

## Design Exception/Variation Workshop Agenda

DAY 1		Speaker	Tab	Topic
<b>8:15</b>	<b>8:30</b>			<b>Sign-in</b>
		Jeremy	<b>1</b>	Welcome & Intro
		Brad	<b>1</b>	Design Basics
		Ben	<b>1</b>	Safety Analysis
<b>10:00</b>	<b>10:15</b>			<b>Break</b>
		Brad	<b>1</b>	Economic Analysis
		Jeremy	<b>2</b>	FHWA Controlling Elements
		Jeremy	<b>3</b>	Functional Class/Design Speed
<b>11:30</b>	<b>12:30</b>			<b>Lunch</b>
		Brad	<b>4</b>	Stopping Sight Distance
		Brad	<b>5</b>	Cross Slope <b>(Problem #1)</b>
<b>2:15</b>	<b>2:30</b>			<b>Break</b>
		Brad	<b>5</b>	Cross Slope <b>(Problem #1 cont.)</b>
		Ben	<b>6</b>	Maximum Grade
		Ben	<b>7</b>	Horizontal Curve Radius
		Ben	<b>8</b>	Superelevation Rate <b>(Problem #2)</b>
<b>4:25</b>	<b>4:30</b>	Jeremy		<b>Closing</b>

DAY 2		Speaker	Tab	Topic
<b>8:15</b>	<b>8:30</b>			<b>Sign-in</b>
		Jeremy	<b>9</b>	Lane Width
		Jeremy	<b>10</b>	Shoulder Width
		Jeremy	<b>11</b>	HSM Predictive Method
<b>9:45</b>	<b>10:00</b>			<b>Break</b>
		Jeremy	<b>11</b>	HSM – Shoulder Width example <b>(Problem #3)</b>
<b>11:30</b>	<b>12:30</b>			<b>Lunch</b>
		Brad	<b>12</b>	Vertical Clearance
		Brad	<b>12</b>	Vertical Clearance Example <b>(Problem #4)</b>
		Brad	<b>13</b>	Structural Capacity
<b>2:15</b>	<b>2:30</b>			<b>Break</b>
		Brad	<b>14</b>	Lateral Offset/Clear Zone & RSAP Example
		Ben	<b>15</b>	Justification/Approval & Lessons Learned
<b>4:15</b>	<b>4:30</b>	Jeremy		<b>Closing</b>

# DESIGN EXCEPTIONS!

<<<W-O-R-K-S-H-O-P>>>

FL DOT, District 6 Tuesday, July 19, 2016 Miami, FL

## Performance-Based Roadway Design

**Balance Impacts**



SAFETY SCOUR  
MOBILITY NLRB  
ECONOMIC REVENUE  
ENVIRONMENT CONTEXT  
SUSTAINABLE

## Driving Force: Governing Design Criteria

Laws, Policy, Procedure, & Definitions



## State Engineers Perform Safety Analysis

Florida Department of Transportation



## Project Basics and Scoping

Florida Department of Transportation



## Statewide Safety Analysis

Florida Department of Transportation



## COMING SOON: DE/DV HANDBOOK!

Any Questions?



## Design Exception Resource Deck

Florida Department of Transportation



## CHANGE IS HERE: CONTROLLING ELEMENTS ANALYSIS

Section A Tuesday, July 19, 2016 Page A2  
(More Page A1)

## FEDERAL REGISTER ENTRY UPDATES DESIGN ELEMENTS

FEDERAL REGISTER  
U.S. DEPARTMENT OF JUSTICE



## Revision of Thirteen Controlling Criteria for Design: Notice and Request for Comment

U.S. DEPARTMENT OF JUSTICE



## APPROVAL PROCESS FOR DEs & DVs

Engineers-of-Record



## Controlling Element: Design Speed

Controlling Element: Design Speed



## Controlling Element: Lane, Shoulder, and Bridge Width

Controlling Element: Lane, Shoulder, and Bridge Width



## Controlling Element: Horizontal Curve Radius - 100 ft R/C

Controlling Element: Horizontal Curve Radius - 100 ft R/C



## Controlling Element: Minimum Grade - 0.5% @ 3%

Controlling Element: Minimum Grade - 0.5% @ 3%



## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



## Controlling Element: Vertical Clearance

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## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



## Controlling Element: Vertical Clearance

Controlling Element: Vertical Clearance



# DESIGN EXCEPTIONS!

<<<W-O-R-K-S-H-O-P>>>

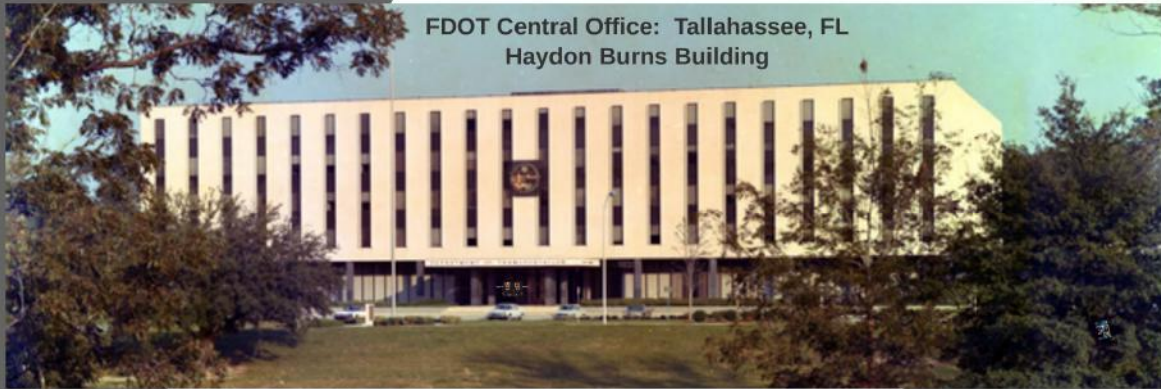
FL DOT, District 6 Tuesday, July 19, 2016 Miami, FL

## Performance-Based Roadway Design



## Driving Force: Governing Design Criteria





# Quality Assurance



<http://www.dot.state.fl.us/rddesign/QA/QA.shtm>

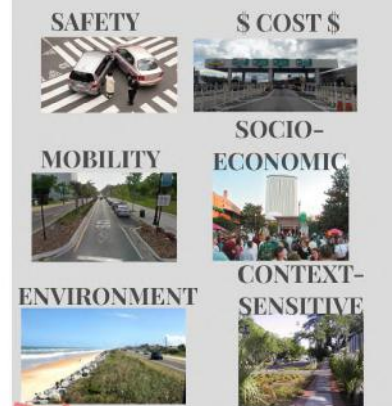
## 2-DAY TOPIC OVERVIEW

Design Basics  
Safety Analysis & Crash Review  
Economic Analysis  
Controlling Elements  
Highway Safety Manual (HSM)  
Roadside Safety Analysis Program (RSAP)  
Justification/Documentation  
Approval Process  
Wrap Up/Questions

# Performance-Based Roadway Design



## Balance Impacts



How does FDOT address this?

Driving Force:  
Laws, Policy,



## Project

3 Main Types of Const



Safe

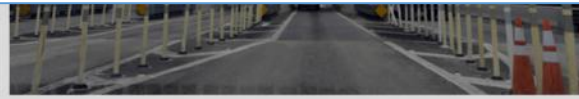
**SAFETY**



**\$ COST \$**



**SOCIO-**



**MOBILITY**



**SOCIO-**

**ECONOMIC**



**CONTEXT-**



## ENVIRONMENT



## CONTEXT-SENSITIVE



How does FDOT address this?

"CSS seeks to balance the need to move vehicles efficiently and safely with other desirable outcomes, including historic preservation, environmental sustainability, and the creation of vital public spaces."

# FDOT MISSION:

The department will provide a *safe* transportation system that ensures the *mobility* of people and goods, enhances *economic* prosperity and preserves the quality of our *environment and communities*.



Florida Department of Transportation

RICK SCOTT  
GOVERNOR

605 Suwannee Street  
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.  
SECRETARY

POLICY

Effective: September 17, 2014  
Office: Design Director  
Topic No.: 000-625-017-a


## COMPLETE STREETS

It is the goal of the Department of Transportation to implement a policy that promotes safety, quality of life, and economic development in Florida. To implement this policy, the Department will routinely plan, design, construct, reconstruct and operate a context-sensitive system of "Complete Streets." While maintaining safety and mobility, Complete Streets shall serve the transportation needs of transportation system users of all ages and abilities, including but not limited to:

- Cyclists
- Motorists
- Transit riders
- Freight handlers
- Pedestrians

The Department specifically recognizes Complete Streets are context-sensitive and require transportation system design that considers local land development patterns and built form. The Department will coordinate with local governments, Metropolitan Planning Organizations, transportation agencies and the public, as needed to provide Complete Streets on the State Highway System, including the Strategic Intermodal System.

This **Complete Streets Policy** will be integrated into the Department's internal manuals, guidelines and related documents governing the planning, design, construction and operation of transportation facilities.

  
Ananth Prasad, P.E.  
Secretary

**POLICY**

Effective: September 17, 2014  
Office: Design Director  
Topic No.: 00p-625-017-a

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# Driving Force: Governing Design Criteria

## Laws, Policy, Procedure, & Definitions

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# DESIGN CRITERIA:

- > Used to balance impacts across the 6 categories (performance-based design)
- > Expressed as minimum values or range of values.
- > Established through years of practice and research.
  - late 1800's - first-iteration cars;
  - 1903 - Ford's First Model A
- > Frequently updated as research & experience warrant.



# FHWA:

Federal Code of Regulations  
(23CFR625)

National Highway System (NHS)

- > 160,955 miles of highways
- > economy, mobility, defense

Mitigation Strategies  
for Design Exceptions

Quality Assurance	Frequently Asked Questions
	Handbook
	Helpful Links
	Practical Design
	Tools
	Training

## Roadway Design

Roadway Design / Quality Assurance / Helpful Links

### Helpful Links



Publications	FDOT	Federal-Aid Partnership Agreement	Standard-Specifications-Road/Bridge Construction
		Plans-Preparation-Manual	Median Handbook
		Design Standards	Strategic Highway Safety Plan-Florida
		Florida-Greenbook	
	FHWA	Mitigation-Strategies ( <i>online version</i> )	Interstate Access Guide
		Mitigation-Strategies ( <i>download version</i> )	Manual on Uniform Traffic Control Devices (MUTCD)
		Flexibility-in-Highway-Design	
	AASHTO	Geometric Design of Highways and Streets 2011 - FDOT Login Required	Strategic Highway Safety Plan
		Highway Safety Manual	Roadside Design Guide 2011 - FDOT Login Required
		Interstate Design Standards	

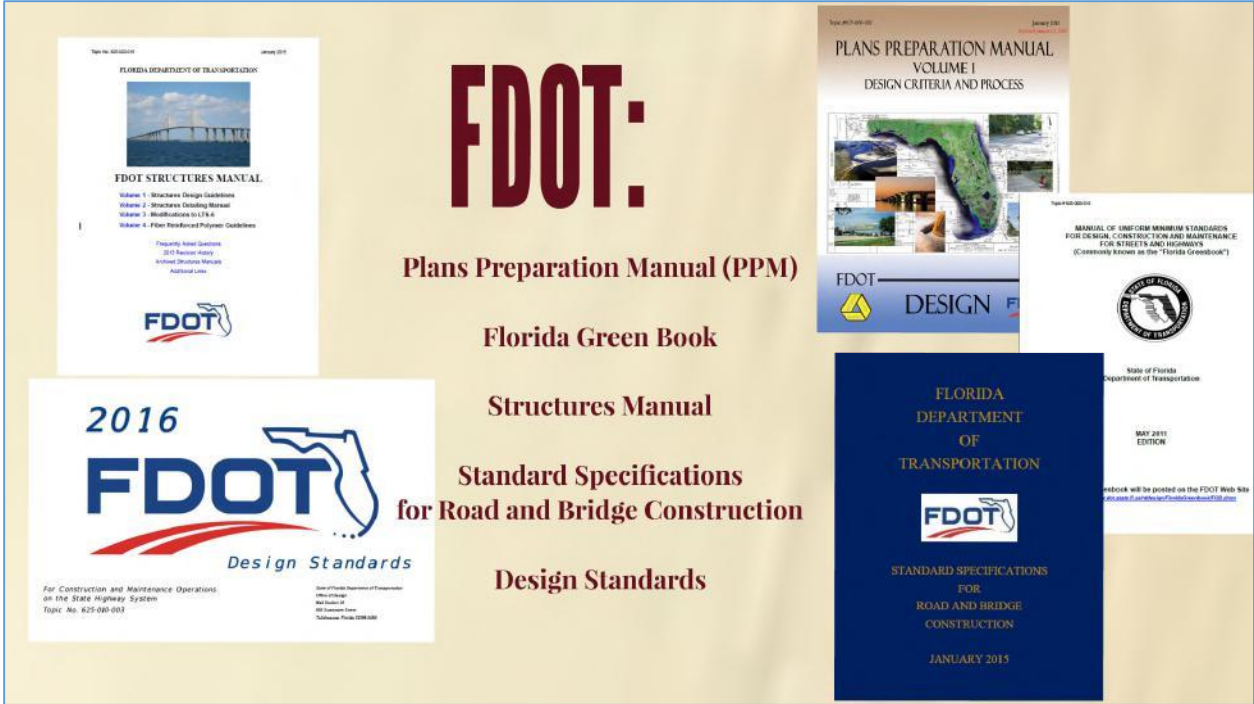
# AASHTO:

**FHWA has adopted many AASHTO publications as the minimum design criteria for the NHS.**

**A Policy on Geometric Design of Highways and Streets**

**A Policy on Geometric Design Interstate System**

**Roadside Design Guide**



# FDOT:

- Plans Preparation Manual (PPM)
- Florida Green Book
- Structures Manual
- Standard Specifications for Road and Bridge Construction
- Design Standards

A Design Exception is required when the proposed design elements are below both the Department's governing criteria and AASHTO's new construction criteria for the Controlling Design Elements.

## Chapter 23

### Design Exceptions and Design Variations

#### 23.1 General

The Department's roadway design criteria and standards are contained in this Volume and are usually within the desirable ranges established by AASHTO. The values given in this Volume have been accepted by FHWA and govern the design process. When it becomes necessary to deviate from the Department's criteria, early documentation and approval are required. There are two approval processes used by designers: Design Exceptions and Design Variations. This chapter does not address the Utility Exception Procedure Topic No. 710-020-002 used by Utility Agencies/Owners to relieve their obligation to comply with a design requirement. **When the Department's criteria are met, no Design Exception or Design Variation is required.** However, when the Department's criteria are not met, a Design Exception, or Design Variation is required. This requirement applies to all entities affecting planning, design, construction and maintenance.

# Project Basics and Scoping

#### 3 Main Types of Construction:



New Construction

Re-  
Construction



RRR  
Construction

#### Other Types of Improvements:

Drainage Safety Traffic Ops

#### Early in Project Life-Cycle:

Project requirements well-defined

Identification of DE/DVs

High Speed/Low Speed Elements

#### Level of Documentation:

Design Memo for all Elements

Design Variation for all PPM Criteria

Exception - all FHWA Controlling Elements

### 3 Main Types of Construction:



New Construction

Re-Construction



RRR Construction

Other Types

Drainage

Early in

Project

Identification

High

Level of

Design

Design

Exception

Construction:

Construction



RR

Construction

Other Types of Improvements:

Drainage Safety Traffic Ops

Early in Project Life-Cycle:

Project requirements well-defined

Identification of DE/DVs

High Speed/Low Speed Elements

Level of Documentation:

Design Memo for all Elements

Design Variation for all PPM Criteria

Exception - all FHWA Controlling Elements



Construction

**Design Variation for all PPM Criteria**  
Exception - all FHWA Controlling Elements




**Safety doesn't happen  
by accident!**

**FHWA ESTABLISHES REGIONAL CONTROLS**

A billboard advertisement for "Safety Analysis". The title "Safety Analysis" is in a large, bold, blue font. To the right is a green shield-shaped logo with a white triangle inside, containing a blue and white emblem and the word "SAFETY" in green. Below the title is a bulleted list of topics. The billboard is mounted on a metal structure against a blue sky with light clouds.

## Safety Analysis



- Defining Safety for Roadway Design
  - Nominal Safety
  - Substantive Safety
- Safety Factors for Safety Analysis
  - Crash Reduction Factors (CRFs)
  - Crash Modification Factors (CMFs)
- Analytical Methods include Historical and Predictive
  - Historic Crash Method (HCM)
  - Highway Safety Manual (HSM)
  - Roadside Safety Analysis Program (RSAP)
- Safety Analysis Tools for Design Exceptions and Variations

## Defining Safety for Road Design

**Safe without meeting Nominal Safety?**



NOMINAL SAFETY

**Safety analysis is a process of reviewing both**



SUBSTANTIVE SAFETY

**Safety is the central theme in a decision to accept or approve a Design Exception or Variation.**

## Defining Safety for Road Design



NOMINAL SAFETY

*Examined in reference to compliance with standards, warrants, guidelines and sanctioned design procedures*





## Defining Safety for Road Design



### SUBSTANTIVE SAFETY

*Actual or expected crash frequency and severity for a highway or roadway segment or intersection*



**Determined by the roadway's crash experience measured over a period of time.**

**How much time?**

*Source: FHWA Resource Center  
Developing Strong Justifications for Design Exceptions*

## Design Exceptions & Variations



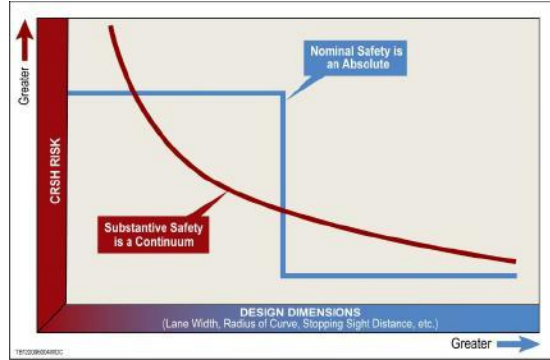
➤ FHWA Mitigation Strategies Guide states

“ The objective with a Design Exception should be to understand the **quantifiable substantive safety** effects expected with a nominally unsafe design decision.”



## Nominal vs. Substantive:

Nominal safety changes abruptly along with criteria change



Substantive safety continuously changes with changes in historical or predicted crashes.

## Safety Factors



Crash Reduction Factors (CRFs)



Crash Modification Factors (CMFs)

## CRFs



### ➤ CRFs (Crash Reduction Factors):

- Percent reduction in crashes
- Result of one or more countermeasures
- Historical Crash Analyses
  - Attributable Crashes
  - Benefit portion of B/C equation

**27% for  
Illumination**



## CMFs




### ➤ CMFs (Crash Modification Factors):


- Percent change in number of crashes
- Result of one or more countermeasures
- Generally for Predictive Analyses (HSM)
- Apply to total amount of crashes for each alternative.
- $CMF = 1 - (CRF/100)$


**0.73 for Illumination**




## Analytical Methods and Tools

 Historical



 Predictive



## Analytical Methods and Tools

➤ Historical 

- Historical Crash Method
- 5 Year Analysis
- Uses Historical Crashes
- Use CRFs.



## Analytical Methods and Tools

### ➤ Predictive



- Highway Safety Manual (HSM)
- Roadside Safety Analysis Program (RSAP)
- Design Life Analysis
- Uses future crashes
- Uses CMFs.



## Historical Crash Method



- Compares crashes attributed to the deficient condition to the construction costs to correct the condition to meet criteria.
- Uses CRFs.
  - Alternative Benefit/Cost (B/C) comparison
  - Crash analysis with CRFs





### Safety Analysis Tools for Design Exceptions and Variations

SAFETY ANALYSIS TOOLS FOR DESIGN EXCEPTIONS AND VARIATIONS (MAY 2015)

13 Controlling Design Elements	2-lane Undivided				4-lane Undivided				4-lane Divisible				Freeway				Special Design Lane				Bypass		All-Other		Reference to the State Safety Code (SSC) or other applicable design
	Highway Safety Manual		FHWA Clearinghouse CMFs		Highway Safety Manual		FHWA Clearinghouse CMFs		Highway Safety Manual		FHWA Clearinghouse CMFs		Highway Safety Manual		FHWA Clearinghouse CMFs		Highway Safety Manual		FHWA Clearinghouse CMFs		Available Safety Manual Design	Additional Design			
	Part C	Part D	Part C	Part D	Part C	Part D	Part C	Part D	Part C	Part D	Part C	Part D	Part C	Part D	Part C	Part D	Part C	Part D							
Design Speed																								SSC 102	
Lane Width	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	SSC 102, 104, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121	
Shoulder Width	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	SSC 102, 104, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121	
Bridge Width																								SSC	
Horizontal Alignment	✓																							SSC 101	
Superelevation	✓																							SSC 101, 102	
Vertical Alignment	✓																							SSC	
Grade	✓																							SSC	
Grading High Water																								SSC	
Clearance																								Minimum 14' for 40' span, 16' for 50' span	
Vertical Clearance																								SSC 101, 102, 103, 104, 105, 106, 107, 108, 109, 110	
Vehicle Clearance (above other structures)	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	SSC 101, 102, 103, 104, 105, 106, 107, 108, 109, 110	
Structural Capacity																								SSC	

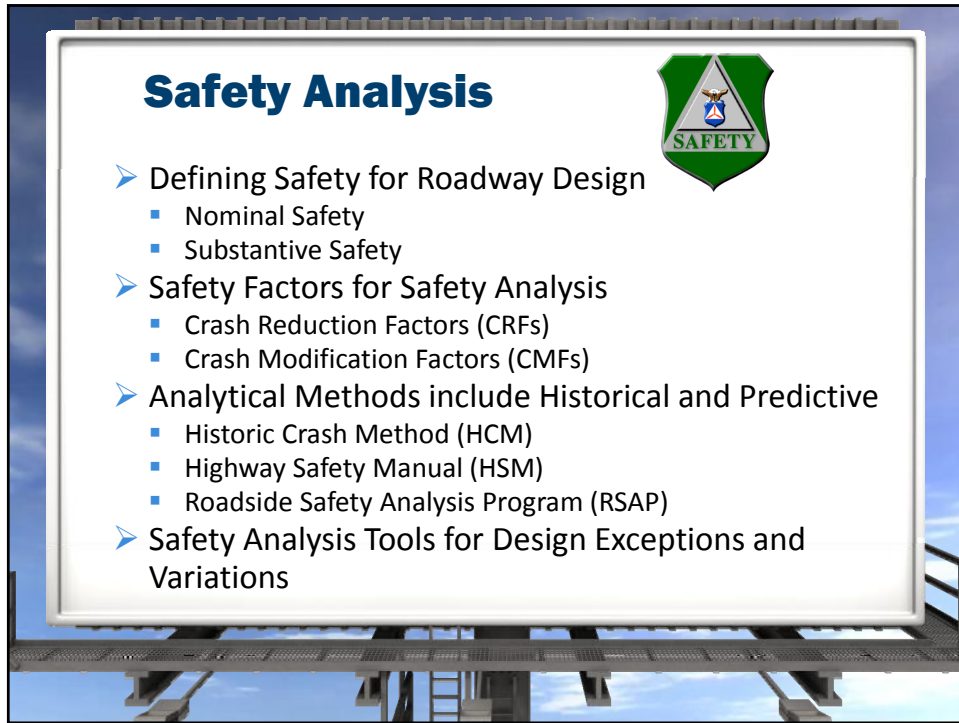
Notes: 1. The reference number of this spreadsheet will be updated as needed.  
 2. The SSC is the State Safety Code. It is a collection of rules and regulations that govern the design and construction of transportation facilities. It is the responsibility of the State DOT to ensure that the SSC is up-to-date and reflects the current state of the art.  
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### Safety Analysis Tools for Design Exceptions and Variations

13 Controlling Design Elements	2-lane Undivided				4-lane Undivided				High Part
	Highway Safety Manual		FHWA Clearinghouse CMFs	Highway Safety Manual		FHWA Clearinghouse CMFs			
	Part C	Part D		Part C	Part D				
Design Speed			5-Star (5)			5-Star (5)		<i>CMFs with 3 Stars or more recommended</i>	
Lane Width	✓	✓	3-Star (4) 4-Star (6) 5-Star (12) Unrated (7)	✓	✓	3-Star (4) 4-Star (6) 5-Star (10) Unrated (5)	✓		
Shoulder Width	✓	✓	3-Star (4) 4-Star (6) 5-Star (15) Unrated (7)	✓	✓	3-Star (4) 4-Star (6) 5-Star (10) Unrated (5)	✓		
Bridge Width									
Horizontal Alignment	✓	✓							






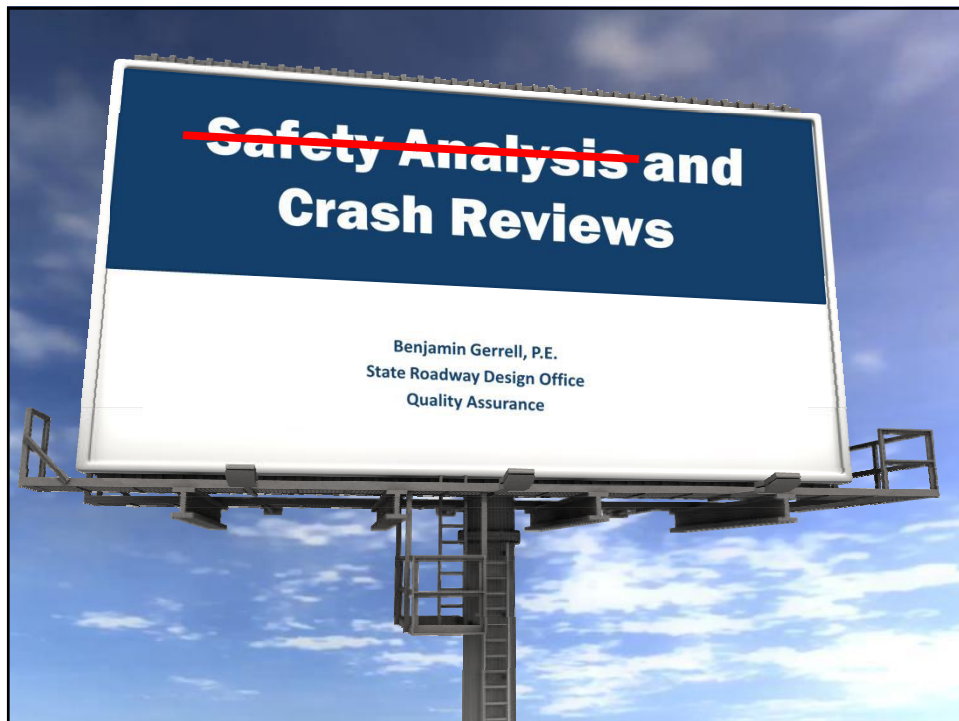


A billboard with a white background and a blue border, set against a blue sky background. The billboard features the title "Safety Analysis" in bold blue text at the top left. To the right of the title is a green shield-shaped logo with a white triangle inside, containing a blue and white symbol and the word "SAFETY" in green at the bottom. Below the title is a bulleted list of topics.

## Safety Analysis



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A billboard with a blue top section and a white bottom section, set against a blue sky background. The top section contains the text "Safety Analysis and Crash Reviews" in white, with a red horizontal line striking through it. The bottom section contains the name and title of Benjamin Gerrell, P.E.

## ~~Safety Analysis and Crash Reviews~~

Benjamin Gerrell, P.E.  
State Roadway Design Office  
Quality Assurance

## Crash Reviews


- Crash Reports
- Historical Crash Analysis
  - Identify the Location
  - Gather Data
    - Crash Analysis Reporting (CAR) System old and new
  - Analyze Crashes
    - Contributing Factors



## Historical Crash Reports Provide Clues




### Historical Crash Analysis: Bridge Width Highlights



Identify the location(s)


Gather Data

Analyze Crashes



District Three: SR 97 Escambia County


### Historical Crash Analysis: Bridge Width Highlights



Identify the location(s)


Gather Data

Analyze Crashes




District Three: SR 97 Escambia County

### Historical Crash Analysis: Bridge Width Highlights



```
graph TD; A[Identify the location(s)] --> B[Gather Data]; B --> C[Analyze Crashes];
```




*District Three: SR 97 Escambia County*

### Historical Crash Analysis Highlights


```
graph TD; A[Identify the location(s)] --> B[Gather Data]; B --> C[Analyze Crashes];
```

**Establishing Limits**

- Project
  - MP 0.615 – 20.070
- Bridge
  - MP 16.087 – 16.101



### Historical Crash Analysis Highlights



Identify the location(s)


↓

Gather Data


↓

Analyze Crashes

- Analysis Period
  - 5 Complete Years of crash data
- What Years?
  - 2010 – 2014 Minimum



### Historical Crash Analysis Highlights



Identify the location(s)

↓

Gather Data

↓

Analyze Crashes

- Crash Analysis Reporting (C.A.R.) System
  - Detail or Summary Reports
  - Law Enforcement Crash Reports (Long Forms)
  - **Order CARS crash records through your Project Manager.**
    - Mainframe System (2010 and earlier crashes)
    - CAR on-line (for 2011 to 2014 crashes)





# Harmful Event vs Controlling Element

Code	Harmful Event (Crash Type)	DS	LW	SW	BW	HA	SE	VA	G	SSD	CS	VC	LO	SC
00	Unknown/Not Codad	X	X	X	X	X	X	X	X	X	X	X	X	X
01	Rear-End	X	X	X	X	X	X	X	X	X	X	X	X	X
02	Head-On	X	X	X	X	X	X	X	X	X	X	X	X	X
03	Angle	X	X	X	X	X	X	X	X	X	X	X	X	X
04	Left-Turn	X	X	X	X	X	X	X	X	X	X	X	X	X
05	Right-Turn	X	X	X	X	X	X	X	X	X	X	X	X	X
06	Sideswipe	X	X	X	X	X	X	X	X	X	X	X	X	X
07	Becket into	X	X	X	X	X	X	X	X	X	X	X	X	X
08	Collision with Parked Car	X	X	X	X	X	X	X	X	X	X	X	X	X
09	Collision with Moving Vehicle on Roadway	X	X	X	X	X	X	X	X	X	X	X	X	X
10	Collision with Pedestrian	X	X	X	X	X	X	X	X	X	X	X	X	X
11	Collision with Bicycle	X	X	X	X	X	X	X	X	X	X	X	X	X
12	Collision with Bicycle (Bike Lane)	X	X	X	X	X	X	X	X	X	X	X	X	X
13	Collision with Moped	X	X	X	X	X	X	X	X	X	X	X	X	X
14	Collision with Train	X	X	X	X	X	X	X	X	X	X	X	X	X
15	Collision with Animal	X	X	X	X	X	X	X	X	X	X	X	X	X
16	Hit Sign/ Sign Post	X	X	X	X	X	X	X	X	X	X	X	X	X
17	Utility/ Light Pole	X	X	X	X	X	X	X	X	X	X	X	X	X
18	Hit Guardrail	X	X	X	X	X	X	X	X	X	X	X	X	X
19	Hit Fence	X	X	X	X	X	X	X	X	X	X	X	X	X
20	Hit Concrete Barrier Wall	X	X	X	X	X	X	X	X	X	X	X	X	X
21	Hit Bridge/ Pier/ Abutment / Rail	X	X	X	X	X	X	X	X	X	X	X	X	X
22	Hit Tree/ Shrubbery	X	X	X	X	X	X	X	X	X	X	X	X	X
23	Collision with Construction Barricade Sign	X	X	X	X	X	X	X	X	X	X	X	X	X
24	Collision with Traffic Gate	X	X	X	X	X	X	X	X	X	X	X	X	X
25	Collision with Crash Attenuators	X	X	X	X	X	X	X	X	X	X	X	X	X
26	Collision with Fixed Object Above Road	X	X	X	X	X	X	X	X	X	X	X	X	X
27	Hit Other Fixed Object	X	X	X	X	X	X	X	X	X	X	X	X	X
28	Collision with Moveable Object on Road	X	X	X	X	X	X	X	X	X	X	X	X	X
29	Ran in Ditch Culvert	X	X	X	X	X	X	X	X	X	X	X	X	X
30	Ran Off Road into Water	X	X	X	X	X	X	X	X	X	X	X	X	X
31	Overturned	X	X	X	X	X	X	X	X	X	X	X	X	X
32	Occupant Fall from Vehicle	X	X	X	X	X	X	X	X	X	X	X	X	X
33	Jackknifed	X	X	X	X	X	X	X	X	X	X	X	X	X
34	Fire	X	X	X	X	X	X	X	X	X	X	X	X	X
35	Explosion	X	X	X	X	X	X	X	X	X	X	X	X	X
36	Downhill Runaway	X	X	X	X	X	X	X	X	X	X	X	X	X
37	Cargo Loss or Shift	X	X	X	X	X	X	X	X	X	X	X	X	X
38	Separation of Units	X	X	X	X	X	X	X	X	X	X	X	X	X
39	Median Crossover	X	X	X	X	X	X	X	X	X	X	X	X	X
77	All other (Specify)	X	X	X	X	X	X	X	X	X	X	X	X	X

**Legend:**  
 DS = Design Speed  
 LW = Lane Width  
 SW = Shoulder Width  
 BW = Bridge Width  
 HA = Horizontal Alignment  
 SE = Superelevation  
 VA = Vertical Alignment  
 G = Grade  
 SSD = Stopping Sight Distance  
 CS = Cross Slope  
 VC = Vertical Clearance  
 LO = Lateral Offset  
 SC = Structural Capacity



REPORT ... CAP013-01  
 DATE ... 06/05/2013  
 TIME ... 10:21:28

FLORIDA - DEPARTMENT OF TRANSPORTATION  
 CRASH DATA DETAIL AND EXTRACT

CRASH ANALYSIS  
 L - DIST BY ROADWAY, MILE PER HOUR

COMMENT: FROM: 01/01/2007 TO 12/31/2011  
 TO: 01/01/2012 TO 12/31/2011

MP: 008.334  
 MP: 010.843

**Eliminate by Contributing Cause**

C	F	N	M	N	S	ADT	Y	M	D	R	CRCC	A	H	L	M	K	T	R	S	L	K	A	V	Y	V	V	F	L	C	C	S	H					
82840903048040000	01	920	1729	95	012300	11	12	07	16	U-4DP	0	09	1	1	01	01	03	R	1	02	01	01	M	03	02	13	01	01	02	N	10	00	56	2	0	0	
82813680748040000	01	930	1729	95	012300	11	11	15	16	U-4DP	0	01	2	2	1	01	01	01	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	44	3	0	0
768417400748040000	01	939	1729	95	016800	07	09	14	15	U-4DP	0	01	1	2	1	03	01	01	R	2	03	01	01	M	01	02	00	01	01	02	N	08	00	61	2	0	0
768432310748040000	01	941	1729	95	016800	07	09	18	13	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	38	2	0	0
768434310748040000	01	942	1729	95	016800	07	09	16	16	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	38	2	0	0
768435700748040000	01	958	1729	95	016800	07	09	10	03	U-4DP	1	03	4	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	36	1	0	0
768435700748040000	01	958	1729	95	016800	07	09	10	03	U-4DP	1	03	4	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	36	1	0	0
76843750748040000	01	958	1729	95	016800	07	09	10	13	U-4DP	0	06	1	3	2	05	01	02	L	1	00	00	03	M	02	01	00	01	01	01	N	13	00	26	2	0	0
768442100748040000	01	958	1729	95	016800	07	09	11	03	U-4DP	1	00	4	1	1	05	01	03	R	2	03	01	01	M	01	02	00	01	01	02	N	08	00	56	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01	955	1729	95	016800	07	09	10	05	U-4DP	0	01	1	1	1	05	01	03	R	2	01	01	01	M	01	02	05	01	01	02	N	08	00	33	2	0	0
768473040748040000	01																																				





## Historical Crash Analysis Highlights

Identify the location(s)

↓

Gather Data

↓

Analyze Crashes

- Crash Analysis Reporting (C.A.R.) System
  - Detail or Summary Reports
  - Law Enforcement Crash Reports (Long Forms)

## Crash Reports

**FLORIDA TRAFFIC CRASH REPORT**

SECTION 1: GENERAL INFORMATION

SECTION 2: CRASH INFORMATION

SECTION 3: VEHICLE INFORMATION

SECTION 4: DRIVER INFORMATION

SECTION 5: WITNESS INFORMATION

SECTION 6: INVESTIGATOR INFORMATION

SECTION 7: CRASH ANALYSIS

SECTION 8: DAMAGE INFORMATION

SECTION 9: OTHER INFORMATION

**VEHICLE 2**

SECTION 1: GENERAL INFORMATION

SECTION 2: CRASH INFORMATION

SECTION 3: VEHICLE INFORMATION

SECTION 4: DRIVER INFORMATION

SECTION 5: WITNESS INFORMATION

SECTION 6: INVESTIGATOR INFORMATION

SECTION 7: CRASH ANALYSIS

SECTION 8: DAMAGE INFORMATION

SECTION 9: OTHER INFORMATION


## Crash Reports

The image shows a standard traffic crash report form. It is divided into several sections: 'SECTION 1' for general information, 'SECTION 2' for vehicle and driver details, 'SECTION 3' for witness information, and a large 'NARRATIVE' section for describing the incident. The form includes checkboxes for various conditions and fields for names, addresses, and phone numbers.

## ONLY the Crash Reports Tells the Story




## Historical Crash Analysis Highlights



```
graph TD; A[Identify the location(s)] --> B[Gather Data]; B --> C[Analyze Crashes];
```

- Contributing Factors
  - Human (Driver behavior)
  - Vehicle (Vehicle design and maintenance)
  - Environmental (Weather)
  - Road Condition (Road design)\*\*

## Historical Crash Analysis Highlights



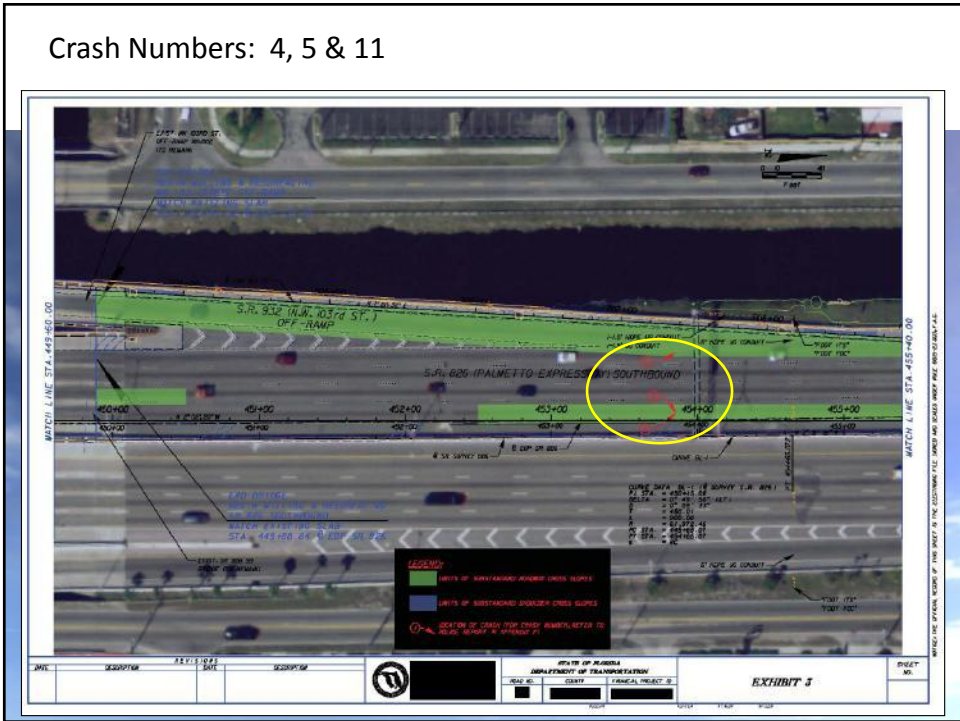
```
graph TD; A[Identify the location(s)] --> B[Gather Data]; B --> C[Analyze Crashes];
```

- Crash Patterns
  - Identify Crash Patterns and Significant Trends.

## Cross Slope Example: Crash Analysis

A Design Exception Request for Substandard (flat) Cross Slope on a RRR Project:

- 5 years of crash data reveals 434 crashes within the design exception limits.
- 61 occurred under wet pavement conditions.
- Police reports indicate 8 out of 61 crashes may have been attributed to substandard cross slope.
- A crash diagram was used for further evaluation.



## Safety Analysis and Crash Review

### Key Points

- Crash Reports
- Historical Crash Analysis
  - Identify the Location
  - Gather Data
    - Crash Analysis Reporting (CAR) System old and new
  - Analyze Crashes
    - Contributing Factors

## Who has the first question??



## **Design Exceptions & Variations Workshop**

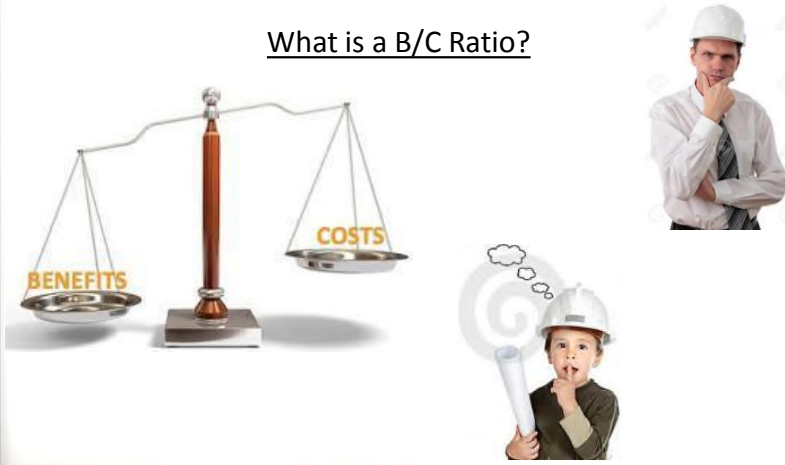
### **Economic Analysis**

#### **Economic Analysis**

- B/C Ratio
- 7-Step Process
- Safety Analysis (BENEFIT)
- Correction or Countermeasure (COST)
- How to Calculate/Interpret the Ratio
- Tool from CO/RDO

## Economic Analysis

What is a B/C Ratio?



The image shows a scale of justice with 'BENEFITS' on the left pan and 'COSTS' on the right pan. To the right, a man in a white shirt and tie is thinking, and a child in a hard hat is holding a rolled-up blueprint with a thought bubble above their head.

## Economic Analysis

B/C Analysis – 7 Steps

*BENEFIT* {

1. # years of crash data
2. # of attributable crashes
3. Societal cost (cost per crash)
4. Crash Reduction Factor (CRF)
5. Determine benefit

*COST* {

6. Estimate cost
7. Calculate B/C ratio



## Economic Analysis

1. # years of crash data
  - Min. of 5 (most-recent)
2. # correctable crashes
  - # crashes potentially *attributable* to deficiency
3. Societal cost (cost per crash)
  - Provided by SSO; found by facility type in PPM Table 23.5.1



## Economic Analysis

### 3. Societal cost (cost per crash)

Topic #625-000-007  
Plans Preparation Manual, Volume 1

January 1, 2016

Table 23.5.1 FDOT (HSIPG) Average Crash Costs by Facility Type

FACILITY TYPE	DIVIDED			UNDIVIDED		
	URBAN	SUBURBAN	RURAL	URBAN	SUBURBAN	RURAL
2-3 Lanes	\$109,686	\$187,990	\$342,662	\$125,974	\$245,281	\$526,887
4-5 Lanes	\$119,072	\$216,234	\$464,901	\$107,908	\$161,173	\$115,320
6+ Lanes	\$117,867	\$153,957	\$313,317	\$62,606	n/a	n/a
Interstate	\$153,963	n/a	\$341,754	n/a	n/a	n/a
Turnpike	\$147,939	n/a	\$254,951	n/a	n/a	n/a

Average Cost/Crash: \$155,695

### Economic Analysis

4. Crash Reduction Factor (CRF) 

- CMF Clearinghouse
- FHWA
- State Safety Office

For Historical Crash Analysis, use CRFs.  
 FDOT's CARS (mainframe)

For Predictive Crash Analysis, use CMFs.  
 Roadside Safety Analysis Program (RSAP)  
 Highway Safety Manual (HSM)

### Economic Analysis

4. Crash Reduction Factor (CRF) - CMF Clearinghouse

▼ Countermeasure: Install centerline and shoulder rumble strips

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
0.8	20	★★★★★	All	All	Rural	Persaud et al., 2015	CMF for total crashes (all ... <a href="#">[read more]</a> )
0.771	22.9	★★★★★	All	Fatal,Serious injury,Minor injury	Rural	Persaud et al., 2015	CMF for injury crashes (K, ... <a href="#">[read more]</a> )
0.742	25.8	★★★★★	Run off road	All	Rural	Persaud et al., 2015	CMF for run-off-road crashes (all ... <a href="#">[read more]</a> )
0.632	36.8	★★★★★	Head on	All	Rural	Persaud et al., 2015	CMF for head-on crashes (all ... <a href="#">[read more]</a> )

## Economic Analysis

### 4. Crash Reduction Factor (CRF) - State Safety Office

**Crash Reduction Factors (as of 02/14/2014)**  
Florida Department of Transportation

Note: Use of CRFs based on less than 5 projects (Column C) are not recommended for use in B/C analysis.

ID	Improvement	Number of Projects	Crash Reduction Factors																	
			Total	Fatal	Injury	PDO	Urban	Rural	Night	Day	Rear-End	Angle	Left-Turn	Right-Turn	Sideswipe	Fixed-Object	Head-On	Pedestrian	Ran-Off-Road	Wet Surfaces
1	New signal at channelized intersection	31	12	15	20	-1	13	7	4	16	-51	53	16	70	10	-40	53	-90	-90	20
2	New signal at non-channelized intersection	11	15	58	15	14	20	-27	21	13	-5	11	34	23	23	51	-46	13	26	11
3	Add signal and channelization	19	19	-8	25	13	17	21	-41	31	-8	40	50	26	-16	-3	48	58	51	34
4	Modify signal at channelized intersection	7	11		31	-18	11		-13	18	29	20	17	7	-4	-272	-272	7	-86	22
5	Modify signal at non-channelized intersection	2	-99	-23	-118	-85	38	-141	-126	-73	-48	-94	-188	100	-23	38				-48
7	Modify signal and add channelization	10	28	-87	27	29	28	30	-1	35	11	37	49	25	-42	-20	-87	38	-17	
8	Remove signal	0																		
9	Add flashing warning signal (signalization)	4	-2	100	-37	28		-2	59	-22	80	-30	-117	100	-63	100			100	46
10	Interconnect traffic signals	0																		
11	New LT channelization w/ LT phase (signalized)	9	17	59	36	-9	16	44	16	19	5	16	50	-42	12	-1	15	29	68	18
12	New LT channelization w/o LT phase (signalized)	10	31	79	35	26	31	39	33	30	18	46	61	-42	39	-26	38	41	12	49
13	New LT channelization (nonsignalized intersection)	46	3	61	9	-6	-6	-20	-26	9	-5	7	24	-42	1	-19	-26	6	0	21
14	Modify intersection at signalized intersection	28	6	-24	13	0	5	78	1	8	7	10	28	11	3	21	-9	16	24	18
15	Modify intersection at non-signalized intersection	6	18	66	32	6	18	100	13	15	10	25	59	43	31	-53	39	-2	-2	17

## Economic Analysis

### 5. Determine benefit

$$\text{Annual Benefit} = \frac{\overset{2}{\# \text{ Correctable Crashes}} \times \overset{3}{\text{Cost per Crash}} \times \overset{4}{\text{CRF}}}{\underset{1}{\# \text{ Years of Crash Data}}}$$



### Economic Analysis

6. Estimate cost - using Avg. Unit Cost x Pay Item Qty

INFONET>Offices>Estimates>Historical Cost Info>Statewide Averages

RESPON 01/25/2016-07-00:00 Page: 1

Florida Department of Transportation  
Item Average Unit Cost  
From 2015/07/01 to 2015/12/31

Contract type: CC STATEWIDE  
Displaying: VALID ITEMS WITH HITS  
From: 0102 1 To: 9999999

Item	No. of Cnts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0102 1	79	\$792.48	\$19,096,192.87	27,185.000	EA	N	MAINTENANCE OF TRAFFIC
0102 2 1	21	\$426,081.60	\$9,759,861.47	23.000	LS	N	SPECIAL DETOUR 1
0102 2 2	14	\$142,935.67	\$2,144,038.95	15.000	LS	N	SPECIAL DETOUR 2
0102 2 3	7	\$42,718.00	\$291,729.00	8.000	LS	N	SPECIAL DETOUR 3
0102 2 4	7	\$26,288.71	\$179,009.90	7.000	LS	N	SPECIAL DETOUR 4
0102 2 5	4	\$75,095.00	\$300,008.00	4.000	LS	N	SPECIAL DETOUR 5
0102 2 6	3	\$87,600.00	\$262,800.00	3.000	LS	N	SPECIAL DETOUR 6
0102 2 7	2	\$102,250.00	\$204,500.00	2.000	LS	N	SPECIAL DETOUR 7
0102 2 8	1	\$23,090.00	\$23,090.00	1.000	LS	N	SPECIAL DETOUR 8
0102 2 9	1	\$64,000.00	\$64,000.00	1.000	LS	N	SPECIAL DETOUR 9
0102 2 10	1	\$44,000.00	\$44,000.00	1.000	LS	N	SPECIAL DETOUR 10
0102 2 11	1	\$18,090.00	\$18,090.00	1.000	LS	N	SPECIAL DETOUR 11
0102 2 12	1	\$46,090.00	\$46,090.00	1.000	LS	N	SPECIAL DETOUR 12
0102 2 13	1	\$189,090.00	\$189,090.00	1.000	LS	N	SPECIAL DETOUR 13
0102 2 14	1	\$46,090.00	\$46,090.00	1.000	LS	N	SPECIAL DETOUR 14
0102 2 15	1	\$5,900.00	\$5,900.00	1.000	LS	N	SPECIAL DETOUR 15
0102 3	13	\$33.92	\$212,917.86	6,277.800	CY	N	COMMERCIAL MAIL FOR TEMP DIVERTWAY MAINT
0102 34	30	\$32.67	\$743,379.84	22,771.000	ME	N	TRAFFIC CONTROL OFFICERS
0102 40	73	\$2.26	\$675,019.27	2,992,471.000	ED	N	WORK ZONE SIGN
0102 41	6	\$22.00	\$132,000.00	600.000	EA	N	WORK ZONE SIGN
0102 62	2	\$0.49	\$5,762.77	11,627.000	ED	N	BARRIER MOUNTED WORK ZONE SIGN
0102 71 11	9	\$17.16	\$1,152,364.90	69,479.000	LF	N	BARRIER WALL, TEMP, F&I, CONCRETE

### Economic Analysis

6. Estimate cost - using Avg. Unit Cost x Pay Item Qty

INFONET>Offices>Estimates>Historical Cost Info>Statewide Averages

1	2	3	4
---	---	---	---

0102 62	\$ .49	ED	BARRIER MOUNTED WORK ZONE SIGN
0102 71 11	\$17.16	LF	BARRIER WALL, TEMP, F&I, CONCRETE

1. Pay Item Number
2. Weighted Average
3. Unit of Measure
4. Pay Item Description

## Economic Analysis

6. Estimate cost - using FDOT's LRE Program

[INFONET>Offices>Estimates>Long Range Estimates \(LRE\)](#)

---

Program Management / Estimates

### Long Range Estimates (LRE)

---

Cheri Sylvester  
 Estimating Systems Support Manager  
 Phone: (850) 414-4179  
 Fax: (850) 414-4199

Some Links below may require either Adobe PDF or Microsoft PowerPoint 2007 or higher. Adobe download. Free PowerPoint viewer download.

---

**Access to LRE**  
 Contact your [District Estimates Coordinator](#) for details and access information on the web based LRE Program.  
 Direct link to LRE: <https://www3.dot.state.fl.us/longrangeestimating> (Authorized users only)  
 LRE is also available through the WebGate.  
 Internet Browser incompatibility issues? [Click here!](#)

## Economic Analysis

6. Estimate cost - Service Life

**Recommended Service Life Criteria**

<b>Intersection &amp; Traffic Control</b>	<b>Years</b>
Channelization, left-turn bay	10
Install New Traffic Signals	10
Upgrade Traffic Signals	10
Improve Sight Distance	10
Construct Roundabout	20
Retime Coordinated System	5
Other inters. improvements, except structures	10

<b>Pedestrian &amp; Bicycle Safety</b>	<b>Years</b>
Construct Sidewalk	20
Install Fencing and Pedestrian Barrier	10
Construct Bikeway	20

### Economic Analysis

6. Estimate cost - Service Life

**Recommended Service Life Criteria**

Structures	Years
Widening bridge or major structure	20
Replace bridge or major structure	<del>30</del>
New bridge or major structure	<del>50</del> → 75
Replace/Improve Minor structure	20
Upgrade Bridge Rail	20
Pedestrian & Bicycle Overpass/Underpass	50
Mechanically Stabilized Earth (MSE) Walls	75
Mechanically Stabilized Earth (MSE) Walls: supporting abutments on spread footings	100
Other structure	20

### Economic Analysis

6. Estimate cost - Service Life

**Recommended Service Life Criteria**

Roadway	Years
Pavement widening, no lanes added	20
Lanes added without new median	20
Highway divided, new median	20
Shoulder widening or improvement	20
Skid treatment – grooving	10
Skid treatment – overlay	10
Flattening, clearing side slopes	20
Other cross section	20
Horizontal alignment changes (except at railroads)	20
Vertical alignment changes	20
Other alignments	20

### Economic Analysis

6. Estimate cost - Service Life

Recommended Service Life Criteria

Roadside Appurtenances	Years
Traffic signs	6
Breakaway sign or luminaire supports	10
Road edge guardrail	10
Median barrier	15
Markings, delineators	2
Lighting	15
Improve drainage structure	20
Fencing	10
Impact attenuators	10
Install Breakaway Utility Poles	10
Relocate Utility Poles	20
Install Guardrail End Treatment	10

### Economic Analysis

6. Estimate cost - Service Life

Recommended Service Life Criteria

Roadside Appurtenances	Years
Upgrade Guardrail	10
Upgrade or Install Concrete Median Barrier	20
Upgrade or Install Cable Median Barrier	10
Other roadside improvements	10

### Economic Analysis

6. Estimate cost - Service Life

**Recommended Service Life Criteria**

Railroad Grade Crossings	Years
Flashing lights replacing signs	10
Elimination - new/reconstructed grade separation	50
Elimination - relocation of highway or railroad	50
Illumination	15
Flashing lights replacing active devices	15
Automatic gates replacing signs	15
Automatic gates replacing active devices	15
Signing, marking	10
Crossing surface improvement	15
Other railroad grade crossing improvement	15

### Economic Analysis

6. Estimate cost - Service Life

**Recommended Service Life Criteria**

Other Safety Improvements	Years
Remove Obstacles	20
Install Edge Treatments	7
Install Centerline Rumble Strips	7
Raised pavement markers	5
Guide markers	5
Painted stripes	2
Safety provisions - roadside features and appurt.	20
All projects not otherwise classifiable	20



## Economic Analysis

### 6. Estimate cost - Capital Recovery Factor (Eng. Economics)

➤ Discount (or Interest) Rate:

- 4% Pavement Design      4% Value Engineering
- 4% Roadway Design      4% Safety

#### Capital Recovery Factors

Year	2%	3%	4%	5%	6%	7%
1	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700
2	0.5150	0.5226	0.5302	0.5378	0.5454	0.5531
3	0.3468	0.3535	0.3603	0.3672	0.3741	0.3811
4	0.2626	0.2690	0.2755	0.2830	0.2886	0.2952
5	0.2122	0.2184	0.2246	0.2310	0.2374	0.2439

## Economic Analysis

### 6. Estimate cost - Finding Capital Recovery Factor

➤ Intersection of...

- Discount rate and
- Service life

➤ Example:

20 yrs @ 4%

➤ Capital Recovery Factor:

**0.0736**

N	2%	3%	4%	5%	6%	7%
1	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700
2	0.5150	0.5226	0.5302	0.5378	0.5454	0.5531
3	0.3468	0.3535	0.3603	0.3672	0.3741	0.3811
4	0.2626	0.2690	0.2755	0.2830	0.2886	0.2952
5	0.2122	0.2184	0.2246	0.2310	0.2374	0.2439
6	0.1785	0.1846	0.1908	0.1970	0.2034	0.2098
7	0.1545	0.1605	0.1666	0.1728	0.1791	0.1856
8	0.1365	0.1425	0.1485	0.1547	0.1610	0.1675
9	0.1225	0.1284	0.1345	0.1407	0.1470	0.1535
10	0.1113	0.1172	0.1233	0.1295	0.1359	0.1424
11	0.1022	0.1081	0.1141	0.1204	0.1268	0.1334
12	0.0946	0.1005	0.1066	0.1128	0.1193	0.1259
13	0.0881	0.0940	0.1001	0.1065	0.1130	0.1197
14	0.0826	0.0885	0.0947	0.1010	0.1076	0.1143
15	0.0778	0.0838	0.0899	0.0963	0.1030	0.1098
16	0.0737	0.0796	0.0858	0.0923	0.0990	0.1059
17	0.0700	0.0760	0.0822	0.0887	0.0954	0.1024
18	0.0667	0.0727	0.0790	0.0856	0.0924	0.0994
19	0.0638	0.0698	0.0761	0.0828	0.0896	0.0968
20	0.0612	0.0672	0.0736	0.0802	0.0872	0.0944
21	0.0588	0.0649	0.0713	0.0780	0.0850	0.0923
22	0.0566	0.0627	0.0692	0.0766	0.0830	0.0904
23	0.0547	0.0608	0.0673	0.0741	0.0813	0.0887
24	0.0529	0.0590	0.0656	0.0725	0.0797	0.0872
25	0.0512	0.0574	0.0640	0.0710	0.0782	0.0858

## Economic Analysis

6. Estimate cost

$$\text{Annual Cost} = \sum ( \text{Element Cost} \times \text{Capital Recovery Factor} )$$

## Economic Analysis

7. Calculate B/C ratio

$$\text{B/C Ratio} = \frac{\text{Annual Benefit}}{\text{Annual Cost}}$$

B/C Ratio < 1.0 → Proposed improvement **is not** recommended

B/C Ratio ≥ 1.0 → Proposed improvement **is** recommended

Must apply **Engineering Judgment** while considering site-specific conditions (e.g., environment, traffic, geometric, operations)

## Economic Analysis


### B/C Analysis Worksheet (EXCEL)

INFONET>Offices>Roadway>Divisions>QA>Tools

---

		Intended users include highway project managers, designers, and traffic and safety reviewers in State and local highway agencies and engineering consulting firms.
B/C Analysis	BCAnalysis.xlsm	Benefit/Cost Analysis Spreadsheet Tool <span style="border: 1px solid red; padding: 2px;">(Revised Edition January 2016)</span>
PPM Checklist	Documentation Checklist	Central Office Design Exception and Variation Documentation Checklist

Instructions



Start B/C Analysis

## Benefit-Cost Analysis Template

- A benefit-cost analysis is a tool for assisting project managers when they are evaluating and comparing different alternatives.
- Results from a benefit-cost analysis, along with public input and environmental documentation, can be used to evaluate both the financial and social effects and impacts of alternatives when a decision needs to be made.
- From an economic perspective, are the benefits of location Alternative "A" worth the project costs? How does location Alternative "A" compare to Alternative "B" or "C"?
- Safety benefits are one of the principal benefits that can result from transportation improvements. Benefits occur when the number of crashes is reduced and/or the severity of the crashes is reduced on a facility or set of facilities because of the transportation improvement.

*Note: This template is a useful resource, but it remains necessary to apply engineering judgment and to consider site-specific environmental, traffic, geometric, and operational conditions which will affect the safety impact of a countermeasure.*

Rev. 02/2014

Introduction

Instructions

Operational Benefit-Cost

Service Life

CRF

Interest Factors

2014 5-year Avg. Cost Per Crash


## Instructions

B/C Analysis

Fill in "Blue" areas only

Select from drop-down list	District, County
Fill in	Date Prepared, Location Description, Section No., BMP, EMP
Select from drop-down list	Roadway Type (i.e. 2 - 3 lanes, urban, undivided)
Select from drop-down list	Control Element (i.e. Horizontal Clearance)
Improvement	Description of Improvement
Fill in	Cost for each element, If applicable
Fill in	Service Life for each element; Defaults are entered, See Service Life Tab, make changes as needed
Enter Total No. of Crashes	Crashes in the exception area
Enter No. of correctable crashes	Number of crashes that are correctable by the proposed correction
Enter No. of Years of crash data	Minimum of 5 years
Primary Crash Reduction Factor	Whole value (i.e. 30) FHWA CRF link or CRF (SSO) tab, other
Description	i.e. pavement grooving
Additional CRF	Not required, but more than one can be used; Whole value (i.e. 25)
Description	i.e. reconstruct curve
Additional CRF	Not required, but more than one can be used; Whole value (i.e. 45)
Description	i.e. superelevation
Comments	Enter any additional info including source info for CRF
Prepared by	Name of who prepared the analysis

Instructions



### Benefit-Cost Analysis

Clear Form

Instructions

District:  County:  Date Prepared:

Location:

Section:  Beg. Milepost:  End Milepost:

Roadway Type:

Control Element:

#### ANNUAL COST OF IMPROVEMENTS

Type	Cost	Service Life	Capital Recovery Factor	Total
ROW		100	0.0408	\$ -
P.E.C.E.I.		15	0.0899	\$ -
Structure		75	0.0425	\$ -
Roadway		20	0.0736	\$ -
Drainage		20	0.0736	\$ -
Signal		20	0.0736	\$ -
Other		20	0.0736	\$ -
Sub-Total	\$			\$ -
Annual Cost =				\$ -

Service Lives

Total number of crashes = <input type="text"/> # of correctable crashes, PC = <input type="text"/> # of years of crash data, YD = <input type="text"/> PC/YD = #DIV/0! Crash reduction factor, CRF = 0.00% CRF x (PC/YD) = #DIV/0! Cost per crash, CPC = #N/A Benefit = #N/A	Primary crash reduction factor (%): <input type="text"/> #1 Additional crash reduction factor: <input type="text"/> Additional crash reduction factor: <input type="text"/>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

State Safety Office

Crash Reduction Factors In Order of Preference  
< 5 projects to generate the CRF, may not be appropriate for the analysis. Go to Option #2

Instructions
Operational Benefit-Cost
Service

**BENEFIT/COST RATIO** #2

$$\frac{\text{Benefit}}{\text{Cost}} = \frac{\#N/A}{\$0.00} = \#N/A$$

Crash Modification Factors (CMF) Clearinghouse

Prepared by: \_\_\_\_\_

---

Operational Benefit-Cost
Service Life
CRF
Interest Factors
2014 5-year

<b>Recommended Service Life Criteria</b>	
<b>Intersection &amp; Traffic Control</b>	
Channelization, left-turn bay	10
Install New Traffic Signals	10
Upgrade Traffic Signals	10
Improve Sight Distance	10
Construct Roundabout	20
Retime Coordinated System	5
Other intersection improvements, except structures	10
<b>Pedestrian &amp; Bicycle Safety</b>	
Construct Sidewalk	20
Install Fencing and Pedestrian Barrier	10
Construct Bikeway	20
<b>Structures</b>	
Widening bridge or major structure	20
Replace bridge or major structure	<del>30</del> → 75
New bridge or major structure	<del>50</del> → 75
Replace/Improve Minor structure	20
Upgrade Bridge Rail	20
Pedestrian & Bicycle Overpass/Underpass	50
Mechanically Stabilized Earth (MSE) Walls	75
Mechanically Stabilized Earth (MSE) Walls: supporting abutments on spread footings	100
Other structure	20

---

Service Life
CRF
Interest Factors
2014 5-year Avg. Cost Per Crash

Year	2%	3%	4%	5%	6%	7%
1	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700
2	0.5150	0.5226	0.5302	0.5378	0.5454	0.5531
3	0.3468	0.3535	0.3603	0.3672	0.3741	0.3811
4	0.2626	0.2690	0.2755	0.2830	0.2886	0.2952
5	0.2122	0.2184	0.2246	0.2310	0.2374	0.2439
6	0.1785	0.1846	0.1908	0.1970	0.2034	0.2098
7	0.1545	0.1605	0.1666	0.1728	0.1791	0.1856
8	0.1365	0.1425	0.1485	0.1547	0.1610	0.1675
9	0.1225	0.1284	0.1345	0.1407	0.1470	0.1535
10	0.1113	0.1172	0.1233	0.1295	0.1359	0.1424
11	0.1022	0.1081	0.1141	0.1204	0.1268	0.1334
12	0.0946	0.1005	0.1066	0.1128	0.1193	0.1259
13	0.0881	0.0940	0.1001	0.1065	0.1130	0.1197
14	0.0826	0.0885	0.0947	0.1010	0.1076	0.1143
15	0.0778	0.0838	0.0899	0.0963	0.1030	0.1098
16	0.0737	0.0796	0.0858	0.0923	0.0990	0.1059
17	0.0700	0.0760	0.0822	0.0887	0.0954	0.1024
18	0.0667	0.0727	0.0790	0.0856	0.0924	0.0994
19	0.0638	0.0698	0.0761	0.0828	0.0896	0.0968
20	0.0612	0.0672	0.0736	0.0802	0.0872	0.0944
21	0.0588	0.0649	0.0713	0.0780	0.0850	0.0923
22	0.0566	0.0627	0.0692	0.0766	0.0830	0.0904

Introduction | Instructions | Operational Benefit-Cost | Service Life | CRF | **Interest Factors** | 2014 5-year Avg. Cost Per Crash

Category	Cost/Injury
2 - 3 Lanes Rural Divided	\$ 342,662.00
2 - 3 Lanes Rural UnDivided	\$ 526,887.00
2 - 3 Lanes Suburban Divided	\$ 187,990.00
2 - 3 Lanes Suburban UnDivided	\$ 245,281.00
2 - 3 Lanes Urban Divided	\$ 109,686.00
2 - 3 Lanes Urban UnDivided	\$ 125,974.00
4 - 5 Lanes Rural Divided	\$ 464,901.00
4 - 5 Lanes Rural UnDivided	\$ 115,320.00
4 - 5 Lanes Suburban Divided	\$ 216,234.00
4 - 5 Lanes Suburban UnDivided	\$ 161,173.00
4 - 5 Lanes Urban Divided	\$ 119,072.00
4 - 5 Lanes Urban UnDivided	\$ 107,908.00
6+ Lanes Rural Divided	\$ 313,317.00
6+ Lanes Suburban Divided	\$ 153,957.00
6+ Lanes Urban Divided	\$ 117,867.00
ALL CRASH RATE CATEGORIES	\$ 155,695.00
Interstate Rural Divided	\$ 341,754.00
Interstate Urban Divided	\$ 153,963.00
Turnpike Rural Divided	<b>\$ 254,951.00</b>
Turnpike Urban Divided	\$ 147,939.00

CRF | Interest Factors | Chart1 | **2014 5-year Avg. Cost Per Crash**

Topic: 0025-0003-007  
Plans Preparation Manual, Volume 1  
January 1, 2016

Table 23.5.1 FDOT (HSIPQ) Average Crash Costs by Facility Type

FACILITY TYPE	DIVIDED			UNDIVIDED		
	URBAN	SUBURBAN	RURAL	URBAN	SUBURBAN	RURAL
2-3 Lanes	\$708,698	\$187,990	\$342,062	\$125,974	\$245,281	\$620,887
4-5 Lanes	\$191,072	\$216,234	\$484,001	\$107,908	\$161,173	\$115,320
6+ Lanes	\$117,067	\$270,234	\$484,001	\$107,908	\$161,173	\$115,320
Interstate	\$153,963	\$153,967	\$313,317	\$107,908	\$161,173	\$115,320
Turnpike	\$147,939	n/a	\$341,754	\$107,908	\$161,173	\$115,320
Average Cost/Crash	\$155,695	n/a	\$254,951	n/a	n/a	n/a



## **Economic Analysis**

- Defined the B/C Ratio & how to use it
- 7-Steps: 5-steps benefit, 1-step cost, 1-B/C
- Crash Analysis (BENEFIT)
- Estimate proposed improvement COST
- How to Calculate/Interpret the Ratio
- Tool from CO/RDO – Makes it simple!


**FDOT** Florida Department of **TRANSPORTATION**

**NCHRP Report 783**

U.S. Department of Transportation  
**Federal Highway Administration**

**FHWA/FDOT**

**Controlling Elements for Geometric Design**





Jeremy Fletcher, P.E., P.S.M,  
Roadway Quality Assurance Administrator (850) 414-4320

**FDOT** Florida Department of **TRANSPORTATION**

**NCHRP Report 783**

**Creating Flexibility**  
in  
*Highway Geometric Design*





from 50,000 feet...



**1 Main Takeaways...**

- 1 No Design Criteria has changed**
- 1 Documentation Reduced**
- 1 Only 10 High Speed Controlling Criteria**
- 1 Only 2 Low Speed Controlling Criteria**
- 1 Documentation Requirements**
- 1 FDOT Design Bulletin coming soon!**



from 50,000 feet...



**1 Presentation Agenda**

- 1 NCHRP 783 Highlights**
- 1 FHWA Memorandum**
- 1 High Speed Controlling Elements**
- 1 Low Speed Controlling Elements**
- 1 Documentation Requirements**



from 50,000 feet...



**1 WHO?**



FDOT Engineers and Designers  
"Howard Wolowitz"

from 50,000 feet...



**1 Presentation Agenda**

- 1 NCHRP 783 Highlights**
- 1 FHWA Memorandum
- 1 High Speed Controlling Elements
- 1 Low Speed Controlling Elements
- 1 Documentation Requirements
- 1 FDOT Design Bulletin



from 50,000 feet...



## ① NCHRP 783 Purpose

- ⑨⑤ NCHRP 17-53 Project
- ⑨⑤ 1985 > 30 yrs.
- ⑨⑤ 2016 “Fresh Look”
- ⑨⑤ Latest research & experience (2010 HCM, 2011 HSM)
- ⑨⑤ Safety & Operations Impacts
- ⑨⑤ Performance vs Standards based design
- ⑨⑤ Flexibility in Highway Design



runway sited...



## ① NCHRP 783

- ① High Speed = Design Speeds greater than or equal to 50mph
- ① Low Speed = Design Speeds less than 50mph.



runway sited...



## 1 NCHRP 783

Did NOT Address:      Did Address:

Intersections

New construction

Roadside design

Reconstruction

Access Mgmt

RRR Projects




aligning on runway...





## 1 URBAN & RURAL ROADWAY TYPES

How to Influence Flexibility in Design


 Modified criteria (add, drop, combine)

 Design Exception process


 Context-sensitive, performance-based design versus standards-based design

**roger, clearance granted...** 

Original	Proposed Names
Design Speed	Design Speed
Lane Width	Lane Width
Shoulder Width	Shoulder Width
Bridge Width	Bridge Width
Structural Capacity	Structural Capacity
Horizontal Alignment	Horizontal Curve Radius
Vertical Alignment	Sag Vertical Curve Length
Grade	Grade
Stopping Sight Distance	Stopping Sight Distance
Cross Slope	Cross Slope
Superelevation	Superelevation
Vertical Clearance	Vertical Clearance
Horizontal Clearance	Lateral Offset

**priorities based on sensitivity analysis...** 

Priority Rank	Roadway Type		
	Rural 2-lane Highways	Rural Multilane Highways	Rural Freeways
TRAFFIC SAFETY			
1	Shoulder width	Shoulder width	Shoulder width
2	Lane width	Lane width	Lane width
3	Grade	SSD w/hidden curve, intersection, or driveway	Horizontal curve radius
4	Horizontal curve radius	Superelevation	SSD w/hidden curve or ramp junction
5	Superelevation	Grade	Superelevation
6	SSD w/hidden curve, intersection, or driveway	Horizontal curve radius	Grade
7	Bridge Width	Bridge Width	Bridge Width
8	Cross Slope	Cross Slope	Cross Slope
9	Sag vertical curve length	Sag vertical curve length	Sag vertical curve length
10	SSD w/no hidden features	SSD w/no hidden features	SSD w/no hidden features
11	Lateral offset	Lateral offset	Lateral offset

**priorities based on sensitivity analysis...** 

Priority Rank	Roadway Type		
	Rural 2-lane Highways	Rural Multilane Highways	Rural Freeways
TRAFFIC OPERATIONS			
1	Shoulder width	Lane width	Lane width
2	Lane width	Shoulder width	Shoulder width
3	Horizontal curve radius	Horizontal curve radius	Horizontal curve radius
4	Grade	Grade	Grade
5	Bridge width	Bridge width	Bridge width
6	Superelevation	Superelevation	Superelevation
7	SSD w/hidden curve, intersection, or driveway	SSD w/hidden curve, intersection, or driveway	SSD w/hidden curve or ramp junction
8	SSD w/no hidden features	SSD w/no hidden features	SSD w/no hidden features
9	Sag vertical curve length	Sag vertical curve length	Sag vertical curve length
10	Cross slope	Cross slope	Cross slope
11	Lateral offset	Lateral offset	Lateral offset

**from 50,000 feet...** 



**1 Presentation Agenda**

- 1 NCHRP 783 Highlights
- 1 **FHWA Memorandum**
- 1 High Speed Controlling Elements
- 1 Low Speed Controlling Elements
- 1 Documentation Requirements
- 1 FDOT Design Bulletin





from 50,000 feet...



<http://www.fhwa.dot.gov/programadmin/standards.cfm>


## Memorandum

Subject: **INFORMATION:** Revisions to the Controlling Criteria for Design and Documentation for Design Exceptions

Date: May 5, 2016

In Reply Refer To:  
HIPA-20

From: Robert B. Mooney   
Acting Director, Office of Program Administration

To: Director of Field Services  
Division Administrators  
Director of Technical Services  
Federal Lands Highway Division Engineers

This memorandum supersedes prior guidance regarding the controlling criteria for design, first established in 1985. For projects on the National Highway System (NHS), a design exception is required to justify not meeting any of the controlling criteria. The revisions below are effective immediately. Divisions should work with their State Transportation Agency (STA) to update Standard Operating Procedures, existing guidance and manuals.

from 50,000 feet...



### **1 FHWA Memo: May 5, 2016**

- 1 Supersedes guidance from 1985**
- 1 10 Controlling Criteria: High Speed**
- 1 2 Controlling Criteria: Low Speed**
- 1 FHWA Required Documentation**
- 1 Direction to States**
- 1 Discussion of comments received**



from 50,000 feet...



## 1 Presentation Agenda

- 1 NCHRP 783 Highlights
- 1 FHWA Memorandum
- 1 High Speed Controlling Elements
- 1 Low Speed Controlling Elements
- 1 Documentation Requirements
- 1 FDOT Design Bulletin



It's the...  
**Real McCoy**



Eliph McCoy (1843 - 1929) INVENTOR OF THE AUTOMATIC LUBRICATING SYSTEM USED ON TRAINS AND CARS TODAY... WITH OVER 50 PATENTS TO HIS CREDIT. People know the value. It is made based on his standards... It is REAL quality... The BEST.

...



## 1 DESIGN SPEED

“Design speed is a selected speed used to determine the various geometric features of the roadway.”

Speed Concepts:  
Informational Guide



Unique Among the 13 Controlling Criteria

- 95 No *direct* effect on design of roadway
- 95 Design control  $\neq$  Design criteria



...


FDOT

## 1 DESIGN SPEED

LOW SPEED

HIGH SPEED

Of the 10 controlling criteria,  
only design loading structural capacity  
and design speed  
apply to all NHS facility types.




...



FDOT

## 1 LANE WIDTH

“Lane width determines the area where a vehicle can maneuver laterally without encroaching into the path of another vehicle or onto the shoulder.”



Formal Design Exceptions Required

-  All travel lanes
-  Including auxiliary lanes, ramps, etc.

...

FDOT

## 1 LANE WIDTH

### LOW SPEED

Urban/Suburban:

- 95 Study found there were no effects on traffic speed or safety from before/after studies for lane widths between 10 ft and 12 ft.

### HIGH SPEED

Rural:

- 95 Prepare Design Exceptions for  $LW < 11$  ft (CMF = 1.05 for 11 FT)
- 95 Known safety & operational effects in HCM and HSM.


New 2014 HSM Supplement for Freeways and Ramps

...


FDOT

## 1 SHOULDER WIDTH

“Shoulder width affects both capacity and safety on roadways. A wide shoulder increases capacity by reducing lateral friction between traffic and roadside objects and thereby increasing driver comfort.”








...




## 1 SHOULDER WIDTH





Reduces Likelihood of Crashes

-  Provides for emergency stopping
-  Allows for errant driver recovery
-  Provides space for evasive maneuvers
-  Space for enforcement activities
-  Space for bicyclists and pedestrians in rural areas.

...



## 1 SHOULDER WIDTH

<u>LOW SPEED</u>	<u>HIGH SPEED</u>
<p>Urban/Suburban:</p> <ul style="list-style-type: none"> <li> Do <u>not</u> retain.</li> </ul>	<p>Rural:</p> <ul style="list-style-type: none"> <li> Retain</li> <li> Greatest impact on crashes/operations of all 13 elements.</li> <li> HSM CMFs available for most facilities</li> </ul>


New 2014 HSM Supplement for Freeways and Ramps

...

FDOT

## 1 BRIDGE WIDTH

“Bridge width is the total width of all lanes and shoulders on a bridge, measured between the points on the bridge rail, curb, or other vertical element that projects farthest onto the roadway.”



...

FDOT

## 1 BRIDGE WIDTH

### Concerns Associated with Narrow Bridges

- 95 “Short” bridges – a discontinuity that may affect driver behavior/lane position
- 95 “Long” bridges – inadequate space for storage, enforcement, & maintenance


...

FDOT

## 1 BRIDGE WIDTH


LOW SPEED


Urban/Suburban:


 Do not retain.

HIGH SPEED

Rural:

 Do not retain.

 BW = Approach roadway width.

 Ops/Safety Effects: Similar to narrow-shoulder roadways

No evidence of increased crash frequency/severity.


...

FDOT

## 1 STRUCTURAL CAPACITY

“Structural capacity has no effect on traffic operations, and its effect on safety is related only to the probability of a structural failure, not to the likelihood of traffic crashes.”

Not Reviewed Here and Not Addressed in this Research



...

FDOT

## 1 STRUCTURAL CAPACITY

LOW SPEED      HIGH SPEED

Of the 10 controlling criteria,  
only design loading structural capacity  
and design speed  
apply to all NHS facility types.

...


FDOT

## 1 HORIZONTAL ALIGNMENT

“Horizontal alignment addresses only horizontal curves, not tangent sections, and the horizontal alignment criterion addresses only curve radius.”





...




## 1 HORIZONTAL ALIGNMENT





Elements Not Requiring a Formal Exception:

-  Horizontal curve length
-  Length of tangent preceding a horizontal curve

...



## 1 HORIZONTAL ALIGNMENT

LOW SPEED	HIGH SPEED
<p>Urban/Suburban:</p> <ul style="list-style-type: none"> <li> Do <u>not</u> retain.</li> </ul>	<p>Rural:</p> <ul style="list-style-type: none"> <li> Retain.</li> <li> Rename to Horizontal Curve Radius.</li> <li> New CMFs developed to evaluate curves as function of length &amp; radius.</li> </ul>

...

FDOT

## 1 VERTICAL ALIGNMENT

“Vertical alignment generally consists of two elements: grades and vertical curves. Both of these elements are considered in the controlling criteria.”

...

FDOT

## 1 VERTICAL ALIGNMENT


“Vertical alignment generally consists of two elements: grades and vertical curves. Both of these elements are considered in the controlling criteria.”

If Retained, Rename “Sag Vertical Curve Length”

- 95 Crest curves are addressed through Stopping Sight Distance evaluations




...




## 1 VERTICAL ALIGNMENT


LOW SPEED

Urban/Suburban:  
 Do not retain.

HIGH SPEED

Rural:  
 Do not retain.


...




## 1 GRADE

“Grade is the rate of change of vertical elevation along a roadway. The controlling criterion for grade includes both maximum and minimum grades.”


New CMF for Grades Developed

  $CMF = 1.0 + 0.016G$


... 


**1 GRADE**

LOW SPEED

Urban/Suburban:  
 Do not retain.

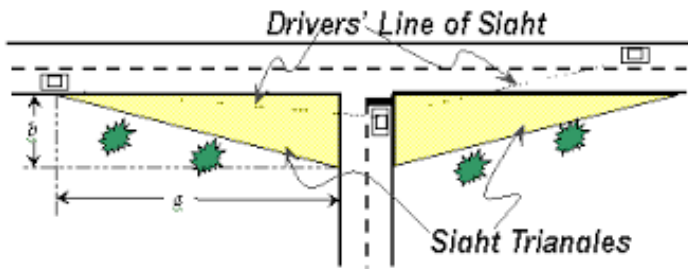
HIGH SPEED

Rural:  
 Retain.

... 


**1 STOPPING SIGHT DISTANCE**

“Stopping sight distance is the distance required for a driver to perceive or recognize a need to stop, react to that perception, and then decelerate to a stop.”



The diagram illustrates the concept of stopping sight distance. It shows a cross-section of a road with a central divider. Two cars are positioned on either side of the divider. A dashed line represents the 'Drivers' Line of Sight' extending from the driver's eye level to the other side of the road. The area between the road surface and the line of sight is shaded yellow and labeled 'Sight Triangles'. A distance 'g' is marked between the driver's eye level and the divider. There are also some green bush-like symbols on the road surface.



...




**1 STOPPING SIGHT DISTANCE**

“Stopping sight distance is the distance required for a driver to perceive or recognize a need to stop, react to that perception, and then decelerate to a stop.”

Sight Distance Needs are Based On:

-  Design speed
-  Grade Adjustments for downhill/uphill

...



**1 STOPPING SIGHT DISTANCE**

<u>LOW SPEED</u>	<u>HIGH SPEED</u>
Only evaluate for safety and operation in the presence of: Horizontal Curves Intersections Driveways.	
<u>Not retained</u>	<u>Retained</u>

Better design guidance is needed.

...




**1 CROSS SLOPE**

“The controlling criterion for cross slope addresses the transverse slope of the pavement surface on tangent sections or on horizontal curves where superelevation is not used.”



...



**1 CROSS SLOPE**

<u>LOW SPEED</u>	<u>HIGH SPEED</u>
<u>Not retained</u>	<u>Retained</u>

Retain as a controlling criterion due to negative consequences of poor drainage.


NCHRP 03-105: Shoulder Breakover Research Planned

... 

## 1 SUPERELEVATION


“Superelevation is the rotation of the pavement on the approach to and through a horizontal curve intended to assist the driver by counteracting the lateral acceleration produced by tracking the curve;

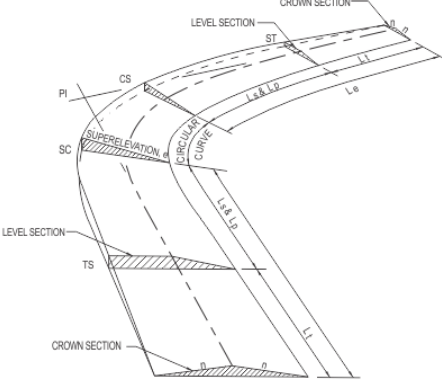


... 

## 1 SUPERELEVATION

No quantifiable effects on traffic operations.

-  Minor variations from AASHTO unlikely to have much effect on traffic operations



...

FDOT

## 1 SUPERELEVATION RATE

LOW SPEED	HIGH SPEED
Urban/Suburban: 95 Do <u>not</u> retain.	Rural: 95 Retain.


Rural: Retain as long as Hz. Curve Radius is retained

...

FDOT

## 1 VERTICAL CLEARANCE

“Vertical clearance values for the various highway functional classifications provide at least a 1-foot differential between the maximum legal vehicle height and the roadway structure, with additional allowances for future resurfacing.”



...

FDOT

## 1 VERTICAL CLEARANCE

- 95 Apply to the entire roadway width (traveled way and shoulders)
- 95 No effects on operations & safety other than increased travel times for overheight trucks

...

FDOT

## 1 VERTICAL CLEARANCE

LOW SPEED	HIGH SPEED
Urban/Suburban: 95 Do <u>not</u> retain.	Rural: 95 Retain.

Important: Maintain integrity for national defense!

...

FDOT

**1 LATERAL OFFSET ~~HZ. CLEARANCE~~**

“Lateral offset deals with the distance from the edge of the traveled way, face of curb, shoulder, or other designated point to a vertical roadside element or obstruction.”

An operational offset; roadside elements are offset so:

- 95 They do not affect a driver’s speed or lane position, and
- 95 Adequate clearance is provided for overhangs/mirrors of trucks/buses and for opening curbside doors.

...


FDOT

**1 LATERAL OFFSET ~~HZ. CLEARANCE~~**

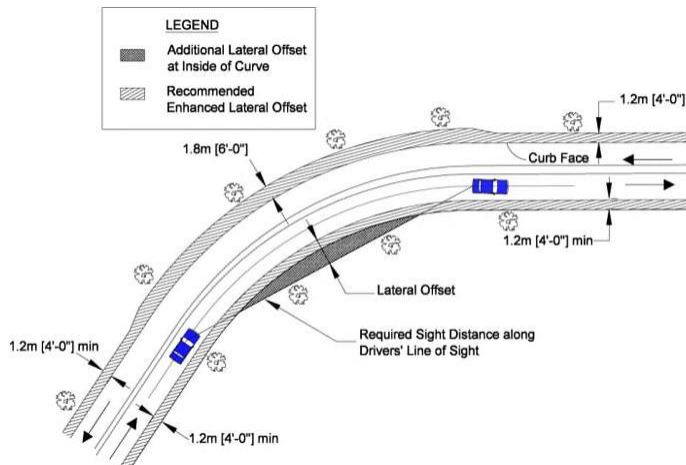
LOW SPEED	HIGH SPEED
Urban/Suburban: 95 Not Retained. 95 Apply new RDG offset (Face/Curb): <ul style="list-style-type: none"> <li>➤ 1.5' (all locations)</li> <li>➤ 3.0' (D/W, Inter/S)</li> <li>➤ 6.0' (outside Hz. Curve; 8' &amp; 12' elsewhere)</li> </ul>	Rural: 95 Do <u>not</u> retain.

Lowest in safety priority rankings.




... 

## 1 **LATERAL OFFSET ~~HZ. CLEARANCE~~**




Lowest in safety priority rankings.

... 

## 1 **“New” High Speed Controlling Elements**

<ol style="list-style-type: none"> <li>1. Design Speed</li> <li>2. Lane Width</li> <li>3. Shoulder Width</li> <li>4. Horizontal Curve Radius</li> <li>5. Superelevation Rate</li> <li>6. Stopping Sight Distance</li> </ol>	<ol style="list-style-type: none"> <li>7. Maximum Grade</li> <li>8. Cross Slope</li> <li>9. Vertical Clearance</li> <li>10. Design Loading Structural Capacity</li> </ol>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------

...



**1 “New” Low Speed Controlling Elements**

- 1. Design Speed**
- 2. Design Loading  
Structural  
Capacity**

from 50,000 feet...





**1 Presentation Agenda**


- 1 NCHRP 783 Highlights**
- 1 FHWA Memorandum**
- 1 High Speed Controlling Elements**
- 1 Low Speed Controlling Elements**
- 1 Documentation Requirements**
- 1 FDOT Design Bulletin**











Alfred Hitchcock

...




**1 FHWA Documentation Requirements**

“The FHWA expects documentation of Design Exceptions to include all of the following:”


-  “Specific design criteria that will not be met”
  -  AASHTO, PPM, Interstate Requirements
-  “Existing roadway characteristics”
  -  Typical Sections, Traffic, Lanes, Context, Etc.
-  “Alternatives Considered”
  -  Correction, Partial correction, Etc.

...




**1 FHWA Documentation Requirements**

“The FHWA expects documentation of Design Exceptions to include all of the following:”




-  “Comparison of the safety and operational performance of the roadway and other impacts such as right-of-way, community, environmental, cost, and usability by all modes of transportation.”

...




**1 FHWA Documentation Requirements**

“The FHWA expects documentation of Design Exceptions to include all of the following:”

-  “Proposed mitigation measures”
  -  See FHWA Mitigation Strategies for Design Exceptions publication.
-  “Compatibility with adjacent sections of roadway”


...



**1 FHWA Documentation Requirements**



“Design Speed and Design Loading Structural Capacity are fundamental criteria in the design of a project. Exceptions to these criteria should be extremely rare and FHWA expects the documentation to provide the following additional information:”

...




**1 FHWA Documentation Requirements**

**Design Speed exceptions require:**


-  Length of section with reduced design speed compared to overall length of project
-  Measures used in transitions to adjacent sections with higher or lower design or operating speeds.

...



**1 FHWA Documentation Requirements**

**Design Loading Structural Capacity exceptions require:**

-  Verification of safe load-carrying capacity (load rating) for all State unrestricted legal loads or routine permit loads, and in the case of bridges and tunnels on the Interstate, all Federal legal loads.

from 50,000 feet...



**1 Presentation Agenda**

- 1 NCHRP 783 Highlights
- 1 FHWA Memorandum
- 1 High Speed Controlling Elements
- 1 Low Speed Controlling Elements
- 1 Documentation Requirements
- 1 FDOT Design Bulletin



James Doohan  
"Scotty"



from 50,000 feet...



**1 Draft FDOT Bulletin**

- 1 Full implementation of FHWA Memo to State Facilities and Projects. (NHS/SHS)
- 1 Chapter 23 changes
- 1 Documentation and Approvals Updated
- 1 Coming in June/July 2016
- 1 AASHTO 2011 (Coming Later Jan 2017)



from 50,000 feet...



**1 Main Takeaways**

- 1 No Design Criteria has changed**
- 1 Documentation Reduced**
- 1 Only 10 High Speed Controlling Criteria**
- 1 Only 2 Low Speed Controlling Criteria**
- 1 Documentation Requirements**
- 1 FDOT Design Bulletin coming soon!**



from 50,000 feet...



**1 Thank you for coming!!**

**1 Questions?**







## Definitions

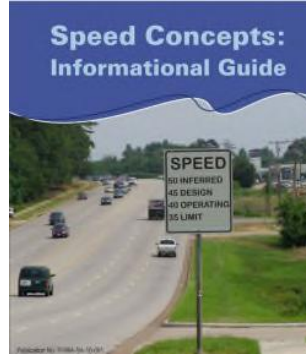
### 2011 AASHTO

#### Definition:

“Design Speed is a selected speed used to determine the various geometric features of the roadway.”

“Every effort should be made to use as high a design speed as practical to attain a desired degree of safety mobility and efficiency.”

PPM 2016



More of a design control than a design criterion.

## Definitions



### 2011 AASHTO (NCHRP 400):

“The assumed Design Speed should be a logical one with respect to the topography, anticipated operating speed, the adjacent land use, and the functional classification of the highway.”


### Design Speed: Criteria

What speed would you expect to drive on the following facility?

Rural Interstate-SIS  
(All Interstates-SIS)

AASHTO Min.: 70mph

FDOT Min.: 70mph



I-10 Gadsden County (D-3)

### Design Speed: Criteria



Urban Interstate (SIS)


AASHTO Min.: 50

FDOT SIS Min.: 60

I-275 Hillsborough County (D-7)

What speed would you expect to drive?

### Design Speed: Criteria




Rural Freeway  
AASHTO Range: 50-70mph  
FDOT: 60mph

SR 417 (TPE/D-5)

What speed would you expect to drive?

### Design Speed: Criteria

Urban Freeway  
AASHTO Range:  
50-70mph  
FDOT SIS: 60mph



Lehman Causeway (D-6)

What speed would you expect to drive?

## Design Speed: Criteria

What speed would you expect to drive on the following facilities?

Rural Arterial  
Minimum Speed: 50  
Range: 50-70mph  
SIS: 65mph



SR 267 Gadsden County (D-3)

## Design Speed: Criteria

Urban Arterial  
AASHTO Range: 30-50mph  
FDOT 40-60mph  
SIS: 50mph



US 92 Daytona (D-5)

What speed would you expect to drive?

## Design Speed: Criteria

Rural Collector

AASHTO Range: 40-60mph

FDOT 55-65



CR 12 South (Liberty)

What speed would you expect to drive?

## Design Speed: Criteria

Urban Collector

AASHTO Range: 30-50mph

FDOT 35-50



Collins Avenue (D-6)

What speed would you expect to drive?

## Design Speed Criteria Matrix

Design Speed Criteria (Minimums/Ranges)						
Facility Type	Context	Design Speed				
		AASHTO (2004)	AASHTO (2011)	RRR	New Construction	
					SIS	Non-SIS
Interstates and Freeways	Urban	50	50-70	50-70 (SIS=60-70)**	70 (Urbanized 60)*	50-70
	Rural	70	70	70	70*	70
Arterials-Urban		30	30-60	30 (SIS=50)**	50**	40-60
Arterials-Rural	Level	60	60-75	55	65*	55-70
	Rolling	50	50-60			
Collector-Urban		30	30	30 (SIS=50)**	50**	35-50
Collector-Rural	Level	40-60	40-60	55	65*	55-65
	Rolling	30-60	30-60	55	65*	55-65

## Who Sets them?

Early in the Design Process


- EOR Coordinates with:
- DDE, DTOE, and PD&E Engineers
- “As High as a Design Speed as Practical”
- Never less than the Posted Speed
- Typical Section Package Process
- Joint Approval
  
- After a year Speed Study
- DTOE with DDE process Exceptions
- Disputes to Director



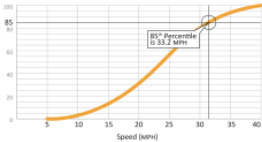
## Speeding Fatalities

**Speeding Statistics:**

- 32,367 Fatalities in America
- 9,944 related to Speed (1/3)
- Half of speeding related fatalities occur on low speed collectors and local roads.

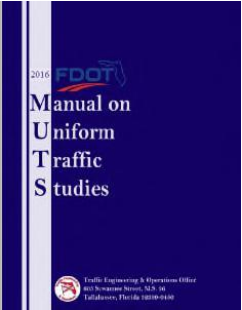


## 85<sup>th</sup> Percentile and Criteria



**Speed:**

- “85<sup>th</sup> Percentile has been used to characterize reasonable and prudent behavior.”
- “Drivers read the road, not design plans”
- “Speed limits should not be lowered to reflect an isolated restrictive element”



## Speed Differentials

TABLE 2

Relative Risk of Differential Speed Caused by Changes in Roadway Geometry.

Speed Differential ( $\Delta V$ )	Safety Risk
$\Delta V < 5$ mi/hr	Low
5 mi/hr $< \Delta V < 15$ mi/hr	Medium
$\Delta V > 15$ mi/hr	High

Crash Risk increased with Differentials between:

- Vehicles in same traffic stream
- Adjacent highway sections
- Geometric Elements (IHSDM)

## Design Speed Crash Types

Types of Crashes to Review – CARS Report Summary

Code	Harmful Event (Crash Type)	DS
00	Unknown/Not Coded	X
01	Rear-End	X
02	Head-On	
03	Angle	
04	Left-Turn	X
05	Right-Turn	X
06	Sideswipe	
07	Backed Into	
08	Collision with Parked Car	
09	Collision with Moving Vehicle on Roadway	X
10	Collision with Pedestrian	X
11	Collision with Bicycle	X
12	Collision with Bicycle (Bike Lane)	X



## Speed Mitigation

- **Objective:** Reduce operating speeds to the Design Speed.
  - **Strategy:** Establish cross-sectional elements to manage speed.
- (Use other criteria to encourage reduced or increased speeds.)

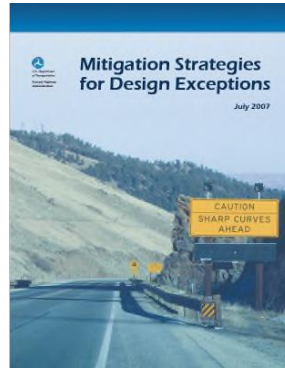


TABLE 22  
Potential Mitigation Strategies

Design Element	Objective	Potential Mitigation Strategies
1. Design Speed	Reduce operating speeds to the design speed.	Cross-sectional elements to manage speed.

## Speed Mitigation

Address Differentials between:

- Other Vehicles
- Pedestrians
- Bicyclists
- Animals
- Geometric Elements



## Speed Mitigation

- Signs
- Adjustments to Geometry.



## Design Speed: Lessons Learned

### Loop Ramp Design Speed:

For highway design speeds of more than 50 mph, the loop design speed preferably should be no less than 25 mph (150-ft radius). If less restrictive conditions exist, the loop design speed and the radius may be increased.

**FDOT Loop Ramp Criteria:** AASHTO criteria governs

**AASHTO Criteria:** Exhibit 10-56, and Exhibits 3-25 through 3-29

### Example: D-3 SR 390 Bay County

SIS Variation Requirements  
(FP 217875-2):

- Design Speed Proposed
- Design Speed Required
- Typical Section Approved
- Context: SIS Facility in Urban/Commercial/Residential Area
- Safety- Existing and Proposed Crashes
- Operations Impacts
- Mitigation/Justification



### Example: D-3 SR 390 Bay County



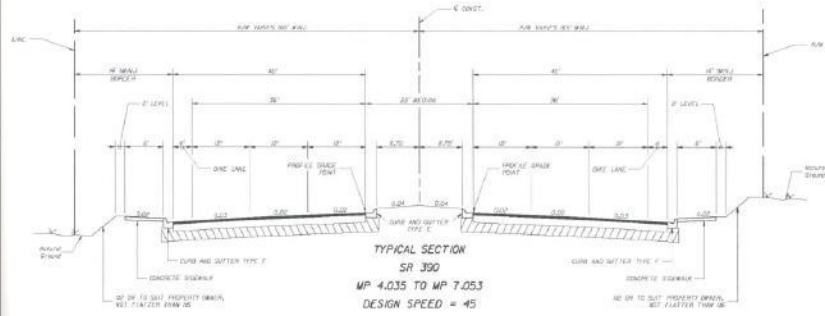
Design Speeds Proposed: 2 Lane to 6-Lane Widening

- SIS Port/Modal Connector/Evacuation Route
- Required: 50 DS/PS
- Proposed: 45 DS/PS



### Example: D-3 SR 390 Bay County

Typical Section Proposed: 2-Lane to 6-Lane Suburban Widening



### Example: D-3 SR 390 Bay County

Typical Section Existing: 2-Lane Urban/Suburban

- Wider Median, Clear Zone, Border Width
- To Meet Criteria:
- Additional 18' Pavement
- Additional 34' of R/W
- \$1,910,000 Cost



## Example: D-3 SR 390 Bay County

Justified Based on:

- Context
- Future Development
- Impacts to Businesses
- Impacts to Residences

Mitigation:

- Constrained Section
- Low Trucks
- Curvilinear Alignment

**Approved by Chief Engineer  
Design Speed Variation**



## Update: SR 390 Buffered Bike Lanes

Pilot Project for Buffered Bike Lanes:

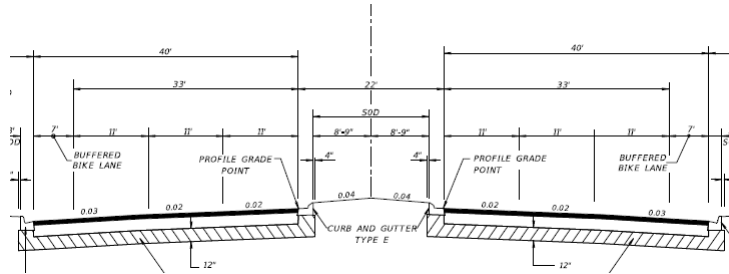
- Design Speed 45mph (Variation)
- Suburban Typical Section
- Reduced to 11' Travel Lanes
- 7' Buffered Bike Lanes



## Update: SR 390 Buffered Bike Lanes

Pilot Project for Buffered Bike Lanes:

- Design Speed 45mph (Variation), PPM Exhibit TYP-6



## Controlling Elements



### Stopping Sight Distance

- Define Stopping Sight Distance
- Sight Obstructions
- Identification & Measurement
- Criteria: AASHTO, FDOT, & RRR
- Safety Analysis – Crash Types
- Mitigation Strategies – Crash Reduction
- Clarifications & Other Resources

## Stopping Sight Distance

### Definition

“The distance needed for drivers to see an object on the roadway ahead and bring their vehicles to safe stop before colliding with the object.”

- *Mitigation Strategies for Design Exceptions – July 2007*



## Stopping Sight Distance

### Sight Obstructions

- Crest curve – road surface itself



- Sag curve –
  - bridge overpass
  - headlight sight distance
  - comfort criteria



## Stopping Sight Distance

### Sight Obstructions – Horizontal Curve

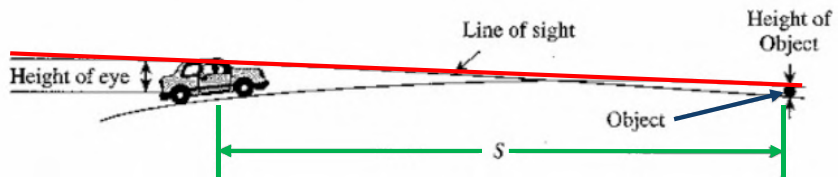
- physical features outside the traveled way



## Stopping Sight Distance

### Measurement

- |                           |                     |
|---------------------------|---------------------|
| ➤ Height of driver's eye  | ➤ Height of object  |
| ➤ 3.5 ft – passenger cars | ➤ 2.0 ft – stopping |
| ➤ 7.6 ft – trucks         | ➤ 3.5 ft – passing  |



FHWA Note: Object heights < 2.0 ft = longer crest curves w/o documented safety benefits → cost, driver's perception

## Stopping Sight Distance

### Identification

- What conditions/features have limited sight distance?
- How significant is the deficiency (e.g., length, relative to criteria)?
- What is the traffic volume?

*Intersections pose greater risk!*



- 2007 Mitigation Strategies, Pg. 55

## Stopping Sight Distance

### Relative Risk

*Intersections*

Geometric Condition		Relative Safety Risk
Tangent horizontal alignment		Minor
Mild curvature >2000 ft (600m) radius		
Mild downgrade (<3%)		
Low-volume intersection		Significant
Intermediate curvature 1000 ft (300 m) to 2000 ft (600 m) radius		
Moderate downgrade (3-5%)		
Structure		
High volume intersection	Major	
Y-diverge on road		
Sharp curvature <1000 ft (300 m) radius		
Steep downgrade (>5%)		
Narrow bridge		
Narrow pavement		
Freeway lane drop		
Exit or entrance downstream along freeway		

2007 Mitigation Strategies, Pg. 56

## Stopping Sight Distance

**Reaction Distance:**  $d = 1.47 Vt$  - 2004 Greenbook, Eq. 3-2, Pg. 113

where,  $t$  = brake reaction time, 2.5 s;  
 $V$  = design speed, mph;

**Braking Distance:**  $d = 1.075 \frac{V^2}{a}$  - 2004 Greenbook, Eq. 3-1, Pg. 111

where,  $d$  = braking distance, ft;  
 $V$  = design speed, mph;  
 $a$  = deceleration rate, ft/s<sup>2</sup>

Recommend  $a = 11.2 \text{ ft/s}^2$  as a comfortable **deceleration** for most drivers.

## Stopping Sight Distance

$d = 1.47 Vt + 1.075 \frac{V^2}{a}$

- 2004 Greenbook, Eq. 3-2, Pg. 113

**US Customary**

Design speed (mph)	Brake reaction distance (ft)	Braking distance on level (ft)	Stopping sight distance	
	A	B	Calculated A+B (ft)	Design (ft)
15	55.1	21.6	76.7	80
20	73.5	38.4	111.9	115
25	91.9	60.0	151.9	155
30	110.3	86.4	196.7	200
35	128.6	117.6	246.2	250
40	147.0	153.6	300.6	305
45	165.4	194.4	359.8	360
50	183.8	240.0	423.8	425
55	202.1	290.3	492.4	495
60	220.5	345.5	566.0	570
65	238.9	405.5	644.4	645
70	257.3	470.3	727.6	730
75	275.6	539.9	815.5	820
80	294.0	614.3	908.3	910

**Assumes:**  
 Wet Pavement,  
 Zero Grade,  
 $t = 2.5 \text{ sec}$ , and  
 $a = 11.2 \text{ ft/s}^2$

<b>AASHTO</b>	<b>FDOT</b>
driver's eye height: <b>3.5 ft</b>	<b>3.5 ft</b>
object height: <b>2.0 ft</b>	<b>0.5 ft</b>
- for passing <b>3.5 ft</b>	
- for RRR <b>2.0 ft</b>	

## Stopping Sight Distance

**Table 2.7.1 Minimum Stopping Sight Distance**

MINIMUM STOPPING SIGHT DISTANCE (FEET)  
(For application of stopping sight distance, use an eye height of 3.5 feet and an object height of 0.5 feet above the road surface)

DESIGN SPEED (mph)	GRADES OF 2% OR LESS	
	Interstate	All Other Facilities
15	----	80
20	----	115
25	----	155
30	----	200
35	----	250
40	----	305
45	----	360
50	----	425
55	570	495
60	645	570
65	730	645
70	820	730

~ 1/8<sup>th</sup> MILE!

- 2016 PPM

## Stopping Sight Distance

**Comparison: AASHTO Vs. FDOT Stopping Sight Distance**

Identical Values!

AASHTO Exhibit 3-1, Pg. 112					FDOT Table 2.7.1		
DS (mph)	Reaction Distance (ft)	Braking Distance (ft)	Stopping Sight Distance (ft)	Design (ft)	DS (mph)	Interstate (ft)	All Other (ft)
15	55.1	21.6	76.7	80	15	---	80
20	73.5	38.4	111.9	115	20	---	115
25	91.9	60.0	151.9	155	25	---	155
30	110.3	86.4	196.7	200	30	---	200
35	128.6	117.6	246.2	250	35	---	250
40	147.0	153.6	300.6	305	40	---	305
45	165.4	194.4	359.8	360	45	---	360
50	183.8	240.0	423.8	425	50	---	425
55	202.1	290.3	492.4	495	55	570	495
60	220.5	345.5	566.00	570	60	645	570
65	238.9	405.5	644.4	645	65	730	645
70	257.3	470.3	727.6	730	70	820	730
75	275.6	539.9	815.5	820			
80	294.0	614.3	908.3	910			

15%  
13%  
13%  
12%

## Stopping Sight Distance

### Roadway Design Bulletin 15-16:

**Volume 1, Chapter 25, Section 25.4.10.1 Vertical Curvature**

Table 25.4.10.1 has been replaced. The new table is **based on an object height of 2.0 feet** which matches AASHTO criteria. A Design Variation is not required for K values on existing facilities that meet the values shown in the new table. **It should be noted that an object height of 6-inches must be used for new construction.**

**IMPLEMENTATION:**

This change is **effective as of January 1, 2016.**

## Stopping Sight Distance

Table 2.7.2 Minimum **Passing Sight Distance**

MINIMUM PASSING SIGHT DISTANCE (FEET) (For application of passing sight distance, use an eye height of 3.5 feet and an object height of 3.5 feet above the road surface)											
DESIGN SPEED (mph)	20	25	30	35	40	45	50	55	60	65	70
2-Lane, 2-Way Facilities	710	900	1090	1280	1470	1625	1835	1985	2135	2285	2480



*~ 1/2 MILE!*

- 2016 PPM

## Stopping Sight Distance

### Trucks

- Recommend greater SSD on long downgrades
- Truck drivers are more experienced
- Can recognize potential risks



## Stopping Sight Distance

### Grade Adjustments on Stopping Sight Distance

$$d = \frac{V^2}{30 \left( \frac{a}{32.2} \pm G \right)}$$

- 2004 Greenbook, Eq. 3, Pg. 114

NON-ZERO GRADE

Where,  
G is percent of grade divided by 100

Upgrades (+G) require shorter distance;  
Downgrades (-G) require longer distance.

Design speed (mph)	US Customary					
	Stopping sight distance (ft)					
	Downgrades			Upgrades		
	3 %	6 %	9 %	3 %	6 %	9 %
15	80	82	85	75	74	73
20	116	120	126	109	107	104
25	158	165	173	147	143	140
30	205	215	227	200	184	179
35	257	271	287	237	229	222
40	315	333	354	289	278	269
45	378	400	427	344	331	320
50	446	474	507	405	388	375
55	520	553	593	469	450	433
60	598	638	686	538	515	495
65	682	728	785	612	584	561
70	771	825	891	690	658	631
75	866	927	1003	772	736	704
80	965	1035	1121	859	817	782

## Stopping Sight Distance

Effect of Grade on Stopping Sight Distance

Table 2.7.1 Minimum Stopping Sight Distance

ADJUSTMENT IN DISTANCE FOR GRADES GREATER THAN 2%

DESIGN SPEED (mph)	INCREASE IN LENGTH FOR DOWNGRADE (ft.)								DECREASE IN LENGTH FOR UPGRADE (ft.)							
	Grades								Grades							
	3%	4%	5%	6%	7%	8%	9%	3%	4%	5%	6%	7%	8%	9%		
15	0	0	1	2	3	4	5	5	5	6	6	7	7	7		
20	1	2	3	5	6	8	10	6	7	8	8	10	10	11		
25	3	5	7	10	12	15	18	8	9	11	12	13	14	16		
30	5	8	11	15	18	22	27	10	12	14	16	18	20	21		
35	7	11	16	21	26	31	37	13	16	19	21	24	26	28		
40	10	15	21	28	34	41	49	16	20	24	27	30	33	36		
45	18	25	32	40	48	57	67	16	21	25	29	33	37	40		
50	21	29	39	49	59	70	82	20	26	32	37	42	46	50		
55	25	35	46	58	70	84	98	26	33	39	45	52	57	62		
60	28	40	53	68	82	99	116	32	40	48	55	62	69	75		
65	37	51	67	83	101	120	140	33	43	52	61	69	77	84		
70	41	58	76	95	115	137	161	40	52	62	72	82	91	99		

- 2016 PPM

## Stopping Sight Distance

Sample SSD on Grade

Determine required SSD for a 4-lane divided arterial highway on a 5.5% downgrade with a Design Speed of 55 MPH:

Table 2.7.1 Minimum Stopping Sight Distance

DESIGN SPEED (mph)	GRADES OF 2% OR LESS	
	Interstate	All Other Facilities
50	----	425
55	570	495
60	645	570

DESIGN SPEED (mph)	INCREASE IN LENGTH FOR DOWNGRADE (ft.)								DECREASE IN LENGTH FOR UPGRADE (ft.)							
	Grades								Grades							
	3%	4%	5%	6%	7%	8%	9%	3%	4%	5%	6%	7%	8%	9%		
50	21	29	39	49	59	70	82	20	26	32	37	42	46	50		
55	25	35	46	58	70	84	98	26	33	39	45	52	57	62		
60	28	40	53	68	82	99	116	32	40	48	55	62	69	75		

SSD = 495 ft + 58 ft = 553 ft

- 2016 PPM

## Stopping Sight Distance

FDOT's RRR-Criteria is Identical to New Construction

Table 25.4.12 Stopping Sight Distance

DESIGN SPEED (mph)	STOPPING SIGHT DISTANCE (ft.)
15	80
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730



"GOOD"  
AS NEW!

- 2016 PPM

## Stopping Sight Distance

Types of Crashes to Review

Safety & Operational Issues	Freeway	Expressway	Rural Two-Lane	Urban Arterial
Collisions with vehicles stopped or slowed on the roadway	X	X	X	X
Collisions with objects on the roadway	X	X	X	X
Collisions with vehicles entering from intersecting roadways		X	X	X

- 2007 Mitigation Strategies, Pg. 59



## Stopping Sight Distance

Types of Crashes to Review – CARS Report

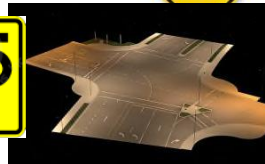
Code	Harmful Event (Crash Type)	SSD
00	Unknown/Not Coded	X
01	Rear-End	X
02	Head-On	X
03	Angle	X
04	Left-Turn	X
05	Right-Turn	X
06	Sideswipe	
07	Backed Into	
08	Collision with Parked Car	

## Stopping Sight Distance

### Mitigation Strategies

Aimed at reducing SSD restrictions, improving drivers' ability to avoid crashes and improving driver awareness.

- Crest curve
  - advance signing
  - Speed advisory plaque
- Sag curve & Intersection
  - install lighting



- 2007 Mitigation Strategies, Pg. 95

## Stopping Sight Distance

### Mitigation Strategies

- Horizontal Curves
  - Concrete barriers are common
    - consider lower-height barrier
    - adjust lane width or lane placement within x-section

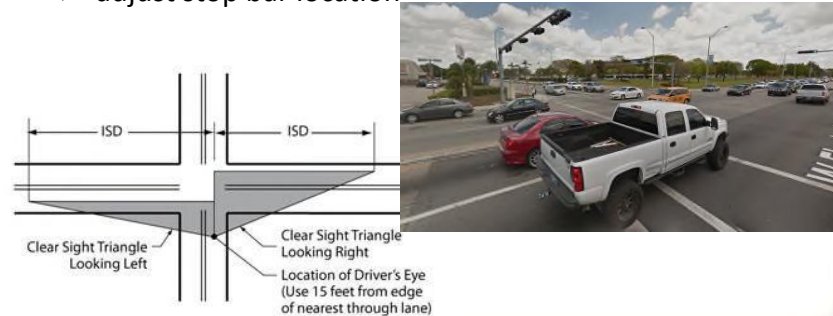


- 2007 Mitigation Strategies, Pg. 95-96

## Stopping Sight Distance

### Mitigation Strategies

- Intersection Sight Distance
  - remove landscaping, trees, utility poles
  - adjust stop bar location



- 2007 Mitigation Strategies, Pg. 95-96

## Stopping Sight Distance

### Mitigation Strategies

- Select cross-sectional elements to manage speed
  - add curb and gutter
  - more-closed cross-section



- 2007 Mitigation Strategies, Pg. 95-96

## Stopping Sight Distance

### Mitigation Strategies

- Improve ability to avoid crash
  - wider shoulders
  - more clear recovery area
- Improve driver awareness
  - advance signing
  - flashers on signs
  - ITS sensors (for approaching traffic)
  - larger signs
  - locate additional sign on left (median or island)



- 2007 Mitigation Strategies, Pg. 96

## Stopping Sight Distance

### Mitigation Strategies Summary

9. Stopping Sight Distance	Mitigate sight distance restrictions.	Signing and speed advisory plaques (crest vertical curves).
		Lighting (sag vertical curves).
		Adjust placement of lane within the roadway cross section (horizontal).
		Cross-sectional elements to manage speed.
	Improve ability to avoid crashes.	Wide shoulders.
		Wider clear recovery area.
	Improve driver awareness on approach to intersections.	Advanced warning signs.
		Dynamic warning signs.
		Larger or additional STOP/YIELD signs.
	Intersection lighting.	

- 2007 Mitigation Strategies, Pg. 69-70

## Stopping Sight Distance

### Applicable Crash Modification Factors

➤ **Crash Modification Factor Clearing House**

Countermeasure: Install centerline and shoulder rumble strips

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
0.8	20	★★★★★	All	All	Rural	Persaud et al., 2015	CMF for total crashes (all ... [read more])
0.771	22.9	★★★★★	All	Fatal, Serious injury, Minor injury	Rural	Persaud et al., 2015	CMF for injury crashes (K, ... [read more])
0.742	25.8	★★★★★	Run off road	All	Rural	Persaud et al., 2015	CMF for run-off-road crashes (all ... [read more])
0.693	26.0	★★★★★	Head-on	All	Rural	Persaud et	CMF for head-on crashes (all ...)

## Stopping Sight Distance

Applicable Crash Reduction Factors

➤ FHWA Desktop Reference

Countermeasures	Crash Type	Crash Severity	Area Type	Road Type	Daily Traffic Volume (veh/day)	Ref
Install centerline rumble strips	All	All	Rural	2-lane	5,000-22,000	5-14
	All	Injury	Rural	2-lane	5,000-22,000	5-15
	Head-on	All	Rural	2-lane highway		28-55
	Head-on	Fatal	Rural	2-lane highway		24-68
	Head-on	Injury (minor)	Rural	2-lane highway		24-26
	Head-on	Injury (major)	Rural	2-lane highway		24-33
	Head-on/Sideswipe	All	Rural	2-lane	5,000-22,000	5-21
	Head-on/Sideswipe	Injury	Rural	2-lane	5,000-22,000	5-25

14  
15  
55  
68  
26  
33  
21  
25

## Stopping Sight Distance

Alternatives to Correction

➤ Partial correction – practical design

- get closer to design speed

Costs to Remedy

- Design/Engineering
- Construction
  - detours/MOT
  - earthwork
  - right-of-way
  - asphalt



## Stopping Sight Distance

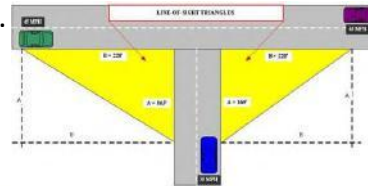
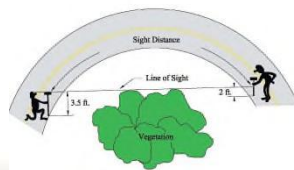
### Clarifications

In addition to SSD, the Greenbook provides criteria for:

- decision sight distance
- passing sight distance
- intersection sight distance

Design Exception required anywhere SSD not provided.

- Design Variations not permitted.

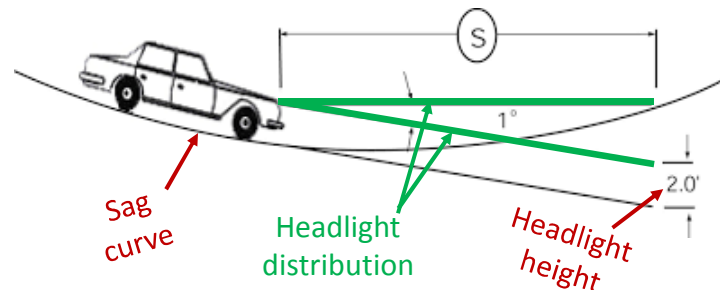


- 2007 Mitigation Strategies, Pg. 55

## Stopping Sight Distance

### Clarifications

Sag Curves – Design Exception required for curves meeting comfort criteria (i.e., about half that of headlight criteria) but not headlight criteria, unless lighting is provided.



- 2007 Mitigation Strategies, Pg. 55

## Stopping Sight Distance

### Resources

- *A Policy on Design Standards Interstate System*, AASHTO, 2005.
- *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2004.
- *A Guide for Reducing Collisions on Horizontal Curves*, NCHRP Report 500, Volume 7, Transportation Research Board, 2004.
- *A Guide for Addressing Run-Off-Road Collisions*, NCHRP Report 500, Volume 6, Transportation Research Board, 2003.
- *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)*, AASHTO, 2001.
- *Determination of Stopping Sight Distances*, NCHRP Report 400, Transportation Research Board, 1997.

## Stopping Sight Distance

- ✓ Defined Stopping Sight Distance
- ✓ Obstructions Beyond the Travel Way
- ✓ Identified SSD Risks & How it's Measured
- ✓ Criteria: AASHTO, FDOT, & RRR
- ✓ Probable Crash Types for Consideration
- ✓ Correct, Partial Correct, or Countermeasure
- ✓ Clarifications & Other Resources

## Controlling Elements

Cross Slope  
(CS)

### Cross Slope

- Define Cross Slope
- Standard Cross Slopes
- Criteria: AASHTO, FDOT, RRR
- Safety Analysis & Crash Types
- Hydroplaning Risk Analysis
- Mitigation Strategies – Crash Reduction
- Clarifications & Resources



## Cross Slope

### Definition

“The pavement slope that drains water from the roadway laterally and helps minimize ponding of water on the pavement.”



- *Mitigation Strategies for Design Exceptions – July 2007*



## Cross Slope

Table 23.9.8 AASHTO Cross Slope (Minimum and Maximum)

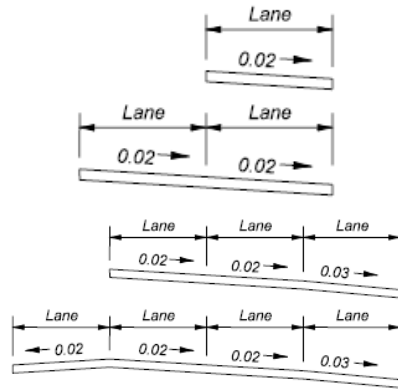
Type Facility	Other Factors	Minimum	Maximum	AASHTO
Freeways	---	0.015	0.025 <sup>(1)</sup>	pg. 504
Arterials	Rural	0.015	0.02 <sup>(1)</sup>	pg. 446
	Urban	0.015	0.03	pg. 472
Divided Highways	---	0.015	0.02 <sup>(1)</sup>	pg. 455
Collectors	Rural	0.015	0.02 <sup>(1)</sup>	pg. 421
	Urban	0.015	0.03	pg. 431
Shoulders	Paved	0.02	0.06	pg. 316
	Gravel	0.04	0.06	pg. 316
	Turf	0.06 <sup>(2)</sup>	0.08 <sup>(2)</sup>	pg. 316

1. Values given are for up to two lanes in one direction. Additional outside lanes may have cross slopes of 0.03.
2. **Shoulder cross slopes which meet FDOT criteria do not require a Design Exception.**

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## Cross Slope

Figure 2.1.1 Standard Pavement Cross Slopes



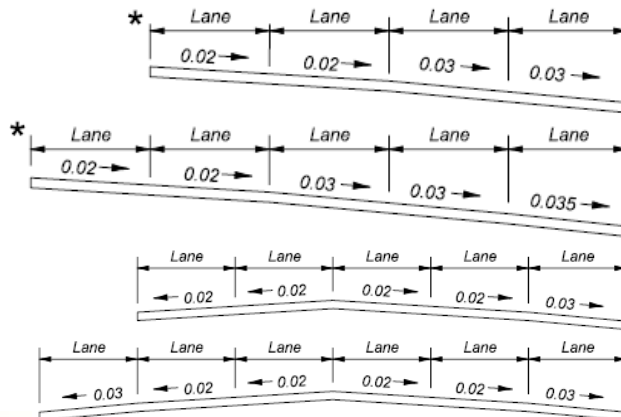
September 2014:  
Gas = \$3.26/gal

See Figure notes.

- 2016 PPM

## Cross Slope

Figure 2.1.1 Standard Pavement Cross Slopes



See Figure notes.

- 2016 PPM

## Cross Slope

Figure 2.1.1 Standard Pavement Cross Slopes

### Figure Notes

- Only standard slopes; not typicals
- Max. cross slope on tangent = 0.04
- Between adjacent lanes = 0.04
- Multi-purpose lns may be 0.03 to 0.05
  - Parking for ADA  $\leq 0.02$

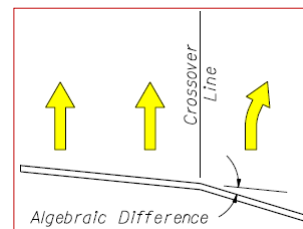
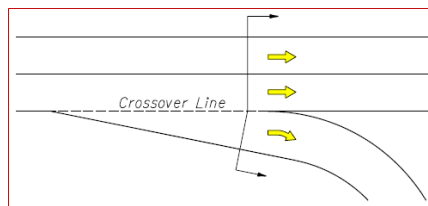


- 2016 PPM

## Cross Slope

Table 2.1.4 Maximum Algebraic Difference in Cross Slope at Turning Roadway Terminals

Design Speed of Exit or Entrance Curve (mph)	Maximum Algebraic Difference in Cross Slope at Crossover Line (%)
Less than 35	6.0
35 and over	5.0



- 2016 PPM

### Cross Slope

Table 2.3.1 Shoulder Widths and Cross Slopes - **Freeways**

HIGHWAY TYPE		CROSS SLOPES	
		NORMAL <sub>1</sub>	
		Outside <sub>2</sub>	Median or Left
<b>F R E E W A Y S</b>  (Lanes One Way)	4-Lane or More	0.06	0.06
	3-Lane		0.05
	2-Lane		
	HOV Lane	N/A <sub>4</sub>	0.05 <sub>2</sub>
	1-lane Barrier-Separated HOV Lane <sub>3</sub>	Same as Lane	Same as Lane <sub>2</sub>
	2-lane Barrier-Separated HOV Lane <sub>3</sub>	Same as Lane	Same as Lane <sub>2</sub>
	1-Lane Ramp	0.06	0.05
	2-Lane Ramp Non-Interstate		
	2-Lane Ramp Interstate		

See Table notes. - 2016 PPM

### Cross Slope

Table 2.3.1 Shoulder Widths and Cross Slopes - **Freeways**

Additional Criteria

Table 2.3.2 Shoulder Widths and Cross Slopes - **Arterials Divided**

Table 2.3.3 Shoulder Widths and Cross Slopes - **Arterials Undivided**

Table 2.3.4 Shoulder Widths and Cross Slopes - **Collectors Divided and Undivided**

Related Criteria

Figure 2.3.1.A Shoulder Superelevation

Figure 2.3.1.B Special Shoulder Superelevation

- 2016 PPM

## Cross Slope

### 25.4.6 Roadway Cross Slopes

Field verify existing:

- Full DTM for entire width
  - 100' intervals on tangents
- Vehicle Mounted Scanner
  - use DTM over limits of out-of-tolerance slopes
  - 100' intervals on tangents
- Use additional cross sections, as necessary, to develop details & estimate quantities.



- 2016 PPM

## Cross Slope

### 25.4.6 Roadway Cross Slopes

- New Construction Criteria whenever practical
- Tables 25.4.6 & 25.4.7 when New Construction is not practical
- “Match Existing” when within allowable range
- Correction required:
  - coordinate for correction method/constructability:
    - Pavement Design Engineer
    - District Bituminous Engineer



- 2016 PPM

## Cross Slope

Table 25.4.6 **Roadway** Cross Slopes

Facility or Feature	Standard	Allowable Range
Two-Lane Roads	0.02	0.015-0.030
Multilane Roads	0.02	0.015-0.040
Shoulders	0.06	Adjacent Lane Cross Slope- 0.080
Parking Lanes	0.05	0.015-0.050

**Table Notes**

- Existing multilane C&G: 0.05 max. (outside lanes)
  - original parabolic crown: 0.015 to 0.05.
- Difference between thru lanes: 0.06 max. breakover
- Existing shoulders "To Remain": 0.07 max. breakover
- Parking/access dedicated for ADA: 0.02 max.

- 2016 PPM

## Cross Slope

Table 25.4.7 **Freeway** Cross Slopes

Facility or Feature	Standard	Allowable Range
Travel Lanes	0.02*	0.015-0.025
Travel Lanes	0.03*	0.025-0.035

**Table Notes**

- Difference between thru lanes: 0.04 max.
  - difference at turning terminal: Table 2.1.4
- Shoulder slopes may remain if meet Table 25.4.6 and have difference between shoulder/lane 0.07 max.

**Related Criteria**



**25.4.7 Superelevation**

- 2016 PPM

### Cross Slope

Types of Crashes to Review

Safety & Operational Issues	Freeway	Expressway	Rural 2-Lane	Urban Arterial
Run-off-road crashes	X	X	X	
Slick pavement	X	X	X	X
Water ponding on the pavement surface	X	X	X	X
Water spreading onto the traveled lanes				X
Loss of control when crossing over a high cross-slope break	X	X	X	

- 2007 Mitigation Strategies, Pg. 59

### Cross Slope

Types of Crashes to Review – CARS Report

Code	Harmful Event (Crash Type)	CS
00	Unknown/Not Coded	X
01	Rear-End	X
02	Head-On	
03	Angle	
04	Left-Turn	
05	Right-Turn	
06	Sideswipe	X

## Cross Slope

### 2.1.5.1 Hydroplaning Risk Analysis

- Coordinate w/ District Drainage Engineer
  - predicts water film thickness and
  - speed at which hydroplaning may occur



- 2016 PPM

## Cross Slope

### 2.1.5.1 Hydroplaning Risk Analysis

- Hydroplaning Risk Analysis Program
  - install instructions and user guide
    - <http://www.dot.state.fl.us/rddesign/Drainage/files/Hydroplaning.zip>



- 2016 PPM



## Cross Slope

### Mitigation Strategies

Primary concern is inadequate drainage and ponding of water.

- Advance signing
  - use large signs in exception areas
- Pavement grooving & other textures
  - improve surface friction
  - open-graded surface courses

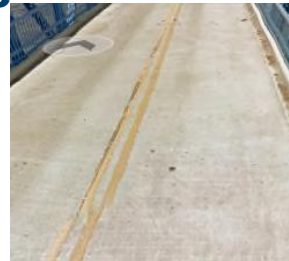


- 2007 Mitigation Strategies, Pg. 98

## Cross Slope

### Mitigation Strategies

- Improve drainage
  - transverse grooving on PCC pavement
  - continuous drainage; more inlets
- Avoid shoulder-point breakover > 8%
  - move breakpoint outward
  - slope shoulder same direction as lane at high point
  - round-over at breakpoint



- 2007 Mitigation Strategies, Pg. 98

## Cross Slope

### Mitigation Strategies Summary

10. Cross Slope	Provide warning of slick pavement.	Signing.
	Improve surface friction.	Pavement grooving (PCC pavement).
		Open-graded friction courses (HMA pavement).
	Improve drainage.	Transverse pavement grooving (PCC pavement).
		Open-graded friction courses (HMA pavement).
Pavement edge drains.		
Mitigate cross-slope break on the high side of superelevated curves.	Modified shoulder cross slope.	

- 2007 Mitigation Strategies, Pg. 98

## Cross Slope

### Applicable Crash Modification Factors

➤ **Crash Modification Factor Clearing House**

Countermeasure: Install wider edgelines (4 in to 6 in)

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
0.825	17.5	★★★★☆	All	All	Rural	Park et al., 2012	Crash type also excludes intersection/interchange ... <a href="#">[read more]</a>
0.635	36.5	★★★★☆	All	Fatal, Serious injury, Minor injury	Rural	Park et al., 2012	Crash type also excludes intersection/interchange ... <a href="#">[read more]</a>
0.877	12.3	★★★★☆	All	Property damage only (PDO)	Rural	Park et al., 2012	Crash type also excludes intersection/interchange ... <a href="#">[read more]</a>
0.714	28.5	★★★★☆	Two-lane	All	Rural	Park et	Crash type also excludes

### Cross Slope

Applicable Crash Reduction Factors

➤ FHWA Desktop Reference

Countermeasures	Crash Type	Crash Severity	Area Type	Road Type	Daily Traffic Volume (veh/day)	Ref
Install edgelines and centerlines	All	All	Rural	Undivided	1,000-1,400	12, 13
Install edgelines and centerlines	All	Injury	All	All		13, 24
Install edgelines, centerlines and delineators	All	Injury	All	All		13, 15
Install edgeline markings	All	All			<5,000 lane	15, 14
	All	All			>5,000 lane	15, 13
	All	All	All	All		11, 12
	All	All				13, 24
	All	All				13, 10
	All	All				15, 17
	All	All				15, 15
	All	All				15, 25
	All	Injury				15, 15
	All	PDO				15, 3
Fixed object	All				<5,000 lane	15, 16
Fixed object	All				>5,000 lane	15, 16
ROR	All					15, 10
ROR	All		All	All		11, 25
Overturn	All				<5,000 lane	15, 15
Overturn	All				>5,000 lane	15, 10
Rear-end	All				<5,000 lane	15, 15
Rear-end	All				>5,000 lane	15, 10
install edgeline markings (from 4 to 6 in)	All	Injury	Rural	2-lane		13, 3
install edgeline markings (6 in)	All	PDO	Rural	2-lane		13, 3
install edgeline markings (6 in)	All	Injury	Rural	2-lane		13, 15
install edgeline markings (6 in)	All	PDO	Rural	2-lane		13, 11

-3

---

24

---

45

---

44

---

38

---

20

---

24

---

30

---

4

### Cross Slope


Alternatives to Correction

➤ Partial correction – practical design

- get closer to design speed

Costs to Remedy

- Design/Engineering
- Construction
  - detours/MOT
  - earthwork
  - right-of-way
  - asphalt



## Cross Slope

### Clarifications

- Applies to typical tangent alignments.
- Areas of intense rainfall & where  $\geq 3$  lanes in each direction may require add'l cross slope for drainage.



- 2007 Mitigation Strategies, Pg. 60

## Cross Slope

### Clarifications

- Other features (e.g., SE transitions, pavement warping at intersections) may require removal of cross slope.
- Such cases are expected and do not require a DE.



- 2007 Mitigation Strategies, Pg. 60

## Cross Slope

### Clarifications

- Cross slope break on high side of SE curve should not exceed 8%.
- A DE is required when not satisfied.



- 2007 Mitigation Strategies, Pg. 60

## Cross Slope

### Resources

- *A Policy on Design Standards Interstate System*, AASHTO, 2005.
- *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2004.
- *A Guide for Reducing Collisions on Horizontal Curves*, NCHRP Report 500, Volume 7, Transportation Research Board, 2004.
- *A Guide for Reducing Collisions Involving Heavy Trucks*, NCHRP Report 500, Volume 13, Transportation Research Board, 2004.
- *A Guide for Addressing Run-Off-Road Collisions*, NCHRP Report 500, Volume 6, Transportation Research Board, 2003.
- *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400)*, AASHTO, 2001.
- *Highway Drainage Guidelines*, AASHTO, 2000.

## **Cross Slope**

- ✓ Defined Cross Slope
- ✓ Standard Cross Slope Figures
- ✓ Criteria: AASHTO, FDOT, RRR
- ✓ Probable Crash Types
- ✓ Hydroplaning Risk Analysis Program
- ✓ Mitigation Strategies – Crash Reduction
- ✓ Clarifications & Other Resources

## Design Exceptions & Variations Workshop

### Historical Crash Method – Cross Slope

#### **HCM – Cross Slope (Freeway)**

- Project Overview
- Group Exercise Objectives
- Submittal Excerpts
- Submittal Review –  
    Summary Sheets, Long Forms, B/C Ratio
- What do you think?  
    Make your recommendation

## HCM – Cross Slope (Freeway)

Report Submittal

**DESIGN EXCEPTION FOR CROSS-SLOPE**

**SR 826 / Palmetto Expressway**

From West of NW 27<sup>th</sup> Ave (M.P. 21.623)  
To West of NW 17<sup>th</sup> Ave (M.P. 23.046)

Miami Dade County, Florida

Financial Project ID: 432743-3-52-01  
Contract No. C9D33

FDOT Project Manager: Bao-Ying Wang, P.E.  
Consultant Project Manager: Maikel Gonzalez, P.E.

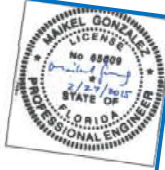
Prepared For:

Florida Department of Transportation  
District 6



Prepared By:  
[Name] and Associates

1000 Biscayne Blvd, Suite 201, Miami, FL 33126  
305.372.3090, www.bpsmiami.com  
Authorization #7904



APPROVED: [Signature]  
February 2015

## HCM – Cross Slope (Freeway)

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VALUES



## HCM – Cross Slope (Freeway)

### Project Overview – SR826 Mainline

- Urban Principal Arterial – Other Freeways and Expressways
- Part of the SIS & NHS
- DS = 60 MPH; PS = 55 MPH
- 2 ~ Typical sections:
  - one for 6-lane divided & one for 8-lane divided
  - 12' lanes; 8' paved outside-shoulders  
w/ 3.5' shoulder gutter; 7' paved inside-shoulders

## HCM – Cross Slope (Freeway)

### Project Overview – SR826 Mainline

- RRR-project
- All tangent – no curves
- Flat & steep cross slopes
- Deficiencies < 100' are not included
- Five-year crash history (2008-2012)
- Corridor anticipated for reconstruction (let in 10 years)

### HCM – Cross Slope (Freeway)

Mainline Cross Slope Deficiencies

*Table 1 – SR-826 MAINLINE Existing Deficient Cross Slope Segments (Travel Lanes)*  
(Flatter than 1.50%)

*Separate B/C By Location!*

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)									
				Westbound				Eastbound					
				Outside Lane 2	Outside Lane 1	Center Lane	Inside Lane	Inside Lane	Center Lane	Outside Lane 1	Outside Lane 2		
57	905+50.00	907+46.97	197		1.07 - 1.34								
30 & 31	912+50.00	936+50.00	2400		0.5 - 1.5								
27	915+50.00	921+00.00	550			0.6 - 1.1							
24	915+50.00	917+50.00	200				1.3*						
25	920+50.00	922+50.00	200				1.3 - 1.4						
58	932+00.00	933+83.40	183										1.3 - 1.5
28	933+50.00	950+50.00	1700			0.3 - 1.1							
18	933+50.00	937+50.00	400							1.2 - 1.5			
32	938+50.00	945+50.00	700		1.3 - 1.5								
20	941+50.00	943+50.00	200					1.2 - 1.40					
26	941+50.00	945+50.00	400				0.7 - 1.3						
19	941+50.00	948+50.00	700							0.5 - 1.3			
29	952+50.00	955+50.00	300			1.1 - 1.4							

\*Cross slope remains constant throughout segment

### HCM – Cross Slope (Freeway)

Group Exercise!

Objective #1: Review summary crash report from CARS and determine which crashes may be attributable to deficiency.

Hint: Convert stationing to milepost.

Begin Project => MP 21.623 = Sta. 884+16.66

Location #18: MP 22.557 to MP 22.633

Location #27: MP 22.216 to MP 22.321

Location #28: MP 22.557 to MP 22.879

Objective #2: Of the available long forms, confirm crashes from Objective #1 may still be considered attributable.

Objective #3: Using the Spreadsheet, determine the B/C ratio(s) and make a recommendation for correction.

# DESIGN EXCEPTION FOR CROSS-SLOPE

## SR 826 / Palmetto Expressway

From West of NW 27<sup>th</sup> Ave (M.P. 21.623)  
To West of NW 17<sup>th</sup> Ave (M.P. 23.046)

Miami Dade County, Florida

Financial Project ID: 432743-3-52-01  
Contract No. C9D33

FDOT Project Manager: Bao-Ying Wang, P.E.  
Consultant Project Manager: Maikel Gonzalez, P.E.

Prepared For:

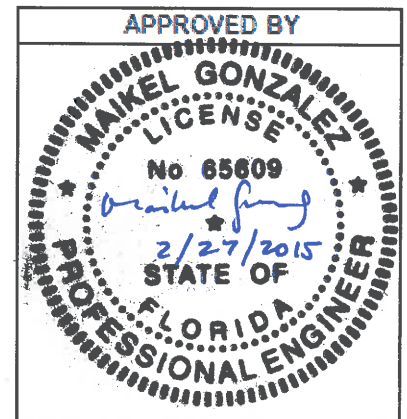
Florida Department of Transportation  
District 6



Prepared By:

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Certificate of Authorization #7904



**February 2015**

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## 1. PROJECT OVERVIEW

This Resurfacing, Restoration and Rehabilitation (RRR) project will address existing pavement and safety deficiencies along SR-826/Palmetto Expressway from west of NW 27th Ave. (MP 21.623) to west of NW 17th Ave. (MP 23.046) (segment total length = 1.423 miles). This section of SR-826 is located within the City of Miami Gardens in Miami-Dade County. The project limits include six (6) on/off ramps connecting NW 167th St. (a one-way pair of parallel frontage roads running in the eastbound (EB) and westbound (WB) directions) to the SR-826 mainline. Also included along the SR-826 mainline are two concrete-deck bridges: bridge 870239 over SR 817/NW 27th Ave., and bridge 870035 over NW 22nd Ave. Furthermore, along NW 167th St., there are signalized intersections at SR-817/NW 27th Ave., NW 22nd Ave., and NW 17th Ave.; however, these intersections have been excluded from the project. Please refer to **Appendix A** for a copy of the Straight Line Diagram.

SR-826 is part of the Strategic Intermodal System (SIS) and the National Highway System (NHS), and is functionally classified as Urban Principal Arterial - Other Freeways and Expressways, whereas NW 167<sup>th</sup> St. is classified as an Urban Minor Collector. Design and posted speeds for SR-826 are 60 MPH and 55 MPH respectively; all ramps have a design speed of 45 MPH with no posted speed available, and NW 167th St. has a design speed of 40 mph and posted speeds of 30, 35, and 40 mph. There are two typical sections along the SR-826 mainline, one for the six-lane divided section and one for the eight-lane divided section; six typical sections for the on/off ramps, and two typical sections for NW 167th St.: one for the EB frontage road and one for the WB frontage road. The SR-826 mainline typical sections include 12' lanes, 8' paved outside shoulders with 3.5' shoulder gutters, and 7' paved inside shoulders. All on/off ramps are single-lane, and generally have 15' lanes with 6' outside (4' paved) and inside shoulders (2' paved). Each frontage road typical section has two lanes, 10' (11' for the EB) to 12' wide, 8' outside shoulders (5' paved), and 6' inside shoulders (unpaved). Please refer to **Appendix B** for a copy of the approved Typical Section Package.

The scope of the project is based on Chapter 25 of the Plans Preparations Manual (PPM), and it generally consists of extending the service life of the existing pavement through milling and resurfacing, as well as addressing safety and accessibility issues. No geometrical changes to the existing typical sections are proposed as part of this project, other than minor widening of existing shoulders along NW 167th St. to provide continuity of existing bicycle facilities (paved shoulders).

As part of the scope, a number of roadway features were evaluated to determine their compliance with current Florida Department of Transportation (FDOT) and American Association of State Highway and Transportation Officials (AASHTO) criteria. As result of this evaluation, a number of locations were identified along the SR-826 mainline, the on/off ramps, and NW 167th St. where the existing travel lane and shoulder cross slopes fail to meet FDOT and AASHTO criteria. Since the existing horizontal alignment along this section of SR-826 and NW 167th St. does not include any horizontal curves, all identified locations correspond to tangent sections. Furthermore, only those locations where the existing deficiency exceeds 100 feet in length have been identified. The following tables summarize all deficient locations identified as part of our analysis.

**Table 1 – SR-826 MAINLINE Existing Deficient Cross Slope Segments (*Travel Lanes*)**  
(Flatter than 1.50%)

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)								
				Westbound				Eastbound				
				Outside Lane 2	Outside Lane 1	Center Lane	Inside Lane	Inside Lane	Center Lane	Outside Lane 1	Outside Lane 2	
57	905+50.00	907+46.97	197		1.07 - 1.34							
30 & 31	912+50.00	936+50.00	2400		0.5 - 1.5							
27	915+50.00	921+00.00	550			0.6 - 1.1						
24	915+50.00	917+50.00	200				1.3*					
25	920+50.00	922+50.00	200				1.3 - 1.4					
58	932+00.00	933+83.40	183									1.3 - 1.5
28	933+50.00	950+50.00	1700			0.3 - 1.4						
18	933+50.00	937+50.00	400						1.2 - 1.5			
32	938+50.00	945+50.00	700		1.3 - 1.5							
20	941+50.00	943+50.00	200					1.2 - 1.40				
26	941+50.00	945+50.00	400				0.7 - 1.3					
19	941+50.00	948+50.00	700						0.5 - 1.3			
29	952+50.00	955+50.00	300			1.1 - 1.4						

\*Cross slope remains constant throughout segment

**Table 2 – SR-826 MAINLINE Existing Deficient Cross Slope Segments (*Travel Lanes*)**  
(Center and Inside Lanes steeper than 2.5% & Outside Lanes steeper than 3.50%)

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)								
				Westbound				Eastbound				
				Outside Lane 2	Outside Lane 1	Center Lane	Inside Lane	Inside Lane	Center Lane	Outside Lane 1	Outside Lane 2	
14	897+50.00	899+50.00	200								3.5 - 3.7	
59	909+50.00	913+50.00	400					2.6 - 2.8				
34	920+50.00	931+50.00	1100	3.6 - 4.8								
15	922+50.00	932+00.00	950									3.5 - 4.3
60	928+50.00	930+50.00	200					2.8*				
35	934+50.00	936+50.00	200	3.6 - 4.3								
61	934+50.00	939+50.00	500				2.5 - 2.7					
16	938+50.00	940+50.00	200									3.7*
36	941+50.00	943+50.00	200	3.5*								
62	944+50.00	946+50.00	200					2.6*				
17	949+50.00	958+50.00	900									3.5 - 4.5
63	950+50.00	958+50.00	800					2.5 - 2.7				
37	951+50.00	953+50.00	200	3.5 - 3.9								
64	953+50.00	955+50.00	200				2.6 - 2.7					
38	955+50.00	957+50.00	200	3.5 - 3.6								

\*Cross slope remains constant throughout segment

**Table 3 – SR-826 MAINLINE Existing Deficient Cross Slope Segments (Shoulders)***(Shoulder Flatter than Adjacent Lane Cross Slope)*

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)			
				Westbound		Eastbound	
				Outside Shoulder	Inside Shoulder	Inside Shoulder	Outside Shoulder
22	916+50.00	919+50.00	300		1.0 - 1.4		
39	933+50.00	935+50.00	200	1.2 - 2.1			
21	941+50.00	943+50.00	200			1.7 - 1.8	
23	944+50.00	946+50.00	200		0.4 - 1.2		

**Table 4 – ON/OFF RAMPS Existing Deficient Cross Slope Segments (Travel Lanes)***(Steeper than 2.5%)*

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)				
				Ramp Number				
				87260157	87260158	87260160	87260161	87260163
65	892+50.00	895+50.00	300		2.5 - 2.8			
33	893+50.00	897+50.00	400	2.7 - 4.2				
34	916+50.00	920+50.00	400			3.1 - 4.2		
40	940+00.00	947+50.00	750				3 - 4.8	
12	946+50.00	949+50.00	300					3.5 - 4.1

**Table 5 – ON/OFF RAMPS Existing Deficient Cross Slope Segments (Shoulders)***(Shoulder Flatter than Adjacent Lane Cross Slope)*

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)	
				Ramp 87260158	
				Inside Shoulder	Outside Shoulder
11	893+50.00	896+50.00	300	1.1 - 1.6	

**Table 6 – NW 167TH STREET Existing Deficient Cross Slope Segments (*Travel Lanes*)**  
(Flatter than 1.50%)

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)			
				Westbound		Eastbound	
				Outside Lane	Inside Lane	Inside Lane	Outside Lane
1	884+16.66	898+50.00	1433				0.6 -1.7
4	884+50.00	889+50.00	500			0.4 - 1.5	
50	887+00.00	888+50.00	150		1.1 -1.4		
42	887+50.00	889+50.00	200	0.4 - 1.3			
51	895+50.00	899+50.00	400		1.1 1.3		
5	902+50.00	905+50.00	300			0.2 - 1.2	
52	903+50.00	905+50.00	200		0.8 - 1.4		
2	904+50.00	905+74.22	124				0.6 -1.2
43	908+00.00	910+00.00	200		0.9 - 1.4		
3	907+00.00	910+50.00	350				0.9 - 1.5
6	907+00.00	909+50.00	250			0.2 - 1.2	
54	913+50.00	916+50.00	300		0.7 - 1.3		
44	914+50.00	916+50.00	200	0.4 - 0.9			
7	915+50.00	917+50.00	200			1.2 - 1.4	
8	918+50.00	923+50.00	500			1.3 - 1.5	
55	919+50.00	932+00.00	1250		0.2-1.5		
45	930+50.00	932+00.00	150	0-1.2			
56	936+50.00	938+50.00	200		0.8-1.1		
46	940+50.00	943+50.00	300	1.1-1.2			
9	943+50.00	945+50.00	200			1- 1.1	
48	949+00.00	953+00.00	400		0.4-1.5		
10	950+50.00	953+00.00	250			0.1 - 1.3	
49	953+00.00	954+50.00	150	0.4-1.1			

**Table 7 – NW 167TH STREET Existing Deficient Cross Slope Segments (*Travel Lanes*)**  
(Steeper than 3.0%)

Location	Begin Station	End Station	Length (ft)	Existing Cross Slope Range (%)			
				Westbound		Eastbound	
				Outside Lane	Inside Lane	Inside Lane	Outside Lane
53	908+50.00	912+50.00	400	3.3 - 6.5			
47	947+50.00	949+50.00	200	3.4 - 4.2			



In order to determine if bringing the existing cross slopes up to current standards was justified based on safety, the five-year crash history (2008-2012) for the corridor was requested and analyzed. Crashes that occurred within identified deficient locations and determined to be directly attributed to a substandard cross slope were used to perform a Benefit/Cost (B/C) analysis. At each of the studied locations, the B/C ratio obtained was less than one. Therefore, corrections could not be justified based on Safety. Furthermore, since this corridor is anticipated to be reconstructed as part of a future capacity project for the addition of express lanes to SR-826 (to be let within the next 10 years), the improvements required to bring the existing deficient cross slopes up to standard would be disproportionately costly relative to the need and probable use.

**As a result, a Design Exception is being requested to maintain the existing substandard cross slopes at all locations identified along the SR-826 mainline, the on/off ramps, and NW 167th St. from MP 21.623 to MP 23.046.**

## **2. DESIGN CRITERIA**

Cross Slope is listed as one of the thirteen Controlling Design Elements in the FDOT Plans Preparation Manual (PPM), Volume 1, Chapter 23 (January 2015); therefore, the applicable criteria controlling this element of design is based on both FDOT and AASHTO requirements. The following section summarizes criteria to be followed when addressing cross slope along state roads in Florida.

### **2.1. FDOT**

#### **2.1.1. FRONTAGE ROAD**

##### **2.1.1.1. TRAVEL LANES**

According to Table 25.4.6, Roadway Cross Slopes of Volume I of the FDOT Plans Preparation Manual (Revised January 1, 2015), the allowable cross slope range for roadway cross slopes is between 0.015 and 0.030.

##### **2.1.1.2. SHOULDERS**

According to Table 25.4.6, Roadway Cross Slopes of Volume I of the FDOT Plans Preparation Manual (Revised January 1, 2015), the allowable cross slopes range for paved shoulder is between the cross slope of the adjacent lane and 0.080. In addition, according to one of the footnotes on Table 25.4.6, "When existing shoulders are to remain, the algebraic difference between the shoulder slope and adjoining roadway pavement slope shall be  $\leq 0.07$ ."

#### **2.1.2. MAINLINE**

##### **2.1.2.1. TRAVEL LANES**

According to Table 25.4.7 Freeway Cross Slopes of Volume I of the FDOT Plans Preparation Manual (Revised January 1, 2015), the allowable cross slope range for inside travel lanes on freeways is between 0.015 and 0.025. The allowable cross slope range for outside travel lanes on freeways is between 0.025 and 0.035.

### **2.1.2.2. SHOULDERS**

According to the footnotes on Table 25.4.7, Freeway Cross Slopes of Volume I of the FDOT Plans Preparation Manual (Revised January 1, 2015), paved shoulder cross slopes do not need to be corrected if they meet the values in Table 25.4.6, that requires that cross slopes range for paved shoulder between the cross slope of the adjacent travel lane and 0.08. In addition, according to one of the footnotes on Table 25.4.6, "When existing shoulders are to remain, the algebraic difference between the shoulder slope and adjoining roadway pavement slope shall be  $\leq 0.07$ ."

### **2.1.3. RAMPS**

#### **2.1.3.1. TRAVEL LANES**

According to Table 25.4.7, Roadway Cross Slopes of Volume I of the FDOT Plans Preparation Manual (Revised January 1, 2015), the allowable cross slope range for inside travel lanes on freeways is between 0.015 and 0.025. This criterion applies to the ramps.

#### **2.1.3.2. SHOULDERS**

According to Table 25.4.6, Roadway Cross Slopes of Volume I of the FDOT Plans Preparation Manual (Revised January 1, 2015), the allowable cross slopes range for paved shoulder is between the cross slope of the adjacent lane and 0.080. In addition, according to one of the footnotes on Table 25.4.6, "When existing shoulders are to remain, the algebraic difference between the shoulder slope and adjoining roadway pavement slope shall be  $\leq 0.07$ ."

## **2.1. AASHTO**

### **2.1.1. FRONTAGE ROAD**

#### **2.1.1.1. TRAVEL LANES**

According to the *2004 AASHTO's A Policy on Geometric Design of Highways and Streets* (page 472), "Cross slopes should range from 1.5 to 3 percent; the lower portion of this range is appropriate where drainage flow is across a single lane and higher values are appropriate where flow is across several lanes."

#### **2.1.1.2. SHOULDERS**

According to the *2004 AASHTO A Policy on Geometric Design of Highways and Streets* (page 405), "Shoulder cross slope should range between 2 and 6 percent".

### **2.1.2. MAINLINE**

#### **2.1.2.1. TRAVEL LANES**

According to the *2004 AASHTO's A Policy on Geometric Design of Highways and Streets* (page 504), "Cross slopes should range should range between 1.5 and 2 percent on tangent sections.....For areas of heavy rainfall, a cross slope of 2.5 percent may be needed to provide adequate pavement drainage".

### 2.1.2.2. SHOULDERS

According to the 2004 AASHTO A Policy on Geometric Design of Highways and Streets (page 505), "Shoulder cross slope should range between 2 and 6 percent".

### 2.1.3. RAMPS

#### 2.1.3.1. TRAVEL LANES

According to the 2004 AASHTO's A Policy on Geometric Design of Highways and Streets (page 829), "The cross slope on portions of ramps on tangent normally should be sloped one way at a practical rate ranging from 1.5 to 2.0 for high-type pavements".

#### 2.1.3.2. SHOULDERS

According to the 2004 AASHTO A Policy on Geometric Design of Highways and Streets (page 405), "Shoulder cross slope should range between 2 and 6 percent".

All criteria supporting documentation has been provided under **Appendix D**.

## 3. PROPOSED CRITERIA

The proposed criteria is to match existing cross slopes along the travel lanes and shoulders at locations identified in the **Table 1 thru Table 7**, where the existing pavement cross slopes fail to meet FDOT and AASHTO requirements. Please refer to **Appendix C** for an exhibit showing the limits of the deficiencies.

## 4. JUSTIFICATION

The following section discusses a number of factors that justify our approach to maintaining the existing deficient cross slope locations along this project.

### 4.1. FUTURE CAPACITY PROJECT

FDOT District Six is currently finalizing a Project Development and Environment (PD&E) Study (FM No. 418423-1) for the addition of express lanes to the SR-826/Palmetto Expressway from the SR-93/I-75 Interchange (MP 15.354) to the Golden Glades Interchange (GGI) (MP 24.572). This project is anticipated to be let for construction within the next 10 years, based on information provided by the District. Since this future capacity project will reconstruct SR-826 Mainline, the on/off ramps, and the frontage roads, this RRR would be considered an interim project, and the improvements required to bring the existing cross slope up to standard would be disproportionately costly relative to the need and probable use.

### 4.2. OPERATION CONDITIONS

#### Amount and Character of Traffic Using the Facility (Mainline)

Traffic projections have been obtained from the Florida Department of Transportation (FDOT) District VI. The Average Annual Daily Traffic (AADT) for 2014 is approximately 155,700 vehicles per day. The projected traffic for 2031 is estimated at 160,700 vehicles. The corridor has a "K" factor of 8% and a "D" factor of 59.3%. The "T" factor for this section of SR 826 is 7.7%. The design and posted speed within the project limits is 60 and 55 MPH, respectively. The scope of this section of SR

## APPENDICES

**APPENDIX A. STRAIGHT LINE DIAGRAM**

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY  
FLORIDA DEPARTMENT OF TRANSPORTATION

DATE BY SLD REV  
05/26/11 N/A

A=ASPHALT  
B=BRICK  
C=CONCRETE  
O=OTHER

INTERIM REVISIONS  
EMP INV N/A

5 YR INV SLD REV  
05/26/11 05/21/11 20-043

INT. OR US ROUTE NO  
SR 826

STATE ROAD NO.  
SR 826

COUNTY  
MIAMI-DADE

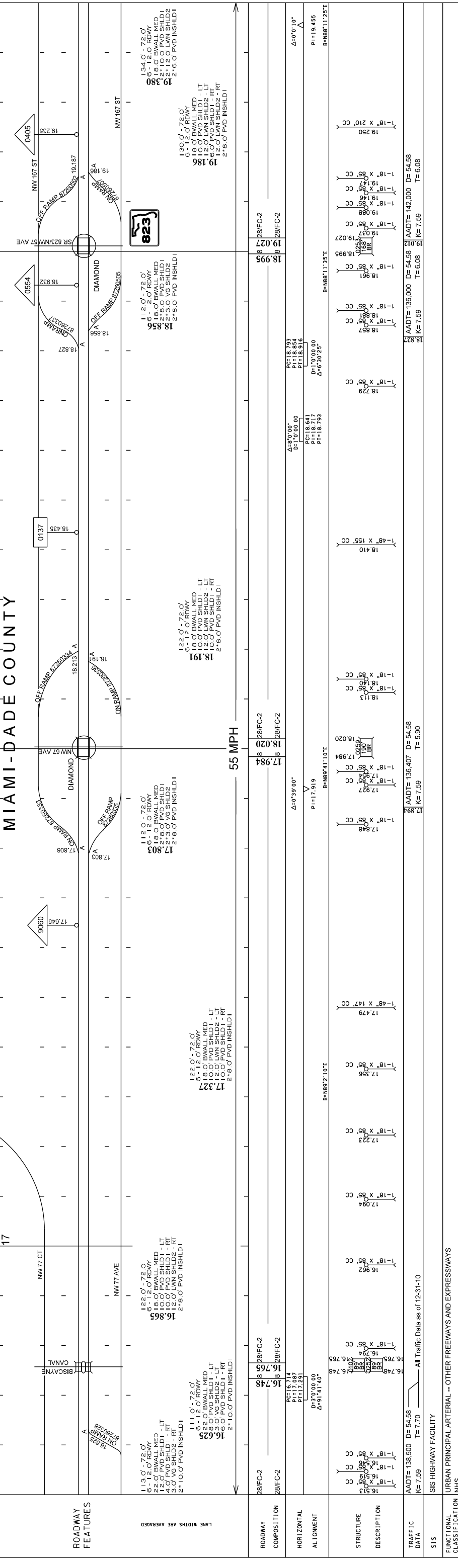
DISTRICT  
6

ROADWAY ID  
87260000

SHEET  
NO. 4  
OF. 5

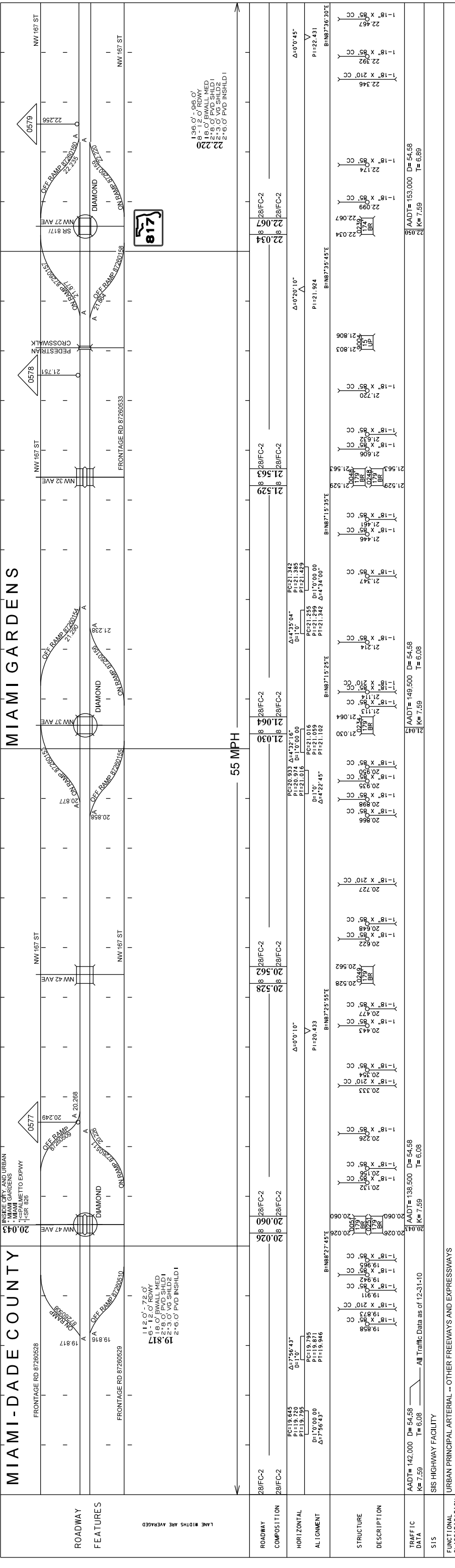
MIAMI-DADE COUNTY

18

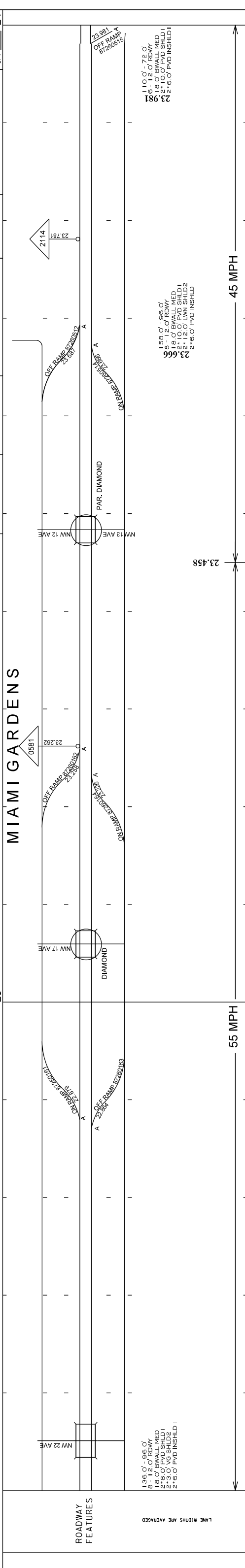


MIAMI-DADE COUNTY

20

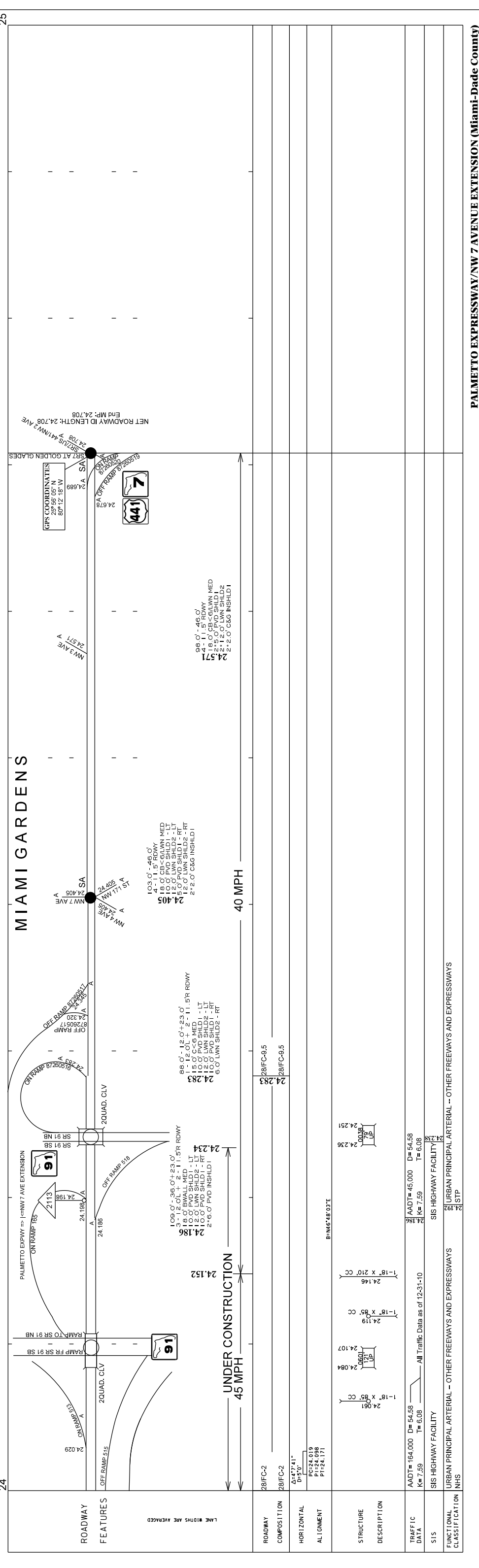


MIAMI GARDENS



ROADWAY	28/FC-2	23,470	23,497	28/FC-2	23,470	28/FC-2
COMPOSITION	B	B	B	B	B	B
HORIZONTAL	Δ=0°35'					
ALIGNMENT	PI=23.438 B=N8657.45°E					
STRUCTURE	1-18" X 85" CC					
DESCRIPTION	22,800 22,834 22,858 22,899 22,926 22,969 22,996 23,023 23,073 23,147 23,175 23,293 23,324 23,402 23,432 23,470 23,497 23,580 23,590 23,993 1-18" X 158" CC					
TRAFFIC DATA	AADT= 153,000 D= 54.58 K= 7.59 T= 6.08 All Traffic Data as of 12-31-10					
SIS	SIS HIGHWAY FACILITY					
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS					

A=ASPHALT B=BRICK C=CONCRETE O=OTHER  
 INTERIM REVISIONS: 5 YR INV SLD REV BMP 05/26/11 06/21/11 22,500 24,708 N/A  
 LANE WIDTHS ARE AVERAGED  
 Δ=0°35' PI=23.438 B=N8657.45°E  
 Δ=0°32'20" PI=22.937 B=N8657.10°E  
 AADT= 153,000 D= 54.58 K= 7.59 T= 6.08 All Traffic Data as of 12-31-10  
 AADT= 164,000 D= 54.58 K= 7.59 T= 6.08  
 SIS HIGHWAY FACILITY  
 URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS



ROADWAY	28/FC-2	24,251	24,283	28/FC-5	24,283	28/FC-5
COMPOSITION	B	B	B	B	B	B
HORIZONTAL	Δ=47°41' PI=24.098 B=N46°48'03"E					
ALIGNMENT	B=N46°48'03"E					
STRUCTURE	1-18" X 85" CC					
DESCRIPTION	24,094 24,107 24,119 24,146 24,251 24,283 24,324 24,330 24,340 24,350 24,360 24,370 24,380 24,390 24,400 24,410 24,420 24,430 24,440 24,450 24,460 24,470 24,480 24,490 24,500 24,510 24,520 24,530 24,540 24,550 24,560 24,570 24,580 24,590 24,600 24,610 24,620 24,630 24,640 24,650 24,660 24,670 24,680 24,690 24,700 24,710 24,720 24,730 24,740 24,750 24,760 24,770 24,780 24,790 24,800 24,810 24,820 24,830 24,840 24,850 24,860 24,870 24,880 24,890 24,900 24,910 24,920 24,930 24,940 24,950 24,960 24,970 24,980 24,990 25,000					
TRAFFIC DATA	AADT= 164,000 D= 54.58 K= 7.59 T= 6.08 All Traffic Data as of 12-31-10					
SIS	SIS HIGHWAY FACILITY					
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS					

A=ASPHALT B=BRICK C=CONCRETE O=OTHER  
 INTERIM REVISIONS: 5 YR INV SLD REV BMP 05/26/11 06/21/11 22,500 24,708 N/A  
 LANE WIDTHS ARE AVERAGED  
 Δ=47°41' PI=24.098 B=N46°48'03"E  
 AADT= 164,000 D= 54.58 K= 7.59 T= 6.08 All Traffic Data as of 12-31-10  
 AADT= 164,000 D= 54.58 K= 7.59 T= 6.08  
 SIS HIGHWAY FACILITY  
 URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS

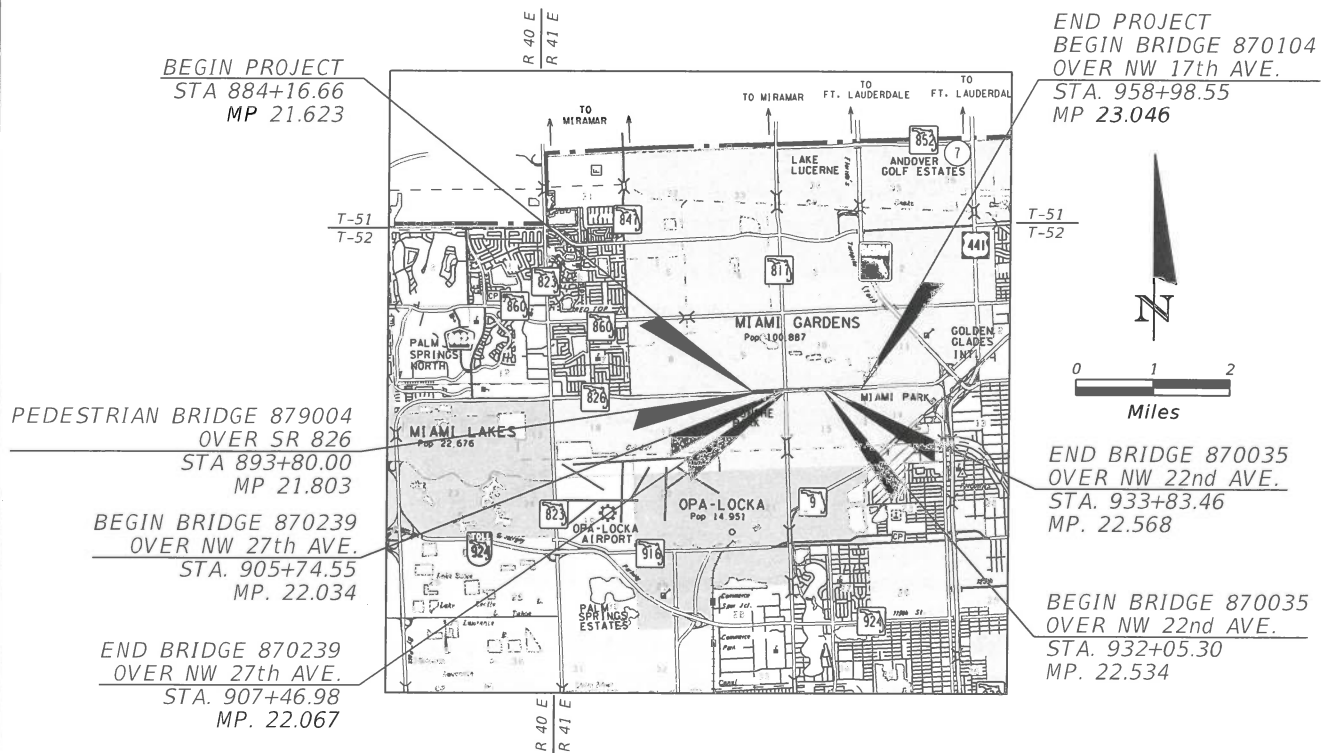
**APPENDIX B. APPROVED TYPICAL SECTION PACKAGE**



*STATE OF FLORIDA*  
*DEPARTMENT OF TRANSPORTATION*  
***TYPICAL SECTION PACKAGE***

FINANCIAL PROJECT ID 432743-3-52-01  
 MIAMI DADE COUNTY (87260)  
 SR 826/PALMETTO EXPRESSWAY AND NW 167TH STREET,  
 FROM WEST OF NW 27TH AVENUE TO WEST OF NW 17TH AVENUE

FDOT PROJECT MANAGER: BAO-YING WANG, P.E.  
 CONSULTANT PROJECT MANAGER: MAIKEL GONZALEZ, P.E.



LOCATION MAP

PREPARED BY:  
**BOLTON PEREZ & ASSOCIATES**  
 7205 CORPORATE CENTER DR., STE. 201  
 MIAMI, FLORIDA 33126  
 T: 305.392.3190 F: 305.392.3090  
 www.bpamiami.com  
 VENDOR NO. F-65-0789352-001  
 CERTIFICATE OF AUTHORIZATION 7904

SEPTEMBER 2014

## PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432743-3-52-01 COUNTY (SECTION) MIAMI-DADE (87260)

PROJECT DESCRIPTION SR 826/ PALMETTO EXPRESSWAY AND NW 167TH ST, FROM WEST OF NW 27TH AVE. (21.623) TO WEST OF NW 17TH AVE. (23.046)

### PROJECT CONTROLS - SR 826 MAINLINE

#### FUNCTIONAL CLASSIFICATION

- ( ) RURAL  
 (X) URBAN  
 (X) FREEWAY/EXPWY. ( ) MAJOR COLL.  
 ( ) PRINCIPAL ART. ( ) MINOR COLL.  
 ( ) MINOR ART. ( ) LOCAL

#### HIGHWAY SYSTEM

- Yes No  
 (X) ( ) NATIONAL HIGHWAY SYSTEM  
 (X) ( ) FLORIDA INTRASTATE HIGHWAY SYSTEM  
 (X) ( ) STRATEGIC INTERMODAL SYSTEM  
 (X) ( ) STATE HIGHWAY SYSTEM  
 ( ) (X) OFF STATE HIGHWAY SYSTEM

#### ACCESS CLASSIFICATION

- (X) 1 - FREEWAY  
 ( ) 2 - RESTRICTIVE w/Service Roads  
 ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing  
 ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing  
 ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing  
 ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing  
 ( ) 7 - BOTH MEDIAN TYPES

#### TRAFFIC

	YEAR	AADT
CURRENT	<u>2014</u>	<u>155,700</u>
OPENING	<u>2017</u>	<u>159,000</u>
DESIGN	<u>2031</u>	<u>160,700</u>

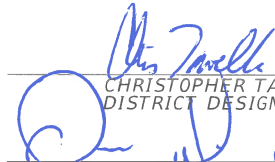
#### DISTRIBUTION


DESIGN SPEED	<u>60 MPH</u>	K= 8%
POSTED SPEED	<u>55 MPH</u>	D = 59.3%
		T 24= 7.7%

#### CRITERIA

- ( ) NEW CONSTRUCTION / RECONSTRUCTION  
 ( ) RRR INTERSTATE / FREEWAY  
 (X) RRR NON-INTERSTATE / FREEWAY  
 ( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION  
 ( ) TDLC / RRR  
 ( ) MANUAL OF UNIFORM MINIMUM STANDARDS  
 (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

#### DESIGN SPEED APPROVALS

  
 CHRISTOPHER TAVELLA, P.E.  
 DISTRICT DESIGN ENGINEER  
 DATE 9/28/14

  
 OMAR MEITIN, P.E.  
 DISTRICT TRAFFIC OPERATIONS ENGINEER  
 DATE 10/7/14

#### LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

##### VARIATIONS

- BORDER WIDTH
- MEDIAN WIDTH
- CROSS SLOPE

##### EXCEPTIONS

- CROSS SLOPE
- SHOULDER WIDTH AND HORIZONTAL CLEARANCE TO GUARDRAIL
- VERTICAL CLEARANCE (PEDESTRIAN BRIDGE UNDERPASS)

#### LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

- PEDESTRIAN BRIDGE 879004 OVER SR 826/PALMETTO EXPWY.
- BRIDGE 870239 OVER NW 27th AVE.
- BRIDGE 870035 OVER NW 22nd AVE.

#### LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

- |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- MIAMI-DADE COUNTY PUBLIC WORKS DEPARTMENT (WATER)</li> <li>- CITY OF NORTH MIAMI BEACH PUBLIC SERVICES DEPT. (WATER)</li> <li>- FLORIDA POWER &amp; LIGHT TRANSMISSION</li> <li>- FLORIDA POWER &amp; LIGHT DISTRIBUTION</li> <li>- FLORIDA POWER &amp; LIGHT FIBERNET</li> <li>- LEVEL 3 COMMUNICATIONS</li> <li>- AT&amp;T FLORIDA</li> </ul> | <ul style="list-style-type: none"> <li>- FLORIDA GAS TRANSMISSION</li> <li>- FIBERLIGHT LLC</li> <li>- FLORIDA CITY GAS</li> <li>- COMCAST</li> <li>- VERIZON BUSINESS (MCI)</li> </ul> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

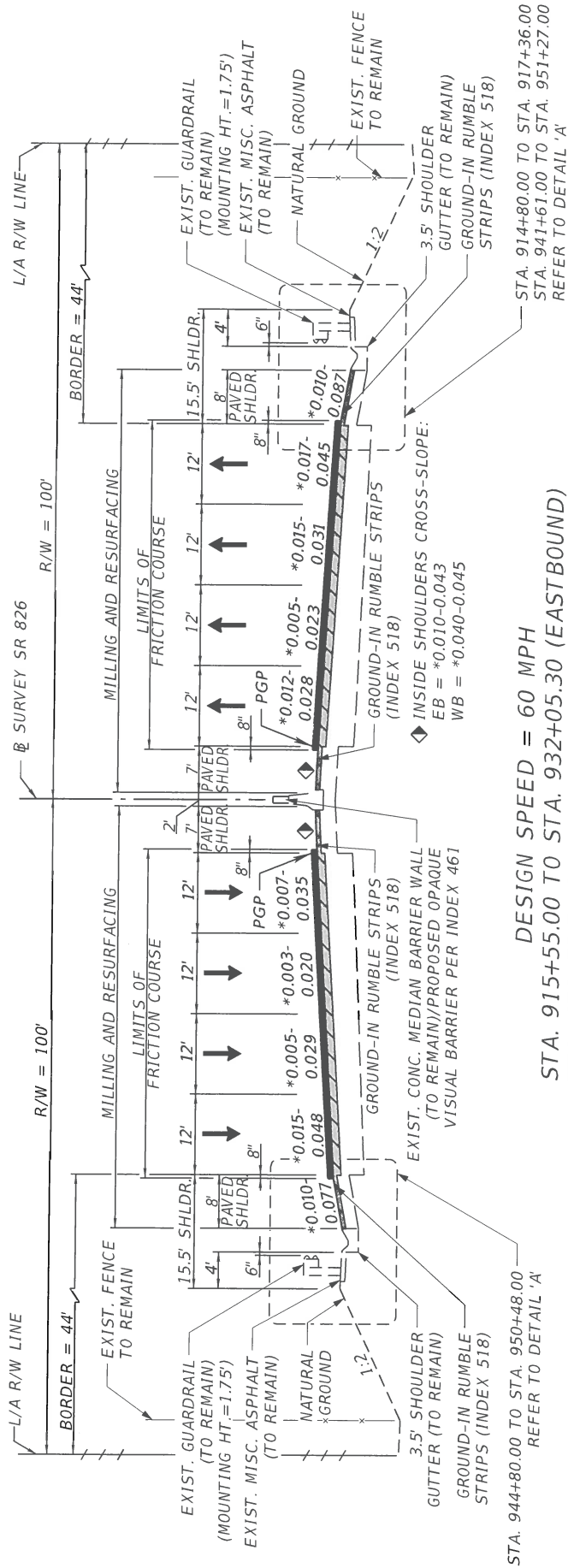
NONE



# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432743-3-52-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME MIAMI-DADE  
 SECTION NO. 87260 ROAD DESIGNATION SR 826/ PALMETTO EXPRESSWAY LIMITS/MILEPOST MP 21.623 TO MP 23.046  
 PROJECT DESCRIPTION RESURFACING, RESTORATION AND REHABILITATION OF SR 826/PALMETTO EXPWY. FROM W. OF NW 27TH AVE. TO W. OF NW 17TH AVE.  
 (INCLUDING NW 167TH ST. (FRONTAGE RD.) AND ON/OFF-RAMPS)

## PROPOSED ROADWAY TYPICAL SECTION



**MAIKEL GONZALEZ**  
 LICENSE NO. 65609  
 APPROVED BY: [Signature]  
 DATE: 9/23/14  
 STATE OF FLORIDA  
 PROFESSIONAL ENGINEER RECORD

**BOITON PEREZ & ASSOCIATES**  
 7205 Corral Gables Center Drive  
 Suite 201  
 Miami, Florida 33126  
 T: 305.392.3190 F: 305.392.3090  
 www.boitonperez.com  
 Vendor FL COA No. 7994

FDOT CONCURRENCE	FHWA CONCURRENCE
Christopher Tavella, PE FDOT District Design Engineer	N/A FHWA Transportation Engineer
Date: 9/28/14	Date: _____

## **APPENDIX D. DESIGN CRITERIA**

**Table 25.4.6 Roadway Cross Slopes**

Facility or Feature	Standard	Allowable Range
Two-Lane Roads	0.02	0.015-0.030
Multilane Roads	0.02	0.015-0.040
Shoulders	0.06	Adjacent Lane Cross Slope- 0.080
Parking Lanes	0.05	0.015-0.050

The multilane standard cross slope value shown is applicable for up to two lanes in one direction. See Section 2.1.5 for additional guidance.

Existing multilane curb and gutter sections may have outside lanes with a maximum cross slope of 0.05.

Existing curb and gutter sections originally constructed with a parabolic crown section may be resurfaced using a series of tangents with a cross slope range from 0.015 to 0.05.

The maximum algebraic difference between adjacent through lanes shall not exceed 0.06.

When existing shoulders are to remain, the algebraic difference between the shoulder slope and adjoining roadway pavement slope shall be  $\leq 0.07$ .

Parking spaces and access aisles dedicated to serving persons with disabilities shall have cross slopes no steeper than 0.02 (1:50) in any direction.

**Table 25.4.7 Freeway Cross Slopes**

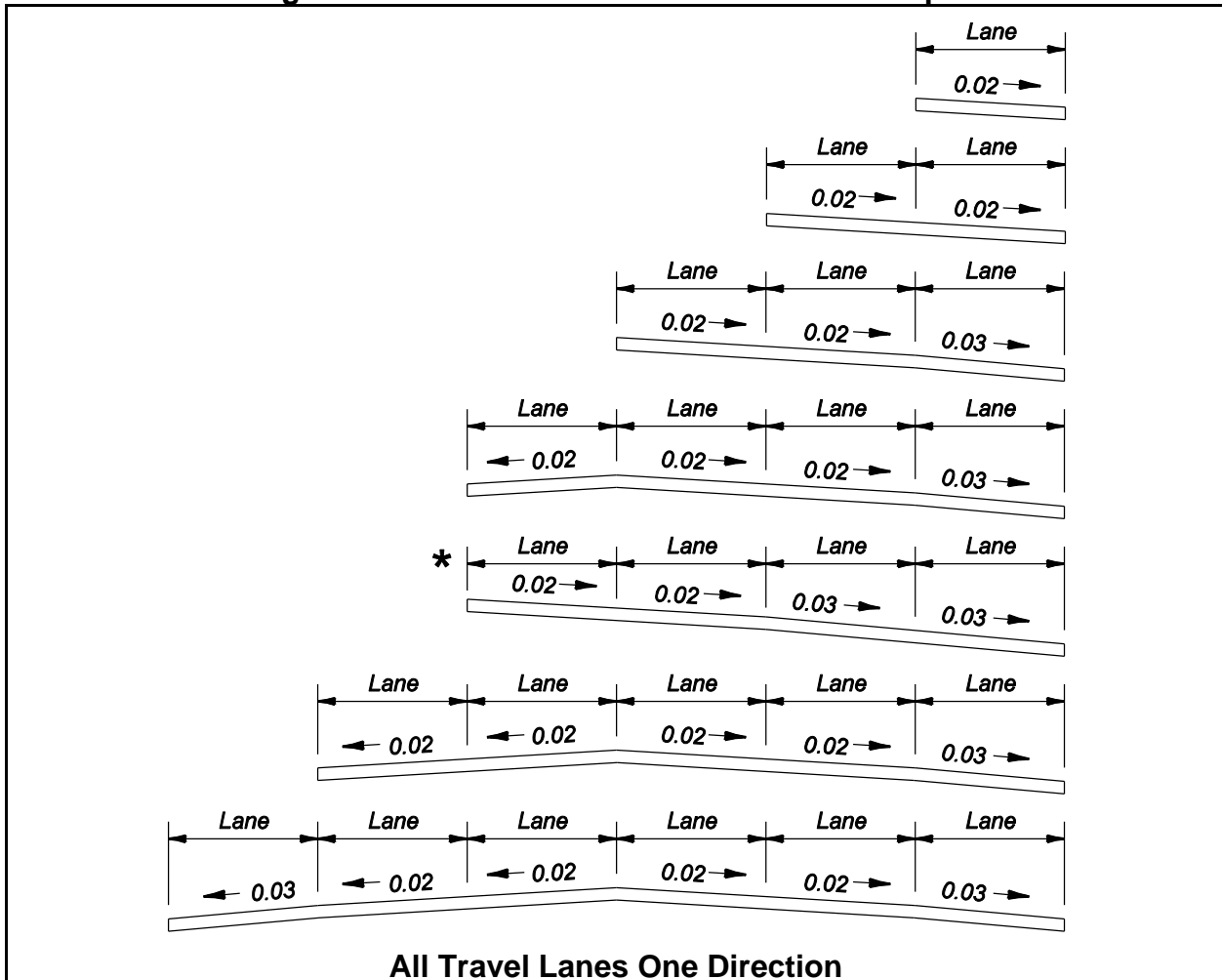
Facility or Feature	Standard	Allowable Range
Travel Lanes	0.02*	0.015-0.025
Travel Lanes	0.03*	0.025-0.035

\* Applies to lanes as designated in Figure 2.1.1.

The algebraic difference in cross slope between adjacent travel lanes shall not exceed 0.04. The maximum algebraic difference in cross slope between a through lane and an auxiliary lane at a turning roadway terminal shall meet Table 2.1.4.

Paved shoulder cross slopes do not need to be corrected if they meet the values in Table 25.4.6 and the algebraic difference in cross slope between the shoulder and adjacent travel lane is 0.07 or less.

**Figure 2.1.1 Standard Pavement Cross Slopes**



These sections show only the standard slopes for adjoining travel lanes; they do not prescribe needed lanes, lane usage or typical section requirements other than lane slope. These slopes are not applicable to parabolic crowns.

Maximum pavement cross slopes on tangent sections are:

0.04 for design speeds of 45 mph or less.

0.03 for design speeds greater than 45 mph.

The change in cross slope between adjacent through lanes shall not exceed 0.04.

Slopes on multi-purpose lanes may be 0.03 to 0.05. Portions of multi-purpose lanes that are reserved for parking and access isles for the physically disabled shall have cross slopes not exceeding 1:50 (0.02) in all directions.

\*NOTE: Four travel lanes may be sloped in one direction for curb and gutter sections only.

guidance applicable to both rural and urban arterials is presented in the section on “Superelevated Cross Sections” in the earlier discussion of rural arterials in this chapter.

Type of terrain	Metric						US Customary						
	Maximum grade (%) for specified design speed (km/h)						Maximum grade (%) for specified design speed (mph)						
	50	60	70	80	90	100	30	35	40	45	50	55	60
Level	8	7	6	6	5	5	8	7	7	6	6	5	5
Rolling	9	8	7	7	6	6	9	8	8	7	7	6	6
Mountainous	11	10	9	9	8	8	11	10	10	9	9	8	8

Exhibit 7-10. Maximum Grades for Urban Arterials

### Cross Slope

Sufficient cross slope for adequate pavement drainage is important on urban arterials. The typical problems related to splashing and hydroplaning are compounded by heavy traffic volumes and curbed sections, especially for high speeds. Cross slopes should range from 1.5 to 3 percent; the lower portion of this range is appropriate where drainage flow is across a single lane and higher values are appropriate where flow is across several lanes. Even higher cross-slope rates may be used for parking lanes. The overall cross section should provide a smooth appearance without sharp breaks. Because urban arterials are often curbed, it is necessary to provide for longitudinal as well as cross-slope drainage. The use of higher cross-slope rates also reduces flow on the roadway and ponding of water due to pavement irregularities and rutting. The section on “Cross Slopes” in Chapter 4 provides additional guidance.

### Vertical Clearances

New or reconstructed structures should provide 4.9-m [16-ft] vertical clearance over the entire roadway width. Existing structures that provide clearance of 4.3 m [14 ft], if allowed by local statute, may be retained. In highly urbanized areas, a minimum clearance of 4.3 m [14 ft] may be provided if there is an alternate route with 4.9-m [16-ft] clearance. Structures should provide additional clearance for future resurfacing of the underpassing road.

### Lane Widths

Lane widths may vary from 3.0 to 3.6 m [10 to 12 ft]. Lane widths of 3.0 m [10 ft] may be used in highly restricted areas having little or no truck traffic. Lane widths of 3.3 m [11 ft] are used quite extensively for urban arterial street designs. The 3.6-m [12-ft] lane widths are most desirable and should be used, where practical, on higher speed, free-flowing, principal arterials.



Paved shoulders should be continuous on both the right and left sides of all freeway facilities. The usable paved width of the right shoulder should be at least 3.0 m [10 ft]; where the DDHV for truck traffic exceeds 250 veh/h, the right shoulder width should be 3.6 m [12 ft]. On four-lane freeways, the median (or left) shoulder is normally 1.2 to 2.4 m [4 to 8 ft] wide, at least 1.2 m [4 ft] of which should be paved and the remainder stabilized. On freeways of six or more lanes, the usable paved width of the median shoulder should also be 3.0 m [10 ft] and preferably 3.6 m [12 ft] where the DDHV for truck traffic exceeds 250 veh/h. Ramp shoulder widths are usually constructed adjacent to acceleration and deceleration lanes with transitions to the freeway shoulder width at the taper ends. **Shoulder cross slope should range between 2 and 6 percent** and can be at least 1 percent greater than the pavement cross slope on tangent sections to facilitate drainage. To provide visual contrast, the color or texture of the shoulders should be different from that of the traveled way. On viaducts, differentiation between traveled way and shoulders is sometimes accomplished by striping and pavement marking, or by corrugated depressions.

## Curbs

In the interest of safety, caution should be exercised in the use of curbs on freeways; where curbs are provided in special cases, they should not be closer to the traveled way than the outer edge of shoulder and should be easily traversable. An example of a special case in which shoulder curbs are used on freeways is at locations where curbs are provided to control drainage and reduce erosion. For more information, refer to the discussion on curb types and their placement in Chapter 4.

## Superelevation

The full superelevation rates used on freeways that are depressed, built at ground-level, or elevated on embankments are not generally applicable to elevated freeways on viaducts. Appearance and adjacent development somewhat limit the difference in elevation between the edges of multilane pavements. Superelevation rates of 6 to 8 percent are generally the maximum that should be used on viaducts. The lower value may be used where freezing and thawing conditions are likely, because bridge decks generally freeze more rapidly than other roadway sections. Combinations of design speed and curvature that result in superelevation rates greater than these values should be avoided. Where freeways are intermittently elevated on viaducts, the lower superelevation rates should be used throughout to promote consistently safe operation. Maximum superelevation rates of 8 to 12 percent are applicable for freeways if snow and ice conditions are not a factor. In lower speed situations, a maximum superelevation rate of 6 percent may be applicable.

## Grades

Maximum grades for freeways are presented in Exhibit 8-1 as a function of design speed and terrain type. Grades on urban freeways should be comparable to those on rural freeways of the same design speed. Steeper grades may be tolerated in urban areas, but the closer spacing of

designs, the values cited in the next paragraph apply. However, with proper ramp terminal facilities, short upgrades of 7 to 8 percent permit good operation without unduly slowing down passenger cars. Short upgrades of as much as 5 percent do not unduly interfere with truck and bus operation. On one-way downgrade ramps, gradients of up to 8 percent do not cause undesirable operation due to excessive acceleration of passenger vehicles. However, there is a greater potential for heavy trucks to increase their speeds on downgrades. Therefore, downgrades should desirably be limited to 3 or 4 percent on ramps with sharp horizontal curvature and significant heavy truck or bus traffic. In many areas, consideration of snow and ice conditions may limit the choice of gradient regardless of the direction of the grade.

From the foregoing discussion, it can be seen that ramp grades are not directly related to design speed; however, design speed is a general indication of the quality of design being used, and the gradient for a ramp with a high design speed should be flatter than for one with a low design speed. As general criteria, it is desirable that upgrades on ramps with a design speed of 70 to 80 km/h [45 to 50 mph] be limited to 3 to 5 percent; those for a 60-km/h [40-mph] design speed, to 4 to 6 percent; those for a 40- to 50-km/h [25- to 30-mph] design speed, to 5 to 7 percent; and those for a 30- to 40-km/h [15- to 25-mph] design speed, to 6 to 8 percent. Where appropriate for topographic conditions, grades steeper than desirable may be used. One-way downgrades on ramps should be held to the same general maximums, but in special cases they may be 2 percent greater. Where ramp terminals are properly located and fit other design needs and where the curvature conforms to a reasonable design speed, ramps are generally long enough to attain the difference in levels with grades that are level or, at least, not too steep. The cases in which grade is a determining factor in the length of the ramp are as follows: (1) for intersection angles of 70 degrees or less, the ramp may need to be located farther from the structure to provide a ramp of sufficient length with reasonable grade; (2) where the intersection legs are on appreciable grade, with the upper road ascending and the lower road descending from the structure, the ramp will have to attain a large difference in elevation that increases with the distance from the structure; (3) where a ramp leaves the lower road on a downgrade and meets the higher road on a downgrade, longer-than-usual vertical curves at the terminals may need a long ramp to meet grade limitations. For these reasons, alignment and grade of a ramp should be determined jointly.

**Vertical curves.** Usually, ramp profiles assume the shape of the letter "S" with a sag vertical curve at the lower end and a crest vertical curve at the upper end. Additional vertical curves may be needed, particularly on ramps that overpass or underpass other roadways. Where a crest or sag vertical curve extends onto the ramp terminal, the length of curve should be determined by using a design speed between those on the ramp and the highway. See Chapter 3 for design values for open and turning roadway conditions.

**Superelevation and cross slope.** The following guidelines should be used for cross-slope design on ramps:

1. Superelevation rates, as related to curvature and design speed on ramps, are given in Exhibit 3-25 through 3-29.
2. The cross slope on portions of ramps on tangent normally should be sloped one way at a practical rate ranging from 1.5 to 2 percent for high-type pavements.

## Design Traffic Volumes

Both urban and rural freeways should normally be designed to accommodate traffic projections for a 20-year period, particularly in the case of new construction. However, some elements of freeway reconstruction may be based on a lesser design period. For further guidance on the selection of appropriate periods for forecasting design traffic volumes, refer to Chapter 2. Specific capacity needs should be determined from directional design hourly volumes (DDHV) for the appropriate design period. In large metropolitan areas, the selection of appropriate design traffic volumes and design periods may be influenced by system planning. Segments of freeways may be constructed or reconstructed to be commensurate with either intermediate traffic demands or traffic based on the completed systems, whichever may be most appropriate.

## Levels of Service

Procedures for traffic operational analyses for freeways, including appropriate adjustments for operational and highway factors, are found in the *Highway Capacity Manual (HCM) (1)*, which also presents a thorough discussion of the level-of-service concept. Designers should strive to provide the highest level of service practical and consistent with anticipated conditions. The levels of service concept is discussed in Chapter 2 and the levels of service are summarized in Exhibit 2-31. For acceptable degrees of congestion, freeways and their auxiliary facilities (i.e., ramps, mainline weaving sections, and collector-distributor (C-D) roads in urban and developing areas) should generally be designed for level-of-service C. In heavily developed sections of metropolitan areas, achievement of level-of-service C may not be practical and the use of level-of-service D may be appropriate. In rural areas, level-of-service B is desirable for through and auxiliary lanes, although level-of-service C may be acceptable on auxiliary facilities carrying unusually high volumes.

## Pavement and Shoulders

Freeways should have a minimum of two through-traffic lanes for each direction of travel. Through-traffic lanes should be 3.6 m [12 ft] wide. Pavements should have a high-type surface with adequate skid resistance and provide a high degree of structural adequacy. **Cross slopes should range between 1.5 and 2 percent on tangent sections, with the higher value recommended for areas with moderate rainfall. For areas of heavy rainfall, a cross slope of 2.5 percent may be needed to provide adequate pavement drainage.** Appropriate cross-slope rates are discussed in Chapter 4. For elevated freeways on viaducts, two-lane pavements usually are sloped to drain the full width of the roadway. On wider facilities, particularly in areas with heavy rainfall, the crown may be located on the lane line at one-third or one-half the total width from one edge, thus providing two directions for surface drainage. In areas that experience snow, the median and cross slopes of the traveled way should be designed to prevent snow stored in the median from melting and draining across the roadway. This may result in icing conditions during freezing temperatures.

Paved shoulders should be continuous on both the right and left sides of all freeway facilities. The usable paved width of the right shoulder should be at least 3.0 m [10 ft]; where the DDHV for truck traffic exceeds 250 veh/h, the right shoulder width should be 3.6 m [12 ft]. On four-lane freeways, the median (or left) shoulder is normally 1.2 to 2.4 m [4 to 8 ft] wide, at least 1.2 m [4 ft] of which should be paved and the remainder stabilized. On freeways of six or more lanes, the usable paved width of the median shoulder should also be 3.0 m [10 ft] and preferably 3.6 m [12 ft] where the DDHV for truck traffic exceeds 250 veh/h. Ramp shoulder widths are usually constructed adjacent to acceleration and deceleration lanes with transitions to the freeway shoulder width at the taper ends. **Shoulder cross slope should range between 2 and 6 percent and can be at least 1 percent greater than the pavement cross slope on tangent sections to facilitate drainage.** To provide visual contrast, the color or texture of the shoulders should be different from that of the traveled way. On viaducts, differentiation between traveled way and shoulders is sometimes accomplished by striping and pavement marking, or by corrugated depressions.

## Curbs

In the interest of safety, caution should be exercised in the use of curbs on freeways; where curbs are provided in special cases, they should not be closer to the traveled way than the outer edge of shoulder and should be easily traversable. An example of a special case in which shoulder curbs are used on freeways is at locations where curbs are provided to control drainage and reduce erosion. For more information, refer to the discussion on curb types and their placement in Chapter 4.

## Superelevation

The full superelevation rates used on freeways that are depressed, built at ground-level, or elevated on embankments are not generally applicable to elevated freeways on viaducts. Appearance and adjacent development somewhat limit the difference in elevation between the edges of multilane pavements. Superelevation rates of 6 to 8 percent are generally the maximum that should be used on viaducts. The lower value may be used where freezing and thawing conditions are likely, because bridge decks generally freeze more rapidly than other roadway sections. Combinations of design speed and curvature that result in superelevation rates greater than these values should be avoided. Where freeways are intermittently elevated on viaducts, the lower superelevation rates should be used throughout to promote consistently safe operation. Maximum superelevation rates of 8 to 12 percent are applicable for freeways if snow and ice conditions are not a factor. In lower speed situations, a maximum superelevation rate of 6 percent may be applicable.

## Grades

Maximum grades for freeways are presented in Exhibit 8-1 as a function of design speed and terrain type. Grades on urban freeways should be comparable to those on rural freeways of the same design speed. Steeper grades may be tolerated in urban areas, but the closer spacing of

**APPENDIX E. CRASH SUMMARY AND DETAILED POLICE REPORTS**

CRASH NUMBER: THE 9 DIGIT CRASH REPORT NUMBER  
 ROADWAY ID: THE 8 DIGIT NUMBER THAT IDENTIFIES THE PART OF THE STATE ROAD SYSTEM ON WHICH THE CRASH HAS OCCURRED  
 COUNTY: THE FIRST TWO DIGITS OF THE ROADWAY ID ARE THE NUMERIC D.O.T. CODE FOR COUNTY  
 SECTION: THE THIRD, FOURTH AND FIFTH DIGITS OF THE ROADWAY ID ARE THE SECTION OF THE STATE ROAD SYSTEM, WITHIN COUNTY, ON WHICH THE CRASH OCCURRED  
 SUBSECTION: THE SIXTH, SEVENTH AND EIGHTH DIGITS OF THE ROADWAY ID IDENTIFY THE SUBDIVISION OF THE PRIMARY SECTION ON WHICH THE CRASH OCCURRED  
 MILEPOST: THE MILEPOST IDENTIFIES THE EXACT POINT ON THE ROADWAY ID WHERE THE CRASH HAS OCCURRED  
 NEAREST NODE: THE NEAREST NODE IS THE CLOSEST NODE (A DEFINED POINT ON THE STATE ROAD SYSTEM) TO THE LOCATION OF THE CRASH  
 STATE ROAD: THE STATE ROAD IS THE ROUTE NUMBER ASSIGNED TO THE ROADWAY ID  
 AVERAGE DAILY TRAFFIC: THE AVERAGE NUMBER OF VEHICLES PER DAY PASSING THE MILE POINT WHERE CRASHES OCCURRED  
 YEAR: THE YEAR IN WHICH THE CRASH OCCURRED (FINAL TWO DIGITS)  
 MONTH: THE MONTH OF THE CRASH  
 DAY: THE DAY OF THE MONTH ON WHICH THE CRASH OCCURRED  
 HOUR: THE TIME AT WHICH THE CRASH OCCURRED, MILITARY TIME  
 CRASH RATE CLASS CATEGORY: THIS FIVE-LETTER/NUMBER CODE IS A COMBINATION OF RURAL/URBAN/SUBURBAN CLASSIFICATION, NUMBER OF LANES, DIVIDED/UNDIVIDED CODE, TYPE OF MEDIAN AND SUBSECTION

TYPE. FOR THOSE NOT OTHERWISE DEFINED BELOW:  
 - A FIRST LETTER "U" MEANS "URBAN" (CURB & GUTTER), "S" MEANS "SUBURBAN", (OPEN DRAINAGE INSIDE CITY OR URBAN AREA), "R" MEANS RURAL (OPEN DRAINAGE OUTSIDE CITY OR URBAN AREA).  
 - AFTER THE HYPHEN (-) THE NUMBER GIVES THE NUMBER OF THRU LANES: "2" MEANS 2-3, "4" MEANS 4-5, "6" MEANS 6 OR MORE.  
 - THE LETTER IN THE 4TH POSITION DISTINGUISHES DIVIDED ("D") FROM UNDIVIDED ("UN")  
 - THE LETTER IN THE FINAL POSITION INDICATES THE TYPE OF MEDIAN: "R" FOR RAISED, "P" FOR PAINTED AND "UN" FOR NOT DIVIDED.  
 - "INT" MEANS INTERSTATE  
 - "TOL" MEANS TOLL ROAD  
 - "OLA" MEANS OTHER LIMITED ACCESS  
 - "RAMP" MEANS RAMP  
 - "1WAY" MEANS ONE WAY  
 - "UNKN" MEANS UNKNOWN  
 ALC INV: ALCOHOL INVOLVED CODE, COMBINED CRASH-LEVEL CODE FOR ALL OF DRIVERS AND PEDESTRIANS INVOLVED IN CRASH  
 0 - NONE  
 1 - ALCOHOL INVOLVED  
 2 - DRUGS INVOLVED  
 3 - ALCOHOL AND DRUGS  
 4 - UNDETERMINED  
 HARMFUL EVENT 1: FIRST HARMFUL EVENT FOR FAULT/1ST VEHICLE AS REPORTED BY OFFICER  
 00 - UNKNOWN/NOT CODED  
 01 - REAR-END  
 02 - HEAD-ON  
 03 - ANGLE  
 04 - LEFT-TURN  
 05 - RIGHT-TURN  
 06 - SIDESWIPE  
 07 - BACKED INTO  
 08 - COLL. W/ PARKED CAR  
 09 - COLL. W/ MV ON ROADWAY  
 10 - COLL. W/ PEDESTRIAN  
 11 - COLL. W/ BICYCLE

12 - COLL. W/ BICYCLE (BIKE LANE)  
 13 - COLLISION WITH MOPED  
 14 - COLLISION WITH TRAIN  
 15 - COLLISION WITH ANIMAL  
 16 - HIT SIGN/SIGN POST  
 17 - UTILITY/LIGHT POLE  
 18 - HIT GUARDRAIL  
 19 - HIT FENCE  
 20 - HIT CONC. BARRIER WALL  
 21 - HIT BRIDGE/PIER/ABUTMENT/RAIL  
 22 - HIT TREE/SHRUBBERY  
 23 - COLL. W/CONSTRUCTION BARRICADE/SIGN  
 24 - COLL. W/TRAFFIC GATE  
 25 - COLL. W/CRASH ATTENUATORS  
 26 - COLL. W/FIXED OBJECT ABOVE ROAD  
 27 - HIT OTHER FIXED OBJECT  
 28 - COLL. W/MOVEABLE OBJECT ON ROAD  
 29 - RAN IN DITCH/CULVERT  
 30 - RAN OFF RD INTO WATER  
 31 - OVERTURNED  
 32 - OCCUPANT FELL FROM VEH  
 33 - JACKKNIFED  
 34 - FIRE  
 35 - EXPLOSION  
 36 - DOWNHILL RUNAWAY  
 37 - CARGO LOSS OR SHIFT  
 38 - SEPARATION OF UNITS  
 39 - MEDIAN CROSSOVER  
 77 - ALL OTHER (EXPLAIN)  
 LIGHTING: LIGHTING CONDITIONS AT TIME OF CRASH, AS REPORTED BY OFFICER  
 01 - DAYLIGHT  
 02 - DUSK  
 03 - DAWN  
 04 - DARK (STREET LIGHT)  
 05 - DARK (NO STREET LIGHT)  
 88 - UNKNOWN  
 WEATHER: WEATHER CONDITIONS AT TIME OF CRASH, AS REPORTED BY OFFICER  
 01 - CLEAR  
 02 - CLOUDY  
 03 - RAIN  
 04 - FOG  
 77 - ALL OTHER 88 - UNKNOWN  
 RD SURF: ROAD SURFACE CONDITIONS AT TIME OF CRASH, AS REPORTED BY OFFICER  
 01 - DRY  
 02 - WET  
 03 - SLIPPERY  
 04 - Icy

77 - ALL OTHER 88 - UNKNOWN  
 TRAFFIC CONTROL: TRAFFIC CONTROL AT SITE OF CRASH, AS REPORTED BY OFFICER  
 00 - UNKNOWN/NOT CODED  
 01 - NO CONTROL  
 02 - SPECIAL SPEED ZONE  
 03 - SPEED CONTROL SIGN  
 04 - SCHOOL ZONE  
 05 - TRAFFIC SIGNAL  
 06 - STOP SIGN  
 07 - YIELD SIGN  
 08 - FLASHING LIGHT  
 09 - RAILROAD SIGNAL  
 10 - OFFICER/GUARD/FLAGMAN  
 11 - POSTED NO U-TURN  
 12 - NO PASSING ZONE  
 77 - ALL OTHER  
 ROAD CONDITS: ROAD CONDITIONS AT TIME AND LOCATION OF CRASH, AS REPORTED BY OFFICER  
 00 - UNKNOWN/NOT CODED  
 01 - NO DEFECTS  
 02 - OBSTRUCTION W/ WARNING  
 03 - OBSTRUCTION WO WARNING  
 04 - ROAD UNDER REPAIR/CONSTRUCTION  
 05 - LOOSE SURFACE MATERIAL  
 06 - SHLDR - SOFT/LOW/HIGH  
 07 - HOLES/RUTS/UNSAFE PAVED EDGES  
 08 - STANDING WATER  
 09 - WORN/POLISHED RD SURF  
 77 - ALL OTHER (EXPLAIN)  
 SITE LOCATION: D.O.T. SITE LOCATION AS CODED BY SAFETY OFFICE  
 01 - NOT AT INTERSECTION/RRXING/BRIDGE  
 02 - AT INTERSECTION  
 03 - INFLUENCED BY INTERSECTION  
 04 - DRIVEWAY ACCESS  
 05 - RAILROAD CROSSING  
 06 - BRIDGE  
 07 - ENTRANCE RAMP  
 08 - EXIT RAMP  
 09 - PARKING LOT (PUBLIC)  
 10 - PARKING LOT (PRIV)  
 11 - PRIVATE PROPERTY  
 12 - TOLL BOOTH  
 13 - PUBLIC BUS STOP ZONE  
 77 ALL OTHER

07 - MOTOR HOME (RV)	VEH DIR1 OR DIR 2: VEHICLE	13 - DISREGARDED STOP SIGN
08 - BUS (DRIVR + 9-15 PASS)	DIRECTION FOR FIRST OR SECOND	14 - FAILED TO MAINTAIN
09 - BUS (DRIVR + > 15 PASS)	VEHICLE, AS REPORTED BY THE	EQUIPMENT/VEHICLE
10 - BICYCLE	OFFICER	15 - IMPROPER PASSING
11 - MOTORCYCLE	E - EAST N - NORTH	16 - DROVE LEFT OF CENTER
12 - MOPED	S - SOUTH U - UNKNOWN	17 - EXCEED STATED SPD LMT
13 - ALL TERRAIN VEHICLE	W - WEST	18 - OBSTRUCTING TRAFFIC
14 - TRAIN	POINT OF IMPACT 1 OR 2: POINT	19 - IMPROPER LOAD
15 - LOW SPEED VEHICLE	OF IMPACT FOR FIRST OR SECOND	20 - DISREGARDED OTHER
77 - OTHER	VEHICLE, AS REPORTED BY THE	TRAFFIC CONTROL
VEHICLE USE 1 OR 2: VEHICLE USE	00 - NOT APPLICABLE	21 - DRIVING WRONG SIDE/WAY
FOR FIRST OR SECOND VEHICLE,	01 - FRONT END	22 - FLEEING POLICE
AS REPORTED BY THE OFFICER	02 - RIGHT FRONT CORNER	23 - VEHICLE MODIFIED
00 - N/A	03 - RIGHT FRONT QUTR PANEL	24 - DRIVER DISTRACTION
01 - PRIVATE TRANSPORTATION	04 - RIGHT FRONT DOOR	77 - ALL OTHER (EXPLAIN)
02 - COMMERCIAL PASSENGERS	05 - RIGHT REAR DOOR	DRIVER/PEDE AGE 1 OR 2: DRIVER
03 - COMMERCIAL CARGO	06 - RIGHT REAR QUTR PANEL	OR PEDESTRIAN AGE FOR FORM
04 - PUBLIC TRANSPORTATION	07 - RIGHT REAR CORNER	SECTION 1 OR 2, AS REPORTED
05 - PUBLIC SCHOOL BUS	08 - REAR END	BY THE OFFICER
06 - PRIVATE SCHOOL BUS	09 - LEFT REAR CORNER	# VEHCLS: TOTAL NUMBER OF
07 - AMBULANCE	10 - LEFT REAR QUTR PANEL	VEHICLES INVOLVED IN THE
08 - LAW ENFORCEMENT	11 - LEFT REAR DOOR	CRASH. IF THE NUMBER IS
09 - FIRE/RESCUE	12 - LEFT FRONT DOOR	HIGHER THAN 9 THEN THIS FIELD
10 - MILITARY	13 - LEFT FRONT QUTR PANEL	WILL DISPLAY AN ASTERISK (*).
11 - OTHER GOVERNMENT	14 - LEFT FRONT CORNER	# KILLED: TOTAL NUMBER OF
12 - DUMP	15 - HOOD	FATALITIES AS A RESULT OF THE
13 - CONCRETE MIXER	16 - ROOF	CRASH. IF THE NUMBER IS
14 - GARBAGE OR REFUSE	17 - TRUNK	HIGHER THAN 9 THEN THIS FIELD
15 - CARGO VAN	18 - UNDERCARRIAGE	WILL DISPLAY AN ASTERISK (*).
77 - OTHER	19 - OVERTURN	NUMBER INURED: TOTAL NUMBER OF
88 - UNKNOWN/DUMMY RECORD	20 - WINDSHIELD	INJURIES AS A RESULT OF THE
VEHICLE MOVMT 1 OR 2: VEHICLE	21 - TRAILER	CRASH. IF THE NUMBER IS
MOVEMENT FOR FIRST OR SECOND	88 - UNKNOWN	HIGHER THAN 99 THEN THIS
VEHICLE, AS REPORTED BY THE	CONTRIB CAUSE 1 OR 2: DRIVER	FIELD WILL DISPLAY
OFFICER	CONTRIBUTING CAUSE FOR FIRST	ASTERISKS(**).
01 - STRAIGHT AHEAD	OR SECOND VEHICLE DRIVER, AS	Y: THE "Y" THAT SOMETIMES
02 - SLOWING/STOPPED/STALLED	REPORTED BY THE OFFICER	APPEARS BETWEEN THE COLUMNS
03 - MAKING LEFT TURN	00 - UNKNOWN/NOT CODED	FOR CRASH NUMBER AND ROADWAY
04 - BACKING	01 - NO IMPROPER DRVNG/ACT	ID, IS A FLAG THAT IDENTIFIES
05 - MAKING RIGHT TURN	02 - CARELESS DRIVING	CRASHES THAT ARE ON OTHER
06 - CHANGING LANES	03 - FAILED TO YIELD	SR'S OR ON NON-MAINTAINED
07 - ENTRNG/LVNG PRKING SPCE	04 - IMPROPER BACKING	SIDE ROADS. THESE CRASHES ARE
08 - PROPERLY PARKED	05 - IMPROPER LANE CHANGE	OCCURRING WITHIN 250 FEET
09 - IMPROPERLY PARKED	06 - IMPROPER TURN	OF THE QUERIED SR AND ARE
10 - MAKING U-TURN	07 - ALCHOL-UNDER INFL	CLASSIFIED AS INFLUENCED
11 - PASSING	08 - DRUGS-UNDER INFLUENCE	CRASHES. CRASHES ON OTHER
12 - DRIVERLESS/RUNAWAY VEH	09 - ALC & DRUGS-UNDER INFL	ROADWAYS WHICH ARE AT THE
77 - ALL OTHERS	10 - FOLLOWED TOO CLOSELY	INTERSECTION WITH THE QUERIED
88 - UNKNOWN	11 - DISREGARDED TRAFF SGNL	SR WILL ALWAYS BE REPORTED
	12 - EXCEEDED SAFE SPD LMT	AND WILL NOT SHOW THIS FLAG.



```

CCCCCCCCC  AAAAAAAAAA  RRRRRRRR
CCCCCCCCC  AAAAAAAAAA  RRRRRRRRRR
CCC        AAA        RRR        RRR
CCC        AAA        RRR        RRR
CCC        AAAAAAAAAA  RRRRRRRRRR
CCC        AAAAAAAAAA  RRRRRRRRRR
CCC        AAA        RRR        RRR
CCC        AAA        RRR        RRR
CCCCCCCCC  AAA        RRR        RRR
CCCCCCCCC  AAA        RRR        RRR

```

C R A S H R E P O R T I N G S Y S T E M

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```

I/O NAME: ..... CARI113
PROGRAM ID: ..... CARPJ13
REPORT NUMBER: ..... 01
RUN CLASS: ..... A
MESSAGE CLASS: ..... Q
PRINTER DEST: ..... LOCAL
# COPIES: ..... 01
ACCOUNT #: ..... 5565945
SUBMIT W/HOLD? ..... N
USERID: ..... RD960BB
DETAIL SORT ORDER: ..... 1 - SORT BY ROADWAY, MILE POINT
PRINT SEGMENTS? ..... N
PRINT INTERSECTIONS? ..... N
SUMMARY FORMAT: ..... -
OVERRIDE VALUES:
MAX # OF BREAKS: ..... 0
CRASH RATE CATEGORY: ...
AVERAGE DAILY TRAFFIC:..
# OF LEGS: .....

```





COMMENT: 2011 FORWARD NOW IN CAR WEB  
FROM: 01/01/2007 TO 12/31/2010  
FROM CO/SEC/SUB: 87 260 000  
TO CO/SEC/SUB: 87 260 000

1 - SORT BY ROADWAY, MILE POINT  
RAMPS INCL  
INFL INCL  
CR/OS INCL

MP: 022.116  
MP: 022.421

C	R	A	N	M	S	ADT	Y	M	D	H	CRCC	A	H	L	W	R	T	R	S	L	R	A	V	V	V	V	V	P	I	C	C	D	#	N					
772121560	87260000	22.256	2131	826	135000	08	05	22	19	U-OLA	0	20	1	1	03	01	01	M	01	01	M	01	01	W	01	01	W	01	01	01	00	00	1	0	01				
772111820	87260000	22.256	2131	826	135000	08	06	11	17	U-OLA	0	01	1	1	01	01	01	L	2	03	01	L	2	03	01	01	01	W	01	01	01	00	34	2	0	00			
772114930	87260000	22.256	2131	826	135000	08	06	22	13	U-OLA	0	77	1	2	03	08	01	L	3	01	L	3	01	01	06	W	01	01	W	01	01	00	21	3	0	02			
769393460	87260000	22.256	2131	826	135000	08	10	04	06	U-OLA	0	00	4	2	03	01	01	L	S	01	L	S	01	01	06	W	01	01	W	01	01	00	33	2	0	00			
772193920	87260000	22.256	2131	826	153500	09	06	23	10	U-OLA	0	20	1	3	2	01	08	01	M	01	M	01	01	01	W	02	01	01	W	01	01	00	00	1	0	00			
774635490	87260000	22.256	2131	826	153000	10	06	18	15	U-OLA	0	01	1	1	03	01	01	R	1	01	R	1	01	01	W	01	01	W	01	01	01	00	38	2	0	01			
774509170	87260000	22.256	2131	826	153000	10	08	04	08	U-OLA	0	01	1	3	2	03	01	L	3	01	L	3	01	01	01	W	01	01	W	01	01	00	25	2	0	00			
772073170	87260000	22.267	2131	826	136000	07	12	22	20	U-OLA	0	01	4	2	1	77	01	R	1	01	R	1	01	01	E	00	02	00	01	02	00	20	3	0	00				
774549270	87260000	22.294	2131	826	153500	09	09	23	06	U-OLA	0	1	3	2	03	01	01	L	4	11	01	L	4	11	01	W	01	01	W	01	01	00	45	2	0	01			
769476610	87260000	22.317	2131	826	136000	07	06	01	14	U-OLA	0	20	1	3	2	03	01	01	M	01	M	01	01	01	W	02	25	01	01	W	01	00	45	2	0	00			
769489260	87260000	22.317	2131	826	136000	07	07	03	20	U-OLA	0	01	4	3	2	03	01	01	L	1	L	1	03	01	01	W	02	34	01	01	W	07	00	37	2	0	00		
772005840	87260000	22.317	2131	826	136000	07	09	08	18	U-OLA	0	77	1	1	03	01	01	L	2	04	03	L	2	04	03	01	W	00	03	01	01	W	01	00	47	2	0	00	
772007090	87260000	22.317	2131	826	136000	07	10	20	07	U-OLA	0	01	1	2	2	01	02	01	L	2	01	L	2	01	01	W	01	01	W	01	01	00	38	4	0	00			
772084450	87260000	22.317	2131	826	135000	08	03	20	13	U-OLA	0	06	1	1	03	01	01	L	1	02	01	L	1	02	01	06	E	09	05	67	01	01	W	02	00	32	0	02	
772134540	87260000	22.317	2131	826	135000	08	05	16	15	U-OLA	0	01	1	1	03	01	01	L	3	01	L	3	01	01	W	01	01	W	01	01	02	00	31	3	0	02			
772119360	87260000	22.317	2131	826	135000	08	06	19	07	U-OLA	0	00	1	2	1	03	01	01	M	01	M	01	01	06	E	00	03	00	01	01	E	01	05	19	2	0	05		
772126810	87260000	22.317	2131	826	135000	08	08	18	23	U-OLA	0	00	4	3	2	03	01	01	M	01	M	01	01	06	W	00	05	00	03	01	01	W	01	00	46	2	0	00	
772158860	87260000	22.317	2131	826	135000	08	09	28	21	U-OLA	0	03	4	2	2	03	01	01	M	01	M	01	01	06	W	00	10	05	00	01	01	W	03	00	36	2	0	00	
772144900	87260000	22.317	2131	826	135000	08	10	23	04	U-OLA	0	77	4	3	2	03	01	01	L	3	01	L	3	01	01	W	00	05	00	01	01	W	14	00	23	2	0	00	
774511250	87260000	22.317	2131	826	153500	09	05	28	16	U-OLA	0	01	1	2	2	03	01	01	L	2	01	L	2	01	01	W	01	01	W	01	01	00	58	2	0	02			
772233950	87260000	22.317	2131	826	153500	09	07	01	05	U-OLA	0	20	1	2	03	01	01	M	01	L	M	01	01	W	01	01	W	01	01	W	14	02	28	00	00	1	0	00	
774549060	87260000	22.317	2131	826	153500	09	08	15	05	U-OLA	0	20	3	2	01	01	01	M	01	L	M	01	01	W	02	02	22	00	00	00	00	40	2	0	01				
774545460	87260000	22.317	2131	826	153500	09	08	28	11	U-OLA	0	06	1	1	03	01	01	L	2	01	L	2	01	01	W	14	05	60	01	01	W	06	00	40	2	0	01		
774540120	87260000	22.317	2131	826	153500	09	08	29	06	U-OLA	0	06	3	2	1	01	01	L	1	01	L	1	01	01	W	14	02	00	01	01	W	06	00	35	2	0	00		
774594820	87260000	22.317	2131	826	153000	10	02	01	06	U-OLA	0	01	1	3	2	03	01	01	R	3	01	R	3	01	01	E	01	02	46	02	02	02	02	02	06	1	0	02	
774631530	87260000	22.317	2131	826	153000	10	03	21	10	U-OLA	0	20	1	2	1	01	01	M	01	L	M	01	01	W	14	77	18	00	00	00	00	00	00	00	00	1	0	01	
774647010	87260000	22.317	2131	826	153000	10	04	15	23	U-OLA	1	02	4	1	03	01	01	L	4	02	01	L	4	02	01	W	14	02	37	01	01	W	08	00	46	2	0	02	
774672020	87260000	22.317	2131	826	153000	10	06	18	15	U-OLA	0	01	1	2	2	03	01	01	R	1	01	R	1	01	01	W	01	02	21	01	01	W	08	00	49	2	0	01	
774669430	87260000	22.317	2131	826	153000	10	07	21	17	U-OLA	0	02	1	1	03	01	01	L	4	01	L	4	01	01	W	01	02	63	01	01	W	08	00	41	3	0	00		
774673150	87260000	22.317	2131	826	153000	10	07	24	09	U-OLA	0	01	1	2	01	01	01	R	2	03	01	R	2	03	01	W	01	02	44	01	01	W	08	00	43	3	0	02	
774683110	87260000	22.317	2131	826	153000	10	07	27	20	U-OLA	0	06	4	2	1	03	01	01	R	2	03	01	R	2	03	01	E	01	02	44	01	01	W	08	00	47	2	0	01
774670810	87260000	22.317	2131	826	153000	10	08	10	12	U-OLA	0	20	1	3	2	03	01	01	M	04	01	M	04	01	E	14	02	43	00	00	00	00	00	00	00	1	0	01	
774693800	87260000	22.317	2131	826	153000	10	08	31	18	U-OLA	0	03	1	2	2	03	01	01	L	1	L	1	01	01	W	14	02	23	01	01	W	07	00	28	4	0	00		
774730200	87260000	22.317	2131	826	153000	10	11	09	18	U-OLA	0	01	5	1	1	03	01	01	L	3	01	L	3	01	01	W	02	23	01	01	W	09	00	30	2	0	04		
769266410	87260000	22.367	2131	826	135000	08	05	14	14	U-OLA	0	06	1	1	01	01	01	L	4	01	L	4	01	01	W	03	00	47	01	01	W	03	00	20	2	0	00		
774644060	87260000	22.367	2131	826	153000	10	04	23	13	U-OLA	0	01	1	1	01	01	01	R	1	01	R	1	01	01	E	14	02	21	01	01	W	07	00	28	3	0	00		
769423200	87260000	22.421	8522	826	136000	07	02	01	22	U-OLA	0	77	4	2	1	03	01	06	M	00	M	00	01	06	E	00	05	00	01	01	E	14	00	52	2	0	00		

FOR YEAR	FATAL CRASH STATISTICS		INJURY CRASH STATS		PROPERTY DAMAGE ONLY		TOTALS		INFLUENCE CRASHES OCCURRING ON INTERSECTING RDWYS AT INT. INFL AREA	
	CRASHES	FATALITIES	CRASHES	INJURIES	CRASHES	INJURIES	CRASHES	FATALITIES	INJURIES	AT INT. INFL AREA
2007	0	0	6	6	8	6	14	0	6	1
2008	0	0	10	23	7	23	17	0	23	1
2009	0	0	5	8	5	8	10	0	8	0
2010	0	0	14	21	17	21	31	0	21	7
TOTAL	0	0	35	58	37	58	72	0	58	9

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CCCCCCCCC  AAAAAAAAAA  RRRRRRRR
CCCCCCCCC  AAAAAAAAAA  RRRRRRRRRR
CCC        AAA        RRR
CCC        AAA        RRR
CCC        AAAAAAAAAA  RRRRRRRRRR
CCC        AAAAAAAAAA  RRRRRRRRRR
CCC        AAA        RRR
CCC        AAA        RRR
CCCCCCCCC  AAA        RRR
CCCCCCCCC  AAA        RRR

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C R A S H R E P O R T I N G S Y S T E M

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```

I/O NAME: ..... CARI113
PROGRAM ID: ..... CARPJ13
REPORT NUMBER: ..... 01
RUN CLASS: ..... A
MESSAGE CLASS: ..... Q
PRINTER DEST: ..... LOCAL
# COPIES: ..... 01
ACCOUNT #: ..... 5565945
SUBMIT W/HOLD? ..... N
USERID: ..... RD960BB
DETAIL SORT ORDER: ..... 1 - SORT BY ROADWAY, MILE POINT
PRINT SEGMENTS? ..... N
PRINT INTERSECTIONS? ..... N
SUMMARY FORMAT: ..... -
OVERRIDE VALUES:
MAX # OF BREAKS: ..... 0
CRASH RATE CATEGORY: ...
AVERAGE DAILY TRAFFIC:..
# OF LEGS: .....

```

FLORIDA - DEPARTMENT OF TRANSPORTATION  
C A R - CRASH ANALYSIS REPORTING SYSTEM  
CRASH DATA DETAIL AND EXTRACT FOR STATE-MAINTAINED ROADS

COMMENT: 2011 FORWARD NOW IN CAR WEB  
FROM: 01/01/2007 TO 12/31/2010  
FROM CO/SEC/SUB: 87 260 000  
TO CO/SEC/SUB: 87 260 000  
RAMP INCL  
INFL INCL  
CR/OS INCL  
MP: 022.457  
MP: 022.979

1 - SORT BY ROADWAY, MILE POINT

C	R	N	M	S	ADT	Y	M	D	H	CRCC	A	H	L	W	R	T	R	SL	R	A	V	V	V	V	V	V	P	I	C	C	D	#	N			
769497550	87260000	22.459	2130	826	136000	07	07	04	19	U-OLA	077	1	1	2	03	01	01	L	4	11	01	01	W	04	02	27	00	00	1	0	01					
774562570	87260000	22.467	8522	826	153500	09	09	19	08	U-OLA	020	1	1	1	01	01	01	M	01	01	01	W	01	01	24	01	01	06	W	00	00	02	01			
774523720	87260000	22.470	8522	826	153500	09	08	14	13	U-OLA	006	1	1	1	01	01	01	R	2	01	01	01	E	09	77	57	05	03	01	E	02	00	39	2	0	
774662360	87260000	22.470	8522	826	153000	10	08	20	23	U-OLA	031	4	1	03	01	01	L	S	03	01	01	W	19	02	00	00	00	00	1	0	00					
772009380	87260000	22.493	8522	826	136000	07	10	20	02	U-OLA	120	4	2	1	01	01	M	M	01	01	01	W	13	12	30	01	01	08	W	08	07	33	2	1		
769440600	87260000	22.506	8522	826	136000	07	02	15	12	U-OLA	020	1	2	1	03	01	M	M	03	01	06	W	01	02	46	06	03	01	W	01	00	00	2	0		
772154290	87260000	22.506	8522	826	135000	08	10	25	15	U-OLA	020	1	3	2	03	01	M	M	01	01	01	E	07	02	42	00	00	00	1	0	00					
772191500	87260000	22.506	8522	826	135000	08	10	25	15	U-OLA	020	1	3	2	03	01	M	M	01	01	01	E	07	02	42	00	00	00	1	0	00					
769412360	87260000	22.515	8522	826	136000	07	06	30	21	U-OLA	077	4	1	01	01	01	M	M	00	00	06	W	00	77	00	01	01	01	W	13	00	34	2	0		
769399890	87260000	22.528	8522	826	136000	07	06	11	09	U-OLA	003	1	1	1	01	01	01	R	2	01	01	06	E	07	05	39	02	01	E	14	00	53	2	0		
769472230	87260000	22.531	8522	826	136000	07	06	11	09	U-OLA	003	1	1	1	01	01	01	R	2	01	01	06	E	07	05	39	02	01	E	14	00	53	2	0		
769483100	87260000	22.531	8522	826	136000	07	06	14	16	U-OLA	003	1	1	03	01	01	R	1	01	01	01	E	13	77	00	01	01	01	E	05	00	32	2	0		
774535150	87260000	22.532	8522	826	135000	09	08	10	17	U-OLA	020	1	1	1	01	01	01	R	S	01	01	06	E	00	05	00	01	01	E	02	00	20	2	0		
772110100	87260000	22.533	8522	826	135000	08	03	23	21	U-OLA	001	4	3	2	03	01	01	L	3	01	01	01	W	01	02	37	01	01	E	08	00	62	2	0		
772086900	87260000	22.533	8522	826	135000	08	03	29	11	U-OLA	001	1	1	1	01	01	01	R	1	03	01	01	E	01	02	26	01	01	E	08	00	80	2	0		
772125580	87260000	22.533	8522	826	135000	08	05	04	16	U-OLA	006	1	1	03	01	01	R	2	01	01	01	06	E	10	05	39	01	01	E	02	00	59	3	0		
772146090	87260000	22.533	8522	826	135000	08	06	29	06	U-OLA	001	1	1	1	01	01	01	R	3	01	01	01	E	01	02	19	03	01	E	07	00	50	2	0		
772150890	87260000	22.533	8522	826	135000	08	11	11	12	U-OLA	003	1	1	01	01	01	L	4	01	01	06	E	10	05	39	01	01	E	02	00	62	2	0			
774656350	87260000	22.533	8522	826	153000	10	07	11	19	U-OLA	001	1	2	03	01	01	R	3	01	01	01	01	E	01	02	77	01	01	E	08	00	41	2	0		
774672140	87260000	22.533	8522	826	153000	10	07	11	18	U-OLA	077	1	1	1	03	01	01	R	3	03	03	01	E	00	18	53	01	01	E	08	00	50	8	0		
774665680	87260000	22.533	8522	826	153000	10	07	14	07	U-OLA	001	1	3	2	01	01	L	1	01	01	01	W	01	02	42	01	01	E	08	00	37	2	0			
774692690	87260000	22.533	8522	826	153000	10	08	30	17	U-OLA	020	1	3	2	03	01	M	M	03	01	01	01	W	01	02	45	00	00	1	0	01					
774699630	87260000	22.533	8522	826	153000	10	08	31	18	U-OLA	001	1	3	2	01	01	L	3	01	01	01	01	W	01	02	19	01	01	E	08	00	48	2	0		
774697410	87260000	22.533	8522	826	153000	10	09	23	15	U-OLA	001	1	3	2	03	01	L	1	01	01	01	01	E	00	02	39	02	01	E	08	00	55	2	0		
772086870	87260000	22.546	8522	826	135000	08	03	09	00	U-OLA	002	4	1	01	01	01	L	3	01	01	01	W	01	01	02	34	01	01	E	01	00	48	2	0		
772086650	87260000	22.546	8522	826	135000	08	10	18	11	U-OLA	001	1	2	1	01	01	L	3	01	01	01	01	W	01	01	02	36	01	01	E	06	00	25	2	0	
774534920	87260000	22.546	8522	826	153500	09	10	18	11	U-OLA	001	1	1	1	01	01	06	R	2	01	01	01	E	01	02	27	01	01	E	08	00	42	2	0		
774587520	87260000	22.546	8522	826	153500	09	11	05	08	U-OLA	001	1	1	1	01	01	06	L	1	01	01	01	E	01	01	20	01	01	E	08	00	35	2	0		
774572640	87260000	22.546	8522	826	153500	09	11	09	19	U-OLA	001	4	1	1	03	01	01	R	4	01	01	01	W	01	02	01	01	01	E	08	00	21	2	0		
774590970	87260000	22.546	8522	826	153000	10	04	14	07	U-OLA	018	1	1	1	01	01	06	R	S	01	01	06	E	01	02	27	01	01	E	15	00	36	2	0		
774722160	87260000	22.546	8522	826	153000	10	10	31	11	U-OLA	001	1	3	2	01	01	06	L	1	01	01	01	W	01	01	02	28	01	01	E	08	00	29	2	0	
772200050	87260000	22.567	2130	826	135000	08	11	26	20	U-OLA	006	4	1	03	01	06	R	2	01	01	01	01	77	E	05	77	19	06	03	77	E	11	00	37	2	0
772226270	87260000	22.567	2130	826	153500	09	03	21	09	U-OLA	018	1	3	2	03	01	06	L	S	01	01	01	01	W	07	02	37	00	00	00	1	0	00			
774652640	87260000	22.567	2130	826	153000	10	05	28	10	U-OLA	006	1	1	1	01	01	06	L	1	04	01	01	06	W	21	05	00	01	01	W	02	00	42	2	0	
769291220	87260000	22.567	2130	826	153000	10	06	22	10	U-OLA	028	1	2	1	03	01	06	R	1	01	01	01	W	18	01	38	01	01	W	13	00	49	6	0		
774692700	87260000	22.567	2130	826	153000	10	08	31	18	U-OLA	001	1	3	2	03	01	06	L	3	02	01	01	W	01	02	38	01	01	W	08	00	56	2	0		



C	R	N	M	I	S	ADT	Y	M	D	H	CRCC	A	H	L	W	R	T	R	SL	R	A	V	V	V	V	V	P	I	C	C	D	#	N								
772226450	87260000	22.796	2107	826	153500	09	04	15	18	U-OLA	0	01	1	1	03	01	01	01	01	01	R	3	01	01	01	01	02	38	03	01	02	34	0	00							
774503660	87260000	22.796	2107	826	153500	09	05	16	20	U-OLA	0	03	4	2	1	03	01	01	01	01	R	3	00	00	06	E	00	77	00	01	01	01	00	20	4	0	03				
77453760	87260000	22.796	2107	826	153500	09	11	04	22	U-OLA	0	20	4	3	2	01	01	01	01	01	M	01	01	01	01	01	01	01	01	01	01	01	00	00	1	0	01				
774623030	87260000	22.796	2107	826	153000	10	02	18	13	U-OLA	0	06	1	1	03	01	01	01	01	01	R	1	01	01	06	E	09	05	00	01	01	01	02	00	21	3	0	00			
774693550	87260000	22.796	2107	826	153000	10	08	08	16	U-OLA	0	03	1	3	2	03	01	01	01	01	L	2	02	01	01	06	W	09	06	00	01	01	01	02	00	22	0	00			
774672310	87260000	22.796	2107	826	153000	10	08	16	17	U-OLA	0	06	4	2	2	03	01	01	01	01	L	2	02	01	01	06	W	03	05	00	01	01	01	01	00	11	00	18	2	0	00
774688630	87260000	22.796	2107	826	153000	10	08	30	20	U-OLA	0	29	4	3	2	03	01	01	01	01	R	S	01	01	01	01	E	02	77	47	01	01	01	02	00	00	1	0	01		
774673320	87260000	22.796	2107	826	153000	10	09	12	06	U-OLA	0	03	1	3	2	01	01	01	01	01	R	1	03	01	01	01	E	10	01	47	01	01	01	02	52	2	0	00			
774699160	87260000	22.796	2107	826	153000	10	11	13	06	U-OLA	0	06	3	2	1	01	01	01	01	01	R	2	01	01	01	E	02	77	22	01	01	01	01	09	00	48	2	0	00		
820206200	87260000	22.796	2107	826	153000	10	12	11	00	U-OLA	0	09	4	1	01	01	01	01	01	01	R	2	01	01	01	E	05	22	2	0	0	0	0	0	0	0	0	0	0	00	
774560950	87260000	22.818	2107	826	153000	10	02	20	19	U-OLA	0	01	4	1	03	01	01	01	01	01	L	4	01	01	01	W	00	02	00	03	01	01	01	08	00	47	2	0	04		
769439120	87260000	22.826	2129	826	136000	07	03	07	05	U-OLA	0	01	1	1	01	01	01	01	01	01	R	4	03	01	01	E	01	02	20	06	01	02	01	00	54	2	0	00			
769439410	87260000	22.826	2129	826	136000	07	03	10	22	U-OLA	0	20	5	1	01	01	01	01	01	01	L	2	00	00	06	00	05	00	03	11	01	01	01	14	00	19	4	0	04		
772024000	87260000	22.826	2129	826	136000	07	08	15	09	U-OLA	0	77	1	1	77	77	01	01	01	01	M	00	00	00	06	00	05	00	03	01	01	01	02	00	27	2	0	01			
772026170	87260000	22.857	2107	826	136000	07	10	28	17	U-OLA	0	06	1	2	03	01	01	01	01	01	L	3	01	00	01	W	14	02	00	04	01	01	01	02	00	33	2	0	00		
774699130	87260000	22.857	2107	826	153000	10	10	28	13	U-OLA	0	01	1	1	01	01	03	01	01	01	R	3	03	01	01	E	02	77	52	02	01	01	01	09	02	42	2	0	00		
769450160	87260000	22.864	2107	826	136000	07	03	22	21	U-OLA	0	01	4	1	01	01	01	01	01	01	R	3	01	01	06	E	00	02	00	01	01	01	01	00	31	2	0	00			
802293740	87260000	22.879	2129	826	135000	08	01	18	11	U-OLA	0	06	1	1	05	01	02	03	01	01	L	2	01	01	S	14	03	52	77	77	01	01	01	00	34	2	0	00			
774616680	87260000	22.894	2129	826	153000	10	02	27	20	U-OLA	0	06	4	2	03	01	01	01	01	01	R	4	01	01	06	E	02	05	34	01	01	01	11	00	20	2	0	02			
772238910	87260000	22.932	2129	826	153000	10	06	08	16	U-OLA	0	01	1	3	2	03	01	01	01	01	R	1	01	01	06	E	14	02	00	01	01	01	07	00	22	2	0	01			
772119690	87260000	22.946	2129	826	135000	08	05	07	08	U-OLA	0	01	1	1	01	01	01	01	01	01	R	1	01	01	E	01	02	21	01	01	01	08	00	47	2	0	02				
772119890	87260000	22.946	2129	826	135000	08	05	22	11	U-OLA	0	06	1	1	01	01	01	01	01	01	R	2	01	01	E	14	02	00	03	01	01	01	06	00	31	2	0	00			
774587950	87260000	22.946	2129	826	153000	10	05	12	06	U-OLA	0	00	1	1	01	01	01	01	01	01	L	3	01	01	E	07	01	00	01	01	01	01	00	40	2	0	00				
774669120	87260000	22.946	2129	826	153000	10	06	24	18	U-OLA	0	02	1	1	03	01	01	01	01	01	R	1	03	01	E	01	01	00	01	01	01	01	00	28	3	0	00				
774665670	87260000	22.946	2129	826	153000	10	07	14	07	U-OLA	0	20	1	3	2	01	01	01	01	01	M	01	01	W	01	E	02	24	01	01	02	00	00	1	0	01	01	01			
772092130	87260000	22.951	2129	826	135000	08	01	30	10	U-OLA	0	20	1	1	01	01	01	01	01	01	M	01	01	E	00	18	00	01	01	01	01	01	00	34	2	0	01				
772064750	87260000	22.951	2129	826	135000	08	02	09	00	U-OLA	0	03	1	1	01	01	01	01	01	01	R	2	03	01	E	02	02	00	03	01	01	01	09	00	27	2	0	00			
772096320	87260000	22.951	2129	826	135000	08	03	17	18	U-OLA	0	20	1	1	03	01	01	01	01	01	M	01	01	E	14	77	54	00	00	00	00	00	1	0	01	01	01	01			
772205870	87260000	22.951	2129	826	153500	09	02	17	18	U-OLA	0	01	1	1	03	01	01	01	01	01	R	4	01	01	E	14	02	22	01	01	02	08	00	21	2	0	01				
772206390	87260000	22.951	2129	826	153500	09	04	04	21	U-OLA	0	20	4	1	03	01	01	01	01	01	M	01	01	E	14	00	05	00	01	01	01	01	01	01	01	01	01	01	01		
774511010	87260000	22.951	2129	826	153500	09	04	19	13	U-OLA	0	01	1	1	03	01	01	01	01	01	R	3	01	01	E	08	02	46	03	01	01	01	07	00	46	3	0	02			
774640940	87260000	22.951	2129	826	153000	10	06	24	07	U-OLA	0	18	1	3	2	03	01	01	01	01	L	S	01	01	W	02	55	00	00	01	01	01	07	00	00	1	0	01			
769460680	87260000	22.957	0479	826	136000	07	04	04	15	U-OLA	0	01	1	2	2	03	01	01	01	01	R	3	03	01	E	01	01	01	39	01	01	02	08	00	38	2	0	02			
772225000	87260000	22.970	2636	826	153500	09	01	14	10	U-OLA	0	77	1	1	1	01	01	01	01	01	R	2	01	01	E	15	02	49	00	00	00	1	0	01	00	00	1	0	01		
774722060	87260000	22.970	2636	826	153000	10	10	09	06	U-OLA	0	18	1	1	01	01	01	01	01	01	R	S	01	01	E	02	02	39	00	00	00	00	00	00	00	00	00	00	1	0	01

FOR YEAR	FATAL CRASH STATISTICS		INJURY CRASH STATS		PROPERTY DAMAGE ONLY		TOTALS		INFLUENCE CRASHES OCCURRING ON INTERSECTING RDWYS AT INT. INFL AREA			
	CRASHES	FATALITIES	CRASHES	INJURIES	CRASHES	INJURIES	CRASHES	FATALITIES	INJURIES	CRASHES	FATALITIES	INJURIES
2007	1	1	13	21	10	23	24	1	23	0	0	0
2008	0	0	23	41	9	41	32	0	41	0	0	0
2009	0	0	14	22	4	22	18	0	22	0	0	0
2010	0	0	16	26	20	26	36	0	26	0	0	0
TOTAL	1	1	66	110	43	112	110	1	112	0	0	0

N O T I C E: THE INFORMATION CONTAINED IN THIS DOCUMENT (REPORT, SCHEDULE, LIST, OR DATA) HAS BEEN COMPILED FROM INFORMATION COLLECTED FOR THE PURPOSE OF IDENTIFYING, EVALUATING, OR PLANNING SAFETY ENHANCEMENTS. THIS PRODUCT IDENTIFIES INFORMATION USED FOR THE PURPOSE OF DEVELOPING HIGHWAY SAFETY CONSTRUCTION IMPROVEMENT PROJECTS WHICH MAY BE IMPLEMENTED UTILIZING FEDERAL-AID HIGHWAY FUNDS. ANY DOCUMENT DISPLAYING THIS NOTICE SHALL BE USED ONLY FOR THOSE PURPOSES DEEMED APPROPRIATE BY THE FLORIDA DEPARTMENT OF TRANSPORTATION. SEE TITLE 23, UNITED STATES CODE, SECTION 409.



FLORIDA TRAFFIC CRASH REPORT  
LONG FORM

DO NOT WRITE IN THIS SPACE

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Date of Crash <b>06-JUL-08</b>		Time of Crash <b>02: 14 PM</b>		Time Officer Notified <b>02: 25 PM</b>		Time Officer Arrived <b>02: 35 PM</b>		Invest. Agency Report Number <b>FHPE08OFF031656</b>		HSMV Crash Report Number <b>77215452</b>	
County Code/ <b>01</b>	City Code <b>00</b>	Feet or Mile(s)	Direction of	City or Town <b>MIAMI GARDENS</b>			(check if in City or Town) <input checked="" type="checkbox"/>		County <b>Miami-Dade</b>		
At Node No. or	Feet or	Mile(s)	From Node No.	Next Node No.	No. of Lanes <b>6</b>	1. Divided <input type="checkbox"/> 2. Undivided <input type="checkbox"/>		On Street, Road or Highway <b>STATE ROAD 826</b>			
At The Intersection Of (street, road or highway) or			Feet or	Mile(s)	Direction <b>W</b>	From Intersection Of (street, road or highway) <b>NW 27 AVENUE</b>					

SECTION 1 Pedestrian  Vehicle

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2007</b>	Make <b>CHEV</b>	Type <b>01</b>	Use <b>01</b>	Veh. License Number <b>Q831ES</b>	State <b>FL</b>	Vehicle Identification Number <b>1G1YY25UX75111681</b>					18. Undercarriage 19. Overturn 20. Windshield 21. Trailer		
Trailer Or Towed Vehicle Information			Trailer Type											
Vehicle Traveling <b>E</b>	on <b>SR 826</b>	At	Est. MPH <b>55</b>	Posted Speed <b>55</b>	Est. Vehicle Damage <b>\$5,000</b>	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage <b>\$0</b>	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP) <b>SECURITY NATIONAL</b>				Policy Number <b>G0023022320001952</b>		Vehicle Removed By: <b>UK</b>		1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input checked="" type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input checked="" type="checkbox"/> <b>DAYRON M FUENTES</b>				Current Address (Number and Street) <b>8435 NW 169 TERRACE</b>				City and State <b>MIAMI LAKES FL</b>		Zip Code <b>33016</b>				
Name of Owner (Trailer or Towed Vehicle)				Current Address (Number and Street)				City and State		Zip Code				
Name of Motor Carrier (Commercial vehicle only)				Current Address (Number and Street)				City, State and Zip Code		US DOT or ICC MC Identification Numbers				
Name of Driver (Taken from Driver license)/ Pedestrian <b>DAYRON M FUENTES</b>				Current Address (Number and Street) <b>8435 NW 169 TERRACE</b>				City, State and Zip Code <b>MIAMI LAKES FL 33016</b>		Date Of Birth <b>23-NOV-85</b>				
Driver License Number <b>F532173854230</b>	State <b>FL</b>	DL Type <b>5</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused		Results <b>5</b>	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>3</b>	Sex <b>1</b>	Inj. <b>1</b>	S. Equip. 2 5	Eject. <b>1</b>
Hazardous Materials Being Transported 1 yes 2 No	Placarded 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond				Was Hazardous Material Spilled? 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative 1 yes 2 No		Driver's Phone No. <b>3054015821</b>					

SECTION 2 Pedestrian  Vehicle

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2006</b>	Make <b>FORD</b>	Type <b>03</b>	Use <b>01</b>	Veh. License Number <b>S208PN</b>	State <b>FL</b>	Vehicle Identification Number <b>1FTRX02W96KB25712</b>					18. Undercarriage 19. Overturn 20. Windshield 21. Trailer		
Trailer Or Towed Vehicle Information			Trailer Type											
Vehicle Traveling <b>E</b>	on <b>SR 826</b>	At	Est. MPH <b>55</b>	Posted Speed <b>55</b>	Est. Vehicle Damage <b>\$2,000</b>	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage <b>\$0</b>	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP) <b>GEICO</b>				Policy Number <b>0282730308</b>		Vehicle Removed By: <b>RODOLFO</b>		1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input checked="" type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input checked="" type="checkbox"/> <b>RODOLFO A MARTINEZ</b>				Current Address (Number and Street) <b>14501 NW 87 CT</b>				City and State <b>MIAMI LAKES FL</b>		Zip Code <b>33018</b>				
Name of Owner (Trailer or Towed Vehicle)				Current Address (Number and Street)				City and State		Zip Code				
Name of Motor Carrier (Commercial vehicle only)				Current Address (Number and Street)				City, State and Zip Code		US DOT or ICC MC Identification Numbers				
Name of Driver (Taken from Driver license)/ Pedestrian <b>RODOLFO A MARTINEZ</b>				Current Address (Number and Street) <b>14501 NW 87 CT</b>				City, State and Zip Code <b>MIAMI LAKES FL 33018</b>		Date Of Birth <b>17-NOV-60</b>				
Driver License Number <b>M635721604170</b>	State <b>FL</b>	DL Type <b>2</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused		Results <b>5</b>	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>3</b>	Sex <b>1</b>	Inj. <b>1</b>	S. Equip. 2 5	Eject. <b>1</b>
Hazardous Materials Being Transported 1 yes 2 No	Placarded 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond				Was Hazardous Material Spilled? 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative 1 yes 2 No		Driver's Phone No.					

CODE INFORMATION

Vehicle Type	Vehicle Use	Trailer Type	Residence (driver/Ped.)	Physical Defects	Alcohol/Drug Use	Location In Vehicle
01 Automobile 02 Van 03 Light Truck/P.U.-2 or 4 rear tires Automobile 04 Medium Truck - 4 rear tires 05 Heavy Truck - 2 or more rear axles 06 Truck Tractor (Cab-Bobtail) 07 Motor Home (RV) 08 Bus (driver + seats for 9-15) 09 Bus (driver + seats for over 15) 10 Bicycle 11 Motorcycle 12 Moped 13 All Terrain Vehicle 14 Train 15 Low Speed Vehicle 77 Other	01 Private Transportation 02 Commercial Passengers 03 Commercial Cargo 04 Public Transportation 05 Public School Bus 06 Private School Bus 07 Ambulance 08 Law Enforcement 09 Fire/Rescue 10 Military 11 Other Government 12 Dump 13 Concrete Mixer 14 Garbage or Refuse 15 Cargo Van 77 Other	01 Single Semi Trailer 02 Tandem Semi Trailer 03 Tank Trailer 04 Saddle Mount/Flatbed 05 Boat Trailer 06 Utility Trailer 07 House Trailer 08 Pole Trailer 09 Towed Vehicle 10 Auto Transport 77 Other	1 County Of Crash 2 Elsewhere In State 3 Non-Resident Out Of State 4 Foreign - 5 Unknown  DL Type: 1 A 2 B 3 C Race: 1 White 2 Black 3 Hispanic 4 Other  Required Endorsements: 1 Yes 2 No 3 No endorsement Required  Sex: 1 Male 2 Female	1 No Defects Known 2 Eyesight Defect 3 Fatigue/Asleep 4 Hearing Defect 5 Illness 6 Seizure, Epilepsy, Blackout 7 Other Physical Defect  Injury Severity: 1 None 2 Possible 3 Non-Incapacitating 4 Incapacitating 5 Fatal (within 30 days) 6 Non-Traffic Fatality	1 Not Drinking or using Drugs 2 Alcohol - Under Influence 3 Drugs - Under Influence 4 Alcohol & Drugs - Under Influence 5 Had Been Drinking 6 Pending ALC/DRUG Test Results  Safety Equipment In Use: 1 Not in use 2 Seat Belt / Shoulder Harness 3 Child Restraint 4 Air Bag - Deployed 5 Air bag - Not Deployed 6 Safety Helmet 7 Eye Protection	1 Front Left 2 Front Center 3 Front Right 4 Rear Left 5 Rear Center 6 Rear Right 7 In Body Of Truck 8 Bus Passenger 9 Other  Ejected: 1 No 2 Yes 3 Partial

**DOCUMENTS WITH THIS NOTICE SHALL BE USED ONLY FOR PURPOSES OF THE FDOT. SEE TITLE 23, USC, SECTION 409.**

<b>SECTION</b>	<input type="checkbox"/> Pedestrian <input type="checkbox"/> Vehicle	<b>Driver Action</b>	1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	<b>Year</b>	<b>Make</b>	<b>Type</b>	<b>Use</b>	<b>Veh. License Number</b>	<b>State</b>	<b>Vehicle Identification Number</b>		18. Undercarriage 19. Overturn 20. Windsheild 21. Trailer			
<b>Trailer Or Towed Vehicle Information</b>			<b>Trailer Type</b>												
<b>Vehicle Traveling</b>				<b>on</b>	<b>At</b>	<b>Est. MPH</b>	<b>Posted Speed</b>	<b>Est. Vehicle Damage</b>	1. Disabling <input type="checkbox"/> 2. Functional <input type="checkbox"/> 3. No Damage		<b>Est. Trailer Damage</b>	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>			
<b>Motor Vehicle Insurance Company (Liability or PIP)</b>						<b>Policy Number</b>			<b>Vehicle Removed By:</b>		1. Tow Rotation List 2. Tow Owner's Request	3. Driver 4. Other <input type="checkbox"/>			
<b>Name of Vehicle Owner (Check Box If Same As Driver)</b>				<b>Current Address (Number and Street)</b>				<b>City and State</b>			<b>Zip Code</b>				
<b>Name of Owner (Trailer or Towed Vehicle)</b>				<b>Current Address (Number and Street)</b>				<b>City and State</b>			<b>Zip Code</b>				
<b>Name of Motor Carrier (Commercial vehicle only)</b>				<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>			<b>US DOT or ICC MC Identification Numbers</b>				
<b>Name of Driver (Taken from Driver license)/ Pedestrian</b>				<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>			<b>Date Of Birth</b>				
<b>Driver License Number</b>		<b>State</b>	<b>DL Type</b>	<b>Req. End</b>	<b>AIC/Drug Test Type</b>		<b>Results</b>	<b>Alc/Drug</b>	<b>Phys. Def</b>	<b>Res.</b>	<b>Race</b>	<b>Sex</b>	<b>Inj.</b>	<b>S. Equip.</b>	<b>Eject.</b>
					1 Blood 3 Urine 5 None 2 Breath 4 Refused										
<b>Hazardous Materials Being Transported</b>		<b>Placarded</b>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond		<b>Was Hazardous Material Spilled?</b>	Recommend Driver Re-exam, if Yes Explain In Narrative		<b>Driver's Phone No.</b>							
1 yes 2 No		1 yes 2 No			1 yes 2 No	1 yes 2 No									
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>	<b>Owner's Name</b>		<b>Address</b>		<b>City</b>		<b>State</b>	<b>Zip</b>			
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>	<b>Owner's Name</b>		<b>Address</b>		<b>City</b>		<b>State</b>	<b>Zip</b>			

<b>Contributing Causes - Driver/Pedestrian</b>	<b>Vehicle Defect</b>	<b>Vehicle Movement</b>	<b>Vehicle Special Functions</b>
01 No Improper Driving/Action 02 Careless Driving (Explain in Narrative) 03 Failure to Yield Right-Of-Way 04 Improper Backing 05 Improper Lane Change 06 Improper Turn 07 Alcohol - Under Influence 08 Drugs - Under Influence 09 Alcohol & Drugs - Under Influence 10 Followed Too Closely 11 Discarded Traffic Signal 12 Exceeded Safe Speed Limit 13 Discarded Stop Sign 14 Failed To Maintain Equip./ Vehicle 15 Improper Passing 16 Drove Left of Center 17 Exceeded Stated Speed Limit 18 Obstructing Traffic	01 No Defects 02 Def. Brakes 03 Warn/ Smooth Tires 04 Defective/ Improper Lights 05 Puncture/Blowout 06 Steering Mech. 07 Windshield Wipers 08 Equipment/Vehicle Defect 77 All Other (Explain In Narrative)	01 Straight Ahead 02 Slowing/ Stopping/ Stalled 03 Making Left Turn 04 Backing 05 Making Right Turn 06 Changing Lanes 07 Entering/Leaving/ Parking Space 08 Properly Parked 09 Improperly Parked 10 Making U-Turn 11 Passing	1 None 2 Farm 3 Police Pursuit 4 Recreational 5 Emergency Operation 6 Construction/Maintenance Source Of Carrier Information 1 Not Applicable 2 Shipping Papers 3 Vehicle Side 4 Driver 5 Other
19 Improper Load 20 Disregarded other Traffic Control 21 Driving Wrong Side/Way 22 Fleeing Police 23 Vehicle Modified (Explain In Narrative) 77 All Other (Explain In Narrative)	Point Of Collision 01 On Road 02 Not On Road 03 Shoulder 04 Median 05 Turn Lane	12 Driverless or Vehicle 77 All Other (Explain In Narrative)	7 Shipping Papers 1 Not Applicable 1 2 3 1 1 1 Location Type 1 Primarily Business 2 Primarily Residential 3 Open Country 77 All Other (Explain In Narrative) 88 Unknown

<b>First/Subsequent Harmful Event (s)</b>	<b>Road System Identifier</b>	<b>Lighting Condition</b>
01 Collision With MV in Transport (Rear End) 02 Collision With MV in Transport (Head On) 03 Collision With MV in Transport (Angle) 04 Collision With MV in Transport (Left Turn) 05 Collision With MV in Transport (Right Turn) 06 Collision With MV in Transport (Sideswipe) 07 Collision With MV in Transport (Backed Into) 08 Collision With Parked Car 09 Collision With MV on Roadway 10 Collision With Pedestrian 11 Collision With Bicycle 12 Collision With Bicycle (Bike Lane) 13 Collision With Moped 14 Collision With Train	01 Interstate 02 U.S. 03 State 04 County 05 Local 06 Turnpike / Toll 07 Forest Road 08 Private Roadway 77 All other (Explain In Narrative)	01 Daylight 02 Dusk 03 Dawn 04 Dark (Street Light) 05 Dark (No Street Light) 88 Unknown
15 Collision With Animal 16 MV Hit Sign / Sign Post 17 MV Hit Utility Pole / Light Pole 18 MV Hit Guardrail 19 MV Hit Fence 20 MV Hit Concrete Barrier Wall 21 MV Hit Bridge/Pier/Abutment/Rail 22 MV Hit Tree / Shrubbery 23 Collision With Construction Barricade Sign 24 Collision With Traffic Gate 25 Collision With Crash Attenuators 26 Collision With Fixed Object Above Road 27 MV Hit Other Fixed Object	28 Collision With Moveable Object on Road 29 Mv Ran Into Ditch/Culvert 30 Ran Off Road Into Water 31 Overtumed 32 Occupant Fell From Vehicle 33 Tractor/Trailer Jackknifed 34 Fire 35 Explosion 36 Downhill Runaway 37 Cargo Loss or Shift 38 Separation of Units 39 Median Crossover 77 All Other (Explain In Narrative)	Road Surface Type 01 Slag/Gravel/Stone 02 Blacktop 03 Brick/Block 04 Concrete 05 Dirt 77 All Other (Explain In Narrative)

<b>Road Conditions At Time Of Crash</b>	<b>Vision Obstructed</b>	<b>Traffic Control</b>	<b>Site Location</b>	<b>Trafficway Character</b>
01 No Defects 02 Obstruction With Warning 03 Obstruction Without Warning 04 Road under Repair/ Construction 05 Loose Surface Materials 06 Shoulders - Soft/Low/High 07 Holes/Ruts/Unsafe Paved Edge 08 Standing Water 09 Worn/Polished Road Surface 77 All other (Explain In Narrative)	01 Vision Not Obstructed 02 Inclement Weather 03 Parked/ Stopped Vehicle 04 Trees/Crops/Bushes 05 Load On Vehicle 06 Building/Fixed Object 07 Signs/Billboards 08 Fog 09 Smoke 10 Glare 77 All other (Explain In Narrative)	01 No Control 02 Special Speed Zone 03 Speed Control Sign 04 School Zone 05 Traffic Signal 06 Stop Sign 07 Yield Sign 08 Flashing Light 09 Railroad Signal 10 Officer/Guard/Flagperson 11 Posted No U-Turn	01 Not At Intersection/RR X-ing/Bridge 02 At Intersection 03 Influenced By Intersection 04 Driveway Access 05 Railroad 06 Bridge 07 Entrance Ramp 08 Exit Ramp 09 Parking Lot - Public 10 Parking Lot - Private 11 Private Property 12 Toll Booth 13 Public Bus Stop Zone 77 All Other (Explain In Narrative)	01 Straight - Level 02 Straight - Upgrade/Downgrade 03 Curve - Level 04 Curve - Upgrade/Downgrade Type Shoulder 01 Paved 02 Unpaved 03 Curb

<b>Violator(s)</b>				
<b>Section #</b>	<b>Name Of Violator</b>	<b>FL Statute Number</b>	<b>Charge</b>	<b>Citation Number</b>
1	DAYRON M FUENTES	316.1925.1	CARELESS DRIVING	3175-SMI
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

FLORIDA TRAFFIC CRASH REPORT

DO NOT WRITE IN THIS SPACE

NARRATIVE/DIAGRAM

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Time EMS Notified (Fatalities Only) :	Time EMS Arrived (Fatalities Only) :	Date Of Crash <b>06-JUL-08</b>	County/ <b>01</b>	City Code <b>00</b>	Invest. Agency Report Number <b>FHPE08OFF031656</b>	HSMV Crash Report Number <b>77215452</b>
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(Narrative)

VEHICLES 1 AND 2 WERE TRAVELING EAST ON STATE ROAD 826, V-1 WAS IN THE CENTER LANE AND V-2 WAS IN THE LEFT LANE. V-1 CHANGED LANES TO THE RIGHT AND WENT OVER STANDING WATER. V-1 LOST CONTROL AND SPUN AROUND INTO THE LEFT DIVIDING CONCRETE WALL, BOUNCED OFF THE WALL AND WHILE STILL IN MOTION WAS STRUCK BY V-2 IN LEFT LANE OF TRAVEL. BOTH VEHICLES WERE MOVED FROM THE ROADWAY PRIOR TO MY ARRIVAL.

Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
2	01	CRISTINA MARTINEZ	14501 NW 87 CT	MIAMI LAKES FL	33018	24-JUL-53	3	2	3	1	2   5	1
2	02	VERONICA MARTINEZ	14501 NW 87 COURT	HIALEAH FL	33018	19-MAY-87	3	2	6	1	2   5	1
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject

Violator(s)

Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

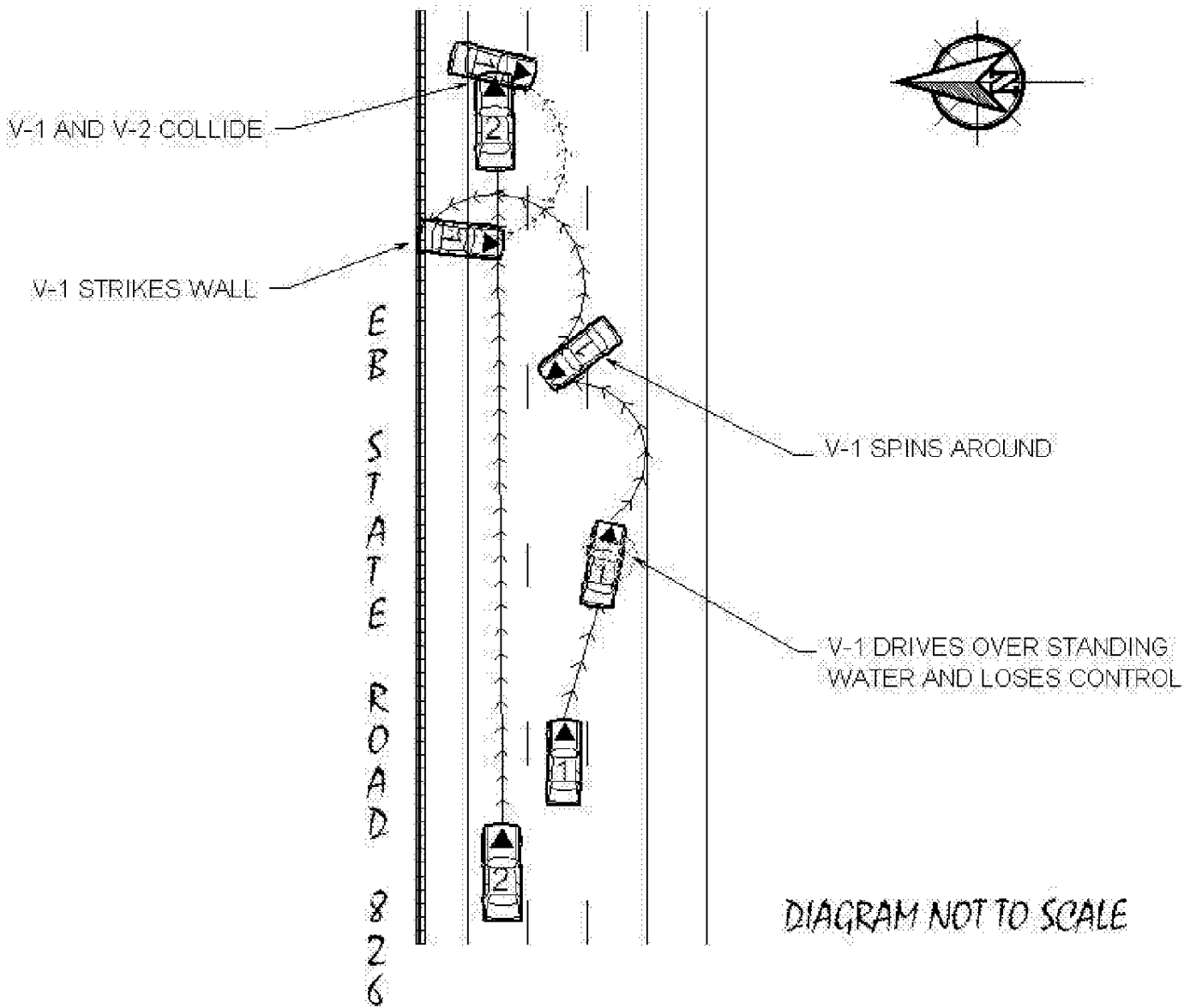
Witness Name	Current Address	City & State	Zip Code
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Witness Name	Current Address	City & State	Zip Code
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First Aid Given By - Name	1 Physician or Nurse 2 Paramedic or EMT 3 Police Officer	4 Certified 1st Aider <input type="checkbox"/>	5 Other <input type="checkbox"/>	Injured Taken To:	By - Name
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Was Investigation Made At Scene?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If No, Then Where?	Is Investigation Complete?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If No, Then Why?	Date of Report	Photos Taken?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If Yes, By Whom?	1 Invest. Agency <input type="checkbox"/> 2 Other <input type="checkbox"/>
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Investigator - Rank & Signature	ID/Badge Number	Department	FHP SO CPD Other
TPR. Y.E. GENER	2682	FHPE	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



**FLORIDA TRAFFIC CRASH REPORT**

DO NOT WRITE IN THIS SPACE

**LONG FORM**

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

**TIME & LOCATION**

Date of Crash <b>12-OCT-08</b>	Time of Crash <b>01:00 AM</b>	Time Officer Notified <b>04:58 PM</b>	Time Officer Arrived <b>04:58 PM</b>	Invest. Agency Report Number <b>FHPE08OFF046179</b>	HSMV Crash Report Number <b>77218306</b>
County Code/ <b>01</b>	City Code <b>00</b>	Feet or Mile(s) <b>1</b>	Direction of <b>S</b>	City or Town <b>Unincorporated</b>	(check if in City or Town) <input type="checkbox"/> County <b>Miami-Dade</b>
At Node No. or <b>1</b>	Feet or Mile(s) <b>1</b>	From Node No.	Next Node No.	No. of Lanes <b>8</b>	<input type="checkbox"/> 1. Divided <input checked="" type="checkbox"/> 2. Undivided
At The Intersection Of (street, road or highway) or			Feet or Mile(s) <b>.1</b>	Direction <b>E</b>	From Intersection Of (street, road or highway) <b>NW 27 AVE</b>

**SECTION 1 Pedestrian  Vehicle**

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2008</b>	Make <b>HOND</b>	Type <b>01</b>	Use <b>01</b>	Veh. License Number <b>350KPR</b>	State <b>FL</b>	Vehicle Identification Number <b>2HGFG12658H548811</b>					18. Undercarriage 19. Overturn 20. Windsheld 21. Trailer		
Trailer Or Towed Vehicle Information			Trailer Type											
Vehicle Traveling <b>W</b>	on <b>SR 826</b>	At	Est. MPH <b>50</b>	Posted Speed <b>55</b>	Est. Vehicle Damage <b>\$5,000</b>	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage <b>\$0</b>	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/> <b>14</b>					
Motor Vehicle Insurance Company (Liability or PIP) <b>STATE FARM</b>			Policy Number <b>677655159</b>		Vehicle Removed By: <b>DRIVER</b>		1. Tow Rotation List 2. Tow Owner's Request		3. Driver 4. Other <input checked="" type="checkbox"/>					
Name of Vehicle Owner (Check Box If Same As Driver) <b>MAGDALENA MENDEZ</b>			Current Address (Number and Street) <b>729 NW 161 AVE</b>			City and State <b>PEMBROKE PINES FL</b>			Zip Code <b>33028</b>					
Name of Owner (Trailer or Towed Vehicle)			Current Address (Number and Street)			City and State			Zip Code					
Name of Motor Carrier (Commercial vehicle only)			Current Address (Number and Street)			City, State and Zip Code			US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian <b>MAGDALENA MENDEZ</b>			Current Address (Number and Street) <b>729 NW 161 AVE</b>			City, State and Zip Code <b>PEMBROKE PINES FL 33028</b>			Date Of Birth <b>20-SEP-65</b>					
Driver License Number <b>M532540658400</b>	State <b>FL</b>	DL Type <b>5</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused		Results <b>5</b>	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>3</b>	Sex <b>2</b>	Inj. <b>2</b>	S. Equip. <b>2/4</b>	Eject. <b>1</b>
Hazardous Materials Being Transported 1 yes 2 No <input checked="" type="checkbox"/>	Placarded 1 yes 2 No <input checked="" type="checkbox"/>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? 1 yes 2 No <input checked="" type="checkbox"/>	Recommend Driver Re-exam, if Yes Explain In Narrative 1 yes 2 No <input checked="" type="checkbox"/>		Driver's Phone No.						

**SECTION Pedestrian  Vehicle**

Driver Action 1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	Year	Make	Type	Use	Veh. License Number	State	Vehicle Identification Number					18. Undercarriage 19. Overturn 20. Windsheld 21. Trailer		
Trailer Or Towed Vehicle Information			Trailer Type											
Vehicle Traveling	on	At	Est. MPH	Posted Speed	Est. Vehicle Damage	1. Disabling <input type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP)			Policy Number		Vehicle Removed By:		1. Tow Rotation List 2. Tow Owner's Request		3. Driver 4. Other <input type="checkbox"/>					
Name of Vehicle Owner (Check Box If Same As Driver)			Current Address (Number and Street)			City and State			Zip Code					
Name of Owner (Trailer or Towed Vehicle)			Current Address (Number and Street)			City and State			Zip Code					
Name of Motor Carrier (Commercial vehicle only)			Current Address (Number and Street)			City, State and Zip Code			US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian			Current Address (Number and Street)			City, State and Zip Code			Date Of Birth					
Driver License Number	State	DL Type	Req. End	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused		Results	Alc/Drug	Phys. Def	Res.	Race	Sex	Inj.	S. Equip.	Eject.
Hazardous Materials Being Transported 1 yes 2 No <input type="checkbox"/>	Placarded 1 yes 2 No <input type="checkbox"/>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? 1 yes 2 No <input type="checkbox"/>	Recommend Driver Re-exam, if Yes Explain In Narrative 1 yes 2 No <input type="checkbox"/>		Driver's Phone No.						

**CODE INFORMATION**

Vehicle Type	Vehicle Use	Trailer Type	Residence (driver/Ped.)	Physical Defects	Alcohol/Drug Use	Location In Vehicle
01 Automobile	01 Private Transportation	01 Single Semi Trailer	1 County Of Crash	1 No Defects Known	1 Not Drinking or using Drugs	1 Front Left
02 Van	02 Commercial Passengers	02 Tandem Semi Trailer	2 Elsewhere In State	2 Eyesight Defect	2 Alcohol - Under Influence	2 Front Center
03 Light Truck/P.U. - 2 or 4 rear tires Automobile	03 Commercial Cargo	03 Tank Trailer	3 Non-Resident Out Of State	3 Fatigue/Asleep	3 Drugs - Under Influence	3 Front Right
04 Medium Truck - 4 rear tires	04 Public Transportation	04 Saddle Mount/Flatbed	4 Foreign 5 Unknown	4 Hearing Defect	4 Alcohol & Drugs - Under Influence	4 Rear Left
05 Heavy Truck - 2 or more rear axles	05 Public School Bus	05 Boat Trailer		5 Illness	5 Had Been Drinking	5 Rear Center
06 Truck Tractor (Cab-Bobtail)	06 Private School Bus	06 Utility Trailer		6 Seizure, Epilepsy, Blackout	6 Pending ALC/DRUG Test Results	6 Rear Right
07 Motor Home (RV)	07 Ambulance	07 House Trailer		7 Other Physical Defect		7 In Body Of Truck
08 Bus (driver + seats for 9-15)	08 Law Enforcement	08 Pole Trailer		<b>Injury Severity</b>	<b>Safety Equipment In Use</b>	8 Bus Passenger
09 Bus (driver + seats for over 15)	09 Fire/Rescue	09 Towed Vehicle		1 None	1 Not in use	9 Other
10 Bicycle	10 Military	10 Auto Transport		2 Possible	2 Seat Belt / Shoulder Harness	<b>Ejected</b>
11 Motorcycle	11 Other Government	11 Other		3 Non-Incapacitating	3 Child Restraint	1 No
12 Moped	12 Dump			4 Incapacitating	4 Air Bag - Deployed	2 Yes
13 All Terrain Vehicle	13 Concrete Mixer			5 Fatal (within 30 days)	5 Air bag - Not Deployed	3 Partial
14 Train	14 Garbage or Refuse			6 Non-Traffic Fatality	6 Safety Helmet	
15 Low Speed Vehicle	15 Cargo Van				7 Eye Protection	
77 Other	77 Other					

**DOCUMENTS WITH THIS NOTICE SHALL BE USED ONLY FOR PURPOSES OF THE FDOT. SEE TITLE 23, USC, SECTION 409.**

<b>SECTION</b>	Pedestrian <input type="checkbox"/> Vehicle <input type="checkbox"/>	<b>Driver Action</b>	1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	<b>Year</b>	<b>Make</b>	<b>Type</b>	<b>Use</b>	<b>Veh. License Number</b>	<b>State</b>	<b>Vehicle Identification Number</b>		18. Undercarriage 19. Overturn 20. Windshield 21. Trailer																																
<b>Trailer Or Towed Vehicle Information</b>			<b>Trailer Type</b>																																									
<b>Vehicle Traveling</b>			<b>on</b>			<b>At</b>			<b>Est. MPH</b>			<b>Posted Speed</b>			<b>Est. Vehicle Damage</b>			1. Disabling <input type="checkbox"/> 2. Functional <input type="checkbox"/> 3. No Damage			<b>Est. Trailer Damage</b>			Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>																				
<b>Motor Vehicle Insurance Company (Liability or PIP)</b>						<b>Policy Number</b>						<b>Vehicle Removed By:</b>						1. Tow Rotation List 2. Tow Owner's Request 3. Driver <input type="checkbox"/> 4. Other																										
<b>Name of Vehicle Owner (Check Box If Same As Driver)</b>						<input type="checkbox"/>						<b>Current Address (Number and Street)</b>						<b>City and State</b>			<b>Zip Code</b>																							
<b>Name of Owner (Trailer or Towed Vehicle)</b>						<input type="checkbox"/>						<b>Current Address (Number and Street)</b>						<b>City and State</b>			<b>Zip Code</b>																							
<b>Name of Motor Carrier (Commercial vehicle only)</b>						<input type="checkbox"/>						<b>Current Address (Number and Street)</b>						<b>City, State and Zip Code</b>			<b>US DOT or ICC MC Identification Numbers</b>																							
<b>Name of Driver (Taken from Driver license)/ Pedestrian</b>						<input type="checkbox"/>						<b>Current Address (Number and Street)</b>						<b>City, State and Zip Code</b>			<b>Date Of Birth</b>																							
<b>Driver License Number</b>			<b>State</b>			<b>DL Type</b>			<b>Req. End</b>			<b>AIC/Drug Test Type</b>			<input type="checkbox"/>			<b>Results</b>			<b>Alc/Drug</b>			<b>Phys. Def</b>			<b>Res.</b>			<b>Race</b>			<b>Sex</b>			<b>Inj.</b>			<b>S. Equip.</b>			<b>Eject.</b>		
1 Blood 3 Urine 5 None 2 Breath 4 Refused																																												
<b>Hazardous Materials Being Transported</b>			<input type="checkbox"/>			<b>Placarded</b>			<input type="checkbox"/>			If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			<input type="checkbox"/>			<b>Was Hazardous Material Spilled?</b>			<input type="checkbox"/>			Recommend Driver Re-exam, if Yes Explain In Narrative			<input type="checkbox"/>			<b>Driver's Phone No.</b>														
1 yes 2 No 1 yes 2 No																																												
<b>#</b>			<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>			<b>Owner's Name</b>			<b>Address</b>			<b>City</b>			<b>State</b>			<b>Zip</b>																							
<b>#</b>			<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>			<b>Owner's Name</b>			<b>Address</b>			<b>City</b>			<b>State</b>			<b>Zip</b>																							

<b>Contributing Causes - Driver/Pedestrian</b>	<b>Vehicle Defect</b>	<b>Vehicle Movement</b>	<b>Vehicle Special Functions</b>
01 No Improper Driving/Action 02 Careless Driving (Explain in Narrative) 03 Failure to Yield Right-Of-Way 04 Improper Backing 05 Improper Lane Change 06 Improper Turn 07 Alcohol - Under Influence 08 Drugs - Under Influence 09 Alcohol & Drugs - Under Influence 10 Followed Too Closely 11 Discarded Traffic Signal 12 Exceeded Safe Speed Limit 13 Discarded Stop Sign 14 Failed To Maintain Equip./ Vehicle 15 Improper Passing 16 Drove Left of Center 17 Exceeded Stated Speed Limit 18 Obstructing Traffic	01 No Defects 02 Def. Brakes 03 Warn/ Smooth Tires 04 Defective/ Improper Lights 05 Puncture/Blowout 06 Steering Mech. 07 Windshield Wipers 08 Equipment/Vehicle Defect 07 All Other (Explain In Narrative)	01 Straight Ahead 02 Slowing/ Stopping/ Stalled 03 Making Left Turn 04 Backing 05 Making Right Turn 06 Changing Lanes 07 Entering/Leaving/ Parking Space 08 Properly Parked 09 Improperly Parked 10 Making U-Turn 11 Passing	1 None 2 Farm 3 Police Pursuit 4 Recreational 5 Emergency Operation 6 Construction/Maintenance Source Of Carrier Information 1 Not Applicable 2 Shipping Papers 3 Vehicle Side 4 Driver 5 Other
19 Improper Load 20 Disregarded other Traffic Control 21 Driving Wrong Side/Way 22 Fleeting Police 23 Vehicle Modified 24 Driver Distraction (Explain In Narrative) 27 All Other (Explain in Narrative)	Point Of Collision 01 On Road 02 Not On Road 03 Shoulder 04 Median 05 Turn Lane	12 Driverless or Runaway Vehicle 77 All Other (Explain In Narrative)	1 Primarily Business 2 Primarily Residential 3 Open Country 77 All Other (Explain in Narrative) 88 Unknown

<b>First/Subsequent Harmful Event (s)</b>	<b>Road System Identifier</b>	<b>Lighting Condition</b>
01 Collision With MV in Transport (Rear End) 02 Collision With MV in Transport (Head On) 03 Collision With MV in Transport (Angle) 04 Collision With MV in Transport (Left Turn) 05 Collision With MV in Transport (Right Turn) 06 Collision With MV in Transport (Sideswipe) 07 Collision With MV in Transport (Backed Into) 08 Collision With Parked Car 09 Collision with MV on Roadway 10 Collision With Pedestrian 11 Collision With Bicycle 12 Collision With Bicycle (Bike Lane) 13 Collision With Moped 14 Collision With Train	01 Interstate 02 U.S. 03 State 04 County 05 Local 06 Turnpike / Toll	01 Daylight 02 Dusk 03 Dawn 04 Dark (Street Light) 05 Dark (No Street Light) 08 Unknown
15 Collision With Animal 16 MV Hit Sign / Sign Post 17 MV Hit Utility Pole / Light Pole 18 MV Hit Guardrail 19 MV Hit Fence 20 MV Hit Concrete Barrier Wall 21 MV Hit Bridge/Pier/Abutment/Rail 22 MV Hit Tree / Shrubbery 23 Collision With Construction Barricade Sign 24 Collision With Traffic Gate 25 Collision With Crash Attenuators 26 Collision With Fixed Object Above Road 27 MV Hit Other Fixed Object	28 Collision With Moveable Object on Road 29 Mv Ran Into Ditch/Culvert 30 Ran Off Road Into Water 31 Overturned 32 Occupant Fell From Vehicle 33 Tractor/Trailer Jackknifed 34 Fire 35 Explosion 36 Downhill Runaway 37 Cargo Loss or Shift 38 Separation of Units 39 Median Crossover 77 All Other (Explain in Narrative)	01 Slag/Gravel/Stone 02 Blacktop 03 Brick/Block 04 Concrete 05 Dirt 77 All Other (Explain in Narrative)

<b>Road Conditions At Time Of Crash</b>	<b>Vision Obstructed</b>	<b>Traffic Control</b>	<b>Site Location</b>	<b>Trafficway Character</b>
01 No Defects 02 Obstruction With Warning 03 Obstruction Without Warning 04 Road under Repair/ Construction 05 Loose Surface Materials 06 Shoulders - Soft/Low/High 07 Holes/Ruts/Unsafe Paved Edge 08 Standing Water 09 Worn/Polished Road Surface 77 All other (Explain In Narrative)	01 Vision Not Obstructed 02 Inclement Weather 03 Parked/ Stopped Vehicle 04 Trees/Crops/Bushes 05 Load On Vehicle 06 Building/Fixed Object 07 Signs/Billboards 08 Fog 09 Smoke 10 Glare 77 All other (Explain In Narrative)	01 No Control 02 Special Speed Zone 03 Speed Control Sign 04 School Zone 05 Traffic Signal 06 Stop Sign 07 Yield Sign 08 Flashing Light 09 Railroad Signal 10 Officer/Guard/Flagperson 11 Posted No U-Turn	01 Not At Intersection/RR X-ing/Bridge 02 At Intersection 03 Influenced By Intersection 04 Driveway Access 05 Railroad 06 Bridge 07 Entrance Ramp 08 Exit Ramp 09 Parking Lot - Public	01 Straight - Level 02 Straight - Upgrade/Downgrade 03 Curve - Level 04 Curve - Upgrade/Downgrade Type Shoulder 01 Paved 02 Unpaved 03 Curb

<b>Violator(s)</b>				
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

FLORIDA TRAFFIC CRASH REPORT

NARRATIVE/DIAGRAM

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

Time EMS Notified (Fatalities Only) :	Time EMS Arrived (Fatalities Only) :	Date Of Crash <b>12-OCT-08</b>	County/ <b>01</b>	City Code <b>00</b>	Invest. Agency Report Number <b>FHPE08OFF046179</b>	HSMV Crash Report Number <b>77218306</b>
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(Narrative)

VEHICLE 1 (SECTION 1) TRAVELED WEST ON SR 826 (PALMETTO) OCCUPYING THE CENTER LANE. DRIVER OF V-1 STATED THAT SHE WENT OVER STANDING WATER & LOST CONTROL OF V-1. V-1 ROTATED CLOCKWISE TOWARD THE OUTSIDE GUARDRAIL. THE LEFT FRONT AND LEFT SIDE OF V-1 STRUCK THE GUARDRAIL.

Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject

Violator(s)				
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

Witness Name	Current Address	City & State	Zip Code
Witness Name	Current Address	City & State	Zip Code

First Aid Given By - Name	1 Physician or Nurse 2 Paramedic or EMT 3 Police Officer	4 Certified 1st Aider <input type="checkbox"/> 5 Other <input type="checkbox"/>	Injured Taken To:	By - Name
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Was Investigation Made At Scene?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If No, Then Where? <b>SR 90 &amp; SW 137 AVE</b>	Is Investigation Complete?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If No, Then Why?	Date of Report <b>13-OCT-08</b>	Photos Taken?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If Yes, By Whom?	1 Invest. Agency <input type="checkbox"/> 2 Other <input type="checkbox"/>
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Investigator - Rank & Signature <b>TPR F. LOZANO</b>	ID/Badge Number <b>2005</b>	Department <b>FHPE</b>	FHP <input checked="" type="checkbox"/>	SO <input type="checkbox"/>	CPD <input type="checkbox"/>	Other <input type="checkbox"/>
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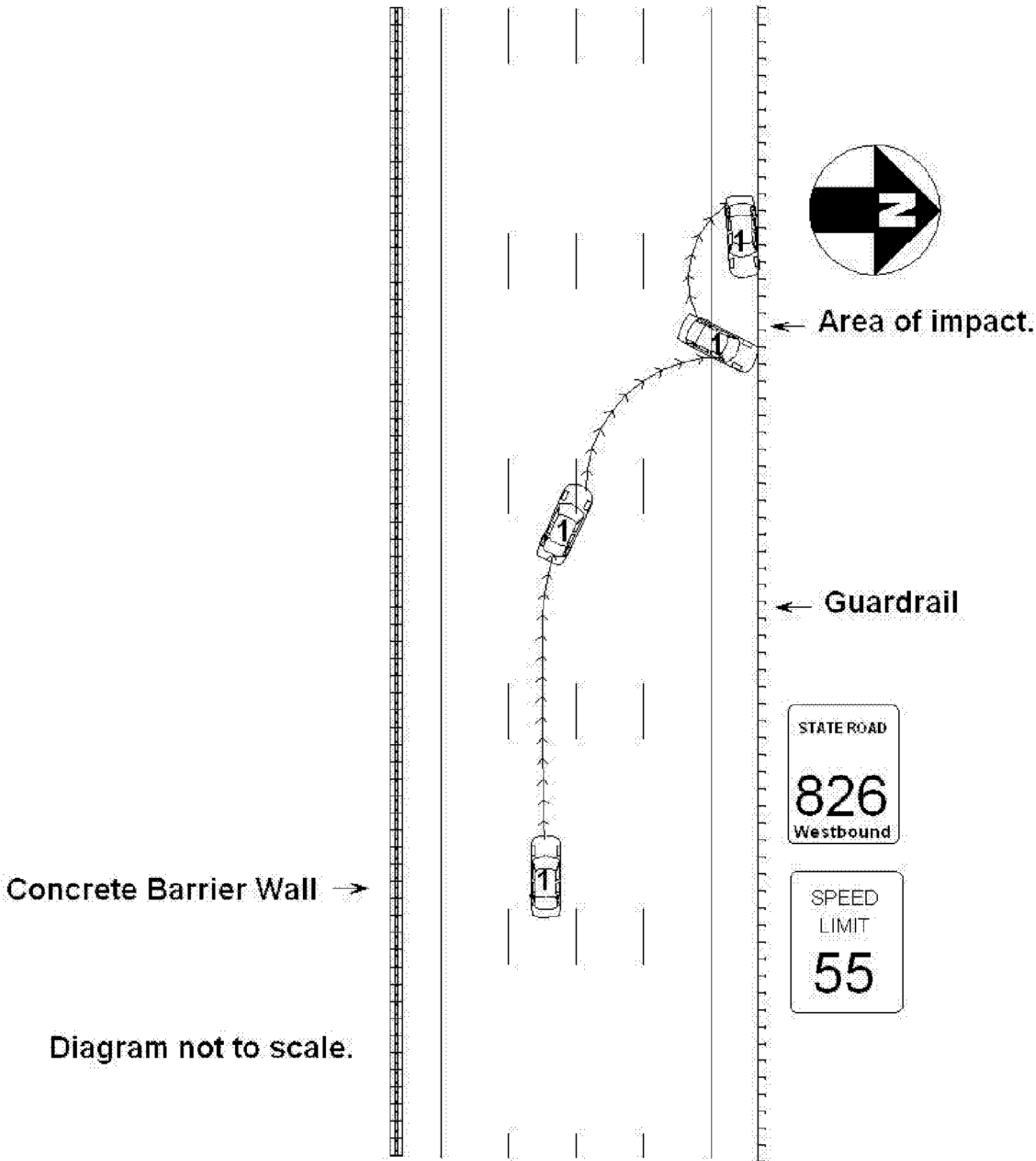


Diagram not to scale.



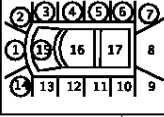
FLORIDA TRAFFIC CRASH REPORT  
LONG FORM

DO NOT WRITE IN THIS SPACE

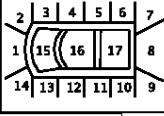
MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Date of Crash 23-JUN-09		Time of Crash 10: 10 AM		Time Officer Notified 10: 15 AM		Time Officer Arrived 10: 15 AM		Invest. Agency Report Number FHPE09OFF028201		HSMV Crash Report Number 77219392	
County Code/ 01	City Code 57	Feet or	Mile(s)	Direction of		City or Town Miami Gardens			(check if in City or Town) <input checked="" type="checkbox"/>	County Miami-Dade	
At Node No.	or	Feet or	Mile(s)	From Node No.	Next Node No.	No. of Lanes 8	1. Divided 2. Undivided		On Street, Road or Highway WB STATE ROAD 826		
At The Intersection Of (street, road or highway)				or	Feet or 1000	Mile(s)	Direction E	From Intersection Of (street, road or highway) STATE ROAD 817 (NW 27 AV)			

**SECTION 1** Pedestrian  Vehicle

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year 1999	Make FORD	Type 01	Use 01	Veh. License Number 459VIK	State FL	Vehicle Identification Number 1FAPP42X1XF165561					18. Undercarriage 19. Overturn 20. Windsheld 21. Trailer			
Trailer Or Towed Vehicle Information			Trailer Type												
Vehicle Traveling W		on STATE ROAD 826		At	Est. MPH 50	Posted Speed 55	Est. Vehicle Damage \$5,000	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>				
Motor Vehicle Insurance Company (Liability or PIP) UNITED AUTO INS. CO.				Policy Number RFL10067540		Vehicle Removed By: ONE WAY TOWING			1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input checked="" type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input checked="" type="checkbox"/> RICARDO CAMPO BRITO				Current Address (Number and Street) 7325 W 2 LN				City and State HIALEAH FL		Zip Code 33014					
Name of Owner (Trailer or Towed Vehicle)				Current Address (Number and Street)				City and State		Zip Code					
Name of Motor Carrier (Commercial vehicle only)				Current Address (Number and Street)				City, State and Zip Code		US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian RICARDO CAMPO BRITO				Current Address (Number and Street) 7325 W 2 LN				City, State and Zip Code HIALEAH FL 33014		Date Of Birth 24-APR-70					
Driver License Number C511720701440		State FL	DL Type 5	Req. End 3	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused		Results	Alc/Drug 1	Phys. Def 1	Res. 1	Race 3	Sex 1	Inj. 1	S. Equip. 2 5	Eject. 1
Hazardous Materials Being Transported <input checked="" type="checkbox"/> 1 yes 2 No		Placarded <input checked="" type="checkbox"/> 1 yes 2 No		If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input checked="" type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input checked="" type="checkbox"/> 1 yes 2 No			Driver's Phone No.				

**SECTION** Pedestrian  Vehicle

Driver Action 1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	Year	Make	Type	Use	Veh. License Number	State	Vehicle Identification Number					18. Undercarriage 19. Overturn 20. Windsheld 21. Trailer			
Trailer Or Towed Vehicle Information			Trailer Type												
Vehicle Traveling		on		At	Est. MPH	Posted Speed	Est. Vehicle Damage	1. Disabling <input type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>				
Motor Vehicle Insurance Company (Liability or PIP)				Policy Number		Vehicle Removed By:			1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/>				Current Address (Number and Street)				City and State		Zip Code					
Name of Owner (Trailer or Towed Vehicle)				Current Address (Number and Street)				City and State		Zip Code					
Name of Motor Carrier (Commercial vehicle only)				Current Address (Number and Street)				City, State and Zip Code		US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian				Current Address (Number and Street)				City, State and Zip Code		Date Of Birth					
Driver License Number		State	DL Type	Req. End	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused		Results	Alc/Drug	Phys. Def	Res.	Race	Sex	Inj.	S. Equip. 1	Eject.
Hazardous Materials Being Transported <input type="checkbox"/> 1 yes 2 No		Placarded <input type="checkbox"/> 1 yes 2 No		If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input type="checkbox"/> 1 yes 2 No			Driver's Phone No.				

**CODE INFORMATION**

Vehicle Type	Vehicle Use	Trailer Type	Residence (driver/Ped.)	Physical Defects	Alcohol/Drug Use	Location In Vehicle
01 Automobile	01 Private Transportation	01 Single Semi Trailer	1 County Of Crash	1 No Defects Known	1 Not Drinking or using Drugs	1 Front Left
02 Van	02 Commercial Passengers	02 Tandem Semi Trailer	2 Elsewhere In State	2 Eyesight Defect	2 Alcohol - Under Influence	2 Front Center
03 Light Truck/P.U. - 2 or 4 rear tires Automobile	03 Commercial Cargo	03 Tank Trailer	3 Non-Resident Out Of State	3 Fatigue/Asleep	3 Drugs - Under Influence	3 Front Right
04 Medium Truck - 4 rear tires	04 Public Transportation	04 Saddle Mount/Flatbed	4 Foreign 5 Unknown	4 Hearing Defect	4 Alcohol & Drugs - Under Influence	4 Rear Left
05 Heavy Truck - 2 or more rear axles	05 Public School Bus	05 Boat Trailer		5 Illness	5 Had Been Drinking	5 Rear Center
06 Truck Tractor (Cab-Bobtail)	06 Private School Bus	06 Utility Trailer		6 Seizure, Epilepsy, Blackout	6 Pending ALC/DRUG Test Results	6 Rear Right
07 Motor Home (RV)	07 Ambulance	07 House Trailer		7 Other Physical Defect		7 In Body Of Truck
08 Bus (driver + seats for 9-15)	08 Law Enforcement	08 Pole Trailer				8 Bus Passenger
09 Bus (driver + seats for over 15)	09 Fire/Rescue	09 Towed Vehicle				9 Other
10 Bicycle	10 Military	10 Auto Transport				
11 Motorcycle	11 Other Government	77 Other				
12 Moped	12 Dump					
13 All Terrain Vehicle	13 Concrete Mixer					
14 Train	14 Garbage or Refuse					
15 Low Speed Vehicle	15 Cargo Van					
77 Other	77 Other					

**DOCUMENTS WITH THIS NOTICE SHALL BE USED ONLY FOR PURPOSES OF THE FDOT. SEE TITLE 23, USC, SECTION 409.**

<b>SECTION</b>	<input type="checkbox"/> Pedestrian <input type="checkbox"/> Vehicle	<b>Year</b>	<b>Make</b>	<b>Type</b>	<b>Use</b>	<b>Veh. License Number</b>	<b>State</b>	<b>Vehicle Identification Number</b>		<b>18. Undercarriage</b> <b>19. Overturn</b> <b>20. Windshield</b> <b>21. Trailer</b>			
<b>Driver Action</b>	1. Phantom <input type="checkbox"/> 2. Hit and Run <input type="checkbox"/> 3. N/A <input type="checkbox"/>												
<b>Trailer Or Towed Vehicle Information</b>				<b>Trailer Type</b>									
<b>Vehicle Traveling</b>	on		<b>At</b>	<b>Est. MPH</b>	<b>Posted Speed</b>	<b>Est. Vehicle Damage</b>	1. Disabling <input type="checkbox"/> 2. Functional <input type="checkbox"/> 3. No Damage <input type="checkbox"/>	<b>Est. Trailer Damage</b>	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>				
<b>Motor Vehicle Insurance Company (Liability or PIP)</b>						<b>Policy Number</b>	<b>Vehicle Removed By:</b>		1. Tow Rotation List <input type="checkbox"/> 2. Tow Owner's Request <input type="checkbox"/>	3. Driver <input type="checkbox"/> 4. Other <input type="checkbox"/>			
<b>Name of Vehicle Owner (Check Box If Same As Driver)</b>			<b>Current Address (Number and Street)</b>				<b>City and State</b>			<b>Zip Code</b>			
<b>Name of Owner (Trailer or Towed Vehicle)</b>			<b>Current Address (Number and Street)</b>				<b>City and State</b>			<b>Zip Code</b>			
<b>Name of Motor Carrier (Commercial vehicle only)</b>			<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>			<b>US DOT or ICC MC Identification Numbers</b>			
<b>Name of Driver (Taken from Driver license)/ Pedestrian</b>			<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>			<b>Date Of Birth</b>			
<b>Driver License Number</b>	<b>State</b>	<b>DL Type</b>	<b>Req. End</b>	<b>AIC/Drug Test Type</b>	<b>Results</b>	<b>Alc/Drug</b>	<b>Phys. Def</b>	<b>Res.</b>	<b>Race</b>	<b>Sex</b>	<b>Inj.</b>	<b>S. Equip.</b>	<b>Eject.</b>
				1 Blood 3 Urine 5 None <input type="checkbox"/> 2 Breath 4 Refused									
<b>Hazardous Materials Being Transported</b>	<input type="checkbox"/>	<b>Placarded</b>	<input type="checkbox"/>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond <input type="checkbox"/>			<b>Was Hazardous Material Spilled?</b>	<input type="checkbox"/>	Recommend Driver Re-exam, if Yes Explain In Narrative <input type="checkbox"/>			<b>Driver's Phone No.</b>	
1 yes 2 No		1 yes 2 No					1 yes 2 No		1 yes 2 No				
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>	<b>Est. Amount</b>	<b>Owner's Name</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>						
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>	<b>Est. Amount</b>	<b>Owner's Name</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>						

<b>Contributing Causes - Driver/Pedestrian</b>	<b>Vehicle Defect</b>	<b>Vehicle Movement</b>	<b>Vehicle Special Functions</b>
01 No Improper Driving/Action <input type="checkbox"/> 02 Careless Driving (Explain in Narrative) <input type="checkbox"/> 03 Failure to Yield Right-Of-Way <input type="checkbox"/> 04 Improper Backing <input type="checkbox"/> 05 Improper Lane Change <input type="checkbox"/> 06 Improper Turn <input type="checkbox"/> 07 Alcohol - Under Influence <input type="checkbox"/> 08 Drugs - Under Influence <input type="checkbox"/> 09 Alcohol & Drugs - Under Influence <input type="checkbox"/> 10 Followed Too Closely <input type="checkbox"/> 11 Discarded Traffic Signal <input type="checkbox"/> 12 Exceeded Safe Speed Limit <input type="checkbox"/> 13 Discarded Stop Sign <input type="checkbox"/> 14 Failed To Maintain Equip./ Vehicle <input type="checkbox"/> 15 Improper Passing <input type="checkbox"/> 16 Drove Left of Center <input type="checkbox"/> 17 Exceeded Stated Speed Limit <input type="checkbox"/> 18 Obstructing Traffic <input type="checkbox"/>	01 No Defects <input type="checkbox"/> 02 Def. Brakes <input type="checkbox"/> 03 Warn/ Smooth Tires <input type="checkbox"/> 04 Defective/ Improper Lights <input type="checkbox"/> 05 Puncture/Blowout <input type="checkbox"/> 06 Steering Mech. <input type="checkbox"/> 07 Windshield Wipers <input type="checkbox"/> 08 Equipment/Vehicle Defect <input type="checkbox"/> 09 All Other (Explain In Narrative) <input type="checkbox"/> 19 Improper Load <input type="checkbox"/> 20 Disregarded other Traffic Control <input type="checkbox"/> 21 Driving Wrong Side/Way <input type="checkbox"/> 22 Fleeting Police <input type="checkbox"/> 23 Vehicle Modified (Explain In Narrative) <input type="checkbox"/> 24 Driver Distraction (Explain In Narrative) <input type="checkbox"/> 27 All Other (Explain in Narrative) <input type="checkbox"/>	01 Straight Ahead <input type="checkbox"/> 02 Slowing/ Stopping/ Stalled <input type="checkbox"/> 03 Making Left Turn <input type="checkbox"/> 04 Backing <input type="checkbox"/> 05 Making Right Turn <input type="checkbox"/> 06 Changing Lanes <input type="checkbox"/> 07 Entering/Leaving/ Parking Space <input type="checkbox"/> 08 Properly Parked <input type="checkbox"/> 09 Improperly Parked <input type="checkbox"/> 10 Making U-Turn <input type="checkbox"/> 11 Passing <input type="checkbox"/> 12 Driverless or Vehicle <input type="checkbox"/> 77 All Other (Explain In Narrative) <input type="checkbox"/>	1 None <input type="checkbox"/> 2 Farm <input type="checkbox"/> 3 Police Pursuit <input type="checkbox"/> 4 Recreational <input type="checkbox"/> 5 Emergency Operation <input type="checkbox"/> 6 Construction/Maintenance <input type="checkbox"/> Source Of Carrier Information 1 Not Applicable <input type="checkbox"/> 2 Shipping Papers <input type="checkbox"/> 3 Vehicle Side <input type="checkbox"/> 4 Driver 5 Other <input type="checkbox"/>
	<b>Point Of Collision</b> 01 On Road <input type="checkbox"/> 02 Not On Road <input type="checkbox"/> 03 Shoulder <input type="checkbox"/> 04 Median <input type="checkbox"/> 05 Turn Lane <input type="checkbox"/> <b>Work Area</b> 01 None <input type="checkbox"/> 02 Nearby <input type="checkbox"/> 03 Entered <input type="checkbox"/>	<b>Pedestrian Action</b> 01 Crossing Not At Intersection <input type="checkbox"/> 02 Crossing At Mid-block Crosswalk <input type="checkbox"/> 03 Crossing At Intersection <input type="checkbox"/> 04 Walking Along Road With Traffic <input type="checkbox"/> 05 Walking Along Road Against Traffic <input type="checkbox"/> 06 Working on Vehicle in Road <input type="checkbox"/> 07 Working in Road <input type="checkbox"/> 08 Standing/Playing in Road <input type="checkbox"/> 09 Standing in Pedestrian Island <input type="checkbox"/> 77 All Other (Explain in Narrative) <input type="checkbox"/> 88 Unknown <input type="checkbox"/>	<b>Location Type</b> 1 Primarily Business <input type="checkbox"/> 2 Primarily Residential <input type="checkbox"/> 3 Open Country <input type="checkbox"/>

<b>First/Subsequent Harmful Event (s)</b>	<b>Road System Identifier</b>	<b>Lighting Condition</b>
01 Collision With MV in Transport (Rear End) <input type="checkbox"/> 02 Collision With MV in Transport (Head On) <input type="checkbox"/> 03 Collision With MV in Transport (Angle) <input type="checkbox"/> 04 Collision With MV in Transport (Left Turn) <input type="checkbox"/> 05 Collision With MV in Transport (Right Turn) <input type="checkbox"/> 06 Collision With MV in Transport (Sideswipe) <input type="checkbox"/> 07 Collision With MV in Transport (Backed Into) <input type="checkbox"/> 08 Collision With Parked Car <input type="checkbox"/> 09 Collision with MV on Roadway <input type="checkbox"/> 10 Collision With Pedestrian <input type="checkbox"/> 11 Collision With Bicycle <input type="checkbox"/> 12 Collision With Bicycle (Bike Lane) <input type="checkbox"/> 13 Collision With Moped <input type="checkbox"/> 14 Collision With Train <input type="checkbox"/> 15 Collision With Animal <input type="checkbox"/> 16 MV Hit Sign / Sign Post <input type="checkbox"/> 17 MV Hit Utility Pole / Light Pole <input type="checkbox"/> 18 MV Hit Guardrail <input type="checkbox"/> 19 MV Hit Fence <input type="checkbox"/> 20 MV Hit Concrete Barrier Wall <input type="checkbox"/> 21 MV Hit Bridge/Pier/Abutment/Rail <input type="checkbox"/> 22 MV Hit Tree / Shrubbery <input type="checkbox"/> 23 Collision With Construction Barricade Sign <input type="checkbox"/> 24 Collision With Traffic Gate <input type="checkbox"/> 25 Collision With Crash Attenuators <input type="checkbox"/> 26 Collision With Fixed Object Above Road <input type="checkbox"/> 27 MV Hit Other Fixed Object <input type="checkbox"/> 28 Collision With Moveable Object on Road <input type="checkbox"/> 29 Mv Ran Into Ditch/Culvert <input type="checkbox"/> 30 Ran Off Road Into Water <input type="checkbox"/> 31 Overturned <input type="checkbox"/> 32 Occupant Fell From Vehicle <input type="checkbox"/> 33 Tractor/Trailer Jackknifed <input type="checkbox"/> 34 Fire <input type="checkbox"/> 35 Explosion <input type="checkbox"/> 36 Downhill Runaway <input type="checkbox"/> 37 Cargo Loss or Shift <input type="checkbox"/> 38 Separation of Units <input type="checkbox"/> 39 Median Crossover <input type="checkbox"/> 77 All Other (Explain in Narrative) <input type="checkbox"/>	01 Interstate <input type="checkbox"/> 02 U.S. <input type="checkbox"/> 03 State <input type="checkbox"/> 04 County <input type="checkbox"/> 05 Local <input type="checkbox"/> 06 Turnpike / Toll <input type="checkbox"/> 07 Forest Road <input type="checkbox"/> 08 Private Roadway <input type="checkbox"/> 77 All other (Explain In Narrative) <input type="checkbox"/> 03 <input type="checkbox"/>	01 Daylight <input type="checkbox"/> 02 Dusk <input type="checkbox"/> 03 Dawn <input type="checkbox"/> 04 Dark (Street Light) <input type="checkbox"/> 05 Dark (No Street Light) <input type="checkbox"/> 88 Unknown <input type="checkbox"/> 01 <input type="checkbox"/>
	<b>Road Surface Condition</b> 01 Dry <input type="checkbox"/> 02 Wet <input type="checkbox"/> 03 Slippery <input type="checkbox"/> 04 Icy <input type="checkbox"/> 77 All other (Explain in Narrative) <input type="checkbox"/> 02 <input type="checkbox"/>	<b>Weather</b> 01 Clear <input type="checkbox"/> 02 Cloudy <input type="checkbox"/> 03 Rain <input type="checkbox"/> 04 Fog <input type="checkbox"/> 77 All other (Explain in Narrative) <input type="checkbox"/> 03 <input type="checkbox"/>
	<b>Road Surface Type</b> 01 Slag/Gravel/Stone <input type="checkbox"/> 02 Blacktop <input type="checkbox"/> 03 Brick/Block <input type="checkbox"/> 04 Concrete <input type="checkbox"/> 05 Dirt <input type="checkbox"/> 77 All Other (Explain in Narrative) <input type="checkbox"/> 02 <input type="checkbox"/>	

<b>Road Conditions At Time Of Crash</b>	<b>Vision Obstructed</b>	<b>Traffic Control</b>	<b>Site Location</b>	<b>Trafficway Character</b>
01 No Defects <input type="checkbox"/> 02 Obstruction With Warning <input type="checkbox"/> 03 Obstruction Without Warning <input type="checkbox"/> 04 Road under Repair/ Construction <input type="checkbox"/> 05 Loose Surface Materials <input type="checkbox"/> 06 Shoulders - Soft/Low/High <input type="checkbox"/> 07 Holes/Ruts/Unsafe Paved Edge <input type="checkbox"/> 08 Standing Water <input type="checkbox"/> 09 Worn/Polished Road Surface <input type="checkbox"/> 77 All other (Explain In Narrative) <input type="checkbox"/>	01 Vision Not Obstructed <input type="checkbox"/> 02 Inclement Weather <input type="checkbox"/> 03 Parked/ Stopped Vehicle <input type="checkbox"/> 04 Trees/Crops/Bushes <input type="checkbox"/> 05 Load On Vehicle <input type="checkbox"/> 06 Building/Fixed Object <input type="checkbox"/> 07 Signs/Billboards <input type="checkbox"/> 08 Fog <input type="checkbox"/> 09 Smoke <input type="checkbox"/> 10 Glare <input type="checkbox"/> 77 All other (Explain In Narrative) <input type="checkbox"/>	01 No Control <input type="checkbox"/> 02 Special Speed Zone <input type="checkbox"/> 03 Speed Control Sign <input type="checkbox"/> 04 School Zone <input type="checkbox"/> 05 Traffic Signal <input type="checkbox"/> 06 Stop Sign <input type="checkbox"/> 07 Yield Sign <input type="checkbox"/> 08 Flashing Light <input type="checkbox"/> 09 Railroad Signal <input type="checkbox"/> 10 Officer/Guard/Flagperson <input type="checkbox"/> 11 Posted No U-Turn <input type="checkbox"/> 12 No Passing Zone <input type="checkbox"/> 77 All Other (Explain In Narrative) <input type="checkbox"/>	01 Not At Intersection/RR X-ing/Bridge <input type="checkbox"/> 02 At Intersection <input type="checkbox"/> 03 Influenced By Intersection <input type="checkbox"/> 04 Driveway Access <input type="checkbox"/> 05 Railroad <input type="checkbox"/> 06 Bridge <input type="checkbox"/> 07 Entrance Ramp <input type="checkbox"/> 08 Exit Ramp <input type="checkbox"/> 09 Parking Lot - Public <input type="checkbox"/> 10 Parking Lot - Private <input type="checkbox"/> 11 Private Property <input type="checkbox"/> 12 Toll Booth <input type="checkbox"/> 13 Public Bus Stop Zone <input type="checkbox"/> 77 All Other (Explain In Narrative) <input type="checkbox"/>	01 Straight - Level <input type="checkbox"/> 02 Straight - Upgrade/Downgrade <input type="checkbox"/> 03 Curve - Level <input type="checkbox"/> 04 Curve - Upgrade/Downgrade <input type="checkbox"/> Type Shoulder 01 Paved <input type="checkbox"/> 02 Unpaved <input type="checkbox"/> 03 Curb <input type="checkbox"/>

Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

FLORIDA TRAFFIC CRASH REPORT

NARRATIVE/DIAGRAM

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

Time EMS Notified (Fatalities Only) :	Time EMS Arrived (Fatalities Only) :	Date Of Crash 23-JUN-09	County/ 01	City Code 57	Invest. Agency Report Number FHPE09OFF028201	HSMV Crash Report Number 77219392
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(Narrative)

Vehicle-1 (Section 1) was traveling Westbound on State Road 826 when his vehicle began to travel out of control. The vehicle rotated counterclockwise across the lanes towards the concrete barrier wall. The vehicle subsequently collided into the concrete barrier wall with its right front and right side. Vehicle-1 after impact with the wall came to final rest on the left inside paved shoulder up against the wall facing east. All descriptions and statements of this crash was provided by the driver.

Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject

**Violator(s)**

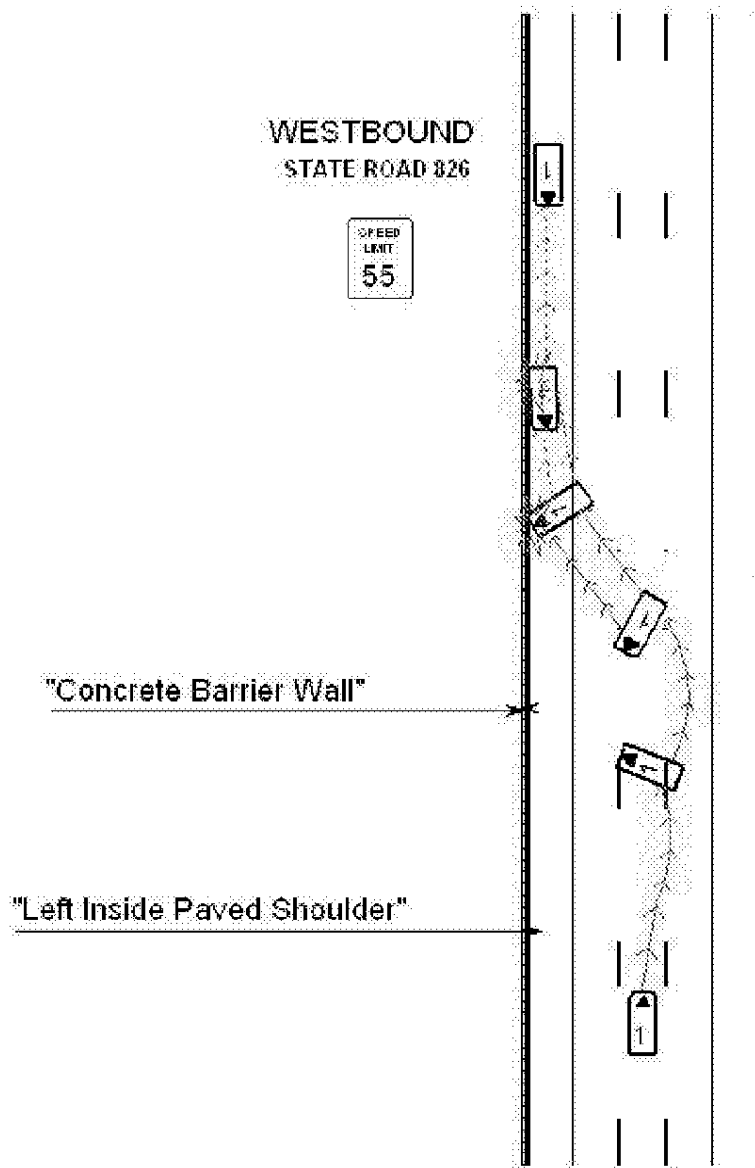
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

Witness Name	Current Address	City & State	Zip Code
Witness Name	Current Address	City & State	Zip Code

First Aid Given By - Name	1 Physician or Nurse 2 Paramedic or EMT 3 Police Officer	4 Certified 1st Aider <input type="checkbox"/> 5 Other <input type="checkbox"/>	Injured Taken To:	By - Name
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Was Investigation Made At Scene?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If No, Then Where?	Is Investigation Complete?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If No, Then Why?	Date of Report	23-JUN-09	Photos Taken?	1 Yes <input type="checkbox"/> 2 No <input checked="" type="checkbox"/>	If Yes, By Whom?	1 Invest. Agency <input type="checkbox"/> 2 Other <input type="checkbox"/>
----------------------------------	----------------------------------------------------------------------------	--------------------	----------------------------	----------------------------------------------------------------------------	------------------	----------------	-----------	---------------	----------------------------------------------------------------------------	------------------	-------------------------------------------------------------------------------

Investigator - Rank & Signature	TPR. G.HENNING	ID/Badge Number	1273/686	Department	FHPE	FHP	SO	CPD	Other
						<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



"Diagram Not Drawn To Scale"

**FLORIDA TRAFFIC CRASH REPORT**

DO NOT WRITE IN THIS SPACE

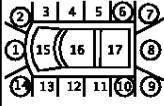
**LONG FORM**

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

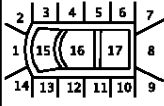
**TIME & LOCATION**

Date of Crash <b>15-AUG-09</b>	Time of Crash <b>05: 58 AM</b>	Time Officer Notified <b>06: 05 AM</b>	Time Officer Arrived <b>06: 35 AM</b>	Invest. Agency Report Number <b>FHPE09OFF037101</b>	HSMV Crash Report Number <b>77454906</b>
County Code/ <b>01</b>	City Code <b>00</b>	Feet or Mile(s)	Direction of	City or Town <b>MIAMI GARDENS</b>	(check if in City or Town) <input checked="" type="checkbox"/> County <b>Miami-Dade</b>
At Node No. or Feet or Mile(s)	From Node No.	Next Node No.	No. of Lanes <b>8</b>	1. Divided 2. Undivided	On Street, Road or Highway <b>STATE ROAD 826</b>
At The Intersection Of (street, road or highway) or		Feet or Mile(s) <b>.25</b>	Direction <b>E</b>	From Intersection Of (street, road or highway) <b>NORTHWEST 27 AVE</b>	

**SECTION 1 Pedestrian  Vehicle**

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2006</b>	Make <b>HOND</b>	Type <b>01</b>	Use <b>01</b>	Veh. License Number <b>T638FI</b>	State <b>FL</b>	Vehicle Identification Number <b>1HGFA16576L050533</b>					18. Undercarriage 19. Overturn 20. Windshield 21. Trailer	
Trailer Or Towed Vehicle Information		Trailer Type											
Vehicle Traveling <b>W</b>	on <b>STATE ROAD 826</b>	At	Est. MPH <b>55</b>	Posted Speed <b>55</b>	Est. Vehicle Damage <b>\$6,000</b>	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage	Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP) <b>UK</b>		Policy Number <b>UK</b>		Vehicle Removed By: <b>MAGIC TOWING</b>			1. Tow Rotation List 2. Tow Owner's Request	3. Driver 4. Other <input checked="" type="checkbox"/>					
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/> <b>MARIA A VELASQUEZ</b>		Current Address (Number and Street) <b>4675 W 18TH CT APT 302</b>			City and State <b>HIALEAH FL</b>		Zip Code <b>33012</b>						
Name of Owner (Trailer or Towed Vehicle)		Current Address (Number and Street)			City and State		Zip Code						
Name of Motor Carrier (Commercial vehicle only)		Current Address (Number and Street)			City, State and Zip Code		US DOT or ICC MC Identification Numbers						
Name of Driver (Taken from Driver license)/ Pedestrian <b>ANDREA MENDEZ</b>		Current Address (Number and Street) <b>10965 SW 28 STREET</b>			City, State and Zip Code <b>MIAMI FL 33165</b>		Date Of Birth <b>08-MAY-87</b>						
Driver License Number <b>M532000876680</b>	State <b>FL</b>	DL Type <b>5</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results <b>5</b>	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>3</b>	Sex <b>2</b>	Inj. <b>2</b>	S. Equip. <b>2/4</b>	Eject. <b>1</b>
Hazardous Materials Being Transported <input checked="" type="checkbox"/> 1 yes 2 No	Placarded <input checked="" type="checkbox"/> 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input checked="" type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input checked="" type="checkbox"/> 1 yes 2 No			Driver's Phone No.				

**SECTION Pedestrian  Vehicle**

Driver Action 1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	Year	Make	Type	Use	Veh. License Number	State	Vehicle Identification Number					18. Undercarriage 19. Overturn 20. Windshield 21. Trailer	
Trailer Or Towed Vehicle Information		Trailer Type											
Vehicle Traveling	on	At	Est. MPH	Posted Speed	Est. Vehicle Damage	1. Disabling <input type="checkbox"/> 2. Functional 3. No Damage	Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP)		Policy Number		Vehicle Removed By:			1. Tow Rotation List 2. Tow Owner's Request	3. Driver 4. Other <input type="checkbox"/>					
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/>		Current Address (Number and Street)			City and State		Zip Code						
Name of Owner (Trailer or Towed Vehicle)		Current Address (Number and Street)			City and State		Zip Code						
Name of Motor Carrier (Commercial vehicle only)		Current Address (Number and Street)			City, State and Zip Code		US DOT or ICC MC Identification Numbers						
Name of Driver (Taken from Driver license)/ Pedestrian		Current Address (Number and Street)			City, State and Zip Code		Date Of Birth						
Driver License Number	State	DL Type	Req. End	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results	Alc/Drug	Phys. Def	Res.	Race	Sex	Inj.	S. Equip.	Eject.
Hazardous Materials Being Transported <input type="checkbox"/> 1 yes 2 No	Placarded <input type="checkbox"/> 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input type="checkbox"/> 1 yes 2 No			Driver's Phone No.				

**CODE INFORMATION**

Vehicle Type	Vehicle Use	Trailer Type	Residence (driver/Ped.)	Physical Defects	Alcohol/Drug Use	Location In Vehicle
01 Automobile	01 Private Transportation	01 Single Semi Trailer	1 County Of Crash	1 No Defects Known	1 Not Drinking or using Drugs	1 Front Left
02 Van	02 Commercial Passengers	02 Tandem Semi Trailer	2 Elsewhere In State	2 Eyesight Defect	2 Alcohol - Under Influence	2 Front Center
03 Light Truck/P.U. - 2 or 4 rear tires Automobile	03 Commercial Cargo	03 Tank Trailer	3 Non-Resident Out Of State	3 Fatigue/Asleep	3 Drugs - Under Influence	3 Front Right
04 Medium Truck - 4 rear tires	04 Public Transportation	04 Saddle Mount/Flatbed	4 Foreign 5 Unknown	4 Hearing Defect	4 Alcohol & Drugs - Under Influence	4 Rear Left
05 Heavy Truck - 2 or more rear axles	05 Public School Bus	05 Boat Trailer		5 Illness	5 Had Been Drinking	5 Rear Center
06 Truck Tractor (Cab-Bobtail)	06 Private School Bus	06 Utility Trailer		6 Seizure, Epilepsy, Blackout	6 Pending ALC/DRUG Test Results	6 Rear Right
07 Motor Home (RV)	07 Ambulance	07 House Trailer		7 Other Physical Defect		7 In Body Of Truck
08 Bus (driver + seats for 9-15)	08 Law Enforcement	08 Pole Trailer				8 Bus Passenger
09 Bus (driver + seats for over 15)	09 Fire/Rescue	09 Towed Vehicle				9 Other
10 Bicycle	10 Military	10 Auto Transport				
11 Motorcycle	11 Other Government	77 Other				
12 Moped	12 Dump					
13 All Terrain Vehicle	13 Concrete Mixer					
14 Train	14 Garbage or Refuse					
15 Low Speed Vehicle	15 Cargo Van					
77 Other	77 Other					

**DOCUMENTS WITH THIS NOTICE SHALL BE USED ONLY FOR PURPOSES OF THE FDOT. SEE TITLE 23, USC, SECTION 409.**

SECTION	Pedestrian <input type="checkbox"/> Vehicle <input type="checkbox"/>													
Driver Action	1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	Year	Make	Type	Use	Veh. License Number	State	Vehicle Identification Number					18. Undercarriage 19. Overturn 20. Windsheild 21. Trailer	
Trailer Or Towed Vehicle Information		Trailer Type												
Vehicle Traveling	on	At	Est. MPH	Posted Speed	Est. Vehicle Damage	1. Disabling <input type="checkbox"/> 2. Functional <input type="checkbox"/> 3. No Damage		Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP)				Policy Number		Vehicle Removed By:			1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input type="checkbox"/> 4. Other <input type="checkbox"/>			
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/>			Current Address (Number and Street)				City and State			Zip Code				
Name of Owner (Trailer or Towed Vehicle)			Current Address (Number and Street)				City and State			Zip Code				
Name of Motor Carrier (Commercial vehicle only)			Current Address (Number and Street)				City, State and Zip Code			US DOT or ICC MC Identification Numbers				
Name of Driver (Taken from Driver license)/ Pedestrian			Current Address (Number and Street)				City, State and Zip Code			Date Of Birth				
Driver License Number	State	DL Type	Req. End	AIC/Drug Test Type <input type="checkbox"/> 1 Blood 3 Urine 5 None 2 Breath 4 Refused		Results	Alc/Drug	Phys. Def	Res.	Race	Sex	Inj.	S. Equip. <input type="checkbox"/>	Eject. <input type="checkbox"/>
Hazardous Materials Being Transported <input type="checkbox"/>		Placarded <input type="checkbox"/>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond <input type="checkbox"/>			Was Hazardous Material Spilled? <input type="checkbox"/>	Recommend Driver Re-exam, if Yes Explain In Narrative <input type="checkbox"/>			Driver's Phone No.				
#	Property Damaged - Other Than Vehicles	Est. Amount	Owner's Name		Address	City	State	Zip						
#	Property Damaged - Other Than Vehicles	Est. Amount	Owner's Name		Address	City	State	Zip						

Contributing Causes - Driver/Pedestrian				Vehicle Defect				Vehicle Movement				Vehicle Special Functions			
01 No Improper Driving/Action 02 Careless Driving (Explain in Narrative) 03 Failure to Yield Right-Of-Way 04 Improper Backing 05 Improper Lane Change 06 Improper Turn 07 Alcohol - Under Influence 08 Drugs - Under Influence 09 Alcohol & Drugs - Under Influence 10 Followed Too Closely 11 Discarded Traffic Signal 12 Exceeded Safe Speed Limit 13 Discarded Stop Sign 14 Failed To Maintain Equip./ Vehicle 15 Improper Passing 16 Drove Left of Center 17 Exceeded Stated Speed Limit 18 Obstructing Traffic				01 No Defects 02 Def. Brakes 03 Warm/ Smooth Tires 04 Defective/ Improper Lights 05 Puncture/Blowout 06 Steering Mech. 07 Windshield Wipers 08 Equipment/Vehicle Defect 09 Improperly Parked 10 Making U-Turn 11 Passing 12 Driverless or Runaway Vehicle 13 All Other (Explain In Narrative)				01 Straight Ahead 02 Slowing/ Stopping/ Stalled 03 Making Left Turn 04 Backing 05 Making Right Turn 06 Changing Lanes 07 Entering/Leaving/ Parking Space 08 Properly Parked 09 Improperly Parked 10 Making U-Turn 11 Passing 12 Driverless or Runaway Vehicle 13 All Other (Explain In Narrative)				1 None 2 Farm 3 Police Pursuit 4 Recreational 5 Emergency Operation 6 Construction/Maintenance 7 All Other (Explain In Narrative)			
19 Improper Load 20 Disregarded other Traffic Control 21 Driving Wrong Side/Way 22 Fleeing Police 23 Vehicle Modified (Explain In Narrative) 24 Driver Distraction (Explain In Narrative) 27 All Other (Explain In Narrative)				Point Of Collision 01 On Road 02 Not On Road 03 Shoulder 04 Median 05 Turn Lane 06 Other (Explain In Narrative)				Pedestrian Action 01 Crossing Not At Intersection 02 Crossing At Mid-block Crosswalk 03 Crossing At Intersection 04 Walking Along Road With Traffic 05 Walking Along Road Against Traffic 06 Working on Vehicle in Road 07 Working in Road 08 Standing/Playing in Road 09 Standing in Pedestrian Island 10 All Other (Explain In Narrative)				Source Of Carrier Information 1 Not Applicable 2 Shipping Papers 3 Vehicle Side 4 Driver 5 Other Location Type 1 Primarily Business 2 Primarily Residential 3 Open Country 4 Unknown			

First/Subsequent Harmful Event (s)				Road System Identifier				Lighting Condition											
01 Collision With MV in Transport (Rear End) 02 Collision With MV in Transport (Head On) 03 Collision With MV in Transport (Angle) 04 Collision With MV in Transport (Left Turn) 05 Collision With MV in Transport (Right Turn) 06 Collision With MV in Transport (Sideswipe) 07 Collision With MV in Transport (Backed Into) 08 Collision With Parked Car 09 Collision with MV on Roadway 10 Collision With Pedestrian 11 Collision With Bicycle 12 Collision With Bicycle (Bike Lane) 13 Collision With Moped 14 Collision With Train				15 Collision With Animal 16 MV Hit Sign / Sign Post 17 MV Hit Utility Pole / Light Pole 18 MV Hit Guardrail 19 MV Hit Fence 20 MV Hit Concrete Barrier Wall 21 MV Hit Bridge/Pier/Abutment/Rail 22 MV Hit Tree / Shrubby 23 Collision With Construction Barricade Sign 24 Collision With Traffic Gate 25 Collision With Crash Attenuators 26 Collision With Fixed Object Above Road 27 MV Hit Other Fixed Object				28 Collision With Moveable Object on Road 29 Mv Ran Into Ditch/Culvert 30 Ran Off Road Into Water 31 Overtumed 32 Occupant Fell From Vehicle 33 Tractor/Trailer Jackknifed 34 Fire 35 Explosion 36 Downhill Runaway 37 Cargo Loss or Shift 38 Separation of Units 39 Median Crossover 77 All Other (Explain in Narrative)				01 Interstate 02 U.S. 03 State 04 County 05 Local 06 Turnpike / Toll 07 Forest Road 08 Private Roadway 77 All other (Explain In Narrative)				01 Daylight 02 Dusk 03 Dawn 04 Dark (Street Light) 05 Dark (No Street Light) 88 Unknown			
Road Conditions At Time Of Crash 01 No Defects 02 Obstruction With Warning 03 Obstruction Without Warning 04 Road under Repair/ Construction 05 Loose Surface Materials 06 Shoulders - Soft/Low/High 07 Holes/Ruts/Unsafe Paved Edge 08 Standing Water 09 Worn/Polished Road Surface 77 All other (Explain In Narrative)				Vision Obstructed 01 Vision Not Obstructed 02 Inclement Weather 03 Parked/ Stopped Vehicle 04 Trees/Crops/Bushes 05 Load On Vehicle 06 Building/Fixed Object 07 Signs/Billboards 08 Fog 09 Smoke 10 Glare 77 All other (Explain In Narrative)				Traffic Control 01 No Control 02 Special Speed Zone 03 Speed Control Sign 04 School Zone 05 Traffic Signal 06 Stop Sign 07 Yield Sign 08 Flashing Light 09 Railroad Signal 10 Officer/Guard/Flagperson 11 Posted No U-Turn 12 No Passing Zone 77 All Other (Explain In Narrative)				Road Surface Condition 01 Dry 02 Wet 03 Slippery 04 Icy 77 All other (Explain in Narrative)				Weather 01 Clear 02 Cloudy 03 Rain 04 Fog 77 All other (Explain in Narrative)			

Road Conditions At Time Of Crash		Vision Obstructed		Traffic Control		Site Location		Trafficway Character	
01 No Defects 02 Obstruction With Warning 03 Obstruction Without Warning 04 Road under Repair/ Construction 05 Loose Surface Materials 06 Shoulders - Soft/Low/High 07 Holes/Ruts/Unsafe Paved Edge 08 Standing Water 09 Worn/Polished Road Surface 77 All other (Explain In Narrative)		01 Vision Not Obstructed 02 Inclement Weather 03 Parked/ Stopped Vehicle 04 Trees/Crops/Bushes 05 Load On Vehicle 06 Building/Fixed Object 07 Signs/Billboards 08 Fog 09 Smoke 10 Glare 77 All other (Explain In Narrative)		01 No Control 02 Special Speed Zone 03 Speed Control Sign 04 School Zone 05 Traffic Signal 06 Stop Sign 07 Yield Sign 08 Flashing Light 09 Railroad Signal 10 Officer/Guard/Flagperson 11 Posted No U-Turn 12 No Passing Zone 77 All Other (Explain In Narrative)		01 Not At Intersection/RR X-ing/Bridge 02 At Intersection 03 Influenced By Intersection 04 Driveway Access 05 Railroad 06 Bridge 07 Entrance Ramp 08 Exit Ramp 09 Parking Lot - Public 10 Parking Lot - Private 11 Private Property 12 Toll Booth 13 Public Bus Stop Zone 77 All Other (Explain In Narrative)		01 Straight - Level 02 Straight - Upgrade/Downgrade 03 Curve - Level 04 Curve - Upgrade/Downgrade Type Shoulder 01 Paved 02 Unpaved 03 Curb	

Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
1	ANDREA MENDEZ	316.646.1	OPERATING CMV NOT PROPERLY INSURED	6571 SMR
1	ANDREA MENDEZ	316.1925.1	CARELESS DRIVING	6570SMR
	Name Of Violator	FL Statute Number	Charge	Citation Number
	Name Of Violator	FL Statute Number	Charge	Citation Number

FLORIDA TRAFFIC CRASH REPORT

DO NOT WRITE IN THIS SPACE

NARRATIVE/DIAGRAM

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

Time EMS Notified (Fatalities Only) :	Time EMS Arrived (Fatalities Only) :	Date Of Crash 15-AUG-09	County/ 01	City Code 00	Invest. Agency Report Number FHPE09OFF037101	HSMV Crash Report Number 77454906
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(Narrative)

VEHICLE ONE WAS TRAVELING WEST ON STATE ROAD 826 ( PALMETTO EXPRESSWAY ) IN THE CENTER LANE WHEN THE DRIVER LOST CONTROL. VEHICLE ONE TRAVELED ACROSS THE INSIDE LANE AND PAVED SHOULDER WHERE IT COLLIDED INTO THE CONCRETE BARRIER WALL WITH ITS FRONT. AFTER IMPACT , VEHICLE ONE CONTINUED TO ROTATE IN A COUNTER CLOCK WISE DIRECTION AND AGAIN COLLIDED INTO THE INSIDE CONCRETE BARRIER WALL WITH ITS RIGHT REAR. VEHICLE ONE HAD BEEN MOVED FROM THE ROAD PRIOR TO MY ARRIVAL.

Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
1	01	ANA P SILVESTRE	1300 NE MIAMI GDNS DR 704	MIAMI FL	33179	24-MAY-82	3	2	3	2	2   4	1
1	02	MARIA A JORDAN	4675 W 18 CT 402	HIALEAH FL	33012	13-SEP-87	3	2	4	1	2   4	1
1	03	ROXANNA M SUAREZ	1908 LANDIS ST	BURBANK CA	91504	14-NOV-89	3	2	6	1	2   4	1
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject

Violator(s)

Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

Witness Name	Current Address	City & State	Zip Code
Witness Name	Current Address	City & State	Zip Code

First Aid Given By - Name	1 Physician or Nurse 2 Parametic or EMT 3 Police Officer	4 Certified 1st Aider 5 Other	Injured Taken To:	By - Name
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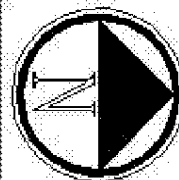
Was Investigation Made At Scene?	1 Yes 2 No	If No, Then Where?	Is Investigation Complete?	1 Yes 2 No	If No, Then Why?	Date of Report	15-AUG-09	Photos Taken?	1 Yes 2 No	If Yes, By Whom?	1 Invest. Agency 2 Other
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Investigator - Rank & Signature	TROOPER W.N. LOPEZ	ID/Badge Number	1730	Department	FHPE	FHP	SO	CPD	Other
						X			

**WESTBOUND STATE ROAD 826**

CONCRETE BARRIER WALL  
PAVED SHOULDER →

AREA OF COLLISION →

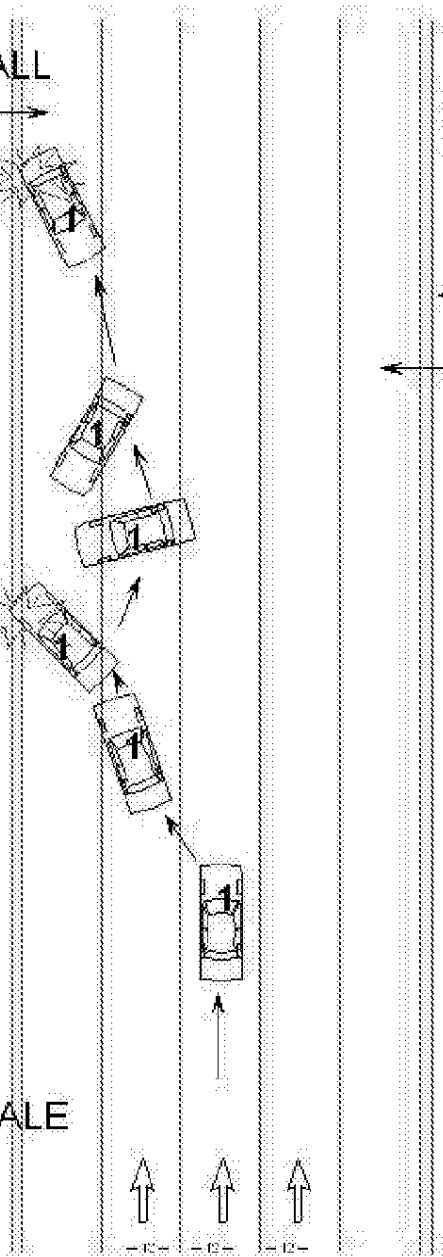


← CONCRETE BARRIER WALL

← PAVED SHOULDER

AREA OF COLLISION →

DIAGRAM NOT TO SCALE  
O GRADE





**FLORIDA TRAFFIC CRASH REPORT**  
**LONG FORM**  
 MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH  
 RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

<b>TIME &amp; LOCATION</b>					
Date of Crash <b>04/Aug/2010</b>	Time of Crash <b>08:00 AM</b>	Time Officer Notified <b>08:17 AM</b>	Time Officer Arrived <b>08:30 AM</b>	Invest. Agency Report Number <b>FHPE100FF040966</b>	HSMV Crash Report Number <b>77450917</b>
County Code/ <b>01</b>	City Code <b>57</b>	Feet or Mile(s)	Direction of <b>Miami Gardens</b>	City or Town <b>(check if in City or Town) <input checked="" type="checkbox"/></b>	County <b>Miami-Dade</b>
At Node No. or <b>1</b>	Feet or Mile(s)	From Node No.	Next Node No.	No. of Lanes <b>6</b>	1. Divided 2. Undivided <b>STATE ROAD 826</b>
At The Intersection Of (street, road or highway) or <b>1000</b>		Feet or Mile(s)	Direction <b>N</b>	From Intersection Of (street, road or highway) <b>STATE ROAD 817</b>	

**SECTION 1 Pedestrian  Vehicle**

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>1997</b>	Make <b>HOND</b>	Type <b>01</b>	Use <b>01</b>	Veh. License Number <b>290YAJ</b>	State <b>FL</b>	Vehicle Identification Number <b>2HGEJ6676WH514337</b>		18. Undercarriage 19. Overturn 20. Windshield 21. Trailer				
Trailer Or Towed Vehicle Information		Trailer Type			1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage		Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>				
Motor Vehicle Insurance Company (Liability or PIP) <b>SECURITY NATIONAL</b>		Policy Number <b>G003220700101952</b>		Vehicle Removed By <b>DRIVER</b>		1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input checked="" type="checkbox"/> 4. Other					
Name of Vehicle Owner (Check Box If Same As Driver) <input checked="" type="checkbox"/> <b>TAMAKA TOUSSAINT</b>			Current Address (Number and Street) <b>155 NW 120TH ST</b>			City and State <b>MIAMI FL</b>		Zip Code <b>33168</b>					
Name of Owner (Trailer or Towed Vehicle)			Current Address (Number and Street)			City and State		Zip Code					
Name of Motor Carrier (Commercial vehicle only)			Current Address (Number and Street)			City, State and Zip Code		US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian <b>TAMAKA TOUSSAINT</b>			Current Address (Number and Street) <b>155 NW 120TH ST</b>			City, State and Zip Code <b>MIAMI FL 33168</b>		Date Of Birth <b>03/Aug/1985</b>					
Driver License Number <b>T253800857830</b>	State <b>FL</b>	DL Type <b>5</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results <b>5</b>	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>2</b>	Sex <b>2</b>	Inj. <b>1</b>	S. Equip. <b>2   5</b>	Eject. <b>1</b>
Hazardous Materials Being Transported <input checked="" type="checkbox"/> 1 yes 2 No	Placarded <input checked="" type="checkbox"/> 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input checked="" type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input checked="" type="checkbox"/> 1 yes 2 No		Driver's Phone No.					

**SECTION 2 Pedestrian  Vehicle**

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2005</b>	Make <b>CHEV</b>	Type <b>01</b>	Use <b>01</b>	Veh. License Number <b>698TCQ</b>	State <b>FL</b>	Vehicle Identification Number <b>2G1WF52EX59204020</b>		18. Undercarriage 19. Overturn 20. Windshield 21. Trailer				
Trailer Or Towed Vehicle Information		Trailer Type			1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage		Est. Trailer Damage		Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>				
Motor Vehicle Insurance Company (Liability or PIP) <b>DIRECT GENERAL</b>		Policy Number <b>FLAD119707139</b>		Vehicle Removed By <b>DRIVER</b>		1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input checked="" type="checkbox"/> 4. Other					
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/> <b>MONIQUE S CROSS</b>			Current Address (Number and Street) <b>2040 NW 162 ST</b>			City and State <b>OPA LOCKA FL</b>		Zip Code <b>33054</b>					
Name of Owner (Trailer or Towed Vehicle)			Current Address (Number and Street)			City and State		Zip Code					
Name of Motor Carrier (Commercial vehicle only)			Current Address (Number and Street)			City, State and Zip Code		US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian <b>MONIQUE S CROSS</b>			Current Address (Number and Street) <b>8261 NE 3RD AVENUE #2</b>			City, State and Zip Code <b>MIAMI FL 33138</b>		Date Of Birth <b>18/Jan/1985</b>					
Driver License Number <b>C620557855180</b>	State <b>FL</b>	DL Type <b>5</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results <b>5</b>	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>2</b>	Sex <b>2</b>	Inj. <b>1</b>	S. Equip. <b>2   5</b>	Eject. <b>1</b>
Hazardous Materials Being Transported <input checked="" type="checkbox"/> 1 yes 2 No	Placarded <input checked="" type="checkbox"/> 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input checked="" type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input checked="" type="checkbox"/> 1 yes 2 No		Driver's Phone No.					

**CODE INFORMATION**

Vehicle Type	Vehicle Use	Trailer Type	Residence (driver/Ped.)	Physical Defects	Alcohol/Drug Use	Location In Vehicle
01 Automobile 02 Van 03 Light Truck/P.U.-2 or 4 rear tires Automobile 04 Medium Truck - 4 rear tires 05 Heavy Truck - 2 or more rear axles 06 Truck Tractor (Cab-Bobtail) 07 Motor Home (RV) 08 Bus (driver + seats for 9-15) 09 Bus (driver + seats for over 15) 10 Bicycle 11 Motorcycle 12 Moped 13 All Terrain Vehicle 14 Train 15 Low Speed Vehicle 77 Other	01 Private Transportation 02 Commercial Passengers 03 Commercial Cargo 04 Public Transportation 05 Public School Bus 06 Private School Bus 07 Ambulance 08 Law Enforcement 09 Fire/Rescue 10 Military 11 Other Government 12 Dump 13 Concrete Mixer 14 Garbage or Refuse 15 Cargo Van 77 Other	01 Single Semi Trailer 02 Tandem Semi Trailer 03 Tank Trailer 04 Saddle Mount/Flatbed 05 Boat Trailer 06 Utility Trailer 07 House Trailer 08 Pole Trailer 09 Towed Vehicle 10 Auto Transport 77 Other	1 County Of Crash 2 Elsewhere In State 3 Non-Resident Out Of State 4 Foreign - 5 Unknown  DL Type: 1 A 2 B 3 C Race: 1 White 2 Black 3 Hispanic 4 Other  Required Endorsements: 1 Yes 2 No 3 No endorsement Required  Sex: 1 Male 2 Female	1 No Defects Known 2 Eyesight Defect 3 Fatigue/Asleep 4 Hearing Defect 5 Illness 6 Seizure, Epilepsy, Blackout 7 Other Physical Defect  Injury Severity: 1 None 2 Possible 3 Non-Incapacitating 4 Incapacitating 5 Fatal (within 30 days) 6 Non-Traffic Fatality	1 Not Drinking or using Drugs 2 Alcohol - Under Influence 3 Drugs - Under Influence 4 Alcohol & Drugs - Under Influence 5 Had Been Drinking 6 Pending ALC/DRUG Test Results  Safety Equipment In Use: 1 Not in use 2 Seat Belt / Shoulder Harness 3 Child Restraint 4 Air Bag - Deployed 5 Air bag - Not Deployed 6 Safety Helmet 7 Eye Protection	1 Front Left 2 Front Center 3 Front Right 4 Rear Left 5 Rear Center 6 Rear Right 7 In Body Of Truck 8 Bus Passenger 9 Other  Ejected: 1 No 2 Yes 3 Partial

**DOCUMENTS WITH THIS NOTICE SHALL BE USED ONLY FOR PURPOSES OF THE FDOT. SEE TITLE 23, USC, SECTION 409.**

<b>SECTION</b>	Pedestrian <input type="checkbox"/> Vehicle <input type="checkbox"/>	<b>Driver Action</b>	1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	<b>Year</b>	<b>Make</b>	<b>Type</b>	<b>Use</b>	<b>Veh. License Number</b>	<b>State</b>	<b>Vehicle Identification Number</b>		18. Undercarriage 19. Overturn 20. Windshield 21. Trailer			
<b>Trailer Or Towed Vehicle Information</b>			<b>Trailer Type</b>			<b>Vehicle Traveling</b> on _____ <b>At</b> _____ <b>Est. MPH</b> _____			<b>Posted Speed</b> _____	<b>Est. Vehicle Damage</b> _____	1. Disabling <input type="checkbox"/> 2. Functional <input type="checkbox"/> 3. No Damage	<b>Est. Trailer Damage</b> _____	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>		
<b>Motor Vehicle Insurance Company (Liability or PIP)</b>					<b>Policy Number</b>					<b>Vehicle Removed By:</b>			1. Tow Rotation List 2. Tow Owner's Request 3. Driver 4. Other <input type="checkbox"/>		
<b>Name of Vehicle Owner (Check Box If Same As Driver)</b> <input type="checkbox"/>				<b>Current Address (Number and Street)</b>				<b>City and State</b>				<b>Zip Code</b>			
<b>Name of Owner (Trailer or Towed Vehicle)</b>				<b>Current Address (Number and Street)</b>				<b>City and State</b>				<b>Zip Code</b>			
<b>Name of Motor Carrier (Commercial vehicle only)</b>				<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>				<b>US DOT or ICC MC Identification Numbers</b>			
<b>Name of Driver (Taken from Driver license)/ Pedestrian</b>				<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>				<b>Date Of Birth</b>			
<b>Driver License Number</b>	<b>State</b>	<b>DL Type</b>	<b>Req. End</b>	<b>AIC/Drug Test Type</b> <input type="checkbox"/>			<b>Results</b>	<b>Alc/Drug</b>	<b>Phys. Def</b>	<b>Res.</b>	<b>Race</b>	<b>Sex</b>	<b>Inj.</b>	<b>S. Equip.</b>	<b>Eject.</b>
Hazardous Materials Being Transported <input type="checkbox"/> <b>Placarded</b> <input type="checkbox"/> <b>1 yes 2 No</b>				If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond <input type="checkbox"/>				Was Hazardous Material Spilled? <input type="checkbox"/> <b>1 yes 2 No</b>		Recommend Driver Re-exam, if Yes Explain In Narrative <input type="checkbox"/> <b>1 yes 2 No</b>			<b>Driver's Phone No.</b>		
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>	<b>Owner's Name</b>		<b>Address</b>		<b>City</b>	<b>State</b>		<b>Zip</b>			
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>	<b>Owner's Name</b>		<b>Address</b>		<b>City</b>	<b>State</b>		<b>Zip</b>			

<b>Contributing Causes - Driver/Pedestrian</b>	<b>Vehicle Defect</b>	<b>Vehicle Movement</b>	<b>Vehicle Special Functions</b>
01 No Improper Driving/Action 02 Careless Driving (Explain in Narrative) 03 Failure to Yield Right-Of-Way 04 Improper Backing 05 Improper Lane Change 06 Improper Turn 07 Alcohol - Under Influence 08 Drugs - Under Influence 09 Alcohol & Drugs - Under Influence 10 Followed Too Closely 11 Discarded Traffic Signal 12 Exceeded Safe Speed Limit 13 Discarded Stop Sign 14 Failed To Maintain Equip./ Vehicle 15 Improper Passing 16 Drove Left of Center 17 Exceeded Stated Speed Limit 18 Obstructing Traffic	01 No Defects 02 Def. Brakes 03 Warn/ Smooth Tires 04 Defective/ Improper Lights 05 Puncture/Blowout 06 Steering Mech. 07 Windshield Wipers 08 Equipment/Vehicle Defect 77 All Other (Explain In Narrative)	01 Straight Ahead 02 Slowing/ Stopping/ Stalled 03 Making Left Turn 04 Backing 05 Making Right Turn 06 Changing Lanes 07 Entering/Leaving/ Parking Space 08 Properly Parked 09 Improperly Parked 10 Making U-Turn 11 Passing	1 None 2 Farm 3 Police Pursuit 4 Recreational 5 Emergency Operation 6 Construction/Maintenance <b>Source Of Carrier Information</b> 1 Not Applicable 2 Shipping Papers 3 Vehicle Side 4 Driver 5 Other
19 Improper Load 20 Disregarded other Traffic Control 21 Driving Wrong Side/Way 22 Fleeting Police 23 Vehicle Modified 24 Driver Distraction (Explain In Narrative) 77 All Other (Explain in Narrative)	<b>Point Of Collision</b> 01 On Road 04 Median 02 Not On Road 05 Turn Lane 03 Shoulder	<b>12 Driverless or Vehicle</b> 77 All Other (Explain In Narrative)	<b>Location Type</b> 1 Primarily Business 2 Primarily Residential 3 Open Country 77 All Other (Explain in Narrative) 88 Unknown

<b>First/Subsequent Harmful Event (s)</b>	<b>Road System Identifier</b>	<b>Lighting Condition</b>
01 Collision With MV in Transport (Rear End) 02 Collision With MV in Transport (Head On) 03 Collision With MV in Transport (Angle) 04 Collision With MV in Transport (Left Turn) 05 Collision With MV in Transport (Right Turn) 06 Collision With MV in Transport (Sideswipe) 07 Collision With MV in Transport (Backed Into) 08 Collision With Parked Car 09 Collision with MV on Roadway 10 Collision With Pedestrian 11 Collision With Bicycle 12 Collision With Bicycle (Bike Lane) 13 Collision With Moped 14 Collision With Train	01 Interstate 02 U.S. 03 State 04 County 05 Local 06 Turnpike / Toll	01 Daylight 02 Dusk 03 Dawn 04 Dark (Street Light) 05 Dark (No Street Light) 88 Unknown
15 Collision With Animal 16 MV Hit Sign / Sign Post 17 MV Hit Utility Pole / Light Pole 18 MV Hit Guardrail 19 MV Hit Fence 20 MV Hit Concrete Barrier Wall 21 MV Hit Bridge/Pier/Abutment/Rail 22 MV Hit Tree / Shrubbery 23 Collision With Construction Barricade Sign 24 Collision With Traffic Gate 25 Collision With Crash Attenuators 26 Collision With Fixed Object Above Road 27 MV Hit Other Fixed Object	28 Collision With Moveable Object on Road 29 Mv Ran Into Ditch/Culvert 30 Ran Off Road Into Water 31 Overturned 32 Occupant Fell From Vehicle 33 Tractor/Trailer Jackknifed 34 Fire 35 Explosion 36 Downhill Runaway 37 Cargo Loss or Shift 38 Separation of Units 39 Median Crossover 77 All Other (Explain in Narrative)	<b>Road Surface Type</b> 01 Slag/Gravel/Stone 02 Blacktop 03 Brick/Block 04 Concrete 05 Dirt 77 All Other (Explain in Narrative)

<b>Road Conditions At Time Of Crash</b>	<b>Vision Obstructed</b>	<b>Traffic Control</b>	<b>Site Location</b>	<b>Trafficway Character</b>
01 No Defects 02 Obstruction With Warning 03 Obstruction Without Warning 04 Road under Repair/ Construction 05 Loose Surface Materials 06 Shoulders - Soft/Low/High 07 Holes/Ruts/Unsafe Paved Edge 08 Standing Water 09 Worn/Polished Road Surface 77 All other (Explain In Narrative)	01 Vision Not Obstructed 02 Inclement Weather 03 Parked/ Stopped Vehicle 04 Trees/Crops/Bushes 05 Load On Vehicle 06 Building/Fixed Object 07 Signs/Billboards 08 Fog 09 Smoke 10 Glare 77 All other (Explain In Narrative)	01 No Control 02 Special Speed Zone 03 Speed Control Sign 04 School Zone 05 Traffic Signal 06 Stop Sign 07 Yield Sign 08 Flashing Light 09 Railroad Signal 10 Officer/Guard/Flagperson 11 Posted No U-Turn	01 Not At Intersection/RR X-ing/Bridge 02 At Intersection 03 Influenced By Intersection 04 Driveway Access 05 Railroad 06 Bridge 07 Entrance Ramp 08 Exit Ramp 09 Parking Lot - Public	01 Straight - Level 02 Straight - Upgrade/Downgrade 03 Curve - Level 04 Curve - Upgrade/Downgrade Type Shoulder 01 Paved 02 Unpaved 03 Curb

<b>Violator(s)</b>	<b>Section #</b>	<b>Name Of Violator</b>	<b>FL Statute Number</b>	<b>Charge</b>	<b>Citation Number</b>
	1	TAMAKA TOUSSAINT	316.1925.1	CARELESS DRIVING	5440-GEM
	Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
	Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
	Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

FLORIDA TRAFFIC CRASH REPORT

NARRATIVE/DIAGRAM

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

Time EMS Notified (Fatalities Only) :	Time EMS Arrived (Fatalities Only) :	Date Of Crash <b>04/Aug/2010</b>	County/ <b>01</b>	City Code <b>57</b>	Invest. Agency Report Number <b>FHPE10OFF040966</b>	HSMV Crash Report Number <b>77450917</b>
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(Narrative)

Vehicle #1 of section was traveling west on state road 826 in the outside lane. Vehicle #2 of section 2 was traveling west on state road 826 in the outside lane ahead of vehicle #1. Driver of vehicle #1 failed to observe vehicle #2 causing this traffic crash to occur. The front of vehicle #1 struck the rear of vehicle #2. Vehicle #1 and #2 were moved to the outside shoulder prior to my arrival. Section #2 Passengar #2: J'Quez Cross DOB: 01/02/2009 Rear Center in Child Restraint Address: 8261 NE 3rd Ave. #2 Miami, Fl. 33138 Photographs taken by the driver of vehicle #1. Latitude: 25.9265533333333 Longitude: -80.2438133333333

Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
1	01	GARLINE PERVIL	66 NW 119 STREET	MIAMI FL	33168	27/Nov/1985	2	2	3	1	2   5	1
2	01	N'QUAN CROSS	8261 NE 3RD AVENUE #2	MIAMI FL	33138	27/Jan/2004	2	1	6	1	2	1
2	02	J'QUEZ CROSS	8261 NE 3RD AVENUE #2	MIAMI FL		02/Jan/2009	2	1	5	1	3	1
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject

<b>Violator(s)</b>												
Section #	Name Of Violator			FL Statute Number	Charge					Citation Number		
Section #	Name Of Violator			FL Statute Number	Charge					Citation Number		
Witness Name			Current Address			City & State			Zip Code			
Witness Name			Current Address			City & State			Zip Code			
First Aid Given By - Name <b>NONE</b>		1 Physician or Nurse 2 Paramedic or EMT 3 Police Officer		4 Certified 1st Aider 5 Other		Injured Taken To:			By - Name			
Was Investigation Made At Scene? 1 Yes 2 No <input checked="" type="checkbox"/> 1		If No, Then Where?		Is Investigation Complete? 1 Yes 2 No <input checked="" type="checkbox"/> 1		If No, Then Why?		Date of Report <b>04/Aug/2010</b>		Photos Taken? 1 Yes 2 No <input checked="" type="checkbox"/> 1		If Yes, By Whom? 1 Invest. Agency 2 Other <input type="checkbox"/>
Investigator - Rank & Signature <b>SGT. A. ROGERS</b>				ID/Badge Number <b>2025</b>		Department <b>FHPE</b>			FHP SO CPD Other <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			

West State Road 826

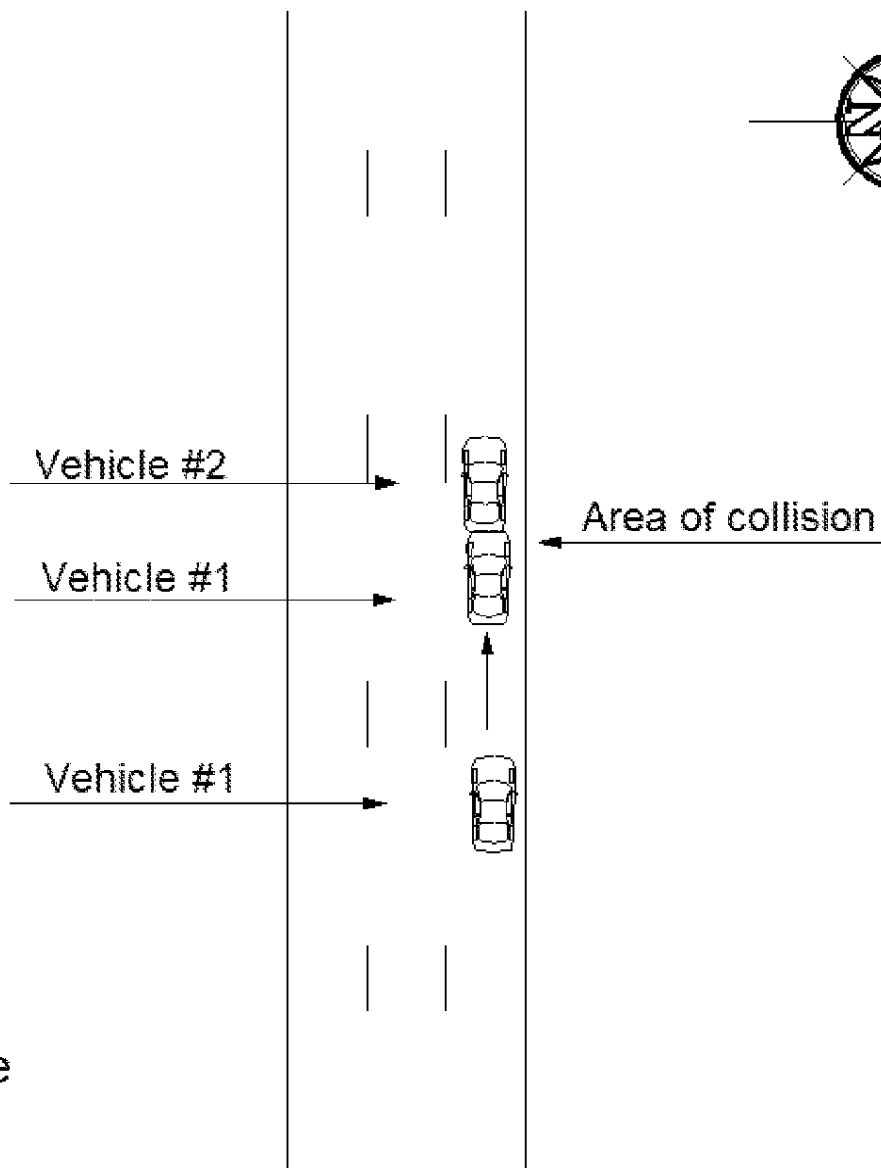
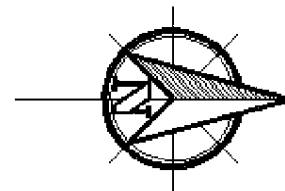


Diagram not to scale

**FLORIDA TRAFFIC CRASH REPORT**

DO NOT WRITE IN THIS SPACE

**LONG FORM**

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

**TIME & LOCATION**

Date of Crash <b>10/Aug/2010</b>	Time of Crash <b>12: 45 PM</b>	Time Officer Notified <b>12: 58 PM</b>	Time Officer Arrived <b>01: 07 PM</b>	Invest. Agency Report Number <b>FHPE100FF042248</b>	HSMV Crash Report Number <b>77467081</b>
County Code/ <b>01</b>	City Code <b>57</b>	Feet or Mile(s)	Direction of	City or Town <b>Miami Gardens</b>	(check if in City or Town) <input checked="" type="checkbox"/> County <b>Miami-Dade</b>
At Node No. or	Feet or Mile(s)	From Node No.	Next Node No.	No. of Lanes <b>8</b>	1. Divided 2. Undivided
At The Intersection Of (street, road or highway) or			Feet or Mile(s) <b>.25</b>	Direction <b>E</b>	From Intersection Of (street, road or highway) <b>STATE ROAD 826 NW 27 AVENUE</b>

**SECTION 1 Pedestrian  Vehicle**

Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2005</b>	Make <b>CHEV</b>	Type <b>04</b>	Use <b>01</b>	Veh. License Number <b>3991JP</b>	State <b>FL</b>	Vehicle Identification Number <b>1GBE5C1235F525121</b>			18. Undercarriage 19. Overturn 20. Windshield 21. Trailer			
Trailer Or Towed Vehicle Information		Trailer Type											
Vehicle Traveling <b>E</b>	on <b>STATE ROAD 826</b>	At	Est. MPH <b>50</b>	Posted Speed <b>55</b>	Est. Vehicle Damage <b>\$6,000</b>	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage	Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/> <b>14</b>					
Motor Vehicle Insurance Company (Liability or PIP) <b>CONTINENTAL CASUALTY</b>				Policy Number <b>2091594802</b>		Vehicle Removed By:		1. Tow Rotation List 2. Tow Owner's Request	3. Driver <input checked="" type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/>			Current Address (Number and Street) <b>MORLIC ENGINEERING CORP 3020 NW 79TH AVE</b>			City and State <b>DORAL FL</b>		Zip Code <b>33122</b>					
Name of Owner (Trailer or Towed Vehicle)			Current Address (Number and Street)			City and State		Zip Code					
Name of Motor Carrier (Commercial vehicle only)			Current Address (Number and Street)			City, State and Zip Code		US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian <b>ISRAEL CARRILLO</b>			Current Address (Number and Street) <b>6421 SW 162ND CT</b>			City, State and Zip Code <b>MIAMI FL 33193</b>		Date Of Birth <b>17/Jun/1967</b>					
Driver License Number <b>C640400672170</b>	State <b>FL</b>	DL Type <b>2</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results <b>5</b>	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>3</b>	Sex <b>1</b>	Inj. <b>2</b>	S. Equip. <b>2   5</b>	Eject. <b>1</b>
Hazardous Materials Being Transported <input checked="" type="checkbox"/> 1 yes 2 No	Placarded <input checked="" type="checkbox"/> 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input checked="" type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input checked="" type="checkbox"/> 1 yes 2 No		Driver's Phone No.					

**SECTION Pedestrian  Vehicle**

Driver Action 1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	Year	Make	Type	Use	Veh. License Number	State	Vehicle Identification Number			18. Undercarriage 19. Overturn 20. Windshield 21. Trailer			
Trailer Or Towed Vehicle Information		Trailer Type											
Vehicle Traveling	on	At	Est. MPH	Posted Speed	Est. Vehicle Damage	1. Disabling <input type="checkbox"/> 2. Functional 3. No Damage	Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP)				Policy Number		Vehicle Removed By:		1. Tow Rotation List 2. Tow Owner's Request	3. Driver <input type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/>			Current Address (Number and Street)			City and State		Zip Code					
Name of Owner (Trailer or Towed Vehicle)			Current Address (Number and Street)			City and State		Zip Code					
Name of Motor Carrier (Commercial vehicle only)			Current Address (Number and Street)			City, State and Zip Code		US DOT or ICC MC Identification Numbers					
Name of Driver (Taken from Driver license)/ Pedestrian			Current Address (Number and Street)			City, State and Zip Code		Date Of Birth					
Driver License Number	State	DL Type	Req. End	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results	Alc/Drug	Phys. Def	Res.	Race	Sex	Inj.	S. Equip. <b>1</b>	Eject.
Hazardous Materials Being Transported <input type="checkbox"/> 1 yes 2 No	Placarded <input type="checkbox"/> 1 yes 2 No	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? <input type="checkbox"/> 1 yes 2 No	Recommend Driver Re-exam, if Yes Explain In Narrative <input type="checkbox"/> 1 yes 2 No		Driver's Phone No.					

**CODE INFORMATION**

Vehicle Type	Vehicle Use	Trailer Type	Residence (driver/Ped.)	Physical Defects	Alcohol/Drug Use	Location In Vehicle
01 Automobile	01 Private Transportation	01 Single Semi Trailer	1 County Of Crash	1 No Defects Known	1 Not Drinking or using Drugs	1 Front Left
02 Van	02 Commercial Passengers	02 Tandem Semi Trailer	2 Elsewhere In State	2 Eyesight Defect	2 Alcohol - Under Influence	2 Front Center
03 Light Truck/P.U. - 2 or 4 rear tires Automobile	03 Commercial Cargo	03 Tank Trailer	3 Non-Resident Out Of State	3 Fatigue/Asleep	3 Drugs - Under Influence	3 Front Right
04 Medium Truck - 4 rear tires	04 Public Transportation	04 Saddle Mount/Flatbed	4 Foreign 5 Unknown	4 Hearing Defect	4 Alcohol & Drugs - Under Influence	4 Rear Left
05 Heavy Truck - 2 or more rear axles	05 Public School Bus	05 Boat Trailer		5 Illness	5 Had Been Drinking	5 Rear Center
06 Truck Tractor (Cab-Bobtail)	06 Private School Bus	06 Utility Trailer		6 Seizure, Epilepsy, Blackout	6 Pending ALC/DRUG Test Results	6 Rear Right
07 Motor Home (RV)	07 Ambulance	07 House Trailer		7 Other Physical Defect		7 In Body Of Truck
08 Bus (driver + seats for 9-15)	08 Law Enforcement	08 Pole Trailer				8 Bus Passenger
09 Bus (driver + seats for over 15)	09 Fire/Rescue	09 Towed Vehicle				9 Other
10 Bicycle	10 Military	10 Auto Transport				
11 Motorcycle	11 Other Government	77 Other				
12 Moped	12 Dump					
13 All Terrain Vehicle	13 Concrete Mixer					
14 Train	14 Garbage or Refuse					
15 Low Speed Vehicle	15 Cargo Van					
77 Other	77 Other					

**DOCUMENTS WITH THIS NOTICE SHALL BE USED ONLY FOR PURPOSES OF THE FDOT. SEE TITLE 23, USC, SECTION 409.**

<b>SECTION</b>	<input type="checkbox"/> Pedestrian <input type="checkbox"/> Vehicle	<b>Year</b>	<b>Make</b>	<b>Type</b>	<b>Use</b>	<b>Veh. License Number</b>	<b>State</b>	<b>Vehicle Identification Number</b>		<b>18. Undercarriage</b> <b>19. Overturn</b> <b>20. Windshield</b> <b>21. Trailer</b>				
<b>Driver Action</b>	1. Phantom <input type="checkbox"/> 2. Hit and Run <input type="checkbox"/> 3. N/A <input type="checkbox"/>													
<b>Trailer Or Towed Vehicle Information</b>				<b>Trailer Type</b>										
<b>Vehicle Traveling</b>	on		<b>At</b>	<b>Est. MPH</b>	<b>Posted Speed</b>	<b>Est. Vehicle Damage</b>	1. Disabling <input type="checkbox"/> 2. Functional <input type="checkbox"/> 3. No Damage <input type="checkbox"/>	<b>Est. Trailer Damage</b>	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>					
<b>Motor Vehicle Insurance Company (Liability or PIP)</b>						<b>Policy Number</b>	<b>Vehicle Removed By:</b>		1. Tow Rotation List <input type="checkbox"/> 2. Tow Owner's Request <input type="checkbox"/>	3. Driver <input type="checkbox"/> 4. Other <input type="checkbox"/>				
<b>Name of Vehicle Owner (Check Box If Same As Driver)</b>			<b>Current Address (Number and Street)</b>				<b>City and State</b>			<b>Zip Code</b>				
<b>Name of Owner (Trailer or Towed Vehicle)</b>			<b>Current Address (Number and Street)</b>				<b>City and State</b>			<b>Zip Code</b>				
<b>Name of Motor Carrier (Commercial vehicle only)</b>			<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>			<b>US DOT or ICC MC Identification Numbers</b>				
<b>Name of Driver (Taken from Driver license)/ Pedestrian</b>			<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>			<b>Date Of Birth</b>				
<b>Driver License Number</b>	<b>State</b>	<b>DL Type</b>	<b>Req. End</b>	<b>AIC/Drug Test Type</b>		<b>Results</b>	<b>Alc/Drug</b>	<b>Phys. Def</b>	<b>Res.</b>	<b>Race</b>	<b>Sex</b>	<b>Inj.</b>	<b>S. Equip.</b>	<b>Eject.</b>
				1 Blood 3 Urine 5 None 2 Breath 4 Refused										
<b>Hazardous Materials Being Transported</b>	<input type="checkbox"/>	<b>Placarded</b>	<input type="checkbox"/>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			<b>Was Hazardous Material Spilled?</b>	<input type="checkbox"/>	Recommend Driver Re-exam, if Yes Explain In Narrative		<input type="checkbox"/>	<b>Driver's Phone No.</b>		
1 yes 2 No		1 yes 2 No					1 yes 2 No		1 yes 2 No					
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>	<b>Est. Amount</b>	<b>Owner's Name</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>							
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>	<b>Est. Amount</b>	<b>Owner's Name</b>	<b>Address</b>	<b>City</b>	<b>State</b>	<b>Zip</b>							

<b>Contributing Causes - Driver/Pedestrian</b>	<b>Vehicle Defect</b>	<b>Vehicle Movement</b>	<b>Vehicle Special Functions</b>
01 No Improper Driving/Action 02 Careless Driving (Explain in Narrative) 03 Failure to Yield Right-Of-Way 04 Improper Backing 05 Improper Lane Change 06 Improper Turn 07 Alcohol - Under Influence 08 Drugs - Under Influence 09 Alcohol & Drugs - Under Influence 10 Followed Too Closely 11 Discarded Traffic Signal 12 Exceeded Safe Speed Limit 13 Discarded Stop Sign 14 Failed To Maintain Equip./ Vehicle 15 Improper Passing 16 Drove Left of Center 17 Exceeded Stated Speed Limit 18 Obstructing Traffic	01 No Defects 02 Def. Brakes 03 Warn/ Smooth Tires 04 Defective/ Improper Lights 05 Puncture/Blowout 06 Steering Mech. 07 Windshield Wipers 08 Equipment/Vehicle Defect 09 Other (Explain In Narrative)	01 Straight Ahead 02 Slowing/ Stopping/ Stalled 03 Making Left Turn 04 Backing 05 Making Right Turn 06 Changing Lanes 07 Entering/Leaving/ Parking Space 08 Properly Parked 09 Improperly Parked 10 Making U-Turn 11 Passing	1 None 2 Farm 3 Police Pursuit 4 Recreational 5 Emergency Operation 6 Construction/Maintenance <b>Source Of Carrier Information</b> 1 Not Applicable 2 Shipping Papers 3 Vehicle Side 4 Driver 5 Other
19 Improper Load 20 Disregarded other Traffic Control 21 Driving Wrong Side/Way 22 Fleeting Police 23 Vehicle Modified 24 Driver Distraction (Explain In Narrative) 27 All Other (Explain in Narrative)	<b>Point Of Collision</b> 01 On Road 04 Median 02 Not On Road 05 Turn Lane 03 Shoulder	<b>12 Driverless or Runaway Vehicle</b> 77 All Other (Explain In Narrative)	<b>Location Type</b> 1 Primarily Business 2 Primarily Residential 3 Open Country
	<b>Work Area</b> 01 None 02 Nearby 03 Entered	<b>Pedestrian Action</b> 01 Crossing Not At Intersection 02 Crossing At Mid-block Crosswalk 03 Crossing At Intersection 04 Walking Along Road With Traffic 05 Walking Along Road Against Traffic 06 Working on Vehicle in Road	07 Working in Road 08 Standing/Playing in Road 09 Standing in Pedestrian Island 77 All Other (Explain in Narrative) 88 Unknown

<b>First/Subsequent Harmful Event (s)</b>	<b>Road System Identifier</b>	<b>Lighting Condition</b>
01 Collision With MV in Transport (Rear End) 02 Collision With MV in Transport (Head On) 03 Collision With MV in Transport (Angle) 04 Collision With MV in Transport (Left Turn) 05 Collision With MV in Transport (Right Turn) 06 Collision With MV in Transport (Sideswipe) 07 Collision With MV in Transport (Backed Into) 08 Collision With Parked Car 09 Collision with MV on Roadway 10 Collision With Pedestrian 11 Collision With Bicycle 12 Collision With Bicycle (Bike Lane) 13 Collision With Moped 14 Collision With Train	01 Interstate 02 U.S. 03 State 04 County 05 Local 06 Turnpike / Toll	01 Daylight 02 Dusk 03 Dawn 04 Dark (Street Light) 05 Dark (No Street Light) 88 Unknown
15 Collision With Animal 16 MV Hit Sign / Sign Post 17 MV Hit Utility Pole / Light Pole 18 MV Hit Guardrail 19 MV Hit Fence 20 MV Hit Concrete Barrier Wall 21 MV Hit Bridge/Pier/Abutment/Rail 22 MV Hit Tree / Shrubby 23 Collision With Construction Barricade Sign 24 Collision With Traffic Gate 25 Collision With Crash Attenuators 26 Collision With Fixed Object Above Road 27 MV Hit Other Fixed Object	28 Collision With Moveable Object on Road 29 MV Ran Into Ditch/Culvert 30 Ran Off Road Into Water 31 Overturned 32 Occupant Fell From Vehicle 33 Tractor/Trailer Jackknifed 34 Fire 35 Explosion 36 Downhill Runaway 37 Cargo Loss or Shift 38 Separation of Units 39 Median Crossover 77 All Other (Explain in Narrative)	<b>Road Surface Condition</b> 01 Dry 02 Wet 03 Slippery 04 Icy 77 All other (Explain in Narrative)
	<b>Weather</b> 01 Clear 02 Cloudy 03 Rain 04 Fog 77 All other (Explain in Narrative)	<b>Road Surface Type</b> 01 Slag/Gravel/Stone 02 Blacktop 03 Brick/Block 04 Concrete 05 Dirt 77 All Other (Explain in Narrative)

<b>Road Conditions At Time Of Crash</b>	<b>Vision Obstructed</b>	<b>Traffic Control</b>	<b>Site Location</b>	<b>Trafficway Character</b>
01 No Defects 02 Obstruction With Warning 03 Obstruction Without Warning 04 Road under Repair/ Construction 05 Loose Surface Materials 06 Shoulders - Soft/Low/High 07 Holes/Ruts/Unsafe Paved Edge 08 Standing Water 09 Worm/Polished Road Surface 77 All other (Explain In Narrative)	01 Vision Not Obstructed 02 Inclement Weather 03 Parked/ Stopped Vehicle 04 Trees/Crops/Bushes 05 Load On Vehicle 06 Building/Fixed Object 07 Signs/Billboards 08 Fog 09 Smoke 10 Glare 77 All other (Explain In Narrative)	01 No Control 02 Special Speed Zone 03 Speed Control Sign 04 School Zone 05 Traffic Signal 06 Stop Sign 07 Yield Sign 08 Flashing Light 09 Railroad Signal 10 Officer/Guard/Flagperson 11 Posted No U-Turn	01 Not At Intersection/RR X-ing/Bridge 02 At Intersection 03 Influenced By Intersection 04 Driveway Access 05 Railroad 06 Bridge 07 Entrance Ramp 08 Exit Ramp 09 Parking Lot - Public	01 Straight - Level 02 Straight - Upgrade/Downgrade 03 Curve - Level 04 Curve - Upgrade/Downgrade <b>Type Shoulder</b> 01 Paved 02 Unpaved 03 Curb
		12 No Passing Zone 77 All Other (Explain In Narrative)	10 Parking Lot - Private 11 Private Property 12 Toll Booth 13 Public Bus Stop Zone 77 All Other (Explain In Narrative)	

Violator(s)	Name Of Violator	FL Statute Number	Charge	Citation Number
Section # 1	ISRAEL CARRILLO	316.610.1	DRIVING VEHICLE IN UNSAFE CONDITION	7582-SYP
Section # 1	ISRAEL CARRILLO	316.1925.1	CARELESS DRIVING	7581-SYP
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

FLORIDA TRAFFIC CRASH REPORT

NARRATIVE/DIAGRAM

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

Time EMS Notified (Fatalities Only) :	Time EMS Arrived (Fatalities Only) :	Date Of Crash <b>10/Aug/2010</b>	County/ <b>01</b>	City Code <b>57</b>	Invest. Agency Report Number <b>FHPE10OFF042248</b>	HSMV Crash Report Number <b>77467081</b>
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(Narrative)

VEHICLE 1 WAS TRAVELING EAST ON STATE ROAD 826 IN THE OUTSIDE LEFT LANE. VEHICLE 1 LOST CONTROL AND COLLIDED WITH THE CONCRETE BARRIER WALL WITH ITS ITS LEFT FRONT. VEHICLE 1 CAME TO FINAL REST IN THE LEFT SHOULDER OF STATE ROAD 826 EAST IN AN EASTERLY DIRECTION.

Latitude: 25.9265833333333 Longitude: -80.2336616666667

Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject

Violator(s)

Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

Witness Name	Current Address	City & State	Zip Code
Witness Name	Current Address	City & State	Zip Code

First Aid Given By - Name	1 Physician or Nurse 2 Paramedic or EMT 3 Police Officer	4 Certified 1st Aider 5 Other	Injured Taken To:	By - Name
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Was Investigation Made At Scene?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/> If No, Then Where?	Is Investigation Complete?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/> If No, Then Why?	Date of Report	Photos Taken?	1 Yes <input checked="" type="checkbox"/> 2 No <input type="checkbox"/>	If Yes, By Whom?	<input type="checkbox"/>
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Investigator - Rank & Signature	ID/Badge Number	Department	FHP SO CPD Other
<b>TPR J. MORISSEAU</b>	<b>1621</b>	<b>FHPE</b>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

State Road 826

Eastbound Lanes Only

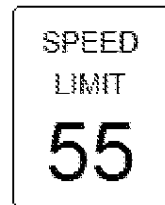
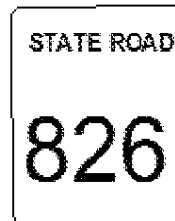
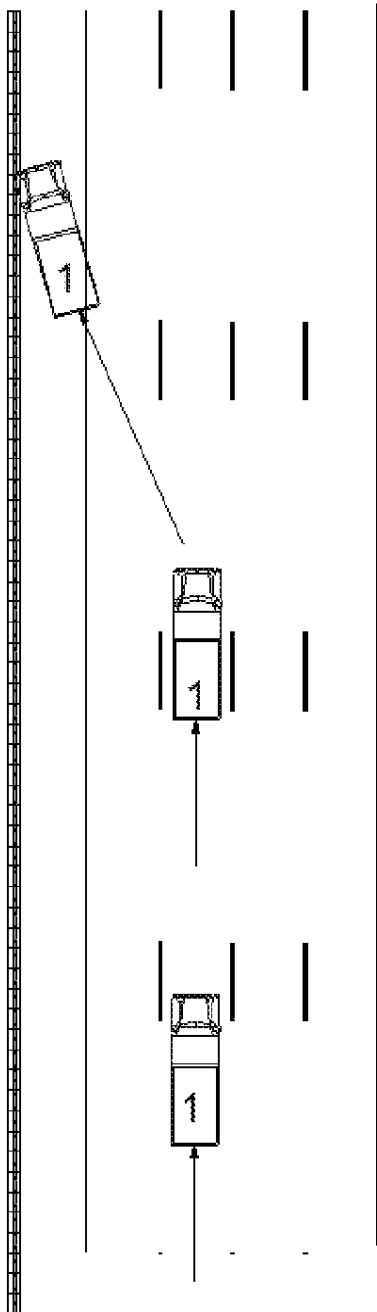


DIAGRAM NOT TO SCALE



**FLORIDA TRAFFIC CRASH REPORT**  
**LONG FORM**  
 MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH  
 RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

<b>TIME &amp; LOCATION</b>						
Date of Crash <b>08/Aug/2010</b>	Time of Crash <b>04: 13 PM</b>	Time Officer Notified <b>04: 15 PM</b>	Time Officer Arrived <b>04: 26 PM</b>	Invest. Agency Report Number <b>FHPE100FF041836</b>	HSMV Crash Report Number <b>77469355</b>	
County Code/ <b>01</b>	City Code <b>00</b>	Feet or <b>300</b>	Mile(s) <b>0</b>	Direction of <b>S</b>	City or Town <b>MIAMI GARDENS</b>	County <b>Miami-Dade</b>
At Node No. or <b>0</b>	Feet or <b>0</b>	Mile(s) <b>0</b>	From Node No. <b>0</b>	Next Node No. <b>0</b>	No. of Lanes <b>8</b>	1. Divided 2. Undivided <b>1</b>
At The Intersection Of (street, road or highway) or			Feet or <b>.25</b>	Mile(s) <b>.25</b>	Direction <b>W</b>	From Intersection Of (street, road or highway) <b>NORTHWEST 17 AVENUE</b>

<b>SECTION 1 Pedestrian</b> <input type="checkbox"/> <b>Vehicle</b> <input checked="" type="checkbox"/>													
Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2010</b>	Make <b>UNK</b>	Type <b>01</b>	Use <b>01</b>	Veh. License Number <b>UK</b>	State <b>UK</b>	Vehicle Identification Number <b>UK</b>					18. Undercarriage 19. Overturn 20. Windshield 21. Trailer	
Trailer Or Towed Vehicle Information		Trailer Type											
Vehicle Traveling <b>W</b>	on <b>STATE ROAD 826</b>	At <b>55</b>	Est. MPH <b>55</b>	Posted Speed <b>55</b>	Est. Vehicle Damage <b>\$1</b>	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage	Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP) <b>UK</b>			Policy Number <b>UK</b>		Vehicle Removed By <b>DRIVER</b>		1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input checked="" type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input checked="" type="checkbox"/>				Current Address (Number and Street) <b>UNKNOWN UNKNOWN</b>				City and State <b>UK UK</b>		Zip Code <b>UNK</b>			
Name of Owner (Trailer or Towed Vehicle)				Current Address (Number and Street)				City and State		Zip Code			
Name of Motor Carrier (Commercial vehicle only)				Current Address (Number and Street)				City, State and Zip Code		US DOT or ICC MC Identification Numbers			
Name of Driver (Taken from Driver license)/ Pedestrian <b>UNKNOWN UNKNOWN</b>				Current Address (Number and Street) <b>UK</b>				City, State and Zip Code <b>UK UK UNK</b>		Date Of Birth			
Driver License Number <b>UNK</b>	State <b>UK</b>	DL Type	Req. End	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results	Alc/Drug	Phys. Def	Res.	Race	Sex	Inj.	S. Equip. <b>1</b>	Eject.
Hazardous Materials Being Transported 1 yes 2 No <input checked="" type="checkbox"/>	Placarded 1 yes 2 No <input checked="" type="checkbox"/>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? 1 yes 2 No <input checked="" type="checkbox"/>	Recommend Driver Re-exam, if Yes Explain In Narrative 1 yes 2 No <input checked="" type="checkbox"/>			Driver's Phone No.				

<b>SECTION 2 Pedestrian</b> <input type="checkbox"/> <b>Vehicle</b> <input checked="" type="checkbox"/>													
Driver Action 1. Phantom <input checked="" type="checkbox"/> 2. Hit and Run 3. N/A	Year <b>2005</b>	Make <b>NISS</b>	Type <b>01</b>	Use <b>01</b>	Veh. License Number <b>610VRS</b>	State <b>FL</b>	Vehicle Identification Number <b>1N4BA41E55C848345</b>					18. Undercarriage 19. Overturn 20. Windshield 21. Trailer	
Trailer Or Towed Vehicle Information		Trailer Type											
Vehicle Traveling <b>W</b>	on <b>STATE ROAD 826</b>	At <b>55</b>	Est. MPH <b>55</b>	Posted Speed <b>55</b>	Est. Vehicle Damage <b>\$2,500</b>	1. Disabling <input checked="" type="checkbox"/> 2. Functional 3. No Damage	Est. Trailer Damage	Show first point of vehicle damage and circle damaged areas <input checked="" type="checkbox"/>					
Motor Vehicle Insurance Company (Liability or PIP) <b>GEICO INSURANCE</b>			Policy Number <b>4151633601</b>		Vehicle Removed By <b>DRIVER</b>		1. Tow Rotation List 2. Tow Owner's Request		3. Driver <input checked="" type="checkbox"/> 4. Other				
Name of Vehicle Owner (Check Box If Same As Driver) <input type="checkbox"/>				Current Address (Number and Street) <b>DAYNE O RUTHERFORD</b>				City and State <b>MIAMI FL</b>		Zip Code <b>33169</b>			
Name of Owner (Trailer or Towed Vehicle)				Current Address (Number and Street)				City and State		Zip Code			
Name of Motor Carrier (Commercial vehicle only)				Current Address (Number and Street)				City, State and Zip Code		US DOT or ICC MC Identification Numbers			
Name of Driver (Taken from Driver license)/ Pedestrian <b>RICARDO T RUTHERFORD</b>				Current Address (Number and Street) <b>18200 NW 4 AVE</b>				City, State and Zip Code <b>MIAMI FL 33169</b>		Date Of Birth <b>30/Dec/1987</b>			
Driver License Number <b>R361736874700</b>	State <b>FL</b>	DL Type <b>5</b>	Req. End <b>3</b>	AIC/Drug Test Type 1 Blood 3 Urine 5 None 2 Breath 4 Refused	Results	Alc/Drug <b>1</b>	Phys. Def <b>1</b>	Res. <b>1</b>	Race <b>2</b>	Sex <b>1</b>	Inj. <b>1</b>	S. Equip. <b>2 5</b>	Eject. <b>1</b>
Hazardous Materials Being Transported 1 yes 2 No <input checked="" type="checkbox"/>	Placarded 1 yes 2 No <input checked="" type="checkbox"/>	If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			Was Hazardous Material Spilled? 1 yes 2 No <input checked="" type="checkbox"/>	Recommend Driver Re-exam, if Yes Explain In Narrative 1 yes 2 No <input checked="" type="checkbox"/>			Driver's Phone No.				

<b>CODE INFORMATION</b>						
Vehicle Type	Vehicle Use	Trailer Type	Residence (driver/Ped.)	Physical Defects	Alcohol/Drug Use	Location In Vehicle
01 Automobile 02 Van 03 Light Truck/P.U.-2 or 4 rear tires Automobile 04 Medium Truck - 4 rear tires 05 Heavy Truck - 2 or more rear axles 06 Truck Tractor (Cab-Boat) Tail 07 Motor Home (RV) 08 Bus (driver + seats for 9-15) 09 Bus (driver + seats for over 15) 10 Bicycle 11 Motorcycle 12 Moped 13 All Terrain Vehicle 14 Train 15 Low Speed Vehicle 77 Other	01 Private Transportation 02 Commercial Passengers 03 Commercial Cargo 04 Public Transportation 05 Public School Bus 06 Private School Bus 07 Ambulance 08 Law Enforcement 09 Fire/Rescue 10 Military 11 Other Government 12 Dump 13 Concrete Mixer 14 Garbage or Refuse 15 Cargo Van 77 Other	01 Single Semi Trailer 02 Tandem Semi Trailer 03 Tank Trailer 04 Saddle Mount/Flatbed 05 Boat Trailer 06 Utility Trailer 07 House Trailer 08 Pole Trailer 09 Towed Vehicle 10 Auto Transport 77 Other	1 County Of Crash 2 Elsewhere In State 3 Non-Resident Out Of State 4 Foreign - 5 Unknown <b>DL Type</b> 1 A 2 B 3 C 4 D/Chauffeur 5 E/Operator 6 E/Oper.-Rest. 7 None <b>Race</b> 1 White 2 Black 3 Hispanic 4 Other <b>Required Endorsements</b> 1 Yes 2 No 3 No endorsement Required <b>Sex</b> 1 Male 2 Female	1 No Defects Known 2 Eyesight Defect 3 Fatigue/Asleep 4 Hearing Defect 5 Illness 6 Seizure, Epilepsy, Blackout 7 Other Physical Defect <b>Injury Severity</b> 1 None 2 Possible 3 Non-Incapacitating 4 Incapacitating 5 Fatal (within 30 days) 6 Non-Traffic Fatality	1 Not Drinking or using Drugs 2 Alcohol - Under Influence 3 Drugs - Under Influence 4 Alcohol & Drugs - Under Influence 5 Had Been Drinking 6 Pending ALC/DRUG Test Results <b>Safety Equipment In Use</b> 1 Not in use 2 Seat Belt / Shoulder Harness 3 Child Restraint 4 Air Bag - Deployed 5 Air bag - Not Deployed 6 Safety Helmet 7 Eye Protection	1 Front Left 2 Front Center 3 Front Right 4 Rear Left 5 Rear Center 6 Rear Right 7 In Body Of Truck 8 Bus Passenger 9 Other <b>Ejected</b> 1 No 2 Yes 3 Partial

**DOCUMENTS WITH THIS NOTICE SHALL BE USED ONLY FOR PURPOSES OF THE FDOT. SEE TITLE 23, USC, SECTION 409.**

<b>SECTION</b>	Pedestrian <input type="checkbox"/> Vehicle <input type="checkbox"/>	<b>Driver Action</b>	1. Phantom <input type="checkbox"/> 2. Hit and Run 3. N/A	<b>Year</b>	<b>Make</b>	<b>Type</b>	<b>Use</b>	<b>Veh. License Number</b>	<b>State</b>	<b>Vehicle Identification Number</b>		18. Undercarriage 19. Overturn 20. Windshield 21. Trailer				
<b>Trailer Or Towed Vehicle Information</b>			<b>Trailer Type</b>			<b>Vehicle Traveling</b> on _____ <b>At</b> _____ <b>Est. MPH</b>			<b>Posted Speed</b>	<b>Est. Vehicle Damage</b>	1. Disabling <input type="checkbox"/> 2. Functional <input type="checkbox"/> 3. No Damage	<b>Est. Trailer Damage</b>	Show first point of vehicle damage and circle damaged areas <input type="checkbox"/>			
<b>Motor Vehicle Insurance Company (Liability or PIP)</b>					<b>Policy Number</b>					<b>Vehicle Removed By:</b>			1. Tow Rotation List 2. Tow Owner's Request 3. Driver 4. Other <input type="checkbox"/>			
<b>Name of Vehicle Owner (Check Box If Same As Driver)</b> <input type="checkbox"/>				<b>Current Address (Number and Street)</b>				<b>City and State</b>				<b>Zip Code</b>				
<b>Name of Owner (Trailer or Towed Vehicle)</b>				<b>Current Address (Number and Street)</b>				<b>City and State</b>				<b>Zip Code</b>				
<b>Name of Motor Carrier (Commercial vehicle only)</b>				<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>				<b>US DOT or ICC MC Identification Numbers</b>				
<b>Name of Driver (Taken from Driver license)/ Pedestrian</b>				<b>Current Address (Number and Street)</b>				<b>City, State and Zip Code</b>				<b>Date Of Birth</b>				
<b>Driver License Number</b>	<b>State</b>	<b>DL Type</b>	<b>Req. End</b>	<b>AIC/Drug Test Type</b>			<b>Results</b>	<b>Alc/Drug</b>	<b>Phys. Def</b>	<b>Res.</b>	<b>Race</b>	<b>Sex</b>	<b>Inj.</b>	<b>S. Equip.</b>	<b>Eject.</b>	
1 Blood 3 Urine 5 None 2 Breath 4 Refused																
<b>Hazardous Materials Being Transported</b> <input type="checkbox"/>			<b>Placarded</b> <input type="checkbox"/>			If Yes, Indicate Name or 4 Digit Number From diamond Box on Placard, and 1 Digit Number From Bottom of Diamond			<b>Was Hazardous Material Spilled?</b> <input type="checkbox"/>			Recommend Driver Re-exam, if Yes Explain In Narrative <input type="checkbox"/>			<b>Driver's Phone No.</b>	
1 yes 2 No			1 yes 2 No						1 yes 2 No			1 yes 2 No				
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>	<b>Owner's Name</b>		<b>Address</b>		<b>City</b>		<b>State</b>		<b>Zip</b>			
<b>#</b>	<b>Property Damaged - Other Than Vehicles</b>			<b>Est. Amount</b>	<b>Owner's Name</b>		<b>Address</b>		<b>City</b>		<b>State</b>		<b>Zip</b>			

<b>Contributing Causes - Driver/Pedestrian</b>	<b>Vehicle Defect</b>	<b>Vehicle Movement</b>	<b>Vehicle Special Functions</b>
01 No Improper Driving/Action 02 Careless Driving (Explain in Narrative) 03 Failure to Yield Right-Of-Way 04 Improper Backing 05 Improper Lane Change 06 Improper Turn 07 Alcohol - Under Influence 08 Drugs - Under Influence 09 Alcohol & Drugs - Under Influence 10 Followed Too Closely 11 Discarded Traffic Signal 12 Exceeded Safe Speed Limit 13 Discarded Stop Sign 14 Failed To Maintain Equip./ Vehicle 15 Improper Passing 16 Drove Left of Center 17 Exceeded Stated Speed Limit 18 Obstructing Traffic	01 No Defects 02 Def. Brakes 03 Warn/ Smooth Tires 04 Defective/ Improper Lights 05 Puncture/Blowout 06 Steering Mech. 07 Windshield Wipers 08 Equipment/Vehicle Defect 77 All Other (Explain In Narrative)	01 Straight Ahead 02 Slowing/ Stopping/ Stalled 03 Making Left Turn 04 Backing 05 Making Right Turn 06 Changing Lanes 07 Entering/Leaving/ Parking Space 08 Properly Parked 09 Improperly Parked 10 Making U-Turn 11 Passing	1 None 2 Farm 3 Police Pursuit 4 Recreational 5 Emergency Operation 6 Construction/Maintenance 77 All Other (Explain In Narrative)
19 Improper Load 20 Disregarded other Traffic Control 21 Driving Wrong Side/Way 22 Fleeting Police 23 Vehicle Modified 24 Driver Distraction (Explain In Narrative) 77 All Other (Explain in Narrative)	01 On Road 02 Not On Road 03 Shoulder 04 Median 05 Turn Lane	12 Driverless or Runaway Vehicle 77 All Other (Explain In Narrative)	1 Not Applicable 2 Shipping Papers 3 Vehicle Side 4 Driver 5 Other
	<b>Point Of Collision</b>	<b>Pedestrian Action</b>	<b>Location Type</b>
	01 On Road 02 Not On Road 03 Shoulder 04 Median 05 Turn Lane	01 Crossing Not At Intersection 02 Crossing At Mid-block Crosswalk 03 Crossing At Intersection 04 Walking Along Road With Traffic 05 Walking Along Road Against Traffic 06 Working on Vehicle in Road	07 Working in Road 08 Standing/Playing in Road 09 Standing in Pedestrian Island 77 All Other (Explain in Narrative) 88 Unknown
	<b>Work Area</b>		
	01 None 02 Nearby 03 Entered		

<b>First/Subsequent Harmful Event (s)</b>	<b>Road System Identifier</b>	<b>Lighting Condition</b>
01 Collision With MV in Transport (Rear End) 02 Collision With MV in Transport (Head On) 03 Collision With MV in Transport (Angle) 04 Collision With MV in Transport (Left Turn) 05 Collision With MV in Transport (Right Turn) 06 Collision With MV in Transport (Sideswipe) 07 Collision With MV in Transport (Backed Into) 08 Collision With Parked Car 09 Collision With MV on Roadway 10 Collision With Pedestrian 11 Collision With Bicycle 12 Collision With Bicycle (Bike Lane) 13 Collision With Moped 14 Collision With Train	01 Interstate 02 U.S. 03 State 04 County 05 Local 06 Turnpike / Toll	01 Daylight 02 Dusk 03 Dawn 04 Dark (Street Light) 05 Dark (No Street Light) 88 Unknown
15 Collision With Animal 16 MV Hit Sign / Sign Post 17 MV Hit Utility Pole / Light Pole 18 MV Hit Guardrail 19 MV Hit Fence 20 MV Hit Concrete Barrier Wall 21 MV Hit Bridge/Pier/Abutment/Rail 22 MV Hit Tree / Shrubbery 23 Collision With Construction Barricade Sign 24 Collision With Traffic Gate 25 Collision With Crash Attenuators 26 Collision With Fixed Object Above Road 27 MV Hit Other Fixed Object	28 Collision With Moveable Object on Road 29 MV Ran Into Ditch/Culvert 30 Ran Off Road Into Water 31 Overturned 32 Occupant Fell From Vehicle 33 Tractor/Trailer Jackknifed 34 Fire 35 Explosion 36 Downhill Runaway 37 Cargo Loss or Shift 38 Separation of Units 39 Median Crossover 77 All Other (Explain in Narrative)	01 Dry 02 Wet 03 Slippery 04 Icy 77 All other (Explain in Narrative)
	<b>Weather</b>	<b>Road Surface Type</b>
	01 Clear 02 Cloudy 03 Rain 04 Fog 77 All other (Explain in Narrative)	01 Slag/Gravel/Stone 02 Blacktop 03 Brick/Block 04 Concrete 05 Dirt 77 All Other (Explain in Narrative)

<b>Road Conditions At Time Of Crash</b>	<b>Vision Obstructed</b>	<b>Traffic Control</b>	<b>Site Location</b>	<b>Trafficway Character</b>
01 No Defects 02 Obstruction With Warning 03 Obstruction Without Warning 04 Road under Repair/ Construction 05 Loose Surface Materials 06 Shoulders - Soft/Low/High 07 Holes/Ruts/Unsafe Paved Edge 08 Standing Water 09 Worm/Polished Road Surface 77 All other (Explain In Narrative)	01 Vision Not Obstructed 02 Inclement Weather 03 Parked/ Stopped Vehicle 04 Trees/Crops/Bushes 05 Load On Vehicle 06 Building/Fixed Object 07 Signs/Billboards 08 Fog 09 Smoke 10 Glare 77 All other (Explain In Narrative)	01 No Control 02 Special Speed Zone 03 Speed Control Sign 04 School Zone 05 Traffic Signal 06 Stop Sign 07 Yield Sign 08 Flashing Light 09 Railroad Signal 10 Officer/Guard/Flagperson 11 Posted No U-Turn	01 Not At Intersection/RR X-ing/Bridge 02 At Intersection 03 Influenced By Intersection 04 Driveway Access 05 Railroad 06 Bridge 07 Entrance Ramp 08 Exit Ramp 09 Parking Lot - Public	01 Straight - Level 02 Straight - Upgrade/Downgrade 03 Curve - Level 04 Curve - Upgrade/Downgrade Type Shoulder 01 Paved 02 Unpaved 03 Curb

<b>Violator(s)</b>				
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

FLORIDA TRAFFIC CRASH REPORT

NARRATIVE/DIAGRAM

MAIL TO DEPT. HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

Time EMS Notified (Fatalities Only) :	Time EMS Arrived (Fatalities Only) :	Date Of Crash <b>08/Aug/2010</b>	County/ <b>01</b>	City Code <b>00</b>	Invest. Agency Report Number <b>FHPE10OFF041836</b>	HSMV Crash Report Number <b>77469355</b>
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(Narrative)

Vehicle 1 of section 1, and vehicle 2 of section 2 were traveling west on State Road 826 passing northwest 17 avenue. Vehicle 1 was in the lane 3 from inside barrier wall. Vehicle 2 was in lane 2 from inside barrier wall. The driver of vehicle 1 made an improper lane change into lane 2. The driver of vehicle 2 was unable to avoid contact with vehicle 1. The right front of vehicle 2 struck the left rear of vehicle 1. Vehicle 2 veered into a northeast direction onto the right shoulder. The right front struck the guardrail. Vehicle 2 came to final rest on the right shoulder facing east. No tag information was ascertain for vehicle 1. No injuries were reported. The driver of vehicle 2 stated he did not see the color, or make of vehicle 1. At the crash scene there was no paint transfer, or visible damage from another vehicle. The driver of vehicle 2 stated he did not see the color, or make of vehicle 1. There is significant damage on the right front, right rear from the guardrail.  
Latitude: 25.9270883333333 Longitude: -80.244145

Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject
Sec#	Pass#	Passenger's Name	Current Address	City & State	Zip Code	Date Of Birth	Race	Sex	Loc	Inj	S. Equip.	Eject

Violator(s)				
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number
Section #	Name Of Violator	FL Statute Number	Charge	Citation Number

Witness Name	Current Address	City & State	Zip Code
Witness Name	Current Address	City & State	Zip Code

First Aid Given By - Name <b>N/A</b>	1 Physician or Nurse 2 Parametic or EMT 3 Police Officer	4 Certified 1st Aider <input type="checkbox"/> 5 Other	Injured Taken To: <b>N/A</b>	By - Name
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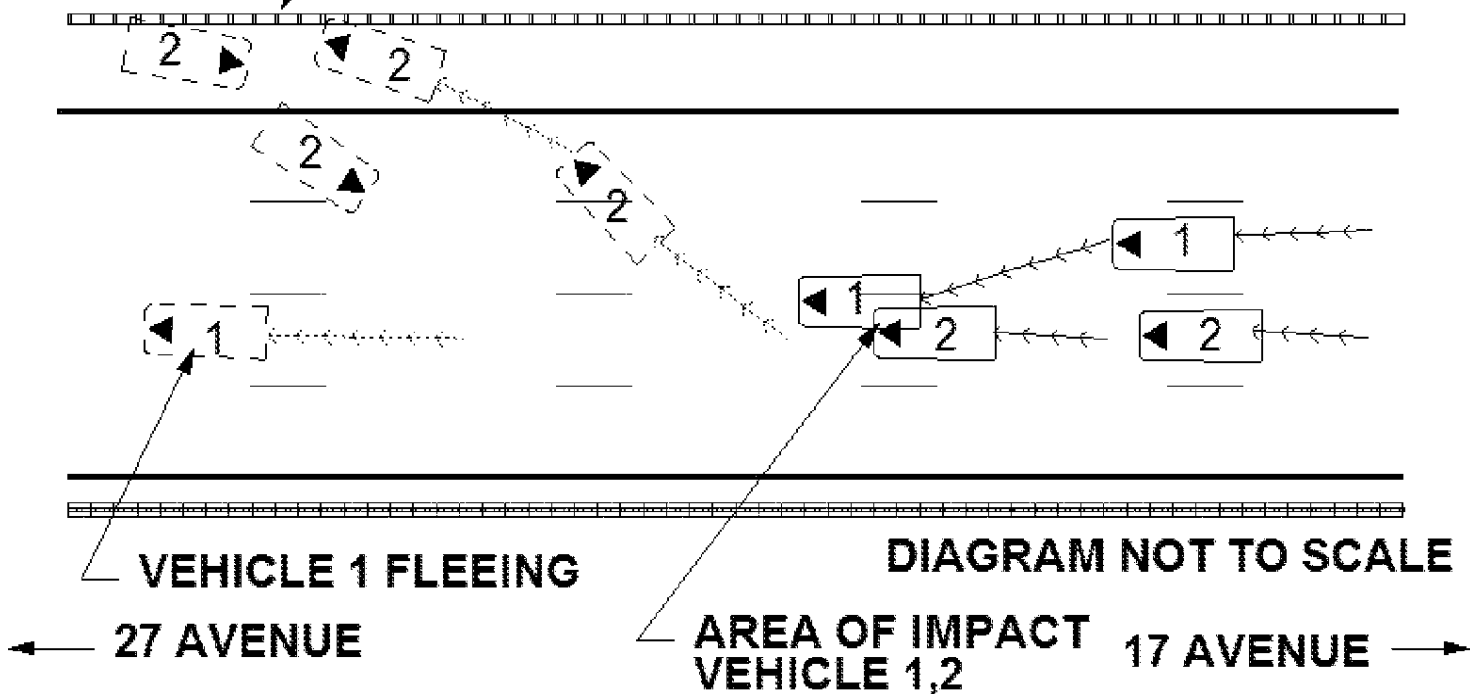
Was Investigation Made At Scene? 1 Yes <input checked="" type="checkbox"/> 2 No	If No, Then Where?	Is Investigation Complete? 1 Yes 2 No	If No, Then Why?	Date of Report <b>08/Aug/2010</b>	Photos Taken? 1 Yes <input checked="" type="checkbox"/> 2 No	If Yes, By Whom? 1 Invest. Agency 2 Other
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Investigator - Rank & Signature <b>TPR W. SULLIVAN</b>	ID/Badge Number <b>2658</b>	Department <b>FHPE</b>	FHP <input checked="" type="checkbox"/> SO <input type="checkbox"/> CPD <input type="checkbox"/> Other <input type="checkbox"/>
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**VEHICLE 2 IMPACT  
WITH GUARDRAIL  
FINAL REST**

**STATE ROAD 826  
WESTBOUND LANES**



# FLORIDA TRAFFIC CRASH REPORT

NOV 14 2011

LONG FORM  SHORT FORM  UPDATE   
(Shaded Areas)

TOTAL # OF VEHICLE SECTION(S) 1  
 TOTAL # OF PERSON SECTION(S) 1  
 TOTAL # OF NARRATIVE SECTION(S) 1

MAIL TO: DEPARTMENT OF HIGHWAY SAFETY & MOTOR VEHICLES  
 TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING  
 TALLAHASSEE, FL 32399-0537

CRASH DATE <b>08/09/2011</b>	TIME OF CRASH <b>6:08 PM</b>	DATE OF REPORT <b>8/09/2011</b>	REPORTING AGENCY CASE NUMBER <b>2011-016264</b>	HSMV CRASH REPORT NUMBER <b>81026488</b>
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<b>CRASH IDENTIFIERS</b>						
COUNTY CODE <b>01</b>	CITY CODE <b>57</b>	COUNTY OF CRASH <b>MIAMI DADE</b>	PLACE OR CITY OF CRASH <b>MIAMI GARDENS</b>	CHECK IF WITHIN CITY LIMITS <input checked="" type="checkbox"/>	TIME REPORTED <b>6:08 PM</b>	TIME DISPATCHED <b>6:09 PM</b>
TIME ON SCENE <b>6:16 PM</b>		TIME CLEARED SCENE <b>6:16 PM</b>		CHECK IF COMPLETED <input checked="" type="checkbox"/>	REASON (if Investigation NOT Complete)	
Notified By: 1 Motorist <input type="checkbox"/> 2 Law Enforcement <input checked="" type="checkbox"/>						

<b>ROADWAY INFORMATION (CHOOSE ONLY 1 OF 4 OPTIONS)</b>					
CRASH OCCURRED ON STREET, ROAD, HIGHWAY <b>NW 167TH ST</b>				AT STREET ADDRESS # <b>1</b>	AT LATITUDE AND LONGITUDE <b>2</b>
AT FEET <b>100</b>	MILES	N <input type="checkbox"/> S <input type="checkbox"/> E <input checked="" type="checkbox"/> W <input type="checkbox"/>	AT / FROM INTERSECTION WITH STREET, ROAD, HIGHWAY <b>3 NW 27TH AVE</b>	OR FROM MILEPOST # <b>4</b>	
<b>4</b> Road System Identifier 1 Interstate 4 County 8 Private Roadway 2 U.S. 5 Local 9 Parking Lot 3 State 6 Turnpike/Toll 77 Other, Explain in Narrative		<b>2</b> Type of Shoulder 1 Paved 2 Unpaved 3 Curb		<b>1</b> Type of Intersection 1 Not at Intersection 5 Traffic Circle 2 Four-Way Intersection 6 Roundabout 3 T-Intersection 7 Five-Point, or More 4 Y-Intersection 77 Other, Explain in Narrative	

<b>CRASH INFORMATION (CHECK IF PICTURES TAKEN)</b> <input type="checkbox"/>				
<b>1</b> Light Condition 1 Daylight 5 Dark-Not Lighted 2 Dusk 6 Dark-Unknown 3 Dawn Lighting 4 Dark-Lighted 77 Other, Explain in Narrative 88 Unknown	<b>3</b> Weather Condition 4 Fog, Smog, Smoke 5 Sleet/Hail/Freezing Rain 6 Blowing Sand, Soil, Dirt 7 Severe Crosswinds 77 Other, Explain in Narrative 1 Clear 2 Cloudy 3 Rain	<b>2</b> Roadway Surface Condition 5 Oil 6 Mud, Dirt, Gravel 7 Sand 8 Water (standing/moving) 1 Dry 2 Wet 4 Ice/Frost 77 Other, Explain in Narrative 88 Unknown	<b>1</b> School Bus Related 1 No 2 Yes, School Bus Directly Involved 3 Yes, School Bus Indirectly Involved	<b>2</b> Manner of Collision/Impact 4 Sideswipe, same direction 5 Sideswipe, Opposite Direction 6 Rear to Side 7 Rear to Rear 77 Other, Explain in Narrative 88 Unknown 1 Front to Rear 2 Front to Front 3 Angle

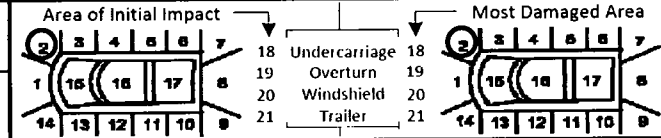
<b>37</b> First Harmful Event 1 Overturn/Rollover 2 Fire/Explosion 3 Immersion 4 Jackknife 5 Cargo/Equipment Loss or Shift 6 Fell/Jumped From Motor Vehicle 7 Thrown or Falling Object 8 Ran into Water/Canal 9 Other Non-Collision	Non-Collision 10 Pedestrian 11 Pedalcycle 12 Railway Vehicle (train, engine) 13 Animal 14 Motor Vehicle in Transport 15 Parked Motor Vehicle 16 Work Zone/Maintenance Equipment 17 Struck by Failing, Shifting Cargo 18 Other Non-Fixed Object	Collision with Fixed Object 19 Impact Attenuator/Crash Cushion 20 Bridge Overhead Structure 21 Bridge Pier or Support 22 Bridge Rail 23 Culvert 24 Curb 25 Ditch 26 Embankment 27 Guardrail Face 28 Guardrail End 29 Cable Barrier	Collision with Fixed Object 30 Concrete Traffic Barrier 31 Other Traffic Barrier 32 Tree (standing) 33 Utility Pole/Light Support 34 Traffic Sign Support 35 Traffic Signal Support 36 Other Post, Pole or Support 37 Fence 38 Mailbox 39 Other Fixed Object (wall, building, tunnel, etc.)	<b>3</b> First Harmful Event Location 1 On Roadway 2 Off Roadway 3 Shoulder 4 Median 6 Gore 7 Separator 8 In Parking Lane or Zone 9 Outside Right-of-way 10 Roadside 88 Unknown
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<b>1</b> First Harmful Event Relation to Junction 5 Railway Grade Crossing 14 Entrance/Exit Ramp 15 Crossover - Related 16 Shared-Use Path or Trail 17 Acceleration/Deceleration Lane 18 Through Roadway 77 Other, Explain in Narrative 88 Unknown	<b>10</b> Contributing Circumstances: Road 9 Worn, Travel-Polished Surface 10 Road Surface Condition (wet, icy, snow, slush, etc.) 11 Obstruction in Roadway 12 Debris 13 Traffic Control Device Inoperative, Missing or Obscured 14 Non-Highway Work 77 Other, Explain in Narrative 88 Unknown	<b>2</b> Contributing Circumstances: Environment 1 None 2 Weather Conditions 5 Animal(s) in Roadway 3 Physical Obstruction(s) 77 Other, Explain in Narrative 4 Glare 88 Unknown
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<b>1</b> Work Zone Related 1 No 2 Yes 88 Unknown	Crash in Work Zone 1 Before the First Work Zone Warning Sign 2 Advance Warning Area 3 Transition Area 4 Activity Area 5 Termination Area	Type of Work Zone 1 Lane Closure 2 Lane Shift/Crossover 3 Work on Shoulder or Median 4 Intermittent or Moving Work 77 Other, Explain in Narrative	Workers in Work Zone 1 No 2 Yes 88 Unknown	Law Enforcement in Work Zone 1 No 2 Officer Present 3 Law Enforcement Vehicle Only Present
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<b>WITNESSES</b>			
NAME	ADDRESS	CITY & STATE	ZIP CODE
NAME	ADDRESS	CITY & STATE	ZIP CODE
NAME	ADDRESS	CITY & STATE	ZIP CODE

<b>NON VEHICLE PROPERTY DAMAGE</b>							
VEHICLE #	PERSON #	PROPERTY DAMAGE - OTHER THAN VEHICLE	EST. AMOUNT	OWNER'S NAME <input checked="" type="checkbox"/> (Check if Business)	ADDRESS	CITY & STATE	ZIP CODE
1		FENCE POLE	\$50	FLORIDA DEPT OF			
VEHICLE #	PERSON #	PROPERTY DAMAGE - OTHER THAN VEHICLE	EST. AMOUNT	OWNER'S NAME <input type="checkbox"/> (Check if Business)	ADDRESS	CITY & STATE	ZIP CODE

<b>VEHICLE #</b> <b>1</b>		<b>Check if Commercial</b> <input type="checkbox"/>		<b>REPORTING AGENCY CASE NUMBER</b> <b>2011-016264</b>			<b>HSMV CRASH REPORT NUMBER</b> <b>81026488</b>							
1 Vehicle in Transport 2 Parked Motor Vehicle 3 Working Vehicle		<b>VEHICLE LICENSE NUMBER</b> <b>CITY211304</b>		<b>STATE</b> <b>FL</b>	<b>REGISTRATION EXPIRES</b>	<b>Check if Permanent Registration</b> <input checked="" type="checkbox"/>	<b>VIN</b> <b>2FAFP74W05X156258</b>							
<b>Hit and Run</b> 1 No 2 Yes 88 Unknown		<b>YEAR</b> <b>2005</b>	<b>MAKE</b> <b>FORD</b>	<b>MODEL</b> <b>CROWN</b>	<b>STYLE</b> <b>4D</b>	<b>COLOR</b> <b>SIL</b>	<b>DAMAGE:</b> 1 Disabling 2 Functional 3 None 4 Minor 88 Unknown		<b>EST. AMOUNT</b> <b>700</b>					
<b>INSURANCE COMPANY</b> <b>SELF INSURED</b>			<b>INSURANCE POLICY NUMBER</b>		<b>Towed due to Damage:</b> 1 No 2 Yes	<b>VEHICLE REMOVED BY</b> <b>DRIVER</b>		<b>1 Rotation 2 Owner Request 3 Driver 4 Other, Explain in Narrative</b> <b>3</b>						
<b>NAME OF VEHICLE OWNER (Check if Business)</b> <input checked="" type="checkbox"/>														
<b>CITY OF OPA LOCKA</b>				<b>101 PERVIZ AVE</b>			<b>CITY &amp; STATE</b> <b>OPA LOCKA, FL</b>		<b>ZIP CODE</b> <b>33054</b>					
<b>TRAILER #</b>	<b>LICENSE NUMBER</b>	<b>STATE</b>	<b>REGISTRATION EXPIRES</b>	<b>Check if Permanent Registration</b>	<b>VIN</b>			<b>YEAR</b>	<b>MAKE</b>	<b>LENGTH</b>	<b>AXLES</b>			
<b>TRAILER #</b>	<b>LICENSE NUMBER</b>	<b>STATE</b>	<b>REGISTRATION EXPIRES</b>	<b>Check if Permanent Registration</b>	<b>VIN</b>			<b>YEAR</b>	<b>MAKE</b>	<b>LENGTH</b>	<b>AXLES</b>			
<b>VEHICLE TRAVELING</b> N <input type="checkbox"/> S <input type="checkbox"/> E <input checked="" type="checkbox"/> W <input type="checkbox"/> Off-Road <input type="checkbox"/> Unknown <input type="checkbox"/>		<b>ON STREET, ROAD, HIGHWAY</b> <b>NW 167TH ST</b>					<b>AT EST. SPEED</b> <b>10</b>	<b>POSTED SPEED</b> <b>30</b>	<b>TOTAL LANES</b> <b>2</b>					
<b>HAZ. MAT. RELEASED</b> 1 No 2 Yes 88 Unknown	<b>HAZ. MAT. PLACARD</b> 1 No 2 Yes 88 Unknown	<b>HAZ. MAT. NUMBER</b>	<b>HAZ. MAT. CLASS</b>	<b>Area of Initial Impact</b>				<b>Most Damaged Area</b>						
<b>MOTOR CARRIER NAME</b>				<b>US DOT NUMBER</b>										
<b>MOTOR CARRIER ADDRESS</b>						<b>CITY &amp; STATE</b>		<b>ZIP CODE</b>		<b>PHONE NUMBER</b>				
<b>Vehicle Body Type</b> <b>1</b>			<b>Trafficway</b> <b>5</b>			<b>Commercial Motor Vehicle Configuration</b>			<b>Cargo Body Type</b>					
<ul style="list-style-type: none"> <li>1 Passenger Car</li> <li>2 Passenger Van</li> <li>3 Pickup</li> <li>7 Motor Home</li> <li>8 Bus</li> <li>11 Motorcycle</li> <li>12 Moped</li> <li>13 All Terrain Vehicle (ATV)</li> </ul>			<ul style="list-style-type: none"> <li>15 Low Speed Vehicle</li> <li>16 (Sport) Utility Vehicle</li> <li>17 Cargo Van (10,000 lbs (4,536 kg) or less)</li> <li>18 Motor Coach</li> <li>19 Other Light Trucks (10,000 lbs (4,536 kg) or less)</li> <li>20 Medium/Heavy Trucks (more than 10,000 lbs (4,536 kg))</li> <li>21 Farm Labor Vehicle</li> <li>77 Other, Explain in Narrative</li> <li>88 Unknown</li> </ul>			<ul style="list-style-type: none"> <li>1 Two-Way, Not Divided</li> <li>2 Two-Way, Not Divided, with a Continuous Left Turn Lane</li> <li>3 Two-Way, Divided, Unprotected (painted &gt;4 feet) Median</li> <li>4 Two-Way, Divided, Positive Median Barrier</li> <li>5 One-Way Trafficway</li> <li>88 Unknown</li> </ul>			<ul style="list-style-type: none"> <li>1 Vehicle 10,000 lbs or less Placarded for Hazardous Materials</li> <li>2 Single-Unit Truck (2-axle and GVWR more than 10,000 lbs (4,536 kg))</li> <li>3 Single-Unit Truck (3 or more axles)</li> <li>4 Truck Pulling Trailer(s)</li> <li>5 Truck Tractor (bobtail)</li> <li>6 Truck Tractor/Semi-Trailer</li> <li>7 Truck Tractor/Double Trailer</li> </ul>			<ul style="list-style-type: none"> <li>8 Tractor/Triple</li> <li>9 Truck more than 10,000 lbs (4,536 kg), Cannot Classify</li> <li>10 Bus/Large Van (seats for 9-15 occupants, including driver)</li> <li>11 Bus (seats for more than 15 occupants, including driver)</li> <li>77 Other, Explain in Narrative</li> <li>88 Unknown</li> </ul>		
<b>Comm/Non-Commercial</b>			<b>Trailer Type</b>			<b>Trailer 1</b>			<b>Trailer 2</b>					
<ul style="list-style-type: none"> <li>1 Interstate Carrier</li> <li>2 Intrastate Carrier</li> <li>3 Not in Commerce/Government</li> <li>4 Not in Commerce/Other Truck</li> </ul>			<ul style="list-style-type: none"> <li>1 Single Semi Trailer</li> <li>2 Tandem Semi Trailer</li> <li>3 Tank Trailer</li> <li>4 Saddle Mount/Trailer</li> <li>5 Boat Trailer</li> <li>6 Utility Trailer</li> <li>7 House Trailer</li> </ul>			<ul style="list-style-type: none"> <li>8 Pole Trailer</li> <li>9 Towed Vehicle</li> <li>10 Auto Transport</li> <li>77 Other, Explain in Narrative</li> <li>88 Unknown</li> </ul>			<ul style="list-style-type: none"> <li>1 No Cargo</li> <li>2 Bus</li> </ul>					
<b>Most Harmful Event</b> <b>37</b>			<b>Collision with Non-Fixed Object</b>			<b>Collision with Non-Fixed Object</b>			<b>Emergency Vehicle Use</b> <b>1</b>					
<ul style="list-style-type: none"> <li>1 Overturn/Rollover</li> <li>2 Fire/Explosion</li> <li>3 Immersion</li> <li>4 Jackknife</li> <li>5 Cargo/Equipment Loss or Shift</li> <li>6 Fell/Jumped From Motor Vehicle</li> <li>7 Thrown or Falling Object</li> <li>8 Ran into Water/Canal</li> <li>9 Other Non-Collision</li> </ul>			<ul style="list-style-type: none"> <li>10 Pedestrian</li> <li>11 Pedalcycle</li> <li>12 Railway Vehicle (train, engine)</li> <li>13 Animal</li> <li>14 Motor Vehicle in Transport</li> <li>15 Parked Motor Vehicle</li> <li>16 Work Zone/Maintenance Equipment</li> <li>17 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle</li> <li>18 Other Non-Fixed Object</li> </ul>			<ul style="list-style-type: none"> <li>19 Impact Attenuator/Crash Cushion</li> <li>20 Bridge Overhead Structure</li> <li>21 Bridge Pier or Support</li> <li>22 Bridge Rail</li> <li>23 Culvert</li> <li>24 Curb</li> <li>25 Ditch</li> <li>26 Embankment</li> <li>27 Guardrail Face</li> <li>28 Guardrail End</li> </ul>			<ul style="list-style-type: none"> <li>29 Cable Barrier</li> <li>30 Concrete Traffic Barrier</li> <li>31 Other Traffic Barrier</li> <li>32 Tree (standing)</li> <li>33 Utility Pole/Light Support</li> <li>34 Traffic Sign Support</li> <li>35 Traffic Signal Support</li> <li>36 Other Post, Pole, or Support</li> <li>37 Fence</li> <li>38 Mailbox</li> <li>39 Other Fixed Object (wall, building, tunnel, etc.)</li> </ul>					
<b>Sequence of Events</b>			<b>Vehicle Maneuver Action</b>			<b>Traffic Control Device For This Vehicle</b>			<b>Vehicle Defects</b>					
<ul style="list-style-type: none"> <li>1st <b>43</b></li> <li>2nd</li> <li>3rd</li> <li>4th</li> </ul>			<ul style="list-style-type: none"> <li>1 Straight Ahead</li> <li>3 Turning Left</li> <li>4 Backing</li> <li>5 Turning Right</li> <li>6 Changing Lanes</li> <li>8 Parked</li> <li>10 Making U-Turn</li> <li>11 Overtaking/Passing</li> <li>13 Stopped in Traffic</li> <li>14 Slowing</li> <li>15 Negotiating a Curve</li> <li>16 Leaving Traffic Lane</li> <li>17 Entering Traffic Lane</li> <li>77 Other, Explain in Narrative</li> <li>88 Unknown</li> </ul>			<ul style="list-style-type: none"> <li>1 No Controls</li> <li>4 School Zone Sign/Device</li> <li>5 Traffic Control Signal</li> <li>6 Stop Sign</li> <li>7 Yield Sign</li> <li>8 Flashing Signal</li> <li>9 Railway Crossing Device</li> <li>10 Person (including Flagman, Officer, Guard, etc.)</li> <li>13 Warning Sign</li> <li>77 Other, Explain in Narrative</li> <li>88 Unknown</li> </ul>			<ul style="list-style-type: none"> <li>1 None</li> <li>2 Brakes</li> <li>3 Tires</li> <li>4 Lights (head, signal, tail)</li> <li>6 Steering</li> <li>7 Wipers</li> <li>9 Exhaust System</li> <li>10 Body, Doors</li> <li>11 Power Train</li> <li>12 Suspension</li> <li>13 Wheels</li> <li>14 Windows/Windshield</li> <li>15 Mirrors</li> <li>16 Truck Coupling/Trailer Hitch/Safety Chains</li> <li>77 Other, Explain in Narrative</li> <li>88 Unknown</li> </ul>					
<b>Roadway Grade</b> <b>1</b>			<b>Roadway Alignment</b> <b>1</b>			<b>Special Function of Motor Vehicle</b> <b>3</b>			<b>Special Function of Motor Vehicle</b>					
<ul style="list-style-type: none"> <li>1 Level</li> <li>2 Hillcrest</li> <li>3 Uphill</li> <li>4 Downhill</li> <li>5 Sag (bottom)</li> </ul>			<ul style="list-style-type: none"> <li>1 Straight</li> <li>2 Curve Right</li> <li>3 Curve Left</li> </ul>			<ul style="list-style-type: none"> <li>1 No Special Function</li> <li>2 Farm Vehicle</li> <li>3 Police</li> <li>7 Taxi</li> <li>8 Military</li> <li>9 Ambulance</li> <li>10 Fire Truck</li> <li>11 Farm Labor Transport</li> <li>12 School Bus</li> <li>13 Transit/Commuter Bus</li> <li>14 Intercity Bus</li> <li>15 Charter/Tour Bus</li> <li>16 Shuttle Bus</li> <li>17 Farm Labor Bus</li> <li>88 Unknown</li> </ul>			<ul style="list-style-type: none"> <li>1 No Special Function</li> <li>2 Farm Vehicle</li> <li>3 Police</li> <li>7 Taxi</li> <li>8 Military</li> <li>9 Ambulance</li> <li>10 Fire Truck</li> <li>11 Farm Labor Transport</li> <li>12 School Bus</li> <li>13 Transit/Commuter Bus</li> <li>14 Intercity Bus</li> <li>15 Charter/Tour Bus</li> <li>16 Shuttle Bus</li> <li>17 Farm Labor Bus</li> <li>88 Unknown</li> </ul>					
<b>VIOLATIONS</b>														
<b>PERSON #</b>	<b>NAME OF VIOLATOR</b>			<b>FL STATUTE NUMBER</b>			<b>CHARGE</b>			<b>CITATION NUMBER</b>				
<b>PERSON #</b>	<b>NAME OF VIOLATOR</b>			<b>FL STATUTE NUMBER</b>			<b>CHARGE</b>			<b>CITATION NUMBER</b>				
<b>PERSON #</b>	<b>NAME OF VIOLATOR</b>			<b>FL STATUTE NUMBER</b>			<b>CHARGE</b>			<b>CITATION NUMBER</b>				

<b>PERSON #</b> <b>1</b>		<b>REPORTING AGENCY CASE NUMBER</b> <b>2011-016264</b>			<b>HSMV CRASH REPORT NUMBER</b> <b>81026488</b>				
1 Driver 2 Non-Motorist 3 Passenger		<b>VEHICLE #</b> <b>1</b>	<b>NAME</b> <b>MOHAN S. BRITTON</b>			<b>PHONE NUMBER</b> <b>(305) 681-1033</b>	Check if Recommended Driver Re-exam <input type="checkbox"/>		
<b>CURRENT ADDRESS (Number and Street)</b> <b>2495 ALI BABA AVE</b>				<b>CITY &amp; STATE</b> <b>OPA LOCKA, FL</b>		<b>ZIP CODE</b> <b>33054</b>			
<b>DATE OF BIRTH</b> <b>11/21/1972</b>	<b>SEX:</b> 1 Male 2 Female 88 Unknown	<b>DRIVER LICENSE NUMBER</b> <b>1</b> <b>B635XXX24210</b>	<b>STATE</b> <b>FL</b>	<b>EXPIRES</b> <b>11/21/2016</b>	<b>INJURY SEVERITY (INJ)</b> 1 None 2 Possible 3 Non-incapacitating 4 Incapacitating 5 Fatal (within 30 days) 6 Non-Traffic Fatality		<b>1</b>		
<b>DL Type</b> <b>5</b> 1 A 2 B 3 C 4 D/Chauffeur 5 E/Operator 6 E/Oper - Rest 7 None		<b>Required Endorsements</b> <b>3</b> 1 Yes 2 No 3 No Req. Endorsement		<b>Drivers Actions at Time of Crash</b>			<b>Condition At Time of Crash</b> <b>1</b> 1 Apparently Normal 3 Asleep or Fatigued 5 Ill (sick) or Fatigued 6 Seizure, Epilepsy, Blackout 7 Physically Impaired 8 Emotional (depression, angry, disturbed, etc.) 9 Under the Influence of Medications/Drugs/Alcohol 77 Other, Explain in Narrative 88 Unknown		
<b>Driver Distracted By</b> <b>1</b> 1 Not Distracted 2 Electronic Communication Devices (cell phone, etc.) 3 Other Electronic Device (navigation device, DVD player)		<b>4 Other Inside the Vehicle (Explain in Narrative)</b> 5 External Distraction (outside the vehicle, explain in narrative) 6 Texting 7 Inattentive 88 Unknown		<b>1st</b> <b>1</b> 1 No Contributing Action 2 Operated MV in Careless or Negligent Manner 3 Failed to Yield Right-of-Way 4 Improper Backing 6 Improper Turn 10 Followed too Closely 11 Ran Red Light 12 Drove too Fast for Conditions 13 Ran Stop Sign 15 Improper Passing 17 Exceeded Posted Speed 21 Wrong Side of Wrong Way 25 Failed to Keep in Proper Lane			<b>3rd</b> <b>1</b> 26 Ran off Roadway 27 Disregarded other Traffic Sign 28 Disregarded Other Road Markings 29 Over-Correcting/Over-Steering 30 Swerved or Avoided: Due to Wind, Slippery Surface, MV, Object, Non-Motorist in Roadway, etc. 31 Operated MV in Erratic, Reckless or Aggressive Manner 77 Other Contributing Factor		
<b>Driver Vision Obstructions</b> <b>2</b> 1 Vision Not Obscured 2 Incomplete Weather 3 Parked/Stopped Vehicle 4 Trees/Crops/Bushes		<b>5 Load on Vehicle</b> 6 Building/Fixed Object 7 Signs/Billboards 8 Fog		<b>9 Smoke</b> 10 Glare 77 All Other, Explain in Narrative		<b>DRIVER OR PASSENGER</b>			
<b>Motor Vehicle Seating Position:</b>		<b>LOCATION: SEAT ROW OTHER (LOC)</b> <b>1 1 1</b>		<b>Helmet Use (HU)</b> <b>3</b> 1 DOT-Compliant Motorcycle Helmet 2 Other Helmet 3 No Helmet		<b>Eye Protection (EP)</b> <b>3</b> 1 Yes 2 No 3 Not Applicable			
<b>Seat</b> 1 Left 2 Middle 3 Right 77 Other (explain in narrative) 88 Unknown		<b>Row</b> 1 Front 2 Second 3 Third 4 Fourth 77 Other Row 88 Unknown		<b>Other</b> 1 Not Applicable 2 Sleeper Section of Truck Cab 3 Other Enclose Cargo Area 4 Unenclosed Cargo Area 5 Trailing Unit 6 Riding on Motor Vehicle Exterior (non-trailing unit) 88 Unknown		<b>Restraint Systems (RS)</b> <b>3</b> 1 Not Applicable 2 None Used - Motor Vehicle Occupant 3 Shoulder and Lap Belt Used 4 Shoulder Belt Only Used 5 Lap Belt Only Used 6 Restraint Used - Type Unknown 7 Child Restraint System - Forward Facing 8 Child Restraint System - Rear Facing 9 Booster Seat 10 Child Restraint - Type Unknown 77 Other, Explain in Narrative			
<b>88 Unknown</b>		<b>88 Unknown</b>		<b>88 Unknown</b>		<b>Air Bag Deployed (ABD)</b> <b>2</b> 1 Not Applicable 2 Not Deployed 3 Deployed-Front 4 Deployed-Side			
<b>5 Deployed-Other (knee, air belt, etc.)</b> 6 Deployed-Combination 7 Deployed-Curtain 88 Deployment Unknown		<b>NON-MOTORIST</b>							
<b>Non-Motorist Description</b> <b>1</b> 1 Pedestrian 2 Other Pedestrian (wheelchair, person in a building, skater, pedestrian conveyance, etc.) 3 Bicyclist 4 Other Cyclist 5 Occupant of Motor Vehicle Not in Transport (parked, etc.) 6 Occupant of a Non-Motor Vehicle Transportation Device 7 Unknown Type of Non-Motorist		<b>Non-Motorist Location At Time of Crash</b> <b>1</b> 1 Intersection - Marked Crosswalk 2 Intersection - Unmarked Crosswalk 3 Intersection - Other 4 Midblock - Marked Crosswalk 5 Travel Lane - Other Location 6 Bicycle Lane 7 Shoulder/Roadside			<b>8 Sidewalk</b> 9 Median/Crossing Island 10 Driveway Access 11 Shared-Use Path or Trail 12 Non-Trafficway Area 77 Other, Explain in Narrative 88 Unknown			<b>Action Prior to Crash</b> <b>1</b> 1 Crossing Roadway 2 Waiting to Cross Roadway 3 Walking/Cycling Along Roadway with Traffic (in or adjacent to travel lane) 4 Walking/Cycling Along Roadway Against Traffic (in or adjacent to travel lane) 5 Walking/Cycling on Sidewalk 6 In Roadway -- Other (working, playing, etc.) 7 Adjacent to Roadway (e.g., shoulder, median) 8 Going to or from School (K-12) 9 Working in Trafficway (incident response) 10 None 77 Other, Explain in Narrative 88 Unknown	
<b>Safety Equipment</b> <b>1</b> 1 None 2 Helmet 3 Protective Pads Used (elbows, knees, shins, etc.) 4 Reflective Clothing (jacket, backpack, etc.)		<b>5 Lighting</b> 6 Not Applicable 77 Other, Explain in Narrative 88 Unknown		<b>Non-Motorist Actions/Circumstances</b> <b>1st</b> <b>1</b> 1 No Improper Action 2 Dart/Dash 3 Failure to Yield Right-of-Way 4 Failure to Obey Traffic Signs, Signals, or Officer 5 In Roadway Improperly (standing, lying, working, playing) 6 Disabled Vehicle Related (working on, pushing, leaving/approaching)			<b>7 Entering/Exiting Parked/Standing Vehicle</b> 8 Inattentive (talking, eating, etc.) 9 Not Visible (dark clothing, no lighting, etc.)		
<b>10 Improper Turn/Merge</b> 11 Improper Passing 12 Wrong-Way Riding or Walking 77 Other, Explain in Narrative 88 Unknown		<b>ALCOHOL/DRUG/EMS</b>							
<b>SUSPECTED ALCOHOL USE:</b> 1 No 2 Yes 88 Unknown		<b>ALCOHOL TESTED:</b> 1 Test Not Given 2 Test Refused 3 Test Given 88 Unknown, if Tested		<b>ALCOHOL TEST TYPE:</b> 1 Blood 2 Breath 3 Urine 77 Other, Explain in Narrative		<b>ALCOHOL TEST RESULT:</b> 1 Pending 2 Completed 88 Unknown			
<b>BAC</b>		<b>SUSPECTED DRUG USE:</b> 1 No 2 Yes 88 Unknown		<b>DRUG TESTED:</b> 1 Test Not Given 2 Test Refused 3 Test Given 88 Unknown, if Tested		<b>DRUG TEST TYPE:</b> 1 Blood 3 Urine 77 Other, Explain in Narrative			
<b>DRUG TEST RESULT:</b> 1 Positive 2 Negative 3 Pending 88 Unknown		<b>SOURCE OF TRANSPORT TO MEDICAL FACILITY</b> 1 Not Transported 2 EMS 3 Law Enforcement 77 Other, Explain in Narrative							
<b>1</b>		<b>EMS AGENCY NAME OR ID</b>		<b>EMS RUN NUMBER</b>		<b>MEDICAL FACILITY TRANSPORTED TO</b>			
<b>ADDITIONAL PASSENGERS</b>									
<b>PERSON #</b>	<b>VEHICLE #</b>	<b>NAME</b>	<b>DATE OF BIRTH</b>	<b>INJ</b>	<b>SEX</b>	<b>LOC: S R O</b>	<b>EJECT HU EP ABD RS</b>		
<b>CURRENT ADDRESS (Number and Street)</b>			<b>CITY &amp; STATE</b>			<b>ZIP CODE</b>			
<b>SOURCE OF TRANSPORT TO MEDICAL FACILITY</b> 1 Not Transported 2 EMS 3 Law Enforcement 77 Other, Explain in Narrative		<b>EMS AGENCY NAME OR ID</b>		<b>EMS RUN NUMBER</b>		<b>MEDICAL FACILITY TRANSPORTED TO</b>			
<b>1</b>		<b>1</b>		<b>1</b>		<b>1</b>			
<b>PERSON #</b>	<b>VEHICLE #</b>	<b>NAME</b>	<b>DATE OF BIRTH</b>	<b>INJ</b>	<b>SEX</b>	<b>LOC: S R O</b>	<b>EJECT HU EP ABD RS</b>		
<b>CURRENT ADDRESS (Number and Street)</b>			<b>CITY &amp; STATE</b>			<b>ZIP CODE</b>			
<b>SOURCE OF TRANSPORT TO MEDICAL FACILITY</b> 1 Not Transported 2 EMS 3 Law Enforcement 77 Other, Explain in Narrative		<b>EMS AGENCY NAME OR ID</b>		<b>EMS RUN NUMBER</b>		<b>MEDICAL FACILITY TRANSPORTED TO</b>			
<b>1</b>		<b>1</b>		<b>1</b>		<b>1</b>			

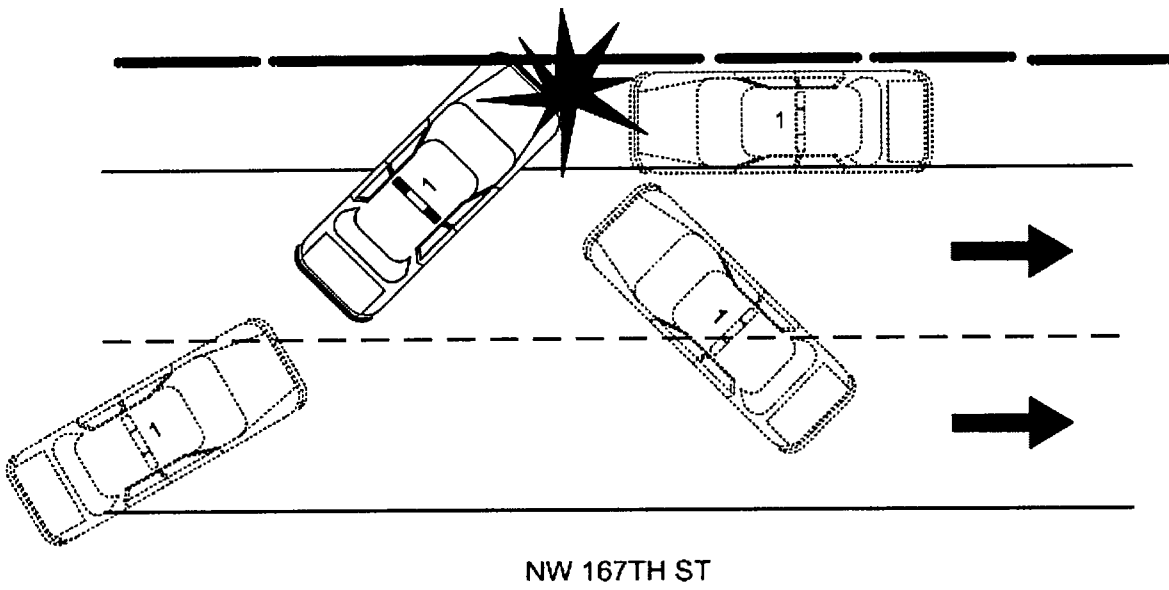
NARRATIVE				REPORTING AGENCY CASE NUMBER <b>2011-016264</b>	HSMV CRASH REPORT NUMBER <b>81026488</b>								
<p>V1 was traveling eastbound on NW 167TH Street within the inside lane. V1 driver advised that as a result of standing water on the road and inclement weather conditions (heavy rain), V1 skidded and V1 right front collided into a fence located on the left shoulder of the road.</p> <p>V1 driver did not sustained any injuries. Only minor damage was caused to the shoulder fence. V1 was functional and was removed by its driver.</p> <p>Nothing further to report.</p>													
** END **													
<b>ADDITIONAL PASSENGERS</b>													
PERSON #	VEHICLE #	NAME	DATE OF BIRTH	INJ	SEX	LOC: S	R	O	EJECT	HU	EP	ABD	RS
CURRENT ADDRESS (Number and Street)			CITY & STATE			ZIP CODE							
SOURCE OF TRANSPORT TO MEDICAL FACILITY		EMS AGENCY NAME OR ID	EMS RUN NUMBER	MEDICAL FACILITY TRANSPORTED TO									
<small>1 Not Transported 2 EMS 3 Law Enforcement 77 Other, Explain in Narrative 88 Unknown</small> <input type="checkbox"/>													
PERSON #	VEHICLE #	NAME	DATE OF BIRTH	INJ	SEX	LOC: S	R	O	EJECT	HU	EP	ABD	RS
CURRENT ADDRESS (Number and Street)			CITY & STATE			ZIP CODE							
SOURCE OF TRANSPORT TO MEDICAL FACILITY		EMS AGENCY NAME OR ID	EMS RUN NUMBER	MEDICAL FACILITY TRANSPORTED TO									
<small>1 Not Transported 2 EMS 3 Law Enforcement 77 Other, Explain in Narrative 88 Unknown</small> <input type="checkbox"/>													
<b>ADDITIONAL VIOLATIONS</b>													
PERSON #	NAME OF VIOLATOR		FL STATUTE NUMBER	CHARGE		CITATION NUMBER							
PERSON #	NAME OF VIOLATOR		FL STATUTE NUMBER	CHARGE		CITATION NUMBER							
<b>REPORTING OFFICER</b>													
ID/BADGE NUMBER	RANK & NAME			DEPARTMENT			FHP	SO	PD	OTHER			
<b>290</b>	<b>PO AMILCAR TORRES</b>			<b>MIAMI GARDENS POLICE DEPARTMENT</b>			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			



**DIAGRAM**

REPORTING AGENCY CASE NUMBER  
**2011-016264**

HSMV CRASH REPORT NUMBER  
**81026488**



Drawing Not To Scale.

**FLORIDA TRAFFIC CRASH REPORT**

**HIGHWAY SAFETY & MOTOR VEHICLES,  
TRAFFIC CRASH RECORDS**

LONG FORM  SHORT FORM  UPDATE

**NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537**

(Electronic Version)

Date of Crash <b>04/Jul/2011 08:45 AM</b>	Time of Crash <b>04/Jul/2011 08:45 AM</b>	Date of Report <b>04/Jul/2011 09:22 AM</b>	Invest. Agency Report Number <b>FHPE11OFF035965</b>	HSMV Crash Report Number <b>82011719</b>
----------------------------------------------	----------------------------------------------	-----------------------------------------------	--------------------------------------------------------	---------------------------------------------

**CRASH IDENTIFIERS**

County Code <b>01</b>	City Code <b>57</b>	County of Crash <b>MIAMI-DADE</b>	Place or City of Crash <b>MIAMI GARDENS</b>	Within City Limits <b>No</b>	Time Reported <b>04/Jul/2011 08:53 AM</b>	Time Dispatched <b>04/Jul/2011 08:55 AM</b>
Time on Scene <b>04/Jul/2011 09:14 AM</b>	Time Cleared Scene <b>04/Jul/2011 10:30 AM</b>	Completed <b>Yes</b>	Reason (if Investigation NOT Completed)			Notified By <b>Law Enforcement</b>

**ROADWAY INFORMATION**

Crash Occured On Street, Road, Highway <b>WB STATE ROAD 826 / EOF NW 27 AVENUE</b>			At Street Address# <b>1</b>	At Latitude and Longitude <b>25.926715000000002 -80.235155000000006</b>
At Feet <b>1000</b>	Or Miles	Direction <b>East</b>	From Intersection With Street, Road, Highway <b>EAST OF NW 27 AVENUE</b>	Or From Milepost #
Road System Identifier <b>3 State</b>		Type Of Shoulder <b>1 Paved</b>	Type Of Intersection <b>1 Not at Intersection</b>	

**CRASH INFORMATION (Check if Pictures Taken)**

Light Condition <b>1 Daylight</b>	Weather Condition <b>3 Rain</b>	Roadway Surface Condition <b>2 Wet</b>	School Bus Related <b>1 No</b>	Manner Of Collision <b>77 Other, Explain in Narrative</b>
First Harmful Event Type	First Harmful Event <b>30</b>	First Harmful Event Location <b>1 On Roadway</b>	Within Interchange <b>No</b>	First Harmful Event Relation to Junction <b>1 Non-Junction</b>
Contributing Circumstances: Road <b>10 Road Surface Condition (wet, icy, snow, slush, etc.)</b>		Contributing Circumstances: Road		Contributing Circumstances: Road
Contributing Circumstances: Environment <b>2 Weather Conditions</b>		Contributing Circumstances: Environment		Contributing Circumstances: Environment
Work Zone Related <b>1 No</b>	Crash In Work Zone	Type Of Work Zone	Workers In Work Zone	Law Enforcement In Work Zone

**VEHICLE (Check if Commercial)**

Vehicle <b>1</b>	Motor Vehicle Type <b>1 Vehicle in Transport</b>	Hit and Run <b>1 No</b>	Veh License Number <b>854IXZ</b>	State <b>FL</b>	Reg. Expires <b>25/Jun/2011</b>	Permanent Reg. <b>No</b>	VIN <b>JN8AZ08T17W520860</b>		
Year <b>2007</b>	Make <b>NISS</b>	Model <b>MURANO</b>	Style <b>UT</b>	Color <b>BLK</b>	Extent of Damage <b>Disabling</b>	Est. Damage <b>8000</b>	Towed Due To Damage <b>Yes</b>	Vehicle Removed By <b>SEAY TOWING</b>	Rotation <b>Rotation</b>
Insurance Company <b>STATE FARM INS CO</b>				Insurance Policy Number <b>2025172594</b>					
Name of Vehicle Owner (Check Box If Business) <b>CHRISTINE VERONICA AMADEO</b> <input type="checkbox"/>			Current Address (Number and Street) <b>5261 SW 155TH AVE</b>			City and State <b>MIRAMAR FL</b>		Zip Code <b>33027</b>	
Trailer One:	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Trailer Two:	License Number	State	Reg. Expires	Permanent Reg.	VIN	Year	Make	Length	Axles
Vehicle Traveling: <b>West</b>	On Street, Road, Highway <b>WB STATE ROAD 826 / EOF NW 27 AVENUE</b>					At Est. Speed <b>55</b>	Posted Speed <b>55</b>	Total Lanes <b>4</b>	
CMV Configuration			Cargo Body Type			Area of Initial Impact		Most Damaged Area	
Comm GVWR/GCWR			Trailer Type (trailer one)		Trailer Type (trailer two)				
Haz. Mat. Release	Haz Mat. Placard	Number	Class						
Motor Carrier Name				US DOT Number					
Motor Carrier Address				City and State		Zip Code		Phone Number	
Comm/Non-Commercial	Vehicle Body Type <b>16 (Sport) Utility Vehicle</b>	Vehicle Defects (one) <b>1 None</b>		Vehicle Defects (two)		Emergency Vehicle Use <b>1 No</b>	Special Function of MV <b>1 No Special Function</b>		
Vehicle Maneuver Action <b>1 Straight Ahead</b>	Trafficway <b>4 Two-Way, Divided, Positive Median Barrier</b>	Roadway Grade <b>1 Level</b>		Roadway Alignment <b>1 Straight</b>		Most Harmful Event <b>3 Collision with Fixed Object</b>		Most Harmful Event Detail <b>30 Concrete Traffic Barrier</b>	
Traffic Control Device For This Vehicle <b>1 No Controls</b>	First (1) Sequence of Events <b>3 Collision with Fixed Object 30 Concrete Traffic Barrier</b>		Second (2) Sequence of Events		Third (3) Sequence of Events		Fourth (4) Sequence of Events		

**PERSON RECORD**

Person# <b>1</b>	Description <b>1 Driver</b>	Vehicle # <b>1</b>	Name <b>CHRISTINE VERONICA AMADEO</b>	Date of Birth <b>25/Jun/1979</b>	Sex <b>2 Female</b>	Phone Number	Re-Exam <b>No</b>
Address <b>5261 SW 155TH AVE</b>		City <b>MIRAMAR</b>	State <b>FL</b>	Zip Code <b>33027</b>			
Driver License Number <b>A530118797250</b>	State <b>FL</b>	Expires <b>25/Jun/2018</b>	DL Type <b>5 E/Operator</b>	Req. End.	Injury Severity <b>2 Possible</b>	Ejection <b>1 Not Ejected</b>	

Date of Crash: 04/Jul/2011 08:45 AM Date of Report: 04/Jul/2011 08:45 AM FIVE-DIGIT AGENCY REPORT NUMBER: FHPE11OFF035965 HSRM Crash Report Number: 82011719

Restraint System <b>3 Shoulder and Lap Belt Used</b>	Air Bag Deployed <b>2 Not Deployed</b>	Helmet Use	Eye Protection <b>3 Not Applicable</b>	Seating Location Seat <b>1 Left</b>	Seating Location Row <b>1 Front</b>	Seating Location Other <b>1 Not Applicable</b>		
Drivers Actions at Time of Crash (first) <b>30 Swerved or Avoided : Due to Wind, Slippery Surface, MV, Object, Non.Motorist in Roadway, etc.</b>			Drivers Actions at Time of Crash (second)		Driver Distracted By <b>1 Not Distracted</b>	Vision Obstruction <b>1 Vision Not Obscured</b>		
Drivers Actions at Time of Crash (third)			Drivers Actions at Time of Crash (fourth)		Drivers Condition at Time of Crash <b>1 Apparently Normal</b>			
Suspected Alcohol Use <b>1 No</b>	Alcohol Tested <b>1 Test Not Given</b>	Alcohol Test Type	Alcohol Test Result	BAC	Suspected Drug Use <b>1 No</b>	Drug Tested <b>1 Test Not Given</b>	Drug Test Type	Drug Test Result
Source of Transport to Medical Facility <b>1 Not Transported</b>	EMS Agency Name or ID <b>RESCUE 54</b>			EMS Run Number <b>133131</b>		Medical Facility Transported To		

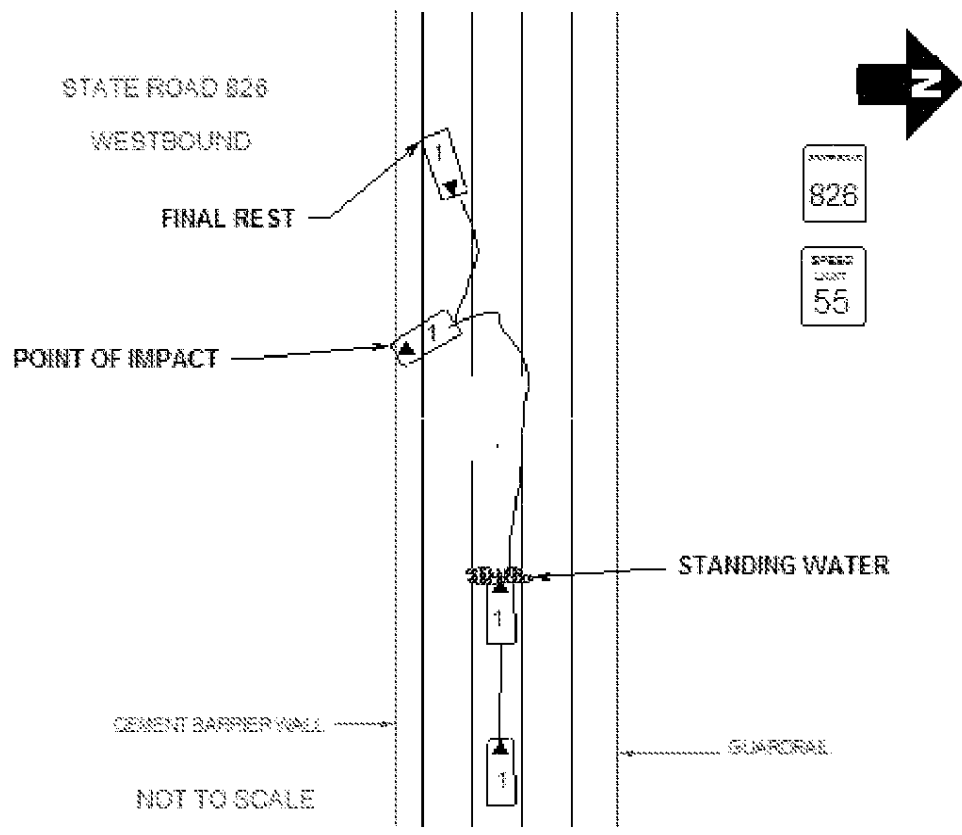
**NARRATIVE**

Officer: Y. VELOZ  
 Date: Jul 4 2011 9:57AM

V01 was traveling westbound on State Road 826 east of NW 27 avenue (unknown lane of travel). V01 drove over standing water causing V01 to lose control. V01 lost control colliding its front with the concrete median wall. V01 came to a final rest in the inside lane facing eastbound. V01 was moved out of the road upon my arrival. V01 caused no damage to the concrete median wall. This report is complete.

**REPORTING OFFICER**

ID/Badge # 2555	Rank and Name <b>TROOPER Y. VELOZ</b>	Department <b>FLORIDA HIGHWAY PATROL</b>	Type of Department <b>FHP</b>
--------------------	------------------------------------------	---------------------------------------------	----------------------------------



**FLORIDA TRAFFIC CRASH REPORT  
LONG FORM**

MAIL TO: DEPT. OF HIGHWAY SAFETY & MOTOR VEHICLES, TRAFFIC CRASH RECORDS, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

DO NOT WRITE IN THIS SPACE

<b>Time &amp; Location</b>	DATE OF CRASH <b>7/4/2007</b>	TIME OF CRASH <b>07:28</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	TIME OFFICER NOTIFIED <b>7:48</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	TIME OFFICER ARRIVED <b>7:55</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	INVEST AGENCY REPORT NUMBER <b>FHPE07OFF036235</b>	HSMV CRASH REPORT NUMBER <b>76949755</b>	
	COUNTY / CITY CODE <b>01 / 00</b>	FEET or MILE(S) <b>80</b>	N S E W <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	CITY OR TOWN <b>MIAMI GARDENS</b>	(Check if in City or Town) <input checked="" type="checkbox"/>	COUNTY <b>Miami-Dade</b>	
	AT NODE NO or FEET or MILE(S)	FROM NODE NO	NEXT NODE NO	NO OF LANES <b>8</b>	<input type="checkbox"/> 1 DIVIDED <input checked="" type="checkbox"/> 2 UNDIVIDED	ON STREET, ROAD OR HIGHWAY <b>WB SR-826</b>	
	AT THE INTERSECTION OF (street, road or highway) or FEET <b>80</b>		MILE(S) <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>		FROM INTERSECTION OF (street, road or highway) <b>N.W. 22ND AVE</b>		

<b>Section 1</b>	DRIVER ACTION <b>1 Phantom 2 Hit &amp; Run 3 N/A</b>	YEAR <b>03</b>	MAKE <b>HOND</b>	TYPE <b>11</b>	USE <b>01</b>	VEH. LICENSE NUMBER <b>04078N</b>	STATE <b>FL</b>	VEHICLE IDENTIFICATION NUMBER <b>JH2PC40007M001477</b>			18 Undercarriage 19 Overturn 20 Windshield 21 Trailer	
	TRAILER OR TOWED VEHICLE INFORMATION		TRAILER TYPE		EST. MPH <b>65</b>		Posted Speed <b>55</b>	EST VEHICLE DAMAGE <b>\$4,500</b>	1 Disabling 2 Functional 3 No Damage	<b>01</b>	SHOW FIRST POINT OF VEHICLE DAMAGE AND/CIRCLE DAMAGED AREA(S) <b>04</b>	
	MOTOR VEHICLE INSURANCE COMPANY (LIABILITY OR PIP) <b>INS EXEMPTED</b>		POLICY NUMBER <b>INS EXEMPTED</b>		VEHICLE REMOVED BY <b>JASON HERNANDEZ</b>		1 Tow Rotation List 2 Tow Owner's Request		3 Driver 4 Other		<b>04</b>	
	NAME OF VEHICLE OWNER (Check Box if Same As Driver) <input checked="" type="checkbox"/> SAME AS DRIVER		CURRENT ADDRESS (Number and Street)		CITY AND STATE		ZIP CODE					

<b>Section 2</b>	DRIVER ACTION <b>1 Phantom 2 Hit &amp; Run 3 N/A</b>	YEAR	MAKE	TYPE	USE	VEH. LICENSE NUMBER	STATE	VEHICLE IDENTIFICATION NUMBER			18 Undercarriage 19 Overturn 20 Windshield 21 Trailer	
	TRAILER OR TOWED VEHICLE INFORMATION		TRAILER TYPE		EST. MPH		Posted Speed	EST VEHICLE DAMAGE	1 Disabling 2 Functional 3 No Damage		SHOW FIRST POINT OF VEHICLE DAMAGE AND/CIRCLE DAMAGED AREA(S)	
	MOTOR VEHICLE INSURANCE COMPANY (LIABILITY OR PIP)		POLICY NUMBER		VEHICLE REMOVED BY		1 Tow Rotation List 2 Tow Owner's Request		3 Driver 4 Other			
	NAME OF VEHICLE OWNER (Check Box if Same As Driver)		CURRENT ADDRESS (Number and Street)		CITY AND STATE		ZIP CODE					

<b>Section 3</b>	HAZARDOUS MATERIALS BEING TRANSPORTED 1 Yes 2 No <b>2</b>	PLACARDED 1 Yes 2 No <b>2</b>	IF YES, INDICATE NAME OF 4 DIGIT NUMBER FROM DIAMOND OR BOX ON PLACARD, AND 1 DIGIT NUMBER FROM BOTTOM OF DIAMOND	WAS HAZARDOUS MATERIAL SPILLED? 1 Yes 2 No <b>2</b>	RECOMMEND DRIVER RE-EXAM IF YES EXPLAIN IN NARRATIVE 1 Yes 2 No <b>2</b>	DRIVER'S PHONE NO <b>305-609-7869</b>								
	NAME OF DRIVER (take From Driver License) / PEDESTRIAN <b>LEONARDO E DURANT</b>		CURRENT ADDRESS (Number and Street) <b>457 NE 24TH ST APT 8</b>		CITY & STATE / ZIP CODE <b>MIAMI FL 33137</b>		DATE OF BIRTH <b>07/20/79</b>							
	DRIVER LICENSE NUMBER <b>D653525792600</b>	STATE <b>FL</b>	DL TYPE <b>5</b>	REQ END <b>1</b>	ALCO/DRUG TEST TYPE 1 Blood 3 Urine 5 None 2 Breath 4 Refused	RESULTS <b>000</b>	ALCO/DRUG <b>1</b>	PHYS DEF <b>1</b>	RES <b>1</b>	RACE <b>3</b>	SEX <b>1</b>	INJ <b>3</b>	S EQUIP <b>6</b>	EJECT <b>7</b>
	NAME OF MOTOR CARRIER (Commercial vehicle Only)		CURRENT ADDRESS (Number and Street)		CITY STATE AND ZIP CODE		US DOT or ICC MC IDENTIFICATION NUMBERS							

S e c t i o n	DRIVER ACTION	1 Phantom 2 Hit & Run 3 N/A	YEAR	MAKE	TYPE	USE	VEH LICENSE NUMBER	STATE	VEHICLE IDENTIFICATION NUMBER			18 Undercarriage 19 Offroad 20 Windshield 22 Trailer	
	TRAILER OR TOWED VEHICLE INFORMATION	TRAILER TYPE		EST. MPH		Posted Speed	EST VEHICLE DAMAGE	1 Disabling 2 Functional 3 No Damage	EST TRAILER DAMAGE	SHOW FIRST POINT OF VEHICLE DAMAGE AND CIRCLE DAMAGED AREA(S)			
V e h i c l e	VEHICLE TRAVELING		ON		AT		Est. MPH	Posted Speed	EST VEHICLE DAMAGE	1 Disabling 2 Functional 3 No Damage	EST TRAILER DAMAGE	SHOW FIRST POINT OF VEHICLE DAMAGE AND CIRCLE DAMAGED AREA(S)	
	MOTOR VEHICLE INSURANCE COMPANY (LIABILITY OR PIP)		POLICY NUMBER		VEHICLE REMOVED BY		1 Tow Rotation List 2 Tow Owner's Request	3 Driver 4 Other					
P e d e s t r i a n	NAME OF VEHICLE OWNER (Check Box If Same As Driver)		CURRENT ADDRESS (Number and Street)		CITY AND STATE		ZIP CODE						
	NAME OF OWNER (Trailer or Towed Vehicle)		CURRENT ADDRESS (Number and Street)		CITY AND STATE		ZIP CODE						
NAME OF MOTOR CARRIER (Commercial vehicle Only)		CURRENT ADDRESS (Number and Street)		CITY, STATE AND ZIP CODE		US DOT or ICC MC IDENTIFICATION NUMBERS							
NAME OF DRIVER (take From Driver License) / PEDESTRIAN		CURRENT ADDRESS (Number and Street)		CITY & STATE / ZIP CODE		DATE OF BIRTH							
DRIVER LICENSE NUMBER		STATE	DL TYPE	REG. END	ALCOHOL/DRUG TEST TYPE	RESULTS	ALCOHOL/DRUG PHYS. DEF.	RES.	RACE	SEX	INJ.	S EQUIP.	EJECT
HAZARDOUS MATERIALS BEING TRANSPORTED		PLACARDED	IF YES, INDICATE NAME OF 4 DIGIT NUMBER FROM DIAMOND OR BOX ON PLACARD, AND 1 DIGIT NUMBER FROM BOTTOM OF DIAMOND		WAS HAZARDOUS MATERIAL SPILLED?	RECOMMEND DRIVER RE-EXAM IF YES EXPLAIN IN NARRATIVE	DRIVER'S PHONE NO						

# 1	PROPERTY DAMAGED - OTHER THAN VEHICLES	EST. AMOUNT	OWNER'S NAME	ADDRESS	CITY	STATE	ZIP
# 2	PROPERTY DAMAGED - OTHER THAN VEHICLES	EST. AMOUNT	OWNER'S NAME	ADDRESS	CITY	STATE	ZIP

CONTINUING CAUSES - DRIVER / PEDESTRIAN			VEHICLE DEFECTS			VEHICLE MOVEMENT			VEHICLE SPECIAL FUNCTIONS																															
01 No Improper Driving / Action	02 Careless Driving (Explain in Narrative)	03 Failed to Yield Right-of-Way	04 Improper Backing	05 Improper Lane Change	06 Improper Turn	07 Alcohol-Under Influence	08 Drugs-Under Influence	09 Alcohol & Drugs-Under Influence	10 Followed Too Closely	11 Disregarded Traffic Signal	12 Exceeded Safe Speed Limit	13 Disregarded Stop Sign	14 Failed to Maintain Equip / Vehicle	15 Improper Passing	16 Drove Left of Center	17 Exceeded Stated Speed Limit	18 Obstructing Traffic	19 Improper Load	20 Disregarded Other Traffic Control	21 Driving Wrong Side / Way	22 Fleeing Police	23 Vehicle Modified	24 Driver Distraction (Explain in Narrative)	27 All Other (Explain in Narrative)																
01 No Defects	02 Def. Brakes	03 Worn / Smooth Tires	04 Defective / Improper Lights	05 Puncture / Blowout	06 Steering Mech.	07 Windshield Wipers	08 Equipment / Vehicle Defect	77 All Other (Explain in Narrative)	01 On Road	02 Not On Road	03 Shoulder	04 Median	05 Turn Lane	01 None	02 Nearby	03 Entered	01 Straight Ahead	02 Slowing / Stopped / Stalled	03 Making Left Turn	04 Backing	05 Making Right Turn	06 Changing Lanes	07 Entering / Leaving Parking Space	08 Properly Parked	09 Improperly Parked	10 Making U-Turn	11 Passing	12 Driverless or Runaway Vehicle	77 All Other (Explain in Narrative)	1 None	2 Farm	3 Police Pursuit	4 Recreational	5 Emergency Operation	6 Construction / Maintenance	1 Not Applicable	2 Shopping Papers	3 Vehicle Side	4 Driver	5 Other
POINT OF COLLISION			WORK AREA			PEDESTRIAN ACTION			LOCATION TYPE																															
01 On Road			01 None			01 Crossing Not at Intersection			01 Primarily Business																															

FIRST / SUBSEQUENT HARMFUL EVENT(S)			ROAD SYSTEM IDENTIFIER			LIGHTING CONDITION																																																																				
01 Collision With MV in Transport (Rear End)	15 Collision with Animal	29 MV Ran Into Ditch / Culvert	01 Interstate	07 Forest Road	01 Daylight	02 Collision With MV in Transport (Head-on)	16 MV Hit Sign / Sign Post	30 Ran Off Road / Into Water	02 U.S.	08 Private Roadway	02 Dust	03 Collision With MV in Transport (Angle)	17 MV Hit Utility Pole / Light Pole	31 Overtaken	03 State	77 All Other (Explain in Narrative)	03 Dawn	04 Collision With MV in Transport (Left Turn)	18 MV Hit Guardrail	32 Occupant Fell From Vehicle	04 County	04 Dark (Street Light)	05 Collision With MV in Transport (Right Turn)	19 MV Hit Fence	33 Tractor / Trailer Jackknifed	05 Local	05 Dark (No Street Light)	06 Collision With MV in Transport (Sideswipe)	20 MV Hit Concrete Barrier Wall	34 Fire	06 Turnpike / Toll	06 Unknown	07 Collision With MV in Transport (Backed Into)	21 MV Hit Bldge / Pier / Abutment / Rail	35 Explosion	07 Working in Road	08 Standing/Playing in Road	08 Unknown	08 Collision With Parked Car	22 MV Hit Tree / Shrubbery	36 Downhill Runaway	08 Working in Road	09 Standing in Pedestrian Island	77 All Other (Explain in Narrative)	09 Collision With MV on Other Roadway	23 Collision with Construction Barricade Sign	37 Cargo Loss or Shift	09 Standing in Pedestrian Island	77 All Other (Explain in Narrative)	10 Collision with Pedestrian	24 Collision with Traffic Gate	38 Separation of Units	09 Standing in Pedestrian Island	77 All Other (Explain in Narrative)	11 Collision with Bicycle	25 Collision with Crash Attenuators	39 Median Crossover	09 Standing in Pedestrian Island	77 All Other (Explain in Narrative)	12 Collision with Bicycle (Bike Lane)	26 Collision with Fixed Object Above Road	77 All Other (Explain in Narrative)	09 Standing in Pedestrian Island	77 All Other (Explain in Narrative)	13 Collision with Moped	27 MV Hit Other Fixed Object	77 All Other (Explain in Narrative)	09 Standing in Pedestrian Island	77 All Other (Explain in Narrative)	14 Collision with Train	28 Collision with Moveable Object on Road	77 All Other (Explain in Narrative)	09 Standing in Pedestrian Island	77 All Other (Explain in Narrative)
ROAD SURFACE / CONDITION			WEATHER			ROAD SURFACE TYPE																																																																				
01 Dry			01 Clear			01 Slag / Gravel / Stone																																																																				

ROAD CONDITIONS AT TIME OF CRASH		VISION OBSTRUCTED		TRAFFIC CONTROL		SITE LOCATION		TRAFFICWAY CHARACTER																																						
01 No Defects	02 Obstruction With Warning	03 Obstruction Without Warning	04 Road Under Repair / Construction	05 Loose Surface Materials	06 Shoulders - Soft / Low / High	07 Holes / Ruts / Unsafe Paved Edge	08 Standing Water	09 Worm / Polished Road Surface	77 All Other (Explain in Narrative)	01 Vision Not Obscured	02 Inclement Weather	03 Parked / Stopped Vehicle	04 Trees / Crops / Bushes	05 Load on Vehicle	06 Building / Fixed Object	07 Signs / Billboards	08 Fog	09 Smoke	77 All Other (Explain in Narrative)	10 Glare	01 No Control	02 Special Speed Zone	03 Speed Control Sign	04 School Zone	05 Traffic Signal	06 Stop Sign	07 Yield Sign	08 Flashing Light	09 Railroad Signal	10 Officer / Guard / Flagman	01 Not At Intersection / RR X'ing / Bridge	02 At Intersection	03 Influenced By Intersection	04 Driveway Access	05 Railroad	11 Private Property	06 Bridge	12 Toll Booth	07 Entrance Ramp	13 Public Bus Stop Zone	08 Exit Ramp	77 All Other (Explain in Narrative)	1 Straight-Level	2 Straight-Upgrade / Downgrade	3 Curve-Level	4 Curve-Upgrade / Downgrade
TYPE SHOULDER		TYPE SHOULDER		TYPE SHOULDER		TYPE SHOULDER		TYPE SHOULDER																																						
1 Paved		1 Paved		1 Paved		1 Paved		1 Paved																																						

V i o l a t o r ( s )	SECTION #	NAME OF VIOLATOR (s)	FL STATUTE NUMBER	CHARGE	CITATION NUMBER
	1	LEONARDO DURANT	NONE		
	SECTION #	NAME OF VIOLATOR (s)	FL STATUTE NUMBER	CHARGE	CITATION NUMBER
	SECTION #	NAME OF VIOLATOR (s)	FL STATUTE NUMBER	CHARGE	CITATION NUMBER

**FLORIDA TRAFFIC CRASH REPORT**

NARRATIVE / DIAGRAM

DO NOT WRITE IN THIS SPACE

MAIL TO DEPT OF HIGHWAY SAFETY & MOTOR VEHICLES TRAFFIC CRASH RECORDS SECTION, NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0500

TIME EMS NOTIFIED (FATALITIES ONLY) <input type="checkbox"/> AM <input type="checkbox"/> PM	TIME EMS ARRIVED (FATALITIES ONLY) <input type="checkbox"/> AM <input type="checkbox"/> PM	DATE OF CRASH 7/4/2007	COUNTY / CITY CODE 01 / 00	INVEST. AGENCY REPORT NUMBER FHPE07OFF036235	HSMV CRASH REPORT NUMBER 76949755
------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------	---------------------------	-------------------------------	-------------------------------------------------	--------------------------------------

(NARRATIVE)

DRIVER OF VEHICLE-1 (MOTORCYCLIST) STATED THAT HE WAS TRAVELING WESTBOUND STATE ROAD-826 80 FT E. OF N.W. 22ND AVE IN THE OUTSIDE RIGHT LANE. VEHICLE-1 LOST CONTROL OF HIS MOTORCYCLE, DUE TO SLICK ROADWAY CONDITION FROM THE RAIN. THE MOTORCYCLIST WAS EJECTED OFF THE MOTORCYCLE SLIDING ON THE ROADWAY PAVEMENT OF WESTBOUND STATE ROAD-826. METRO DADE FIRE ENGINE# 54 RESPONDED TO THE SCENE AND TREATED THE MOTORCYCLIST FOR INJURIES SUSTAINED. THE MOTORCYCLIST REFUSED METRO DADE RESCUE TO TRANSPORT HIM TO A LOCAL HOSPITAL. THE MOTORCYCLIST WIFE WAS ON THE SCENE ALSO AND TAKEN HIM TO MEMORIAL WEST HOSPITAL BY HER PERSONAL VEHICLE. THE MOTORCYCLE WAS MOVED OFF THE ROADWAY PURSUANT TO FLA LAW ONTO THE RIGHT SHOULDER EMERGENCY LANE PRIOR TO MY ARRIVAL.

SEC#	PASS#	PASSENGER'S NAME	CURRENT ADDRESS	CITY & STATE	ZIP CODE	DATE OF BIRTH	RACE	SEX	LOC	INJ	S	EQUIP	EJECT
SEC#	PASS#	PASSENGER'S NAME	CURRENT ADDRESS	CITY & STATE	ZIP CODE	DATE OF BIRTH	RACE	SEX	LOC	INJ	S	EQUIP	EJECT
SEC#	PASS#	PASSENGER'S NAME	CURRENT ADDRESS	CITY & STATE	ZIP CODE	DATE OF BIRTH	RACE	SEX	LOC	INJ	S	EQUIP	EJECT
SEC#	PASS#	PASSENGER'S NAME	CURRENT ADDRESS	CITY & STATE	ZIP CODE	DATE OF BIRTH	RACE	SEX	LOC	INJ	S	EQUIP	EJECT
SEC#	PASS#	PASSENGER'S NAME	CURRENT ADDRESS	CITY & STATE	ZIP CODE	DATE OF BIRTH	RACE	SEX	LOC	INJ	S	EQUIP	EJECT
SEC#	PASS#	PASSENGER'S NAME	CURRENT ADDRESS	CITY & STATE	ZIP CODE	DATE OF BIRTH	RACE	SEX	LOC	INJ	S	EQUIP	EJECT
SEC#	PASS#	PASSENGER'S NAME	CURRENT ADDRESS	CITY & STATE	ZIP CODE	DATE OF BIRTH	RACE	SEX	LOC	INJ	S	EQUIP	EJECT

Violator(s)	SECTION #	NAME OF VIOLATOR	FL STATUTE NUMBER	CHARGE	CITATION NUMBER
	SECTION #	NAME OF VIOLATOR	FL STATUTE NUMBER	CHARGE	CITATION NUMBER

WITNESS NAME (1)	CURRENT ADDRESS	CITY & STATE	ZIP CODE	WITNESS NAME (2)	CURRENT ADDRESS	CITY & STATE	ZIP CODE
------------------	-----------------	--------------	----------	------------------	-----------------	--------------	----------

FIRST AID GIVEN BY - NAME <b>MET. DADE ENGINE# 54</b>	1 Physician or Nurse 2 Paramedic or EMT 3 Police Officer 4 Certified 1st Aider 5 Other	INJURED TAKEN TO <b>02 MEMORIAL WEST HOSPITAL</b>	BY - NAME <b>MOTORCYCLIST (WIFE)</b>
WAS INVESTIGATION MADE AT SCENE? 1 YES <input checked="" type="checkbox"/> 2 NO <input type="checkbox"/>	IF NO, THEN WHERE?	IS INVESTIGATION COMPLETE? 1 YES <input checked="" type="checkbox"/> 2 NO <input type="checkbox"/>	IF NO THEN WHY?
INVESTIGATOR - RANK & SIGNATURE <b>TPR MOSEL CARTER</b>	ID / BADGE NUMBER <b>1285/0772</b>	DEPARTMENT <b>FLORIDA HIGHWAY PATROL</b>	DATE OF REPORT <b>7/4/2007</b>
PHOTOS TAKEN? 1 YES <input checked="" type="checkbox"/> 2 NO <input type="checkbox"/>		IF YES, BY WHOM? 1 INVEST AGENCY <input type="checkbox"/> 2 OTHER <input type="checkbox"/>	
FHP <input checked="" type="checkbox"/> SO <input type="checkbox"/> CPD <input type="checkbox"/> OTHER <input type="checkbox"/>			

DIAGRAM



INDICATE NORTH  
WITH ARROW

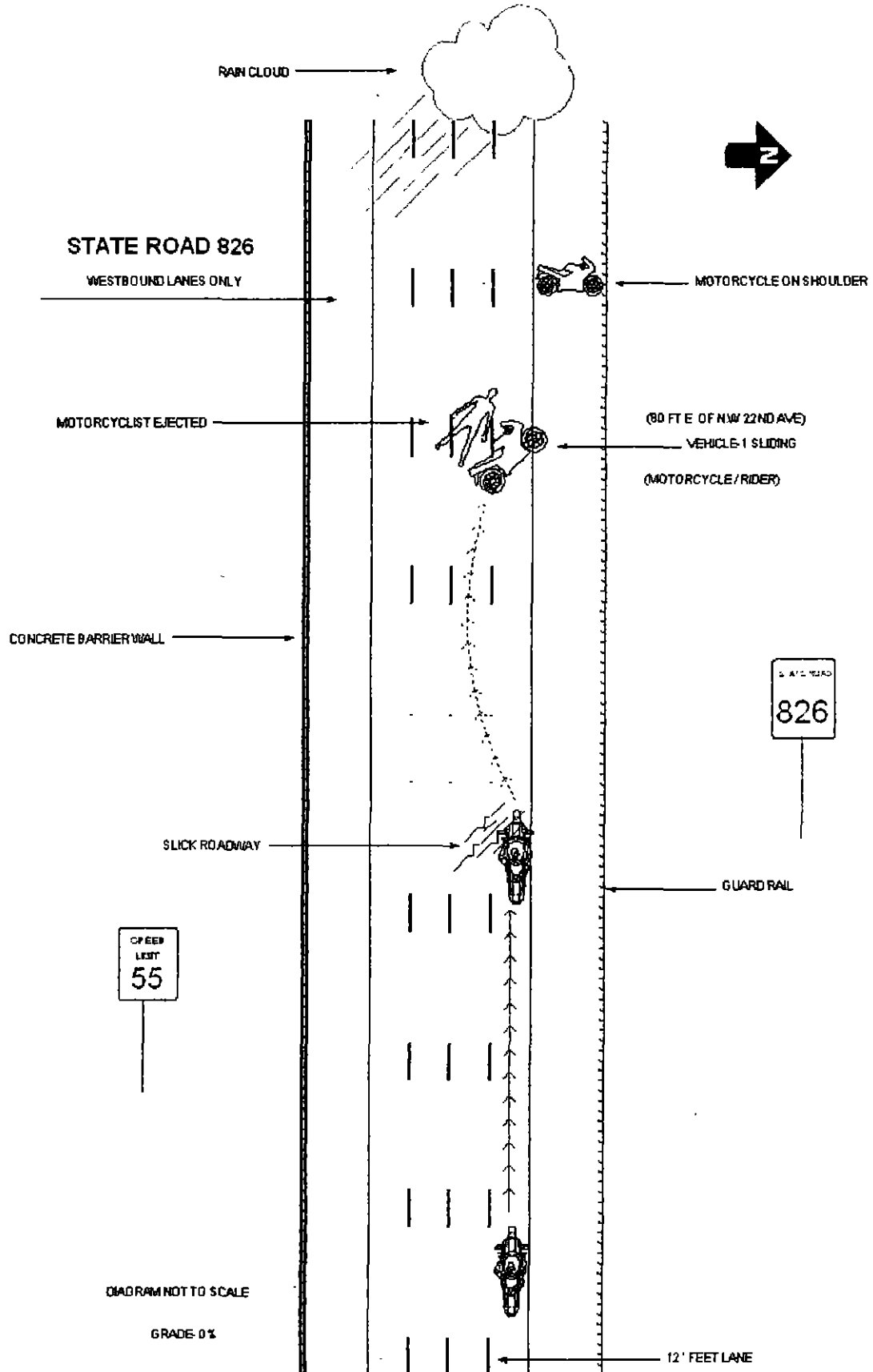


DIAGRAM NOT TO SCALE

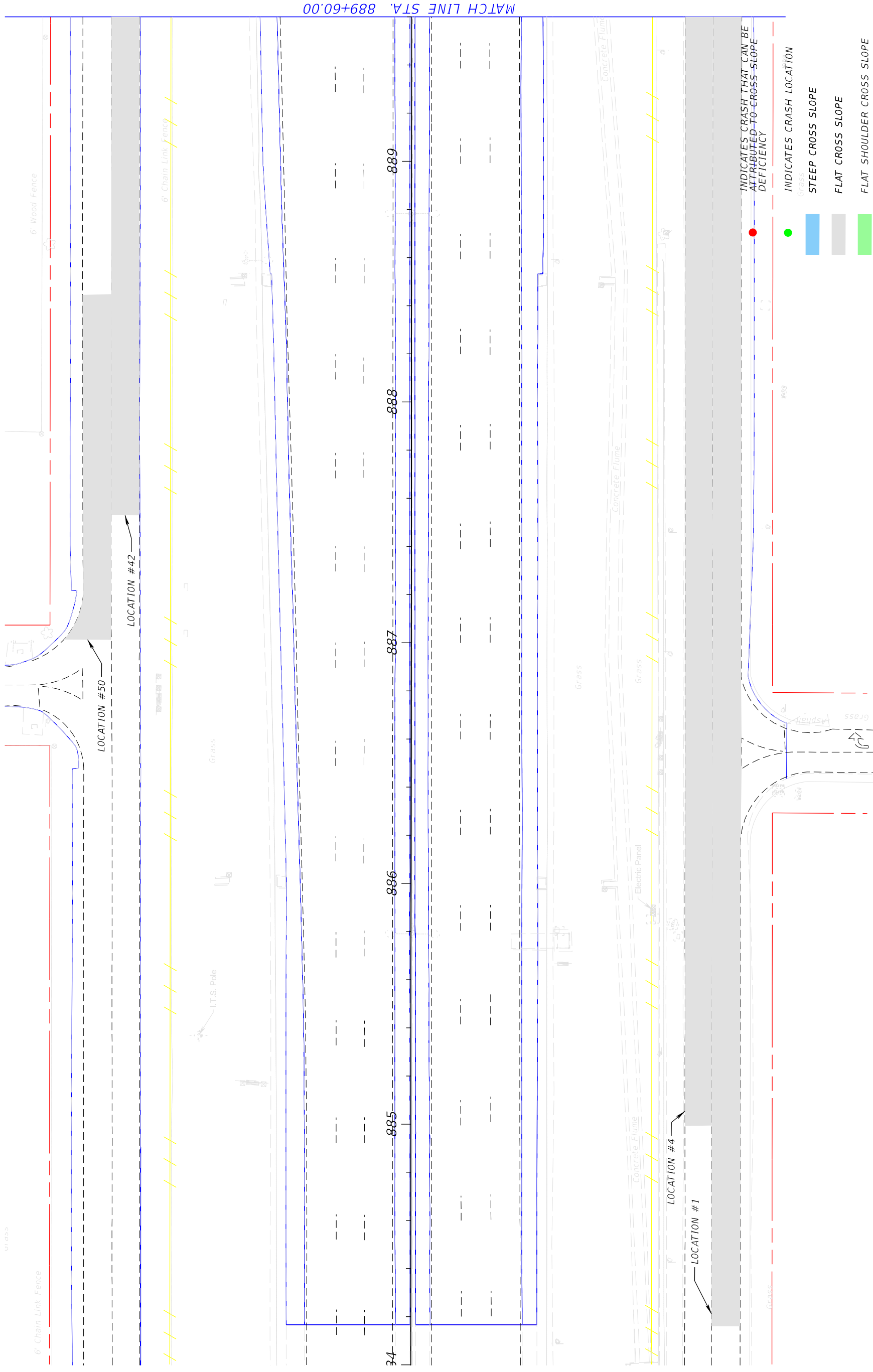
GRADE 0%



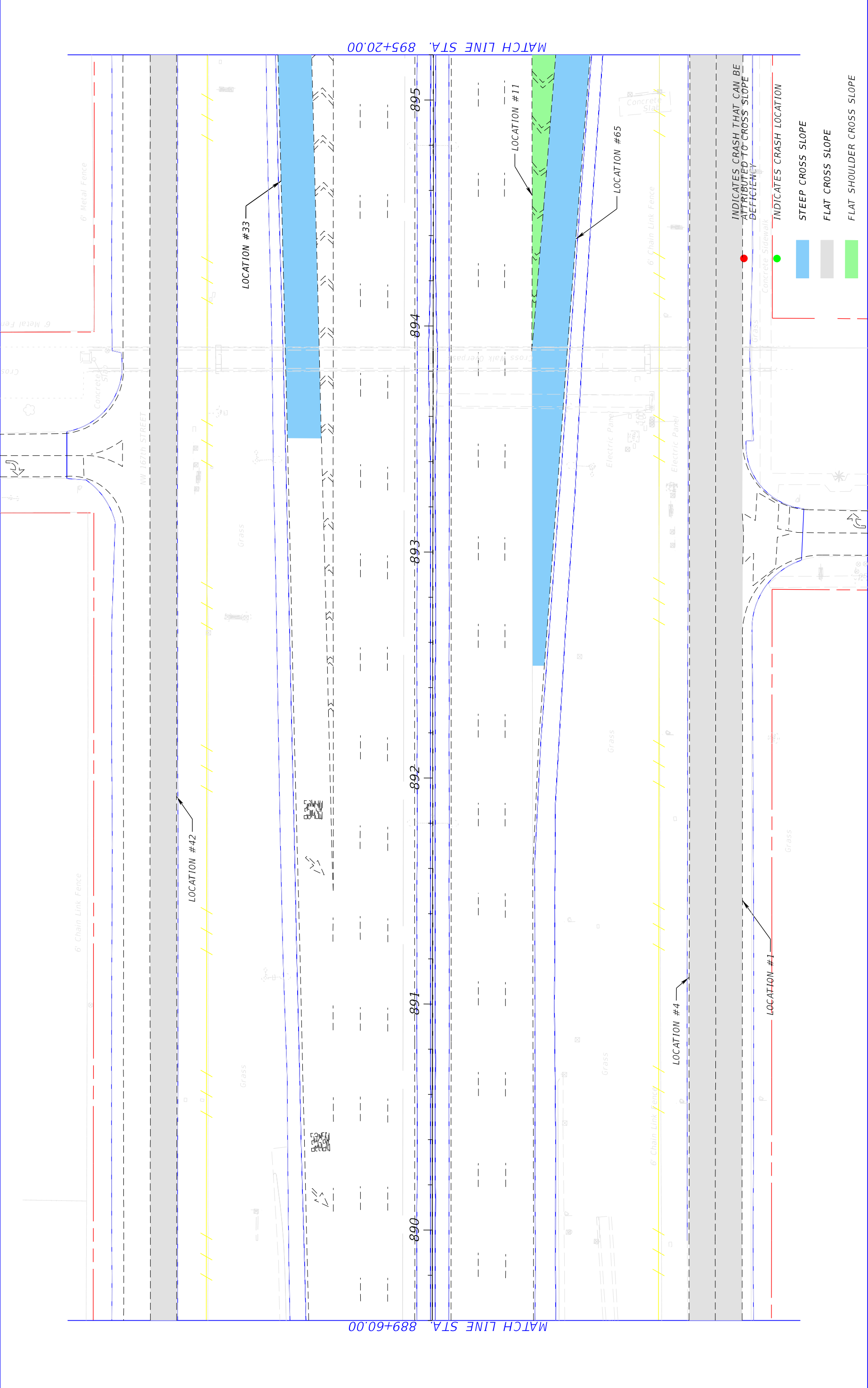




**APPENDIX C. DEFICIENT CROSS SLOPE EXHIBIT**



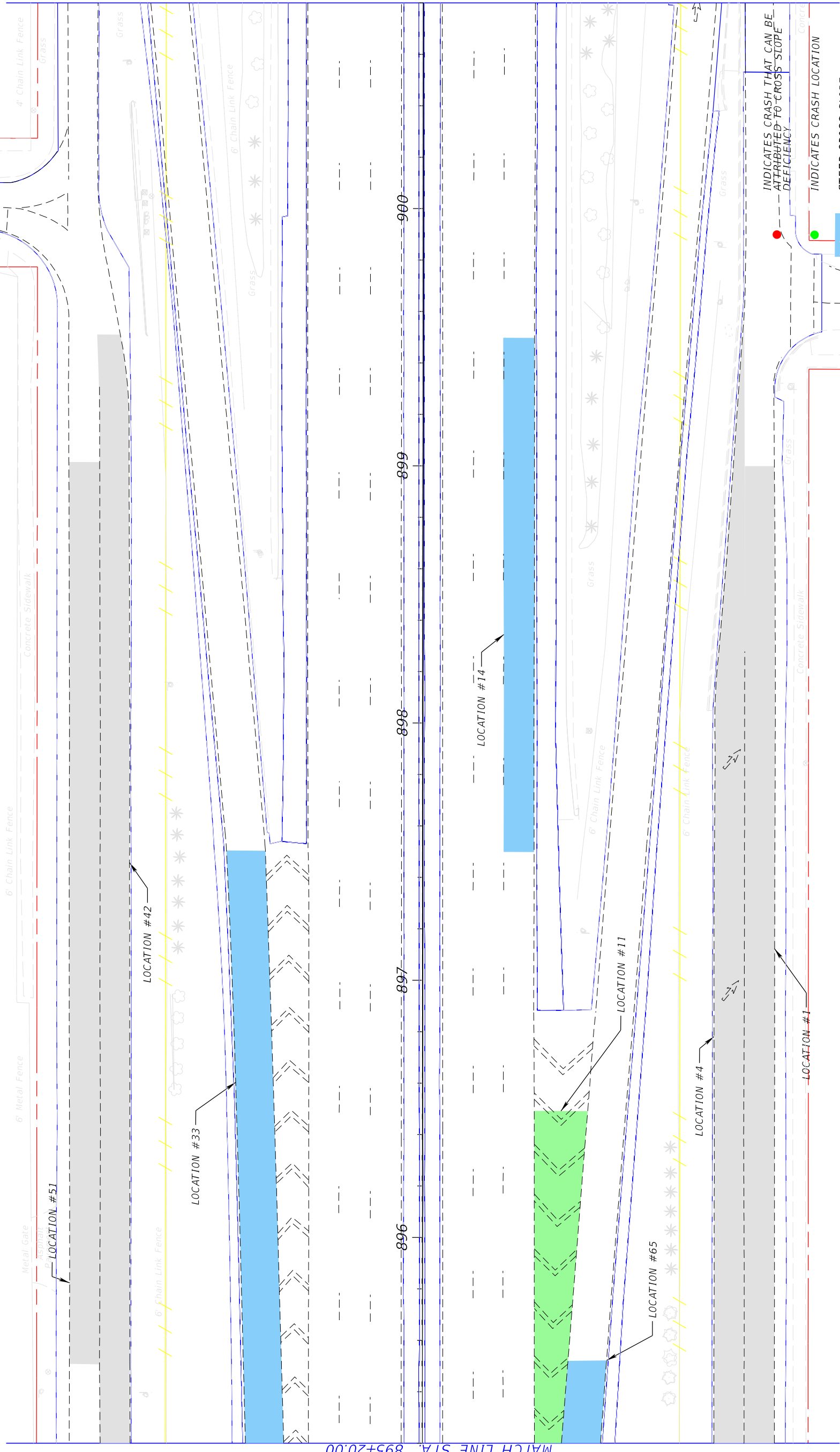
REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		ROAD NO.		COUNTY		FINANCIAL PROJECT ID		SHEET NO.	
DATE	DESCRIPTION	MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904		MIAMI-DADE		826		MIAMI-DADE		432743-152-01		1	



REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	DESCRIPTION	ROAD NO.	COUNTY	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SHEET NO.
		826	MIAMI-DADE	826	MIAMI-DADE	432743-152-01	2
		MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904					
		<b>DESIGN EXCEPTION</b> <b>CROSS SLOPE</b>					

MATCH LINE STA. 895+20.00

MATCH LINE STA. 900+80.00

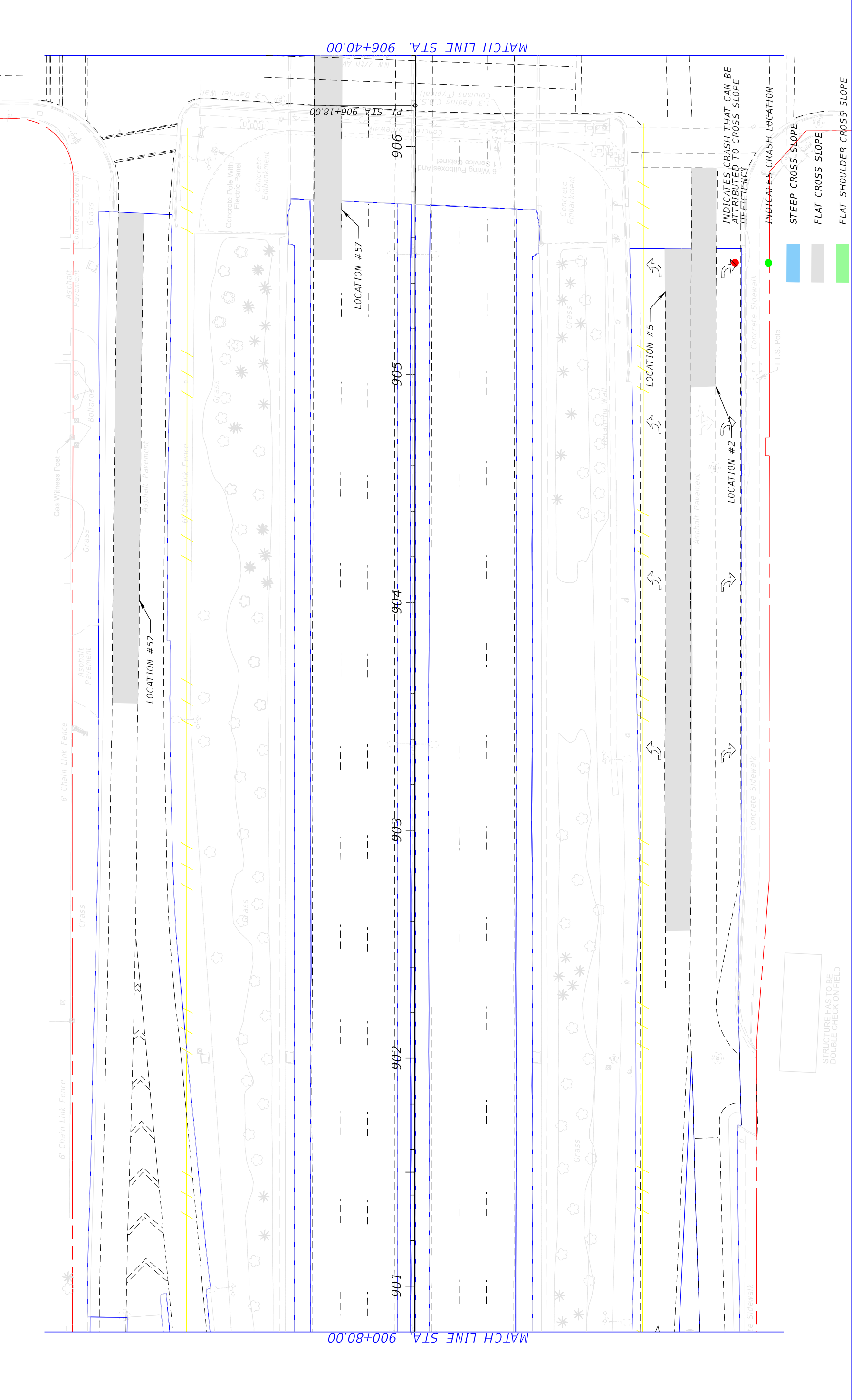


REVISIONS		DESCRIPTION
DATE	DESCRIPTION	DATE

MAIKEL GONZALEZ, P.E.  
P.E. LICENSE NUMBER 65609  
BOLTON PEREZ & ASSOCIATES  
7205 CORPORATE CENTER DRIVE, SUITE 201  
MIAMI, FLORIDA 33126  
CERTIFICATE OF AUTHORIZATION 7904

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
826	MIAMI-DADE
FINANCIAL PROJECT ID 432743-152-01	

DESIGN EXCEPTION CROSS SLOPE	
INDICATES CRASH LOCATION	
STEEP CROSS SLOPE	FLAT CROSS SLOPE
FLAT SHOULDER CROSS SLOPE	
INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY	
SHEET NO. 3	



MATCH LINE STA. 900+80.00

MATCH LINE STA. 906+40.00

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		DESIGN EXCEPTION		SHEET NO.	
DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	CROSS SLOPE				
		826	MIAMI-DADE	432743-152-01	CROSS SLOPE				
		MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7201 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904							
		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD NO. 826 COUNTY MIAMI-DADE FINANCIAL PROJECT ID 432743-152-01							
								4	

STRUCTURE HAS TO BE DOUBLE CHECK ON FIELD

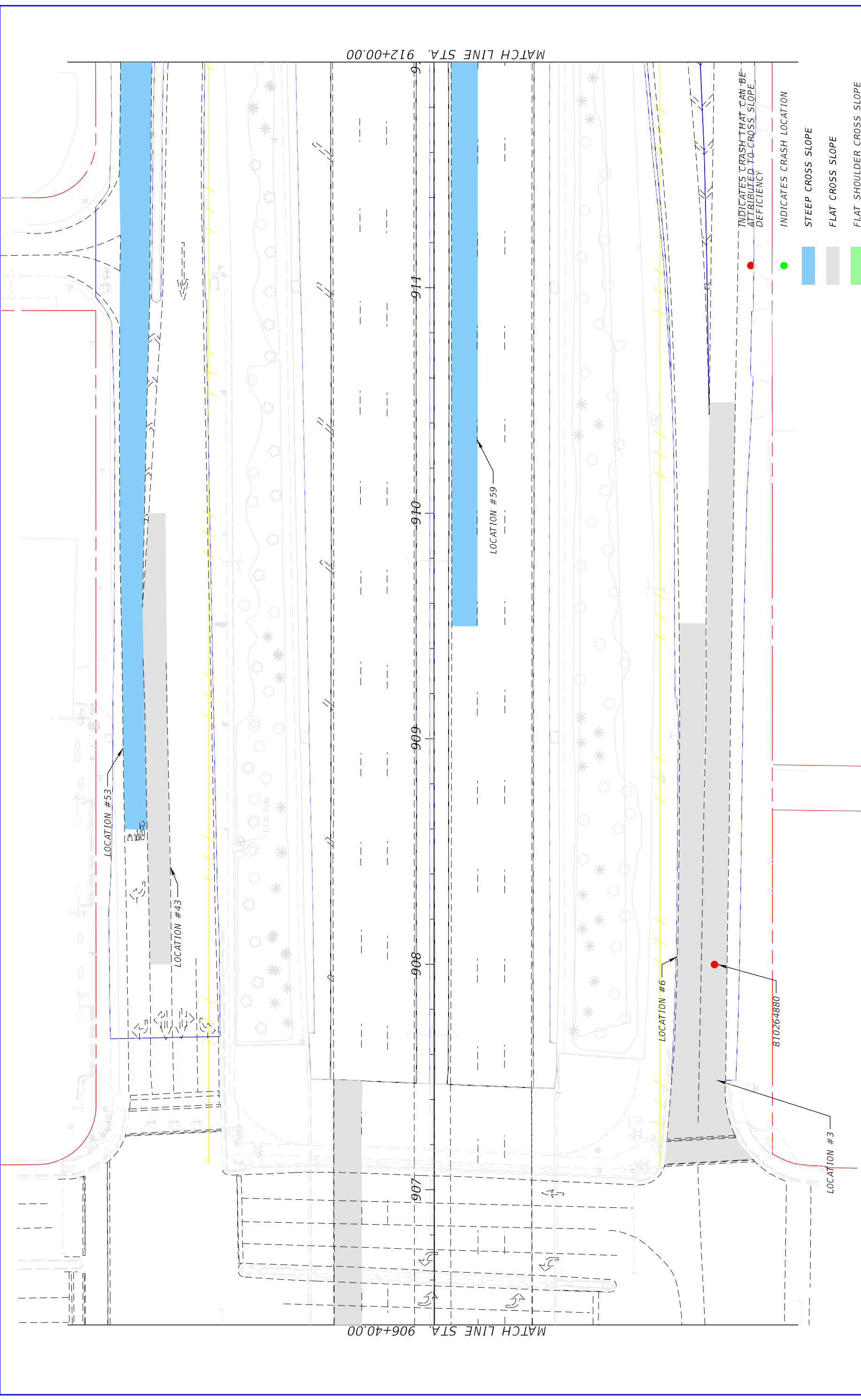
INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY

INDICATES CRASH LOCATION

- STEEP CROSS SLOPE
- FLAT CROSS SLOPE
- FLAT SHOULDER CROSS SLOPE

MATCH LINE STA. 906+40.00

MATCH LINE STA. 912+00.00

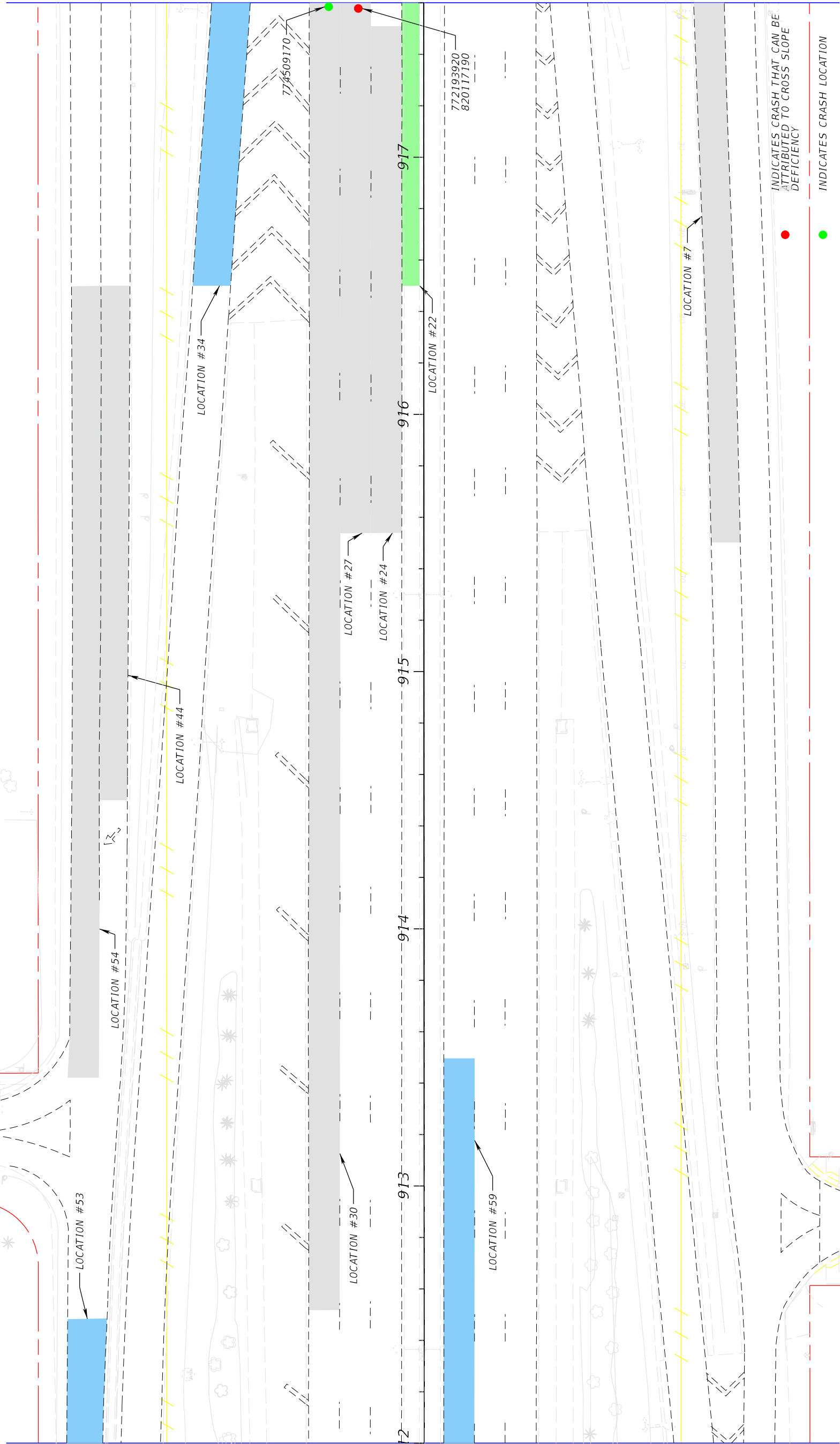


REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		ROAD NO.		COUNTY		FINANCIAL PROJECT ID		SHEET NO.	
DATE	DESCRIPTION	MAIKEL GONZALEZ, P.E.	DEPARTMENT OF TRANSPORTATION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	826	MIAMI-DADE	432743-152-01			5	
		P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904											
												DESIGN EXCEPTION	
												CROSS SLOPE	
												2/13/2015	
												10:34:16 AM	
												P:\_design_projects\1322201 SR-826 (Palmetto Expwy) RRR Project\_engineering\Design	



MATCH LINE STA. 912+00.00

MATCH LINE STA. 917+60.00



INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY

INDICATES CRASH LOCATION

STEEP CROSS SLOPE

FLAT CROSS SLOPE

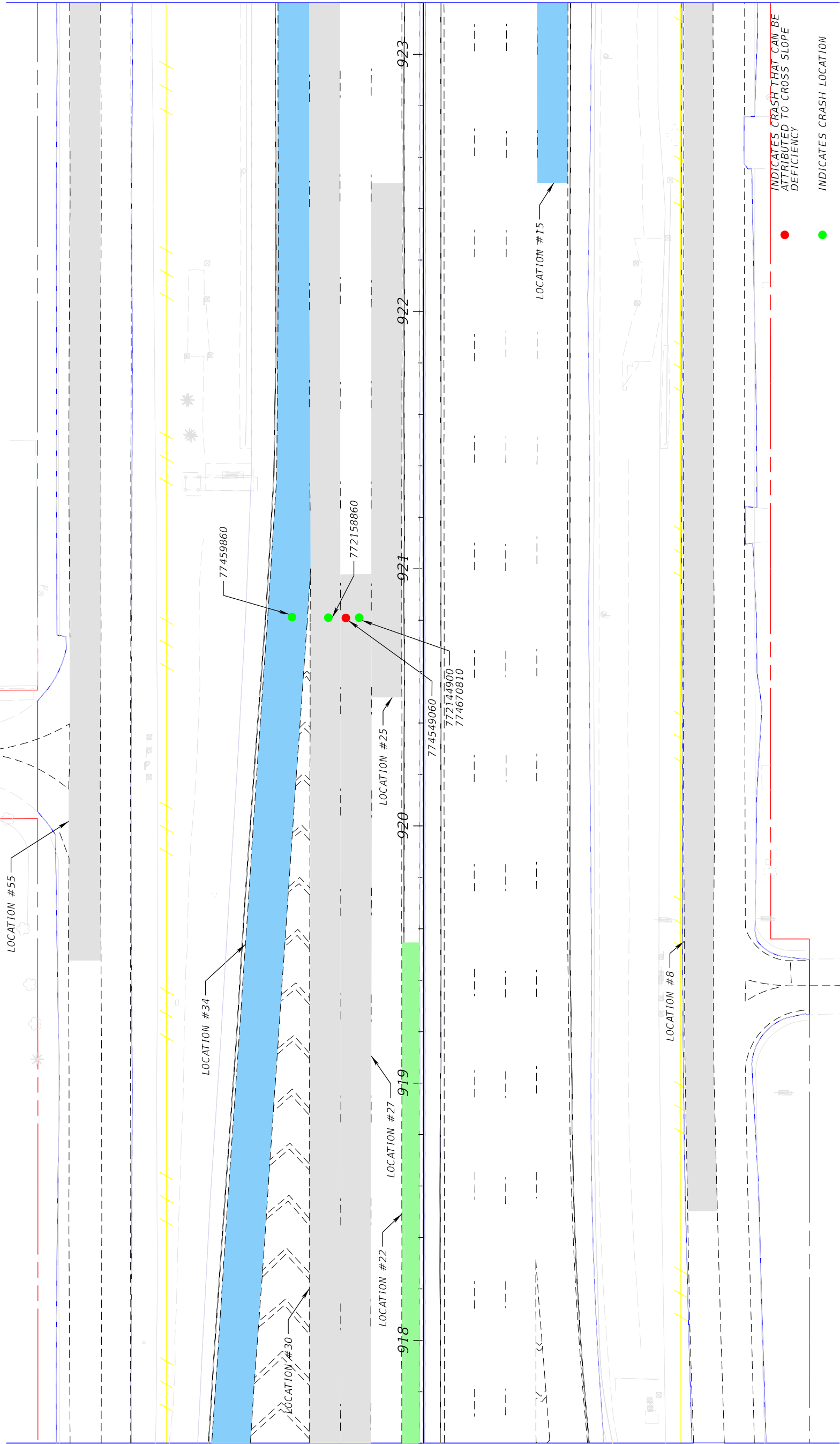
FLAT SHOULDER CROSS SLOPE

REVISIONS		DESCRIPTION	
DATE	DESCRIPTION	DATE	DESCRIPTION

MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	ROAD NO. 826	COUNTY MIAMI-DADE	FINANCIAL PROJECT ID 432743-1-52-01
<b>DESIGN EXCEPTION</b> <b>CROSS SLOPE</b>					
SHEET NO.					6

MATCH LINE STA. 917+60.00

MATCH LINE STA. 923+20.00



- INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY
- INDICATES CRASH LOCATION
- STEEP CROSS SLOPE
- FLAT CROSS SLOPE
- FLAT SHOULDER CROSS SLOPE

REVISIONS		DESCRIPTION	
DATE	DESCRIPTION	DATE	DESCRIPTION

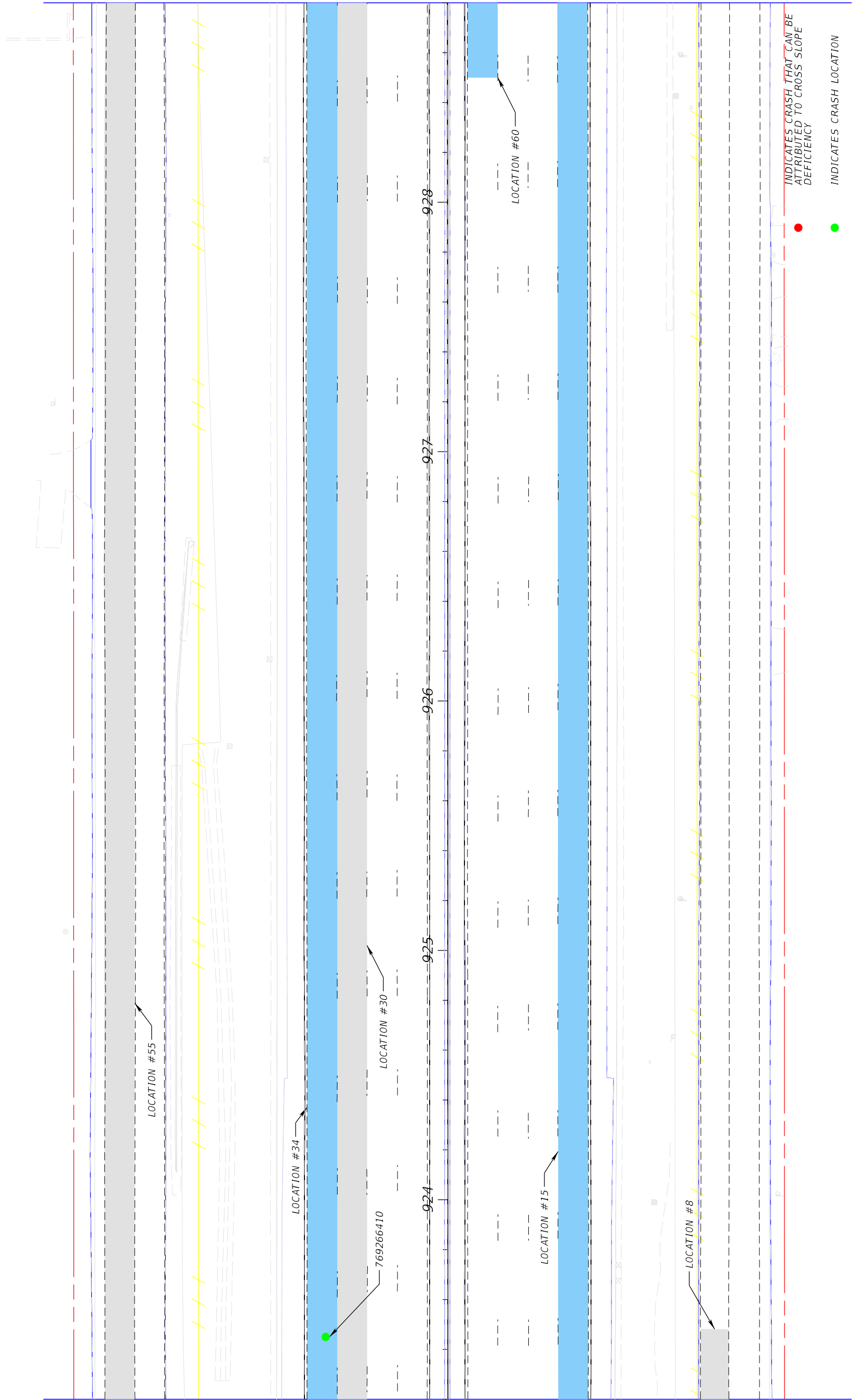
MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
826	MIAMI-DADE	432743-152-01	

<b>DESIGN EXCEPTION</b> <b>CROSS SLOPE</b>		SHEET NO.
		7

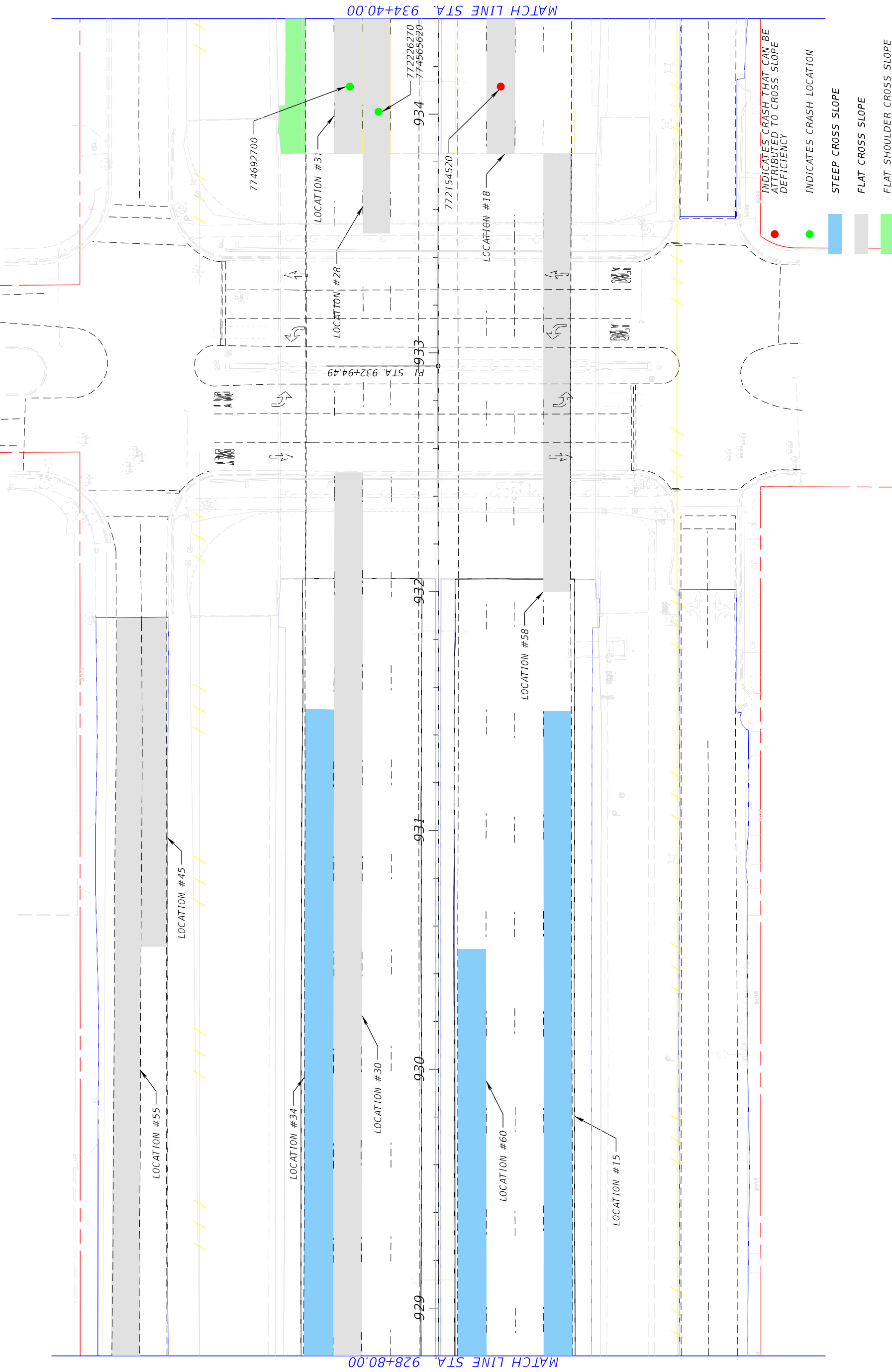
MATCH LINE STA. 923+20.00

MATCH LINE STA. 928+80.00



- INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY
- INDICATES CRASH LOCATION
- STEEP CROSS SLOPE
- FLAT CROSS SLOPE
- FLAT SHOULDER CROSS SLOPE

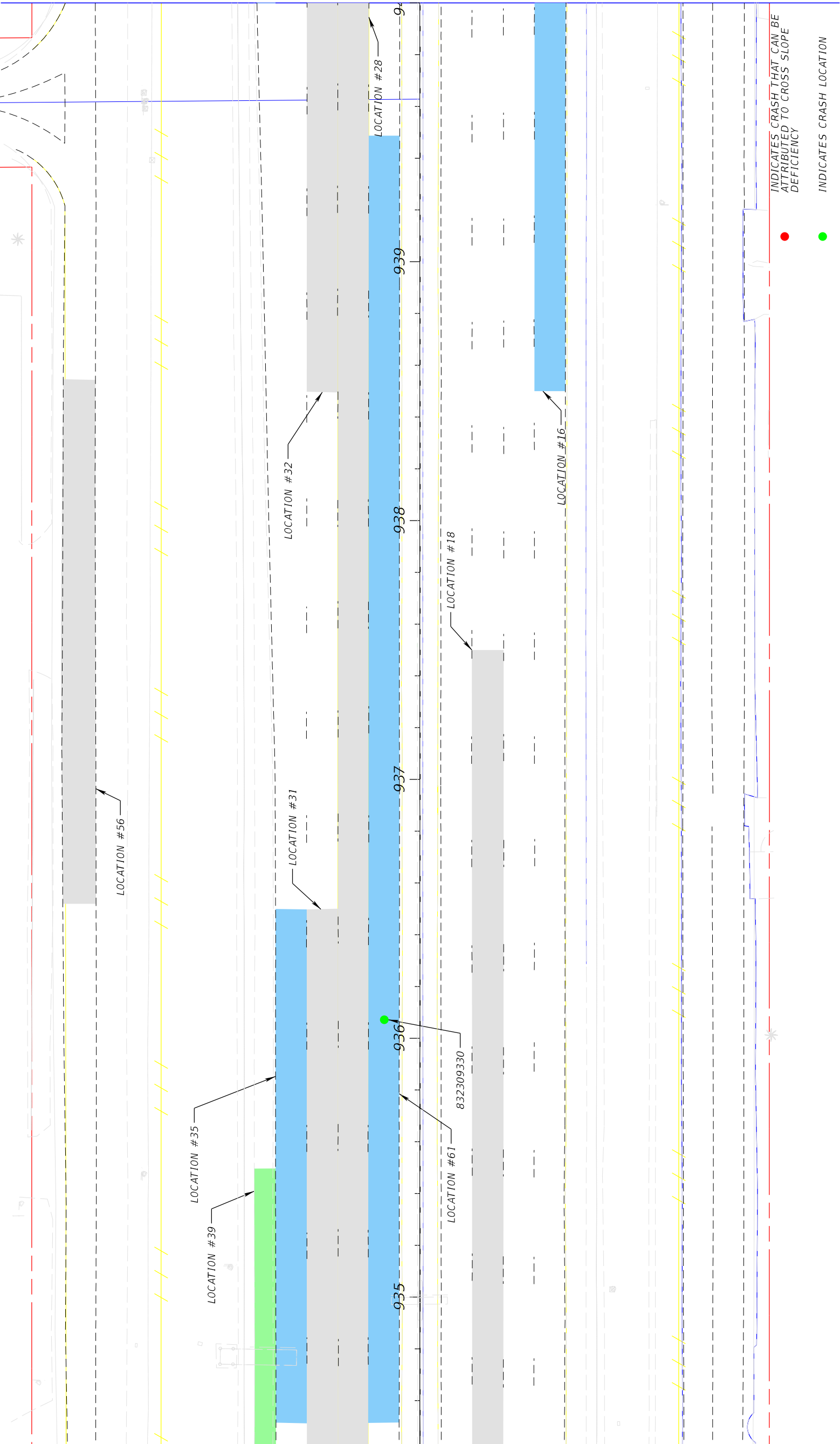
REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		ROAD NO.		COUNTY		FINANCIAL PROJECT ID		SHEET NO.	
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	DESIGN EXCEPTION		SHEET NO.	
				826	MIAMI-DADE	432743-1-52-01	826	MIAMI-DADE	432743-1-52-01	<b>CROSS SLOPE</b>		8	
MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904				<b>DESIGN EXCEPTION</b> <b>CROSS SLOPE</b>									



REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		DESIGN EXCEPTION		CROSS SLOPE		SHEET NO.	
DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID							
		826	MIAMI-DADE	432743-152-01							
		MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904									
		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD NO. 826 COUNTY MIAMI-DADE FINANCIAL PROJECT ID 432743-152-01									
		DESIGN EXCEPTION CROSS SLOPE									
		2/13/2015 10:34:27 AM fcano									
		P:\_design_projects\1322201 SR-826 (Palmetto Expwy) RRR Project\_engineering\Design									

MATCH LINE STA. 934+40.00

MATCH LINE STA. 940+00.00

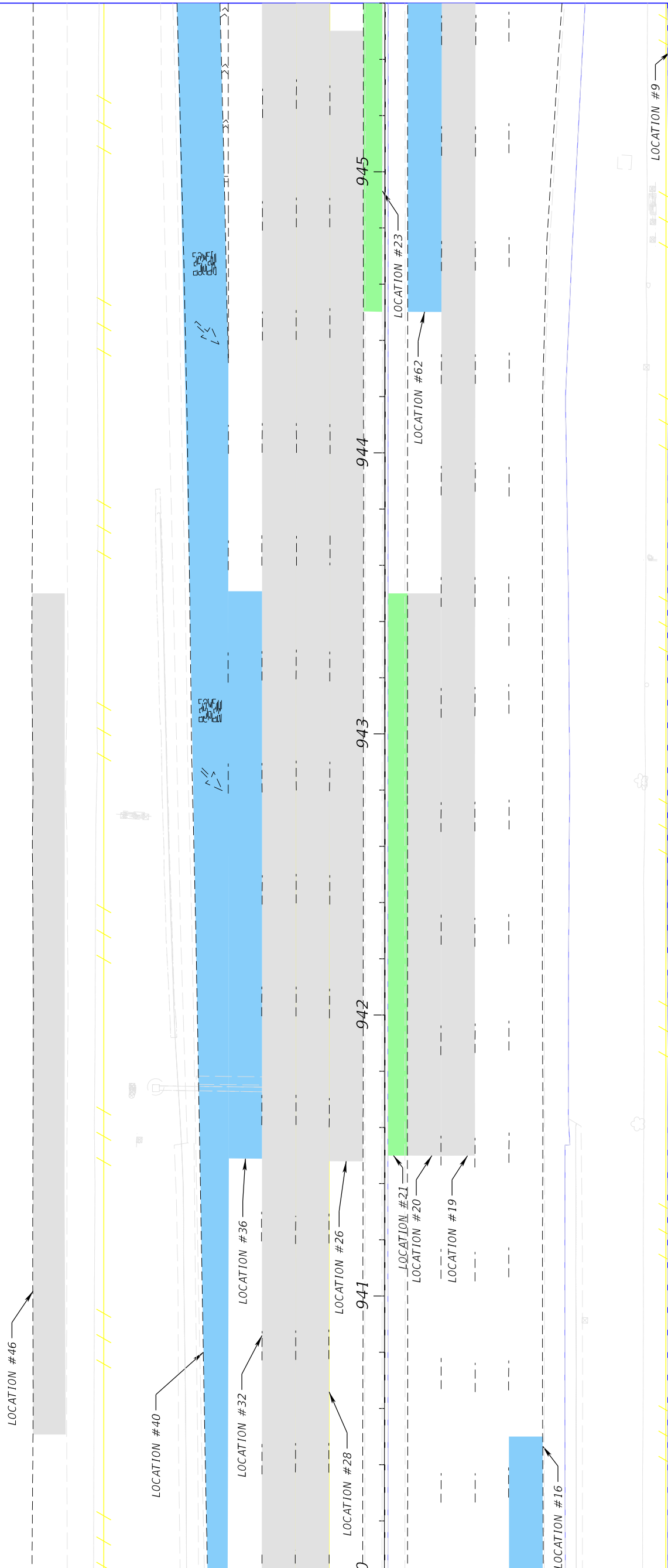


- INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY
- INDICATES CRASH LOCATION
- STEEP CROSS SLOPE
- FLAT CROSS SLOPE
- FLAT SHOULDER CROSS SLOPE

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		FINANCIAL PROJECT ID	
DATE	DESCRIPTION	ROAD NO.	COUNTY	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SHEET NO.
		826	MIAMI-DADE	826	MIAMI-DADE	432743-1-52-01	10
		MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904					
		DESIGN EXCEPTION CROSS SLOPE					
		2/13/2015 10:34:30 AM fcano P:\_design_projects\1322201 SR-826 (Palmetto Expwy) RRR Project\_engineering\Design					

MATCH LINE STA. 940+00.00

MATCH LINE STA. 945+60.00

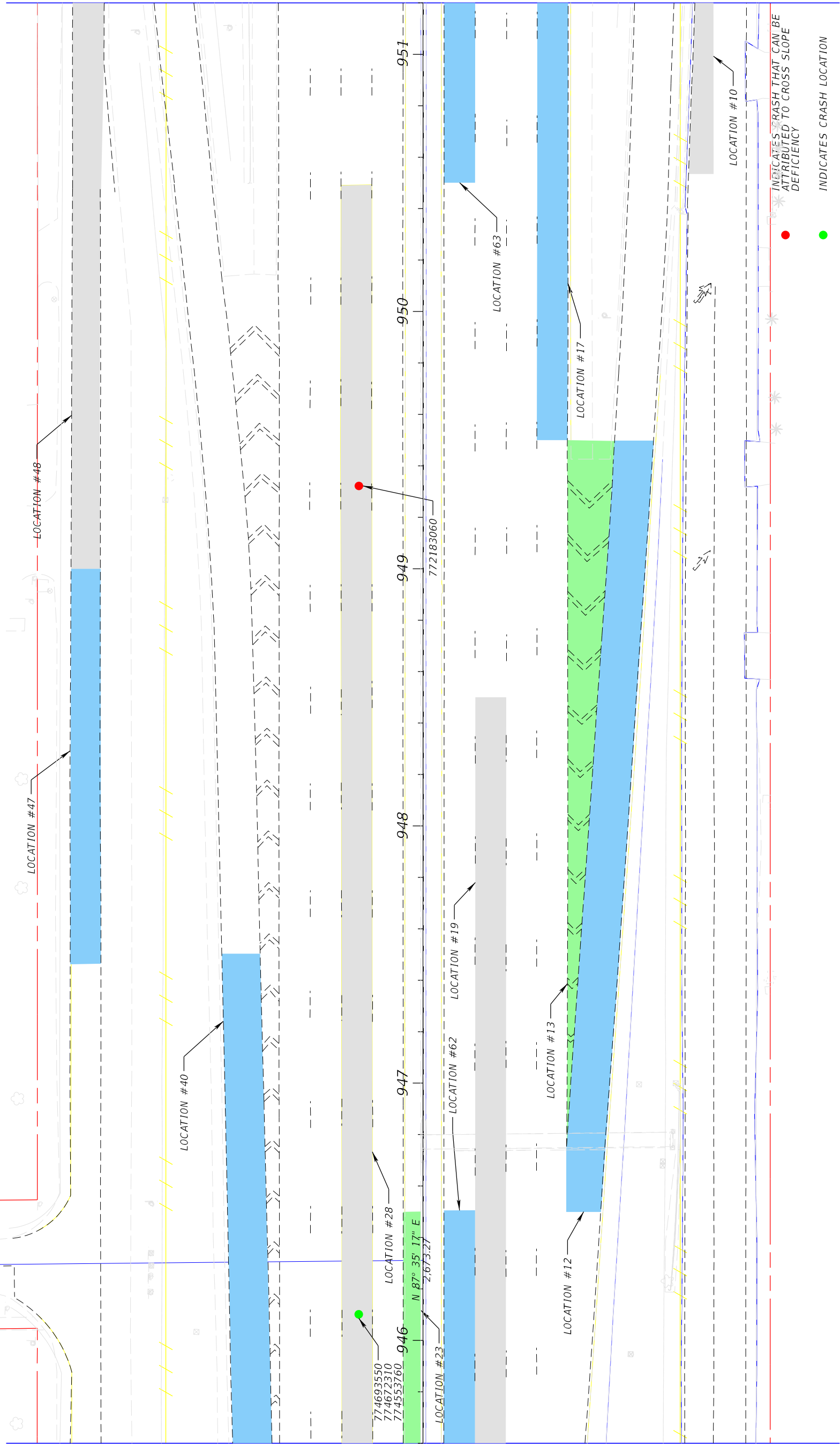


- INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY
- INDICATES CRASH LOCATION
- STEEP CROSS SLOPE
- FLAT CROSS SLOPE
- FLAT SHOULDER CROSS SLOPE

REVISIONS		STATE OF FLORIDA		DESIGN EXCEPTION		SHEET NO.	
DATE	DESCRIPTION	ROAD NO.	COUNTY	DEPARTMENT OF TRANSPORTATION	FINANCIAL PROJECT ID		
		826	MIAMI-DADE		432743-152-01	11	
				MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904		CROSS SLOPE	
				DEPARTMENT OF TRANSPORTATION COUNTY MIAMI-DADE		2/13/2015 10:34:32 AM P:\_design_projects\1322201 SR-826 (Palmetto Expwy) RRR Project\_engineering\Design	

MATCH LINE STA. 945+60.00

MATCH LINE STA. 951+20.00



INDICATES CRASH THAT CAN BE ATTRIBUTED TO CROSS SLOPE DEFICIENCY

INDICATES CRASH LOCATION

STEEP CROSS SLOPE

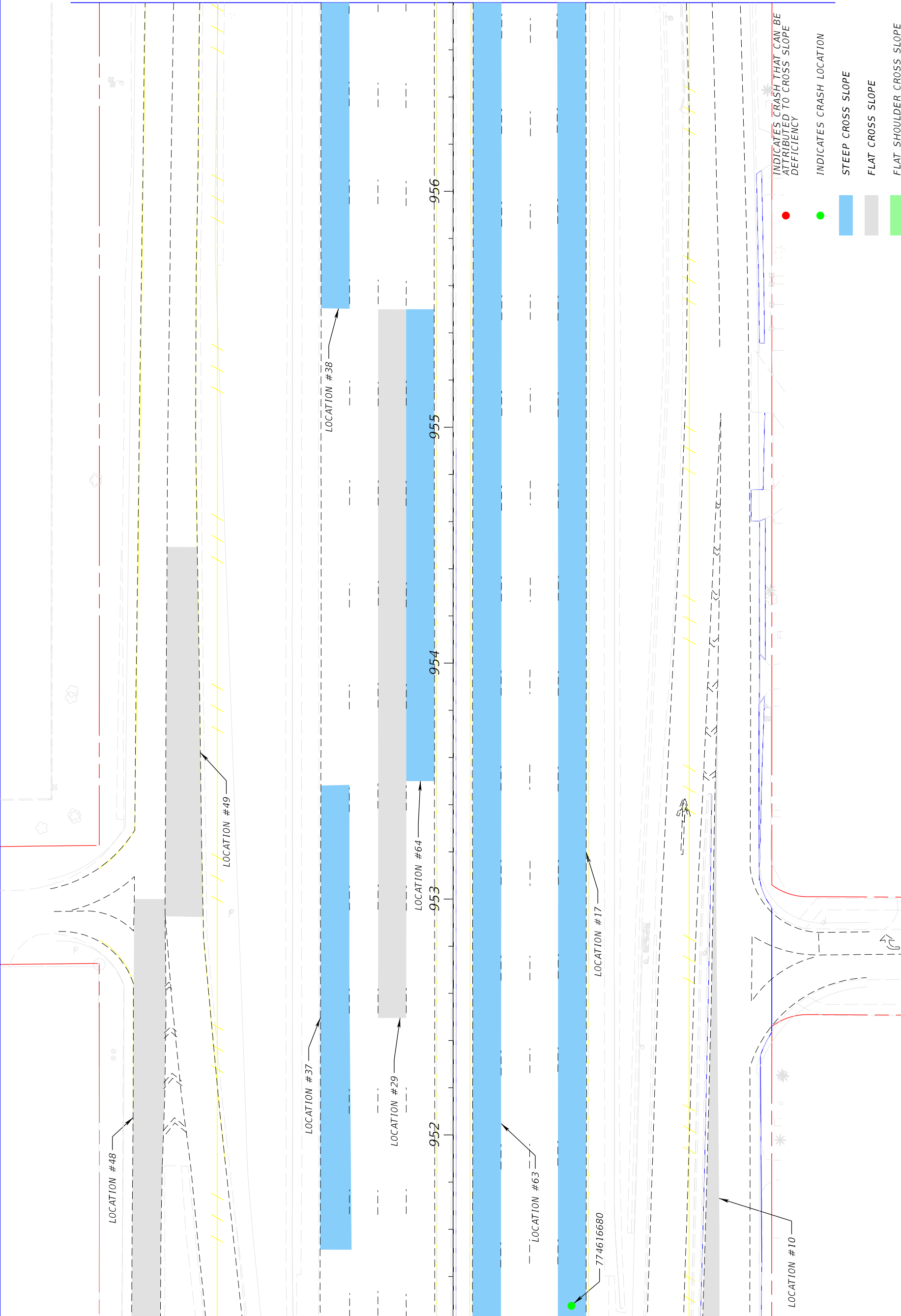
FLAT CROSS SLOPE

FLAT SHOULDER CROSS SLOPE

REVISIONS		STATE OF FLORIDA		DEPARTMENT OF TRANSPORTATION		ROAD NO.		COUNTY		FINANCIAL PROJECT ID		SHEET NO.		
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	826	MIAMI-DADE	432743-1-52-01	DESIGN EXCEPTION		12		
				7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904						CROSS SLOPE				
				MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904							DESIGN EXCEPTION			

MATCH LINE STA. 951+20.00

MATCH LINE STA. 956+80.00



REVISIONS	
DATE	DESCRIPTION

MAIKEL GONZALEZ, P.E.  
 P.E. LICENSE NUMBER 65609  
 BOLTON PEREZ & ASSOCIATES  
 7205 CORPORATE CENTER DRIVE, SUITE 201  
 MIAMI, FLORIDA 33126  
 CERTIFICATE OF AUTHORIZATION 7904

STATE OF FLORIDA	
DEPARTMENT OF TRANSPORTATION	
ROAD NO.	COUNTY
826	MIAMI-DADE
FINANCIAL PROJECT ID	
432743-152-01	

DESIGN EXCEPTION	
CROSS SLOPE	
SHEET NO.	13





REVISIONS		STATE OF FLORIDA		SHEET NO.	
DATE	DESCRIPTION	DEPARTMENT OF TRANSPORTATION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID
		MAIKEL GONZALEZ, P.E. P.E. LICENSE NUMBER 65609 BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904	826	MIAMI-DADE	432743-152-01
			<b>DESIGN EXCEPTION</b> <b>CROSS SLOPE</b>		
			14		

**APPENDIX F. SPREAD CALCULATIONS AND HYDROPLANING ANALYSIS**

**Spread Calculation**

$I = 7.68 \text{ in/hr}$   
 $n = 0.016$   
 $C1 = 0.95$   
 $C2 = 0.3$   
 $C = \frac{1}{2} * A1 + C2 * A2 / A$   
 $Sx = \text{Cross Slope}$   
 $SL = \text{Longitudinal Slope}$   
 $T = \text{Spread}$

(Intensity)

(Manning Roughness Coefficient)

Runoff coefficient impervious area

Runoff coefficient pervious area

**SR-826 Palmetto Expressway (Eastbound)**

Structure	Inlet location Station	Station From	Station To	Length	Width	*Area (Ac)			C	Q = CIA (CFS)	Intercepted flow	By-pass Flow	Sx (FT/FT)	SL (FT/FT)	T (FT)	Maximum Spread (FT)	Remarks
						Total A	Impervious A1	Pervious A2									
P-140	883+01.26	880+06.13	883+01.26	295.1	52.00	0.352	0.352	0.000	0.95	2.57	4.00	0.00	0.052	0.0154	5.23	8.00	OK
P-141	886+00.04	883+01.26	886+00.04	298.8	52.00	0.357	0.357	0.000	0.95	2.60	4.00	0.00	0.0596	0.0253	4.40	8.00	OK
P-142	888+50.65	886+00.04	888+50.65	250.6	52.00	0.299	0.299	0.000	0.95	2.18	4.00	0.00	0.0522	0.0145	4.96	8.00	OK
P-144	896+91.20	900+00.19	896+91.20	309.0	52.00	0.369	0.369	0.000	0.95	2.69	4.00	0.00	0.0372	0.0156	6.55	8.00	OK
P-145	900+00.19	902+00.31	900+00.19	200.1	52.00	0.239	0.239	0.000	0.95	1.74	4.00	0.00	0.0539	0.0302	3.90	8.00	OK
P-147	902+00.31	906+58.77	902+00.31	458.5	52.00	0.547	0.547	0.000	0.95	3.99	4.00	0.00	0.0593	0.0237	5.24	8.00	OK
P-149	909+00.73	906+58.77	909+00.73	242.0	52.00	0.289	0.289	0.000	0.95	2.11	4.00	0.00	0.0642	0.0109	4.54	8.00	OK
P-150	910+99.94	909+00.73	910+99.94	199.2	52.00	0.238	0.238	0.000	0.95	1.74	4.00	0.00	0.0576	0.0222	3.95	8.00	OK
P-151	912+99.81	910+99.94	912+99.81	199.9	52.00	0.239	0.239	0.000	0.95	1.74	4.00	0.00	0.0919	0.0308	2.78	8.00	OK
P-152	914+78.57	912+99.81	914+78.57	178.8	52.00	0.213	0.213	0.000	0.95	1.56	4.00	0.00	0.0571	0.0283	3.65	8.00	OK
P-154	924+51.50	928+50.23	924+51.50	398.7	64.00	0.586	0.586	0.000	0.95	4.27	4.00	0.27	0.0644	0.0233	5.12	8.00	OK
P-155	928+50.23	932+94.39	928+50.23	444.2	64.00	0.653	0.653	0.000	0.95	4.76	4.00	0.76	0.0622	0.0221	5.51	8.00	OK
P-156	937+50.60	932+94.39	937+50.60	456.2	64.00	0.670	0.670	0.000	0.95	4.89	4.00	0.89	0.0805	0.0222	4.73	8.00	OK
P-157	941+51.17	937+50.60	941+51.17	400.6	64.00	0.589	0.589	0.000	0.95	4.29	4.00	0.29	0.0817	0.0211	4.51	8.00	OK
P-158	951+43.02	955+00.06	951+43.02	357.0	64.00	0.525	0.525	0.000	0.95	3.83	4.00	0.00	0.0725	0.0245	4.52	8.00	OK
P-159	955+00.06	959+67.76	955+00.06	467.7	64.00	0.687	0.687	0.000	0.95	5.01	4.00	1.01	0.0536	0.0214	6.20	8.00	OK

**Spread Calculation**

I = 7.68 in/hr  
 n = 0.016  
 C1 = 0.95  
 C2 = 0.3

C =  $(C1 \cdot A1 + C2 \cdot A2) / A$   
 Sx = Cross Slope  
 SL = Longitudinal Slope  
 T = Spread

(Intensity)  
 (Manning Roughness Coefficient)  
 Runoff coefficient impervious area  
 Runoff coefficient pervious area

**SR-826 Palmetto Expressway (Westbound)**

Structure	Inlet location Station	Station From	Station To	Length	Width	*Area (Ac)			C	Q = CIA (GFS)	Intercepted flow	By-pass Flow	Sx (FT/FT)	SL (FT/FT)	T (FT)	Maximum Spread (FT)	Remarks
						Total A	Impervious A1	Pervious A2									
B-104	883+01.53	880+12.78	883+01.53	288.8	52.00	0.345	0.345	0.000	0.95	2.51	4.00	0.00	0.0522	0.0143	5.25	8.00	OK
B-102	886+00.84	883+01.53	886+00.84	299.3	52.00	0.357	0.357	0.000	0.95	2.61	4.00	0.00	0.0438	0.0283	5.23	8.00	OK
B-100	888+50.54	886+00.84	888+50.54	249.7	52.00	0.298	0.298	0.000	0.95	2.17	4.00	0.00	0.0211	0.0236	7.98	8.00	OK
P-227	899+99.76	902+00.31	899+99.76	200.6	52.00	0.239	0.239	0.000	0.95	1.75	4.00	0.00	0.0715	0.0254	3.38	8.00	OK
P-225	902+00.31	906+61.28	902+00.31	461.0	52.00	0.550	0.550	0.000	0.95	4.01	4.00	0.01	0.0557	0.0233	5.48	8.00	OK
P-224	909+00.76	906+61.28	909+00.76	239.5	52.00	0.286	0.286	0.000	0.95	2.10	4.00	0.00	0.0402	0.0088	6.33	8.00	OK
P-223	911+00.73	909+00.76	911+00.73	200.0	52.00	0.239	0.239	0.000	0.95	1.74	4.00	0.00	0.0363	0.0155	5.65	8.00	OK
P-177	913+00.22	911+00.73	913+00.22	199.5	52.00	0.238	0.238	0.000	0.95	1.74	4.00	0.00	0.0433	0.0296	4.48	8.00	OK
P-176	914+79.00	913+00.22	914+79.00	178.8	52.00	0.213	0.213	0.000	0.95	1.56	4.00	0.00	0.0462	0.0273	4.19	8.00	OK
P-174	924+51.19	928+50.07	924+51.19	398.9	64.00	0.586	0.586	0.000	0.95	4.28	4.00	0.28	0.0733	0.0194	4.89	8.00	OK
P-172	928+50.07	932+94.49	928+50.07	444.4	64.00	0.653	0.653	0.000	0.95	4.76	4.00	0.76	0.052	0.0192	6.33	8.00	OK
P-171	937+50.87	932+94.49	937+50.87	456.4	64.00	0.671	0.671	0.000	0.95	5.17	4.00	1.17	0.0405	0.0193	7.62	8.00	OK
P-169	941+51.43	937+50.87	941+51.43	400.6	64.00	0.589	0.589	0.000	0.95	5.06	4.00	1.06	0.0235	0.0500	8.89	2.85	CHECK
P-167	951+43.56	954+99.45	951+43.56	355.9	64.00	0.523	0.523	0.000	0.95	4.87	4.00	0.87	0.0414	0.0192	7.36	8.00	OK
P-166	954+99.45	959+67.50	954+99.45	468.1	64.00	0.688	0.688	0.000	0.95	5.02	4.00	1.02	0.0684	0.0252	5.16	8.00	OK

Shoulder is reduced at this section - appears to be reduced to accommodate an overhead cantilever sign

Typical Section Assumptions

Longitudinal Slope	1.50%
Pavement Type	OGFC

Design Speed 60 mph

Intensity (in/hr)	Predicted Speed Reduction <sup>1</sup> (mph)	Predicted Driver Speed (mph)
0.1	0	60
0.25	0	60
0.5	6	54
1	8	52
2	12	48
3 <sup>2</sup>	--	45
4 <sup>2</sup>	--	45

<sup>1</sup> Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.

<sup>2</sup> High intensity speed reductions are assumed to be large enough to reduce drivers' speed below hydroplaning potential.

**Hydroplaning Speed Results**

Cross slope	0.02	0.02	0.003	0.005	0.025	Predicted Drivers' Speed
Shoulder		Lane 1	Lane 2	Lane 3	Lane 4	
0.1	--	109.26	109.26	109.26	109.26	60
0.25	--	109.26	109.26	109.26	109.26	60
0.5	--	109.26	72.13	81.72	109.26	54
1	--	109.26	53.96	56.97	109.26	52
2	--	109.26	52.07	52	66.01	48
3	--	109.26	50.68	51.23	56.18	45
4	--	109.26	49.78	50.29	51.45	45

Minimum cross slopes occur along WB SR-826

Typical Section Assumptions

Longitudinal Slope	1.50%
Pavement Type	OGFC

Design Speed 40 mph

Intensity (in/hr)	Predicted Speed Reduction <sup>1</sup> (mph)	Predicted Driver Speed (mph)
0.1	0	40
0.25	0	40
0.5	6	34
1	8	32
2	12	28
3 <sup>2</sup>	--	28
4 <sup>2</sup>	--	28

<sup>1</sup> Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.

<sup>2</sup> High intensity speed reductions are assumed to be large enough to reduce drivers' speed below hydroplaning potential.

Hydroplaning Speed Results

Cross slope	0.02	0.002	0.001							Predicted Drivers' Speed
Rainfall Intensity (in/hr)	Shoulder	Lane 1	Lane 2							
0.1	--									40
0.25	--									40
0.5	--									34
1	--									32
2	--									28
3	--									28
4	--	38.09	46.3035							28

Minimum cross slopes occur along Frontage Road (NW 167th Street)

Note: Since the hydroplaning speed results for a 4 in rainfall intensity was lower than the predicted driver's speed, analysis of lesser intensities is not required

Typical Section Assumptions

Longitudinal Slope	0.19%
Pavement Type	OGFC

Design Speed 40 mph

Intensity (in/hr)	Predicted Speed Reduction <sup>1</sup> (mph)	Predicted Driver Speed (mph)
0.1	0	40
0.25	0	40
0.5	6	34
1	8	32
2	12	28
3 <sup>2</sup>	--	28
4 <sup>2</sup>	--	28

<sup>1</sup> Predicted speed reductions taken from Contract Study BDQ22 performed by Gulf Coast University.

<sup>2</sup> High intensity speed reductions are assumed to be large enough to reduce drivers' speed below hydroplaning potential.

Hydroplaning Speed Results

Cross slope	0.02	0.30%	Lane 1							Predicted Drivers' Speed
Rainfall Intensity (in/hr)										
0.1	--									40
0.25	--									40
0.5	--									34
1	--									32
2	--	60.14								28
3	--	53.95								28
4	--	50.41								28

Cross slopes occurring at STA 908+00.00

## **APPENDIX G. BENEFIT/COST ANALYSIS**



## BENEFIT COST ANALYSIS WORKSHEET FOR EXCEPTIONS AND VARIATIONS FDOT DISTRICT 6



FINANCIAL PROJECT ID: 432743-3-52-01  
 PROJECT NAME: SR-826/Palmetto Expressway and NW 167th Street from West of NW 27th Avenue to West of NW 17th Avenue  
 SUBMITTED BY: Bolton Perez and Associates DATE SUBMITTED: 2/3/2015

### FACILITY DESCRIPTION

DISTRICT: 6 COUNTY: Miami-Dade DESIGN SPEED: 45 MPH  
 LENGTH (MILES): 1.423 STATE ROAD: 826 POSTED SPEED: 45 MPH  
 B.M.P.: 21.623 SECTION No. 87260000  
 E.M.P.: 23.046 FACILITY TYPE 6-LANE/8-LANE URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS

### CRASH TYPE AND FREQUENCY

TYPE OF CRASH	SUMMARY OF CRASHES						CRF	NUMBER OF CRASHES REDUCED
	NUMBER OF ASSOCIATED CRASHES							
	2007	2008	2009	2010	2011	TOTAL		
REAR - END								
HEAD - ON								
ANGLE								
LEFT -TURN								
RIGHT -TURN								
BAKED INTO								
SIDESWIPE								
PEDESTRIAN/BICYCLE								
FIXED OBJECT ABOVE GROUND								
SIGN (POST)								
BRIDGE/PIER/ABUTMENT								
TREE/SHRUB								
OTHER FIXED OBJECT				1		1	0.33	0.33
OVERTURNED								
UTILITY/LIGHT POLE								
COLLISION WITH PARKED CAR								
COLLISION W/ MV ON OTHER SIDE OF ROAD								
OCCUPANT FELL FROM VEHICLE								
ALL OTHER, UNKNOWN and N/A								
<b>FIVE YEAR TOTAL</b>						<b>1</b>		<b>0.33</b>
<b>AVERAGE PER YEAR</b>						<b>0.2</b>		<b>0.07</b>

CRASH INFORMATION FOR FACILITY	
* COST/CRASH	\$120,075.00
CRASH CLEANUP	\$100.00
INTEREST	4.0%

\* From 2015 PPM Chapter 23, pg. 23-10

### BENEFIT/COST ANALYSIS

COST OF IMPROVEMENTS				
TYPE	TOTAL COST	LIFE	CAPITAL RECOVERY FACTOR	ANNUALIZED COST
R.O.W	\$0.00	14	0.09467	\$0.00
P.E.C.E.I.	\$11,640.11	14	0.09467	\$1,101.96
DRAINAGE	\$1,687.50	14	0.09467	\$159.75
ROADWAY	\$15,551.88	14	0.09467	\$1,472.28
PAVEMENT	\$43,983.94	14	0.09467	\$4,163.91
SIGNING / PAV. MARKINGS	\$2,909.50	14	0.09467	\$275.44
OTHER	\$17,347.93	14	0.09467	\$1,642.31
<b>SUB-TOTAL</b>	<b>\$93,120.85</b>			<b>\$8,815.66</b>
CHANGE IN MAINTENANCE				\$0.00
CHANGE IN CRASH CLEANUP				\$33.00
<b>TOTAL ANNUAL COST</b>				<b>\$8,848.66</b>

BENEFITS	
TOTAL CRASH REDUCTION	\$39,624.75
OTHER: OPERATIONAL BENEFITS	\$0.00
OTHER	\$0.00
<b>FIVE YEAR TOTAL BENEFIT</b>	<b>\$39,624.75</b>
<b>TOTAL ANNUAL BENEFIT</b>	<b>\$7,924.95</b>

**BENEFIT/COST RATIO= 0.90**

#### COMMENTS:

- Analysis assumes crashes that can be possibly attributed to cross slope will be reduced by a crash reduction factor of 33%.
- PECEI = Preliminary Engineering and CEI (15% of construction).
- Segment being analyzed for slope correction includes location #3 at +/- STA 908+00.00 eastbound NW 167<sup>th</sup> Street R2. Cross slope are flat in this segment, requiring reconstruction of two lanes, shoulder, curb and gutter, and adjust inlet.
- CRF values obtained from the FDOT Safety Analysis Tools for Design Exceptions and Variations (May 2013).

Location 3 - Slope Correction (flat)

PAY ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	COST
101-1	MOBILIZATION	1.0	LS	\$7,054.61	\$7,054.61
102-1	MAINTENANCE OF TRAFFIC	1.0	LS	\$6,413.28	\$6,413.28
327-70-15	MILLING EXIST ASPH PAVT, 2 3/4" AVG DEPTH	0	SY	\$2.04	\$0.00
110-1-1	CLEARING AND GRUBBING	0.03	AC	\$15,638.02	\$469.14
327-70-6	MILLING EXIST ASPH PAVT, 1 1/2" AVG DEPTH	1244	SY	\$3.77	\$4,691.56
337-7-74	SUPERPAVE ASPH CONC, TRAFFIC B, PG76-22 (3")	334	TN	\$131.82	\$43,983.94
425-4	INLET ADJUST	2	EA	\$843.75	\$1,687.50
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	95	SY	\$40.93	\$3,888.35
520-1-10	CONCRETE CURB & GUTTER, TYPE F	150	LF	\$23.13	\$3,469.50
570-1-2	PERFORMANCE TURF, SOD	972	SY	\$3.12	\$3,033.33
	SIGNING AND MARKING	1	LS	\$2,909.50	\$2,909.50

SUBTOTAL \$77,600.71

CONTINGENCY (5%) \$3,880.04

MOT & MOBILIZATION \$13,467.89

PECEI \$11,640.11

**TOTAL** **\$93,120.85**

## BENEFIT COST ANALYSIS WORKSHEET FOR EXCEPTIONS AND VARIATIONS FDOT DISTRICT 6



FINANCIAL PROJECT ID: 432743-3-52-01  
 PROJECT NAME: SR-826/Palmetto Expressway and NW 167th Street from West of NW 27th Avenue to West of NW 17th Avenue  
 SUBMITTED BY: Bolton Perez and Associates DATE SUBMITTED: 2/3/2015

### FACILITY DESCRIPTION

DISTRICT: 6 COUNTY: Miami-Dade DESIGN SPEED: 60 MPH  
 LENGTH (MILES): 1.423 STATE ROAD: 826 POSTED SPEED: 55 MPH  
 B.M.P.: 21.623 SECTION No. 87260000  
 E.M.P.: 23.046 FACILITY TYPE 6-LANE/8-LANE URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS

### CRASH TYPE AND FREQUENCY

TYPE OF CRASH	SUMMARY OF CRASHES						CRF	NUMBER OF CRASHES REDUCED
	NUMBER OF ASSOCIATED CRASHES							
	2007	2008	2009	2010	2011	TOTAL		
REAR - END								
HEAD - ON								
ANGLE		1				1	0.33	0.33
LEFT -TURN								
RIGHT -TURN								
BAKED INTO								
SIDESWIPE								
PEDESTRIAN/BICYCLE								
FIXED OBJECT ABOVE GROUND								
SIGN (POST)								
BRIDGE/PIER/ABUTMENT								
TREE/SHRUB								
OTHER FIXED OBJECT								
OVERTURNED								
UTILITY/LIGHT POLE								
COLLISION WITH PARKED CAR								
COLLISION W/ MV ON OTHER SIDE OF ROAD								
OCCUPANT FELL FROM VEHICLE								
ALL OTHER, UNKNOWN and N/A								
<b>FIVE YEAR TOTAL</b>						<b>1</b>		<b>0.33</b>
<b>AVERAGE PER YEAR</b>						<b>0.2</b>		<b>0.07</b>

CRASH INFORMATION FOR FACILITY	
* COST/CRASH	\$127,800.00
CRASH CLEANUP	\$100.00
INTEREST	4.0%

\* From 2015 PPM Chapter 23, pg. 23-10

### BENEFIT/COST ANALYSIS

COST OF IMPROVEMENTS				
TYPE	TOTAL COST	LIFE	CAPITAL RECOVERY FACTOR	ANNUALIZED COST
R.O.W	\$0.00	14	0.09467	\$0.00
P.E.C.E.I.	\$32,195.83	14	0.09467	\$3,047.95
DRAINAGE	\$392.86	14	0.09467	\$37.19
ROADWAY	\$16,864.71	14	0.09467	\$1,596.56
PAVEMENT	\$160,129.95	14	0.09467	\$15,159.34
SIGNING / PAV. MARKINGS	\$0.00	14	0.09467	\$0.00
OTHER	\$47,983.32	14	0.09467	\$4,542.53
<b>SUB-TOTAL</b>	<b>\$257,566.67</b>			<b>\$24,383.57</b>
CHANGE IN MAINTENANCE				\$0.00
CHANGE IN CRASH CLEANUP				\$33.33
<b>TOTAL ANNUAL COST</b>				<b>\$24,416.90</b>

BENEFITS	
TOTAL CRASH REDUCTION	\$42,595.74
OTHER: OPERATIONAL BENEFITS	\$0.00
OTHER	\$0.00
<b>FIVE YEAR TOTAL BENEFIT</b>	<b>\$42,595.74</b>
<b>TOTAL ANNUAL BENEFIT</b>	<b>\$8,519.15</b>

**BENEFIT/COST RATIO= 0.35**

#### COMMENTS:

- Analysis assumes crashes that can be possibly attributed to cross slope will be reduced by a crash reduction factor of 33%.
- PECEI = Preliminary Engineering and CEI (15% of construction).
- Segment being analyzed for slope correction includes location #18 from STA 934+00.00 to STA 937+50.00 eastbound 826 (R2). Cross slope are flat in this segment, requiring reconstruction of mainline lane, shoulder, and median barrier wall.
- CRF values obtained from the FDOT Safety Analysis Tools for Design Exceptions and Variations (May 2013).

Location 18 - Slope Correction (flat)

PAY ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	COST
101-1	MOBILIZATION	1.0	LS	\$19,512.63	\$19,512.63
102-1	MAINTENANCE OF TRAFFIC	1.0	LS	\$17,738.75	\$17,738.75
110-1-1	CLEARING AND GRUBBING	0.37	AC	\$15,638.02	\$5,779.89
120-6	EMBANKMENT	194	CY	\$14.20	\$2,761.11
160-4	TYPE B STABILIZATION	1,400	SY	\$1.19	\$1,666.00
285-7-15	OPTIONAL BASE, BASE GROUP 15	1400	SY	\$61.77	\$86,478.00
334-1-24	SUPERPAVE ASPHALTIC CONC, TRAFFIC D, PG76-22 (3")	231	TN	\$107.95	\$24,936.45
160-4	TYPE B STABILIZATION	389	SY	\$1.19	\$462.78
285-7-06	OPTIONAL BASE, BASE GROUP 06	389	SY	\$100.00	\$38,888.89
334-1-22	SUPERPAVE ASPH CONC, TRAFFIC B, PG76-22 (1")	21	TN	\$89.67	\$1,917.94
520-6	SHOULDER GUTTER- CONCRETE	350	LF	\$18.61	\$6,513.50
536-1-1	GUARDRAIL	350	LF	\$16.65	\$5,827.50
339-1	MISCELLANEOUS ASPHALT	6	TN	\$274.69	\$1,762.59
0425-4	ADJUSTING INLETS	1	EA	\$392.86	\$392.86

**Mainline**

**Shoulder**

**Drainage**

SUBTOTAL	\$214,638.89
CONTINGENCY (5%)	\$10,731.94
MOT & MOBILIZATION	\$37,251.38
PECEI	\$32,195.83
<b>TOTAL</b>	<b>\$257,566.67</b>

## BENEFIT COST ANALYSIS WORKSHEET FOR EXCEPTIONS AND VARIATIONS FDOT DISTRICT 6



FINANCIAL PROJECT ID: 432743-3-52-01  
 PROJECT NAME: SR-826/Palmetto Expressway and NW 167th Street from West of NW 27th Avenue to West of NW 17th Avenue  
 SUBMITTED BY: Bolton Perez and Associates DATE SUBMITTED: 2/3/2015

### FACILITY DESCRIPTION

DISTRICT: 6 COUNTY: Miami-Dade DESIGN SPEED: 60 MPH  
 LENGTH (MILES): 1.423 STATE ROAD: 826 POSTED SPEED: 55 MPH  
 B.M.P.: 21.623 SECTION No. 87260000  
 E.M.P.: 23.046 FACILITY TYPE: 6-LANE/8-LANE URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS

### CRASH TYPE AND FREQUENCY

TYPE OF CRASH	SUMMARY OF CRASHES						CRF	NUMBER OF CRASHES REDUCED
	NUMBER OF ASSOCIATED CRASHES							
	2007	2008	2009	2010	2011	TOTAL		
REAR - END								
HEAD - ON								
ANGLE								
LEFT - TURN								
RIGHT - TURN								
BAKED INTO								
SIDESWIPE								
PEDESTRIAN/BICYCLE								
FIXED OBJECT ABOVE GROUND								
SIGN (POST)								
BRIDGE/PIER/ABUTMENT								
TREE/SHRUB								
OTHER FIXED OBJECT			2		1	3	0.33	0.99
OVERTURNED								
UTILITY/LIGHT POLE								
COLLISION WITH PARKED CAR								
COLLISION W/ MV ON OTHER SIDE OF ROAD								
OCCUPANT FELL FROM VEHICLE								
ALL OTHER, UNKNOWN and N/A								
<b>FIVE YEAR TOTAL</b>						<b>3</b>		<b>0.99</b>
<b>AVERAGE PER YEAR</b>						<b>0.6</b>		<b>0.20</b>

CRASH INFORMATION FOR FACILITY	
* COST/CRASH	\$127,800.00
CRASH CLEANUP	\$100.00
INTEREST	4.0%

\* From 2015 PPM Chapter 23, pg. 23-10

### BENEFIT/COST ANALYSIS

COST OF IMPROVEMENTS				
TYPE	TOTAL COST	LIFE	CAPITAL RECOVERY FACTOR	ANNUALIZED COST
R.O.W	\$0.00	14	0.09467	\$0.00
P.E.C.E.I.	\$55,921.11	14	0.09467	\$5,293.99
DRAINAGE	\$843.75	14	0.09467	\$79.88
ROADWAY	\$9,111.47	14	0.09467	\$862.57
PAVEMENT	\$345,099.43	14	0.09467	\$32,670.21
SIGNING / PAV. MARKINGS	\$17,752.73	14	0.09467	\$1,680.63
OTHER	\$96,929.92	14	0.09467	\$9,176.26
<b>SUB-TOTAL</b>	<b>\$525,658.41</b>			<b>\$49,763.54</b>
CHANGE IN MAINTENANCE				\$0.00
CHANGE IN CRASH CLEANUP				\$99.00
<b>TOTAL ANNUAL COST</b>				<b>\$49,862.54</b>

BENEFITS	
TOTAL CRASH REDUCTION	\$126,522.00
OTHER: OPERATIONAL BENEFITS	\$0.00
OTHER	\$0.00
<b>FIVE YEAR TOTAL BENEFIT</b>	<b>\$126,522.00</b>
<b>TOTAL ANNUAL BENEFIT</b>	<b>\$25,304.40</b>

**BENEFIT/COST RATIO = 0.51**

#### COMMENTS:

- Analysis assumes crashes that can be possibly attributed to cross slope will be reduced by a crash reduction factor of 33%.
- PECEI = Preliminary Engineering and CEI (15% of construction).
- Segment being analyzed for slope correction includes location #27 from STA 914+50.00 to STA 921+00.00 westbound 826 (L2). Cross slope are flat in this segment, requiring reconstruction of mainline lane, shoulder, and median barrier wall.
- CRF values obtained from the FDOT Safety Analysis Tools for Design Exceptions and Variations (May 2013).

Location 27 - Slope Correction (flat)

PAY ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	COST
101-1	MOBILIZATION	1.0	LS	\$41,008.81	\$41,008.81
102-1	MAINTENANCE OF TRAFFIC	1.0	LS	\$37,280.74	\$37,280.74
110-1-1	CLEARING AND GRUBBING	0.28	AC	\$15,638.02	\$4,379.79
120-6	EMBANKMENT	361	CY	\$14.20	\$5,127.78
285-7-15	OPTIONAL BASE, BASE GROUP 15	2817	SY	\$61.77	\$173,985.50
334-1-24	SUPERPAVE ASPHALTIC CONC, TRAFFIC D, PG76-22 (3")	155	TN	\$107.95	\$16,723.25
285-7-06	OPTIONAL BASE, BASE GROUP 06	1413	SY	\$100.00	\$141,300.00
334-1-22	SUPERPAVE ASPH CONC, TRAFFIC B, PG76-22 (1")	97	TN	\$89.67	\$8,710.88
520-6	SHOULDER GUTTER- CONCRETE	50	LF	\$17.70	\$885.00
536-1-1	GUARDRAIL	50	LF	\$16.65	\$832.50
339-1	MISCELLANOUS ASPHALT	8	TN	\$274.69	\$2,266.19
0425-4	ADJUSTING INLETS	1	EA	\$843.75	\$843.75
	SIGNING AND MARKING	1	LS	\$17,752.73	\$17,752.73

**Mainline**

**Shoulder**

**Drainage  
Signin &  
Marking**

SUBTOTAL \$372,807.38

CONTINGENCY (5%) \$18,640.37

MOT & MOBILIZATION \$78,289.55

PECEI \$55,921.11

**TOTAL \$525,658.41**

## BENEFIT COST ANALYSIS WORKSHEET FOR EXCEPTIONS AND VARIATIONS FDOT DISTRICT 6



FINANCIAL PROJECT ID: 432743-3-52-01  
 PROJECT NAME: SR-826/Palmetto Expressway and NW 167th Street from West of NW 27th Avenue to West of NW 17th Avenue  
 SUBMITTED BY: Bolton Perez and Associates DATE SUBMITTED: 2/4/2015

### FACILITY DESCRIPTION

DISTRICT: 6 COUNTY: Miami-Dade DESIGN SPEED: 60 MPH  
 LENGTH (MILES): 1.423 STATE ROAD: 826 POSTED SPEED: 55 MPH  
 B.M.P.: 21.623 SECTION No. 87260000  
 E.M.P.: 23.046 FACILITY TYPE: 6-LANE/8-LANE URBAN PRINCIPAL ARTERIAL - OTHER FREEWAYS AND EXPRESSWAYS

### CRASH TYPE AND FREQUENCY

TYPE OF CRASH	SUMMARY OF CRASHES						CRF	NUMBER OF CRASHES REDUCED
	NUMBER OF ASSOCIATED CRASHES							
	2007	2008	2009	2010	2011	TOTAL		
REAR - END								
HEAD - ON								
ANGLE								
LEFT -TURN								
RIGHT -TURN								
BAKED INTO								
SIDESWIPE		1				1	0.33	0.33
PEDESTRIAN/BICYCLE								
FIXED OBJECT ABOVE GROUND								
SIGN (POST)								
BRIDGE/PIER/ABUTMENT								
TREE/SHRUB								
OTHER FIXED OBJECT								
OVERTURNED								
UTILITY/LIGHT POLE								
COLLISION WITH PARKED CAR								
COLLISION W/ MV ON OTHER SIDE OF ROAD								
OCCUPANT FELL FROM VEHICLE								
ALL OTHER, UNKNOWN and N/A								
<b>FIVE YEAR TOTAL</b>						<b>1</b>		<b>0.33</b>
<b>AVERAGE PER YEAR</b>						<b>0.2</b>		<b>0.07</b>

CRASH INFORMATION FOR FACILITY	
* COST/CRASH	\$127,800.00
CRASH CLEANUP	\$100.00
INTEREST	4.0%

\* From 2015 PPM Chapter 23, pg. 23-10

### BENEFIT/COST ANALYSIS

COST OF IMPROVEMENTS				
TYPE	TOTAL COST	LIFE	CAPITAL RECOVERY FACTOR	ANNUALIZED COST
R.O.W	\$0.00	14	0.09467	\$0.00
P.E.C.E.I.	\$137,371.22	14	0.09467	\$13,004.79
DRAINAGE	\$1,687.50	14	0.09467	\$159.75
ROADWAY	\$58,039.78	14	0.09467	\$5,494.57
PAVEMENT	\$697,138.93	14	0.09467	\$65,997.43
SIGNING / PAV. MARKINGS	\$0.00	14	0.09467	\$0.00
OTHER	\$204,732.31	14	0.09467	\$19,381.80
<b>SUB-TOTAL</b>	<b>\$1,098,969.73</b>			<b>\$104,038.34</b>
CHANGE IN MAINTENANCE				\$0.00
CHANGE IN CRASH CLEANUP				\$33.30
<b>TOTAL ANNUAL COST</b>				<b>\$104,071.64</b>

BENEFITS	
TOTAL CRASH REDUCTION	\$42,557.40
OTHER: OPERATIONAL BENEFITS	\$0.00
OTHER	\$0.00
<b>FIVE YEAR TOTAL BENEFIT</b>	<b>\$42,557.40</b>
<b>TOTAL ANNUAL BENEFIT</b>	<b>\$8,511.48</b>

**BENEFIT/COST RATIO= 0.08**

#### COMMENTS:

- Analysis assumes crashes that can be possibly attributed to cross slope will be reduced by a crash reduction factor of 33%.
- PECEI = Preliminary Engineering and CEI (15% of construction).
- Segment being analyzed for slope correction includes location #28 from STA 934+00.00 to STA 950+50.00 westbound (L2). Cross slope are flat in this segment, requiring reconstruction of mainline lane, shoulder, and median barrier wall.
- CRF values obtained from the FDOT Safety Analysis Tools for Design Exceptions and Variations (May 2013).

Location 28 - Slope Correction (flat)

PAY ITEM NO.	DESCRIPTION	QTY	UNIT	UNIT COST	COST
101-1	MOBILIZATION	1.0	LS	\$83,255.28	\$83,255.28
102-1	MAINTENANCE OF TRAFFIC	1.0	LS	\$75,686.62	\$75,686.62
110-1-1	CLEARING AND GRUBBING	1.80	AC	\$14,825.00	\$26,614.21
120-6	EMBANKMENT	944	CY	\$14.20	\$13,411.11
285-7-15	OPTIONAL BASE, BASE GROUP 15	6800	SY	\$61.77	\$420,036.00
334-1-24	SUPERPAVE ASPHALTIC CONC, TRAFFIC D, PG76-22 (3")	374	TN	\$133.57	\$49,955.18
285-7-06	OPTIONAL BASE, BASE GROUP 02	1889	SY	\$100.00	\$188,888.89
334-1-22	SUPERPAVE ASPH CONC, TRAFFIC B, PG76-22 (1")	130	TN	\$89.67	\$11,644.65
520-6	SHOULDER GUTTER- CONCRETE	1050	LF	\$17.70	\$18,585.00
536-1-1	GUARDRAIL	1050	LF	\$16.65	\$17,482.50
339-1	MISCELLANEOUS ASPHALT	31	TN	\$274.69	\$8,561.17
0425-4	ADJUSTING INLETS	2	EA	\$843.75	\$1,687.50

**Mainline**

**Shoulder**

**Drainage**

SUBTOTAL \$915,808.11

CONTINGENCY (5%) \$45,790.41

MOT & MOBILIZATION \$158,941.90

PECEI \$137,371.22

TOTAL \$1,098,969.73



# Controlling Elements

**Grade**

**Grade**



**Grade**



**Grade**

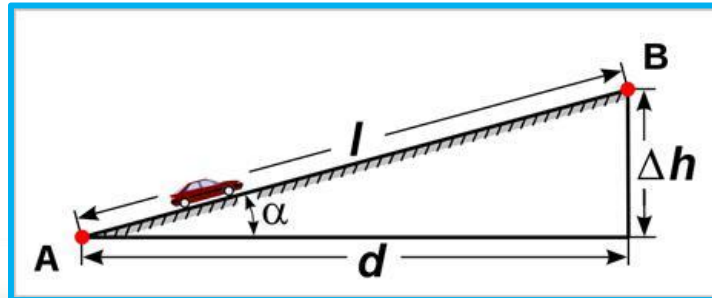


## Grade

### Definition

“Grade is the rate of change of the vertical alignment.”

- FHWA Mitigation Strategies for  
Design Exceptions – July 2007



## Grade

### Definition

“Grade affects vehicle speed and vehicle control, particularly for large trucks.”



*FHWA Mitigation Strategies for  
Design Exceptions - July 2007*



## Grade

Criteria

- FDOT
  - New Construction/ Reconstruction
    - PPM Chapter 2
  - Resurfacing Restoration and Rehabilitation (RRR)
    - PPM Chapter 25
- AASHTO
  - AASHTO Greenbook Chapter 5,6,7, and 8
  - PPM Chapter 23

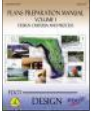


## Grade

FDOT

New Construction/ Reconstruction

- Maximum Grades
  - Steep Grades
  - PPM Table 2.6.1



### Grade

FDOT  
New Construction/ Reconstruction  
 > Maximum Grades

MAXIMUM GRADES IN PERCENT													
TYPE OF HIGHWAY	AREA	DESIGN SPEED (mph)											
		FLAT TERRAIN						ROLLING TERRAIN					
		30	40	45	50	60	70	30	40	45	50	60	70
FREEWAYS <sup>1</sup>	Rural	----	----	4	4	3	3	----	----	----	5	4	4
	Urban	----	----	4	4	3	3	----	----	----	5	4	4
ARTERIALS <sup>3</sup>	Rural	----	5	5	4	3	3	----	6	6	5	4	4
	Urban	8	7	6	6	5	----	9	8	7	7	6	----
COLLECTORS <sup>3</sup>	Rural	7	7	7	6	5	4	9	8	8	7	6	5
	Urban	9	9	8	7	6	5	11	10	9	8	7	6
	Industrial <sup>2</sup>	4	4	4	3	3	----	5	5	5	4	4	----


### Grade

FDOT  
New Construction/ Reconstruction  
 > Minimum Grades

- Flat Grades
- PPM Table 2.6.4

GRADES ON CURB AND GUTTER SECTIONS	
Minimum Distance Required between VPI's	250 ft.
Minimum Grade (%)	0.3 %

## Grade




**FDOT**

Resurfacing Restoration and Rehabilitation (RRR)

- Section 25.4.10 and 25.4.10.2
- Grades that meet the standards at time of construction okay if:
  - Stopping sight distance is met or exceeded
  - Grades don't affect truck operations
  - No hidden dips to obscure traffic or hazards
  - No steep grades and sharp vertical curves near an intersection
  - Sufficient grades and special gutter grades when necessary
  - Adequate sight distance for traffic signals

## Grade




**AASHTO**

- Maximum Grades
  - PPM Chapter 23 Table 23.9.7

Maximum Grades

Type Facility	Type Terrain	Grades (%) For Design Speed (mph)									AASHTO
		30	35	40	45	50	55	60	65	70	
Freeway <sup>(1)</sup>	Level	---	---	---	---	4	4	3	3	3	pg. 506, Exh. 8-1
	Rolling	---	---	---	---	5	5	4	4	4	
Rural Arterial	Level	---	---	5	5	4	4	3	3	3	pg. 446, Exh. 7-2
	Rolling	---	---	6	6	5	5	4	4	4	
Urban Arterial:	Level	8	7	7	6	6	5	5	---	---	pg. 472, Exh. 7-10
	Rolling	9	8	8	7	7	6	6	---	---	
Rural Collector <sup>(2)</sup>	Level	7	7	7	7	6	6	5	---	---	pg. 423, Exh. 6-4
	Rolling	9	9	8	8	7	7	6	---	---	
Urban Collector <sup>(2)</sup>	Level	9	9	9	8	7	7	6	---	---	pg. 432, Exh. 6-8
	Rolling	11	10	10	9	8	8	7	---	---	

## Grade



**AASHTO**

- Minimum Grades
  - PPM Chapter 23 Table 23.9.7

Minimum Grades for Urban Curb & Gutter


Type Facility	Minimum %	AASHTO
Arterials	as required for adequate drainage	pg. 471
Collector Roads & Streets	0.30	pg. 431
Local Roads & Streets	0.20	pg. 391

## Grade

FHWA Proposed Changes to Controlling Criteria

- Low Speed Facilities
  - Remove from List of Controlling Criteria
- High Speed Facilities
  - Change to Maximum Grade

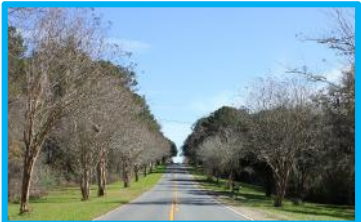

## Grade



### Identification

➤ Evaluating Grade

- Determine from profile grade lines which grades are deficient.
- Are the grades too steep or too flat?
- Is there a high percentage of trucks on this roadway?
- What are the posted speeds and design speeds in the grades?
- Is there sufficient drainage in the flat grades?

## Grade

### Potential Adverse Impacts to Safety and Operations

Safety and Operational Issues	Freeway	Expressway	Rural Two-Lane	Urban Arterial
Trucks losing control descending grade	X	X	X	
Risky passing maneuvers			X	X
Reduced speeds ascending grade	X	X	X	X
Reduced speeds descending grade	X	X	X	X
Run-off-road crashes, particularly where steep grades are combined with horizontal curves	X	X	X	
Rear-end crashes descending grade	X	X	X	
Slick pavement (flat grades)	X	X	X	X
Water ponding on the pavement surface (flat grades)	X	X	X	X
Water spreading onto the traveled lanes (flat grades)				X



## Grade

Types of Crashes to Review – CARS Report

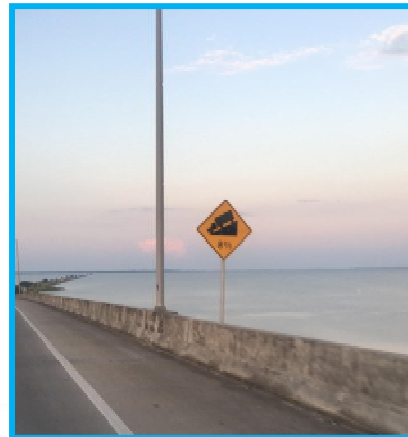
Code	Harmful Event (Crash Type)	G
00	Unknown/Not Coded	X
01	Rear-End	X
02	Head-On	X
03	Angle	
04	Left-Turn	
05	Right-Turn	
06	Sideswipe	
07	Backed Into	X
08	Collision with Parked Car	
09	Collision with Moving Vehicle on Roadway	
10	Collision with Pedestrian	

## Grade

### Mitigation Strategies

Targeted at mitigating grade to improve drainage, improve the drivers' ability to stay on the roadway, and reduce severity when they can not.

- Provide advanced warning
  - Signing



## Grade

### Mitigation Strategies

- Improve safety and operations for vehicles ascending or descending steep grades.
  - Climbing lanes
  - Downgrade lanes
- Capture out-of-control vehicles descending steep grades.
  - Escape ramps

## Grade

### Mitigation Strategies

- Improve ability to stay within the lane.
  - Enhanced pavement markings
  - Delineators
  - Centerline rumble strips
  - Shoulder rumble strips
  - Painted edgeline rumble strips



- FHWA Mitigation Strategies for Design Exceptions – July 2007

## Grade

### Mitigation Strategies

- Improve ability to recover if driver leaves the lane.
  - Paved or partially paved shoulders
  - Safety edge



## Grade

### Mitigation Strategies

- Reduce crash severity if driver leaves the roadway.
  - Remove or relocate fixed objects
  - Traversable slopes
  - Breakaway safety hardware
  - Shield fixed objects and steep slopes



## Grade

### Mitigation Strategies

- Address drainage on flat grades.
  - Adjusting gutter profile on curbed cross sections.
  - Continuous drains

## Grade

### Mitigation Strategies Summary

8. Grade	Provide advance warning.	Signing.
	Improve safety and operations for vehicles ascending or descending steep grades.	Climbing lanes.
		Downgrade lanes.
	Capture out-of-control vehicles descending steep grades.	Escape ramps.
	Improve ability to stay within the lane.	Enhanced pavement markings.
		Delineators.
		Centerline rumble strips.
Shoulder rumble strips.		
	Painted edgeline rumble strips.	

## Grade

Applicable CMFs and CRFs

- Crash Modification Factor Clearing House

▼ Countermeasure: Widen paved shoulder from 3 ft to 5 ft

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference
0.87	13	★★★★☆	All	All	Not specified	Stamatiadis et al., 2009
0.9	10	★★★★☆	Single vehicle	All	Not specified	Stamatiadis et al., 2009
0.95	5	★★★★☆	All	All	Rural	Various, 2009

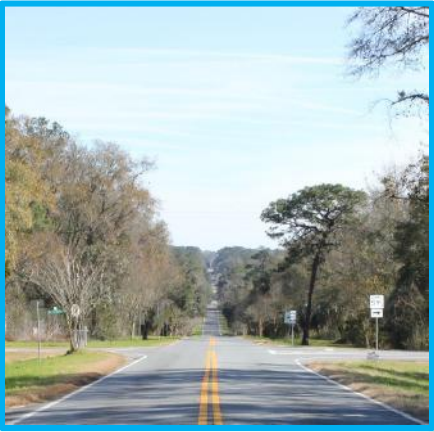
## Grade

Alternatives to Correct

- Partial Correction
  - Change Grade
  - Change Typical Section

Cost to Remedy

- Design/ Engineering
- Construction
  - Right of Way
  - Asphalt
  - Earthwork



## Grade

### Key Points

- “Grade is the rate of change of the vertical alignment.”
- Criteria for Steep and Flat Grades.
- Identify the deficient grades.
- Analyze Safety
  - Historical Crash Method (RRR Projects)
  - Predictive Method (New Construction or Reconstruction)
- Choose Appropriate Mitigation

# Controlling Elements

**Horizontal  
Alignment**

**Horizontal Alignment**



## Horizontal Alignment



## Horizontal Alignment





## Horizontal Alignment

### Definition

Horizontal alignment refers only to roadway horizontal curvature.

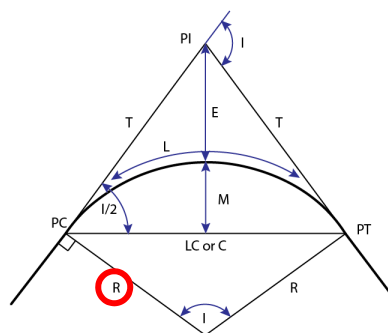


## Horizontal Alignment

### Definition

“The adopted design criteria specify a minimum radius for the selected design speed, which is calculated from the maximum rate of superelevation and the side friction factor.”


*FHWA Mitigation Strategies for  
Design Exceptions  
July 2007*



## Horizontal Alignment

**Criteria**

- FDOT
  - New Construction/ Reconstruction
    - PPM Chapter 2
    - Standard Index
  - Resurfacing Restoration and Rehabilitation (RRR)
    - PPM Chapter 25
    - Standard Index
- AASHTO
  - AASHTO Greenbook Chapter 3
  - PPM Chapter 23

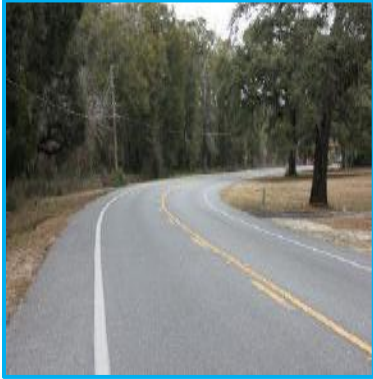



## Horizontal Alignment


**FDOT**

**New Construction/ Reconstruction**

- High Speed Facilities
  - Design Speed 50 mph or Greater
  - Radius from  $e_{MAX} = 10\%$  Table
    - PPM Table & Figure 2.9.1
    - Standard Index 510


## Horizontal Alignment




**FDOT**

New Construction/ Reconstruction

- Low Speed Facilities
  - Design Speed 45 mph or Less
  - Radius from  $e_{MAX} = 5\%$  Table
    - PPM Table & Figure 2.9.2
    - Standard Index 511



## Horizontal Alignment



**FDOT**

Resurfacing Restoration and Rehabilitation (RRR)

- Minimum Radius with Superelevation
  - Radius for  $e_{MAX} = 5\%$  and  $e_{MAX} = 10\%$ 
    - PPM Table 25.4.11.1 Safe Criteria for SHS with Max. SE

DESIGN SPEED (mph)	$e_{MAX} = 0.10$				$e_{MAX} = 0.05$			
	SHS		RRR		SHS		RRR	
	D <sub>max</sub>	R <sub>min.</sub> (ft.)	D <sub>max</sub>	R <sub>min.</sub> (ft.)	D <sub>max</sub>	R <sub>min.</sub> (ft.)	D <sub>max</sub>	R <sub>min.</sub> (ft.)
30	24° 45'	231	30° 30'	188	20° 00'	286	25° 45'	223
35	17° 45'	323	20° 45'	276	14° 15'	402	17° 15'	332
40	13° 15'	432	14° 45'	388	10° 45'	533	12° 15'	468
45	10° 15'	559	11° 00'	521	8° 15'	694	9° 00'	637
50	8° 15'	694	8° 30'	674	6° 30'	881	6° 45'	849
55	6° 30'	881	6° 45'	849	N/A		N/A	
60	5° 15'	1091	5° 30'	1042	N/A		N/A	
65	4° 15'	1348	4° 30'	1273	N/A		N/A	
70	3° 30'	1637	3° 45'	1528	N/A		N/A	

## Horizontal Alignment

**AASHTO**

- Minimum Radius with Superelevation
  - Rural Highways and High Speed Urban Streets
    - $e_{MAX} = 4\%$  to  $e_{MAX} = 12\%$
    - Greenbook Exhibit 3-15
    - PPM Table 23.9.10

**Minimum Radius (feet) with Superelevation (page 147, Exh. 3-15)**

Type Facility	Super-elevation e-max	Minimum Curve Radius (feet) for Design Speed (mph)											
		15	20	25	30	35	40	45	50	55	60	65	70
Rural Highways and High Speed Urban Streets	0.04	42	86	154	250	371	533	711	926	1190	1500	---	---
	0.06	39	81	144	231	340	485	643	833	1060	1330	1660	2040
	0.08	38	76	134	214	314	444	587	758	960	1200	1480	1810
	0.10	36	72	126	200	292	410	540	694	877	1090	1340	1630
	0.12	34	68	119	188	272	381	500	641	807	1000	1220	1480

## Horizontal Alignment

**AASHTO**

- Minimum Radius with Normal Cross Slope
  - All Facility Types
    - Greenbook Exhibit 3-26
    - PPM Table 23.9.10

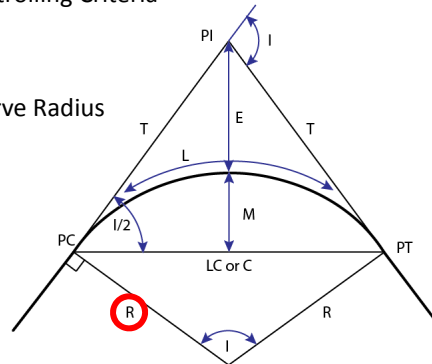
**Minimum Radius (feet) for Section with Normal Cross Slope (2001 AASHTO, page 168, Exh. 3-26)**

Type Facility	Minimum Curve Radius (feet) for Design Speed (mph)											
	15	20	25	30	35	40	45	50	55	60	65	70
All	960	1700	2460	3350	4390	5570	6880	8350	9960	11720	13180	14730

## Horizontal Alignment

### FHWA Proposed Changes to Controlling Criteria

- Low Speed Facilities
  - Remove from List of Controlling Criteria
- High Speed Facilities
  - Change to Horizontal Curve Radius



## Horizontal Alignment

### Identification

- Evaluating Curves Radii
  - Determine from curve data which curves are deficient (Survey, Right of Way Maps, and Old Plans).
  - Are the deficient curves superelevated (Survey, field verify, and Old Plans)?
  - Are there any intersections near the curves?
  - What are the posted speeds and design speeds in the curves?
  - What design speed does the curve meet?



### Horizontal Alignment

Potential Adverse Impacts to Safety and Operations

Safety & Operational Issues	Freeway	Expressway	Rural Two-Lane	Urban Arterial
Run-off-road crashes	X	X	X	
Cross-median crashes	X	X		
Cross-centerline crashes			X	X
Large vehicle rollover crashes	X	X	X	
Large vehicles off-tracking into adjacent lane or shoulder	X	X	X	X
Skidding	X	X	X	X
Rear-end crashes if operations deteriorate (abrupt speed reduction)	X	X	X	
Reduced free-flow speeds	X	X	X	X

### Horizontal Alignment

Types of Crashes to Review – CARS Report

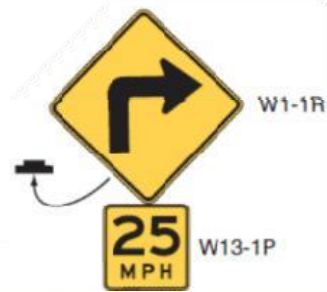
Code	Harmful Event (Crash Type)	HA
00	Unknown/Not Coded	X
01	Rear-End	
02	Head-On	X
03	Angle	X
04	Left-Turn	
05	Right-Turn	
06	Sideswipe	X
07	Backed Into	
08	Collision with Parked Car	
09	Collision with Moving Vehicle on Roadway	X
10	Collision with Pedestrian	X

## Horizontal Alignment

### Mitigation Strategies

Targeted at mitigating horizontal alignment and superelevation to improve the drivers' ability to stay on the roadway and reduce severity when they can not.

- Provide advanced warning
  - Signing
  - Pavement marking messages
  - Dynamic curve warning system
- Provide Delineation
  - Chevrons
  - Post-mounted delineators
  - Reflectors on barrier



## Horizontal Alignment

### Mitigation Strategies

- Improve ability to stay within the lane.
  - Widen the roadway
  - Skid-resistant pavement
  - Enhanced pavement markings
  - Lighting
  - Centerline rumble strips
  - Shoulder rumble strips
  - Painted edgeline rumble strips



Lighting

## Horizontal Alignment

### Mitigation Strategies

- Improve ability to recover if driver leaves the lane.
  - Paved or partially paved shoulders
  - Safety edge



## Horizontal Alignment

### Mitigation Strategies

- Reduce crash severity if driver leaves the roadway.
  - Remove or relocate fixed objects
  - Traversable slopes
  - Breakaway safety hardware
  - Shield fixed objects and steep slopes





### Horizontal Alignment

#### Mitigation Strategies Summary

5. Horizontal Alignment & 6. Superelevation	Provide advance warning.	Signing. Pavement marking messages. Dynamic curve warning systems.
	Provide delineation.	Chevrons. Post-mounted delineators. Reflectors on barrier.
	Improve ability to stay within the lane.	Widen the roadway. Skid-resistant pavement. Enhanced pavement markings. Lighting. Centerline rumble strips. Shoulder rumble strips.

### Horizontal Alignment

#### Mitigation Strategies Summary

Design Element	Objective	Potential Mitigation Strategies
<b>Potential Mitigation Strategies</b>		Painted edgeline rumble strips.
	Improve ability to recover if driver leaves the lane.	Paved or partially paved shoulders. Safety edge.
	Reduce crash severity if driver leaves the roadway.	Remove or relocate fixed objects. Traversable slopes. Breakaway safety hardware. Shield fixed objects and steep slopes.

## Horizontal Alignment

Applicable CMFs and CRFs

➤ Crash Modification Factor Clearing House

▼ Countermeasure: Illumination

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference
0.69	32	★★★★☆	All	Serious injury, Minor injury	Urban	Elvik, R. and Vaa, T., 2004
0.84	16	★★★★☆	All	Property damage only (PDO)	Urban	Elvik, R. and Vaa, T., 2004
0.73	27	★★★★☆	All	Serious injury, Minor injury	All	Elvik, R. and Vaa, T., 2004

## Horizontal Alignment

Alternatives to Correct

➤ Partial Correction


- Increase radius
- Increase superelevation
- Increase both

Cost to Remedy

➤ Design/ Engineering

➤ Construction

- Right of Way
- Asphalt
- Earthwork



## Horizontal Alignment

### Key Points

- “The adopted design criteria specify a minimum radius for the selected design speed, which is calculated from the maximum rate of superelevation and the side friction factor.”
- The Criteria for LS and HS Facilities is not the same.
- Identify the curves with deficient Curve Radii.
- Analyze Safety
  - Historical Crash Method (RRR Projects)
  - Predictive Method (New Construction or Reconstruction)
- Choose Appropriate Mitigation

# Controlling Elements

Superelevation

## Superelevation



## Superelevation



## Superelevation

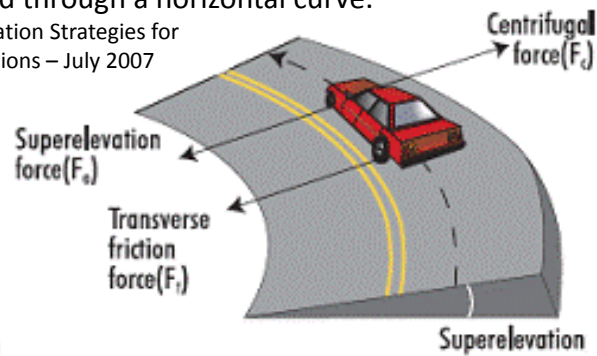


## Superelevation

### Definition

Superelevation is the rotation of the pavement on the approach to and through a horizontal curve.

- FHWA Mitigation Strategies for  
Design Exceptions – July 2007



## Superelevation

### Definition

“Superelevation is intended to assist the driver by counteracting the lateral acceleration produced by tracking the curve.”



*FHWA Mitigation Strategies for  
Design Exceptions  
July 2007*



## Superelevation

Criteria

- FDOT
  - New Construction/ Reconstruction
    - PPM Chapter 2
    - Standard Index
  - Resurfacing Restoration and Rehabilitation (RRR)
    - PPM Chapter 25
    - Standard Index
- AASHTO
  - AASHTO Greenbook Chapter 3
  - PPM Chapter 23

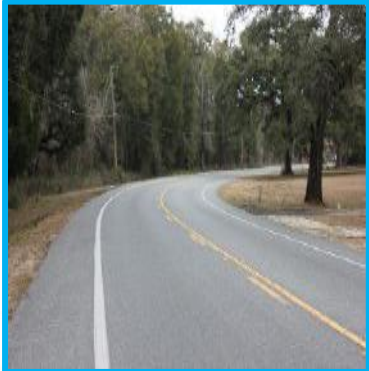



## Superelevation

FDOT

New Construction/ Reconstruction

- High Speed Facilities
  - Design Speed 50 mph or Greater
  - $e_{MAX} = 10\%$  Table
    - PPM Table & Figure 2.9.1
    - Standard Index 510



## Superelevation

FDOT

### New Construction/ Reconstruction

- Low Speed Facilities
  - Design Speed 45 mph or Less
  - $e_{MAX} = 5\%$  Table
    - PPM Table & Figure 2.9.2
    - Standard Index 511



## Superelevation

FDOT

### Resurfacing Restoration and Rehabilitation

- Superelevation for Low Speed Facilities PPM Chapter 25
  - Same as New Construction
    - $e_{MAX} = 5\%$  Table
    - PPM Table & Figure 2.9.2
    - Standard Index 511





## Superelevation



FDOT

### Resurfacing Restoration and Rehabilitation

➤ Superelevation for High Speed Facilities PPM Chapter 25

- New Construction
    - $e_{MAX} = 10\%$  Table
    - PPM Table & Figure 2.9.1
    - Standard Index 510
  - Correction Required except when both conditions met:
    - Superelevation not linked to crashes
    - Existing Superelevation Rate within  $e_{MAX} = 6\%$  and  $e_{MAX} = 12\%$
- Figures from AASHTO

## Superelevation



FDOT

### Resurfacing Restoration and Rehabilitation

➤ Required Superelevation from  $e_{MAX} = 6\%$  Table

- Example – Design Speed = 60 mph and Radius = 2710 ft.

US CUSTOMARY										
$e$ (%)	$V_d = 15$ mph	$V_d = 20$ mph	$V_d = 25$ mph	$V_d = 30$ mph	$V_d = 35$ mph	$V_d = 40$ mph	$V_d = 45$ mph	$V_d = 50$ mph	$V_d = 55$ mph	$V_d = 60$ mph
	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)
1.5	888	1580	2290	3130	4100	5230	6480	7870	9410	11100
2.0	914	1120	1630	2240	2950	3770	4690	5700	6820	8060
2.2	543	991	1450	2000	2630	3370	4190	5100	6110	7230
2.4	482	884	1300	1790	2360	3030	3770	4600	5520	6540
2.6	430	791	1170	1610	2130	2740	3420	4170	5020	5950
2.8	384	709	1050	1460	1930	2490	3110	3800	4580	5440
3.0	341	635	944	1320	1760	2270	2840	3480	4200	4990
3.2	300	566	850	1200	1600	2080	2600	3200	3860	4600
3.4	258	498	761	1090	1460	1900	2390	2940	3580	4250
3.6	209	422	673	972	1320	1740	2190	2710	3290	3940
3.8	176	358	583	864	1190	1590	2010	2490	3040	3650
4.0	151	309	511	786	1070	1440	1840	2300	2810	3390
4.2	131	270	452	684	960	1310	1680	2110	2590	3140
4.4	116	238	402	615	868	1180	1540	1940	2400	2920
4.6	102	212	360	555	788	1090	1410	1780	2210	2710
4.8	91	189	324	502	718	965	1300	1640	2050	2510
5.0	82	169	292	456	654	911	1180	1510	1890	2330
5.2	73	152	264	413	595	833	1090	1390	1750	2160
5.4	65	136	237	373	540	759	995	1280	1610	1990
5.6	58	121	212	335	487	687	903	1160	1470	1830
5.8	51	106	186	296	431	611	806	1040	1320	1650
6.0	39	81	144	231	340	485	643	833	1080	1330

## Superelevation

FDOT  
Resurfacing Restoration and Rehabilitation  
 ➤ Required Superelevation from  $e_{MAX} = 6\%$  Table  
 ■ Example – Design Speed = 60 mph and Radius = 2710 ft.


US CUSTOMARY										
$e$ (%)	$V_d = 15$ mph	$V_d = 20$ mph	$V_d = 25$ mph	$V_d = 30$ mph	$V_d = 35$ mph	$V_d = 40$ mph	$V_d = 45$ mph	$V_d = 50$ mph	$V_d = 55$ mph	$V_d = 60$ mph
	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)	$R$ (ft)
1.5	888	1580	2290	3130	4100	5230	6480	7870	9410	11100
2.0	814	1120	1630	2240	2950	3770	4680	5700	6820	8060
2.2	543	891	1450	2000	2630	3370	4190	5100	6110	7230
2.4	482	884	1300	1790	2360	3030	3770	4600	5520	6540
2.6	430	791	1170	1610	2130	2740	3420	4170	5020	5950
2.8	384	709	1050	1450	1930	2490	3110	3800	4580	5440
3.0	341	635	944	1320	1760	2270	2840	3480	4200	4980
3.2	300	566	850	1200	1600	2080	2600	3200	3860	4600
3.4	256	498	761	1080	1460	1900	2390	2940	3560	4250
3.6	209	422	673	972	1320	1740	2190	2710	3290	3940
3.8	176	358	583	864	1190	1590	2010	2490	3040	3650
4.0	151	309	511	766	1070	1440	1840	2300	2810	3390
4.2	131	270	452	684	960	1310	1680	2110	2580	3140
4.4	114	238	405	615	850	1160	1500	1900	2340	2860
4.6	102	212	360	555	788	1090	1410	1780	2210	2710
4.8	92	190	324	503	718	960	1260	1580	1980	2450
5.0	82	169	292	456	654	911	1190	1510	1890	2330
5.2	77	152	264	413	595	833	1090	1390	1750	2160
5.4	71	138	240	375	549	770	1000	1280	1600	1990
5.6	66	126	220	342	513	720	930	1180	1480	1830
5.8	61	106	186	295	431	611	806	1040	1320	1650
6.0	59	81	144	231	340	485	643	833	1060	1330

## Superelevation

FDOT  
Resurfacing Restoration and Rehabilitation  
 ➤ Minimum Survey Guidelines PPM 25.3.4  
 ■ Type of Work (1 – 16 listed) & Level of Survey Effort (1 – 4)  
 ■ Level 1 – For Curves Check:

- At PC and 50 ft. before and after
- 100 ft. after PC
- Middle of Curve or 300 ft. intervals
- 100 ft. before PT
- At PT and 50 ft. before and after

## Superelevation




**FDOT**

Resurfacing Restoration and Rehabilitation

➤ If Superelevation Correction is required (PPM 25.4.7)

- Provide Cross Sections in the Plans at:
  - At PC and 50 ft. before and after
  - Middle of Curve or 300 ft. intervals
  - At PT and 50 ft. before and after

## Superelevation



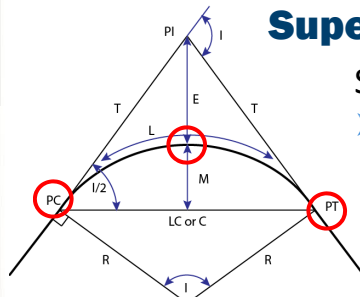
**AASHTO**

➤ Superelevation

- Rural and Urban
  - $e_{MAX} = 6\%$ ,  $e_{MAX} = 10\%$ , and  $e_{MAX} = 12\%$
  - Greenbook
  - PPM Table 23.9.9

Type Facility	Superelevation Rate	AASHTO
Highways (Rural)	0.12	pg. 144
Urban	0.06	pg. 145
Low Speed Urban w/severe constraints	None	pg. 145
Ramps and Turning Roadways at Intersections	0.10	pg. 639

## Superelevation




**Side Friction Factor (f)**

- Calculate f at the following
  - Each lane of different cross-slope
  - PC of the curve
  - Point of maximum cross-slope
  - PT of the curve
  - Compare to AASHTO maximum values for design speed

$$f = \frac{V^2 - 15Re}{V^2e + 15R}$$

f = Side Friction Factor  
 V = Design Speed (mph)  
 R = Radius (feet)  
 e = Superelevation (ft/ft) at the station evaluated



## Superelevation



### FHWA Proposed Changes to Controlling Criteria

- Low Speed Facilities
  - Remove from List of Controlling Criteria
- High Speed Facilities
  - Change to Superelevation Rate

## Superelevation

**Identification**

- Evaluating Curve Superelevation
  - Determine from curve data which curves are deficient (Survey, Right of Way Maps, and Old Plans).
  - Are the deficient curves superelevated (Survey, field verify, and Old Plans)?
  - What is the side friction factor for the curve?
  - What are the posted speeds and design speeds in the curves?
  - What design speed does the curve meet?

## Superelevation

### Potential Adverse Impacts to Safety and Operations

Safety & Operational Issues	Freeway	Expressway	Rural Two-Lane	Urban Arterial
Run-off-road crashes	X	X	X	
Cross-median crashes	X	X		
Cross-centerline crashes			X	
Skidding	X	X	X	X
Large vehicle rollover crashes	X	X	X	

## Superelevation

Types of Crashes to Review – CARS Report

Code	Harmful Event (Crash Type)	SE
00	Unknown/Not Coded	X
01	Rear-End	
02	Head-On	X
03	Angle	
04	Left-Turn	
05	Right-Turn	
06	Sideswipe	X
07	Backed Into	
08	Collision with Parked Car	X
09	Collision with Moving Vehicle on Roadway	X
10	Collision with Pedestrian	X

## Superelevation

### Mitigation Strategies

Targeted at mitigating horizontal alignment and superelevation to improve the drivers' ability to stay on the roadway and reduce severity when they can not.

- Provide advanced warning
  - Signing
  - Pavement marking messages
  - Dynamic curve warning system



Signing



## Superelevation

Mitigation Strategies

- Provide Delineation
  - Chevrons
  - Post-mounted delineators
  - Reflectors on barrier



W1-8L




Chevrons

## Superelevation

Mitigation Strategies

- Improve ability to stay within the lane.
  - Widen the roadway
  - Skid-resistant pavement
  - Enhanced pavement markings
  - Lighting
  - Centerline rumble strips
  - Shoulder rumble strips
  - Painted edgeline rumble strips



Lighting

## Superelevation

### Mitigation Strategies

- Improve ability to recover if driver leaves the lane.
  - Paved or partially paved shoulders
  - Safety edge



Paved Shoulder



Safety Edge

## Superelevation

### Mitigation Strategies

- Reduce crash severity if driver leaves the roadway.
  - Remove or relocate fixed objects
  - Traversable slopes
  - Breakaway safety hardware
  - Shield fixed objects and steep slopes



Guardrail



### Superelevation

#### Mitigation Strategies Summary

5. Horizontal Alignment &	Provide advance warning.	Signing.
		Pavement marking messages.
		Dynamic curve warning systems.
6. Superelevation	Provide delineation.	Chevrons.
		Post-mounted delineators.
		Reflectors on barrier.
	Improve ability to stay within the lane.	Widen the roadway.
		Skid-resistant pavement.
		Enhanced pavement markings.
		Lighting.
		Centerline rumble strips.
		Shoulder rumble strips.

### Superelevation

#### Mitigation Strategies Summary

Design Element	Objective	Potential Mitigation Strategies
Potential Mitigation Strategies		Painted edgeline rumble strips.
	Improve ability to recover if driver leaves the lane.	Paved or partially paved shoulders.
		Safety edge.
	Reduce crash severity if driver leaves the roadway.	Remove or relocate fixed objects.
		Traversable slopes.
		Breakaway safety hardware.
		Shield fixed objects and steep slopes.

## Superelevation

### Applicable CMFs and CRFs

#### ➤ Crash Modification Factor Clearing House

▼ Countermeasure: Install centerline and shoulder rumble strips

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
0.8	20	★★★★★	All	All	Rural	Persaud et al., 2015	CMF for total crashes (all ... <a href="#">[read more]</a> )
0.771	22.9	★★★★★	All	Fatal,Serious injury,Minor injury	Rural	Persaud et al., 2015	CMF for injury crashes (K, ... <a href="#">[read more]</a> )
0.742	25.8	★★★★★	Run off road	All	Rural	Persaud et al., 2015	CMF for run-off-road crashes (all ... <a href="#">[read more]</a> )

## Superelevation

### Alternatives to Correct

- Partial Correction
  - Increase radius
  - Increase superelevation
  - Increase both

### Cost to Remedy

- Design/ Engineering
- Construction
  - Right of Way
  - Asphalt
  - Earthwork



## Superelevation

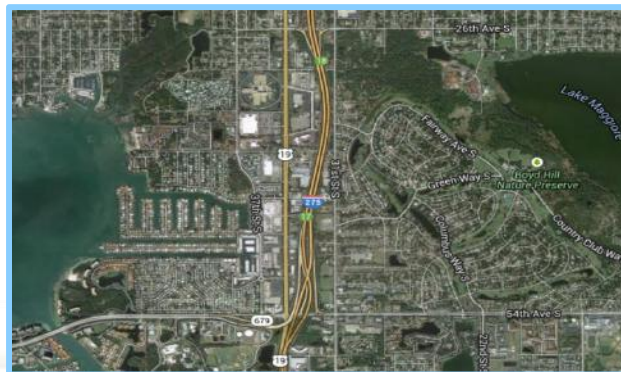
### Example

- I-275/ SR 93, RRR Project
  - 6-lane Divided Urban Principal Arterial –Interstate (SIS)
  - Requested Design Exception for Superelevation and Horizontal Alignment
    - 7 curves, 6 on the mainline and 1 on a ramp

## Superelevation

### Example

- I-275/ SR 93, RRR Project
  - From 54th Ave. S. to south of 26th Ave S.



## Superelevation

### Example

- I-275/ SR 93, RRR Project
  - Design Speed and Posted Speed of 65 mph
  - 12ft lanes, 12 ft. shoulders, 10 ft. paved, and 64 ft. med.



## Superelevation

### Example

- Criteria for 7 of 14 curves ( Curve 8 is on ramp, DS = 35 mph)

Curve No. <sup>(1)</sup>	Existing e (As-Built)	FDOT Criteria	AASHTO Criteria			
		( $e_{max} = 0.10$ ) [Table 2.9.1]	( $e_{max} = 0.06$ ) [Ex. 3-26]	( $e_{max} = 0.08$ ) [Ex. 3-27]	( $e_{max} = 0.10$ ) [Ex. 3-28]	( $e_{max} = 0.12$ ) [Ex. 3-29]
1	0.052	0.075	0.055	0.067	0.075	0.079
2	0.028	0.041	0.036	0.039	0.041	0.042
3	0.060	0.087	0.060	0.075	0.087	0.093
4	0.028	0.041	0.036	0.039	0.041	0.042
8	0.020	0.042	0.034	0.039	0.042	0.043
11	0.023	0.033	0.030	0.032	0.033	0.034
12	0.023	0.033	0.030	0.032	0.033	0.034

## Superelevation

### Example

➤ Answers to Workshop Problem 2

Curve No.	Curve Name	No. of Travel Lanes	Curve Location	Station	MP	Design Speed (mph)	Radius (ft)	Existing Superelevation (ft/ft)	Side Friction Factor (f) Calculated	AASHTO Maximum Side Friction Factor (f <sub>max</sub> )	
1	CLNB1 (Mainline)	4	PC	105+62.38	0.734	65	2303.86	0.009	0.111	0.11	
			Midpoint	108+88.51	0.796			0.054			
			PT	112+10.33	0.857			0.036			
2	CLNB2 (Mainline)	3	PC	121+73.65	1.040	65	4583.66	0.025	0.076	0.11	
			Midpoint	126+08.07	1.122			0.025			0.036
			PT	130+39.89	1.204			0.020			0.041
3	CLS81 (Mainline)	2	PC	91+42.73	0.446	65	1909.85	0.062	0.090	0.11	
			Midpoint	98+26.11	0.575			0.057			0.090
			PT	104+55.27	0.695			0.050			0.097
4	CLS82 (Mainline)	2	PC	107+87.36	0.757	65	4583.66	0.020	0.060	0.11	
			Midpoint	116+71.41	0.924			0.028			0.033
			PT	125+34.02	1.088			0.001			0.060
8	RMPC_3 (Ramp)	2	PC	196+73.75	0.617	35	1432.99	0.020	0.111	0.11	
			Midpoint	200+53.32	0.689			0.015			
			PT	204+15.83	0.757			0.042			

## Superelevation

### Example

- Calculated f less than AASHTO maximum f
- Speed calculated from the side friction factor equation matches or exceeds Design Speeds for mainline and ramp

Curve No.	Curve Name	Location Sta. to Sta.	Milepost (mi.)	R Radius (ft)	e <sup>(1)</sup> Superelevation (ft/ft)	f <sup>(2)</sup> Side Friction Factor (calculated)	Achieved Design Speed (mph)
1	CLNB1 (mainline)	105+62.38 to 112+10.33	0.734 to 0.857	2303.86	0.009	0.111	65
2	CLNB2 (mainline)	121+73.65 to 130+39.89	1.040 to 1.204	4583.66	0.020	0.076	80

## Superelevation

### Example

- Crash History Review
  - 2008 – 2013 Crashes were reviewed
    - 148 crashes within project limits
    - 30 crashes within substandard curves
    - None were attributed to superelevation deficiency.
- Benefit-Cost Analysis
  - Cost to correct was \$16 million
  - 0 B/C

## Superelevation

### Example

- Mitigation
  - Diamond grinding will restore skid resistance, reduce the potential for hydroplaning and provide a smooth concrete surface
  - Existing lighting to remain
  - Existing rumble strips to remain
- Approval Process
  - The Superelevation Design Exception was approved.
  - The curve radii met the 1956 AASHTO criteria so no Design Exception or Variation was needed for Horizontal Alignment.

## Superelevation

### Key Points

- “Superelevation is intended to assist the driver by counteracting the lateral acceleration produced by tracking the curve.”
- The Criteria for LS and HS Facilities is not the same.
- Identify the curves with too little or too much Superelevation.
- Check Side Friction Factors
- Analyze Safety
  - Historical Crash Method (SE RRR Projects)
  - Predictive Method (New Construction or Reconstruction)
- Choose Appropriate Mitigation





## Lane Width Definitions and Policy

- **Definitions:** “The lane width of a roadway influences the comfort of driving, operational characteristics, and, in some situations, the likelihood of crashes.”
- **Policy:** “It is FHWA policy that the requirement of a formal design exception for lane width is applicable for all travel lanes, including auxiliary lanes and ramps.”
- **AASHTO 2011:** “Roads with a narrow traveled way, narrow shoulders, and an appreciable traffic volume tend to provide poor service, have a relatively higher crash rate, and need frequent and costly maintenance. “

## Lane Width Definitions and Policy

- **AASHTO 2011:** “Where unequal-width lanes are used, locating the wider lane on the outside (right) provides more space for large vehicles that usually occupy that lane, provides more space for bicycles, and allows drivers to keep their vehicles at a greater distance from the right edge.”

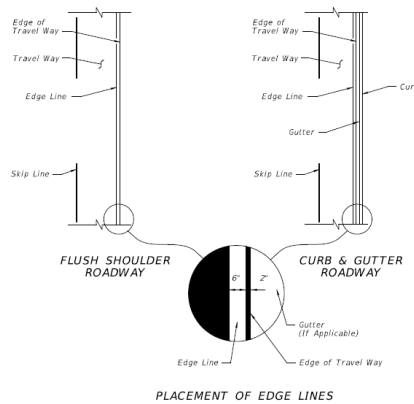


## Lane Width Criteria Matrix

Facility	Location	Lane Width				
		New Construction		RRR		AASHTO
		Travel Lanes	Auxiliary (LT/RT/Etc)	All Lanes		All Lanes
			Two Lane (ADT)	Multi Lane		
Interstates and Freeways	Rural	12'				
	Urban					
Arterials	Rural	12' 11'(LS+4L+Urb)		12' (>2000) 10'-12' (Other)	12' 11'(LS+4L+Urb)	11'
	Urban	11' 12'(HS,2L)			10' 11'(HS,HT)	10'
Collectors	Rural	12' 11'(LV,LS)	11' 12'(2L)	12' (>2000) 10'-12' (other)	12' 11'(LS+4L+Urb)	10'
	Urban	11'	11'		10' 11'(HS,HT)	10' 9' RES

## Lane Width Measurement

- Index 17346
- Interior Lanes measured to center of stripe.
- Inside lane stripes also 2"



## Lane Width Deficiencies: Rural

- Old Secondary Roads
- Funding Challenges



## Lane Width Deficiencies: Effects

- Pavement Rutting
- Shoulder Rutting
- Potholes at edge
- Edge Cracking
- Premature striping wear
- High Crashes (Severe)



What kind of crashes result from drop offs at the edge of pavement?

## Lane Width Deficiencies-Urban

- Increased Shy Distances
- Edge Cracking
- Premature striping wear
- Curb Tire Marks



## MSDE: Lane Width Crash Types

TABLE 6

Lane Width: Potential Adverse Impacts to Safety and Operations

Safety & Operational Issues	Freeway	Expressway	Rural Two-Lane	Urban Arterial
Run-off-road crashes	X	X	X	
Cross-median crashes	X	X		
Cross-centerline crashes			X	
Sideswipe (same direction) crashes	X	X		X
Rear-end crashes if operations deteriorate (abrupt speed reduction)	X	X	X	
Reduced free-flow speeds	X	X	X	X
Large vehicles off-tracking into adjacent lane or shoulder	X	X	X	X

## Lane Width Safety Impacts

➤ FHWA Mitigation Strategies

“On high-speed, rural two-lane highways, an increased risk of cross-centerline head-on or cross-centerline sideswipe crashes is a concern because drivers may have more difficulty staying within the travel lane. On any high-speed roadway, the primary safety concerns with reductions in lane width are crash types related to lane departure, including run-off-road crashes”

## Lane Width Crash Type Examples

Types of Crashes to Review – CARS Report Summary

Code	Harmful Event (Crash Type)	LW
00	Unknown/Not Coded	X
01	Rear-End	
02	Head-On	X
03	Angle	
04	Left-Turn	X
05	Right-Turn	X
06	Sideswipe	X
07	Backed Into	
08	Collision with Parked Car	X
09	Collision with Moving Vehicle on Roadway	X
10	Collision with Pedestrian	X
11	Collision with Bicycle	X
12	Collision with Bicycle (Bike Lane)	X
13	Collision with Moped	X

## Lane Width Sideswipe Crash Statistics

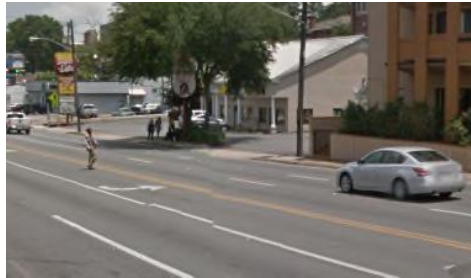
Table 5.1. Segments with the Highest Frequency of Sideswipe Crashes (Year 2003 to Year 2007)

Roadway ID	Crash Frequency	State Road Number	Street Name	City	Begin Milepost	End Milepost	Average Lane Width
87037000	11	SR 907	Alton Rd	Miami	1.1	2.583	9
12010000	9	SR 45	Cleveland Ave	Fort Myers	21.027	23.421	10
87140000	9	SR 7	NW 7th Ave	Miami	5.649	10.714	9
15150000	8	SR 55	34th St N	St. Petersburg	8.078	8.907	10
72080101	8	SR 15	Union Street	Jacksonville	0.282	1.024	12
72150000	8	SR 115	Norwood Ave	Jacksonville	0.72	1.9	9
86200000	8	SR 858	Hallandale Beach Blvd	Miami	3.63	5.429	11
87060000	8	SR A1A	Collins Ave	Miami	4.535	5.472	10
86020000	7	SR 5	US 1/SR5/Federal Hwy	Fort Lauderdale	0	15.325	10
87060000	7	SR A1A	Collins Ave	Miami	5.649	6.669	11

70% are 10' or Narrower

## Lane Width Alternatives

- Reconstruction
- Widening
- Re-striping
- Variable Lane widths
- Re-Allocation of Existing or Proposed Widths.



## Lane Width Tools

- Highway Safety Manual (HSM)
- Interactive Highway Safety Design Module (IHSDM)
- Roadside Safety Analysis Program (RSAP)



## HSM Lane Width CMFs

- HSM Rural Two-Lane Highways (Chapter 10)
- HSM Rural Multi-Lane Highways (Chapter 11)
- HSM Urban Two-Lane Highways (Chapter 12)
- HSM Urban Four-Lane Undivided (Chapter 12)
- HSM Urban Four-Lane Divided (Chapter 12)
- HSM Freeways and Ramps (Chapter 18-19)

## Urban Lane Width CMFs

➤ HSM Urban Six-Lane Highways (CMFs Coming Soon)



### NCHRP 17-58 [Active]

Safety Prediction Models for Six-Lane and One-Way Urban and Suburban Arterials

Project Data	
Funds:	\$599,910
Staff Responsibility:	Mark S. Bush
Research Agency:	Texas A&M Transportation Institute
Principal Investigator:	Mr. Dominique Lord
Effective Date:	1/14/2013
Completion Date:	1/13/2016

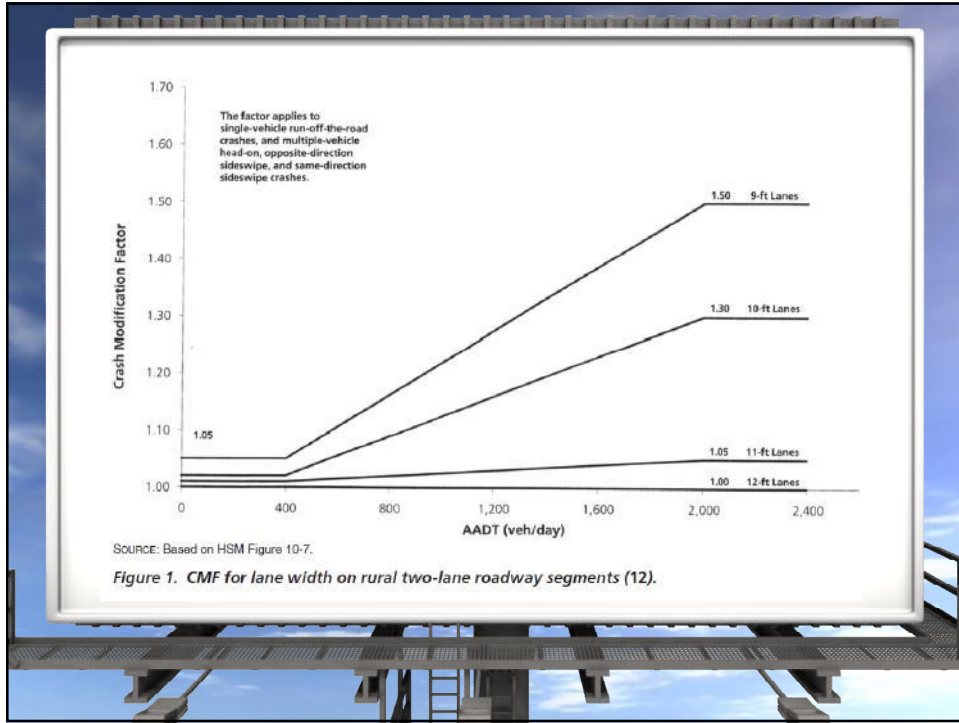
## Rural Lane Width CMFs

➤ HSM Volume 2, Chapter 10

Table 6. CMF for lane width on rural two-lane roadway segments (12, 18, 19).

Lane width	Average annual daily traffic (AADT) (veh/day)		
	< 400	400 to 2000	> 2000
9 ft or less	1.05	$1.05 + 2.81 \times 10^{-4}(AADT - 400)$	1.50
10 ft	1.02	$1.02 + 1.75 \times 10^{-4}(AADT - 400)$	1.30
11 ft	1.01	$1.01 + 2.5 \times 10^{-5}(AADT - 400)$	1.05
12 ft or more	1.00	1.00	1.00



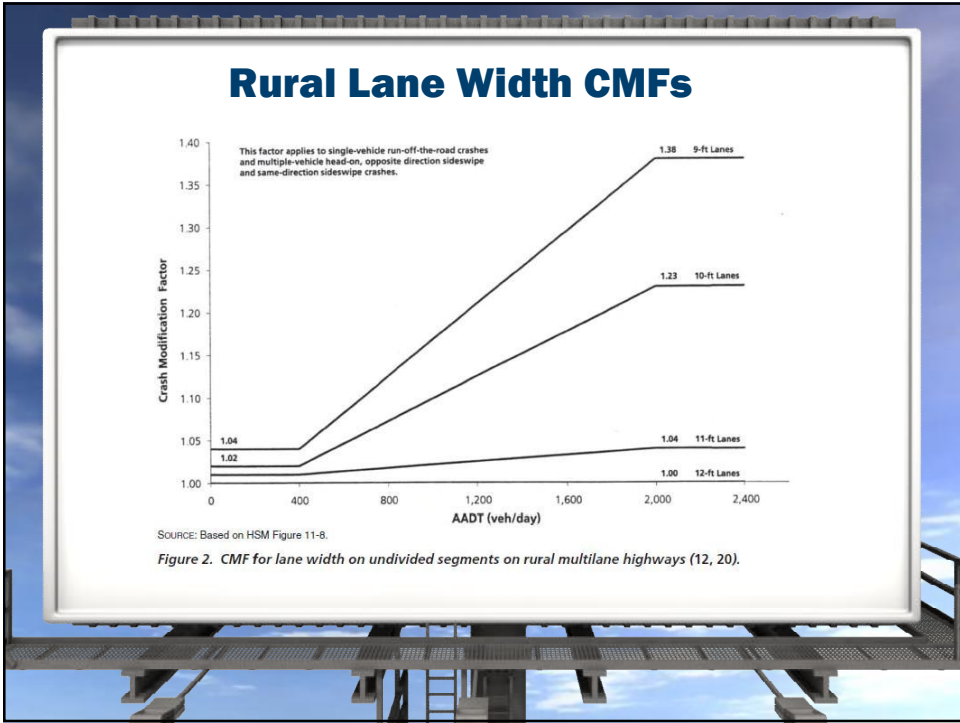


### Rural Lane Width CMFs

➤ HSM Rural Multi-Lane Highways (Chapter 11)

Table 8. CMF for lane width on undivided rural multilane roadway segments (12, 20).

Lane width	Average annual daily traffic (AADT) (veh/day)		
	< 400	400 to 2000	> 2000
9 ft or less	1.04	$1.04 + 2.13 \times 10^{-4}(AADT - 400)$	1.38
10 ft	1.02	$1.02 + 1.31 \times 10^{-4}(AADT - 400)$	1.23
11 ft	1.01	$1.01 + 1.88 \times 10^{-5}(AADT - 400)$	1.04
12 ft or more	1.00	1.00	1.00



### Lane Width Mitigation Strategies

**MSDE, Table 22**

- Optimize Lane and Shoulder Widths
- Signing
- Pavement markings (Wide, Recessed, Raised)
- Rumble Strips (Striping)
- Delineators
- Lighting
- Safety Edge

Mitigation Strategies for Design Exceptions  
May 2007  
U.S. Department of Transportation  
Federal Highway Administration

## Lane Width Mitigation Strategies

### MSDE, Table 22

- Remove or Relocate fixed Objects
- Traversable Slopes
- Breakaway Hardware
- Shield Fixed Objects
- Provide Pull Off Areas



## Lane Width Mitigation (FDOT)

### FDOT Rural Standard Treatments

- Paved Shoulders
- Audible-Vibratory Markings
- Rumble Striping (Edge and Center)
- 6" Wide Striping
- Required Delineators



## Lane Width Alternatives

- Reconstruction
- Widening
- Re-striping
- Variable Lane widths
- Re-Allocation of Widths



## Lane Width Cost Considerations

- Roadway Widening
- Earthwork
- Overbuild
- Drainage
- MOT
- Right of Way
- Utility Relocation
- Environmental Mitigation



## Lane Width Operations

➤ FFS Impacts to Lane Width Reductions

TABLE 4

Operational Effects of Freeway Lane Widths

Lane width (ft)	Reduction in Free-Flow Speed (mi/h)
12	0.0
11	1.9
10	6.6

## Lane Width: Lessons Learned

2538-1-0 Lane Width

In review and discussion with Michael Shepard, P.E., State Roadway Design Engineer, the following comment is offered for your consideration:

- The State Roadway Design Office recommends the use of high performance delineators in lieu of the proposed 2' traffic separator. These delineators are able to fit between the existing double yellow line, thereby allowing the center turn lane to remain at its present width of 11'. High performance delineators are relatively low maintenance, as they are designed to withstand a minimum of 50 hits before requiring replacement. In addition, they provide much better nighttime visibility than the proposed traffic separator.

If you concur with this recommendation, then a design exception for lane width will no longer be required, and this exception request can be withdrawn. If you disagree with this recommendation, please let me know, and I will finalize processing your exception request. If you have any questions and/or comments, please feel free to contact me.

Thank you,

## Example: I-275 Hillsborough River

Exception Basics:

Lane Width Proposed

Design Speed Required

Typical Section Approved

Context: SIS Facility in Urban/Commercial/Residential Area

Safety- Existing and Proposed Crashes

Operations Impacts

Mitigation

Approved by Tom Byron, Chief Engineer.

## Example: I-275 Hillsborough River

Exception Basics:

- Lane Widths Proposed 11'

(2-11' Aux Lanes)

- Shoulder Width Proposed 8'

- Shoulder Width Required 12'

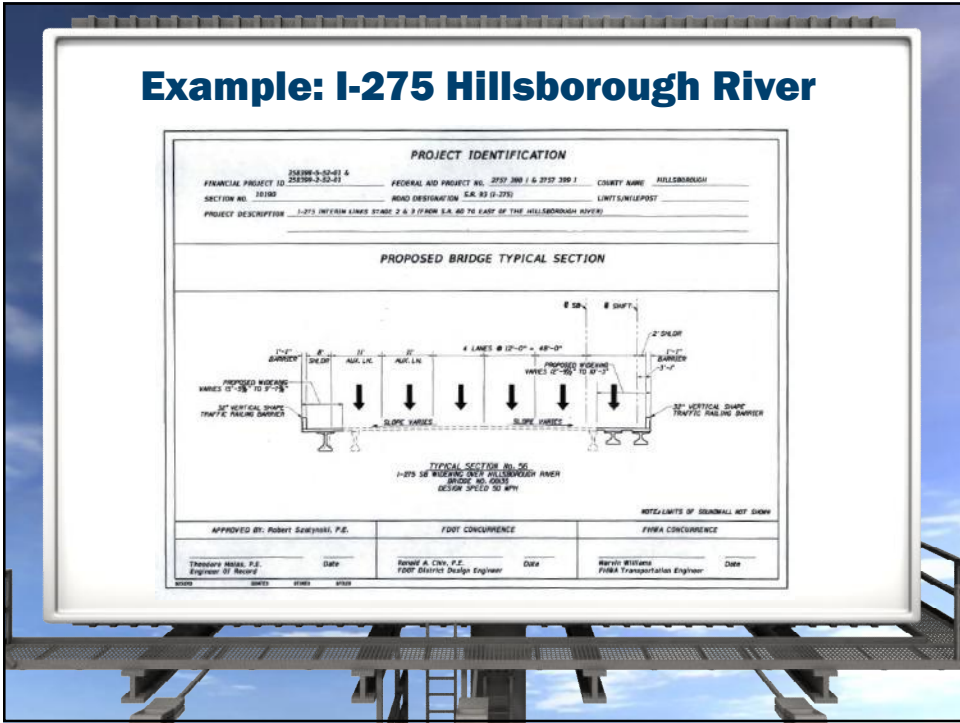
- Design Speed = 50

Typical Section Approved

Context: SIS Facility in Urban Area



## Example: I-275 Hillsborough River



## Example: I-275 Hillsborough River

### Exception Justified:

- Shortened Length (900')
- Short Term Condition
- Shoulder Adjacent to Aux Lanes
- Reduces Capacity Issues
- \$133 Million Crashes
- Reduces Rear-End Crashes

### Mitigation:

- Re-distribution of Width
- Lighting Provided
- Road Rangers

### Approved by FHWA

**A. Submitted/Approval Letter**

Project Name: I-275 (State Road 92) - widening - Hillsborough River  
 Project Number: 25698-3-02-01 4  
 Project Location: Hillsborough County, Florida

Submitted by: Robert Salsky, P.E.  
 Submitted on: 11/11/15

Approved by: Mark Williams, P.E.  
 Approved on: 11/11/15

Approved by: Robert A. Cohn, P.E.  
 Approved on: 11/11/15


Approved by: [Signature]  
 Approved on: 11/11/15

Approved by: [Signature]  
 Approved on: 11/11/15



### Shoulder Width Discussion

- Criteria (Definitions, Measurement, Clarifications, Special Conds)
- Identifying Deficiencies
- Crash Types Associated (MSDE/Spreadsheet)
- Historical Crash Review (Summaries and Reports)
- Alternatives (Build, No Build, Partial, Practical Design, Complete Streets)
- Tools and CMFs/CRFs
- Costs (Crash reduction/Construction)
- Mitigation Strategies
- Best Practices and Lessons Learned
- Example

A photograph showing a multi-lane highway with a narrow shoulder. A large truck is in the right lane, and a bus is in the left lane. The shoulder is narrow and appears to be a mix of asphalt and concrete. There are many cars in the lanes, and the traffic is moving slowly. The sky is blue with some clouds.



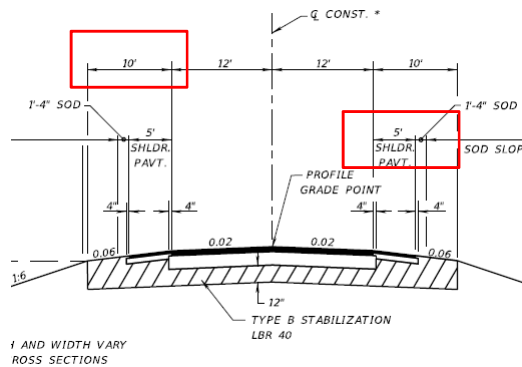
## Shoulder Width Discussion

- AASHTO Definition: "A shoulder is the portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of subbase, base, and surface courses. In some cases, the shoulder can accommodate bicyclists."



## Shoulder Width Measurement

- Measured from Edge of Traveled Way to break in slope.



## Shoulder Width Identification

- Any criteria deficiencies issues in this picture?



## FHWA Proposed Changes (Report 783)

### Shoulder Width

#### Low Speed:

- Do not retain

#### High Speed:

- Retain
- Largest effect on crashes and operation of all 13 elements
- HSM CMFs available for most facilities.
- 2014 HSM Supplement  
Freeways and Ramps (New CMFs Available)



## Shoulder Width Criteria: Tables

Table 2.3.1 Shoulder Widths and Cross Slopes - Freeways

HIGHWAY TYPE		WIDTH (FEET)								CROSS SLOPES	
		WITHOUT SHOULDER GUTTER				WITH SHOULDER GUTTER				NORMAL <sub>1</sub>	
		FULL WIDTH		PAVED WIDTH		FULL WIDTH		PAVED WIDTH			
Outside	Median or Left	Outside	Median or Left	Outside	Median or Left	Outside	Median or Left	Outside <sub>2</sub>	Median or Left		
4-Lane or More		12	12	10	10	15.5	15.5	8	8	0.06	0.06
		12	12	10	10	15.5	15.5	8	8		
3-Lane		12	8	10	4	15.5	13.5	8	6	0.05	0.05
2-Lane		12	8	10	4	15.5	13.5	8	6		
HOV Lane		N/A <sub>4</sub>	14	N/A <sub>4</sub>	10	N/A <sub>4</sub>	N/A <sub>4</sub>	N/A <sub>4</sub>	N/A <sub>4</sub>	N/A <sub>4</sub>	0.05 <sub>2</sub>
1-lane Barrier-Separated		6	4 <sub>4</sub>	6	4 <sub>4</sub>	N/A <sub>4</sub>	N/A <sub>4</sub>	N/A <sub>4</sub>	N/A <sub>4</sub>	Same	Same as

## Shoulder Width Criteria: Tables

Table 2.3.2 Shoulder Widths and Cross Slopes - Arterials Divided

HIGHWAY TYPE		WIDTH (FEET)								CROSS SLOPES	
		WITHOUT SHOULDER GUTTER				WITH SHOULDER GUTTER				NORMAL <sub>1</sub>	
		FULL WIDTH		PAVED WIDTH		FULL WIDTH		PAVED WIDTH			
Outside	Median or Left	Outside	Median or Left	Outside	Median or Left	Outside	Median or Left	Outside <sub>2</sub>	Median or Left		
4-Lane		12	12	5	4	15.5	15.5	8	8	0.06	0.06
		10	10	5	4	15.5	15.5	8	8		
		8	8	5	4	13.5	13.5	6	6		
3-Lane		12	12	5	0 <sub>4</sub>	15.5	15.5	8	8	0.05	0.05
		10	10	5	0 <sub>4</sub>	15.5	15.5	8	8		
		8	8	5	0 <sub>4</sub>	13.5	13.5	6	6		
2-Lane		12	8	5	0 <sub>4</sub>	15.5	13.5	8	6	0.05	0.05
		10	8	5	0 <sub>4</sub>	15.5	13.5	8	6		
		8	6	5	0 <sub>4</sub>	13.5	11.5	6	4		
1-lane Ramp		6	5	5	5	11.5	11.5	4 <sub>4</sub>	4		

## Shoulder Width Criteria: Tables

Table 2.3.3 Shoulder Widths and Cross Slopes - Arterials Undivided

HIGHWAY TYPE		WIDTHS (FEET)				CROSS SLOPES NORMAL 1,4
		WITHOUT SHOULDER GUTTER		WITH SHOULDER GUTTER		
		FULL WIDTH	PAVED WIDTH 2,6	FULL WIDTH	PAVED WIDTH	
ARTERIALS Undivided (lanes Two-Way)	Multilane 3	12	5	15.5	8	0.06
		10	5	15.5	8	
		8	5	13.5	6	
	2-Lane	12	5	15.5	8	
		10	5	15.5	8	
		8	5	13.5	6	
Auxiliary Lane At-Grade Intersections	Same As Travel Lanes	5	11.5s	4s		

## Shoulder Width Criteria: Tables

Table 2.3.4 Shoulder Widths and Cross Slopes – Collectors Divided and Undivided

HIGHWAY TYPE		WIDTHS (FEET)								CROSS SLOPES	
		WITHOUT SHOULDER GUTTER				WITH SHOULDER GUTTER				NORMAL 1	
		FULL WIDTH		PAVED WIDTH		FULL WIDTH		PAVED WIDTH		Outside 4	Median Or Left
Outside	Median Or Left	Outside	Median Or Left	Outside	Median Or Left	Outside	Median Or Left	Outside 4	Median Or Left		
COLLECTORS Divided (Lanes One-Way)	3-Lane	12	12	5	0 3	15.5	15.5	8	8	0.06	0.05
		10	10	5	0 3	15.5	15.5	8	8		
		8	8	5	0 3	13.5	13.5	6	6		
	2-Lane	12	8	5	0 3	16.5	13.5	8	6		
		10	8	5	0 3	15.5	13.5	8	6		
		8	8	5	0 3	13.5	11.5	6	4		
Auxiliary Lane At-Grade Intersection	Same As Travel Lanes	Same As Travel Lanes	5	4	11.5s	N/A 5	4s	N/A 5			
COLLECTORS Undivided (Lanes Two-Way)	Multilane 4	12		5		15.5		8		0.06	
		10		5		15.5		8			
		8		5		13.5		6			
	2-Lane	12		5		15.5		8			
		10		5		15.5		8			
		8		5		13.5		6			
Auxiliary Lane At-Grade Intersection	Same As Travel Lanes	Same As Travel Lanes			11.5s		4s				

## Most Common Design Exceptions

1. Shoulder Width
2. Cross Slope
3. Horizontal Clearance
4. Bridge Width
5. Stopping Sight Distance
6. Vertical Alignment
7. Structural Capacity



## Shoulder Width Operations Rural 2-Lane

Table 5. HCM adjustment to free-flow speed for lane and shoulder width on two-lane highways (13).

Lane width (ft)	Reduction in free-flow speed (mph)			
	Shoulder width (ft)			
	≤ 0 < 2	≤ 2 < 4	≤ 4 < 6	≥ 6
≥ 9 < 10	6.4	4.8	3.5	2.2
≥ 10 < 11	5.3	3.7	2.4	1.1
≥ 11 < 12	4.7	3.0	1.7	0.4
≥ 12	4.2	2.6	1.3	0.0

NOTE: The values in Table 5 are used as  $f_{LS}$  in Equation 1.  
SOURCE: Based on HCM Exhibit 15-7.

## Shoulder Width Operations Rural and Suburban Multi-Lane

Table 16. Adjustment to free-flow speed for lateral clearance on rural and suburban multilane highways (13).

Four-lane highways		Six-lane highways	
Total lateral clearance (ft)	Reduction in free-flow speed (mph)	Total lateral clearance (ft)	Reduction in free-flow speed (mph)
12	0.0	12	0.0
10	0.4	10	0.4
8	0.9	8	0.9
6	1.3	6	1.3
4	1.8	4	1.7
2	3.6	2	2.8
0	5.4	0	3.9

## Shoulder Width Operations Freeways

Table 19. Adjustments for free-flow speed right-side lateral clearance on freeways (13).

Right Shoulder Lateral Clearance (ft)	Reduction in free-flow speed (mph)			
	Number of lanes in one direction			
	2 lanes	3 lanes	4 lanes	≥5 lanes
≥ 6	0.0	0.0	0.0	0.0
5	0.6	0.4	0.2	0.1
4	1.2	0.8	0.4	0.2
3	1.8	1.2	0.6	0.3
2	2.4	1.6	0.8	0.4
1	3.0	2.0	1.0	0.5
0	3.6	2.4	1.2	0.6

TABLE 9  
Shoulder Width: Potential Adverse Impacts to Safety and Operations

Safety & Operational Issues	Freeway	Expressway	Rural Two-Lane	Urban Arterial
Run-off-road crashes	X	X	X	Assumed cross section with curb and gutter (no shoulders)
Cross-median crashes	X	X		
Cross-centerline crashes			X	
Pavement edge dropoffs	X	X	X	
Rear-end crashes if operations deteriorate (abrupt speed reduction)	X	X	X	
Lane blockage from incidents	X	X	X	
Reduced free-flow speeds	X	X	X	
Shying away from the edge of the roadway	X	X	X	
Inadequate space for enforcement activities and emergency response	X	X	X	
Inadequate space for emergency pullover	X	X	X	
Inadequate space to avoid crashes or objects on the travel lanes	X	X	X	
Lack of storage space for disabled vehicles	X	X	X	
Bicyclists forced onto the travel lanes.	X	X	X	
Inadequate space for maintenance activities	X	X	X	

### Shoulder Width Crash Types

Types of Crashes to Review – CARS Report Summary

Code	Harmful Event (Crash Type)	SW
00	Unknown/Not Coded	X
01	Rear-End	X
02	Head-On	X
03	Angle	
04	Left-Turn	
05	Right-Turn	
06	Sideswipe	X
07	Backed Into	
08	Collision with Parked Car	X
09	Collision with Moving Vehicle on Roadway	X
10	Collision with Pedestrian	X
11	Collision with Bicycle	X
12	Collision with Bicycle (Bike Lane)	X
13	Collision with Moped	X

### Shoulder Width CMFs (Width)

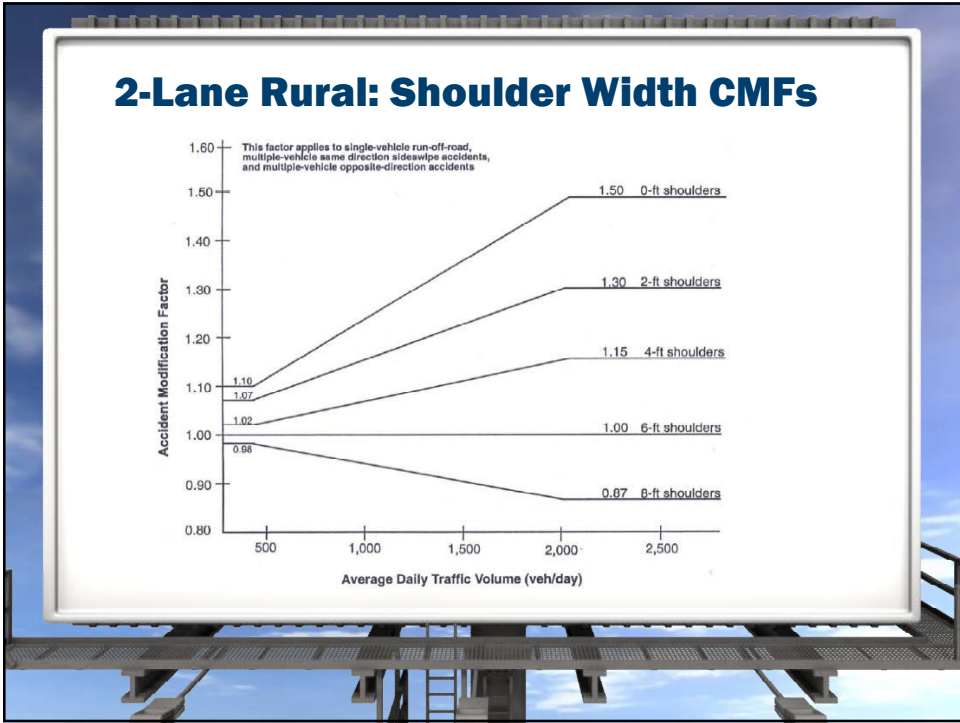
$CMF = (CMF_{wra} \times CMF_{tra} - 1.0) \times p_{ra} + 1.0$  (HSM Eq. 10-11)

$p_{ra} = 0.574$  (Proportion of Total Crashes)

**Table 13. CMFs for shoulder width on rural two-lane roadway segments ( $CMF_{wra}$ ) (12, 18).**

Shoulder width	Average annual daily traffic (AADT) (veh/day)		
	< 400	400 to 2000	> 2000
0 ft	1.10	$1.10 + 2.5 \times 10^{-4}(AADT - 400)$	1.50
2 ft	1.07	$1.07 + 1.43 \times 10^{-4}(AADT - 400)$	1.30
4 ft	1.02	$1.02 + 8.125 \times 10^{-5}(AADT - 400)$	1.15
6 ft	1.00	1.00	1.00
8 ft or more	0.98	$0.98 - 6.875 \times 10^{-5}(AADT - 400)$	0.87





### 2-Lane Rural Shoulder Type CMFs

$CMF = (CMF_{wra} \times CMF_{tra} - 1.0) \times p_{ra} + 1.0$  (HSM Eq. 10-11)

$p_{ra} = 0.574$

Table 14. CMFs for shoulder types and shoulder width on roadway segments ( $CMF_{tra}$ ) (12, 18).

Shoulder type	Shoulder width (ft)						
	0	1	2	3	4	6	8
Paved	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Gravel	1.00	1.00	1.01	1.01	1.01	1.02	1.02
Composite	1.00	1.01	1.02	1.02	1.03	1.04	1.06
Turf	1.00	1.01	1.03	1.04	1.05	1.08	1.11

## Combined Factors Rural 2-Lane

Crash Modification Factors for Shoulder Width and Type (Rural 2-Lane High Speed)							
<i>Assumed AADT Greater than 2000</i>							
Shoulder Type	Shoulder Width (Feet)						
	0	1	2	3	4	6	8
<b>Paved</b>							
CMF Width-Related	1.50	1.40	1.30	1.23	1.15	1.00	0.87
CMF Type <b>Paved</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CMF Adjusted to Total Crashes	<b>1.29</b>	<b>1.23</b>	<b>1.17</b>	<b>1.13</b>	<b>1.09</b>	<b>1.00</b>	<b>0.93</b>
<b>Composite Shoulders</b>							
CMF Width	1.50	1.40	1.30	1.23	1.15	1.00	0.87
CMF Type <b>Composite</b> (50/50 Paved)	1.00	1.01	1.02	1.02	1.03	1.04	1.06
CMF Adjusted to Total Crashes	<b>1.29</b>	<b>1.24</b>	<b>1.19</b>	<b>1.15</b>	<b>1.11</b>	<b>1.02</b>	<b>0.96</b>
<b>Turf Shoulders</b>							
CMF Width	1.50	1.40	1.30	1.23	1.15	1.00	0.87
CMF Type <b>Turf</b>	1.00	1.01	1.03	1.04	1.05	1.08	1.11
CMF Adjusted to Total Crashes	<b>1.29</b>	<b>1.24</b>	<b>1.19</b>	<b>1.16</b>	<b>1.12</b>	<b>1.05</b>	<b>0.98</b>
<b>HSM Equation 10-12</b> <i>Values in italics have been pro-rated based on adjacent values</i>							
CMF (Total Crashes) = CMF (Related Crashes) * CMF (Total Crashes) * % Related Crashes (57.4%)							
<b>References: HSM Table 10-9, 10-10</b>							

## Multi-Lane Shoulder Width CMFs

Table 17. CMFs for paved right (outside) shoulder width on multilane divided highway segments (12, 26).

Average paved shoulder width				
0 ft	2 ft	4 ft	6 ft	8 ft or more
1.18	1.13	1.09	1.04	1.00

SOURCE: Based on HSM Table 11-17.

## Outside Shoulder Width CMFs

**HSM Freeway CMFs:  
(Chapter 18)**

CMF: Single Vehicle (F+I)	$CMF = \exp(-0.0647(W_s - 10))$
CMF: Single Vehicle (F+I) Curves	$CMF = \exp(-0.097(W_s - 10))$
CMF: PDOs on Tangents	$CMF = 1.0$
CMF: PDOs on Curves	$CMF = \exp(-0.0840(W_s - 10))$

## Inside Shoulder Width CMFs

**HSM Freeway CMFs:  
(Chapter 18)**

CMF: Fatalities and Injuries	$CMF = \exp(-0.0172(W_{is} - 6))$
CMF: PDOs	$CMF = \exp(-0.0153(W_{is} - 6))$

**Note: Ramp CMFs also available in  
HSM Supplement.**

## Shoulder Width Cost Considerations

- Shoulder Widening
- Earthwork
- Overbuild
- Drainage
- MOT
- Right of Way
- Utility Relocation
- Environmental Mitigation



## Shoulder Width Mitigation Strategies

Table 22 MSDE

- Optimize Lane and Shoulder Widths
- Signing
- Pavement markings (Wide, Recessed, Raised)
- Rumble Strips (Striping)
- Delineators
- Lighting
- Safety Edge



## Shoulder Width Mitigation Strategies

MSDE, Table 22

- Remove or Relocate fixed Objects
- Traversable Slopes
- Breakaway Hardware
- Shield Fixed Objects
- Provide Pull Off Areas



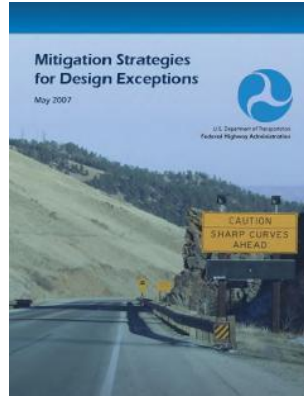
## Shoulder Width Mitigation (FDOT Stds)

- Paved Shoulders
- Audible-Vibratory Markings
- Rumble Striping (Edge and Center)
- 6" Wide Striping
- Required Delineators
- Traversable Slopes



## Shoulder Width: Lessons Learned

- For Rural Arterials, Usable shoulders do not have to be paved.
- No Design Exception Required for unpaved Rural Arterials as long as usable width is met.
- Design Variations or Memos in Florida



## Shoulder Width: Lessons Learned

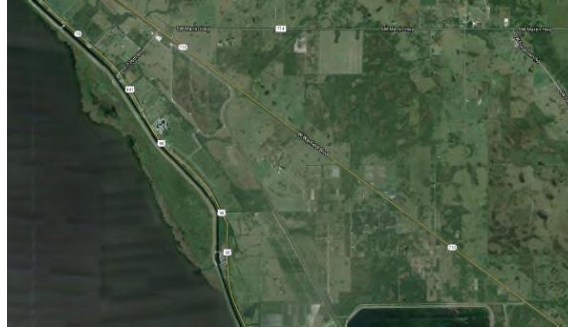
For 6-Lane or Greater Interstates:

- 12' Paved Inside Shoulders are required for Truck DDHV greater than 250.
- 10' for Low Trucks
- Design Exception Required regardless of language in Interstate Design Guide.



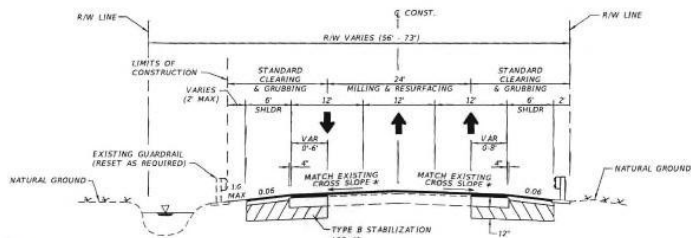
## Shoulder Width Example: SR 710 (D-4)

- Rural Multi-Lane
- Existing Two-Lanes
- Proposed 3-Lanes
- Proposed 6' Shoulder
- Required 8' Shoulder
- Design Speed 65mph



## Shoulder Width Example

PROPOSED ROADWAY TYPICAL SECTION



**R.J. Behar & Company, Inc.**  
 Engineers • Planners  
 12788 Powell Hill Road, Suite 2002B  
 Houston, TX 77060  
 BEAR COMPANY, P.L.L.C. LICENSE NO. 41786

STA 1237+60.00 TO STA 1247+50.00

NEIGH GREEN - 22 MBU

## Shoulder Width Example: D-4

**Justified:**

- Reduction in Crash Severity
- Improved LOS
- Environmental Impacts



**Mitigation:**

- Improved Turnouts
- Signs, Audible Markings (cl and edge)



# Design Exceptions: Evaluating Shoulder Width using the Highway Safety Manual



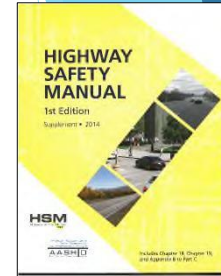
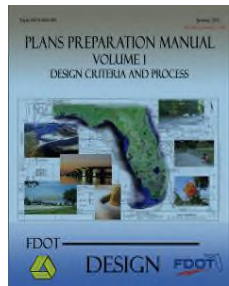
Jeremy Fletcher, PE, PSM  
State Roadway Design Office  
Quality Assurance & Engineering Support

## Presentation Overview

- ▶ Introduction to the HSM
- ▶ Identify Design Exception
- ▶ Safety Analysis
  - ▶ Predictive Method
- ▶ EB Adjustments
- ▶ Benefit/Cost Analysis
- ▶ Mitigation Strategies
- ▶ Justification, Documentation and Approval Requirements

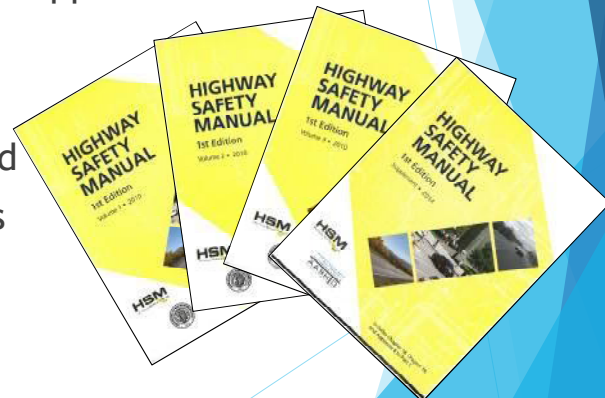
## Introduction-Tools You May Need

- ▶ Provide a demonstration of the Highway Safety Manual's application in a Shoulder Width Design Exception.



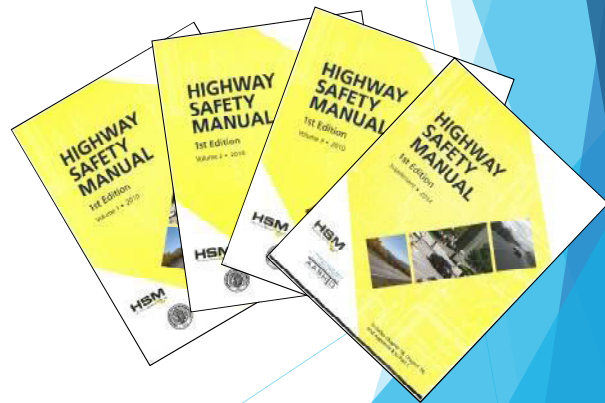
## AASHTO Highway Safety Manual (HSM) 2010/2014

- ▶ Consist of 3 Volumes and a Supplement
  - ▶ Part A Fundamentals
  - ▶ Part B Process
  - ▶ Part C Predictive Method
  - ▶ Part D Countermeasures



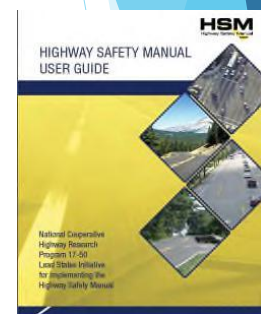
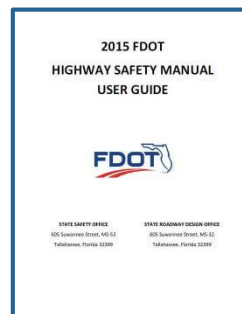
## AASHTO Highway Safety Manual (HSM) 2010/2014

- ▶ What does the manual provide?
- ▶ Equations and Factors to quantifiably measure safety and performance of an existing or proposed roadway condition...
- ▶ Informed Decisions



## Introduction- New FDOT HSM User Guide

- ▶ Practical Guide to help navigate the predictive method.
- ▶ State Safety Office Website.
- ▶ Published in June 2015.
- ▶ NCHRP 17-50 HSM User Guide
  - ▶ Final Draft on-line



## Safety Analysis

- ▶ Historical Crash Method (HCM)
  - ▶ How did or is this facility performing (past-present)
- ▶ Predictive Method
  - ▶ How should this facility perform or how will it function with some geometric or safety adjustments.

## Safety Analysis

- ▶ Historical Crash Method (HCM)
  - ▶ Uses Historical Crashes
  - ▶ 5 year Analysis
  - ▶ Uses Crash Reduction Factors (CRFs)
- ▶ Predictive Method
  - ▶ Statistically Predicts Crashes
  - ▶ Design Life Analysis
  - ▶ Uses Crash Modification Factors (CMFs)
  - ▶ Types
    - ▶ Roadside Safety Analysis Program (RSAP)
    - ▶ Highway Safety Manual (HSM)

## Safety Analysis

### ▶ Predictive Method

- ▶ The two Predictive Methods listed in our Plans Preparation Manual are:
  - ▶ Highway Safety Manual.
  - ▶ Roadside Safety Analysis Program (RSAP)
  - ▶ Both methods use specific roadway geometric features and traffic volumes to quantitatively estimate safety performance of proposed alternatives.

## HSM Part C: Predictive Method

- ▶ Provides equations that statistically predict the number of crashes
  - ▶ Rural Two Lane Roads Ch. 10
  - ▶ Rural Multilane Roads Ch. 11
  - ▶ Urban/ Suburban Roads Ch. 12
  - ▶ Urban/ Rural Freeways Ch. 18 (2014 Supplement)
  - ▶ Ramps Ch. 19 (2014 Supplement)

## HSM Part C: Predictive Method



### Rural two-lane two-way roads

- 1 segment SPF
- 3 intersection SPFs



### Rural multilane highways

- 2 segment SPFs
- 3 intersection SPFs



### Urban and suburban arterials

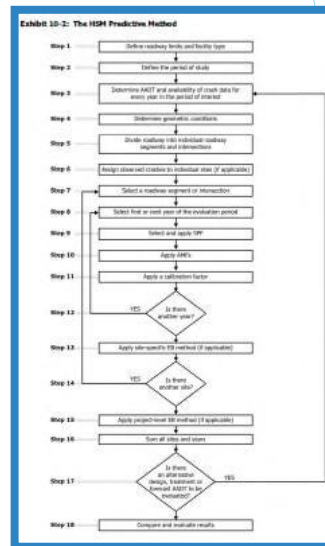
- 5 segment SPFs
- 4 intersection SPFs

18 SPFs in First Edition HSM

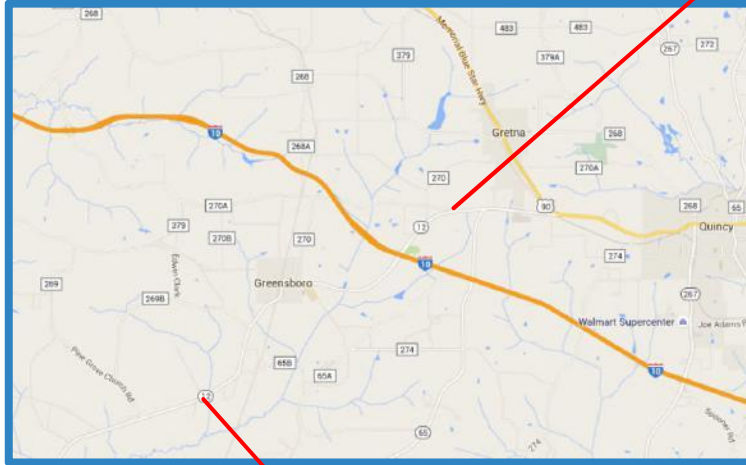
NCHRP 17-45: Freeways & Ramps

## HSM Predictive Method (18 Steps)

- ▶ Steps 1 - 4: Collect Existing Conditions
- ▶ Steps 5 - 8: Segment Roadway and Assign Crashes
- ▶ Steps 9 - 13: Apply SPFs, CMFs, Cf and EB Adjustment
- ▶ Steps 15 - 18: Design Life and Alternative Analysis



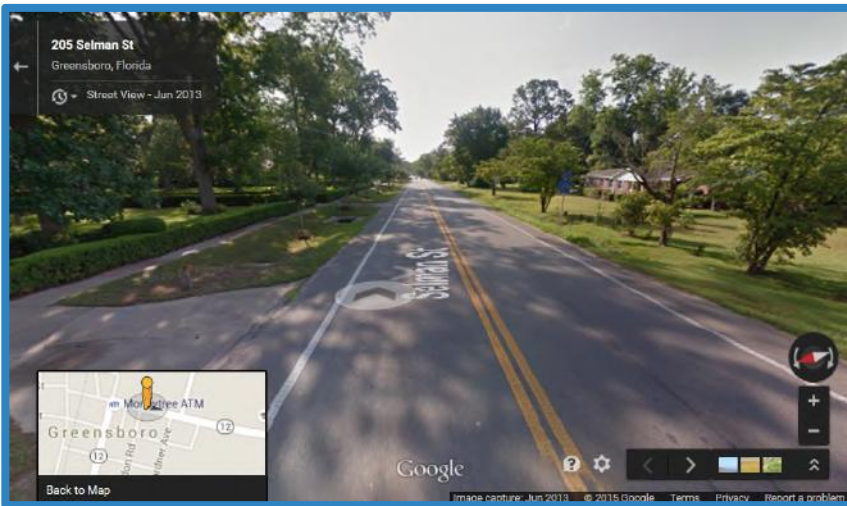
## State Road 12 Gadsden County



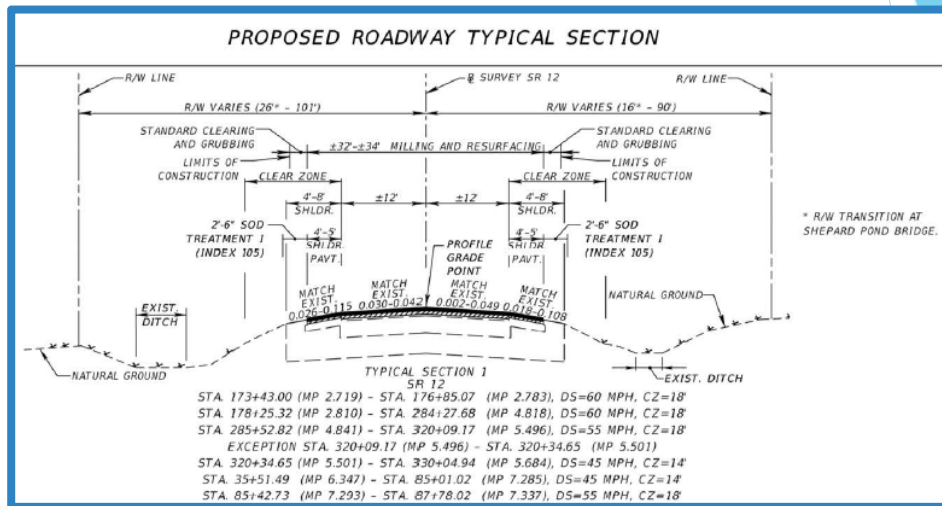
END PROJECT  
M.P. 12.459

BEGIN PROJECT  
M.P. 2.719

## Typical Section Looking North

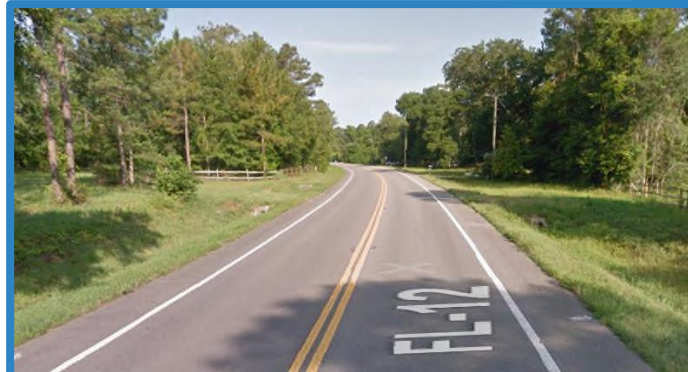


## Approved Typical Section



## Evaluate Existing Shoulder Widths

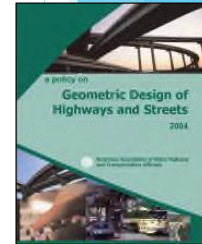
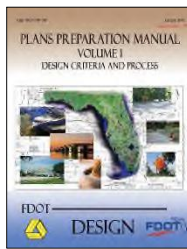
- ▶ Effective Width: 4 to 5 Feet
  - ▶ 6 feet Required
- ▶ Paved Width: 4 to 5 Feet
  - ▶ Paved Widths less than 4 Feet Require a Design Variation





## Minimum Shoulder Width Criteria (effective or stabilized widths)

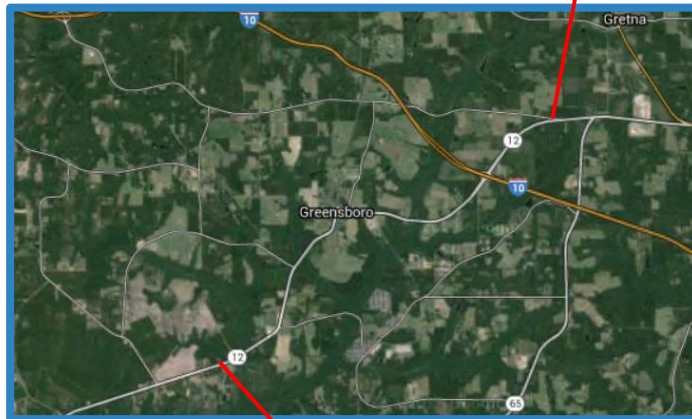
- ▶ FDOT PPM Criteria
  - ▶ New Construction (Ch. 2)
    - ▶ 8 feet (low volume)
    - ▶ 5 feet paved
  - ▶ RRR (Ch. 25)
    - ▶ 6 feet (all volumes)
    - ▶ 4 feet paved
- ▶ AASHTO Greenbook Criteria
  - ▶ New Construction
    - ▶ 8 feet (> 2000 ADT)
    - ▶ 0 foot paved



## Identify Design Exception

- ▶ 13 Controlling Criteria
  - ▶ Design Speed
  - ▶ Lane Widths
  - ▶ **Shoulder Widths**
  - ▶ Bridge Widths
  - ▶ Structural Capacity
  - ▶ Vertical Clearance
  - ▶ Grades
  - ▶ Cross Slope
  - ▶ Superelevation
  - ▶ Horizontal Alignment
  - ▶ Vertical Alignment
  - ▶ Stopping Sight Distance
  - ▶ Horizontal Clearance

## Step 1: Define roadway limits and facility type (Scope)



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M.P. 2.719

## Step 1: Define roadway limits and facility type (Scope)

### 2 PROJECT DESCRIPTION

The CONSULTANT shall investigate the status of the projects and become familiar with concepts and commitments (typical sections, alignments, etc.) developed from prior studies. If a Preliminary Engineering Report is available from a prior or current Project Development and Environmental (PD&E) study, the CONSULTANT shall use the approved concepts as a basis for the design unless otherwise directed by the DEPARTMENT.

**Financial Project ID: 428848-1-32-01**

*This 3R project primarily consists of resurfacing SR 12 from the Yon Creek Bridge to West of SR 10 (US 90). Existing travel lanes, parking lanes, auxiliary lanes, median crossovers, and paved shoulders will be resurfaced. The typical section consists of two (2) 12' travel lanes and variable width shoulders (5' paved). In the vicinity of the SR 8 (I-10) overpass, SR 12 widens to include a raised median and provides two (2) 12' travel lanes in each direction. The right-of-way varies throughout the project limits. No additional right-of-way will be required.*

*A flashing beacon exists within the limits of Greensboro at the intersection of SR 12 and CR 270 (Selman Street)(CMP 6.008). No work is anticipated for this signal.*

*Minor ADA improvements will be included in this project within the limits of Greensboro. These improvements may consist of repairing deficient sidewalk, replacing/retrofitting non compliant curb ramps, and meeting clear space requirements. An ADA Survey Report will be required. See Section 4.9.*

*The CSX railroad crossing at CMP 5.499 has been replaced in separate project.*

## Step 2: Define the study period (Project Design Life)

- ▶ 5 year study of observed crashes (CARS Data)
  - ▶ 2007 - 2011
  - ▶ CARS Data (Typically KABC only)
  - ▶ Total Crashes Sorted by KABCO
- ▶ 20 year study for Life Cycle cost analysis. (HSM/EB Model)
  - ▶ 2011 - 2031
  - ▶ 20 Year Expected Resurfacing Cycle

## Step 2: Crash Types KABCO Factors (Default % Distribution for Rural 2-lane)

- ▶ **K = Fatal Crashes (1.3%)**
- ▶ **A = Incapacitating Injury Crashes (5.4%)**
- ▶ **B = Non-Incapacitating Injury Crashes (10.9%)**
- ▶ **C = Possible Injury Crashes (14.5%)**
- ▶ **O = Property Damage Only crashes. (67.9%)**
- ▶ All Crashes (100%)
- ▶ KABC Crashes (32.1%)

## Step 3: AADT and Crash Data (Research)

- ▶ Obtain AADTs and Growth Rates for
  - ▶ AADTs
    - ▶ Opening Year: 2011      4500 veh/day
    - ▶ Design Year: 2031      5500 veh/day
  - ▶ Crash Data Needs
    - ▶ 2007 -2011 Minimum
    - ▶ Request from Project Manager.

## Step 4: Geometric Conditions (Typical and Layout)

- ▶ Geometric Design Features, Traffic Control, Features, and Site Characteristics
  - ▶ Length of Segment (miles)
  - ▶ AADT (vehicles per day)
  - ▶ Lane Width (feet)
  - ▶ Shoulder Width (feet)
  - ▶ Shoulder Type (paved/ gravel/ composite/ turf)
  - ▶ Curve Data
  - ▶ Grade
  - ▶ Driveway Density (driveways/mile)

## Step 4: Base Conditions 2-Lane Rural

- Lane Width----- 12 feet
- Shoulder Width ----- 6 feet
- Shoulder Type----- Paved
- Roadside Hazard Rating----- 3
- Driveway Density----- 5 per mile
- Horizontal Curvature ----- None
- Vertical Curvature ----- None
- Centerline Rumble Strips ----- None
- Passing Lanes----- None
- Two-Way Left-turn Lanes----- None
- Lighting ----- None
- Automated Speed Enforcement ----- None
- Grade ----- 0%

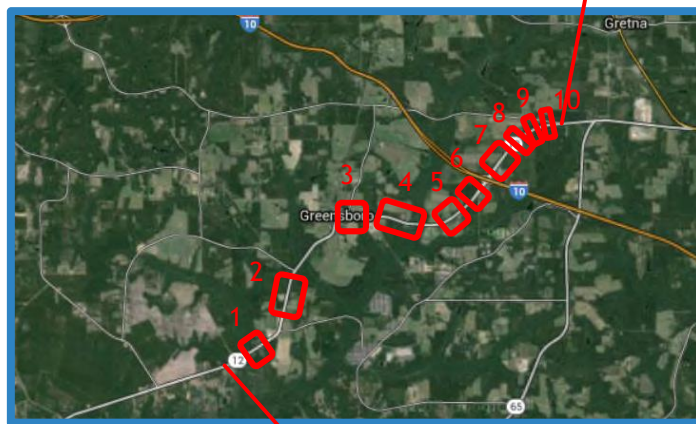
## Step 4: Workshop Example:

- ▶ Go to HSM Website-Tools-
- ▶ Using HSM Spreadsheet, input variables for base conditions and CMFs for existing conditions on project.

## Step 4: Geometric Conditions (Spreadsheet)

Worksheet 1A -- General Information and Input Data for Rural Two-Lane Two-Way Roadway Segments			
General Information		Location Information	
Analyst	Jeremy Fletcher	Roadway	SR 12 Greensboro
Agency or Company	FDOT	Roadway Section	MP 6.76 to MP 7.17
Date Performed	05/28/15	Jurisdiction	FDOT
		Analysis Year	2007
Input Data		Base Conditions	Site Conditions
Length of segment, L (mi)		--	0.409
AAADT (veh/day)	AAADT <sub>MAX</sub> = 17,800 (veh/day)	--	4,300
Lane width (ft)		12	12
Shoulder width (ft)		6	Right Shld: 4 Left Shld: 4
Shoulder type		Paved	Right Shld: Paved Left Shld: Paved
Length of horizontal curve (mi)		0	0.0
Radius of curvature (ft)		0	0
Spiral transition curve (present/not present)		Not Present	Not Present
Superelevation variance (ft/ft)		< 0.01	0
Grade (%)		0	0
Driveway density (driveways/mile)		5	12
Centerline rumble strips (present/not present)		Not Present	Not Present
Passing lanes [present (1 lane) / present (2 lane) / not present]		Not Present	Not Present
Two-way left-turn lane (present/not present)		Not Present	Not Present
Roadside hazard rating (1-7 scale)		3	3
Segment lighting (present/not present)		Not Present	Not Present
Auto speed enforcement (present/not present)		Not Present	Not Present
Calibration Factor, Cr		1	1.00

## Step 5: Segment Project



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BEGIN PROJECT  
M.P. 2.719

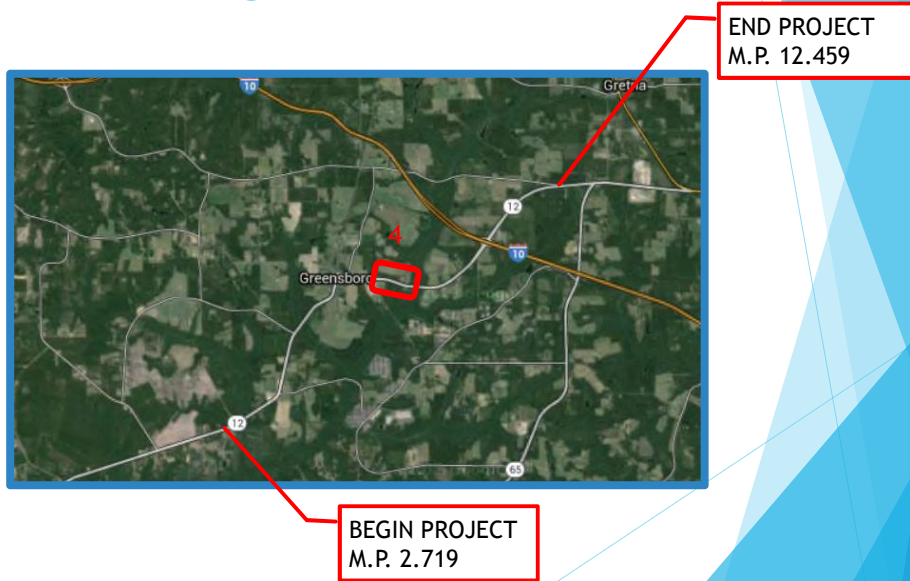
## Step 6: Assign Observed Crashes

EXCEPTION AREAS	STA	MP	TO	STA	MP	LENGTH	Total Crashes Occurring in Areas	Event Codes Related to Shoulder Width													Total					
								2	8	9	10	11	16	17	18	19	20	21	22	23		27	31			
1	184+65.00	2.932	TO	193+64.00	3.102	899	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
2	242+24.00	4.022	TO	270+66.00	4.560	2842	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	23+60.00	6.103	TO	31+60.00	6.223	800	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	57+13.00	6.757	TO	78+77.00	7.166	2164	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	105+1.00	7.671	TO	119+61.00	7.940	1420	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	122+69.00	7.998	TO	144+95.00	8.420	2226	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7	193+55.00	9.341	TO	248+92.00	10.389	5537	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	270+89.00	10.805	TO	287+74.00	11.124	1685	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	301+01.00	11.376	TO	317+82.00	11.694	1681	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
10	341+80.00	12.148	TO	356+61.00	12.429	1481	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					Total		20835	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	Harmful event Code	Description					Harmful event Code	Description																		
	2	Head-on					19	Hit fence																		
	8	Coll. w/ parked car					20	Hit conc. barrier wall																		
	9	Coll. w/ mv on roadway					21	Hit bridge/pier/abutment/rail																		
	10	Coll. w/ pedestrian					22	Hit tree/shrubbery																		
	11	Coll. w/ bicycle					23	Coll. w/ construction barricade																		
	16	Utility/light pole					27	Hit fixed Object																		
	17	Hit pole					31	Overturned																		
	18	Hit guardrail																								

## Step 6: Observed Crash Adjustments (PDOs)

- ▶ Florida CARS Data typically only includes KABC Crashes. To account for PDO crashes, an increase should be applied to the observed crash data to determine the Total Observed Crash Rate for the site.
  - ▶ Section 4 Observed 5 year Crashes = 4
    - ▶ KABC Crashes = 32.1% of Total Crashes [Table 10-3]
    - ▶ PDO Crashes = 67.9% Crashes [Table 10-3]
  - ▶ Adjustments: Total Crashes =  $4 \div 0.321$ 
    - ▶ Total Observed Crashes = 12.46 Over 5 Years (2.5 Crashes/Year)

## Step 7: Select a Segment or Intersection



## Step 7: Selected Segment 4





## Step 8: Determine 1<sup>st</sup> Year

- ▶ Opening Year
  - ▶ 2011
- ▶ Observed Crash Data (5 Years)
  - ▶ 2007 - 2011
- ▶ Design Year
  - ▶ 2031

## Step 8: Safety Performance Functions (SPF)

- ▶  $N = \text{Crash Frequency} = \text{Crashes/Year}$

## Step 9: Select and apply SPF

### ► Rural Two-lane, Two-way Roads

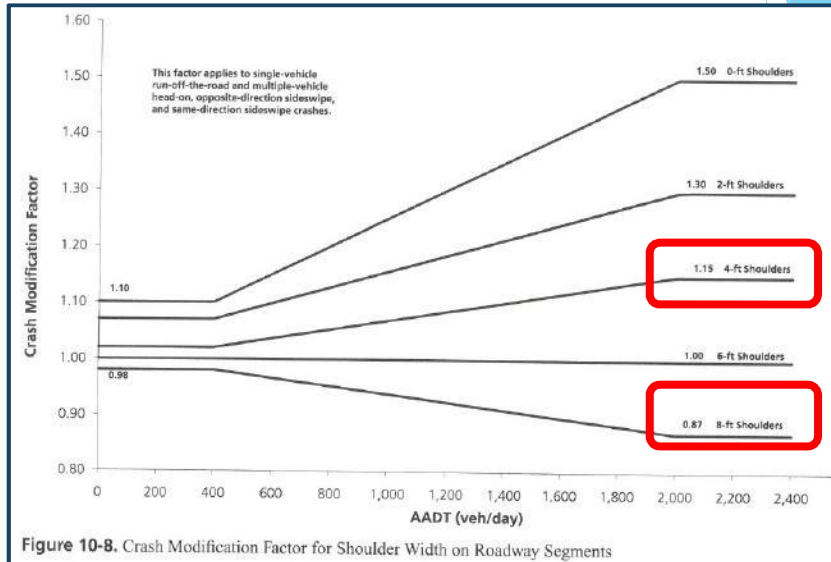
- $N_{spfrs} = AADT \times L \times 365 \times 10^{-6} \times e^{(-0.312)}$ 
  - $N_{spfrs}$  = Total Number of Crashes for Base Conditions
    - Used in Before and After Calculations
  - AADT = Annual Average Daily Traffic (veh/day) = 4500 veh/day
  - L = length of segment (miles) = 0.409 miles
- $N_{spfrs-2011} = 4500 \times 0.409 \times 365 \times 10^{-6} \times e^{(-0.312)}$ 
  - 0.49 Crashes/year (Predicted in 2011)

## Step 10: Apply CMFs

**Table 10-7.** Summary of Crash Modification Factors (CMFs) in Chapter 10 and the Corresponding Safety Performance Functions (SPFs)

Facility Type	CMF	CMF Description	CMF Equations and Tables
Rural Two-Lane Two-Way Roadway Segments	$CMF_{1r}$	Lane Width	Table 10-8, Figure 10-7, Equation 10-11
	$CMF_{2r}$	Shoulder Width and Type	Table 10-9, Figure 10-8, Table 10-10, Equation 10-12
	$CMF_{3r}$	Horizontal Curves: Length, Radius, and Presence or Absence of Spiral Transitions	Table 10-7
	$CMF_{4r}$	Horizontal Curves: Superelevation	Equation 10-14, 10-15, 10-16,
	$CMF_{5r}$	Grades	Table 10-11
	$CMF_{6r}$	Driveway Density	Table 10-11
	$CMF_{7r}$	Centerline Rumble Strips	See text
	$CMF_{8r}$	Passing Lanes	See text
	$CMF_{9r}$	Two-Way Left-Turn Lanes	Equation 10-18, 10-19
	$CMF_{10r}$	Roadside Design	Equation 10-20
	$CMF_{11r}$	Lighting	Equation 10-21, Table 10-12
	$CMF_{12r}$	Automated Speed Enforcement	See text

## Step 10: HSM: CMF Figure 10-8



## Step 10: Shoulder Width CMF Table 10-9

**Table 10-9.** CMF for Shoulder Width on Roadway Segments ( $CMF_{wtd}$ )

Shoulder Width	AADT (vehicles per day)		
	< 400	400 to 2000	> 2000
0 ft	1.10	$1.10 + 2.5 \times 10^{-4} (AADT - 400)$	1.50
2 ft	1.07	$1.07 + 1.43 \times 10^{-4} (AADT - 400)$	1.30
4 ft	1.02	$1.02 + 8.125 \times 10^{-5} (AADT - 400)$	1.15
6 ft	1.00	1.00	1.00
8 ft or more	0.98	$0.98 + 6.875 \times 10^{-5} (AADT - 400)$	0.87

Note: The collision types related to shoulder width to which this CMF applies include single-vehicle run-off the-road and multiple-vehicle head-on, opposite-direction sideswipe, and same-direction sideswipe crashes.

## Step 10: Shoulder Type CMF Table 10-10

**Table 10-10.** Crash Modification Factors for Shoulder Types and Shoulder Widths on Roadway Segments ( $CMF_{tra}$ )

Shoulder Type	Shoulder Width (ft)						
	0	1	2	3	4	6	8
Paved	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Gravel	1.00	1.00	1.01	1.01	1.01	1.02	1.02
Composite	1.00	1.01	1.02	1.02	1.03	1.04	1.06
Turf	1.00	1.01	1.03	1.04	1.05	1.08	1.11

Note: The values for composite shoulders in this table represent a shoulder for which 50 percent of the shoulder width is paved and 50 percent of the shoulder width is turf.

## Step 10: Apply CMFs

### ► Shoulder Width CMF Adjustment Equation

- $CMF_{2r} = (CMF_{wra} \times CMF_{tra} - 1.0) \times p_{ra} + 1.0$  [HSM Equation 10-12]
  - $CMF_{2r}$  = Crash Modification Factor for Shoulder Width and Type
  - $CMF_{wra}$  = Crash Modification Factor for Shoulder Width = 1.15
  - $CMF_{tra}$  = Crash Modification Factor for Type = 1.0
  - $p_{ra}$  = Proportion of total crashes represented by related crashes = 0.574
- $CMF_{2r} = (1.15 \times 1.0 - 1.0) \times 0.574 + 1.0$ 
  - 1.09 CMF Adjustment to Total Crashes (4' Paved Shoulder)

## Step 10: CMF Combined Table

Crash Modification Factors for Shoulder Width and Type (Rural 2-Lane High Speed)							
<i>Assumed AADT Greater than 2000</i>							
Shoulder Type	Shoulder Width (Feet)						
	0	1	2	3	4	6	8
<b>Paved</b>							
CMF Width-Related	1.50	1.40	1.30	1.23	1.15	1.00	0.87
CMF Type <b>Paved</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CMF Adjusted to Total Crashes	1.29	1.23	1.17	1.13	1.09	1.00	0.93
<b>Composite Shoulders</b>							
CMF Width	1.50	1.40	1.30	1.23	1.15	1.00	0.87
CMF Type <b>Composite</b> (50/50 Paved)	1.00	1.01	1.02	1.02	1.03	1.04	1.06
CMF Adjusted to Total Crashes	1.29	1.24	1.19	1.15	1.11	1.02	0.96
<b>Turf Shoulders</b>							
CMF Width	1.50	1.40	1.30	1.23	1.15	1.00	0.87
CMF Type <b>Turf</b>	1.00	1.01	1.03	1.04	1.05	1.08	1.11
CMF Adjusted to Total Crashes	1.29	1.24	1.19	1.16	1.12	1.05	0.98
<b>HSM Equation 10-12</b>							
<i>Values in italics have been pro-rated based on adjacent values</i>							
CMF (Total Crashes) = CMF (Related Crashes) * CMF (Total Crashes) * % Related Crashes (57.4%)							
<b>References: HSM Table 10-9, 10-10</b>							

## Step 11: Apply Calibration Factors

- ▶ Florida Calibration Factor for a Rural 2-lane, 2-way Roadway Segment is 1.0
  - ▶ FDOT State Safety Office Web Site (Segments and Intersections)
- ▶  $N_{\text{predicted}} = N_{\text{spfrs}} \times C_x \times (\text{CMF}_{1r} \times \text{CMF}_{2r} \times \dots \times \text{CMF}_{12r})$  [HSM: Eq. 10-2]
  - ▶  $N_{\text{predicted}}$  = Predicted Average Crashes for a Roadway Segment and Year
  - ▶  $N_{\text{spfrs}}$  = Total Number of Crashes for Base Conditions = 0.49 crashes/year
  - ▶  $C_x$  = Calibration Factor for Roadway Segment = 1.0
  - ▶  $\text{CMF} = \text{CMF}_{2r}$  = Crash Modification Factor for Shoulder Width and Type = 1.09
  - ▶  $\text{CMF}_{\text{Hcurve}} = 1.09$  (Based on 2900' Radius for a 0.2 Mile Curve)
- ▶  $N_{\text{predicted}} = 0.49 \times 1.0 \times (1.09 \times 1.09)$ 
  - ▶ 0.582 Crashes/year (Predicted in 2011)

## Step 11: Apply Calibration Factors

- ▶ Florida Calibration Factor for a Rural 2-lane, 2-way Roadway Segment is 1.0

Table 23.5.3 HSM Calibration Factors for Florida (2012)

FDOT Segment Calibration Factors		
Segment Type	Abbreviation	Calibration Factor (C <sub>2</sub> )
Rural 2-lane, 2-way Undivided	R2U	1.00
Rural 4-lane Divided	R4D	0.68
Urban 2-lane Undivided	U2U	1.02
Urban 3-lane with a Center Two-Way Left Turn Lane	U32LT	1.04
Urban 4-lane Undivided	U4U	0.73
Urban 4-lane Divided	U4D	1.63
Urban 3-lane with a Center Two-Way Left Turn Lane	U52LT	0.70
FDOT Intersection Calibration Factors		
Rural 2-lane 3-Leg Stop-Controlled Intersection	R23ST	1.30
Rural 2-lane 4-Leg Stop-Controlled Intersection	R24ST	0.90
Rural 2-lane 4-Leg Signalized Intersection	R24SG	1.00
Rural Multilane 4-Leg Signalized Intersection	RM4SG	1.00
Urban 3-Leg Stop-Controlled Intersection	U3ST	0.88
Urban 3-Leg Signalized Intersection	U3SG	1.56
Urban 4-Leg Signalized Intersection	U4SG	1.00

## Step 11: Apply Calibration Factors

- ▶ Florida Crash

Table 23.5.3 HSM Calibration Factors for Florida (2012)

FDOT Segment Calibration Factors		
Segment Type	Abbreviation	Calibration Factor (C <sub>2</sub> )
Rural 2-lane, 2-way Undivided	R2U	1.00
Rural 4-lane Divided	R4D	0.68
Urban 2-lane Undivided	U2U	1.02
Urban 3-lane with a Center Two-Way Left Turn Lane	U32LT	1.04
Urban 4-lane Undivided	U4U	0.73
Urban 4-lane Divided	U4D	1.63
Urban 3-lane with a Center Two-Way Left Turn Lane	U52LT	0.70
FDOT Intersection Calibration Factors		
Rural 2-lane 3-Leg Stop-Controlled Intersection	R23ST	1.30
Rural 2-lane 4-Leg Stop-Controlled Intersection	R24ST	0.90
Rural 2-lane 4-Leg Signalized Intersection	R24SG	1.00
Rural Multilane 4-Leg Signalized Intersection	RM4SG	1.00
Urban 3-Leg Stop-Controlled Intersection	U3ST	0.88
Urban 3-Leg Signalized Intersection	U3SG	1.56
Urban 4-Leg Signalized Intersection	U4SG	1.00

## Step 11: Worksheet N<sub>Predicted</sub>

Worksheet 1B -- Crash Modification Factors for Rural Two-Lane Two-Way Roadway Segments												
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
CMF for Lane Width	CMF for Shoulder Width and Type	CMF for Horizontal Curves	CMF for Super-elevation	CMF for Grades	CMF for Driveway Density	CMF for Centerline Rumble Strips	CMF for Passing Lanes	CMF for Two-Way Left-Turn Lane	CMF for Roadside Design	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
<i>CMF 1r</i>	<i>CMF 2r</i>	<i>CMF 3r</i>	<i>CMF 4r</i>	<i>CMF 5r</i>	<i>CMF 6r</i>	<i>CMF 7r</i>	<i>CMF 8r</i>	<i>CMF 9r</i>	<i>CMF 10r</i>	<i>CMF 11r</i>	<i>CMF 12r</i>	<i>CMF comb</i>
from Equation 10-11	from Equation 10-12	from Equation 10-13	from Equations 10-14, 10-15, or 10-16	from Table 10-11	from Equation 10-17	from Section 10.7.1	from Section 10.7.1	from Equation 10-18 & 10-19	from Equation 10-20	from Equation 10-21	from Section 10.7.1	$(1) \times (2) \times \dots \times (11) \times (12)$
1.00	1.09	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.183
Worksheet 1C -- Roadway Segment Crashes for Rural Two-Lane Two-Way Roadway Segments												
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)					
Crash Severity Level	N spf rs	Overdispersion Parameter, k	Crash Severity Distribution	N spf rs by Severity Distribution	Combined CMFs	Calibration Factor, Cr	Predicted average crash frequency,					
	from Equation 10-6	from Equation 10-7	from Table 10-3 (proportion)	(2) <sup>TOTAL</sup> x (4)	(13) from Worksheet 1B		(5)x(6)x(7)					
Total	0.492	0.58	1.000	0.492	1.18	1.00	0.582					
Fatal and Injury (FI)	--	--	0.321	0.158	1.18	1.00	0.187					
Property Damage Only (PDO)	--	--	0.679	0.334	1.18	1.00	0.395					

## Step 11: Workshop Part 2

- ▶ Copy over Segment Tab and Re-do for 8' shoulder.

## Step 12: Predicted Crashes (4' Shoulder)

Service Life Year	AADT	N <sub>SPFTotal</sub>	Calib. Factor	CMF <sub>Total-Before</sub>	N <sub>predictedTotal-Before</sub>
2011	4500	0.49	1.00	1.183	0.582
2012	4545	0.50	1.00	1.183	0.588
2013	4590	0.50	1.00	1.183	0.593
2014	4636	0.51	1.00	1.183	0.599
2015	4683	0.51	1.00	1.183	0.605
2016	4730	0.52	1.00	1.183	0.611
2017	4777	0.52	1.00	1.183	0.618
2018	4825	0.53	1.00	1.183	0.624
2019	4873	0.53	1.00	1.183	0.630
2020	4922	0.54	1.00	1.183	0.636
2021	4971	0.54	1.00	1.183	0.643
2022	5021	0.55	1.00	1.183	0.649
2023	5071	0.55	1.00	1.183	0.655
2024	5121	0.56	1.00	1.183	0.662
2025	5173	0.57	1.00	1.183	0.669
2026	5224	0.57	1.00	1.183	0.675
2027	5277	0.58	1.00	1.183	0.682
2028	5329	0.58	1.00	1.183	0.689
2029	5383	0.59	1.00	1.183	0.696
2030	5436	0.59	1.00	1.183	0.703
2031	5491	0.60	1.00	1.183	0.710
				Total	13.519

## Step 12: Predicted Crash Comparison (4' vs 8' Shoulder)

Service Life Year	AADT	N <sub>SPFTotal</sub>	Calib. Factor	CMF <sub>Total-Before</sub>	N <sub>predictedTotal-Before</sub>	CMF <sub>Total-After</sub>	N <sub>predictedTotal-After</sub>
2011	4500	0.49	1.00	1.183	0.582	1.041	0.512
2012	4545	0.50	1.00	1.183	0.588	1.041	0.517
2013	4590	0.50	1.00	1.183	0.593	1.041	0.522
2014	4636	0.51	1.00	1.183	0.599	1.041	0.527
2015	4683	0.51	1.00	1.183	0.605	1.041	0.533
2016	4730	0.52	1.00	1.183	0.611	1.041	0.538
2017	4777	0.52	1.00	1.183	0.618	1.041	0.543
2018	4825	0.53	1.00	1.183	0.624	1.041	0.549
2019	4873	0.53	1.00	1.183	0.630	1.041	0.554
2020	4922	0.54	1.00	1.183	0.636	1.041	0.560
2021	4971	0.54	1.00	1.183	0.643	1.041	0.565
2022	5021	0.55	1.00	1.183	0.649	1.041	0.571
2023	5071	0.55	1.00	1.183	0.655	1.041	0.577
2024	5121	0.56	1.00	1.183	0.662	1.041	0.583
2025	5173	0.57	1.00	1.183	0.669	1.041	0.588
2026	5224	0.57	1.00	1.183	0.675	1.041	0.594
2027	5277	0.58	1.00	1.183	0.682	1.041	0.600
2028	5329	0.58	1.00	1.183	0.689	1.041	0.606
2029	5383	0.59	1.00	1.183	0.696	1.041	0.612
2030	5436	0.59	1.00	1.183	0.703	1.041	0.618
2031	5491	0.60	1.00	1.183	0.710	1.041	0.625
				Total	13.519		11.896



## Step 13: Weighting using the Empirical Beyes Method (EB)

- ▶ HSM Page 3-24

“...the statistical reliability is improved by combining the observed crash frequency and the estimate of the average crash frequency from a predictive model”

“The EB method is only applicable when both predicted and observed crash data are available for the specific roadway network conditions for which the estimate is being made.”

“It can be used to estimate expected average crash frequency for both past and future periods.”

## Step 13: Empirical Beyes Method (EB)

- ▶ Weighting Factor Calculations [HSM EQ. 3-10]

- ▶  $w = \text{Weighted Adjustment} = 1 / (1 + k \times (\sum N_{\text{predicted}} (\text{all study years})))$

- ▶  $k = 0.236 / L$  [HSM Equation 10-7]

- ▶  $k = 0.236 / 0.4 \text{ miles} = 0.577$

- ▶  $\sum N_{\text{predicted}} (2011) = 0.512 \text{ Crashes}$

- ▶  $w = 1 / (1 + 0.577 \times 0.512) = 0.77 (2011)$

- ▶ The longer the segment area with crash data, the higher the values are weighted to the predictive model.

## Step 13: Empirical Bayes Method (EB)

### ▶ Observed Crash Frequencies and Predicted Crashes Needed

- ▶  $N_{\text{expected}} = w \times N_{\text{predicted}} + (1 - w) \times N_{\text{observed}}$  [HSM Eq. 3-9]
  - ▶  $N_{\text{expected}}$  = Total Number of Expected Crashes
  - ▶  $N_{\text{predicted}}$  = Total Number of Predicted Crashes
  - ▶  $N_{\text{observed}}$  = Observed Crashes
  - ▶  $w$  = Weighted Adjustment =  $1 / (1 + k \times (\sum N_{\text{predicted}} \text{ (all study years)}))$
- ▶  $N_{\text{expected}} = 0.77 \times 0.512 + (1 - 0.77) \times 2.5$ 
  - ▶ 1.02 Total Crashes Expected [2011]

## Step 14: Next Segment or Intersection

- ▶ Repeat the process for all sites/segments:
  - ▶  $N_{\text{expected}}$  for each segment and intersection
  - ▶ Weighting factor can be calculated individually by year or used on all years. (Example:  $w = 0.77$ )
  - ▶ Apply average observed crash rate (Example: 2.5/year) to all future years for life cycle analysis.

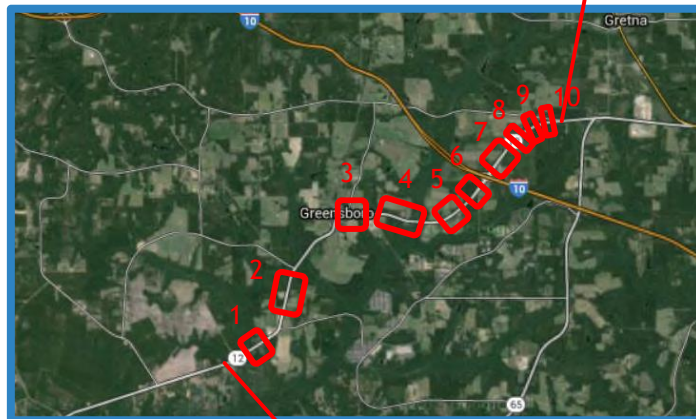
## Step 14: Expected Crash Summary

$N_{Expected(FI)}$ Before (4')	$N_{Expected(FI)}$ After (8')	Delta $N_{FI}$	$N_{Expected(PDO)}$ Before	$N_{Expected(PDO)}$ After	Delta $N_{PDO}$	$N_{Expected(Total)}$ Before	$N_{Expected(Total)}$ After	Delta $N_{Total}$
0.33	0.31	0.02	0.69	0.66	0.04	1.02	0.97	0.05
0.33	0.31	0.02	0.70	0.66	0.04	1.03	0.97	0.05
0.33	0.31	0.02	0.70	0.66	0.04	1.03	0.98	0.05
0.33	0.31	0.02	0.70	0.67	0.04	1.04	0.98	0.06
0.33	0.32	0.02	0.71	0.67	0.04	1.04	0.99	0.06
0.34	0.32	0.02	0.71	0.67	0.04	1.05	0.99	0.06
0.34	0.32	0.02	0.71	0.67	0.04	1.05	0.99	0.06
0.34	0.32	0.02	0.72	0.68	0.04	1.06	1.00	0.06
0.34	0.32	0.02	0.72	0.68	0.04	1.06	1.00	0.06
0.34	0.32	0.02	0.72	0.68	0.04	1.06	1.01	0.06
0.34	0.32	0.02	0.73	0.69	0.04	1.07	1.01	0.06
0.34	0.33	0.02	0.73	0.69	0.04	1.07	1.01	0.06
0.35	0.33	0.02	0.73	0.69	0.04	1.08	1.02	0.06
0.35	0.33	0.02	0.74	0.70	0.04	1.08	1.02	0.06
0.35	0.33	0.02	0.74	0.70	0.04	1.09	1.03	0.06
0.35	0.33	0.02	0.74	0.70	0.04	1.10	1.03	0.06
0.35	0.33	0.02	0.75	0.70	0.04	1.10	1.04	0.06
0.35	0.33	0.02	0.75	0.71	0.04	1.11	1.04	0.06
0.36	0.34	0.02	0.75	0.71	0.04	1.11	1.05	0.06
0.36	0.34	0.02	0.76	0.71	0.04	1.12	1.05	0.06
0.36	0.34	0.02	0.76	0.72	0.04	1.12	1.06	0.07

## Step 15: Alternative-Apply project level EB Method

- ▶ This step is applicable to existing conditions when observed crash data are available, but cannot be accurately assigned to specific sites.
- ▶ Since our example has accurate locations of the observed crashes, this step is not applicable to the example shown.
- ▶ Can be used to perform Life Cycle Cost Analysis based on Crash Rate Deltas instead.

## Step 16: Sum all Sites and Years

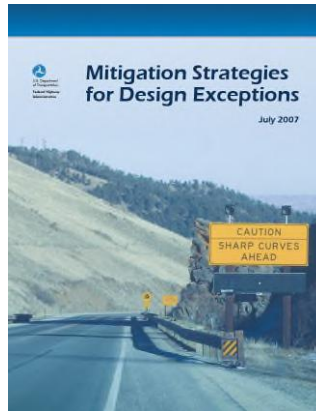


## Step 16: Sum all Sites and Years

- ▶ Add up the  $N_{\text{expected}}$  for all Sites to Include
  - ▶ Segments
    - ▶ Tangent Sections
    - ▶ Curved Sections
  - ▶ Intersections

# Step 17 Mitigation Strategies

- ▶ Mitigation is a thorough process. Every Exception is unique.
- ▶ Mitigation Strategies for Design Exceptions (July 2007) is a resource for evaluating and implementing.



**TABLE 22**  
Potential Mitigation Strategies

### Step 17 Mitigation Strategies

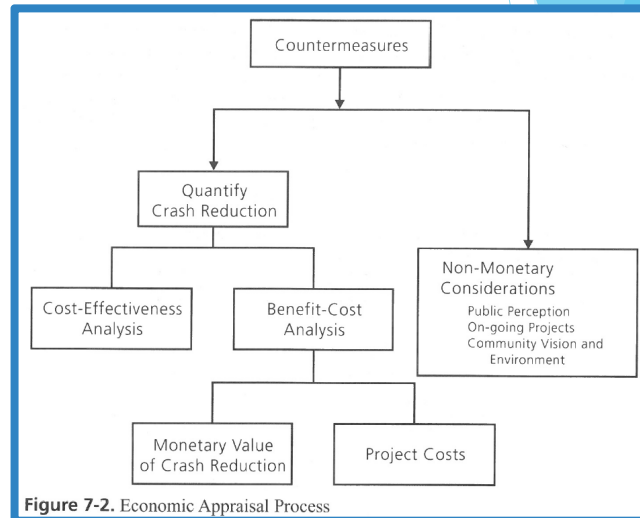
Design Element	Objective	Potential Mitigation Strategies
1. Design Speed	Reduce operating speeds to the design speed.	Cross-sectional elements to manage speed.
2. Lane Width & 3. Shoulder Width	Optimize safety and operations by distributing available cross-sectional width.	Select optimal combination of lane and shoulder width based on site characteristics.
	Provide advance warning of lane width reduction.	Signing.
	Improve ability to stay within the lane.	Wide pavement markings.
		Recessed pavement markings.
		Raised pavement markings.
		Delineators.
		Lighting.
		Centerline rumble strips.
	Shoulder rumble strips.	
	Painted edgeline rumble strips.	
Improve ability to recover if driver leaves the lane.	Paved or partially-paved shoulders.	
	Safety edge.	

Design Element	Objective	Potential Mitigation Strategies	Examples
1. Design Speed	Reduce operating speeds to the design speed.	Reduce or eliminate lane widths. Reduce lane widths. Reduce shoulder widths. Reduce cross-sectional width. Full offset.	None None None None None
	Provide advance warning of lane width reduction.	Signing. Advance warning signs. Advance warning signs with lane width reduction symbol. Advance warning signs with lane width reduction symbol and lane width reduction symbol.	None None None None
2. Lane Width & 3. Shoulder Width	Improve ability to stay within the lane.	Wide pavement markings.	None
		Recessed pavement markings.	None
		Raised pavement markings.	None
		Delineators.	None
		Lighting.	None
		Centerline rumble strips.	None
Improve ability to recover if driver leaves the lane.	Paved or partially-paved shoulders.	None	
	Safety edge.	None	

## Step 17: Alternative Designs and Countermeasures

- ▶ Optimize widths across section
- ▶ Edge Line Rumble Stripes
- ▶ Safety Edge
- ▶ Improved delineation
- ▶ Better Clear Zone
- ▶ Roadway Lighting



## Step 18: Compare and Evaluate Results

- ▶ Economic Appraisal of Crash reduction Benefits
- ▶ Construction costs for the improvements
- ▶ Net present value and Benefit Cost

## Step 18: Annual Costs Fatal and Injuries

Year	Year in Service Life	Delta $N_{fi}$	Crash Cost $_{fi}$	AM $_{fi}$
1	2011	0.02	\$603,848	\$12,077
2	2012	0.02	\$603,848	\$12,077
3	2013	0.02	\$603,848	\$12,077
4	2014	0.02	\$603,848	\$12,077
5	2015	0.02	\$603,848	\$12,077
6	2016	0.02	\$603,848	\$12,077
7	2017	0.02	\$603,848	\$12,077
8	2018	0.02	\$603,848	\$12,077
9	2019	0.02	\$603,848	\$12,077
10	2020	0.02	\$603,848	\$12,077
11	2021	0.02	\$603,848	\$12,077
12	2022	0.02	\$603,848	\$12,077
13	2023	0.02	\$603,848	\$12,077
14	2024	0.02	\$603,848	\$12,077
15	2025	0.02	\$603,848	\$12,077
16	2026	0.02	\$603,848	\$12,077
17	2027	0.02	\$603,848	\$12,077
18	2028	0.02	\$603,848	\$12,077
19	2029	0.02	\$603,848	\$12,077
20	2030	0.02	\$603,848	\$12,077
21	2031	0.02	\$603,848	\$12,077
				\$253,616

## Step 18: Annual Costs Property Damage

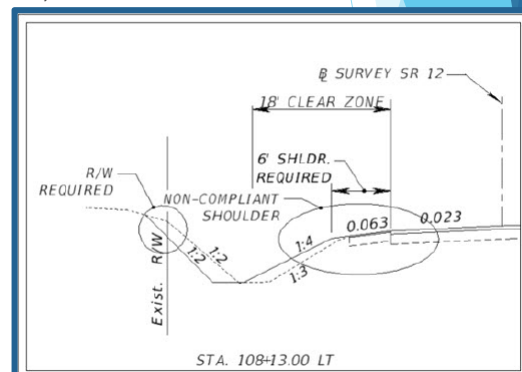
Delta $N_{PDD}$	Crash Cost $_{PDD}$	AM $_{PDD}$
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
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0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
0.040	\$7,600	\$304
		\$6,384

## Step 18: Total Present Value of Crashes

AM <sub>Total</sub>	(P/A,I,y) Factor	PV <sub>Total</sub>
\$12,381	1.00	\$12,381
\$12,381	1.89	\$23,352
\$12,381	2.78	\$34,358
\$12,381	3.63	\$44,942
\$12,381	4.45	\$55,118
\$12,381	5.24	\$64,903
\$12,381	6.00	\$74,311
\$12,381	6.73	\$83,358
\$12,381	7.44	\$92,057
\$12,381	8.11	\$100,421
\$12,381	8.76	\$108,463
\$12,381	9.39	\$116,196
\$12,381	9.99	\$123,632
\$12,381	10.56	\$130,782
\$12,381	11.12	\$137,656
\$12,381	11.65	\$144,267
\$12,381	12.17	\$150,623
\$12,381	12.66	\$156,734
\$12,381	13.13	\$162,611
\$12,381	13.59	\$168,261
\$12,381	14.03	\$173,694
<b>Total Present Value</b>		<b>\$2,158,118</b>

## Step 18: Construction and R/W Costs

- ▶ Construction Costs (widen 4000' of shoulder from 4'-8')
  - ▶ Embankment, MOT, Mobilization, Drainage \$100,000
- ▶ R/W Costs (6-8 Parcels)
  - ▶ \$700,000
- ▶ Environmental Impacts = Unknown
- ▶ Total Projected Costs = \$800,000





## Step 18: Benefit Cost/Net Present Value

- ▶ Two Ways to analyze:
  - ▶ 1. Net Present Value = Benefits-Costs
    - ▶  $\$2,158,000 - \$800,000 = \$1,358,000$  Net Present Value in Shoulder Widening (Used in Prioritization of Projects)
  - ▶ 2. Benefit/Cost: Benefits/Costs
    - ▶  $\$2,158,000 / \$800,000 = 2.70$
- ▶ Benefits = Present Value of Crash Reduction (\$2,158,000)
- ▶ Cost = Current Design, Construction, and R/W Costs (\$800,000+)

## Future HSM Safety Office Training Coming this Fall!!

- ▶ 9 (1-Hour) Webinars:
  - ▶ Intro to HSM
  - ▶ Network Screening
  - ▶ Chapter 10 (Two-Lane)
  - ▶ Chapter 11 (Multi-Lane)
  - ▶ Chapter 12 Urban and Suburban
  - ▶ Freeways
  - ▶ Ramps
  - ▶ Part D CMFs
  - ▶ Benefit Cost

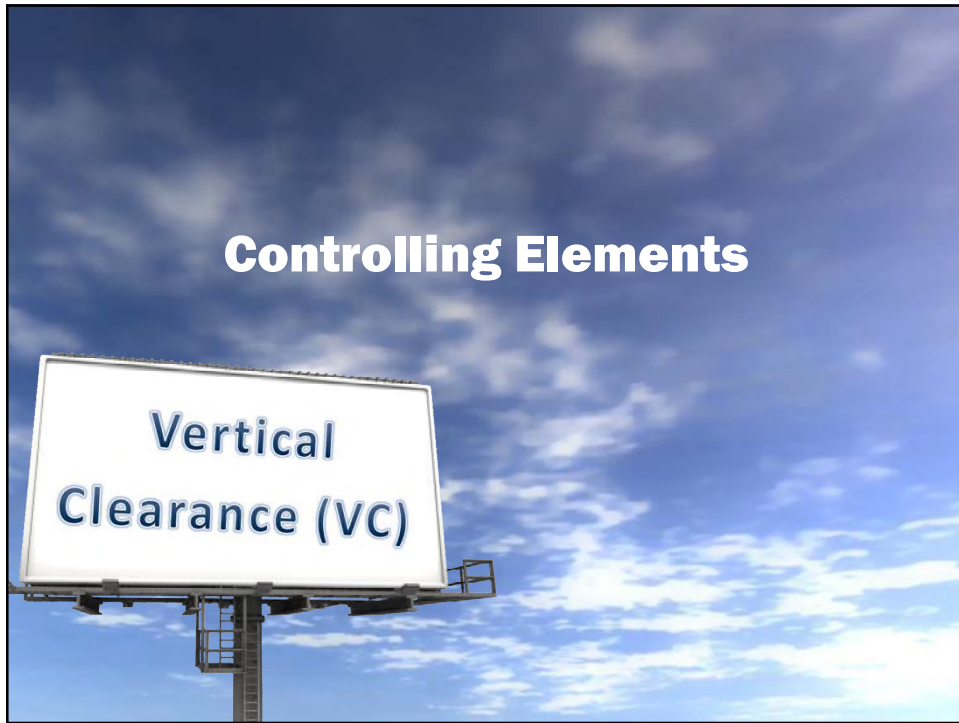
## Future HSM Safety Office Training Coming this Fall!!

- ▶ 4 (1-day Each) Workshops: Regional/District Locations
  - ▶ Design Track
  - ▶ Traffic Ops Track
  - ▶ PD&E track
  - ▶ Planning Track
  - ▶ (4-Day Total), Consultant, HSM team

Who has the first question?



## Controlling Elements

A billboard with a white background and a blue border. At the top, it says "Vertical Clearance" in bold blue text. On the left, a cow is holding a sign that says "LOOKIN AHEAD" in black, hand-drawn letters. To the right of the cow is a thought bubble containing the word "AGENDA" with a red 'X' over it. Below the cow and thought bubble is a bulleted list of topics.

**Vertical Clearance**

LOOKIN AHEAD

~~AGENDA~~

- Define Vertical Clearance
- Measurement
- Criteria: AASHTO, FDOT, RRR, Florida Statutes, SDDCTEA
- Best Practice(s)
- Safety Analysis – Crash Types
- Mitigation Strategies – Crash Reduction
- Clarifications and Resources

## Vertical Clearance

### Definition

“The least distance measured between the lowest bridge super-structure element and the traffic lane or shoulder directly below the element.”



- 2016 PPM

## Vertical Clearance

**Table 23.9.6 AASHTO Vertical Clearance (Minimum)**

Type Facility	Vertical Clearance (feet) <sup>(2)</sup>	AASHTO
Freeways	16 <sup>(1),(4)</sup>	pp. 506, 507, 763, 764
Arterials:		
Rural	16 <sup>(1)</sup>	pp. 447, 763, 764
Urban	16 <sup>(1)</sup>	pp. 472, 763, 764
Arterials (Existing Structures):		
Rural	14	pp. 447, 763, 764
Urban	14	pp. 472, 763, 764
Other Highways	14	pp. 385, 507
Sign Trusses	17	pg. 507
Pedestrian Overpass	17	pg. 507
Tunnels:		
Freeways	16	pg. 355
Other Highways	14	pg. 355
Railroads	23 <sup>(3)</sup>	pg. 522

See Table notes.

- 2016 PPM

## Vertical Clearance

### Table Notes

- 14 ft allowed if have 16 ft on an alternate route.
- Add 6 in for future resurfacing
- Over high speed rail systems
  - AREMA guidelines
  - electrified railroad = 24 ft 3 in min.
  - Topic No. 000-725-003: S FL Rail Corridor Clearance

American Railway  
Engineering and  
Maintenance-of-Way  
Association

- 2016 PPM

## Vertical Clearance

### Table Notes & Approval

- Exceptions to 16 ft on rural Interstate/single urban route must coordinate with the SDDCTEA.
  - PPM 23.3 Approval
    - Interstate Vertical Clearance Exception Coordination form
    - submit via email; Copy FHWA Florida Division
      - allow 10 working days
      - include with Design Exception submittal
      - required before DDE approval

- 2016 PPM

## Vertical Clearance

### 2.10 Vertical Clearance

- Construction affecting existing clearances
  - Design Clearance  $\geq 16$  ft 0 in min.
- For  $16$  ft 0 in  $\leq$  Clearance  $\leq 16$  ft 2 in
  - provide following plan note:  
 "When construction is complete, submit a certified survey confirming the as-built minimum vertical clearance is equal to or greater than the minimum design vertical clearance called for in the plans."



- 2016 PPM

## Vertical Clearance

### 2.10 Vertical Clearance

- Construction affecting existing sign structure clearances:
  - Design Clearance  $\geq 17$  ft 0 in min.
- Construction affecting existing walk-in DMS clearances:
  - Design Clearance  $\geq 19$  ft 0 in min.



- 2016 PPM

## Vertical Clearance

### 2.10 Vertical Clearance

- Construction affecting existing signal clearances:
  - Design Clearance  $\geq$  17 ft 0 in min.
  - 15 ft 0 in  $\leq$  Design Clearance < 17 ft 0 in → DV Required
  - Design Clearance < 15 ft 0 in → DV Not Approved



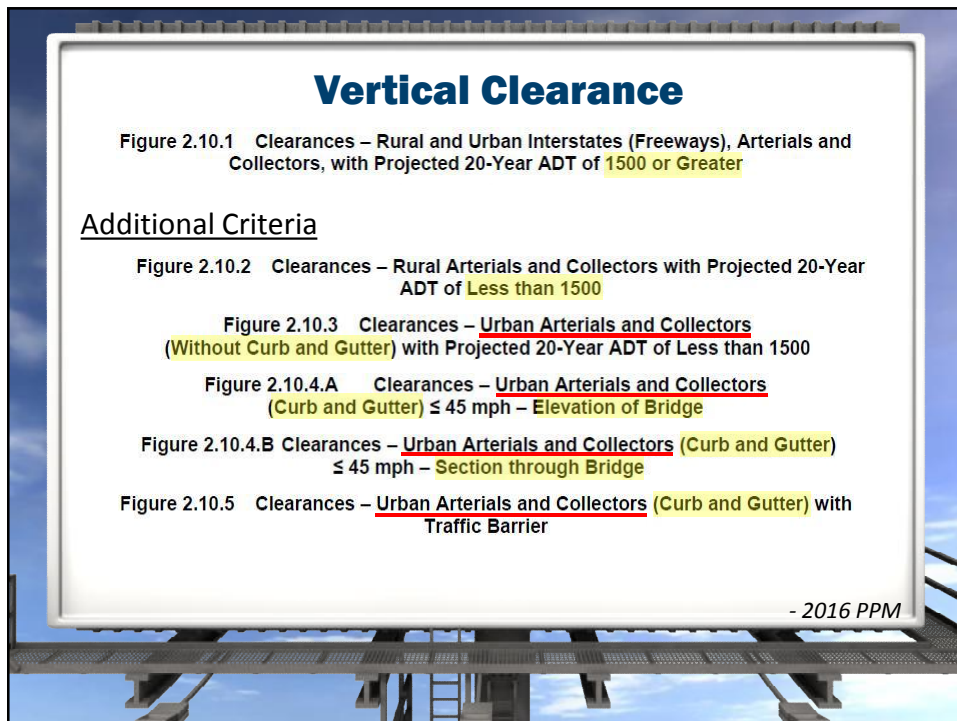
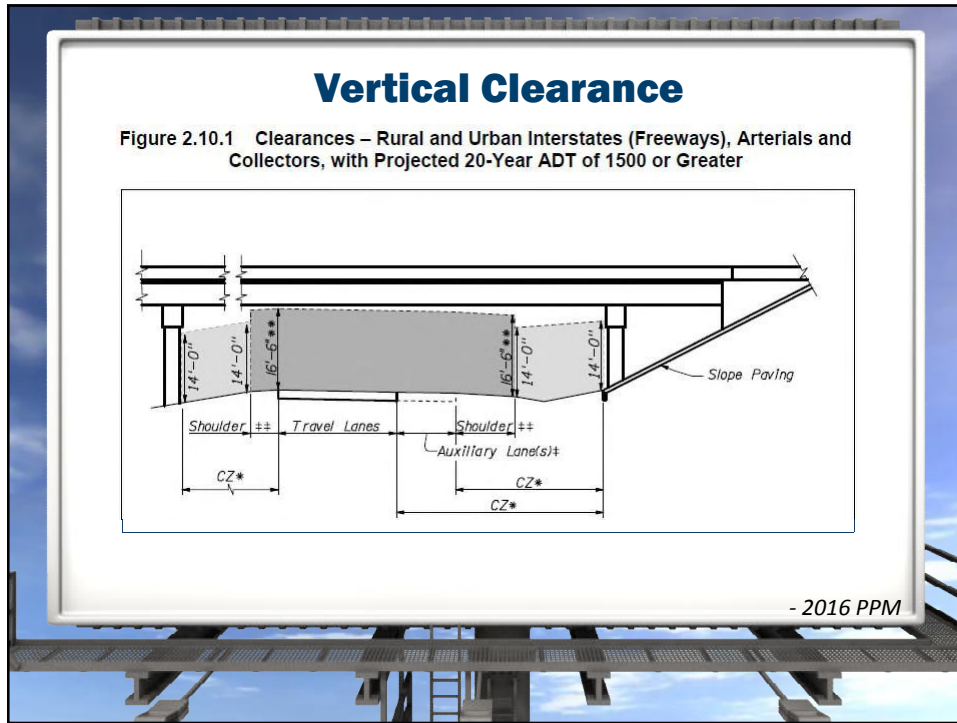
- 2016 PPM

## Vertical Clearance

### 316.515 Florida Statutes - State Uniform Traffic Control:

- Maximum width, height, length –
  - Paragraph (2) – Inclusive of the load carried thereon:
    - No vehicle may exceed a height of **13 feet 6 inches**
    - An automobile transporter may not exceed **14 feet**







## Vertical Clearance

Table 2.10.1 Minimum Vertical Clearances for New Bridges

FACILITY TYPE (Freeways, Arterials, Collectors & Others) <sup>1</sup>	CLEARANCE
Roadway or Railroad Over Roadway	16'-6"
Roadway Over Railroad	23'-6" <sup>2</sup>
Pedestrian Over Roadway	17'-6"
Pedestrian Over Railroad	23'-6" <sup>2</sup>



See Table notes.

13 ft - 5 in  
Under RR Bridge!

- 2016 PPM

## Vertical Clearance



## Vertical Clearance

In Addition to New Construction Criteria (Ch. 2):

- Bridge underpass clearance:
  - maintain Design Clearance  $\geq$  14 ft 6 in thru milling & resurfacing
  - for Design Clearance < 14 ft 6 in:
    - provide signing/warning features
- Bridge low member clearance:
  - If sway bracing Design Clearance < 14 ft 0 in:
    - contact District Structures Design Engineer (DSDE)



- 2016 PPM 25.4.13

## Vertical Clearance

Vertical Clearance Summary Table:

Vertical Clearance Criteria						
		Facility Above (All: Interstate, Freeway, Arterial, Collector, Railroad)			Signs/Signals/Peds	DMS
	Criteria	FDOT New Const.	FDOT RRR	AASHTO	All	All
Facility Below	Interstate	16.5'	16'	16' (14' Alt)	17.5' FDOT (New/RRR) 17' AASHTO	19.5'
	Freeway		14.5'	16' (14' Alt)		
	Arterial					
	Collector, Other		14'			
	Railroad	23.5'	23'	N/A	N/A	
	Railroad: Elect	24.25'	N/A	N/A		

## Vertical Clearance

### Best Practice

- Robert Robertson, State Structures Design Engineer
  - VC Design Exceptions for Category 1 & 2 bridges
  - VC Design Variations for Category 2 bridges
  
- Request review & recommendation from CO/Maintenance
  - Richard Kerr – Bridge Maintenance Inspection Engineer
  - Andrew DeVault – State Bridge Load Rating Engineer
  - Rudy Powell – Director, Office of Maintenance
  - Include recommendation with submittal

## Vertical Clearance

### Best Practice



- SDG 2.6.7 Structures Over/Adjacent to Railroad
  - follow AREMA specs
  - piers < 25 ft from track CL → crash walls required  
(unless pier size = “heavy” construction)
  - 12 ft < piers < 25 ft  
→ crash wall height  $\geq$  6 ft
  - piers < 12 ft  
→ crash wall height  $\geq$  12 ft



### Vertical Clearance

Types of Crashes to Review

Safety & Operational Issues	Freeway	Expressway	Rural Two-Lane	Urban Arterial
Collision with overhead structure	X	X	X	X
Rear-end crashes (vehicles following the vehicle that collided with the structure)	X	X	X	X
Debris on the roadway	X	X	X	X
Long delays as a result of a closed roadway or lanes	X	X	X	X

- 2007 Mitigation Strategies, Pg. 63

### Vertical Clearance

Types of Crashes to Review – CARS Report

Code	Harmful Event (Crash Type)	VC
00	Unknown/Not Coded	X
01	Rear-End	X
02	Head-On	
03	Angle	
04	Left-Turn	
05	Right-Turn	
06	Sideswipe	
07	Backed Into	
08	Collision with Parked Car	

## Vertical Clearance

### Mitigation Strategies

- Advance warning
  - signing (most-common)
    - nearest intersection/ roadway wide point
    - detour or turn around
    - MUTCD for sizes; larger-size where appropriate
    - electronic over-height detection
  - Innovation
    - sign truss with chimes at Vertical Clearance elevation



- 2007 Mitigation Strategies, Pg. 101

## Vertical Clearance

### Mitigation Strategies

- electronic over-height detection
- sign truss with chimes




- 2007 Mitigation Strategies, Pg. 101

### Vertical Clearance

Mitigation Strategies

- Marked detours
  - route to bypass structure
  - prohibit large vehicles




- 2007 Mitigation Strategies, Pg. 102

### Vertical Clearance

Mitigation Strategies Summary

11. Vertical Clearance	Advance warning.	Signing.
	Preventing impacts with low structures.	Alternate routes.
		Large vehicle restrictions.



- 2007 Mitigation Strategies, Pg. 70

## Vertical Clearance

Applicable Crash Modification Factors

➤ Crash Modification Factor Clearing House

▼ Countermeasure: Improve pavement friction (increase skid resistance)

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
0.799	20.1	★★★★★	All	All	All	Lyon and Persaud, 2008	
0.667	33.3	★★★★★	All	All	All	Lyon and Persaud, 2008	
0.819	18.1	★★★★★	All	All	All	Lyon and Persaud, 2008	
0.707	20.7	★★★★★	All	All	All	Lyon and Persaud, 2008	

## Vertical Clearance

Applicable Crash Modification Factors

➤ FHWA Desktop Reference

Countermeasures	Crash Type	Crash Severity	Area Type	Road Type	Daily Traffic Volume (veh/day)	Ref
Improve pavement friction (increase skid resistance)	Wet pavement	All	All	All		15 13
Wet pavement	Fatal/Injury		Rural	2-lane		15 10
Improve pavement friction (overlays)	All	All			<5,000/lane	15 13
All	All				>5,000/lane	15 20
Fixed Object	All				>5,000/lane	15 13
Fixed Object	All				>5,000/lane	15 14
Head-on	All				<5,000/lane	15 13
Head-on	All				>5,000/lane	15 17
Head-on	Fatal/Injury					15 17
Head-on	PDO					15 17
Left-turn	Fatal/Injury					15 11
Left-turn	PDO					15 14
ROR	Fatal/Injury					15 18
ROR	PDO					15 19
Rear-end	Fatal/Injury					15 12
Rear-end	PDO					15 11
Right-angle	All					15 12
Right-angle	Fatal/Injury					15 11
Right-angle	PDO					15 11
Sideswipe	All				<5,000/lane	15 13
Sideswipe	All				>5,000/lane	15 11
Sideswipe	Fatal/Injury					15 12
Sideswipe	PDO					15 12
Wet pavement	All				<5,000/lane	15 17
Wet pavement	All				>5,000/lane	15 23
Wet pavement	All				>5,000/lane	15 10

45  
—  
30  
—  
13  
—  
20  
—  
43  
—  
34  
—  
43  
—  
61  
—  
19

## Vertical Clearance

### Alternatives to Correction

- Partial correction – practical design?

### Costs to Remedy

- Design
- Construction
  - detours/MOT
  - schedule
  - right-of-way
  - jacks?



## Vertical Clearance

### Clarifications

- VC standards adopted for Interstate System to maintain integrity for national defense purposes.
- Design Exception required if standards not met.
  - coordinate with the SDDCTEA

### Substantive Safety

- Obvious adverse affects due to insufficient clearance.
- Risk for overheight vehicle driver and others on both roads.
- Results in lengthy closures and costly repairs.

- 2007 Mitigation Strategies, Pg. 62



## Vertical Clearance

### Resources

- *A Policy on Design Standards Interstate System*, AASHTO, 2005.
- *Federal Aid Policy Guide*, FHWA, 2005.  
<http://www.fhwa.dot.gov/legregs/directives/fapg/0625sup.htm>
- *A Policy on Geometric Design of Highways and Streets*, AASHTO, 2004.
- *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT  $\leq$  400)*, AASHTO, 2001.

## Vertical Clearance



- ✓ Defined Vertical Clearance
- ✓ Discussed how to measure VC
- ✓ Criteria: AASHTO, FDOT, RRR, Florida Statutes
- ✓ Best Practice(s) from the SSDE
- ✓ Probable crash types involved
- ✓ Replacement versus countermeasures
- ✓ Clarifications & Other Resources

## Design Exceptions & Variations Workshop

### Vertical Clearance B/C Example

#### **Vertical Clearance - B/C**

- Initial Review for Completion
- Criteria Comparison
- Crash Analysis – Benefit
- Correction/Mitigation – Costs
- Determine Appropriate CRF
- B/C Ratio Calculation & Summary
- Alternatives & Mitigation

## Vertical Clearance - B/C

Initial Review

- Header Information
- Federal Oversight/ Exception or Variation
- Element Selection

**Submittal/Approval Letter**

To: James H. Hwang, P.E.  
Special or Temporary Design Engineer Date: 02/23/15

Financial Project ID: 422452-1-92-01 New Const. ( ) RRR (X)

Federal Aid Number: 524-200-C

Project Name: Transportation Projects - Addendum SR 198, SR 145, SR 1

State Road Number: SR 198, SR 145, SR 1 On Rec. Date: 08/01/2009

Begin Project MP: 14.275 End Project MP: 14.275 On Rec. Date: 08/01/2009

Full Federal Clearance: Yes ( ) No (X) (A)

Request for Design Exception (A, B, C) Design Variation ( ) (For Design Exception or Variation, Resolving Center Office Approval: Resubmit/Yes ( ) No ( ) Original/No ( ))

Requested for the following element(s):

<input type="checkbox"/> Design Speed	<input type="checkbox"/> Lane Width	<input type="checkbox"/> Shoulder Width	<input type="checkbox"/> Bridge Width
<input type="checkbox"/> Structural Capacity	<input checked="" type="checkbox"/> Vertical Clearance	<input type="checkbox"/> Grades	<input type="checkbox"/> Cross Slope
<input type="checkbox"/> Substation	<input type="checkbox"/> Horizontal Alignment	<input type="checkbox"/> Vertical Alignment	<input type="checkbox"/> Striping Sign Changes
<input type="checkbox"/> Horizontal Clearance	<input type="checkbox"/> Other:		

The project is located on SR 198 (State Street/Union Street and SR 104/BR 115/ Matthews Expressway) and spans from east of Cleveland Road/Highway Road (SR 1207) to just west of the Matthews Bridge (SR 14.275) in Currituck County. The overall length of the project is approximately 4 miles.

The purpose of this project is to extend the service life of the roadway pavement by milling and resurfacing of the existing asphalt pavement and providing safety improvements such as curb ramp upgrades. In addition, the project will address miscellaneous work including drainage improvements, sidewalk replacement, curb & gutter repairs, bridge deck joints and approach slab repairs, signing & pavement markings, and signage.

Design exceptions are being requested for the vertical clearance for the I-95 NB bridges over Kings Rd and Union St and also SR 104 bridge over Washington St, Palmato St, and A. Philip Randolph Blvd, located within the project limit to remain. The attached documentation provides further detailed information.

Recommended by: \_\_\_\_\_  
Responsible Professional Engineer

Approved: James H. Hwang Date: 02-23-15 Robert M. ... Date: 1/26/15  
Special or Temporary Design Engineer State Structures Design Engineer

State Roadway Design Engineer: \_\_\_\_\_ State Structures Design Engineer: \_\_\_\_\_  
Date Date FDOT/Access Administrator CRS

## Vertical Clearance - B/C

Initial Review

- Description
- E.O.R.'s Signature & Seal (should be on report itself)
- District Approval
- CO/FHWA Approval

**Submittal/Approval Letter**

To: James H. Hwang, P.E.  
Special or Temporary Design Engineer Date: 02/23/15

Financial Project ID: 422452-1-92-01 New Const. ( ) RRR (X)

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Project Name: Transportation Projects - Addendum SR 198, SR 145, SR 1

State Road Number: SR 198, SR 145, SR 1 On Rec. Date: 08/01/2009

Begin Project MP: 14.275 End Project MP: 14.275 On Rec. Date: 08/01/2009

Full Federal Clearance: Yes ( ) No (X) (A)

Request for Design Exception (A, B, C) Design Variation ( ) (For Design Exception or Variation, Resolving Center Office Approval: Resubmit/Yes ( ) No ( ) Original/No ( ))

Requested for the following element(s):

<input type="checkbox"/> Design Speed	<input type="checkbox"/> Lane Width	<input type="checkbox"/> Shoulder Width	<input type="checkbox"/> Bridge Width
<input type="checkbox"/> Structural Capacity	<input checked="" type="checkbox"/> Vertical Clearance	<input type="checkbox"/> Grades	<input type="checkbox"/> Cross Slope
<input type="checkbox"/> Substation	<input type="checkbox"/> Horizontal Alignment	<input type="checkbox"/> Vertical Alignment	<input type="checkbox"/> Striping Sign Changes
<input type="checkbox"/> Horizontal Clearance	<input type="checkbox"/> Other:		

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Responsible Professional Engineer

Approved: James H. Hwang Date: 02-23-15 Robert M. ... Date: 1/26/15  
Special or Temporary Design Engineer State Structures Design Engineer

State Roadway Design Engineer: \_\_\_\_\_ State Structures Design Engineer: \_\_\_\_\_  
Date Date FDOT/Access Administrator CRS

### Vertical Clearance - B/C

Preliminary Details

- District & County
- Location (i.e., section ID, mileposts)
- Roadway Type (i.e., # lanes, urban/rural, divided/undivided)

A photograph of a highway interchange. A yellow sign above the road indicates a vertical clearance of 13'-8". A red arrow points from the handwritten text '13'-8"' to the sign. The sign also has '1-95 NB' written in red on it. The scene shows a multi-lane highway with traffic lights and an overpass structure.

### Vertical Clearance - B/C

Preliminary Details

- District & County *D2 - Duval*
- Location (i.e., section ID, mileposts) *72040, 72080*
- Roadway Type (i.e., # lanes, urban/rural, divided, undivided) *0.967-14.575*

A photograph of a highway interchange, identical to the one above. A yellow sign above the road indicates a vertical clearance of 13'-8". The sign also has '1-95 NB' written in red on it. The scene shows a multi-lane highway with traffic lights and an overpass structure.

### Vertical Clearance - B/C

Criteria Comparison

- Proposed conditions
- Criteria requirements

*Table 1: Bridge Vertical Clearance*

Bridge No.	Description	Exception /Variation	Existing Vertical Clearance (ft)	Minimum Vertical Clearance Criteria (ft)	
				FDOT	AASHTO*
720172	I-95 NB Over Kings Road, Overpass	Exception	13.67	14.5	14
720300	I-95 NB Over Union Street, Overpass	Variation	14.28	14.5	14
720101	SR 10A Over A. P. Randolph Blvd, Underpass	Variation	14.3	14.5	14
720079	SR 10A Over Palmetto Street, Underpass	Exception	12.07	14.5	14
720081	SR 10A Over Washington Street, Underpass	Variation	14.4	14.5	14

\*An allowance of 6 inches should be added to vertical clearance to accommodate future resurfacing.

- Exceptions **AND** Variations?  
(distinguish between the two)

### Vertical Clearance - B/C

Data Gathering - Cost of Improvements

- Right-of-Way
- Prof. Engineer C.E.I.
- Structure (replacement)
- Roadway (approaches)
- Drainage
- Signal
- Other (miscellaneous)

- NONE required
- \$31,548
- \$6,309,742
- \$946,461
- NONE required
- NONE required
- NONE required

### Vertical Clearance - B/C

Safety

- Total # crashes                      ➤ 435
- # correctable crashes              ➤ 5
- Years of crashes ( ≥ 5-yrs )      ➤ 2009-2013

### Vertical Clearance - B/C

Crash Reduction Factor

- FHWA: CRF = for replacing bridge
- E.O.R.: Presented case for using 100%, for achieving criteria!

Table 5. Bridge Countermeasures

Countermeasures	Crash Type	Crash Severity	Area Type	Road Type	Daily Traffic Volume (veh/day)	Ref	Crash Reduct
BRIDGE COUNTERMEASURES							
Repair bridge deck	All	All				15	14
	All	All				15	13
	All	All				15	15
Replace bridge (general)	All	All	All	All		1	45
Replace bridge (2-lane)	All	All				15	45
Upgrade bridge parapet	All					15	5

Replace bridge (general)

Replace bridge (2-lane)

45

---

45



Rev. 02/2014

**Benefit-Cost Analysis**

District: **Two** County: **72 - Duval** Date Prepared: **02/01/16**

Location: **Downtown Resurfacing Projects in Jacksonville SR 139, SR 115, SR5**

Section: **72040, 72080** Leg. Milepos: **0.967** End Milepost: **14.575**

Rdway Type: **2 - 3 Lanes Urban UnDivided**

Control Element: **Vertical Clearance**

Bridge reconstruction to achieve 16'-6" Vertical Clearance.

**ANNUAL COST OF IMPROVEMENTS**

Type	Cost	Service Life	Capital Recovery		Total
			Factor		
ROW		100	0.0408	\$	-
P.E.C.E.I.	\$ 31,548.00	15	0.0899	\$	2,836.17
Structure	\$ 6,309,742.21	75	0.0425	\$	268,164.04
Roadway	\$ 946,461.00	20	0.0736	\$	69,659.53
Drainage		20	0.0736	\$	-
Signal		20	0.0736	\$	-
Other		20	0.0736	\$	-
Sub-Total	\$ 7,287,751.21			\$	340,659.74
				Annual Cost =	\$ 340,659.74

Total number of crashes = **435** Primary crash reduction factor (%): **100**  
 # of correctable crashes, PC = **5**  
 # of years of crash data, YD = **5**  
 PC/YD = **1.00**  
 Crash reduction factor, CRF = **100.00%** Additional crash reduction factor:  
 CRF x (PC/YD) = **1.00**  
 Cost per crash, CPC = **\$125,974.00** Additional crash reduction factor:  
 Benefit = **\$125,974**

**BENEFIT/COST RATIO**

$$\frac{\text{Benefit}}{\text{Cost}} = \frac{\$125,974.00}{\$340,659.74} = \mathbf{0.37}$$

B/C Ratio = 0.37 < 1.0; therefore, overall impact of societal costs do not indicate replacing the bridge is warranted.

Prepared by: **B. Bradley 2/1/2016**

### Vertical Clearance - B/C

Benefit/Cost Ratio Summary

➤ Replacement

**Table 2: Estimated Benefit/Cost to Replace Bridge Structures**

Bridge No.	Description	Est. Construction Cost	Est. Annual Cost*	Est. Annual Benefit**	Benefit/Cost Ratio
720172	I-95 NB Over Kings Road	\$6,309,742.21***	\$364,703.10	5 crashes = \$131,636	0.36
720300	I-95 NB Over Union Street	\$9,197,242.20***	\$531,600.60	N/A	N/A
720101	SR 10A Over A. P. Randolph	\$3,069,937.71	\$177,442.40	N/A	N/A
720079	SR 10A Over Palmetto Street	\$12,687,646.51***	\$733,345.97	10 crashes = \$263,272	0.36
720081	SR 10A Over Washington St	\$3,111,086.63	\$179,820.81	N/A	N/A

\*Annual Cost based on service life of 30yrs and discount rate of 4% (capital recovery factor = 0.0578)  
 \*\*Annual Benefit based on 5yrs crash data using an average of \$131,636 per crash (per PPM Table 23.5.1)  
 \*\*\*Include cost for replacing adjacent bridges that will be impacted

Differences Here...but

Same result

### Vertical Clearance - B/C

Alternatives

➤ Bridge Jacking

**Table 3: Estimated Benefit/Cost for Jacking Bridges**

Bridge No.	Description	Est. Construction Cost	Est. Annual Cost*	Est. Annual Benefit**	Benefit/Cost Ratio
720172	I-95 NB Over Kings Road	\$5,100,000.00***	\$375,360.00	5 crashes = \$131,636	0.35
720300	I-95 NB Over Union Street	\$7,687,500.00***	\$565,800.00	N/A	N/A
720101	SR 10A Over A. P. Randolph	\$2,250,000.00	\$165,600.00	N/A	N/A
720079	SR 10A Over Palmetto Street	\$8,890,000.00***	\$654,304.00	10 crashes = \$263,272	0.40
720081	SR 10A Over Washington St	\$2,050,000.00	\$150,880.00	N/A	N/A

\*Annual Cost based on service life of 20yrs and discount rate of 4% (capital recovery factor = 0.0736)  
 \*\*Annual Benefit based on 5yrs crash data using an average of \$131,636 per crash (per PPM Table 23.5.1)  
 \*\*\*Include cost for jacking adjacent bridges that will be impacted

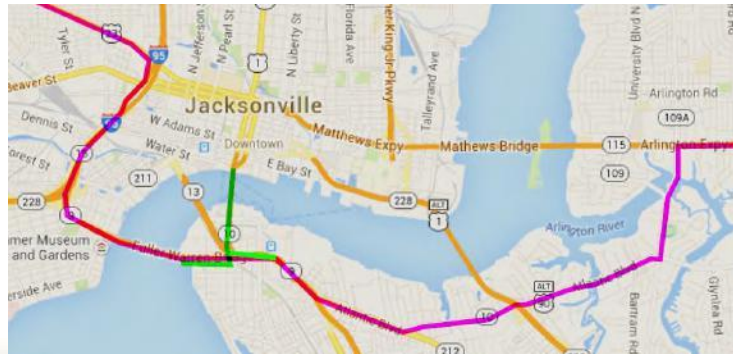
Ratio is Similar to Replacement



## Vertical Clearance - B/C

### Mitigation

- Reference: 2007 Mitigation Strategies Handbook by FHWA
  - Consider:
    - alternate routes



## Vertical Clearance - B/C

### Mitigation


- Advance warning signs



### Vertical Clearance - B/C

Mitigation

- Actual bridge clearance



11'-11"

### Vertical Clearance - B/C

Mitigation

- Electronic over-height vehicle detection system



## Vertical Clearance - B/C

### Mitigation

- "NO TRUCKS" with flashing beacon on both approaches



## Vertical Clearance - B/C

- ✓ Checked for Complete Information
- ✓ Compared Criteria Against Proposed
- ✓ Summarized Crashes for the Benefit
- ✓ Provided Costs to Replace, Jack, or Mitigate
- ✓ Discussed CRFs and E.O.R.'s Choice
- ✓ Calculated B/C with CO/RDO Spreadsheet
- ✓ Per FHWA – Alternatives & Mitigation

## Controlling Elements



Design Loading  
Structural Capacity  
(DLSC)

### Structural Capacity

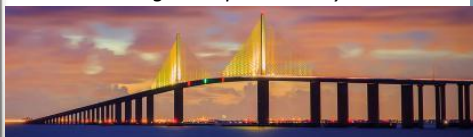
- Define Structural Capacity
- Load Rating
- Criteria: AASHTO & FDOT
- Safety Analysis – Crash Types
- Mitigation Strategies – Crash Reduction
- Clarifications & Resources

## Structural Capacity

### Definition

“Design Loading Structural Capacity refers only to the load-carrying capacity of the bridge.”

- *Mitigation Strategies for Design Exceptions – July 2007*



## Structural Capacity

Blocks + truck = up to 200,000 lbs or = 100 tons = 200 kips

### Load Rating

Load rating analysis approximates safe load-carrying capacity for bridges, establishes posting restrictions, and estimates strength for permit routing.



Concrete blocks = 1 Ton each

- 2016 Bridge Load Rating Manual

## Structural Capacity

**AASHTO**  
**LRFD BRIDGE DESIGN**  
**SPECIFICATIONS**

Seventh Edition, 2014  
U.S. Customary Units

**AASHTO**  
American Association of State Highway and Transportation Officials

**Table 23.9.5**  
**AASHTO Structural Capacity**  
**(Minimum Loadings)**

Type Facility	AASHTO
All Facilities	See <i>AASHTO LRFD</i> for minimum loadings.

- 2016 PPM

## Structural Capacity

Topic No. 0254294-01 January 2015

FLORIDA DEPARTMENT OF TRANSPORTATION

**FDOT STRUCTURES MANUAL**

Volume 1 - Structures Design Guidelines  
Volume 2 - Structures Detailing Manual  
Volume 3 - Modifications to LTS-6  
Volume 4 - Fiber Reinforced Polymer Guidelines

Frequently Asked Questions  
2015 Revision History  
Archived Structure Manuals  
Additional Links

**FDOT**

26.17 Bridge Load Rating (LR)

- LRFR load rating
  - per AASHTO MBE
  - as amended by:
    - FDOT SDG &
    - FDOT BLRM
- LR calcs required at 90%
  - Bridge LR Summary Detail Sheet
  - LR Summary Form

Plans Review Districts (1, 6 & Turnpike)	Tom Andres	(850) 414-4269
Plans Review Districts (4 & 7)	Tom Andres	(850) 414-4269
Plans Review Districts (2, 3 & 5)	Matt Kosar	(850) 414-4297

- 2016 PPM

## Structural Capacity

### 25.4.24 Bridges (RRR Design Criteria)

- .1 – Bridge Loading
- .2 – Bridge Width
- .3 – Bridge Railing
- .4 – Vertical Clearance
- .5 – Considerations
- .6 – Pier Protection



- 2016 PPM

## Structural Capacity

### 26.17 Bridge Load Rating

Prior to developing scope for bridge widening/rehabilitation:

- Determine suitability using Load Rating (LR)
  - If existing LR is inaccurate/older method
    - perform new LR per SDG Chapter 7
    - submit LR calcs (both existing and new) with 90% submittal



- 2016 PPM

## Structural Capacity

Bridge LR Manual, Ch. 2

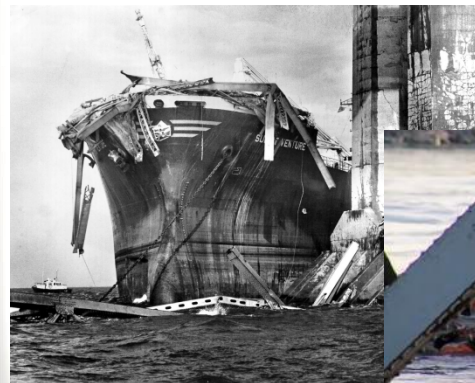
- Before confining analysis to superstructure only, consider substructure; for example:
  - rotted timber piles
  - settlement
  - excessive scour
  - distressed pile caps



- 2016 BLRM

## Structural Capacity

Types of Crashes to Review





### Structural Capacity

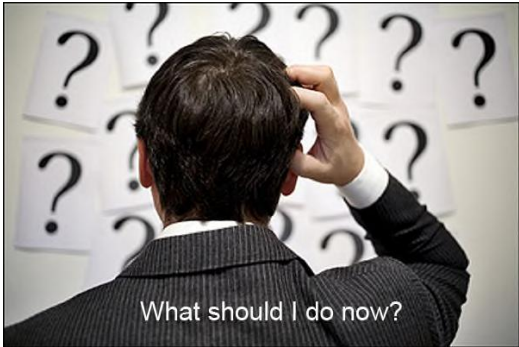
Types of Crashes to Review – CARS Report

Code	Harmful Event (Crash Type)	SC
21	Hit Bridge/ Pier/ Abutment / Rail	X
22	Hit Tree/ Shrubbbery	
23	Collision with Construction Barricade Sign	
24	Collision with Traffic Gate	
25	Collision with Crash Attenuaters	
26	Collision with Fixed Object Above Road	
27	Hit Other Fixed Object	X
28	Collision with Moveable Object on Road	
29	Ran in Ditch Culvert	

### Structural Capacity

Mitigation Strategies

- “Mitigation strategies for structural capacity are not addressed in this Guide.”



What should I do now?

*- 2007 Mitigation Strategies, Pg. 104*

## Structural Capacity

### Mitigation Strategies (a.k.a. "Posting Avoidance")

- Round-up – AASHTO distribution eqt'ns rounded  $\leq 5\%$
- Refined analysis –finite element/load redistribution
- Dynamic analysis for improved surface conditions –  
when joints are smooth, reduce DLA to 20% (typically 33%)
- Barrier stiffness – additional stiffness (strength) from  
barriers

- 2016 BLRM 7.4

## Structural Capacity

### Mitigation Strategies (a.k.a. "Posting Avoidance")


- Striped lanes – use actual not design lanes (Service limits)
- Steel service – neglect limit state if calcs consider fatigue,  
ADTT (e.g., exceptionally low volume), and replacement  
schedule.
- Reduced dead load factor – lower DL factor to 1.15  
(typically 1.25) when dimensions thoroughly/accurately  
field verified

- 2016 BLRM 7.4

## Structural Capacity

When Posting the Bridge is Unavoidable

- Advance warning signs
- Alternative routing (a.k.a., Detour)
- Consider strengthening
  - carbon wrap
  - crutch-bent
- Otherwise, just replace the bridge! ;o)



- 2016 BLRM 7.4

## Structural Capacity

Applicable Crash Modification Factors

- Crash Modification Factor Clearing House
  - Countermeasure: Install dynamic signal warning flashers

CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Reference	Comments
0.814	18.6	★★★★☆	All	All	All	Srinivasan, et al., 2011	Average major and minor road ... [read more]
0.792	20.8	★★★★☆	Rear end	All	All	Srinivasan, et al., 2011	Average major and minor road ... [read more]
0.745	25.5	★★★★☆	Angle	All	All	Srinivasan, et al., 2011	Average major and minor road ... [read more]
0.85	18	★★★★☆	All	Fatal, Serious Injury, Minor	All	Srinivasan, et al.	Average major and minor road ...

## Structural Capacity

Applicable Crash Modification Factors



➤ FHWA Desktop Reference

Countermeasures	Crash Type	Crash Severity	Area Type	Road Type	Daily Traffic Volume (veh/day)	Ref	
BRIDGE							
Repair bridge deck	All	All				15 134	
	All	All				15 133	
	All	All				15 135	
Replace bridge (general)	All	All	All	All	1 1 45	14	
Replace bridge (2-lane)	All	All				15 49	13
Upgrade bridge parapet	All	All				15 55	15
Upgrade bridge railing	All	All				15 20	
	All	All	All	All		1 5	
	All	Fatal				15 76	45
	All	Fatal				15 60	
	All	Fatal				15 52	
	All	Injury				15 61	
	All	Injury	All	All		1 30	45
	All	Injury				15 30	
	All	Injury				15 92	
All	PDO				15 50		

## Structural Capacity

Clarifications

- Bridge rail:
  - is important safety consideration
  - structurally sound
  - meets crash test standards (TL-4)
- Bridge rail not considered a controlling element for a formal Design Exception.
- A Design Variation is required!

- 2007 Mitigation Strategies, Pg. 66

## Structural Capacity



- ✓ Probable Crash Types
- ✓ Mitigation Strategies – Crash Reduction
- ✓ Clarifications for Bridge Barriers
- ✓ Defined Structural Capacity
- ✓ Load Rating Requirements
- ✓ Criteria: AASHTO & FDOT



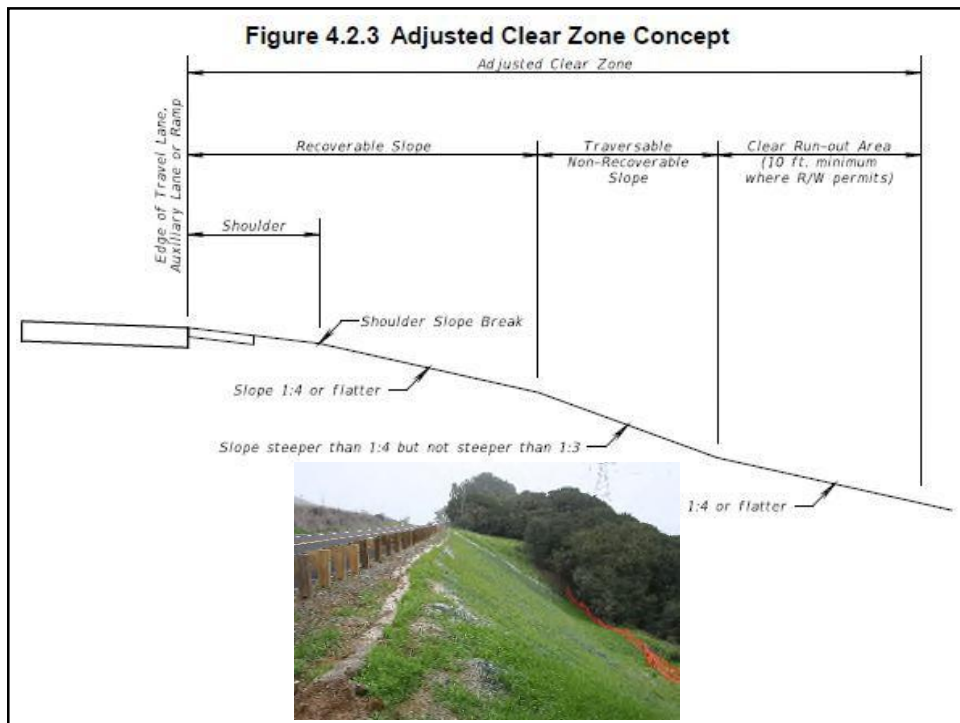
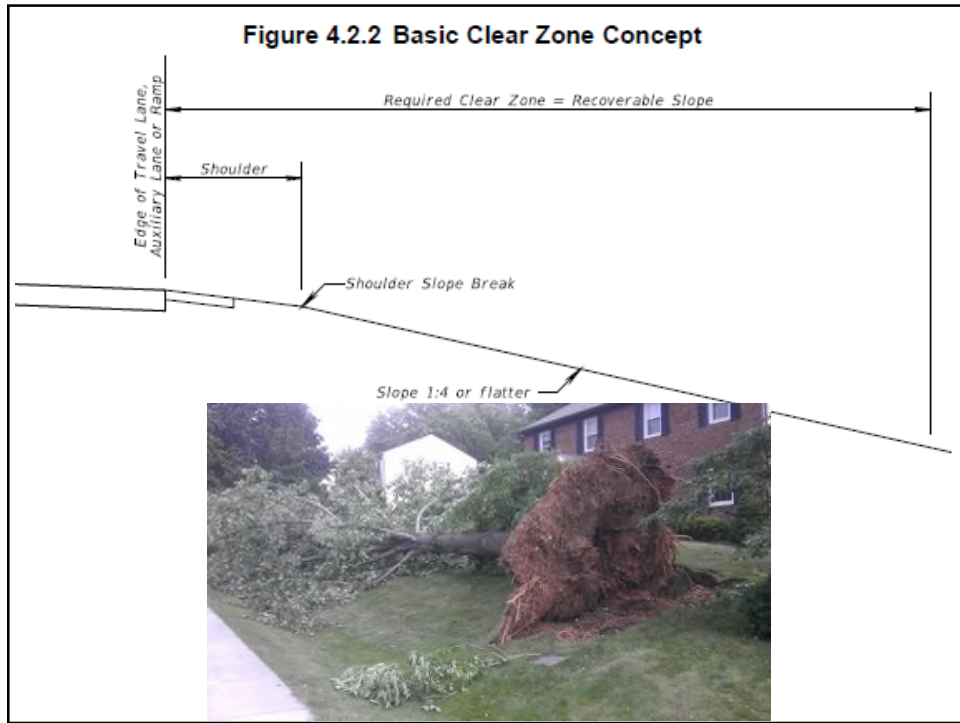
#### 4.2.1 Roadside Geometry

Roadside geometry refers to the terrain features (slopes) that a vehicle will encounter when departing a roadway. The components of roadside geometry include front slopes, back slopes, and transverse slopes.

#### 4.2.2 Roadside Slope Classification

Roadside Slopes include areas located beyond the edge of the traffic lane as shown in **Figures 4.2.2** and **4.2.3**. These areas are divided into the following classifications:

1. Traversable Slope – Smooth terrain, unobstructed by fixed objects, and sloped at 1:3 or flatter
2. Recoverable Slope – Traversable Slope 1:4 or flatter
3. Traversable Non-Recoverable Slope – Traversable Slope steeper than 1:4 and flatter than 1:3
4. Non-Traversable Slope – Rough, obstructed, or slopes steeper than 1:3
5. Critical Slope – Non-Traversable Slope steeper than 1:3



**Table 4.2.1 Clear Zone Width Requirements**

NEW CONSTRUCTION				
DESIGN SPEED (mph)	≥ 1500 AADT <sup>(1)</sup>		< 1500 AADT <sup>(1)</sup>	
	TRAVEL LANES & MULTILANE RAMPS (feet)	AUXILIARY LANES & SINGLE LANE RAMPS (feet)	TRAVEL LANES & MULTILANE RAMPS (feet)	TRAVEL LANES & MULTILANE RAMPS (feet)
< 45	18	10	16	10
45	24	14	20	14
50	24	14	20	14
55	30	18	24	14
> 55	36	24	30	18

**Table 4.2.1 Clear Zone Width Requirements**

TDLC PROJECTS	
DESIGN SPEED (mph)	ALL LANE TYPES (feet)
≤ 30	12
35	14
40	16



**Table 4.2.1 Clear Zone Width Requirements**

RESURFACING, RESTORATION AND REHABILITATION (RRR) PROJECTS <sup>(2)</sup>		
DESIGN SPEED  (mph)	TRAVEL LANES & MULTILANE RAMPS  (feet)	AUXILIARY LANES & SINGLE LANE RAMPS  (feet)
< 45	6	6
45 <sup>(3)</sup>	14	8
> 45	18	8

(1) Annual Average Daily Traffic (AADT) for projected 20-year traffic.  
 (2) RRR Criteria does not apply to Interstate and Freeways  
 (3) May be reduced to <45 mph widths if conditions more nearly approach those for lower speeds (40 mph or less).

**Table 4.2.3 Continued Lateral Offset Criteria**

Design Element		Urban Curb or Curb and Gutter Design Speed ≤ 45 mph			All Other
		New Construction	RRR	TDLC	
Traffic <sup>(1)</sup> Control Signs	Single and Multi-Column	Locate in accordance with <i>Design Standards</i> . Use breakaway supports whether inside or outside the clear zone			
	Overhead Sign Supports	Outside Clear Zone			
<b>Light Poles, Signal Poles, ITS Poles/Equipment, AFUs, Bridge Piers, Drop Offs, Mailboxes, etc.</b>					
Trees	Where the diameter is or is expected to be > 4 inches measured 6 inches above the ground	4 feet from face of curb	1.5 feet <sup>(5)</sup> from face of curb	4 feet from face of curb (1.5 feet under constrained conditions)	Outside Clear Zone


(1) When location within sidewalk is necessary, provide a minimum 4 feet unobstructed sidewalk (not including width of curb).  
 (2) Aboveground Fixed Utilities are objects owned by a public or private utility agency that are more than 4 inches above the grade and are not accepted by FDOT as crashworthy (such as strain poles, down guys, telephone load pedestals, temporary supports, etc.)  
 (3) Mid-span poles are new poles being installed as part of and within the alignment of an existing pole line.  
 (4) Existing AFUs are not to be relocated for RRR Projects unless they are adjacent to added or widened lanes or have been hit 3 times in 5 years.  
 (5) Requirements provided for Existing trees. Meet New Construction requirements for New Plantings.

## Horizontal Clearance - RSAP

Horizontal Clearance = Lateral Offset ≠ Clear Zone

- What is **RSAP**?
- Project description
- Hazard location (station & offset)
- Value of statistical life
- Road segment characteristics & traffic data
- Alternate roadside designs
- Results


## Horizontal Clearance - RSAP




So What is **RSAP**?

- **R**oadside **S**afety **A**nalysis **P**rogram – EXCEL platform
  - performs B/C on roadside alternatives
  - mathematical encroachment models
  - risk-based probabilistic roadside cost-benefit design
  - **predictive** model for crashes

*What's an encroachment?*






RSAP v. 3.0.1 (release 130502)  
Excel v. 15.0  
Windows (32-bit) NT 6.0.1

**RoadSafe LLC**  
Rsap.RoadSafeLLC.com

## Horizontal Clearance - RSAP




So What is **RSAP**?

- Originated in 2003 as an NCHRP Project
- AASHTO's Roadside Design Guide – see Ch.2
- <http://rsap.roadsafellc.com>

**Register Your RSAP**

COOL! → RSAPv3 is free and there are no restrictions on copying or using it.

[Home](#) | [Install](#) | [Contact Us](#) | [RSAP Training](#) | [Installation Tips](#) | [RSAP Information](#) | [Release Notes](#) | [Questions](#) | [Seminar Slides](#)




Transportation Engineering, Research and Software Development  
RSAP Home

**Overview of RSAP**

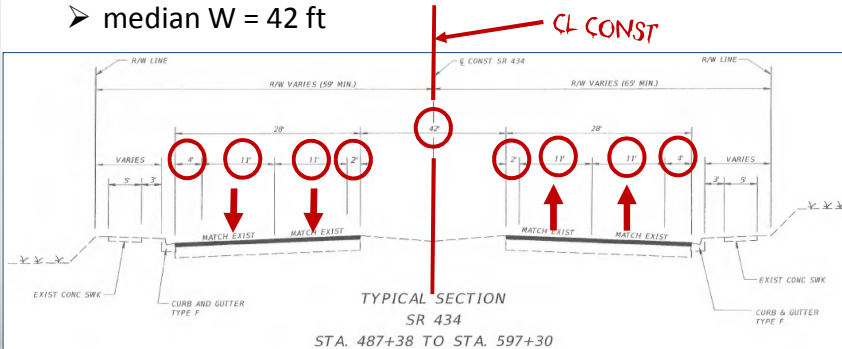
RSAP is an encroachment-based computer software tool for cost-effectiveness evaluation of roadside safety improvements originally developed under NCHRP Project 22-9(1). Subsequently, some improvements were made, bugs corrected and patches installed under NCHRP Project 22-9(2). A third NCHRP project, 22-9(3) was initiated but never completed. Various releases of RSAP have been distributed with the AASHTO Roadside Design Guide (RDG) since the 2002 edition. This version of RSAP (i.e., RSAPv3) was developed under NCHRP Project 22-27 which was completed in 2012.

## Horizontal Clearance - RSAP



Example Problem – Given Info

- Roadway Typical Section
- 4 lane divided
- 11 ft. lanes
- median W = 42 ft
- median shoulder W = 2 ft
- right shoulder W = 4 ft



TYPICAL SECTION  
SR 434  
STA. 487+38 TO STA. 597+30

## Horizontal Clearance - RSAP



### Example Problem – Given Info

- Horizontal Clearance – Hazard Location in Median

Table 1: Design Exception for Horizontal Clearance and Locations

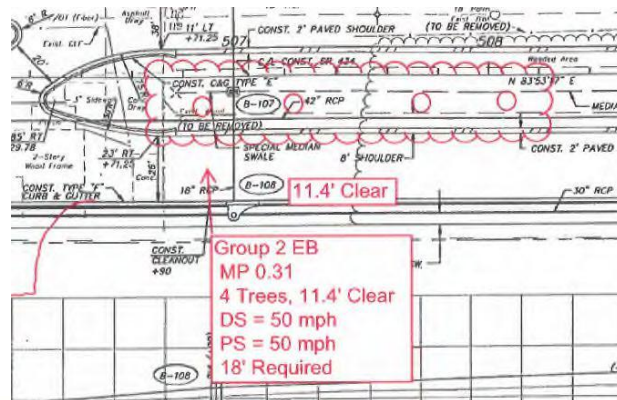
Description	AASHTO Requirement	FDOT Requirement	Clearance Provided To Travel Lane
(Group 1) 2 trees MP 0.29 WB Sht 20 PS=50 DS=50	Outside Clear Zone	18' (CZ) from Travel lane PPM 25.4.14.1	11.7'
(Group 2) 4 trees MP 0.31 EB Sht 20 PS=50 DS=50	Outside Clear Zone	18' (CZ) from Travel lane PPM 25.4.14.1	11.4'
(Group 3) 2 trees MP 0.39 WB Sht 21 PS=50 DS=50	Outside Clear Zone	18' (CZ) from Travel lane PPM 25.4.14.1	1 tree 13' and 1 tree 17.7'
(Group 4) 1 tree MP 0.39 EB Sht 21 PS=50 DS=50	Outside Clear Zone	18' (CZ) from Travel lane PPM 25.4.14.1	13'
(Group 5) 3 trees MP 0.44 EB Sht 21 PS=50 DS=50	Outside Clear Zone	18' (CZ) from Travel lane PPM 25.4.14.1	12'
(Group 6) 9 trees MP 0.48-0.51 EB Sht 21 PS=50 DS=50	Outside Clear Zone	18' (CZ) from Travel lane PPM 25.4.14.1	11.4'
(Group 7) 9 trees MP 0.48-0.51 WB Sht 21 PS=50 DS=50	Outside Clear Zone	18' (CZ) from Travel lane PPM 25.4.14.1	12'

## Horizontal Clearance - RSAP



### Example Problem – Plan Sheet

- Horizontal Clearance (Lateral Offset) – Hazard Location



RSAPv3 - RSAP 3.0.2 (release 130708)

### RSAP PROJECT INFORMATION

**BASIC INFORMATION**

Today's date (i.e., run date) 2/4/2016

Title

Units USCU (only USCU units at this time)

Design Life 25 YRS

Construction Year 2015

Rate of Return 4 %

**CRASH COSTS**

Use GDP values during life? N

Expand to current year by GDP? Y <http://www.gpoaccess.gov/usbudget/fy09/hist.html>

GDP Deflator to construction year 1.07

Crash Cost Timeline					
Year	2012	2015	2027.5	2040	Cost Used
	\$ 9,100,000	\$ 9,395,247	\$ 9,395,247	\$ 9,395,247	\$9,395,247

Base year for crash cost data 2012

Value of Statistical Life \$ 9,100,000

Reference for VSL: Guidance on Treatment of the Economic Value of a Statistical Life, US Department of Transportation, Washington, D.C., October 4, 2013. <http://www.dot.gov/office-policy/transportation-policy/guidance-treatment-economic-value-of-a-statistical-life>

RSAP Root Directory: C:\Program Files\RSAPv3

Notes:

RSAP Controls

- PROJECT Start a New Project
- TRAFFIC Open Existing Project
- HIGHWAY
- ALTERNATIVES Clear User Information
- X-SECTION Restore RSAP Defaults
- ANALYZE
- RESULTS
- SETTINGS
- HAZARDS

Traffic Info >

Help User's Manual

Save Engineer's Manual

SaveAs Exit

Enter a unique and meaningful title for your project.

Project Information Traffic Information Road Segments Alternatives Severity Cross-Section Results Unit F ...

RSAP Controls

- PROJECT Start a New Project
- TRAFFIC Open Existing Project
- HIGHWAY
- ALTERNATIVES Clear User Information
- X-SECTION Restore RSAP Defaults
- ANALYZE
- RESULTS
- SETTINGS
- HAZARDS

Traffic Info >

Help User's Manual

Save Engineer's Manual

SaveAs Exit

Enter a project title in the yellow cell to the right.

N				
Y	<a href="http://www.gpoaccess.gov/usbudget/fy09/hist.html">http://www.gpoaccess.gov/usbudget/fy09/hist.html</a>			
1.07	Crash Cost Timeline			
2012	2015	2027.5	2040	Cost Used
\$ 9,100,000	\$ 9,395,247	\$ 9,395,247	\$ 9,395,247	\$9,395,247

Guidance on Treatment of the Economic Value of a Statistical Life, US Department of Transportation, Washington, D.C., October 4, 2013.

**Table 23.5.2 FDOT KABC0 Crash Costs**

Crash Severity	Comprehensive Crash Cost
Fatal (K)	\$10,230,000
Severe Injury (A)	\$580,320
Moderate Injury (B)	\$157,170
Minor Injury (C)	\$97,650
Property Damage Only (O)	\$7,600

Source: Florida Department of Transportation Crash Analysis Reporting (C.A.R.) System, analysis years 2010 through 2014.

The screenshot shows the RSAP software interface for project 430675-1. The 'BASIC INFORMATION' section includes the title '430675-1 (SR434 - SR419 to Tuskawilla Rd., Seminole Co.) - Horizontal Clearance' and a 'Crash Cost Timeline' table. The 'CRASH COSTS' section includes a table with the same data as the first image, where the 2012 value is circled in red. The interface also features a sidebar with navigation options like 'PROJECT', 'TRAFFIC', and 'ALTERNATIVES'.

RSAP v21 - RSAP 3.0.2 (release 130700)

C3

**TRAFFIC INFORMATION**

CONSTRUCTION YEAR ADT:  vehicles/day

TRAFFIC GROWTH:  % growth/yr

WHICH ADT TO USE?  Mid-Life

MID-LIFE ADT:  vehicles/day

END OF LIFE ADT:  vehicles/day

ADT USED BY RSAP:  vehicles/day

PERCENT TRUCKS:  10%

**VEHICLE MIX**

RSAP VEHICLES	FHWA CLASS	PERCENT %	RSAP TYPE	TYPICAL CHARACTERISTICS					Crash Cost Adj.
				WEIGHT lbs	LENGTH ft	WIDTH ft	C.G. Long. ft	C.G. Hgt ft	
Motorcycles	1	0	M	600	7.00	1.50	3.00	2.60	0.56
Passenger Cars	2	60	C	3,300	15.00	5.40	6.00	2.00	1.00
Pickup Truck	3	20	PU	5,000	19.75	6.50	8.50	2.30	1.00
Light Tractor Trailer	8-9	0	LTT	16,000	48.00	8.50	12.00	4.8	3.52
Average Tractor Trailer	8-13	6	ATT	22,250	48.00	8.50	20.00	4.8	3.52
Heavy Tractor Trailer	8-13	0	HTT	37,500	48.00	8.50	20.00	6	3.52
Light Single Unit Truck	5	0	LSUT	6,800	35.00	7.77	12.50	3.4	3.52
Average Single Unit Truck	6	4	ASUT	12,000	35.00	7.77	12.50	3.4	3.52
Heavy Single Unit Truck	7	0	HSUT	22,000	35.00	7.77	12.50	4.2	3.52
Total		90.00							

Click [here](#) for the on-line link to the FHWA classification system.

RSAP Controls

- PROJECT
- TRAFFIC
- HIGHWAY
- ALTERNATIVES
- X-SECTION
- ANALYZE
- RESULTS
- SETTINGS
- HAZARDS

Clear User Information

Restore RSAP Defaults

Assign Mix Automatically

< Project Info

Save User's Manual

Print

Enter the ADT and traffic growth in the yellow cells.

Project Information Traffic Information Road Segments Alternatives Severity Cross-Section Results Unit F ...

RSAP Controls

PROJECT

TRAFFIC

HIGHWAY

ALTERNATIVES

X-SECTION

ANALYZE

RESULTS

SETTINGS

HAZARDS

Clear User Information

Restore RSAP Defaults

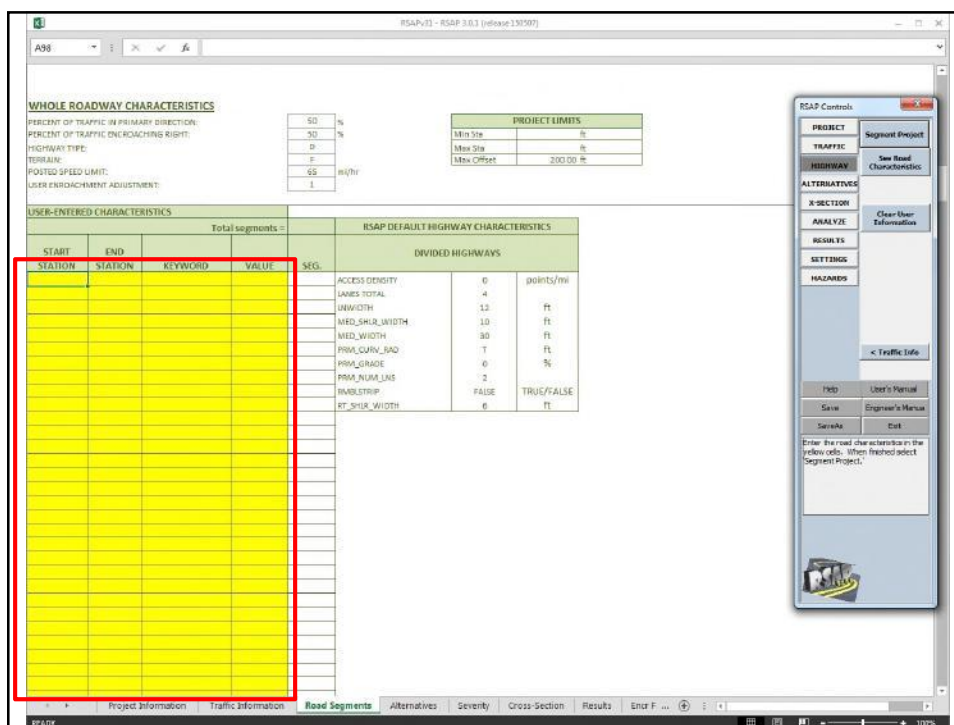
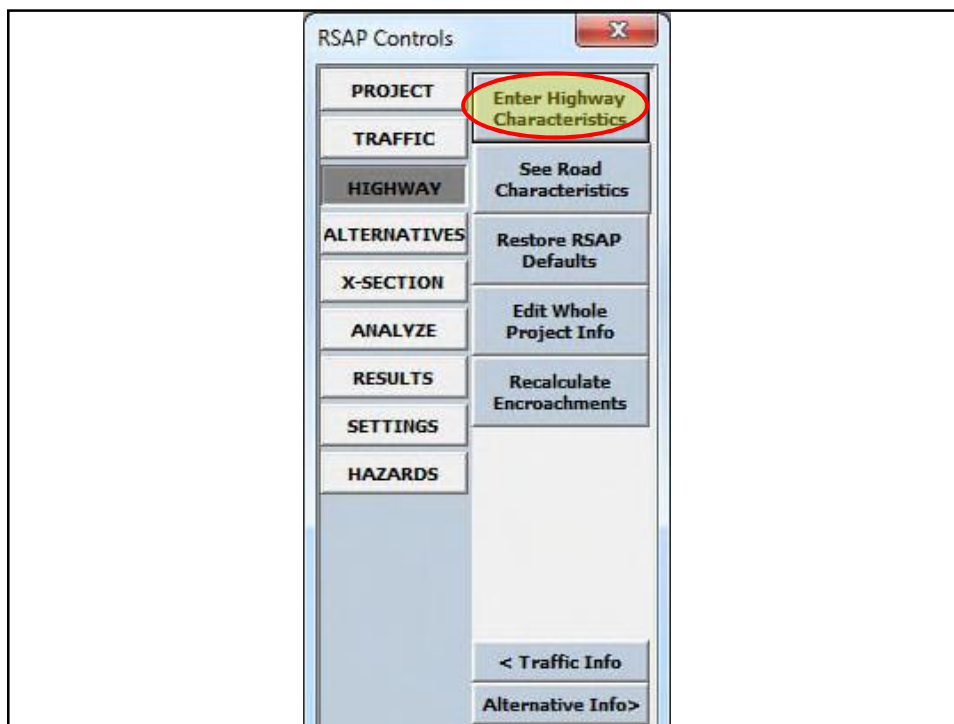
Assign Mix Automatically

< Project Info

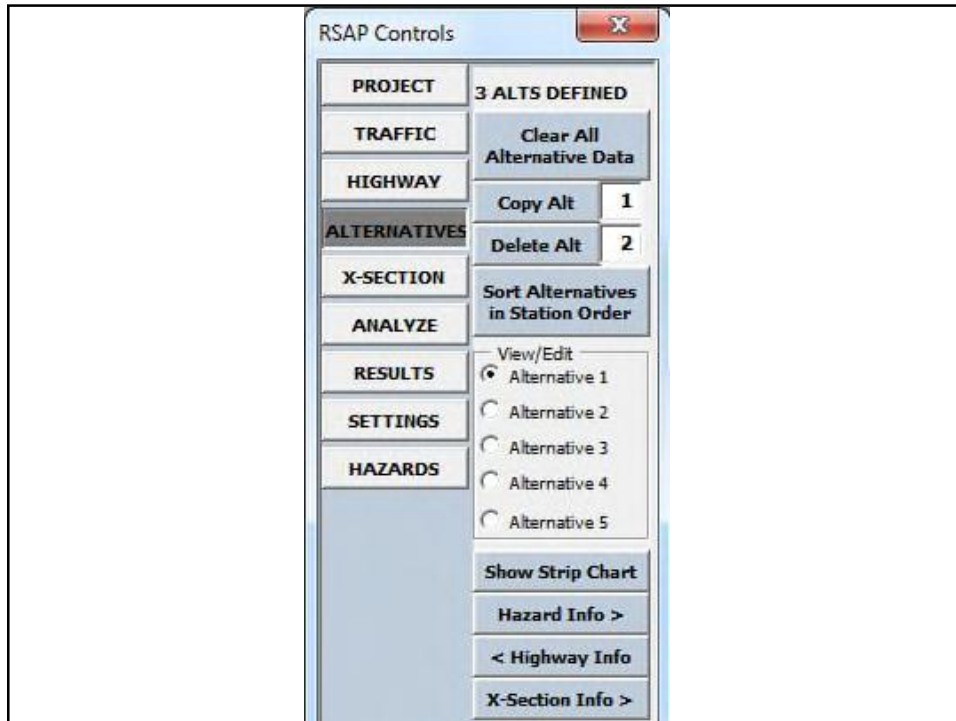
Highway Info >











RSAPV3 - RSAP 3.0.1 (release 150977)

A36

ROADSIDE FEATURES FOR ALTERNATIVE NUMBER: 1

ALTERNATIVE NAME: [Redacted] DEFAULT X-SECTION: All Data

CONSTRUCTION COST: 5 ANNUAL MAINTENANCE COST: 5,000.00

GENERAL HAZARD TYPE	SPECIFIC HAZARD TYPE	START STATION	END STATION	START OFFSET	END OFFSET	PARAMETER	VALUE
PoleFreeSign	Tree	505+38.00	L 11.3	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	505+38.00	L 11.3	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	505+87.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	507+25.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	507+75.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	509+09.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	510+38.00	L 5.2	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	510+63.00	R 10.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	510+63.00	L 10.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	512+50.00	R 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	512+85.00	R 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	513+30.00	R 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	513+83.00	L 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	513+83.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+10.00	L 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+10.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+37.00	L 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+37.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+40.00	L 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+40.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+90.00	L 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	514+90.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	515+19.00	L 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	515+19.00	R 11.6	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	515+40.00	L 11.0	NA	NA	NA	Dia. (in.) 10
PoleFreeSign	Tree	515+40.00	R 11.6	NA	NA	NA	Dia. (in.) 10

26 trees over 100' segment

Gen Hazard Type:

- bridge rail
- crash cushion
- guardrail
- barrier

Specific Hazards:

- pier column
- delineator
- fixed object
- luminaire
- mailbox
- sign, signal, pole

**Example Problem**  
Add:  
• terminal ends  
• guardrail  
...as “hazards”!

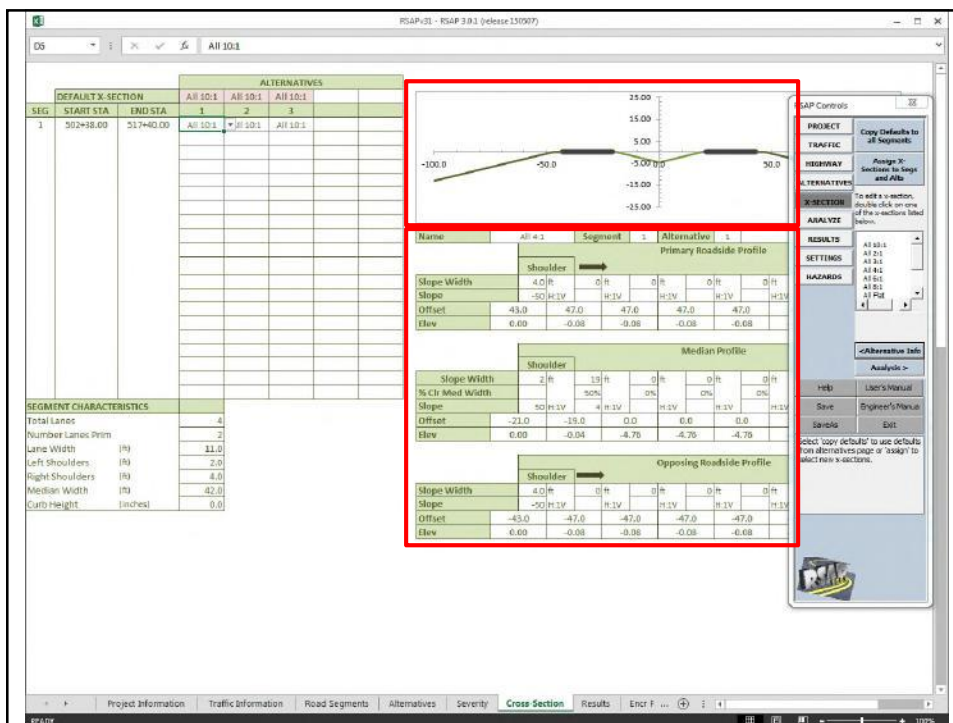
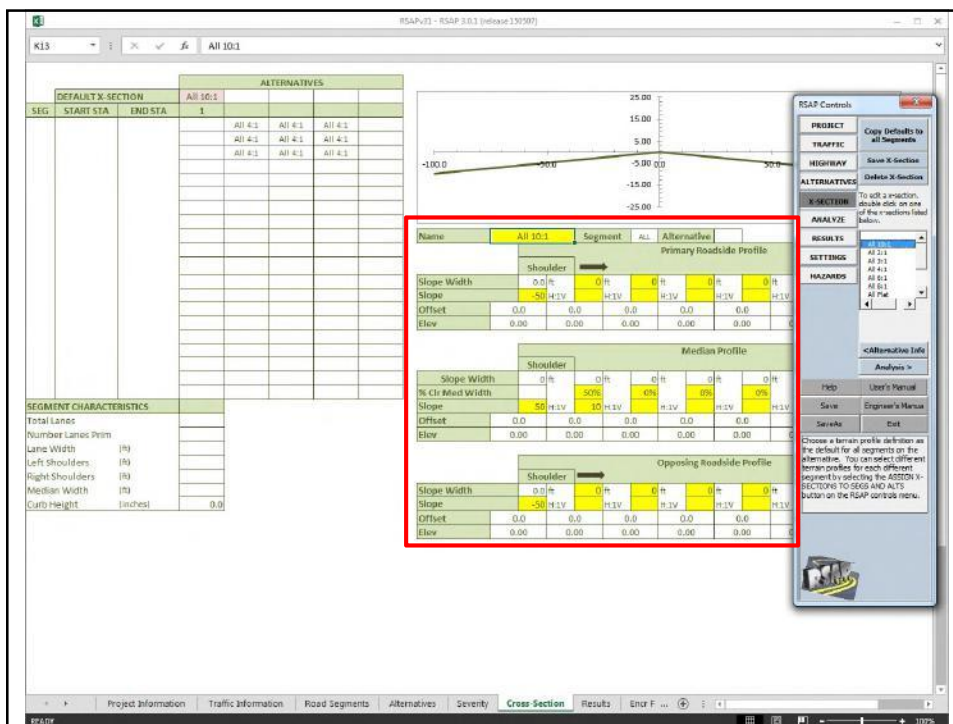
ROADSIDE FEATURES FOR ALTERNATIVE NUMBER:										2		
ALTERNATIVE NAME										Trees - Shielded	Default X-Section	
CONSTRUCTION COST										\$ 67,000.00	ANNUAL MAINTENANCE COST	\$ 7,000.00
GENERAL HAZARD TYPE	SPECIFIC HAZARD TYPE	START STATION	START SIDE	START OFFSET	END STATION	END SIDE	END OFFSET	PARAMETER	VALUE			
		STATIONS		ft	STATIONS		ft					
TerminalEnds	GenericEnd	504+38.00	L	13.3	NA	NA	NA			24		
Guardrail - SemiRigid	TL3WbeamSk	504+38.00	L	13.3	516+40.00	R	13.3	Width (in.)		12		
TerminalEnds	GenericEnd	504+38.00	R	13.3	NA	NA	NA			24		
Guardrail - SemiRigid	TL3WbeamSk	504+38.00	R	13.3	516+40.00	L	13.3	Width (in.)		12		
PoleTreeSign	Tree	505+38.00	L	11.3	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	505+38.00	R	11.3	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	506+87.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	507+23.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	507+75.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	508+08.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	510+38.00	L	5.3	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	510+58.00	R	10	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	510+63.00	L	10	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	512+50.00	R	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	512+85.00	R	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	513+30.00	R	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	513+83.00	L	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	513+83.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+10.00	L	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+10.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+37.00	L	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+37.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+65.00	L	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+65.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+90.00	L	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	514+90.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	515+19.00	L	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	515+19.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	515+40.00	L	11	NA	NA	NA	Dia. (in.)		10		
PoleTreeSign	Tree	515+40.00	R	11.6	NA	NA	NA	Dia. (in.)		10		
TerminalEnds	GenericEnd	516+40.00	L	13.3	NA	NA	NA			24		
TerminalEnds	GenericEnd	516+40.00	R	13.3	NA	NA	NA			24		

**Example Problem**  
“Trees Cut Down” option = NO HAZARDS in the median!


ROADSIDE FEATURES FOR ALTERNATIVE NUMBER:										3		
ALTERNATIVE NAME										Trees Cut Down	Default X-Section	
CONSTRUCTION COST										\$ 10,000.00	ANNUAL MAINTENANCE COST	\$ 500.00
GENERAL HAZARD TYPE	SPECIFIC HAZARD TYPE	START STATION	START SIDE	START OFFSET	END STATION	END SIDE	END OFFSET	PARAMETER	VALUE			
		STATIONS		ft	STATIONS		ft					

The screenshot displays the RSAP software interface. On the left, there are tables for 'DEFAULT X-SECTION' and 'ALTERNATIVES'. The 'ALTERNATIVES' table shows three alternatives, all with a slope of 4:1. Below these is a 'SEGMENT CHARACTERISTICS' table with fields for Total Lanes, Lane Width, Left Shoulders, Right Shoulders, Median Width, and Curb Height. The main area features a 'Cross Section' graph showing a profile with a peak at 0.00 and slopes of 4:1 on both sides. Below the graph are three tables: 'Primary Roadside Profile', 'Median Profile', and 'Opposing Roadside Profile', each with columns for Slope Width, Slope, Offset, and Elevation. On the right, the 'RSAP Controls' panel is visible, with the 'X-SECTION' button highlighted. The panel includes options for PROJECT, TRAFFIC, HIGHWAY, ALTERNATIVES, X-SECTION, ANALYZE, RESULTS, SETTINGS, and HAZARDS. A text box in the X-SECTION section provides instructions on how to edit an x-section.

This is a close-up of the 'RSAP Controls' panel. The 'X-SECTION' button is selected, and a list of x-section options is displayed. The list includes: All 10:1, All 2:1, All 3:1, All 4:1, All 6:1, All 8:1, and All Flat. The list is enclosed in a red box. Below the list are navigation arrows and a '<Alternative Info' button. At the bottom of the panel is an 'Analysis >' button.



## Horizontal Clearance - RSAP



Running the Analysis

- See Settings button
  - min/max trajectories
  - encroachment increments
  - Encroachment direction
    - primary right
    - primary left
    - opposing right
    - opposing left


80 %

Cancel

Initializing segment and hazard data.  
 Priority set to High  
 Segment 1 - Alternative 1 - PL - C  
 - Number of trajectories selected: 76  
 - Minimum trajectory score: 0.930127382148659  
 - Average trajectory score: 0.941894834904097  
 (score > 0.9 is considered a good score)  
 (0.9 > score > 0.8 is considered acceptable score)  
 (0.8 > score > 0.7 is of questionable quality)  
 (0.7 > score is unacceptable score. Consider reducing number of trajectories.)

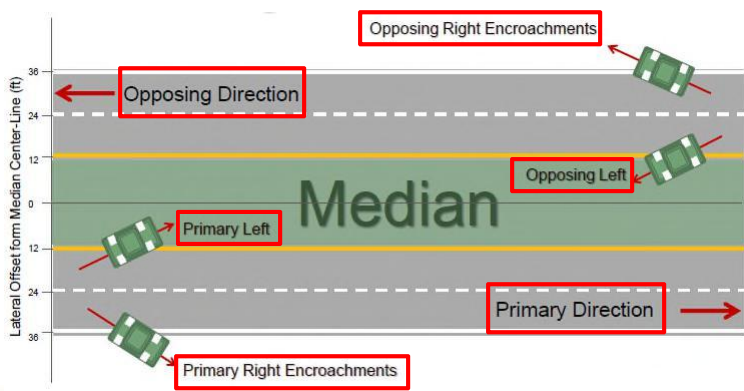
Segment 1 - Alternative 1 - DI - DI1

## Horizontal Clearance - RSAP



Running the Analysis

- encroachments



RSAP v01 - RSAP 36.1 (release 130307)

### DETAILED COLLISION AND COST SUMMARY

430675-1 (SR434 - SR419 to Tuskawilla Rd.; Seminole Co.) - Horizontal Clearance

Based on Analysis Run on 2/10/2016 4:19:41 PM  
RSAP 3.0.1 (release 130307) is running on your Windows 11.0 on Windows(12-01) RT6.CJ

Analysis Time = 2307.021 sec.

Alternate Segment	Feature Number	Feature Type	Encroachment and Variable Type	EXPECTED ANNUAL CRASHES			ANNUAL COST OF CRASHES		
				Total Feature Crashes	Penetrated or Violated	Rollled Over after Redirection	Annual Feature Crash Cost	Feature Maintenance Cost	Feature Repair / Cost
ALTERNATIVE 1									
1	1	1	Tree	PL - PU	0.0013	0.0001	\$	150	\$
1	1	1	Tree	PL - C	0.0034	0.0002	\$	381	\$
1	1	1	Tree	PL - ATT	0.0001	0.0000	\$	23	\$
1	1	1	Tree	PL - ASUT	0.0001	0.0000	\$	16	\$
1	1	1	Tree	OL - PU	0.0032	0.0002	\$	793	\$
1	1	1	Tree	OL - C	0.0069	0.0004	\$	1,854	\$
1	1	1	Tree	OL - ATT	0.0003	0.0000	\$	247	\$
1	1	1	Tree	OL - ASUT	0.0002	0.0000	\$	139	\$
1	1	2	Tree	PL - PU	0.0001	0.0000	\$	5	\$
1	1	2	Tree	PL - C	0.0002	0.0000	\$	11	\$
1	1	2	Tree	PL - ATT	0.0000	0.0000	\$	1	\$
1	1	2	Tree	PL - ASUT	0.0000	0.0000	\$	0	\$
1	1	2	Tree	OL - PU	0.0002	0.0000	\$	21	\$
1	1	2	Tree	OL - C	0.0004	0.0000	\$	54	\$
1	1	2	Tree	OL - ATT	0.0000	0.0000	\$	7	\$
1	1	2	Tree	OL - ASUT	0.0000	0.0000	\$	4	\$
1	1	3	Tree	PL - PU	0.0031	0.0002	\$	732	\$
1	1	3	Tree	PL - C	0.0079	0.0004	\$	1,848	\$
1	1	3	Tree	PL - ATT	0.0003	0.0000	\$	362	\$
1	1	3	Tree	PL - ASUT	0.0002	0.0000	\$	145	\$
1	1	3	Tree	OL - PU	0.0012	0.0001	\$	189	\$
1	1	3	Tree	OL - C	0.0030	0.0001	\$	391	\$
1	1	3	Tree	OL - ATT	0.0001	0.0000	\$	35	\$
1	1	3	Tree	OL - ASUT	0.0001	0.0000	\$	15	\$
1	1	4	Tree	PL - PU	0.0024	0.0001	\$	476	\$
1	1	4	Tree	PL - C	0.0002	0.0003	\$	1,301	\$
1	1	4	Tree	PL - ATT	0.0002	0.0000	\$	214	\$
1	1	4	Tree	PL - ASUT	0.0001	0.0000	\$	99	\$
1	1	4	Tree	OL - PU	0.0013	0.0001	\$	190	\$

RSAP Controls

**PROJECT** **REPORTS**

Seq. Detail

**TRAFFIC** B/C Settings

**HIGHWAY**

**ALTERNATIVES**  Include Terrain Rollovers in

**X-SECTION** **Print Reports**

**ANALYZE** Check boxes for reports you want to print.

**RESULTS**  Input Summary

**SETTINGS**  Analysis Settings

**HAZARDS**  Feature Collision and Cost Report

Segment Report

Benefit Cost Report

Export to Wrksht

Preview Printout

Help User's Manual

Save Engineer's Manual

Quit Exit

Select your defaults to use defaults if an alternative is set or assign to select new x-sections.

RSAP Controls

**PROJECT** **REPORTS**

Seq. Detail

**TRAFFIC** B/C Settings

**HIGHWAY**

**ALTERNATIVES**  Include Terrain Rollovers in

**X-SECTION** **Print Reports**

**ANALYZE** Check boxes for reports you want to print.

**RESULTS**  Input Summary

**SETTINGS**  Analysis Settings

**HAZARDS**  Feature Collision and Cost Report

Segment Report

Benefit Cost Report

Export to Wrksht

Preview Printout



**SEGMENT AND ALTERNATIVE COST SUMMARY**

**430675-1 (SR434 - SR419 to Tuskawilla Rd.; Seminole Co.) - Horizontal Clearance**

Based on Analysis Run on 2/10/2016 4:19:41 PM  
RSAP 3.0.1 (release 150507) running in Excel Version 15.0 on Windows (32-bit) NT 6.01

AADT		45,171	vpd	PT		10.00	%	Rate of Return		4	%
								Design Life		25	yrs
ANNUAL SEGMENT SUMMARY							A/P	0.0640			
Segment	Crashes	Crash Costs	Maintenance Cost	Repair Costs	Crash Rate (crashes/MVMT)	Alternative	Annualized Construction Cost	Expected Annual Maintenance Cost	Expected Annual Repair Cost	Expected Annual Crash Cost	
		<u>Alternative # 1</u>				1	\$ 0	\$ 5,000	\$ 0	\$ 61,182	
1	0.29	\$ 61,182		\$ 0	1654	2	\$ 4,289	\$ 7,000	\$ 897	\$ 41,302	
		<u>Alternative # 2</u>				3	\$ 640	\$ 500	\$ 0	\$ 0	
1	0.98	\$ 41,302		\$ 897	5560						
		<u>Alternative # 3</u>									
1	0.00	\$ 0		\$ 0	0						

RSAP Controls

<b>PROJECT</b>	<b>REPORTS</b>
<b>TRAFFIC</b>	Seq. <b>Detail</b>
<b>HIGHWAY</b>	B/C Settings
<b>ALTERNATIVES</b>	<input type="checkbox"/> Include Terrain Rollovers in
<b>X-SECTION</b>	<b>Print Reports</b>
<b>ANALYZE</b>	Check boxes for reports you want to print.
<b>RESULTS</b>	<input type="checkbox"/> Input Summary
<b>SETTINGS</b>	<input type="checkbox"/> Analysis Settings
<b>HAZARDS</b>	<input type="checkbox"/> Feature Collision and Cost Report
	<input type="checkbox"/> Segment Report
	<input type="checkbox"/> Benefit Cost Report
	<input type="checkbox"/> Export to Wrksht
	<input type="checkbox"/> Preview Printout

**DETAILED COLLISION AND COST SUMMARY**  
**430675-1 (SR434 - SR419 to Tuskawilla Rd.; Seminole Co.) - Horizontal Clearance**  
 Based on Analysis Run on 2/10/2016 4:19:41 PM  
 RSAP 3.0.1 (release 150507) running in Excel Version 15.0 on Windows (32-bit) NT 6.01  
 Analysis Time = 2367.621 sec.

Alternative	Segment	FEATURE		EXPECTED ANNUAL CRASHES			ANNUAL COST OF CRASHES			
		Feature Number	Feature Type	Encroachment and Vehicle Type	Total Feature Crashes	Penetrated or Vaulted	Rolled Over after Redirection	Annual Feature Crash Cost	Feature Maintenance Cost	Feature Repair Cost
1 ALTERNATIVE 1										
1	1	1	Tree	PL - PU	0.0013	0.0001	\$ -	\$ 155	\$ -	\$ -
1	1	1	Tree	PL - C	0.0034	0.0002	\$ -	\$ 381	\$ -	\$ -
1	1	1	Tree	PL - ATT	0.0001	0.0000	\$ -	\$ 23	\$ -	\$ -
1	1	1	Tree	PL - ASUT	0.0001	0.0000	\$ -	\$ 16	\$ -	\$ -
1	1	1	Tree	OL - PU	0.0032	0.0002	\$ -	\$ 733	\$ -	\$ -
1	1	1	Tree	OL - C	0.0080	0.0004	\$ -	\$ 1,854	\$ -	\$ -
1	1	1	Tree	OL - ATT	0.0003	0.0000	\$ -	\$ 247	\$ -	\$ -
1	1	1	Tree	OL - ASUT	0.0002	0.0000	\$ -	\$ 139	\$ -	\$ -
1	1	2	Tree	PL - PU	0.0001	0.0000	\$ -	\$ 5	\$ -	\$ -
1	1	2	Tree	PL - C	0.0002	0.0000	\$ -	\$ 11	\$ -	\$ -

RSAP Controls

PROJECT	<b>REPORTS</b>	
TRAFFIC	Seq.	Detail
HIGHWAY	<b>B/C</b>	Settings
ALTERNATIVES	<input type="checkbox"/> Include Terrain Rollovers in	
X-SECTION	<b>Print Reports</b>	
ANALYZE	Check boxes for reports you want to print.	
RESULTS	<input type="checkbox"/> Input Summary	
SETTINGS	<input type="checkbox"/> Analysis Settings	
HAZARDS	<input type="checkbox"/> Feature Collision and Cost Report	
	<input type="checkbox"/> Segment Report	
	<input type="checkbox"/> Benefit Cost Report	
	<input type="checkbox"/> Export to Wrksht	
	<input type="checkbox"/> Preview Printout	

**EQUIVALENT ANNUAL INCREMENTAL BENEFIT-COST**

**SR434 - SR419 to Tuskawilla Rd.; Seminole Co.) - Horizontal**

Based on Analysis Run on 2/10/2016 4:19:41 PM  
*RSAP 3.0.1 (release 150507) running in Excel Version 15.0 on Windows (32-bit) NT 6.01*

		Decision Point Benefit-Cost Ratio: 2			
		Alternative Choice			
		1	3	2	
With Respect to Alternative	Alternative No.	Trees - Existing	Trees Cut Down	Trees - Shielded	
	ALTERNATIVE NAMES				
1	Trees - Existing	1.00	-15.85	<b>2.77</b>	
3	Trees Cut Down		0.00	-3.74	
2	Trees - Shielded			0.00	

Best Benefit-Cost Choice is: **Trees - Shielded**


ADT: 45,171 vpd  
 Percent Trucks 10 %

### Horizontal Clearance - RSAP

- ✓ What RSAP is...
- ✓ Project description information
- ✓ Apply the correct value of statistical life
- ✓ How to locate hazards by station & offset
- ✓ Road segment characteristics & traffic data
- ✓ How to evaluate alternate roadside designs
- ✓ Results – How to interpret





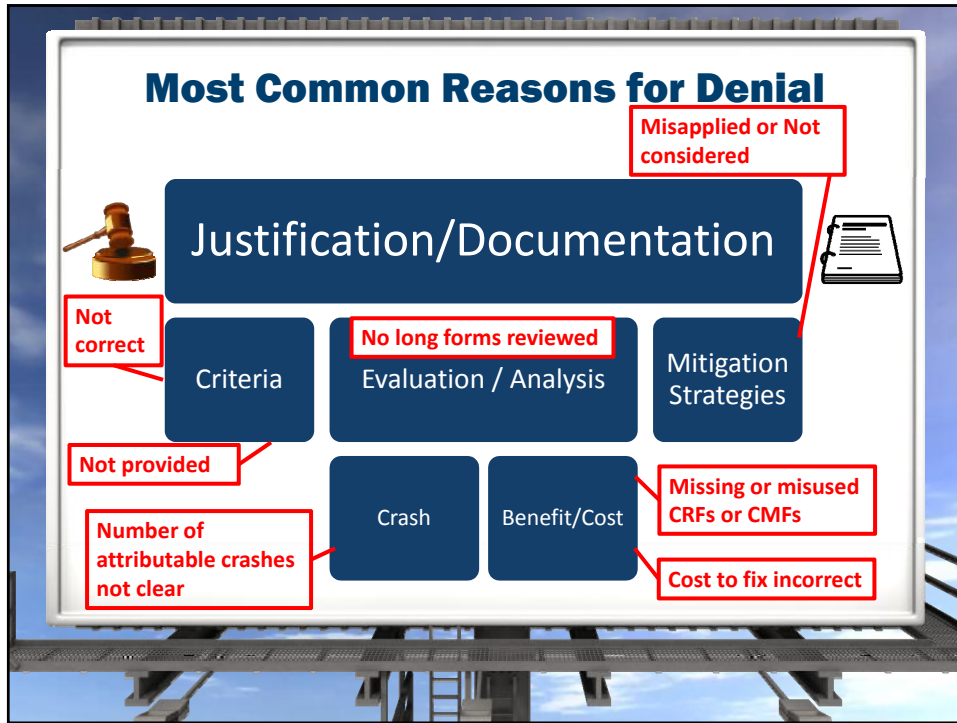
**Objective**

Justification 

➤ Demonstrate that the impacts on the operation and safety of the roadway facility are acceptable, compared to the impacts and benefits of meeting the criteria.

- Include Sufficient Documentation
- Evaluate the Operational and Safety Impacts

   
QUALITY vs. QUANTITY





## Justification

➤ A Strong Case for an Exception Can Be Made If:

- The Required Criteria Are Not Applicable to the Site Conditions.
- The Project Can be just as Safe by Not Following Nominal Criteria
- The Environmental or Community Needs Prohibit Meeting Criteria.

## Justification

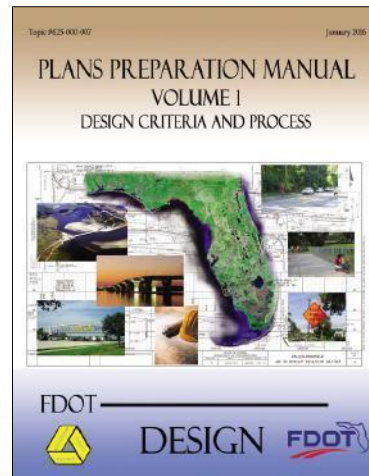
➤ A Case Should Not Be Made Based Solely On the Following:

- Money 
  - (Too Expensive to fix)
- Time 
  - (Schedule, Schedule, Schedule)
- Similar to other designs
  - (This is the way we did it on another project)

## Documentation

➤ Plans Preparation Manual  
Chapter 23

- See Section 23.5 for other requirements or Call us.
- Hope to soon streamline documentation required.



## Documentation

- Submittal/Approval Letter Included (Cover Letter)
- Description of Design Exception/Variation element and applicable criteria
  - AASHTO
  - FDOT
- Traffic using the facility. Anticipated impact on Operations, Adjacent Sections, Level Of Service, Safety, Long and Short Term Effects.
- All Mitigation Efforts
- Comments on the most recent 5-year crash history
- Description of the anticipated Cost (Social and to the Department - Benefit/Cost)

## Submittal/Approval Letter Summary

- Project Description on Approval Letter
  - General Information (Consistent with report)
  - Design Exception or Design Variation



The image shows a hand holding a document titled "Exhibit 23-A Submittal/Approval Letter". The document is a form with various fields and checkboxes, some of which are filled out. It includes a signature at the bottom. The document is held against a background of a blue sky and a bridge structure.

## Submittal/Approval Letter: Sealing

- Responsible Engineer
  - Sign and seal the report justifying and documenting the request
  - In accordance with Chapter 19 of the PPM



Signed and Sealed

## Submittal/Approval Letter

- Submittal/Approval Letter (Exhibit 23-A)
  - Submit with Report
  - To District or Turnpike Design Engineer





### Submittal/Approval Letter: Sealing

- Approved or Denied
  - District or Turnpike Design Engineer
- May also be Approved or Denied
  - District Structures Engineer
  - State Roadway Design Engineer
  - State Structures Design Engineer
  - Chief Engineer
  - FHWA Division Administrator



Approval Signatures

### Description of the Design Exception/Variation

- Element and Applicable Criteria for Project
  - Controlling Element or Other Element
  - AASHTO Values
  - FDOT Values or Standards
  - Detailed explanation of why criteria can't be met or isn't applicable
  - Proposed values for project and why it is appropriate

## Amount/character of traffic using the facility

- Description of the anticipated impact on
  - Operations
  - Adjacent Sections
  - Level Of Service
  - Safety
  - Long and Short Term Effects
    - Is the Exception temporary or permanent?

## All Mitigation Efforts

- Discussion on Proposed and Considered
  - FHWA Mitigation Strategies Table 22

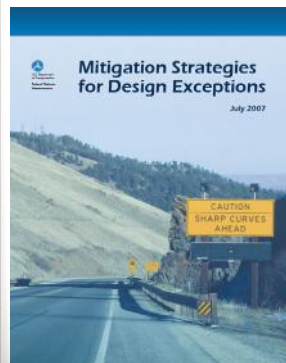


TABLE 22  
Potential Mitigation Strategies

Design Element	Objective	Potential Mitigation Strategies
1. Design Speed	Reduce operating speeds to the design speed.	Cross-sectional elements to manage speed.
	Optimize safety and operations by distributing available cross-sectional width.	Select optimal combination of lane and shoulder width based on site characteristics.
2. Lane Width & 3. Shoulder Width	Provide advance warning of lane width reduction.	Signing
	Improve ability to stay within the lane.	Wide pavement markings
		Recessed pavement markings.
	Improve ability to recover if driver leaves the lane.	Raised pavement markings.
		Delineators.
		Lighting.
		Centerline rumble strips.
Improve ability to recover if driver leaves the lane.	Shoulder rumble strips.	
	Painted edgeline rumble strips.	
Improve ability to recover if driver leaves the lane.	Paved or partially-paved shoulders.	
	Safety edge.	

## Comments on the most recent 5-year crash history

- Most recent five (5) year Crash History and Analysis
  - Location (Limits of DE/DV in milepost)
  - Type (Potential crashes for deficient Element)
  - Severity (KABCO)
  - Relation to Design Exception Element (Attributable or not)

## Description of the anticipated Cost (Social and to the Department - Benefit/Cost)

- Provides an economic assessment for reducing the number and/or severity of crashes.
- The B/C ratio analysis provides a means of selecting the most cost-effective countermeasure(s) for a project.

- Historical



**CRF = 27% for Illumination**

- Predictive



**CMF = 0.73 for Illumination**

## Documentation

- Use engineering judgment
- Length of documentation is not important.
- The key is to provide clarity and completeness to someone not familiar with the project or the design.

*Note: Provide Enough Time for Central Office and for FHWA Review*

## FHWA Documentation

- Specific design criteria that will not be met
- Existing roadway characteristics
- Alternatives considered
- Comparison of the safety and operational performance of road
- Impacts to r/w, environment, community, and all users,
- Project costs
- Proposed mitigation measures
- Compatibility with adjacent sections of roadway

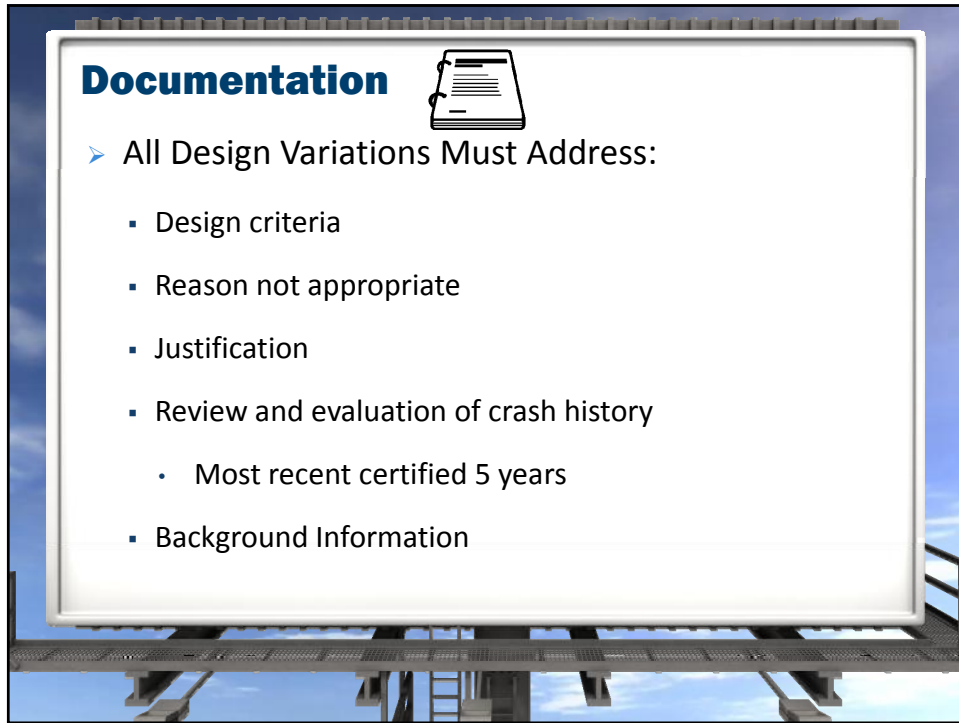
## **FHWA Additional Documentation**


- Design Speed Exceptions
  - Length of section with reduced speed compared to overall length of project.
  - Measures used in transitions to adjacent sections with higher or lower design speeds.
- Design Loading Structural Capacity Exceptions
  - Verification of safe load-carrying capacity (load rating) for all State unrestricted legal loads or routine permit loads and, in the case of bridges and tunnels on the Interstate, all Federal legal loads.

## **Documentation**



- Design Variations for District Approval Only
  - Section 23.8 Design Variation Approval
  - Formal Design Variation or Design Memorandum
  - Formal Design Variation required for
    - Clear Zones
    - Sight Distance
    - Americans with Disability Act (ADA)



**Documentation** 

- All Design Variations Must Address:
  - Design criteria
  - Reason not appropriate
  - Justification
  - Review and evaluation of crash history
    - Most recent certified 5 years
  - Background Information






**Design Exceptions & Variations**

**Approvals**



## Submittal and Approval Process

- Submit early
- Adequate appendices
- Submit through project manager.
- Denial not necessarily imply a disagreement with the decision
- Reminder...Most Design Exceptions are ultimately approved.

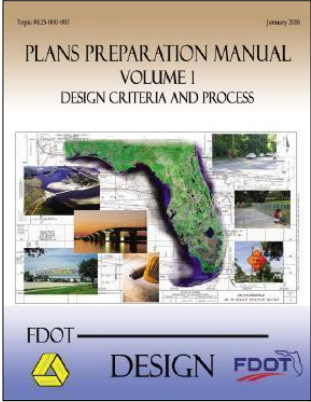


## Approvals

- Plans Preparation Manual

Chapter 23

- See Section 23.3 and Exhibit 23-B for other requirements or Call us.




FDOT DESIGN FDOT

 **Approval**

- District Design Engineer or Turnpike Design Engineer
  - Design Exceptions
  - Design Variations


 Bernie Masing, P.E. District - 1	 Kathy Thomas, P.E. District - 2	 Jared Perdue, P.E. District - 3	 Howard Webb, P.E. District - 4
 Annette Brennan, P.E. District - 5	 Chris Tavella, P.E. District - 6	 Richard Moss, P.E. District - 7	 Pat Muench, P.E. Turnpike

 **Approval**

- District or Turnpike Structures Design Engineer
  - Design Exceptions for Category 1 and 2 Bridge Structures.
  - Design Variations for Category 1 Structures.


*Note: District Structures Design Engineer's (DSDE) concurrence on all Design Exceptions and Design Variations requiring approval by the State Structures Design Engineer (SSDE).*






## Approval

- State Roadway Design Engineer (SRDE)
  - Design Exceptions for all controlling elements except for Structural Capacity
  - Design Variations for stormwater fencing
  - Turnpike Delegation




Michael Shepard, P.E.  
State Roadway Design Engineer



## Approval

- State Structures Design Engineer (SSDE)
  - Design Exceptions for Category 1 and 2 Bridge Structures.
  - Design Variations for Category 2 Structures.
  - Design Variations for Structural Capacity on Category 1 and 2 Bridge Structures
  - Turnpike Delegation
  - Design Variations for Traffic Railing on Category 1 and 2 Bridge Structures



## Approval

- Chief Engineer
  - Design Exceptions for Design Speed on SIS facilities (following review by the State Transportation Planner)
  - Design Variations for Design Speed on SIS facilities (following review by the State Transportation Planner)



## Approval

- FHWA Division Administrator
  - Projects of Division Interest (PODIs)
  - **Rule 14-57 F.A.C.** or South Florida Rail Corridor
  - 16-ft vertical clearance Interstates

### Approval Process (PPM Exhibit 23-B)

Exhibit 23-B Central Office Approvals- Design Exceptions and Design Variations					
Design Element	State Roadway Design Engineer	State Structures Design Engineer	State Transportation Planner	Chief Engineer	FHWA Division Admin.*
	Approval	Approval	Review	Approval	
Design Speed Exception	X				
- SIS	X		X	X	
Design Speed Variation			X	X	
- SIS					
Lane Width Exception	X				
Shoulder Width Exception	X				
Bridge Width Exception	X	X			
Bridge Width Variation (Category 2 Structures)		X			
Structural Capacity of Bridge Exception		X			

- ### Common DE Comments
- Vertical Clearance and Shoulder Width** has been denied:
- Please include a discussion on the **most recent 5 year crash** history (2008 – 2012) and any individual crashes that may be related to the deficiencies. If any are found to be attributable, include a B/C ratio using relevant construction costs to correct these elements.
  - **Mitigation Strategies** were not provided in the reports. The FHWA Mitigation Strategies for Design Exceptions gives guidance on mitigation for each of the 13 controlling criteria. Please provide discussions on mitigation strategies for the deficient elements in the reports.

## Common DE Comments

**Horizontal Alignment** has been denied:

- This submittal package **did not include FDOT Criteria** in the Criteria Section of the report. Please include FDOT Criteria in the resubmittal.
- Please **provide all proposed curve data** and compare it to **design criteria (FDOT and AASHTO)** in the resubmittal package.
- The **seal on this submittal package was not visible.**

## Common DE Comments

**Cross Slope** has been denied:

- The report should be updated to include discussion on **individual crash reports that were reviewed and /or attributed** to deficient cross slope.
- The **construction costs in the Benefit/Cost analysis** should be based only on those costs necessary to correct the **deficient segment, not to correct all of the deficient segments on the project.** Please update the B/C accordingly.

## Common DE Comments

**Vertical Clearance** has been denied:

- An approval letter from the Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) was not provided in the report. Please coordinate with the SDDCTEA as specified in Section 23.3 of the PPM.
- The benefit-cost ratios were calculated using a CRF of 26% and a cost per crash of \$193,477. This CRF did not appear to be an appropriate CRF for Vertical Clearance. The cost per crash was updated in Chapter 23 of the revised 2015 PPM. Please update the benefit-cost ratios with an appropriate CRF and the latest cost per crash.


## Helpful Hints...

1. Include table of cross slopes for deficient areas, and provide separate B/C for noncontiguous areas.
2. Include the 6% and 12% superelevation values from AASHTO Tables for RRR projects
3. Include a table of Existing vs. FDOT vs. AASHTO values for K values and Stopping Sight Distance
4. Lane width and/or shoulder width: limits and stalled vehicle provisions.
5. Check your vertical clearances on RRR projects.



### **Helpful Hints...**

6. Consider design alternatives: Existing, Meets Criteria, and Partial Correction.
7. Include a copy of the Typical Section Package.
8. Include at least the last 5 years of crash data.
9. Include a Mitigation Strategies section in your report called Mitigation Strategies.
10. Verify that your seal is visible in the pdf file. Sign and date the letter. Only sign and seal the report.



### **Who has the first question??**

