McBee Landing Traffic Impact Study

23rd Street at Haden Street Independence, Missouri







Prepared for:

McBee's Coffee 'n Car Wash

Prepared by TranSystems
June 2020



June 22, 2020

Mr. Steven McBee

McBee's Coffee 'n Carwash 126 N. Market Street Gallatin, MO 64640

TranSystems

2400 Pershing Road Suite 400 Kansas City, MO 64108 Tel 816 329 8600 Fax 816 329 8601

www.transystems.com

Re: McBee Landing Traffic Impact Study

23rd Street and Haden Street Independence, Missouri

Dear Mr. McBee:

In response to your request and authorization, TranSystems has completed a traffic impact study for the proposed commercial development to be generally located in the south side of 23rd Street at Haden Street in Independence, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

Included in this study is a discussion of the anticipated impact of the proposed development on the adjacent street network and identified improvements to mitigate deficiencies for the following scenarios:

- Existing Conditions
- Existing plus Development Conditions
- Future Year 2040 Conditions

We trust that the enclosed information proves beneficial to you, the Missouri Department of Transportation, and the City of Independence in this phase of the development process. We appreciate the opportunity to be of service to you and will be available to review this study at your convenience.

Sincerely,

TRANSYSTEMS

By: /4/1/

By:

Emma Martin, EIT

EHM:JJW/ehm/P101200135

Enclosure

Introduction

TranSystems has completed a traffic impact study for the proposed McBee Landing residential and commercial development to be generally located along the south side of 23rd Street at Haden Street in Independence, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The location of the development site relative to the major streets in the area is shown on *Figure A-I* in *Appendix A*.

This study also contains a description of the proposed development and the surrounding transportation infrastructure along with trip generation estimates, trip distribution estimates, capacity analyses, and a summary of the findings.

Proposed Development Plan

The proposed development consists of both residential and commercial land uses. The commercial portion of the development consists of an automated car wash and office space located along the south side of 23rd Street. Multifamily residential units for senior living will be located to south of the commercial businesses. The current development plan is included on *Figure A-2* in *Appendix A* for reference.

Access to the site will be provided from two new drives along 23rd Street. The first driveway will be aligned across 23rd Street from Haden Street. This drive will provide access to the offices and senior living land uses. The second driveway will be aligned across 23rd Street from Woodbury Street, and will primarily be an access for the car wash. A new drive is also proposed to be constructed onto Kings Highway, providing an alternate access point for the development in the future.

Study Area

To assess the impacts of the proposed development, the intersections listed below were identified for study during the A.M. and P.M. peak periods.

- 23rd Street and Kings Highway
- 23rd Street and Haden Street
- 23rd Street and Woodbury Street

Traffic Counts

Traffic counts were not collected at the time of this study due to the COVID-19 pandemic. The Governor of Missouri issued a Stay-At-Home order for the entire state from April 6, 2020 through May 3, 2020 to limit the spread of the virus. Schools and many businesses were closed. The closures have significantly altered traffic patterns, and will continue to do so as many businesses continue to operate on a limited basis and many professionals continue to work from home.

Turning-movement traffic volume counts were obtained from the Missouri Department of Transportation (MoDOT) 2019 Average Annual Daily Traffic Map for the segment of 23rd Street near the development site. The maps provided the A.M. and P.M. peak hour traffic volumes by direction of travel. Turning

movement counts at the study intersections were estimated based on street network characteristics, land uses in the surrounding area, and engineering judgement. The existing lane configurations, traffic control devices, and estimated peak hour volumes have been illustrated in *Figures A-3* through *A-5*.

Surrounding Street Network and Land Uses

The development site is located on roughly 11 acres of undeveloped land. The site is bounded by 23rd Street on the north. The 23rd Street corridor is generally lined with commercial businesses, but there are also some single-family residences. To the east, south and west, the site is bounded by single-family residences, with some larger lot sizes. Along the northeast edge of the site there is a tire store and parking lot, which is part of a larger shopping center that includes a HyVee grocery store.

Adjacent to the development site, 23rd Street is a five-lane highway with a posted speed limit of 40 mph. Within the City of Independence, 23rd Street is part of the state highway system as MO-78 Highway, and is classified by MoDOT as a principal arterial roadway. The street is generally 68 feet wide, with five-lanes, including a center two-way left-turn lane. There are paved four-foot shoulders on each side of the street, along with curb and gutter. Sidewalks are provided along the north and south sides of the street. The alignment of the roadway is straight with some slight vertical curvature.

Kings Highway is classified by the City of Independence as a collector street. It is a 24-foot wide, two-lane street with a posted speed limit of 25 mph. South of 23rd Street there are curbs and gutters with sidewalk along only the west side of the street. The street provides access to the residential neighborhood to the south, including Hanthorn Early Education School, as well as some commercial businesses to the west of Kings Highway.

Haden Street is a two-lane local street that provides access to the residential neighborhood to the north of 23rd Street. It has no shoulders, curbs, or gutters. Woodbury Street is also a local street and has similar characteristics. Woodbury Street is not continuous to the north and provides local access only to the adjacent residences. There is no sidewalk and no posted speed limit on either local street.

Analysis

The scope of analysis for the assessment of the proposed development's impact on the surrounding transportation system is based in large part on the recommended practices of the Institute of Transportation Engineers (ITE), as outlined in their <u>Traffic Engineering Handbook</u>. ITE is a nationally-recognized organization of transportation professionals with members from both private and public sectors. The analysis of the proposed development's impact included development of trip generation and trip distribution estimates as well as a traffic operations assessment for each study scenario. The study also addresses access management criteria provided in MODOT's Engineering Policy Guide (EPG). Each of the analysis methodologies and findings are described in the subsequent sections.

Driveway Spacing

The MoDOT EPG provides recommended spacings between driveways based on the type of highway. For major non-freeway routes in urban areas, the minimum driveway spacing is 440 feet. The proposed site

driveways are spaced closer together than the minimum spacing. The driveway at the Haden Street intersection is 210 feet east of Kings Highway and 330 feet west of Woodbury Street. The driveway at the Woodbury Street intersection is 210 feet west of Slayton Street.

While the proposed driveway spacings are less than the minimum spacing recommendations in the EPG, it should be noted that the driveways are all aligned with existing intersections. The EPG states that driveways should be lined up across the public roadway from each other whenever possible.

Sight Distance

Sight distances and methods for measurement are provided in A Policy on Geometric Design of Highways and Streets (7th Edition), also referred to as the AASHTO Green Book published by the American Association of State Highway and Transportation Officials (AASHTO). Intersection sight distance is provided at intersections to allow the drivers of stopped vehicles to depart from their approach and enter or cross the uncontrolled street. These distances are generous, allowing enough distance for the stopped driver to complete their turning or crossing maneuver without requiring through traffic on the uncontrolled street to reduce their speed. Stopping sight distance is the minimum distance required to allow for a vehicle to stop before reaching a stationary object in its path.

Sight distances were measured in the field at each proposed site driveway intersection. The measurements and AASHTO recommended sight distances for each direction of travel are shown in **Table 1**.

	Inte	Table I ersection Sight Dist	ances	
Location	Direction Looking	Measured Sight Distance, feet	Recommended Intersection Sight Distance, feet	Recommended Stopping Sight Distance, feet
23rd Street at Haden	East	>600	500	305
Street	West	>600	385	305
23rd Street at Woodbury Street	East	>600	500	305
	West	500	385	305

The sight distance measurements indicate that sight distances are adequate at the both of the proposed site driveway intersections along 23rd Street. There is a slight crest vertical curve to the west of the intersection of Woodbury Street and 23rd Street that limits sight lines, however the measured sight distance exceeds the recommended sight distance for a right-turn movement from a stop controlled roadway.

Trip Generation

Trip generation estimates were prepared using the Institute of Transportation Engineer's <u>Trip Generation</u>, I 0th Edition. The Automated Car Wash land use (ITE code 948) does not provide information regarding average weekday and A.M. peak hour data, however it was estimated using other similar auto-oriented

land uses and engineering judgement. **Table 2** shows the expected trips to be generated by the proposed development. Additional information related to trip generation is included in **Appendix B**.

	Proposed	l Develo	Table 2 opment Tr	rip Gen	eratio	n			
1 1 1 1	ITE /	Average	A.M.	Peak	Hour	P.M.	Peak	Hour	
Land Use	Intensity	Code	Weekday	Total	In	Out	Total	In	Out
Automated Car Wash	5,200 sf	948	400	8	4	4	74	37	37
General Office Building	10,400 sf	710	168	36	31	5	14	2 2	12
Senior Adult Housing - Detached	68 units	251	401	31	10	21	36	22	14
Total Development Trips			969	75	45	30	124	61	63
Pass-by Trips (40% of car wash)		8), 37 <u>0</u> 1 2051	155.1 <u>.</u> 1.1.1	1 - 2	A Jr he	30	15	15	
Non-Pass-by Trips			969	75	45	30	94	46	48
Total New	Developmen	t Trips	969	75	45	30	94	46	48

Pass-by traffic occurs when drivers stop at the proposed development while in route to their final destination. Pass-by traffic is common for car washes. A pass-by percentage of 40% was assumed for the car wash since it will be an auto-oriented business located along a heavily traveled corridor.

Trip Distribution

The estimated trips generated by the proposed development were distributed onto the surrounding street network based on the trip distributions summarized in *Table 3*. These distributions are based on traffic counts, the expected service area of the development and engineering judgment.

Table 3 Trip Distribution				
Direction To/From	Percentage			
East on 23rd Street	50%			
West on 23rd Street	50%			
Total	100%			

Traffic Operation Assessment

An assessment of traffic operations was made for the scenarios listed below.

- Existing Conditions
- Existing plus Development Conditions
- Future Year (2040)

The study intersections were evaluated using the Synchro traffic analysis software package. Calculations were performed based on the methodologies outlined in the <u>Highway Capacity Manual (HCM)</u>, 6th Edition, which is published by the Transportation Research Board. The operating conditions at an intersection are graded by the "level of service" experienced by drivers. Level of service (LOS) describes the quality of traffic operating conditions and is rated from "A" to "F". LOS A represents the least congested condition with free-flow movement of traffic and minimal delays. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate grades of B, C, D, and E reflect incremental increases in the average delay per stopped vehicle. Delay is measured in seconds per vehicle. *Table 4* shows the upper limit of delay associated with each level of service for signalized and unsignalized intersections.

Į:	Table 4 Intersection Level of Service Delay Thresholds						
Le	vel of Service (LOS)	Signalized	Unsignalized				
	Α	≤ 10 Seconds	≤ 10 Seconds				
	В	≤ 20 Seconds	≤ 15 Seconds				
	С	≤ 35 Seconds	≤ 25 Seconds				
	D	≤ 55 Seconds	≤ 35 Seconds				
	E	≤ 80 Seconds	≤ 50 Seconds				
	6 F	> 80 Seconds	> 50 Seconds				

While LOS measurements apply to both signalized and unsignalized intersections, there are significant differences between how these intersections operate and how they are evaluated. LOS for signalized intersections reflects the operation of the intersection as a whole.

Unsignalized intersections, in contrast, are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are the left turns off of the major street and the side-street approaches for two-way stop-controlled intersections. At unsignalized intersections lower LOS ratings (D, E and F) do not, in themselves, indicate the need for additional improvements. Many times there are convenient alternative routes to avoid the longer delays. Other times the volumes on the unsignalized approaches are relatively minor when compared to the major street traffic, and improvements such as a traffic signal installation may increase the average delay to all users of the intersection.

The decision to install a traffic signal, which is often considered when lower LOS ratings are projected, should be based on engineering studies and the warrants for traffic signal installation as outlined in the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD). Signals are typically not recommended in locations where there are convenient alternative paths, or if the installation of a traffic signal would have negative impacts on the surrounding transportation system.

The LOS rating deemed acceptable varies by community, facility type and traffic control device. Most communities in the region have identified LOS D as the minimum desirable goal for signalized intersections.

However, at unsignalized intersections LOS D, E, or even F are often considered acceptable for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection, or the location has been deemed undesirable for signalization.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The projected vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes.

Existing Conditions

The results of the existing conditions intersection analyses are summarized in *Table 5*. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on *Figures A-3* through *A-5*. The Synchro output files are included in *Appendix C*.

Table 5 Intersection Operational Analysis Existing Conditions					
Intersection		A.M. Pe	ak Hour	P.M. Pe	eak Hour
Moven	nent	LOS	Delay ²	LOS	Delay ²
23rd Street and Kings Highway			-		
Northb	ound	Ε	42.4	F	>100
Westbound Left-	Turn	Α	9.9	В	14.3
23rd Street and Haden Street					793
Southb	ound	D	28.1	C	21.8
Eastbound Left-	-Turn	В	13.2	В	11.4
23rd Street and Woodbury Street	u P	.71		100	16 14
Southb	ound	D	25.0	c	11.3
Eastbound Left-	-Turn	В	13.1	В	20.8

I - Level of Service

The results in *Table 5* indicate that two of the three study intersections currently operate at acceptable levels of service during the peak hours. The northbound movements at the Kings Highway intersection operate at LOS E and LOS F during the A.M. and P.M. peak hours, respectively. The lengthy delays are due to the high volume of through traffic on 23rd Street. While the delays are long, the 95th percentile queue lengths are three vehicles or less.

Existing plus Development Conditions

The MoDOT Engineering Policy Guide also provides guidance on the need for turn lanes at intersections. According to the EPG, an eastbound right-turn lane is warranted on 23rd Street at Haden Street with the addition of development traffic. The turn lane warrant analysis is shown in **Appendix C**. Although the traffic volumes do satisfy the warranting criteria during the P.M. peak hour, it should be noted that there are no right-turn lanes at any of the commercial driveways along the 23rd Street corridor in the vicinity of the site. The addition of a right-turn lane would have a nominal impact on the capacity analysis and LOS

^{2 -} Delay in seconds per vehicle

at the intersection. For these reasons, an eastbound right-turn lane was not included in the capacity analysis for the Existing plus Development Conditions scenario.

Due to the heavy volume of through traffic on 23rd Street, long delays can be expected for side street traffic exiting the site. Delays will be especially long for northbound left-turn traffic, which has to cross both directions of traffic on 23rd Street. Right-turn movements will experience less delay as they are only opposed by one direction of traffic on 23rd Street. The driveway that aligns with Haden Street is the main access to the development site. In order to separate these movements at the main access and minimize delays for right-turn traffic, a northbound right-turn lane is recommended at the site driveway that aligns with Haden Street.

The results of the Existing plus Development conditions intersection analyses are summarized on the following page in *Table 6*. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on *Figures A-6* through *A-8*. The Synchro output files are included in *Appendix C*.

Table 6 Intersection Operational Analysis Existing plus Development Conditions						
Intersection		A.M. Pe	ak Hour	P.M. Pe	ak Hour	
	Movement	LOS	Delay ²	LOS	Delay ²	
23rd Street and K	Kings Highway				PARTY NAME OF TAXABLE	
	Northbound	E	44.8	F	>100	
	Westbound Left-Turn	В	10.0	В	14.6	
23rd Street and H	laden Street			อนห์2 อีกบ	See Seren	
	Northbound Left-Turn/Through	F.	93.8	F	>100	
	Northbound Right-Turn	В	11.6	C	16.3	
	Southbound	F	>100	social roles	>100	
	Eastbound Left-Turn	В	13.2	В	11.4	
	Westbound Left-Turn	В	10.0	В	14.0	
23rd Street and \	Noodbury Street	nd free?				
*() 8	Northbound	E	39.7	F	>100	
	Southbound	Face	86.0	F	84.2	
	Eastbound Left-Turn	В	13.2	В	11.3	
	Westbound Left-Turn	Α	9.9	В	14.2	

I - Level of Service

The results in *Table 6* indicate that most of the side street movements are projected to operate at LOS E or LOS F with the addition of development traffic. The long delays are due to the high volume of through traffic on 23rd Street. The traffic signal on 23rd Street at the commercial driveway east of the site will interrupt the flow of through traffic and create gaps for drivers to enter 23rd Street. Although long delays are projected in this scenario, all 95th percentile queues are projected to be no more than four vehicles during each of the peak hours.

^{2 -} Delay in seconds per vehicle

While delays are projected to be long in this scenario, the side-street volumes are relatively low and are well below the minimum thresholds for signalization. As such, no further improvements are identified at this time to address the low levels of service. In the long-term a connection should eventually be made to the east of the site to allow site traffic to access the existing signalized intersection at 23rd Street and the commercial driveway to the east of the site. This connection would require easements from private property owners and reconfiguration of existing parking lots, so it will take extensive cooperation between several property owners for this to occur.

Future Year (2040) Conditions

This scenario provides an estimate of future traffic conditions in year 2040 by considering the addition of background traffic growth to the existing plus development traffic volumes. To estimate future background traffic growth, the existing traffic volumes at the study intersections were assumed to increase at a rate of 0.5% per year. This modest growth rate is consistent with a mature developed area.

The results of the Future Year (2040) Conditions intersection analyses are summarized in **Table 7**. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-9** through **A-11**. The Synchro output files are included in **Appendix C**.

Table 7 Intersection Operational Analysis Future Year 2040					
Intersection	The second secon	A.M. Pe	eak Hour	P.M. P	eak Hour
	Movement	LOS	Delay ²	LOSI	Delay ²
23rd Street and K	ings Highway		State of	obudy Kill	3.57 (38) S.YI
	Northbound	F	66.1	F	>100
	Westbound Left-Turn	В	10.4	c	16.2
23rd Street and H	laden Street	1 10 1 10 1			
	Northbound Left-Turn/Through	F	>100	F	>100
	Northbound Right-Turn	В	12.1	C	17.7
	Southbound	F	>100	F	>100
	Eastbound Left-Turn	В	14.4	В	12.2
	Westbound Left-Turn	В	10.5	C	15.4
23rd Street and V	Voodbury Street				
	Northbound	E	50.8	F	>100
	Southbound	F	>100	F	>100
	Eastbound Left-Turn	В	14.4	В	12.1
	Westbound Left-Turn	Α	10.2	В	15.7

I - Level of Service

The results in the table are similar to the previous scenario. Most side street movements are projected to operate at LOS F during the peak hours. All side street traffic volumes are anticipated to remain below the minimum thresholds for traffic signal installation.

^{2 -} Delay in seconds per vehicle

Summary

TranSystems has completed a traffic impact study for the proposed residential and commercial development to be generally located along the south side of 23rd Street at Haden Street in Independence, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

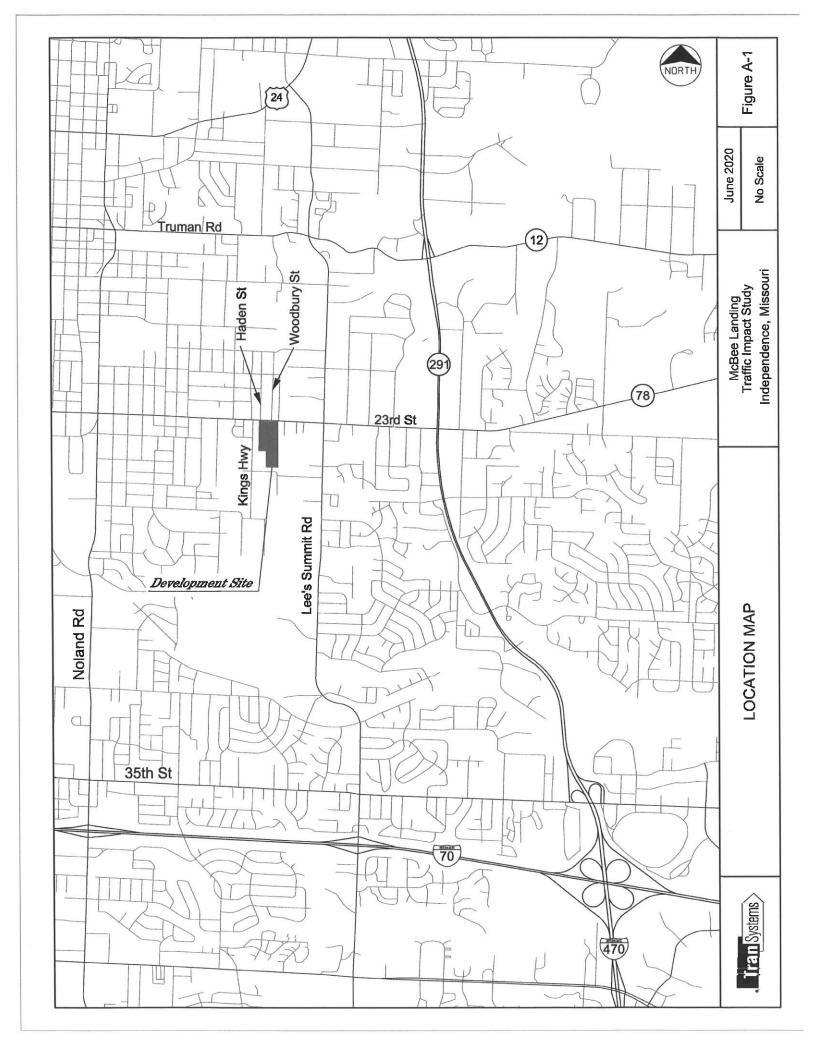
The proposed development plan includes two new site driveways on 23rd Street. Each driveway is aligned across 23rd Street from an existing intersection on the north side of the road. Sight distances are adequate from each proposed site driveway.

With the addition of development traffic, most side street movements at the study intersections are projected to operate at level of service E or F during the peak hours. This is due mostly to the high volume of through traffic on 23rd Street. To reduce delays for northbound traffic existing the site, the site driveway that aligns with Haden Street should be constructed with two outbound lanes to allow northbound right-turn traffic to bypass queued left-turning vehicles.

While delays are projected to be long with the addition of development traffic, the side-street volumes are relatively low and are well below the minimum thresholds for signalization. As such, no further improvements are identified at this time to address the low levels of service. In the long-term a connection should eventually be made to the east of the site to allow site traffic to access the existing signalized intersection at 23rd Street and the commercial driveway to the east of the site.

Appendix A - Figures

igure A-I	Location Map
igure A-2	Site Plan
igure A-3	Existing Lane Configurations and Traffic Controls
igure A-4	Existing A.M. Peak Hour Traffic Volumes
Figure A-5	Existing P.M. Peak Hour Traffic Volumes
Figure A-6	Existing plus Development Lane Configurations and Traffic Controls
Figure A-7	Existing plus Development A.M. Peak Hour Traffic Volumes
Figure A-8	Existing plus Development P.M. Peak Hour Traffic Volumes
Figure A-9	Future Year (2040) Lane Configurations and Traffic Controls
Figure A-10	Future Year (2040) A.M. Peak Hour Traffic Volumes
Figure A-II	Future Year (2040) P.M. Peak Hour Traffic Volumes



McBee Landing Traffic Impact Study

23rd Street at Haden Street Independence, Missouri







Prepared for:

McBee's Coffee 'n Car Wash

Prepared by TranSystems
June 2020



June 22, 2020

Mr. Steven McBee

McBee's Coffee 'n Carwash 126 N. Market Street Gallatin, MO 64640

TranSystems

2400 Pershing Road Suite 400 Kansas City, MO 64108 Tel 816 329 8600 Fax 816 329 8601

www.transystems.com

Re: McBee Landing Traffic Impact Study 23rd Street and Haden Street

Independence, Missouri

Dear Mr. McBee:

In response to your request and authorization, TranSystems has completed a traffic impact study for the proposed commercial development to be generally located in the south side of 23rd Street at Haden Street in Independence, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

Included in this study is a discussion of the anticipated impact of the proposed development on the adjacent street network and identified improvements to mitigate deficiencies for the following scenarios:

- Existing Conditions
- Existing plus Development Conditions
- ▶ Future Year 2040 Conditions

We trust that the enclosed information proves beneficial to you, the Missouri Department of Transportation, and the City of Independence in this phase of the development process. We appreciate the opportunity to be of service to you and will be available to review this study at your convenience.

Sincerely,
TRANSYSTEMS

Jeffrey Wilke, PE, PTOE

By: YMVMU

Emma Martin, EIT

EHM:JJW/ehm/P101200135 Enclosure

Introduction

TranSystems has completed a traffic impact study for the proposed McBee Landing residential and commercial development to be generally located along the south side of 23rd Street at Haden Street in Independence, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system. The location of the development site relative to the major streets in the area is shown on *Figure A-1* in *Appendix A*.

This study also contains a description of the proposed development and the surrounding transportation infrastructure along with trip generation estimates, trip distribution estimates, capacity analyses, and a summary of the findings.

Proposed Development Plan

The proposed development consists of both residential and commercial land uses. The commercial portion of the development consists of an automated car wash and office space located along the south side of 23rd Street. Multifamily residential units for senior living will be located to south of the commercial businesses. The current development plan is included on *Figure A-2* in *Appendix A* for reference.

Access to the site will be provided from two new drives along 23rd Street. The first driveway will be aligned across 23rd Street from Haden Street. This drive will provide access to the offices and senior living land uses. The second driveway will be aligned across 23rd Street from Woodbury Street, and will primarily be an access for the car wash. A new drive is also proposed to be constructed onto Kings Highway, providing an alternate access point for the development in the future.

Study Area

To assess the impacts of the proposed development, the intersections listed below were identified for study during the A.M. and P.M. peak periods.

- 23rd Street and Kings Highway
- 23rd Street and Haden Street
- 23rd Street and Woodbury Street

Traffic Counts

Traffic counts were not collected at the time of this study due to the COVID-19 pandemic. The Governor of Missouri issued a Stay-At-Home order for the entire state from April 6, 2020 through May 3, 2020 to limit the spread of the virus. Schools and many businesses were closed. The closures have significantly altered traffic patterns, and will continue to do so as many businesses continue to operate on a limited basis and many professionals continue to work from home.

Turning-movement traffic volume counts were obtained from the Missouri Department of Transportation (MoDOT) 2019 Average Annual Daily Traffic Map for the segment of 23rd Street near the development site. The maps provided the A.M. and P.M. peak hour traffic volumes by direction of travel. Turning

movement counts at the study intersections were estimated based on street network characteristics, land uses in the surrounding area, and engineering judgement. The existing lane configurations, traffic control devices, and estimated peak hour volumes have been illustrated in *Figures A-3* through *A-5*.

Surrounding Street Network and Land Uses

The development site is located on roughly 11 acres of undeveloped land. The site is bounded by 23rd Street on the north. The 23rd Street corridor is generally lined with commercial businesses, but there are also some single-family residences. To the east, south and west, the site is bounded by single-family residences, with some larger lot sizes. Along the northeast edge of the site there is a tire store and parking lot, which is part of a larger shopping center that includes a HyVee grocery store.

Adjacent to the development site, 23rd Street is a five-lane highway with a posted speed limit of 40 mph. Within the City of Independence, 23rd Street is part of the state highway system as MO-78 Highway, and is classified by MoDOT as a principal arterial roadway. The street is generally 68 feet wide, with five-lanes, including a center two-way left-turn lane. There are paved four-foot shoulders on each side of the street, along with curb and gutter. Sidewalks are provided along the north and south sides of the street. The alignment of the roadway is straight with some slight vertical curvature.

Kings Highway is classified by the City of Independence as a collector street. It is a 24-foot wide, two-lane street with a posted speed limit of 25 mph. South of 23rd Street there are curbs and gutters with sidewalk along only the west side of the street. The street provides access to the residential neighborhood to the south, including Hanthorn Early Education School, as well as some commercial businesses to the west of Kings Highway.

Haden Street is a two-lane local street that provides access to the residential neighborhood to the north of 23rd Street. It has no shoulders, curbs, or gutters. Woodbury Street is also a local street and has similar characteristics. Woodbury Street is not continuous to the north and provides local access only to the adjacent residences. There is no sidewalk and no posted speed limit on either local street.

Analysis

The scope of analysis for the assessment of the proposed development's impact on the surrounding transportation system is based in large part on the recommended practices of the Institute of Transportation Engineers (ITE), as outlined in their <u>Traffic Engineering Handbook</u>. ITE is a nationally-recognized organization of transportation professionals with members from both private and public sectors. The analysis of the proposed development's impact included development of trip generation and trip distribution estimates as well as a traffic operations assessment for each study scenario. The study also addresses access management criteria provided in MODOT's Engineering Policy Guide (EPG). Each of the analysis methodologies and findings are described in the subsequent sections.

Driveway Spacing

The MoDOT EPG provides recommended spacings between driveways based on the type of highway. For major non-freeway routes in urban areas, the minimum driveway spacing is 440 feet. The proposed site

driveways are spaced closer together than the minimum spacing. The driveway at the Haden Street intersection is 210 feet east of Kings Highway and 330 feet west of Woodbury Street. The driveway at the Woodbury Street intersection is 210 feet west of Slayton Street.

While the proposed driveway spacings are less than the minimum spacing recommendations in the EPG, it should be noted that the driveways are all aligned with existing intersections. The EPG states that driveways should be lined up across the public roadway from each other whenever possible.

Sight Distance

Sight distances and methods for measurement are provided in A Policy on Geometric Design of Highways and Streets (7th Edition), also referred to as the AASHTO Green Book published by the American Association of State Highway and Transportation Officials (AASHTO). Intersection sight distance is provided at intersections to allow the drivers of stopped vehicles to depart from their approach and enter or cross the uncontrolled street. These distances are generous, allowing enough distance for the stopped driver to complete their turning or crossing maneuver without requiring through traffic on the uncontrolled street to reduce their speed. Stopping sight distance is the minimum distance required to allow for a vehicle to stop before reaching a stationary object in its path.

Sight distances were measured in the field at each proposed site driveway intersection. The measurements and AASHTO recommended sight distances for each direction of travel are shown in **Table 1**.

	Inte	Table I rsection Sight Dist	ances	
Location	Direction Looking	Measured Sight Distance, feet	Recommended Intersection Sight Distance, feet	Recommended Stopping Sight Distance, feet
23rd Street at Haden	East	>600	500	305
Street	West	>600	385	305
23rd Street at	East	>600	500	305
Woodbury Street	West	500	385	305

The sight distance measurements indicate that sight distances are adequate at the both of the proposed site driveway intersections along 23rd Street. There is a slight crest vertical curve to the west of the intersection of Woodbury Street and 23rd Street that limits sight lines, however the measured sight distance exceeds the recommended sight distance for a right-turn movement from a stop controlled roadway.

Trip Generation

Trip generation estimates were prepared using the Institute of Transportation Engineer's <u>Trip Generation</u>, 10th Edition. The Automated Car Wash land use (ITE code 948) does not provide information regarding average weekday and A.M. peak hour data, however it was estimated using other similar auto-oriented

land uses and engineering judgement. **Table 2** shows the expected trips to be generated by the proposed development. Additional information related to trip generation is included in **Appendix B**.

	Proposed	Develo	Table 2 opment Tr	ip Gene	eratio	n			
		ITE	Average	A.M.	Peak I	Hour	P.M.	Peak l	Hour
Land Use	Intensity	Code	Weekday	Total	ln	Out	Total	in	Out
Automated Car Wash	5,200 sf	948	400	8	4	4	74	37	37
General Office Building	10,400 sf	710	168	36	- 31	5	14	2	12
Senior Adult Housing - Detached	68 units	251	401	31	10	21	36	22	14
1.3 3 L. T. FT T	otal Developme	nt Trips	969	75	45	30	124	61	63
Pass-by Trips (40% of car wash)			-		Ti_P	to leg	30	15	15
Non-Pass-by Trips			969	75	45	30	94	46	48
Total New Development Trips			969	75	45	30	94	46	48

Pass-by traffic occurs when drivers stop at the proposed development while in route to their final destination. Pass-by traffic is common for car washes. A pass-by percentage of 40% was assumed for the car wash since it will be an auto-oriented business located along a heavily traveled corridor.

Trip Distribution

The estimated trips generated by the proposed development were distributed onto the surrounding street network based on the trip distributions summarized in *Table 3*. These distributions are based on traffic counts, the expected service area of the development and engineering judgment.

Table 3 Trip Distribution				
Direction To/From	Percentage			
East on 23rd Street	50%			
West on 23rd Street	50%			
Total	100%			

Traffic Operation Assessment

An assessment of traffic operations was made for the scenarios listed below.

- Existing Conditions
- Existing plus Development Conditions
- Future Year (2040)

The study intersections were evaluated using the Synchro traffic analysis software package. Calculations were performed based on the methodologies outlined in the <u>Highway Capacity Manual (HCM)</u>, 6th Edition, which is published by the Transportation Research Board. The operating conditions at an intersection are graded by the "level of service" experienced by drivers. Level of service (LOS) describes the quality of traffic operating conditions and is rated from "A" to "F". LOS A represents the least congested condition with free-flow movement of traffic and minimal delays. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate grades of B, C, D, and E reflect incremental increases in the average delay per stopped vehicle. Delay is measured in seconds per vehicle. *Table 4* shows the upper limit of delay associated with each level of service for signalized and unsignalized intersections.

Table 4 Intersection Level of Service Delay Thresholds					
Level of Service (LOS)	Signalized	Unsignalized			
Α	≤ 10 Seconds	≤ 10 Seconds			
В	≤ 20 Seconds	≤ 15 Seconds			
C	≤ 35 Seconds	≤ 25 Seconds			
D	≤ 55 Seconds	≤ 35 Seconds			
E	≤ 80 Seconds	≤ 50 Seconds			
F	> 80 Seconds	> 50 Seconds			

While LOS measurements apply to both signalized and unsignalized intersections, there are significant differences between how these intersections operate and how they are evaluated. LOS for signalized intersections reflects the operation of the intersection as a whole.

Unsignalized intersections, in contrast, are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are the left turns off of the major street and the side-street approaches for two-way stop-controlled intersections. At unsignalized intersections lower LOS ratings (D, E and F) do not, in themselves, indicate the need for additional improvements. Many times there are convenient alternative routes to avoid the longer delays. Other times the volumes on the unsignalized approaches are relatively minor when compared to the major street traffic, and improvements such as a traffic signal installation may increase the average delay to all users of the intersection.

The decision to install a traffic signal, which is often considered when lower LOS ratings are projected, should be based on engineering studies and the warrants for traffic signal installation as outlined in the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD). Signals are typically not recommended in locations where there are convenient alternative paths, or if the installation of a traffic signal would have negative impacts on the surrounding transportation system.

The LOS rating deemed acceptable varies by community, facility type and traffic control device. Most communities in the region have identified LOS D as the minimum desirable goal for signalized intersections.

However, at unsignalized intersections LOS D, E, or even F are often considered acceptable for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection, or the location has been deemed undesirable for signalization.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The projected vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes.

Existing Conditions

The results of the existing conditions intersection analyses are summarized in **Table 5**. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on **Figures A-3** through **A-5**. The Synchro output files are included in **Appendix C**.

Table 5 Intersection Operational Analysis Existing Conditions					
Intersection	A.M. Peak Hour		P.M. Peak Hour		
Movement	LOS	Delay ²	LOS	Delay ²	
23rd Street and Kings Highway				_	
Northbound	E	42.4	F	>100	
Westbound Left-Turn	Α	9.9	В	14.3	
23rd Street and Haden Street			11594		
Southbound	D	28.1	C	21.8	
Eastbound Left-Turn	В	13.2	В	11.4	
23rd Street and Woodbury Street	7.37				
Southbound	D	25.0	c	11.3	
Eastbound Left-Turn	В	13.1	В	20.8	

I - Level of Service

The results in *Table 5* indicate that two of the three study intersections currently operate at acceptable levels of service during the peak hours. The northbound movements at the Kings Highway intersection operate at LOS E and LOS F during the A.M. and P.M. peak hours, respectively. The lengthy delays are due to the high volume of through traffic on 23rd Street. While the delays are long, the 95th percentile queue lengths are three vehicles or less.

Existing plus Development Conditions

The MoDOT Engineering Policy Guide also provides guidance on the need for turn lanes at intersections. According to the EPG, an eastbound right-turn lane is warranted on 23rd Street at Haden Street with the addition of development traffic. The turn lane warrant analysis is shown in *Appendix C*. Although the traffic volumes do satisfy the warranting criteria during the P.M. peak hour, it should be noted that there are no right-turn lanes at any of the commercial driveways along the 23rd Street corridor in the vicinity of the site. The addition of a right-turn lane would have a nominal impact on the capacity analysis and LOS

^{2 -} Delay in seconds per vehicle

at the intersection. For these reasons, an eastbound right-turn lane was not included in the capacity analysis for the Existing plus Development Conditions scenario.

Due to the heavy volume of through traffic on 23rd Street, long delays can be expected for side street traffic exiting the site. Delays will be especially long for northbound left-turn traffic, which has to cross both directions of traffic on 23rd Street. Right-turn movements will experience less delay as they are only opposed by one direction of traffic on 23rd Street. The driveway that aligns with Haden Street is the main access to the development site. In order to separate these movements at the main access and minimize delays for right-turn traffic, a northbound right-turn lane is recommended at the site driveway that aligns with Haden Street.

The results of the Existing plus Development conditions intersection analyses are summarized on the following page in *Table 6*. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on *Figures A-6* through *A-8*. The Synchro output files are included in *Appendix C*.

Table 6 Intersection Operational Analysis Existing plus Development Conditions					
Intersection	Movement	A.M. Peak Hour		P.M. Peak Hour	
		LOS	Delay ²	LOS	Delay ²
23rd Street and K	ings Highway				
	Northbound	E	44.8	F	>100
	Westbound Left-Turn	В	10.0	В	14.6
23rd Street and H	laden Street		Varue lujes	erril# cos	ra erse but
	Northbound Left-Turn/Through	F	93.8	F	>100
	Northbound Right-Turn	В	11.6	C	16.3
	Southbound	F	>100	Form	>100
	Eastbound Left-Turn	В	13.2	В	11.4
	Westbound Left-Turn	В	10.0	В	14.0
23rd Street and V	Voodbury Street	en stille			
	Northbound	E	39.7	F	>100
	Southbound	6 F	86.0	F	84.2
	Eastbound Left-Turn	В	13.2	В	11.3
	Westbound Left-Turn	Α	9.9	В	14.2

I - Level of Service

The results in *Table 6* indicate that most of the side street movements are projected to operate at LOS E or LOS F with the addition of development traffic. The long delays are due to the high volume of through traffic on 23rd Street. The traffic signal on 23rd Street at the commercial driveway east of the site will interrupt the flow of through traffic and create gaps for drivers to enter 23rd Street. Although long delays are projected in this scenario, all 95th percentile queues are projected to be no more than four vehicles during each of the peak hours.

^{2 -} Delay in seconds per vehicle

While delays are projected to be long in this scenario, the side-street volumes are relatively low and are well below the minimum thresholds for signalization. As such, no further improvements are identified at this time to address the low levels of service. In the long-term a connection should eventually be made to the east of the site to allow site traffic to access the existing signalized intersection at 23rd Street and the commercial driveway to the east of the site. This connection would require easements from private property owners and reconfiguration of existing parking lots, so it will take extensive cooperation between several property owners for this to occur.

Future Year (2040) Conditions

This scenario provides an estimate of future traffic conditions in year 2040 by considering the addition of background traffic growth to the existing plus development traffic volumes. To estimate future background traffic growth, the existing traffic volumes at the study intersections were assumed to increase at a rate of 0.5% per year. This modest growth rate is consistent with a mature developed area.

The results of the Future Year (2040) Conditions intersection analyses are summarized in *Table 7*. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on *Figures A-9* through *A-11*. The Synchro output files are included in *Appendix C*.

Table 7 Intersection Operational Analysis Future Year 2040					
Intersection		A.M. Peak Hour		P.M. Peak Hour	
	Movement	LOS¹	Delay ²	LOS	Delay ²
23rd Street and K	ings Highway		2,8872.2	BY HI SIG	*1 ,12 Egg
	Northbound	Fine	66.1	F	>100
	Westbound Left-Turn	В	10.4	c	16.2
23rd Street and H	laden Street	la 19462			
	Northbound Left-Turn/Through	F	>100	F	>100
	Northbound Right-Turn	В	12.1	C	17.7
	Southbound	F	>100	219 F	>100
	Eastbound Left-Turn	В	14.4	В	12.2
	Westbound Left-Turn	В	10.5	C	15.4
23rd Street and V	Voodbury Street	1 1 In 1			
	Northbound	E	50.8	F	>100
	Southbound	F	>100	F	>100
	Eastbound Left-Turn	В	14.4	В	12.1
	Westbound Left-Turn	Α	10.2	В	15.7

I - Level of Service

The results in the table are similar to the previous scenario. Most side street movements are projected to operate at LOS F during the peak hours. All side street traffic volumes are anticipated to remain below the minimum thresholds for traffic signal installation.

^{2 -} Delay in seconds per vehicle

McBee Landing Traffic Impact Study
23rd Street at Haden Street
Independence, Missouri

Summary

TranSystems has completed a traffic impact study for the proposed residential and commercial development to be generally located along the south side of 23rd Street at Haden Street in Independence, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

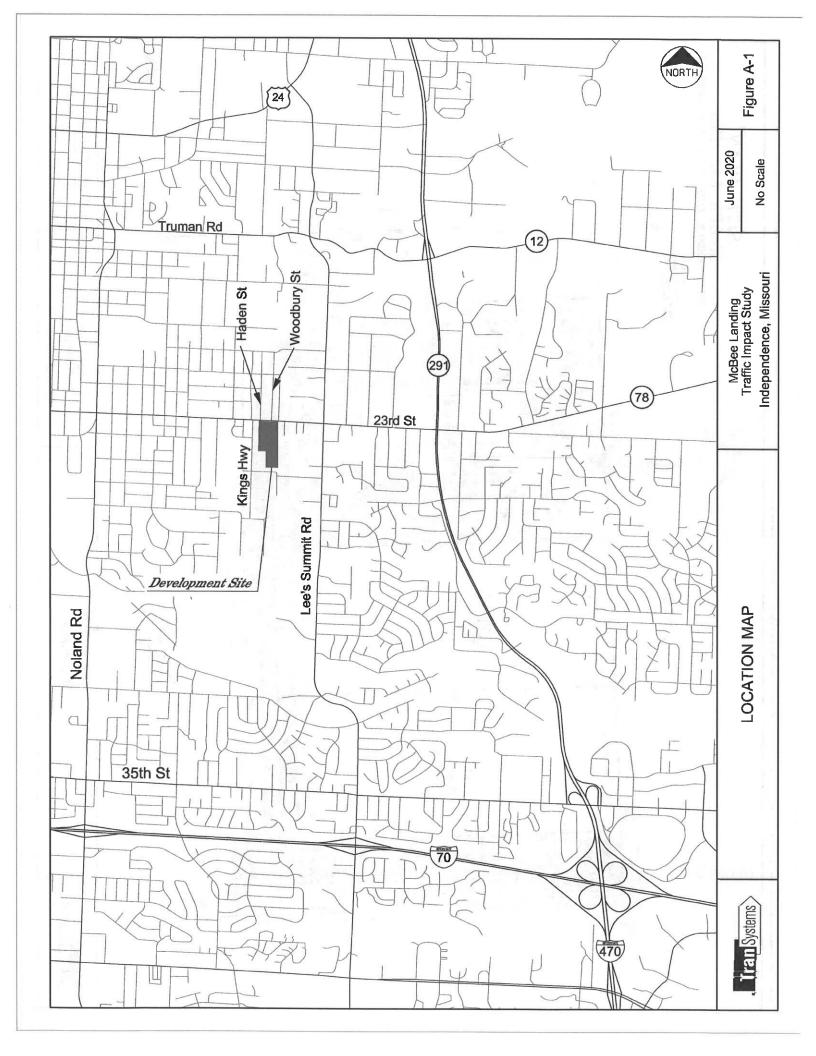
The proposed development plan includes two new site driveways on 23rd Street. Each driveway is aligned across 23rd Street from an existing intersection on the north side of the road. Sight distances are adequate from each proposed site driveway.

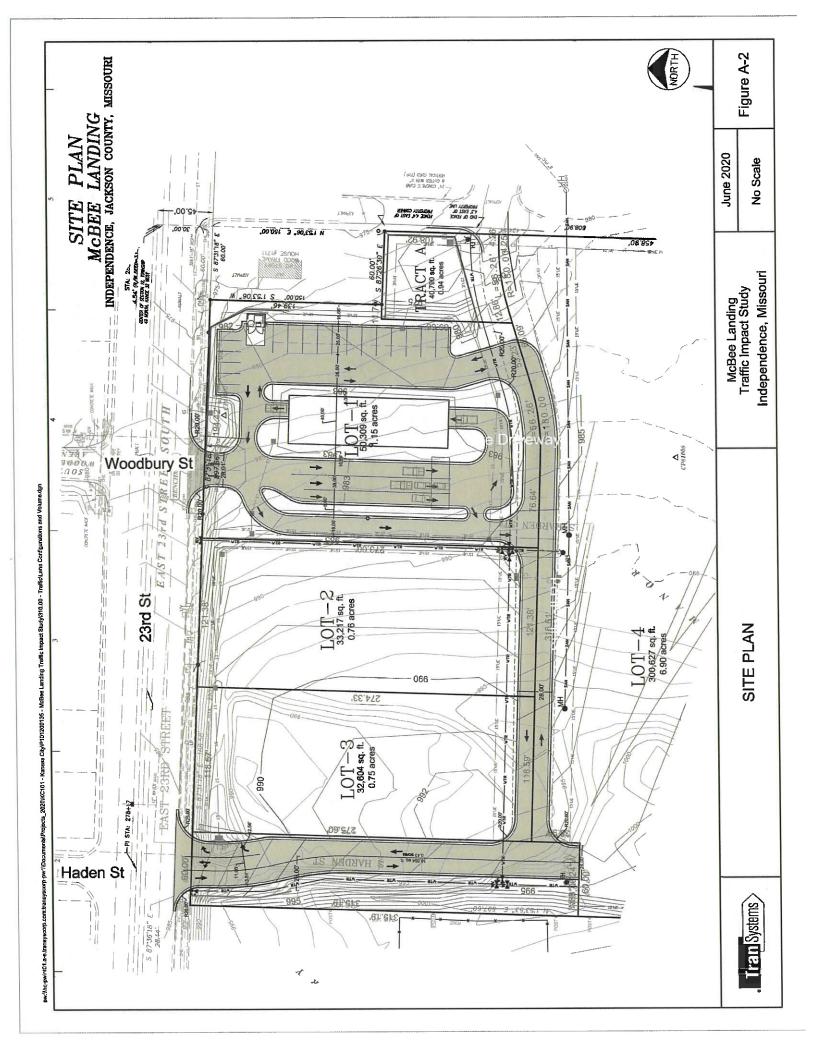
With the addition of development traffic, most side street movements at the study intersections are projected to operate at level of service E or F during the peak hours. This is due mostly to the high volume of through traffic on 23rd Street. To reduce delays for northbound traffic existing the site, the site driveway that aligns with Haden Street should be constructed with two outbound lanes to allow northbound right-turn traffic to bypass queued left-turning vehicles.

While delays are projected to be long with the addition of development traffic, the side-street volumes are relatively low and are well below the minimum thresholds for signalization. As such, no further improvements are identified at this time to address the low levels of service. In the long-term a connection should eventually be made to the east of the site to allow site traffic to access the existing signalized intersection at 23rd Street and the commercial driveway to the east of the site.

Appendix A - Figures

Figure A-I	Location Map
igure A-2	Site Plan
Figure A-3	Existing Lane Configurations and Traffic Controls
Figure A-4	Existing A.M. Peak Hour Traffic Volumes
Figure A-5	Existing P.M. Peak Hour Traffic Volumes
Figure A-6	Existing plus Development Lane Configurations and Traffic Controls
Figure A-7	Existing plus Development A.M. Peak Hour Traffic Volumes
Figure A-8	Existing plus Development P.M. Peak Hour Traffic Volumes
Figure A-9	Future Year (2040) Lane Configurations and Traffic Controls
Figure A-10	Future Year (2040) A.M. Peak Hour Traffic Volumes
Figure A-11	Future Year (2040) P.M. Peak Hour Traffic Volumes





23rd St

Woodbury St

Haden St -

Figure A-3

June 2020

No Scale

Independence, Missouri McBee Landing Traffic Impact Study

Kings Hwy

Legend



- Traffic Signal



- Stop Sign



- Lane Configuration



23rd St Woodbury St Haden St Kings Hwy 792-

Legend

pwiking-pwinto1.a-e iransyscop.com/brainsyscop-pwi/Locumental-Projects_2020/KC161 - Kansas City/P101200135 - McBoe Landing Traffic Impact Study/310.00 - Traffic)Lane Configurations and Volumedign

123 - Total Hourly Volume

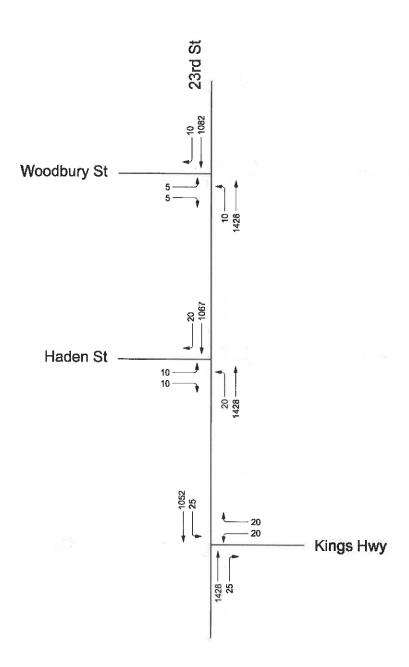


Figure A-5

June 2020

No Scale

Independence, Missouri McBee Landing Traffic Impact Study

P.M. PEAK HOUR TRAFFIC VOLUMES



pwithe-pwint01 - extensyscorp.com/tocuments/Projects_2020IKC101 - Kansas Cityle-101200135 - McBae Landing Traffic Impact Study/310.00 - TrafficLane Configurations and Volume dgn

Kings Hwy

Legend



- Traffic Signal



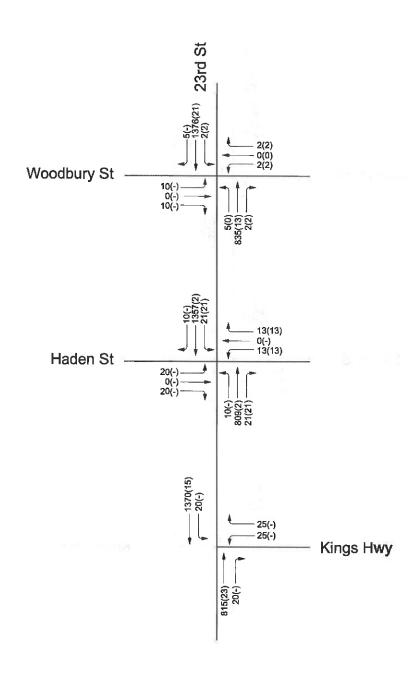
Stop SignLane Configuration

June 2020 No Scale

McBee Landing Traffic Impact Study

Independence, Missouri

EXISTING PLUS DEVELOPMENT CONDITIONS A.M. PEAK HOUR TRAFFIC VOLUMES





mens/Projects_2020KC101 - Kensas City/P101200135 - McBae Landing Traffic Impact Study(310.00 - Traffic/Lane Configurations and Volume.dgn

pw/ling-pwint01.a-e.transysconp.com:bransyscorp-pw1\Docu

Total Hourly Volume 123(45)

Proposed Development Traffic

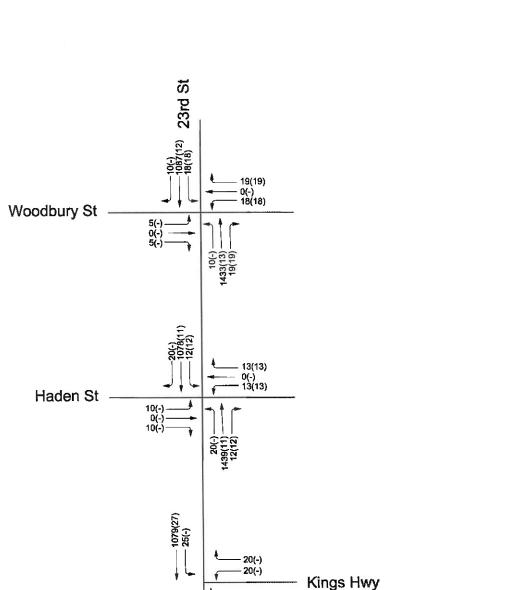




Figure A-8

No Scale

McBee Landing Traffic Impact Study Independence, Missouri

June 2020



Total Hourly Volume

123(45)

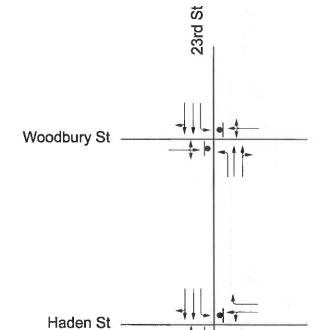
Proposed Development Traffic

Figure A-9

No Scale

June 2020

Independence, Missouri McBee Landing Traffic Impact Study



Kings Hwy

Legend



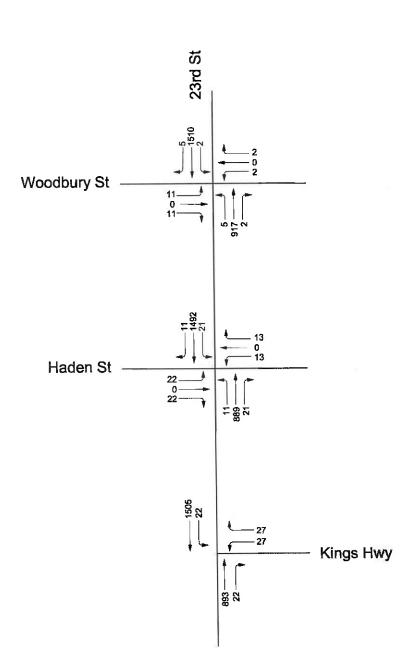
pw/ling-pwind1.ae.lransyscorp.com/bransysco

- Traffic Signal



- Stop Sign - Lane Configuration





FUTURE YEAR 2040 A.M. PEAK HOUR TRAFFIC VOLUMES

Figure A-10

June 2020

No Scale

McBee Landing Traffic Impact Study Independence, Missouri



Legend

priking-pwin01 a-stransyscorp.com:transyscorp.pw10.commens/Projects_2020KC101 - Kansas CityP101200195 - McBee Landing Traffic Impact Study/310.00 - Traffic Lane Conligurations and Voluma.dgn

Moderndence, Missouri

Kings Hwy

22 – 1581 – 12 –

1181 27 FUTURE YEAR 2040 P.M. PEAK HOUR TRAFFIC VOLUMES

Tran Systems

Legend

orp-pw1/Documents/Projects_2020/KC101 - Kansas City4P101200135 - McBee Landing Traffic Impact Study/310.00 - Traffic/Lane Configurations and Volume.dgn

Haden St -

McBee Landing Traffic Impact Study
23rd Street at Haden Street
Independence, Missouri

A	\p	p	en	dix	В	-	T	rip		Genei	ation	and	Di	istr	·ib	ut	io	n
---	-----------	---	----	-----	---	---	---	-----	--	-------	-------	-----	----	------	-----	----	----	---

See attached worksheets.

McBee Landing TIS Independence, Missouri Trip Generation

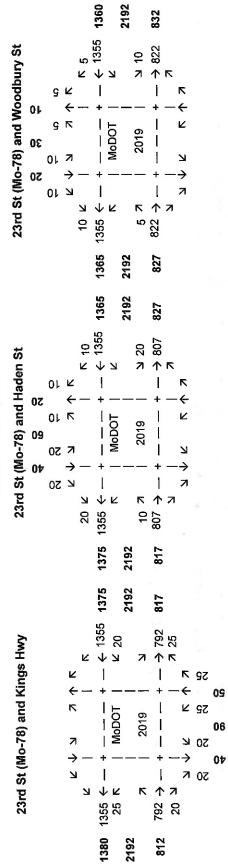
		里			A.M.	A.M. Peak Hour	ur			P.M.	P.M. Peak Hour	ır	
Land Use	Intensity	Code	Daily	Total	w lu	% Out	ln	Out	Total	w In	% Out	ln	Out
Automated Car Wash	5,200 sf	948	400	ω	20%	20%	4	4	74		20%	37	37
Office Building	10,400 sf	710	168	36	%98	4%	2	S	4		84%	7	12
Senior Adult Housing - Detachated	68 units	251	40	31	33%	%19	0	71	36		36%	22	4
Total Proposed	osed Development T	Trips	696	7.5			45	30	124			19	63
	Pass-by	Trips	١.	'				-	30			15	15
	Non-Pass by	/ Trips	l	7.5			45	30	94			46	48
Tatal New Proposed Dev	osed Development Trips	Trips	696	7.5			45	30	94			46	48

Notes -

- Trip generation estimates were developed using ITE's Trip Generation, 10th Edition.







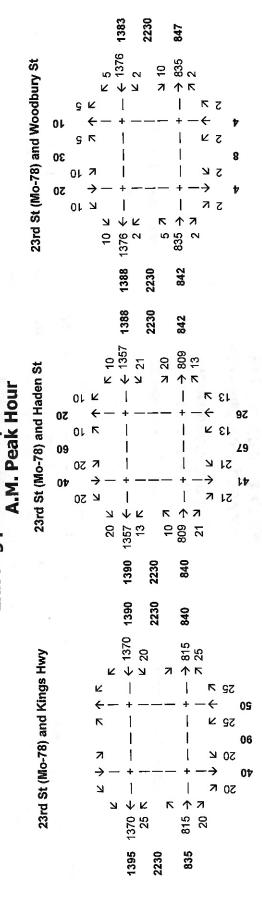
Existing Conditions P.M. Peak Hour

23rd St (Mo-78) and Woodbury St + - - + 10 7 1438 1428 4 -- + — — — + — → 1428 1438 2525 23rd St (Mo-78) and Haden St 20 21 1448 1428 → 1 + · 1077 1067 ← — + R 2525 1077 23rd St (Mo-78) and Kings Hwy ⊼ 02 -← L 02 + — — + MoDOT | 72 K ←→ 72 K 1072 1052 ← -- + 20 R -- 13525

McBee Landing TIS

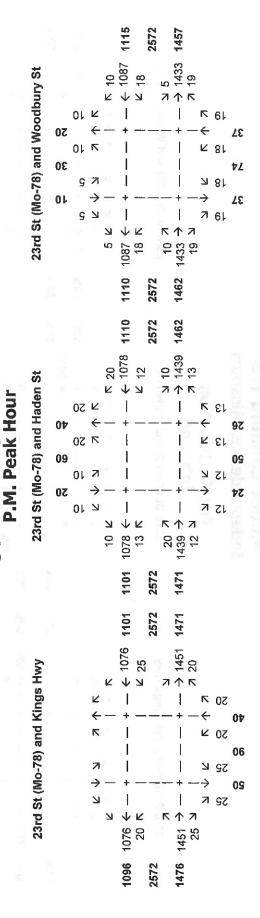
Independence, Missouri

Existing plus Development Conditions



Independence, Missouri McBee Landing TIS

Existing plus Development Conditions



Trip Distribution Inbound

23rd St (Mo-78) and Haden St

23rd St (Mo-78) and Kings Hwy

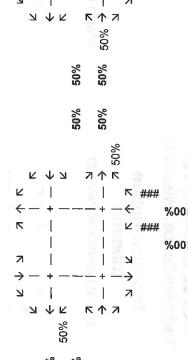
23rd St (Mo-78) and Woodbury St

20% 20% %05 → - → %09 %05 R トイオ 50% 20% 20% K 50% 400k 400k 下个刀 20% 20% ∠ + 50% **50%** 20% €0% 20% → 20%

Trip Distribution Outbound

23rd St (Mo-78) and Haden St

23rd St (Mo-78) and Woodbury St



20% 20%

| | | |

7 ↑ N

23rd St (Mo-78) and Kings Hwy

20% 20% 20% 20% ⊼ .← 50% 7 - → %05 %**05** ト个オ

20%

Trip Distribution Inbound

23rd St (Mo-78) and Woodbury St 20% 20% 23rd St (Mo-78) and Haden St | ↓∠ 20% 20% 23rd St (Mo-78) and Kings Hwy

20% 20%

א ל 12 א %00↓ %001 7 × ↑ 7 × 20% Ψ \bowtie 20% **20% 20% ★** 20% × → 50% **50%**

€ %09 %09

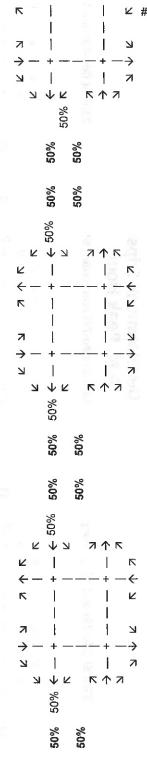
20%

Trip Distribution Outbound

23rd St (Mo-78) and Haden St

23rd St (Mo-78) and Kings Hwy

23rd St (Mo-78) and Woodbury St



50% 50%

> 7 ↑ N 7 • N 1 • N

7

400%

%001

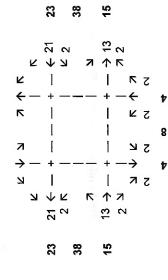
P101200135

Development Trips A.M. Peak Hour

23rd St (Mo-78) and Haden St

23rd St (Mo-78) and Kings Hwy

23rd St (Mo-78) and Woodbury St



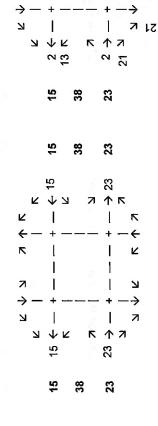
5

۷9

21 K

7

23

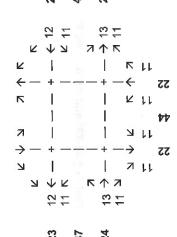


Development Trips P.M. Peak Hour

23rd St (Mo-78) and Haden St

23rd St (Mo-78) and Kings Hwy

23rd St (Mo-78) and Woodbury St



24

09

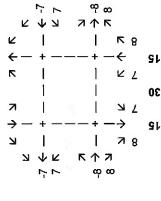
23

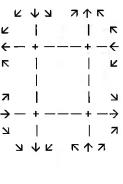
	~		i			7
	7		1		- 11	7
		7			个才	
			<u>+</u> c c		7 5	4
			24	47	23	
			24	47	23	
			.4	4	14	
			4		23	
			- 24			
		Z	Υ 7	,	1 个 下	
	¥ ←		-			K
	\leftarrow	_	+ -		- + -	-← ∠
	K		l			K
			1		l	
	7		i		i	ĸ
	\rightarrow	_	<u> </u>	<u> </u>	_ + -	
	R		i		ĺ	-→ 7
	7			7		
		7	ΨĽ	9 1	マイス	1
			24		23	
			24	47	23	

Pass-by Trips P.M. Peak Hour

23rd St (Mo-78) and Haden St

23rd St (Mo-78) and Woodbury St





7

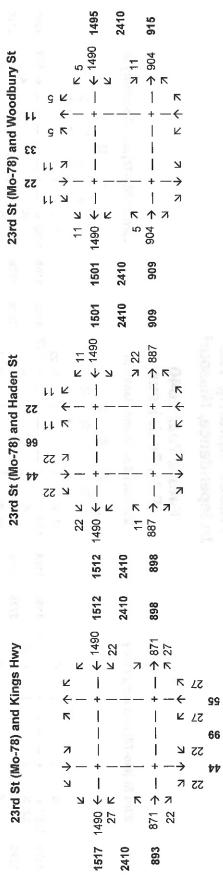
ト个オ

23rd St (Mo-78) and Kings Hwy

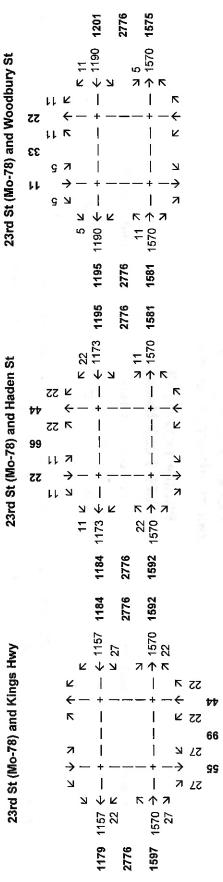
и ↓ к



Future Year 2040 A.M. Peak Hour



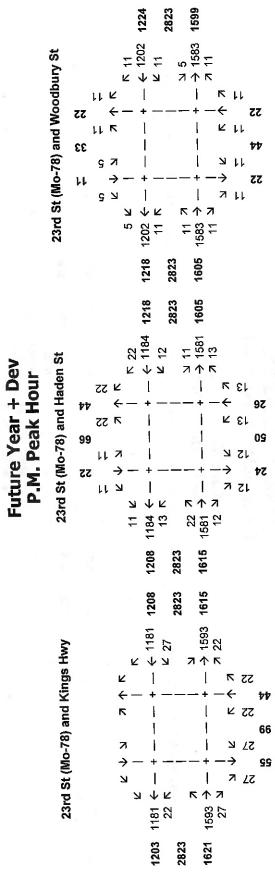
Future Year 2040 P.M. Peak Hour



Future Year + Dev A.M. Peak Hour

		1518	2448	930	
23rd St (Mo-78) and Woodbury St	11 7 7 1 1 7 7 1 1 2 6 7 -	1510 \leftarrow + + - \leftarrow 1510 \leftarrow	7	+ + + 917 - + 32 -	8
		1523	2448	924	
		1523	2448	924	
23rd St (Mo-78) and Haden St	22 × × × × × × × × × × × × × × × × × ×	 		921 889 → + + - → 889 21 ×	29 21 21 71 71
		1527	2448	921	
23rd St (Mo-78) and Kings Hwy	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1505	The same state of the same sta	893 → + + + + - → 893 22 ¥	22 - 25 25 25 25 25 25 25
		532	448	915	

McBee Landing TIS Independence, Missouri



2823

McBee Landing Traffic Impact Study 23rd Street at Haden Street Independence, Missouri

Appendix C - Capacity Analysis Reports

See attached worksheets.

Intersection						
Int Delay, s/veh	1					
•	EBT	EBR	WBL	WBT	NBL	NBR
		EBK				NDK
Lane Configurations	1	^^	7	4255	N/	0.5
Traffic Vol, veh/h	792	20	20	1355	25	25
Future Vol., veh/h	792	20	20	1355	25	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None		None		None
Storage Length	-	-	Ö	-	0	-
Veh in Median Storage,	# 0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
	2	2	2	2	2	2
Heavy Vehicles, %			22		27	27
Mvmt Flow	861	22	22	14/3	21	ZI
Major/Minor M	lajor1	N	Major2		Minor1	
Conflicting Flow All	0	0	883	0	1653	442
		J	-	0	872	772
Stage 1	-	-			781	
Stage 2			-	-		- 0.04
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-		-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	762	-	89	563
Stage 1	-	-	-	-	369	-
Stage 2		_			412	-
Platoon blocked, %		-				
			762		86	563
Mov Cap-1 Maneuver					86	
Mov Cap-2 Maneuver	-					
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	400	
Augustah	ED		MD		NB	
Approach	EB	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	WB			
HCM Control Delay, s	0		0.1		42.4	
HCM LOS					E	
Minor Long/Major M.	.+	NIDI n1	EBT	EDD	WBL	WBT
Minor Lane/Major Mvm	IL	NBLn1				
Capacity (veh/h)		149			762	
HCM Lane V/C Ratio		0.365			0.029	
HCM Control Delay (s)		42.4			9.9	
HCM Lane LOS		E		-		
HCM 95th %tile Q(veh))	1.5	i .		0.1	-
HOW SOUL YOUR CALACIL	1	l. u			V.	

Intersection									
Int Delay, s/veh	0.6							\$.6	it Decay, short
Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations	ሻ	44	^		M		4	4A 14 17	anguero, irra i ene
Traffic Vol, veh/h	10	807	1355	10	20	20			
Future Vol, veh/h	10	807	1355	10	20	20			dusy love to
Conflicting Peds, #/hr	0	0	0	0	0	0			
Sign Control	Free	Free	Free	Free	Stop	Stop			
RT Channelized	-	None		None		None			
Storage Length	0	-	-	-	0	-			
Veh in Median Storage	,# -	0	0	-	0	-			
Grade, %	-	0	0	-	0	-			
Peak Hour Factor	92	92	92	92	92	92			
Heavy Vehicles, %	2	2	2	2	2	2			
Mvmt Flow	11	877	1473	11	22	22			
Major/Minor	Major1		Major2		Minor2				
Conflicting Flow All	1484	0	-	0	1940	742	RET BEAR O	3 3327	Date: Profesion
Stage 1			-		1479				
Stage 2	_	_	-	-	461	_			
Critical Hdwy	4.14	-	_		6.84	6.94			
Critical Hdwy Stg 1	-	_	_	_	5.84	-			
Critical Hdwy Stg 2	-	_	-	_	5.84	_			
Follow-up Hdwy	2.22	_	_	-	3.52	3.32			resolved mission to
Pot Cap-1 Maneuver	449			_	57	358			
Stage 1	-	_	-	_	176	_			
Stage 2	-		-		601				
Platoon blocked, %		-	-	_					
Mov Cap-1 Maneuver	449	_	-	_	56	358			
Mov Cap-2 Maneuver	-		-	_	138	-			
Stage 1	_	-		_	172	_			
Stage 2	_	-	_	_	601	-			
Annach	ED		MD		CD				
Approach HCM Control Delay, s	0.2		WB 0		SB 28.1				
HCM LOS	U.Z		U		200000000000000000000000000000000000000				
ncivi LOS					D				
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WRP	SBLn1			
Capacity (veh/h)		449	LDI	WDI	VVDIX				
HCM Lane V/C Ratio		0.024	-	-		0.218			
HCM Control Delay (s)		13.2	-	_	_				
HCM Lane LOS		13.2 B				∠0.1 D			
HCM 95th %tile Q(veh)	100000	0.1		-		0.8			
HOM SOM WHIE CHARL		U, I	-	_	-	0.8			

ntersection												
nt Delay, s/veh	0.3											- 4
Novement	EBL	EBT	WBT	WBR	SBL	SBR						
ane Configurations	ኘ	^	1		**						1	E fosé s
raffic Vol, veh/h	5	822	1355	5	10	10						
future Vol, veh/h	5	822	1355	5	10	10						
Conflicting Peds, #/hr	0	0	0	0	0	0						
Sign Control	Free	Free	Free	Free	Stop	Stop		-101-		2127272220		
RT Channelized	-	None	-	None		None						
Storage Length	0	-	_	-	0	-						
/eh in Median Storage		0	0	-	ŏ	-						
Grade, %	, # -	0	0	-	0				(2)			
Peak Hour Factor	92	92	92	92	92	92						
	2	2	2	2	2	2						76
Heavy Vehicles, % Mymt Flow	5	893	1473	5	11	11		TANKE BE				
VIVIIIL FIOW	J	090	14/3	บ	H	11						
			1-1-0		line o							
	Major1		Major2		/linor2	700					APS SOUR	
Conflicting Flow All	1478	0	-	0	1933	739						
Stage 1	-	-	-			-						
Stage 2	-	-	-	-	457							
Critical Hdwy	4.14	-	-	-	6.84	6.94						
Critical Hdwy Stg 1	-	i .	-	-	5.84	-						
Critical Hdwy Stg 2	-	-	-	-	5.84	-						
Follow-up Hdwy	2.22	-	-	-	3.52	3.32						
Pot Cap-1 Maneuver	452	-	-	-	58	360						
Stage 1	-	-	-	-	176	-						
Stage 2	-	-	-	-	604	-						
Platoon blocked, %		-	-	-								
Mov Cap-1 Maneuver	452		-	-	57	360						
Mov Cap-2 Maneuver	-	-	-	-	140	-						
Stage 1	-	-		-	174	-						
Stage 2	-	-	-	-	604	-		-11				
							The state of the s					
Approach	EB		WB		SB							
HCM Control Delay, s	0.1		0		25							
HCM LOS					D							
Minor Lane/Major Mvn	nt	EBL	EBT	WBT	WBR	SBLn1						
Capacity (veh/h)		452				202						
HCM Lane V/C Ratio		0.012				0.108						
HCM Control Delay (s		13.1				25						
HCM Lane LOS		13.1 B										
	150000					THE REAL PROPERTY.						
HCM 95th %tile Q(veh	IJ	0	-			0.4						

Intersection											
Int Delay, s/veh	2.2								The second secon		n Dalay, shet
Movement	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations	^ }		19	44	**					7	Syndeylerine () sas
	1428	25	25	1052	20	20					
	1428	25	25	1052	20	20					
Conflicting Peds, #/hr	0	0	0	0	0	0					
	Free	Free	Free	Free	Stop	Stop					
RT Channelized	-	None	1100	None	-	and the second second					
Storage Length	_	-	0	-	0	-					
Veh in Median Storage,	# 0	_	-	0	0						
Grade, %	0	-	-	0	0						
Peak Hour Factor	92	92	92	92	92	92					
Department of the Control of the Con											
Heavy Vehicles, %	2	2	2	2	2	2					
Mvmt Flow	1552	27	27	1143	22	22					
Major/Minor Ma	ajor1	N	Major2	ı	Minor1						
Conflicting Flow All	0	0	1579	0	2192	790	1-32		a	(4)	8/4 mol7 nestribus
Stage 1	-	o o	-		1566	-					
Stage 2	-		_	_	626	_					
Critical Hdwy			4.14		6.84	6.94					
	-	-		-	5.84						
Critical Hdwy Stg 1	-	_	_	-		-					
Critical Hdwy Stg 2		-		•	5.84	-					
Follow-up Hdwy	-	-	2.22	-	3.52	3.32					
Pot Cap-1 Maneuver	-	-	413	-	39	333					
Stage 1	-	-	-	-	158	-					
Stage 2		-	-	-	495	-					
Platoon blocked, %	_	-		-							
Mov Cap-1 Maneuver	-	-	413	-	36	333					
Mov Cap-2 Maneuver	-	-	-	-	36	-					
Stage 1		-	_	-	158	-					
Stage 2	-	_	-	-	463	-					
Approach	EB		WB		NB						
HCM Control Delay, s	0		0.3		135						
HCM LOS					F						
Minor Lane/Major Mvmt		NBLn1	EBT	EBR	WBL	WBT					
	7200	65			413						
Capacity (veh/h)			-	-		•					
HCM Lane V/C Ratio		0.669	-	-	0.066	_					
HCM Control Delay (s)		135	-	-	14.3	-					
HCM Lane LOS		F	_	-	В	-					
HCM 95th %tile Q(veh)		2.9	-	-	0.2	-					

ntersection								
nt Delay, s/veh	0.3						99.5	
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
ane Configurations	7	^	1		W		A SA Managaran	
Traffic Vol, veh/h	20	1428	1067	20	10	10		
Future Vol, veh/h	20	1428	1067	20	10	10		
Conflicting Peds, #/hr	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Stop	Stop	19 ago con at 1 of 15 the	
RT Channelized	-	None	-	None	-	None		
Storage Length	0	-	-	-	0	-		176
Veh in Median Storage,	# -	0	0		0	-		
Grade, %	-	0	0	-	0	-		- 13
Peak Hour Factor	92	92	92	92	92	92		
Heavy Vehicles, %	2	2	2	2	2	2	A A A A A A A A A A A A A A A A A A A	
Mvmt Flow	22	1552	1160	22	11	11		
Major/Minor N	/lajor1	ı	Major2		Minor2			
Conflicting Flow All	1182	0	_			591	(a) the second of the second of	
Stage 1	-				1171			
Stage 2	_	_	_		820	-	P1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
Critical Hdwy	4.14	_	_	_	6.84	6.94		
Critical Hdwy Stg 1		_		_	5.84	_	NAV.	
Critical Hdwy Stg 2		_			5.84			
Follow-up Hdwy	2.22		_	_	3.52	3.32		
Pot Cap-1 Maneuver	587	<u></u>		- S	53	450		
Stage 1	301				257	-		
Stage 2	_				393			
Platoon blocked, %				-	000			
Mov Cap-1 Maneuver	587	_		2	51	450		
Mov Cap-1 Maneuver	- 301	-	-		400	-100		
Stage 1	-	_			0.17			
The state of the s	-	_			000	_		
Stage 2	_				383			
A	FD		\A/D		SB			
Approach	0.2		WB		21.8			
HCM Control Delay, s	0.2		U		21.0 C			
HCM LOS								
Minor Lane/Major Mvn	nt	EBL	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)		587				236		
HCM Lane V/C Ratio		0.037				0.092	2 (4) C (4) C (4) C (4)	
HCM Control Delay (s	B Car	11.4				21.8		
HCM Lane LOS		В				. C		
	1	0.1				0.3		
HCM 95th %tile Q(veh	1)	U. I		150000		0.0		

Intersection												
Int Delay, s/veh	0.1										rievas va	
Movement		EDT	MOT	MDD	CDI	CDD					10/2 10	
	EBL	EBT	WBT	WBR	SBL	SBR						
Lane Configurations	10	44	↑ ↑	40	W	-						
Traffic Vol, veh/h	10	1428	1082	10	5	5						
Future Vol, veh/h	10	1428	1082	10	5	5						
Conflicting Peds, #/hr		0	0	_ 0	0	0						
Sign Control	Free	Free	Free	Free	Stop	Stop						
RT Channelized	-	None	-	None		None						
Storage Length	0	-	L	-	0	-						
Veh in Median Storag	e,# -	0	0	-	0	_						
Grade, %	-	0	0	-	0	-						
Peak Hour Factor	92	92	92	92	92	92						
Heavy Vehicles, %	2	2	2	2	2	2						
Mvmt Flow	11	1552	1176	11	5	5						
Major/Minor	Major1		Major2		Minor2	Richard		100000				
Conflicting Flow All	1187	0	-	0		594	1.21	262	0.06			
Stage 1	1107	-	_	-	1182	594						
Stage 2		_	_	<u>-</u>	798	_						
Critical Hdwy	4.14	<u>-</u>			6.84	6.94						
Critical Hdwy Stg 1	4.14		-	-								
			<u>-</u>	_	5.84							
Critical Howy Stg 2	0.00	-	-	-	5.84	2.00						
Follow-up Hdwy	2.22		_	-	3.52	3.32						
Pot Cap-1 Maneuver	584	-	-	-	54	448						
Stage 1	-		_	-	254	-						
Stage 2	•	-	-	-	404	•						
Platoon blocked, %		-	-		and a	-						
Mov Cap-1 Maneuver		-	-	-	53	448						
Mov Cap-2 Maneuver	-	-	-	-	163	-						
Stage 1	-	-	-	-	249	-						
Stage 2		-	-	-	404	-						
Approach	EB		WB		SB							
HCM Control Delay, s			0		20.8							
HCM LOS					C							
Minor Long (Marian M		EDI	FDT	VAIDT	MADE	OD! 4						
Minor Lane/Major Mvr	nt	EBL	EBT	WBT		SBLn1						
Capacity (veh/h)		584	-		-	239						
HCM Lane V/C Ratio		0.019	-	-		0.045						
HCM Control Delay (s)	11.3	-	-	-	20.8						
HCM Lane LOS		В	-	-	-	С						
HCM 95th %tile Q(veh	1)	0.1		-	-	0.1						

ntersection nt Delay, s/veh	1				The second second	
-			11/51	14/5-	ME	NDD
Movement	EBT	EBR	WBL	WBT	NBL	NBR
ane Configurations	1		ኘ	44	W	
raffic Vol, veh/h	815	20	20	1370	25	25
Future Vol, veh/h	815	20	20	1370	25	25
Conflicting Peds, #/hr	0	0	0	_ 0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None		None	-	None
Storage Length	-	-	0	-	0	-
Veh in Median Storage,		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	886	22	22	1489	27	27
Major/Minor N	/lajor1		Major2	١	/linor1	
Conflicting Flow All	0	0	908	0	1686	454
	Ū		500	U	897	TUT -
Stage 1	-	-			789	-
Stage 2			4.14	_	6.84	6.94
Critical Howy	-	_	4.14	-	5.84	0.54
Critical Hdwy Stg 1					5.84	
Critical Hdwy Stg 2	=		2.22		3.52	3.32
Follow-up Hdwy	AS CHIC		745		3.52	553
Pot Cap-1 Maneuver	-	•	745	-	358	200
Stage 1	-	-	-		700 -	
Stage 2	-	-	-	-	408	-
Platoon blocked, %	-		745	1000000	00	EEO
Mov Cap-1 Maneuver	-		745	-	82	
Mov Cap-2 Maneuver	-	-	-		82	
Stage 1	-	-	-	-	358	
Stage 2		-	-	-	396	_
					MARIE	
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		44.8	
HCM LOS	U				E	
1 IOW LOO						
					14.5	14/57
Minor Lane/Major Mvn	nt	NBLn1				
Capacity (veh/h)		143				
HCM Lane V/C Ratio		0.38			0.029	
HCM Control Delay (s)	44.8			10	
HCM Lane LOS		E				
HCM 95th %tile Q(veh	1)	1.6	;	-	0.1	-
The state of the s						

Intersection															
Int Delay, s/veh	3.4													Parks VB	9/1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	ř	414		7	44	à		4	7		4			uli rupirei	l en
Traffic Vol, veh/h	10	809	21	21	1357	10	13	0	13	20	0	20			
Future Vol, veh/h	10	809	21	21	1357	10	13	0	13	20	0	20			
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0			
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop			
RT Channelized	_		None		-	None			None	-	-	None			
Storage Length	0	_	-	0	_	-	-	_	0	_		-			
Veh in Median Storage	# -	0			0		_	0			0				
Grade, %	_	_	_	-	0	-	-	0	_	_	0	_			
Peak Hour Factor	92	_	92	92	92	92	92	92	92	92	92	92			
Heavy Vehicles, %	2	10000000	2	2	2	2	2	2	2	2	2	2			
Mymt Flow	11	_	23	23	1475	11	14	0	14	22	0	22			
MATTER TOWN		010	20	20	1410		14	U	14	22	U	22			
Major/Minor N	/lajor1			Major2			Minor1			Minor2					
Conflicting Flow All	1486	0	0	902	0	0	1697	2445	451	1989	2451	743	21	A word neith	
Stage 1							913	913	-	1527	1527	- 10			
Stage 2	-	-	£10 .	25 -	-		784	1532	-	462	924	_			
Critical Hdwy	4.14			4.14			7.54	6.54	6.94	7.54	6.54	6.94			
Critical Hdwy Stg 1	-	_	_		-	_	6.54	5.54	-	6.54	5.54	0.07			
Critical Hdwy Stg 2	_						6.54	5.54	_	6.54	5.54				
Follow-up Hdwy	2.22			2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32			
Pot Cap-1 Maneuver	448			749	_		60	31	556	3.32	31	358			
Stage 1	440			140		-	294	350		123					
Stage 2	-				-				-		178	-			
Platoon blocked, %	-	•		-	-	-	352	177	-	549	346	-			
	140	FSDSONG		740	-	-	C 4	00	FFO	0.4	00	0.50			
Mov Cap-1 Maneuver	448		-	749	-	-	54	29	556	34	29	358			
Mov Cap-2 Maneuver	-		-) 2000/00/2000		-	_	54	29	-	34	29	-			
Stage 1	-		-	-	-	-	287	341	-	120	172	-			
Stage 2	-	-	-	-	_	_	320	172	_	522	337	-			
Approach	EB			WB			NB			SB					
HCM Control Delay, s	0.4			0.2			52.7			147					
HCM LOS	0.1			U.L			F			F					
Minor Lane/Major Mvm		NBLn1	NIDI 52	EBL	EBT	EBR	WDI	WDT	WDD	SBLn1					
		54	556				WBL	WBT	VVDR						
Capacity (veh/h)				448	-	-	749	-	-	62					
HCM Lane V/C Ratio			0.025		-	-	0.03	ANTE -	-	0.701					
HCM Control Delay (s)		93.8	11.6	13.2	0.2		10	-	•	147					
HCM Lane LOS		F	В	В	Α	-	Α	_	-	F					
HCM 95th %tile Q(veh)		0.9	0.1	0.1	-	-	0.1	-	-	3					

ntersection														
nt Delay, s/veh	0.9													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
ane Configurations	14	^		ሻ	†			4			4			
Traffic Vol, veh/h	5	835	2	2	1376	5	2	0	2	10	0	10		
Future Vol. veh/h	5	835	2	2	1376	5	2	0	2	10	0	10		
Conflicting Peds, #/hr	0	0	Ō	0	0	0	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop		
RT Channelized			None			None			None		-	None		
Storage Length	0	-	(2, 1 =, 1 = 10m) -	0	-	-	-	_	-	_	_	_		V 5.4 5.6
/eh in Median Storage,	# -	0	-		0			0	-	-	0			
Grade, %	100.00000	Ō	-	-	0	-	-	0	_	-	0	-		
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92		
leavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2		
Mymt Flow	5	908	2	2	1496	5	2	0	2	11	0	11		
77777		.00	ESCON -	-		CONTROL DO			_					
Major/Minor N	/lajor1		N	Major2		١	/linor1		1	Minor2				
Conflicting Flow All	1501	0	0	910	0	0	1671	2424	455	1967	2423	751	9-	 ค. อวี รูกรัร
Stage 1	-	-	-	-	-	-	919	919	-	1503	1503	-		
Stage 2	-	-	. ·		-	157 -3	752	1505	-	464	920	-		
Critical Hdwy	4.14	-		4.14	_	-	7.54	6.54	6.94	7.54	6.54	6.94		
Critical Hdwy Stg 1	-	-	3 -1	-	-	2 -1	6.54	5.54	-	6.54	5.54	-		
Critical Hdwy Stg 2	-		-	_	=	-	6.54	5.54	-	6.54	5.54	-		
Follow-up Hdwy	2.22	_	_	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32		
Pot Cap-1 Maneuver	442		-	744	_	-	63	32	552	37	32	353		
Stage 1	-	_	_	-	-	-	292	348	-	127	183	-		
Stage 2	-			_	_	-	368	182	-	548	348	-		
Platoon blocked, %		_	-		_	_								
Mov Cap-1 Maneuver	442	_		744	_	_	60	32	552	36	32	353	1900	
Mov Cap-2 Maneuver	_	_	_		-	_	60	32		36	32	-	124 6	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Stage 1	-		_		-	-	289	344		126	182	-		
Stage 2	-		-	-	_		356	181	_	540	344	-		()
-10302														
Approach	EB			WB			NB			SB				
HCM Control Delay, s	0.1			0			39.7			86				
HCM LOS							E			F				/1
Minor Lane/Major Mvn	nt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)		108	442			V/41-55 Tr			35.000					
HCM Lane V/C Ratio		The second secon	0.012	-		0.003			0.334					
HCM Control Delay (s)		39.7				Committee of the last of the l	<u> </u>		AUTORIO					
HCM Lane LOS	1201000	39.7 E	13.2 B	_		The second second	_		_					
HCM 95th %tile Q(veh	A THE SAME	0.1	0			FF. 85655 A	-							
LIOIM SOUT WITE OF AGI	7	0.1	U			v			1.2					

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1		া	44	N	
Traffic Vol, veh/h	1451	25	25	1079	20	20
Future Vol, veh/h	1451	25	25	1079	20	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None		None
Storage Length	-	-	0	-	0	-
Veh in Median Storage,	# 0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1577	27	27	1173	22	22
Major/Minor M	lajor1	N	Major2	ı	Minor1	
Conflicting Flow All	0	0	1604	0	2232	802
Stage 1			-	-	1591	
Stage 2	-	-	-	- E	641	97 -3
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	. 3	3.3 -	9.5 -	5.84	
Critical Hdwy Stg 2	-	-	-	-	5.84	
Follow-up Hdwy	-		2.22	-	3.52	3.32
Pot Cap-1 Maneuver	_	-	404	-	36	327
Stage 1	-	_	_	-	153	_
Stage 2		_	-	-	487	_
Platoon blocked, %	-	-		_	- 100	
Mov Cap-1 Maneuver			404	_	34	327
Mov Cap-2 Maneuver	-		.07	_	34	-
Stage 1	-			_	153	
Stage 2			115,	_	454	Af .
Cago L				10000	-10-1	
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.3		147	
HCM LOS	U		0.3		147 F	
TIGINI EGG					Г	
Minor Lane/Major Mvmt		NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		62			404	
HCM Lane V/C Ratio		0.701	-	-		-
		147	-			-
HCM Control Delay (s)			-	-	14.6	-
HCM Lane LOS HCM 95th %tile Q(veh)		F 3	-	-	0.2	-

Intersection											and the second			
Int Delay, s/veh	2.7												8	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	ሻ	^		ሻ	1			4	T T	9	4	- 4	10.1	
Traffic Vol, veh/h	20	1439	12	12	1078	20	13	0	13	10	0	10		
Future Vol, veh/h	20	1439	12	12	1078	20	13	0	13	10	0	10		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop		
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None		
Storage Length	0	-	-	0	-	_	-	-	0	-	-	-:		
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	=		
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-		
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92		
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2		
Mvmt Flow	22	1564	13	13	1172	22	14	0	14	11	0	11		
Major/Minor N	/lajor1		1	Major2		1	Minor1		1	Minor2				
Conflicting Flow All	1194	0	0	1577	0	0	2227	2835	789	2035	2830	597		
Stage 1	-	-	-	-	•	-	1615	1615	-	1209	1209			
Stage 2	-	10.7	-	-	-	-	612	1220	-	826	1621	-		
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94		
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	# 1 ·	6.54	5.54	-		
Critical Hdwy Stg 2	-		-	-	-	-	6.54	5.54	-	6.54	5.54			
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32		
Pot Cap-1 Maneuver	580	-		414	-	_	24	17	333	33	17	446		
Stage 1	-	-	-	-	-	-	108	161	-	194	254	-		
Stage 2	_	-	-	-	-	-	447	251	_	332	160	-		
Platoon blocked, %		-	-		-	-								12 (2.45)
Mov Cap-1 Maneuver	580		-	414	_	-	22	16	333	30	16	446		
Mov Cap-2 Maneuver	_	_	_	-	-	-	22	16	-	30	16	-		
Stage 1				_			104	155	-	187	246	-		
Stage 2	-		-	-	-	-	422	243	-	306	154	-		
Approach	EB			WB			NB			SB				
HCM Control Delay, s	0.2			0.2			168.2			105.4				
HCM LOS							F			F				
Minor Lane/Major Mvn	nt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)		22					414			56				
HCM Lane V/C Ratio			0.042			-	0.032		6 - 6 -	0.388				
HCM Control Delay (s		\$ 320					14			105.4				
HCM Lane LOS		F					-			F				
HCM 95th %tile Q(veh	19894	1.9								a Country of				
TOTAL VOID OCTOR	7	1.0	V. 1	•										

ntersection													
nt Delay, s/veh	4											1	rava i sla
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
ane Configurations	7	^		ř	44			4	Y 1	٦		4	Configurations P
raffic Vol, veh/h	10	1433	19	18	1087	10	18	0	19	5	0	5	
uture Vol, veh/h	10	1433	19	18	1087	10	18	0	19	5	0	5	
Conflicting Peds, #hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	None		-	None			None	-	-	None	
Storage Length	0	-	-	0	-	-	-	-	-	0	-	-	
eh in Median Storage,	# -	0	-	-	0	_		0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	
leavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	
Nymt Flow	11	1558	21	20	1182	11	20	0	21	5	0	5	
WWITE TION	1.5	1000	-,	20	1102								
Major/Minor N	1ajor1		N	Major2		1	Minor1		I	Minor2			
Conflicting Flow All	1193	0	0	1579	0	0	2222	2824	790	2029	96 1	597	lefing Flow All
Stage 1		-			-		1591	1591	-	1228	-	-	
Stage 2	-	-	_	-	-	-	631	1233	173 -	801		_	
Critical Hdwy	4.14		_	4.14		-	7.54	6.54	6.94	7.54	-	6.94	
Critical Hdwy Stg 1		-	_	_	-	_	6.54	5.54	88 -	6.54	_	_	
Oritical Howy Stg 2	_	_	_	-			6.54	5.54	-	6.54	-	-	
Follow-up Hdwy	2.22	_	_	2.22	_	_	3.52	4.02	3.32	3.52	2.2	3.32	
Pot Cap-1 Maneuver	581		_	413			24	17	333	34	0	446	
Stage 1	-	_	_		-	_	112	166	-	189	0	_	
Stage 2			_				436	247		344	0	_	
Platoon blocked, %		_	_		_	-	100	- 11		011	•		
Mov Cap-1 Maneuver	581		_	413			23	16	333	30		446	
Mov Cap-2 Maneuver	-			-	_	-	23	16	-	30	_	-	
Stage 1			1000	-			110	163	_	185	_		
Stage 2	_	-	_	-			410	235		317	_		
Stage 2		•		-		-	410	233		211	_	_	
Approach	EB			WB			NB			SB			
HCM Control Delay, s	0.1			0.2			251.9			84.2			
HCM LOS							F			F			
Minor Lane/Major Mvm	t	NBLn1	EBL	EBT	EBR		WBT		SBLn1				
Capacity (veh/h)		44		-			-	-	- 00				
HCM Lane V/C Ratio			0.019	-	-	0.047	-		0.194				
HCM Control Delay (s)		251.9	11.3	-	-		-	-	84.2				
HCM Lane LOS		F	В	_	-		-	_					
HCM 95th %tile Q(veh)		3.7	0.1	-	-	0.1	-	-	0.6				

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	17>	LUIT	YVDE	1	NDL	HUIN
Traffic Vol, veh/h	893	22	22	1505	27	27
Future Vol, veh/h	893	22	22	1505	27	27
-			0			
Conflicting Peds, #/hr	0	0		0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None		None	-	
Storage Length			0	-	0	-
Veh in Median Storage,		-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	971	24	24	1636	29	29
Major/Minor NA	oior1	Α.	Acior2		dinar4	
	ajor1		Major2		Minor1	400
Conflicting Flow All	0	0	995	0	1849	498
Stage 1	-	-	-		983	-
Stage 2	_	-	-	-	866	S -
Critical Hdwy	-	-	4.14	-		6.94
Critical Hdwy Stg 1	-	-	-	41 -	5.84	3 g -
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	691	-	66	518
Stage 1	-	-	-	-	323	-
Stage 2	=	_	_	-	372	-
Platoon blocked, %	_	_		-		
Mov Cap-1 Maneuver	_		691		64	518
Mov Cap-2 Maneuver	_	-	-	_	64	-
Stage 1	-				323	-
		-				
Stage 2	-	_	-	-	359	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		66.1	
HCM LOS	U		V. I		F	
TOWN EOO						
Minor Lane/Major Mvmt		NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		114	-	-	691	-
HCM Lane V/C Ratio		0.515	-	-	0.035	-
HCM Control Delay (s)		66.1	-		and the same of th	-
HCM Lane LOS		F	-	_		-
HCM 95th %tile Q(veh)		2.4	-	-	Difference and a little	-

Intersection														
Int Delay, s/veh	6.7												desig ye	eT:
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
_ane Configurations	ኘ	414		ሻ	1	1		4	7		4		30. H2 H2 12.	9.59
Fraffic Vol, veh/h	11	889	21	33	1492	11	13	0	13	22	0	22		
uture Vol. veh/h	11	889	21	33	1492	11	13	0	13	22	0	22		
Conflicting Peds, #/hr	0	manufacture and	0	0	0	0	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop		
RT Channelized	-		None	-	- 100	None	-	-	None	-	-	None		
Storage Length	0	_	-	0		-	-		0	_		-		
eh in Median Storage		0	_		0			0	-	_	0			
Grade, %	, 17 -			-	0	_	-	0	_	-	0	-		
Peak Hour Factor	92		92	92	92	92	92	92	92	92	92	92		
	2		2	2			2							
leavy Vehicles, %					2	2		2	2	2	2	2		
/vmt Flow	12	966	23	36	1622	12	14	0	14	24	0	24		
Major/Minor N	/lajor1			Major2			Minor1		N	Minor2				
Conflicting Flow All	1634	0	0	989	0		1885	2708			2742	047		
Stage 1				909		0			495	2207	2713	817		
	-	-	•		-	-	1002	1002	-	1700	1700	-		
Stage 2		-	S(-)	-	-	- 1	883	1706	-	507	1013	_		
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94		
Critical Hdwy Stg 1	-	-	2.6 -1	80 -	(-	-	6.54	5.54	-	6.54	5.54	-		
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-		
ollow-up Hdwy	2.22	18 8 37	0 k -	2.22	S	-	3.52	4.02	3.32	3.52	4.02	3.32		
Pot Cap-1 Maneuver	393	-	-	695	-	-	43	21	520	25	21	320		
Stage 1	-	-	- 15	SF -	a-0	-	260	318	_	96	146	-		
Stage 2	-	-	-		-	-	307	145	_	516	315			
Platoon blocked, %		-	-		-	_				0.0	0.0			
Mov Cap-1 Maneuver	393		_	695	-		37	19	520	~ 23	19	320		
Nov Cap-2 Maneuver	-	-		-			37	19	-	~ 23	19	-		
Stage 1							252	308	_	93	138			
	_	_	-		-		269	137		487	305	-		
Stage 2	-	-	-		-	-	209	137	_	407	300	-		
Approach	EB			WB			NB			SB				
HCM Control Delay, s	0.4			0.2			82.6	Sales a	\$	320.2				
HCM LOS	Ų.T			0.2			F		Ψ	520.2 F				
IOW ECO														
/linor Lane/Major Mvm	t	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR S	SBLn1				
Capacity (veh/h)		37	520	393			695			43				
ICM Lane V/C Ratio			0.027	0.03	NAS -		0.052	018.		1.112				
ICM Control Delay (s)		153.1	12.1	14.4	0.2	-	1000 L L			320.2				
ICM Contact Delay (s)							10.5 B							
		F	B	В	Α	-		-	_	F				
ICM 95th %tile Q(veh)		1.3	0.1	0.1	-	-	0.2	-	-	4.5				
Notes														
: Volume exceeds car	acity	\$: De	elay exc	eeds 3	00s	+: Com	putatio	n Not D	efined	*: All	major	volume in	nlatoon	

ntersection	1.3													- 1
nt Delay, s/veh														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
ane Configurations	ጘ	^		ሻ	44	5		4			4			
Traffic Vol, veh/h	5	917	2	2	1510	5	2	0	2	11	0	11		
Future Vol, veh/h	5	917	2	2	1510	5	2	0	2	11	0	11		
Conflicting Peds, #/hr	0	Ò	0	0	0	0	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop		
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None		
Storage Length	0	-	-	0	-	-	_	-	_	-	_	-',		
Veh in Median Storage,	# -	0	-	-	0	-	-	0	-	-	0	-		
Grade, %	-	0	-	-	0	-	-	0	-	-	0	·		
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92		
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2		
Mvmt Flow	5	997	2	2	1641	5	2	0	2	12	0	12		
Major/Minor M	lajor1			Major2		N	Minor1		N	/linor2				
Conflicting Flow All	1646	0	0	999	0	0	1833	2658	500	2157	2657	823	30 20	in and
Stage 1							1008	1008		1648	1648			
Stage 2	_	-			-	_	825	1650	_	509	1009	_		1764
Critical Hdwy	4.14			4.14			7.54	6.54	6.94	7.54	6.54	6.94		
Critical Hdwy Stg 1		-	-	2.74	_	1. 1	6.54	5.54	_	6.54	5.54	_		
Critical Hdwy Stg 2					_		6.54	5.54	_	6.54	5.54			
Follow-up Hdwy	2.22	-	-	2.22	_	_	3.52	4.02	3.32	3.52	4.02	3.32		
Pot Cap-1 Maneuver	389			689	_		47	22	516	27	22	317		
Stage 1	-	_		-		2).	258	316	-	103	155	-		
Stage 2						_	333	155	_	515	316	_		
Platoon blocked, %			_		-	-	000	100		010	0.0			nin o
Mov Cap-1 Maneuver	389			689	_		45	22	516	27	22	317		
Mov Cap-1 Maneuver	-	_	_	-			45	22	-	27	22			
Stage 1					_		255	312		102	155			
The second secon			_				320	155	Estimate.	506	312			
Stage 2			ESCUSSION -				320	100		500	012			
•	En	STOLEN		1A/D	VI THE SE		ND			CD			and the second	
Approach	EB			WB			NB	Total State of the		SB	Constant of the			
HCM Control Delay, s	0.1			0			50.8			130.7				
HCM LOS							F			F				
Missaul and Marian Ma		NIDL -4	EDI	EDT	EDD	WDI	MDT	WDD	CDI n4		UP STATES			
Minor Lane/Major Mvm	l	NBLn1	EBL	EBT	EBR		WBT	WBR	SBLn1					
Capacity (veh/h)		83		-		1000000	-		50					
HCM Lane V/C Ratio			0.014			0.003	-		0.478					
HCM Control Delay (s)		50.8			-				130.7					
HCM Lane LOS		F				В			F					
HCM 95th %tile Q(veh)		0.2	0	-	-	0	-	-	1.8					

Intersection	10							7000		
Int Delay, s/veh	4.9									ALUS Á
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations	1	-	7	44	W					
Traffic Vol, veh/h	1593	27	27	1181	22	22				
Future Vol, veh/h	1593	27	27	1181	22	22				
Conflicting Peds, #/hr	0	0	0	0	0	0				
Sign Control	Free	Free	Free	Free	Stop	Stop	2 901 37			
RT Channelized		None	-	None		None				
Storage Length	-	_	0		0	-				
/eh in Median Storage,	# 0			0	Ō	-				
Grade, %	0		_	0	0	-				
Peak Hour Factor	92	92	92	92	92	92				
Heavy Vehicles, %	2	2	2	2	2	2				
Mymt Flow	1732	29	29	1284	24	24				
mant cion	1102	20	20	,_01	10.000					
			0		P 4					
	lajor1		Major2		Minor1	204				
Conflicting Flow All	0	0	1761	0		881				
Stage 1	-	-	-	-	1747	-				
Stage 2	-	-	711 -	-	700	-11				
Critical Hdwy	-	-	4.14	-	6.84	6.94				
Critical Hdwy Stg 1	-	-	i.i -	- L	5.84	- 3				
Critical Hdwy Stg 2	-	-	-	-	5.84	-				
Follow-up Hdwy	-	0.E _	2.22	-	3.52	3.32				
Pot Cap-1 Maneuver	-	-	351	-	26	290				
Stage 1	-	-	1	-	125	-				
Stage 2	-	-		-	454	-				
Platoon blocked, %	_	_		-						
Mov Cap-1 Maneuver	_	-	351		24	290				
Mov Cap-2 Maneuver	_	_	_		24	SHOW TO SHOW				
Stage 1			-	_	125					
Stage 2					416	13 -				
Olugo Z					710					
A	ED)AID		ND					
Approach	EB		WB		NB					
HCM Control Delay, s	0		0.4		307.4					
HCM LOS					F					
Minor Lane/Major Mvm	t	NBLn1	EBT	EBR		WBT				
Capacity (veh/h)		44	-		5555 T	-				
HCM Lane V/C Ratio		1.087	ů.	BH 1	0.084					
HCM Control Delay (s)	;	\$ 307.4	-							
HCM Lane LOS		F	-	-	_					
HCM 95th %tile Q(veh)		4.5	-	-	0.3	-				
Notes				ceeds 3		+: Comp			me in pla	

ntersection														
nt Delay, s/veh	4.2													1 1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
ane Configurations	7	ት ጉ		ሻ	介			4	7	2 7	4	229	4 1	1000033
raffic Vol, veh/h	22	1581	12	12	1184	22	13	0	13	11	0	11		
uture Vol, veh/h	22	1581	12	12	1184	22	13	0	13	11	0	11		201 91 91
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop		
RT Channelized		-	None	-	-	None	-		None		-	None		
Storage Length	0	-	-	0	-	-	-	-	0	-	-	-		leva i rasa
eh in Median Storage,	# -	0	-	_	0	-	-	0	-	-	0	-		
Grade, %	-	0	_	_	0	-	-	Ö	-	-	0	-		
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92		
leavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2		
Vivmt Flow	24	1718	13	13	1287	24	14	0	14	12	0	12		
							35555, 50				-			
Major/Minor M	1ajor1		1	Major2		1	Minor1			Minor2				
Conflicting Flow All	1311	0	0	1731	0	0	2443	3110	866	2232	3104	656	TA IN	2.1 1101
Stage 1						_	1773	1773		400=	1325	-		
Stage 2	-	_	_	_	_	-	670	1337	-	907	1779	_		
Critical Hdwy	4.14			4.14	_	_	7.54	6.54	6.94	7.54	6.54	6.94		
Critical Hdwy Stg 1	_	_	_	illes acci	-	-	6.54	5.54	-	6.54	5.54	-		
Critical Hdwy Stg 2				_	Jarra.		6.54	5.54		6.54	5.54			
Follow-up Hdwy	2.22	-		2.22	_	-	3.52	4.02	3.32	3.52	4.02	3.32		
Pot Cap-1 Maneuver	524			360			16	11	297	23	11	408		
Stage 1	-	_	_	-	_	_	86	134	-	164	223	-		
Stage 2	_					_	413	220		297	133			
Platoon blocked, %		-	-			_	710	220		LUI	100			
Mov Cap-1 Maneuver	524			360			15	10	297	21	10	408		
Mov Cap-1 Maneuver	J24 -	-	-	300	_	-	15	10	201	21	10	400		
							82	128		156	215			
Stage 1	_		-	-	-		386	212	-	270	127	-		
Stage 2							300	212		210	121			
Approach	EB			WB			NB			SB				
HCM Control Delay, s	0.2			0.2			284.5			184.5				
HCM LOS	0.2			0.2			F			F				
Minor Lane/Major Mvm	t	NBLn1		EBL	EBT	EBR		WBT		SBLn1				
Capacity (veh/h)		15		524				-		40			170 100	
HCM Lane V/C Ratio			0.048			_	0.036	-		0.598				
HCM Control Delay (s)		\$ 551.2		12.2		-	15.4	-	-	184.5				
HCM Lane LOS		F			-	-	С	-	-	F				
HCM 95th %tile Q(veh)	22/21	2.2	0.1	0.1			0.1			2.2				

Intersection													
nt Delay, s/veh	7.1												
lovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
ane Configurations	ኻ	个个		ሻ	44			4		ሻ			
raffic Vol, veh/h	11	1583	19	18	1202	11	18	0	19	5	0	5	
ture Vol, veh/h	11	1583	19	18	1202	11	18	0	19	5	0	5	
nflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
an Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
T Channelized	-	1100	None	-	-	None	-	otop _	None	-	-	None	
orage Length	0	_	-	0	-	-	<u>-</u>	_	-	0	_	-	
eh in Median Storage,		0	_		0	-		0		-	0		
ade, %		0	_		0	-	_	0	-	_	0	-	
ak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	
eavy Vehicles, %	2		2	2	2	2	2	2	2	2	2	2	
mt Flow	12	1721	21	20	1307	12	20	0	21	5	0	5	
AIH LIOM	14	1121	21	20	1001	12	20	U	21	J	U	J	
jor/Minor N	lajor1			Major2			Minor1		1	Minor2			
onflicting Flow All	1319	0	0	1742	0	0	2450	3115	871	2238	-	660	
Stage 1	פונו	-	U	1174	-	-	1756	1756	0/ 1	1353	_	-	
	-	-	-	-	-	-	694	1359	_	885		_	
Stage 2	4.14	-	-	4.14			7.54	6.54	6.94	7.54	-	6.94	
tical Hdwy		-	-	4.14	•	-	6.54	5.54	0.54	6.54	-	0.34	
tical Hdwy Stg 1	-	_	-		_	_				6.54		-	
itical Hdwy Stg 2	- 0.00		-	0.00	-	-	6.54	5.54	- 2.20		-	2 20	
llow-up Hdwy	2.22		-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32	
t Cap-1 Maneuver	520	-	-	357	•	-	~ 16	11	294	23	0	406	
Stage 1	-	_	_	-	-	_	88	137	_	158	0	-	
Stage 2	-	-	-	-		-	399	215	-	306	0		
atoon blocked, %		-	_		-	-							
ov Cap-1 Maneuver	520	-	, -	357	-	-	~ 15	10	294	20		406	
ov Cap-2 Maneuver	-		-	-	-	-	~ 15	10	-	20	-	-	
Stage 1	-		-	-		-	86	134	-	154	-	-	
Stage 2	_	-	-	_	_	_	372	203	_	278	-	-	
			1										
proach	EB			WB			NB			SB			
CM Control Delay, s	0.1			0.2		9	507.8			134			
CM LOS							F			F			
inor Lane/Major Mvm	t	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
apacity (veh/h)		29	520	-	-	357	-	-	38				
CM Lane V/C Ratio			0.023	-	-	0.055	-	-	0.286				
CM Control Delay (s)		\$ 507.8	12.1	-			-	-	134				
CM Lane LOS		F	В	-	-		-	-	F				
ICM 95th %tile Q(veh)		4.6	0.1	-	-		-	-	0.0				
lotes	Z (3) (1)												
Volume exceeds cap	nacity	\$ D	elay ex	reede ?	800e	+: Con	nputatio	n Not F)efined	*· ΔI	maior	volume it	n platoon
volunie exceeds cal	Jaoity	Ψ. υ	ciay cx	occus c	7000	., 0011	putatio	140t L	Jointou	11	major	- Olumo II	. piatooii