CITY OF TAMPA

TRANSPORTATION AND STORMWATER
SERVICES DEPARTMENT

Twiggs Street Traffic Study

from

Jefferson Street to Meridian Avenue

Contract 16-D-46913
WO #13 (PO # 117211571)

September 2017

FINAL REPORT

DKS

FINAL REPORT

TWIGGS STREET TRAFFIC STUDY

From Jefferson Street to Meridian Avenue

Prepared for

CITY OF TAMPA

TRANSPORTATION AND STORMWATER
SERVICES DEPARTMENT

By

DKS

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EXECUTIVE SUMMARY

The study area included not only Twiggs Street from Jefferson Street to Meridian Avenue, but also Kennedy Boulevard which parallels Twiggs Street through this area. Traffic conditions on Kennedy Boulevard impact the use of and conditions on Twiggs Street. The purpose of this traffic study was to identify possible changes to the design and operation of these streets that will improve traffic conditions, reduce congestion and enhance pedestrian safety.

The scope of this traffic study included the following tasks:

- **Review Traffic and Pedestrian Counts**
- **Observe Existing Traffic Conditions**
- **Prepare Intersection Capacity Analyses**
- **Evaluate Study Results and Improvement Options**
- **Attend Project Review Meetings**
- **Document Study Findings in a Report**

Twiggs Street through the study area serves two very important transportation functions. It is a primary connector to the Selmon Expressway and a portal for both entering and exiting traffic to and from the downtown. It also provides primary access for the Hillsborough County Courthouse complex located on both sides of Twiggs Street at Jefferson Street. The Hillsborough County Courthouse complex is a major generator of trips for persons involved with the court activities, which is particularly significant on Mondays and Wednesdays when prospective jurors report for possible selection and assignment to new court cases. The period from 7- 8 AM represents the critical traffic period for this segment of Twiggs Street when motorists are traveling to downtown, dropping off passengers and/or searching for available parking.

For those driving and needing to park, the Twiggs Street Garage is a first choice because of its proximity to the complex and because parking is free for those reporting for jury duty. The Twiggs Street Garage has four access driveways, two on the north side on Twiggs Street and two on the south side from Brush Street. The east access driveway on Twiggs Street has two lanes which can operate as two exit lanes or one exit lane and one entrance lane. The west access driveway on Twiggs Street only has one entrance lane. The Brush Street access driveways operate as a one-way inbound and one-way outbound.

The path for pedestrians walking between the Twiggs Street Garage and the Courthouse doors involves crossing Twiggs Street at the marked crosswalk located on the west leg of the East Street intersection. This crosswalk is controlled by signs with flashing beacons that operate constantly, regardless of the presence of pedestrians. Pedestrian crossings are continuous from 7 AM- 6 PM, but peak between 7-8 AM.

Traffic demands on Twiggs Street are highest near Meridian Avenue. The peak periods of the day for traffic are between 7-9 AM and 4-6 PM with the highest volumes occurring between 7-8 AM. The prevailing traffic patterns during these peak hours reflect higher westbound traffic volumes during the morning peak with higher eastbound traffic during the evening peak.

The traffic counts at the Twiggs Street Garage driveways show highly directionalized traffic inbound in the AM and outbound in the PM, with 80% of inbound traffic occurring at the west driveway. The pedestrian crossings of Twiggs Street in the crosswalk near East Street are as high as 445 pedestrians during the AM peak hour.

Capacity analyses results verify the observed congestion at the Meridian Avenue intersection (LOS F). These congested conditions are experienced due to the high traffic volumes exiting the Selmon Expressway express lanes. Traffic

congestion during AM peak hour on Twiggs Street primarily impacts the westbound direction and extends through the Courthouse area, and includes the west entrance to the Twiggs Garage. Of particular concern is the long vehicle queue that extends back from Nebraska Avenue through the Meridian Avenue intersection and onto the westbound express lanes of the Selmon Expressway.

The following improvements are recommended to improve traffic conditions, reduce congestion and enhance pedestrian safety:

1. **Construct a Third Westbound Lane on Twiggs Street between Meridian Avenue and Nebraska Avenue**

This lane would help southbound right turns from the Selmon Expressway onto Twiggs Street and the westbound right turns at Nebraska Avenue This appears to be possible by relocating the north sidewalk to north of the Selmon Expressway bridge columns, and relocating two wood poles at Nebraska Avenue and storm water inlets along the existing north curb.

2. **Post Overhead Sign Restricting Westbound Traffic from Turning left at Nebraska Avenue between 7 – 9 AM**

The westbound left turns from Twiggs Street at Nebraska Avenue are very low during the AM peak hour, but they still cause delays to the heavy westbound through traffic and limit use of the left through lane. Restricting this movement will open two lanes for through traffic and transfer the left turns to either East Street or Jefferson Street.

3. **Install Electronic Variable Message Signs Informing Motorists when the East Access Driveway for the Twiggs Street Garage is Open for Entering Traffic**

Motorists traveling to the Twiggs Street Garage contribute to the congestion by over utilizing at the west entrance. Highly-visible electronic variable message signs should be installed at both driveways to direct parkers to use the east entrance when it is open and available.

4. **Upgrade the Pedestrian Crossing Control to a Traffic Signal Installation**

Install a traffic signal activated by pedestrians to provide greater safety for pedestrian crossings and maintain better traffic capacity and progression on Twiggs Street.

5. **If Possible, Construct a Second Entrance Lane at the West Access Driveway for the Twiggs Street Garage**

An option to explore for increasing inbound capacity at the Twiggs Street Garage would be to construct a second entrance lane at the west access driveway. This opening currently accommodates a sidewalk for pedestrians, a single entrance lane and a raised island for parking control equipment.

6. **Eliminate Eight On-Street Parking Spaces on north side of Twiggs Street to Restripe for a Westbound Left Turn Lane into the East Access Driveway for the Twiggs Street Garage**

To better accommodate left turns into the Twiggs Street Garage, restripe for a westbound left turn lane extending from Nebraska Avenue west to the east access driveway to the Twiggs Street Garage. This striping plan will eliminate eight on-street parking spaces and reduce lane widths.

7. **Revise Operation of the Access Driveways to the Surface Parking Lot on the North Side of Twiggs Street**

The access driveways serving the surface parking lot on the north side of Twiggs Street are in close proximity to, but offset from the Twiggs Street Garage driveways and contribute to the congestion.

1. INTRODUCTION

Twiggs Street between Jefferson Street and Meridian Avenue experiences major congestion during the AM peak hours, particularly on Mondays and Wednesdays when jurors travel to this area of Downtown Tampa to report for Jury duty at the County Courthouse. This congestion which extends back onto the express lanes from the Selmon Expressway is caused by a variety of traffic and pedestrian issues that occur along this segment of Twiggs Street. These issues include over 1600 right-turning vehicles onto Twiggs Street from the Selmon Expressway express lanes, vehicles in both directions dropping off passengers near the Courthouse, vehicles queuing at the entrance to the Twiggs Street Garage, motorists searching for on-street parking and vehicles stopping for pedestrians crossing Twiggs Street in the crosswalk near East Street. The purpose of this traffic study was to identify possible changes that will improve traffic conditions, reduce congestion and enhance pedestrian safety. The study area included not only Twiggs Street through this area, but also Kennedy Boulevard because traffic conditions on Kennedy Boulevard impact the use of and conditions on Twiggs Street. The traffic study area is shown on Exhibit 1 on the next page.

The scope of this traffic study included the following tasks:

- **Review Traffic and Pedestrian Counts**

Peak hour turning movement counts, including pedestrians and bicycles were obtained by the City of Tampa at key locations on Twiggs Street and Kennedy Boulevard in the study area. These counts were reviewed to identify current traffic patterns as well as pedestrian crossings.

- **Observe Existing Traffic Conditions**

Existing traffic conditions were observed to identify operational and safety problems on Twiggs Street and Kennedy Boulevard in the study area. These observations occurred on different days of the week, and included Monday mornings during peak activities at the County Courthouse. Special attention was given the traffic movements into and out of the Twiggs Street Parking Garage and pedestrian activity in the crosswalk on Twiggs Street near East Street serving the Courthouse.

- **Prepare Intersection Capacity Analyses**

Intersection capacity analyses were prepared for the three signalized intersections on Twiggs Street at Meridian Avenue, Nebraska Avenue and Jefferson Street. These analyses considered existing AM and PM peak hour traffic volumes and current intersection signal control timings.

- **Evaluate Study Results and Improvement Options**

The results of observations and analyses were evaluated to determine the need for changes to improve traffic operations and pedestrian safety. Improvement options that were considered included revised intersection geometries and control, restricted traffic movements, new lane markings, pedestrian crossing upgrades and revised access to the Twiggs Street Parking Garage and surface parking lot across Twiggs Street.

- **Attend Project Review Meetings**

Meetings were attended with City staff to discuss study findings and recommendations and to present improvement options. These meetings occurred before preparation of this report, so that appropriate input could be obtained and reflected in our final recommendations.

- **Document Study Findings in a Report**

This report was prepared to summarize and document the findings and recommendations of our study. This report includes concept plans showing recommended changes to Twiggs Street between Jefferson Street and Meridian Avenue.

STUDY EXHIBIT 1

Twiggs Street Traffic Study

Corridor Map

Twiggs Street from Jefferson Street to Meridian Avenue

2. BACKGROUND

Twiggs Street through the study area serves two very important transportation functions. It is a primary connector to the Selmon Expressway and a portal for both entering and exiting traffic to and from the downtown. It also provides primary access for the Hillsborough County Courthouse complex located on both sides of Twiggs Street at Jefferson Street. These functions combine to produce high traffic demands during the typical weekday morning peak inbound period, particularly on Mondays and Wednesdays when prospective jurors report for assignments.

The Selmon Expressway reversible express ramp to and from the east aligns with Meridian Street north of Twiggs Street. Morning inbound traffic on the express lanes enters the downtown at this portal and either travels westbound on Twiggs Street or southbound on Meridian Avenue. In the afternoon this pattern reverses with exiting traffic from the downtown traveling eastbound on Twiggs Street and northbound on Meridian Avenue. The two traffic signal controlled intersections on Twiggs Street at Meridian Avenue and Nebraska Avenue are critical to accommodating these peak traffic flows.

Kennedy Boulevard parallels Twiggs Street one block to the south and has a direct connection with an exit ramp from the Selmon Expressway westbound general use (non-express) lanes. This traffic flows directly into two westbound lanes on Kennedy Boulevard to the traffic signal controlled intersection at Jefferson Street. The operation of this traffic signal is critical to accommodating peak inbound morning traffic.

The Hillsborough County Courthouse complex is a major generator of trips for persons involved with the court activities, which includes all Courthouse personnel, law enforcement, jurors, court participants and visitors. This traffic generation is particularly significant on Mondays and Wednesdays when prospective jurors report for possible selection and assignment to new court cases. On those days prospective jurors arrive prior to 8:00 AM and stay until they are dismissed, which can vary depending upon the court schedule. The period from 7:00 AM to 8:00 AM represents the critical traffic period for this segment of Twiggs Street when motorists are dropping off passengers or searching for available parking. The afternoon has a reverse flow with passenger pick-up activity and departures from parking. However, these tend to be spread out over several hours between 3:00 PM and 5:30 PM.

Because travel to the Courthouse represents an unusual event for most prospective jurors and participants in court cases, they are unfamiliar with the street system, circulation patterns and location of available parking. For those driving, the Twiggs Street garage is a first choice because of its proximity to the Courthouse complex and because parking is free for those reporting for jury duty. The garage also serves monthly parkers and fills up by 10:00 AM on a regular basis, which results in redirected trips. Fortunately, the redirection occurs after 8:00 AM when the peak traffic flows are less.

The Twiggs Garage has four access driveways, two on the north side on Twiggs Street and two on the south side from Brush Street. The east access driveway on Twiggs Street has two lanes which can operate as two exit lanes or one exit lane and one entrance lane. The west access driveway only has one entrance lane. The single entrance lane and single exit lane on Brush Street are primarily used by monthly parkers.

The path for pedestrians walking between the Twiggs Garage and the Courthouse doors involves crossing Twiggs Street at the marked crosswalk located on the west leg of the East Street intersection. This crosswalk is controlled by signs with flashing beacons that operate constantly, regardless of the presence of pedestrians. Pedestrian crossings are continuous during the AM peak hour between 7 AM – 8 AM.

3. EXISTING CONDITIONS

The Twiggs Street study area was divided into three segments based upon existing characteristics and key operating conditions:

- Segment 1 - Jefferson Street to East Street
- Segment 2 – East Street to Nebraska Avenue
- Segment 3 – Nebraska Avenue to Meridian Avenue

The existing characteristics and observed traffic conditions in these segments are described below and shown on the following exhibits.

Twiggs Street from Jefferson Street to East Street

This segment of Twiggs Street has two traffic lanes in each direction with on-street parking on both sides of the street. Most of the pick-up/drop-off activity and pedestrian crossing activity related to the Hillsborough County Courthouse complex occurs in this segment because of the proximity to the Courthouse doors. Pick-up/drop-off activity typically occurs in the traffic lanes because all of the curb space along this segment is utilized for on-street parking. Pedestrian crossings across Twiggs Street primarily occur at the marked crosswalk just west of East Street. The flow of pedestrians at this location is significant and disruptive to traffic flow on Twiggs Street. The crosswalk is controlled by flashing beacons that operate continuously, giving pedestrians priority at all times. During morning peak hours, westbound traffic on Twiggs Street typically backs up from the Jefferson Street signal through the crosswalk and East Street intersection. Pedestrians walk through the traffic queues. During our observations, the green time allocation to Jefferson Street traffic appeared to be more than needed for traffic and pedestrian crossings at the traffic signal. A greater allocation of green time to Twiggs Street would help reduce queues, congestion and vehicle delays.

Twiggs Street from East Street to Nebraska Avenue

This segment of Twiggs Street also has two traffic lanes in each direction with on-street parking on both sides of the street. It provides access to the Twiggs Garage on the south side and a large surface parking lot on the north side. The congestion experienced in this segment is related to inbound access to both the garage and the surface parking lot. Even though the Twiggs Garage has two separate entrance driveways on Twiggs Street that are open during the morning inbound peak, most patrons use the single entrance lane at the west driveway. At busy times this causes major congestion at the west driveway that blocks the eastbound curb lane and the westbound center lane. It appears that the underutilized east entrance primarily serves monthly parkers who are aware that it is open. Westbound motorists do not seem to recognize the east driveway as an entrance and proceed to the congested entrance at the west end. The two access driveways serving the large surface parking lot on the north side of Twiggs Street are less congested, than the west garage driveway, but they also contribute to the congestion. These two driveways are located offset to the east from the Twiggs Garage driveways which results in overlaps of the left turn queues into both parking facilities.

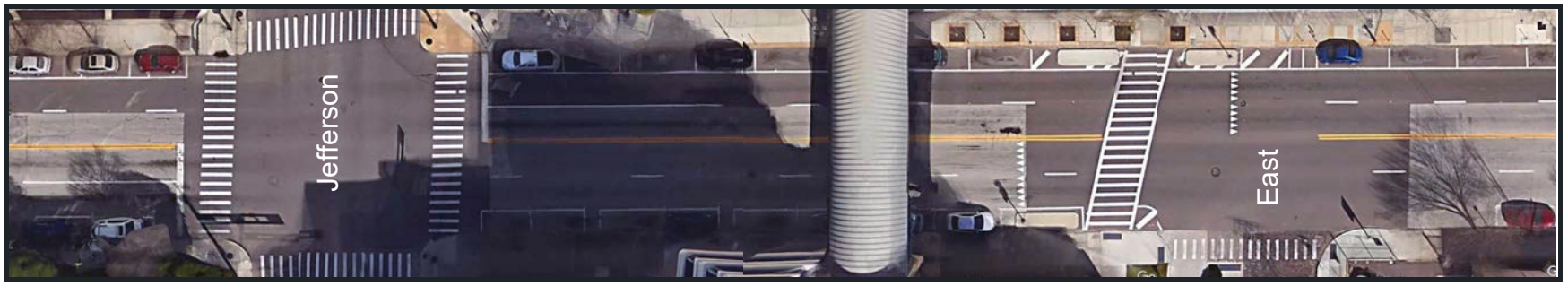
Twiggs Street from Nebraska Avenue to Meridian Avenue

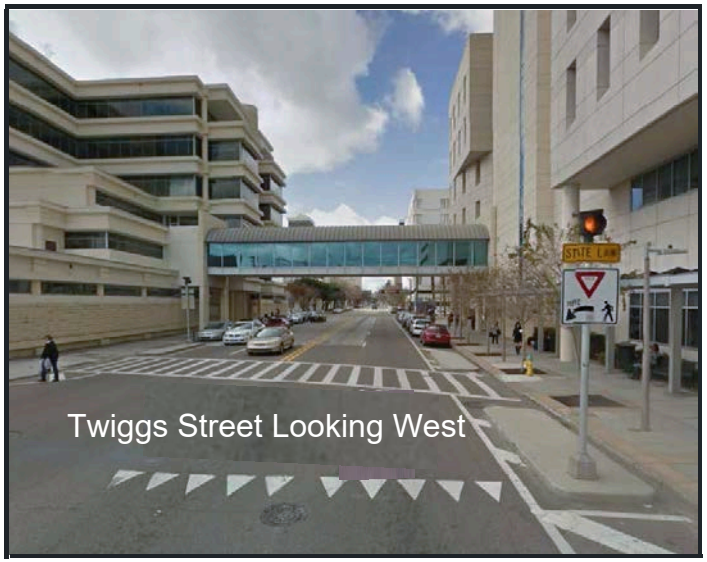
This segment of Twiggs Street that passes under the Selmon Expressway has two traffic lanes in each direction with no on-street parking. A narrow raised centerline is intended to prevent left turn access to and from driveways on the north side for Union Train Station and on the south for Channelside Charter School. This is a critical street segment in the morning peak hours because over 1600 vehicles per hour turn right in one lane from the Selmon Expressway exit ramp to Twiggs Street. This traffic queues on Twiggs Street from Nebraska Avenue back to Meridian Avenue and onto the express lanes. A high percentage of westbound traffic on Twiggs Street

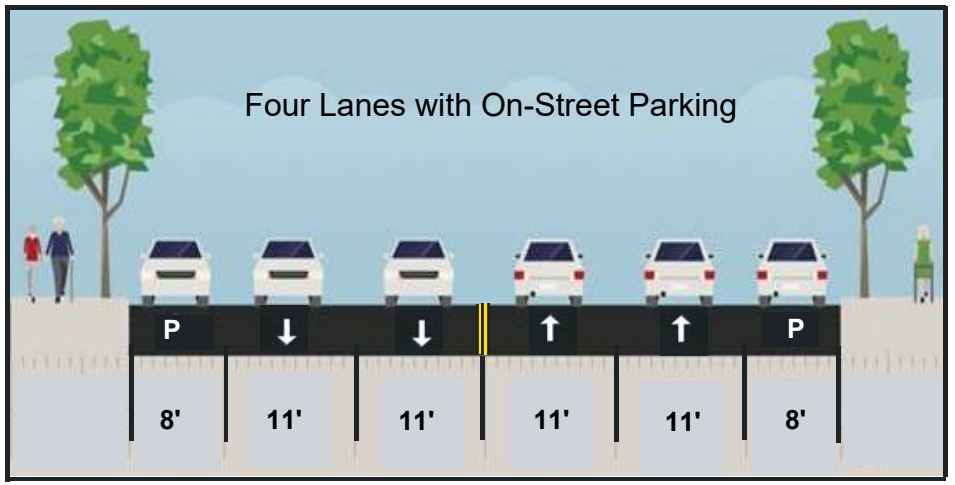
STUDY EXHIBIT 2

Twiggs Street Traffic Study

Segment 1 from Jefferson Street to East Street



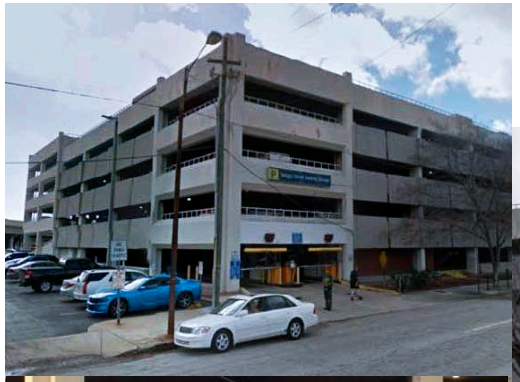


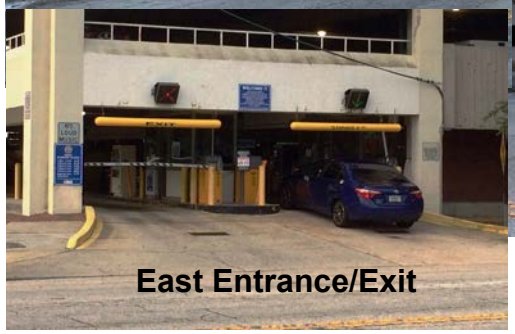


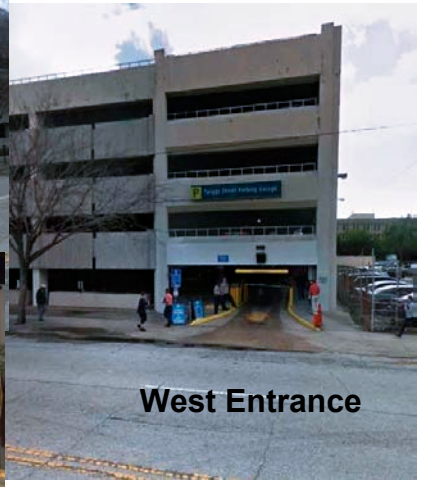
STUDY EXHIBIT 3

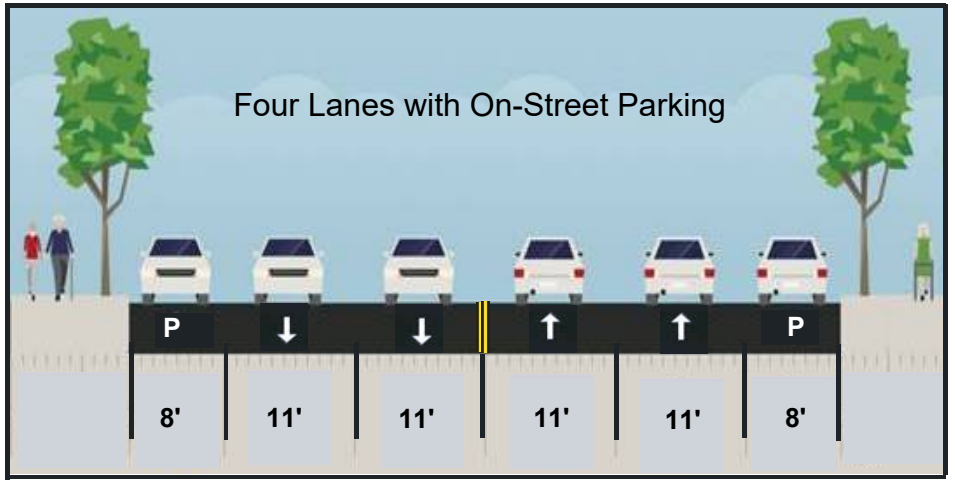
Twiggs Street Traffic Study

Segment 2 from East Street to Nebraska Avenue





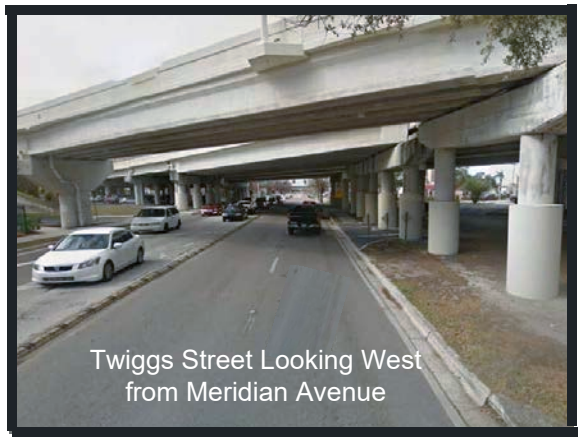


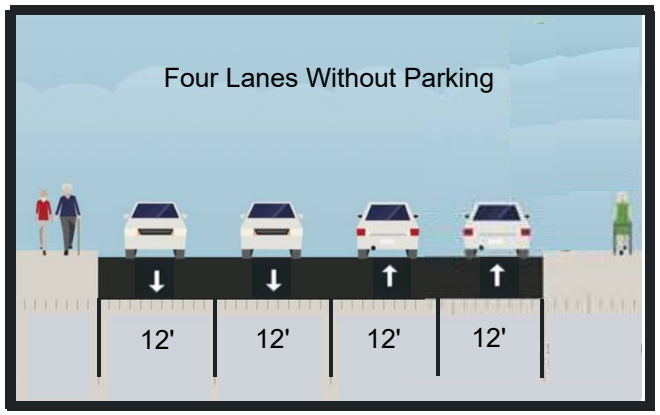


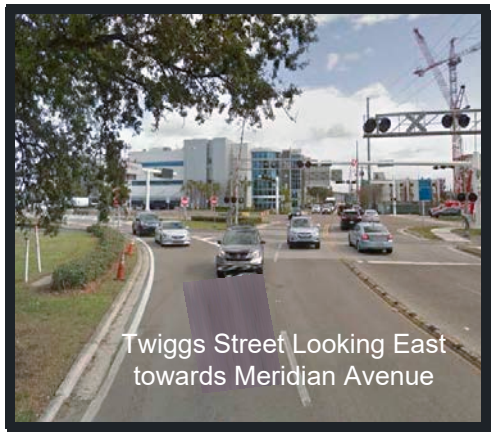
STUDY EXHIBIT 4

Twiggs Street Traffic Study

Segment 3 from Nebraska Avenue to Meridian Avenue







utilizes the right curb lane and turns right at Nebraska Avenue, basically leaving a single lane for westbound through traffic on Twiggs Street. During our observations, the green time allocation to Nebraska Avenue traffic appeared to be more than needed for traffic at the traffic signal. A greater allocation of green time to Twiggs Street would help reduce queues, congestion and vehicle delays.

Traffic Volumes

The existing use of Twiggs Street by motorists and pedestrians was measured to obtain an understanding of existing operating conditions, current needs, and opportunities for changes to improve conditions. Counts of automobiles and pedestrians were conducted at five key signalized intersections, the Twiggs Street access driveways serving the Twiggs Street Parking Garage and the pedestrian crosswalk at the Courthouse.

Traffic demands on Twiggs Street are highest near Meridian Avenue. The westbound AM peak hour volumes on Twiggs Street (in two lanes) are approximately 50% of the westbound AM peak hour volumes (in four lanes) on Kennedy Boulevard. The peak traffic periods of the day for traffic are between 7-9 AM and 4-6 PM with the highest volumes occurring between 7-8 AM. The prevailing traffic patterns during these peak hours reflect higher westbound traffic volumes during the morning peak with higher eastbound traffic during the evening peak. The highest intersection traffic volumes are found at the Meridian Avenue intersection.

The traffic counts at the Twiggs Garage driveways show highly directionalized traffic inbound in the AM and outbound in the PM, with 80% of inbound traffic occurring at the west driveway. The pedestrian crossings of Twiggs Street in the crosswalk near East Street are as high as 455 pedestrians during the AM peak hour.

Level of Service Conditions

Level of Service conditions at the three signalized intersections on Twiggs Street were calculated based upon existing signal timings and optimized signal timings to identify the benefits of possible signal timing changes. The results verify the observed congestion at the Meridian Avenue intersection (LOS F). These congested conditions are experienced due to the high traffic volumes exiting the Selmon Expressway express lanes. The capacity analyses also indicate traffic conditions cannot be significantly improved with just new signal timings. Existing level of service conditions during peak traffic hours are listed in Table 1, below:

Table 1
Existing Level of Service Conditions

Twiggs Street Intersection	AM Peak Hour		PM Peak Hour	
	Existing Timings	Optimum Timings	Existing Timings	Optimum Timings
Jefferson St	B	B	C	C
Nebraska Ave	D	D	C	C
Meridian Ave	F	F	D	D

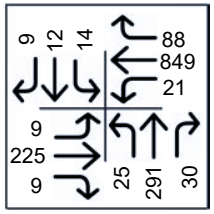
Traffic congestion during AM peak hour on Twiggs Street primarily impacts the westbound direction and extends through the Courthouse area, and includes the west entrance to the Twiggs Garage. Of particular concern is the long vehicle queue that extends back from Nebraska Avenue through the Meridian Avenue intersection and onto the westbound express lanes of the Selmon Expressway.

STUDY EXHIBIT 5

Twiggs Street Traffic Study

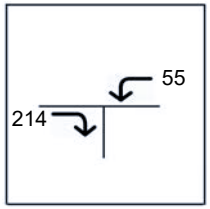
Existing AM Peak Hour Traffic Volumes

Twiggs & Jefferson

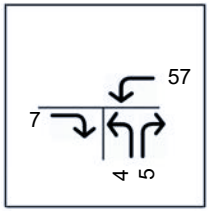


Ped Crossing

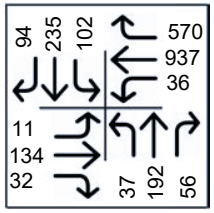
Twiggs & West Garage



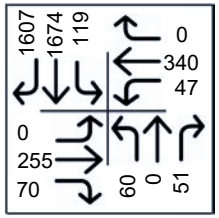
Twiggs & East Garage



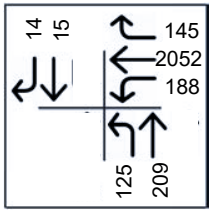
Twiggs & Nebraska



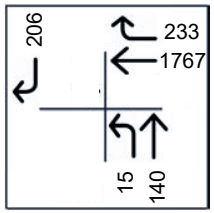
Twiggs & Meridian



Kennedy & Jefferson



Kennedy & Nebraska

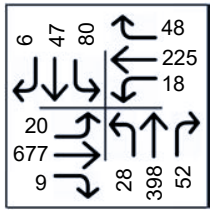


STUDY EXHIBIT 6

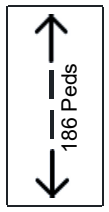
Twiggs Street Traffic Study

Existing PM Peak Hour Traffic Volumes

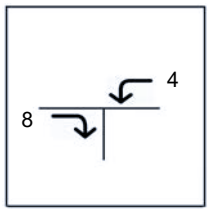
Twiggs & Jefferson



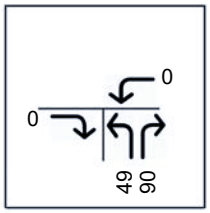
Ped Crossing



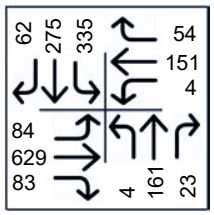
Twiggs & West Garage



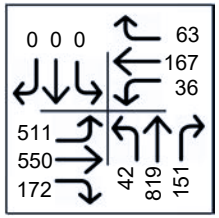
Twiggs & East Garage



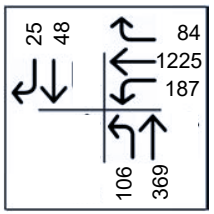
Twiggs & Nebraska



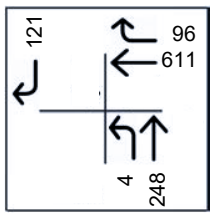
Twiggs & Meridian



Kennedy & Jefferson



Kennedy & Nebraska

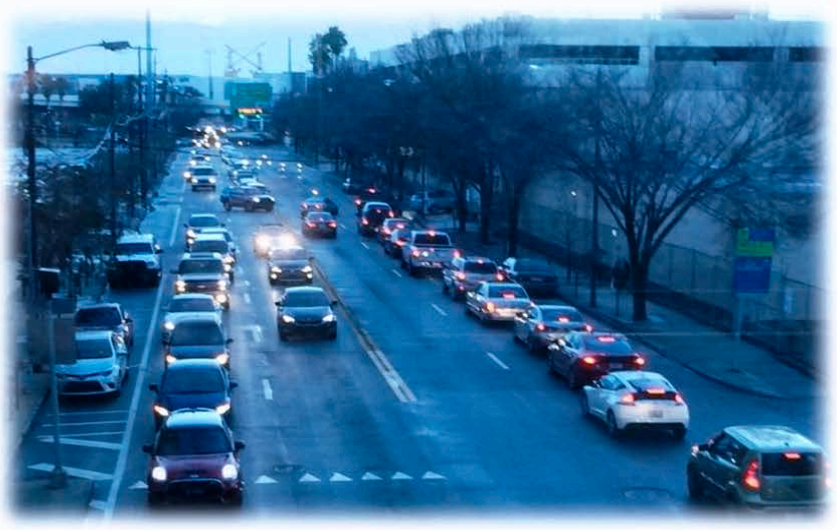


4. STUDY RECOMMENDATIONS

Congested traffic conditions occur on Twiggs Street between Jefferson Street and Meridian Avenue during the morning peak hours (7-9 AM), especially on Mondays when new jurors are reporting to the Hillsborough County Courthouse. During this period vehicles queue in the westbound lanes extending east from Nebraska Avenue onto the Selmon Expressway exit at Meridian Avenue. Congestion also occurs on Twiggs Street at the west entrance driveway to the Twiggs Garage and at the pedestrian crosswalk near East Street. Unfortunately, Kennedy Boulevard experiences similar conditions in this area and does not provide a good alternative route to avoid Twiggs Street congestion. The primary causes for the congestion on Twiggs Street include:

- Insufficient capacity at the Meridian Avenue intersection and on the segment of Twiggs Street between Meridian Avenue and Nebraska Avenue is the key cause of traffic back-ups on the inbound express lanes of the Selmon Expressway during morning peak hours.
- The predominant use of the west entrance driveway serving the Twiggs Street Garage, frequently blocks one eastbound lane and one westbound lane on Twiggs Street. This driveway only has a single lane for entering traffic. Existing information signs at the Twiggs Street Garage do not produce an even distribution of traffic at the two access driveways on Twiggs Street.
- The high volumes of pedestrians crossing Twiggs Street in and near the crosswalk at East Street produce conflicts and disrupt traffic flows in both directions.

Several recommendations were developed to address these problems:



Twiggs Street looking east towards Twiggs Garage with vehicles waiting to enter at west driveway

Twiggs Street looking east at pedestrian crossings during morning peak traffic conditions

1. **Construct a Third Westbound Lane on Twiggs Street between Meridian Avenue and Nebraska Avenue – Recommendations Exhibit 1**

With the high volume of westbound traffic on Twiggs Street in the AM peak hour between Meridian Avenue and Nebraska Avenue, both signalized intersections would greatly benefit from the construction of a third westbound lane. This lane would help southbound right turns from the Selmon Expressway exit ramp onto Twiggs Street (1607 vph) and the westbound right turns at Nebraska Avenue (570 vph). The capacity analyses for both intersections show significant reductions in delay and improved levels of service in the AM peak hour with the recommended widening.

Table 2
Level of Service Conditions with Widening

Twiggs Street Intersection	AM Peak Hour		PM Peak Hour	
	Existing Conditions	With Widening	Existing Conditions	With Widening
Jefferson St	B	B	C	C
Nebraska Ave	D	C	C	C
Meridian Ave	F	D	D	D

This widening appears to be possible by relocating (1) the north sidewalk to north of the Selmon Expressway bridge columns, (2) two wood poles at Nebraska Avenue and (3) several storm water inlets along the existing north curb. The north sidewalk does not extend the entire distance to Meridian Avenue, but rather starts just east of the access driveway to the Union Railroad Station. This sidewalk appears to primarily serve those using the station parking lot and would be easily accessible in a relocated position north of the bridge columns.

The pavement width on Twiggs Street between Nebraska Avenue and Meridian Avenue is approximately 48 feet with a sidewalk on the north side. Widening to the north by 7 feet would provide 55 feet for five lanes at 11 feet each. A new sidewalk could be constructed north of the bridge columns for the Selmon Expressway through an area that is currently landscaped. The new sidewalk would actually better align with the crosswalk at Nebraska Avenue which is currently angled because Twiggs Street is wider (60 feet) west of Nebraska Avenue.

2. **Post Overhead Sign Restricting Westbound Traffic from Turning left at Nebraska Avenue between 7 – 9 AM**

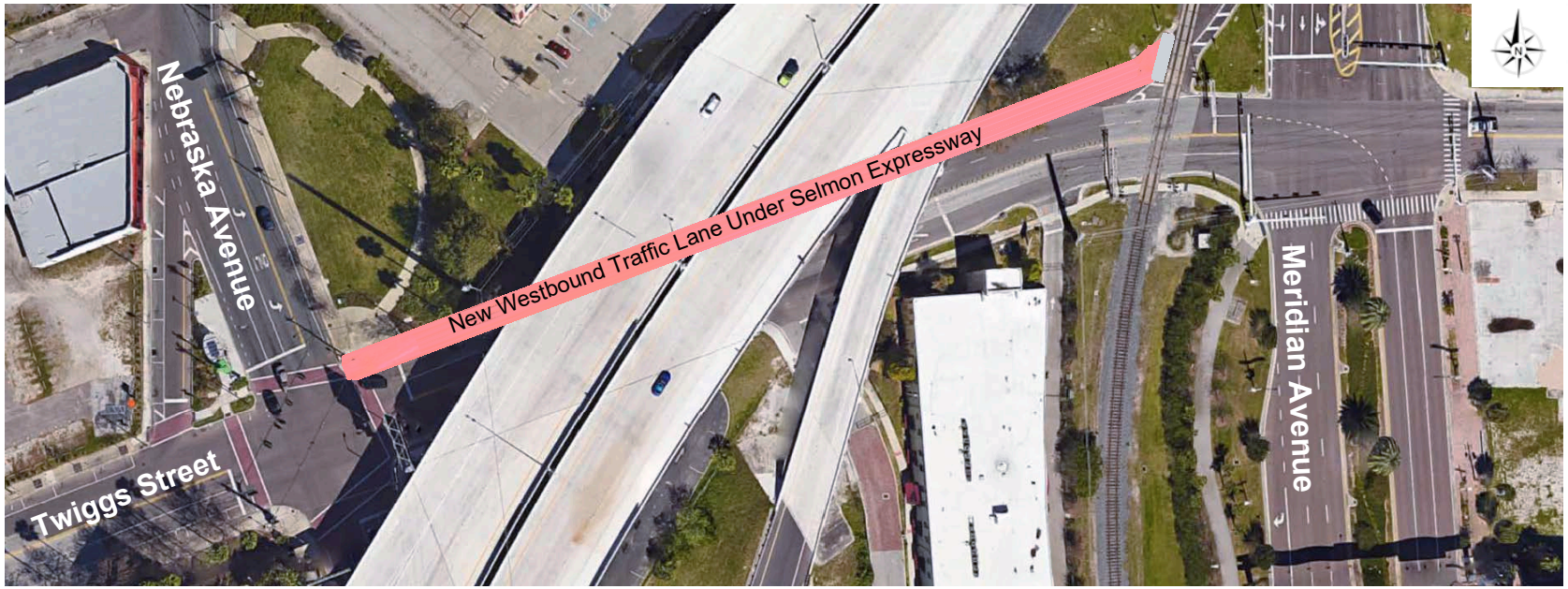
The westbound left turns from Twiggs Street at Nebraska Avenue are very low (36 vph) during the AM peak hour, but they still cause delays to the heavy westbound through traffic (937 vph) and limit use of the left through lane. Restricting this left-turn movement will open two lanes for through traffic during the highest two hours of traffic and transfer the limited number of left turns to either East Street or Jefferson Street.

3. **Install Electronic Variable Message Signs Informing Motorists when the East Access Driveway for the Twiggs Garage is Open for Entering Traffic – Recommendations Exhibits 2 & 3**

Currently westbound motorists traveling to the Twiggs Garage pass by the east entrance and contribute to the congestion at the west entrance. Also, over 95% of eastbound motorists enter at the congested west entrance because they are either not aware of the east access driveway or not sure if it is open for entering traffic. The current information signs that are provided for the Twiggs Garage only identify where the garage is located, but do not provide information about the availability of multiple entry locations.

RECOMMENDATIONS EXHIBIT 1

Twiggs Street Traffic Study



Relocate north sidewalk behind bridge columns for Selmon Expressway

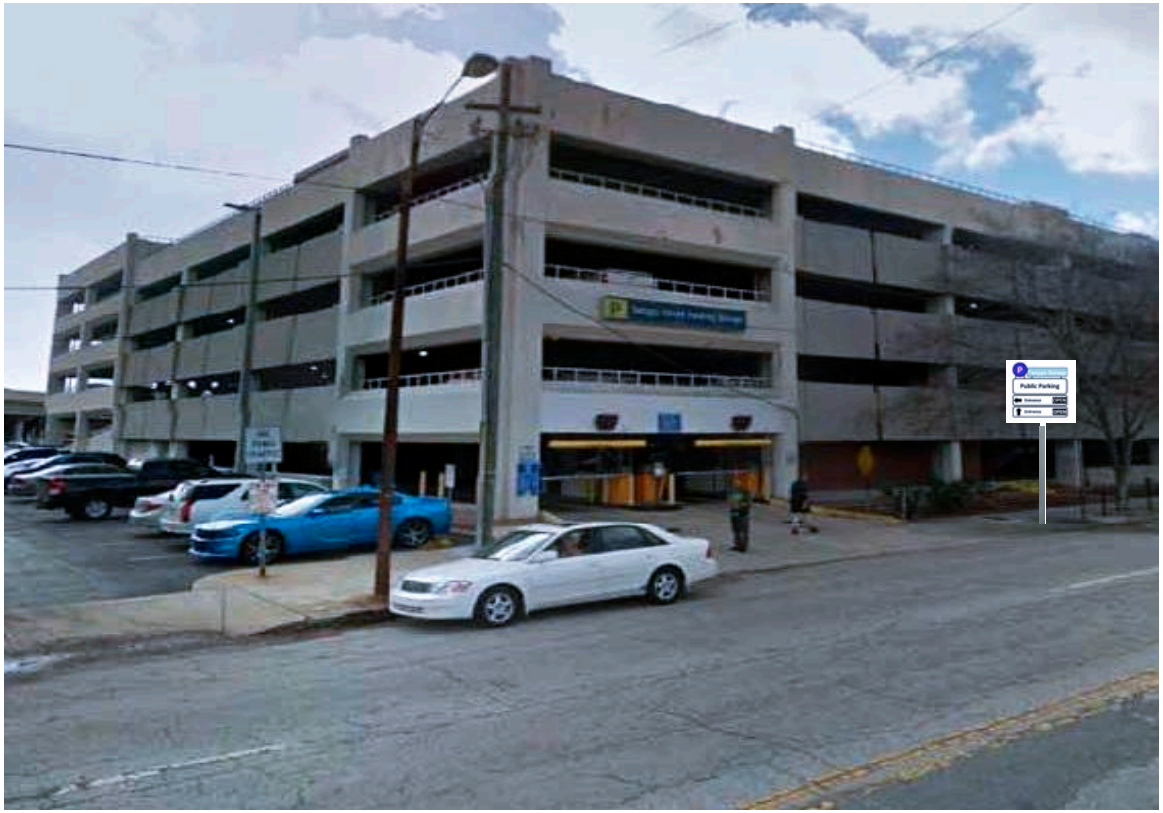
Widen Twiggs Street by 7 feet from west of railroad crossing to Nebraska Avenue

Stripe the new westbound lane as a right-turn lane at Nebraska Avenue

Maintain YIELD sign control for the southbound right turn lane at Meridian Avenue

RECOMMENDATIONS EXHIBIT 2

Twiggs Street Traffic Study

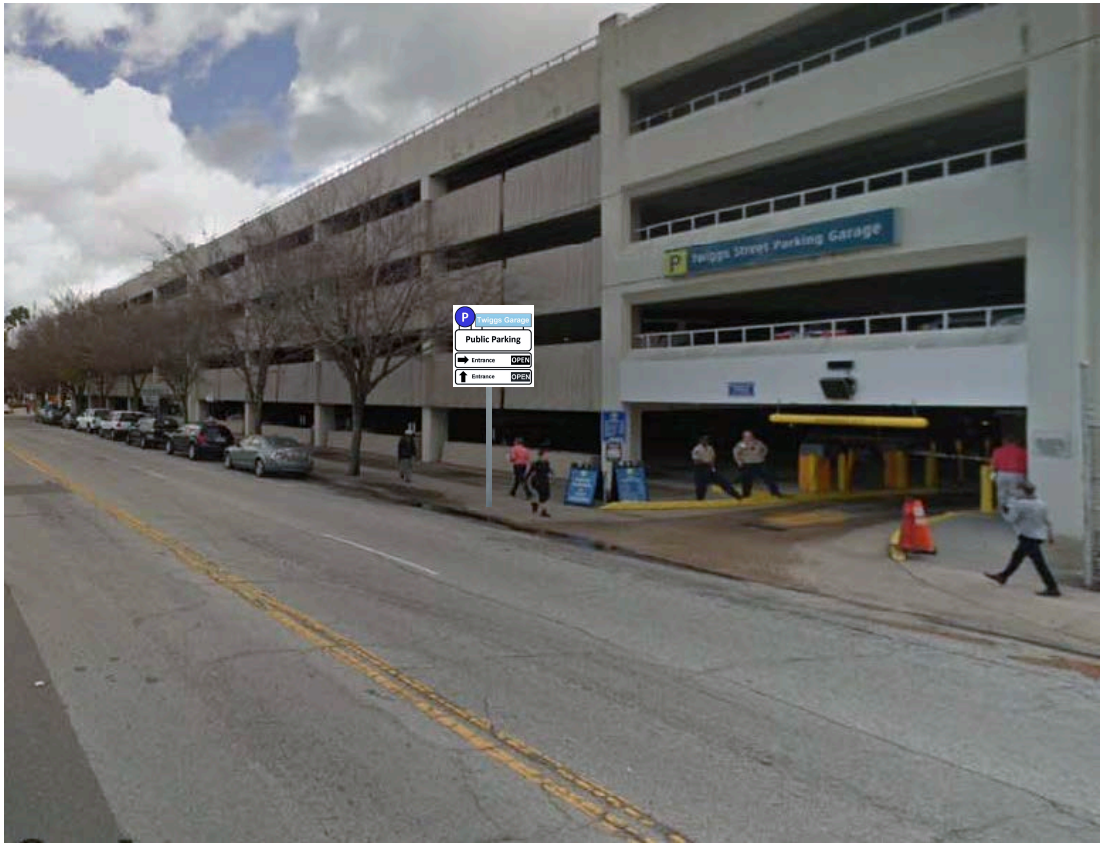


Twiggs Street Garage East Driveway Dynamic Message Sign

Install highly-visible dynamic message sign at the east access driveway for Twiggs Garage to inform motorists when the east entrance is open

RECOMMENDATIONS EXHIBIT 3

Twiggs Street Traffic Study



Twiggs Street Garage West Driveway Variable Message Sign

Install highly-visible dynamic message sign at the west access driveway for Twiggs Garage to inform motorists when the east entrance is open

Highly-visible electronic dynamic message signs (DMS) should be installed near both driveways to direct parkers to use the east entrance when it is open and available for entering vehicles. At other times the sign messages could be changed to direct motorists to the west entrance or to indicate when the garage is full.

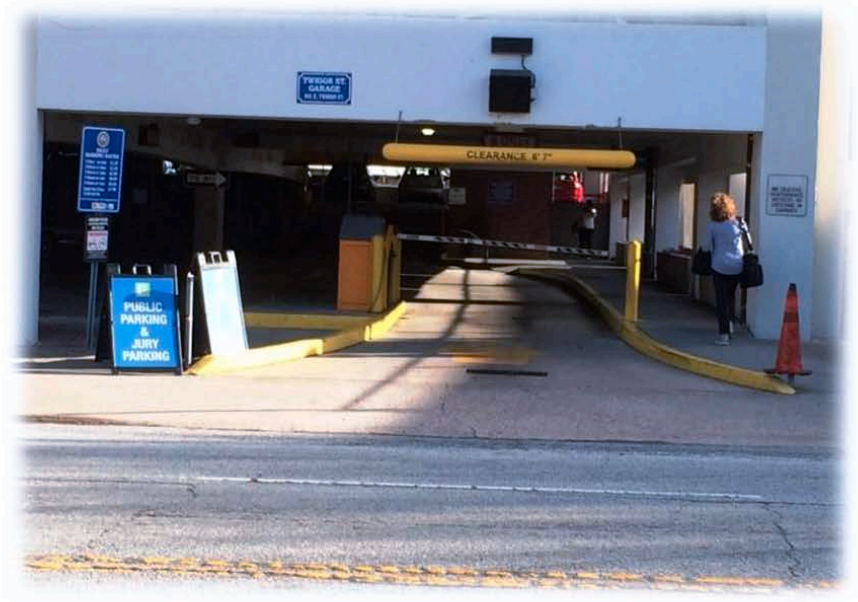
4. **Upgrade the Pedestrian Crossing with a Traffic Signal Installation – Recommendations Exhibit 4**

The current continuously flashing beacon alerts motorists of the pedestrian crosswalk location, but not of actual pedestrian crossings. Conversion to a traffic signal activated by pedestrians will improve safety when pedestrians are crossing. The crossing should be relocated to the west to achieve greater distance from the East Street intersection. This signal installation should include the addition of count-down timers, so pedestrians are aware of the time remaining for each crossing period.

This change in control of the pedestrian crosswalk will not eliminate all of the current congestion during busy crossing periods, but should make crossing conditions safer for pedestrians. During less busy crossing periods, this change in control should help traffic flow better because the continuously flashing lights are eliminated. Considering the options of maintaining the existing flashing control, upgrading to a high-intensity activated crosswalk (HAWK), upgrading to a RRFB installation, or upgrading to a traffic signal the recommendation for the traffic signal installation seems to be the most appropriate solution. The existing flashing operation appears to be less safe, a HAWK operation is not well understood and the RRFB installation would not improve traffic flow conditions. Traffic signal control will improve pedestrian safety and improve traffic flow.

5. **If possible, Construct a Second Entrance Lane at the West Access Driveway for the Twiggs Garage**

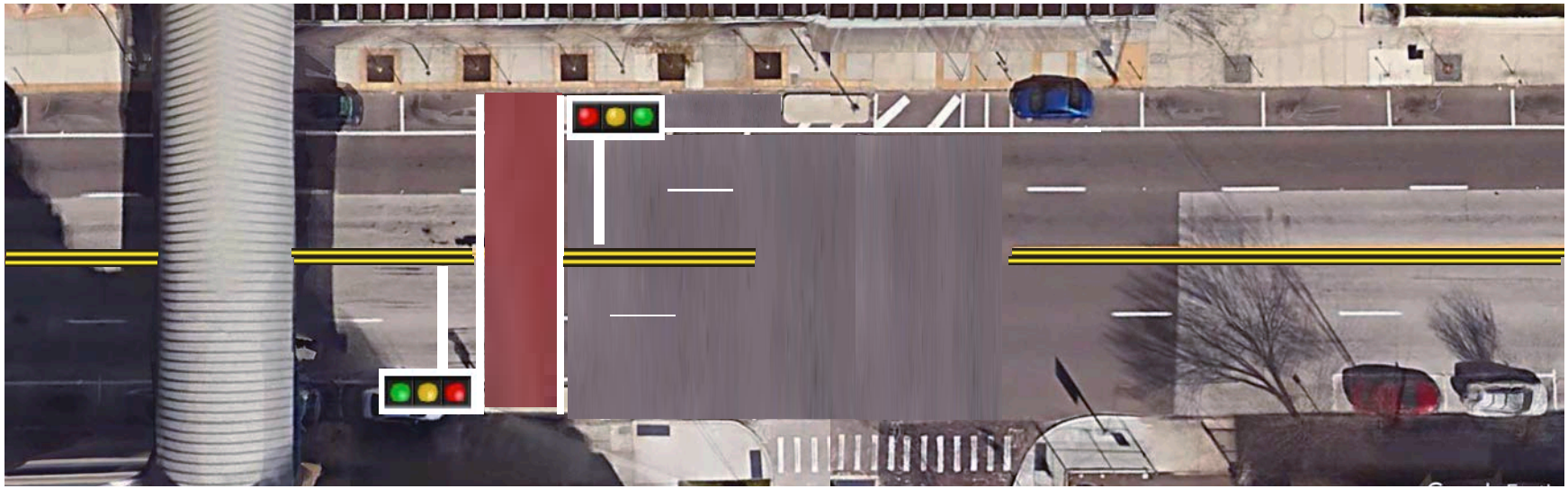
An option to explore for increasing inbound capacity at the Twiggs Street Garage is to construct a second entrance lane at the west access driveway. This opening currently accommodates a sidewalk for pedestrians, a single entrance lane and a raised island for parking control equipment. It appears that approximately 10 feet is available to add a second lane with the additional parking equipment installed on a new raised island. The two inbound lanes would need to merge to one lane at the up ramp which is possible in the distance available. Typically, two lanes with ticket dispensers can operate efficiently with one receiving lane.



West Access Driveway at Twiggs Street Garage

RECOMMENDATIONS EXHIBIT 4

Twiggs Street Traffic Study



Upgrade pedestrian crossing to a high-emphasis crosswalk with Traffic Signal control

Install ground-mounted signal heads facing eastbound traffic because of location of pedestrian bridge

Install overhead signal heads facing westbound traffic

Install countdown counters to inform pedestrians of time remaining before crossing phase ends

6. **Eliminate Eight On-Street Parking Spaces on north side of Twiggs Street to Restripe for a Westbound Left Turn Lane into the East Access Driveway for the Twiggs Street Garage – Recommendations Exhibit 5**

Another option to consider for reducing congestion on Twiggs Street in the vicinity of the Twiggs Garage involves restriping Twiggs Street for a westbound left turn lane extending from Nebraska Avenue west to the east access driveway to the Twiggs Street Garage. This lane can be achieved by eliminating approximately eight on-street parking spaces along the north curb and restriping for narrower traffic lanes. This option should be considered if the recommended electronic signs are successful in diverting more entering traffic to east access driveway during busy inbound traffic times. Currently, left turns are not a problem at the east access driveway because the volumes are low.

7. **Relocate the Two Access Driveways to the Surface Parking Lot on the North Side of Twiggs Street – Recommendations Exhibit 6**

The privately owned surface parking lot on the north side of Twiggs Street between East Street and Nebraska Avenue has three access driveways. The locations and operations of these driveways conflict with the driveways to the Twiggs Street Garage. The parking lot access driveways are offset to the east of the Twiggs garage driveways which results in conflicting overlaps for left turning traffic. While not a major problem, these left turn overlaps cause blockage of the inside through lanes on Twiggs Street. Ideally, the surface parking lot should be served by one inbound driveway and one outbound driveway located to align near the middle of the Twiggs Street Garage, separated from the driveways serving the Twiggs Street Garage. Assuming the ideal location for the surface lot driveways may not be possible, an alternative access plan was developed as shown on Recommendations Exhibit 6. These driveway locations offer a more practical solution for the congestion related to the left turns.

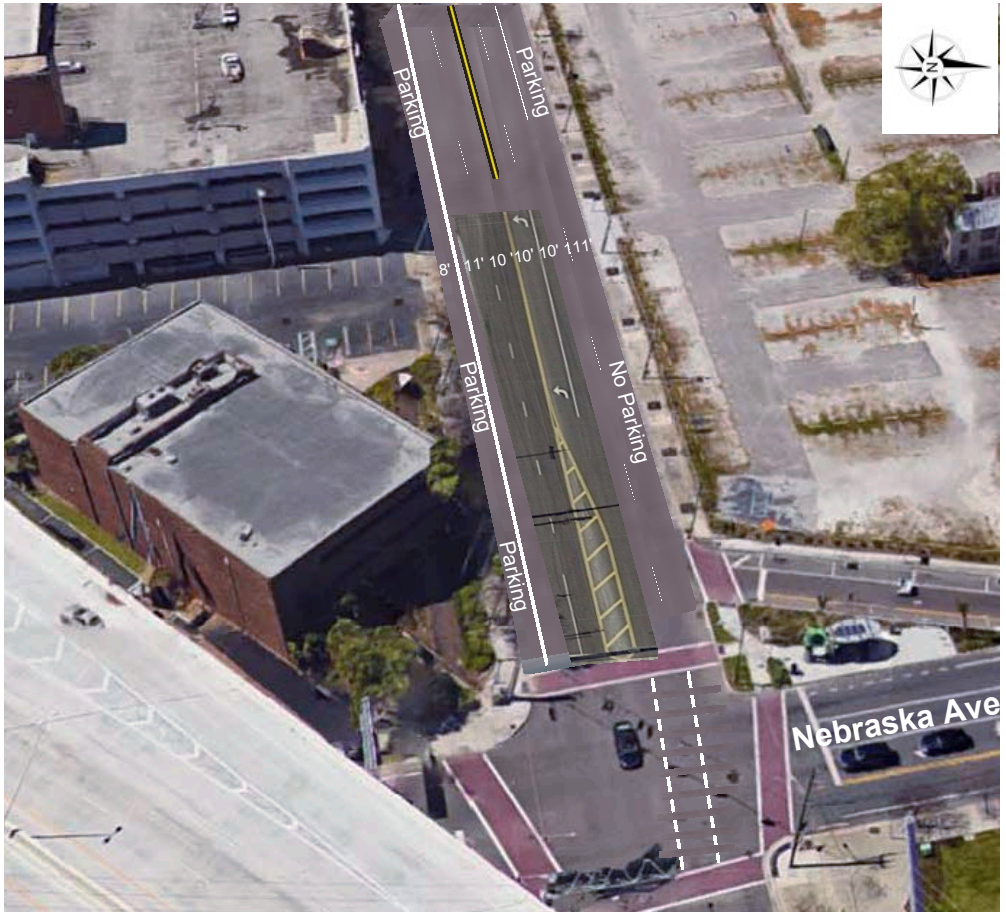
An additional recommendation to assist exiting traffic from the Twiggs Street Garage during late afternoon periods is to modify the signal timing at the Nebraska Avenue intersection during this period. Increasing the percent of green time for Twiggs Street traffic at the Nebraska Avenue intersection should reduce the length of eastbound vehicle queues on Twiggs Street. Currently eastbound traffic on Twiggs Street queues back from the Nebraska Avenue intersection and either blocks the east driveway or significantly reduces visibility for exiting traffic (making left turns) to see westbound traffic on Twiggs Street. With shorter queues of eastbound vehicles, it should be easier and safer to exit from the Twiggs Street Garage.

RECOMMENDATIONS EXHIBIT 5

Twiggs Street Traffic Study

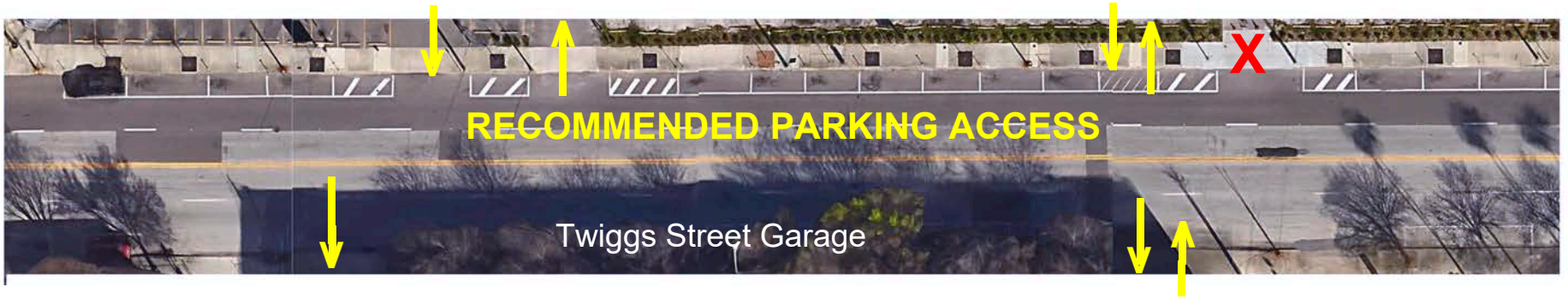
Restripe Twiggs Street for five traffic lanes and one parking lane between Nebraska Avenue and the East Twiggs Street Garage driveway by removing eight parking spaces on the north side of Twiggs Street

The cross section would consist of one parking lane 8 feet wide on south curb, two outside traffic lanes that are 11 feet wide and a westbound center left turn 10 feet wide, totaling 60 feet



RECOMMENDATIONS EXHIBIT 6

Twiggs Street Traffic Study



Request a change in the access driveway operations for the surface parking lot on the north side of Twiggs Street

Convert the two west driveways to one-way operation to obtain more seperation for inbound left turn movements

Relocate (or close) the east driveway to align with the Twiggs Street Garage east driveway

APPENDIX A

Traffic Counts

Study Name Jefferson St @ Twiggs St
Start Date 11/16/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Road
Classification Totals

	Jefferson St Southbound				Twiggs St Westbound				Jefferson St Northbound				Twiggs St Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	0	4	4	0	16	227	4	0	3	54	7	0	4	54	0	0
7:15 AM	2	1	2	0	21	230	6	0	3	68	6	0	0	50	4	0
7:30 AM	3	4	3	0	26	190	6	0	12	96	5	0	1	66	3	0
7:45 AM	5	4	5	0	25	210	5	0	13	77	9	0	4	57	2	0
8:00 AM	4	7	7	0	27	166	6	0	14	76	10	0	4	68	4	0
8:15 AM	1	9	9	0	29	173	5	0	15	53	7	0	4	92	3	0
8:30 AM	0	1	5	0	30	171	6	0	14	71	5	0	7	97	3	0
8:45 AM	0	4	6	0	18	155	5	0	19	68	7	0	4	67	5	0
4:00 PM	1	7	16	0	30	69	8	0	10	114	9	0	3	156	9	0
4:15 PM	0	14	21	0	10	54	6	0	10	104	7	0	2	126	4	0
4:30 PM	2	9	16	0	18	51	6	0	17	122	9	0	2	160	12	0
4:45 PM	1	4	14	0	15	59	2	0	18	77	7	0	4	164	4	0
5:00 PM	1	16	14	0	22	48	6	0	16	136	7	0	2	159	2	0
5:15 PM	2	13	17	0	7	55	2	0	15	108	7	0	2	189	5	0
5:30 PM	1	12	25	0	8	61	7	0	12	78	7	0	2	174	4	0
5:45 PM	2	7	24	1	11	65	3	0	9	80	7	0	3	158	9	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Name Jefferson St @ Twiggs St
Start Date 11/16/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Crosswalk
Classification Pedestrians

	Jefferson St Southbound			Twiggs St Westbound			Jefferson St Northbound			Twiggs St Eastbound		
Start Time	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combined
7:00 AM	2	6		1	6		11	2		0	1	
7:15 AM	1	15		5	1		12	0		6	2	
7:30 AM	3	13		5	4		12	1		7	7	
7:45 AM	11	26		9	13		27	11		17	13	
8:00 AM	16	32		8	25		18	8		4	4	
8:15 AM	22	25		10	23		19	15		3	10	
8:30 AM	35	9		5	22		16	11		11	9	
8:45 AM	19	9		9	5		23	3		8	4	
4:00 PM	26	14		22	5		7	20		12	9	
4:15 PM	17	10		11	11		5	13		6	5	
4:30 PM	12	13		2	9		1	17		13	5	
4:45 PM	20	10		6	8		2	19		7	4	
5:00 PM	39	12		25	13		5	37		16	24	
5:15 PM	13	6		8	6		3	16		1	7	
5:30 PM	9	10		15	6		8	17		3	8	
5:45 PM	6	6		13	2		5	6		0	7	
6:00 PM	0	0		0	0		0	0		0	0	

City of Tampa (FL)
306 East Jackson Street
PO Box 2000
Tampa, Florida, United States 33602
(813) 274-8105

Count Name: N E St & Crosswalk
Site Code:
Start Date: 06/27/2017

Turning Movement Data

Start Time	E Twiggs St Westbound				N E Street Northbound				E Twiggs St Eastbound					
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
7:00 AM	206	1	0	207	4	0	15	4	8	40	0	20	48	259
7:15 AM	230	8	0	238	10	0	31	10	4	56	0	27	60	308
7:30 AM	184	3	0	187	9	2	70	11	5	71	0	56	76	274
7:45 AM	177	7	0	184	10	0	100	10	8	83	0	83	91	285
Hourly Total	797	19	0	816	33	2	216	35	25	250	0	186	275	1126
8:00 AM	192	4	0	196	15	0	123	15	7	87	0	108	94	305
8:15 AM	175	4	0	179	15	0	131	15	8	95	0	122	103	297
8:30 AM	205	5	0	210	12	0	131	12	6	94	0	101	100	322
8:45 AM	139	2	0	141	5	0	122	5	3	88	0	114	91	237
Hourly Total	711	15	0	726	47	0	507	47	24	364	0	445	388	1161
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	72	2	3	74	6	1	66	7	4	62	0	48	66	147
3:15 PM	76	0	0	76	4	1	51	5	1	55	0	53	56	137
3:30 PM	83	4	0	87	8	0	41	8	0	93	0	38	93	188
3:45 PM	82	1	3	83	12	1	55	13	2	93	0	62	95	191
Hourly Total	313	7	6	320	30	3	213	33	7	303	0	201	310	663
4:00 PM	95	2	0	97	10	1	56	11	4	122	0	37	126	234
4:15 PM	67	1	0	68	7	4	47	11	4	113	0	50	117	196
4:30 PM	63	3	2	66	14	2	40	16	3	153	0	35	156	238
4:45 PM	63	3	0	66	13	1	39	14	4	156	1	42	161	241
Hourly Total	288	9	2	297	44	8	182	52	15	544	1	164	560	909
5:00 PM	73	3	0	76	16	2	83	18	0	168	0	59	168	262
5:15 PM	74	1	0	75	17	2	35	19	0	181	0	23	181	275
5:30 PM	52	2	0	54	11	4	26	15	1	170	1	16	172	241
5:45 PM	61	2	0	63	9	2	16	11	2	141	0	7	143	217
Hourly Total	260	8	0	268	53	10	160	63	3	660	1	105	664	995
Grand Total	2369	58	8	2427	207	23	1278	230	74	2121	2	1101	2197	4854
Approach %	97.6	2.4	-	-	90.0	10.0	-	-	3.4	96.5	0.1	-	-	-
Total %	48.8	1.2	-	50.0	4.3	0.5	-	4.7	1.5	43.7	0.0	-	45.3	-
All Vehicles (no classification)	2369	58	-	2427	207	23	-	230	74	2121	2	-	2197	4854
% All Vehicles (no classification)	100.0	100.0	-	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	100.0
Bicycles on Crosswalk	-	-	0	-	-	-	4	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	0.0	-	-	-	0.3	-	-	-	-	0.1	-	-
Pedestrians	-	-	8	-	-	-	1274	-	-	-	-	1100	-	-
% Pedestrians	-	-	100.0	-	-	-	99.7	-	-	-	-	99.9	-	-

City of Tampa (FL)
306 East Jackson Street
PO Box 2000
Tampa, Florida, United States 33602
(813) 274-8105

Count Name: Twigg West Entrance
Site Code:
Start Date: 06/27/2017

Turning Movement Data

Start Time	E Twiggs St Westbound			West Garage Ent/Ex Northbound			E Twiggs St Eastbound				
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
7:00 AM	214	3	217	0	0	0	13	26	0	39	256
7:15 AM	244	8	252	0	0	0	21	34	0	55	307
7:30 AM	194	7	201	0	0	0	38	35	0	73	274
7:45 AM	194	14	208	0	0	0	33	30	0	63	271
Hourly Total	846	32	878	0	0	0	105	125	0	230	1108
8:00 AM	201	12	213	0	0	0	55	49	0	104	317
8:15 AM	187	13	200	0	0	0	66	32	0	98	298
8:30 AM	187	14	201	0	0	0	54	47	1	102	303
8:45 AM	144	16	160	0	0	0	39	49	0	88	248
Hourly Total	719	55	774	0	0	0	214	177	1	392	1166
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	68	2	70	1	0	1	10	52	0	62	133
3:15 PM	75	0	75	0	0	0	3	61	0	64	139
3:30 PM	86	4	90	0	0	0	4	103	0	107	197
3:45 PM	80	0	80	0	0	0	4	101	1	106	186
Hourly Total	309	6	315	1	0	1	21	317	1	339	655
4:00 PM	96	2	98	0	0	0	1	126	0	127	225
4:15 PM	65	1	66	0	0	0	0	132	0	132	198
4:30 PM	62	0	62	0	0	0	1	160	0	161	223
4:45 PM	59	2	61	0	0	0	1	166	0	167	228
Hourly Total	282	5	287	0	0	0	3	584	0	587	874
5:00 PM	76	2	78	0	0	0	2	185	0	187	265
5:15 PM	77	0	77	0	0	0	2	191	0	193	270
5:30 PM	53	0	53	0	0	0	3	189	0	192	245
5:45 PM	64	1	65	0	0	0	1	156	0	157	222
Hourly Total	270	3	273	0	0	0	8	721	0	729	1002
Grand Total	2426	101	2527	1	0	1	351	1924	2	2277	4805
Approach %	96.0	4.0	-	100.0	0.0	-	15.4	84.5	0.1	-	-
Total %	50.5	2.1	52.6	0.0	0.0	0.0	7.3	40.0	0.0	47.4	-
All Vehicles (no classification)	2426	101	2527	1	0	1	351	1924	2	2277	4805
% All Vehicles (no classification)	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	100.0

City of Tampa (FL)
306 East Jackson Street
PO Box 2000
Tampa, Florida, United States 33602
(813) 274-8105

Count Name: Twiggs East Ent
Site Code:
Start Date: 06/27/2017

Turning Movement Data

Start Time	E Twiggs St Westbound			Garage Ent Northbound			E Twiggs St Eastbound				
	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
7:00 AM	227	1	228	0	0	0	0	29	0	29	257
7:15 AM	230	14	244	0	0	0	0	30	0	30	274
7:30 AM	209	12	221	1	0	1	3	28	0	31	253
7:45 AM	216	10	226	1	1	2	1	26	1	28	256
Hourly Total	882	37	919	2	1	3	4	113	1	118	1040
8:00 AM	239	10	249	1	2	3	1	40	1	42	294
8:15 AM	199	19	218	2	1	3	2	32	0	34	255
8:30 AM	187	18	205	3	0	3	1	40	0	41	249
8:45 AM	176	8	184	7	1	8	2	43	1	46	238
Hourly Total	801	55	856	13	4	17	6	155	2	163	1036
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	52	0	52	21	18	39	0	58	1	59	150
3:15 PM	57	0	57	13	13	26	0	68	0	68	151
3:30 PM	60	0	60	12	17	29	0	99	0	99	188
3:45 PM	67	1	68	15	15	30	0	99	1	100	198
Hourly Total	236	1	237	61	63	124	0	324	2	326	687
4:00 PM	67	0	67	16	23	39	0	135	0	135	241
4:15 PM	61	0	61	13	11	24	0	124	0	124	209
4:30 PM	36	0	36	24	17	41	0	181	0	181	258
4:45 PM	54	0	54	16	5	21	0	147	0	147	222
Hourly Total	218	0	218	69	56	125	0	587	0	587	930
5:00 PM	62	0	62	32	14	46	0	202	0	202	310
5:15 PM	60	0	60	18	13	31	0	189	0	189	280
5:30 PM	52	0	52	12	5	17	0	186	0	186	255
5:45 PM	50	0	50	6	7	13	0	153	1	154	217
Hourly Total	224	0	224	68	39	107	0	730	1	731	1062
Grand Total	2361	93	2454	213	163	376	10	1909	6	1925	4755
Approach %	96.2	3.8	-	56.6	43.4	-	0.5	99.2	0.3	-	-
Total %	49.7	2.0	51.6	4.5	3.4	7.9	0.2	40.1	0.1	40.5	-
All Vehicles (no classification)	2361	93	2454	213	163	376	10	1909	6	1925	4755
% All Vehicles (no classification)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Study Name Nebraska Ave @ Twiggs St
Start Date 11/17/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Road
Classification Totals

	Nebraska Ave Southbound				Twiggs St Westbound				Nebraska Ave Northbound				Twiggs St Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	13	58	18	0	107	239	5	0	6	33	1	0	6	42	4	0
7:15 AM	24	57	31	0	132	262	11	0	7	37	5	0	11	30	3	0
7:30 AM	27	79	23	0	141	248	7	0	13	50	10	0	9	35	2	0
7:45 AM	19	58	28	0	146	216	13	0	14	58	12	0	11	26	3	0
8:00 AM	27	46	23	0	153	219	7	0	23	51	10	0	4	44	3	0
8:15 AM	40	49	44	0	159	187	0	0	20	59	15	0	6	53	5	0
8:30 AM	27	31	17	0	166	203	5	0	2	48	3	0	11	22	7	0
8:45 AM	30	41	20	0	118	154	3	0	2	34	4	0	12	23	3	0
9:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:00 PM	20	69	65	0	25	36	1	0	8	61	7	0	23	146	26	1
4:15 PM	12	59	72	0	22	42	3	0	12	46	0	0	18	133	30	0
4:30 PM	19	86	97	0	18	35	6	0	11	80	1	0	22	138	21	0
4:45 PM	13	83	74	0	10	45	4	0	8	42	1	0	23	167	18	0
5:00 PM	15	89	92	0	15	30	2	0	8	53	3	0	35	160	32	0
5:15 PM	14	62	92	0	14	49	2	0	4	40	0	0	24	177	26	0
5:30 PM	19	71	89	0	15	40	0	0	6	37	1	0	15	153	14	0
5:45 PM	14	63	63	0	10	33	1	0	6	35	0	0	11	141	12	0
6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Study Name Nebraska Ave @ Twiggs St
Start Date 11/17/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Crosswalk
Classification Pedestrians

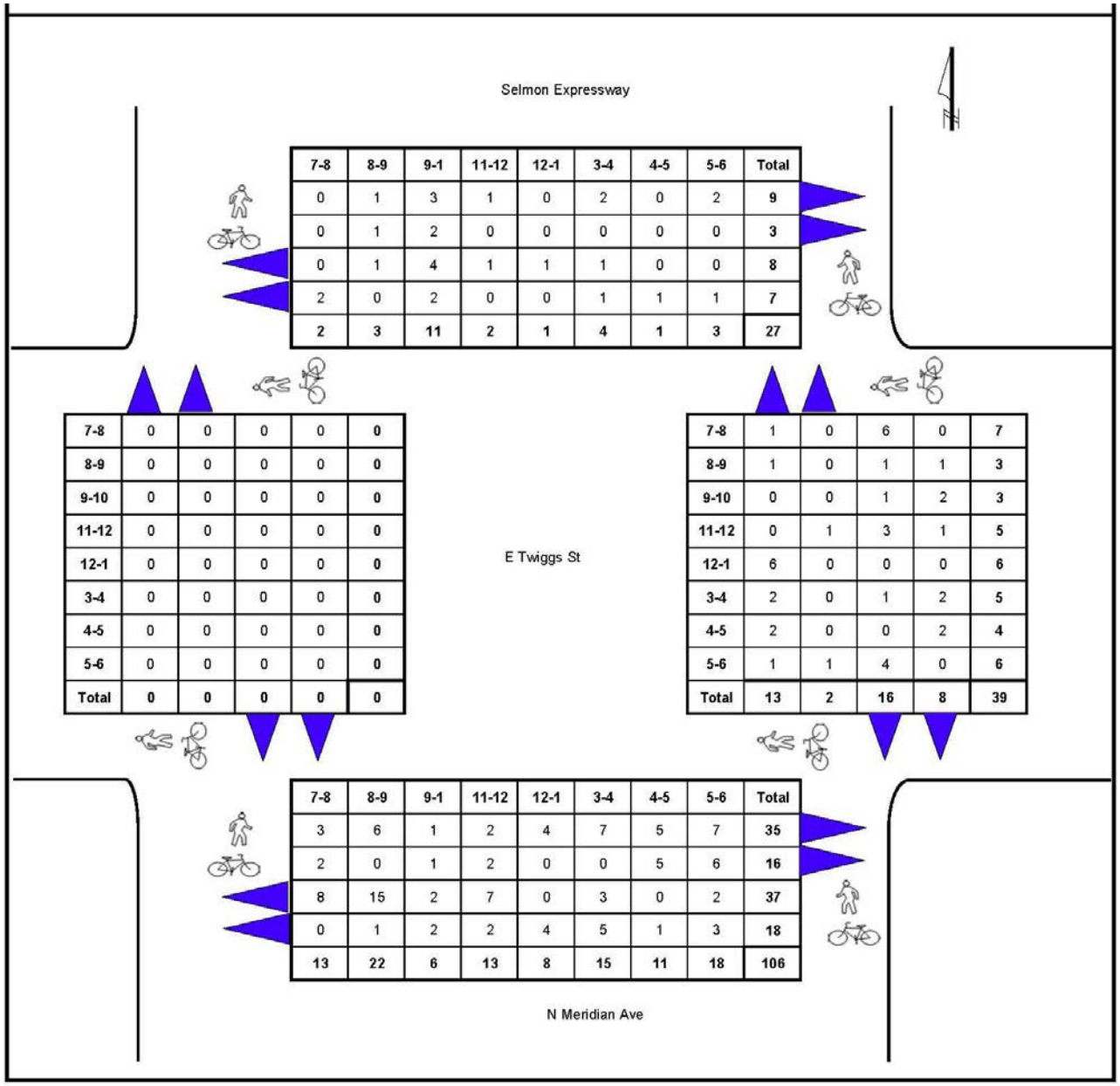
	Nebraska Ave Southbound			Twiggs St Westbound			Nebraska Ave Northbound			Twiggs St Eastbound		
Start Time	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combined
7:00 AM	0	2		0	0		2	0		0	1	
7:15 AM	1	11		0	2		0	1		0	0	
7:30 AM	2	5		1	1		5	2		1	0	
7:45 AM	0	10		3	2		3	0		0	1	
8:00 AM	2	8		0	1		7	4		0	0	
8:15 AM	0	2		0	0		2	3		0	0	
8:30 AM	1	4		0	2		0	1		0	2	
8:45 AM	0	3		0	3		0	2		0	0	
9:00 AM	0	0		0	0		0	0		0	0	
4:00 PM	3	1		0	1		0	6		2	0	
4:15 PM	4	0		0	0		1	1		0	0	
4:30 PM	4	0		0	0		0	2		0	0	
4:45 PM	2	0		0	0		0	1		1	0	
5:00 PM	14	2		0	0		0	3		1	1	
5:15 PM	6	0		1	0		0	1		2	0	
5:30 PM	2	0		2	2		0	0		2	1	
5:45 PM	5	0		1	1		1	2		2	0	
6:00 PM	0	0		0	0		0	0		0	0	

TURNING MOVEMENT COUNT: 10/15/15
EAST/WEST ST: E Twiggs St
N Meridian Ave @ E Twiggs St
ALL VEHICLES

TIME: 7am-6pm
NORTH/SOUTH ST: N Meridian Ave
COUNTED BY: LDP

START	NORTHBOUND					SOUTHBOUND						EASTBOUND					WESTBOUND						GRAND
TIME	LEFT	THRU	RIGHT	U-TURN	TOTAL	LEFT	THRU	RIGHT	U-TURN	TOTAL	NS TOTAL	LEFT	THRU	RIGHT	U-TURN	TOTAL	LEFT	THRU	RIGHT	U-TURN	TOTAL	EW TOTAL	TOTAL
7:00	5	0	8	1	14	9	363	340	0	712	726	0	51	16	0	67	9	46	0	0	55	122	848
7:15	12	0	11	0	23	23	533	342	0	898	921	0	36	22	0	58	8	107	0	0	115	173	1,094
7:30	20	0	16	0	36	40	353	509	0	902	938	0	78	17	0	95	11	103	0	0	114	209	1,147
7:45	23	0	16	1	40	47	425	416	0	888	928	0	90	15	0	105	19	84	0	0	103	208	1,136
Total	**60**	**0**	**51**	**2**	**113**	**119**	**1,674**	**1,607**	**0**	**3,400**	**3,513**	**0**	**255**	**70**	**0**	**325**	**47**	**340**	**0**	**0**	**387**	**712**	**4,225**
8:00	23	0	14	0	37	38	361	335	0	734	771	0	126	55	0	181	20	150	0	0	170	351	1,122
8:15	20	0	7	1	28	44	339	385	0	768	796	0	137	52	0	189	14	107	0	0	121	310	1,106
8:30	21	0	15	0	36	23	229	348	0	600	636	0	77	29	0	106	11	73	0	0	84	190	826
8:45	7	0	8	1	16	6	197	154	0	357	373	0	44	15	0	59	9	99	0	0	108	167	540
Total	**71**	**0**	**44**	**2**	**117**	**111**	**1,126**	**1,222**	**0**	**2,459**	**2,576**	**0**	**384**	**151**	**0**	**535**	**54**	**429**	**0**	**0**	**483**	**1,018**	**3,594**
9:00	10	0	11	2	23	6	136	105	0	247	270	0	44	5	0	49	12	32	0	0	44	93	363
9:15	4	0	7	0	11	3	124	45	0	172	183	0	53	9	0	62	13	33	0	0	46	108	291
9:30	2	0	10	0	12	0	100	44	0	144	156	0	43	9	0	52	8	53	0	0	61	113	269
9:45	8	0	12	1	21	0	64	39	0	103	124	0	54	9	0	63	15	26	0	0	41	104	228
Total	**24**	**0**	**40**	**3**	**67**	**9**	**424**	**233**	**0**	**666**	**733**	**0**	**194**	**32**	**0**	**226**	**48**	**144**	**0**	**0**	**192**	**418**	**1,151**
11:00	7	0	9	1	17	0	27	3	0	30	47	0	57	0	0	57	6	32	0	0	38	95	142
11:15	1	0	16	1	18	0	47	14	0	61	79	0	59	15	0	74	18	20	0	0	38	112	191
11:30	7	0	14	0	21	1	36	7	0	44	65	0	46	13	0	59	9	39	0	0	48	107	172
11:45	7	0	14	0	21	2	26	5	0	33	54	0	82	10	0	92	11	15	0	0	26	118	172
Total	**22**	**0**	**53**	**2**	**77**	**3**	**136**	**29**	**0**	**168**	**245**	**0**	**244**	**38**	**0**	**282**	**44**	**106**	**0**	**0**	**150**	**432**	**677**
12:00	17	0	23	0	40	0	14	12	0	26	66	0	63	8	0	71	9	37	0	0	46	117	183
12:15	5	0	14	2	21	0	20	6	0	26	47	0	48	13	0	61	13	36	0	0	49	110	157
12:30	9	0	9	0	18	0	8	6	0	14	32	0	49	11	0	60	7	47	0	0	54	114	146
12:45	3	0	14	2	19	0	9	0	0	9	28	8	61	12	0	81	6	34	0	1	41	122	150
Total	**34**	**0**	**60**	**4**	**98**	**0**	**51**	**24**	**0**	**75**	**173**	**8**	**221**	**44**	**0**	**273**	**35**	**154**	**0**	**1**	**190**	**463**	**636**
15:00	6	39	16	1	62	0	0	0	0	0	62	18	66	41	2	127	6	33	4	0	43	170	232
15:15	5	61	27	0	93	0	0	0	0	0	93	34	79	21	0	134	11	60	3	0	74	208	301
15:30	8	75	21	1	105	0	0	0	0	0	105	39	99	59	1	198	9	70	8	0	87	285	390
15:45	4	93	34	0	131	0	0	0	0	0	131	49	72	37	2	160	7	49	5	0	61	221	352
Total	**23**	**268**	**98**	**2**	**391**	**0**	**0**	**0**	**0**	**0**	**391**	**140**	**316**	**158**	**5**	**619**	**33**	**212**	**20**	**0**	**265**	**884**	**1,275**
16:00	6	103	21	1	131	0	0	0	0	0	131	82	85	27	1	195	12	67	17	0	96	291	422
16:15	5	108	24	0	137	0	0	0	0	0	137	78	112	28	0	218	12	51	9	0	72	290	427
16:30	8	178	20	0	206	0	0	0	0	0	206	97	117	30	0	244	12	41	9	0	62	306	512
16:45	8	191	20	1	220	0	0	0	0	0	220	102	166	28	0	296	3	49	9	0	61	357	577
Total	**27**	**580**	**85**	**2**	**694**	**0**	**0**	**0**	**0**	**0**	**694**	**359**	**480**	**113**	**1**	**953**	**39**	**208**	**44**	**0**	**291**	**1,244**	**1,938**
17:00	8	255	39	0	302	0	0	0	0	0	302	142	144	41	1	328	7	54	17	0	78	406	708
17:15	11	254	38	0	303	0	0	0	0	0	303	135	179	36	0	350	10	40	17	0	67	417	720
17:30	14	160	33	0	207	0	0	0	0	0	207	125	99	53	0	277	8	36	11	0	55	332	539
17:45	9	150	41	2	202	0	0	0	0	0	202	109	128	42	0	279	11	37	18	0	66	345	547
Total	**42**	**819**	**151**	**2**	**1,014**	**0**	**0**	**0**	**0**	**0**	**1,014**	**511**	**550**	**172**	**1**	**1,234**	**36**	**167**	**63**	**0**	**266**	**1,500**	**2,514**

Twiggs Street and Meridian Avenue – Pedestrian / Bicycle Count



7-8	8-9	9-1	11-12	12-1	3-4	4-5	5-6	Total
0	1	3	1	0	2	0	2	9
0	1	2	0	0	0	0	0	3
0	1	4	1	1	1	0	0	8
2	0	2	0	0	1	1	1	7
2	3	11	2	1	4	1	3	27

7-8	0	0	0	0	0
8-9	0	0	0	0	0
9-10	0	0	0	0	0
11-12	0	0	0	0	0
12-1	0	0	0	0	0
3-4	0	0	0	0	0
4-5	0	0	0	0	0
5-6	0	0	0	0	0
Total	0	0	0	0	0

7-8	1	0	6	0	7
8-9	1	0	1	1	3
9-10	0	0	1	2	3
11-12	0	1	3	1	5
12-1	6	0	0	0	6
3-4	2	0	1	2	5
4-5	2	0	0	2	4
5-6	1	1	4	0	6
Total	13	2	16	8	39

7-8	8-9	9-1	11-12	12-1	3-4	4-5	5-6	Total
3	6	1	2	4	7	5	7	35
2	0	1	2	0	0	5	6	16
8	15	2	7	0	3	0	2	37
0	1	2	2	4	5	1	3	18
13	22	6	13	8	15	11	18	106

Study Name Jefferson St @ Kennedy Blvd
Start Date 11/16/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Road
Classification Totals

	Jefferson St Southbound				Kennedy Blvd Westbound				Jefferson St Northbound				Kennedy Blvd Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	5	5		0	27	555	30			38	25	0	0		0	0
7:15 AM	0	3		0	29	504	38			59	36	0	0		0	0
7:30 AM	5	3		0	41	538	64			55	36	0	0		0	0
7:45 AM	5	4		0	53	492	60			60	28	0	0		0	0
8:00 AM	3	8		0	43	513	38			52	19	0	0		0	0
8:15 AM	7	8		0	36	543	53			37	13	0	0		0	0
8:30 AM	4	6		0	43	503	63			46	9	0	0		0	0
8:45 AM	3	10		0	47	505	39			40	9	0	0		0	0
9:00 AM	0	0		0	0	3	0			0	0	0	0		0	0
4:00 PM	8	18		0	28	253	33			111	30	0	0		0	0
4:15 PM	4	13		0	34	289	37			80	16	0	0		0	0
4:30 PM	5	14		0	36	216	33			113	22	0	0		0	0
4:45 PM	3	10		0	27	284	38			78	27	0	0		0	0
5:00 PM	10	15		0	22	310	47			122	28	0	0		0	0
5:15 PM	6	11		0	26	306	55			110	39	0	0		0	0
5:30 PM	6	13		0	20	314	50			70	20	0	0		0	0
5:45 PM	3	10		0	18	308	36			70	20	0	0		0	0
6:00 PM	0	0		0	0	0	0			0	0	0	0		0	0

Study Name Jefferson St @ Kennedy Blvd
Start Date 11/16/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Crosswalk
Classification Pedestrians

	Jefferson St Southbound			Kennedy Blvd Westbound			Jefferson St Northbound			Kennedy Blvd Eastbound		
Start Time	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combined
7:00 AM	4	4		0	3		3	4		4	3	
7:15 AM	5	5		0	8		3	7		12	1	
7:30 AM	7	1		4	17		10	8		6	0	
7:45 AM	13	7		4	27		8	7		24	1	
8:00 AM	6	4		3	17		10	5		16	0	
8:15 AM	6	8		1	19		7	2		25	0	
8:30 AM	10	8		1	23		5	4		17	0	
8:45 AM	9	3		4	13		4	1		9	0	
9:00 AM	0	0		0	0		0	0		0	0	
4:00 PM	11	7		16	3		3	1		4	9	
4:15 PM	4	4		2	2		2	2		1	3	
4:30 PM	5	4		2	4		1	7		4	13	
4:45 PM	8	4		3	0		0	3		2	10	
5:00 PM	15	12		68	0		15	4		5	39	
5:15 PM	2	8		9	2		0	3		0	9	
5:30 PM	2	1		4	1		0	0		0	7	
5:45 PM	4	2		8	0		0	1		2	6	
6:00 PM	0	0		0	0		0	0		0	0	

Study Name Nebraska Ave @ Kennedy Blvd
Start Date 11/15/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Road
Classification Totals

	Nebraska Ave Southbound				Kennedy Blvd Westbound				Nebraska Ave Northbound				Kennedy Blvd Eastbound			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn
7:00 AM	46	0	0	0	34	435	0		28	0	0	0	0	0	0	
7:15 AM	64	0	0	0	65	454	0		37	6	0	0	0	0	0	
7:30 AM	41	0	0	0	72	447	0		39	5	0	0	0	0	0	
7:45 AM	61	0	0	0	63	444	0		43	4	0	0	0	0	0	
8:00 AM	41	0	0	0	96	419	0		29	2	0	0	0	0	0	
8:15 AM	42	0	0	0	63	416	0		30	1	0	0	0	0	0	
8:30 AM	41	0	0	0	46	375	0		21	2	0	0	0	0	0	
8:45 AM	31	0	0	0	32	318	0		29	3	0	0	0	0	0	
9:00 AM	0	0	0	0	0	0	0		0	0	0	0	0	0	0	
4:00 PM	37	0	0	0	22	105	0		53	4	0	0	0	0	0	
4:15 PM	30	0	0	0	23	117	0		67	10	0	0	0	0	0	
4:30 PM	46	0	0	0	22	123	0		70	4	0	0	0	0	0	
4:45 PM	46	0	0	0	22	113	0		72	1	0	0	0	0	0	
5:00 PM	33	0	0	0	28	175	0		79	2	0	0	0	0	0	
5:15 PM	49	0	0	0	23	142	0		83	1	0	0	0	0	0	
5:30 PM	22	0	0	0	26	166	0		46	1	0	0	0	0	0	
5:45 PM	24	0	0	0	20	132	0		45	0	0	0	0	0	0	
6:00 PM	1	0	0	0	0	0	0		2	0	0	0	0	0	0	

Study Name Nebraska Ave @ Kennedy Blvd
Start Date 11/15/2016
Start Time 7:00 AM
Site Code
Project 16-0763 THEA Planning and Design

Type Crosswalk
Classification Pedestrians

	Nebraska Ave Southbound			Kennedy Blvd Westbound			Nebraska Ave Northbound			Kennedy Blvd Eastbound		
Start Time	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combin	Peds CW	Peds CCW	eds Combined
7:00 AM	0	0		0	0		1	0		0	2	
7:15 AM	0	0		0	0		0	0		0	2	
7:30 AM	0	2		0	0		0	0		0	0	
7:45 AM	0	2		1	0		2	0		0	3	
8:00 AM	0	0		0	0		0	0		1	0	
8:15 AM	0	0		0	0		0	0		0	1	
8:30 AM	0	0		0	0		1	0		0	0	
8:45 AM	0	0		0	0		0	0		0	0	
9:00 AM	0	0		0	0		0	0		0	0	
4:00 PM	0	0		0	0		1	1		2	0	
4:15 PM	2	2		0	0		2	1		1	0	
4:30 PM	1	1		0	0		1	0		0	0	
4:45 PM	1	0		0	0		1	0		1	1	
5:00 PM	1	1		0	0		0	2		1	0	
5:15 PM	2	2		0	0		0	1		0	0	
5:30 PM	1	0		1	0		1	0		0	0	
5:45 PM	0	1		0	0		0	0		0	0	
6:00 PM	0	0		0	0		0	0		0	0	

APPENDIX B

Intersection Level of Service Analyses

HCM 2010 Signalized Intersection Summary
4: Jefferson St & Twiggs St

Existing AM Peak Hour

06/28/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	9	225	9	21	849	88	25	291	30	14	12	9
Future Volume (veh/h)	9	225	9	21	849	88	25	291	30	14	12	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1676	1710	1710	1676	1710
Adj Flow Rate, veh/h	10	245	10	23	923	96	27	316	33	15	13	10
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	1496	62	48	1482	153	95	1025	105	297	326	273
Arrive On Green	0.53	0.53	0.53	1.00	1.00	1.00	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	72	2823	116	40	2797	288	169	2654	273	648	844	706
Grp Volume(v), veh/h	136	0	129	551	0	491	197	0	179	18	0	20
Grp Sat Flow(s),veh/h/ln	1506	0	1505	1650	0	1475	1618	0	1477	797	0	1401
Q Serve(g_s), s	0.0	0.0	6.2	0.0	0.0	0.0	0.0	0.0	11.8	1.1	0.0	1.2
Cycle Q Clear(g_c), s	5.8	0.0	6.2	0.0	0.0	0.0	11.5	0.0	11.8	12.9	0.0	1.2
Prop In Lane	0.07		0.08	0.04		0.20	0.14		0.18	0.83		0.50
Lane Grp Cap(c), veh/h	826	0	798	901	0	782	654	0	571	355	0	541
V/C Ratio(X)	0.16	0.00	0.16	0.61	0.00	0.63	0.30	0.00	0.31	0.05	0.00	0.04
Avail Cap(c_a), veh/h	826	0	798	901	0	782	654	0	571	355	0	541
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.8	0.0	16.9	0.0	0.0	0.0	29.9	0.0	30.0	31.1	0.0	26.7
Incr Delay (d2), s/veh	0.4	0.0	0.4	3.1	0.0	3.8	1.2	0.0	1.4	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.6	0.8	0.0	0.8	5.5	0.0	5.0	0.5	0.0	0.5
LnGrp Delay(d),s/veh	17.3	0.0	17.4	3.1	0.0	3.8	31.0	0.0	31.4	31.4	0.0	26.9
LnGrp LOS	B		B	A		A	C		C	C		C
Approach Vol, veh/h		265			1042			376			38	
Approach Delay, s/veh		17.3			3.4			31.2			29.0	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		60.0		80.0		60.0		80.0
Change Period (Y+Rc), s		5.9		* 5.8		5.9		* 5.8
Max Green Setting (Gmax), s		54.1		* 74		54.1		* 74
Max Q Clear Time (g_c+I1), s		13.8		8.2		14.9		2.0
Green Ext Time (p_c), s		2.7		12.2		2.7		12.3

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B

Notes

HCM 2010 Signalized Intersection Summary
4: Jefferson St & Twiggs St

Existing PM Peak Hour

06/29/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	20	677	9	1[illegible]	225	4[illegible]	2[illegible]	39[illegible]	52	[illegible]0	47	6
Future Volume (veh/h)	20	677	9	1[illegible]	225	4[illegible]	2[illegible]	39[illegible]	52	[illegible]0	47	6
Number	7	4	14	3	[illegible]	1[illegible]	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1710	1676	1710	1710	1676	1710
Adj Flow Rate, veh/h	22	736	10	20	245	52	30	433	57	[illegible]7	51	7
Adj No. of Lanes	0	2	0	0	2	0	0	2	0	0	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	11[illegible]6	16	64	767	177	102	13[illegible]2	179	404	695	95
Arrive On Green	0.39	0.39	0.39	0.77	0.77	0.77	0.53	0.53	0.53	0.53	0.53	0.53
Sat Flow, veh/h	52	3064	41	[illegible]9	19[illegible]0	456	13[illegible]	2611	339	666	1313	1[illegible]0
Grp Volume(v), veh/h	399	0	369	152	0	165	273	0	247	[illegible]7	0	5[illegible]
Grp Sat Flow(s),veh/h/ln	1639	0	151[illegible]	10[illegible]1	0	1445	1622	0	1466	666	0	1494
Q Serve(g_s), s	4.4	0.0	27.5	4.1	0.0	4.7	0.0	0.0	13.3	9.5	0.0	2.7
Cycle Q Clear(g_c), s	27.0	0.0	27.5	31.6	0.0	4.7	12.[illegible]	0.0	13.3	22.[illegible]	0.0	2.7
Prop In Lane	0.06		0.03	0.13		0.32	0.11		0.23	1.00		0.12
Lane Grp Cap(c), veh/h	662	0	5[illegible]8	44[illegible]	0	559	[illegible]87	0	776	404	0	791
V/C Ratio(X)	0.60	0.00	0.63	0.34	0.00	0.29	0.31	0.00	0.32	0.22	0.00	0.07
Avail Cap(c_a), veh/h	662	0	5[illegible]8	44[illegible]	0	559	[illegible]87	0	776	404	0	791
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	34.7	12.0	0.0	10.2	18.5	0.0	18.6	25.1	0.0	16.1
Incr Delay (d2), s/veh	4.0	0.0	5.0	2.1	0.0	1.3	0.9	0.0	1.1	1.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.2	0.0	12.4	1.9	0.0	2.0	6.1	0.0	5.6	2.3	0.0	1.1
LnGrp Delay(d),s/veh	38.6	0.0	39.7	14.1	0.0	11.5	19.4	0.0	19.7	26.3	0.0	16.3
LnGrp LOS	D		D	B		B	B		B	C		B
Approach Vol, veh/h		76[illegible]			317			520			145	
Approach Delay, s/veh		39.1			12.[illegible]			19.6			22.3	
Approach LOS		D			B			B			C	

Timer	1	2	3	4	5	6	7	[illegible]
Assigned Phs		2		4		6		[illegible]
Phs Duration (G+Y+Rc), s		[illegible]0.0		60.0		[illegible]0.0		60.0
Change Period (Y+Rc), s		5.9		* 5.[illegible]		5.9		* 5.[illegible]
Max Green Setting (Gmax), s		74.1		* 54		74.1		* 54
Max Q Clear Time (g_c+I1), s		15.3		29.5		24.[illegible]		33.6
Green Ext Time (p_c), s		5.0		7.6		5.0		7.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
3: Nebraska Ave & Twiggs St

Existing AM Peak Hour

06/29/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	134	32	36	1137	670	37	192	56	102	235	94
Future Volume (veh/h)	11	134	32	36	1137	670	37	192	56	102	235	94
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	12	146	35	39	1236	728	40	209	61	111	255	0
Adj No. of Lanes	0	2	0	0	2	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	862	242	58	1359	724	267	267	78	186	986	441
Arrive On Green	1.00	1.00	1.00	0.43	0.43	0.43	0.19	0.19	0.19	0.05	0.28	0.00
Sat Flow, veh/h	0	1357	381	49	2141	1140	1120	1387	405	1774	3539	1583
Grp Volume(v), veh/h	44	0	149	1049	0	954	40	0	270	111	255	0
Grp Sat Flow(s),veh/h/ln	110	0	1628	1836	0	1494	1120	0	1791	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	0.0	49.3	0.0	38.9	4.2	0.0	20.1	6.3	7.8	0.0
Cycle Q Clear(g_c), s	38.9	0.0	0.0	74.4	0.0	38.9	4.2	0.0	20.1	6.3	7.8	0.0
Prop In Lane	0.28		0.23	0.04		0.76	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	103	0	1034	1192	0	949	267	0	345	186	986	441
V/C Ratio(X)	0.42	0.00	0.14	0.88	0.00	1.01	0.15	0.00	0.78	0.60	0.26	0.00
Avail Cap(c_a), veh/h	103	0	1034	1192	0	949	267	0	345	186	986	441
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.09	0.00	0.09	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.0	0.0	0.0	35.9	0.0	40.2	47.3	0.0	53.7	45.5	39.3	0.0
Incr Delay (d2), s/veh	12.3	0.0	0.3	1.0	0.0	10.1	1.2	0.0	16.0	5.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.1	38.0	0.0	39.4	1.4	0.0	11.4	1.4	3.9	0.0
LnGrp Delay(d),s/veh	61.3	0.0	0.3	36.9	0.0	50.4	48.5	0.0	69.7	50.6	39.9	0.0
LnGrp LOS	E		A	D		F	D		E	D	D	
Approach Vol, veh/h		193			2003			310			366	
Approach Delay, s/veh		14.1			43.3			67.0			43.2	
Approach LOS		B			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		45.0		95.0	12.0	33.0		95.0
Change Period (Y+Rc), s		6.0		* 6.1	* 5.7	6.0		* 6.1
Max Green Setting (Gmax), s		39.0		* 89	* 6.3	27.0		* 89
Max Q Clear Time (g_c+I1), s		9.8		90.9	8.3	22.1		90.9
Green Ext Time (p_c), s		3.8		0.0	0.0	1.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.9
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
3: Nebraska Ave & Twiggs St

Existing PM Peak Hour

06/29/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	629	83	4	151	54	4	161	23	335	275	62
Future Volume (veh/h)	84	629	83	4	151	54	4	161	23	335	275	62
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	91	684	90	4	164	59	4	175	25	364	299	0
Adj No. of Lanes	0	2	0	0	2	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	1099	145	36	1048	360	367	468	67	576	1744	780
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.29	0.29	0.29	0.16	0.49	0.00
Sat Flow, veh/h	308	2612	345	22	2491	857	1076	1595	228	1774	3539	1583
Grp Volume(v), veh/h	439	0	426	121	0	106	4	0	200	364	299	0
Grp Sat Flow(s),veh/h/ln	1631	0	1634	1826	0	1544	1076	0	1823	1774	1770	1583
Q Serve(g_s), s	24.4	0.0	28.6	0.0	0.0	6.0	0.4	0.0	12.2	19.3	6.6	0.0
Cycle Q Clear(g_c), s	30.4	0.0	28.6	5.6	0.0	6.0	0.4	0.0	12.2	19.3	6.6	0.0
Prop In Lane	0.21		0.21	0.03		0.55	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	717	0	688	795	0	650	367	0	535	576	1744	780
V/C Ratio(X)	0.61	0.00	0.62	0.15	0.00	0.16	0.01	0.00	0.37	0.63	0.17	0.00
Avail Cap(c_a), veh/h	717	0	688	795	0	650	367	0	535	729	1744	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.89	0.00	0.89	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.5	0.0	31.8	25.1	0.0	25.2	35.1	0.0	39.3	26.1	19.7	0.0
Incr Delay (d2), s/veh	3.9	0.0	4.2	0.4	0.0	0.5	0.1	0.0	2.0	1.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.3	0.0	13.7	3.0	0.0	2.7	0.1	0.0	6.5	9.5	3.2	0.0
LnGrp Delay(d),s/veh	36.3	0.0	35.9	25.5	0.0	25.7	35.1	0.0	41.3	27.3	19.9	0.0
LnGrp LOS	D		D	C		C	D		D	C	B	
Approach Vol, veh/h		865			227			204			663	
Approach Delay, s/veh		36.1			25.6			41.1			23.9	
Approach LOS		D			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		75.0		65.0	27.9	47.1		65.0
Change Period (Y+Rc), s		6.0		* 6.1	* 5.7	6.0		* 6.1
Max Green Setting (Gmax), s		69.0		* 59	* 34	29.0		* 59
Max Q Clear Time (g_c+I1), s		8.6		32.4	21.3	14.2		8.0
Green Ext Time (p_c), s		3.6		8.0	0.9	2.7		9.1

Intersection Summary	
HCM 2010 Ctrl Delay	31.3
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
2: Meridian Ave & Twiggs St

Existing AM Peak Hour

06/28/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	255	70	47	340	0	60	0	51	119	1674	1607
Future Volume (veh/h)	0	255	70	47	340	0	60	0	51	119	1674	1607
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1900	1863	0	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	277	76	51	370	0	65	0	55	129	1820	1747
Adj No. of Lanes	0	1	0	0	2	0	2	1	0	0	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	0	347	96	54	531	0	138	0	63	188	2849	918
Arrive On Green	0.00	0.08	0.08	0.25	0.25	0.00	0.04	0.00	0.04	0.58	0.58	0.58
Sat Flow, veh/h	0	1408	386	87	2239	0	3442	0	1583	325	4912	1583
Grp Volume(v), veh/h	0	0	353	194	227	0	65	0	55	734	1215	1747
Grp Sat Flow(s),veh/h/ln	0	0	1795	631	1610	0	1721	0	1583	1847	1695	1583
Q Serve(g_s), s	0.0	0.0	27.1	7.4	17.3	0.0	2.6	0.0	4.8	38.8	32.9	81.2
Cycle Q Clear(g_c), s	0.0	0.0	27.1	34.5	17.3	0.0	2.6	0.0	4.8	38.8	32.9	81.2
Prop In Lane	0.00		0.22	0.26		0.00	1.00		1.00	0.18		1.00
Lane Grp Cap(c), veh/h	0	0	442	188	397	0	138	0	63	1071	1966	918
V/C Ratio(X)	0.00	0.00	0.80	1.03	0.57	0.00	0.47	0.00	0.87	0.69	0.62	1.90
Avail Cap(c_a), veh/h	0	0	442	188	397	0	138	0	63	1071	1966	918
HCM Platoon Ratio	1.00	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.96	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	60.9	55.9	46.3	0.0	65.8	0.0	66.8	20.5	19.2	29.4
Incr Delay (d2), s/veh	0.0	0.0	9.6	73.7	5.9	0.0	2.5	0.0	68.8	1.8	0.6	410.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	14.6	11.1	8.4	0.0	1.3	0.0	3.3	20.3	15.5	139.8
LnGrp Delay(d),s/veh	0.0	0.0	70.5	129.8	52.2	0.0	68.3	0.0	135.7	22.3	19.8	439.6
LnGrp LOS			E	F	D		E		F	C	B	F
Approach Vol, veh/h		353			421			120			3696	
Approach Delay, s/veh		70.5			87.9			99.2			218.7	
Approach LOS		E			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		41.0		12.0		41.0		87.0
Change Period (Y+Rc), s		6.5		* 6.4		6.5		5.8
Max Green Setting (Gmax), s		34.5		* 5.6		34.5		81.2
Max Q Clear Time (g_c+I1), s		36.5		6.8		29.1		83.2
Green Ext Time (p_c), s		0.0		0.0		2.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	192.2
HCM 2010 LOS	F

Notes

HCM 2010 Signalized Intersection Summary
2: Meridian Ave & Twiggs St

Existing PM Peak Hour

06/29/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	511	550	172	36	167	63	42	819	151	0	0	0
Future Volume (veh/h)	511	550	172	36	167	63	42	819	151	0	0	0
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	555	598	187	39	182	68	46	890	164	0	0	0
Adj No. of Lanes	1	1	0	0	2	0	0	3	0	0	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	843	887	277	121	570	227	0	1126	207	0	1326	413
Arrive On Green	0.09	0.21	0.21	0.32	0.32	0.32	0.00	0.26	0.26	0.00	0.00	0.00
Sat Flow, veh/h	1774	1362	426	274	1764	704	0	4321	793	0	5253	1583
Grp Volume(v), veh/h	555	0	785	137	0	152	0	697	357	0	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1788	1171	0	1571	0	1695	1723	0	1695	1583
Q Serve(g_s), s	23.3	0.0	56.4	4.5	0.0	10.1	0.0	26.8	27.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.3	0.0	56.4	15.0	0.0	10.1	0.0	26.8	27.0	0.0	0.0	0.0
Prop In Lane	1.00		0.24	0.28		0.45	0.00		0.46	0.00		1.00
Lane Grp Cap(c), veh/h	843	0	1165	411	0	507	0	884	449	0	1326	413
V/C Ratio(X)	0.66	0.00	0.67	0.33	0.00	0.30	0.00	0.79	0.79	0.00	0.00	0.00
Avail Cap(c_a), veh/h	843	0	1165	411	0	507	0	1218	619	0	1326	413
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.00	0.67	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	19.9	0.0	41.3	36.3	0.0	35.5	0.0	48.2	48.2	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.0	2.1	2.2	0.0	1.5	0.0	2.5	4.9	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	28.7	4.4	0.0	4.6	0.0	12.9	13.5	0.0	0.0	0.0
LnGrp Delay(d),s/veh	22.6	0.0	43.4	38.5	0.0	37.0	0.0	50.6	53.2	0.0	0.0	0.0
LnGrp LOS	C		D	D		D		D	D			
Approach Vol, veh/h		1340			289			1054			0	
Approach Delay, s/veh		34.8			37.7			51.5			0.0	
Approach LOS		C			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	46.0	51.7		42.3		97.7	0.0	42.3
Change Period (Y+Rc), s	* 5.8	6.5		* 5.8		6.5	* 6.4	5.8
Max Green Setting (Gmax), s	* 40	31.5		* 50		77.5	* 34	10.2
Max Q Clear Time (g_c+I1), s	25.3	17.0		29.0		58.4	0.0	0.0
Green Ext Time (p_c), s	1.7	6.8		7.5		7.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	41.7
HCM 2010 LOS	D

Notes

HCM 2010 Signalized Intersection Summary
3: Nebraska Ave & Twiggs St AM Peak Hour With WBRT

Future AM Peak Hour

07/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	134	32	0	1173	670	37	192	56	102	235	94
Future Volume (veh/h)	11	134	32	0	1173	670	37	192	56	102	235	94
Number	7	4	14	3	8	18	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	0	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	12	146	35	0	1275	728	40	209	61	111	255	0
Adj No. of Lanes	0	2	0	0	2	1	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	77	1118	311	0	2247	1005	267	267	78	182	986	441
Arrive On Green	1.00	1.00	1.00	0.00	0.43	0.43	0.19	0.19	0.19	0.04	0.28	0.00
Sat Flow, veh/h	75	1760	489	0	3632	1583	1120	1387	405	1774	3539	1583
Grp Volume(v), veh/h	78	0	115	0	1275	728	40	0	270	111	255	0
Grp Sat Flow(s),veh/h/ln	716	0	1609	0	1770	1583	1120	0	1791	1774	1770	1583
Q Serve(g_s), s	4.6	0.0	0.0	0.0	38.2	53.4	4.2	0.0	20.1	6.0	7.8	0.0
Cycle Q Clear(g_c), s	42.8	0.0	0.0	0.0	38.2	53.4	4.2	0.0	20.1	6.0	7.8	0.0
Prop In Lane	0.15		0.30	0.00		1.00	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	484	0	1022	0	2247	1005	267	0	345	182	986	441
V/C Ratio(X)	0.16	0.00	0.11	0.00	0.57	0.72	0.15	0.00	0.78	0.61	0.26	0.00
Avail Cap(c_a), veh/h	484	0	1022	0	2247	1005	267	0	345	182	986	441
HCM Platoon Ratio	2.00	2.00	2.00	1.00	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.09	0.09	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.9	0.0	0.0	0.0	25.7	30.0	47.3	0.0	53.7	46.6	39.3	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.2	0.0	0.1	0.4	1.2	0.0	16.0	5.8	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	0.0	18.7	23.6	1.4	0.0	11.4	1.6	3.9	0.0
LnGrp Delay(d),s/veh	5.6	0.0	0.2	0.0	25.7	30.5	48.5	0.0	69.7	52.4	39.9	0.0
LnGrp LOS	A		A		C	C	D		E	D	D	
Approach Vol, veh/h		193			2003			310			366	
Approach Delay, s/veh		2.4			27.5			67.0			43.7	
Approach LOS		A			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		45.0		95.0	12.0	33.0		95.0
Change Period (Y+Rc), s		6.0		* 6.1	6.0	6.0		* 6.1
Max Green Setting (Gmax), s		39.0		* 89	6.0	27.0		* 89
Max Q Clear Time (g_c+I1), s		9.8		44.8	8.0	22.1		55.4
Green Ext Time (p_c), s		3.8		23.0	0.0	1.5		19.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Notes

HCM 2010 Signalized Intersection Summary
2: Meridian Ave & Twiggs St AM Peak Hour With WBRT

Future AM Peak Hour

07/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	255	70	47	340	0	60	0	51	119	1674	1607
Future Volume (veh/h)	0	255	70	47	340	0	60	0	51	119	1674	1607
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	0	1863	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	0	277	76	51	370	0	65	0	55	129	1820	0
Adj No. of Lanes	1	1	0	0	2	0	1	2	0	0	3	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	0	2	2	2	2	2	2
Cap, veh/h	51	477	131	92	798	0	71	71	63	159	2395	772
Arrive On Green	0.00	0.11	0.11	0.34	0.34	0.00	0.04	0.00	0.04	0.49	0.49	0.00
Sat Flow, veh/h	1008	1408	386	176	2440	0	1774	1770	1583	326	4910	1583
Grp Volume(v), veh/h	0	0	353	200	221	0	65	0	55	730	1219	0
Grp Sat Flow(s),veh/h/ln	1008	0	1795	921	1610	0	1774	1770	1583	1846	1695	1583
Q Serve(g_s), s	0.0	0.0	26.2	9.6	14.7	0.0	5.1	0.0	4.8	46.9	40.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	26.2	35.8	14.7	0.0	5.1	0.0	4.8	46.9	40.3	0.0
Prop In Lane	1.00		0.22	0.25		0.00	1.00		1.00	0.18		1.00
Lane Grp Cap(c), veh/h	51	0	608	344	546	0	71	71	63	900	1653	772
V/C Ratio(X)	0.00	0.00	0.58	0.58	0.40	0.00	0.92	0.00	0.87	0.81	0.74	0.00
Avail Cap(c_a), veh/h	51	0	608	344	546	0	71	71	63	1071	1966	918
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.96	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	52.7	43.5	35.5	0.0	67.0	0.0	66.8	30.4	28.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	1.3	7.0	2.2	0.0	78.2	0.0	68.8	4.1	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	13.2	7.8	6.9	0.0	4.1	0.0	3.3	25.0	19.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	54.1	50.5	37.7	0.0	145.2	0.0	135.7	34.5	29.9	0.0
LnGrp LOS			D	D	D		F		F	C	C	
Approach Vol, veh/h		353			421			120			1949	
Approach Delay, s/veh		54.1			43.8			140.8			31.6	
Approach LOS		D			D			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		53.9		12.0		53.9		74.1
Change Period (Y+Rc), s		6.5		* 6.4		6.5		5.8
Max Green Setting (Gmax), s		34.5		* 5.6		34.5		81.2
Max Q Clear Time (g_c+I1), s		37.8		7.1		28.2		48.9
Green Ext Time (p_c), s		0.0		0.0		2.5		19.4

Intersection Summary	
HCM 2010 Ctrl Delay	40.8
HCM 2010 LOS	D

Notes