SR 26 / University Avenue
Multimodal Emphasis Corridor Study

DRAFT Phase 2 Report

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Prepared for:

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INTRODUCTION

The first phase of the Metropolitan Transportation Planning Organization for the Gainesville Urbanized Area's State Road 26/University Avenue Multimodal Emphasis Corridor Study, adopted in December 2014, identified a list of viable transportation projects that would benefit the multimodal operations of University Avenue between Gale Lemerand Drive and Waldo Road. Nine of these projects, indicated in Table 1, were selected to undergo additional research, project refinement, and resulting implementation planning. This Phase 2 report describes the project refinements and includes planning-level cost estimates for those projects.

Table 1. Phase 2 Project Listing

Location	Project Type
Waldo Rd	Pedestrian-oriented intersection design
E 7th St – E 10th St	Raised median
NE Blvd	Enhanced pedestrian crossing
E 1st St – E 3rd St	Midblock pedestrian crossing
W 13th St and Main St	On-demand right turn on red restriction
NW 17th St and Corridor-Wide	Bicycle striping and signal detection
Gale Lemerand Dr – W 13th St	Bikeway/Sidewalk
Gale Lemerand Dr – W 13th St	Enhanced pedestrian crossing(s)
Corridor-Wide	Transit shelters and benches

WALDO ROAD

The existing configuration of the intersection of SR 26 and Waldo Road is shown in Figure 1. There were two specific comments regarding this intersection made during the Technical Advisory Committee (TAC) walking tour (preliminary Phase 1 field assessment). The first was that the southeast corner of the intersection includes a free-flow (uncontrolled) right turn lane across two *signalized* crosswalks. The second comment was that the pedestrian crossings are quite long.

Figure 1 SR 26 at Waldo Road Existing Configuration

The uncontrolled right turn across the two signalized crosswalks results in pedestrians receiving a WALK signal when the vehicles are under free-flow operations. Essentially, this tells pedestrians they are permitted to start to cross the roadway in the direction of the signal indication. While crossings with a WALK signal can occur with conflicting turning vehicles, those vehicles approaching from a perpendicular or near perpendicular direction normally have a red signal. Thus pedestrians may reasonably expect the vehicle operators turning right from the direction that has the red traffic signal (or at least the through movements have a red traffic signal) to be required to stop and yield prior to making a right turn on red. However, under the existing condition on the southeast corner of this intersection, there is nothing to inform the free-flow north-to-east right turning motorists that the pedestrian's traffic control has changed. This could lead to confusion and safety issues at this intersection.

The signalized pedestrian movement in conflict with the free-flow right turn is also inconsistent with normal signal operations and the MUTCD.[1] Discussions with FDOT commenters suggest that restricting this free-flow right turn is not desirable. This leaves the alternative of removing the signalized crossing of the uncontrolled vehicular movement. Adding a concrete slip lane island on the southeast corner of the intersection would allow for the pedestrian signal hardware to be moved to the slip lane island and thus provide for signalized pedestrian crossings across only the signalized motor vehicle movements. The construction of this island would also reduce the needed pedestrian clearance intervals for this intersection and in turn reduce loss time to signalized vehicular movements Figure 2. This intersection modification would require

- installation of the channelization island,
- relocation of the pedestrian signal buttons and indications to the concrete island, and
- removal and replacement of the crosswalk markings on the eastern leg of the intersection.

[1] MUTCD Section 4E.06, 02, "Standard: …When the pedestrian signal heads associated with a crosswalk are displaying either a steady WALKING PERSON (symbolizing WALK) or a flashing UPRAISED HAND (symbolizing DONT WALK) signal indication, a steady or a flashing red signal indication shall be shown to any conflicting vehicular movement that is approaching the intersection or midblock location perpendicular or nearly perpendicular to the crosswalk."

The inclusion of a slip lane island on the southeast corner would also enable the reduction of pedestrian crossing distances and thus exposure times. Specifically, the signalized portion of the crossing would be reduced by approximately 38 feet (135 feet to 97 feet), which equates to an 11-second exposure reduction (39 seconds to 28 seconds) based on a walking speed of 3.5 ft/sec.

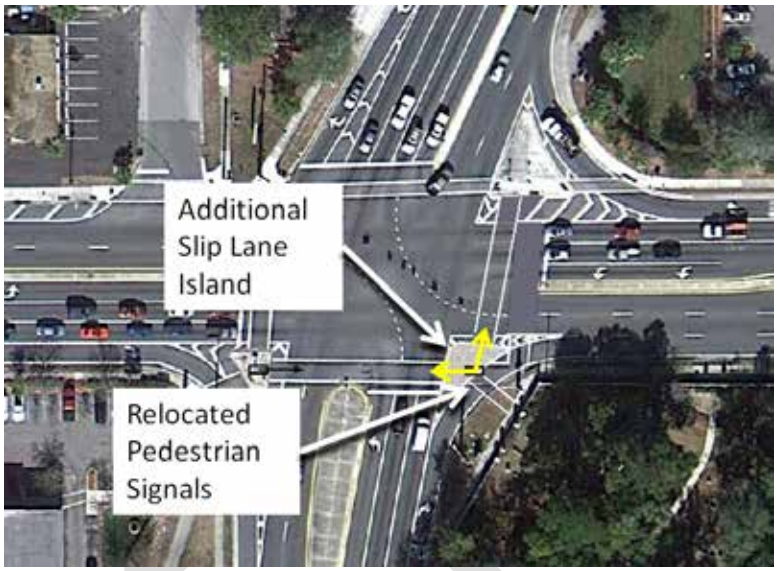

Figure 2 SR 26 and Waldo Road, Modified Southeast Corner

More significant modifications using pedestrian friendly intersection design could further reduce pedestrian crossing distances. The northwest corner could be modified to reduce the crossing distance for pedestrians as well as reduce motor vehicle turning speeds. Gap acceptance slip lanes on the northeast and southwest would also reduce motor vehicle speeds across the pedestrian crosswalks. Additionally, modified slip lanes would put the pedestrians crossing in a better position to be seen by approaching motorists. Depending on the size of the channelization islands installed, they could be used to provide a gateway treatment onto the University Avenue corridor. AASHTO's A Policy on the Geometric Design of Streets and Highways[2] allows for trucks to use the receiving width of the roadway. Finally, the *TURNING VEHICLES YIELD TO PEDESTRIAN* sign (R10-15) should be considered on the northbound to eastbound and eastbound to southbound approaches. The conceptual intersection design is shown in Figure 3.

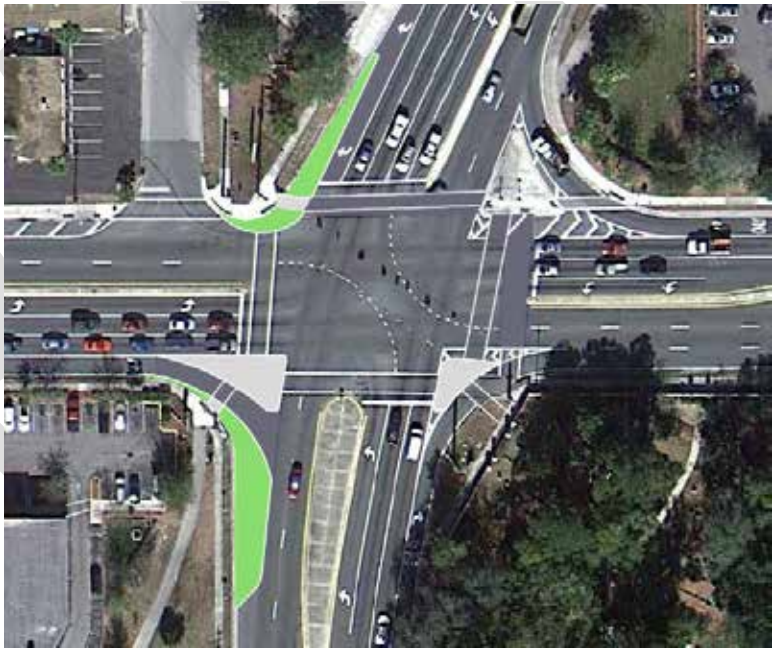

Figure 3 SR 26 and Waldo Road, Compact Design

This more comprehensive reconstruction of the intersection, which could be performed as a second implementation phase, would require

[2] AASHTO, A Policy on the Geometric Design of Streets and Highways, 4th Ed., AASHTO, Washington, DC, 2012.

- reconstruction of the radius returns on the northwest and southwest corners of the intersection,
- assessment and modification of drainage structures on the northwest and southwest corners of the intersection
    - one inlet on the northwest corner and
    - two inlets on the southwest corner,
- installation of the channelization island on the southeast corner of the intersection,
- relocation of the pedestrian signal buttons and indications from the southeast corner of the intersection to the concrete island,
- reconstruction of the channelization island on the southwest corner of the intersection,
- traffic signal adjustments on the channelization island on the southwest corner of the intersection,
- additional signing at the southeast and southwest corners of the intersection, and
- removal and replacement of the crosswalk markings on the eastern leg of the intersection.

E 7TH STREET – E 10TH STREET

The section of SR 26 from NE 7th Street to east of NE 10th Street has no raised median. A raised median could improve aesthetics for all travelers and potential safety for those pedestrians who choose to cross at midblock locations. There is potential to add sections of raised median – much like those west of NE 7th – midblock on each block from NE 7th to 9th. Additionally, the raised divider on the west approach to the intersection of SR 26 and Waldo Road could be extended to include the area currently marked with a painted restricted median.

It is possible that a raised median could encourage pedestrians to cross at uncontrolled locations. This Phase 2 study evaluated the degree to which installing raised medians might encourage uncontrolled pedestrian crossings along this section this location (relocated from existing controlled crossings), inhibit those using strollers or pushing carts, and/or make crossings safer.

Pedestrian Crossing Data

SR 26 from E 7th Street to the beginning of the raised median east of 10th Street was video recorded to map pedestrian movements. Data was collected for the Thursday, Friday, and Saturday, February 5-7, 2015. Visibility during the 0:00-2:00 hours on February 5th were sub-optimal due to rain. One thousand three hundred and forty (1,340) pedestrian movements in which pedestrians crossed SR 26 were mapped (Figure 4). These pedestrian crossings fell into several categories.

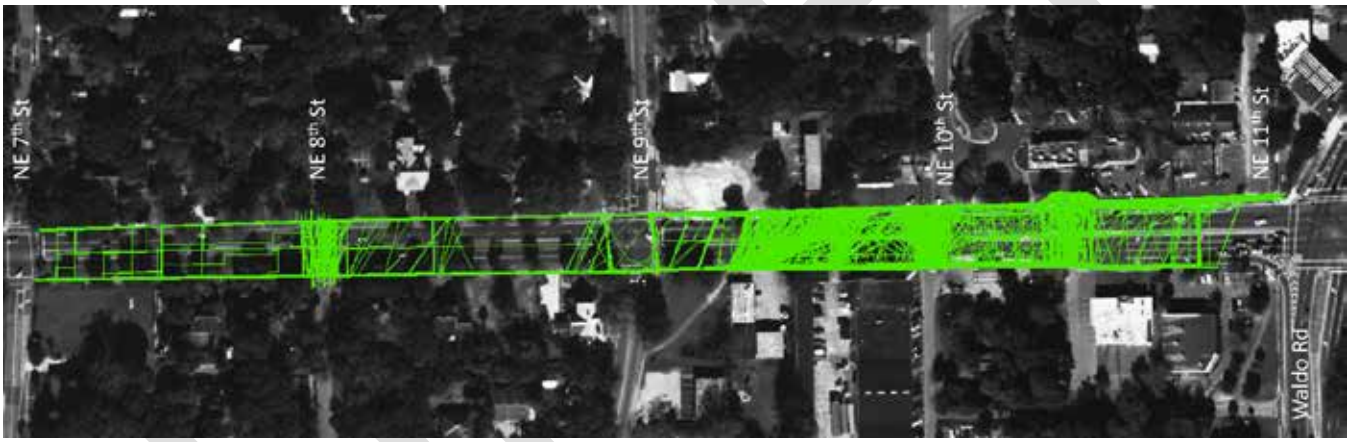

Figure 4 Pedestrian Paths Mapped between E 7th St and Waldo Rd

First, 259 of the pedestrian crossings (19 percent) were made at either the E 7th Street or E 9th Street signalized crosswalks (Figure 5). These pedestrians are crossing at the preferred locations. Of these crossings, 168 represented pedestrians not walking along SR 26 at all but traveling along either 7th Street or 9th and only crossing SR 26. Thus, the potential for migration from signalized crossings to midblock crossings is represented by approximately 7% of the crossings or 91 pedestrians.

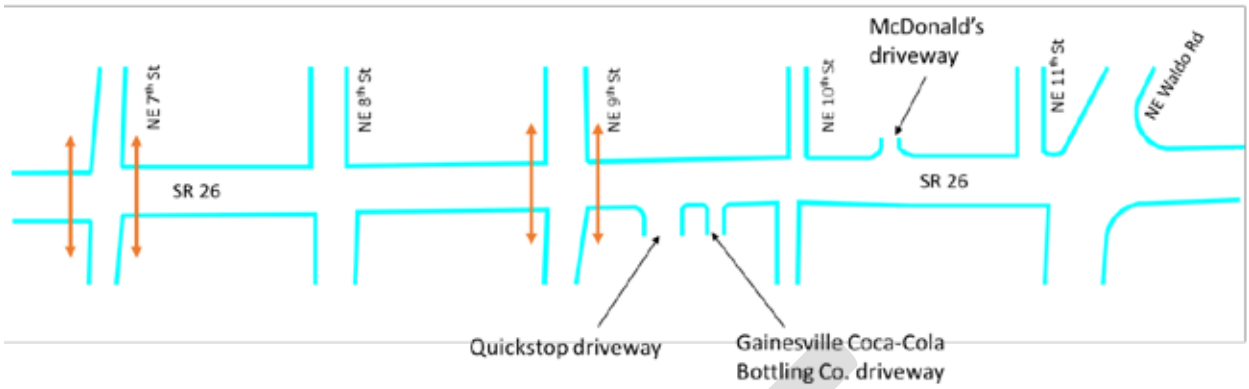

Figure 5 Crossings at Signalized Intersections

Another 185 crossings (14 percent) were made by pedestrians whose travel path took them past the signalized crosswalk at E 7th St, E 9th St, or both. These pedestrians had the opportunity to cross SR 26 at a signalized crosswalk without significantly diverging from their intended travel path. Observations of these pedestrians suggest that they walk along SR 26 until there is a gap in the traffic they feel is adequate, they then cross the street where convenient (Figure 6). This minimizes their perceived (and probably actual) delay when compared to crossing at the traffic signals.

Figure 6 Example Paths of Pedestrians Who Could Have Used a Signalized Crossing

A third set of pedestrians was noted who crossed midblock but whose travel path did not take them past a signalized crosswalk. One hundred fifty (150) crossings fell into this category (11%). Also included in this set are pedestrians who crossed midblock and whose origins and destinations could not be determined. Twenty-six (26) crossings fell into this category (2%).

A large portion (26 percent) of pedestrians were observed crossing legally at unmarked crosswalks at E 8th St (145 crossings) and E 10th St (200 crossings). These pedestrians likely continued north or south after crossing SR 26.

The largest group (28 percent) of pedestrians was observed making direct crossings which originated or terminated at one of three locations: the Quickstop driveway (204 crossings), the Gainesville Coca-Cola Bottling Co. driveway (82 crossings), or the McDonald's driveway (89 crossings) (Figure 7). Pedestrians making this

maneuver sometimes would wait for a sufficient gap in traffic before crossing. Other times, particularly when crossing to and from the McDonald's driveway, pedestrians would cross one half of the roadway, wait in the painted median or shared left turn lane, and then complete the crossing after finding a gap in traffic.

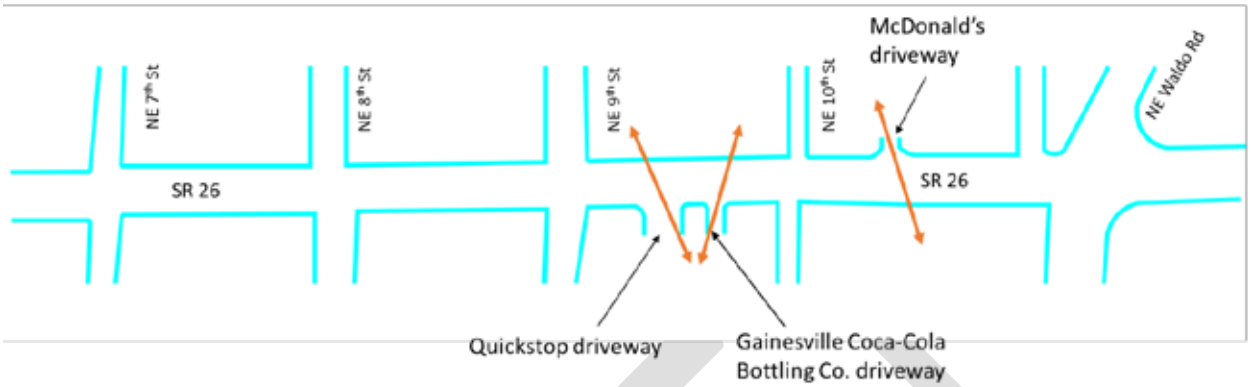

Figure 7 Pedestrians Crossing at Quickstop, Gainesville Coca-Cola Bottling Co., or McDonald's Driveways.

Recommendations

Most pedestrians who cross SR 26 between E 7th Street and E 10th Street are crossing along their desired path of travel. They are not diverging from their desire lines to cross at a traffic signal. A raised median would allow these pedestrians to cross one direction of travel at a time. This would reduce the potential for crashes along this corridor.

A specific concern for consideration identified in Phase I was whether or not individuals pushing strollers or using wheelchairs would be negatively impacted by median installation. All the individuals pushing strollers or using wheelchairs were observed to use the signalized crosswalks and curb ramps.

Given the above, a raised median is recommended to be installed between E 7th Street and the existing median east of E 10th Street. Between E 7th Street and E 9th Street, the FDOT Straight Line Diagram indicates this section of roadway has four 12-foot lanes and a 13-foot painted turn lane. Narrowing the travel lanes to 11 feet would allow for the provision of a 17-foot median where there are currently two-way left turn lanes and a 6-foot traffic separator where there are dedicated left turn lanes (which would be 11 feet wide). The 2015 revision of the FDOT *Plans Preparation Manual* (Table 2.1.1) specifies lane widths of 11 feet for divided urban arterials with design speeds of 45 mph or less. East of E 10th Street the median could widen to encompass the current painted median (Figure 8). The existing and proposed cross sections are shown in Figure 9.

Figure 8 Recommended Medians between 7th Street and 10th Street

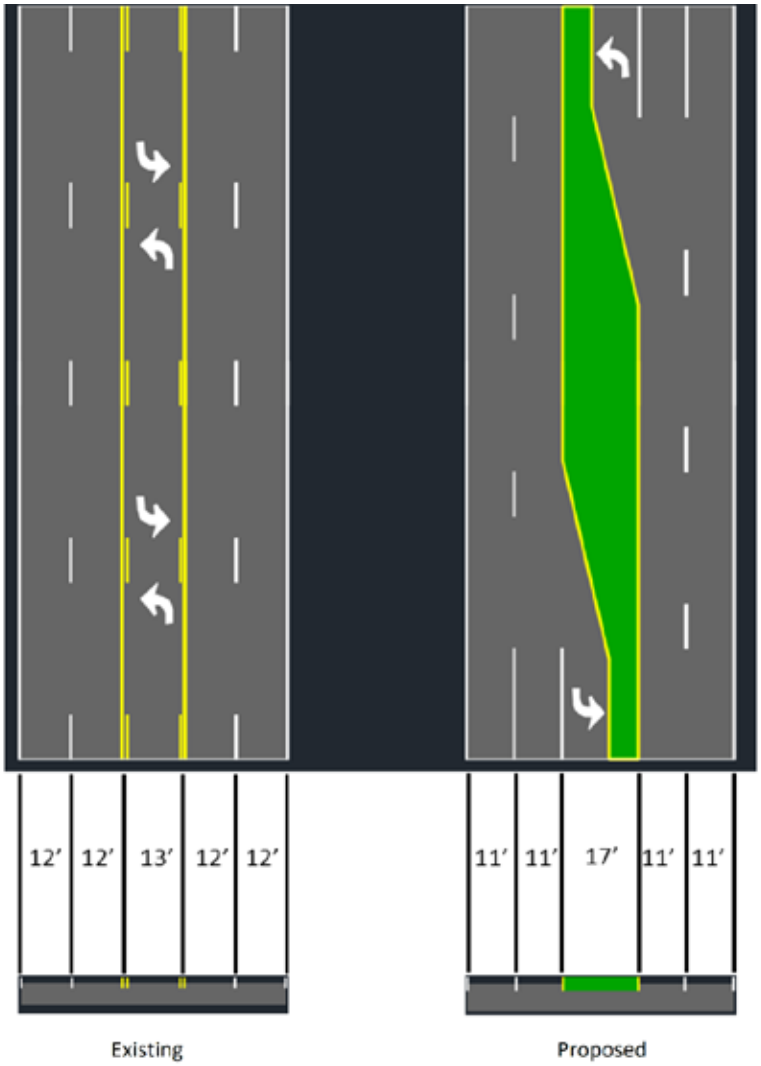

Figure 9 Existing and Proposed Cross Sections

NE BOULEVARD

TAC walking tour (preliminary Phase 1 field assessment) participants noted that NE Boulevard is located directly across from Sweetwater Park. A trail through Sweetwater Park connects SR 26 to the bike lanes on S 2nd Avenue and then further on to S 4th Avenue, and thus to the planned Power District. Providing a crossing opportunity from NE Boulevard to Sweetwater Park would make an important connection for both bicyclists and pedestrians. During Phase 1, it was thought a designated crossing of SR 26 at this location, possibly a Rectangular Rapid Flashing Beacon or Pedestrian Hybrid Beacon, could serve existing demand at this location as well as the future demand that will result from further development of the Power District.

A pedestrian mapping study was conducted for the area around NE 5th Street and NE Boulevard, which currently includes a raised median (Figure 10). Morning, midday, and afternoon periods were reviewed in detail to evaluate the potential for a designated crossing in this area.

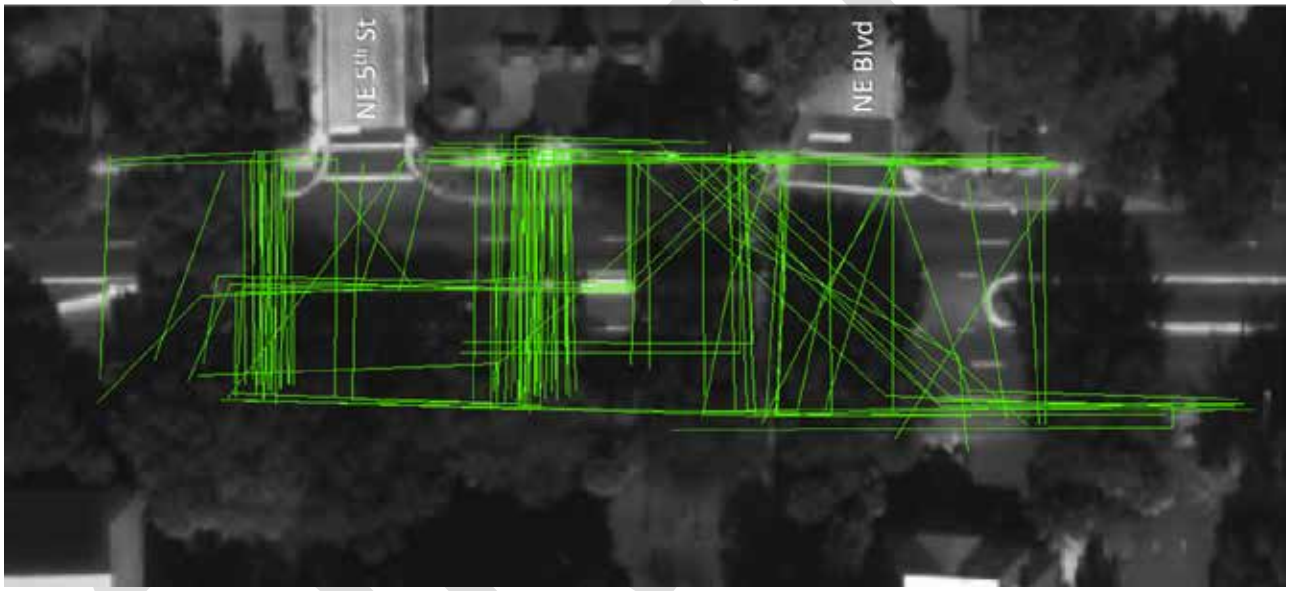

Figure 10 Pedestrian Paths Mapped near NE Blvd

The FDOT Traffic Engineering Manual includes the following guidance to determine minimum levels of pedestrian demand for a midblock crossing:

> **(3)** *Minimum Levels of Pedestrian Demand*
>
> ***(a)*** *Any location under consideration for a possible mid-block crosswalk should exhibit (1) a well defined spatial pattern of pedestrian generators, attractors, and flow (across a roadway) between them or (2) a well defined pattern of existing pedestrian crossings. Generators and attractors should be identified over an aerial photograph to illustrate potential pedestrian routes in relation to any proposed mid-block crosswalk location.*
>
> ***(b)*** *Sufficient demand should exist that meets or exceeds the thresholds for three consecutive days of data collection. Data collection should be based upon pedestrian volumes observed crossing the roadway outside a crosswalk at or in the vicinity of the proposed location, or at an adjacent (nearby) intersection.*
>
> - *Minimum of 20 pedestrians during an hour (any four consecutive 15-minute periods).*

- *Minimum of 60 pedestrians during any 4 hours of the day, not necessarily consecutive hours.*

As can be seen from Table 2, there were no 1-hour periods during which the pedestrian volumes exceeded 20 pedestrians per hour; the maximum was 18 pedestrian crossings between 4:45 and 5:45 in the evening. While the maximum sum for any four hour period is 70 pedestrians (7:30-830 and 8:30-930 in the morning, 11:30 - 12:30 and 12:30-1:30 over lunch, and 4:45-5:45 in the evening), these crossings were not concentrated at a specific location. Thus the minimum levels of pedestrian demand are not met.

Table 2. Pedestrian Crossings near NE Blvd

Morning			Midday			Evening		
Time	Pedestrians	Hourly Total	Time	Pedestrians	Hourly Total	Time	Pedestrians	Hourly Total
7:30	3	14	11:30	1	9	4:00	4	16
7:45	6	17	11:45	0	9	4:15	4	17
8:00	2	15	12:00	5	12	4:30	2	17
8:15	3	16	12:15	3	13	4:45	6	18
8:30	6	17	12:30	1	12	5:00	5	13
8:45	4		12:45	3		5:15	4	
9:00	3		1:00	6		5:30	3	
9:15	4		1:15	2		5:45	1	

Until such time as the pedestrian volumes increase at this area, a pedestrian crossing is not recommended. With the increase in development to the north, it may be that a pedestrian crossing would be appropriate near NE Blvd. However, when further considered a more extensive origin and destination study should be conducted to determine the most appropriate location for the crossing and to inform how pedestrians could be focused to a single crossing location.

E 1ST STREET - E 3RD STREET

The north and south sides of the block between East 1st and 3rd Streets are occupied by government offices and the south side includes a busy RTS bus stop. Significant pedestrian cross flow occurs at this location. The raised median between East 1st and 3rd includes a section free of vegetation in which pavers have been installed. This section is used by pedestrians as they cross the street. A designated crossing of SR 26 at this location, possibly controlled by a Rectangular Rapid Flashing Beacon or Pedestrian Hybrid Beacon, could serve existing demand at this location. The distance between the controlled crossings at East 1st and 3rd Streets is only 400 feet (approx.) so a special justification would be needed to install a controlled crossing at this location.[3]

A pedestrian mapping study was conducted for SR 26 between E 1st St and E 3rd St (Figure 11). One hundred eighty pedestrians were observed crossing SR 26 as part of this study. This represented 166 separate crossing events (a group of pedestrians crossing together was considered one crossing event). Of these 166 pedestrian crossing events, 147 pedestrian crossings (89%) occurred at the location where the median is pavered instead of planted. The observed pedestrian crossing counts are shown in Table 3.

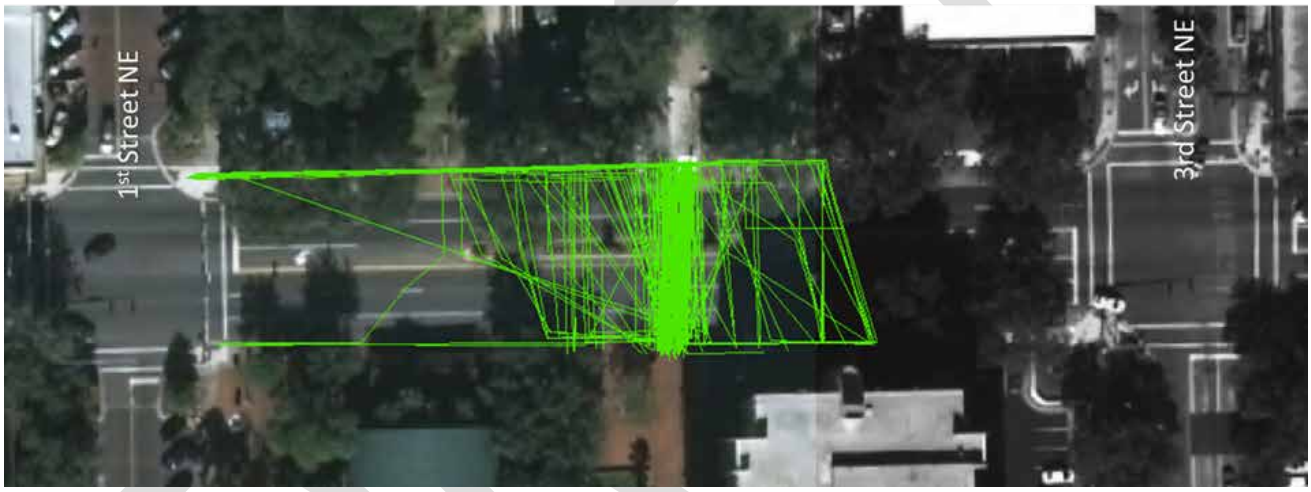

Figure 11 Mapped Pedestrian Movements between E 1st St and E 3rd St

As can be seen in Table 3, there are numerous hours, and in fact two 15-minute periods, during which the pedestrian volumes exceed 20 pedestrians per hour.[4] For instance, between 8:15 and 9:15 in the morning, there were 22 pedestrians observed crossing SR 26. The four hour cumulative total of 8:30-9:30, 11:30-12:30, 12:30-1:30 and 4:45-5:45 is 144 pedestrians. Thus this location certainly meets the volume criteria from the Traffic Engineering Manual.

[3] The FDOT Traffic Engineering Manual states that the minimum distance between to the nearest alternative crossing location is 300 feet per the Department's Plans Preparation Manual, Vol. 1, Section 8.3.3.2. However, in the PPM, this spacing requirement is not written as a standards condition (shall), it is a guidance condition (should).

[4] Data were collected for three consecutive days. The data shown in Table 3 are from a Thursday. The Friday counts were very similar, while the Saturday counts were significantly lower, presumably because of the presence of work-related travel.

Table 3. Pedestrian Crossings between E 1st Street and E 3rd Street

Morning			Midday			Evening		
Time	Pedestrians	Hourly Total	Time	Pedestrians	Hourly Total	Time	Pedestrians	Hourly Total
7:30	0	11	11:30	12	30	4:00	8	25
7:45	4	17	11:45	5	28	4:15	11	28
8:00	4	19	12:00	9	27	4:30	6	32
8:15	3	22	12:15	4	29	4:45	0	38
8:30	6	40	12:30	10	36	5:00	21	38
8:45	6		12:45	4		5:15	5	
9:00	7		1:00	11		5:30	12	
9:15	21		1:15	11		5:45	0	

This crossing location, however, is only 200 feet (approx.) from either the E 1st Street crosswalk or the E 3rd Street Crosswalk.

Given that there is already an accommodation made for (or acknowledgment of) midblock crossings at this location, installation of a designated crosswalk should be considered. Since the speed limit at this location is 30 mph, a rectangular rapid flashing beacon would be appropriate. Advance stop bars should be included to reduce the potential for second threat crashes.

To implement this improvement, signs and markings for the crosswalk would need to be installed. In addition, curb ramps would need to be provided at the roadsides and across the median.

RIGHT TURN ON RED RESTRICTIONS SR 26 AT MAIN STREET AND SR 26 AT 13TH STREET

NO RIGHT ON RED blank out signs are installed at the signalized intersections of SR 26 with Main Street and 13th Street (Figure 12). During certain periods these signs are activated (lit) every cycle. However, during off peak periods they are not activated.

Figure 12 NO RIGHT ON RED Blank Out Sign at SR 26 and 13th Street

Periods when pedestrian crossings are less frequent include early mornings and later in the evening. Because pedestrians are not crossing the intersections every cycle during these off-peak periods, it would needlessly reduce the intersection efficiency to prohibit right turns on red during these times. However, during these periods, motorists may not be as aware of pedestrians within the right of way and waiting to cross the street. Thus, Pedestrian safety could be enhanced during off peak periods by restricting right turn on red vehicular movements when pedestrians are crossing at this intersection. Allowing activation of the blank out signs when the corresponding pedestrian buttons are pushed would allow for this restriction while not prohibiting right turn on red when pedestrians are not present. Discussions with City of Gainesville traffic engineering staff suggests that while it is not trivial to reprogram the controllers for this type of on-demand blank-out sign operating, it is possible at these intersections. The implementation of this improvement would require City staff to reprogram the controllers. If implemented, pre- and post-implementation compliance rates should be evaluated.

NW 17TH STREET

The TAC walking tour (preliminary Phase 1 field assessment) participants reported that conflicts between through (north-south) bicyclists and motorists turning right onto University Avenue at the intersection with NW 17th Street are prevalent. These "right-hook" conflicts could likely be reduced if bicyclists were positioned within the through lanes to better communicate their intent to proceed through the intersections. Restriping the north approach and using shared lane markings or marking the loops to show where bicyclists can be detected could encourage bicyclists to move away from the right edge of pavement.

Figure 13 NW 17th Street and University Existing Markings

Figure 14 Potential Markings for NW 17th Street and SW 17th Street

The northern approach to this intersection has the bike lane striped all the way to the stop line. This solid-stripe-to-the-intersection striping is inconsistent with the MUTCD, the AASHTO *Bike Guide*,[5] and the Florida *Greenbook*.[6] Also, a solid line separating the bike lane from the general lane at an intersection discourages motorists from approaching the intersection and turning right from "as close as practicable to the right-hand curb or edge of roadway."[7] This movement to the right is required by Florida's uniform traffic laws. It also encourages bicyclists making a through movement to stay on the right side of the pavement all the way up to the intersection. The combination of these behaviors encourages "right hook" type conflicts. The (approximate) existing striping is shown in Figure 13.

The recommendation for this location is for the bike lane to be terminated in advance of the intersection and SHARED LANE MARKINGS installed on the final approach. Alternatively, the BICYCLE DETECTOR could be used instead of a SHARED LANE MARKING. Both the north and south approaches could have either marking placed at the intersection to both inform the bicyclists of where to place their bicycles to be detected by the signals and to encourage them to move their bicycles further into the through lanes. This marking pattern is shown in Figure 14. The SHARED LANE MARKING may be more familiar to Gainesville residents and thus be a better symbol to use.

[5] AASHTO, Guide for the Development of Bicycle Facilities, 4th Ed., AASHTO, Washington, DC, 2012.

[6] FDOT, Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways, FDOT, Tallahassee, FL, 2011.

[7] Required by Section 316.151, Florida Statutes.

The advantage of the SHARED LANE MARKINGS is that they are more clearly seen by motorists and thus convey a "bikes are allowed here" message. The detector symbols are significantly smaller (see Figure 15) as they are designed for conspicuity to bicyclists, not motorists.

Discussions with City Traffic Engineering suggest that they are able to detect bicycles at this intersection using video detection. Thus, implementing this improvement would require only minimal restriping and the installation of the chosen pavement markings.

The intersection improvements described above would require the following physical improvements:

- modification of the southbound bike lane striping, and
- installation of BICYCLE DETECTION (or SHARED LANE MARKINGS) on the north and south approaches to the intersection.

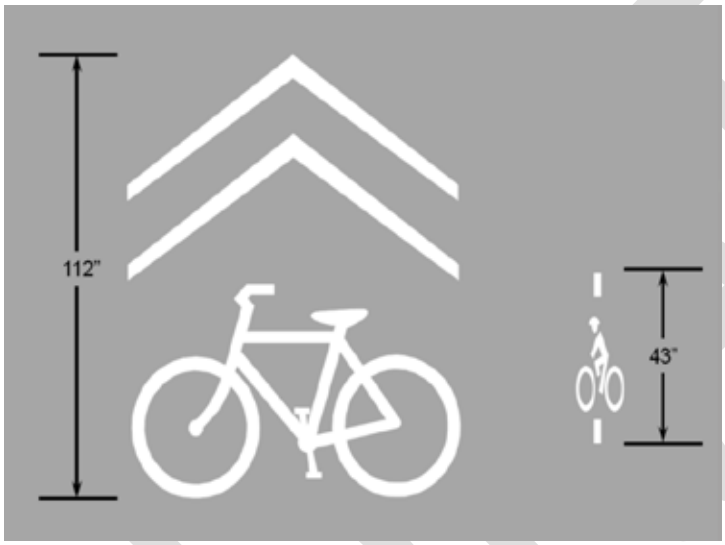

Figure 15 Relative Sizes of SHARED LANE MARKING and BICYCLE DETECTOR Symbol

Signals at Other Cross Streets

The side street signalized approaches to SR 26 at NW 17th, NW 8th, and NW 2nd were specifically mentioned during the TAC walking tour (preliminary Phase 1 field assessment) as being non-responsive to bicyclists. City staff has indicated that all signalized intersections along the corridor are capable of video detection of bicyclists. Therefore, BICYCLE DETECTOR or SHARED LANE MARKINGS should be used at all of these locations to inform bicyclists of where they need to place their bicycles to be detected by the signal system.

GALE LEMERAND DRIVE – W 13TH STREET (PEDESTRIAN/BIKEWAY)

The south side of SR 26 between Gale Lemerand Drive and W 13th Street generally forms the northern boundary of the University of Florida and is an area of particularly high east-west bicycle and pedestrian activity, primarily consisting of student travel. This section of SR 26 provides non-motorized access to Ben Hill Griffin Stadium, the O'Connell Center, Library West, and multiple residence halls and classroom buildings, and also provides crossing access to key destinations on the north side of SR 26. The existing configuration of this section includes an 8-foot sidewalk located directly at the back of curb. The majority of the section also includes a second sidewalk-like facility, separated from the other sidewalk by a low brick wall and a planting strip that is located on University property. Given the lack of comfortable bicycle accommodation within University Avenue itself, each of these facilities experiences a heavy mix of bicycle and pedestrian travel, creating the potential for conflicts between the modes. This is especially true during peak travel, including on football and basketball game days, and frequently leads to the functional capacity of the sidewalk being exceeded (Figure 16).

Figure 16 Pedestrian Traffic along SR 26 on a Game Day

There are several potential options for a project that would enable the reconfiguring of the south side of SR 26 to significantly better accommodate both pedestrian and bicycle travel through this section. As part of this second study phase, three concepts/options have been developed and discussed with University staff to determine feasibility and willingness of the University to become a project partner. All of the options under consideration include improved lighting in the area, create chicanes at existing intersections for the campus-side facility to enhance bicycle safety, and require minor modifications to existing parking lots. Two options leave both facilities open to bicycle and pedestrian travel but delineate (through signage and pavement markings) travel paths for each mode. Another option uses the campus-side facility for exclusive bicycle travel and the SR 26 sidewalk for exclusively pedestrian travel, and incorporates a 32-inch wall with a 2 ½-foot clear recovery zone setback from SR 26 designed to assist in channelizing users to certain SR 26 crossing locations. A conceptual rendering of this third option is shown in Figure 17. This design, or a hybrid approach among the proposed options, would help solve the modal conflict and facility capacity problems described above while encouraging active transportation and multi-modalism within this section of the study corridor.

Figure 17 Conceptual Rendering of Potential Option for Pedestrian/Bikeway

GALE LEMERAND DRIVE – W 13TH STREET (ENHANCED PEDESTRIAN CROSSINGS)

Figure 18 Pedestrian Crossing Map of SR 26 from 14th Street W to Gale Lemerand Dr

In addition to enhancing bicycle and pedestrian accommodation along SR 26, there is a desire to better accommodate pedestrian crossings of SR 26. During the TAC walking tour (preliminary Phase 1 field assessment), numerous participants reported they routinely witness pedestrian midblock crossings of this section of SR 26. The TAC members expressed the desirability of channelizing pedestrians to designated crossings, and the creation of additional controlled crossings - focusing pedestrian crossings to predictable locations.

A multi-day pedestrian mapping study, similar to those described previously in this report, was carried out to assist in identifying the need for, and appropriate locations of, enhanced crossings. The results of the study confirm the very high volume of pedestrian crossings (Figure 13). While crossing at midblock locations does occur somewhat frequently, the study shows that the vast majority of crossings take place at existing intersections. Two of these intersections, NW 16th Street and NW 19th Street, have been identified as the most appropriate locations for enhanced crossings. Figure 18 shows the mapped movements of 7089 of pedestrians. Of these 7089 of pedestrians, 1877 pedestrians (27%) crossed outside of designated, signalized crosswalks. Observations revealed that 630 of these uncontrolled crossings (38%) occurred at NW 16th Street and additional occurred 266 of pedestrians (14%) crossed at NW 19th Street.

Each of these potential crossing locations is more than 300 feet from the nearest signalized crossing: NW 16th is approximately 425 feet from NW 15th Street and NW 19th Street is approximately 450 feet from NW 18th Street. Given the volume of pedestrian crossings, marked pedestrian crossings without full control for pedestrians (no Don't Walk signal) could result in serious impedance to the motorist flows. For example, if a RECTANGULAR RAPID FLASHING BEACON is installed at NW 16th Street, it is likely to be activated nearly continuously. A more positive form of traffic control, PEDESTRIAN HYBRID BEACON, creates a defined period when pedestrians cannot legally enter the crosswalk. This allows for the pedestrian crossings to be timed to better accommodate vehicular flows. Alternatively, a full signal could be evaluated for these locations.

The FHWA Manual on Uniform Traffic Control Devices states in a guidance section that "*The pedestrian hybrid beacon should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs."* This statement falls under guidance and not standard, and, in fact, many Pedestrian Hybrid Beacons have been placed adjacent to stop controlled intersections. However, it may be that the FDOT would prefer to fully signalize these intersections instead of providing the hybrid beacon.

TRANSIT SHELTERS AND BENCHES (CORRIDOR-WIDE)

Phase 1 of the S.R. 26/University Avenue Multimodal Emphasis Corridor Study identified various bus stop locations that would justify added stop amenities, in particular shelters or benches based on the warrants established by RTS. This section further reviews each candidate stop for improvements and identifies opportunities and constraints to the provision of added passenger amenities.

The FDOT *Accessing Transit Design Handbook*[8] provides guidance to state and local governments and transit agencies in the location, design, and installation of transit facilities consistent with state and federal laws, regulations, and best practices. Sections 2.1 and 2.2 identify general design criteria for bus stop benches and bus stop shelters. If implementation of the recommendations in this section moves forward, close coordination with the FDOT Maintenance office (for permitting) and the FDOT Traffic Operations office should occur.

Bus Stop Benches

Bus stop benches provide comfort for waiting passengers and help identify bus stops. Benches are recommended when a shelter with seating is not provided and if bus headways are longer than 15 minutes. Bench placement must be in an accessible location and appropriately connected to the path of travel on an accessible path to the bus boarding and alighting (B&A) area. Placement shall leave clearance for pedestrian traffic. Sidewalk width adjacent to benches shall never be less than 5 feet, and benches should be set back at least 10 feet from the travel lane in curb sections. Unsheltered benches may be provided in high use areas that are unsuitable for shelters because of high levels of pedestrian movement in a small area. Table 4 summarizes the major design criteria for bus stop benches according to the *Accessing Transit Design Handbook.*

Table 4. Bus Stop Benches Criteria

Criteria	Description
Bus headways	Longer than 15 min
Placement	Connected to accessible path to B&A area
Sidewalk	Never be less than 5 feet
Set back	At least 10 feet from travel lane in curb section

Bus Stop Shelters

Shelters provide a comfortable waiting area for passengers and protect them from exposure to the sun, rain and heavy wind. Shelters also enhance the image of the transit service and help provide a more convenient overall transit experience.

The decision to place a bus shelter should be made based on a number of factors, including ridership, location, and route connectivity. Shelters should not be obstructive to pedestrian circulation and should be easily detectable to persons with visual impairments. The location of shelters should also minimize walking distance for passengers.

[8] *FDOT Accessing Transit Design Handbook for Florida Bus Passenger Facilities. Version III, 2013*

The size and design of shelters varies with the number of boardings at a bus stop and space availability. Shelters should be at a minimum distance of 5 feet from the front door of the bus to provide adequate circulating space for persons in wheelchairs while not obstructing the B&A area. A minimum distance of 5 feet between the face of the curb and the roof panels of the shelter should be maintained to allow clear passage of the bus (*FDOT Accessing Transit Design Handbook for Florida Bus Passenger Facilities. Version III, 2013*). Table 5 summarizes the major design criteria for bus stop benches according to the *Accessing Transit Design Handbook.*

Table 5. Bus Stop Shelters Criteria

Criteria	Description
Bus Service	Stop having service a minimum of 10 times in a 5-day period
Placement	Do not obstruct pedestrian circulation and easily detectable to persons with visual impairments
Sidewalk	Never be less than 5 feet wide
Set back	At a minimum distance of 5 feet between the face of the curb and the roof panels

Bus Stop Lighting

Lighting is the most critical factor in crime prevention. Bus passenger facilities that offer nighttime services should have an optimum level of lighting incorporated into the design of the facility. Adequate lighting greatly influences safety and passenger perception of safety. Local transit stops should be located within 30 feet of an overhead light source.

SR 26/University Avenue Bus Stops

RTS currently has a competitive bid, annual amenities contract with Tolar Manufacturing for three types of bus stop shelters with dimensions summarized in Table 6. The Community Redevelopment Agency (CRA), however, has design recommendations that promote Landscape Forms amenities in this area of the City.

Table 6. RTS Bus Stop Shelter Dimensions

Type	Shelter Dimensions	Concrete Pad Dimensions
9' low dome	9 feet by 5 feet by 8 feet height	10 feet by 6 feet
13' low dome	13 feet by 5 feet by 8 feet height	14 feet by 6 feet
17' with screens	17 feet by 5 feet by 8 feet height	18 feet by 6 feet

Figures 19 and 20 show typical configurations of a small RTS bus stop shelter.

Figure 19 Photo of existing shelter at RTS stop located on westbound SR 26 at NW 14th Street

Figure 20 Photo of existing shelter at RTS stop located on eastbound SR 26 at SW 6th Street

RTS has established warrants to help establish the need for shelters and benches at bus stops. For a shelter, a minimum of 36 passenger boardings a day is required, while for benches, a minimum of 15 boardings a day is required. Based on these warrants, the following bus stop locations were examined during a field review to evaluate the feasibility of installing the identified passenger amenities:

Bus Stop Shelters

- Westbound SR 26 at NW 17th Street
- Westbound SR 26 at NW 16th Street
- Westbound SR 26 at NW 13th Street
- Westbound SR 26 at NW 10th Street
- Westbound SR 26 at NW 6th Street
- Westbound SR 26 at NE 1st Street
- Eastbound SR 26 at Buckman Drive
- Eastbound SR 26 at NW 15th Street
- Eastbound SR 26 at SW 13th Street

Bus Stop Benches

- Westbound SR 26 at NW 7th Terrace
- Eastbound SR 26 at Gale Lemerand Drive
- Eastbound SR 26 at Fletcher Drive
- Eastbound SR 26 at SW 9th Terrace

Figure 21 shows the location of the bus stops identified for passenger amenities improvements.

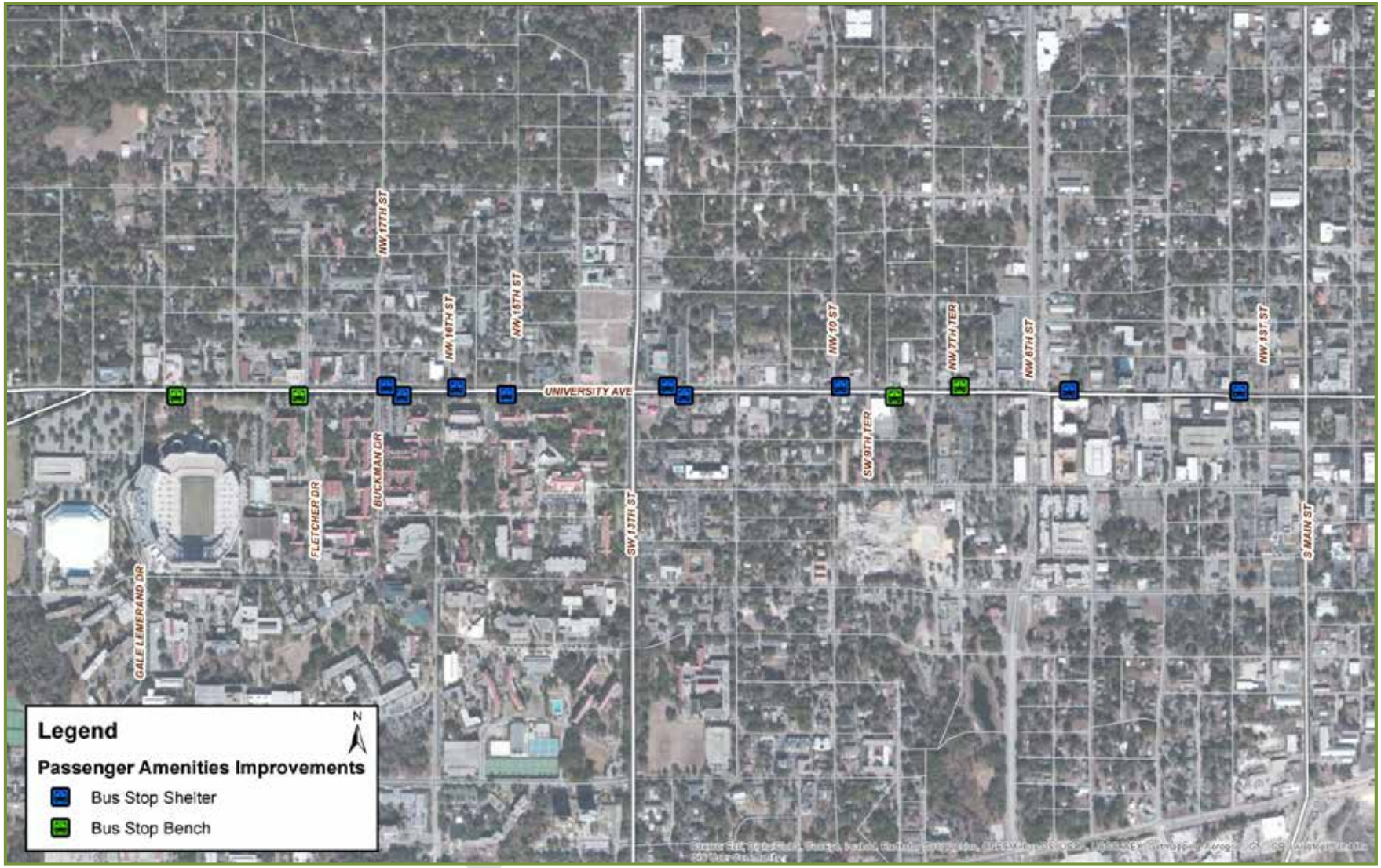

Figure 21 Bus Stops Identified For Passenger Amenities Improvements

Bus Stop Shelters Feasibility

Westbound SR 26 at NW 17th Street

This RTS stop serves the University of Florida area. It is located in an area with high pedestrian activity and limited space between the curb and the adjacent property (Figure 22). A restaurant operates in the adjacent property and offers outdoor seating presenting a constraint for the installation of a bus stop shelter at this location.

The adjacent striped area between the travel lane and the curb is approximately 8 feet wide and offers the opportunity to develop a curb extension or bus bulb; this treatment would extend the sidewalk providing added space for pedestrians and the installation of a bus shelter. The current sidewalk configuration does not provide space for installing a bus shelter and keep the minimum requirement for minimum distance of 5 feet between the face of the curb and the edge of shelter.

This stop is located about 80 feet away from the nearest overhead light source. There is no opportunity, with the existing stop layout, to locate the stop closer to the overhead light due to the proximity to the crosswalk and intersection. Therefore, the level of lighting is not adequate and the installation of a lighted shelter is recommended.

Figure 22 Photo looking west from RTS stop located on westbound SR 26 at NW 17th Street

Westbound SR 26 at NW 16th Street

This RTS stop serves the University of Florida area. There is limited space between the curb and the adjacent property line (Figure 23). The grass area between the sidewalk and the fence could represent an opportunity for the implementation of a bus stop shelter; however, costs for a property easement or acquisition will have to be considered. RTS has indicated that the need for a shelter installation has been identified but an easement was not granted by property owner. RTS has also requested authorization from FDOT for installation of a bus stop shelter on the sidewalk.

The adjacent striped area between the travel lane and the curb is approximately 8 feet wide and offers the opportunity to develop a bus bulb. This treatment would extend the sidewalk providing added space for pedestrians, quicker boarding, and opportunity for installation of a bus shelter within the right of way which will eliminate the need to incur added costs for a property easement or acquisition.

This stop is located about 10 feet away from the nearest overhead light source. However, the roof of the shelter could block the light and the installation of a lighted shelter is recommended.

Figure 23 Photo looking north from across SR 26 to RTS stop located on westbound SR 26 at NW 16th Street

Westbound SR 26 at NW 13th Street

This RTS stop serves a commercial area in the vicinity of the University of Florida. There is limited space between the curb and the adjacent property line. The grass area behind the sidewalk could present an opportunity for the implementation of a bus stop shelter that would require further engineering analysis to determine the need for a short retaining wall because of the grade differential (Figure 24).

East of the existing bench location the grass area becomes relatively flat west of the adjacent property driveway. This could present an opportunity for installing a bus stop shelter without the need for a retaining wall, but further analysis will be required to determine if a shelter in that location would introduce a sight distance constraint to vehicles exiting the driveway. Costs for a property easement or acquisition should also be evaluated since this grass area is not located within the right-of-way limits.

This stop is located about 30 feet away from the nearest overhead light source. However, the roof of the shelter could block the light and the installation of a lighted shelter is recommended.

Figure 24 Photo looking east from RTS stop located on westbound SR 26 at NW 13th Street

Westbound SR 26 at NW 10th Street

This RTS stop serves a commercial area. There is limited space in the grass area where the existing bench is located, with a large rock directly behind the bench (Figure 25); this stop does not meet ADA requirements. The adjacent business is currently vacant but the business is being advertised by a real estate company (Figure 26). Installation of a shelter at this location is problematic, with the required rock removal and proximity of an existing tree and signal pole.

Moving the bus stop to the east in between the entering and exiting driveway where there is more adequate spacing for the installation of a bus shelter should be considered. The grass area behind the sidewalk at this location is located within the limits of the adjacent property; therefore, costs for a property easement or acquisition should also be evaluated.

This stop is located next to an overhead light source and thus the level of lighting is adequate. If the stop were to be moved as recommended for the shelter installation, there is another overhead lighting source; however, the roof of the shelter could block the light and the installation of a lighted shelter is recommended.

Figure 25 Photo looking west from RTS stop located on westbound SR 26 at NW 10th Street

Figure 26 Photo looking east between the entering and exiting driveway next to RTS stop located on westbound SR 26 at NW 10th Street

Westbound SR 26 at NW 6th Street

This RTS stop serves a commercial area. The existing bench does not meet ADA requirements. The space between the curb and the adjacent property fence provides the opportunity for the installation of a bus shelter in the existing bench area that can extend into the sidewalk if needed (Figure 27).

This stop is located about 15 feet away from the nearest overhead light source. However, the existence of an extensive tree canopy could block the light and the installation of a lighted shelter is recommended.

Figure 27 Photo looking east from RTS stop located on westbound SR 26 at NW 6th Street

Westbound SR 26 at NW 1st Street

This RTS stop serves the Office of State Attorney building. The space between the curb and the building is limited as the building edge directly abuts the back of sidewalk, and there is not adequate space for installation of a bus shelter outside of the outer building edge (Figure 28). This stop is located next to an overhead light source; the level of lighting is adequate.

Two opportunities for a shelter installation have been identified at this location:

- Move the bus stop to the east where there is a building opening area of about 9 feet long as shown in Figure 29. However, the spacing is not adequate for the shelter concrete pad required for the smallest RTS shelter. The possibility of hanging an awning off the building should be further evaluated. The awning could block the light and the installation of additional lighting is recommended.
- Move the bus stop further to the east next to the parking lot area shown in Figure 30. The space between the curb and the parking lot provides the opportunity for the installation of a bus shelter that can extend into the sidewalk if needed. There is an existing historical marker in the grass area that might have to be relocated slightly to the east to accommodate a shelter. There is an overhead light source at this location; however, the roof of the shelter could block the light and the installation of a lighted shelter is recommended.

Figure 28 Photo looking east from RTS stop located on westbound SR 26 at NW 1st Street

Figure 29 Photo looking east to building opening area next to RTS stop located on westbound SR 26 at NW 1st Street

Figure 30 Photo looking east parking lot area next to RTS stop located on westbound SR 26 at NW 1st Street

Eastbound SR 26 at Buckman Drive

This RTS stop serves the University of Florida area. It is located in an area with high pedestrian activity. The existing benches are located within an existing easement that provides adequate space for a shelter installation (Figure 31). Further analysis will be needed to determine the need for a concrete pad that would require the removal of part of the brick pavers at this location. Other RTS stops have shelters bolted to brick pavers but the design will need to be approved by the University of Florida. Discussions with the University of Florida are ongoing regarding the approval of installation of a bus stop shelter at this location.

This stop is located about 100 feet away from the nearest overhead light source. Therefore, the level of lighting is not adequate and the installation of a lighted shelter is recommended.

Figure 31 Photo looking west from RTS stop located on eastbound SR 26 at Buckman Drive

Eastbound SR 26 at NW 15th Street

This RTS stop serves the University of Florida area (Figure 32). There is a similar opportunity for installation of a bus stop shelter at this location as observed at the RTS stop located on eastbound SR 26 at Buckman Dr.

This stop is located about 12 feet away from the nearest overhead light source but the presence of extensive tree canopy could block the light. Therefore, the installation of a lighted shelter is recommended.

Figure 32 Photo looking west from RTS stop located on eastbound SR 26 at NW 15th Street

Eastbound SR 26 at SW 13th Street

This RTS stop serves a commercial area. There is limited space within the sidewalk area the bus stop is located (Figure 33). Bicycle racks that do not present evidence of being used are located in the adjacent grass area and could be removed to provide space for a bus stop shelter installation (Figure 34).

Further analysis will be required to determine if placement of a shelter would pose any sight distance constraint to vehicles exiting the adjacent parking area. Costs for a property easement or acquisition should also be evaluated. The adjacent striped area between the travel lane and the curb offers the opportunity to develop a bus bulb. This treatment would extend the sidewalk providing added space for pedestrians, quicker boarding, and opportunity for installation of a bus shelter within the right of way.

This stop is located about 30 feet away from the nearest overhead light source but the roof of the shelter could block the light. Therefore, the installation of a lighted shelter is recommended.

Figure 33 Photo looking east from RTS stop located on eastbound SR 26 at SW 13th Street

Figure 34 Photo looking west from RTS stop located on eastbound SR 26 at SW 13th Street

Bus Stop Benches Feasibility

Westbound SR 26 at NW 7th Terrace

This RTS stop serves a commercial area. There is adequate space within the sidewalk for a bus stop bench placement (Figure 35). Considerations to move the bus stop more towards the east away from the intersection for passenger safety is recommended. RTS indicates the bus currently stops to pick up passengers prior to the RTS bus stop sign; the sign location was chosen because it was the only location that did not require drilling the sign into concrete.

This stop is located about 60 feet away from the nearest overhead light source. Therefore, the level of lighting is not adequate and the installation of a new overhead light source no more than 30 feet from the bus stop is needed.

Figure 35 Photo looking west from RTS stop located on westbound SR 26 at NW 7th Terrace

Eastbound SR 26 at Gale Lemerand Drive

This RTS stop serves the University of Florida area (Figure 36). It is located in an area with high pedestrian activity. The existing bench does not meet ADA requirements. Moving the bench closer to the existing bus stop and providing a pad will give better accessibility for passengers. Discussions with the University of Florida are ongoing regarding the approval of movement of the bench at this location.

This stop is located about 15 feet away from the nearest overhead light source but the presence of an existing tree canopy could block the light. Therefore, the level of lighting might not be adequate.

Figure 36 Photo looking east from RTS stop located on eastbound SR 26 at Gale Lemerand Drive

Eastbound SR 26 at Fletcher Drive

This RTS stop serves the University of Florida area. It is located in an area with high pedestrian activity. There is an existing seat wall that serves as a seating area for RTS passengers (Figure 37). The seat wall does not meet ADA requirements. A new bench can be located in the sidewalk with sufficient clearance still provided.

There is an overhead light source located behind to the RTS stop; however, the luminaria is directed to the parking lot area. Therefore, the level of lighting might not be adequate.

Figure 37 Photo looking east from RTS stop located on eastbound SR 26 at Fletcher Drive

Eastbound SR 26 at 9th Terrace

This RTS stop serves a commercial area. The grass area behind the sidewalk provides an opportunity for a bus stop bench installation (Figure 38). However, this grass area is located within the limits of the adjacent property and costs for a property easement or acquisition should be evaluated. The existing sidewalk provides opportunity to install a new bus stop bench with sufficient clearance still provided.

The adjacent striped area between the travel lane and the curb offers the opportunity to develop a bus bulb. This treatment would extend the sidewalk providing added space for pedestrians, quicker boarding, and opportunity for installation of a bus bench.

This stop is located about 30 feet away from the nearest overhead light source. Therefore, the level of lighting is adequate.

Figure 38 Photo looking east from RTS stop located on eastbound SR 26 at 9th Terrace

SUMMARY OF RECOMMENDATIONS

The recommendations associated with the bicycle- and pedestrian-oriented projects are summarized in Table 7. Table 8 summarizes the recommendations for bus stop amenities.

Table 7. Summary of Recommendations

Location	Project Type	Recommendations
Waldo Rd	Pedestrian-oriented intersection design	• reconstruct radii (NW and SW) • modify drainage structures (NW and SW) • install channelization island (SE) • reconstruct channelization island (SW) • traffic signal adjustments (SE) • add signing (SE and SW) • replace crosswalk markings (E)
E 7th St – E 10th St	Raised median	• install three new medians • extend one existing median
NE Blvd	Enhanced pedestrian crossing	• no recommendations at this time
E 1st St – E 3rd St	Midblock pedestrian crossing	• install designated crosswalk (likely Rectangular Rapid Flashing Beacon) • advance stop bars • crosswalk signing and marking • median and roadside curb ramps
W 13th St and Main St	On-demand right turn on red restriction	• re-program signals to make restriction on demand for pedestrians
NW 17th St and Corridor-Wide	Bicycle striping and signal detection	• restripe bike lane on southbound approach • add Shared Lane Marking on both approaches to aid in signal detection of bicycles (also applies to other signalized side streets)
Gale Lemerand Dr – W 13th St	Bikeway/Sidewalk	• modify existing SR 26 sidewalk and campus-side sidewalk to create pedway and bikeway • install pedestrian-scale lighting • parking lost modifications • conduct corridor alignment plan to refine project specifics
Gale Lemerand Dr – W 13th St	Enhanced pedestrian crossing(s)	• install new pedestrian crossings at NW 16th Street and NW 19th Street

Table 8. Recommended Bus Stop Amenity Improvements

RTS Stop	Recommendations
Westbound SR 26 at NW 17th Street	Bus bulb and lighted bus stop shelter
Westbound SR 26 at NW 16th Street	Bus bulb and lighted bus stop shelter
Westbound SR 26 at NW 13th Street	Lighted bus stop shelter east of existing stop
	Property easement or acquisition needed
	Further evaluate sight distance constraints
Westbound SR 26 at NW 10th Street	Lighted bus stop shelter east of existing stop between entering and exiting driveway
	Property easement or acquisition needed
Westbound SR 26 at NW 6th Street	Lighted bus stop shelter
	Property easement or acquisition needed
Westbound SR 26 at NW 1st Street	Lighted bus stop shelter east of existing stop; two alternate locations
Eastbound SR 26 at Buckman Drive	Lighted bus stop shelter
Eastbound SR 26 at NW 15th Street	Lighted bus stop shelter
Eastbound SR 26 at SW 13th Street	Remove existing bike racks
	Bus bulb and lighted bus stop shelter
	Further evaluate sight distance constraints
Westbound SR 26 at NW 7th Terrace	Bus stop bench; move stop towards east away from intersection
Eastbound SR 26 at Gale Lemerand Drive	Move bus stop bench closer to RTS stop and provide concrete pad
Eastbound SR 26 at Fletcher Drive	Bus stop bench and provide better lighting source directed to RTS stop
Eastbound SR 26 at 9th Terrace	Bus stop bench

PLANNING COST ESTIMATES

General awareness of anticipated costs associated with implementing the projects described in this report will be useful as the projects programmed for implementation (via the MTPO's Long Range Transportation Plan, FDOT's Five-Year Work Program, or some other source). Planning-level project cost estimates are shown in Table 9; Appendix A provides the construction cost details. Two projects, NE Boulevard (no recommended improvements at this time) and Right Turn on Red restrictions at Main Street and W 13th Street (potential City of Gainesville task) do not have associated costs. The pedestrian-oriented intersection improvements at Waldo Road are broken into two separate cost estimates for the two potential implementation stages described in that section of the report.

Table 9. Summary of Project Costs

PROJECT	Cost Summaries							
	Waldo Road Pedestrian-oriented intersection design (interim)	Waldo Road Pedestrian-oriented intersection design (complete)	E 7th St - E 10 St Raised Median	E 1st St - E 3rd St Midblock pedestrian crossing	NW 17th St and Corridor-Wide Bicycle striping and signal detection	Gale Lemerand Dr - W 13th St Pedway/Bikeway	Gale Lemerand Dr - W 13th St Enhanced pedestrian crossings	Corridor-Wide Transit shelters and benches
Construction (see Appendix A for more detail)	$ 23,220	$ 197,727	$ 185,134	$ 30,824	$ 7,924	$ 2,176,165	$ 684,638	$ 377,410
Corridor Alignment Planning	$ -		$ -	$ -	$ -	$ 150,000	$ -	$ -
Preliminary Engineering/Design								
(24% Construction Cost)	$ 5,573	$ 47,454	$ 44,432	$ 7,398	$ 1,902	$ 522,280	$ 164,313	$ 90,578
Construction Inspection (CEI)								
(18% Construction Cost)	$ 4,180	$ 35,591	$ 33,324	$ 5,548	$ 1,426	$ 391,710	$ 123,235	$ 67,934
R/W Acquisition	$ -		-	-	$ -	$ -	$ -	$ 60,000
Permitting	$ -	$ 1,500	$ 500	$ -	$ -	$ 1,500	$ 1,000	$ 1,000
SUBTOTAL	$ 32,972	$ 282,272	$ 263,390	$ 43,771	$ 11,251	$ 3,241,654	$ 973,186	$ 596,922
PRORATED COST INCREASE (10%)	$ 3,297	$ 28,227	$ 26,339	$ 4,377	$ 1,125	$ 324,165	$ 97,319	$ 59,692
GRAND TOTAL	**$ 36,270**	**$ 310,499**	**$ 289,729**	**$ 48,148**	**$ 12,377**	**$ 3,565,820**	**$ 1,070,505**	**$ 656,614**

Appendix A: **Cost Estimate Details**

SR 26/University Ave Multimodal Emphasis Corridor Study Waldo Road Pedestrian-Oriented Intersection Design (Interim)		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$825
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$825
ENVIRONMENTAL (SILT BARRIERS, HAY, ETC.)	0.75% OF CONST. COST	$41
STRIPING & SIGNAGE	500 FT @ $5.00/FT	$2,500
SIGNALIZATION	2 PED BUTTONS @ $1500 EA	$3,000
CURBING TYPE F		
TRAFFIC ISLANDS (CONCRETE)	200 SY @ $65/SY	$13,000
SUBTOTAL		$20,191
CONTINGENCY	15% OF CONST. COST	$3,029
TOTAL CONST. ESTIMATE		**$23,220**

**NOTE: THIS OPINION OF COST IS BASED ON MODIFICATIONS TO THE SE CORNER ONLY

SR 26/University Ave Multimodal Emphasis Corridor Study Waldo Road Pedestrian-Oriented Intersection Design (Complete)		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$19,725
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$19,725
ENVIRONMENTAL (SILT BARRIERS, HAY, ETC.)	0.75% OF CONST. COST	$986
ASPHALT PAVEMENT (BASE, STRUCTURAL, FRICTION COURSE	75 TNS @ $200/TN	$15,000
DRAINAGE STRUCTURES	3 @$6000 EA	$18,000
PIPE	100 FT @$75/FT	$7,500
CLEARING & GRADING (ROADWAY)	.25 ACRES @ $20,000/ACRE	$5,000
STRIPING	2000 FT @ $5.00/FT	$10,000
SIGNALIZATION	4 PED BUTTONS @ $1500 EA	$6,000
CURBING TYPE F	750 FT @ $30/FT	$22,500
TRAFFIC ISLANDS (CONCRETE)	600 SY @ $65/SY	$39,000
GRASSING (SOD)	1500 SY @ $3.00 /SY	$4,500
UTILITY ADJUSTMENTS/RELOCATIONS	2 DECORATIVE LIGHT POLES @ $2000 EA	$4,000
SIGNAGE	2 ADDITIONAL SIGNS @ $500 EA	$1,000
SUBTOTAL		$171,936
CONTINGENCY	15% OF CONST. COST	$25,790
TOTAL CONST. ESTIMATE		**$197,727**

**NOTE: THIS OPINION OF COST IS FOR THE NW AND SW CORNERS ONLY

SR 26/University Ave Multimodal Emphasis Corridor Study East 7th to East 10th Raised Medians		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$18,469
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$18,469
ENVIRONMENTAL (SILT BARRIERS, HAY, ETC.)	0.75% OF CONST. COST	$923
CLEARING & GRADING (ROADWAY)	0.5 ACRES @ $20,000/ACRE	$10,000
STRIPING & SIGNAGE	3500 FT @ $5.00/FT	$17,500
CURBING TYPE E	2000 FT @ $30/FT	$60,000
6' TRAFFIC SEPARATORS (CONCRETE)	625 FT @ $45/FT	$28,125
GRASSING (SOD)	2000 SY @ $3.00 /SY	$6,000
UTILITY ADJUSTMENTS/RELOCATIONS	ADJUST 3 MANHOLES @ $500 EA	$1,500
SUBTOTAL		$160,986
CONTINGENCY	15% OF CONST. COST	$24,148
TOTAL CONST. ESTIMATE		**$185,134**

SR 26/University Ave Multimodal Emphasis Corridor Study E 1st to E 3rd Midblock Pedestrian Crossing		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$3,075
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$3,075
ENVIRONMENTAL (SILT BARRIERS, HAY, ETC.)	0.75% OF CONST. COST	$154
SIGNAGE	2 SIGNS @ $300 EA	$600
STRIPING	200 FT @ $5.00/FT	$1,000
SIGNALIZATION	2 RRFB @ $7000 EA	$14,000
CONCRETE ADA RAMPS	35 SY @ $40/SY	$1,400
UTILITY ADJUSTMENTS/RELOCATIONS	ELECTRICAL SERVICE	$3,500
SUBTOTAL		$26,804
CONTINGENCY	15% OF CONST. COST	$4,021
TOTAL CONST. ESTIMATE		**$30,824**

SR 26/University Ave Multimodal Emphasis Corridor Study NW 17th and Corridor-Wide Bicycle Striping and Signal Detection		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$795
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$795
PAVEMENT MARKING REMOVAL	400 FT @ $5/FT	$2,000
RESTRIPING (INCLUDES SHARED LANE SYMBOLS)	200 FT STRIPING	$1,400
SHARED LANE SYMBOLS	15 INTERSECTIONS (2 PER INT.)	$1,500
SIGNAGE	2 SIGNS AT $200 EA	$400
SUBTOTAL		$6,890
CONTINGENCY	15% OF CONST. COST	$1,034
TOTAL CONST. ESTIMATE		**$7,924**

SR 26/University Ave Multimodal Emphasis Corridor Study Gale Lemerand to W 13th Pedway/Bikeway		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$202,350
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$202,350
ENVIRONMENTAL (SILT BARRIERS, HAY, ETC.)	0.75% OF CONST. COST	$10,118
DEMOLITION	10000 SY @ $2.50/SY	$25,000
CONCRETE PAVEMENT (SIDEWALK)	5000 SY @ $35/SY	$175,000
BRICK PAVERS	3000 SY @ $60/SY	$180,000
STEM WALLS (CONC W/ BRICK FACING)	2500 FT @ $175/FT	$437,500
RELOCATE TREES	5 @ $1000 EA	$5,000
PAVEMENT SYMBOLS	100 SHARROWS @ $50 EA	$5,000
STRIPING (EDGELINE, CROSS WALKS, STOP BARS)	4500 FT @ $5.00/FT	$22,500
DRAINAGE CATCH BASINS	12 INLETS AT $3500 EA	$42,000
STORMSEWER PIPE (18" RCP)	2500 FT @ $60/FT	$150,000
GRASSING (SOD)	4000 SY @ $3.00/SY	$12,000
LIGHTING (10 FT HEIGHT)	80 DECORATIVE LIGHTS @ $4000 EA	$320,000
BIKEWAY-PEDWAY INTERIOR SEATING	VARIOUS LOCATIONS	$25,000
WHEELSTOPS	50 @ $150 EA	$7,500
PARKING LOT RE-STRIPING (EAST OF FLETCHER)	1500 FT @ $4/FT	$6,000
PARTIAL RECONSTRUCTION OF PARKING (WEST OF FLETCHER)	RELOCATE CURB/SIDEWALK/PAVEMENT	$65,000
SUBTOTAL		$1,892,318
CONTINGENCY	15% OF CONST. COST	$283,848
TOTAL CONST. ESTIMATE		**$2,176,165**

**NOTE: OPINION OF COST IS BASED ON A TWELVE FT WIDE TWO-WAY BIKE PATH ADJACENT TO CAMPUS PARKING, A TWELVE FOOT WIDE PEDESTRIAN PATH ADJACENT TO EASTBOUND UNIVERSITY AVE. WITH A STEM WALL AND AN EIGHT FOOT WIDE LANDSCAPE/HARDSCAPE PLAZA AREA BETWEEN THE TWO PATHWAYS. PROJECT LENGTH IS ESTIMATED AT 3250'.

SR 26/University Ave Multimodal Emphasis Corridor Study Gale Lemerand to W 13th Enhanced Pedestrian Crossings		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$68,299
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$68,299
ENVIRONMENTAL (SILT BARRIERS, HAY, ETC.)	0.75% OF CONST. COST	$3,415
CONCRETE SIDEWALK (RAMPS)	4 LOCATIONS (10 SY EA) @ $35/SY	$1,575
DEMOLITION	.25 ACRES @ $10,000/ACRE	$2,500
STRIPING & SIGNAGE	5000 FT @ $5.00/FT	$25,000
SIGNALIZATION (COMPLETE)	2 INTERSECTIONS @ $200,000 EA	$400,000
CONC TRAFFIC SEPARATOR (2' WIDE)	650 FT @ $35/FT	$22,750
UTILITY ADJUSTMENTS/RELOCATIONS	INSTALL POWER FEED (2)	$3,500
SUBTOTAL		$595,337
CONTINGENCY	15% OF CONST. COST	$89,301
TOTAL CONST. ESTIMATE		**$684,638**

**NOTE: OPINION OF COST IS CONSERVATIVELY BASED ON COMPLETE INSTALLATION OF MAST ARM SIGNALS AT THE INTERSECTIONS OF NW 16TH AND NW 19TH.

SR 26/University Ave Multimodal Emphasis Corridor Study Corridor-Wide Transit Shelters and Benches		
DESCRIPTION	ESTIMATE BASIS	AMOUNT
MOBILIZATION	15% OF CONST. COST	$37,650
MAINTENANCE OF TRAFFIC	15% OF CONST. COST	$37,650
ENVIRONMENTAL (SILT BARRIERS, HAY, ETC.)	0.75% OF CONST. COST	$1,883
BUS BULB (INCL DEMO AND NEW CURB/PAVEMENT/SIDEWALK)	3 LOCATIONS @ $15,000 EA	$45,000
LIGHTED BUS SHELTER (17X5X8)	9 LOCATIONS @ $20,000 EA	$180,000
BUS STOP BENCH	3 @ $2500 EA	$7,500
RELOCATE BENCH AND POUR PAD	1 @ $2000 EA	$2,000
LIGHTING	3 LOCATIONS @ $5000 EA	$15,000
GRASSING (SOD)	3 LOCATIONS @ $500 EA	$1,500
SUBTOTAL		$328,183
CONTINGENCY	15% OF CONST. COST	$49,227
TOTAL CONST. ESTIMATE		**$377,410**

**NOTE: ADDITIONAL R/W MAY BE REQUIRED AT 3 LOCATIONS. ACQUISITION COSTS ARE REFLECTED ON SUMMARY PAGE AND ARE ESTIMATED AT $20,000 EACH.