

# COMPLETE streets

COLUMBIA AVE CASE STUDY | KISSIMMEE, OSCEOLA COUNTY, FLORIDA

MAY 2016



Prepared for:



Prepared by:



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# STUDY BACKGROUND

MetroPlan Orlando is developing a policy that establishes regional Complete Streets goals and builds support for implementing Complete Streets projects on local and state roadways.

MetroPlan Orlando's Complete Streets Task Force assisted in the development of the draft policy, which defines Complete Streets as:

*“Complete Streets are planned, designed, constructed, operated, and maintained to safely and comfortably accommodate people of all ages and ability, including pedestrians, cyclists, transit users, motorists, and freight and service operators.”*

The draft policy and its implementation tools seek to incorporate “Complete Streets” thinking into the region’s transportation investments.

As part of the policy development process, MetroPlan Orlando conducted a series of case studies to highlight strategies for incorporating Complete Streets design principles into local projects. They identify viable opportunities for implementing the policy’s goals and provide guidance to local partners.

Each case study corridor was selected to show specific teachable elements of Complete Streets design and implementation.



Looking west along Columbia Ave from Central Ave Elementary School

## SELECTED CORRIDORS

1. Orange Center Boulevard (Orlando, FL) - Lane reduction and enhanced bicycle accommodations to support community redevelopment
- 2. Columbia Avenue (Kissimmee, FL) - Enhanced bicycle and pedestrian accommodations to support future transit investment**
3. Howell Branch Road (Seminole County, FL) - Improve bicycle and pedestrian comfort and safety on large suburban arterial

The recommendations shown in this report present design concepts for Columbia Avenue. The ideas presented have not been discussed with local residents and any modifications to the roadways should include public engagement and additional analysis before proceeding to design or construction.



Looking east along Columbia Ave near the Thacker Ave intersection

# CORRIDOR SELECTION

MetroPlan Orlando's planning area of Orange, Osceola, and Seminole Counties is nearly 3,000 square miles. An analysis of land use and transportation characteristics identified roads ready for a Complete Streets study.

The land use analysis identified areas where multimodal travel is in most demand. The transportation analysis identified corridors that would most benefit from Complete Streets investments by answering three questions:

1. How well will it address safety issues?
2. How well will it support existing infrastructure?
3. How compatible is the street for complete streets improvements?

No one criteria determined that an area is suitable, but overall, multiple criteria highlighted viable areas and corridors for Complete Streets projects.

Columbia Ave from N Hoagland Blvd to N Central Ave (shown below) ranked highly in the land use and transportation evaluation. The following land use and transportation characteristics were seen along the corridor:

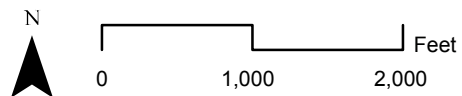
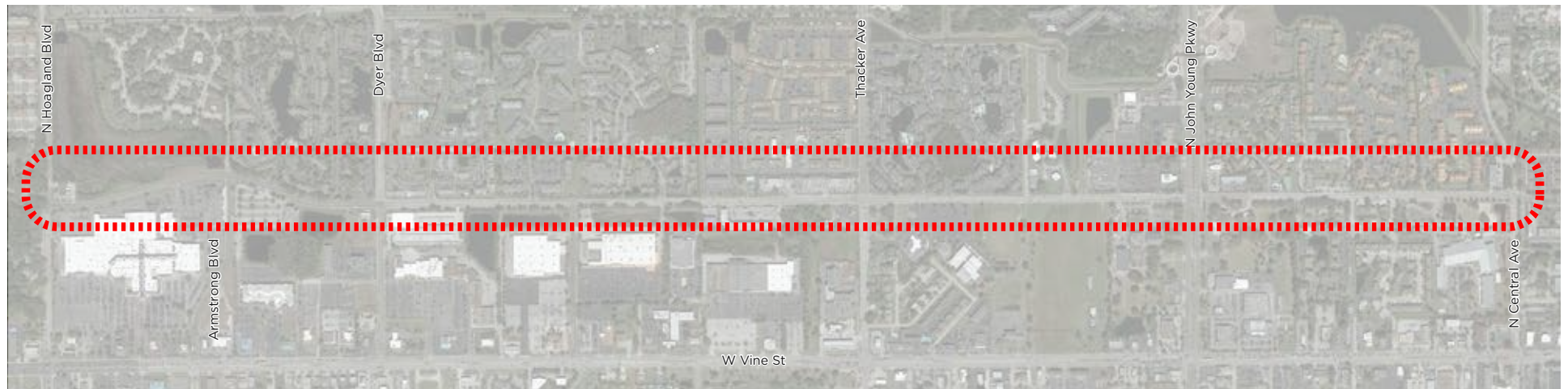
## LAND USE ANALYSIS

- High Transportation Disadvantaged Index (measure of populations that have historically had significant unmet transportation needs)
- Medium population density
- Supportive future land uses/within Community Redevelopment Area
- Within 2 miles of high activity transit stop
- Within 2 miles of public park
- Within 0.5 mile of multiple educational institutions

## TRANSPORTATION ANALYSIS

- High pedestrian and bicycle crash frequency
- High vehicle crash frequency
- Accommodates transit service
- Low heavy truck activity (less than 5%)
- Accommodates high frequency transit service
- Relatively low vehicular traffic volume (less than 20,000 veh/day)

With the future addition of the Kissimmee Transit Circulator, this corridor also presents a unique opportunity to illustrate how Complete Streets improvements can support transit investment.



Study Corridor

## Study Corridor Extents

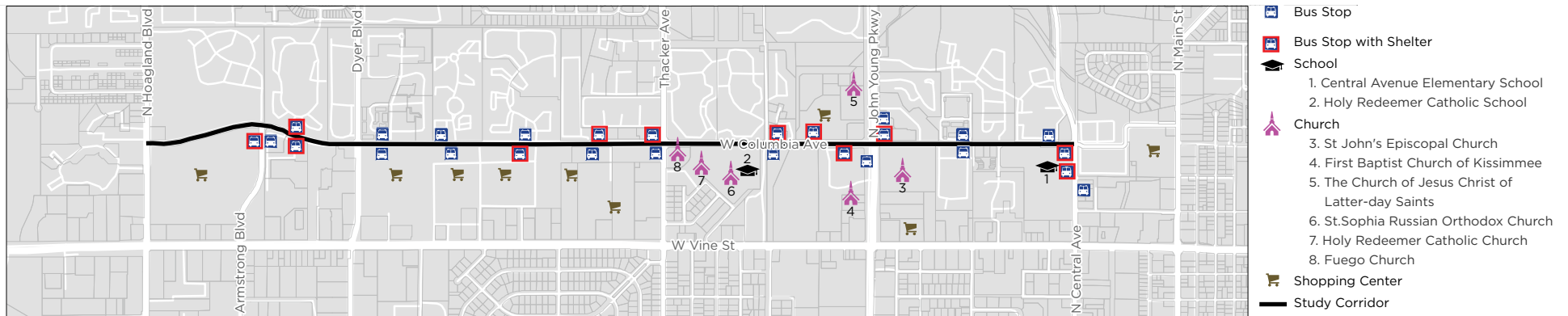


# EXISTING CONDITIONS

An existing conditions analysis enabled understanding of specific issues and opportunities along the study corridor. The maps below identify existing pedestrian generators, transit, existing and future land use, vehicular traffic, crashes, and pedestrian and bicycle facilities.

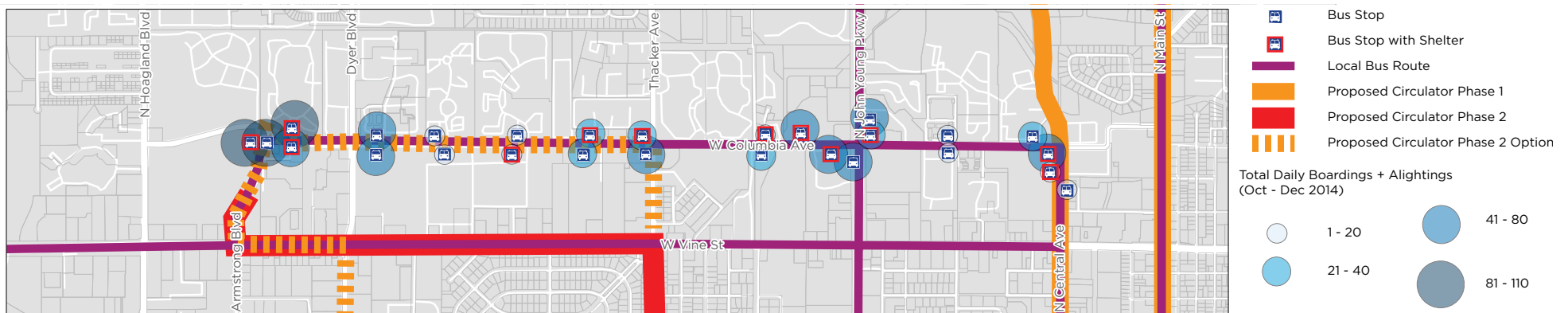
**Pedestrian Generators:** The corridor consists of many pedestrian generators including several multi-family residential complexes, some single family houses, six churches, two schools, 24 bus stops, and multiple retail shopping centers.

**Transit:** Link 56 runs along Columbia Ave and has 24 bus stops along the study corridor with moderate to high boarding and alighting activity (the most active stops experience 81-110 passengers/day). Link 57 runs along John Young Pkwy and intersects with Columbia Ave. In the future, the City of Kissimmee plans for a transit circulator to connect downtown Kissimmee with Columbia Ave and the surrounding area. Phase 1 intersects with the Study Area at Central Ave and Main St and Phase 2 consists of two options with one running along Columbia Ave from Armstrong Blvd to Thacker Ave.



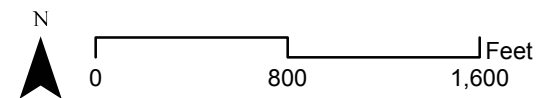
Source: Lynx, Google Maps, KAI

**Pedestrian Generators**



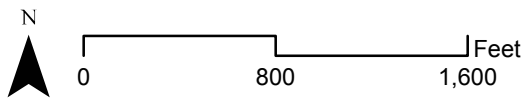
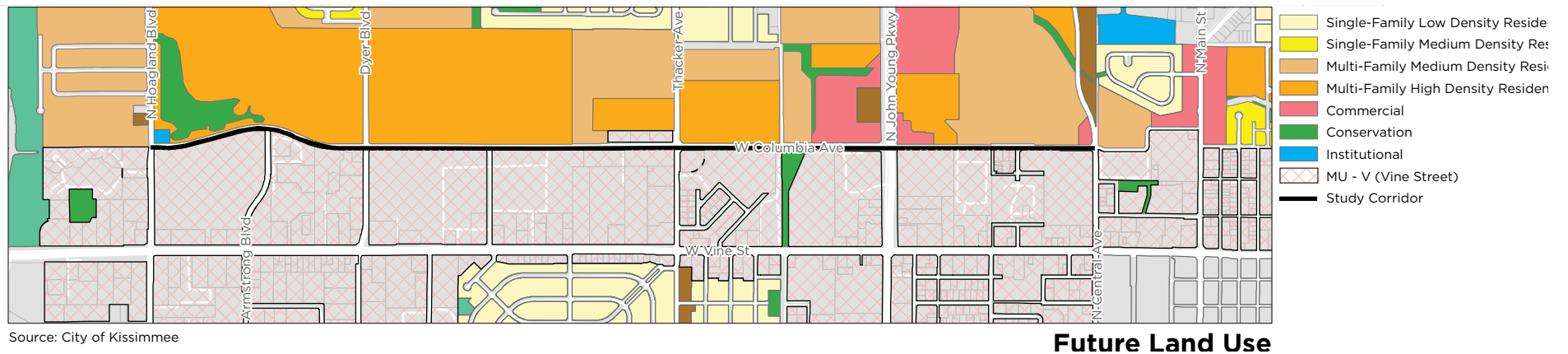
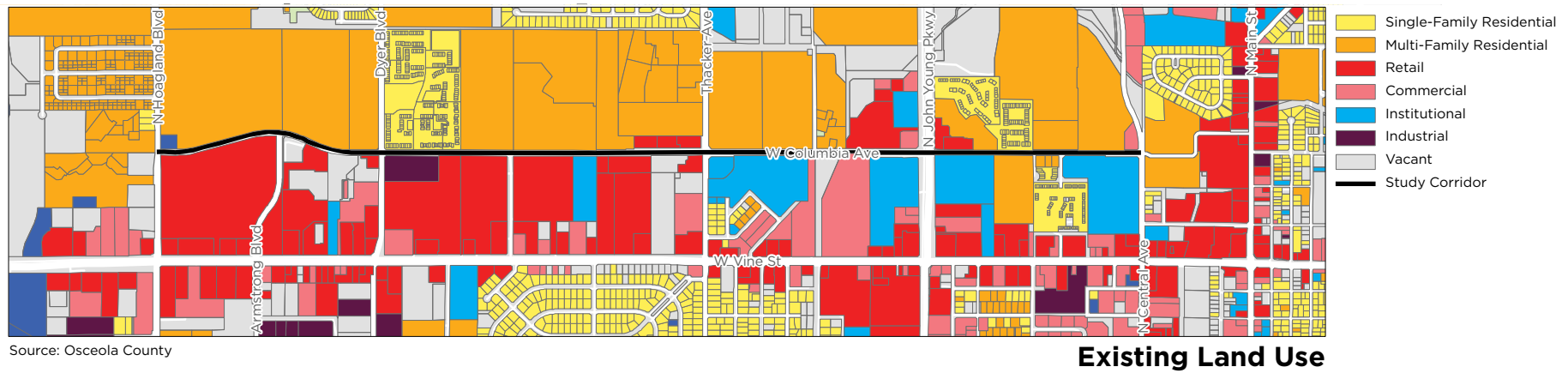
Source: Lynx

**Transit**



**Existing Land Use:** The study corridor is surrounded by predominantly multi and single family residential, retail, and institutional land uses. Multi and single family communities make up most of the parcels north of the road. Retail uses are primarily located south of the roadway with the Plaza del Sol shopping center in the west and big box shopping centers towards the middle of the corridor. Churches and schools are mostly located east of Thacker Ave.

**Future Lane Use:** Most of the corridor will maintain its existing land uses in the future. The south side of the roadway is within the Vine Street CRA and is designated as mixed use. The north side of the roadway will remain predominantly multi-family with pockets of commercial land use near the John Young Parkway intersection.



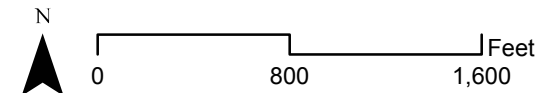
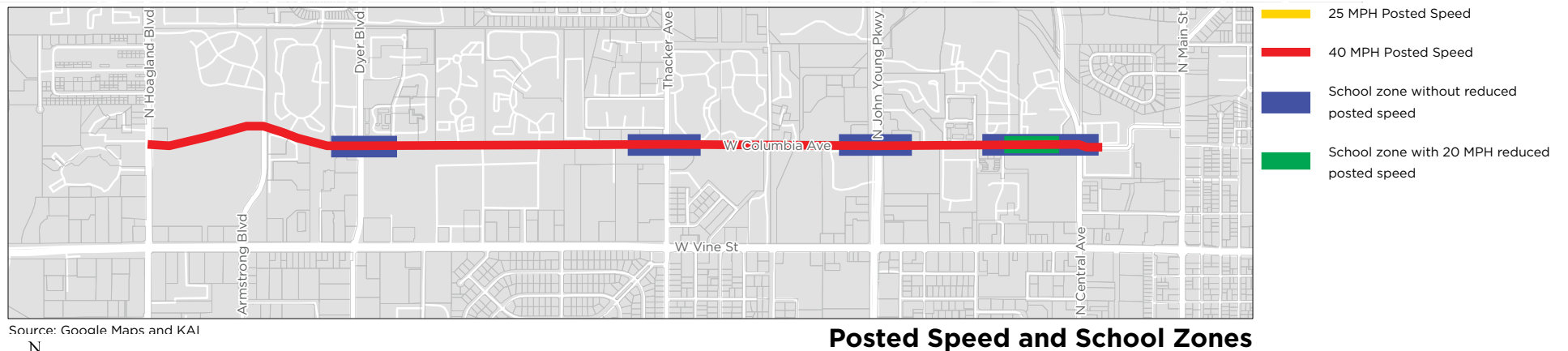
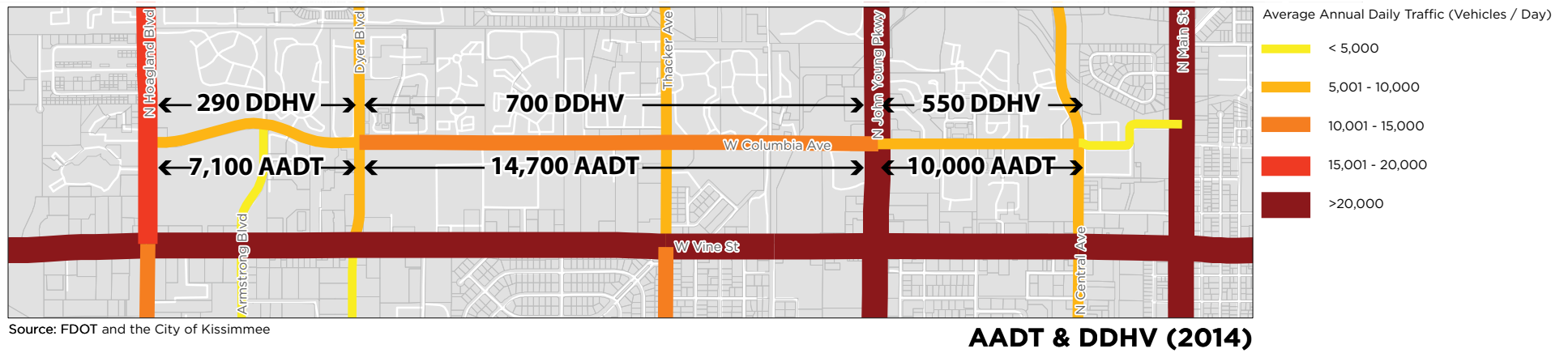
**Average Annual Daily Traffic (AADT) & Directional Design Hourly Volume (DDHV):**

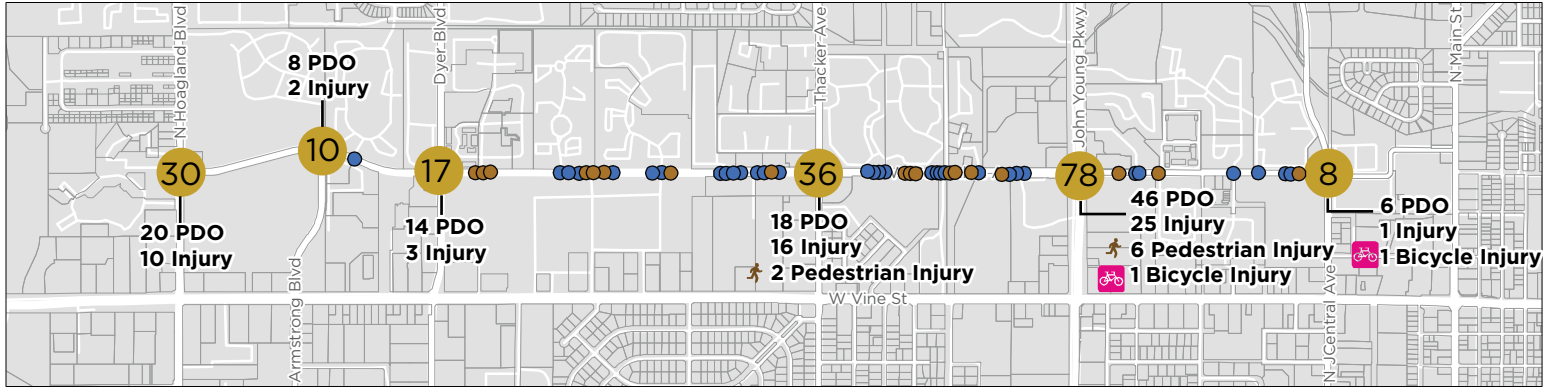
Based on 2014 FDOT and City of Kissimmee data, the highest vehicle volumes along the study corridor are between Dyer Blvd and John Young Pkwy with an AADT of 14,700 and DDHV of 700. According to the City of Kissimmee Comprehensive Plan, the corridor is located within the Multimodal Transportation District so the LOS standard is LOS E. This data suggest that the roadway is currently operating at LOS C or better (based on FDOT Generalized Service Volume Tables).

**Posted Speed:** The posted speed limit is 40 MPH. It consists of four school zones marked at the intersections of Dyer Blvd, Thacker Ave, John Young Pkwy, and near Central Ave Elementary School (includes 20 MPH reduced speed limit).

**Crash History:** Crash data between August 2012 and July 2015 (3 years) shows that a majority of crashes occurred at signalized intersections. Detailed bicycle crash data for 2008-2015 revealed that the majority of bicycle crashes occur on the sidewalk, crosswalk, or against traffic.

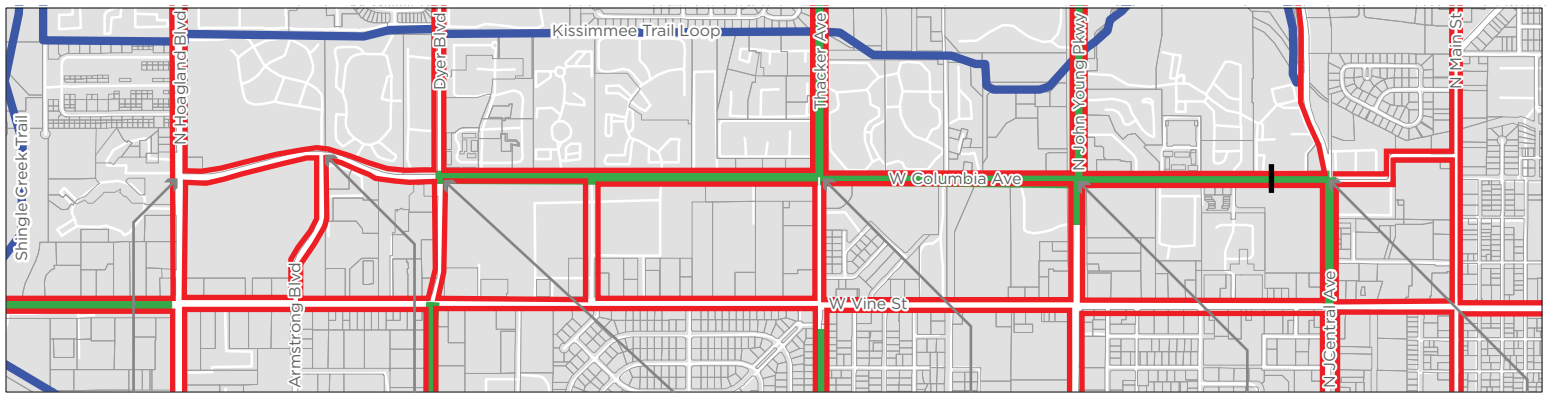
**Pedestrian and Bicycle Facilities:** Continuous sidewalks are present along the entire length of the corridor. Substandard 4' wide bike lanes are present between Dyer Blvd and Central Ave. According to the City of Kissimmee Trails Master Plan, two off-street bike paths - Shingle Creek Regional Trail and Kissimmee Trail Loop - are present in the vicinity of the study corridor.



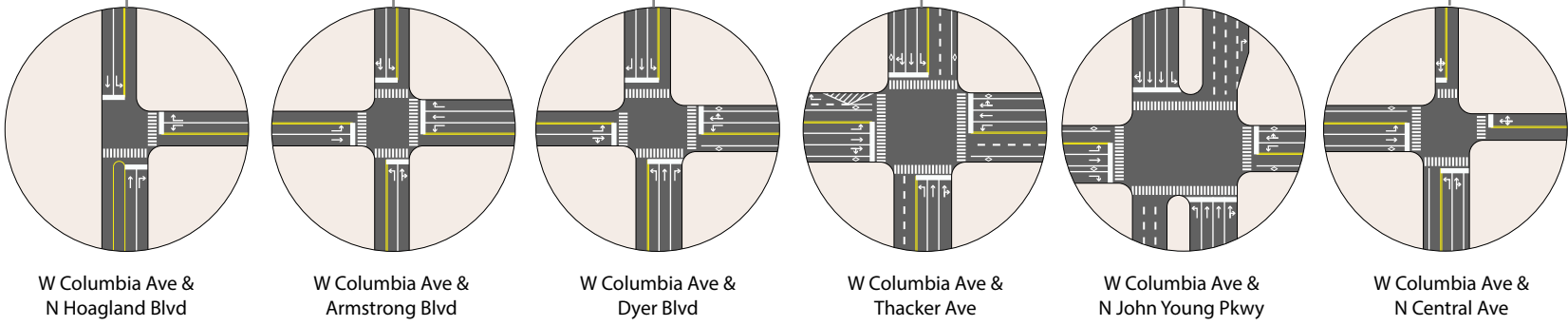


Source: Signal Four Analytics

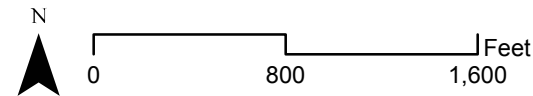
### Crash History (Aug 2012 to July 2015)



Source: Google Maps



### Pedestrian and Bicycle Facilities + Signalized Intersections





# USER NEEDS AND OPPORTUNITIES

A design workshop with City of Kissimmee staff on March 16, 2016 provided additional information on the redevelopment occurring along the corridor. The existing conditions analysis and design workshop were synthesized into six overall user needs and opportunities.

## PEDESTRIAN

**Need:** The pedestrian generators and attractors include Central Ave Elementary School as well as three other elementary and middle schools within a mile of the corridor, numerous multi-family complexes, and well-used bus stops where pedestrians frequently cross mid-block. There is a need to provide a safe and comfortable environment along and across the corridor for pedestrians.

**Opportunity:** Complete Streets improvements should increase safe crossing opportunities in key areas and decrease vehicular speeds for enhanced safety. Intersections should be completed with appropriate ADA compliant ramps and crosswalks on all corners within the urban context. In addition, the future Kissimmee Transit Circulator will frequent this area and generate more pedestrian trips.

**Next Steps:** Conduct pedestrian counts at signalized intersections and mid-block high pedestrian activity areas, conduct a corridor pedestrian crash analysis, and evaluate potential for mid-block pedestrian crossings near pedestrian generators.



Students crossing Central Ave



Substandard bicycle facilities (4' bike lane)

## BICYCLE

**Need:** The bicycle facilities along Columbia Ave are substandard - with 4' bike lanes along most of the corridor and no bike facilities in some locations. This causes many bicyclists to use the sidewalk and, as seen in the crash data, most of the bicyclist crashes occur at driveways, sidewalks, or crosswalks.

**Opportunity:** Design improvements should include the accommodation of safe travel for bicyclists providing connections to surrounding land uses and the planned bike network. Recommendations include reducing vehicle speeds to provide a more comfortable biking environment.

**Next Steps:** Conduct a corridor bicycle crash analysis and evaluation of a feasible connection to the Shingle Creek Trail.

## TRANSIT

**Need:** The corridor is served well by transit and will continue to be served by buses in the future.

**Opportunity:** Bus stops should be improved to enhance accessibility and should be located near safe pedestrian crossing opportunities. The Kissimmee Transit Circulator will provide an opportunity to significantly increase transit service in the corridor and connect it to major destinations such as downtown Kissimmee and the Osceola Regional Medical Center.

**Next Steps:** Corridor-level analysis of bus stop accessibility and placement based on surrounding land uses and safe pedestrian crossing opportunities.



Non ADA compliant pedestrian curb ramp



Non-accessible bus stops just west of Thacker Ave

## VEHICULAR

**Need:** Resurfacing is necessary due to roadway cracking and deterioration. As seen by traffic volumes, excess vehicular capacity is available along the corridor. Wide cross sections and high speeds along some of the corridor make the pedestrian and cyclist environment uncomfortable.

**Opportunity:** In order to enhance pedestrian and bicyclist safety and comfort, it is recommended that the design and posted speed be set at 35 mph.

**Next Steps:** Conduct a pavement analysis, program resurfacing of Columbia Ave to include Complete Streets elements, and conduct a traffic study to further justify lane reduction.

## FREIGHT

**Need:** Heavy truck percentages along the corridor are moderate, ranging from 2% to 5%.

**Opportunity:** Complete Streets improvements should consider a design that accommodates a typical delivery bus (WB-52) vehicle. City of Kissimmee should also consider encouraging larger trucks bound for the land uses on the western end of the corridor to use US 192 (Vine Street).

**Next Steps:** Incorporate freight mobility and livability components into analysis.

## COMMUNITY REDEVELOPMENT

**Need:** Multiple vacant and underutilized parcels exist along Columbia Ave.

**Opportunity:** The proposed US 192 BRT and Kissimmee Transit Circulator bring an opportunity to redevelop several parcels within the vicinity of the stations - Armstrong Blvd and Emory Ave. Complete Streets improvements can capture, support, and encourage transit-oriented development momentum in the area.

**Next Steps:** Leverage development activity by seeking public-private partnership for implementation of Complete Streets elements.



*Wide roadway cross section encourages high vehicle speeds*



*Proposed site of US 192 Emory Ave station west of John Young Parkway*

# COMPLETE STREETS DESIGN ELEMENTS

Each roadway is unique, and should respond to the user context. A complete street may include sidewalks, bike lanes, special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossings opportunities, median islands, accessible pedestrian signals, curb extensions, narrow travel lanes, roundabouts, landscaping, lighting, and many other features. These elements address users that operate within all realms of the cross section - cartway zone, buffer zone, and sidewalk zone.

There are a number of nationally recognized design manuals and guidebooks that present the design characteristics for complete streets and how these characteristics should relate to their environment. In all, they share a common understanding that designing for the comfort and safety of the most vulnerable users better serves the safety of everyone. A commonly used, yet not exhaustive, list of innovative Complete Streets elements is provided below based on cross section realm.

## CARTWAY ZONE

**Design Speed:** Vehicular travel speed has a measured impact on comfort and safety for pedestrians and bicyclists. With increased vehicular speeds comes increased difficulty for pedestrians to cross roadways. Faster speeds increase the force with which a vehicle strikes a pedestrian, leading to more severe injuries and less likelihood of survival. Many design guidelines for Complete Streets recommend posted speeds be set between 20 mph to 35 mph. Many design guidelines also stipulate that the design speed of the roadway should equal the posted speed. Geometric design elements, such as horizontal and vertical curves, block length, and vehicular lane widths should reinforce that posted speed.

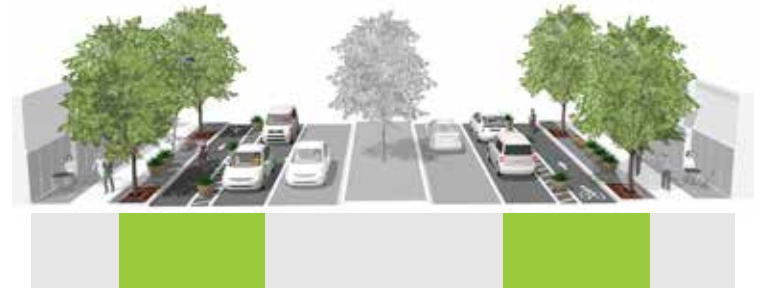
**Roadway Width:** Wider streets experience higher average and 85th percentile speeds than narrow streets. As street widths widen, accidents per mile increase. Wider streets act as barriers to pedestrian travel, making it difficult to cross the roadway. The number of travel lanes and the width of the travel lanes also impact the roadway width.

**Raised Medians:** Raised medians provide a refuge for pedestrians crossing the roadway, allowing someone to negotiate one direction of travel at a time. These commonly include landscaping to increase comfort for pedestrians.

**Pedestrian Connectivity:** Sufficient opportunity for safe and comfortable pedestrian access along and across a roadway can be accomplished through the use of well-marked pedestrian crosswalks at intersections and mid-block crossings that can include rectangular rapid flashing beacons. In urban neighborhood contexts, crossing opportunities could be spaced as frequent as every 300-660 feet.



Cartway Zone



Buffer Zone



Sidewalk Zone

Miles per Hour	Probability of Fatality
20	5%
30	37-45%
40	85%

*Faster vehicle speeds decrease likelihood of survival. Credit: United Kingdom Department of Transportation, 1987. "Killing Speeds and Saving Lives." London, England.*

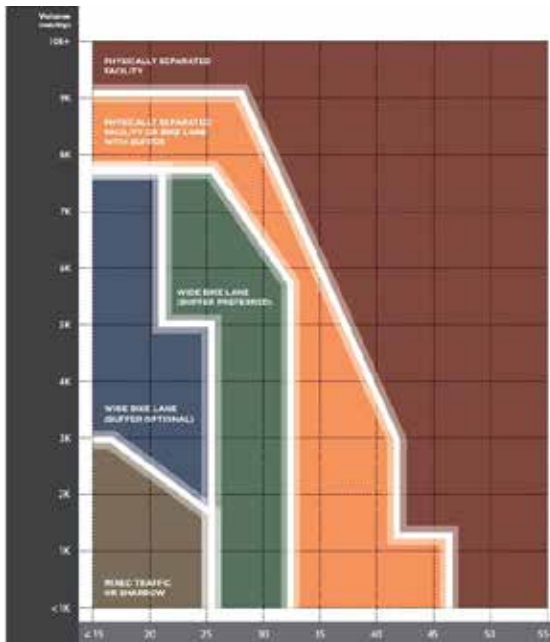


**Curb Extensions:** Curb extensions decrease the overall width of the roadway and can serve as a visual cue to drivers to slow down. Curb extensions encompass several different treatments including mid-block traffic calming, horizontal deflections, transit stops, and on-street parking lane bulb-outs.

**Other Traffic Calming Elements:** Speed control elements manage speeds and reinforce safe, pedestrian-friendly speeds. These elements include speed humps, speed tables/raised intersections, speed cushions, and raised in-pavement crosswalk lights. The elimination of excessive right-turn deceleration lanes can encourage slower speeds along the roadway.

## BUFFER ZONE

**Bicycle Facility:** Different levels of bicycle accommodation can be used for different target groups of bicycle users. Shared lane markings (“sharrows”) are recommended for use on roadways with low speeds (<30 mph) and low



*Bicycle facilities at different speeds and volumes  
Source: Montgomery County Bicycle Planning Guidance, 2014*

volumes (<3,000 veh/day). Separated bicycle facilities - including buffered bike lane, shared use path and cycle tracks, - are generally recommended for speeds above 30 mph and 8,000 veh/day (see table for more details). These facilities tend to encourage the “interested but concerned” group of cyclists (approximately 45% of cyclists according to a Portland State University study) to use the bike facility. Inclusion of vertical separation elements in the buffer enhances bicyclist comfort and further alerts drivers of the presence of the facility.



*Pedestrian Refuge Island  
Photo Credit: Bruce Landis, FHWA*



*Raised cycle track  
Photo Credit: NACTO*

**Parking:** On-street parking serves as a buffer for pedestrians and supports local commercial uses along the roadway.

**Landscape Buffer:** Horizontal separation from the roadway by use of trees and street furniture add to pedestrian comfort and sense of safety.

**Street Trees:** Street trees provide much needed shade and a vertical barrier from traffic, which increases pedestrian safety and comfort.

**Bus Shelters:** Bus shelters are commonly used at high boarding and alighting stops and enhance the transit experience by providing shade and shelter. They should be strategically placed near pedestrian crossing opportunities and designed using accessible pedestrian guidelines.



*Bus shelter  
Photo Credit: NACTO*



*In-ground crosswalk pavement lights  
Photo Credit: KA LA*



## SIDEWALK ZONE

**Pedestrian Accessibility Improvements:** Pedestrian accessibility features such as ADA-compliant curb ramps, well-marked crosswalks, and audible pedestrian signals should be included in any roadway modifications.

**Driveway/Sidewalk Considerations:** Sidewalks should remain at one level and less than 1:12 cross slope when crossing a driveway, making it easier for people with wheelchairs and other walking aids to navigate.

**Wide Sidewalks:** Wide sidewalks (6-7' in residential areas, 8-12' in commercial and downtown areas) allow for more pedestrian maneuverability and comfort. Appropriate sidewalk width depends on the adjacent uses and intensity of uses.

**Pedestrian-Scale Lighting:** Pedestrian-scale lighting is important to pedestrian safety as it illuminates pedestrians on the sidewalk and in the crosswalks.

**Street Furniture:** The use of street furniture - including benches, newspaper kiosks, utility poles, and bollards - can be helpful to establish a more defined pedestrian space outside of the roadway curb and can increase pedestrian comfort.

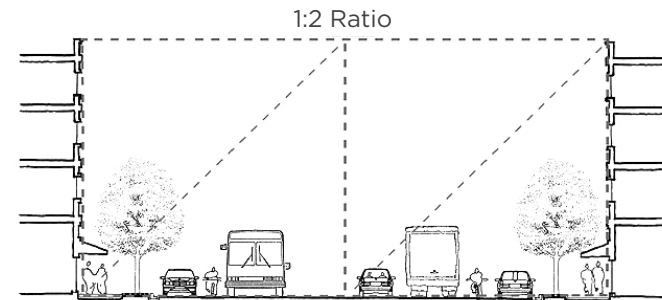
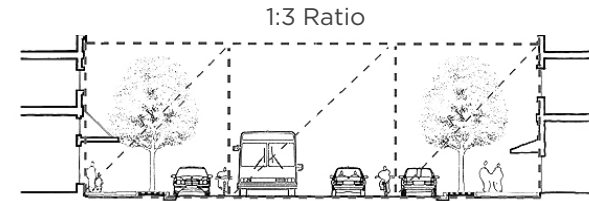
**Bike Parking:** Bike parking can encourage and support the biking environment in the area, providing designated space within the sidewalk zone to store bikes.



ADA Pedestrian Directional Ramps  
Photo Credit: KAI



Level sidewalks with short driveway ramps.  
Image Credit: KAI



Building height to width ratio between 1:3 and 1:2 create a human scale that is comfortable for pedestrians and gives a sense of enclosure to a street .  
Photo Credit: Community, Design + Architecture.

**Building Placement:** Building placement and a sense of street enclosure is important to reinforce safe speeds and pedestrian comfort. Design guidance suggests that a maximum 1:3 height-to-width ratio is acceptable for providing a sense of enclosure. Wherever possible, local zoning codes should include small setbacks to encourage 1:3 or lower ratio.



Bike Parking and Pedestrian-scale street lighting  
Photo Credit: NACTO



Pedestrian Amenities  
Photo Credit: Gerding Edlen, ASLA

# RECOMMENDATIONS

## IMPROVEMENTS MAP

### N Hoagland Blvd & Columbia Ave

- Add crosswalks on north leg
- Add special emphasis crosswalks
- Add directional ADA compliant pedestrian ramps aligned with crosswalks

### Armstrong Blvd & Columbia Ave Dyer Blvd & Columbia Ave

- Add special emphasis crosswalks
- Add directional ADA compliant pedestrian ramps aligned with crosswalks

### Thacker Ave & Columbia Ave

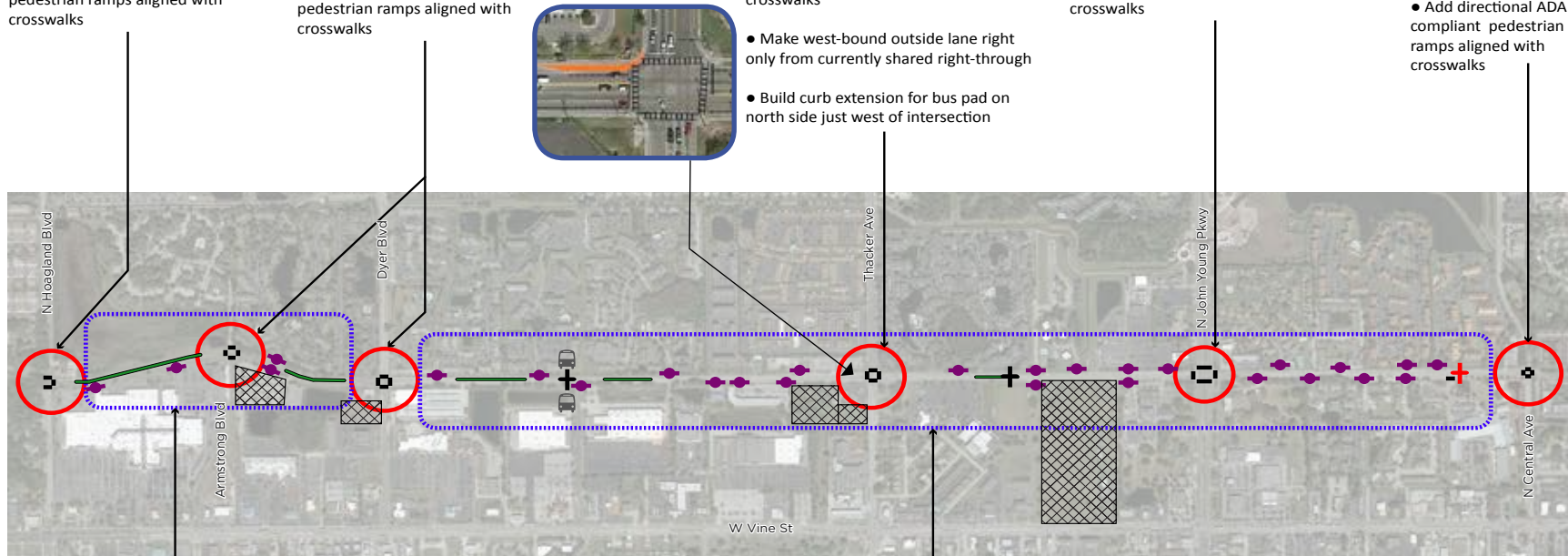
- Add special emphasis crosswalks
- Add directional ADA compliant pedestrian ramps aligned with crosswalks
- Make west-bound outside lane right only from currently shared right-through
- Build curb extension for bus pad on north side just west of intersection

### N John Young Pkwy & Columbia Ave

- Add special emphasis crosswalks
- Add directional ADA compliant pedestrian ramps aligned with crosswalks

### N Central Ave & Columbia Ave

- Add special emphasis crosswalks
- Add directional ADA compliant pedestrian ramps aligned with crosswalks



### Typical Section AA: N Hoagland Blvd to Dyer Blvd

- Two 11' lanes
- 14' Landscaped median with left-turn pockets
- Street trees and landscape
- Pedestrian scale lighting
- 12' shared-use path on north side (Option 1)
- Raised 6' one-way cycle track on both sides (Option 2)

### Typical Section BB: Dyer Blvd to N Central Ave

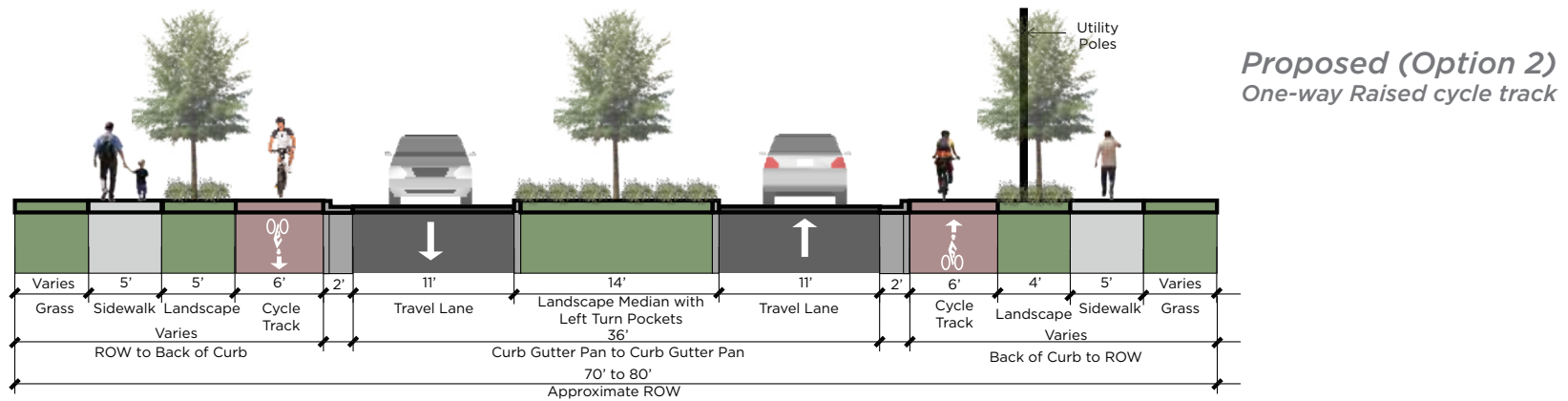
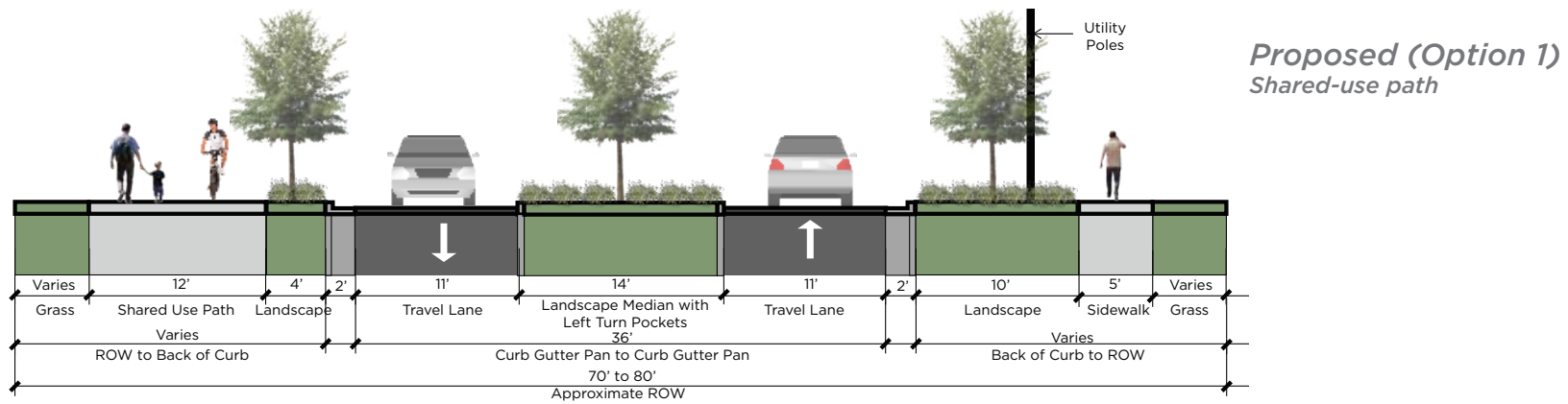
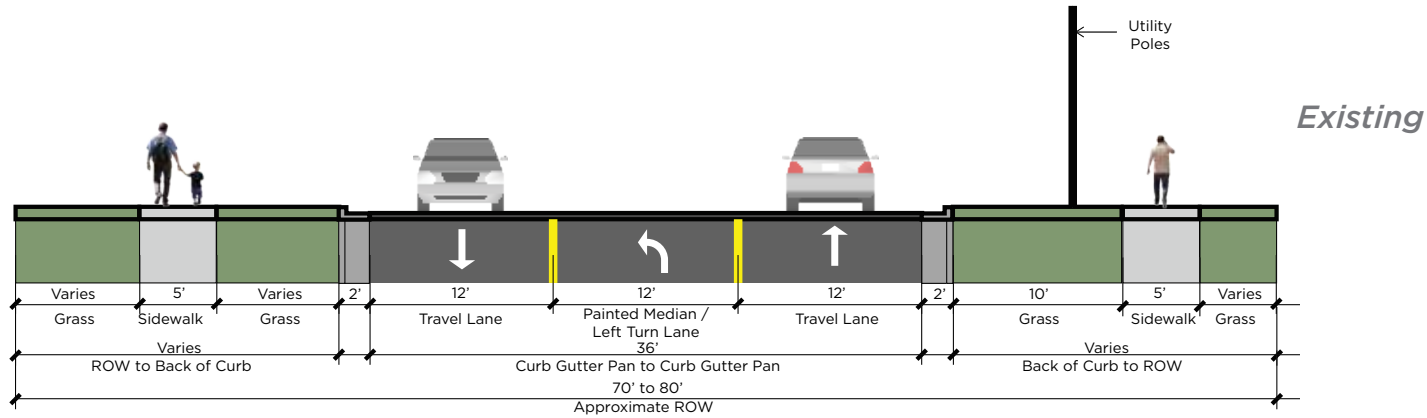
- Two 11' lanes and 10' two-way center left turn lane
- Landscaped spot medians
- Street trees and landscape
- Pedestrian scale lighting
- 6' buffered bike lane on both sides

- Special emphasis crosswalk
- ◆ Standard crosswalk with ADA compliant pedestrian ramps
- ⊕ Midblock crossing with RRFB and pedestrian refuge island
- ⊕ Raised in-pavement crosswalk light installation
- 🚌 Consolidated and relocated bus stop location

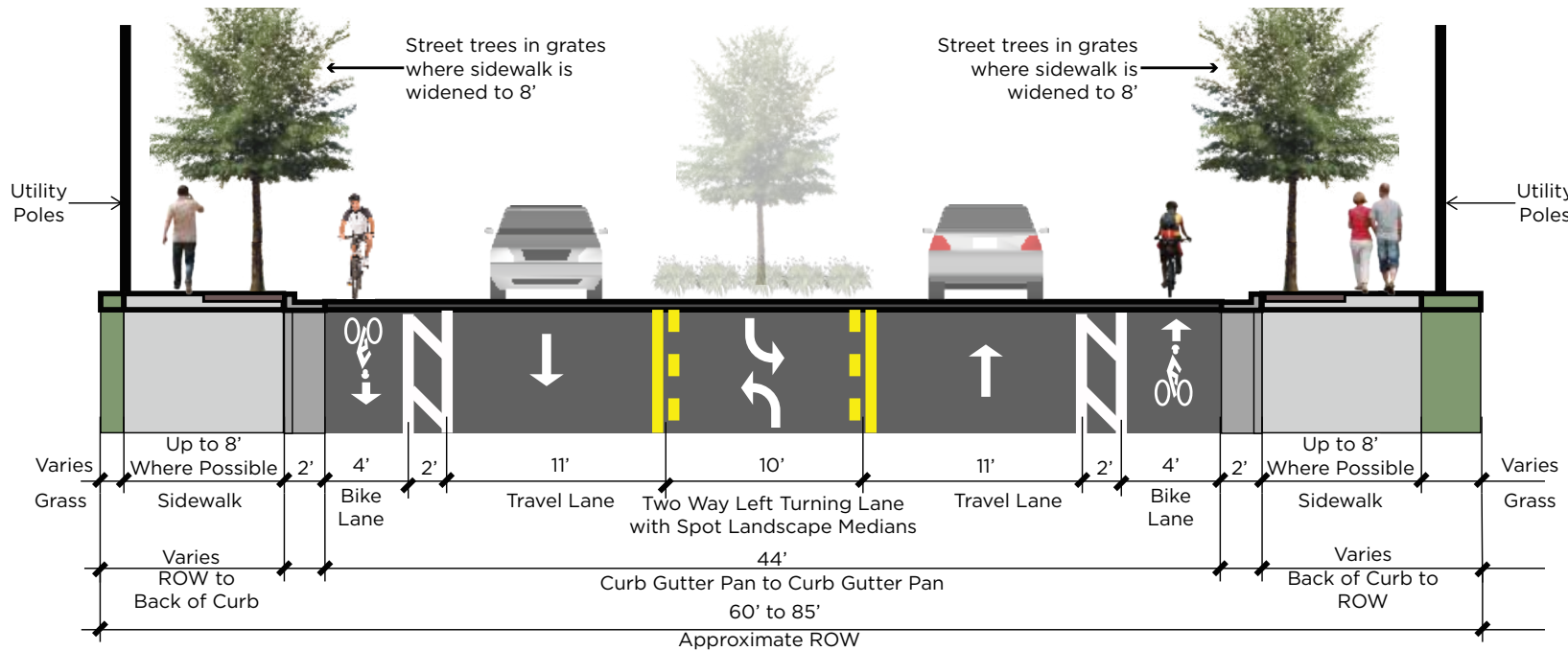
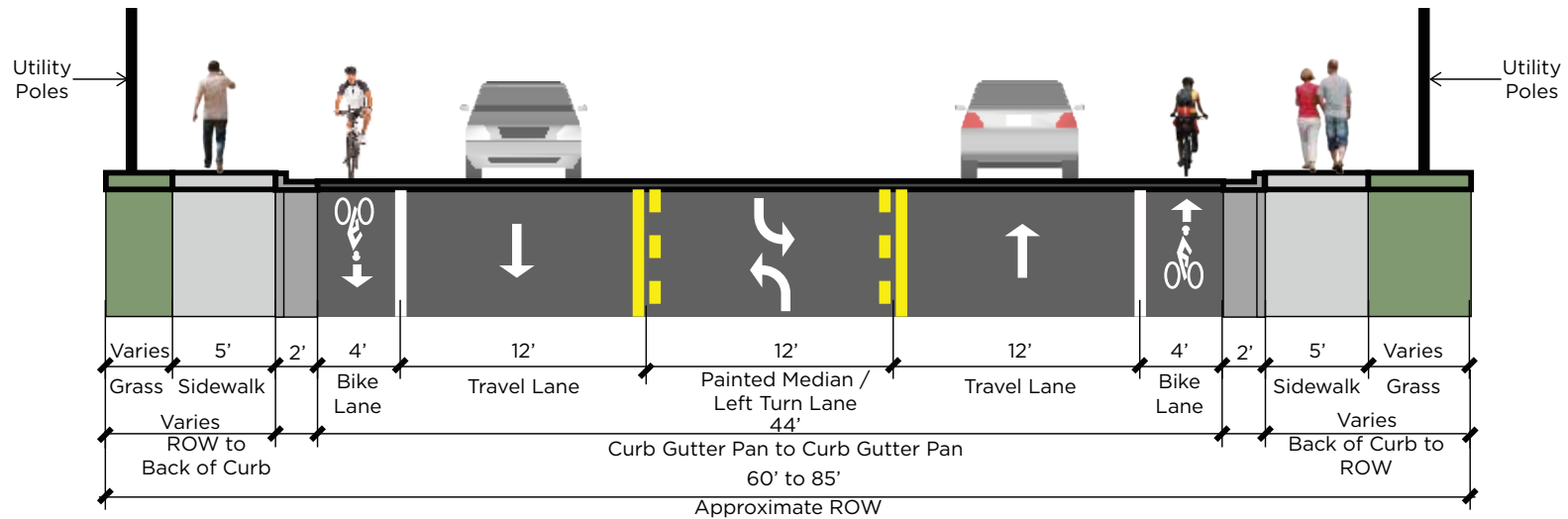
- ⋯ Typical section
- ▨ Potential redevelopment
- Potential raised median location
- Intersection improvements



TYPICAL SECTION AA: N HOAGLAND BLVD TO DYER BLVD



TYPICAL SECTION BB: DYER BLVD TO N CENTRAL AVE





## NEXT STEPS

The recommendations shown in this report present design concepts for Complete Streets and have not been discussed with local residents. It is recommended that the City of Kissimmee evaluate the improvements and their cost to investigate next steps. Most improvements will include public engagement and additional analysis before proceeding to design or construction. A multi-modal corridor planning study is recommended to further refine the area's needs and opportunities.

These recommendations are intended to be a list of easily implementable Complete Streets solutions that can be accomplished in the short-term. Where possible, improvements should be coordinated with development projects along the corridor.

It is acknowledged that occasionally, local governments do not have the resources to accomplish all Complete Streets improvements along a corridor at one time. If the City of Kissimmee were to advance this project, a two-phased approach could provide an incremental process for funding these projects:

**Phase I** could include a Multi-modal Corridor Planning Study and, beyond that, improvements that could be coordinated with pavement maintenance. Lane re-striping, bike lane additions, and special emphasis intersection crosswalk markings could be implemented during this phase. In addition, the shared-use path (Option 1) and cycle track (Option 2) could be included in this phase along with the installation of directional ADA-compliant ramps. These improvements can be implemented as part of the regular resurfacing program. This approach is commonly used by agencies to leverage maintenance projects.

**Phase II** could include all other Complete Streets improvements along the corridor consisting of enhanced pedestrian lighting, bus stop/shelter modifications, street trees and landscaping, landscaped spot medians, and sidewalk widening.

## COST ESTIMATE

Quantity calculations were used to create planning level cost estimates for all potential Phase I and II improvements identified in this report. Area 8 (includes Osceola County) and Statewide 12 month average (March 1, 2015 to February 29, 2016) pay item costs were used for all estimations. These pay item lists can be found in Appendix A.

Each improvement was evaluated for the following costs: project engineering, stormwater quality, maintenance of traffic, and roadway mobilization. A contingency of 30% was applied to provide a more conservative estimate of potential costs, recognizing the planning-level magnitude of this exercise. The cost estimate values should be revised during the design phase for improvements that are chosen for implementation. It assumes there to be no drainage, utility, right-of-way (ROW), stormwater, or existing traffic signal modifications needed and bus stop/shelter modification costs were assumed to be funded by other parties.

### PHASE I ESTIMATED COST (2016 DOLLARS)

#### Multimodal Corridor Planning Study      **\$300,000**

Roadway pavement rehabilitation:	\$1,153,000
Striping/buffered bike lane:	\$135,000
Cycle track/shared-use path	\$85,000
ADA/Intersection enhancements	\$81,000
Engineering and construction support:	\$155,000

#### **Total Phase I Construction Cost:      \$1,609,000**

### PHASE II ESTIMATED COST (2016 DOLLARS)

Pedestrian lighting:	\$2,080,000
Street Trees/landscaping:	\$419,000
Mid-block crosswalks/landscaped medians:	\$261,000
Engineering and construction support:	\$304,000

#### **Total Phase II Construction Cost:      \$3,064,000**

### **Total Estimated Cost:      \$4,973,000**



## APPENDIX A

# Columbia Ave - N Hoagland Blvd to Dyer Blvd - Phase I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley

Date: April 12, 2016

	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>SECTION 1: ROADWAY - PAVEMENT REHABILITATION</b>						
1	0327-70-5	Milling Exist Asph Pavt, 2" Avg Depth	SY	11,158	\$2.01	\$22,427.58
2	337-7-22	Asph Conc FC, Inc Bit, FC-5, PG 76-22, PMA	TN	465	\$129.69	\$60,305.85
3	337-7-41	Asph Conc FC, Traffic B, FC-12.5, PG 76-22	TN	775	\$92.32	\$71,538.77
<b>SUBTOTAL ROADWAY - PAVEMENT REHABILITATION</b>						<b>\$ 154,272</b>
<b>SECTION 2: ADA/INTERSECTION ENHANCEMENTS</b>						
4	0522-1	Concrete Sidewalk and Driveways, 4"	SY	264	\$15.53	\$4,099.92
5		Concrete Sidewalk Removal	SY	264	\$14.00	\$3,696.00
6	0527-2	Detectable Warnings	SF	220	\$30.57	\$6,725.40
<b>SUBTOTAL ADA/INTERSECTION ENHANCEMENTS</b>						<b>\$ 14,521</b>
<b>SECTION 3: SHARED USE PATH/CYCLE TRACK</b>						
7	0522-1	Concrete Sidewalk and Driveways, 4"	SY	3,410	\$15.53	\$52,957.30
8		Concrete Sidewalk Removal	SY	805	\$14.00	\$11,270.00
9	0527-2	Detectable Warnings	SF	40	\$30.57	\$1,222.80
<b>SUBTOTAL SHARED USE PATH/CYCLE TRACK</b>						<b>\$ 65,450</b>
<b>SECTION 4: RE-STRIPING</b>						
10	0711-15101	Thermoplastic, STD-OP, White, Solid 6"	GM	1.03	\$4,152.03	\$4,276.59
11	0711-15131	Thermoplastic, STD-OP, White, Skip 6"	GM	0.08	\$1,434.84	\$114.79
12	0711-11123	Thermoplastic, STD, White, Solid, 12"	LF	1,625.00	\$2.26	\$3,672.50
13	0711-11125	Thermoplastic, STD, White, Solid, 24"	LF	775.00	\$4.21	\$3,262.75
14	0711-15201	Thermoplastic, STD-OP, Yellow, Solid 6"	GM	0.92	\$4,158.27	\$3,825.61
15	0711-11224	Thermoplastic, STD, Yellow, Solid, 18"	LF	550.00	\$3.13	\$1,721.50
16	0711-11160	Thermoplastic, STD, White, Message	EA	1.00	\$122.97	\$122.97
17	0711-11170	Thermoplastic, STD, White, Arrow	EA	12.00	\$61.07	\$732.84
<b>SUBTOTAL RE-STRIPING</b>						<b>\$ 17,730</b>
<b>SECTION 5: MINOR ITEMS</b>						
18		Subtotal Sections 1-3	LS	10%	\$ 3,225.09	\$ 3,225.09
<b>SUBTOTAL MINOR ITEMS</b>						<b>\$ 3,225</b>



# Columbia Ave - N Hoagland Blvd to Dyer Blvd - Phase I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley				Date: April 12, 2016		
	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>SECTION 6: ROADWAY MOBILIZATION</b>						
19		Subtotal Sections 1-3	LS	3%	\$ 967.53	\$ 967.53
<b>SUBTOTAL ROADWAY MOBILIZATION</b>						<b>\$ 968</b>
<b>SECTION 7: ROADWAY MAINTENANCE OF TRAFFIC (MOT)</b>						
20		Subtotal Sections 1-3	LS	3%	\$ 967.53	\$ 967.53
<b>SUBTOTAL ROADWAY MOT</b>						<b>\$ 968</b>

# Columbia Ave - N Hoagland Blvd to Dyer Blvd - Phase I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley					Date: April 12, 2016		
	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST	
<b>SECTION 8: STORMWATER QUALITY / POLLUTION PREVENTION</b>							
21		Subtotal Sections 1-3	LS	5%	\$ 1,612.54	\$ 1,612.54	
<b>SUBTOTAL STORMWATER QUALITY</b>						<b>\$ 1,613</b>	
<b>ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 193,296</b>	
<b>30% CONTINGENCY</b>						<b>\$ 57,990</b>	
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 251,286</b>	
<b>ENGINEERING AND CONSTRUCTION SUPPORT</b>							
22		Project Engineering	LS	6%	\$ 251,286	\$15,080.00	
23		Construction Support / Construction Management	LS	5%	\$ 251,286	\$12,570.00	
<b>TOTAL ESTIMATE ENGINEERING AND CONSTRUCTION SUPPORT COSTS</b>						<b>\$ 27,650</b>	
<b>TOTAL PROJECT COST</b>						<b>\$ 278,936</b>	

# Columbia Ave - N Hoagland Blvd to Dyer Blvd - Phase II - Option I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley Date: April 12, 2016

	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>SECTION 1: ROADWAY - MEDIAN CONSTRUCTION</b>						
1	0520-1-7	Concrete Curb & Gutter, Type E	LF	3,500	\$13.43	\$47,005.00
2	0520-70	Concrete Traffic Seperator, Sp - VAR Widt	SY	145	\$59.38	\$8,610.10
3		Removal of Existing Pavement	SY	2,700	\$10.00	\$27,000.00
<b>SUBTOTAL ROADWAY - MEDIAN CONSTRUCTION</b>						<b>\$ 82,615</b>
<b>SECTION 2: MID-BLOCK CROSSWALKS AND MEDIANS</b>						
4	0711-15201	Thermoplastic, STD-OP, Yellow, Solid, 6"	GM	0.92	\$4,583.76	\$4,217.06
5	0711-11123	Thermoplastic, STD, White, Solid, 12"	LF	310.00	\$2.26	\$700.60
6	0711-11125	Thermoplastic, STD, White, Solid, 24"	LF	160.00	\$4.21	\$673.60
7		In-Ground Lighted Crosswalk System	EA	1.00	\$30,000.00	\$30,000.00
<b>SUBTOTAL SIGNING AND MARKING</b>						<b>\$ 35,591</b>
<b>SECTION 3: LIGHTING/UTILITIES</b>						
8		Pedestrian Light Pole - Acorn Style - F&I All Components	EA	36	\$10,000.00	\$360,000.00
<b>SUBTOTAL LIGHTING/UTILITIES</b>						<b>\$ 360,000</b>
<b>SECTION 4: LANDSCAPING</b>						
9		Landscaped Area	SF	52,000	\$2.50	\$130,000.00
10		Small Canopy Trees	EA	98	\$300.00	\$29,400.00
11		Irrigation	LS	10%	\$28,250.00	\$28,250.00
12		Prepared Soil Layer, Finish Soil, 12"	SY	1610	\$5.85	\$9,418.50
<b>SUBTOTAL LANDSCAPING</b>						<b>\$ 197,069</b>
<b>ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 675,275</b>
<b>30% CONTINGENCY</b>						<b>\$ 202,590</b>
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 877,865</b>
<b>ENGINEERING AND CONSTRUCTION SUPPORT</b>						
13		Project Engineering	LS	6%	\$ 877,865	\$52,680.00
14		Construction Support / Construction Management	LS	5%	\$ 877,865	\$43,900.00

# Columbia Ave - N Hoagland Blvd to Dyer Blvd - Phase II - Option I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley				Date: April 12, 2016		
	<b>PAY ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>TOTAL QUANTITY</b>	<b>UNIT PRICE</b>	<b>TOTAL COST</b>
<b>TOTAL ESTIMATE ENGINEERING AND CONSTRUCTION SUPPORT COSTS \$</b>						<b>96,580</b>
<b>TOTAL PROJECT COST \$</b>						<b>974,445</b>

# Columbia Ave - N Hoagland Blvd to Dyer Blvd - Phase II - Option II

Kissimmee, Osceola County, Florida  
MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley

Date: April 12, 2016

	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>SECTION 1: ROADWAY - MEDIAN CONSTRUCTION</b>						
1	0520-1-7	Concrete Curb & Gutter, Type E	LF	3,500	\$13.43	\$47,005.00
2	0520-70	Concrete Traffic Seperator, Sp - VAR Widt	SY	145	\$59.38	\$8,610.10
3		Removal of Existing Pavement	SY	2,700	\$10.00	\$27,000.00
<b>SUBTOTAL ROADWAY - MEDIAN CONSTRUCTION</b>						<b>\$ 82,615</b>
<b>SECTION 2: MID-BLOCK CROSSWALKS AND MEDIANS</b>						
4	0711-15201	Thermoplastic, STD-OP, Yellow, Solid, 6"	GM	0.92	\$4,583.76	\$4,217.06
5	0711-11123	Thermoplastic, STD, White, Solid, 12"	LF	310.00	\$2.26	\$700.60
6	0711-11125	Thermoplastic, STD, White, Solid, 24"	LF	160.00	\$4.21	\$673.60
7		In-Ground Lighted Crosswalk System	EA	1.00	\$30,000.00	\$30,000.00
<b>SUBTOTAL SIGNING AND MARKING</b>						<b>\$ 35,591</b>
<b>SECTION 3: LIGHTING/UTILITIES</b>						
8		Pedestrian Light Pole - Acorn Style - F&I All Components	EA	36	\$10,000.00	\$360,000.00
<b>SUBTOTAL LIGHTING/UTILITIES</b>						<b>\$ 360,000</b>
<b>SECTION 4: LANDSCAPING</b>						
9		Landscaped Area	SF	39,500	\$2.50	\$98,750.00
10		Small Canopy Trees	EA	98	\$300.00	\$29,400.00
11		Irrigation	LS	10%	\$28,250.00	\$28,250.00
12		Prepared Soil Layer, Finish Soil, 12"	SY	1610	\$5.85	\$9,418.50
<b>SUBTOTAL LANDSCAPING</b>						<b>\$ 165,819</b>
<b>ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 644,025</b>
<b>30% CONTINGENCY</b>						<b>\$ 193,210</b>
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 837,235</b>
<b>ENGINEERING AND CONSTRUCTION SUPPORT</b>						
13		Project Engineering	LS	6%	\$ 837,235	\$50,240.00
14		Construction Support / Construction Management	LS	5%	\$ 837,235	\$41,870.00
<b>TOTAL ESTIMATE ENGINEERING AND CONSTRUCTION SUPPORT COSTS</b>						<b>\$ 92,110</b>
<b>TOTAL PROJECT COST</b>						<b>\$ 929,345</b>



# Columbia Ave - Dyer Blvd to N. Central Ave. - Phase I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley

Date: April 12, 2016

	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>SECTION 1: ROADWAY - PAVEMENT REHABILITATION</b>						
1	0327-70-5	Milling Exist Asph Pavt, 2" Avg Depth	SY	48,620	\$2.01	\$97,726.20
2	337-7-22	Asph Conc FC, Inc Bit, FC-5, PG 76-22, PMA	TN	2,086	\$129.69	\$270,481.46
3	337-7-41	Asph Conc FC, Traffic B, FC-12.5, PG 76-22	TN	3,476	\$92.32	\$320,904.32
4	0522-2	Concrete Sidewalk and Driveways, 6"	SY	1,000	\$39.24	\$39,240.00
<b>SUBTOTAL ROADWAY - PAVEMENT REHABILITATION</b>						<b>\$ 728,352</b>
<b>SECTION 2: ADA/INTERSECTION ENHANCEMENTS</b>						
5	0522-1	Concrete Sidewalk and Driveways, 4"	SY	864	\$15.53	\$13,417.92
6		Concrete Sidewalk Removal	SY	864	\$14.00	\$12,096.00
7	0527-2	Detectable Warnings	SF	720	\$30.57	\$22,010.40
<b>SUBTOTAL ADA/INTERSECTION ENHANCEMENTS</b>						<b>\$ 47,524</b>
<b>SECTION 4: RE-STRIPING/BUFFERED BIKE LANE</b>						
8	0711-15101	Thermoplastic, STD-OP, White, Solid 6"	GM	0.41	\$4,152.03	\$1,702.33
9	0711-15102	Thermoplastic, STD-OP, White, Solid 8"	GM	5.80	\$5,812.97	\$33,715.23
10	0711-15131	Thermoplastic, STD-OP, White, Skip 6"	GM	0.08	\$1,434.84	\$114.79
11	0711-11123	Thermoplastic, STD, White, Solid, 12"	LF	8,489.00	\$2.26	\$19,185.14
12	0711-11124	Thermoplastic, STD, White, Solid, 18"	LF	100.00	\$3.02	\$302.00
13	0711-11125	Thermoplastic, STD, White, Solid, 24"	LF	1,430.00	\$4.21	\$6,020.30
14	0711-15201	Thermoplastic, STD-OP, Yellow, Solid 6"	GM	3.02	\$4,158.27	\$12,557.98
15	0711-15202	Thermoplastic, STD-OP, Yellow, Solid 8"	GM	0.12	\$6,016.93	\$722.03
16	0711-11224	Thermoplastic, STD, Yellow, Solid, 18"	LF	225.00	\$3.13	\$704.25
17	0711-11160	Thermoplastic, STD, White, Message	EA	60.00	\$122.97	\$7,378.20
18	0711-11170	Thermoplastic, STD, White, Arrow	EA	61.00	\$61.07	\$3,725.27
<b>SUBTOTAL RE-STRIPING/BUFFERED BIKE LANE</b>						<b>\$ 86,128</b>
<b>SECTION 4: MINOR ITEMS</b>						
19		Subtotal Sections 1-3	LS	10%	\$ 13,365.18	\$ 13,365.18
<b>SUBTOTAL MINOR ITEMS</b>						<b>\$ 13,365</b>
<b>SECTION 5: ROADWAY MOBILIZATION</b>						

# Columbia Ave - Dyer Blvd to N. Central Ave. - Phase I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley				Date: April 12, 2016		
	<b>PAY ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>TOTAL QUANTITY</b>	<b>UNIT PRICE</b>	<b>TOTAL COST</b>
20		Subtotal Sections 1-3	LS	3%	\$ 4,009.55	\$ 4,009.55
<b>SUBTOTAL ROADWAY MOBILIZATION</b>						<b>\$ 4,010</b>
<b>SECTION 6: ROADWAY MAINTENANCE OF TRAFFIC (MOT)</b>						
21		Subtotal Sections 1-3	LS	3%	\$ 4,009.55	\$ 4,009.55
<b>SUBTOTAL ROADWAY MOT</b>						<b>\$ 4,010</b>

# Columbia Ave - Dyer Blvd to N. Central Ave. - Phase I

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley					Date: April 12, 2016	
	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>SECTION 7: STORMWATER QUALITY / POLLUTION PREVENTION</b>						
22		Subtotal Sections 1-3	LS	5%	\$ 6,682.59	\$ 6,682.59
<b>SUBTOTAL STORMWATER QUALITY</b>						<b>\$ 6,683</b>
<b>ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 890,071</b>
<b>30% CONTINGENCY</b>						<b>\$ 267,030</b>
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 1,157,101</b>
<b>ENGINEERING AND CONSTRUCTION SUPPORT</b>						
23		Project Engineering	LS	6%	\$ 1,157,101	\$69,430.00
24		Construction Support / Construction Management	LS	5%	\$ 1,157,101	\$57,860.00
<b>TOTAL ESTIMATE ENGINEERING AND CONSTRUCTION SUPPORT COSTS</b>						<b>\$ 127,290</b>
<b>TOTAL PROJECT COST</b>						<b>\$ 1,284,391</b>

# Columbia Ave - Dyer Blvd to N. Central Ave. - Phase II

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley

Date: April 12, 2016

	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
<b>SECTION 1: ROADWAY - MEDIAN CONSTRUCTION</b>						
1	0520-1-7	Concrete Curb & Gutter, Type E	LF	2,745	\$13.43	\$36,865.35
2		Removal of Existing Pavement	SY	1,450	\$10.00	\$14,500.00
<b>SUBTOTAL ROADWAY - MEDIAN CONSTRUCTION</b>						<b>\$ 51,365</b>
<b>SECTION 2: SIDEWALK REPLACEMENT</b>						
3	0522-1	Concrete Sidewalk and Driveways, 4"	SY	16,890.00	\$15.53	\$262,301.70
4		Concrete Sidewalk Removal	SY	10,555.00	\$14.00	\$147,770.00
5		In-Ground Lighted Crosswalk System	EA	1.00	\$30,000.00	\$30,000.00
<b>SUBTOTAL SIDEWALK REPLACEMENT</b>						<b>\$ 440,072</b>
<b>SECTION 3: SIGNING AND MARKING</b>						
6	0711-15201	Thermoplastic, STD-OP, Yellow, Solid, 6"	GM	0.29	\$4,583.76	\$1,329.29
7		In-Ground Lighted Crosswalk System	EA	1.00	\$30,000.00	\$30,000.00
<b>SUBTOTAL SIGNING AND MARKING</b>						<b>\$ 31,329</b>
<b>SECTION 4: LIGHTING/UTILITIES</b>						
8		Pedestrian Light Pole - Acorn Style - F&I All Components	EA	124	\$10,000.00	\$1,240,000.00
<b>SUBTOTAL LIGHTING/UTILITIES</b>						<b>\$ 1,240,000</b>
<b>SECTION 5: LANDSCAPING</b>						
9		Landscaped Area	SF	7,000	\$2.50	\$17,500.00
10		Small Canopy Trees	EA	250	\$300.00	\$75,000.00
11		Irrigation	LS	10%	\$28,250.00	\$28,250.00
12		Prepared Soil Layer, Finish Soil, 12"	SY	660	\$5.85	\$3,861.00
<b>SUBTOTAL LANDSCAPING</b>						<b>\$ 124,611</b>
<b>ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 1,447,306</b>
<b>30% CONTINGENCY</b>						<b>\$ 434,200</b>
<b>TOTAL ESTIMATED CONSTRUCTION COSTS</b>						<b>\$ 1,881,506</b>

# Columbia Ave - Dyer Blvd to N. Central Ave. - Phase II

Kissimmee, Osceola County, Florida

MetroPlan Orlando



## Engineer's Opinion of Probable Cost - Concept Study

Prepared By: Brandon W. Kelley				Date: April 12, 2016		
	<b>PAY ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>TOTAL QUANTITY</b>	<b>UNIT PRICE</b>	<b>TOTAL COST</b>
<b>CAPITAL SUPPORT COSTS</b>						
13		Project Engineering	LS	6%	\$ 1,881,506	\$112,900.00
14		Construction Support / Construction Management	LS	5%	\$ 1,881,506	\$94,080.00
<b>TOTAL ESTIMATE CAPITAL SUPPORT COSTS \$</b>						<b>206,980</b>
<b>TOTAL PROJECT COST \$</b>						<b>2,088,486</b>







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