



INTERSECTION SAFETY ANALYSIS

**U.S. BUSINESS 41 (S.R. 45) AT
26th STREET/BAYSHORE ROAD**

**MANATEE COUNTY
SECTION NO.: 13030000
MILEPOST: 1.291**

FM No. 40922413290
Contract No. C-9430

May 2016

PREPARED FOR

Florida Department of Transportation, District 1
Project Manager: Michael Kautz
801 N. Broadway Street
Bartow, Florida 33830

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INTRODUCTION

The Florida Department of Transportation (FDOT) – District One Safety Office has retained HNTB Corporation as part of a District-Wide Traffic Safety Project to perform an Intersection Safety Analysis for the intersection of U.S. Bus 41 (S.R. 45) at 26th Street/Bayshore Road in Manatee County, Florida. This study was conducted as a result of a citizen's request. Based on field reviews, engineering analysis and judgment, recommendations have been made in this report.

EXISTING CONDITIONS

The intersection of U.S. Bus 41 and 26th Street/Bayshore Road is an un-signalized full median opening with flashing beacons that is stop controlled for the eastbound and westbound movements. Figure 1 shows the intersection location in relation to the adjacent roadway system. Land uses in the vicinity of the intersection consist of commercial/retail developments and residential neighborhoods. A Mobil gas station is located in the northwest quadrant of the intersection and the Holy Cross Catholic Church is located on the southwest quadrant of the intersection. 26th Street serves as access to the Leisure Lake Mobile Home Park just west of the intersection.

Within the study area, U.S. Bus 41 is a four-lane urban principal arterial roadway with a raised median. This section of U.S. Bus 41 serves as a north-south route connecting U.S. 41 to 9th Street. The posted speed limit is 50 miles per hour (mph). At the intersection with 26th Street/Bayshore Road, the northbound approach consists of one exclusive left turn lane that is also used for U-turns, one exclusive right turn lane, and two through lanes. The northbound left turn lane measures to be approximately 675 feet long (including taper). The southbound approach consists of one exclusive left turn lane that is also used for U-turns, one exclusive right turn lane, and two through lanes. The southbound left turn lane was measured to be approximately 435 feet long (including taper). The northwest corner of the intersection has guardrail protection for about 200 feet along U.S. Bus 41. There are street lights on all corners of the intersection. The pavement and the associated striping are in good condition.

26th Street is a two-lane two way undivided roadway that extends west of the intersection connecting U.S. Bus 41 to the Leisure Lake Mobile Home Park and ends at 8th Avenue W. The eastbound approach has a channelized right turn lane that merges into southbound U.S. Bus 41 and also a shared left/through lane. The posted speed limit on 26th Street is 20 mph. East of the intersection, 26th Street becomes Bayshore Road. Bayshore Road has a channelized right turn lane that merges into northbound U.S. Bus 41. There is also one exclusive left turn lane and one through lane on the westbound approach. Bayshore Road turns to the south and ends at 17th Street W. There are no street lights along 26th Street or Bayshore Road.

With respect to traffic control, the eastbound and westbound approaches are stop controlled with yield control for the eastbound and westbound channelized right turn lanes. There is also a diagonal span wire



with one-section signal heads that extends across the intersection. Vehicles driving on U.S. Bus 41 are shown flashing yellow beacons whereas the vehicles on 26th Street and Bayshore Road are shown flashing red beacons. There is a signalized intersection on U.S. Bus 41 located approximately 0.5 miles south at 17th Street (Memphis Road). Appendix A includes a condition diagram of the study area.

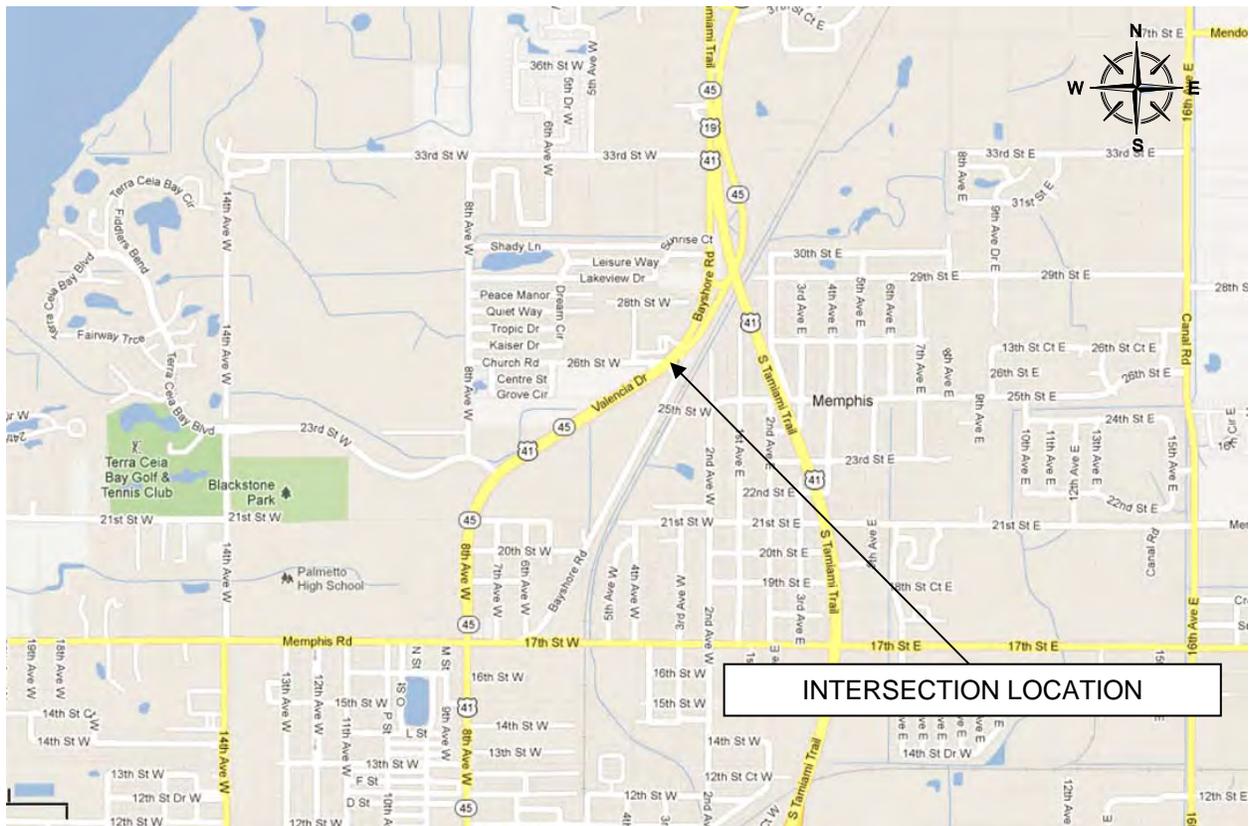


FIGURE 1 - STUDY LOCATION MAP



DATA COLLECTION

This section of the report presents the data that was obtained for this study. For the purposes of this study, it was determined that the following information would be required:

- Crash data from January 2010 through December 2014.
- Eight-hour turning movement counts at the intersection of U.S. Bus 41 and 26th Street/Bayshore Drive.
- Vehicle count data from count stations located in the vicinity of the intersection.
- Recently completed or future planned projects within the study limits.

Crash Data

Crash data was provided by the FDOT CARS Database and Signal 4 Analytics for the 60-month period extending between January 2010 and December 2014. Collision summaries for the 60-month period are presented in Table 1; collision summary sheets and diagrams are included in Appendix B. Areas of concern are discussed in the Crash Analysis section of this report.

Traffic Volume Data

Eight-hour turning movement counts were collected by HNTB. The counts were completed on Tuesday, June 12, 2012, between the hours of 7:00 a.m. and 10:00 a.m., 11:00 a.m. and 1:00 p.m., and 3:00 p.m. and 6:00 p.m. The detailed turning movement count data is included as Appendix C of this report.

The morning peak was found to be from 7:00 a.m. to 8:00 a.m. and the afternoon peak was found to be from 5:00 p.m. to 6:00 p.m. The eastbound left turn plus through volume from 26th Street was at its maximum from 8:00 a.m. to 9:00 a.m. with 26 vph. The westbound left turn plus through volume from Bayshore Road was at its maximum from 7:00 a.m. to 8:00 a.m. with 24 vph. Seven-day counts were also performed by HNTB from Tuesday, June 12, 2012 to Monday, June 18, 2012 to determine if any variability in traffic patterns was found due to the Holy Cross Catholic Church. It was found that on Sundays there is a 65% increase in daily traffic (compared to a typical weekday) on the eastbound approach with a maximum eastbound approaching volume of 93 vph.

Traffic volume data on U.S. Bus 41 was also obtained from the Florida Department of Transportation 2014 Annual Average Daily Traffic Report. This information contains recent and historical count data. One count station was identified south of the intersection on U.S. Bus 41. The counts indicate the 2014 AADT was 20,500 with 4.0% truck traffic.



Recently Completed/Future Projects

An investigation of the Department's Work Program indicated that there have been no recently completed projects since 2007 and there are no anticipated projects in the vicinity of the intersection.



Figure 2 – U.S. Bus 41 looking northbound into 26th Street



Figure 3 – U.S. Bus 41 looking southbound into 26th Street



Figure 4 – 26th Street looking eastbound into U.S. Bus 41



Figure 5 – Bayshore Road looking westbound into U.S. Bus 41



CRASH ANALYSIS

Collision reports were obtained from the FDOT CARS Database and Signal 4 Analytics for the 60-month period extending between January 2007 and December 2011. The collision data is summarized in Table 1.

According to the collision data, there have been 21 collisions reported within the intersection during this time period. Eight (38%) of the crashes were angle collisions, 5 (24%) were rear end collisions, 3 (15%) were off road, one (5%) was a sideswipe collision, and one (5%) was a left turn crash. Seven crashes (33%) occurred at night and three (14%) occurred on wet pavement. Eight crashes (38%) resulted in personal injury and one crash resulted in a fatality. Four (19%) crashes occurred during the morning peak hours, one (5%) occurred in the mid-day peak hours, and four (19%) occurred during the evening peak hours. The crash rate at the intersection has been higher than the statewide average for all the years that were analyzed (2010 through 2014).

The majority of crashes identified were angle crashes occurring at the intersection. Six of the angle crashes involved vehicles travelling eastbound out of 26th Street and four of those crashes involved vehicles travelling northbound through the intersection. These are the types of crashes that can potentially be corrected by modifying the median opening.



TABLE 1 – CRASH SUMMARY
U.S. BUS 41 (S.R. 45) AT 26TH STREET/BAYSHORE ROAD
JANUARY 2010 – DECEMBER 2014

COLLISION TYPE	2010	2011	2012	2013	2014	TOTAL
Rear End	0	2	0	1	2	5
Left Turn	0	0	0	0	1	1
Angle	1	2	1	3	1	8
Sideswipe	1	0	0	0	0	1
Right Turn	0	0	0	0	0	0
Pedestrian/Bicycle	0	0	0	0	0	0
Run-off-Road	0	0	0	2	1	3
Head On	0	0	0	0	0	0
Other	0	0	1	0	2	3
Total	2	4	2	6	7	21
Fatal Crashes	0	1	0	0	0	1
Injury Crashes	2	2	1	2	1	8
Property Damage Only	0	1	1	4	6	12
Day	1	3	2	4	4	14
Night	1	1	0	2	3	7
Wet	1	0	0	1	1	3
Dry	1	4	2	5	6	18
AM Peak (7 AM - 9 AM)	0	2	0	0	2	4
Midday Peak (11 AM - 1 PM)	0	0	0	1	0	1
PM Peak (4 PM - 6 PM)	0	0	1	1	2	4
Spot Crash Rate	0.261	0.535	0.295	0.851	0.936	0.576
Statewide Avg Spot Crash Rate	0.405	0.388	0.464	0.530	0.604	0.483



OPERATIONAL ANALYSIS

Due to the high number of angle and left turn crashes, it is recommended that the full median opening be converted to a dual directional opening. It is proposed that both the eastbound and westbound existing through and left turn lanes on 26th Street and Bayshore Road be eliminated along with the overhead flashing beacons. This raises the question of whether the intersection will continue to operate efficiently in the new lane configuration and without the through or left turn movements from both the eastbound and westbound side streets. To allow vehicles to turn onto northbound U.S. Bus 41 from eastbound 26th Street and southbound U.S. Bus 41 from westbound Bayshore Road, they would have to make u-turns at the next nearest intersections or utilize back access roadways. Eastbound traffic would complete southbound u-turns at a median opening south of 26th Street. Westbound traffic would utilize Bayshore Road and travel south to 17th Street, which then provides access back to U.S. Bus 41 via the signalized intersection of U.S. Bus 41 and 17th Street. To accommodate the extra vehicles at these intersections, it is recommended that the lane lengths for the corresponding left turns be revised to accommodate the additional traffic. Table 2 below shows the queue lengths, deceleration lengths and the resulting total length for the intersection under study, and the nearest two intersections on U.S. Bus 41. These lengths are based on Index 17346 for curbed medians. The results show that the left turn lanes at the intersection of U.S. Bus 41 and 26th Street/Bayshore Road are sufficient in length and the median opening to the south of 26th Street/Bayshore Road would require a 340-foot southbound left turn lane.

**TABLE 2 – SUMMARY OF QUEUES
U.S. BUS 41 AT 26TH STREET/BAYSHORE ROAD**

INTERSECTION	EXISTING/PROPOSED GEOMETRY	NB/SB	LEFT TURN MAX QUEUE (FT)	DECELERATION LENGTH (FT)	TOTAL LANE LENGTH (FT)
U.S. Bus 41 at 26 th Street/Bayshore Road	Existing	NB	-	-	675
	Proposed		100	240	340
U.S. Bus 41 at 26 th Street/Bayshore Road	Existing	SB	-	-	435
	Proposed		100	240	340
U.S. Bus 41 at Full Median Opening South of 26 th Street/Bayshore Road	Existing	SB	No Left Turn Lane Exists		
	Proposed		100	240	340



BENEFIT/COST ANALYSIS

This section presents the benefit/cost analysis that was performed for the recommended improvement of replacing the full median opening with a dual directional median opening. The procedures outlined in the Department's *Highway Safety Improvement Program Guideline* were used to determine the benefit/cost ratio, and a benefit-cost form has been prepared for the proposed improvements.

The Department's *Accident Reduction Factors for Use in Calculating Benefit/Cost* was used as a reference to estimate the percentage of crashes that would be expected to be eliminated with the improvements. Each crash was also reviewed on an individual basis to determine if the proposed improvements would have potentially prevented the crash. Sixty months of crashes from 2010 to 2014 were used for this analysis. The 2008 to 2012 statewide average cost per crash of \$152,103 was used, as reported in FDOT's State Safety Office Bulletin 14-01 for an urban four-lane divided roadway with a raised median.

A total of 21 crashes occurred from 2010 to 2014 of which eight were angle crashes. One of these angle crashes resulted in a fatality and occurred in 2011 between a northbound vehicle and an eastbound vehicle turning left. All angle crashes would potentially be prevented with the recommended improvements.

The cost for these improvements includes both design and construction costs. The design costs for the modifications are estimated at approximately \$35,369, which includes preparing design plans and specifications. The construction costs are estimated to be \$107,180; these estimates also include contingency, construction support, maintenance of traffic, and mobilization costs. Since all work will be completed within the existing right-of-way, there are no right-of-way costs associated with these improvements.

These improvements provide the following benefit/cost results:

- Number of crashes potentially reduced - total 8 (1.6 annually)
- Cost of Improvement - \$142,549 (\$10,491 annually)
- Life of Improvement - 20 years
- **Benefit/Cost - 23.20**
- **Net Present Value - \$3,164,859**

The proposed improvements result in a high benefit/cost ratio, a net present value greater than 0 and are expected to have a beneficial impact at reducing a number of the crashes occurring at this intersection.



The **Highway Safety Improvement Program Guide** states that a project can qualify for HSP funds provided that the project is low cost (typically less than \$1,000,000), can be accomplished within three years, and has a benefit/cost ratio greater than 2.0. The estimated construction cost of this project is \$142,549 and the benefit/cost ratio is 23.20.

A detailed benefit/cost analysis form is included in Appendix E of this report.



RECOMMENDATIONS

Based on the results of the crash analysis, operational analysis, and engineering judgment, the following recommendations were developed:

1. Consider replacing the full median opening with a dual directional median opening per FDOT Standard Index 527, Sheet 2 of 3. This reconfiguration will eliminate the eastbound and westbound through and left turn movements at the intersection. For the eastbound traffic, these movements can be accommodated as u-turns at the median openings immediately to the south of the intersection. For the westbound traffic, these movements can utilize the back access along Bayshore Road to 17th Street. As part of these improvements, a southbound left turn lane will be required at the median opening that is 1415 feet south of 26th Street/Bayshore Road. It is also recommended that the median opening that is 815 feet south of 26th Street/Bayshore Road be closed. These improvements are expected to significantly reduce the number of angle crashes at the intersection of U.S. Bus 41 and 26th Street/Bayshore Road.



APPENDIX A

CONDITION DIAGRAM

CONDITION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE 05/09/2012 PREPARED BY HNTB



MATCHLINE - SEE SHEET 2

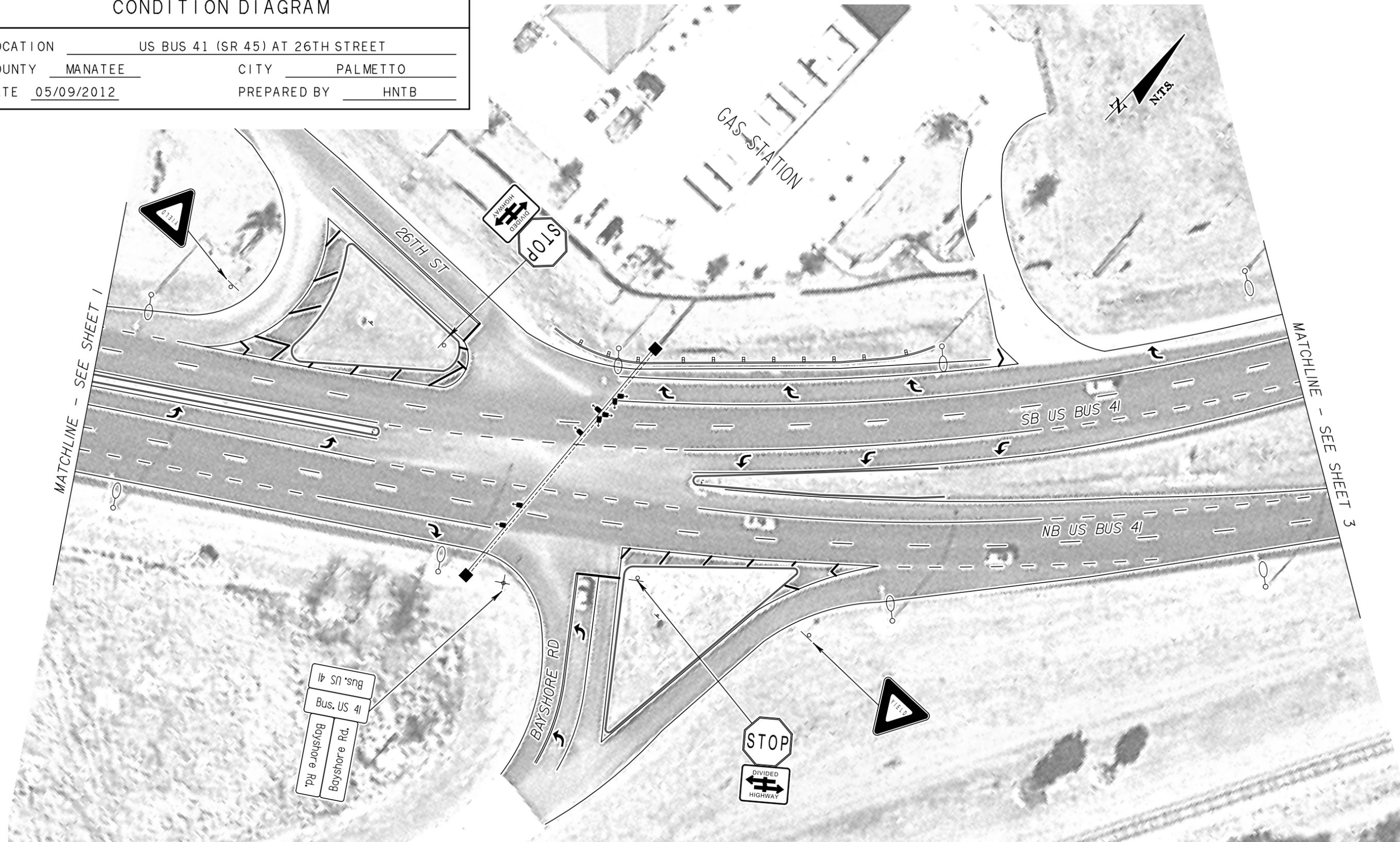
SHEET
1

SYMBOLS

	TREES		POWER POLE		COMBINATION POLE		PED. SIGNAL HEAD		OVERHEAD SIGN		FENCE
	SHRUBS		SIGN		LIGHT POLE		SIGNAL POLE		HYDRANT		GUARDRAIL
	HEDGE		TRAFFIC SIGNAL POLE		SIGNAL HEAD		CONTROLLER CABINET		RR SIGNAL		BUILDING

CONDITION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE 05/09/2012 PREPARED BY HNTB



SHEET
2

SYMBOLS

	TREES		POWER POLE		COMBINATION POLE		PED. SIGNAL HEAD		OVERHEAD SIGN		FENCE
	SHRUBS		SIGN		LIGHT POLE		SIGNAL POLE		HYDRANT		GUARDRAIL
	HEDGE		TRAFFIC SIGNAL POLE		SIGNAL HEAD		CONTROLLER CABINET		RR SIGNAL		BUILDING

CONDITION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE 05/09/2012 PREPARED BY HNTB



MATCHLINE - SEE SHEET 2

SHEET
3

SYMBOLS

 TREES	 POWER POLE	 COMBINATION POLE	 PED. SIGNAL HEAD	 OVERHEAD SIGN	 FENCE
 SHRUBS	 SIGN	 LIGHT POLE	 SIGNAL POLE	 HYDRANT	 GUARDRAIL
 HEDGE	 TRAFFIC SIGNAL POLE	 SIGNAL HEAD	 CONTROLLER CABINET	 RR SIGNAL	 BUILDING



APPENDIX B

CRASH DATA

COLLISION SUMMARY

Section: 13030-000
 Location: At 26th Street/Bayshore Road
 Study Period: 1/1/2010 to 12/31/2010
 No. of Years: 5

State Route: 45
 M.P.: 1.241 - 1.341
 County: Manatee

Engineer: HNTB

No.	Date	Day	Time	Type	Fatal	Injury	Prop. Damage	Day/Night	Wet/Dry	Contributing Cause	Comments
1	2/11/2010	Thu.	8:17	Sideswipe		x		Night	Wet	FTYRW	
2	11/12/2010	Fri.	14:30	Angle		x		Day	Dry	FTYRW	

Total No.	Fatal	Injury	Property Damage	Angle	Left Turn	Head On	Right Turn	Rear End	Side Swipe	Collision w/ Sign	Overturned	Collision w/ Pole	Hit Animal	Ran Off Road	Other
2	0	2	0	1	0	0	0	0	1	0	0	0	0	0	0
%	0	100	0	50	0	0	0	0	50	0	0	0	0	0	0
One Vehicle	Ped/Bike	Day	Night	Dry	Wet	Careless Driving	FTYRW	Improper Turn	DUI	Improper Lane Change	Disregarded Traffic Signal	Failed to Maintain Vehicle	Improper Load	No Improper Driving	Other
0	0	1	1	1	1	0	2	0	0	0	0	0	0	0	0
0	0	50	50	50	50	0	100	0	0	0	0	0	0	0	0

Notice:

Please be aware that the records you requested contain information compiled and collected for the purpose of obtaining Federal-aid funding for safety improvement projects. Under Federal law (23 U.S.C. § 409), these records are not subject to discovery or admissible into evidence in any court proceeding and may not be considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in the records.

COLLISION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE RANGE 01/01/2010 TO 12/31/2010 PREPARED BY HNTB



SHEET
1

SYMBOLS

<p> OVERTURNED VEHICLE</p> <p> BACKING VEHICLE</p> <p> OUT OF CONTROL</p>	<p> HEAD-ON COLLISION</p> <p> ANGLE COLLISION</p> <p> RIGHT TURN COLLISION</p>	<p> COLLISION W/ PED.</p> <p> COLLISION W/ BIKE</p> <p> LEFT TURN COLLISION</p>	<p> REAR-END COLLISION</p> <p> SIDE SWIPE</p> <p> PERSONAL INJURY</p> <p> FATALITY</p>
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CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	0	1	0	1
NIGHTTIME	0	1	0	1
TOTAL	0	2	0	2

COLLISION SUMMARY

Section: 13030-000
 Location: At 26th Street/Bayshore Road
 Study Period: 1/1/2011 to 12/31/2011
 No. of Years: 1

State Route: 45
 M.P.: 1.241 - 1.341
 County: Manatee

Engineer: HNTB

No.	Date	Day	Time	Type	Fatal	Injury	Prop. Damage	Day/Night	Wet/Dry	Contributing Cause	Comments
1	2/18/2011	Fri.	15:40	Angle	x			Day	Dry	FTYRW	
2	9/1/2011	Thu.	8:15	Rear End			x	Day	Dry	Careless Driving	
3	9/1/2011	Thu.	8:15	Rear End		x		Day	Dry	Careless Driving	
4	12/12/2011	Mon.	18:53	Angle		x		Night	Dry	Disregarded Stop Sign	

Total No.	Fatal	Injury	Property Damage	Angle	Left Turn	Head-On	Ran into Ditch	Rear End	Side Swipe	Collision w/ Sign	Overturned	Collision w/ Pole	Hit Animal	Ran Off Road	Other
4	1	2	1	2	0	0	0	2	0	0	0	0	0	0	0
%	25	50	25	50	0	0	0	50	0	0	0	0	0	0	0
One Vehicle	Ped/Bike	Day	Night	Dry	Wet	Careless Driving	FTYRW	Improper Turn	DUI	Improper Lane Change	Disregarded Stop Sign	Failed to Maintain Vehicle	Improper Load	No Improper Driving	Other
0	0	3	1	4	0	2	1	0	0	0	1	0	0	0	0
0	0	75	25	100	0	50	25	0	0	0	25	0	0	0	0

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COLLISION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE RANGE 01/01/2011 TO 12/31/2011 PREPARED BY HNTB



SHEET
1

SYMBOLS

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	1	1	1	3
NIGHTTIME	0	1	0	1
TOTAL	1	2	1	4

COLLISION SUMMARY

Section: 13030-000
 Location: At 26th Street/Bayshore Road
 Study Period: 1/1/2012 to 12/31/2012
 No. of Years: 1

State Route: 45
 M.P.: 1.241 - 1.341
 County: Manatee

Engineer: HNTB

No.	Date	Day	Time	Type	Fatal	Injury	Prop. Damage	Day/Night	Wet/Dry	Contributing Cause	Comments
1	5/8/2012	Tue.	17:30	Other		x		Day	Dry	Careless Driving	Opposite direction sideswipe, collision w/ sign and hydrant
2	11/11/2012	Sun.	11:50	Angle			x	Day	Dry	FTYRW	

Total No.	Fatal	Injury	Property Damage	Angle	Left Turn	Head On	Run Into Ditch	Rear End	Side Swipe	Collision w/ Sign	Overturned	Collision w/ Pole	Hit Animal	Run Off Road	Other
2	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1
%	0	50	50	50	0	0	0	0	0	0	0	0	0	0	50
One Vehicle	Ped/Bike	Day	Night	Dry	Wet	Careless Driving	FTYRW	Improper Turn	DUI	Improper Lane Change	Disregarded Traffic Signal	Failed to Maintain Vehicle	Improper Load	No Improper Driving	Other
0	0	2	0	2	0	1	1	0	0	0	0	0	0	0	0
0	0	100	0	100	0	50	50	0	0	0	0	0	0	0	0

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COLLISION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE RANGE 01/01/2012 TO 12/31/2012 PREPARED BY HNTB



SHEET
1

SYMBOLS

<p> OVERTURNED VEHICLE</p> <p> BACKING VEHICLE</p> <p> OUT OF CONTROL</p>	<p> HEAD-ON COLLISION</p> <p> ANGLE COLLISION</p> <p> RIGHT TURN COLLISION</p>	<p> COLLISION W/ PED.</p> <p> COLLISION W/ BIKE</p> <p> LEFT TURN COLLISION</p>	<p> REAR-END COLLISION</p> <p> SIDE SWIPE</p> <p> PERSONAL INJURY FATALITY</p>
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CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	1	1	0	2
NIGHTTIME	0	0	0	0
TOTAL	1	1	0	2

COLLISION SUMMARY

Section: 13030-000
 Location: At 26th Street/Bayshore Road
 Study Period: 1/1/2013 to 12/31/2013
 No. of Years: 1

State Route: 45
 M.P.: 1.241 - 1.341
 County: Manatee

Engineer: HNTB

No.	Date	Day	Time	Type	Fatal	Injury	Prop. Damage	Day/Night	Wet/Dry	Contributing Cause	Comments
1	4/1/2013	Mon.	17:44	Collision w/ Pole		x		Day	Dry	Other	
2	5/22/2013	Wed.	21:58	Angle			x	Night	Dry	FTYRW	
3	7/12/2013	Fri.	10:15	Hit Guardrail			x	Day	Wet	Exceeded Speed Limit	
4	10/6/2013	Sun.	20:18	Angle		x		Night	Dry	FTYRW	
5	11/3/2013	Sun.	7:30	Rear End			x	Day	Dry	Other	
6	12/12/2013	Thu.	11:25	Angle			x	Day	Dry	FTYRW	

Total No.	Fatal	Injury	Property Damage	Angle	Left Turn	Head-On	Ran Into Ditch	Rear End	Side Swipe	Hit Guardrail	Overturned	Collision w/ Pole	Hit Animal	Ran Off Road	Other
6	0	2	4	3	0	0	0	1	0	1	0	1	0	0	0
%	0	33	67	50	0	0	0	17	0	17	0	17	0	0	0
One Vehicle	Ped/Bike	Day	Night	Dry	Wet	Careless Driving	FTYRW	Improper Turn	DUI	Exceeded Speed Limit	Disregarded Traffic Signal	Failed to Maintain Vehicle	Improper Load	No Improper Driving	Other
2	0	4	2	5	1	0	3	0	0	1	0	0	0	0	2
33	0	67	33	83	17	0	50	0	0	17	0	0	0	0	33

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COLLISION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE RANGE 01/01/2013 TO 12/31/2013 PREPARED BY HNTB



SHEET
1

SYMBOLS

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	3	1	0	4
NIGHTTIME	1	1	0	2
TOTAL	4	2	0	6

COLLISION SUMMARY

Section: 13030-000
 Location: At 26th Street/Bayshore Road
 Study Period: 1/1/2014 to 12/31/2014
 No. of Years: 1

State Route: 45
 M.P.: 1.241 - 1.341
 County: Manatee

Engineer: HNTB

No.	Date	Day	Time	Type	Fatal	Injury	Prop. Damage	Day/Night	Wet/Dry	Contributing Cause	Comments
1	1/10/2014	Fri.	17:35	Rear End			x	Night	Dry	Careless Driving	
2	2/1/2014	Sat.	0:17	Hit Tree		x		Night	Wet	Exceeded Speed Limit	
3	4/20/2014	Sun.	9:15	Angle			x	Day	Dry	Other	
4	6/15/2014	Sun.	13:55	Rear End			x	Day	Dry	Careless Driving	
5	8/20/2014	Wed.	16:30	Other			x	Day	Dry	No Improper Driving	Hit ladder left in roadway
6	9/26/2014	Fri.	7:40	Left Turn			x	Night	Dry	FTYRW	
7	11/3/2014	Mon.	7:11	Other			x	Day	Dry	FTYRW	Conflicting statements

Total No.	Fatal	Injury	Property Damage	Angle	Left Turn	Head On	Ran Into Ditch	Rear End	Side Swipe	Collision w/ Sign	Overturned	Collision w/ Pole	Hit Tree	Run Off Road	Other
7	0	1	6	1	1	0	0	2	0	0	0	0	1	0	2
%	0	14	86	14	14	0	0	29	0	0	0	0	14	0	29
One Vehicle	Ped/Bike	Day	Night	Dry	Wet	Careless Driving	FTYRW	Improper Turn	DUI	Exceeded Speed Limit	Disregarded Traffic Signal	Failed to Maintain Vehicle	Improper Load	No Improper Driving	Other
0	0	4	3	6	1	2	2	0	0	1	0	0	0	1	1
0	0	57	43	86	14	29	29	0	0	14	0	0	0	14	14

Notice:

Please be aware that the records you requested contain information compiled and collected for the purpose of obtaining Federal-aid funding for safety improvement projects. Under Federal law (23 U.S.C. § 409), these records are not subject to discovery or admissible into evidence in any court proceeding and may not be considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in the records.

COLLISION DIAGRAM

LOCATION US BUS 41 (SR 45) AT 26TH STREET
 COUNTY MANATEE CITY PALMETTO
 DATE RANGE 01/01/2014 TO 12/31/2014 PREPARED BY HNTB



SHEET
1

SYMBOLS

	OVERTAKEN VEHICLE		HEAD-ON COLLISION		COLLISION W/ PED.		REAR-END COLLISION
	BACKING VEHICLE		ANGLE COLLISION		COLLISION W/ BIKE		SIDE SWIPE
	OUT OF CONTROL		RIGHT TURN COLLISION		LEFT TURN COLLISION		PERSONAL INJURY
					FATALITY		

CRASH SUMMARY

	PROPERTY DAMAGE ONLY	INJURY	FATAL	TOTAL
DAYTIME	4	0	0	4
NIGHTTIME	2	1	0	3
TOTAL	6	1	0	7



APPENDIX C

TRAFFIC COUNT DATA

HNTB Corporation, Inc.
 201 N Franklin St Ste 550
 Tampa, FL 33602
 (813) 402-4150

File Name : US 41 Business @ 26th St W
 Site Code : 00000000
 Start Date : 6/12/2012
 Page No : 1

Counter: TDC-8
 Counted By: Larry
 Weather: Sunny
 Day of the Week: Tuesday

Groups Printed- Car - Truck & Bus

Start Time	US 41 Business Southbound				Bayshore Rd Westbound				US 41 Business Northbound				26TH ST W Eastbound				Int. Total
	Left	Thru	Right	U Turn	Left	Thru	Right	U Turn	Left	Thru	Right	U Turn	Left	Thru	Right	U Turn	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
07:00 AM	4	148	2	0	1	4	4	0	3	122	2	0	3	0	13	0	306
07:15 AM	3	195	1	0	2	4	5	0	8	122	0	0	4	2	6	0	352
07:30 AM	7	204	2	0	0	3	8	0	5	140	5	0	5	1	12	0	392
07:45 AM	10	205	5	0	2	8	2	0	1	124	0	0	4	0	7	0	368
Total	24	752	10	0	5	19	19	0	17	508	7	0	16	3	38	0	1418
08:00 AM	4	164	4	0	0	4	5	0	4	107	3	0	2	0	14	0	311
08:15 AM	2	170	2	1	2	1	2	0	6	113	3	0	5	1	9	0	317
08:30 AM	2	172	1	0	2	1	3	0	5	101	3	0	7	2	20	0	319
08:45 AM	2	163	1	0	0	0	4	0	5	87	2	0	9	0	15	0	288
Total	10	669	8	1	4	6	14	0	20	408	11	0	23	3	58	0	1235
09:00 AM	3	120	1	0	1	2	1	0	2	93	2	0	7	0	6	0	238
09:15 AM	3	131	0	0	1	1	3	0	5	105	3	0	2	1	9	0	264
09:30 AM	2	148	0	2	1	0	2	0	7	111	5	0	9	0	12	0	299
09:45 AM	1	122	5	1	1	1	2	0	5	101	0	0	1	0	6	0	246
Total	9	521	6	3	4	4	8	0	19	410	10	0	19	1	33	0	1047
11:00 AM	2	120	1	0	2	0	2	0	5	95	4	0	4	0	11	0	246
11:15 AM	3	125	5	1	3	6	4	0	4	90	0	0	2	0	7	0	250
11:30 AM	3	124	2	0	0	0	4	0	6	123	7	0	3	1	6	0	279
11:45 AM	4	127	2	2	2	0	2	0	5	111	0	1	4	0	6	0	266
Total	12	496	10	3	7	6	12	0	20	419	11	1	13	1	30	0	1041
12:00 PM	2	135	1	0	1	0	1	0	10	99	4	0	4	3	11	0	271
12:15 PM	8	126	1	0	3	1	4	0	4	111	1	0	4	1	4	0	268
12:30 PM	4	149	2	1	2	4	7	0	9	116	6	0	2	0	8	0	310
12:45 PM	5	131	3	0	3	1	3	0	5	123	7	0	6	4	17	0	308
Total	19	541	7	1	9	6	15	0	28	449	18	0	16	8	40	0	1157
03:00 PM	7	124	1	0	0	7	6	0	5	159	4	0	2	0	11	0	326
03:15 PM	5	117	1	1	2	5	6	0	5	141	3	0	7	1	9	0	303
03:30 PM	2	122	1	0	1	1	5	0	6	136	5	0	3	1	8	0	291
03:45 PM	8	139	1	0	1	4	11	0	7	137	3	1	4	1	10	0	327
Total	22	502	4	1	4	17	28	0	23	573	15	1	16	3	38	0	1247
04:00 PM	5	157	0	0	0	2	5	0	7	160	3	0	2	0	6	0	347
04:15 PM	4	160	2	0	2	0	4	0	10	162	1	0	2	0	11	0	358
04:30 PM	8	175	3	0	1	0	9	0	3	173	3	0	2	0	13	0	390
04:45 PM	6	178	3	0	2	0	6	0	7	191	3	0	3	1	6	0	406
Total	23	670	8	0	5	2	24	0	27	686	10	0	9	1	36	0	1501
05:00 PM	9	184	3	0	0	1	4	0	13	230	3	0	8	0	4	0	459
05:15 PM	3	195	4	1	4	3	5	0	5	212	2	0	5	1	4	0	444
05:30 PM	8	195	2	0	1	3	3	0	6	204	5	0	3	0	11	0	441
05:45 PM	0	162	3	2	1	2	3	0	8	182	1	1	4	1	6	0	376
Total	20	736	12	3	6	9	15	0	32	828	11	1	20	2	25	0	1720
Grand Total	139	4887	65	12	44	69	135	0	186	4281	93	3	132	22	298	0	10366
Apprch %	2.7	95.8	1.3	0.2	17.7	27.8	54.4	0.0	4.1	93.8	2.0	0.1	29.2	4.9	65.9	0.0	
Total %	1.3	47.1	0.6	0.1	0.4	0.7	1.3	0.0	1.8	41.3	0.9	0.0	1.3	0.2	2.9	0.0	

HNTB Corporation, Inc.

201 N Franklin St Ste 550

Tampa, FL 33602

(813) 402-4150

File Name : US 41 Business @ 26th St W

Site Code : 00000000

Start Date : 6/12/2012

Page No : 2

Counter: TDC-8
 Counted By: Larry
 Weather: Sunny
 Day of the Week: Tuesday

Start Time	US 41 Business Southbound					Bayshore Rd Westbound					US 41 Business Northbound					26TH ST W Eastbound					Int. Total
	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	
Peak Hour From 07:00 AM to 05:45 PM - Peak 1 of 1																					
By Approach	07:15 AM					03:00 PM					04:45 PM					08:00 AM					
Volume	24	768	12	0	804	4	17	28	0	49	31	837	13	0	881	23	3	58	0	84	
Percent	3.0	95.5	1.5	0.0		8.2	34.7	57.1	0.0		3.5	95.0	1.5	0.0		27.4	3.6	69.0	0.0		
High Int.	07:45 AM					03:45 PM					05:00 PM					08:30 AM					
Volume	10	205	5	0	220	1	4	11	0	16	13	230	3	0	246	7	2	20	0	29	
Peak Factor	0.914					0.766					0.895					0.724					

HNTB Corporation, Inc.

201 N Franklin St Ste 550

Tampa, FL 33602

(813) 402-4150

File Name : US 41 Business @ 26th St W

Site Code : 00000000

Start Date : 6/12/2012

Page No : 1

Counter: TDC-8

Counted By: Larry

Weather: Sunny

Day of the Week: Tuesday

Groups Printed- Truck & Bus

Start Time	US 41 Business Southbound				Bayshore Rd Westbound				US 41 Business Northbound				26TH ST W Eastbound				Int. Total
	Left	Thru	Right	U Turn	Left	Thru	Right	U Turn	Left	Thru	Right	U Turn	Left	Thru	Right	U Turn	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	3
07:15 AM	0	1	0	0	0	1	0	0	1	1	0	0	1	0	1	0	6
07:30 AM	0	1	0	0	0	0	0	0	1	2	3	0	0	0	1	0	8
07:45 AM	0	1	0	0	0	1	0	0	0	3	0	0	0	0	0	0	5
Total	0	4	0	0	0	2	0	0	2	7	4	0	1	0	2	0	22
08:00 AM	0	1	1	0	0	0	0	0	0	4	1	0	0	0	1	0	8
08:15 AM	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	4
08:30 AM	0	3	0	0	0	0	0	0	1	2	3	0	0	0	0	0	9
08:45 AM	0	4	0	0	0	0	0	0	0	0	1	0	0	0	1	0	6
Total	0	8	1	0	0	0	0	0	2	7	5	0	2	0	2	0	27
09:00 AM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
09:15 AM	0	1	0	0	0	1	0	0	0	4	0	0	0	0	0	0	6
09:30 AM	0	1	0	0	0	0	0	0	0	4	3	0	0	0	0	0	8
09:45 AM	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	5
Total	0	6	0	0	0	1	0	0	0	11	4	0	0	0	0	0	22
11:00 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
11:15 AM	0	5	0	0	0	0	0	0	0	2	0	0	0	0	0	0	7
11:30 AM	1	4	0	0	0	0	1	0	0	4	3	0	0	0	0	0	13
11:45 AM	0	1	0	0	0	0	0	0	0	6	0	0	0	0	0	0	7
Total	1	11	0	0	0	0	1	0	0	12	4	0	0	0	0	0	29
12:00 PM	0	1	0	0	1	0	0	0	1	1	1	0	0	0	0	0	5
12:15 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
12:30 PM	0	2	1	0	0	0	0	0	0	1	2	0	0	0	0	0	6
12:45 PM	0	1	0	0	0	0	0	0	0	3	1	0	1	0	0	0	6
Total	0	6	1	0	1	0	0	0	1	6	4	0	1	0	0	0	20
03:00 PM	1	1	0	0	0	0	0	0	0	2	1	0	0	0	0	0	5
03:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
03:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	3
Total	1	2	0	0	0	1	0	0	0	3	4	0	0	0	1	0	12
04:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
04:30 PM	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	0	5
04:45 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
Total	0	4	0	0	0	0	0	0	0	4	4	0	0	0	0	0	12
05:00 PM	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	2	0	0	0	0	0	0	0	2	3	0	0	0	0	0	7
05:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	3	0	0	0	0	1	0	0	4	4	0	0	0	0	0	12
Grand Total	2	44	2	0	1	4	2	0	5	54	33	0	4	0	5	0	156
Apprch %	4.2	91.7	4.2	0.0	14.3	57.1	28.6	0.0	5.4	58.7	35.9	0.0	44.4	0.0	55.6	0.0	
Total %	1.3	28.2	1.3	0.0	0.6	2.6	1.3	0.0	3.2	34.6	21.2	0.0	2.6	0.0	3.2	0.0	

Site ID: SB US 41 Business												
Station Num: 021306115221/0000000000088												
Description: 7 Day Volume												
City: Palmetto												
County: Manatee												
Start Date/Time: 06-18-2012 00:00												
End Date/Time: 06-19-2012 00:00												
06-18-2012 Lanes (Southbound)												
End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	10	18	6	1	3	16	45	132	193	151	132	122
30	12	4	7	4	5	17	82	202	197	147	104	117
45	17	9	7	6	18	24	101	215	180	116	150	133
00	10	12	4	4	11	35	132	213	154	117	127	155
Hr Total	49	43	24	16	37	92	360	762	724	531	513	527
End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	155	145	143	131	134	197	175	103	81	61	41	18
30	163	121	118	142	159	199	155	108	81	52	35	23
45	155	130	120	144	153	177	130	87	66	55	33	11
00	131	146	128	131	177	164	126	82	60	46	30	27
Hr Total	604	542	509	548	623	737	586	380	288	214	139	79
24 Hour Total:	8927											
AM Peak Hour Begins:	07:15 AM Peak Volume: 823 AM Peak Hour Factor: 0.96											
PM Peak Hour Begins:	16:45 PM Peak Volume: 750 PM Peak Hour Factor: 0.94											

Site ID: NB US 41 Business
Station Num: 011306111221/000000000011
Description: 7 Day Volume
City: Palmetto
County: Manatee
Start Date/Time: 06-12-2012 00:00
End Date/Time: 06-14-2012 00:00

		Lanes (Northbound)																								
End Time	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
15	10	10	11	11	5	8	22	61	127	114	97	123	104	10	10	11	11	8	22	61	127	114	97	123	104	
30	9	5	4	4	7	9	33	78	130	122	113	115	94	9	5	4	4	7	9	33	78	130	122	113	115	94
45	15	6	5	5	7	13	35	84	150	109	123	101	136	6	5	5	7	13	35	84	150	109	123	101	136	
00	12	5	4	4	7	15	32	82	125	94	106	111	117	5	4	4	7	15	32	82	94	106	111	117		
Hr Total	46	26	24	24	26	45	122	305	532	439	439	450	451	46	26	24	24	45	122	305	532	439	439	450	451	
End Time	12	13	14	15	16	17	18	19	20	21	22	23		13	14	15	16	17	18	19	20	21	22	23		
15	113	113	120	120	168	170	246	174	115	84	73	30	31	113	113	120	120	168	170	174	115	84	73	30	31	
30	116	135	150	150	149	173	219	145	124	94	69	34	19	116	135	150	150	149	173	145	124	94	69	34	19	
45	131	133	139	139	147	179	215	116	106	86	67	33	21	131	133	139	139	147	179	116	106	86	67	33	21	
00	135	153	144	144	148	201	192	102	71	87	42	33	20	135	153	144	144	148	201	102	71	87	42	33	20	
Hr Total	495	534	553	553	612	723	872	537	416	351	251	130	91	495	534	553	553	612	723	537	416	351	251	130	91	
24 Hour Total:	8470																									
AM Peak Hour Begins:	07:00																									
PM Peak Hour Begins:	16:45																									
	AM Peak Volume: 532																									
	PM Peak Volume: 881																									
	AM Peak Hour Factor: 0.89																									
	PM Peak Hour Factor: 0.90																									

		Lanes (Northbound)																								
End Time	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
15	17	4	9	9	7	6	15	58	109	127	108	101	124	17	4	9	9	7	6	15	58	109	127	108	101	124
30	17	8	5	5	3	6	35	74	126	107	86	102	114	17	8	5	5	3	6	35	74	126	107	86	102	114
45	13	5	3	3	8	13	37	84	131	99	114	118	119	13	5	3	3	8	13	37	84	131	99	114	118	119
00	5	5	4	4	6	7	51	81	111	96	112	124	109	5	5	4	4	6	7	51	81	111	96	112	124	109
Hr Total	52	22	21	21	24	32	138	297	477	429	420	445	466	52	22	21	21	24	32	138	297	477	429	420	445	466
End Time	12	13	14	15	16	17	18	19	20	21	22	23		13	14	15	16	17	18	19	20	21	22	23		
15	135	113	152	152	150	160	248	175	121	109	105	45	24	135	113	152	152	150	160	175	121	109	105	45	24	
30	144	120	144	144	145	162	209	167	119	105	73	36	19	144	120	144	144	145	162	167	119	105	73	36	19	
45	149	148	137	137	163	203	214	141	99	82	76	40	15	149	148	137	137	163	203	141	99	82	76	40	15	
00	118	121	142	142	171	190	201	126	106	97	55	34	17	118	121	142	142	171	190	126	106	97	55	34	17	
Hr Total	546	502	575	575	629	715	872	609	445	393	309	155	75	546	502	575	575	629	715	609	445	393	309	155	75	
24 Hour Total:	8648																									
AM Peak Hour Begins:	07:15																									
PM Peak Hour Begins:	17:00																									
	AM Peak Volume: 495																									
	PM Peak Volume: 872																									
	AM Peak Hour Factor: 0.94																									
	PM Peak Hour Factor: 0.88																									

Site ID: WB Bayshore Rd		Station Num: 04130611711/0000000000072		Description: 7 Day Volume		City: Palmetto		County: Manatee		Start Date/Time: 06-12-2012 00:00		End Date/Time: 06-14-2012 00:00	
06-12-2012 Lane (Westbound)													
End Time	00	01	02	03	04	05	06	07	08	09	10	11	11
15	0	1	0	0	0	1	1	5	9	9	4	1	4
30	0	2	4	1	1	2	6	11	11	5	5	2	13
45	0	1	1	1	0	4	6	11	11	6	3	3	4
00	2	0	0	0	3	1	11	12	4	4	4	2	4
Hr Total	2	4	5	2	4	8	28	43	24	16	16	8	25
End Time	12	13	14	15	16	17	18	19	20	21	22	23	23
15	2	8	5	5	13	7	5	4	9	2	2	3	4
30	8	5	4	13	6	12	9	9	8	9	5	3	6
45	13	6	9	9	7	10	7	4	7	2	1	3	2
00	7	9	7	7	16	8	6	4	4	6	12	2	2
Hr Total	30	28	25	49	31	30	21	28	19	20	11	14	14
24 Hour Total:	475												
AM Peak Hour Begins:	07:00 AM Peak Volume: 43 AM Peak Hour Factor: 0.83												
PM Peak Hour Begins:	15:00 PM Peak Volume: 49 PM Peak Hour Factor: 0.77												
06-13-2012 Lane (Westbound)													
End Time	00	01	02	03	04	05	06	07	08	09	10	11	11
15	3	0	2	1	1	0	0	1	8	6	12	3	10
30	1	1	1	0	0	0	0	2	13	9	10	7	6
45	1	2	0	0	1	1	6	6	13	6	4	8	12
00	0	2	4	4	0	1	3	6	14	8	6	6	16
Hr Total	5	5	7	2	2	9	15	48	29	32	24	44	44
End Time	12	13	14	15	16	17	18	19	20	21	22	23	23
15	9	6	7	7	11	9	12	9	11	10	6	5	3
30	12	2	9	9	6	4	7	9	12	9	8	3	3
45	3	9	3	3	6	12	12	4	3	7	4	6	4
00	7	13	14	14	9	8	11	5	8	9	2	1	4
Hr Total	31	30	33	32	33	42	42	27	34	35	20	15	14
24 Hour Total:	568												
AM Peak Hour Begins:	07:00 AM Peak Volume: 48 AM Peak Hour Factor: 0.75												
PM Peak Hour Begins:	17:00 PM Peak Volume: 42 PM Peak Hour Factor: 0.75												

Site ID: WB Bayshore Rd		Station Num: 04130611711/000000000072		Description: 7 Day Volume		City: Palmetto		County: Manatee		Start Date/Time: 06-14-2012 00:00		End Date/Time: 06-16-2012 00:00	
Lane (Westbound)													
End Time	00	01	02	03	04	05	06	07	08	09	10	11	11
15	0	1	0	0	0	0	3	6	11	9	6	7	3
30	0	2	0	0	0	0	0	7	15	8	6	6	7
45	2	0	0	3	1	4	4	6	9	11	6	7	7
00	0	1	0	0	0	7	13	13	5	17	5	8	8
Hr Total	2	4	0	3	1	14	32	40	45	23	28	25	25
End Time	12	13	14	15	16	17	18	19	20	21	22	23	23
15	14	3	10	13	15	15	8	6	19	7	5	2	1
30	16	7	1	10	8	19	10	3	4	8	2	4	4
45	8	6	10	11	1	10	10	4	9	5	4	4	4
00	10	5	15	12	9	5	12	14	14	5	5	3	1
Hr Total	48	21	36	46	33	42	25	25	46	25	16	13	10
24 Hour Total:	578												
AM Peak Hour Begins:	06:45 AM Peak Volume: 48 AM Peak Hour Factor: 0.71												
PM Peak Hour Begins:	14:45 PM Peak Volume: 49 PM Peak Hour Factor: 0.64												
Lane (Westbound)													
End Time	00	01	02	03	04	05	06	07	08	09	10	11	11
15	3	0	0	0	2	2	4	6	9	8	2	11	2
30	8	2	1	0	0	1	1	13	10	7	6	3	3
45	0	1	1	0	3	3	3	7	8	6	1	6	3
00	0	1	2	1	0	2	2	10	8	12	2	4	12
Hr Total	11	4	4	1	5	10	10	36	35	33	11	24	20
End Time	12	13	14	15	16	17	18	19	20	21	22	23	23
15	9	13	3	3	8	8	9	14	9	5	5	0	0
30	11	9	11	2	8	7	7	8	9	16	8	4	1
45	10	6	8	8	9	8	5	17	10	12	5	1	2
00	3	7	11	10	6	10	10	12	6	5	6	0	1
Hr Total	33	35	33	24	30	31	31	51	34	38	24	5	4
24 Hour Total:	536												
AM Peak Hour Begins:	06:15 AM Peak Volume: 39 AM Peak Hour Factor: 0.75												
PM Peak Hour Begins:	18:00 PM Peak Volume: 51 PM Peak Hour Factor: 0.75												



APPENDIX D

COST ESTIMATE

MANATEE COUNTY - CANDIDATE PROJECT ESTIMATES

LOCATION: US BUS 41 AT 26TH STREET

SECTION/MILEPOST: 13030 / 1.291

CITY/COUNTY MANATEE COUNTY

SCOPE: Construct dual directional median opening

Bid Item	Description	Unit	Quantity	Unit Cost	Total Cost
101-1	Mobilization	LS	1	5%	See Below
102-1	Maintenance of Traffic	LS	1	5%	See Below
104-10-3	Sediment Barrier	LF	1700	\$1.15	\$1,955.00
104-15	Soil Tracking Prevention Device	EA	2	\$2,907.12	\$5,814.24
110-1-1	Clearing & Grubbing	AC	0.55	\$12,219.27	\$6,720.60
120-1	Regular Excavation	CY	440	\$4.77	\$2,098.80
160-4	Type B Stabilization	SY	1005	\$3.18	\$3,195.90
162-1-11	Prepared Soil Layer, Finish Soil Layer, 6"	SY	2520	\$1.07	\$2,696.40
285-710	Optional Base, Base Group 10	SY	1005	\$14.37	\$14,441.85
334-1-13	Superpave Asphaltic Concrete, Traffic C	TN	165.8	\$91.70	\$15,206.15
337-7-22	Asphalt Concrete Friction Course, Inc, Bit	TN	40.2	\$132.10	\$5,310.42
520-1-7	Concrete Curb and Gutter, Type E	LF	240	\$13.31	\$3,194.40
520-1-10	Concrete Curb and Gutter, Type F	LF	500	\$17.50	\$8,750.00
520-5-11	Concrete Traffic Separator	LF	80	\$32.02	\$2,561.60
570-1-2	Performance Turf, Sod	SY	2520	\$2.29	\$5,770.80
650-1-60	Traffic Signal, Removal	EA	8	\$61.85	\$494.80
641-2-60	Concrete Pole Removal	EA	2	\$1,099.83	\$2,199.66
634-46-00	Span Wire Assembly, Removal	EA	1	\$693.97	\$693.97
700-1-60	Single Post Sign, Remove	AS	2	\$15.36	\$30.72
700-1-11	Single Post Sign, F&I, Less than 12 SF	EA	6	\$313.18	\$1,879.08
700-2-60	Multi Post Sign, Remove	AS	2	\$561.34	\$1,122.68
705-11-3	Delineator, Flex High Visibility Med	EA	6	\$182.07	\$1,092.42
706-3	Retro-Reflective Pavement Markers	EA	30	\$3.33	\$99.90
711-12-101	Thermoplastic, Std, White, Solid 6"	GM	0.12	\$2,800.00	\$336.00
711-11-102	Thermoplastic, Std, White, Solid 8"	GM	0.13	\$6,393.25	\$831.12
711-11-124	Thermoplastic, Std, White, Solid 18"	LF	130	\$3.00	\$390.00
711-11-170	Thermoplastic, Std, White, Arrow	EA	3	\$60.03	\$180.09
711-12-221	Thermoplastic, Std, Yellow, Solid, 6"	LF	1140	\$1.15	\$1,311.00
999-25	Initial Contingency (Do Not Bid)	LS	1	5%	See Below
	CONTINGENCY (Project Unknowns)		10%	10%	See Below

	Sub-Total	\$88,377.60
(101-1) MOB (Mobilization)	5%	\$4,418.88
	Sub-Total	\$92,796.48
(101-1) MOT (Maintenance of Traffic)	5%	\$4,639.82
	Sub-Total	\$97,436.31
PU (Project Unknowns)	10%	\$9,279.65
	Sub Total	\$102,076.13
(999-25) Initial Contingency (Do Not Bid)	5%	\$5,103.81
Project Total		\$107,179.94



APPENDIX E

BENEFIT/COST ANALYSIS

Benefit-Cost Analysis

District: **One** County: **13 - Manatee** Date Prepared: **05/05/16**

Location: **U.S. Bus 41 (S.R. 45) at 26th Street/Bayshore Road**

Section : **13030000** Beg. Milepost : **1.291** End Milepost :
Rdway Type: **4 - 5 Lanes Urban Divided**

Control Element: **Other (describe in box below)**

Construct dual directional median opening

ANNUAL COST OF IMPROVEMENTS

Type	Cost	Life	Capital		Total
			Service	Recovery	
			Factor		
ROW		20	0.0736	\$	-
P.E.C.E.I.	\$ 35,369.00	20	0.0736	\$	2,603.16
Structure		20	0.0736	\$	-
Roadway	\$ 107,179.94	20	0.0736	\$	7,888.44
Drainage		20	0.0736	\$	-
Signal		20	0.0736	\$	-
Other		20	0.0736	\$	-
Sub-Total	\$ 142,548.94			\$	10,491.60
				Annual Cost =	\$ 10,491.60

Total number of crashes =	21	Primary crash reduction factor (%):	100
# of correctable crashes, PC =	8		
# of years of crash data, YD =	5		
PC/YD =	1.60	Additional crash reduction factor:	
Crash reduction factor, CRF =	100.00%		
CRF x (PC/YD) =	1.60		
Cost per crash, CPC =	\$152,103.00	Additional crash reduction factor:	
Benefit =	\$243,365		

BENEFIT/COST RATIO

$$\frac{\text{Benefit}}{\text{Cost}} = \frac{\$243,364.80}{\$10,491.60} = \mathbf{23.20}$$

Year	CRF x (PC/YD)	Cost per Crash	(P/A,I,y) Factor	Present Value
1	1.6	\$152,103.00	0.96	\$234,004.99
2	1.6	\$152,103.00	0.92	\$225,005.36
3	1.6	\$152,103.00	0.89	\$216,351.31
4	1.6	\$152,103.00	0.85	\$208,028.23
5	1.6	\$152,103.00	0.82	\$200,028.83
6	1.6	\$152,103.00	0.79	\$192,333.64
7	1.6	\$152,103.00	0.76	\$184,937.78
8	1.6	\$152,103.00	0.73	\$177,824.23
9	1.6	\$152,103.00	0.70	\$170,985.67
10	1.6	\$152,103.00	0.68	\$164,407.52
11	1.6	\$152,103.00	0.65	\$158,084.91
12	1.6	\$152,103.00	0.62	\$152,005.65
13	1.6	\$152,103.00	0.60	\$146,157.60
14	1.6	\$152,103.00	0.58	\$140,538.30
15	1.6	\$152,103.00	0.56	\$135,130.74
16	1.6	\$152,103.00	0.53	\$129,934.90
17	1.6	\$152,103.00	0.51	\$124,936.19
18	1.6	\$152,103.00	0.49	\$120,132.17
19	1.6	\$152,103.00	0.47	\$115,510.67
20	1.6	\$152,103.00	0.46	\$111,069.26
21			0.44	
22			0.42	
23			0.41	
24			0.39	
25			0.38	

Total Present Value

Benefit Benefit

\$3,307,407.94

Cost Cost

\$142,548.94

Net Present Value

\$3,164,859.00