



Prepared for:
Florida Department of Transportation District 6
1000 NW 111th Avenue
Miami, Florida 33172

Feasibility Study for Pedestrian Bridges in the Florida Keys

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FPID 425144-2-32-01**

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Executive Summary

Purpose and Need

The purpose of this study is to review the feasibility of implementing pedestrian bridges over Overseas Highway at five locations in the Florida Keys (Monroe County) listed below. The review includes the evaluation of different bridge types (temporary or permanent), alternative sites, and provisions for a marked at-grade crosswalk to maintain ADA compliance. The apparent need for pedestrian bridges at these locations is based on pedestrian safety and to reduce congestion during large events that induce pedestrians to cross SR 5/US 1/Overseas Highway from the event site to off-site parking areas on the opposite side of the highway.

- Marathon Community Park (MM ±49)
- Marathon, Children's Rotary Park (MM ±51.2)
- Islamorada, Upper Matecumbe Key (MM ±81.6)
- Islamorada, Founders Park (MM ±87)
 - Founders Park was identified as the highest priority out of the five locations reviewed, based on the highest total annual event attendance generating pedestrian traffic and lack of existing pedestrian facilities
- Key Largo, Rowell's Waterfront Park (MM ±104.6)

Bridge Options

The following bridge options were considered:

- A. Temporary Pedestrian Bridge, Purchase Complete System
- B. Temporary Pedestrian Bridge, Purchase in Parts
 - Purchase prefabricated truss and support towers from ACROW
 - Purchase remaining parts (stairs and deck systems) from different fabricators
- C. Temporary Pedestrian Bridge, Reuse Existing Truss and Purchase Remaining Parts
 - Utilize existing ACROW truss sections and partial support towers owned by FDOT
 - Purchase from ACROW missing members for truss and support towers only
 - Purchase remaining parts (stairs and deck systems) from different fabricators
- D. Temporary Pedestrian Bridge, Rent Complete System
- E. Permanent Pedestrian Bridge

Cost Estimate and Conclusions

- **A temporary pedestrian bridge is not a cost effective option based on the expected usage at the five locations reviewed.** At Founders Park in Islamorada (MM ±87), implementing a temporary pedestrian bridge would require an estimated initial cost of \$380,000-\$471,000 and an estimated recurring cost of \$63,000 per event. The average expected number of bridge users is 3,000 people per event and the resulting average recurring cost is \$21 per user.
- **A permanent pedestrian bridge is not warranted based on the expected usage at the five locations reviewed.** Even at Founders Park in Islamorada (MM ±87), the location with the highest total annual event attendance, constructing a permanent pedestrian bridge is not warranted, with an estimated construction cost of \$1,211,000.

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1.0 Analysis of Existing Conditions

HDR was retained by the Florida Department of Transportation (FDOT) District 6 to prepare a Feasibility Study reviewing the impacts of constructing pedestrian bridges at five candidate locations in the Florida Keys (Monroe County).

Background

In April 2016, FDOT agreed to review the possibility of installing a temporary overhead walkway at the urging of Florida Keys officials such as Islamorada Mayor Mike Forster, Monroe County Sheriff Rick Ramsay and Monroe County Mayor Heather Carruthers.

Candidate Locations

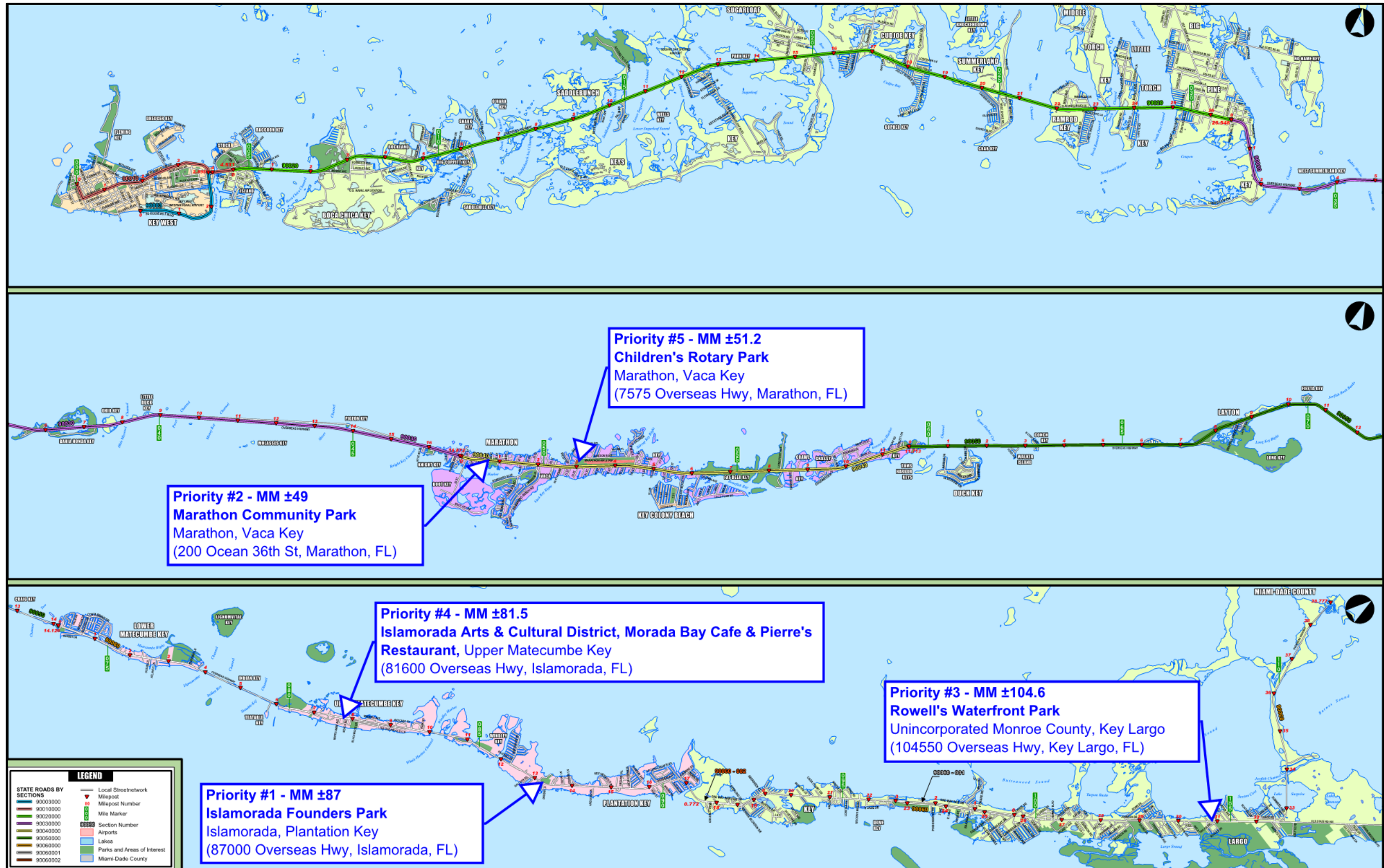
This list of locations was provided by local stakeholders within Monroe County and was not generated by FDOT, listed below and shown in **Figure 1-1**. The existing conditions were evaluated through office and field reviews.

- Marathon Community Park (MM ±49)
- Marathon, Children's Rotary Park (MM ±51.2)
- Islamorada, Upper Matecumbe Key (MM ±81.6)
 - Morada Bay Beach Café and Pierre's Restaurant
 - Morada Way Arts & Cultural District
- Islamorada, Founders Park (MM ±87)
- Key Largo, Rowell's Waterfront Park (MM ±104.6)

Based on the frequency and expected attendance of large events, the locations were prioritized for review as follows:

1. Islamorada, Founders Park (MM ±87)
2. Marathon Community Park (MM ±49)
3. Key Largo, Rowell's Waterfront Park (MM ±104.6)
4. Islamorada, Upper Matecumbe Key (MM ±81.6)
5. Marathon, Children's Rotary Park (MM ±51.2)

Figure 1-1 – Candidate Locations for Pedestrian Bridges in Monroe County



1.1 Location 1 (Islamorada Founders Park, MM ±87)

Founders Park is a public park located on Plantation Key within the limits of the municipality “Islamorada, Village of Islands,” along the gulf-side of SR 5/US 1/Overseas Highway. The study area is shown in **Figure 1-2** and the existing conditions are shown in **Figure 1-3** (Plan View) and **Figure 1-4** (Typical Section). Founders Park has two driveway turnouts along Overseas Highway, referred to in this report as the south driveway (MM ±86.82) and north driveway (MM ±86.94).

1.1.1 Special Events

Islamorada Founders Park was identified as a potential pedestrian bridge site based on the frequency and size of public annual events, summarized in **Table 1-1**. This list of events and attendance figures was provided by local stakeholders within Monroe County and was not verified by FDOT. It is assumed the event parking utilizes the roadside of Overseas Highway and nearby roads due to the limited on-site parking areas within the Founders Park property. It is assumed attendees have been crossing Overseas Highway from the event entrances at the south or north driveways to access the roadside parking areas along Old Highway 4A. It is assumed these events require law enforcement officers to frequently stop highway traffic to allow pedestrians to cross Overseas Highway, creating congestion.

Table 1-1 – Location 1 Special Events

Event (Organizer)	Approx. Dates	Times	Estimated Attendance
Gigantic Nautical Flea Market (Upper Keys Rotary)	Third weekend in February	8am-5pm Sat. & Sun.	10,000 (Sat.), 5,000 (Sun.)
Holiday Festival and Parade (Islamorada Chamber of Commerce)	First Friday in December	4pm-10pm	5,000-6,000 (Fri.)
Island Fest (Islamorada Chamber of Commerce)	Dates vary (approximately first weekend in April)	10am-5pm Sat. & Sun.	3,000 (Sat.), 5,000 (Sun.)
Woofstock (Marvelous Pet Rescues)	Second weekend in March	Fri. 4pm-9pm, Sat. 8am-5pm	300 (Fri.), 4,000 (Sat.)
Spirit of Islamorada July 4th Celebration (Islamorada & Upper Keys Rotary)	July 4 th	4pm-11pm	3,000

Figure 1-2 – Location 1 Study Area Map

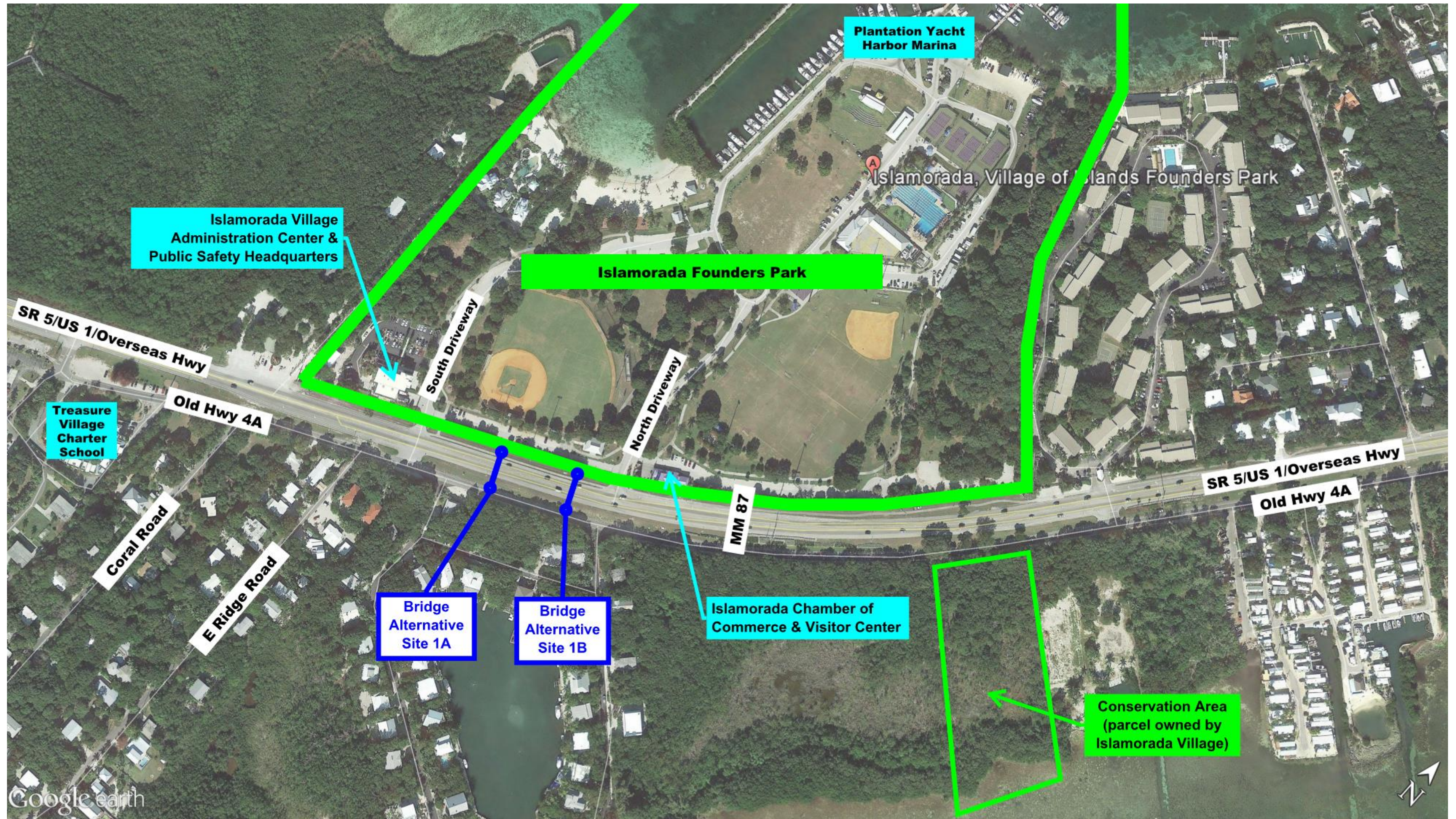


Figure 1-3 – Location 1 (MM ±87) Existing Conditions Plan

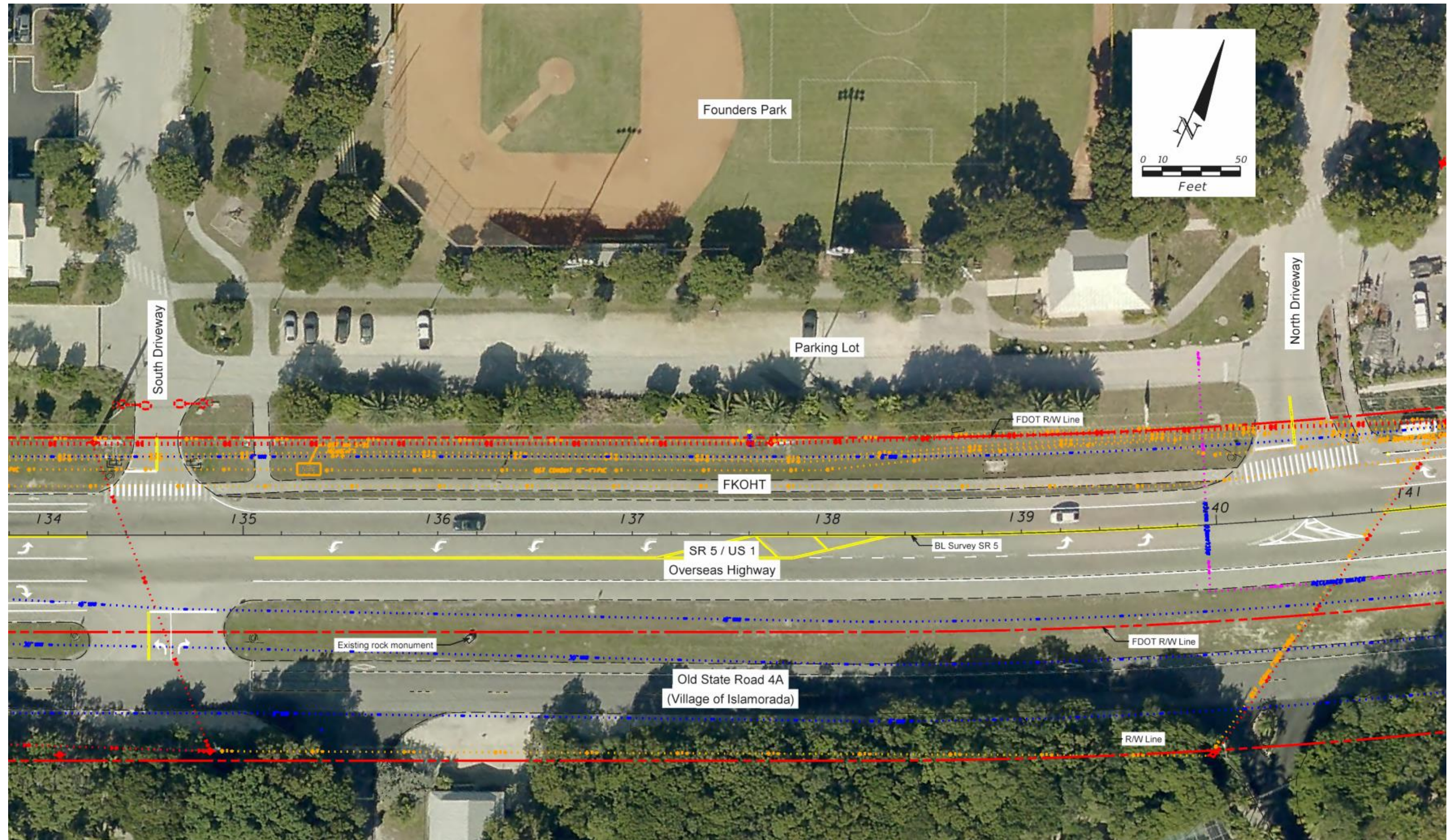
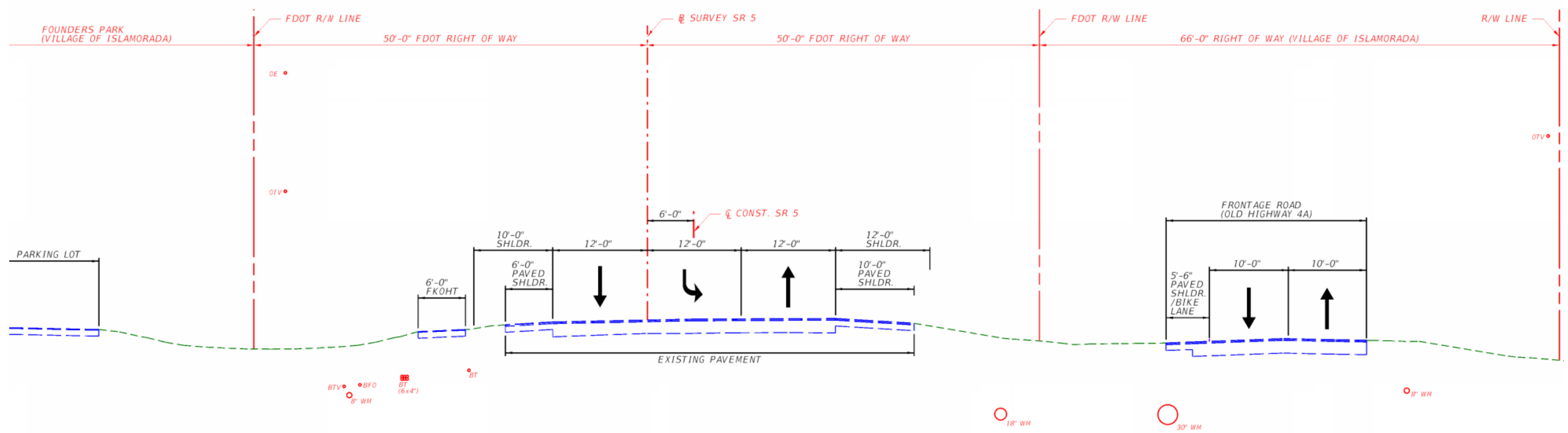


Figure 1-4 – Location 1 (MM ±87) Existing Typical Section



1.1.2 Other Local Facilities

The study area surrounding Founders Park also contains the following relevant local facilities:

- Plantation Yacht Harbor Marina
- Islamorada Village Administration Center & Public Safety Headquarters
 - Located at the south driveway
- Islamorada Chamber of Commerce & Visitor Center
 - Located north of the north driveway
- Treasure Village Montessori Charter School
 - Located south of Founders Park along the ocean-side of Old Highway 4A

1.1.3 FDOT Projects

Based on the data collection from the FDOT archives, the following programmed or previous projects were identified within or adjacent to Islamorada Founders Park (MM ±87). The as-built or design plans for the previous projects are attached in **Appendix D**.

Previous Projects

- FPID 414649-1-52-01 (FY 2008)
 - SR 5/US 1/Overseas Highway, from north of East Ridge Road (MM 86.8) to Royal Poinciana Boulevard (MM 90.0)
 - Resurfacing Project, the scope of work also included shoulder widening and upgrade of signing & pavement markings within the study limits
- FPID 405646-1-52-01 (FY 2008)
 - SR 5/US 1/Overseas Highway, from MM 85.5 to MM 86.9
 - Resurfacing Project, the scope of work also included shoulder widening within the study limits

Future Programmed Projects

- None programmed

1.1.4 Roadway Typical Section

The existing roadway typical section at Islamorada Founders Park is shown in **Figure 1-4**. SR 5/US 1/Overseas Highway consists of a two-lane two-way divided section with a left-turn lane and flush paved shoulders. The through and turn lanes are 12 feet wide. The NB shoulder is 12 feet and 10 feet paved. The SB shoulder is 10 feet wide and 6 feet paved. The Florida Keys Overseas Heritage Trail (FKOHT) consists of a paved asphalt path 6 feet wide, adjacent to the SB shoulder. The FDOT right of way is 100 feet wide.

A parallel frontage road named “Old Highway 4A” is located along the ocean-side of Overseas Highway consisting of a two-lane two-way undivided section with flush shoulders under jurisdiction of the municipality “Islamorada, Village of Islands.” The lanes are 10 feet wide, with a 5 foot wide paved shoulder along the SB side only. Old Highway 4A is centered in a right of way 66 feet wide contiguous with the FDOT right of way.

1.1.5 Design and Posted Speeds

The most recent FDOT projects along SR 5/US 1/Overseas Highway near Islamorada Founders Park, FPID 414649-1-52-01 and FPID 405646-1-52-01, utilized a Design Speed of 55 mph. The existing Posted Speed is 45 mph.

1.1.6 Roadway Alignment

The horizontal alignment of SR 5/US 1/Overseas Highway near Islamorada Founders Park includes a horizontal curve; the curve data is summarized in **Table 1-2**. See the plans from the most recent FDOT projects (**Appendix D**) and the Right of Way Map (**Appendix C**) for additional detail.

Table 1-2 – Location 1 Horizontal Curvature and Superelevation

Curve Ref. #	Location	Project FPID	Radius (feet)	Degree of Curvature	Length (feet)	Superelevation Rate
C-8	PC 138+21.14 PI 145+14.63 PT 151+81.94	414649-1-52-01	2,864.937	2°00'00"	1,360.81	4.8%

1.1.7 Pedestrian and Bicycle Facilities

Pedestrian Facilities

The existing pedestrian facilities along SR 5/US 1/Overseas Highway near Islamorada Founders Park consist of the FKOHT asphalt path along the gulf-side. The path terminates at the south driveway for Founders Park and continues northward. Marked crosswalks are provided along the trail at the driveway turnouts within the study area.

Bicycle Facilities

The existing bicyclist facilities near Islamorada Founders Park consist of paved shoulders (6-10 feet wide) along Overseas Highway and a paved shoulder (5.5 feet wide) along the SB side of Old Highway 4A. Directly adjacent to the park, the paved shoulders are not marked as bicycle lanes; however, the bicycle lanes are marked south of the study area.

1.1.8 Traffic

Two traffic count stations are located along SR 5/US 1/Overseas Highway near Islamorada Founders Park; the traffic volume data for the most current year (2015) is listed in **Table 1-3**.

Table 1-3 – Location 1 Existing Traffic Volume Characteristics

Traffic Count Station	Location	Section, Milepost	Annual Average Daily Traffic (AADT)	K ₃₀	D ₃₀	Truck Factor (T24)
90-0101	SR 5/US 1/Overseas Highway, 1400 feet south of Snake Creek Bridge (MM 85.4)	90060000, MP 11.484	27,500	9.67	54.3	5.8%
90-0102	SR 5/US 1/Overseas Highway, 100 feet south of Tavernier Creek Bridge (MM 90.7)	90060000, MP 17.037	25,500	9.67	54.3	7.2%

1.1.9 Utilities

The following utilities were identified within the FDOT right of way near Islamorada Founders Park based on a review of the plans from previous FDOT projects.

- Florida Keys Electric Cooperative
 - Overhead electric lines with utility lines are located along the gulf-side of Overseas Highway, including transmission lines (138 kV) and distribution lines (24 kV)
- Florida Keys Aqueduct Authority
 - One water line (8") along the gulf-side of Overseas Highway and two water lines (18" & 30") along the ocean-side of Overseas Highway
- AT&T Florida
 - Buried telephone lines along the gulf-side of Overseas Highway, including multiple conduits (6x4 inches)
- Comcast
 - Overhead cable television lines are mounted on the overhead electric poles along the gulf-side of Overseas Highway

1.2 Location 2 (Marathon Community Park, MM ±49)

Marathon Community Park is a public park located on Vaca Key within the limits of the City of Marathon and along the ocean-side of SR 5/US 1/Overseas Highway. The study area is shown in **Figure 1-5** and the existing conditions are shown in **Figure 1-6 to Figure 1-11** (Plan View and Typical Section). Marathon Community Park has two driveway connections along Overseas Highway at the intersections of 36th Street (west entrance) and 39th Street (east entrance). For this study, three alternative sites were considered for a potential pedestrian bridge near Marathon Community Park:

- Alternative Site 2A – west of 35th Street (MM ±48.9), near the parking areas at Stanley Switlik Elementary School
- Alternative Site 2B – west of 37th Street (MM ±49.05), near the west park entrance
- Alternative Site 2C – east of 39th Street (MM ±49.2), near the east park entrance

1.2.1 Special Events

Marathon Community Park was identified as a potential pedestrian bridge site based on the frequency and size of public annual events, summarized in **Table 1-4**. This list of events and attendance figures was provided by local stakeholders within Monroe County and was not verified by FDOT. The designated parking for these events is on the gulf-side of the highway, including the parking lots at Stanley Switlik Elementary School between 33rd Street and 35th Street, the Trinity AME Church at 41st Street, and an unpaved lot between 47th Street and 49th Street. It is assumed overflow event parking also utilizes adjacent local businesses and neighborhoods along the gulf-side of the highway. The existing signalized intersection at 33rd Street includes a marked crosswalk across Overseas Highway with pedestrian signals, pedestrian detectors (push-buttons), and sidewalk connections from the parking lots at Stanley Switlik Elementary School to the park entrance on the ocean-side of the highway. It is assumed many attendees have been crossing Overseas Highway directly at the park entrances near 36th Street and 37th Street or 39th Street to access parking areas on the gulf-side of the highway. It is assumed these events require law enforcement officers to frequently stop highway traffic to allow pedestrians to cross, creating congestion.

Table 1-4 – Location 2 Special Events

Event (Organizer)	Approx. Dates	Times	Estimated Attendance
Marathon Seafood Festival (OFF, City of Marathon, Chamber of Commerce)	February, March or April	8am-9pm weekend	10,000
Bubbly Fest (Chamber of Commerce, Rotary)	end December/ early January	10am-9pm	10,000
Celtic Fest (area churches)	early January	10am-9pm weekend	10,000
Nautical Flea Market (Marathon Yacht Club Educational Foundation)	end of February	8am-2pm	2,000
Relay for Life (Rotary)	March or April	8am-1pm Sat. or Sun.	1,500

Figure 1-5 – Location 2 Study Area Map

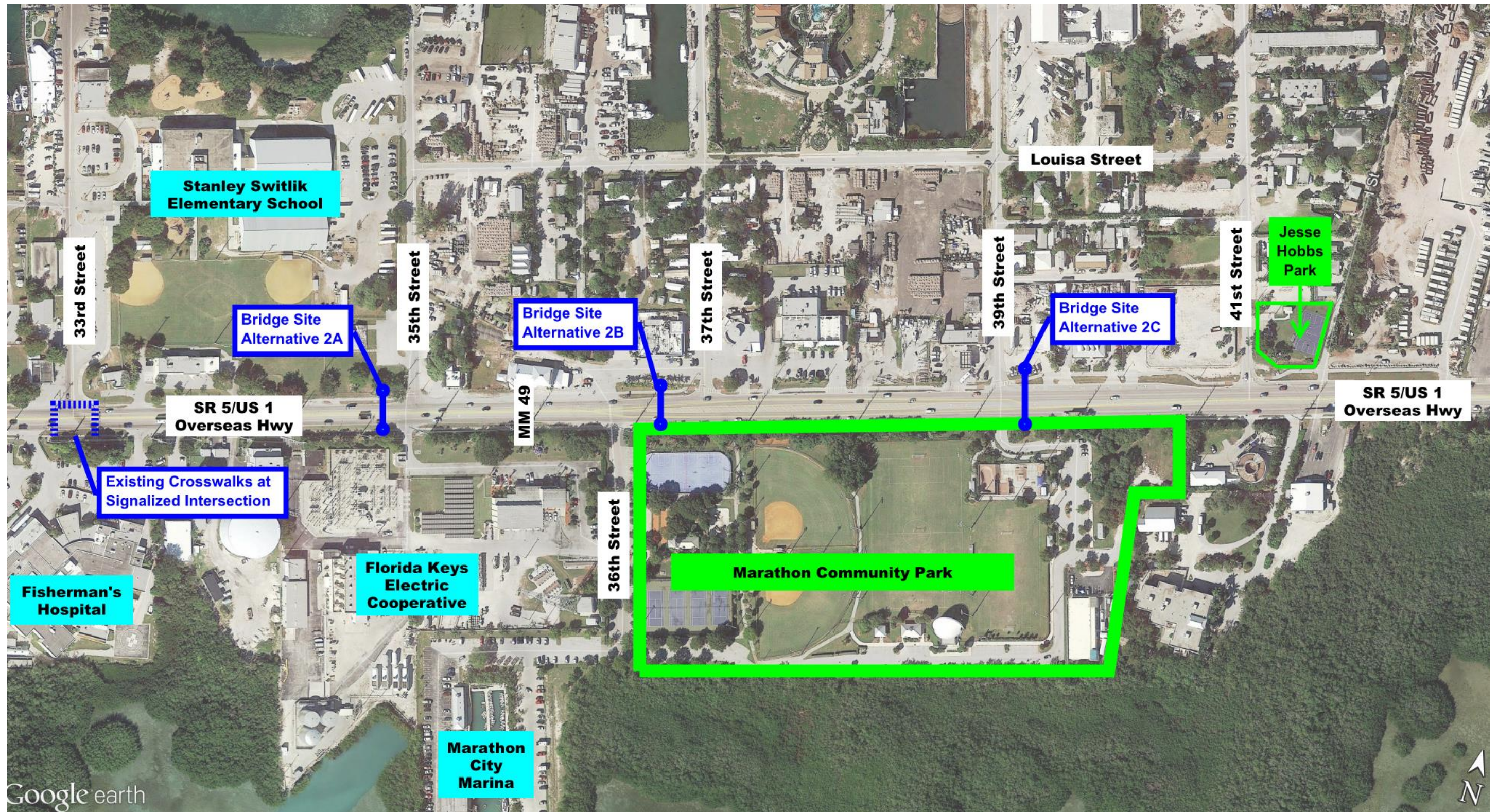


Figure 1-6 – Location 2A (MM ±48.9) Existing Conditions Plan

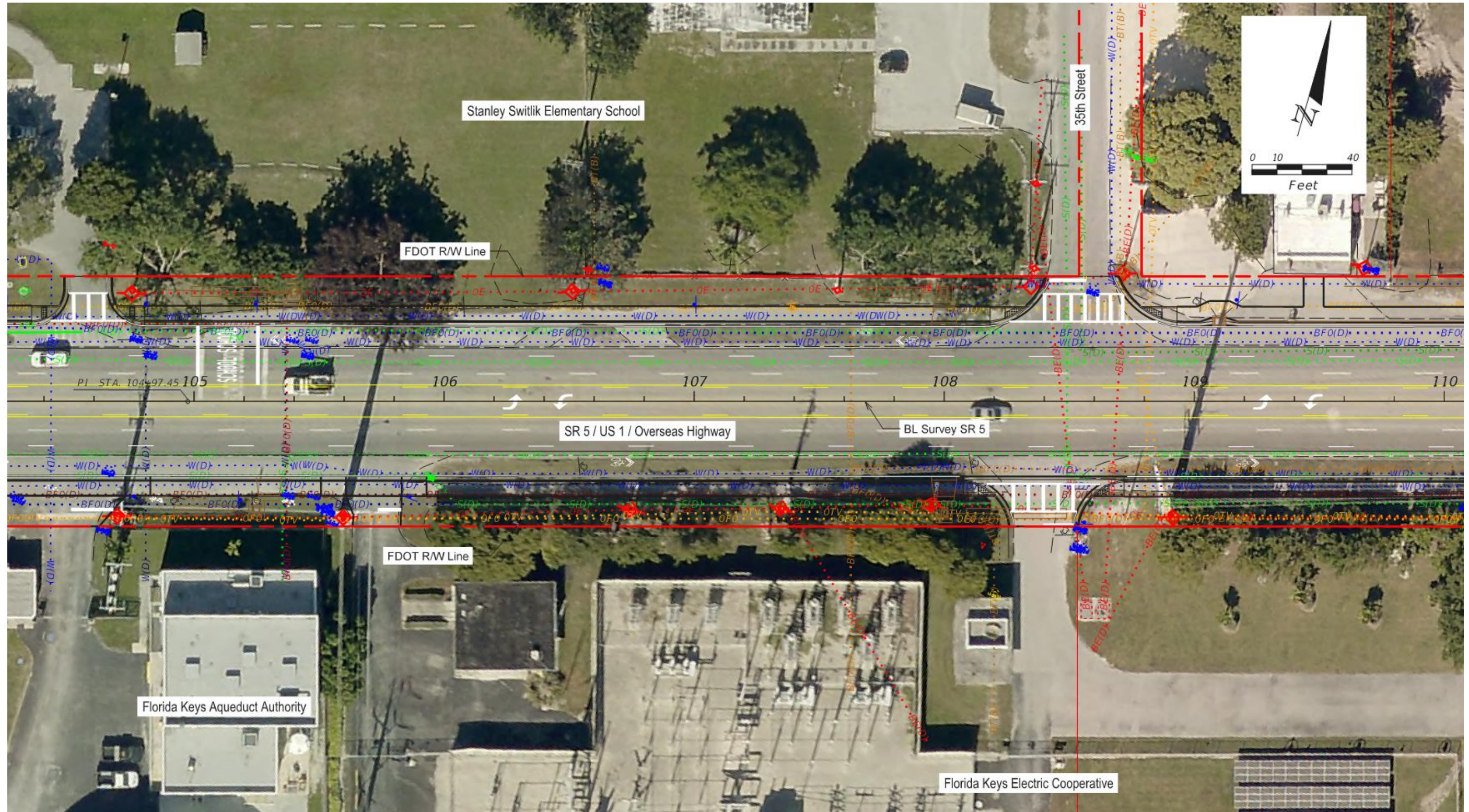


Figure 1-7 – Location 2A (MM ±48.9) Existing Typical Section

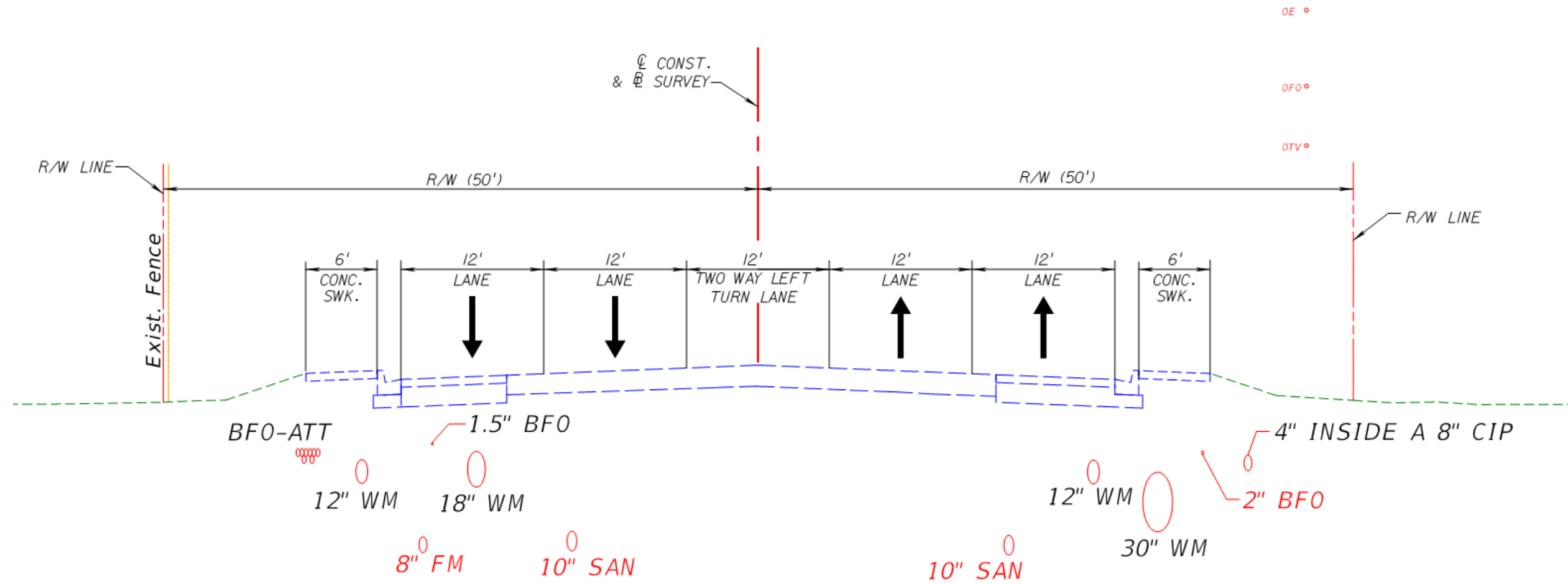


Figure 1-8 – Location 2B (MM ±49.05) Existing Conditions Plan

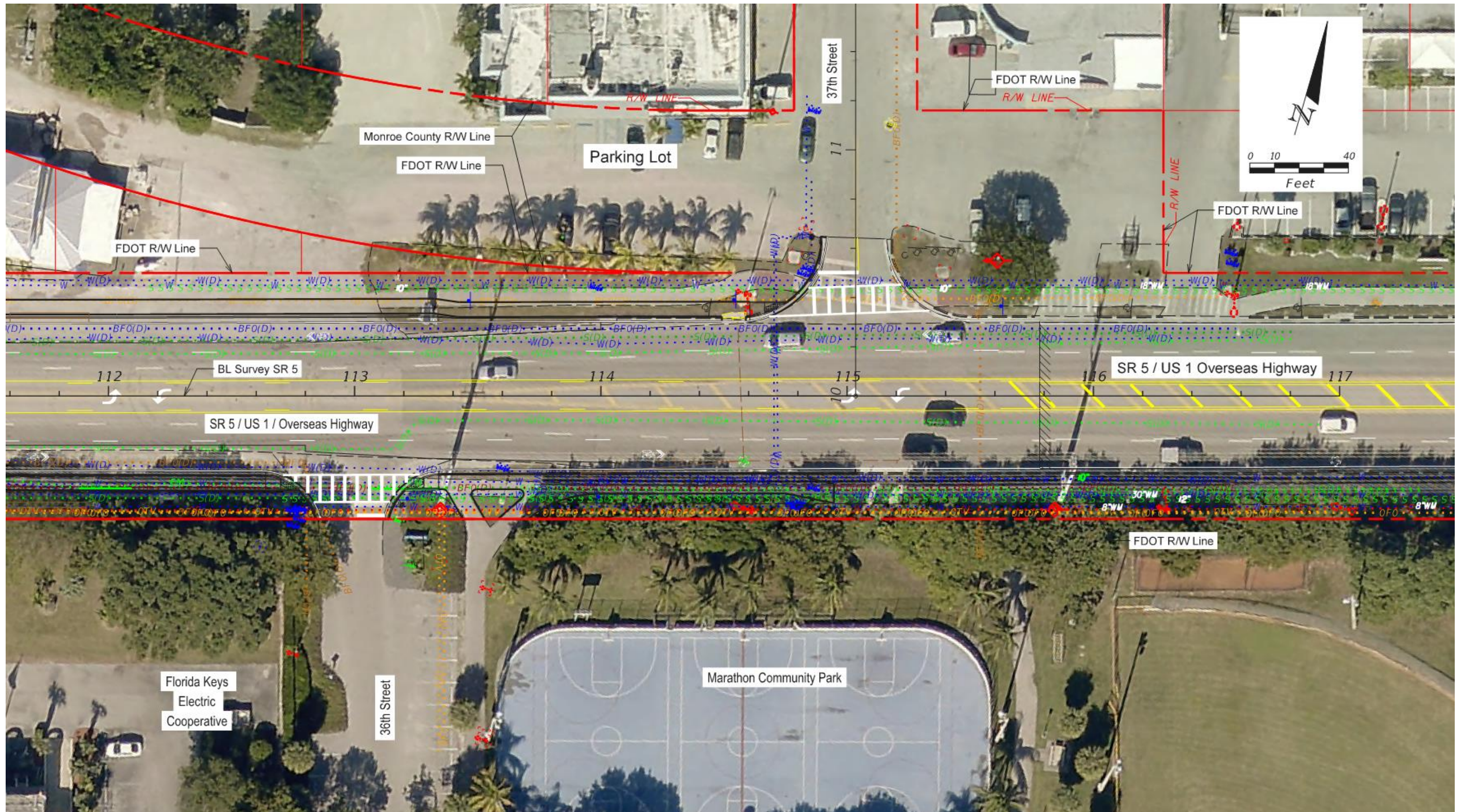


Figure 1-9 – Location 2B (MM ±49.05) Existing Typical Section

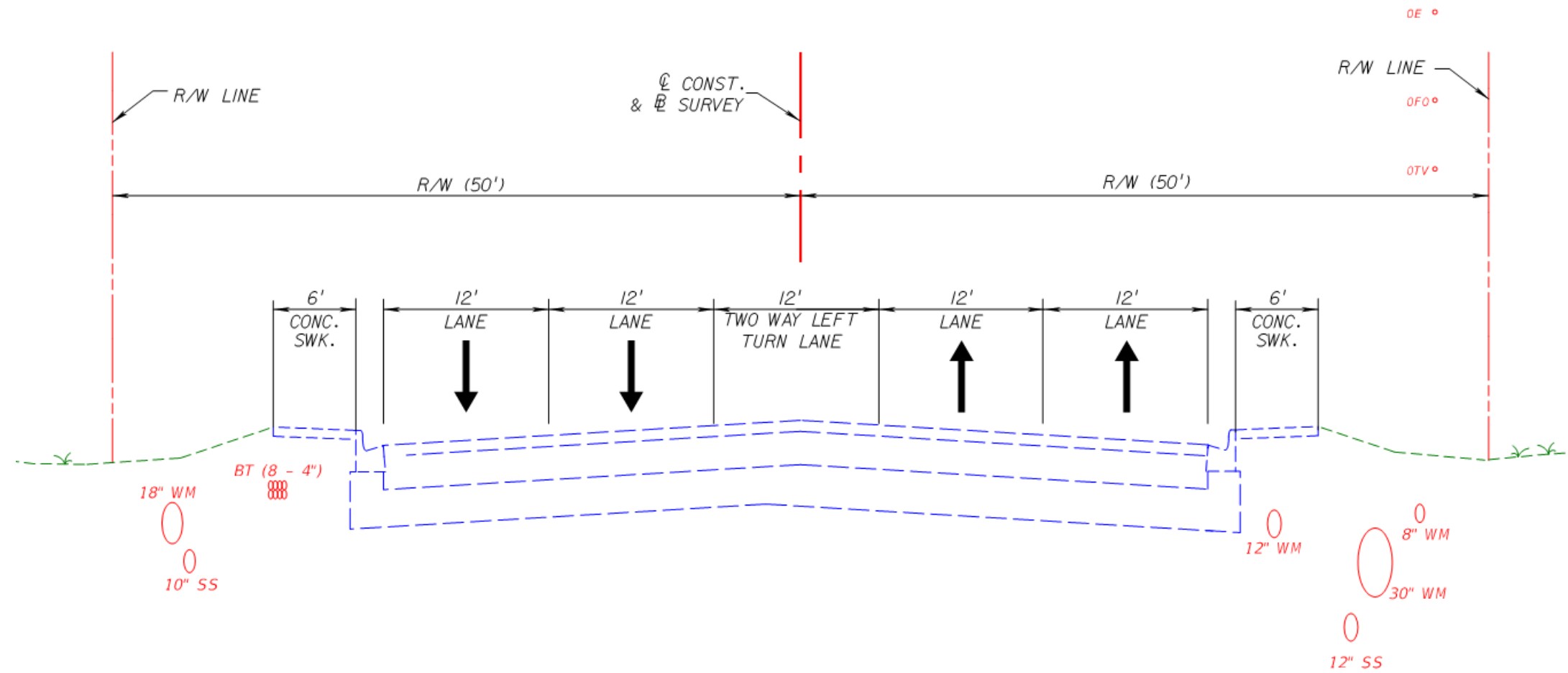
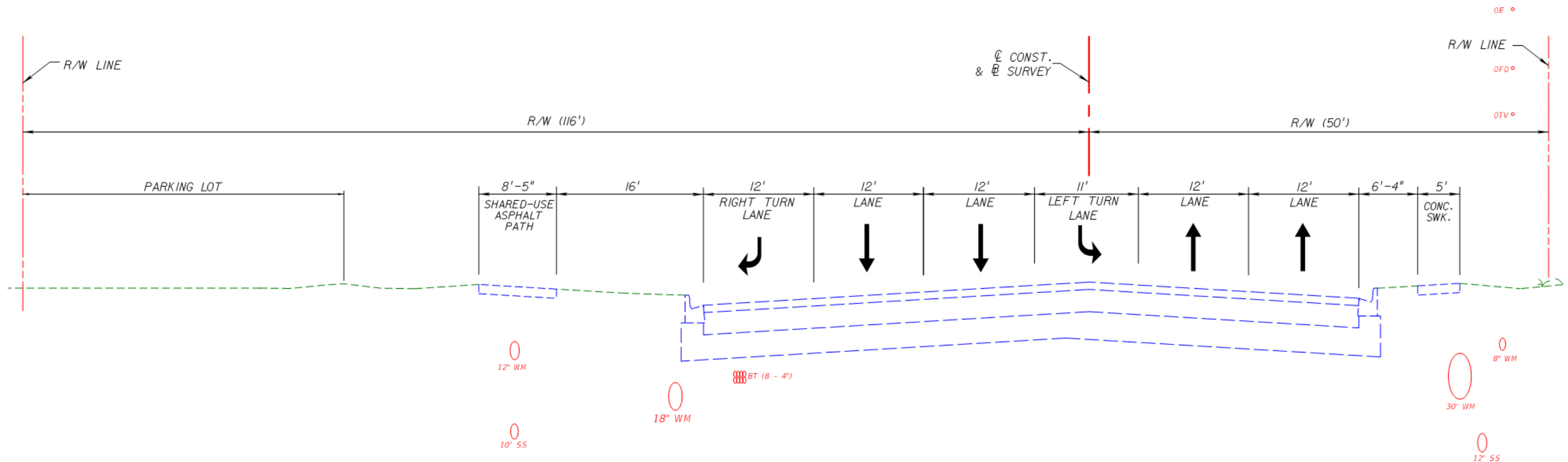


Figure 1-10 – Location 2C (MM ±49.2) Existing Conditions Plan



Figure 1-11 – Location 2C (MM ±49.2) Existing Typical Section



1.2.2 Other Local Facilities

The study area surrounding Marathon Community Park also contains the following relevant local facilities:

- Stanley Switlik Elementary School
 - Located at the gulf-side of the highway, between 33rd Street and 35th Street
- Jesse Hobbs Park
 - Located at the gulf-side of the highway, at 41st Street
- Marathon City Marina
 - Located at the ocean-side of the highway at 36th Street
- Fisherman's Community Hospital
 - Located at the ocean-side of the highway at 33rd Street
- Utility facilities for the Florida Keys Electric Cooperative, Florida Keys Aqueduct Authority and City of Marathon

1.2.3 FDOT Projects

Based on the data collection from the FDOT archives, the following programmed or previous projects were identified within or adjacent to Marathon Community Park (MM ±49). The as-built or design plans for the previous projects are attached in **Appendix D**.

Previous Projects

- FPID 429187-1-52-01 (FY 2015)
 - SR 5/US 1/Overseas Highway, from MM 48 to south of 33rd Street (MM 48.70)
 - Resurfacing Project, the scope of work also included shoulder widening and upgrade of signing & pavement markings.
- FPID 419854-1-52-01 and 418054-1-58-01 (FY 2010)
 - SR 5/US 1/Overseas Highway, from 37th Street (MM 49.1) to Coco Plum Drive (MM 54.6)
 - Resurfacing Project, the scope of work also included the upgrade of pedestrian curb ramps and construction of trail segments (FKOHT) within the limits

Future Programmed Projects

- FPID 429187-2-52-01 (FY 2017, Letting Date 10/27/2016)
 - SR 5/US 1/Overseas Highway, from south of 33rd Street (MM 48.70) to north of 37th Street (MM 49.03)
 - Resurfacing Project includes widening to change the existing four-lane undivided roadway with flush shoulders to a four-lane divided roadway with a median two-way left-turn lane as well as curb & gutter along both sides of the road. The scope of work also includes drainage improvements, construction of concrete sidewalks along both sides of the road, and upgrade of signing, pavement markings, and signalization.

1.2.4 Roadway Typical Section

The existing roadway typical section for SR 5/US 1/Overseas Highway varies at the three alternative sites near Marathon Community Park.

Alternative Site 2A – west of 35th Street (see **Figure 1-7**)

The existing roadway at this site will be modified by future project FPID 429187-2-52-01 (FY 2017); SR 5/US 1/Overseas Highway is proposed to be widened to a four-lane divided roadway with a two-way left-turn lane in the median and curb & gutter on both sides. The through lanes and the two-way left-turn lane will be 12 feet wide. Concrete sidewalks (6 feet wide) are proposed along both sides of the road. The FDOT right of way is 100 feet wide.

Alternative Site 2B – west of 37th Street (see **Figure 1-9**)

The existing roadway at this site will be modified by future project FPID 429187-2-52-01 (FY 2017); SR 5/US 1/Overseas Highway is proposed to be widened to a four-lane divided roadway with a two-way left-turn lane in the median and curb & gutter on both sides. The through lanes and the two-way left-turn lane will be 12 feet wide. Concrete sidewalks (6 feet wide) are proposed along both sides of the road. The FDOT right of way is 100 feet wide. From 36th Street to 37th Street, adjacent to the gulf-side of Overseas Highway is a public right of way 66 feet wide named “Old Highway 4A” under jurisdiction of Monroe County and no longer functions as a roadway facility. The right of way is utilized as a paved parking lot for the adjacent business (Florida Keys Lobster House).

Alternative Site 2C – east of 39th Street (see **Figure 1-11**)

SR 5/US 1/Overseas Highway consists of a four-lane two-way divided section with a median left-turn lane and westbound right-turn lane. The through and turn lanes are 12 feet wide. A concrete sidewalk (5 feet wide) is located along the ocean-side of the highway. The FKOHT consist of an asphalt path (8 feet wide) along the gulf-side of the highway. The FDOT right of way is 166 feet wide (116 feet LT and 50 feet RT) and includes the unpaved parking lot for the adjacent business (Amerigas Eagle Propane) along the gulf-side of the highway.

1.2.5 Design and Posted Speeds

The most recent FDOT projects along SR 5/US 1/Overseas Highway near Marathon Community Park used two different Design Speeds; FPID 429187-2-52-01 (FY 2017) utilized a Design Speed of 40 mph and FPID 419854-1-52-01 (FY 2010) utilized a Design Speed of 45 mph. In this study, a Design Speed of 45 mph will be used along SR 5/US 1/Overseas Highway consistently for all three alternative sites. The existing Posted Speed is 35 mph west of 36th Street and 45 mph east of 36th Street (MM 49.04, MP 1.001).

1.2.6 Roadway Alignment

The horizontal alignment of SR 5/US 1/Overseas Highway near Marathon Community Park consists of a series of tangent lines with a deflection of 0°02'49" at station 104+97.45 west of 35th Street. See the plans from the most recent FDOT projects (**Appendix D**) and the Right of Way Map (**Appendix C**) for additional detail.

1.2.7 Pedestrian and Bicycle Facilities

Pedestrian Facilities

The existing pedestrian facilities along SR 5/US 1/Overseas Highway near Marathon Community Park consist of a concrete sidewalk along the ocean-side of the highway and the FKOHT asphalt path along the gulf-side of the highway. Two marked crosswalks across Overseas Highway are located at the signalized intersection at 33rd Street.

Bicycle Facilities

No designated on-road bicycle facilities are present along SR 5/US 1/Overseas Highway near Marathon Community Park. FPID 429187-2-52-01 (FY 2017) is proposed to install shared-lane markings (Sharrows) from west of 33rd Street to 37th Street.

1.2.8 Traffic

One traffic count station is located along SR 5/US 1/Overseas Highway near the study area; the traffic volume data for the most current year (2015) is listed in **Table 1-5**.

Table 1-5 – Location 2 Existing Traffic Volume Characteristics

Traffic Count Station	Location	Section, Milepost	Annual Average Daily Traffic (AADT)	K ₃₀	D ₃₀	Truck Factor (T24)
90-0642	SR 5/US 1/Overseas Highway, between 22 nd Street and 23 rd Street (MM 48.2)	90040000, MP 0.25	19,700	9.67	54.3	6.0%

1.2.9 Utilities

The following utilities were identified within the FDOT right of way near Marathon Community Park based on a review of the plans from previous FDOT projects.

- Florida Keys Electric Cooperative
 - Overhead electric lines with utility lines are located along the ocean-side of the highway, including transmission lines (138 kV) and distribution lines (24 kV)
- Florida Keys Aqueduct Authority
 - Multiple water lines (8") along both side of the road and a buried fiber optic line along the ocean-side of the road.
- City of Marathon
 - Multiple sanitary sewer gravity and force main lines along both sides of the road
- AT&T Florida
 - Buried fiber-optic telephone line along the gulf-side of the highway
- Comcast
 - Overhead cable television lines are mounted on the overhead electric poles along the ocean-side of the highway

1.3 Location 3 (Rowell’s Waterfront Park, Key Largo, MM ±104.6)

Rowell’s Waterfront Park is a public park located on Key Largo within unincorporated Monroe County and along the gulf-side of SR 5/US 1/Overseas Highway. The study area is shown in **Figure 1-12** and the existing conditions are shown in **Figure 1-13** (Plan View) and **Figure 1-14** (Typical Section). Rowell’s Waterfront Park has one driveway turnout along Overseas Highway adjacent to the intersection at Esther Street (MM ±104.6).

1.3.1 Special Events

Rowell’s Waterfront Park was identified as a potential pedestrian bridge site based on the frequency and size of public annual events, summarized in **Table 1-6**. This list of events and attendance figures was provided by local stakeholders within Monroe County and was not verified by FDOT. It is assumed the event parking utilizes the roadside of Overseas Highway and nearby neighborhood roads due to the limited on-site parking areas within the Rowell’s Waterfront Park property. It is assumed attendees are crossing Overseas Highway from the event entrances to access the roadside parking areas along the ocean-side of the highway, including an unpaved lot at the intersection with Taylor Drive (MM ±104.8) and at Key Largo Elementary School (MM 104.8 to 105.1). It is assumed these events require law enforcement officers to frequently stop highway traffic to allow pedestrians to cross the highway, creating congestion.

Table 1-6 – Location 3 Special Events

Event (Organizer)	Approx. Dates	Times	Estimated Attendance
Key Largo Stone Crab & Seafood Festival (Key Largo Merchants Association Inc.)	Last weekend in January	11am-8pm	8,000-10,000 (over 2 days)
Key Largo Family 4th of July Free Picnic & Concert (Key Largo Volunteer Fire Dept. and Key Largo Volunteer Ambulance Corps.)	July 4th	8am-10:30pm	2,000
Brew on the Bay Craft Beer Festival (Rotary Club of Key Largo Charitable Events)	2 nd weekend in January	10am-6:30pm	1,500
Free Easter Egg Hunt Celebration (Dolphins Plus Bayside)	3 rd weekend in March	7:30-11:30am	1,500

1.3.2 Other Local Facilities

The study area surrounding Rowell’s Waterfront Park also contains the Key Largo Elementary School, located along the ocean-side of the highway between Taylor Drive and Dolphin Road (MM 104.8 to 105.1). In addition, an undeveloped lot owned by Monroe County is located along the ocean-side of the highway at the intersection with Taylor Drive (MM ±104.8).

Figure 1-12 – Location 3 Study Area Map

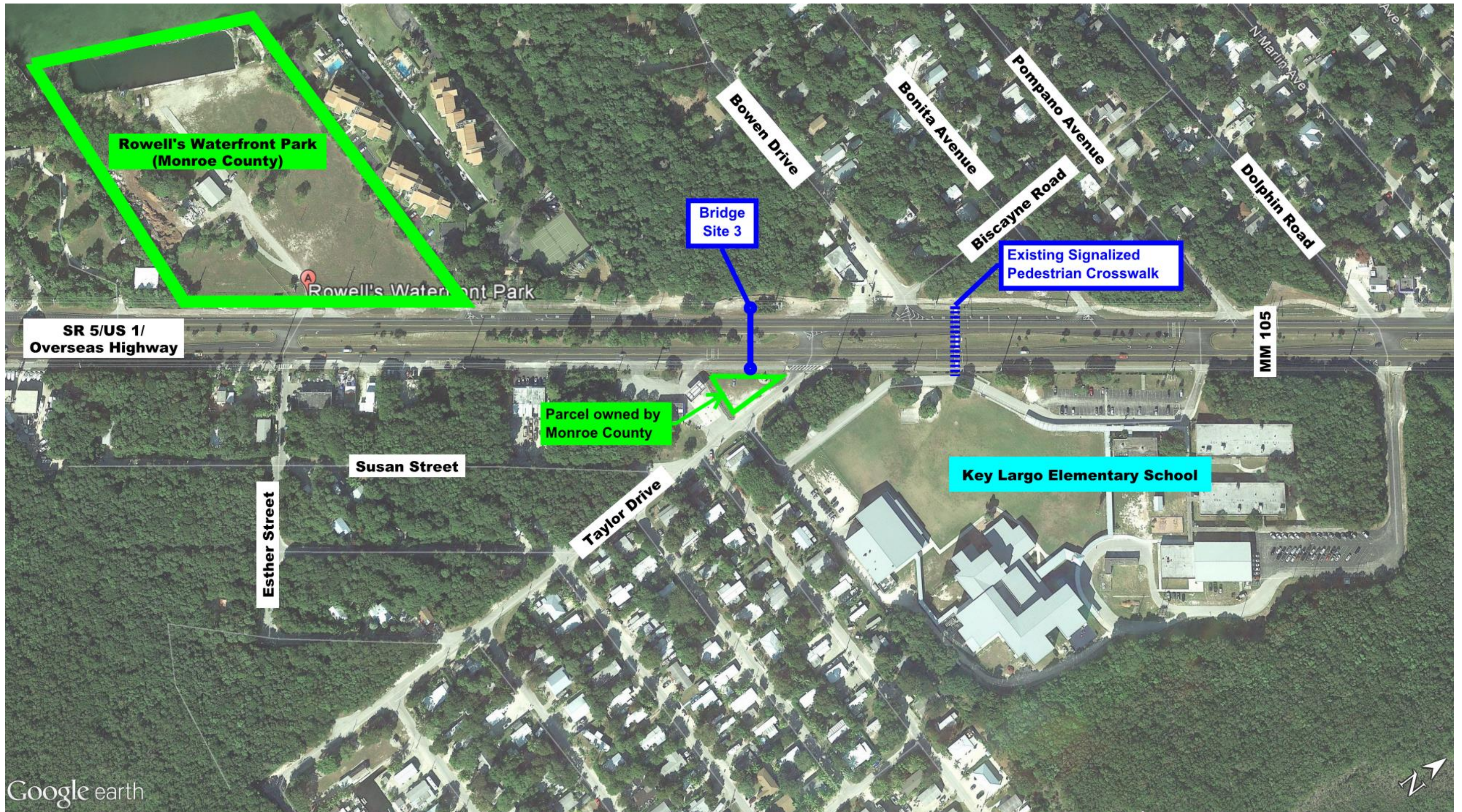


Figure 1-13 – Location 3 (MM ±104.6) Existing Conditions Plan

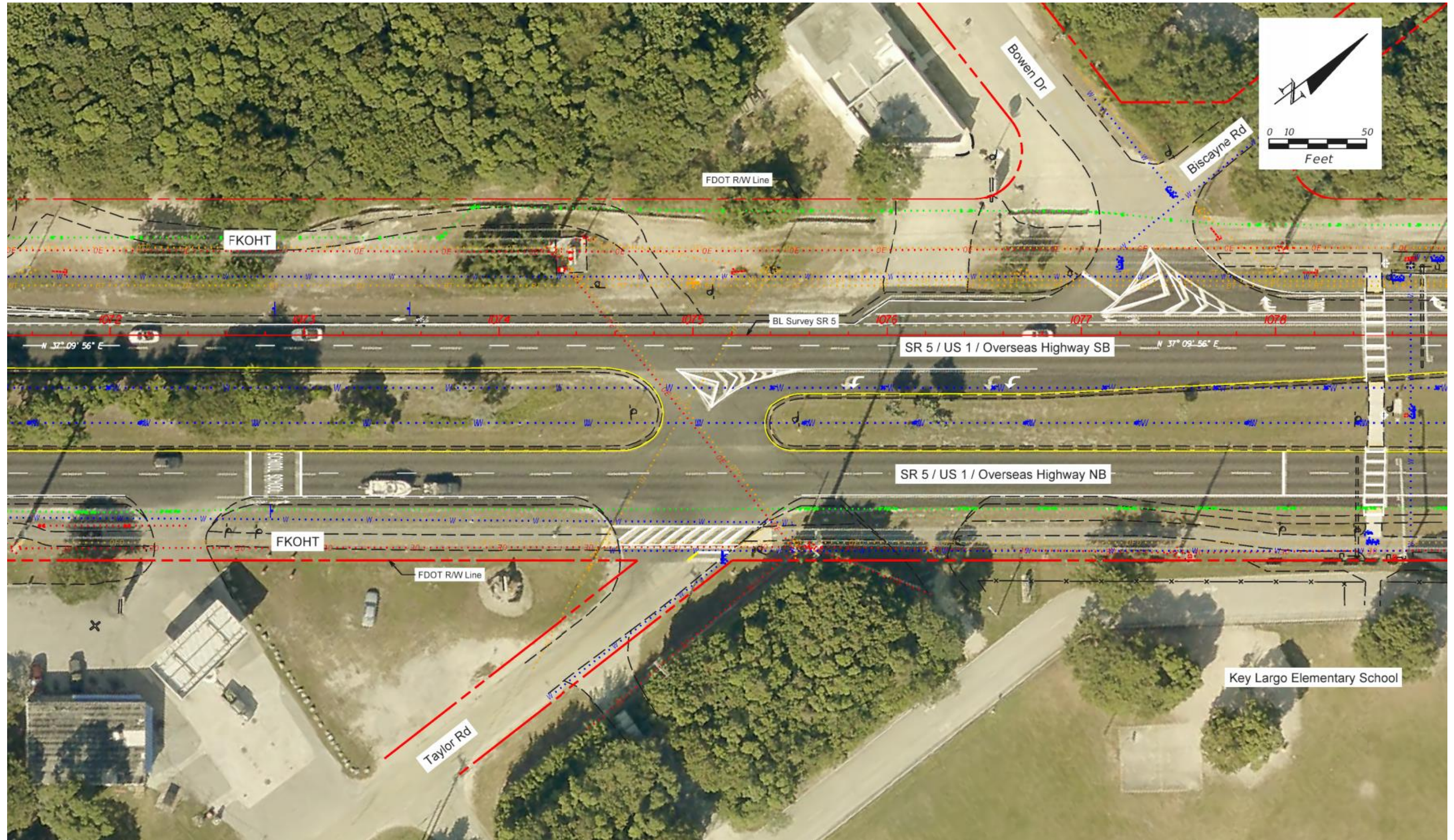
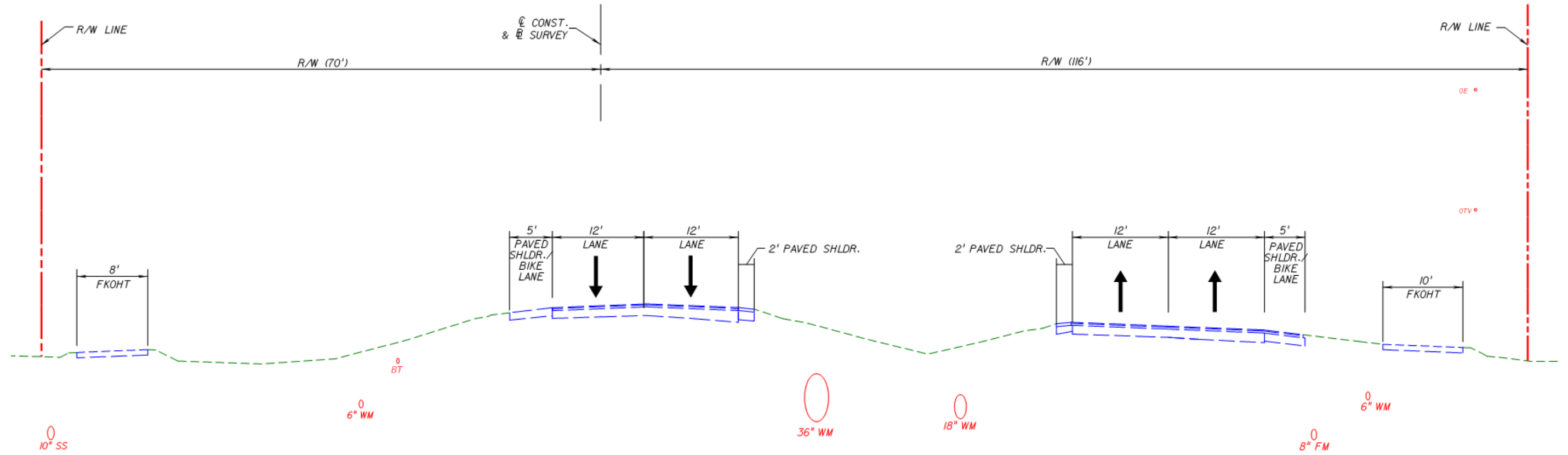


Figure 1-14 – Location 3 (MM ±104.6) Existing Typical Section



1.3.3 FDOT Projects

Based on the data collection from the FDOT archives, the following programmed or previous projects were identified within or adjacent to Rowell's Waterfront Park (MM ±104.6). The as-built or design plans for the previous projects are attached in **Appendix D**.

Previous Projects

- FPID 419846-1-52-01 (FY 2013)
 - SR 5/US 1/Overseas Highway, from Hialeah Lane (MM 103.2) to Lake Surprise Boulevard (MM 106.3)
 - Resurfacing Project, the scope of work also included shoulder widening, construction of a shared use path (FKOHT) along the ocean-side of the highway, and upgrade of signing & pavement markings within the study limits
- FPID 419846-2-52-01 (FY 2014)
 - SR 5/US 1/Overseas Highway, from Atlantic Avenue (MM 99.6) to Abaco Road (MM 106.3)
 - Landscaping Project
- FPID 424197-2-52-01 (FY 2014)
 - Monroe County Bayside Trail, from MM 100 to MM 106
 - Bike Path/Trail Project to construct a new shared use path (FKOHT) along the bay-side of Overseas Highway within the study limits

Future Programmed Projects

- None programmed

1.3.4 Roadway Typical Section

The existing roadway typical section at Rowell's Waterfront Park is shown in **Figure 1-14**. SR 5/US 1/Overseas Highway consists of a four-lane two-way divided section with flush shoulders and a grass median. The through lanes are 12 feet wide. The NB outside shoulder is 10 feet and 5 feet paved, the SB outside shoulder is 8 feet wide and 5 feet paved. The inside shoulders are 2 feet paved. The FKOHT consists of asphalt paths (8-10 feet) wide along both sides of the highway. The FDOT right of way is typically 166 feet wide at Rowell's Waterfront Park and increases to 186 feet wide at a point south of Taylor Drive.

1.3.5 Design and Posted Speeds

The most recent FDOT project along SR 5/US 1/Overseas Highway near Rowell's Waterfront Park, FPID 419846-1-52-01, utilized a Design Speed of 45 mph. The existing Posted Speed is 45 mph.

1.3.6 Roadway Alignment

The horizontal alignment of SR 5/US 1/Overseas Highway near Rowell’s Waterfront Park consists of a tangent line with no deflections or horizontal curves within the study area. See the plans from the most recent FDOT projects (**Appendix D**) and the Right of Way Map (**Appendix C**) for additional detail.

1.3.7 Pedestrian and Bicycle Facilities

Pedestrian Facilities

The existing pedestrian facilities along SR 5/US 1/Overseas Highway near Rowell’s Waterfront Park consist of the FKOHT asphalt paths (8-10 feet wide) along both sides of the highway. The paths are continuous throughout the study area and connect to marked signalized pedestrian crosswalk at Key Largo Elementary School (MM ±104.9), just north of the intersection with Bowen Drive.

Bicycle Facilities

The existing bicyclist facilities along SR 5/US 1/Overseas Highway near Rowell’s Waterfront Park consists of paved shoulders (5 feet wide) marked as bicycle lanes along both sides of the highway.

1.3.8 Traffic

Two traffic count stations are located along SR 5/US 1/Overseas Highway near the study area; the traffic volume data for the most current year (2015) is listed in **Table 1-7**.

Table 1-7 – Location 3 Existing Traffic Volume Characteristics

Traffic Count Station	Location	Section, Milepost	Annual Average Daily Traffic (AADT)	K ₃₀	D ₃₀	Truck Factor (T24)
90-0094	SR 5/US 1/Overseas Highway, 200 feet south of Bass Street (MM 103.4)	90060000, MP 29.504	28,500	9.67	54.3	7.2%
90-0200	SR 5/US 1/Overseas Highway, 900 feet south of CR 905 at R-164 (MM 106.2)	90060000, MP 32.397	23,500	9.67	54.3	11.9%

1.3.9 Utilities

The following utilities were identified within the FDOT right of way near Rowell's Waterfront Park based on a review of the plans from previous FDOT projects.

- Florida Keys Electric Cooperative
 - Overhead electric lines with utility lines are located along both sides of the highway, including transmission lines (138 kV) and distribution lines (24 kV)
- Florida Keys Aqueduct Authority
 - Two water lines (18" and 36") along the median and a 6" water line along each side of the highway
- Key Largo Wastewater Treatment District
 - An 8" sanitary force main and 4" sanitary sewer line along the ocean-side of the highway and a 10" sanitary sewer line along the bay-side of the highway.
- AT&T Florida
 - Buried telephone lines and overhead fiber optic lines along the bay-side of the highway
- Comcast
 - Overhead cable television lines are mounted on the overhead electric poles along the ocean-side of the highway

1.4 Location 4 (Islamorada, Upper Matecumbe Key, MM ±81.6)

The Morada Bay Beach Café and Pierre’s Restaurant (MM ±81.6) was identified as a potential pedestrian bridge site based on the high frequency of events generating pedestrian traffic across Overseas Highway. This location is on Upper Matecumbe Key within the limits of the municipality “Islamorada, Village of Islands.” The surrounding neighborhood on the ocean-side of the highway is also identified as the “Morada Way Arts & Cultural District.” The study area is shown in **Figure 1-15** and the existing conditions are shown in **Figure 1-16** (Plan View) and **Figure 1-17** (Typical Section).

1.4.1 Special Events

Upper Matecumbe Key (MM ±81.6) was identified as a potential pedestrian bridge site based on the high frequency of events occurring at the private property named “Morada Bay Beach Café and Pierre’s Restaurant” along the gulf-side of Overseas Highway, as summarized in **Table 1-8**. The priority of this regular event and attendance figure was provided by local stakeholders within Monroe County and was not verified by FDOT. The property has a large parking lot; however, it is assumed the event overflow parking utilizes the on-street parking areas along Old Highway 4A and parking lots at adjacent businesses along the ocean-side of Overseas Highway. It is assumed attendees have been crossing Overseas Highway near the intersections at Palm Avenue, Morada Way, or Beach Road. It is assumed these events require law enforcement officers to frequently stop highway traffic to allow pedestrians to cross Overseas Highway, creating congestion.

Table 1-8 – Location 4 Special Event

Event (Organizer)	Approx. Dates	Times	Estimated Attendance
Full Moon Party (Morada Bay & Pierre’s Restaurant)	Monthly (13 times per year)	9pm-midnight	up to 700

1.4.2 Other Local Facilities

The study area surrounding MM ±81.6 also contains the following relevant local facilities:

- Monroe County Public Library (Islamorada Branch) and Library Beach Park
 - Located at the gulf-side of Overseas Highway, at the intersection of Johnston Road
- Florida Keys Memorial, 1935 Hurricane Monument
 - Located at the ocean-side of Overseas Highway, at the intersection of Johnston Road

Figure 1-15 – Location 4 Study Area Map



Figure 1-16 – Location 4 (MM ±81.6) Existing Conditions Plan

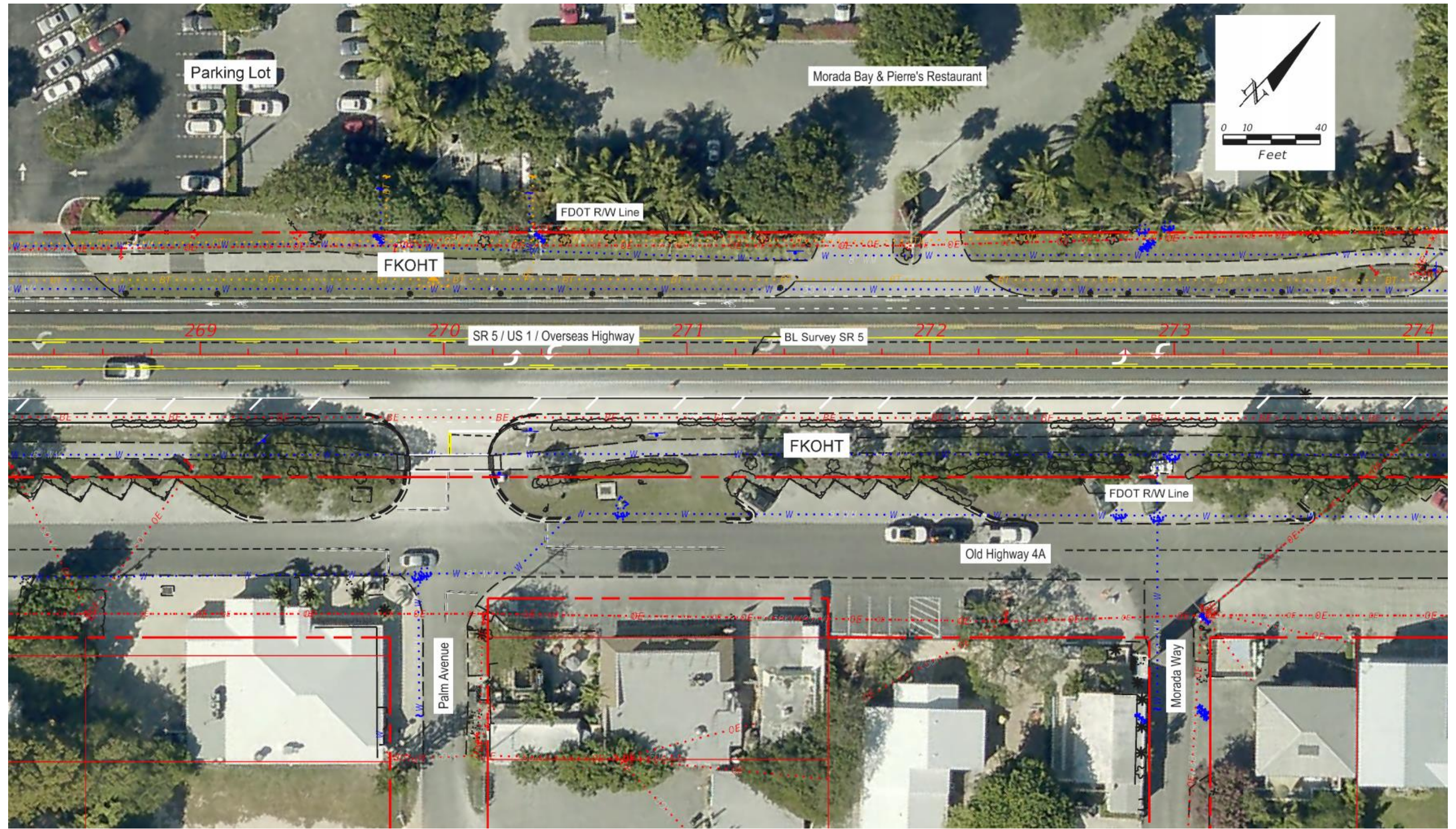
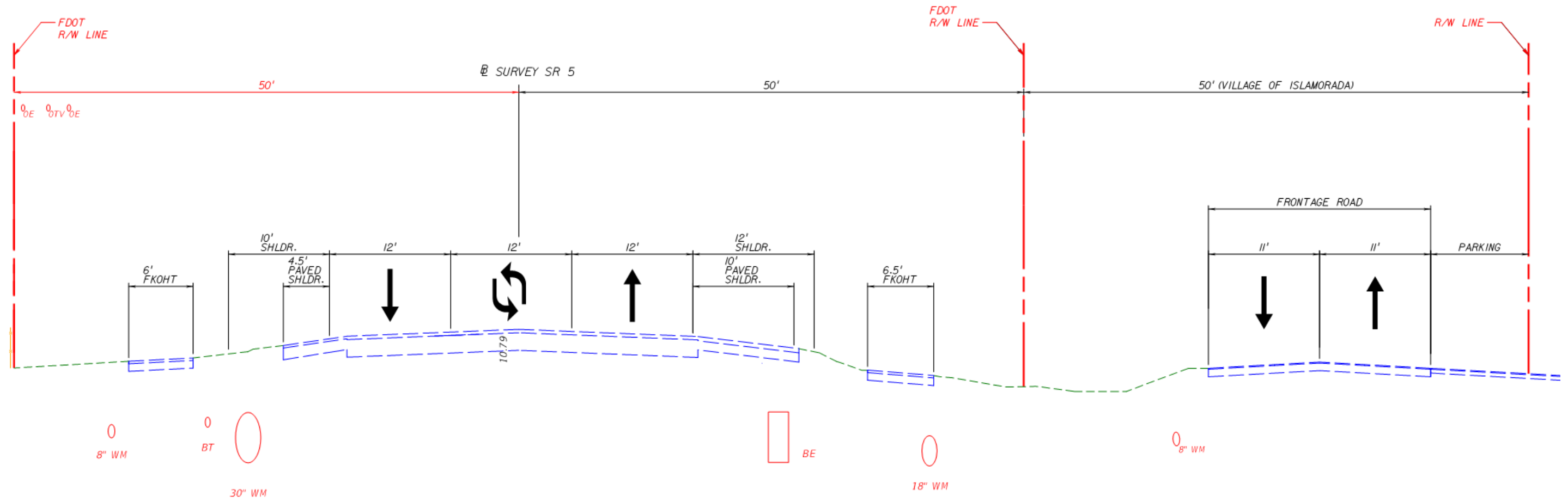


Figure 1-17 – Location 4 (MM ±81.6) Existing Typical Section



1.4.3 FDOT Projects

Based on the data collection from the FDOT archives, the following programmed or previous projects were identified within or adjacent to the study area on Upper Matecumbe Key (MM ±81.6). The as-built or design plans for the previous projects are attached in **Appendix D**.

Previous Projects

- FPID 425600-6-52-01 (FY 2016, currently under construction)
 - SR 5/US 1/Overseas Highway, from south of Lignumvitae Channel Bridge (MM 77.47) to north of Jerome Avenue (MM 81.44)
 - Resurfacing Project, the scope of work also included shoulder widening, reconstruction of the FKOHT, and upgrade of signing & pavement markings within the study limits
- FPID 432303-1-52-01 (FY 2015)
 - SR 5/US 1/Overseas Highway, from Jerome Avenue (MM 81.47) to Smuggler's Cove Entrance (MM 85.59)
 - Landscaping Project; the scope of work included installation of trees and ground cover adjacent to the FKOHT along the ocean-side of the highway
- FPID 425600-3-52-01 (FY 2013)
 - SR 5/US 1/Overseas Highway, from Jerome Avenue (MM 81.47) to Whale Harbor (MM 84.01)
 - Resurfacing Project, the scope of work also included shoulder widening within the study limits

Future Programmed Projects

- None programmed

1.4.4 Roadway Typical Section

The existing roadway typical section adjacent to MM ±81.6 is shown in **Figure 1-17**. SR 5/US 1/Overseas Highway consists of a two-lane two-way divided section with a two-way left-turn lane and flush paved shoulders. The through and turn lanes are 12 feet wide. The NB shoulder is 12 feet and 10 feet paved. The SB shoulder is 8 feet wide and 5 feet paved. The FKOHT consists of a paved asphalt path (6-8 feet wide) along both side of the road. The FDOT right of way is 100 feet wide.

A parallel frontage road named "Old Highway 4A" is located along the ocean-side of Overseas Highway consisting of a two-lane two-way undivided section with flush shoulders under the jurisdiction of the municipality "Islamorada, Village of Islands." The lanes are 10 feet wide, with no paved shoulders. Diagonal on-street parking is located in the landscaped strip between Overseas Highway and Old Highway 4A. The right of way for Old Highway 4A varies from 50-66 feet wide within the study area and is contiguous with the FDOT right of way.

1.4.5 Design and Posted Speeds

The most recent FDOT projects along SR 5/US 1/Overseas Highway near MM ±81.6, FPID 425600-6-52-01 and FPID 425600-3-52-01, utilized a Design Speed of 45 mph. The existing Posted Speed is 45 mph.

1.4.6 Roadway Alignment

The horizontal alignment of SR 5/US 1/Overseas Highway near MM ±81.6 consists of a tangent line with no deflections or horizontal curves within the study area. See the plans from the most recent FDOT projects (**Appendix D**) and the Right of Way Map (**Appendix C**) for additional detail.

1.4.7 Pedestrian and Bicycle Facilities

Pedestrian Facilities

The existing pedestrian facilities along SR 5/US 1/Overseas Highway near MM ±81.6 consist of the FKOHT asphalt paths (6-8 feet wide) along both sides of the highway and continuous throughout the study limits.

Bicycle Facilities

The existing bicyclist facilities along SR 5/US 1/Overseas Highway near MM ±81.6 consist of paved shoulders (5 feet wide SB and 10 feet wide NB) marked as bicycle lanes.

1.4.8 Traffic

One traffic count station is located along SR 5/US 1/Overseas Highway near the study area; the traffic volume data for the most current year (2015) is listed in **Table 1-9**.

Table 1-9 – Location 4 Existing Traffic Volume Characteristics

Traffic Count Station	Location	Section, Milepost	Annual Average Daily Traffic (AADT)	K ₃₀	D ₃₀	Truck Factor (T ₂₄)
90-0101	SR 5/US 1/Overseas Highway, 1400 feet south of Snake Creek Bridge (MM 85.4)	90060000, MP 11.484	27,500	9.67	54.3	5.8%

1.4.9 Utilities

The following utilities were identified within the FDOT right of way near MM ±81.6 based on a review of the plans from previous FDOT projects.

- Florida Keys Electric Cooperative
 - Overhead electric lines with utility lines are located along the gulf-side of Overseas Highway, including transmission lines (138 kV) and distribution lines (24 kV)
 - Buried electric
- Florida Keys Aqueduct Authority
 - Two water lines (8" & 30") along the gulf-side of Overseas Highway and two water lines (8" & 18") located between Overseas Highway and Old Highway 4A
- AT&T Florida
 - Buried telephone lines along the gulf-side of Overseas Highway
- Comcast
 - Overhead cable television lines are mounted on the overhead electric poles along the gulf-side of Overseas Highway

1.5 Location 5 (Marathon, Children’s Rotary Park, MM ±51.2)

Children’s Rotary Park is a public park located on Vaca Key within the limits of the City of Marathon, along the ocean-side of SR 5/US 1/Overseas Highway between 75th Street and 76th Street. The study area is shown in **Figure 1-18** and the existing conditions are shown in **Figure 1-19** (Plan View) and **Figure 1-20** (Typical Section). Children’s Rotary Park has no driveway connection along Overseas Highway; access to the park is provided from 75th Street (MM ±51.15).

1.5.1 Special Events

Children’s Rotary Park was identified as a potential pedestrian bridge site based on the size of one large public annual event held at this facility, summarized in **Table 1-10**. The priority of this event and attendance figure was provided by local stakeholders within Monroe County and was not verified by FDOT. The property has a small parking lot and it is assumed the event overflow parking utilizes the roadside of the adjacent neighborhood streets as well as the airport Frontage Road (Rick Turner Drive) along the gulf-side of the highway. It is assumed attendees parking along the Frontage Road have been crossing Overseas Highway near the intersection at 75th Street to access the park. It is assumed these events require law enforcement officers to frequently stop highway traffic to allow pedestrians to cross the highway, creating congestion.

Table 1-10 – Location 5 Special Event

Event (Organizer)	Approx. Dates	Times	Estimated Attendance
Easter Egg Hunt (City of Marathon)	March/April	8am-1pm, Sat. or Sun.	1,500

1.5.2 Other Local Facilities

The study area surrounding Children’s Rotary Park also contains the Florida Keys Marathon Airport, located along the gulf-side of the highway between MM 51 and MM 52.5.

1.5.3 FDOT Projects

Based on the data collection from the FDOT archives, the following programmed or previous projects were identified within or adjacent to Children’s Rotary Park (MM 51.2). The as-built or design plans for the previous projects are attached in **Appendix D**.

Previous Projects

- FPID 419854-1-52-01 and 418054-1-58-01 (FY 2010)
 - SR 5/US 1/Overseas Highway, from 37th Street (MM 49.1) to Coco Plum Drive (MM 54.6)
 - Resurfacing Project, the scope of work also included the upgrade of pedestrian curb ramps and construction of trail segments (FKOHT) within the limits

Future Programmed Projects

- None programmed

Figure 1-18 – Location 5 Study Area Map



Figure 1-19 – Location 5 (MM ±51.2) Existing Conditions Plan

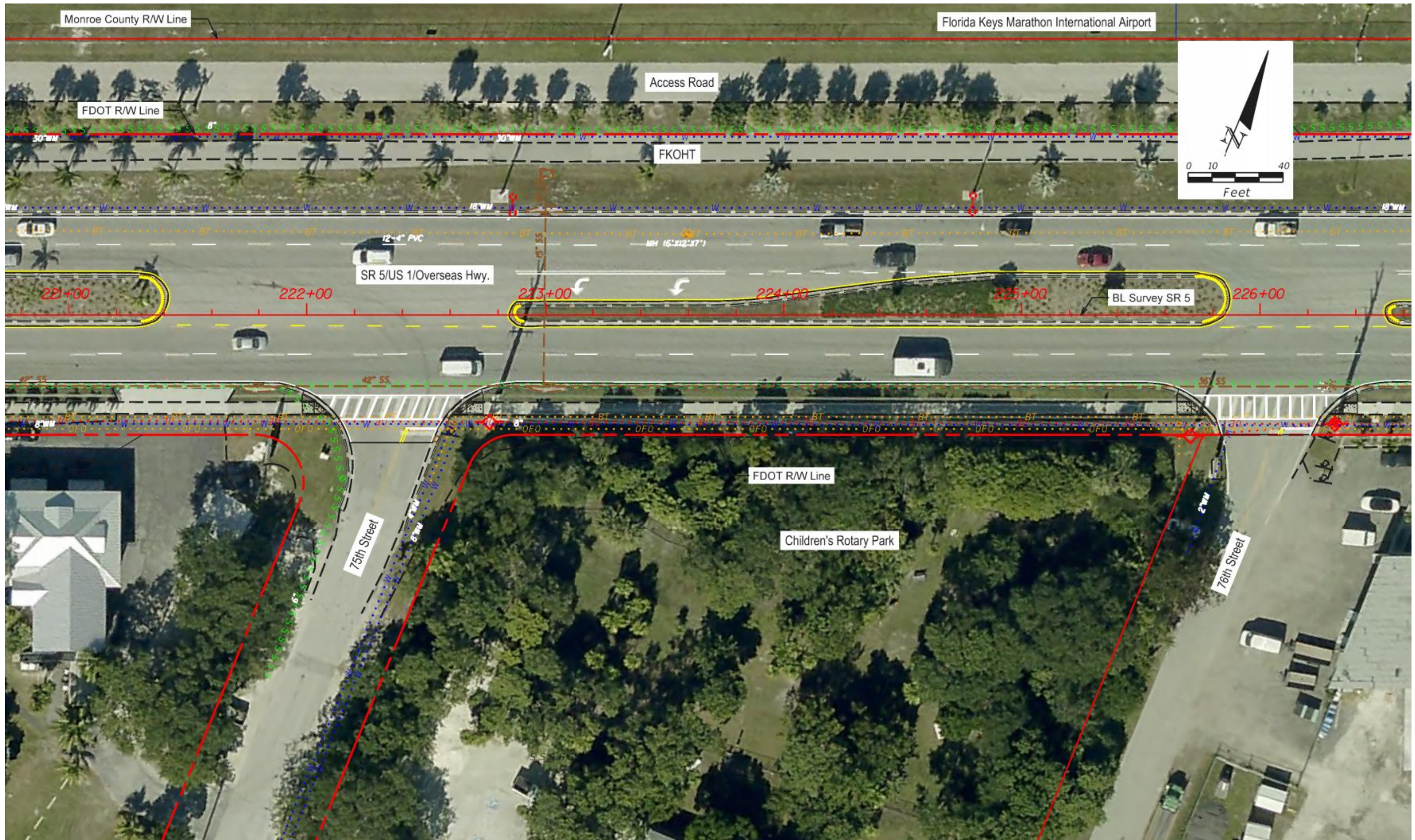
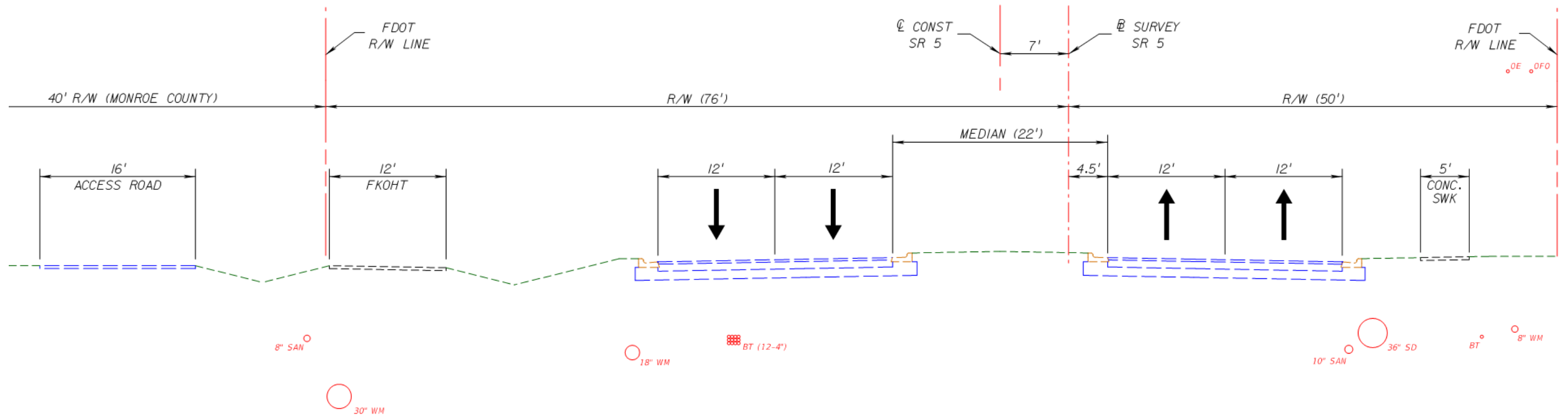


Figure 1-20 – Location 5 (MM ±51.2) Existing Typical Section



1.5.4 Roadway Typical Section

The existing roadway typical section at Children’s Rotary Park is shown in **Figure 1-20**. SR 5/US 1/Overseas Highway consists of a four-lane two-way divided section with a raised median. The through and turn lanes are 12 feet wide. A concrete sidewalk (5 feet wide) is located along the ocean-side of the highway. The FKOHT consists of an asphalt path (10 feet wide) along the gulf-side of the highway. The FDOT right of way is 126 feet wide (76 feet LT and 50 feet RT).

A frontage road named “Rick Turner Drive” is located along the gulf-side of Overseas Highway adjacent to the Florida Keys Marathon Airport. The frontage road consists of a two-lane two-way undivided section with flush shoulders under jurisdiction of Monroe County. Rick Turner Drive is centered in a right of way 40 feet wide contiguous with the FDOT right of way.

1.5.5 Design and Posted Speeds

The most recent FDOT project along SR 5/US 1/Overseas Highway near Children’s Rotary Park, FPID 419854-1-52-01, utilized a Design Speed of 45 mph. The existing Posted Speed is 45 mph.

1.5.6 Roadway Alignment

The horizontal alignment of SR 5/US 1/Overseas Highway near Children’s Rotary Park consists of a tangent line with no deflections or horizontal curves within the study area. See the plans from the most recent FDOT projects (**Appendix D**) and the Right of Way Map (**Appendix C**) for additional detail.

1.5.7 Pedestrian and Bicycle Facilities

Pedestrian Facilities

The existing pedestrian facilities along SR 5/US 1/Overseas Highway near Children’s Rotary Park consist of a concrete sidewalk along the ocean-side of the highway and an asphalt path (FKOHT) along the gulf-side of the highway. The nearest marked crosswalks across Overseas Highway are located at the signalized intersections at Sombrero Beach Road (1.0 miles west of this site) and 107th Street (1.4 miles east of this site).

Bicycle Facilities

No designated on-road bicycle facilities are present along SR 5/US 1/Overseas Highway near Children’s Rotary Park.

1.5.8 Traffic

One traffic count station is located along SR 5/US 1/Overseas Highway near the study area; the traffic volume data for the most current year (2015) is listed in **Table 1-11**.

Table 1-11 – Location 5 Existing Traffic Volume Characteristics

Traffic Count Station	Location	Section, Milepost	Annual Average Daily Traffic (AADT)	K ₃₀	D ₃₀	Truck Factor (T ₂₄)
90-0200	SR 5/US 1/Overseas Highway, 200 feet north of 70 th Street (Marathon) (MM 50.9)	90040000, MP 2.799	32,000	9.67	54.3	7.2%

1.5.9 Utilities

The following utilities were identified within the FDOT right of way near Children’s Rotary Park based on a review of the plans from previous FDOT projects.

- Florida Keys Electric Cooperative
 - Overhead electric lines with utility lines are located along the ocean-side of the highway, including transmission lines (138 kV) and distribution lines (24 kV)
- Florida Keys Aqueduct Authority
 - Two water lines (18” and 30”) along the gulf-side of Overseas Highway and one water line (8”) along the ocean-side of between Overseas Highway
- City of Marathon
 - An 8” sanitary sewer line along the ocean-side of the highway gravity and a 10” sanitary sewer line along the gulf-side of the highway
- AT&T Florida
 - Buried telephone lines along both sides of the highway, including a 12x4” duct under the WB travel lanes
- Comcast
 - Overhead cable television lines are mounted on the overhead electric poles along the ocean-side of the highway

2.0 Bridge Alternatives

2.1 Background Research

The use of temporary pedestrian bridges for the following two local events was reviewed:

- Miami/Lipton open tennis tournament
- Formula ePrix race event

2.1.1 Miami/Lipton Open Tennis Tournament

Miami Open, formally the Lipton International Players Championship, is currently played at the Crandon Park Tennis Center in Key Biscayne, Florida. Discussions with an engineer at the Miami Dade County Transportation and Public Works office and the organizers for the event revealed no pedestrian bridge was used and anticipated to be used at this event.

2.1.2 Formula ePrix Event

Miami Dade County Transportation and Public Works was contacted in reference to the Formula event and the possibility of the use of temporary pedestrian bridges. Pictures and videos were found on the internet showing that pedestrian bridges were placed over the race track along NE 8th Street adjacent to the American Airlines Arena, see **Figure 2-1**.

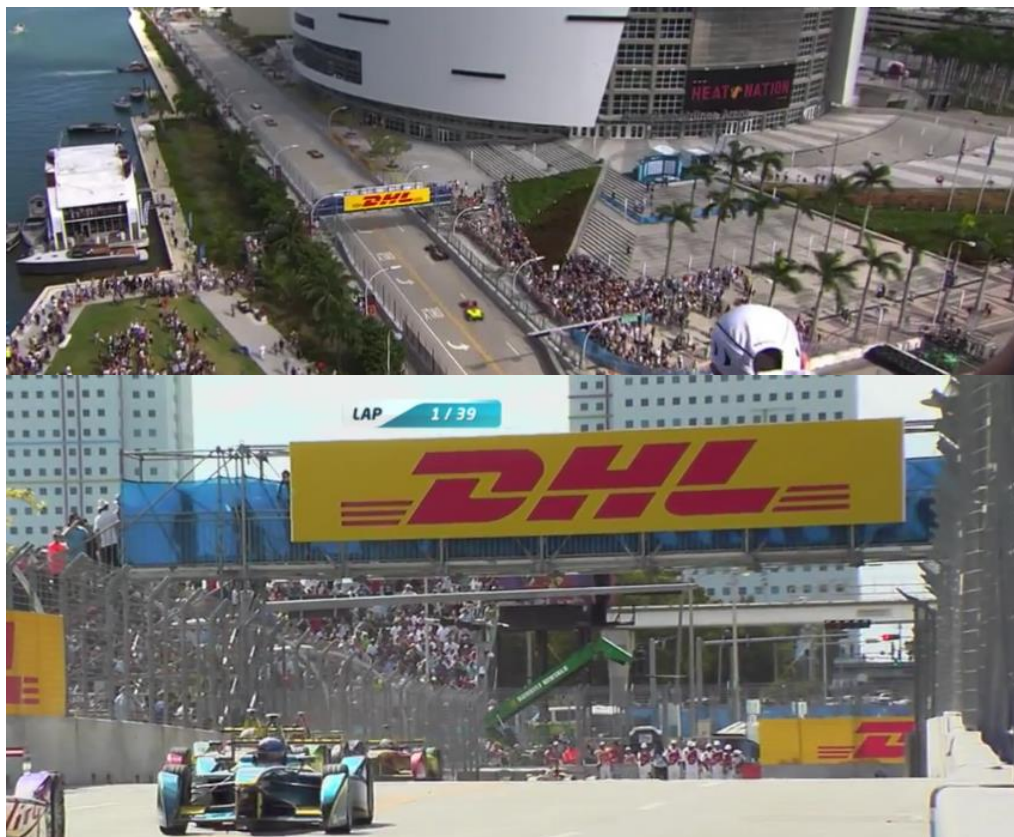


Figure 2-1 – Photos of Temporary Bridge over NE 8th Street during ePrix Event

Visits were made to the City of Miami Public works and City of Miami Building Department in search of documentation/permits for the placement of these structures. Staff at the Miami Public Works office located one drawing that depicted one bridge over Biscayne Blvd near NE 7th Street and showed that the bridge was to be permitted by the City of Miami, see **Figure 2-2**. A visit to the City of Miami Building Department failed to locate the permit as no record for this pedestrian bridge was in their files. No structures plan were available for review therefore we contacted the race organizer directly.

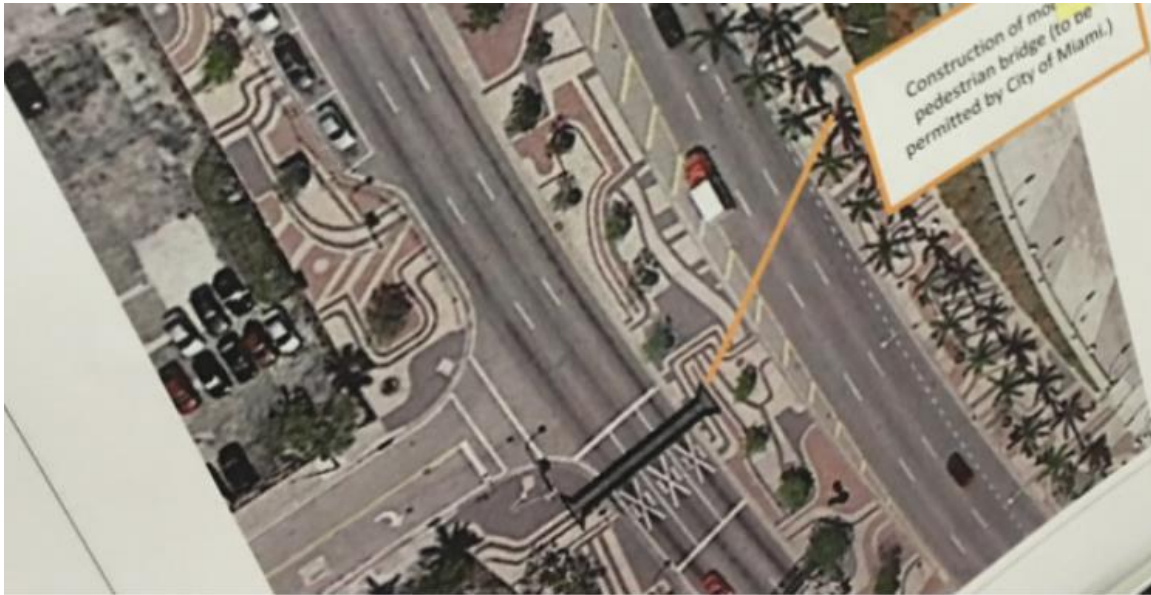


Figure 2-2 – Temporary Bridge over Biscayne Blvd from City of Miami Public Works

The event organizer was contacted to get more information related to this temporary pedestrian bridge. The event organizer provided the following information related to the bridge built during the event.

1. The bridge erection company and also the bridge provider was Nussli, a large company providing temporary structures worldwide. The temporary bridge was rented from Nussli as part of a big package including many items for the event including grandstands, stages, etc.
2. The temporary bridge was designed considering a high wind load and to serve 30,000 people to cross the road in a single day. The width of the bridge was 3 meters (approximately 10 feet) and had a span length of 70 feet.
3. The bridge was assembled in 48 hours on the ground. The two towers on the side of road were erected in the permanent locations. The center span was assembled on the side of the road and lifted to its final location using cranes. Lane closures were required and the center span structure was erected in about 2 hours.

2.1.3 FDOT White Paper for Temporary Pedestrian Bridge

FDOT Maintenance Office performed a study for the temporary pedestrian bridge. See **Appendix A, Attachment 1** for a white paper for the study. In the paper, following vendors were identified for the temporary pedestrian bridge.

- ACROW Bridge
 - 251-408-1340
 - <http://acrow.com/>
- Mabey
 - 954-535-7610
 - <https://www.mabey.com/us>
- Excel Bridge
 - 1-800-504-0084
 - <http://www.excelbridge.com/for-owners/bridge-types>
- Bigr Bridge
 - 1-800-234-0734
 - http://www.bigrbridge.com/site/media/bigr/bigr_pedestrian_bridge.pdf
- Contech
 - 1-800-338-1132
 - <http://www.conteches.com/>
- Gator Bridge
 - 1-770-212-3695
 - <http://gatorbridge.com/>
- Pioneer Bridge
 - 1-866-708-5778
 - <http://pioneerbridges.com/home/>

The white paper indicated the Department currently has an inventory of ACROW and Mabey temporary bridge components. The components currently in inventory can be combined with additional parts to provide a temporary pedestrian bridge superstructure and towers. The foundations, stairs, other means of access, barriers, and site work would be site specific. Using current temporary bridge inventory, ACROW provided an estimate of \$200,000 for the Department to purchase the additional temporary bridge components to provide four 100 feet long by 8 feet wide temporary pedestrian bridge spans and five 20 feet tall towers. See **Appendix A** for more information.

2.1.4 Bridge Purchase and Rental Providers

2.1.4.1 Nussli

Nussli was contacted to request further information on temporary pedestrian bridges and provided the following information.

1. Nussli only rent bridges and do not sell temporary bridges in order to protect their renting business. The company provided a rough estimate for a weekend rental of a temporary pedestrian bridge of around \$60,000; and the pricing fluctuates depending on the bridge dimensions. The bridge structures available for rental are all fabricated in Europe.
2. Nussli has about 300-400 feet long pedestrian bridges structures available for renting across the entire east region of the U.S. They ship the bridges to locations anywhere needed. Single pedestrian bridge structural pieces can be packed and shipped in 1-2 trucks. The temporary bridge takes approximately two days to install.
3. Nussli provided technical information on their temporary bridge product; see **Appendix A, Attachment 3**.

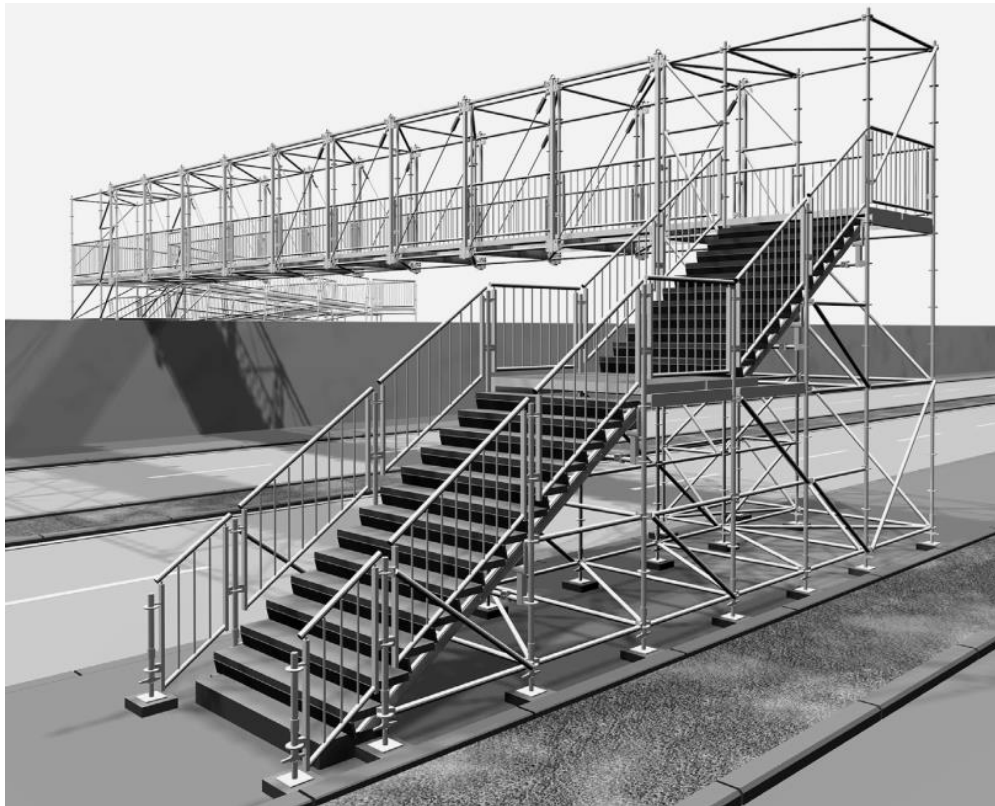


Figure 2-3 – Nussli Demountable Bridge System

2.1.4.2 Quick Bridge System

Nussli's temporary bridges are only available for rental; therefore, HDR further explored potential temporary bridge providers. Two structures systems used for Grand Prix events were reviewed: Quick Bridge and Mabey Bridge. See **Appendix A, Attachment 4** for a news article related to the use of Mabey bridges for Grand Prix debut in Modesto, CA. See **Appendix A, Attachment 5** for a brochure of Quick Bridge. In comparing these two structures systems, Quick bridge is a truss system and is similar to the Nussli temporary bridge; while Mabey bridge is a steel beam system. From the assembling and disassembling point view, a truss system is more favorable due to the smaller structural components and the capability to have a longer span. A Quick Bridge provider was contacted and they provided following information regarding their system.

1. The manufacturer is Mi-Jack Promotions, which is part of the Lanco Group of Companies. In addition to bridges, Lanco Group is a manufacturer and distributor for large cranes and heavy equipment.
2. The purchase cost for a pre-owned 88 ft. long bridge is approximately \$250,000. This cost is not inclusive of transportation (from Houston or Chicago) or assembly/disassembly. They currently have pre-owned bridges available for purchase and for lease. The cost for a new bridge to be manufactured will increase over \$250,000.
3. For an 88 foot. long bridge, the typical installation costs would be in the \$18,000-\$25,000 range, depending on the location, conditions, size of bridge, etc. Additional costs would be incurred if the bridge is disassembled and placed it into storage.
4. The bridges are well made and will not require maintenance other than any minor repairs that may come about, and the possibility of painting after many years in use. Additional costs for assembly and disassembly would be incurred if the bridge is relocated.
5. Typically their team can assemble the bridge in 2-5 days (not including shipment).
6. Quick Bridge has not been used for any events in Florida. They provided fences and other track features for the 2015 ePrix event; but the temporary bridge was provided by Nussli. Quick Bridge claimed that their system is more efficient for packaging compared to Nussli Bridge.

2.2 Request for Quotes from Temporary Pedestrian Bridge Fabricators

Based on the studies performed by HDR and FDOT Maintenance Office, HDR sent a Request for Quotes (RFQ) to several fabricators for purchase or rental of a temporary pedestrian bridge with the requirements listed below. Among the nine fabricators contacted, in total nine quotes were received on either a purchase or a rental of a temporary pedestrian bridge. Eight quotes were received for the steel bridges and one quote is for an aluminum bridge. The responses and quotes from the bridge fabricators are summarized in **Table 2-1 and Table 2-3**; see **Appendix B** for additional detail. The purchase option listed as “ACROW (partial)” would re-use the existing ACROW truss and tower components owned by FDOT at the District 5 Oviedo Yard and the purchase price would only include the missing parts.

Purchase Option

- Purchase Price
 - Including submittal of Shop Drawings and calculations to FDOT for review
- Annual Maintenance Cost
- Transportation/Delivery Costs (to Islamorada, FL)
- Installation and Removal Costs

Rental Option

- Rental Cost for the whole assembly including stairs
 - Including submittal of structural member details and sizes to FDOT for review
- Installation Cost
- Delivery Cost (to Islamorada, FL)

Temporary Pedestrian Bridge Requirements

- Minimum clear span length = 67 feet
- Minimum bridge total length = 86 feet
- Minimum clear width of the walkway and stairs = 8 feet
- Minimum clear height of walkway inside the truss = 8 feet
- Minimum tread of stairs = 12 inches
- Minimum riser height of stairs = 6 inches
- Minimum height of supporting towers = 20 feet
- Bridge design to meet requirements from FDOT SDG
- Easy to assemble and disassemble
- Modular construction

Table 2-1 – RFQ Responses from Different Bridge Fabricators

Ref. #	Fabricator	Response
1	ACROW Bridge	Quotes received for the following three estimates: — Full purchase of a temporary pedestrian bridge — Purchase of the parts to combine with FDOT’s inventory for a temporary pedestrian bridge — Rental of a temporary pedestrian bridge
2	Mabey Bridge	No quote received.
3	Excel Bridge	No quote received. The fabricator decided not to participate.
4	BIGR Bridge	Quote received for full purchase of a temporary pedestrian bridge
5	Contech	Quote received for full purchase of a temporary pedestrian bridge
6	Gator Bridge	Quote received for full purchase of an aluminum temporary pedestrian bridge
7	Pioneer Bridge	No quote was received
8	Quick Bridge	Quotes received for the following two estimates: — Full purchase of a temporary pedestrian bridge — Rental of a temporary pedestrian bridge
9	NUSSLI	Quote received for rental of a temporary pedestrian bridge

Table 2-2 – Summary of Temporary Bridge Quotes Received

Fabricator	Purchase Option	Rental Option
ACROW	\$ 110,770 — Includes: one span 90 ft x 8 ft, two 20 ft towers. — Does not include: assembly & erection, foundation, deck, fencing, stairs \$ 55,230 — Includes: extra parts required for one span 70 ft x 8 ft, two 20 ft towers in addition to FDOT inventory. Both quotes do not include: assembly & erection, foundation, deck, fencing, stairs	\$ 19,530 for 1-month; Includes: one span 90 ft x 8 ft, two 20 ft towers. Does not include: assembly & erection, foundation, deck, fencing, stairs
Contech	\$ 147,200 (one span 86 ft x 8 ft, including decking), \$ 98,000 (two stairs, 20 ft), \$38,500 (two support towers) Total \$ 283,700, including delivery Does not include: assembly & erection, foundation	N/A
Gator Bridge	Aluminum Bridge \$ 50,993 (one span 67 ft x 8 ft, including decking) \$ 77,760 (stairs, landings, rail) Does not include: support towers, installation, unloading, foundations, abutments, expansion joints	N/A
Nussli		\$ 61,763; Includes: span 67 ft x 8 ft, landing platforms, aluminum staircases, decking, transportation, installation, & removal
Quick Bridge Systems	\$ 238,000 (purchase used), \$35,000 minimum (installation and removal), Includes span =70 ft. Does not include shipping from Houston, Texas	\$ 25,000 per month for whole assembly, \$35,000 minimum (installation and removal), Includes span =70 ft. Does not include shipping from Houston, TX
BIGR Bridge	\$ 94,020 (span 86' x ft), \$ 45,725 (two support towers), \$ 125,000 (stairs) Includes material only	

Comparison of Quotes

The quotes for purchase and rental are shown in **Table 2-3 and Table 2-5**. The quotes for purchase received from different fabricators did not include the cost for other parts (railing, deck, etc) necessary to assemble a full pedestrian bridge. The total costs were adjusted to allow for comparison by substituting the cost for the missing components estimated by the engineer, as shown in **Table 2-4**.

Table 2-3 – Summary of Quotes for Purchase of Temporary Pedestrian Bridge

Fabricator	Material	Span	Towers	Stairs (2 sets)	Other Parts	Delivery	Total	Notes
ACROW	Steel	included	included	N/A	N/A	N/A	\$110,770	8 ft x 90 ft span
ACROW (partial)	Steel	included	included	N/A	N/A	N/A	\$55,230	8 ft x 70 ft clear span, extra parts in addition to FDOT inventory
BIGR	Steel	\$94,020	\$45,725	\$125,000	included	N/A	\$264,745	8 ft x 86 ft span
Contech	Steel	\$147,200	\$38,500	\$98,000	included	included	\$283,700	8 ft x 86 ft span
Gator	Aluminum	\$50,993	N/A	\$77,760	included	\$3,000	\$128,753	8 ft x 67 ft clear span, open truss
Quick	Steel	included	included	included	included	N/A	\$238,000	Used, 7 ft x 70 ft clear span, width does not meet FDOT requirement

Table 2-4 – Summary of Adjusted Quotes for Purchase of Temporary Pedestrian Bridge

Fabricator	Material	Span	Towers	Stairs (2 sets)	Other Parts	Delivery	Total	Notes
ACROW	Steel	\$110,770	included	\$105,000	\$67,500	\$5,000	\$288,270	Add \$15,000 for assembly
ACROW (partial)	Steel	\$55,230	included	\$105,000	\$67,500	\$3,000	\$230,730	Add \$15,000 for assembly
BIGR	Steel	\$94,020	\$45,725	\$125,000	included	\$5,000	\$269,745	
Contech	Steel	\$147,200	\$38,500	\$98,000	included	included	\$283,700	
Gator	Aluminum	\$50,993	\$40,000	\$77,760	included	included	\$173,753	Add \$5,000 for assembly
Quick	Steel	\$238,000	included	included	included	\$5,000	\$290,600	Applied a factor of 1.2 to adjust to required width
Engineer's Estimate	Steel	\$135,000	\$40,000	\$105,000	\$17,500	\$5,000	\$302,500	

Table 2-5 – Summary of Quotes for Rental of Temporary Pedestrian Bridge

Fabricator	Material	Duration	Delivery	Installation	Removal	Misc. (Profit)	Total	Notes
ACROW	Steel	One Month	included	N/A	N/A	N/A	\$19,530	Includes: one span 90 ft x 8 ft, two 20 ft towers. Does not include: assembly & erection, foundation, deck, fencing, stairs.
NUSSLI	Steel	2-4 days	included	included	included	included	\$61,763	Aluminum Staircases
Quick	Steel	One Month	included	included	included	included	\$60,000	Width does not meet FDOT requirement
Engineer's Estimates	Steel	2-4 days	\$5,000	\$15,000	\$20,000	\$20,000	\$60,000	

2.3 Bridge Options Considered

Temporary Pedestrian Bridge Options

Four different financing options were considered:

A. Temporary Pedestrian Bridge, Purchase Complete System

- Purchase prefabricated pedestrian bridge complete system from a single supplier; bids open to all suppliers meeting FDOT specific requirements
- Separate contractor would transport, install and remove structure for each event
- Equipment would be stored on FDOT property for frequent reuse
- Separate contractor would construct permanent site work only

B. Temporary Pedestrian Bridge, Purchase in Parts

- Purchase prefabricated truss and support towers from ACROW
- Purchase remaining parts (stairs and deck systems) from different fabricators
- Separate contractor would transport, install and remove structure for each event
- Equipment would be stored on FDOT property for frequent reuse
- Separate contractor would construct permanent site work only

C. Temporary Pedestrian Bridge, Reuse Existing Truss & Purchase Remaining Parts

- Utilize existing ACROW truss sections and partial support towers owned by FDOT and stored at District 5 Oviedo Yard
- Purchase from ACROW missing members for truss and support towers only
- Purchase remaining parts (stairs and deck systems) from different fabricators
- Separate contractor would transport, install and remove structure for each event
- Equipment would be stored on FDOT property for frequent reuse
- Separate contractor would construct permanent site work only

D. Temporary Pedestrian Bridge, Rent Complete System

- Rent prefabricated pedestrian bridge complete system from a single supplier, including transport, installation, and removal to site prepared by FDOT; bids open to all suppliers meeting FDOT specific requirements
- Separate contractor would construct permanent site work only

Permanent Pedestrian Bridge Options

The permanent bridge option consists of one span with two Florida I-36 beams, deck 10 feet wide, and two 18 inch prestressed concrete piles at each support. The stairway approaches would be constructed with narrow walls.

3.0 Alternatives Analysis

3.1 Location 1 (Islamorada Founders Park, MM ±87)

Founders Park in Islamorada was identified as the first priority to review a potential pedestrian bridge, due to the highest total annual event attendance and lack of existing pedestrian facilities. Founders Park hosts two large events and three medium-size events, attracting a total expected attendance of 36,300 people annually.

3.1.1 Alternative Sites

Two alternative bridge sites were considered at Founders Park, one site near each driveway turnout from Overseas Highway. The pros and cons of each alternative site are summarized in Table 3-1.

Table 3-1 – Location 1 Analysis of Alternative Sites

	Alternative Site 1A (station 136+60 to 137+00)	Alternative Site 1B (station 139+00)
Location	Pro: Site 1A is near the south park entrance and the primary event entrance	Pro: Site 1B is near the north park entrance and the secondary event entrance Con: Site 1B requires a slightly taller bridge and additional earthwork at roadside due to roadway superelevation
Right of Way Impacts	Pro: Both sites can accommodate a bridge within the existing FDOT right of way Con: Both sites require construction of earthwork and an asphalt path connection within right of way for Old Highway 4A under the jurisdiction of Islamorada, Village of Islands.	Con: Site 1B requires construction of a connecting path outside the right of way into Founders Park (Islamorada)
Utility Impacts	Pro: Both sites do not impact the existing overhead electric transmission poles or lines Con: Both sites require construction in close proximity to the existing overhead electric-distribution and overhead cable television lines along the gulf-side. The bridge structure would be within the required 20 foot “trigger distance” to the existing overhead electric lines per OSHA Rule (29 CFR Part 1926). Both sites require construction in close proximity to the existing overhead cable television lines along the north side.	
Drainage Impacts	Pro: Site 1A requires no impacts to existing drainage structures	Con: Site 1B requires extension of side-drain to construct a connecting path into Founders Park.
	Con: Both sites require fill with the existing roadside swale for the bridge foundation pad and asphalt path reconstruction, roadside drainage improvements may be required	
Maintenance of Traffic	Pro: At both sites, traffic from Overseas Highway could be detoured to the parallel route Old Highway 4A during off-peak hours for the erection of the bridge truss.	
Other Impacts	Con: Site 1A requires construction in close proximity to an existing rock boulder with historic monument in grass strip between Overseas Highway and Old Highway 4A, careful staging of equipment would be necessary	

3.1.2 Preferred Alternative

Bridge Site and Options

Alternative Site 1A was selected as the preferred alternative site to implement a potential pedestrian bridge at Founders Park. Temporary and permanent pedestrian bridge options were considered at this site. The concept typical section and plan view are shown in **Figure 3-1 to Figure 3-6**. The improvements at Site 1A would include:

Temporary Bridge Option

- Install single-span temporary pedestrian bridge with stairways parallel to Overseas Highway.
 - ***Overhead utility lines (electric-distribution and cable television) are along the gulf-side of Overseas Highway; cautious staging of construction equipment is necessary at this location to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926).***
- Install temporary concrete barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways during installation, operation, and removal.
- Along the gulf-side, reconstruct and widen the existing asphalt path (FKOHT) to provide a pad for the bridge support towers and stairways, as well as a continuous pedestrian connection around the temporary structure. Re-grade the roadside swale to maintain positive drainage pattern.
- Along the ocean-side, construct an asphalt pad for the bridge supports and stairways. Construct an asphalt path ramp connection from the stairway to the edge of shoulder pavement at Old Highway 4A.

Permanent Bridge Option

- Construct single-span pedestrian bridge with two piles at each support. Locate the piles to avoid impacts to the existing buried utility lines.
 - ***Overhead utility lines (electric-distribution and cable television) are along the gulf-side of Overseas Highway; cautious staging of construction equipment is necessary at this location to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926).***
- Construct stairway approaches with narrow walls parallel to Overseas Highway.
- Construct pier protection barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways. Reconstruct and widen the roadway shoulders to 12 feet wide paved to meet criteria.
- Along the gulf-side, reconstruct the existing asphalt path and realign the FKOHT around the bridge supports and walls to meet FDOT criteria for the horizontal alignment of a Shared Use Path. Re-grade the roadside swale to maintain positive drainage pattern.
- Along the ocean-side, construct an asphalt path connection from the stairway to the edge of shoulder pavement at Old Highway 4A. Re-grade the roadside swale to provide seepage trench between Overseas Highway and Old Highway 4A.

Crosswalk

At the direction of the District, the pedestrian bridge options (temporary or permanent option) would include stairways and not ADA-compliant approach ramps. A permanent at-grade mid-block crosswalk would need to be constructed at the south driveway, near station 135+10, to maintain ADA-compliant access across Overseas Highway. The crosswalk would connect the existing paths within Founders Park and the FKOHT on the gulf-side of Overseas Highway to a connecting path on the ocean-side of Overseas Highway. The new path would terminate at the existing paved shoulder along Old Highway 4A, since no existing pedestrian facilities are present along the ocean-side of the Overseas Highway or Old Highway 4A. The permanent crosswalk recommendations include:

- Construct a concrete sidewalk pad and detectable warning surface at the edge of pavement on both sides of Overseas Highway and at the edge of Old Highway 4A
- Install new crosswalk signing and pavement marking to comply with Design Standard Index 17346.
- The installation of pedestrian-actuated Rectangular Rapid Flashing Beacons (RRFBs) or Pedestrian Hybrid Beacon (“Hawk signal”) should also be evaluated to improve pedestrian safety at the mid-block crosswalk on this high-speed roadway.
- Install new lighting to comply with requirements from PPM Vol. 1 Section 7.3.2.4 and Table 7.3.4 for pedestrian lighting at mid-block crosswalks.

The permanent marked crosswalk would be at an uncontrolled approach with no signal control. The installation of a marked crosswalk at an uncontrolled approach requires review and approval by the District Traffic Operations Engineer. To be considered for a marked pedestrian crosswalk, the uncontrolled approach location shall meet the criteria in FDOT Traffic Engineering Manual (TEM) Section 3.8.5(3) for “Minimum Levels of Pedestrian Demand” and Section 3.8.5(4) for “Minimum Location Characteristics.” Based on TEM Section 3.8.5(3)(b), this site may not provide sufficient pedestrian demand during an average seven day period without a special event.

3.1.3 Maintenance of Traffic

All temporary or permanent pedestrian bridge options would require a closure of all traffic along SR 5/US 1/Overseas Highway for the bridge erection, installation, and removal. To minimize impacts to the travelling public, traffic from Overseas Highway could be detoured to the parallel roadway Old Highway 4A; however, this route may not be able to accommodate the FDOT Design Vehicle (WB-62FL). See **Figure 3-7** for a detail of the potential detour route. For the temporary pedestrian bridge options, temporary concrete barriers will be required along both shoulders to shield the temporary bridge within the clear zone. Temporary concrete barriers may also be required for all staging areas along Overseas Highway before bridge installation and after bridge removal.

Figure 3-1 – Location 1 Temporary Pedestrian Bridge Concept – Plan View

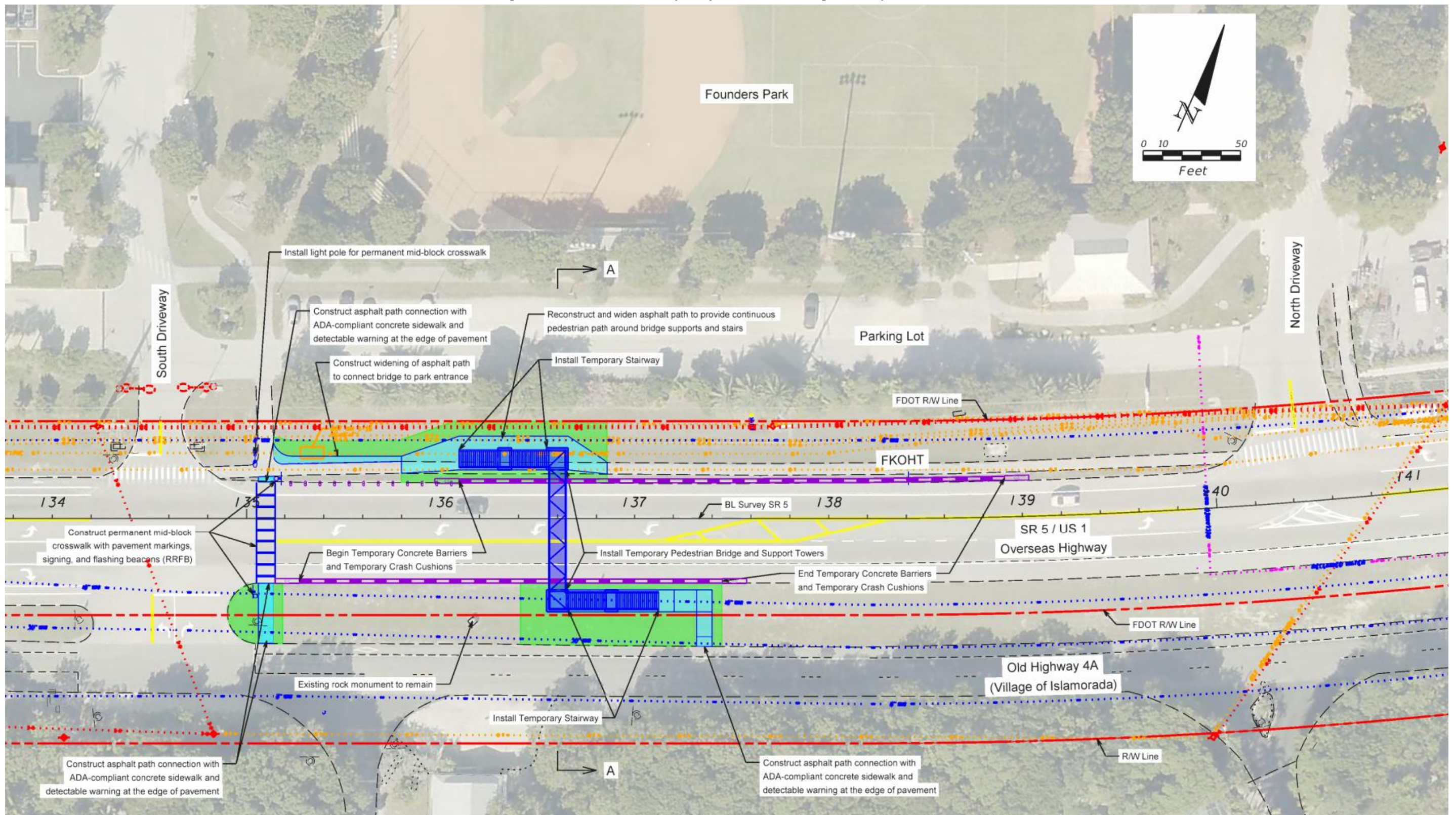


Figure 3-2 – Location 1 Temporary Pedestrian Bridge Concept – Typical Section

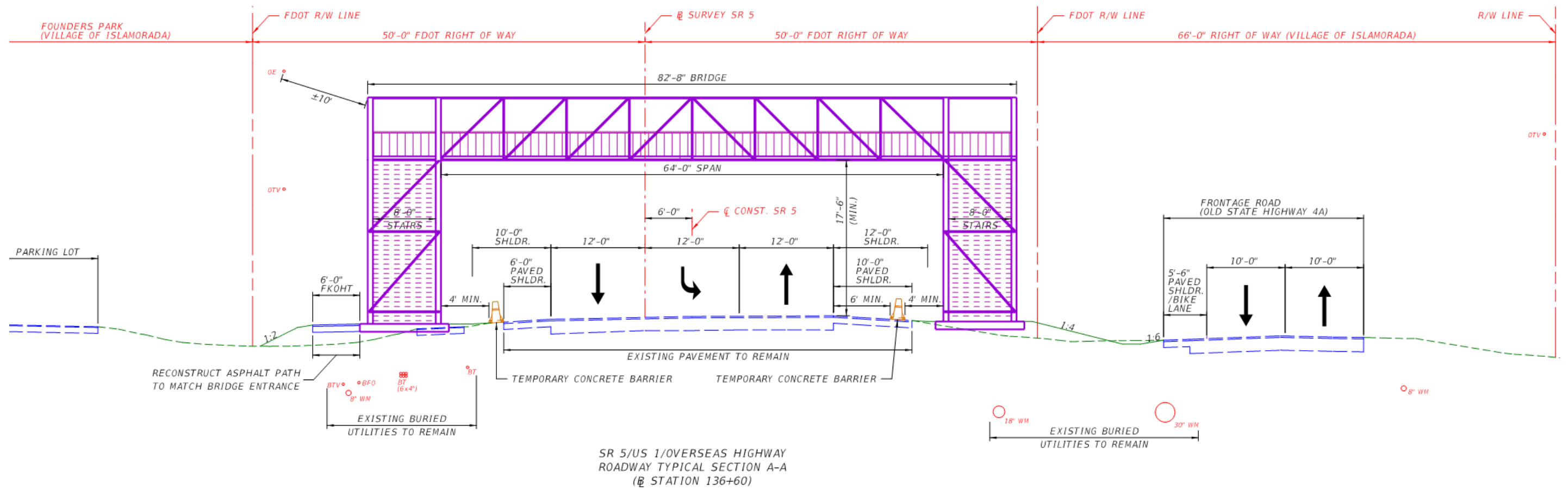


Figure 3-3 – Location 1 Temporary Pedestrian Bridge Concept – Structural Plan & Elevation

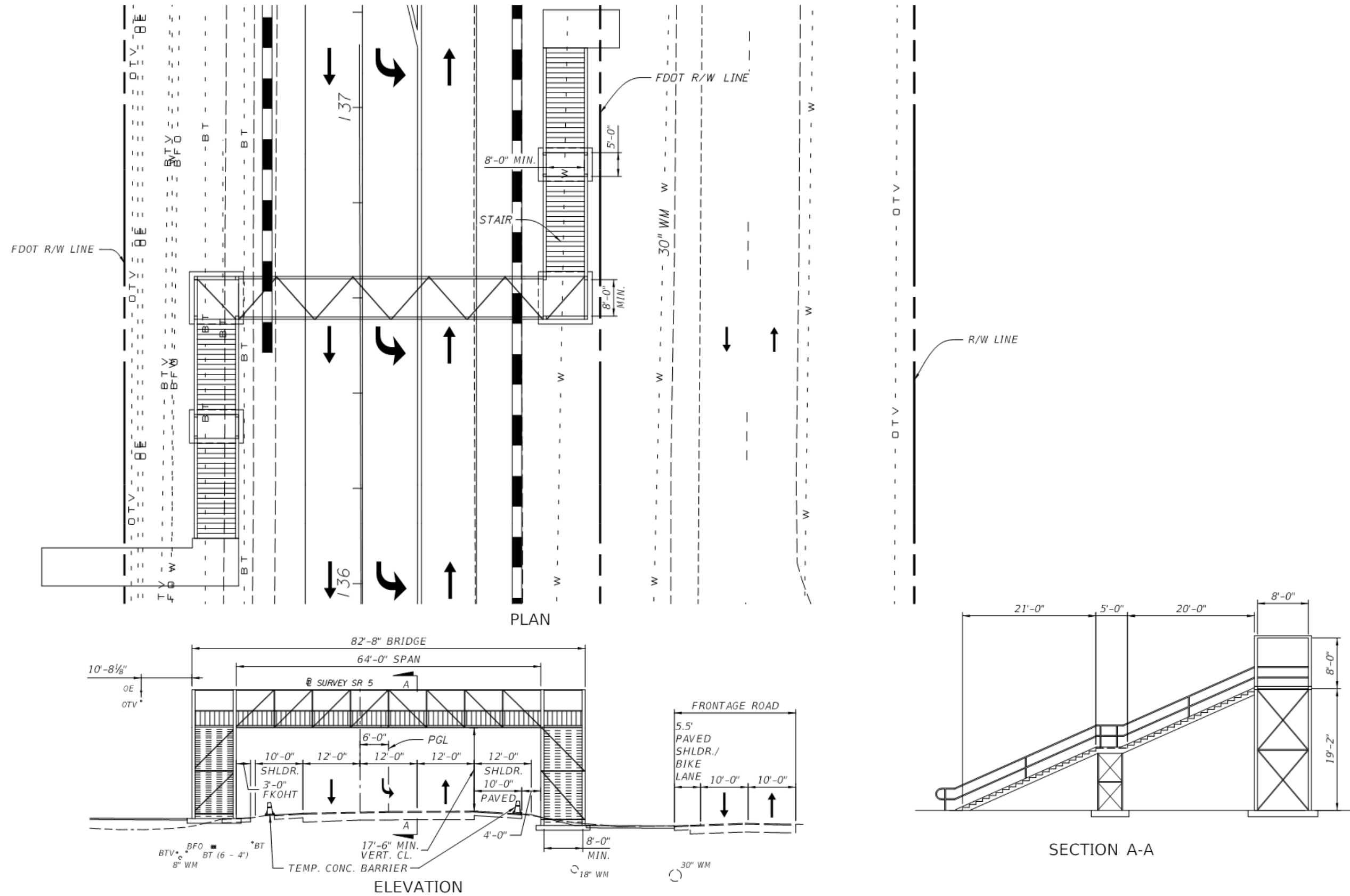


Figure 3-4 – Location 1 Permanent Pedestrian Bridge Concept – Plan View

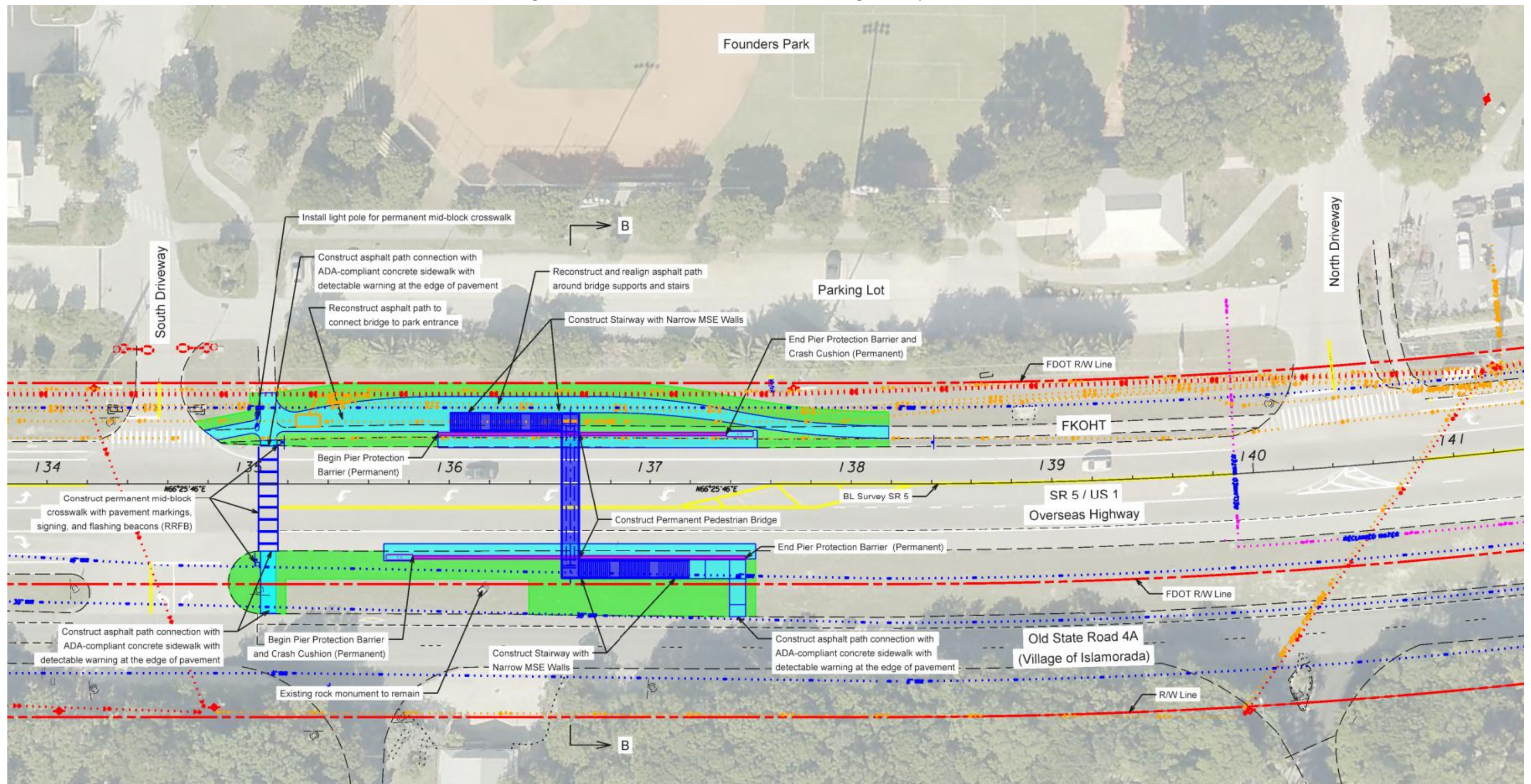


Figure 3-5 – Location 1 Permanent Pedestrian Bridge Concept – Typical Section

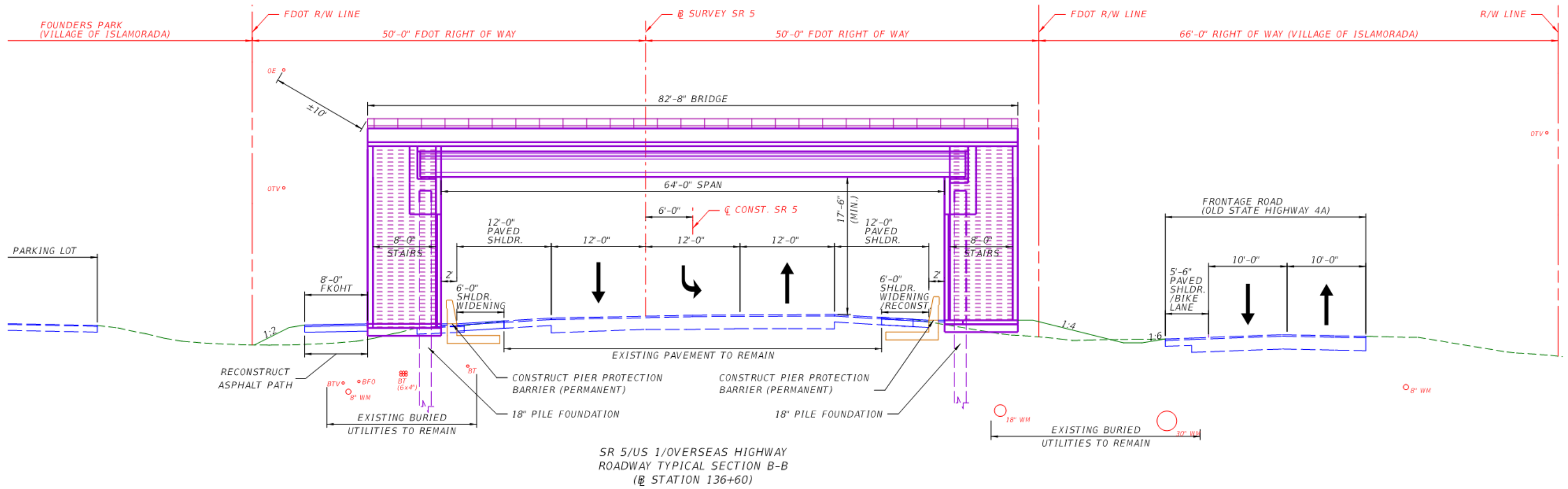


Figure 3-6 – Location 1 Permanent Pedestrian Bridge Concept – Structural Plan & Elevation

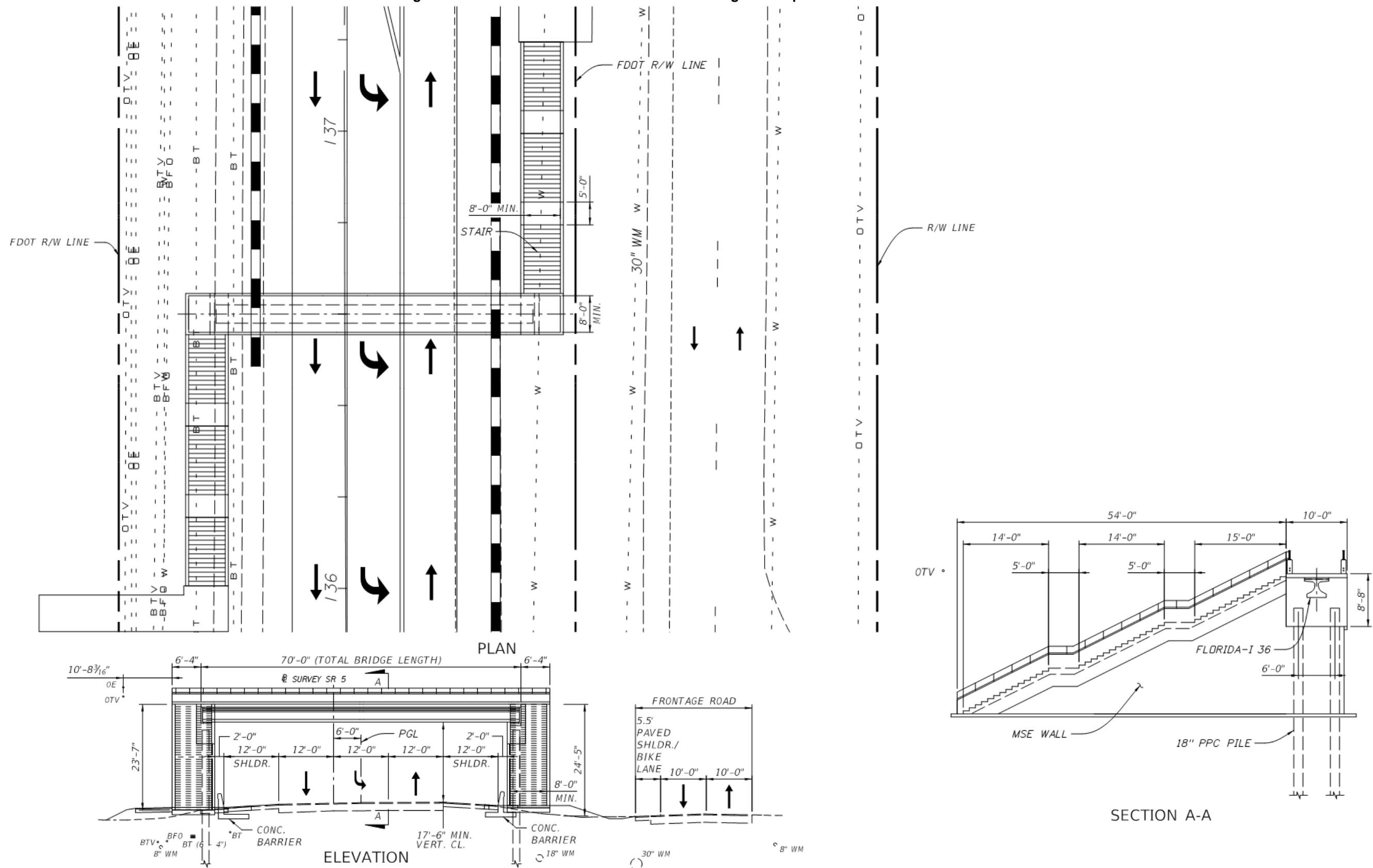


Figure 3-7 – Location 1 Maintenance of Traffic, Potential Detour Route



3.2 Location 2 (Marathon Community Park, MM ±49)

Marathon Community Park was identified as the second priority for a potential pedestrian bridge site due to the frequency and size of events. Marathon Community Park hosts three large events and two medium-size events, attracting a total expected attendance of 33,500 people annually. Marathon Community Park also hosts various small events throughout the year, including concerts, movies, and games; these small events are assumed to not generate minimal pedestrian traffic crossing Overseas Highway.

3.2.1 Alternative Sites

Three alternative bridge sites were considered at Marathon Community Park, based on the nearest park entrance or off-site parking area. The pros and cons of each alternative site are summarized in **Table 3-1**.

Table 3-2 – Location 2 Analysis of Alternative Sites

	Alternative Site 2A (west of 35 th Street)	Alternative Site 2B (east of 36 th Street and west of 37 th Street)	Alternative Site 2C (east of 39 th Street)
Location	Pro: Site 2A is near the primary event overflow parking lot at Stanley Switlik Elementary School at the gulf-side.	Pro: Site 2B is directly at park entrance at the ocean-side and does not block business frontage at the gulf-side.	Pro: Site 2C is directly at park entrance at the ocean-side.
	Con: Site 2A is not adjacent to a park entrance at the ocean-side	Con: Site 2B is not near an event overflow parking lot at the gulf-side.	Con: Site 2B is not near an event overflow parking lot at the gulf-side and blocks a business parking area within the FDOT right of way.
Right of Way Impacts	Pro: At all sites, a bridge can fit within the narrow FDOT right of way.		
	Con: The FDOT right of way is relatively narrow at all sites, allowing very little space for harmonization or mobilization of construction equipment.		
Utility Impacts	Pro: No impacts to overhead electric transmission are anticipated at all sites.		
	Con: Site 2A requires relocation of wooden light pole and work adjacent to utility pole	Con: Site 2B requires work adjacent to a light pole on the gulf-side.	Con: Site 2C requires work adjacent to light poles on both sides
	Con: All three sites require construction in close proximity to the existing overhead electric-distribution and overhead cable television lines along the ocean-side (Sites 2B & 2C) or both sides (Site 2A). The bridge structure would be within the required 20 foot “trigger distance” to the existing overhead electric lines per OSHA Rule (29 CFR Part 1926) and providing the minimum 10 foot clearance is not practical at all three sites.		
Maintenance of Traffic	Con: Site 2A has no parallel route for traffic detour during bridge erection. Bridge installation would require full roadway closure in close proximity to a hospital and several other critical local public safety facilities.	Pro: At Sites 2B & 2C, traffic from Overseas Highway could be detoured using local streets (35 th Street to Louisa Street to 41 st Street) during off-peak hours for erection of the bridge truss.	

3.2.2 Preferred Alternative

Bridge Site and Options

Alternative Site 2B was selected as the preferred alternative site to implement a potential pedestrian bridge at Marathon Community Park. Temporary and permanent pedestrian bridge options were considered at this site. The concept typical section and plan view are shown in **Figure 3-8 to Figure 3-12**. The improvements at Site 2B would include:

Temporary Bridge Option

- Install single-span temporary pedestrian bridge with stairways parallel to Overseas Highway.
 - ***Overhead utility lines (electric-distribution and cable television) are in close proximity to the highway and it is not practical to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926) at this location; therefore, the existing electric lines may be required to be de-energized during construction.***
- Install temporary concrete barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways during installation, operation, and removal.
- Along both sides of the highway, reconstruct and widen the existing concrete sidewalks to provide a pad for the bridge support towers and stairways, as well as a continuous pedestrian connection around the temporary structure. Re-grade the side-slope at the back of sidewalk to maintain the existing drainage pattern.

Permanent Bridge Option

- Construct single-span pedestrian bridge with two piles at each support.
 - ***Overhead utility lines (electric-distribution and cable television) are in close proximity to the highway and it is not practical to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926) at this location; therefore, the existing electric lines may be required to be de-energized during construction.***
 - ***There is high concentration of various existing buried utilities under the roadside on both sides of the highway and it is not practical to avoid utility impacts at this location.***
- Construct stairway approaches with narrow walls parallel to Overseas Highway.
- Construct pier protection barriers along the edge of pavement to shield the bridge supports and stairways. Remove the existing curb and gutter and reconstruct the pavement adjacent to the barrier.
- Along both sides of the highway, reconstruct and widen the existing concrete sidewalks to provide continuous pedestrian connection around the structure. Re-grade the side-slope at the back of sidewalk to maintain the existing drainage pattern.

Crosswalk

At the direction of the District, the pedestrian bridge options (temporary or permanent option) would include stairways and not ADA-compliant approach ramps. The signalized intersection at 33rd Street has two existing crosswalks across Overseas Highway, approximately 0.25 mile west of Site 2B and the westernmost park entrance at 36th Street. Project FPID 429187-2-52-01 (FY 2017) is proposed to reconstruct and upgrade the pedestrian facilities at the 33rd Street intersection to be ADA-compliant. The existing concrete sidewalks along both sides of Overseas Highway provide a continuous pedestrian facility from the crosswalk to the park entrances. Construction of a new crosswalk closer to the park is not considered at Site 2B.

3.2.3 Maintenance of Traffic

All temporary or permanent pedestrian bridge options would require a closure of all traffic along SR 5/US 1/Overseas Highway for the bridge erection, installation, and removal. To minimize impacts to the travelling public, traffic from Overseas Highway could be detoured to the parallel roadway Louisa Street from 35th Street to 39th Street; however, this route may not be able to accommodate the FDOT Design Vehicle (WB-62FL). For the temporary pedestrian bridge options, temporary concrete barriers will be required along the edge of pavement at both sides to shield the temporary bridge. Temporary concrete barriers may also be required for all staging areas along Overseas Highway before bridge installation and after bridge removal.

Figure 3-8 – Location 2B Temporary Pedestrian Bridge Concept – Plan View

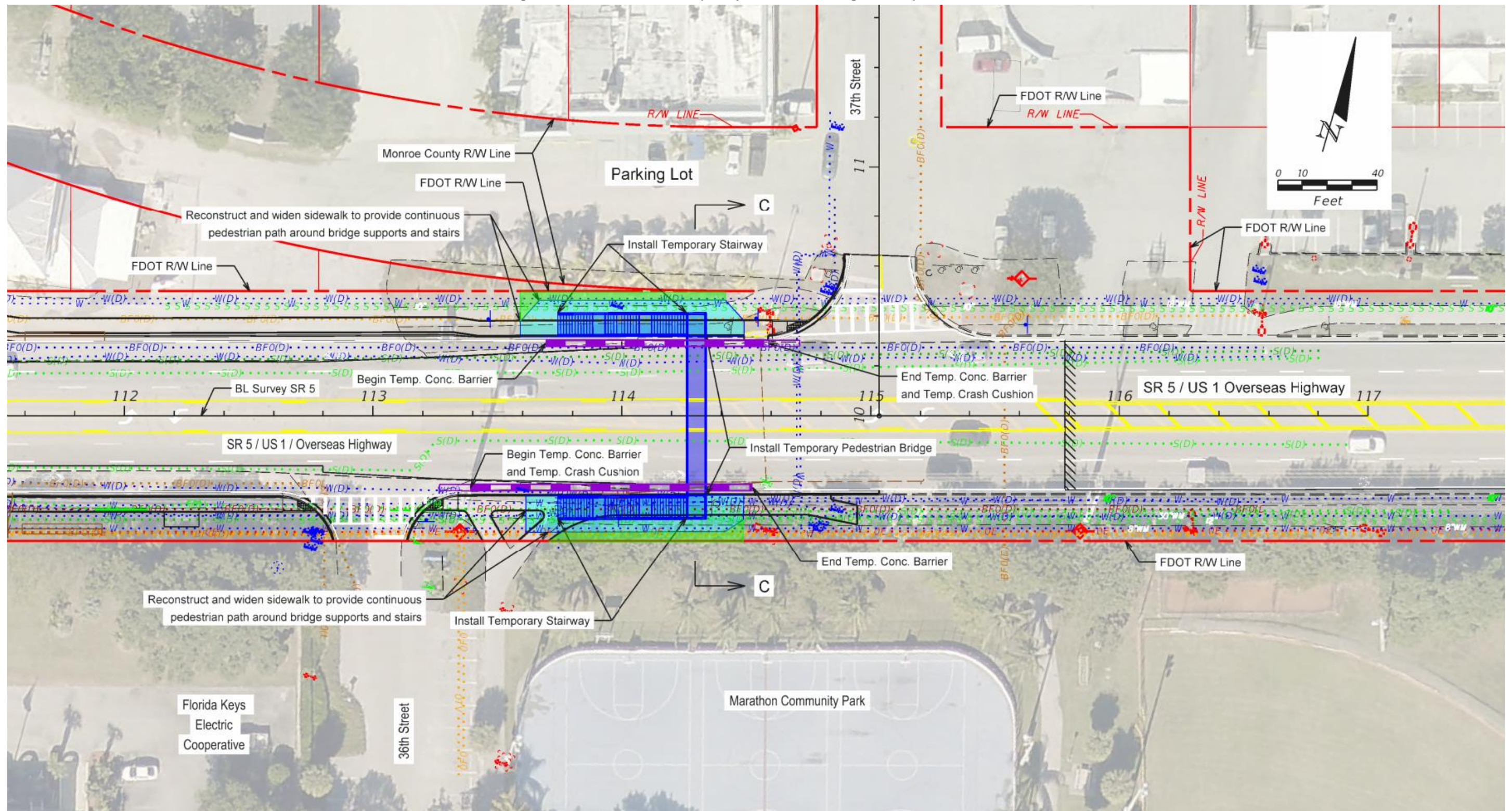
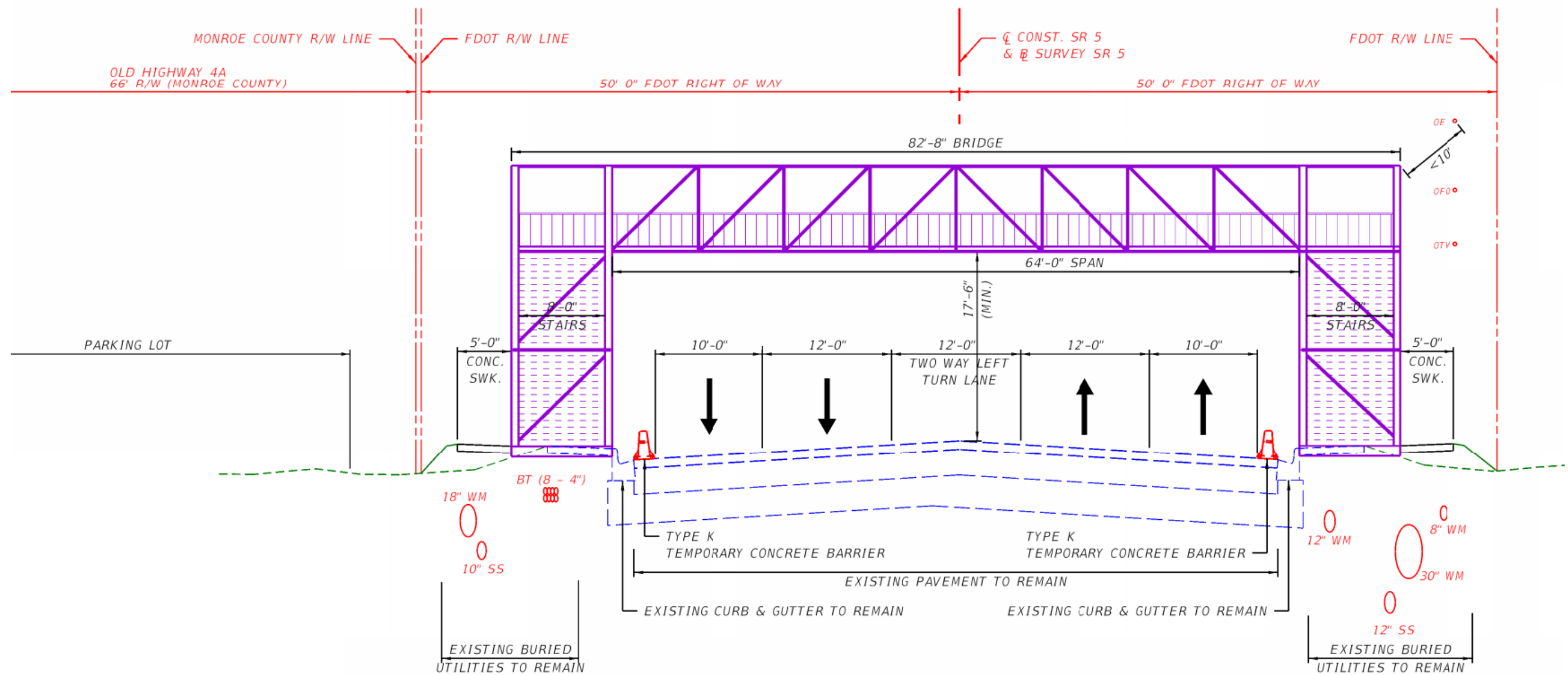


Figure 3-9 – Location 2B Temporary Pedestrian Bridge Concept – Typical Section



SR 5/US 1/OVERSEAS HIGHWAY
ROADWAY TYPICAL SECTION C-C
(@ STATION 114+40)

Figure 3-10 – Location 2B Temporary Pedestrian Bridge Concept – Structural Plan & Elevation

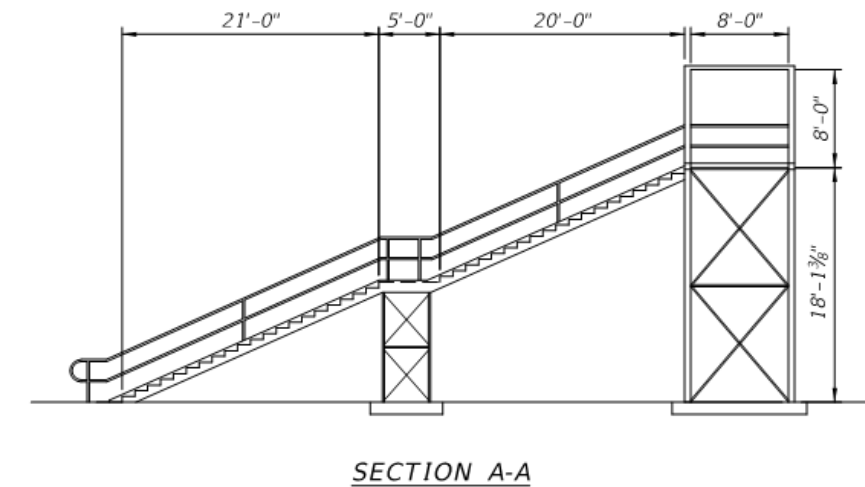
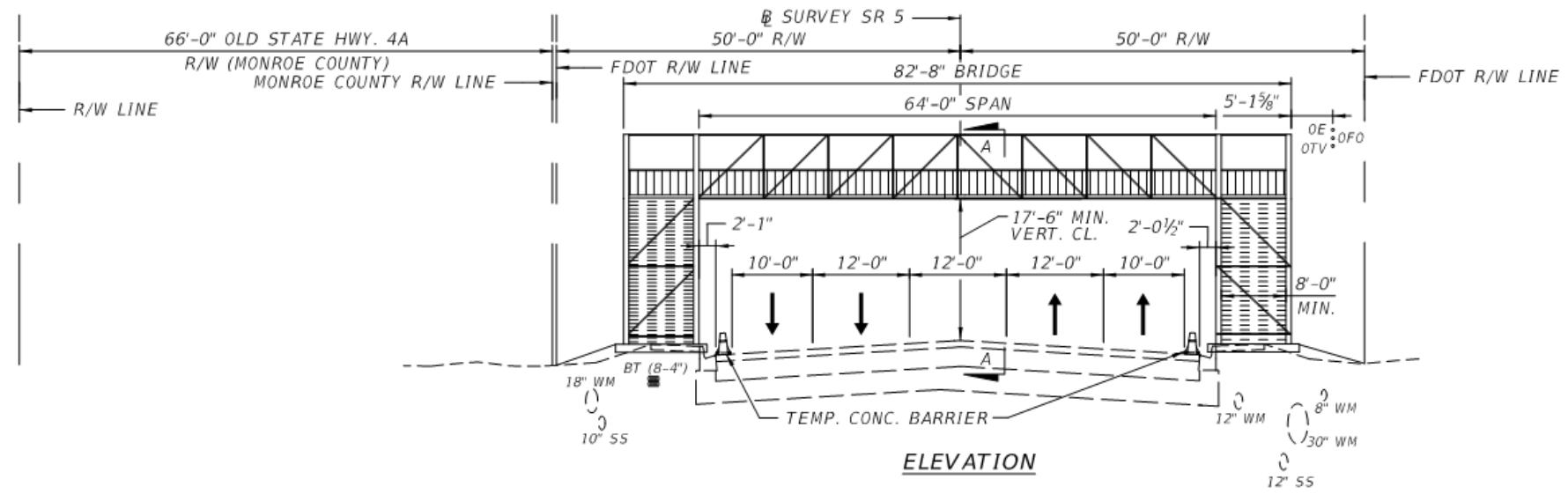
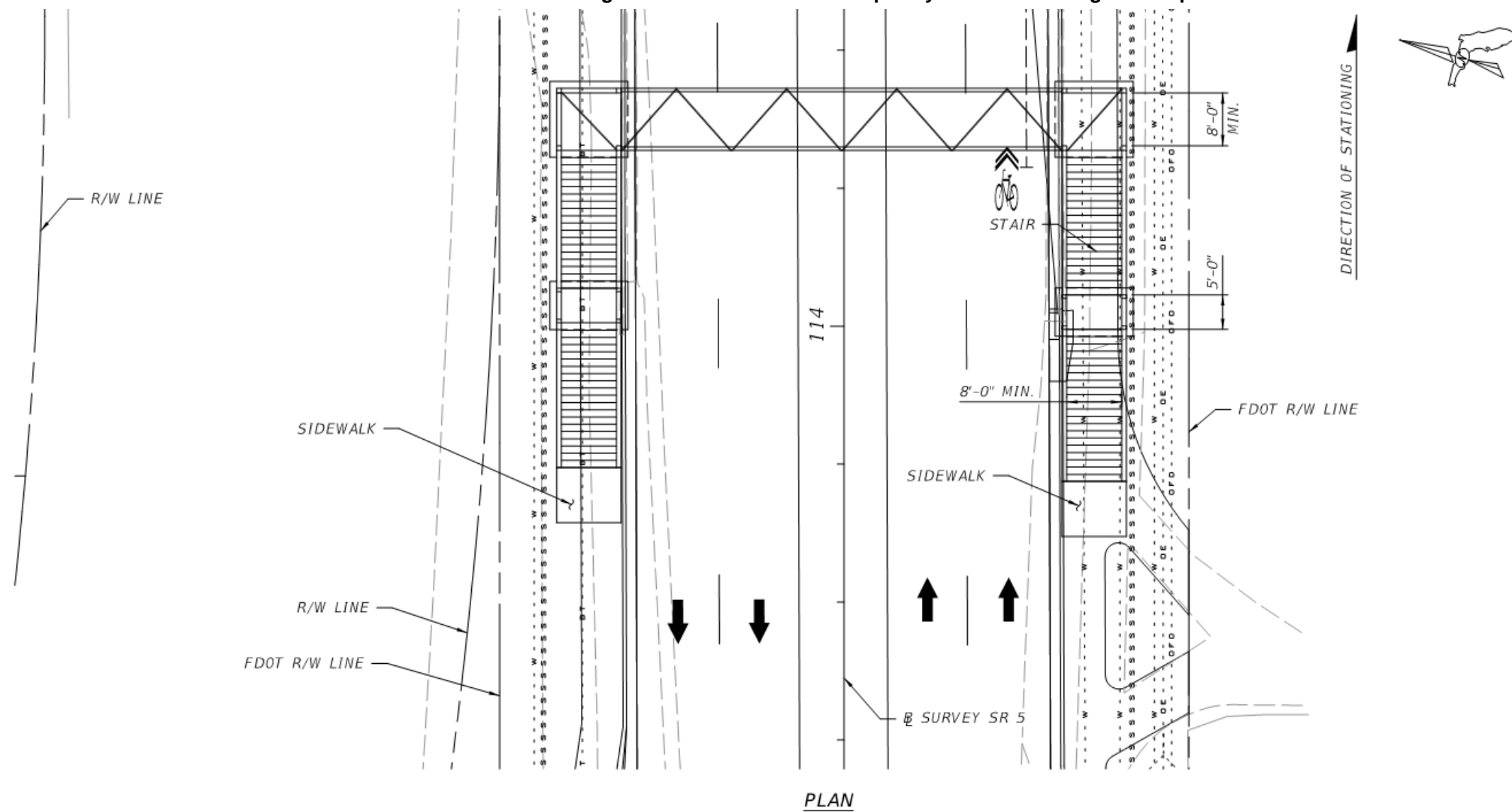
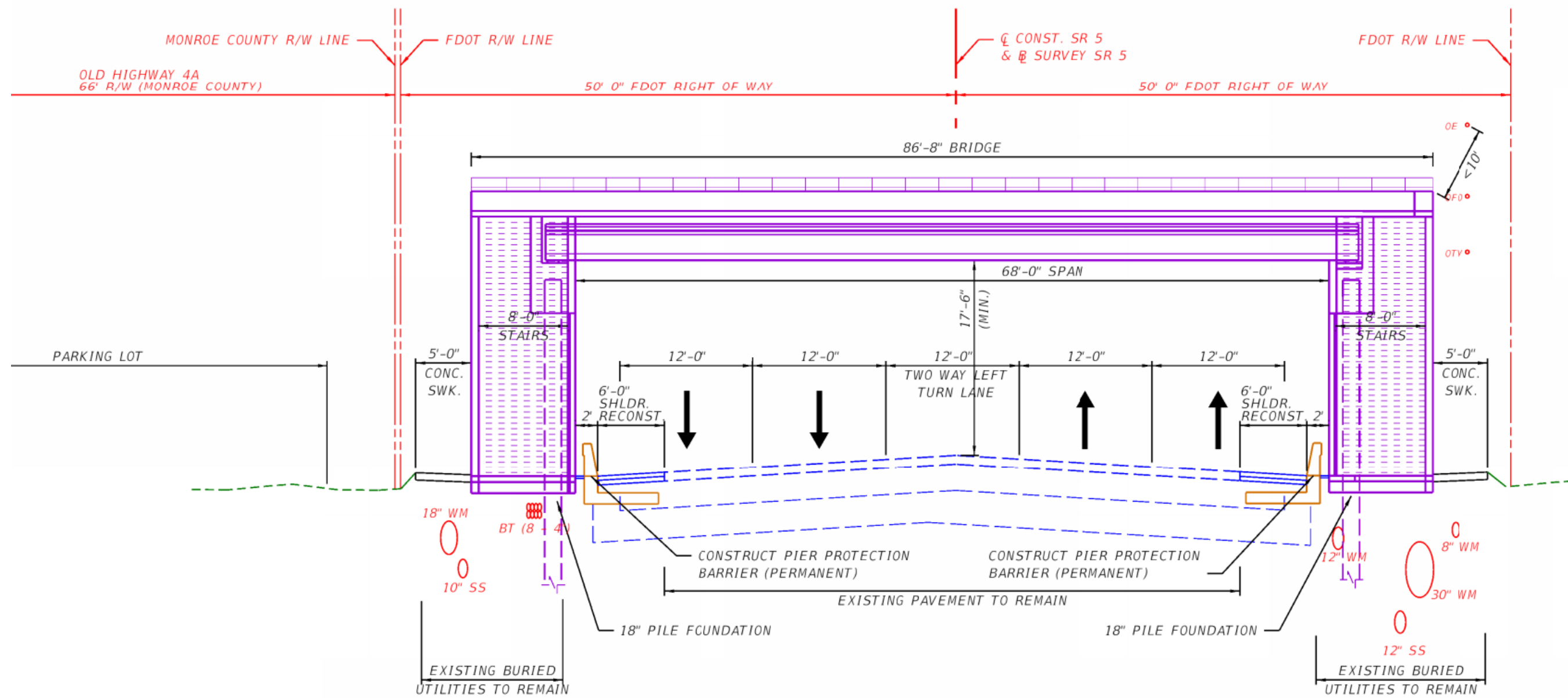
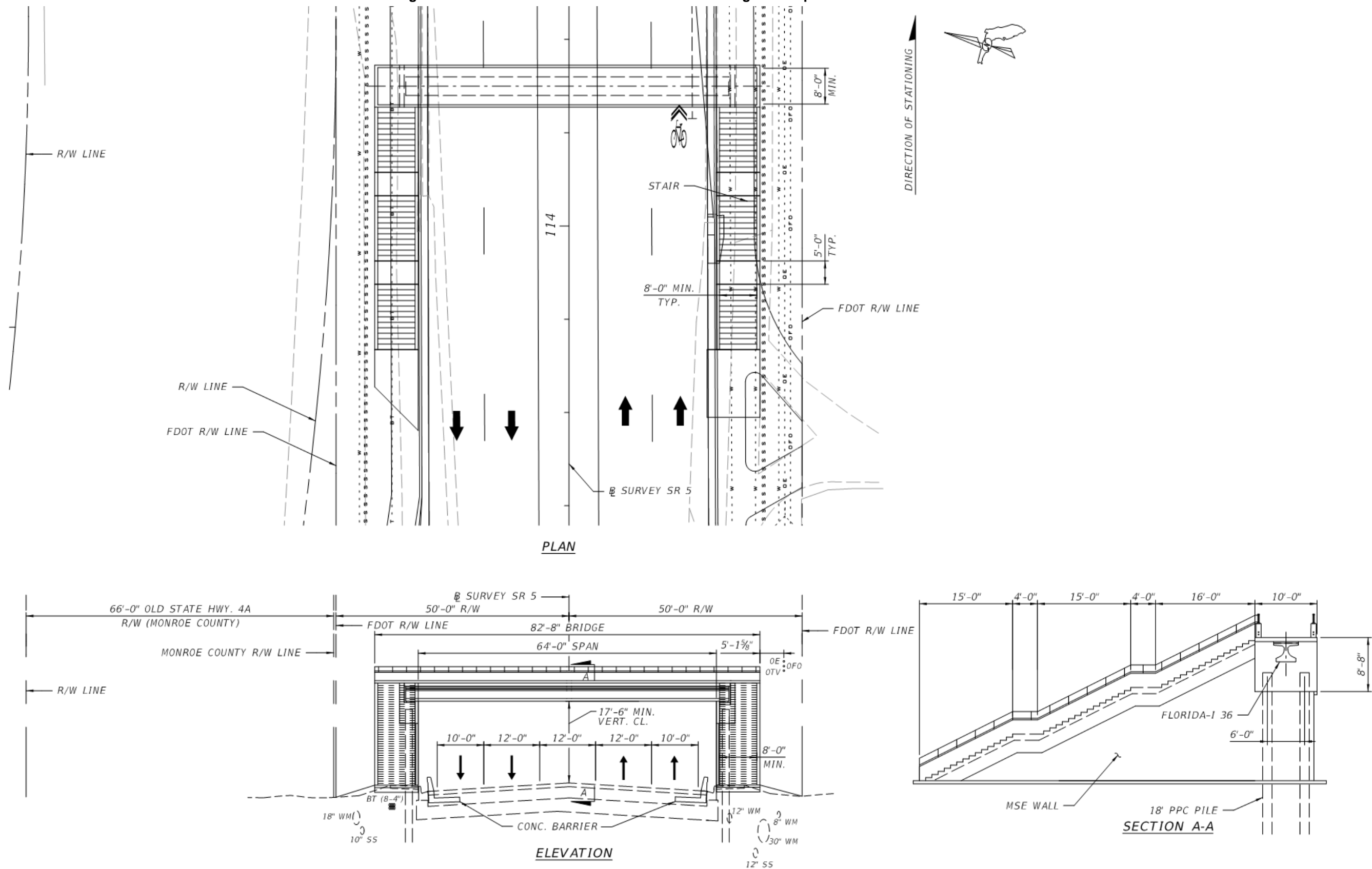


Figure 3-11 – Location 2B Permanent Pedestrian Bridge Concept – Typical Section



SR 5/US 1/OVERSEAS HIGHWAY
ROADWAY TYPICAL SECTION D-D
(@ STATION 114+40)

Figure 3-12 – Location 2B Permanent Pedestrian Bridge Concept – Structural Plan & Elevation



3.3 Location 3 (Rowell's Waterfront Park, Key Largo, MM ±104.6)

Rowell's Waterfront Park in Key Largo was identified as the third priority for a potential pedestrian bridge due to the frequency and size of events. Rowell's Waterfront Park hosts one large event and three medium-size events, attracting a total expected attendance of 15,000 people annually.

3.3.1 Alternative Site

Several potential bridge sites were considered near Rowell's Waterfront Park; however, the concentration of business driveways along the ocean-side of the highway precludes all a bridge site adjacent to the park. The selected Site 3 is south of the intersection at Taylor Drive and is located approximately 1,000 feet north of the entrance to Rowell's Waterfront Park along the gulf-side of the highway. The pros and cons of this site are summarized below.

1. Location

- Pro: At Site 3, the ocean-side is near potential event parking areas along Taylor Road and at Key Largo Elementary School
- Con: At Site 3, the gulf-side is ±1,000 feet north of the park entrance.

2. Right of Way Impacts

- Pro: At Site 3, a bridge can fit within the FDOT right of way.

3. Utility Impacts

- Pro: At Site 3, no impacts to overhead electric transmission are anticipated.
- Con: Site 3 requires construction in close proximity to the existing overhead electric-distribution and overhead cable television lines along the ocean-side of the highway. The bridge structure would be within the required 20 foot "trigger distance" to the existing overhead electric lines per OSHA Rule (29 CFR Part 1926) and providing the minimum 10 foot clearance is not practical at this site.

4. Drainage Impacts

- Con: At Site 3, the bridge foundation pad and asphalt path reconstruction requires fill with the existing roadside swales, roadside drainage improvements may be required.
- Con: At Site 3, the site requires impacts to an existing underground French Drain along the ocean-side of the highway; reconstruction and realignment of this system would be required.

5. Landscaping Impacts

- Pro: At Site 3, no existing trees would be directly impacted by construction of a bridge structure
- Con: At Site 3, the existing median landscaping is located under the bridge span may require trimming.

6. Maintenance of Traffic

- Pro: At Site 3, traffic from Overseas Highway could be detoured using local streets (Esther Street to Susan Street to Taylor Drive) during off-peak hours for erection of the bridge truss.

3.3.2 Preferred Alternative

Bridge Site and Options

Temporary or permanent pedestrian bridge options were considered at Site 3, near Rowell's Waterfront Park in Key Largo. The concept typical section and plan view are shown in **Figure 3-13 to Figure 3-18**. The improvements at Site 3 would include:

Temporary Bridge Option

- Install single-span temporary pedestrian bridge with stairways parallel to Overseas Highway.
 - ***Overhead utility lines (electric-distribution and cable television) are in close proximity to the highway and it is not practical to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926) at this location; therefore, the existing electric lines may be required to be de-energized during construction.***
- Install temporary concrete barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways during installation, operation, and removal.
- Along the gulf-side, construct an asphalt pad for the bridge supports and stairways. Construct an asphalt path connection from the stairway to the existing paved path (FKOHT).
- Along the ocean-side, reconstruct and widen the existing asphalt path (FKOHT) to provide a pad for the bridge support towers and stairways, as well as a continuous pedestrian connection around the temporary structure. Re-grade the roadside swale to maintain positive drainage pattern.

Permanent Bridge Option

- Construct single-span pedestrian bridge with two piles at each support. Locate the piles to avoid impacts to the existing buried utilities.
 - ***Overhead utility lines (electric-distribution and cable television) are in close proximity to the highway and it is not practical to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926) at this location; therefore, the existing electric lines may be required to be de-energized during construction.***
- Construct stairway approaches with narrow walls parallel to Overseas Highway.
- Construct pier protection barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways. Reconstruct and widen the roadway outside shoulders to 12 feet wide paved to meet criteria.
- Along the gulf-side, construct an asphalt path connection from the stairway to the existing paved path (FKOHT). Re-grade the roadside swale.
- Along the ocean-side, reconstruct the existing asphalt path and realign the FKOHT around the bridge supports and walls to meet FDOT criteria for the horizontal alignment of a Shared Use Path. Re-grade the roadside swale to maintain positive drainage pattern. Reconstruct and realign the existing French Drain.

Crosswalk

At the direction of the District, the pedestrian bridge options (temporary or permanent option) would include stairways and not ADA-compliant approach ramps. The signalized mid-block crosswalk at Key Largo Elementary School (MM 104.9) has an existing crosswalk across Overseas Highway, approximately 0.28 mile north of the park entrance. The existing asphalt paths (FKOHT) along both sides of Overseas Highway provide a continuous pedestrian facility from the crosswalk to the park entrance. Construction of a new crosswalk closer to the park is not considered.

3.3.3 Maintenance of Traffic

All temporary or permanent pedestrian bridge options would require a closure of all traffic along SR 5/US 1/Overseas Highway for the bridge erection, installation, and removal. To minimize impacts to the travelling public, traffic from Overseas Highway could be detoured to the parallel roadway Susan Street from Esther Street to Taylor Drive; however, this route may not be able to accommodate the FDOT Design Vehicle (WB-62FL). For the temporary pedestrian bridge options, temporary concrete barriers will be required along the edge of pavement at both sides to shield the temporary bridge. Temporary concrete barriers may also be required for all staging areas along Overseas Highway before bridge installation and after bridge removal.

Figure 3-13 – Location 3 Temporary Pedestrian Bridge Concept – Plan View

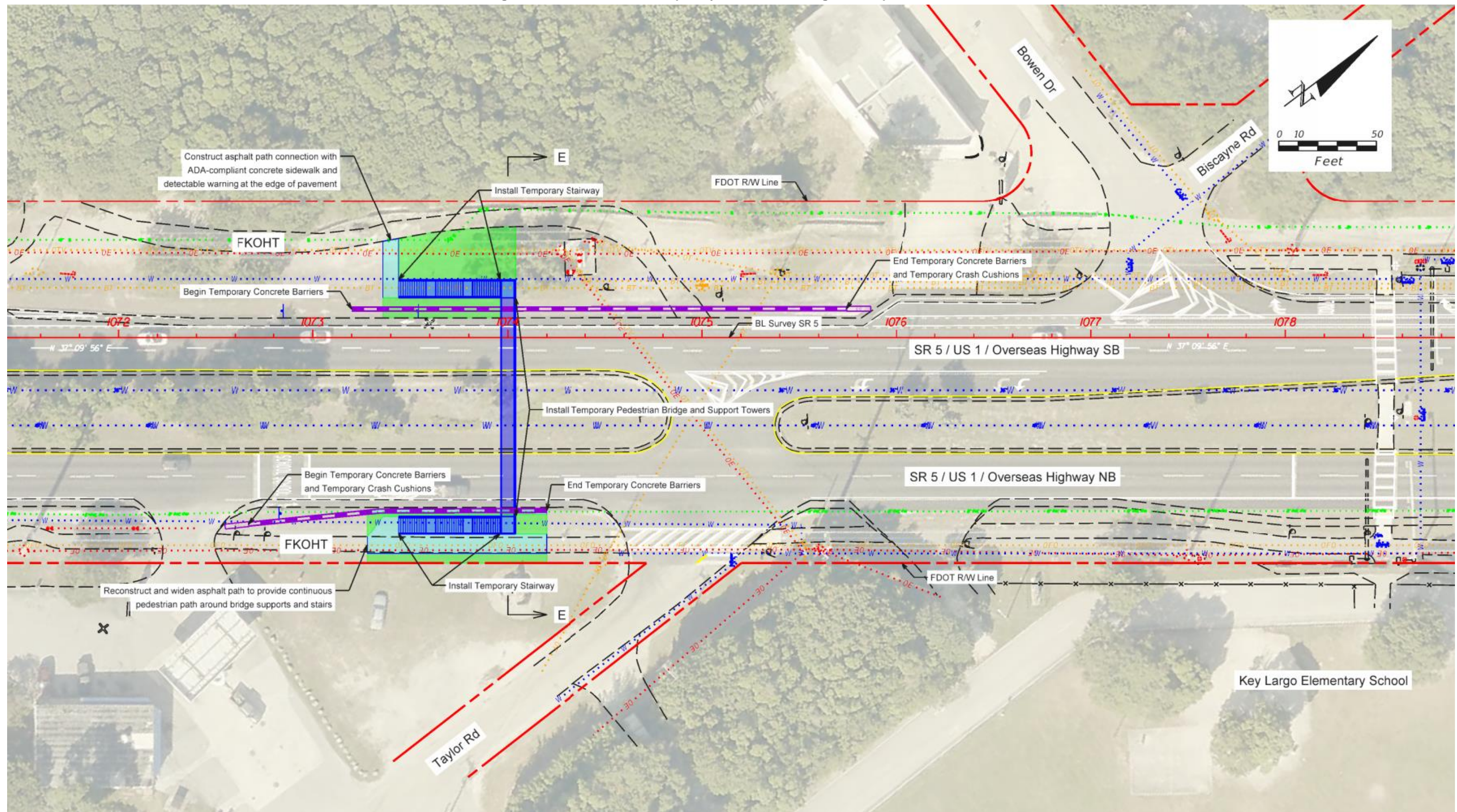


Figure 3-14 – Location 3 Temporary Pedestrian Bridge Concept – Typical Section

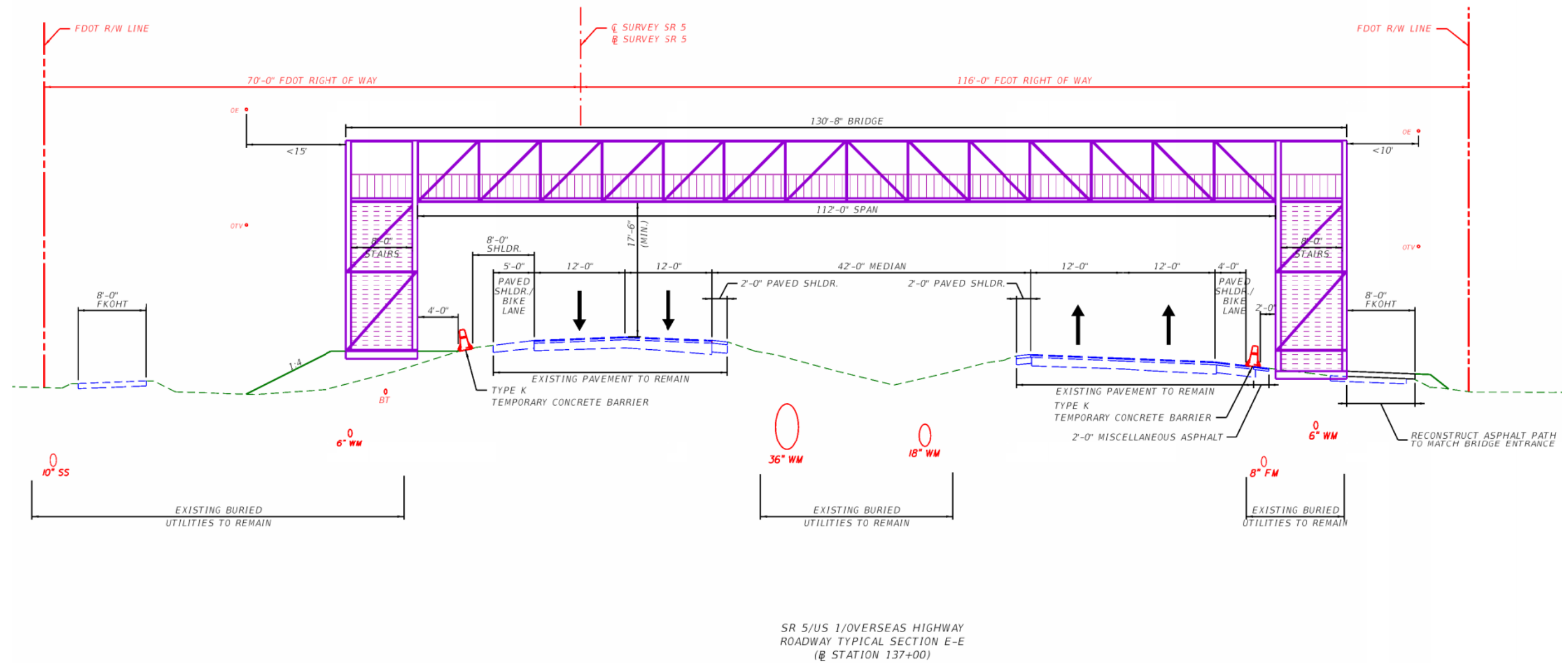


Figure 3-15 – Location 3 Temporary Pedestrian Bridge Concept – Structural Plan & Elevation

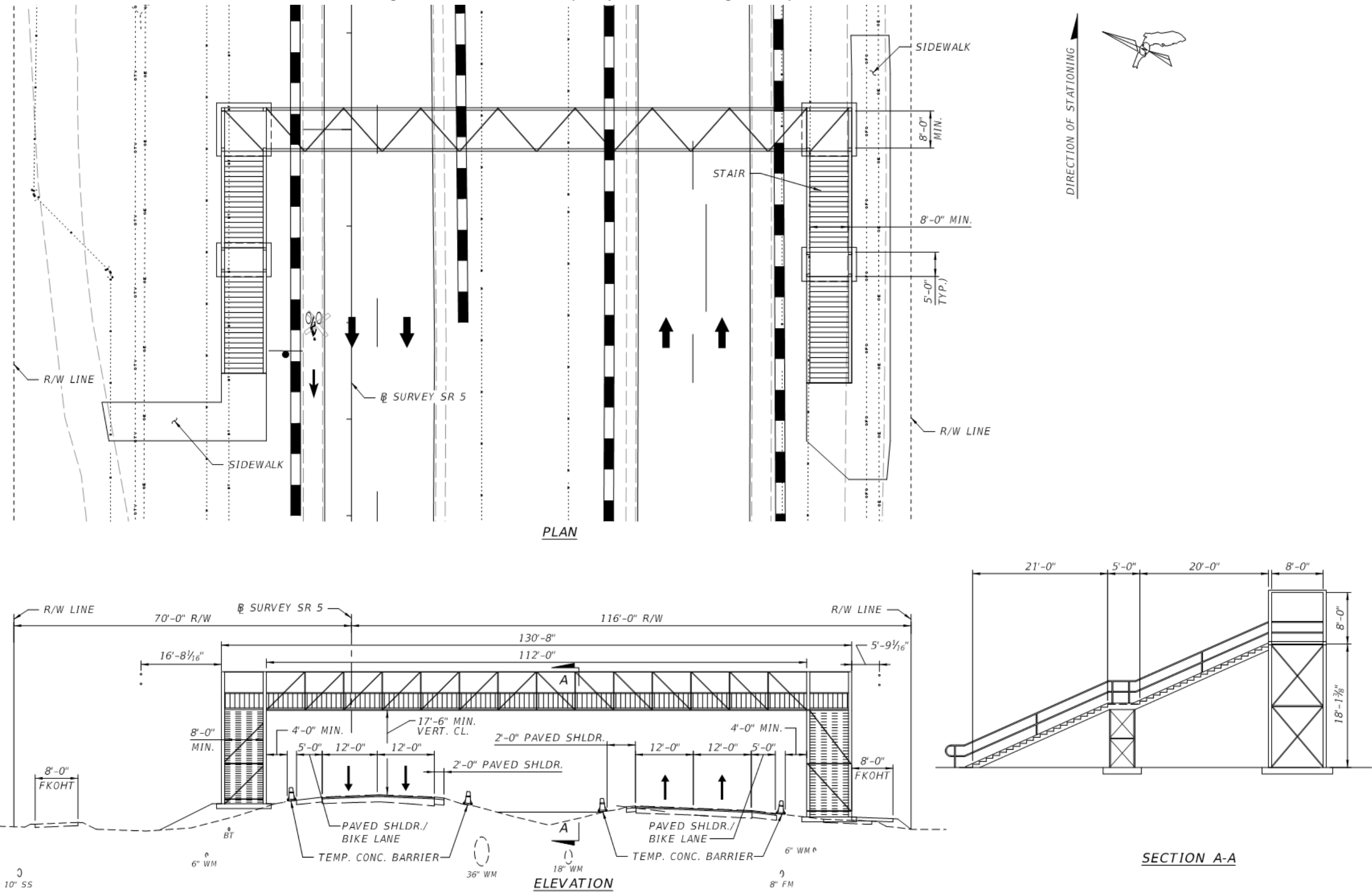


Figure 3-16 – Location 3 Permanent Pedestrian Bridge Concept – Plan View

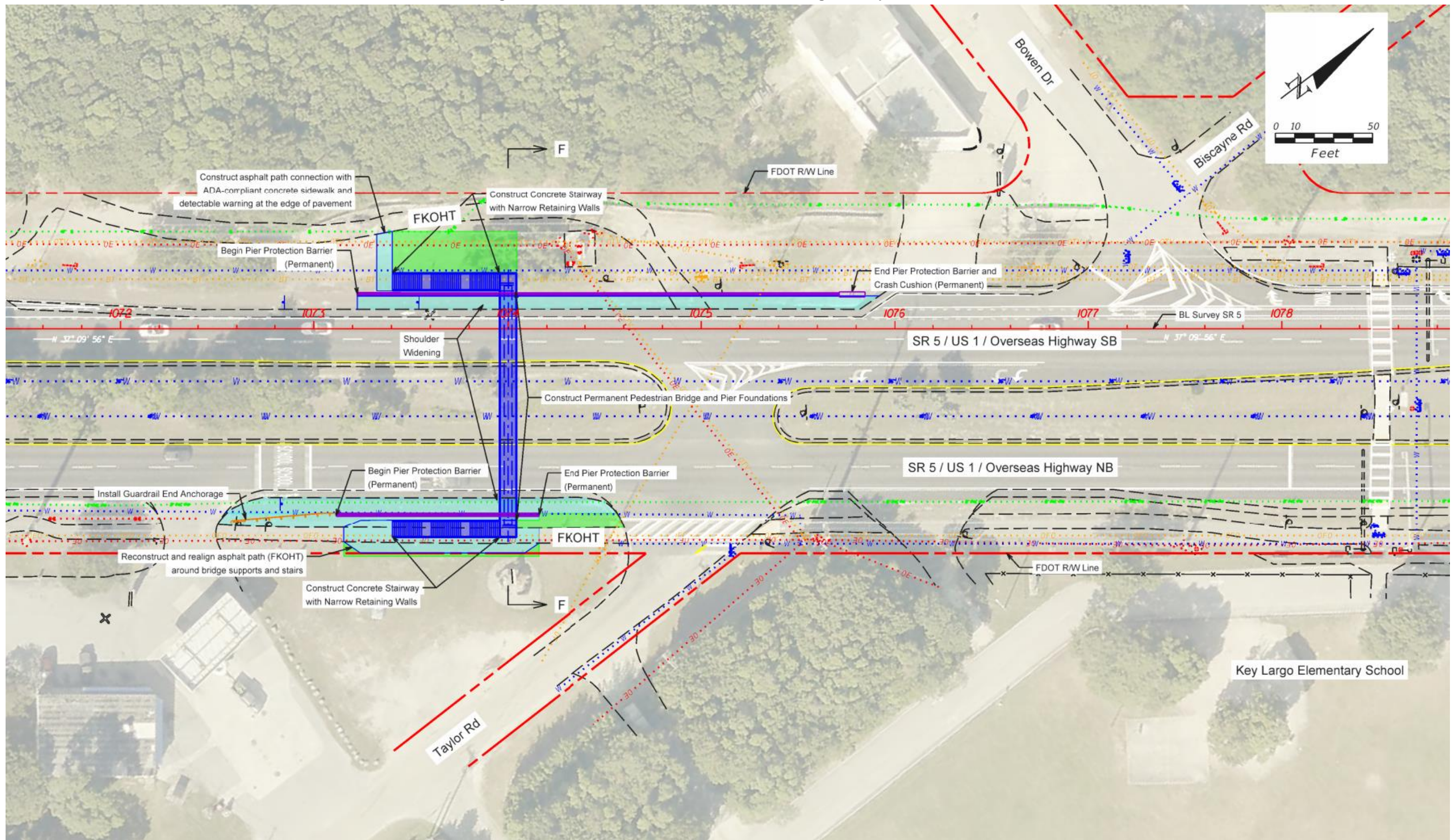


Figure 3-17 – Location 3 Permanent Pedestrian Bridge Concept – Typical Section

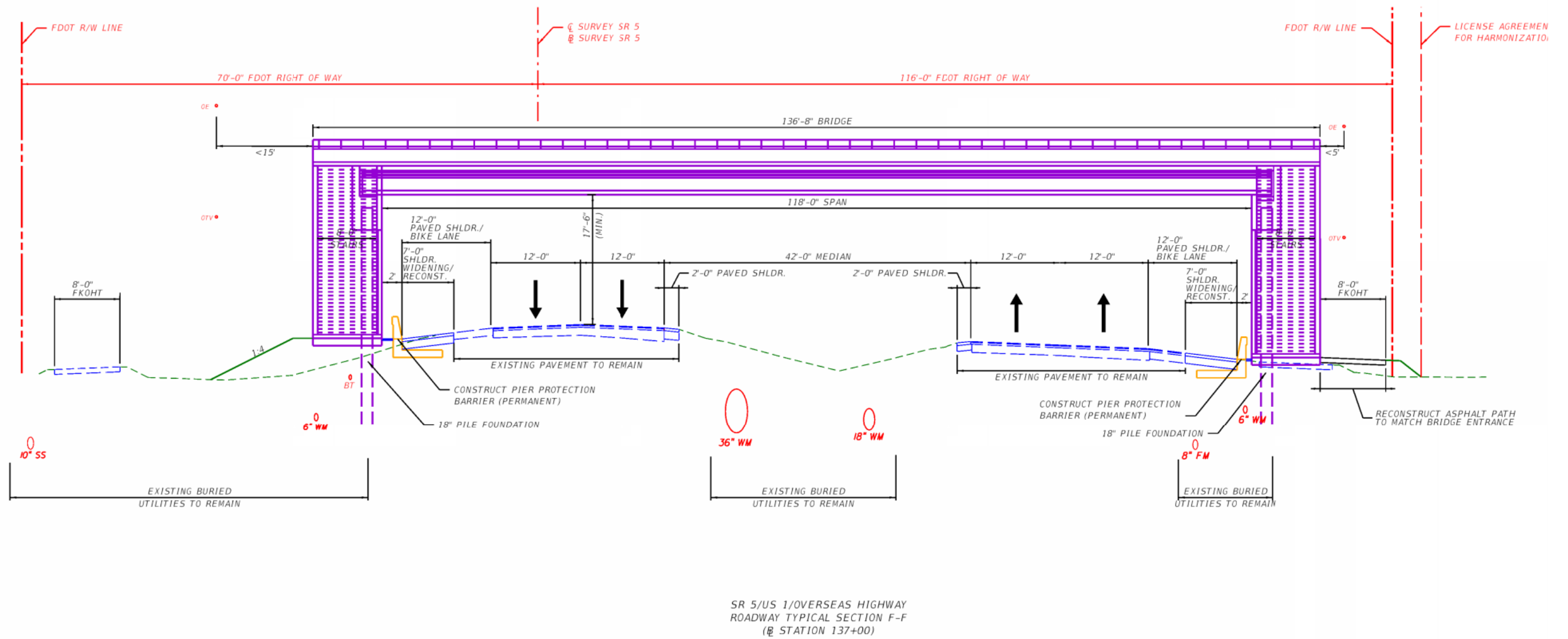
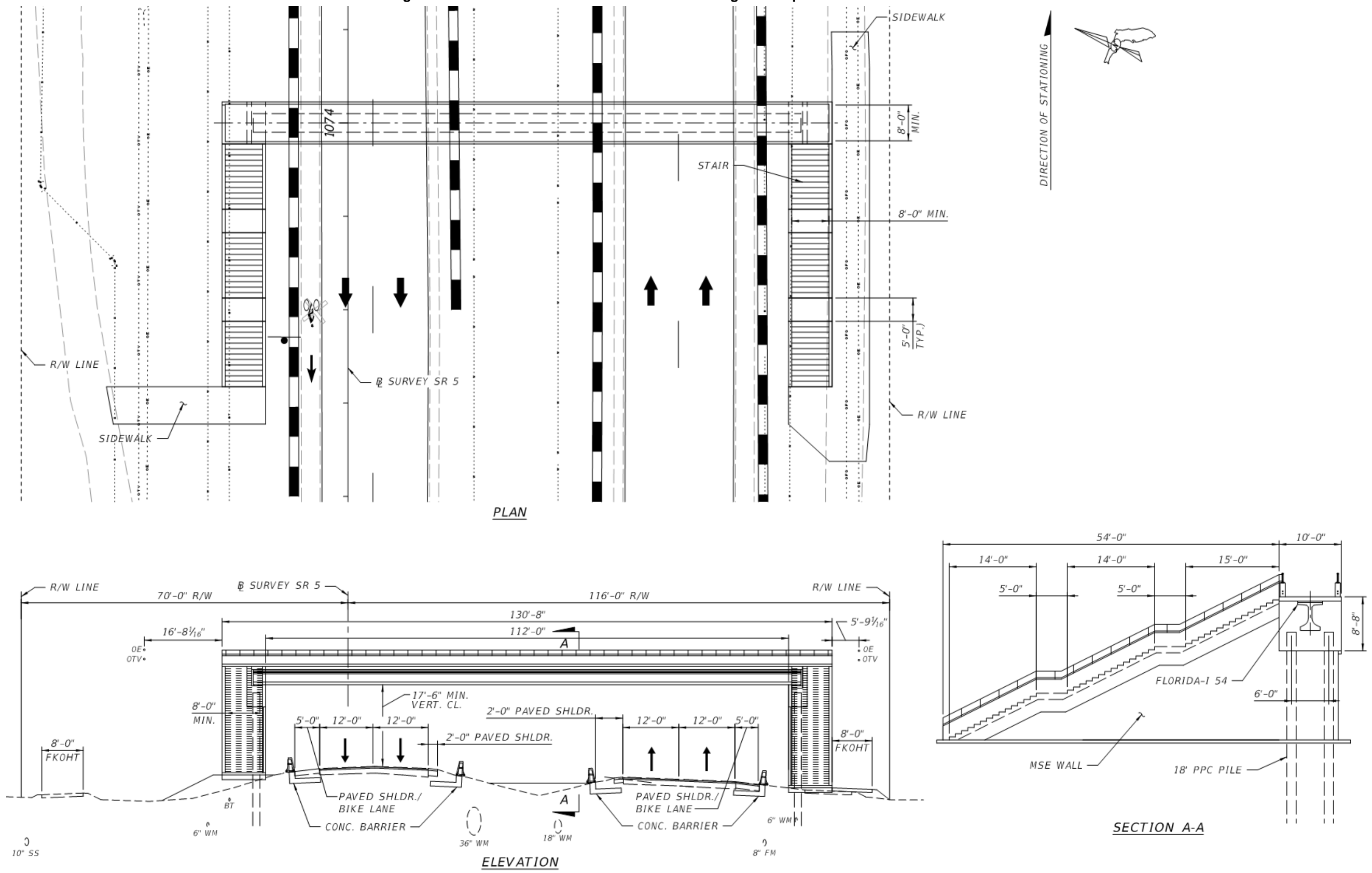


Figure 3-18 – Location 3 Permanent Pedestrian Bridge Concept – Structural Plan & Elevation



3.4 Location 4 (Islamorada, Upper Matecumbe Key, MM ±81.6)

The area on Upper Matecumbe Key surrounding Morada Bay Beach Café and Pierre’s Restaurant (MM ±81.6) was identified as the fourth priority for a potential pedestrian bridge site. Morada Bay Beach Café and Pierre’s Restaurant hosts one small event monthly, attracting an expected attendance of 700 people monthly and generating pedestrian traffic across Overseas Highway. This location is on Upper Matecumbe Key and the surrounding neighborhood on the ocean-side of the highway is also identified as the “Morada Way Arts & Cultural District.”

3.4.1 Alternative Site

One potential pedestrian bridge site was considered at Location 4. The selected Site 4 is north of the intersection of Palm Avenue and is located adjacent to the event entrance (Morada Bay Beach Café and Pierre’s Restaurant) along the gulf-side of Overseas Highway. The pros and cons of this site are summarized below.

1. Location
 - Pro: At Site 4, the ocean-side is adjacent to on-street parking along Old Highway 4A, available for overflow event parking.
 - Con: At Site 4, the bridge site is in close proximity to an intersection (Palm Avenue) along the ocean-side and a driveway along the gulf-side; therefore, a bridge structure will obstruct the intersection sight distance required per FDOT Standard Index 546.
2. Right of Way Impacts
 - Pro: At Site 4, a bridge can fit within the FDOT right of way.
 - Con: Site 4 requires construction of earthwork and an asphalt path connection within right of way for Old Highway 4A (Islamorada)
3. Utility Impacts
 - Pro: At Site 4, no impacts to overhead electric transmission are anticipated.
 - Con: Site 4 requires construction in close proximity to the existing overhead electric-distribution and overhead cable television lines along the gulf-side of Overseas Highway. The bridge structure would be within the required 20 foot “trigger distance” to the existing overhead electric lines per OSHA Rule (29 CFR Part 1926) and providing the minimum 10 foot clearance is not practical at this site.
4. Drainage Impacts
 - Con: At Site 4, the bridge foundation pad and asphalt path reconstruction requires fill with the existing roadside swales, adjustment of the existing ditch-bottom inlet in the swale between Overseas Highway and Old Highway 4A.
5. Landscaping Impacts
 - Pro: At Site 4, no existing trees would be directly impacted by construction of a bridge structure
 - Con: At Site 4, the existing roadside landscape shrubs located between Overseas Highway and Old Highway 4A will be impacted by the path widening and side slope re-grading around the bridge structure.
6. Maintenance of Traffic
 - Pro: At Site 4, traffic from Overseas Highway could be detoured using local streets during off-peak hours for erection of the bridge truss.

3.4.2 Preferred Alternative

Bridge Site and Options

Temporary or permanent pedestrian bridge options were considered at Site 3, near MM ±81.6 on Upper Matecumbe Key in Islamorada. The concept typical section and plan view are shown in **Figure 3-19 to Figure 3-24**. The improvements at Site 4 would include:

Temporary Bridge Option

- Install single-span temporary pedestrian bridge with stairways parallel to Overseas Highway.
 - ***Overhead utility lines (electric-distribution and cable television) are in close proximity to the highway and it is not practical to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926) at this location; therefore, the existing electric lines may be required to be de-energized during construction.***
- Install temporary concrete barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways during installation, operation, and removal.
- Along both sides of Overseas Highway reconstruct and widen the existing asphalt paths (FKOHT) to provide a pad for the bridge support towers and stairways, as well as a continuous pedestrian connection around the temporary structure.
- Along the ocean-side of Overseas Highway, construct an asphalt path connection from the stairway to the existing edge of pavement at Old Highway 4A. Re-grade the roadside swale and adjust the existing ditch-bottom inlet in the swale between Overseas Highway and Old Highway 4A.

Permanent Bridge Option

- Construct single-span pedestrian bridge with two piles at each support. Locate the piles to avoid impacts to the existing buried utilities.
 - ***Overhead utility lines (electric-distribution and cable television) are in close proximity to the highway and it is not practical to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926) at this location; therefore, the existing electric lines may be required to be de-energized during construction.***
- Construct stairway approaches with narrow walls parallel to Overseas Highway.
- Construct pier protection barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways. Reconstruct and widen the roadway outside shoulders to 12 feet wide paved to meet criteria.
- Along both sides of Overseas Highway, reconstruct the existing asphalt path and realign the FKOHT around the bridge supports and walls to meet FDOT criteria for the horizontal alignment of a Shared Use Path.
- Along the ocean-side of Overseas Highway, construct an asphalt path connection from the stairway to the existing edge of pavement at Old Highway 4A. Re-grade the roadside swale and adjust the existing ditch-bottom inlet in the swale between Overseas Highway and Old Highway 4A.

Crosswalk

At the direction of the District, the pedestrian bridge options (temporary or permanent option) would include stairways and not ADA-compliant approach ramps. A permanent at-grade crosswalk would need to be constructed at the south side of the Palm Avenue intersection, near station 269+60, to maintain ADA-compliant access across Overseas Highway between the existing pedestrian facilities on both sides. The permanent crosswalk recommendations include:

- Construct a concrete sidewalk pad and detectable warning surface at the edge of pavement on both sides of Overseas Highway
- Install new crosswalk signing and pavement marking to comply with Design Standard Index 17346.
- The installation of pedestrian-actuated Rectangular Rapid Flashing Beacons (RRFBs) or Pedestrian Hybrid Beacon (“Hawk signal”) should also be evaluated to improve pedestrian safety at the mid-block crosswalk on this roadway.
- Installation of new lighting to comply with requirements from PPM Vol. 1 Section 7.3.2.4 and Table 7.3.4 for pedestrian lighting at mid-block crosswalks.

The permanent marked crosswalk would be at an uncontrolled approach with no signal control. The installation of a marked crosswalk at an uncontrolled approach requires review and approval by the District Traffic Operations Engineer. To be considered for a marked pedestrian crosswalk, the uncontrolled approach location shall meet the criteria in FDOT Traffic Engineering Manual (TEM) Section 3.8.5(3) for “Minimum Levels of Pedestrian Demand” and Section 3.8.5(4) for “Minimum Location Characteristics.” Based on TEM Section 3.8.5(3)(b), this site may not provide sufficient pedestrian demand during an average seven day period without a special event.

3.4.3 Maintenance of Traffic

All temporary or permanent pedestrian bridge options would require a closure of all traffic along SR 5/US 1/Overseas Highway for the bridge erection, installation, and removal. To minimize impacts to the travelling public, traffic from Overseas Highway could be detoured to the parallel roadway Old Highway 4A from Jerome Avenue to Beach Road; however, this route may not be able to accommodate the FDOT Design Vehicle (WB-62FL). For the temporary pedestrian bridge options, temporary concrete barriers will be required along both shoulders to shield the temporary bridge within the clear zone. Temporary concrete barriers may also be required for all staging or storage areas along Overseas Highway before bridge installation and after bridge removal.

Figure 3-19 – Location 4 Temporary Pedestrian Bridge Concept – Plan View

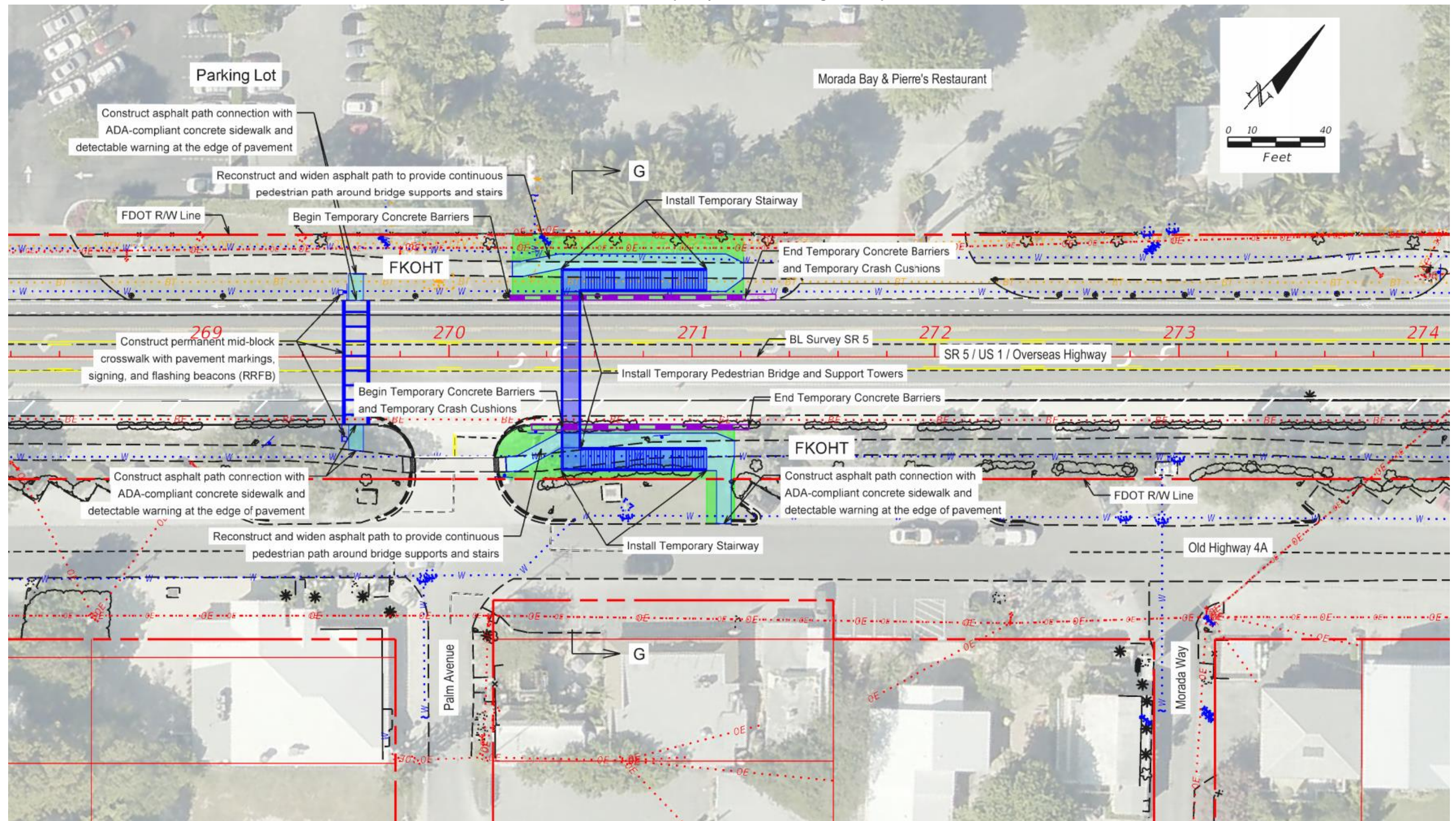


Figure 3-20 – Location 4 Temporary Pedestrian Bridge Concept – Typical Section

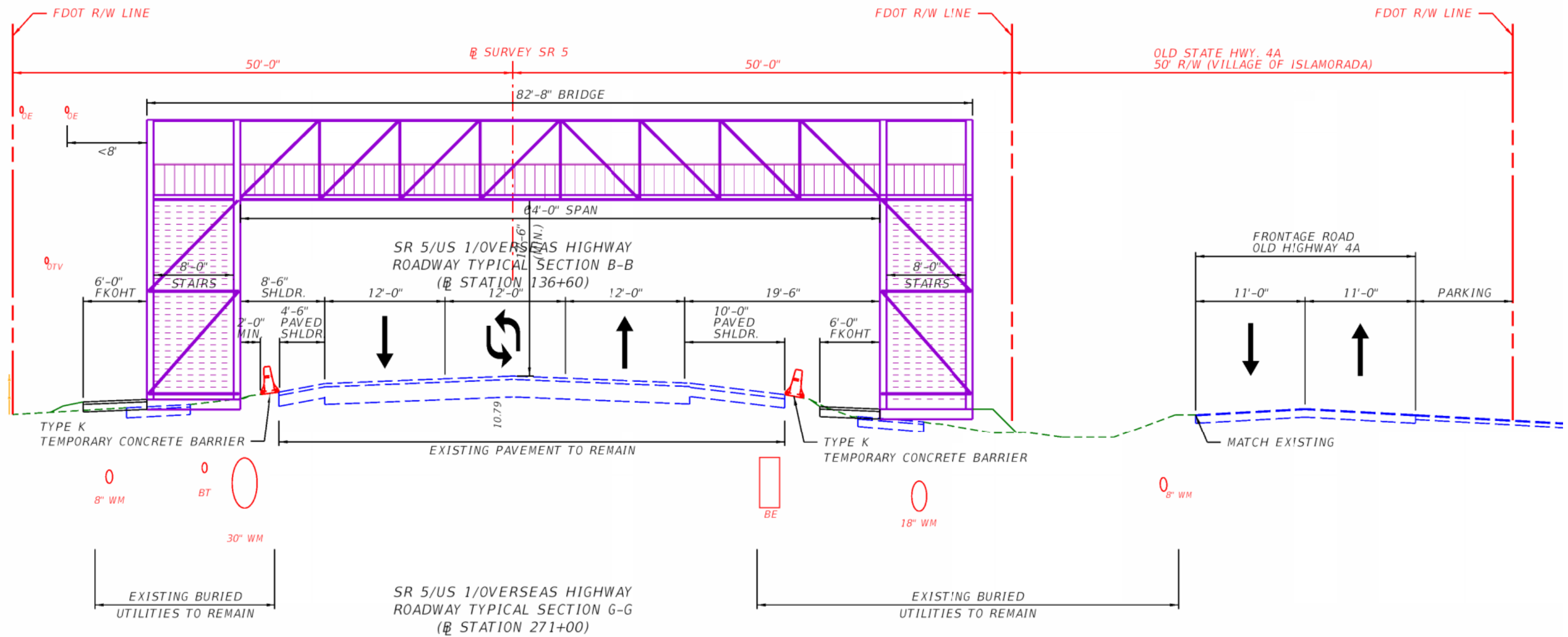


Figure 3-21 – Location 4 Temporary Pedestrian Bridge Concept – Structural Plan & Elevation

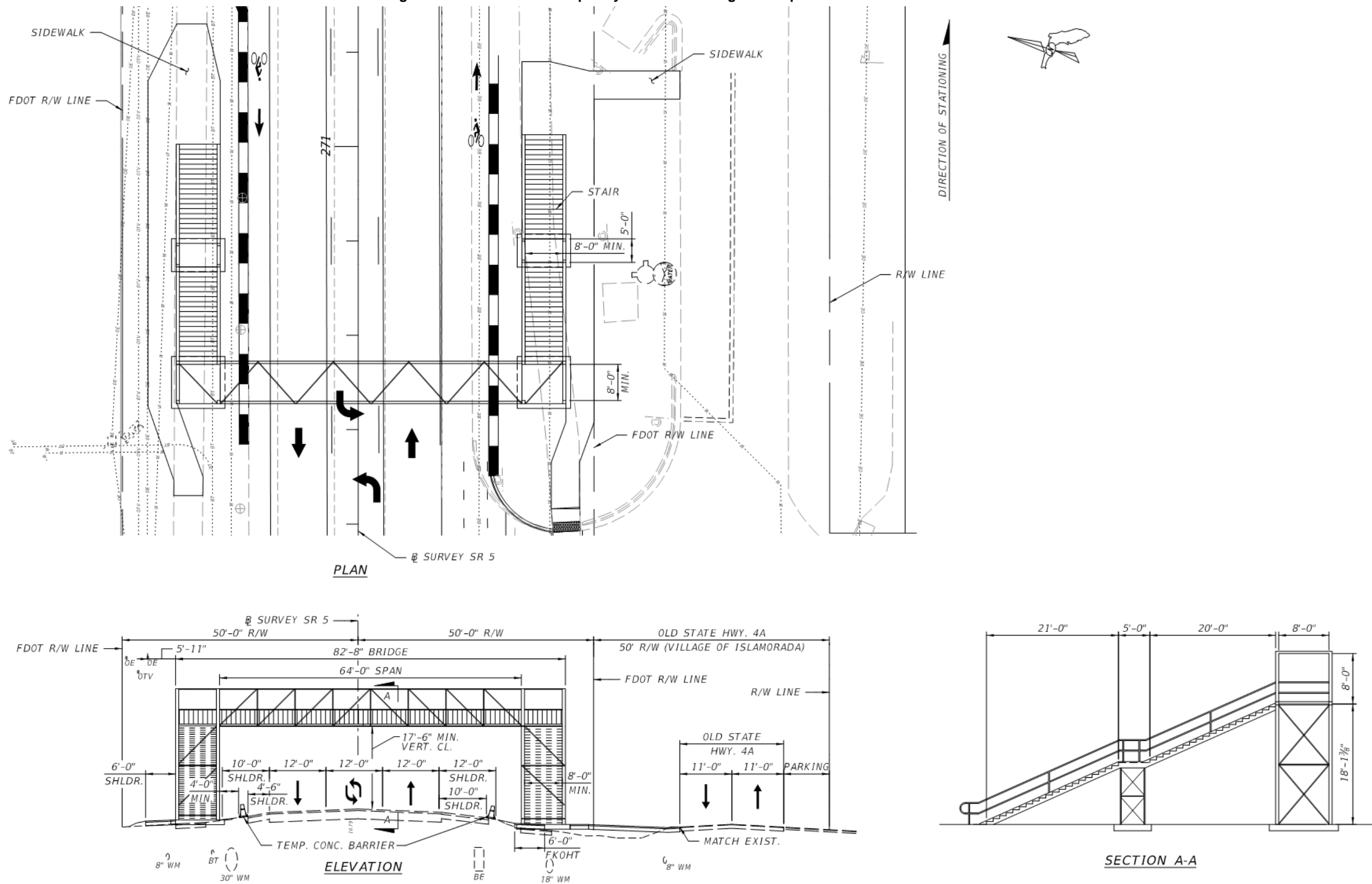


Figure 3-22 – Location 4 Permanent Pedestrian Bridge Concept – Plan View

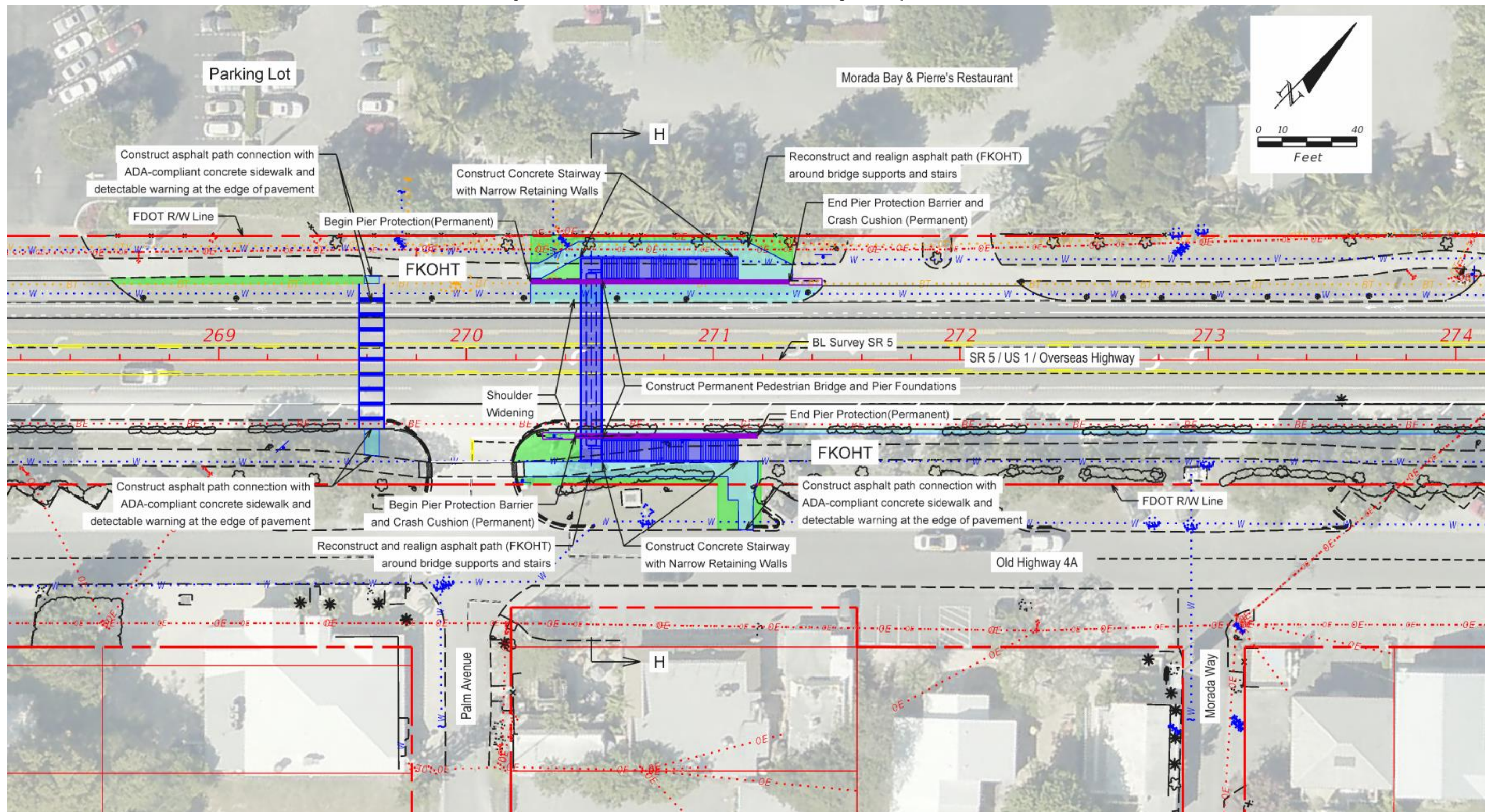


Figure 3-23 – Location 4 Permanent Pedestrian Bridge Concept – Typical Section

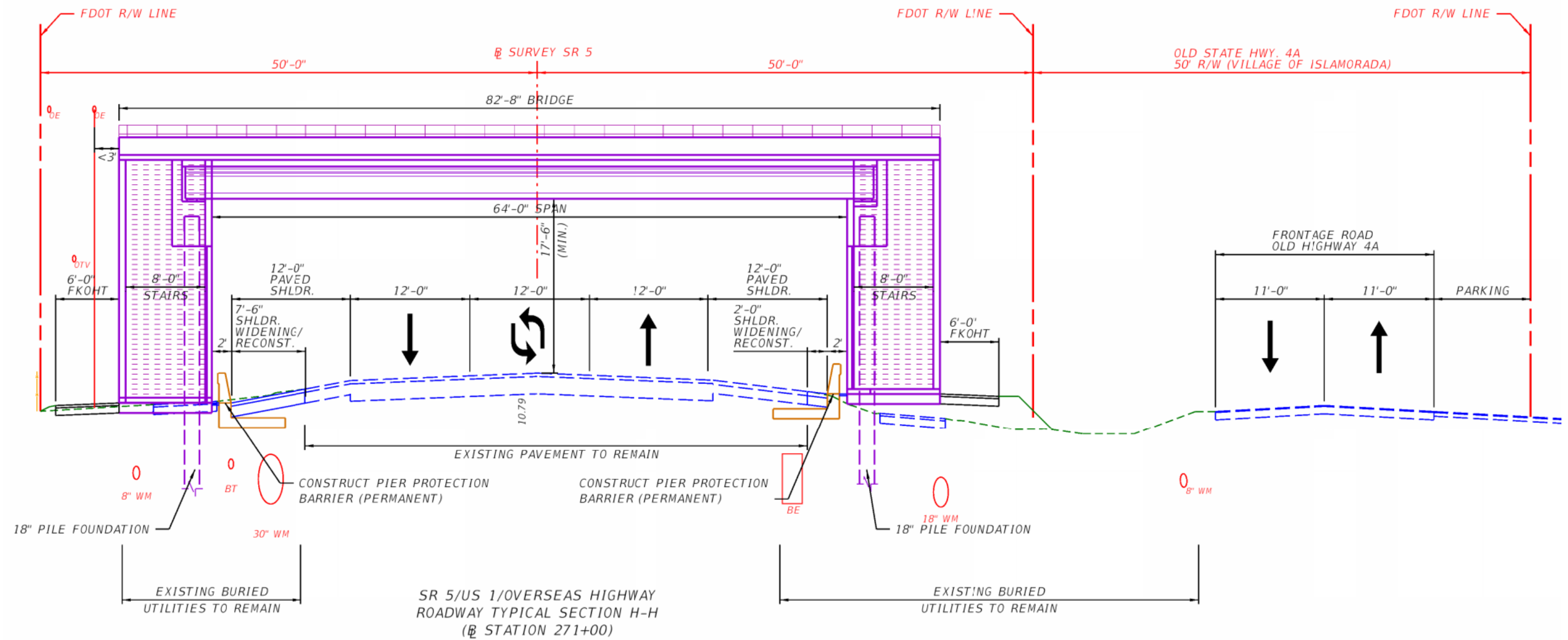
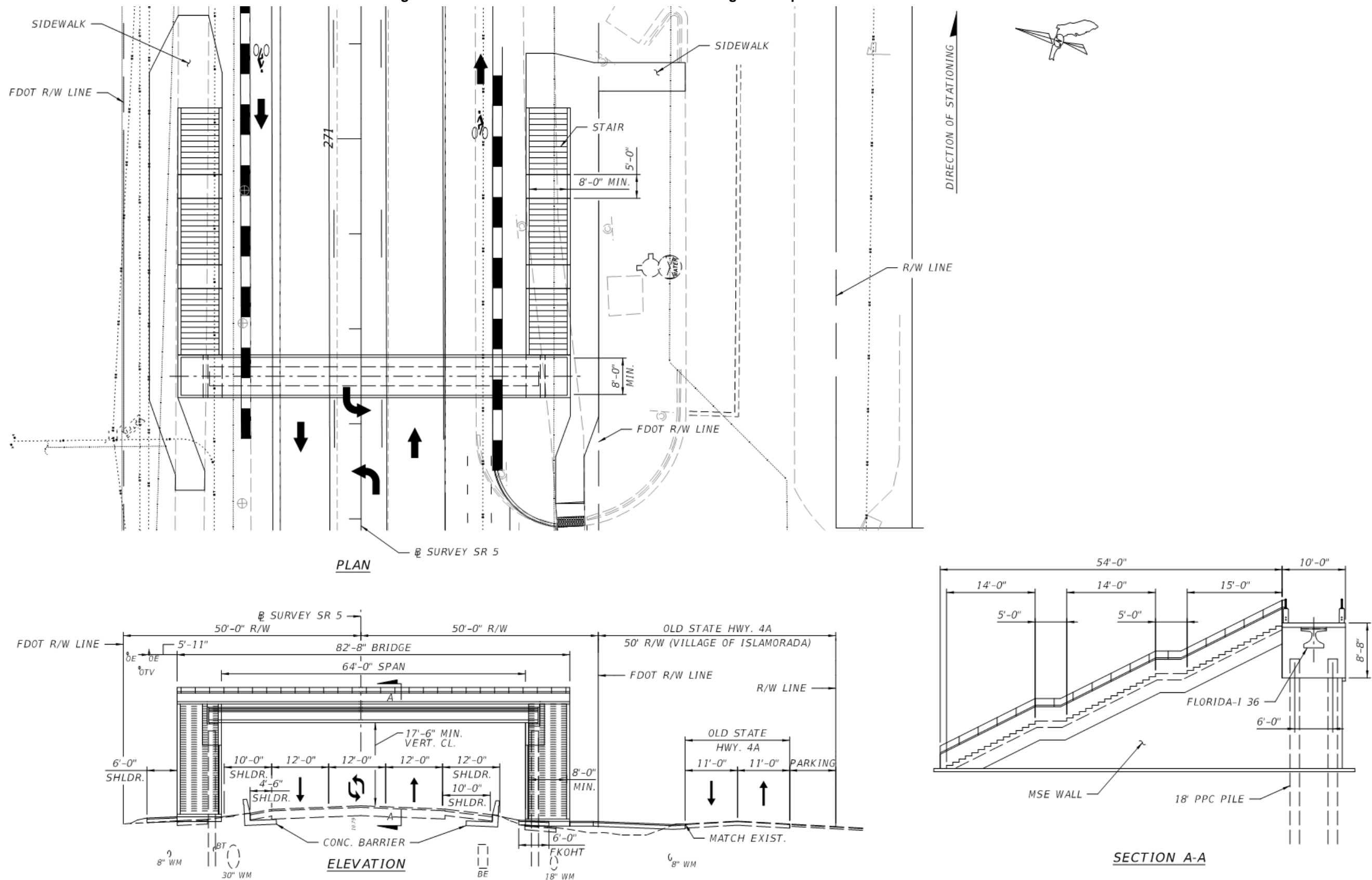


Figure 3-24 – Location 4 Permanent Pedestrian Bridge Concept – Structural Plan & Elevation



3.5 Location 5 (Marathon, Children's Rotary Park, MM ±51.2)

Children's Rotary Park in Marathon was identified as the lowest priority for evaluating a potential pedestrian bridge site due to the occurrence of one small annual event at this site, attracting an expected attendance of 1,500 people and potentially generating pedestrian traffic across Overseas Highway.

3.5.1 Alternative Site

One potential pedestrian bridge site was considered at Location 5. The selected Site 5 is mid-block west of 76th Street. The pros and cons of this site are summarized below.

1. Location
 - Con: Site 5 is a ±400 feet from the park entrance along 75th Street.
2. Right of Way Impacts
 - Pro: At Site 5, a bridge can fit within the FDOT right of way.
 - Con: Site 5 requires construction of an asphalt path connection within right of way for the airport frontage road (Rick Turner Drive), under the jurisdiction of Monroe County
3. Utility Impacts
 - Pro: At Site 5, no impacts to overhead electric transmission are anticipated.
 - Con: Site 5 requires construction in close proximity to the existing overhead electric-distribution and overhead cable television lines along the ocean-side of the highway. The bridge structure would be within the required 20 foot "trigger distance" to the existing overhead electric lines per OSHA Rule (29 CFR Part 1926) and providing the minimum 10 foot clearance is not practical at this site.
 - Con: Site 5 requires work adjacent to a light pole on the gulf-side of the highway.
4. Landscaping Impacts
 - Con: At Site 5, several existing trees in the median and gulf-side of the highway are directly adjacent the bridge structure and will likely require relocation or removal.
5. Maintenance of Traffic
 - Pro: At Site 5, traffic from Overseas Highway could be detoured to local roads during off-peak hours for erection of the bridge truss.
6. Other Impacts
 - Con: At Site 5, there is no existing pedestrian connection from the park entrance along 75th Street to the existing sidewalk along Overseas Highway; construction of a new sidewalk along 75th Street is required.

3.5.2 Preferred Alternative

Bridge Site and Options

Temporary or permanent pedestrian bridge options were considered at Site 5, near Children's Rotary Park in Marathon. The concept typical section and plan view are shown in **Figure 3-25 to Figure 3-27**. The improvements at Site 5 would include:

Temporary Bridge Option

- Install single-span temporary pedestrian bridge with stairways parallel to Overseas Highway.
 - ***Overhead utility lines (electric-distribution and cable television) are in close proximity to the highway and it is not practical to comply with the Minimum Clearance Distance of 10 feet required per OSHA Rule (29 CFR Part 1926) at this location; therefore, the existing electric lines may be required to be de-energized during construction.***
- Install temporary concrete barriers with crash cushions along the roadway shoulders to shield the bridge supports and stairways during installation, operation, and removal.
- Along both sides of the highway, reconstruct and widen the existing concrete sidewalks to provide a pad for the bridge support towers and stairways, as well as a continuous pedestrian connection around the temporary structure. Re-grade the side-slope at the back of sidewalk to maintain the existing drainage pattern.
- Construct new sidewalk along the east side of 75th Street from the park entrance to the ocean-side of Overseas Highway.

Permanent Bridge Option

A permanent pedestrian bridge was not considered at Location 4 (Marathon Children's Rotary Park) due to the lack of sufficient demand to server pedestrian traffic during one small annual event.

Crosswalk

At the direction of the District, the pedestrian bridge options (temporary or permanent option) would include stairways and not ADA-compliant approach ramps. A permanent at-grade crosswalk would need to be constructed at the west side of the 75th Street intersection, near station 221+90, to maintain ADA-compliant access across Overseas Highway between the existing pedestrian facilities on both sides. The new path would terminate at the existing pavement for the airport frontage road (Rick Turner Drive). The permanent crosswalk recommendations include:

- Construct new curb ramps at the SW and NW corner to connect the west-leg crosswalks at 75th Street
- Extend the existing raised median to create a pedestrian refuge area at the west-leg of the at 75th Street intersection
- Construct an asphalt path connection from the existing path (FKOHT) on the gulf-side of Overseas Highway to the edge of pavement for the airport frontage road (Rick Turner Drive).
- Install new crosswalk signing and pavement marking to comply with Design Standard Index 17346.
- The installation of pedestrian-actuated Rectangular Rapid Flashing Beacons (RRFBs) or Pedestrian Hybrid Beacon (“Hawk signal”) should also be evaluated to improve pedestrian safety at the mid-block crosswalk on this roadway.
- Installation of new lighting to comply with requirements from PPM Vol. 1 Section 7.3.2.4 and Table 7.3.4 for pedestrian lighting at mid-block crosswalks.

The permanent marked crosswalk would be at an uncontrolled approach with no signal control. The installation of a marked crosswalk at an uncontrolled approach requires review and approval by the District Traffic Operations Engineer. To be considered for a marked pedestrian crosswalk, the uncontrolled approach location shall meet the criteria in FDOT Traffic Engineering Manual (TEM) Section 3.8.5(3) for “Minimum Levels of Pedestrian Demand” and Section 3.8.5(4) for “Minimum Location Characteristics.” Based on TEM Section 3.8.5(3)(b), this site may not provide sufficient pedestrian demand during an average seven day period without a special event.

3.5.3 Maintenance of Traffic

All temporary or permanent pedestrian bridge options would require a closure of all traffic along SR 5/US 1/Overseas Highway for the bridge erection, installation, and removal. To minimize impacts to the travelling public, traffic from Overseas Highway could be detoured around the park, from 75th Street to Ocean Terrace to 76th Street; however, this route may not be able to accommodate the FDOT Design Vehicle (WB-62FL). An alternate longer detour route would utilize Aviation Boulevard and Industrial Avenue, around the north side of the airport. For the temporary pedestrian bridge options, temporary concrete barriers will be required along both shoulders to shield the temporary bridge within the clear zone. Temporary concrete barriers may also be required for all staging or storage areas along Overseas Highway before bridge installation and after bridge removal.

Figure 3-25 – Location 5 Temporary Pedestrian Bridge Concept – Plan View

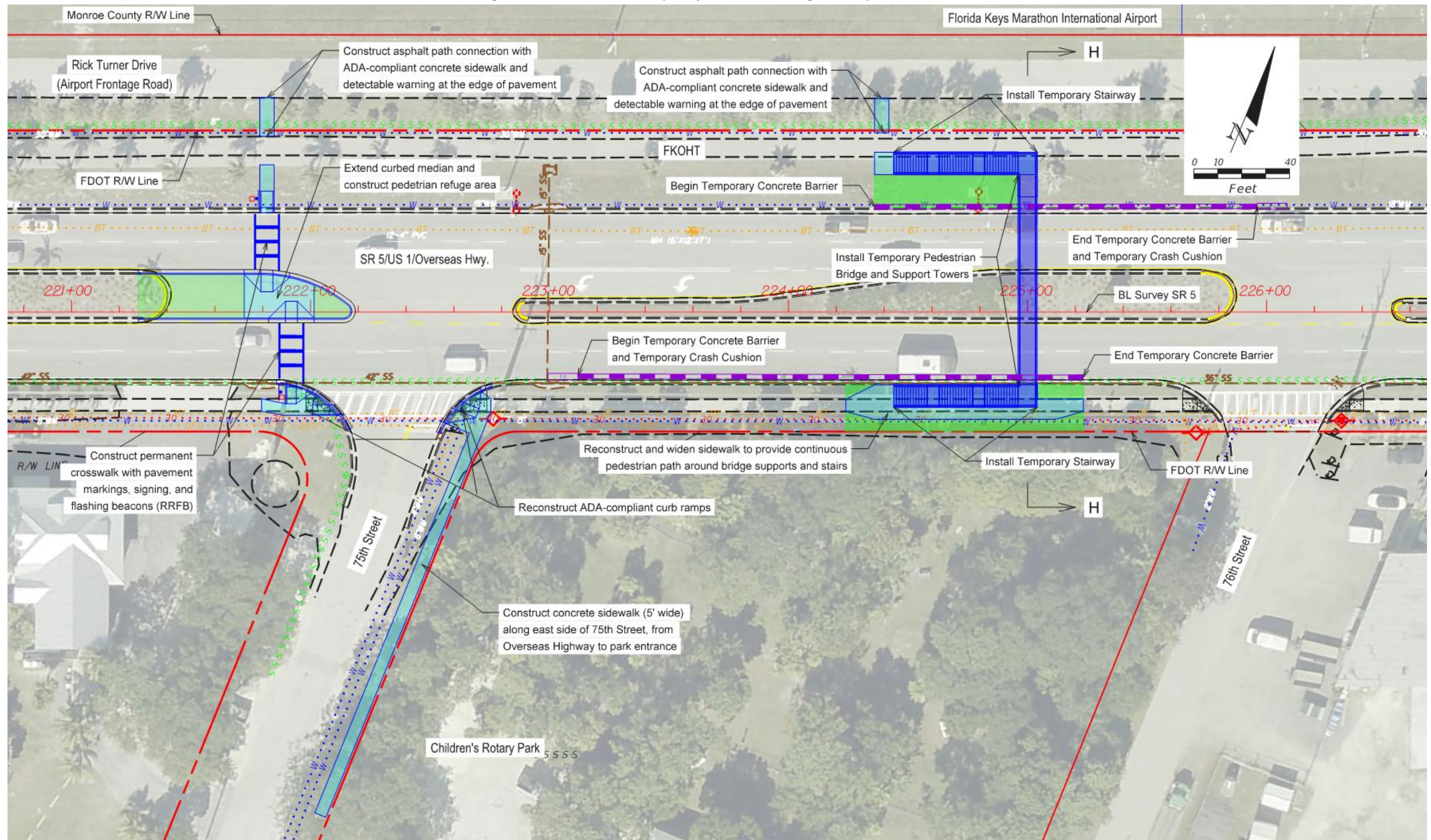


Figure 3-26 – Location 5 Temporary Pedestrian Bridge Concept – Typical Section

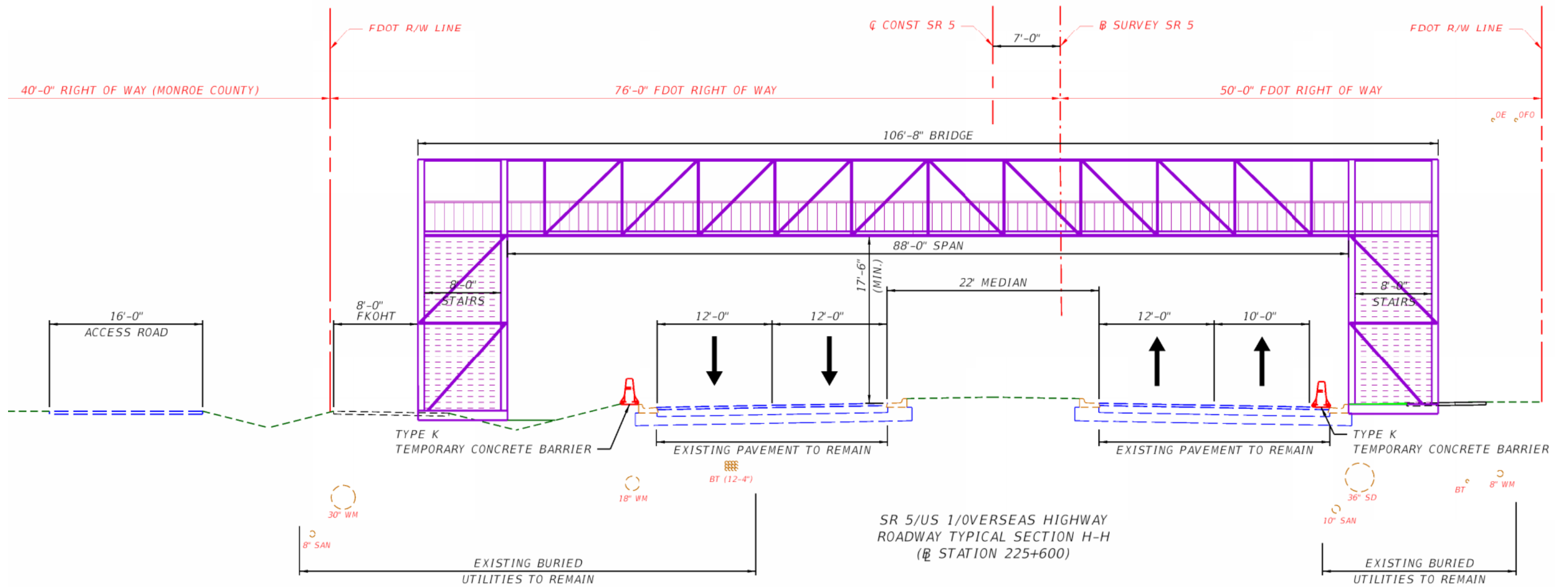
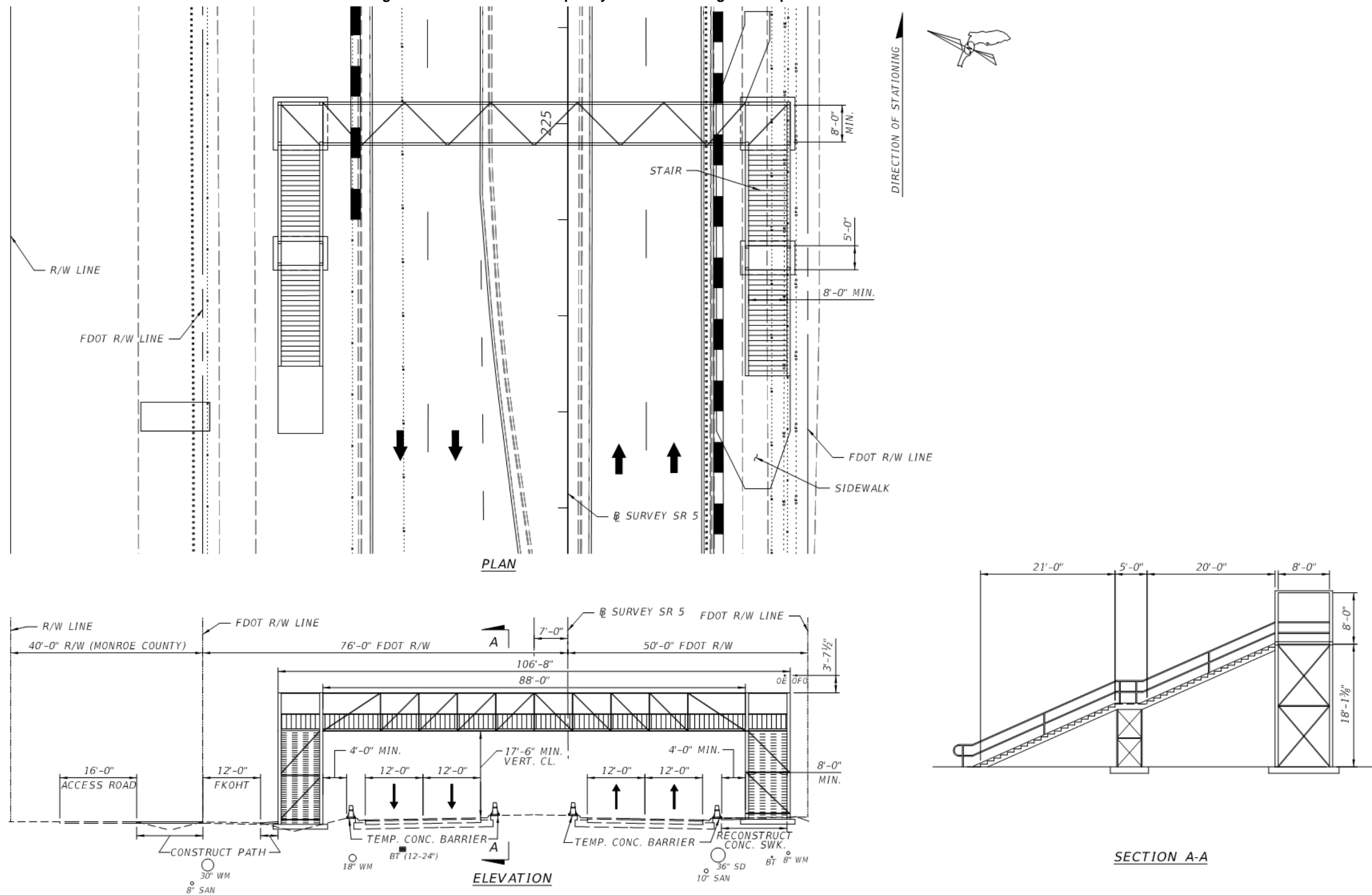


Figure 3-27 – Location 5 Temporary Pedestrian Bridge Concept – Structural Plan & Elevation



4.0 Cost Estimate

Preliminary cost estimates were developed for each location and each bridge option to consider the initial one-time fixed costs as well as the long-term recurring costs. Fixed costs for the temporary bridge options include purchase/rental of the bridge components and construction of permanent site work. Fixed costs for the permanent bridge option include the full construction cost of the bridge structure, stairways with retaining walls, as well as the site work. A temporary pedestrian bridge was estimated using four different financing options, listed below as options A to D. In addition, one permanent pedestrian option is listed as option E.

- A. Temporary Pedestrian Bridge, Purchase Complete System
- B. Temporary Pedestrian Bridge, Purchase in Parts
- C. Temporary Pedestrian Bridge, Reuse Existing Truss & Purchase Remaining Parts
- D. Temporary Pedestrian Bridge, Rent Complete System
- E. Permanent Pedestrian Bridge

Temporary Pedestrian Bridge Common Costs

The following costs are common to all temporary bridge options:

- Initial Fixed Costs
 - Miscellaneous Site Work
 - Construct asphalt pad foundation for the bridge towers and stairways
 - Reconstruct and realign the pedestrian pathway around the proposed temporary bridge site to provide continuity of the existing asphalt trail (FKOHT) along the gulf-side of the highway. Construct an asphalt path connection from the bridge to the edge of pavement at Old Highway 4A
 - Construct a crosswalk across Overseas Highway, with asphalt path connections on each side, concrete sidewalk with detectable warning surface, Preformed Thermoplastic pavement markings, and advance warning signs to meet Standard Index 17346. Construct a new light pole to meet pedestrian lighting criteria at a mid-block crosswalk. Consider installing flashing beacons (RRFBs) or Pedestrian Hybrid Beacon signal based on pedestrian volume.
 - Engineering Services for design review of structures shop drawings provided by the bridge fabricators and to prepare design plan for the permanent site work
 - Engineering Services for CEI during construction of permanent site work
- Recurring Costs
 - Maintenance of Traffic during bridge delivery, installation, operation, and removal for each event installation; costs include temporary concrete barriers along the roadway shoulders to shield the structure from highway traffic and temporary signing for the traffic detour during span installation and removal.
 - Engineering Services for design review of maintenance of traffic plans provided by the Contractor, to be paid for each event installation
 - Annual Maintenance for purchased temporary bridge options and for permanent site work within FDOT right of way, to be paid annually by the District
 - Bridge Rehabilitation for future replacement of bridge elements, to be paid once during the 75 design life of the bridge structure

Temporary Pedestrian Bridge Options

The RFQ sent to bridge fabricators was based on a generic temporary bridge span length to be used at Sites 1, 2, and 4. Sites 3 and 5 would require a longer span length; therefore, the cost for purchase or rental of the bridge span was increased proportionally based on the required span length at these two sites. The costs for each temporary pedestrian bridge option are summarized below:

A. Temporary Pedestrian Bridge, Purchase Complete System

- Initial Fixed Costs
 - Purchase prefabricated pedestrian bridge complete system from a single supplier; bids open to all suppliers meeting FDOT specific requirements
- Recurring Costs
 - Separate contractor would transport, install and remove structure for each event

B. Temporary Pedestrian Bridge, Purchase in Parts

- Initial Fixed Costs
 - Purchase prefabricated truss and support towers from ACROW
 - Purchase remaining parts (stairs and deck systems) from different fabricators
- Recurring Costs
 - Separate contractor would transport, install and remove structure for each event

C. Temporary Pedestrian Bridge, Reuse Existing Truss & Purchase Remaining Parts

- Initial Fixed Costs
 - Utilize existing ACROW truss sections and partial support towers owned by FDOT and stored at District 5 Oviedo Yard
 - Purchase from ACROW missing members for truss and support towers only
 - Purchase remaining parts (stairs and deck systems) from different fabricators
- Recurring Costs
 - Separate contractor would transport, install and remove structure for each event

D. Temporary Pedestrian Bridge, Rent Complete System

- Recurring Costs
 - Rent prefabricated pedestrian bridge complete system from a single supplier, including transport, installation, and removal to site prepared by FDOT; bids open to all suppliers meeting FDOT specific requirements

Permanent Pedestrian Bridge

E. Permanent Pedestrian Bridge

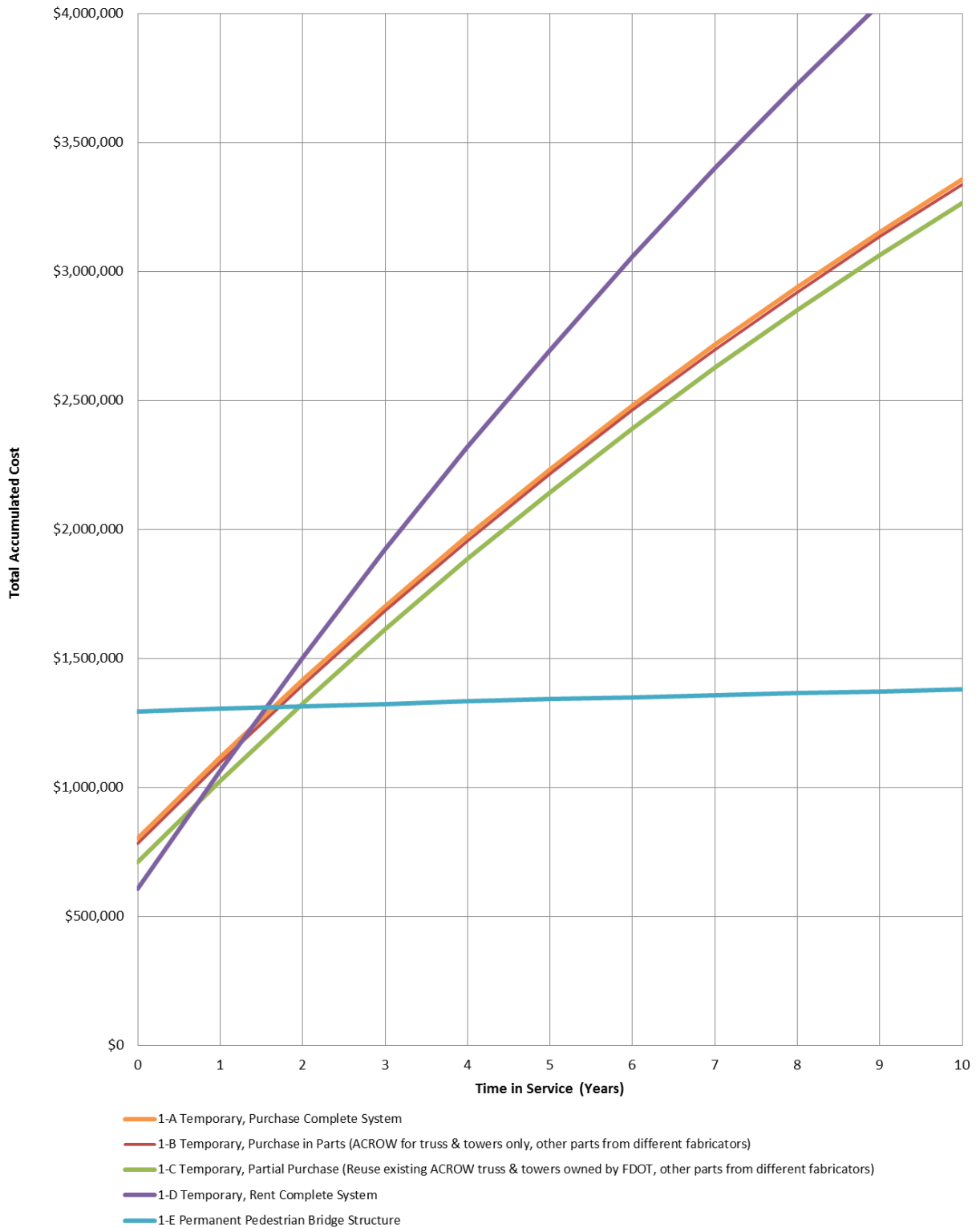
- Initial Fixed Costs
 - Construct new bridge structure and concrete stairway with narrow walls
 - Construct permanent site work
- Recurring Costs
 - Annual Maintenance

4.1 Location 1 (Islamorada Founders Park, MM ±87)

Table 4-1 – Location 1, Summary of Cost Estimates

Bridge Option	Temporary				Permanent
	1-A	1-B	1-C	1-D	1-E
Description	Purchase complete prefabricated bridge system	Purchase bridge system in parts (ACROW for truss & towers only, other parts from different fabricators)	Reuse existing ACROW truss & towers owned by FDOT. Purchase remaining parts from different fabricators.	Rent complete prefabricated bridge system for each event	Construct permanent pedestrian bridge structure
Initial Fixed Costs					
Purchase prefabricated steel truss pedestrian bridge complete system	\$ 301,000				
Purchase ACROW prefabricated steel truss and towers only		\$ 118,000			
Purchase ACROW missing parts for truss and towers only			\$ 56,000		
Purchase two stairways for truss pedestrian bridge		\$ 105,000	\$ 105,000		
Purchase other parts (deck, fencing, handrails, etc) for truss pedestrian bridge		\$ 17,500	\$ 17,500		
Construct Permanent Bridge Structure, including foundations and concrete stairways with retaining walls					\$ 513,000
Construct Miscellaneous Site Work (Roadway, Signing, Pavement Markings, Signalization, & Lighting; includes permanent crosswalk for all options and asphalt pad for temporary bridge foundation)	\$ 98,000	\$ 98,000	\$ 98,000	\$ 98,000	\$ 496,000
Sub-Total Initial Fixed Costs	\$ 399,000	\$ 338,500	\$ 276,500	\$ 98,000	\$ 1,009,000
Engineering Services (Design. To prepare structural details to assemble truss, towers, stairways, and other parts from different fabricators)		\$ 50,000	\$ 50,000		
Engineering Services (Design. For temporary option: review of structures shop drawings and prepare design plans for site work. For permanent option: Prepare design plans for structures & site work as well as post-design review of shop drawings. 15%)	\$ 60,000	\$ 51,000	\$ 42,000	\$ 15,000	\$ 152,000
Engineering Services (CEI for construction of site work and permanent bridge, 12%)	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000	\$ 122,000
Total Initial Fixed Costs	\$ 471,000	\$ 451,500	\$ 380,500	\$ 125,000	\$ 1,283,000
Recurring Costs					
Truss pedestrian bridge (Transportation)	\$ 3,000	\$ 3,000	\$ 3,000		
Truss pedestrian bridge (Installation)	\$ 20,000	\$ 20,000	\$ 20,000		
Truss pedestrian bridge (Removal)	\$ 20,000	\$ 20,000	\$ 20,000		
Rental for prefabricated steel truss pedestrian bridge complete system (including transportation, installation, and removal)				\$ 72,000	
Maintenance of Traffic (during bridge delivery, staging, installation, event, and removal)	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	
Engineering Services (CEI for field verification of bridge installation, 10% of each installation or 3% of rental)	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,500	
Sub-Total Recurring Costs (per each event)	\$ 65,000	\$ 65,000	\$ 65,000	\$ 94,500	\$ -
Engineering Services (Post-Design. For all temporary options: review MOT plans provided by contractor. For temporary rental option: review structures shop drawings provided by contractor. Present Value, 10% of per-event cost, paid for once annually)	\$ 2,000	\$ 2,000	\$ 2,000	\$ 9,200	
Annual Maintenance Cost (Present value, 1% of Initial Fixed Cost for purchased temporary bridge options, permanent bridge, and all site work)	\$ 4,000	\$ 4,000	\$ 4,000	\$ 1,000	\$ 11,000
Total Annual Recurring Costs (5 events per year)	\$ 331,000	\$ 331,000	\$ 331,000	\$ 482,700	\$ 11,000
Bridge Rehabilitation (Present Value. For temporary option: replace decking, railing, fencing, bearings, and stairs. For permanent option: Replace decking, railing, fencing, joints, bearings, and painting. 20% of initial cost. Paid once within 75-year period)	\$ 61,000	\$ 50,000	\$ 50,000		\$ 103,000
Summary					
Total Accumulated Cost for First Year (5 events per year)	\$ 802,000	\$ 782,500	\$ 711,500	\$ 607,700	\$ 1,294,000
Total Accumulated Cost for 10 Years (Present Value with an Interest Rate of 5%)	\$ 3,026,894	\$ 3,007,394	\$ 2,936,394	\$ 3,852,281	\$ 1,367,939
Life Cycle Cost for 75 Years (Present Value with an Interest Rate of 5%)	\$ 6,981,525	\$ 6,951,025	\$ 6,880,025	\$ 9,530,395	\$ 1,600,335
Average Recurring Cost per Person (average expected 3,000 users per event)	\$ 21.67	\$ 21.67	\$ 21.67	\$ 31.50	
Annual Average Cost per Person (5 events per year with average 3,000 users per event. One-time fixed costs are distributed over 10 years equally)	\$ 25.21	\$ 25.08	\$ 24.60	\$ 33.01	\$ 9.29

Figure 4-1 – Location 1, Comparison of Accumulated Costs for Bridge Options



Notes
 (a) For the Temporary Bridge Options Year 0 includes procurement of bridge components and construction of site work.
 (b) For the Permanent Bridge Option, Year 0 includes all construction costs (structure and site work).
 (c) Temporary Bridge costs assumes reusing for 5 annual events at Location 1 (Islamorada Founders Park).

Feasibility Study for Pedestrian Bridges in the Florida Keys

Table 4-2 – Location 1, Preliminary Construction Cost Estimate for Temporary Pedestrian Bridge (Site Work Only)

Pay Item	Description	Quantity	Unit	Unit Price	Total
Maintenance of Traffic (per each event)					\$ 20,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 1,802
102-60	WORK ZONE SIGN	280	ED	\$ 2.00	\$ 560
102-71-14	BARRIER WALL,TEMP,F&I,TYPE K	496	LF	\$ 20.00	\$ 9,920
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	1,000	ED	\$ 1.00	\$ 1,000
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	84	ED	\$ 4.00	\$ 336
102-74-6	CHANNELIZING DEVICE- PED LCD	70	ED	\$ 4.00	\$ 280
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	4	LO	\$ 1,200.00	\$ 4,800
102-99	PORTABLE CHANGEABLE MESSAGE SIGN,TEMP	56	ED	\$ 20.00	\$ 1,120
Site Work (Roadway, Signing, Pavement Markings, Signalization, & Lighting)					\$ 98,000
101-1	MOBILIZATION	10%	LS		\$ 7,798
999-25	CONTINGENCY	15%	LS		\$ 11,697
104-10-3	SEDIMENT BARRIER	250	LF	\$ 4.00	\$ 1,000
110-1-1	CLEARING & GRUBBING	0.19	AC	\$ 20,000.00	\$ 3,800
120-1	REGULAR EXCAVATION	40	CY	\$ 25.00	\$ 1,000
120-6	EMBANKMENT	410	CY	\$ 20.00	\$ 8,200
160-4	TYPE B STABILIZATION	450	SY	\$ 5.00	\$ 2,250
285-704	OPTIONAL BASE,BASE GROUP 04	400	SY	\$ 25.00	\$ 10,000
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	35	TN	\$ 150.00	\$ 5,250
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	30	SY	\$ 50.00	\$ 1,500
527-2	DETECTABLE WARNINGS	64	SF	\$ 70.00	\$ 4,480
570-1-2	PERFORMANCE TURF, SOD	600	SY	\$ 5.00	\$ 3,000
630-2-11	CONDUIT, F& I, OPEN TRENCH	50	LF	\$ 6.00	\$ 300
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	50	LF	\$ 20.00	\$ 1,000
635-2-12	PULL & SPLICE BOX, F&I, 24" X36"	3	EA	\$ 1,200.00	\$ 3,600
711-14-123	THERMOPLASTIC, PREFORM, WHITE, SOLID,12"	106	LF	\$ 10.00	\$ 1,060
711-14-125	THERMOPLASTIC, PREFORM, WHITE, SOLID,24"	80	LF	\$ 15.00	\$ 1,200
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2	AS	\$ 320.00	\$ 640
700-11-241	ELECTRONIC DISPLAY SIGN, FURNISH & INSTALL GROUND MOUNT-SOLAR POWER, ELECT WARNING W/FLASHING BEACON, UP TO 12 SF	2	AS	\$ 12,000.00	\$ 24,000
715-1-12	LIGHTING CONDUCTORS, F&I, INSUL,NO.8-6	300	LF	\$ 3.00	\$ 900
715-4-119	LIGHT POLE COMP, F&I, WS150,CUSTOM HT	1	EA	\$ 4,000.00	\$ 4,000
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	1	EA	\$ 800.00	\$ 800

Feasibility Study for Pedestrian Bridges in the Florida Keys

Table 4-3 – Location 1, Preliminary Construction Cost Estimate for Permanent Pedestrian Bridge (Structures and Site Work)

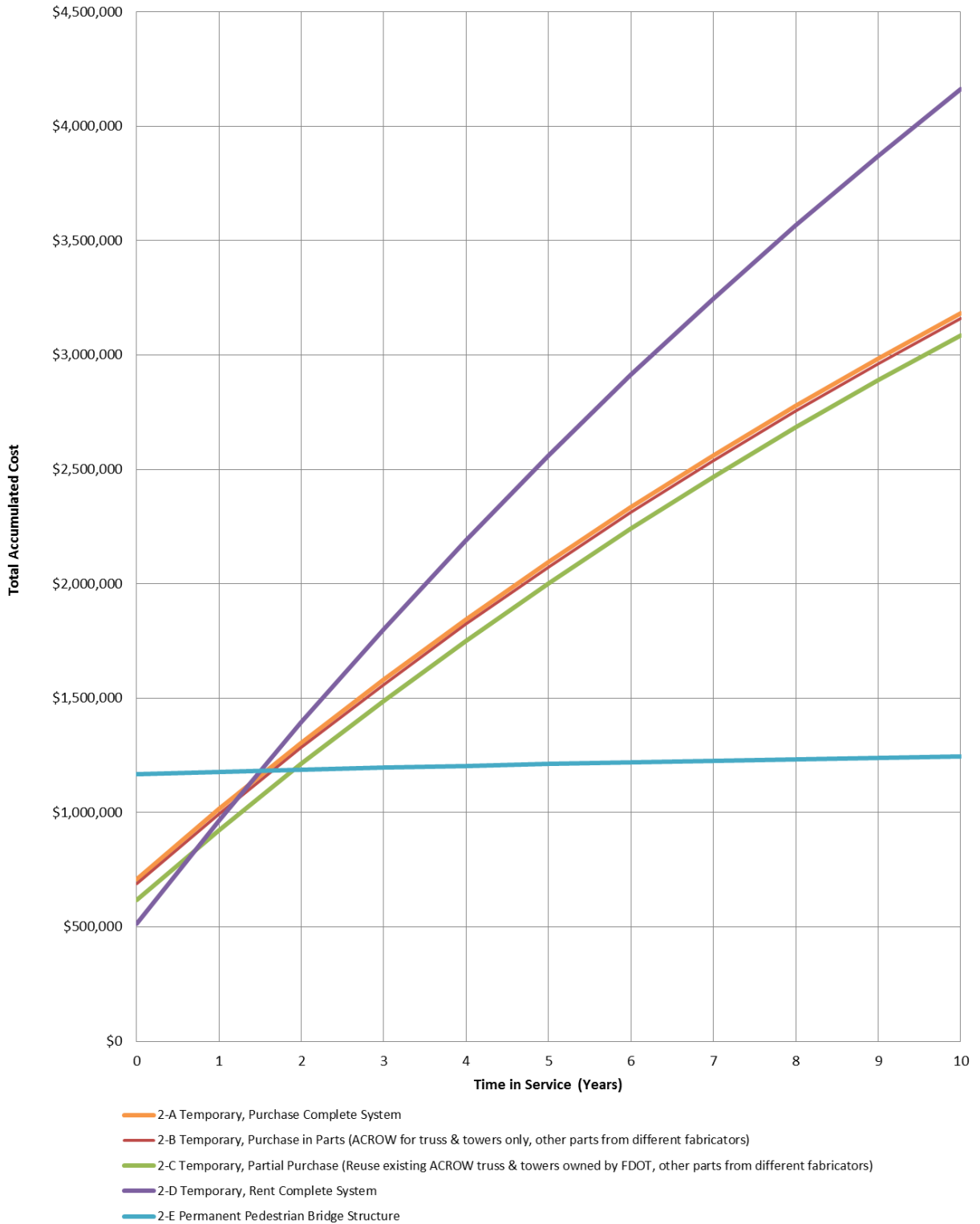
Pay Item	Description	Quantity	Unit	Unit Price	Total
Structures					\$ 513,000
101-1	MOBILIZATION	10%	LS		\$ 39,451
999-25	CONTINGENCY	20%	LS		\$ 78,902
120-6	EMBANKMENT	398	CY	\$ 18.00	\$ 7,164
400-0-13	CONC CLASS NS, GRAVITY WALL	27	CY	\$ 628.00	\$ 17,144
400-2-4	CONC CLASS II, SUPERSTRUCTURE	21	CY	\$ 700.00	\$ 14,490
400-2-10	CONC CLASS II, APPROACH SLABS	4	CY	\$ 387.00	\$ 1,703
400-2-11	CONC CLASS II, RETAINING WALLS	115	CY	\$ 804.00	\$ 92,460
400-4-5	CONC CLASS IV, SUBSTRUCTURE	58	CY	\$ 1,250.00	\$ 73,000
400-147	COMPOSITE NEOPRENE PADS	0.6	CF	\$ 1,500.00	\$ 900
415-1-3	REINF STEEL- RETAINING WALL	23,567.0	LB	\$ 2.00	\$ 47,134
415-1-4	REINF STEEL- SUPERSTRUCTURE	4,249.0	LB	\$ 2.00	\$ 8,498
415-1-5	REINF STEEL- SUBSTRUCTURE	11,978.0	LB	\$ 1.50	\$ 17,967
415-1-6	REINF STEEL- MISCELLANEOUS	5,588.0	LB	\$ 3.00	\$ 16,764
415-1-9	REINF STEEL- APPROACH SLABS	911.0	LB	\$ 1.00	\$ 911
450-2-36	PREST BEAMS: FLORIDA-I BEAM 36"	142.0	LF	\$ 203.00	\$ 28,826
455-34-3	PRESTRESSED CONCRETE PILING, 18" SQ	196.0	LF	\$ 91.00	\$ 17,836
455-143-3	TEST PILES-PREST CONCRETE, 18" SQ	226.0	LF	\$ 166.00	\$ 37,516
460-70-2	ALLUMINUM BULLET RAILING	271.0	LF	\$ 12.00	\$ 3,252
521-6-11	CONC PARAPET, PED/BIKE, 27"	271.0	LF	\$ 33.00	\$ 8,943
Site Work (Roadway, Signing, Pavement Markings, Signalization, & Lighting)					\$ 496,000
101-1	MOBILIZATION	10%	LS		\$ 35,394
999-25	CONTINGENCY	20%	LS		\$ 70,788
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 35,394
102-60	WORK ZONE SIGN	2,400	ED	\$ 2.00	\$ 4,800
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	312	LF	\$ 20.00	\$ 6,240
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	8,000	ED	\$ 1.00	\$ 8,000
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	720	ED	\$ 4.00	\$ 2,880
102-74-6	CHANNELIZING DEVICE- PED LCD	600	ED	\$ 4.00	\$ 2,400
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP	268	ED	\$ 20.00	\$ 5,360
104-10-3	SEDIMENT BARRIER	250	LF	\$ 3.00	\$ 750
110-1-1	CLEARING & GRUBBING	0.35	AC	\$ 20,000.00	\$ 7,000
120-1	REGULAR EXCAVATION	100	CY	\$ 25.00	\$ 2,500
120-6	EMBANKMENT	700	CY	\$ 20.00	\$ 14,000
160-4	TYPE B STABILIZATION	800	SY	\$ 5.00	\$ 4,000
285-704	OPTIONAL BASE, BASE GROUP 04	750	SY	\$ 20.00	\$ 15,000
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	40	TN	\$ 150.00	\$ 6,000
334-1-14	SUPERPAVE ASPHALTIC CONC, TRAFFIC D	30	TN	\$ 150.00	\$ 4,500
337-7-24	ASPH CONC FC, FC-5, PG 76-22, ARB	15	TN	\$ 150.00	\$ 2,250
425-1-891	INLETS, BARRIER WALL, <10'	1	EA	\$ 5,000.00	\$ 5,000
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	18	LF	\$ 70.00	\$ 1,260
430-982-129	MITERED END SECT, OPTIONAL RD, 24" CD	1	EA	\$ 1,500.00	\$ 1,500
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	30	SY	\$ 50.00	\$ 1,500
527-2	DETECTABLE WARNINGS	80	SF	\$ 70.00	\$ 5,600
521-72-10	SHLDR CONC BARRIER WALL, RIGID SHLDR 42"	370	LF	\$ 350.00	\$ 129,500
544-75-1	CRASH CUSHION	4	EA	\$ 20,000.00	\$ 80,000
570-1-2	PERFORMANCE TURF, SOD	1,000	SY	\$ 4.00	\$ 4,000
630-2-11	CONDUIT, F& I, OPEN TRENCH	50	LF	\$ 6.00	\$ 300
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	50	LF	\$ 20.00	\$ 1,000
635-2-12	PULL & SPLICE BOX, F&I, 24" X 36"	3	EA	\$ 1,200.00	\$ 3,600
711-14-123	THERMOPLASTIC, PREFORM, WHITE, SOLID, 12"	106	LF	\$ 10.00	\$ 1,060
711-14-125	THERMOPLASTIC, PREFORM, WHITE, SOLID, 24"	80	LF	\$ 15.00	\$ 1,200
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2	AS	\$ 320.00	\$ 640
700-11-241	ELECTRONIC DISPLAY SIGN, FURNISH & INSTALL GROUND MOUNT-SOLAR POWER, ELECT WARNING W/FLASHING BEACON, UP TO 12 SF	2	AS	\$ 12,000.00	\$ 24,000
715-1-12	LIGHTING CONDUCTORS, F&I, INSUL, NO.8-6	300	LF	\$ 3.00	\$ 900
715-4-119	LIGHT POLE COMP, F&I, WS150, CUSTOM HT	1	EA	\$ 4,000.00	\$ 4,000
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	1	EA	\$ 800.00	\$ 800
Total Construction Costs					\$ 1,009,000

4.2 Location 2 (Marathon Community Park, MM ±49)

Table 4-4 – Location 2, Summary of Cost Estimates

Bridge Option	Temporary				Permanent
	2-A	2-B	2-C	2-D	2-E
Description	Purchase complete prefabricated bridge system	Purchase bridge system in parts (ACROW for truss & towers only, other parts from different fabricators)	Reuse existing ACROW truss & towers owned by FDOT. Purchase remaining parts from different fabricators.	Rent complete prefabricated bridge system for each event	Construct permanent pedestrian bridge structure
Initial Fixed Costs					
Purchase prefabricated steel truss pedestrian bridge complete system	\$ 301,000				
Purchase ACROW prefabricated steel truss and towers only		\$ 118,000			
Purchase ACROW missing parts for truss and towers only			\$ 56,000		
Purchase two stairways for truss pedestrian bridge		\$ 105,000	\$ 105,000		
Purchase other parts (deck, fencing, handrails, etc) for truss pedestrian bridge		\$ 17,500	\$ 17,500		
Construct Permanent Bridge Structure, including foundations and concrete stairways with retaining walls					\$ 500,000
Construct Miscellaneous Site Work (Roadway; includes asphalt pad for temporary bridge foundation)	\$ 33,000	\$ 33,000	\$ 33,000	\$ 33,000	\$ 412,000
Utility Relocation	TBD	TBD	TBD	TBD	TBD
Sub-Total Initial Fixed Costs	\$ 334,000	\$ 273,500	\$ 211,500	\$ 33,000	\$ 912,000
Engineering Services (Design. To prepare structural details to assemble truss, towers, stairways, and other parts from different fabricators)		\$ 50,000	\$ 50,000		
Engineering Services (Design. For temporary option: review of structures shop drawings and prepare design plans for site work. For permanent option: Prepare design plans for structures & site work as well as post-design review of shop drawings. 15%)	\$ 51,000	\$ 42,000	\$ 32,000	\$ 5,000	\$ 137,000
Engineering Services (CEI for construction of site work and permanent bridge, 12%)	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 110,000
Total Initial Fixed Costs	\$ 389,000	\$ 369,500	\$ 297,500	\$ 42,000	\$ 1,159,000
Recurring Costs (per each event)					
Truss pedestrian bridge (Transportation)	\$ 3,000	\$ 3,000	\$ 3,000		
Truss pedestrian bridge (Installation)	\$ 20,000	\$ 20,000	\$ 20,000		
Truss pedestrian bridge (Removal)	\$ 20,000	\$ 20,000	\$ 20,000		
Rental for prefabricated steel truss pedestrian bridge complete system (including transportation, installation, and removal)				\$ 72,000	
Maintenance of Traffic (during bridge delivery, staging, installation, event, and removal)	\$ 18,000	\$ 18,000	\$ 18,000	\$ 18,000	
Engineering Services (CEI for field verification of bridge installation, 10% of each installation or 3% of rental)	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,500	
Sub-Total Recurring Costs (per each event)	\$ 63,000	\$ 63,000	\$ 63,000	\$ 92,500	\$ -
Engineering Services (Post-Design. For all temporary options: review MOT plans provided by contractor. For temporary rental option: review structures shop drawings provided by contractor. Present Value, 10% of per-event cost, paid for once annually)	\$ 1,800	\$ 1,800	\$ 1,800	\$ 9,000	
Annual Maintenance Cost (Present value, 1% of Initial Fixed Cost for purchased temporary bridge options, permanent bridge, and all site work)	\$ 3,500	\$ 3,000	\$ 3,000	\$ 1,000	\$ 10,000
Total Annual Recurring Costs (5 events per year)	\$ 320,300	\$ 319,800	\$ 319,800	\$ 472,500	\$ 10,000
Bridge Rehabilitation (Present Value. For temporary option: replace decking, railing, fencing, bearings, and stairs. For permanent option: Replace decking, railing, fencing, joints, bearings, and painting. 20% of initial cost. Paid once within 75-year period)	\$ 61,000	\$ 49,000	\$ 49,000		\$ 100,000
Total Accumulated Cost					
Total Accumulated Cost for First Year (5 events per year)	\$ 709,300	\$ 689,300	\$ 617,300	\$ 514,500	\$ 1,169,000
Total Accumulated Cost for 10 Years (Present Value with an Interest Rate of 5%)	\$ 2,874,347	\$ 2,849,847	\$ 2,777,847	\$ 3,713,302	\$ 1,259,000
Life Cycle Cost for 75 Years (Present Value with an Interest Rate of 5%)	\$ 6,691,036	\$ 6,649,793	\$ 6,577,793	\$ 9,248,648	\$ 1,453,850
Average Recurring Cost per Person (average expected 3,000 users per event)	\$ 21.00	\$ 21.00	\$ 21.00	\$ 30.83	
Annual Average Cost per Person (5 events per year with average 3,000 people using the bridge during each event, and fixed costs distributed over 10 years equally)	\$ 23.95	\$ 23.78	\$ 23.30	\$ 31.78	\$ 8.39

Figure 4-2 – Location 2, Comparison of Accumulated Costs for Bridge Options



Notes
 (a) For the Temporary Bridge Options Year 0 includes procurement of bridge components and construction of site work.
 (b) For the Permanent Bridge Option, Year 0 includes all construction costs (structure and site work).
 (c) Temporary Bridge costs assumes reusing for 5 annual events at Location 2 (Marathon Community Park).

Feasibility Study for Pedestrian Bridges in the Florida Keys

**Table 4-5 – Location 2, Preliminary Construction Cost Estimate for Temporary Pedestrian Bridge
(Site Work Only)**

Pay Item	Description	Quantity	Unit	Unit Price	Total
Maintenance of Traffic (per each event)					\$ 18,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 1,593
102-60	WORK ZONE SIGN	280	ED	\$ 2.00	\$ 560
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	464	LF	\$ 20.00	\$ 9,280
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	1,000	ED	\$ 1.00	\$ 1,000
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	140	ED	\$ 4.00	\$ 560
102-74-6	CHANNELIZING DEVICE- PED LCD	112	ED	\$ 4.00	\$ 448
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP	84	ED	\$ 20.00	\$ 1,680
Site Work (Roadway)					\$ 33,000
104-10-3	SEDIMENT BARRIER	170	LF	\$ 4.00	\$ 680
110-1-1	CLEARING & GRUBBING	0.1	AC	\$ 20,000.00	\$ 2,000
120-1	REGULAR EXCAVATION	80	CY	\$ 25.00	\$ 2,000
120-6	EMBANKMENT	130	CY	\$ 20.00	\$ 2,600
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	350	SY	\$ 50.00	\$ 17,500
570-1-2	PERFORMANCE TURF, SOD	200	SY	\$ 5.00	\$ 1,000
101-1	MOBILIZATION	10%	LS		\$ 2,578
999-25	CONTINGENCY	15%	LS		\$ 4,254

Feasibility Study for Pedestrian Bridges in the Florida Keys

Table 4-6 – Location 2, Preliminary Construction Cost Estimate for Permanent Pedestrian Bridge (Structures and Site Work)

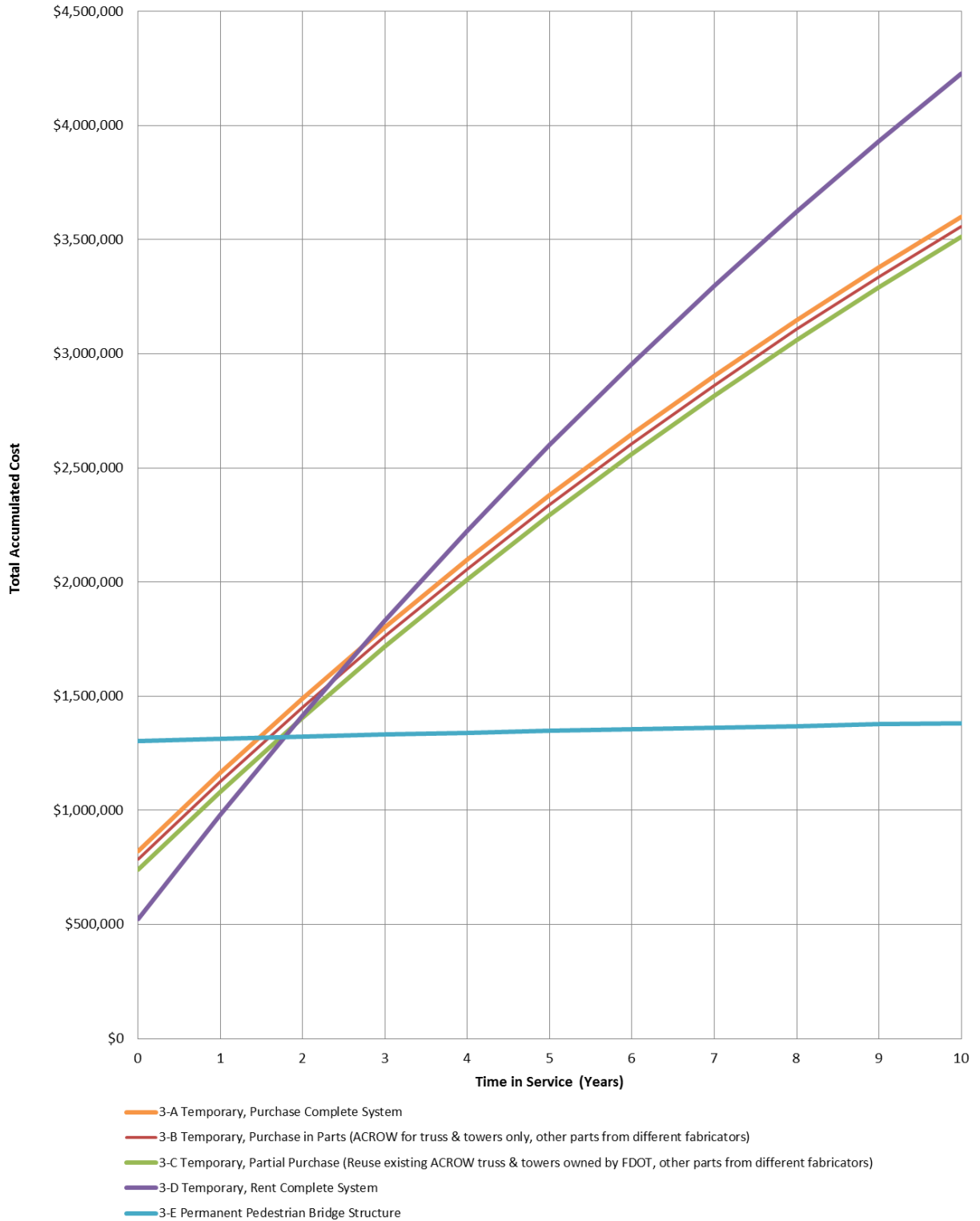
Pay Item	Description	Quantity	Unit	Unit Price	Total
Structures					\$ 500,000
120-6	EMBANKMENT	398	CY	\$ 18.00	\$ 7,164
400-0-13	CONC CLASS NS, GRAVITY WALL	27	CY	\$ 628.00	\$ 17,144
400-2-4	CONC CLASS II, SUPERSTRUCTURE	21	CY	\$ 700.00	\$ 14,490
400-2-10	CONC CLASS II, APPROACH SLABS	4	CY	\$ 387.00	\$ 1,703
400-2-11	CONC CLASS II, RETAINING WALLS	115	CY	\$ 804.00	\$ 92,460
400-4-5	CONC CLASS IV, SUBSTRUCTURE	58	CY	\$ 1,250.00	\$ 73,000
400-147	COMPOSITE NEOPRENE PADS	0.6	CF	\$ 1,500.00	\$ 900
415-1-3	REINF STEEL- RETAINING WALL	23,567.0	LB	\$ 2.00	\$ 47,134
415-1-4	REINF STEEL- SUPERSTRUCTURE	4,249.0	LB	\$ 2.00	\$ 8,498
415-1-5	REINF STEEL- SUBSTRUCTURE	11,978.0	LB	\$ 1.50	\$ 17,967
415-1-6	REINF STEEL- MISCELLANEOUS	5,588.0	LB	\$ 3.00	\$ 16,764
415-1-9	REINF STEEL- APPROACH SLABS	911.0	LB	\$ 1.00	\$ 911
450-2-36	PREST BEAMS: FLORIDA-I BEAM 36"	142.0	LF	\$ 203.00	\$ 28,826
455-34-3	PRESTRESSED CONCRETE PILING, 18" SQ	196.0	LF	\$ 91.00	\$ 17,836
455-143-3	TEST PILES-PREST CONCRETE, 18" SQ	226.0	LF	\$ 166.00	\$ 37,516
460-70-2	ALLUMINUM BULLET RAILING	271.0	LF	\$ 12.00	\$ 3,252
521-6-11	CONC PARAPET, PED/BIKE, 27"	271.0	LF	\$ 33.00	\$ 8,943
101-1	MOBILIZATION	10%	LS		\$ 39,451
999-25	CONTINGENCY	15%	LS		\$ 65,094
Site Work (Roadway, Pavement Markings)					\$ 412,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 30,119
102-60	WORK ZONE SIGN	3,120	ED	\$ 2.00	\$ 6,240
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	480	LF	\$ 20.00	\$ 9,600
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	15,900	ED	\$ 1.00	\$ 15,900
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	480	ED	\$ 4.00	\$ 1,920
102-74-6	CHANNELIZING DEVICE- PED LCD	960	ED	\$ 4.00	\$ 3,840
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP	670	ED	\$ 20.00	\$ 13,400
104-10-3	SEDIMENT BARRIER	460	LF	\$ 3.00	\$ 1,380
110-1-1	CLEARING & GRUBBING	0.35	AC	\$ 20,000.00	\$ 7,000
120-1	REGULAR EXCAVATION	100	CY	\$ 25.00	\$ 2,500
120-6	EMBANKMENT	200	CY	\$ 20.00	\$ 4,000
160-4	TYPE B STABILIZATION	400	SY	\$ 5.00	\$ 2,000
285-709	OPTIONAL BASE, BASE GROUP 09	300	SY	\$ 25.00	\$ 7,500
327-70-1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	1,300	SY	\$ 4.00	\$ 5,200
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	50	TN	\$ 150.00	\$ 7,500
337-7-73	ASPH CONC FC, TRAF C, FC-9.5, PG 76-22, ARB	90	TN	\$ 150.00	\$ 13,500
425-1-891	INLETS, BARRIER WALL, <10'	2	EA	\$ 5,000.00	\$ 10,000
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	20	LF	\$ 70.00	\$ 1,400
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	330	SY	\$ 50.00	\$ 16,500
527-2	DETECTABLE WARNINGS	80	SF	\$ 70.00	\$ 5,600
521-72-10	SHLDR CONC BARRIER WALL, RIGID SHLDR 42"	450	LF	\$ 350.00	\$ 157,500
570-1-2	PERFORMANCE TURF, SOD	100	SY	\$ 4.00	\$ 400
711-16-101	THERMOPLASTIC, STD-OTH, WHITE, SOLID, 6"	0.1	GM	\$ 4,000.00	\$ 400
711-16-131	THERMOPLASTIC, STD-OTH, WHITE, SKIP, 6"	0.1	GM	\$ 1,500.00	\$ 150
711-16-201	THERMOPLASTIC, STD-OTH, YELLOW, SOLID, 6"	0.1	GM	\$ 5,300.00	\$ 530
711-16-231	THERMOPLASTIC, STD-OTH, YELLOW, SKIP, 6"	0.1	GM	\$ 1,800.00	\$ 180
711-14-123	THERMOPLASTIC, PREFORM, WHITE, SOLID, 12"	210	LF	\$ 10.00	\$ 2,100
711-14-125	THERMOPLASTIC, PREFORM, WHITE, SOLID, 24"	170	LF	\$ 15.00	\$ 2,550
101-1	MOBILIZATION	10%	LS		\$ 30,119
999-25	CONTINGENCY	15%	LS		\$ 49,696
Total Construction Costs					\$ 912,000

4.3 Location 3 (Rowell’s Waterfront Park, Key Largo, MM ±104.6)

Table 4-7 – Location 3, Summary of Cost Estimates

Bridge Option	Temporary				Permanent
	3-A	3-B	3-C	3-D	3-E
Description	Purchase complete prefabricated bridge system	Purchase bridge system in parts (ACROW for truss & towers only, other parts from different fabricators)	Reuse existing ACROW truss & towers owned by FDOT. Purchase remaining parts from different fabricators.	Rent complete prefabricated bridge system for each event	Construct permanent pedestrian bridge structure
Fixed Costs					
Purchase prefabricated steel truss pedestrian bridge complete system	\$ 362,000				
Purchase ACROW prefabricated steel truss and towers only		\$ 153,000			
Purchase ACROW missing parts for truss and towers only			\$ 115,000		
Purchase two stairways for truss pedestrian bridge		\$ 105,000	\$ 105,000		
Purchase other parts (deck, fencing, handrails, etc) for truss pedestrian bridge		\$ 23,000	\$ 23,000		
Construct Permanent Bridge Structure, including foundations and concrete stairways with retaining walls					\$ 620,000
Construct Miscellaneous Site Work (Roadway; includes asphalt pad for temporary bridge foundation)	\$ 34,000	\$ 34,000	\$ 34,000	\$ 34,000	\$ 398,000
Sub-Total Fixed Costs	\$ 396,000	\$ 315,000	\$ 277,000	\$ 34,000	\$ 1,018,000
Engineering Services (Design. To prepare structural details to assemble truss, towers, stairways, and other parts from different fabricators)		\$ 57,500	\$ 57,500		
Engineering Services (Design. For temporary option: review of structures shop drawings and prepare design plans for site work. For permanent option: Prepare design plans for structures & site work as well as post-design review of shop drawings. 15%)	\$ 60,000	\$ 48,000	\$ 42,000	\$ 6,000	\$ 153,000
Engineering Services (CEI for construction of site work and permanent bridge, 12%)	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 123,000
Total Fixed Costs	\$ 461,000	\$ 425,500	\$ 381,500	\$ 45,000	\$ 1,294,000
Recurring Costs (per each event)					
Truss pedestrian bridge (Transportation)	\$ 4,500	\$ 4,500	\$ 4,500		
Truss pedestrian bridge (Installation)	\$ 30,000	\$ 30,000	\$ 30,000		
Truss pedestrian bridge (Removal)	\$ 30,000	\$ 30,000	\$ 30,000		
Rental for prefabricated steel truss pedestrian bridge complete system (including transportation, installation, and removal)				\$ 93,000	
Maintenance of Traffic (during bridge delivery, staging, installation, event, and removal)	\$ 21,000	\$ 21,000	\$ 21,000	\$ 21,000	
Engineering Services (CEI for field verification of bridge installation, 10% of each installation or 3% of rental)	\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000	
Sub-Total Recurring Costs (per each event)	\$ 88,500	\$ 88,500	\$ 88,500	\$ 117,000	\$ -
Engineering Services (Post-Design. For all temporary options: review MOT plans provided by contractor. For temporary rental option: review structures shop drawings provided by contractor. Present Value, 10% of per-event cost, paid for once annually)	\$ 2,100	\$ 2,100	\$ 2,100	\$ 11,400	
Annual Maintenance Cost (Present value, 1% of Initial Fixed Cost for purchased temporary bridge options, permanent bridge, and all site work)	\$ 3,960	\$ 3,150	\$ 2,770		\$ 10,180
Total Annual Recurring Costs (4 events per year)	\$ 360,060	\$ 359,250	\$ 358,870	\$ 479,400	\$ 10,180
Bridge Rehabilitation (Present Value. For temporary option: replace decking, railing, fencing, bearings, and stairs. For permanent option: Replace decking, railing, fencing, joints, bearings, and painting. 20% of initial cost. Paid once within 75-year period)	\$ 73,000	\$ 60,000	\$ 60,000		\$ 124,000
Total Accumulated Cost					
Total Accumulated Cost for First Year (4 events per year)	\$ 821,060	\$ 784,750	\$ 740,370	\$ 524,400	\$ 1,304,180
Total Accumulated Cost for 10 Years (Present Value with an Interest Rate of 5%)	\$ 3,241,288	\$ 3,199,533	\$ 3,152,599	\$ 3,746,800	\$ 1,372,607
Life Cycle Cost for 75 Years (Present Value with an Interest Rate of 5%)	\$ 7,549,758	\$ 7,485,475	\$ 7,434,071	\$ 9,386,095	\$ 1,616,357
Average Recurring Cost per Person (average expected 1,800 users per event)	\$ 49.17	\$ 49.17	\$ 49.17	\$ 65.00	\$ -
Annual Average Cost per Person (4 events per year with average 1,800 users per event. One-time fixed costs are distributed over 10 years equally)	\$ 56.41	\$ 55.81	\$ 55.14	\$ 67.21	\$ 19.39

Figure 4-3 – Location 3, Comparison of Accumulated Costs for Bridge Options



Notes
 (a) For the Temporary Bridge Options Year 0 includes procurement of bridge components and construction of site work.
 (b) For the Permanent Bridge Option, Year 0 includes all construction costs (structure and site work).
 (c) Temporary Bridge costs assumes reusing for 4 annual events at Location 3 (Rowell's Waterfront Park).

Feasibility Study for Pedestrian Bridges in the Florida Keys

**Table 4-8 – Location 3, Preliminary Construction Cost Estimate for Temporary Pedestrian Bridge
(Site Work Only)**

Pay Item	Description	Quantity	Unit	Unit Price	Total
Maintenance of Traffic (recurring costs, per each event)					\$ 21,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 1,888
102-60	WORK ZONE SIGN	280	ED	\$ 2.00	\$ 560
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	600	LF	\$ 20.00	\$ 12,000
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	1,900	ED	\$ 1.00	\$ 1,900
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	112	ED	\$ 4.00	\$ 448
102-74-6	CHANNELIZING DEVICE- PED LCD	112	ED	\$ 4.00	\$ 448
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP	56	ED	\$ 20.00	\$ 1,120
Site Work (Roadway)					\$ 34,000
104-10-3	SEDIMENT BARRIER	400	LF	\$ 4.00	\$ 1,600
110-1-1	CLEARING & GRUBBING	0.13	AC	\$ 20,000.00	\$ 2,600
120-6	EMBANKMENT	190	CY	\$ 20.00	\$ 3,800
160-4	TYPE B STABILIZATION	400	SY	\$ 5.00	\$ 2,000
285-704	OPTIONAL BASE, BASE GROUP 04	350	SY	\$ 25.00	\$ 8,750
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	30	TN	\$ 150.00	\$ 4,500
570-1-2	PERFORMANCE TURF, SOD	600	SY	\$ 5.00	\$ 3,000
101-1	MOBILIZATION	10%	LS		\$ 2,625
999-25	CONTINGENCY	15%	LS		\$ 4,331

Feasibility Study for Pedestrian Bridges in the Florida Keys

Table 4-9 – Location 3, Preliminary Construction Cost Estimate for Permanent Pedestrian Bridge (Structures and Site Work)

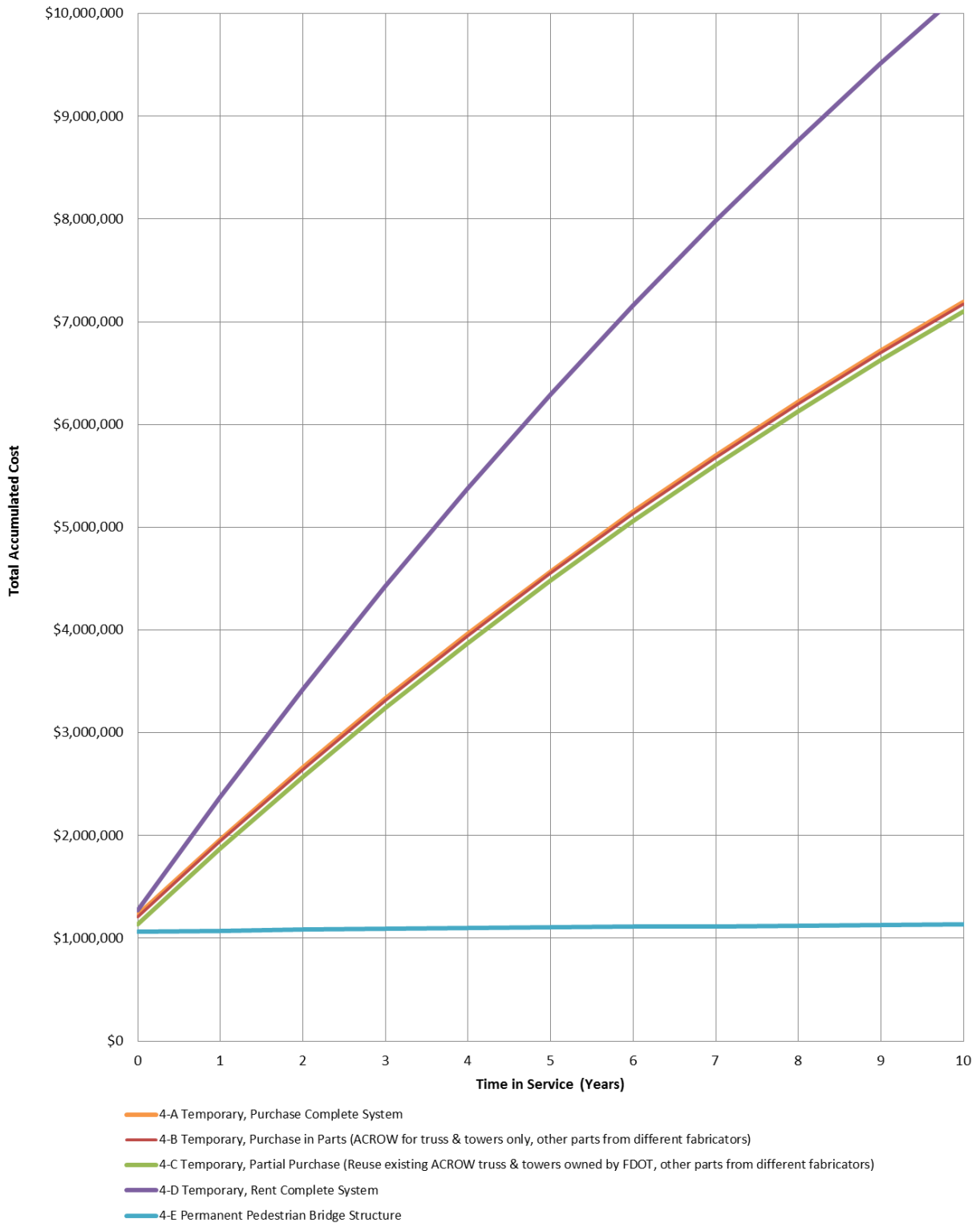
Pay Item	Description	Quantity	Unit	Unit Price	Total
Structures					\$ 620,000
120-6	EMBANKMENT	430	CY	\$ 18.00	\$ 7,737
400-0-13	CONC CLASS NS, GRAVITY WALL	29	CY	\$ 628.00	\$ 18,516
400-2-4	CONC CLASS II, SUPERSTRUCTURE	33	CY	\$ 700.00	\$ 23,305
400-2-10	CONC CLASS II, APPROACH SLABS	4	CY	\$ 387.00	\$ 1,703
400-2-11	CONC CLASS II, RETAINING WALLS	124	CY	\$ 804.00	\$ 99,857
400-4-5	CONC CLASS IV, SUBSTRUCTURE	59	CY	\$ 1,250.00	\$ 73,694
400-147	COMPOSITE NEOPRENE PADS	0.8	CF	\$ 1,500.00	\$ 1,125
415-1-3	REINF STEEL- RETAINING WALL	25,461.0	LB	\$ 2.00	\$ 50,922
415-1-4	REINF STEEL- SUPERSTRUCTURE	6,825.0	LB	\$ 2.00	\$ 13,650
415-1-5	REINF STEEL- SUBSTRUCTURE	12,085.9	LB	\$ 1.50	\$ 18,129
415-1-6	REINF STEEL- MISCELLANEOUS	6,035.0	LB	\$ 3.00	\$ 18,105
415-1-9	REINF STEEL- APPROACH SLABS	911.0	LB	\$ 1.00	\$ 911
450-2-54	PREST BEAMS: FLORIDA-I BEAM 54"	238.0	LF	\$ 272.00	\$ 64,736
455-34-3	PRESTRESSED CONCRETE PILING, 18" SQ	294.0	LF	\$ 91.00	\$ 26,754
455-143-3	TEST PILES-PREST CONCRETE, 18" SQ	324.0	LF	\$ 166.00	\$ 53,784
460-70-2	ALLUMINUM BULLET RAILING	371.0	LF	\$ 12.00	\$ 4,452
521-6-11	CONC PARAPET, PED/BIKE, 27"	371.0	LF	\$ 33.00	\$ 12,243
101-1	MOBILIZATION	10%	LS		\$ 48,962
999-25	CONTINGENCY	15%	LS		\$ 80,788
Roadway					\$ 398,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 28,819
102-60	WORK ZONE SIGN	2,400	ED	\$ 2.00	\$ 4,800
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	600	LF	\$ 20.00	\$ 12,000
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	15,900	ED	\$ 1.00	\$ 15,900
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	960	ED	\$ 4.00	\$ 3,840
102-74-6	CHANNELIZING DEVICE- PED LCD	960	ED	\$ 4.00	\$ 3,840
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP	268	ED	\$ 20.00	\$ 5,360
104-10-3	SEDIMENT BARRIER	600	LF	\$ 3.00	\$ 1,800
110-1-1	CLEARING & GRUBBING	0.35	AC	\$ 20,000.00	\$ 7,000
120-6	EMBANKMENT	200	CY	\$ 20.00	\$ 4,000
160-4	TYPE B STABILIZATION	500	SY	\$ 5.00	\$ 2,500
285-704	OPTIONAL BASE, BASE GROUP 04	450	SY	\$ 20.00	\$ 9,000
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	25	TN	\$ 150.00	\$ 3,750
334-1-14	SUPERPAVE ASPHALTIC CONC, TRAFFIC D	50	TN	\$ 150.00	\$ 7,500
337-7-24	ASPH CONC FC, FC-5, PG 76-22, ARB	20	TN	\$ 150.00	\$ 3,000
521-72-10	SHLDR CONC BARRIER WALL, RIGID SHLDR 42"	450	LF	\$ 350.00	\$ 157,500
544-75-1	CRASH CUSHION	2	EA	\$ 20,000.00	\$ 40,000
570-1-2	PERFORMANCE TURF, SOD	1,000	SY	\$ 4.00	\$ 4,000
101-1	MOBILIZATION	10%	LS		\$ 28,819
999-25	CONTINGENCY	15%	LS		\$ 51,874
Total Construction Costs					\$ 1,018,000

4.4 Location 4 (Islamorada, Upper Matecumbe Key, MM ±81.6)

Table 4-10 – Location 4, Summary of Cost Estimates

Bridge Option	Temporary				Permanent
	4-A	4-B	4-C	4-D	4-E
Description	Purchase complete prefabricated bridge system for reuse at each event	Purchase bridge in parts for reuse at each event (ACROW for truss only; parts from different fabricators)	Reuse existing ACROW truss owned by FDOT and purchase remaining parts from different fabricators	Rent complete prefabricated bridge system for each event	Construct permanent pedestrian bridge structure
Fixed Costs					
Purchase prefabricated steel truss pedestrian bridge complete system	\$ 301,000				
Purchase ACROW prefabricated steel truss and towers only		\$ 118,000			
Purchase ACROW missing parts for truss and towers only			\$ 56,000		
Purchase two stairways for truss pedestrian bridge		\$ 105,000	\$ 105,000		
Purchase other parts (deck, fencing, handrails, etc) for truss pedestrian bridge		\$ 17,500	\$ 17,500		
Construct Permanent Bridge Structure, including foundations and concrete stairways with retaining walls					\$ 506,000
Construct Miscellaneous Site Work (Roadway, Signing, Pavement Markings, Signalization, & Lighting; includes permanent crosswalk for all options and asphalt pad for temporary bridge foundation)	\$ 87,000	\$ 87,000	\$ 87,000	\$ 87,000	\$ 326,000
Sub-Total Fixed Costs	\$ 388,000	\$ 327,500	\$ 265,500	\$ 87,000	\$ 832,000
Engineering Services (Design. To prepare structural details to assemble truss, towers, stairways, and other parts from different fabricators)		\$ 50,000	\$ 50,000		
Engineering Services (Design. For temporary option: review of structures shop drawings and prepare design plans for site work. For permanent option: Prepare design plans for structures & site work as well as post-design review of shop drawings. 15%)	\$ 59,000	\$ 50,000	\$ 40,000	\$ 14,000	\$ 125,000
Engineering Services (CEI for construction of site work and permanent bridge, 12%)	\$ 11,000	\$ 11,000	\$ 11,000	\$ 11,000	\$ 100,000
Total Fixed Costs	\$ 458,000	\$ 438,500	\$ 366,500	\$ 112,000	\$ 1,057,000
Recurring Costs (per each event)					
Truss pedestrian bridge (Transportation)	\$ 3,000	\$ 3,000	\$ 3,000		
Truss pedestrian bridge (Installation)	\$ 20,000	\$ 20,000	\$ 20,000		
Truss pedestrian bridge (Removal)	\$ 20,000	\$ 20,000	\$ 20,000		
Rental for prefabricated steel truss pedestrian bridge complete system (including transportation, installation, and removal)				\$ 72,000	
Maintenance of Traffic (during bridge delivery, staging, installation, event, and removal)	\$ 14,000	\$ 14,000	\$ 14,000	\$ 14,000	
Engineering Services (CEI for field verification of bridge installation, 10% of each installation or 3% of rental)	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,500	
Sub-Total Recurring Costs (per each event)	\$ 59,000	\$ 59,000	\$ 59,000	\$ 88,500	\$ -
Engineering Services (Post-Design. For all temporary options: review MOT plans provided by contractor. For temporary rental option: review structures shop drawings provided by contractor. Present Value, 10% of per-event cost, paid for once annually)	\$ 1,400	\$ 1,400	\$ 1,400	\$ 8,600	
Annual Maintenance Cost (Present value, 1% of Initial Fixed Cost for purchased temporary bridge options, permanent bridge, and all site work)	\$ 4,000	\$ 4,000	\$ 4,000	\$ 1,000	\$ 9,000
Total Annual Recurring Costs (13 events per year)	\$ 772,400	\$ 772,400	\$ 772,400	\$ 1,160,100	\$ 9,000
Bridge Rehabilitation (Present Value. For temporary option: replace decking, railing, fencing, bearings, and stairs. For permanent option: Replace decking, railing, fencing, joints, bearings, and painting. 20% of initial cost. Paid once within 75-year period)	\$ 61,000	\$ 50,000	\$ 50,000		\$ 102,000
Total Accumulated Cost					
Total Accumulated Cost for First Year (13 events per year)	\$ 1,230,400	\$ 1,210,900	\$ 1,138,900	\$ 1,272,100	\$ 1,066,000
Total Accumulated Cost for 10 Years (Present Value with an Interest Rate of 5%)	\$ 6,422,268	\$ 2,770,412	\$ 2,698,412	\$ 3,624,868	\$ 1,147,000
Life Cycle Cost for 75 Years (Present Value with an Interest Rate of 5%)	\$ 15,569,191	\$ 15,538,691	\$ 15,466,691	\$ 22,716,514	\$ 1,334,365
Average Recurring Cost per Person (average expected 300 users per event)	\$ 168.57	\$ 168.57	\$ 168.57	\$ 252.86	\$ -
Annual Average Cost per Person (13 events per year with average 300 users per event. One-time fixed costs are distributed over 10 years equally)	\$ 179.82	\$ 179.40	\$ 177.81	\$ 257.43	\$ 25.21

Figure 4-4 – Location 4, Comparison of Accumulated Costs for Bridge Options



Notes
 (a) For the Temporary Bridge Options Year 0 includes procurement of bridge components and construction of site work.
 (b) For the Permanent Bridge Option, Year 0 includes all construction costs (structure and site work).
 (c) Temporary Bridge costs assumes reusing for monthly events (13 times per year) at Location 4 (MM 81.6, Upper Matecumbe Key, Morada Bay Cafe & Pierre's Restaurant, Morada Way Arts & Cultural District).

Feasibility Study for Pedestrian Bridges in the Florida Keys

Table 4-11 – Location 4, Preliminary Construction Cost Estimate for Temporary Pedestrian Bridge (Site Work Only)

Pay Item	Description	Quantity	Unit	Unit Price	Total
Maintenance of Traffic (per each event)					\$ 14,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 1,264
102-60	WORK ZONE SIGN	336	ED	\$ 2.00	\$ 672
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	260	LF	\$ 20.00	\$ 5,200
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	1,900	ED	\$ 1.00	\$ 1,900
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	84	ED	\$ 4.00	\$ 336
102-74-6	CHANNELIZING DEVICE- PED LCD	112	ED	\$ 4.00	\$ 448
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP	84	ED	\$ 20.00	\$ 1,680
Site Work (Roadway, Signing, Pavement Markings, Signalization, & Lighting)					\$ 87,000
104-10-3	SEDIMENT BARRIER	220	LF	\$ 4.00	\$ 880
110-1-1	CLEARING & GRUBBING	0.10	AC	\$ 20,000.00	\$ 2,000
120-1	REGULAR EXCAVATION	80	CY	\$ 25.00	\$ 2,000
120-6	EMBANKMENT	190	CY	\$ 20.00	\$ 3,800
160-4	TYPE B STABILIZATION	400	SY	\$ 5.00	\$ 2,000
285-704	OPTIONAL BASE, BASE GROUP 04	350	SY	\$ 25.00	\$ 8,750
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	15	TN	\$ 150.00	\$ 2,250
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	30	SY	\$ 50.00	\$ 1,500
527-2	DETECTABLE WARNINGS	64	SF	\$ 70.00	\$ 4,480
570-1-2	PERFORMANCE TURF, SOD	600	SY	\$ 5.00	\$ 3,000
630-2-11	CONDUIT, F& I, OPEN TRENCH	50	LF	\$ 6.00	\$ 300
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	50	LF	\$ 20.00	\$ 1,000
635-2-12	PULL & SPLICE BOX, F&I, 24" X 36"	3	EA	\$ 1,200.00	\$ 3,600
711-14-123	THERMOPLASTIC, PREFORM, WHITE, SOLID, 12"	106	LF	\$ 10.00	\$ 1,060
711-14-125	THERMOPLASTIC, PREFORM, WHITE, SOLID, 24"	80	LF	\$ 15.00	\$ 1,200
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2	AS	\$ 320.00	\$ 640
700-11-241	ELECTRONIC DISPLAY SIGN, FURNISH & INSTALL GROUND MOUNT-SOLAR POWER, ELECT WARNING W/FLASHING BEACON, UP TO 12	2	AS	\$ 12,000.00	\$ 24,000
715-1-12	LIGHTING CONDUCTORS, F&I, INSUL, NO. 8-6	300	LF	\$ 3.00	\$ 900
715-4-119	LIGHT POLE COMP, F&I, WS150, CUSTOM HT	1	EA	\$ 4,000.00	\$ 4,000
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	1	EA	\$ 800.00	\$ 800
101-1	MOBILIZATION	10%	LS		\$ 6,816
999-25	CONTINGENCY	15%	LS		\$ 11,246

Feasibility Study for Pedestrian Bridges in the Florida Keys

Table 4-12 – Location 4, Preliminary Construction Cost Estimate for Permanent Pedestrian Bridge (Structures and Site Work)

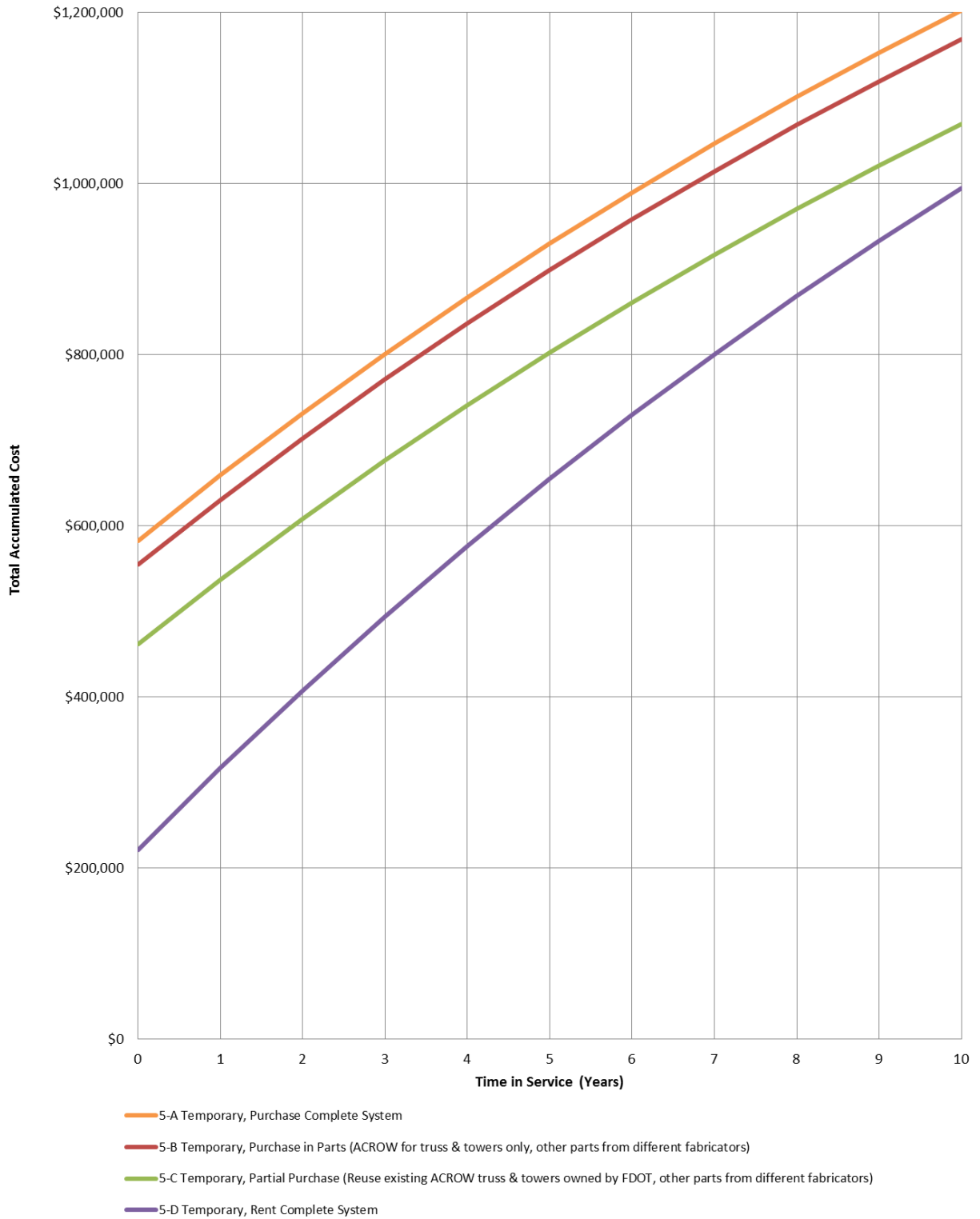
Pay Item	Description	Quantity	Unit	Unit Price	Total
Structures					\$ 506,000
120-6	EMBANKMENT	398	CY	\$ 18.00	\$ 7,164
400-0-13	CONC CLASS NS, GRAVITY WALL	27	CY	\$ 628.00	\$ 17,144
400-2-4	CONC CLASS II, SUPERSTRUCTURE	21	CY	\$ 700.00	\$ 14,490
400-2-10	CONC CLASS II, APPROACH SLABS	4	CY	\$ 387.00	\$ 1,703
400-2-11	CONC CLASS II, RETAINING WALLS	115	CY	\$ 804.00	\$ 92,460
400-4-5	CONC CLASS IV, SUBSTRUCTURE	58	CY	\$ 1,250.00	\$ 73,000
400-147	COMPOSITE NEOPRENE PADS	0.6	CF	\$ 1,500.00	\$ 900
415-1-3	REINF STEEL- RETAINING WALL	23,567.0	LB	\$ 2.00	\$ 47,134
415-1-4	REINF STEEL- SUPERSTRUCTURE	4,249.0	LB	\$ 2.00	\$ 8,498
415-1-5	REINF STEEL- SUBSTRUCTURE	11,978.0	LB	\$ 1.50	\$ 17,967
415-1-6	REINF STEEL- MISCELLANEOUS	5,588.0	LB	\$ 3.00	\$ 16,764
415-1-9	REINF STEEL- APPROACH SLABS	911.0	LB	\$ 1.00	\$ 911
450-2-45	PREST BEAMS: FLORIDA-I BEAM 45"	142.0	LF	\$ 238.00	\$ 33,796
455-34-3	PRESTRESSED CONCRETE PILING, 18" SQ	196.0	LF	\$ 91.00	\$ 17,836
455-143-3	TEST PILES-PREST CONCRETE, 18" SQ	226.0	LF	\$ 166.00	\$ 37,516
460-70-2	ALLUMINUM BULLET RAILING	271.0	LF	\$ 12.00	\$ 3,252
521-6-11	CONC PARAPET, PED/BIKE, 27"	271.0	LF	\$ 33.00	\$ 8,943
101-1	MOBILIZATION	10%	LS		\$ 39,948
999-25	CONTINGENCY	15%	LS		\$ 65,914
Roadway, Signing, Pavement Markings, Signalization, & Lighting					\$ 326,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 23,817
102-60	WORK ZONE SIGN	3,120	ED	\$ 2.00	\$ 6,240
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	260	LF	\$ 20.00	\$ 5,200
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	15,900	ED	\$ 1.00	\$ 15,900
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	720	ED	\$ 4.00	\$ 2,880
102-74-6	CHANNELIZING DEVICE- PED LCD	960	ED	\$ 4.00	\$ 3,840
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN,TEMP	268	ED	\$ 20.00	\$ 5,360
104-10-3	SEDIMENT BARRIER	250	LF	\$ 3.00	\$ 750
110-1-1	CLEARING & GRUBBING	0.10	AC	\$ 20,000.00	\$ 2,000
120-1	REGULAR EXCAVATION	300	CY	\$ 25.00	\$ 7,500
120-6	EMBANKMENT	400	CY	\$ 20.00	\$ 8,000
160-4	TYPE B STABILIZATION	400	SY	\$ 5.00	\$ 2,000
285-704	OPTIONAL BASE,BASE GROUP 04	350	SY	\$ 20.00	\$ 7,000
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	20	TN	\$ 150.00	\$ 3,000
334-1-14	SUPERPAVE ASPHALTIC CONC, TRAFFIC D	35	TN	\$ 150.00	\$ 5,250
337-7-24	ASPH CONC FC, FC-5, PG 76-22, ARB	15	TN	\$ 150.00	\$ 2,250
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	30	SY	\$ 50.00	\$ 1,500
527-2	DETECTABLE WARNINGS	80	SF	\$ 70.00	\$ 5,600
521-72-10	SHLDR CONC BARRIER WALL,RIGID SHLDR 42"	200	LF	\$ 350.00	\$ 70,000
544-75-1	CRASH CUSHION	2	EA	\$ 20,000.00	\$ 40,000
570-1-2	PERFORMANCE TURF, SOD	1,000	SY	\$ 4.00	\$ 4,000
630-2-11	CONDUIT, F& I, OPEN TRENCH	50	LF	\$ 6.00	\$ 300
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	50	LF	\$ 20.00	\$ 1,000
635-2-12	PULL & SPLICE BOX, F&I, 24" X 36"	3	EA	\$ 1,200.00	\$ 3,600
711-14-123	THERMOPLASTIC, PREFORM, WHITE, SOLID,12"	106	LF	\$ 10.00	\$ 1,060
711-14-125	THERMOPLASTIC, PREFORM, WHITE, SOLID,24"	80	LF	\$ 15.00	\$ 1,200
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2	AS	\$ 320.00	\$ 640
700-11-241	ELECTRONIC DISPLAY SIGN, FURNISH & INSTALL GROUND MOUNT- SOLAR POWER, ELECT WARNING W/FLASHING BEACON, UP TO 12 SF	2	AS	\$ 12,000.00	\$ 24,000
715-1-12	LIGHTING CONDUCTORS, F&I, INSUL,NO.8-6	300	LF	\$ 3.00	\$ 900
715-4-119	LIGHT POLE COMP, F&I, WS150,CUSTOM HT	1	EA	\$ 4,000.00	\$ 4,000
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	1	EA	\$ 800.00	\$ 800
101-1	MOBILIZATION	10%	LS		\$ 23,817
999-25	CONTINGENCY	15%	LS		\$ 39,298
Total Construction Costs					\$ 832,000

4.5 Location 5 (Marathon, Children’s Rotary Park, MM ±51.2)

Table 4-13 – Location 5, Summary of Cost Estimates

Bridge Option	Temporary			
	5-A	5-B	5-C	5-D
Description	Purchase complete prefabricated bridge system for reuse at each event	Purchase bridge in parts for reuse at each event (ACROW for truss only; parts from different fabricators)	Reuse existing ACROW truss owned by FDOT and purchase remaining parts from different fabricators	Rent complete prefabricated bridge system for each event
Fixed Costs				
Purchase prefabricated steel truss pedestrian bridge complete system	\$ 332,000			
Purchase ACROW prefabricated steel truss and towers only		\$ 136,000		
Purchase ACROW missing parts for truss and towers only			\$ 56,000	
Purchase two stairways for truss pedestrian bridge		\$ 105,000	\$ 105,000	
Purchase other parts (deck, fencing, handrails, etc) for truss pedestrian bridge		\$ 20,000	\$ 20,000	
Construct Permanent Bridge Structure, including foundations and concrete stairways with retaining walls				
Construct Miscellaneous Site Work (Roadway, Signing, Pavement Markings, Signalization, & Lighting; includes permanent crosswalk for all options and asphalt pad for temporary bridge foundation)	\$ 94,000	\$ 94,000	\$ 94,000	\$ 94,000
Sub-Total Fixed Costs	\$ 426,000	\$ 355,000	\$ 275,000	\$ 94,000
Engineering Services (Design. To prepare structural details to assemble truss, towers, stairways, and other parts from different fabricators)		\$ 53,750	\$ 53,750	
Engineering Services (Design. For temporary option: review of structures shop drawings and prepare design plans for site work. For permanent option: Prepare design plans for structures & site work as well as post-design review of shop drawings. 15%)	\$ 64,000	\$ 54,000	\$ 42,000	\$ 15,000
Engineering Services (CEI for construction of site work and permanent bridge, 12%)	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000
Total Fixed Costs	\$ 502,000	\$ 474,750	\$ 382,750	\$ 121,000
Recurring Costs (per each event)				
Truss pedestrian bridge (Transportation)	\$ 4,000	\$ 4,000	\$ 4,000	
Truss pedestrian bridge (Installation)	\$ 25,000	\$ 25,000	\$ 25,000	
Truss pedestrian bridge (Removal)	\$ 25,000	\$ 25,000	\$ 25,000	
Rental for prefabricated steel truss pedestrian bridge complete system (including transportation, installation, and removal)				\$ 71,027
Maintenance of Traffic (during bridge delivery, staging, installation, event, and removal)	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000
Engineering Services (CEI for field verification of bridge installation, 10% of each installation or 3% of rental)	\$ 2,500	\$ 2,500	\$ 2,500	\$ 2,500
Sub-Total Recurring Costs (per each event)	\$ 74,000	\$ 74,000	\$ 74,000	\$ 91,027
Engineering Services (Post-Design. For all temporary options: review MOT plans provided by contractor. For temporary rental option: review structures shop drawings provided by contractor. Present Value, 10% of per-event cost, paid for once annually)	\$ 2,000	\$ 2,000	\$ 2,000	\$ 9,103
Annual Maintenance Cost (Present value, 1% of Initial Fixed Cost for purchased temporary bridge options, permanent bridge, and all site work)	\$ 4,260	\$ 3,550	\$ 2,750	
Total Annual Recurring Costs (1 event per year)	\$ 80,260	\$ 79,550	\$ 78,750	\$ 100,130
Bridge Rehabilitation (Present Value. For temporary option: replace decking, railing, fencing, bearings, and stairs. For permanent option: Replace decking, railing, fencing, joints, bearings, and painting. 20% of initial cost. Paid once within 75-year period)	\$ 67,000	\$ 60,000	\$ 60,000	
Total Accumulated Cost				
Total Accumulated Cost for First Year (1 event per year)	\$ 582,260	\$ 554,300	\$ 461,500	\$ 221,130
Total Accumulated Cost for 10 Years (Present Value with an Interest Rate of 5%)	\$ 1,121,746	\$ 1,089,014	\$ 990,837	\$ 894,179
Life Cycle Cost for 75 Years (Present Value with an Interest Rate of 5%)	\$ 2,132,864	\$ 2,084,779	\$ 1,977,191	\$ 2,072,034
Average Recurring Cost per Person (average expected 750 users per event)	\$ 98.67	\$ 98.67	\$ 98.67	\$ 121.37
Annual Average Cost per Person (1 event per year with average 750 users per event. One-time fixed costs are distributed over 10 years equally)	\$ 173.95	\$ 169.37	\$ 156.03	\$ 149.64

Figure 4-5 – Location 5, Comparison of Accumulated Costs for Bridge Options



Notes
 (a) For the Temporary Bridge Options Year 0 includes procurement of bridge components and construction of site work.
 (b) For the Permanent Bridge Option, Year 0 includes all construction costs (structure and site work).
 (c) Temporary Bridge costs assumes reusing for 1 annual event at Location 5 (Marathon Children's Park).

Feasibility Study for Pedestrian Bridges in the Florida Keys

Table 4-14 – Location 5, Preliminary Construction Cost Estimate for Temporary Pedestrian Bridge (Site Work Only)

Pay Item	Description	Quantity	Unit	Unit Price	Total
Maintenance of Traffic (per each event)					\$ 20,000
101-2	MAINTENANCE OF TRAFFIC	10%	LS		\$ 1,754
102-60	WORK ZONE SIGN	280	ED	\$ 2.00	\$ 560
102-71-14	BARRIER WALL, TEMP, F&I, TYPE K	592	LF	\$ 20.00	\$ 11,840
102-74-1	CHANNEL DEVICE-TYPS I,II,DI,VP, DRUM, LC	1,000	ED	\$ 1.00	\$ 1,000
102-74-2	CHANNELIZING DEVICE, TYPE III, 6'	84	ED	\$ 4.00	\$ 336
102-74-6	CHANNELIZING DEVICE- PED LCD	70	ED	\$ 4.00	\$ 280
102-89-1	TEMPORARY CRASH CUSHION, RED OPT	2	LO	\$ 1,200.00	\$ 2,400
102-99	PORTABLE CHANGEABLE MESSAGE SIGN, TEMP	56	ED	\$ 20.00	\$ 1,120
Site Work (Roadway, Signing, Pavement Markings, Signalization, & Lighting)					\$ 94,000
104-10-3	SEDIMENT BARRIER	250	LF	\$ 4.00	\$ 1,000
110-1-1	CLEARING & GRUBBING	0.25	AC	\$ 20,000.00	\$ 5,000
120-1	REGULAR EXCAVATION	60	CY	\$ 25.00	\$ 1,500
120-6	EMBANKMENT	330	CY	\$ 20.00	\$ 6,600
160-4	TYPE B STABILIZATION	350	SY	\$ 5.00	\$ 1,750
285-704	OPTIONAL BASE, BASE GROUP 04	300	SY	\$ 25.00	\$ 7,500
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	25	TN	\$ 150.00	\$ 3,750
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	30	SY	\$ 50.00	\$ 1,500
527-2	DETECTABLE WARNINGS	64	SF	\$ 70.00	\$ 4,480
570-1-2	PERFORMANCE TURF, SOD	600	SY	\$ 5.00	\$ 3,000
630-2-11	CONDUIT, F& I, OPEN TRENCH	50	LF	\$ 6.00	\$ 300
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	50	LF	\$ 20.00	\$ 1,000
635-2-12	PULL & SPLICE BOX, F&I, 24" X 36"	3	EA	\$ 1,200.00	\$ 3,600
711-14-123	THERMOPLASTIC, PREFORM, WHITE, SOLID, 12"	106	LF	\$ 10.00	\$ 1,060
711-14-125	THERMOPLASTIC, PREFORM, WHITE, SOLID, 24"	80	LF	\$ 15.00	\$ 1,200
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2	AS	\$ 320.00	\$ 640
700-11-241	ELECTRONIC DISPLAY SIGN, FURNISH & INSTALL GROUND MOUNT-SOLAR POWER, ELECT WARNING W/FLASHING BEACON, UP TO 12 SF	2	AS	\$ 12,000.00	\$ 24,000
715-1-12	LIGHTING CONDUCTORS, F&I, INSUL, NO. 8-6	300	LF	\$ 3.00	\$ 900
715-4-119	LIGHT POLE COMP, F&I, WS150, CUSTOM HT	1	EA	\$ 4,000.00	\$ 4,000
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	1	EA	\$ 800.00	\$ 800
101-1	MOBILIZATION	10%	LS		\$ 7,358
999-25	CONTINGENCY	15%	LS		\$ 12,141

List of Appendices

A. Background Research

- A-1. FDOT Office of Maintenance, Temporary Pedestrian Bridge Summary White Paper, August 11, 2016
- A-2. ACROW Bridge Details, 8FT SSR Pedestrian Bridge
- A-3. Nussli Bridge: Technical Data Sheet for Demountable Bridge System
- A-4. Mabey Bridge: News for the Use of the Temporary Bridges for Grand Prix Debut in Modesto, CA.
- A-5. Quick Bridge: Brochure for the Quick Bridge System

B. Temporary Bridge Quotes

- B-1. Temporary Bridge RFQ
- B-2. ACROW
- B-3. ACROW (Partial)
- B-4. Contech
- B-5. GatorBridge
- B-6. Nussli
- B-7. Quick Bridge Systems
- B-8. BGR Bridge

C. Right of Way Maps

- C-1. Location 1 (Islamorada Founders Park, MM ±87)
- C-2. Location 2 (Marathon Community Park, MM ±49)
- C-3. Location 3 (Rowell's Waterfront Park, Key Largo, MM ±104.6)
- C-4. Location 4 (Islamorada, Upper Matecumbe Key, MM ±81.6)
- C-5. Location 5 (Marathon, Children's Rotary Park, MM ±51.2)

D. Plans from Previous and Programmed Projects

- D-1. FPID 405646-1-52-01 (FY 2008)
- D-2. FPID 414649-1-52-01 (FY 2008)
- D-3. FPID 419846-1-52-01 (FY 2013)
- D-4. FPID 419846-2-52-01 (FY 2014)
- D-5. FPID 419854-1-52-01 (FY 2010)
- D-6. FPID 425600-3-52-01 (FY 2013)
- D-7. FPID 425600-6-52-01 (FY 2016)
- D-8. FPID 429187-1-52-01 (FY 2015)
- D-9. FPID 429187-2-52-01 (FY 2017)
- D-10. FPID 432303-1-52-01 (FY 2015)