US 90 Arterial Study: Vulnerable Road Users

US 90 from the Escambia County Line to
SR 87 South in Santa Rosa County, Florida

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Submitted by:
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List of Abbreviations

AADT	Average Annual Daily Traffic
ADA	Americans with Disabilities Act
B-C	Benefit-Cost, which defines a cost analysis ratio of anticipated cost savings (benefit) to the cost of proposed improvements
CMF	Crash Modification Factor
CR	County Road
DUI	Driving Under the Influence
EB	Eastbound (direction along corridor)
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FHP	Florida Highway Patrol
FPID	Financial Project Identification Number
HSM	Highway Safety Manual
KABCO	Injury severity scale (**K**: fatal; **A**: severe/incapacitating; **B**: moderate/non-incapacitating; **C**: minor/possible; **O**: property damage only)
MP	Mile post
mph	miles per hour
MUTCD	Manual on Uniform Traffic Control Devices
NPV	Net Present Value, defined as the difference between anticipated cost savings and the cost of proposed improvements
NRHP	National Register of Historic Places
PSC	Pensacola State College
SR	State Road
TPO	Transportation Planning Organization
US	United States Route
VRU	Vulnerable Road User, such as a bicyclist or pedestrian at risk in a vehicle traffic environment
WB	Westbound (direction along corridor)
WFRPC	West Florida Regional Planning Council

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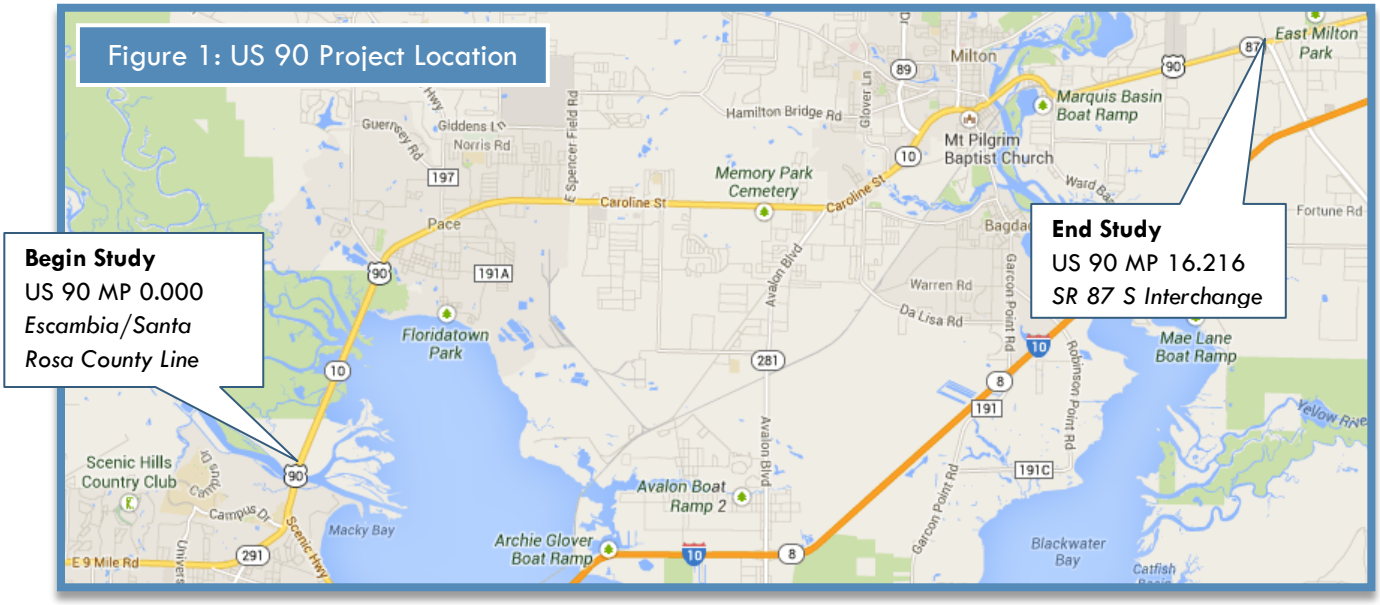
Introduction

Purpose

The objective of this Arterial Study is to summarize safety analysis results and recommended improvements along US 90, with a focus on vulnerable road users (VRUs). The corridor lies in Santa Rosa County, Florida, extending 16.2 miles from the Escambia County Line to State Road (SR) 87 South, as illustrated in Figure 1. This document first presents a broad engineering assessment of existing site conditions, lighting features, safety measures, recent crash history, and areas of critical concern. Corresponding recommendations are provided for safety concerns identified in the preliminary analysis phase. Additionally, local stakeholder input is presented and addressed with further safety recommendations as applicable.



Background

Santa Rosa County, in partnership with the Florida Department of Transportation (FDOT), determined that a safety study be performed along US 90 within the subject project limits. This study shall address safety concerns for pedestrian and bicycle traffic following a history of related collisions, some of which resulted in fatal injuries. Jacobs Engineering Group was selected to develop an arterial study and supporting technical memoranda in conjunction with efforts on FDOT District Three Districtwide Safety Contract C8U46. Key stakeholders include FDOT District Three, Santa Rosa County and its residents, the City of Milton, and the West Florida Regional Planning Council (WFRPC).

General Approach

Due to the extensive project length, the US 90 corridor was divided into multiple segments for the purposes of this assessment, based on varied features such as roadway typical section, crash pattern and frequency, adjacent land use and topography, and traffic volumes. These corridor segments are described as follows within the approximate limits shown and depicted on the Project Limits map in Appendix A:

- Segment 1 (MP 0.000 – 2.559): Western Waterways
- Segment 2 (MP 2.559 – 6.913): Pace
- Segment 3 (MP 6.913 – 8.922): Pea Ridge
- Segment 4 (MP 8.922 – 11.689): West Milton
- Segment 5 (MP 11.689 – 12.230): Downtown Milton
- Segment 6 (MP 12.230 – 16.216): East Milton

To develop this report, information presented in Technical Memoranda 1 (Site and Safety Analysis) and 2 (Preliminary Arterial Study Recommendations) was combined with stakeholder input and final safety recommendations. This study provides an overview of existing conditions, based on field review observations, crash data research, and lighting analysis, to identify critical areas of improvement that warrant safety recommendations. Solutions are first identified for pedestrian and bicyclist safety concerns based on actual crash history. Additionally, existing site issues observed within the corridor are addressed with feasible improvements for vulnerable road users. Roadway safety concerns identified in the site and safety analysis phase are also listed with general recommendations for lighting, signalized intersection, and side road upgrades.

A public meeting was conducted at the Santa Rosa County Auditorium on April 3, 2014 to gather additional stakeholder input. This activity provided further insight into safety issues from a local perspective which may not have been evident from data analysis and site observation. Comments and corresponding recommendations are provided in this report for consideration, along with small and large scale improvements identified in Technical Memorandum 2. Recommendations are presented with estimated construction cost values by segment and type.

Standard guidance was provided by FDOT and Federal Highway Administration (FHWA) directives. For benefit-cost analysis, no crash modification factors (CMFs) are Highway Safety Manual-approved for vulnerable road users. Instead, trends regarding the potential change in crashes or user behavior are presented in the HSM. The FHWA Clearinghouse provides crash reduction factors (CRFs) for issues relating to vulnerable road users and these are presented within this memorandum for reference. CRFs are used to estimate the percentage reduction in crashes, as an input to the benefit-cost analysis. For recommendations and analysis of lighting, the FDOT MUTS was used in calculating the benefit-cost ratio.

Site Analysis

Methodology

A broad collection of resources were employed as part of the comprehensive approach to site analysis efforts. Numerous publications, including FDOT standards, FHWA manuals, traffic studies, and master plans, were referenced throughout the process. Input was provided by key stakeholders such as FDOT, Santa Rosa County, the City of Milton, and the West Florida Regional Planning Council. Several day and night time field reviews were conducted to investigate site conditions and understand existing safety concerns. This section of the memo includes an overview of existing site conditions by Segment, followed by a summary of access management, bicycle and pedestrian facilities, and lighting features.

Existing Conditions Overview

The US 90 corridor from the Escambia County Line (MP 0.000) to SR 87 South (MP 16.216) is classified as an urban minor arterial. Appendix A provides geographic reference information for the project layout and FDOT straight line diagrams. Three predominant typical sections are present along the route, as illustrated in Appendix B and listed as follows:

- **Typical 1 (US 90 MP 0.000 – MP 11.689):** Four lane divided highway with flush shoulders through commercial districts in the Pace, Pea Ridge, and west Milton (Segments 1 – 4)
- **Typical 2 (US 90 MP 11.689 – MP 12.230):** Two lane highway with curb and gutter and center turn lanes in downtown Milton (Segment 5)
- **Typical 3 (US 90 MP 12.230 – MP 16.216):** Two lane highway with flush shoulders in east Milton (Segment 6)

As noted in the General Approach summary, the corridor was divided into six segments for purposes of analysis. Existing roadway and traffic site conditions within each approximated segment are described in the following sections of the report. Aerial figures are also provided in Appendix C for reference; these plans illustrate both site and safety conditions of the roadway. Traffic data is summarized in Appendix D, as obtained from the Florida Traffic Online database for 10 traffic monitoring sites within the project limits.

Segment 1: Western Waterways (MP 0.000 – MP 2.559)

Roadway Elements. This four lane divided section consists of 5 sets of parallel bridges spanning multiple water bodies. Traveling east from the Escambia/Santa Rosa County Line, waterways include the Escambia River, Saultsman Bayou, White River, Simpson River, and Bass Hole Cove. There are extensive guardrail sections in place in conjunction with bridge approaches to shield barrier and canal hazards. Four median openings exist within the segment, including one directional U-turn for eastbound and westbound US 90 and various openings at three boat landing access points. Paved shoulders may be utilized by pedestrians and bicyclists, as no sidewalks or bike lanes are present. No lighting features exist along US 90. The posted speed within the segment is 55 mph. This segment was under construction at the time of this memorandum, and final configurations may vary.

Traffic Characteristics and Land Use. The majority of traffic traveling within this segment consists of commuter and transport vehicles crossing the waterways separating Escambia and Santa Rosa Counties. Sporadic access points attract recreational and commercial boaters. Traffic statistics for 2012 suggest an AADT of 38,500 within Segment 1, the highest count of all study segments.

Intersection Data. No intersecting roadways are located within the Segment 1 limits.

Signing and Pavement Markings. Existing signs and pavement markings appear to be installed in accordance with standard guidelines. No pedestrian-related signing and pavement markings are present within Segment 1.

Segment 1 Typical Section

Segment 2: Pace (MP 2.559 – MP 6.913)

Roadway Elements. This segment of US 90 continues as a four lane divided highway through the community of Pace. There are no existing bridges within the segment limits, although a pedestrian underpass is located at MP 4.495 to facilitate school property access on either side of US 90, between SS Dixon Primary School and recreational fields to the south. This area is defined by numerous side road and driveway accesses, correlating to a high number of median openings and turn lanes. Bicyclists are able to utilize paved shoulder or marked bike lane sections through this segment. There is sidewalk present from east of the CR 197/Chumuckla Highway intersection (MP 4.018) to Jernigan Road (MP 4.580) through the SS Dixon school zone. No lighting features are present within Segment 2. The posted speed within the segment is 45 mph.

Traffic Characteristics and Land Use. Traffic within the segment consists of local commuters and truck traffic servicing commercial areas. Businesses are closely located along this entire corridor segment, including commercial, shopping, and medical facilities. Churches and schools are also regularly accessed from US 90, as well as residential neighborhoods. Traffic statistics for 2012 suggest an AADT of 34,500 within Segment 2.

Intersection Data. Numerous side roads are present along the corridor characterized by minor road stop control. Major Segment 2 signalized intersections occur at the following intersecting roads:

- CR 197A/Woodbine Road (MP 3.028) – Protected left turn EB, Protected/Permissive left turn WB; strain pole configuration. EB contains "No U-Turn" sign (R3-4) ground-mounted in the median.
- CR 197/Chumuckla Highway/Floridatown Road (MP 4.018) - Protected/Permissive left turns EB and WB; mast arm configuration.
- CR 197 B/West Spencer Field Road (MP 4.825) - Protected/Permissive left turns EB and WB; strain pole configuration.
- East Spencer Field Road (MP 5.811) - Protected/Permissive left turns EB and WB; strain pole configuration.
- Watkins Street (6.081) - Protected/Permissive left turn EB, Protected left turn WB; mast arm configuration.
- Spears Street/Home Depot West Entrance (MP 6.366) - Protected/Permissive left turns EB and WB; strain pole configuration.
- Cardinal Street/Walmart West Entrance (MP 6.672) – Protected left turns EB and WB; strain pole configuration.

All signalized intersections have existing pedestrian signal features, many implemented as part of a County-wide pedestrian actuated signal improvement effort.

Signing and Pavement Markings. There are crosswalk markings at a majority of signalized intersections, in addition to sporadic bike lanes. Some bike lanes consist of buffered bike lane markings for added emphasis and separation from traffic near the SS Dixon school zone. This school zone consists of standard pavement markings and signs, including overhead warning signs with flashing beacons.

Segment 2 School Zone and Buffered Bike Lane

Segment 3: Pea Ridge (MP 6.913 – MP 8.922)

Roadway Elements. A four lane divided highway continues along this segment of US 90 through the community of Pea Ridge. This area is moderately urbanized with several side roads and church and commercial driveways, along with numerous median openings. Within the limits of Segment 3, there is no sidewalk present. Approximately 50% of the segment includes marked bike lanes; however, there is no shoulder pavement or bike lane available on westbound US 90 between Bell Lane and Evelyn Street. No lighting features are present within Segment 3. The posted speed within the segment varies between 45 mph and 55 mph.

Traffic Characteristics and Land Use. Segment 3 traffic consists of local commuters and truck traffic servicing commercial areas. Businesses and churches are not as closely spaced as compared to Segment 2. Several churches, including a church which contains a school, and large residential developments are regularly accessed from US 90. Traffic statistics for 2012 suggest an AADT of 31,000 within Segment 3.

Intersection Data. In this segment, Bell Lane (MP 7.073) is the only signalized intersection present and consists of Protected/Permissive left turn signals both EB and WB. A mast arm configuration is utilized. Pedestrian signal features are also present.


Segment 3 Typical Section

Signing and Pavement Markings. The Bell Lane intersection includes special emphasis crosswalk markings. Bike lanes are marked with standard striping and messages on the eastbound and westbound exits of the intersection; however, the approaches to the intersection do not provide a bike lane between the through and right turn lanes. School area reduced speed warning signs are present approaching the entrance to West Florida Baptist Church. A recent FDOT study was performed which did not recommend additional regulatory school zone signage in this location; this study also provided recommendations for median opening modification and turn lane addition.

Segment 4: West Milton (MP 8.922 – MP 11.689)

Roadway Elements. The Segment 4 corridor is categorized under Typical Section 1, similar to the four lane divided highway present in Segments 1-3. Pond Creek Bridge is the only bridge within the segment; it is a narrow structure with a negligible shoulder width and no pedestrian accessibility features. With concentrated areas of commercial businesses, office parks, and shopping centers, there are numerous median openings and turn lanes present along this segment. Existing bike lanes and sidewalks are located at the intersection with Avalon Blvd. At the SR 87/ Stewart Street intersection (MP 11.621), a small section of sidewalk on the eastbound lanes connects pedestrians with downtown Segment 5. Lighting is present in the vicinity of Pond Creek Bridge and along westbound US 90 in a commercial setting between


Pond Creek Bridge (Eastbound US 90)

Glover Lane (MP 10.304) and Campbell Lane (MP 10.816). There are also median lamps for 0.5 miles on the approach to SR 87/Stewart Street. The Blackwater Heritage State Trail, a multi-use path, crosses US 90 at the SR 87/ Stewart Street intersection. Posted speed limits vary as follows: 45 mph on the west of Campbell Lane (MP 10.816) and 35 mph on the east end of the segment until connecting to a short segment of 25 mph speed zone adjacent to Segment 5.

Traffic Characteristics and Land Use. Segment 4 traffic consists of local commuters and truck traffic servicing commercial areas. Businesses are closely located along this largely commercial corridor segment. A few churches and the Milton campus of Pensacola State College are accessed from US 90. Traffic statistics for 2012 suggest an AADT range of 24,500 to 34,500 within Segment 4, with larger traffic volumes east of SR 89/Dogwood Drive.

Dogwood Drive Intersection

SR 87/ Stewart Street Intersection

Intersection Data. Major Segment 4 signalized intersections occur at the following intersecting roads:

- SR 281/Avalon Blvd (MP 9.304) – Protected left turns EB and WB; mast arm configuration.
- Kmart Shopping Center entrance (MP 9.417) – Protected/Permissive left turn EB, Permissive left turn WB; mast arm configuration. EB contains "No U-Turn" sign (R3-4) ground-mounted in median.
- Parkmore Plaza Drive (MP 9.855) - Protected/Permissive EB and WB; strain pole utilized.
- Glover Lane (MP 10.304) - Protected/Permissive EB (left turn signal) with overhead "Left Turn Yield on Green" sign (R10-12). Protected/Permissive WB (permissive right turn signal). No left turn lane WB. Strain pole configuration.
- Santa Rosa County Offices entrance (MP 10.914) - Protected left turns EB and WB. EB has overhead "Do Not Block Intersection" sign (R10-7). Strain pole configuration.

- SR 89/Dogwood Drive (MP 11.004) - Protected left turns EB and WB. EB contains overhead "No U-Turn" sign (R3-4). Strain pole configuration.
- SR 87/Stewart Street (MP 11.621) – Protected dual left turn EB. No left turn lane WB.

Most notably, the signal timing is not synchronized between the closely spaced intersections of Dogwood Drive and the entrance to Santa Rosa County Offices and other commercial businesses. All signalized intersections have existing pedestrian signal features, many implemented as part of a County-wide pedestrian actuated signal improvement effort.

Signing and Pavement Markings. The only crosswalk markings on US 90 are located at the Stewart Street intersection. In addition to the Avalon Blvd bicycle features, there are two short segments of bike lane markings at eastbound right turn lanes into restaurants, the Shrimp Basket (MP 10.484) and La Hacienda (MP 10.835).

Segment 5: Downtown Milton (MP 11.689 – MP 12.230)

Roadway Elements. Segment 5 corresponds to Typical Section 2, as a two lane curbed roadway with center turn lanes which winds along eight city blocks in downtown Milton. Sidewalk extends along the corridor on both sides of US 90. There is one bridge over the Blackwater River on the east end of the segment. There are no bike lanes within the corridor. Roadway lighting is present along the entire corridor, through downtown Milton and along the bridge. The posted speed limit is 25 mph throughout.

Segment 5 Typical Section

Traffic Characteristics and Land Use. Traffic generally consists of local commuters within the downtown business and residential district. There are a church, government offices, and small commercial businesses located adjacent to US 90. Traffic statistics for 2012 suggest an AADT range of 13,500 to 19,100, with higher traffic volumes on the west end of the segment.

Intersection Data. Numerous side roads are present along the corridor characterized by minor road stop control. There are the three signalized intersections in Segment 5, all of which contain Permissive left turn signalization features both EB and WB. They occur at the following intersecting roads: Canal Street (MP 11.893) and Elmira Street (MP 12.039) with mast arm configurations; and Willing Street (MP 12.104) with a strain pole configuration.

All signalized intersections have existing pedestrian signal features, many implemented as part of a County-wide pedestrian actuated signal improvement effort.

Signing and Pavement Markings. There are crosswalk markings at all signalized intersections and at a majority of side roads.

Canal Street Intersection

Blackwater River Bridge Approaching Downtown Milton (Westbound US 90)

Segment 6: East Milton (MP 12.230 – MP 16.216)

Roadway Elements. This segment is a two lane roadway with flush paved shoulders, as shown on Typical Section 3. There are two bridges along the segment crossing Macavis Bayou and a CSX railroad. This segment has the lowest overall percentage of side roads among Segments 2 through 6. Approximately half of the side roads have turn lanes on US 90. The CSX railroad and a shared use path (Old Brick Highway – Florida Trail) lie parallel to the north of US 90. Sidewalks and bike lanes are present on the approaches to the signalized intersections. There is no roadway lighting within the segment. The posted speed limit varies from 25 mph to 55 mph for 1.5 miles east of the Blackwater River bridge, with 55 mph maintained in the eastern portion of the segment.


Segment 6 Typical Section

Traffic Characteristics and Land Use. Traffic consists of commuters and transport service vehicles. Several businesses, industrial centers, and an airport (Peter Prince Field) lie adjacent to the highway. Small residential areas are also accessed from US 90. Traffic statistics for 2012 suggest an AADT range of 12,100 to 18,800, with higher traffic volumes on the west end of the segment.

Intersection Data. There are two signalized intersections within Segment 6, both of which utilize strain pole configurations. They are located at the following intersecting roads:

- Ward Basin Road (MP 13.205) – EB includes a Permissive left turn/Protected right turn. Protected/Permissive left turn WB.
- SR 87 South (MP 16.216) – Protected/Permissive left turns EB and WB.

All signalized intersections have existing pedestrian signal features, many implemented as part of a County-wide pedestrian actuated signal improvement effort.

Ward Basin Road Intersection

Signing and Pavement Markings. Bike lane, crosswalk, and turn lane pavement markings appear to be standard throughout the corridor.

Access Management Summary

Access management classifications along US 90 vary between Class 3 and 6. Recent data and corridor limits were obtained from the current US 90 Corridor Management Plan, adopted by the West Florida Regional Planning Council in 2011. Classifications are listed in accordance with the study segments shown in Table 1. Access Classes 3 and 5 include restrictive medians; Access Classes 4 and 6 include non-restrictive medians. Complete descriptions are found in Rule 14-97 F.A.C., "State Highway System Access Control Classification System and Access Management Standards."

Table 1. Access Management Summary

Segment	From MP	To MP	Class
1	0.000	2.559	3
2	2.559	4.018	
	4.018	4.825	6
	4.825	6.913	5
3	6.913	8.922	
4	8.922	11.689	
5	11.689	12.104	
	12.104	12.230	6
6	12.230	16.216	4

Bicycle and Pedestrian Facility Overview

Further details related to existing bicycle and pedestrian facilities are provided in Tables 2A and 2B. Sidewalks are limited within the corridor, typically on the approach to major signalized intersections. Marked bike lanes are prevalent in all segments except for Segment 1. Paved shoulders are present along the corridor, utilized by bicyclists in the absence of marked bike lanes.

Table 2A. Summary of Existing Sidewalk Facilities

Eastbound US 90				Westbound US 90			
From Sta.	To Sta.	Length (feet)	Sidewalk	From Sta.	To Sta.	Length (feet)	Sidewalk
98+50	305+00	20650		98+50	305+00	20650	
305+00	343+00	3800	✓	305+00	342+00	3700	✓
343+00	581+50	23850		342+00	582+00	24000	
581+50	601+00	1950	✓	582+00	601+00	1900	✓
601+00	618+00	1700		601+00	720+00	11900	
618+00	619+00	100	✓	720+00	745+00	2500	✓
619+00	713+00	9400		745+00	776+00	3100	
713+00	739+00	2600	✓	776+00	805+00	2900	✓
739+00	773+00	3400		805+00	812+00	700	
773+00	803+00	3000	✓	812+00	965+00	15300	Old Brick Road Trail
803+00	937+00	13400					
937+00	961+50	2450	✓				
961+50	965+00	350					

Table 2B. Summary of Existing Bicycle Facilities											
Eastbound US 90						Westbound US 90					
From Sta.	To Sta.	Length (feet)	Marked Bike Lanes	Paved Shoulder	Grass Shoulder	From Sta.	To Sta.	Length (feet)	Marked Bike Lanes	Paved Shoulder	Grass Shoulder
98+50	282+00	18350		✓		98+50	262+00	16350		✓	
282+00	285+00	300	✓			262+00	264+00	200	✓		
285+00	305+00	2000		✓		264+00	305+00	4100		✓	
305+00	341+00	3600	✓			305+00	340+00	3500	✓		
341+00	350+00	900		✓		340+00	370+00	3000		✓	
350+00	373+00	2300	✓			370+00	377+00	700	✓		
373+00	380+00	700			✓	377+00	384+00	700		✓	
380+00	382+00	200		✓		384+00	395+00	1100	✓		
382+00	386+00	400	✓			395+00	403+00	800		✓	
386+00	391+00	500			✓	403+00	411+00	800	✓		
391+00	400+00	900		✓		411+00	437+00	2600		✓	
400+00	405+00	500	✓			437+00	461+50	2450	✓		
405+00	417+00	1200		✓		461+50	470+00	850		✓	
417+00	420+00	300			✓	470+00	473+00	300	✓		
420+00	423+00	300		✓		473+00	480+00	700			✓
423+00	455+50	3250	✓			480+00	481+00	100	✓		
455+50	460+00	450			✓	481+00	508+50	2750		✓	
460+00	464+00	400	✓			508+50	517+00	850	✓		
464+00	469+00	500		✓		517+00	565+00	4800		✓	
469+00	476+00	700			✓	565+00	576+00	1100	✓		
476+00	504+00	2800	✓			576+00	582+50	650		✓	
504+00	511+00	700		✓		582+50	601+00	1850	✓		
511+00	519+00	800	✓			601+00	605+00	400			✓
519+00	549+00	3000		✓		605+00	623+50	1850		✓	
549+00	560+00	1100	✓			623+50	626+00	250			✓
560+00	570+00	1000		✓		626+00	628+50	250		✓	
570+00	573+00	300	✓			628+50	630+00	150			✓
573+00	581+50	850		✓		630+00	635+00	500	Bridge (no bike/ped features)		
581+50	590+00	850	✓			635+00	649+00	1400			✓
590+00	613+50	2350		✓		649+00	661+00	1200		✓	
613+50	630+00	1650			✓	661+00	664+00	300			✓
630+00	635+00	500	Bridge (no bike/ped features)			664+00	680+00	1600		✓	
635+00	650+00	1500		✓		680+00	691+00	1100			✓
650+00	653+00	300	✓			691+00	712+00	2100		✓	
653+00	667+00	1400		✓		712+00	716+00	400	✓		
667+00	668+00	100	✓			716+00	719+50	350		✓	
668+00	672+00	400		✓		719+50	739+00	1950	Curb/sidewalk only		
672+00	680+00	800			✓	739+00	764+50	2550		✓	
680+00	687+00	700		✓		764+50	773+00	850	Bridge (shoulder & sidewalk)		
687+00	688+00	100	✓			773+00	804+00	3100	✓		
688+00	723+00	3500		✓		804+00	917+00	11300	*	✓	
723+00	739+00	1600	Curb/sidewalk only			917+00	965+00	4800	✓ *		
739+00	764+50	2550		✓							
764+50	768+50	400	Bridge (shoulder & sidewalk)								
768+50	773+00	450		✓							
773+00	804+00	3100	✓								
804+00	937+00	13300		✓							
937+00	965+00	2800	✓								

*Old Brick Road Trail lies parallel to WB US 90 from Sta. 812+00 to Sta. 965+00

Lighting Analysis Summary

A lighting justification analysis was performed for the US 90 project corridor as part of the general site assessment. A complete report is included in Appendix E for reference. Existing lighting features are limited to short sections along US 90 in Segments 4 and 5, including the following approximate locations:

- Vicinity of Pond Creek Bridge
  - Approximate Sta. 630+00 – 635+00 LT and RT
  - Segment 4: MP 10.066 – MP 10.161
- A commercial area with one hotel
  - Approximate Sta. 643+00 – 665+00 LT
  - Segment 4: MP 10.313 – MP 10.729
- Decorative median lighting in east Milton
  - Approximate Sta. 686+00 – 716+00
  - Segment 4: MP 11.127 – MP 11.695
- Roadway lighting approaching downtown Milton
  - Approximate Sta. 716+00 – 727+00 LT and RT
  - Segment 5: MP 11.695 – MP 11.903
- Downtown Milton street lamps and bridge lighting
  - Approximate Sta. 727+00 – 745+00 LT and RT
  - Segment 5: MP 11.903 – MP 12.230

Lighting analysis for this assessment was based on 3-year historical collision data provided by FDOT. Within the period of January 2010 to December 2012, 212 night-time crashes occurred which involved eight fatalities and 193 total injuries, including seven pedestrian-related collisions.

The recommendations provided by the lighting justification report suggest that roadway lighting is warranted for the US 90 corridor within Segments 1, 2, 3, 4, and 6 along US 90 between the Escambia County Line to SR 87 South, based on traffic volumes and night-time crash frequency and severity. Due to minimal night-time crashes, lighting is not warranted within Segment 5 (from MP 11.689 to MP 12.230 in downtown Milton) which has lighting facilities currently present.

Safety Analysis

Methodology

Existing safety conditions along US 90 were assessed to determine critical locations along the corridor. The study focused primarily on pedestrian and bicyclist safety needs and related collision history. Key supporting factors of the safety analysis involved the following:

- Review of traffic studies, TPO publications, and aerial maps for standard compliance
- Day and night time site visits to confirm publication reviews and to observe site conditions and traffic behavior
- Research of crash reports provided by Florida Dept. of Highway Safety and Motor Vehicles
- Input from FDOT, Santa Rosa County, WFRPC, and other stakeholders

For crash report analysis, the KABCO scale was used to distinguish injury severity levels. The five categories of injury severity are defined by the Florida Department of Highway Safety and Motor Vehicles as follows:

- ***Fatal Injury (K):*** An injury that results in death within thirty days of crash occurrence.
- ***Incapacitating Injury (A):*** Any non-fatal injury that prevents the injured person from walking, driving, or normally continuing activities performed prior to the injury.
- ***Non-Incapacitating Injury (B):*** Any injury (other than fatal or incapacitating) that is evident to observers at the scene of the crash in which the injury occurred.
- ***Possible Injury (C):*** Any reported or claimed injury that is not evident to observers.
- ***Property Damage Only (O):*** No personal injury involved.

Crash History Summary

For the period between January 2010 and December 2012, a total of 926 crashes were reported within the project limits comprising varied levels of crash severity, including 10 fatalities. Of particular significance to this study were crashes involving pedestrians and bicyclists, which accounted for 15 collisions and 2 fatalities (20% of the corridor total) within the study period. Collision Maps in Appendix F provide details on approximate locations by crash type.

Crash Type Analysis

Annual crash frequencies are listed in Table 3 with major categories described by crash type.

Table 3. Summary of Annual Crash Frequency					
CRASH DESCRIPTION	NUMBER OF CRASHES BY YEAR *(JAN 2010- DEC 2012)*				
	2010	2011	2012	TOTAL	% TOTAL
Rear-End Collision	153	137	209	499	54%
Improper Turn to/from Driveway or Side Road	33	36	29	98	11%
Other	39	19	39	97	10%
Improper Lane Change/Passing	18	29	28	75	8%
Improper Left Turn at Intersection	14	13	16	43	5%
Running Traffic Signal	18	13	8	39	4%
Improper Left Turn at Median Opening	3	10	8	21	2%
Unknown	6	5	5	16	2%
Pedestrian or Bicyclist Involved	2	6	7	15	2%
Alcohol or Drug Related	3	8	2	13	2%
Improper Right Turn at Intersection	1	3	1	5	1%
Speeding	1	1	2	4	1%
Improper Left Turn from a Two-way Left Turn	1	0	0	1	0.1%
Total Number of Crashes	**292**	**280**	**354**	**926**	

Pedestrian or Bicyclist Involved (2%). Of the 15 crashes involving pedestrians or bicyclists, two resulted in fatalities. Crash details and contributing factors are listed in Table 4 by location corresponding to the Appendix F collision maps. General statistics are as follows:

- 47% of crashes occurred at night, including both with fatalities
- 6 of 15 crashes involved pedestrians; 9 involved bicyclists
- One fatal crash resulted from an intoxicated pedestrian; the other was on a side road and involving a crossing between two businesses on US 90.
- Of the 5 non-alcohol related pedestrian crashes, the pedestrians were struck while walking on the shoulder (1), in a crosswalk (1), in a bike lane (1), or in the roadway (2)
- Of the 9 bicycle crashes, bicyclists were struck while traveling in a bike lane (3), on the shoulder (2), crossing between sidewalks (1), or in the roadway (3).

Table 4. Summary of Crashes involving Pedestrians and Bicyclists					
Number	Date	Weather Conditions	Time	Injury Severity	Description
P1	9-Jan-12	Dry	Night	C	Pedestrian on outside shoulder struck by passing WB vehicle mirror near Escambia River Bridge
P2	5-Sep-12	Dry	Day	A	Bicyclist using sidewalk (not bike lane) struck by vehicle while crossing Sports Dr along EB US 90
P3	20-Jun-11	Dry	Day	*Unknown*	Bicyclist exiting Winn Dixie parking lot entered turn lane into path of WB vehicle
P4	21-Nov-11	Wet	Night	C	Pedestrian in roadway struck by passing WB vehicle mirror near E Spencer Field Rd
P5	18-Oct-12	Dry	Day	B	Pedestrian walking in bike lane struck by passing WB vehicle near Watkins St
P6	9-Apr-12	Dry	Day	A	Pedestrian in crosswalk struck by right turning vehicle exiting Walmart
FP1	21-Oct-11	Dry	Night	K	*(Not along US 90)* Pedestrian on Bell Ln south of crosswalk traveling from Tom Thumb to liquor store struck by SB vehicle
P7	3-Sep-10	Dry	Day	C	Bicyclist traveling EB along outside WB shoulder struck by vehicle turning from Metron Way onto WB US 90
P8	13-Oct-12	Dry	Night	C	Bicyclist crossing from outside shoulder (near Flea Market entrance) to median traveled in front of WB vehicle near Peaden Rd
P9	24-May-11	Dry	Day	B	Bicyclist on EB US 90 struck by vehicle exiting Kids Discovery
FP2	15-May-10	Dry	Night	K	Intoxicated pedestrian in roadway on Pond Creek Bridge struck by WB vehicles
P10	15-Jun-11	Dry	Day	C	Bicyclist on outside shoulder turned left into travel lanes into the path of an EB vehicle near Red Brick Rd
P11	2-Oct-11	Dry	Day	B	Bicyclist on shoulder struck by EB vehicle near Eaton Dr in hit and run
P12	13-Nov-12	Dry	Night	B	Bicyclist on shoulder struck by EB vehicle near Industrial Blvd
P13	28-Mar-12	Dry	Night	A	Bicyclist in bike lane struck by vehicle changing lanes into right turn lane at SR 87
Note: Crash number nomenclature depicts both pedestrian and bicyclist crashes in terms of fatal (FP) and non-fatal (P) injuries, in numerical order from west to east along the project limits.					

Rear End Collision (54%). Rear end collisions comprise over half of the crashes within the corridor. These typically occur at signalized intersections within Segments 2, 3, and 4; these common intersections include Woodbine Road, CR 197A/Chumuckla Highway, West Spencer Field Road, East Spencer Field Road, shopping center entrances, Bell Lane, Avalon Blvd, and Galt City Road. Crashes are commonly attributed to driver negligence.

Improper Turn to/from a Driveway or Side Road (11%). These crashes are largely contributed to drivers failing to yield the right of way. Pace Lane and Chantilly Way had the highest number of incidents in which drivers attempted to cross US 90 into the path of oncoming vehicles. Several collisions also involved motorcycles.

Other (10%). Crashes in this category are miscellaneous and not attributed to specific traffic violations. Contributing factors include objects or animals in the roadway; driver medical issues; vehicle malfunctions; and lost control typically due to driver negligence.

Improper Lane Change/Passing (8%). Driver error attributed to the majority of these crashes, which had no apparent location trends along the corridor.

Improper Left Turn at Intersection (5%). US 90 intersections at West and East Spencer Field Roads had the highest incidence of these crashes. Signals at both locations have protected and permissive left turn phases, where turning drivers fail to yield to oncoming westbound vehicles.

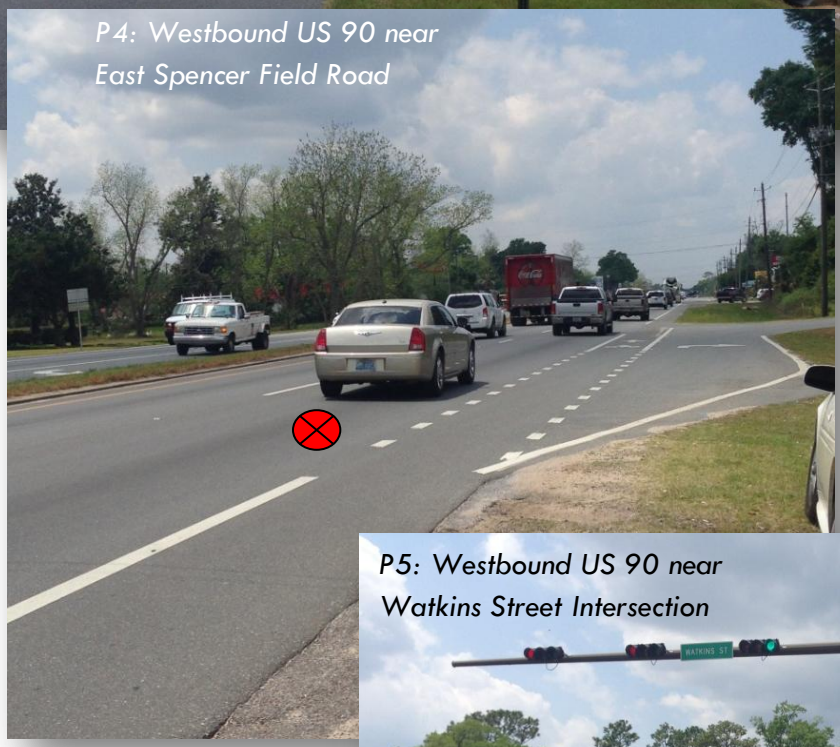
Running Traffic Signal (4%). No signalized intersection trends were apparent following analysis of these crashes, which were attributed to driver error. Reports identify failure to notice red light as a common driver statement, in addition to admission of running a red light with the assumption that they could safely clear the intersection.

The following site photographs present approximate locations for pedestrian or bicyclist collisions listed in Table 4. The "⊗" symbol denotes the general area of occurrence based on crash reports.

P1: Westbound US 90 at Escambia River Bridge

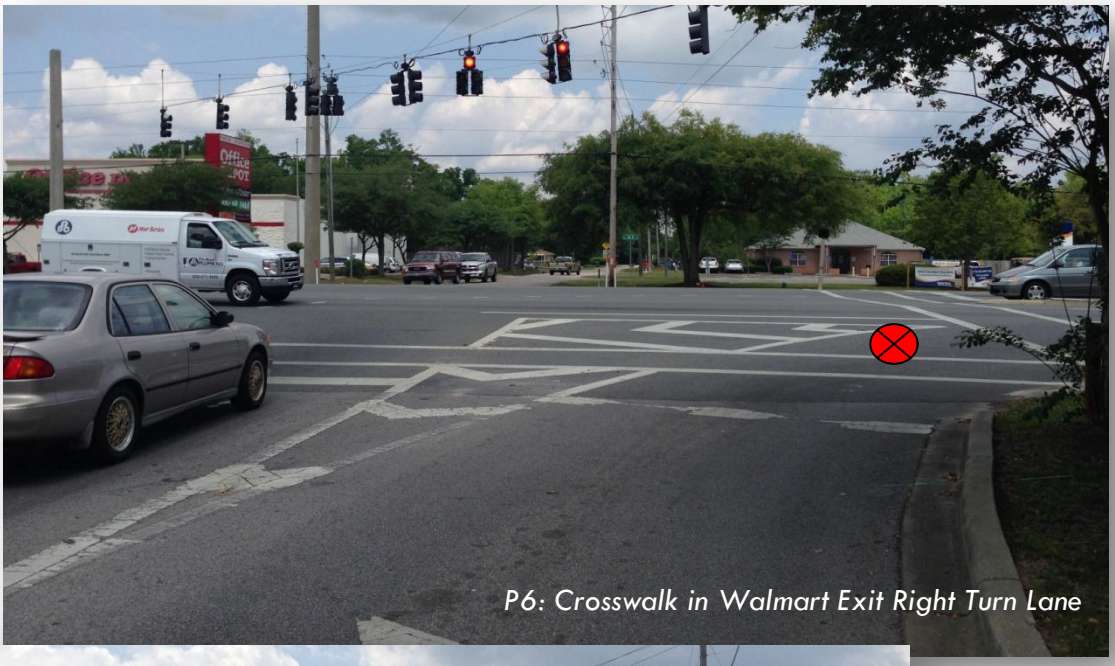
P2: Westbound US 90 at Sports Drive Intersection

P3: Westbound US 90 at Winn Dixie Entrance



P4: Westbound US 90 near East Spencer Field Road

P5: Westbound US 90 near Watkins Street Intersection



P6: Crosswalk in Walmart Exit Right Turn Lane

FP1: Bell Lane between Tom Thumb and JD's Liquor Store

P7: Westbound US 90 at Metron Way

P8: Pea Ridge Flea Market Entrance at Westbound US 90

P9: Eastbound US 90 at Kids Discovery Exit

FP2: Pond Creek Bridge (Westbound US 90)

P10: Eastbound US 90 near Red Brick Road

P11: Eastbound US 90 near Eaton Drive

P12: Eastbound US 90 near Industrial Blvd.

P13: Eastbound US 90 near SR 87 South

Crash Severity Analysis

Within the study period (January 2010 to December 2012), 821 injuries were attributed to crashes along US 90, along with 478 property damage only collisions. Injury severities related to each crash type are summarized in Table 5. Injuries sustained in pedestrian and bicyclist crashes are noted in Table 4 by location.

There were 8 fatal crashes which did not involve pedestrians and were largely due to driver error. These crashes are described as follows:

- ***Improper Turn from Side Road (2):*** Vehicles entering US 90 from Diamond Street (MP 3.156) and from the Pea Ridge Flea Market driveway (MP 7.300) colliding with oncoming vehicles. The Diamond Street collision involved a motorcyclist traveling on US 90 at night.
- ***Running Traffic Signal (1):*** The driver of a westbound vehicle failed to stop at the Woodbine Road intersection (MP 3.028) and collided with a left turning vehicle.
- ***Lost Control (3):*** An unrestrained driver exceeding the speed limit attempting a turn onto SR 87 and collided with a concrete pole. Another driver lost control of his vehicle while pulling a trailer and collided with oncoming traffic. Additionally, an unrestrained driver was ejected from his vehicle following off-tracking, overcorrecting, and overturning his vehicle at 4am.
- ***Alcohol Related (2):*** A DUI driver collided with a motorcyclist at Simmons Road (MP 4.563) at night. Another driver under the influence of alcohol lost control and overturned into Escambia Bay at night.

The KABCO scale was used to distinguish injury severity levels, defined by the Florida Department of Highway Safety and Motor Vehicles as follows:

- ***Fatal Injury (K):*** An injury that results in death within thirty days of crash occurrence.
- ***Incapacitating Injury (A):*** Any non-fatal injury that prevents the injured person from walking, driving, or normally continuing activities performed prior to the injury.
- ***Non-Incapacitating Injury (B):*** Any injury (other than fatal or incapacitating) that is evident to observers at the scene of the crash in which the injury occurred.
- ***Possible Injury (C):*** Any reported or claimed injury that is not evident to observers.
- ***Property Damage Only (O):*** No personal injury involved.

Table 5. Summary of Crash Severity

CRASH DESCRIPTION	CRASH SEVERITY TYPE					TOTAL	% TOTAL
	K	A	B	C	O		
Rear-End Collision	0	47	119	282	275	723	56%
Improper Turn to/from Driveway or Side Road	2	21	24	63	43	153	12%
Other	2	14	18	29	47	110	8%
Improper Lane Change/Passing	0	3	3	12	60	78	6%
Running Traffic Signal	1	7	19	39	10	76	6%
Improper Left Turn at Intersection	0	12	15	26	13	66	5%
Improper Left Turn at Median Opening	0	2	4	9	12	27	2%
Unknown	1	2	3	4	8	18	1.4%
Alcohol or Drug Related	1	1	6	2	6	16	1.2%
Pedestrian or Bicyclist Involved	2	3	4	5	1	15	1.2%
Improper Right Turn at Intersection	0	0	5	2	3	10	0.8%
Speeding	1	3	1	1	0	6	0.5%
Improper Left Turn from a Two-way Left Turn	0	0	1	0	0	1	0.1%
Total Number of Injuries	**10**	**115**	**222**	**474**	**478**	**1,299**	
Percentage of Total Injuries	**<1%**	**9%**	**17%**	**37%**	**37%**		

Critical Areas of Concern

Based on preliminary assessment results from existing conditions analysis, several safety issues were identified within the US 90 corridor. These critical areas of concern are described below and can be located in the Appendix C reference figures.

1. Roadway Lighting

Night-time crash frequency and severity within the US 90 corridor are key issues for all road users, including pedestrians, bicyclists, motorcyclists, and other drivers. Within the three year period of January 2010 to December 2012, 212 night-time crashes occurred which involved eight fatalities and 193 total injuries, including seven pedestrian-related collisions.

Upon review of contributing crash factors involving poor visibility, a significant number of night-time crashes for improper turns and collisions with pedestrian and bicyclists could potentially have been reduced if lighting features had been present. Segments 2, 3, and 6 are most critical based on night-time crash history. Based on the findings in the lighting justification analysis, roadway lighting is warranted along the corridor in Segments 1, 2, 3, 4, and 6.

2. Pedestrian Accessibility

Providing continuous pedestrian access along the entire 16 mile corridor equates to the best case scenario for US 90 pedestrians and bicyclists. However, a feasible approach to improving safety involves identification of critical locations for smaller scale improvements. Crash history was researched in conjunction with site analysis to determine deficiencies and inconsistencies.

Bike Lanes. Bicyclists generally use the shoulder along the corridor between short sections of marked bike lanes. Based on crash history, deficiencies in lighting conditions and signing and pavement markings may have influenced some occurrences. Two incidents involved a bicycle crossing a side road where bike lane markings were discontinuous (Sports Drive, MP 4.437 and the Kids Discovery entrance, MP 8.731). Another crash may have resulted from a combination of poor lighting conditions and lack of signage at the SR 87 turn lane. In general, bike lane markings and related signage are inconsistent, particularly at right turn lanes within Segments 2 – 4. One example of this is the bike lane configuration in Segment 2 shown in Appendix C; turn lane and intersection markings and signs are inconsistent or lacking. There are 18 critical sections along EB and WB US 90 without bike lanes or paved shoulder, where bicyclists must travel in the roadway or along a grassed shoulder.

Sidewalk and Crosswalks. Site visits did not identify a large volume of pedestrian traffic. However, several collisions showed that pedestrians are using the shoulder or roadway to travel along US 90. In Segment 2, there are residential and commercial areas east of Woodbine Road that are not connected to the bike lane and sidewalk features present at CR 197A, less than 1 mile away. Avalon Blvd and Ward Basin sidewalks are also disconnected from other areas of interest accessed by downtown Milton pedestrian facilities.

Pond Creek Bridge. This narrow structure, which connects residential and commercial areas in West Milton, is not suitable for use by pedestrians or bicyclists due to inadequate width and lack of regulatory and/or warning signs. Pedestrians are not provided with a protective safety barrier

from traffic, traveling at least 45 mph on US 90. Signing and pavement markings for bicycles are nonexistent. Although not directly supported by crash history (due to an intoxicated pedestrian fatality), standard pedestrian and bicyclist safety guidelines conflict with the existing bridge crossing conditions. In addition to pedestrians and bicyclists regularly commuting between residential and commercial areas of interest, Mayo Park visitors must cross the bridge from the east side of Pond Creek to utilize the restroom facilities on the west side of the creek.

3. Intersection and Side Road Safety

Advance Intersection Warning. Signal Ahead (W3-3) warning signs are not present at a majority of major signalized intersections. No signal-interconnected flashing beacon assemblies on Be Prepared to Stop (W3-4) signs are located in conjunction with W3-3 signs at any signalized intersections. Pedestrian and bicyclist-related warning and regulatory signs are not consistent throughout the corridor. The majority of bicycle regulatory signage does not correspond to current MUTCD guidance.

Signal Backplates. Signalized intersections lack signal backplates which improve signal visibility, particularly along east-west highways affected by sunlight conditions. Delayed or sudden stops at intersections caused by drivers unaware of a signal may result from poor visibility, combined with a lack of advance warning. In the case of closely spaced signals which are not synchronized, such as the Dogwood Drive intersection and adjacent signal to the west, conflicting traffic signals may be difficult to distinguish without backplates.

Existing Pavement Markings. In general, existing crosswalk markings, stop bars, and bike lane markings are in poor condition in areas throughout the corridor that have not been recently resurfaced.

Signals at Dogwood Drive and Commercial Entrance. Signal timing is not synchronized between the closely spaced intersections of Dogwood Drive (MP 11.004) and the entrance to Santa Rosa County Offices and other commercial businesses, located approximately 450' to the west. Alternating red and green phases occur frequently; there are no existing signal backplates on the strain pole wire mounted signal heads. The eastbound approach in particular has four through lanes initially, two of which become left turn only lanes at the Dogwood Drive intersection; no ground-mounted or overhead lane direction signs are present.

St Johns Road. This side road intersection (MP 13.883) was noted in discussions with Santa Rosa County officials. During the 2010 – 2012 crash analysis period, two crashes occurred at this intersection. Both were day time crashes in dry conditions attributed to drivers looking away from the roadway while approaching stopped vehicles, leading to rear end collisions. These crashes involved two non-incapacitating and five possible injuries, along with property damage to six vehicles. There is no center turn lane present at this location, where large truck traffic access is frequent due to industrial areas north of US 90. Existing intersection warning signs are present on eastbound and westbound US 90.

Bicycle and Pedestrian Safety Recommendations

Methodology

Crash history research, site observations, and lighting analysis were primarily used as references for the study and subsequent recommendations related to bicycle and pedestrian safety concerns along the US 90 corridor. Safety improvements corresponding to locations with relevant crash history are presented first, followed by additional recommendations based strictly upon engineering judgment for adherence to standard guidance, as crash data may not directly support needed improvements. Benefit-cost analysis documentation for pedestrian and bicyclist recommendations are presented in Appendix L.

Crash-related Issues

Three-year crash history data, covering January 2010 through December 2012, was a key indicator of vulnerable road user safety concerns. During this period, 15 collisions occurred which involved pedestrians or bicyclists. Recommendations, including estimated construction costs, are summarized in Table 7 and supported by calculations in Appendix G and in the *US 90 Lighting Justification Report* (Appendix E).

In addition to lighting recommendations, other categories of recommendations provided for the issues related to pedestrian and bicycle crashes are signing, pavement markings, sidewalk, and widening to provide a keyhole bike lane. The HSM does not provide CMFs for these countermeasures indicating research had not been completed to provide statistically reliable CMFs, only trends in crashes or user behavior. However, the FHWA CMF Clearinghouse includes CRFs relating to these items and these are presented in Table 6 and in Appendix L.

Table 6. Crash Reduction Factors from FHWA CMF Clearinghouse

Countermeasure	CRF ID	Description	CRF	Star Rating
Signs	62	Install signs to conform to MUTCD	15	★★★
Signs	63	Install signs to conform to MUTCD	7	★★★
Markings	4123	Install high-visibility crosswalk	40	★★
Markings	1696	Improve/install pedestrian crossing	25	Unrated
Markings	1697	Improve/install pedestrian crossing	25	Unrated
Sidewalk	1333	Install sidewalk (to avoid walking along roadway)	74	Unrated
Shoulder	1821	Provide paved shoulder (of at least 4 feet) (to avoid walking along roadway)	71	Unrated
Bike Lane	1719	Provide bike lanes	35	★★

Table 6 Notes: *1) Unrated CRFs are from Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects, Gan et al., 2005*
2) Source (May 2014): http://www.cmfclearinghouse.org/

The CMFs for signs, pavement markings, and bike lanes indicate a reduction in crashes and are consistent with HSM trends of reduced crashes for these countermeasures. For sidewalk, no CMF was found in the FHWA CMF Clearinghouse regarding installation of a new sidewalk, only sidewalk widening. Sidewalk addition was mentioned in the HSM as reducing the risk of pedestrian crashes.

In some cases, the negligible cost of improvements (sign(s), pavement marking, etc.) eliminates a need for in-depth cost analysis and justification, due to the comparative costs ranging from $67,890 to $6.82 million according to KABCO severity. Costs according to severity level obtained from the FDOT Plans Preparation Manual, Volume 1, Chapter 23, January 1, 2014 revision are as follows:

- ***Fatal Injury (K):*** $6.82M estimated for an injury that results in death within thirty days of crash occurrence.
- ***Incapacitating Injury (A):*** $557,752 estimated for any non-fatal injury that prevents the injured person from walking, driving, or normally continuing activities performed prior to the injury.
- ***Non-Incapacitating Injury (B):*** $111,228 estimated for any injury (other than fatal or incapacitating) that is evident to observers at the scene of the crash in which the injury occurred.
- ***Possible Injury (C):*** $67,890 estimated for any reported or claimed injury that is not evident to observers.
- ***Property Damage Only (O):*** $6,500 estimated when no personal injury is involved.

In general, recommendations in Table 7 fall into the following categories:

- ***Lighting:*** Recommended for all night-time crashes not involving alcohol (6 total)
- ***Signing and Pavement Markings:*** Recommended for bike lanes, crosswalks, and stop bars where markings are insufficient or in poor condition and may need supplemental warning signs (4 locations)
- ***Bike Lane Addition:*** Widening and restriping recommended where no bike lane or paved shoulder is present (1 location)
- ***Sidewalk Addition:*** Recommended in locations with increased pedestrian traffic and high crash frequency, further discussed in Site Observations section of report (2 locations)
- ***Other:*** Additional items include landscape maintenance and three locations without recommendation due to negligent behavior

Table 7. Recommendations for Incidents Involving Pedestrians and Bicyclists							
Segment	Crash Number	Location	Time	Injury Severity	Crash Description	Preliminary Recommendation	Estimated Construction Cost
1	P1	MP 0.066 Sta. 102+00	Night	C	Pedestrian on outside shoulder struck by passing WB vehicle mirror near Escambia River Bridge	Roadway lighting to improve visibility (US 90 Lighting Justification Report)	$543,000 for Segment 1
2	P2	MP 4.437 Sta. 333+00	Day	A	Bicyclist using sidewalk (not bike lane) struck by vehicle while crossing Sports Dr along EB US 90	Replace faded stop bar and crosswalk markings	<$500
	P3	MP 4.877 Sta. 356+00	Day	*Unknown*	Bicyclist exiting Winn Dixie parking lot entered turn lane into path of WB vehicle	*No recommendation or analysis due to contributing cause / behavior: bicyclist failed to yield to oncoming vehicle and fled scene.*	-
	P4	MP 5.764 Sta. 403+50	Night	C	Pedestrian in roadway struck by passing WB vehicle mirror near E Spencer Field Rd	Roadway lighting to improve visibility (US 90 Lighting Justification Report); sidewalk addition candidate (refer to Site Observations section of report)	$923,000 for Segment 2 (Lighting only)
	P5	MP 6.066 Sta. 419+20	Day	B	Pedestrian walking in bike lane struck by passing WB vehicle near Watkins St	Sidewalk addition between residential and commercial zones (refer to Site Observations section of report)	$324,000
	P6	MP 6.672 Sta. 451+20	Day	A	Pedestrian in crosswalk struck by right turning vehicle exiting Walmart	Add special emphasis crosswalk markings and pedestrian warning signs (W11-2, W16-7P); trim landscaping to maintain visibility on approach to signal	$3,850
3	FP1	MP 7.073 Sta. 472+50	Night	**K**	*(Not along US 90)* Pedestrian crossing Bell Ln south of crosswalk at US 90, traveling from Tom Thumb to JD's liquor store, struck by SB vehicle	Roadway lighting to improve visibility (US 90 Lighting Justification Report)	$426,000 for Segment 3
	P7	MP 7.140 Sta. 475+50	Day	C	Bicyclist traveling EB along outside WB shoulder struck by vehicle turning from Metron Way onto WB US 90	Widen WB US 90 for 700' east of intersection to add 5' bike lane between through and right turn lanes	$119,000
	P8	MP 7.286 Sta. 483+75	Night	C	Bicyclist crossing from outside shoulder (near Flea Market entrance) to median traveled in front of WB vehicle near Peaden Rd	Roadway lighting to improve visibility (US 90 Lighting Justification Report)	$426,000 for Segment 3
	P9	MP 8.731 Sta. 560+00	Day	B	Bicyclist on EB US 90 struck by vehicle exiting Kids Discovery	Bike lane markings extending across commercial driveway for emphasis (FDOT Standard Index 17347)	<$500

Table 7, Continued. Recommendations for Incidents Involving Pedestrians and Bicyclists							
Segment	Crash Number	Location	Time	Injury Severity	Crash Description	Preliminary Recommendation	Estimated Construction Cost
4	FP2	MP 10.076 Sta. 630+50	Night	K	Intoxicated pedestrian in roadway west of Pond Creek Bridge struck by WB vehicles	*No recommendation due to intoxication. Roadway lighting is present; however, lack of pedestrian and bicyclist features on bridge is addressed in General Roadway Safety Recommendations.*	-
6	P10	MP 13.546 Sta. 813+75	Day	C	Bicyclist on outside shoulder turned left into travel lanes into the path of an EB vehicle near Red Brick Rd	*No recommendation or analysis due to contributing cause/ behavior: bicyclist failed to yield to oncoming vehicle.*	-
	P11	MP 15.161 Sta. 899+00	Day	B	Bicyclist on shoulder struck by EB vehicle near Eaton Dr in hit and run	Addition of bike lane markings and signage (refer to Site Observations section of report)	$1,350
	P12	MP 15.502 Sta. 917+00	Night	B	Bicyclist on shoulder struck by EB vehicle near Industrial Blvd	Roadway lighting to improve visibility (US 90 Lighting Justification Report); also suggest bike lane signage (refer to Site Observations section of report)	$845,000 for Segment 6
	P13	MP 16.127 Sta. 950+00	Night	A	Bicyclist in bike lane struck by vehicle changing lanes into right turn lane at SR 87	Roadway lighting to improve visibility (US 90 Lighting Justification Report); standard bike lane signage present	$845,000 for Segment 6

Notes: 1. Refer to Vulnerable Road User Safety Study Figures in Appendix C for crash number reference locations.
2. B-C Ratios calculated for lighting improvements by Segment; refer to Appendix E Lighting Justification Report. B-C Ratios not calculated for remaining improvements due to various reasons, including lack of recommendation based on contributing cause/behavior; negligible cost of improvements; or improvement basis upon substandard facility needs in the absence of HSM-approved CMF and predictive VRU methodology.

In addition to physical crash-related improvements to roadway features along US 90, a recommendation for public awareness and education has been determined as a potential safety need in the area. Informing both vulnerable road users and motorists of the laws and local safety issues is complimentary to the proposed roadway improvements. Numerous successful campaigns exist across the state as examples of pedestrian and bicyclist safety initiatives, with proven FDOT resources which may be consulted by local agencies for input and guidance.

Site Observations

Pedestrian and bicyclist-related safety issues observed were first presented in Technical Memorandum 1. Although there is no recent crash history justification to utilize in benefit-cost analysis, construction costs were estimated for these critical improvements. Cost estimation calculations are provided in Appendix H.

For bike lanes and sidewalks, existing features are tabulated in Technical Memo 1, Tables 2A and 2B. These features are summarized in Table 8 for the 16.2 mile corridor. The recently refurbished Old Brick Road Trail parallel to US 90 throughout Segment 6 comprises 2.9 miles (18%) of the study limits; however, the historic brick trail is not ADA compliant and is not included in Table 8.

Table 8. Summary of Existing Bicycle and Pedestrian Features

Location	Bike Lane	Paved Shoulder	Grassed or No Shoulder	Sidewalk
EB US 90	27%	65%	8%	16%
WB US 90	25%	66%	9%	12%

Bike Lane Recommendations. Proposed bike lane improvements vary from signing and pavement marking upgrades to lane widening for the addition of a bike lane. Bike lane additions are proposed in those areas (8% - 9% of the corridor) where no bike lane or paved shoulder exist. These locations are listed in Table 9 with costs based on $240 per linear foot of widened roadway with curb and gutter. An estimate of $110 per linear foot of roadway assumes a flush shoulder and open ditch configuration constructed within the existing right of way.

Table 9. Summary of Proposed Bicycle Facilities

Segment	US 90 Direction	From Sta.	To Sta.	Length (LF)	Cost Estimate per LF	Estimated Construction Cost
2	EB	373+00	380+00	700	$240	$168,000
	EB	386+00	391+00	500	$240	$120,000
	EB	417+00	420+00	300	$240	$72,000
	EB	455+50	460+00	450	$110	$49,500
3	EB	469+00	476+00	700	$240	$168,000
	WB	473+00	480+00	700	$240	$168,000
4	WB	601+00	605+00	400	$240	$96,000
	EB	613+50	630+00	1,650	$240	$396,000
	WB	623+50	626+00	250	$110	$27,500
	WB	628+50	630+00	150	$110	$16,500
	WB	635+00	649+00	1,400	$110	$154,000
	WB	661+00	664+00	300	$110	$33,000
	EB	672+00	680+00	800	$110	$88,000
	WB	680+00	691+00	1,100	$110	$121,000
			Totals:	9,400		$1,677,500

Recommended signing and pavement marking improvements are listed in Table 10. Existing signs are lacking or outdated; therefore, the entire corridor requires sign replacement or addition to provide consistency and emphasis to bicyclists traveling in bike lanes (25% - 27%) or along paved shoulders (65% - 66%), particularly at signalized intersections. The cost for corridor-wide improvements is estimated to be $55,000.

Table 10. Summary of Proposed Bicycle Signing and Pavement Messages

Segment	Bike Lane Signs	Bike Lane Symbols	Estimated Construction Cost
Segment 1 (MP 0.000 – 2.559): Western Waterways	0	0	$0
Segment 2 (MP 2.559 – 6.913): Pace	37	0	$18,500
Segment 3 (MP 6.913 – 8.922): Pea Ridge	12	0	$6,000
Segment 4 (MP 8.922 – 11.689): West Milton	15	0	$7,500
Segment 5 (MP 11.689 – 12.230): Downtown Milton	18	18	$12,150
Segment 6 (MP 12.230 – 16.216): East Milton	21	2	$10,850
Totals:	103	20	$55,000

Extensions of existing bike line markings are recommended at locations with right turn lanes approaching commercial driveways, to provide awareness to drivers exiting businesses or entering from median openings. Critical locations are listed below. Costs are based on $500 per location for 6" white guidelines.

- Shopping center, MP 4.918
- Target entrance, MP 6.192
- Shopping center, MP 6.529
- Lowe's entrance, MP 7.213
- Shopping center, MP 8.610
- Kids Discovery, MP 8.731 *(P9)*
- Total construction estimate: $3,000

Sidewalk Recommendations. Recommendations and estimated costs for sidewalk additions are presented by corridor segment. A construction estimate of $270,000 per mile of sidewalk was used for cost analysis purposes based on typical roadway, pavement marking, and drainage items required.

Segment 1 (MP 0.000 – 2.559): Western Waterways

No sidewalk is proposed at this time for Segment 1. While crash history shows some pedestrian traffic present (P1), the 2.6 mile roadway segment is not anticipated to have large pedestrian volumes due to the adjacent land use.

Cost Estimate: $0

Segment 2 (MP 2.559 – 6.913): Pace

Sidewalk addition is recommended for the following locations:

- **Woodbine Road to CR 197 (MP 3.028 to MP 4.018):** Estimate $270,000 to construct a one mile extension to the existing sidewalk facility at CR 197, connecting commercial, residential, medical, and school areas. This estimate is for only one side of US 90. Addition of a sidewalk along eastbound US 90 appears to provide better connectivity to residential properties; site conditions such as drainage, pedestrian counts, etc. need to be analyzed to determine if this is the best option.
- **SS Dixon Street to School Lane (MP 4.575 to MP 7.073):** Estimate $675,000 to construct a 2.5 mile extension along westbound US 90, from the SS Dixon sidewalk facility and school zone to large commercial shopping areas to the east. This commercial area includes existing bike lanes, suggesting elevated volumes of vulnerable road users. At a minimum, a reduced segment should be constructed based on crash history in the vicinity of the shopping areas. P4 and P5 pedestrian collisions occurred within 2,000 feet of the Watkins Street (MP 6.081). While proposed lighting may reduce similar crashes, an immediate improvement to this area would be beneficial. An estimated $324,000 would construct a 1.2 mile sidewalk segment along westbound US 90, from Summerdale Blvd (MP 5.519) to Cardinal Street (MP 6.672), a commercial segment surrounded by residential areas wherein both pedestrian crashes occurred.

Combined Cost Estimate: $594,000 - $945,000

Segment 3 (MP 6.913 – 8.922): Pea Ridge

No sidewalk is recommended at this time for Segment 3. Large pedestrian volumes are not anticipated based on land use and site observations.

Cost Estimate: $0

Segment 4 (MP 8.922 – 11.689): West Milton

The area between Avalon Blvd (MP 9.304) and Stewart Street (MP 11.621) could benefit from sidewalk addition, due to the commercial and residential land uses which lie between existing sidewalk facilities at each intersection. The Pensacola State College (PSC) Milton Campus lies north of Avalon Blvd. The Blackwater Heritage State Trail also crosses US 90 at Stewart Street. Connecting the 2.3 mile segment between PSC and downtown Milton would benefit commuting pedestrians and recreational users. This estimate is based on sidewalk addition along the eastbound side of US 90. For this sidewalk to provide a continuous connection, Pond Creek Bridge would also need to be improved, as described separately.

Cost Estimate: $621,000

Segment 5 (MP 11.689 – 12.230): Downtown Milton

No sidewalk is proposed for Segment 5 due to the presence of existing sidewalk facilities.

Cost Estimate: $0

Segment 6 (MP 12.230 – 16.216): East Milton

Upon current construction completion, sidewalk facilities will be present in the western mile of Segment 6 from downtown Milton to Ward Basin Road. To add a sidewalk for the remaining three miles of Segment 6 along eastbound US 90 would cost an estimated $810,000.

Along westbound US 90, Old Brick Road Trail is present between Ward Basin Road and SR 87 in Segment 6. This location is listed on the National Register of Historic Places (NRHP #94000626) and is not ADA compliant. A recent rehabilitation project costing $1.5M undertaken by Santa Rosa County addressed drop-offs at culverts and the uneven brick surface at some of the worst areas, however was not able to address all existing issues. It is estimated to cost more than the $1.5M already expended to bring the trail into full ADA compliance. The site would need to be further evaluated to determine the impacts reconstruction of Old Brick Road Trail to meet ADA compliance would have on the historic character of the trail.

East of Ward Basin Road, land use, population density, and the presence of the Old Brick Road Trail eliminate a critical need for sidewalk addition. Therefore, no sidewalk is recommended for Segment 6.

Cost Estimate: $0

The combined cost for all recommended improvements totals $1.6 million. Locations in Segments 2 and 4 are most critical given the crash history and anticipated pedestrian volumes and trip frequency.

Pond Creek Bridge Pedestrian Alternatives. Recommendations for this narrow structure (MP 10.076 to MP 10.145) located within Segment 4 involve both short-term and long-term implementation as described below.

Short-term Pond Creek Bridge Improvements

Short-term recommendations apply to bicycle traffic only and consist of signing and pavement marking upgrades, which may draw emphasis to bicyclists who must use the travel lane to cross Pond Creek Bridge. Warning signs (W11-1, Bicycle Warning with W16-1P, Share the Road) should be installed at the bridge approaches along both sides of US 90 ($2,000). Additionally, zig-zag edgeline pavement marking placed 250 feet prior to the bridge approaches may contribute to traffic calming and driver awareness of the upcoming narrow bridge ($2,000). An estimated construction cost for this short-term safety improvement is $4,000.

Long-term Pond Creek Bridge Pedestrian Improvements

FDOT previously developed cost estimates for several alternatives along eastbound US 90, listed below in 2010 values:

- **Alternative 1:** Widen existing bridge on outside of eastbound US 90 to allow for six-foot pedestrian path; includes partial removal of existing deck, barrier with picket rail and associated work ($1.6 million)

- **Alternative 2:** Cantilever six-foot pedestrian path to existing bridge on outside of eastbound US 90 with picket rail and associated work, assuming no right of way acquisition ($825,000)
- **Alternative 3:** Standalone wooden pedestrian bridge 12-foot by 400-foot not attached to bridge, parallel to bridge on outside eastbound with picket rail inside and outside and associated work; access to construct, alignment, bridge length, and actual pile lengths could increase or decrease cost) ($1.3 million)

General Roadway Safety Recommendations

Methodology

During research and analysis for pedestrian and bicyclist improvements, additional concerns related to roadway safety were identified.

Critical Areas of Concern

Based on preliminary assessment results from existing conditions analysis, several safety issues were identified within the US 90 corridor. Supporting calculations are provided in Appendix I.

Roadway Lighting

Based on the findings of lighting justification analysis, roadway lighting is warranted along the US 90 corridor in Segments 1, 2, 3, 4, and 6. Segments 2, 3, and 6 are most critical based on night-time crash history for all crash types. These corridor segments are also critical in terms of pedestrian and bicyclist safety, as discussed in the Crash-related Issues section of the report. Segment 5, 0.5 miles through downtown Milton, has existing lighting features as well as minimal night-time crash occurrence.

As presented in the *Lighting Justification Report* contained in *Technical Memorandum 1: Site and Safety Analysis,* Benefit-Cost ratios were calculated using a Crash Reduction Factor of 0.3 based on values for Urban Mainline (25% commercial) in Figure 15-1 of the FDOT Manual on Uniform Traffic Studies, January 2000 edition. Estimated construction costs and B-C ratios are listed below by segment:

- Segment 1 (2.559 miles): $543,000; B-C 143.8
- Segment 2 (4.354 miles): $923,000; B-C 1126.8
- Segment 3 (2.009 miles): $426,000; B-C 274.9
- Segment 4 (2.767 miles): $587,000; B-C 417.6
- Segment 6 (3.986 miles): $845,000; B-C 54.2
- Corridor Total: $3,324,000

Intersection and Side Road Safety

Pedestrian and Railroad Crossings. In Segment 6, warning signs are not consistent at approaches to and along northbound side roads which cross the Old Brick Road Trail and CSX railroad. Signs are proposed at the following side road location, estimated at $500:

- St. Johns Street (MP 13.883): Bicycle Warning, W11-1 with W16-7P arrow plaque

Signal Backplates. Backplates with retroreflective borders are proposed at the 20 signalized intersections along US 90 to improve signal visibility. Estimated cost is $24,000 for corridor-wide implementation.

Advance Intersection Warning. Signal Ahead (W3-3) warning signs are proposed at all 20 major signalized intersections. Additionally, Be Prepared to Stop (W3-4) signs are recommended at five intersections with high crash frequency related to rear end and red light running collisions. The W3-

4 signs should include flashing beacons which are signal interconnected for emphasis. Table 11 summarizes the proposed intersection signs. The total cost for sign addition is estimated to be $89,000.

Table 11. Summary of Proposed Signalized Intersection Advance Warning Signs

Intersection	Signal Ahead Sign (W3-3)	Be Prepared to Stop Sign (W3-4) with Flashing Beacon
CR 197A/Woodbine Road (MP 3.028)	✓	✓
CR 197/Chumuckla Highway/Floridatown Road (MP 4.018)	✓	
CR 197 B/West Spencer Field Road (MP 4.825)	✓	
East Spencer Field Road (MP 5.811)	✓	✓
Watkins Street (6.081)	✓	✓
Spears Street/Home Depot West Entrance (MP 6.366)	✓	
Cardinal Street/Walmart West Entrance (MP 6.672)	✓	
Bell Lane (MP 7.073)	✓	✓
SR 281/Avalon Blvd (MP 9.304)	✓	✓
Kmart Shopping Center entrance (MP 9.417)	✓	
Parkmore Plaza Drive (MP 9.855)	✓	
Glover Lane (MP 10.304)	✓	
Combined: Santa Rosa County Offices entrance (MP 10.914); SR 89/Dogwood Drive (MP 11.004)	✓	
SR 87/Stewart Street (MP 11.621)	✓	
Canal Street (MP 11.893)	✓	
Elmira Street (MP 12.039)	✓	
Willing Street (MP 12.104)	✓	
Ward Basin Road (MP 13.205)	✓	
SR 87 South (MP 16.216)	✓	
Total Item Quantity	38	10
Total Cost	$19,000	$70,000

Signals at Dogwood Drive and Commercial Entrance. Signal timing is not synchronized between the closely spaced intersections of Dogwood Drive (MP 11.004) and at the entrance to Santa Rosa County Offices and other commercial businesses, located approximately 450' to the west. It is assumed that the traffic operations department responsible for signal coordination can properly

address the issue to eliminate driver confusion. Alternatively, added emphasis to traffic signals could be provided with dual red signal displays or a third red signal mounted centrally between the existing signal heads. Additionally, ground-mounted or overhead lane direction signs are proposed on the eastbound approach to bring awareness to the dual left turn lanes at Dogwood Drive (ground-mounted sign construction cost estimate $1,000).

Stakeholder Input

Public Information Meeting

A US 90 Pedestrian/Bicyclist Safety Study Public Information Meeting was held April 3, 2014 at the Santa Rosa County Auditorium from 5:30 – 6:30 PM CDT. The objective of the public meeting focused on gathering local stakeholder input for inclusion in this study, to supplement observed conditions and crash records. Residents and business owners along the 16.2 mile corridor were invited to attend the meeting, and also provided with several options for submitting comments or questions. Twenty-two attendees were recorded on the sign-in sheet, which included residents, business owners, and local officials and staff from FDOT, Santa Rosa County, the City of Milton, FHP, and emergency services. Aerial view displays similar to Appendix C figures were made available to assist with discussion at the meeting, along with meeting flier handouts which listed contact information for the project, included in Appendix J.

Public Comments and Recommendations

Public comment cards were completed and returned at the meeting by 10 stakeholders; three additional comments were received during the two week comment period following the meeting. Transcripts of the comments are found in Appendix K.

Comments received included detailed information regarding areas of concern. Specific locations range from MP 6.7 to MP 13.5, contained in Segments 2, 3, 4, 5, and 6. The majority of safety issues raised include sidewalk, crosswalk, and bike lane additions, as described in the following sections with recommendations for improvement. Additional concerns include pedestrian and traffic signals, speed zones, intersection control, and lighting. Cost estimation is provided in Appendix H.

VRU Concerns in Segments 2, 3, and 4 (Pace, Pea Ridge, and West Milton)

Segment 2 and 3 bike lanes and sidewalk: Comment 9 suggested the addition of bike lanes and sidewalks along eastbound US 90 between Walmart (MP 6.672) and Santa Villa Drive (MP 7.466). There are existing bike lanes and/or paved shoulders along eastbound US 90 within these limits, with the exception of 1,150' identified in Bicycle and Pedestrian Safety Recommendations, Table 9. Two bicycle-related crashes (P7 and P8) occurred along westbound US 90 during the study period. The location of P7 lies within a recommended bike lane segment; P8 lies within a segment of existing paved shoulder. Additional bike lane improvements are not proposed beyond those already presented (widening, lighting, and signing).

No sidewalk facilities lie within this segment of US 90. One fatal crash (FP1) occurred on Bell Lane at night. Pedestrian counts are unknown but activity levels are anticipated to be increased due to the overlapping commercial and residential areas. Further study is recommended to determine pedestrian volumes and related sidewalk needs. As described previously in this report, sidewalk addition is proposed from MP 4.575 to MP 7.073 along westbound US 90 between a school zone and commercial shopping areas. Additional sidewalk along eastbound US 90 from Walmart to Santa Villa Drive would cost an estimated $216,000.

Segment 4 sidewalk: Comment 7 requested sidewalk addition from Avalon Blvd (MP 9.304) to Stewart Street (MP 11.621). This improvement is identified in the Bicycle and Pedestrian Safety

Recommendations section of this report, with details of cost estimation ($621,000) and additional requirements (Pond Creek Bridge improvements).

Emerald Sands Inn: A discussion at the public meeting with an employee of Emerald Sands Inn (MP 10.764) revealed a pattern of high pedestrian traffic crossing US 90 in the vicinity of the motel and adjacent apartments. Further study involving pedestrian counts is recommended to determine if a midblock crosswalk would be warranted at this location.

Blackwater Heritage Trail Crossing: Comment 1 questioned the pedestrian-actuated signal timing at the trail crossing. Upon further field review, it was determined that the pedestrian signals for north and south US 90 crossings did not respond to actuation. The issue was communicated to Santa Rosa County for further analysis and repair.

Comment 7 requested more time for the pedestrian crossing signal. This information was also shared with the local agency for consideration.

Glover Lane Crossing: Comment 3 noted an issue with the pedestrian signal button at Glover Lane. No issues were observed during a field review. However, this issue was communicated to the local agency.

VRU Concerns in Segment 5 (Downtown Milton)

Segment 5 Crosswalk: Comments 1 and 7 requested crosswalk addition at Mary Street (MP 11.755); comments 3, 4, 6, 7 suggested crosswalk addition at Escambia Street (MP 11.940). Stakeholder input for these locations indicates critical local crossing needs, which are not currently supported by pedestrian counts. The cost for adding crosswalk and advance warning signs, justified following pedestrian count assessment, is estimated to be $3,700 per location, for a total of $7,400. It is recommended that a study be conducted to include pedestrian counts and analysis.

Segment 5 bike lanes and sidewalk: Comments 3, 6, and 7 identify various locations downtown which involve risk to pedestrian and bicyclist safety. In general, the lack of bike lanes or paved shoulders from Martin Luther King, Jr Drive (MP 11.823) to Willing Street (MP 12.104) is a safety concern due to heavy downtown traffic. As small scale solution involves the addition of signing and pavement markings ("sharrows") related to a shared lane condition, which may cost approximately $13,600. This value is based on estimates for eight intersecting roads in downtown Milton between Stewart Street (MP 11.621) and Willing Street (MP 12.104). One R4-11 "Bicycles May Use Full Lane" sign should be placed downstream of each intersection on the eastbound and westbound approaches. Two shared lane markings should also be placed at standard locations within each block on both approaches.

Large scale recommendations include widening of US 90 to provide bike lanes throughout the 0.3 mile segment from MLK Jr Drive to Willing Street, at a construction cost estimate of $923,000.

Sidewalk addition was suggested from Stewart Street (MP 11.621) to Canal Street (MP 11.893) along westbound US 90. Existing sidewalk is present within this segment along eastbound US 90. A westbound sidewalk and crosswalk addition may cost approximately $180,000 in addition to

potential right-of-way costs, modifications to business parking areas, and aesthetic requirements to match the historic downtown environment.

VRU Concerns in Segment 6 (East Milton)

Sidewalk extension to Old Brick Road Trail: Comment 10 suggested a 900' extension of the sidewalk west of Red Brick Road to the Old Brick Road Trail along westbound US 90. This minor improvement is strongly recommended to provide connectivity between the existing facilities. Estimated construction costs are $60,000.

Segment 6 bike lanes: Comments 2 and 5 request bike lanes in east Milton to SR 87 S. This section of US 90 includes paved shoulders with some bike lane markings and signage. No additional recommendations are suggested beyond the signs, markings, and lighting previously proposed.

General Roadway Concerns

Pond Creek Bridge: Three stakeholder comments (1, 7, 11) referred to critical safety concerns along Pond Creek Bridge. Issues and alternative recommendations are presented in the Bicycle and Pedestrian Safety Recommendations section of this report.

Roadway Lighting: Comment 1 noted poor lighting in two Segment 4 locations due to night-time pedestrian activity. Lighting features are proposed within this segment, as described in the General Roadway Safety Recommendations and in Appendix E.

Signal/median opening at Santa Villa Drive: Comment 8 involved a signal request at Santa Villa Drive. As an alternative, median opening modification was suggested. Further analysis is required at this location to assess the traffic movements in this segment, specifically for commercial trucks with frequent trips to and from McCombs Electric which require a U-turn movement for business access.

"Do Not Block Intersection" signs in downtown Milton: Comments 4, 6, and 7 suggested R10-7 "Do Not Block Intersection" signs at Escambia Street and traffic signals in Segment 5 due to congestion and access issues. The additional signs would cost a total of $3,000 for 6 signs (Escambia Street, Canal Street, and Elmira Street). "Do Not Block Intersection" pavement markings at Escambia Street should also be considered for emphasis, costing approximately $1,550.

Alternate Opinion

Two comments were received which were not supportive of sidewalk and bike lanes along US 90. Comment 12 cited low VRU volumes and high speeds as reasons for reducing or eliminating bicycle and pedestrian access. Comment 13 stated opposition to any new facilities which would restrict traffic flow to a business, and suggested user education as a health and safety improvement.

Technical Summary

Conclusion

Recommendations were developed following site, safety, and cost analysis. Safety improvements are focused on pedestrian and bicycle concerns, identified by crash analysis, site observations, and stakeholder input. Additional improvements were determined for general roadway safety issues. Short term improvements are defined as maintenance items or those items which could typically be implemented within less than one year. In general, mid term recommendations include items which could individually be designed and constructed within one to three years' time. Long term improvements may take 3 years or more to implement due to planning, right of way, construction time, funding, utility coordination, etc. Costs have been provided for all proposed recommendations, as summarized below.

Critical Improvements – Short Term

- Bike lanes
  - Recommend standard bike lane markings and signage per Table 10:
    - Segment 2: $18,500
    - Segment 3: $6,000
    - Segment 4: $ 7,500
    - Segment 5: $12,150
    - Segment 6: $ 10,850 *(P11, P12)*
    - Total construction estimate: $55,000
  - Recommend extension of existing bike lane markings at commercial driveways with right turn lanes along eastbound US 90:
    - Shopping center, MP 4.918
    - Target entrance, MP 6.192
    - Shopping center, MP 6.529
    - Lowe's entrance, MP 7.213
    - Shopping center, MP 8.610
    - Kids Discovery, MP 8.731 *(P9)*
    - Total construction estimate: $3,000
  - Recommend signing and pavement markings for shared roadway
    - Segment 5, Downtown Milton: $13,600
- Intersection signing and pavement marking
  - Propose stop bar and crosswalk markings at Sports Drive (MP 4.437, *P2*): $500
  - Propose special emphasis crosswalk and warning signs at Walmart exit (MP 6.672, *P6*): $3,850
  - Segment 5 crosswalks and signs at Mary Street and Escambia Street: $7,400
  - R10-7 "Do Not Block Intersection" signs at Escambia, Canal, and Elmira Streets: $3,000
  - "Do Not Block Intersection" pavement markings at Escambia Street: $1,550
  - Recommend Segment 6 railroad and pedestrian crossing warning signs at St. Johns Street (MP 13.883): $500

- Pond Creek Bridge
  - Recommend warning signs and pavement markings for driver awareness: $4,000

Critical Improvements – Mid Term

- Sidewalk
  - Sidewalk is proposed in Segments 2, 3, and 4:
    - Woodbine Road to CR 197 (MP 3.028 to MP 4.018): $270,000
    - SS Dixon Street to School Lane (MP 4.575 to MP 7.073): $675,000; or a shorter segment from Summerdale Blvd (MP 5.519) to Cardinal Street (MP 6.672): $324,000; both proposed segments include P4 and P5 collision locations
    - Sidewalk from Walmart (MP 6.672) to Santa Villa Drive (MP 7.466): $216,000
    - Avalon Blvd (MP 9.304) and Stewart Street (MP 11.621): $621,000
    - Stewart Street (MP 11.621) to Canal Street (MP 11.893): $180,000
    - Extension west of Red Brick Road to Old Brick Road Trail: $60,000
- Bike lanes
  - At least 8% of the corridor has no available paved shoulder or bike lane facilities. Recommend bike lane additions in Segments 2, 3, and 4 per Table 9:
    - Approximately 1.8 miles of widening at 14 locations, including School Lane intersection, MP 7.073 *(P7)*
    - Total construction estimate: $1,677,500

Critical Improvements – Long Term

- Roadway lighting
  - Recommend warranted lighting features in Segments 1, 2, 3, 4, and 6
  - Pedestrian/bicycle-related collisions include P1, P4, FP1, P8, P12, P13; Segments 2, 3, and 6 most critical segments based on night-time crash frequency
  - Construction costs estimated per Segment: 1) $543,000; 2) $923,000; 3) $426,000; 4) $587,000; 6) $845,000; Total: $3,324,000
- Bike lanes
  - Segment 5 widening to separate vehicle and bicycle traffic in downtown Milton: $923,000
- Pond Creek Bridge
  - FDOT alternatives developed following FP2 incident:
    - Alternative 1: Bridge widening ($1.6 million)
    - Alternative 2: Cantilever pedestrian path to existing bridge ($825,000)
    - Alternative 3: Standalone wooden pedestrian bridge ($1.3 million)

Additional Improvements

- Traffic signals *(Short Term)*
  - Recommend advance warning signs per Table 11
    - W3-3 signs at approaches to 20 signalized intersections: $19,000

        - In addition to W3-3 signs, W3-4 with signal interconnected flashing beacons proposed at approaches to 5 critical intersections: $70,000
    - Recommend signal backplates at 20 signalized intersections within Segments 2 – 6: $24,000
    - Dogwood Drive and commercial entrance
        - Assess possibility of synchronizing signals (traffic operations); alternatively, add emphasis to traffic signals with redundancy (dual/additional red signal displays); further traffic operations analysis required (no cost estimate provided)
        - Install ground mounted lane direction signage : $1,000
- Further Study/Coordination Efforts *(Mid Term)*
    - Emerald Sands Inn pedestrian counts for midblock crosswalk
    - Pedestrian counts for sidewalk addition between Walmart and Santa Villa Drive
    - Traffic count values near Santa Villa Drive to assess median U-turns
    - Downtown Milton pedestrian counts for US 90 crosswalks at Mary Street and Escambia Street
    - Coordination with FDOT Safety Office for public awareness initiatives

Tables 12, 13, and 14 summarize short, mid, and long term recommendations, respectively. Table 15 summarizes all recommendations presented in this report, including B-C ratios.

Table 12. Summary of Short Term Recommendations							
Segment	Bicycle/Pedestrian Related				General Roadway		Short Term Total
	Crash-related Issues		Site Observations				
	Estimate	Description	Estimate	Description	Estimate	Description	
1							N/A
2	$500	Sports Drive Crosswalk, Stop Bar	$18,500	Bicycle Signs, Messages	$8,400	Signal Backplates	$81,750
	$3,850	Walmart Ent. Crosswalk, Signs	$500	Shopping Center, MP 4.918, Markings	$49,000	Signalized Intersection Advance Warning Signs	
			$500	Target Entrance, MP 6.192, Markings			
			$500	Shopping Center, MP 6.529, Markings			
3	$500	Kids Discovery, MP 8.731, Signs	$6,000	Bicycle Signs, Messages	$1,200	Signal Backplates	$23,700
			$500	Lowe's Entrance, MP 7.213, Markings	$15,000	Signalized Intersection Advance Warning Signs	
			$500	Shopping Center, MP 8.610, Markings			
4			$7,500	Bicycle Signs, Messages	$8,400	Signal Backplates	$40,900
			$4,000	Pond Creek Bridge, Signs, Markings	$20,000	Signalized Intersection Advance Warning Signs	
					$1,000	Dogwood Drive, Commercial Entrance Lane Use Signs	
5			$12,150	Bicycle Signs, Messages	$3,600	Signal Backplates	$44,300
			$13,600	Shared Lane Signs, Messages	$3,000	Signalized Intersection Advance Warning Signs	
			$7,400	Crosswalk at Mary St. and Escambia St.	$4,550	Do Not Block Intersection Improvements	
6	$1,350	Eaton Drive, Signs, Markings	$10,850	Bicycle Signs, Messages	$2,400	Signal Backplates	$17,100
					$500	Pedestrian and Railroad Crossing Signs	
					$2,000	Signalized Intersection Advance Warning Signs	
Totals:	$6,200		$82,500		$119,050		$207,750

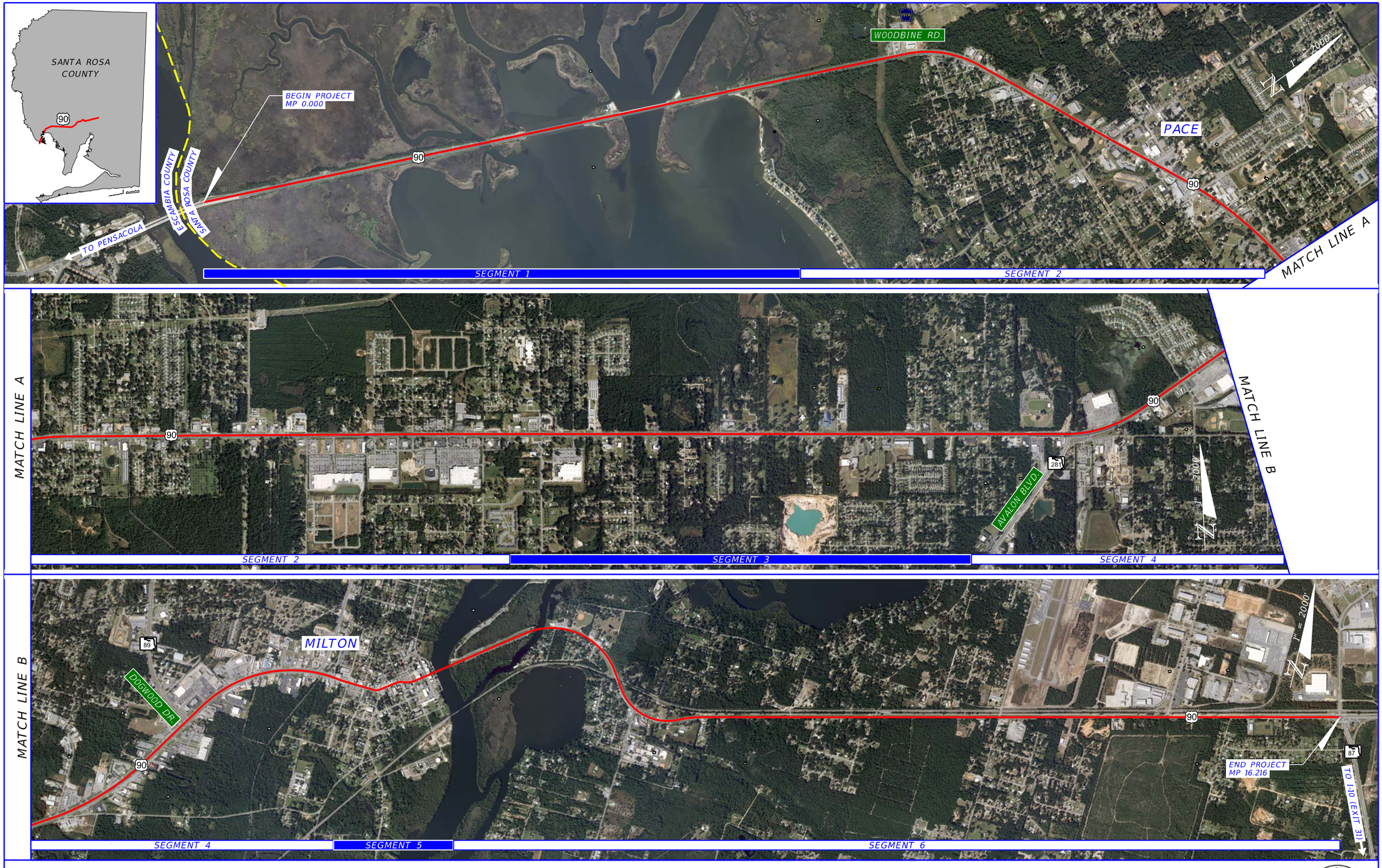
Table 13. Summary of Mid Term Recommendations							
Segment	Bicycle/Pedestrian Related				General Roadway		Large Scale Total
	Crash-related Issues		Site Observations				
	Estimate	Description	Estimate	Description	Estimate	Description	
1							N/A
2			$270,000	Woodbine Road to CR 197, Sidewalk			$1,354,500
	$324,000	Summerdale Blvd. to Cardinal Street, Sidewalk	$351,000	SS Dixon Street to School Lane, Sidewalk			
			$409,500	1,950 LF Additional Bike Lane			
3			$336,000	1,400 LF Additional Bike Lane			$671,000
	$119,000	US 90 Widening at Metron Way	$ 216,000	Sidewalk from Walmart to Santa Villa Drive			
4			$621,000	Avalon Blvd (PSC) to Stewart St (Downtown Milton), Sidewalk			$1,553,000
			$932,000	6,050 LF Additional Bike Lane			
5			$60,000	Sidewalk Extension to Old Brick Road Trail			$60,000
6			$180,000	Sidewalk from Stewart St to Canal St			$180,000
Totals:	$443,000		$3,375,500		$0		$3,818,500

Table 14. Summary of Long Term Recommendations							
Segment	Bicycle/Pedestrian Related				General Roadway		Large Scale Total
	Crash-related Issues		Site Observations				
	Estimate	Description	Estimate	Description	Estimate	Description	
1	$543,000	Lighting					$543,000
2	$923,000	Lighting					$923,000
3	$426,000	Lighting					$426,000
4					$587,000	Lighting	$1,412,000
			$825,000	Pond Creek Bridge (least cost option)			
5			$923,000	Widen for bike lanes			$923,000
6	$845,000	Lighting					$845,000
Totals:	$2,737,000		$1,748,000		$587,000		$5,072,000

Table 15. Summary of Recommendations and Benefit-Cost Analysis					
Segment	Short Term	Mid Term	Long Term	Total	Benefit-Cost Ratio for Segments with VRU Crash History
1	$0	$0	$543,000	$543,000	-
2	$81,750	$1,354,500	$923,000	$2,359,250	4.07
3	$23,700	$671,000	$426,000	$1,120,700	17.38
4	$40,900	$1,553,000	$1,412,000	$3,005,900	-
5	$44,300	$60,000	$923,000	$1,027,300	-
6	$17,100	$180,000	$845,000	$1,042,100	23.37
Totals:	$207,750	$3,818,500	$5,072,000	$9,098,250	9.88

Appendix A

Project Limits and Straight Line Diagram



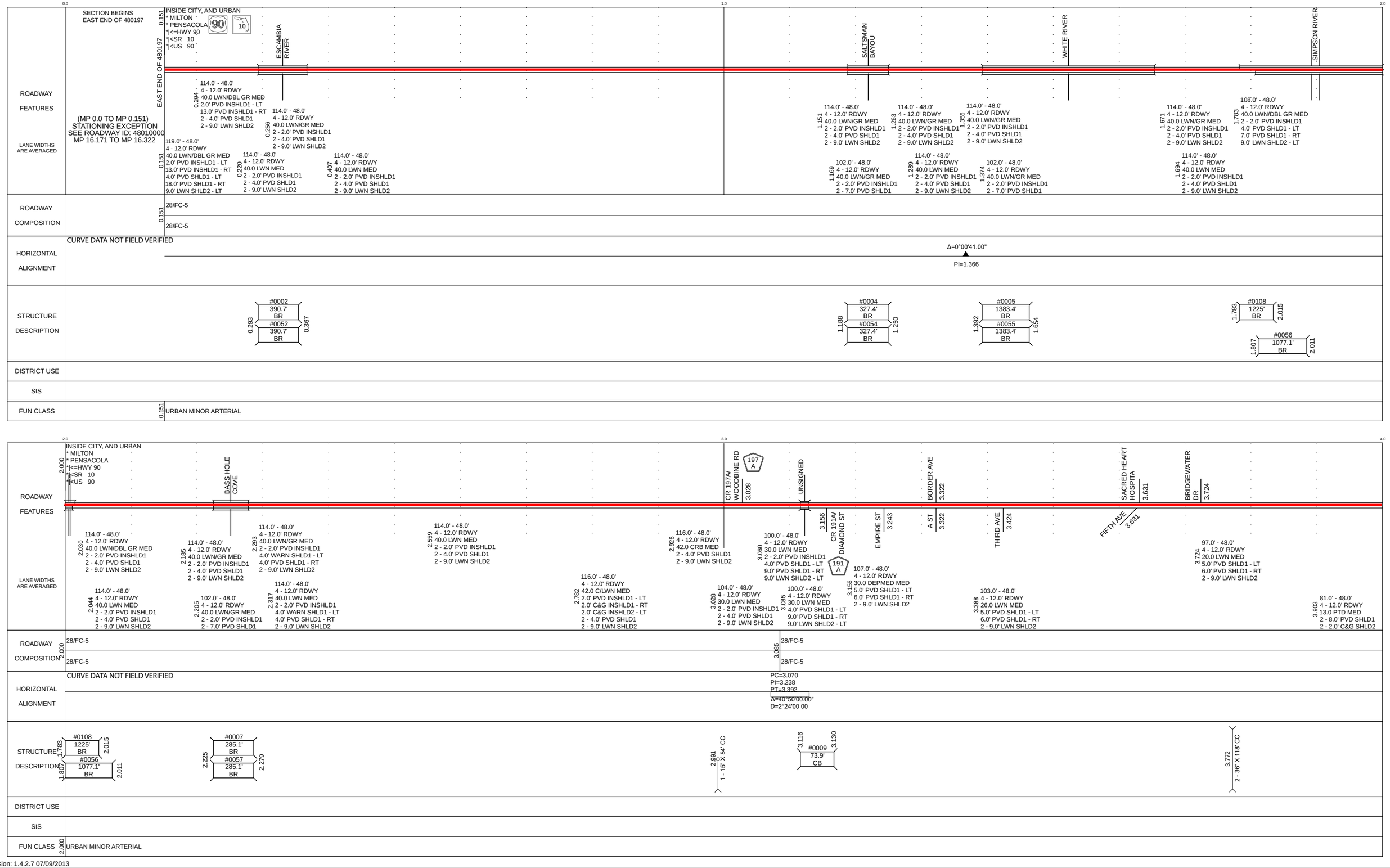
US 90 ARTERIAL STUDY LIMITS (SANTA ROSA COUNTY)
FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH
FPID 418439-1-32-06

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	05/31/2010	06/16/2010	009.209	009.209	06/26/2013 FDOT	07/09/2013 PG
			013.434	018.748	12/05/2012 HSA - DB/TF	12/12/2012 HSA/DB
BY	METRIC	METRIC	011.689	012.691	06/13/2011 METRIC	06/14/2011 METRIC

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	US 90	SR 10/SR 87	SANTA ROSA	03	58010000	1 OF 7



Version: 1.4.2.7 07/09/2013

	5 YR INV	SLD REV
DATE	05/31/2010	06/16/2010
BY	METRIC	METRIC

BMP	EMP	INV	SLD REV
009.209	009.209	06/26/2013 FDOT	07/09/2013 PG
013.434	018.748	12/05/2012 HSA - DB/TF	12/12/2012 HSA/DB
011.689	012.691	06/13/2011 METRIC	06/14/2011 METRIC

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	US 90	SR 10/SR 87	SANTA ROSA	03	58010000	2 OF 7

4.0 5.0 6.0

ROADWAY FEATURES

4.000 INSIDE CITY, AND URBAN
* MILTON
* PENSACOLA
*|<=HWY 90
*|<SR 10
*|<US 90

4.018 CR 197/ CHUMUCKLA HWY

4.209 MAJORS ST

4.437 PACE PATRIOT BLVD

4.575 S S DIXON ST

4.598 ETHEL DIXON ST

4.825 CR197B/ WEST SPENCER

4.986 APT ENT

5.114 RIDGE POINTE DR

5.179 DEAN DR

5.335 TRAILER TRL

5.393 HILLTOP AVE

5.519 SUMMERDALE BLVD

5.669 SANTA ROSA DR

5.811 E SPENCER FIELD RD

4.018 CR197/ FLORIDATOWN RD

4.287 STEPHENS RD

4.437 SPORTS DR

4.563 PEDESTRIAN UNDERPASS

4.580 SIMMONS RD

4.613 JERNIGAN RD

4.871 ALBA ST

5.088 VICKSBURG DR

5.208 SANFORD ST

5.393 SAN ST

5.543 IDLEWOOD DR

5.603

5.897 DAVENPORT LN

LANE WIDTHS ARE AVERAGED

4.000 81.0' - 48.0'
4 - 12.0' RDWY
13.0 PTD MED
2 - 8.0' PVD SHLD1
2 - 2.0' C&G SHLD2

4.613 92.0' - 48.0'
4 - 12.0' RDWY
18.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 9.0' LWN SHLD2

4.716 99.0' - 48.0'
4 - 12.0' RDWY
25.0 C>6 MED
4.0' PVD INSHLD1 - LT
2 - 4.0' PVD SHLD1
2 - 9.0' LWN SHLD2

4.825 97.0' - 48.0'
4 - 12.0' RDWY
27.0 C/LWN MED
2 - 2.0' C&G INSHLD1
9.0' LWN SHLD1 - LT
4.0' PVD SHLD1 - RT
9.0' LWN SHLD2 - RT

4.932 97.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
9.0' LWN SHLD1 - LT
4.0' PVD SHLD1 - RT
9.0' LWN SHLD2 - RT

4.986 101.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 9.0' LWN SHLD2

5.543 93.0' - 48.0'
4 - 12.0' RDWY
27.0 C/LWN MED
2.0' C&G INSHLD1 - LT
3.0' PVD INSHLD1 - RT
2.0' C&G INSHLD2 - RT
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

5.603 93.0' - 48.0'
4 - 12.0' RDWY
27.0 C/LWN MED
3.0' PVD INSHLD1 - LT
2.0' C&G INSHLD1 - RT
2.0' C&G INSHLD2 - LT
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

5.811 93.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

ROADWAY COMPOSITION

4.000 28/FC-5

4.000 28/FC-5

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

PI=4.625
Δ=18°40'00.00"

PI=4.921
Δ=1°00'00.00"

STRUCTURE DESCRIPTION

4.493 #9002 21.1' CB 4.497

4.661 1 - 48" X 98' CC - LT
1 - 48" X 54' CC - RT

4.968 1 - 15" X 64' CC

5.062 1 - 15" X 60' CC

5.271 1 - 24" X 62' CC - LT
1 - 24" X 62' CC - RT

5.828 1 - 15" X 56' CC

5.994 1 - 15" X 58' CC

DISTRICT USE

SIS

FUN CLASS

4.000 URBAN MINOR ARTERIAL

6.0 7.0 8.0

ROADWAY FEATURES

6.000 INSIDE CITY, AND URBAN
* MILTON
* PENSACOLA
*|<=HWY 90
*|<SR 10
*|<US 90

6.081 WATKINS ST

6.113 JERRY DR

6.192 TARGET ENT/EXIT

6.222 BOONE RD

6.366 SPEARS ST

6.464 HOME DEPOT ENT

6.529 SHADOW OAK DR

6.672 CARDINAL ST

6.750 WALMART ENT

6.828 KEYSER LN

7.073 SCHOOL LN

7.140 METRON WAY

7.213 EVELYN ST

7.300 FLEA MARKET ENT

7.466 SANTA VILLA DR

7.683 TAMARIND DR

7.755 SUNSET DR

7.824 STRUTH LN

7.834 UNSIGNED

7.843 PACE VFD

7.982 BESSINGER LN

7.073 CR197A/BELL LN

7.960 TRICE RD

LANE WIDTHS ARE AVERAGED

6.000 93.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

6.081 93.0' - 48.0'
4 - 12.0' RDWY
27.0 CRB MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

6.222 93.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

6.300 93.0' - 48.0'
4 - 12.0' RDWY
27.0 C/LWN MED
2 - 2.0' C&G INSHLD1
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

6.596 93.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

6.672 93.0' - 48.0'
4 - 12.0' RDWY
27.0 CRB MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

6.744 93.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

7.213 93.0' - 48.0'
4 - 12.0' RDWY
27.0 CRB MED
2 - 2.0' C&G INSHLD1
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

7.390 93.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

ROADWAY COMPOSITION

6.000 28/FC-5

6.000 28/FC-5

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

PI=6.683
Δ=0°19'00.00"

STRUCTURE DESCRIPTION

6.391 1 - 15" X 60' CC

6.590 1 - 15" X 60' CC

6.808 1 - 15" X 68' CC

7.037 1 - 15" X 52' CC

7.536 1 - 15" X 58' CC

7.678 1 - 15" X 58' CC

DISTRICT USE

SIS

FUN CLASS

6.000 URBAN MINOR ARTERIAL

Version: 1.4.2.7 07/09/2013

	5 YR INV	SLD REV
DATE	05/31/2010	06/16/2010
BY	METRIC	METRIC

BMP	EMP	INV	SLD REV
009.209	009.209	06/26/2013 FDOT	07/09/2013 PG
013.434	018.748	12/05/2012 HSA - DB/TF	12/12/2012 HSA/DB
011.689	012.691	06/13/2011 METRIC	06/14/2011 METRIC

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	US 90	SR 10/SR 87	SANTA ROSA	03	58010000	3 OF 7

8.0 9.0 10.0

ROADWAY FEATURES

INSIDE CITY, AND URBAN
* MILTON
* PENSACOLA
*|<=HWY 90
*|<SR 10
*|<US 90

8.000 8.051 ALEX REED TRL | LORI LN 8.327 | CRAIG ST 8.660 | GERI ST 8.727 | ANNA SIMPSON RD 8.831 | W BUSHNELL RD 8.899 | VAN HORN RD 8.968 | PENSACOLA JR COLLEGE 9.304 | SHOPPING CTR ENT/EXT 9.417 | SHOPPING CTR ENT/EXT 9.516 | JAIMEE LEIGH DR 9.855

SHEFFIELD DR 8.118 | BOSTIC LN 8.220 | CHANTILLY WAY 8.561 | CHANTILLY PL 8.610 | MORNINGSIDE LN 8.866 | ARCADIA ST 8.922 | GAINER AVE 8.978 | SR 281/ AVALON BLVD 9.304 | UNSIGNED 9.396 | PARKMORE PLAZA DR 9.855 | SHOPPING CTR ENT/EXT 9.927 | SHOPPING CTR ENT/EXT 9.995

LANE WIDTHS ARE AVERAGED

8.000 93.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

9.211 93.0' - 48.0'
4 - 12.0' RDWY
27.0 CRB MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

9.396 97.0' - 48.0'
4 - 12.0' RDWY
27.0 DEPMED MED
2.0' C&G SHLD1 - LT
15.0' PVD SHLD1 - RT
5.0' LWN SHLD2 - RT

9.516 104.0' - 48.0'
4 - 12.0' RDWY
27.0 DEPMED MED
4.0' PVD SHLD1 - LT
15.0' PVD SHLD1 - RT
2 - 5.0' LWN SHLD2

9.561 93.0' - 48.0'
4 - 12.0' RDWY
27.0 DEPMED MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

9.633 92.0' - 48.0'
4 - 12.0' RDWY
26.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

9.911 92.0' - 48.0'
4 - 12.0' RDWY
26.0 CRB MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

ROADWAY COMPOSITION

8.000 28/FC-5
8.000 28/FC-5
9.261 28/FC-5
9.261 28/FC-5

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

Δ=35°08'00.00"
D=2°00'00.00
PC=9.328
PI=9.500
PT=9.661

STRUCTURE DESCRIPTION

8.026 1 - 10' X 4' X 108' CBC
8.186 1 - 15" X 58' CC
8.432 1 - 15" X 56' CC
9.620 1 - 15" X 57' CC
9.824 1 - 15" X 54' CC

DISTRICT USE

SIS

FUN CLASS

8.000 URBAN MINOR ARTERIAL

10.0 11.0 12.0

ROADWAY FEATURES

INSIDE CITY, AND URBAN
* MILTON
* PENSACOLA
*|<=HWY 90
*|<SR 10
*|<US 90

10.000 SUNAGO DR 10.061 | POND CRK | GLOVER LN 10.304 | RAMP TO OLD HWY 90 10.350 | OLD HWY 90 10.364 | UNSIGNED 10.764 | CAMPBELL LN 10.816 | UNSIGNED 10.846 | SHOPPING CTR ENT 11.004 | SR 89/ DOGWOOD DR 11.004 | SHOPPING CTR ENT/EXT 11.127 | SHOPPING CTR ENT/EXT 11.180 | CHAVERS ST 11.370

INSIDE CITY, AND URBAN
* MILTON
* PENSACOLA
*|<=HWY 90/CAROLINE ST
*|<SR 10
*|<US 90

11.370 | SR 87/ STEWART ST 11.621 | BRUNER ST 11.689 | MARY ST 11.755 | CANAL ST 11.823 | ESCAMBIA ST 11.893 | SANTA ROSA ST 11.940 | 11.986

INSIDE CITY, AND URBAN
* MILTON
* PENSACOLA
*|<=HWY 90/CAROLINE ST
*|<SR 10/SR 87
*|<US 90

SUSAN ST 11.689 | DR MARTIN LUTHER KIN 11.823 | CR 191/CANAL ST 11.893

LANE WIDTHS ARE AVERAGED

10.000 92.0' - 48.0'
4 - 12.0' RDWY
26.0 CRB MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

10.263 89.0' - 48.0'
4 - 12.0' RDWY
27.0 LWN MED
5.0' LWN SHLD1 - LT
4.0' PVD SHLD1 - RT
5.0' LWN SHLD2 - RT

10.145 88.0' - 48.0'
4 - 12.0' RDWY
26.0 CRB MED
5.0' LWN SHLD1 - LT
4.0' PVD SHLD1 - RT
5.0' LWN SHLD2 - RT

10.304 98.0' - 48.0'
4 - 12.0' RDWY
32.0 LWN MED
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

10.569 116.0' - 48.0'
4 - 12.0' RDWY
38.0 LWN MED
2 - 15.0' PVD SHLD1

10.627 110.0' - 48.0'
4 - 12.0' RDWY
38.0 LWN MED
4.0' PVD SHLD1 - LT
15.0' PVD SHLD1 - RT
5.0' LWN SHLD2 - LT

10.764 108.0' - 48.0'
4 - 12.0' RDWY
42.0 CB>6/LWN MED
2 - 2.0' C&G INSHLD1
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

10.856 101.0' - 48.0'
4 - 12.0' RDWY
42.0 CRB MED
4.0' PVD SHLD1 - LT
2.0' CRG SHLD1 - RT
5.0' LWN SHLD2 - LT

10.961 101.0' - 48.0'
4 - 12.0' RDWY
42.0 C/LWN MED
2 - 2.0' C&G INSHLD1
4.0' PVD SHLD1 - LT
2.0' C&G SHLD1 - RT
5.0' LWN SHLD2 - LT

11.004 108.0' - 48.0'
4 - 12.0' RDWY
42.0 C/LWN MED
2 - 2.0' C&G INSHLD1
2 - 4.0' PVD SHLD1
2 - 5.0' LWN SHLD2

11.125 110.0' - 48.0'
4 - 12.0' RDWY
38.0 C/LWN MED
2 - 2.0' C&G INSHLD1
4.0' PVD SHLD1 - LT
15.0' PVD SHLD1 - RT
5.0' LWN SHLD2 - LT

11.328 108.0' - 48.0'
4 - 12.0' RDWY
40.0 C/LWN MED
2 - 2.0' C&G INSHLD1
2 - 5.0' PVD SHLD1
2 - 5.0' LWN SHLD2

11.472 109.0' - 48.0'
4 - 12.0' RDWY
40.0 C/LWN MED
2 - 2.0' C&G INSHLD1
5.0' PVD SHLD1 - LT
9.0' PVD SHLD1 - RT
5.0' LWN SHLD2 - LT
2.0' C&G SHLD2 - RT

11.569 112.0' - 48.0'
4 - 12.0' RDWY
40.0 C/LWN MED
2 - 2.0' C&G INSHLD1
5.0' PVD SHLD1 - LT
15.0' PVD SHLD1 - RT
4.0' LWN SHLD2 - LT

11.621 101.0' - 48.0'
4 - 12.0' RDWY
35.0 C/LWN MED
2 - 2.0' CRG INSHLD1
2 - 9.0' PVD SHLD1

11.689 54.0' - 24.0'
2 - 12.0' RDWY
18.0 PTD MED
2 - 6.0' PVD SHLD1

11.755 49.0' - 24.0'
2 - 12.0' RDWY
15.0 PTD MED
2 - 5.0' PVD SHLD1

11.823 42.0' - 24.0'
2 - 12.0' RDWY
14.0 PTD MED
2 - 2.0' CRG SHLD1

ROADWAY COMPOSITION

10.000 28/FC-5
10.000 28/FC-5
11.689 28/FC-6
11.689 28/FC-6

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

Δ=24°56'00.00"
D=1°00'00.00
PC=10.319
PI=10.559
PT=10.791

PI=11.439

Δ=60°01'00.00"

Δ=38°45'00.00"
D=20°58'00.00
PC=11.860
PI=11.884
PT=11.895

PC=11.975
PI=11.989
PT=12.000

Δ=33°19'00.00"
D=25°14'00.00

STRUCTURE DESCRIPTION

10.076 #0011 364.3' BR | #0066 364.3' BR 10.145
10.187 1 - 15" X 63' CMP
10.367 1 - 15" X 76' CC
10.613 1 - 18" X 68' CC
10.822 1 - 15" X 68' CC
11.332 1 - 54" X 76' CC - LT
1 - 54" X 67' CC - RT 11.350
1 - 54" X 144' CC
11.680 1 - 24" X 149' CC

DISTRICT USE

SIS

FUN CLASS

10.000 URBAN MINOR ARTERIAL

Version: 1.4.2.7 07/09/2013

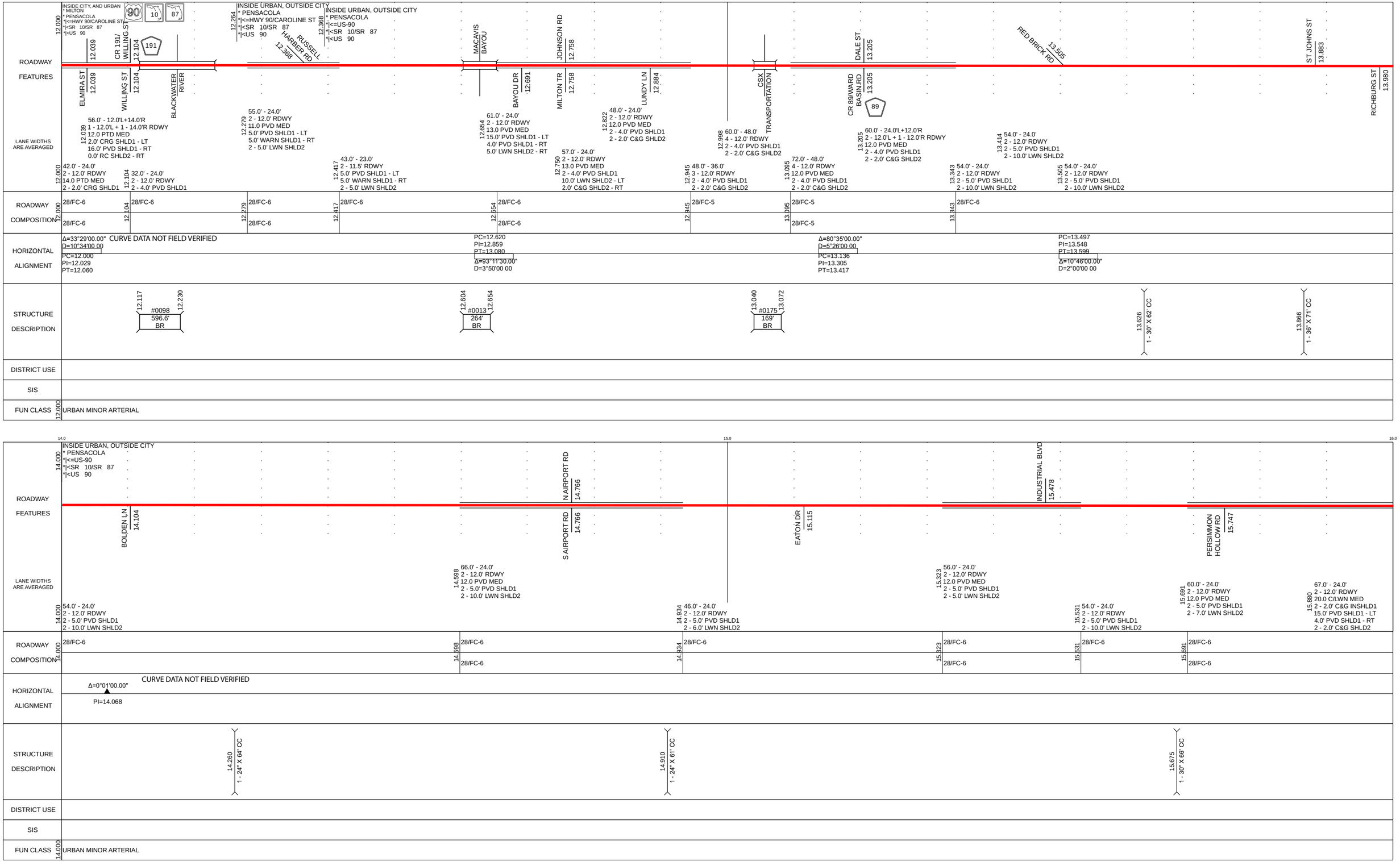
	5 YR INV	SLD REV
DATE	05/31/2010	06/16/2010
BY	METRIC	METRIC

BMP	EMP	INV	SLD REV
009.209	009.209	06/26/2013 FDOT	07/09/2013 PG
013.434	018.748	12/05/2012 HSA - DB/TF	12/12/2012 HSA/DB
011.689	012.691	06/13/2011 METRIC	06/14/2011 METRIC

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	US 90	SR 10/SR 87	SANTA ROSA	03	58010000	4 OF 7



Version: 1.4.2.7 07/09/2013

	5 YR INV	SLD REV
DATE	05/31/2010	06/16/2010
BY	METRIC	METRIC

BMP	EMP	INV	SLD REV
009.209	009.209	06/26/2013 FDOT	07/09/2013 PG
013.434	018.748	12/05/2012 HSA - DB/TF	12/12/2012 HSA/DB
011.689	012.691	06/13/2011 METRIC	06/14/2011 METRIC

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	US 90	SR 10/SR 87	SANTA ROSA	03	58010000	5 OF 7

16.0 | 17.0 | 18.0

ROADWAY FEATURES

16.000 INSIDE URBAN, OUTSIDE CITY
* PENSACOLA
*|<=US-90
*|<SR 10/SR 87
*|<US 90

16.202 INSIDE URBAN, OUTSIDE CITY
* PENSACOLA
*|<=US-90
*|<SR 10
*|<US 90

16.710 OUTSIDE CITY & URBAN
*|<=US-90
*|<SR 10
*|<US 90

EAST MILTON RD 16.216

16.048 56.0' - 24.0'
2 - 12.0' RDWY
20.0 CRB MED
2.0' PVD INSHLD1 - LT
2 - 4.0' PVD SHLD1
2 - 2.0' C&G SHLD2

16.193 RAMP TO SR 87 SB

16.216 SR 87

16.339 RAMP FROM SR 87 EB

TRACI DR 16.416

16.416 57.0' - 24.0'
2 - 12.0' RDWY
20.0 PVD MED
5.0' PVD SHLD1 - LT
2.0' C&G SHLD1 - RT
6.0' LWN SHLD2 - LT

KIM DR 16.543

KAREN DR 16.697

COX RD 16.794

JEFF ATES RD 17.276

17.440 56.0' - 24.0'
2 - 12.0' RDWY
12.0 PVD MED
2 - 5.0' PVD SHLD1
2 - 5.0' LWN SHLD2

PADDLE WHEEL DR 17.526

HOLLOW PINE CT 17.699

LANE WIDTHS ARE AVERAGED

16.000 67.0' - 24.0'
2 - 12.0' RDWY
20.0 C/LWN MED
2 - 2.0' C&G INSHLD1
15.0' PVD SHLD1 - LT
4.0' PVD SHLD1 - RT
2 - 2.0' C&G SHLD2

16.216 56.0' - 24.0'
2 - 12.0' RDWY
20.0 CRB MED
2.0' PVD INSHLD1 - RT
2 - 4.0' PVD SHLD1
2 - 2.0' C&G SHLD2

16.543 50.0' - 24.0'
2 - 12.0' RDWY
2 - 5.0' PVD SHLD1
2 - 8.0' LWN SHLD2

17.735 50.0' - 24.0'
2 - 12.0' RDWY
2 - 5.0' PVD SHLD1
2 - 8.0' LWN SHLD2

ROADWAY COMPOSITION

16.000 28/FC-6 | 16.053 28/FC-5
28/FC-6 | 28/FC-5

16.216 28/FC-6
28/FC-6

16.543 28/FC-6

17.440 28/FC-6
28/FC-6

17.735 28/FC-6

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

Δ=0°01'00.00"
PI=17.189

STRUCTURE DESCRIPTION

16.862 1 - 24" X 61' CC

17.025 1 - 24" X 62' CC

17.286 1 - 24" X 61' CC

17.648 1 - 24" X 69' CC

DISTRICT USE

SIS

FUN CLASS

16.000 URBAN MINOR ARTERIAL

16.710 RURAL MINOR ARTERIAL

18.0 | 19.0 | 20.0

ROADWAY FEATURES

18.000 OUTSIDE CITY & URBAN
*|<=US-90
*|<SR 10
*|<US 90

UNSIGNED 18.930

SA JONES RD 19.438

BINGHAM RD 19.629

ZION RD 19.744

18.750 49.0' - 24.0'
2 - 12.0' RDWY
4.0' PVD SHLD1 - LT
5.0' PVD SHLD1 - RT
2 - 8.0' LWN SHLD2

LANE WIDTHS ARE AVERAGED

18.000 50.0' - 24.0'
2 - 12.0' RDWY
2 - 5.0' PVD SHLD1
2 - 8.0' LWN SHLD2

19.438 50.0' - 24.0'
2 - 12.0' RDWY
2 - 5.0' PVD SHLD1
2 - 8.0' LWN SHLD2

ROADWAY COMPOSITION

18.000 28/FC-6

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED

Δ=5°41'00.00"
D=0°59'00.00
PC=18.546
PI=18.601
PT=18.656

PC=18.656
PI=18.711
PT=18.766
Δ=5°49'00.00"
D=1°00'00.00

B=N75°26'00"E

STRUCTURE DESCRIPTION

DISTRICT USE

SIS

FUN CLASS

18.000 RURAL MINOR ARTERIAL

Version: 1.4.2.7 07/09/2013

INTERIM REVISIONS						
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	11/11/2011	12/07/2011	0.637	7.384	10/22/2012 - HSA	10/31/2012 - HSA
BY	HSA Consulting Group	HSA Consulting Group	0.000	0.652	05/01/2013 - HSA	05/10/2013 - HSA

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	US 90	SR 10	ESCAMBIA	03	48010000	5 OF 5

16.0

ROADWAY FEATURES

16.000 INSIDE URBAN, OUTSIDE CITY
* PENSACOLA
*I<=DAVIS HWY
*I<SR 10
*I<US 90

RIVER

ESCAMBIA

E END ESC RIV BRIDGE

SECTION ENDS
E END ESC RIV BRIDGE

END MP: 16.322
NET ROADWAY ID LENGTH: 16.322

ASSOCIATED STATION EXCEPTION
SEE ROADWAY ID: 58010000
MP 0.000 TO MP 0.151

LANE WIDTHS ARE AVERAGED

16.000
101.0' - 48.0'
4 - 12.0' RDWY
20.0 TRAFFIC SEPARATOR/CONCRETE CRB MED
11.0' PAVED SHLD1 - LT
22.0' PAVED SHLD1 - RT
3.0' PAVED INSHLD1 - LT
10.0' PAVED INSHLD1 - RT
16.171

16.322

ROADWAY COMPOSITION

16.000 28/FC-5

28/FC-5

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED
PC=16.076
PI=16.133
PT=16.171
Δ=11°59'52.00"
D=2°00'00 00

STRUCTURE DESCRIPTION

16.000 #0137 16.169
892
BR
#0197
1700
BR
16.000 16.322

DISTRICT USE

SIS

FUN CLASS

16.000 URBAN MINOR ARTERIAL

Appendix B

Roadway Typical Sections

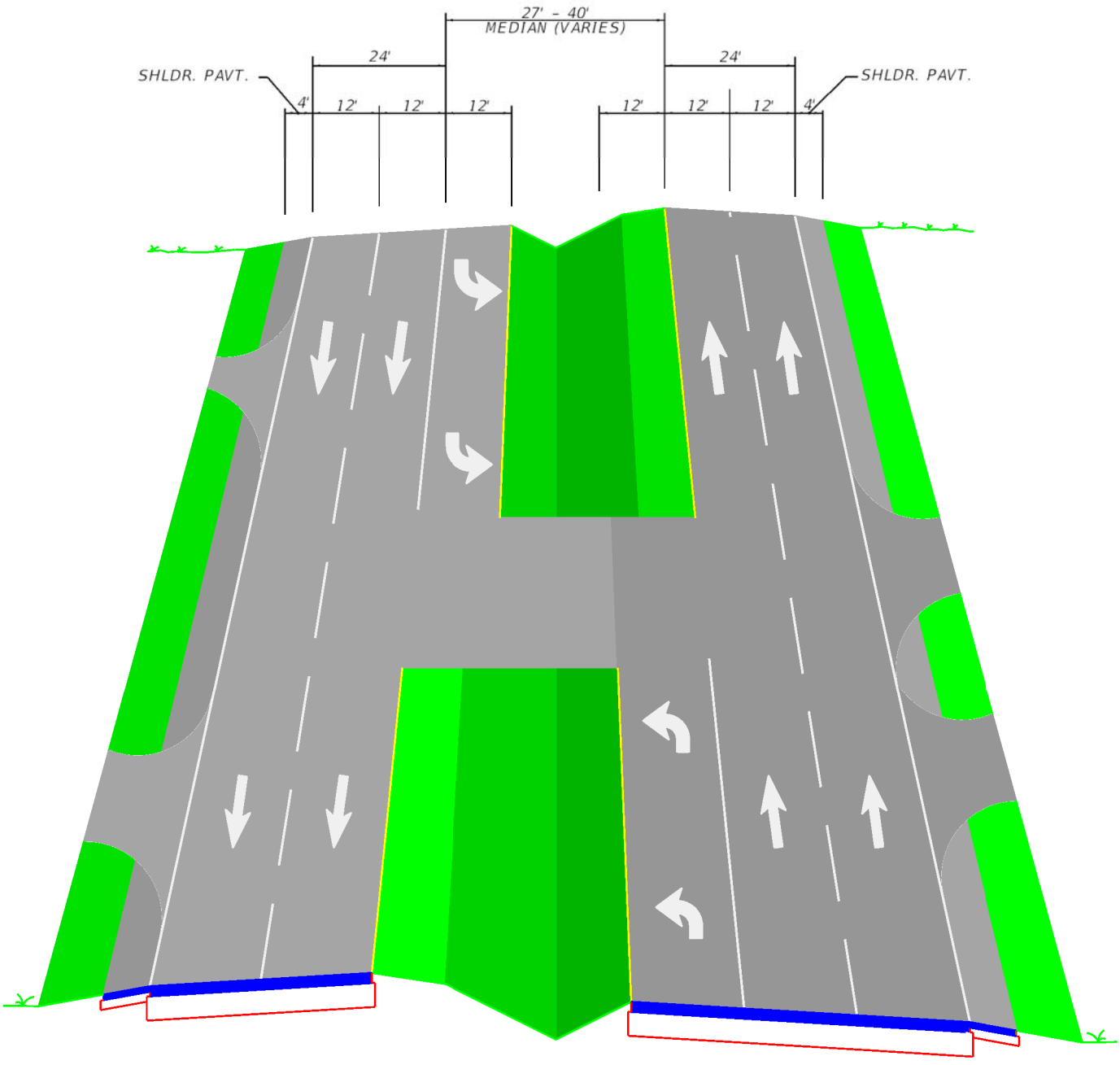
TYPICAL SECTION 1

FINANCIAL PROJECT ID 418439-1-32-06 FEDERAL AID PROJECT NO. N/A COUNTY NAME SANTA ROSA

SECTION NO. 58010000 LIMITS/MILEPOST MP 0.000 TO MP 11.689 ROAD DESIGNATION US 90

PROJECT DESCRIPTION US 90 FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH

TYPICAL DESCRIPTION FROM THE BEGINNING OF PROJECT TO SUSAN ST. IN MILTON, FLORIDA.



STA. 100+00.00 TO STA. 716+18.00

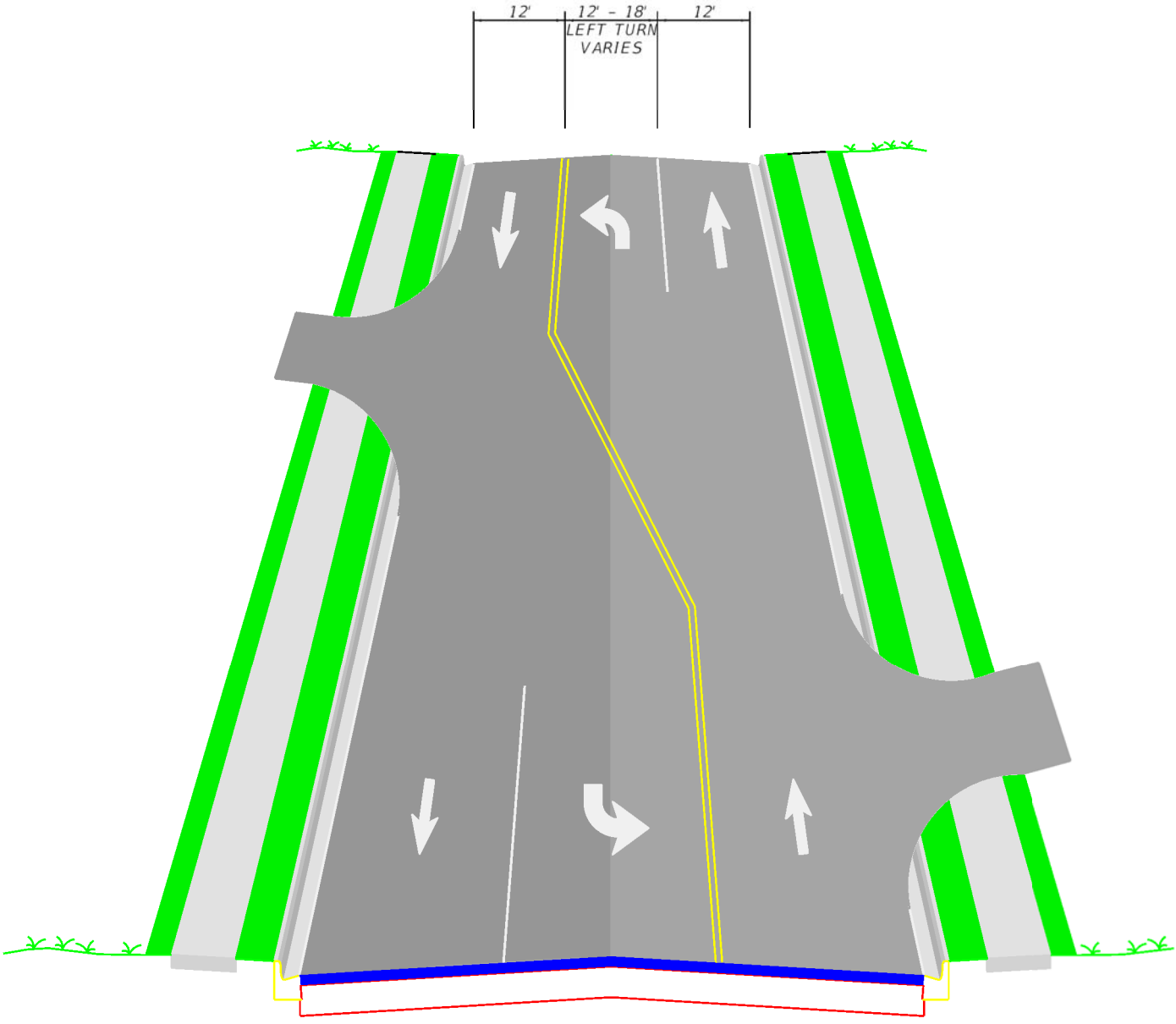
TYPICAL SECTION 2

FINANCIAL PROJECT ID 418439-1-32-06 FEDERAL AID PROJECT NO. N/A COUNTY NAME SANTA ROSA

SECTION NO. 58010000 LIMITS/MILEPOST MP 11.689 TO MP 12.104 ROAD DESIGNATION US 90

PROJECT DESCRIPTION US 90 FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH

TYPICAL DESCRIPTION FROM SUSAN ST. TO WILLING ST. IN MILTON, FLORIDA.



STA. 716+18.00 TO STA. 738+14.00

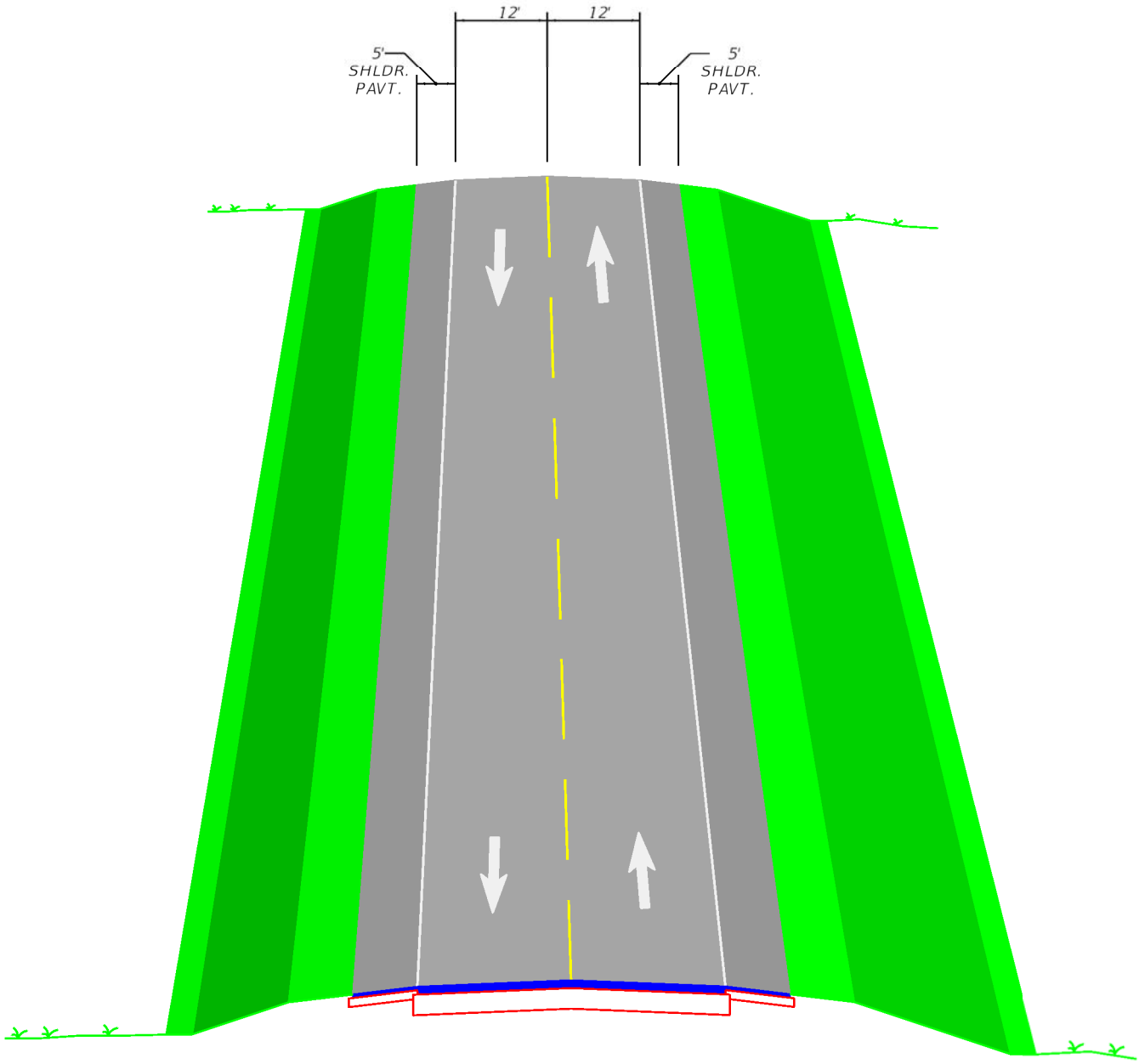
TYPICAL SECTION 3

FINANCIAL PROJECT ID 418439-1-32-06 FEDERAL AID PROJECT NO. N/A COUNTY NAME SANTA ROSA

SECTION NO. 58010000 LIMITS/MILEPOST MP 12.104 TO MP 16.216 ROAD DESIGNATION US 90

PROJECT DESCRIPTION US 90 FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH

TYPICAL DESCRIPTION FROM WILLING ST. TO THE END OF THE PROJECT AT SR 87.



STA. 738+14.00 TO STA. 955+00.00

Appendix C

Vulnerable Road User Safety Study Figures

1" = 100'

P1: Pedestrian on outside shoulder struck by passing WB vehicle mirror near Escambia River Bridge

MP 0.0

MP 0.20

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 1

1" = 100'

MP 0.20

MP 0.46

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 2

1" = 100'

MP 0.46

MP 0.75

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 3

1" = 100'

MP 0.75

MP 1.01

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 4

1" = 100'

MP 1.01

MP 1.30

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 5

1" = 100'

MP 1.30

MP 1.56

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 6

1" = 100'

MP 1.56

MP 1.85

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 7

bridgeeg 6/4/2014 8:26:45 PM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD08.d

1" = 100'

MP 1.85

MP 2.11

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

MP 2.11

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 8

1" = 100'

MP 2.11

MP 2.38

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 9

1" = 100'

MP 2.38

MP 2.66

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 10

1" = 100'

MP 2.66

MP 2.93

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 11

MP 2.93

MP 3.21

LEGEND	
EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 12

bridgeeg 6/4/2014 8:35:01 PM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD13.d

1" = 100'

DOWN'S

TAYLOR'S HOME DECOR

BORDER AVE.

270

90

275

280

EMPIRE ST.

PACE COIN

A ST.

A+ SIGNS

3RD AVE.

MP 3.17

MP 3.46

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

FDOT

SANTA ROSA COUNTY FLORIDA

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

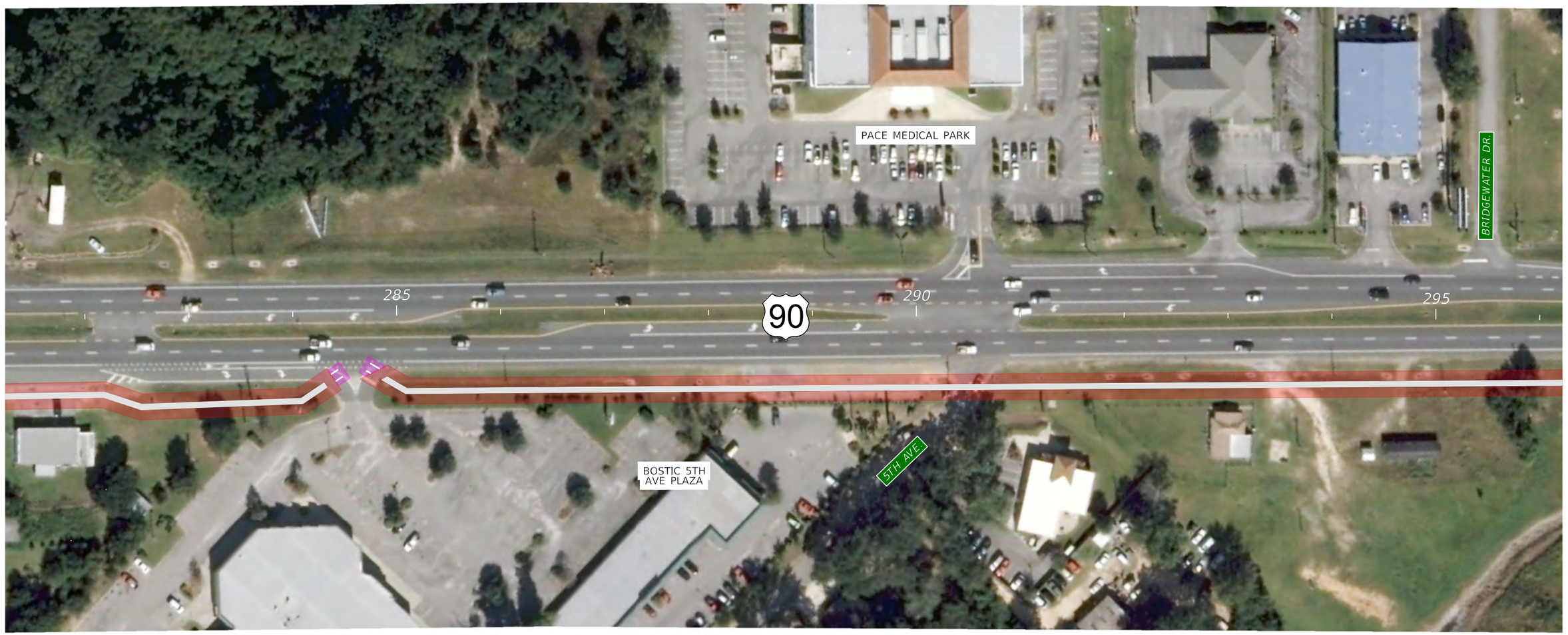
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 13

iversean 6/5/2014 11:25:44 AM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD14.d

1" = 100'



MP 3.46

MP 3.74

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

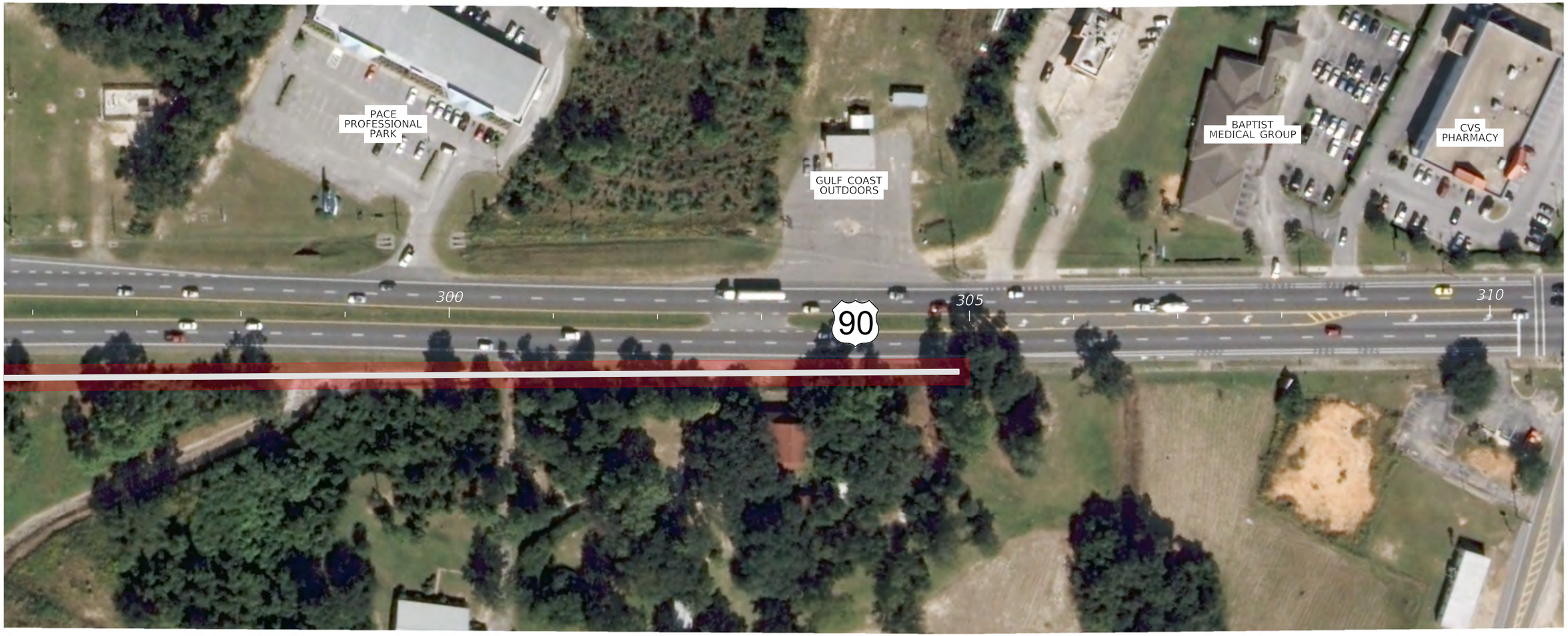
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 14

1" = 100'



MP 374

MP 401

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 15

bridgeeg 6/4/2014 8:27:20 PM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD16.d

1" = 100'

MP 4.01

MP 4.29

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 16

P2: Bicyclist using sidewalk (not bike lane) struck by vehicle while crossing Sports Dr along EB US 90

1" = 100'

SPEED LIMIT 45

SCHOOL SPEED LIMIT 20 WHEN FLASHING

MAIN ST. CENTER

ADVANCE TIRE

H&R BLOCK

PACE PATRIOT BLVD

SS DIXON SCHOOLS

SCHOOL ENTRANCE

END SCHOOL ZONE

SCHOOL SCHOOL

325

330

335

90

SCHOOL SPEED LIMIT 20 WHEN FLASHING

STEPHENS RD.

COMMERCIAL SHOPPING PLAZA

SPORTS DR.

SIMMONS RD.

SPEED LIMIT 45

SCHOOL SPEED LIMIT 20 WHEN FLASHING

MP 4.29

MP 4.55

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	BIKE LANE ADDITION/PM
SIDEWALKS	SIGN PANEL
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 17

1" = 100'

SCHOOL SPEED LIMIT 20 WHEN FLASHING

SPEED LIMIT 45

FNB

BURGER KING

BIG 10

SS DIXON ST.

ETHEL DIXON ST.

W SPENCER FIELD RD.

SCHOOL SPEED LIMIT 20 WHEN FLASHING

SCHOOL

SCHOOL ZONE END

340

345

350

90

STIMMONS RD.

JERNIGAN RD.

IMMANUEL BAPTIST CHURCH

SCHOOL SPEED LIMIT 20 WHEN FLASHING

SPEED LIMIT 45

MP 4.55

MP 4.84

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 18

bridgeeg 6/4/2014 8:27:48 PM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD19.d

P3: Bicyclist exiting Winn Dixie parking lot entered turn lane into path of WB vehicle

1" = 100'

WINN DIXIE

197B

W SPENCER FIELD RD.

COUNTRY VILLAGE APT. ENT.

355

360

90

365

ALBA ST.

MOVIE GALLERY

OAK PLAZA

VICKSBURG DR.

MP 4.82

MP 5.09

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

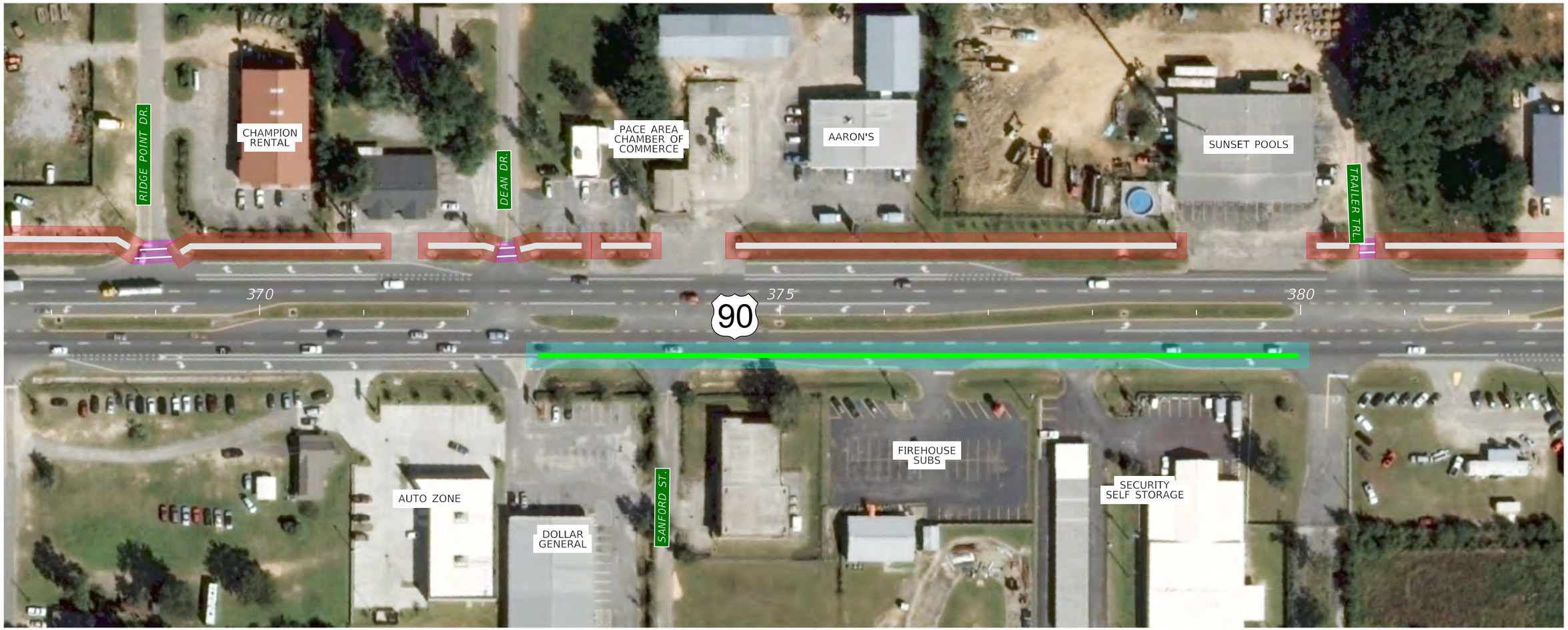
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 19

bridgeeg 6/4/2014 8:27:58 PM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD20.d

1" = 100'



MP 5.09

MP 5.37

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 20

1" = 100'

MP 5.37

MP 5.63

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING			
SIDEWALKS		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

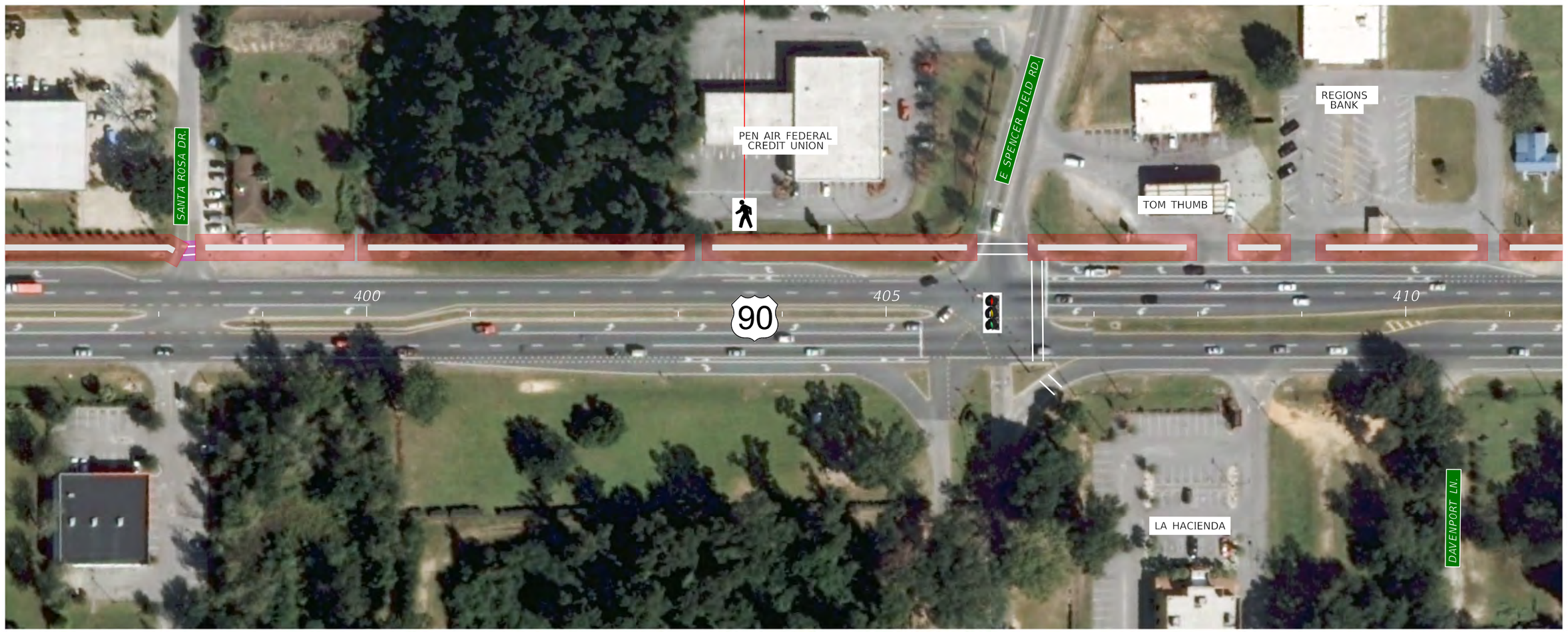
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 21

1" = 100'

P4: Pedestrian in roadway struck by passing WB vehicle mirror near E Spencer Field Rd



MP 5.63

MP 5.92

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING			
SIDEWALKS		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

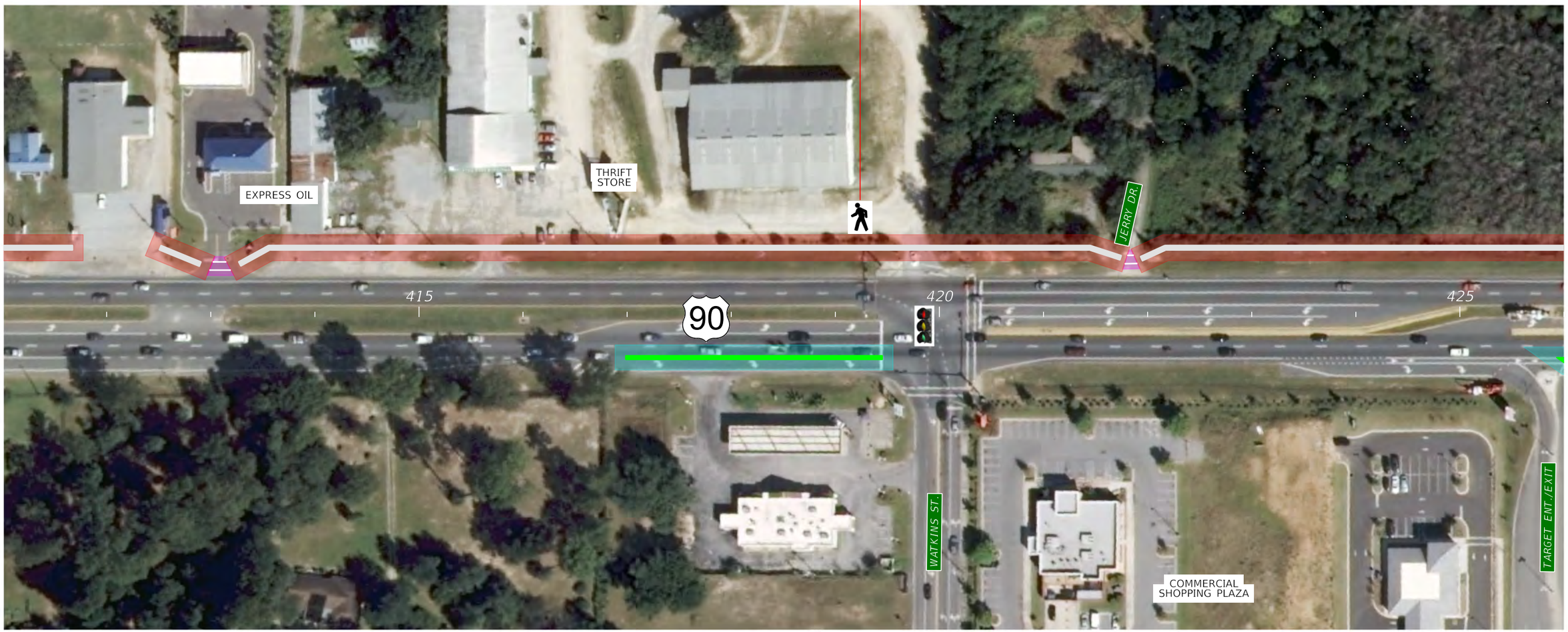
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 22

1" = 100'

P5: Pedestrian walking in bike lane struck by passing WB vehicle near Watkins St



MP 5.92

MP 6.18

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

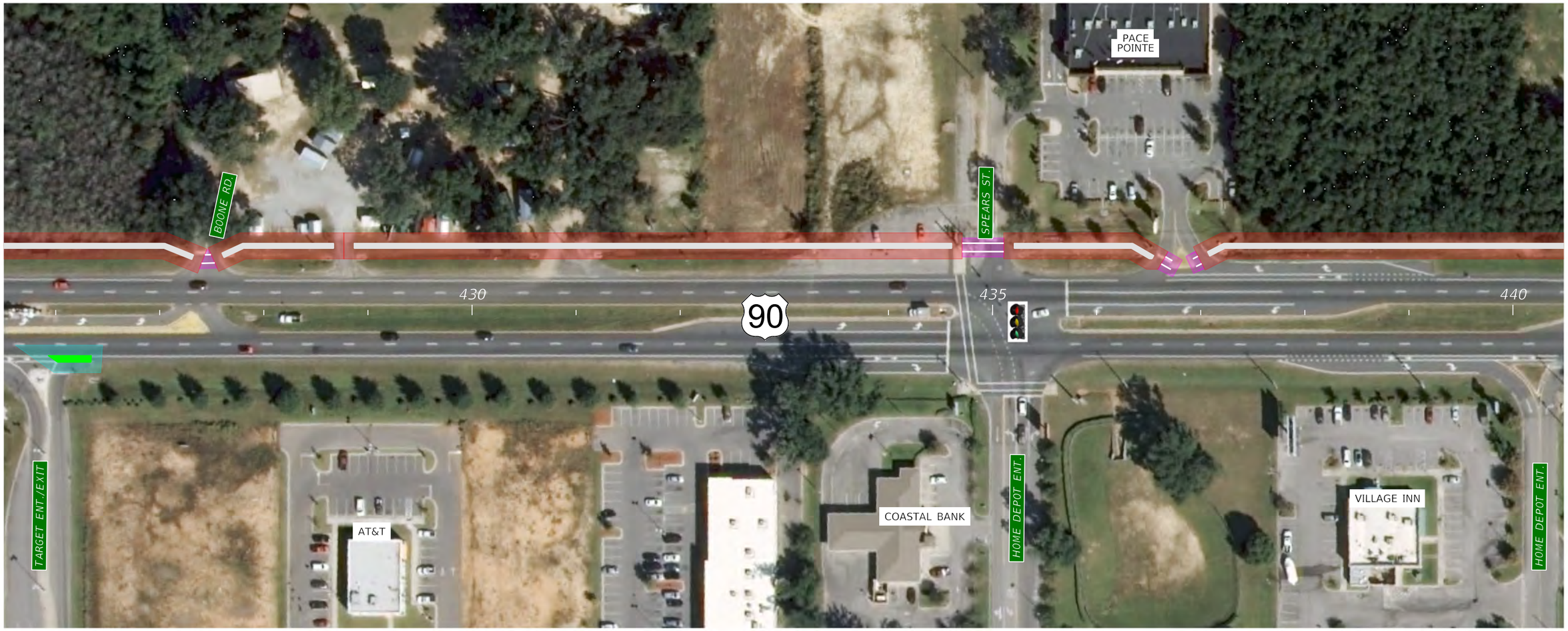
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 23

1" = 100'



MP 6.18

MP 6.47

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

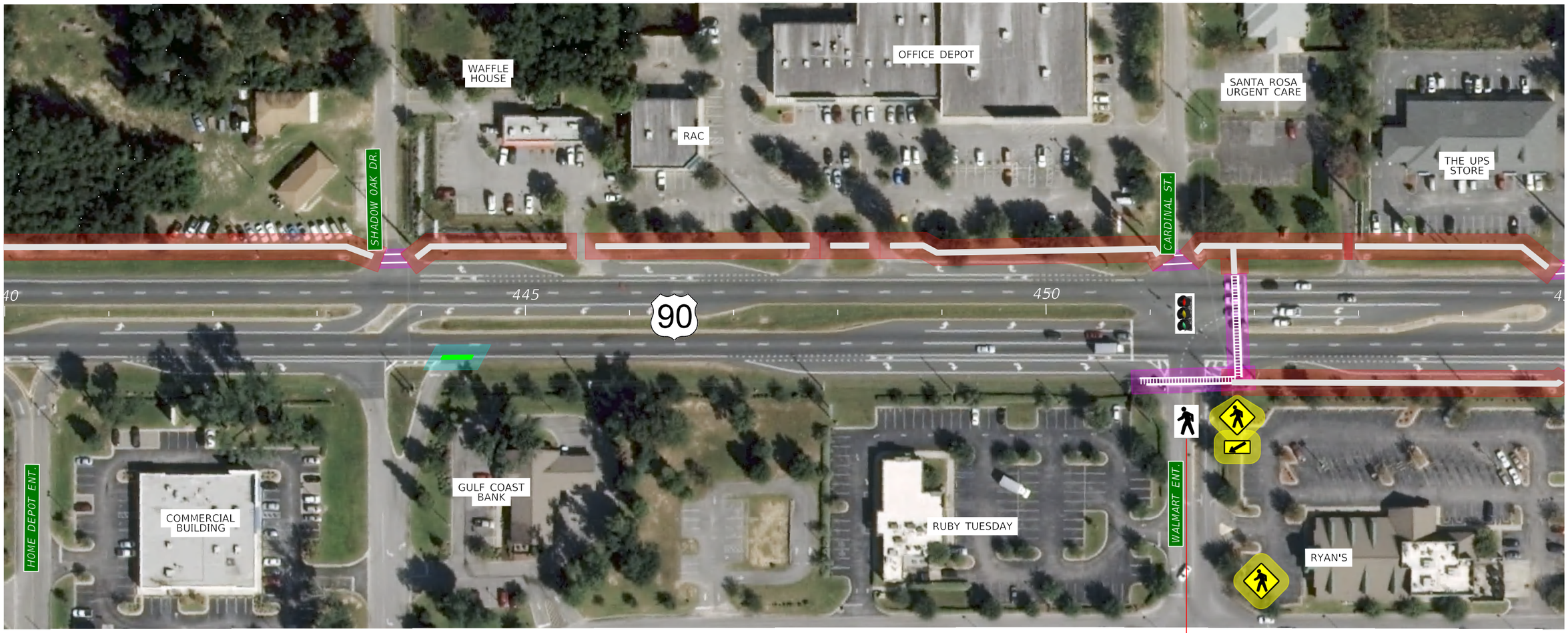
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 24

1" = 100'



P6: Pedestrian in crosswalk struck by right turning vehicle exiting Walmart

MP 6.47

MP 6.73

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

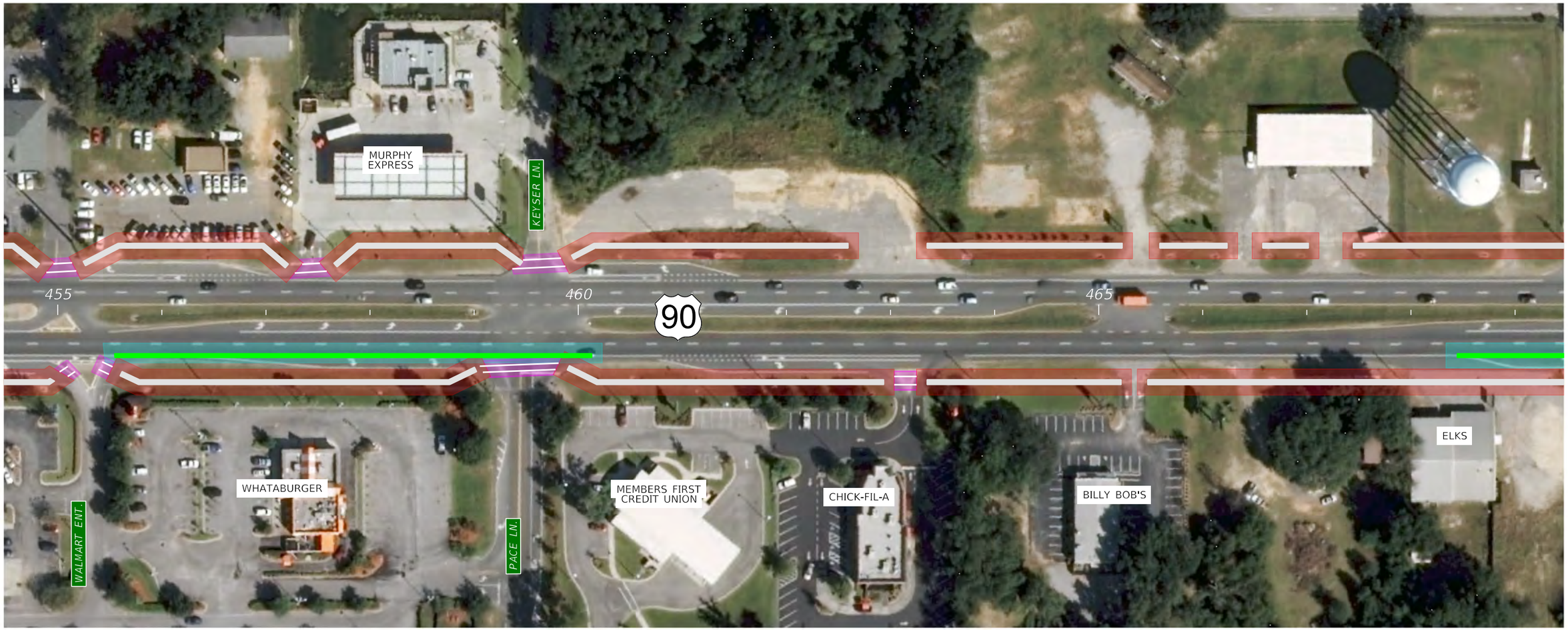
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 25

1" = 100'



MP 6.73

MP 7.02

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

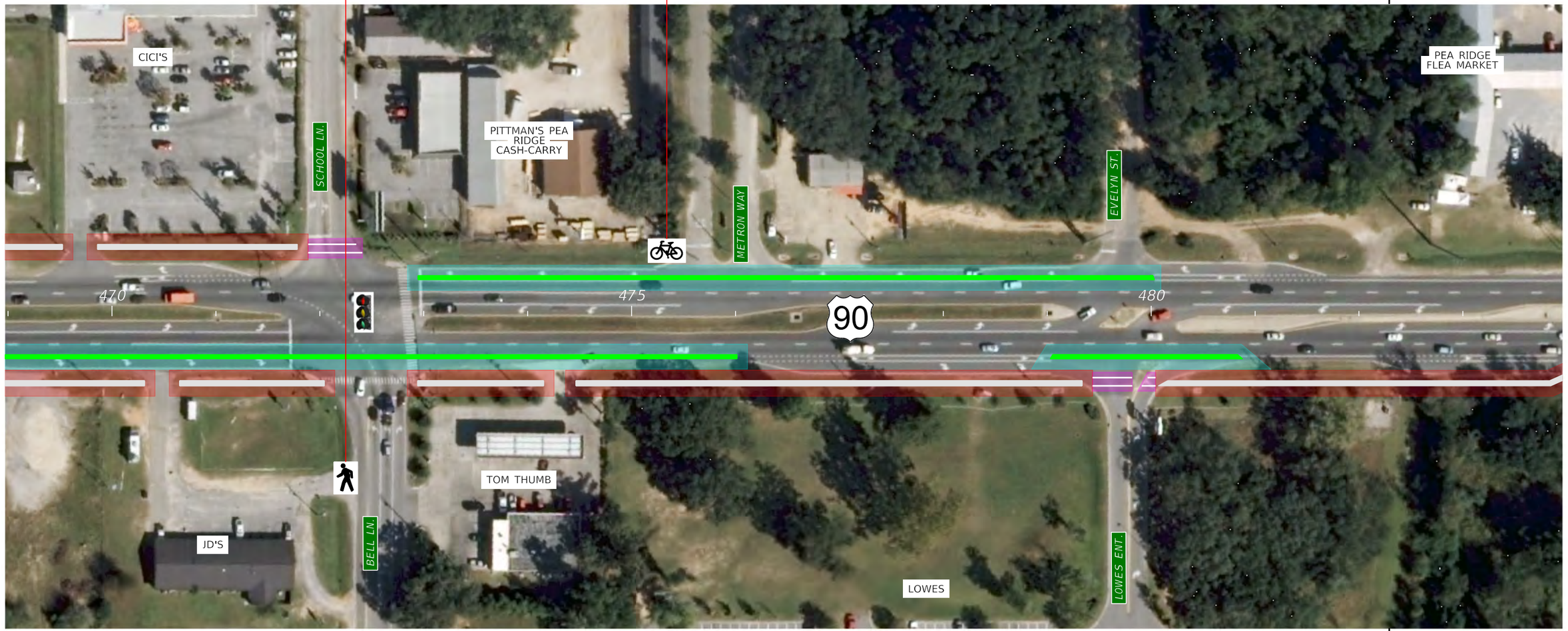
SHEET NO. 26

FP1: (Not along US 90) Pedestrian crossing Bell Ln south of crosswalk at US 90, traveling from Tom Thumb to JD's liquor store, struck by SB vehicle

P7: Bicyclist traveling EB along outside WB shoulder struck by vehicle turning from Metron Way onto WB US 90

1" = 100'

SPEED LIMIT 45 | SPEED LIMIT 55



SPEED LIMIT 45 | SPEED LIMIT 55

MP 7.02

MP 7.28

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

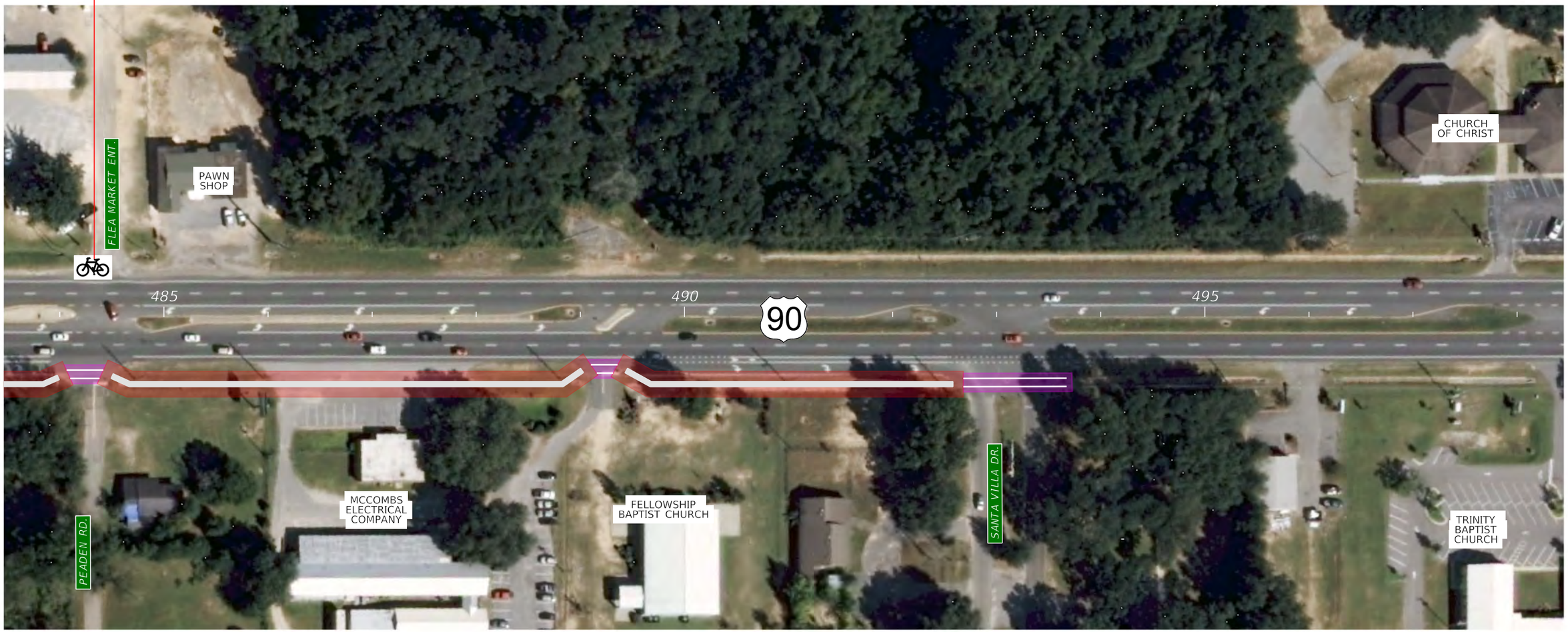
VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 27

1" = 100'

N

P8: Bicyclist crossing from outside shoulder (near Flea Market entrance) to median traveled in front of WB vehicle near Peaden Rd



MP 7.28

MP 7.57

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

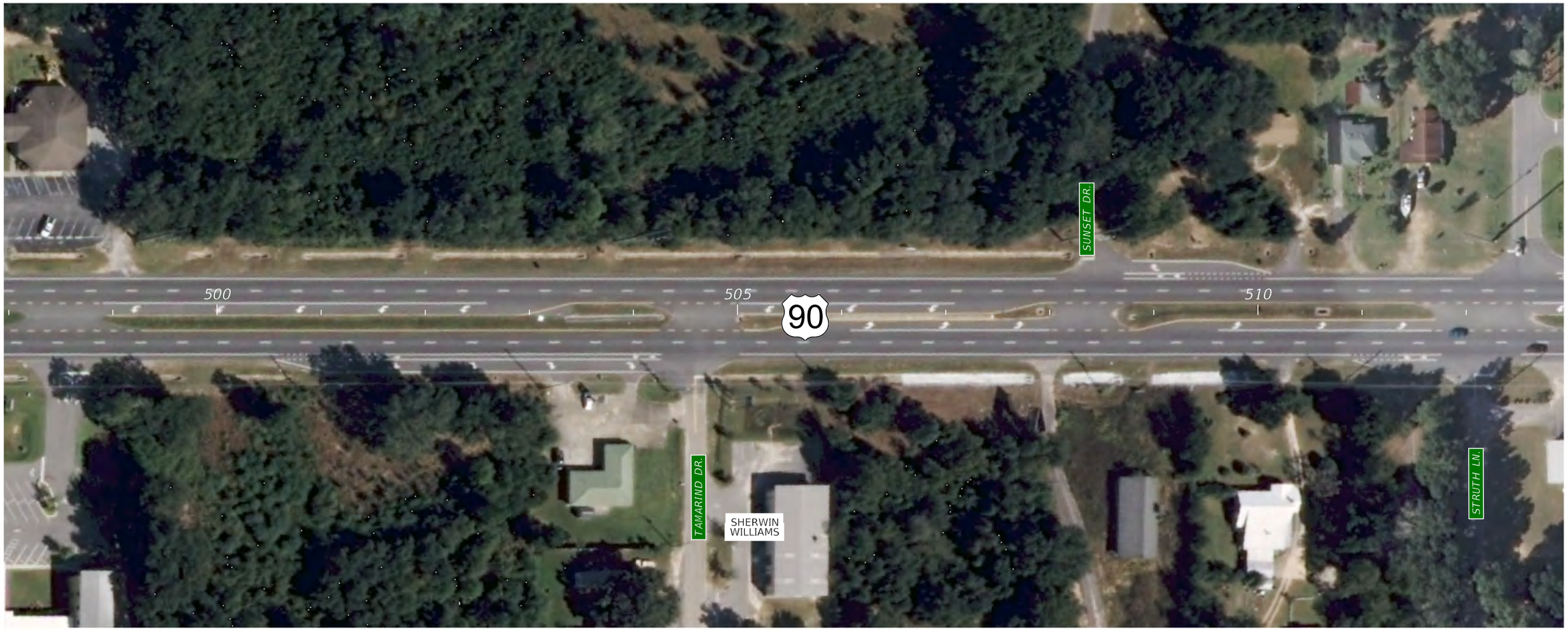
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 28

1" = 100'



MP 7.57

MP 7.83

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 29

1" = 100'

MP 7.83

MP 8.12

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

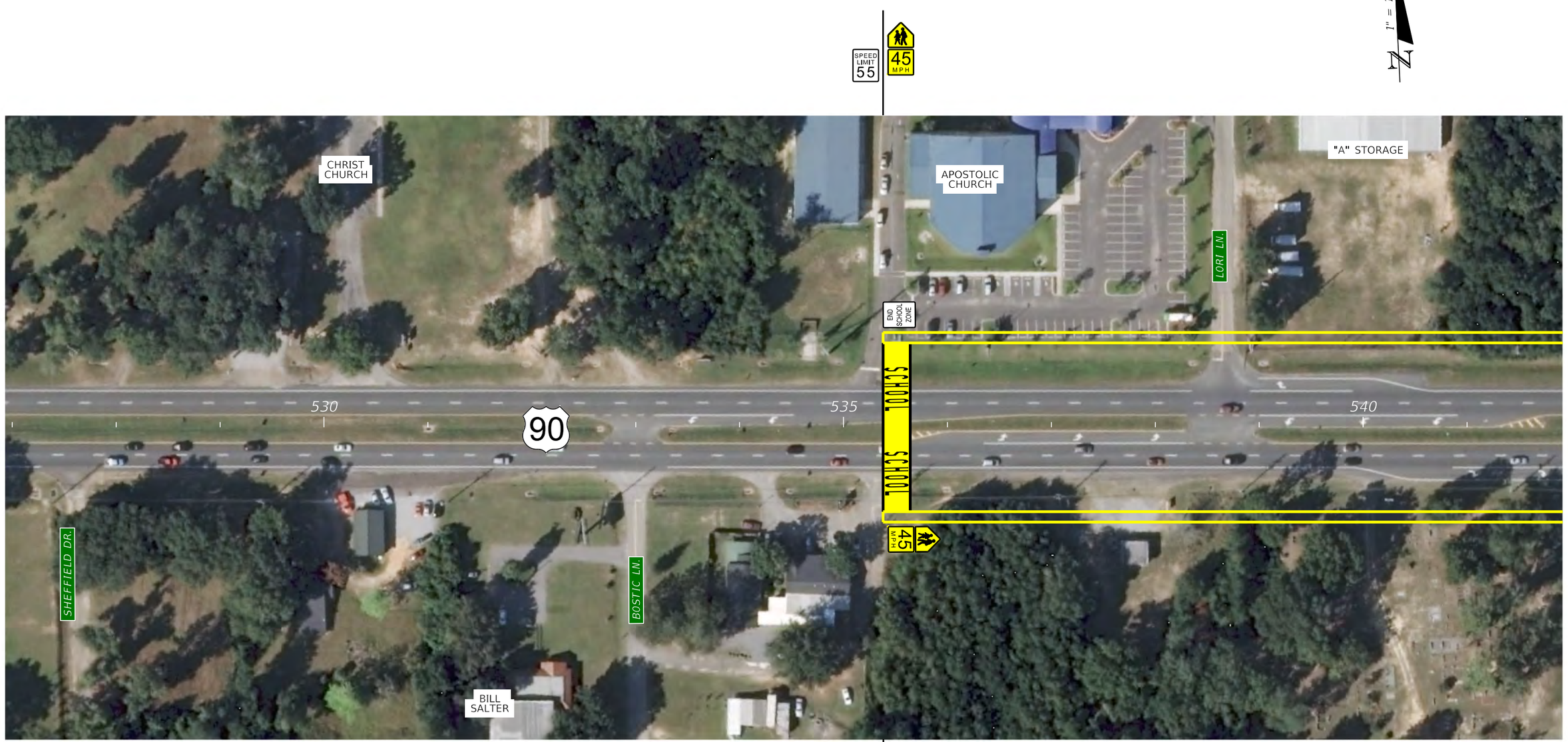
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 30

1" = 100'



MP 8.12

MP 8.38

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

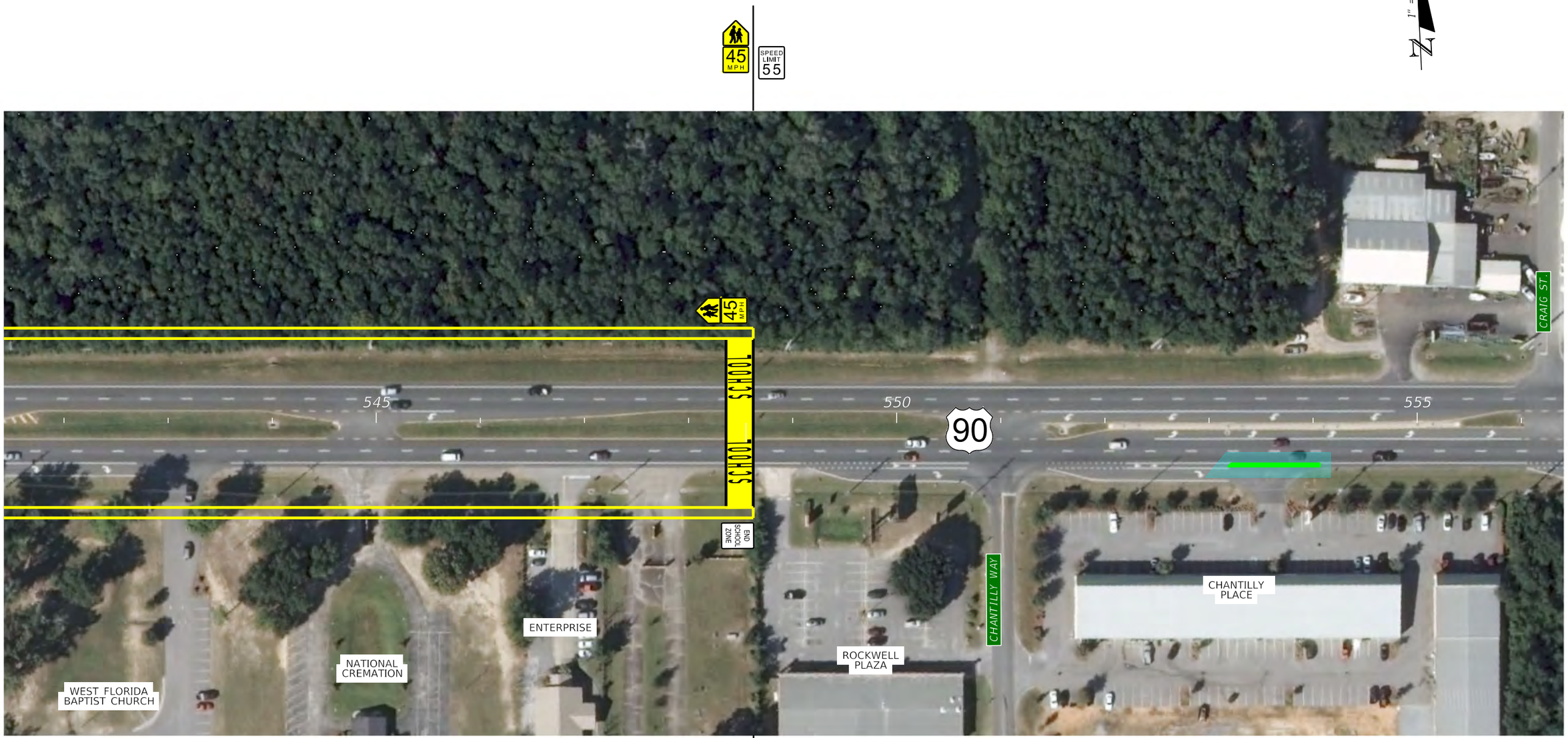
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 31



MP 8.38

MP 8.66

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 32

1" = 100'

P9: Bicyclist on EB US 90 struck by vehicle exiting Kids Discovery

MP 8.66

MP 8.93

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 33

1" = 100'

SPEED LIMIT 55 | SPEED LIMIT 45

SPEED LIMIT 55 | SPEED LIMIT 45

MP 8.93

MP 9.21

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 34

bridgeeg 6/4/2014 8:29:24 PM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD35.d

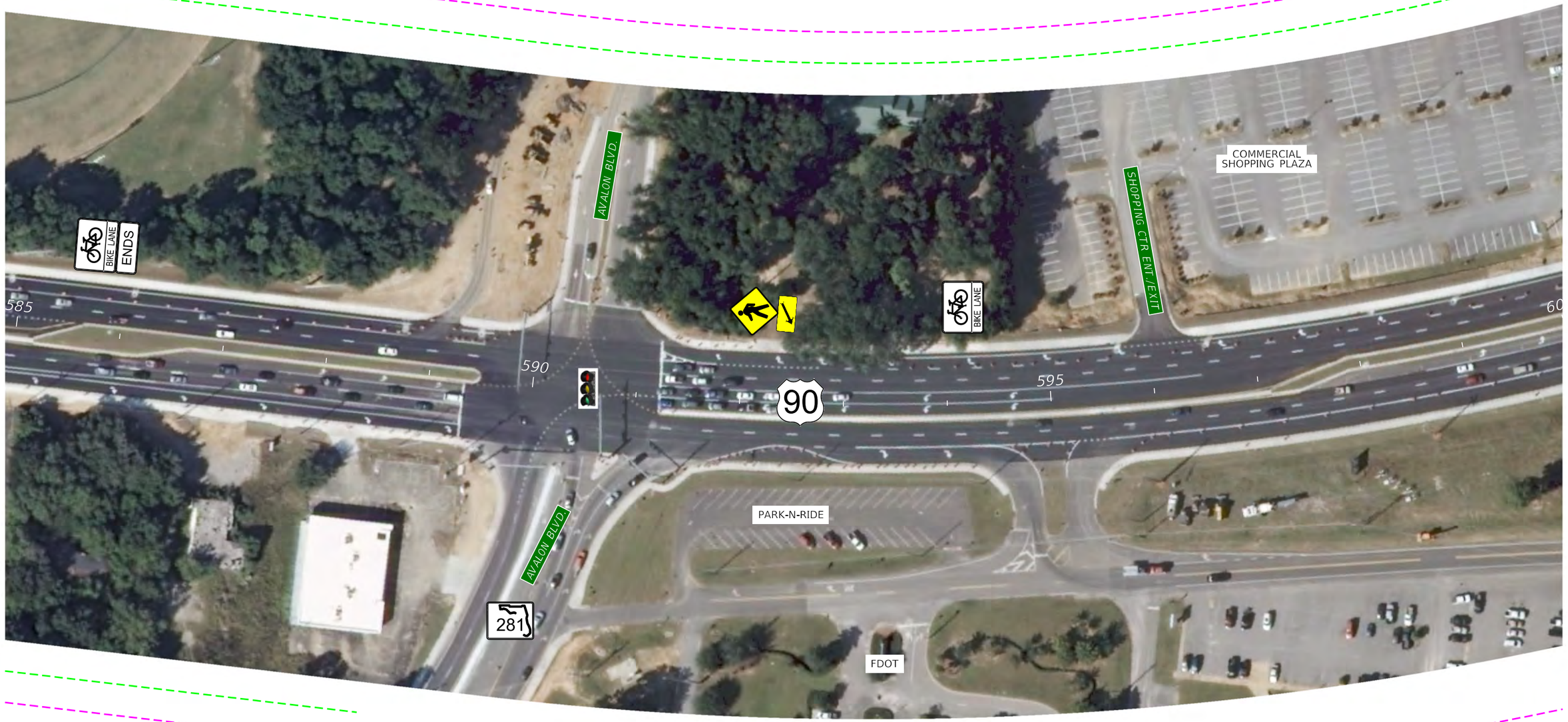
LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

1" = 100'

N



MP 9.21

MP 9.48

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 35

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

1" = 100'

MP 9.48

MP 9.74

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

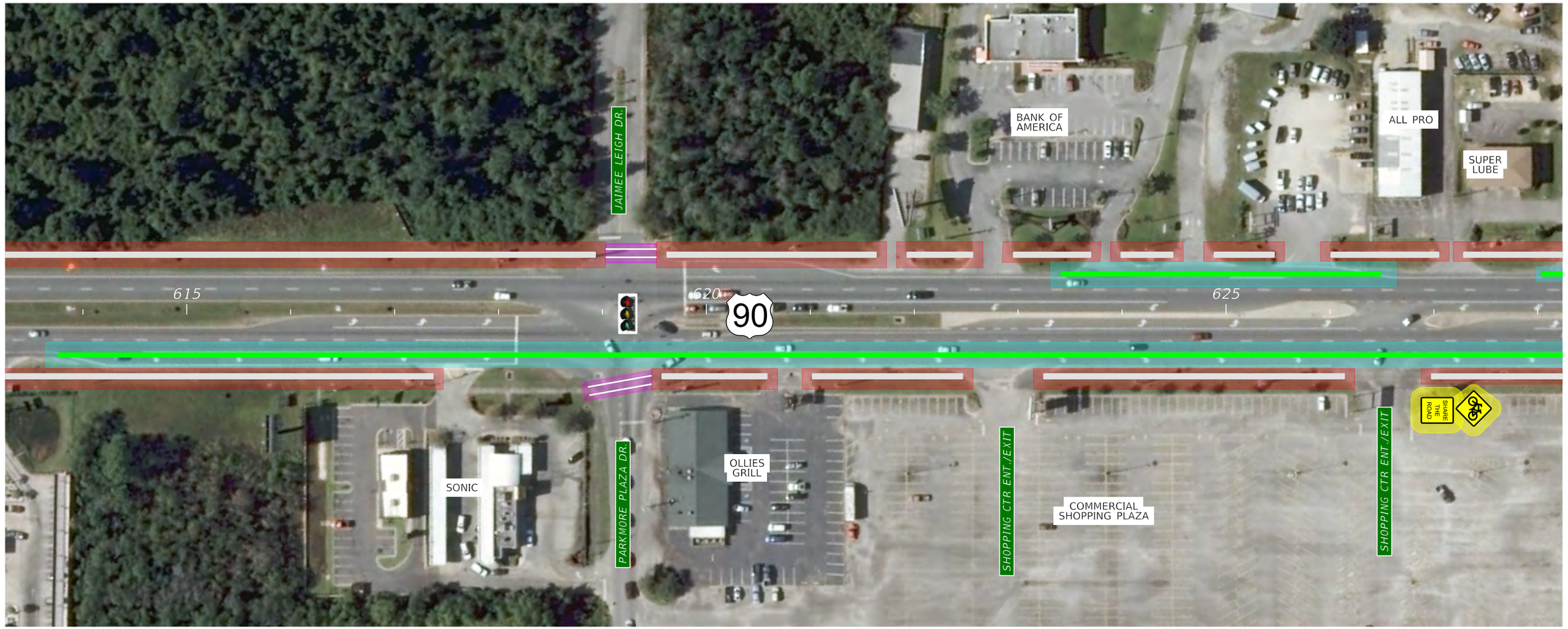
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 36

1" = 100'



MP 9.74

MP 10.03

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

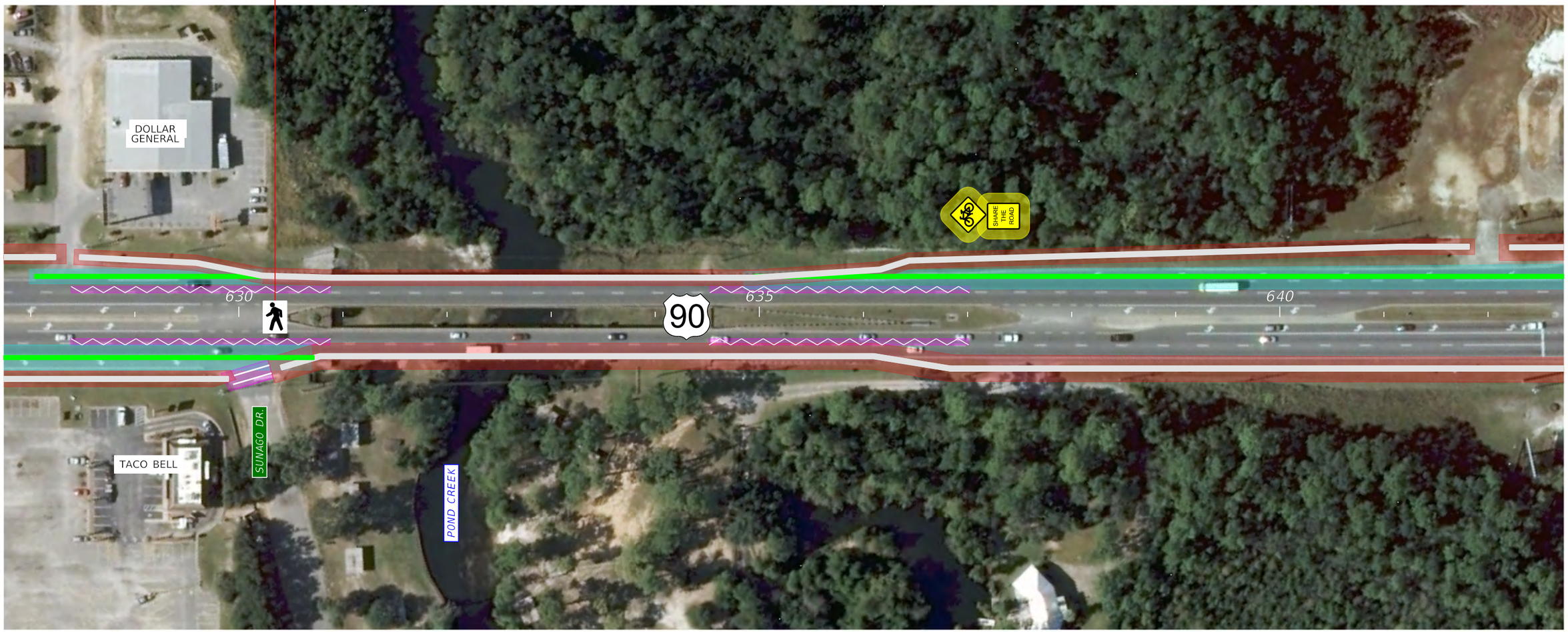
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 37

1" = 100'

FP2: Intoxicated pedestrian in roadway on Pond Creek Bridge struck by WB vehicles



MP 10.03

MP 10.29

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 38

1" = 100'

BADCOCK FURNITURE

MILTON DODGE

KIA

BILL'S RV CENTER

GLOVER LN

645

650

655

90

OLD HWY 90

STATE FARM

COOKS PAINT & BODY SHOP

TITAN INS.

SHRIMP BASKET

MP 10.29

MP 10.58

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 39

1" = 100'

MP 10.56

MP 10.84

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

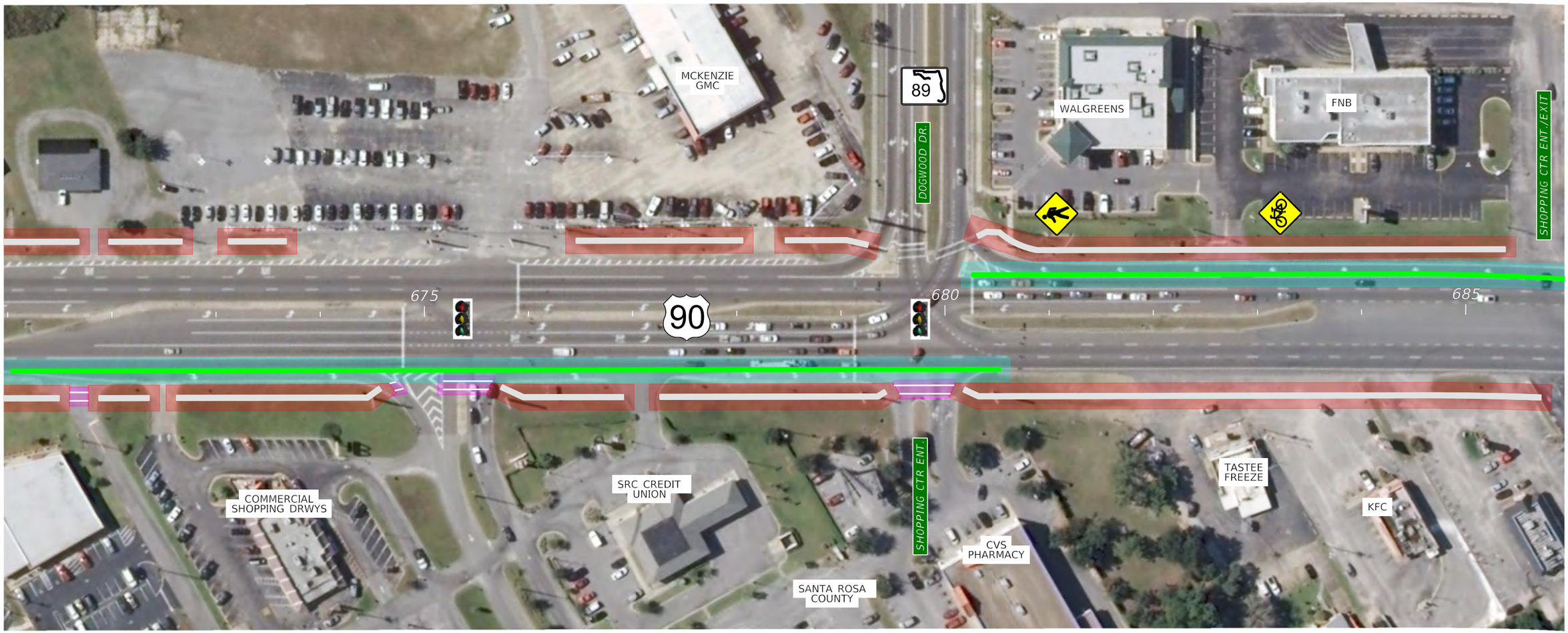
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 40

1" = 100'



MP 10.84

MP 11.11

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

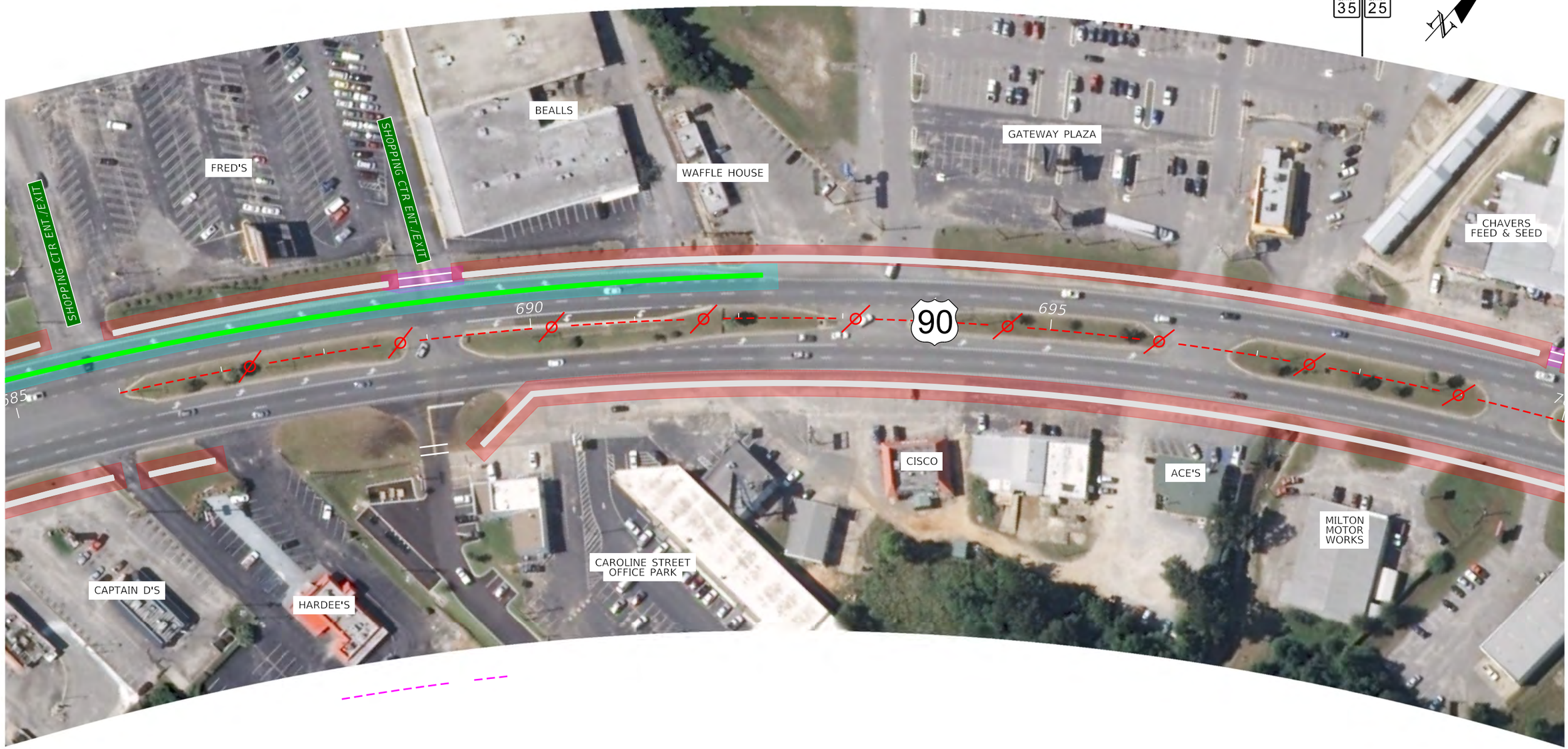
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 41



MP 11.11

MP 11.37

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 42

1" = 100'

HALL'S HARDWARE

CHAVERS ST.

REGIONS BANK

ALLSTATE

TIRES ETC.

ARBY'S

STEWART ST.

700

705

90

710

BIG 10

TEXAS ROADHOUSE

CAR QUEST

DOWNTOWN MOTORS

BLACKWATER HERITAGE STATE TRAIL

MP 11.37

MP 11.64

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

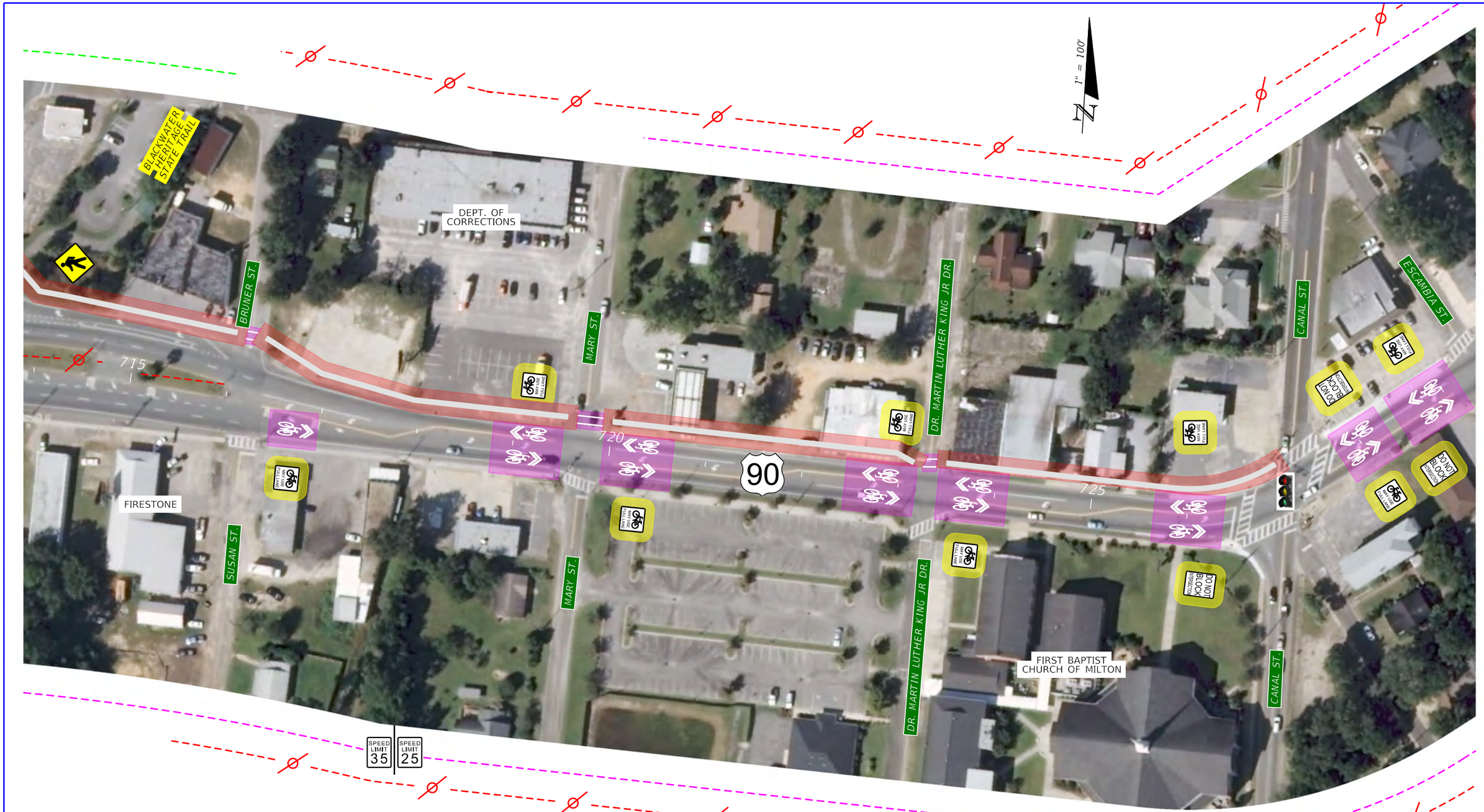
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 43



LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	BIKE LANE ADDITION/PM
SIDEWALKS	SIGN PANEL
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

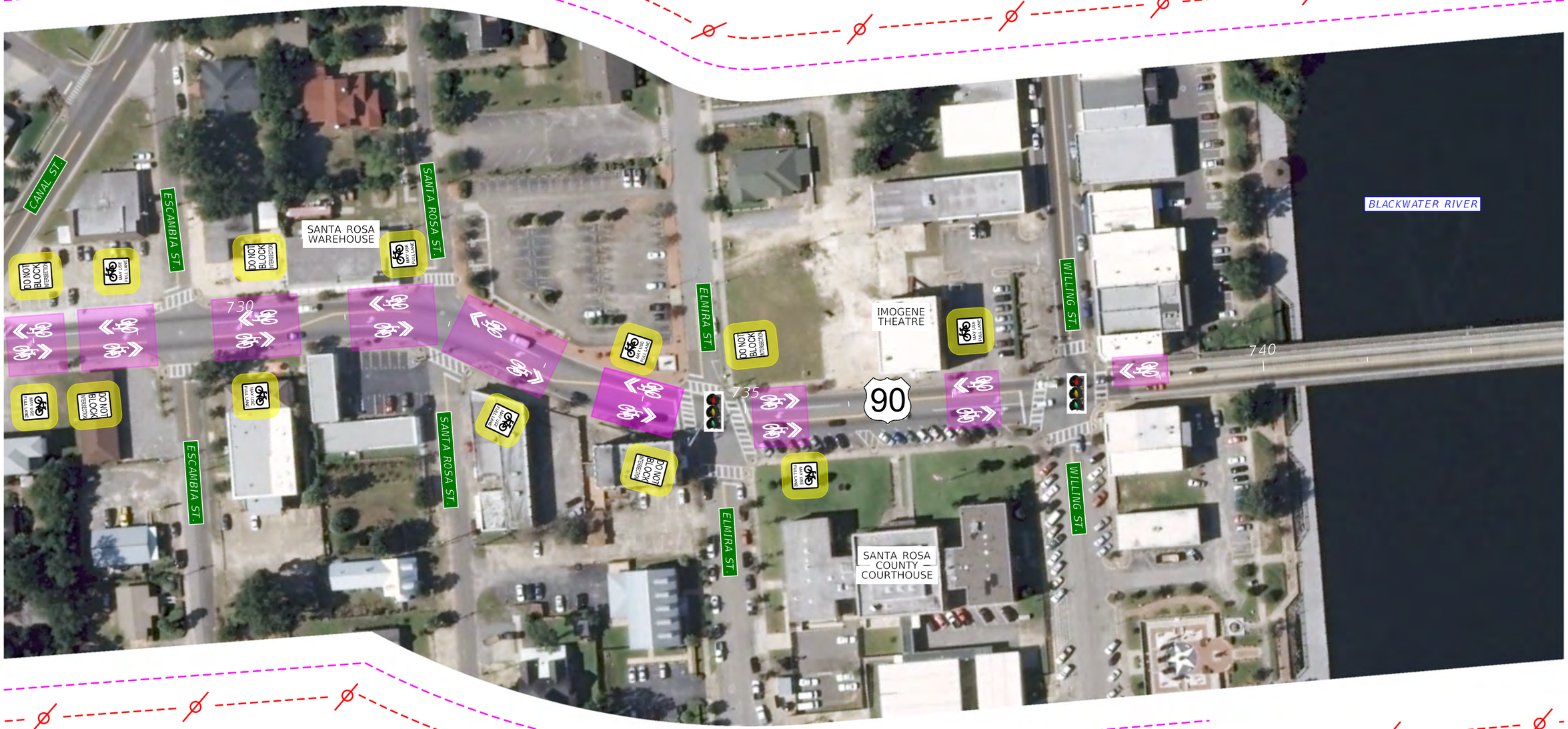
SHEET NO. 44

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

1" = 100'



MP 11.92

MP 12.19

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 45

1" = 100'

MP 12.19

MP 12.47

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK, SIGN PANEL
LIGHTING	
SIDEWALKS	BIKE LANE ADDITION/PM, PAVEMENT MARKING (PM)
BIKE LANES	

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

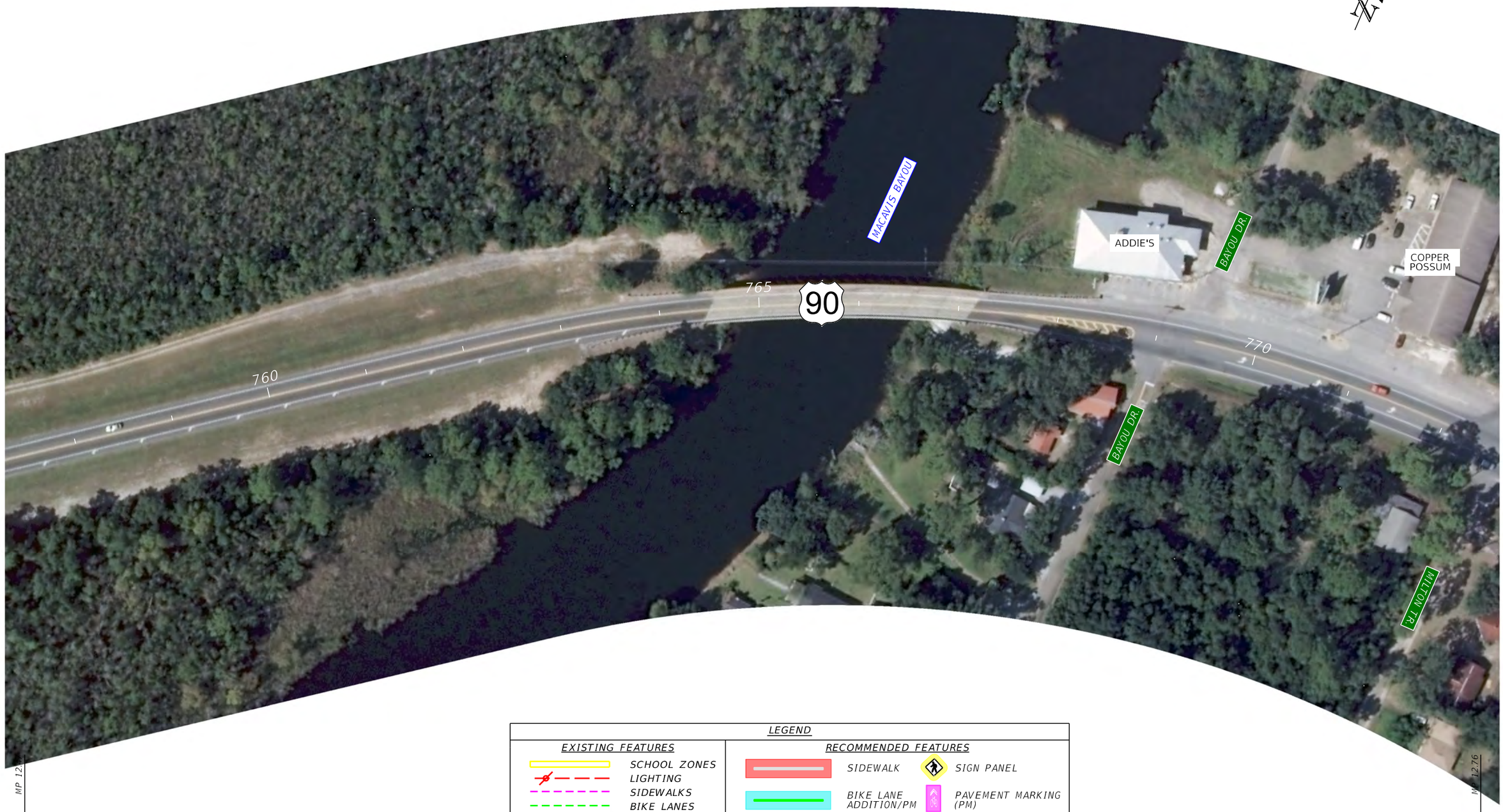
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 46



LEGEND	
EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 47

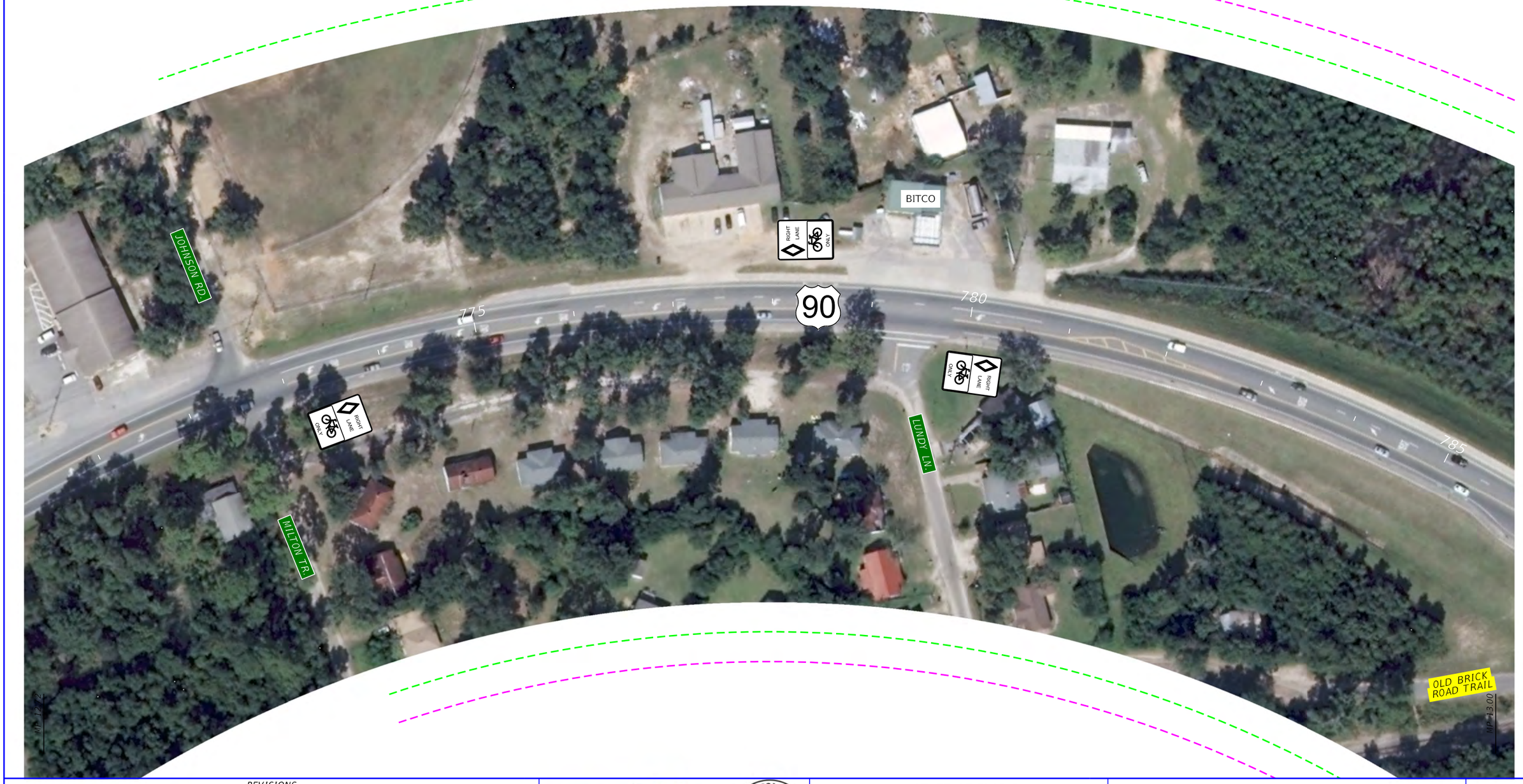
bridgeeg 6/4/2014 8:30:58 PM P:\EHXH2100\2100 TWOs\2109 - US 90 RSA\700CADD\41843915201\roadway\PLANRD48.d

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

1" = 100'



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

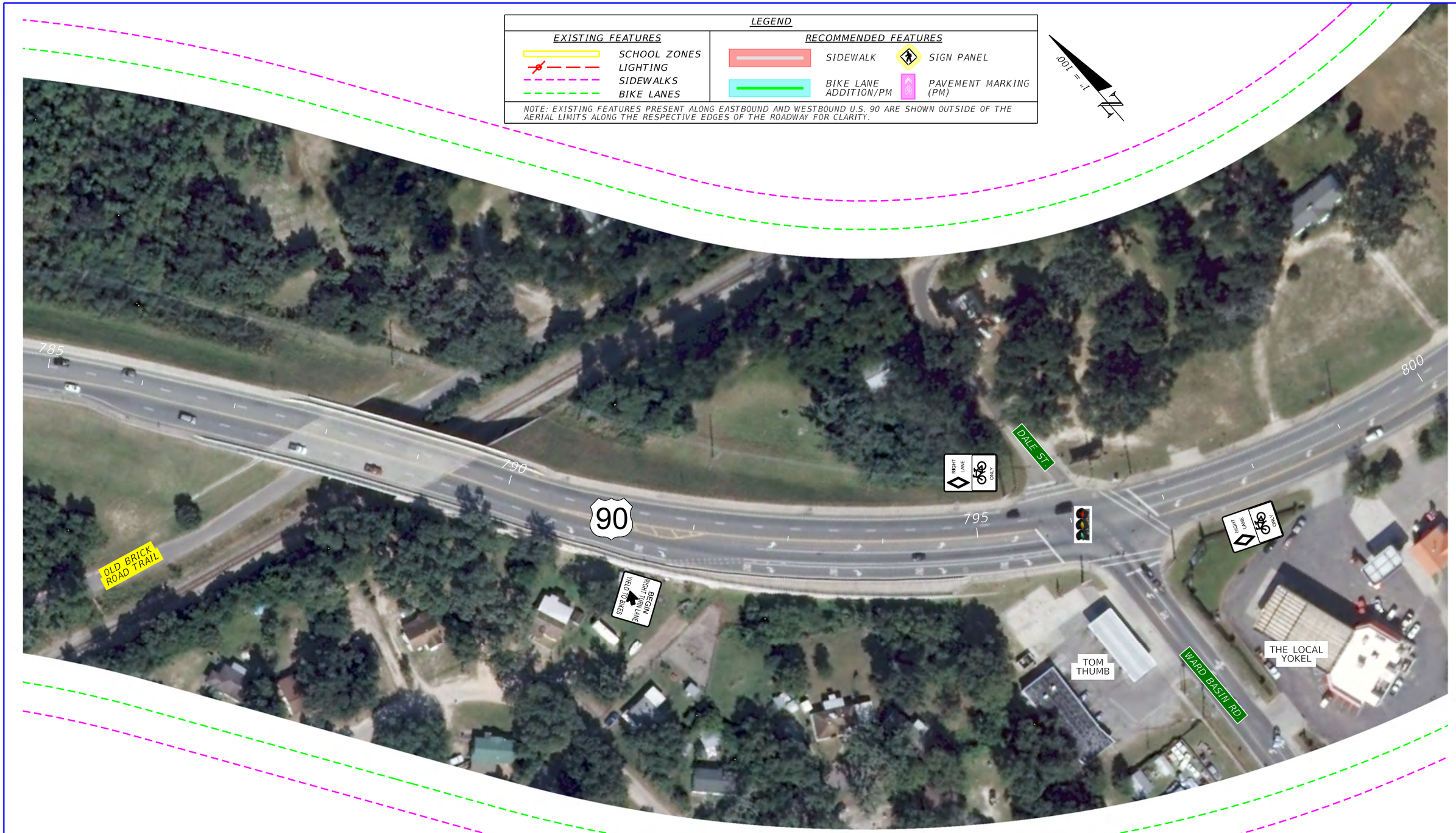
SHEET NO. 48

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

1" = 100'



MP 13.00

MP 13.29

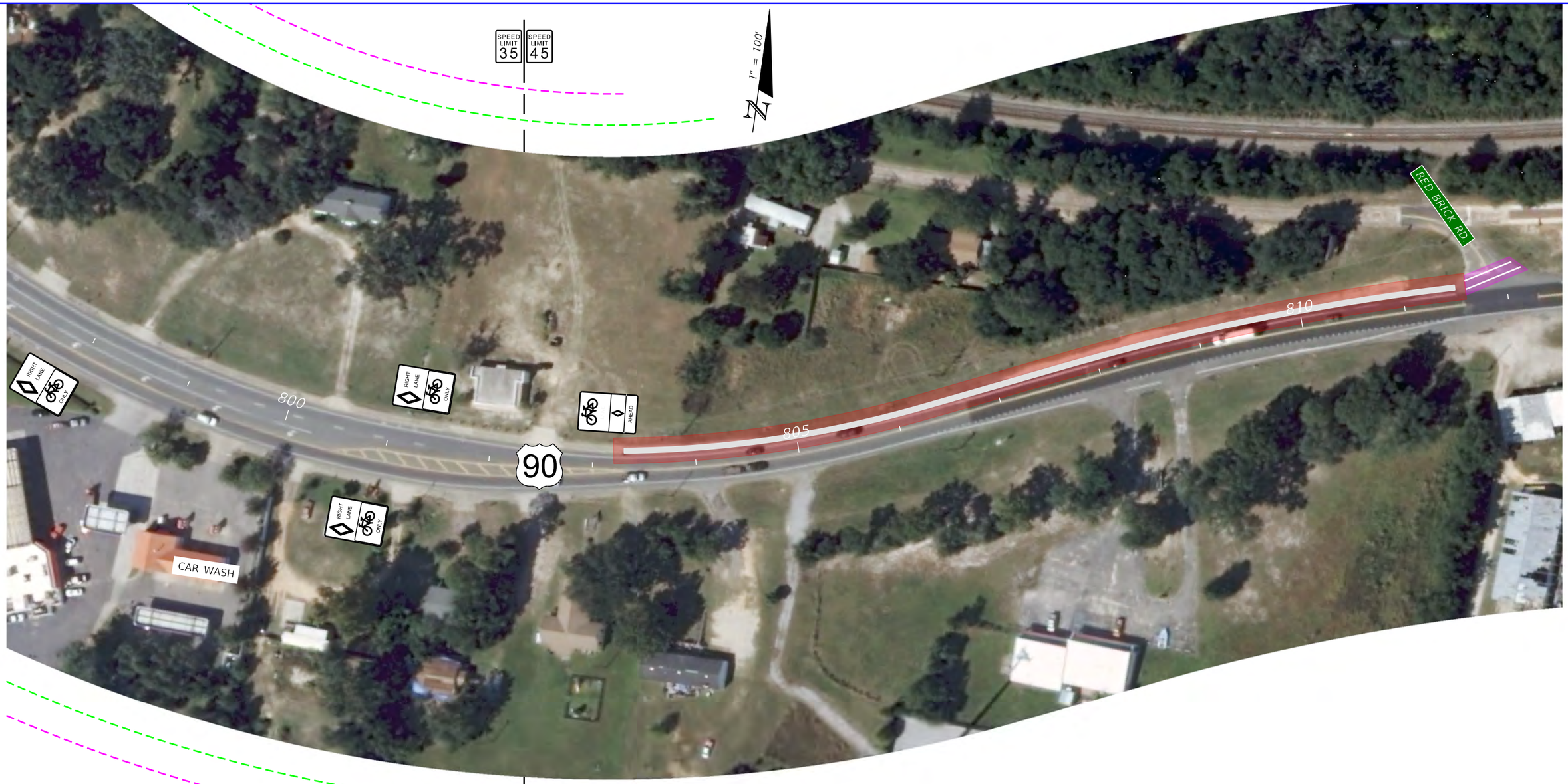
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 49



MP 13.23

MP 13.51

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING			
SIDEWALKS		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 50

P10: Bicyclist on outside shoulder turned left into travel lanes into the path of an EB vehicle near Red Brick Rd

MP 13.48

MP 13.74

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK, SIGN PANEL
LIGHTING	
SIDEWALKS	BIKE LANE ADDITION/PM, PAVEMENT MARKING (PM)
BIKE LANES	

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 51

1" = 100'

N

MP 13.74

MP 14.02

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 52

1" = 100'

MP 14.02

MP 14.27

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING			
SIDEWALKS		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 53

1" = 100'

MP 14.29

MP 14.55

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 54

1" = 100'

MP 14.55

MP 14.82

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 55

1" = 100'

MP 14.82

MP 15.12

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 56

1" = 100'

P11: Bicyclist on shoulder struck by EB vehicle near Eaton Dr in hit and run

MP 15.12

MP 15.39

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 57

1" = 100'

P12: Bicyclist on shoulder struck by EB vehicle near Industrial Blvd

MP 15.39

MP 15.67

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 58

LEGEND

EXISTING FEATURES	RECOMMENDED FEATURES
SCHOOL ZONES	SIDEWALK
LIGHTING	SIGN PANEL
SIDEWALKS	BIKE LANE ADDITION/PM
BIKE LANES	PAVEMENT MARKING (PM)

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 59

1" = 100'

MP 15.94

MP 16.22

P13: Bicyclist in bike lane struck by vehicle changing lanes into right turn lane at SR 87

LEGEND

EXISTING		RECOMMENDED	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

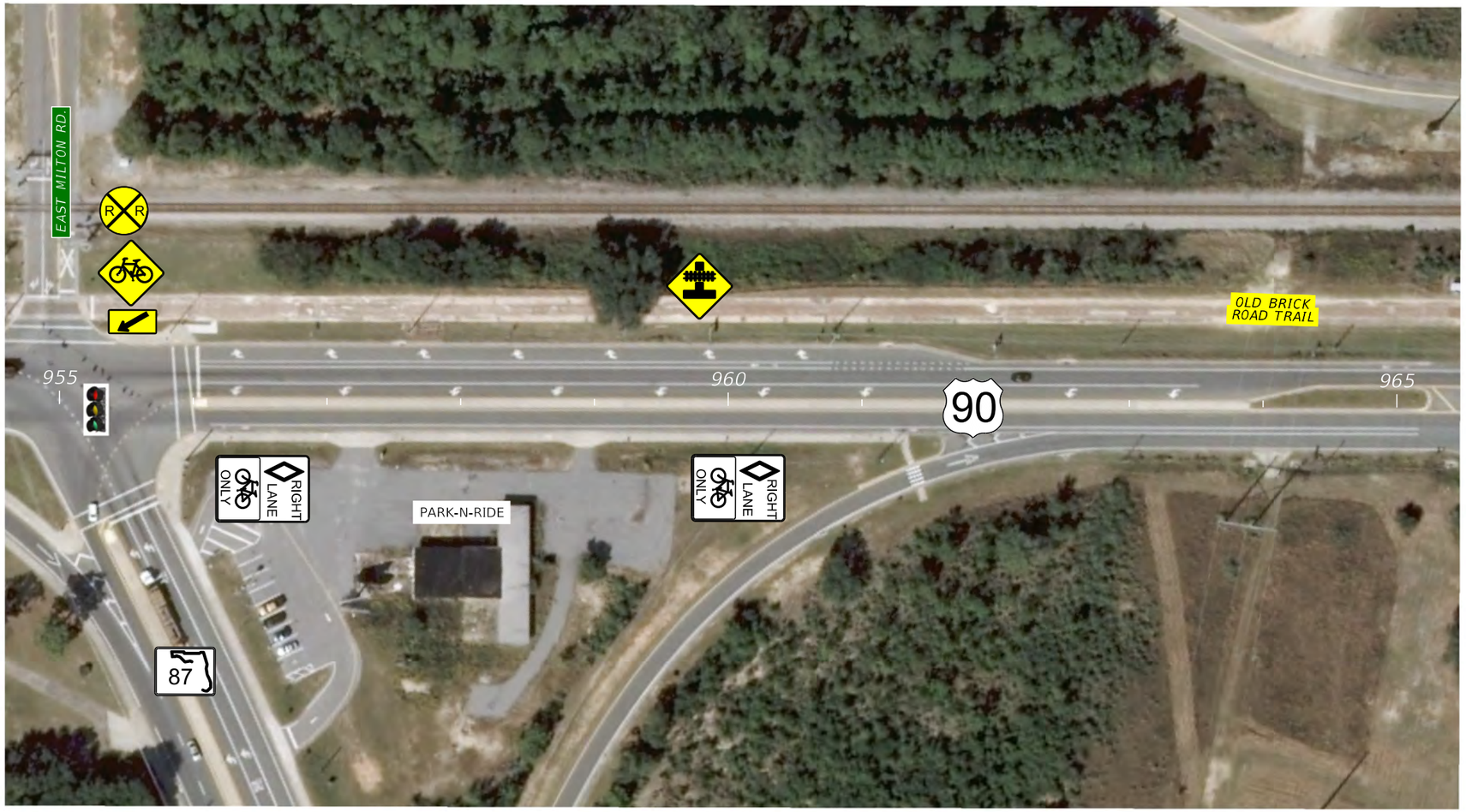
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 60

1" = 100'



MP 16.22

MP 16.41

LEGEND

EXISTING FEATURES		RECOMMENDED FEATURES	
SCHOOL ZONES		SIDEWALK	SIGN PANEL
LIGHTING		BIKE LANE ADDITION/PM	PAVEMENT MARKING (PM)
SIDEWALKS			
BIKE LANES			

NOTE: EXISTING FEATURES PRESENT ALONG EASTBOUND AND WESTBOUND U.S. 90 ARE SHOWN OUTSIDE OF THE AERIAL LIMITS ALONG THE RESPECTIVE EDGES OF THE ROADWAY FOR CLARITY.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 90	SANTA ROSA	418439-1-32-06

VULNERABLE ROAD USER SAFETY STUDY FIGURES

SHEET NO. 61

Appendix D

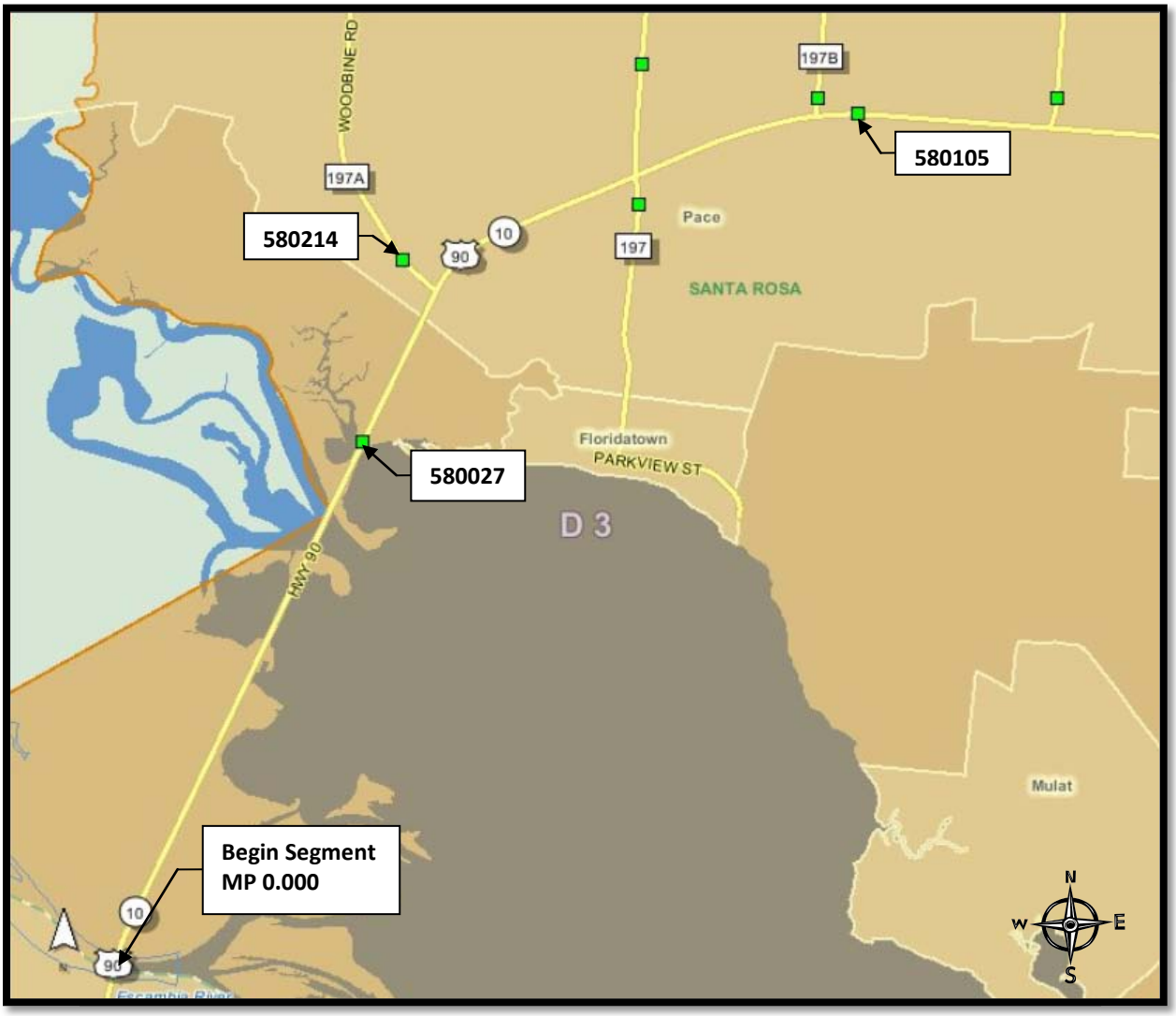
Traffic Data

Summary of 2012 Traffic Data
US 90 in Santa Rosa County (MP 0.000 to MP 16.216)
FPID 418439-1-32-06

Traffic Monitoring Station	Highway	MP	Description	AADT	K	D	T
580027	US 90	2.323	SR 10 (US 90), 230' East of Bridge at Bass Hole Cove	38,500	9	57.2	3.6
580214	CR 197A	0.194	CR 197A (Woodbine Rd) - 0.194 Miles North of SR 10 (US90)	18,300	9	57.2	5.6
580105	US 90	5.006	SR 10 (US 90) - 0.181 Miles East of CR 197B (W Spencer Field Rd)	34,500	9	57.2	3.5
580128	US 90	9.004	SR 10 (US 90) - 0.300 Miles West of SR 281 (Avalon Blvd)	31,000	9	57.2	3.5
581502	US 90	10.554	SR 10 (US 90) - 0.250 Miles East of Glover Ln	34,500	9	57.2	3.3
585018	US 90	11.127	SR 10 (US 90) - 650 Ft East of SR 89 (Dogwood Dr)	24,500	9	57.2	3.5
585011	US 90	11.668	SR 10 (US 90) - 250 Ft East of SR 87 (Stewart St)	19,100	9	57.2	7.7
585010	US 90	12.076	SR 10 (US 90) - 150 Ft West of CR 191 (Willing St)	13,500	9	57.2	7.7
581507	US 90	12.440	SR 10 (US 90) - 700 Ft East of Blackwater River Bridge	18,800	9	57.2	4.7
580062	US 90	13.555	SR 10 (US 90) - 0.350 Miles East of CR 89 (Ward Basin Rd)	14,200	9	57.2	6.1
580019	US 90	15.666	SR 10 (US 90) - 0.550 Miles West of SR 87 (South)	12,100	9	57.2	8.5

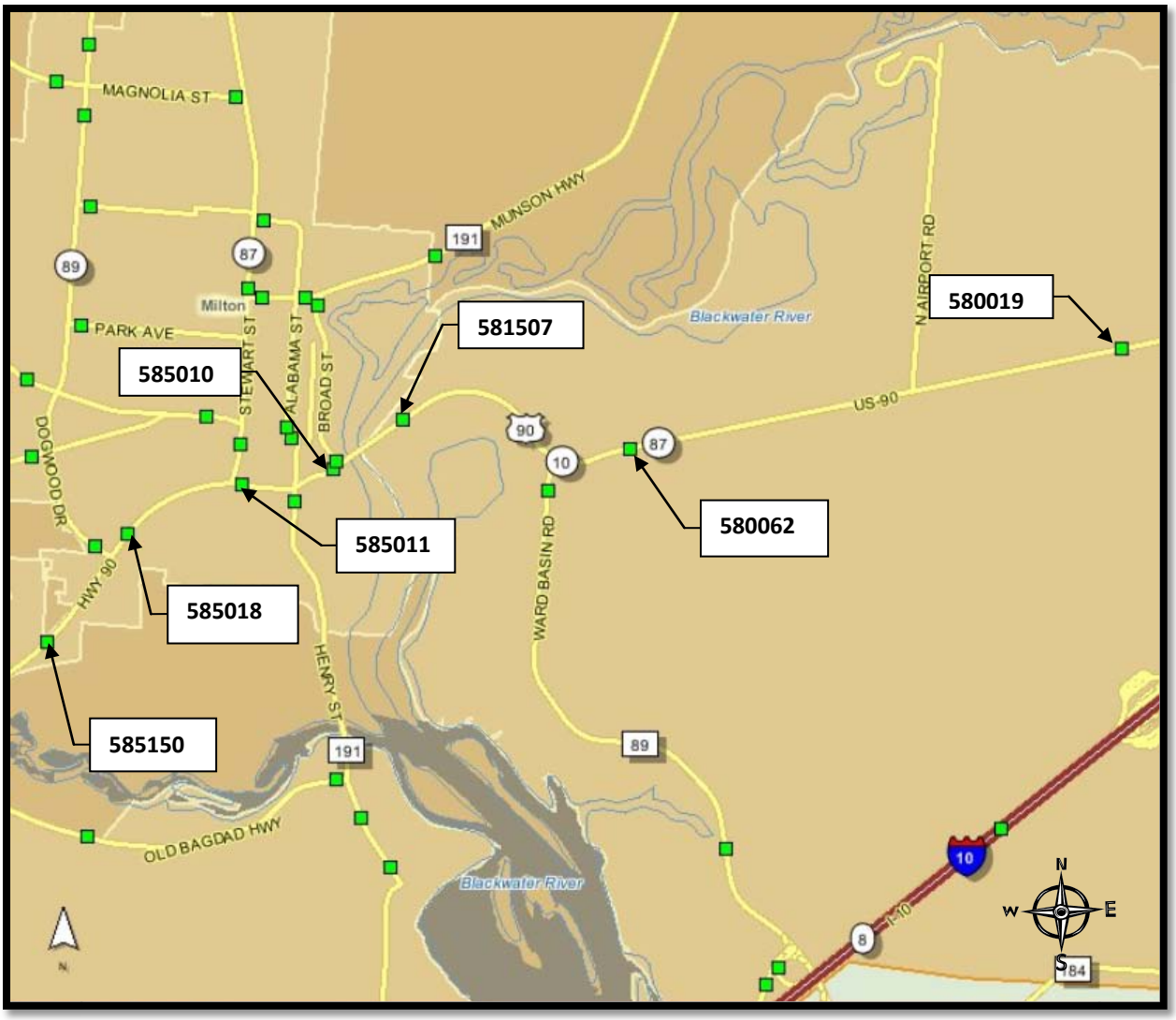
Arterial Study: US 90 from the Escambia County Line to SR 87 South
FDOT Traffic Data Maps

Arterial Study: US 90 from the Escambia County Line to SR 87 South
FDOT Traffic Data Maps

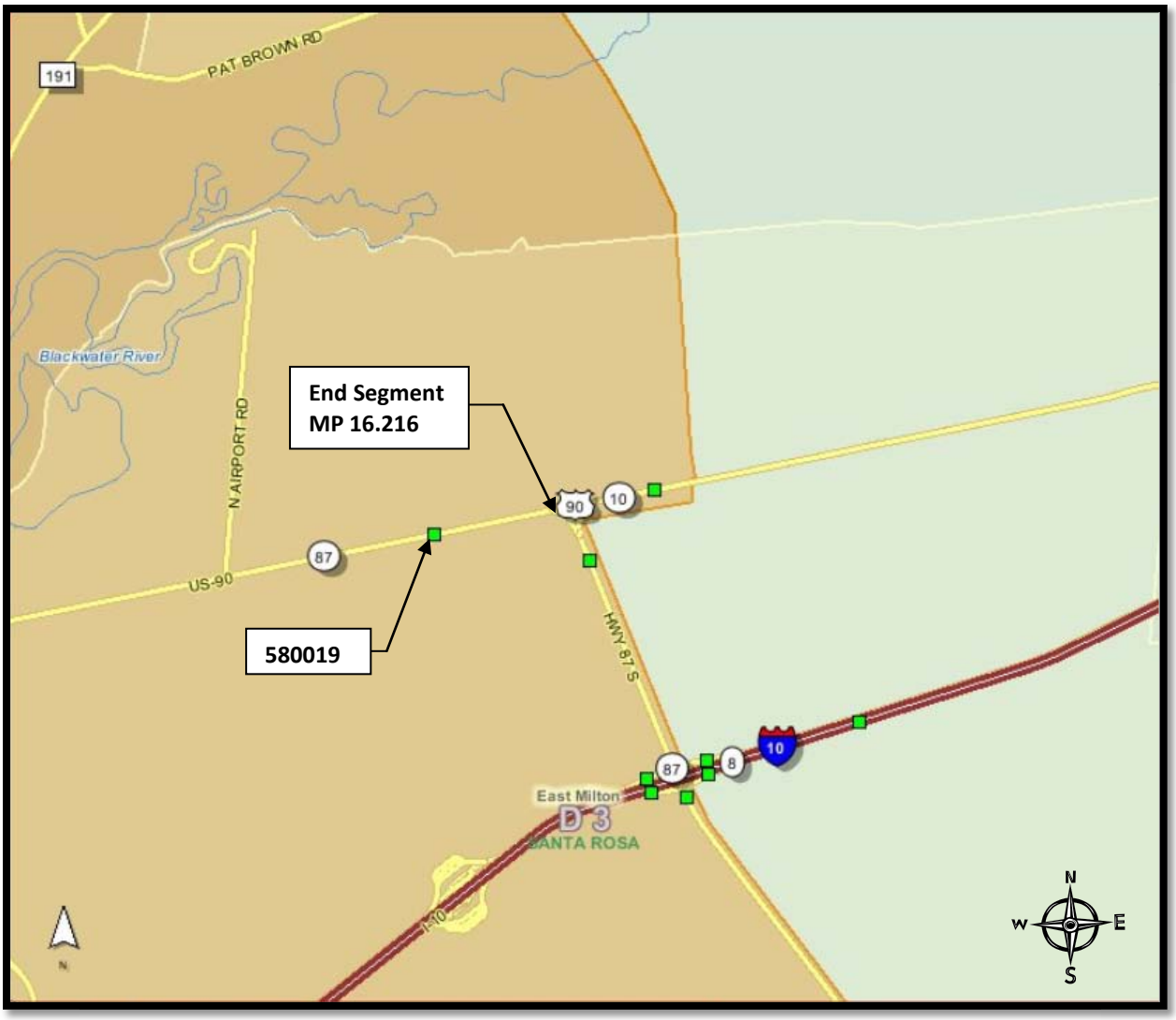


Arterial Study: US 90 from the Escambia County Line to SR 87 South
FDOT Traffic Data Maps

Arterial Study: US 90 from the Escambia County Line to SR 87 South
FDOT Traffic Data Maps



Arterial Study: US 90 from the Escambia County Line to SR 87 South
FDOT Traffic Data Maps



Site Information	
Feature	**1**
Road Name	HWY 90
Site	580027
Description	SR10 (US90) - 230' E OF BRIDGE (BASS HOLE COVE)
Section	58010000
Milepoint	2.323
AADT	**38500**
Site Type	Portable
Class Data	Yes
K Factor	9
D Factor	57.2
T Factor	3.6
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Annual Vehicle Classification
	Historical AADT Data
	Synopsis 580027CL-20120214
	Vehicle Class History

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FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 0027 - SR10 (US90) - 230' E OF BRIDGE (BASS HOLE COVE)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	38500 C	E 19500	W 19000	9.00	57.20	3.60
2011	36000 C	E 18000	W 18000	9.00	55.80	3.70
2010	39500 C	E 19000	W 20500	10.61	55.16	5.60
2009	35500 C	E 18000	W 17500	10.79	55.78	3.00
2008	34500 C	E 17000	W 17500	11.25	54.42	5.10
2007	39500 C	E 20500	W 19000	10.84	54.80	9.00
2006	43000 C	E 24000	W 19000	10.82	56.15	6.20
2005	40000 C	E 20000	W 20000	10.80	56.20	4.10
2004	40000 C	E 20000	W 20000	16.40	59.10	4.10
2003	34500 C	E 17000	W 17500	10.60	56.50	5.70
2002	34000 C	E 17000	W 17000	11.10	53.70	6.20
2001	35500 C	E 18000	W 17500	10.80	54.60	3.50
2000	34500 C	E 17500	W 17000	10.40	54.70	4.30
1999	35000 C	E 17500	W 17500	11.00	56.70	3.00
1998	33000 C	E 16500	W 16500	10.60	56.70	2.40
1997	34000 C	E 17000	W 17000	10.70	55.40	4.50

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	WOODBINE RD
Site	580214
Description	CR 197A (WOODBINE RD) - 0.194 MILE N O F SR10 (US90)
Section	58531000
Milepoint	0.194
AADT	**18300**
Site Type	Portable
Class Data	No
K Factor	9
D Factor	57.2
T Factor	5.6
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Historical AADT Data
	Synopsis 580214-20120214

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FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 0214 - CR 197A (WOODBINE RD) - 0.194 MILE N OF SR10 (US90)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	18300 C	N 9200	S 9100	9.00	57.20	5.60
2011	15000 C	N 0	S 0	9.00	55.80	7.00
2010	16500 C	N 0	S 0	10.61	55.16	5.80
2009	16000 C	N 0	S 0	10.79	55.78	6.10
2008	15000 C	N 0	S 0	11.25	54.42	8.40
2007	17500 C	N 0	S 0	10.84	54.80	10.20
2006	16500 C	N 0	S 0	10.82	56.15	9.30
2005	17500 C	N	S	10.80	56.20	6.20
2004	15500 C	N	S	16.40	59.10	7.00
2003	15500 C	N	S	10.60	56.50	5.20
2002	16500 C	N	S	11.10	53.70	7.50
2001	13500 C	N	S	10.80	54.60	9.50
2000	15800 C	N 7800	S 8000	10.40	54.70	5.80
1999	15000 C	N	S	11.00	56.70	5.90
1998	14000 C	N	S	10.60	56.70	3.60
1997	14000 C	N	S	10.70	55.40	6.20

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	HWY 90
Site	580105
Description	SR 10 (US90) - 0.181 M E OF CR 197B (W S PENCER FIELD)
Section	58010000
Milepoint	5.006
AADT	**34500**
Site Type	Portable
Class Data	No
K Factor	9
D Factor	57.2
T Factor	3.5
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Historical AADT Data
	Synopsis 580105-20120215

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FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 0105 - SR 10 (US90) - 0.181 M E OF CR 197B (W SPENCER FIELD)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	34500 C	E 17000	W 17500	9.00	57.20	3.50
2011	31500 C	E 16000	W 15500	9.00	55.80	3.80
2010	31000 C	E 16000	W 15000	10.61	55.16	4.30
2009	31500 C	E 15000	W 16500	10.79	55.78	3.10
2008	31000 C	E 15500	W 15500	11.25	54.42	4.50
2007	34000 C	E 16500	W 17500	10.84	54.80	7.30
2006	38000 C	E 19000	W 19000	10.82	56.15	5.70
2005	36500 C	E 18500	W 18000	10.80	56.20	4.70
2004	34000 C	E 17000	W 17000	16.40	59.10	4.50
2003	30000 C	E 15000	W 15000	10.60	56.50	5.40
2002	29500 C	E 15000	W 14500	11.10	53.70	6.40
2001	27500 C	E 14000	W 13500	10.80	54.60	3.60
2000	28000 C	E 14000	W 14000	10.40	54.70	4.90
1999	28000 C	E 14000	W 14000	11.00	56.70	3.40
1998	26500 C	E 13000	W 13500	10.60	56.70	2.70
1997	28500 C	E 14000	W 14500	10.70	55.40	5.10

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	HWY 90
Site	580128
Description	SR 10 (US90) - 0.300 M W OF SR 281 (AVALON BLVD)
Section	58010000
Milepoint	9.004
AADT	**31000**
Site Type	Portable
Class Data	Yes
K Factor	9
D Factor	57.2
T Factor	3.5
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Annual Vehicle Classification
	Historical AADT Data
	Synopsis 580128CL-20120213
	Vehicle Class History

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2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 0128 - SR 10 (US90) - 0.300 M W OF SR 281 (AVALON BLVD)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	31000 C	E 15500	W 15500	9.00	57.20	3.50
2011	29500 C	E 15000	W 14500	9.00	55.80	3.30
2010	31500 C	E 16000	W 15500	10.61	55.16	4.00
2009	30500 C	E 15000	W 15500	10.79	55.78	3.10
2008	28000 C	E 14000	W 14000	11.25	54.42	4.70
2007	29000 C	E 14500	W 14500	10.84	54.80	7.90
2006	33500 C	E 18500	W 15000	10.82	56.15	6.80
2005	33500 C	E 17000	W 16500	10.80	56.20	5.60
2004	32500 C	E 16500	W 16000	16.40	59.10	5.60
2003	28000 C	E 14000	W 14000	10.60	56.50	6.30
2002	26500 C	E 13000	W 13500	11.10	53.70	6.70
2001	26000 C	E 13000	W 13000	10.80	54.60	3.60
2000	26000 C	E 13000	W 13000	10.40	54.70	4.90
1999	24000 C	E 12000	W 12000	11.00	56.70	3.40
1998	23500 C	E 12000	W 11500	10.60	56.70	2.70
1997	25500 C	E 13000	W 12500	10.70	55.40	5.10

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	HWY 90
Site	581502
Description	SR10 (US90) - 0.250 M E OF GLOVER LN
Section	58010000
Milepoint	10.554
AADT	**34500**
Site Type	Portable
Class Data	Yes
K Factor	9
D Factor	57.2
T Factor	3.3
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Annual Vehicle Classification
	Historical AADT Data
	Synopsis 581502CL-20120213
	Vehicle Class History

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TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 1502 - SR10 (US90) - 0.250 M E OF GLOVER LN

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	34500 C	E 17500	W 17000	9.00	57.20	3.30
2011	34000 C	E 17000	W 17000	9.00	55.80	4.30
2010	38000 C	E 19000	W 19000	10.61	55.16	3.40
2009	36500 C	E 18500	W 18000	10.79	55.78	3.30
2008	35000 C	E 17500	W 17500	11.25	54.42	3.90
2007	35000 C	E 17500	W 17500	10.84	54.80	4.90
2006	36500 C	E 18500	W 18000	10.82	56.15	4.10
2005	40000 C	E 20000	W 20000	10.80	56.20	3.70
2004	40000 C	E 20000	W 20000	16.40	59.10	3.70
2003	32500 C	E 16000	W 16500	10.60	56.50	4.30
2002	32500 C	E 16500	W 16000	11.10	53.70	6.40
2001	32500 C	E 16500	W 16000	10.80	54.60	3.70
2000	32000 C	E 16000	W 16000	10.40	54.70	5.50
1999	35000 C	E 17500	W 17500	11.00	56.70	3.80
1998	34000 C	E 17000	W 17000	10.60	56.70	3.10
1997	34500 C	E 17000	W 17500	10.70	55.40	5.70

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	HWY 90
Site	585018
Description	SR10 (US90) - 650' E OF SR 89 (DOGWOOD DR)
Section	58010000
Milepoint	11.127
AADT	**24500**
Site Type	Portable
Class Data	No
K Factor	9
D Factor	57.2
T Factor	3.5
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Historical AADT Data
	Synopsis 585018-20120213

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FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 5018 - SR10 (US90) - 650' E OF SR 89 (DOGWOOD DR)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	24500 C	E 12000	W 12500	9.00	57.20	3.50
2011	21500 C	E 11000	W 10500	9.00	55.80	3.80
2010	26000 C	E 13500	W 12500	10.61	55.16	4.30
2009	26000 C	E 13000	W 13000	10.79	55.78	3.10
2008	24000 C	E 12000	W 12000	11.25	54.42	4.50
2007	31500 C	E 16000	W 15500	10.84	54.80	7.30
2006	32000 C	E 16000	W 16000	10.82	56.15	5.70
2005	28500 C	E 14500	W 14000	10.80	56.20	4.70
2004	26500 C	E 13500	W 13000	16.40	59.10	4.50
2003	27500 C	E 14000	W 13500	10.60	56.50	5.40
2002	28000 C	E 14500	W 13500	11.10	53.70	6.40
2001	26500 C	E 13500	W 13000	10.80	54.60	3.60
2000	25000 C	E 12500	W 12500	10.40	54.70	4.90
1999	28500 C	E 14500	W 14000	11.00	56.70	3.40
1998	28000 C	E 14000	W 14000	10.60	56.70	2.70
1997	29000 C	E 15000	W 14000	10.70	55.40	5.10

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	HWY 90/CAROLINE ST
Site	585011
Description	SR 10 (US90) - 250' E OF SR 87 (STEWART ST)
Section	58010000
Milepoint	11.668
AADT	**19100**
Site Type	Portable
Class Data	No
K Factor	9
D Factor	57.2
T Factor	7.7
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Historical AADT Data
	Synopsis 585011-20120228

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2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 5011 - SR 10 (US90) - 250' E OF SR 87 (STEWART ST)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	19100 C	E 9100	W 10000	9.00	57.20	7.70
2011	18000 C	E 8500	W 9500	9.00	55.80	7.10
2010	22000 C	E 11000	W 11000	10.61	55.16	7.20
2009	18000 C	E 0	W 0	10.79	55.78	7.80
2008	19500 C	E 0	W 0	11.25	54.42	7.00
2007	21000 C	E 0	W 0	10.84	54.80	7.20
2006	23000 C	E 11500	W 11500	10.82	56.15	11.20
2005	23000 C	E	W	10.80	56.20	4.70
2004	18400 C	E 9200	W 9200	16.40	59.10	7.30
2003	18200 C	E 9000	W 9200	10.60	56.50	8.50
2002	16500 C	E	W	11.10	53.70	10.30
2001	16500 C	E	W	10.80	54.60	7.80
2000	14500 C	E	W	10.40	54.70	8.10
1999	16000 C	E	W	11.00	56.70	7.60
1998	17300 C	E 8800	W 8500	10.60	56.70	3.50
1997	20100 C	E 9600	W 10500	10.70	55.40	6.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	HWY 90/CAROLINE ST
Site	585010
Description	SR 10 (US90) - 150' W OF CR 191 (WILLIN G ST)
Section	58010000
Milepoint	12.076
AADT	**13500**
Site Type	Portable
Class Data	No
K Factor	9
D Factor	57.2
T Factor	7.7
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Historical AADT Data
	Synopsis 585010-20120209

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FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 5010 - SR 10 (US90) - 150' W OF CR 191 (WILLING ST)

YEAR	AADT	DIRECTION 1		DIRECTION 2		*K FACTOR	D FACTOR	T FACTOR
2012	13500 C	E	0	W	0	9.00	57.20	7.70
2011	13000 C	E	0	W	0	9.00	55.80	7.10
2010	14000 C	E	0	W	0	10.61	55.16	7.20
2009	15500 C	E	0	W	0	10.79	55.78	7.80
2008	14500 C	E	0	W	0	11.25	54.42	7.00
2007	15000 C	E	0	W	0	10.84	54.80	7.20
2006	15500 C	E	0	W	0	10.82	56.15	11.20
2005	15000 C	E		W		10.80	56.20	4.70
2004	14000 C	E		W		16.40	59.10	7.30
2003	13000 C	E		W		10.60	56.50	8.50
2002	13000 C	E		W		11.10	53.70	10.30
2001	13000 C	E		W		10.80	54.60	7.80
2000	12500 C	E		W		10.40	54.70	8.10
1999	13500 C	E		W		11.00	56.70	7.60
1998	12500 C	E		W		10.60	56.70	3.50
1997	13500 C	E		W		10.70	55.40	6.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	US-90
Site	581507
Description	SR 10 (US90) - 700' E OF BLACKWATER RIVER BRIDGE
Section	58010000
Milepoint	12.44
AADT	**18800**
Site Type	Portable
Class Data	Yes
K Factor	9
D Factor	57.2
T Factor	4.7
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Annual Vehicle Classification
	Historical AADT Data
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	Vehicle Class History

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TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 1507 - SR 10 (US90) - 700' E OF BLACKWATER RIVER BRIDGE

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	18800 C	E 9500	W 9300	9.00	57.20	4.70
2011	19500 C	E 10000	W 9500	9.00	55.80	3.90
2010	19700 C	E 10000	W 9700	10.61	55.16	4.60
2009	17100 C	E 8600	W 8500	10.79	55.78	8.10
2008	18500 C	E 9300	W 9200	11.25	54.42	7.40
2007	18000 C	E 9100	W 8900	10.84	54.80	6.20
2006	18100 C	E 9100	W 9000	10.82	56.15	7.20
2005	19300 C	E 9700	W 9600	10.80	56.20	6.30
2004	19100 C	E 9700	W 9400	16.40	59.10	6.30
2003	17100 C	E 8600	W 8500	10.60	56.50	5.30
2002	17900 C	E 9200	W 8700	11.10	53.70	7.70
2001	15000 C	E	W	10.80	54.60	7.80
2000	15500 C	E	W	10.40	54.70	8.10
1999	16500 C	E	W	11.00	56.70	7.60
1998	16000 C	E	W	10.60	56.70	3.50
1997	17500 C	E	W	10.70	55.40	6.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	US-90
Site	580062
Description	SR 10 (US90) - 0.350 M E OF CR 89 (WARD BASIN RD)
Section	58010000
Milepoint	13.555
AADT	**14200**
Site Type	Portable
Class Data	Yes
K Factor	9
D Factor	57.2
T Factor	6.1
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Annual Vehicle Classification
	Historical AADT Data
	Synopsis 580062CL-20120209
	Vehicle Class History

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2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 0062 - SR 10 (US90) - 0.350 M E OF CR 89 (WARD BASIN RD)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	14200 C	E 7200	W 7000	9.00	57.20	6.10
2011	12300 C	E 6200	W 6100	9.00	55.80	6.00
2010	14600 C	E 7300	W 7300	10.61	55.16	6.60
2009	12900 C	E 6500	W 6400	10.79	55.78	7.00
2008	13000 C	E 6600	W 6400	11.25	54.42	5.50
2007	12800 C	E 6500	W 6300	10.84	54.80	7.00
2006	14400 C	E 7300	W 7100	10.82	56.15	12.40
2005	15100 C	E 7800	W 7300	10.80	56.20	7.20
2004	14000 C	E 7100	W 6900	16.40	59.10	7.20
2003	11900 C	E 6100	W 5800	10.60	56.50	7.30
2002	12000 C	E 6000	W 6000	11.10	53.70	10.50
2001	11500 C	E 5800	W 5700	10.80	54.60	7.50
2000	10800 C	E 5400	W 5400	10.40	54.70	7.20
1999	10900 C	E 5400	W 5500	11.00	56.70	9.60
1998	10600 C	E 5200	W 5400	10.60	56.70	2.40
1997	10800 C	E 5500	W 5300	10.70	55.40	7.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Site Information	
Feature	**1**
Road Name	US-90
Site	580019
Description	SR 10 (US90) - 0.550 M W OF SR 87 (SOUTH)
Section	58010000
Milepoint	15.666
AADT	**12100**
Site Type	Portable
Class Data	Yes
K Factor	9
D Factor	57.2
T Factor	8.5
TRAFFIC REPORTS (provided in format)	
Santa Rosa County	**Annual Average Daily Traffic**
	Annual Vehicle Classification
	Historical AADT Data
	Synopsis 580019CL-20120214
	Vehicle Class History

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TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 58 - SANTA ROSA

SITE: 0019 - SR 10 (US90) - 0.550 M W OF SR 87 (SOUTH)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	12100 C	E 6100	W 6000	9.00	57.20	8.50
2011	12300 C	E 6100	W 6200	9.00	55.80	6.90
2010	13000 C	E 6500	W 6500	10.61	55.16	7.00
2009	11900 C	E 5900	W 6000	10.79	55.78	6.80
2008	11200 C	E 5500	W 5700	11.25	54.42	7.10
2007	10800 C	E 5400	W 5400	10.84	54.80	8.30
2006	10300 C	E 5200	W 5100	10.82	56.15	14.00
2005	12100 C	E 6100	W 6000	10.80	56.20	8.60
2004	12000 C	E 6100	W 5900	16.40	59.10	8.60
2003	8900 C	E 4500	W 4400	10.60	56.50	10.10
2002	9800 C	E 4900	W 4900	11.10	53.70	13.70
2001	9200 C	E 4600	W 4600	10.80	54.60	8.30
2000	8800 C	E 4400	W 4400	10.40	54.70	11.80
1999	8500 C	E	W	11.00	56.70	7.60
1998	8300 C	E 4100	W 4200	10.60	56.70	3.50
1997	8200 C	E	W	10.70	55.40	6.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Appendix E

Lighting Justification Report

US 90 Lighting Justification Report

US 90 from the Escambia County Line to
SR 87 South in Santa Rosa County, Florida

FPID: 418439-1-32-06

Submitted by:
Jacobs Engineering Group, Inc.
March 28, 2014

Table of Contents

Appendices

List of Abbreviations

%ADTn	Percent Average Daily Traffic at Night
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACC	Average Crash Cost
ADT	Annual Daily Traffic
AEC	Annual Energy Cost
AIC	Annualized Installation Cost
ANC	Average Annual Number of Night Crashes
B-C	Benefit-Cost, which defines a cost analysis ratio of anticipated cost savings (benefit) to the cost of proposed improvements
CFL	Continuous Freeway Lighting
CRF	Crash Reduction Factor
F.A.C.	Florida Administrative Code
FDOT	Florida Department of Transportation
H.F.C.	Horizontal Foot-Candle
IR	Interest Rate, %
KABCO	Injury severity scale (**K**: fatal; **A**: severe/incapacitating; **B**: moderate/non-incapacitating; **C**: minor/possible; **O**: property damage only)
KWH	Kilowatt-Hour
KW	Kilowatt
MP	Mile post
MUTS	Manual on Uniform Traffic Studies
NCHRP	National Cooperative Highway Research Program
NRU	Night Accident Rate Unlighted
PPM	Plans Preparation Manual
TMC	Total Annual Maintenance Cost
SR	State Road
US	United States Route
W	Watt

Introduction

The purpose of this report is to document the lighting justification analysis performed along 16 miles of US 90 in Santa Rosa County, from the Escambia County Line to SR 87 South. A project location map is provided in Appendix A. This report is included as an integral part of the US 90 Arterial Study.

The US 90 project corridor is an urban minor arterial with varied roadway features as described in the Site Analysis section of the report. The following typical sections are included within the project limits, as illustrated in Appendix D:

- **Typical 1 (US 90 MP 0.000 – MP 11.689):** Four lane divided highway with flush shoulders through commercial districts in the Pace, Pea Ridge, and west Milton (Segments 1 – 4)
- **Typical 2 (US 90 MP 11.689 – MP 12.230):** Two lane highway with curb and gutter and center turn lanes in downtown Milton (Segment 5)
- **Typical 3 (US 90 MP 12.230 – MP 16.216):** Two lane highway with flush shoulders in east Milton (Segment 6)

Due to the extensive project length, the US 90 corridor was divided into six segments for the purposes of this assessment, based on varied features such as roadway typical section, crash pattern and frequency, adjacent land use and topography, and traffic volumes. These corridor segments are described as follows and illustrated in the Appendix A map:

- Segment 1 (MP 0.00 – 2.559): Western Waterways
- Segment 2 (MP 2.559 – 6.913): Pace
- Segment 3 (MP 6.913 – 8.922): Pea Ridge
- Segment 4 (MP 8.922 – 11.689): West Milton
- Segment 5 (MP 11.689 – 12.230): Downtown Milton
- Segment 6 (MP 12.230 – 16.216): East Milton

Existing lighting features are limited to five short segments along the corridor. Lighting analysis for this assessment was based on 3-year historical collision data provided by FDOT. Within the period of January 2010 to December 2012, 212 night-time crashes occurred which involved eight fatalities and 193 total injuries, including seven pedestrian-related collisions.

Lighting Analysis

Methodology

The procedure for roadway lighting justification is based upon Chapter 15, "Highway Lighting Justification Procedure" of the FDOT Manual on Uniform Traffic Studies, January 2000 Edition. Utilizing the warrants of the American Association of State Highway and Transportation Officials (AASHTO) and crash summary reports, the initial step of analysis was to determine if 16 miles of US 90 in Santa Rosa County, from the Escambia County Line to SR 87 South, warrant lighting. A preliminary lighting calculation (Appendix B) was made utilizing Roadway Optimizer, a tool in the AGI32 computer lighting program. As shown in Table 1, the basis for US 90 light pole spacing is FDOT criteria outlined in the Plans Preparation Manual, Volume One, January 2014 Edition, Table 7.3.1 Conventional Lighting – Roadways:

Table 1. Conventional Roadway Lighting Criteria

Roadway Classifications	Illumination Level Average Initial Horizontal Foot-Candle (H.F.C.)	Illumination Uniformity Ratios		Veiling Luminance Ratio
		Lavg/Lmin	Lmax/Lmin	Lv(max)/Lavg
Interstate, Expressway, Freeway & Major Arterials	1.5	4:1 or Less	10:1 or Less	0.3:1 or Less
All Other Roadways	1.0	4:1 or Less	10:1 or Less	0.3:1 or Less
Sidewalks and Shared Use Paths (Separate Facilities)	2.5	4:1 or Less	10:1 or Less	----------

The US 90 corridor, a 16 mile urban minor arterial, is divided into three typical roadway sections within the study limits. Table 2 summarizes the typical section limits and pole spacing determined, which is based on both sides of the roadway in opposite side configuration. An average initial horizontal illumination level of 1.5 foot candles was used as the basis of the pole spacing criteria. The preliminary lighting design utilized the standard FDOT District Three conventional light poles with full cut-off type GE M-400 Series luminaires. For Typical Sections 1 and 2, the luminaire mounting height was set at 45 feet, pole top mounting height, and 400 W high pressure sodium fixtures with Type III distribution. For Typical Section 3, the luminaire mounting height was set at 45 feet, pole top mounting height, and 400 W high pressure sodium fixtures with Type II distribution.

Table 2. Typical Section Pole Summary

Typical Section	Milepost Limits		Station Limits		Typical Pole Spacing
	From	To	From	To	
1	0.000	11.689	100+00	716+18	275
2	11.689	12.104	716+18	738+14	550
3	12.104	16.216	738+14	955+00	575

Minimum pole setback distances from the travel lane are 20 feet for mainline, 14 feet for ramps, and 4 feet behind guardrail or curb. For Typical Sections 1 and 3, a 22 foot setback was used in the analysis to maintain a minimum 20 foot travel lane setback, and to account for

the 30" pole diameter per FDOT Standard Index 17500 for conventional lighting. For Typical Section 2, a 12 foot setback was used to place the poles on the outer edge of concrete sidewalk.

Following the preliminary lighting calculation, a benefit-cost analysis was performed to determine the benefit-cost ratio. The analysis is based on the number of light poles per mile and various cost and historical data as outlined in the FDOT Manual on Uniform Traffic Studies. A benefit-cost ratio greater than 2.0 is required to justify lighting. If the benefit-cost ratio is equal to or greater than 1.0 for high crash locations, then roadway lighting is justified.

AASHTO Warrants

The warrant analysis was based on the procedure laid out in Chapter 15 of the Manual on Uniform Traffic Studies. This procedure includes two steps: determining whether or not the roadway lighting would meet American Association of State Highway and Transportation Officials (AASHTO) warrants, and determining a benefit-cost analysis ratio. Chapter 15 also refers to both the National Cooperative Highway Research Program (NCHRP) Report 152 – Warrants for Highway Lighting and Rule 14-64 F.A.C., "Illumination of the State Highway System". However, since all sections of Rule 14-64 have been repealed by the Florida Legislature, the warrants contained within it have not been included in this analysis.

Table 3.2 of the AASHTO Roadway Lighting Design Guide, October 2005 states that continuous lighting may be warranted under one of the conditions described in Table 3 of this report.

Table 3. AASHTO Warranting Conditions for Continuous Freeway Lighting

Case	Warranting Conditions
CFL-1	Sections in and near cities where the current average daily traffic (ADT) is 30,000 or greater.
CFL-2	Sections where three or more successive interchange are located with an average spacing of 1.5 miles or less, and adjacent areas outside right-of-way are substantially urban in character.
CFL-3	Sections of two miles or more passing through a substantially developed suburban or urban area in which one or more of the following conditions exist: a. Local traffic operates on a complete street grid having some form of street lighting, parts of which are visible from freeway. b. The freeway passes through a series of developments – such as residential, commercial, industrial and civics areas, colleges, parks, terminals, etc. that includes lighted roads, streets, parking areas, yards, etc. – that are lighted. c. Separate cross streets, both with and without connecting ramps, occur with an average spacing of 0.5 miles or less, some of which are lighted as part of the local street system. d. The freeway cross section elements, such as median and borders are substantially reduced in width below desirable sections used in relatively open country.
CFL-4	Sections where the ratio of night to day crash rate is at least 2.0 times the statewide average for all unlighted similar sections, and a study indicates that lighting may be expected to result in a significant reduction in the night crash rate. Where crash data are not available, rate comparison may be used as a general guideline for crash severity.

Street lighting may be considered for those locations where the respective governmental agencies concur that lighting will contribute substantially to the safety, efficiency and comfort of vehicular or pedestrian traffic.

Bridges

It may be desirable to provide fixed source lighting on long bridges in urban and suburban areas even though the approaches are not lighted. On bridges without full shoulders, lighting enhances both safety and utility of the bridges. Where bridges are provided with sidewalks for pedestrian movements, lighting is warranted for pedestrian safety and policing. In these cases, the determinations to install lighting have been made on the basis of experience and accident data under certain existing conditions. These conditions include the average daily traffic for the roadway for existing and the accidents rate.

Based on the US 90 project limits, the warranting condition case that applies to this analysis is the conditions in CFL-3 and the warrant for bridges. Based on this assumption, roadway lighting on US 90 may be warranted.

Benefit-Cost Analysis

The values used in the calculation of the benefit-cost ratio were based on historical data and default values as outlined in the FDOT Manual on Uniform Traffic Studies (MUTS), Chapter 15. The calculated results are shown in Appendix C, which also provides crash frequency and severity data for each segment.

The following input values to determine the benefit-cost ratio were derived:

- Pole spacing and luminary size was estimated using 45 foot mounting heights, 400W high pressure sodium lamps, GE M-400 Series light fixtures with full cutoff. A conservative spacing of 200 feet was calculated to achieve a minimum average initial foot candle of 1.5, Avg./Min of 4:1 and a Max/Min of 10:1. Refer to Appendix B.
- Construction costs of $4,000 per pole, annual maintenance costs of $100 per pole, and electrical rates of 8 cents per KWH
- At least one night-time fatality occurred in all segments, with the exception of Segment 5. Average Crash Cost (ACC), maximum Average Daily Traffic (AADT), and Night Accident Rate Unlighted (NRU) values varied by segment as follows:
    - Segment 1: ACC = $5.0M; AADT = 38,500; NRU = 0.96
    - Segment 2: ACC = $12.0M; AADT = 34,500; NRU = 3.66
    - Segment 3: ACC = $4.6M; AADT = 31,000; NRU = 2.86
    - Segment 4: ACC = $4.7M; AADT = 34,500; NRU = 3.65
    - Segment 5: ACC = $6,500; AADT = 19,100; NRU = 1.39
    - Segment 6: ACC = $3.2M; AADT = 18,800; NRU = 1.20
- The Crash Reduction Factor (CRF) of 0.3 is based on values for Urban Mainline in Figure 15-1 in the FDOT Manual on Uniform Traffic Studies, Chapter 15.
- An interest rate of 4% and a 15-year service life was utilized in the calculation of the capital recovery factor.

Technical Summary

Conclusion

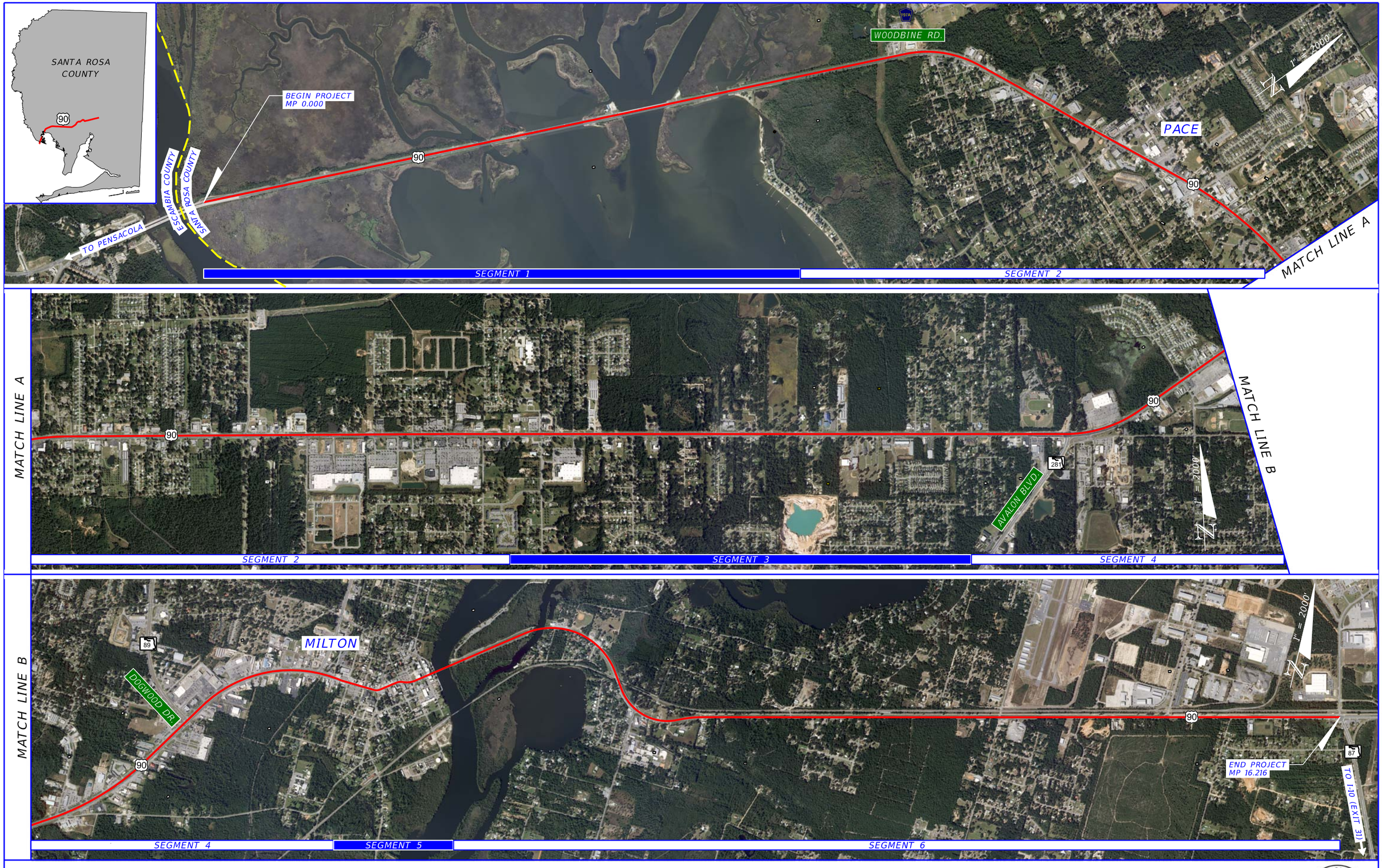
The AASHTO lighting warrants identified and calculated benefit-cost ratio greater than 2 for all segments excluding Segment 5, concluding that lighting is justified on US 90 in Santa Rosa County, from MP 0.000 to MP 11.689 and MP 12.230 to MP 16.216. Existing lighting is present in Segment 5, downtown Milton from MP 11.689 to MP 12.230. The B-C values calculated are the result of high night-time crash rates, with severe injuries and fatalities that occurred between 2010 and 2012, as indicated in the crash reports.

Recommendations

It is recommended to utilize roadway lighting on US 90 in Santa Rosa County, within the limits of the Segments 1, 2, 3, 4, and 6 maintained by FDOT District Three. These segments correspond to US 90 from MP 0.000 to MP 11.689 and MP 12.230 to MP 16.216.

Appendix A

Project Location Map



US 90 ARTERIAL STUDY LIMITS (SANTA ROSA COUNTY)
FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH
FPID 418439-1-32-06

Appendix B

Roadway Lighting Calculations

Roadway Optimizer - Layout 1

General:

Typical Section 1 - STA 100+00.00 to STA 716+18.00

Roadway Standard: IES RP-8-2000
R-Table: R3 (Slightly Specular), Q0=0.07 Actual QO Value: 0.07

Roadway Layout:

Layout Type: Two Rows, Opposite, With Median; 2R_OPP_w/M
Roadway Width: 36 ft
Median Width: 27 ft
Lanes In Direction Of Travel: 3
Driver's Side Of Roadway: Right

Luminaire Information:

Label: GE451002 Flat Med Cutoff-15
Description: M_CL40S____FMC3_ 15ft arm
File Name: GE451002 Flat Med Cutoff Type 3.ies
Luminaire Arrangement: SINGLE
Arm Length: 15 ft
Lumens Per Lamp: 51000
Number Of Lamps: 1
Luminaire Lumens: 38982
Efficiency (%): 77
Luminaire Watts: 468
Total Light Loss Factor: 1.000

Luminaire Location Summary:
Coordinates in ft

Spacing - Row 1: 275
Spacing - Row 2: 275

Label	X-Coord	Y-Coord	Z-Coord	Orient	Tilt	Spin
GE451002 Flat Med Cuto	825	-22	45	90	0	0
GE451002 Flat Med Cuto	550	-22	45	90	0	0
GE451002 Flat Med Cuto	275	-22	45	90	0	0
GE451002 Flat Med Cuto	0	-22	45	90	0	0
GE451002 Flat Med Cuto	-275	-22	45	90	0	0
GE451002 Flat Med Cuto	825	121	45	270	0	0
GE451002 Flat Med Cuto	550	121	45	270	0	0

Roadway Optimizer - Layout 1 - Cont.

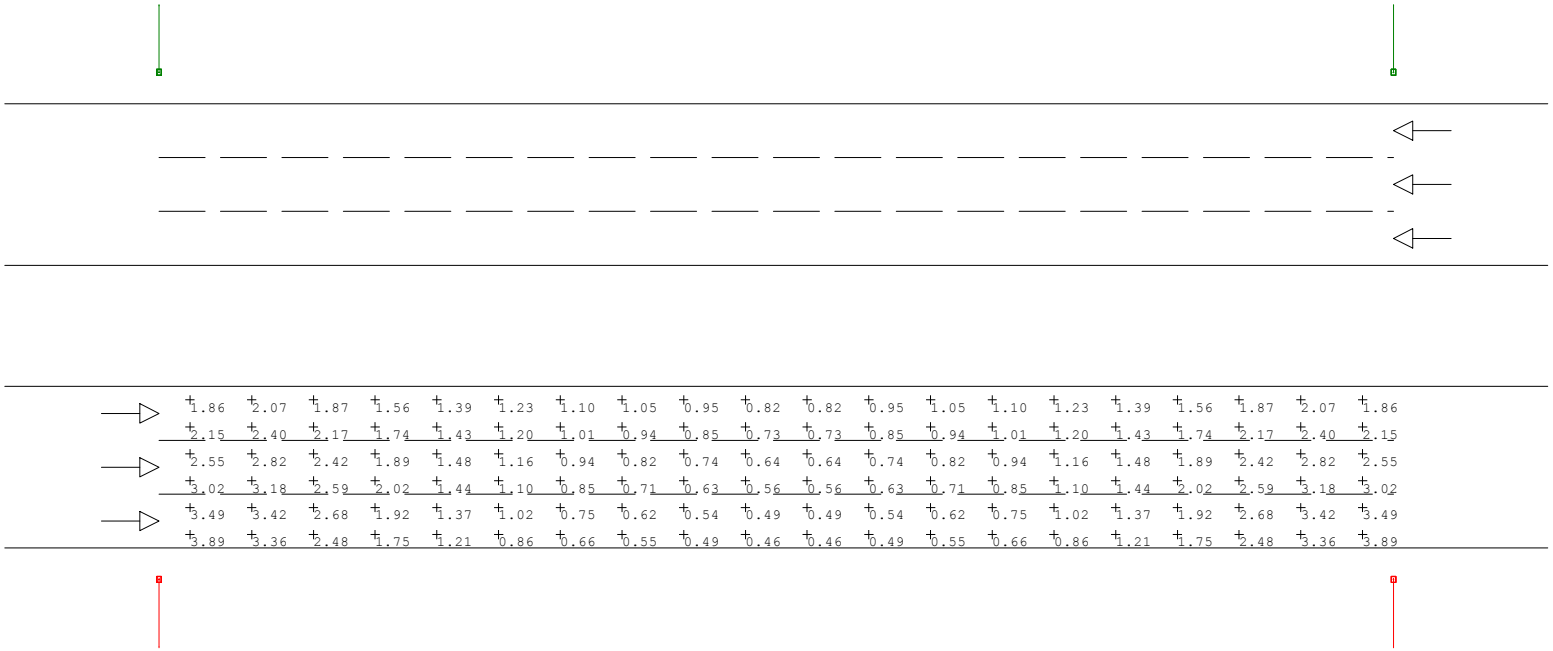
Luminaire Location Summary:
Coordinates in ft

GE451002 Flat Med Cuto	275	121	45	270	0	0
GE451002 Flat Med Cuto	0	121	45	270	0	0
GE451002 Flat Med Cuto	-275	121	45	270	0	0

Total Number of locations: 10

Roadway Optimizer - Layout 1

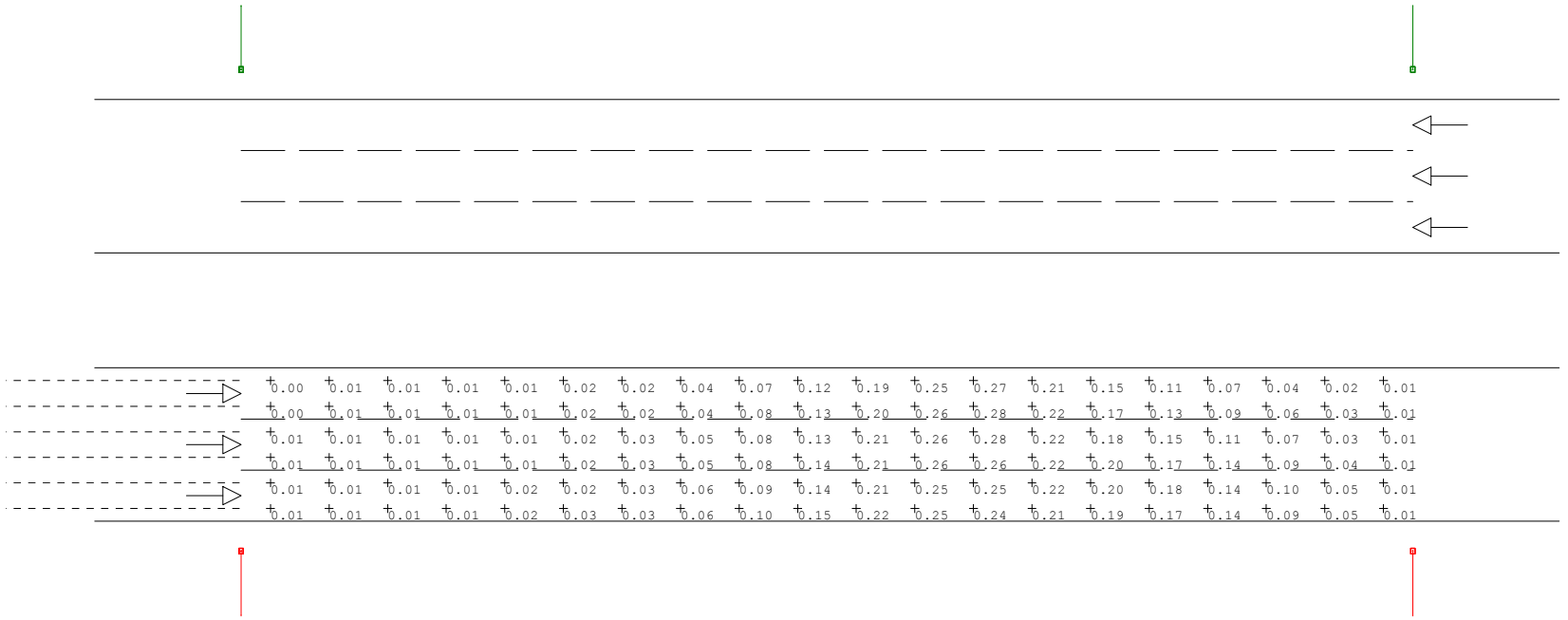
RoadOpt_Illum



Illuminance (Fc)
Average = 1.53
Maximum = 3.89
Minimum = 0.46
Avg/Min Ratio = 3.33
Max/Min Ratio = 8.46
Max/Avg Ratio = 2.54

Roadway Optimizer - Layout 1

RoadOpt_Veil_Lum



Veiling Luminance (Cd/SqM)
Average = 0.09
Maximum = 0.28
Minimum = 0.00
Avg/Min Ratio = N.A.
Max/Min Ratio = N.A.
Max/Avg Ratio = 3.11
MaxLv Ratio = 0.28
Threshold Increment (TI) = 18.35

Roadway Optimizer - Layout 2

General:

Typical Section 2 - STA 716+18.00 to STA 738+14.00

Roadway Standard: IES RP-8-2000
R-Table: R3 (Slightly Specular), Q0=0.07 Actual QO Value: 0.07

Roadway Layout:

Layout Type: Two Rows, Staggered; 2R_STG
Roadway Width: 42 ft
Lanes In Direction Of Travel: 3
Driver's Side Of Roadway: Right

Label: GE451002 Flat Med Cutoff-8
Description: M_CL40S____FMC3_ 8ft arm
File Name: GE451002 Flat Med Cutoff Type 3.ies
Luminaire Arrangement: SINGLE
Arm Length: 8 ft
Lumens Per Lamp: 51000
Number Of Lamps: 1
Luminaire Lumens: 38982
Efficiency (%): 77
Luminaire Watts: 468
Total Light Loss Factor: 1.000

Luminaire Location Summary:
Coordinates in ft

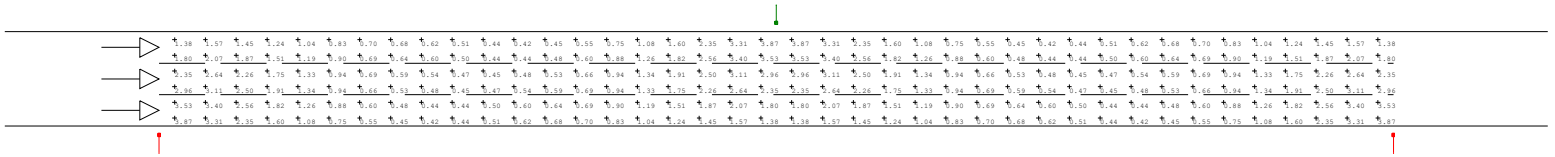
Spacing - Row 1: 550
Spacing - Row 2: 550

Label	X-Coord	Y-Coord	Z-Coord	Orient	Tilt	Spin
GE451002 Flat Med Cuto	1100	-12	45	90	0	0
GE451002 Flat Med Cuto	550	-12	45	90	0	0
GE451002 Flat Med Cuto	0	-12	45	90	0	0
GE451002 Flat Med Cuto	-550	-12	45	90	0	0
GE451002 Flat Med Cuto	1375	54	45	270	0	0
GE451002 Flat Med Cuto	825	54	45	270	0	0
GE451002 Flat Med Cuto	275	54	45	270	0	0
GE451002 Flat Med Cuto	-275	54	45	270	0	0

Total Number of locations: 8

Roadway Optimizer - Layout 2

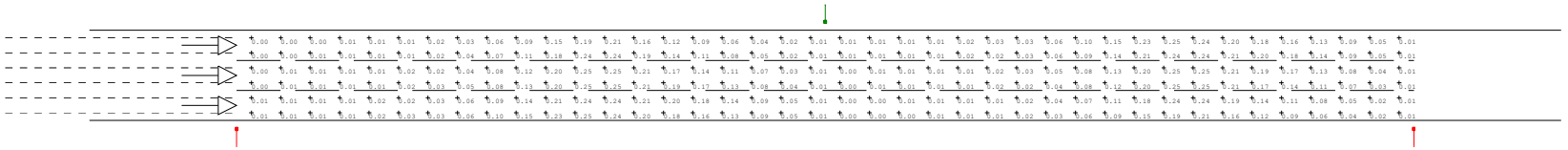
RoadOpt_Illum



Illuminance (Fc)
Average = 1.34
Maximum = 3.87
Minimum = 0.42
Avg/Min Ratio = 3.19
Max/Min Ratio = 9.21
Max/Avg Ratio = 2.89

Roadway Optimizer - Layout 2

RoadOpt_Veil_Lum



Veiling Luminance (Cd/SqM)
Average = 0.09
Maximum = 0.25
Minimum = 0.00
Avg/Min Ratio = N.A.
Max/Min Ratio = N.A.
Max/Avg Ratio = 2.78
MaxLv Ratio = 0.28
Threshold Increment (TI) = 17.84

Roadway Optimizer - Layout 3

General:

Typical Section 3 - STA 738+14.00 to STA 955+00.00

Roadway Standard: IES RP-8-2000
R-Table: R3 (Slightly Specular), Q0=0.07 Actual QO Value: 0.07

Roadway Layout:

Layout Type: Two Rows, Staggered, With Median; 2R_STG_w/M
Roadway Width: 12 ft
Median Width: 1 ft
Lanes In Direction Of Travel: 1
Driver's Side Of Roadway: Right

Label: GE451001 Flat Med Cutoff-15
Description: M_CL40S____FMC2_
File Name: GE451001 Flat Med Cutoff Type 2.ies
Luminaire Arrangement: SINGLE
Arm Length: 15 ft
Lumens Per Lamp: 51000
Number Of Lamps: 1
Luminaire Lumens: 38416
Efficiency (%): 75
Luminaire Watts: 468
Total Light Loss Factor: 1.000

Luminaire Location Summary:
Coordinates in ft

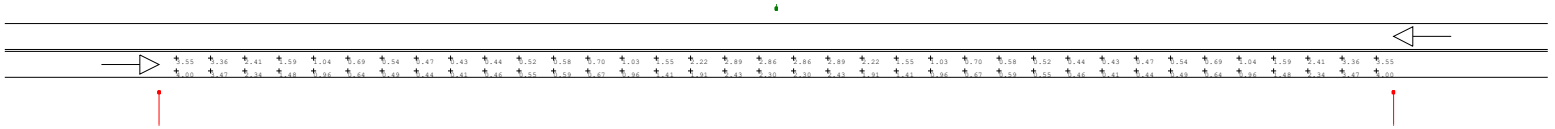
Spacing - Row 1: 575
Spacing - Row 2: 575

Label	X-Coord	Y-Coord	Z-Coord	Orient	Tilt	Spin
GE451001 Flat Med Cuto	-575	-22	45	90	0	0
GE451001 Flat Med Cuto	0	-22	45	90	0	0
GE451001 Flat Med Cuto	575	-22	45	90	0	0
GE451001 Flat Med Cuto	1150	-22	45	90	0	0
GE451001 Flat Med Cuto	-287.5	47	45	270	0	0
GE451001 Flat Med Cuto	287.5	47	45	270	0	0
GE451001 Flat Med Cuto	862.5	47	45	270	0	0
GE451001 Flat Med Cuto	1437.5	47	45	270	0	0

Total Number of locations: 8

Roadway Optimizer - Layout 3

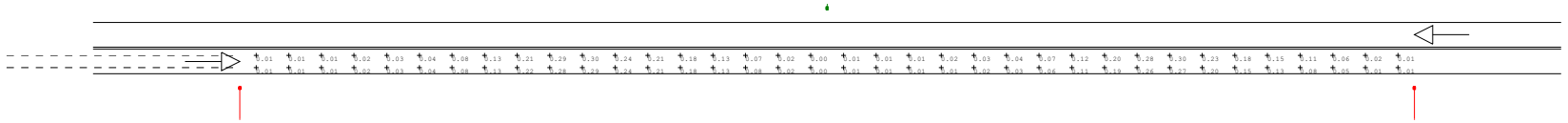
RoadOpt_Illum



Illuminance (Fc)
Average = 1.46
Maximum = 4.00
Minimum = 0.41
Avg/Min Ratio = 3.56
Max/Min Ratio = 9.76
Max/Avg Ratio = 2.74

Roadway Optimizer - Layout 3

RoadOpt_Veil_Lum



Veiling Luminance (Cd/SqM)
Average = 0.1
Maximum = 0.30
Minimum = 0.00
Avg/Min Ratio = N.A.
Max/Min Ratio = N.A.
Max/Avg Ratio = 3
MaxLv Ratio = 0.29
Threshold Increment (TI) = 18.90

Appendix C

Benefit-Cost Analysis

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION

DATE: March 28, 2014

COUNTY: Santa Rosa County

ROAD: US 90 Segment 1 **From MP:** 0.000 **To MP:** 2.559

BENEFIT-COST RATIO = FOR LIGHTING INSTALLATION

$$\frac{\text{ADT x \%ADTn x 365 x NRU x CRF x ACC}}{\text{(AIC + TMC + AEC) x 1,000,000}}$$

INPUTS:

ADT	**38500**	Average Daily Traffic	Poles on	**2**	side(s) of road
%ADTn	**0.22**	Percent ADT at night	**200**		Ft Spacing between Poles[2]
NRU	**0.96**	Night crash rate unlighted	**400**		Luminary Wattage
CRF	**0.3**	Crash reduction factor	**1**		Luminary per pole
ACC	**$4,988,204**	Average crash cost	**$0.08**		Cost per KWH
AIC	**$19,068**	Annualized installation cost	**4**		IR, Interest Rate, %
TMC	**$5,300**	Total annual maintenance cost	**15**		L, Service Life, Years
AEC	**$6,809**	Annual energy cost	**$100**		Annual maintenance cost/luminary
ANC	**8**	Average annual no. night crashes			

Average Crash Cost (ACC)[3]

	Crash Frequency by Severity				
Year	**K**	**A**	**B**	**C**	**O**
2010	0	0	3	0	2
2011	1	0	1	3	1
2012	1	0	5	1	5
Average	**0.7**	**0.0**	**3.0**	**1.3**	**2.7**

Crash Type	Average Crash Cost		Average Annual Crashes			Average Annual Crash Cost	
Fatality (K)	**$6.82**	**Million/Fatality [1]**	x	0.7	=	**$4.55**	**Million**
Severe Injury (A)	**$557,752**	**/Injury [1]**	x	0.0	=	**$0.00**	**Million**
Moderate Injury (B)	**$111,228**	**/Injury [1]**	x	3.0	=	**$0.33**	**Million**
Minor Injury (C)	**$67,890**	**/Injury [1]**	x	1.3	=	**$0.09**	**Million**
Property Damage Only (O)	**$6,500**	**/Prop. Damage [1]**	x	2.7	=	**$0.02**	**Million**
				ACC	**=**	**$4.99**	**Million**

NRU = ((ANC)*(1/365)*(10^6))/((ADTn)*(Length) = **0.96**

Capital Recovery Factor = (IR/100) X [1+(IR/100)]^{L}/([1+(IR/100]^{L}-1)) = **0.0899**

Initial Cost/Pole = $4,000

No.Poles/Mile = 53

AIC = Initial Cost/Pole X CRF X No. of Poles/Mile or Inter.

$4,000 X 0.0899 X 53 = **$19,068**

TMC = No. of Poles/Mile or Inter. X Luminaires/Pole X Annual Maintenance/Luminary

53 X 1 X $100 = **$5,300**

AEC = No. of Poles/Mile or Inter. X Luminaires/Pole X Watts/Luminaire X KW/1000 W X Cents/KWH X 11 Hours/Day X $/100Cents X 365 Days/Year

53 X 1 X 400 /1000W X

$0.08 X 11 X 365 = **$6,809**

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION = 143.8

Notes : (1) Data from FDOT PPM Volume 1, Chapter 23: KABCO Crash Costs (Revised January 1, 2014)
(2) Reference Appendix B for Lighting Calculations
(3) Reference US 90 Arterial Study for Crash Data

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION

DATE: March 28, 2014

COUNTY: Santa Rosa County

ROAD: US 90 Segment 2 **From MP:** 2.559 **To MP:** 6.913

BENEFIT-COST RATIO = FOR LIGHTING INSTALLATION

$$\frac{\text{ADT x \%ADTn x 365 x NRU x CRF x ACC}}{\text{(AIC + TMC + AEC) x 1,000,000}}$$

INPUTS:

ADT	**34500**	Average Daily Traffic	Poles on	**2**	side(s) of road
%ADTn	**0.21**	Percent ADT at night	**200**		Ft Spacing between Poles[2]
NRU	**3.66**	Night crash rate unlighted	**400**		Luminary Wattage
CRF	**0.3**	Crash reduction factor	**1**		Luminary per pole
ACC	**$12,043,773**	Average crash cost	**$0.08**		Cost per KWH
AIC	**$19,068**	Annualized installation cost	**4**		IR, Interest Rate, %
TMC	**$5,300**	Total annual maintenance cost	**15**		L, Service Life, Years
AEC	**$6,809**	Annual energy cost	**$100**		Annual maintenance cost/luminary
ANC	**42**	Average annual no. night crashes			

Average Crash Cost (ACC)[3]

	Crash Frequency by Severity				
Year	**K**	**A**	**B**	**C**	**O**
2010	3	4	19	5	15
2011	0	7	15	8	10
2012	0	5	12	7	17
Average	**1.0**	**5.3**	**15.3**	**6.7**	**14.0**

Crash Type	Average Crash Cost		Average Annual Crashes			Average Annual Crash Cost
Fatality (K)	**$6.82**	**Million/Fatality [1]**	x	1.0	=	**$6.82 Million**
Severe Injury (A)	**$557,752**	**/Injury [1]**	x	5.3	=	**$2.97 Million**
Moderate Injury (B)	**$111,228**	**/Injury [1]**	x	15.3	=	**$1.71 Million**
Minor Injury (C)	**$67,890**	**/Injury [1]**	x	6.7	=	**$0.45 Million**
Property Damage Only (O)	**$6,500**	**/Prop. Damage [1]**	x	14.0	=	**$0.09 Million**
				ACC	=	**$12.04 Million**

NRU = ((ANC)*(1/365)*(10^6))/((ADTn)*(Length) = **3.66**

Capital Recovery Factor = (IR/100) X [1+(IR/100)]^{L}/([1+(IR/100]^{L}-1)) = **0.0899**

Initial Cost/Pole = $4,000

No.Poles/Mile = 53

AIC = Initial Cost/Pole X CRF X No. of Poles/Mile or Inter.

$4,000 X 0.0899 X 53 = **$19,068**

TMC = No. of Poles/Mile or Inter. X Luminaires/Pole X Annual Maintenance/Luminary

53 X 1 X $100 = **$5,300**

AEC = No. of Poles/Mile or Inter. X Luminaires/Pole X Watts/Luminaire X KW/1000 W X Cents/KWH X 11 Hours/Day X $/100Cents X 365 Days/Year

53 X 1 X 400 /1000W X

$0.08 X 11 X 365 = **$6,809**

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION = 1126.8

Notes : (1) Data from FDOT PPM Volume 1, Chapter 23: KABCO Crash Costs (Revised January 1, 2014)
(2) Reference Appendix B for Lighting Calculations
(3) Reference US 90 Arterial Study for Crash Data

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION

DATE: March 28, 2014

COUNTY: Santa Rosa County

ROAD: US 90 Segment 3 **From MP:** 6.913 **To MP:** 8.922

BENEFIT-COST RATIO = FOR LIGHTING INSTALLATION

$$\frac{\text{ADT x \%ADTn x 365 x NRU x CRF x ACC}}{\text{(AIC + TMC + AEC) x 1,000,000}}$$

INPUTS:

ADT	**31000**	Average Daily Traffic	Poles on	**2**	side(s) of road
%ADTn	**0.19**	Percent ADT at night	**200**		Ft Spacing between Poles[2]
NRU	**2.86**	Night crash rate unlighted	**400**		Luminary Wattage
CRF	**0.3**	Crash reduction factor	**1**		Luminary per pole
ACC	**$4,653,921**	Average crash cost	**$0.08**		Cost per KWH
AIC	**$19,068**	Annualized installation cost	**4**		IR, Interest Rate, %
TMC	**$5,300**	Total annual maintenance cost	**15**		L, Service Life, Years
AEC	**$6,809**	Annual energy cost	**$100**		Annual maintenance cost/luminary
ANC	**12**	Average annual no. night crashes			

Average Crash Cost (ACC)[3]

	Crash Frequency by Severity				
Year	**K**	**A**	**B**	**C**	**O**
2010	0	2	1	0	2
2011	1	1	10	0	2
2012	0	6	7	1	4
Average	**0.3**	**3.0**	**6.0**	**0.3**	**2.7**

Crash Type	Average Crash Cost		Average Annual Crashes			Average Annual Crash Cost
Fatality (K)	**$6.82**	**Million/Fatality [1]**	x	0.3	=	**$2.27 Million**
Severe Injury (A)	**$557,752**	**/Injury [1]**	x	3.0	=	**$1.67 Million**
Moderate Injury (B)	**$111,228**	**/Injury [1]**	x	6.0	=	**$0.67 Million**
Minor Injury (C)	**$67,890**	**/Injury [1]**	x	0.3	=	**$0.02 Million**
Property Damage Only (O)	**$6,500**	**/Prop. Damage [1]**	x	2.7	=	**$0.02 Million**
				ACC	**=**	**$4.65 Million**

NRU = ((ANC)*(1/365)*(10^6))/((ADTn)*(Length) = **2.86**

Capital Recovery Factor = (IR/100) X [1+(IR/100)]^{L}/([1+(IR/100]^{L}-1)) = **0.0899**

Initial Cost/Pole = $4,000

No.Poles/Mile = 53

AIC = Initial Cost/Pole X CRF X No. of Poles/Mile or Inter.

$4,000 X 0.0899 X 53 = **$19,068**

TMC = No. of Poles/Mile or Inter. X Luminaires/Pole X Annual Maintenance/Luminary

53 X 1 X $100 = **$5,300**

AEC = No. of Poles/Mile or Inter. X Luminaires/Pole X Watts/Luminaire X KW/1000 W X Cents/KWH X 11 Hours/Day X $/100Cents X 365 Days/Year

53 X 1 X 400 /1000W X

$0.08 X 11 X 365 = **$6,809**

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION = 274.9

Notes : (1) Data from FDOT PPM Volume 1, Chapter 23: KABCO Crash Costs (Revised January 1, 2014)
(2) Reference Appendix B for Lighting Calculations
(3) Reference US 90 Arterial Study for Crash Data

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION

DATE: March 28, 2014

COUNTY: Santa Rosa County

ROAD: US 90 Segment 4 **From MP:** 8.922 **To MP:** 11.689

BENEFIT-COST RATIO = FOR LIGHTING INSTALLATION

$$\frac{\text{ADT x \%ADTn x 365 x NRU x CRF x ACC}}{\text{(AIC + TMC + AEC) x 1,000,000}}$$

INPUTS:

ADT	**34500**	Average Daily Traffic	Poles on	**2**	side(s) of road
%ADTn	**0.20**	Percent ADT at night	**200**		Ft Spacing between Poles[2]
NRU	**3.65**	Night crash rate unlighted	**400**		Luminary Wattage
CRF	**0.3**	Crash reduction factor	**1**		Luminary per pole
ACC	**$4,740,539**	Average crash cost	**$0.08**		Cost per KWH
AIC	**$19,068**	Annualized installation cost	**4**		IR, Interest Rate, %
TMC	**$5,300**	Total annual maintenance cost	**15**		L, Service Life, Years
AEC	**$6,809**	Annual energy cost	**$100**		Annual maintenance cost/luminary
ANC	**25**	Average annual no. night crashes			

Average Crash Cost (ACC)[3]

	Crash Frequency by Severity				
Year	**K**	**A**	**B**	**C**	**O**
2010	1	1	19	3	4
2011	0	2	6	10	5
2012	0	1	10	4	10
Average	**0.3**	**1.3**	**11.7**	**5.7**	**6.3**

Crash Type	Average Crash Cost		Average Annual Crashes			Average Annual Crash Cost
Fatality (K)	**$6.82**	**Million/Fatality [1]**	x	0.3	=	**$2.27 Million**
Severe Injury (A)	**$557,752**	**/Injury [1]**	x	1.3	=	**$0.74 Million**
Moderate Injury (B)	**$111,228**	**/Injury [1]**	x	11.7	=	**$1.30 Million**
Minor Injury (C)	**$67,890**	**/Injury [1]**	x	5.7	=	**$0.38 Million**
Property Damage Only (O)	**$6,500**	**/Prop. Damage [1]**	x	6.3	=	**$0.04 Million**
				ACC	**=**	**$4.74 Million**

NRU = ((ANC)*(1/365)*(10^6))/((ADTn)*(Length) = **3.65**

Capital Recovery Factor = (IR/100) X [1+(IR/100)]^{L}/([1+(IR/100]^{L}-1)) = **0.0899**

Initial Cost/Pole = $4,000

No.Poles/Mile = 53

AIC = Initial Cost/Pole X CRF X No. of Poles/Mile or Inter.

$4,000 X 0.0899 X 53 = **$19,068**

TMC = No. of Poles/Mile or Inter. X Luminaires/Pole X Annual Maintenance/Luminary

53 X 1 X $100 = **$5,300**

AEC = No. of Poles/Mile or Inter. X Luminaires/Pole X Watts/Luminaire X KW/1000 W X Cents/KWH X 11 Hours/Day X $/100Cents X 365 Days/Year

53 X 1 X 400 /1000W X

$0.08 X 11 X 365 = **$6,809**

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION = 417.6

Notes : (1) Data from FDOT PPM Volume 1, Chapter 23: KABCO Crash Costs (Revised January 1, 2014)
(2) Reference Appendix B for Lighting Calculations
(3) Reference US 90 Arterial Study for Crash Data

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION

DATE: March 28, 2014

COUNTY: Santa Rosa County

ROAD: US 90 Segment 5 **From MP:** 11.689 **To MP:** 12.230

BENEFIT-COST RATIO = FOR LIGHTING INSTALLATION

$$\frac{\text{ADT x \%ADTn x 365 x NRU x CRF x ACC}}{\text{(AIC + TMC + AEC) x 1,000,000}}$$

INPUTS:

ADT	**19100**	Average Daily Traffic	Poles on **2**	side(s) of road
%ADTn	**0.19**	Percent ADT at night	**200**	Ft Spacing between Poles[2]
NRU	**1.39**	Night crash rate unlighted	**400**	Luminary Wattage
CRF	**0.3**	Crash reduction factor	**1**	Luminary per pole
ACC	**$6,500**	Average crash cost	**$0.08**	Cost per KWH
AIC	**$19,068**	Annualized installation cost	**4**	IR, Interest Rate, %
TMC	**$5,300**	Total annual maintenance cost	**15**	L, Service Life, Years
AEC	**$6,809**	Annual energy cost	**$100**	Annual maintenance cost/luminary
ANC	**1**	Average annual no. night crashes		

Average Crash Cost (ACC)[3]

	Crash Frequency by Severity				
Year	**K**	**A**	**B**	**C**	**O**
2010	0	0	0	0	3
2011	0	0	0	0	0
2012	0	0	0	0	0
Average	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**

Crash Type	Average Crash Cost		Average Annual Crashes			Average Annual Crash Cost	
Fatality (K)	**$6.82**	**Million/Fatality [1]**	x	0.0	=	**$0.00**	**Million**
Severe Injury (A)	**$557,752**	**/Injury [1]**	x	0.0	=	**$0.00**	**Million**
Moderate Injury (B)	**$111,228**	**/Injury [1]**	x	0.0	=	**$0.00**	**Million**
Minor Injury (C)	**$67,890**	**/Injury [1]**	x	0.0	=	**$0.00**	**Million**
Property Damage Only (O)	**$6,500**	**/Prop. Damage [1]**	x	1.0	=	**$0.01**	**Million**
				ACC	=	**$0.01**	**Million**

NRU = ((ANC)*(1/365)*(10^6))/((ADTn)*(Length) = **1.39**

Capital Recovery Factor = (IR/100) X [1+(IR/100)]^{L}/([1+(IR/100]^{L}-1)) = **0.0899**

Initial Cost/Pole = $4,000

No.Poles/Mile = 53

AIC = Initial Cost/Pole X CRF X No. of Poles/Mile or Inter.

$4,000 X 0.0899 X 53 = **$19,068**

TMC = No. of Poles/Mile or Inter. X Luminaires/Pole X Annual Maintenance/Luminary

53 X 1 X $100 = **$5,300**

AEC = No. of Poles/Mile or Inter. X Luminaires/Pole X Watts/Luminaire X KW/1000 W X Cents/KWH X 11 Hours/Day X $/100Cents X 365 Days/Year

53 X 1 X 400 /1000W X

$0.08 X 11 X 365 = **$6,809**

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION = 0.1

Notes : (1) Data from FDOT PPM Volume 1, Chapter 23: KABCO Crash Costs (Revised January 1, 2014)
(2) Reference Appendix B for Lighting Calculations
(3) Reference US 90 Arterial Study for Crash Data

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION

DATE: March 28, 2014

COUNTY: Santa Rosa County

ROAD: US 90 Segment 6 **From MP:** 12.230 **To MP:** 16.216

BENEFIT-COST RATIO = FOR LIGHTING INSTALLATION

$$\frac{\text{ADT x \%ADTn x 365 x NRU x CRF x ACC}}{\text{(AIC + TMC + AEC) x 1,000,000}}$$

INPUTS:

ADT	**18800**	Average Daily Traffic	Poles on	**2**	side(s) of road
%ADTn	**0.20**	Percent ADT at night	**200**		Ft Spacing between Poles[2]
NRU	**1.26**	Night crash rate unlighted	**400**		Luminary Wattage
CRF	**0.3**	Crash reduction factor	**1**		Luminary per pole
ACC	**$3,208,583**	Average crash cost	**$0.08**		Cost per KWH
AIC	**$19,068**	Annualized installation cost	**4**		IR, Interest Rate, %
TMC	**$5,300**	Total annual maintenance cost	**15**		L, Service Life, Years
AEC	**$6,809**	Annual energy cost	**$100**		Annual maintenance cost/luminary
ANC	**7**	Average annual no. night crashes			

Average Crash Cost (ACC)[3]

	Crash Frequency by Severity				
Year	**K**	**A**	**B**	**C**	**O**
2010	1	0	7	2	3
2011	0	0	0	0	1
2012	0	3	1	1	2
Average	**0.3**	**1.0**	**2.7**	**1.0**	**2.0**

Crash Type	Average Crash Cost		Average Annual Crashes			Average Annual Crash Cost
Fatality (K)	**$6.82**	**Million/Fatality [1]**	x	0.3	=	**$2.27 Million**
Severe Injury (A)	**$557,752**	**/Injury [1]**	x	1.0	=	**$0.56 Million**
Moderate Injury (B)	**$111,228**	**/Injury [1]**	x	2.7	=	**$0.30 Million**
Minor Injury (C)	**$67,890**	**/Injury [1]**	x	1.0	=	**$0.07 Million**
Property Damage Only (O)	**$6,500**	**/Prop. Damage [1]**	x	2.0	=	**$0.01 Million**
				ACC	=	**$3.21 Million**

NRU = ((ANC)*(1/365)*(10^6))/((ADTn)*(Length) = **1.26**

Capital Recovery Factor = (IR/100) X [1+(IR/100)]^{L}/([1+(IR/100]^{L}-1)) = **0.0899**

Initial Cost/Pole = $4,000

No.Poles/Mile = 53

AIC = Initial Cost/Pole X CRF X No. of Poles/Mile or Inter.

$4,000 X 0.0899 X 53 = **$19,068**

TMC = No. of Poles/Mile or Inter. X Luminaires/Pole X Annual Maintenance/Luminary

53 X 1 X $100 = **$5,300**

AEC = No. of Poles/Mile or Inter. X Luminaires/Pole X Watts/Luminaire X KW/1000 W X Cents/KWH X 11 Hours/Day X $/100Cents X 365 Days/Year

53 X 1 X 400 /1000W X

$0.08 X 11 X 365 = **$6,809**

BENEFIT-COST RATIO FOR LIGHTING INSTALLATION = 54.2

Notes : (1) Data from FDOT PPM Volume 1, Chapter 23: KABCO Crash Costs (Revised January 1, 2014)
(2) Reference Appendix B for Lighting Calculations
(3) Reference US 90 Arterial Study for Crash Data

Appendix D

Roadway Typical Sections

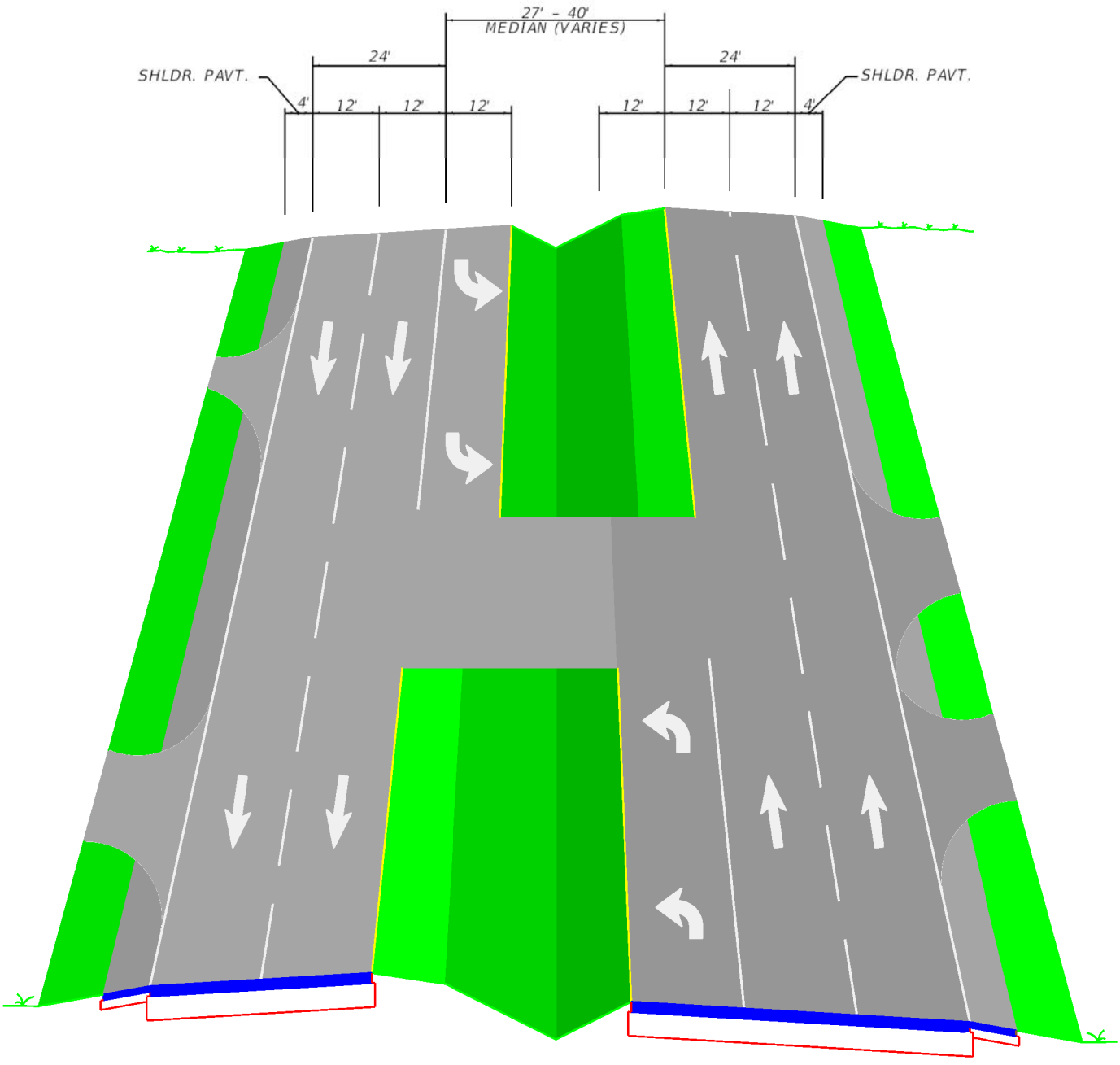
TYPICAL SECTION 1

FINANCIAL PROJECT ID 418439-1-32-06 FEDERAL AID PROJECT NO. N/A COUNTY NAME SANTA ROSA

SECTION NO. 58010000 LIMITS/MILEPOST MP 0.000 TO MP 11.689 ROAD DESIGNATION US 90

PROJECT DESCRIPTION US 90 FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH

TYPICAL DESCRIPTION FROM THE BEGINNING OF PROJECT TO SUSAN ST. IN MILTON, FLORIDA.



STA. 100+00.00 TO STA. 716+18.00

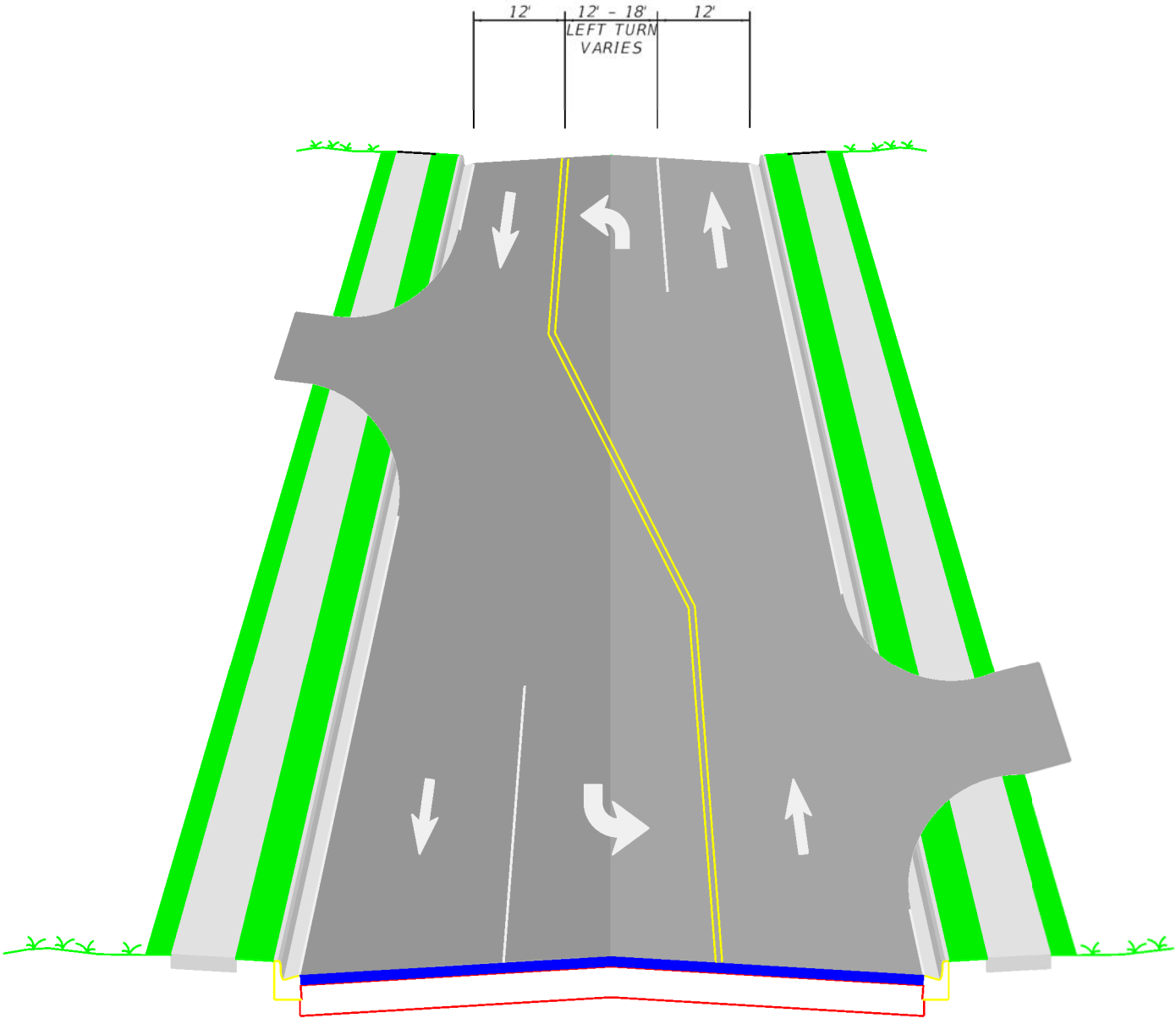
TYPICAL SECTION 2

FINANCIAL PROJECT ID 418439-1-32-06 FEDERAL AID PROJECT NO. N/A COUNTY NAME SANTA ROSA

SECTION NO. 58010000 LIMITS/MILEPOST MP 11.689 TO MP 12.104 ROAD DESIGNATION US 90

PROJECT DESCRIPTION US 90 FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH

TYPICAL DESCRIPTION FROM SUSAN ST. TO WILLING ST. IN MILTON, FLORIDA.



STA. 716+18.00 TO STA. 738+14.00

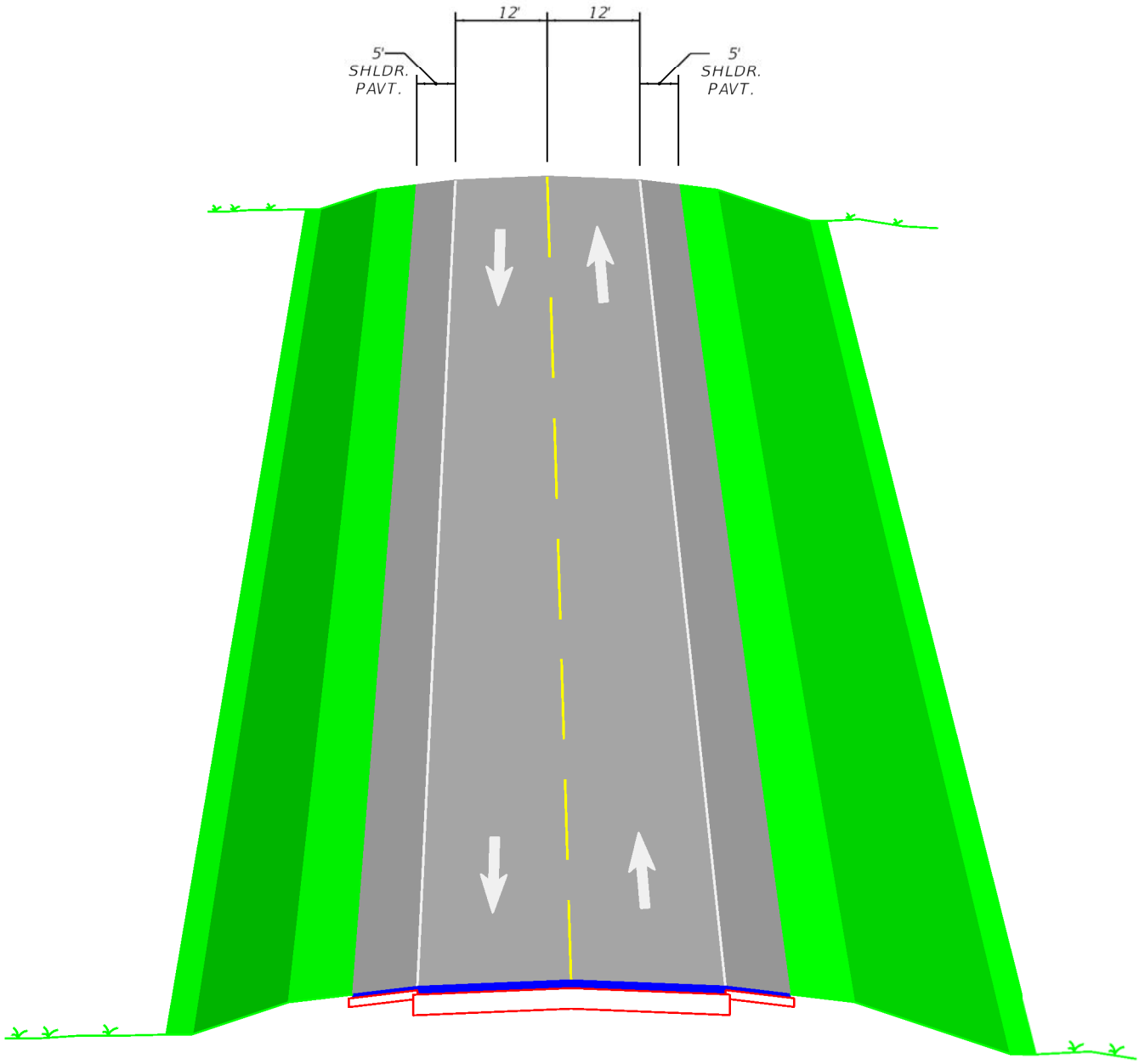
TYPICAL SECTION 3

FINANCIAL PROJECT ID 418439-1-32-06 FEDERAL AID PROJECT NO. N/A COUNTY NAME SANTA ROSA

SECTION NO. 58010000 LIMITS/MILEPOST MP 12.104 TO MP 16.216 ROAD DESIGNATION US 90

PROJECT DESCRIPTION US 90 FROM THE ESCAMBIA COUNTY LINE TO SR 87 SOUTH

TYPICAL DESCRIPTION FROM WILLING ST. TO THE END OF THE PROJECT AT SR 87.



STA. 738+14.00 TO STA. 955+00.00

Appendix F

Collision Maps

US 90 Crash Locations

N
W E
S

SANTA ROSA

ESCAMBIA

LUTHER FOWLER RD
QUINTETTE RD
WILLARD NORRIS RD
BERRYHILL ROAD
WEST SPENCER FIELD
CHUMUCKLA HWY
WINDHAM RD
HAMILTON BRIDGE RD
WOODBINE RD
NORRIS RD
EAST SPENCER FIELD
HWY 87 N
STEWART ST
DOGWOOD DR
SANDERS ST
PARK AVE
ALABAMA ST
BROAD ST
MUNSON HWY
PARKER RD
PAT BROWN RD
NORTH AIRPORT RD
HWY 90
HENRY ST
FORSYTH ST
FLORIDATOWN RD
PARKVIEW ST
BELL LN
GALLICH RD
OLD BAGDAD HWY
DA LISA RD
CYANAMID RD
STERLING WAY
MONTECEITO BLVD
AVALON BLVD
DEL MONTE ST
GARCON POINT RD
ROBINSON POINT RD
DAVIS HWY
SCENIC HWY

1 2 3 4 5 6 7 8 9 10 11

0 0.5 1 2 3 4
Miles

Legend

- Unknown(16)
- Other(97)
- Alcohol_Drugs(13)
- Ped_Bicyclist_Involved(15)
- Speeding(4)
- ImproperLaneChange_Passing(75)
- ImproperTurn_Drive_Sideroad(98)
- ImproperLT_TwoWayLT(1)
- ImproperLT_Med(21)
- Rear_Ends(499)
- ImproperRT_Int(5)
- ImproperLT_Int(43)
- RunningRed_StoppingCondition(39)
- Fatalities(10)
- US90_MINUS_2013(926)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

US 90 Crash Locations

N
W E
S

SANTA ROSA

ESCAMBIA

LUTHER FOWLER RD
QUINTETTE RD
BERRYHILL ROAD
WILLARD NORRIS RD
WEST SPENCER FIELD
CHUMUCKLA HWY
WINDHAM RD
HAMILTON BRIDGE RD
NORRIS RD
WOODBINE RD
EAST SPENCER FIELD
HWY 87 N
STEWART ST
DOGWOOD DR
SANDERS ST
PARK AVE
ALABAMA ST
BROAD ST
MUNSON HWY
PARKER RD
PAT BROWN RD
NORTH AIRPORT RD
HWY 90
HWY 87 S
HENRY ST
FORSYTH ST
I-10
HICKORY HAMMOCK RD
OLD BAGDAD HWY
GALT CITY RD
FLORIDATOWN RD
PARKVIEW ST
BELL LN
STERLING WAY
CYANAMID RD
DA LISA RD
MONTECEITO BLVD
AVALON BLVD
DEL MONTE ST
GARCON POINT RD
ROBINSON POINT RD
DAVIS HWY
SCENIC HWY

P1: 828523410
P2: 831655030
P3: 820439550
P4: 828306910
P5: 832208900
P6: 820223070
P7: 770957270
P8: 831984860
P9: 820905730
P10: 820963650
P11: 822643440
P12: 832256880
P13: 828827050
FP1: 828179410
FP2: 765361880

1 2 3 4 5 6 7 8 9 10 11

0 0.5 1 2 3 4
Miles

Legend

- Ped_Bicyclist_Involved (15)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

US 90 Crash Locations

N
W E
S

SANTA ROSA

ESCAMBIA

LUTHER FOWLER RD
QUINTETTE RD
BERRYHILL ROAD
WILLARD NORRIS RD
HWY 87 N
STEWART ST
MUNSON HWY
PARKER RD
PAT BROWN RD
CHUMUCKLA HWY
WEST SPENCER FIELD
WINDHAM RD
HAMILTON BRIDGE RD
DOGWOOD DR
SANDERS ST
PARK AVE
ALABAMA ST
BROAD ST
NORTH AIRPORT RD
HWY 90
HWY 87 S
WOODBINE RD
NORRIS RD
EAST SPENCER FIELD
HENRY ST
FORSYTH ST
I-10
HICKORY HAMMOCK RD
FLORIDATOWN RD
PARKVIEW ST
BELL LN
GALT CITY RD
OLD BAGDAD HWY
DA LISA RD
CYANAMID RD
STERLING WAY
MONTECEITO BLVD
AVALON BLVD
DEL MONTE ST
GARCON POINT RD
ROBINSON POINT RD
DAVIS HWY
SCENIC HWY

1
2
3
4
5
6
7
8
9
10
11

F4: 770978560
F5: 770945680
F3: 831998090
F2: 819934680
F1: 831675690
F6: 770807400
FP1: 828179410
F7: 770853480
FP2: 765361880
F8: 770855990

0 0.5 1 2 3 4
Miles

Legend

- Fatalities (10)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

US 90 Crash Locations -1

0 0.125 0.25 0.5 0.75 1 Miles

N W E S

FLORIDATOWN RD

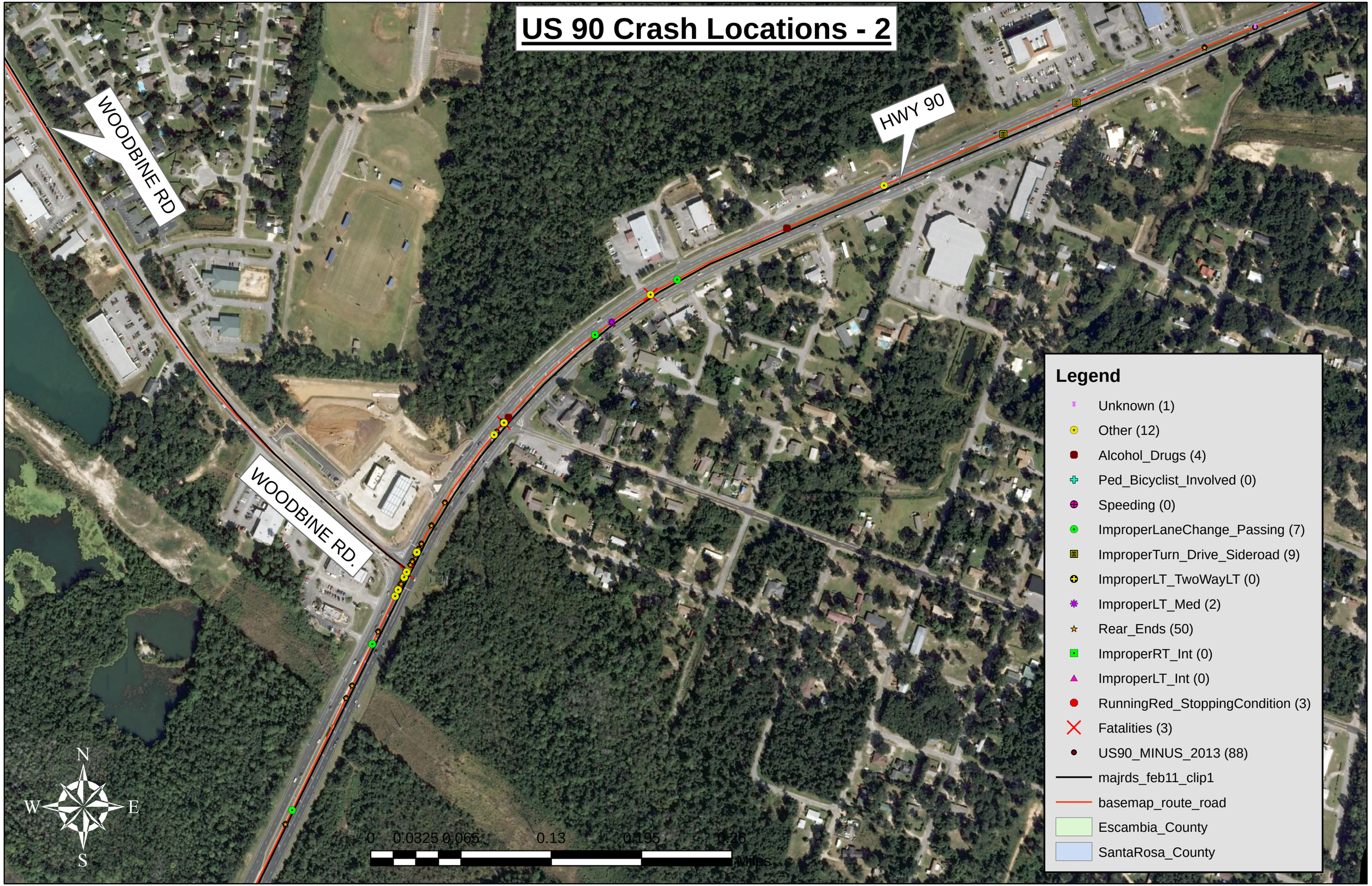
PARKVIEW ST

DAVIS HWY

Legend

- Unknown (5)
- Other (15)
- Alcohol_Drugs (3)
- Ped_Bicyclist_Involved (1)
- Speeding (0)
- ImproperLaneChange_Passing (8)
- ImproperTurn_Drive_Sideroad (0)
- ImproperLT_TwoWayLT (0)
- ImproperLT_Med (0)
- Rear_Ends (14)
- ImproperRT_Int (0)
- ImproperLT_Int (0)
- RunningRed_StoppingCondition (0)
- Fatalities (2)
- US90_MINUS_2013 (46)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

US 90 Crash Locations - 2



US 90 Crash Locations - 3

N
W
E
S

US HWY 90

FLORIDATOWN RD.

FLORIDATOWN RD.

0 0.03 0.06 0.12 0.18 0.24
Miles

Legend

- Unknown (1)
- Other (5)
- Alcohol_Drugs (1)
- Ped_Bicyclist_Involved (1)
- Speeding (0)
- ImproperLaneChange_Passing (12)
- ImproperTurn_Drive_Sideroad (17)
- ImproperLT_TwoWayLT (0)
- ImproperLT_Med (0)
- Rear_Ends (34)
- ImproperRT_Int (1)
- ImproperLT_Int (5)
- RunningRed_StoppingCondition (3)
- Fatalities (1)
- US90_MINUS_2013 (80)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

US 90 Crash Locations - 4

N
W
E
S

W. SPENCER FIELD RD.

US HWY 90

Legend

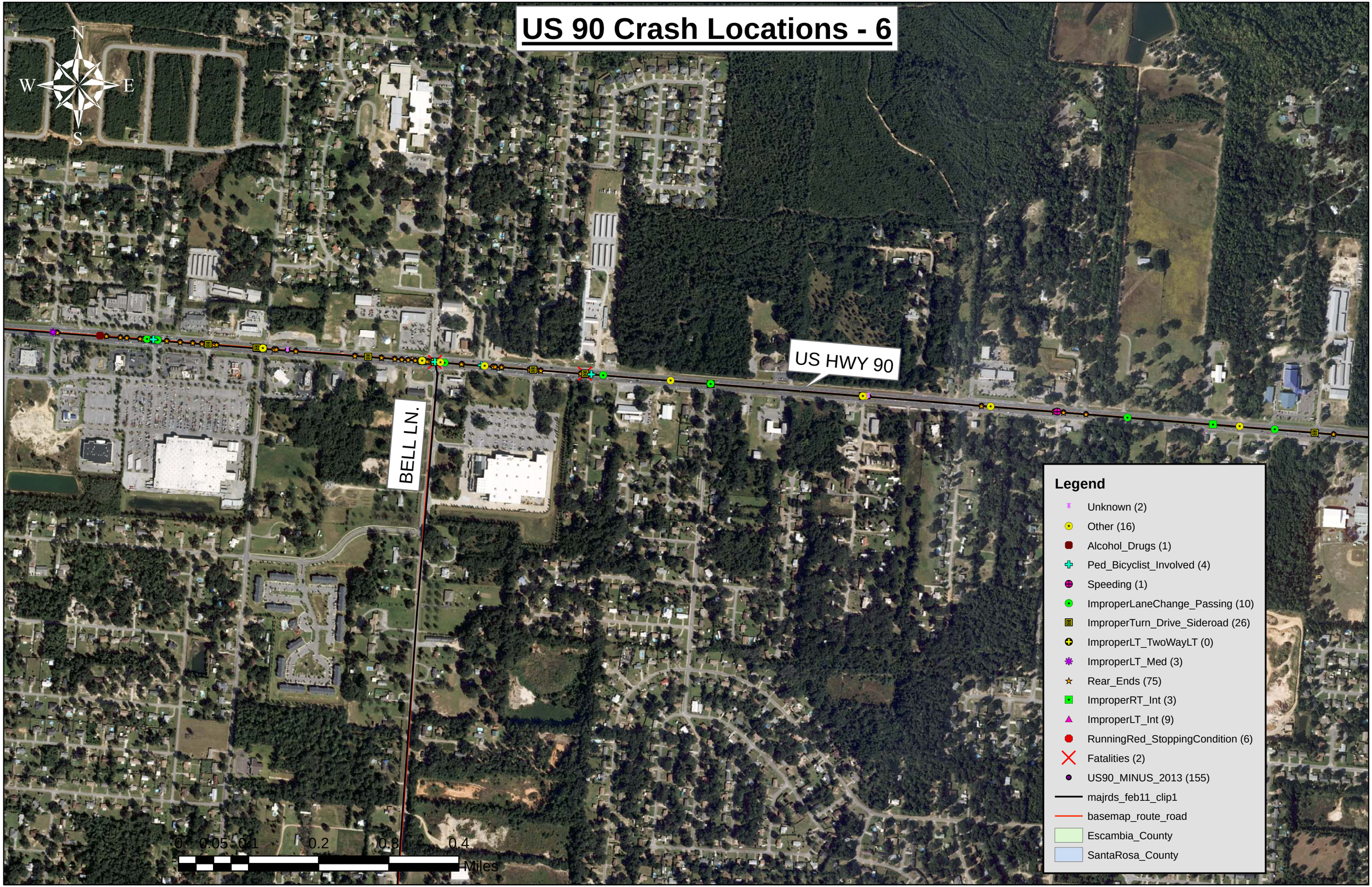
- Unknown (1)
- Other (7)
- Alcohol_Drugs (0)
- Ped_Bicyclist_Involved (1)
- Speeding (0)
- ImproperLaneChange_Passing (6)
- ImproperTurn_Drive_Sideroad (4)
- ImproperLT_TwoWayLT (1)
- ImproperLT_Med (2)
- Rear_Ends (32)
- ImproperRT_Int (0)
- ImproperLT_Int (3)
- RunningRed_StoppingCondition (2)
- Fatalities (0)
- US90_MINUS_2013 (59)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

0 0.03 0.06 0.12 0.18 0.24

Miles

US 90 Crash Locations - 5

US 90 Crash Locations - 6



US 90 Crash Locations - 7

N
W E
S

US HWY 90

US HWY 90

OLD BAGDAD HWY.

AVALON BLVD.

Legend

- Unknown (0)
- Other (8)
- Alcohol_Drugs (3)
- Ped_Bicyclist_Involved (1)
- Speeding (0)
- ImproperLaneChange_Passing (11)
- ImproperTurn_Drive_Sideroad (7)
- ImproperLT_TwoWayLT (0)
- ImproperLT_Med (5)
- Rear_Ends (69)
- ImproperRT_Int (0)
- ImproperLT_Int (2)
- RunningRed_StoppingCondition (4)
- Fatalities (0)
- US90_MINUS_2013 (110)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

0 0.0375 0.075 0.15 0.225 0.3
Miles

US 90 Crash Locations - 8

N
W
E
S

US HWY 90

GALT CITY RD.

OLD BAGDAD HWY.

OLD BAGDAD HWY.

0 0.04 0.08 0.16 0.24 0.32
Miles

Legend

- Unknown (0)
- Other (5)
- Alcohol_Drugs (0)
- Ped_Bicyclist_Involved (1)
- Speeding (0)
- ImproperLaneChange_Passing (3)
- ImproperTurn_Drive_Sideroad (7)
- ImproperLT_TwoWayLT (0)
- ImproperLT_Med (4)
- Rear_Ends (46)
- ImproperRT_Int (0)
- ImproperLT_Int (5)
- RunningRed_StoppingCondition (4)
- Fatalities (1)
- US90_MINUS_2013 (75)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

US 90 Crash Locations - 9

HAMILTON BRIDGE RD.

STEWART ST.

ALABAMA ST.

HENRY ST.

DOGWOOD DR.

US HWY 90

N

W E

S

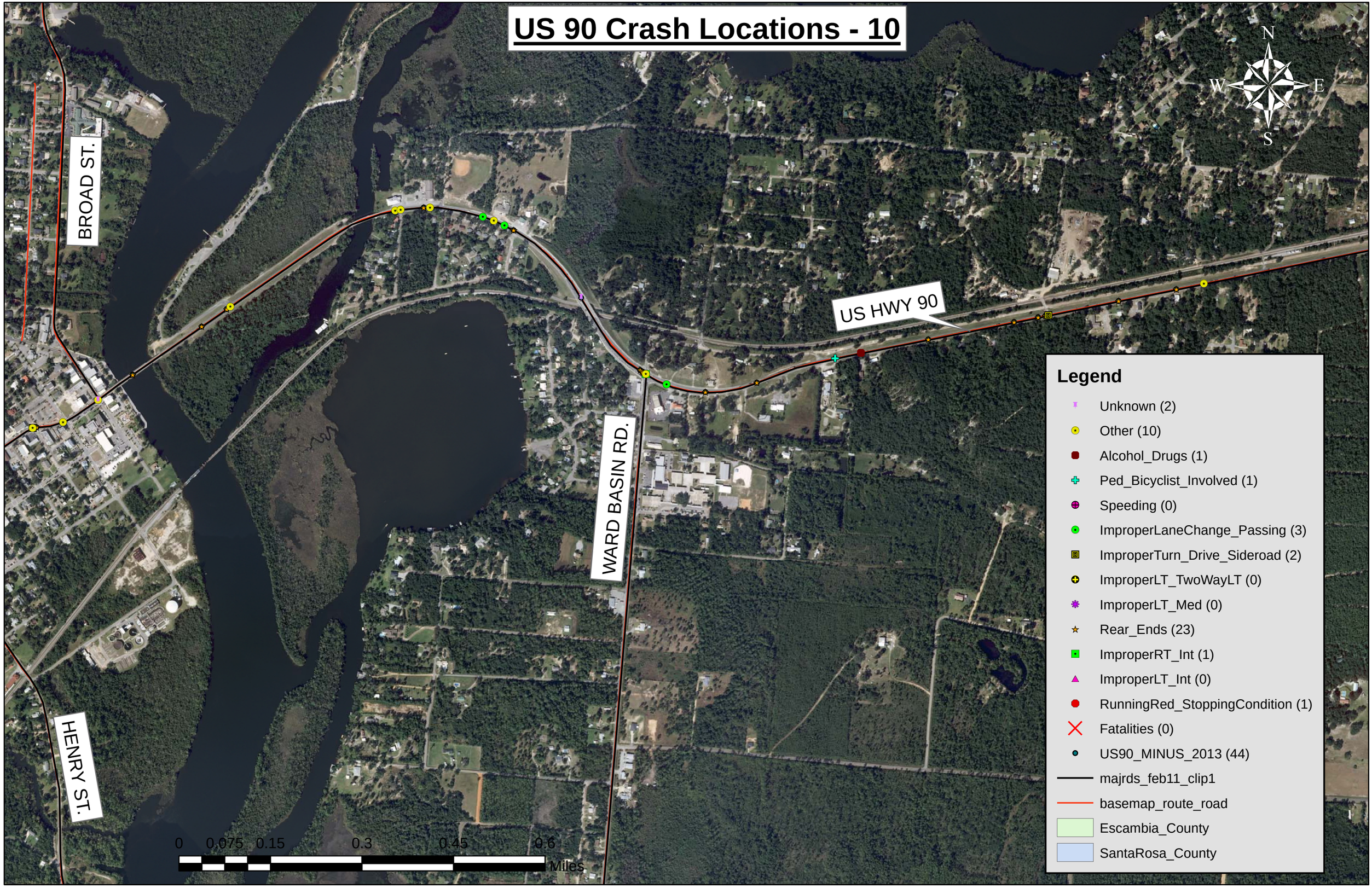
Legend

- Unknown (0)
- Other (10)
- Alcohol_Drugs (0)
- Ped_Bicyclist_Involved (0)
- Speeding (2)
- ImproperLaneChange_Passing (5)
- ImproperTurn_Drive_Sideroad (12)
- ImproperLT_TwoWayLT (0)
- ImproperLT_Med (5)
- Rear_Ends (39)
- ImproperRT_Int (0)
- ImproperLT_Int (6)
- RunningRed_StoppingCondition (9)
- Fatalities (0)
- US90_MINUS_2013 (89)
- majrds_feb11_clip1
- basemap_route_road
- Escambia_County
- SantaRosa_County

0 0.0425 0.085 0.17 0.255 0.34

Miles

US 90 Crash Locations - 10



US 90 Crash Locations - 11

Appendix G

Cost Estimations for Crash-Related Issues

Safety Improvement Cost Estimation for Incidents Involving Pedestrians and Bicyclists			
Number	Preliminary Recommendation	Estimated Construction Cost	Construction Cost Calculations
P1	Roadway lighting to improve visibility (US 90 Lighting Justification Report)	$543,000 for Segment 1	($4,000 per pole) x (53 poles per mile) x (2.559 miles) = $543,000
P2	Replace faded stop bar and crosswalk markings at Sports Drive	<$500	Stop Bar, 24" white: (Average Length, 20 LF) x ($4 per LF) + (35% Construction Cost) = $108; Crosswalk, 12" white: (Average Length, 100 LF) x ($2 per LF) + (35% Construction Cost) = $270; Total: $380
P3	*No recommendation or analysis due to contributing cause / behavior: bicyclist failed to yield to oncoming vehicle and fled scene.*	-	-
P4	Roadway lighting to improve visibility (US 90 Lighting Justification Report); sidewalk addition candidate	$923,000 for Segment 2 (Lighting only)	($4,000 per pole) x (53 poles per mile) x (4.354 miles) = $923,000
P5	Sidewalk addition between residential and commercial zones (refer to Site Observations section of report)	$324,000	Based on historic costs for similar sidewalk construction. ($51 per LF) x (1.2 miles) = $324,000
P6	Add special emphasis crosswalk markings and pedestrian warning signs (W11-2, W16-7P); trim landscaping to maintain visibility on approach to signal	$3,850	Sign: $500; Special Emphasis Crosswalk: [(12" white, 450 LF) x ($2 per LF) + (35% Construction Cost)] + [(24" white, 390 LF) x ($4 per LF) + (35% Construction Cost)] = $3,350; Total: $3,850
FP1	Roadway lighting to improve visibility (US 90 Lighting Justification Report)	$426,000 for Segment 3	($4,000 per pole) x (53 poles per mile) x (2.009 miles) = $426,000
P7	Widen WB US 90 for 700' east of intersection to add 5' bike lane between through and right turn lanes	$119,000	Refer to Bike Lane Addition Calculations in Appendix C. (700 LF) x ($170 per LF) = $119,000
P8	Roadway lighting to improve visibility (US 90 Lighting Justification Report)	$426,000 for Segment 3	($4,000 per pole) x (53 poles per mile) x (2.009 miles) = $426,000
P9	Bike lane markings extending across commercial driveway (Kids Discovery) for emphasis (FDOT Standard Index 17347)	<$500	(150 LF) x ($2 per LF) + (35% Construction Cost) = $405
FP2	*No recommendation due to intoxication. Roadway lighting is present; however, lack of pedestrian and bicyclist features on bridge is addressed in General Roadway Safety Recommendations.*	-	-
P10	*No recommendation or analysis due to contributing cause/ behavior: bicyclist failed to yield to oncoming vehicle.*	-	-
P11	Addition of bike lane markings and signage near Eaton Drive	$1,350	Signs: (2 signs) x ($500 per sign) = $1,000; Pavement Markings: (2 symbols) x ($175 per symbol) = $350; Total: $1,350
P12	Roadway lighting to improve visibility (US 90 Lighting Justification Report); also suggest bike lane signage	$845,000 for Segment 6	($4,000 per pole) x (53 poles per mile) x (3.986 miles) = $845,000
P13	Roadway lighting to improve visibility (US 90 Lighting Justification Report); standard bike lane signage present	$845,000 for Segment 6	($4,000 per pole) x (53 poles per mile) x (3.986 miles) = $845,000

Appendix H

Cost Estimations for Site Observations

Safety Improvement Cost Estimation for Proposed Bicycle Facilities				
Option 1: Ditch Relocation				
Description	Units	Quantity	Unit Cost	Cost
Mobilization (10%)	LS	1	$5,926.71	$5,926.71
Maintenance of Traffic (10%)	LS	1	$5,387.91	$5,387.91
Stabilization	SY	415	$2.20	$913.00
Base (OBG-6)	SY	415	$15.50	$6,432.50
Type SP, Traffic Level B, 3"	TN	64	$79.28	$5,073.92
FC-5, 3/4"	TN	16	$118.00	$1,888.00
30" Pipe	LF	150	$62.06	$9,309.00
30" MES	EA	6	$2,216.24	$13,297.44
Excavation (700' x 10' x 3' - lwh avg)	CY	780	$8.00	$6,240.00
Embankment (700' x 10' x 3' - lwh avg)	CY	780	$10.00	$7,800.00
Sod (20' average width)	SY	1556	$1.88	$2,925.28
			Subtotal	$65,193.76
			Contingency (10%)	$6,519.38
			Total Cost for 700' Bike Lane Addition	$71,713.14
			Length (LF)	700
			Average Estimated Cost per LF of Widening	$110

Option 2: Storm Drain Conveyance				
Description	Units	Quantity	Unit Cost	Cost
Mobilization (10%)	LS	1	$13,354.45	$13,354.45
Maintenance of Traffic (10%)	LS	1	$12,140.41	$12,140.41
Stabilization	SY	415	$2.20	$913.00
Base (OBG-6)	SY	415	$15.50	$6,432.50
Type SP, Traffic Level B, 3"	TN	64	$79.28	$5,073.92
FC-5, 3/4"	TN	16	$118.00	$1,888.00
Curb Inlet	EA	3	$6,000.00	$18,000.00
Ditch Bottom Inlet	EA	3	$1,979.31	$5,937.93
30" Pipe	LF	700	$62.06	$43,442.00
30" MES	EA	6	$2,216.24	$13,297.44
Type E Curb	LF	700	$22.42	$15,694.00
Embankment (700' x 10' x 3' - lwh avg)	CY	780	$10.00	$7,800.00
Sod (20' average width)	SY	1556	$1.88	$2,925.28
			Subtotal	$146,898.92
			Contingency (10%)	$14,689.89
			Total Cost for 700' Bike Lane Addition	$161,588.82
			Length (LF)	700
			Average Estimated Cost per LF of Widening	$240

Notes:

1. Estimate based on a 700' section of widening to accommodate a 5' wide bike lane along an urban section typical to the project.

2. Option 1 is intended for locations with adequate right-of-way width to relocate a roadside ditch with minimal impacts; Option 2 includes curb and gutter and a piped ditch for locations where ditch relocation may not be feasible.

Cost Estimation for Proposed Bicycle Signing and Pavement Messages
For signs and symbols presented in Table 4, the following cost estimates were used:
Bike Lane Signs: $500 per assembly
Bike Lane Pavement Message: $175 each

Cost Estimation for Proposed Sidewalk Facilities
Based on historic construction data from similar projects, a cost estimate of $51 per LF was used for sidewalk facilities.

Cost Estimation for Pond Creek Bridge Recommendations
For signs and pavement markings presented as short-term improvements, the following cost estimates were used:
Bicycle Warning Signs: $500 per assembly ($2,000 total for 4 signs)
6" Zig-zag Pavement Markings: $2 per LF ($2,000 total for 1,000 LF of edgeline)
For long-term alternatives, construction costs were provided by FDOT analysis.

Safety Improvement Cost Estimation for Stakeholder Input Recommendations		
Preliminary Recommendation	Estimated Construction Cost	Construction Cost Calculations
Sidewalk addition in Segments 2/3 from Walmart to Santa Villa Drive	$216,000	(0.8 miles) x ($270,000 per mile) = $216,000
Segment 5 crosswalks and signs at Mary Street and Escambia Street	$7,400	Signs: (6 sign assemblies per Index 17346, sheet 10, Scheme 2) x ($500 each) = $3,000; Special Emphasis Crosswalk: [(12" white, 100 LF) x ($2 per LF) + (35% Construction Cost)] + [(24" white, 80 LF) x ($4 per LF) + (35% Construction Cost)] = $700; Total: $3,700 per crosswalk
Shared lane signs and pavement markings for eight Segment 5 intersections	$13,600	Signs: (1 sign per approach) x (16 approaches) x ($500 each) = $8,000; Pavement symbols: (4 symbols per intersection) x (8 intersections) x ($175 each) = $5,600; Total: $13,600
Segment 5 widening for bike lane addition (0.3 mile segment)	$923,000	Roadway widening: (0.6 miles EB/WB) x ($240/LF) x (5,280 miles/LF) = $761,000; Sidewalk replacement: (0.6 miles) x ($270,000 per mile) = $162,000; Total: $923,000
Segment 6 sidewalk extension to Old Brick Road Trail	$60,000	[(900 LF) x (1 mile/5,280 LF) x ($270,000 per mile)] + (30% Contingency) = $60,000
Segment 5 "Do Not Block Intersection" improvements at Escambia, Canal, Elmira Streets	$4,550	Signs: (6 R10-7 signs) x ($500 each) = $3,000; Pavement markings at Escambia Street: (6 messages: "Do Not Block") x ($175 each) = $1,050; [(12" white, 180 LF) x ($2 per LF) + (35% Construction Cost)] = $500; Total: $1,550

Appendix I

Cost Estimations for Roadway Recommendations

Cost Estimation for Lighting Facilities				
Segment	Pole Cost	Number of Poles per Mile	Segment Length (Miles)	Construction Cost Total
1	$4,000	53	2.559	$543,000
2	$4,000	53	4.354	$923,000
3	$4,000	53	2.009	$426,000
4	$4,000	53	2.767	$587,000
6	$4,000	53	3.986	$845,000
			Total	$3,324,000

Cost Estimation for Segment 6 Pedestrian and Railroad Crossing Signs
For signs at St. Johns Street, a construction estimate of $500 per sign was used.
St. Johns Street: 1 sign = $500

Cost Estimation for Signal Backplates with Retroreflective Border
For signal backplates, a construction estimate of $300 per signal was used.
Assume 4 backplates per intersection at 20 intersections = 80 backplates total
Cost to install 80 backplates = $24,000

Cost Estimation for Signalized Intersection Advance Warning Signs
For signs and beacons presented in Table 5, the following cost estimates were used:
Signal Ahead Signs: $500 per assembly ($19,000 total for 38 signs)
Signal Interconnected Be Prepared to Stop Sign with Flashing Beacons: $7,000 per assembly ($70,000 total for 5 intersections)

Appendix J

Public Information Meeting Flier

Project Description

A safety study is being performed along U.S. 90 from the Escambia County line to State Road 87 South in Santa Rosa County. The focus of this assessment is vulnerable road users, such as pedestrians and bicyclists, who travel within the 16.2-mile corridor through Pace, Pea Ridge, and Milton. As part of the study, existing features will be analyzed in conjunction with crash history and local stakeholder input to identify potential safety improvements.

Public Meeting Information

This meeting is being held to receive input related specifically to pedestrian and bicyclist safety within the U.S. 90 study corridor. Maps, drawings, and other information will be displayed. The meeting will be conducted in an open house format (no formal presentation is scheduled). Florida Department of Transportation (FDOT) representatives will be on hand to answer questions and receive comments.

Meeting Location: Santa Rosa County Auditorium, 4530 Spikes Way, Milton, FL 32583
Meeting Date/Time: Thursday, April 3, 2014 from 5:30 pm to 6:30pm CDT

Who will take my comments?

Persons wishing to submit written statements may do so at the meeting, by mailing them to the Project Manager, 1369D South Railroad Avenue, Chipley, Florida, 32428, or via email at jsmith@panhandlegroup.com. All comments must be postmarked or received by the department by April 18, 2014. Additional contact information can be found below:

Jimmy Smith, P.E.
Project Manager
Panhandle Group
1369D South Railroad Avenue
Chipley, Florida 32428
(850) 638-3363
jsmith@panhandlegroup.com

Ian Satter
District Public Information Director
FDOT, District 3
Post Office Box 607
Chipley, Florida 32428
(888) 638-0250 ext. 1205 (toll-free)
ian.satter@dot.state.fl.us

For more Florida Department of Transportation District Three information follow us on twitter
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FDOT, District Three
John Smith, District Three Title VI Coordinator
1074 Highway 90
Chipley, Florida 32428
(888) 638-0250
john.smith@dot.state.fl.us

FDOT, Tallahassee Office
Jacqueline Paramore, State Title VI Coordinator
605 Suwannee Street, MS 65
Tallahassee, Florida 32399-0450
(850) 414-4753
jacqueline.paramore@dot.state.fl.us

Appendix K

Stakeholder Comments

Comment 1

1-1. Crosswalk needed at HWY 90/Mary St. in downtown Milton. Residents from the historic black neighborhood south of US 90 cross at Mary St. to go to the convenience store. Speed limit is 25 mph and motorists should be able to safely stop for people in the crosswalk.

1-2. Pedestrian features are needed on Pond Creek Bridge.

1-3. Lighting is needed in front of Emerald Sands Inn for residents frequently crossing to fast food restaurants. Lighting is needed on HWY 90 from Parkmore Plaza Road to Pond Creek Bridge. Intersection of HWY 90 & Parkmore Plaza Road is very dark.

1-4. Check pedestrian actuated signals & traffic signals for crossing of Blackwater Heritage Trail at US 90. If pedestrians have the white crossing signal, can SR 87 southbound traffic turning East turn into the crosswalk? If so, it is not a safe condition for pedestrians.

Submitted by: Nancy Model
Received on: April 3, 2014

FDOT Safety Office Response:

1-1. The need for crosswalk addition at the Mary Street intersection was taken into consideration and assessed in the field. Final study recommendations include further analysis to determine pedestrian volumes and safe crossing options in this area. Potential study by City and/or County authorities will determine if the crosswalk is warranted.

1-2. Pedestrian and bicyclist accessibility concerns across Pond Creek Bridge are noted as a critical issue of the U.S. 90 corridor, due to the narrow bridge width and lack of separation from traffic. Final study recommendations include multiple alternatives for vulnerable road user access across Pond Creek Bridge, including structure modifications, replacement, and addition. The study also proposes advanced warning options for vehicles approaching the crossing.

1-3. A lighting justification study was performed along the entire project corridor. Final study recommendations warrant lighting along U.S. 90 in the segments which include the area surrounding the Emerald Sands Inn and between Parkmore Plaza Road and Pond Creek Bridge.

1-4. The City of Milton has been notified of potential pedestrian actuated signal issues at the intersection of U.S. 90 and the Blackwater Heritage Trail immediately east of the SR 87 South termination.

Comment 2

2-1. The stretch of HWY 90 at 87 South intersection should have a bicycle and pedestrian lane. The poorer East Milton area at 90 & 87 S has lots of walkers and bicycle riders. A bicyclist was hit near the 90 & 87 S intersection.

Submitted by: M. L. Goel
Received on: April 3, 2014

FDOT Safety Office Response:

2-1. FDOT has analyzed this segment of U.S. 90 from Milton to SR 87 South, which lies within the eastern portion of the safety study corridor limits. Final study recommendations include roadway lighting, signing, and pavement markings to improve visibility and awareness in the East Milton area, which currently lacks existing lighting features.

Comment 3

3-1. Need crosswalks at Escambia St. & HWY 90.

3-2. Traffic speed limit on HWY 90 downtown - no one drives the speed limit. Many drive 35-45 going through downtown. Because of the speed many bikers have a hard time on HWY 90.

3-3. HWY 90 between Dogwood Drive and Stewart St. needs sidewalks/bike lanes.

3-4. Station 640/645 need help with damage to crosswalk push button.

Submitted by: Sammy Carroll
Received on: April 3, 2014

FDOT Safety Office Response:

3-1. The need for crosswalk addition at the Escambia Street intersection was taken into consideration and assessed in the field. Final study recommendations include further analysis to determine pedestrian volumes and safe crossing options in this area. Potential study by City and/or County authorities will determine if the crosswalk is warranted.

3-2. Bicyclist safety in downtown Milton was identified in the analysis as a concern due to the lack of bike lanes as well as signing and pavement marking for emphasis. Final study recommendations list alternatives for improving bicyclist safety in downtown Milton, including the addition of shared roadway signing and pavement markings and roadway widening for bike lane addition.

3-3. The segment of U.S. 90 between Dogwood Drive and Stewart Street was included in the field reviews and analysis of site safety and crash data. Final study recommendations include sidewalk addition between Avalon Blvd and Stewart Street, which encompasses the segment in question. Widening for bike lane addition is recommended along westbound U.S. 90 from Dogwood Drive to the Bealls Shopping Center; standard signing and pavement markings are also proposed as bicyclists use the existing paved shoulder with this segment.

3-4. The City of Milton has been notified of potential pedestrian actuated signal issues at the intersection of U.S. 90 and Glover Lane.

Comment 4

4-1. Need crosswalk for pedestrian safety at Escambia St. and HWY 90.

4-2. Along HWY 90 in historic district of downtown need signage "Do Not Block Intersection."

Submitted by: Kim Macarthy
Received on: April 3, 2014

FDOT Safety Office Response:

4-1. The need for crosswalk addition at the Escambia Street intersection was taken into consideration and assessed in the field. Final study recommendations include further analysis to determine pedestrian volumes and safe crossing options in this area. Potential study by City and/or County authorities will determine if the crosswalk is warranted.

4-2. Traffic flow and intersection spacing in downtown Milton was assessed during the safety study. Final study recommendations include addition of "Do Not Block Intersection" signing and pavement markings for driver awareness on U.S. 90 to reduce the number of vehicles blocking side streets in the downtown area.

Comment 5

5-1. Need better bicycle lanes in East Milton along 90 and also 87 South.

Submitted by: John Smith
Received on: April 3, 2014

FDOT Safety Office Response:

5-1. Noted; however, no response provided due to anonymous submission without address listed.

Comment 6

6-1. Canal St to Stewart St - there are no sidewalks or bike path. No bike path through downtown.

6-2. Need a crosswalk at HWY 90 & Escambia St as well as a "Do Not Block Intersection" sign.

6-3. Need sidewalks and designated entrances on HWY 90.

Submitted by: Cassandra Sharp
Received on: April 3, 2014

FDOT Safety Office Response:

6-1. The segment of U.S. 90 from Canal Street to Stewart Street was included in the study field reviews and analysis of site safety and crash data. Final study recommendations list alternatives for improving bicyclist safety in downtown Milton, including the addition of shared roadway signing and pavement markings and roadway widening for bike lane addition.

6-2. The need for crosswalk addition at the Escambia Street intersection was taken into consideration and assessed in the field. Final study recommendations include further analysis to determine pedestrian volumes and safe crossing options in this area. Potential study by City and/or County authorities will determine if the crosswalk is warranted. Traffic flow and

6-3. Several locations of sidewalk addition along the U.S. 90 corridor are included as final study recommendations based on analysis of critical safety issues, site observations, and local input.

Comment 7

7-1. Separated sidewalk needed in downtown Milton from Mary St west to Blackwater Heritage State Trail and then sidewalks from Stewart St to Avalon Boulevard.

7-2. Pond Creek bridge extremely dangerous and regularly used by pedestrians & bicyclists and families with baby strollers. High potential for accidents, injuries, or even deaths on this bridge.

7-3. Pedestrian crossing needed for Mary St and more time for actuated signal at Blackwater Heritage State Trail.

7-4. Crossing also needed at Escambia St and a "Do Not Block Crossing" sign for those on 90 who block cars on Escambia from crossing.

Submitted by: Vernon Compton
Received on: April 3, 2014

FDOT Safety Office Response:

7-1. The need for sidewalk addition was assessed along the U.S. 90 corridor. Final study recommendations include sidewalk addition within both segments in question as follows: from Avalon Blvd to Stewart Street (SR 87 South) in West Milton; and from the Blackwater Heritage State Trail (east of SR 87 South) to Mary Street in downtown Milton.

7-2. Pedestrian and bicyclist accessibility concerns across Pond Creek Bridge are noted as a critical issue of the U.S. 90 corridor, due to the narrow bridge width and lack of separation from traffic. Final study recommendations include multiple alternatives for vulnerable road user access across Pond Creek Bridge, including structure modifications, replacement, and addition. The study also proposes advanced warning options for vehicles approaching the crossing.

7-3. The need for crosswalk addition at the Mary Street intersection was taken into consideration and assessed in the field. Final study recommendations include further analysis to determine pedestrian volumes and safe crossing options in this area. Potential study by City and/or County authorities will determine if the crosswalk is warranted. The City of Milton has been notified of potential pedestrian actuated signal timing issues at the intersection of U.S. 90 and the Blackwater Heritage State Trail.

7-4. The need for crosswalk addition at the Escambia Street intersection was taken into consideration and assessed in the field. Final study recommendations include further analysis to determine pedestrian volumes and safe crossing options in this area. Potential study by City and/or County authorities will determine if the crosswalk is warranted. Traffic flow and intersection spacing in downtown Milton was also assessed during the safety study. Final study recommendations include addition of "Do Not Block Intersection" signing and pavement markings for driver awareness on U.S. 90 to reduce the number of vehicles blocking side streets in the downtown area, including the Escambia Street intersection.

Comment 8

8-1. When will we get traffic light at entrance to Santa Villa & HWY 90 or do away with grassed median and design highway as it is in Pace with no median.

Submitted by: Jack McCombs
Received on: April 3, 2014

FDOT Safety Office Response:

8-1. FDOT has reviewed your comments related to a traffic signal at Santa Villa Drive and a two-way left turn lane. Final study recommendations include further analysis of this issue, separate from this pedestrian/bicyclist safety effort, to determine the traffic movements and volumes at the location in question.

Comment 9

9-1. From Walmart to Santa Villa Drive sidewalk and bike.

Submitted by: Royce & Silvia Peaden
Received on: April 3, 2014

FDOT Safety Office Response:

9-1. FDOT has analyzed the segment of U.S. 90 between Walmart and Santa Villa Drive, which lies within the safety study corridor limits. Final study recommendations include the addition of bike lanes where absent within this segment. Further study is recommended for sidewalk addition due to unknown pedestrian volumes in the area.

Comment 10

10-1. I think the sidewalk should be on the north side of HWY 90 and tie into the old brick road in East Milton.

Submitted by: Bridget Hall Head
Received on: April 3, 2014

FDOT Safety Office Response:

10-1. FDOT has analyzed the segment of U.S. 90 east of Milton within the safety study corridor limits. Sidewalk addition in this area is included as a final study recommendation to provide a safe connection for pedestrians between the existing sidewalk and the trail.

Comment 11

11-1. Thank you for the opportunity to comment. The area that I believe is the most dangerous for pedestrians and bicyclists is the bridge over Pond Creek at Mayo Park on the west side of Milton. The bridge is located about 1 block west of the intersection of Glover and rt 90. Mayo Park has most of its facility on the east side of Pond Creek but its bathroom facilities are on the west side of Pond Creek, causing users of the park to walk across the bridge to use the whole park, putting their life at risk on this most dangerous bridge. To confirm how dangerous this bridge crossing is to pedestrians and bicyclists you would only need to walk across it once yourself. Please consider helping to eliminate this hazard.

Submitted by: Larry and Lou Ann Moss
Received on: April 5, 2014

FDOT Safety Office Response:

11-1. FDOT has analyzed the U.S. 90 crossing over Pond Creek within the safety study corridor limits. Pedestrian and bicyclist accessibility concerns across Pond Creek Bridge are noted as a critical issue of the U.S. 90 corridor, due to the narrow bridge width and lack of separation from traffic. Final study recommendations include multiple alternatives for vulnerable road user access across Pond Creek Bridge, including structure modifications, replacement, and addition. The study also proposes advanced warning options for vehicles approaching the crossing.

Comment 12

12-1. Pedestrian and bicycle paths not needed. Speed limit 45-55 mph. Not enough pedestrian/bicycle traffic.

Submitted by: Ron Fitzgerald
Received on: April 10, 2014

FDOT Safety Office Response:

12-1. Noted; however, no response provided due to submission without address listed.

Comment 13

13-1. If this study restricts traffic in and out of our funeral home we would be opposed to any new bike lanes/pedestrian lanes.

13-2. By looking at the maps and reading the accident comments, very few were the fault of the motorist. Maybe instead of spending money for this study we should spend it on bicycle safety & A.A. meetings.

Submitted by: Jeffrey S. Wilkinson
Received on: April 10, 2014

FDOT Safety Office Response:

13-1. Final study recommendations do not include the addition of bike lanes or sidewalk along the U.S. 90 corridor near the National Cremation and Burial Society property. Therefore, no impacts to existing business access conditions are anticipated.

13-2. Crash history analysis was documented in the safety study efforts. Final study recommendations include public awareness options utilized in similar areas around the state to improve road user safety.

Appendix L

Benefit-Cost Analysis

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT THREE SAFETY OFFICE BENEFIT COST ANALYSIS

Rev. 01/2014

Date Prepared: **05/21/14**

Prepared By: **Jacobs**

County: **58 - Santa Rosa**

Section : **58010** SR: **10** US: **90**

Beg. MP : **2.559** End MP: **6.913** Length: **4.354**

Description of Location:

US 90 (SR 10) in Santa Rosa County from the Escambia County Line to SR 87 South. Urban minor arterial in this area, with three typical sections: 4-lane divided flush shoulders; 2-lane with center turn lane curb and gutter downtown, and 2-lane undivided flush shoulders.

Roadway Type: **4 - 5 Lanes Rural Divided**

Cause of Crash Problems (List and Discuss):

Study focuses on bicycle/pedestrian (vulnerable road users):
Segment 2
Two bicyclist crashes and three pedestrian crashes

Proposed Improvements (List and Discuss):

Proposed pavement markings, stop bar and crosswalks; proposed signs, pedestrian warning signs; and proposed sidewalk.

Crash Reduction Factor Selection

Crash reduction factor	0.11	Install signs to conform to MUTCD (CMF ID 62/63) (average)
Crash reduction factor	0.4	Install high-visibility crosswalk (CMF ID 4123)
Crash reduction factor	0.74	Install sidewalk (to avoid walking along roadway) (CMF ID 1333)
Overall CRF	**0.861**	

Crash Year			2010	2011	2012	Avg.
Total Crashes	0	0	0	2	3	1.667
Correctable Crashes	0	0	0	1.722	2.583	1.435

Number of crashes by type and year contributable to identified deficiency

Crash Type			2010	2011	2012
Collision with Pedestrian/Bicycle	0	0	0	2	3
Total	0	0	0	2	3

Annual Benefit $ 537,144.24

Crash Information for Facility

Cost per Crash: $ 374,247.00

Crash Cleanup: $ -

Interest Rate: 4.0%

Annual Cost of Improvements

Type	*Cost*	*Life*	*Capital*	*Annual Cost*
ROW				
P.E.C.E.I.	$413,655.00	20	0.0736	$ 30,445.01
Structure				
Roadway	$1,378,850.00	20	0.0736	$101,483.36
Pavement				
Drainage				
Signal				
Lighting				
Sub-Total	$1,792,505.00			$131,928.37
			Change in Maintenance	
			Crash Cleanup	$ -
			Total Annual Cost	**$131,928.37**
			Benefit/Cost	**4.07**
			Net Present Value	**$405,215.88**

Comments

Segment 2 - Crash Related and Site Observations

Crashes and proposed improvements related to vulnerable road users only.
15% each cost of P.E. and C.E.I.
Spreadsheet modified for 3 years of crash data.
Neglected crash cleanup costs.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT THREE SAFETY OFFICE BENEFIT COST ANALYSIS

Rev. 01/2014

Date Prepared: **05/21/14**

Prepared By: **Jacobs**

County: **58 - Santa Rosa**

Section : **58010** SR: **10** US: **90**

Beg. MP : **6.913** End MP: **8.922** Length: **2.009**

Description of Location:

US 90 (SR 10) in Santa Rosa County from the Escambia County Line to SR 87 South. Urban minor arterial in this area, with three typical sections: 4-lane divided flush shoulders; 2-lane with center turn lane curb and gutter downtown, and 2-lane undivided flush shoulders.

Roadway Type: **4 - 5 Lanes Rural Divided**

Cause of Crash Problems (List and Discuss):

Study focuses on bicycle/pedestrian (vulnerable road users):
Segment 3
Three bicyclist crashes and one pedestrian crash

Proposed Improvements (List and Discuss):

Proposed widening to add 700 LF of bike lane and bike lane markings.

Crash Reduction Factor Selection

Crash reduction factor	0.35	Provide bike lanes (CMF ID 1719)
Crash reduction factor	0.11	Install signs to conform to MUTCD (CMF ID 62/63) (average)
Crash reduction factor		

Overall CRF **0.422**

Crash Year			2010	2011	2012	Avg.
Total Crashes	0	0	1	2	1	1.333
Correctable Crashes	0	0	0.422	0.843	0.422	0.562

Number of crashes by type and year contributable to identified deficiency

Crash Type			2010	2011	2012
Collision with Pedestrian/Bicycle	0	0	1	2	1
Total	0	0	1	2	1

Annual Benefit $ 210,326.81

Crash Information for Facility

Cost per Crash: $ 374,247.00

Crash Cleanup: $ -

Interest Rate: 4.0%

Annual Cost of Improvements

Type	*Cost*	*Life*	*Capital*	*Annual Cost*
ROW				
P.E.C.E.I.	$ 37,950.00	20	0.0736	$ 2,793.12
Structure				
Roadway	$126,500.00	20	0.0736	$ 9,310.40
Pavement				
Drainage				
Signal				
Lighting				
Sub-Total	$164,450.00			$ 12,103.52
			Change in Maintenance	
			Crash Cleanup	$ -
			Total Annual Cost	**$ 12,103.52**
			Benefit/Cost	**17.38**
			Net Present Value	**$198,223.29**

Comments

Segment 3 - Crash Related and Site Observations

Crashes and proposed improvements related to vulnerable road users only.
15% each cost of P.E. and C.E.I.
Spreadsheet modified for 3 years of crash data.
Neglected crash cleanup costs.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT THREE SAFETY OFFICE BENEFIT COST ANALYSIS

Rev. 01/2014

Date Prepared: **05/21/14**

Prepared By: **Jacobs**

County: **58 - Santa Rosa**

Section : **58010** SR: **10** US: **90**

Beg. MP : **12.23** End MP: **16.216** Length: **3.986**

Description of Location:

US 90 (SR 10) in Santa Rosa County from the Escambia County Line to SR 87 South. Urban minor arterial in this area, with three typical sections: 4-lane divided flush shoulders; 2-lane with center turn lane curb and gutter downtown, and 2-lane undivided flush shoulders.

Roadway Type: **4 - 5 Lanes Rural Divided**

Cause of Crash Problems (List and Discuss):

Study focuses on bicycle/pedestrian (vulnerable road users):
Segment 6
Four bicyclist crashes

Proposed Improvements (List and Discuss):

Proposed pavement markings; proposed signs; and proposed sidewalk.

Crash Reduction Factor Selection

Crash reduction factor	0.11	Install signs to conform to MUTCD (CMF ID 62/63) (average)
Crash reduction factor	0.4	Install high-visibility crosswalk (CMF ID 4123)
Crash reduction factor	0.74	Install sidewalk (to avoid walking along roadway) (CMF ID 1333)
Overall CRF	**0.861**	

Crash Year			2010	2011	2012	Avg.
Total Crashes	0	0	0	2	2	1.333
Correctable Crashes	0	0	0	1.722	1.722	1.148

Number of crashes by type and year contributable to identified deficiency

Crash Type			2010	2011	2012
Collision with Pedestrian/Bicycle	0	0	0	2	2
Total	0	0	0	2	2

Annual Benefit $ 429,715.40

Crash Information for Facility

Cost per Crash: $ 374,247.00

Crash Cleanup: $ -

Interest Rate: 4.0%

Annual Cost of Improvements

Type	*Cost*	*Life*	*Capital*	*Annual Cost*
ROW				
P.E.C.E.I.	$ 57,660.00	20	0.0736	$ 4,243.78
Structure				
Roadway	$ 192,200.00	20	0.0736	$ 14,145.92
Pavement				
Drainage				
Signal				
Lighting				
Sub-Total	$ 249,860.00			$ 18,389.70
			Change in Maintenance	
			Crash Cleanup	$ -
			Total Annual Cost	**$ 18,389.70**
			Benefit/Cost	**23.37**
			Net Present Value	**$411,325.70**

Comments

Segment 6 - Crash Related and Site Observations

Crashes and proposed improvements related to vulnerable road users only.
15% each cost of P.E. and C.E.I.
Spreadsheet modified for 3 years of crash data.
Neglected crash cleanup costs.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DISTRICT THREE SAFETY OFFICE BENEFIT COST ANALYSIS

Rev. 01/2014

Date Prepared: **05/21/14**

Prepared By: **Jacobs**

County: **58 - Santa Rosa**

Section : **58010** SR: **10** US: **90**

Description of Location:

Summary for corridor segments (2, 3, 6) with pedestrian/bicyclist crash history. Refer to individual spreadsheets for site/crash data.

Roadway Type: **4 - 5 Lanes Rural Divided**

Cause of Crash Problems (List and Discuss):

Proposed Improvements (List and Discuss):

Crash Reduction Factor Selection

Crash reduction factor 0.99 — Weighted CRF* from Segments 2, 3, and 6

Crash reduction factor — *Calculated as follows: $[CRF_1 + (1 - CRF_1)(CRF_2) + (1 - CRF_1)(1 - CRF_2)(CRF_3)...]$ for eight CRF's

Crash reduction factor

Overall CRF **0.99**

Crash Year			2010	2011	2012	Avg.
Total Crashes	0	0	1	6	6	4.333
Correctable Crashes	0	0	0.99	5.94	5.94	4.29

Number of crashes by type and year contributable to identified deficiency

Crash Type			2010	2011	2012
Collision with Pedestrian/Bicycle	0	0	1	6	6
Total	0	0	1	6	6

Annual Benefit $ 1,605,519.63

Crash Information for Facility

Cost per Crash: $ 374,247.00

Crash Cleanup: $ -

Interest Rate: 4.0%

Annual Cost of Improvements

Type	*Cost*	*Life*	*Capital*	*Annual Cost*
ROW				
P.E.C.E.I.	$509,265.00	20	0.0736	$ 37,481.90
Structure				
Roadway	1,697,550	20	0.0736	$124,939.68
Pavement				
Drainage				
Signal				
Lighting				
Sub-Total	$2,206,815.00			$162,421.58
			Change in Maintenance	
			Crash Cleanup	$ -
			Total Annual Cost	**$162,421.58**
			Benefit/Cost	**9.88**
			Net Present Value	**$ 1,443,098.05**

Comments

Summary Segments 2, 3, and 6 - Crash Related and Site Observations

Crashes and proposed improvements related to vulnerable road users only.
15% each cost of P.E. and C.E.I.
Spreadsheet modified for 3 years of crash data.
Neglected crash cleanup costs.

CMF / CRF Details

CMF ID: 62

Install signs to conform to MUTCD

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Signs

Study: ***Handbook of Road Safety Measures*, Elvik, R. and Vaa, T., 2004**

Star Quality Rating:	★★★☆☆

Crash Modification Factor (CMF)	
Value:	0.85
Adjusted Standard Error:	0.1
Unadjusted Standard Error:	0.06

Crash Reduction Factor (CRF)	
Value:	15 *(This value indicates a **decrease** in crashes)*

Adjusted Standard Error:	10
Unadjusted Standard Error:	6

Applicability

Crash Type:	All
Crash Severity:	Serious injury,Minor injury
Roadway Types:	Local
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	Not specified
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Meta-analysis
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	11-01-2009
Comments:	

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CMF / CRF Details

CMF ID: 63

Install signs to conform to MUTCD

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Signs

Study: ***Handbook of Road Safety Measures*, Elvik, R. and Vaa, T., 2004**

Star Quality Rating:	★★★☆☆

Crash Modification Factor (CMF)	
Value:	0.93
Adjusted Standard Error:	0.06
Unadjusted Standard Error:	0.03

Crash Reduction Factor (CRF)	
Value:	7 *(This value indicates a **decrease** in crashes)*

Adjusted Standard Error:	6
Unadjusted Standard Error:	3

Applicability

Crash Type:	All
Crash Severity:	Property Damage Only (PDO)
Roadway Types:	Local
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	Not specified
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Meta-analysis
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	11-01-2009
Comments:	

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CMF / CRF Details

CMF ID: 4123

Install high-visibility crosswalk

Description: High-visibility crosswalks aim to increase awareness of pedestrians at intersections by using highly visible marking patterns. The markings used in this study included a series of longitudinal white stripes constructed from thermoplastic material.

Prior Condition: High visibility crosswalks aim to increase awareness of pedestrians at intersections by using highly visible marking patterns. High visibility crosswalks installed in NYC have a series of longitudinal white stripes that are constructed from thermoplastic materials.

Category: Pedestrians

Study: *The Relative Effectiveness of Pedestrian Safety Countermeasures at Urban Intersections - Lessons from a New York City Experience*, Li Chen, Cynthia Chen, and Reid Ewing, 2012

Star Quality Rating:	★★☆☆☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.6
Adjusted Standard Error:	

Unadjusted Standard Error:	

Crash Reduction Factor (CRF)

Value:	40 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability

Crash Type:	Vehicle/pedestrian
Crash Severity:	All
Roadway Types:	Not Specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Urban
Traffic Volume:	
Time of Day:	All

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg

Traffic Control:	Not specified
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	1998 to 2008
Municipality:	New York City
State:	NY
Country:	USA
Type of Methodology Used:	Simple before/after
Sample Size Used:	Crashes
Before Sample Size Used:	63 Crashes
After Sample Size Used:	15 Crashes

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	09-01-2012

Comments:	The treatment group included both signalized and unsignalized intersections. The corresponding change in crashes in the comparison group was an 18 percent reduction in pedestrian-vehicle crashes. This could be used to adjust the treatment effect to account for other factors not related to the treatment.

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CMF / CRF Details

CMF ID: 1696

Improve/install pedestrian crossing

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Pedestrians

Study: ***Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects*****, Gan et al., 2005**

Star Quality Rating:	Cannot Be Rated

Crash Modification Factor (CMF)	
Value:	0.75
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	25 *(This value indicates a **decrease** in crashes)*

Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	11-01-2009
Comments:	

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CMF / CRF Details

CMF ID: 1697

Improve/install pedestrian crossing

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Pedestrians

Study: ***Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects*****, Gan et al., 2005**

Star Quality Rating:	Cannot Be Rated

Crash Modification Factor (CMF)	
Value:	0.75
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	25 *(This value indicates a **decrease** in crashes)*

Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability

Crash Type:	Vehicle/pedestrian
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	11-01-2009
Comments:	

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CMF / CRF Details

CMF ID: 1333

Install sidewalk (to avoid walking along roadway)

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Pedestrians

Study: ***Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects*****, Gan et al., 2005**

Star Quality Rating:	Cannot Be Rated

Crash Modification Factor (CMF)	
Value:	0.26
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	74 *(This value indicates a **decrease** in crashes)*

Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability

Crash Type:	Vehicle/pedestrian
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	
Traffic Volume:	Not specified
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	
Municipality:	
State:	AK, AR, KY, MO, OK
Country:	
Type of Methodology Used:	
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	09-28-2010
Comments:	This CMF is the combined result of CMFs used for this treatment in Alaska, Arizona, Kentucky, Missouri, and Oklahoma.

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CMF / CRF Details

CMF ID: 1821

Provide paved shoulder (of at least 4 feet) (to avoid walking along roadway)

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Shoulder treatments

Study: ***Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects*****, Gan et al., 2005**

Star Quality Rating:	Cannot Be Rated

Crash Modification Factor (CMF)	
Value:	0.29
Adjusted Standard Error:	
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)	
Value:	71 *(This value indicates a **decrease** in crashes)*

Adjusted Standard Error:	
Unadjusted Standard Error:	

Applicability

Crash Type:	Vehicle/pedestrian
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	
Sample Size Used:	

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	11-01-2009
Comments:	

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CMF / CRF Details

CMF ID: 1719

Provide bike lanes

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Bicyclists

Study: ***Signalized Intersections: Informational Guide*****, Rodegerdts et al., 2004**

Star Quality Rating:	★★☆☆☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.65
Adjusted Standard Error:	
Unadjusted Standard Error:	0.2

Crash Reduction Factor (CRF)	
Value:	35 *(This value indicates a **decrease** in crashes)*

Adjusted Standard Error:	
Unadjusted Standard Error:	20.3

Applicability

Crash Type:	Vehicle/bicycle
Crash Severity:	Fatal,Serious injury,Minor injury
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	
Intersection Geometry:	
Traffic Control:	
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

Development Details	
Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Simple before/after
Sample Size Used:	Crashes
Before Sample Size Used:	26 Crashes
After Sample Size Used:	11 Crashes

Other Details	
Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	07-29-2010
Comments:	

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