Herbert Street (North Side) Sidewalk Feasibility Study

City of Port Orange

Final

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RS&H
IMPROVING YOUR WORLD

Prepared For:
Volusia County MPO

Volusia County MPO
Transportation Planning

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INTRODUCTION

The City of Port Orange considers the construction of a sidewalk on the north side of Herbert Street as a high priority issue. Herbert Street serves multiple trip purposes including residential, recreational, school access, park access, and access to a historic site. A complete sidewalk connecting Clyde Morris Boulevard to Nova Road would improve safe pedestrian and bicycle access to not only the school and community park, but also to the City Government Complex, Library, and the YMCA facility. There is an existing five-foot wide sidewalk west of Carya Circle heading westward toward Clyde Morris Boulevard, and a very short segment just west of Nova Road.

A Bicycle and Pedestrian School Safety Review Study for Silver Sands Middle is anticipated to be conducted by the Volusia County MPO in 2010. Currently, pedestrians walk along the road or on the shoulder adjacent to Herbert Street between Carya Circle and Nova Road. There is a 4-foot wide bike lane that is located only in the eastbound direction and both pedestrians and bicyclists use this lane for bidirectional movements. This creates conflicts directly adjacent to the eastbound vehicular travel lane. **This project will improve safety by eliminating the need for pedestrians and some bicyclists to use the vehicular travel lane east of Carya Circle and eliminate the use of the eastbound bike lane for two-way travel.**

PROJECT PURPOSE AND SCOPE

The proposed project is to complete the sidewalk within the existing gap along the north side of Herbert Street from Carya Circle to Nova Road. This feasibility study examines the existing sidewalk system and proposes recommendations based on the observed alternatives. The length of the study corridor is approximately 1,300 feet.

The sidewalk system along the north and south side of Herbert Street is incomplete. This corridor receives relatively high traffic volumes, especially during the morning and afternoon peak periods. Much of this traffic is associated with the middle school, as well as with the community park and access to City Center Circle. The project location is illustrated in Exhibit 1. A cost estimate is also provided as part of this study for the city's and the MPO's budgeting and planning purposes. For the purposes of data collection, concept development, corridor evaluation and cost estimation, two field visits were conducted.

The analysis conducted was essential to develop a preliminary feasibility assessment. It is recognized that a preliminary engineering study is recommended prior to the final determination of the ability to permit and construct this sidewalk. Due to the proposed improvements to the existing stormwater drainage facilities along the corridor that are presented in this report, a basin study is recommended. In addition, engineering designs for the required stormwater drainage facilities will be necessary. Our research and investigations have indicated that the sidewalk concept is feasible as portrayed in this document.

The graphic renderings within this report include notes, diagrams and callouts identifying the right-of-way (as provided by the city), sidewalks, intersecting streets and driveways, and other corridor characteristics. Considerations include conformance to the requirements of the Americans with Disabilities Act (ADA), appropriate signage along the sidewalk and at roadway crossings. The City of Port Orange has standard construction details for sidewalks and for sidewalk and bike path ramps in their land development code that should be considered during final design.

PHYSICAL INVENTORY AND ASSESSMENT OF RIGHT-OF-WAY

The study corridor is located between Clyde Morris Boulevard and Nova Road within the City of Port Orange; specifically from Carya Circle to Nova Road, a distance of approximately 1,300 feet. Land uses along the north side of this segment of Herbert Street are primarily residential, but include two small retail uses.

Field reviews were conducted on July 22nd and October 1, 2009 to analyze the existing conditions, record measurements, examine the termini of the existing sidewalks, and examine the existing stormwater drainage facilities and systems. The July field review included representatives from the City and the MPO, while the October review was conducted by RS&H personnel only. Field notes were recorded and photographs of significant features were taken for subsequent review and use during the alternatives development process. Geographical Information Systems (GIS) maps were used in the field as references for property lines and parcel boundaries. No electronic survey data was available for this project. The city provided a hard copy of a 2004 survey conducted along Herbert Street. The city also provided a copy of a right-of-way dedication of property associated with the Nova Oaks Condominium project (pertinent only for the south sidewalk feasibility study). This information along with the GIS parcel data is used as the base for developing the sidewalk concept.

Herbert Street is a two-lane collector facility with a daily volume of approximately 12,000 vehicles (as of Spring 2008). Observations indicated that the road experiences a heavy morning peak period due to the school traffic. The posted speed limit is 30 mph, and there are several transit stops for Votran's Route #12. Traffic count and Votran transit route #12 information are provided in the Appendix.

The field review started at Nova Road near the Italian restaurant, the terminus of the Nova Road sidewalk system. Roadway curbing exists on Herbert Street from Nova Road to Clara Street, and west to Francis Street, after which the roadway is primarily a rural section with open swale drainage. The section between Nova Road and Clara Street is level as a closed drainage system exists. West of Clara Street, there is an open drainage ditch that is relatively close to the edge of pavement (within 3 to 4 feet).

Existing sidewalk terminus just west of Nova Road (Looking West)

Roadway swale (Looking East)

Continuing west of Francis Street, the swale is further away from the edge of pavement (approximately 8 to 10 feet from top of swale bank). Mitered end sections of reinforced concrete pipes (RCP) supporting the conveyance of stormwater eastward to Nova Road and the Halifax Canal exist at driveway crossings and street intersections. The roadway pavement is experiencing cracking and erosion, and the City is stabilizing the edge through the placement of top soil and sod. Overhead power poles are also present between the edge of pavement and the front edge of the drainage swale.

At Silver Creek Run, there are sidewalks extending northward from Herbert Street on both sides of the divided entrance road. The proposed sidewalk should provide connection to these two existing sidewalks.

Utilities Assessment

Within the project limits, overhead power lines are located along the north of Herbert Street. Power poles and guy wires are present, located at the edge of the right-of-way. There are several underground water and sewer lines located along the north right-of-way, which is detailed below. A natural gas line runs along the right-of-way.

Cross drain headwalls, mitered end culvert, and small swale west of Nova Road (Looking East)

Of greater significance for the proposed sidewalk is the existing stormwater drainage facilities and system. As the majority of Herbert Street is a rural section, the stormwater is collected via a ditch system, which utilizes numerous reinforced concrete and corrugated metal pipes for conveyance under streets and driveways. The existing drainage system from Carya Circle to Clara Street consists of a series of swales connected by side drains on the north side of Herbert Street. The inside top of bank of the existing swales are typically 3 to 4 feet off the edge of pavement, with very steep side slopes. The swales convey runoff to a cross drain underneath Herbert Street, located approximately 150 feet west of Clara Street. On the south side of Herbert Street, runoff from the cross drain is conveyed into an existing swale system which crosses Nova Road (SR 5A) before discharging into the Halifax Canal located on the east side of Nova Road.

Silver Creek Subdivision Stormwater treatment and conveyance to Herbert Street

The stormwater ponds in the Silver Creek subdivision discharge into the existing swale on the north side of Herbert Street, west of Francis Street. The Silver Creek Subdivision stormwater ponds outfall into the existing ditch with a 25-

year, 24-hour design discharge of 12.59 cubic feet per second (SJRWMD Permit No. 40-127-76076-1). This permitted discharge is being accommodated by the existing open ditch and closed drainage system from the subdivision to Herbert Street to Nova Road.

The Port Orange Utilities Department was contacted to obtain information on underground utilities. Through inspection of partial "as built" drawings, other development plan drawings, and field reviews, the following information was obtained:

- Overhead power lines along the roadway R/W
- Natural gas line along the north roadway R/W
- Fiber optic and underground telephone cable lines
- 4-inch PVC force main along the north R/W from Stone Gate Lane to the east
- 6-inch PVC waterline along the north R/W from Stone Gate Lane to the east
- 10-inch water main along the north side R/W from Old Hammock Lane eastward.

Right-of-Way Assessment

A survey of Herbert Street conducted in 2004 was provided by the City of Port Orange. The following summary of the existing conditions is based on that survey. The majority of the corridor within the study limits has a right-of-way width of 55 to 60 feet. Starting at Carya Circle, the R/W width is 60 feet, then changes to 65 feet approximately 80 feet west of Old Hammock Road. Approximately 160 feet west of Francis Street, the recorded R/W width for Herbert Street is only 30 feet.

There are two locations where minimal R/W easements may be required, based on the 2004 survey. These include a corner clip approximately 125 feet west of Francis Street, and a sliver along the Italian restaurant property between Clara Street and Nova Road. An estimated cost for acquiring this R/W is included in the cost estimate.

Soils Assessment

Prior to the first field visit, a soil map (Exhibit 2) was prepared in GIS from the data available on Volusia County's website. The soil coverage was created by Natural Resources Conservation Services (NRCS) and St. Johns River Water Management District (SJRWMD). The soil map illustrates that the soils in the study area consists primarily of Tuscawilla Fine Sand, a hydric group classification of D, which indicates a poorly drained soil that results in greater runoff.

SIDEWALK CONCEPT PLAN

The proposed project is a 5-foot wide concrete sidewalk from Cayra Circle eastward to connect to the existing sidewalk just west of Nova Road. The primary issue associated with this sidewalk is the need to modify the drainage infrastructure on the eastern end of the project.

Stormwater Drainage Modifications

The proposed sidewalk will require modification to the existing stormwater drainage infrastructure along the north side of Herbert Street. The project is located within St. Johns River Water Management District's (SJRWMD) Halifax Canal Sub-Basin in the Northern Coastal Hydraulic Basin. The proposed sidewalk is exempt from a permit according to Chapter 40C-42.0225(5), F.A.C. However, this exemption is dependent upon the ability to demonstrate that the capacity of the existing swales is not reduced. Based upon past experience with the Water Management District, a permit will be required to demonstrate that there will be no reduction in swale capacity. Therefore, a Standard General Permit will be obtained. No wetland or floodplain impacts are anticipated.

The existing drainage system from Carya Circle to Clara Street consists of a series of swales connected by side drains on the north side of Herbert Street. The inside top of bank of the existing swales are typically 3-4' off the edge of pavement, with very steep side slopes. The swales convey runoff to a cross drain underneath Herbert Street, located approximately 150' west of Clara Street. On the south side of Herbert Street, runoff from the cross drain is conveyed into an existing swale system which crosses Nova Road (SR 5A) before discharging into the Halifax Canal located on the east side of Nova Road. The stormwater ponds in the Silver Creek subdivision discharge into the existing swale on the north side of Herbert Street, south of Francis Street.

Design Issues:

- The proposed sidewalk will consume the existing swales. There is not enough right-of-way and vertical clearance to provide a boardwalk and allow for maintenance of the swales. Instead, the system will have to be piped, with back of sidewalk inlets collecting the off-site runoff.
- The Silver Creek Subdivision stormwater ponds outfall into the existing ditch with a 25-year, 24-hour design discharge of 12.59 cubic feet per second (SJRWMD

Permit No. 40-127-76076-1). This permitted discharge will need to be accommodated within the proposed closed drainage system to the Halifax Canal. Because the Herbert Street drainage system is part of the outfall for the Silver Creek stormwater management system, it will need to be designed for the 25-year, 24-hour storm. A letter modification will be needed from SJRWMD to document the modification to the permitted design.

- The existing 24" pipe that crosses underneath Nova Road (SR 5A) is a control point for the design. With piping the Herbert street drainage system, the necessary slopes for the pipes may cause the system to become deeper than the existing swales. This may result in having to replace existing structures, including the pipe underneath Nova Road and the outfall to the Halifax canal. If the pipe underneath Nova Road would need to be replaced, a Drainage Connection Permit from the Florida Department of Transportation (FDOT) will be required.
- A Drainage Basin study will need to be performed to determine how much flow is going to the existing swale system in order to ensure that the closed network is properly sized.

Sidewalk Concept

The proposed 5-foot wide sidewalk would begin at the eastern side of Carya Circle and extend eastward to the existing sidewalk just west of Nova Road. To achieve an acceptable horizontal clearance from the travel lanes, the proposed sidewalk should be located five-feet from the existing edge of pavement. The sidewalk would be located on top of the piped stormwater drainage system. For the short section from Clara Street to the connection to the existing sidewalk, the 5-foot wide sidewalk should be located at the back of the existing curb, eliminating the need for a buffer between the travel lane and the sidewalk.

Recommended crosswalk features include high emphasis pavement markings of all side streets and driveways, appropriate pedestrian ramps, detectable warning surfaces at each ramp, and appropriate pedestrian signage. These items have been included in the cost estimates.

FINANCIAL FEASIBILITY

Table 1 provides a preliminary cost estimate for the design and construction of the proposed sidewalk along the north side of Herbert Street, from Carya Circle to the existing sidewalk. The item number and unit of measure are based on the Florida Department of Transportation (FDOT) Basis of Estimate Manual. The unit prices are based on the average costs for each pay item as provided by FDOT for the most recent 6-month reporting period of March 1 through September 30, 2009. The cost estimate table also provides a three-year escalation of the cost estimate based upon the FDOT's most recent inflation factors. ***Based on our findings, the cost estimate does not include utility relocation or tree removal as these activities are not anticipated to be required.***

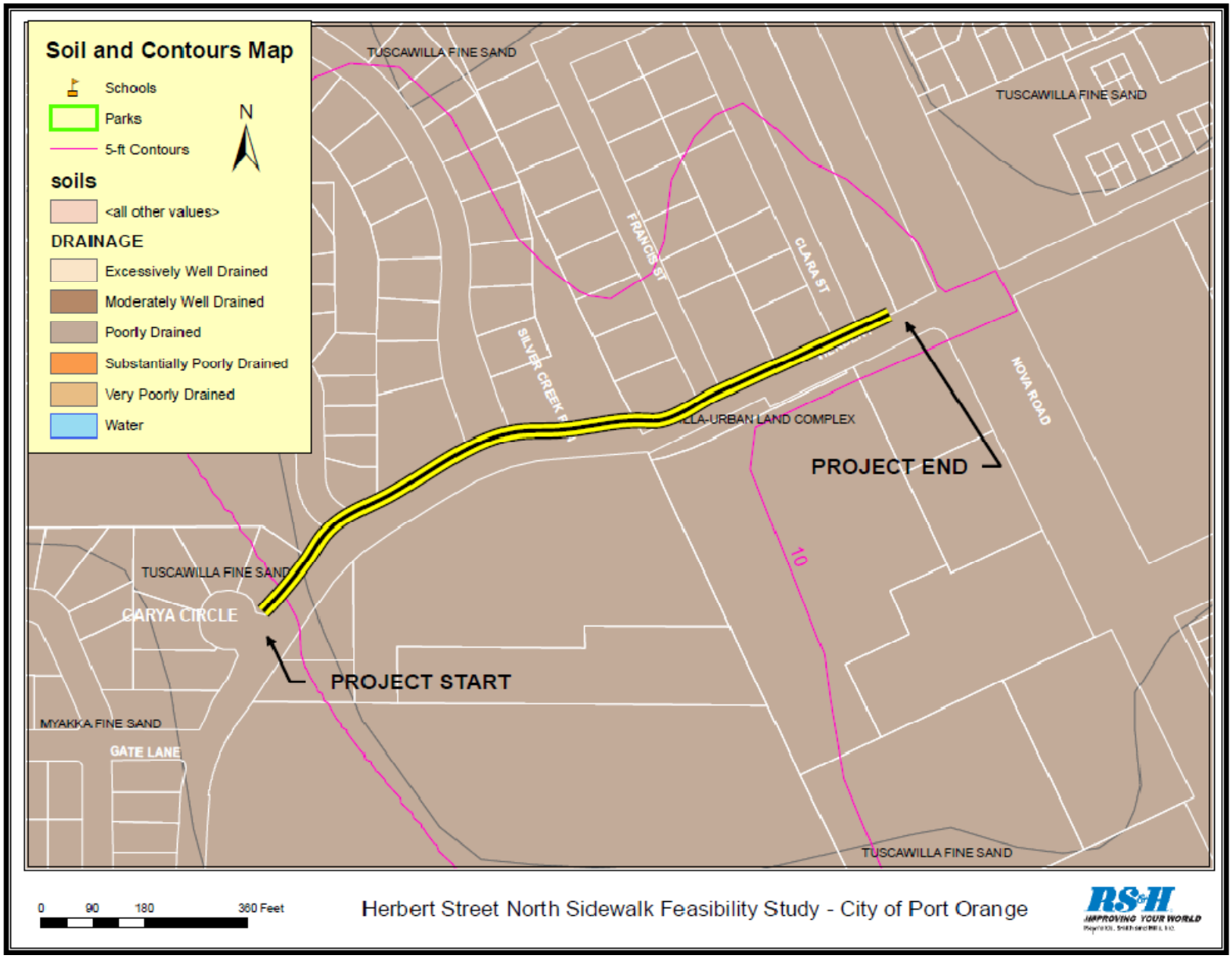
Table 1: Cost Estimate

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	1090	$ 0.77	$ 839.30
110-1-1	CLEARING AND GRUBBING	AC	0.45	$ 7,311.77	$ 3,290.30
120-1	REGULAR EXCAVATION	CY	239.580	$ 2.85	$ 682.80
522-1	CONCRETE SIDEWALK, 4" THICK	SY	624	$ 31.23	$ 19,487.52
527-1	DETECTABLE WARNING SURFACE	EA	6	$ 471.90	$ 2,831.40
570-1-2	PERFORMANCE TURF, SOD	SY	27.733	$ 1.80	$ 49.92
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	6	$ 268.04	$ 1,608.24
711-11-123	12" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	545	$ 2.05	$ 1,117.25
				Subtotal	**$ 37,369.89**
	DRAINAGE IMPROVEMENTS				
	Herbert St. North Sidewalk Items				
425-1-531	INLET-DBI TYPE C (MOD) (=<10')	EA	11	$ 1,950.69	$ 21,457.59
425-2-63	MANHOLES-P-8 (PARTIAL)	EA	2	$ 1,528.08	$ 3,056.16
425-4	INLET-ADJUST	EA	2	$ 751.67	$ 1,503.34
425-5	MANHOLES-ADJUST	EA	3	$ 567.86	$ 1,703.58
430-175-101	PIPE CULVERT OPTIONAL MATERIAL (SS & CD, RO	LF	1113	$ 35.53	$ 39,544.89
	Outfall Replacement & Nova Road Pipe Items				
430-175-101	PIPE CULVERT OPTIONAL MATERIAL (SS & CD, RO	LF	410	$ 35.53	$ 14,567.30
	Drainage Design Cost & Expenses				
	Design Labor Fee				$ 67,440.00
	Expenses:				
	Expense: Permit Modification-Silver Creek Fee				$ 250.00
	Expense: SJRWMD Standard General ERP (1-40 acres) Fee				$ 1,000.00
	Other Expenses				$ 500.00
	DRAINAGE SUBTOTAL				**$ 151,022.86**
				SUBTOTAL	**$ 188,392.75**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ 1,000.00
101-1	MOBILIZATION	LS	1	10.00%	$ 18,839.27
102-1	MAINTENANCE OF TRAFFIC	LS	1	10.00%	$ 18,839.27
N/A	ENGINEERING AND DESIGN	LS	1	15.00%	$ 28,258.91
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	CONTINGENCY	LS	1	25.00%	$ 47,098.19
				TOTAL	**$ 307,428.40**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 317,573.54**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 328,026.10**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 338,786.10**

Exhibit 1: Location Map

Exhibit 2: Soil and Contour Map



The following exhibits are located on the referenced sheet number.

Exhibit Sheets 1 - 3: Concept Map – Carya Circle to Existing Sidewalk

Exhibit Sheet 4: Sidewalk Typical Section

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RS&H
Reynolds, Smith and Hills, Inc.
1000 Legion Place, Suite 800
Orlando, Florida 32801
407-893-5800
FL Cert. No. EB0005620

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	- - -

HEBRET STREET SIDEWALK (NORTH)

SHEET NO. 1

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RS&H
Reynolds, Smith and Hills, Inc.
1000 Legion Place, Suite 800
Orlando, Florida 32801
407-893-5800
FL Cert. No. EB0005620

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	- - -

HERBERT STREET SIDEWALK (NORTH)

SHEET NO. 2

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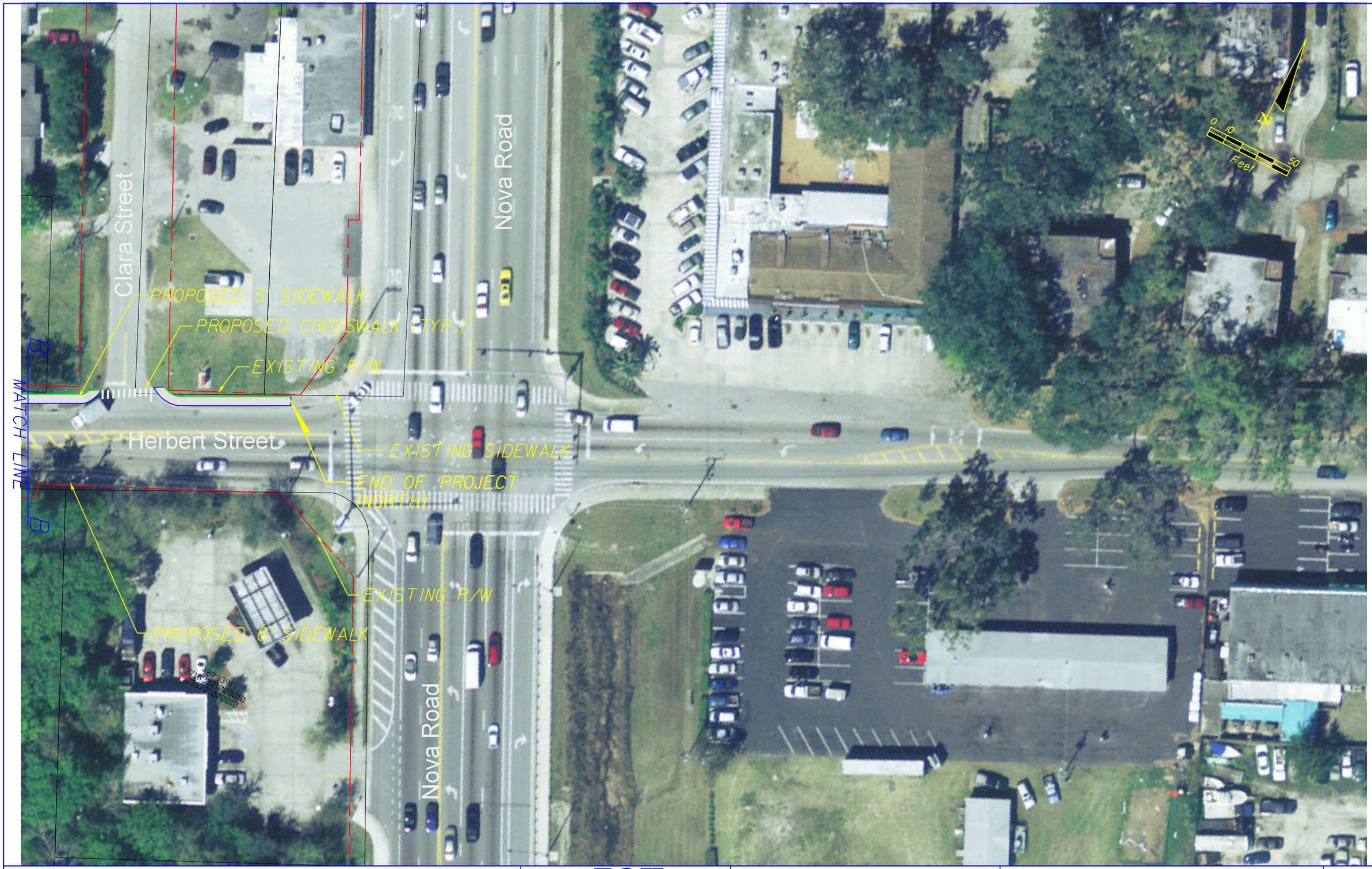

REVISIONS			
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RS&H
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1000 Legion Place, Suite 800
Orlando, Florida 32801
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FL Cert. No. EB0005620

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	- - -

HERBERT STREET SIDEWALK (NORTH)

SHEET NO. 3

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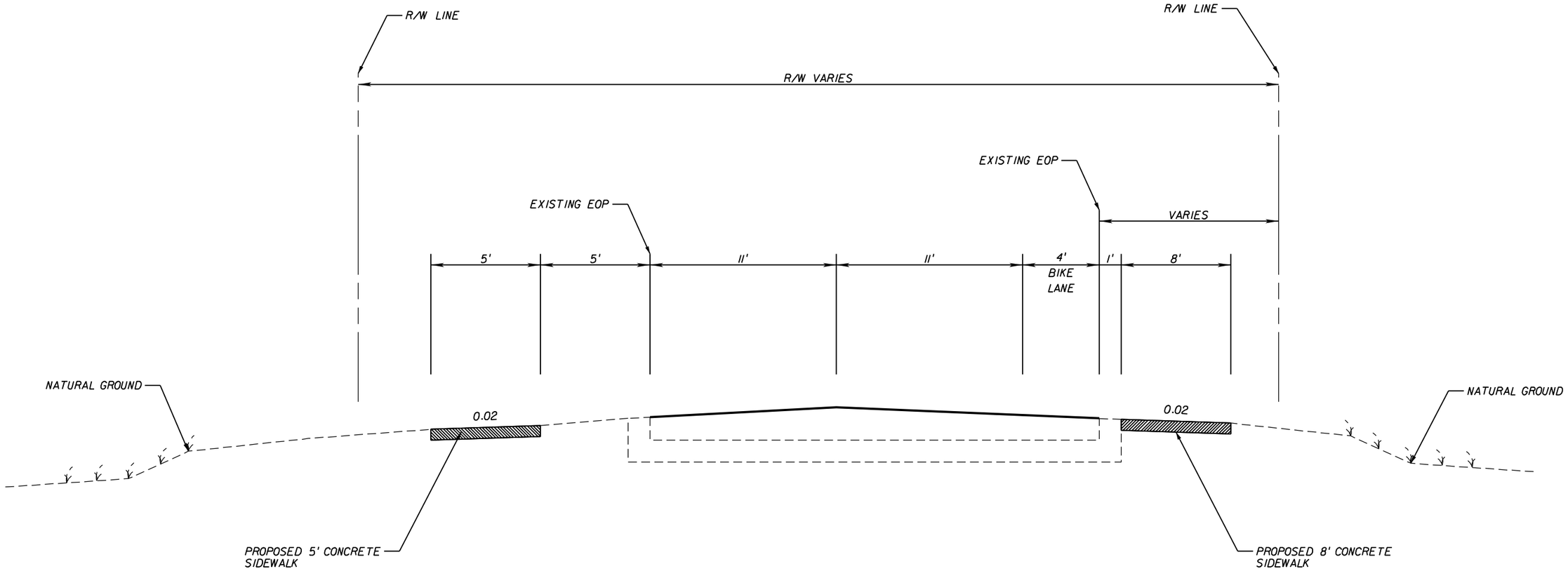

HERBERT STREET
TYPICAL SECTION
5' SIDEWALK WITH 5' BUFFER SETBACK

TRAFFIC DATA

CURRENT YEAR = 2008, AADT = 12,000
POSTED SPEED = 30 MPH

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RS&H
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407-893-5800
FL Cert. No. EB0005620

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	- - -

HERBERT STREET SIDEWALK
TYPICAL SECTION
(NORTH)

SHEET NO. 4

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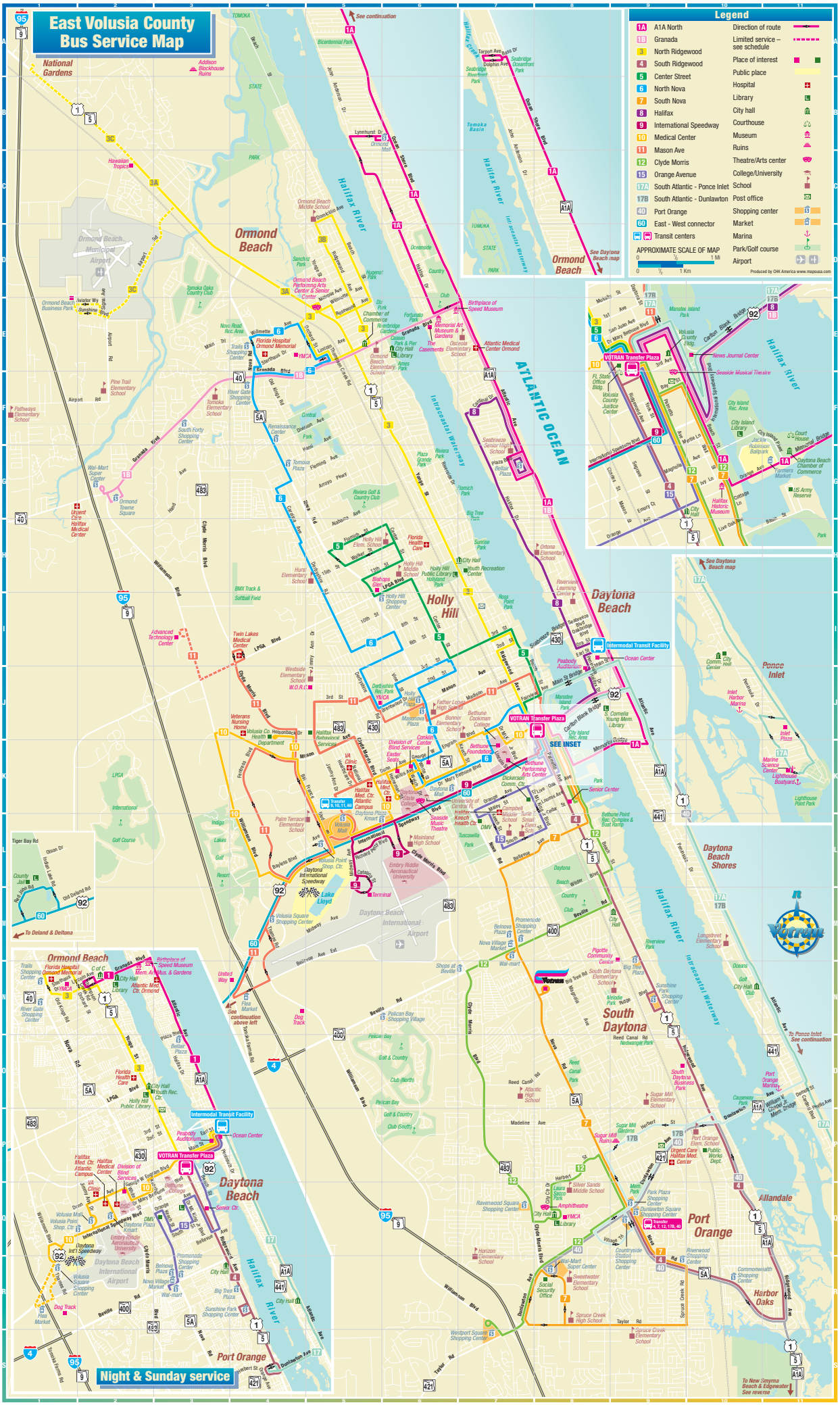
City of Port Orange
Average Daily Traffic Counts

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1																		
2																		
3	** NEARBY ROADWAY CONSTRUCTION			* NEW ADDITIONS			U.C. UNDER CONSTRUCTION				N/A NOT APPLICABLE							
4	Figure Varies Substantially from previous growth trends				Figure not accurate due to va		Figure includes only one way traffic flow											
5																		
6	STA.	ROAD	LOCATION	SPR	FALL	SPR	SPR	FALL	SPR	FALL	SPR	FALL	SPR	FALL	SPRING	FALL	SPRING	SPRING
7				1997	1997	1998	1999	1999	2000	2000	2001	2001	2002	2002	2006	2006	2007	2008
8																		
9																		
29	901	HERBERT ST	E OF RIDGEWOOD	957	838	1038	930	868	863	694	993	683	746	729	536		359	368
30	902	HERBERT ST	E OF RAILROAD	5617	5318	5201	5890	4674	4795	4347	5430	5093	10280	4954	5121		4281	4244
31	903	HERBERT ST	W OF JACKSON ST	6907	7889	6994	7635	6791	7181	6333	7390	6733	7757	7191	20068		6412	6205
32	904	HERBERT ST	W OF FRANCIS	8010	7671	8868	7601	8306	8628	8100	6593	7974	8816	8254	9318		8953	12057
33	905	HERBERT ST	E OF CM BLVD	5907	5825	6328	5984	6799	6161	5411	6625	5678	6147	5296	7918		7513	7263


East Volusia County Bus Service Map
Legend
1A A1A North
1B Granada
3 North Ridgewood
4 South Ridgewood
5 Center Street
6 North Nova
7 South Nova
8 Halifax
9 International Speedway
10 Medical Center
11 Mason Ave
12 Clyde Morris
15 Orange Avenue
17A South Atlantic - Ponce Inlet
17B South Atlantic - Dunlawton
40 Port Orange
60 East - West connector
Transit centers
Direction of route
Limited service – see schedule
Place of interest
Public place
Hospital
Library
City hall
Courthouse
Museum
Ruins
Theatre/Arts center
College/University
School
Post office
Shopping center
Market
Marina
Park/Golf course
Airport
APPROXIMATE SCALE OF MAP
Produced by CHK America www.mapsusa.com
Ormond Beach
Daytona Beach
Holly Hill
Ponce Inlet
Daytona Beach Shores
South Daytona
Port Orange
Allandale
Harbor Oaks
Atlantic Ocean
Halifax River
Intracoastal Waterway
VOTRAN Transfer Plaza
Intermodal Transit Facility
Ocean Center
SEE INSET
Night & Sunday service

Inflation Factors

This *"Transportation Costs"* report is one of a series of reports issued by the Office of Policy Planning. It provides information on inflation factors and other indices that may be used to adjust project costs.

Please note that the methodology for Inflationary adjustments relating to specific transportation projects should be addressed with the district office where the project will be located. For general use or non-specific areas, the general guidelines provided herein may be used for inflationary adjustments.

Construction Cost Inflation Factors

The table below includes the inflation factors and present day cost (PDC) multipliers that are applied to the Department's Work Program for highway construction costs expressed in 2010 dollars.

Fiscal Year	Inflation Factor	PDC Multiplier
2010	Base	1.000
2011	3.3%	1.033
2012	3.3%	1.067
2013	3.3%	1.102
2014	3.3%	1.139
2015	3.3%	1.176
2016	3.3%	1.215
2017	3.3%	1.255
2018	3.3%	1.297
2019	3.3%	1.339
2020	3.3%	1.384
Source: Office of Financial Development, (Fiscal Year 2010 is July 1, 2009 to June 30, 2010)		

Other Transportation Cost Inflation Factors

Other indices may be used to adjust project costs for other transportation modes or non construction costs. Examples are as follows:

The Consumer Price Index (CPI, also retail price index) is a weighted average of prices of a specified set of products and services purchased by wage earners in urban areas. Restated, it is a price index which tracks the prices of a specified set of consumer products and services, providing a measure of inflation. The CPI is a fixed quantity price index and a reasonable cost-of-living index.

The Producer Price Index for Highway and Street Construction (PPI) is reported monthly by the U.S. Department of Labor's Bureau of Labor Statistics. It is derived from current pricing information of material and services used directly or indirectly in highway construction. PPI does not forecast future inflation rates.

The Employment Cost Index (ECI) is based on the National Compensation Survey. It measures quarterly changes in compensation costs, which include wages, salaries, and other employer costs for civilian workers (nonfarm private industry and state and local government).

Advisory Inflation Factors For Previous Years

Another *"Transportation Costs"* report is available covering highway construction cost inflation for previous years. "*Advisory Inflation Factors For Previous Years (1987-2010)* provides Present Day Cost (PDC) multipliers that enable project cost estimates from previous years to be updated to FY 2010. Please go to http://www.dot.state.fl.us/planning/policy/costs/RetroCostInflation.pdf for the table and text providing this information.