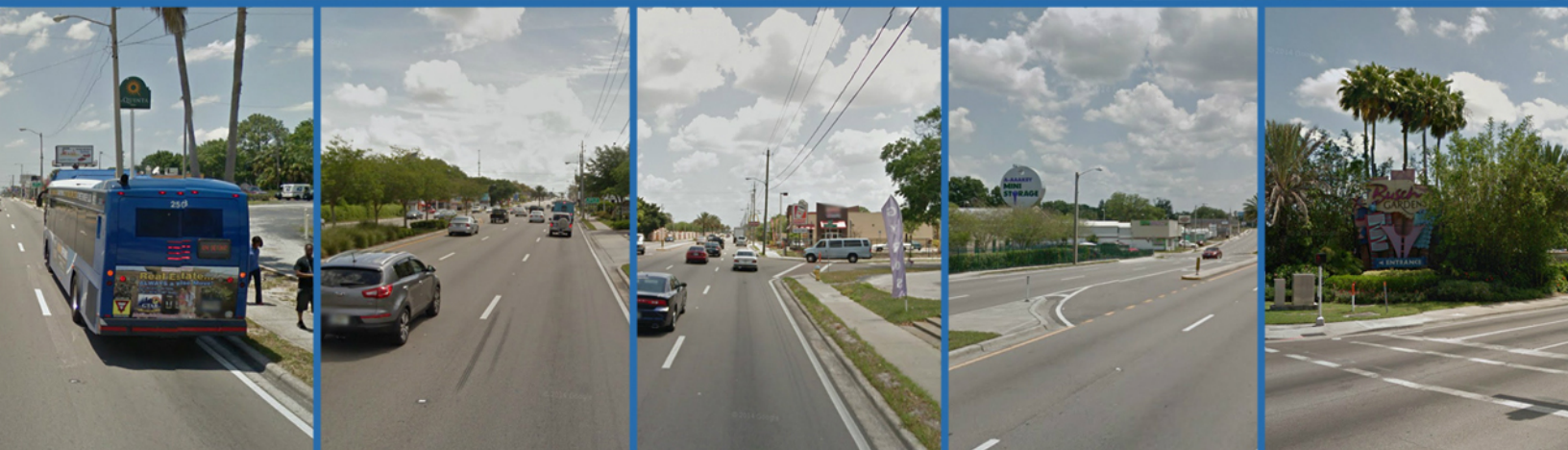


East Busch Boulevard (SR 580)

From Nebraska Avenue (SR 45/US 41) to N. 56th Street (SR 583)



Pedestrian Crosswalk Study Report



East Busch Boulevard (SR 580)

From Nebraska Avenue (SR 45/US 41) to N. 56th Street (SR 583)

Pedestrian Crosswalk Study

Hillsborough County

Prepared for:

Florida Department of Transportation
District Seven



Prepared by:

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2818 Cypress Ridge Boulevard, Suite 200
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January 2016

Section 1 Introduction and Existing Conditions

1.1 Introduction

This study is a review of the pedestrian crossings along the East Busch Boulevard (SR 580) corridor from Nebraska Avenue to 56th Street (See **Figure 1-1**). Existing crosswalks are present at eight signalized intersections along the corridor and one mid-block crossing at 12th Street, which includes a Rectangular Rapid Flashing Beacon (RRFB; see photo below right).

Raised medians exist along the corridor, many of which include landscaping. All of the landscaped medians would provide adequate refuge areas for a two-stage pedestrian crossing. All of the medians are in good condition, and there are no observed cracks or other defects in the concrete that would require immediate rehabilitation.

There are 29 HART bus stops along East Busch Boulevard for HART local route 39, and six stops within one block of East Busch Boulevard on for HART local routes 5, 12, and 18.



The existing sidewalks are five feet wide along most of East Busch Boulevard. In many cases the sidewalk is separated from the street by a narrow grass strip, where utility poles are currently located. A majority of the sidewalks along the corridor are in good shape and do not require any rehabilitation or maintenance.

1.2 Lighting

There is street lighting along the corridor on both the North and South side of the road intermittently. In many areas the light levels are low including near several crosswalks and proposed crosswalks. These low light levels may be a contributing factor to nighttime pedestrian/bicycle accidents along the corridor. Many of the sidewalks are not lighted at all or rely on ambient light from businesses along the corridor. Near the western limit at Nebraska Avenue the eastbound lanes and sidewalk are completely dark at night. There are not any street lights until just east of 14th Street, leaving a half mile stretch without any lighting in the eastbound direction.

1.3 Pedestrian Attractors and Generators

In the recommendation section under each of the recommended crossings, the immediate generators and attractors are specified for each specific crossing. Typical commercial businesses include major gas stations (BP, Race Trac, 7-11, etc.), large retailers (Publix, Walgreens, Big Lots, etc.), restaurant chains (Red Lobster, Olive Garden, McDonalds, Taco Bell, etc.). There are also a significant number of independent grocery stores, boutique retail, private businesses, and small motels/hotels. These businesses contribute to steady pedestrian and bicycle traffic along the corridor and regular crossing points.

1.4 Pedestrian Crossing Counts and Crosswalk Warrants

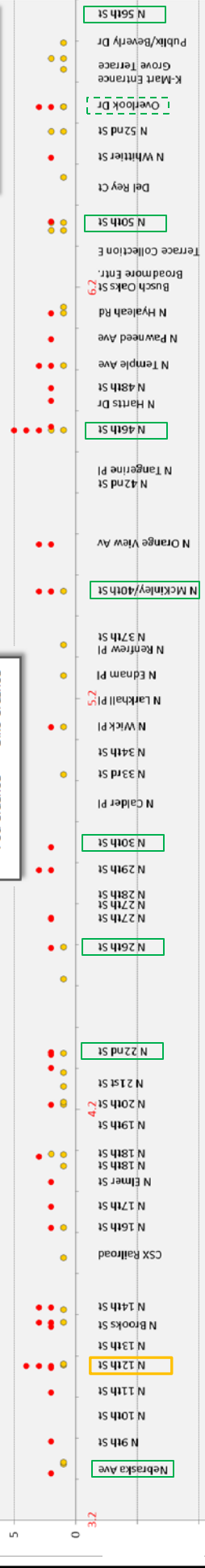
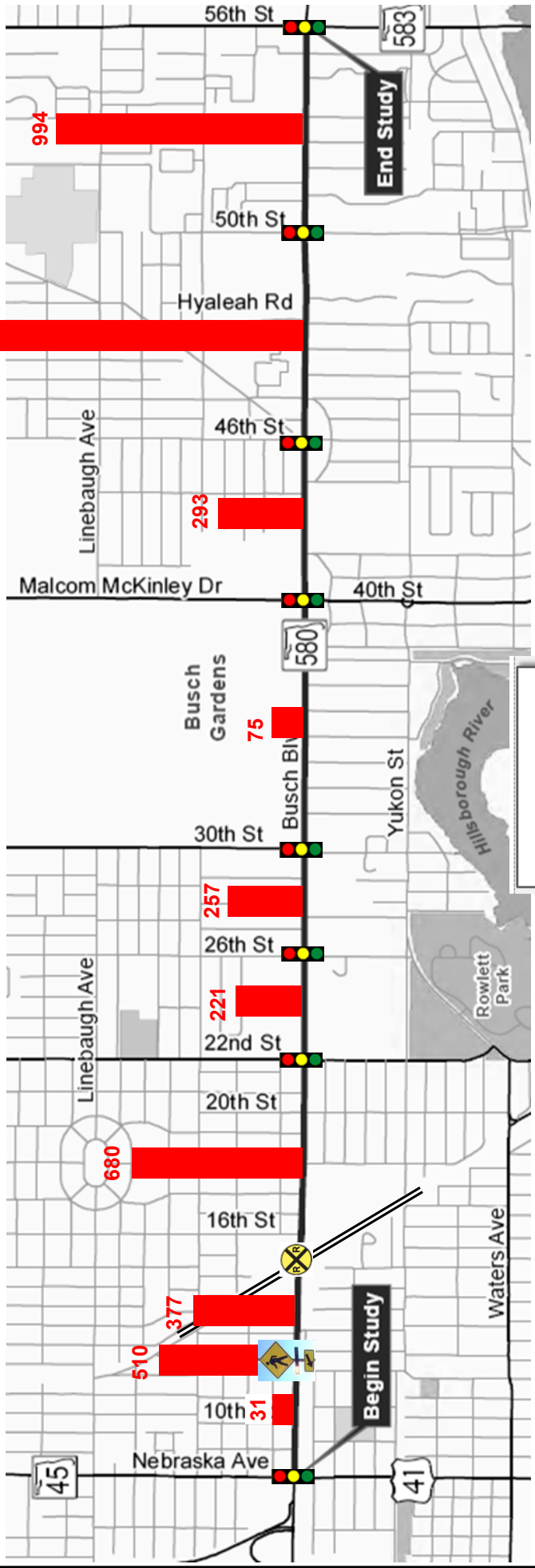
To gather crossing data for the entire corridor, three-day pedestrian counts from May 2015 as well as November 2014 were used. The three-day pedestrian counts were performed 5/7/15-5/9/15, 5/14/15-5/16/15, 5/28/15-5/30/15, and 11/13/14-11/15/14. The 2015 three-day pedestrian counts cover from Nebraska Avenue to 46th Street, with the 2014 data accounting for the segment from 46th Street to 56th Street. The 2015 counts were recorded from 7:00 AM to 6:00 PM each of the three days, and the 2014 counts were recorded from 9:00 AM to 6:00 PM. The recorded pedestrian crossings have a wide range along the corridor with the most recorded in a one hour period being 23 crossings. The raw counts are included in the **Appendix**, and **Table 1-1** summarizes the pedestrian and bicycle counts with the northbound and southbound crossings combined. **Figure 1-2** is a graphic summary of the counts collected by segment. The count segments are bounded by the signalized intersections in addition to the existing pedestrian crossing at 12th Street and the CSX railroad crossing located near 15th Street.

Table 1-1 Summary of Bike-Ped Crossing Counts Between Signalized Intersections

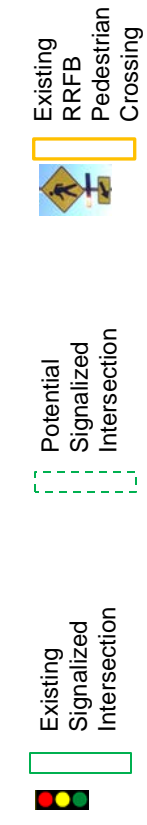
	Nebraska Ave to 12th Street (Crosswalk)			Existing RRFB Crosswalk at 12th Street			12th Street (Crosswalk) to RR Tracks			RR Tracks to 22nd Street			22nd Street to 26th Street			26th Street to 30th Street			30th Street to McKinley Drive			McKinley Drive to 46th Street			46th Street to 50th Street			50th Street to 56th Street									
Time of Count	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb	Total Peds	Total Bike	Total Comb							
700-800	1	0	1	8	6	14	4	3	7	13	5	18	2	1	3	3	0	3	3	0	3	8	3	11	-	-	-	-	-	-							
800-900	1	2	3	6	11	17	6	5	11	24	4	28	15	0	15	1	0	1	3	1	4	4	0	4	-	-	-	-	-	-							
900-1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	5	49	34	2	36							
1000-1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	1	59	30	12	42							
1100-1200	0	0	0	5	11	16	12	6	18	18	3	21	6	1	7	17	0	17	1	0	1	14	1	15	40	3	43	32	10	42							
1200-1300	3	1	4	20	9	29	10	4	14	18	4	22	6	0	6	12	1	13	5	0	5	7	1	8	41	4	45	31	3	34							
1400-1500	1	0	1	26	5	31	6	3	9	24	8	32	7	1	8	13	5	18	0	1	1	14	2	16	41	6	47	19	8	27							
1500-1600	1	1	2	18	10	28	4	6	10	19	5	24	8	0	8	6	4	10	0	1	1	11	2	13	48	6	54	45	5	50							
1600-1700	2	0	2	36	8	44	14	6	20	45	11	56	4	1	5	10	1	11	7	2	9	13	1	14	60	9	69	47	9	56							
1700-1800	1	2	3	18	15	33	21	15	36	29	5	34	10	0	10	10	1	11	3	1	4	8	2	10	55	1	56	39	6	45							
Totals	10	6	16	137	75	212	77	48	125	190	45	235	58	4	62	72	12	84	22	6	28	79	12	91	387	35	422	277	55	332							
700-800	3	0	3	8	8	16	6	5	11	12	2	14	5	2	7	1	1	2	1	0	1	6	3	9	-	-	-	-	-	-							
800-900	3	0	3	13	6	19	9	2	11	34	14	48	6	0	6	3	4	7	2	0	2	6	2	8	-	-	-	-	-	-							
900-1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	5	37	33	4	37							
1000-1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	4	48	32	3	35							
1100-1200	1	0	1	9	8	17	7	2	9	16	7	23	6	0	6	11	1	12	0	1	1	12	0	12	57	9	66	35	8	43							
1200-1300	0	0	0	7	5	12	15	1	16	19	8	27	7	0	7	6	0	6	1	2	3	21	2	23	45	2	47	23	7	30							
1400-1500	0	0	0	11	3	14	6	5	11	11	8	19	18	0	18	6	1	7	4	0	4	12	2	14	64	12	76	30	7	37							
1500-1600	1	0	1	15	5	20	11	4	15	24	8	32	15	0	15	10	4	14	1	0	1	4	1	5	59	8	67	22	4	26							
1600-1700	1	0	1	17	5	22	10	2	12	24	13	37	5	3	8	25	1	26	0	1	1	6	1	7	59	11	70	38	14	52							
1700-1800	1	1	2	21	7	28	21	12	33	24	8	32	10	0	10	14	2	16	0	1	1	19	4	23	54	5	59	28	5	33							
Totals	10	1	11	101	47	148	85	33	118	164	68	232	72	5	77	76	14	90	9	5	14	86	15	101	414	56	470	241	52	293							
700-800	0	0	0	1	5	6	6	9	15	8	2	10	3	0	3	1	0	1	0	1	1	9	2	11	-	-	-	-	-	-							
800-900	0	1	1	5	0	5	12	1	13	21	0	21	2	0	2	3	4	7	2	0	2	13	0	13	-	-	-	-	-	-							
900-1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42	1	43	18	3	21							
1000-1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43	4	47	19	6	25							
1100-1200	0	0	0	14	9	23	11	4	15	23	9	32	1	0	1	3	3	6	4	1	5	9	0	9	56	3	59	42	3	45							
1200-1300	1	0	1	10	12	22	11	11	22	16	11	27	10	1	11	7	3	10	2	0	2	15	2	17	72	14	86	44	2	46							
1400-1500	0	0	0	4	3	7	9	3	12	25	10	35	14	4	18	8	0	8	1	0	1	8	4	12	46	12	58	38	6	44							
1500-1600	0	1	1	16	13	29	15	4	19	14	4	18	8	0	8	13	3	16	4	0	4	12	2	14	49	11	60	50	5	55							
1600-1700	0	0	0	16	15	31	10	12	22	23	7	30	18	0	18	18	5	23	7	2	9	11	1	12	58	4	62	46	4	50							
1700-1800	1	0	1	13	14	27	8	8	16	29	11	40	20	1	21	10	2	12	6	3	9	13	0	13	66	7	73	57	26	83							
Totals	2	2	4	79	71	150	82	52	134	159	54	213	76	6	82	63	20	83	26	7	33	90	11	101	432	56	488	314	55	369							
3-Day Totals			31			510			377				680				221				257				75				293				1380				994
Dates of the Counts	Thur. 5/14/15 Fri. 5/15/15 Sat. 5/16/15			Thur. 5/14/15 Fri. 5/15/15 Sat. 5/16/15			Thur. 5/14/15 Fri. 5/15/15 Sat. 5/16/15			Thur. 5/7/15 Fri. 5/8/15 Sat. 5/9/15			Thur. 5/28/15 Fri. 5/29/15 Sat. 5/30/15			Thur. 5/7/15 Fri. 5/8/15 Sat. 5/9/15			Thur. 5/28/15 Fri. 5/29/15 Sat. 5/30/15			Thur. 5/7/15 Fri. 5/8/15 Sat. 5/9/15			Thur. 11/13/14 Fri. 11/14/14 Sat. 11/15/14			Thur. 11/13/14 Fri. 11/14/14 Sat. 11/15/14									

Number of Bike-Ped Crossings by Segment for 30 Hours over a 3-Day period

1380



Reported Long-Form Bike-Ped Crashes by Milepoint, 2009-2013, Inclusive



Summary of Bike-Ped Crossing Counts Between Signalized Intersections and Bike-Ped Crash Locations

Minimum requirements based on the FDOT's *Traffic Engineering Manual (TEM)*, Section 3.8 (revised May 2015, not yet adopted and incorporated into the TEM) for a pedestrian crosswalk at uncontrolled locations include:

- 20 or more pedestrians during a single hour (any four consecutive 15-minute periods) of an average day or
- 18 or more pedestrians during each of any two hours of an average day, or
- 15 or more pedestrians during each of any three hours of an average day.

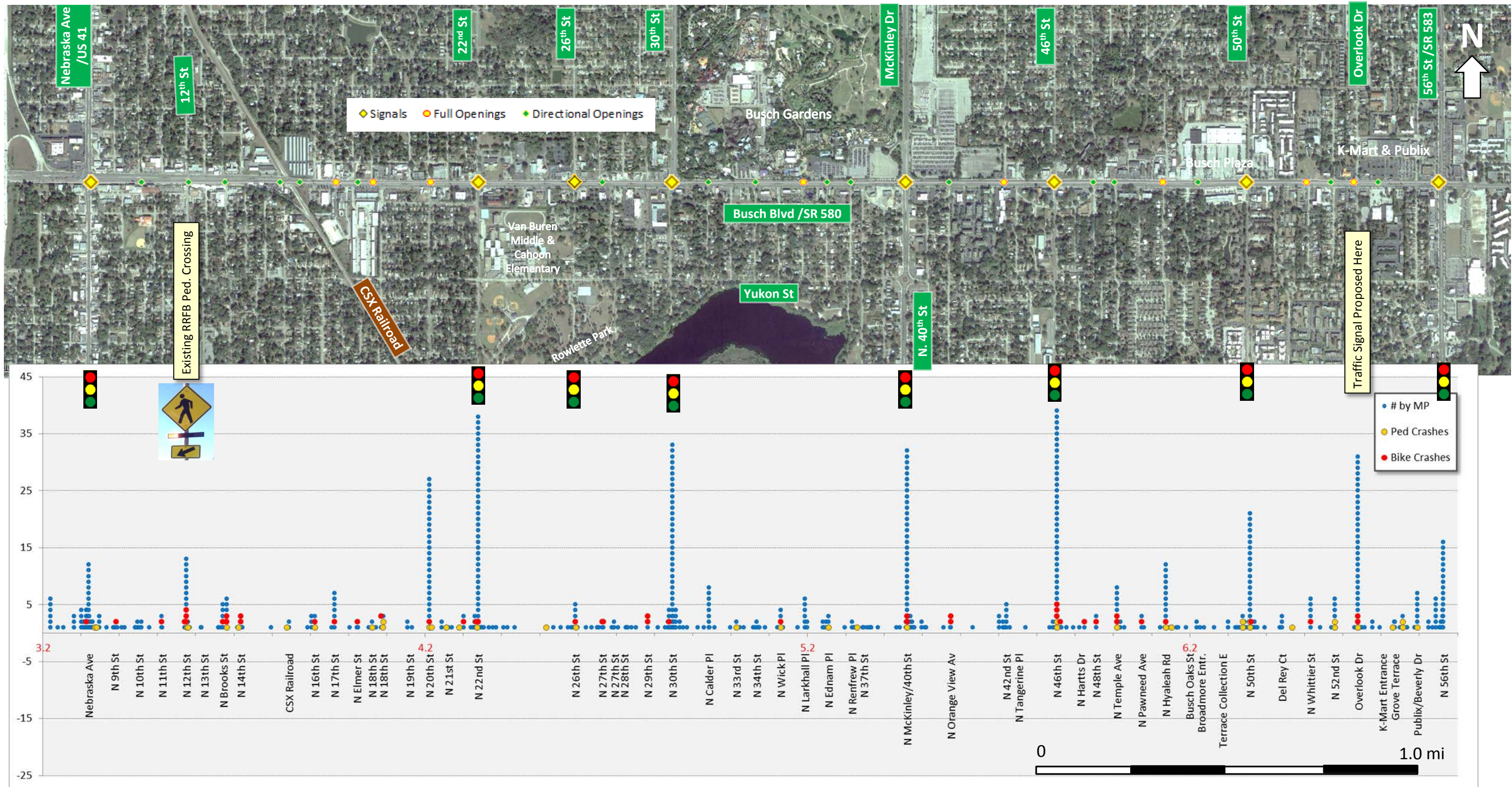
Several crossing locations counted on East Busch Boulevard met the minimum volume requirements for a new marked pedestrian crossing, as shown in **Table 1-2**.

Table 1-2 Summary of Highest Single Hours of Recorded Pedestrian Volumes

Date	Location	Highest Single Hour	Width Required to meet Volume	Recorded Pedestrian Crossing Volume (One Hour)
5/14/15	East Busch Boulevard @ Brooks Street	5:00pm-6:00pm	150'	30
5/15/15	East Busch Boulevard @ Brooks Street	5:00pm-6:00pm	150'	28
5/16/15	East Busch Boulevard @ Brooks Street	12:00pm-1:00pm	150'	22
5/7/15	East Busch Boulevard @ 21 st Street	4:00pm-5:00pm	150'	21
11/13/14	East Busch Boulevard @ Pawnee Avenue	4:00pm-5:00pm	300'	28
11/13/14	East Busch Boulevard @ Pawnee Avenue	5:00pm-6:00pm	300'	33

1.5 Pedestrian and Bicycle Crash History

The Florida Department of Transportation Crash Data Management System (CDMS) was used to query available pedestrian and bicycle crash data history along the East Busch Boulevard corridor within the study area between 2009 and 2013, inclusive. Based on the available data, there were, approximately 42 pedestrian crashes and approximately 48 bicycle crashes that occurred in this corridor (see crash data plotted by milepoint in **Figure 1-3**). Of the approximately 90 reported bicycle and pedestrian crashes, 15 of them occurred at or very close to signalized intersections, including six crashes reported at East Busch Boulevard and 46th Street. There were five bike-ped crashes reported at Overlook Drive, which would be correctable by the installation of a traffic signal, currently being considered by the FDOT. This still leaves a majority of the crashes occurring away from existing crosswalks/intersections. Of the 33 low-light accidents, 22 of them occurred away from crosswalks/intersections.



Reported Long-Form Crashes by Milepoint (2009-2013 Inclusive)

Figure 1-3

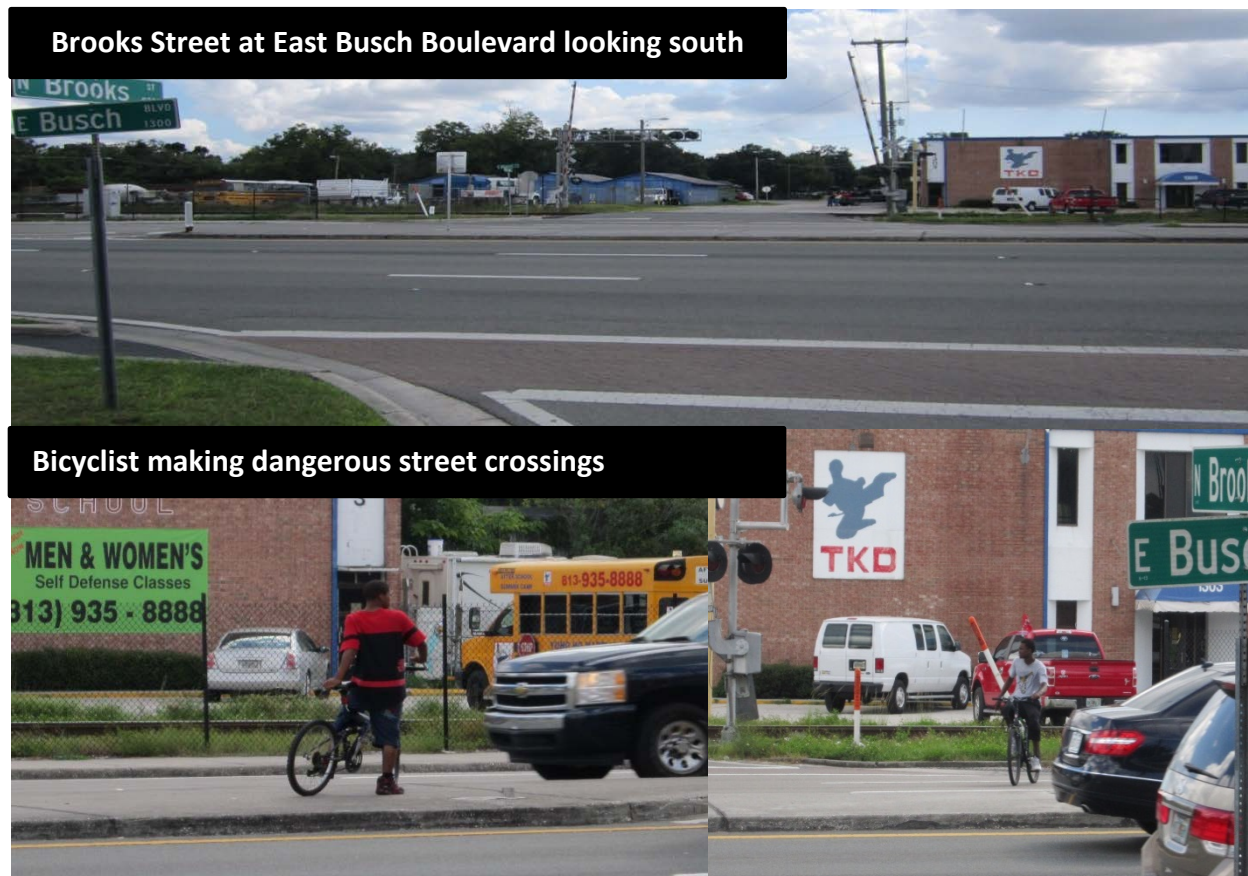
Section 2 Recommendations

2.1 New Crosswalk Placement

New marked pedestrian crosswalks are recommended at four locations along the East Busch Boulevard corridor based on a review of bike-ped counts and crash data. The recommendations are displayed in **Figure 1-4**.

Placement 1: East Busch Boulevard at Brooks Street

- Crossing would be approximately 560' from the East Busch Boulevard pedestrian crossing at 12th Street
- Brooks Street has steady pedestrian and bicycle traffic.
- From 2009 to 2013 there were six crashes involving pedestrians/bicyclists with one being fatal.
- Observed numerous counts over 15 and several over 20 crossings per hour
- Pedestrian Crossing Generators:
 - BP Gas Station (Convenience Store)
 - Busch Laundromat
 - Republic Pharmacy



Placement 2: East Busch Boulevard at 21st Street or 19th Street

- 21st Street is outside of 300' but is close to the 22nd Street signalized intersection, so 19th Street would be a reasonable alternative due to the observed area of crossings.
- Steady pedestrian traffic was observed all three days during the periods the count.
- From 2009 to 2013 there were seven crashes involving pedestrians/bicyclists.
- Pedestrian Crossing Generators:
 - Walgreens
 - Sunset Inn
 - Budget Inn
 - Catholic Charities
 - Quick Fuel (Convenience Store)
- A crossing at 19th Street would facilitate access to the bus stops on both sides of East Busch Boulevard.

East Busch Boulevard looking north towards 21st Street



Bicyclist visiting Food Mart and a local trip generator (Sunset Inn)



Placement 3: East Busch Boulevard at Pawnee Avenue

- Numerous pedestrian/bicycle counts, over 20 per hour during several single hour periods across the three-day count.
- Most of the pedestrian traffic was counted between Temple Avenue and 48th Street with Pawnee Avenue being the most logical crossing point due to the larger landscaped median which would provide for a better two-stage crossing.
- Significant crossing counts
 - 11/13/14 – 4:00 PM to 5:00 PM = 28 crossings
 - 11/13/14 – 5:00 PM to 6:00 PM = 33 crossings
- Pedestrian crossing generators:
 - Retail stores (Sell R Us, HIP Beauty Supply, Simple Mobile Solutions, Computer Microsystems Group, Iphone City, Boost Mobile, Dollar Way Plus, Deli Plus Bodega Latina Grocery, Amana Food Market, Tienda Caliente)
 - Dry cleaners/laundromats (Busch Laundromat, B&W Coin Laundry & Dry Cleaning, Sunshine Dry Cleaner, Busy Bee Dry Cleaners)
 - Restaurants (Caribbean Crown, West Indian Restaurant, Hungry Howie's Pizza, 4 U Coffee Shop, Petra, Kreyol Delight, Sacred Grounds Coffee,
 - Places of worship (Enlightened Ministries, New Millennium Community Church, Masjid Omar,
 - Hair salons (Harriet's Hair and Nail Salon, Pretty Lady Hair, Habib's Hair Design, Divine Creations Beauty Salon, Denise Island of Beauty, Super Mario's Fresh Fades)
 - Professional Services (Bob Hogue School of Real Estate, Business Resources and Marketing, Global Income Tax, Patrick Leduc Criminal Law, Prodigy Bail Bonds, Affordable Laser Printer Repair, Primerica, Tampa Language Center, Insurance Botanica, America's Tax and Accounting, We Care Home Service, Hess Spinal and Medical Center)
 - Andover Club Apartments
 - Other Businesses (Addicted 2 Tattoos, Interline, Western Union, Babylon Hookah Lounge, Albasha Hookah)



Placement 4: East Busch Boulevard East of N 27th Street

While this location does not currently meet the required volumes to warrant a crossing, it did record over 20 crossings in an hour within a 300 foot segment of East Busch Boulevard (wider area than used for the other locations). This location is a safety hazard for pedestrians due to the vertical geometry of the road causing a reduction in sight distance.

- There were 9 pedestrian/bicycle crashes between 2009 and 2013.
- Significant Crossing Counts [Required wider area to reach 20 crossings]
 - 5/8/15 – 4:00 PM to 5:00 PM = 20 crossings
- Pedestrian crossing generators:
 - Numerous restaurants (Red Lobster, Olive Garden, Taco Bell, Subway, Popeye’s, Pollo Rumbero)
 - Payday loan store
 - Several bars
 - Hotels (Travelodge, La Quinta, Holiday Inn Express)



2.2 Street Lighting

Approximately 37 percent of the reported bicycle and pedestrian crashes occurred at night, dawn or dusk according to the crash records database. Based on our site review there are areas where lighting levels are low and could contribute to unsafe pedestrian/bicycle interactions with motorists. The western segment of the corridor between Nebraska Avenue and the railroad crossing has little to no lighting on the eastbound travel lanes, including the sidewalk. Along this half-mile segment there are only two street lights on the south side of East Busch Boulevard. It is recommended that the street lighting be improved to provide better illumination of the sidewalks and crosswalks along the corridor. For the proposed new mid-block crossings, it is recommended that adequate street lighting be installed to increase visibility at these locations. See **Figure 1-5** for street lighting comparison.

2.3 Crosswalk Signage and Marking

The proposed signing and marking for the new crosswalks are similar to the existing mid-block crossing at 12th Street (see picture on next page). The recommended crosswalk locations would require either Rectangular Rapid Flashing Beacons (RRFBs) or Pedestrian Hybrid Beacons (PHBs or “HAWK” signals) to

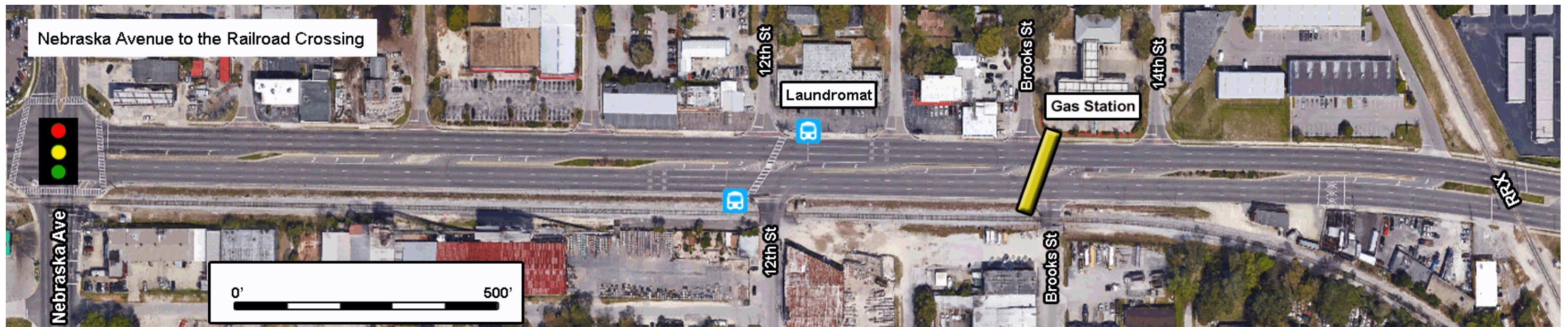
supplement the standard pedestrian crossing signs and crosswalk markings. It is recommended that the most recently adopted pedestrian safety striping package be used to increase crosswalk visibility.

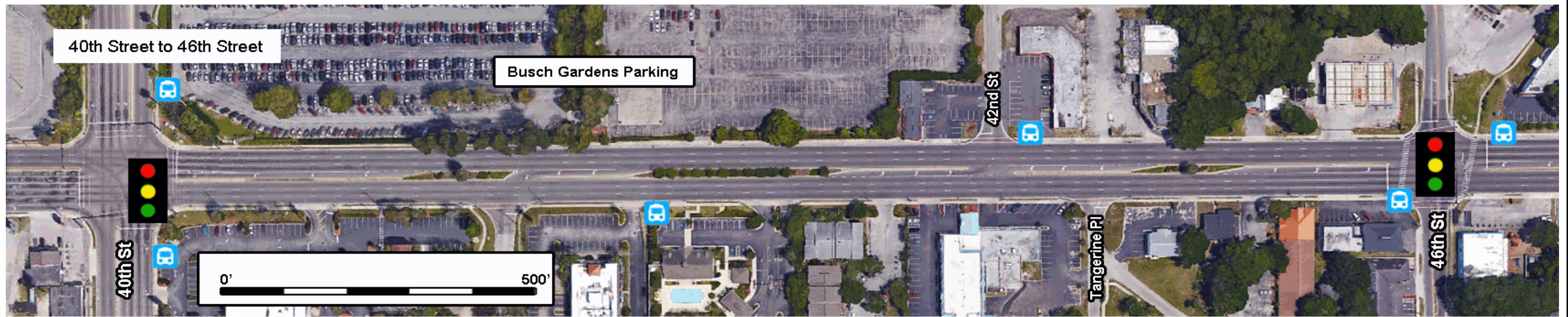


2.4 Widening Sidewalks

One potential pedestrian safety improvement that was considered was narrowing the travel lane widths and widening the sidewalks along the corridor. This improvement is not recommended due to the location of utility poles (see photo to right) immediately adjacent to the sidewalk between the travel lanes and sidewalk. These utility poles would then fall in the middle of the sidewalk or would require the sidewalk to be bifurcated to go around the poles. The relocation of utility poles would be too costly and not feasible.



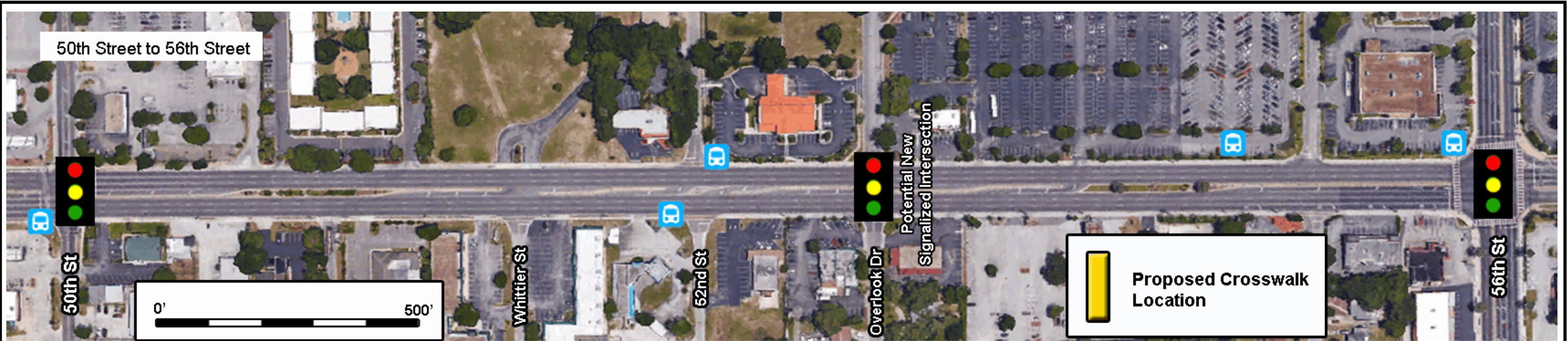




East Busch Boulevard (SR 580) Corridor Study
 From Nebraska Avenue (SR 45/US 41) to North 56th Street (SR 583) - Hillsborough County

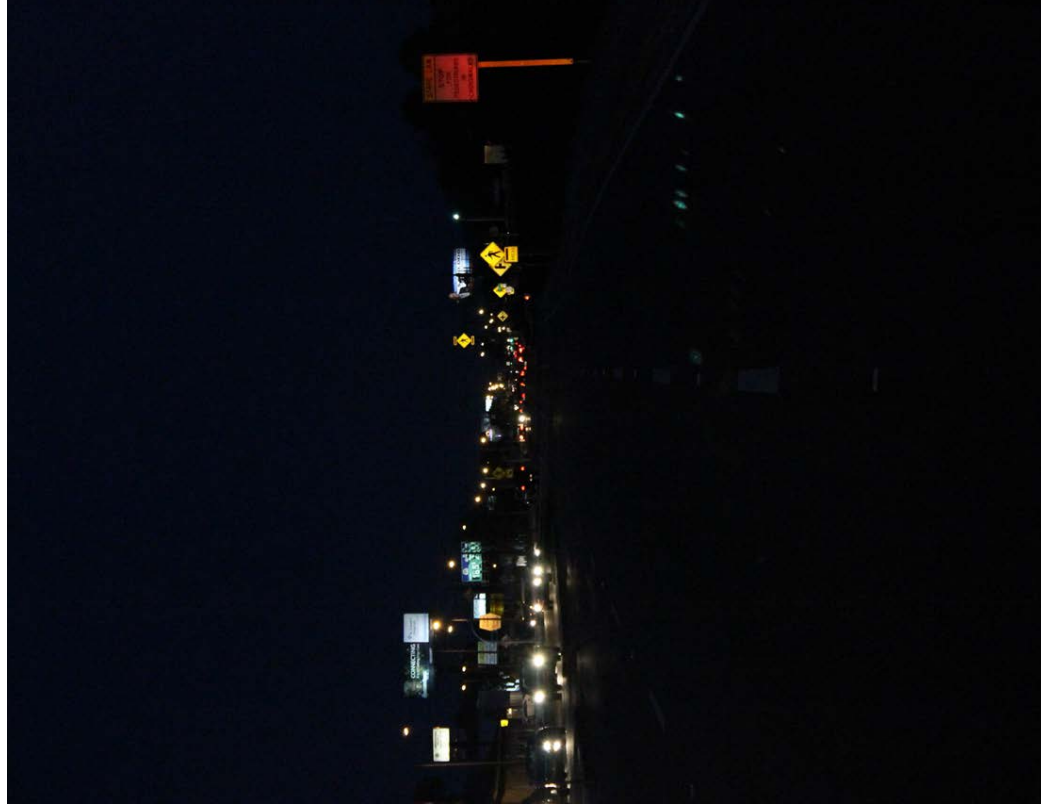
Recommended Locations for Pedestrian Crosswalks

Figure 1-4
 Sheet 2 of 3





Looking west toward Nebraska Avenue at westbound lanes



Looking east toward 12th Street at eastbound lanes

Both photos taken on January 12, 2016 using a Canon DSLR with an ISO setting of 6400, F-stop of 5.6 and exposure time of 1/125th Second

East Busch Boulevard (SR 580) Corridor
 Study
 From Nebraska Avenue (SR 45/US 41) to
 North 56th Street (SR 583) - Hillsborough County



Nighttime Views Between Nebraska Ave and 12th St

Figure 1-5