WEST SHORE BLVD

COMPLETE STREET FEASIBILITY STUDY

CITY OF TAMPA FLORIDA
ORGANIZED JULY 15 1887
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SUMMARY REPORT

2014

West Shore Boulevard
Complete Street Feasibility Evaluation

Summary Report

Prepared for:
City of Tampa, Florida

Prepared by:

May 8, 2014

EXECUTIVE SUMMARY

A complete-street feasibility evaluation was completed for West Shore Boulevard between Kennedy Boulevard and Boy Scout/Spruce Street to compare opportunities that could improve multi-modal accommodations while also continuing to serve motor vehicle traffic. This preliminary evaluation consisted of the following:

- Data collection of historical and existing traffic
- Travel demand forecasting
- Review of existing public right-of-way
- Development of potential cross-sections
- Development of plan view concept
- Long range cost estimates
- Policy recommendations

The Westshore Alliance formed a technical subcommittee to help review materials and develop project alternatives. The committee consisted of members from the City of Tampa, Hillsborough County, Florida DOT, Westshore Alliance, and other various professionals with a background in transportation planning and engineering. This project was managed by the City of Tampa. However, this section of West Shore Boulevard is under Hillsborough County jurisdiction, and three of the largest cross-street intersections are under Florida DOT jurisdiction, which is why proactive coordination between the different public agencies was essential.

Cross-section recommendations were identified as “short-range” improvements that potentially could be implemented within the existing public right-of-way. The “long-range” improvements identify an additional 10-foot public access easement located between the edge of right-of-way and in front of anticipated private redevelopments. The cross-sections were prepared for consistency with the recently created Westshore Overlay District and the Westshore Area Master Plan.

The recommendations for both north and south of I-275 contain symmetrical cross-sections with on-street bicycle lanes, much wider sidewalks, trees planted both within a landscaped median and behind the curbs. The segment north of I-275 is proposed to have a typical cross-section that can preserve the existing curb-line, which may provide a significant cost savings when compared to a total reconstruction of the facility. The segment south of I-275 has more dramatic improvements by reducing the currently inefficient six-lanes into a four-lane facility between Kennedy Boulevard and I-275. The removal of the outside lanes reduces merging/weaving conflicts and allows the outside travel lanes to accommodate significantly improved landscaping and bicycle/pedestrian facilities.

Modifications to existing intersection geometries were then prepared and the recommendations are provided in a plan view that covers the study area. The development of recommendations was an iterative process of considering both traffic engineering and urban design principles. The alternatives developed during this project represent a balance of providing the “complete street” benefits with the least amount of increased

traffic delay. In summary, the recommendations are anticipated to increase existing motor vehicle travel times along the study area by about 4.4 percent (or 11 seconds).

Significant opportunities to reduce pedestrian crossing distances, improve sidewalk and bicycle infrastructure, reduce unnecessary pavement, and improve landscaping were identified at various locations throughout the study area. Changes to existing lane configurations were identified at the Kennedy Boulevard and at the Cypress Street intersections. However, these recommendations do not prevent other capacity improvements, such as triple northbound-left-turn-lanes at Kennedy Boulevard, from potentially being evaluated further also.

Opportunities at some locations were identified to reduce the length of existing left-turn lanes so that additional median space could be used for landscaping. These opportunities were due to low left-turn volumes and/or a reduced design speed. A speed study was completed as part of this project and the results identified that the majority of vehicles in both directions currently travel five to nine miles per hour slower than the existing 45 mph speed limit.

The long-range planning level cost potential was estimated for the recommendations identified in this project. The estimate assumed a total reconstruction of West Shore Boulevard between Kennedy Boulevard and Boy Scout/Spruce Street. The total range of cost potential for the recommendations was from $14-21 million. However, it is expected that the actual cost may be on the low end of the range. If the typical cross section for the north segment can be built within the existing curb, that would be a considerable cost savings compared to a total reconstruction. This cost comparison is recommended for additional refinement with more detailed levels of design and engineering.

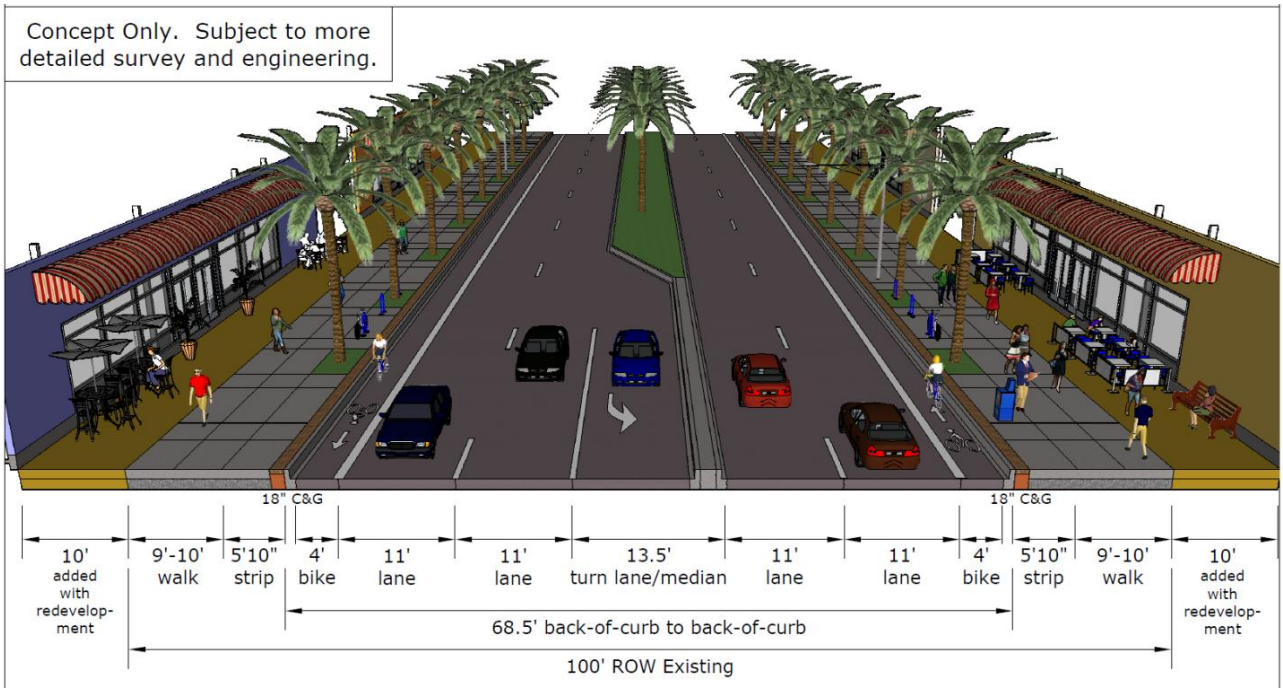
Transportation policy can have a significant influence on the development of potential improvements for transportation infrastructure. In addition to the design and infrastructure recommendations presented, the following policy considerations were also explored:

- "Constrain" the Long Range Transportation Plan (LRTP) to remove six-lane widening project
- Carry the Analysis Further to PD&E and Design Phases
    - FHWA/FDOT Concurrence with other agencies
    - SR 60/I-275 Interchange Coordination
    - Perform sub-area FSUTMS travel demand model refinement
    - Extension of Reo, Occident, and Trask Streets under I-275
- Bury overhead utilities
- Convert to mast arm traffic signals
- Convert to 35 mph speed limit

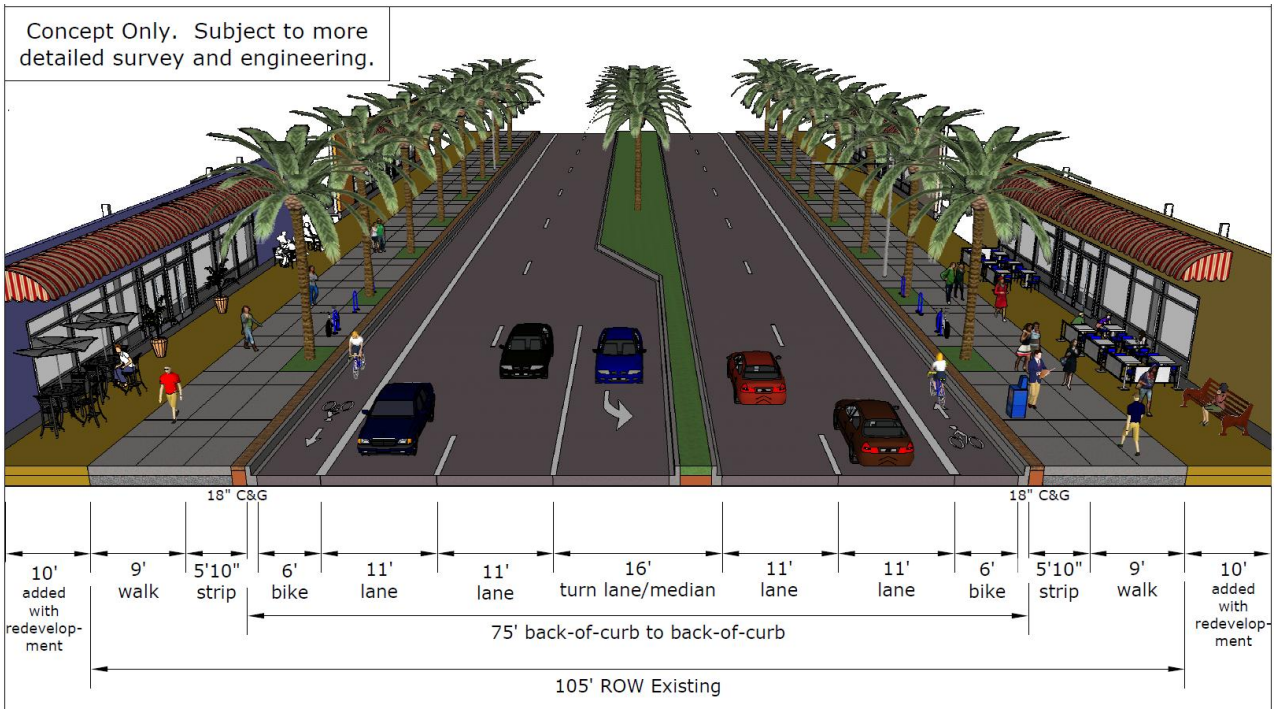
Other considerations would be to consider evaluating mid-block pedestrian crossings along the study area and potentially changing the West Shore Boulevard "principal arterial" classification.

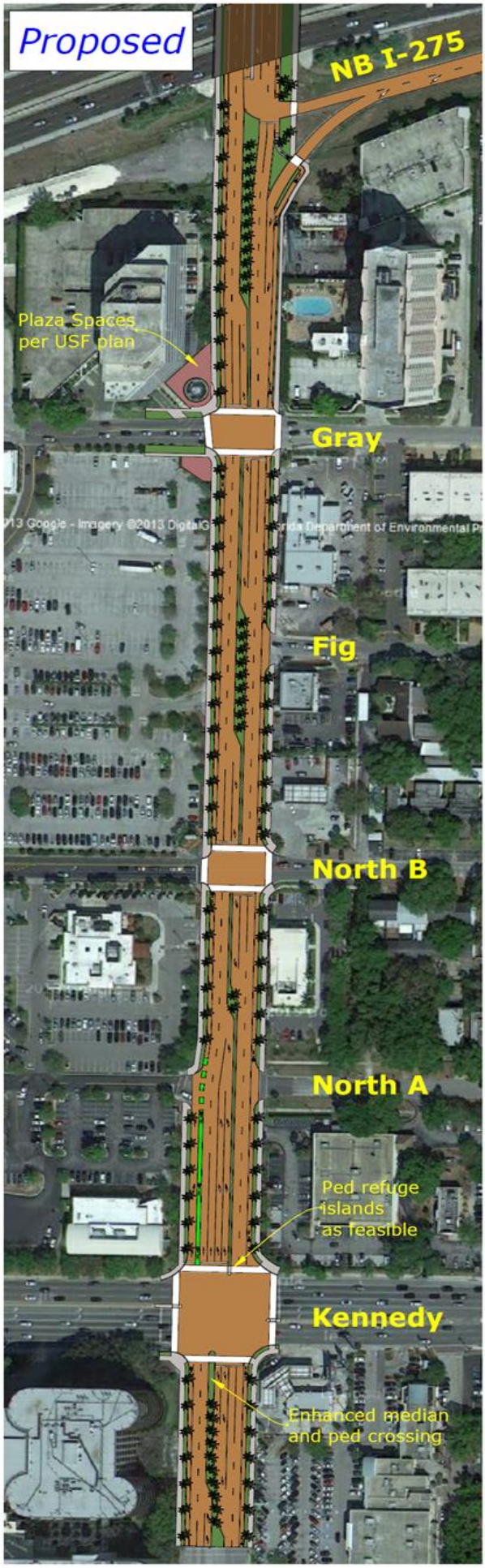
The following graphics show the recommended improvements.

North Segment – Typical Cross Section



South Segment – Typical Cross Section





N

0 40 80 160 Feet

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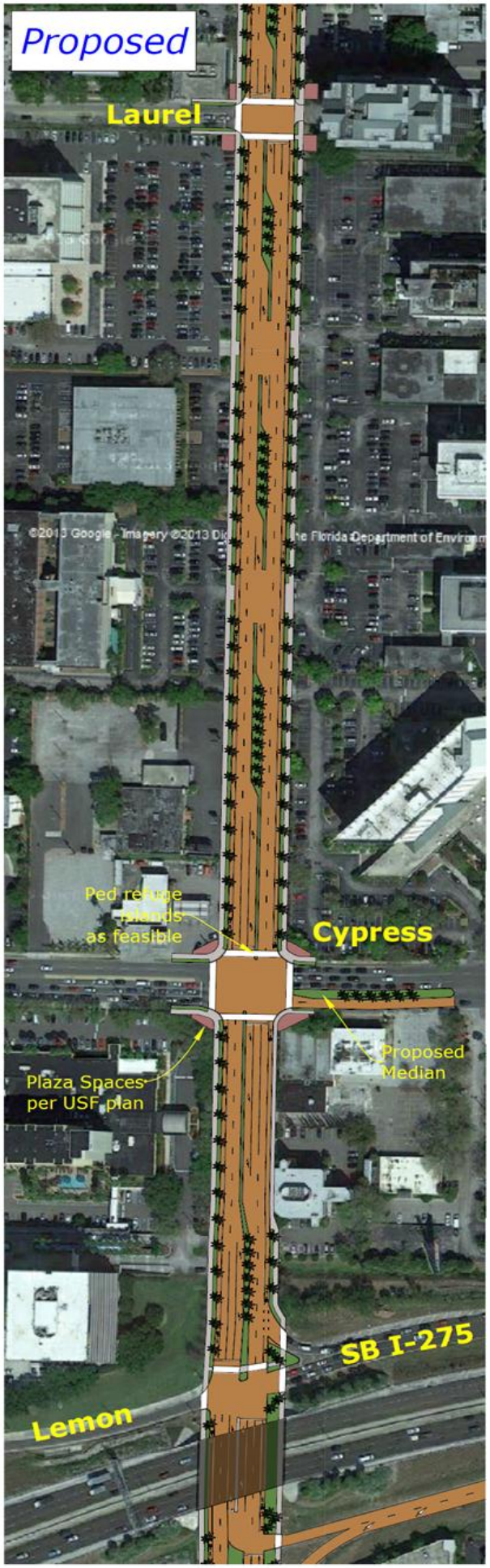
Project # 130107
West Shore Boulevard
Overlay Sidewalks with Bicycle Lanes

SOUTH CONCEPT

D.B. AJB
C.B. JSC
Rev. 3/8/14



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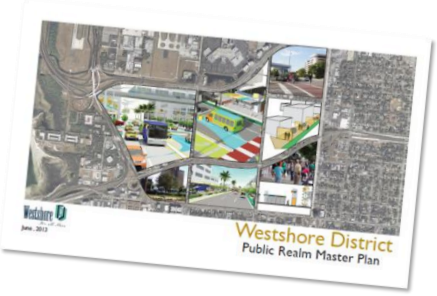
Available by Electronic File

BACKGROUND

The Hillsborough County Metropolitan Planning Organization's (MPO) Long Range Transportation Plan (LRTP) identifies widening West Shore Boulevard to continuous six-lanes between Spruce Street and Kennedy Boulevard. The LRTP is based on projected future-year traffic volume forecasts. However, more recent planning efforts, including the Westshore Public Realm Master Plan, have subsequently focused making West Shore Boulevard a complete street serving more than just vehicle traffic.



The West Shore corridor was originally developed as a suburban style corridor. Much of the original development exhibits car-oriented design, with surface parking in front and walking and biking access inconvenient or non-existent. The trend over time had been to reduce the number of access points in order to accommodate greater traffic volumes travelling through the neighborhood. The area has grown into a dominant sub-market of retail and office, with most trips made by private vehicles.

West Shore Boulevard has grown into a large market of retail and office space since the 1960's with typical suburban style development patterns.

Newer re-developments are now being subject to an overlay architecture district, which encourages buildings in the front, providing better pedestrian access, and parking behind the buildings. Other large residential projects are currently under construction or are planned in the near future.

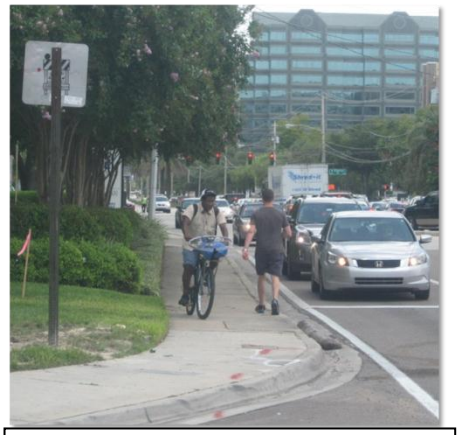
The streetscape includes no landscaping south of I-275, with occasional median landscaping north of I-275. Above-ground utilities exist throughout the corridor, including span-wire traffic signals. In general, the streetscape (within the public right-of-way) could be characterized as barren and hostile to people, with outdated and unsightly equipment prevailing.

West Shore Boulevard south of I-275.

The existing ROW is purposed to maximize vehicle travel lanes, providing minimal pedestrian and transit facilities, and no dedicated bicycle facilities. Pedestrians are occasionally present along study area, but with only narrow sidewalks and limited crossing opportunities, few people have historically chosen to walk. However, recent observations indicate that the trend may be starting to change.

The plan to widen West Shore Boulevard in the LRTP was originally intended to relieve overall traffic congestion by providing additional north-south capacity in the region. Based on generalized roadway capacities, the expected demand warrants six-lanes. However, the generalized capacities do not adequately account for details like intersection capacity and performance, and detailed operational analysis is needed to measure actual improvements in capacity and performance.

In recent years, the importance of providing higher-quality pedestrian and bicycle facilities to provide convenient mode choices has become more apparent for mixed-use neighborhoods to remain economically competitive. West Shore Boulevard has a substantial concentration of destinations, particularly office and retail uses, and is expected to see continued growth. It will be difficult to continue to serve this development with an exclusively auto-oriented corridor, and therefore, the City of Tampa is exploring options to provide a more balanced set of transportation options, including re-purposing travel lanes to provide higher-quality pedestrian and bicycle facilities.



A pedestrian and a bicyclist share a narrow sidewalk along busy West Shore Boulevard.

The purpose of the study is to evaluate options for serving the transportation needs of all modes of travel in the West Shore Boulevard corridor. With input from the Westshore Alliance and the technical subcommittee, the City of Tampa evaluated opportunities to make West Shore Boulevard more of a “complete street.” This project evaluates which options are technically feasible to improve West Shore Boulevard to better accommodate all modes of travel and to improve aesthetics along this primary arterial.

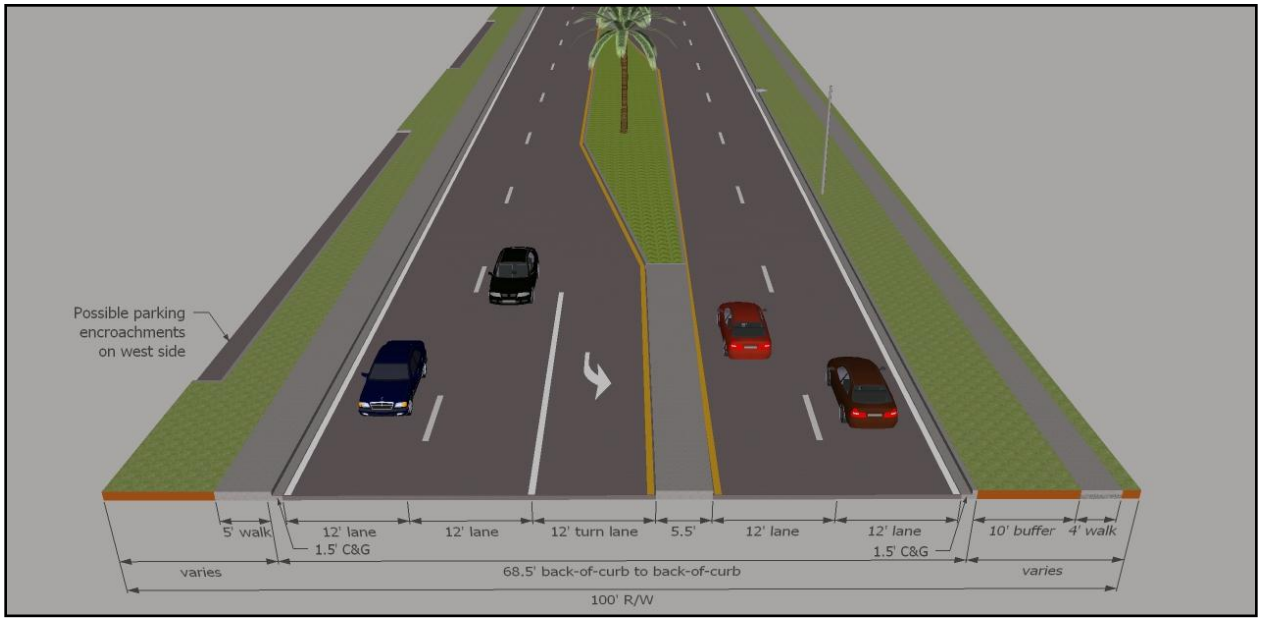
EXISTING CROSS-SECTION

West Shore Boulevard is a north-south arterial roadway that connects between International Plaza north of Spruce Street and Interbay Boulevard in South Tampa. The roadway is generally a four-lane divided arterial

between International Plaza Mall and I-275, a six-lane divided facility between I-275 and Kennedy Boulevard, and a two-lane undivided facility south of Kennedy Boulevard.

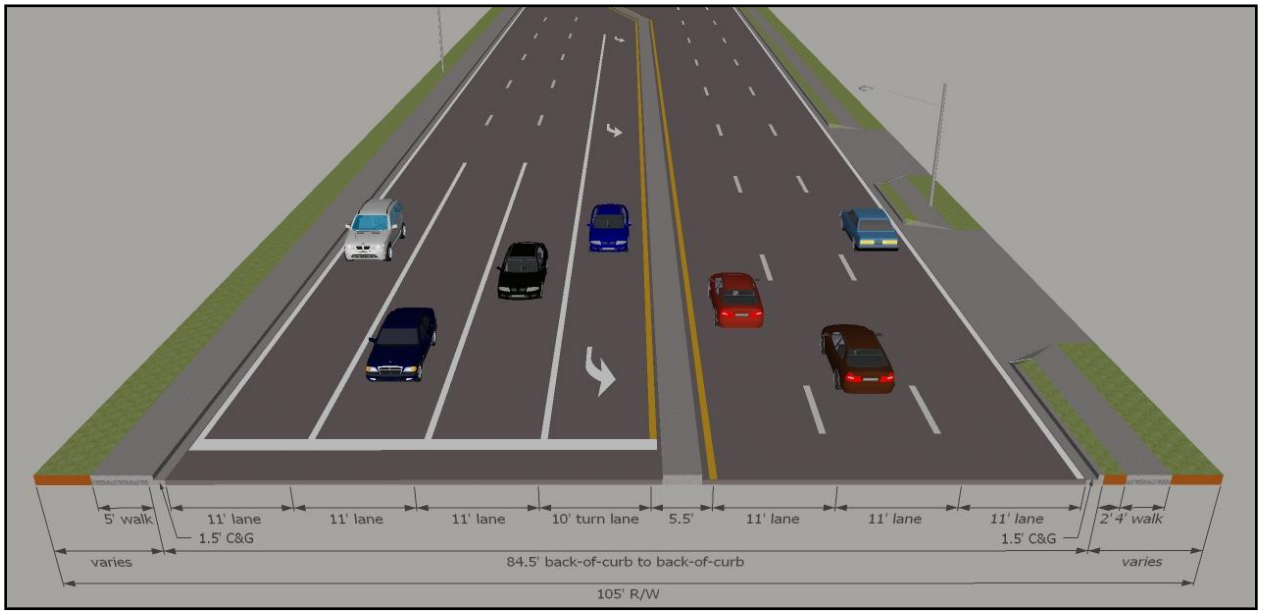
While sidewalks are continuous throughout the corridor, the pedestrian environment is generally low quality. North of I-275, sidewalks are generally curb-tight on the west side of the street, set back approximately 10 feet on the east side, are typically four to five feet in width, and with four-lanes of relatively high-volume traffic. South of I-275, sidewalks are almost exclusively curb-tight, adjacent to six-lanes (and up to eight-lanes at the intersections) of high-volume traffic. Pedestrian crossings are provided only at signals, where people walking must contend with long wait times, long crossing distances, and significant volumes of conflicting turning vehicles.

No dedicated bicycle facilities are provided in the corridor. Bicyclists may legally share the travel lanes, but with a posted speed of 45 mph and 11-foot wide shared use lanes, few people are comfortable doing so, and therefore, frequently a rare bicyclist may share the narrow sidewalk with pedestrians.



Existing typical cross-section along the north segment of West Shore Boulevard between Spruce Street and Cypress Street.

The right-of-way width in the corridor is generally 100 – 105 feet, providing adequate space for a six-lane divided roadway with curb-tight sidewalks and utilities. With this current configuration, there is not adequate space dedicated for complete street features such as wide and/or setback sidewalks, bicycle facilities, or planting strips.

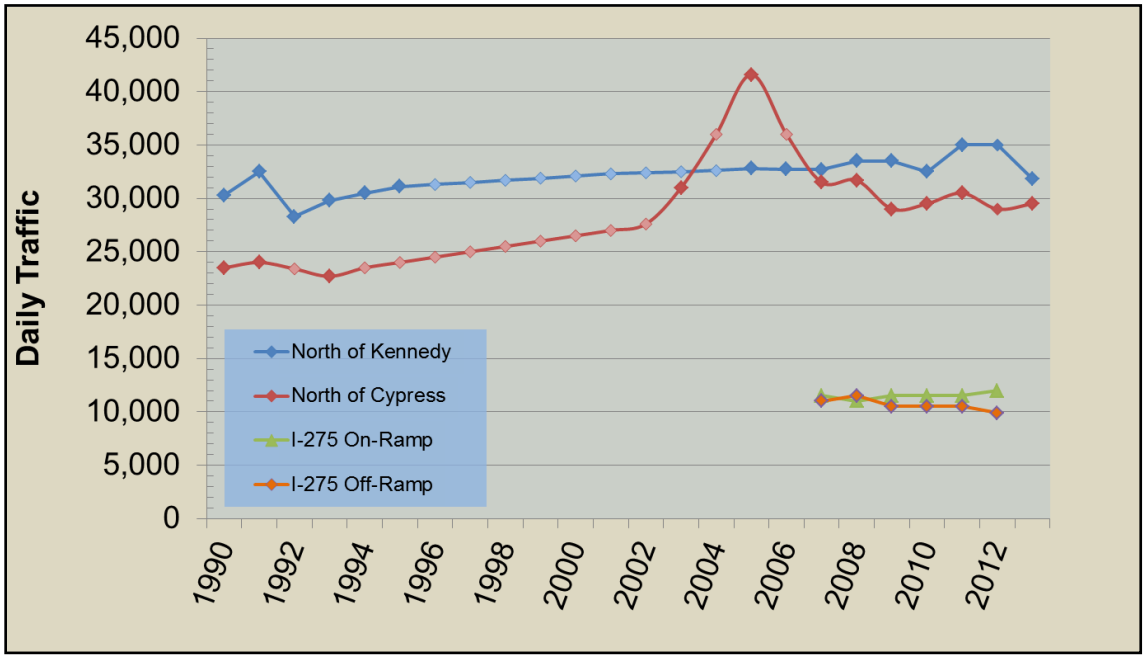


Existing typical cross-section along the south segment of West Shore Boulevard between I-275 and Kennedy Boulevard.

TRAFFIC DATA

Historical traffic counts were first reviewed to identify trends and daily traffic volumes along West Shore Boulevard. Historical traffic counts that are published by the Florida DOT and the City of Tampa along West Shore Boulevard were obtained and reviewed to identify trends.

TRAFFIC VOLUME HISTORY ALONG WEST SHORE BOULEVARD



The historical traffic data identified that the daily volumes north of Kennedy Boulevard have remained relatively consistent while the volumes north of Cypress Street have been increasing. The truck percentage along West Shore Boulevard has remained relatively consistent at 2-3 percent of overall traffic.

Due to the age of existing data, new traffic data was also collected for use in the evaluation. Existing traffic counts were collected at all signalized intersections in the study area along West Shore Boulevard in July 2013 and adjusted to peak season values. A two-hour turning movement count (TMC) was conducted for each peak period (AM Peak, Mid-day, and PM Peak) during a typical week day at the following intersections:

- Westshore Boulevard & Kennedy Boulevard
- Westshore Boulevard & North B Street
- Westshore Boulevard & West Gray Street
- Westshore Boulevard & I-275 Northbound Ramps
- Westshore Boulevard & I-275 Southbound Ramps
- Westshore Boulevard & West Cypress Street
- Westshore Boulevard & West Laurel Street
- Westshore Boulevard & West Spruce Street/Boy Scout Boulevard

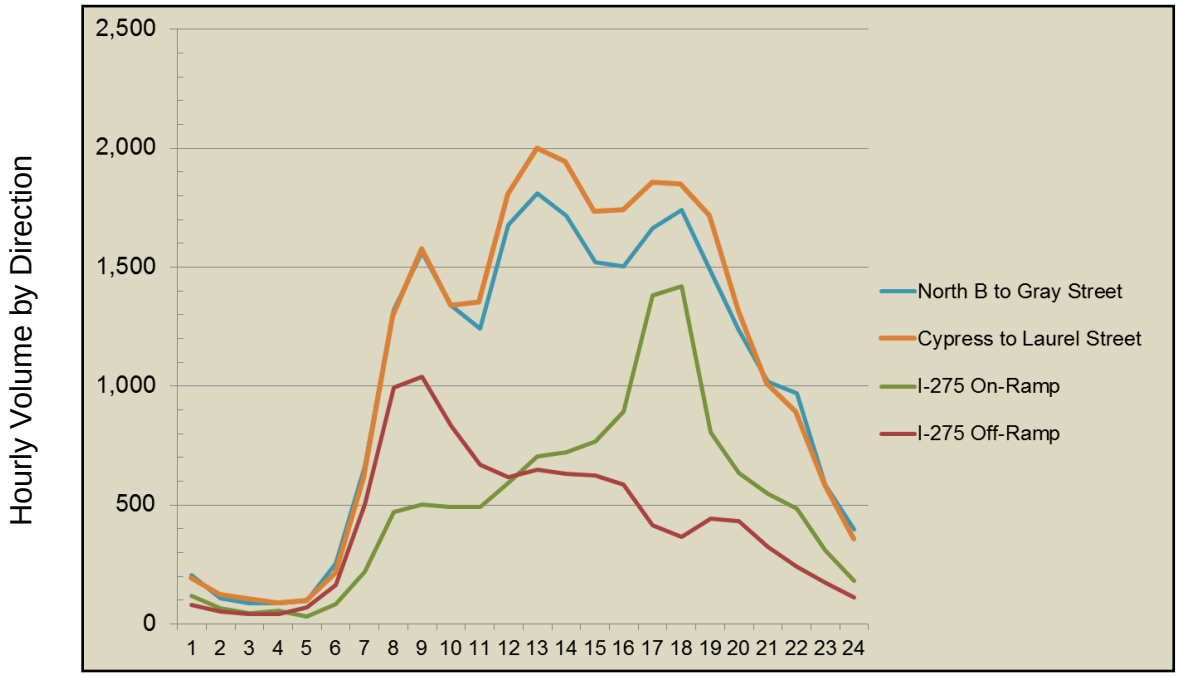
Traffic signal timings, lane geometries, pedestrian counts, and bicycle counts were also collected as part of the TMC data collection process. A summary of the peak hour turning movement count volumes for each of the three time periods is available in the appendix.

Twenty-four hour mainline vehicle classification counts that identify volumes by vehicle type were also collected for three consecutive days at two locations in each direction. The south location was collected between Kennedy Boulevard and I-275. The north location was collected between I-275 and Spruce Street/Boy Scout Boulevard. The following graph identifies the hourly volume trends for West Shore Boulevard.

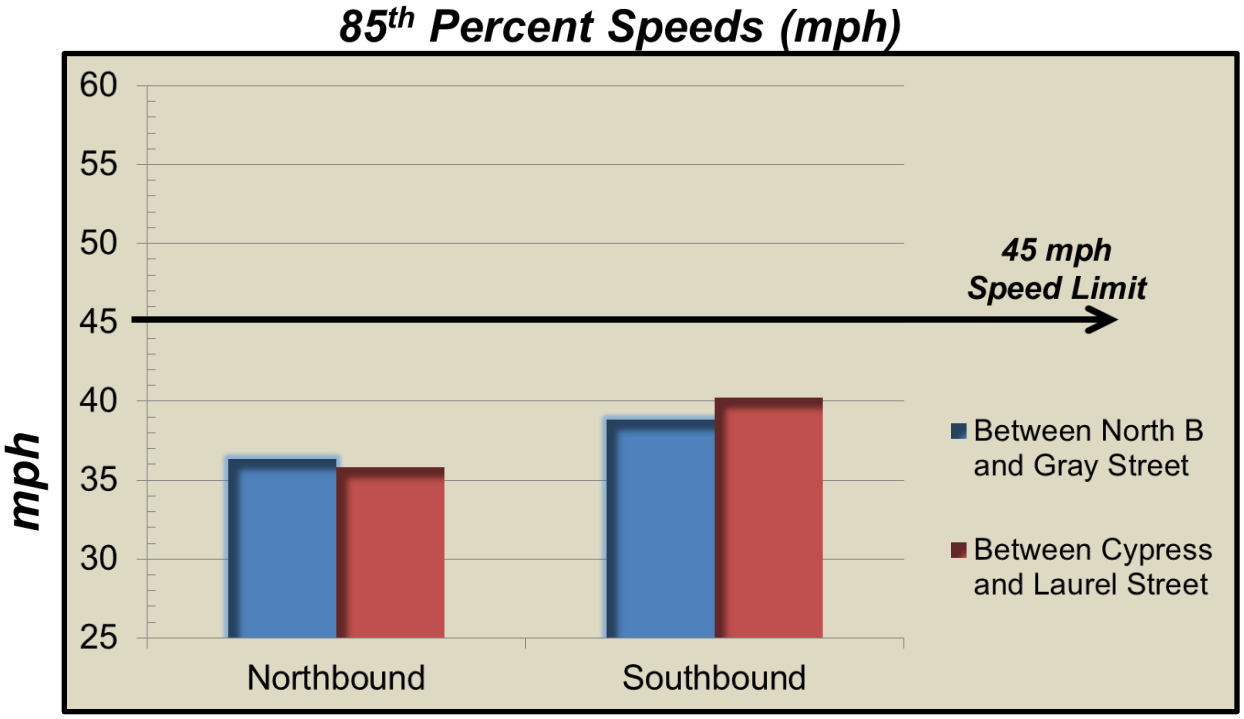
The hourly volume collection identified a sustained traffic demand from 7:00am-8:00pm. There are similarities between the north and the south segments regarding hourly distribution of traffic. The northbound direction generally carries more daily volume. The noon hour demonstrates to be the greatest demand along the study area, and the hourly distribution patterns on West Shore Boulevard are different than the I-275 patterns.

During the data collection there was consistent demand between different days. The largest challenge was finding “regular days” to conduct the data collection. The lowest hourly volumes were identified between 10:00am-11:00am, which was when the spot speed data was collected.

HOURLY TRAFFIC VOLUMES ON WEST SHORE BOULEVARD



Since the speed limit was also considered as part of the evaluation, existing speed data was collected and analyzed. One-hour data sets of mainline spot speeds for each direction of travel were collected. Speed data was collected in each direction along the south half and also the north half of the corridor. This data was then summarized to identify the 85th percentile speed. The table below summarizes the results. A copy of the data collected is provided in the appendix.



Most speeds collected were between five to nine mph below the speed limit. The northbound direction was identified to generally be the slower direction. It is likely that there is a combination of factors of why most speeds are below the 45 mph speed limit, such as the traffic volumes, and a variety of dense land uses located near the right-of-way.

TRAVEL DEMAND MODELING

Travel demand model estimates were generated using the FSUTMS model for future 2035 conditions for both the 4-lane and 6-lane alternatives. The base 2035 Tampa Bay Regional Planning Model was used to compare three alternative scenarios:

- Base model: 2035 Long Range Cost Affordable Network
- Scenario 1: 2035 base model with six-lanes of West Shore Blvd and other relievers
- Scenario 2: 2035 base model with four-lanes of West Shore Blvd and other relievers
- Scenario 3: 2035 base model with four-lanes of West Shore Blvd only

The other relievers are planned parallel local roadways to West Shore Blvd identify to carry local trips underneath I-275. These relievers were identified and adopted by the subcommittee as assumed improvements in the future year condition:

- Reo Street
- Occident Street
- Trask Street

The six-lane scenario of West Shore Blvd was identified to attract many more vehicles to the corridor than the four-lane scenario. It would be difficult to demonstrate a service delay improvement with the six-lanes of West Shore Blvd due to the increased volume assignment. This is why an existing traffic volumes comparison was also undertaken.

It was identified that the future year six-lane scenario would attract about 10,000 more vehicles per day than the four-lane scenario. The combination of the Reo Street, Occident, and Trask Street relievers were identified as the facilities that would accommodate these vehicles, in addition to help restoring an improved grid network of streets.

The travel demand model plots are provided for comparison in the appendix. The table below summarizes the different travel demand model scenario conditions, the assumptions, and resulting assignment of traffic volumes.

West Shore Boulevard
Complete Street Feasibility Evaluation

Travel Demand Modeling Summary
September 2013

Location on West Shore			Base Model	Scenario 1	Scenario 2	Scenario 3
	1990 AADT	Existing AADT	2035 LRTP Cost Affordable	2035 6-Lane and other Relievers	2035 4-Lane and other Relievers	2035 4-Lane and LRTP
South of I-275	30,300	32,000	62,200	56,200	44,200	48,800
I-275 to Cypress	--	--	61,500	43,100	33,300	50,600
North of Cypress	23,500	29,500	49,500	49,400	39,800	40,000
Transit Trips	--	--	34,537	33,154	33,558	34,537

Note: Future year travel demand estimates provided in PSWADT, not AADT.

2035 Cost Affordable Plan
- Completion of I-275
- Widen O'brien Street to 4 lanes
- *Widen West Shore Blvd to continuous 6 lanes*

Scenario 1
- Completion of I-275
- Widen O'brien Street to 4 lanes
- *Widen West Shore Blvd to continuous 6 lanes*
- Extension of Trask Street under I-275
- Extension of Occident Street under I-275 to Westshore Mall
- Extension of Reo Street under I-275

Scenario 2
- Completion of I-275
- Widen O'brien Street to 4 lanes
- *West Shore Blvd is 4 lanes*
- Extension of Trask Street under I-275
- Extension of Occident Street under I-275 to Westshore Mall
- Extension of Reo Street under I-275

Scenario 3
- Completion of I-275
- Widen O'brien Street to 4 lanes
- *West Shore Blvd is 4 lanes*

DESIGN TRAFFIC VOLUMES AND ANALYSIS

Future year turning movement counts were generated for each alternative using the link volumes estimated by the travel demand model and the existing turning movement proportions. Future year travel demand model volumes were developed and provided by FDOT. The 2035 Cost Affordable Plan was used and considered to be the base model year for future year analyses. Model volumes were provided in peak-

season weekday average daily traffic (PSWADT) and then multiplied by the Florida DOT "K" factor to obtain peak hour volumes. Existing turning movement proportions were applied from the TMCs. Directionalization of the volumes was done by using the existing directional split for the link. Computing the north-south through volumes was based on the upstream and downstream directional link volumes, and the existing turning proportions. Computing the north-south turning volumes was done as a proportion of the non-through upstream link volume. Computing the east-west turning volumes was done as a proportion of the non-through downstream link volume. Computing the east-west through volumes at Spruce and Kennedy Streets was based on their model link volumes and the calculated turning volumes. Computing the remaining east-west through volumes was proportionate to the east-west turning volumes. Minor street volumes not provided in in the model network were also adjusted to ensure growth projections as compared to existing volumes.

There was a lack of preexisting available AADT data for side street traffic. Also, the published traffic volume data in the vicinity is predominantly a combination of estimated and calculated estimates along West Shore Blvd. Therefore, as part of this project, classification count data was collected for three consecutive days along West Shore Blvd to develop an AADT for both the north and south study segments. This AADT was compared to the TMC collected data utilizing the AADT*K*D*% method.

The peak season adjusted TMC data demonstrated greater volumes at the majority of locations when compared to the classification count method. Therefore, it was determined that utilizing the existing TMC counts may provide a sufficient and a more conservative analysis. Also, this method allowed the project team to analyze AM, MidDay, and PM Peak scenarios, scenarios which would not be possible under the proposed AADT*K*D*% method. Therefore, the TMC data is considered to be a sufficient and more detailed method to establish the Base Year volumes.

Existing traffic conditions and future 2035 traffic conditions for the 4-lane and 6-lane alternatives were analyzed using Synchro. Synchro is a traffic analysis and optimization software application which determines intersection capacity and traffic operations. Analysis was performed for AM, Midday, and PM peak conditions for existing conditions and each future alternative. With future 2035 conditions showing high levels of congestion for all scenarios, the 4-lane alternative was also analyzed with existing traffic volumes for comparison.

Future year lane configurations for the alternatives were determined through analysis based upon the future year traffic volumes. Differences in projected volumes along West Shore resulted in substantial expansions needed in turn lane configurations to accommodate projected demand for the 6-lane scenario, as compared to the 4-lane scenario. The 6-lane scenario was developed with an effort made to address forecasted future year travel demand model volumes which may produce V/C ratios more comparable to the 4-lane scenario. The forecasted 6-lane volumes are extremely high, and are difficult or impossible to serve with at-grade intersections, particularly at the Boy Scout, Cypress, I-275, and Kennedy intersections. The 6-lane scenario included more aggressive and hypothetical turn-lane assumptions than the 4-lane scenario regarding turn lanes in an effort to address these much higher volumes, largely because the model forecast allocates

significantly more traffic to the 6-lane scenario. Turn lane additions were assumed to bring operations to levels comparable to the 4-lane scenario and the lower allocated demand. The added lanes for the 6-lane scenario consisted of:

- 3rd NBLT lane, 2nd NBRT lane, 3rd SBLT lane, 3rd SBT lane at Boy Scout/Spruce Street
- 2nd EBT lane, 2nd EBLT lane, 2nd WBLT lane, WBRT lane, 2nd SBLT lane, SBRT lane, NBRT lane at Cypress
- 2nd SBLT lane, no merge lane at I-275 NB

The additional turn lanes identified in the 6-lane scenario (some of which are located outside of the ROW) are not recommended for further consideration. Refinements that help develop a more detailed travel demand model are suggested for further consideration, but were not originally identified in the City's scope of services for this preliminary screening evaluation of West Shore Blvd. For these reasons is why an existing volume conditions analysis was also undertaken to comparatively evaluate the two alternative scenarios on West Shore Blvd.

Traffic signals were optimized manually in accordance with procedures in the Highway Capacity Manual for each intersection to optimize the level of service and the volume-to-capacity (V/C) ratio. The following tables summarize expected level of service, delay, volume/capacity ratios, and critical movements listed by intersection for AM, Midday, and PM peak-hour conditions, respectively. More detail on this data is also documented in the Synchro reports in the appendix.

AM Peak-Hour Intersection Conditions

Intersections		AM Existing	AM Existing 4-lane Concept	2035 AM 4-lane	2035 AM 6-lane
Boy Scout	LOS	D	D	F	F
	Delay	38.9	37.4	216.7	263.8
	Max V/C	0.94	0.94	1.74	1.94
	Movement	WBL/EBT	WBL/EBT	EBL/WBT	WBL/EBT
Laurel	LOS	A	A	B	B
	Delay	3.4	3.4	11.8	15.7
	Max V/C	0.30	0.30	0.75	0.85
	Movement	SBT	SBT	NBL/SBT	NBL
Cypress	LOS	D	D	E	D
	Delay	40.5	42.9	68.5	41.5
	Max V/C	0.83	0.95	1.04	0.85
	Movement	NBL	NBL	SBL/NBT	SBL/NBT
I-275 SB	LOS	C	C	D	C
	Delay	24.8	26.9	39.8	33.7
	Max V/C*	0.91	0.91	1.03	1.07
	Movement	WBR	WBR	WBR	WBR
	NBL V/C*	0.78	0.78	0.99	0.99
I-275 NB	LOS	B	B	D	D
	Delay	16.7	19.6	45.4	52.3
	Max V/C	0.86	0.86	1.04	1.17
	Movement	NBT	NBT	NBT	NBR
Gray	LOS	A	A	B	B
	Delay	6.4	7.4	17.0	13.3
	Max V/C	0.52	0.63	0.77	0.71
	Movement	WBTL	NBT	NBT	NBT
North B	LOS	A	A	A	A
	Delay	2.1	2.6	6.1	7.7
	Max V/C	0.41	0.55	0.78	0.87
	Movement	WB	NBT	WB/NBT	WB/NBT
Kennedy	LOS	D	D	E	E
	Delay	45.0	46.3	71.7	68.9
	Max V/C	0.89	0.84	1.07	1.04
	Movement	NBL	NBT	SBL/NBT/EBT	NL/ST/WL/ET

Mid-day Peak-Hour Intersection Conditions

Intersections		Mid Existing	Mid Existing 4-lane Concept	2035 Mid 4-lane	2035 Mid 6-lane
Boy Scout	LOS	D	E	F	F
	Delay	53.9	55.4	86.0	81.4
	Max V/C	0.82	0.82	1.09	1.04
	Movement	NBL/SBT	NBL/SBT	NL/ST/EL/WT	WL/ET/NL/ST
Laurel	LOS	A	A	B	B
	Delay	6.7	7.1	12.7	14.3
	Max V/C	0.62	0.62	0.71	0.78
	Movement	EBL	EBL	SBT	NBL
Cypress	LOS	D	D	F	D
	Delay	37.1	41.7	80.8	46.6
	Max V/C	0.83	0.94	1.10	0.92
	Movement	WBL/EBT	NBL	NL/ST/EL/WT	EBL
I-275 SB	LOS	B	B	C	B
	Delay	17.9	18.2	20.4	18.3
	Max V/C*	0.92	0.92	0.75	0.78
	Movement	WBR	WBR	WBR	WBR
	NBL V/C*	0.67	0.67	0.97	0.95
I-275 NB	LOS	A	A	B	B
	Delay	7.1	8.4	13.4	19.9
	Max V/C	0.67	0.67	0.74	0.80
	Movement	NBT	NBT	NBT	NBR
Gray	LOS	B	C	D	E
	Delay	19.4	27.1	35.6	57.4
	Max V/C	0.85	0.86	0.96	0.98
	Movement	EBL	EBL/SBT	NBL/SBT	NBL/SBT/WBL
North B	LOS	B	B	C	B
	Delay	12.7	13.4	21.8	18.2
	Max V/C	0.84	0.84	0.94	0.96
	Movement	EBL	EBL/SBT	SBT	NBL/SBL/EBL
Kennedy	LOS	D	D	F	F
	Delay	48.1	51.2	116.0	119.2
	Max V/C	0.85	0.85	1.22	1.19
	Movement	SBL/NBT	SBL/NBT	SL/NT/WL/ET	SL/NT/WL/ET

PM Peak-Hour Intersection Conditions

Intersections		PM Existing	PM Existing 4-lane Concept	2035 PM 4-lane	2035 PM 6-lane
Boy Scout	LOS	E	E	F	F
	Delay	70.5	69.9	194.1	191.1
	Max V/C	1.03	1.03	1.55	1.56
	Movement	NBL/EBL/SBT	EBL/WBT/NBL	EL/WT/NL/ST	EL/WT/NL/ST
Laurel	LOS	A	A	B	C
	Delay	6.9	6.9	17.0	21.1
	Max V/C	0.57	0.57	0.87	0.96
	Movement	EBL	EBL	EBL/NBT	EBL/NBT
Cypress	LOS	D	D	F	E
	Delay	44.2	44.7	97.8	69.3
	Max V/C	0.97	0.97	1.18	1.10
	Movement	EBR	EBR	EL/WT/SL/NT	EBR/WBL/SBT
I-275 SB	LOS	B	B	B	B
	Delay	14.5	14.6	15.2	17.2
	Max V/C*	0.95	0.95	0.76	1.01
	Movement	WBL	WBL	WBR	WBR
	NBL V/C*	0.20	0.20	0.51	0.90
I-275 NB	LOS	F	F	D	F
	Delay	107.7	109.7	47.6	121.6
	Max V/C	1.28	1.28	1.04	1.46
	Movement	SBL/NBR	SBL/NBR	SBL/NBT	SBL/NBR
Gray	LOS	B	C	D	D
	Delay	19.6	24.5	51.8	32.5
	Max V/C	0.68	0.68	0.94	0.90
	Movement	EBL/SBL	EBL/SBL	EBL/NBT	EBL/NBT
North B	LOS	A	B	C	D
	Delay	7.9	13.9	28.0	38.4
	Max V/C	0.80	0.80	0.91	0.95
	Movement	EBL	EBL	EBL/NBL/SBT	EBL/NBL/SBT
Kennedy	LOS	E	E	F	F
	Delay	57.6	58.5	157.8	183.9
	Max V/C	0.96	0.94	1.43	1.46
	Movement	NBL/SBT	NBL/SBT	WL/ET/NL/ST	WL/ET/NL/ST

* *Note:* NBL volumes at Lemon constrained to 1.00 (excess routed to Cypress). Max V/C of movements reported since this is a minor movement with no exclusive signal phase.
Phase splits manually optimized based on existing timing plans.
Coordinated phase assumed to be along West Shore except at Kennedy and Boy Scout/Spruce.
PSCF removed at I-275 ramps for all time periods due to construction diversion from Lois.
PSCF removed at Cypress in PM peak due to construction diversion from Lois.

Arterial performance along West Shore Boulevard was also analyzed using Synchro to identify the impact to typical travel times. The following table summarizes the arterial performance of the study corridor for AM, Midday, and PM peak-hour conditions, respectively.

West Shore Boulevard Arterial Performance Comparisons

Arterial		AM Existing	AM Existing	2035 AM	2035 AM
			4-lane Concept	4-lane	6-lane
Northbound	LOS	E	E	F	F
	Speed	16.1	15.8	6.3	6.8
	Time (s)	230	234	585	542
Southbound	LOS	E	E	F	F
	Speed	15.0	14.0	12.7	12.9
	Time (s)	247	266	293	288

Arterial		Mid Existing	Mid Existing	2035 Mid	2035 Mid
			4-lane Concept	4-lane	6-lane
Northbound	LOS	D	E	E	E
	Speed	17.4	16.4	13.1	15.0
	Time (s)	214	226	283	248
Southbound	LOS	E	E	F	F
	Speed	14.8	14.2	8.9	9.9
	Time (s)	250	261	415	374

Arterial		PM Existing	PM Existing	2035 PM	2035 PM
			4-lane Concept	4-lane	6-lane
Northbound	LOS	F	F	F	F
	Speed	12.5	12.0	8.6	8.5
	Time (s)	297	308	430	438
Southbound	LOS	E	E	F	F
	Speed	14.1	13.7	7.2	7.2
	Time (s)	263	271	516	514

<u>4-lane scenario includes:</u>
- Convert to 4-lanes from Kennedy to I-275
- Single NBLT lane at Cypress
- Single EBT departure lane at Cypress

<u>6-lane scenario includes:</u>
- Continuous 6-lanes from Kennedy to Spruce
- 3rd NBLT lane, 2nd NBRT lane, 3rd SBLT lane, 3rd SBT lane at Spruce
- 2nd EBT lane, 2nd EBLT lane, 2nd WBLT lane, WBRT lane, 2nd SBLT lane, SBRT lane, NBRT lane at Cypress
- 2nd SBLT lane, no merge lane at I-275 NB

TRAFFIC ANALYSIS FINDINGS

Several major capacity constraints exist along the corridor, specifically the intersections with Spruce Street, Cypress Street, I-275, and Kennedy Boulevard. Spruce/Boy Scout and Kennedy Boulevard represent the most significant constraints, and also represent the termini of the study corridor. The minor intersections at

Laurel Street, Gray Street, and North B Street have little effect on capacity, and show minimal performance differences with four or six lanes. Overall, future year operations anticipate continued high levels of congestion at the constrained intersections, particularly at Spruce/Boy Scout and Kennedy, with both the four-lane and six-lane alternatives.

The additional demand attracted by the six-lane alternative exacerbates the capacity constraints, resulting in the need for additional turn lanes in addition to the mainline widening. Many of these hypothetical turn lanes would be located outside of existing right-of-way. Level of Service F results even with the addition of these turn lanes. In summary, the six-lane alternative induces more demand on West Shore Boulevard than the amount of additional capacity created.

Because future-year volumes were showing highly congested operations in all alternatives, the four-lane alternative was analyzed for existing traffic volumes to provide a comparison to existing operations. The reduction in travel lanes between Kennedy and I-275 results in somewhat reduced speeds, but level-of-service remains comparable to existing conditions.

In summary, the proposed four-lane cross-section and associated intersection geometry improvements represent an overall 4.4 percent average travel time increase between all three time periods when compared to existing conditions. This average accounts for both directions of West Shore Boulevard through the study area for each of the three peak periods analyzed. Specifically, a 3.7% (or nine second) increase was reported for the northbound direction and a 5.0% (or 13 second) increase for the southbound direction.

ALTERNATIVE CONFIGURATIONS

Reconfiguration to a 4-lane roadway would provide space for improved pedestrian, bicycle, or transit facilities or streetscape elements. Several different options for reconfiguring the roadway were developed for review by the project review subcommittee. Provided below is a description of the configurations that were endorsed by the subcommittee. One typical cross-section was developed for each the north segment north of I-275 and the south segment south of I-275.

The north segment (I-275 to Spruce/Boy Scout) maintains the roadway as four-lanes with a landscaped median and provides left-turn lanes as needed to preserve access. The existing curb lines are maintained to limit costs, but the space between the curbs is reconfigured to provide 11 foot travel lanes, four-foot on-street bicycle lanes, and a 13.5 foot landscaped median. The remaining space located outside of the curb line on both sides of the street provides approximately a six foot utility, landscaping, furniture and/or sidewalk strip followed by an additional 9-10 feet of continuous sidewalk. These are considered to be “short-term” improvements since it appears they can be configured within the existing 100 foot public right-of-way.

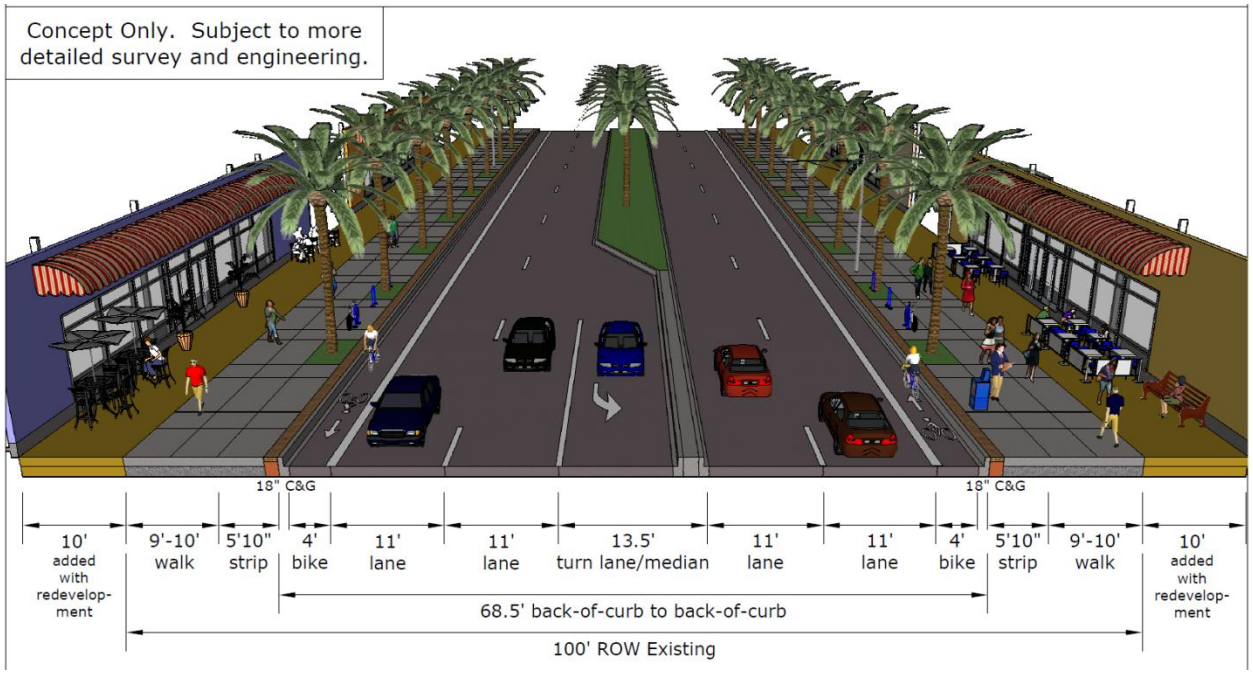
The south segment (Kennedy to I-275) reconfigures the roadway to four-lanes with a continuous landscaped median and provides left-turn lanes as needed. The existing curb lines are changed to provide 11 foot travel lanes, a sixteen foot continuously landscaped median, and six-foot wide on-street bike lanes. The remaining

space located outside of the curb line on both sides of the street provides approximately a six foot utility, landscaping, furniture and/or sidewalk strip followed by an additional nine feet of continuous sidewalk. These are considered to be "short-term" improvements since it appears they can be configured within the existing 105 foot public right-of-way.

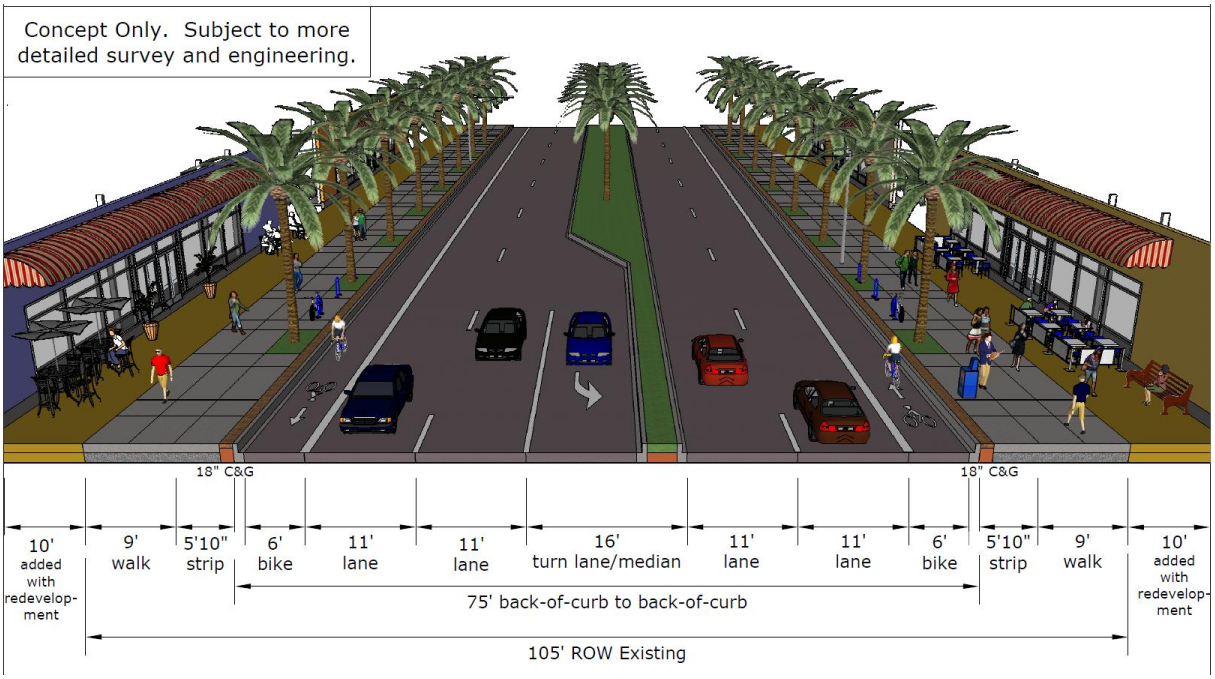
Both segments also identified "long-term" improvements that identified a public easement adjacent to the existing public right-of-way line. The width of the easement is 10 feet on each side of the street. The intention is to use the transitional 10 feet as public space for walking and streetscape amenities, such as plaza space, benches, tables, kiosks, public art, etc. along the frontage of buildings.

Both proposed segments would significantly improve the walking and bicycling environment compared to existing conditions, and could include an additional sidewalk dedication to be required as redevelopment occurs. Both segments also provide substantial space for median and street side landscaping in order to contribute to the streetscape and sense of place along West Shore Boulevard. The following graphics show the typical cross-section developed for the north and south segment of West Shore Boulevard.

North Segment – Typical Cross Section



South Segment – Typical Cross Section

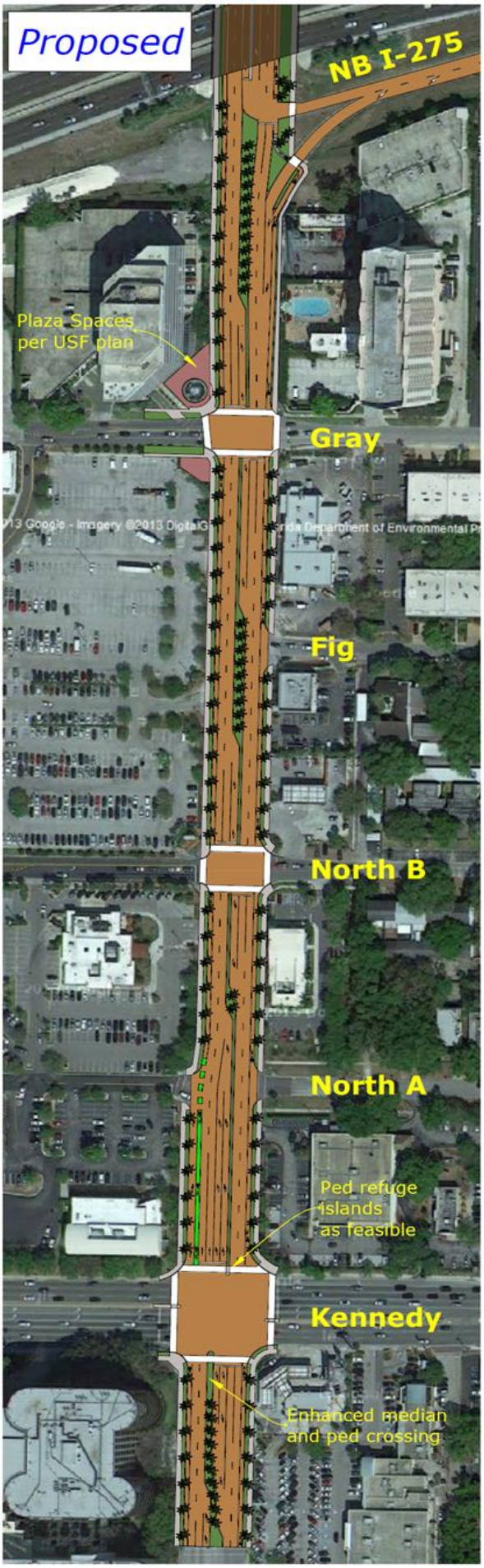


A conceptual plan view of improvement alternatives was also developed in addition to the typical cross-sections. The plan view covers the entire length of the study area and provides more detail, specifically identifying improvements at the intersections also.

Turn-lane modifications were evaluated at each intersection that would have relatively minor impact to traffic delays, while also providing the ability to reduce the existing pedestrian crossing distance and provide the ability for improved landscaping. Where feasible, pedestrian refuge areas were identified within the wider median. Special attention was given at intersections previously identified in the Westshore Area Master Plan as public plaza corners for consistency.

A reduced speed limit from the existing 45 mph to 35 mph facilitates the ability to reduce the length of turn lanes by reducing the required braking distance within each turn lane, while still being able to serve the same amount of traffic volumes. Opportunities for turn-lane removal along West Shore Boulevard are identified at the intersection of Kennedy Boulevard and at Cypress Street.

The following graphics provide the plan view of conceptual improvements. The four-lane concept alternative that was evaluated in the capacity analysis is the same alternative shown below.



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ADEASQ
TRANSPORTATION ENGINEERING + PLANNING
446 Second Street North, Suite 100
St. Petersburg, FL 33701

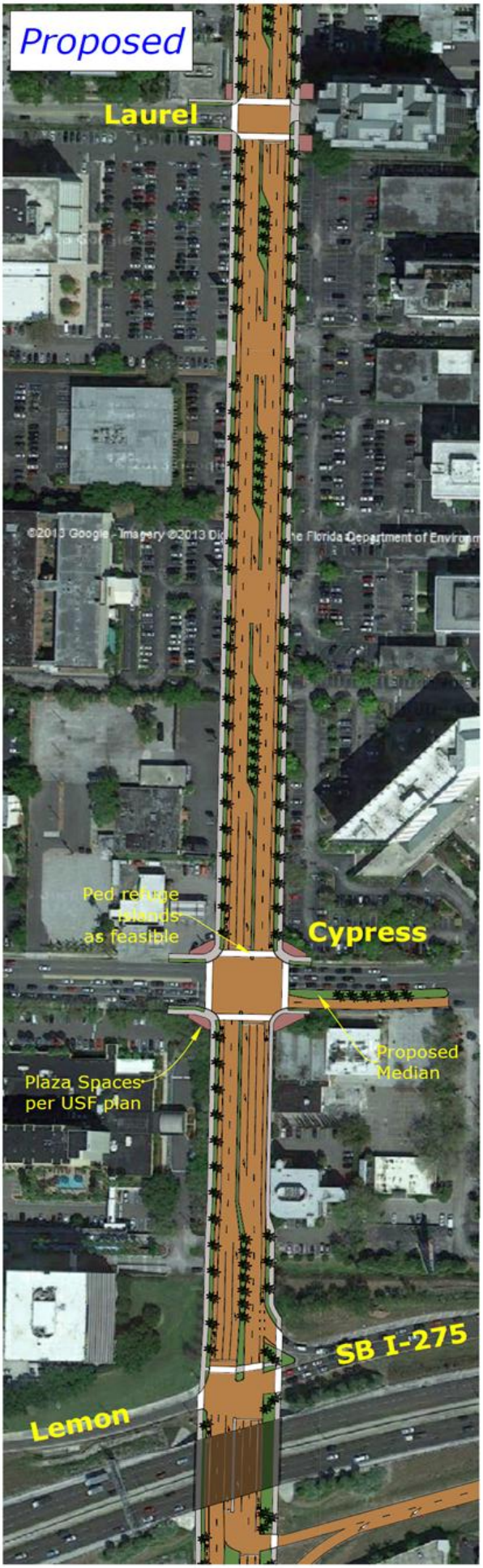
Project # 130107

West Shore Boulevard

Overlay Sidewalks with Bicycle Lanes

SOUTH CONCEPT

D.B. AJB
C.B. JSC
Rev. 3/8/14



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COST POTENTIAL

The long-range cost potential was estimated for the recommendations identified in this project. A planning level estimate referenced the most recent Florida Department of Transportation Long Range Estimating (LRE) data for specific cost items. Therefore, conservative assumptions were applied to provide the estimate.

The estimate assumed a total reconstruction of West Shore Boulevard between Kennedy Boulevard and Boy Scout/Spruce Street. This reconstruction includes new bicycle and pedestrian facilities, new decorative lighting, new street trees, and retrofit of the new medians. Existing span-wire traffic signals would be changed to assume new and more decorative mast-arm signal assembly. Utilities that are currently overhead would be converted to underground utilities, where feasible.

Construction aspects of the cost potential include Maintenance of Traffic (MOT) and mobilization of the contractors. Other phases assumed in the cost potential include 15 percent for inspection (CEI), 15 percent for design, and a 25 percent cost contingency. Cost escalation to year 2015 dollars was also assumed.

The total range of cost potential for the recommendations was from $14-21 million. However, it is expected that the actual cost may be on the low end of the range. If the typical cross section for the north segment can be built within the existing curb line (with some existing drain inlets and piping), as discussed in the previous sections of the report, that would be a considerable cost savings away from a total reconstruction.

A copy of the potential cost breakdown is provided in the appendix. This cost potential is recommended to be refined further concurrent with more detailed levels of design and engineering.

POLICY CONSIDERATIONS

In addition to the design and infrastructure recommendations presented, policy considerations were also explored. Transportation policy can have a significant influence on the development of potential improvements for transportation infrastructure.

As addressed in previous sections of the report, the current MPO 2035 Cost Feasible Long-Range Transportation Plan (LRTP) has a line-item to widen West Shore Boulevard that would result in a continuous six-lane facility between Kennedy Boulevard and Spruce/Boy Scout Road. It is suggested to modify the LRTP and remove the six lane designation, which is in contrast to the recommendations identified in this report. One option may be to "constrain" the right-of-way to accommodate only four lanes of travel, or to change the project description to match the recommendations in this report of a multi-modal four-lane complete street. The topic of whether this section of West Shore Boulevard should continue to be classified as a "principal arterial" may also be worthy of future consideration.

These recommendations are associated with a transportation planning initiative. Further development will be required in the design engineering and environmental analysis prior to construction. The evaluation of mid-block pedestrian crossings along the study area may also be considered. Refinement of more detailed designs may also include moving the overhead utilities underground and to convert the existing span-wire traffic signals into mast arm assembly.

It is suggested that future analyses continue to collaborate with the Florida DOT, Hillsborough County, HART, and the City of Tampa since this high profile corridor has relevance for each agency. These recommendations should be coordinated with the upcoming I-275 & SR 60 interchange project development, as the parallel relievers of Reo, Occident, and Trask Streets are important to its successful implementation. Similarly, the City of Tampa should now consider incorporating these reliever roadway extensions into its Capital Improvement Program.

The final policy consideration relates to design speed. The reduction of free-flow travel speeds in urban areas is a significant component towards successful multi-modal and safe, walkable streets. It is suggested that the design speed of future improvements be no greater than 35 mph along this study area of West Shore Boulevard. Similarly, the speed limit would also be reduced accordingly to no greater than 35 mph. Current speed data collected for existing conditions indicate that the majority of vehicles travel below the existing 45 mph speed limit.