

Congestion Management/ Crash Mitigation Process

A Feasibility Study on Implementing HOV,
Reversible Lanes and Time-of-Day Parking Strategies



Arterial Roadway HOV Lanes



Arterial Roadway Reversible Lanes



Arterial Roadway Time-of-Day Parking

601 East Kennedy Boulevard, 18th Floor
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**Congestion Management / Crash Mitigation Process:
A Feasibility Study on Implementing HOV, Reversible Lanes and Time-of-Day
Parking Strategies**

Technical Memorandum II

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Section 1. Introduction to Study

The Hillsborough County MPO adopted its *2035 Long Range Transportation Plan* in December 2009, which includes all of the multimodal projects that are necessary to meet projected needs to year 2035. The Plan provides estimated costs for these projects, and illustrates that the anticipated funding revenues will not keep pace with the projected transportation needs. Congestion will be a fact of life in Hillsborough County for many years to come.

The Hillsborough County MPO is the transportation planning agency responsible for teaming with partner agencies such as the Florida Department of Transportation, Hillsborough County and the local municipalities to identify solutions to assist our community with addressing congestion and planning for future transportation needs.

Faced with the challenge of looking at all possible solutions to congestion management, the Hillsborough County MPO was interested in identifying communities that have successfully implemented management and operational concepts on arterial roadways to optimize the use of existing infrastructure.

The Hillsborough County MPO reached out to departments of transportation, and county and city transportation and public works departments across the Country to collect information on successful implementation of three arterial operational strategies:

- High occupancy vehicle (HOV) lane restrictions
- Reversible lane applications
- Time-of-day parking restrictions

Phase I of this study, referred to as the *Congestion Management/Crash Mitigation Process, A Feasibility Study on Implementing HOV, Reversible Lanes or Time-of-Day Parking Strategies*, was to investigate applications of these strategies on functioning arterials in other metropolitan areas and to summarize the major lessons learned based on phone interviews of staff from the various agencies.

A summary of the interviews conducted through the Country, the operational characteristics for each corridor discussed, and the success of each strategy as based on agency observations was presented by the MPO at a workshop on April 30, 2012 to the Florida Department of Transportation (FDOT), District 7; the City of Tampa; and Hillsborough County. The purpose of the workshop was to foster coordination on

how these strategies might be applied in Hillsborough County. The *Phase 1 Final Executive Summary* highlights the major findings of the phone interviews with nine (9) agencies across the County and a summary of the questions asked during the interviews is provided in the Appendix.

A link to the website for the Hillsborough County MPO where the *Phase 1 Executive Summary* and the *Phase II Technical Memorandum* can be located is as follows:
<http://www.hillsboroughmpo.org/infobar/link/pubmaps/>.

Moving forward with Phase II, the MPO used the input from FDOT District 7, the City of Tampa, and Hillsborough County to identify specific Hillsborough County arterial corridors that are currently experiencing or are projected to experience significant congestion levels and therefore could be candidates for the three strategies mentioned above. The MPO also coordinated the suggested corridors with the recommendations from the Crash Management/Crash Mitigation Process and the 2035 Long-Range Transportation Plan. The MPO's engineering consultant conducted field examinations of the physical attributes of each corridor recommended for review and compared the characteristics of the corridor to the operational information collected from Phase 1.

A workshop was held September 24, 2012 to present to the FDOT District 7, the City of Tampa and Hillsborough County the findings for each arterial studied and to further define the arterials that may be good candidates for additional study.

Section 2. Phase II Study Process

Phase II of the Congestion Management /Crash Mitigation Process, A Feasibility Study focused on reviewing arterial corridors in Hillsborough County for similar operational characteristics as detailed from Phase 1 and providing direction from an engineering perspective if the various corridors were viable candidates for additional study.

2.1 Primary Objectives and Corridors Studied

The primary objective of the Phase II effort was to determine if corridors were feasible for application of congestion management strategies in the short or long-term planning process based on the findings of Phase I. Sixteen final arterial corridors were reviewed during Phase II. Special emphasis was placed on the lessons learned during Phase 1 as comparison guidelines and emphasis on the ability to utilize existing infrastructure wherever possible to accomplish the strategies. The list of corridors reviewed is provided and includes a number that matches to the locations illustrated on the **Exhibit 1–Arterial Corridors Reviewed During Phase II.**

Arterial Corridors Reviewed for HOV Strategies during Phase II of Study

- (1) Fowler Avenue from I-275 to I-75
- (2) Fletcher Avenue from I-275 to I-75
- (4) Hillsborough Avenue from I-275 to I-4
- (5) Bruce B. Downs Boulevard from I-75 to Busch Boulevard

Arterial Corridors Reviewed for Reversible Lanes Strategies during Phase II of Study

- (3) Bruce B. Downs Boulevard from County Line Road to Busch Boulevard
- (8) Bloomingdale Avenue from US 301 to Bell Shoals Road
- (10) Dale Mabry Highway from Hillsborough to Columbus Drive
- (11) Boyette Road from I-75 to Bell Shoals Road
- (14) Gunn Highway from Linebaugh Avenue to Casey Road
- (15) Sheldon Road from Hillsborough Avenue to Citrus Park Drive

Arterial Corridors Reviewed for Time-of-Day Parking Strategies during Phase II of Study

- (16) Sligh Avenue from North Boulevard to Armenia Avenue
- (17) Florida Avenue from Henderson Avenue to Osborne Avenue
- (18) Highland Avenue/Tampa St. from Henderson Avenue to Osborne Avenue
- (19) Tampa Street from Columbus Drive to Henderson Avenue
- (20) Channelside Drive from Kennedy Boulevard to Whiting Street
- (23) West Bay-to-Bay Boulevard from Bayshore Boulevard to Manhattan Avenue



Exhibit 1:
Arterial Corridors Reviewed during Phase II of Study
North Hillsborough County

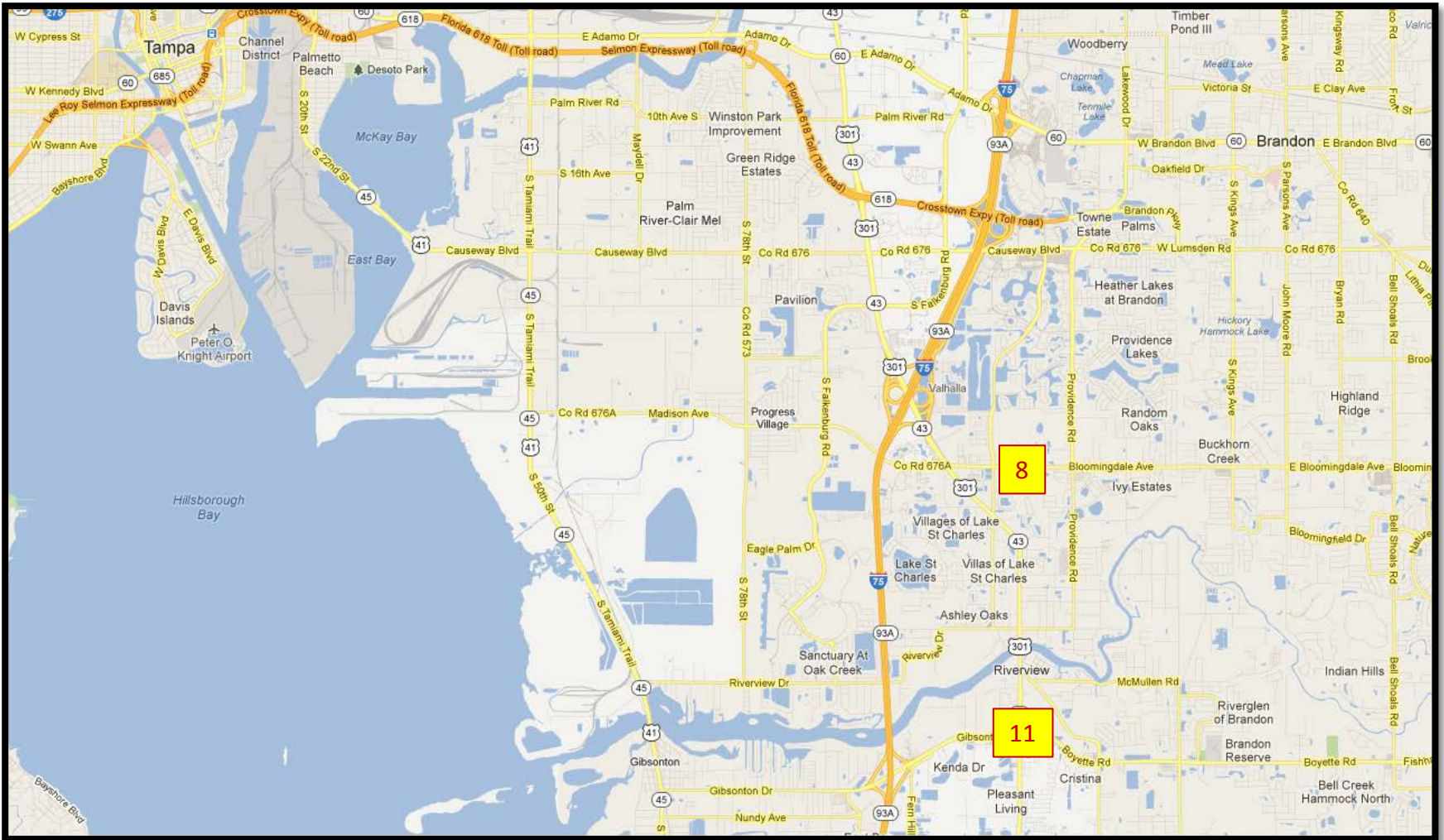


Exhibit 1 Continued:
Arterial Corridors Reviewed during Phase II of Study
South Hillsborough County

2.2 Stakeholder Participation - Workshop Summary

The key stakeholders for this project included the FDOT District 7, the City of Tampa and Hillsborough County. The April 30, 2012 workshop included a separate presentation to each of these agencies summarizing the findings of the national case study search on the successful implementation of congestion management strategies on arterial corridors. The operational characteristics and the success of each strategy as based on agency observation was presented to foster a conversation on how these strategies might be applied in Hillsborough County.



The September 24, 2012 workshop focused on the local assessment as to how these HOV, reversible lanes and time-of-day parking strategies might be applied on arterial corridors in Hillsborough County.



2.2.1 Arterial Corridors Reviewed for HOV Strategies

As part of the Phase II workshop, the MPO presented information on the corridors that the MPO had identified as potential arterial corridors for HOV implementation strategies based on operational characteristics. The corridors discussed at the workshop are listed below and the information presented for each corridor follows within this section.

- ✓ Fowler Avenue from I-275 to I-75
- ✓ Fletcher Avenue from I-275 to I-75
- ✓ Bruce B. Downs Boulevard from County Line to Busch Boulevard
- ✓ East Hillsborough Avenue from I-275 to I-4

Each corridor considered is shown with this information:

- ✓ Aerial view of corridor
- ✓ A table illustrating a 24-hour peak period traffic count within corridor
- ✓ Operational characteristics for corridor

Each presentation included a variety of questions from the three agencies. Discussion questions addressed on HOV included the following: 1) What type of criteria needs are warranted for HOV? 2) Bruce B Downs is very different on weekdays versus weekends for traffic patterns for HOV, how do you propose to handle? and 3) How do you handle cross streets with HOV? Each question was equally considered as a valuable piece of the research to lead to the final selection of a corridor for further study by the MPO.



Fowler Ave.
I-275 to I-75
(looking east)

Gillette Ave

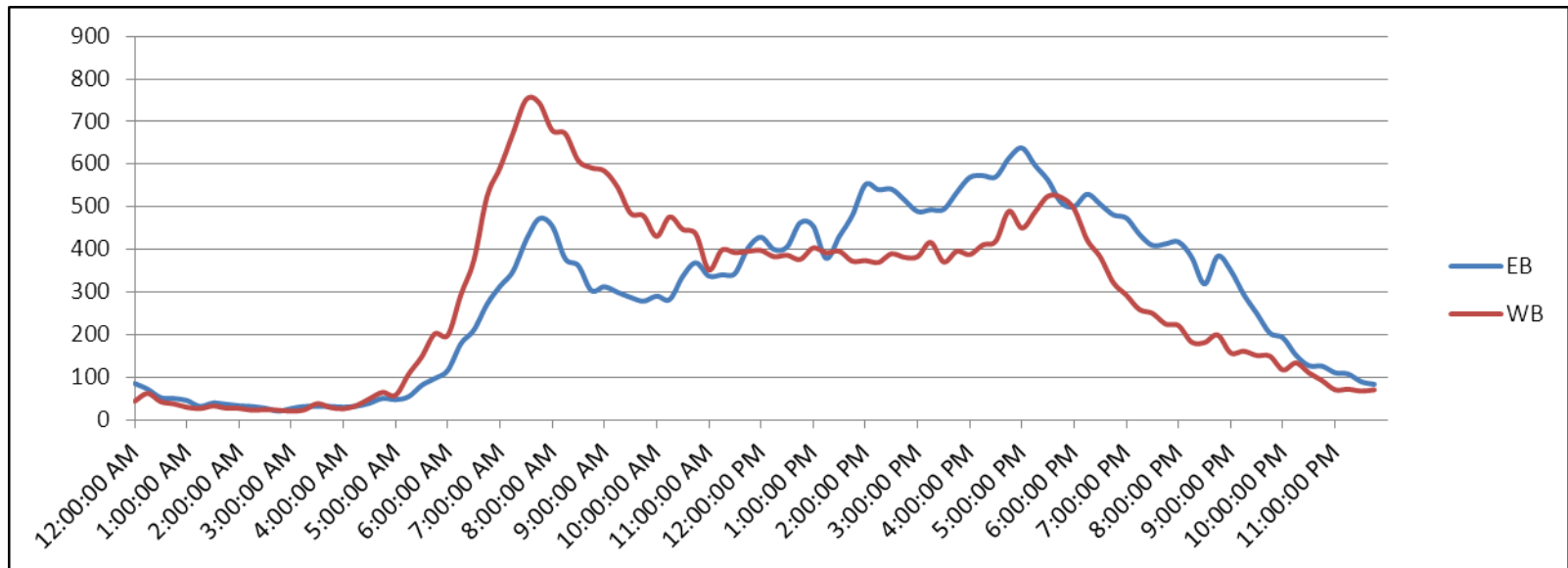
Site ID: FD_100118

Number of Lanes (Directional):

3

County: Hillsborough

Description: SR 582/FOWLER AVE, AT HILLSBOROUGH RIVER



COMMENTS:

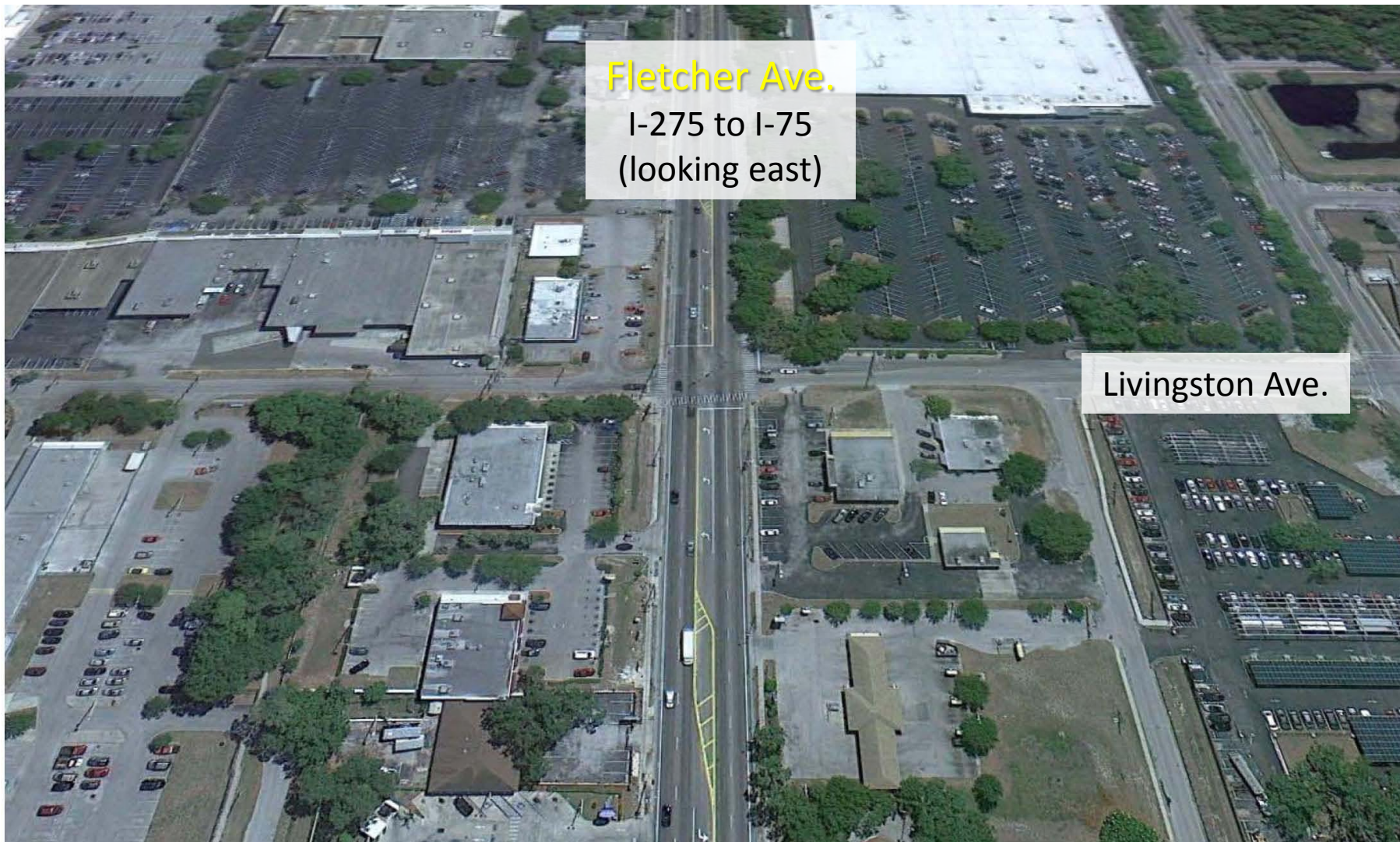
- 6 Lanes Divided with Limited Driveways and Signals
- Excellent Commuter Route

Fowler Avenue, West of I-75

Comments

- 2011 AADT = 55,500
- 2035 AADT = 77,800
- Level of Service, year 2035 = F
- No Capacity Improvements within 5 years
- **Good Candidate for HOV due to University/Medical Services Area**

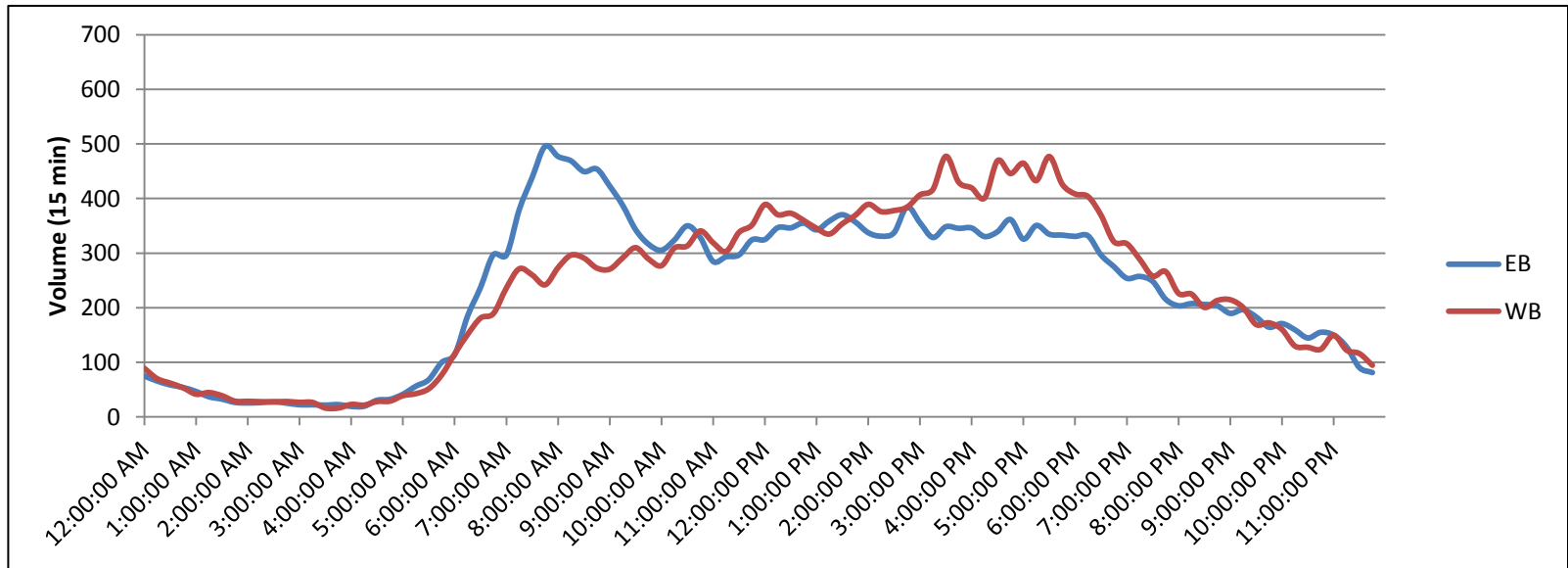




Fletcher Ave.
I-275 to I-75
(looking east)

Livingston Ave.

Site ID:	HI_220925	Number of Lanes (Directional):	2
County:	Hillsborough		
Description:	Fletcher Av, E. of Bruce B Downs		



COMMENTS:

- “Complete Streets” Project Underway, West End
- High Impact for the University/Medical Services Area



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HOV OPPORTUNITY

EXHIBIT 2a

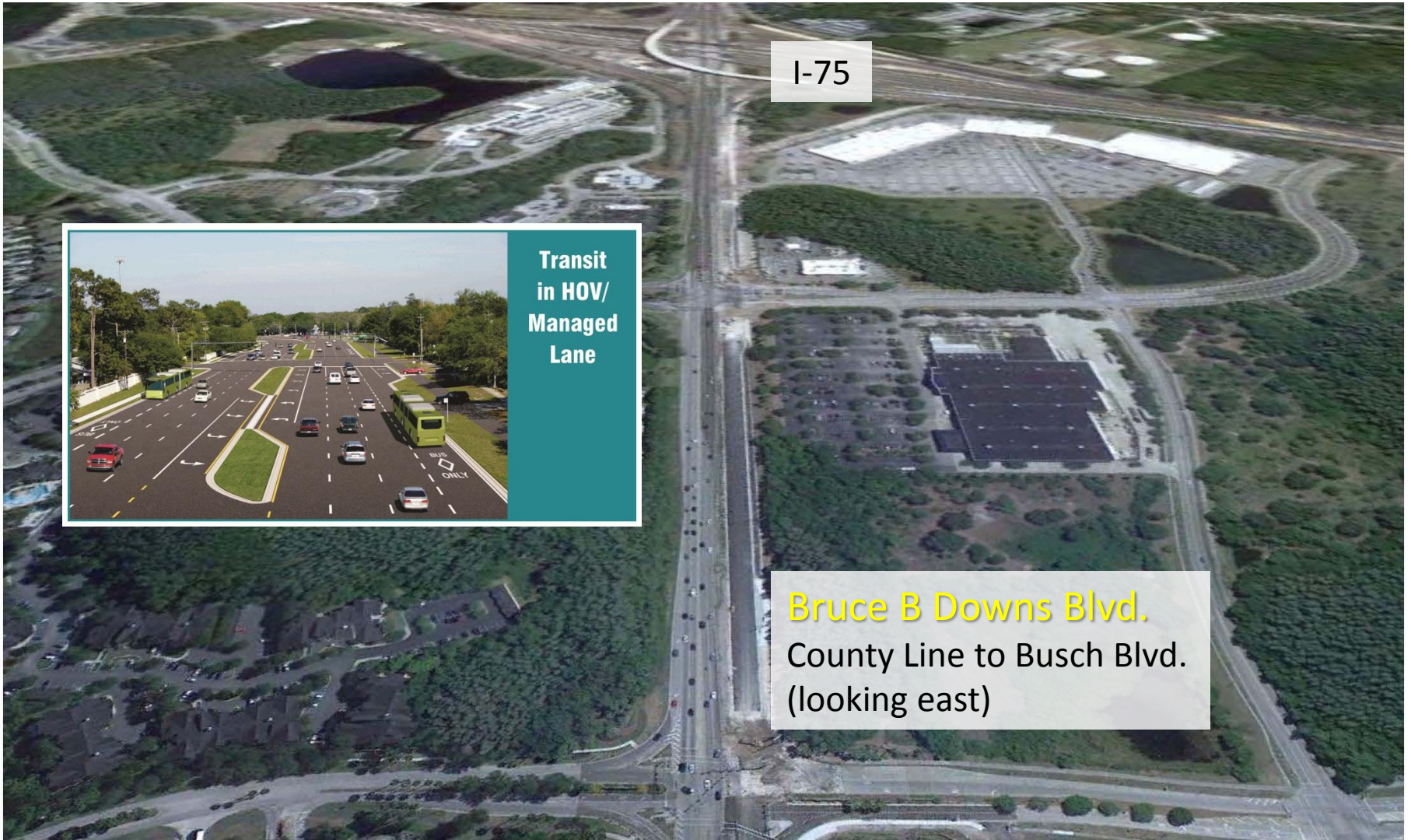
SEPTEMBER 24, 2012

Fletcher Avenue, East, I-275 to I-75

Comments

- 2011 AADT = 40,000
- 2035 AADT = 60,000
- Level of Service, year 2035 = F
- Current PD&E Underway
- **No Conclusions at this time**





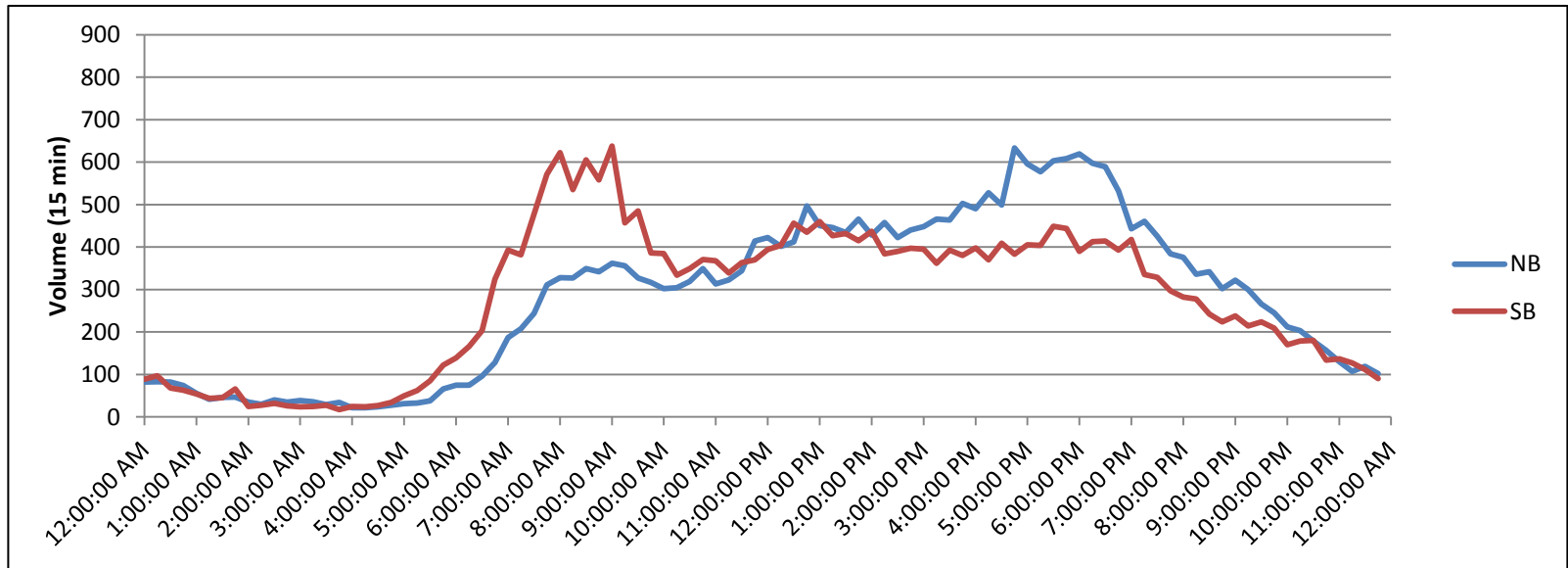
I-75



Transit
in HOV/
Managed
Lane

Bruce B Downs Blvd.
County Line to Busch Blvd.
(looking east)

Site ID:	FD_105729	Number of Lanes (Directional):	4 (Year 2013)
County:	Hillsborough		
Description:	BRUCE B DOWNS BLVD, SOUTH OF I-75 (HPMS)		



COMMENTS:

- Current Construction to Eight (8) Lane Divided
- Level of Service a Concern in Near Future (Rail Candidate)



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 HOV OPPORTUNITY

EXHIBIT 3a

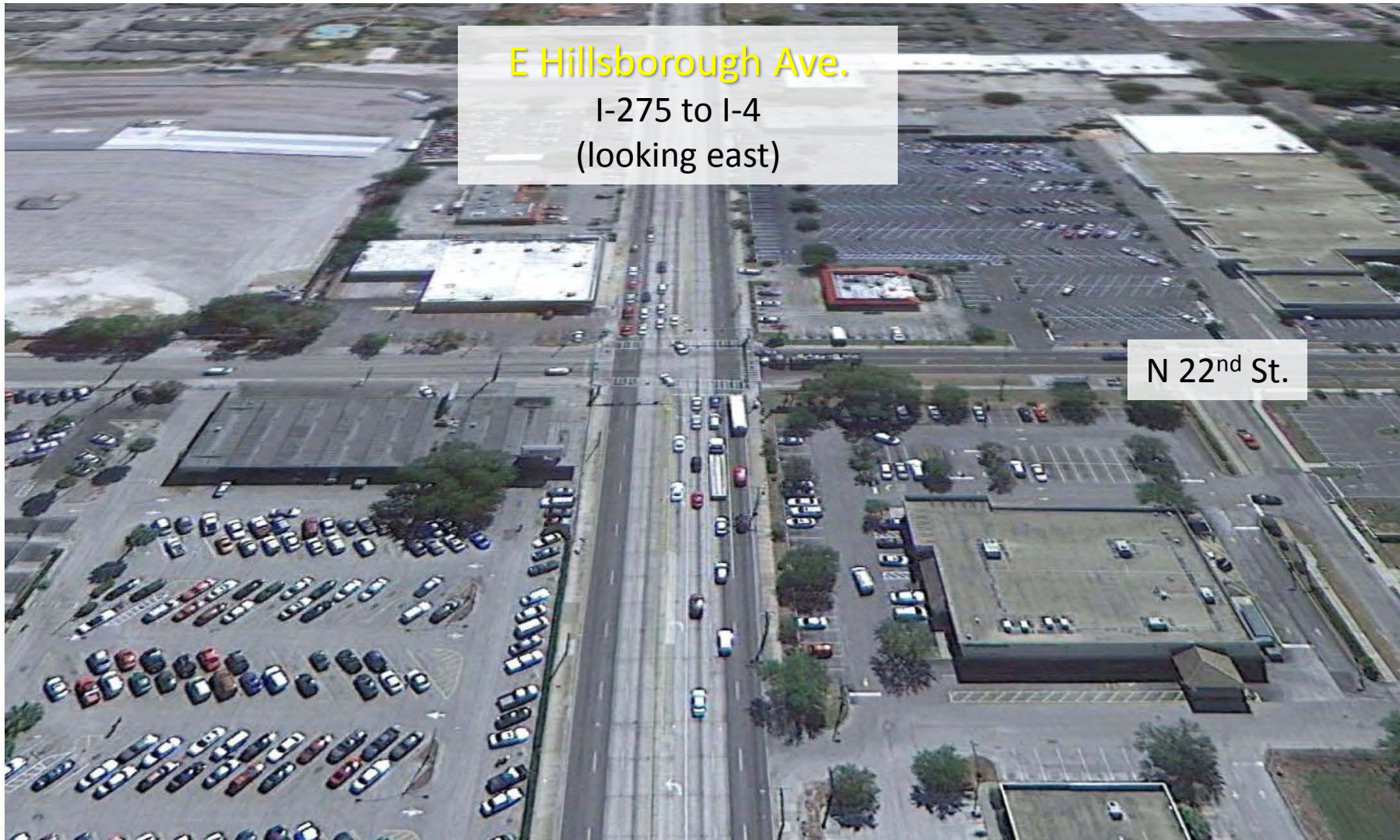
SEPTEMBER 24, 2012

Bruce B Downs Blvd., South of I-75

Comments

- 2011 AADT = 44,000
- 2035 AADT = 92,000
- Level of Service, year 2035 = F
- Major Capacity Improvements within 5 years
- **Good Candidate for HOV due to Potential to University/Medical Facilities and Laneage**



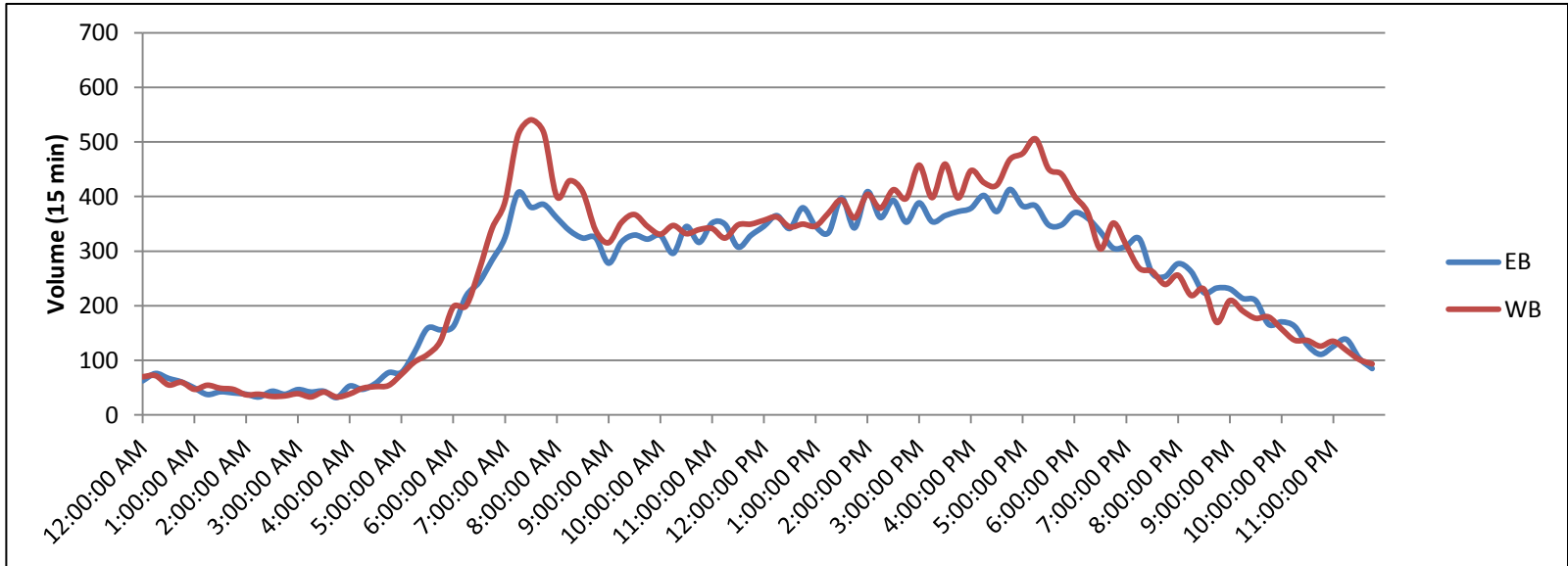


E Hillsborough Ave.

I-275 to I-4
(looking east)

N 22nd St.

Site ID:	FD_105167	Number of Lanes (Directional):	3
County:	Hillsborough		
Description:	SR 600/US 92/US 41/E HILLSBOROUGH AVE, EAST OF SR 585/22ND ST		



COMMENTS:

- Good Lane Usage to the Interstate 275
- Access is Extensive to Businesses, Concern



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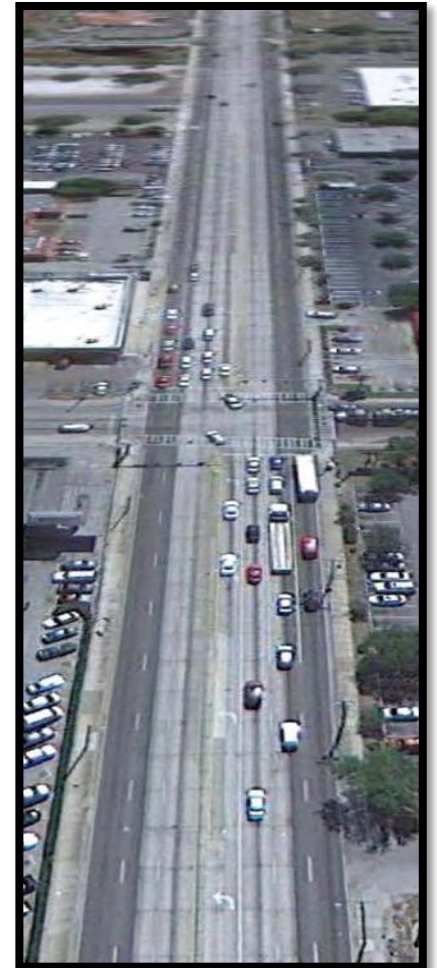
EXHIBIT 4a

SEPTEMBER 24, 2012

E Hillsborough Avenue, I-275 to N. 50th Street

Comments

- 2011 AADT = 43,500
- 2035 AADT = 75,300
- Level of Service, year 2035 = F
- No Capacity Improvements within 5 years
- **Good Candidate for HOV due to Strong Peak Directions to/from I-275 and Laneage**



2.2.2. Arterial Corridors Reviewed for Reversible Lanes Strategies

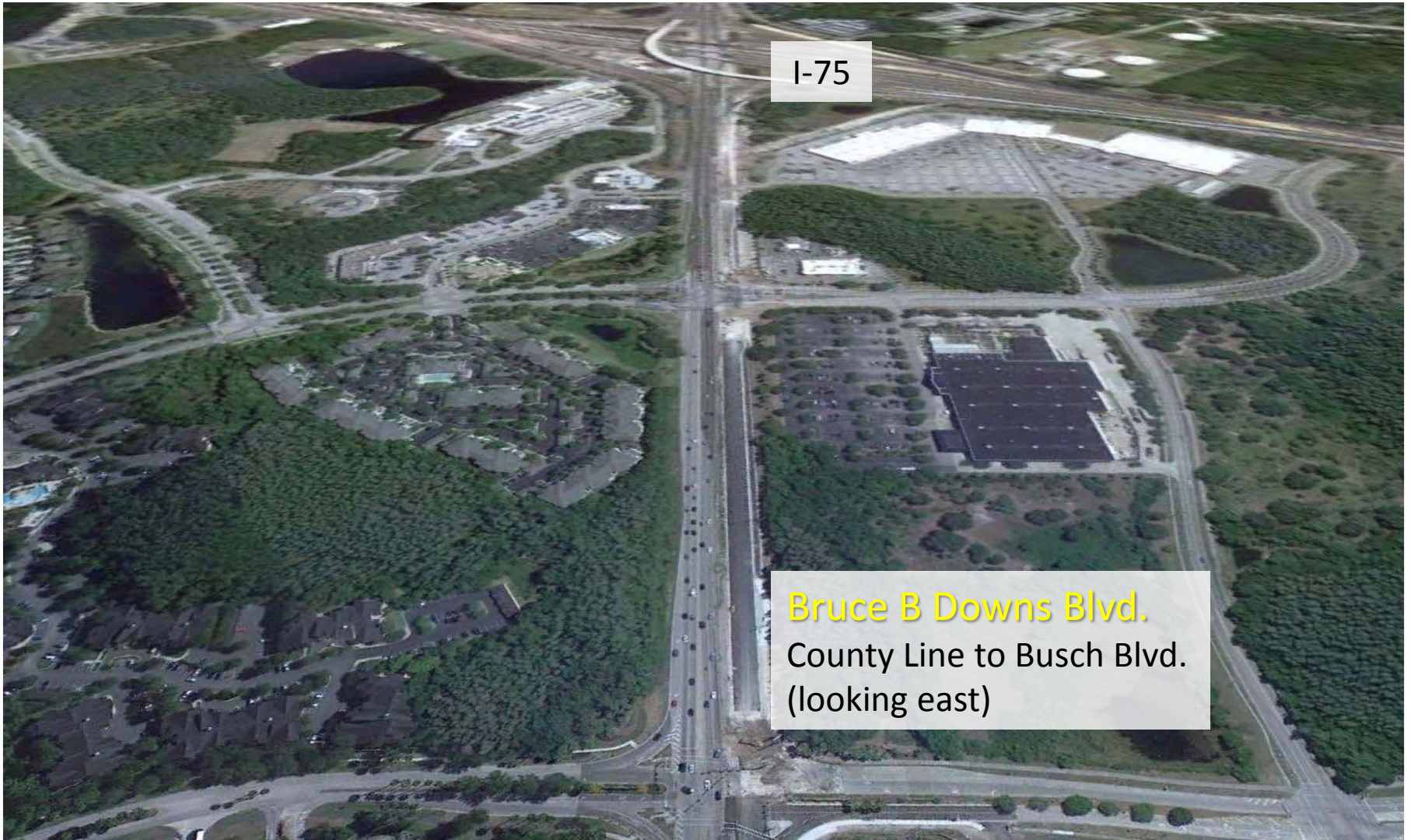
As part of the Phase II workshop, the MPO presented information on corridors that might be considered for reversible lanes strategies due to current operational characteristics. The corridors discussed at the workshop are listed below and the information presented for each corridor follows within this section.

- ✓ Bruce B. Downs Boulevard from County Line to Busch Boulevard (also reviewed for HOV implementation as listed in previous section)
- ✓ Bloomingdale Avenue from U.S. 301 to Bell Shoals Road
- ✓ Dale Mabry Highway from I-275 to Hillsborough Avenue
- ✓ Boyette Road from U.S. 301 to Bell Shoals Road
- ✓ Gunn Highway from Linebaugh Avenue to Casey Road
- ✓ Sheldon Road from Hillsborough Avenue to Citrus Park Drive

Each corridor considered is shown with this information:

- ✓ Aerial view of corridor
- ✓ A table illustrating a 24-hour peak period traffic count within corridor
- ✓ Operational characteristics for corridor

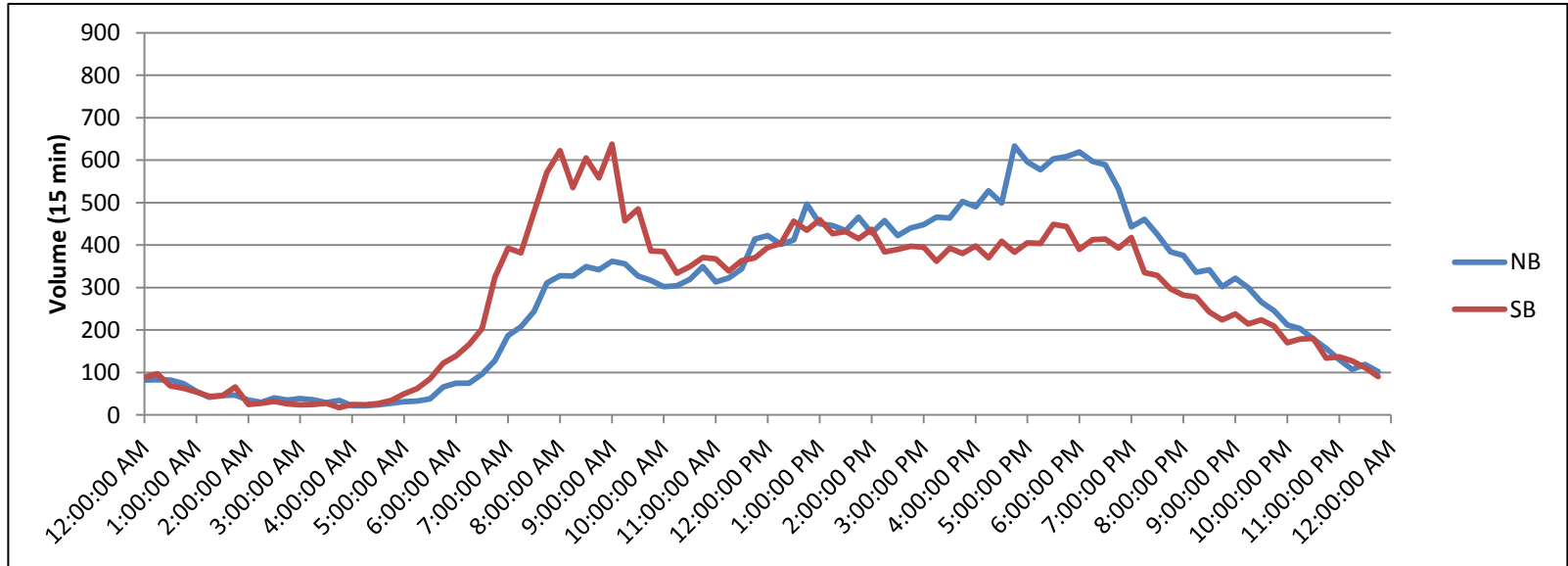
Each presentation included a variety of questions from the three agencies. Discussion questions addressed regarding the reversible lanes discussion included the following: 1. How are median separators handled for reversible lanes? 2. How do you handle left turn lanes with reversible lanes? 3. How do you enforce driving rules with reversible lanes? Each question was equally considered as a valuable piece of the research to lead to the final selection of a corridor for further study by the MPO.



I-75

Bruce B Downs Blvd.
County Line to Busch Blvd.
(looking east)

Site ID: FD_105729 Number of Lanes (Directional): 4 (Year 2013)
 County: Hillsborough
 Description: BRUCE B DOWNS BLVD, SOUTH OF I-75 (HPMS)



COMMENTS:

- Has Extreme Directional Peaks
- Very Wide Median Not Applicable for Reverse Opportunities



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REVERSIBLE LANE OPPORTUNITY

EXHIBIT 5a

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Bruce B Downs Blvd, South of I-75

Comments

- 2011 AADT = 44,000
- 2035 AADT = 92,000
- Level of Service, year 2035 = F
- Major Capacity Improvements within 5 years
- **Not a Good Candidate, Median Construction Hindrance**





Bloomington Ave.
US 301 to Bell Shoals Rd.
(looking east)

US 301



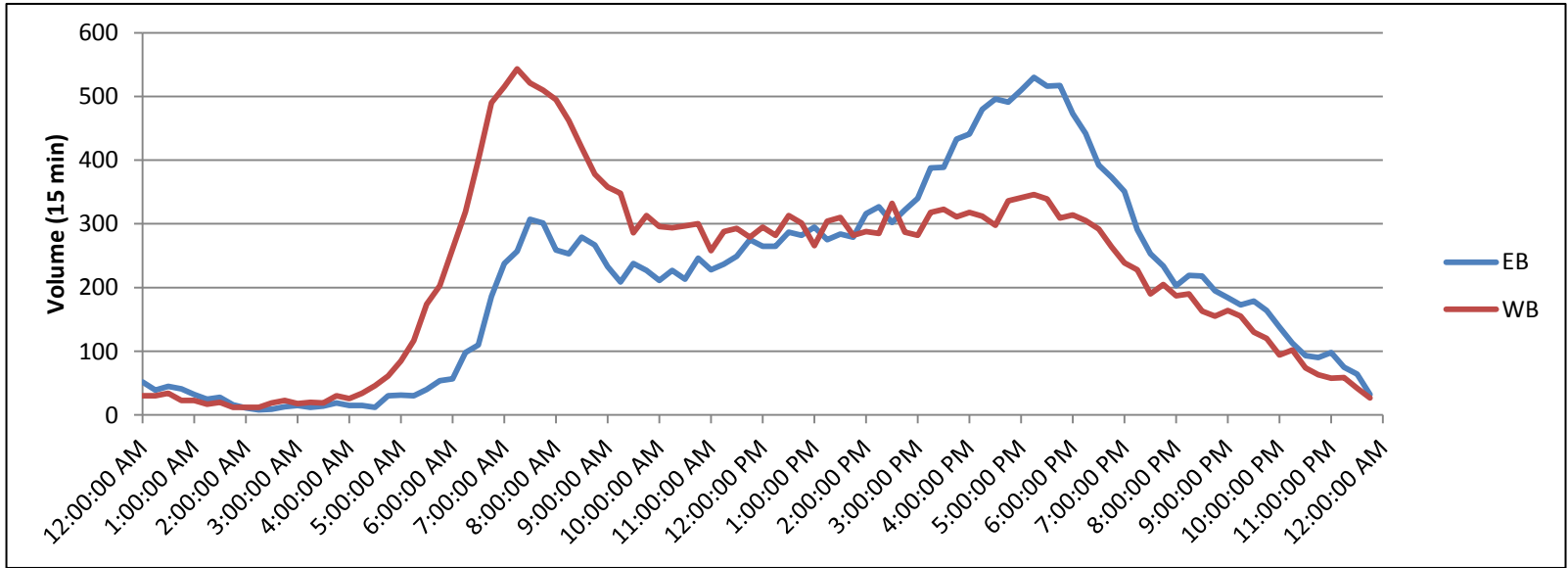
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REVERSIBLE LANE OPPORTUNITY

EXHIBIT 6

SEPTEMBER 24, 2012

Site ID: HI_220424 Number of Lanes (Directional): 3
 County: Hillsborough
 Description: BLOOMINGDALE AVE, W of OLD TWIG LN



COMMENTS:

- Some Sections Contain Raised Median, Majority Flush
- Extreme Peak Direction Flows to US 301
- Lithia Pinecrest?

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EXHIBIT 6a

REVERSIBLE LANE OPPORTUNITY

SEPTEMBER 24, 2012



Bloomingtondale Avenue, East of US 301 to Bell Shoals Rd.

Comments

- 2011 AADT = 40,000
- 2035 AADT = 57,000
- Level of Service, year 2035 = F
- No Capacity Improvements within 5 years
- **Good Candidate for Reversible Lanes due to Peak Flows**



Bloomington Ave.
US 301 to Bell Shoals Rd.
(looking east)



Christy Ln.

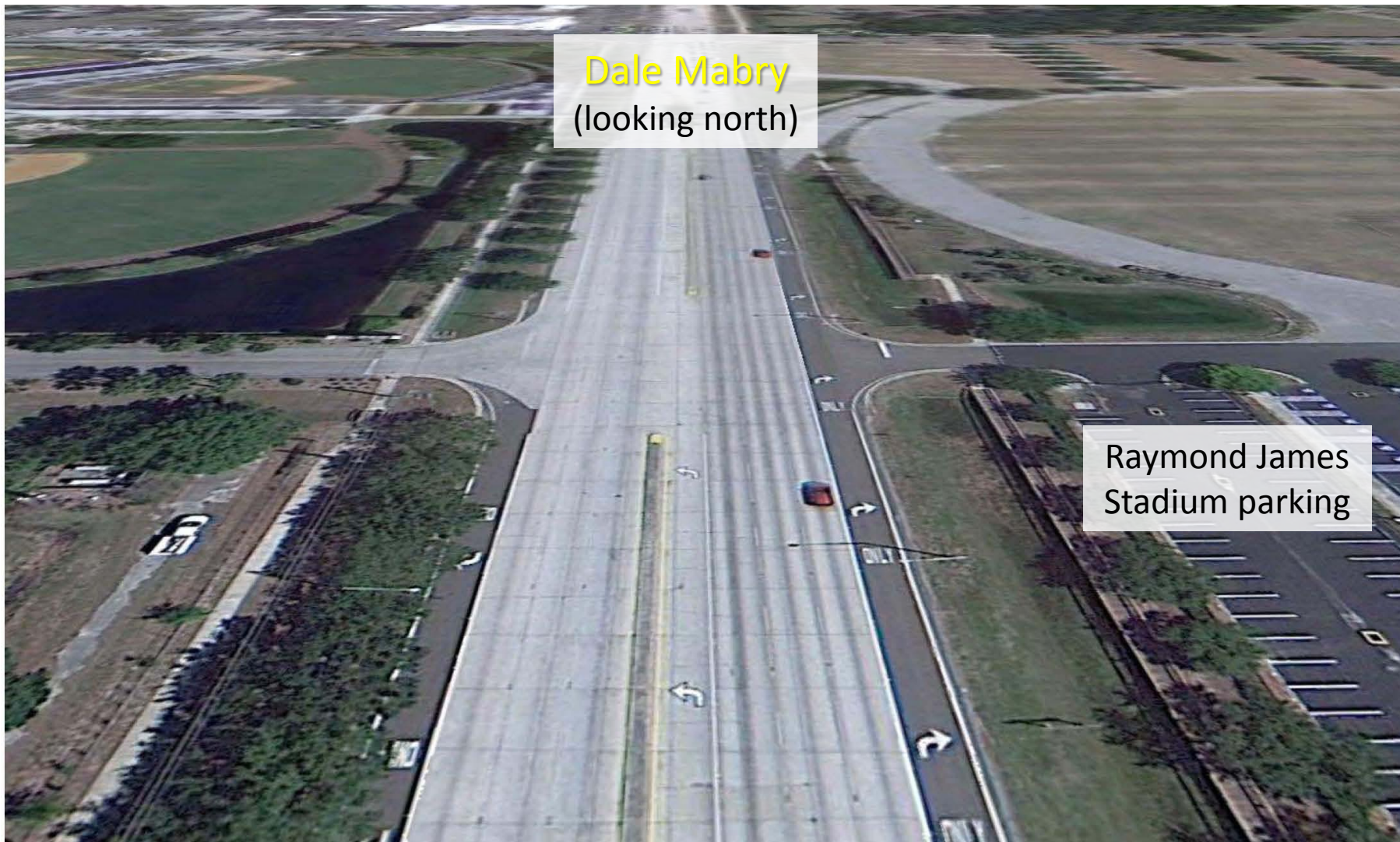


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REVERSIBLE LANE OPPORTUNITY

EXHIBIT 6c

SEPTEMBER 24, 2012



Dale Mabry
(looking north)

Raymond James
Stadium parking

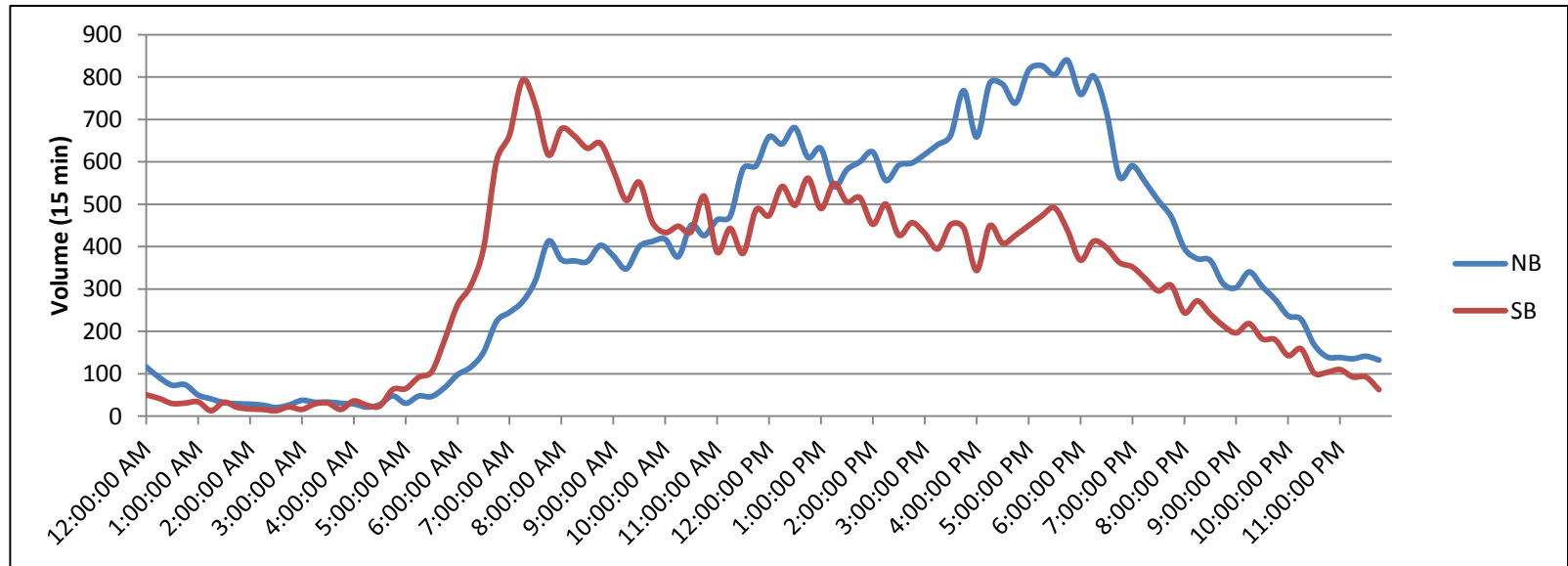
Site ID: FD_105207

Number of Lanes (Directional):

3

County: Hillsborough

Description: SR 597/DALE MABRY HWY N



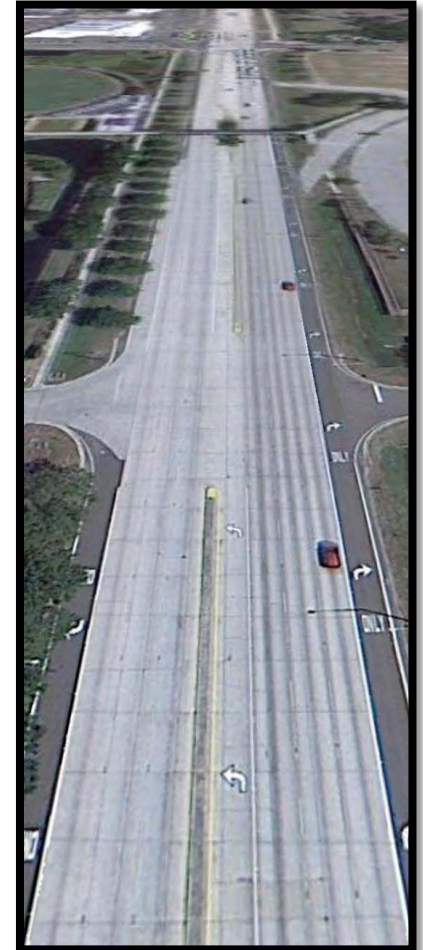
COMMENTS:

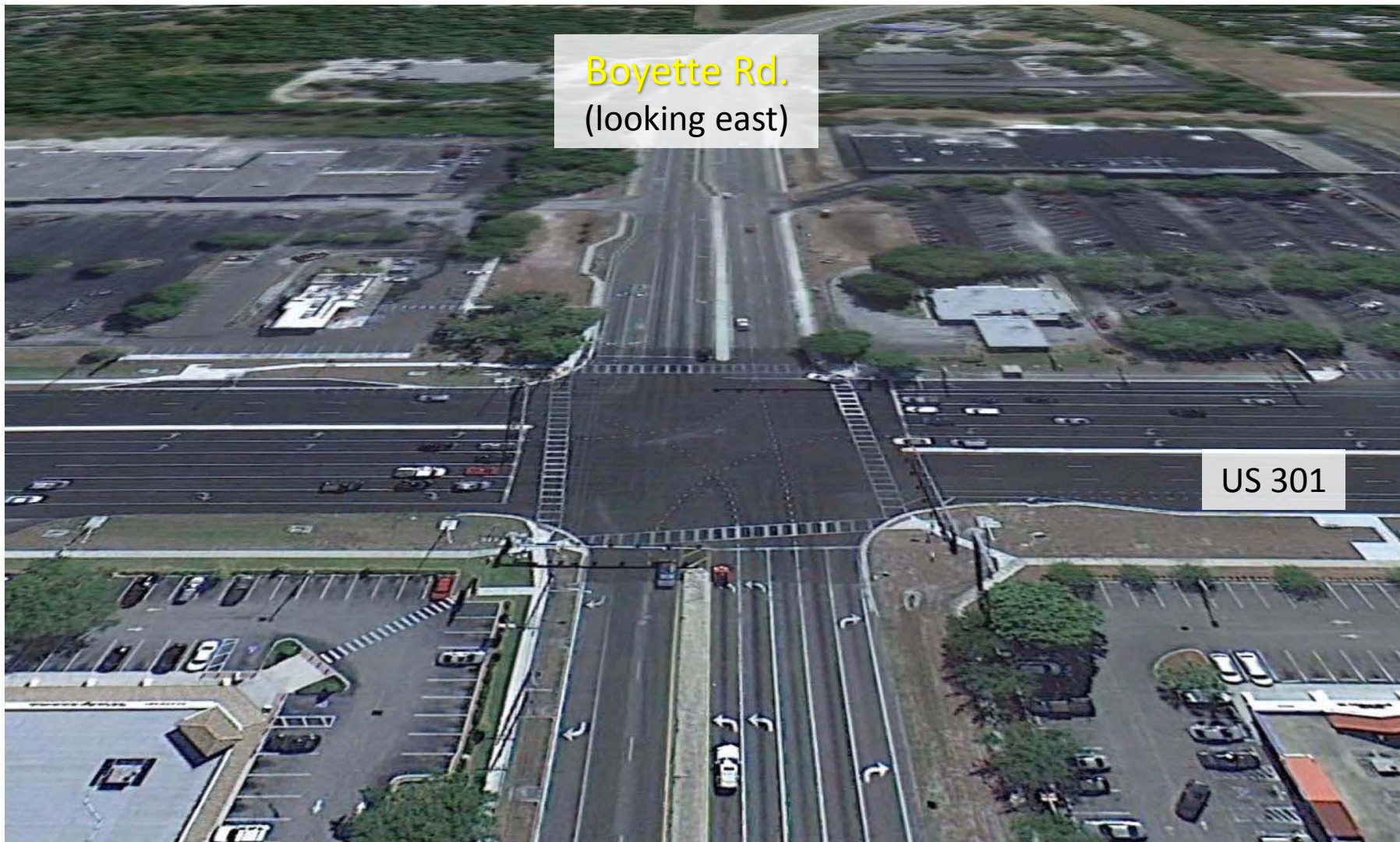
- Excellent Limited Access for Great Lengths
- Very Limited Left Turns from Hillsborough Avenue to Columbus Avenue

Dale Mabry, I-275 to Hillsborough Avenue

Comments

- 2011 AADT = 60,500
- 2035 AADT = 78,000
- Level of Service, year 2035 = F
- No Capacity Improvements within 5 years
- **Good Candidate for Reversible Lanes due to Flush Median and Laneage**

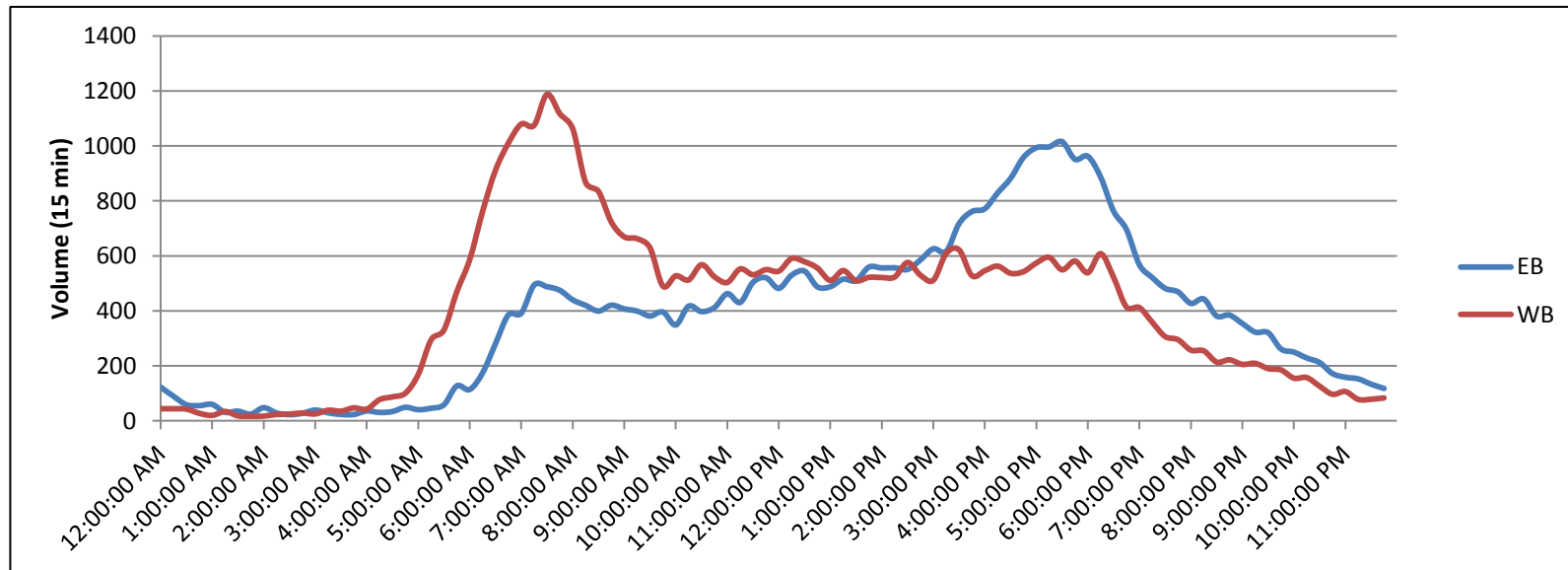




Boyette Rd.
(looking east)

US 301

Site ID: _____ Number of Lanes (Directional): **3**
 County: Hillsborough
 Description: **Boyette Road East of I-75**



COMMENTS:

- Recent Road Improvements (Capacity)
- Very Wide Landscaped Medians



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REVERSIBLE LANE OPPORTUNITY

EXHIBIT 11a

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Boyette Road, East of US 301

Comments

- 2011 AADT = 23,000
- 2035 AADT = 47,500
- Level of Service, year 2035 = C
- Major Capacity Improvements in Place
- **Not a Good Candidate for Reversible Lanes due to School and LOS High**



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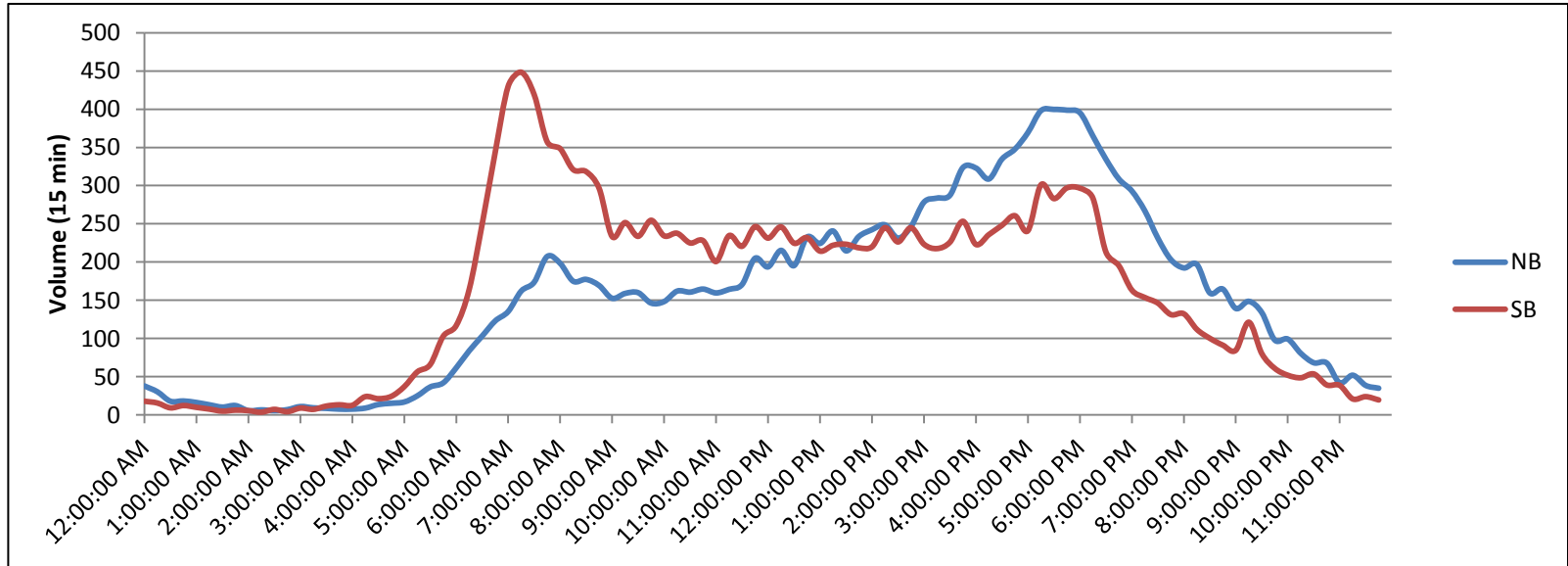
EXHIBIT 11b

SEPTEMBER 24, 2012



Gunn Hwy
North of Linebaugh Ave.
(looking northwest)

Site ID:	HI_210031	Number of Lanes (Directional):	2
County:	Hillsborough		
Description:	Gunn Hwy, 0.2 mile s of Mobley		



COMMENTS:

- Good Section with Flush Medians
- Peak Demands Take You to/from Dale Mabry



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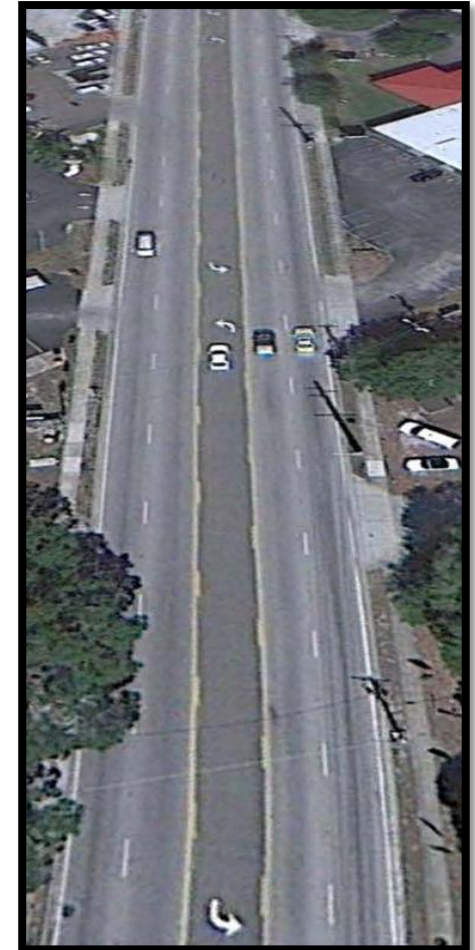
EXHIBIT 14a

SEPTEMBER 24, 2012

Gunn Highway, North of Linebaugh Ave.

Comments

- 2011 AADT = 33,000
- 2035 AADT = 40,500
- Level of Service, year 2035 = F
- No Capacity Improvements within 5 years
- **Good Candidate for Reversible Lanes
(Flush Median)**



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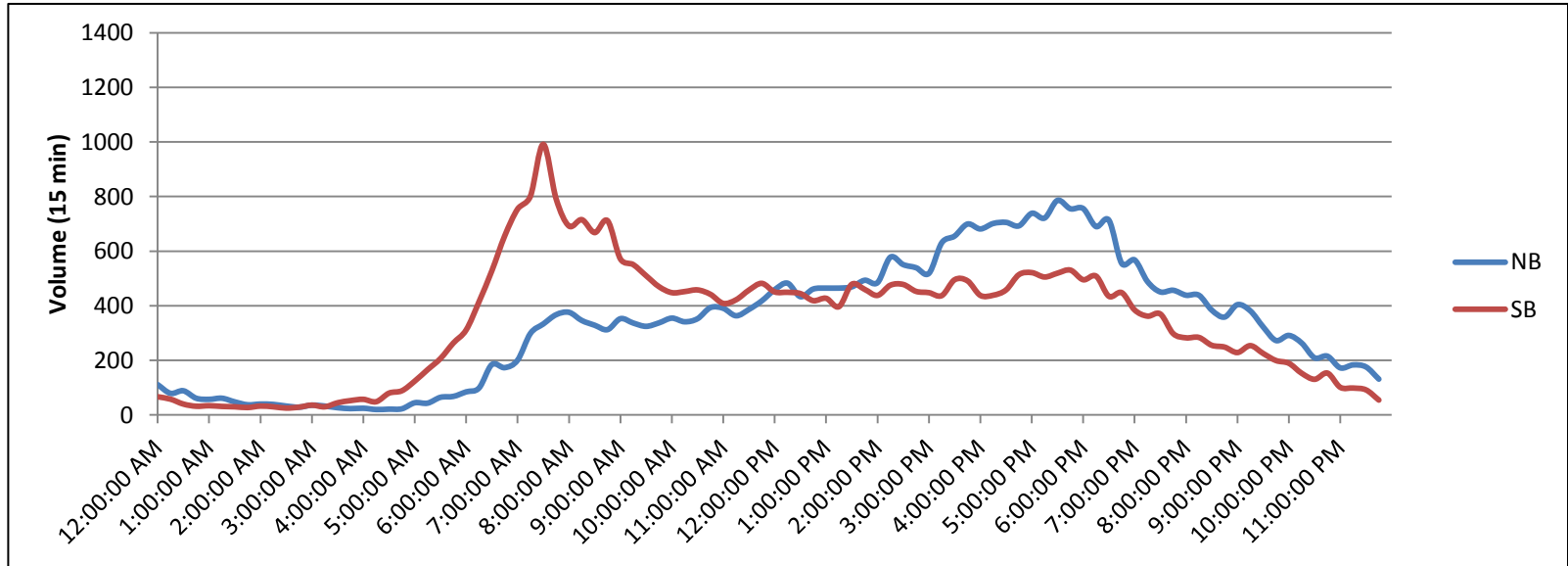
EXHIBIT 14b

SEPTEMBER 24, 2012



Sheldon Rd.
North of Hillsborough Ave.
(looking north)

Site ID:	HI_221965	Number of Lanes (Directional):	2
County:	Hillsborough		
Description:	Sheldon Road North of Hillsborough Ave		



COMMENTS:

- Extreme Peak Direction Flows in A.M.
- Median Not Conducive to Reversible Needs



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REVERSIBLE LANE OPPORTUNITY

EXHIBIT 15a

SEPTEMBER 24, 2012

Sheldon Road, North of Hillsborough Ave.

Comments

- 2011 AADT = 32,000
- 2035 AADT = 33,500
- Level of Service, year 2035 = F
- No Capacity Improvements within 5 years
- **Not a good candidate due to separate bridges in median**



2.2.3 Arterial Corridors Reviewed for Time-of-Day Parking Strategies

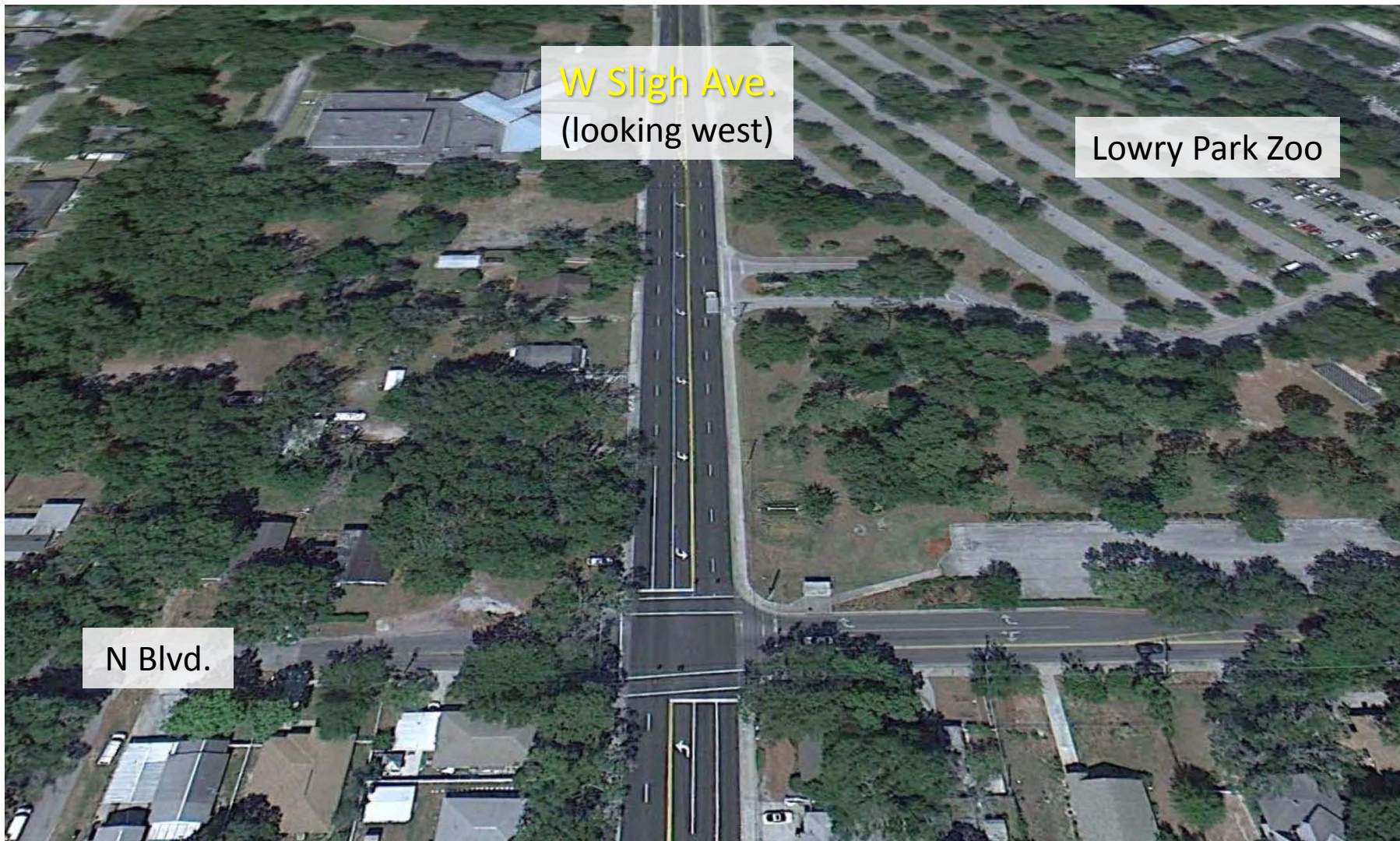
As part of the Phase II workshop, the MPO presented information on the corridors that were identified as potential arterial corridors for time-of-day implementation strategies due to operational characteristics. Specifically, the evaluation considered the feasibility of allowing on-street parking during non-peak traffic hours. The corridors discussed at the workshop are listed below and the information presented for each corridor follows within this section.

- ✓ West Sligh Avenue from North Boulevard to Armenia Avenue
- ✓ North Florida Avenue from Henderson Avenue to Osborne Avenue
- ✓ North Highland Avenue/Tampa St. from Henderson Avenue to Osborne Avenue
- ✓ Tampa Street from Columbus Drive to Henderson Avenue
- ✓ Channelside Drive from Kennedy Boulevard to Whiting Street
- ✓ West Bay-to-Bay Boulevard from Bayshore Boulevard to Manhattan Avenue

Each corridor considered is shown with this information:

- ✓ Aerial view of corridor
- ✓ A table illustrating a 24-hour peak period traffic count within corridor
- ✓ Operational characteristics for corridor

Each presentation included a variety of questions from the three agencies. Discussion questions addressed regarding the peak-period parking strategies included the following: 1) Enforcement is critical for parking restricted corridors, how is it handled? 2) Closely look at each corridor for capacity when considering on street parking, to ensure this is the best option. 3) How do you incorporate “Complete Streets” into off peak or on peak street parking? Each question was equally considered as a valuable piece of the research to lead to the final selection of a corridor for further study by the MPO.

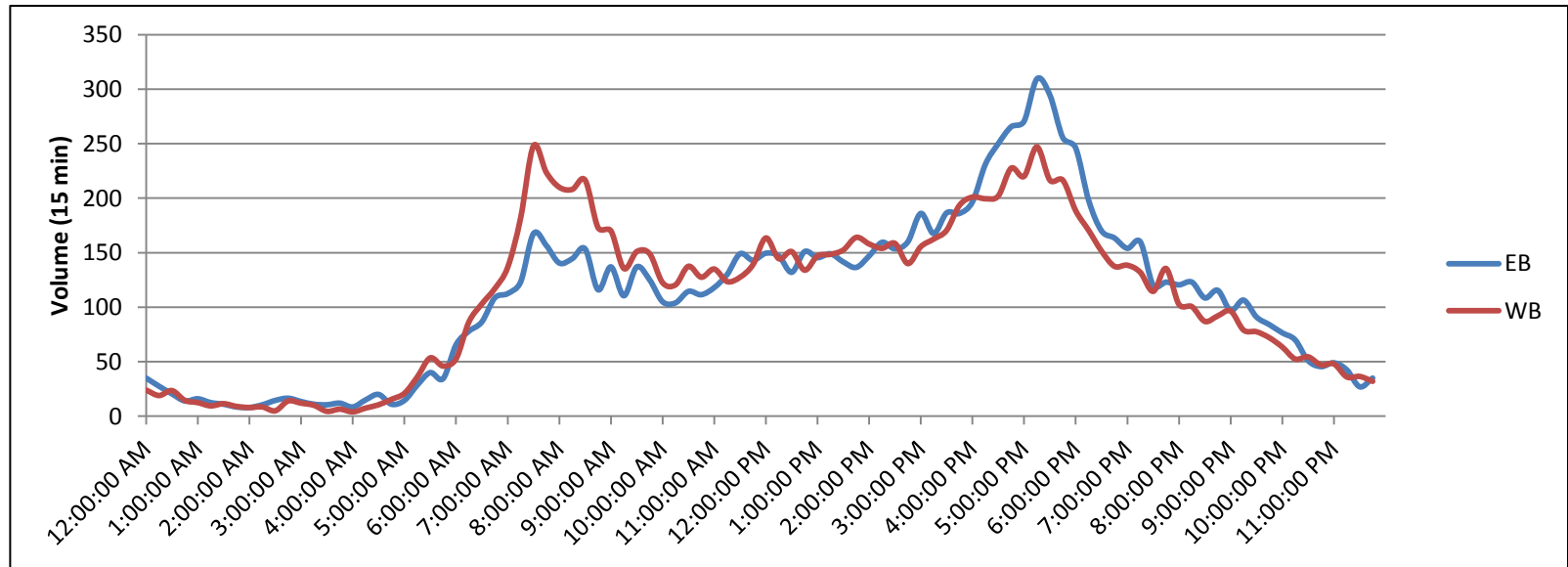


W Sligh Ave.
(looking west)

Lowry Park Zoo

N Blvd.

Site ID:	FD_109069	Number of Lanes (Directional):	2
County:	Hillsborough		
Description:	SLIGH AVENUE, E OF N ARMENIA AVE		



COMMENTS:

- Moderate Volume Mid-day, Level of Service Good
- Weekend Volume Based on Local Attractions



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EXHIBIT 16a

OFF-PEAK PARKING OPPORTUNITY

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W Sligh Avenue, West of North Blvd

Comments

- 2011 AADT = 23,300
- 2035 AADT = 34,000
- Level of Service, year 2035 = F
- No Capacity Improvements within 5 years
- **Not a Good Candidate due to Capacity LOS**

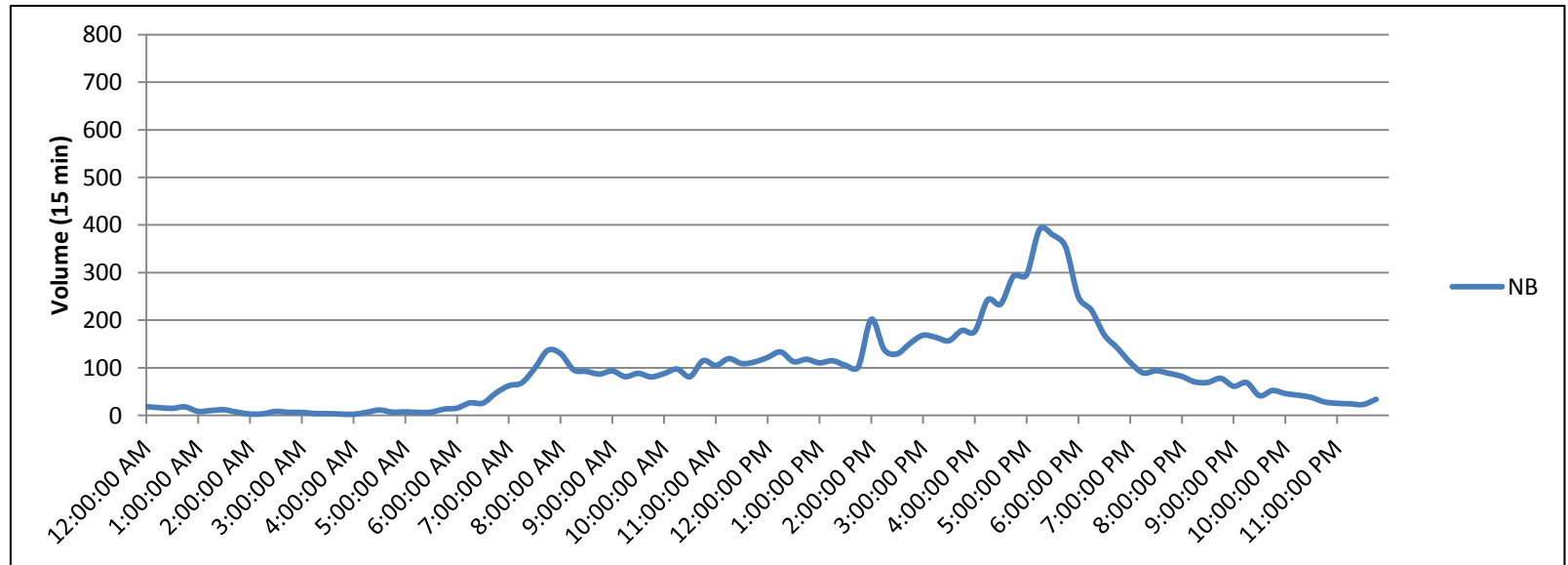




N Florida Ave.
(looking north)

E Columbus Dr.

Site ID:	FD_105329	Number of Lanes (Directional):	3
County:	Hillsborough		
Description:	SR 685/BUS US 41/N FLORIDA AVE (NORTHBOUND), S OF COLUMBUS DR		



COMMENTS:

- Minimal Lane Usage from 7 pm to 4 pm
- 2008 RSA Reports Suggests Lane Reductions for Safety



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EXHIBIT 17a

OFF-PEAK PARKING OPPORTUNITY

SEPTEMBER 24, 2012

N Florida Avenue, North of E Columbus Drive

Comments

- 2011 AADT = 9,100
- 2035 AADT = 23,300
- Level of Service, year 2035 = D
- No Capacity Improvements within 5 years
- **Good Candidate for On Street Parking (7 pm to 4 pm)**
- **Businesses / Residents need Parking**



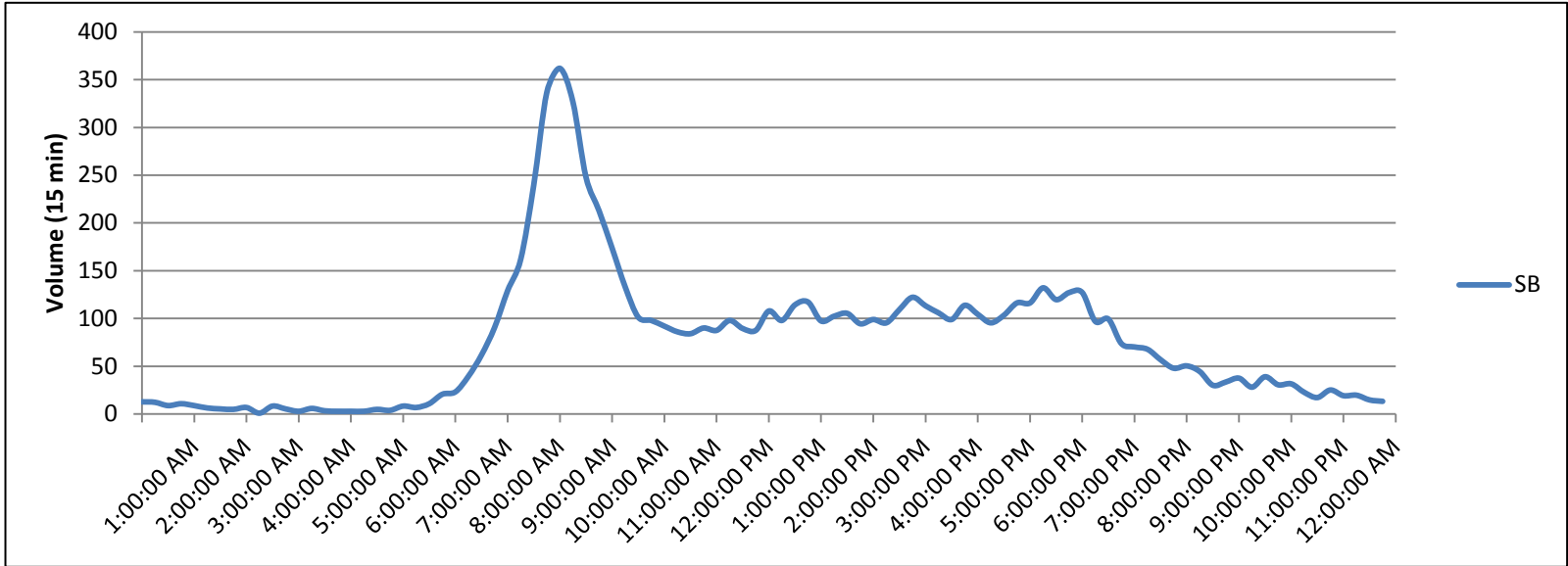


N Highland Ave.
(looking south)

W Genesee St.

W Chelsea St.

Site ID:	FD_105334	Number of Lanes (Directional):	3
County:	Hillsborough		
Description:	North Highland, North of MLK, Jr. BLVD		



COMMENTS:

- Excessive Lane Widths
- Extreme Peak for 2 Hours



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EXHIBIT 18a

OFF-PEAK PARKING OPPORTUNITY

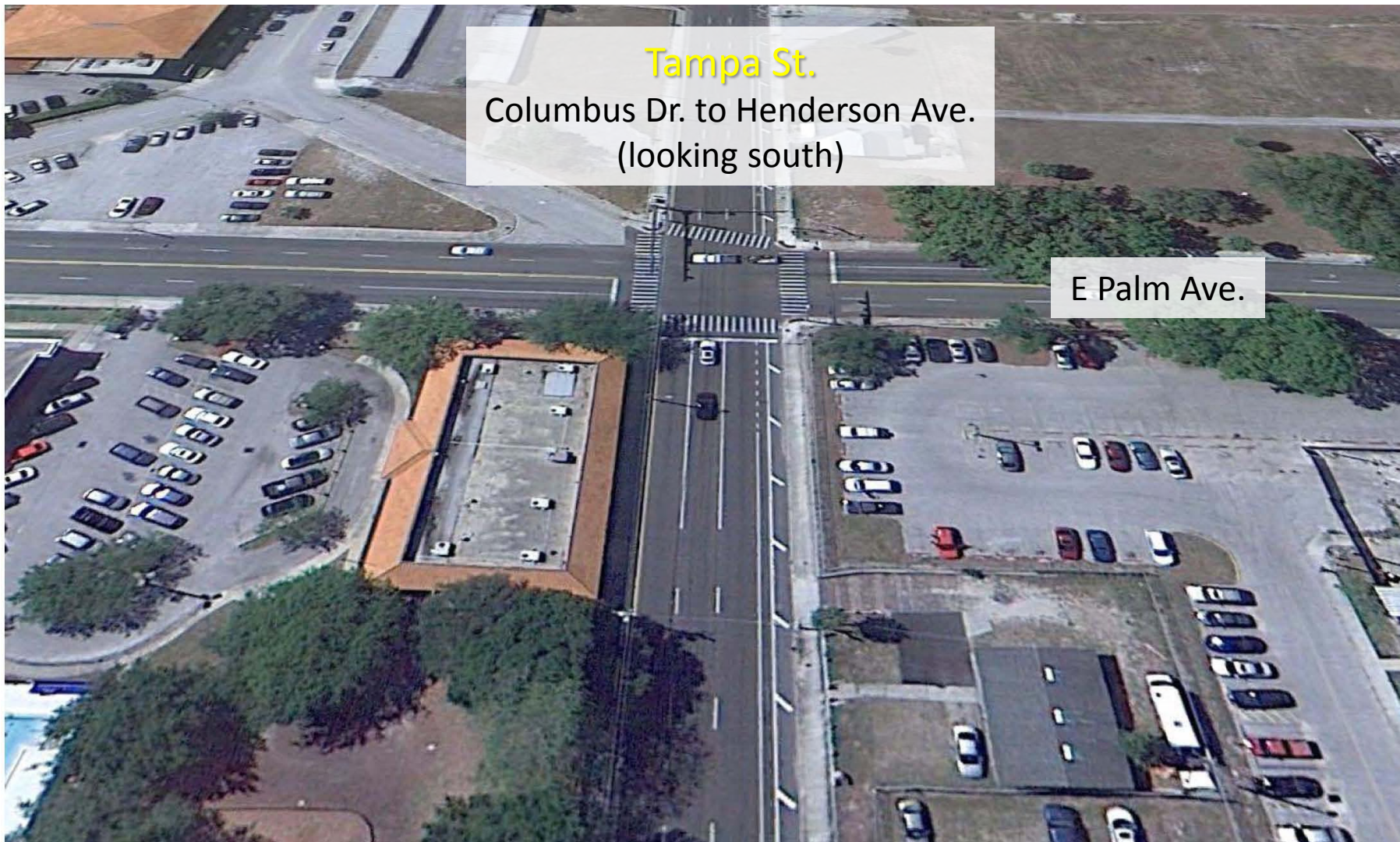
SEPTEMBER 24, 2012

N Highland Avenue, South of Florida Ave

Comments

- 2011 AADT = 9,000
- 2035 AADT = 21,000
- Level of Service, year 2035 = D
- No Capacity Improvements within 5 years
- **Good Candidate for On Street Parking**

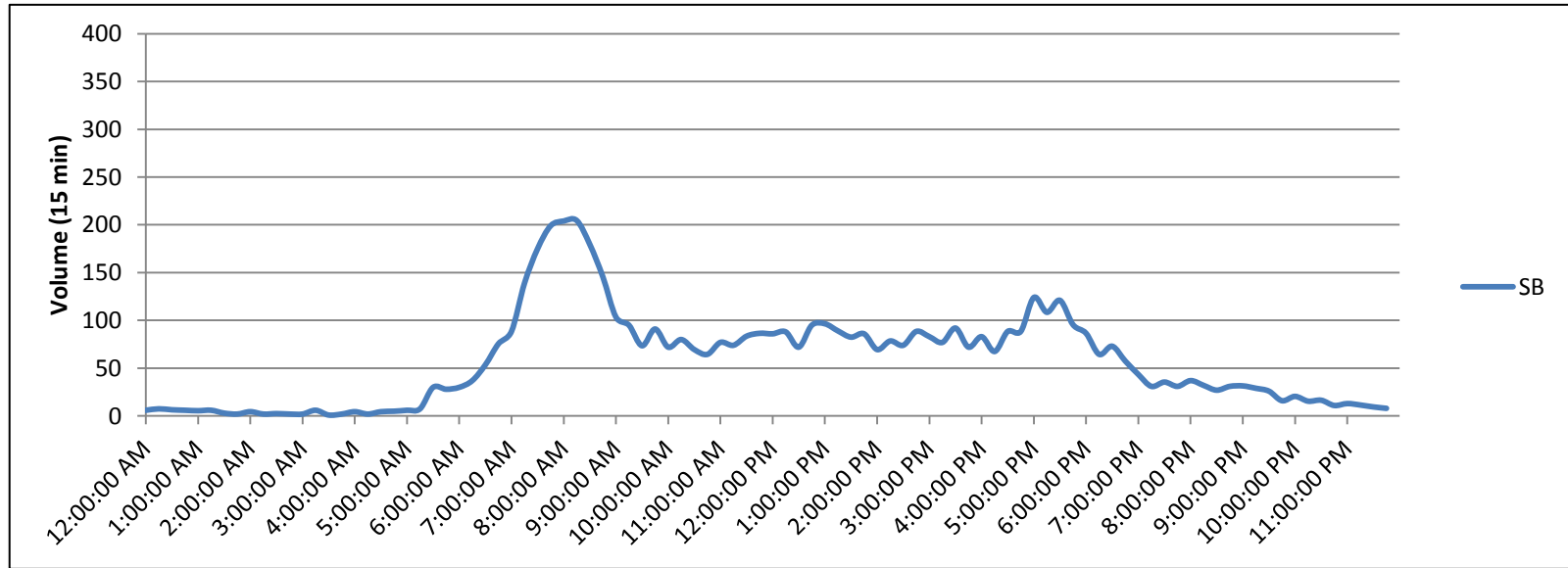




Tampa St.
Columbus Dr. to Henderson Ave.
(looking south)

E Palm Ave.

Site ID: FD_105296 Number of Lanes (Directional): 3
 County: Hillsborough
 Description: SR 685/BUS US 41/N TAMPA ST (SOUTHBOUND), SOUTH OF SCOTT ST



COMMENTS:

- Parking Needed along this Section
- Moderate Traffic Except from 7am to 10 am



CONGESTION MANAGEMENT/
 CRASH MITIGATION PROCESS
 Workshop #2

EXHIBIT 19a

OFF-PEAK PARKING OPPORTUNITY

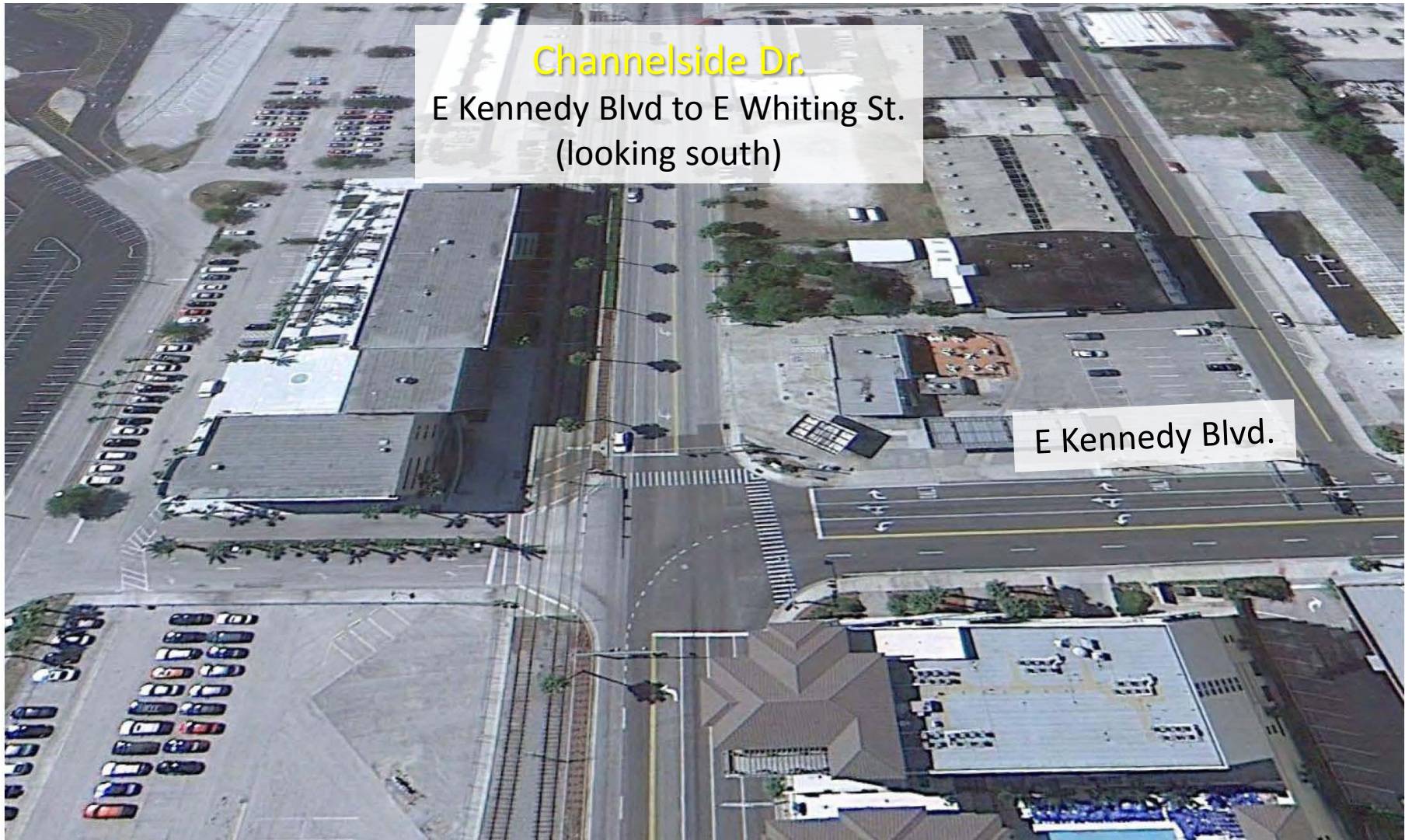
SEPTEMBER 24, 2012

Tampa St. Columbus Dr. to Henderson Ave

Comments

- 2011 AADT = 8,000
- 2035 AADT = 31,000
- Level of Service, year 2035 = E
- No Capacity Improvements within 5 years
- **Good Candidate for On Street Parking (10 am to 7 am)**

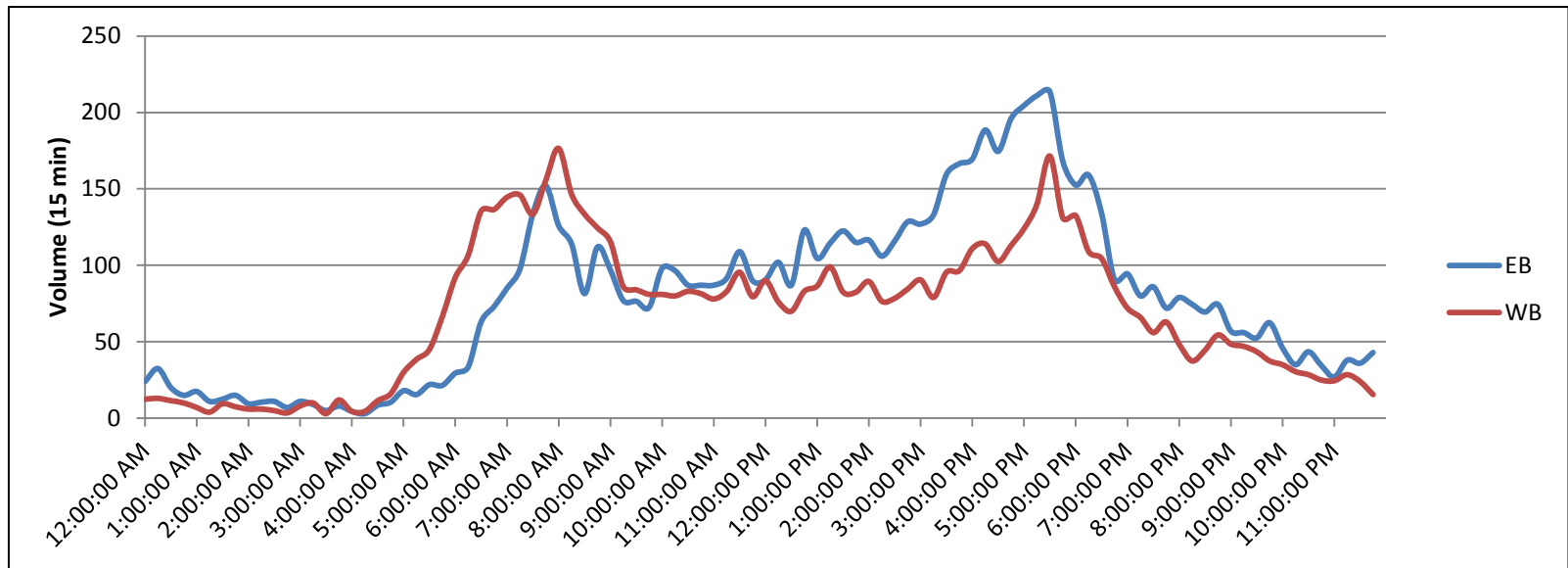




Channelside Dr.
E Kennedy Blvd to E Whiting St.
(looking south)

E Kennedy Blvd.

Site ID: FD_101566 Number of Lanes (Directional): 2
 County: Hillsborough
 Description: CHANNELSIDE DR



COMMENTS:

- Very Moderate Volume
- Parking Needed



CONGESTION MANAGEMENT/
 CRASH MITIGATION PROCESS
 Workshop #2

EXHIBIT 20a

OFF-PEAK PARKING OPPORTUNITY

SEPTEMBER 24, 2012

Channelside Dr. E Kennedy Blvd to E Whiting St.

Comments

- 2011 AADT = 15,000
- 2035 AADT = 23,000
- Level of Service, year 2035 = C
- No Capacity Improvements within 5 years
- **Good Candidate for Parking During Off-Peak, Both Sides**

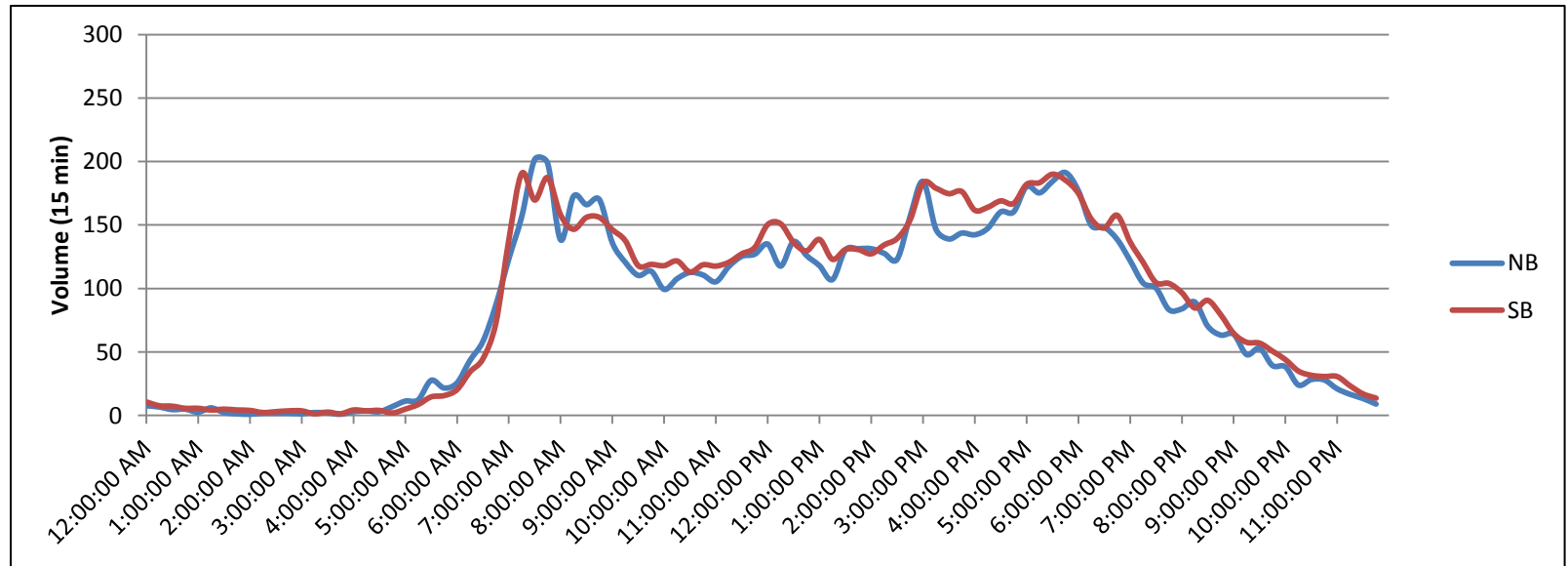




W Bay to Bay Blvd.
S Esperanza Ave. to S Manhattan Ave.
(looking east)

S Church Ave.

Site ID:	Hi_325660	Number of Lanes (Directional):	2
County:	Hillsborough		
Description:	Bay to bay West of Himes Ave		



COMMENTS:

- Parking Needed
- Volumes Moderate Certain Sections



CONGESTION MANAGEMENT/
 CRASH MITIGATION PROCESS
 Workshop #2

EXHIBIT 22a

OFF-PEAK PARKING OPPORTUNITY

SEPTEMBER 24, 2012

W Bay to Bay Blvd. S Esperanza Ave. to S Manhattan Ave

Comments

- 2011 AADT = 8,000 to 18,000
- 2035 AADT = 30,000
- Level of Service, year 2035 = C to D
- No Capacity Improvements within 5 years
- **Good Candidate for Parking in Certain Sections**



Section 3. Approved MPO Recommendations

After the completion of the September 24, 2012 workshop, the MPO presented the draft recommendations to the Citizens Advisory and Technical Advisory Committees for review, and the MPO Board for review and approval.

The presentation included a discussion on the direct link between the Congestion Management/Crash Mitigation Process goals and the Arterial Corridor Feasibility Study.

<p>Congestion Management/Crash Mitigation Process</p> <p>GOAL 2: Shift Peak-Hour Trips to Non-SOV Modes</p> <ul style="list-style-type: none">• Improve attractiveness of transit & HOV trips• Improve safety & comfort of bicycling & walking trips 	<p>Congestion Management/Crash Mitigation Process</p> <p>GOAL 3: Reduced Peak-Hour Impacts</p> <ul style="list-style-type: none">• <u>Improve Peak-Hour Operations</u>• Reduce Peak-Hour Demand 
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3.1 MPO Staff Recommended Action to Committees

The MPO staff provided a summary of the study and the proposed recommendations, followed by a discussion to the following Committees.

- Citizens Advisory Committee, October 17, 2012
- Technical Advisory Committee, October 22, 2012
- MPO Board Meeting, November 13, 2012

The Agenda Item presented to the Committees and MPO Board with the recommended action is provided on the next page. The Citizens Advisory and the Technical Advisory Committees and the Hillsborough County MPO Board voted unanimously to approve the recommendations from the Feasibility Study. The recommendations approved by the MPO are provided in more detail in this section.



Hillsborough Metropolitan Planning Organization

601 E Kennedy Boulevard, 18th floor, Tampa, Florida, 33601 · 813-272-5940 · HillsboroughMPO.org

Board & Committee Agenda Item

Agenda Item: Congestion Management/Crash Mitigation
Lane Operations Study

Presenter: Gena Torres, MPO Staff

Summary: The MPO's Congestion Management/Crash Mitigation Process (CM/CMP) identifies challenges and solutions to reducing congestion and crashes along arterial roadways in Hillsborough County, with an emphasis on using existing right-of-way and other cost-effective programs.

One approach is to reduce peak-hour impacts when congestion is at its worst. The MPO undertook a study focused on three lane-operational improvements: Reversible Lanes, HOV Lanes, and Off-Peak Parking Lanes. These innovative strategies have been successfully implemented in different areas of the country faced with limited funds, limited right-of-way, and heavy traffic congestion during those morning and afternoon commute times.

The first part of the MPO's study included conducting interviews in communities where these lane treatments have been in place. A summary is attached documenting those case studies. The second part of the study identified Hillsborough County roadways that appear to be good candidates for these strategies.

The study looked at the following roads as having the best opportunity for these treatments; those in **bold** are the recommended top priorities for further study:

High Occupancy Vehicle Lanes

- **Bruce B. Downs Blvd. from I-75 to Bearss Ave.**
- Fletcher Ave. from I-275 to I-75
- Fowler Ave. from I-275 to I-75
- Hillsborough Ave. from I-275 to I-4

Factors that were considered include: high peak direction flow, available lanes, access to large activity centers/employers, future level of service concern, current construction.

Reversible Lanes

- Bloomingdale Ave. from US 301 to Bell Shoals Rd.
- Boyette Rd. east of I-75 to Boyette Rd.
- Bruce B. Downs Blvd. from County Line to Bearss Ave.
- Dale Mabry Hwy. from Hillsborough Ave. to Columbus Ave.
- **Gunn Highway from Linebaugh Ave. to Casey Rd.**
- Sheldon Rd. from Hillsborough Ave. to Citrus Park Dr.

Factors that were considered include: high peak direction flow, flush medians, no landscaping, dual turns at terminus, limited access.

Off-Peak Parking

- Bay to Bay Blvd. from Bayshore Blvd. to Manhattan Ave.
- Channelside Dr. from Kennedy Blvd to Whiting St.
- **Florida Ave. from Channelside Dr. to Violet St.**
- Highland/Tampa from Hillsborough Ave. to Jackson St.
- Sligh Ave. from North Blvd. to Armenia Ave.

Factors that were considered include: business and/or residential parking needs, excessive lane widths, moderate traffic, alternate blocks/sides can apply.

Recommended Action: Accept the report and to proceed with feasibility studies of the roadways recommended for these lane-operation treatments.

Prepared By: Gena Torres, MPO Staff

Attachments: CM/CMP Operational Study – Case Study Summary

3.2 Approved MPO Recommendations

The MPO Board met on November 13, 2012 and the agenda included a presentation and recommendations for further study on three arterial corridors. This section provides a brief summary of the information presented at the MPO Board meeting and the recommended actions.

3.2.1. Arterial Corridor Recommendation for HOV Strategies

As addressed in Phase II of the Study, the corridors showing the operational characteristics that most supported further study for high-occupancy vehicle strategies included the following: Bruce B. Downs Boulevard from I-75 to USF; Fletcher Avenue from I-275 to I-75; Fowler Avenue from I-275 to I-75; and Hillsborough Avenue from I-275 to I-4.

As presented to the MPO, the Bruce B. Downs Boulevard corridor south of I-75 was considered a good candidate because the corridor exhibits these characteristics:

- Current Year 2015 widening project provides opportunity to designate special lanes
- Congestion in future – Bruce B. Downs is shown as failing in 2035 even with I-275 and I-75 as 10 lanes
- Carpooling indicators:
 - Parking limited at hospitals, paid on campus
 - Large employers improve carpool group formation
 - TBARTA (formerly BACS) and NNTA carpool agencies active in area
 - FDOT studying managed lanes on I-75 (connecting to recommended section for study)
 - HART building MetroRapid to USF (connecting corridor to operating bus rapid transit system opening 2013)
 - TBARTA studying rail or Bus Rapid Transit on Bruce B. Downs
- High peak volumes at rush hour

MPO Recommendation On HOV Lane Opportunities – The MPO approved that Bruce B. Downs Boulevard be studied further for the possible implementation of HOV lanes from south of I-75 to Busch Boulevard (the actual termini will be determined during the next study). The recommendation included these items:

- Start with Bruce B. Downs (Segment A)
- Construction in corridor to be completed by Year 2015, so timely location to implement

- Corridor promotes carpooling to University of South Florida (USF)
- HOV in corridor preserves Bus Rapid Transit (BRT) options for future
- Good test case



Bruce B. Downs Blvd.
(Illustration provided by the Hillsborough County MPO)

This illustration was provided at the MPO meeting and shows one possible configuration for the Bruce. B. Downs corridor with HOV lanes, as both auto and bus would be permitted to use the lane. This illustration was taken from previous studies conducted by the MPO that were centered on improving carpool, HOV and transit in the corridor.

3.2.2. Arterial Corridor Recommendation for Reversible Lanes Strategies

As addressed in Phase II of the Study, the corridors that were showing the operational characteristics that most supported further study for reversible lanes included the following: Bloomingdale Boulevard from US 301 to Bell Shoals Road; Boyette from I-75 to Boyette Road; Bruce B. Downs from County Line to Busch; Dale Mabry Highway from

Hillsborough Avenue to Columbus Drive; Gunn Highway from Linebaugh Avenue to Casey Road; and Sheldon Road from Hillsborough Avenue to Citrus Park Drive.

Two corridors were identified as possible candidates: Bloomingdale Avenue from U.S. 301 to Bell Shoals Road and Gunn Highway from Linebaugh Avenue to Casey Road. Bloomingdale Boulevard was considered a possible candidate for these corridor characteristics:

- Bedroom communities/ high-peak volumes in one direction
- Few or no center medians
- Limited number of driveways
- An alternate route for commuters on Lithia Pinecrest (Segment B)

Gunn Highway from Linebaugh Avenue to Casey Road was considered a viable corridor because of these corridor characteristics:

- High-peak volumes in one direction
- Few or no center medians
- Limited number of driveways
- An alternate route for Linebaugh Avenue

MPO Recommendation On Reversible Lanes Opportunities – The MPO approved that a feasibility study be conducted on Gunn Highway for the potential implementation of reversible lanes from Casey Road to Linebaugh Avenue. The recommendation included these items:

- Start with Gunn Highway
- Only one mile long
- Addresses a bottleneck
- Good test case

3.2.3 Arterial Corridor Recommendation for Time-of-Day Parking Strategies

As addressed in Phase II of the Study, the corridors that were showing the operational characteristics and land use characteristics that most supported further study for time-of-day parking strategies included the following: Bay-to-Bay Boulevard from Bayshore Boulevard to Manhattan Avenue; Channelside Drive from Kennedy Boulevard to Whiting; Florida Avenue from Channelside Drive to Violet Street; Highland/Tampa Street from Hillsborough Avenue to Jackson; Sligh from North Boulevard to Armenia.

Florida Avenue from Channelside Drive to Violet Street was the corridor identified as the best possible candidate because of these characteristics:

- Road is overbuilt for the volume of traffic during off-peak
- Speeding is a concern in off-peak
- Severe crashes in corridor
- Pedestrian fatalities in corridor
- Neighborhood support
- Parking is needed by adjacent businesses due to small size of parcels platted during early 20th century

MPO Recommendation On Time-of-Day Parking Opportunities – The MPO approved that a feasibility study be conducted on Florida Avenue from Channelside Drive to Violet Street for the potential implementation of time-of-day parking strategies. The recommendation included these items:

- Start with Florida Avenue as good test case
- Corridor exhibits more than enough capacity during off-peak
- Parking strategies support business revitalization in this corridor as defined through the *InVision Tampa* project currently underway by City of Tampa.

APPENDIX - AGENCIES INTERVIEWED FOR PHASE I OF STUDY

Appendix A: Case Study Questions – HOV Lanes

I. Washington Street (Two-way) and Patrick Street / Henry Street (N-S One-way pair) Alexandria, VA	
Contact	Bob Garbacz 703-746-4143 Jim Neurohr 703-746-4404
Date of Initiation	Mid 1980's
Facility Type	Urban Arterial
Reason for HOV Implementation	Major commuting routes
Largest Issue/Obstacle	Enforcement
What would be done differently?	
How was success measured?	Unknown
How were problems measured?	Unknown
Was special FHWA/FTA funding used	Unknown
Legal Issues	Dillon Rule, Jurisdiction
Level of Public Acceptance/Opposition	Generally accepted; issues with enforcement
Enforcement issues	Jurisdiction questions, traffic disruption, LEO frustration
Maintenance Issues	Signing/pavement marking deterioration
Turns from HOV lanes?	Right turns at first opportunity or risk citation
Passing from HOV lanes?	No; turning traffic will often wait until last minute to enter
Motorcycle Use Permitted?	Not sure; motorcycles likely ignored
Exemptions to occupancy requirements	None
Hours of Operation	7-9 AM Northbound, 4-6 PM Southbound
Project Limits	Green St to First St (Washington St) Duke St to Montgomery St (Patrick St/Henry St)
Length	Washington Street: about 1.4 miles Patrick Street/Henry Street: about one mile
Special signing / pavement marking	Yes; side and overhead signing, diamond markings
Maintaining Agency	City of Alexandria, Virginia
Notes	HOV sections operate in isolation; no continuity outside the City limits; bottlenecks and difficult movements at termini; keeping lanes clear prior to HOV period

Appendix A: Case Study Questions – HOV Lanes

II. Santa Fe Drive (US 85), Denver, Littleton and Englewood, CO	
Contact	Alazar Tesfaye 303-757-9511 Jeff Lancaster 303-757-9511
Date of Initiation	Mid 1980's
Facility Type	Urban Arterial
Reason for HOV Implementation	Major commuting route
Largest Issue/Obstacle	Cooperation between multiple jurisdiction
What would be done differently?	Evaluation of maintenance and enforcement prior to implementation
How was success measured?	Unknown
How were problems measured?	Unknown
Was special FHWA/FTA funding used	Yes, FHWA CMAW
Legal Issues	None
Level of Public Acceptance/Opposition	Generally accepted; issues with enforcement
Enforcement issues	Jurisdictional differences and inconsistency
Maintenance Issues	Left side lanes create difficulty; regular use outside of restricted hours
Turns from HOV lanes?	No; have to cross HOV lanes to enter intersection left turn lanes
Passing from HOV lanes?	No
Motorcycle Use Permitted?	Yes
Exemptions to occupancy requirements	Hybrid/Electric by state legislation
Hours of Operation	6-9 AM Northbound, 4-6:30 PM Southbound
Project Limits	Bowles Avenue/Platt River Drive to Alameda Avenue
Length	7.5 miles northbound; 5.7 miles southbound
Special signing / pavement marking	Yes; side and overhead signing, overhead green signals, diamond markings
Maintaining Agency	Colorado Department of Transportation
Notes	Prior to FHWA guidelines were issued; now out of compliance. No regulatory guidance for CDOT to implement consistent signing and pavement markings.

Appendix A: Case Study Questions – HOV Lanes

III. Multiple One-Way Pairs, Houston, TX	
Contact	Nader Mirjamali, P.E. 713-652-4375 (temporary)
Date of Initiation	1990's; opened in stages through the 2000's
Facility Type	Urban Arterials
Reason for HOV Implementation	Major commuting routes with heavy transit vehicle traffic
Largest Issue/Obstacle	Time for construction; unforeseen utility conflicts
What would be done differently?	Improve agency coordination; reconsider shift of storm inlets
How was success measured?	Detailed system modeling, measurement of time savings
How were problems measured?	Not applicable
Was special FHWA/FTA funding used	FTA funding for bus lanes; FHWA, City funding for other elements
Legal Issues	None
Level of Public Acceptance/Opposition	Generally accepted; public happy when construction over
Enforcement issues	METRO responsibility; lack of resources
Maintenance Issues	None with robust pavement section, storm water inlets are maintenance issue
Turns from HOV lanes?	Right turns permitted
Passing from HOV lanes?	Not permitted, but happens due to low enforcement
Motorcycle Use Permitted?	Unknown – not an issue downtown
Exemptions to occupancy requirements	No – METRO directed they are not allowed
Hours of Operation	6-9 AM Northbound, 4-6:30 PM Southbound
Project Limits	Not applicable
Length	Total length over 20 miles; over 300 blocks
Special signing / pavement marking	Yes; side and overhead signing, diamond marking in curb lane, dashed diamond in second lane
Maintaining Agency	METRO
Notes	Part of multi facility improvement; Seven year construction period; included relocation of storm drain inlets from curb to middle of curb lane, Unique “dual diamond” lanes; METRO distinguishes between “diamond lanes “ (non-barrier separated lanes) and HOV lanes (barrier separated lanes)

Appendix A: Case Study Questions – Reversible Lanes

I. Connecticut Avenue, Washington DC	
Case study interview participants	Soumya S. Dey, District DOT, Deputy Associate Director
Facility type	Urban Arterial
Why candidate for Rev Lane	Peak period congestion
Largest issue/obstacle in providing RL	Negative impact on land use and economic development – focus on through traffic
What would you do differently	Consider alternatives such as bus designated lanes or other transit priority concepts
How was the success measured	Utilization, safety, land use/development impacts, compliance
How were problems measured	Utilization, safety, land use/development impacts, compliance
Was special funding used	No
Feds involved	No
Legal challenges	No
Public acceptance	Opposition to mast arms for overhead signals (particularly from Fine Arts Commission)
Enforcement / control strategy	Roadside signs/pavement markings/VMS
Maintenance	Minimal
Entrance/exit fees used	No
Transit allowed	Yes
Hours of operation	M-F (7:00am-9:30am, 4:00pm-6:30pm)
Segment length	2.7 miles (24 th Street to Legation Street)
Built on new or existing corridors	Existing
Elevated	No
Electronic fees	No
Limited access corridor	No
Special lighting	No
Total number of lanes	6
Reversible lane configuration/ratio	4:2
Managing/operating agency	District DOT
Currently under operation?	Yes
Notes	Parking lanes (2) are opened to traffic during peak RLs viewed as pro commuter/anti residents/anti local business

Appendix A: Case Study Questions – Reversible Lanes

II. Tyvola Road, Charlotte, North Carolina	
Case study interview participant	Charles Abel, Transportation Systems Section Manager, Charlotte
Date of Rev. lane treatment initiation	1987 (rebuilt in 1998) - originally intended for intermittent use, but since retired
Facility type	Major collector
Why candidate for Rev Lane	Special events (i.e.: basketball games)
Largest issue/obstacle in providing RL	Fiber-optic signal maintenance was extremely challenging
How was the success measured	Considered popular and successful during time of operation
Was special funding used	No special funding used
Feds involved	No
Legal challenges	No
Public acceptance	Generally, yes
Enforcement / control strategy	Overhead signals/traffic enforcement /pavement markings
Maintenance	Intensive: cameras, lighted fiber-optic signals, 22 officers req. for supervision
Entrance/exit fees used	No
Transit allowed	Yes
Hours of operation	Seasonal/as needed for 1-2 hour periods
Segment length	3.5 miles
Built on new or existing corridors	New - completed in 1998
Elevated	No
Electronic fees	No
Limited access corridor	No
Special lighting	Yes, 196 fiber-optic control signals
Total number of lanes	6
Reversible lane configuration/ratio	Customizable
Managing/operating agency	City of Charlotte: Dept. of Public Works, Police Dept.
Currently under operation?	No - system retired following construction of new stadium at different location
Notes	Tyvola Road and overhead control system constructed in 1998 for \$22 million

Appendix A: Case Study Questions – Reversible Lanes

III. 7 th Street / 7 th Avenue, Phoenix, Arizona	
Case study interview participants, 3/21/12	Kerry Wilcoxon, P.E., Traffic Engineer, City of Phoenix
Date of Rev. lane treatment initiation	1982 (7 th Street), 1979 (7 th Avenue)
Facility type	Arterial roads
Why candidate for Rev Lane	Traffic concerns assoc. with growing city, began as citizen-initiative
Largest issue/obstacle in providing RL	Impacts on businesses and traffic in residential neighborhoods
What would you do differently	Consider use of overhead lighted signs
How was the success measured	Crash rate comparison, reverse lane utilization
How were problems measured	Public input, traffic studies
Was special funding used	Congestion Mitigation and Air Quality (CMAQ) and federal stimulus program for signage
Feds involved	Congestion Mitigation and Air Quality (CMAQ) and federal stimulus program for signage
Legal challenges	No
Public acceptance	Process reviewed in 2010 and operations will continue> Some are strongly against RLS
Enforcement / control strategy	Overhead / roadside signs, pavement markings, recently used VMS for left hand turns
Maintenance	Additional signage and safety measures in 2010-2012
Entrance/exit fees used	No
Transit allowed	Yes
Hours of operation	M-F (6:00am-9:00am, 4:00pm-6:00pm)
Segment length	7 miles (7 th Street), 6 miles (7 th Ave)
Built on new or existing corridors	Existing
Elevated	No
Electronic fees	No
Limited access corridor	No
Special lighting	No
Total number of lanes	6 (3 northbound, 2 southbound, center land designated for left turns)
Reversible lane configuration/ratio	3:3 (am), 4:2 (pm)
Managing/operating agency	City of Phoenix
Currently under operation?	Yes
Notes	Considerable public opposition

Appendix A: Case Study Questions – Time-of-Day Parking

I. 14 th Street, 2900 – 3000 block, Washington DC	
Local contact	Damon Harvey, District DOT, Parking Manager, 202-671-0493
Facility type	Urban Arterial
Why candidate for LOSP	Peak period congestion with limited street use during off peak
Largest issue / obstacle in providing LOSP	Drivers getting use to the parking on the street during the off hours
What would you do differently	Place larger information signage at the beginning of the restriction area
How was the success measured	Utilization, land use / development increase, compliance
How were problems measured	Enforcement, safety, development impacts, compliance
Was special funding used	No, but as time went on, success was providing metering for income
Feds involved	No
Legal challenges	None
Public acceptance	Very positive acceptance form residents and merchants
Enforcement / control strategy	Roadside signs / pavement markings / towing
Maintenance	Minimal
Special lighting	No
Transit allowed	No, maybe in the future
Hours of operation	M-F (9:00am-4:00pm) parking allowed
Segment length	1.5 miles
Built on new or existing corridors	Existing
Benefit to Cost	No
Electronic fees	Yes, cell phone parking meters
Limited access corridor	No
Merchants/residents involved	Yes
Total number of lanes	6
Towing	Yes
Managing / operating agency	The District with private towing
Currently under operation?	Yes
Notes	Parking lanes are open to traffic during peak

Appendix A: Case Study Questions –Time-of-Day Parking

I. North Miami Avenue, 20 th Street to 56 th Street, North Miami, Florida	
Local contact	Humberto Escandon, City of Miami, Fl., Parking Manager
Facility type	Urban Arterial
Why candidate for LOSP	Local business demand more parking, near their shops
Largest issue / obstacle in providing LOSP	Drivers getting use to the parking on the street during the off hours
What would you do differently	Provided this opportunity sooner
How was the success measured	Utilization of business enhanced with capacity of the road unchanged
How were problems measured	Enforcement, safety, compliance
Was special funding used	No
Feds involved	No
Legal challenges	None
Public acceptance	Very positive acceptance form residents and merchants
Enforcement / control strategy	Towing
Maintenance	Minimal
Special lighting	No
Transit allowed	No
Hours of operation	M-F (9:00am-4:00pm) parking allowed
Segment length	2.0 miles
Built on new or existing corridors	Existing
Benefit to Cost	No
Electronic fees	No
Limited access corridor	No
Merchants/residents involved	Yes, public meetings regularly
Total number of lanes	4
Towing	Yes
Managing / operating agency	City Parking Division
Currently under operation?	Yes
Notes	Parking lanes are open to traffic during peak

Appendix A: Case Study Questions – Time-of-Day Parking

I. Main Street, Downtown, Richmond, Virginia	
Local contact	Thomas Flynn, traffic Engineer, City of Richmond, Virginia
Facility type	Urban Arterial
Why candidate for LOSP	Downtown parking a premium, spaces needed everywhere
Largest issue / obstacle in providing LOSP	Merchants wanted more time, no real obstacles
What would you do differently	Provide truck bays on either end of the restrictions
How was the success measured	Public acceptance
How were problems measured	Enforcement
Was special funding used	No, but metering became popular for the City
Feds involved	No
Legal challenges	None
Public acceptance	Very positive
Enforcement / control strategy	Tickets, towing
Maintenance	Minimal
Special lighting	No
Transit allowed	No
Hours of operation	M-F (9:00am-4:00pm) parking allowed
Segment length	2.0 miles
Built on new or existing corridors	Existing
Benefit to Cost	No
Electronic fees	Yes, meters
Limited access corridor	No
Merchants/residents involved	Yes
Total number of lanes	4
Towing	Yes
Managing / operating agency	The City with private towing
Currently under operation?	Yes
Notes	Successful