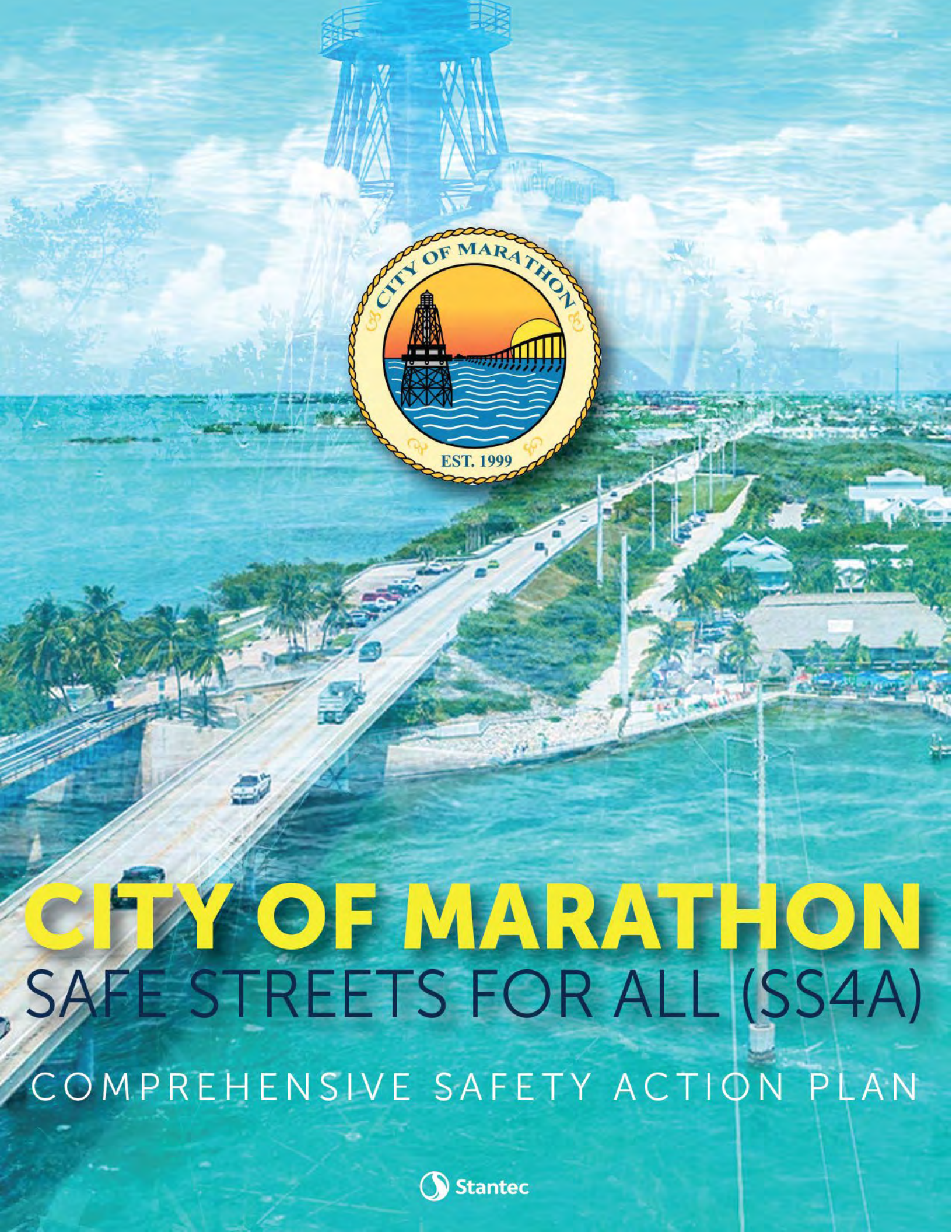


CITY OF MARATHON

SAFE STREETS FOR ALL (SS4A)

COMPREHENSIVE SAFETY ACTION PLAN

Stantec

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Contents

Acknowledgements **2**
City Council 2
City of Marathon 2
Consultant Team 2
Stakeholder Group 2

Executive Summary **7**
Crash trends 7
Action steps 8
Policy and process change recommendations 8
Infrastructure recommendations 9

1 Introduction **11**
US 1 in Marathon 11

2 Existing Policy Review **13**
Guiding principles 13
Vision Zero and The Safe System Approach 14
Statewide initiatives 15
Plans, programs, and policy landscape 16

3 Community Engagement **19**
Engagement findings 20
Conversational engagement methods 21
Stakeholder working group 21
In-person public meetings 22
Community events 22
Online engagement 23
Outreach and promotions 23

4 Crash Trends and Patterns **24**
Crash factors 24
Crash severity 25
Road user modes 28
Crash types 29
Environmental 30
Temporal 31
Behavioral 33
What does this mean for safety? 34
High Injury Network (HIN) 35
High Injury Network (HIN) insights 36
Top five intersections 37
Observations 38
Insights 38

5 Demographic Considerations **40**
Underserved communities 40
Findings 41

6 Recommended Safety Actions **43**

Policy recommendations 43
Policy screening 43
Decision framework 45
Recommended safety policies 45
Further consideration 46
Not advancing 48
Infrastructure recommendations 50
Top five intersections 50
Citywide treatments 63

7 Progress and Transparency Scorecard 65
Monitoring, evaluation and reporting 65
Partnerships 66
Looking ahead 67

Table of Figures

Figure ES 1: Crashes by Severity and Year 7
Figure ES 2: High Injury Network 8
Figure 1 US 1 in Marathon 11
Figure 2 Safe System Approach 14
Figure 3 FDOT's Target Zero Program 15
Figure 4 Planning Process 16
Figure 5 US 1 Transportation Master Plan 18
Figure 6 Key Community Concerns 20
Figure 7 In-person public meeting 22
Figure 8 Community Events 22
Figure 9 Online Engagement Survey 23
Figure 10 Outreach and Promotions 23
Figure 11 Crash Numbers 24
Figure 12 Crash Factors 24
Figure 13 Injury Outcome Pyramids 25
Figure 14 Crashes by Year and Severity 25
Figure 15 FSI Crashes 26
Figure 16 FSI Crash Type 26
Figure 17 FSI Contributions 27
Figure 18 Road User Modes - Total Crashes 28
Figure 19 Road User Modes - FSI Crashes 28
Figure 20 Crash Types - Total Crashes 29
Figure 21 Crash Types - FSI Crashes 29
Figure 22 Total Crashes - Lighting Conditions 30
Figure 23 FSI Crashes - Lighting Conditions 30
Figure 24 Total Crashes - Month 31
Figure 25 FSI Crashes - Month 31
Figure 26 Total Crashes - Day 32
Figure 27 FSI Crashes - Day 32
Figure 28 Behavioral Total Crashes 33
Figure 29 Behavioral FSI Crashes 33
Figure 30 High Injury Network 35
Figure 31 HIN Insights 36

Figure 32 Near-miss intersections Near-miss incidents 37
Figure 33 Near-Miss at US 1 and 39th Street 38
Figure 34 Near-Miss Insights 38
Figure 35 Underserved Census Tracts 40
Figure 36 Policy Screening Meeting (Photo) 43
Figure 37 US 1 & 39th Street 51
Figure 38 US 1 & Sombrero Beach Road 53
Figure 39 US 1 & 73rd Street/Aviation Blvd 55
Figure 40 Roadside Advertising Sign Obstructing Visibility at US 1 and 73rd Street 56
Figure 41 US 1 & Sadowski Causeway 59
Figure 42 Existing Conditions at US 1 & Coco Plum Drive 61
Figure 43 US 1 & Coco Plum Drive 61

Table of Tables

Table 1 HIN Metrics 36
Table 2 Potential Disadvantage Indicators 41
Table 3 Policy Screening Scorecard 44
Table 4 Marathon Florida Toolbox of Countermeasures 64
Table 5 Example of Policy Implementation Tracking from Other Municipality Vision Zero Program 66

Appendices

Appendix A SS4A Leadership Commitment and Goal Setting
Appendix B City of Marathon SS4A Community Engagement Plan
Appendix C SS4A Safety Analysis Memorandum
Appendix D SS4A Demographics Analysis
Appendix E Stakeholder Meeting #3
Appendix F Technical Memorandum – SR 5/Overseas Highway between 36 Street and 39 Street
Appendix G Intersection Safety Study – SR 5/US 1 (Overseas Highway) and Sombrero Beach Road
Appendix H Signalization Plan – Signalization Improvements at Sadowski Causeway

Acronyms and Abbreviations

American Community Survey (ACS)

Comprehensive Safety Action Plan (CSAP)

Eastbound (EB)

Emergency Medical Services (EMS)

Fatal and serious injuries (FSI)

Florida Department of Transportation (FDOT)

High Injury Network (HIN)

Northbound (NB)

Public information officer (PIO)

Property damage only (PDO)

Safe Streets and Roads for All (SS4A)

Southbound (SB)

Vision Zero (VZ)

Vulnerable road users (VRU)

Underserved Communities (UCT)

United States Highway 1 (US 1)

United States Department of Transportation (USDOT)

Westbound (WB)

Executive Summary

Every person has the right to travel freely without injury or death; however, from 2019 through 2024, 78 people were seriously injured, and 10 people died on public roads in the City of Marathon (the City). To address this public health crisis, the City applied to the Safe Streets and Roads for All (SS4A) grant program and was awarded funds to develop a Comprehensive Safety Action Plan (CSAP) to prevent roadway fatalities and serious injuries in the City.

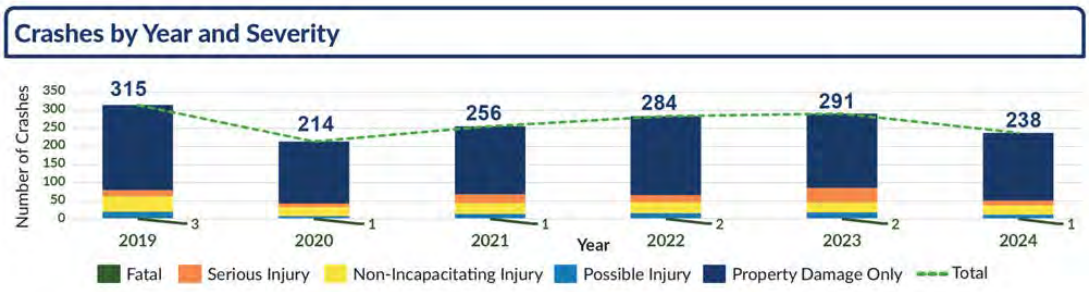
This plan is grounded in the Safe System Approach, a modern framework for improving road and transportation safety, particularly of crashes that are more severe in nature. It combines data-driven analysis with community engagement to identify and prioritize targeted safety improvements across the City's road network, establishing a clear path for the City to move toward zero crashes. Local road safety plans, such as this CSAP, are one of many proven safety countermeasures promoted by the Federal Highway Administration (FHWA) and are shown to have an impact in the reduction of FSI (fatal and serious injury) crashes[1].

Crash trends

Between 2019 and 2024, a total of 1,598 crashes occurred on public roads in the City. Total crashes declined from 2019 to 2020, reflecting reduced travel during the COVID-19 pandemic. However, crashes increased by 36% between 2020 and 2023, indicating a period of increased crash experience. From 2023 to 2024, overall crash frequency declined.

Marathon had a total of 88 fatal and serious injuries (FSI) crashes between 2019 and 2024. Similarly to total crashes, FSI crashes declined between 2019 and 2020 and increased 125% between 2020 and 2023. From 2023 to 2024, FSI crashes declined. **Figure ES-1** displays crashes by year and severity.

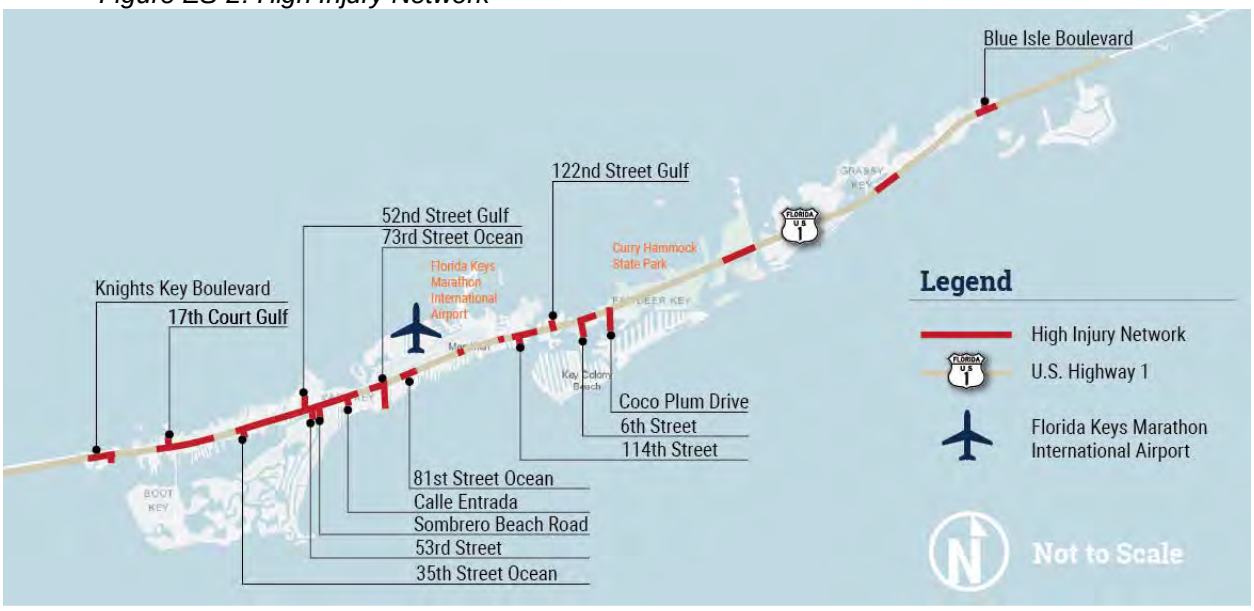
Figure ES-1: Crashes by Year and Severity



[1] https://highways.dot.gov/safety/proven-safety-countermeasures/local-road-safety-plans

A high injury network (HIN) analysis was performed on the City's road network to identify geographic areas having a higher concentration of crashes by frequency and severity. The network is predominately defined by US Route 1 (US 1), a state-owned route that travels through the City. The HIN analysis found that 40% of all crashes and 82% of all FSI crashes occurred on 8% of the roadway network. Additionally, over 50% of all vulnerable road user (VRU) crashes occurred in HIN segments. **Figure ES-2** depicts the HIN. While the HIN is not solely represented by US 1, all other roadways within the HIN consist of the approach roadways to intersections with US 1.

Figure ES-2: High Injury Network



Action steps

A data-driven approach guided by community involvement produced comprehensive recommendations that, if implemented, begin to solve the root cause of crashes within the City.

Policy and process change recommendations

Based on public and stakeholder feedback regarding prevalent Vision Zero (VZ) policies, a shortlist of well-received policies was developed. This CSAP recommends these policies for further advancement and investigation to guide the City's future safety decisions, standards, and long-term direction.

- Better post-crash care and Emergency Medical Services (EMS) response
- Establish safety subcommittee
- Establish a Rapid Response Team

- Strengthen access management controls
- Install bike and pedestrian facilities through the development process

Due to the high ranking of the better post-crash and EMS response policy received from the stakeholders, the City partnered with local first responders to submit a 2026 SS4A Planning and Demonstration grant application. This became a specific infrastructure-based recommendation applied for via the SS4A program as further detailed below.

Infrastructure recommendations

Infrastructure recommendations are physical improvements to be implemented. They focus on improving roadway conditions and are countermeasures that are proven to reduce crashes if implemented. These recommendations generally fall into two categories: top five intersections and citywide treatment.

Top five intersections

As part of the CSAP, five intersections were selected for detailed safety evaluation based on crash history, including locations with documented history of fatal and serious injury crashes, as well as input from City staff and stakeholders. The recommended upgrades for these intersections can be summarized as the following improvements.

- Enhancements for pedestrians and cyclists
- Intersections design enhancements
- Reduction of conflict points

Citywide treatment

In addition to targeted improvements at the top five intersections, several systemic safety improvements were identified throughout the City where similar roadway conditions exist. These improvements are intended to address common safety concerns and reduce the potential for severe rashes across the City's transportation network. Citywide treatment improvements include:

- Enhancements for pedestrians and cyclists
- Intersections design enhancements
- Speed control and traffic calming measures
- Improved visibility and sightline conditions

Grant Application for Signal Pre-Emption

Through the stakeholder engagement process conducted as part of the CSAP, post-crash care and emergency response emerged as priority area for improving transportation safety within the city. In response, the City partnered with local first responders to pursue a 2026 SS4A Planning and Demonstration Grant focused on emergency vehicle preemption along the US 1 corridor.

The project proposes to pilot emergency vehicle preemption technology at key signalized intersections to reduce delays for emergency responders and improve response times during critical incidents. Given the City's linear roadway network and limited alternate routes, improving emergency access along US 1 has the potential to enhance post-crash care and support the City's broader goal of reducing datal and serious injury outcomes.

1 Introduction

The City of Marathon (the City) suffers from the occurrence of fatal and serious injury (FSI) crashes occurring on their roads resulting in loss and irreparable impact to lives of residents and visitors. In response to this public health crisis, the City applied to the United States Department of Transportation (USDOT) for grant funds under the Safe Streets and Roads for All (SS4A) program to investigate existing safety issues, along with potential infrastructure and policy improvements, documented in this Comprehensive Safety Action Plan (CSAP).

This plan follows the Safe System Approach using data analysis and community engagement to recommend focused, strategic safety improvements on the road network. It also creates a framework for the City to move toward zero crashes in the future.

US 1 in Marathon

The City is comprised of thirteen islands connected by one corridor of travel; the larger roadway network is unique with US 1 (also known as US Route 1, or FDOT internal unsigned State Road 5) serving as the primary connection to all islands. US 1 in the City is defined between Mile marker (MM) 47.0 and MM 60.5, from the east end of the Seven Mile Bridge to the west end of Tom's Harbor Channel Bridge. It is primarily a four-lane roadway with hardscaped or striped median separation but narrows to a two-lane roadway in certain segments. **Figure 1** illustrates US 1 within Marathon.

Additionally, the Florida Keys Overseas Heritage Trail, a 10–12-foot multi-use trail runs adjacent to the corridor and generates a large amount of bicycle and pedestrian traffic.

Figure 1 US 1 in Marathon



The 2012 Marathon Comprehensive Plan[2] reported that an earlier origin and destination study (from the Monroe County Traffic Report Guidelines Manual) showed that 39% of total vehicular trips on US 1 were permanent Marathon residents, 46% of trips were by visitors, and the remaining 11% were seasonal residents. While based on earlier data, these findings highlight the disproportionate numbers of non-residents traveling on US 1 who have an impact on safety conditions.

US 1 serves as the City's economic and public safety lifeline for all modes of transportation in the Florida Keys. Limited route redundancy along portions of US 1 contributes to safety challenges for motorists, bicyclists, and pedestrians, particularly at intersections and along higher-speed segments.

[2] https://www.ci.marathon.fl.us/sites/default/files/fileattachments/planning/page/4781/7_-_transportation.pdf 2012 Marathon Comprehensive Plan

2 Existing Policy Review

Safety action plans are guided by a combination of principles, regulations, and best practices that focus on preventing harm and responding effectively when risks arise. A review of guiding principles, state initiatives, City plans, and existing policies was conducted to assess how these efforts shape local guidance and ongoing initiatives. A detailed peer review was also performed to evaluate current practices influencing safe vehicle behavior. Supporting documentation is provided in **Appendix A.**

This review was intended to identify foundational policies that support safety, highlight gaps or opportunities for advancement, and ensure that this plan builds upon—rather than duplicates—previous City efforts.

The City operates within a unique regulatory and planning context shaped by its island geography, designation as an Area of Critical State Concern, heavy reliance on US 1, and extensive coordination requirements with state and county agencies. As such, safety outcomes depend not only on City-led actions, but also on policy alignment and interagency partnership.

Guiding principles

Policy decisions are guided by an overall framework, guiding principles, and a commitment to safety that influences specific strategies for implementation. The safety framework encompasses several methods to eliminate roadway-related deaths and severe injuries. Safety improvements are addressed through roadway design, operation, behavior change, programs, and policies that seek to systemically and proactively mitigate or eliminate risk factors.

This involves a shift away from a reactive approach, which targets historical crash hotspots, to a proactive approach that addresses systemic risk factors, such as socioeconomic, geographic, and roadway design vulnerabilities within the transportation system. The following transportation safety frameworks are established approaches in current national and state transportation safety planning practices. Each reflects an effective proactive approach and has been reviewed (as detailed in the following sections) to inform policy recommendations put forth in this study.

- Vision Zero and The Safe System Approach
- Statewide initiatives
- Local plans, programs, and policy landscape

Vision Zero and The Safe System Approach

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries and improve mobility[3] to be safe, healthy, and equitable. The zero deaths vision acknowledges that even one death on our transportation system is unacceptable and focuses on safe mobility for all road users, which requires implementation of a Safe System approach.

The Safe System Approach expands upon the traditional four "E's" of traffic safety with a focus on shared responsibility. To help communities build safety toolkits, **Figure 2.** organizes the following five elements on the inside of the wheel crucial to the Safe System Approach.

Figure 2 Safe System Approach



Safe Road Users

Encourage safe, responsible driving and behavior by people who use our roads and create conditions that prioritize their ability to reach their destination unharmed.

Safe Vehicles

Expand the availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants.

Safe Speeds

Promote safer speeds in all roadway environments through a combination of thoughtful, equitable, context-appropriate roadway design, appropriate speed-limit setting, targeted education, outreach campaigns, and enforcement.

Safe Roads

Design roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users.

Post-Crash Care

Enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.

[3] What is Vision Zero? | Vision Zero Network

Statewide initiatives

At the statewide level, the Florida Department of Transportation (FDOT) has established Target Zero (**Figure 3**), Florida's transportation safety initiative aimed at eliminating fatal and serious injury crashes. Target Zero aligns with the Safe System Approach and sets a formal performance target of zero fatalities and serious injuries on Florida roadways.

Target Zero emphasizes:

Figure 3 FDOT's Target Zero Program



- Safer roadway design and context-sensitive engineering
- Safer speeds through design and speed management
- Safe road user behavior through education and enforcement
- Post-crash care and coordinated emergency response

FDOT specifically identifies lane-departure, pedestrian and bicyclist, and intersection crashes as priority focus areas—many of which are prevalent crash types identified in Marathon.

Within Monroe County, FDOT District Six oversees safety programs, signal operations, and investment along US 1 and other state facilities. District Six administers programs such as Safe Routes to School, safety-focused resurfacing and restriping projects, signal timing and arterial management improvements, and Traffic Incident Management coordination across Monroe County.

These statewide and district initiatives provide an important framework within which the City's Comprehensive Safety Plan is implemented and position Marathon to leverage existing FDOT programs and funding sources for future safety improvements. As noted previously, the High Injury Network (HIN) is largely concentrated along US 1, an FDOT-maintained corridor.

Plans, programs, and policy landscape

City plans

Figure 4 Planning Process



Several adopted City plans provide policy direction relevant to transportation safety and multimodal mobility in the City. **Figure 4** illustrates the collaborative planning process used to develop transportation and safety planning initiatives.

The City's Comprehensive Plan serves as the primary policy framework guiding land use, transportation, and infrastructure decision-making. The Transportation Element establishes goals and policies supporting a safe, efficient, and multimodal transportation system, and emphasizes coordination with FDOT for improvements along US 1. Recent amendments to the Comprehensive Plan reflect ongoing efforts to update transportation-related policies and strengthen intergovernmental coordination.

In addition to the Comprehensive Plan, the City has advanced planning efforts focused on improving conditions for people walking and biking. The City has secured grant funding through FDOT to develop a Bicycle and Pedestrian Master Plan, which will start later this year (2026) to provide corridor-level guidance, facility recommendations, and design considerations to improve non-motorized safety and connectivity.

The City's existing bicycle facilities include the Florida Keys Overseas Heritage Trail, a shared-use path along US 1. Additionally, there are bike lanes on Aviation Boulevard and portions of 107th Street Gulf Boulevard, Sadowski Causeway and W Ocean Drive. While this work is ongoing, it complements the CSAP by identifying physical improvements that support safer walking and biking environments.

Together, these plans establish a policy foundation that supports the CSAP's emphasis on reducing fatal and serious injury crashes, improving multimodal safety, and coordinating investments along City- and state-maintained roadways.

Policies, programs, and procedures

In addition to long-range plans, the City has adopted policies, ordinances, and procedures that influence roadway safety outcomes and implementation capacity.

Transportation-related provisions within the Comprehensive Plan, development regulations and City ordinances support coordination of transportation improvements, access management, and consistency with adopted transportation policies. These tools are especially important along corridors with frequent driveways and side-street access, where design decisions directly affect crash risk. As an example, Public Right-of-Way Use permits limit the number of access driveways per property.

Grant agreements and resolutions approved by City Council includes 1) a Transportation Alternative FDOT grant that funds the upcoming Bicycle and Pedestrian Master Plan and 2) Resolution 2025-52 approval of the US 1 Transportation Master Plan (**Figure 5**), which demonstrates an ongoing commitment to advancing bicycle and pedestrian safety through coordinated planning and external funding. These actions position the City to implement recommendations from the CSAP through future capital projects, resurfacing efforts, and grant-funded initiatives.

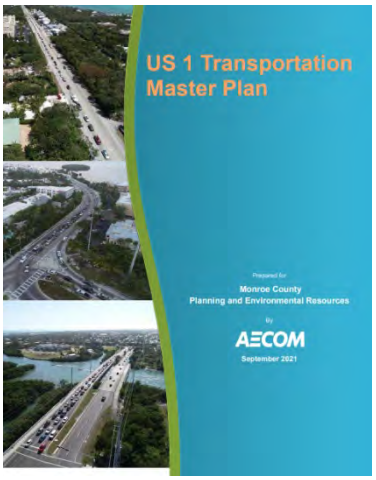
Operationally, the City coordinates closely with FDOT, Monroe County, and public safety agencies on roadway operations, enforcement, and emergency response—particularly along US 1, which serves as both the City's primary transportation corridor and a critical hurricane evacuation route. These established coordination practices are essential to implementing safety strategies that require cross-jurisdictional collaboration. The Florida Keys Transportation Coordination Committee (FKTCC)[4] also plays a key role in recommending and prioritizing solution projects identified in the US 1 Transportation Master Plan. Collectively, these efforts demonstrate a strong and ongoing commitment to enhancing safety along US 1.

This policy and program landscape provides a strong foundation for the CSAP. The recommendations that follow are intentionally designed to align with existing City policies, leverage ongoing planning efforts, and strengthen procedures that support a Safe System Approach to transportation safety.

[4] https://www.monroecounty-fl.gov/1163/Florida-Keys-Transportation-Coordination

Monroe County

Figure 5 US 1 Transportation Master Plan



Monroe County plays a significant role in transportation planning and safety coordination across the Florida Keys, particularly along US 1, which serves as the primary regional corridor and evacuation route. In 2021, the Monroe County Board of County Commissioners adopted the US 1 Transportation Master Plan (**Figure 5**), which establishes short-, mid-, and long-term strategies to improve safety, mobility, and operations along US 1 throughout the county.

The Transportation Master Plan focuses on operational improvements, access management, multimodal safety, and coordination with municipalities and FDOT. Several Study segments within the City overlap with corridors identified in the plan as requiring safety and operational improvements, reinforcing the CSAP's emphasis on US 1. In addition to these planning efforts, Monroe County provides public transit service through bus routes[5] serving Marathon and connecting communities throughout the Florida Keys, supporting multimodal travel options for residents and visitors. Safety recommendations from this study at locations in the City include the following:

- Review and identify potential pedestrian/bicycle signing and pavement marking improvements along US 1 in the vicinity of the signalized intersections in Marathon.
- Conduct a feasibility study to add a "NO U-TURN" sign for SB left turn traffic to reduce conflicts with westbound right turn traffic at the intersection of US 1 and Sombrero Beach Road. (since implemented)
- Conduct a feasibility study to restrict traffic to a "RIGHT TURN ONLY" at the intersection of US 1 and Aviation Boulevard/72nd Street.
- FDOT Traffic Operations Office is conducting a safety study at the intersection of US 1 and Coral Lane.

Monroe County also supports safety through interagency coordination efforts, including Traffic Incident Management (TIM) teams and regional emergency response planning. These efforts emphasize rapid incident clearance, responder safety, and reliable traffic operations during peak travel periods and emergency events, supporting post-crash care and secondary crash prevention.

[5] https://www.monroecounty-fl.gov/busroutes

3 Community Engagement

Meaningful community engagement was a foundational element of the City's CSAP. Engagement activities were designed to ensure that the CSAP reflects local lived experience, builds trust with community members, and incorporates diverse perspectives on transportation safety across the City's unique island context.

Given the City's linear geography, travel needs, and reliance on US 1, the engagement approach emphasized reaching residents, businesses, visitors, and stakeholders where they already gather, both geographically and socially. Engagement was conducted throughout the planning process and incorporated a combination of online tools and targeted outreach and promotion efforts to maximize accessibility and participation. Three rounds of conversational engagement were held at regular intervals over the course of the project, resulting in a total of nine engagement events featuring a variety of formats.

- Stakeholder meetings (in-person and virtual)
    - May 2025: Initiated to support development of the CSAP purpose and need and to collect preliminary feedback on safe travel concerns throughout the City.
    - Fall 2025: Held to share initial ideas on transportation safety policies and countermeasures that could be implemented.
    - Spring 2026: Presentation of CSAP study findings, acting as a final opportunity for study feedback
- In-person public meetings at City Council meetings
- Community events

Please note that the third round in-person public meeting is not documented within this CSAP as this final event would serve as the adoption of the CSAP.

As part of this process, a community engagement plan was developed that can be found in **Appendix B**. Community input directly informed the identification of priority safety concerns, HIN validation, policy development, and project recommendations included in this Plan.

Engagement findings

Across engagement activities, participants consistently identified safety concerns related to walking, biking, driving, and emerging micromobility modes (i.e. e-bikes). Most participants expressed that they feel not safe walking or biking in the City, particularly along US 1 and at major intersections.

Figure 6 Key Community Concerns



Key themes that emerged through public meetings, pop-up events, surveys, and stakeholder discussions included:

- Excessive vehicle speeds, particularly on curved segments of US 1
- Gaps in sidewalk connectivity, especially in the southern portion of the City
- The need for more and safer pedestrian crossings
- Visibility and lighting concerns
- Conflicts involving e-bikes at driveways and intersections
- Support for increased enforcement focused on speeding and high-risk locations
- Concerns about sign clutter and roadway complexity affecting driver behavior

Several locations were repeatedly noted by community members, including US 1 intersections with Aviation Boulevard, Sombrero Beach Road, Sadowski Causeway, and Coco Plum Drive. Additionally, multiple segments of US 1 between 11th Street and 30th Street. These concerns closely aligned with crash data and near-miss observations reviewed as part of the HIN analysis.

Community feedback also demonstrated broad support for the overall goals of the CSAP. Where concerns were raised, comments focused primarily on implementation feasibility, coordination with state agencies, traffic flow impacts, and funding considerations rather than opposition to safety improvements themselves.

Conversational engagement methods

Stakeholder working group

Designated as the Stakeholder Working Group, this study's stakeholders were convened to provide technical insight, institutional knowledge, and interagency coordination throughout the planning process. This group played a key role in reviewing data, identifying constraints, and shaping implementable recommendations.

The Stakeholder Working Group consisted of representatives from City departments, regional and state agencies, emergency responders, law enforcement, and neighboring jurisdictions. The group met at key milestones to review crash trends, near-miss video observations, and preliminary recommendations using a Safe System Approach. The project team engaged this group through interviews, meetings, and coordinated outreach efforts. Stakeholders represented diverse sectors including transportation, public safety, education, tourism, business, and regional planning.

Discussion topics included:

- Trends in fatal and serious injury crashes
- HIN identification and validation
- Emergency response considerations and post-crash care
- Enforcement challenges and opportunities
- Coordination with FDOT on US 1
- Feasibility and acceptance of safety policies

The Safety Working Group provided essential guidance on feasibility, jurisdictional responsibilities, and implementation sequencing, ensuring that final recommendations reflected both community priorities and operational realities.

In-person public meetings

Figure 7 In-person public meeting



Three in-person public meetings were held at the accessible location of City Hall at key stages of the project as shown in **Figure 7** Meetings were designed to be interactive, providing opportunities for participants to learn about crash trends, review HIN findings, and discuss safety priorities.

Meeting formats included:

- Project presentations with clear visuals
- Interactive polling and facilitated discussion
- Question-and-answer sessions
- Opportunities for direct feedback

Meetings were publicly noticed in advance through City communication channels, local media, and partner networks.

Community events

Pop-up engagement was conducted at well-attended community events to reach residents and visitors who may not participate in traditional meetings. These informal settings allowed for accessible, one-on-one conversations and increased survey participation. **Figure 8** shows examples of community outreach activities conducted during these events. Pop-up events included:

- Nautical Fun in the Sun
- Food Truck Jamboree
- Marathon Seafood Festival

Figure 8 Community Events





At these events, participants were invited to complete surveys, ask questions, and identify safety concerns using maps and visual tools.

Online engagement

Online engagement tools were used to supplement in-person efforts and provide ongoing access to information and feedback opportunities. Community safety surveys (**Figure 9**) were made available electronically and promoted through QR codes, City communication platforms, and partner networks. Online engagement allowed participants to contribute input at their convenience and supported continued engagement throughout the planning process.

Figure 9 Online Engagement Survey



Outreach and promotions

Figure 10 Outreach and Promotions



Outreach and promotion efforts were coordinated in partnership with the City and local organizations to ensure broad awareness of engagement opportunities. **Figure 10** shows outreach and promotional activities used to engage community members and increase awareness of the project. Notifications were distributed through:

- City communication channels and the City of Marathon TV App
- Local radio and media outlets
- Flyers and posters at public facilities
- Partner organization networks

This approach ensured consistent messaging and broad community awareness and access to information regarding meetings, surveys, and project updates.

4 Crash Trends and Patterns

Figure 11 Crash Numbers



There were approximately 1,598 crashes on public roads in the City from 2019 through 2024. Overall, this reflects a consistent pattern of crashes, averaging about 270 per year. **Figure 11** summarizes the total number of crashes, including fatal and serious injury crashes that occurred from 2019-2024.

Transportation safety is a challenging issue that requires a data-driven approach that is informed by community involvement. Crash data indicates that the City suffers from all crash types and those crashes impact all travel forms including vehicles, bicyclists, and pedestrians. Additionally, crashes are experienced in all neighborhoods.

The project team examined six years of crash data from 2019-2024 pulled from Signal Four Analytics. The data analysis evaluated all public streets to understand trends of crash overrepresentation, crash types, prevalent risk factors, and safety emphasis areas. For detailed review of crash trends and patterns please refer to **Appendix B**.

Crash factors

Crash data examined trends and patterns across the following factors: crash severity, road user modes crash type, environmental, temporal, and behavioral **Figure 12.**

Figure 12 Crash Factors



Crash severity

Crash severity refers to how serious the outcomes of a traffic crash are, typically based on injury level and damage. Crashes are classified by the highest injury severity reported. **Figure 13** illustrates the hierarch of injury outcomes.

Categories include:

Fatal Injury- injuries resulting in death

Serious Injury- injuries that cause significant impairment or delimitation

Non-incapacitating Injury- visible but not life-threatening or disabling

Possible Injury- complaint of pain, no visible injury

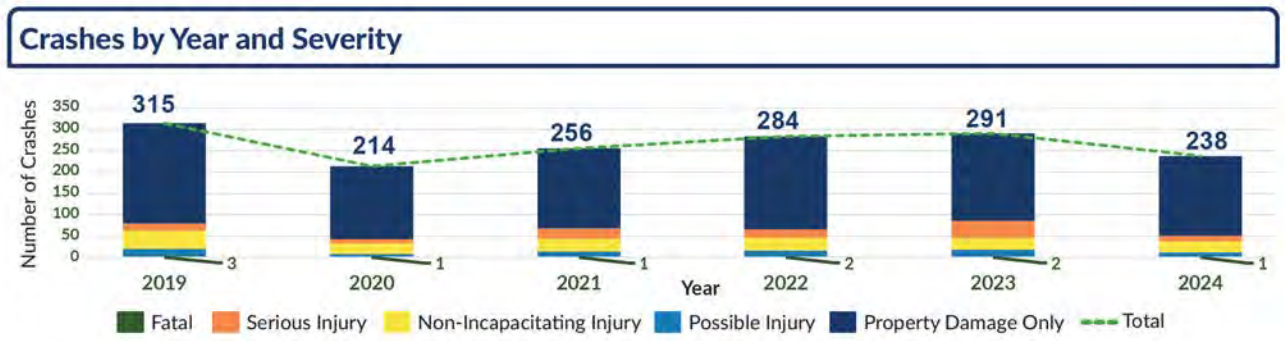
Property Damage Only (PDO)- no injuries

Figure 13 Injury Outcome Pyramids



Figure 14 presents total crashes in the City, categorized by year and severity. Between 2019 and 2024, a total of 1,598 crashes occurred on public roads. Total crashes declined from 2019 to 2020, reflecting reduced travel during the COVID-19 pandemic. However, crashes increased by 36 percent between 2020 and 2023, indicating a period of increased crash experience. From 2023 to 2024, overall crash frequency declined, which coincided with lower volumes observed by FDOT[6].

Figure 14 Crashes by Year and Severity



[6] Florida Traffic Online shows a general decline in Annual Average Daily Traffic for most roads within the City from 2023 to 2024, perhaps owing to an active 2024 hurricane season (Helene and Milton): https://tdaappsprod.dot.state.fl.us/fto/

Figure 15 FSI Crashes

Fatal and serious injury (FSI) crashes accounted for 6% of total crashes in the City. (**Figure 15**)

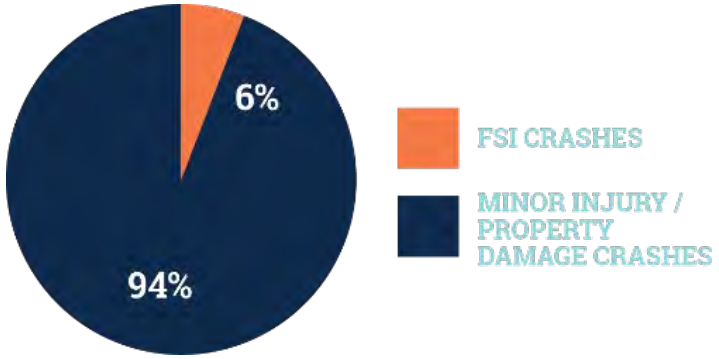


Figure 16 FSI Crash Type

The top five FSI crash types are shown in **Figure 16**, and account for 81% of total FSI crashes during the study period.

The largest share of FSI crashes is a result of left turn movements at 28%. Bicyclists account for 22% of crashes. Rear-end, off-road, and head-on crashes account for 10%, 10%, and 11%, respectively.

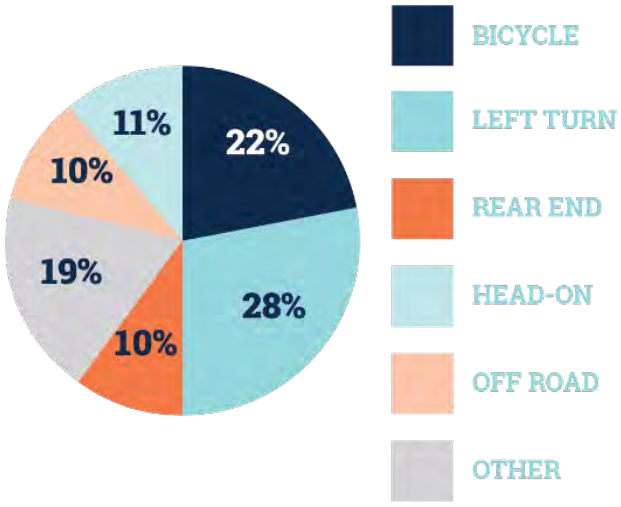
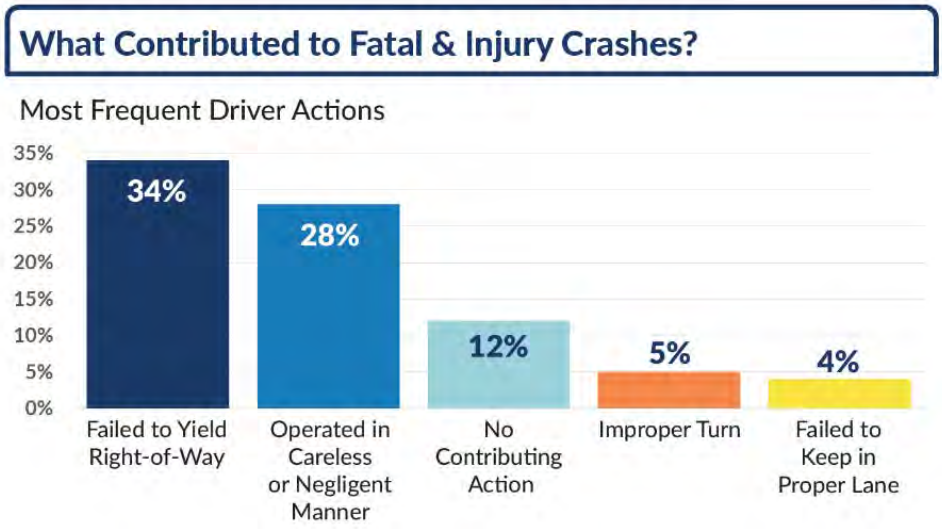


Figure 17 FSI Contributions

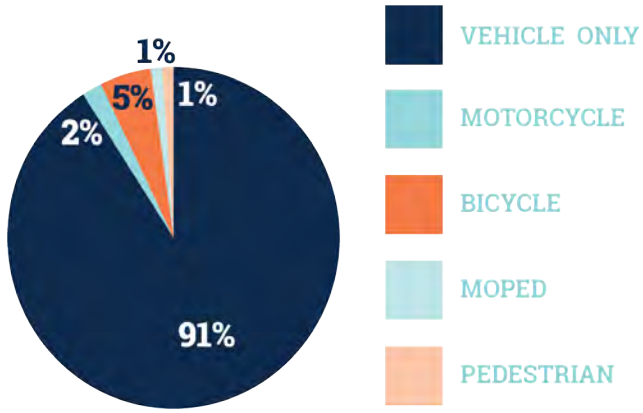


As shown in **Figure 17**, driver actions contributing to FSI crashes are predominantly a result of failing to yield (34%) and careless or negligent vehicle operation (28%). Analysis found that bicycle crashes generally relate to motorists failing to yield. This is likely a common occurrence for bicyclists and pedestrians navigating the Florida Keys Overseas Heritage Trail due to continuous conflict points with driveways. No contributing action, improper turns, and failure to keep in proper lane account for 12%, 5%, and 4% of FSI crashes, respectively.

Road user modes

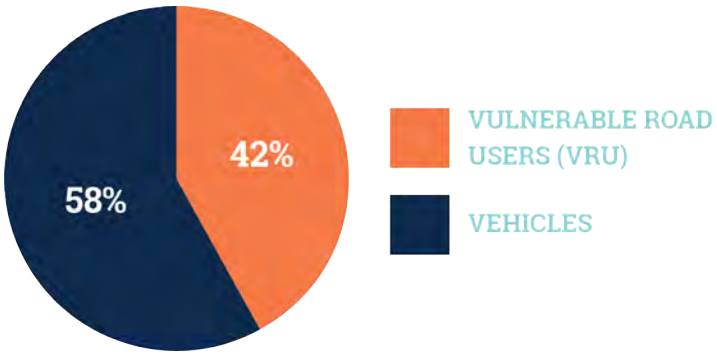
Different travel modes were analyzed to understand their involvement in crashes. Vehicles accounted for 91% of total crashes, while the remaining 9% involved vulnerable road users (VRU) which include pedestrians, bicycles, mopeds, and motorcycles. These users are at high risk of serious injury or death when subjected to the forces of an impact due to lack of physical protection from collisions. **Figure 18**. depicts total crashes by road user modes.

Figure 18 Road User Modes - Total Crashes



FSI crashes by modes are shown in **Figure 19.** VRUs accounted for 42% of FSI crashes, being overrepresented at five times the rate of FSI crashes compared to vehicular travel indicating they are at severe risk for serious injuries or fatalities. Future safety projects should be designed with a clear focus on improving safety for VRUs.

Figure 19 Road User Modes - FSI Crashes

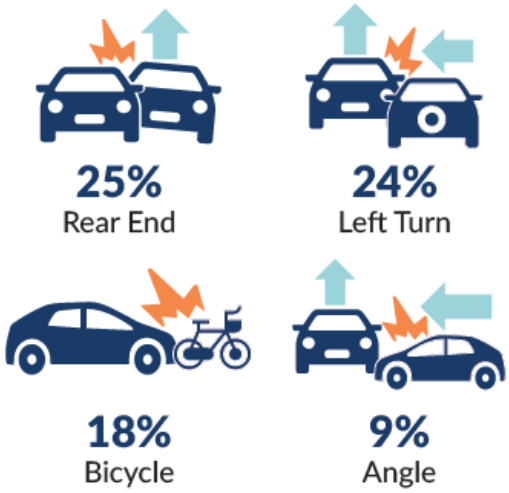


Crash types

Total crash types are shown in **Figure 20.** The most frequent types are rear end at 25%. Rear end crashes are typically a result of drive distraction or visibility issues.

The second most frequent crash type are left turn crashes, left turn crashes occurring in the City are overrepresented when it comes to FSI severity outcomes. Left turn crashes often occur when a driver misjudges the speed and distance of an oncoming driver, has an obstructed view of oncoming traffic, or is distracted. The relatively high occurrence of driveways intersecting US 1 suggests this crash pattern results from driveways spaced too closely to each other or public intersections.

Figure 20 Crash Types - Total Crashes

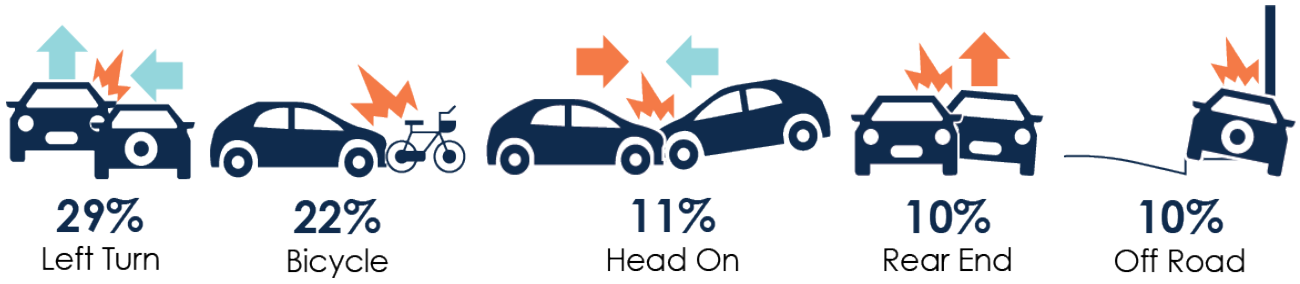


The third most frequent type of crash involves conflicts between vehicles and bicycles. While bicyclists account for only 5% of modes involved in crashes, they comprise 18% of total crash types. Findings indicate that US 1 creates a significant barrier to safe and comfortable bicycle travel.

The fourth most frequent are angle crashes, often a result of improper movements and visibility issues. It is important to note that FDOT distinguishes between left turn and angle crashes, although such crash types can be similar in nature. Likewise, angle crashes can be indicative of similar issues like obstructed views and access management control.

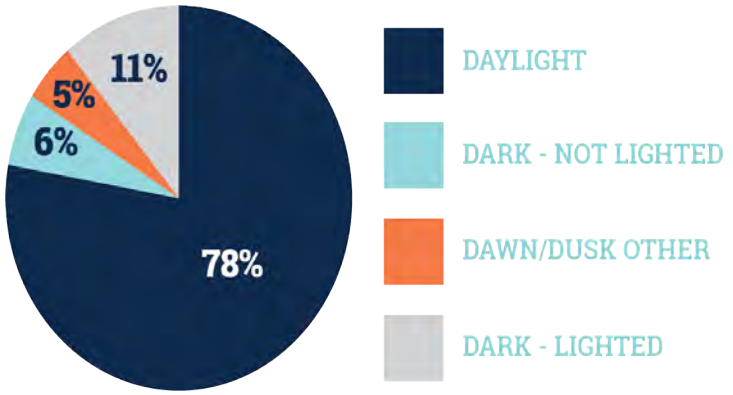
FSI crash types are shown in **Figure 21.** The most frequent FSI crashes are left turn at 29%. Crashes involving vehicles and bicycles are at 22%. A disproportionate amount that suggests lack of proper bike facilities. Head on, off road, and rear end crashes account for 11%,10%, and 10%, respectively, which are also types of crashes where a significant amount of kinetic energy can be imparted. Safety improvements should place special emphasis on evaluation of conflict points, particularly when reviewing impacts on left-turn movements and bicyclists.

Figure 21 Crash Types - FSI Crashes



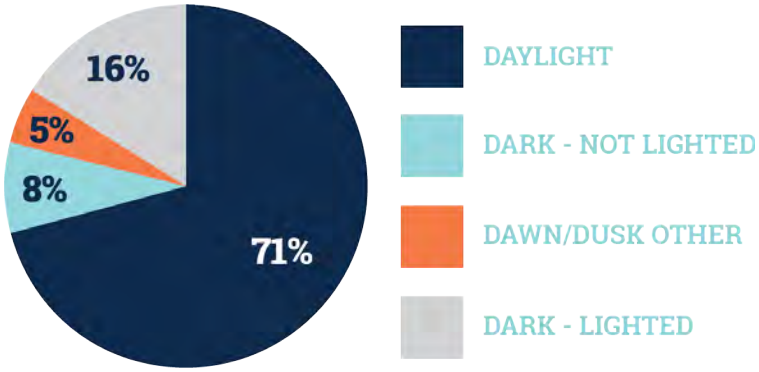
Environmental

Figure 22 Total Crashes - Lighting Conditions



Environmental factors—such as lighting and road surface quality—can increase crash risk by reducing driver visibility and making it more difficult to maintain lane control, particularly in poorly lit environments. Daylight conditions accounted for 78% of total crashes in the City. Non-daylight conditions made up 22% of total crashes despite an outsized share of traffic volumes during daylight hours. A breakdown of lighting conditions for total crashes is shown in **Figure 22.**

Figure 23 FSI Crashes - Lighting Conditions



Crash data indicates that 29% of FSI crashes occurred during non-daylight conditions compared to 22% of total crashes, as shown in **Figure 23**. Of the 29% of FSI crashes that occurred during non-daylight conditions, nine crashes involved a bicyclist or pedestrian.

VRUs are more likely to be obscured during non-daylight conditions; furthermore, they have a significantly greater risk of sustaining an injury when hit by a vehicle. Due to the east-west orientation of US 1, crossing and signal indicator conspicuity for bicyclists and pedestrians can be obscured during conditions prone to sun glare.

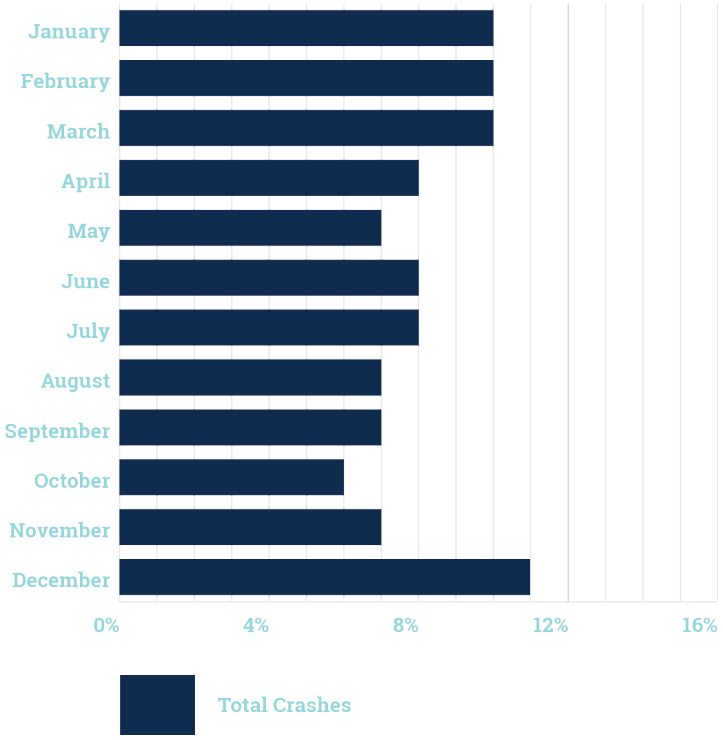
Road surface conditions also contributed to crashes. Crashes occurred most frequently during dry road surface conditions, indicating that while pavement friction and drainage could be deficient in certain spot locations, pavement surface friction is generally adequate across the City. Data shows FSI crashes only took place during dry conditions.

Temporal

Temporal analysis evaluates when crashes occur to identify patterns related to the month, day of the week and time of day.

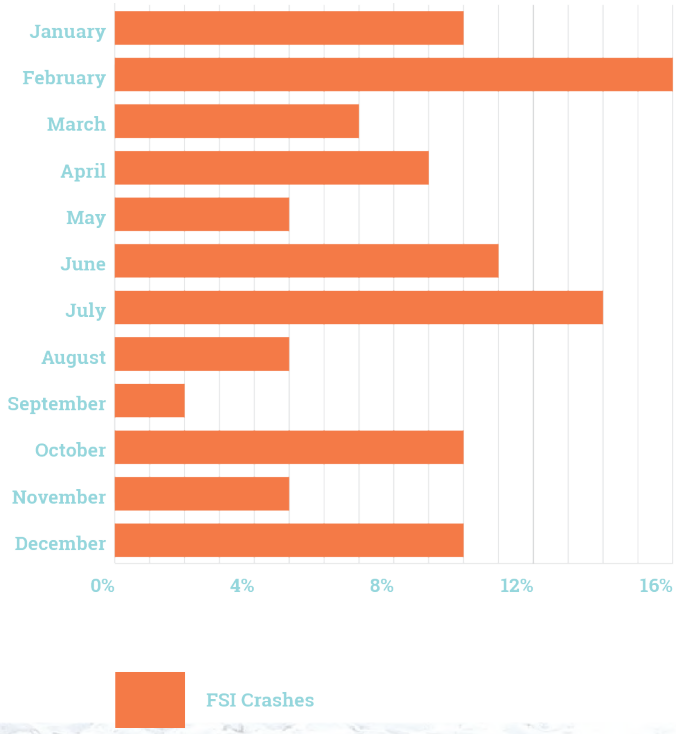
December experienced the highest number of total crashes at 11%. January and February accounted for 10%. These months correspond with the winter travel season when there may be an increase in transient populations visiting the City, resulting in higher traffic volumes. Safety policy recommendations should consider increased crash risk during the winter travel season. The months with the lowest total crashes are September, November and October at 7%, 7%, and 6%, respectively. (**Figure 24)**

Figure 24 Total Crashes - Month



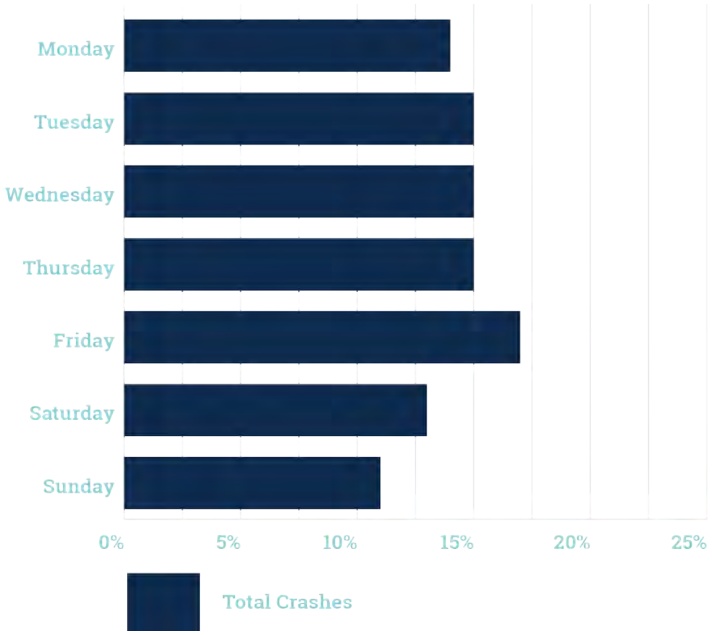
February experienced the highest number of FSI crashes at 17%. June and July accounted for 11% and 14%, respectively. December, January, and March accounted for 11%, 11%, and 7%, respectively. (**Figure 25**)

Figure 25 FSI Crashes - Month



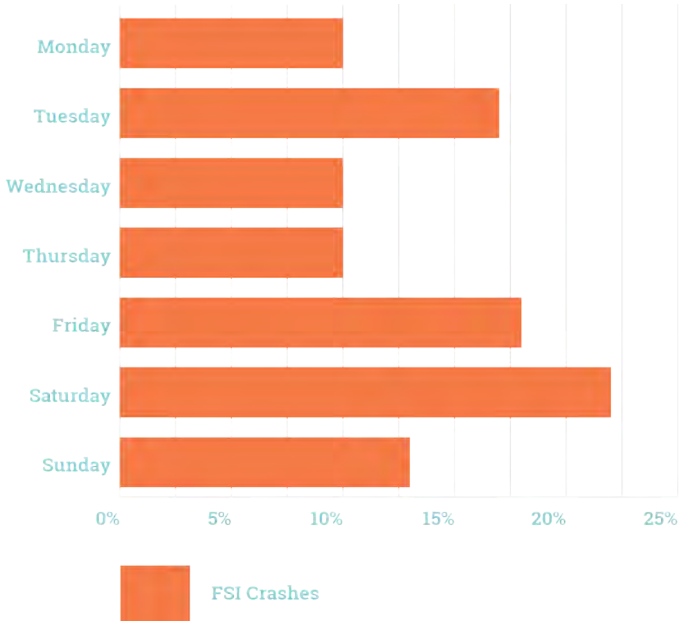
Fridays experienced the highest share of total crashes at 17%, likely reflecting increased traffic volumes and activity levels connected to the start of the weekend. Tuesday, Wednesday, and Thursday each accounted for 15% of crashes. In contrast, weekends had the lowest crash rates, with Saturday at 13% and Sunday at 11%. **(Figure 26)**

Figure 26 Total Crashes - Day



FSI crashes occurred on Saturdays (22%) and Fridays (18%), likely due to increased leisure travel and activity. Sunday was the third most common day, accounting for 13% of FSI crashes. Altogether, 50% of FSI crashes took place between Friday and Sunday. Monday, Wednesday, and Thursday each represent 10%. (**Figure 27)**

Figure 27 FSI Crashes - Day



Behavioral

Behavioral factors play a role in crash occurrence and injury outcomes, including speeding and aggressive driving, distracted driving, non-use of seatbelts, and alcohol and/or drug involvement. **Figure 28** and **Figure 29** identify behaviors involved in total crashes and FSI crashes, respectively, during the study period.

Distracted driving accounts for 42% of total crashes. Speeding/aggressive driving and alcohol/drug use accounts for 4% and 2%, respectively. 52% of total crashes are not related to behavioral factors.

Distracted driving accounts for 30% of FSI crashes, while speeding/aggressive driving has a much lower share at 1%; both figures show an underrepresentation at the FSI crash level when compared to total crashes. Conversely, the percentage of FSI crashes involving alcohol and/or drugs is nearly 1.5 times that for total crashes at 6%.

Figure 28 Behavioral Total Crashes

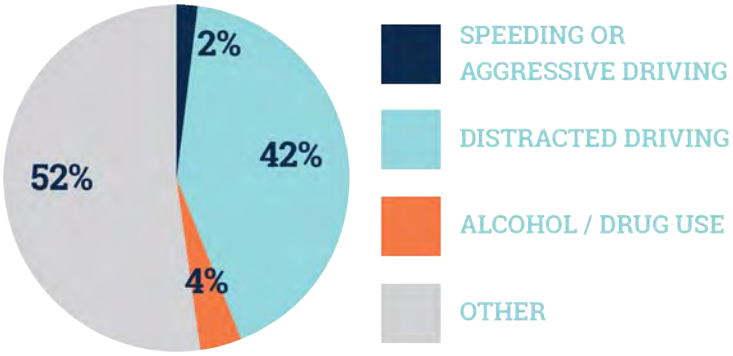
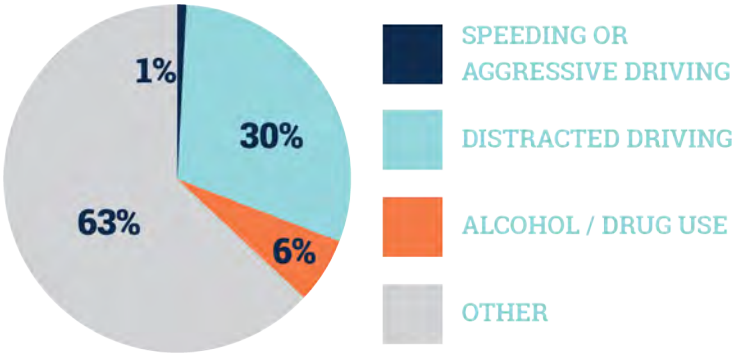


Figure 29 Behavioral FSI Crashes



What does this mean for safety?

The crash analysis identifies consistent and recurring patterns that help explain why total and FSI crashes occur on the City's roadway network. While crashes happen citywide and across all travel modes, severe outcomes are not evenly distributed.

Overrepresented Crash Factors

- VRU crashes
- Turning-movement and angle crashes
- Crashes at intersections and major access points
- Crashes along high-access-density corridors, particularly US 1
- Non-daylight crashes
- Crashes concentrated on High Injury Network (HIN) corridors and intersections

People walking and biking experience a disproportionate share of fatal and serious injuries relative to their involvement in total crashes. Motor vehicle occupants account for most crashes overall, but VRUs face a significantly higher risk of severe injury when crashes occur.

FSI crashes are most often associated with specific conflict types and roadway conditions rather than isolated locations. Turning movements, intersections, and driveway access points—particularly along US 1—are common factors in severe crashes. These patterns indicate systemic risk related to access density, speed, and complexity, rather than individual behavior alone.

Environmental and temporal factors further influence crash severity. Non-daylight conditions are associated with a higher likelihood of fatal and serious injuries, especially for vulnerable road users. While behavioral factors such as failure to yield and impairment are present in the crash data, the severity of resulting injuries reflects roadway environments that do not adequately mitigate the consequences of human error.

A relatively small portion of City's roadway network accounts for a majority of FSI crashes. This concentration reinforces the importance of focusing safety efforts on identified corridors and intersections with elevated risk.

Overall, the findings from **Appendix B** point to the need for a strategic, system-based approach to safety. Reducing FSI crashes in the City will require interventions that manage speed, reduce conflict points, improve visibility, and prioritize protection for VRUs—particularly along the HIN. These conclusions directly inform the recommendations and implementation strategies presented in **Chapter 6**.

High Injury Network (HIN)

A HIN analysis was performed on the roadway network within the City to identify areas having a higher concentration of crashes by frequency and severity. The Equivalent Property Damage Only (EPDO) method, which employs a crash cost methodology, was used to quantify crash frequency and severity as a single metric for each segment of the network. A segmentation method was used to develop and segment the roadway network for the HIN. Refer to **Appendix B** for a more detailed explanation of these methodologies.

The resulting HIN identified based on the segmentation methodology is depicted in red segments in **Figure 30**. A complete inventory of all HIN roadway segments can be found in **Appendix C**.

Figure 30 High Injury Network



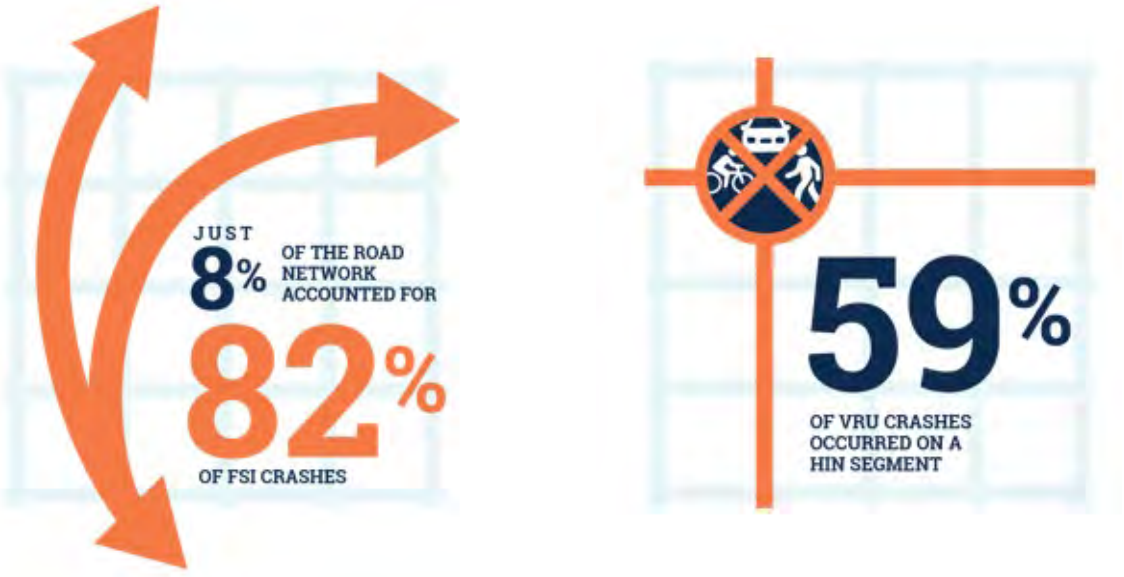
High Injury Network (HIN) insights

There was a total of 645 crashes on the HIN. The analysis revealed that 40% of total crashes and 82% of FSI crashes occurred on only eight percent of the roadway network in the City. Additionally, 59% of total VRU crashes occurred on those segments. **Figure 31** and **Table 1** summarize these insights.

Table 1 HIN Metrics

HIN METRICS	METRIC
Centerline Miles	7
Number of Crashes	645
Fatal and Serious Injury Crashes	82%
Bicycle and Pedestrian Crashes	59%

Figure 31 HIN Insights



Top five intersections

In coordination with City Planning, the Project Team reviewed location-specific crash data and near-miss analysis to support the selection and prioritization of the top five intersections shown in **Figure 32** for traffic engineering and transportation planning services. At the project kickoff meeting, the City identified these intersections along US 1 based on crash history and observed needs. These site-specific evaluations are separate from the HIN analysis and are intended to better understand conflicts among vehicles, bicyclists, and pedestrians.

Figure 32 Near-miss intersections Near-miss incidents

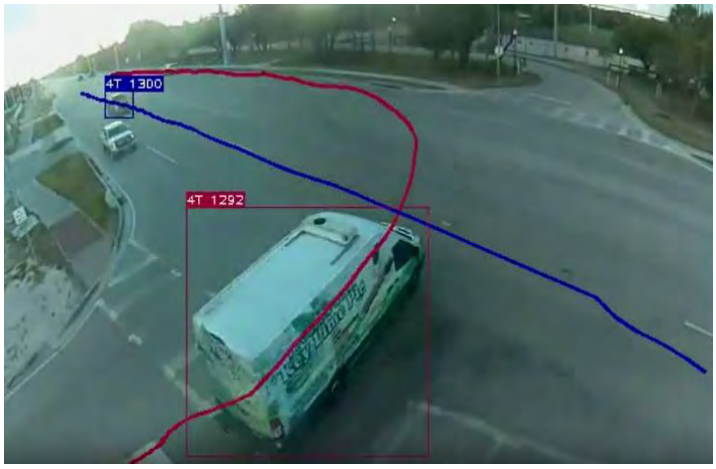


A total of 48 hours of video were collected at the five selected intersections, including three signalized locations and two unsignalized locations. These intersections have a recorded history of fatal and serious injury (FSI) crashes. Data was collected at these intersections from Wednesday, April 23, 2025, through Thursday, April 24, 2025. The video recordings were processed with the Quality Count's (project vendor hired by Stantec to collect near-miss data) DataLens software, which flagged near-misses using artificial intelligence technology.

Observations

Each near-miss incident captured by the DataLens tool was characterized by the two conflicting movements, with the crossing movement listed first. For example, a near-miss listed as between an eastbound (EB) left and westbound (WB) through movement, indicates that the EB left turning vehicle crossed in front of the path of the WB through vehicle. **Figure 33** displays a near-miss identified at the intersection of US 1 and 39th Street. The red line represents the crossing movement.

Figure 33 Near-Miss at US 1 and 39th Street



Near-misses were defined by the time separation (known at PET, post-encroachment time) between road users passing through the same conflict point, with shorter times indicating higher risk. Longer time gaps represented situations where conflict was avoided despite shared use of the same space. To account for differences in traffic volumes, near-miss rates were normalized by the number of vehicles entering each intersection to identify locations with a higher likelihood of conflict per entering vehicle More detailed information on this methodology can be found in **Appendix C**.

Insights

Among the intersections, the signalized intersection at US 1 & Sombrero Beach Road experienced the highest frequency of conflicts, with the unsignalized intersection at US 1 & 73rd Street ranking second.

VRUs accounted for 28% of all captured conflicts. Signalized and unsignalized intersections experienced similar rates of near-miss frequency. Intersections with more volume saw increased near-miss incidents. Additionally, most vehicles experienced a near-miss incident after two seconds of movement.

Across four intersections, WB left turn movements exhibited the highest conflict rates, accounting for 27% of observed conflicts. This observation is consistent with left turn and angle crashes seeing a relatively high rate of occurrence from observed crash history across near-miss analysis intersections.

Figure 34 Near-Miss Insights



More site-specific observations are found below.

- US 1 & 39th Street: 86% of observed near-misses with less than two seconds involved a VRU, and all observed near-misses with less than 1.5 seconds involved a VRU. This intersection is likely to see higher VRU volumes with the Marathon Community Park located on the south side of this intersection.
- US 1 & Sombrero Beach Road: 61% of the observed near-misses of less than two seconds involved a WB left turning vehicle turning in front of an EB through vehicle. The remaining 39% of near-misses observed involved vehicle-bicycle conflicts, primarily on the south or west legs of the intersection.
- US 1 & 73rd Street: A WB left turn created the greatest number of incidents, often with less than two seconds involving a WB left turning vehicle turning in front of an EB through vehicle. However, 66% of the near-misses of less than two seconds involved a VRU crossing on the south or west legs of the intersection.
- US 1 & Sadowski Causeway: 82% of near-misses of less than seconds involved a VRU.
- US 1 & Coco Plum Drive: Fewest number observed near-misses with less than two seconds.

5 Demographic Considerations

Understanding demographic considerations is critical to developing a CSAP that protects all roadway users, particularly those who may be more vulnerable to traffic-related injuries and fatalities. Safety planning is ultimately about people, and demographic conditions influence how individuals travel, what transportation options are available to them, and the level of risk they experience on the roadway network.

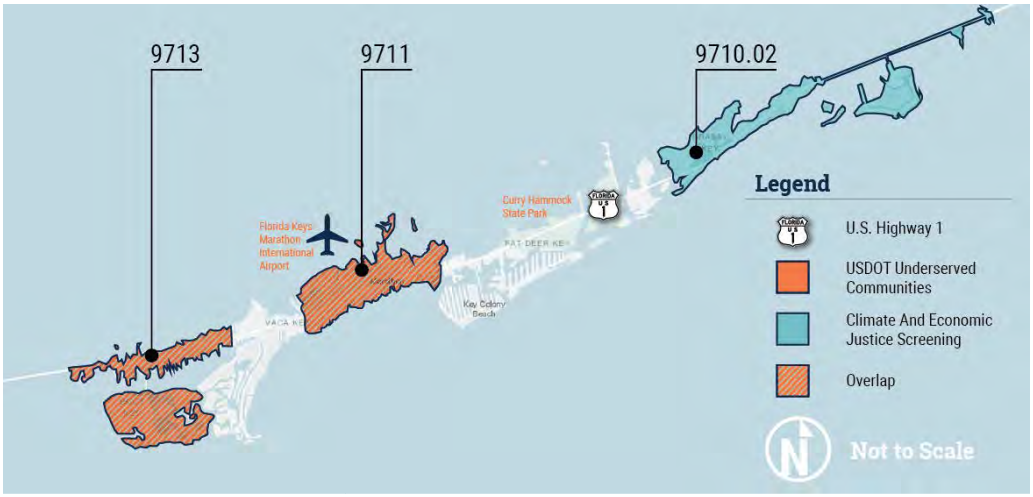
This analysis draws on data from the American Community Survey (ACS), the USDOT Underserved Communities Tool (UCT), and legacy demographic evaluation tools to identify populations and areas within the City that may face disproportionate safety risks or barriers to safe mobility. For more information on demographic considerations, refer to **Appendix D**.

Underserved communities

A review of federal screening tools identified portions of the City that meet criteria for being considered underserved. Using the USDOT Underserved Communities Tool, two of the five census tracts that intersect the City were identified as underserved. These tracts shown in **Figure 35**. are located primarily in the southwestern portion of the City, including areas west of 70th Street and portions of Boot Key.

Analysis of archived Climate and Economic Justice Screening Tool data identified three underserved census tracts (**Figure 35).** These tracts experience one or more qualifying burdens, including low income, high risk of population loss, linguistic isolation, and a high risk of flooding within the next 30 years. The presence of flood-related burdens is consistent with the City's island geography and exposure to sea-level rise.

Figure 35 Underserved Census Tracts



In addition to place-based screening tools, citywide demographic indicators from the American Community Survey highlight characteristics commonly associated with transportation vulnerability. Compared to Monroe County and the State of Florida, the City has a higher percentage of households with limited English proficiency. While the proportion of low-income residents and zero-vehicle households is similar to or slightly lower than county and state averages, these populations are more likely to rely on walking, biking, and transit, particularly where vehicle ownership or maintenance presents a financial burden. These figures are listed in **Table 2**.

Table 2 Potential Disadvantage Indicators

POTENTIAL DISADVANTAGE INDICATORS	MARATHON POPULATION	MONROE COUNTY POPULATION	FLORIDA POPULATION
Low Income Population	17%	17%	21%
Limited English Proficiency Households	8%	5%	7%
Zero Vehicle Households	5%	7%	6%

Findings

This demographic considerations analysis shows that underserved communities within the City are geographically concentrated and overlap with known roadway safety challenges. Underserved census tracts identified through federal screening tools are co-located with segments of US 1 that have been identified as part of the City's HIN.

These corridors experience elevated rates of FSI crashes and are characterized by limited access control, frequent driveway intersections, side-street conflicts, gaps in pedestrian and bicycle infrastructure, and other common barriers to VRU mobility. The combination of higher crash exposure and demographic vulnerability underscores the importance of prioritizing safety improvements in these areas.

Citywide findings also highlight broader demographic considerations that informed development of this CSAP, including:

- A higher share of limited English proficiency households relative to county and state averages
- The presence of low-income populations that may depend more heavily on walking, biking, and transit

- Environmental and climate-related burdens, including flood risk, that can compound safety challenges and affect evacuation, mobility, and infrastructure resilience

These findings reinforce the need for safety strategies that are inclusive, accessible, and responsive to the needs of underserved populations. This includes tailoring safety education and outreach materials for limited English proficiency communities, prioritizing improvements that support safe walking and biking access, and advancing projects along HIN corridors that serve vulnerable populations.

The demographic considerations analysis directly informed project prioritization, policy development, and outreach strategies included in this CSAP, ensuring that investments are aligned with areas of greatest need and risk.

6 Recommended Safety Actions

Recommended safety actions were guided by a data driven approach with input from community involvement. These recommendations are guided by the Safe System Approach and begin to solve the safety challenges that exist in the City. Recommendations can be grouped into two categories: policy recommendations and project recommendations, the latter being defined as physical improvements.

Policy recommendations

As mentioned in **Chapter 2**, a detailed review of plans and policies for the City was completed. Additionally, a review of peer agency policies, programs, and implementation processes was conducted to inform best practices and calibrate local decision-making. This research focused on how comparable jurisdictions plan, prioritize, fund, and deliver similar hard and soft -infrastructure investments. The review prioritized peer agencies, which included a mix of coastal municipalities and other jurisdictions that have recently advanced CSAPs and safety projects.

Policy screening

After review, 16 policies were presented at and following a stakeholder meeting in March 2026 (**Figure 36),** where participants completed a poll to indicate their level of support for each policy.

The polling results were compiled into a policy scorecard, which ranked the policies based on stakeholder support. Based on the polling results, policies were classified into three categorizations: recommended policies receiving strong support (green); policies for further consideration receiving moderate support (yellow); and policies not advancing due to mixed or lower levels of support (red).

The policy scorecard results are presented in

Table 3, and more detailed policy screening results can be found in **Appendix E.**

Figure 36 Policy Screening Meeting (Photo)



Table 3 Policy Screening Scorecard

Policy Name	Policy Score
Better post-crash care and EMS response	73.8
Safety subcommittee for FL Keys Transportation Coordination Committee	65.5
Rapid Response Team for fatal and serious crashes	62.8
Continue access management where feasible	62.5
Have developers provide concessions for safer ped/bike travel	61.5
Annual Vision Zero report issued by Planning Department	57.8
Rumble strips to reduce run-off-road/head-on crashes	55.5
Public outreach campaign for safer driving	52.5
Obtain Vision Zero commitment from stakeholders through signed memorandum	52
Increase Sheriff's Office enforcement on High Injury Network roads	50.8
Issue City Complete Streets Policy through following study	50
E-bike training, workshop, and advocacy	49.8
Bike road crossing slowdowns	49.2
Establish Families for Safe Streets chapter	39
Safety Zones on US 1 with increased penalty	38.5
Slow streets program for 20 MPH signing	34.7

Decision framework

Clear strategies for improving safety within the City are identified and provided in the decision framework below. The framework identifies expected timeframe of implementation, cost estimate, the decision makers responsible for leading these efforts, and identifies the partnerships needed. It also outlines key needs for adoption, including additional studies or legislation.

Recommended safety policies

- Coordinate between City Planning, EMS, and local hospitals to understand emergency response care needs and examine funding options for enhanced post-crash care[7].
    - Timeframe: Immediate
    - Cost: Low-cost action
    - Partnership: Monroe County Emergency Management and local hospitals
    - Responsible Party: City Planning and City Fire/Rescue
- Establish a safety subcommittee as part of the Florida Keys Transportation Committee to coordinate with other Monroe County Vision Zero cities, to better understand how they are working to reduce fatal and serious injury crashes and how they are coordinating with FDOT to construct safety improvements.
    - Timeframe: Immediate
    - Cost: Low-cost action
    - Partnership: Monroe County and municipalities including Key West, Islamorada, Key Colony Beach, and Layton
    - Responsible Party: City Planning
- Establish a Rapid Response Team to quickly address fatal and serious injury crashes within one week of their occurrence, including communications on what can be done with the owning jurisdiction (City Engineering, FDOT, or Monroe County), including conceptual drawings or ideas of fixes.
    - Timeframe: Immediate

[7] Due to the relatively high ranking nature of this policy, based on stakeholder feedback, the City has applied for a SS4A Planning and Demonstration grant to implement emergency pre-emption technologies along US 1.

- Cost: Low-cost action
- Partnership: Monroe County, FDOT
- Responsible Party: City Planning, City Engineering

- Implement access management measures at locations with a history of severe crashes by reducing the number of driveways allowed on properties and closing the center of roadways to restrict left turning movement. These updates may require legislative revisions to the land development ordinance.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: Property owners
  - Responsible Party: City Planning, City Engineering, FDOT
- Establish Smart Growth and development processes to have development projects trigger improvements for pedestrian and bicycle facilities, including new sidewalks and trails, intersection improvements such as traffic control devices and crosswalks, and bike and micromobility parking. These updates may require legislative revisions to the Land Development Ordinance. In addition, the City should consider adopting impact fees—one-time charges on new development used to fund public infrastructure expansion—which also requires legislative approval.
  - Timeframe: Medium-term
  - Cost: Low-cost action
  - Partnership: Private developers
  - Responsible Party: City Planning and City Council

Further consideration

- Monitor the progress of implementing the safety policies by tracking action items, progress towards completion of safety efforts, and the resulting reduction of fatal and serious injury crashes, reported annually through a Vision Zero report.
  - Timeframe: Immediate
  - Cost: Low-cost action
  - Partnership: City Engineering

- Responsible Party: City Planning

- Coordinate with FDOT for full coverage of rumble strips on US 1 (not including locations with intersecting streets and driveways) to reduce the chance of severe crashes resulting from crossing the center of the road or running off the road.
  - Timeframe: Medium term
  - Cost: Medium-cost action
  - Partnership: City Planning
  - Responsible Party: FDOT, City Engineering
- Implement a public outreach campaign for safer driving led by the City's Public Information Officer and communicated to City employees and residents through online and other communication tools.
  - Timeframe: Short-term
  - Cost: Low-cost action
  - Partnership: City agencies, neighborhood organizations
  - Responsible Party: City Public Information Officer
- Obtain a Vision Zero commitment from all stakeholders through a Memorandum of Understanding where there is agreement to participate in an annual 2-hour task force meeting, share data in relation to traffic safety, and commit to having agencies/businesses/organizations and its employees drive safely on City roadways.
  - Timeframe: Immediate
  - Cost: Low-cost action
  - Partnership: City agencies, businesses, local organizations
  - Responsible Party: City Planning
- Increase Sheriff's Office enforcement/policing for speeding of both e-bike and motorized vehicles, and in coordination with City Planning, prioritize two locations on US 1 for speed feedback signing and increased enforcement on a semi-annual basis.
  - Timeframe: Short-term
  - Cost: Medium-cost action

- Partnership: Florida Highway Patrol
- Responsible Party: Sherrif's Office, City Planning

- Implement a Complete Streets policy following adoption of the Bicycle and Pedestrian Master Plan to better accommodate all road users. This policy update may require legislative approval. Additionally, adoption of policy should be integrated with land development ordinance.
  - Timeframe: Short-term
  - Cost: Low-cost action
  - Partnership: City Engineering, FDOT, bike advocacy groups
  - Responsible Party: City Planning
- Implement e-bike training workshops and advocacy efforts, including bike rodeos and helmet fittings with participation from City Planning and the Sheriff's Office to be held at locations such as parks and schools.
  - Timeframe: Short-term
  - Cost: Low-cost action
  - Partnership: Sherriff's Office, bike advocacy groups
  - Responsible Party: City Planning
- Install hardscaping and chicanes to slow bicyclists down before crossing streets when traveling on the Florida Keys Overseas Heritage Trail along US 1.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering

Not advancing

- Partner with the City of Key West to establish a Families for Safe Streets local chapter that helps City Planning better access resources for support gatherings, follow-up support for families impacted by road tragedies, and continue to bring visibility to this public health crisis.
  - Timeframe: Immediate

- Cost: Low-cost action
- Partnership: City of Key West, non-profit organizations
- Responsible Party: City Planning

- Establish Safety Zones on US 1 for segments that see a higher number of severe crashes. Coordinate with FDOT for special signing to share the increased penalty with drivers and perform before and after speed observations.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: City Engineering, Sheriff's Office, Florida Highway Patrol
  - Responsible Party: FDOT, City Planning
- Develop a Slow Streets Program to have the City sign speed limits of 20 MPH on local/neighborhood streets, which excludes US 1, County roadways, and those already signed at 30 MPH. Further studying to review the impact of reduced speeds on roadways may be needed. Additionally, legislation is required.
  - Timeframe: Short-term
  - Cost: Medium-cost action
  - Partnership: City Engineering
  - Responsible Party: City Engineering

Infrastructure recommendations

Infrastructure recommendations are physical improvements to be implemented. They focus on improving roadway conditions and are countermeasures that are proven to reduce crashes if implemented. These recommendations generally fall into two categories:

- Top five intersections
- Citywide treatments

Through the stakeholder engagement process conducted as part of the CSAP, post-crash care and emergency response emerged as priority area for improving transportation safety within the city. In response, the City partnered with local first responders to pursue a 2026 SS4A Planning and Demonstration Grant focused on emergency vehicle preemption along the US 1 corridor.

The proposed project would pilot emergency vehicle preemption technology at key signalized intersections to reduce delays for emergency responders and improve response times during critical incidents. Given the City's linear roadway network and limited alternate routes, improving emergency access along US 1 has the potential to enhance post-crash care and support the City's broader goal of reducing datal and serious injury outcomes.

Top five intersections

As mentioned in **Chapter 4**, five intersections were selected for detailed safety evaluation based on crash history, and input from the City staff and stakeholders. The Project Team's recommendations were informed by observations of near-miss incidents.

The recommended improvements for these intersections focus on enhancing pedestrian and bicycle safety, improving intersection operations, increasing driver awareness and reducing conflict points between roadway users.

Decision framework

Clear strategies for implementing infrastructure within the City are identified and provided in the decision framework below. The framework identifies FDOT projects, state projects that have already been identified or scheduled for implementation, and recommended improvements, those proposed by the Project Team.

The decision framework applied identified expected timeframe of implementation, cost estimate, the decision makers responsible for leading these efforts, and identifies the partnerships needed.

US 1 & 39th Street

Marathon Community Park generates substantial pedestrian activity along the corridor between 36th Street and 39th Street, with frequent crossings also observed near 36th Street. Improvements at this location should be coordinated with the transportation circulation strategies currently under evaluation as part of the City's Community Park Master Plan.

The Master Plan is considering relocating the primary park access from its current position opposite 39th Street to an existing driveway approximately 300 feet to the east, with the existing access potentially limited to emergency use only. Although this relocation may introduce access management challenges—and the current configuration at the 39th Street and US 1 intersection is generally more favorable from a safety standpoint, it also presents an opportunity to implement enhancements that better accommodate VRUs. The major recommended infrastructure improvements are illustrated in **Figure 37.**

Figure 37 US 1 & 39th Street



FDOT projects

FDOT is developing crosswalk construction plans to cross US 1 in the vicinity of Marathon Community Park. The type of traffic control and exact location of the crossing to be constructed has not been determined and will likely be influenced by the City's Community Park Master Plan. In accordance with design guidelines, a two-staged, staggered, special emphasis crosswalk with a raised median refuge island, a midblock traffic control signal (or Pedestrian Hybrid Beacon), and corresponding signing would be required to attract driver's attention for appropriate yielding behavior because of the posted speed limit of 45 mph on US 1; however, east of 36th Street, the speed limit of 35 mph may permit an unsignalized crossing; additional information is in **Appendix F**.

Recommended improvements

- Install a Rectangular Rapid Flashing Beacon (RRFB) east of 36th Street with accompanying signing to provide addition.
    - Timeframe: Medium-term
    - Cost: Medium-cost action
    - Partnership: FDOT, City Engineering, City Planning
    - Responsible Party: FDOT, City Engineering
- Install continuous sidewalk and crosswalk treatments across driveway crossings parallel to US 1.
    - Timeframe: Medium-term
    - Cost: Medium-cost action
    - Partnership: FDOT, City Engineering, City Planning
    - Responsible Party: FDOT, City Engineering
- Coordinate with the Monroe County Sheriff's Office during events like the Marathon Seafood Festival to station officers in the US 1 median for traffic calming and directing vehicles to designated parking. Additionally, if these events become frequent, the City should work with FDOT to evaluate the use of flashing advisory speed signs during event periods.
    - Timeframe: Short-term
    - Cost: Low-cost action
    - Partnership: FDOT, City Eng./Planning, Monroe County Sheriff's Office
    - Responsible Party: FDOT, Monroe County Sheriff's Office

US 1 & Sombrero Beach Road

This intersection experiences unsafe gap acceptance, with drivers—particularly those making southbound left turns—misjudging the time or distance needed to enter traffic or cross opposing flows. Vulnerable road users are also at elevated risk due to long pedestrian crossing distances and an unprotected bike lane on the north side of the corridor. **Figure 38** highlights the major infrastructure improvements recommended for this intersection.

Figure 38 US 1 & Sombrero Beach Road



FDOT projects

The City has been coordinating with FDOT to bring safety improvements proposed in the Intersection Safety Study (March 2024) to conception. Safety improvements proposed by FDOT include widening for a southbound double left from US 1 to Sombrero Beach Road and prohibiting the left turn egress movement from 53rd Street onto US 1 southbound. These actions are contingent on review of traffic impacts on Sombrero Beach Road.

These improvements address unsafe gap acceptance amongst southbound left turners through protected-only phasing and access management, respectively. Other ancillary safety measures proposed by FDOT include extending the westbound right-turn lane from Sombrero Beach Road, signing/striping refreshing, adding signal ahead signing on US 1 northbound and southbound, refreshing detectible warning pads, trimming landscaping obstructing sight distance on the northeast corner of the intersection, and modifying the signal operating plan to improve overlaps and general phasing. Additionally, “No Crossing/Use Crosswalk” signs in the median to direct pedestrians to cross at the signal is proposed. These improvements are detailed in **Appendix G**.

Recommended improvements

- Restrict left turns from southbound US 1 to protected-only phases during peak periods as an interim measure before double left-turns are implemented; historic crash data shows that 1pm-7pm protected-only phasing would address most angle and left turn crash events.
  - Timeframe: Short-term
  - Cost: Low-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering
- Install signal improvements including refining signal timing and progression, reviewing clearance intervals, and evaluating a Leading Pedestrian Interval (LPI) to improve intersection safety where signal phasing allows.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering
- Install bicycle-focused treatments such as protected bike lanes, bicycle warning signs, and green conflict-zone pavement markings.
  - Timeframe: Short-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering
- Potential reclamation of curb-to-curb space and shortening pedestrian crossing distances should be evaluated to enhance pedestrian safety and accessibility, which may include reducing curb return radii on the west leg.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering

US 1 & 73rd Street/Aviation Boulevard

These intersections are characterized by conflicting vehicular movements and pedestrian safety challenges. There are no east-west crosswalks, which create significant barrier to mobility for residents looking to connect between gulf side and ocean side residences and commercial centers. The nearest crosswalk traversing US 1 either to the north or the south of these intersections is one mile away. Given US 1's roadway width, speeds, and traffic volumes, FDOT would likely require signalization for the proposed crossing, potentially supporting signalization at the US 1 & Aviation Boulevard intersection.

Compared to other US 1 intersections, both 73rd Street and Aviation Boulevard see an elevated occurrence of left turn crashes, which correlate to crashes with FSI severity outcomes. Over the last five years, US 1 & 73rd Street saw two FSI crashes per year, half of which resulted in an incapacitating injury. Field observations indicate that roadside advertising and landscaping in the southeast and southwest corners of the intersection (on the northbound side of US 1) is obstructing intersection sight distances for through traffic on US 1 and traffic turning onto US 1 (**Figure 40**).

FDOT has previously evaluated the Aviation Boulevard and US 1 intersection due to documented safety concerns and side-street delay issues. The most significant infrastructure recommendations for this intersection are depicted in **Figure 39**.

Figure 39 US 1 & 73rd Street/Aviation Blvd

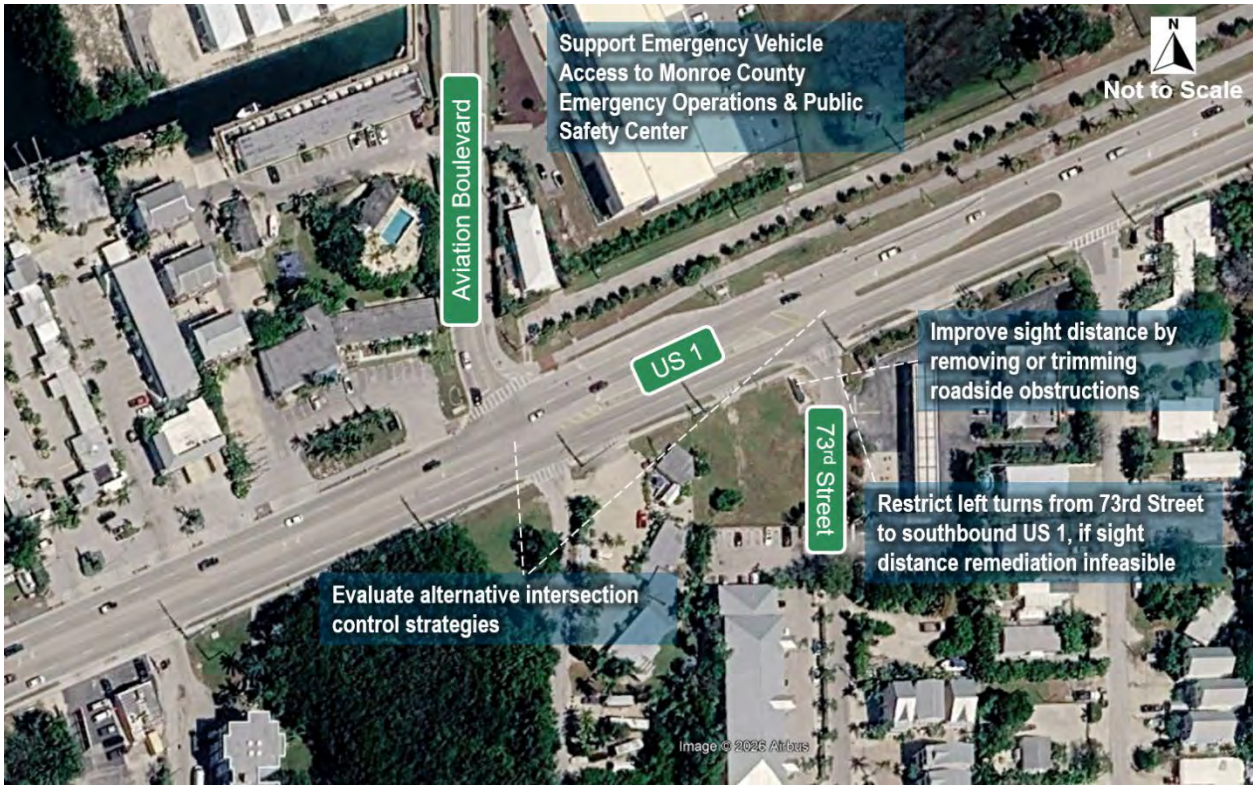


Figure 40 Roadside Advertising Sign Obstructing Visibility at US 1 and 73rd Street



FDOT projects

There are no known FDOT projects at these locations.

Recommended improvements: US 1 near 73rd Street and Aviation Boulevard intersections.

- Investigate a potential crosswalk traversing US 1 at either intersection with traffic control and location to be determined in concert with FDOT.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering
- Study alternative intersection configurations to evaluate safety and operation improvements as future conditions warrant.
  - Timeframe: Long-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering

Recommended improvements: US 1 & 73rd Street.

- **Short-term:** The City should coordinate with private property owners of adjacent parcels to remove and/or trim obstructing features impacting sight distance.
  - Timeframe: Short-term
  - Cost: Low-cost action
  - Partnership: FDOT, City Engineering, Property owners
  - Responsible Party: FDOT, City Engineering, Property owners
- **Long-term:** If no progress can be made with remediating sight distance issues at 73rd Street, it is recommended that FDOT construct a median turning bay for US 1 northbound traffic at the intersection with 75th Street to permit U-turning traffic from northbound to southbound as an alternate route for 73rd left turn egress movements. Left turns from 73rd Street onto southbound US 1 can be prohibited through a combination of signing, pavement markings, and median hardscaping, effectively eliminating the potential for future FSI crashes at this location.
  - Timeframe: Long-term
  - Cost: High-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering

Recommended improvements: US 1 & Aviation Boulevard.

- It is recommended that FDOT carefully monitor crash and congestion data at this intersection, and revisit signal warrant evaluations as needed. The installation of a traffic signal itself is not noted by FHWA to be a proven crash countermeasure in all applicable cases as signals can increase certain crash types, particularly rear-end crashes[8]. However, if side street approaches (Aviation Boulevard or 72nd Street) experience delay resulting in shorter, riskier gap acceptance, signal installation may make sense overall.

  Signalization of this intersection would provide an opportunity to provide a controlled crossing of US 1 for VRU travel as an unsignalized crosswalk would circumvent FDOT guidance. Such signalization may also prove beneficial to first responder vehicles that are looking to enter the flow of US 1 traffic from the

[8] https://cmfclearinghouse.fhwa.dot.gov/detail.php?facid=324

newly constructed Monroe County Emergency Operations and Public Safety Center.

- Timeframe: Long-term
- Cost: High-cost action
- Partnership: FDOT, City Engineering, City Planning
- Responsible Party: FDOT, City Engineering

US 1 & Sadowsky Causeway

This intersection is characterized by conflicts between pedestrians and westbound left turn traffic from Sadowski Causeway. There is also an unprotected bike lane on the north side of the corridor. The primary infrastructure recommendations for this intersection are shown in **Figure 41.**

Figure 41 US 1 & Sadowski Causeway



FDOT projects

FDOT is currently in the process of eliminating the overlap between the westbound left-turn movement and the east-west pedestrian crossing phase through modifications to its signal operating plan at this intersection. The east-west pedestrian crossing will now overlap with only the westbound right turn and the southbound left turn. Furthermore, through the same changes, FDOT is proposing refreshed signing and crosswalk striping at this intersection. Documentation of such improvements are included in **Appendix H**.

Recommended improvements

- Install bike-focused improvements including that east-west crossing striping be refreshed to include green striping on the east-west crossing to indicate shared bicycle and pedestrian usage. Other improvements in the vicinity of this intersection, such as protected bike lanes, bike boxes, and green conflict-zone pavement markings, should be installed to improve bicyclist visibility and reduce conflicts.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering
- Install pedestrian improvements, including pedestrian-scale lighting and maintaining sidewalk/trail continuity across driveways.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering
- As possible, consolidate private driveway access points along US 1 to minimize pedestrian exposure to vehicle traffic.
  - Timeframe: Medium-term
  - Cost: Medium-cost action
  - Partnership: FDOT, City Engineering, City Planning
  - Responsible Party: FDOT, City Engineering

US 1 & Coco Plum Drive

The northbound US 1 approach to this intersection has a documented history of signal indicator conspicuity issues, evidenced by skid marks on approach to the intersection (**Figure 42**, top photo facing southbound, bottom photo facing northbound). To address signal indication visibility concerns for northbound US 1 traffic, FDOT installed retroreflective backplates and added a supplemental far-side pedestal-mounted signal head in the mid-2010s.

Figure 42 Existing Conditions at US 1 & Coco Plum Drive



Even with these safety improvements, the intersection continues to experience approximately one injury crash per year involving left-turn and angle crash conflicts associated with northbound US 1 traffic, including conflict with both southbound and westbound left turns. The major recommended infrastructure improvements are shown in **Figure 43.**

Figure 43 US 1 & Coco Plum Drive



FDOT projects

There are no known projects for this location.

Recommended improvements

- Remove trees installed in the median of US 1 to the south of the Coco Plum Drive intersection to restore obscured sight lines.
    - Timeframe: Short-term
    - Cost: Low-cost action
    - Partnership: FDOT, City Engineering, City Planning
    - Responsible Party: FDOT, City Engineering
- Implement protected U-turn/left-turn phasing on US 1 to reduce high-risk turning conflicts; if protected-only phasing is feasible, install “NO TURN ON RED” signing for the Coco Plum Drive approach.
    - Timeframe: Short-term
    - Cost: Low-cost action
    - Partnership: FDOT, City Engineering, City Planning
    - Responsible Party: FDOT, City Engineering
- Install Leading Pedestrian Intervals (LPIs), maintain and enhance ADA-accessible pedestrian facilities and improve pedestrian crossing conspicuity through visibility enhancements and targeted signing.
    - Timeframe: Medium-term
    - Cost: Medium-cost action
    - Partnership: FDOT, City Engineering, City Planning
    - Responsible Party: FDOT, City Engineering
- Bicycle safety improvements, including a protected bike lane and bike box treatments to increase cyclist visibility, should also be considered.
    - Timeframe: Medium-term
    - Cost: Medium-cost action
    - Partnership: FDOT, City Engineering, City Planning
    - Responsible Party: FDOT, City Engineering

Citywide treatments

In addition to infrastructure recommendations discussed above, **Table 4** presents the Marathon Safety Countermeasure Toolbox, which provides a broad range of proven safety treatments that may be considered throughout the City based on site-specific conditions and safety needs.

Table 4 Marathon Florida Toolbox of Countermeasures

MARATHON FLORIDA TOOLBOX OF COUNTERMEASURES							
List of Countermeasures		***Safety Benefits***				***Considerations***	
Countermeasure Name	**Description**	**Crash Reduction Factor** *(CRF)*	**CRF Bucket** *(≤20, 21-50, 51+)*	**Other Safety Benefits**		**Timeline** (Short, Mid, Long)	**Cost Bucket ($ - $$$)**
Intersection Signalization							
Add Missing High Visibility Crosswalks and Signs	Add crosswalks using high visibility paint and include advanced yield or stop markings and signs	**40%** *(pedestrian crashes)*	High	Encourages yielding, Increases visibility of pedestrians when crossing		Short	$
Traffic Signals	Assigns right of way movements at an intersection, for all modes	**49%** *(all crashes vs unsignalized)*	Moderate	-		Long	$$$
Signal Operations: Protected Left Turn Phasing	Provides a dedicated left turn phase by separating the turning movement from any other conflicting traffic	**41-48%** (left turn crashes)	Moderate	Reduces pedestrian and vehicle conflict with turning vehicles		Short	$$
Stop Sign Control	Adds control, where warranted	**40%** *(all crashes)*	Moderate	Reduces the amount of time people must wait to cross streets		Short	$
Signal Operations: Split Phasing	Removes left turn conflicts from pedestrian crossing phases, but increases delay	**34%** (pedestrian crashes)	Moderate	-		Short	$$
Pedestrian Countdown Signal	Clarifies amount of time left to cross on green and flashing don't walk	**25%** *(pedestrian crashes)*	Moderate	-		Short	$
No Right Turn on Red	Prohibits vehicles from making a permitted right turn after coming to a complete stop during a conflicting walk or bike signal phase	**25%** *(pedestrian crashes)*	Moderate	Reduces opportunity for conflict with pedestrian/bicyclists		Short	$
Leading Pedestrian Intervals (LPIs)	Gives people crossing the street a head start (about 3 - 7 seconds) before motorists go through the intersection	**13%** *(pedestrian crashes)*	Low	Reduce potential conflicts between pedestrians and turning vehicles.		Short	$
Intersection Geometry							
Roundabouts	A circular intersection that requires yielding at entry; has fewer conflict points between turning vehicles, through traffic, and people crossing	**78% to 82%** *(fatal and serious injury crashes)*	High	Slows vehicle speeds		Long	$$$
Mini-Roundabouts	A smaller roundabout that slows traffic going through minor intersections	**20% to 61%** *(all crashes)*	High	People walking across one stream of traffic at a time and can pause between the traffic entering the roundabout and exiting the roundabout, Slows vehicle approach speed by approximately 40% (FHWA)		Long	$$$
Pedestrian Refuge Island	Raised median that reduces crossing distance and makes it possible to cross half way	**46% - 56%** *(pedestrian crashes)*	High	Slows turns, Reduces risk of left-turn and head-on collisions at intersections		Medium	$$
Curb Extensions	Expands sidewalk curb to reduce crossing distance at curbs	**23% - 47%** *(all crashes)*	Moderate	Slows turns, reduces size of wide intersection, Reduction of 85th percentile speeds between 1 and 3.5 mph (FHWA)		Medium	$$$
Upgrade to High Visibility / with 10' Advance Stop Bars	Adds patterns (i.e., bar pairs, continental, ladder) that are visible to both drivers and pedestrians and a bar a few feet before the crosswalk for vehicles to stop at.	**40%** *(pedestrian and vehicle crashes)*	Moderate	Increases visibility, encourages yielding and reduced red light running		Short	$
Parking Restrictions at Crossing Locations / Daylighting	Improves driver visibility of people crossing the street through removing parking spaces close to the intersection	**20%** *(all crashes for "remove obstructions for sightlines")*	Low	Provides potential space for other amenities such as bike parking and planters at daylighted intersections		Short	$
Travel Lane Signs & Markings	Reminds drivers of posted speed limits and which lanes to be in with advance notice	-	Moderate	-		Short	$
Midblock Treatments							
Shared Use Path / Multi-Use Trails	Off-road path designed for non-motorized users such as pedestrians, cyclists, strollers, wheelchairs. Have designated signage for micromobility as needed	**65% to 89%** *(pedestrian and bicycle crashes)*	High	Reduces conflicts between pedestrians, cyclists, and vehicles		Long	$$$
Add Crosswalks / Reduce Long Distances Between with Ped refuge island	Reduces need for pedestrians to cross wide/fast roads to access retail and/or bus stops when a crosswalk is far	**65%** *(all crashes)*	High	-		Short	$
Pedestrian Hybrid Beacons (PHB) / HAWK	Adds large over street button-activated visual flashes to non-signalized crosswalks	**55%** *(pedestrian crashes)*	High	Increases visibility of pedestrians at crossings		Long	$$
Rectangular Rapid Flash Beacons (RRFBs)	Adds button-activated visual flashes to non-signalized crosswalks	**47%** *(pedestrian crashes)*	Moderate	Increases visibility of pedestrians at crossings, Can increase motorist yielding rates by up to 98% (FHWA)		Medium	$$
Separated Bicycle Lane	Increases safety for cyclists by providing vertical delineation elements from vehicles	**45% to 54%** *(all crashes)*	High	Less conflict with bikes (on sidewalks) for pedestrians		Long	$$$
Medians / Replacing Center Left Turn Lanes	Physical barrier or strip that reduces potential for head-on or mid-block turning conflicts	**42%** *(all crashes)*	Moderate	Provides refuge for pedestrians to cross road in stages, Reduction of 85th percentile speed between 1 and 8 mph (FHWA)		Long	$$
Sidewalks	Raised path next to the road intended for pedestrian use	**40%** *(pedestrian crashes)*	Moderate	Reduces chance of pedestrian conflict with vehicles		Long	$$$
Buffered Bicycle Lane	Provides bicycle lanes with an on-street buffer zone through pavement markings	**34%** *(bicycle crashes)*	High	Reduces conflict with bikes and vehicles		Medium	$$$
Green bike Lanes: Dash to highlight Conflict Areas	Increases visibility of cyclists, which is particularly useful to identify potential conflict areas for drivers	-	-	Provides conflict with bikes (on sidewalks) for pedestrians		Short	$
Corridor Access Management	Controlling entry and exit points along a roadway such as closing driveway access	**25% to 31%** (fatal and serious injuries along urban/suburban arterials)	Moderate			Long	$$$
Update Road Signage and Markings	Clear, consistent signage and pavement markings help communicate rules and expectations, especially where new micromobility regulations are in place or in areas with frequent conflicts.	-	-			Short	$
Speed Management							
Reduce Lane Width	Slows vehicles by narrowing roadway	**38% to 56%** *(all crashes)*	High	Reduces crossing distances and shorter signal cycles		Medium	$
Chicane	Slows traffic through lane shifts or alternating curving lanes	-	-	-		Long	$$
Speed Table	Reduces speed midblock by raising the wheelbase vehicles driving over	**30 to 46%** *(all crashes)*	Moderate	Increases pedestrian visibility if at crosswalk, Reduction of 85th percentile speed between 4 and 11 mph (FHWA)		Medium	$$
Red Light Cameras	Intends to reduce red running via threat of fine for driving through an intersection when the light is not green	**37%** *(all red-light running crashes)*	Moderate	-		Medium	$$
Reduce Posted Speed Limit	Restricts vehicle speed through regulation	**26%** *(fatal crashes, PSL reduced from 25 mph to 20 mph)*	High	Lowers injury severity if conflicts do occur		Medium	$
Intelligent Traffic System (ITS) Management/ Greenwave	Enhances traffic flow and reduces stops for all modes using coordinated traffic signal timing of nearby signals	-	-	Programming allows pedestrians and cyclists to have a head starts crossing to improve visibility		Long	$$
Low Light or Visibility Conditions							
Streetlighting	Improves visibility of other road users. Especially useful to see people walking or biking who may be crossing the street.	**42%** *(pedestrian crashes at night)*	Moderate	-		Short	$$
Pedestrian-scale Streetlighting (under structures, etc.)	Improves visibility of people walking, usually in areas with pedestrian accessible retail	**42%** *(pedestrian crashes at night)*	Moderate	-		Short	$$
Retroreflective Traffic Signal Backplates	Makes traffic signals more visible and conspicuous in both daytime and nighttime conditions	**15%** *(all crashes)*	Low	-		Short	$

7 Progress and Transparency Scorecard

Achieving reduced FSI outcomes can only be managed if it is measured. As a result, measuring the progress toward zero FSI crashes keeps this CSAP from being a plan that sits on the shelf. Additionally, in the spirit of the Sunshine Law and keeping residents informed of the discussions and documents that are transforming into tangible actions, the progress being affected by the CSAP will be posted online and tracked to add a level of accountability for all stakeholders and partnering agencies. As such, it is recommended that the City provide a publicly reviewable scorecard posted on the City's CSAP webpage to monitor, evaluate, and report FSI statistics and countermeasure/policy implementation.

Monitoring, evaluation and reporting

Monitoring, evaluating and reporting are essential for a data-driven approach to roadway safety. Upon submission and acceptance of this CSAP, a Progress and Transparency Scorecard template will be submitted to this City for continuous sharing of updated crash data, project tracking, performance measures, and sharing of public engagement activities. These items will be available on the City's CSAP website[9]. It is recommended that the City's scorecard include the following measures to be updated on an annual basis:

- Crash data: The City should continue to monitor crash data on an annual basis. This includes the continued analysis of total crashes, FSI crashes, and VRU crashes. The City can obtain access to crash records by registering for a Signal Four Analytics username/account as a public agency employee through the Signal Four Analytics website[10]. Once approved, the platform can be used to monitor crash trends on an annual basis and support ongoing Safety Action Plan implementation. Frequency and year-on-year reduction percentages are traditional means to continually track progress on FSI data. However, when such information is shared with the public, caveats on the variability of FSI crash data should be made.

- Policy implementation tracking: Along with crash data, the City should share, in a table format, their progress on the top five policies recommended within this CSAP (see **Recommended safety policies** section of CSAP in **Chapter 6**). Much like other municipal agencies have done (**Table 5**), the City can track the partners responsible for the success of the policy, the quantified timeframe in which they hope to complete the policy, and the current status of progress on each policy.

[9] https://www.ci.marathon.fl.us/planning/page/safe-streets-all-ss4a
[10] Account request via the following: https://signal4analytics.com/analytics/NewUserRequest.aspx

- Performance measurement: The City should pair crash data and implementation tracking data with outcome and process metrics. On the same webpage, the City would define the success of its CSAP, whether it would be a 10% year-on-year reduction of FSI crashes or implementation of three of the five recommended policies.
- Public engagement: The City should continue to participate in a safety subcommittee within the Florida Keys Transportation Coordination Committee, with meetings open to the public to facilitate engagement with residents and visitors on transportation safety trends impacting the community. Notifications for such meetings can be posted on the CSAP website. This supports continued trust-building with the community and real-time feedback collection.

Table 5 Example of Policy Implementation Tracking from Other Municipality Vision Zero Program

Action	Partners*	Timeframe	Progress
2.21 Provide traffic safety tips for older adults.	***HHS***	5 year	**No**
2.22 Conduct outreach focused on safety improvements for people experiencing homelessness.	***HHS***	2 year	**Yes, Incomplete**
2.23 Continue enforcement efforts targeting distracted and impaired driving with a focus on the HIN. Explore education and warnings to target drowsy driving.	***PD***	2 year	**Yes, Incomplete**
2.24 Improve communication and enhance channels for distribution of information pertaining to various traffic safety projects.	***M***, BJC, HHS, C, P, T, SSJC	2 year	**Yes, Implementation Ongoing**
2.25 Work with major employers to take the Vision Zero pledge and disseminate Vision Zero information to employees.	***M***, C	2 year	**No**
2.26 Hold transportation safety hackathons to engage residents on potential safety improvements.	***SSJC***, BJC, M, P, T	Annual	**No**

* ***ABC***: Lead partner ABC: Supporting partner(s) *ABC:* Non-Task Force partner(s)

Partnerships

Crucial to the success of CSAP is the cooperation of the City's partners, mainly FDOT and the Sheriff's Office. Roadways are owned and maintained by different agencies with different priorities and regulatory procedures. Safety improvements involve planning, engineering, operations, enforcement, and public engagement. Clear responsibility and coordination support timely and consistent delivery. While the City owns and maintains

most of their roadways, US 1 is a state route, owned and maintained by District Six of the FDOT, which comprises the majority of the HIN identified in this CSAP.

The Sheriff's Office is also an invaluable partner in determining the feasibility of proposed improvements as their day-to-day operations and response to crashes are impacted by the decisions made by FDOT and the City. Project recommendations at the top five intersections highlighted within this CSAP (see **Top five intersections** section of CSAP in **Chapter 6**) mostly lie within FDOT jurisdiction and, therefore, will require FDOT review, approval, and project development processes. As such, following the submission of this CSAP, the City will transmit a technical memorandum to FDOT regarding their top requests for safety improvements at the five intersections identified in this CSAP.

Looking ahead

The City should continue to remain committed to providing a community where residents and visitors can safely move through–whether driving, biking, boating, or walking. Guided by the Safe System Approach and informed by community engagement, the CSAP creates a framework for moving towards a safer transportation network for all users. The proposed scorecard system makes the City's CSAP a hyper-vigilant process, consisting of a feedback loop to monitor FSI crashes, improve safety at FSI crash locations, and monitor those same locations post-implementation. By acting on this CSAP, the City stands to benefit from a livability and economic standpoint, especially with the proven return on investment for such local road safety plans[11]. The City should continue monitoring FHWA's SS4A program for future funding opportunities for safety improvements within City jurisdiction.

[11] https://highways.dot.gov/safety/proven-safety-countermeasures/local-road-safety-plans

Appendix A SS4A Leadership Commitment and Goal Setting

Appendix A: SS4A Leadership Commitment and Goal Setting Memorandum

To:	Maria Covelli; Brian Shea City of Marathon	From:	Matthew Maher Stantec Consulting Services Inc.
Project/File:	238210815	Date:	July 30, 2025

Reference: City of Marathon SS4A Leadership Commitment and Goal Setting

1 Introduction

The City of Marathon (the City), much like many other similarly-sized cities across the United States, suffers from the occurrence of fatal and serious injury (FSI) crashes occurring within its limits resulting in loss and irreparable impact to lives of residents and tourists. In response to this public health crisis, the City has applied to the United States Department of Transportation (USDOT) for grant funds to investigate the existing safety issues, along with potential infrastructure and policy improvements, documented in a Comprehensive Safety Action Plan (CSAP) that will create a framework for the City to get to zero FSI crashes in the future. An essential part of this CSAP will be to obtain commitment from City departments, City leadership, and coordinating stakeholders to take steps on specific activities that will mitigate the harm and loss of life.

The City's Planning Department realizes that its actions alone will not be able to eliminate FSI crashes. Therefore, the purpose of this memo is to set forth a series of Vision Zero policy recommendations that will graduate through a process of vetting with stakeholders including the City Council, City Public Works/Engineering, City Emergency Response, Florida Department of Transportation (FDOT), the Monroe County Sheriff's Office, the Monroe County School District, etc. to obtain commitments for efforts proven to reduce FSI crashes. Using the upcoming Stakeholder Meeting #2 this September (2025) held for the CSAP as a springboard, the City's Planning Department will poll stakeholders and City staff/officials on 1) their perceived ability to carry out the Vision Zero policy recommendations listed within this technical memorandum and 2) whether they believe the goals associated with each of the policy recommendations follow the SMART (specific, measurable, achievable, relevant, and time-bound) framework. These policy recommendations have the singular goal of eliminating FSI crashes within the City and are based on the Federal Highway Administration's (FHWA's) Safe System Approach further detailed in the following section.

2 Guiding Principles for Policy Development

Policy decisions are guided by an overall framework, guiding principles, and a commitment to safety that influence specific strategies for implementation. The safety framework encompasses several methods to

eliminate roadway-related deaths and severe injuries. Safety improvements are addressed through roadway design, operation, behavior change (recognizing that humans make mistakes), programs (non-infrastructure), and policies that seek to systemically and proactively mitigate or eliminate risk factors. This involves a paradigm shift away from a historical approach of reactively addressing collision hotspot locations with a documented history of total crashes to a proactive approach of addressing socioeconomic and geographic data inherent within the existing transportation system[1]. The following transportation safety frameworks are common themes in current national transportation safety planning practices by following this more effective proactive approach, and have been reviewed (as detailed in the following sections) to glean ideas for policy recommendations to be put forth within this CSAP study:

- The Four "E's" of Traffic Safety;
- The Safe System Approach;
- Vision Zero; and,
- Peer Review of Other Safety Action Plans.

2.1 The Four "E's" of Traffic Safety

Outlined below is the traditional framework for addressing safety based on the four "Es" of safety planning[2] (**Figure 1**). Programmatic policies and strategies typically fall under enforcement and education.

- **Education**: Education focuses on informing roadway users on how they can help prevent a crash from happening.
- **Engineering**: The design of the transportation network needs to promote safe and accessible use by all users.
- **Enforcement**: Prevention of poor behaviors through policing can mitigate the effects of unsafe behaviors and hold all accountable to create a safer environment.
- **Emergency Response**: The best planning efforts involve emergency responders so that safe and expedient access to and from a crash scene continues to be a priority.

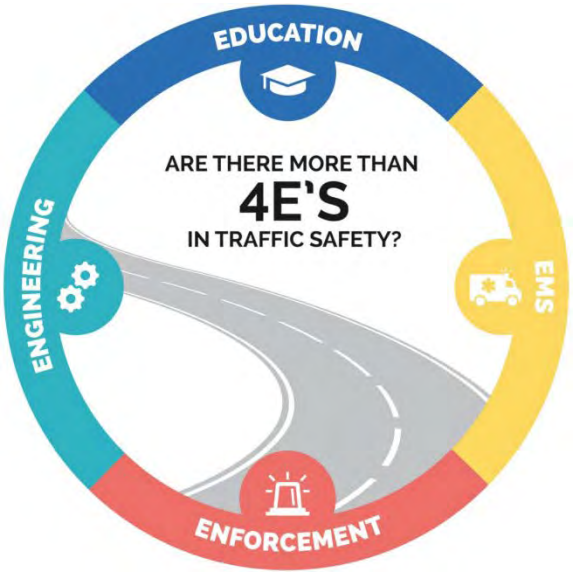


Figure 1 – The 4E's of Traffic Safety

[1] Approach from National Roadway Safety Strategy
[2] Graphic and Approach from NEFL Community Traffic Safety Program in FDOT District 2

A 2022 article from the FDOT District 2 Community Traffic Safety Program challenges the idea of there being only four "E's" and recommends the following other considerations when planning for traffic safety: **E**mbedded technology for the travel of every mode, **E**nlistment of all stakeholders, **E**ngagement of your constituents, **E**valuation of your program via a feedback loop, and the **E**ncouragement of your team.

2.2 Safe System Approach

The U.S. Department of Transportation (USDOT) recognizes that addressing roadway safety takes a multi-layered approach to both prevent crashes and minimize crash-related injuries and fatalities. Therefore, the USDOT adopted the Safe System Approach which identifies six principles and five elements for communities to use when developing toolkits for improving safety. **Figure 2**, details the principles along the outside of the "safe system wheel," and depicts the elements on the inside. This approach expands upon the traditional four "Es" of traffic safety by focusing on the shared responsibility of crashes.



Figure 2 – Safe System Approach

2.3 Vision Zero Guiding Principles

Vision Zero is a strategy to eliminate fatalities and severe injuries and improve safe, healthy, and equitable mobility[3]. With the Vision Zero strategy, communities incorporate the Safe System Approach to identify a leader (e.g., a Vision Zero Coordinator) to focus on implementation and administrative policies. Furthermore, when communities adopt Vision Zero, they commit to eight essential components. The following paragraphs are paraphrased from the Vision Zero Network (a non-profit entity seeking to help communities eliminate fatalities) publication of Components of a Strong Vision Zero Commitment[4] adapted for applicability to the to the City's context.

2.3.1 Political Commitment

Top local leaders (e.g., Mayor or City Council) need to publicly and formally pledge to achieve a time-based Vision Zero goal for all road users. This commitment should be supported by an official policy that outlines concrete steps, a timeline, responsible parties, and a strong focus on equity, openness, and community engagement.

2.3.2 Multi-Disciplinary Leadership

A Vision Zero Taskforce or Leadership Committee should be comprised of senior officials from key departments such as the Office of the Mayor, Planning, County Police, and the Chamber of Commerce. Additional departments that may participate include Fire, Emergency Services, Public Works, Senior

[3] What is Vision Zero? | Vision Zero Network
[4] 9 Components of a Strong Vision Zero Commitment | Vision Zero Network

Services, and the School District. To bring the guiding principles of the Safe System Approach towards implementation, some jurisdictions have a designated position (i.e., Chief Safety Officer, Coordinator, or similar). A Chief Safety Officer is a lead advocate for all Vision Zero efforts and can continuously monitor FSI crash incidents and responses. However, the most important role served by this position is the coordination effort with entities such as FDOT, the County Sheriff's Office, the school district, etc. Coordination will ensure that partner agencies will continue to act on policies, fund/design/construct highly ranked countermeasures, and address High Injury Network locations cited within the original CSAP and its subsequent annual updates. The Chief Safety Officer would also be responsible for the issuance of an annual Vision Zero report, which will feature updates on crash data, completed/upcoming projects within the City, ongoing grant submissions, and the status of policy recommendations established in the CSAP. This position is typically filled by an employee (in this case, a City employee) with experience and/or interest in safety planning/engineering or crash data processing and evaluation.

2.3.3 Socioeconomic Considerations

The City will commit to both a demographic approach to Vision Zero by establishing inclusive and representative processes, and fair outcomes by ensuring transparency and measurable benchmarks. Beginning with an understanding of how the City's High-Injury Network impacts underserved pedestrians, cyclists, and drivers who are disproportionately affected by crash violence, the City can start to identify crash countermeasures that better protect these populations. Vision Zero advocates are responsible for pushing roadway safety efforts beyond the conventional focus on the "E" of Enforcement. This means prioritizing forward-thinking approaches such as self-enforcing road designs and policies that promote safe behavior, thereby reducing reliance on enforcement as a primary tool.

2.3.4 Cooperation and Collaboration

The City will encourage meaningful collaboration across appropriate public agencies and community partners for multiple parties with varying perspectives to set shared goals, coordinate, and share accountability. The accountability and collaboration will be enforced through the creation and maintenance of a dedicated Safety Task Force, led by a Chief Safety Officer (or similar), focused on overseeing Action Plan implementation and annual reporting over time.

2.3.5 Safe System Approach

The City will implement a Safe System Approach, which acknowledges that human error is inevitable and that human bodies can only withstand a limited amount of impact from a crash. This approach focuses on designing and managing road infrastructure in ways that reduce the risk of serious mistakes and minimize the impacts of crashes to prevent serious injuries.

2.3.6 Data-Driven Decision Making

The City will collect, assess, utilize, and share reliable data to better understand roadway safety challenges and allocate resources where they can have the most significant impact. This process will also incorporate

key overlapping priorities, such as high pedestrian traffic areas and demographic groups that are disproportionately affected by dangerous street and land use conditions.

2.3.7 Community Engagement

Recognizing that data alone doesn't capture the whole story, the City will prioritize intentional community engagement. This includes encouraging community member representation on the Safety Task Force and gathering robust public input through outreach efforts, workshops, surveys, etc.

2.3.8 Transparency

Vision Zero planning and implementation should be transparent, include regular updates on the status of the Action Plan, track performance measures, and deliver public reports to governing and/or leadership bodies (e.g., City council).

2.4 Peer Review of Other Safety Action Plans

Stantec completed a peer review of other CSAPs within the State of Florida, and with national Vision Zero leaders, to establish an understanding of current practices that influence safe vehicle behaviors, trends, and shortcomings. This section summarizes the agencies reviewed, key takeaways, and resulting best practices recommended from the peer review process.

2.4.1 Peers Agencies

Hundreds of communities across the United States have committed to becoming safer places to live, work, and play. To better understand relevant policies that the City could consider as models, seven peer agencies and Federal Highway Administration (FHWA) Safe Streets for All (SS4A) resources were reviewed. Several key policy takeaways emerged from the peer action plans jurisdictions mapped on **Figure 3** and detailed on **Table 1**.

Reference: City of Marathon SS4A Leadership Commitment and Goal Setting

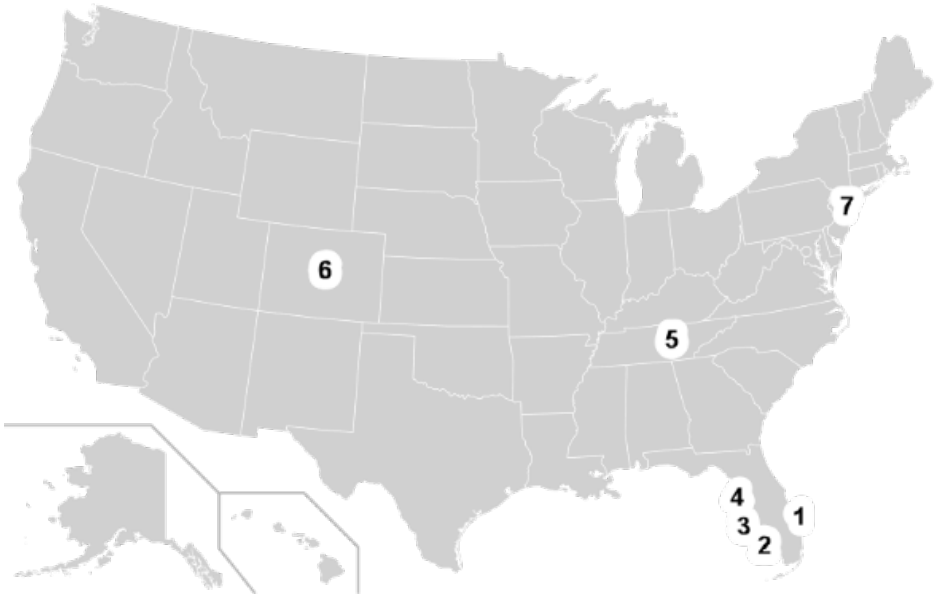
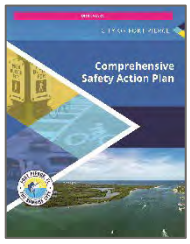
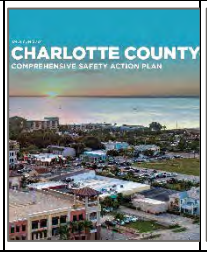
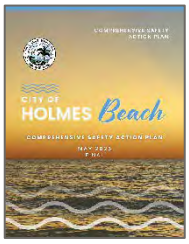
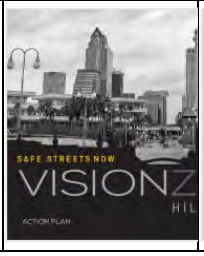
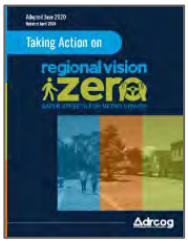
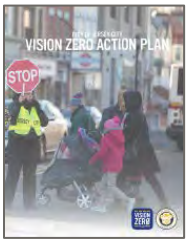


Figure 3 –Map of Peer Agencies

Table 1 – Peer Agencies Reviewed

Peer Docs	#1 Fort Pierce, FL	#2 Punta Gorda, FL CCPG MPO	#3 Holmes Beach, FL	#4 Hillsborough, FL MPO	#5 Knoxville, TN TPO	#6 Denver, CO DRCOG	#7 Jersey City, NJ
Document Reviewed	Comprehensive Safety Action Plan	Comprehensive Safety Action Plan	Comprehensive Safety Action Plan	Safe Streets Now Vision Zero	Regional Roadway Safety Action Plan	Regional Vision Zero	Vision Zero Action Plan
Adoption Year	2025	2024	2025	2017	2023	2020	2019
Agency Type	City	Regional Planning	City	Regional Planning	Regional Planning	Regional Planning	City
Cover							

2.4.2 Key Policy Takeaways

The following key takeaways emerged from the policy review of peer jurisdictions: a focus on Complete Streets, speed reduction, encouragement of informed practices involving the land development process, and the development of a framework to motivate and enforce the policies developed within this study. Each is expanded below.

2.4.2.1 Complete Streets Focus

The National Association of City Transportation Officials defines "Complete Streets" as roadway infrastructure that is "…designed and operated so they work for all users – pedestrians, bicyclists, motorists, connected/autonomous vehicle (CV/AV) users, electric vehicle (EV) users, and transit riders of all ages and abilities."[5] Safer streets start with having a strong Complete Streets policy that promotes design and operation of streets for all users. Transportation planners often look towards Smart Growth America and the National Complete Streets Coalition's "Elements of a Complete Streets Policy" publications as guiding documents for building a robust, local, context-specific framework.[6] To supplement these publications, peer agencies lay out more specific policy guidelines for street design, parking, and access management.

Jersey City, New Jersey's Vision Zero Action Plan highlights their goal for developing street design guidelines which incorporate Complete Streets and Vision Zero principles, including travel lane widths, pedestrian

[5] Sustainable Complete Streets | National Complete Streets Coalition
[6] Complete Streets Policy Elements | Smart Growth America

infrastructure, bicycle facilities, and traffic calming treatments.[7] In addition to traditional modes of travel (such as bikes, personal vehicles, and trucks), the advent of e-bikes, e-scooters, and other non-traditional modes of travel introduce high travel speeds to vulnerable road users which increases the risk of higher kinetic energy crashes. In response to the increased risk posed by these "micromobility" modes, the City of Holmes Beach recommended police demonstration/workshops of safe e-bike and golf cart usage.[8]

2.4.2.2 Access Management

Non-traditional (or "active") modes of travel are further prioritized by establishing access management policies that reduce driveway openings and associated ingress and egress conflict points. Reducing driveway openings for both sidewalk spaces and bike lanes reduces pedestrians, bicyclists, and other non-motorized vehicles exposure to traffic and crashes, many of which could result in fatalities or serious injuries. Access management can also be applied to intersections of roadways by managing how close driveway access is to an intersection, constructing raised medians to restrict certain movements, building a roundabout, etc.[9] These access management strategies were mined from the Knoxville Regional Transportation Planning Organization (TPO) Safety Action Plan and the Metro Denver Regional Vision Zero Plan which draws upon FHWA.[10]

2.4.2.3 Speed Reduction

Peer agencies address vehicle speeds through design policies, targeted enforcement strategies (such as in areas with an elevated occurrence of FSI crashes), and posted speed limits. For example, Jersey City has a goal to develop a traffic calming policy that incorporates a menu of treatments including speed humps, raised intersections, traffic circles (also referred to as neighborhood traffic circles or mini-roundabouts), or forced-turn channelization.[11] Today, setting speed limits in residential areas to 20 miles per hour (mph) can be paired with an education campaign such as Denver, Colorado's signing of a citywide speed limit for local streets, as depicted in **Figure 4**.[12]



Figure 4 –Local Street Speed Limit

2.4.2.4 Smart Growth & Development Process

For new developments, agencies can implement planning and zoning approval standards which incorporate multimodal elements and encourage more human-centered roadway design. Knoxville TPO recommends expanding bicycle parking requirements as well as requiring new developments to consider pedestrian and bicyclist travel connections. Furthermore, building frontage requirements for developers can create a streetscape that encourages slower speeds, including ordinances for a limited number of curb cuts, sidewalk

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[7] Jersey City Vision Zero, P. 51
[8] Holmes Beach Comprehensive Safety Action Plan, P. 22
[9] Corridor Access Management | FHWA
[10] Knoxville TPO. P. 44, 48; Metro Denver Vision Zero. P. 85
[11] Jersey City Traffic Calming Toolkit, As Recommended in the Jersey City Vision Zero Action Plan
[12] Metro Denver Vision Zero. P. 80, "TWENTY IS PLENTY" Campaign

widths appropriate for the level of existing/proposed pedestrian trip generation, on-street parking, and other cues that physically and/or visually narrow the roadway, such as trees.[13]

2.4.2.5 How to Motivate and Enforce Policies

Perhaps the most important piece of a good CSAP is the proper administration of the policy recommendations and underlying action items following CSAP adaptation. Jersey City has been a prime example of how to administer an action plan well, having achieved zero deaths on its roadways in 2022 three years after action plan release, which is a rare feat for one of the United States' top 100 cities in terms of population. While several establish a task force or some equivalent management body that continuously monitors the state of FSI crashes within their jurisdiction, Jersey City makes the additional effort to issue publicly available Vision Zero Annual Reports. These reports not only monitor the status of crashes, but follow up on policy recommendations and action items commissioned in their action plan to state their progress, whether completed, ongoing, or not yet progressed.[14] Furthermore, these reports offer a level of public and inter/intra-agency accountability as they give a transparent view of the lead and supporting stakeholders responsible (school districts, public works, health/human services, law department, mayor's office, parking, etc. having agreed to) each action item, and whether or not progress had been made. This has proven to be effective, as 68% of the action items set forth in the Vision Zero Action Plan have either been advanced or completed.[15]

2.5 Best Practice Summary

The following tables summarize selected best practices that peer agencies outlined in their Vision Zero or safety action plans grouped by recurring themes, many of which stem from programs and outreach that affect behavioral change (**Table 2**) and administrative or organizational practices that peer agencies employ to facilitate Vision Zero implementation (**Table 3**). Additional agencies (non-peers) with applicable and exemplary practices are listed in the "Programs In Action" column. Strategies with several checkmarks are broadly implemented and perceived as easier to implement, while those with fewer checkmarks are perhaps locally relevant or more challenging to implement or manage.

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[13] Knoxville TPO. P. 44-45
[14] 2023 Jersey City Vision Zero Annual Report
[15] Jersey City Vision Zero Website

Table 2 – Peer Agencies' Programs and Outreach Related to Behavioral Change

Program	Ft Pierce FL	Pt Gorda FL	Holmes Bch, FL	Hillsborough, FL MPO	Knoxville, TN Regional TPO	Denver, CO DRCOG	Jersey City, NJ	Programs In Action
Roadway Ownership / Maintenance Responsibility	Most roads	Most roads	Most roads	No	No	No	Most roads	--
*Adopted Policy on Vision Zero / Safety for **all local jurisdictions*** *(requirement)*	✓	✓	✓	✓	Regional Only	Regional Only	✓	Hillsborough MPO
Adopted Complete Streets Policy	✓	✓		✓	✓	Complete Streets Policy and Toolkit	✓	Knoxville TPO
Neighborhood Slow Streets Program	✓					Toolkit with design treatments	✓	Boston, MA
Families for Safer Streets Local Chapter				✓			✓	New York City, NY
Public Education Campaign	✓	✓	✓	✓	✓	✓	✓	Wilmington, NC
Vision Zero Training / Education	✓	✓	✓	✓	✓	✓	✓	Montgomery County, MD
Vision Zero Website / Resource Platform	✓	✓		✓	✓	✓	✓	Boston, MA
TDM Program		✓			✓	✓	Through Hudson TMA	Austin, TX
Engagement with Historically Underserved Communities		✓	✓		✓			Los Angeles, CA

Note: Checkmark indicates 'yes' this program is present / supported. Text description offers *additional* specifics or limitations.

Table 3 – Peer Agencies' Practices

Agency Practices	Ft Pierce FL	Pt Gorda FL	Holmes Bch, FL	Hillsborough, FL MPO	Knoxville, TN Regional TPO	Denver, CO DRCOG	Jersey City, NJ	Programs In Action
Agency Partnerships and Collaboration	✓	✓	✓	✓	✓	✓	✓	New York City, NY
Rapid Response Team or Program (Quick Build)		✓	✓		City only	✓	✓	Metropolitan Transportation Commission
Vision Zero Task Force	✓	✓			✓		✓	Charlotte, NC
Vision Zero Coordinator or equivalent					✓			Arlington County, VA Durham, NC
Annual Reporting Requirement	✓		✓				✓	Montgomery County, MD
Regulation Changes in Road Design	✓	✓	✓	✓	✓	✓	✓	All apply
Regulation Changes in Land Use Planning	✓	✓	✓	✓	✓	✓	✓	All apply

Note: Checkmark indicates 'yes' this program is present / supported. Text description offers *additional* specifics or limitations.

3 City Policy Recommendations

Informed by the 1) the Four “E’s” of Traffic Safety, 2) the Safe System Approach, 3) Vision Zero guiding principles, and 4) the peer review of other CSAPs, the following dozen Vision Zero policy strategies emerged as preferred recommendations (**Figure 5**):

1. Access Management Policies;
2. Public Outreach Campaign;
3. Vision Zero Progress Monitoring;
4. Families for Safer Streets Local Chapter;
5. Targeted Enforcement for Speeding;
6. Slow Streets Program;
7. Roadway and Vehicle Safety Overlay;
8. Rapid Response Ream/Quick Build;
9. Agency Partnerships and Collaboration;
10. Healthcare Coordination;
11. Annual Reporting and Evaluation; and,
12. Municipal Complete Streets Policy.

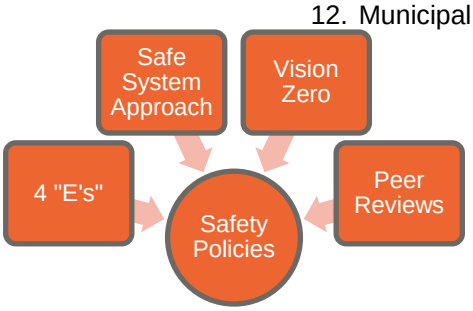


Figure 5 – Vision Zero Policy Recommendations Flowchart

Recommendations are not intended to represent an exhaustive list of policy options that represent all best practices within the industry, but rather a condensed list of programs or policies that peer agencies have employed. Furthermore, as stated at the beginning of this technical memorandum, these policy recommendations are to be vetted by stakeholders and City officials via meeting discussions and survey feedback (**Figure 6**) to suit local planning initiatives. Pairing these policies with traffic calming treatments and similar engineering countermeasures developed in other tasks within this CSAP will complement these efforts and their effectiveness.

Measurable Target Defining Program Success	1. To what extent can your agency assist with implementing this strategy?	2a. Do you feel that this strategy can be reasonably initiated by your agency by the Start Year mentioned?	2b. If no, what are your concerns about implementation? (Select all that apply)			Additional Comments (optional)
			Lack of Resources (staff/funds)	Ability to Hit Target	Coordination & Hesitancy	
Hold a meeting within a week of each FSI crash to formulate a plan to fix by any means possible with the idea that all crashes are preventable	Somewhat	Yes				We currently have a Rapid Response process. Happy to share about our process to the extent it's helpful. We would like to be involved in crash response if there is a crash in Jersey City, regardless of roadway jurisdiction.
Prepare brief action plan summarizing conditions, contributing circumstances, and proposed short-term improvement strategies within a month for every FSI crash	Somewhat	Yes				In Jersey City, we do this as part of our Rapid Response. Again, happy to participate regardless of roadway jurisdiction for crashes in Jersey City area.
At least two quick-build or demonstration safety projects should be built annually by each municipality, counties tie to Bergen Local and Hudson V2 Safety Action Plan. Each project's effectiveness of addressing safety countermeasures is then assessed	Somewhat	Yes				Likely won't be a focus for Jersey City portion of NJSEA area in the short term, but could be a potentially useful tool as new employers come online and/or Essex-Hudson and Hackensack River Greenways advance, bringing more people on foot and bike to those areas. We are certainly open to demonstration projects and use them in our City.

Figure 6 – Example of Survey Feedback on a Vision Zero Policy Recommendation

The twelve Vision Zero policies are further detailed in **Table 4**. Central to all strategies discussed, especially what may be considered the two most important strategies, “Agency Partnerships and Collaboration” (#9) and “Annual Reporting and Evaluation” (#11), is the continuance of a permanent convening Safety Task Force (STF). Establishing a permanent STF that operates beyond the completion of the consultant-assisted efforts (2025-2026) will provide the City a foundation for leadership commitment and future plan updates. Perhaps the most important item to pursue in **Table 4**, #9 Agency Partnerships and Collaboration, will squarely rely on the continuation of the STF to solidify commitment of partnering entities. To ensure the continuation of the STF, the City should perform the following:

- Request that STF member entities sign a Memorandum of Understanding (MOU) for their commitment to Vision Zero and to meet on a regular (i.e., annual or bi-annual) basis to report on the status of the dozen recommendations within this document.
- Issue an annual report to document City FSI crash data, give an update on safety projects proposed under CSAP or superseded versions, and summarize the status of each of the dozen Vision Zero strategies proposed later in this document (along with the status of action items supporting each strategy). The status of such strategy and action item activities will also be discussed during STF meetings.
- Incorporate Vision Zero and recommended policies into the everyday administrative functions of the City’s departments and rulemaking decisions. This strategy will influence how transportation projects are prioritized, designed, and constructed within the district.

Through collaborative, continuous, and cooperative work (the three “Cs” of transportation planning), including agency partnerships and collaboration summarized above, the City should consider each of the dozen policy recommendations cited in **Table 4**. This table is organized in the following manner:

Strategies are grouped into Programs and Outreach, and Policies similar to how the peer review best practices were organized. Furthermore, the “Aligns with…” column indicates which of the FHWA’s Safe System Approaches are achieved (Roads, Users, Speeds, Vehicles, and Post-Crash Care).

Reference: City of Marathon SS4A Leadership Commitment and Goal Setting

Table 4 – Vision Zero Policy Recommendations

	#	Vision Zero Strategy	Aligns with…	Action Items	Suggested Goals
Programs and Outreach	1	*Access Management Policies*	Safe Roads	• Consolidate/revoke access • City to suggest candidate locations to FDOT	• Consolidate/revoke 2 ingress/egress points per yr. • Do pre/post crash evaluation at these locations
	2	*Public Outreach Campaign*	Safe Users Safe Speeds	• Work with County and track efficacy • Multimedia public education campaign	• Perform yearly communications update for safety • Target underserved/zero-vehicle HH audience
	3	*Vision Zero Progress Monitoring*	Safe Users	• City-hosted website • Allows for public accountability	• Generate web traffic of at least 100 unique hits • Have table of recommendations and status on page
	4	*Families for Safer Streets (FSS) Local Chapter*	Safe Users	• Talk with Key West to establish Keys chapter • School district coordination	• Establish FSS Keys chapter by 2028 • Add ped/bike/micromobility course for students
	5	*Targeted Enforcement for Speeding*	Safe Users Safe Speeds	• Tracking with speed data collection efforts • Radar speed message signs	• 1-mi. segment of US 1 for increased enforcement • Select two locations in City for feedback signing
	6	*Slow Streets Program*	Safe Speeds	• Systemic speed limit reductions • Neighborhood speed zones for local roads	• Investigate signing local roads at 20 mph • Do pre/post crash evaluation for local road system
	7	*Roadway and Vehicle Safety Overlay*	Safe Roads Safe Speeds Safe Vehicles	• Work with FDOT to designate zones • Crash data monitoring by City	• Petition FDOT for infrastructure on US 1 to slow through traffic • Do pre/post speed evaluation on US 1
Policies	8	*Rapid Response Team / Quick Build*	Safe Users Safe Roads	• Establish Rapid Response Team • Expedite action plans addressing FSI crashes	• City to produce concepts to address crash within a week of the FSI crash • Coordinate with the owning jurisdiction (i.e. FDOT)
	9	*Agency Partnerships and Collaboration*	Safe Users Post-Crash Care	• Coordination with public/private and FDOT • Get buy-in with MOU	• Signature from all STF members on MOU by 2028 • Bi-annual meetings with FDOT with punch list
	10	*Healthcare Coordination*	Post-Crash Care	• Accurate fatality/serious injury reporting • Update EMT fleet for faster response	• Coordinate with EMS services to understand needs • Look for funding sources for better post-crash care
	11	*Annual Reporting and Evaluation*	Safe Users Safe Roads	• Convene with STF for reporting/lessons learned • Issuance of annual reports to track progress	• Issuance of annual reports starting in 2027 • Annual or bi-annual meeting of the STF
	12	*Municipal Complete Streets Policies*	All	• Complete streets municipal policy	• Issuance of a municipal complete streets policy

4 Next Steps

The dozen Vision Zero policy recommendations provided within this technical memorandum will be modified and ranked based on the feedback received during the second round of stakeholder and public outreach carried out under this CSAP (during fall of 2025). Based on the ability and willingness of the City, and its stakeholders, to implement and maintain the policy recommendations and underlying action items presented in this document, a revised list of policy recommendations will be provided to the City and ranked based on priority, effectiveness, and timeline as key punch list items to annually track by the City with the help of the STF. Furthermore, horizon years and achievable/specific quantities will be set for all of the action items bulleted in the second to the right column of **Table 4**.

In keeping with the effort originally envisioned by the City, this memo will be updated with the aforementioned information as the study progresses into its final stages.

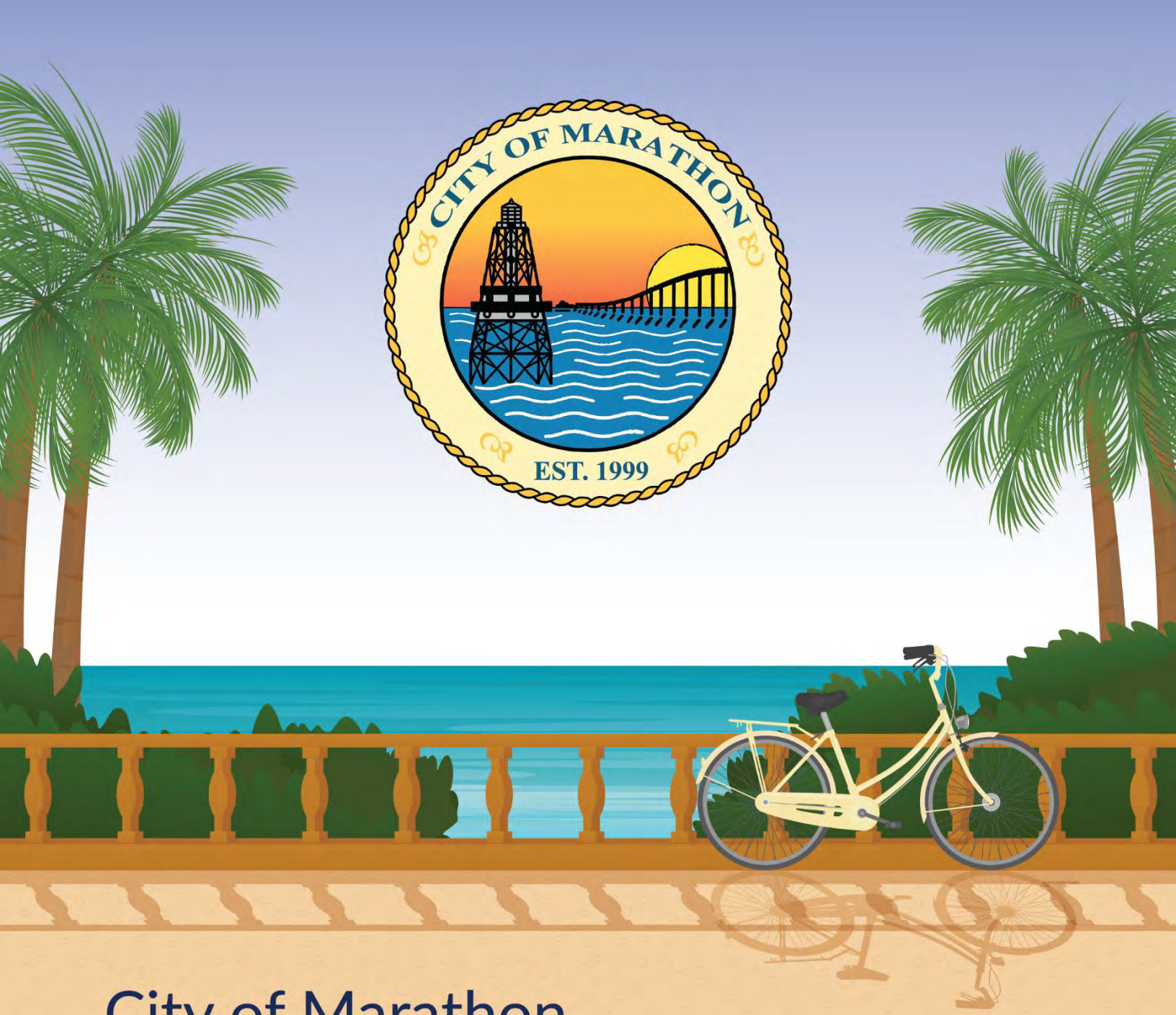
Regards,

Stantec Consulting Services Inc.

Matthew Maher PE, PTOE, RSP$_{2I}$
Principal
Phone: (407) 638-2012
matthew.maher@stantec.com

stantec.com

Appendix B City of Marathon SS4A Community Engagement Plan



City of Marathon

Safe Streets for All (SS4A)

Comprehensive Safety Action Plan

COMMUNITY ENGAGEMENT PLAN (CEP)

Contents

1. Introduction 2
2. Project Area 2
3. Purpose of the CEP 2
4. CEP Engagement Goals 3
5. Target Stakeholders 3
6. Engagement Strategy Overview 5
7. Engagement Activities 5
8. Public Engagement Activities Events and Locations 6
   8A. In-Person Public Meetings 6
   8B. Pop-Up Events 7
   8C. In-Person Stakeholder Meeting 8
9. In-Person Public Meetings 9
10. Pop-Up Events 9
11. Stakeholder Meetings 10
12. Online Engagement 11
13. Tools and Materials 11
14. Outreach and Promotion Strategy 12
15. Timeline 12
16. Engagement Reporting 13
17. Engagement Reports – Outreach Summary 13
   17A. Round 1 Engagement Reports 14

COMMUNITY ENGAGEMENT PLAN (CEP)

1. Introduction

The City of Marathon is actively developing a Safety Action Plan as part of the Safe Streets and Roads for All (SS4A) initiative, with a strong focus on community-driven solutions. This Community Engagement Plan (CEP) outlines how the plan will work with residents, stakeholders, businesses, and visitors to ensure that the Safety Action Plan reflects shared concerns, lived experiences, and local priorities. Emphasizing equitable participation, the municipality will use a range of strategies to engage underserved communities, public safety organizations, civic groups, and transportation stakeholders throughout the planning and implementation phases.

2. Project Area

The engagement plan encompasses the full geographic area of the City of Marathon, located in the Middle Florida Keys. This includes Key Vaca, Grassy Key, Fat Deer Key, Long Point Key, Crawl Key, and Boot Key—all linked along a 13-mile corridor of U.S. Route 1. Marathon is characterized by a mix of residential neighborhoods, commercial hubs, tourist destinations, schools, marinas, and environmental preserves. Given the City's linear layout and dependency on a single highway, the engagement approach will be tailored to address multimodal accessibility and geographic challenges across the islands.

3. Purpose of the CEP

The purpose of the Community Engagement Plan (CEP) is to establish an inclusive, transparent, and effective engagement process that ensures community voices directly influence the development and implementation of the Safety Action Plan. This plan is rooted in the commitment to foster trust, promote equitable access to participation, and prioritize the safety of all road users—regardless of age, ability, or mode of transportation.

A central goal of the CEP is to create data-informed, locally supported solutions that reflect the unique needs and experiences of the community. To achieve this, the CEP will involve robust engagement with the public and key stakeholders, including the private sector, advocacy organizations, and community groups. This collaborative process will ensure broad community representation and provide multiple opportunities for meaningful feedback, helping to shape a Safety Action Plan that is responsive, inclusive, and grounded in real-world experiences.

4. CEP Engagement Goals

The engagement goals of the Community Engagement Plan (CEP) center on raising public awareness about the SS4A planning process while ensuring that all residents—both year-round and seasonal—have inclusive and accessible opportunities to contribute their input. The CEP is designed to support meaningful involvement from a diverse cross-section of the community, including individuals who travel by foot, bicycle, public transit, personal vehicles, or mobility aids.

By working closely with stakeholder organizations, community groups, and local leadership, the CEP aims to uncover and address critical transportation safety concerns across the region. The engagement process prioritizes equitable access and seeks to include perspectives from pedestrians, cyclists, seniors, youth, individuals with disabilities, and residents of all backgrounds and experiences.

Feedback gathered through these efforts will play an essential role in guiding project prioritization and informing the development of the Safety Action Plan. Ultimately, the CEP is committed to ensuring that community voices shape a data-informed, locally supported strategy to improve transportation safety for everyone.

5. Target Stakeholders

To ensure comprehensive community input and collaboration, stakeholder coordination will include a diverse set of individuals, organizations, and agencies. These stakeholders represent various sectors essential to the planning, outreach, and implementation of the Safety Action Plan.

Business and Tourism Entities

- Marathon Chamber of Commerce
- Monroe County Tourist Development Council (TDC)
- Visit Florida Keys

Government Representatives

- Local Representatives from the City of Marathon
- Officials from Neighboring Municipalities (e.g., Cities of Key Colony Beach and Layton)

Municipal Departments and Committees

- Public Works Department
- Transportation Coordination Committee
- Emergency Management Division
- Commerce and Planning Councils

Public Safety and Emergency Services

- Police Departments
- Fire/Rescue Services
- Monroe County Sheriff's Office (MCSO)

Education Sector

- Monroe County School District
- School Transportation and Student Safety Personnel

Transportation Providers

- Public Transit Agencies
- Ride-Share Operators
- Marine-Based Transit Providers

Community-Based Organizations

- Civic and Neighborhood Groups
- Health and Safety Advocacy Organizations
- Florida Keys Scenic Corridor Alliance

State Agencies

- Florida Department of Transportation (FDOT) – District 6
- Florida Department of Commerce

Public Information Officers

- Monroe County
- Monroe County Sheriff's Office

6. Engagement Strategy Overview

The CEP will implement a four-pronged strategy to ensure meaningful and effective engagement:

- **In-Person Public Meetings**
  - Public meetings to share project details, gather community input, and respond to community feedback.
- **Pop-Up Events**
  - Use of community events and casual settings to collect feedback through engaging tools and one-on-one interaction.
- **Stakeholder Coordination Meetings**
  - Collaboration with key agencies and community partners to develop and promote safe, actionable, and fundable projects.
  - Members will include representatives from city departments, FDOT, schools, emergency responders, and the public.
  - These meetings will be held virtually, with one (1) scheduled as an in-person meeting.
- **Digital Outreach**
  - Online platforms will be used to extend accessibility and allow for at-home engagement and survey participation.

7. Engagement Activities

To engage a wide range of participants and gather valuable input, the following outreach activities will be implemented:

Three (3) In-Person Public Meetings

- Hosted at ADA compliant facilities such as City Hall, local schools, or community centers.
- Meetings will occur early, mid-way, and at the draft review stage.

Three (3) Pop-Up Events

- Set up at high-traffic community locations like farmers markets, school events, and festivals.
- Activities may include:
  - Informational giveaways
  - QR-code enabled surveys
  - Visual boards and maps for annotation

One (1) In-Person Stakeholder Meeting

- Organized with City staff, Monroe County officials, the Chamber of Commerce, and other partners for focused discussion.

All other stakeholder meetings will be conducted virtually and hosted by Stantec.

8. Public Engagement Activities Events and Locations

The following section outlines the planned public engagement activities, including event types and their proposed locations.

8A. In-Person Public Meetings

Conducted at accessible and central venues such as:

- Marathon City Hall
  - Council Chambers, 9805 Overseas Highway, Marathon
- Monroe County Public Library – Marathon Branch
  - 3490 Overseas Hwy, Marathon, FL 33050
  - Community Room: capacity 50 max.
- Marathon Government Center
  - 2798 Overseas Hwy, 2nd Floor, Marathon, FL 33050
  - Community Room: capacity 140 max.

*Venues will be ADA-compliant.

Date/Time/Location	Activity
Possible Dates: **May 12 – May 15, 2025**	**In-Person Public Meeting #1**

6 pm to 8 pm | Council Chambers, 9805 Overseas Highway, Marathon	
Possible Dates: **October 13 – October 16, 2025** 6 pm to 8 pm | Location: TBD	**In-Person Public Meeting #2**
Possible dates: **March 16 – March 20, 2026** 6 pm to 8 pm | Location: TBD	**In- Person Public Meeting #3**

Additional Meeting Dates for Consideration:

- **City Council Meetings** – 2nd Tuesday of every month - (Project Team Presentation)
  - May 13, 2025
  - June 10, 2025
  - July 8, 2025
- **City Workshops** – 4th Tuesday of every month – (Project Team Presentation)
  - April 22, 2025
  - May 27, 2025
  - June 24, 2025
  - July 22, 2025
- **City Council Budget Meeting** – (Project Team Presentation)
  - September 12, 2025, at 5 pm

8B. Pop-Up Events

These events will be hosted at well-attended community gatherings to engage a broad audience. A list of potential events is provided below:

Date/Time/Location	Activity
May 3, 2025 11 am to 6 pm Marathon Community Park	**Nautical Fun in the Sun - Closing Circle/Leadership & Graduation** *Opportunity for project team to interact with stakeholders/community leaders, distribute survey

August 27, 2025 5 pm to 8 pm Oceanfront Park	**Food Truck Jamboree** *Opportunity to distribute survey and interact with local community
March 14 – March 15, 2026 10 am to 5 pm Marathon Community Park	**Marathon Annual Seafood Festival** *Opportunity to distribute survey and interact with local community

Other possible Pop-up events included:

- **January 25 – January 26, 2026**: **Big Pine and Lower Keys Nautical Expo**
- **April 11, 2026: 7 Mile Bridge Run**

*Locations will be ADA-compliant

8C. In-Person Stakeholder Meeting

Held at a formal, professional location such as:

- Marathon City Hall
  - Council Chambers, 9805 Overseas Highway, Marathon
- Monroe County Public Library – Marathon Branch
  - 3490 Overseas Hwy, Marathon, FL 33050
  - Community Room: capacity 50 max.
- Marathon Government Center
  - 2798 Overseas Hwy, 2nd Floor, Marathon, FL 33050
  - Community Room: capacity 140 max.

Date/Time/Location	Activity
Possible Dates: • **May 5 – May 8, 2025** • **September 22 - 25, 2025** • **March 23 – March 26, 2026** 2 pm to 4 pm Location: TBD	**In-Person Stakeholder Meeting**

*Venues will be ADA-compliant.
**Venue or event locations subject to change

9. In-Person Public Meetings

Purpose:
Public meetings are intended to inform residents and stakeholders about the SS4A planning process, gather feedback on community safety concerns, and collaboratively shape the vision and priorities for the plan.

Format & Participation:
Three in-person public meetings will be conducted at various stages throughout the project timeline. Each meeting will be highly interactive, using creative tools to foster dialogue and participation.

Notification:
Meetings will be promoted at least three weeks in advance using:

- Local radio
- Flyers, emails, and social media posts
- Notices in libraries, City Hall, schools, and community bulletin boards
- City of Marathon App TV

Schedule:
Exact dates and locations will be coordinated with City staff and local partners, with meetings distributed across the project phases.

10. Pop-Up Events

Purpose:
These informal engagement events are designed to meet people where they are—at community festivals, public markets, schools, and other high-traffic areas—providing an approachable way to share information and collect feedback from diverse segments of the community.

Format & Participation:
At least three rounds of in-person pop-up events will be held, in partnership with local event organizers and hosted.

Materials may include maps, comment cards, display boards, and giveaways to encourage engagement.

Notification:
Pop-up events will be promoted in advance through:

- Flyers and posters at key locations
- Radio, social media, and email blasts
- Partner organization networks

Schedule:
Timing will align with existing community events, especially during peak community seasons (e.g., fall festivals, spring market days).

11. Stakeholder Meetings

Purpose:
The purpose of the stakeholder meeting is to engage directly with influential leaders and organizations in the Marathon community to gather project-specific insights, identify potential challenges and opportunities, and build support for implementing strategies developed during the Safety Action Plan process.

Format & Participation:
The meeting will be conducted through in-person session, phone call, or video conference. The project team will coordinate with local leadership to identify key organizational stakeholders to interview throughout the planning phase. These will include representatives from public agencies, City departments, advocacy groups, and community-based organizations.

Notification:
Invitations will be issued via email or direct outreach by project team members and municipal staff.

Schedule:
Meeting will be scheduled during the early stages of the planning process to inform project direction and strategy alignment.

12. Online Engagement

Purpose:
Online tools are essential to extending reach and providing residents with access to information and engagement opportunities at their convenience.

Components may include:

- **Project Webpage:** A Marathon-specific page will include project updates, downloadable materials, public meeting schedules, and comment submission tools.
- **Community Surveys:** Available in both digital and printed formats, these surveys will assess safety concerns, values, and preferences.
- **Social Media Campaigns:** Tailored posts and graphics will raise awareness and drive participation in engagement events and surveys.
- **City of Marathon TV App:** Utilize the app to share customized posts and information about upcoming events, while also providing a platform for collecting community feedback.

Participation:
All digital platforms will be publicly accessible 24/7 and updated regularly throughout the planning process. Comments and feedback will be enabled and available on all platforms.

13. Tools and Materials

To support engagement efforts, a variety of tools and materials will be used to ensure broad accessibility, encourage participation, and maximize outreach. These resources will include:

- Flyers, fact sheets, and project FAQs to provide clear and consistent information to the public.
- Interactive maps for collecting location-specific feedback from community members.
- Live polling tools such as Mentimeter to facilitate interactive and engaging public meetings.
- Surveys offered in both online and paper formats to accommodate different preferences and access levels.

- Email updates and social media posts shared through the City and partner communication platforms to keep the public informed and involved.
- Local media outreach, including the use of US 1 Radio (104.1 FM), which serves as a trusted community source for updates.
- City of Marathon TV App: Utilize the app to share customized posts and information about upcoming events, while also providing a platform for collecting community feedback.
- Social media channels and partner networks that offer cost-effective ways to reach a wide audience and promote project participation.

Together, these tools will ensure that the City of Marathon's Safety Action Plan is developed with community input and community awareness.

14. Outreach and Promotion Strategy

The outreach and awareness strategy for the SS4A initiative will involve partnerships with local media outlets, including US 1 Radio, City of Marathon TV App, and the Marathon Chamber of Commerce, to promote public meetings, distribute surveys, and communicate key messages. Informational materials will be made available in municipal buildings, libraries, schools, and other community spaces to ensure broad visibility. Additionally, the County's Public Information Officers will be leveraged to coordinate messaging, amplify outreach efforts across official communication channels, and ensure consistent and timely dissemination of updates throughout the community.

15. Timeline

- **Initial Public Meeting** – Spring/Summer 2025
- **Community Survey** – Ongoing throughout planning
- **Stakeholder Kickoff** – Spring/Summer 2025
- **In-Person Stakeholder meeting** – Fall 2025
- **Virtual Stakeholder meeting** - Ongoing throughout planning
- **In-Person Meetings** – Ongoing throughout planning
- **Pop-Up Events** – Ongoing throughout planning
- **Draft Plan Review & Final Public Meeting** – Summer 2026

*timeline subject to change

16. Engagement Reporting

All engagement activities and feedback will be summarized in interim and final reports that visually present public input, recurring themes, and community safety priorities. These reports will support plan transparency and guide final Safety Action Plan recommendations.

17. Engagement Reports – Outreach Summary

The following reports provide a comprehensive overview of the community engagement and outreach activities conducted throughout the planning process. They include a summary of public comments received through various channels such as public meetings, pop-up events, surveys, and stakeholder interviews. In addition to capturing feedback, the reports also detail the methods used to engage traditionally underserved populations, strategies implemented to ensure broad community participation, and metrics that reflect the level of engagement achieved. The results highlight key themes, concerns, and priorities expressed by community members, which have informed the development of the SS4A project. This summary serves as documentation of our commitment to inclusive, transparent, and responsive outreach efforts that align with the goals of the Safe Streets and Roads for All initiative.

17A. Round 1 Engagement Reports

1. Pop up Event – May 3, 2025

Pop-Up Event Summary – Saturday, May 3, 2025

Location: 200 36th Street Ocean, Marathon, FL 33050

Event Overview:
On May 3, 2025, the Safe Streets and Road for All (SS4A) project team participated in a community outreach event in collaboration with the City of Marathon (the City). The event took place during the *Nautical Fun in the Sun / Closing Circle, Leadership & Graduation* celebration at Marathon Community Park from 11:00 AM to 6:00 PM.

Materials Prepared for the Pop-Up:

- Printed surveys for in-person submissions
- Printed flyers for public distribution
- A printed QR code (linked to the project website and survey) displayed on a tabletop stand
- A sign-in sheet for collecting email addresses and contact information

Event Activities:
During the event, the MRG team shared a tent with the City of Marathon and actively engaged with City residents throughout the day. Team members distributed informational flyers highlighting the project and details about upcoming public meetings. Attendees were encouraged to participate in the community survey, with the option to complete it on-site or later using the online link provided. Attendees were also given the opportunity to complete a sign-in log providing their contact details to receive updates about upcoming outreach events.

Community Engagement & Outcomes:

- **Over 25 community members** visited the tent to learn more about the project and receive flyers.
- **More than 30 surveys** were collected during and after the event, including both paper and digital submissions. Paper submissions have been appended to this meeting summary along with a spreadsheet of digital feedback received to date.
- **Survey Link**: https://www.surveymonkey.com/r/MarathonSS4A













City of Marathon

Safe Streets for All (SS4A) Program



Help Shape Marathon's Safety Action Plan!

Website

bit.ly/MarathonSS4A

Survey

surveymonkey.com/r/MarathonSS4A

City of Marathon
Safe Streets for All (SS4A) Program



Safety Action Plan Public Survey

The City of Marathon is actively developing a Safety Action Plan as part of the Safe Streets and Roads for All (SS4A) initiative, with a strong focus on community-driven solutions. This comprehensive plan will identify projects and strategies through detailed data analysis and active community engagement, ensuring alignment with the USDOT Safe Streets for All program and the Federal Highway Administration's methodology. The Safety Action Plan will serve as a roadmap for ongoing safety analysis, project prioritization, and funding strategies to help the City of Marathon advance its commitment to safer streets. Your input is essential to shaping a safer future for all in our community.

1. Are you a resident of Marathon or a visitor?

- [x] Resident
- [ ] Visitor

2. What is your zip code of residence in Marathon? *(Optional)*

33050

3. What is the street address of your residence or rental in Marathon? *(Optional)*

73rd St

4. What is your email address? *(Optional)*

5. What mode(s) of transportation do you use most often to get around Marathon? *Select all that apply.*

- [x] Car
- [ ] Transit
- [x] Bicycle
- [ ] E-scooter/ e-bike
- [ ] Motorcycle
- [x] Walking

City of Marathon

Safe Streets for All (SS4A) Program



6. Do you feel safe biking or walking in Marathon?

- [x] Yes
- [ ] No

7. If not, what locations in Marathon do you feel are unsafe for biking or walking? *(Optional)*

8. What changes would you be willing to accept to help make roads safer? *Select all that apply.*



- [ ] Slower traffic



- [ ] Fewer lanes



- [ ] Lower speed limits



- [ ] More waiting at stop lights



- [x] Increased enforcement

9. What specific transportation safety improvements would you like the City of Marathon to prioritize?

Maybe more stop lights in a few of the more populated areas

10. Have you, a family member, or a friend ever been impacted by a serious crash in Marathon?

- [ ] Yes
- [x] No

11. If YES, please briefly describe how the serious crash impacted you, your family, and any additional information you would like to share with us. *(Optional)*

12. Would you like to be part of the City of Marathon SS4A Safety Action Plan mailing list?

- [ ] Yes
- [x] No

City of Marathon

Safe Streets for All (SS4A) Program



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Website

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Survey

surveymonkey.com/r/MarathonSS4A



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1. Are you a resident of Marathon or a visitor?

☐ Resident ☒ Visitor

2. What is your zip code of residence in Marathon? *(Optional)*

33040

3. What is the street address of your residence or rental in Marathon? *(Optional)*

4. What is your email address? *(Optional)*

KWKEYSGIRL@gmail.com

5. What mode(s) of transportation do you use most often to get around Marathon? *Select all that apply.*

☒ Car ☐ Transit ☐ Bicycle ☐ E-scooter/ e-bike ☐ Motorcycle ☐ Walking

City of Marathon

Safe Streets for All (SS4A) Program



6. Do you feel safe biking or walking in Marathon?

- [x] Yes
- [ ] No

7. If not, what locations in Marathon do you feel are unsafe for biking or walking? *(Optional)*

8. What changes would you be willing to accept to help make roads safer? *Select all that apply.*



- [ ] Slower traffic



- [ ] Fewer lanes



- [ ] Lower speed limits



- [ ] More waiting at stop lights



- [ ] Increased enforcement

9. What specific transportation safety improvements would you like the City of Marathon to prioritize?

CROSSINGS ON OSH

10. Have you, a family member, or a friend ever been impacted by a serious crash in Marathon?

- [ ] Yes
- [x] No

11. If YES, please briefly describe how the serious crash impacted you, your family, and any additional information you would like to share with us. *(Optional)*

12. Would you like to be part of the City of Marathon SS4A Safety Action Plan mailing list?

- [ ] Yes
- [x] No

City of Marathon

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1. Are you a resident of Marathon or a visitor?

☑ Resident ☐ Visitor

2. What is your zip code of residence in Marathon? *(Optional)*

33051

3. What is the street address of your residence or rental in Marathon? *(Optional)*

4. What is your email address? *(Optional)*

5. What mode(s) of transportation do you use most often to get around Marathon? *Select all that apply.*

☑ Car	☐ Transit	☐ Bicycle	☐ E-scooter/ e-bike	☐ Motorcycle	☐ Walking

City of Marathon

Safe Streets for All (SS4A) Program



6. Do you feel safe biking or walking in Marathon?

- [x] Yes
- [ ] No

7. If not, what locations in Marathon do you feel are unsafe for biking or walking? *(Optional)*

8. What changes would you be willing to accept to help make roads safer? *Select all that apply.*



- [ ] Slower traffic



- [ ] Fewer lanes



- [ ] Lower speed limits



- [ ] More waiting at stop lights



- [ ] Increased enforcement

9. What specific transportation safety improvements would you like the City of Marathon to prioritize?

10. Have you, a family member, or a friend ever been impacted by a serious crash in Marathon?

- [x] Yes
- [ ] No

11. If YES, please briefly describe how the serious crash impacted you, your family, and any additional information you would like to share with us. *(Optional)*

Senior citizen hit us

12. Would you like to be part of the City of Marathon SS4A Safety Action Plan mailing list?

- [ ] Yes
- [x] No

City of Marathon

Safe Streets for All (SS4A) Program



Help Shape Marathon's Safety Action Plan!

Website

bit.ly/MarathonSS4A

Survey

surveymonkey.com/r/MarathonSS4A

City of Marathon
Safe Streets for All (SS4A) Program



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The City of Marathon is actively developing a Safety Action Plan as part of the Safe Streets and Roads for All (SS4A) initiative, with a strong focus on community-driven solutions. This comprehensive plan will identify projects and strategies through detailed data analysis and active community engagement, ensuring alignment with the USDOT Safe Streets for All program and the Federal Highway Administration's methodology. The Safety Action Plan will serve as a roadmap for ongoing safety analysis, project prioritization, and funding strategies to help the City of Marathon advance its commitment to safer streets. Your input is essential to shaping a safer future for all in our community.

1. Are you a resident of Marathon or a visitor?

- [x] Resident
- [ ] Visitor

2. What is your zip code of residence in Marathon? *(Optional)*

33050

3. What is the street address of your residence or rental in Marathon? *(Optional)*

900 James Ave

4. What is your email address? *(Optional)*

Phippsdonna560 gmail. Com

5. What mode(s) of transportation do you use most often to get around Marathon? *Select all that apply.*

- [x] Car
- [ ] Transit
- [ ] Bicycle
- [ ] E-scooter/ e-bike
- [ ] Motorcycle
- [x] Walking

City of Marathon

Safe Streets for All (SS4A) Program



6. Do you feel safe biking or walking in Marathon?

- [x] Yes
- [ ] No

7. If not, what locations in Marathon do you feel are unsafe for biking or walking? *(Optional)*

E-Bikes on Sidewalks

8. What changes would you be willing to accept to help make roads safer? *Select all that apply.*



- [ ] Slower traffic



- [ ] Fewer lanes



- [ ] Lower speed limits



- [ ] More waiting at stop lights



- [ ] Increased enforcement

9. What specific transportation safety improvements would you like the City of Marathon to prioritize?

10. Have you, a family member, or a friend ever been impacted by a serious crash in Marathon?

- [ ] Yes
- [x] No

11. If YES, please briefly describe how the serious crash impacted you, your family, and any additional information you would like to share with us. *(Optional)*

12. Would you like to be part of the City of Marathon SS4A Safety Action Plan mailing list?

- [ ] Yes
- [x] No

City of Marathon

Safe Streets for All (SS4A) Program



Sign-In Sheet

Event:

Date/Time:

First/Last Name	Zip Code	Email	Resident or Visitor?
Kristi Stere Schluter	33050	27989thstreet@gmail.com	☑ Resident ☐ Visitor
Darlene F. Pointer	33050	Darlene.pointer@gmail.com	☑ Resident ☐ Visitor
			☐ Resident ☐ Visitor
			☐ Resident ☐ Visitor
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			☐ Resident ☐ Visitor
			☐ Resident ☐ Visitor

1. Marathon Stakeholder Meeting #1 – May 12, 2025

Marathon Stakeholder Meeting #1 – Summary
Date: Monday, May 12, 2025
Time: 2:00 PM
Location: Virtual via TEAMS
Attendees: Project study team, local stakeholders, law enforcement, city officials

Name	Organization
Maria Covelli	City of Marathon
Brian Shea	City of Marathon
James Muro	City of Marathon Fire Rescue
Ray Atkinson	City of Key West
John Bartus	City of Key Colony Beach
Janene Sclafani	Monroe County
Ryan Stachurski	City of Key West
Julie Cheon	Monroe County
Shieda Castillo	FDOT District 6
Derek Paul	Monroe County Sherriff's Office
David Fernandez	Monroe County Sherriff's Office
Kristen Livengood	Monroe County
Daniel Samess	CEO, Greater Marathon Chamber of Commerce
Matthew Maher	Stantec
Kush Bhagat	Stantec

Meeting Overview

The first meeting of the City of Marathon's (the City's) *Safe Streets for All Comprehensive Safety Action Plan Stakeholder Group* was held on Monday, May 12, 2025, at 2:00 PM via Microsoft Teams. This summary provides an overview of the presentation, discussion, and key actions from the kickoff meeting. Stakeholders in attendance were invited via a TEAMS calendar invitation.

The meeting served as an introduction to the project team, an outline of the study's objectives, and a starting point for collaborative discussion on roadway safety. Topics included initial safety data, crash trends, and the roles of participating stakeholders. Emphasis was placed on applying the Safe System Approach to guide the development of strategic safety solutions for the City.

The session was recorded, and all participants were notified by the consultant project manager, Matt Maher, at the start of the meeting. Presentation slides were shared

during the meeting and are included in these summary notes for reference. The full presentation is appended to this document. The meeting concluded at approximately 3:00 PM.

Discussion Highlights

Project Introduction:
Brian Shea, City Planning Director, provided a brief introduction to the project study team.

Study Purpose and Approach:
Matt presented the purpose of the study, focusing on developing actions and potential safety improvement projects. Stakeholders were encouraged to utilize the Safe System Approach when identifying problems and potential solutions.

Crash Data Analysis:
In performing the crash data analysis for the City, Stantec reviewed six years of crash data, which Matt summarized. Matt also included a discussion on societal crash costs. He noted that, per Florida Department of Transportation (FDOT) data, higher-severity crashes result in significantly higher societal impacts when compared to more common property damage only (PDO) crashes. For instance, over 1,400 PDO crashes would equate to the impact of a single fatal crash. To improve the statistical significance of crash data analysis findings, all injury crashes were analyzed in addition to the FSI (fatal and serious injury) crashes that are typically analyzed.

High Injury Network (HIN) Segments:
The following list of HIN segments along US 1 was presented:

- 7 Mile Vista Parking Area to Knights Key
- 15th to 23rd
- 33rd to 73rd
- 81st Intersection
- 99th Intersection
- 109th to Key Vaca Cut
- 122nd Intersection
- Sadowski Intersection
- Coco Plum Intersection
- Half-mile segment on Long Point Key (Burnt Point)
- Peachtree to Guava

Participants noted safety issues at the following locations overlapping with the HIN:

- Airport Drive and US 1, near 73rd Street

- 53rd Street – Sombrero Boulevard

Law Enforcement Insights
Officers shared challenges with signal preemption for emergency vehicles, citing driver non-compliance. Law enforcement meeting participants also expressed interest in reviewing study recommendations before public release.

Near Miss Observations:
Video footage of near misses at five intersections along the HIN was presented for review and discussion.

Ongoing Coordination:
A City Commissioner is already in communication with FDOT about adjusting pedestrian signal timing at Sadowski Causeway.

Next Steps in the Study:
Matt confirmed the study will document:

- Crash and near miss analyses
- Study goals
- Proposed policy changes
- Recommendations organized by short, medium, and long-term timelines

Stakeholder Q&A and Comments
Sheriff Rick Ramsay:

- Expressed concern about the overuse of traffic signals
- Noted the rise in e-bike usage on sidewalks, creating safety issues at driveways
- Suggested stop signs for e-bikes, though acknowledged practicality concerns
- Warned that excessive crosswalks may provide a false sense of security
- Emphasized the need to maintain traffic flow on US 1, given that current volumes already exceed capacity

Janene Sclafani:

- Highlighted multimodal conflicts and the absence of bike lanes
- Recommended more education for drivers and pedestrians, noting issues with driver entitlement and inattentive walking
- Raised concern over the proximity of numerous driveways along US 1, contributing to frequent rear-end crashes and erratic lane changes

James Muro:

- Inquired whether signal preemption for emergency vehicles would require justification in the study

- The project team responded that this study is a prerequisite for municipalities to apply for implementation grants. Preemption may fall under the “post-crash care” category within the Safe System framework

City of Marathon
Comprehensive Safety Action Plan

Stakeholder Meeting #1
May 12, 2025

Meeting Agenda

- Project Team
- Purpose of Study
- Stakeholder Team Roles
- Fatal and Serious Injury Costs to Society
- High Injury Network
- Video Observations
- Next Steps

Project Team



Brian Shea, AICP, CFM
Planning Director
City of Marathon



Matthew Maher, PE, PTOE, RSP_{2I}
Project Manager
Stantec



Alicia Gonzalez
Public Engagement
MRG



Frank Domingo, PE
Quality Assurance Engineer
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Kush Bhagat, PE, RSP_1, IMSA II
Deputy Project Manager
Stantec



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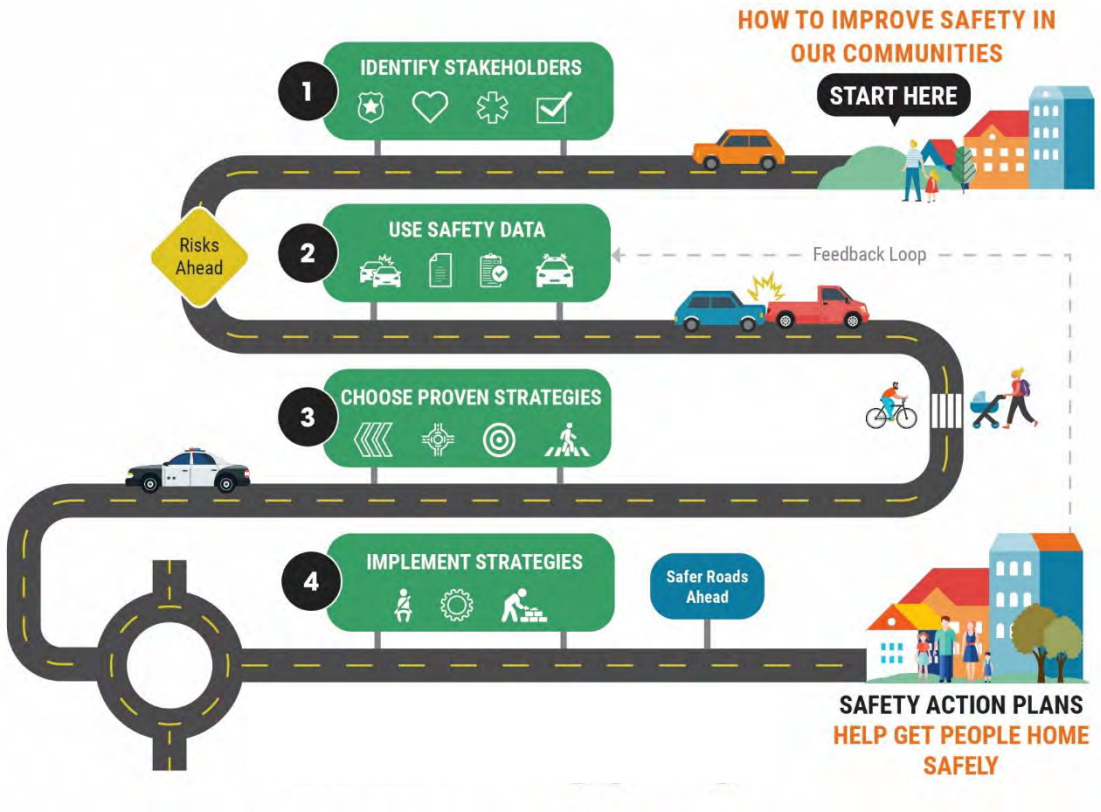
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Develop a Safety Action Plan that includes:

- Comprehensive set of projects and strategies identified through data and engagement

Process will result in a:

- Plan consistent with the USDOT Safe Streets for All program
- Tools and frameworks for ongoing analysis and prioritization
- Funding strategies to allow the City to work toward its safety commitments



The Safety Action Plan will align with the Federal Highway Administration's methodology

Stakeholder Team Roles

- Provides feedback on City traffic safety issues
- Includes various community groups
- Employs the “Safe System Approach”
  - Designing safer roads
  - Promoting safer speeds
  - Encouraging practices that lead to safer people
  - Encouraging use of safer vehicles
  - Providing the best post-crash care
- Connects us to communications or PI staff
- Messaging (don’t use “accident”, use **“crash”**)

APPROACH

1. **Organize (today)**
   Stakeholder Kickoff Meeting
2. **Identify & Screen (September)**
   Methodology and Countermeasure Input Meeting
3. **Select & Prioritize (next Spring)**
   Recommendations Meeting

Six-Year Summary of Crash Data, 2019 thru 2024

How Many Crashes Occurred?

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Per Week: 5

Fatal & Serious Injury
88
Per Year: 15

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Property Damage Only
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Cost to Society
$233M
Per Day: $106K

When Did the Crashes Occur?

Peak Months

Less More

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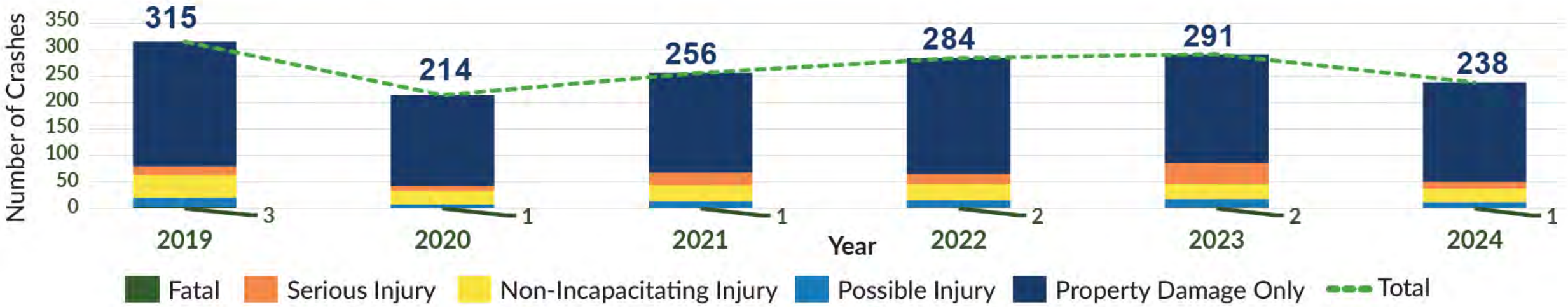
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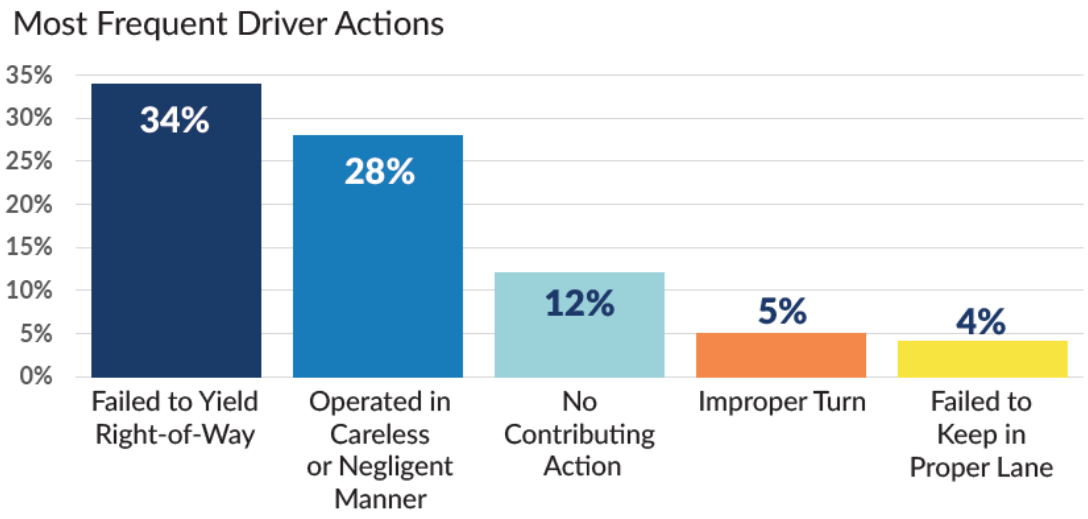
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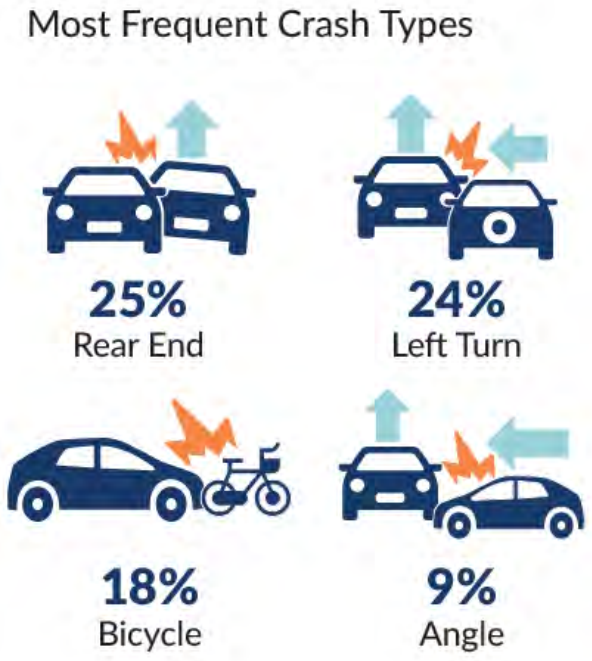


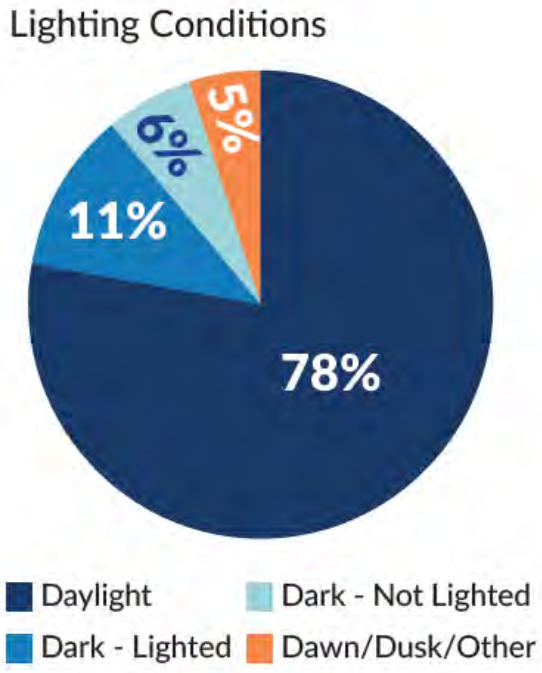
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Fatal and Injury Crash Trends







Where are Fatal/Serious Injury crashes happening?

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HIN accounts for 75% of crash cost total for City, $175M of the $233M

- US Route 1 (from south to north)
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  - Half-mile segment on Long Point Key (Burnt Point)
  - Peachtree to Guava

Poll: Does the HIN generally agree with your experience?

- US Route 1 (from south to north)
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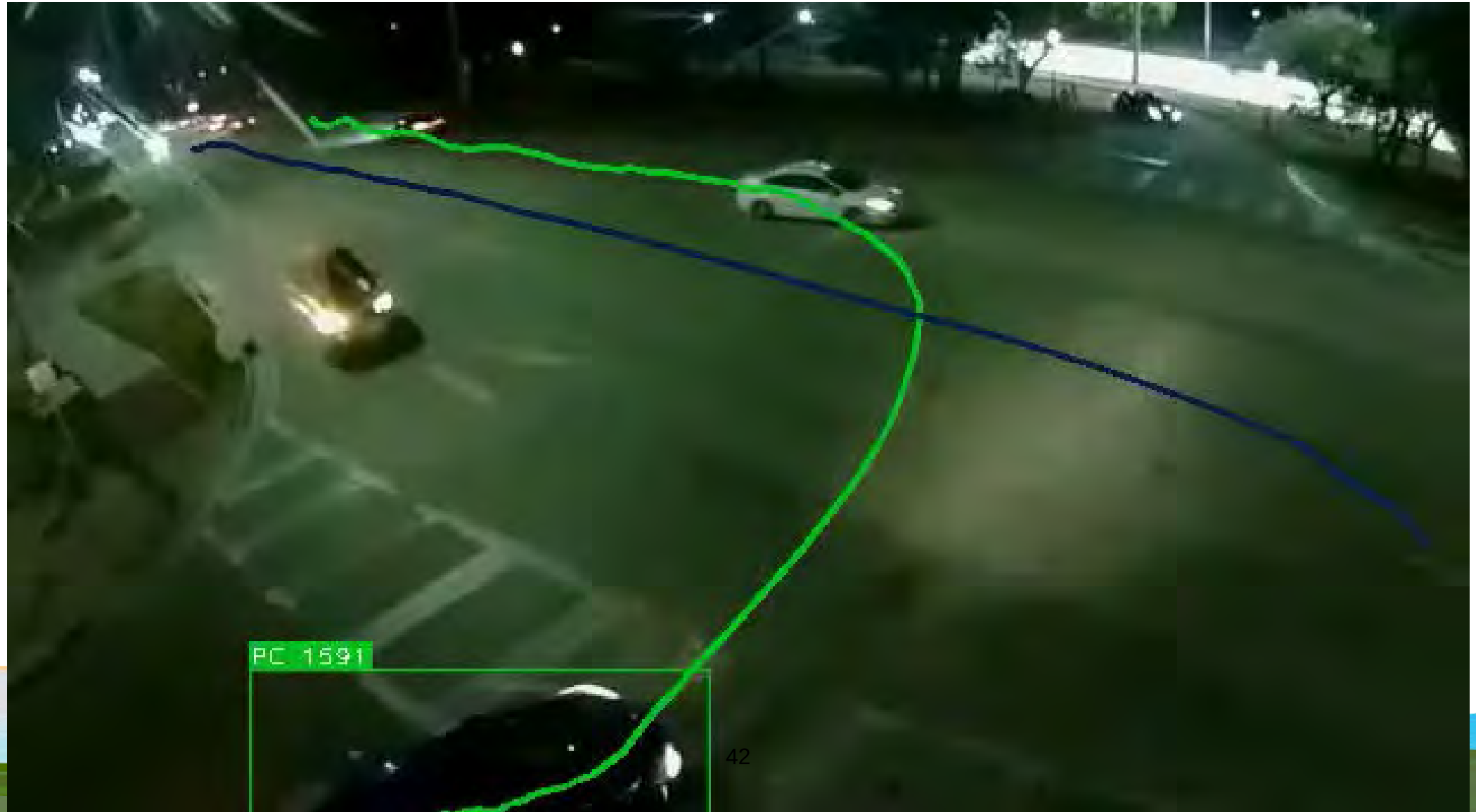
High Injury Network (HIN) Map



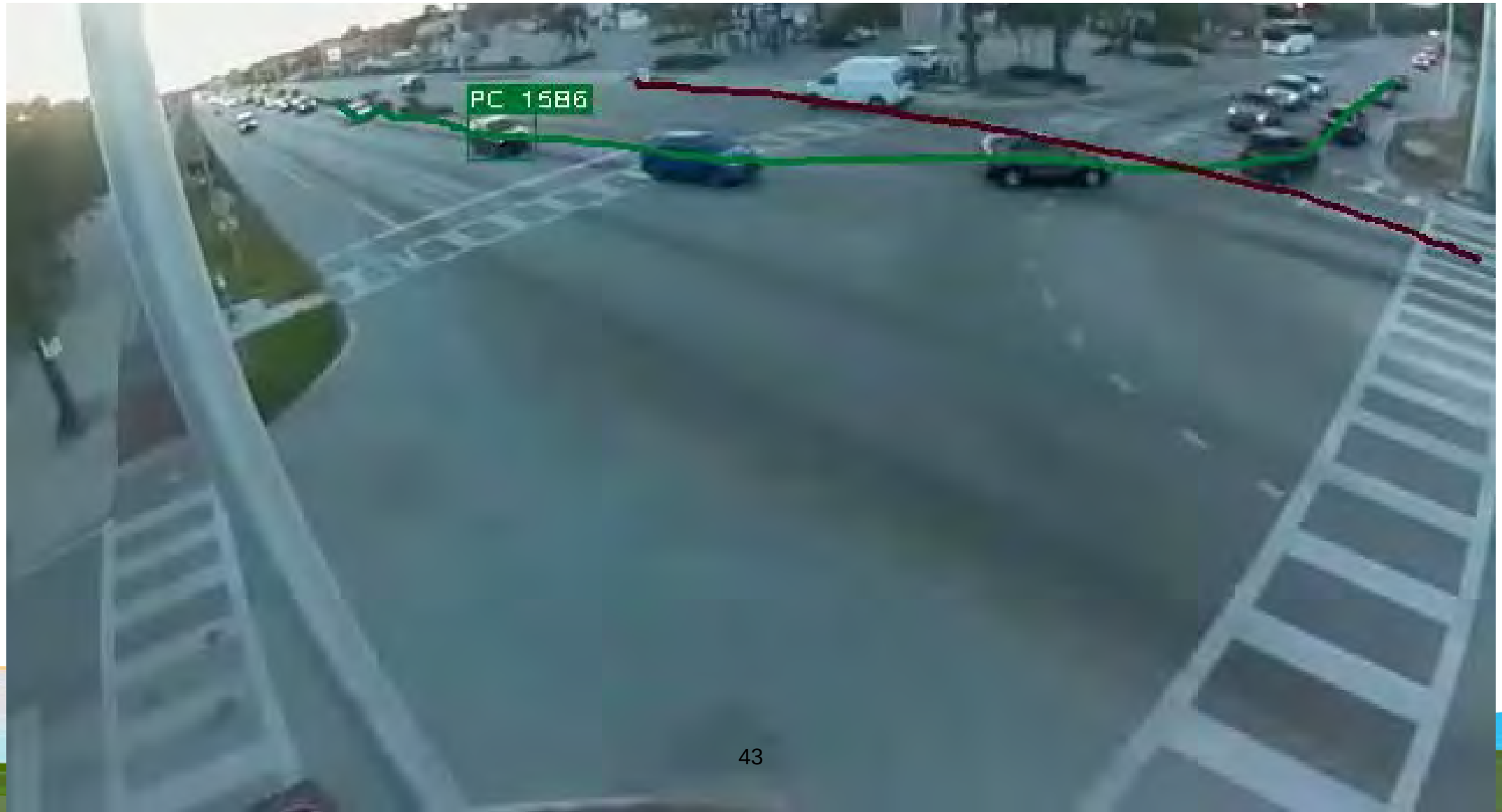
Legend

- High Injury Network roadways based on six-year fatal and severe injury crash scan
- Near miss video installation sites

39th Street Near Miss Video



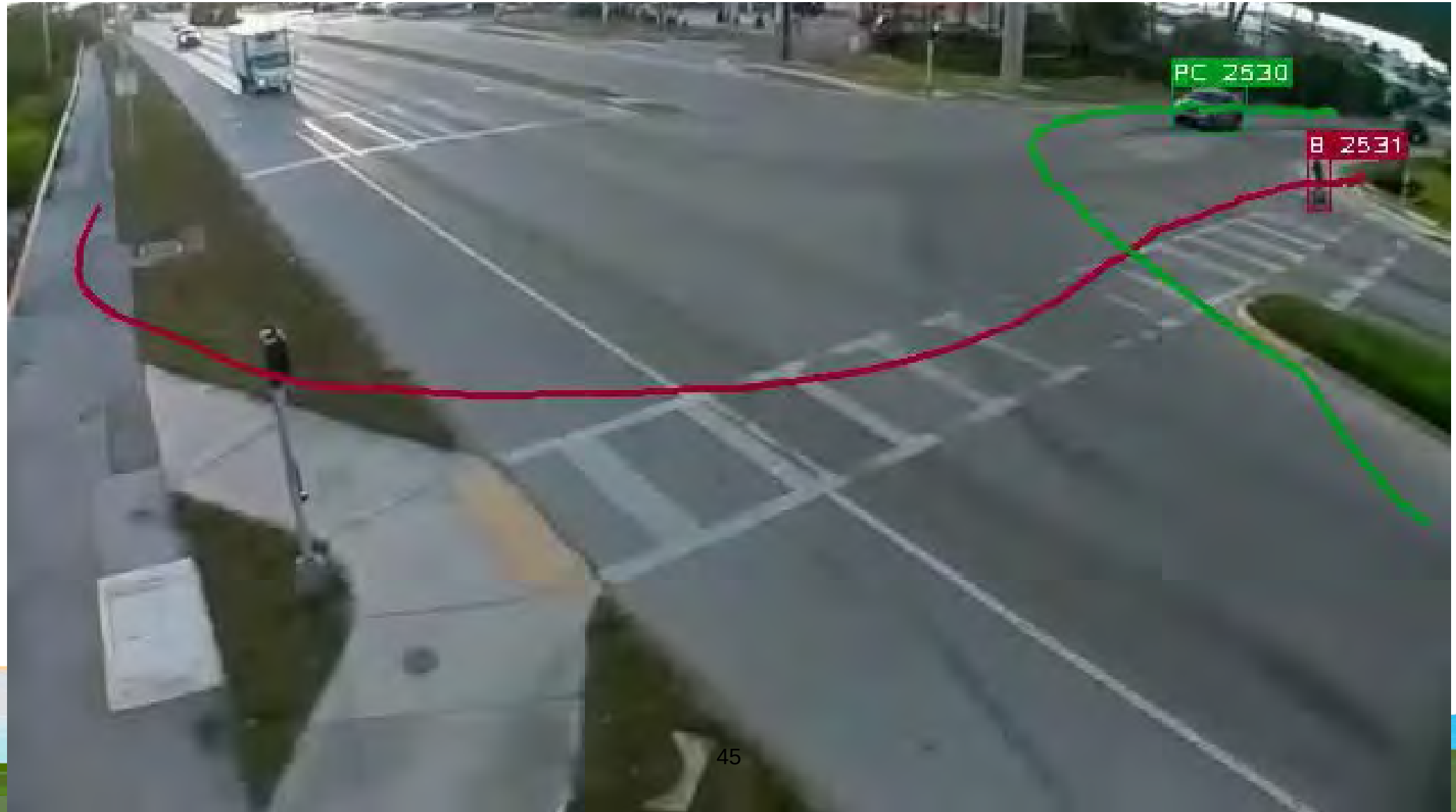
Sombrero Beach Boulevard Near Miss Video



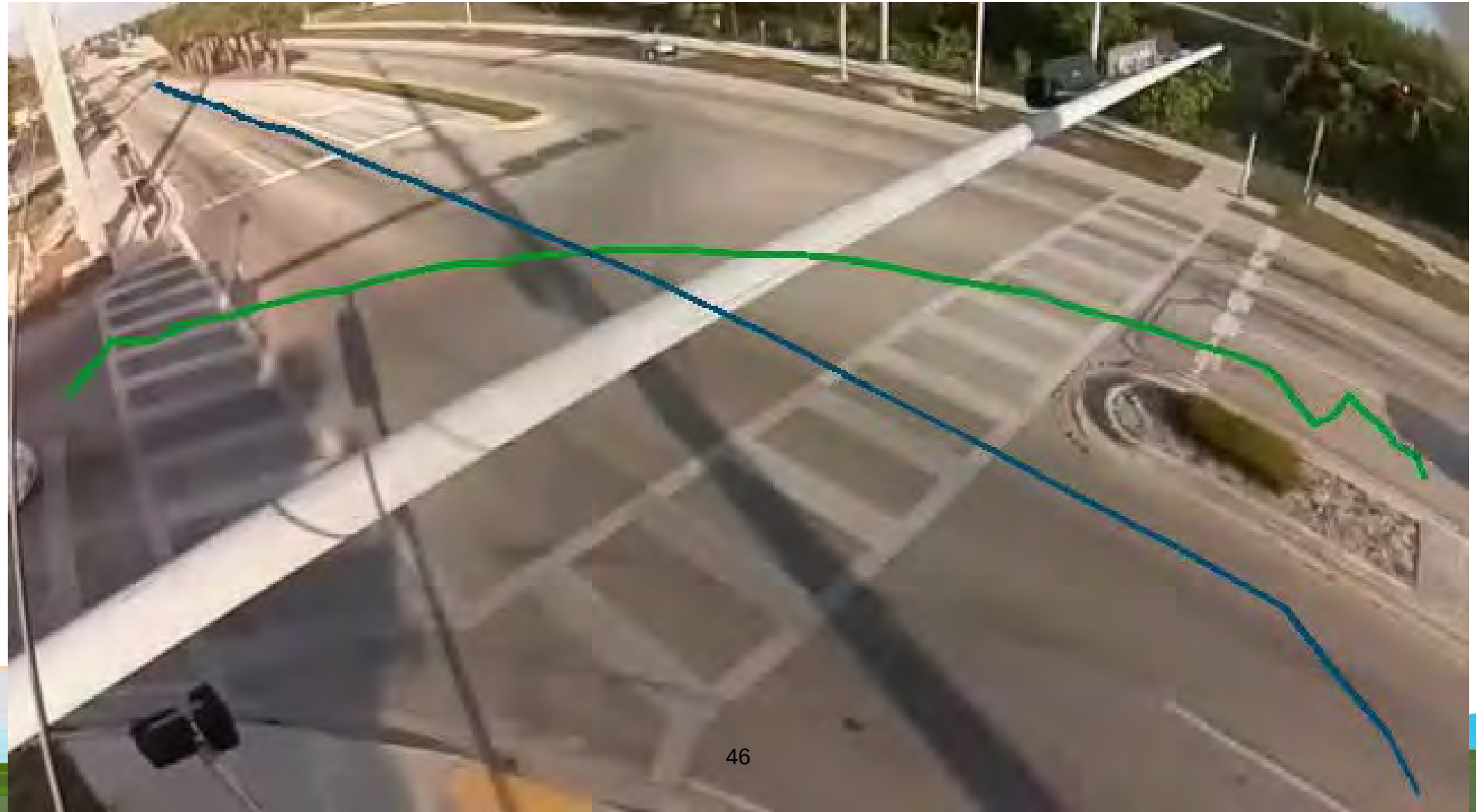
73rd Street Near Miss Video



Sadowski Causeway Near Miss Video



Coco Plum Drive Near Miss Video



Poll: What are you willing to accept for safer roads?

A. Slower traffic

B. Fewer lanes

C. Lower speed limits

D. More waiting at stop lights

E. Increased enforcement

Question & Answer



WE WANT YOUR INPUT!

Residents, businesses, and visitors are encouraged to share their ideas and concerns to help guide the plan.

www.surveymonkey.com/r/MarathonSS4A



1. In-Person Meeting #1 – May 13, 2025

City of Marathon In-Person Meeting #1 Summary

Date: Tuesday, May 13, 2025
Time: 5:30 PM
Location: Marathon Council Chambers, 9805 Overseas Hwy., Marathon, Florida
Attendees: Project study team, Local Council, and Public

Present Council:

Councilmember Lynny Del Gaizo
Councilmember Kenny Matlock
Councilmember Robyn Still
Vice Mayor Jeff Smith
Mayor Lynn Landry, comprising a quorum.
Also, in attendance were:
City Manager, George Garrett
City Clerk, Diane Clavier
City Attorney, Steve Williams
Deputy City Manager, Brian Bradley
Finance Director, Jennifer Johnson
Planning Director, Brian Shea
Deputy Utilities Director, Libby Soldano
Fire Chief James Muro
Code Director, Ted Lozier
Grants Coordinator, Maria Covelli
Park and Recreation Director, Scott Williamson
MCSO Captain Derek Paul

Presenter: Kush Bhagat, Deputy Project Manager, Stantec

Overview of SS4A Grant and Safety Action Plan

Mr. Bhagat from Stantec delivered a PowerPoint presentation outlining the purpose and scope of the *Safe Streets and Roads for All* (SS4A) initiative. He explained that the project is supported by a grant approved through the FDOT and is designed to develop a comprehensive Safety Action Plan in alignment with the methodology established by the Federal Highway Administration (FHWA).

During the presentation, Bhagat provided a six-year crash data overview, highlighting key trends, recurring crash patterns, and specific locations where injury-related incidents have occurred. The full presentation is appended to this document. The presentation included the following slides:

Slide 1: Welcome & Introduction
Welcome is extended to all attendees of the first stakeholder meeting for the City of Marathon's Comprehensive Safety Action Plan. This initiative is recognized as an important step toward the creation of safer streets, in alignment with the U.S. Department of Transportation's Safe Streets for All program.

Slide 2: Purpose of the Study
The primary objective of the plan is the development of a comprehensive, data-driven strategy aimed at the reduction of serious and fatal traffic injuries. The approach is intended to align with federal methodology and serve as a framework for ongoing safety assessment, prioritization of projects, and long-term funding success.

Slide 3: Meet the Project Team
Guidance for the project is being provided by a multidisciplinary team. From Stantec, project leadership is being offered by Project Manager Matthew Maher and Deputy PM Kush Bhagat, with quality assurance oversight by Engineer Frank Domingo. The City of Marathon is represented by Planning Director Brian Shea, whose local expertise supports the effort. Public engagement is being led by Paulette Summers of MRG, and traffic engineering expertise is being contributed by Keffler Castro of C.H. Perez.

Slide 4: Understanding the Crash Data
A six-year dataset from 2019 to 2024 has been analyzed. The estimated societal cost of crashes within the City of Marathon has been calculated at $233 million, with approximately 75% of that cost attributed to a limited number of corridors and intersections identified as the High Injury Network (HIN).

Slide 5: High Injury Network (HIN)
The High Injury Network identifies areas where fatal and serious injury crashes are most concentrated. Key segments include portions of U.S. Route 1, particularly between the 7 Mile Vista Parking Area and Knights Key, as well as intersections spanning 15th to 23rd, 33rd to 73rd, and locations near 81st, 99th, and 122nd streets. Additional high-risk zones include Long Point Key and the corridor between Peachtree and Guava.

Slide 6: Video Observations

To enhance the understanding of traffic safety conditions, cameras were installed at select sites to capture near-miss incidents—precursors to more severe crashes. Locations included in this assessment are 39th Street, Sombrero Beach Boulevard, 73rd Street, Sadowski Causeway, and Coco Plum Drive. The video data has provided real-time insights into risk patterns not evident through crash records alone.

Slide 7: Next Steps

Informed by crash data, video analysis, and stakeholder feedback, work will now proceed to refine strategies and prioritize projects for inclusion in the final Safety Action Plan. The resulting plan is expected to support efforts to obtain state and federal funding. Continued public input will be welcomed throughout this process.

Slide 8: Q&A

The floor is now opened for questions and comments. Contributions made today will be used to help shape the future of transportation safety in the City of Marathon.

Feedback/Comment:

Mayor Lynn Landry inquired about the date of the next workshop meeting. Planning Director Brian Shea responded, noting that the next workshop is scheduled for May 27th, 2025.











City of Marathon

Safe Streets for All (SS4A) Program



Sign-In Sheet

Event: Public Meeting #1

Date/Time: Tuesday, May 13, 2025 at 5:30 pm

First/Last Name	Zip Code	Email	Resident or Visitor?
James Mura (Fire Chief)			☐ Resident ☐ Visitor
Diane Clavier (City Clerk)			☐ Resident ☐ Visitor
Kush Bhaghat (Stantec)			☐ Resident ☐ Visitor
Priscila Chaves (MRG)			☐ Resident ☐ Visitor
Isela Carmiol (MRG)			☐ Resident ☐ Visitor
Maria Corelli (Grants Coord.)	33050		☒ Resident ☐ Visitor
Gerard Ruysin (Bldg Official)			☐ Resident ☐ Visitor
Megan Hughes	33050		☒ Resident ☐ Visitor
Riley Woodstock			☒ Resident ☐ Visitor
Melany Menendez			☒ Resident ☐ Visitor
Paige Johnson	33050		☒ Resident ☐ Visitor
Amy Johnson	33050		☒ Resident ☐ Visitor
Roger Johnson	33050		☒ Resident ☐ Visitor
Jerry & Tom Hirchak	33050		☒ Resident ☐ Visitor
Debra Strong	33050		☒ Resident ☐ Visitor
Alex Rickert	33050		☒ Resident ☐ Visitor

City of Marathon

Safe Streets for All (SS4A) Program



Sign-In Sheet

Event:

Date/Time:

First/Last Name	Zip Code	Email	Resident or Visitor?
Analise Marrow	33549		☒ Resident ☒ Visitor
Mari Dollay	33050		☐ Resident ☐ Visitor
Brad Hager	33050		☒ Resident ☐ Visitor
Aaron Hager			☒ Resident ☐ Visitor
Melissa Hager			☒ Resident ☐ Visitor
Michael Melchiorre	33050		☐ Resident ☐ Visitor
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City of Marathon
Comprehensive Safety Action Plan

Stakeholder Meeting #1
May 12, 2025

Meeting Agenda

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- Purpose of Study
- Stakeholder Team Roles
- Fatal and Serious Injury Costs to Society
- High Injury Network
- Video Observations
- Next Steps

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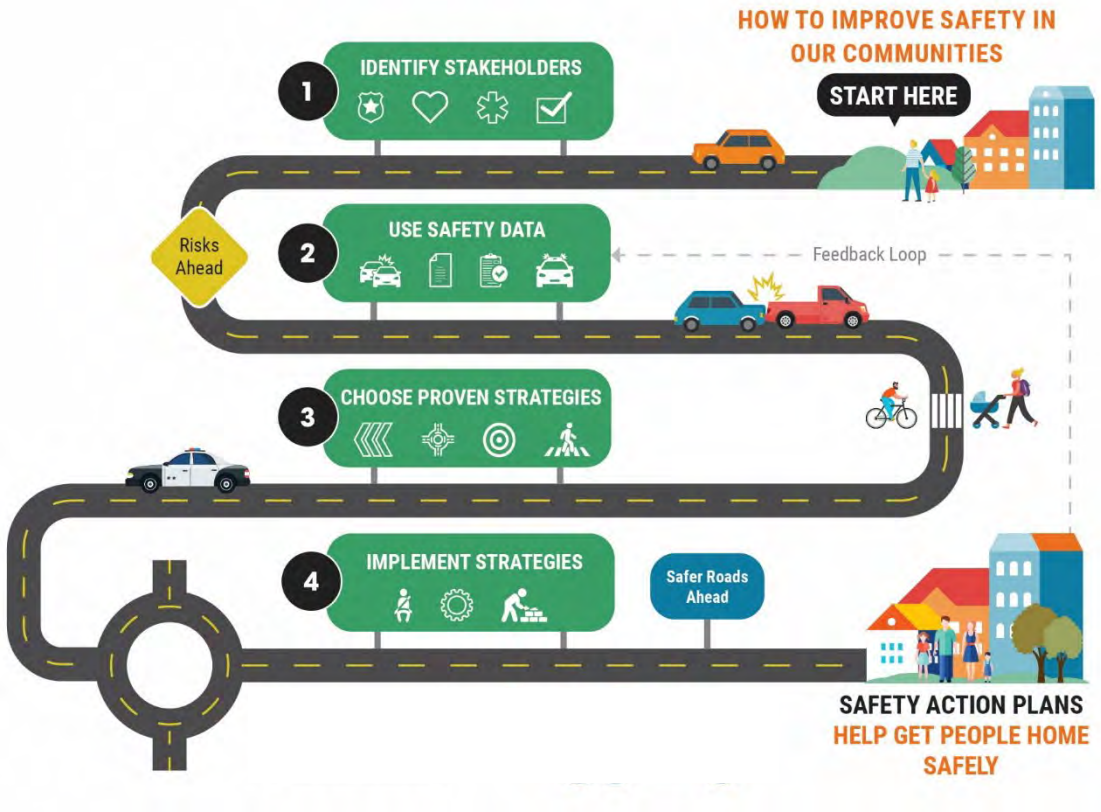
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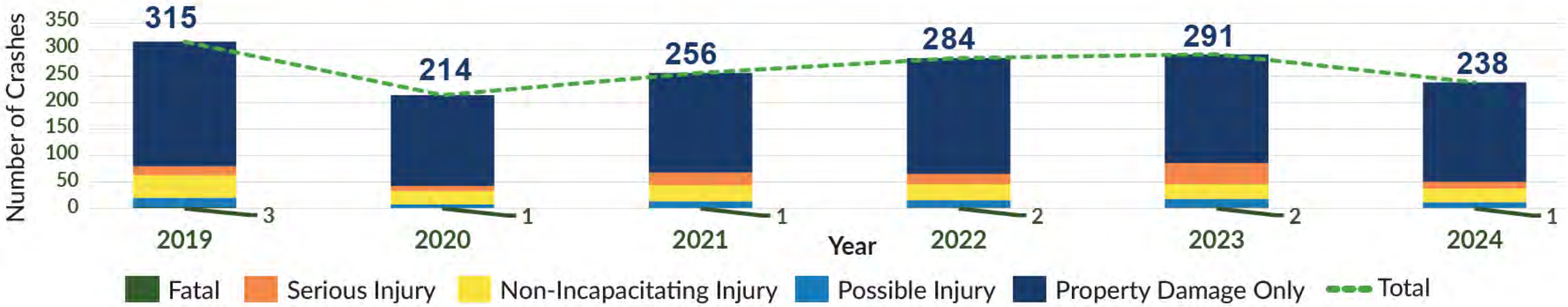
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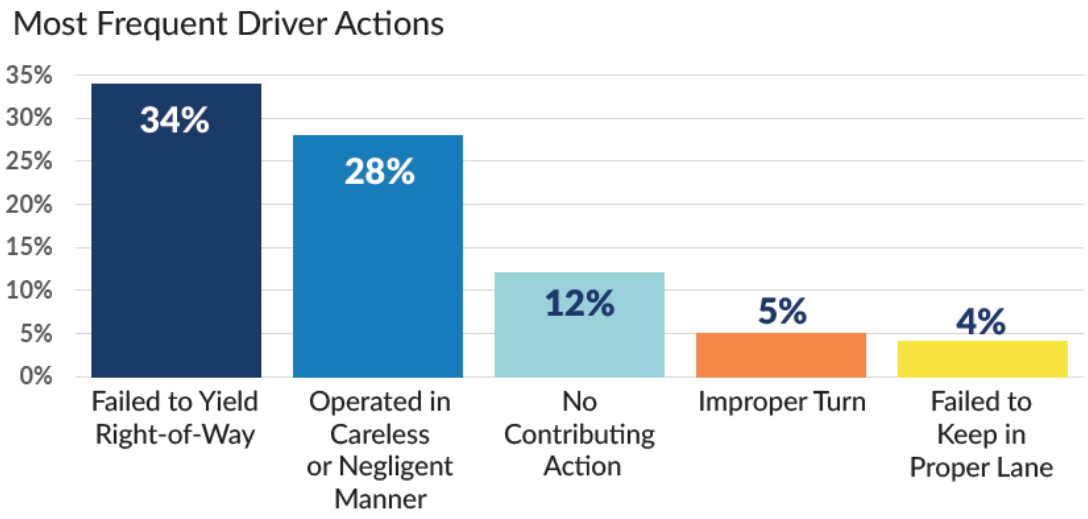
Crashes by Year and Severity

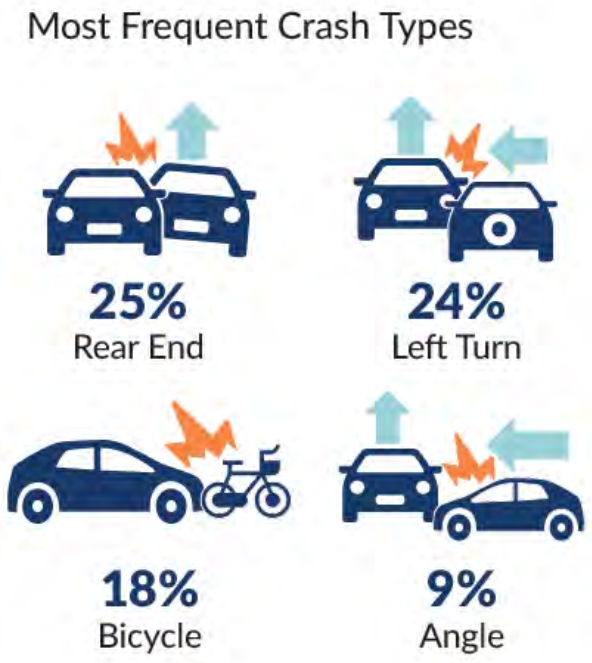


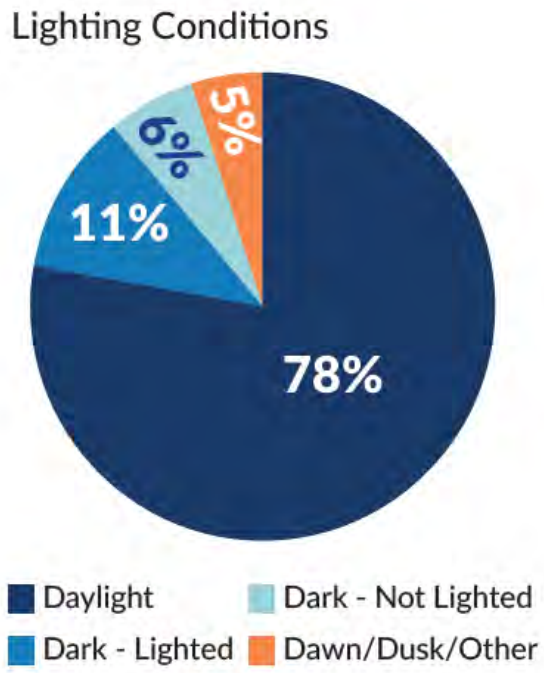
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Fatal and Injury Crash Trends







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Join at menti.com | use code 5234 0460

Mentimeter

Menti

City_of_Marathon_Com...

Choose a slide to present

Instructions

Go to

www.menti.com

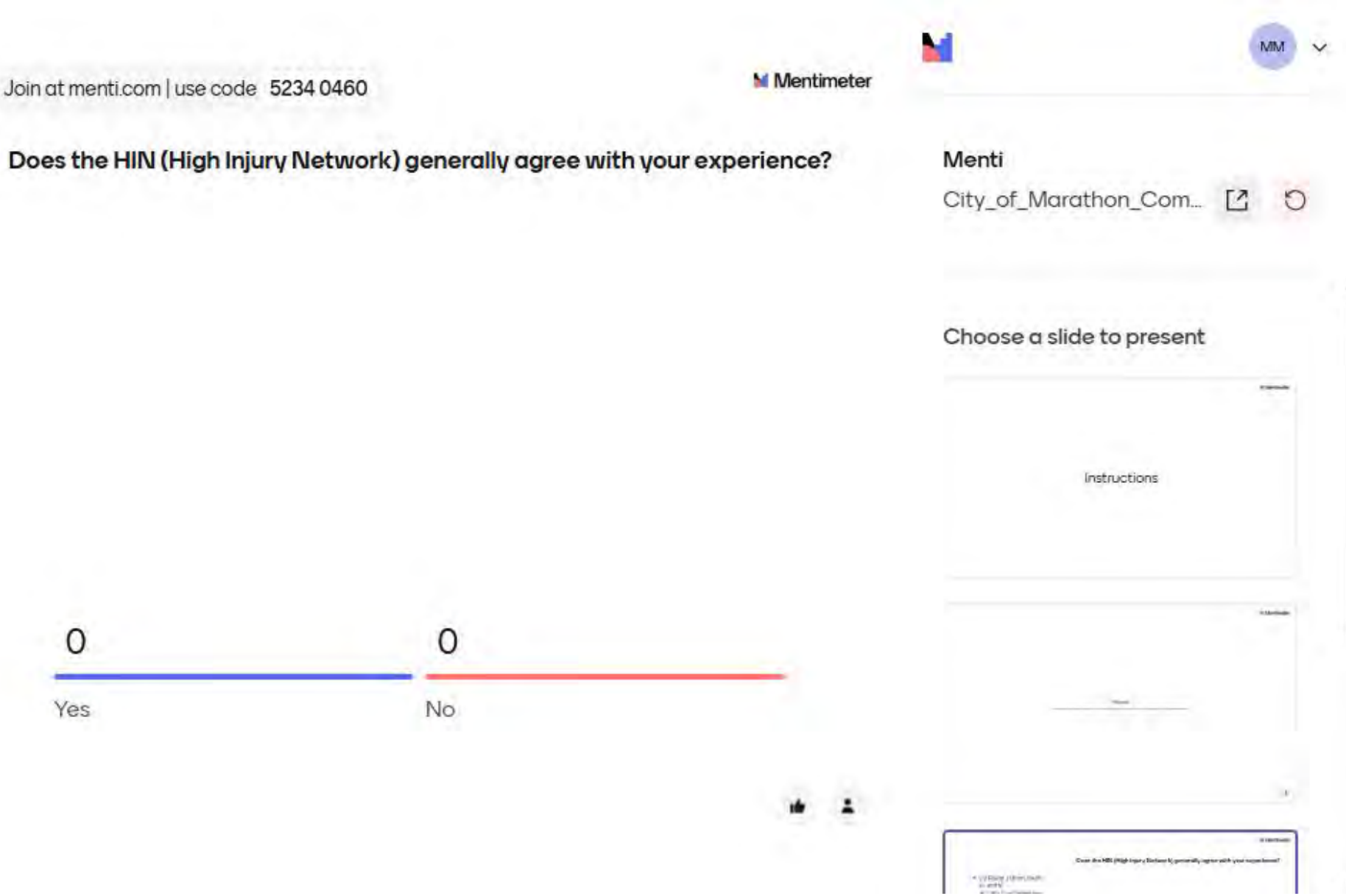
Enter the code

5234 0460



Or use QR code

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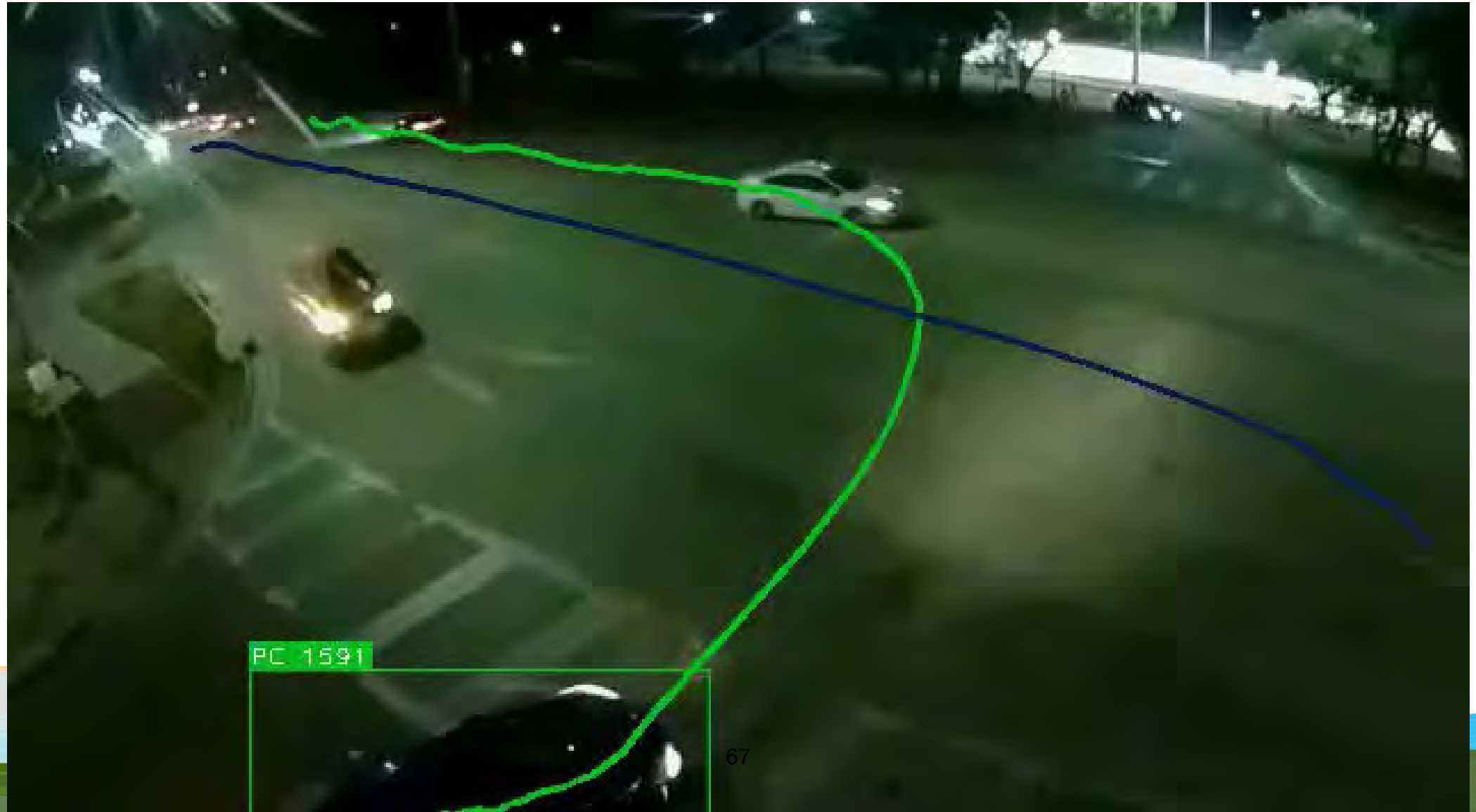
High Injury Network (HIN) Map



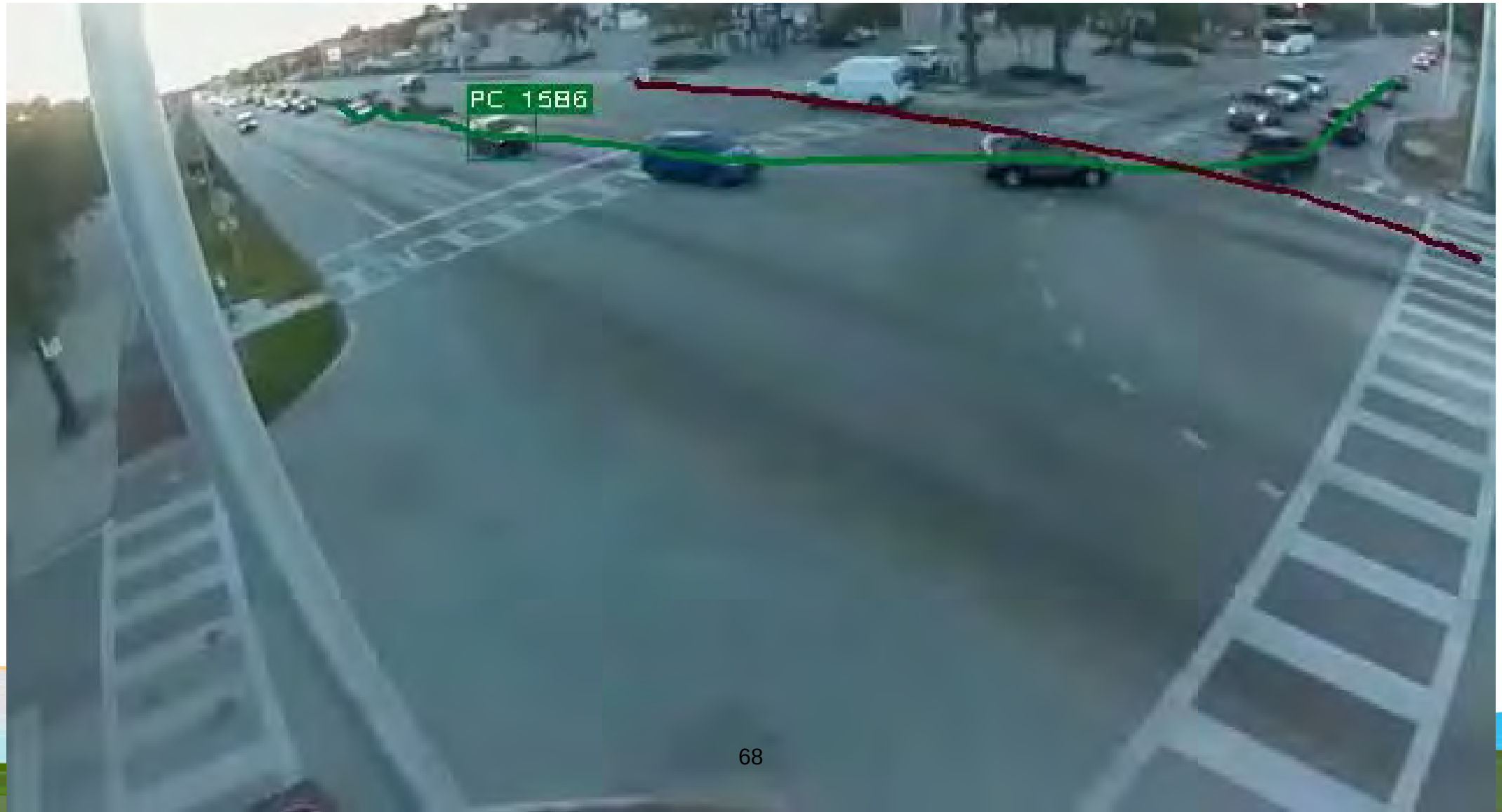
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- Near miss video installation sites

39th Street Near Miss Video



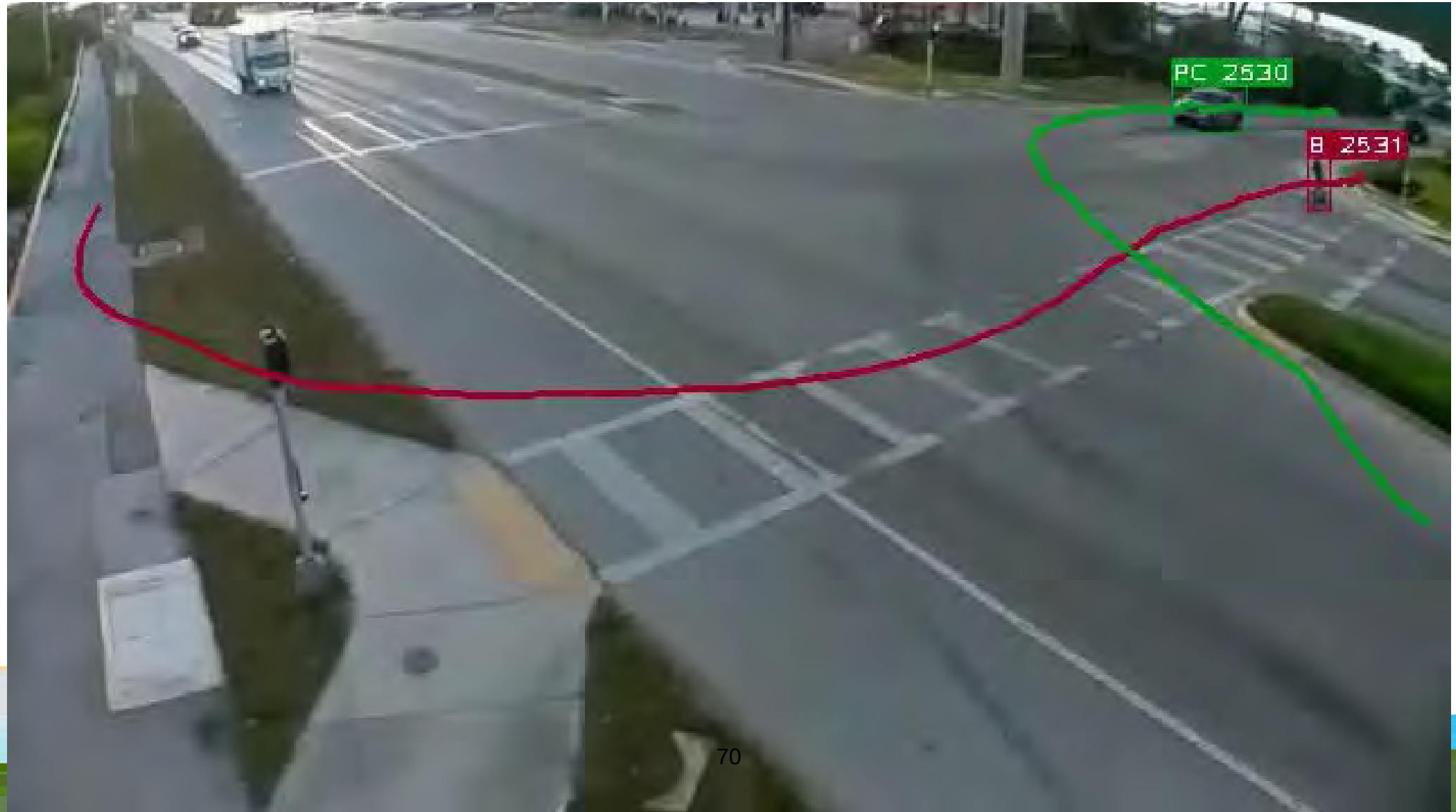
Sombrero Beach Boulevard Near Miss Video



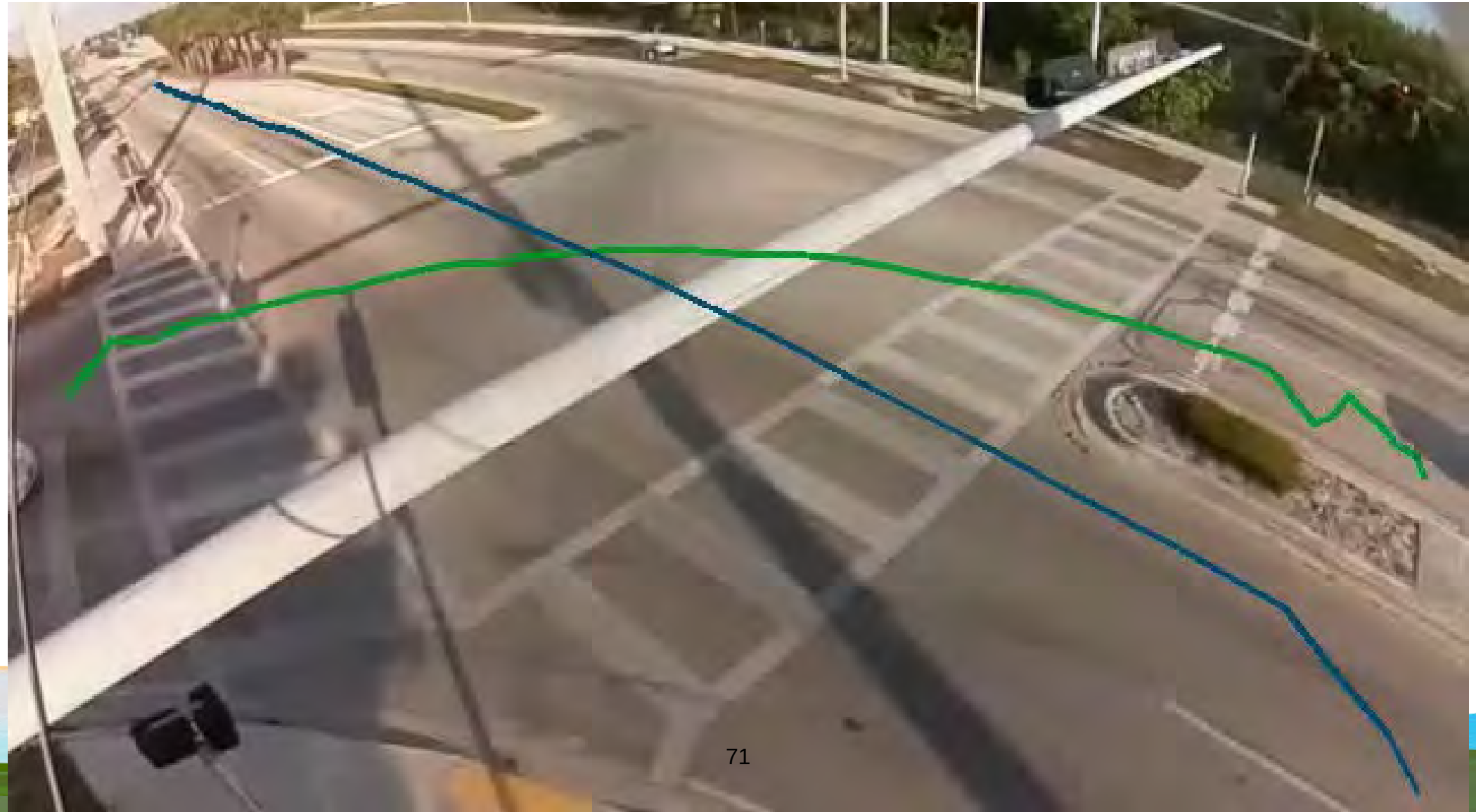
73rd Street Near Miss Video



Sadowski Causeway Near Miss Video



Coco Plum Drive Near Miss Video



Question & Answer



WE WANT YOUR INPUT!

Residents, businesses, and visitors are encouraged to share their ideas and concerns to help guide the plan.

www.surveymonkey.com/r/MarathonSS4A



Appendix C SS4A Safety Analysis Memorandum

Appendix C: SS4A Safety Analysis Memorandum

To:	Maria Covelli; Brian Shea City of Marathon	From:	Matthew Maher Stantec Consulting Services Inc.
Project/File:	238210815	Date:	July 14, 2025

Reference: City of Marathon SS4A Safety Analysis

1 Introduction

The Safe Streets and Roads for All (SS4A) grant program funded the development of a comprehensive safety action plan to prevent roadway fatalities and serious injuries in the City of Marathon, Florida (the City). This memorandum details the safety analysis and demographics assessment.

Every person has the right to travel freely without injury or death; however, from 2019 through 2024, 105 people were seriously injured, and 10 people died on public roads in the City. Vision Zero is the concept that while not all crashes can be eliminated, those resulting in serious injuries or deaths can be prevented, and the only acceptable number is zero. Note that serious injury crashes may be referred to as severe injury crashes or incapacitating injury crashes, but all terms define the same life-altering injuries.

The Florida Department of Transportation (FDOT) has adopted Target Zero, which is a statewide initiative that shares the same goal as vision zero and builds on it with a campaign for safer travel behaviors. The safe system approach is a guide for how to achieve the goal of zero traffic fatalities and serious injuries. There are six principles of the safe system approach:

- Death and serious injuries are unacceptable;
- Humans make mistakes;
- Humans are vulnerable;
- Responsibility is shared;
- Safety is proactive; and,
- Redundancy is crucial.

These principles differ from the traditional approach to safety, which had reacted based on crash history to attempt reductions in all crashes rather than proactively focusing on preventing the most severe ones and had often blamed fatal and serious crashes on people's behaviors and mistakes rather than designing a transportation system that is forgiving. The safe system principles work with the five complementary safe system elements; together these principles and elements serve as a guide to improving safety.

- Safer people;
- Safer roads;
- Safer vehicles;
- Safer speeds; and,

- Post-crash care.

2 Crash Data Analysis

To assess the transportation safety issues on public roads in the City, crash records for the years 2019 through 2024, were obtained from the University of Florida's Signal Four Analytics crash database for the city and Monroe County (the County) overall. The crash data was cleaned by removing crashes occurring on forest roads, private roadways, and parking lots, and crashes with a coded severity level of "non-traffic fatality" were recategorized to "property damage only," in accordance with the 2023 *FDOT Safety Crash Data Guidance*.

After the crash data was cleaned, there were a total of 1,598 crashes on public roads in the City of Marathon from 2019 through 2024 (that is, approximately 270 crashes per year). The data was examined for crash trends and insights across the following characteristics:

- Crash severity
- Crash type
- Environmental factors
    - Light condition
    - Road surface condition
- Temporal factors
    - Month of year
    - Day of week
    - Time of day
- Road user modes
- Behavioral factors
    - Speeding or aggressive driving
    - Distracted driving
    - Alcohol and drug use
    - Unbelted occupants

Crash data for the County was also summarized to identify characteristics that are overrepresented in the crash data in the City. However, it is important to note that not all over- or under- representations are statistically significant, especially for crash attributes that have a relatively small sample size (i.e., head on crashes).

2.1 Crash Severity

The severity of each crash is measured by the maximum injury reported, with the following five categories: no injury, possible injury, non-serious injury, serious injury, and fatal. A crash that resulted in no injuries is also known as "property damage only" (PDO). **Figure 1** depicts the number of crashes by year and severity in the City.

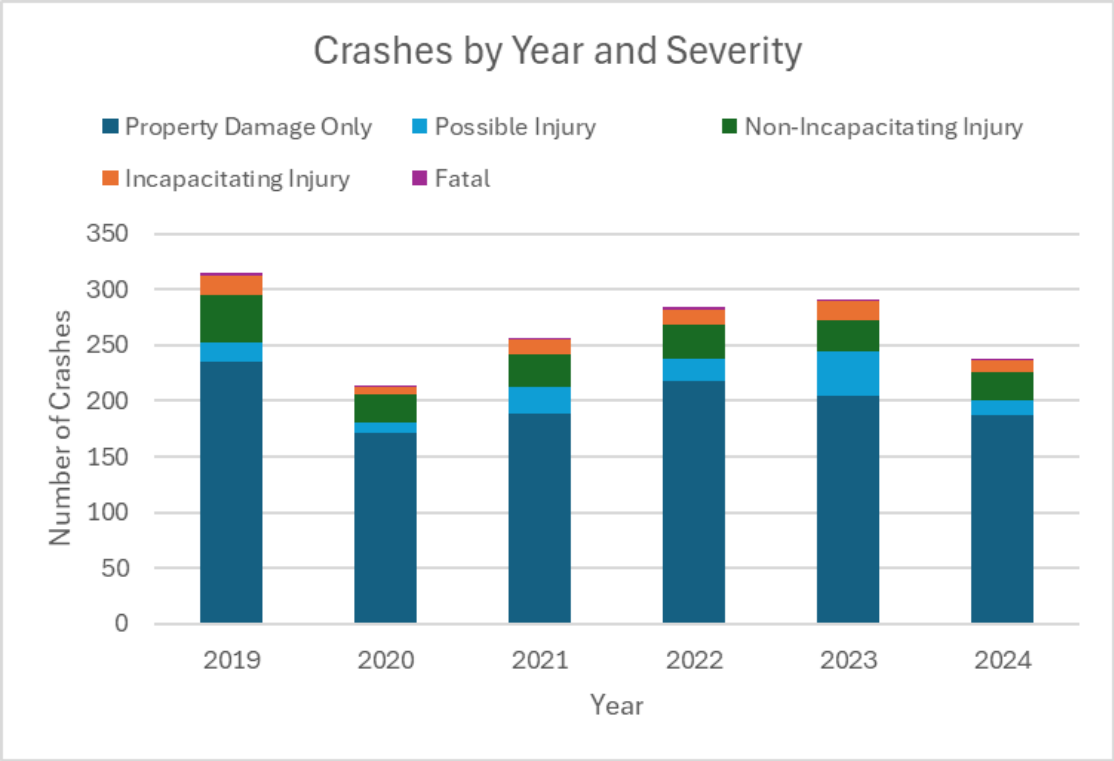


Figure 1 - Crashes by Year and Severity 2019-2024

The number of crashes increased each year from 2020 to 2023, reaching a peak of 291 crashes in 2023, and reduced slightly to 238 crashes in 2024. Note that the number of crashes in 2020 was significantly lower than in subsequent years, likely due to reduced travel during the COVID-19 pandemic. The number and percentage of crashes by severity in the City is listed in **Table 1**, along with the average share of crash severity during the same period in the County to identify overrepresentation patterns.

Table 1 - Crashes by Severity 2019-2024

Crash Severity	City of Marathon Number of Crashes	City of Marathon Percent of Total Crashes	Monroe County Percent of Total Crashes
Property Damage Only	**1,204**	**75.3%**	**73.9%**
Possible Injury	124	7.8%	8.6%
Non-serious Injury	182	11.4%	12.3%
Serious Injury	**78**	**4.9%**	**4.6%**
Fatal	10	0.6%	0.6%
Total	1,598	100%	100%

*__Bolded__ rows indicate an overrepresented crash characteristic

The breakdown of crashes by severity in the City is similar to the County overall, with slight overrepresentations for PDO and serious injury crashes, but these differences are likely not statistically significant. While there are many factors that contribute to the injury severity of a crash, speed and angle of collision are among the most significant.

2.2 Crash Type

The percentage of crashes by crash type for the City is depicted in **Figure 2** (in magenta), along with the average in Monroe County (in light blue).

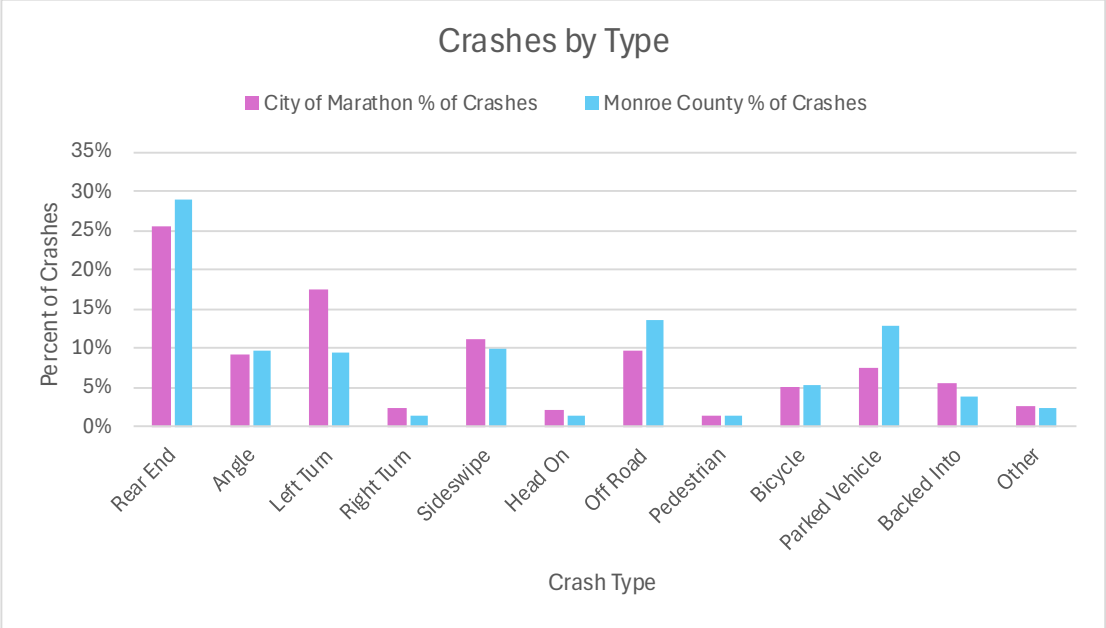


Figure 2 - Crashes by Type 2019-2024

A much larger percentage of crashes in the City were left turn (18 percent) compared to the average in the County (nine percent). Left turn crashes can occur when a driver misjudges the speed and distance of an oncoming driver, has an obstructed view of oncoming traffic, or is distracted. Due to the relatively high frequency of driveways intersecting Route 1 within the City, this crash pattern may point to a lack of access management policies to revoke or consolidate business points of access that are spaced too closely to each other or public intersections. Additionally, right turn, sideswipe, head on, and backed into crash types are slightly overrepresented.

The top five fatal and serious injury (FSI) crash types in the City are listed in **Table 2**, and account for over 80 percent of all FSI crashes during the study period.

Table 2 - Top Five Fatal and Serious Injury Crash Types 2019-2024

Crash Type	City of Marathon Number of FSI Crashes	City of Marathon Percent of FSI Crashes
Left Turn	25	28.4%
Bicycle	19	21.6%
Head On	10	11.4%
Off Road	9	10.2%
Rear End	9	10.2%
Total	72	81.8%

2.3 Environmental Factors

Environmental factors such as light and road surface condition can contribute to crashes as drivers may find it more challenging to see non-motorists or maintain their lane during dark or wet conditions.

2.3.1 Light Condition

The number and percentage of crashes by light condition are listed in **Table 3**, along with the average in the County.

Table 3 - Crashes by Light Condition 2019-2024

Light Condition	City of Marathon Percent of Total Crashes	City of Marathon Percent of FSI Crashes	Monroe County Percent of Total Crashes
Daylight	**81.4%**	70.5%	76.2%
Dawn or Dusk	**4.9%**	**4.5%**	3.7%
Dark – Lighted	8.5%	**15.9%**	11.7%
Dark – Not Lighted	4.3%	**8.0%**	6.6%
Unknown	0.8%	1.1%	1.8%
Total	100%	100%	100%

*__Bolded__ cells indicate an overrepresented crash characteristic

Crashes in the City occurred more frequently during daylight and dawn or dusk conditions compared to the average in the County. Looking at just fatal and serious injury crashes in the City, 30 percent (26 crashes) occurred during non-daylight conditions compared to 19 percent of all crashes in the city. Of the 26 fatal and serious injury crashes occurring during non-daylight conditions, nine crashes (35 percent) involved a bicyclist or pedestrian. Bicyclists and pedestrians are more likely to be obscured during non-daylight conditions; furthermore, they have a significantly greater risk of sustaining an injury when hit by a vehicle compared to a vehicle occupant. Additionally, due to the east-west orientation of US 1, crossing conspicuity for bicyclists and pedestrians can be obscured during conditions prone to sun glare.

2.3.2 Road Surface Condition

The number and percentage of crashes by road surface condition are listed in **Table 4**, along with the average in the County. Crashes in the City occurred more frequently during dry road surface conditions compared to the average in the County, indicating that pavement friction and drainage could be deficient in certain spot locations, but are generally adequate across the city. Looking at off road crashes, a slightly larger percentage (eight) occurred during wet road surface conditions; this is likely not statistically significant.

Table 4 - Crashes by Road Surface Condition 2019-2024

Road Surface Condition	City of Marathon Percent of Total Crashes	City of Marathon Percent of FSI Crashes	Monroe County Percent of Total Crashes
Dry	**94.5%**	**100%**	91.4%
Wet	4.9%	0%	6.8%
Unknown/Other	0.6%	0%	1.7%
Total	100%	100%	100%

*__Bolded__ cells indicate an overrepresented crash characteristic

2.4 Temporal Characteristics

The month and time of day of crashes were also investigated to understand any patterns. The total number of crashes tends to increase with traffic volumes; therefore, peak months and times of day for crashes often reflect the temporal variations in traffic volumes.

2.4.1 Month of Year

The number of crashes by month and severity is depicted in **Figure 3**. Total crashes, and fatal and serious injury crashes in the city, were greatest in the months of December through March. This period corresponds with the winter travel season when there may an increase in transient populations visiting the City, resulting in higher traffic volumes.

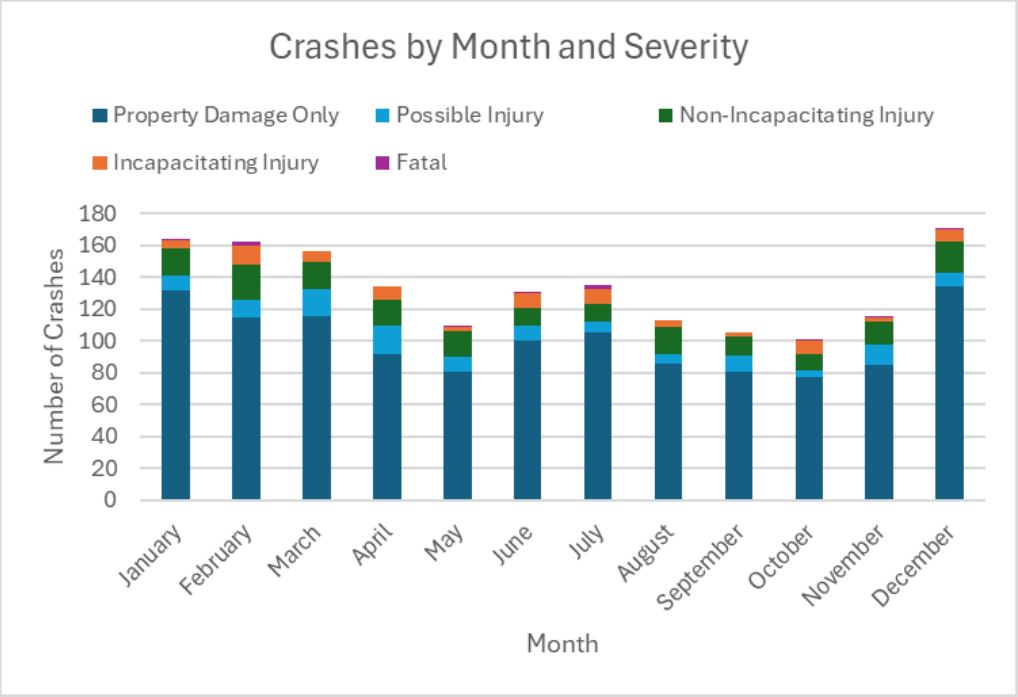


Figure 3 - Crashes by Month and Severity 2019-2024

2.4.2 Day of Week

The number of crashes by day of week and severity is depicted in **Figure 4**. The number of crashes during weekdays were fairly consistent, except for Fridays, which was the most frequent day for crashes. When looking at just fatal and serious injury crashes, 40 percent occurred on Fridays or Saturdays. Traffic volumes may be lower during the weekend, which may induce greater operating speeds and chance of injury.

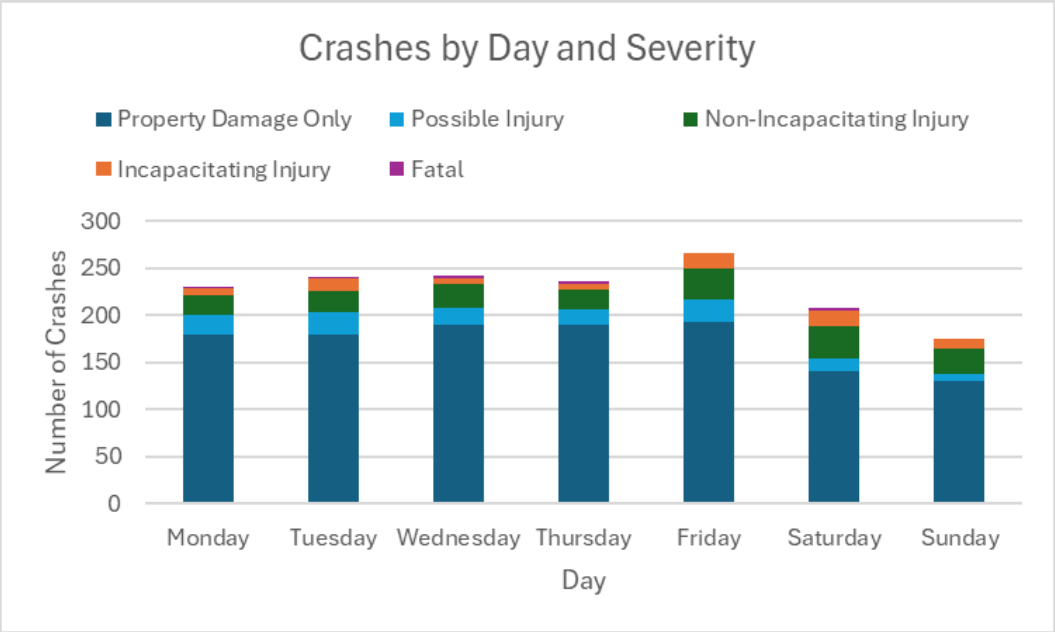


Figure 4 - Crashes by Day of Week 2019-2024

2.4.3 Time of Day

The number of crashes by time of day and severity is depicted in **Figure 5**. Crashes occurred more frequently from 12 to 1 pm and 2 to 5 pm.

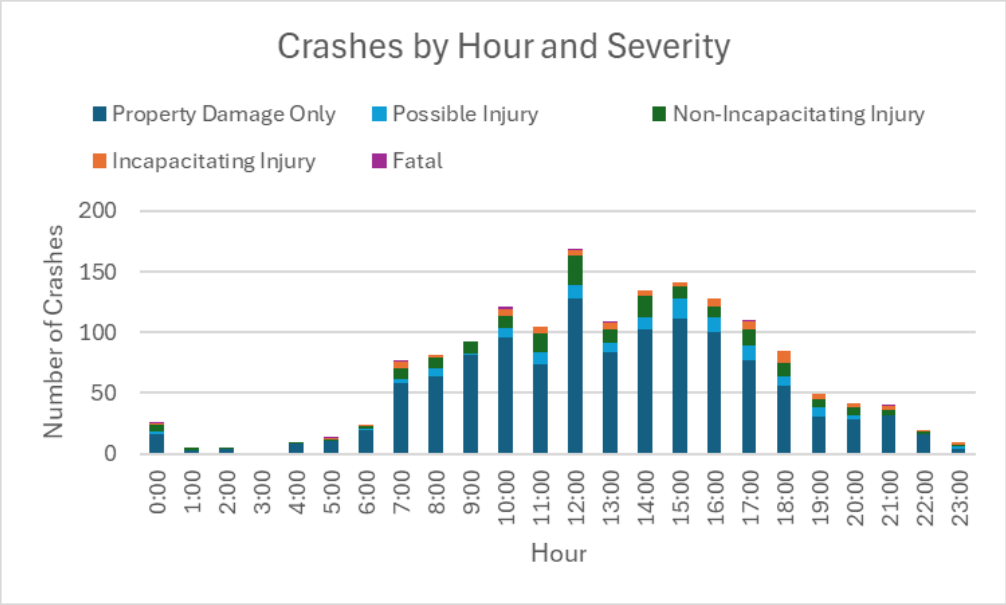


Figure 5 - Crashes by Hour and Severity 2019-2024

The distribution of bicycle and pedestrian crashes throughout the day is depicted in **Figure 6**. Similar to the pattern for all crashes, bicycle and pedestrian crashes peak from 12 to 1 pm and 2 to 3 pm.

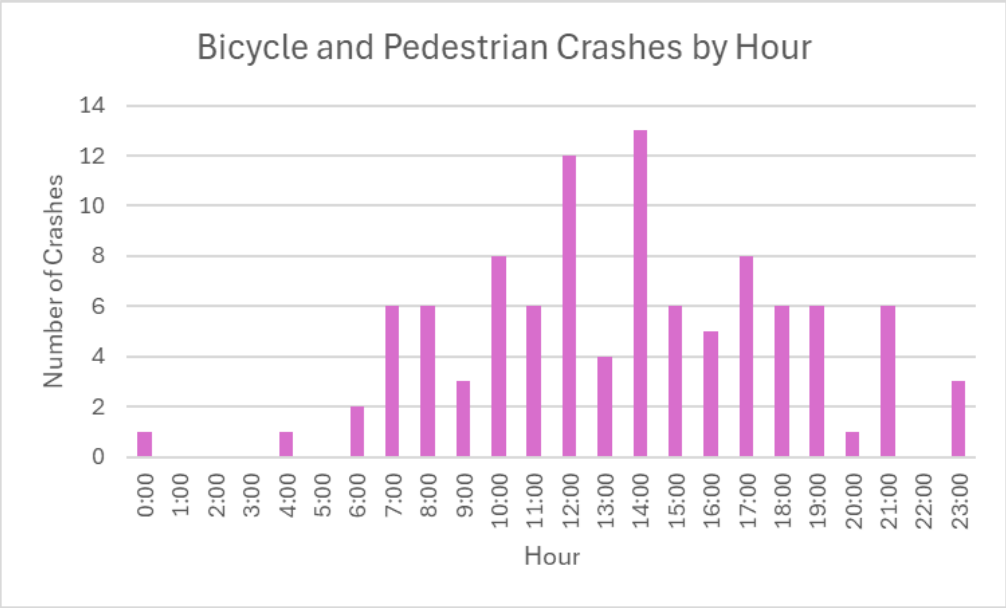


Figure 6 - Bicycle and Pedestrian Crashes by Hour 2019-2024

2.5 Road User Modes

Crash data was examined to understand the different travel modes involved in the crashes. **Table 5** details the breakdown of crashes by mode as identified in the crash report.

Table 5 - Crashes by Travel Mode 2019-2024

Travel Mode Involved in Crash	City of Marathon Percent of Total Crashes	City of Marathon Percent of FSI Crashes
Vehicle Only	90.9%	58.0%
Motorcycle	2.3%	13.6%
Moped	0.6%	0.0%
Bicycle	4.9%	21.6%
Pedestrian	1.3%	6.8%
Total	100%	100%

Based on the data, crashes involving a motorcycle, bicycle, or pedestrian account for 8.5 percent of all crashes in the City, but they account for 42 percent of fatal and serious injury crashes. People outside of motor vehicles are at high risk of serious injury or death when subjected to the forces of an impact; therefore, they are vulnerable road users (VRUs).

2.6 Behavioral Factors

Road user behaviors may also contribute to the occurrence of a crash or resulting injuries, such as speeding or aggressive driving, distracted driving, not using a seatbelt, or alcohol and/or drug use. Data coded in the crash reports were used to identify the percentage of all crashes in the City, and fatal and serious injury crashes where any of these user behaviors were present. Note that a single crash may be counted in multiple categories, for example, if a crash involved drug use and aggressive driving, it would be counted as a crash involving speeding or aggressive driving and as a crash involving alcohol and/or drug use.

The FDOT Strategic Highway Safety Plan (SHSP) defines a speeding or aggressive driving crash as one where any driver involved in the crash had two aggressive driving behavior actions coded in the crash report, or had a driver action code of “Drove too Fast for Conditions,” “Exceeded Posted Speed,” or “Operated MV in Erratic, Reckless or Aggressive Manner.” A distracted driving crash is defined as one where at least one of the drivers involved in the crash was coded as anything other than “Not Distracted” or “Unknown” in the Driver Distracted By field of the crash report. Suspected alcohol and/or drug use is also noted in the crash report through a yes or no indicator.

Using the applicable crash data fields and definitions, **Table 6** details the percentage of all crashes and fatal and serious injury crashes in Marathon where any of these user behaviors were present. While these behaviors should be modified, the transportation system should be designed in a forgiving way, so that when people do make these mistakes, there are multiple layers of protection before it results in a fatal or serious injury.

Table 6 - Crashes by Road User Behavior 2019-2024

User Behavior	City of Marathon Percent of Total Crashes	City of Marathon Percent of FSI Crashes
Speeding or aggressive driving	1.7%	1.1%
Distracted driving	42.1%	29.5%
Alcohol and/or drug use	3.6%	5.7%

The percentage of fatal and serious injury crashes identified as involving speeding or aggressive driving is similar to that for all crashes in the City. The percentage of fatal and serious injury crashes identified as involving distracted driving is less than for all crashes. Most notably, the percentage of fatal and serious injury crashes involving alcohol and/or drugs is nearly 1.5 times that for all crashes in Marathon.

Seatbelt usage is also recorded in the crash reports for each person involved in a crash (for non-motorists, there is a separate code labeled “not applicable”). If a person was an occupant of a motor vehicle and did not use a seatbelt or other restraint system, such as a lap belt or child restraints, it was coded as “none used.” Based on the crash data in Marathon, 1.1 percent of motor vehicle occupants did not use a seatbelt, but account for seven percent of the fatal and serious injuries during the study period.

3 High Injury Network

A high injury network (HIN) analysis was performed on the roadway network within the City to identify areas having a higher concentration of crashes by frequency and severity. The Equivalent Property Damage Only (EPDO) method, which employs a crash cost methodology, was used to quantify crash frequency and severity as a single metric for each segment of the network as described below.

3.1 Equivalent Property Damage Only Weighting Method

The EPDO method weighs each crash according to the relative societal costs based on the injury severity level, with PDO crashes given a weight of one. The crash costs account for costs to society such as lost productivity, medical costs, insurance costs, congestion costs, property damages, amongst other costs. In this analysis, fatal and serious injury crashes use the same crash cost and EPDO weight, based on the statewide distribution of those crash severity levels, as the difference between a crash resulting in a fatality versus a serious injury more often relates to a person’s health and the mechanics of the crash/vehicles involved, rather than the circumstances of the crash. The societal crash costs, adapted from the 2025 FDOT Design Manual (FDM) Chapter 122, and resulting EPDO weights for each crash severity level are detailed in **Table 7**. Based on the EPDO calculations, the societal value of a fatal or serious injury crash is over 300 times that of a PDO crash.

Table 7 - Adapted FDOT Crash Costs and EPDO Weights

Crash Severity	Societal Crash Cost	Relative Crash Cost	EPDO Weight
Property Damage Only	$7,700	$7,700/$7,700	1.00
Possible Injury	$103,950	$103,950/$7,700	13.50
Non-serious Injury	$180,180	$180,180/$7,700	23.40
Serious Injury	$2,346,650	$2,346,650/$7,700	304.76
Fatal			

The score for each segment of the road network was calculated by multiplying the number of crashes on each segment by their respective EPDO weighting factors. The project team used easyHIN[1], a product of Barrios Consulting Group, to calculate and assign EPDO scores to the roadway network and identify the HIN based on the segments with the highest EPDO scores based on the segmentation methodology.

3.2 Segmentation Methodology

The following parameters were used in developing and segmenting the roadway network for the HIN.

- All public roads in the City of Marathon were screened
- The maximum length of a HIN segment was 0.5 miles
    - Adjacent 0.5-mile segments were combined in the final segmentation
- The maximum percentage of the network (by centerline miles) to be identified as part of the HIN was eight percent.

3.3 HIN Summary

The resulting HIN identified based on the segmentation methodology is depicted via red lines in **Figure 7**. Also provided in **Table 8** is a list of all HIN roadway segments.

[1] https://barrios.group/unlock-safer-streets-identifying-high-injury-networks-with-easyhin/

Reference: City of Marathon SS4A Safety Analysis

Figure 7 - City of Marathon High Injury Network (NOT TO SCALE)



Table 8 - City of Marathon High Injury Network Segment Table

Road	From	To
Kyle Way East	Kyle Way South	Knights Key Boulevard
Knights Key Boulevard	Kyle Way East	US 1
US 1	7 Mile Bridge Parking Lot	450 feet W of Knights Key Boulevard
11th Street Ocean	600 feet south of US 1	US 1
US 1	15th Street Ocean	29th Street Ocean
17th Court	US 1	End
23rd Street Ocean	End	US 1
35th Street Ocean	End	US 1
US 1	36th Street	64th Street
46th Street Gulf	US 1	End
50th Street Gulf	US 1	End
Sombrero Beach Road	Sombrero Boulevard	US 1
63rd Street Ocean	62nd Street	US 1
65th Street	66th Street	US 1
US 1	Aviation Boulevard	79th Street
75th Street	Ocean Terrace	US 1
Lime Lane	End	US 1
95th Street	End	Airport Access Road
US 1	109th Street Gulf	110th Street Ocean
110th Street Ocean	End	US 1
114th Street Ocean	End	US 1
116th Street Ocean	End	US 1
122nd Street Gulf	US 1	400 feet N of US 1
US 1	100 feet E of 125th Street Gulf	375 feet E of Coral Lane
US 1	750 feet W of Coco Plum Drive	575 feet E of Coco Plum Drive
US 1	0.5 miles W of MM 56.1 Burn Point	MM 56.1 Burn Point
US 1	Tropical Avenue	Guava Avenue
Blue Isle Blvd	US 1	End

Summary data from the HIN is detailed in **Table 9**. Forty percent of all crashes and 82 percent of all fatal and serious injury crashes occurred on just eight percent of the roadway network in Marathon. Additionally, over half of all bicycle and pedestrian crashes occurred in those segments.

Table 9 - HIN Summary Statistics

HIN Metrics	Metric
Centerline miles	7
Number of crashes	645
Percent of total crash weight	75.0%
Percent of fatal and serious injury crashes	81.8%
Percent of bicycle and pedestrian crashes	58.3%

4 Near Miss Incident Analysis

As part of the safety analysis, video analytics were used to identify near miss incidents at five intersections in the city. The near miss conflict analysis is a site-specific analysis separate from the HIN analysis and is intended to help better understand near-miss incidents that are occurring between multiple vehicles, vehicles and bicycles, and vehicles and pedestrians, and to propose targeted countermeasures to reduce or prevent these conflicts from turning into crashes.

4.1 Data Collection

Data collection included 48 hours of video recording at three signalized and two unsignalized intersections. Conversations were held with City staff at the outset of the project in April 2025 to select five intersections within the city with a recorded history of FSI crashes. Data was collected at the following intersections from Wednesday, April 23, 2025, through Thursday, April 24, 2025:

- US 1 and 39th Street – unsignalized;
- US 1 and Sombrero Beach Road – signalized;
- US 1 and 73rd Street – unsignalized;
- US 1 and Sadowski Causeway – signalized; and,
- US 1 and Coco Plum Drive – signalized.

The video recordings were processed with Quality Count's DataLens software, which flagged near misses using artificial intelligence technology. An example screenshot of a near miss identified by the technology is provided in **Figure 8**.

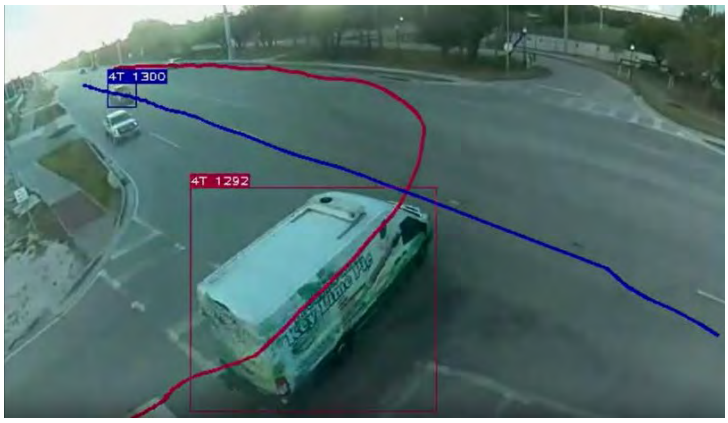


Figure 8 - US 1 and 39th Street Near Miss Example

4.2 Near Miss Incident Data

Each near miss was characterized by the two movements that conflicted, with the first listed movement being the one that crossed in front of the other movement. For example, a near miss listed as between an eastbound left and westbound through movement, indicates that the eastbound left-turning vehicle crossed in front of

the path of the westbound through vehicle. Near misses involving a vulnerable road user (a bicyclist or pedestrian) are characterized by the leg of the intersection they were crossing. For example, a conflict listed as between a southbound right and west leg bicycle, indicates that the southbound right-turning vehicle turned in front of the path of a bicyclist that was crossing the west leg of the intersection. Near misses involving pedestrians included the crossing leg information and the side they were crossing from and to. For example, a conflict listed as between a southbound right and a north leg east to west pedestrian, indicates that the southbound right-turning vehicle crossed in front of the path of a pedestrian crossing the north leg of the intersection, heading westbound.

The post-encroachment time (PET) was also determined for each near miss. PET is the time between one road user leaving a given point on a roadway and a second road user arriving at that same point. A PET of zero seconds means that a crash occurred, while a long PET suggests that two road users passed through the same point of conflict, but with a significant amount of time having lapsed between both vehicles.

As intersections with higher volume would likely have more conflicts, a vehicle-vehicle near miss conflict rate was calculated by adjusting for the number of vehicles entering the intersection over the same period to identify intersections at which a road user would more likely encounter a potential conflict. The number of conflicts by mode during the 48-hour observation period, PET, and vehicular conflict rate by intersection are listed for each intersection in **Table 10**.

Table 10 - Near Miss Conflicts by Intersection, Conflict Mode, and PET

Intersection	Conflict Mode	Post-Encroachment Time			Total Conflicts by Mode	Conflict Rate
		0.10-1.49 seconds	1.50-1.99 seconds	2.00-3.00 seconds		
US 1 and 39th Street (Unsignalized)	Vehicle-Vehicle	0	3	92	95	0.162
	Vehicle-Bicycle	2	8	22	32	NA
	Vehicle-Pedestrian	4	7	12	23	
	Intersection Total	6	18	126	150	
US 1 and Sombrero Beach Road (Signalized)	Vehicle-Vehicle	3	17	157	177	0.227
	Vehicle-Bicycle	3	9	26	38	NA
	Vehicle-Pedestrian	0	1	9	10	
	Intersection Total	6	27	192	225	
US 1 and 73rd Street (Unsignalized)	Vehicle-Vehicle	0	11	138	149	0.230
	Vehicle-Bicycle	1	4	13	18	NA
	Vehicle-Pedestrian	1	8	17	26	
	Intersection Total	2	23	168	193	
US 1 and Sadowski Causeway (Signalized)	Vehicle-Vehicle	0	3	52	55	0.102
	Vehicle-Bicycle	0	11	18	29	NA
	Vehicle-Pedestrian	1	2	7	10	
	Intersection Total	1	16	77	94	
US 1 and Coco Plum Drive (Signalized)	Vehicle-Vehicle	0	4	37	41	0.096
	Vehicle-Bicycle	0	2	9	11	NA
	Vehicle-Pedestrian	0	0	1	1	
	Intersection Total	0	6	47	53	

The intersection of US 1 and Sombrero Beach Road had the highest number of conflicts, while the US 1 and 73rd Street intersection had the highest conflict rate based on the prevailing traffic volumes.

4.3 Near Miss Incident Data Analysis

The near miss conflict data was further examined to understand patterns and trends. Conflicts with a PET of two seconds or more were not included for further analysis as many of those vehicle-vehicle near misses were associated with a protected left turn phase and subsequent opposing through movement; furthermore, a two-second conflict is equal to the minimum red clearance interval in Florida, per the FDOT Traffic Engineering Manual (TEM).

Conflicts with PETs less than 1.5 seconds and those with 1.5 to less than two seconds were analyzed by movement combinations at each intersection. **Figure 9** through **Figure 13** depict the number of near misses by movement combination and PET category for each intersection.

4.3.1 US 1 and 39th Street

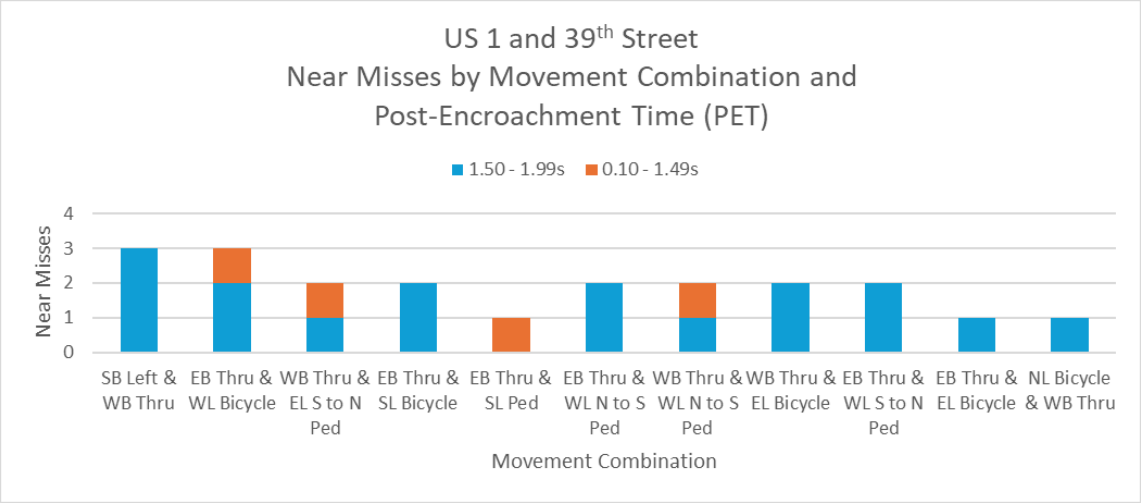


Figure 9 - US 1 and 39th Street Near Misses by Movement Combination and PET

At the US 1 and 39th Street intersection, 86 percent of the observed near misses with a PET of less than two seconds involved a vulnerable road user, and all the observed near misses with a PET of less than 1.5 seconds involved a vulnerable road user. This intersection likely sees higher VRU volumes as the Marathon Community Park is located on the south side of the intersection.

Recommended countermeasures for the near miss conflicts with VRUs include installing a marked midblock crosswalk across US 1, to the west of the intersection, with traffic control devices such as Rectangular Rapid Flashing Beacons (RRFB) or Pedestrian Hybrid Beacons (PHB), signage, and median refuge islands. Note that a separate study should be conducted to further investigate this recommendation based on the selection criteria for marking a crosswalk and installing traffic control device treatments appropriate for the volume of crossing pedestrians, volume of conflicting vehicles, and speed of conflicting vehicles, also factoring in guidance detailed in section 5.2 of the FDOT TEM.

4.3.2 US 1 and Sombrero Beach Road

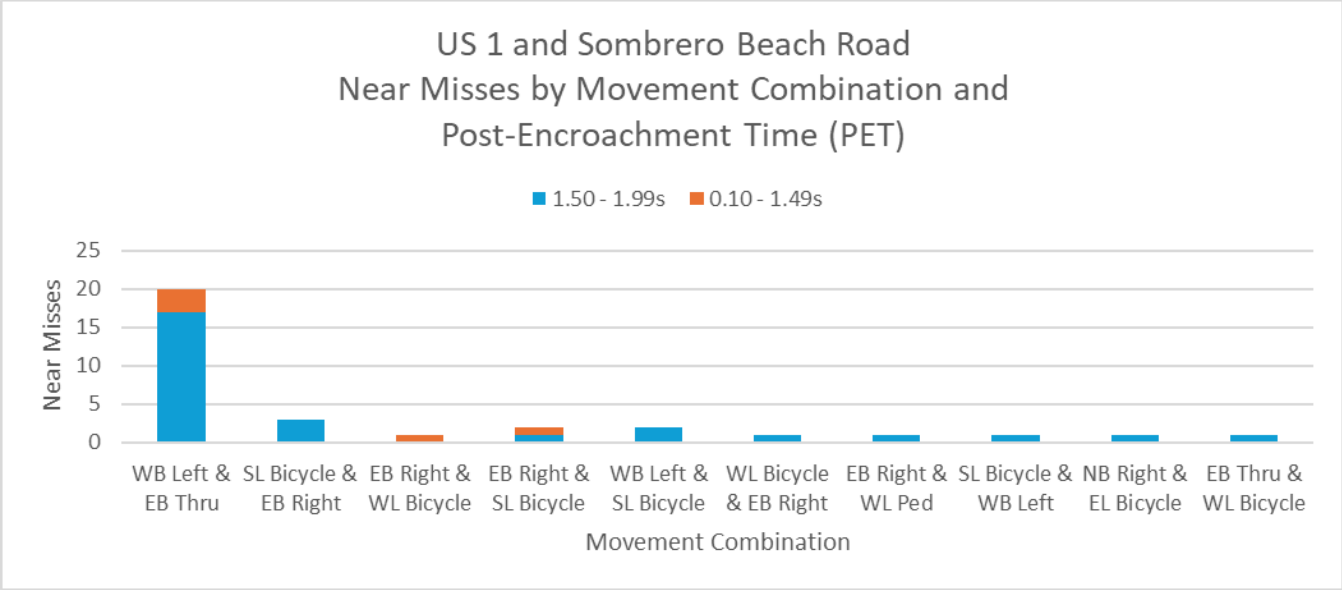


Figure 10 - US 1 and Sombrero Beach Road Near Misses by Movement Combination and PET

At the US 1 and Sombrero Beach Road intersection, 61 percent of the observed near misses with a PET of less than two seconds involved a westbound left turning vehicle turning in front of an eastbound through vehicle. The remaining 39 percent of observed near misses involved vehicle-bicycle conflicts, primarily on the south or west legs of the intersection.

Currently the eastbound and westbound left turn lanes are negatively offset, which restricts sight lines of the opposing through movements, and the left turn phasing is protected-permissive with four-section head flashing yellow arrows (FYA). To mitigate vehicle-vehicle and vehicle-bicycle left turning conflicts it is recommended to modify the eastbound and westbound left turn phasing to protected only. Furthermore, a leading pedestrian interval (LPI) is recommended on the south leg of the intersection and “no turn on red” restriction and signage for the eastbound approach to mitigate right turning vehicle-bicycle conflicts.

4.3.3 US 1 and 73rd Street

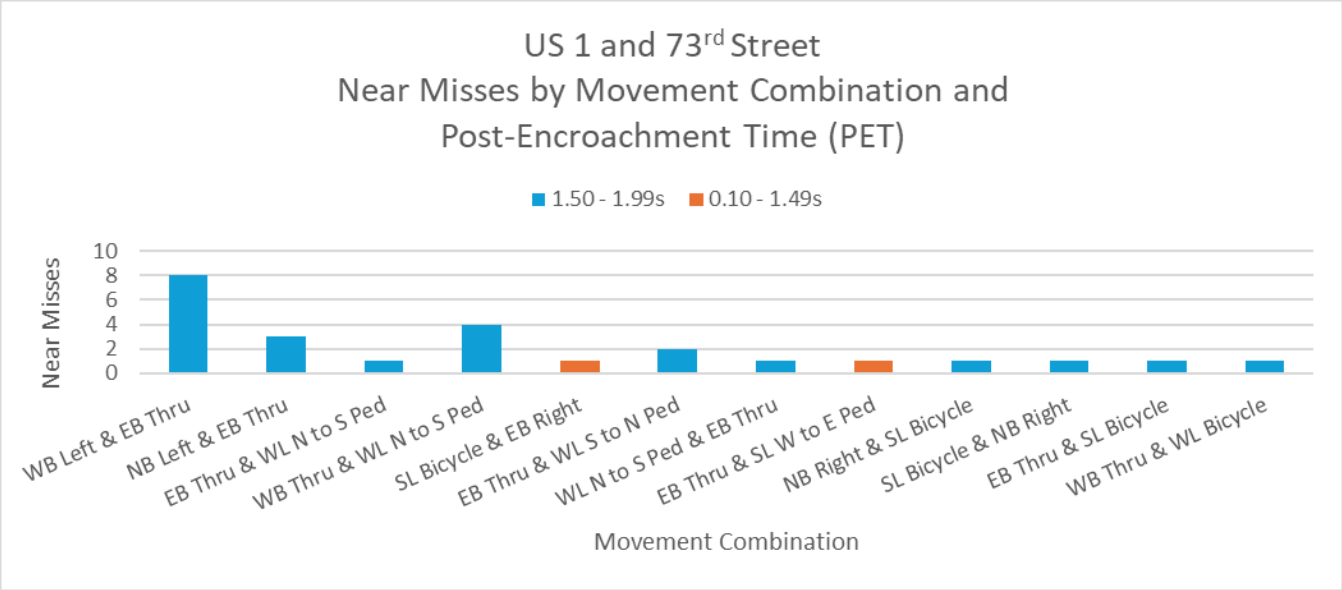


Figure 11 - US 1 and 73rd Street Near Misses by Movement Combination and PET

At the intersection of US 1 and 73rd Street, the movement combination with the greatest number of near misses with a PET of less than two seconds involved a westbound left turning vehicle turning in front of an eastbound through vehicle. However, the majority (66 percent) of the near misses with a PET of less than two seconds involved a VRU crossing on the south or west legs of the intersection. Recommended countermeasures at this intersection include installing a marked midblock crosswalk across US 1, to the east of the intersection, with traffic control devices such as Rectangular Rapid Flashing Beacons (RRFB) or Pedestrian Hybrid Beacons (PHB), signage, and median refuge islands. As with recommendations for the 39th Street intersection, a separate study should be conducted to further investigate this recommendation based on the selection criteria for marking a crosswalk and installing traffic control device treatments detailed in section 5.2 of the FDOT TEM.

4.3.4 US 1 and Sadowski Causeway

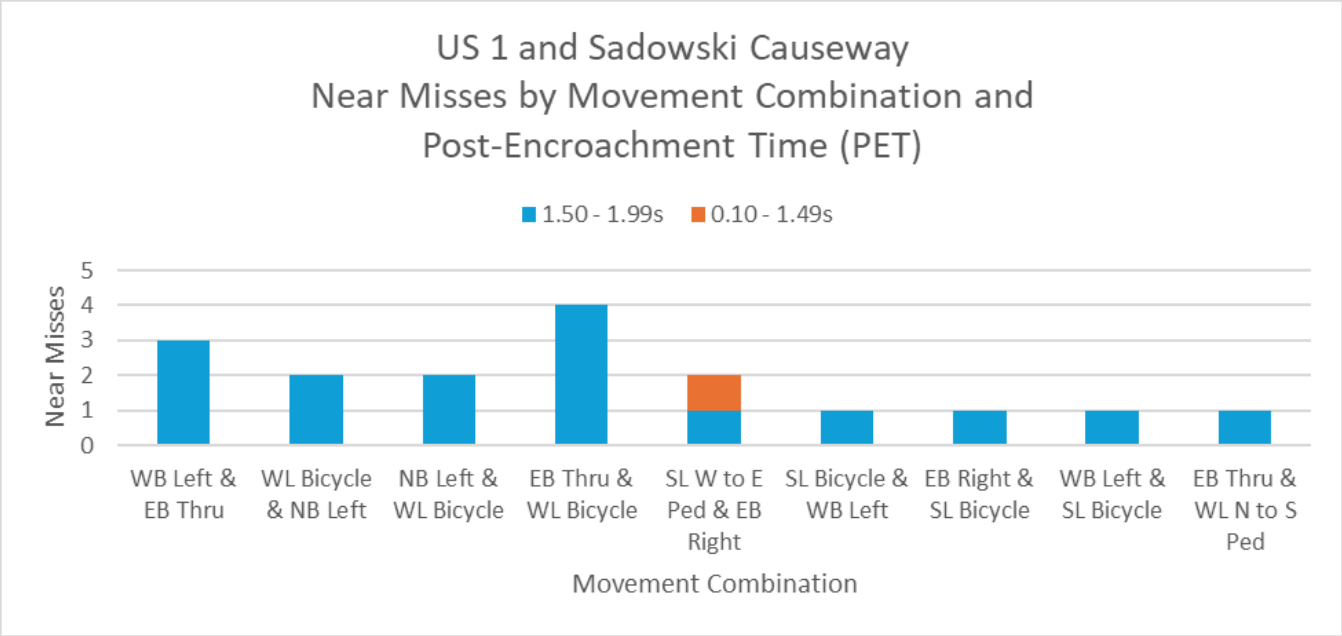


Figure 12 - US 1 and Sadowski Causeway Near Misses by Movement Combination and PET

At the intersection of US 1 and Sadowski Causeway, 82 percent of the near misses with a PET of less than seconds involved a VRU. Recommended countermeasures to mitigate conflicts with VRUs include implementing an LPI on the south leg of the intersection and adding a marked crosswalk across US 1 on the east leg of the intersection with an LPI.

4.3.5 US 1 and Coco Plum Drive

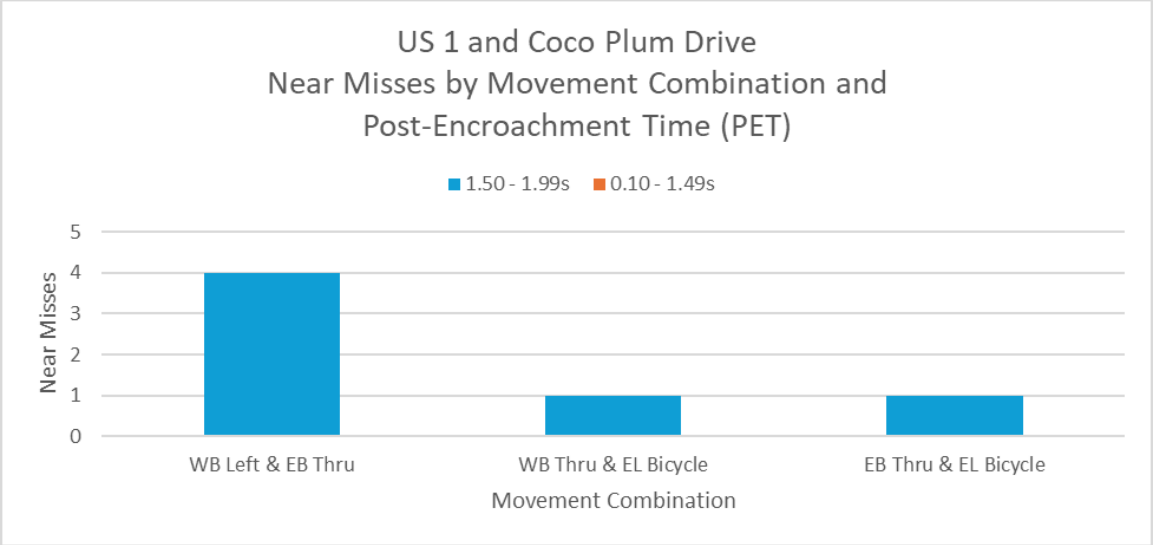


Figure 13 - US 1 and Coco Plum Drive Near Misses by Movement Combination and PET

The US 1 and Coco Plum Drive intersection had the fewest number of observed near misses with a PET of less than two seconds. While the number of conflicts involving VRUs is low, it is recommended to install marked crosswalks across US 1 on the east and west legs of the intersection given how susceptible to injury these users are.

4.4 Near Miss Recommendations

Recommended countermeasures at the five intersections where near miss incident data was collected are summarized below:

- Modify left turn phasing to non-variable protected-only for the following intersection movements:
  - Eastbound left turn at US 1 and Sombrero Beach Road
  - Westbound left turn at US 1 and Sombrero Beach Road
- Implement leading pedestrian intervals (LPIs) at the following intersection legs:
  - South leg of US 1 and Sombrero Beach Road intersection
  - South leg of US 1 and Sadowski Causeway intersection
- Restrict right turn on red at the following intersection approach
  - Eastbound approach of US 1 and Sombrero Beach Road intersection
- Add marked crosswalks at the following intersection legs:
  - East leg of US 1 and Sadowski Causeway intersection
  - West leg of US 1 and Coco Plum Drive intersection
  - East leg of US 1 and Coco Plum Drive intersection
- Install a marked midblock crosswalk with traffic control devices (RRFB, PHB, or other based on further investigation) at the following locations:
  - West of US 1 and 39th Street intersection
  - East of US 1 and 73rd Street intersection

It is important to note that this analysis and the associated recommendations are based on near misses flagged by an artificial intelligence software that was not manually reviewed; therefore, misclassifications were possible. Additionally, this near miss analysis does not provide a full surrogate safety analysis as data on road user trajectories, including speed and direction, were not included. For example, it may have appeared that a driver made a right turn in front of a pedestrian, while the pedestrian had noticed the vehicle and waited or slowed to cross soon thereafter; such a conflict would not have had as great a potential crash severity as a vehicle nearly hitting a pedestrian that had soon before crossed in front of the vehicle. Additionally, the potential angle of impact and relative speeds have a significant effect on potential crash injuries. Therefore, the analysis performed and associated recommendations should be considered preliminary with further investigation required for verification.

5 FDOT Network Screening

The FDOT regularly screens the transportation network for various crash characteristics, such as those analyzed in the **Crash Data Analysis** section as well as other factors using data driven methods. The publicly available network screening analyses were reviewed to develop findings for the City and are detailed in this section.

5.1 Highway Safety Matrix

Annually the FDOT State Safety Office produces highway safety matrices to identify Cities and Counties that have the greatest potential for reducing fatal and serious injuries through targeted safety implementations. The matrices are divided into groups based on population, and within each population group, cities and counties are given a relative ranking in nine emphasis areas based on the number of fatalities and serious injuries that occurred over a five-year period.

The City of Marathon falls into group three, with a population between 3,000 and 14,999. The FDOT fiscal year 2026 group three matrix was based on crash data from 2019 through 2023, and the rankings for the City of Marathon are detailed in **Table 11**. A ranking of "1" represents the highest fatality and serious injury volume of the 120 cities in group three.

Table 11 - Marathon Ranking in FDOT Highway Safety Matrix for FY 2026

Emphasis Area	City of Marathon Relative Rank
Aging Road Users (Drivers 65+)	4
Teen Drivers	3
Motorcyclist Involved	16
Pedestrian or Bicyclist Involved	6
Speeding or Aggressive Driving	98
Distracted Driving	2
Impaired Driving	44
Occupant Protection	20
Work Zone Related	51

The City is within the top 40 percent for fatalities and serious injuries in each of the categories except speeding or aggressive driving and work zone related.

5.2 SAFE Report

Since 2020, the FDOT Traffic Engineering and Operations Office has produced the System Analysis and Forecast Evaluation (SAFE) report annually for signalized intersections on the State Highway System. The report identifies signalized intersections experiencing a greater number of fatal and serious injury crashes than expected based on the excess expected crash frequency method using crash data from the most recent three-year period. Each year's report lists only the intersections that were newly identified as having a high potential for safety improvement. For example, if an intersection was listed in the 2020 report and still meets the criteria for inclusion for the 2022 report, it would be omitted as it was already listed in a previous year.

In the City of Marathon, one signalized intersection was listed in a SAFE report. The intersection of US 1 and Sombrero Beach Road was identified in the 2023 SAFE report based on crash data from 2019 through 2021. During that period, the observed number of fatal and serious injury crashes was six, while the expected number was 2.65, and the overrepresented crash types were rear end, head on, and bicycle/pedestrian.

5.3 Vulnerable Road User Safety Assessment

The FDOT produced a vulnerable road user safety assessment in 2023 that identified one-mile segments on state-owned and major non-state-owned roads with higher numbers of VRU crashes during the period of 2017 through 2021. The segments were prioritized into three tiers based on the number of VRU crashes per segment, with tier one having between 12 and 23 crashes during the five-year period, tier two having between seven and eleven crashes, and tier three having between three and six crashes.

Within the City of Marathon, two road segments were identified as having higher numbers of VRU crashes and are listed below.

- US 1 from Sombrero Beach Road to 74th Street Ocean; and,
- US 1 from 117th Street Ocean to approximately 950 feet west of Coco Plum Drive.

Both segments were listed as being in tier three, and portions of each are included in the HIN developed as part of this study and documented in the **High Injury Network** section of this technical memorandum.

6 Demographics Assessment

It is important to understand the demographics within the City so that the transportation system accommodates the needs of the population. Five-year average (2019-2023) datasets from the American Community Survey (ACS) were reviewed to identify indicators of potential, historical disadvantage including low-income populations, limited English proficiency households, and zero vehicle households. **Table 12** details these percentages for the City, and the County, and the State of Florida for comparison.

Table 12 - Marathon Indicators of Potential Disadvantage 2019-2023

Indicator of Potential Disadvantage	Percent of Marathon Population	Percent of Monroe County Population	Percent of Florida Population
Low Income Population	17.1%	17.2%	21.3%
Limited English Proficiency Households	8.3%	5.0%	6.9%
Zero Vehicle Households	5.1%	6.9%	5.9%

The percentage of households in the City with limited English proficiency is greater than the average in the County and State of Florida. Efforts should be made to tailor safety education materials and classes for these populations.

While the percentage of low-income population in the City is similar to that for the County and lower than the statewide average, and the percentage of zero vehicle households is slightly lower than the County and statewide averages, these populations often rely on walking, biking, and transit as vehicle ownership and maintenance can be burdensome.

7 Summary and Next Steps

The data presented within this technical memorandum will inform the engagement, policy/process, and project selection/ranking efforts going forward throughout the course of this study. Identified within this preceding document are the following:

- Crash data profiles, along with crash attributes that are overrepresented with respect to FSI crashes for which Stantec will develop policies to reduce the risk of these crashes throughout the City;
- An HIN analysis that highlights the roadways that need reactive addressing of documented FSI crash history through targeted, specific crash countermeasures;
- A Near Miss analysis that proposed a list of crash countermeasures that can currently be investigated by the City in coordination with FDOT District Six; and,
- FDOT and demographic screening information to further identify location-specific and population-specific areas of focus for which to recommend infrastructure and policy-based recommendations, respectively.

Stantec, and its subconsultant team, will continue working with the City to further develop the crash countermeasure and policy recommendations discussed within this technical memorandum as this study progresses.

Regards,

Stantec Consulting Services Inc.

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Principal, Traffic Engineer
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Appendix D SS4A Demographics Analysis

Appendix D: SS4A Demographic Analysis Memorandum

Appendix D: SS4A Demographic Analysis Memorandum

To:	Brian Shea; Maria Covelli City of Marathon	From:	Matthew Maher Stantec Consulting Services Inc.
Project/File:	238210815	Date:	December 8, 2025

Reference: City of Marathon SS4A Task 5 Demographics Analysis

1 Introduction

The Safe Streets and Roads for All (SS4A) grant program funded the development of a comprehensive safety action plan to prevent roadway fatalities and serious injuries in the City of Marathon, Florida (the City). This memorandum details the demographics analysis. Safety planning is ultimately about people: the end users of all roadway networks. It is therefore critical to understand population and demographic factors when undertaking an evaluation of roadway safety and planning safe conditions for the traveling public, in this case, the over 10,000 people residing and visiting Marathon. The USDOT notes that “traffic crashes are a leading cause of death for teenagers in America, and disproportionally impact people who are Black, American Indian, and live in rural communities. We face a crisis on our roadways; it is both unacceptable and solvable.”

2 Demographic Data Sources

Demographic metrics specific to Marathon and each census tract within the City were sourced from the American Community Survey (ACS) dataset, the Underserved Communities Tool (UCT), and an archived dataset of the White House Council on Environmental Quality’s Climate and Economic Justice Screening Tool (CEJST). The ACS is an ongoing survey conducted by the U.S. Census Bureau since 2005, that collects detailed social, economic, housing, and demographic information from a sample of households. The UCT is a visual tool from USDOT that identifies underserved census tracts based on the definition of an Area of Persistent Poverty from the Infrastructure Investment and Jobs Act (IIJA). The CEJST was developed to identify the burdens faced by communities and determine those that are underserved.

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3 Demographic Data

3.1 American Community Survey Data

Five-year average (2019-2023) datasets from the ACS were reviewed to identify indicators of potential, historical disadvantage including low-income populations, limited English proficiency households, and zero vehicle households. **Table 1** details these percentages for the City, and the County, and the State of Florida for comparison.

Table 1 - Marathon Indicators of Potential Disadvantage 2019-2023

Indicator of Potential Disadvantage	Percent of Marathon Population	Percent of Monroe County Population	Percent of Florida Population
Low Income Population	17.1%	17.2%	21.3%
Limited English Proficiency Households	8.3%	5.0%	6.9%
Zero Vehicle Households	5.1%	6.9%	5.9%

The percentage of households in the City with limited English proficiency is greater than the average in the County and State of Florida. While the percentage of low-income population in the City is similar to that for the County and lower than the statewide average, and the percentage of zero vehicle households is slightly lower than the County and statewide averages, these populations often rely on walking, biking, and transit as vehicle ownership and maintenance can be burdensome.

3.2 Underserved Communities Tool Data

A visual assessment of underserved communities was performed using the UCT, which identified two census tracts as underserved of the five tracts that transect the City boundaries. As depicted in **Figure 1**, the underserved communities within Marathon identified by the UCT are at the southwest end of the City, west of 70th Street and including Boot Key.

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Figure 1 - UCT Data Marathon Underserved Communities



3.3 Climate and Economic Justice Screening Tool Data

A review of the archived CEJST dataset identified three underserved census tracts within the City. The underserved census tracts and their burdens are detailed in **Table 2**.

Table 2 - CEJST Marathon Underserved Burdens

Census Tract #	Underserved Burden
12087971002	≥ 90th percentile for risk of flood in 30 years
12087971100	Low income
	≥ 90th percentile for expected population loss rate
	≥ 90th percentile for risk of flood in 30 years
12087971300	Low income
	≥ 90th percentile for expected population loss rate
	≥ 90th percentile for risk of flood in 30 years
	≥ 90th percentile for households in linguistic isolation and has low high school attainment

All three of the underserved census tracts have a high risk of flooding within 30 years, which is expected based on the island geography of the City. Additionally, two of the three underserved census tracts are burdened by low incomes and a high risk of population loss relative to other census tracts.

4 Summary and Conclusion

The analysis of demographic data from the American Community Survey (ACS), Underserved Communities Tool (UCT), and Climate and Economic Justice Screening Tool (CEJST) revealed that southwest portions of Marathon are considered to be underserved. Work from Task 3 (our safety analysis) shows that these communities are co-located with High Injury Network (HIN) segments of US 1, including portions of US 1 from the 7-mile Bridge Parking Lot to Knights Key Boulevard, 15th Street Ocean to 29th Street Ocean, and 36th Street to 64th Street. These segments of US 1 suffer elevated FSI (fatal and serious injury) crash rates due to a lack of access control for side streets and private driveways, and due to a lack of pedestrian and bicycle connectivity/facilities.

Furthermore, a City-wide scan of demographic data revealed that common underserved attributes, or burdens, include a greater limited English proficiency across the City compared to the average in the County and State, high risk of flooding within 30 years, low incomes, and high risk of population loss relative to other census tracts.

Efforts should be made to tailor safety education materials and classes for limited English proficiency populations, and public outreach and infrastructure should be inclusive of low-income populations as they often rely on walking, biking, and transit as vehicle ownership and maintenance can be burdensome.

Regards,

Stantec Consulting Services Inc.

Matthew Maher PE, PTOE, RSP2I
Principal, Traffic Engineer
Mobile: 973 902-3143
Direct: 407 638-2012
matthew.maher@stantec.com

stantec.com

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Appendix E Stakeholder Meeting #3

City of Marathon
Comprehensive Safety Action Plan

Stakeholder Meeting #3
March 2026 City Council Workshop
March 24, 2026

Meeting Agenda

- Project team
- Purpose of study
- Outreach and what we heard
- High Injury Network (HIN)
- Intersection improvements being advanced
- Policy survey results and recommendations
- Remaining project schedule

Project Team



Brian Shea, AICP, CFM
Planning Director
City of Marathon



Matthew Maher, PE, PTOE, RSP_{2I}
Project Manager
Stantec



Paulette Summers
Public Engagement
MRG



Frank Domingo, PE
Quality Assurance Engineer
Stantec



Chris Benitez, PE, PTOE, RSP_1
Technical Advisor
Stantec

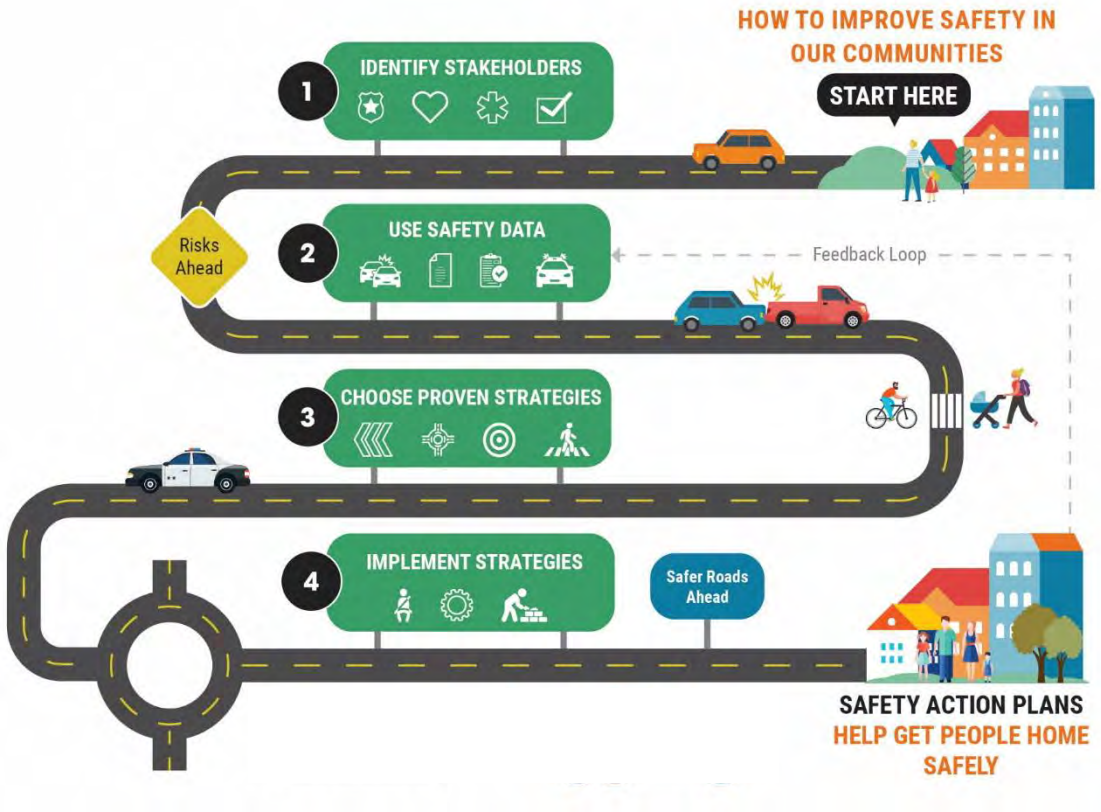
Purpose of Study

Develop a Safety Action Plan that includes:

- **<u>100% grant-funded program from USDOT</u>**
- Set of projects and strategies identified through data and engagement

Process will result in a:

- Plan consistent with the USDOT Safe Streets for All program
- Tools and frameworks for ongoing analysis and prioritization
- Funding strategies to allow the City to work toward its safety commitments



The Safety Action Plan will align with the Federal Highway Administration's methodology

Summary of Outreach Efforts

- Pop-up Outreach
  - Nautical Fun in the Sun, Saturday, May 3rd
  - Food Truck Jamboree, Wednesday, August 27th
  - Marathon Seafood Festival, Saturday, March 14th
- Stakeholder Meetings
  - Virtual Meeting, Monday, May 12th
  - In-Person Meeting, Tuesday, September 23rd
  - **In-Person Meeting, Today**
- Public Meetings
  - Council Meeting, Tuesday, May 13th
  - Council Meeting, Tuesday, October 14th







What We Heard from the Public

- Majority feel unsafe walking/biking
- >60% willing to see increased enforcement
- Want to see more sidewalks and crosswalks
- Business and road sign clutter
- Better biking facilities and transition areas
- Reduce speeding, esp. around curves
- Control e-bike speeding issues
- Aviation Boulevard & US 1
  - Most commented intersection
  - Emergency Center seen as signal opportunity
- South (west) end of City
  - About 11th to 30th Street, lack of sidewalk continuity
  - Single-lane section: vehicles flying around left-turners
  - Sediment/sand in bike lane
- Locations that need better drainage
  - Vicinity of 15th Street
  - Sombrero Boulevard
  - Various locations between Aviation and 111th
- Locations that need better lighting
  - Vaca & Knights Keys
  - Oceanside streets around 110th
  - US 1 vicinity of Sadowski Causeway

FDOT Studies Underway/Under Consideration

- Sombrero Beach & US 1 Safety Study
  - Completed 2024, concepts developed
  - Double-left from US 1 SB to SBR
- US 1 & Sadowski Ped Crossing Safety Study
  - In progress (Project #2025-01-0005)
  - Various locations between Aviation and 111th
- US 1 Widening Feasibility Study, 11th to 15th
  - In progress, concepts have been developed
  - Two-way left-turn lane being investigated
- Coral Lane & US 1 Safety Study
  - In progress
- Study Wish List
  - US 1 & 33rd Turning Lane Study
  - Feasibility Study for Traffic Light at Aviation & US 1
  - US 1, 35 mph from 33rd to 40th (by public library & park)
  - Stop signs on trial at side street crossings for e-bikes
  - Bike/ped facilities under eval. at US 1 & Coco Plum
  - US 1 bus aprons/bays
  - Electronic speed limit signs

High Injury Network (HIN) Map



Legend

- High Injury Network roadways based on six-year fatal and severe injury crash scan
- Near miss video installation sites

HIN Safety Action Plan Recommendations

- US 1, 7-mile Parking to Knights Key
  - Lighting (and ped lighting)
  - Centerline rumble strip
  - Improve ped/bike connectivity
- US 1, 15th to 29th Street
  - Extension of limits for current FDOT study (11th to 15th)
  - Dedicate width to sidewalk on NB side or access mgmt.
- US 1, 36th to 64th Street
  - US 1 & Sombrero improvements (plus pylons & signals)
  - Consolidate access, prohibit turns, check sight dist.
- Sombrero Beach Road
  - Traffic calming (25 mph/speed table/speed hump)
  - Pedestrian crossing between malls
- US 1, Aviation Boulevard to 79th Street
  - Signal warrant analysis (crash experience may warrant)
  - Signal provides access management opportunity
- US 1, Sadowski Causeway to Coral Lane
  - Double-post NB U-turn restriction
  - Photometrics analysis for lighting (>40% nighttime)
  - For pedestrians: narrow driveways and LPIs
- US 1 & Coco Plum Drive
  - Near-side signal and/or SW corner sign relocation

Ideas from Key West Safety Action Plan (March 2026)

1. City-Based Complete Streets Design Manual (ped lighting, sight distance, etc.)
2. City-FDOT Speed Coordination Memorandum of Understanding
3. Updating Micromobility Ordinance for training, insurance, and data sharing
4. FDOT-approved automated enforcement pilot



CITY OF KEY WEST

Comprehensive Safety Action Plan

TOWARDS VISION ZERO

VISION ZERO

Policy Survey Results

Policy 1

Obtain a Vision Zero commitment from all stakeholders through a Memorandum of Understanding where you agree to participate in an annual 2-hour task force meeting, share data in relation to traffic safety, and commit to having your agency/business/organization and its employees drive safely on City roadways.

52 **Moderate Support**

Policy 2

Implement E-Bike Training Workshops and Advocacy efforts, including bike rodeos and helmet fittings with participation from City Planning and the Sheriff's Office to be held at locations like parks and schools.

49.8 **Mixed Support**

Policy 3

Monitor the progress of implementing the safety policies below by City Planning including tracking of action items, progress towards completion of these efforts, and the resulting reduction of fatal and serious injury crashes all displayed in an annual Vision Zero report.

57.8 **Moderate Support**

Policy 4

Establish a Safety Subcommittee led by City Planning as part of the Florida Keys Transportation Coordination Committee to communicate with other Vision Zero keys cities, such as Key West and Islamorada, to see how they are reducing fatal and serious injury crashes and how they are coordinating with FDOT to construct safety improvements.

65.5 **Strong Support**

Policy Survey Results

Policy 5

Partner with the City of Key West to establish a Families for Safe Streets local chapter that helps City Planning better access resources for support gatherings, follow-up support for families impacted by road tragedies, and continue to bring visibility to this public health crisis.

39 **Lower Support**

Policy 6

Issue a municipal Complete Streets policy following City Planning's Bicycle and Pedestrian Master Plan study to better accommodate all road users including policy and design frameworks.

50 **Moderate Support**

Policy 7

Implement a Public Outreach Campaign for Safer Driving led by the City's Public Information Officer and to be communicated to City employees and residents alike through online and other communication.

52.5 **Moderate Support**

Policy 8

Establish a Rapid Response Team at City Planning to quickly address fatal and serious injury crashes within one week of their occurrence, including communications on what can be done with the owning jurisdiction (City Engineering, FDOT, or Monroe County), including conceptual drawings or ideas of fixes.

62.8 **Strong Support**

Policy Survey Results

Policy 9

Increase Sheriff's Office enforcement/policing for speeding of both e-bike and motorized vehicles, and in coordination with City Planning, select two locations on US Route 1 for speed feedback signing and increased enforcement on a semi-annual basis.

50.8 **Moderate Support**

Policy 10

Establish Smart Growth and Development Processes to have redevelopment projects trigger improvements for walking and biking, including bicycle and scooter racks, sidewalk connections, and crosswalks.

61.5 **Strong Support**

Policy 11

Establish Safety Zones on US-1 for segments that see a higher number of severe crashes. Coordinate with FDOT for special signing to share the increased penalty with drivers and perform before and after speed observations.

38.5 **Lower Support**

Policy 12

Coordinate with FDOT for full Coverage of Rumble Strips on US-1 (not including locations with intersecting streets and driveways) to reduce the chance of severe crashes resulting from crossing the center of the road or running off the road.

55.5 **Moderate Support**

Policy Survey Results

Policy 13

Add hardscaping and chicanes to force bicycle traffic to slow down before crossing streets when traveling on the Florida Keys Overseas Heritage Trail along US-1.

49.2 **Mixed Support**

Policy 14

Coordinate between City Planning, EMS, and Baptist Health to understand emergency response care needs and examine funding options for enhanced post-crash care.

73.8 **Strong Support**

Policy 15

Implement Access Management measures at locations with a history of severe crashes by reducing the number of driveways into places of business and closing the middle of roadways to restrict left turns.

62.5 **Strong Support**

Policy 16

Develop a Slow Streets Program to have the City sign speed limits of 20 MPH on local/neighborhood streets, which excludes US Route 1, County roadways, and those already signed at 30 MPH.

34.7 **Lower Support**

Policy Summary Table/Ranking

Policy #	Policy Name	Policy Score
14	Better post-crash care and EMS response	**73.8**
4	Safety subcommittee for FL Keys Transportation Coordination Committee	**65.5**
8	Rapid Response Team for fatal and serious crashes	**62.8**
15	Continue access management where feasible	**62.5**
10	Have developers provide concessions for safer ped/bike travel	**61.5**
3	Annual Vision Zero report issued by Planning Department	**57.8**
12	Rumble strips to reduce run-off-road/head-on crashes	**55.5**
7	Public outreach campaign for safer driving	**52.5**
1	Obtain Vision Zero commitment from stakeholders through signed memorandum	**52**
9	Increase Sheriff's Office enforcement on High Injury Network roads	**50.8**
6	Issue City Complete Streets Policy through following study	**50**
2	E-bike training, workshop, and advocacy **(?)**	**49.8**
13	Bike road crossing slowdowns **(?)**	**49.2**
~~5~~	~~Establish Families for Safe Streets chapter~~	**~~39~~**
~~11~~	~~Safety Zones on US 1 with increased penalty~~	**~~38.5~~**
~~16~~	~~Slow streets program for 20 MPH signing~~	**~~34.7~~**

Policy Survey Results

Key Concerns from Opposing Responses

- **Cost & Funding:** Concerns about unfunded mandates and overall implementation costs
- **Feasibility:** Questions about practicality, logistics, and space limitations
- **Traffic Flow:** Potential for increased congestion or negative impacts on mobility
- **Clarity:** Need for more detail to fully understand scope and impacts; will elaborate in SAP
- **Jurisdiction:** Some policies seen as better suited for state-level action
- **User Impact:** Concerns about effects on cyclists and overall usability

Opposition focused on *implementation challenges*, not disagreement with safety goals

Remaining Project Schedule

April

- Draft for City Council Review on 24th

May

- Comments due back 15th – 3 week review

June

- Adoption on 9th
- Submission to Feds by 30th

Question & Answer



WE WANT YOUR INPUT!

Residents, businesses, and visitors are encouraged to share their ideas and concerns to help guide the plan.

www.surveymonkey.com/r/MarathonSS4A



PLEASE JOIN US FOR OUR FINAL MEETING
ON TUESDAY, JUNE 9 FOR COUNCIL ADOPTION
OPEN TO THE PUBLIC

Appendix F Technical Memorandum – SR 5/Overseas Highway between 36 Street and 39 Street

FINAL

MODIFIED TECHNICAL MEMORANDUM

SR 5/Overseas Highway between 36 Street and 39 Street

Financial Project No.: 409521-8-32-01
Task Work Order No.: 40

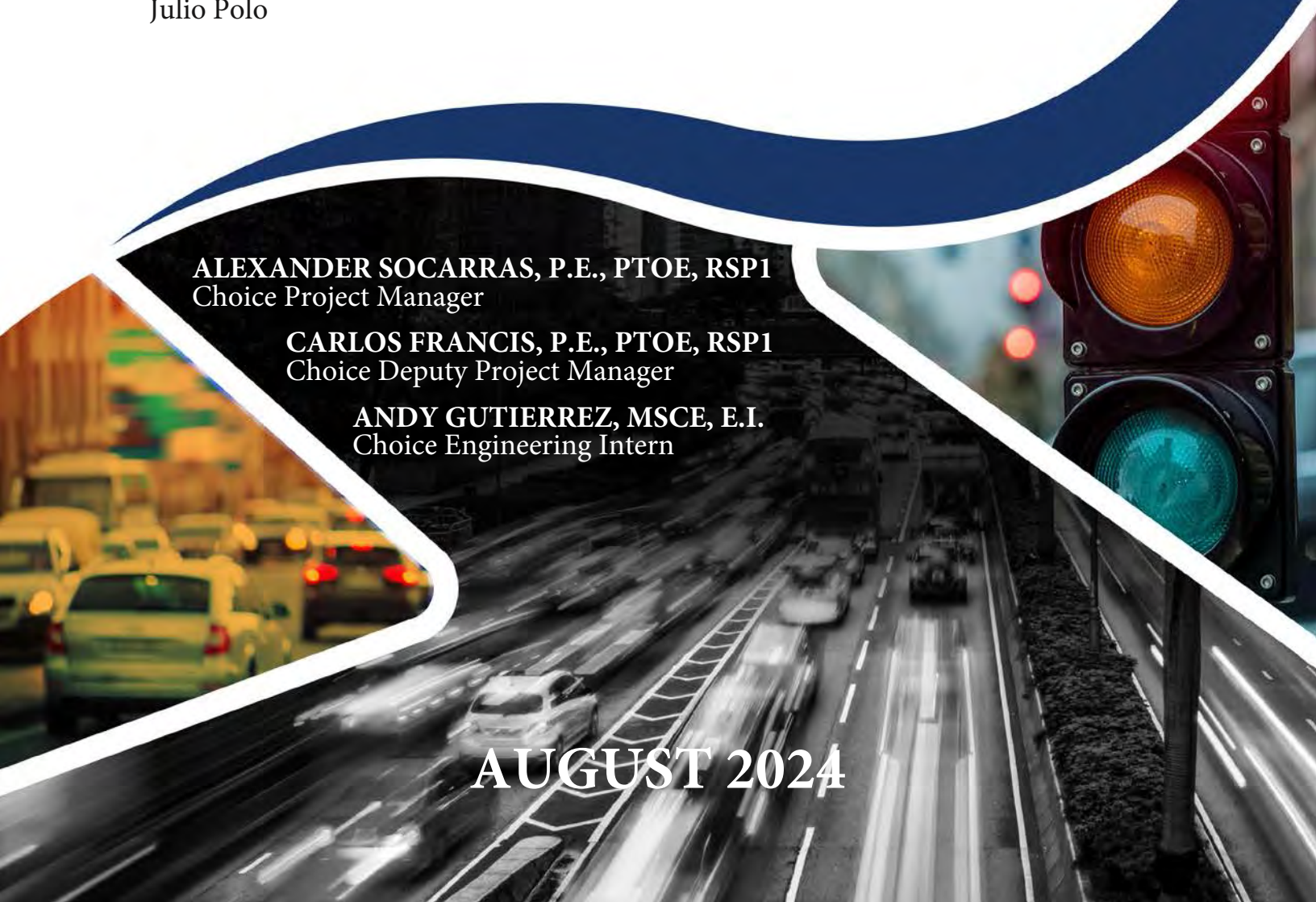
Prepared for:
Florida Department of Transportation - District 6

FDOT Project Manager:
Julio Polo

ALEXANDER SOCARRAS, P.E., PTOE, RSP1
Choice Project Manager

CARLOS FRANCIS, P.E., PTOE, RSP1
Choice Deputy Project Manager

ANDY GUTIERREZ, MSCE, E.I.
Choice Engineering Intern



AUGUST 2024

Engineer's Certification

I, Alexander Socarras, P.E. No. 80510, certify that I currently hold an active Professional Engineer's License in the State of Florida and am competent through education or experience to provide engineering services in the civil and traffic engineering disciplines contained in this report. I further certify that this report was prepared by me or under my responsible charge as defined in Chapter 61G15-18.011 F.A.C. and that all statements, conclusions, and recommendations made herein are true and correct to the best of my knowledge and ability.

Study Location:

Modified Technical Memorandum –SR 5/Overseas Highway between 36 Street and 39 Street



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To: Julio Polo, FDOT Project Manager

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Subject: Modified Technical Memorandum: SR 5/Overseas Highway between 36 Street and 39 Street

1. Introduction

Choice Engineering Consultants, Inc. was retained by the Florida Department of Transportation (FDOT) District Six Traffic Operations Office (hereafter referred to as the Department) to prepare a Modified Technical Memorandum for the study segment of SR 5/Overseas Highway between 36 Street and 39 Street, located in Marathon within Monroe County, Florida – see **Figure 1**. This study was initiated following a request from a Transportation Planner in Monroe County to evaluate the feasibility of installing a marked pedestrian crosswalk across SR 5 in front of the Marathon Community Park and City Marina. According to the requestor, there are "pedestrian safety concerns…crossing US 1 to and from the park/City Marina [between the] park entrance and points of interest..." – see **Appendix A**. The purpose of this effort is to evaluate the study area by performing qualitative field reviews and data collection efforts on a typical weekday and weekend day, a crash summary, and an engineering analysis of the criteria for the installation of a midblock crossing provided in the FDOT Traffic Engineering Manual (TEM), Section 5.2.6, to develop a response to the request (CTP 2024-02-0010).

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Figure 1: Study Location Map

2. Existing Conditions

The study segment of SR 5/Overseas Highway between 36 Street (MP 1.035/MM 49.044) and 39 Street (MP 1.198/MM 49.207) measures approximately 0.163-miles (861-feet) in length and is located in Marathon in Monroe County, Florida. Within the study segment, SR 5 has a functional classification of Urban Principle Arterial – Other and context classification of C4 Urban General. The Department describes the C4 Urban General classification as a "mix of uses set within small blocks with a well-connected roadway network." Additionally, SR 5 is identified as Section 90040-000 on the State Highway System – see Straight-Line Diagram provided in **Appendix B**. The study segment is a four-lane, divided roadway with a painted median north of 37 Street and a Two-Way-Left-Turn Lane (TWLTL) south of 37 Street. Furthermore, the study segment has a posted speed limit of 45 MPH, and a northeast-southwest orientation. However, the study segment along SR 5 is considered to have an east-west orientation hereafter with the intersecting side streets orientated north-south. Note, SR 5 has a posted speed limit of 35 MPH just west of the study segment with a speed feedback sign facing the westbound direction of travel.

Within the study area, there is a continuous sidewalk along both sides of SR 5, street lighting present along the north side of SR 5, and utility poles and powerlines present along the south side of SR 5. Note, the sidewalk on the north side of SR 5 is a part of the Florida Keys Overseas Heritage Trail (FKOHT). In addition, there is a bus stop available along the south side of SR 5 located approximately 75-feet west of 36 Street for eastbound direction of travel. The immediate land use within the study segment is predominately commercial with a mixture of residential and recreational areas. There are restaurants, convenience stores, a government building, and a gas station along the north side of SR 5. In addition, Marathon Community Park and the Marathon City Marina are located on the south side of SR 5. Note, both 36 Street and 39 Street provide entrance/exit access to the Marathon Community Park and City Marina along SR 5. Furthermore, there is a pedestrian path that connects to the Marathon Community Park located approximately 270-feet east of 36 Street or approximately 585-feet west of 39 Street. There are also two other pedestrian paths that connects to the Marathon Community Park located approximately 130-feet and 180-feet east of 39 Street. In addition, Monroe County Public Library, Marathon Branch, is located on 35 Street (approximately 0.228-miles west of 36 Street) and Stanley Switlik Elementary is located on 33 Street (approximately 0.086 miles west of 36 Street).

3. Traffic Data

3.1 72-HOUR TRAFFIC VOLUME COUNTS

Seventy-two-hour traffic volume counts were collected in 15-minute intervals along the eastbound and westbound travel directions of SR 5 from Thursday, March 14, 2024, through Saturday, March 16, 2024. **Table 1** summarizes the daily hourly volumes and the average of the three-day, 72-hour counts. The graph in **Figure 2** shows the variation of the average three-day hourly traffic volumes versus time of day for each of the directions of travel and the combined total. Note, the combined volume of both directions for each of the three individual days is also presented for comparison. Based on this data, the segment experienced a two-hour midday and afternoon peak period between 11:00 AM to 1:00 PM and 3:00 PM to 5:00 PM, respectively. Details of the traffic data collected, in 15-minute intervals, are included in **Appendix C**.

Table 1: Summary of Traffic Volume Counts by Direction

Time Period (Hour)	Thursday, March 14, 2024			Friday, March 15, 2024			Saturday, March 16, 2024			3-day Average		
	SR 5/Overseas Highway		Total	SR 5/Overseas Highway		Total	SR 5/Overseas Highway		Total	SR 5/Overseas Highway		Total
	EB	WB		EB	WB		EB	WB		EB	WB	
12:00:00 AM	53	35	**88**	58	65	**123**	79	59	**138**	63	53	**116**
1:00:00 AM	37	37	**74**	40	27	**67**	47	55	**102**	41	40	**81**
2:00:00 AM	34	18	**52**	35	27	**62**	35	30	**65**	35	25	**60**
3:00:00 AM	35	23	**58**	43	29	**72**	37	43	**80**	38	32	**70**
4:00:00 AM	32	63	**95**	57	42	**99**	42	27	**69**	44	44	**88**
5:00:00 AM	116	114	**230**	96	99	**195**	85	70	**155**	99	94	**193**
6:00:00 AM	221	284	**505**	195	257	**452**	169	153	**322**	195	231	**426**
7:00:00 AM	472	547	**1,019**	411	481	**892**	298	277	**575**	394	435	**829**
8:00:00 AM	702	626	**1,328**	513	590	**1,103**	410	412	**822**	542	543	**1,084**
9:00:00 AM	646	649	**1,295**	594	591	**1,185**	528	563	**1,091**	589	601	**1,190**
10:00:00 AM	761	672	**1,433**	711	632	**1,343**	548	659	**1,207**	673	654	**1,328**
11:00:00 AM	862	771	**1,633**	751	741	**1,492**	560	676	**1,236**	724	729	**1,454**
12:00:00 PM	832	782	**1,614**	715	736	**1,451**	549	626	**1,175**	699	715	**1,413**
1:00:00 PM	733	741	**1,474**	648	674	**1,322**	543	562	**1,105**	641	659	**1,300**
2:00:00 PM	661	761	**1,422**	613	698	**1,311**	484	569	**1,053**	586	676	**1,262**
3:00:00 PM	795	735	**1,530**	591	678	**1,269**	493	597	**1,090**	626	670	**1,296**
4:00:00 PM	719	700	**1,419**	599	730	**1,329**	523	576	**1,099**	614	669	**1,282**
5:00:00 PM	661	663	**1,324**	635	614	**1,249**	526	612	**1,138**	607	630	**1,237**
6:00:00 PM	567	521	**1,088**	526	523	**1,049**	460	526	**986**	518	523	**1,041**
7:00:00 PM	575	419	**994**	463	438	**901**	436	487	**923**	491	448	**939**
8:00:00 PM	466	309	**775**	363	345	**708**	359	320	**679**	396	325	**721**
9:00:00 PM	371	237	**608**	365	285	**650**	382	252	**634**	373	258	**631**
10:00:00 PM	241	134	**375**	263	182	**445**	233	170	**403**	246	162	**408**
11:00:00 PM	155	87	**242**	138	135	**273**	177	116	**293**	157	113	**269**
24-Hour Total	**10,747**	**9,928**	**20,675**	**9,423**	**9,619**	**19,042**	**8,003**	**8,437**	**16,440**	**9,391**	**9,328**	**18,719**

Note: Yellow highlights the midday peak period and blue highlights the afternoon peak period.

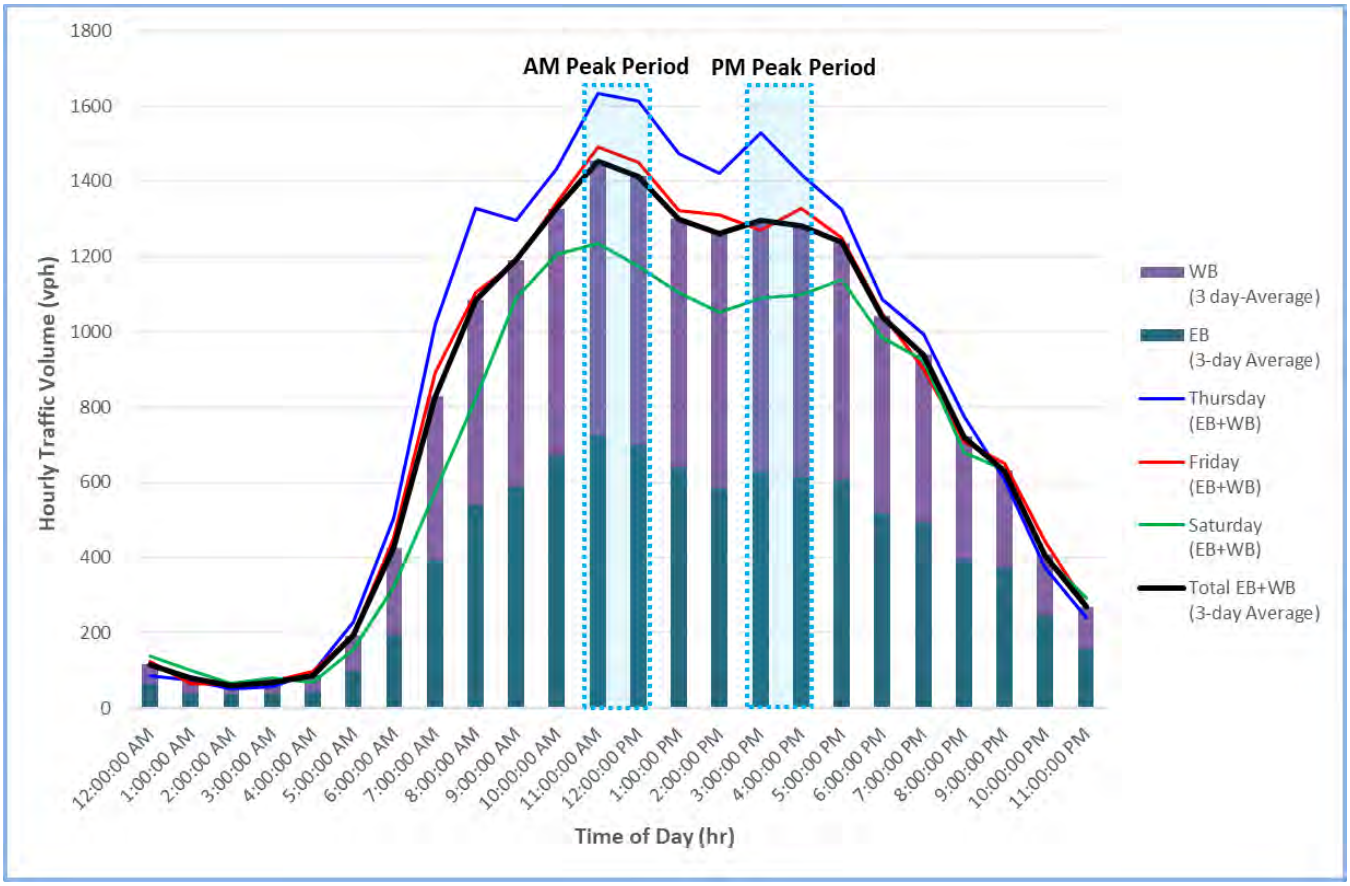


Figure 2: Hourly Traffic Volumes vs Time-of-Day

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3.2 PEDESTRIAN COUNTS

Two, four-hour pedestrian counts were collected, in 15-minute intervals, on Thursday, March 14, 2024, from 7:45 AM to 9:45 AM and from 5:00 PM to 7:00 PM, and on Saturday, March 16, 2024, from 10:00 AM to 12:00 PM and from 4:00 PM to 6:00 PM. Note, these periods corresponds to the highest pedestrian/bicycle activity observed based on a preliminary review of the study area using recorded video data collected between Thursday, March 14, 2024, and Saturday, March 16, 2024. Three zones of approximately 400-feet wide each were established along SR 5 from approximately 200-feet west of 36 Street to 200-feet east of 39 Street. Pedestrians that crossed SR 5 within each of the three designated zones were counted and distinctions were made for pedestrians either walking, riding a bicycle, or riding a scooter. Furthermore, the pedestrian's direction of travel was also noted and whether crossings were individual or in groups. **Table 2** and **Table 3** provide a summary of the pedestrian data collected during the specified morning and afternoon periods for the weekday and weekend day, respectively. Additional details are provided in **Appendix C**.

Table 2: Summary of Pedestrian Counts (Weekday)



	TIME	ZONE 1	ZONE 2	ZONE 3	TOTAL
MORNING PERIOD	7:45 AM-8:00 AM	⇑P,⇑P	⇑P	-	3
	8:00 AM-8:15 AM	⇑B	-	⇑P	2
	8:15 AM-8:30 AM	⇓(P, P),⇑B,⇑B	-	⇓P	5
	8:30 AM-8:45 AM	-	-	-	-
	7:45 AM-8:45 AM	**7**	**1**	**2**	**10**
	8:45 AM-9:00 AM	-	-	-	-
	9:00 AM-9:15 AM	⇑B,⇑P	⇑B	⇓P	4
	9:15 AM-9:30 AM	⇓B, ⇑P,⇑P	-	-	3
	9:30 AM-9:45 AM	⇑B, ⇑(P, P),⇑P	-	-	4
	8:45 AM-9:45 AM	**9**	**1**	**1**	**11**
	TOTAL	**16**	**2**	**3**	**21**
AFTERNOON PERIOD	5:00 PM-5:15 PM	⇑B, ⇑B, ⇓(B, B),⇓P	⇑B, ⇓P, ⇓B	⇑P, ⇑B, ⇓P	11
	5:15 PM-5:30 PM	⇓B,⇑P,⇓B	⇑(P, P, P)	-	6
	5:30 PM-5:45 PM	⇑B	-	-	1
	5:45 PM-6:00 PM	⇓B	⇑(P, P)	-	3
	5:00 PM-6:00 PM	**10**	**8**	**3**	**21**
	6:00 PM-6:15 PM	⇑(P, P, P), ⇑P,⇓B	-	-	5
	6:15 PM-6:30 PM	⇑(P, P), ⇓(P, P), ⇓P,⇓B	-	-	6
	6:30 PM-6:45 PM	-	⇓P,⇑P,⇓(P, P, P, P)	-	6
	6:45 PM-7:00 PM	⇑B,⇓B	⇓(P, P, P)	-	5
	6:00 PM-7:00 PM	**13**	**9**	**0**	**22**
	TOTAL	**23**	**17**	**3**	**43**

Based on **Table 2**, the following is stated for the weekday pedestrian counts:

- Overall, within the study segment, there were 21 total crossings in the morning period with 16 (76%) crossings in Zone 1, 2 (10%) crossings in Zone 2, and 3 (14%) crossings in Zone 3. Furthermore, there were 43 total crossings in the afternoon period with 23 (53%) crossings in Zone 1, 17 (40%) crossing in Zone 2, and 3 (7%) crossings in Zone 3. Note, there were a total of 10 group crossings during both periods and the crossing directions varied across the periods with 36 (56%) traveling north and 28 (44%) traveling south.
- Between 7:45 AM and 8:45 AM, there was a total of 10 crossings within the study segment with 7 (70%) crossings in Zone 1 including four pedestrians and three bicyclists, 1 (10%) pedestrian crossing in Zone 2, and 2 (20%) pedestrian crossings in Zone 3. Note, there was 1 group of two pedestrians that crossed Zone 1.
- Between 8:45 AM and 9:45 AM, there was a total of 11 crossings within the study segment with 9 (82%) crossings in Zone 1 including six pedestrians and three bicyclists, 1 (9%) bicyclist crossing in Zone 2, and 1 (9%) pedestrian crossing in Zone 3. Note, there was 1 group of two pedestrians that crossed Zone 1.
- Between 5:00 PM and 6:00 PM, there was a total of 21 crossings within the study segment with 10 (48%) crossings in Zone 1 including eight bicyclists and two pedestrians, 8 (38%) crossing in Zone 2 with six pedestrians and 2 bicyclists, and 3 (14%) crossings in Zone 3 with two pedestrians and one bicyclist. Note, there was 1 group of two bicyclists that crossed Zone 1, and 1 group of three pedestrians and one group of two pedestrians that crossed Zone 2.
- Between 6:00 PM and 7:00 PM, there was a total of 22 crossings within the study segment with 13 (59%) crossings in Zone 1 including nine pedestrians and four bicyclists, 9 (41%) pedestrian crossings in Zone 2, and no crossings in Zone 3. Note, there were 2 groups of two pedestrians and 1 group of three pedestrians that crossed Zone 1, and 1 group of four pedestrians and 1 group of three pedestrians that crossed Zone 2.

Table 3: Summary of Pedestrian Counts (Weekend Day)

Legend:
P: Pedestrian
B: Bicycle
S: Scooter
(X): Group
⇧ : Direction



	TIME	ZONE 1	ZONE 2	ZONE 3	TOTAL
MORNING PERIOD	10:00 AM-10:15 AM	⇩B, ⇧(P, P)	⇩P, ⇩P	-	5
	10:15 AM-10:30 AM	-	-	-	-
	10:30 AM-10:45 AM	⇧P	-	⇩B	2
	10:45 AM-11:00 AM	⇩P	⇩B	⇧B, ⇧B	4
	10:00 AM-11:00 AM	**5**	**3**	**3**	**11**
	11:00 AM-11:15 AM	⇩(P, P), ⇧P, ⇩P	⇧P, ⇧P	-	6
	11:15 AM-11:30 AM	⇧S, ⇧B	⇩B, ⇩P	-	4
	11:30 AM-11:45 AM	-	⇧(P, P), ⇧B, ⇩P	⇩B, ⇧B	6
	11:45 AM-12:00 PM	⇧B	-	-	1
	11:00 AM-12:00 PM	**7**	**8**	**2**	**17**
	TOTAL	**12**	**11**	**5**	**28**
AFTERNOON PERIOD	4:00 PM-4:15 PM	⇧B	⇩B	⇧B, ⇩S	4
	4:15 PM-4:30 PM	⇧P	⇧P, ⇩P, ⇧B	-	4
	4:30 PM-4:45 PM	⇩B, ⇧P	⇧(P, P)	⇧B	5
	4:45 PM-5:00 PM	⇧B	⇩(P, P)	-	3
	4:00 PM-5:00 PM	**5**	**8**	**3**	**16**
	5:00 PM-5:15 PM	⇧P, ⇩B	-	-	2
	5:15 PM-5:30 PM	⇩B	⇩P, ⇧P	⇩S	4
	5:30 PM-5:45 PM	⇩P, ⇩B, ⇧P	⇩P, ⇩P	-	5
	5:45 PM-6:00 PM	⇩(P, P)	-	-	2
	5:00 PM-6:00 PM	**8**	**4**	**1**	**13**
	TOTAL	**13**	**12**	**4**	**29**

Based on **Table 3**, the following is stated for the weekend day pedestrian counts:

- Overall, within the study segment, there were 28 total crossings in the morning period with 12 (43%) crossings in Zone 1, 11 (39%) crossings in Zone 2, and 5 (45%) crossings in Zone 3. Furthermore, there were 29 total crossings in the afternoon period with 13 (45%) crossings in Zone 1, 12 (41%) crossings in Zone 2, and 4 (14%) crossings in Zone 3. Note, there were a total of 6 group crossings during both periods and the crossing directions varied across the periods with 29 (51%) traveling north and 28 (49%) traveling south.
- Between 10:00 AM and 11:00 AM, there was a total of 11 crossings within the study segment with 5 (45%) crossings in Zone 1 including four pedestrians and 1 bicyclist, 3 (27%) crossings in Zone 2 with two pedestrians and 1 bicyclist, and 3 (27%) bicyclist crossings in Zone 3. Note, there was 1 group of two pedestrians that crossed Zone 1.
- Between 11:00 AM and 12:00 PM, there was a total of 17 crossings within the study segment with 7 (41%) crossings in Zone 1 including four pedestrians, two bicyclists, and 1 scooterist, 8 (47%)

crossings in Zone 2 with six pedestrians and two bicyclists, and 2 (12%) bicyclist crossings in Zone 3. Note, there was 1 group of two pedestrians that crossed Zone 1 and 1 group of two pedestrians that crossed Zone 2.

- Between 4:00 PM and 5:00 PM, there was a total of 16 crossings within the study segment with 5 (31%) crossings in Zone 1 including three bicyclists and two pedestrians, 8 (50%) crossing in Zone 2 with six pedestrians and two bicyclists, and 3 (19%) crossings in Zone 3 with two bicyclists and one scooterist. Note, there were 2 groups of two pedestrians that crossed Zone 2.
- Between 5:00 PM and 6:00 PM, there was a total of 13 crossings within the study segment with 8 (62%) crossings in Zone 1 including five pedestrians and 3 bicyclists, 4 (31%) crossings in Zone 2 with four pedestrians, and 1 (8%) scooterist crossing in Zone 3. Note, there was 1 group of two pedestrians that crossed Zone 1.

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3.3 GAP STUDY

A vehicle gap study was conducted on Thursday, March 14, 2024, from 7:45 AM to 9:45 AM and from 5:00 PM to 7:00 PM, and on Saturday, March 16, 2024, from 10:00 AM to 12:00 PM and from 4:00 PM to 6:00 PM, to coincide with the pedestrian peak periods identified in Section 3.2 of this report. Gap data was collected within Zone 1, approximately 100-feet east of 36 Street, in 15-minute intervals for both directions of travel along SR 5 to determine the typical size and number of gaps in the vehicular traffic stream. As stated in Chapter 8 of the FDOT Manual on Uniform Traffic Studies (MUTS), the critical gap is defined as the minimum time length (in seconds) of a gap in traffic which will permit (on average) a side street vehicle, a single pedestrian, or a group of pedestrians to cross a roadway of specified width without coming into conflict with passing vehicles. The critical gap for a single pedestrian (t_c) is estimated using the Highway Capacity Manual (HCM) 6th Edition, Equation 20-77.

$$t_c = \frac{L}{S_p} + t_s$$

where,

t_c = single pedestrian critical headway (seconds)

S_p = 15th percentile pedestrian walking speed (default 3.5 feet per second)

L = crosswalk length (feet)

t_s = pedestrian start-up time and end clearance time (default 3 seconds)

For this location, the pedestrian critical gap was calculated assuming a single-stage pedestrian crossing. The single-stage pedestrian crossing assumes pedestrians cross the entire length of the roadway without stopping midway at a pedestrian refuge. Thus, a critical gap of approximately 20 seconds was determined by dividing the 59-foot roadway length (from edge to edge) by the 15th percentile pedestrian walking speed of 3.5 ft/sec and then adding a pedestrian start-up time and end clearance time of 3 seconds. Note, the calculated value of 19.86 was rounded up to the next whole number for analysis. **Table 4** and **Table 5** summarize the gap data collected for SR 5 within the study limits for a weekday and weekend day, respectively, during the specified data collection periods and provide the number of safe gaps available each hour that exceed the critical gap time of 20 seconds. Additional details are provided in **Appendix C**. Note, pedestrians that traveled in groups of 2 or more were considered to require only one gap since they typically traveled together.

Table 4: Summary of Gap Data (Weekday)

Location	Peak Period	Time of Day	Critical Gap* (Seconds)	No. of Safe Gaps for 1 person to cross SR 5 Greater than Critical Gap	Amount of Crossings** from Table 2
SR 5/Overseas Highway between 36 Street and 39 Street	Morning	7:45 AM to 8:45 AM	20	0	9
		8:45 AM to 9:45 AM		0	10
	Afternoon	5:00 PM to 6:00 PM		0	17
		6:00 PM to 7:00 PM		1	13

Table 5: Summary of Gap Data (Weekend Day)

Location	Peak Period	Time of Day	Critical Gap* (Seconds)	No. of Safe Gaps for 1 person to cross SR 5 Greater than Critical Gap	Amount of Crossings** from Table 3
SR 5/Overseas Highway between 36 Street and 39 Street	Morning	10:00 AM to 11:00 AM	20	1	10
		11:00 AM to 12:00 PM		0	15
	Afternoon	4:00 PM to 5:00 PM		2	14
		5:00 PM to 6:00 PM		0	12

Note(s):

* Critical Gap calculated using the Pedestrian Critical Gap Equation in Chapter 8 of the FDOT MUTS assuming a 15th percentile pedestrian walking speed of 3.5 ft/sec and a pedestrian start-up time and clearance time of 3 seconds.

** Pedestrians that crossed SR 5 in a group were counted as one crossing regardless of the number of pedestrians in the group.

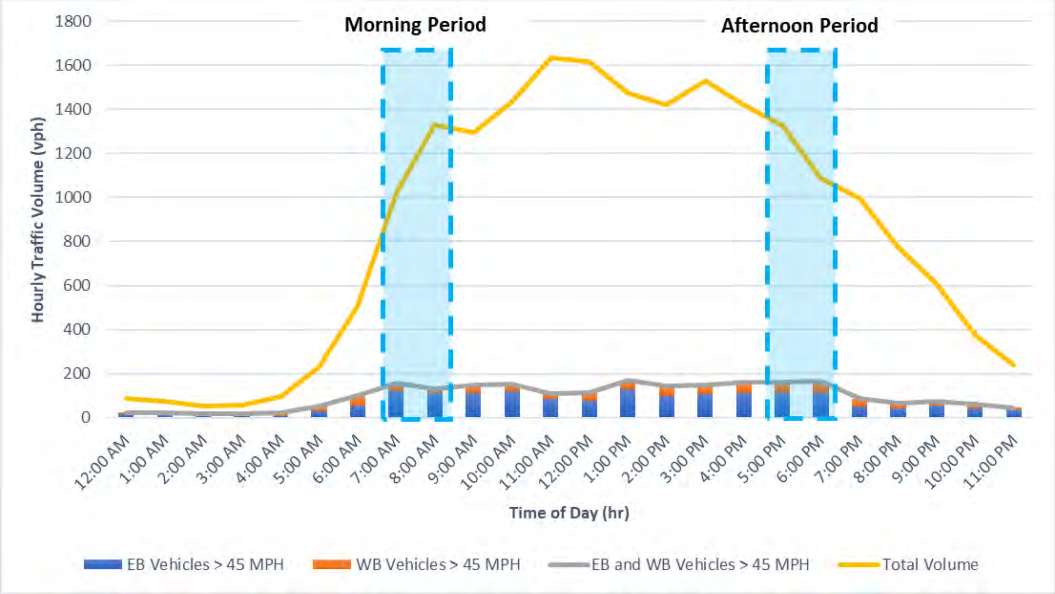
By comparing the number of available gaps presented in **Table 4** and **Table 5** to the number of crossings on SR 5 within the study area (from **Table 2** and **Table 3** above) for each hourly period, it appears that there were not enough gaps in the existing travel stream to accommodate the pedestrian crossing demand during all periods.

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3.4 SPOT SPEED STUDY

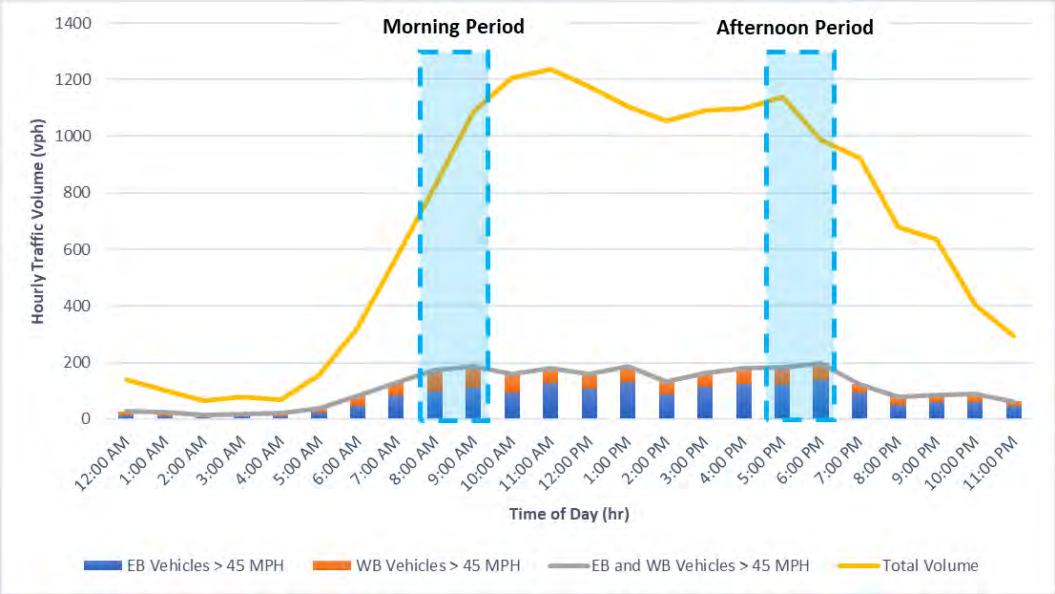
Speed counts were collected in 15-minute intervals for the eastbound and westbound directions of SR 5 within the study segment on Thursday, March 14, 2024, and Saturday, March 16, 2024, to determine the daily fluctuation of vehicle travel speeds in the study segment on a typical weekday and weekend day, respectively. **Figure 3** and **Figure 4** graphically present the number of vehicles that exceeded the posted speed limit of 45 MPH, each hour along SR 5 for a typical weekday and weekend day, respectively. In addition, speed data statistics were calculated for the pedestrian peak periods on the weekday and weekend day identified in Section 3.2 of this report and summarized in **Table 6** and **Table 7**, respectively. Details of the speed data collected are provided in **Appendix C**.

Figure 3: Vehicles Exceeding the Posted Speed Limit vs Time of Day – Weekday



Based on **Figure 3**, the study segment experienced a two-hour morning and afternoon peak period where the posted speed limit was exceeded the most from 7:00 AM to 9:00 AM and 5:00 PM to 7:00 PM, respectively, during the weekday. However, most vehicles throughout the weekday are traveling at or below 45 MPH. Furthermore, the period that experienced the highest number of eastbound and westbound vehicles speeding with respect to the total volume per hour was from 12:00 AM to 4:00 AM with an average of 30% of vehicles traveling above the posted speed limit of 45 MPH, and an average of 2% of eastbound and westbound vehicles traveling at 55 MPH or greater.

Figure 4: Vehicles Exceeding the Posted Speed Limit vs Time of Day – Weekend Day



Similarly, based on **Figure 4**, the study segment experienced a two-hour morning and afternoon peak period where the posted speed limit was exceeded the most from 8:00 AM to 10:00 AM and 5:00 PM to 7:00 PM, respectively, during the weekend day. However, most vehicles throughout the weekend day are traveling at or below 45 MPH. Furthermore, the period that experienced the highest number of eastbound and westbound vehicles speeding with respect to the total volume per hour was from 3:00 AM to 7:00 AM with an average of 26% of vehicles traveling above the posted speed limit of 45 MPH, and an average of 4% of eastbound and westbound vehicles traveling at 55 MPH or greater.

Based on **Table 6**, the average 85th percentile speeds during the morning period were approximately 45 and 44 MPH in the eastbound and westbound directions of travel, which is equal to or 1 MPH less than the posted speed limit, respectively. During the afternoon period, the average 85th percentile speeds were approximately 46 and 45 MPH in the eastbound and westbound directions of travel, which is 1 MPH greater than and equal to the posted speed limit, respectively. Additionally, the average speeds for the morning period were approximately 39 and 36 MPH for the eastbound and westbound directions of travel, respectively, and approximately 40 and 39 MPH for the eastbound and westbound directions of travel, respectively, during the afternoon period. Overall, the average 10 MPH pace during both the morning and afternoon periods was between 35 to 44 MPH for both the eastbound and westbound directions of travel, except for the westbound direction during the morning period which had a 10 MPH pace between 31 to 40 MPH.

Table 6: Summary of Speed Data Statistics – Weekday

Description	Thursday, March 14, 2024	
	Eastbound	Westbound
Morning Period: 7:45 AM - 9:45 AM		
Posted Speed Limit (MPH)	45	45
85th Percentile (MPH)	45.4	43.6
Average Speed (MPH)	39.4	36.2
Standard Deviation (MPH)	5.9	7.3
Ten Mile Pace (MPH)	35 to 44	31 to 40
Percent in Ten Mile Pace (%)	63.3%	53.2%
Afternoon Period: 5:00 PM - 7:00 PM		
Posted Speed Limit (MPH)	45	45
85th Percentile (MPH)	45.6	44.9
Average Speed (MPH)	40.2	39.2
Standard Deviation (MPH)	6.0	5.9
Ten Mile Pace (MPH)	35 to 44	35 to 44
Percent in Ten Mile Pace (%)	68.7%	64.2%

Based on **Table 7**, the average 85th percentile speeds during the morning period were approximately 46 and 45 MPH in the eastbound and westbound directions of travel, which is 1 MPH greater than and equal to the posted speed limit, respectively. During the afternoon period, the average 85th percentile speeds were approximately 47 and 45 MPH in the eastbound and westbound directions of travel, which is 2 and 0 MPH higher than the posted speed limit. Additionally, the average speeds for the morning period were approximately 41 and 39 MPH for the eastbound and westbound directions of travel, respectively, and approximately 41 and 40 MPH for the eastbound and westbound directions of travel, respectively, during the afternoon period. Overall, the average 10 MPH pace during both the morning and afternoon periods was between 35 to 44 MPH for both directions of travel.

Table 7: Summary of Speed Data Statistics – Weekend Day

Description	Saturday, March 16, 2024	
	Eastbound	Westbound
Morning Period: 10:00 AM - 12:00 PM		
Posted Speed Limit (MPH)	45	45
85th Percentile (MPH)	45.7	45.0
Average Speed (MPH)	40.5	39.4
Standard Deviation (MPH)	5.7	5.6
Ten Mile Pace (MPH)	35 to 44	35 to 44
Percent in Ten Mile Pace (%)	71.2%	68.0%
Afternoon Period: 4:00 PM - 6:00 PM		
Posted Speed Limit (MPH)	45	45
85th Percentile (MPH)	46.5	45.3
Average Speed (MPH)	41.0	39.7
Standard Deviation (MPH)	6.1	5.8
Ten Mile Pace (MPH)	35 to 44	35 to 44
Percent in Ten Mile Pace (%)	67.9%	67.0%

4. Crash Review and Summary

Crash data for the five most recent years (from January 2019 to December 2023) was downloaded from FDOT's Signal Four Analytics. The crash data includes crashes along SR 5 (Section 90040-000) that occurred between 200-feet west of 36 Street (MP 0.997) and 200-feet east of 39 Street (MP 1.236). Signal Four Analytics is "an interactive, web-based system designed to support the crash mapping and analysis needs of law enforcement, traffic engineering, transportation planning agencies, and research institutions in the state of Florida." It is noted that the Signal Four Analytics original output included 32 crashes but after reviewing the detailed police reports, 19 out of the 32 crashes were removed from further analysis because they occurred outside of the study limits. A crash summary for the study segment is provided in **Table 8** and crash summary worksheets are included in **Appendix D**.

There was a total of 13 crashes that occurred within the study segment during the referenced five-year period with 2 crashes in 2019, 2 crashes in 2020, 2 crashes in 2021, 3 crashes in 2022, and 4 crashes in 2023. The leading crash types consisted of Bicycle with 6 (46%) crashes, Angle with 3 (23%) crashes, and Rear End with 2 (15%) crashes. There were no Pedestrian related crashes that occurred within the five-year period. A brief description of the Bicycle related crashes is included at the end of the section. The leading contributing causes for all crashes included "failed to yield right-of-way" with 7 (54%) crashes, "no contributing action" with 3 (23%) crashes, and "careless or negligent manner" with 2 (15%) crashes. Based on crash severity, 7 (54%) crashes were property damage only (PDO), 5 (38%) were injury type crashes, and 1 (8%) was a fatal crash. A brief description of the fatal crash is included at the end of the section. Note, the FCR has been requested and is currently under review. There were 2 (15%) night/dusk/dawn crashes reported, which is less than the 2019-2023 Districtwide average for all roadways of 26%. There was 1 (8%) crash that occurred under wet/slippery pavement conditions which is less than the 2019-2023 Districtwide average for all roadways of 10%.

Based on the FDOT's Signal Four Analytics High Crash Lists (2019-2021) for intersections and segments, there were no high crash intersections or high crash segments identified within the study segment. Note, there is no high crash list yet available for 2022 or 2023. A confidence level analysis was not performed at this location since the total number of crashes occurring per year did not meet the minimum criteria of 8 crashes per year to be statistically significant.

Additionally, a preliminary review of crash data from Signal Four Analytics was performed from January 1, 2024, to March 12, 2024 (latest date available at the time of retrieval). Based on this review, there was 1 Angle crash reported. The crash (26291992) occurred on January 23, 2024, at 11:04 AM, during daylight and dry pavement conditions with "improper turn" as the contributing action and resulted in an injury. According to the police report, the crash involved a southbound vehicle attempting to make a left-turn out of the gas station driveway, located at 3896 Overseas Highway, and colliding with a westbound vehicle along SR 5. Note, the driveway exit at the gas station prohibits left-turn movements with a RIGHT TURN ONLY sign.

Table 8: Crash Summary (2019-2023)

SR 5/Overseas Highway between 36 Street and 39 Street		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2019	2020	2021	2022	2023			
CRASH TYPE	Rear End	0	0	1	0	1	2	0	15.4%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	1	1	0	0	1	3	1	23.1%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	0	0	0	1	0	1	0	7.7%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	0	0	0	0	0	0.0%
	Bicycle	1	0	1	2	2	6	1	46.2%
	Fixed Object	0	1	0	0	0	1	0	7.7%
	Other Non Fixed Object Collisions	0	0	0	0	0	0	0	0.0%
	Non-Collisions	0	0	0	0	0	0	0	0.0%
	Others	0	0	0	0	0	0	0	0.0%
	Total Crashes	**2**	**2**	**2**	**3**	**4**	**13**	**3**	**100.0%**
SEVERITY	PDO Crashes	0	2	1	1	3	7	1	53.8%
	Fatal Crashes	0	0	0	0	1	1	0	7.7%
	Injury Crashes	2	0	1	2	0	5	1	38.5%
LIGHTING CONDITIONS	Daylight	2	1	2	2	4	11	2	84.6%
	Dusk	0	0	0	0	0	0	0	0.0%
	Dawn	0	0	0	0	0	0	0	0.0%
	Dark	0	1	0	1	0	2	0	15.4%
	Unknown	0	0	0	0	0	0	0	0.0%
SURFACE CONDITIONS	Dry	2	1	2	3	4	12	2	92.3%
	Wet	0	1	0	0	0	1	0	7.7%
	Others	0	0	0	0	0	0	0	0.0%

The following is a brief description of the Bicycle related crashes and the fatal crash that occurred within the study segment from January 1, 2019, to March 12, 2024:

- The first Bicycle related crash (87208053) occurred on March 13, 2019, at 11:00 AM, during daylight and dry pavement conditions with "failed to yield right-of-way" as the contributing action and resulted in an injury. According to the police report, the crash involved a vehicle exiting Marathon Community Park that collided with a bicyclist crossing 39 Street traveling in the westbound direction on the south leg crosswalk of the intersection. Note, the driver of the vehicle exiting Marathon Community Park was determined to be at fault.

- The second Bicycle related crash (88333886) occurred on July 1, 2021, at 5:17 PM, during daylight and dry pavement conditions with no contributing action and resulted in an injury. According to the police report, the crash involved a vehicle exiting Fairway Market (permanently closed) that collided with a bicyclist crossing a driveway approximately 110-feet west of 39 Street traveling in the eastbound direction on the crosswalk on the north side of SR 5. Note, the bicyclist darted in front of the vehicle.
- The third Bicycle related crash (24930034) occurred on May 20, 2022, at 12:30 PM, during daylight and dry pavement conditions with "failed to yield right-of-way" as the contributing action and resulted in an injury. According to the police report, the crash involved a vehicle exiting Marathon Community Park that collided with a bicyclist crossing 36 Street traveling in the westbound direction on the crosswalk on the south leg crosswalk of the intersection. Note, the driver of the vehicle exiting Marathon Community Park was determined to be at fault.
- The fourth Bicycle related crash (24930066) occurred on October 31, 2022, at 6:58 AM, during dark - not lighted and dry pavement conditions with no contributing action and resulted in an injury. According to the police report, the crash involved a vehicle exiting Marathon Community Park that collided with a bicyclist crossing 36 Street traveling in the westbound direction on the south leg crosswalk of the intersection. Note, it was determined that the bicyclist failed to yield right-of-way. In addition, the driver's view was obstructed by a utility pole.
- The fifth Bicycle related crash (89719568) occurred on October 27, 2023, at 3:00 PM, during daylight and dry pavement conditions with "failed to yield right-of-way" as the contributing action and resulted in PDO. According to the police report, the crash involved a vehicle performing a westbound right-turn movement that collided with a bicyclist crossing 37 Street traveling in the westbound direction on the north leg crosswalk of the intersection. Note, the driver of the westbound right-turn vehicle was determined to be at fault.
- The sixth Bicycle related crash (89740756) occurred on November 18, 2023, at 10:31 AM, during daylight and dry pavement conditions with no contributing action and resulted in a fatal. According to the police report, the crash involved a vehicle performing a southbound right-turn movement from 39 Street that collided with a bicyclist crossing SR 5 in the northbound direction while utilizing the eastbound left-turn lane as a two-stage crossing. Note, the bicyclist darted in front of the vehicle. In addition there are no marked crosswalks to cross SR 5 within the study segment.

5. Field Review

An in-person field review was performed on Thursday, April 18, 2024, from 5:00 PM to 7:00 PM and an additional field review was performed using video from Saturday, March 16, 2024, from 4:00 PM to 6:00 PM, to ascertain the overall operations and site conditions within the study segment from both a traffic operations and safety perspective. The field review was performed during pedestrian peak periods identified in Section 3.2 of this report. Field observation photographs are presented in **Photograph 1** through **Photograph 8**. The following key observations were made within the study segment during both observation periods, unless otherwise indicated:

General Observations:

- The overall level of vehicular traffic through the study segment was relatively moderate to heavy with bidirectional demand. Vehicles along SR 5 typically traveled through the study segment in large platoons with relatively small headways between vehicles. Note, the nearest signalized intersections are approximately 0.852-miles east (Sombrero Beach Road) and 0.228-miles west (33 Street) of 39 Street and 36 Street, respectively.
- There was no apparent speeding or aggressive driving behavior observed within the study segment along SR 5 based on comparison with the going speed of the test vehicle. Note, the floating car method was performed to review the vehicular speed and video-record the existing conditions along SR 5 within study segment.
- Overall, the pedestrian and bicyclist demand were moderate along the continuous sidewalk and relatively light to moderate crossings within the study segment. Most of the pedestrians and bicyclists within the study segment were observed along the sidewalk exercising, traveling for leisure activities/purposes, or accessing Marathon Community Park.
- There appeared to be a pattern of pedestrians and bicyclists crossing SR 5 near 36 Street to access the Marathon Community Park – see **Photograph 1**. Occasionally, there were some pedestrians and bicyclists crossing SR 5 near the pedestrian path that provides access into Marathon Community Park, located approximately 270-feet east of 36 Street on the south side of SR 5 – see **Photograph 2**. During the weekday afternoon period, family, friends, and children were observed utilizing the park for recreational purposes such as playing sports (baseball, basketball, tennis, etc.), exercising, and the playground area – see **Photograph 3**.

- Typically, pedestrians and bicyclists that crossed SR 5 within the study segment appeared to be rushed or utilized the TWLTL as a two-stage pedestrian crossing due to the low frequency of available gaps along SR 5 – see **Photograph 4**. Typically, pedestrians were observed waiting a notable amount of time to identify a sufficient gap in the traffic stream to safely cross SR 5.
- Westbound vehicles along SR 5 regularly utilized the TWLTL to access the Marathon Community Park and City Marina at 36 Street and typically experienced vehicle queues of approximately 1 to 2 westbound left-turn vehicles with a maximum observed vehicle queue of 3 westbound left-turn vehicles – see **Photograph 5**. No conflicts were observed between westbound left-turn vehicles and pedestrians crossing SR 5 near the park entrance. Note, most vehicles and pedestrians accessed the park entrance on 36 Street instead of 39 Street due to the proximity of the recreational activities.
- Northbound vehicles on 36 Street typically traveled past the stop bar and/or encroached into the crosswalk to have a better view of the oncoming eastbound and westbound vehicles along SR 5 due to the utility pole on the southeast corner of the intersection – see **Photograph 6**. Typically, northbound vehicles on 36 Street experienced a queue of 1 to 2 northbound vehicles. In addition, northbound left-turn vehicles on 36 Street occasionally utilized the TWLTL to merge onto SR 5.
- There was light transit bus activity near or within the study segment. Transit buses were observed dropping off and picking up passengers at the bus stop located on the south side of SR 5 approximately 75-feet west of 36 Street without conflicts. Pedestrians were observed crossing SR 5 to board into and alight from the transit bus – see **Photograph 7**.
- During the weekday afternoon period, a local law enforcement official with an unmarked vehicle was observed enforcing the posted speed limit and pulling over vehicles along SR 5 – see **Photograph 8**.

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Photograph 1: View of pedestrians and bicyclists crossing SR 5 near 36 Street coming in and out of the Marathon Community Park.



Photograph 2: View of pedestrians crossing SR 5 near the pedestrian path that provides access into the Marathon Community Park.

(Note: There is a pedestrian path that provides access into Marathon Community Park located approximately 270-feet east of 36 Street on the south side of SR 5.)



Photograph 3: View of recreational activities at Marathon Community Park.
(Note: During the weekday afternoon period, family, friends, and children were observed utilizing the park for recreational purposes such as playing sports (baseball, basketball, tennis, etc.), exercising, and the playground area.)



Photograph 4: View of pedestrians utilizing the TWLTL as a two-stage pedestrian crossing, facing southwest.
(Note: Typically, pedestrians and bicyclists that cross SR 5 within the study segment appeared to be rushed or utilized the TWLTL as a two-stage pedestrian crossing due to the low frequency of available gaps along SR 5.)



Photograph 5: View of westbound left-turn vehicles at 36 Street, facing southwest.
(Note: Westbound vehicles along SR 5 regularly utilized the TWLTL to access the park and marina and typically experienced vehicle queues of approximately 1 to 3 westbound left-turn vehicles



Photograph 6: View of northbound vehicle on 36 Street.
(Note: Northbound vehicles on 36 Street typically traveled past the stop bar and/or encroach into the crosswalk to have a better view of the oncoming eastbound and westbound vehicles along SR 5 due to the utility pole on the southeast corner of the intersection.)



Photograph 7: View of transit bus activity on SR 5 west of 36 Street, facing northeast.
(Note: Transit buses were observed dropping off/picking up passengers at the bus stop located on the south side of SR 5 approximately 75-feet west of 36 Street without conflicts.)



Photograph 8: View of local law enforcement official enforcing the posted speed limit, facing southwest.
(Note: The local law enforcement official was utilizing an unmarked vehicle along SR 5.)

6. Review of the TEM

6.1 Evaluation Criteria for a Marked Crosswalk

Section 5.2 of the FDOT's 2024 Traffic Engineering Manual (TEM) was reviewed to determine whether the criteria for the installation of a marked crosswalk at midblock and uncontrolled approaches is satisfied and is summarized in **Table 9**. Section 5.2.5.1 of the TEM indicates that a marked crosswalk should be considered for installation when:

I. Proximity to Significant Generators and Attractors

Any midblock or unsignalized intersection under consideration for a marked crosswalk should have either of the following characteristics:

(a) a well-defined spatial pattern of pedestrian generators, attractors, and flow (across a roadway) between them; or

(b) a well-defined pattern of existing pedestrian crossings.

II. Pedestrian Demand and Vehicular Volume

a) 20 or more pedestrians during a single hour (any four consecutive 15-minute periods) of an average day; or

b) Recommended pedestrian thresholds may be reduced by 50% at midblock or unsignalized intersections connecting a shared use path.

c) A minimum vehicular volume of 2,000 Average Daily Traffic (ADT) along the roadway segment.

III. Distance Between Crossing Locations

The minimum distance to nearest alternative intersection or crossing location is 300 feet.

IV. Outside of Intersection Influence Area

The proposed location must be outside the influence area of adjacent signalized intersections, including the limits of the auxiliary turn lanes.

Based on a comprehensive review of the data presented herein, the first criteria for proximity to significant generators and attractors and the third criteria for minimum vehicular volume and location characteristics are fully met, and the second criteria for recommended levels of pedestrian demand is partially met due to the potential crosswalk not appearing to be related to nature-based trail crossings. A summary of the applicable criteria is shown in **Table 9**. The following section will serve to evaluate the degree of traffic treatment that may be considered to promote pedestrian safety at the proposed crosswalk.

Table 9: Review of TEM Section 5.2.5.1

Criteria Category per Section 5.2.5.1	Criteria Requirement	SR 5/Overseas Highway between 36 Street and 39 Street, The Marathon Community Park and City Marina		
		Condition		Comment(s)
		Met	Not Met	
Proximity to Significant Generators and Attractors	A well-defined spatial pattern of pedestrian generators, attractors, and flow (across a roadway) between them.	✓		There appeared to be a pattern of pedestrians and bicyclists crossing SR 5 near 36 Street to access the Marathon Community Park. Occasionally, there were some pedestrians and bicyclists crossing SR 5 near the pedestrian path that provides access into Marathon Community Park, located approximately 270-feet east of 36 Street.
	A well-defined pattern of existing pedestrian crossings.	✓		
Recommended Levels of Pedestrian Demand	The following threshold should be considered for a new marked crosswalk: ● 20 or more pedestrians during a single hour of an average day	✓		The requirement of 20 or more pedestrians during a single hour of an average day is met during a typical weekday from 5:00 PM to 6:00 PM and 6:00 PM to 7:00 PM - see Section 3.2 for additional details.
	Pedestrian volume demand data is not needed for the following conditions: ● Pedestrian crosswalks within a school zone. ● Pedestrian crosswalks under the following Context Classifications: - C2T Rural Town - C3C Suburban Commercial - C4 Urban General - C5 Urban Center - C6 Urban Core	✓		There is no school zone within the study segment. However, due to the preliminary FDOT Context Classification of the study segment, pedestrian volume demand data is not needed for evaluation.
	Crosswalk thresholds at midblock or unsignalized intersections connecting a shared use path: ● Crossing locations connecting to a shared use path may use a 50% reduction to the recommended pedestrian thresholds previously outlined	✓		The potential crosswalk location would serve as a connector to Florida Keys Overseas Heritage Trail (FKOHT). Therefore, the threshold of 10 or more pedestrians during a single hour is met during a typical weekday from 7:45 AM to 8:45 AM, 8:45 AM to 9:45 AM, 5:00 PM to 6:00 PM, and 6:00 PM to 7:00 PM, and during a typical weekend day from 10:00 AM to 11:00 AM, 11:00 AM to 12:00 PM, 4:00 PM to 5:00 PM, and 5:00 PM to 6:00 PM.
	The proposed crosswalk is related to nature-based trail crossings.		✓	Although the FKOHT offers access to many ecological resources and scenic venues throughout the Keys, the potential crosswalk does not appear to be related to nature-based trail crossings.
Minimum Vehicular Volume and Location Characteristics	A minimum vehicular volume of 2,000 Average Daily Traffic (ADT) along the roadway.	✓		These requirements are met based on a the 72-hour volume counts collected and summarized in Table 1. In addition, Florida Traffic Online (FTO) was also reviewed and the requirement of 2,000 ADT was met.
	The minimum distance to nearest alternative intersection or crossing location is 300 feet per FDOT Design Manual, Chapter 222.	✓		Nearest designated pedestrian crossing is >300 ft.
	The proposed location must be outside the influence area of adjacent signalized intersections, including the limits of the auxiliary turn lanes.	✓		The potential crosswalk location would not be within the influence area of a signalized intersection.

6.2 EVALUATION CRITERIA FOR CROSSWALK TREATMENT OPTIONS

Section 5.2 of the FDOT's 2024 TEM was further reviewed to determine the appropriate treatment options for a pedestrian crosswalk at the study location, if any. According to the criteria for Beacons and signals in Section 5.2.5.2 of the TEM, a Rectangular Rapid Flashing Beacon (RRFB) may be considered for installation when:

- Posted speed limit of 35 mph or slower.
- A marked special emphasis crosswalk.
- Maximum of four (4) through lanes (both directions) irrespective of median presence, or five (5) lanes with a median refuge island (Note: For locations with five (5) lanes with a Two-Way Left-Turn Lane, a refuge island or raised median needs to be present for RRFB application).

Based on the criteria above, an RRFB may not be considered for installation at the study location due to the roadway having a posted speed limit of 45 MPH. However, an RRFB may be considered in the segment west of 36 Street where the posted speed limit is 35 MPH.

According to the criteria for Beacons and signals in Section 5.2.5.2 of the TEM, a Pedestrian Hybrid Beacon (PHB) may be considered for installation when:

- A midblock traffic control signal is not justified under Chapter 4C of the Manual on Uniform Traffic Control Devices (MUTCD) signal warrants and when gaps in traffic are not adequate to permit pedestrians to cross.
- The speed of vehicles approaching the location on the major street is too high to permit pedestrians to cross.
- Pedestrian delays are excessive, follow the engineering study requirements mentioned in Section 4F.01 of the 2009 MUTCD.

Based on the criteria above, a PHB may be considered. However, based on review of Figure 5.2-2 *Guidelines for the Installation of Pedestrian Treatments on High-Speed Roadways* of the TEM, a two-stage crossing will be required to meet the crosswalk length guidelines provided – see **Figure 5** below. Note, Figure 5.2-2 of the TEM summarizes the PHB volume guidance offered in Chapter 4F of the 2009 MUTCD. However, coordination with the Monroe County Sheriff's Office and City Manager of Marathon indicated they are opposed to a PHB/High Intensity Activated Crosswalk Beacon (HAWK).

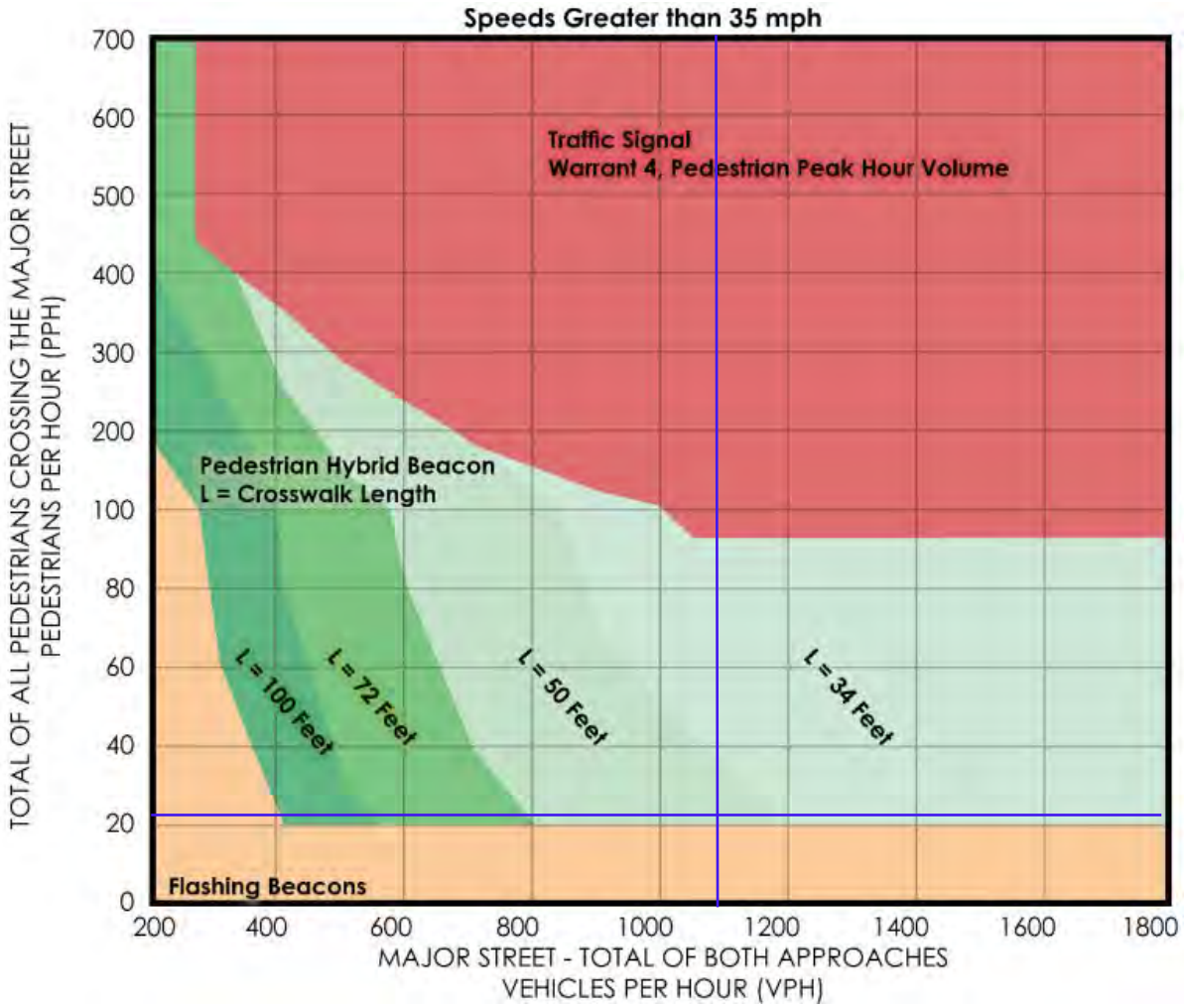


Figure 5: Guidelines for the Installation of Pedestrian Treatments on High-Speed Roadways

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7. Conclusions and Recommendations

Based on the existing conditions, traffic data collected, and field reviews performed, there was an apparent pattern of pedestrians and bicyclists crossing SR 5 near 36 Street to access the Marathon Community Park and Marathon City Marina. Occasionally, there were some pedestrians and bicyclists that crossed SR 5 near the pedestrian path that provides access into Marathon Community Park, located approximately 270-feet east of 36 Street. Additionally, based on the pedestrian group size and counts and the vehicle gap study performed, it appears that there were not enough gaps in the existing travel stream to accommodate the pedestrian crossing demand during all pedestrian peak periods. Based on field observations, pedestrians and bicyclists that cross SR 5 within the study segment appeared to be rushed or utilized the TWLTL as a two-stage pedestrian crossing due to the low frequency of available gaps along SR 5. Furthermore, a review of historical crash data from January 1, 2019, to March 12, 2024, identified five crashes that involved bicyclists crossing driveways or minor streets along SR 5, and one fatal crash that involved a bicyclist crossing SR 5 within the study segment. Finally, a review of Section 5.2 of the Department's Traffic Engineering Manual (TEM) indicates that two of the three criteria for the installation of a marked crosswalk were fully satisfied and the remaining criteria was partially satisfied, at this time, because the proposed crosswalk is not directly related to nature-based trail crossings. According to the criteria for Beacons and signals in Section 5.2.5.2 of the TEM, a PHB may be considered at the proposed crosswalk location, however, based on review of Figure 5.2-2 *Guidelines for the Installation of Pedestrian Treatments on High-Speed Roadways* of the TEM, a two-stage crossing will be required to meet the crosswalk length guidelines provided. In addition, a PHB may be substituted with a midblock traffic control signal under the context classification of C4 Urban General and using traffic signal Warrant 8 Roadway Network of the MUTCD. Based on the existing conditions within the study limits, SR 5/Overseas Highway is part of a highway system that serves as the principal roadway network for through traffic flow.

Therefore, based on a comprehensive review of the findings documented in this report including the evaluation criteria presented in Section 5.2 of FDOT's 2024 TEM, and using engineering judgment, it is recommended that the Department consider installing a two-staged, staggered, special emphasis crosswalk with a raised median refuge island, a PHB (or midblock traffic control signal), and corresponding signage, in accordance with FDOT's Standard Plans (Index 711-001), the 2024 FDOT Design Manual (FDM) 222 and 230, and the MUTCD within the study segment of SR 5 between 36 Street and 39 Street. A two-stage

pedestrian crossing increases the number of safe gaps available for pedestrians to utilize because of the shorter crossing distance to the median refuge island. The staggered proposed crossing may be installed between the pedestrian path that connects to the Marathon Community Park near 37 Street and approximately 220-feet east of 37 Street to accommodate the pedestrian demand and minimize the impacts to the two existing driveways along the north side of SR 5/Overseas Highway and east of 37 Street.

Additionally, it is also recommended that the Department consider installing Pedestrian Crossing Warning Sign (W11-2) pavement markings on the approaches to the proposed crosswalk. According to Section 5.2.7 *Treatment Options* of FDOT's 2024 TEM, when there is a high volume of fast-moving vehicles at a marked pedestrian crossing, the W11-2 pavement markings can be used alongside existing signs. To install these markings, approval must first be obtained from the District Transportation Operations Engineer. Using W11-2 pavement markings is recommended as a safety measure in the following circumstances:

- Multi-lane roadway (45 mph or greater)
- Rural two-lane roadway (50 mph or greater)
- Crosswalks have restricted sight distance due to obstructions such as trees or parked vehicles.
- There is a documented history of non-compliant driver yielding to pedestrian behavior.

Furthermore, Section 5.2 of the FDOT TEM (2024) indicates that adequate illumination be provided at the proposed crosswalk in accordance with FDM 222 and 231. Therefore, a lighting evaluation should be conducted.

Note, this study's draft was entered into the Department's Electronic Review Comments (ERC) for review and all related comments and responses are provided in **Appendix E**. Furthermore, coordination with the Monroe County Sheriff's Office and the Marathon City Manager concluded that the installation of a PHB or midblock traffic control signal is not considered to be favorable at this time. Details of the coordination had between the Monroe County Sheriff's Office, the Marathon City Manager, and the Department is provided in **Appendix F**.

Appendix G Intersection Safety Study – SR 5/US 1 (Overseas Highway) and Sombrero Beach Road







Intersection Safety Study

SR 5/US 1 (Overseas Highway) and Sombrero Beach Road
Monroe County, FL

Section No. 90040000, Milepost 2.050

FDOT Task Work Order No. 16
Contract No. C-AO79
FPID No. 444438-1-32-01

DRAFT

Prepared for

FDOT

Florida Department of Transportation
District Six Traffic Operations Office

March 2024

Intersection Safety Study

SR 5/US 1 (Overseas Highway) and Sombrero Beach Road
Section No. 90040000, Milepost 2.050
Monroe County, Florida

Task Work Order No. 16
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FPID No. 444438-1-32-01

PREPARED FOR

Florida Department of Transportation
District 6 Traffic Operations Office

March 2024

DRAFT

Executive Summary

This report documents the findings of a safety study conducted for the intersection of SR 5/US 1 (Overseas Highway) and Sombrero Beach Road, located in Monroe County, Florida. The Department initiated this study to develop potential safety improvements to address the identified crash patterns. As part of this safety study, traffic volumes, crash data, and spot speed data were reviewed and analyzed to determine safety improvements. This study was performed based on the scope of services outlined in Task 3 (Intersection Analysis) of the Districtwide Traffic Operations Studies contract. The report includes a description of existing conditions, a summary of data collected/analyzed, and study findings/recommendations.

- SR 5/US 1 is a divided, north/south, four-lane urban principal arterial.
- The posted speed limit along US 1 in the vicinity of the study intersection is 45 mph.
- Sombrero Beach Road is an undivided, two-lane, east/west urban major collector.
- The study intersection of US 1 and Sombrero Beach Road is a four-legged signalized intersection with exclusive left-turn lanes in three directions.
- There are pedestrian features such as high emphasis crosswalks, pedestrian signals with push buttons.
- There is a sidewalk on the east side of US 1, and a multi-purpose trail as well as a bike lane on the west side of US 1.
- Lighting exists on the west side of US 1.
- The north/south left-turn movements have “protected/permissive” phasing with a five-section signal head in each direction.
- The east/west movements have “split” phasing.
- The land uses surrounding the study intersection are primarily commercial.

Based on the findings of the analyses conducted as part of this study, the following improvements are suggested for the Department’s consideration:

Short-Term Improvements

- Replace the existing Pedestrian Warning sign facing southbound traffic with a fluorescent yellow-green sign.
- Perform necessary repairs to address damaged curb/sidewalk and drop-off at the third driveway north of the intersection (east side of US 1). Also, install missing STOP sign facing westbound traffic.

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- Refurbish pavement markings (left-turn/through/right arrows, lane lines, double yellow lines) on the east leg. Also, repair pavement damage (right-turn lane) on this leg.
- Replace the existing No U-Turn sign (in the median) facing southbound traffic.
- Install Keep Right sign and No-Turns sign at the median nose on the north leg.
- Replace the Right Lane Must Turn Right sign facing northbound right-turn traffic. Also, install an additional Right Lane Must Turn Right sign, right-turn arrows, and ONLY markings to emphasize the right-turn only condition.
- Replace the pedestrian education plaque (R10-3i) on the northeast corner.
- Trim roadside landscaping and bushes on the northeast corner to improve the visibility of pedestrian warning sign facing westbound traffic and pedestrians on the northeast corner.
- Add Signal Ahead (W3-3) signs in the northbound/southbound directions, as the nearest signals are more than one mile away along US 1.
- Refurbish detectable warning pads at the west leg crosswalk.
- Install a new pedestrian warning sign facing eastbound traffic, as it was observed to be missing during the field review.
- Install ‘‘No Crossing’’ and ‘‘Use Crosswalk’’ signs (in the median) on the north leg to direct pedestrians to use the crosswalk at the intersection.
- Install advance street name signs in the northbound/southbound directions to reduce the potential for rear-end and sideswipe crashes.
- Install Turning Vehicles Stop for Pedestrians sign on the east and south legs, to help reduce the potential for pedestrian/bicycle crashes.
- Provide striping as shown in the concept drawing to channelize the westbound right-turn movement.
- Install a No Left-Turn sign facing eastbound traffic at the first driveway east of the study intersection (on the south side).

Mid-Term Improvements

- Reconstruct the third driveway north of the intersection (east side of US 1) to accommodate turns by larger vehicles.
- Extend the westbound right-turn lane to reduce the potential for rear-end and sideswipe crashes.
- Install pedestrian signals and push buttons to accommodate pedestrians crossing on the west leg. Also, install pedestrian push buttons to facilitate crossing the east leg.

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- Consider modifying the signal operating plan (SOP), as part of the upcoming signal retiming study, to enhance the intersection operations. For example, allowing pedestrians to cross the south leg while serving the southbound left-turn phase. Similarly, pedestrian phase on the north leg could be activated during the westbound phase. As such, the intersection operations could be more efficient as compared to the existing SOP, which activates the pedestrian phases (on the north/south legs) during the eastbound phase. As the eastbound volume is relatively low, the eastbound phase acts more like an exclusive pedestrian phase, which is not as efficient.
- A total of two alternatives (Alternatives 1 and 2) were developed to reduce the potential for left-turn crashes and to better accommodate the southbound left-turn volumes at the US 1 and Sombrero Beach Road. The 8-hour TMCs collected as part of this study indicate that the southbound left-turn volume is consistently heavy (242-307 vehicles per hour) and is close to or exceeded the 300 vehicles per hour threshold for dual left-turn lanes during 5 hours.
- A total of two alternatives (Alternatives 3A and 3B) were developed to reduce the potential for left-turn/angle crashes at the US 1 and 53rd Street intersection. A total of 30 left-turn/angle crashes were reported in the vicinity of this intersection.

Proposed alternatives are described in more detail in the following sections.

Alternative 1

- Install offset left-turn lanes in the northbound/southbound directions to improve visibility and reduce the potential for left-turn crashes.
- Replace the existing 5-section signal heads (associated with protected/permissive left-turn phase in northbound and southbound directions) with 4-section signal heads that display flashing yellow arrow (FYA) during the permissive phase. The 4-section signal head provides the flexibility to operate in ‘‘protected only’’ mode during certain times of the day. It is recommended that a structural analysis of the existing mast arms be conducted to determine if they can accommodate the additional signal heads associated with FYA.

Alternative 2

- Install an additional left-turn lane to provide dual southbound left-turn lanes with protected-only phasing, which will help reduce left-turn crashes and provide additional capacity.

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- Widen the east leg to provide two receiving lanes for southbound left-turn traffic. The new intersection geometry will require the relocation of at least two mast arms (one on the SW corner and one on the NE corner) and adjustment of signal heads facing westbound traffic.
- As the mast arm located on the NE corner needs to be replaced, it may be necessary to relocate the existing or install a new cabinet. If a new cabinet is needed, it should be placed in such a way that it does not cause any sight distance issues.

Alternative 3A

This alternative includes the improvements mentioned in Alternative 2 and median modifications at the 53rd Street median opening. These modifications include extending the median on US 1 to prohibit the westbound left-turn movement from 53rd Street. The alternative routes for the affected movement are shown in **Figures 6-1** and **6-2**.

Alternative 3B

This alternative includes the improvements mentioned in Alternative 2 and median opening closure at 53rd Street. As such, the westbound left-turn movement from 53rd Street and the southbound left-turn movement from US 1 will be prohibited. The alternative routes for the affected movements are shown in **Figures 6-3** and **6-4**.

DRAFT

Table of Contents

EXECUTIVE SUMMARY III
LIST OF TABLES VII
LIST OF FIGURES VIII
1 INTRODUCTION 1
2 EXISTING CONDITIONS 3
2.1 Intersection Geometry 3
2.2 Pedestrian/Bicycle and Transit Facilities 3
2.3 Traffic Signal 6
3 TRAFFIC DATA 7
3.1 Turning Movement Counts 7
3.2 Spot Speed Study 7
4 CRASH ANALYSIS 9
4.1 Crash Data Review 9
4.2 Expected Value Analysis 12
4.3 2023 Crash Data Analysis 13
4.4 Probable Causes and General Countermeasures 14
4.5 Crash Data for US 1 and 53RD Street Intersection (2018-2023) 15
5 FIELD REVIEW 17
6 OPERATIONAL ANALYSIS 32
7 PLANNED/COMPLETED ROADWAY IMPROVEMENTS 39
8 CONCLUSIONS AND RECOMMENDATIONS 40
9 AGENCY COORDINATION 44
10 BENEFIT/COST AND NET PRESENT VALUE ANALYSIS 45

List of Tables

Table 2-1: Location Characteristics 4
Table 3-1: Peak Hour TMCs at US 1 & Sombrero Beach Road (2/8/2024) 7
Table 3-2: Peak Hour TMCs at US 1 & 53RD Street (5/2/2024) 7
Table 3-3: Summary of 85TH Percentile Speed 8
Table 4-1: Crash Summary with EVA (2018 to 2022) 12
Table 4-2: Crash Statistics 13
Table 4-3: 2023 Crash Summary 14
Table 4-4: Probable Causes and General Countermeasures 14
Table 4-5: US 1 & 53RD Street Intersection Crash Summary 15
Table 6-1: Summary of Operational Analysis – Existing and Proposed Conditions 34

DRAFT

List of Figures

FIGURE 1-1: PROJECT LOCATION MAP....2
FIGURE 2-1: AERIAL VIEW OF STUDY INTERSECTION....5
FIGURE 4-1: CRASHES BY YEAR....10
FIGURE 4-2: CRASH SUMMARY....11
FIGURE 4-3: US 1 AND 53RD STREET COLLISION DIAGRAMS....16
FIGURE 5-1: VEHICLE TURNING IN A MEDIAN OPENING BETWEEN QUEUED VEHICLES....28
FIGURE 5-2: CRASH REPORT DESCRIBING VEHICLE TURNING OUT FROM 53RD ST. BETWEEN QUEUED VEHICLES....29
FIGURE 6-1: TRAFFIC REROUTING FOR ALTERNATIVE 3A – SCENARIO 1....35
FIGURE 6-2: TRAFFIC REROUTING FOR ALTERNATIVE 3A - SCENARIO 2....36
FIGURE 6-3: TRAFFIC REROUTING FOR ALTERNATIVE 3B - SCENARIO 1....37
FIGURE 6-4: TRAFFIC REROUTING FOR ALTERNATIVE 3B - SCENARIO 2....38

Appendices

APPENDIX A: STRAIGHT LINE DIAGRAM
APPENDIX B: EXISTING CONDITION SKETCH
APPENDIX C: SIGNAL TIMING SHEETS/AS-BUILT PLANS
APPENDIX D: TURNING MOVEMENT COUNTS
APPENDIX E: SPOT SPEED STUDY
APPENDIX F: COLLISION DIAGRAM AND CRASH SUMMARIES
APPENDIX G: PLANNED/COMPLETED ROADWAY IMPROVEMENTS
APPENDIX H: CONCEPTUAL IMPROVEMENT DIAGRAM
APPENDIX I: AGENCY COORDINATION
APPENDIX J: B/C, NPV ANALYSIS

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1 Introduction

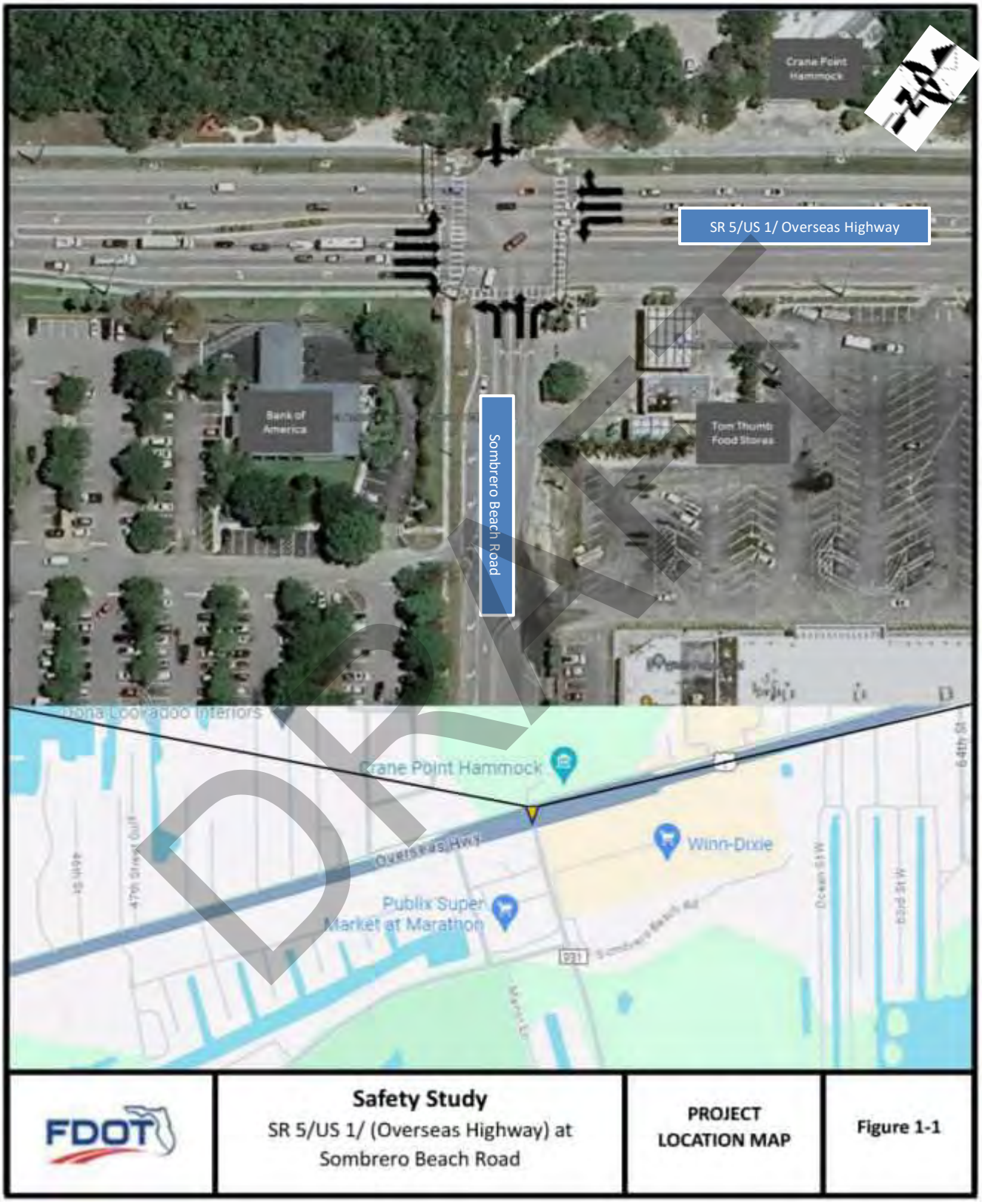
The Florida Department of Transportation (FDOT) has retained Kimley-Horn and Associates, Inc. (KHA), AECOM Technical Services, Inc. (AECOM) and Caltran Engineering Group (Caltran) to conduct a safety study for the intersection of SR 5/US 1 (Overseas Highway) and Sombrero Beach Road located in Monroe County, Florida (see **Figure 1-1**). This study was initiated by the Department to develop potential safety improvements to address the identified crash patterns. As part of this safety study, traffic volumes, crash data, and spot speed data were reviewed and analyzed to determine safety improvements.

This safety study is being completed in accordance with Task Work Order No. 16. The tasks completed by AECOM and Caltran as part of this study include:

- Existing Condition Diagram
- Crash Analysis and Collision Diagrams
- Field Reviews
- Turning Movement Counts (Caltran)
- Spot Speed Study (Caltran)
- Operational Analysis
- Development of Improvements
- Conceptual Improvement Diagrams
- Preliminary Estimate of Construction Cost
- B/C and NPV Analysis

The following sections of this report summarize the findings and results of the analyses conducted as part of this study.

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Figure 1-1: Project Location Map

2 Existing Conditions

SR 5/US 1 (Overseas Highway) is identified as Section 90040000 on the State Highway System, and the study intersection is located at Milepost 2.050 (see **Appendix A** for Straight Line Diagram). The study intersection is a four-legged signalized intersection. For the purposes of this study, US 1 is considered a north/south roadway. A condition diagram showing the existing features is included in **Appendix B**.

2.1 Intersection Geometry

The lane configuration for the intersection of US 1 and Sombrero Beach Road is described below:

Northbound US 1: This approach consists of one left-turn lane, two through lanes, and one right-turn lane. The length of the left-turn lane and right-turn lanes including taper length are approximately 200 feet and 330 feet, respectively.

Southbound US 1: This approach consists of one left-turn lane, one through lane, one shared through/right-turn lane and one bicycle lane. The length of the left-turn lane including taper length is approximately 550 feet.

Westbound Sombrero Beach Road: This approach consists of one left-turn lane, one shared through/left-turn lane, and one right-turn lane. The length of the right-turn lane including taper length is approximately 175 feet.

Eastbound Crane Point Hammock: This approach consists of one shared left/through/right-turn lane.

2.2 Pedestrian/Bicycle and Transit Facilities

The study intersection has the following facilities:

- Sidewalks exist on the east side of US 1 and on the south side of Sombrero Beach Road.
- Florida Keys Overseas Heritage Trail runs parallel to US 1 on the west side.
- Pedestrian signals are provided at the crosswalks on all legs, except the west leg crosswalk. Pedestrian push buttons exist to activate the pedestrian signals to cross US 1. Pedestrian signals on the east leg are on recall and they do not have pedestrian push buttons.
- Bicycle lane is present along US 1 in the southbound direction.
- Miami-Dade Transit (MDT) Route 301 (Dade-Monroe Express) starts at Florida City and

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terminates at the subject intersection.

- Key West Transit Lower Keys Shuttle (LKS) operates along US 1 and terminates in the northbound direction north of Sombrero Beach Road.

The land uses surrounding the study intersection consist of commercial and recreational. A Tom Thumb gas station and a shopping plaza exist on the east side of US 1 north of the intersection, while a Bank of America and a Publix Super Market are located on the east side of US 1, south of the intersection. The Crane Point Hammock Museum and a nature trail exist on the west side of the intersection. There are two full median openings in the vicinity of the study intersection: (1) approximately 450 feet south of the intersection, and (2) approximately 700 feet north of the intersection (see **Figure 2-1**).

Table 2-1: Location Characteristics

	SR 5 (US 1)	Sombrero Beach Road
Typical Section	Four-lane, two-way, divided	Two-lane, two-way, undivided
Functional Classification	Urban principal arterial	Urban major collector
Access Classification	6	No data available
Context Classification	C4 – Urban General	Not available
Speed Limit	45 MPH	30 MPH
Traffic Data (AADT) 2022	30,500 (PTMS Site 900110) 200 feet north of 70 Street (Marathon)	7,600 (PTMS Site 900055) 200 feet south of SR 5/US 1
Street Lighting	West side	One light pole east of the intersection

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Figure 2-1: Aerial View of Study Intersection

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2.3 Traffic Signal

Traffic signals are mounted horizontally on the mast arms and include backplates with retroreflective borders. Additionally, one vertical, pedestal-mounted traffic signal is provided for southbound traffic and one vertical, mast arm upright-mounted traffic signal is provided for northbound traffic. The northbound direction is controlled by three 3-section signal heads and one 5-section signal head. The southbound direction is controlled by two 3-section signal heads and one 5-section signal head. The 5-section signal heads allow for northbound and southbound protected/permissive left-turns. The westbound direction is controlled by one 4-section signal head and one 3-section signal head. The eastbound direction is controlled by two 3-section signal heads. The eastbound and westbound directions are split phased. The signal operates in 'free' mode at all times.

US 1 is considered the major street at this intersection and the northbound and southbound through phases operate in recall mode. All other phases are actuated. The signal timing plans, and the as-built plans are included as **Appendix C**. The pedestrian phase for east leg crosswalk operates in recall mode and there are no pedestrian push buttons. Pedestrian push buttons are provided for the north leg and south leg crosswalks across US 1. On the west leg, Florida Keys Overseas Heritage Trail crosses the Crane Point Hammock driveway, and the trail crossing is unsignalized (stop controlled).

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3 Traffic Data

3.1 Turning Movement Counts

Eight-hour turning movement counts (TMCs) were collected by Caltran on Thursday, February 8, 2024, for the US 1 and Sombrero Beach Road intersection. In addition, 8-hour TMCs for the US 1 and 53rd Street intersection were collected by Choice Engineering on Thursday, May 2, 2024. Eight-hour TMCs are included in **Appendix D**. The peak-hour TMCs for the US 1 and Sombrero Beach Road, and US 1 and 53rd Street intersections are summarized in **Table 3-1** and **Table 3-2**, respectively. As it can be seen from the **Table 3-1**, the southbound left-turn volume is consistently heavy (250-300 vehicles per hour), which is reaching the 300 vehicles per hour threshold for dual left-turn lanes.

Table 3-1: Peak Hour TMCs at US 1 & Sombrero Beach Road (2/8/2024)

Peak Hour	SR 5/US 1			SR 5/US 1			Sombrero Beach Road			Sombrero Beach Road		
	Southbound			Northbound			Westbound			Eastbound		
	L/U	T	R	L/U	T	R	L/U	T	R	L/U	T	R
7:45am – 8:45am	181	937	1	1	753	82	160	0	158	1	0	0
12:00pm –1:00pm	307	1087	7	5	905	118	281	2	314	5	6	8
4:15pm –5:15pm	248	1075	2	3	998	148	271	0	318	6	5	8

Note: L – Left-turn; U – U-turn; T – Through; R – Right-turn

Table 3-2: Peak Hour TMCs at US 1 & 53rd Street (5/2/2024)

Peak Hour	SR 5/US 1			SR 5/US 1			53rd Street			53rd Street		
	Southbound			Northbound			Westbound			Eastbound		
	L/U	T	R	L/U	T	R	L/U	T	R	L/U	T	R
12:00pm –1:00pm	35	1279	0	0	997	127	47	0	64	0	0	0
4:00pm –5:00pm	41	1173	0	0	1060	142	39	0	77	0	0	0

Note: L – Left-turn; U – U-turn; T – Through; R – Right-turn

3.2 Spot Speed Study

Spot Speed Studies were conducted by Caltran on February 8, 2024, at two locations (one on the south side, one on the north side of the intersection). See **Appendix E** for speed data. **Table 3-3** provides a summary of the 85th Percentile Speed by travel direction and location.

Based on the speed study results shown in **Table 3-3**, most of the northbound/southbound motorists do not appear to be traveling at high speeds in the vicinity of the study intersection.

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Table 3-3: Summary of 85th Percentile Speed

Location	Posted Speed Limit (MPH)	85th Percentile (MPH)
US 1 NB - North of Sombrero Beach Road	45	45.4
US 1 SB - North of Sombrero Beach Road	45	43.0
Location	**Posted Speed Limit (MPH)**	**85th Percentile (MPH)**
US 1 NB - South of Sombrero Beach Road	45	40.0
US 1 SB - South of Sombrero Beach Road	45	42.6

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4 Crash Analysis

4.1 Crash Data Review

The crash data for the 5-year period from 2018 to 2022 was obtained from Signal Four Analytics for the study intersection of US 1 and Sombrero Beach Road. The data was reviewed, and collision diagrams as well as crash summaries (see **Appendix F**) were developed to gain insight into the crash patterns. The following is a summary of findings:

- A total of 52 crashes (35 long-form, 17 short-form) were reported during the referenced five-year period, with 8 crashes in 2018, 13 crashes in 2019, 7 crashes in 2020, 15 crashes in 2021, and 9 crashes in 2022. See **Figure 4-1** for crash summary by year.
- There were 19 injury crashes and 33 property damage only (PDO) crashes. No fatal crashes were reported during the referenced 5-year period. The injury crashes accounted for 37 percent of the total crashes (see **Figure 4-2**).
- The most frequent crash types were rear-end (26 crashes or 50%) and left-turn (12 crashes or 23%), followed by sideswipe (6 crashes or 12%). See **Figure 4-2** for crash distribution by type.
- Based on the distribution by time of day, crashes have occurred throughout the day, with higher frequency during the afternoon period (2-6 PM).
- The vehicle travel direction for 26 rear-end crashes is summarized below. Careless driving and followed too closely were stated as contributing causes for 92% of the crashes. Based on time of day, 23% of these crashes occurred during nighttime and 50% occurred between 2 PM and 6 PM. Four rear-end crashes resulted in injuries.
    - Northbound – 12 crashes
    - Southbound – 10 crashes
    - Eastbound – 2 crashes
    - Westbound – 2 crashes
- Eleven out of the 12 left-turn crashes (92%) involved southbound left-turn vehicles and 9 left-turn crashes resulted in injuries. Crash data indicates that Failed to Yield-Right-Of-Way was stated as a contributing cause for 8 left-turn crashes (7 southbound left-turn crashes). In addition, misjudgment of travel speeds and gaps in opposing traffic by left-turning vehicles may have contributed to left-turn crashes. Based on time of day, 42% of the left-turn crashes occurred between 4 PM and 6 PM.
- Four out of the 6 sideswipe crashes (92%) involved southbound vehicles, while the remaining two sideswipe crashes involved westbound vehicles. There were no injury crashes.

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- There were 3 crashes that involved bicyclists and one crash involved a pedestrian. The following is a brief description based on a cursory review of the crash reports.
    - A vehicle traveling northbound on US 1 in the right-turn lane hit a bicycle, which was crossing the south leg crosswalk (west to east).
    - A vehicle traveling southbound on US 1 in the rightmost lane hit a bicycle, which was crossing the south leg (it appears there was no crosswalk at the time). The crash occurred during nighttime.
    - A vehicle traveling northbound on US 1 in the inside lane, hit a pedestrian who was crossing the north leg (east to west), not in crosswalk. The crash occurred during nighttime.
    - A vehicle was traveling westbound on Sombrero Beach Road in the right-turn lane, and while turning hit a bicycle which was crossing the east leg in crosswalk (south to north). The crash occurred during nighttime.
- The percentage of non-daylight condition crashes (dark, dawn, and dusk) is 21%, which is lower than the districtwide average of 30%.
- The percentage of wet roadway surface crashes is 6%, which is less than the districtwide average of 18%.

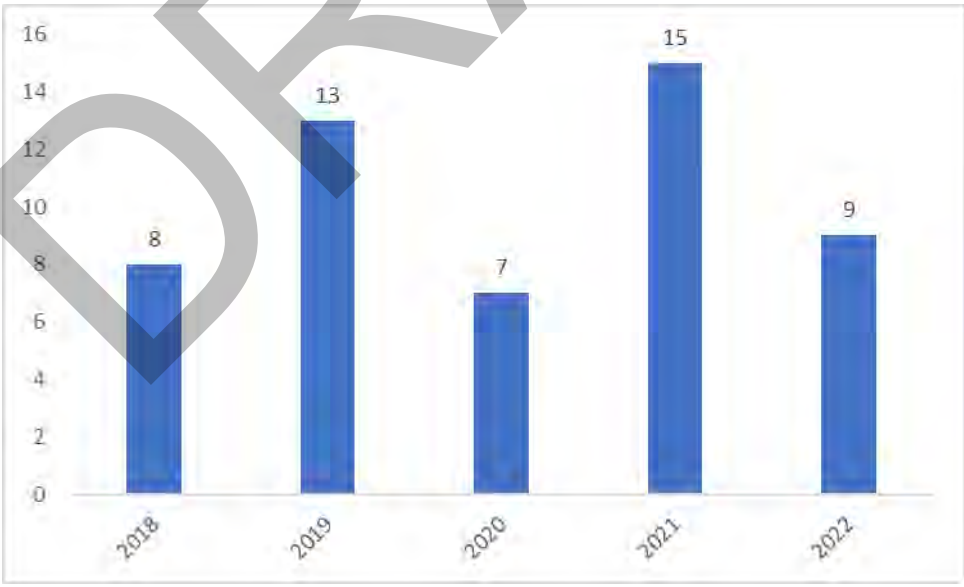
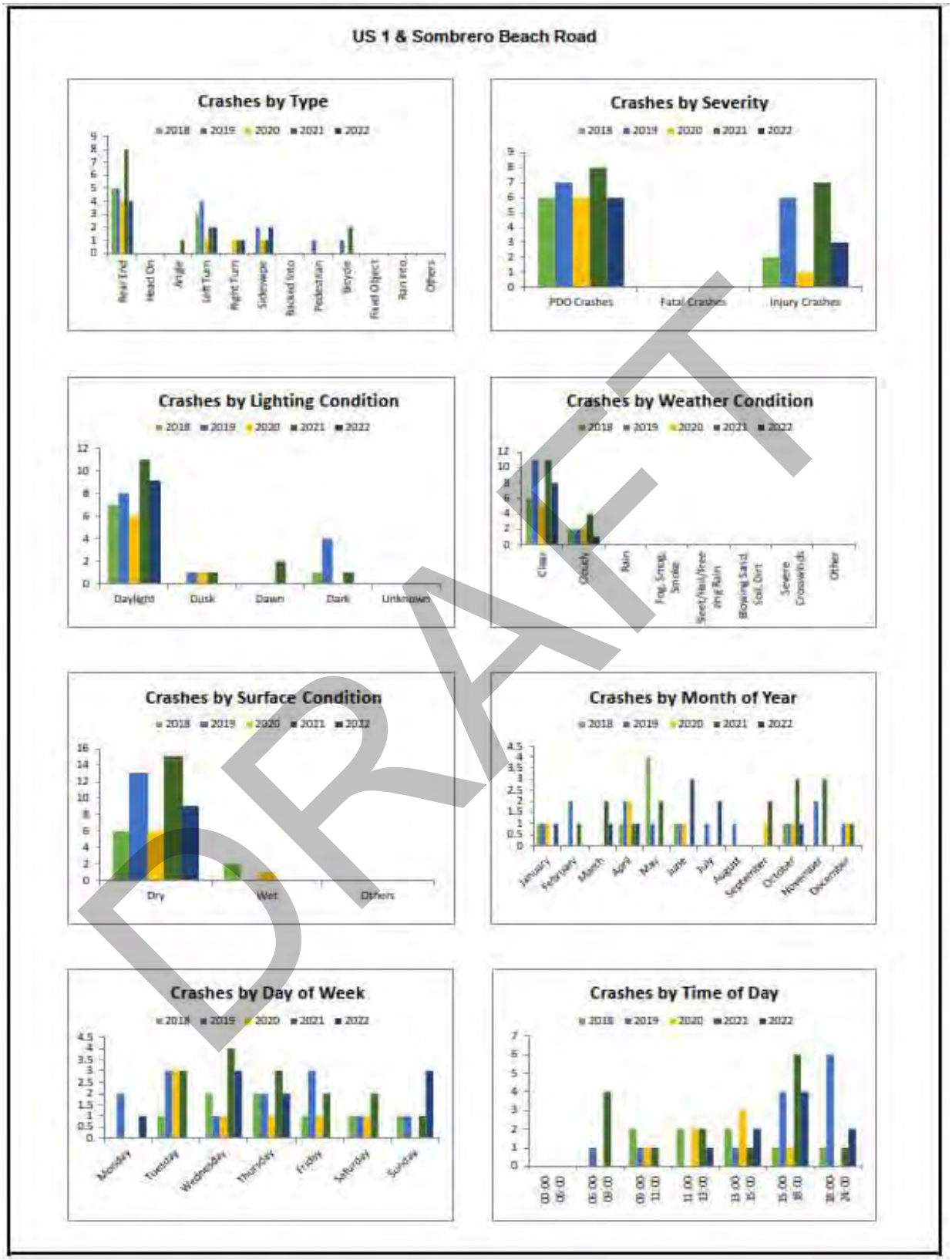


Figure 4-1: Crashes by Year

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Figure 4-2: Crash Summary

4.2 Expected Value Analysis

An Expected Value Analysis (EVA) was performed to identify prevalent crash patterns. The EVA compares crash frequencies for the study intersection with similar intersections in District Six. If the mean crashes per year was greater than the 90th or 95th percentile values, then that crash type was deemed to be abnormally high. **Table 4.1** provides a summary of EVA for crash types and the detailed analysis is provided in **Appendix F**. **Table 4.1** identifies bicycle crash frequency (90th percentile) as abnormally high. However, the mean bicycle crash frequency is 0.6 crashes per year.

Table 4-1: Crash Summary with EVA (2018 to 2022)

US 1 & Sombrero Beach Road 4 Lane x 2 Lane, Signalized, with Turn Lanes, 4 Leg Intersection, Divided		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%	Expected Annual Crash Value		90 %ile	95 %ile
		Year								Abnormally High Crashes per year			
		2018	2019	2020	2021	2022				90th percentile	95th percentile		
CRASH TYPE	Rear End	5	5	4	8	4	26	5.20	50.0%	22.85	25.34		
	Head On	0	0	0	0	0	0	0.00	0.0%	0.20	0.23		
	Angle	0	0	0	1	0	1	0.20	1.9%	8.80	9.68		
	Left Turn	3	4	1	2	2	12	2.40	23.1%	6.22	6.98		
	Right Turn	0	0	1	1	1	3	0.60	5.8%	0.76	0.87		
	Sideswipe	0	2	1	1	2	6	1.20	11.5%	6.33	7.08		
	Backed Into	0	0	0	0	0	0	0.00	0.0%	0.56	0.64		
	Pedestrian	0	1	0	0	0	1	0.20	1.9%	0.75	0.85		
	Bicycle	0	1	0	2	0	3	0.60	5.8%	0.46	0.52	X	X
	Fixed Object	0	0	0	0	0	0	0.00	0.0%	1.45	1.64		
	Other Non-Collisions	0	0	0	0	0	0	0.00	0.0%	1.18	1.33		
	Overturn/Rollover	0	0	0	0	0	0	0.00	0.0%	0.71	0.82		
	Others	0	0	0	0	0	0	0.00	0.0%	3.91	4.36		
	Total Crashes	**8**	**13**	**7**	**15**	**9**	**52**	**10.40**	**100.0%**	**47.72**	**52.65**		
SEVERITY	PDO Crashes	6	7	6	8	6	33	6.60	63.5%	36.53	40.47		
	Fatal Crashes	0	0	0	0	0	0	0.00	0.0%	0.33	0.38		
	Injury Crashes	2	6	1	7	3	19	3.80	36.5%	13.28	14.68		
LIGHTING CONDITIONS	Daylight	7	8	6	11	9	41	8.20	78.8%	33.13	36.51		
	Dusk	0	1	1	1	0	3	0.60	5.8%	1.21	1.36		
	Dawn	0	0	0	2	0	2	0.40	3.8%	0.77	0.87		
	Dark	1	4	0	1	0	6	1.20	11.5%	14.23	15.84		
	Unknown	0	0	0	0	0	0	0.00	0.0%	0.20	0.23		
SURFACE CONDITIONS	Dry	6	13	6	15	9	49	9.80	94.2%	40.88	45.11		
	Wet	2	0	1	0	0	3	0.60	5.8%	7.30	8.11		
	Others	0	0	0	0	0	0	0.00	0.0%	3.91	4.36		

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Safety ratios were calculated based on the Rate-Quality Control Method. This method uses crash rate as a criterion for identifying high crash locations and applies a statistical test to determine whether the crash rate for the study location is significantly abnormal as compared to a predetermined crash rate for locations of similar characteristics. The safety ratio is based on the crash rate for the study location and critical crash rate for similar locations. It takes into account the total number of crashes while the

EVA analyzes specific crash types. Intersections with a safety ratio equal to or greater than one are considered high crash locations. As shown in **Table 4-2**, the safety ratio is less than one for 2018 and 2019, and as such this location is not considered a high crash location. **Table 4-2** also provides calculations related to statistical significance and confidence level. It should be noted that a minimum crash frequency of eight crashes per year is required for statistically valid results. Typically, 99.95% confidence level is used as the threshold for high crash locations in urban areas. The level of statistical significance is calculated using the following formula.

$$Level\ of\ Statistical\ Significance = \frac{ACR - A + \frac{1}{2M}}{\sqrt{\frac{A}{M}}}$$

Where:

ACR = Actual crash rate for the study location (crashes per million entering vehicles)

A = Districtwide average crash rate for highway category being tested (crashes per million entering vehicles)

M = Average vehicle exposure spot (million entering vehicles)

Table 4-2: Crash Statistics

Year	2018	2019	2020	2021	2022
Number of Crashes	8	13	7	15	9
Average Daily Traffic (ADT)	28,000	29,000	24,000	30,500	30,500
Actual Crash Rate (ACR)	0.783	1.228	0.799	1.347	0.808
District 6 Average Crash Rate (A)	1.107	1.057	#N/A	#N/A	#N/A
Average Vehicle Exposure (M)	10.220	10.585	8.760	11.133	11.133
Critical Crash Rate (CCR)	2.142	2.050	#N/A	#N/A	#N/A
Safety Ratio	0.365	0.599	#N/A	#N/A	#N/A
Statistical Significance	-0.837	0.691	-	-	-
Confidence Level	50.00%	75.00%	#N/A	#N/A	#N/A

4.3 2023 Crash Data Analysis

Crash data for the year 2023 was retrieved to supplement the previously analyzed 5-year crash data (2018-2022). The Signal Four data indicates that ten crashes were reported in 2023, which include four left-turn, three rear-end, two sideswipe and one angle crash. The crash statistics for this year are summarized in **Table 4-3**. Three out of ten crashes involved injuries and one crash occurred during nighttime.

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Table 4-3: 2023 Crash Summary

Signal Four Data SR 5/US 1 and Sombrero Beach Road		2023 Crashes
CRASH TYPE	Angle	1
	Rear End	3
	Left Turn	4
	Sideswipe	2
	Total Crashes	**10**

4.4 Probable Causes and General Countermeasures

Table 4-4 summarizes probable causes and general countermeasures for left-turn, bicycle, and rear-end crashes.

Table 4-4: Probable Causes and General Countermeasures

Crash Type	Crash Stats	Probable Causes	General Countermeasures
Left-turn	12 crashes	• North-south left-turn vehicles can potentially block each other's view of opposing vehicles • Misjudgment of travel speeds and gaps by left-turning vehicles	• Offset left-turn lanes (north-south) • FYA during permissive left-turn phase (north-south) • Protected-Only left-turn phase (north-south)
Bicycle/ Pedestrian	3 bicycle crashes/ 1 pedestrian crash	• Conflicts with right turning vehicles • Cyclists using sidewalk • Pedestrians crossing US 1 not in crosswalk	• Install Turning Vehicles Stop for Pedestrian signs • Install ''No Crossing'' and ''Use Crosswalk'' signs
Rear-end/ Sideswipe	26 crashes/ 6 crashes	• Nearest signal more than 1 mile south and more than 1.5 miles north • Heavy volumes and peak hour congestion	• Install Signal Ahead signs in north/south directions • Install advance street name signs in the north /south directions

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4.5 Crash Data for US 1 and 53rd Street Intersection (2018-2023)

Crash data for the 6-year period (2018-2023) was retrieved and collision diagrams were developed (see **Figure 4-3)**. During our coordination with the Monroe County Sheriff's Office, Sergeant Korzen and Officer Leird stated that this median opening experiences angle crashes involving westbound left-turn vehicles from 53rd Street and northbound through vehicles on US 1. A total of 49 crashes were reported in the vicinity of the US 1/53rd Street intersection, of which majority were angle crashes (see **Table 4-5** for crash summary). Four crashes occurred during nighttime and two crashes occurred during wet road surface conditions. Twenty seven out of the 49 crashes involved injuries.

Table 4-5: US 1 & 53rd Street Intersection Crash Summary

Crash Data SR 5/US 1 and 53rd Street		2018 Crashes	2019 Crashes	2020 Crashes	2021 Crashes	2022 Crashes	2023 Crashes	Total Crashes
CRASH TYPE	Angle	4	2	2	7	3	5	23
	Bicycle	3	1		1	1	2	8
	Left-Turn	1	1	2	1		2	7
	Rear-End		3	1	1		1	6
	Sideswipe	1					1	2
	Head-On		1	1				2
	Right-Turn		1					1
	Total Crashes	**9**	**9**	**6**	**10**	**4**	**11**	**49**

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Figure 4-3: US 1 and 53rd Street Collision Diagrams

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5 Field Review

A field review was conducted by qualified traffic engineers on March 13, 2024, during Midday and PM peak periods to observe existing conditions. The following is a list of observations:

General Observations:

1. The Keep Right sign at the median nose on the north leg appears to have been hit (see **Photo 1**).
2. Lane lines on the north leg (in the northbound lanes) are faded (see **Photo 2**). Also, the north leg crosswalk, especially in the rightmost lane is slightly faded.
3. Damaged curb/sidewalk was observed (see **Photo 3**) at the third driveway (Winn-Dixie shopping plaza) north of the intersection (east side of US 1). In addition, STOP sign facing westbound traffic appears to have been hit by a right-turn vehicle (see **Photo 3**). It is possible that larger vehicles are encroaching onto the sidewalk/curb as they turn onto US 1, which may be a possible reason for damaged curb/sidewalk and STOP sign. A Miami-Dade transit bus was observed to turn right onto US 1 at this driveway. While making this turn, the bus appears to have encroached onto the sidewalk (see **Photo 7**). Also, drop off was observed at this location (see **Photo 3**).
4. Pavement markings (left-turn/through/right arrows, bike lane markings, double yellow lines) on the east leg are faded (see **Photo 4**). Also, observed pavement damage in the right-turn lane on this leg (see **Photos 5 and 9**).
5. Sight distance for westbound right-turn vehicles at the Tom Thumb gas station appears to be restricted due to landscaping and other objects on the northeast corner (see **Photo 6**).
6. No U-Turn sign facing southbound traffic is faded.
7. Right Lane Must Turn Right sign facing northbound right-turn traffic appears to be faded.
8. Pedestrian education plaque (R10-3i) on the northeast corner is faded (see **Photo 8**).
9. Roadside landscaping on the northeast corner partially blocks the pedestrian warning sign facing westbound traffic (see **Photos 4 and 9**). Also, some bushes on this corner could potentially block the view for westbound right-turn motorists of pedestrians, especially those in wheelchairs waiting on the northeast corner (see **Photo 4)**.
10. Detectable warning pads at the west leg crosswalk are damaged (see **Photo 10**). In addition, it appears that a pedestrian warning sign facing eastbound traffic (on the west leg) has been hit and only the base was observed during the field review (see **Photo 10**). Also, there are no pedestrian signals to accommodate pedestrian crossing at this crosswalk (see **Photo 11**).

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Midday Peak Observations:

11. In general, most of the pedestrians/bicyclists were observed to cross at crosswalks during their designated time (see **Photo 12**).
12. Southbound left-turn queues in the range of 9-13 vehicles were observed (see **Photo 13**). Cycle failures for this movement were observed. Only 1-2 southbound left-turn vehicles were observed to clear the intersection during the permissive phase due to inadequate gaps in northbound through traffic.
13. Southbound through queues in the range of 15-20 vehicles were observed (see **Photo 13).**
14. Northbound through queues in the range of 20-25 vehicles were observed. During some cycles, the northbound queues were observed to be more than 30 vehicles, especially when north/south leg crosswalks pedestrian phases were activated (see **Photo 14).**
15. Northbound through vehicle queues frequently extended beyond the 53rd Street median opening. Observed vehicles turning in and out from 53rd Street between the queued northbound vehicles on US 1 (see **Photo 15**). The conditions as shown in **Figure 5-1** were observed during the field review. Also, one of the crash report narratives indicated similar condition with vehicles coming out from 53rd Street (see **Figure 5-2**).
16. Westbound queues of approximately 7-9 vehicles were observed (see **Photo 17).**

PM Peak Observations:

17. Similar to the Midday (MD) peak period, most of the pedestrians/bicyclists were observed to cross at crosswalks during their designated time.
18. Southbound left-turn queues in the range of 12-15 vehicles were observed. Cycle failures for this movement were observed. Only 1-2 southbound left-turn vehicles were observed to clear the intersection during the permissive phase due to inadequate gaps in northbound through traffic.
19. Southbound through queues were relatively low as compared to the midday peak period (in the range of 8-10 vehicles) were observed (see **Photo 18).**
20. Northbound through queues in the range of 25-30 vehicles were observed. During some cycles, the northbound queues were observed to be more than 30 vehicles, especially when north/south leg crosswalks pedestrian phases were activated (see **Photo 19).**
21. Westbound queues in the range of 7-8 vehicles in the left-turn lanes and westbound queues in the range of 10-12 vehicles in the right-turn, were observed (see **Photo 20).**

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Study Photographs



Photo 1: Looking south – Keep Right sign is missing from the median nose on the north leg



Photo 2: Looking west – Lane lines on the north leg (in the northbound lanes) are worn and faded

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Photo 3: Looking north - Damaged curb/sidewalk, drop off at the third driveway north of the intersection; also note bent STOP sign facing westbound traffic



Photo 4: Looking west - Pavement markings on the east leg are faded; also bushes on NE corner could potentially block the view for WB right-turn motorists of pedestrians on the NE corner

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Photo 5: Looking West - Pavement damage in the right-turn lane on the east leg



Photo 6: Looking North – Line of sight for westbound right-turn vehicles at the Tom Thumb gas station

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Photo 7: Looking North – Bus appears to have encroached onto the sidewalk

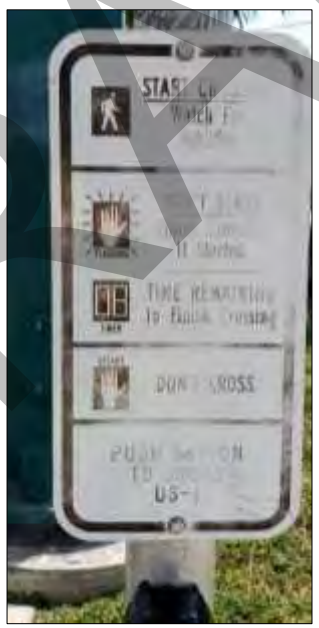


Photo 8: Looking North – Pedestrian education plaque on the northeast corner is faded

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Photo 9: Looking West – Roadside landscaping on the northeast corner partially blocks the pedestrian warning sign

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Photo 10: Looking East – Detectable warning pad is damaged; pedestrian warning sign facing eastbound traffic appears to have been hit and only the base is visible

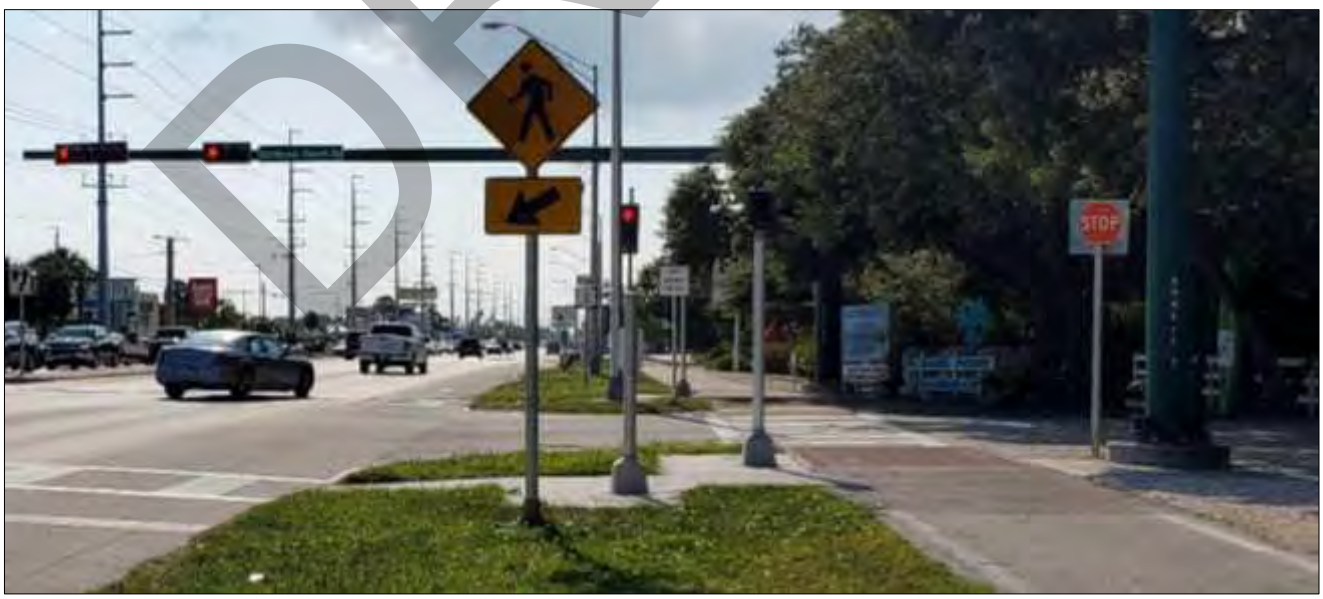


Photo 11: Looking South – Pedestrian signals to accommodate crossing at this crosswalk do not exist

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Photo 12: Looking North – Bicyclists observed to cross at crosswalks during their designated time



Photo 13: Looking North – Long southbound queues during MD peak

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Photo 14: Looking South – Long northbound queues during MD peak

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Photo 15: Looking South – NB through vehicle queues extend beyond the 53rd Street; vehicles turning in and out from 53rd Street between queued vehicles during MD peak

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Photo 16: Looking North – NB through vehicle queues extend beyond the 53rd Street; vehicles turning out from 53rd Street between queued vehicles during MD peak

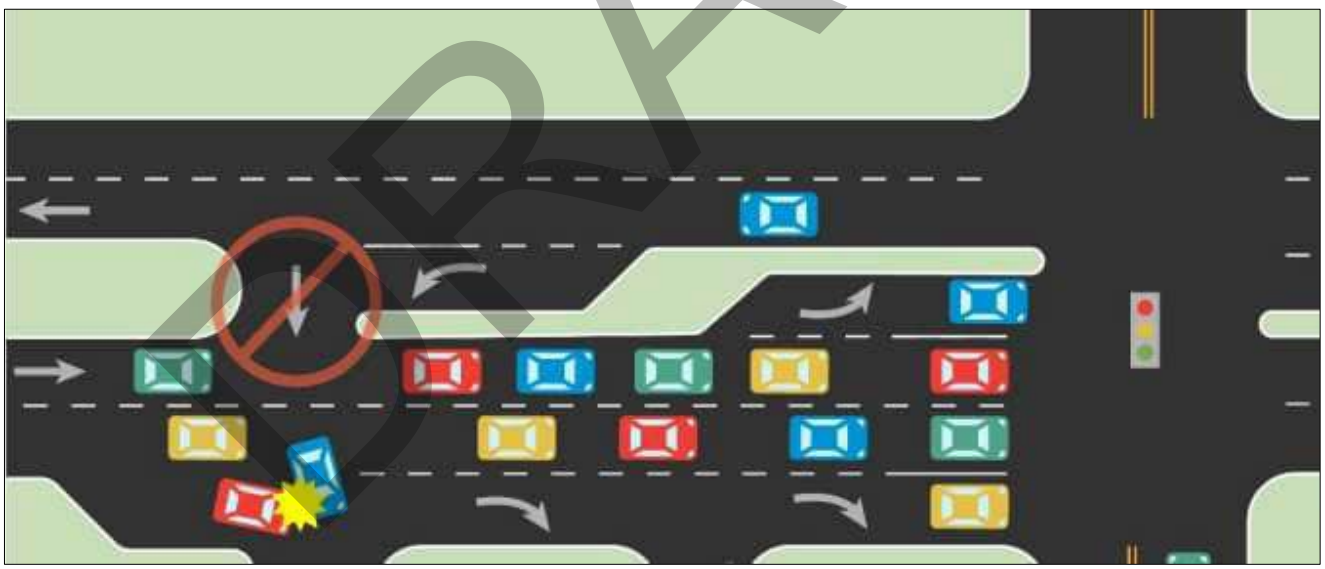


Figure 5-1: Vehicle turning in a median opening between queued vehicles

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Date of Crash	Date of Report	Invest. Agency Report Number	HSMV Crash Report Number
17/Mar/2018 08:55 AM	17/Mar/2018 08:55 AM	MCSO18OFF001955	87491760

ID Number	Rank	Name	Troop / Post	Officer Agency	Phone Number	Date Created
9455	DEPUTY	MARTIN-REYES, JUAN	MCSO/DIST 4/5	MONROE COUNTY SO	305-289-2430	Mar 17, 2018

Vehicle 2 was traveling eastbound in the inside lane on US 1 at approximately Mile-Marker 49.5. Vehicle 1 was stopped at the stop sign at 53rd Street and US 1, waiting to make a left turn (Westbound) onto US 1. An 18 wheeler was stopped eastbound on the outside lane of US 1 and 53rd Street waiting to make a right turn onto 53rd Street. Vehicle 1 proceeded to make the left turn onto US 1 from 53rd Street while his vision of the eastbound inside lane of US 1 was blocked by the 18 wheeler. As Vehicle 1 approached the inside lane, Vehicle 2, who had the right of way, crossed in front of the path of Vehicle 1. Vehicle 1 crashed its front onto the right front quarter panel and right front door of Vehicle 2. Both vehicles sustained approximately $4,000 worth of damage each.

REPORTING OFFICER

ID/Badge #	Rank and Name	Department	Type of Department
9455	DEPUTY MARTIN-REYES, JUAN	MONROE COUNTY SO	SO

Figure 5-2: Crash report describing vehicle turning out from 53rd St. between queued vehicles



Photo 17: Looking East – View of Westbound queues during MD peak

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Photo 18: Looking North – View of southbound queues during PM peak

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Photo 19: Looking South – Long northbound queues during PM peak



Photo 20: Looking East – View of Westbound queues during PM peak

6 Operational Analysis

Operational analysis was performed using Synchro software to evaluate the intersection performance (during AM, MD, and PM peak hours) under the existing and proposed conditions. The major intersection characteristics used in Synchro include traffic volumes, signal phasing/timing information, and roadway geometry. Synchro uses this information and other input data in conjunction with procedures documented in the Highway Capacity Manual to estimate Level of Service (LOS), delay, and queue lengths. The signal timing information and as-built plans used in this analysis was provided by FDOT District 6 and is included in **Appendix C**. The following is a summary of results from the operational analysis.

Existing Conditions:

Operational analysis for the existing conditions indicates that the study intersection operates at LOS B during the AM peak hour, at LOS C during the Midday (MD) and PM peak hours.

Existing splits were also optimized, as part of the operational analysis. The results of the operational analysis conducted with split optimization indicated that the overall intersection LOS remain unchanged, but the overall delay is expected to increase.

Proposed Conditions:

Alternative 1: Replace the existing 5-section signal heads in north/south directions with 4-section signal heads that display flashing yellow arrow (FYA) during the permissive phase. Operationally, the FYA and the current protected-permissive phase would function in a similar manner, and therefore it was assumed that LOS/Delay would be similar.

Alternative 2: Install an additional southbound left-turn lane at the US 1 & Sombrero Beach Road intersection to provide dual left-turn lanes, implement protected-only left-turn phasing and optimize splits. The results of the operational analysis indicated that some of the green time for southbound left-turn phase can be reallocated to northbound through phase and thus reduce delay and queuing for that movement. The results of the operational analysis indicate that the intersection is expected to operate at an acceptable LOS. However, the intersection delay is expected to increase slightly during Midday peak period (see **Table 6-1** for details).

Alternative 3A: This alternative includes the improvements mentioned in Alternative 2 and median modifications at the 53rd Street median opening. These modifications include extending the median on US 1 to prohibit the westbound left-turn movement from 53 Street. For the purposes of operational

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analysis, two traffic rerouting scenarios were assumed: 1) 100% of the prohibited traffic will use the westbound left-turn lanes at the US 1 & Sombrero Beach Road intersection, 2) 50% of the prohibited traffic will use the westbound left-turn lanes at the US 1 & Sombrero Beach Road intersection and the remaining 50% will make a right-turn on US 1, followed by a northbound to southbound U-turn at the US 1 & Sombrero Beach Road intersection. **Figures 6-1 and 6-2** show the affected movements and the associated alternate routes. Also, these figures show the existing volumes plus the rerouted volumes. The results of the operational analysis indicate that the intersection is expected to operate at an acceptable LOS. However, the intersection delay is expected to increase slightly (see **Table 6-1** for details).

Alternative 3B: This alternative includes the improvements mentioned in Alternative 2 and median modifications at the 53rd Street median opening. These modifications include closing the median opening on US 1 to prohibit the westbound left-turn movement from 53rd Street and the southbound left-turn movement from US 1. For the purposes of operational analysis, two traffic rerouting scenarios were assumed: 1) 100% of the prohibited traffic will use the westbound left-turn lanes at the US 1 & Sombrero Beach Road intersection, 2) 50% of the prohibited traffic will use the westbound left-turn lanes at the US 1 & Sombrero Beach Road intersection and the remaining 50% will make a right-turn on US 1, followed by a northbound to southbound U-turn at the US 1 & Sombrero Beach Road intersection. **Figures 6-3 and 6-4** show the affected movements and the associated alternate routes. Also, these figures show the existing volumes plus the rerouted volumes. The results of the operational analysis indicate that the intersection is expected to operate at an acceptable LOS. However, the intersection delay is expected to increase slightly (see **Table 6-1** for details).

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Table 6-1: Summary of Operational Analysis – Existing and Proposed Conditions

Alternative	Configuration	SR 5/US 1 at Sombrero Beach Road	
		MD Delay (sec)/LOS	PM Delay (sec)/LOS
Existing	Existing Geometry	31.7/C	31.5/C
Alternative 1	FYA for NB/SB left-turn movements	31.7/C	31.5/C
Alternative 2	Install an additional SB left-turn lane, implement protected-only left-turn phase and optimize splits.	32.8/C	30.7/C
Alternative 3A	Alternative 2 + Median Modification at 53rd Street	34.8/C (Scenario 1) 35.1/D (Scenario 2)	32.5/C (Scenario 1) 32.6/C (Scenario 2)
Alternative 3B	Alternative 2 + Median Closure at 53rd Street	35.4/D (Scenario 1) 36.7/D (Scenario 2)	33.5/C (Scenario 1) 33.5/C (Scenario 2)

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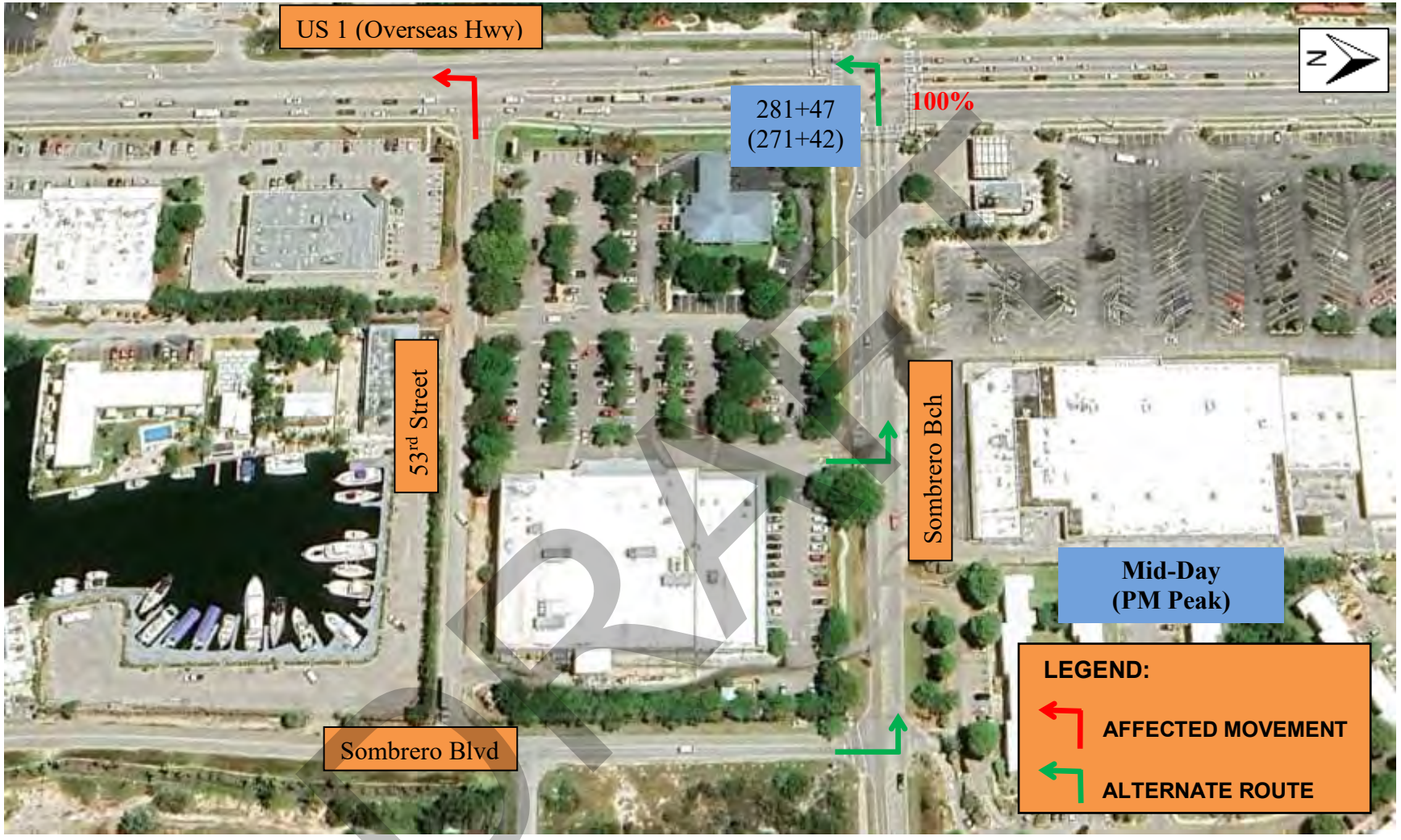


Figure 6-1: Traffic Rerouting for Alternative 3A – Scenario 1

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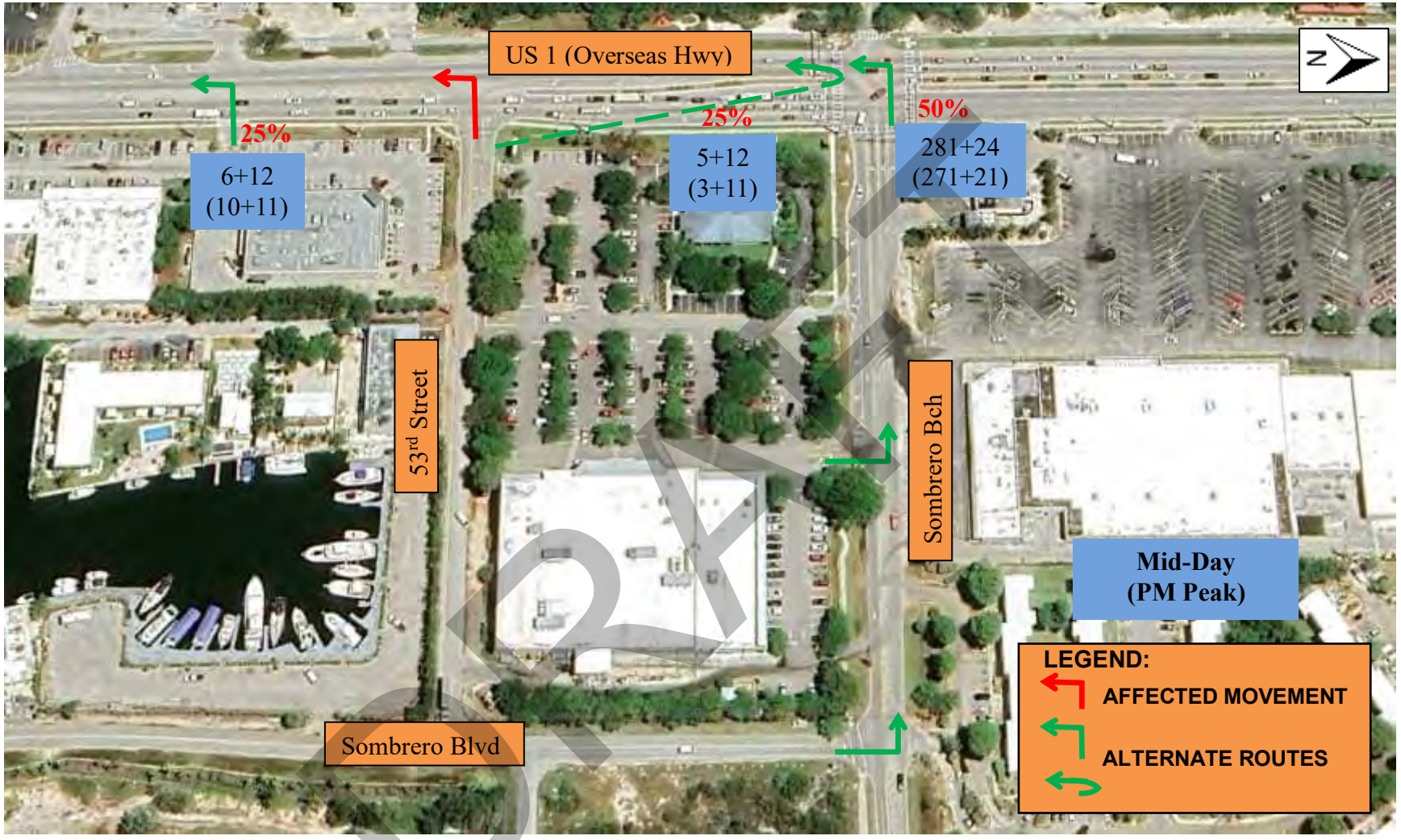


Figure 6-2: Traffic Rerouting for Alternative 3A - Scenario 2

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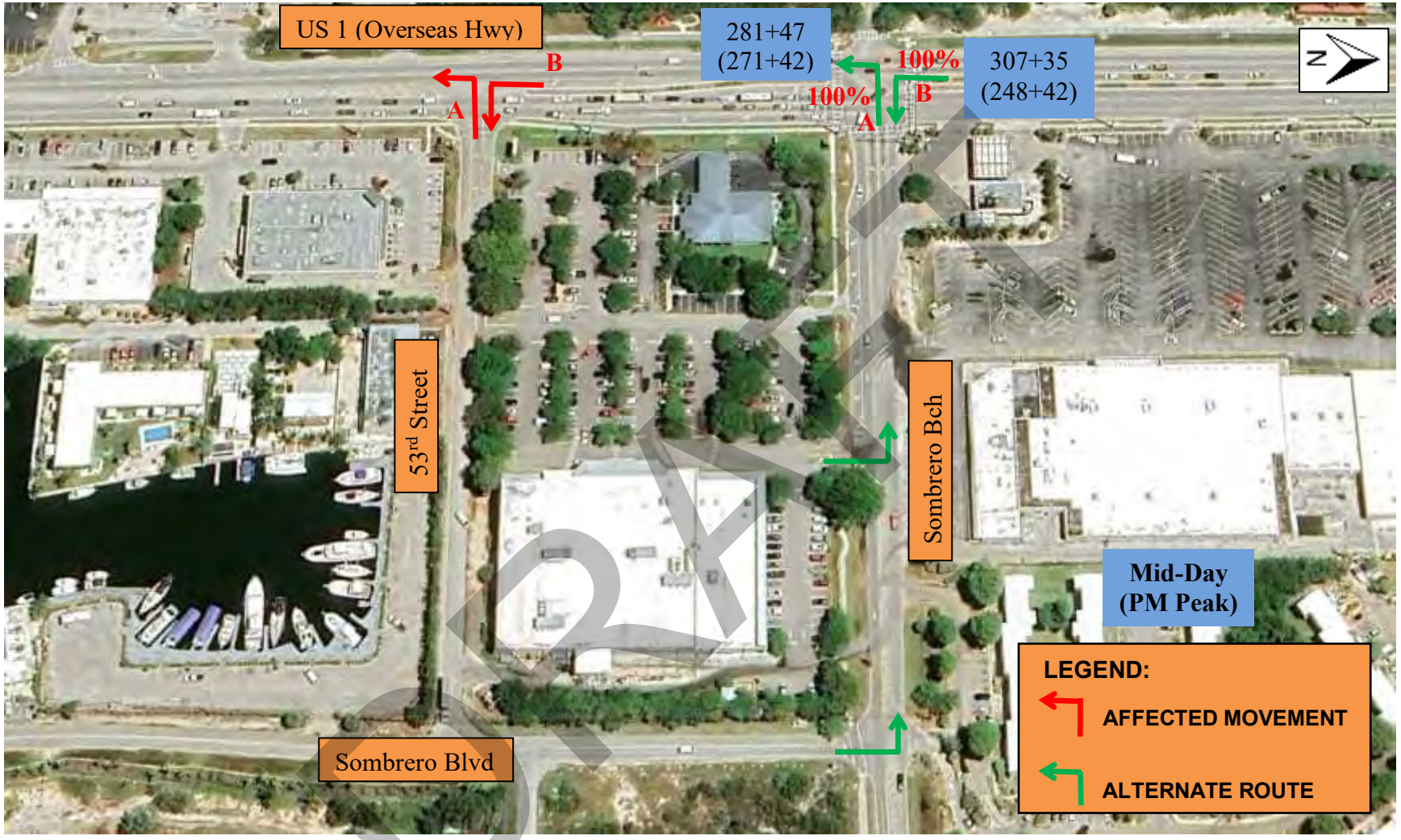


Figure 6-3: Traffic Rerouting for Alternative 3B - Scenario 1

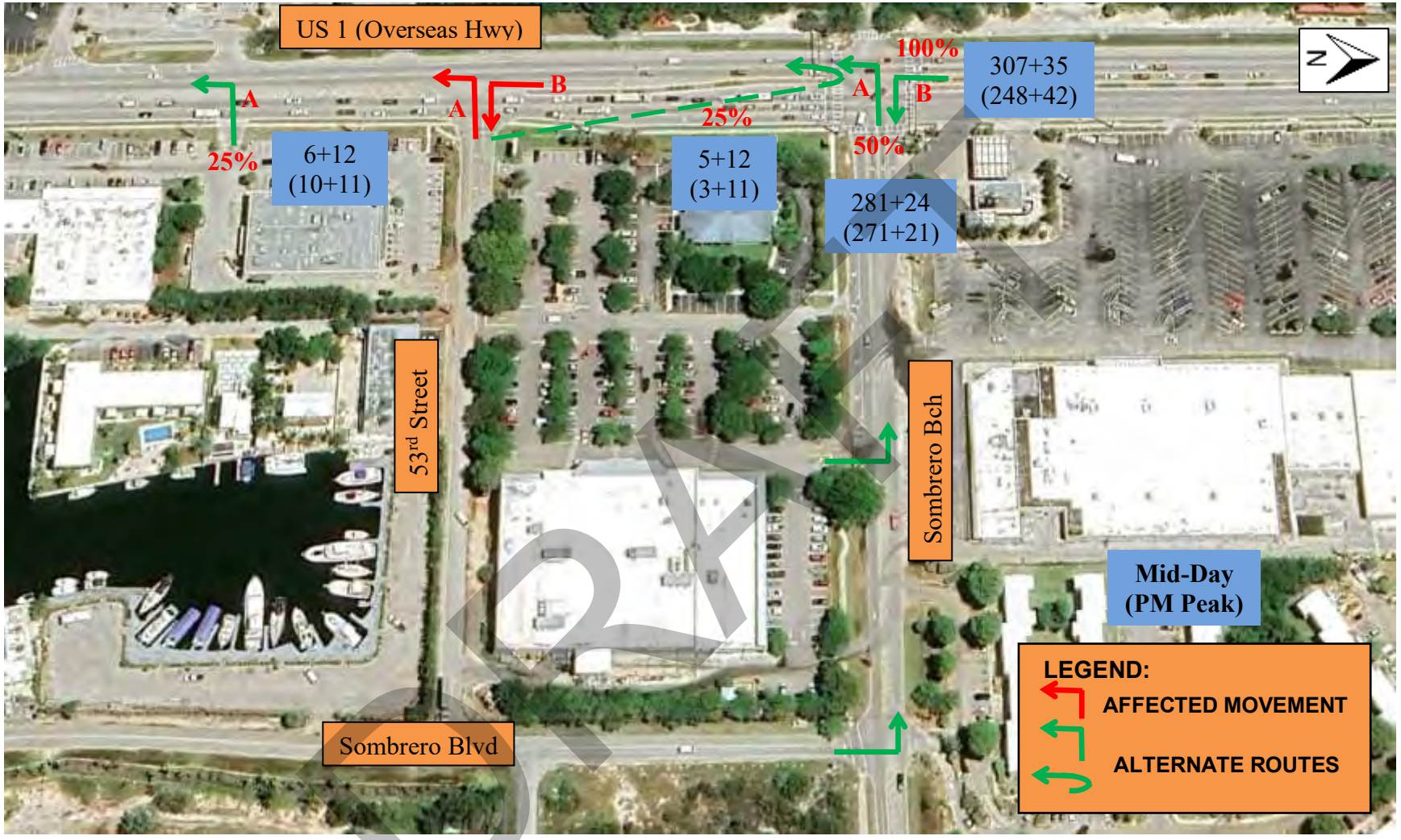


Figure 6-4: Traffic Rerouting for Alternative 3B - Scenario 2

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7 Planned/Completed Roadway Improvements

A review of the FDOT Five-Year Work Program for FY 2024-2028 indicated the following ongoing/ completed projects within the limits of the study intersection:

Ongoing

- FM 444920-1: SR 5/US 1 FL Keys Connected Vehicles Pilot. Project was let on July 13, 2021 (Expected to be completed in the next three months).

Completed

- 429187-4: Added auxiliary traffic signal heads facing northbound and southbound traffic in 2017.
- 434684-3: South leg crosswalk and pedestrian signals were added in June of 2021.

See **Appendix G** for the project information.

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8 Conclusions and Recommendations

Based on the findings of the analyses conducted as part of this study, the following improvements are suggested for the Department's consideration to help enhance safety:

Short-Term Improvements

- Replace the existing Pedestrian Warning sign facing southbound traffic with a fluorescent yellow-green sign.
- Perform necessary repairs to address damaged curb/sidewalk and drop-off at the third driveway north of the intersection (east side of US 1). Also, install missing STOP sign facing westbound traffic.
- Refurbish pavement markings (left-turn/through/right arrows, lane lines, double yellow lines) on the east leg. Also, repair pavement damage (right-turn lane) on this leg.
- Replace the existing No U-Turn sign (in the median) facing southbound traffic.
- Install Keep Right sign and No-Turns sign at the median nose on the north leg.
- Replace the Right Lane Must Turn Right sign facing northbound right-turn traffic. Also, install an additional Right Lane Must Turn Right sign, right-turn arrows, and ONLY markings to emphasize the right-turn only condition.
- Replace the pedestrian education plaque (R10-3i) on the northeast corner.
- Trim roadside landscaping and bushes on the northeast corner to improve the visibility of pedestrian warning sign facing westbound traffic and pedestrians on the northeast corner.
- Add Signal Ahead (W3-3) signs in the northbound/southbound directions, as the nearest signals are more than one mile away along US 1.
- Refurbish detectable warning pads at the west leg crosswalk.
- Install a new pedestrian warning sign facing eastbound traffic, as it was observed to be missing during the field review.
- Install ‘‘No Crossing’’ and ‘‘Use Crosswalk’’ signs (in the median) on the north leg to direct pedestrians to use the crosswalk at the intersection.
- Install advance street name signs in the northbound/southbound directions to reduce the potential for rear-end and sideswipe crashes.
- Install Turning Vehicles Stop for Pedestrians sign on the east and south legs, to help reduce the potential for pedestrian/bicycle crashes.

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- Provide striping as shown in the concept drawing to channelize the westbound right-turn movement.
- Install a No Left-Turn sign facing eastbound traffic at the first driveway east of the study intersection (on the south side).

Mid-Term Improvements

- Reconstruct the third driveway north of the intersection (east side of US 1) to accommodate turns by larger vehicles.
- Extend the westbound right-turn lane to reduce the potential for rear-end and sideswipe crashes.
- Install pedestrian signals and push buttons to accommodate pedestrians crossing on the west leg. Also, install pedestrian push buttons to facilitate crossing the east leg.
- Consider modifying the signal operating plan (SOP), as part of the upcoming signal retiming study, to enhance the intersection operations. For example, allowing pedestrians to cross the south leg while serving the southbound left-turn phase. Similarly, pedestrian phase on the north leg could be activated during the westbound phase. As such, the intersection operations could be more efficient as compared to the existing SOP, which activates the pedestrian phases (on the north/south legs) during the eastbound phase. As the eastbound volume is relatively low, the eastbound phase acts more like an exclusive pedestrian phase, which is not as efficient.
- A total of two alternatives (Alternatives 1 and 2) were developed to reduce the potential for left-turn crashes and to better accommodate the southbound left-turn volumes at the US 1 and Sombrero Beach Road. The 8-hour TMCs collected as part of this study indicate that the southbound left-turn volume is consistently heavy (242-307 vehicles per hour) and is close to or exceeded the 300 vehicles per hour threshold for dual left-turn lanes during 5 hours.
- A total of two alternatives (Alternatives 3A and 3B) were developed to reduce the potential for left-turn/angle crashes at the US 1 and 53rd Street intersection. A total of 30 left-turn/angle crashes were reported in the vicinity of this intersection.

Proposed alternatives are described in more detail in the following sections.

Alternative 1

- Install offset left-turn lanes in the northbound/southbound directions to improve visibility and reduce the potential for left-turn crashes.

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Replace the existing 5-section signal heads (associated with protected/permissive left-turn phase in northbound and southbound directions) with 4-section signal heads that display flashing yellow arrow (FYA) during the permissive phase. The 4-section signal head provides the flexibility to operate in ‘‘protected only’’ mode during certain times of the day. It is recommended that a structural analysis of the existing mast arms be conducted to determine if they can accommodate the additional signal heads associated with FYA.

Alternative 2

- Install an additional left-turn lane to provide dual southbound left-turn lanes with protected-only phasing, which will help reduce left-turn crashes and provide additional capacity.
- Widen the east leg to provide two receiving lanes for southbound left-turn traffic. The new intersection geometry will require the relocation of at least two mast arms (one on the SW corner and one on the NE corner) and adjustment of signal heads facing westbound traffic.
- As the mast arm located on the NE corner needs to be replaced, it may be necessary to relocate the existing or install a new cabinet. If a new cabinet is needed, it should be placed in such a way that it does not cause any sight distance issues.

Alternative 3A

This alternative includes the improvements mentioned in Alternative 2 and median modifications at the 53rd Street median opening. These modifications include extending the median on US 1 to prohibit the westbound left-turn movement from 53rd Street. The alternative routes for the affected movement are shown in **Figures 6-1** and **6-2**.

Alternative 3B

This alternative includes the improvements mentioned in Alternative 2 and median opening closure at 53rd Street. As such, the westbound left-turn movement from 53rd Street and the southbound left-turn movement from US 1 will be prohibited. The alternative routes for the affected movements are shown in **Figures 6-3** and **6-4**.

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Conceptual improvement sketches for suggested improvements are provided in **Appendix H**. It should be noted that the conceptual improvement diagrams were prepared using aerial photos and are not based on an engineering survey. As such, it is recommended that design elements be verified and addressed during the design phase based on an engineering survey and applicable standards.

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9 Agency Coordination

As part of the government agency coordination effort for this study, AECOM contacted Mr. Bratislav Ostojic, FDOT Consultant for D6 Arterial Operations, for input. Mr. Ostojic stated that the study signal was last retimed/fine-tuned in February 2022 and no signal timing complaints have been received in the last two years. In addition, Mr. Ostojic and Mrs. Yenia Morales, FDOT D6 Traffic Safety Specialist IV provided as-built plans. Furthermore, AECOM contacted Erik Echezabal, PE, PTOE, TSM&O Lead from Choice Engineering (Monroe County Signal Retiming Consultant) for input regarding pedestrian clearance intervals for eastbound/ westbound pedestrian phases. Mr. Echezabal stated that during signal retiming effort in 2022, the yellow and all-red clearance intervals were adjusted to address citizen complaints regarding congestion at this location. Finally, AECOM requested and received the following input from Sergeant Korzen and Officer Leird of the Monroe County Sheriff's Office. See **Appendix I** for agency coordination emails.

Input from Monroe County Sheriff's Office (Sergeant Korzen, Officer Leird)

- Some northbound motorists use the northbound right-turn lane as a through lane to go through the study intersection.
- US 1 and 53rd Street intersection experience a lot of crashes. Vehicles coming in and out from 53rd Street complete their turns between queued vehicles on US 1.
- Suggest installation of delineators to channelize northbound right-turn traffic and westbound right-turn traffic to minimize conflicts.
- Suggest providing offset northbound/southbound left-turn lanes on US 1.
- No U-Turn sign facing southbound traffic is faded.
- Eastbound vehicles turn left into the Tom Thumbs gas station (on the northeast corner) from through lane just east of the study intersection.

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10 Benefit/Cost and Net Present Value Analysis

The benefits associated with the expected reduction in crashes due to the proposed improvements were estimated based on the crash reduction factors obtained from the CMFClearinghouse.org website and the FDOT approved Technical Report "Update of Florida Crash Reduction Factors and Countermeasures to improve the Development of District Safety Improvement Projects".

The average annual benefit resulting from crash reduction for Alternative 1 is estimated to be $195,337, based on an average cost per crash of $123,406. The preliminary estimate of probable cost for Alternative 1 is approximately $1,054,402, which is equivalent to an annualized cost of $106,781. The resulting B/C ratio is 1.8 and the Net Present Value is $499,544.

The average annual benefit for Alternative 2 is estimated to be $319,819. The preliminary estimate of probable cost for Alternative 2 is approximately $2,136,339, which is equivalent to an annualized cost of $203,932. The resulting B/C ratio is 1.6 and the Net Present Value is $407,887.

The average annual benefit resulting from crash reduction for Alternative 3A is estimated to be $614,809. The preliminary estimate of probable cost for Alternative 3A is approximately $2,263,236, which is equivalent to an annualized cost of $211,081. The resulting B/C ratio is 2.9 and the Net Present Value is $2,627,701.

The average annual benefit for Alternative 3B is estimated to be $670,342. The preliminary estimate of probable cost for Alternative 3B is approximately $2,465,572, which is equivalent to an annualized cost of $228,016. The resulting B/C ratio is 2.9 and the Net Present Value is $316,189. See **Appendix J** for B/C, NPV analysis.

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Appendix H Signalization Plan – Signalization Improvements at Sadowski Causeway

FPID:448061-1-32-01
TASK WORK ORDER 33

CONTRACT PLANS COMPONENTS

SIGNALIZATION

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

SIGNALIZATION PLANS

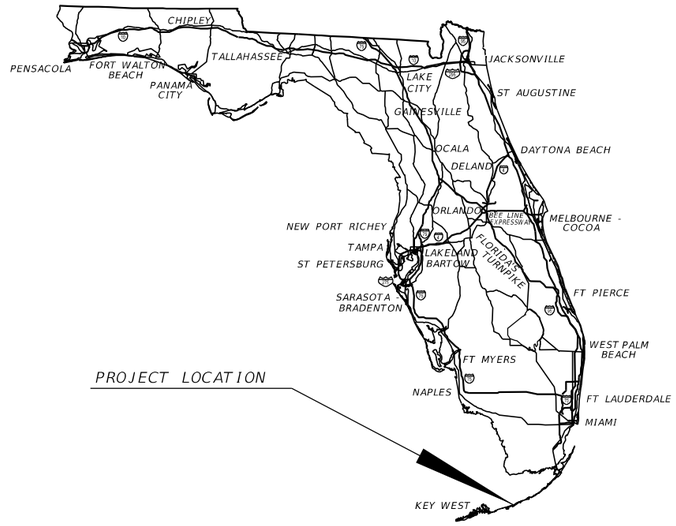
FINANCIAL PROJECT ID 434684-7-52-01

MONROE COUNTY (90040)

STATE ROAD NO. 5 (US-1/OVERSEAS HIGHWAY)

SIGNALIZATION IMPROVEMENTS AT SADOWSKI CAUSEWAY

PROJECT LOCATION URL:	http://tiny.cc/88wq001
PROJECT LIMITS:	BEGIN MP 5.707 – END MP 5.707
EXCEPTIONS:	NONE
BRIDGE LIMITS:	NONE
RAILROAD CROSSING:	NONE



ERIK ALEXANDER ECHEZABAL
LICENSE
No 82215
STATE OF FLORIDA
PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL

SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

INDEX OF SIGNALIZATION PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	SUMMARY OF PAY ITEMS
3	GENERAL NOTES
4	SIGNING AND PAVEMENT MARKING PLAN
5	SIGNALIZATION PLAN
6	SYSTEM TIMINGS
CTL-1 - CTL-15*	PROJECT CONTROL SHEETS

* These sheets are included in the Index of Signalization Plans only to indicate that they are part of the Signalization Plans. These sheets are contained in a separate digitally signed and sealed document.

GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY2024-25 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, FY2024-25 Standard Specifications for Road and Bridge Construction at the following website: http://www.fdot.gov/programmanagement/Implemented/SpecBooks

SIGNALIZATION PLANS ENGINEER OF RECORD:

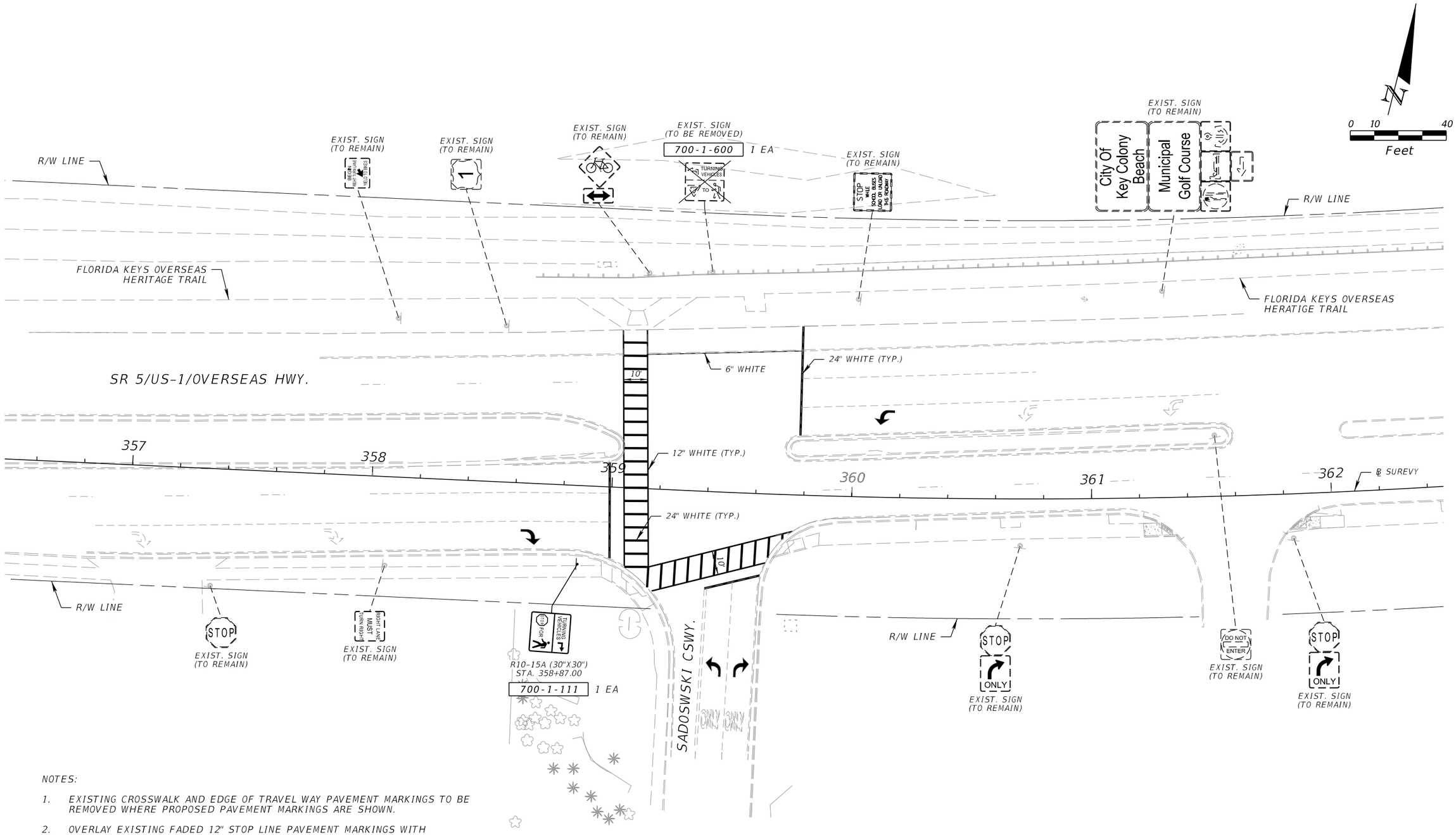
ERIK ALEXANDER ECHEZABAL, P.E.
P.E. LICENSE NUMBER 82215
CHOICE ENGINEERING CONSULTANTS, INC.
12855 SW 132ND STREET, SUITE 200
MIAMI, FLORIDA 33186
(786) 250-5526
CONTRACT NO.: CAP47
VENDOR NO.: 47-3395906

FDOT PROJECT MANAGER:

RAMON SIERRA, P.E.

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
E6O75	25	1

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



NOTES:

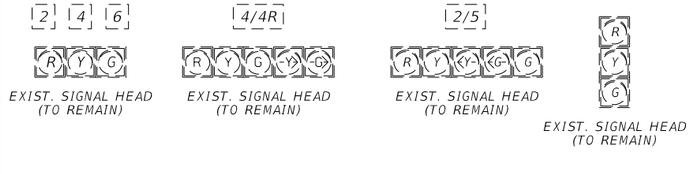
1. EXISTING CROSSWALK AND EDGE OF TRAVEL WAY PAVEMENT MARKINGS TO BE REMOVED WHERE PROPOSED PAVEMENT MARKINGS ARE SHOWN.
2. OVERLAY EXISTING FADED 12" STOP LINE PAVEMENT MARKINGS WITH PROPOSED THERMOPLASTIC IN PLACE.

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SIGNING AND PAVEMENT MARKING PLAN	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ERIK ALEXANDER ECHEZABAL, P.E. LICENSE NUMBER: 82215 CHOICE ENGINEERING CONSULTANTS, INC. 12855 SW 132ND STREET, SUITE 200 MIAMI, FLORIDA 33186	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		4
					SR 5	MONROE	434684-7-52-01		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

P:\FDOT\448061-1_TW033_SadowskiCswy\SigningAndMarking\PLANSP01.dgn : PLANSP01 [SHEET]
MDCelis 10/28/2025 10:08:16 AM

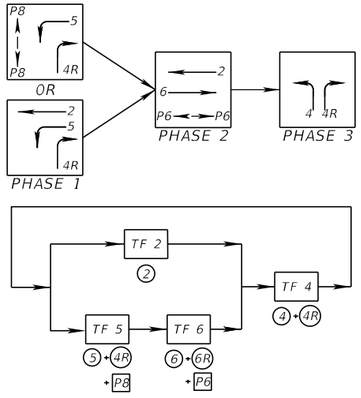
SIGNAL HEAD AND SIGN DETAILS



CONTROLLER TIMINGS
PHASE TIMING SET 1

TIMING FUNCTION		2	4	5	6
MOVEMENT NUMBER		2	4	5,4R	6
TIMING FUNCTIONS	MINIMUM GREEN	7	7	4	7
	EXTENSION	1.0	3.0	2.0	1.0
	MAXIMUM GREEN 1	70	20	15	70
	MAXIMUM GREEN 2	0	0	0	0
	YELLOW CLEARANCE	4.8	3.4	4.8	4.8
	ALL RED	2.0	3.1	2.0	2.0
	PEDESTRIAN WALK	-	-	7.0	7.0
	PED. CLEARANCE	-	-	21	10
	RECALL	MAX	-	-	MAX

SIGNAL OPERATING PLAN

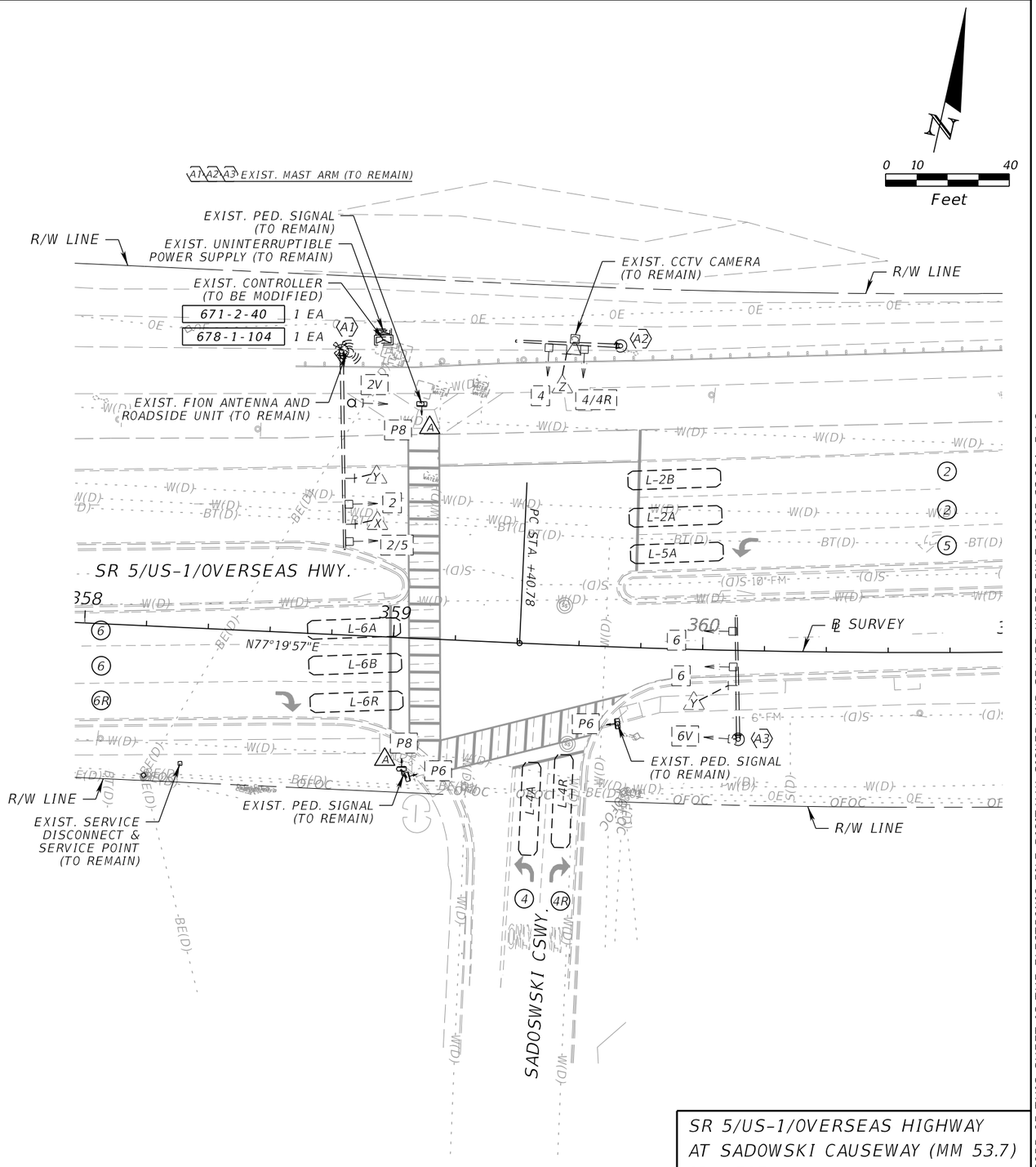


CONTROLLER OPERATIONS:

1. MAJOR STREET: SR 5/US-1/OVERSEAS HIGHWAY
   MINOR STREET: SADOWSKI CAUSEWAY
2. PHASES 1 AND 3 – ACTUATED
   PHASE 2 – RECALL
   PHASE 2 IS THE COORDINATED PHASE
3. FLASHING OPERATIONS:
   MOVEMENTS 2 AND 6 – YELLOW
   MOVEMENTS 4 – RED
4. P8 IS NEGATIVE PED FOR VEHICULAR MOVEMENT 2.

NOTES:

1. MODIFY CONTROLLER DATABASE TO ENABLE PROPOSED SIGNAL OPERATING PLAN. (SOP) DEPICTS ONLY LEADING LEFT TURN OPERATIONS.
2. INSTALL ADDITIONAL LOAD SWITCH TO OPERATE MOVEMENT 4R AS PROGRAMMED OVERLAP.
3. ALL EXISTING SIGNAL FEATURES TO REMAIN UNLESS OTHERWISE SPECIFIED.
4. ESTIMATED TOTAL ELECTRICAL LOAD: 596 W
   ESTIMATED INTERSECTION AMPERAGE: 4.97 A



SR 5/US-1/OVERSEAS HIGHWAY
AT SADOWSKI CAUSEWAY (MM 53.7)
ID# 505

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SIGNALIZATION PLAN	SHEET NO.
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					SR 5	MONROE	434684-7-52-01		

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Stantec