OLSSON ASSOCIATES

Traffic Impact Study

KESSLER VIEW

3RD STREET AND KESSLER DRIVE
LEE'S SUMMIT, MISSOURI

May 2018

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1.0 INTRODUCTION AND OBJECTIVE

This report studies traffic impacts associated with proposed developments along both the north and south sides of 3rd Street near Kessler Drive in Lee's Summit, Missouri. The objective of this study is to evaluate operations at study intersections for the scenarios detailed below. The report will review roadway conditions and give consideration to potential impacts of the proposed developments in regard to turn lanes, storage bays, and intersection control methods. Study intersections include:

- 3rd Street and View High Drive
- 3rd Street and Kessler Drive
- Drive locations along 3rd Street between View High Drive and Kessler Drive
- Kessler Drive and Fascination Drive (development scenarios)

The four scenarios that were analyzed as a part of this study are as follows:

- Existing Conditions
- Existing Plus Approved Development Conditions
    - Considers approved development projects south of 3rd Street
- Existing Plus Approved Plus Proposed Development Conditions
    - Considers development from proposed projects south of 3rd Street
- Full Build Development Conditions
    - Considers development from previous scenarios plus approved development north of 3rd Street

The City of Lee's Summit provided data for approved projects near 3rd Street. The approved studies provided include:

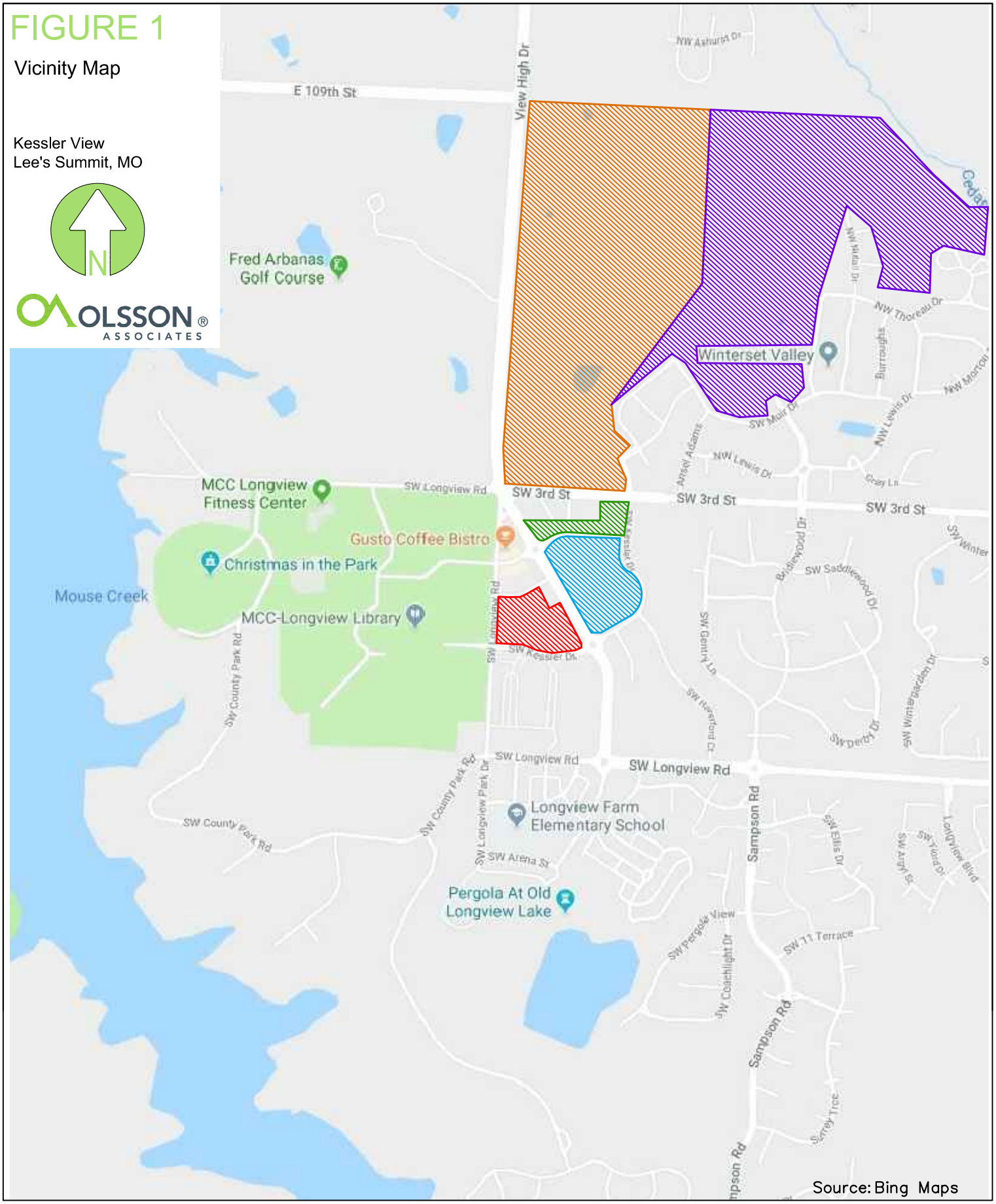
- Approved development south of 3rd Street:
    - The Longview Commons Traffic Impact Study (TIS) completed by Olsson Associates in September 2016 accounts for the mixed-use development between Kessler Drive and View High Drive, bound by Fascination Drive to the north.
    - The New Longview Commercial TIS completed by Olsson Associates in May 2007 is located to the north of the Longview Commons development.
    - The Kessler Ridge development is currently under construction and will consist of 92 single family dwellings when complete.
- Approved development north of 3rd Street:
    - The Village at View High TIS was completed by TranSystems in July 2016.
    - The Winterset Valley TIS was completed by HDR Engineering in October 2013.

The approximate location of approved and proposed developments are shown on the vicinity map, **Figure 1**.

FIGURE 1

Vicinity Map

Kessler View
Lee's Summit, MO



LEGEND

- Longview Development
- New Longview Commercial
- Villages at View High
- Winterset Valley
- Residences at New Longview

2.0 DATA COLLECTION

The data collection effort included acquiring AM and PM peak hour turning movement counts and documentation of current roadway geometrics. Intersection turning movement counts were conducted on Tuesday, March 6, 2018 at the following intersections:

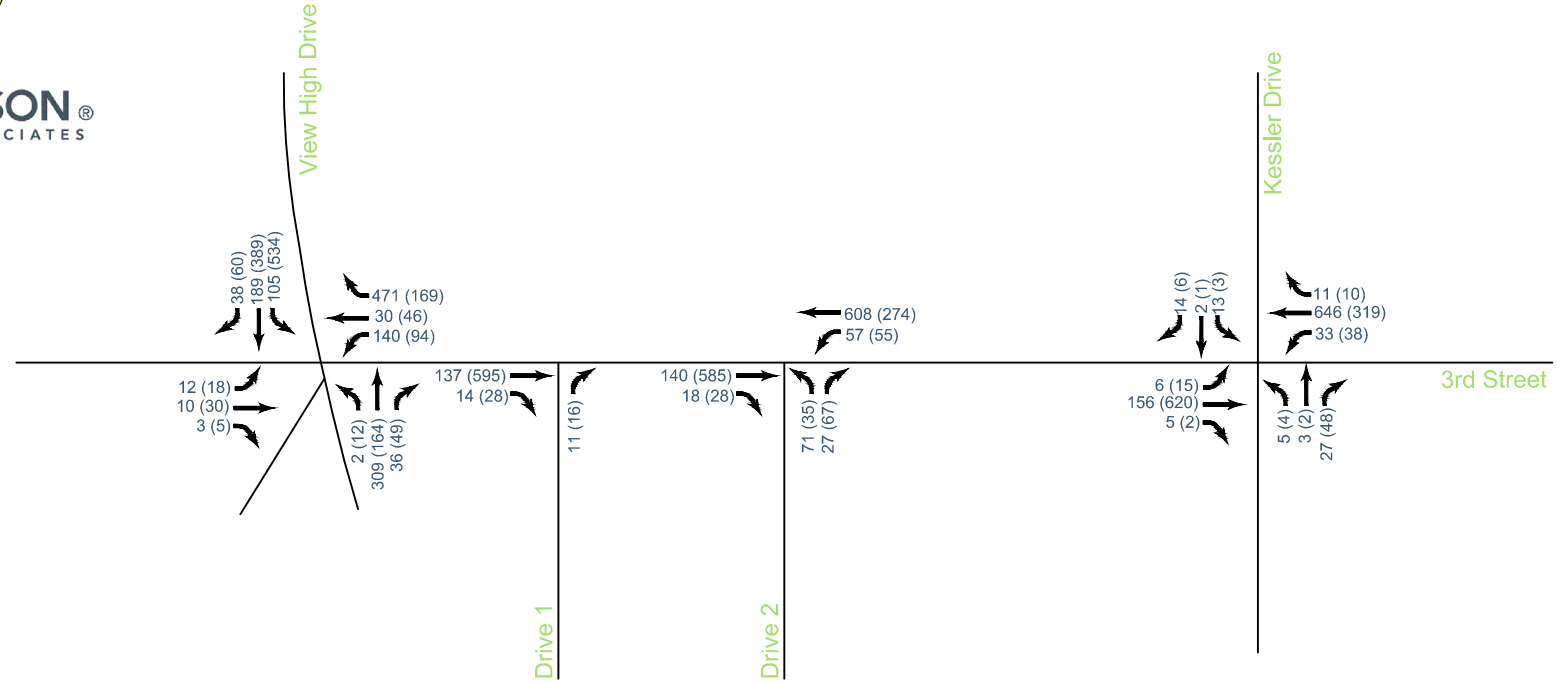
- 3rd Street and Kessler Drive
- 3rd Street and View High Drive

Based on the data collected, the peak hour periods for the study intersection of 3rd Street and Kessler Drive was determined to be 7:15-8:15 AM and 5:00-6:00 PM. The existing peak hour volumes at the two intersections are illustrated in **Figure 2**. Count data collected for this study can be found in **Appendix A**.

FIGURE 2

Existing
Peak Hour Volumes

Kessler View
Lee's Summit, MO



LEGEND

AM (PM) *Peak Hour Volume*

3.0 EXISTING CONDITIONS

To provide a baseline for comparative purposes for future development scenarios, traffic control operations were reviewed for the study intersections. This analysis considers existing operations, and does not include the consideration of any approved or proposed development.

3.1 Existing Warrant Analysis

Existing Signal Warrants: A traffic signal may be justified if traffic conditions meet any of the applicable nine signal warrants described in the 2009 Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD provides criteria for conducting an engineering study to determine whether a traffic signal is appropriate at any intersection.

For this study, Warrants 1, 2, and 3 were reviewed under existing conditions to determine if alternative control measures are warranted for the intersection of 3rd Street and Kessler Drive. Based on data collected, the Eight-Hour Vehicular Volume Warrant (Warrant 1), the Four-Hour Vehicular Volume Warrant (Warrant 2), and the Peak Hour Warrant (Warrant 3) do not meet the necessary criteria that would warrant a traffic signal at the intersection of 3rd Street and Kessler Drive.

3.2 Existing Capacity Analysis

Capacity analysis was performed for the existing conditions study intersections utilizing the existing lane configurations and traffic control. Analysis was conducted using Synchro, Version 10, and Sidra Roundabout Analysis, Version 7, based on the Highway Capacity Manual delay methodologies. For simplicity, the amount of control delay is equated to a grade or Level of Service (LOS) based on thresholds of driver acceptance. The amount of delay is assigned a letter grade A through F, LOS A representing little or no delay and LOS F representing very high delay. **Table 1** shows the delays associated with each LOS grade for signalized and unsignalized intersections, respectively.

TABLE 1: INTERSECTION LOS CRITERIA

Level-of-Service	Average Control Delay (seconds)	
	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50
Highway Capacity Manual (HCM 2010)		

The signalized study intersection of 3rd Street and View High Drive is operating at LOS B during both the AM and PM peak hour periods. The individual movements at 3rd Street and View High Drive are operating at a LOS D or better during the AM and PM peak hour period. The individual movements at the unsignalized study intersections of 3rd Street and Kessler Drive, 3rd Street and Drive 1, and 3rd Street and Drive 2 are operating at a LOS C or better during the AM and PM peak hour period.

4.0 EXISTING PLUS APPROVED CONDITIONS

This scenario considers approved development for sites located south of 3rd Street. In some cases, updated site plans have been submitted to the City for the approved development sites. To accurately represent the approved projects traffic conditions, elements of the previously approved studies were used with updated site plans. Trip generation was updated, if necessary, to account for revised site plans. Approved trip distributions from the previous reports were used to distribute and balance approved development trips through the study network. It should be noted that portions of the approved projects, south of 3rd Street, have been constructed and are occupied. Thus, trips for those uses are accounted for in the existing traffic counts. A site plan that details the occupied and unconstructed portions of the approved developments can be found in **Figure 3.**

4.1 Network Characteristics

Five roadways within the study area were considered during analysis: 3rd Street, View High Drive, Longview Road, Fascination Drive, and Kessler Drive. Current network characteristics are summarized in **Table 2** below. The functional classification for each roadway was acquired from Lee's Summit Classification System Map. The intersection of View High Drive and 3rd Street is a signalized intersection. The intersection of 3rd Street and Kessler Drive operates under two-way stop control for north/south movements. The intersections of View High Drive and Fascination Drive, View High Drive and Kessler Drive, and View High Drive and Longview Road are all roundabout controlled intersections.

TABLE 2: EXISTING NETWORK SUMMARY

Roadway	Functional Classification	Section	Median Type	Posted Speed
View High Drive	Major Arterial	4-Lane	Raised	40 mph
3rd Street	Major Arterial	4-Lane	Raised	35 mph
Longview Road	Major Arterial	4-Lane	Raised	35 mph
Fascination Drive	Local	2-Lane	n/a	25 mph
Kessler Drive	Commercial/Industrial Collector	2-Lane	n/a	25 mph

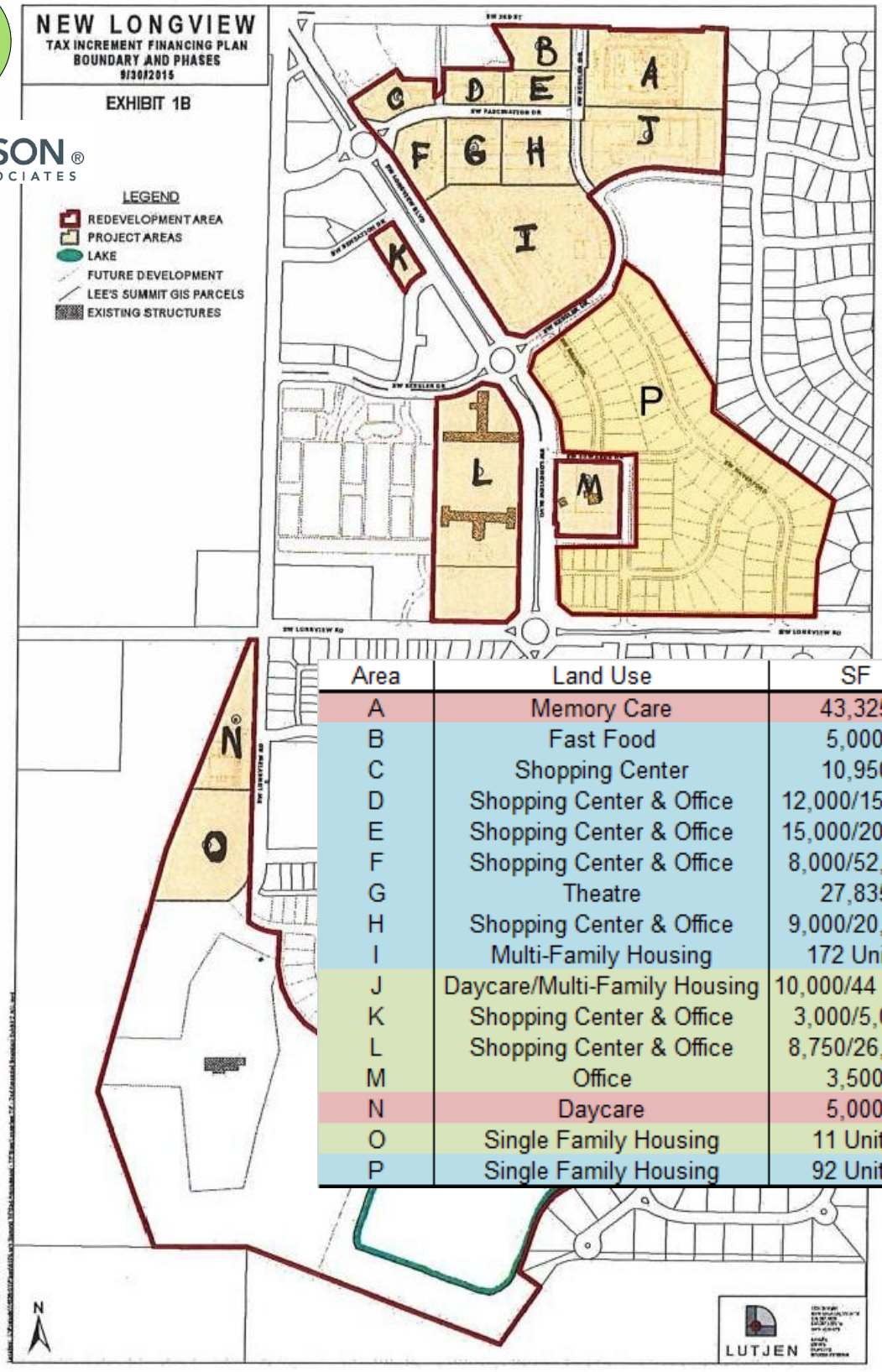
Several drives associated with approved development projects are proposed south of 3rd Street. Individual traffic impact studies should be referenced for drive locations and geometrics.

With approved development, a right-in/right-out access along 3rd Street is proposed, referred to as Drive 3. This drive is proposed to utilize an existing curb cut, which provides a 100' eastbound right-turn lane existing. Drive 3 is anticipated to serve approved fast-food development. For the purposes of this study, this intersection will be included in analysis due to its location along 3rd Street.

FIGURE 3

Site Plan

Kessler View
Lee's Summit, MO



Area	Land Use	SF	Status
A	Memory Care	43,325	Occupied
B	Fast Food	5,000	Approved
C	Shopping Center	10,950	Approved
D	Shopping Center & Office	12,000/15,063	Approved
E	Shopping Center & Office	15,000/20,000	Approved
F	Shopping Center & Office	8,000/52,500	Approved
G	Theatre	27,835	Approved
H	Shopping Center & Office	9,000/20,000	Approved
I	Multi-Family Housing	172 Units	Approved
J	Daycare/Multi-Family Housing	10,000/44 Units	Proposed
K	Shopping Center & Office	3,000/5,000	Proposed
L	Shopping Center & Office	8,750/26,250	Proposed
M	Office	3,500	Proposed
N	Daycare	5,000	Occupied
O	Single Family Housing	11 Units	Proposed
P	Single Family Housing	92 Units	Approved

4.2 Approved Projects Trip Generation and Distribution

To account for revised site plans and better represent approved development conditions, trip generation and distribution was conducted for approved development south of 3rd Street. Trip distribution followed previously approved studies. **Table 3** provides a summary of trip generation for the approved projects south of 3rd Street.

TABLE 3: APPROVED PROJECTS TRIP GENERATION

Land Use	Size	Average Weekday	AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
Shopping Center	54,950 SF	4,002	180	112	68	349	168	181
Movie Theater with Matinee*	7 Screens	1,420	-	-	-	142	57	85
General Office Building	107,563 SF	1,139	128	110	18	123	20	103
Fast-Food Restaurant with Drive-Through Window	5,000 SF	2,355	201	103	98	164	86	78
Mid-Rise Apartment*	172 DU	936	59	16	43	75	46	29
Single-Family Detached Housing	92 DU	963	71	18	53	94	60	34
	Total	**10,935**	**577**	**328**	**249**	**859**	**400**	**459**

*No ITE AM Trip Estimation Available

Pass-by characteristics were determined for the Fast-Food Restaurant with Drive-Through Window land use using the *ITE Trip Generation Handbook (10th Edition)*. Pass-by trips are made by traffic already on the roadway and passing the site, versus making a direct trip to the development (primary trips). According to the *ITE Trip Generation Handbook*, the pass-by trips during the AM and PM peak hour periods for the described land use varies from 25% to 71%. To be conservative, 30% pass-by trips during the AM and PM peak hour was used for this study. Trip generation data considering pass-by trips for the restaurant land uses are illustrated in **Table 4**.

TABLE 4: EXISTING PLUS APPROVED PROJECTS – PASS-BY

Land Use	Pass-by Percentage	AM Peak Hour				PM Peak Hour			
		Pass-by		Primary		Pass-by		Primary	
		Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
Fast-Food Restaurant with Drive-Through Window	30%	31	30	72	68	26	23	60	55

Trip distribution and site trips (including pass-by) are shown in **Figure 4** for the study intersections. Existing plus approved development volumes are illustrated in **Figure 5.** More detailed trip distribution information for approved developments can be found in **Appendix C.**

4.3 Existing plus Approved Projects Warrant Analysis

Existing plus Approved Projects Signal Warrants: Based on the existing plus approved development volumes, none of the unsignalized intersections are expected to meet Warrant 3 for signalization. Only warrant 3 was evaluated based on available volume data.

Existing plus Approved Projects Lane Warrants: The *Access Management Code* for Lee's Summit was used to determine whether auxiliary turn lanes are warranted at the study intersections and study drives. Lee's Summit's *Access Management Code* requires that right-turn lanes be provided at all arterial roadway intersections and along collector roadway intersections where the right-turning volume on the collector street is or is projected to be at least 100 vehicles per hour.

Currently all arterial study intersections provide right-turn lanes at intersections with the exception of the westbound right-turn movement at 3rd Street and Kessler Drive. Based on the criteria, a right-turn lane is not warranted at this location.

Lee's Summit's *Access Management Code* requires that left-turn lanes be provided at signalized intersections, along arterial roadways, along collector roadways which intersect with arterial or collector roadways, and median divided roadways. Currently all arterial roadways provide left-turn lanes.

It was noted during a field review that the northbound and southbound movements at 3rd Street and Kessler Drive are not striped. Based on the *Access Management Code*, a left-turn lane should be provided for the northbound movement at the intersection of 3rd Street and Kessler Drive. However, based on anticipated traffic volumes and current geometric conditions, the following lane configuration is recommended for these movements:

- Northbound: Shared left-through lane with 100' right-turn lane. Currently the northbound movement on Kessler Drive aligns with the inside (left) lane at the intersection with 3rd Street creating this as the natural through movement. However, the "right turn lane" aligns better with the northbound accepting lane on Kessler Drive, north of 3rd Street, so it could also serve as the through lane. Since northbound through volumes are small, operations are not expected to have a significant change with either lane configuration.
- Southbound: 160' left-turn lane with shared through-right lane

Existing plus approved projects lane configurations and traffic control for the study network are illustrated in **Figure 6**. Signal and turn lane warrant analysis sheets can be found in **Appendix B**.

4.4 Existing plus Approved Projects Capacity Analysis

The signalized study intersection of 3rd Street and View High Drive is expected to operate at LOS B during both the AM and PM peak hour periods. The individual movements at 3rd Street and View High Drive are expected to operate at a LOS C or better during the AM and PM peak hour period.

Unsignalized intersection movements are expected to operate at a LOS C or better with the exception of the movements detailed below.

- The northbound and southbound left-turn movements at 3rd Street and Kessler Drive are expected to operate at LOS E during the AM peak period and a LOS F during the PM peak hour period.
    - The 95th percentile queue for the southbound left-turn movement is expected to be less than one vehicle. The northbound shared left-turn/through movement 95th percentile queue is approximately 7 vehicles and is expected to be contained within the allotted storage.
    - It is not uncommon for side street delay to be higher during peak hour periods to accommodate larger volumes associated with the major street movement (east-west).

- The northbound movement at the intersection of 3rd Street and Drive 2 is expected to operate at a LOS F during the PM peak hour period.
    - Similar to the intersection of 3rd Street and Kessler Drive, while a LOS F is not ideal, it is not uncommon for side street delay to be higher during peak hour periods to accommodate larger volumes associated with the major street movement (east-west).

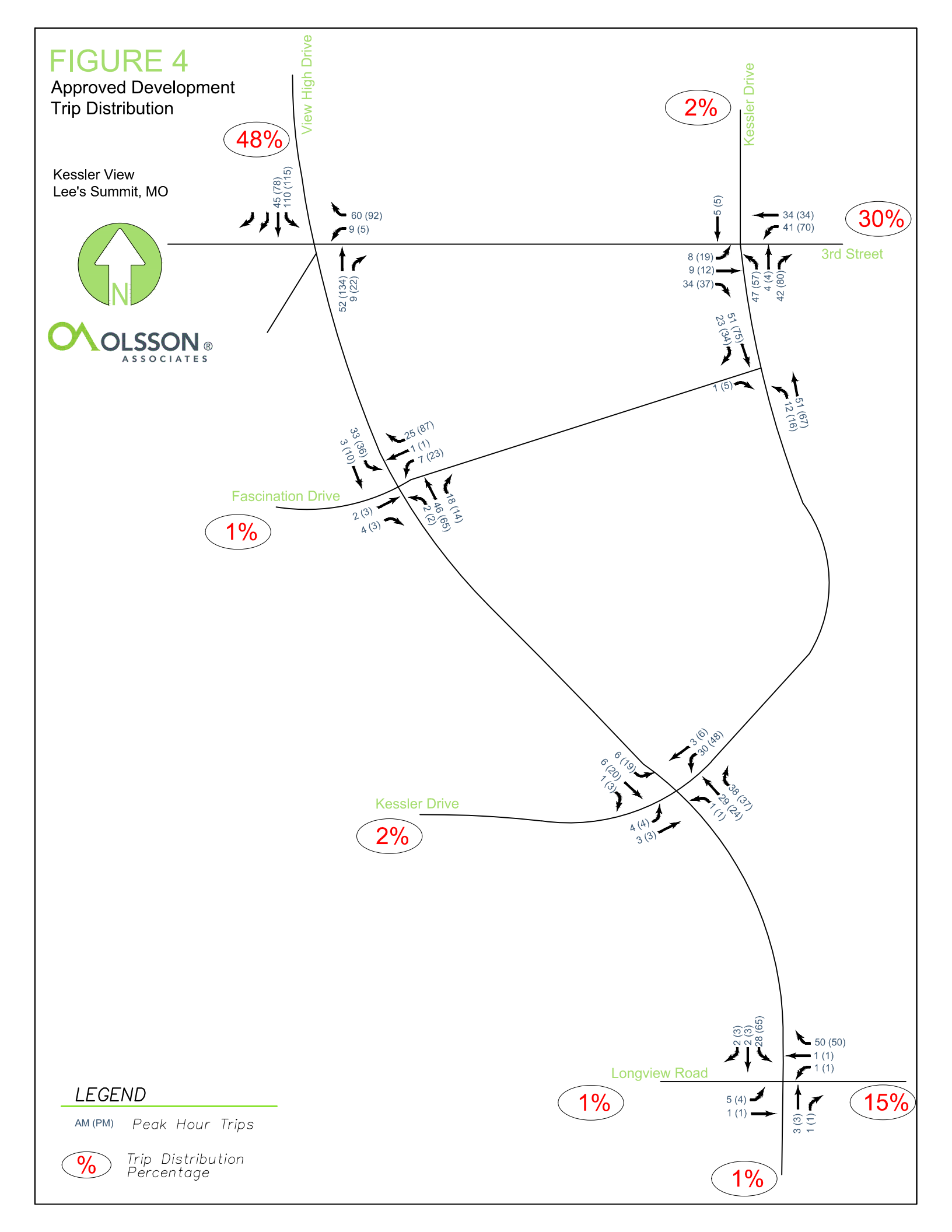
Several drives associated with approved development projects are proposed south of 3rd Street. Individual traffic impact studies should be referenced for those drive operations. Based on the analysis conducted for this study, operations at development drive locations would not be expected to change significantly from previously submitted studies. Similarly, operations at existing roundabout intersections located along View High Drive would not be expected to change significantly from analysis conducted in previously approved studies.

The existing plus approved conditions capacity analysis summary is illustrated in **Figure 7**. Detailed results may be found in **Appendix B**.

FIGURE 4

Approved Development
Trip Distribution

Kessler View
Lee's Summit, MO



LEGEND

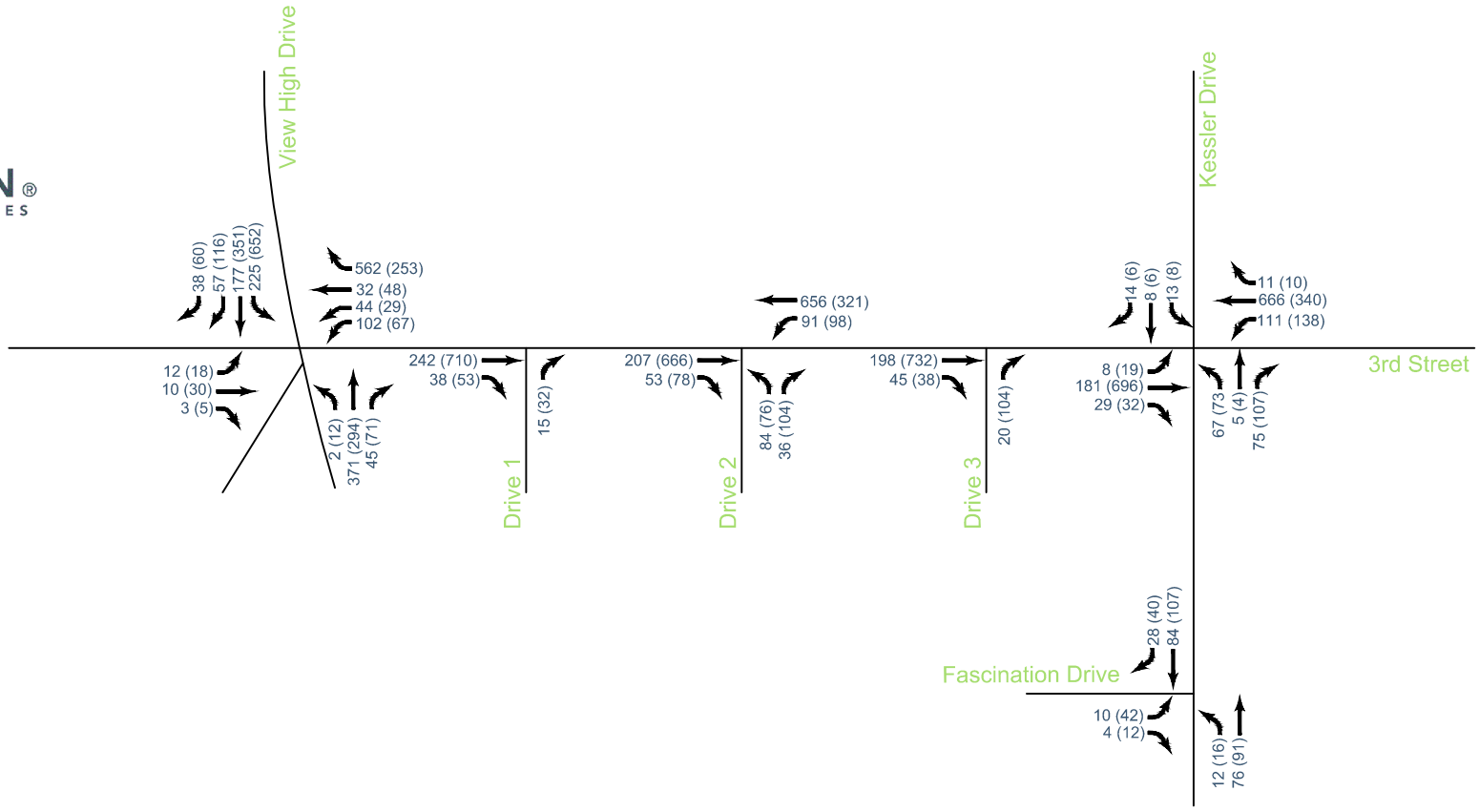
AM (PM) Peak Hour Trips

% Trip Distribution Percentage

FIGURE 5

Existing + Approved Projects
Peak Hour Volumes

Kessler View
Lee's Summit, MO



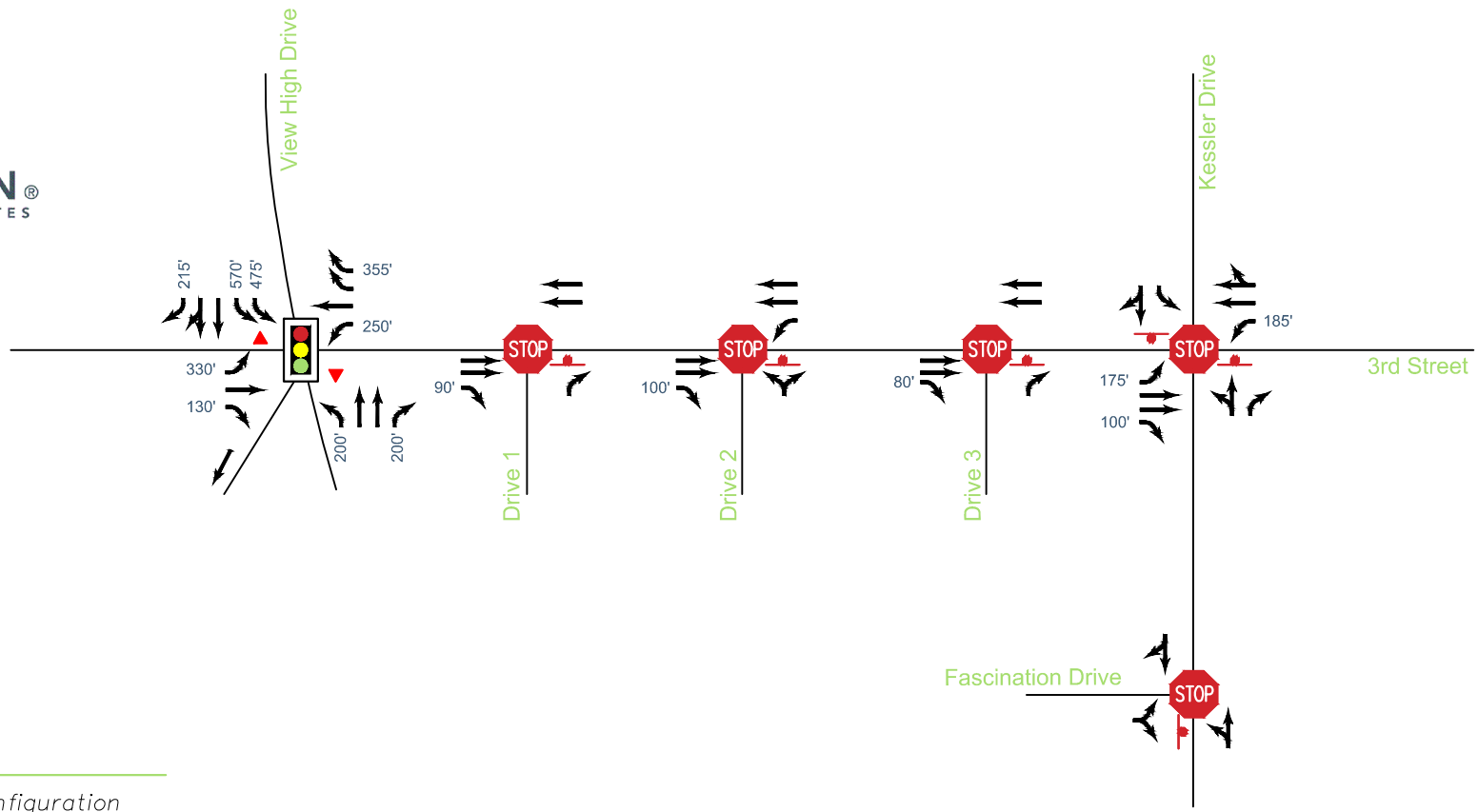
LEGEND

AM (PM) *Peak Hour Volume*

FIGURE 6

Existing + Approved Projects
Lane Configuration and
Traffic Control

Kessler View
Lee's Summit, MO



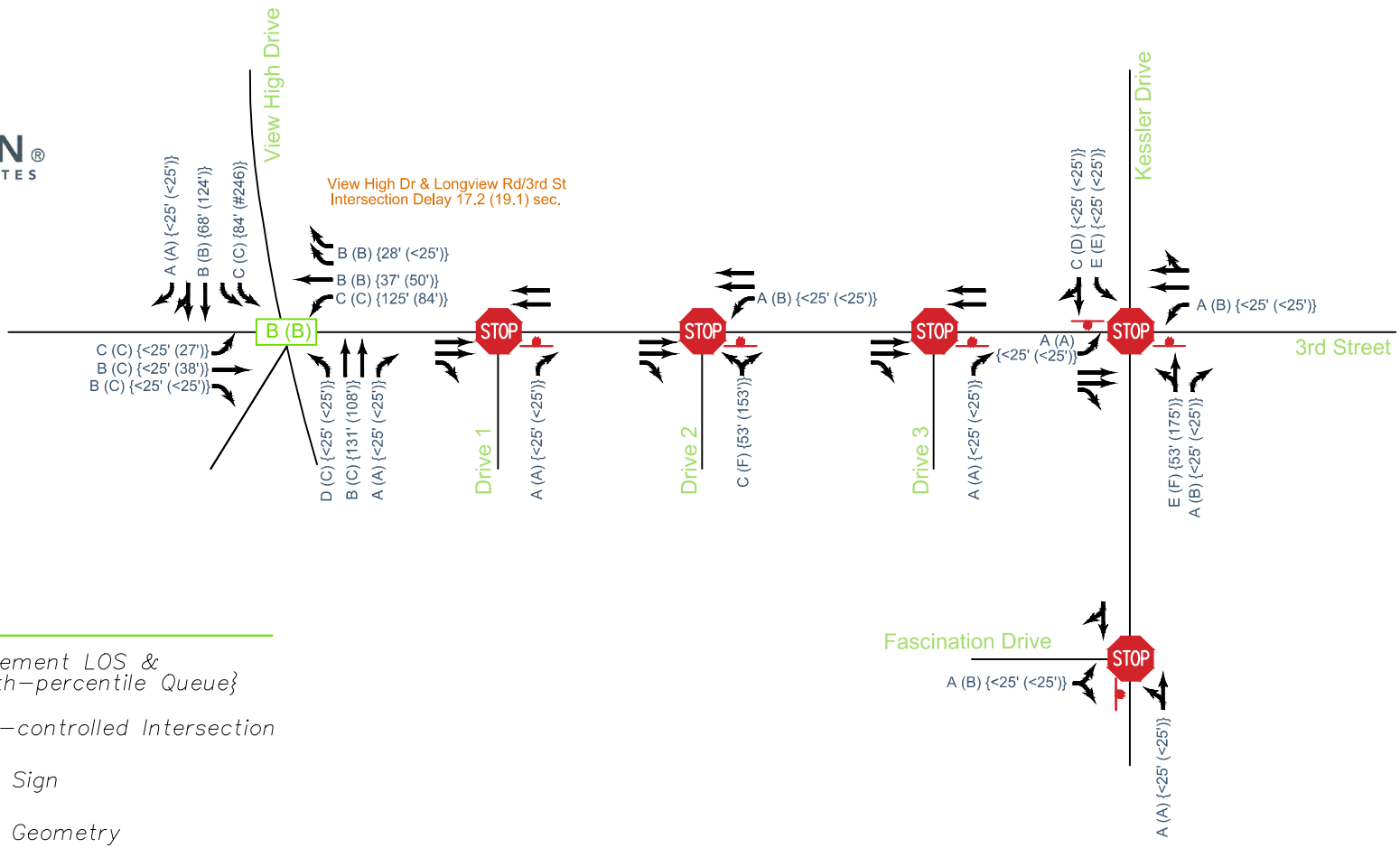
LEGEND

- XX' — Lane Configuration & Storage Length
- Signalized Intersection
- STOP — Stop-controlled Intersection
- Stop Sign
- Yielding Channelized Right-turn

FIGURE 7

Existing + Approved Project
Level of Service

Kessler View
Lee's Summit, MO



LEGEND

AM (PM) {AM (PM)}	Movement LOS & {95th-percentile Queue}
STOP	Stop-controlled Intersection
	Stop Sign
	Lane Geometry
AM (PM)	Signalized Intersection LOS
#	95th-percentile Queue Length Exceeds Capacity
m	Volume for 95th-percentile Queue Metered by Upstream Signal

5.0 EXISTING PLUS APPROVED PLUS PROPOSED DEVELOPMENT CONDITIONS

This scenario considers development from the previous scenario plus proposed development located south of 3rd Street. Traffic conditions were reviewed to identify any potential geometric improvements that could be attributed to additional traffic associated with proposed development.

Access locations for proposed development were reviewed and approved with previous project submittals. Based on information available for this report, proposed access locations have not been modified; previous submittals should be referenced for access locations and geometrics.

5.1 Proposed Development Trip Generation and Distribution

Table 5 provides a summary of trip generation for the proposed development south of 3rd Street. Detailed ITE trip generation information can be found in **Appendix D.**

Table 5: Proposed Development Trip Generation

Land Use	Size	Average Weekday	AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
Shopping Center	11,750 SF	1,402	158	98	60	112	54	58
Multi-Family Housing (Low-Rise)	44 DU	312	22	6	16	29	19	10
Small Office Building	31,250 SF	506	60	50	10	77	25	52
Day Care Center	10,000 SF	477	110	59	51	112	53	59
Single-Family Detached Housing	11 DU	137	13	4	9	13	9	4
	Total	**2,834**	**363**	**217**	**146**	**343**	**160**	**183**

Trips were distributed based on previously approved studies. The trip distribution and site trips for the proposed development are shown in **Figure 8**. Existing plus approved plus proposed volumes are illustrated in **Figure 9.**

5.2 Existing plus Approved plus Proposed Warrants

Existing plus Approved plus Proposed Signal Warrants: Considering Existing plus Approved plus Proposed volumes, the intersection of 3rd Street and Kessler Drive is expected to meet the criteria for signalization during the PM peak hour period based on Warrant 3 (peak hour warrant). Due to the warrant being met for only one peak hour and based on expected traffic volumes, the intersection of 3rd Street and Kessler Drive will be analyzed as both a signalized and two-way stop-controlled intersection.

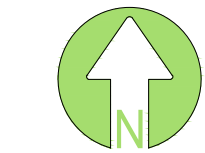
Existing plus Approved plus Proposed Turn Lane Warrants: Following the Lee's Summit *Access Management Code*, it was determined that the guidelines for additional turn lanes were not met at any of the study intersections during the AM and PM peak hour periods considering Existing plus Approved plus Proposed conditions.

Existing plus Approved plus Proposed Development conditions lane configurations and traffic control for the study network are illustrated in **Figure 10**. Signal and turn lane warrant analysis sheets can be found in **Appendix D**.

FIGURE 8

Proposed Development
Trip Distribution

Kessler View
Lee's Summit, MO



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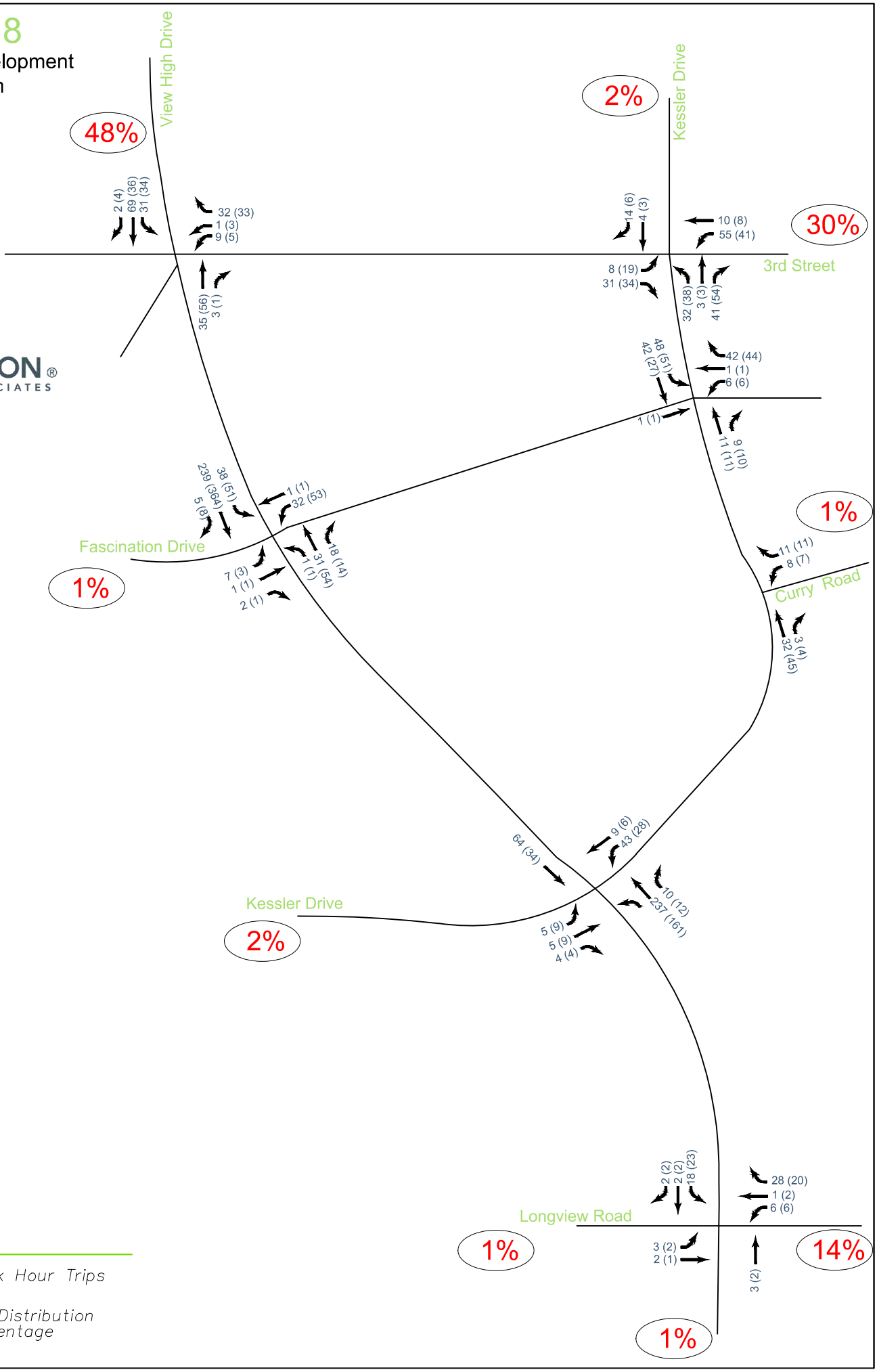


LEGEND

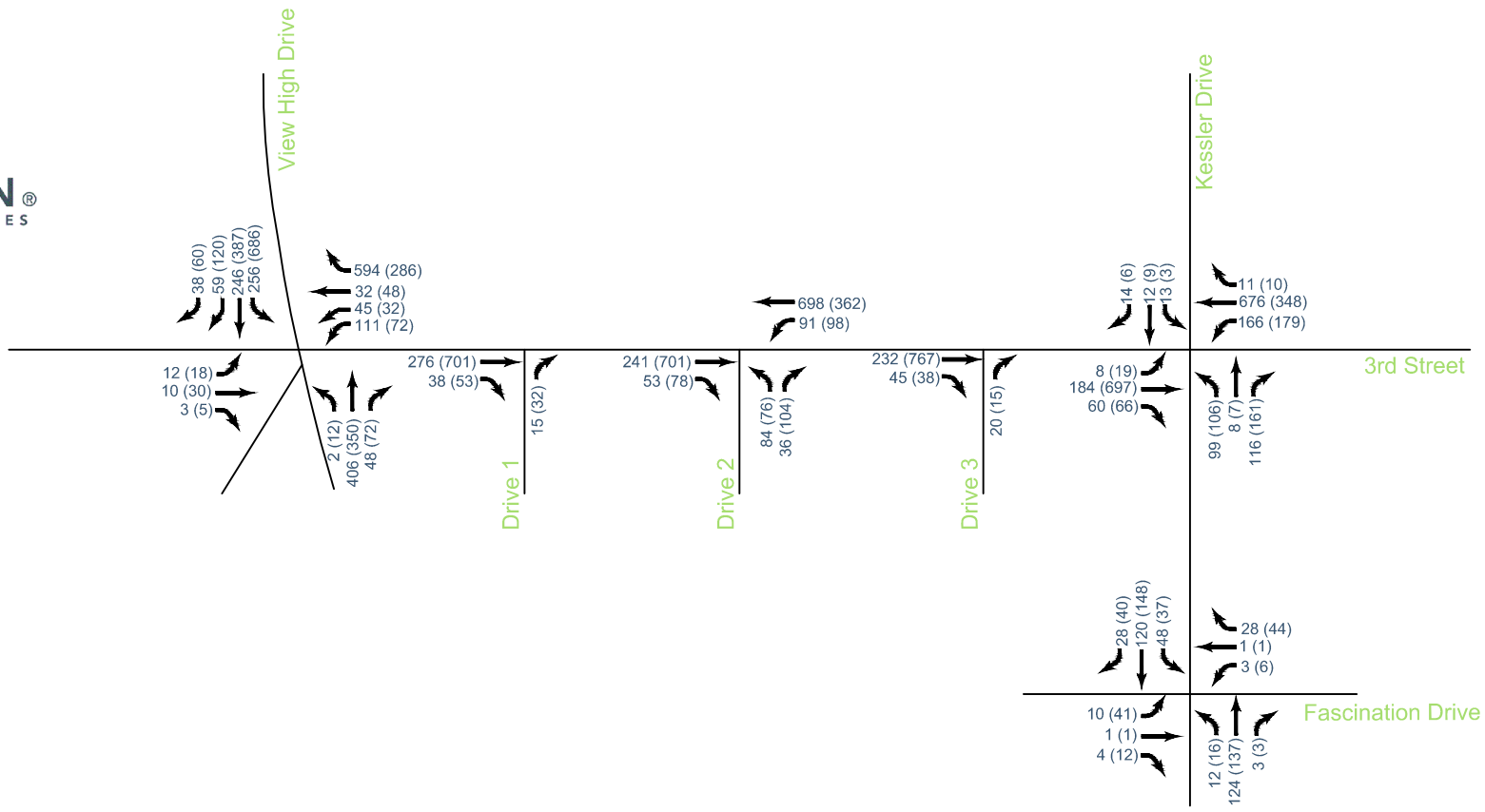
AM (PM) *Peak Hour Trips*

% *Trip Distribution Percentage*

FIGURE 9

Existing + Approved +
Proposed Development
Conditions
Peak Hour Volumes

Kessler View
Lee's Summit, MO



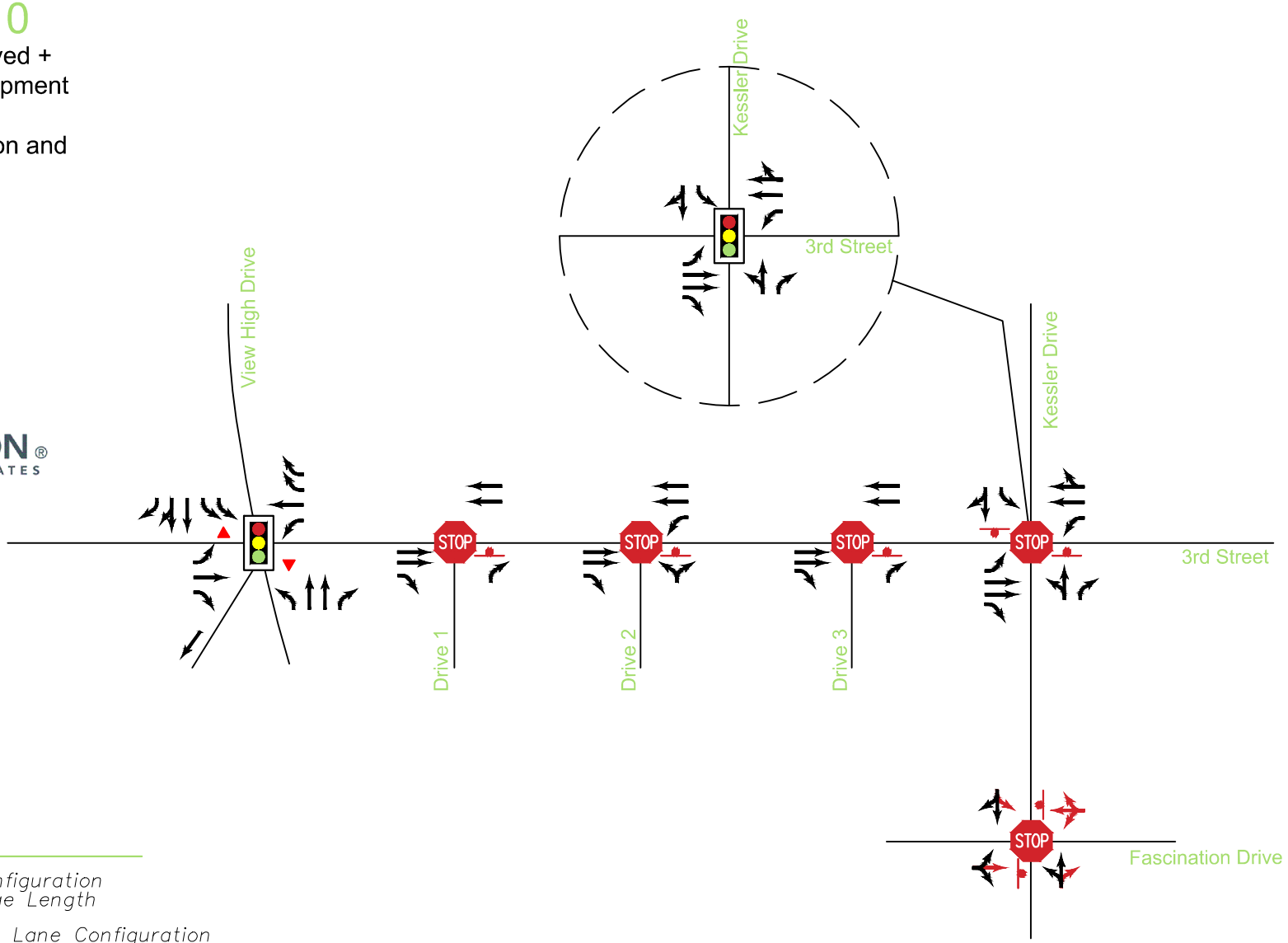
LEGEND

AM (PM) *Peak Hour Volume*

FIGURE 10

Existing + Approved + Proposed Development Conditions Lane Configuration and Traffic Control

Kessler View
Lee's Summit, MO



LEGEND

- XX' → *Lane Configuration & Storage Length*
- XX' → *Proposed Lane Configuration & Storage Length*
- *Signalized Intersection*
- STOP *Stop-controlled Intersection*
- *Stop Sign*
- ▼ *Yielding Channelized Right-turn*

5.3 Existing plus Approved plus Proposed Capacity Analysis

Results of the capacity analysis indicate similar operations to the Existing plus Approved project conditions, with the following exceptions:

- As an unsignalized intersection, delay for the northbound movement at the intersection of 3rd Street and Kessler Drive is expected to increase during the AM peak hour period resulting in an expected LOS F for the movement. The expected queue for the northbound left-turn movement is about 7 vehicles. The northbound movement at the intersection would be expected to continue operating at LOS F during the PM peak hour period and is expected to have about 14 vehicle queue length.
    - The intersection of 3rd Street and Kessler Drive meets the PM peak hour warrant for signalization, thus was analyzed also as a signalized intersection. As a signalized intersection, 3rd Street and Kessler Drive is expected to operate at LOS B during both the AM and PM peak hour periods. Individual movements are expected to operate at LOS E or better during both peak periods.

- Delay at the intersection of 3rd Street and Drive 2 is consistent with Existing plus Approved conditions analysis. The installation of a signal at 3rd Street and Kessler Drive would be expected to benefit operations at the intersection of 3rd Street and Drive 2 by platooning vehicles along 3rd Street; thus allowing for greater gaps in traffic at unsignalized side-street intersections.

Development specific drives associated with proposed development were not analyzed for the purposes of this study. Based on the analysis conducted for this study, operations at development drive locations would not be expected to change significantly from previously submitted studies. Similarly, operations at existing roundabout intersections located along View High Drive would not be expected to change significantly from analysis conducted in previously approved studies.

The Existing plus Approved plus Proposed Development capacity analysis summary is illustrated in **Figure 11**. Detailed results may be found in **Appendix D**.

FIGURE 11

Existing + Approved +
Proposed Development
Conditions
Level of Service

Kessler View
Lee's Summit, MO

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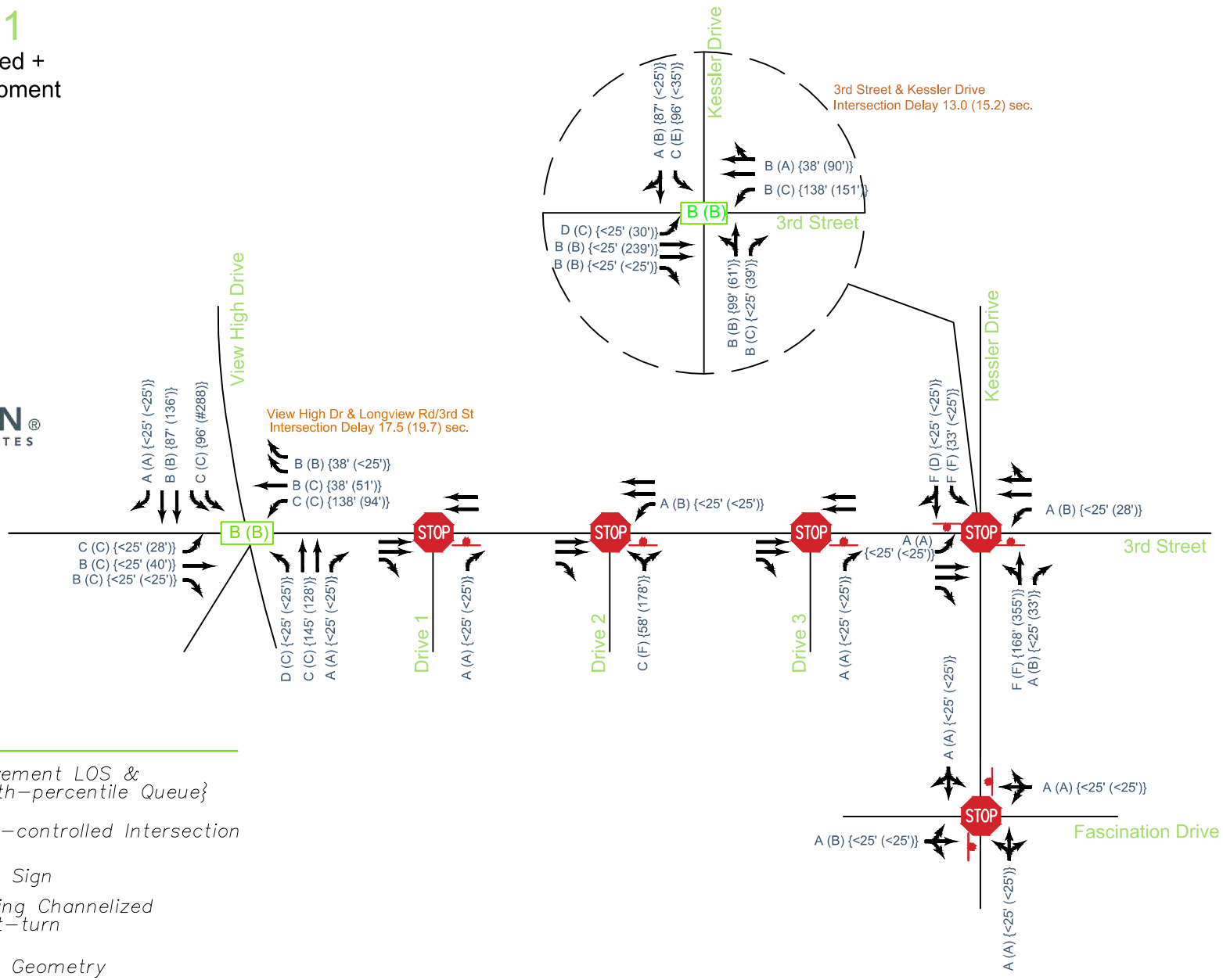


LEGEND

AM (PM) {AM (PM)}	Movement LOS & {95th-percentile Queue}
STOP	Stop-controlled Intersection
	Stop Sign
▼	Yielding Channelized Right-turn
→	Lane Geometry
AM (PM)	Signalized Intersection LOS
#	95th-percentile Queue Length Exceeds Capacity
m	Volume for 95th-percentile Queue Metered by Upstream Signal

6.0 FULL BUILD CONDITIONS

The full build scenario includes all approved and proposed development south of 3rd Street (included in previous scenarios), as well as proposed development located north of 3rd Street. The City provided traffic impact studies for The Village at View High (completed by TranSystems in July 2016) and The Winterset Valley (completed by HDR Engineering in October 2013) representing proposed development north of 3rd Street. Full build conditions were evaluated to identify any potential geometric improvements that could be attributed to the additional traffic associated with development north of 3rd Street.

6.1 North of 3rd Street Proposed Development Trip Generation and Distribution

Trips associated with proposed development located north of 3rd Street were obtained from studies provided by the City. Proposed development north of 3rd Street includes single family dwelling units, multi-family dwelling units, senior living, and retail. Trip generation and distribution from each study was used to determine peak hour development trips. Proposed (north of 3rd Street) development trips were added to Existing plus Approved plus Proposed volumes to develop Full Build Conditions peak hour volumes.

Full Build conditions peak hour volumes are shown in **Figure 12**. Trip distribution sheets from the previous studies can be found in **Appendix E**.

6.2 Full Build Warrant Analysis

Full Build Signal Warrants: Based on the full build development volumes, the intersection of 3rd Street and Kessler Drive (as with the Existing plus Approved plus Proposed development conditions) is expected to meet criteria for signalization considering PM peak hour volumes. As discussed in the previous scenario, signalization may be considered due to anticipated delay for the intersection if it remains unsignalized. For the full build conditions scenario, the intersection of 3rd Street and Kessler Drive was analyzed as signalized.

The intersection of 3rd Street and Drive 2 is expected to approach meeting the criteria for signalization considering full build PM peak hour volumes. It is not recommended to signalize this intersection due to its proximity to the existing signal at 3rd Street and View High Drive and the proposed signal at 3rd Street and Kessler Drive.

No other unsignalized intersections are expected to meet the criteria for signalization.

Full Build Turn Lane Warrants: Following the Lee's Summit *Access Management Code*, the guidelines for a right-turn lane are expected to be met for the westbound right-turn movement at 3rd Street and Kessler Drive. During the PM peak hour, 200+ vehicles are expected to make the right-turn movement based on full build conditions, thus meeting the recommended criteria. A 150' right-turn lane is recommended.

Due to the addition of the north leg for Drive 2 along 3rd Street in this scenario, it is recommended that a 150' eastbound left-turn lane be provided. This is following guidance set forth in the *Access Management Code* that recommends left-turn lanes along arterial roads.

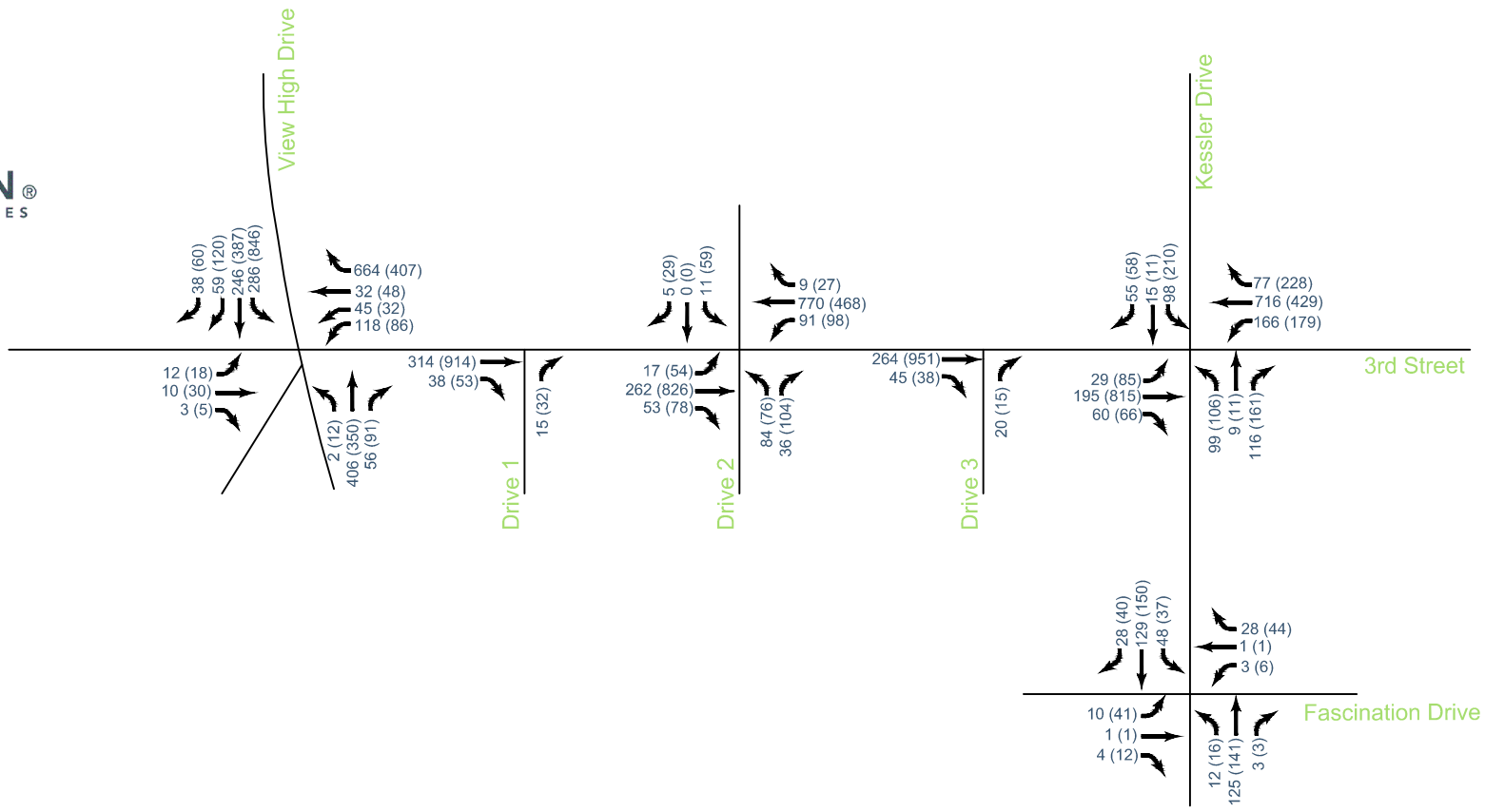
No other intersections are expected to meet the criteria for additional turn lanes.

Full build conditions lane configurations and traffic control for the study network are illustrated in **Figure 13**. Signal and turn lane warrant analysis sheets can be found in **Appendix E.**

FIGURE 12

Full Build Conditions
Peak Hour Volumes

Kessler View
Lee's Summit, MO



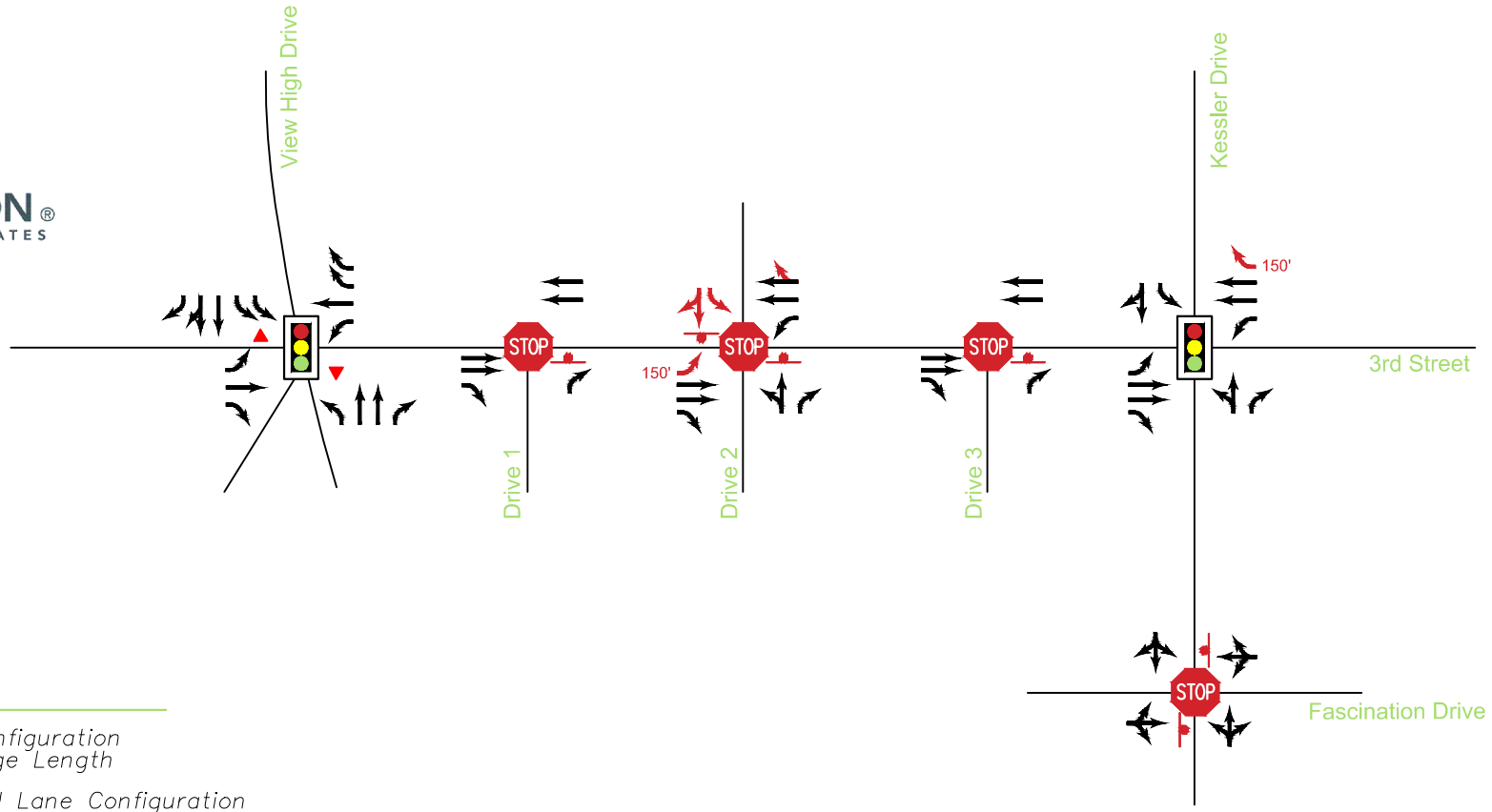
LEGEND

AM (PM) *Peak Hour Volume*

FIGURE 13

Full Build Conditions
Lane Configuration
and Traffic Control

Kessler View
Lee's Summit, MO



LEGEND

- XX' — *Lane Configuration & Storage Length*
- XX' — *Proposed Lane Configuration & Storage Length*
- *Signalized Intersection*
- STOP — *Stop-controlled Intersection*
- *Stop Sign*
- *Yielding Channelized Right-turn*

6.3 Full Build Conditions Capacity Analysis

Results of the capacity analysis indicate similar operations to the Existing plus Approved plus Proposed project conditions, with the following exceptions:

- Results of the capacity analysis indicate improved delay from unsignalized conditions at the intersection of 3rd Street and Kessler Drive with the installation of a traffic signal. The intersection is expected to operate at a LOS B in the AM peak hour period and a LOS C in the PM peak hour period with no individual movement experiencing delay lower than LOS D during the AM and PM peak hour periods as a signalized intersection.

- The northbound movement at the intersection of 3rd Street and Drive 2 is expected to operate at a LOS E during the AM peak hour period and LOS F during the PM peak hour period. The 95th-percentile queue for the northbound movement is expected to potentially block access for existing development (McDonald's and gas station). It is recommended to monitor operations at the intersection to determine if additional traffic control measures should be considered to accommodate full build conditions.

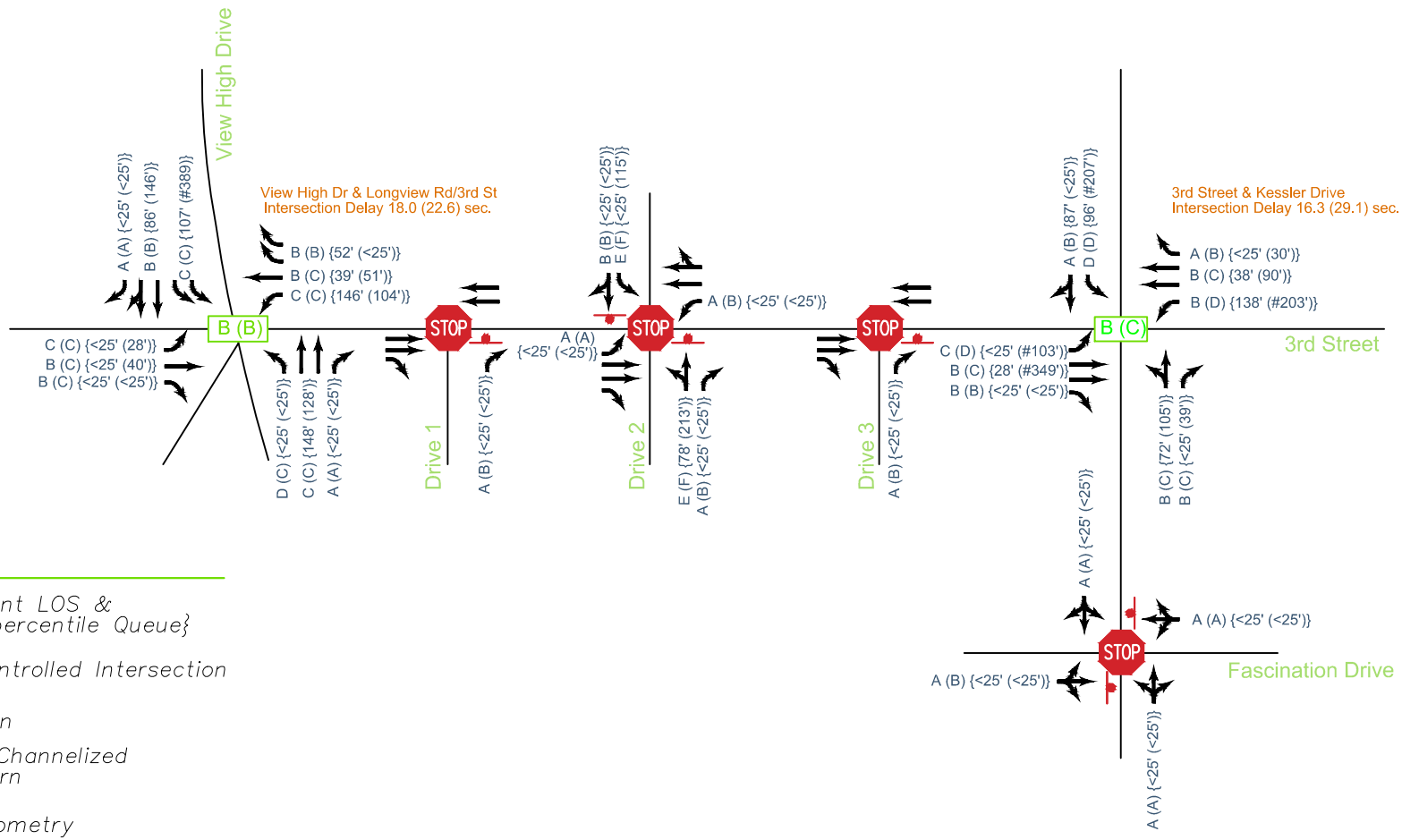
Development specific drives associated with approved development were not analyzed for the purposes of this study. Based on the analysis conducted for this study, operations at development drive locations would not be expected to change significantly from previously submitted studies. Similarly, operations at existing roundabout intersections located along View High Drive would not be expected to change significantly from analysis conducted in previously approved studies.

The full build conditions capacity analysis summary is shown in **Figure 14**. Detailed results can be found in **Appendix E**.

FIGURE 14

Full Build Conditions
Level of Service

Kessler View
Lee's Summit, MO



LEGEND

AM (PM) {AM (PM)}	Movement LOS & {95th-percentile Queue}
STOP	Stop-controlled Intersection
	Stop Sign
	Yielding Channelized Right-turn
	Lane Geometry
AM (PM)	Signalized Intersection LOS
#	95th-percentile Queue Length Exceeds Capacity
m	Volume for 95th-percentile Queue Metered by Upstream Signal

7.0 Conclusions and Recommendations

7.1 Conclusions

This study process embodied open communication with the client regarding approach, goals, background information, and results. The general findings of the Kessler View traffic impact study can be best summarized by four main points:

1. The northbound and southbound left-turn movements at 3rd Street and Kessler Drive are expected to experience moderate delay during the AM and PM peak periods in the Existing plus Approved projects scenario.
    a. Signalization of the intersection of 3rd Street and Kessler Drive is expected to reduce delay for the minor street movements for the Existing plus Approved plus Proposed Scenario. If volumes materialize as expected, signalization of the intersection should be considered with completion of approved plus proposed development south of 3rd Street.

2. Operations of the existing roundabouts along View High Drive are not expected to be significantly impacted by modifications to approved and proposed development plans. Previous studies should be referenced for expected operations.

3. The intersection of 3rd Street and Drive 2 approaches meeting the criteria for signalization based on full build traffic volumes. Due to the proximity of this intersection to the signalized intersection of 3rd Street and View High Drive and recommended signalization of 3rd Street and Kessler Drive, it is not recommended to signalize 3rd Street and Drive 2.

4. Several drives associated with specific development projects are proposed south of 3rd Street. Individual traffic impact studies should be referenced for those drive operations. Based on the analysis conducted for this study, operations at development drive locations would not be expected to change significantly from previously submitted studies.

7.2 Recommendations

Given the review of information, list of conclusions and intersection specific capacity analysis, the following action items are recommended:

1. It is anticipated that a signal will be warranted at the intersection of 3rd Street and Kessler Drive upon the completion of the Existing plus Approved plus Proposed Development condition. Signal warrants should be evaluated prior to signalization to ensure volumes materialize as studied.
    a. There are two northbound lanes at the intersection; consult with City staff prior to signalization regarding lane striping to determine which lane is preferred to be the through movement. Northbound through volumes are low and operations are expected to be adequate with either lane configuration.

2. Considering full-build conditions, it is recommended to provide an eastbound left-turn lane with 150’ of storage plus taper at the intersection of 3rd Street and Drive 2. A westbound right-turn lane with 150’ of storage plus taper is recommended at the intersection of 3rd Street and Kessler Drive.

Appendix A

Count Data

3rd St & Kessler St - TMC
Tue Mar 6, 2018
Full Length (6AM-6PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

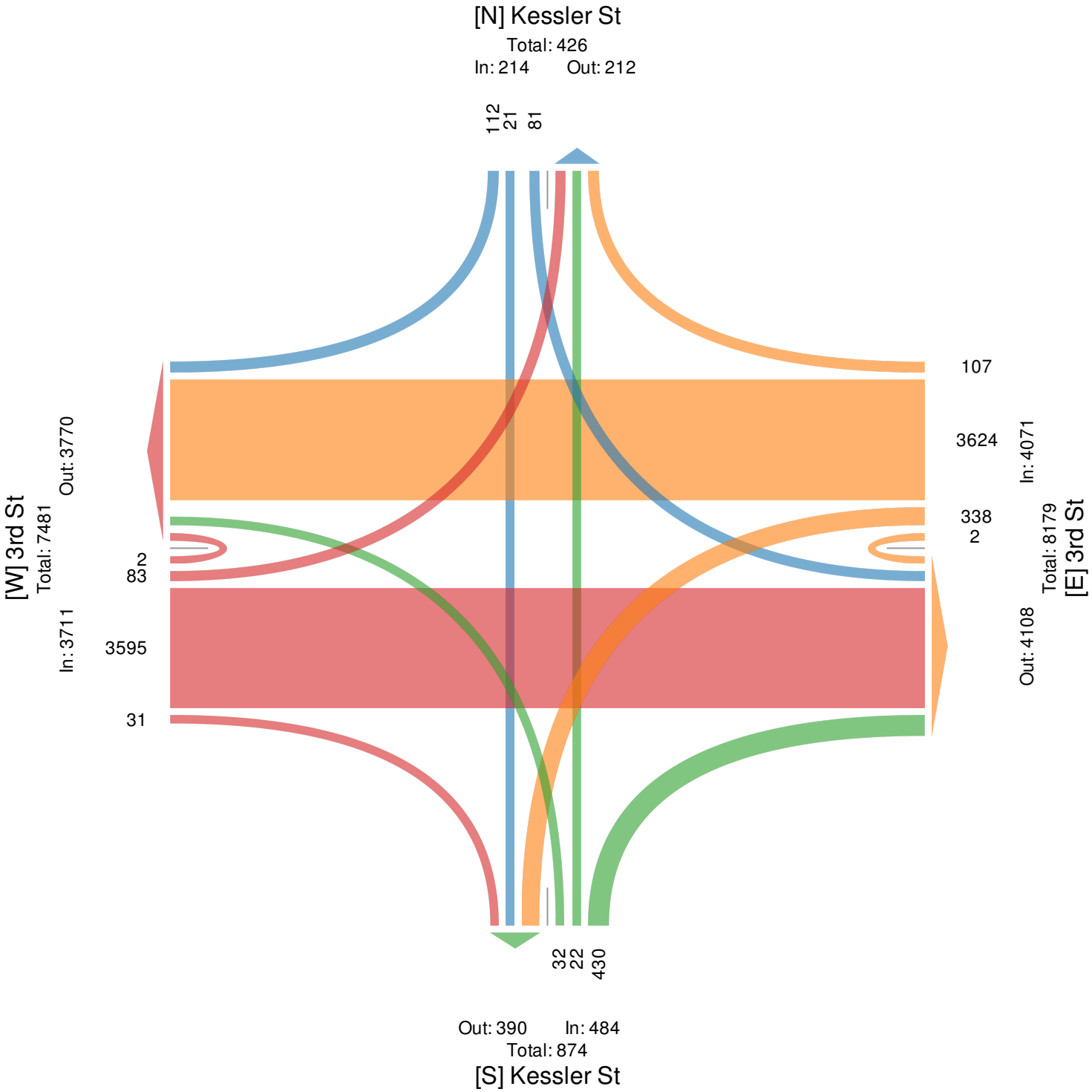
Leg Direction	Kessler St Southbound					3rd St Westbound					Kessler St Northbound					3rd St Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2018-03-06 6:00AM	1	0	1	0	**2**	0	45	4	0	**49**	1	0	1	0	**2**	0	12	0	0	**12**	**65**
6:15AM	0	0	0	0	**0**	0	64	1	0	**65**	1	0	0	0	**1**	0	10	0	0	**10**	**76**
6:30AM	5	0	0	0	**5**	1	119	3	0	**123**	7	0	0	0	**7**	1	24	0	0	**25**	**160**
6:45AM	8	1	2	0	**11**	2	115	6	0	**123**	5	0	0	0	**5**	0	25	0	0	**25**	**164**
Hourly Total	14	1	3	0	**18**	3	343	14	0	**360**	14	0	1	0	**15**	1	71	0	0	**72**	**465**
7:00AM	4	1	3	0	**8**	2	151	6	0	**159**	8	1	1	0	**10**	2	24	3	0	**29**	**206**
7:15AM	4	1	1	0	**6**	4	167	7	0	**178**	6	0	0	0	**6**	0	36	1	0	**37**	**227**
7:30AM	4	0	1	0	**5**	1	158	10	0	**169**	5	2	2	0	**9**	2	45	2	0	**49**	**232**
7:45AM	6	0	6	0	**12**	3	181	7	0	**191**	9	1	0	0	**10**	1	36	2	0	**39**	**252**
Hourly Total	18	2	11	0	**31**	10	657	30	0	**697**	28	4	3	0	**35**	5	141	8	0	**154**	**917**
8:00AM	0	1	5	0	**6**	3	140	9	0	**152**	7	0	3	0	**10**	2	39	1	0	**42**	**210**
8:15AM	1	1	3	0	**5**	0	117	11	0	**128**	5	1	1	0	**7**	0	31	0	0	**31**	**171**
8:30AM	5	2	0	0	**7**	4	118	7	0	**129**	5	0	1	0	**6**	0	26	2	0	**28**	**170**
8:45AM	3	0	2	0	**5**	6	116	7	0	**129**	5	0	1	0	**6**	0	36	0	1	**37**	**177**
Hourly Total	9	4	10	0	**23**	13	491	34	0	**538**	22	1	6	0	**29**	2	132	3	1	**138**	**728**
9:00AM	2	0	2	0	**4**	2	129	7	0	**138**	8	0	0	0	**8**	0	44	0	0	**44**	**194**
9:15AM	4	0	3	0	**7**	1	131	1	0	**133**	13	0	0	0	**13**	3	45	0	0	**48**	**201**
9:30AM	0	0	1	0	**1**	4	63	6	0	**73**	6	0	0	0	**6**	0	46	2	0	**48**	**128**
9:45AM	2	0	0	0	**2**	2	45	6	1	**54**	10	1	0	0	**11**	1	50	3	0	**54**	**121**
Hourly Total	8	0	6	0	**14**	9	368	20	1	**398**	37	1	0	0	**38**	4	185	5	0	**194**	**644**
10:00AM	1	0	2	0	**3**	3	39	9	0	**51**	1	0	0	0	**1**	0	32	0	0	**32**	**87**
10:15AM	0	0	0	0	**0**	3	48	8	0	**59**	9	0	1	0	**10**	0	42	2	0	**44**	**113**
10:30AM	1	2	2	0	**5**	3	79	6	0	**88**	7	1	0	0	**8**	0	55	3	0	**58**	**159**
10:45AM	1	0	1	0	**2**	1	80	6	0	**87**	12	0	0	0	**12**	0	98	0	0	**98**	**199**
Hourly Total	3	2	5	0	**10**	10	246	29	0	**285**	29	1	1	0	**31**	0	227	5	0	**232**	**558**
11:00AM	1	0	1	0	**2**	3	59	6	0	**68**	13	0	0	0	**13**	0	44	0	0	**44**	**127**
11:15AM	1	0	1	0	**2**	1	42	2	0	**45**	10	1	1	0	**12**	1	41	0	0	**42**	**101**
11:30AM	3	0	3	0	**6**	1	30	8	1	**40**	10	0	0	0	**10**	2	65	0	0	**67**	**123**
11:45AM	3	0	1	0	**4**	1	41	10	0	**52**	6	0	0	0	**6**	0	50	2	0	**52**	**114**
Hourly Total	8	0	6	0	**14**	6	172	26	1	**205**	39	1	1	0	**41**	3	200	2	0	**205**	**465**
12:00PM	1	0	0	0	**1**	1	58	12	0	**71**	7	0	0	0	**7**	1	81	3	0	**85**	**164**
12:15PM	4	0	0	0	**4**	0	73	5	0	**78**	15	0	0	0	**15**	0	148	5	1	**154**	**251**
12:30PM	2	0	2	0	**4**	3	56	4	0	**63**	13	0	0	0	**13**	2	84	2	0	**88**	**168**
12:45PM	2	0	1	0	**3**	1	64	7	0	**72**	11	0	1	0	**12**	0	48	2	0	**50**	**137**
Hourly Total	9	0	3	0	**12**	5	251	28	0	**284**	46	0	1	0	**47**	3	361	12	1	**377**	**720**
1:00PM	3	0	3	0	**6**	3	37	8	0	**48**	13	1	1	0	**15**	0	60	1	0	**61**	**130**
1:15PM	1	1	0	0	**2**	7	49	5	0	**61**	9	0	1	0	**10**	1	59	0	0	**60**	**133**
1:30PM	1	0	1	0	**2**	3	51	3	0	**57**	13	1	0	0	**14**	1	72	3	0	**76**	**149**
1:45PM	3	2	1	0	**6**	1	51	5	0	**57**	14	0	2	0	**16**	1	115	0	0	**116**	**195**
Hourly Total	8	3	5	0	**16**	14	188	21	0	**223**	49	2	4	0	**55**	3	306	4	0	**313**	**607**
2:00PM	3	0	3	0	**6**	0	46	10	0	**56**	5	1	1	0	**7**	2	55	1	0	**58**	**127**
2:15PM	0	0	1	0	**1**	0	47	7	0	**54**	7	2	0	0	**9**	1	69	1	0	**71**	**135**
2:30PM	3	1	0	0	**4**	4	55	5	0	**64**	9	2	0	0	**11**	0	67	1	0	**68**	**147**
2:45PM	0	2	2	0	**4**	3	30	10	0	**43**	13	0	0	0	**13**	0	83	3	0	**86**	**146**
Hourly Total	6	3	6	0	**15**	7	178	32	0	**217**	34	5	1	0	**40**	3	274	6	0	**283**	**555**
3:00PM	1	1	4	0	**6**	4	51	7	0	**62**	12	0	2	0	**14**	2	75	3	0	**80**	**162**
3:15PM	2	0	4	0	**6**	4	52	10	0	**66**	10	0	2	0	**12**	0	135	3	0	**138**	**222**
3:30PM	3	0	0	0	**3**	4	64	10	0	**78**	13	0	3	0	**16**	1	147	3	0	**151**	**248**

Leg	Kessler St					3rd St					Kessler St					3rd St					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
3:45PM	6	1	2	0	**9**	2	38	3	0	**43**	6	3	1	0	**10**	2	126	1	0	**129**	**191**
Hourly Total	12	2	10	0	**24**	14	205	30	0	**249**	41	3	8	0	**52**	5	483	10	0	**498**	**823**
4:00PM	2	1	5	0	**8**	3	53	7	0	**63**	14	1	0	0	**15**	0	142	3	0	**145**	**231**
4:15PM	5	0	4	0	**9**	0	49	14	0	**63**	5	0	0	0	**5**	0	161	2	0	**163**	**240**
4:30PM	2	1	2	0	**5**	1	50	8	0	**59**	11	1	0	0	**12**	0	152	5	0	**157**	**233**
4:45PM	2	1	2	0	**5**	2	54	7	0	**63**	13	0	2	0	**15**	0	140	3	0	**143**	**226**
Hourly Total	11	3	13	0	**27**	6	206	36	0	**248**	43	2	2	0	**47**	0	595	13	0	**608**	**930**
5:00PM	0	0	1	0	**1**	1	73	11	0	**85**	11	1	2	0	**14**	0	162	5	0	**167**	**267**
5:15PM	0	0	2	0	**2**	5	74	7	0	**86**	17	0	2	0	**19**	2	154	3	0	**159**	**266**
5:30PM	5	1	0	0	**6**	4	89	11	0	**104**	10	1	0	0	**11**	0	158	3	0	**161**	**282**
5:45PM	1	0	0	0	**1**	0	83	9	0	**92**	10	0	0	0	**10**	0	146	4	0	**150**	**253**
Hourly Total	6	1	3	0	**10**	10	319	38	0	**367**	48	2	4	0	**54**	2	620	15	0	**637**	**1068**
Total	112	21	81	0	**214**	107	3624	338	2	**4071**	430	22	32	0	**484**	31	3595	83	2	**3711**	**8480**
% Approach	52.3%	9.8%	37.9%	0%	**-**	2.6%	89.0%	8.3%	0%	**-**	88.8%	4.5%	6.6%	0%	**-**	0.8%	96.9%	2.2%	0.1%	**-**	**-**
% Total	1.3%	0.2%	1.0%	0%	**2.5%**	1.3%	42.7%	4.0%	0%	**48.0%**	5.1%	0.3%	0.4%	0%	**5.7%**	0.4%	42.4%	1.0%	0%	**43.8%**	**-**
Lights	107	19	74	0	**200**	93	3599	330	2	**4024**	421	22	30	0	**473**	29	3561	73	2	**3665**	8362
% Lights	95.5%	90.5%	91.4%	0%	**93.5%**	86.9%	99.3%	97.6%	100%	**98.8%**	97.9%	100%	93.8%	0%	**97.7%**	93.5%	99.1%	88.0%	100%	**98.8%**	98.6%
Articulated Trucks	0	0	0	0	**0**	1	3	1	0	**5**	1	0	0	0	**1**	1	4	1	0	**6**	12
% Articulated Trucks	0%	0%	0%	0%	**0%**	0.9%	0.1%	0.3%	0%	**0.1%**	0.2%	0%	0%	0%	**0.2%**	3.2%	0.1%	1.2%	0%	**0.2%**	0.1%
Buses and Single-Unit Trucks	5	2	7	0	**14**	13	22	7	0	**42**	8	0	2	0	**10**	1	30	9	0	**40**	106
% Buses and Single-Unit Trucks	4.5%	9.5%	8.6%	0%	**6.5%**	12.1%	0.6%	2.1%	0%	**1.0%**	1.9%	0%	6.3%	0%	**2.1%**	3.2%	0.8%	10.8%	0%	**1.1%**	1.3%

*L: Left, R: Right, T: Thru, U: U-Turn

3rd St & Kessler St - TMC
Tue Mar 6, 2018
Full Length (6AM-6PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3rd St & Kessler St - TMC
Tue Mar 6, 2018
AM Peak (7:15AM - 8:15AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

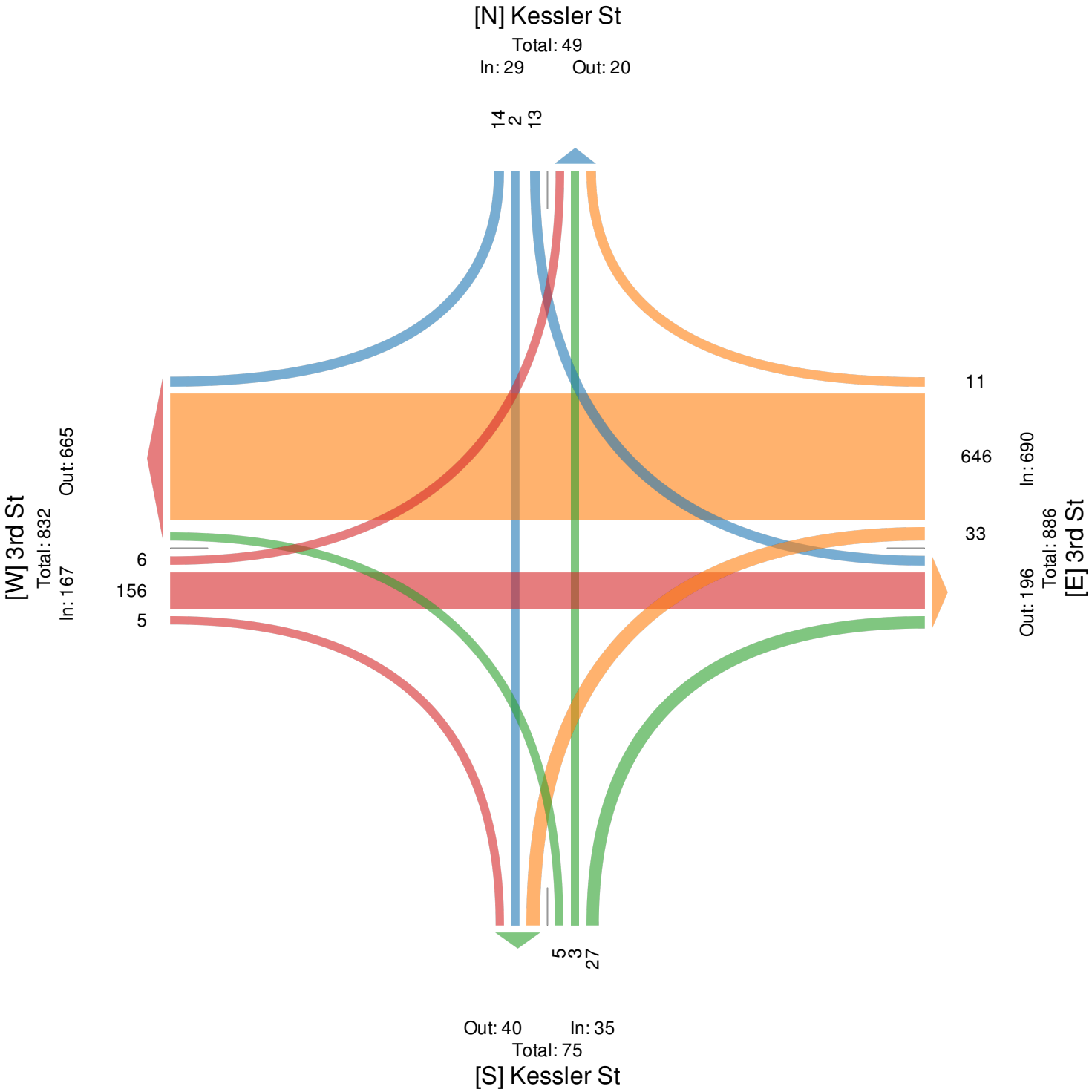
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Kessler St					3rd St					Kessler St					3rd St					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2018-03-06 7:15AM	4	1	1	0	**6**	4	167	7	0	**178**	6	0	0	0	**6**	0	36	1	0	**37**	**227**
7:30AM	4	0	1	0	**5**	1	158	10	0	**169**	5	2	2	0	**9**	2	45	2	0	**49**	**232**
7:45AM	6	0	6	0	**12**	3	181	7	0	**191**	9	1	0	0	**10**	1	36	2	0	**39**	**252**
8:00AM	0	1	5	0	**6**	3	140	9	0	**152**	7	0	3	0	**10**	2	39	1	0	**42**	**210**
Total	14	2	13	0	**29**	11	646	33	0	**690**	27	3	5	0	**35**	5	156	6	0	**167**	**921**
% Approach	48.3%	6.9%	44.8%	0%	-	1.6%	93.6%	4.8%	0%	-	77.1%	8.6%	14.3%	0%	-	3.0%	93.4%	3.6%	0%	-	-
% Total	1.5%	0.2%	1.4%	0%	**3.1%**	1.2%	70.1%	3.6%	0%	**74.9%**	2.9%	0.3%	0.5%	0%	**3.8%**	0.5%	16.9%	0.7%	0%	**18.1%**	-
PHF	0.583	0.500	0.542	-	**0.604**	0.688	0.892	0.825	-	**0.903**	0.750	0.375	0.417	-	**0.875**	0.625	0.867	0.750	-	**0.852**	0.914
Lights	14	1	11	0	**26**	6	644	30	0	**680**	26	3	5	0	**34**	4	153	4	0	**161**	901
% Lights	100%	50.0%	84.6%	0%	**89.7%**	54.5%	99.7%	90.9%	0%	**98.6%**	96.3%	100%	100%	0%	**97.1%**	80.0%	98.1%	66.7%	0%	**96.4%**	97.8%
Articulated Trucks	0	0	0	0	**0**	1	1	0	0	**2**	0	0	0	0	**0**	1	0	1	0	**2**	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	9.1%	0.2%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	20.0%	0%	16.7%	0%	**1.2%**	0.4%
Buses and Single-Unit Trucks	0	1	2	0	**3**	4	1	3	0	**8**	1	0	0	0	**1**	0	3	1	0	**4**	16
% Buses and Single-Unit Trucks	0%	50.0%	15.4%	0%	**10.3%**	36.4%	0.2%	9.1%	0%	**1.2%**	3.7%	0%	0%	0%	**2.9%**	0%	1.9%	16.7%	0%	**2.4%**	1.7%

*L: Left, R: Right, T: Thru, U: U-Turn

3rd St & Kessler St - TMC
Tue Mar 6, 2018
AM Peak (7:15AM - 8:15AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3rd St & Kessler St - TMC
Tue Mar 6, 2018
Midday Peak (12PM - 1PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

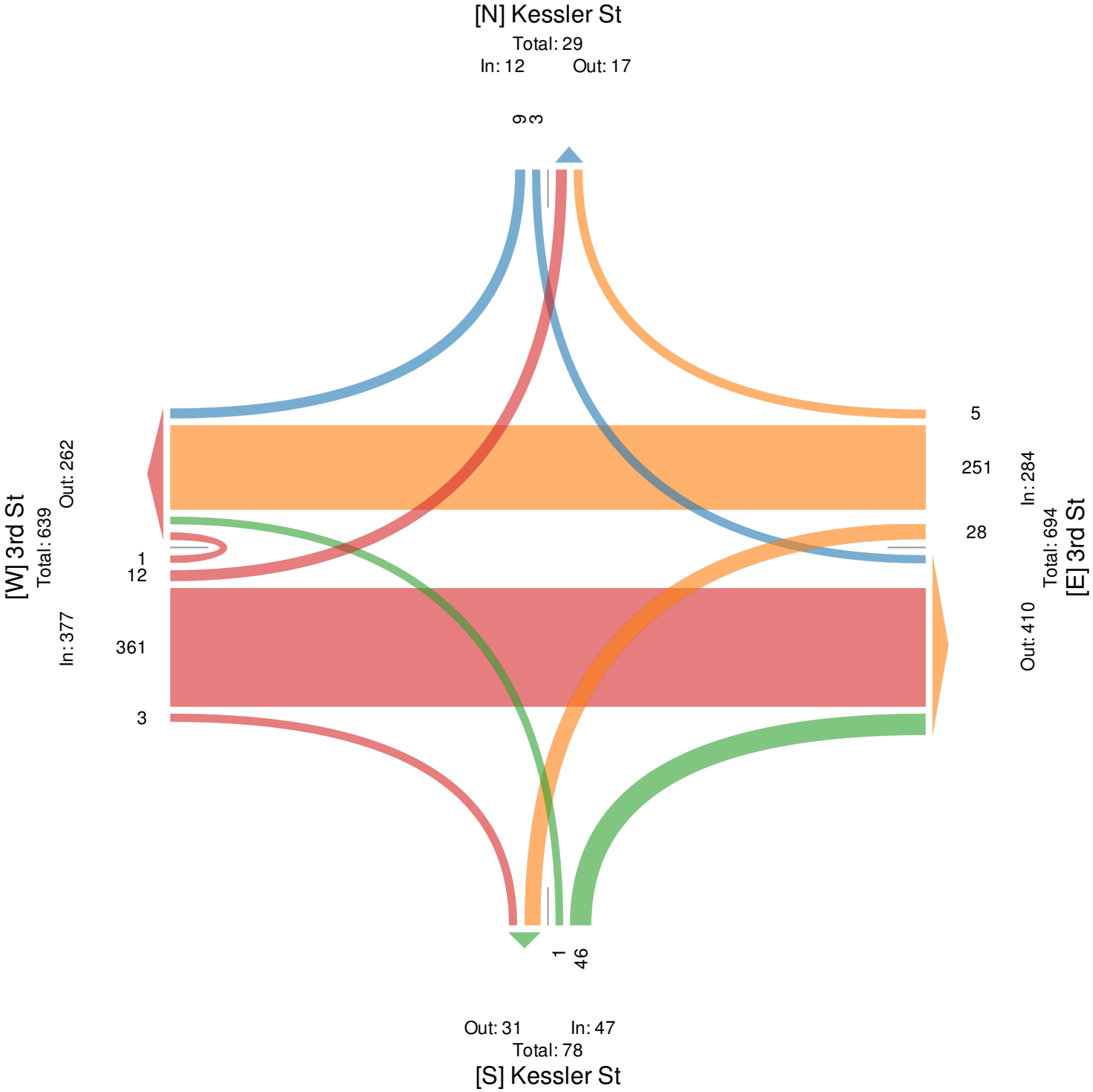
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Kessler St					3rd St					Kessler St					3rd St					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2018-03-06 12:00PM	1	0	0	0	**1**	1	58	12	0	**71**	7	0	0	0	**7**	1	81	3	0	**85**	**164**
12:15PM	4	0	0	0	**4**	0	73	5	0	**78**	15	0	0	0	**15**	0	148	5	1	**154**	**251**
12:30PM	2	0	2	0	**4**	3	56	4	0	**63**	13	0	0	0	**13**	2	84	2	0	**88**	**168**
12:45PM	2	0	1	0	**3**	1	64	7	0	**72**	11	0	1	0	**12**	0	48	2	0	**50**	**137**
Total	9	0	3	0	**12**	5	251	28	0	**284**	46	0	1	0	**47**	3	361	12	1	**377**	**720**
% Approach	75.0%	0%	25.0%	0%	-	1.8%	88.4%	9.9%	0%	-	97.9%	0%	2.1%	0%	-	0.8%	95.8%	3.2%	0.3%	-	-
% Total	1.3%	0%	0.4%	0%	**1.7%**	0.7%	34.9%	3.9%	0%	**39.4%**	6.4%	0%	0.1%	0%	**6.5%**	0.4%	50.1%	1.7%	0.1%	**52.4%**	-
PHF	0.563	-	0.375	-	**0.750**	0.417	0.860	0.583	-	**0.910**	0.767	-	0.250	-	**0.783**	0.375	0.610	0.600	0.250	**0.612**	0.717
Lights	9	0	3	0	**12**	5	247	28	0	**280**	45	0	1	0	**46**	3	360	11	1	**375**	713
% Lights	100%	0%	100%	0%	**100%**	100%	98.4%	100%	0%	**98.6%**	97.8%	0%	100%	0%	**97.9%**	100%	99.7%	91.7%	100%	**99.5%**	99.0%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	1	0	0	0	**1**	0	0	0	0	**0**	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	2.2%	0%	0%	0%	**2.1%**	0%	0%	0%	0%	**0%**	0.1%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	0	1	1	0	**2**	6
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	1.6%	0%	0%	**1.4%**	0%	0%	0%	0%	**0%**	0%	0.3%	8.3%	0%	**0.5%**	0.8%

*L: Left, R: Right, T: Thru, U: U-Turn

3rd St & Kessler St - TMC
Tue Mar 6, 2018
Midday Peak (12PM - 1PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3rd St & Kessler St - TMC
Tue Mar 6, 2018
PM Peak (5PM - 6PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

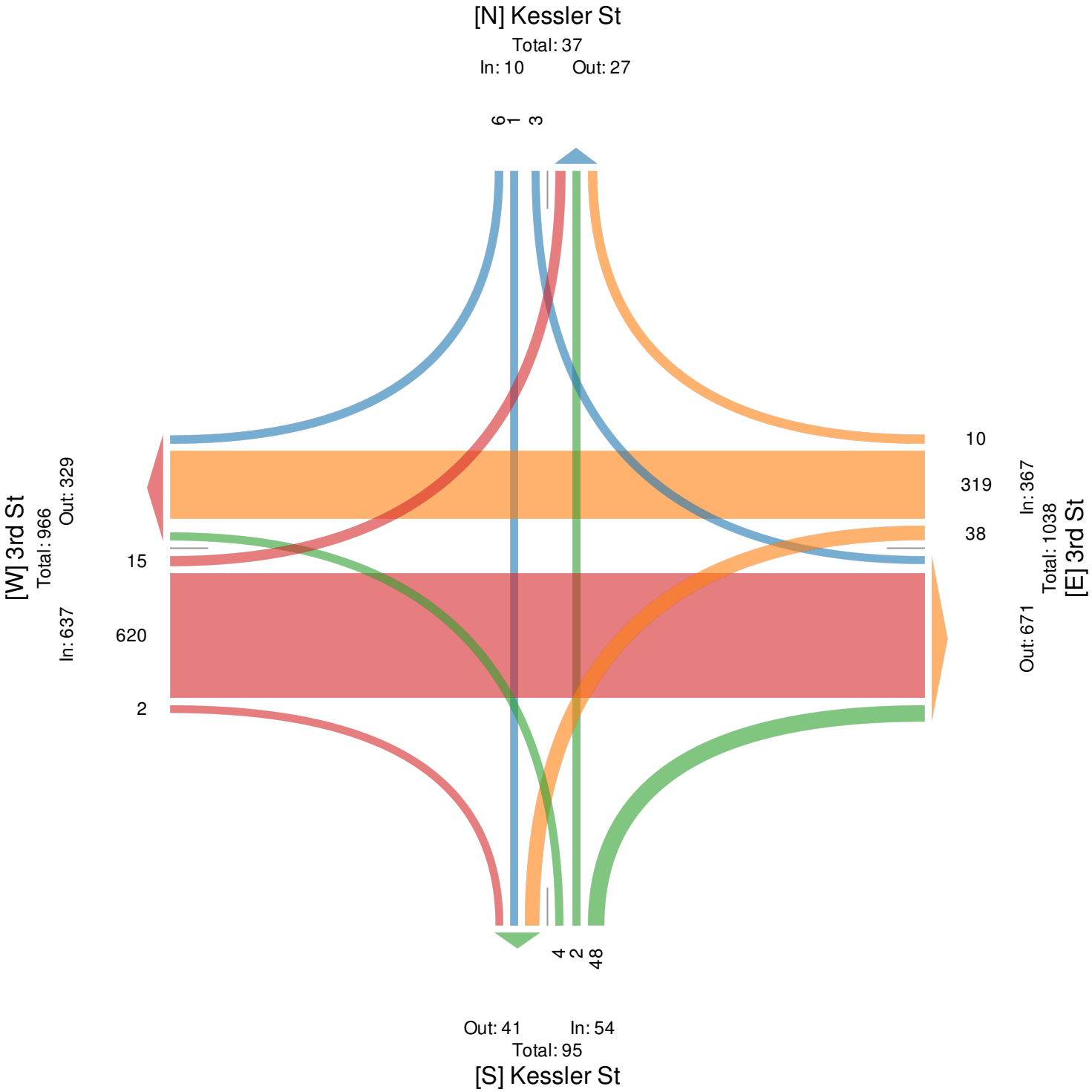
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	Kessler St					3rd St					Kessler St					3rd St					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2018-03-06 5:00PM	0	0	1	0	**1**	1	73	11	0	**85**	11	1	2	0	**14**	0	162	5	0	**167**	**267**
5:15PM	0	0	2	0	**2**	5	74	7	0	**86**	17	0	2	0	**19**	2	154	3	0	**159**	**266**
5:30PM	5	1	0	0	**6**	4	89	11	0	**104**	10	1	0	0	**11**	0	158	3	0	**161**	**282**
5:45PM	1	0	0	0	**1**	0	83	9	0	**92**	10	0	0	0	**10**	0	146	4	0	**150**	**253**
Total	6	1	3	0	**10**	10	319	38	0	**367**	48	2	4	0	**54**	2	620	15	0	**637**	**1068**
% Approach	60.0%	10.0%	30.0%	0%	-	2.7%	86.9%	10.4%	0%	-	88.9%	3.7%	7.4%	0%	-	0.3%	97.3%	2.4%	0%	-	-
% Total	0.6%	0.1%	0.3%	0%	**0.9%**	0.9%	29.9%	3.6%	0%	**34.4%**	4.5%	0.2%	0.4%	0%	**5.1%**	0.2%	58.1%	1.4%	0%	**59.6%**	-
PHF	0.300	0.250	0.375		**0.417**	0.500	0.896	0.864		**0.882**	0.706	0.500	0.500		**0.711**	0.250	0.957	0.750		**0.954**	0.947
Lights	6	1	3	0	**10**	10	317	38	0	**365**	48	2	4	0	**54**	2	617	15	0	**634**	1063
% Lights	100%	100%	100%	0%	**100%**	100%	99.4%	100%	0%	**99.5%**	100%	100%	100%	0%	**100%**	100%	99.5%	100%	0%	**99.5%**	99.5%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	5
% Buses and Single-Unit Trucks	0%	0%	0%	0%	**0%**	0%	0.6%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0%	0.5%	0%	0%	**0.5%**	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

3rd St & Kessler St - TMC
Tue Mar 6, 2018
PM Peak (5PM - 6PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 499464, Location: 38.913014, -94.446237

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3rd St & View High Dr - TMC
Tue Mar 6, 2018
Full Length (7:15AM-8:15AM, 5PM-6PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 507970, Location: 38.913182, -94.450771

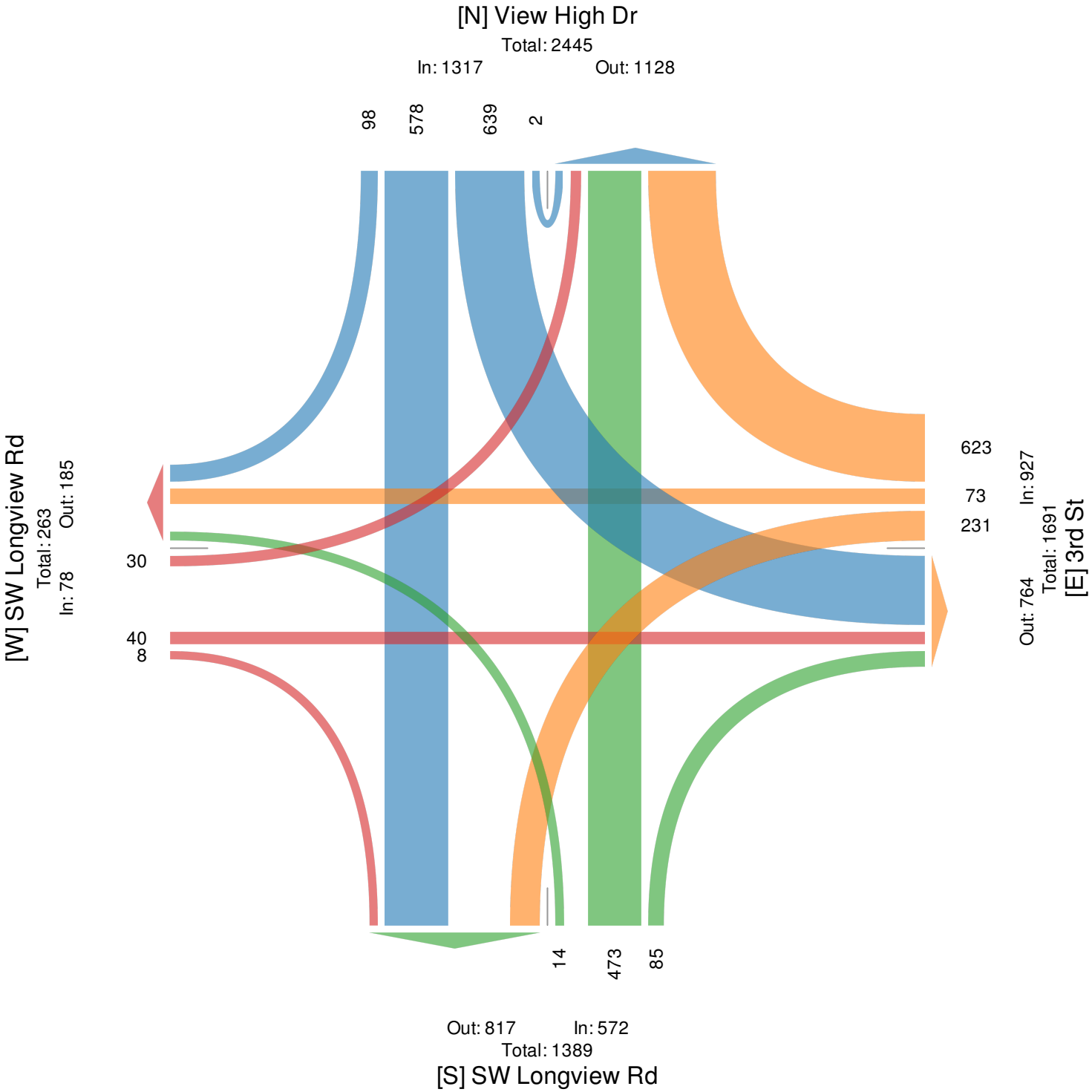
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	View High Dr					3rd St					SW Longview Rd					SW Longview Rd					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2018-03-06 7:15AM	2	23	17	0	**42**	139	7	18	0	**164**	8	83	1	0	**92**	0	5	3	0	**8**	**306**
7:30AM	13	47	28	0	**88**	119	3	34	0	**156**	13	70	0	0	**83**	2	1	4	0	**7**	**334**
7:45AM	14	70	34	2	**120**	103	12	64	0	**179**	6	78	1	0	**85**	1	1	3	0	**5**	**389**
Hourly Total	29	140	79	2	**250**	361	22	116	0	**499**	27	231	2	0	**260**	3	7	10	0	**20**	**1029**
8:00AM	9	49	26	0	**84**	110	8	24	0	**142**	9	78	0	0	**87**	0	3	2	0	**5**	**318**
Hourly Total	9	49	26	0	**84**	110	8	24	0	**142**	9	78	0	0	**87**	0	3	2	0	**5**	**318**
5:00PM	9	73	155	0	**237**	46	5	14	0	**65**	13	44	3	0	**60**	2	12	3	0	**17**	**379**
5:15PM	13	107	126	0	**246**	35	10	24	0	**69**	11	41	4	0	**56**	2	8	9	0	**19**	**390**
5:30PM	14	103	129	0	**246**	40	13	26	0	**79**	18	34	1	0	**53**	0	6	1	0	**7**	**385**
5:45PM	24	106	124	0	**254**	31	15	27	0	**73**	7	45	4	0	**56**	1	4	5	0	**10**	**393**
Hourly Total	60	389	534	0	**983**	152	43	91	0	**286**	49	164	12	0	**225**	5	30	18	0	**53**	**1547**
Total	98	578	639	2	**1317**	623	73	231	0	**927**	85	473	14	0	**572**	8	40	30	0	**78**	**2894**
% Approach	7.4%	43.9%	48.5%	0.2%	-	67.2%	7.9%	24.9%	0%	-	14.9%	82.7%	2.4%	0%	-	10.3%	51.3%	38.5%	0%	-	-
% Total	3.4%	20.0%	22.1%	0.1%	**45.5%**	21.5%	2.5%	8.0%	0%	**32.0%**	2.9%	16.3%	0.5%	0%	**19.8%**	0.3%	1.4%	1.0%	0%	**2.7%**	-
Lights	97	576	633	2	**1308**	617	73	230	0	**920**	83	472	14	0	**569**	8	39	29	0	**76**	2873
% Lights	99.0%	99.7%	99.1%	100%	**99.3%**	99.0%	100%	99.6%	0%	**99.2%**	97.6%	99.8%	100%	0%	**99.5%**	100%	97.5%	96.7%	0%	**97.4%**	99.3%
Articulated Trucks	1	0	2	0	**3**	0	0	0	0	**0**	1	0	0	0	**1**	0	1	0	0	**1**	5
% Articulated Trucks	1.0%	0%	0.3%	0%	**0.2%**	0%	0%	0%	0%	**0%**	1.2%	0%	0%	0%	**0.2%**	0%	2.5%	0%	0%	**1.3%**	0.2%
Buses and Single-Unit Trucks	0	2	4	0	**6**	6	0	1	0	**7**	1	1	0	0	**2**	0	0	1	0	**1**	16
% Buses and Single-Unit Trucks	0%	0.3%	0.6%	0%	**0.5%**	1.0%	0%	0.4%	0%	**0.8%**	1.2%	0.2%	0%	0%	**0.3%**	0%	0%	3.3%	0%	**1.3%**	0.6%

*L: Left, R: Right, T: Thru, U: U-Turn

3rd St & View High Dr - TMC
Tue Mar 6, 2018
Full Length (7:15AM-8:15AM, 5PM-6PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 507970, Location: 38.913182, -94.450771

GEWALT HAMILTON ASSOCIATES, INC.
Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3rd St & View High Dr - TMC
Tue Mar 6, 2018
AM Peak (7:15AM - 8:15AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 507970, Location: 38.913182, -94.450771

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	View High Dr Southbound					3rd St Westbound					SW Longview Rd Northbound					SW Longview Rd Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2018-03-06 7:15AM	2	23	17	0	**42**	139	7	18	0	**164**	8	83	1	0	**92**	0	5	3	0	**8**	**306**
7:30AM	13	47	28	0	**88**	119	3	34	0	**156**	13	70	0	0	**83**	2	1	4	0	**7**	**334**
7:45AM	14	70	34	2	**120**	103	12	64	0	**179**	6	78	1	0	**85**	1	1	3	0	**5**	**389**
8:00AM	9	49	26	0	**84**	110	8	24	0	**142**	9	78	0	0	**87**	0	3	2	0	**5**	**318**
Total	38	189	105	2	**334**	471	30	140	0	**641**	36	309	2	0	**347**	3	10	12	0	**25**	**1347**
% Approach	11.4%	56.6%	31.4%	0.6%	-	73.5%	4.7%	21.8%	0%	-	10.4%	89.0%	0.6%	0%	-	12.0%	40.0%	48.0%	0%	-	-
% Total	2.8%	14.0%	7.8%	0.1%	**24.8%**	35.0%	2.2%	10.4%	0%	**47.6%**	2.7%	22.9%	0.1%	0%	**25.8%**	0.2%	0.7%	0.9%	0%	**1.9%**	-
PHF	0.679	0.675	0.772	0.250	**0.696**	0.847	0.625	0.547	-	**0.895**	0.692	0.931	0.500	-	**0.943**	0.375	0.500	0.750	-	**0.781**	0.866
Lights	38	188	101	2	**329**	467	30	139	0	**636**	35	308	2	0	**345**	3	9	12	0	**24**	1334
% Lights	100%	99.5%	96.2%	100%	**98.5%**	99.2%	100%	99.3%	0%	**99.2%**	97.2%	99.7%	100%	0%	**99.4%**	100%	90.0%	100%	0%	**96.0%**	99.0%
Articulated Trucks	0	0	2	0	**2**	0	0	0	0	**0**	1	0	0	0	**1**	0	1	0	0	**1**	4
% Articulated Trucks	0%	0%	1.9%	0%	**0.6%**	0%	0%	0%	0%	**0%**	2.8%	0%	0%	0%	**0.3%**	0%	10.0%	0%	0%	**4.0%**	0.3%
Buses and Single-Unit Trucks	0	1	2	0	**3**	4	0	1	0	**5**	0	1	0	0	**1**	0	0	0	0	**0**	9
% Buses and Single-Unit Trucks	0%	0.5%	1.9%	0%	**0.9%**	0.8%	0%	0.7%	0%	**0.8%**	0%	0.3%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0.7%

*L: Left, R: Right, T: Thru, U: U-Turn

3rd St & View High Dr - TMC
Tue Mar 6, 2018
AM Peak (7:15AM - 8:15AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 507970, Location: 38.913182, -94.450771

GEWALT HAMILTON ASSOCIATES, INC.
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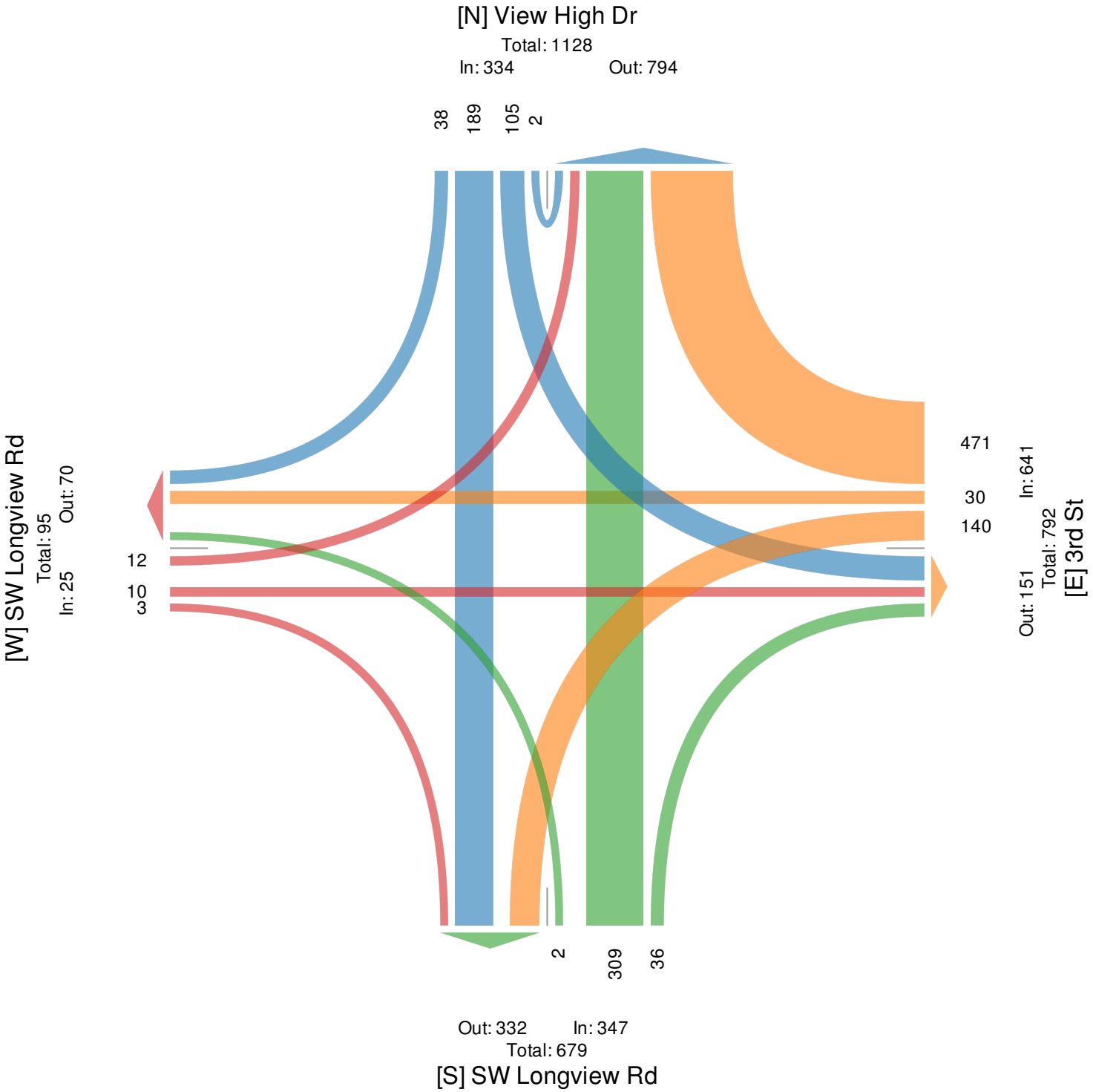
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



3rd St & View High Dr - TMC
Tue Mar 6, 2018
PM Peak (5PM - 6PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 507970, Location: 38.913182, -94.450771

Provided by: Gewalt Hamilton Associates Inc.
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg	View High Dr					3rd St					SW Longview Rd					SW Longview Rd					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2018-03-06 5:00PM	9	73	155	0	**237**	46	5	14	0	**65**	13	44	3	0	**60**	2	12	3	0	**17**	**379**
5:15PM	13	107	126	0	**246**	35	10	24	0	**69**	11	41	4	0	**56**	2	8	9	0	**19**	**390**
5:30PM	14	103	129	0	**246**	40	13	26	0	**79**	18	34	1	0	**53**	0	6	1	0	**7**	**385**
5:45PM	24	106	124	0	**254**	31	15	27	0	**73**	7	45	4	0	**56**	1	4	5	0	**10**	**393**
Total	60	389	534	0	**983**	152	43	91	0	**286**	49	164	12	0	**225**	5	30	18	0	**53**	**1547**
% Approach	6.1%	39.6%	54.3%	0%	-	53.1%	15.0%	31.8%	0%	-	21.8%	72.9%	5.3%	0%	-	9.4%	56.6%	34.0%	0%	-	-
% Total	3.9%	25.1%	34.5%	0%	**63.5%**	9.8%	2.8%	5.9%	0%	**18.5%**	3.2%	10.6%	0.8%	0%	**14.5%**	0.3%	1.9%	1.2%	0%	**3.4%**	-
PHF	0.625	0.909	0.861	-	**0.968**	0.826	0.717	0.843	-	**0.905**	0.681	0.911	0.750	-	**0.938**	0.625	0.625	0.500	-	**0.697**	0.984
Lights	59	388	532	0	**979**	150	43	91	0	**284**	48	164	12	0	**224**	5	30	17	0	**52**	1539
% Lights	98.3%	99.7%	99.6%	0%	**99.6%**	98.7%	100%	100%	0%	**99.3%**	98.0%	100%	100%	0%	**99.6%**	100%	100%	94.4%	0%	**98.1%**	99.5%
Articulated Trucks	1	0	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	1
% Articulated Trucks	1.7%	0%	0%	0%	**0.1%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0.1%
Buses and Single-Unit Trucks	0	1	2	0	**3**	2	0	0	0	**2**	1	0	0	0	**1**	0	0	1	0	**1**	7
% Buses and Single-Unit Trucks	0%	0.3%	0.4%	0%	**0.3%**	1.3%	0%	0%	0%	**0.7%**	2.0%	0%	0%	0%	**0.4%**	0%	0%	5.6%	0%	**1.9%**	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

3rd St & View High Dr - TMC
Tue Mar 6, 2018
PM Peak (5PM - 6PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 507970, Location: 38.913182, -94.450771

GEWALT HAMILTON ASSOCIATES, INC.
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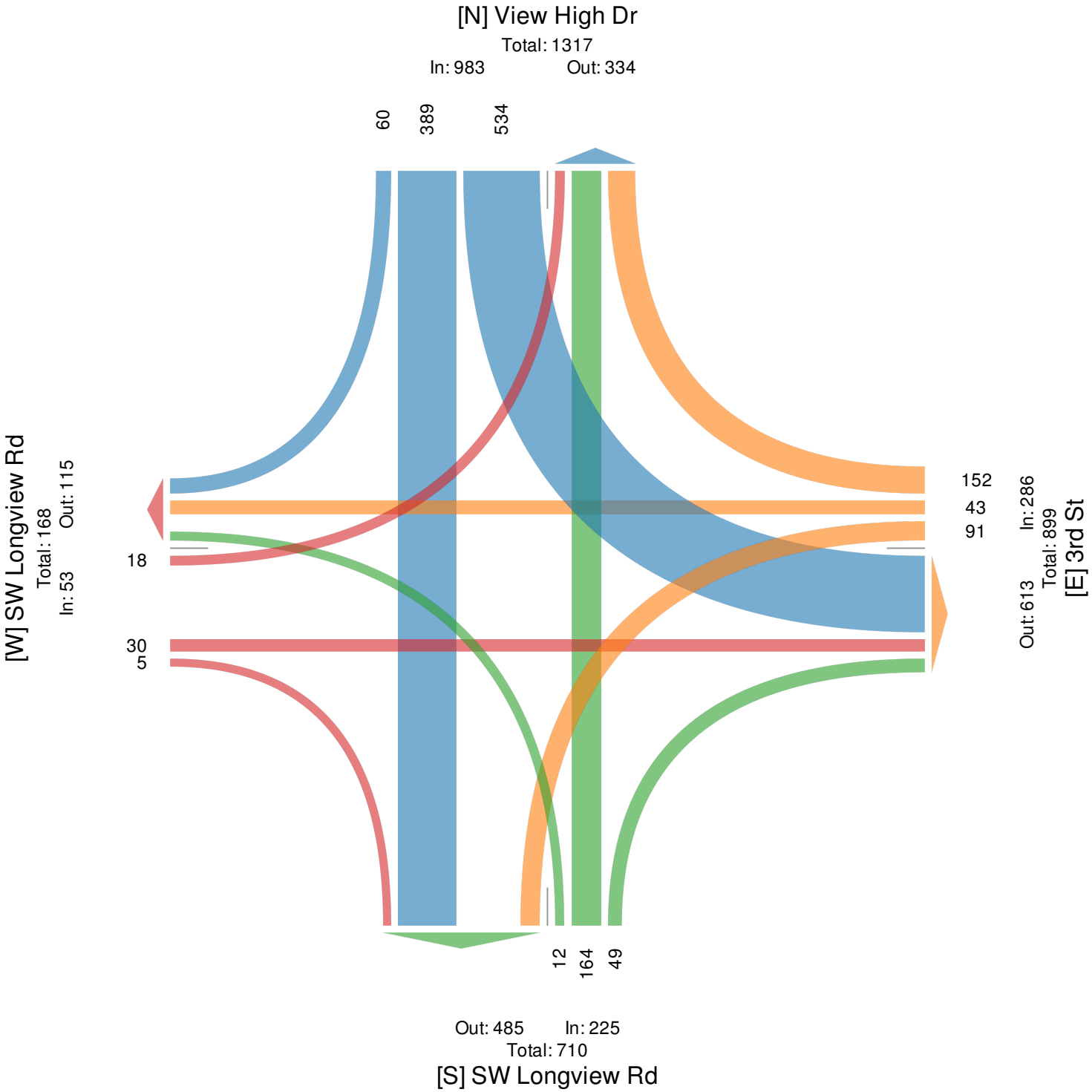
625 Forest Edge Drive, Vernon Hills, IL, 60061, US



Appendix B

Warrants Summary Report

3: 3rd St & Kessler

Intersection Information

	Major Street	Minor Street
Street Name	3rd Street	Kessler Drive
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approch Speed	40	30

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met?	No	0 Hours met (8 required)
Condition A and B Met?	No	0 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	0 Hours met (4 required)
Warrant 3, Peak Hour		
	No	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	No	0 Hours met (1 required)
Warrant 9, Intersection Near a Grade Crossing		
	No	
AWSC Warrant, Multiway Stop Application		
	No	
Condition A Met?	No	
Condition B Met?	No	
Condition C Met?	No	

Warrant 1: Eight-hour Vehicular Volume

3: 3rd St & Kessler

Intersection Information

Major Street Name:	3rd Street
Major Street Direction:	EB/WB
Minor Street Direction:	NB/SB

WARRANT 1 MET? **No**

Details:

Condition A Met?	No	0 Hours met (8 required)
Condition B Met?	No	0 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
06:00 to 07:00	**72**		**14**		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				
06:15 to 07:15	**89**		**15**		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				
06:30 to 07:30	**116**		**21**		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				
06:45 to 07:45	**140**		**28**		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

07:00 to 08:00	154		29		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

07:15 to 08:15	167		33		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

07:30 to 08:30	161		37		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

07:45 to 08:45	140		34		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

08:00 to 09:00	137		34		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

08:15 to 09:15	139		32		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

08:30 to 09:30	156		22		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

08:45 to 09:45	176		21		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

09:00 to 10:00	194		20		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

09:15 to 10:15	182		22		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

09:30 to 10:30	178		29		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

09:45 to 10:45	188		29		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

10:00 to 11:00	232		29		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

10:15 to 11:15	244		26		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

10:30 to 11:30	242		20		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

10:45 to 11:45	251		22		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

11:00 to 12:00	205		26		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

11:15 to 12:15	246		32		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

11:30 to 12:30	357		35		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

11:45 to 12:45	378		31		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

12:00 to 13:00	376		28		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

12:15 to 13:15	352		24		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

12:30 to 13:30	259		24		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

12:45 to 13:45	247		23		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

13:00 to 14:00	313		21		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

13:15 to 14:15	310		23		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

13:30 to 14:30	321		25		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

13:45 to 14:45	313		27		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

14:00 to 15:00	283		32		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

14:15 to 15:15	305		29		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

14:30 to 15:30	372		32		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

14:45 to 15:45	455		37		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

15:00 to 16:00	498		30		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

15:15 to 16:15	563		30		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

15:30 to 16:30	588		34		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

15:45 to 16:45	594		32		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

16:00 to 17:00	608		36		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

16:15 to 17:15	630		40		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

16:30 to 17:30	626		33		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

16:45 to 17:45	630		36		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

17:00 to 18:00	637		38		No	No	No	No
Condition A	Volume >= 100% column (500)?	Yes	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	Yes	**Volume >= 80% column (60)?**	No				

17:15 to 18:15	470		27		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	Yes	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

17:30 to 18:30	311		20		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

17:45 to 18:45	150		9		No	No	No	No
Condition A	Volume >= 100% column (500)?	No	Volume >= 100% column (750)?	No				
	Volume >= 80% column (400)?	No	Volume >= 80% column (600)?	No				
Condition B	**Volume >= 100% column (750)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (600)?	No	**Volume >= 80% column (60)?**	No				

Warrant 2: Four-hour Vehicular Volume

3: 3rd St & Kessler

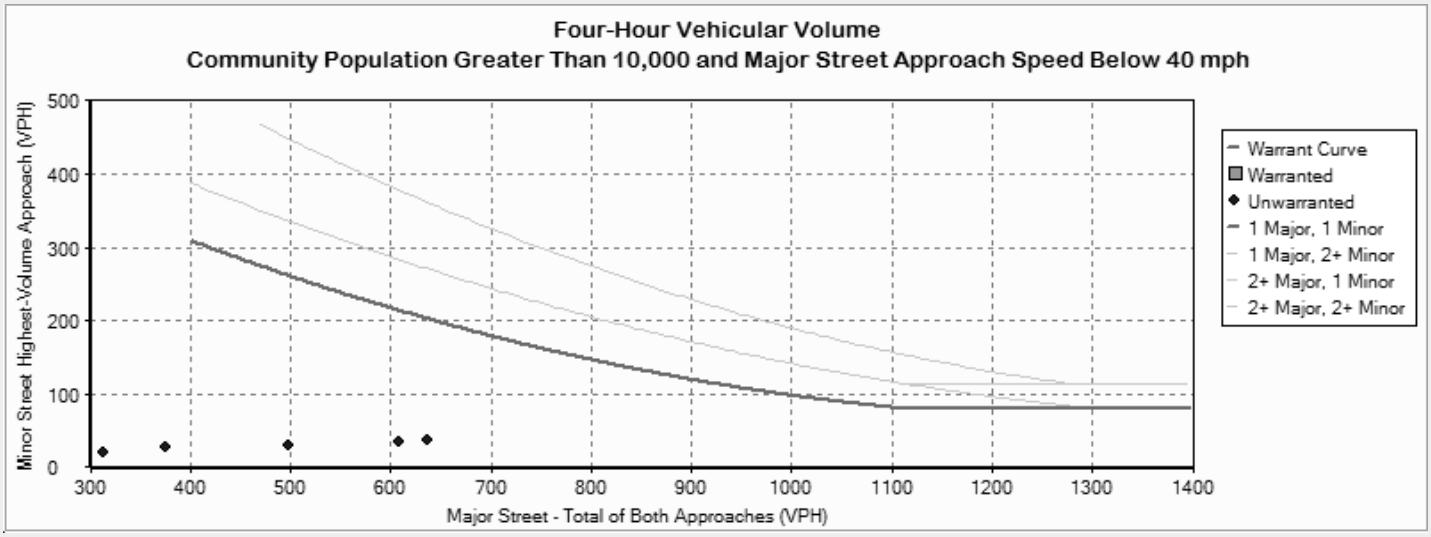
Intersection Information

	Major Street	Minor Street
Street Name	3rd Street	Kessler Drive
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approch Speed	40	30

Warrant 2 Met? **No**

Details:

Notes	0 Hours met (4 required)
Low population	No



Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0.00	0.00
01:00:00 - 02:00:00	0.00	0.00
02:00:00 - 03:00:00	0.00	0.00
03:00:00 - 04:00:00	0.00	0.00
04:00:00 - 05:00:00	0.00	0.00
05:00:00 - 06:00:00	0.00	0.00
06:00:00 - 07:00:00	432.00	18.00
07:00:00 - 08:00:00	850.00	35.00
08:00:00 - 09:00:00	675.00	74.00
09:00:00 - 10:00:00	591.00	38.00
10:00:00 - 11:00:00	517.00	31.00
11:00:00 - 12:00:00	409.00	41.00
12:00:00 - 13:00:00	660.00	47.00
13:00:00 - 14:00:00	536.00	55.00
14:00:00 - 15:00:00	500.00	40.00
15:00:00 - 16:00:00	747.00	52.00
16:00:00 - 17:00:00	856.00	47.00
17:00:00 - 18:00:00	1,004.00	54.00
18:00:00 - 19:00:00	0.00	0.00
19:00:00 - 20:00:00	0.00	0.00
20:00:00 - 21:00:00	0.00	0.00
21:00:00 - 22:00:00	0.00	0.00
22:00:00 - 23:00:00	0.00	0.00
23:00:00 - 00:00:00	0.00	0.00

Warranted Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)

Warrant 3: Peak Hour

3: 3rd St & Kessler

Intersection Information

	Major Street	Minor Street
Street Name	3rd Street	Kessler Drive
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approch Speed	40	30

Warrant 3 Met? **No**

Details

Low Population? No

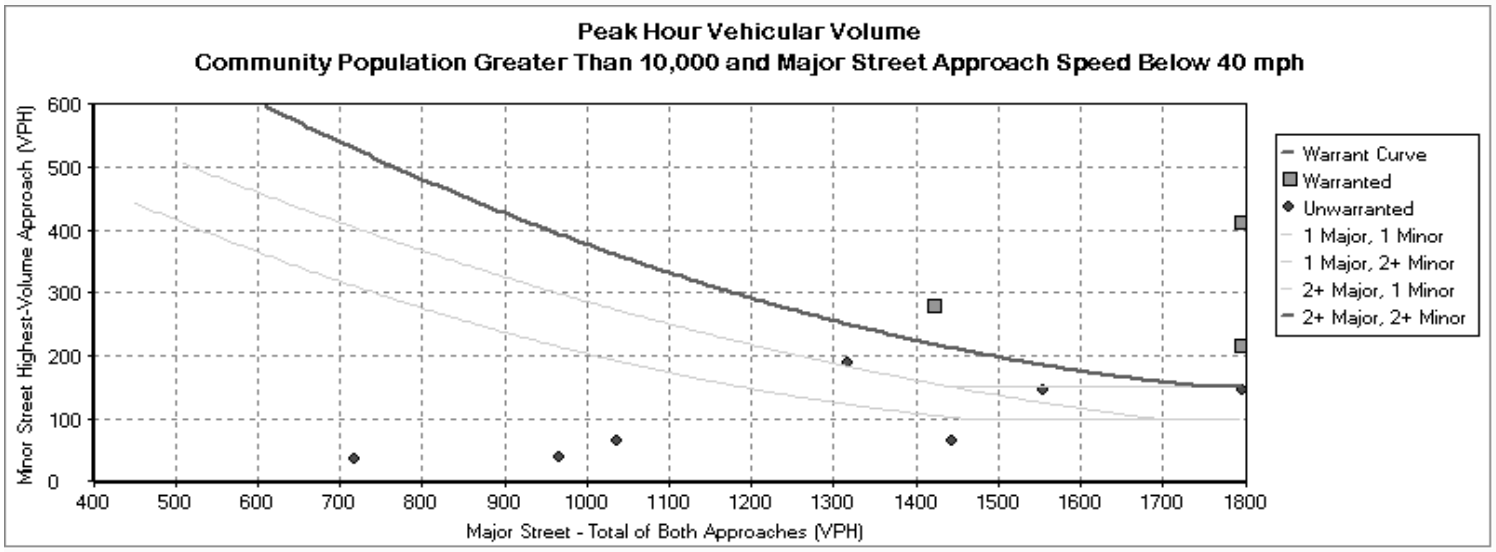
Condition A Met? No

Notes 0 Hours met (1 required)

Condition B Met? No

Notes 0 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Not Met
Total Entering Intersection Volume Condition Met?	Not Met



Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	72	14
7:00	154	29
8:00	137	34
9:00	194	20
10:00	232	29
11:00	205	26
12:00	376	28
13:00	313	21
14:00	283	32
15:00	498	30
16:00	608	36
17:00	637	38

Warrant 4: Pedestrian Volume

3: 3rd St & Kessler

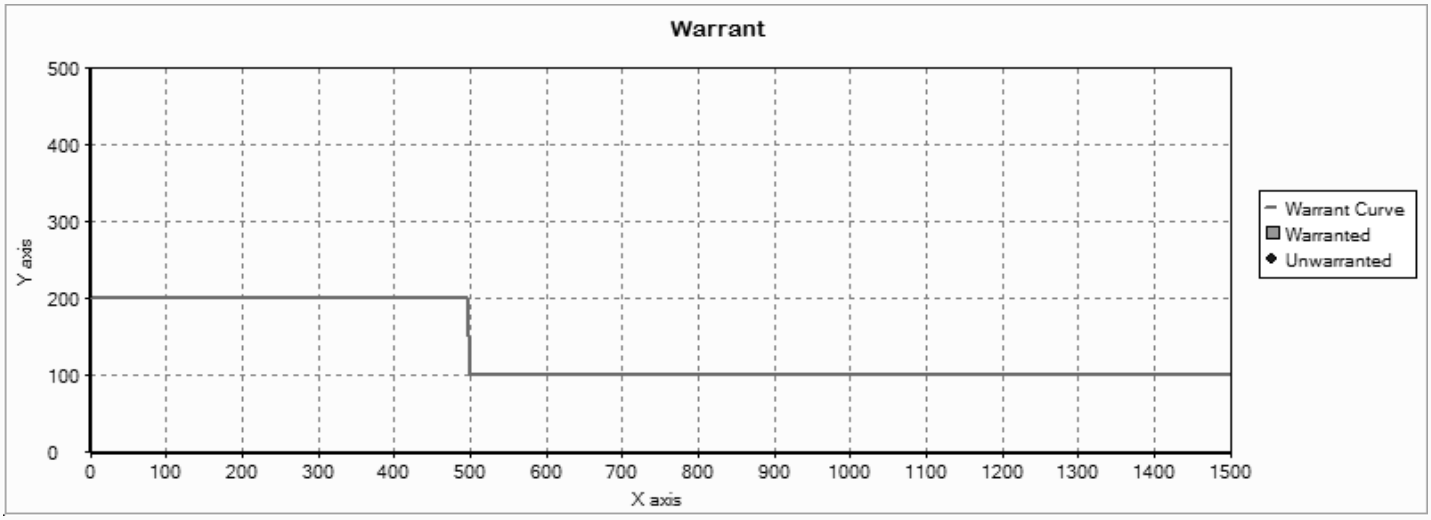
Intersection Information

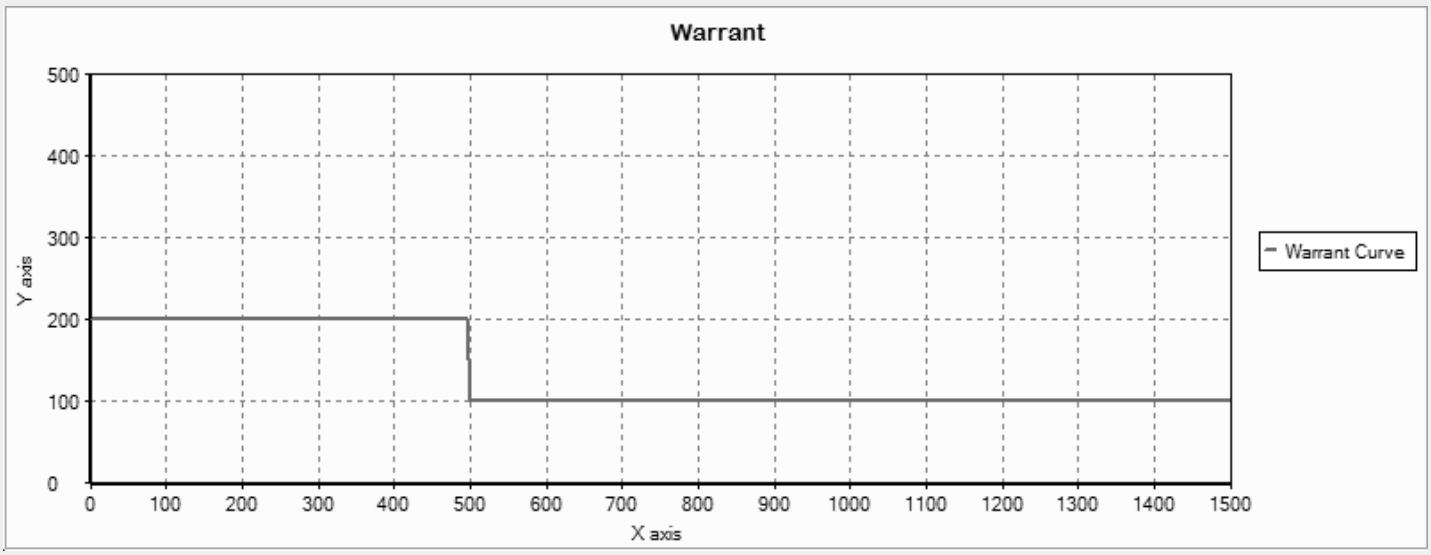
	Major Street	Minor Street
Street Name	3rd Street	Kessler Drive
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approch Speed	40	30

WARRANT 4 MET ? **No**

Details

Pedestrian Four Hour Volume Warrant Met?	No		
Pedestrian Peak Hour Warrant Met?	No	Notes	0 Hours met (4 required)
Speed Limit or 85th Percentile Speed on Major Street > 35mph, or Intersection lies within an Isolated Community with Population < 10,000?	Yes		




Warrant
500
400
300
200
100
0
Y axis
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
X axis
Warrant Curve

Warrant 5: School Crossing

3: 3rd St & Kessler

Intersection Information

Major Street Name	3rd Street
Major Street Direction	EB/WB

WARRANT 5 MET? **No**

Details:

Time Period Interval for Students Crossing (min)	0
Number of Students Crossing in Time Period	0
Number of Adequate Gaps in Time Period	0
Other Remedial Measures Attempted?	No
Adjacent Signal on EB approach?	No
Distance to signal on EB Approach (ft)	-
Adjacent Signal on WB approach?	No
Distance to signal on WB Approach (ft)	-
Will New Signal Restrict Progressive Traffic?	No

Warrant 6: Coordinated Signal System

3: 3rd St & Kessler

Intersection Information

Major Street Name	3rd Street
Major Street Direction	EB/WB

WARRANT 6 MET? **No**

Details:

Approach Direction & Name	Acceptable Platooning?	Adjacent Coordinating Signal?	Adjacent Intersection Distance
SB Approach (Kessler Drive)	Yes	No	N/A
NB Approach (Kessler Drive)	Yes	No	N/A
WB Approach (3rd Street)	Yes	No	N/A
EB Approach (3rd Street)	Yes	No	N/A

Unacceptable Platooning? (At least one approach)	Distance to Closest Signal (Must be N/A or > 1000)
No	N/A

Warrant 7: Crash Experience

3: 3rd St & Kessler

Intersection Information

Major Street Name	3rd Street
Major Street Direction	EB/WB
Minor Street Direction	NB/SB

WARRANT 7 MET? **No**

Details:

Low Population?	No	Traffic Volume Condition Met?	No
Major Street Speed Limit	40		0 Hours Met (8 Required)
Major Street 85th-% tile Speed	40.00	Ped Volume Condition Met?	No
			0 Hours Met (8 Required)

Qualifying Crashes **0**

Adequate Alternative Trials? No

Hour	Traffic Volumes				Pedestrian Volumes			
	Major Street Vehicles	Minor Street Vehicles	80% Standard Met? A or B		Northbound Ped Volumes		Southbound Ped Volumes	
			Condition A	Condition B	Peds	> 80?	Peds	> 80?
06:00 to 07:00	432	0	No	No	0	No	0	No
06:15 to 07:15	558	0	No	No	0	No	0	No
06:30 to 07:30	698	0	No	No	0	No	0	No
06:45 to 07:45	768	0	No	No	0	No	0	No
07:00 to 08:00	850	0	No	No	0	No	0	No
07:15 to 08:15	857	0	No	No	0	No	0	No
07:30 to 08:30	801	0	No	No	0	No	0	No

07:45 to 08:45	740	0	No	No	0	No	0	No
08:00 to 09:00	675	0	No	No	0	No	0	No
08:15 to 09:15	663	0	No	No	0	No	0	No
08:30 to 09:30	685	0	No	No	0	No	0	No
08:45 to 09:45	649	0	No	No	0	No	0	No
09:00 to 10:00	591	0	No	No	0	No	0	No
09:15 to 10:15	492	0	No	No	0	No	0	No
09:30 to 10:30	414	0	No	No	0	No	0	No
09:45 to 10:45	439	0	No	No	0	No	0	No
10:00 to 11:00	517	0	No	No	0	No	0	No
10:15 to 11:15	546	0	No	No	0	No	0	No
10:30 to 11:30	530	0	No	No	0	No	0	No
10:45 to 11:45	490	0	No	No	0	No	0	No
11:00 to 12:00	409	0	No	No	0	No	0	No
11:15 to 12:15	453	0	No	No	0	No	0	No
11:30 to 12:30	597	0	No	No	0	No	0	No
11:45 to 12:45	642	0	No	No	0	No	0	No

12:00 to 13:00	660	0	No	No	0	No	0	No
12:15 to 13:15	613	0	No	No	0	No	0	No
12:30 to 13:30	503	0	No	No	0	No	0	No
12:45 to 13:45	485	0	No	No	0	No	0	No
13:00 to 14:00	536	0	No	No	0	No	0	No
13:15 to 14:15	541	0	No	No	0	No	0	No
13:30 to 14:30	545	0	No	No	0	No	0	No
13:45 to 14:45	544	0	No	No	0	No	0	No
14:00 to 15:00	500	0	No	No	0	No	0	No
14:15 to 15:15	528	0	No	No	0	No	0	No
14:30 to 15:30	607	0	No	No	0	No	0	No
14:45 to 15:45	704	0	No	No	0	No	0	No
15:00 to 16:00	747	0	No	No	0	No	0	No
15:15 to 16:15	813	0	No	No	0	No	0	No
15:30 to 16:30	835	0	No	No	0	No	0	No
15:45 to 16:45	822	0	No	No	0	No	0	No
16:00 to 17:00	856	0	No	No	0	No	0	No

16:15 to 17:15	900	0	No	No	0	No	0	No
16:30 to 17:30	919	0	No	No	0	No	0	No
16:45 to 17:45	968	0	No	No	0	No	0	No
17:00 to 18:00	1,004	0	No	No	0	No	0	No
17:15 to 18:15	752	0	No	No	0	No	0	No
17:30 to 18:30	507	0	No	No	0	No	0	No
17:45 to 18:45	242	0	No	No	0	No	0	No

Warrant 8: Roadway Network

3: 3rd St & Kessler

Intersection Information

Major Street Name	3rd Street
Major Street Direction	EB/WB
Minor Street Direction	NB/SB

WARRANT 8 MET? (A or B) No

Details:

Growth Rates % (per year)

	NB	SB	EB	WB
L	0.00	0.00	0.00	0.00
T	0.00	0.00	0.00	0.00
R	0.00	0.00	0.00	0.00

Condition A, Total Entering Volume

Existing Peak Hour	1,068
Years	0.00
Future Peak Hour	1,068
Warrant 1 in 5 Years?	No
Warrant 2 in 5 Years?	No
Warrant 3 in 5 Years?	No

Condition B, Non-normal Business Day

	Existing	Future
Highest Hour	0	0
Second Highest Hour	0	0
Third Highest Hour	0	0
Fourth Highest Hour	0	0
Fifth Highest Hour	0	0
Yearly Growth Rate (%)	0.00	
Years	0.00	

Condition A Met? No **Condition B Met?** No

Warrant 9: Intersection Near a Grade Crossing

3: 3rd St & Kessler

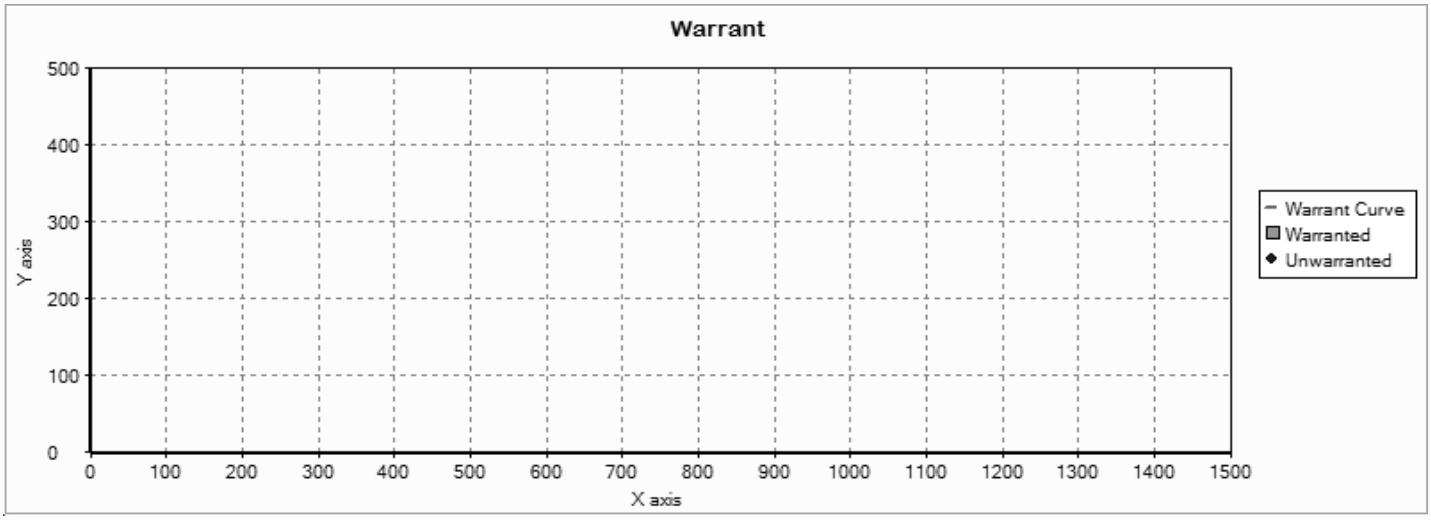
Intersection Information

	Major Street	Minor Street
Street Name	3rd Street	Kessler Drive
Direction	EB/WB	NB/SB
Number of Lanes	1	1
Approch Speed	40	30

WARRANT 9 MET ? **No**

Details

Note **No approach with a railroad grade crossing**		
Minor street approach having a grade crossing		
Distance from the center of the track to the stop or yield line	Interpolated	
Number of occurences of rail traffic per day		Adjustment Factor
Percentage of high-occupancy buses crossing the track (%)		Adjustment Factor
Percentage of tractor-trailer trucks crossing the track (%)		Adjustment Factor
The rail traffic arrival times are uknown, the highest traffic volume hour of the day is used		



Hour	Major Street Total of Both Approaches (vph)	Minor Street Adjusted Volume Crossing Tracks (vph)

All-Way Stop Control Warrant: Multiway Stop Applications

3: 3rd St & Kessler

Intersection Information

Major Street Name:	3rd Street
Major Street Direction:	EB/WB
Minor Street Direction:	NB/SB

AWSC WARRANT MET? **No**

Details:

Condition A Met?	No	Qualifying Crashes	0
Condition B Met?	No	Major Street 85th %-tile Speed	40.00
Condition C Met?	No	Major Street Speed Limit	40

Notes: 0 Hours Met (8 Required)

Hour	Traffic Volumes		Bicycle Volumes		Ped Volumes		Condition C		
	Major Street	Minor Street	East Bound Bicycle Volumes	North Bound Bicycle Volumes	East Bound Ped Volumes	North Bound Ped Volumes	Major Street	Minor Street	
							Veh Vol > 210	Avg(Veh + Ped + Bicycle) > 200	Delay > 30

Capacity Analysis

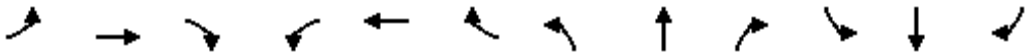
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	156	5	33	646	11	5	3	27	13	2	14
Future Vol, veh/h	6	156	5	33	646	11	5	3	27	13	2	14
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	175	-	100	190	-	-	95	-	-	175	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	87	63	83	89	69	42	38	75	54	50	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	179	8	40	726	16	12	8	36	24	4	24

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	742	0	0	187	0	0	640	1017	90	924	1017	371
Stage 1	-	-	-	-	-	-	195	195	-	814	814	-
Stage 2	-	-	-	-	-	-	445	822	-	110	203	-
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	-
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	861	-	-	1385	-	-	360	236	950	224	236	626
Stage 1	-	-	-	-	-	-	788	738	-	338	390	-
Stage 2	-	-	-	-	-	-	562	386	-	883	732	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	861	-	-	1385	-	-	332	227	950	204	227	626
Mov Cap-2 Maneuver	-	-	-	-	-	-	332	227	-	204	227	-
Stage 1	-	-	-	-	-	-	781	731	-	335	379	-
Stage 2	-	-	-	-	-	-	519	375	-	833	725	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	12.4	18.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	332	604	861	-	-	1385	-	-	204	501
HCM Lane V/C Ratio	0.036	0.073	0.009	-	-	0.029	-	-	0.118	0.056
HCM Control Delay (s)	16.2	11.4	9.2	-	-	7.7	-	-	25	12.6
HCM Lane LOS	C	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.2	0	-	-	0.1	-	-	0.4	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	16	20	8	255	48	554	4	332	52	136	278	56
v/c Ratio	0.07	0.08	0.02	0.57	0.09	0.31	0.02	0.43	0.09	0.24	0.18	0.07
Control Delay	26.1	26.3	0.0	25.8	16.7	1.5	26.0	21.9	0.3	23.0	12.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	26.3	0.0	25.8	16.7	1.5	26.0	21.9	0.3	23.0	12.3	0.2
Queue Length 50th (ft)	4	5	0	57	9	0	1	42	0	17	20	0
Queue Length 95th (ft)	19	14	0	93	29	19	5	100	0	40	56	0
Internal Link Dist (ft)		339			579			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	312	255	447	520	573	2249	242	2011	1014	1278	2843	1312
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.08	0.02	0.49	0.08	0.25	0.02	0.17	0.05	0.11	0.10	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	10	3	140	30	471	2	309	36	105	189	38
Future Volume (veh/h)	12	10	3	140	30	471	2	309	36	105	189	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	20	8	255	48	554	4	332	0	136	278	0
Peak Hour Factor	0.75	0.50	0.38	0.55	0.63	0.85	0.50	0.93	0.69	0.77	0.68	0.68
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	49	250	212	318	532	1114	13	678		398	1061	
Arrive On Green	0.03	0.13	0.13	0.18	0.28	0.28	0.01	0.19	0.00	0.12	0.30	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	16	20	8	255	48	554	4	332	0	136	278	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	0.5	0.5	0.2	7.2	1.0	7.8	0.1	4.4	0.0	1.9	3.1	0.0
Cycle Q Clear(g_c), s	0.5	0.5	0.2	7.2	1.0	7.8	0.1	4.4	0.0	1.9	3.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	49	250	212	318	532	1114	13	678		398	1061	
V/C Ratio(X)	0.32	0.08	0.04	0.80	0.09	0.50	0.30	0.49		0.34	0.26	
Avail Cap(c_a), veh/h	306	250	212	510	532	1114	238	1968		1254	2782	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.0	19.9	19.8	20.6	13.8	11.8	25.9	18.9	0.0	21.3	14.0	0.0
Incr Delay (d2), s/veh	3.7	0.1	0.1	4.7	0.1	0.3	11.8	0.5	0.0	0.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	0.1	3.0	0.4	1.9	0.1	1.6	0.0	0.7	1.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.7	20.0	19.8	25.3	13.8	12.1	37.6	19.5	0.0	21.9	14.1	0.0
LnGrp LOS	C	C	B	C	B	B	D	B		C	B	
Approach Vol, veh/h		44			857			336	A		414	A
Approach Delay, s/veh		23.1			16.2			19.7			16.7	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	15.0	14.3	12.0	5.4	20.6	6.5	19.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	3.9	6.4	9.2	2.5	2.1	5.1	2.5	9.8
Green Ext Time (p_c), s	0.4	1.2	0.4	0.0	0.0	1.0	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	17.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

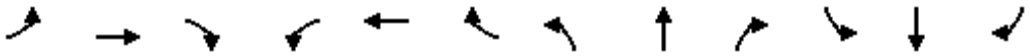
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	620	2	38	319	10	4	2	48	3	1	6
Future Vol, veh/h	15	620	2	38	319	10	4	2	48	3	1	6
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	175	-	100	190	-	-	-	-	95	175	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	96	25	86	90	50	50	50	71	38	25	30
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	646	8	44	354	20	8	4	68	8	4	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	374	0	0	654	0	0	953	1148	323	817	1146	187
Stage 1	-	-	-	-	-	-	686	686	-	452	452	-
Stage 2	-	-	-	-	-	-	267	462	-	365	694	-
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	-
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	1181	-	-	929	-	-	214	197	673	268	198	823
Stage 1	-	-	-	-	-	-	404	446	-	557	569	-
Stage 2	-	-	-	-	-	-	715	563	-	627	442	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1181	-	-	929	-	-	195	185	673	226	186	823
Mov Cap-2 Maneuver	-	-	-	-	-	-	195	185	-	226	186	-
Stage 1	-	-	-	-	-	-	397	438	-	548	542	-
Stage 2	-	-	-	-	-	-	660	537	-	549	434	-

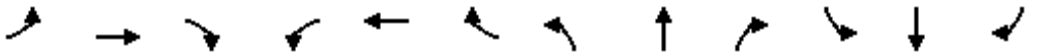
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	13	14.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	192	673	1181	-	-	929	-	-	226	524
HCM Lane V/C Ratio	0.063	0.1	0.017	-	-	0.048	-	-	0.035	0.046
HCM Control Delay (s)	25	10.9	8.1	-	-	9.1	-	-	21.5	12.2
HCM Lane LOS	D	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.2	0.3	0.1	-	-	0.1	-	-	0.1	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	36	48	8	112	64	204	16	180	72	621	427	95
v/c Ratio	0.14	0.18	0.02	0.36	0.16	0.13	0.06	0.25	0.13	0.62	0.20	0.09
Control Delay	28.2	29.5	0.0	27.9	24.0	1.9	28.6	24.9	0.5	22.2	10.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	29.5	0.0	27.9	24.0	1.9	28.6	24.9	0.5	22.2	10.6	0.2
Queue Length 50th (ft)	13	18	0	41	17	0	6	33	0	109	45	0
Queue Length 95th (ft)	21	34	0	80	45	12	19	64	0	164	108	0
Internal Link Dist (ft)		339			579			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	318	261	451	531	533	1773	248	2054	1031	1305	2626	1227
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.18	0.02	0.21	0.12	0.12	0.06	0.09	0.07	0.48	0.16	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	30	5	94	46	169	12	164	49	534	389	60
Future Volume (veh/h)	18	30	5	94	46	169	12	164	49	534	389	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	48	8	112	64	204	16	180	0	621	427	0
Peak Hour Factor	0.50	0.63	0.63	0.84	0.72	0.83	0.75	0.91	0.68	0.86	0.91	0.63
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	234	198	184	327	1138	49	638		806	1369	
Arrive On Green	0.05	0.13	0.13	0.10	0.17	0.17	0.03	0.18	0.00	0.23	0.39	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	36	48	8	112	64	204	16	180	0	621	427	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	1.1	1.3	0.2	3.4	1.6	2.6	0.5	2.4	0.0	9.4	4.7	0.0
Cycle Q Clear(g_c), s	1.1	1.3	0.2	3.4	1.6	2.6	0.5	2.4	0.0	9.4	4.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	96	234	198	184	327	1138	49	638		806	1369	
V/C Ratio(X)	0.38	0.21	0.04	0.61	0.20	0.18	0.33	0.28		0.77	0.31	
Avail Cap(c_a), veh/h	288	235	199	479	436	1301	224	1849		1178	2614	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.5	21.9	21.4	23.9	19.6	10.5	26.6	19.8	0.0	20.0	12.0	0.0
Incr Delay (d2), s/veh	2.4	0.4	0.1	3.2	0.3	0.1	3.8	0.2	0.0	1.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.5	0.1	1.4	0.7	0.6	0.2	0.9	0.0	3.5	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	22.3	21.5	27.1	19.9	10.6	30.4	20.0	0.0	21.9	12.1	0.0
LnGrp LOS	C	C	C	C	B	B	C	C		C	B	
Approach Vol, veh/h		92			380			196	A		1048	A
Approach Delay, s/veh		24.4			17.0			20.9			17.9	
Approach LOS		C			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	15.0	10.8	12.0	6.5	26.5	8.0	14.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	11.4	4.4	5.4	3.3	2.5	6.7	3.1	4.6
Green Ext Time (p_c), s	1.6	0.6	0.2	0.0	0.0	1.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix C

Single-Family Detached Housing
(210)

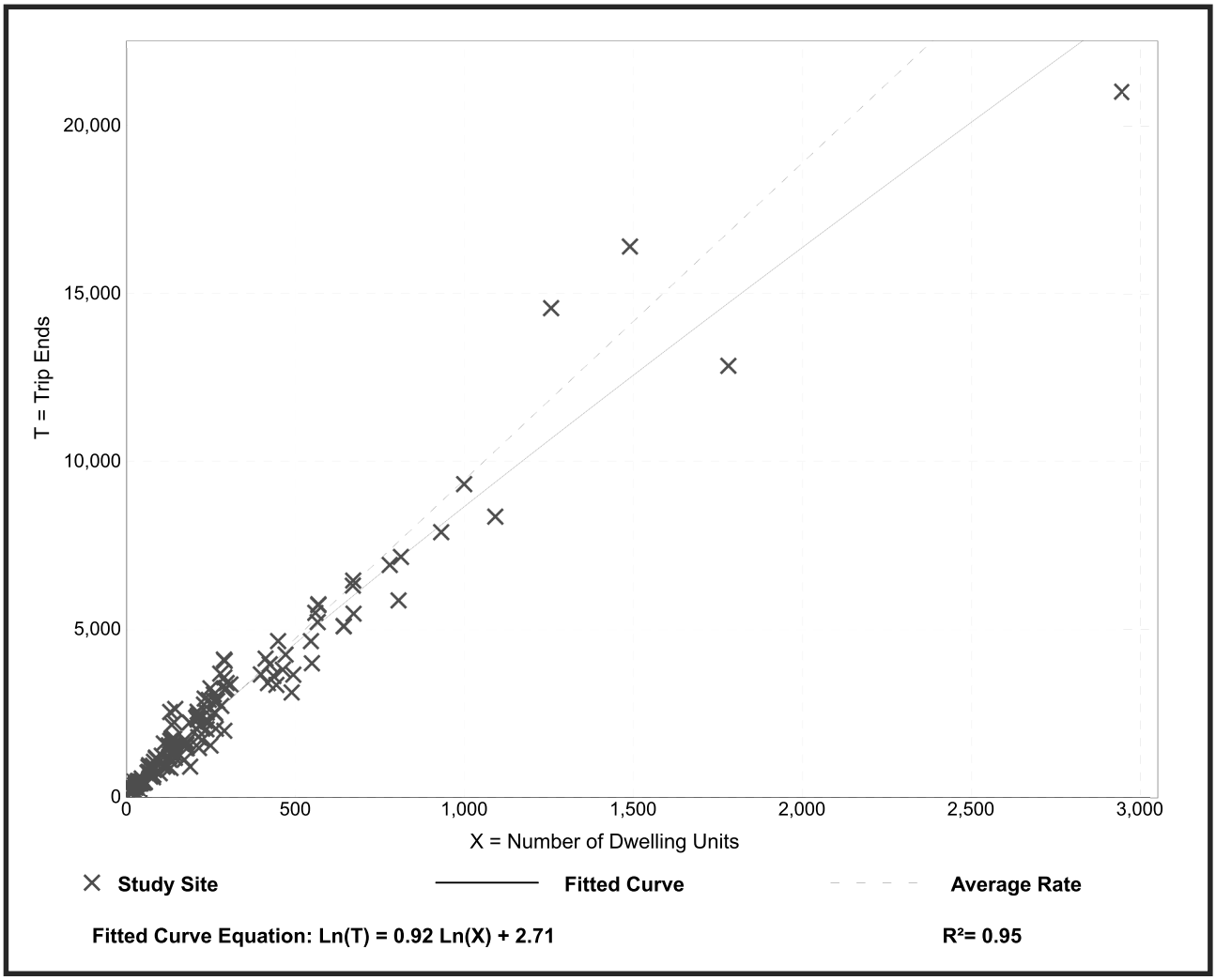
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



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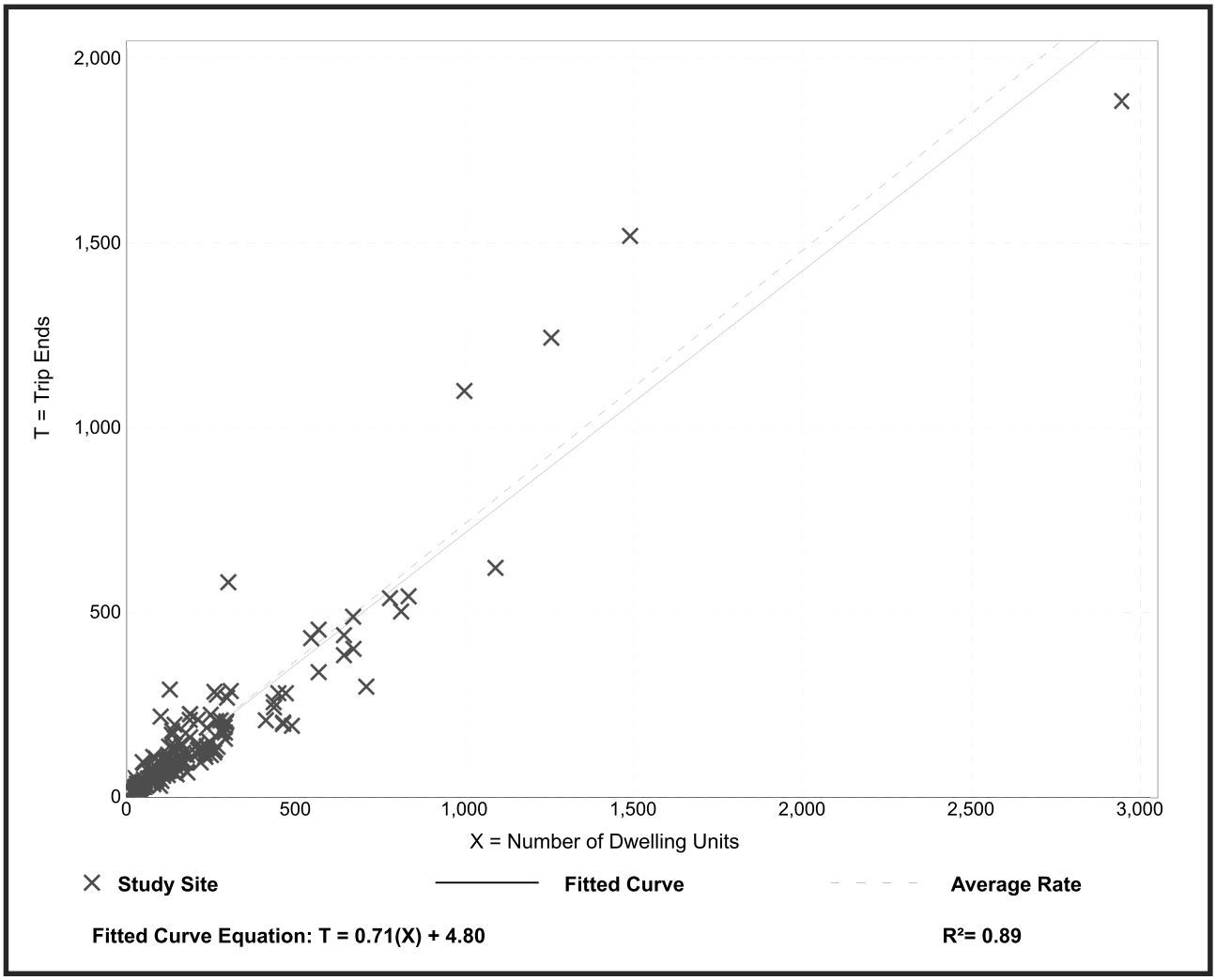
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 173
Avg. Num. of Dwelling Units: 219
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



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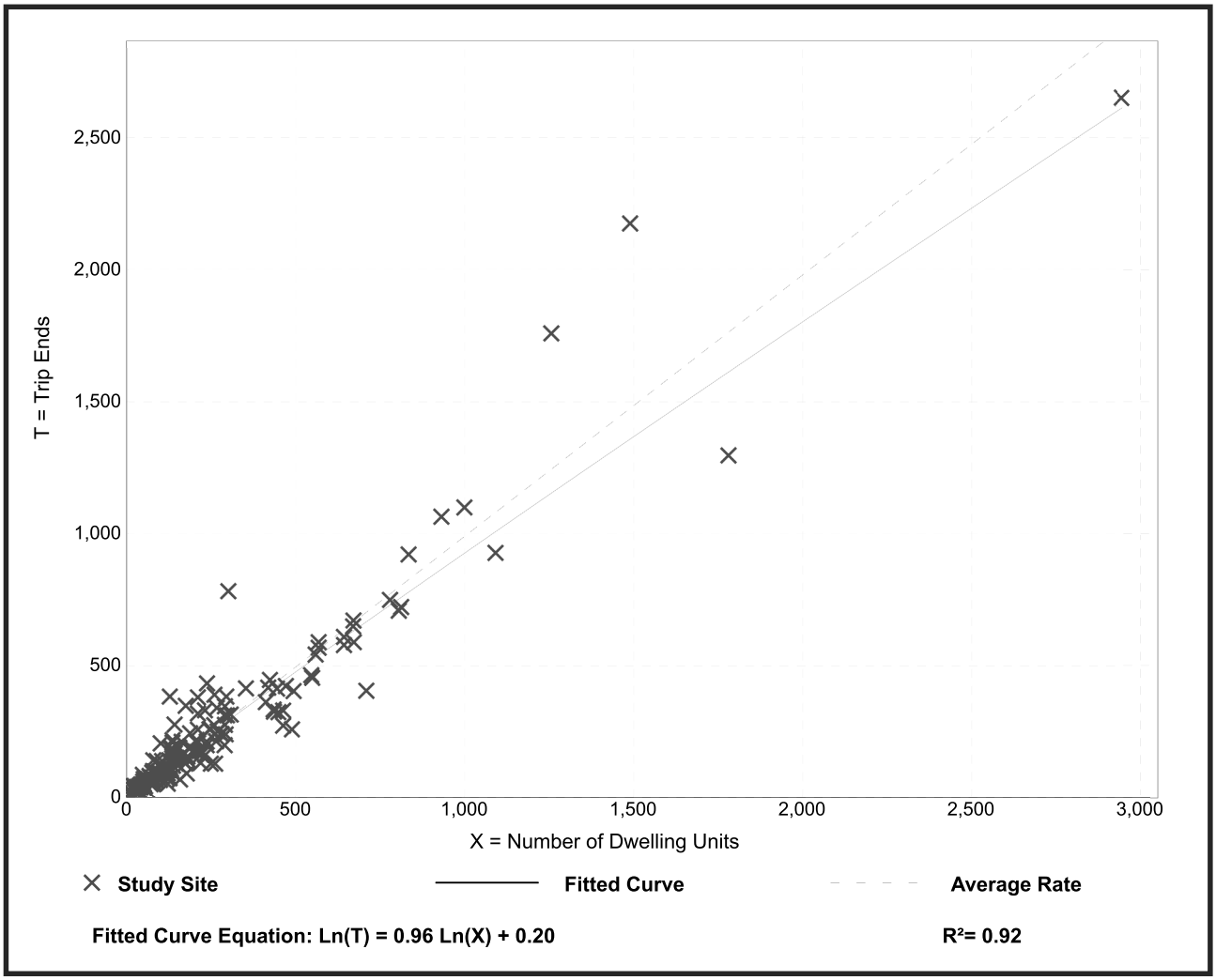
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 190
Avg. Num. of Dwelling Units: 242
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



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Multifamily Housing (Mid-Rise)
(221)

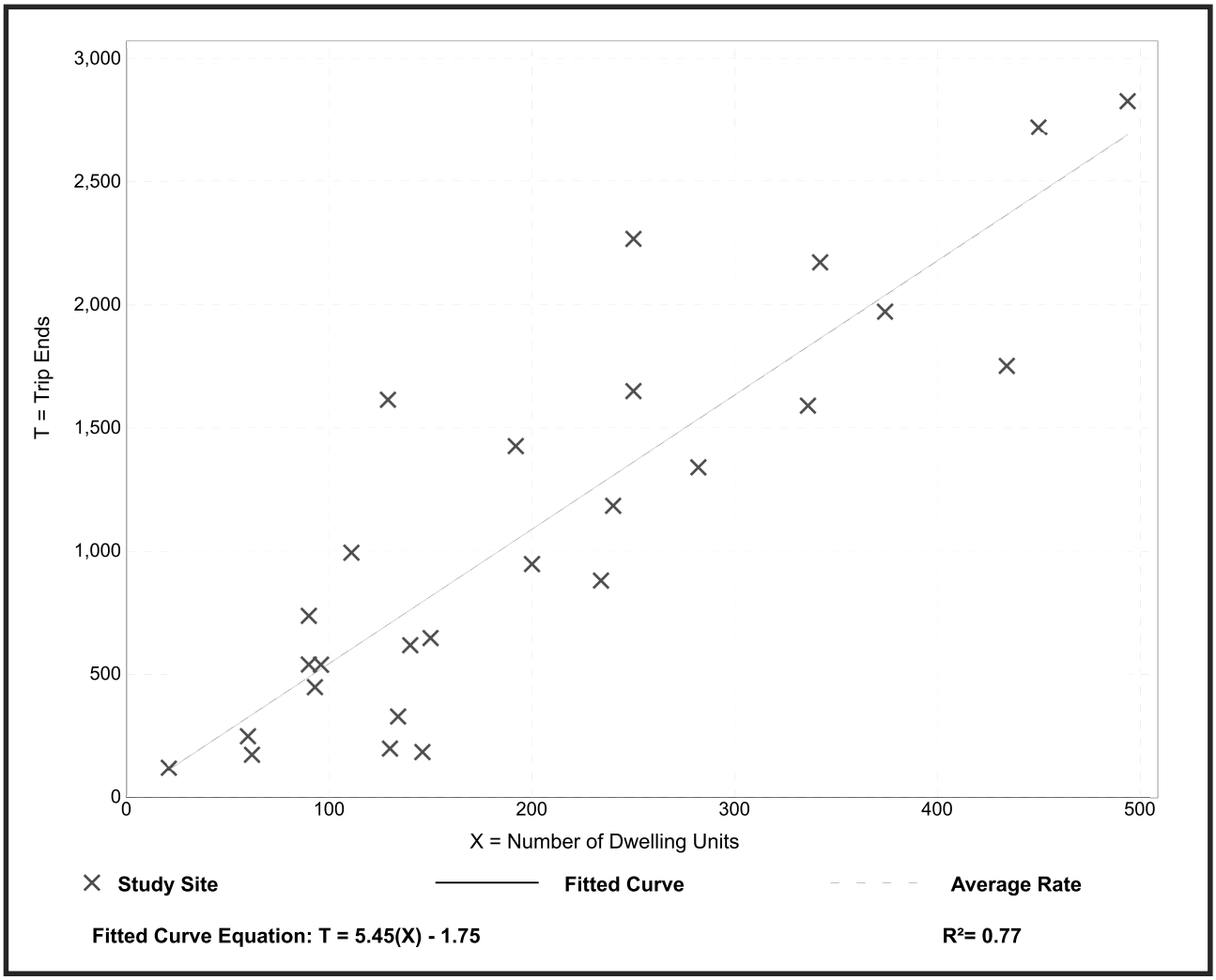
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 27
Avg. Num. of Dwelling Units: 205
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.44	1.27 - 12.50	2.03

Data Plot and Equation



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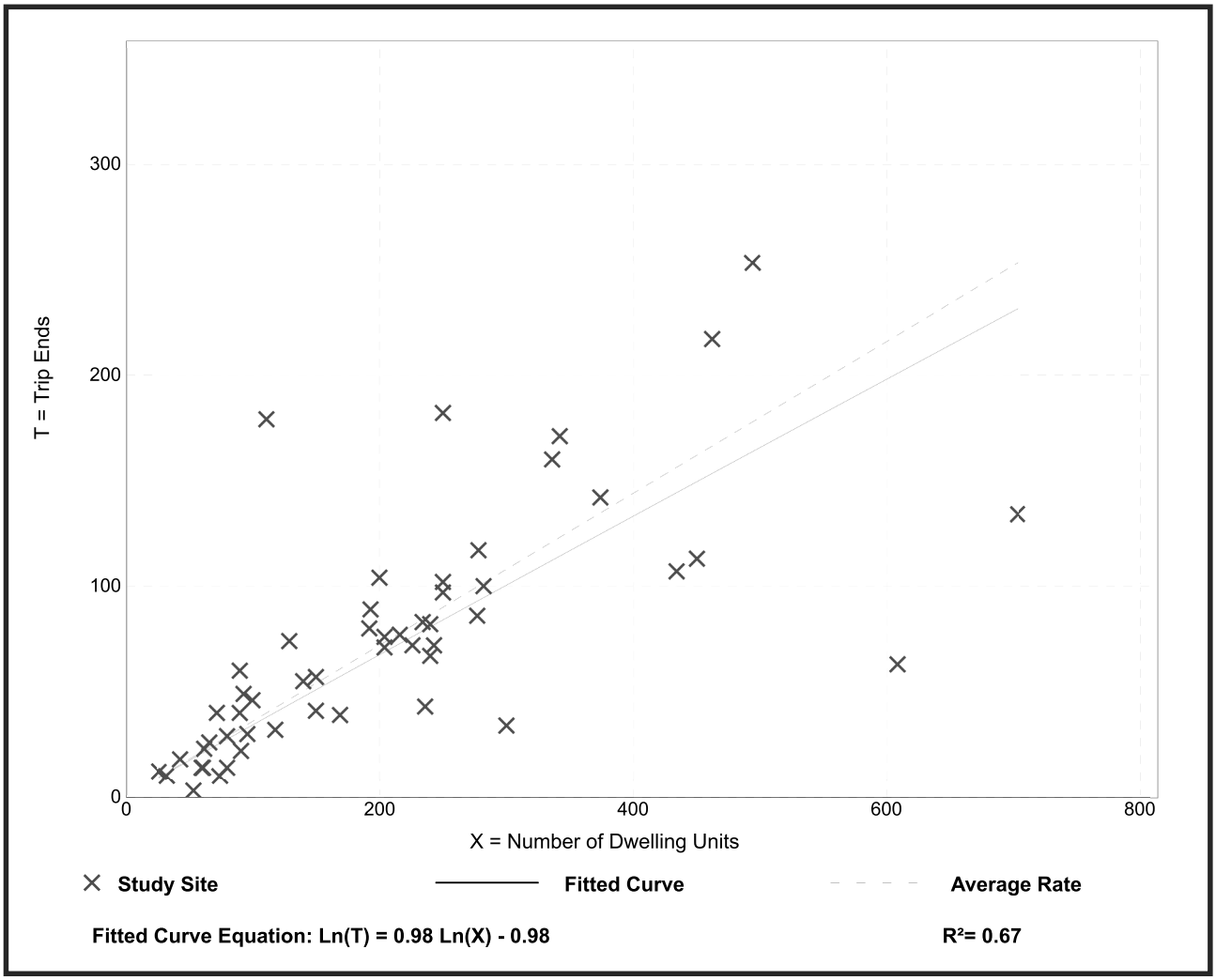
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 53
Avg. Num. of Dwelling Units: 207
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



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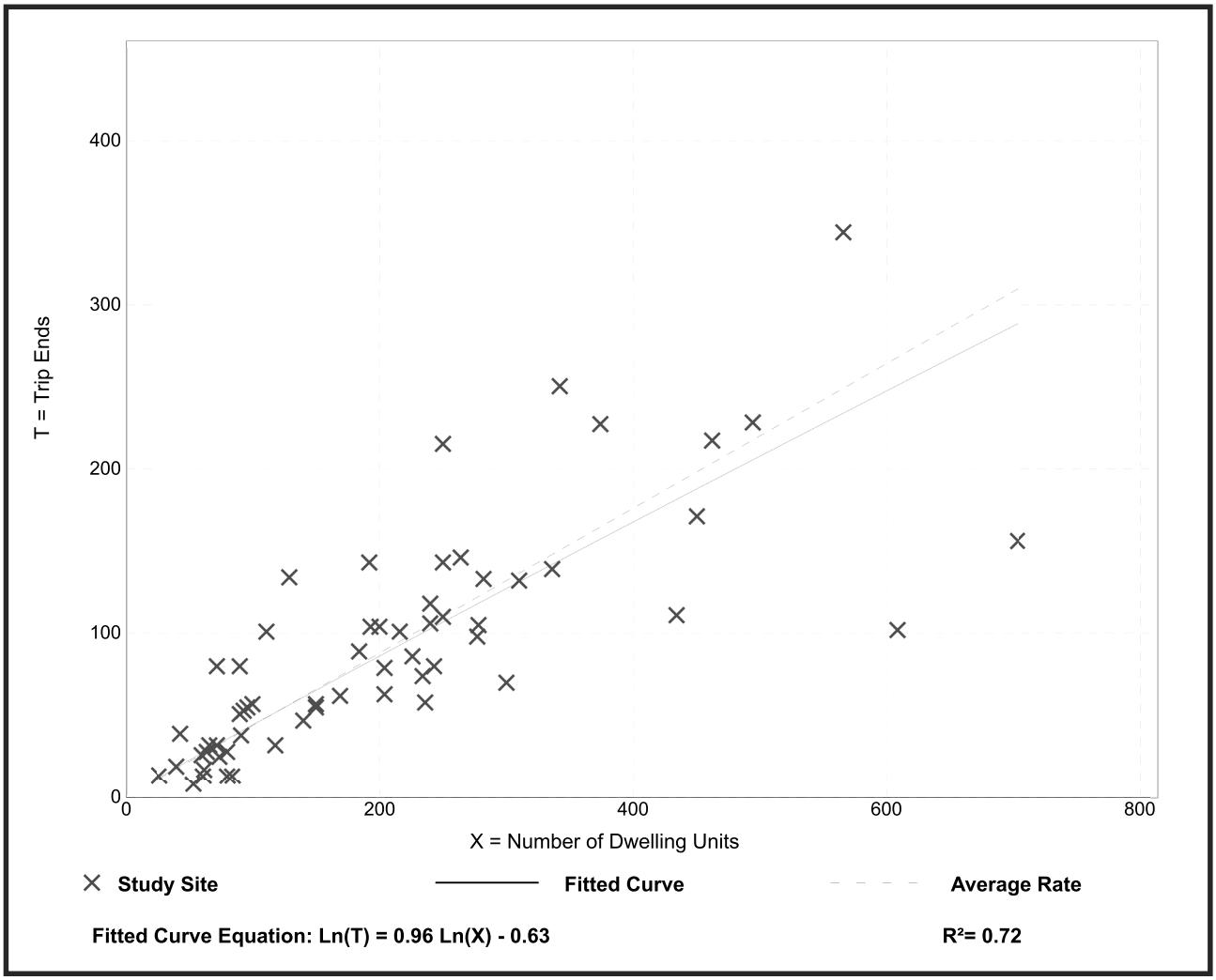
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 60
Avg. Num. of Dwelling Units: 208
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



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Movie Theater
(444)

Vehicle Trip Ends vs: **Movie Screens**
On a: **Weekday**

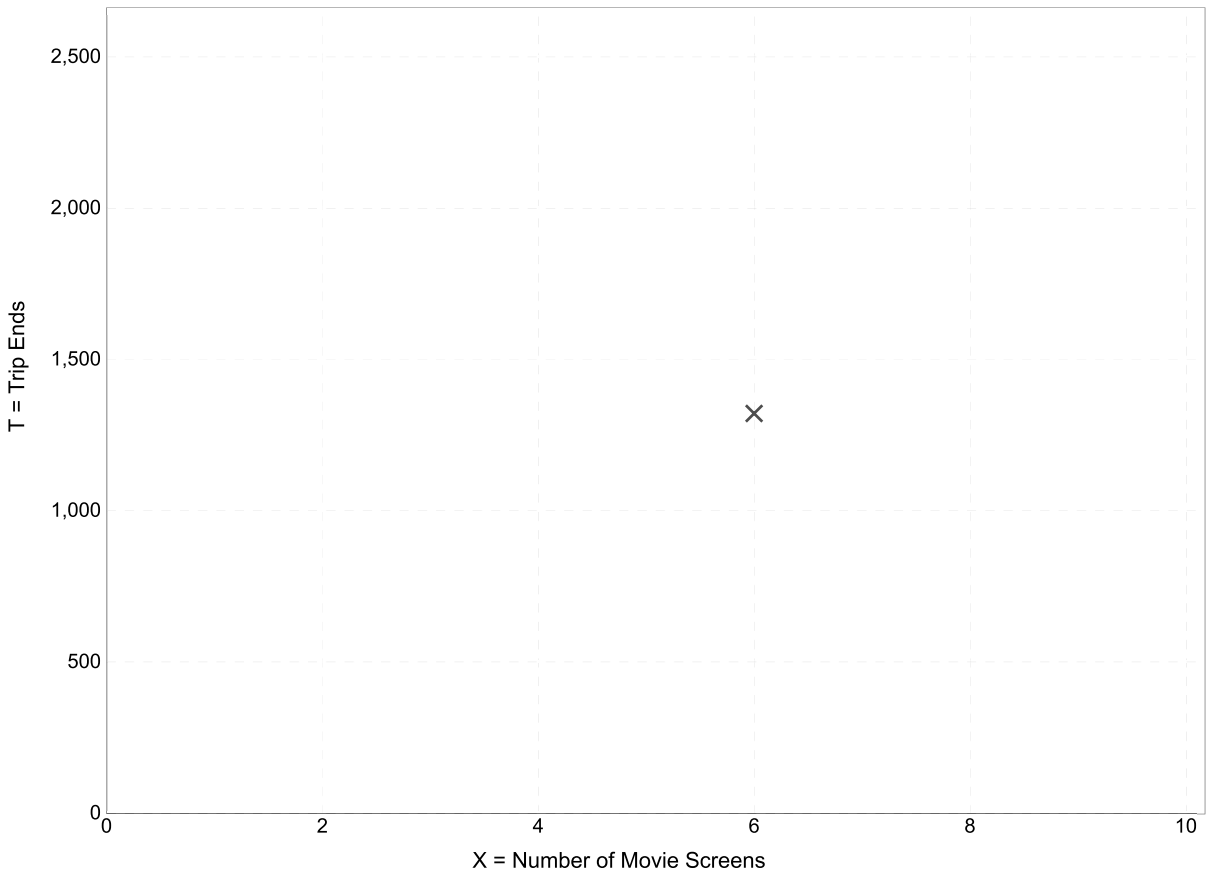
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. Num. of Movie Screens: 6
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Movie Screen

Average Rate	Range of Rates	Standard Deviation
220.00	220.00 - 220.00	*

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= **

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Movie Theater
(444)

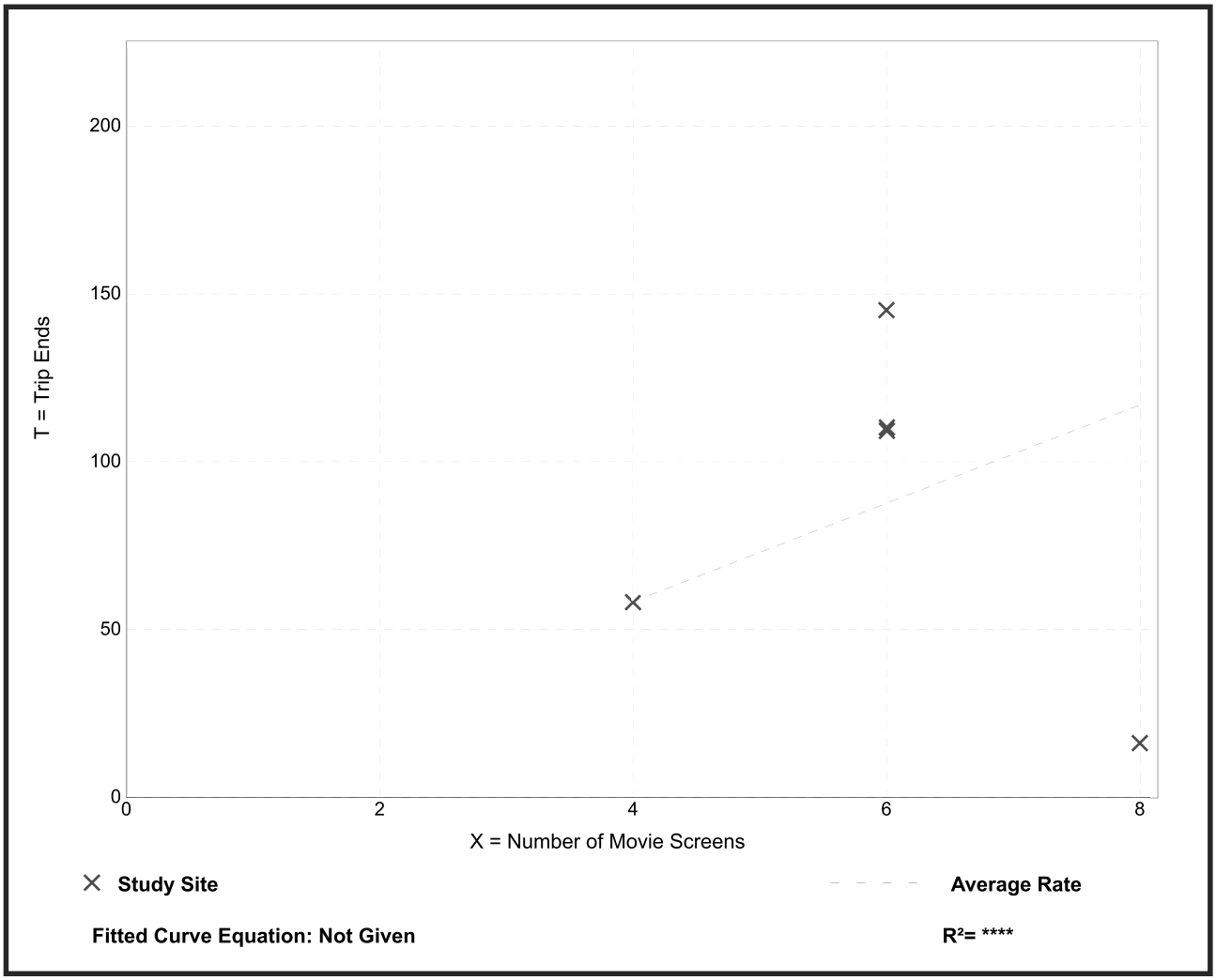
Vehicle Trip Ends vs: **Movie Screens**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 5
Avg. Num. of Movie Screens: 6
Directional Distribution: 44% entering, 56% exiting

Vehicle Trip Generation per Movie Screen

Average Rate	Range of Rates	Standard Deviation
14.60	2.00 - 24.17	9.08

Data Plot and Equation

Caution – Small Sample Size



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General Office Building
(710)

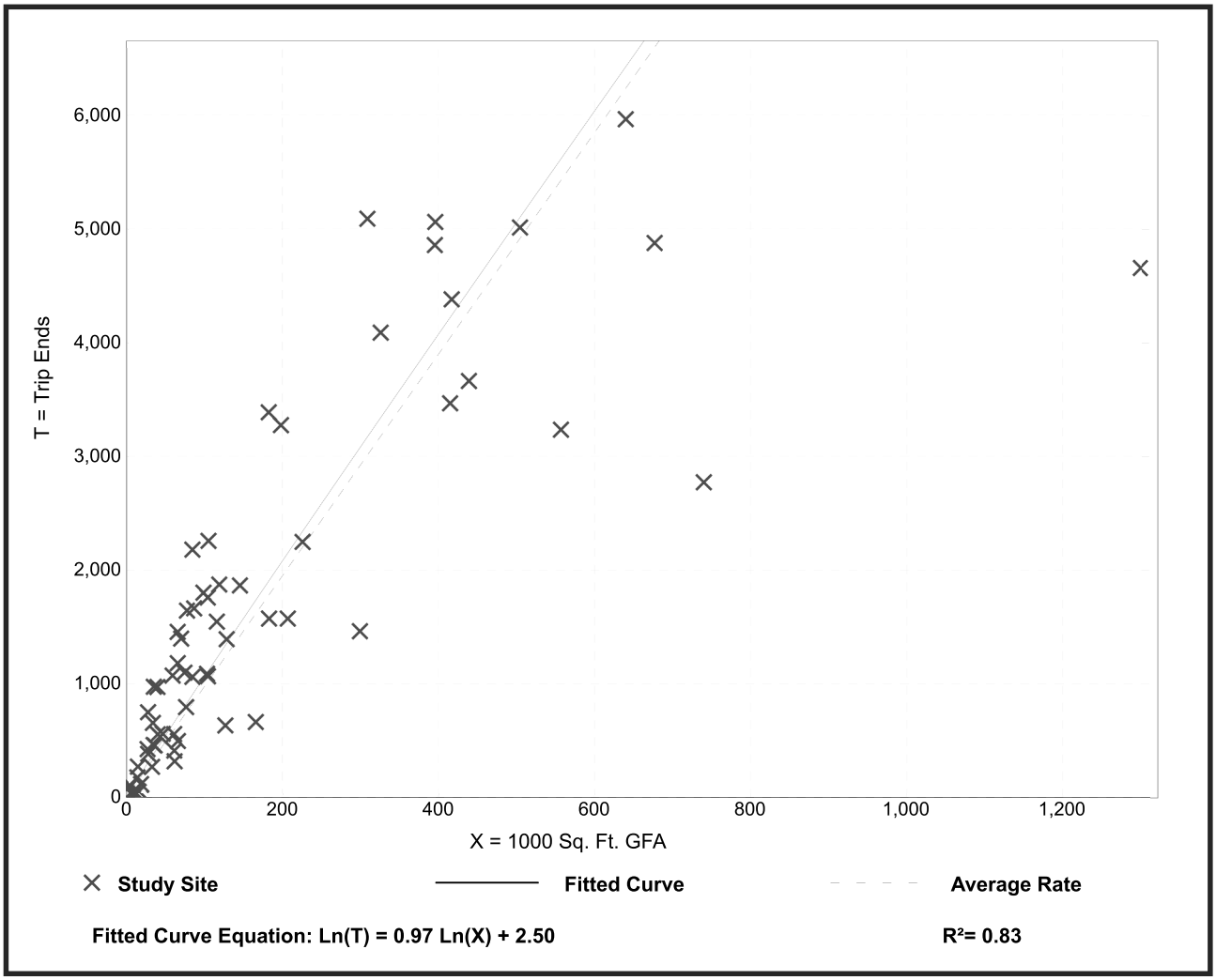
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 66
Avg. 1000 Sq. Ft. GFA: 171
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.74	2.71 - 27.56	5.15

Data Plot and Equation



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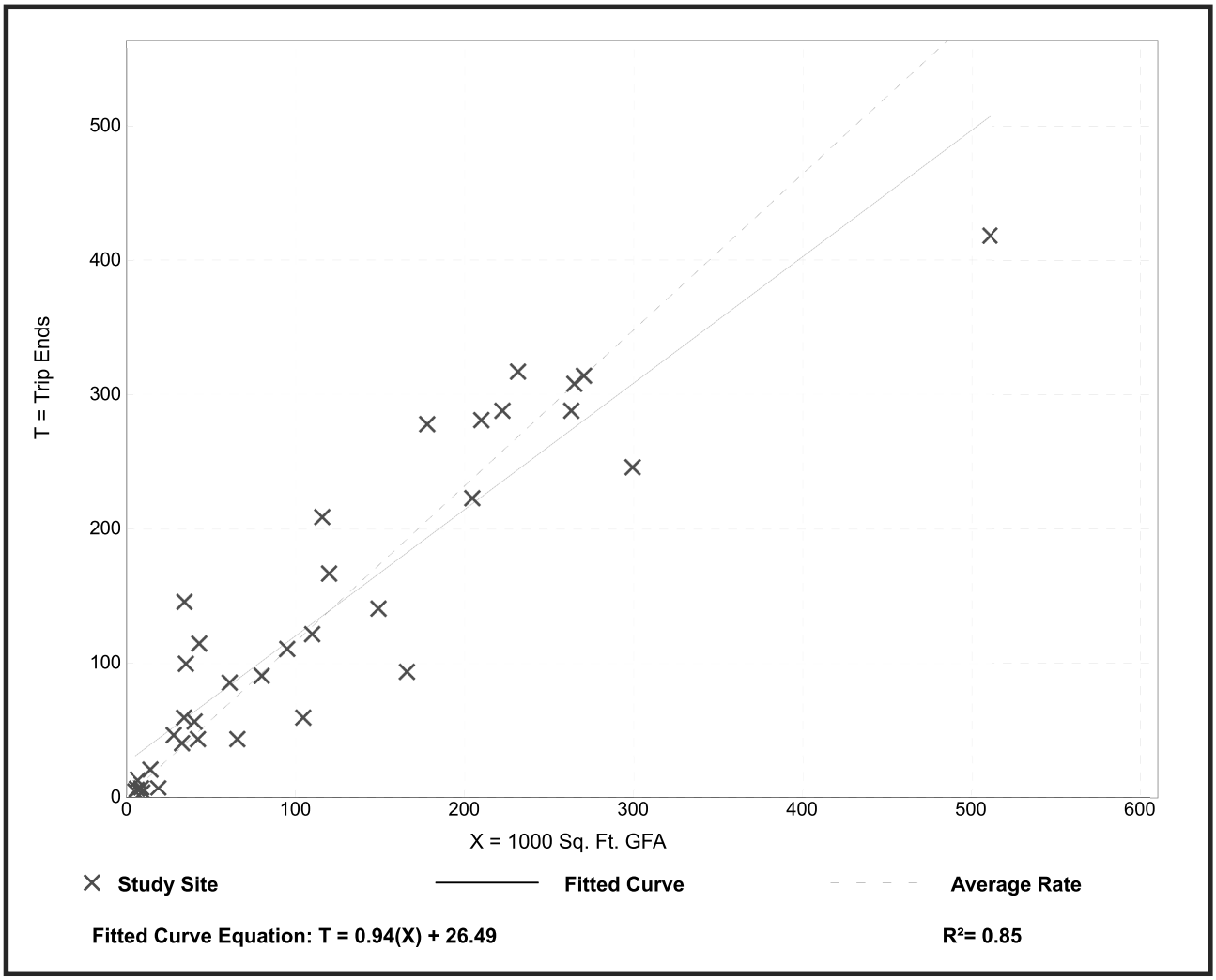
General Office Building
(710)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 35
Avg. 1000 Sq. Ft. GFA: 117
Directional Distribution: 86% entering, 14% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.16	0.37 - 4.23	0.47

Data Plot and Equation



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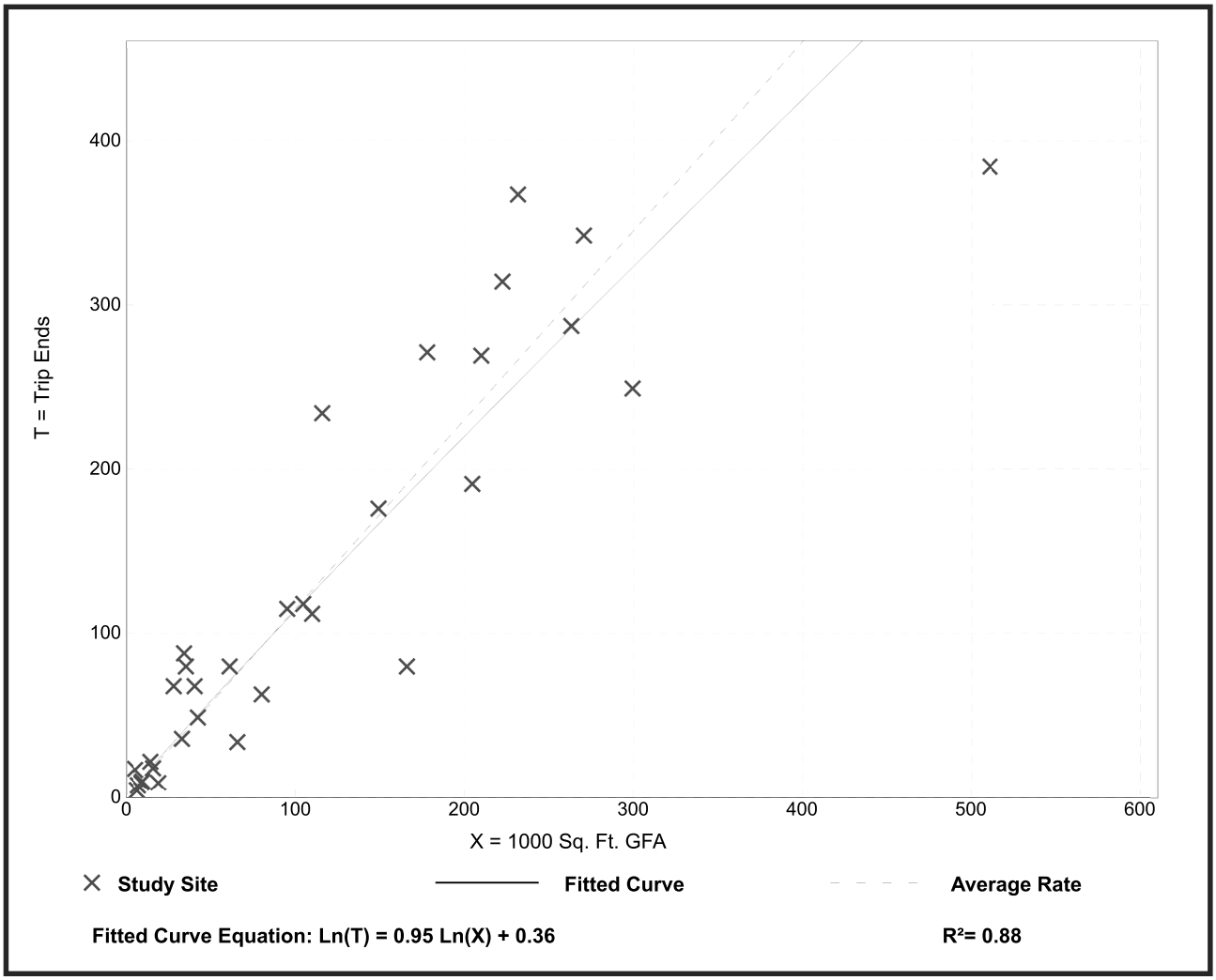
General Office Building
(710)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 32
Avg. 1000 Sq. Ft. GFA: 114
Directional Distribution: 16% entering, 84% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.15	0.47 - 3.23	0.42

Data Plot and Equation



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Shopping Center
(820)

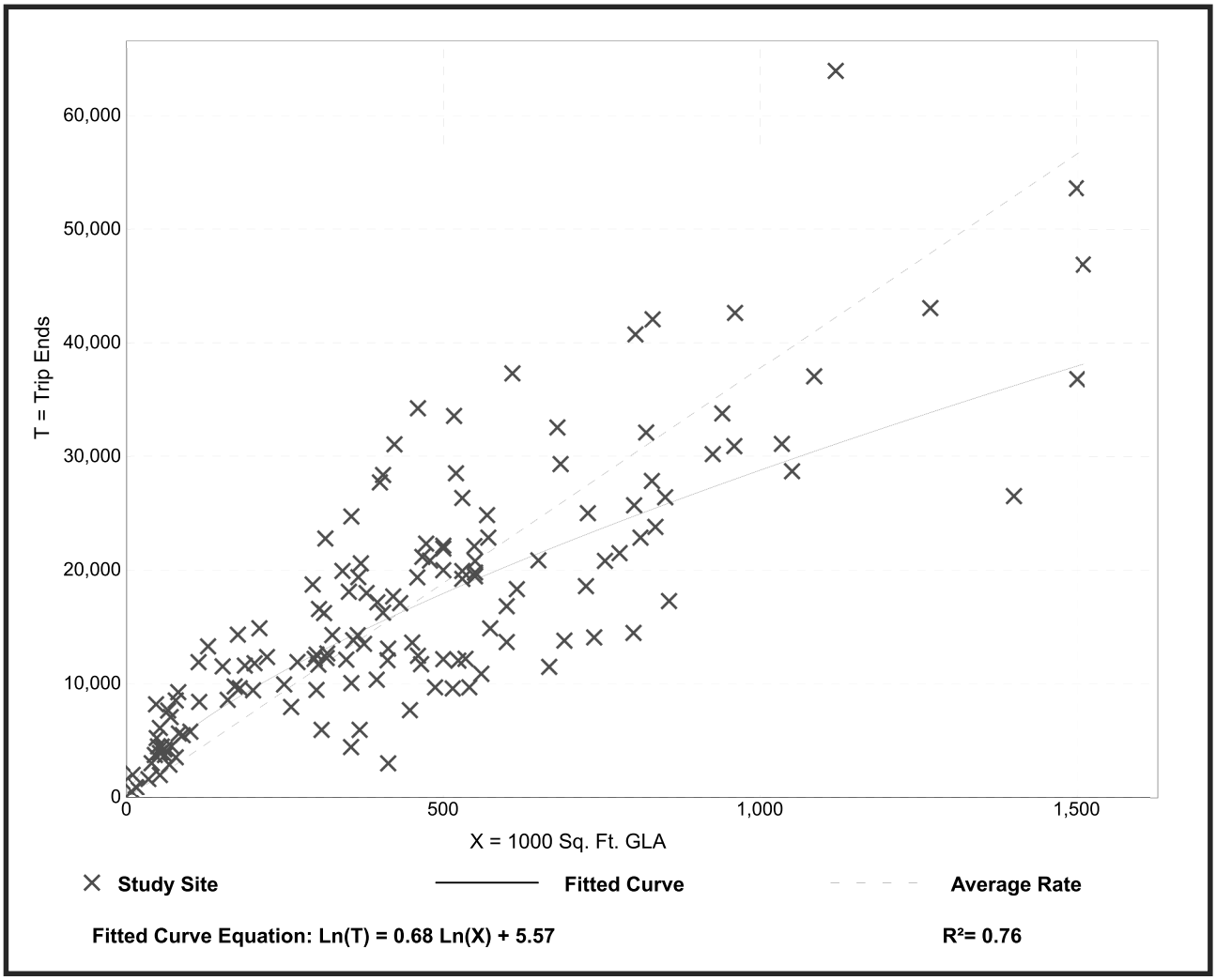
Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 147
Avg. 1000 Sq. Ft. GLA: 453
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

Data Plot and Equation



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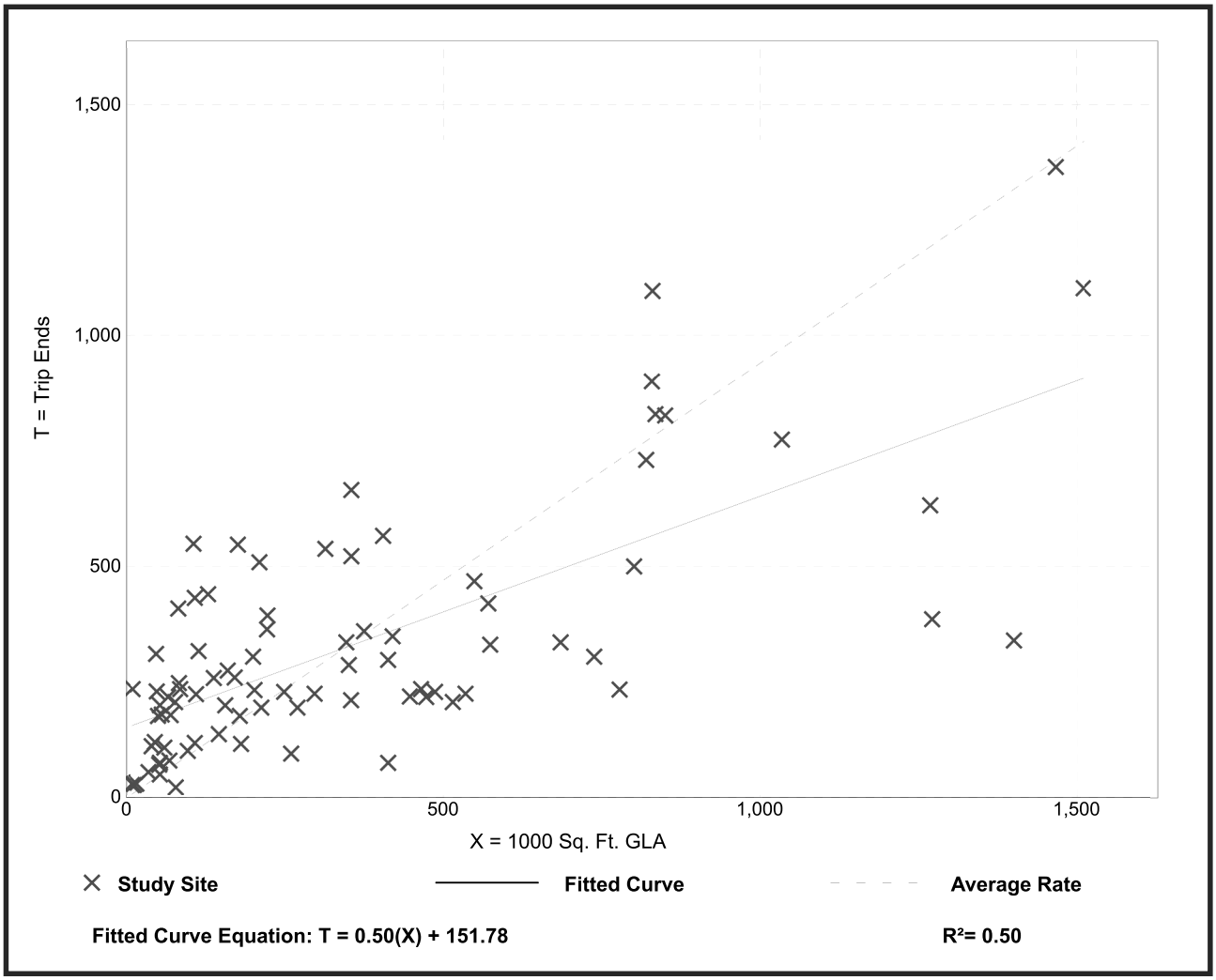
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 84
Avg. 1000 Sq. Ft. GLA: 351
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



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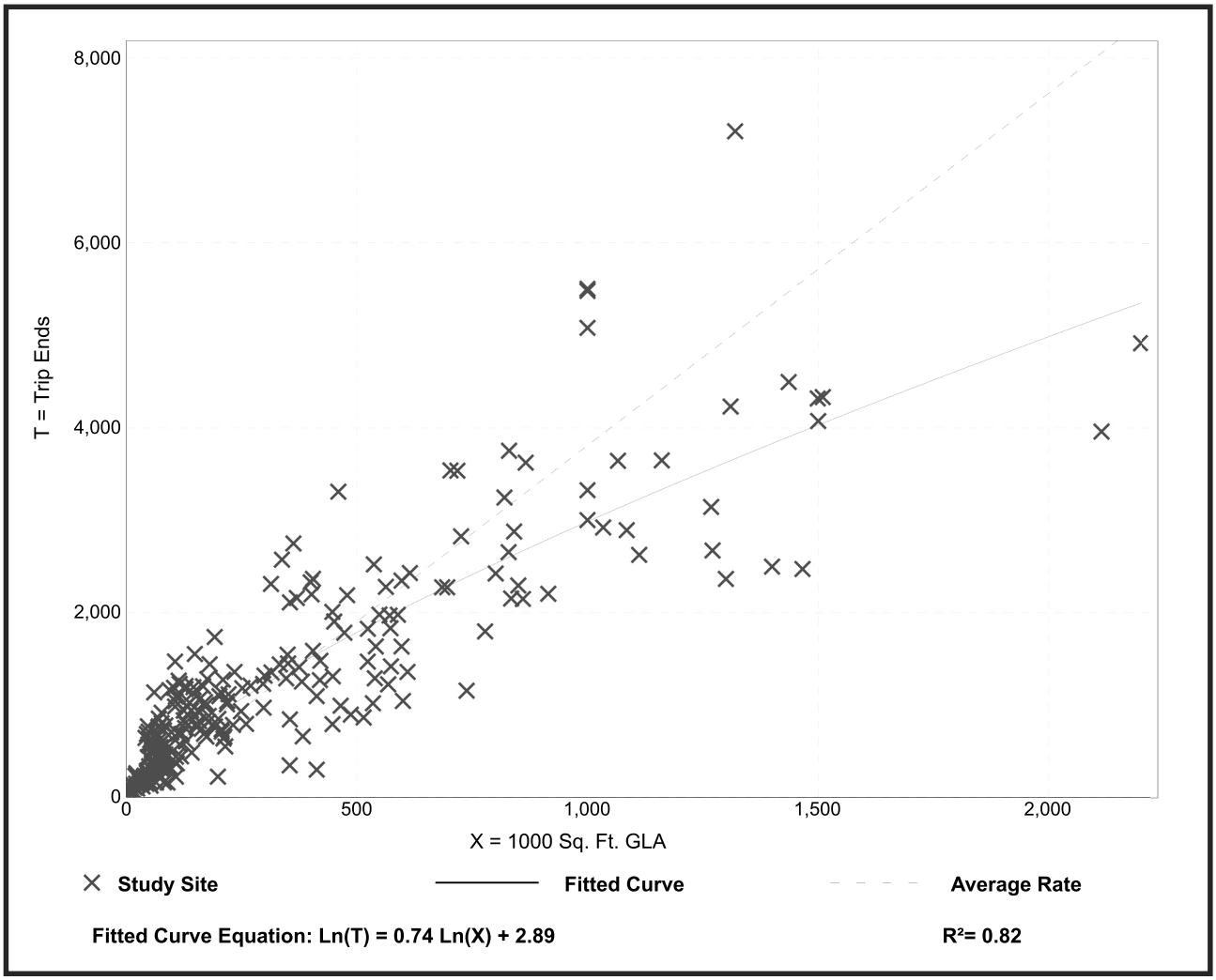
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 261
Avg. 1000 Sq. Ft. GLA: 327
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



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Fast-Food Restaurant with Drive-Through Window
(934)

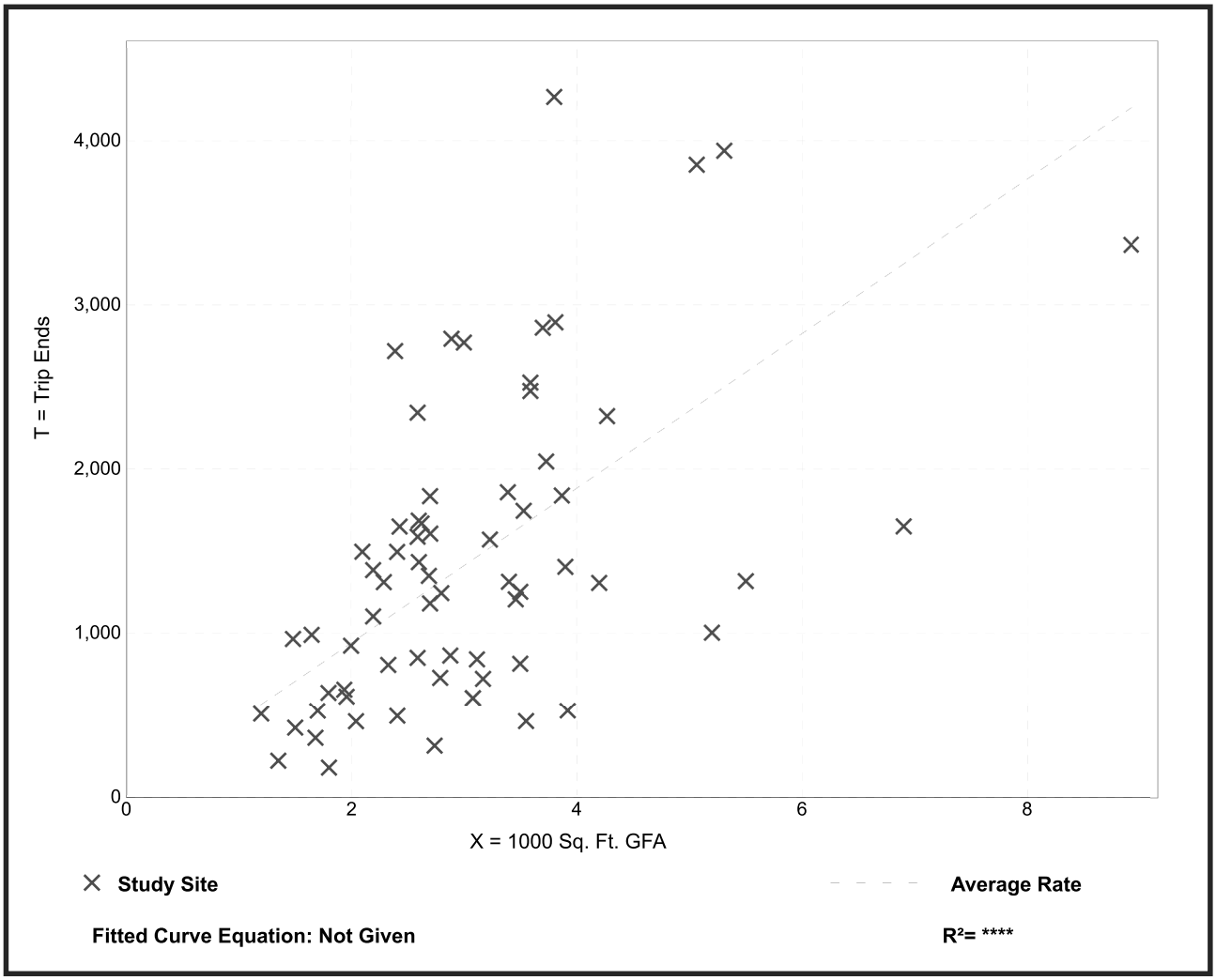
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 67
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
470.95	98.89 - 1137.66	244.44

Data Plot and Equation



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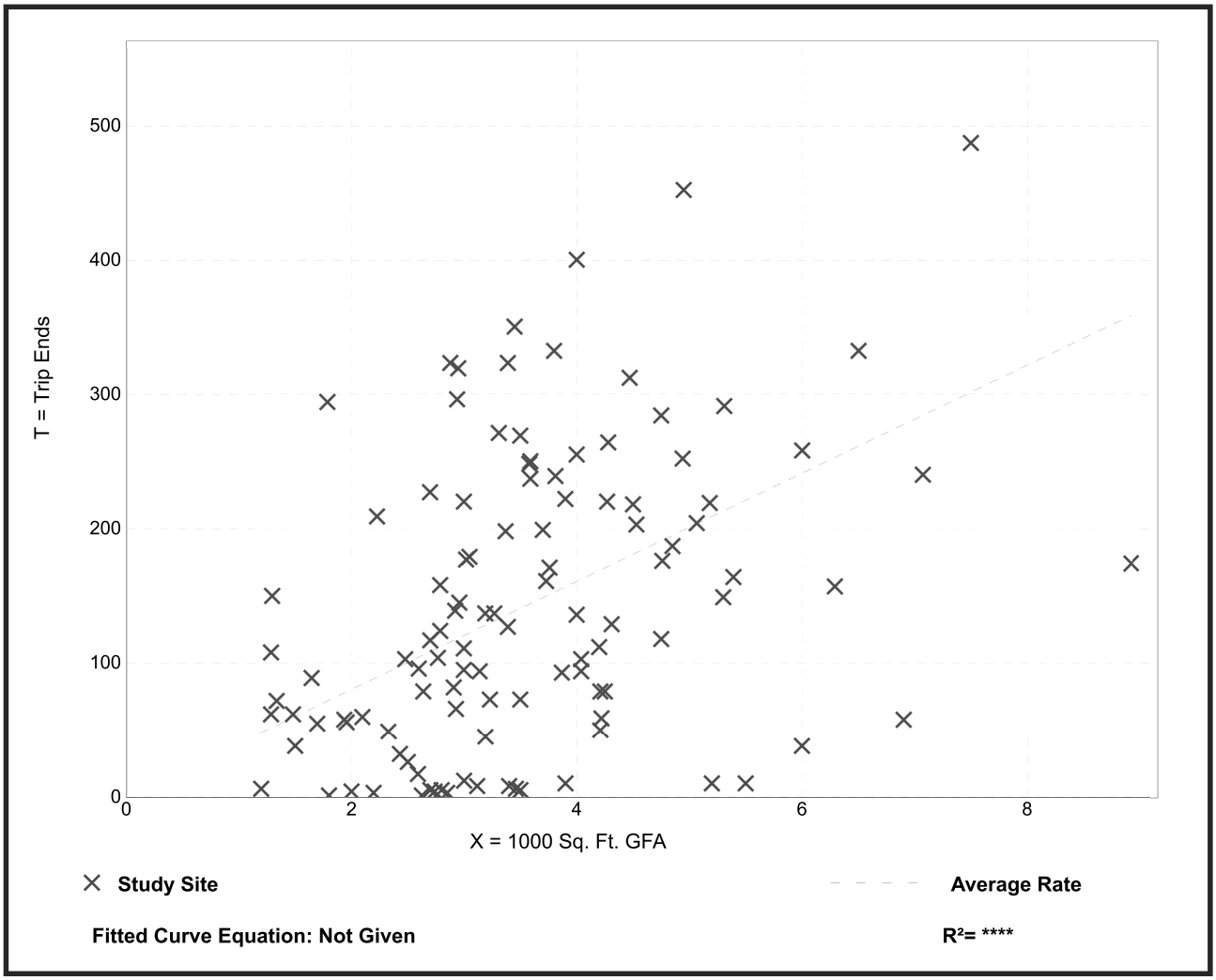
Fast-Food Restaurant with Drive-Through Window
(934)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 111
Avg. 1000 Sq. Ft. GFA: 4
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
40.19	0.38 - 164.25	28.78

Data Plot and Equation



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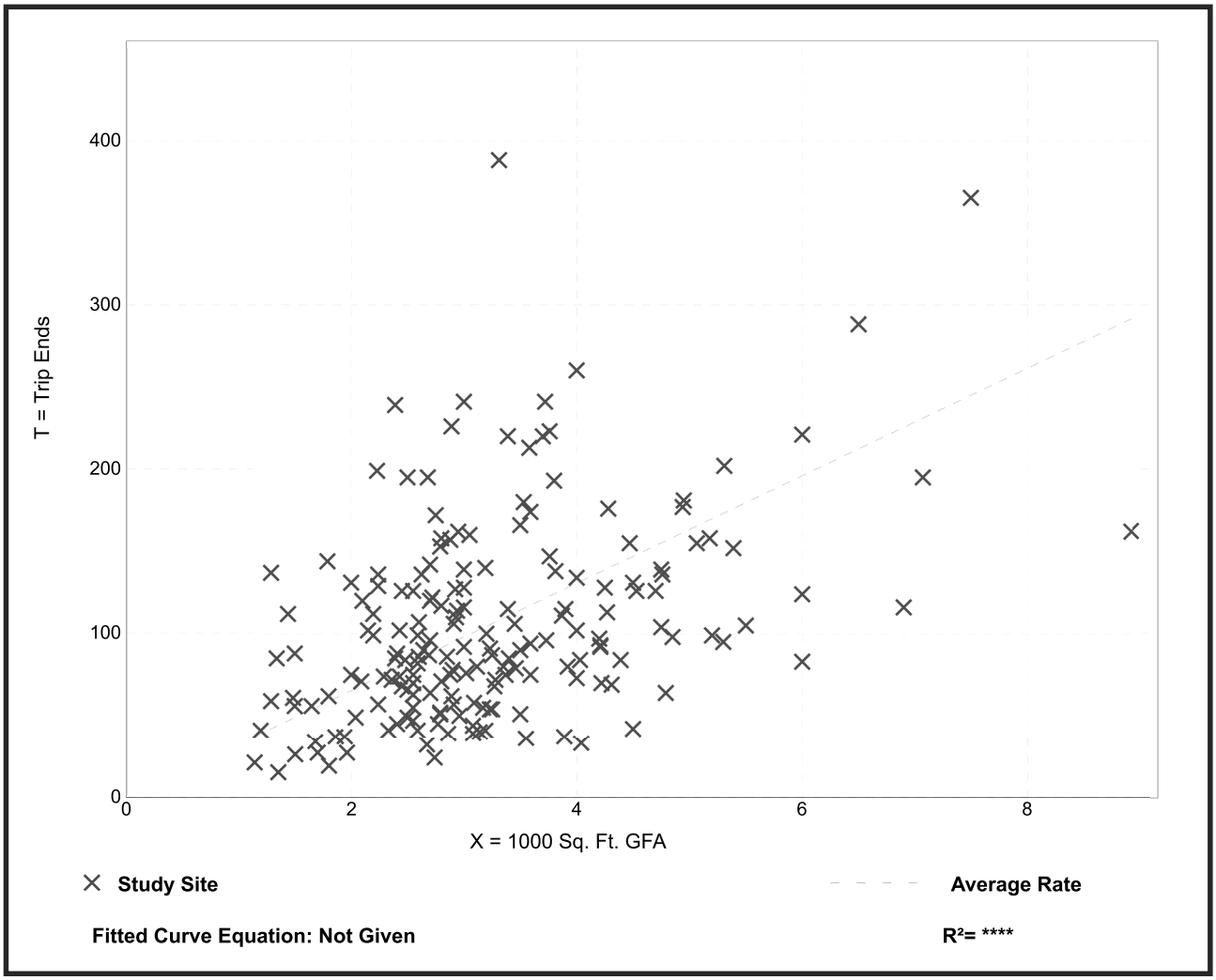
Fast-Food Restaurant with Drive-Through Window
(934)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 185
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
32.67	8.17 - 117.22	17.87

Data Plot and Equation



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Trip Distribution

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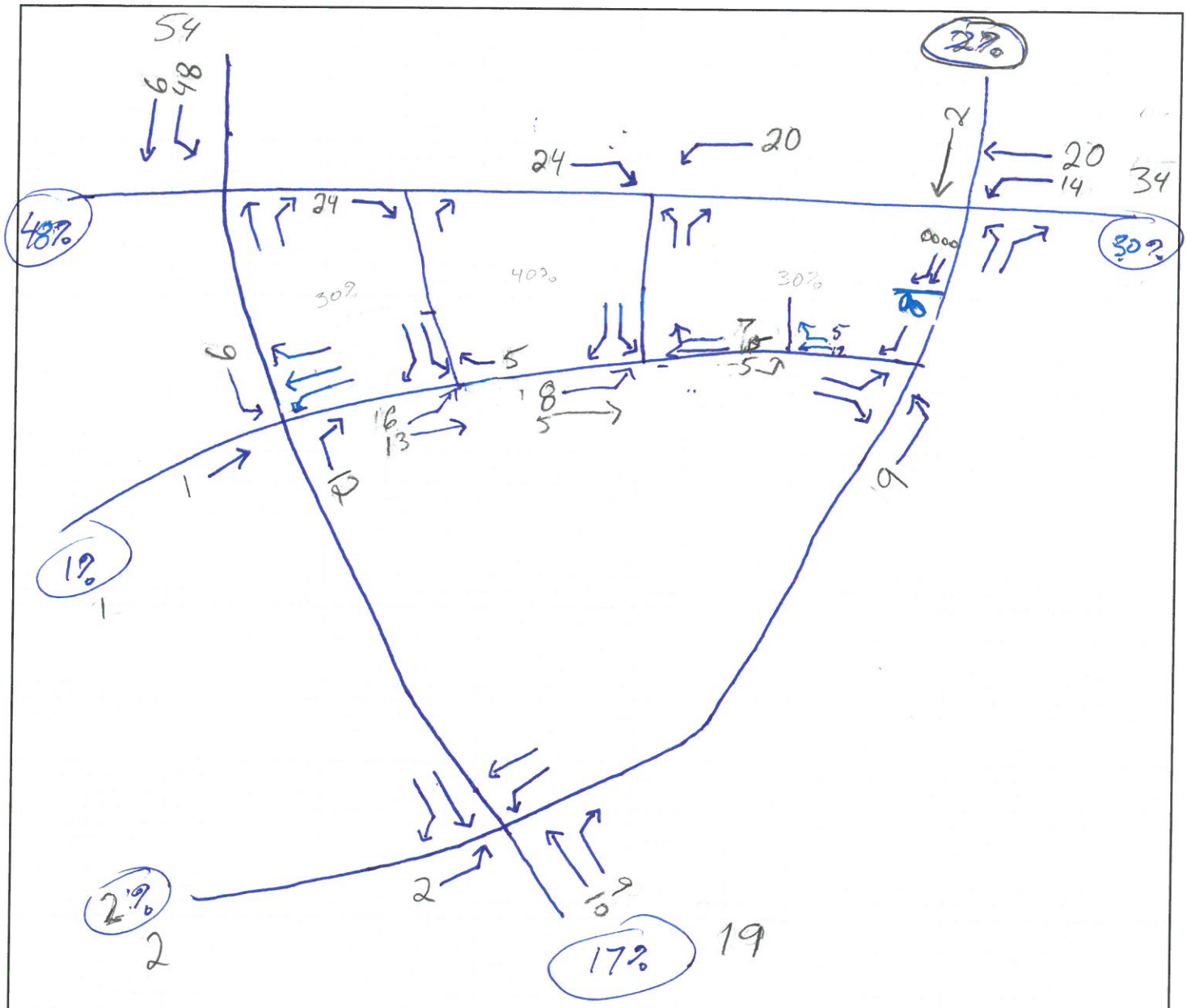


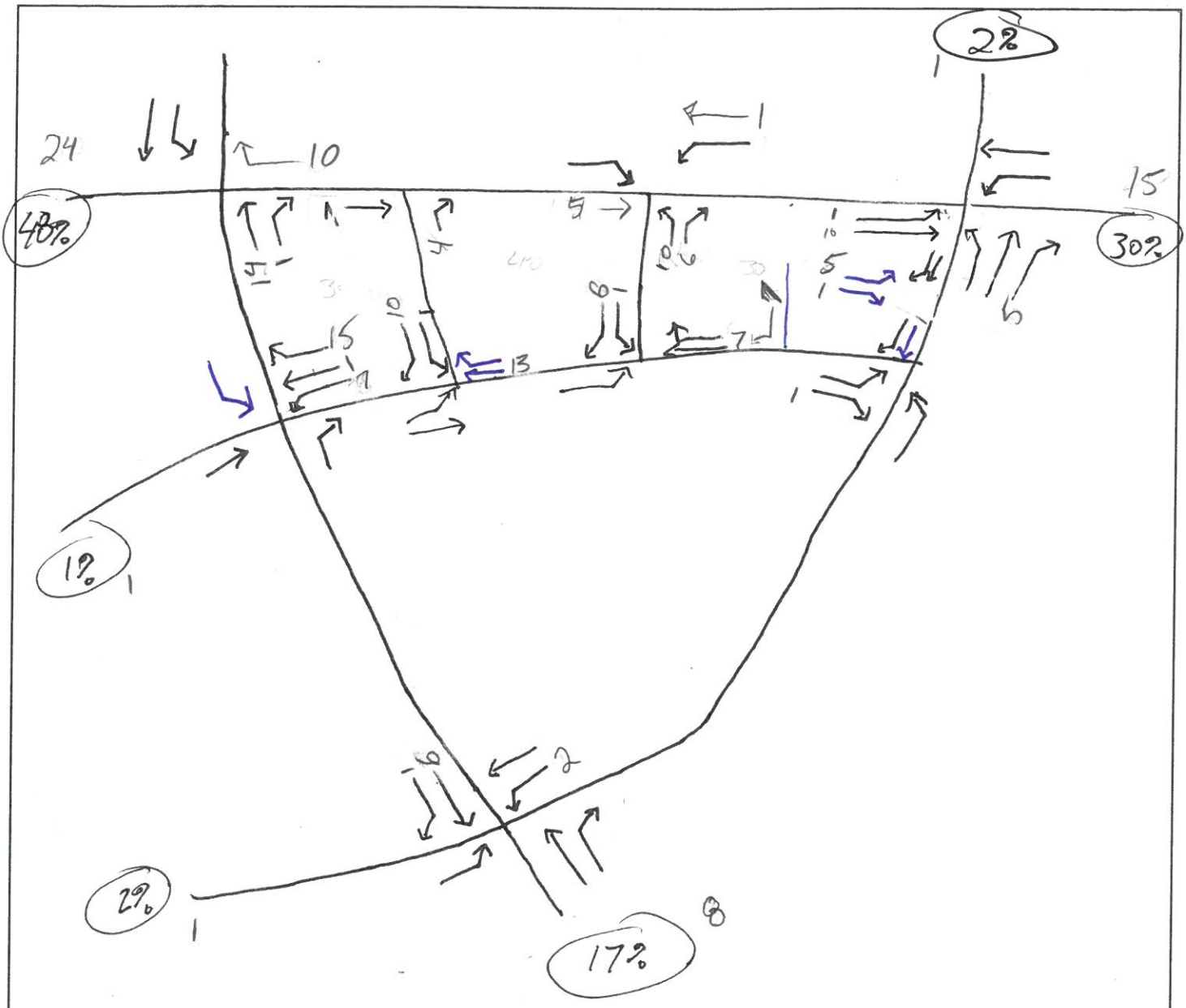
(112)

Distributions to Lots C, D, E

AM IN

project: Longview				
subject				
drawn by: JP	date:	project no.:	sheet 1	of

OLSSON ASSOCIATES



Distributions to Lots C, D, E

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subject				
drawn by: JP	date:	project no.:	sheet 2	of

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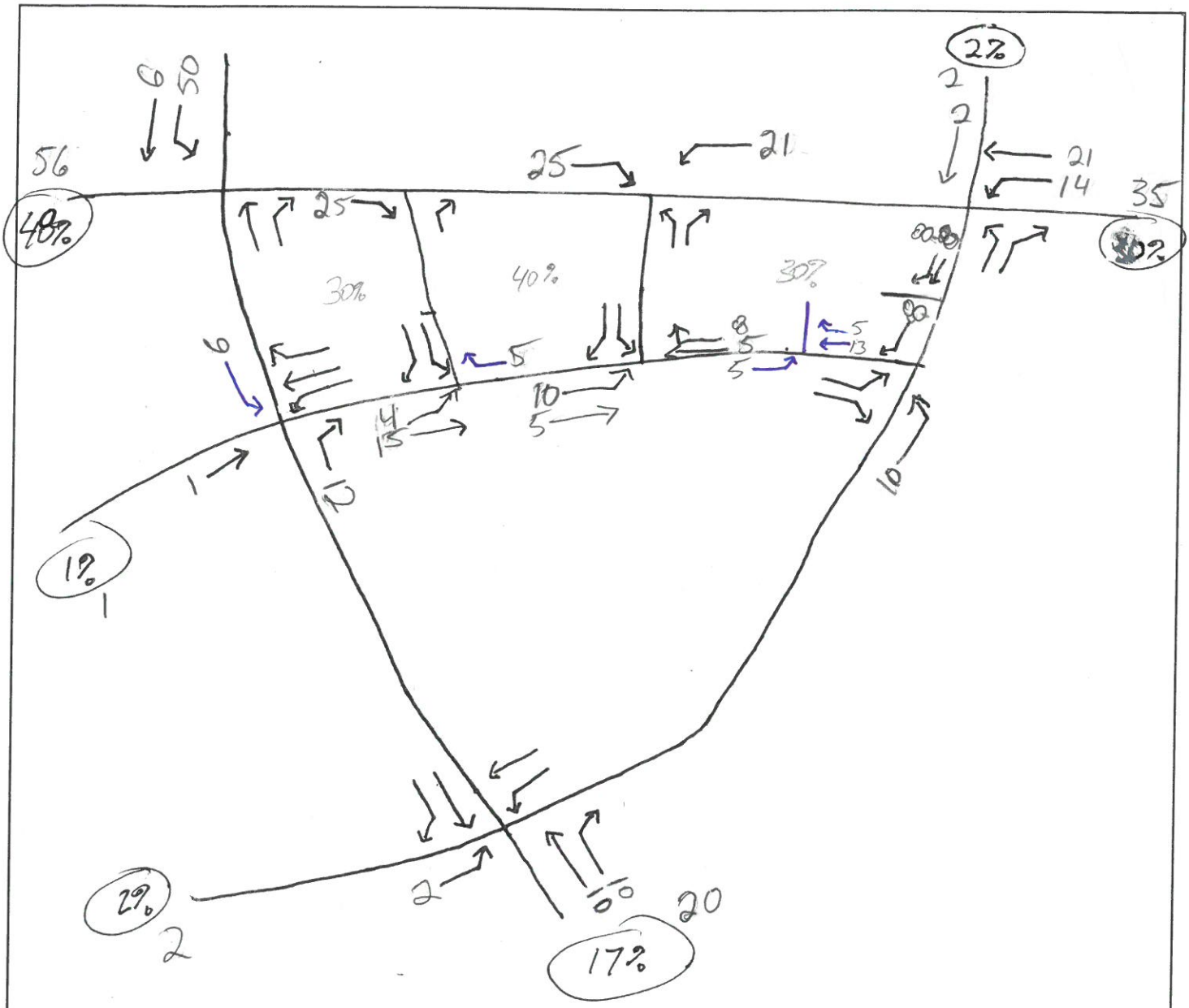

Distributions to Lots C, D, E

PM IN

project: Longview

subject

drawn by: JP date: project no.: sheet 3 of

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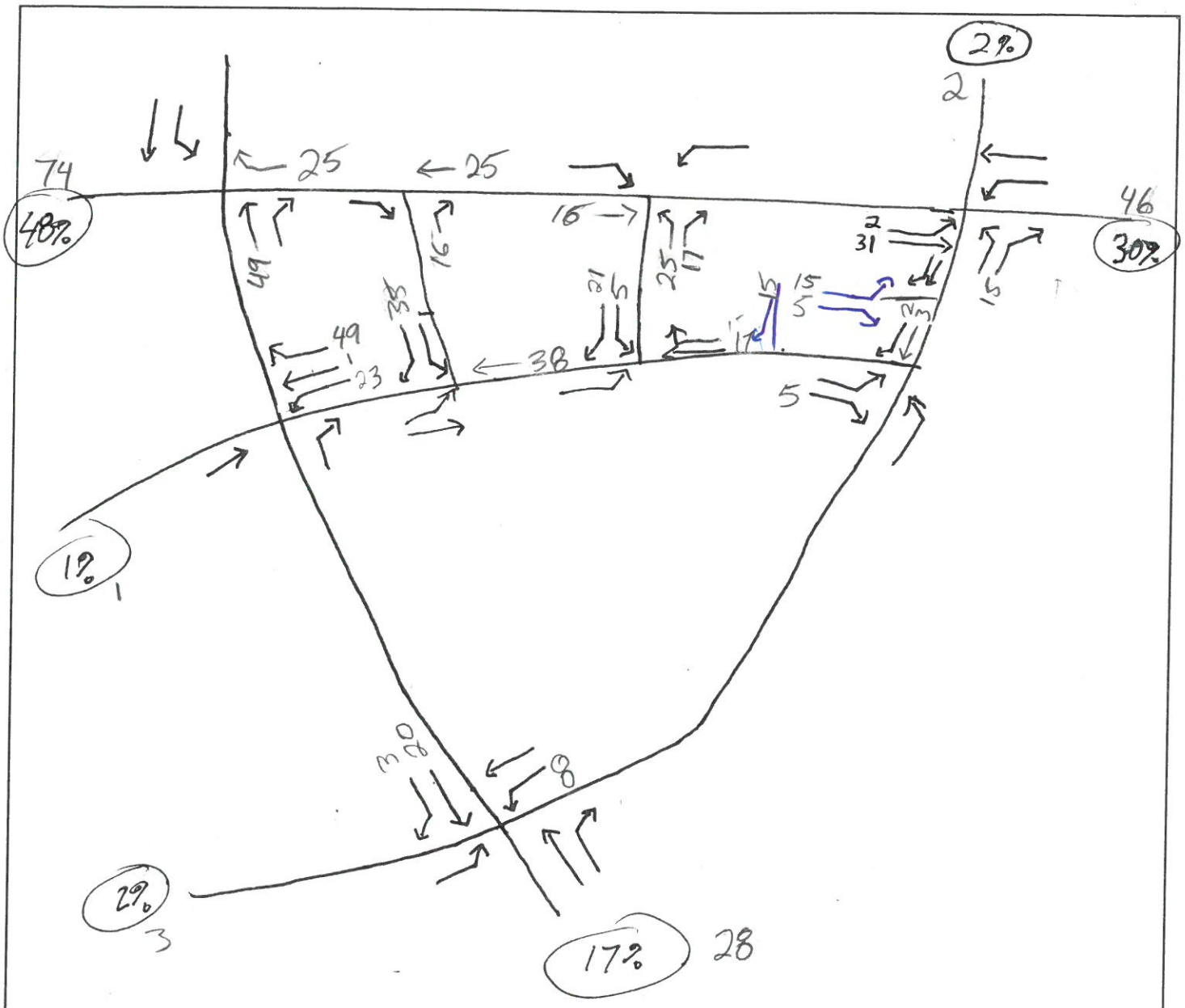

154

Distributions to Lots C, D, E

PM OUT

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subject				
drawn by: JP	date:	project no.:	sheet 4	of

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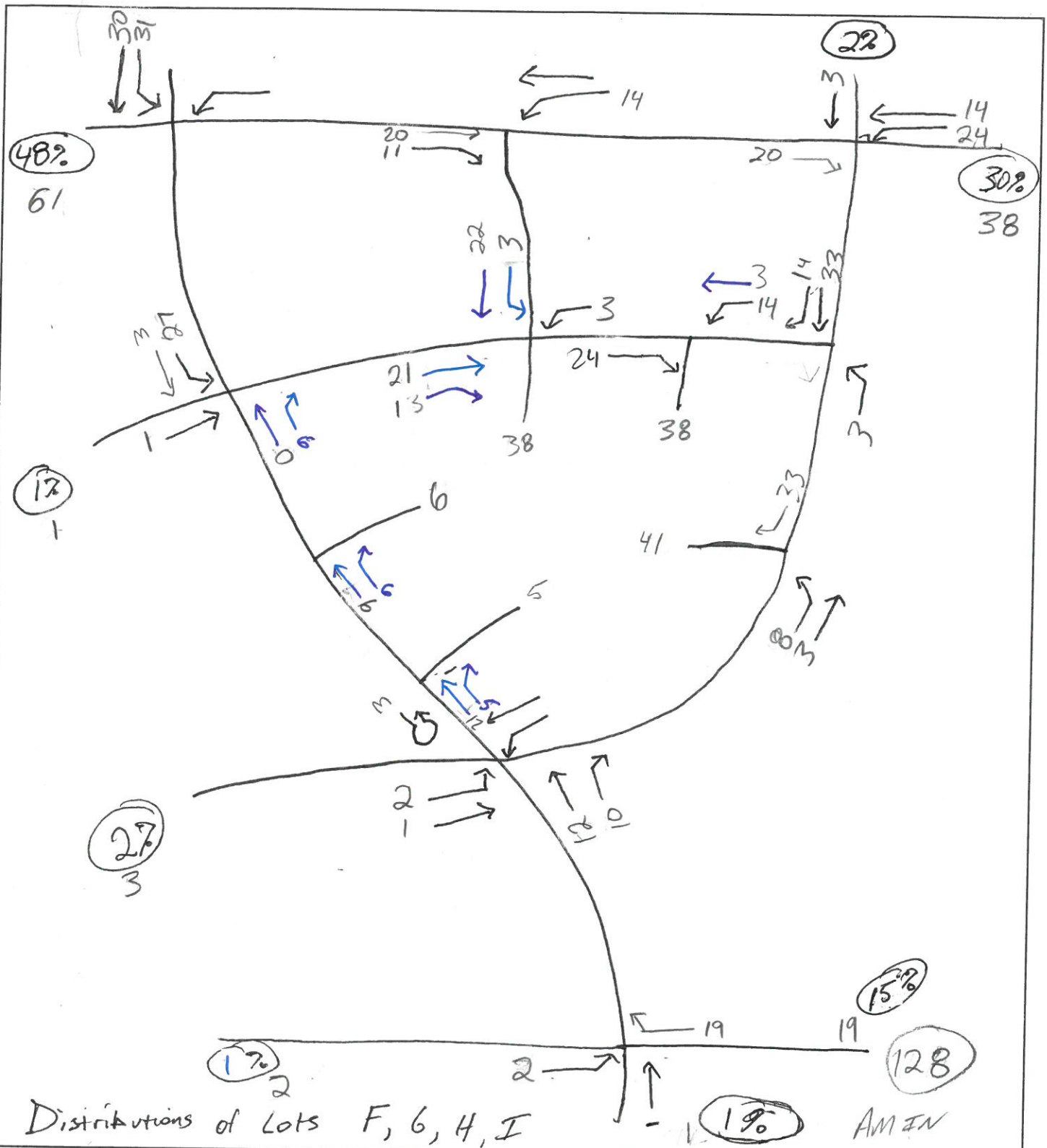

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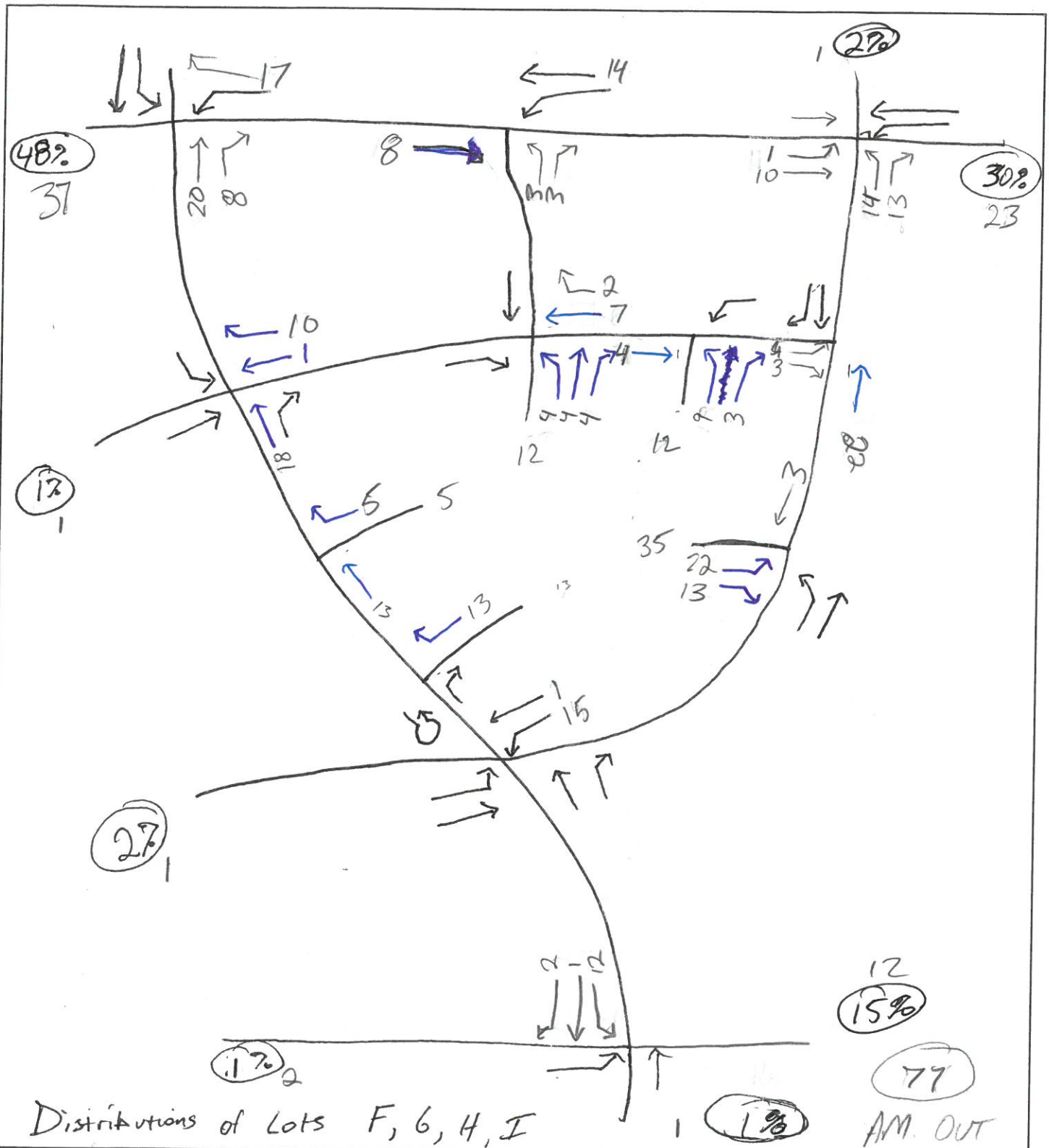

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drawn by: JP date: project no.: sheet 6 of

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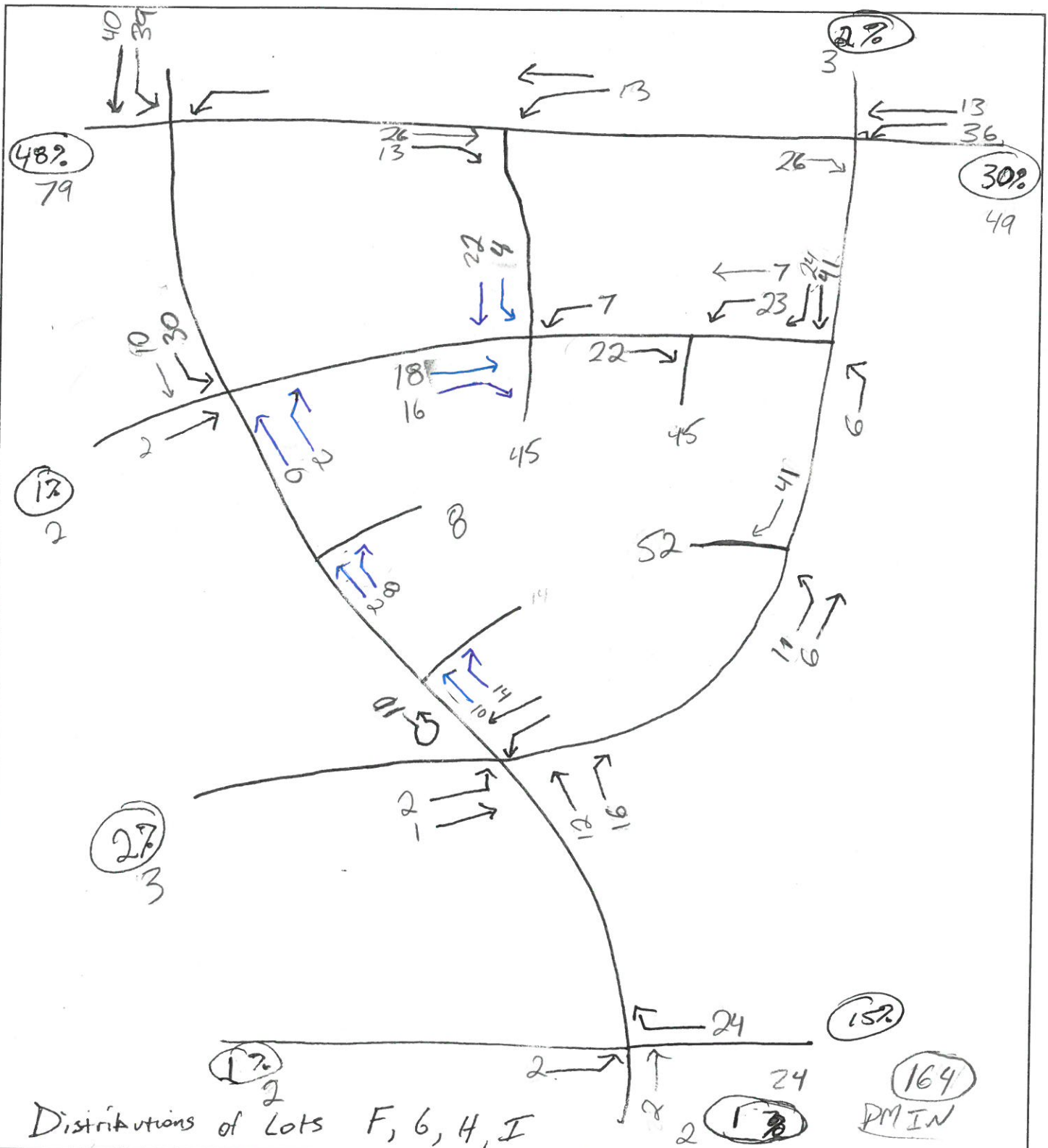

project:			
subject			
drawn by: JP	date:	project no.:	sheet 7 of

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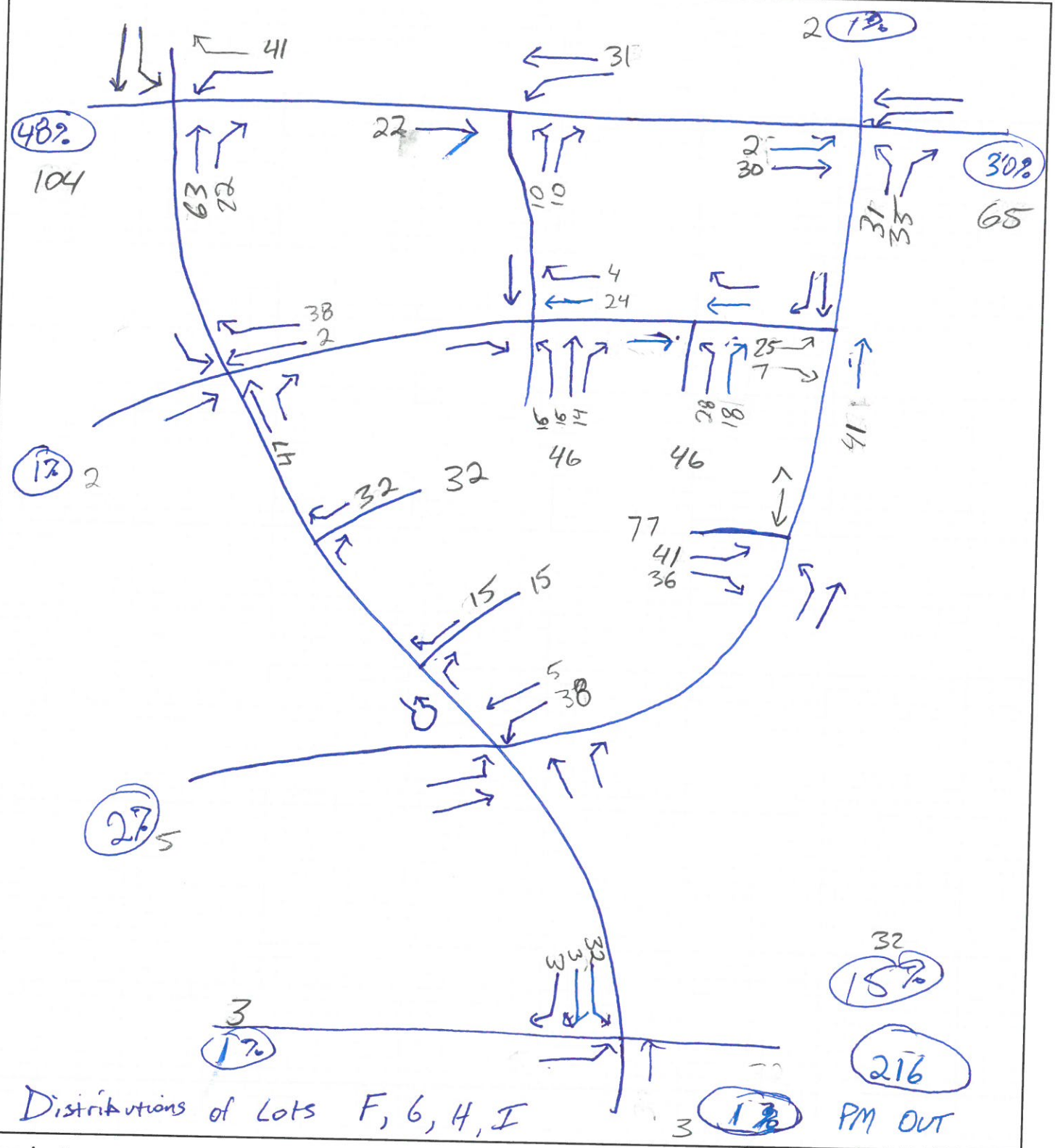
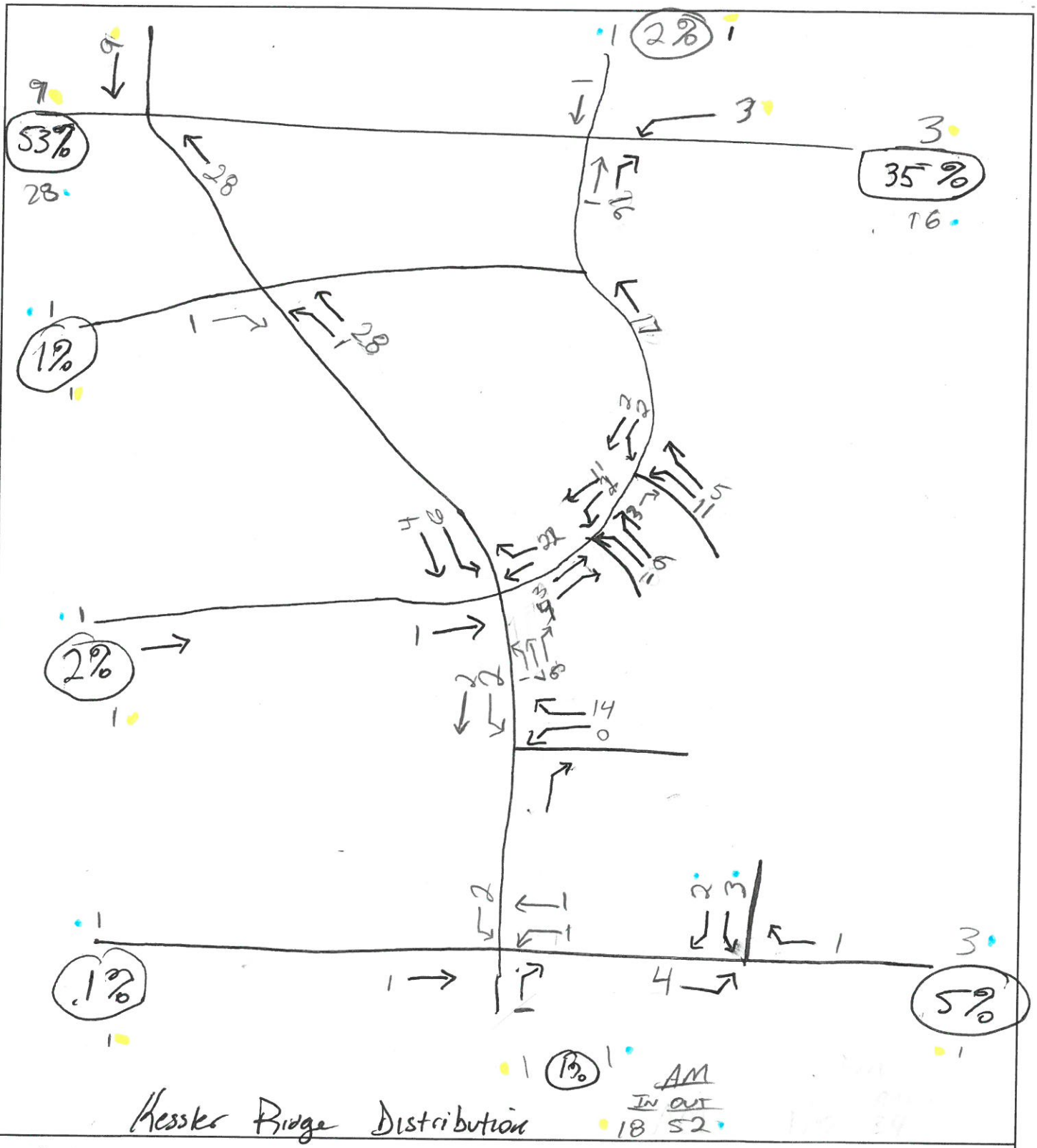


Distributions of Lots F, 6, H, I

project:			
subject			
drawn by: JP	date:	project no.:	sheet 8 of

OLSSON ASSOCIATES



Kessler Ridge Distribution

project:			
subject			
drawn by:	date:	project no.:	sheet 9 of

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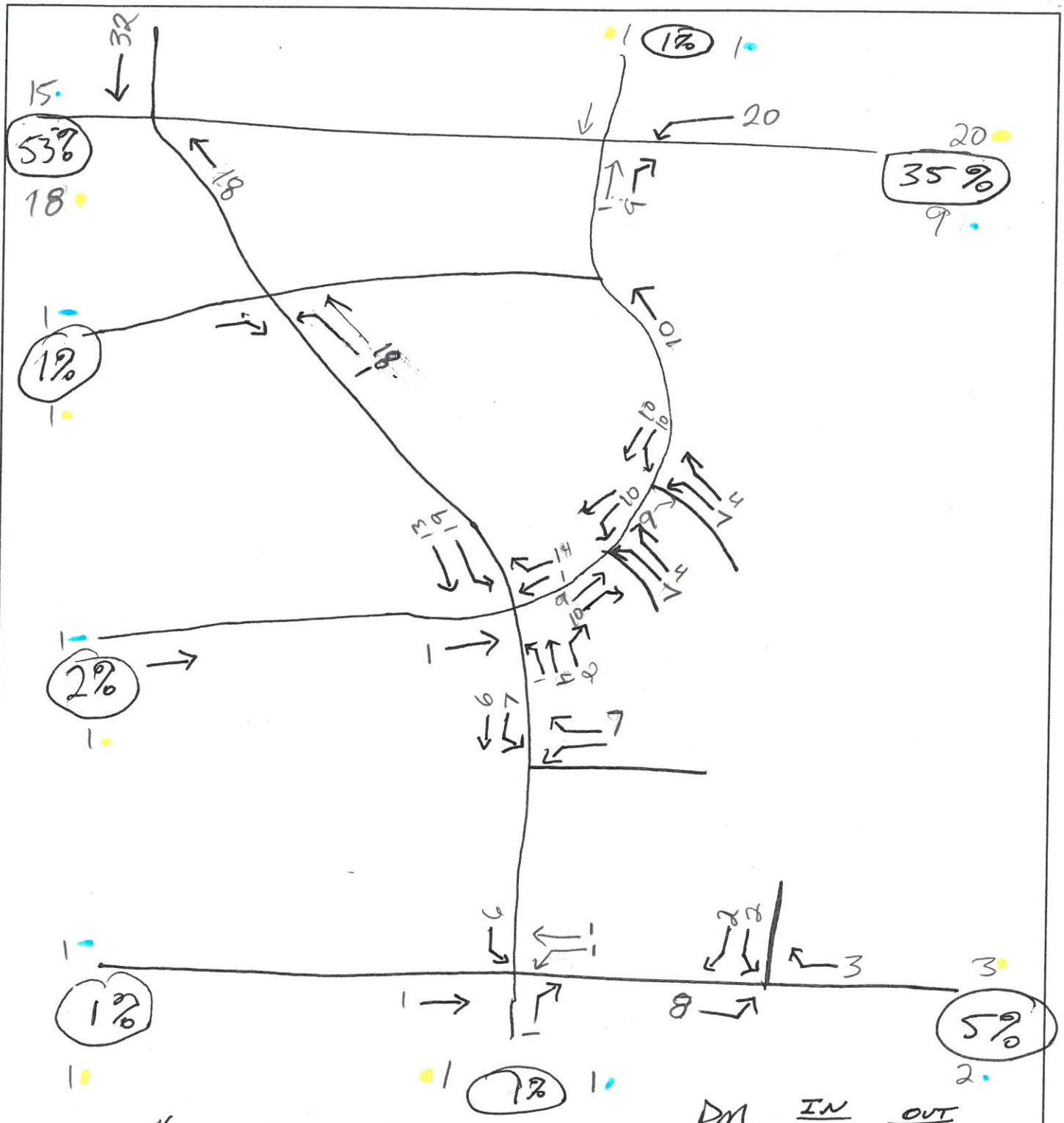

project:

subject

drawn by: date: project no.: sheet 10 of

41
37

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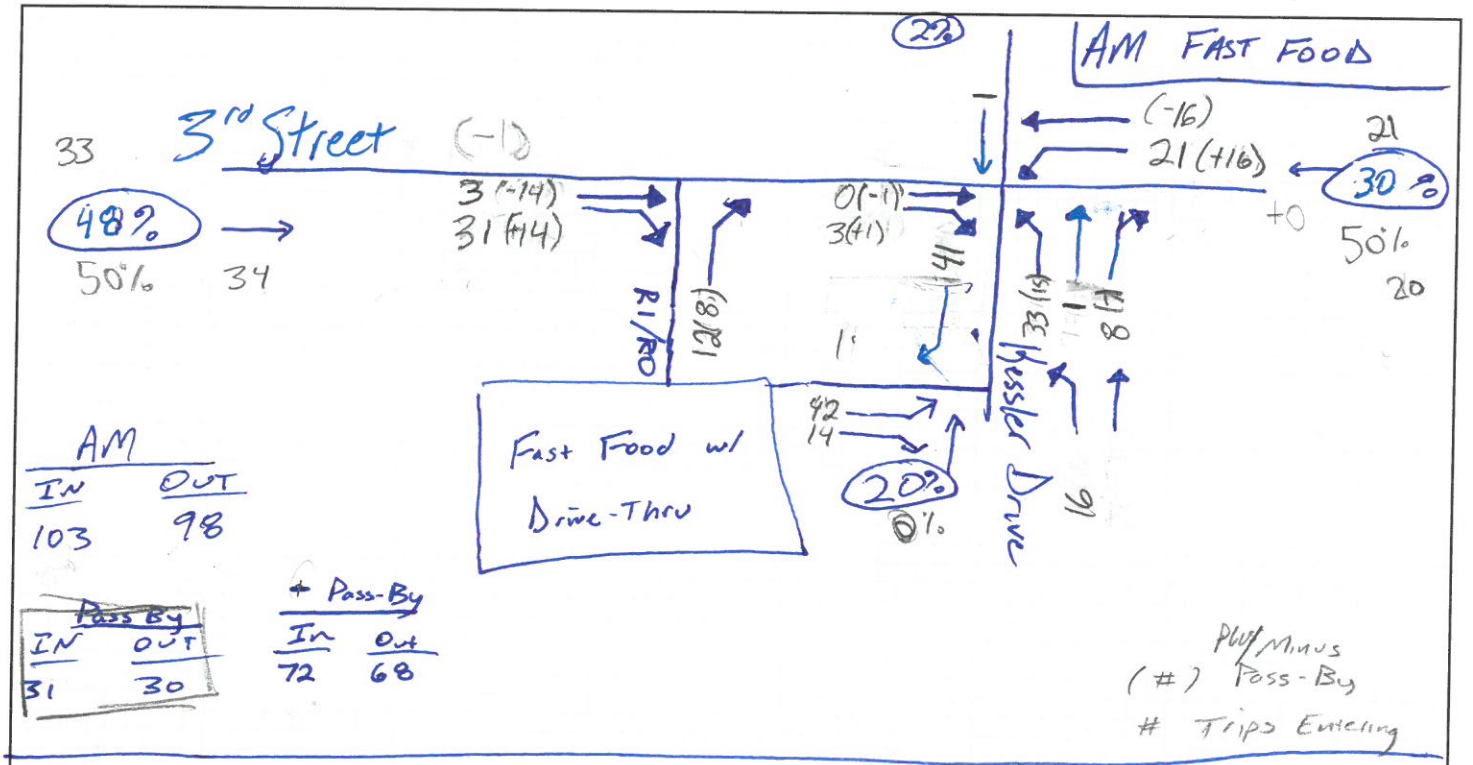
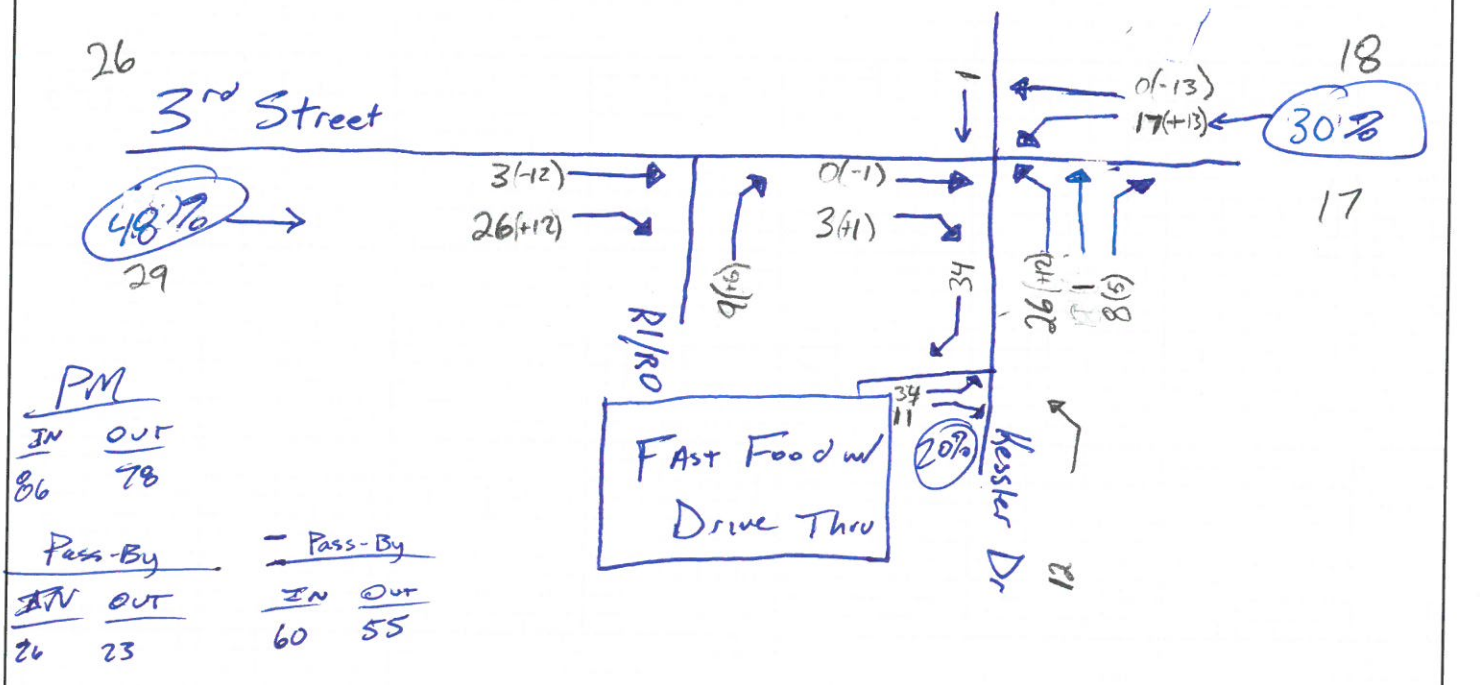
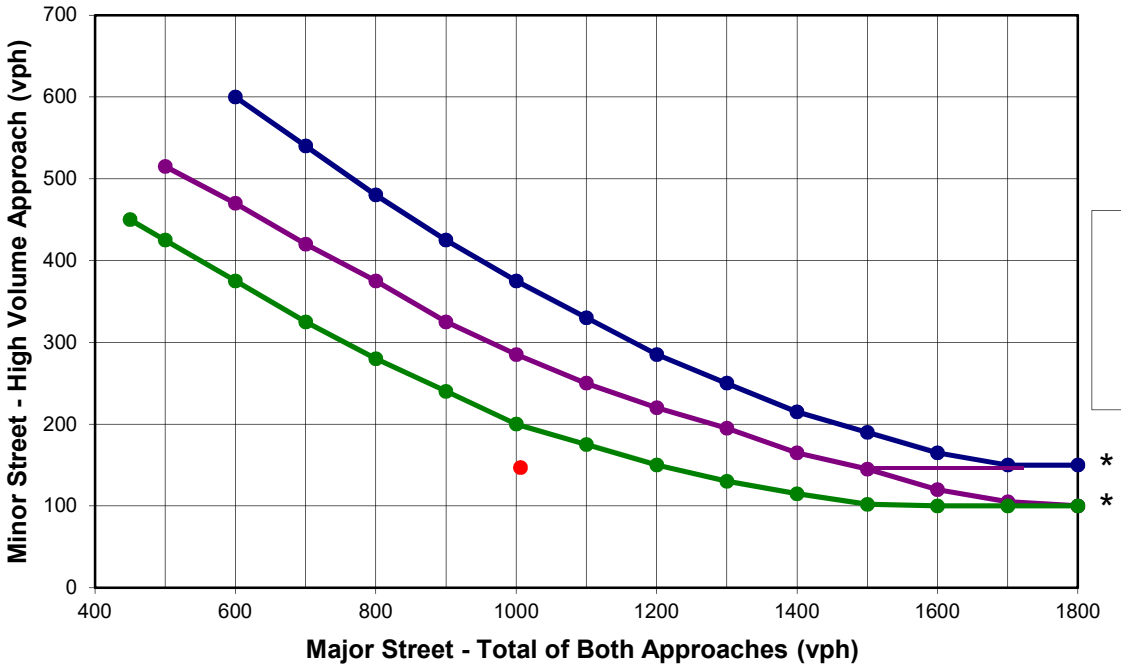




project: Longview Trip Dist			
subject			
drawn by: Josh P	date:	project no.:	sheet 11 of

Signal Warrants

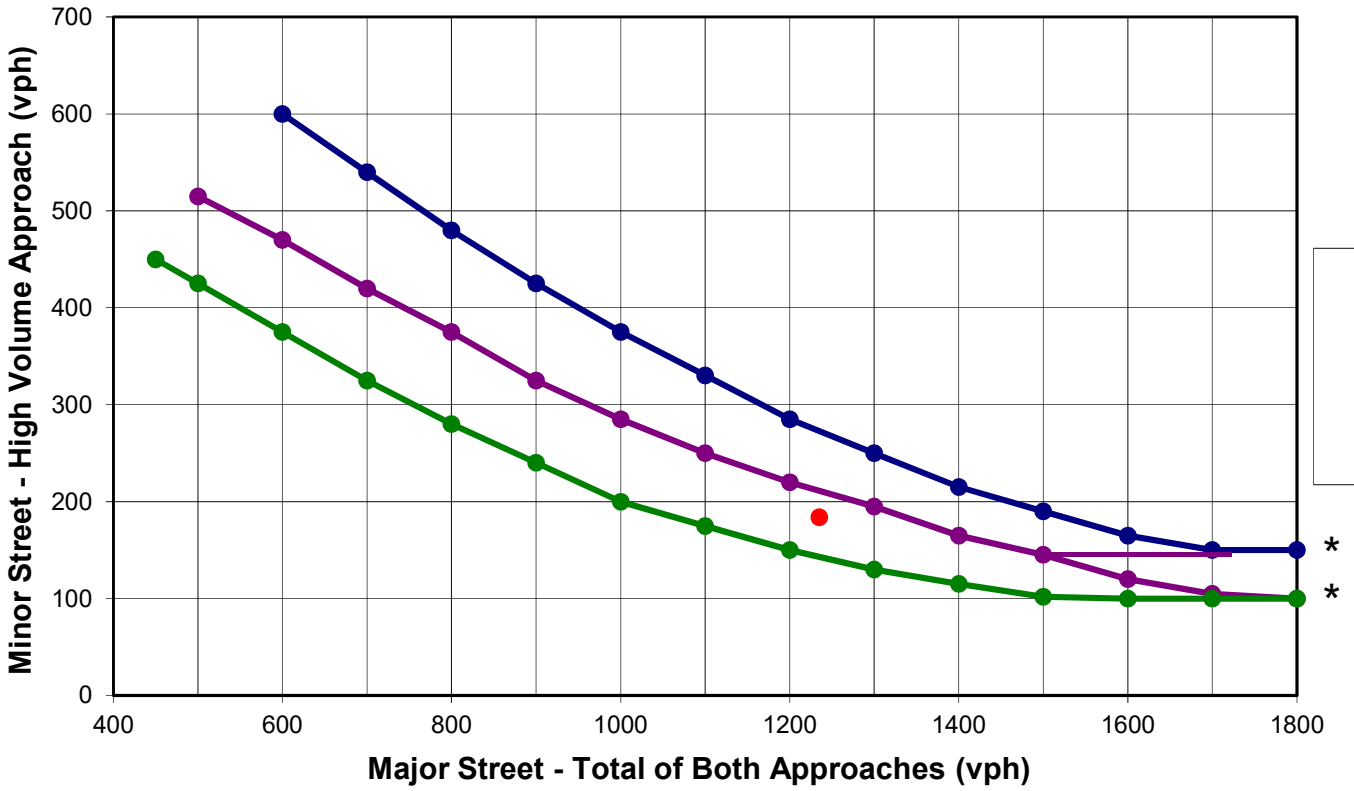
Ex+App Projects S of 3rd AM Peak Hour Volume Warrant
3rd Street & Kessler Drive



Off Chart:
Major - 1006
Minor - 147

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

Ex+App Projects S of 3rd PM Peak Hour Volume Warrant
3rd Street & Kessler Drive

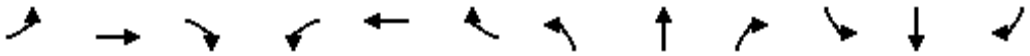


Off Chart:
Major - 1235
Minor - 184

2 or more lanes & 2 lanes
2 or more lanes & 1 lane
1 lane & 1 lane
plotted value

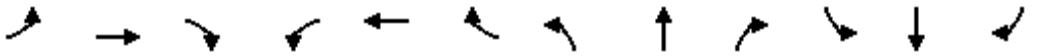
*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

Capacity Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	13	4	176	41	611	3	426	58	259	282	49
v/c Ratio	0.05	0.04	0.01	0.44	0.10	0.37	0.01	0.44	0.09	0.33	0.13	0.05
Control Delay	27.2	27.3	0.0	25.0	21.4	1.7	27.5	19.8	0.3	20.6	8.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	27.3	0.0	25.0	21.4	1.7	27.5	19.8	0.3	20.6	8.9	0.1
Queue Length 50th (ft)	4	3	0	42	9	0	1	52	0	30	16	0
Queue Length 95th (ft)	21	19	0	125	37	28	8	131	0	84	68	0
Internal Link Dist (ft)		339			287			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	356	291	473	593	556	2071	277	2243	1101	1459	2879	1326
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.04	0.01	0.30	0.07	0.30	0.01	0.19	0.05	0.18	0.10	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	10	3	146	32	562	2	371	45	225	234	38
Future Volume (veh/h)	12	10	3	146	32	562	2	371	45	225	234	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	13	4	176	41	611	3	426	0	259	282	0
Peak Hour Factor	0.78	0.78	0.78	0.83	0.78	0.92	0.78	0.87	0.78	0.87	0.83	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	260	221	230	452	1053	10	706		468	1167	
Arrive On Green	0.03	0.14	0.14	0.13	0.24	0.24	0.01	0.20	0.00	0.14	0.33	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	15	13	4	176	41	611	3	426	0	259	282	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	0.4	0.3	0.1	4.8	0.9	8.8	0.1	5.5	0.0	3.5	2.9	0.0
Cycle Q Clear(g_c), s	0.4	0.3	0.1	4.8	0.9	8.8	0.1	5.5	0.0	3.5	2.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	47	260	221	230	452	1053	10	706		468	1167	
V/C Ratio(X)	0.32	0.05	0.02	0.77	0.09	0.58	0.29	0.60		0.55	0.24	
Avail Cap(c_a), veh/h	319	260	221	531	483	1099	248	2049		1305	2896	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.0	18.8	18.7	21.2	14.8	12.5	24.9	18.3	0.0	20.3	12.3	0.0
Incr Delay (d2), s/veh	3.9	0.1	0.0	5.3	0.1	0.7	15.2	0.8	0.0	1.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	2.1	0.3	2.2	0.1	2.0	0.0	1.3	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.9	18.8	18.7	26.4	14.9	13.2	40.2	19.2	0.0	21.3	12.4	0.0
LnGrp LOS	C	B	B	C	B	B	D	B		C	B	
Approach Vol, veh/h		32			828			429	A		541	A
Approach Delay, s/veh		23.1			16.1			19.3			16.7	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	15.0	11.5	12.0	5.3	21.5	6.3	17.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	5.5	7.5	6.8	2.3	2.1	4.9	2.4	10.8
Green Ext Time (p_c), s	0.8	1.5	0.3	0.0	0.0	1.0	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	17.2
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	181	29	111	666	11	67	5	75	13	8	14
Future Vol, veh/h	8	181	29	111	666	11	67	5	75	13	8	14
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	175	-	100	190	-	-	-	-	95	175	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	87	78	83	92	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	208	37	134	724	14	86	6	96	17	10	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	738	0	0	245	0	0	863	1234	104	1126	1264	369
Stage 1	-	-	-	-	-	-	228	228	-	999	999	-
Stage 2	-	-	-	-	-	-	635	1006	-	127	265	-
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	-
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	864	-	-	1318	-	-	248	175	931	160	168	628
Stage 1	-	-	-	-	-	-	754	714	-	261	319	-
Stage 2	-	-	-	-	-	-	433	317	-	863	688	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	864	-	-	1318	-	-	209	155	931	127	149	628
Mov Cap-2 Maneuver	-	-	-	-	-	-	209	155	-	127	149	-
Stage 1	-	-	-	-	-	-	745	705	-	258	286	-
Stage 2	-	-	-	-	-	-	364	285	-	758	680	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1.2	22.6	25.7
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	204	931	864	-	-	1318	-	-	127	290
HCM Lane V/C Ratio	0.452	0.103	0.012	-	-	0.101	-	-	0.131	0.097
HCM Control Delay (s)	36.5	9.3	9.2	-	-	8	-	-	37.6	18.7
HCM Lane LOS	E	A	A	-	-	A	-	-	E	C
HCM 95th %tile Q(veh)	2.1	0.3	0	-	-	0.3	-	-	0.4	0.3

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	207	53	91	656	84	36
Future Vol, veh/h	207	53	91	656	84	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	185	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	78	83	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	68	110	713	108	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	306	0	815	119
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	577	-
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	-	-	1252	-	315	910
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	525	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1252	-	287	910
Mov Cap-2 Maneuver	-	-	-	-	287	-
Stage 1	-	-	-	-	710	-
Stage 2	-	-	-	-	525	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	361	-	-	1252	-
HCM Lane V/C Ratio	0.426	-	-	0.088	-
HCM Control Delay (s)	22.2	-	-	8.2	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	2.1	-	-	0.3	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	4	12	76	84	28
Future Vol, veh/h	10	4	12	76	84	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	4	13	83	91	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	215	106	121	0	-	0
Stage 1	106	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	773	948	1467	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	766	948	1467	-	-	-
Mov Cap-2 Maneuver	766	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1467	-	810	-	-
HCM Lane V/C Ratio	0.009	-	0.019	-	-
HCM Control Delay (s)	7.5	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	242	38	0	740	0	15
Future Vol, veh/h	242	38	0	740	0	15
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
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	263	41	0	804	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	152
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	867
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	867
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	867	-	-	-
HCM Lane V/C Ratio	0.019	-	-	-
HCM Control Delay (s)	9.2	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

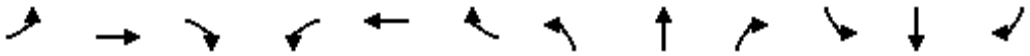
Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Traffic Vol, veh/h	198	45	0	747	0	20
Future Vol, veh/h	198	45	0	747	0	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	-	85	-	-	-	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	215	49	0	812	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	108
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	925
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	925
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

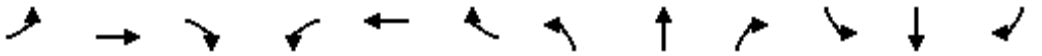
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	925	-	-	-
HCM Lane V/C Ratio	0.024	-	-	-
HCM Control Delay (s)	9	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	23	38	6	123	62	291	15	338	91	709	503	77
v/c Ratio	0.10	0.16	0.01	0.41	0.16	0.18	0.07	0.46	0.17	0.64	0.23	0.07
Control Delay	30.9	31.7	0.0	30.8	25.1	1.8	31.1	26.2	0.7	24.7	10.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	31.7	0.0	30.8	25.1	1.8	31.1	26.2	0.7	24.7	10.5	0.1
Queue Length 50th (ft)	9	15	0	48	18	0	6	68	0	137	55	0
Queue Length 95th (ft)	27	38	0	84	50	17	21	108	0	#246	124	0
Internal Link Dist (ft)		339			287			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	283	232	430	473	482	1696	220	1829	947	1162	2488	1174
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.16	0.01	0.26	0.13	0.17	0.07	0.18	0.10	0.61	0.20	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	30	5	96	48	253	12	294	71	652	438	60
Future Volume (veh/h)	18	30	5	96	48	253	12	294	71	652	438	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	38	6	123	62	291	15	338	0	709	503	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.87	0.78	0.87	0.78	0.92	0.87	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	226	192	186	352	1236	46	615		881	1429	
Arrive On Green	0.04	0.12	0.12	0.10	0.19	0.19	0.03	0.17	0.00	0.25	0.40	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	23	38	6	123	62	291	15	338	0	709	503	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	0.7	1.1	0.2	3.8	1.6	3.7	0.5	5.0	0.0	11.1	5.7	0.0
Cycle Q Clear(g_c), s	0.7	1.1	0.2	3.8	1.6	3.7	0.5	5.0	0.0	11.1	5.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	67	226	192	186	352	1236	46	615		881	1429	
V/C Ratio(X)	0.35	0.17	0.03	0.66	0.18	0.24	0.32	0.55		0.80	0.35	
Avail Cap(c_a), veh/h	278	227	192	463	421	1339	216	1785		1137	2523	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.1	22.8	22.4	24.9	19.7	10.0	27.6	21.8	0.0	20.2	12.0	0.0
Incr Delay (d2), s/veh	3.0	0.3	0.1	4.0	0.2	0.1	4.0	0.8	0.0	3.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.1	1.7	0.6	0.9	0.2	2.0	0.0	4.4	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	23.1	22.5	28.9	19.9	10.1	31.6	22.6	0.0	23.5	12.2	0.0
LnGrp LOS	C	C	C	C	B	B	C	C		C	B	
Approach Vol, veh/h		67			476			353	A		1212	A
Approach Delay, s/veh		25.5			16.2			23.0			18.8	
Approach LOS		C			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.7	15.0	11.0	12.0	6.5	28.2	7.2	15.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	13.1	7.0	5.8	3.1	2.5	7.7	2.7	5.7
Green Ext Time (p_c), s	1.6	1.2	0.2	0.0	0.0	2.0	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	16.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	696	32	138	340	10	73	4	107	3	6	6
Future Vol, veh/h	19	696	32	138	340	10	73	4	107	3	6	6
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	175	-	100	190	-	-	-	-	95	175	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	92	78	83	87	78	78	78	83	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	757	41	166	391	13	94	5	129	4	8	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	404	0	0	798	0	0	1337	1541	379	1159	1576	202
Stage 1	-	-	-	-	-	-	805	805	-	730	730	-
Stage 2	-	-	-	-	-	-	532	736	-	429	846	-
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	-
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	1151	-	-	820	-	-	111	114	619	151	109	805
Stage 1	-	-	-	-	-	-	342	393	-	380	426	-
Stage 2	-	-	-	-	-	-	499	423	-	574	377	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1151	-	-	820	-	-	~ 85	89	619	95	85	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 85	89	-	95	85	-
Stage 1	-	-	-	-	-	-	335	385	-	372	340	-
Stage 2	-	-	-	-	-	-	385	338	-	439	369	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	3.1	109.7	33.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	85	619	1151	-	-	820	-	-	95	154
HCM Lane V/C Ratio	1.161	0.208	0.021	-	-	0.203	-	-	0.04	0.1
HCM Control Delay (s)	236.8	12.3	8.2	-	-	10.5	-	-	44.5	31
HCM Lane LOS	F	B	A	-	-	B	-	-	E	D
HCM 95th %tile Q(veh)	7	0.8	0.1	-	-	0.8	-	-	0.1	0.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	666	78	98	321	76	104
Future Vol, veh/h	666	78	98	321	76	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	185	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	78	83	87	78	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	724	100	118	369	97	125

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	824	0	1145	362
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	421	-
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	-	-	802	-	193	635
Stage 1	-	-	-	-	441	-
Stage 2	-	-	-	-	630	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	802	-	165	635
Mov Cap-2 Maneuver	-	-	-	-	165	-
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	630	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	52.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	283	-	-	802	-
HCM Lane V/C Ratio	0.787	-	-	0.147	-
HCM Control Delay (s)	52.3	-	-	10.3	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	6.1	-	-	0.5	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	12	16	91	107	40
Future Vol, veh/h	41	12	16	91	107	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	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	45	13	17	99	116	43

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	271	138	159	0	-	0
Stage 1	138	-	-	-	-	-
Stage 2	133	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	718	910	1420	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	709	910	1420	-	-	-
Mov Cap-2 Maneuver	709	-	-	-	-	-
Stage 1	877	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1420	-	746	-	-
HCM Lane V/C Ratio	0.012	-	0.077	-	-
HCM Control Delay (s)	7.6	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	710	43	0	397	0	32
Future Vol, veh/h	710	43	0	397	0	32
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
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	772	47	0	432	0	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	410
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	591
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	591
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	591	-	-	-
HCM Lane V/C Ratio	0.059	-	-	-
HCM Control Delay (s)	11.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Traffic Vol, veh/h	732	38	0	419	0	15
Future Vol, veh/h	732	38	0	419	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	85	-	-	-	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	796	41	0	455	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	398
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	601
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	601
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	601	-	-	-
HCM Lane V/C Ratio	0.027	-	-	-
HCM Control Delay (s)	11.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Approved Studies

LONGVIEW COMMONS

LONGVIEW BLVD & 3RD STREET

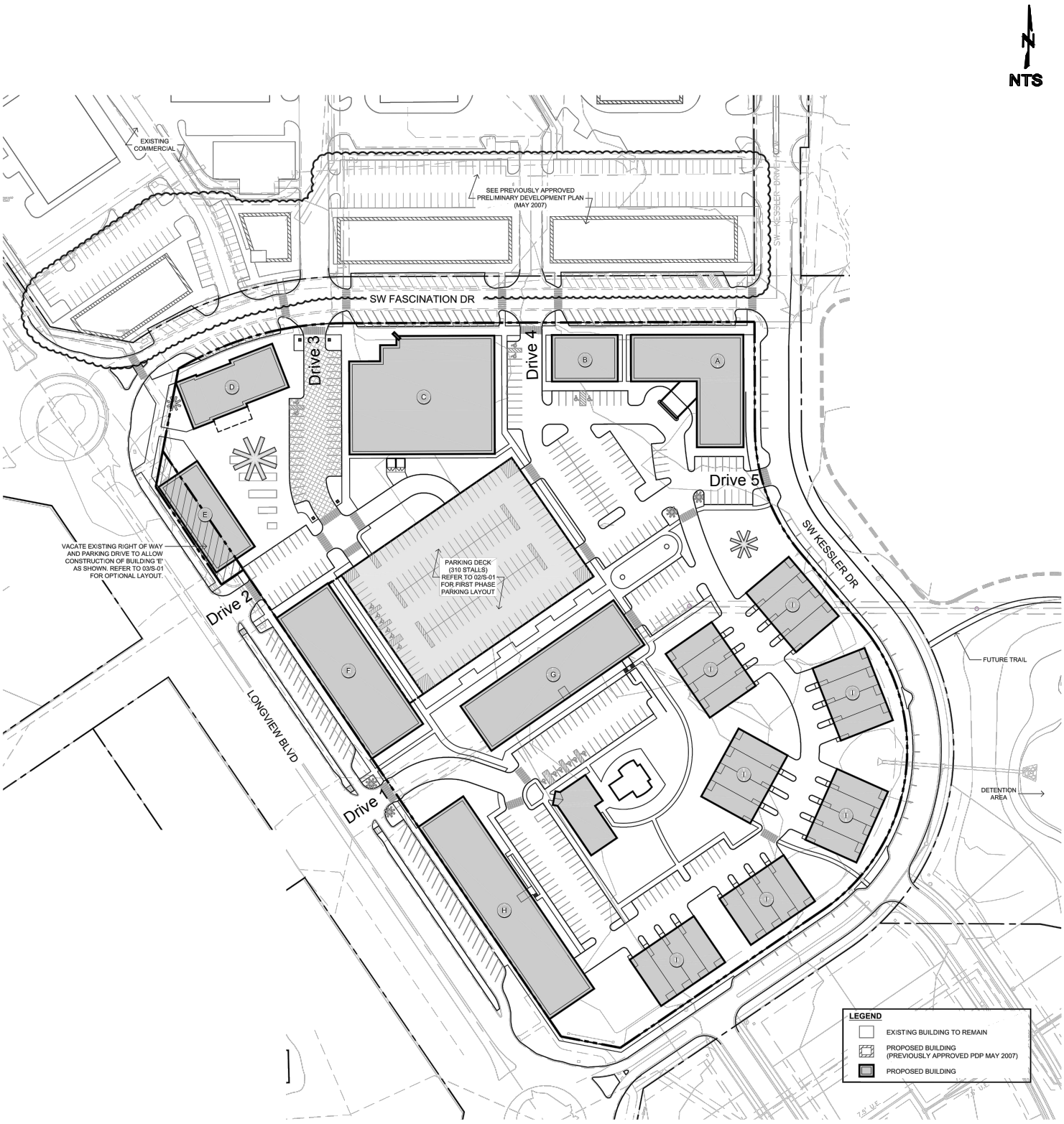
LEE'S SUMMIT, MISSOURI

TRAFFIC IMPACT STUDY

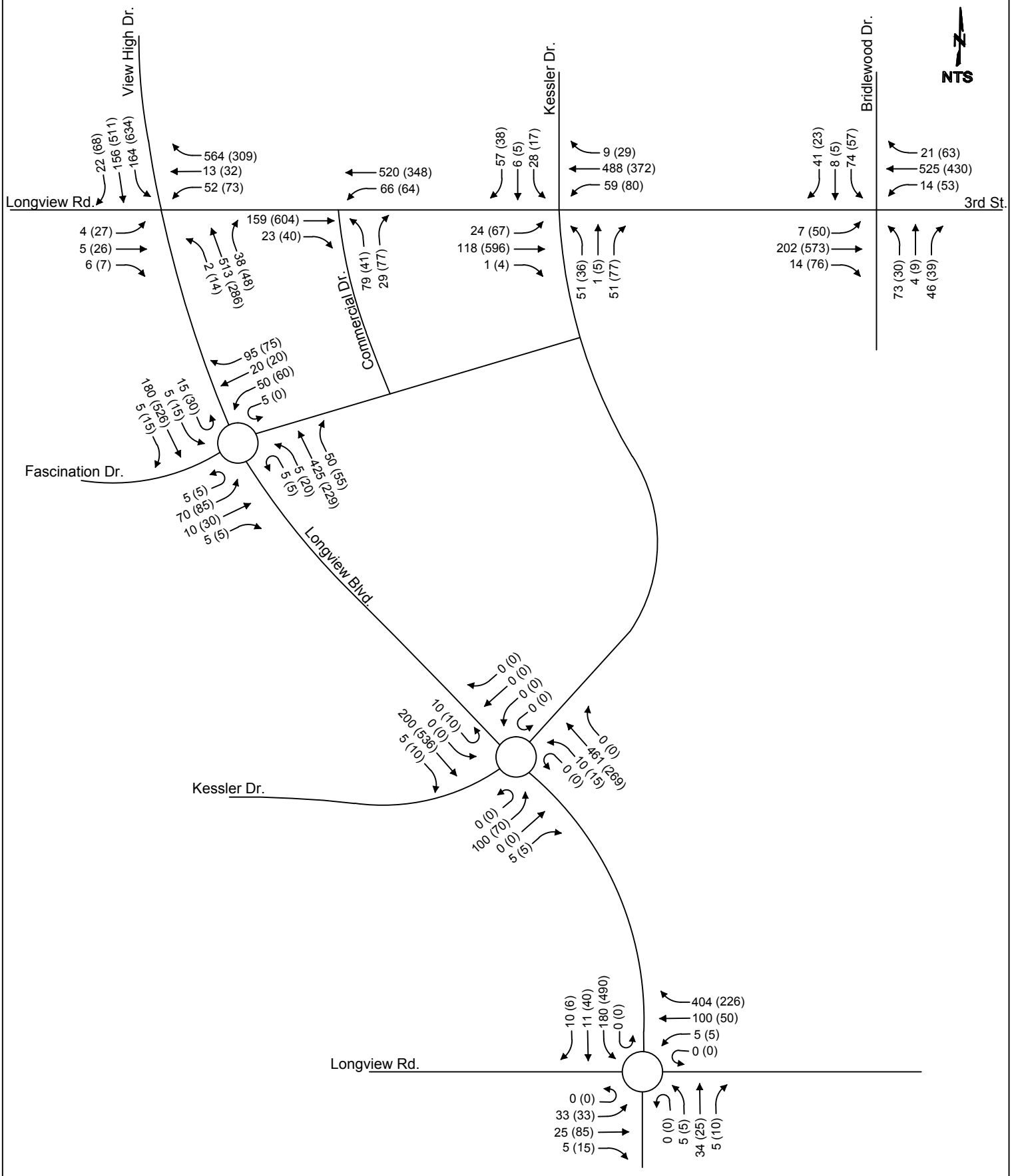
SEPTEMBER 2016

Olsson Associates Project No. 2016-2608

OLSSON ASSOCIATES



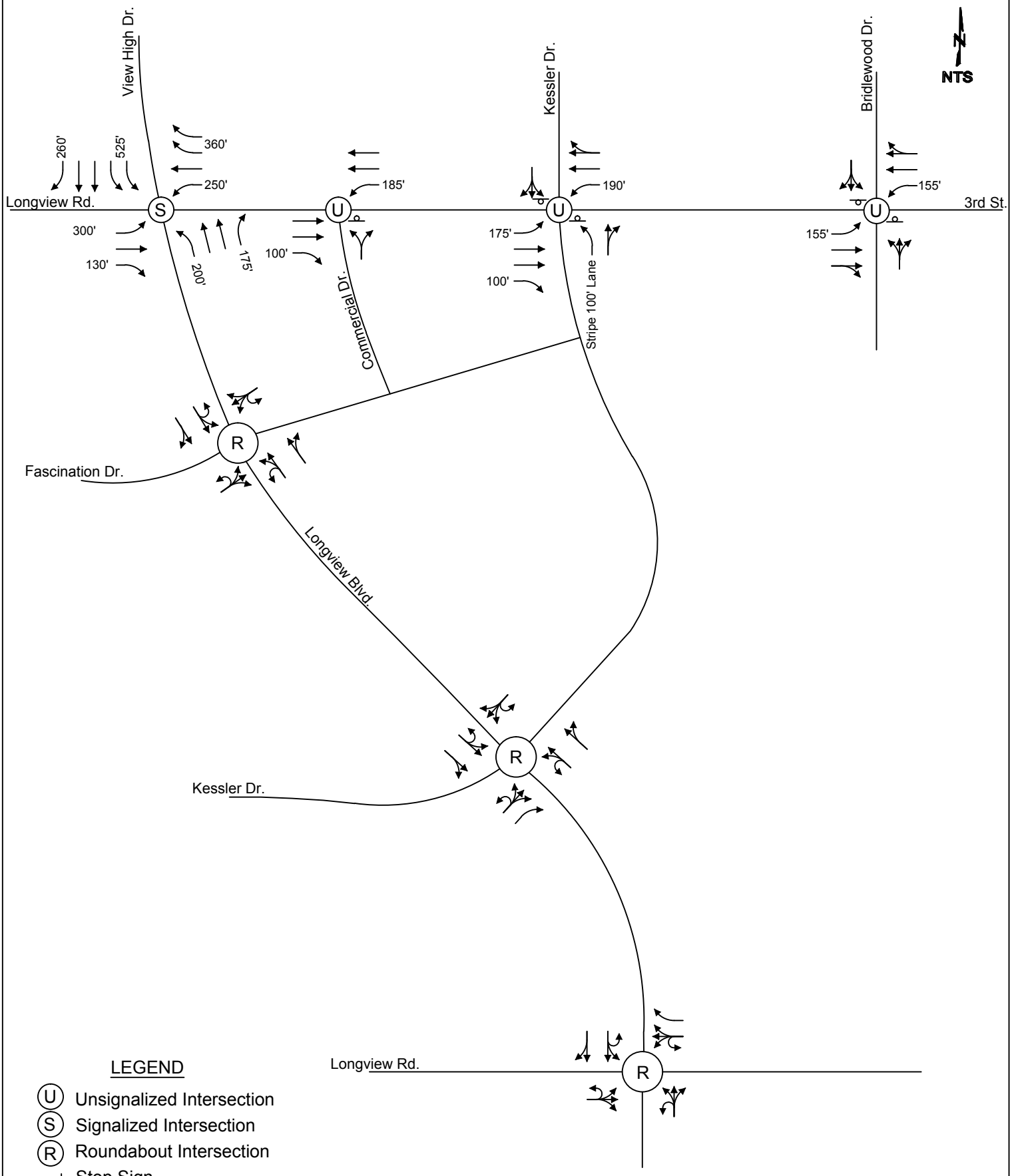
PROJECT NO: 016-2806	Site Plan	OLSSON ASSOCIATES	FIGURE
DRAWN BY: JMD		7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	2
DATE: 9/7/2016			



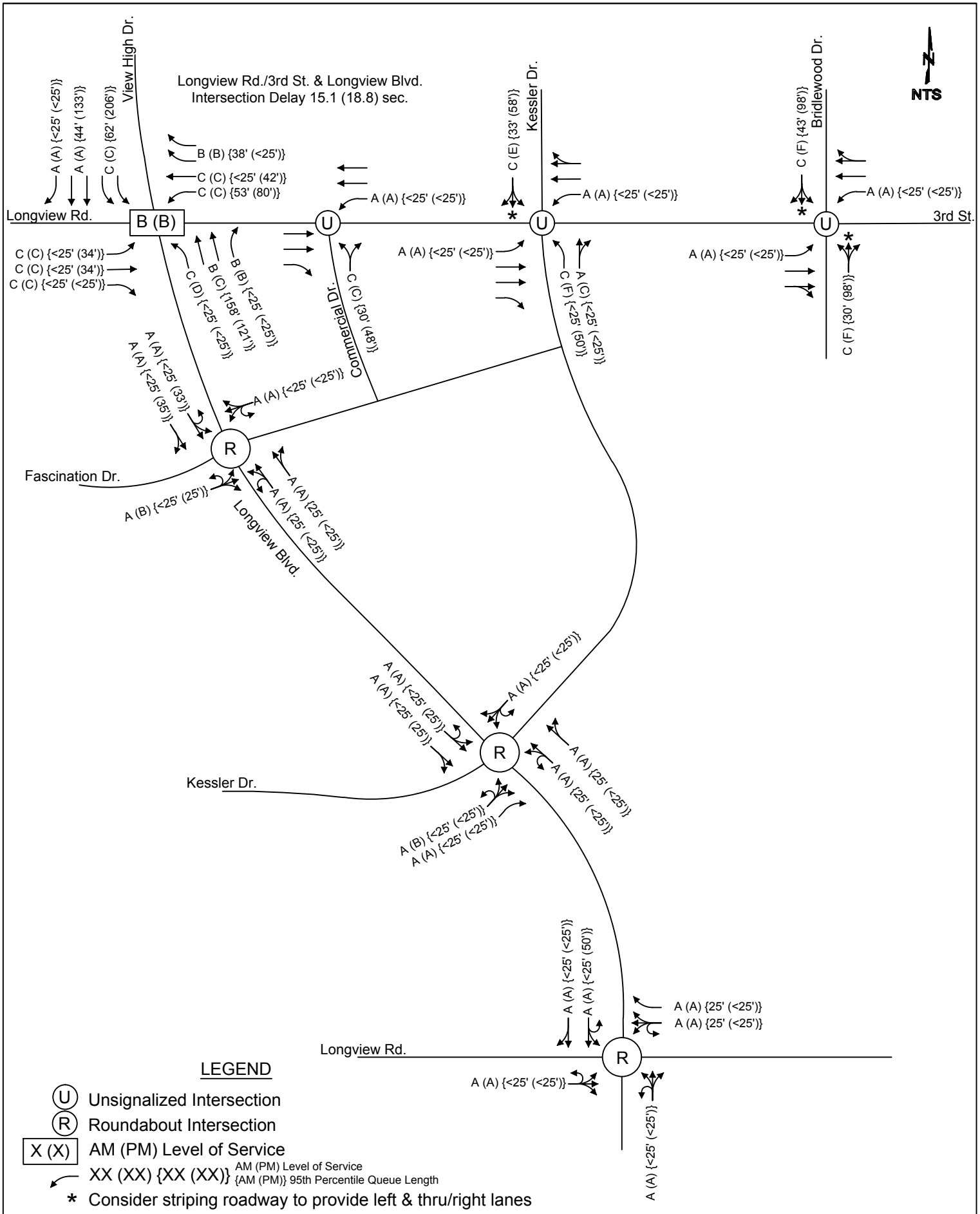
LEGEND

XX (XX) - AM (PM) Peak Hour Volumes

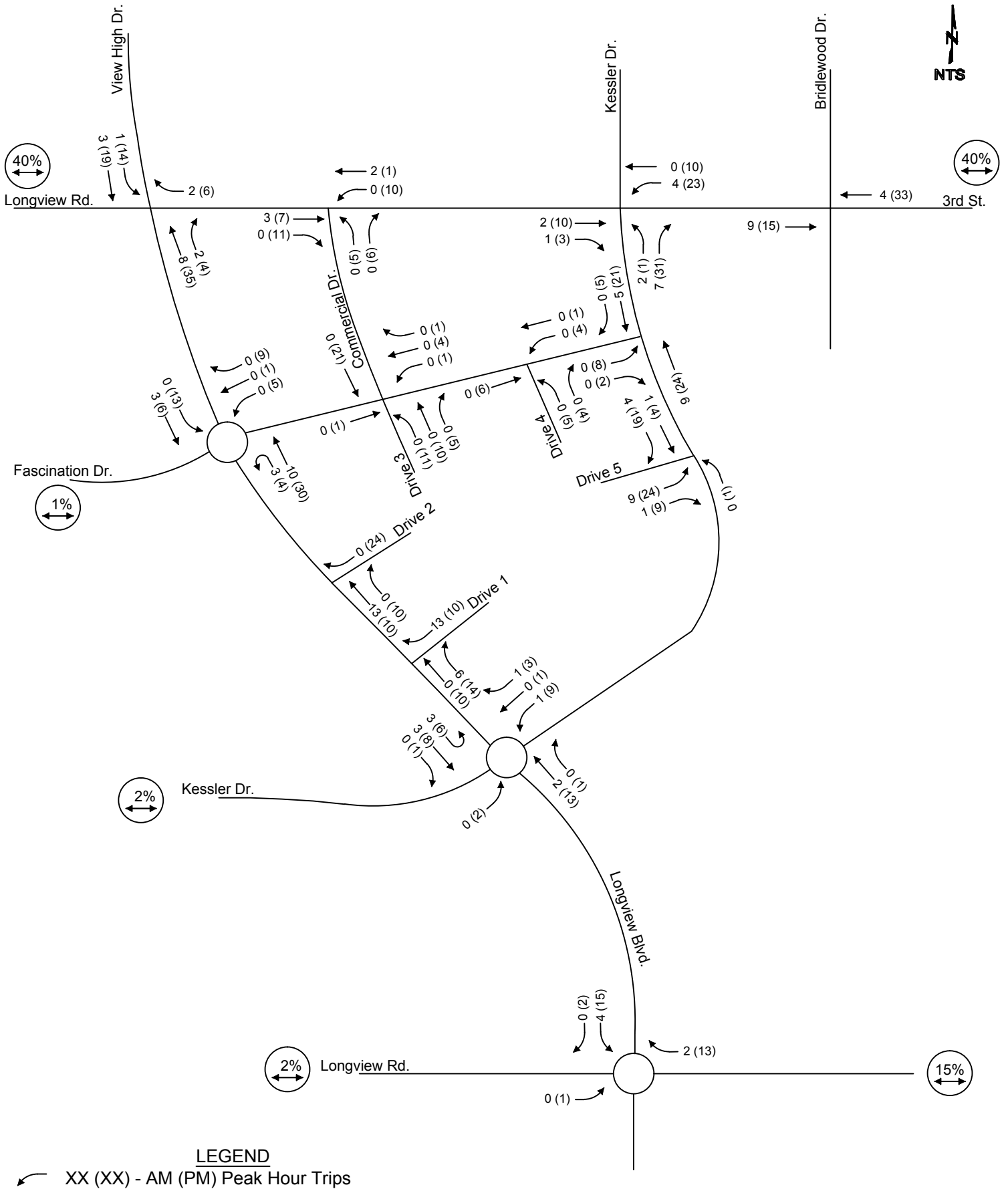
PROJECT NO: 016-2608	Existing plus Approved Peak Hour Volumes	OLSSON ASSOCIATES	7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	FIGURE
DRAWN BY: JRC				3
DATE: 9/7/2016				



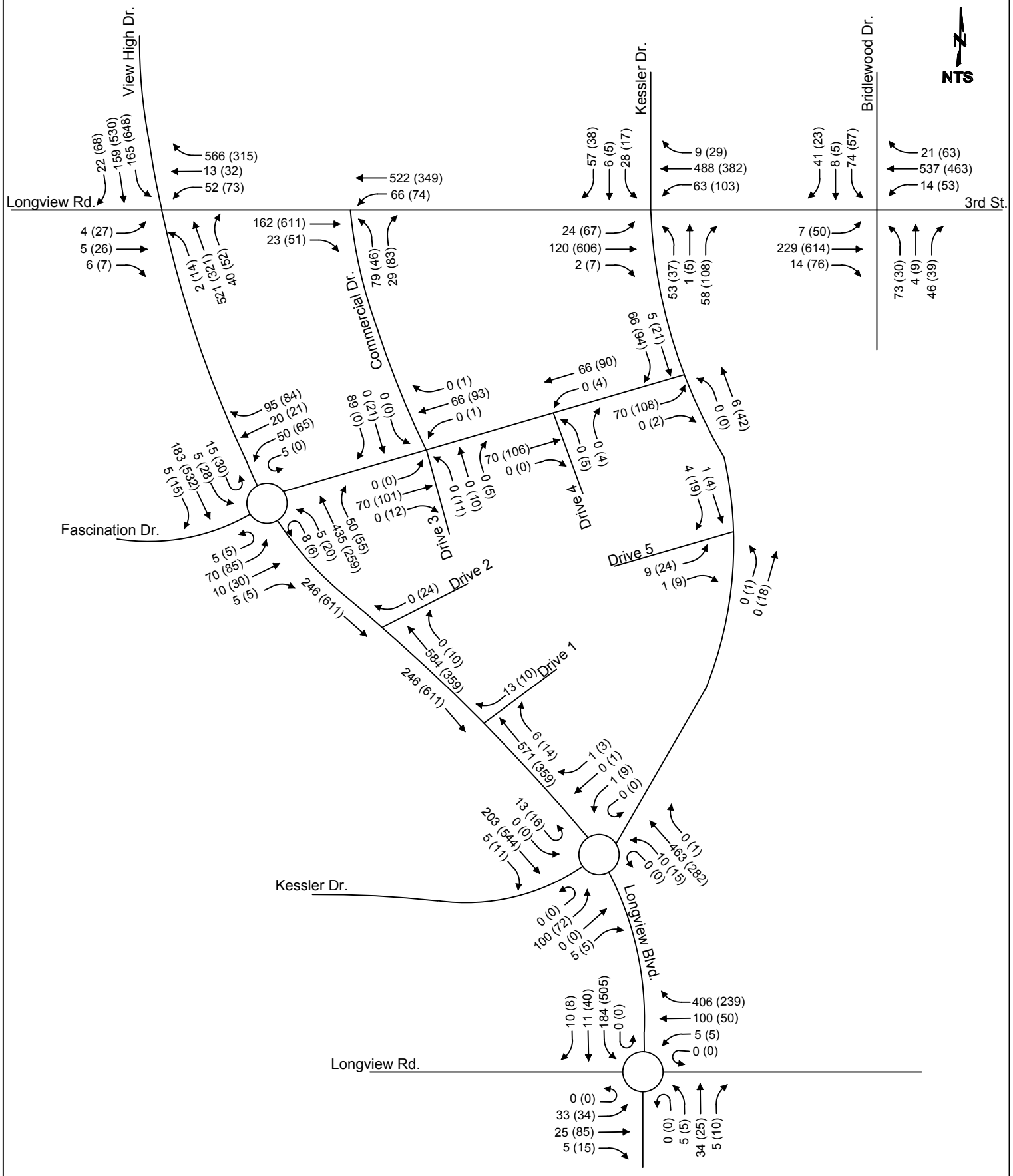
PROJECT NO: 016-2608	Existing plus Approved Lane Configurations and Traffic Control	OLSSON ASSOCIATES	7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	FIGURE
DRAWN BY: JRC				4
DATE: 9/7/2016				



PROJECT NO: 016-2608	Existing plus Approved Level of Service	OLSSON ASSOCIATES	7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	FIGURE
DRAWN BY: JMP				5
DATE: 9/7/2016				



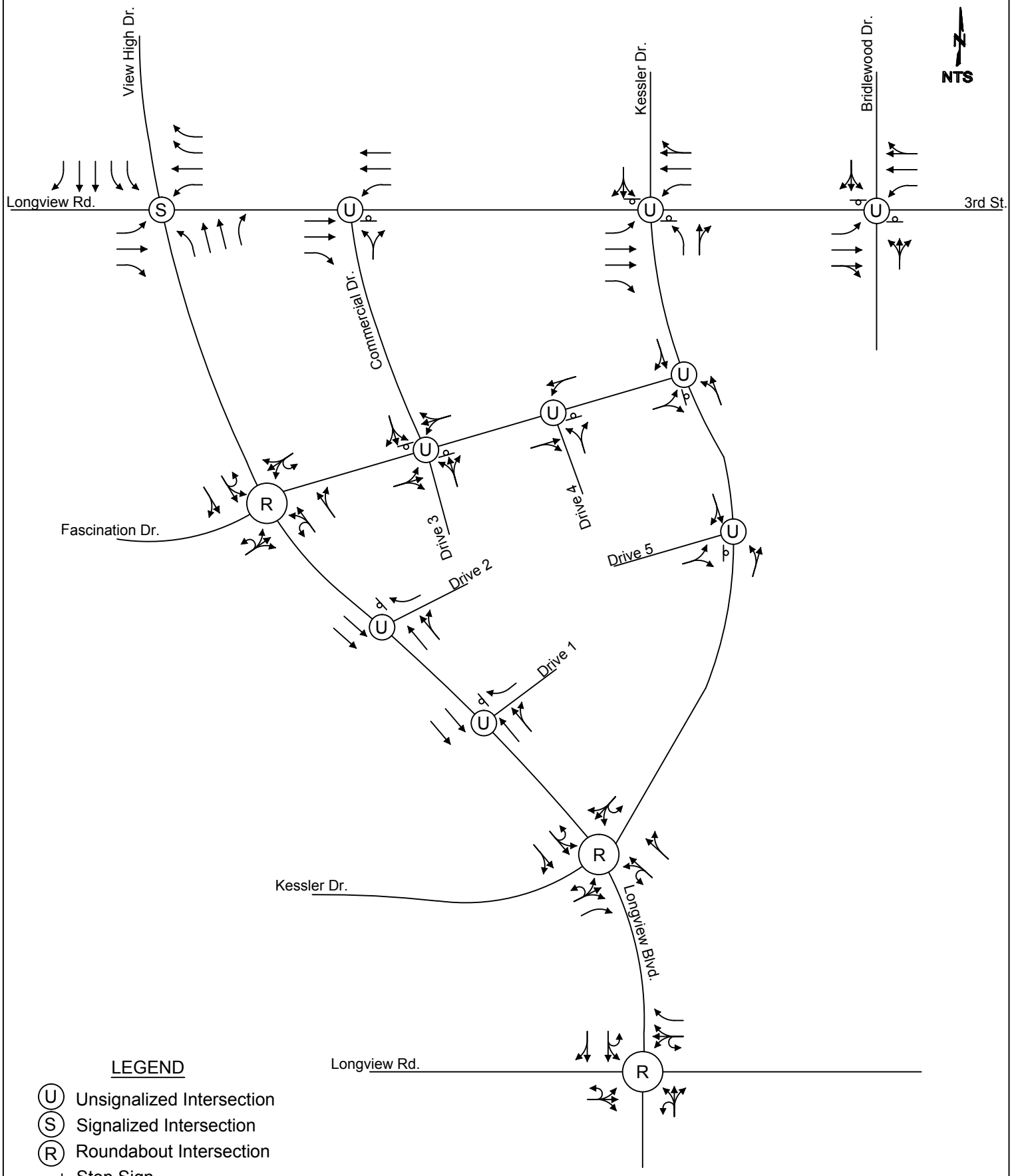
PROJECT NO: 016-2608	Phase 1 Trip Distribution	OLSSON ASSOCIATES	FIGURE
DRAWN BY: TCM		7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	6
DATE: 9/7/2016			



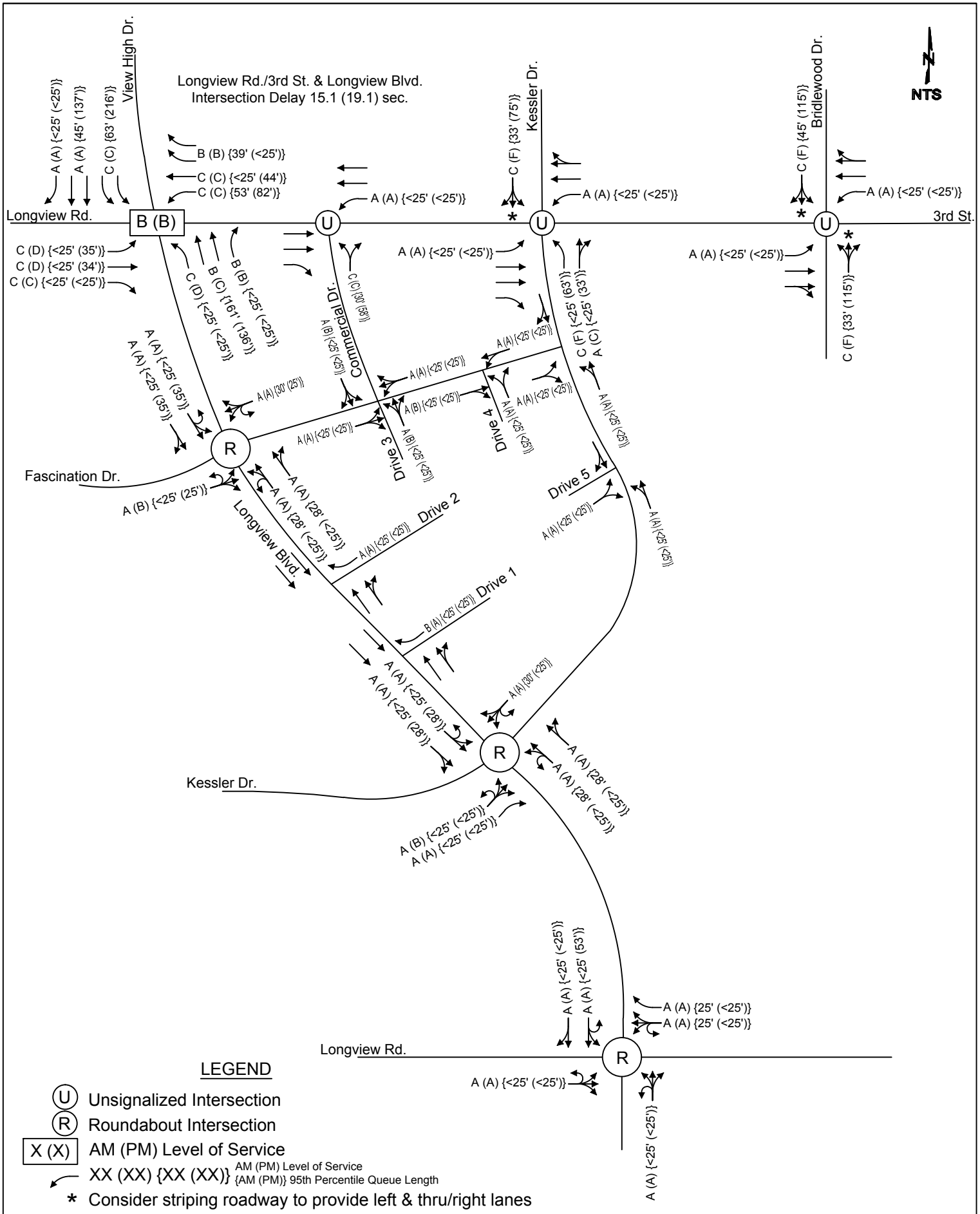
LEGEND

XX (XX) - AM (PM) Peak Hour Volumes

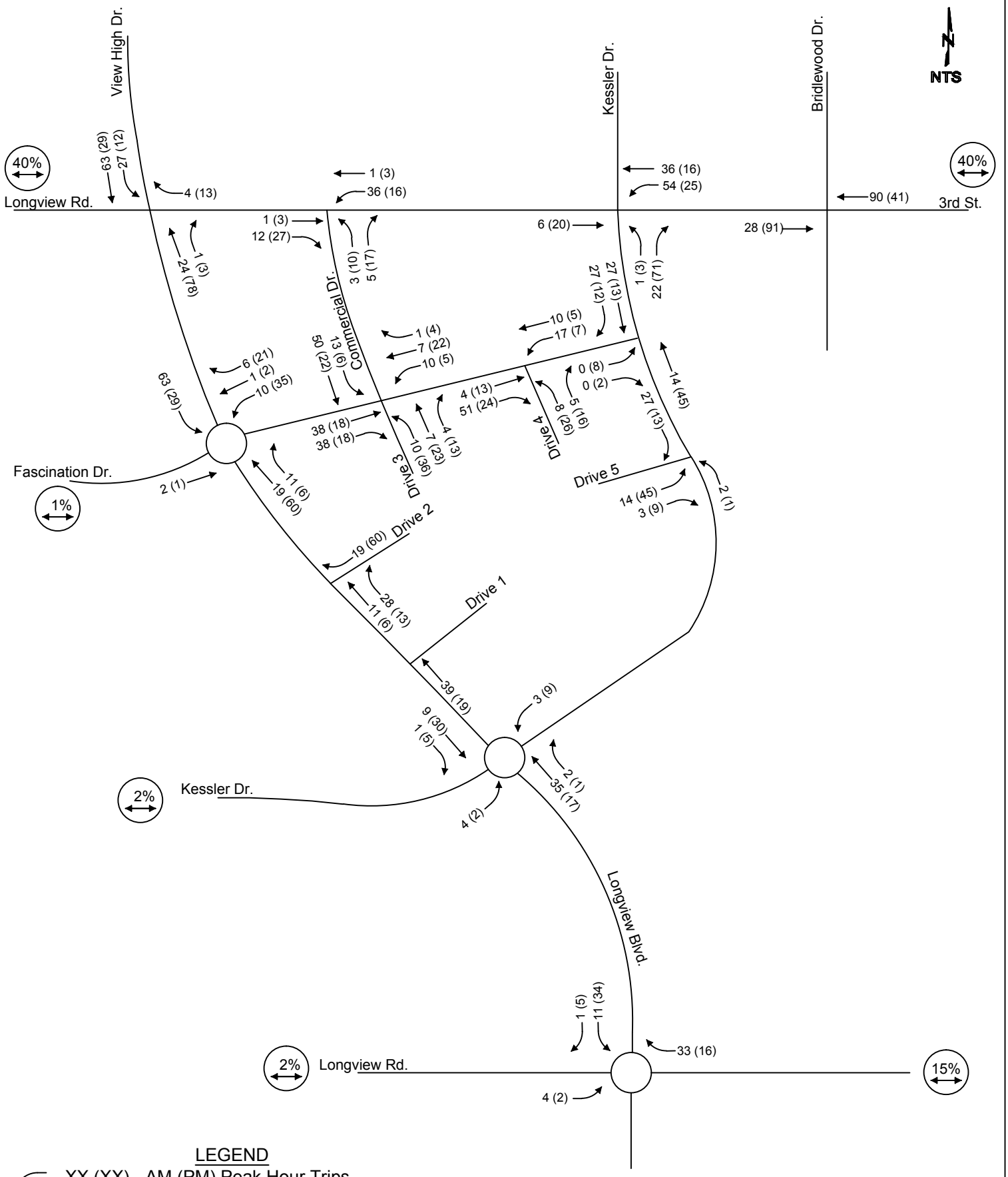
PROJECT NO: 016-2608	Existing plus Approved plus Phase 1 Peak Hour Volumes	OLSSON ASSOCIATES	7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	FIGURE
DRAWN BY: TCM				7
DATE: 9/7/2016				



PROJECT NO: 016-2608 DRAWN BY: TCM DATE: 9/7/2016	Existing plus Approved plus Phase 1 Lane Configurations and Traffic Control	OLSSON ASSOCIATES 7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	FIGURE 8



PROJECT NO: 016-2608	Existing plus Approved plus Phase 1 Level of Service	OLSSON ASSOCIATES	FIGURE
DRAWN BY: JMP		7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	9
DATE: 9/7/2016			

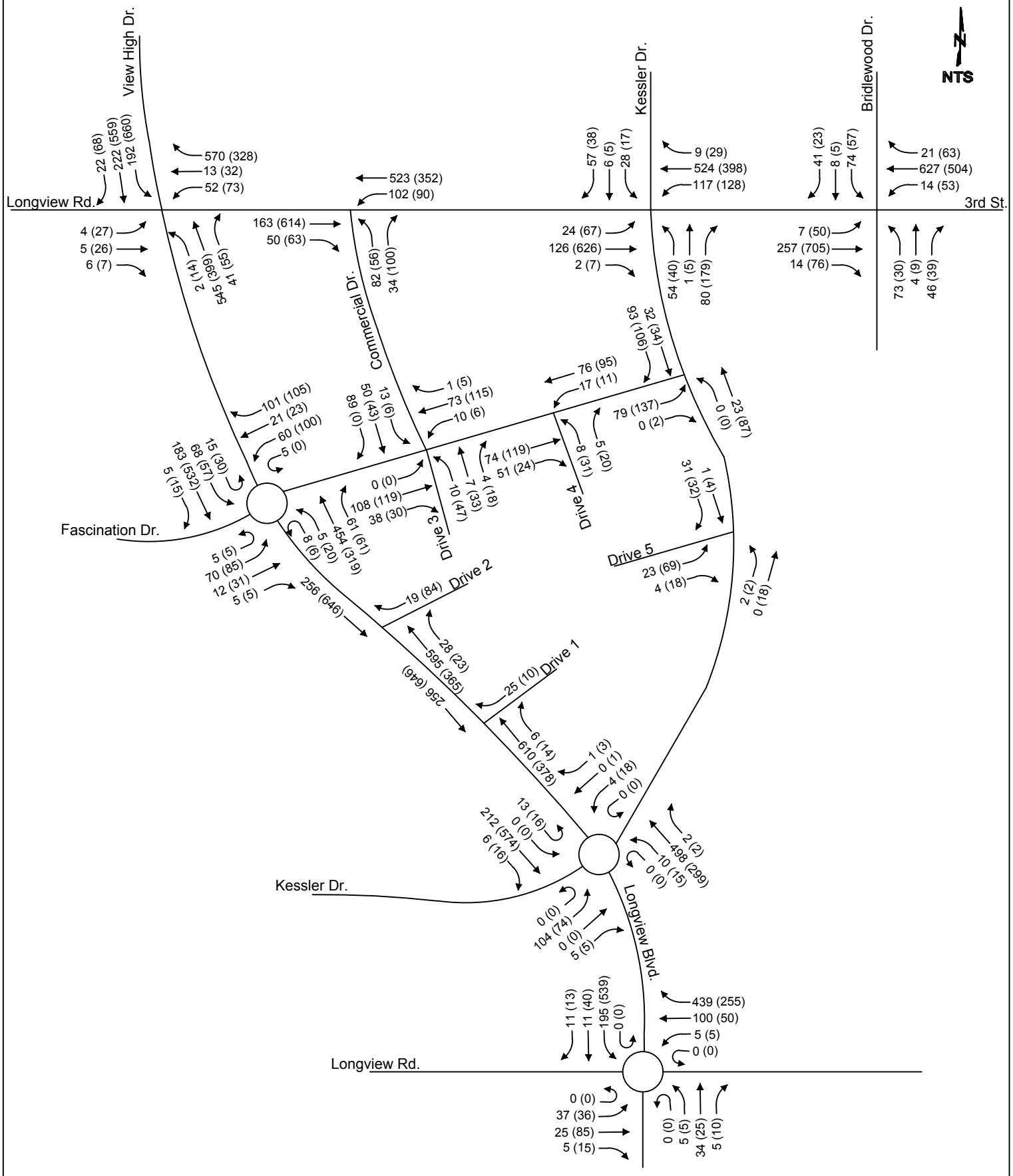


LEGEND

XX (XX) - AM (PM) Peak Hour Trips

XX% Trip Distribution Percentage

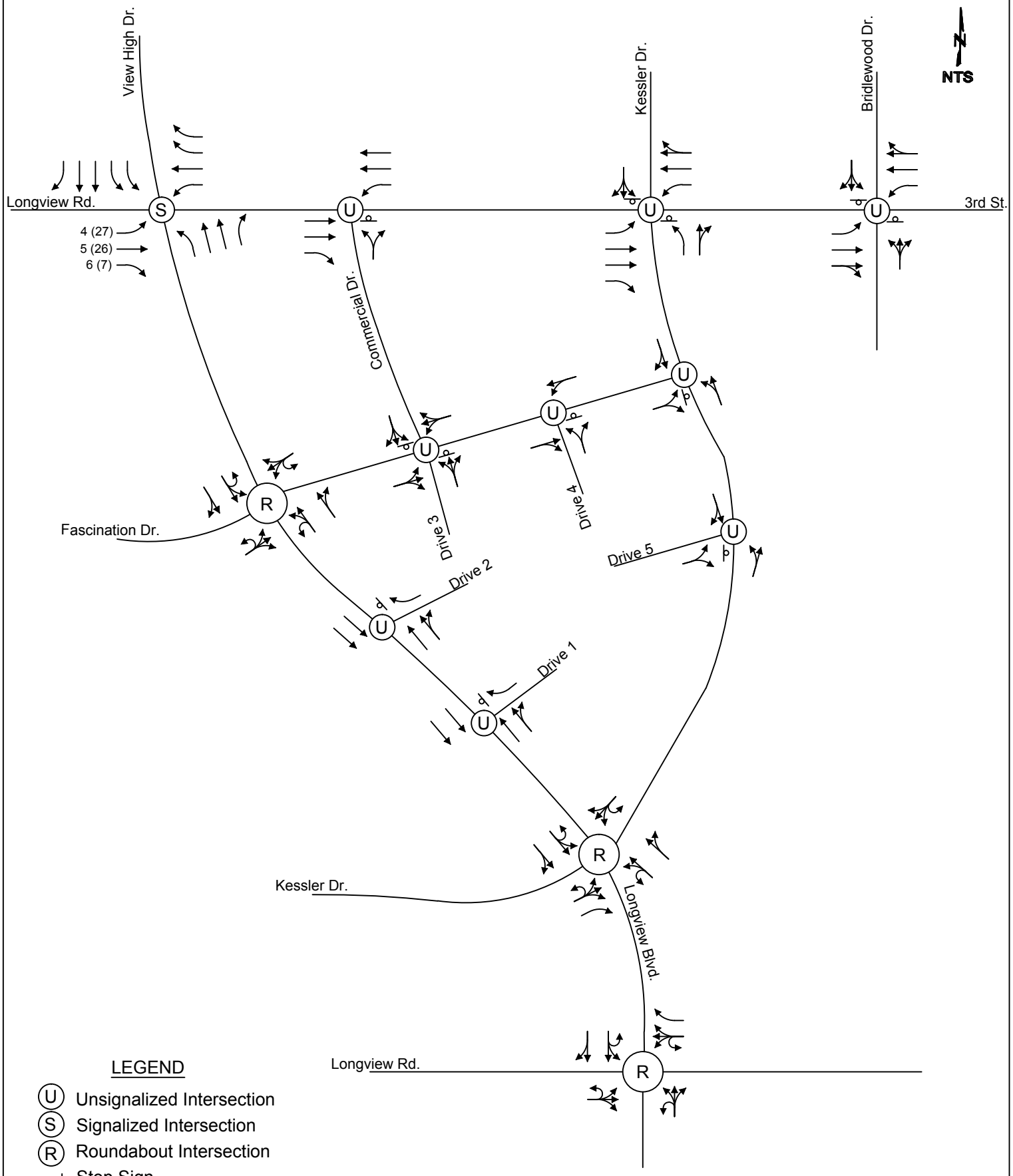
PROJECT NO: 016-2608	Full Build Trip Distribution	OLSSON ASSOCIATES	7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	FIGURE 10
DRAWN BY: TCM				
DATE: 9/7/2016				



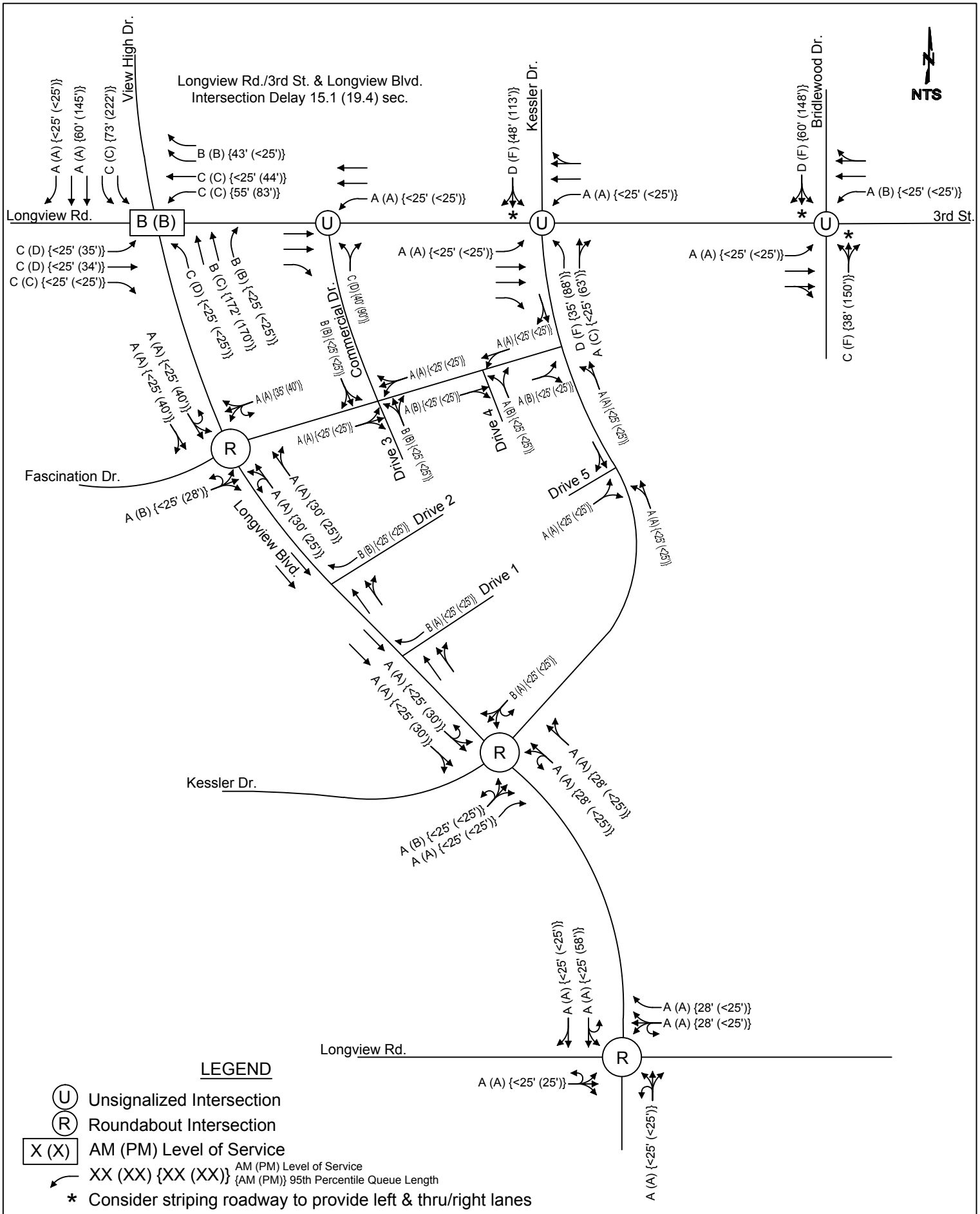
LEGEND

XX (XX) - AM (PM) Peak Hour Volumes

PROJECT NO: 016-2608	Existing plus Approved plus Full Build Peak Hour Volumes	OLSSON ASSOCIATES	FIGURE
DRAWN BY: TCM		7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	11
DATE: 9/7/2016			



PROJECT NO: 016-2608	Existing plus Approved plus Full Build Lane Configurations and Traffic Control	OLSSON ASSOCIATES	FIGURE
DRAWN BY: TCM		7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	12
DATE: 9/7/2016			



PROJECT NO: 016-2608	Existing plus Approved plus Full Build Level of Service	OLSSON ASSOCIATES	FIGURE
DRAWN BY: TCM		7301 West 133rd Street Suite 200 Overland Park, KS 66213-4750 TEL 913.381.1170 FAX 913.381.1174	13
DATE: 9/7/2016			

3rd Street and View High Traffic Impact Study

3rd Street and View High Drive
Lee's Summit, Missouri

Prepared for:

Parrot Properties, Inc.

Prepared by TranSystems

July 2016

TranSystems
EXPERIENCE | Transportation

are not operational. The Residences at New Longview development is 90-percent complete and occupied, while the most recent phases of Winterset Valley are approximately 10-percent complete and occupied. Portions of the some of the New Longview Commercial development are also complete and operational.

Future Traffic Volume Projections

Future traffic projections for this study were developed using future volumes provided by Lee's Summit staff from the City's travel demand model. Daily traffic volumes were provided from the 2040 model for the major streets surrounding the site. These 2040 volumes were compared to current daily traffic volumes for the same streets, which are shown on the City's traffic count map. In general, the traffic model projects traffic volumes on the streets adjacent to the site increase at a rate of 0.8% per year. This growth rate was then applied to the existing traffic volumes to establish background traffic volumes for future year 2040 conditions.

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 Traffic Engineering Handbook. 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. Each of the analysis methodologies and findings are described in the subsequent sections.

Trip Generation

Trip generation estimates were prepared using the Institute of Transportation Engineer's Trip Generation, 9th Edition. ***Table 1*** below shows the expected trips to be generated by the proposed development.

Table 1
Trip Generation

Land Use	Intensity	ITE Code	Average Weekday	A.M. Peak Hour			P.M. Peak Hour		
				Total	In	Out	Total	In	Out
Shopping Center	256,766 sf	820	12,535	278	172	106	1,127	541	586
Senior Adult Housing - Attached	25 du	252	96	5	2	3	8	4	4
Apartments	304 du	220	1,966	153	31	122	185	120	65
Total New Development Trips			***14,597***	***436***	***205***	***231***	***85***	***88***	***29***

Trip Distribution

The estimated trips generated by the proposed development were distributed onto the surrounding grid street network based on the trip distributions summarized on the following page in ***Table 2***. These

distributions are based on existing travel patterns, expected service area of the development, and engineering judgment. The detailed distribution patterns through the study intersections are shown in ***Appendix B***.

Table 2
Trip Distribution

Direction To/From	Retail Percentage	Residential Percentage
North on View High Drive	40%	60%
East on Chipman Road	10%	5%
East on 3rd Street	40%	30%
South on Longview Boulevard	10%	5%
Total	**100%**	**100%**

Traffic Operation Assessment

An assessment of traffic operations was made for the scenarios listed below. These scenarios allowed for comparison of the before and after impacts of the proposed development on the street network.

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

The study intersections were evaluated using the Synchro traffic analysis software package. Calculations were performed based on the methodologies outlined in the Highway Capacity Manual (HCM), 2000 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 3*** shows the upper limit of delay associated with each level of service for signalized and unsignalized intersections.

Table 3
Intersection Level of Service Delay Thresholds

Level of Service (LOS)	Signalized	Unsignalized
A	≤ 10 Seconds	≤ 10 Seconds
B	≤ 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 paths to avoid the longer delays. Other times the volumes on the unsignalized approaches are relatively minor when compared to the major street traffic, and traffic signal installation may increase the average delay to all users of the intersection.

Traffic queues are 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 are 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.

The LOS rating deemed acceptable varies by community, facility type and traffic control device. The City of Lee's Summit has designated LOS C, and the City of Kansas City has designated LOS D as the minimum desirable standard for signalized intersections. 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.

Existing Conditions

The results of the Existing Conditions intersection analyses are summarized in ***Table 4***. 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 4
Intersection Operational Analysis
Existing Conditions

Intersection	A.M. Peak Hour		P.M. Peak Hour	
Movement	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Chipman Road and View High Drive				
Westbound Left-Turn	*C*	*20.1*	***D***	***28.2***
Westbound Right-Turn	*B*	*11.5*	*B*	*10.1*
Southbound Left-Turn	*A*	*9.5*	*A*	*8.7*
109th Street and View High Drive				
Eastbound Left-Turn	*C*	*20.9*	***D***	***34.6***
Eastbound Right-Turn	*A*	*9.1*	*B*	*14.8*
Northbound Left-Turn	*A*	*8.1*	*A*	*9.6*

Table 4 – Continued
Intersection Operational Analysis
Existing Conditions

Intersection / Movement	A.M. Peak Hour LOS[1]	A.M. Peak Hour Delay[2]	P.M. Peak Hour LOS[1]	P.M. Peak Hour Delay[2]
View High Drive and golf course drive				
Eastbound	*B*	*10.5*	*B*	*10.5*
Northbound Left-Turn	*A*	*7.6*	*C*	*21.1*
3rd Street and View High Drive				
Traffic Signal	*B*	*16.2*	*B*	*18.3*
3rd Street and existing driveway				
Westbound Left-Turn	*A*	*7.5*	*A*	*8.5*
Northbound	*B*	*11.9*	*B*	*13.2*
3rd Street and Kessler Drive				
Eastbound Left-Turn	*A*	*8.4*	*A*	*7.9*
Westbound Left-Turn	*A*	*7.4*	*A*	*8.6*
Northbound Left-Turn	*B*	*11.6*	*C*	*17.8*
Northbound Shared Right-Turn/Through	*A*	*8.6*	*B*	*10.3*
Southbound Left-Turn	*B*	*14.6*	*C*	*17.3*
Southbound Shared Right-Turn/Through	*B*	*11.3*	*B*	*12.4*
3rd Street and Bridlewood Drive				
Eastbound Left-Turn	*A*	*8.4*	*A*	*8.1*
Westbound Left-Turn	*A*	*7.5*	*A*	*8.8*
Northbound Left-Turn	*B*	*14.7*	***D***	***25.9***
Northbound Shared Right-Turn/Through	*A*	*9.3*	*B*	*13.5*
Southbound Left-Turn	*C*	*19.1*	***D***	***26.8***
Southbound Shared Right-Turn/Through	*B*	*11.1*	*B*	*12.0*

1 – Level of Service
2 – Delay in seconds per vehicle

As shown in the table, most movements at the study intersections currently operate within acceptable levels of service during the peak hours. There are three movements that operate at LOS D during the P.M. peak hour. These intersections are discussed in the following paragraphs. The peak hour traffic signal warrant analyses are included in ***Appendix D***.

Chipman Road and View High Drive

The westbound left-turn movement currently operates at LOS D during the P.M. peak hour. Existing total minor street traffic volumes appear to satisfy the peak hour traffic signal warrant during the P.M. peak hour. However, the Manual on Uniform Traffic Control Devices (MUTCD) states that when there is a separate right-turn lane on the minor street approach, the right-turn volume should not be included in the warrant analysis if the movement enters the major street with minimal conflict. Since the westbound right-turn movement experiences little delay it should not be included in the warrant analysis. Without the westbound right turn volume, the peak hour warrant is not satisfied at this intersection.

109th Street and View High Drive

The eastbound left-turn movement is projected to operate at LOS D during the P.M. peak hour. Existing total minor street traffic volumes appear to satisfy the peak hour traffic signal warrant during the P.M.

peak hour. However, the eastbound right-turn movement experiences little delay and should not be included in the warrant analysis. Without the eastbound right turn volume, the peak hour warrant is nearly satisfied, since the lower single-lane minor street threshold is applicable.

Typically, the peak hour signal warrant is applied only in unusual cases such as at facilities that attract or discharge a large number of vehicles over a short time. Existing conditions at the intersection do not satisfy these conditions, therefore it is not likely that a signal is warranted at this time. However, when projecting traffic volumes into the future, the peak hour warrant can provide a good indication of the potential for future signalization.

3rd Street and Bridlewood Drive

The northbound and southbound left-turn movements are projected to operate at LOS D during the P.M. peak hour. Existing traffic volumes are less than the warranting volumes for the peak hour traffic signal warrant. Therefore it is not likely that a signal is warranted at this time.

Existing plus Approved Conditions

The development trips generated by the unbuilt portion of each approved development in the vicinity of the site were compiled to determine the effects of traffic from the approved developments that are yet to be completed. The results of the Existing plus Approved 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-7*** through ***A-9***. The Synchro output files are included in ***Appendix C***.

Table 5
Intersection Operational Analysis
Existing plus Approved Conditions

Intersection	A.M. Peak Hour		P.M. Peak Hour	
Movement	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Chipman Road and View High Drive				
Westbound Left-Turn	***D***	***30.5***	***F***	***>100***
Westbound Right-Turn	*B*	*12.9*	*B*	*11.7*
Southbound Left-Turn	*B*	*10.6*	*A*	*9.9*
109th Street and View High Drive				
Eastbound Left-Turn	***D***	***30.7***	***F***	***>100***
Eastbound Right-Turn	*A*	*9.7*	*C*	*20.3*
Northbound Left-Turn	*A*	*8.6*	*B*	*11.3*
View High Drive and golf course drive				
Eastbound	*B*	*12.3*	***E***	***36.2***
Northbound Left-Turn	*A*	*8.0*	*B*	*12.4*
3rd Street and View High Drive				
Traffic Signal	*B*	*17.9*	*C*	*21.8*
3rd Street and existing driveway				
Westbound Left-Turn	*A*	*7.7*	*A*	*9.4*
Northbound	*C*	*14.9*	*C*	*19.0*

Table 5 – Continued
Intersection Operational Analysis
Existing plus Approved Conditions

Intersection / Movement	A.M. Peak Hour LOS[1]	A.M. Peak Hour Delay[2]	P.M. Peak Hour LOS[1]	P.M. Peak Hour Delay[2]
3rd Street and Kessler Drive				
Eastbound Left-Turn	*A*	*8.6*	*A*	*8.4*
Westbound Left-Turn	*A*	*7.6*	*A*	*9.3*
Northbound Left-Turn	*C*	*19.3*	***F***	***53.7***
Northbound Shared Right-Turn/Through	*A*	*9.1*	*B*	*13.1*
Southbound Left-Turn	*C*	*22.8*	***E***	***42.2***
Southbound Shared Right-Turn/Through	*B*	*11.5*	*B*	*13.1*
3rd Street and Bridlewood Drive				
Eastbound Left-Turn	*A*	*8.7*	*A*	*8.7*
Westbound Left-Turn	*A*	*7.7*	*A*	*9.3*
Northbound Left-Turn	*C*	*18.7*	***E***	***41.6***
Northbound Shared Right-Turn/Through	*A*	*9.9*	*C*	*17.1*
Southbound Left-Turn	***D***	***25.1***	***F***	***51.4***
Southbound Shared Right-Turn/Through	*B*	*12.1*	*B*	*14.9*

1 – Level of Service
2 – Delay in seconds per vehicle

As shown in ***Table 5***, there are a number of movements at several study intersections that are projected to operate at undesirable levels of service during the peak hours with the addition of traffic from the approved but unbuilt developments. These undesirable levels of service are most prevalent in the P.M. peak hour, and are discussed in the following paragraphs. The peak hour traffic signal warrant analyses are shown in ***Appendix D***.

Chipman Road and View High Drive

The westbound left-turn movement is projected to operate at LOS D and LOS F during the A.M. and P.M. peak hours, respectively. As in the previous scenario, the westbound right-turn movement is projected to experience little delay and should be excluded from the warrant analysis. Without the westbound right-turn volume, the peak hour warrant is not satisfied at this intersection.

109th Street and View High Drive

The eastbound left-turn movement is projected to operate at LOS D and LOS F during the A.M. and P.M. peak hours, respectively. The peak hour warrant is projected to be satisfied during the P.M. peak hour with or without the eastbound right-turn volume. As such, the intersection should be monitored for traffic signal installation. Traffic signals are typically installed based on field measured traffic volumes, therefore the intersection should be regularly monitored as development continues in the area. A full warrant study should be conducted using the eight-hour signal warrants.

3rd Street and Kessler Drive

The northbound and southbound left-turn movements are projected to operate at LOS F and LOS E, respectively, during the P.M. peak hour. The northbound and southbound right-turn movements have a separate lane to bypass the left-turn traffic and are projected to experience minimal delays. With the

right-turn volumes excluded from the warrant analysis, the peak hour warrant is not projected to be satisfied at this intersection.

3rd Street and Bridlewood Drive

The northbound and southbound left-turn movements are projected to operate at LOS D to LOS F during the A.M. and P.M. peak hours. With the addition of traffic from the approved developments, traffic volumes are projected to be less than the warranting volumes for the peak hour traffic signal warrant. The volume of northbound or southbound left-turn traffic at the intersection will need to increase in order to satisfy the peak hour signal warrant. Future phases of Winterset Valley to the north of the intersection have the potential to increase southbound left-turn traffic at this intersection, depending on the routes drivers select. As such, the intersection should be regularly monitored as development continues in the area. A full warrant study should be conducted using the eight-hour signal warrants.

Existing plus Approved plus Development Conditions

The results of the Existing plus Approved plus Development conditions intersection analyses are summarized in ***Table 6***. This study scenario assessed the street system with the additional traffic generated by the proposed development. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on ***Figures A-10*** through ***A-12***. The Synchro output files are included in ***Appendix C***.

Table 6
Intersection Operational Analysis
Existing plus Approved plus Development Conditions

Intersection	A.M. Peak Hour		P.M. Peak Hour	
Movement	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Chipman Road and View High Drive				
Westbound Left-Turn	***E***	***48.8***	***F***	***>100***
Westbound Right-Turn	*B*	*13.9*	*B*	*14.5*
Southbound Left-Turn	*B*	*11.4*	*B*	*12.5*
109th Street and View High Drive				
Eastbound Left-Turn	***E***	***40.9***	***F***	***>100***
Eastbound Right-Turn	*B*	*10.1*	***D***	***34.8***
Northbound Left-Turn	*A*	*9.1*	*B*	*14.3*
View High Drive and golf course drive/ Drive A				
Eastbound Left-Turn	***F***	***58.7***	***F***	***>100***
Eastbound Right-Turn	*A*	*9.5*	*B*	*14.9*
Westbound Left-Turn	***F***	***86.9***	***F***	***>100***
Westbound Right-Turn	*C*	*16.2*	*B*	*14.5*
Northbound Left-Turn	*A*	*8.1*	*B*	*12.8*
Southbound Left-Turn	*B*	*12.6*	*B*	*12.7*
View High Drive and Drive B				
Westbound Right-Turn	*B*	*11.5*	*B*	*11.2*
3rd Street and View High Drive				
Traffic Signal	*B*	*18.2*	*C*	*23.3*

Table 6 – Continued
Intersection Operational Analysis
Existing plus Approved plus Development Conditions

Intersection / Movement	A.M. Peak Hour LOS[1]	A.M. Peak Hour Delay[2]	P.M. Peak Hour LOS[1]	P.M. Peak Hour Delay[2]
3rd Street and Drive C				
Eastbound Left-Turn	*A*	*8.7*	*A*	*8.5*
Westbound Left-Turn	*A*	*7.8*	*A*	*9.5*
Northbound	*C*	*17.8*	***D***	***31.7***
Southbound Left-Turn	*C*	*22.3*	***F***	***29.2***
Southbound Shared Right-Turn/Through	*B*	*10.1*	*A*	*9.8*
3rd Street and Kessler Drive				
Eastbound Left-Turn	*A*	*8.9*	*A*	*9.6*
Westbound Left-Turn	*A*	*7.6*	*A*	*9.6*
Northbound Left-Turn	*C*	*21.1*	***F***	***>100***
Northbound Shared Right-Turn/Through	*A*	*9.1*	*C*	*15.9*
Southbound Left-Turn	***E***	***36.7***	***F***	***>100***
Southbound Shared Right-Turn/Through	*B*	*11.6*	*B*	*13.3*
3rd Street and Bridlewood Drive				
Eastbound Left-Turn	*A*	*9.0*	*A*	*9.8*
Westbound Left-Turn	*A*	*8.0*	*B*	*10.6*
Northbound Left-Turn	*C*	*23.6*	***F***	***>100***
Northbound Shared Right-Turn/Through	*B*	*10.5*	***D***	***30.6***
Southbound Left-Turn	***D***	***33.1***	***F***	***>100***
Southbound Shared Right-Turn/Through	*B*	*13.1*	*C*	*24.3*

1 – Level of Service
2 – Delay in seconds per vehicle

Lee's Summit's Access Management Code (AMC) provides guidance on turn lane requirements, throat lengths, and spacings of intersections and driveways. All proposed site driveways are adequately spaced per the AMC, and have adequate throat lengths, with the exception of Drive C. The first access point along Drive C should be at least 125 feet north of 3rd Street, measured between adjacent curbs. Several turn lanes are to be constructed in accordance with the AMC, which are listed below. Each of these lanes should also include an appropriate taper in addition to the minimum storage length. These improvements are reflected in the analysis results shown in ***Table 6***.

View High Drive and Drive A

- Southbound left-turn lane with a minimum 300 feet of storage.
- Northbound right-turn lane with a minimum 200 feet of storage.
- Construct Drive A as a three-lane roadway with a center two-way left-turn lane.

View High Drive and Drive B

- Northbound right-turn lane with a minimum 150 feet of storage.

3rd Street and Drive C

- Eastbound left-turn lane with a minimum 200 feet of storage. This length may need to be reduced slightly, given the constraints of the available space to construct the turn lane within the existing raised median.

Table 7
Intersection Operational Analysis
Existing plus Approved plus Development Conditions – Signalization

Intersection / *Movement*	A.M. Peak Hour		P.M. Peak Hour	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Chipman Road and View High Drive *Traffic Signal*	*A*	*3.7*	*A*	*8.9*
109th Street and View High Drive *Traffic Signal*	*A*	*3.1*	*B*	*12.6*
View High Drive and golf course drive/ Drive A *Traffic Signal*	*B*	*11.2*	*B*	*10.9*
3rd Street and View High Drive *Traffic Signal*	*B*	*18.6*	*C*	*22.5*
3rd Street and Kessler Drive *Traffic Signal*	*C*	*20.2*	*B*	*16.2*
3rd Street and Bridlewood Drive *Traffic Signal*	*B*	*15.9*	*C*	*29.9*

1 – Level of Service
2 – Delay in seconds per vehicle

Traffic signals are projected to result in reduced delays for side-street movements. Conversely, signals will introduce delays for traffic on the major streets, and can increase the frequency of certain crash types. Therefore, signals should only be installed when warranted. These study intersections should be monitored for traffic signal installation as development occurs. Full warrant studies should be conducted using the eight-hour signal warrants. When signals are installed, they should be interconnected to ensure proper coordination and progression for through traffic along the arterial streets.

Development Phasing

The proposed development is to be constructed in phases. Drive A and Drive B are to be constructed with the initial phases of the development. These phases will include the apartments, senior adult housing, and the commercial area to the north of Drive B. All improvements identified for the View High Drive intersections with Drive A and Drive B will be necessary at the time these intersections are constructed.

As later phases of the development are constructed south of Drive B, the connection to Kessler Drive at 3rd Street will be constructed to provide circulation throughout the site. When this connection is made, the improvements identified for the 3rd Street and Kessler Drive intersection will be necessary. The improvements identified for 3rd Street and Drive C will be necessary when the intersection is constructed.

Future Year 2040 Conditions

The results of the future year 2040 conditions intersection analyses are summarized on the following page in ***Table 8***. This scenario provides an estimate of future traffic conditions in year 2040 by

considering the addition of background traffic growth to the existing plus approved plus development traffic volumes. The study intersections were evaluated with the lane configurations, traffic volumes, and traffic control devices shown on ***Figures A-13*** through ***A-15***. The Synchro output files are included in ***Appendix C***.

Table 8
Intersection Operational Analysis
Future Year 2040 Conditions

Intersection	A.M. Peak Hour		P.M. Peak Hour	
Movement	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Chipman Road and View High Drive				
Traffic Signal	*A*	*3.9*	*B*	*10.4*
109th Street and View High Drive				
Traffic Signal	*A*	*3.3*	*B*	*19.0*
View High Drive and golf course drive/ Drive A				
Traffic Signal	*B*	*12.9*	*B*	*11.4*
View High Drive and Drive B				
Westbound	*B*	*12.6*	*B*	*10.7*
3rd Street and View High Drive				
Traffic Signal	*C*	*24.9*	*C*	*23.3*
3rd Street and Drive C				
Eastbound Left-Turn	*A*	*8.8*	*A*	*8.5*
Westbound Left-Turn	*A*	*7.9*	*A*	*9.9*
Northbound	*B*	*16.8*	***D***	***37.8***
Southbound Left-Turn	*C*	*22.8*	***F***	***70.2***
Southbound Shared Right-Turn/Through	*A*	*9.5*	*A*	*9.2*
3rd Street and Kessler Drive				
Traffic Signal	*C*	*18.1*	*B*	*16.9*
3rd Street and Bridlewood Drive				
Traffic Signal	*C*	*15.3*	*B*	*12.0*

1 – Level of Service
2 – Delay in seconds per vehicle

As shown in the table, the study intersections are projected to operate within acceptable levels of service during the peak hours, except some of the side-street movements at 3rd Street and Drive C. Alternate routes will be available if delays are unacceptable to drivers.

Summary

TranSystems has completed a traffic impact study for the proposed mixed-use development to be located generally in the northeast corner of the 3rd Street and View High Drive intersection in Lee's Summit, Missouri. The purpose of this study was to assess the impact of the proposed development on the surrounding transportation system.

A number of development projects have been approved by the City in recent years in the vicinity of the proposed development site, but not all have been built and completed at the time of this study. These projects include New Longview Commercial, Residences at New Longview, Winterset Valley, Goddard

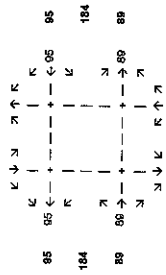
3rd and View High

Lee's Summit, Missouri

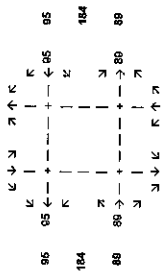
Approved Development Trips - New Longview Commercial (unbuilt portions)

A.M. Peak Hour

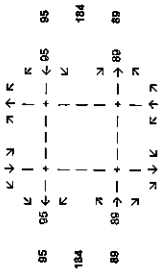
View High Dr. and Chipman Rd.



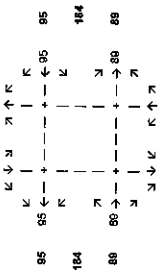
View High Dr. and 109th St.



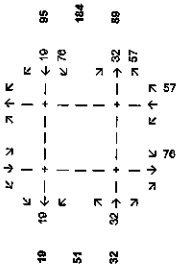
View High Dr. and Site Drive A/Golf Course Dr.



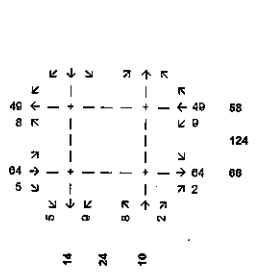
View High Dr. and Site Drive B



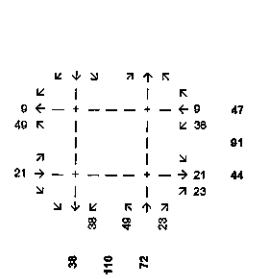
View High Dr. and 3rd St./Longview Rd.



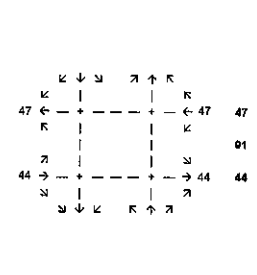
3rd St. and Site Drive C



3rd St. and Kessler Dr.



3rd St. and Bridlewood Dr.



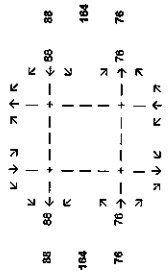
3rd and View High

Lee's Summit, Missouri

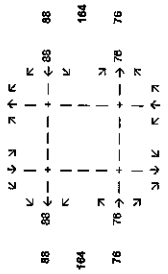
Approved Development Trips - New Longview Commercial (unbuilt portions)

P.M. Peak Hour

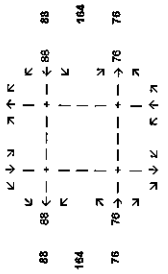
View High Dr. and Chipman Rd.



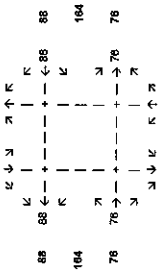
View High Dr. and 109th St.



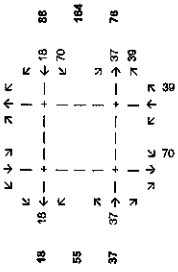
View High Dr. and Site Drive A/Golf Course Dr.



View High Dr. and Site Drive B



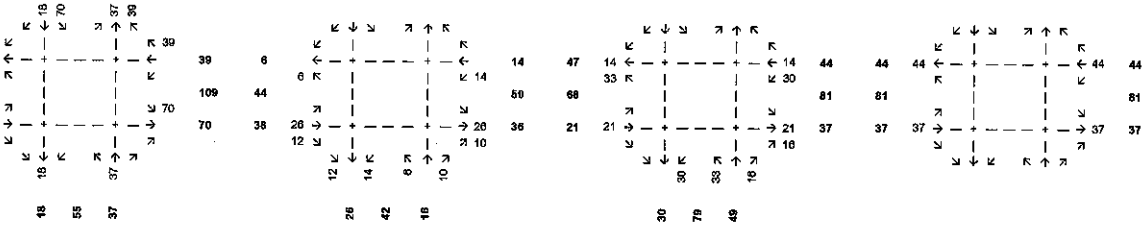
View High Dr. and 3rd St./Longview Rd.



3rd St. and Site Drive C

3rd St. and Kessler Dr.

3rd St. and Bridlewood Dr.



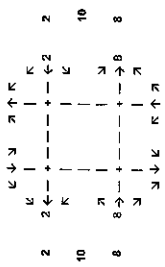
3rd and View High

Lee's Summit, Missouri

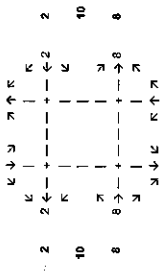
Approved Development Trips - Residences at New Longview (10% unbuilt portion)

A.M. Peak Hour

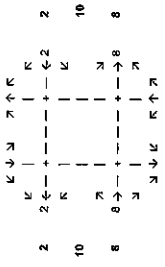
View High Dr. and Chipman Rd.



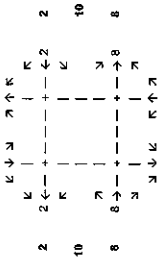
View High Dr. and 109th St.



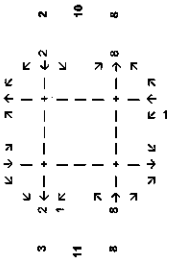
View High Dr. and Site Drive A/Golf Course Dr.



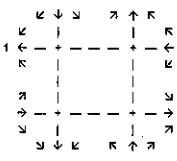
View High Dr. and Site Drive B



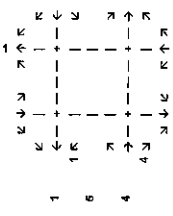
View High Dr. and 3rd St./Longview Rd.



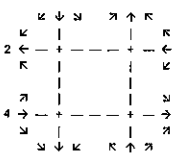
3rd St. and Site Drive C



3rd St. and Kessler Dr.



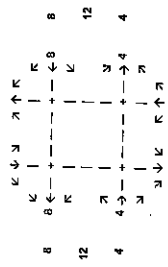
3rd St. and Bridlewood Dr.



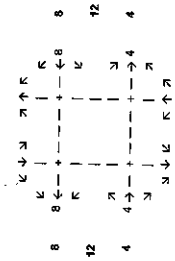
3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Residences at New Longview (10% unbuilt portion)
P.M. Peak Hour

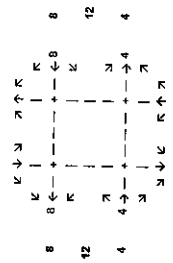
View High Dr. and Chipman Rd.



View High Dr. and 109th St.



View High Dr. and Site Drive A/Golf Course Dr.



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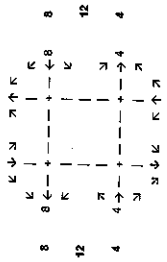
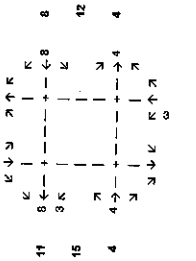


View High Dr. and 3rd St./Longview Rd.



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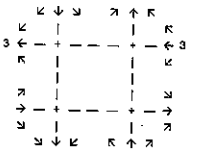
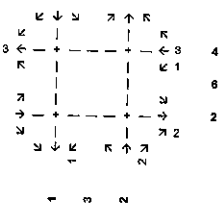
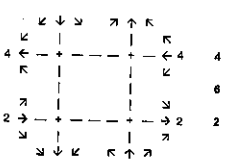


3rd St. and Kessler Dr.



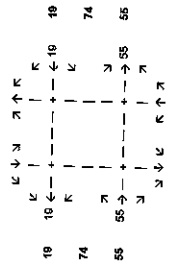
3rd St. and Bridlewood Dr.



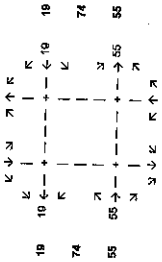
3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Winterset Valley (90% unbuilt portion)
A.M. Peak Hour

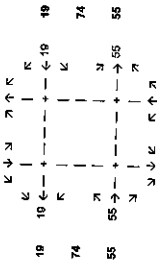
View High Dr. and Chipman Rd.



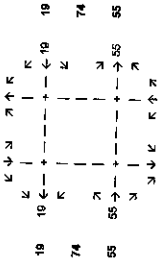
View High Dr. and 109th St.



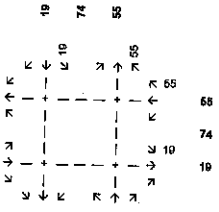
View High Dr. and Site Drive A/Golf Course Dr.



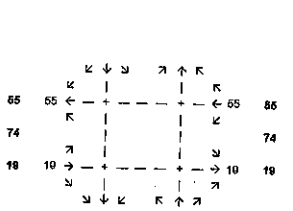
View High Dr. and Site Drive B



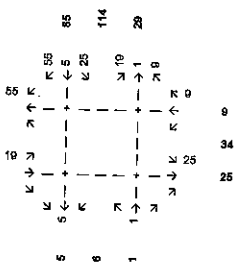
View High Dr. and 3rd St./Longview Rd.



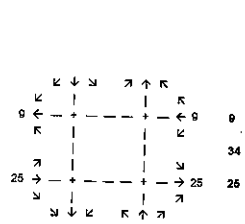
3rd St. and Site Drive C



3rd St. and Kessler Dr.



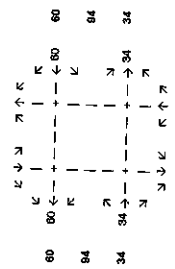
3rd St. and Bridlewood Dr.



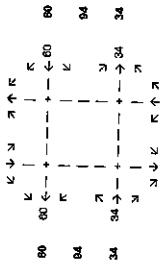
3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Winterset Valley (90% unbuilt portion)
P.M. Peak Hour

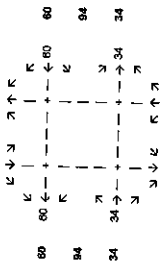
View High Dr. and Chipman Rd.



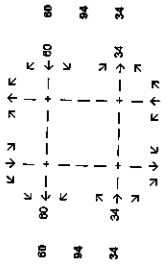
View High Dr. and 109th St.



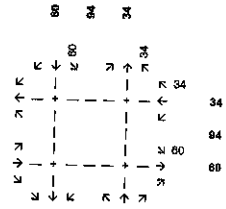
View High Dr. and Site Drive A/Golf Course Dr.



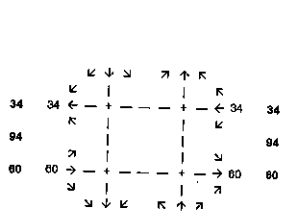
View High Dr. and Site Drive B



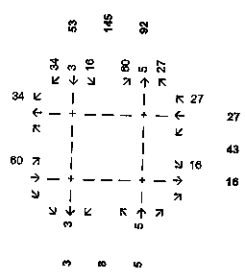
View High Dr. and 3rd St./Longview Rd.



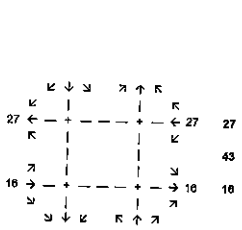
3rd St. and Site Drive C



3rd St. and Kessler Dr.



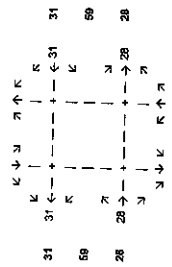
3rd St. and Bridlewood Dr.



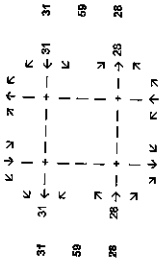
3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Goddard School
A.M. Peak Hour

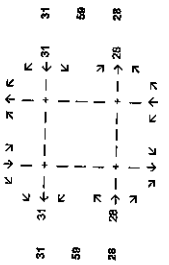
View High Dr. and Chipman Rd.



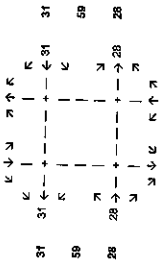
View High Dr. and 109th St.



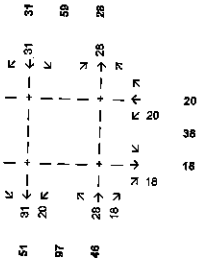
View High Dr. and Site Drive A/Golf Course Dr.



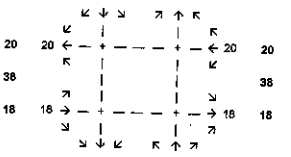
View High Dr. and Site Drive B



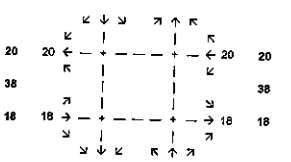
View High Dr. and 3rd St./Longview Rd.



3rd St. and Site Drive C



3rd St. and Kessler Dr.



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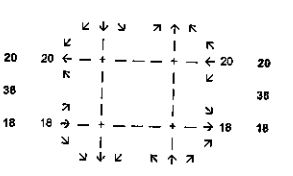
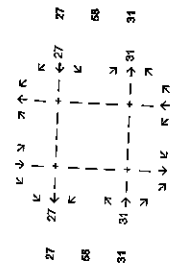


3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Goddard School
P.M. Peak Hour

View High Dr. and Chipman Rd.



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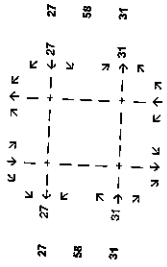
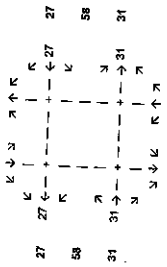


View High Dr. and Site Drive A/Golf Course Dr.



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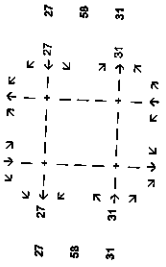

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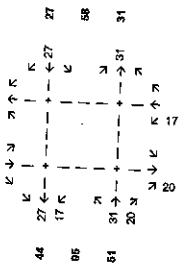

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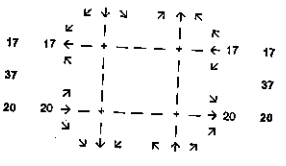

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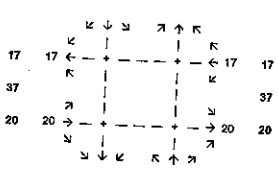

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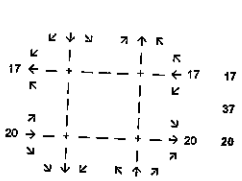

3rd and View High
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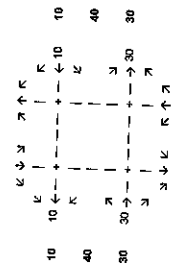

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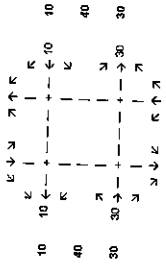

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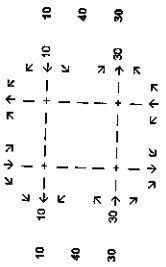

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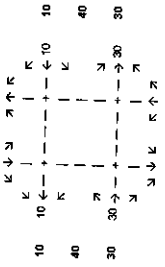

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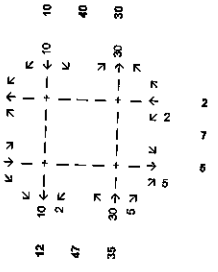

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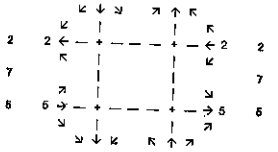

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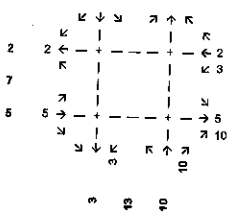

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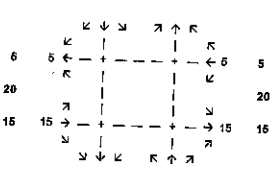

3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Kessler Ridge
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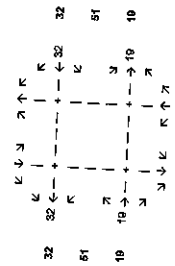
View High Dr. and Chipman Rd.



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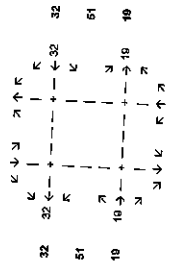

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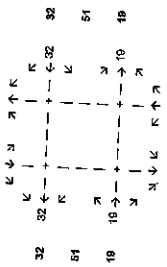

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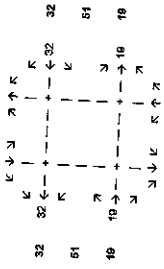

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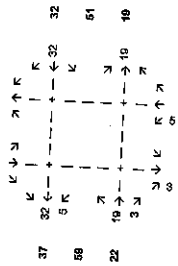

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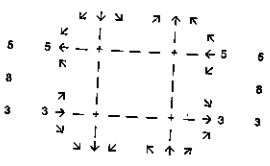

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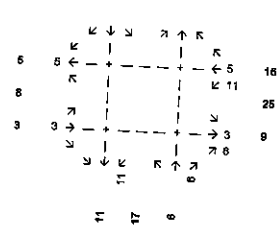

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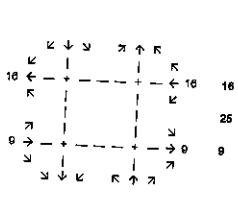

3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Autumn Leaves
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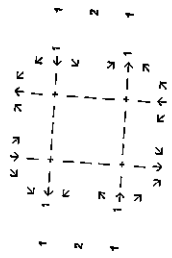

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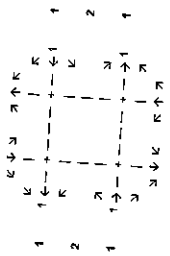

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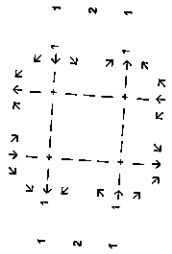

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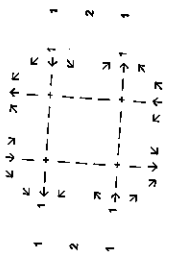

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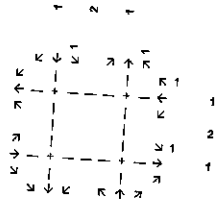

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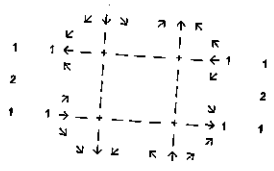

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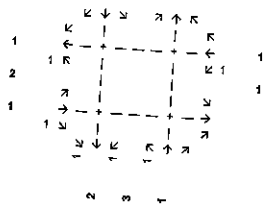

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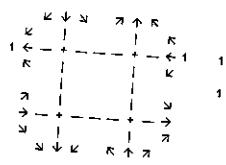
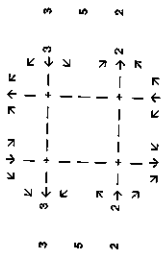


3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Autumn Leaves
P.M. Peak Hour

View High Dr. and Chipman Rd.



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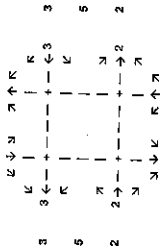

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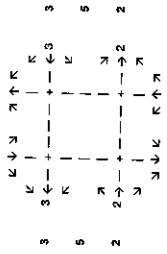

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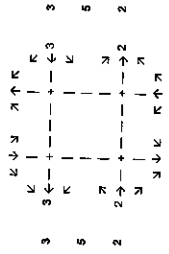

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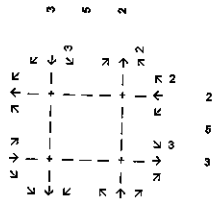

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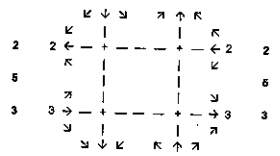

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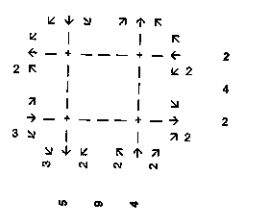

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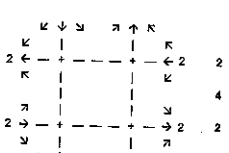

3rd and View High
Lee's Summit, Missouri

Approved Development Trips - Summit Church
P.M. Peak Hour

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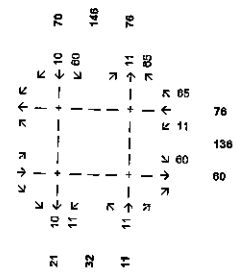

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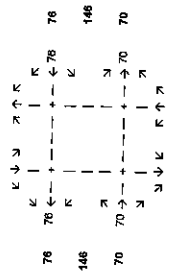

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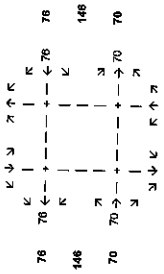

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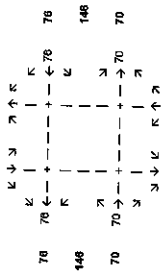

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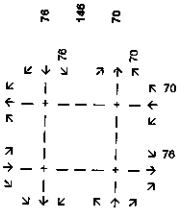

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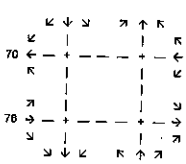

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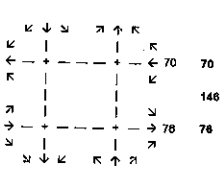

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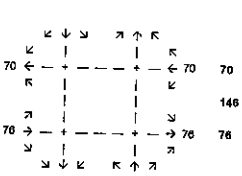

6/30/2016

Submitted by:

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RESIDENCES AT NEW LONGVIEW

LEE'S SUMMIT, MISSOURI

TRAFFIC IMPACT ANALYSIS

Draft Report

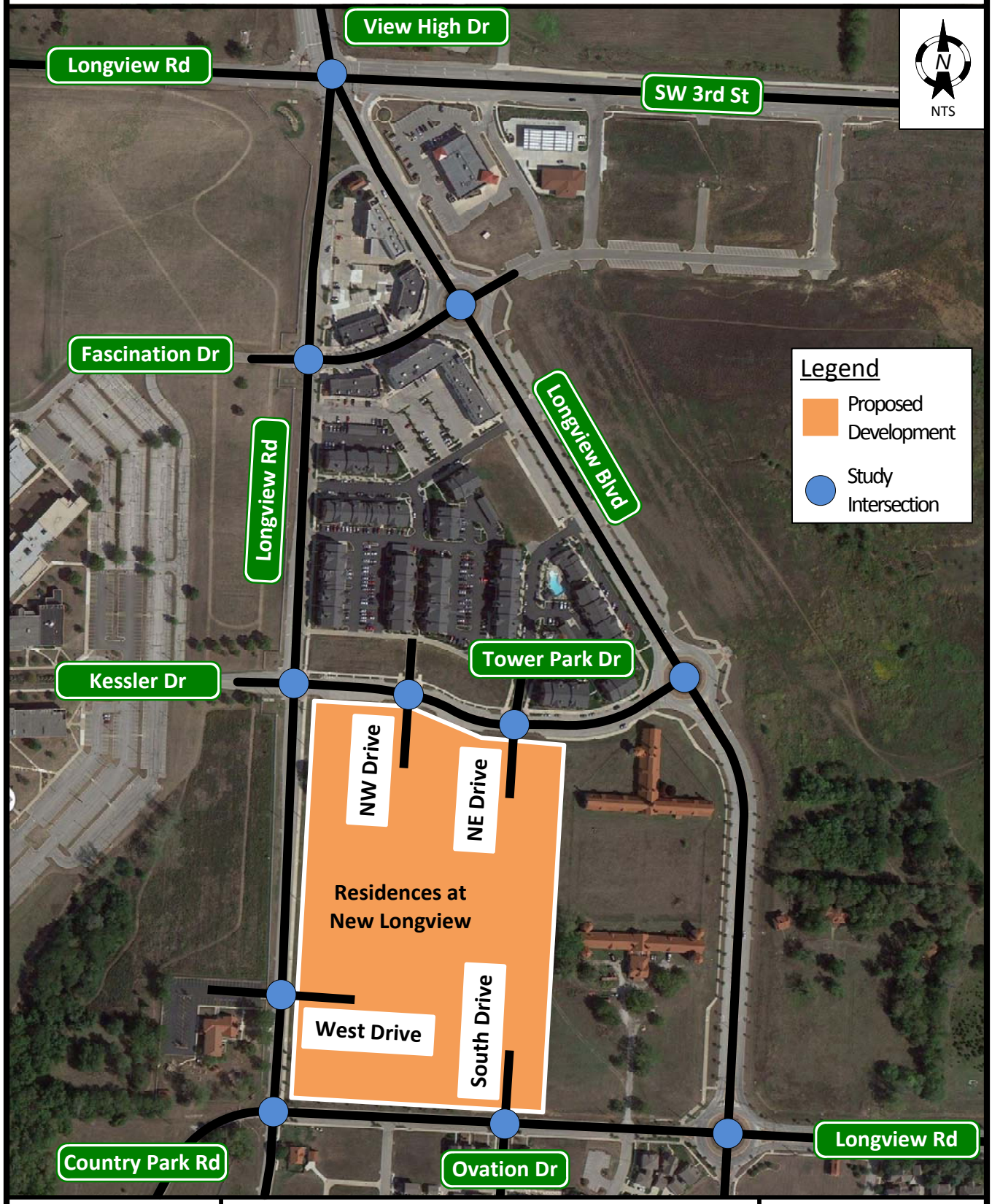
Prepared For:

Renaissance Infrastructure Consulting

January 24, 2014

17-J14-1714

Residences at New Longview | Lee's Summit, MO



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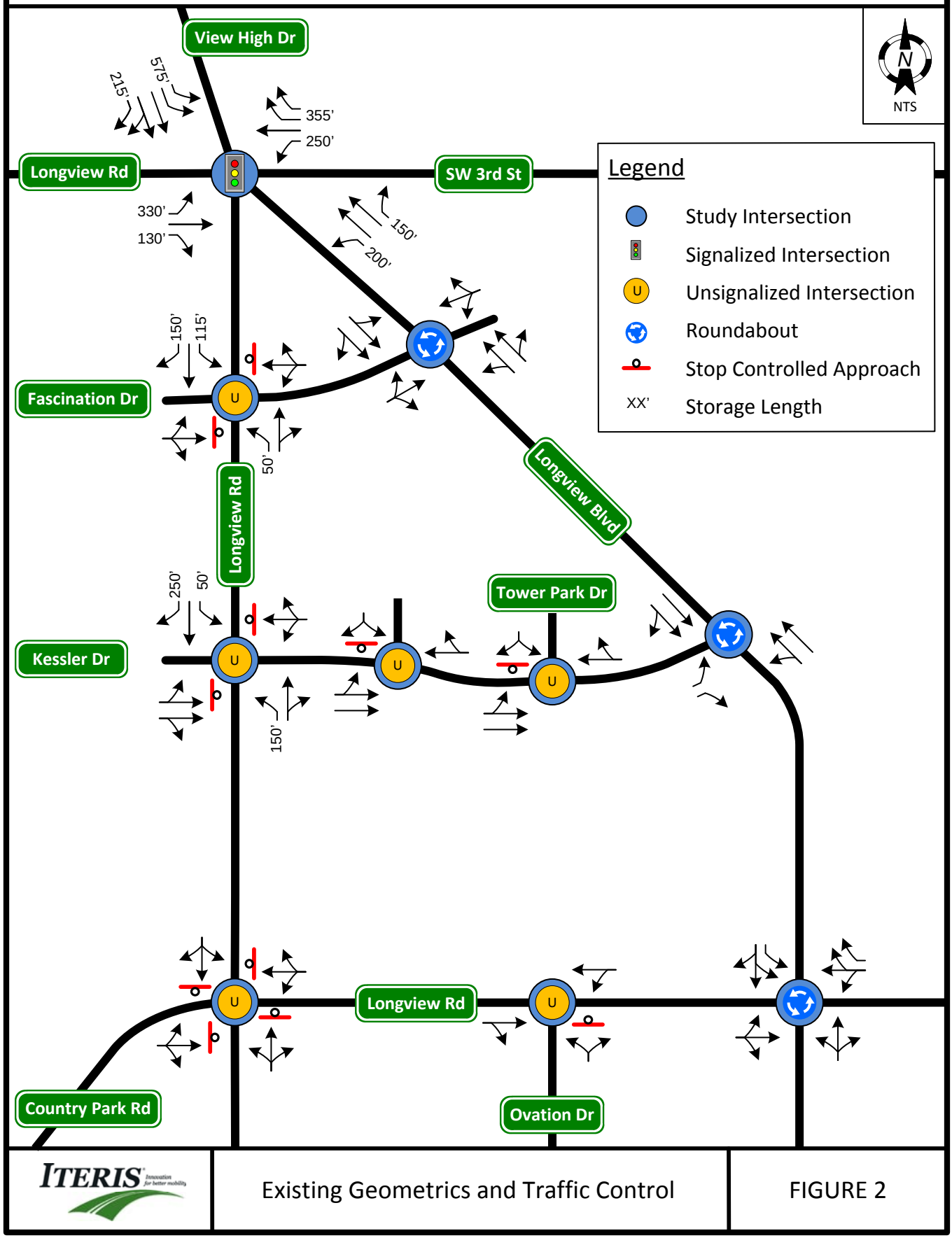
Vicinity Map

FIGURE 1



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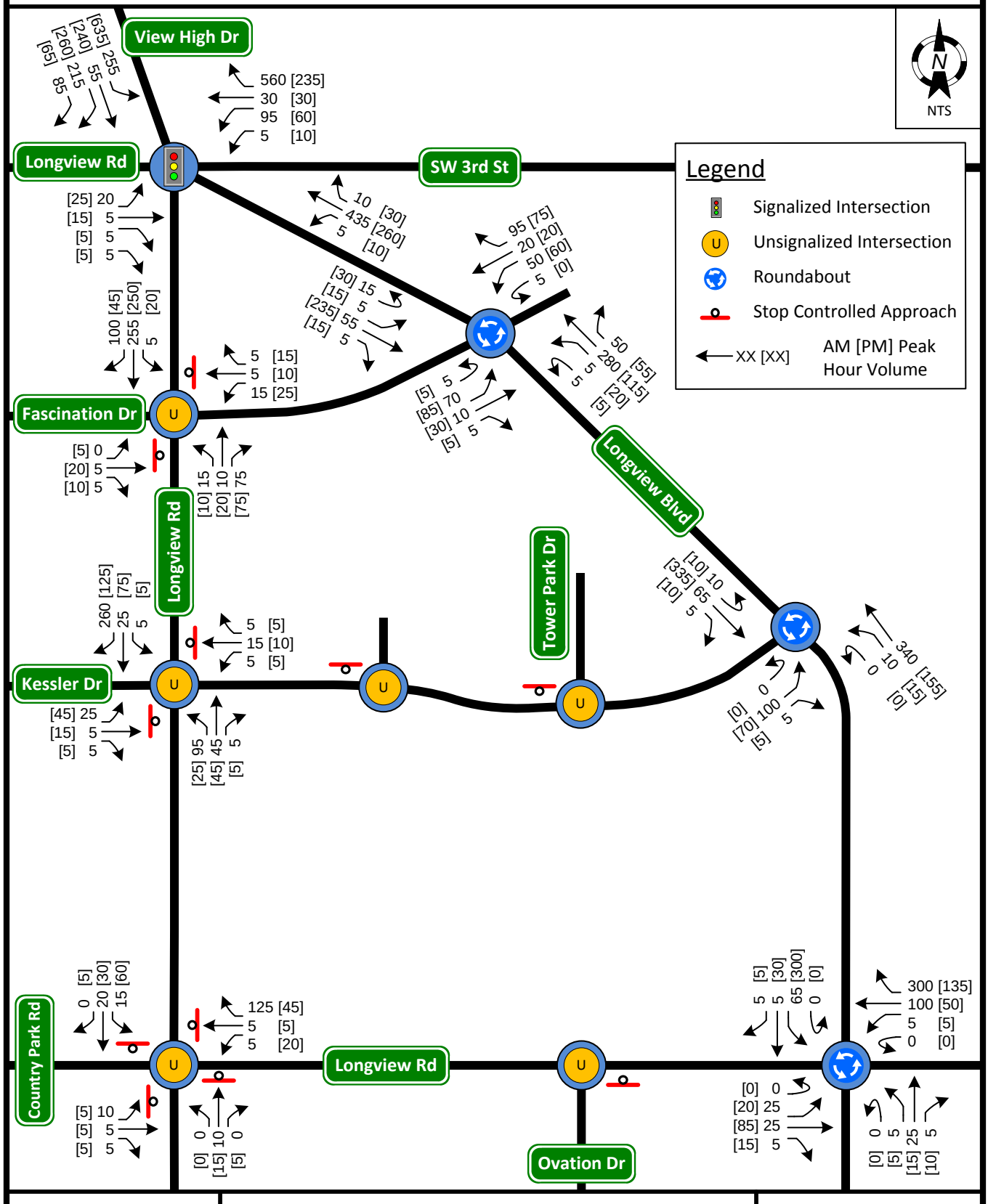
Existing Geometrics and Traffic Control

FIGURE 2



Existing Traffic Volumes

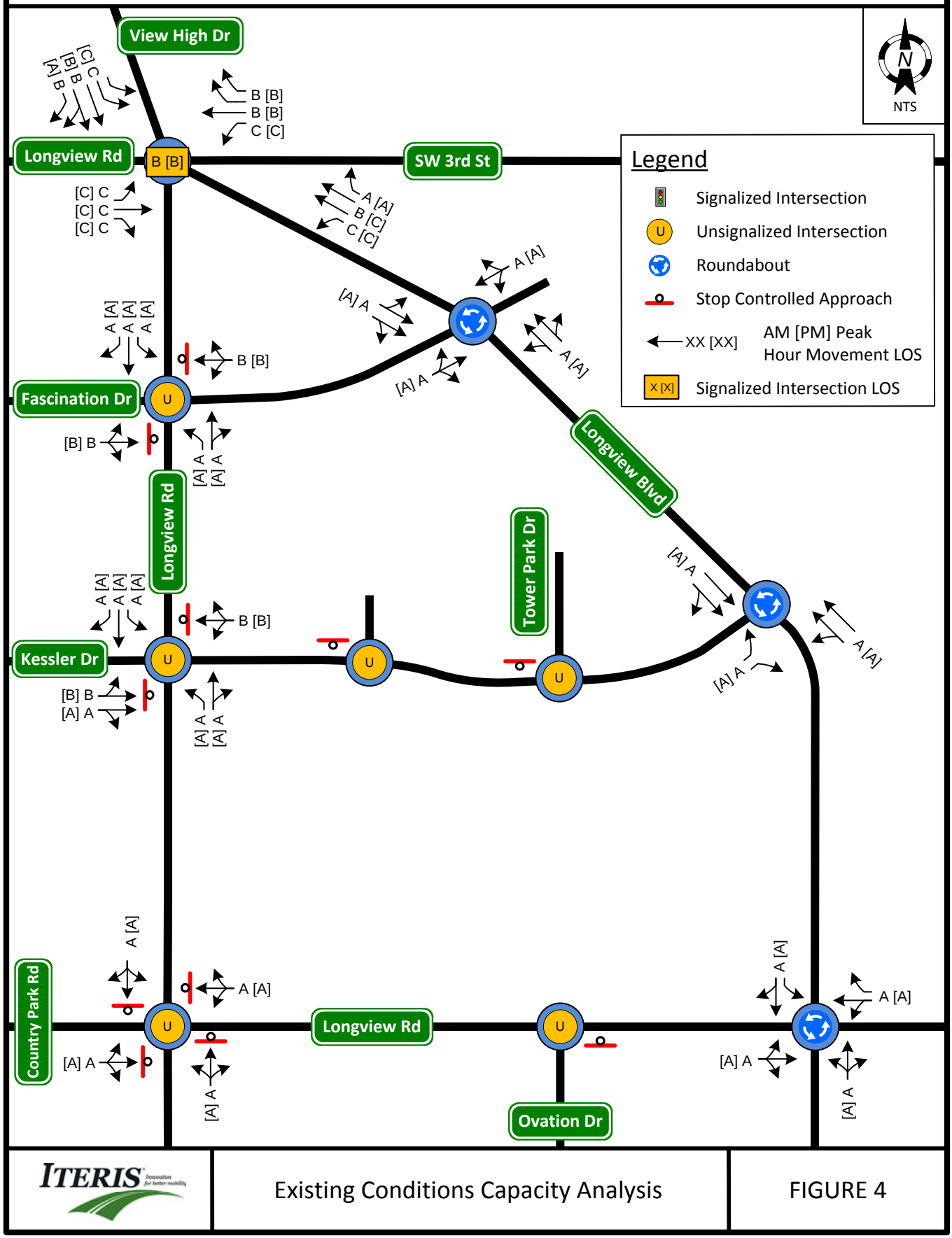
FIGURE 3

TABLE 1 – LEVEL OF SERVICE INTERPRETATION

Level of Service	Description	Signalized Intersection Delay (s/veh)	Stop-Control Intersection Delay (s/veh)
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	< 10	< 10
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	>10 and < 20	>10 and < 15
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	>20 and < 35	>15 and < 25
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>35 and < 55	>25 and < 35
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>55 and < 80	>35 and < 50
F	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	> 80	> 50

Source: Highway Capacity Manual, Special Report 209, Transportation Research Board, Washington, D.C., 2010.

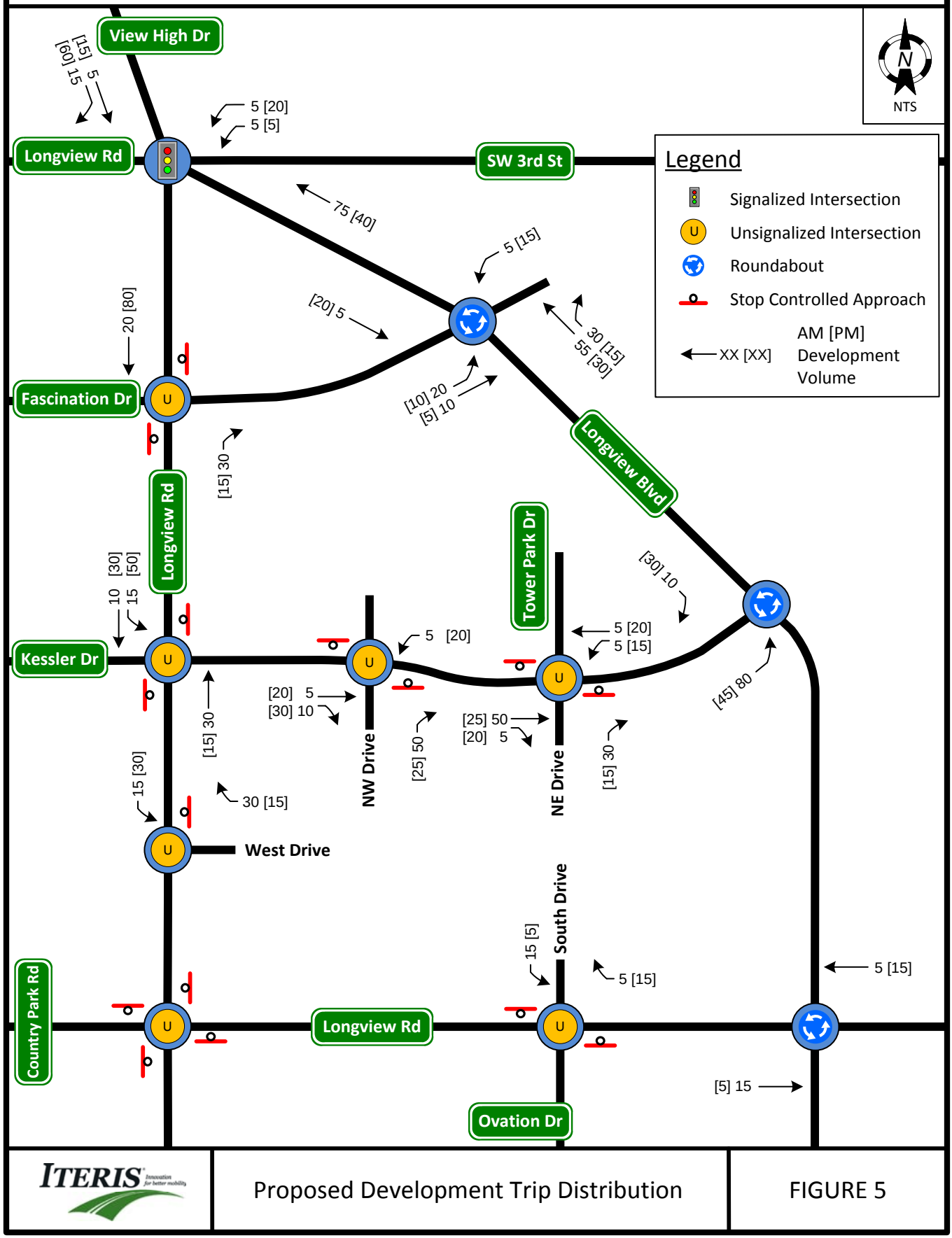
Residences at New Longview — Lee's Summit, MO



ITERIS

Existing Conditions Capacity Analysis

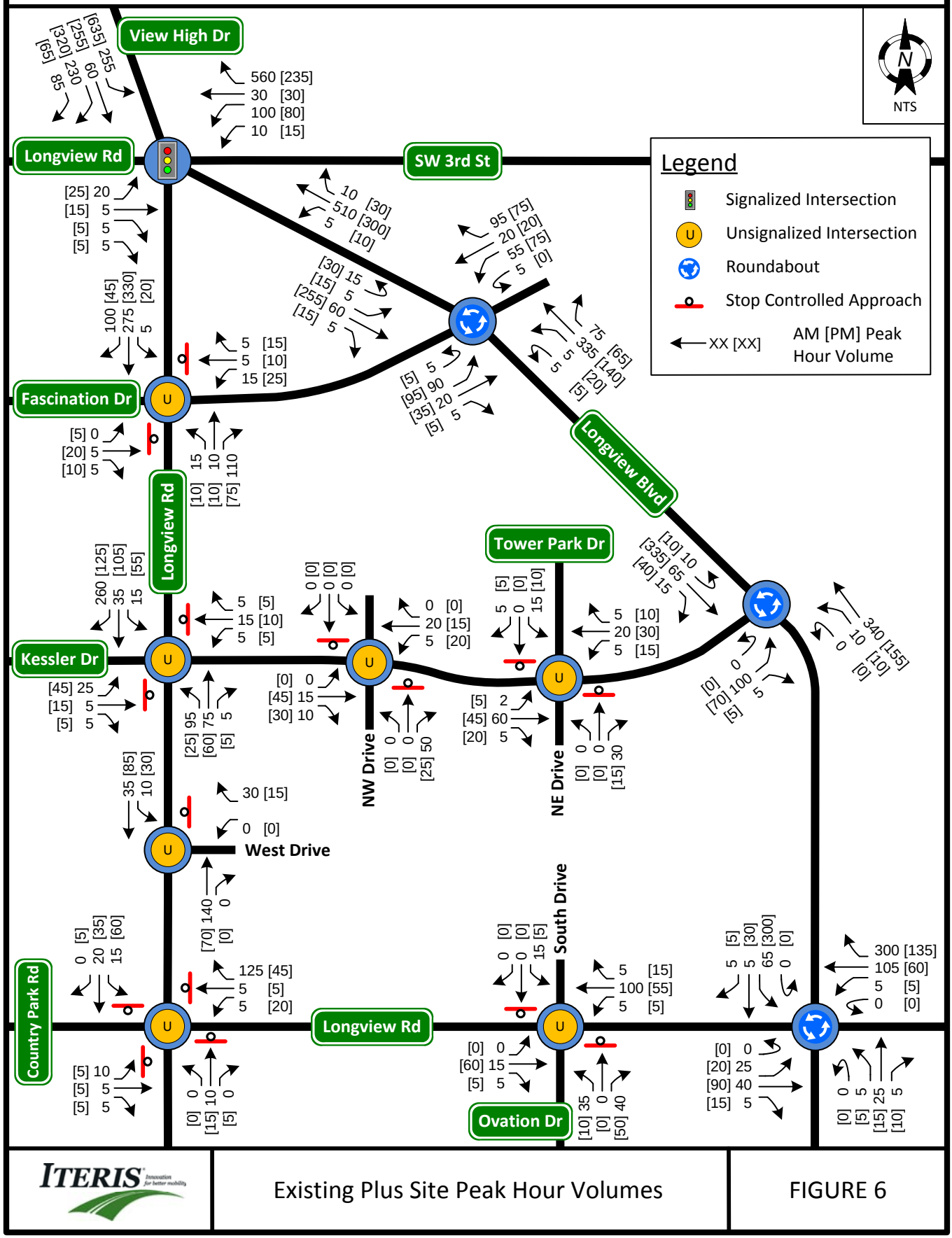
FIGURE 4



ITERIS

Proposed Development Trip Distribution

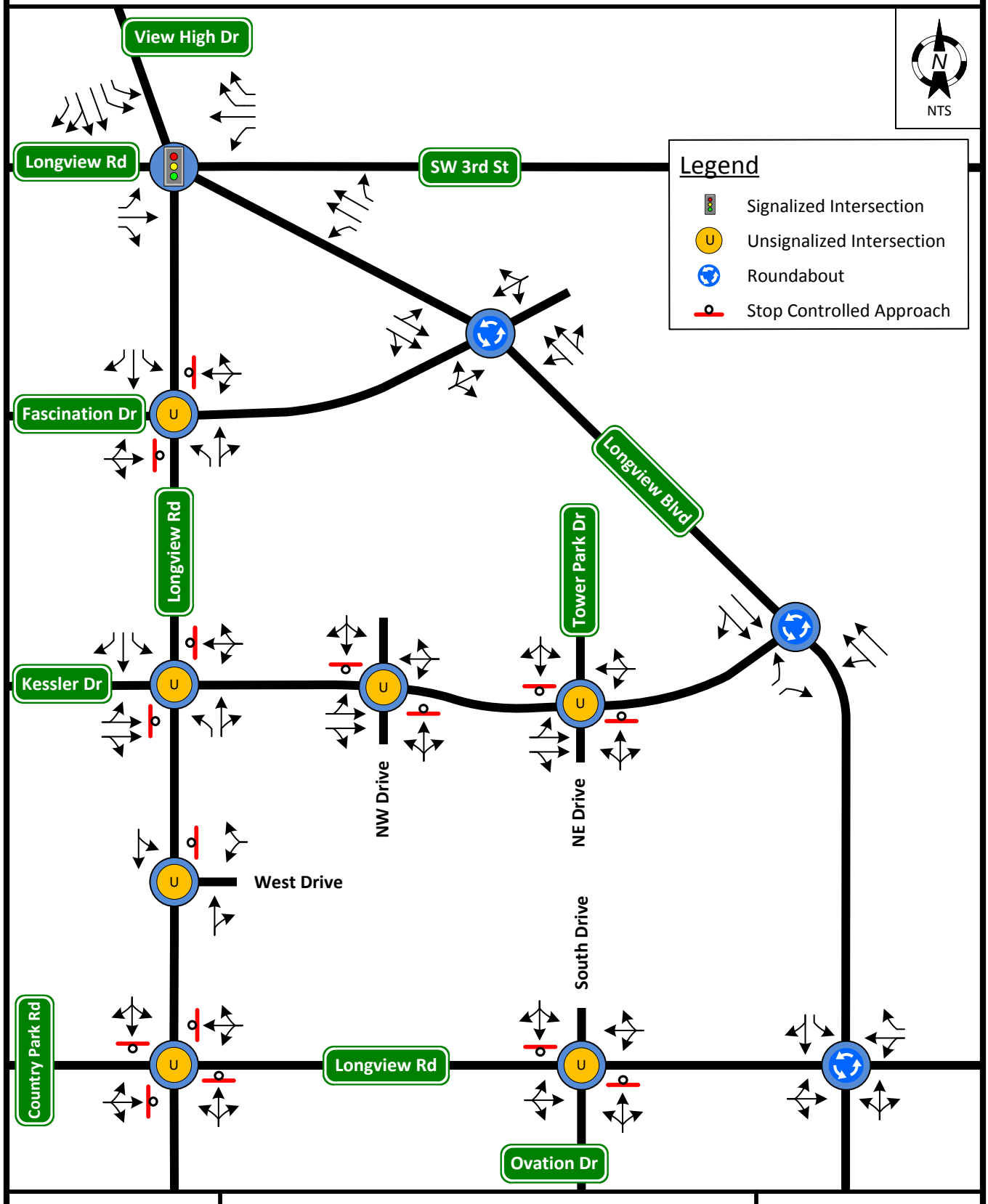
FIGURE 5



ITERIS

Existing Plus Site Peak Hour Volumes

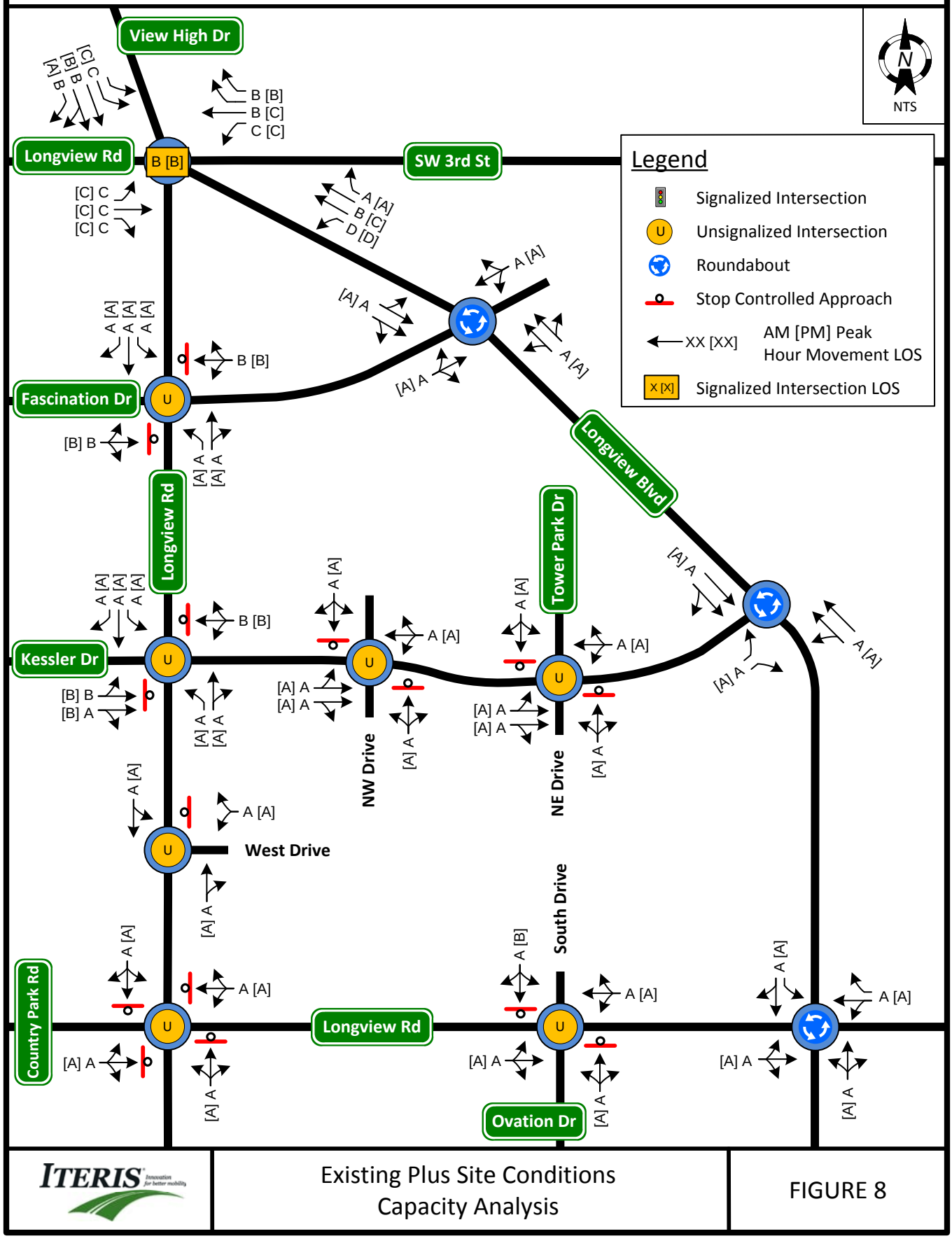
FIGURE 6



ITERIS

Existing Plus Site Conditions
Traffic Control and Geometrics

FIGURE 7



ITERIS

Existing Plus Site Conditions
Capacity Analysis

FIGURE 8

WINTERSET VALLEY
TRAFFIC IMPACT STUDY

PREPARED FOR:
WINTERSET 6, L.L.C.

PREPARED BY:
HDR ENGINEERING, INC.
3741 NE TROON DR
LEE'S SUMMIT, MO 64064
CONTACT: DAN MCGHEE, PE
(816) 347-1100

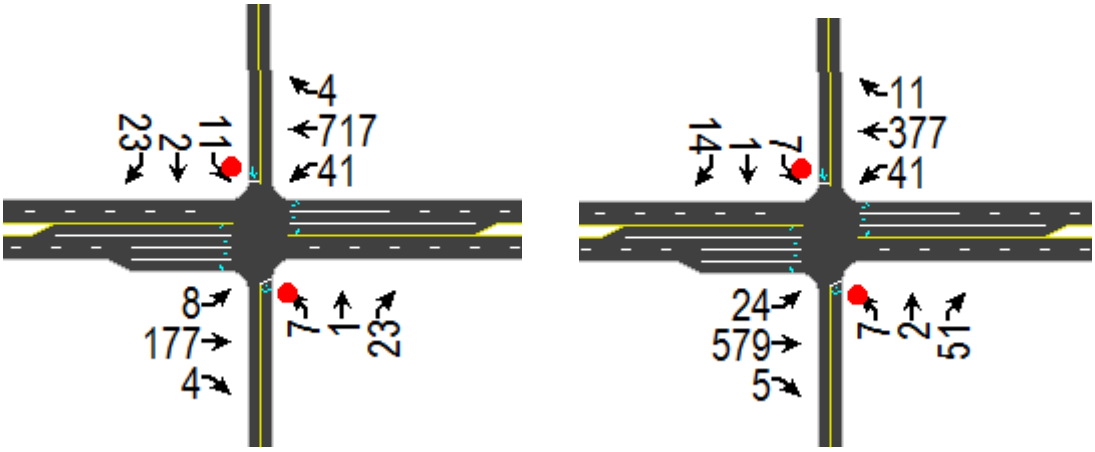
DUSTIN ELLIOTT, PE, PTOE

OCTOBER 16, 2013

HDR NO. 216267

10/16/13

Figure 4: Existing plus Phase 1 Development Traffic Volumes and Lane Configurations



A.M. Peak Hour P.M. Peak Hour

Table 4: Existing plus Phase 1 Development Conditions Level of Service Results

Movement	A.M. Peak Hour		P.M. Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound Left-turn	10.1	B	8.6	A
Westbound Left-turn	7.9	A	9.3	A
Northbound	17.6	B	23.3	C
Southbound	21.9	C	18.5	C

The analysis results indicate that the all movements at the study intersection are expected to continue operating within desirable LOS goals with the additional traffic from Phase 1 of the proposed development.

Table 5: Existing plus Phase 1 Development Conditions
95th Percentile Queue Projections (in feet)

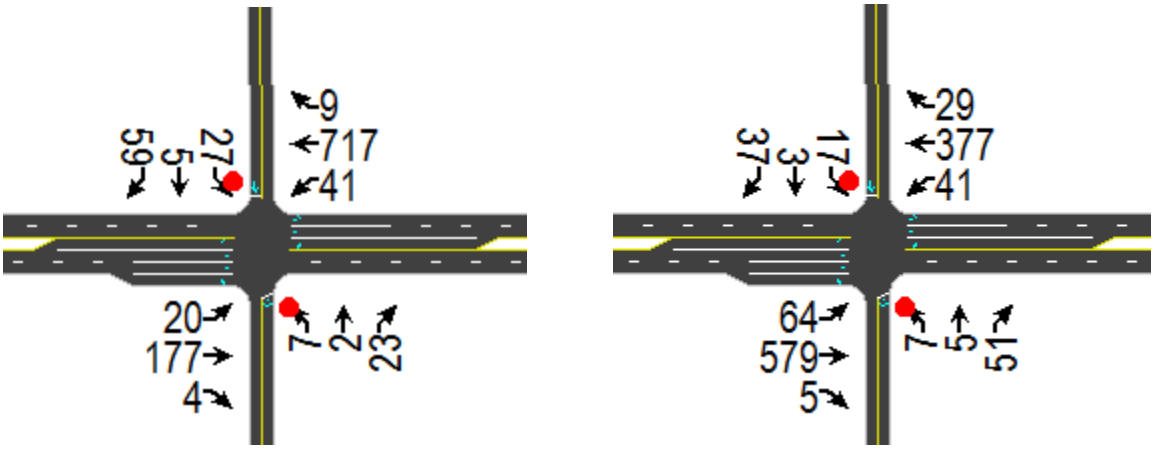
Lane	AM	PM
Eastbound Left-turn	25	25
Westbound Left-turn	25	25
Northbound	25	25
Southbound	25	25

Existing plus Full Development Conditions

An analysis was performed to identify the impacts of all phases of the proposed development on the study intersection using the trip generation estimates and distribution assumptions identified previously. Figure 5 shows the A.M. and P.M. peak hour volumes and lane configurations used in the analyses. The lane configurations of the

intersection were analyzed as proposed with the new north leg having one lane each for northbound and southbound. Stop sign control was considered for the southbound approach. The Level of Service results of the analyses are summarized in Table 6 and the Synchro outputs are included in the appendix for reference. Queue results are summarized in Table 7.

Figure 5: Existing plus Full Development Traffic Volumes and Lane Configurations



A.M. Peak Hour

P.M. Peak Hour

Table 6: Existing plus Full Development Conditions Level of Service Results

Movement	A.M. Peak Hour		P.M. Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Eastbound Left-turn	10.1	B	8.9	A
Westbound Left-turn	7.9	A	9.3	A
Northbound	20.1	C	31.8	D
Southbound	29.8	D	24.3	C

The analyses indicate that the anticipated additional traffic for future phases of the proposed development is expected to result in LOS D conditions for the southbound approach in the A.M. peak hour and for the northbound approach in the P.M. peak hour. Although LOS D is undesirable according to City goals for LOS, the amount of anticipated traffic is not sufficient to warrant the installation of a traffic signal. Providing a southbound left-turn lane would reduce delays for the through and right-turning movements on that approach.

Table 7: Existing plus Full Development Conditions
95th Percentile Queue Projections (in feet)

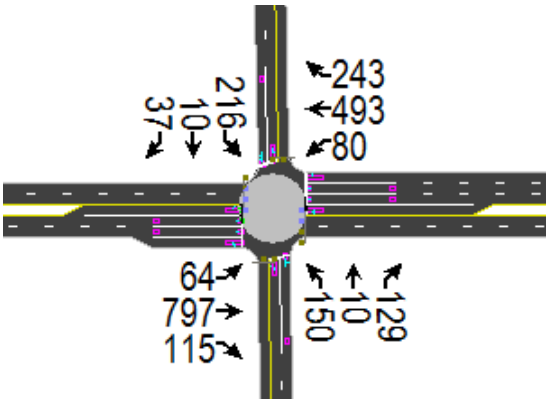
Lane	AM	PM
Eastbound Left-turn	25	25
Westbound Left-turn	25	25
Northbound	25	25
Southbound	25	25

Future Year 2030 Conditions

The Future Year 2030 Conditions analysis considers full build-out of the nearby New Longview project plus other background traffic growth on the street system. Traffic estimates for these were taken from the *New Longview Revised Traffic Impact Study* dated March 2007 and its addendum dated April 2007. This assessment was only performed for the P.M. peak hour as it was the only scenario provided in the New Longview studies.

The study intersection was analyzed considering the lane configurations and traffic control identified for the 2030 conditions analysis in the New Longview studies. The northbound and southbound approaches both include a left-turn lane and a shared through / right-turn lane. The eastbound and westbound approaches both include left- and right-turn lanes and two through lanes. Figure 6 shows the P.M. peak hour volumes and lane configurations used in the analyses for this scenario. The Level of Service results of the analyses are summarized in Table 8 and the Synchro outputs are included in the appendix for reference.

Figure 6: Future Year 2030 Traffic Volumes and Lane Configurations



P.M. Peak Hour

Appendix D

Multifamily Housing (Low-Rise)
(220)

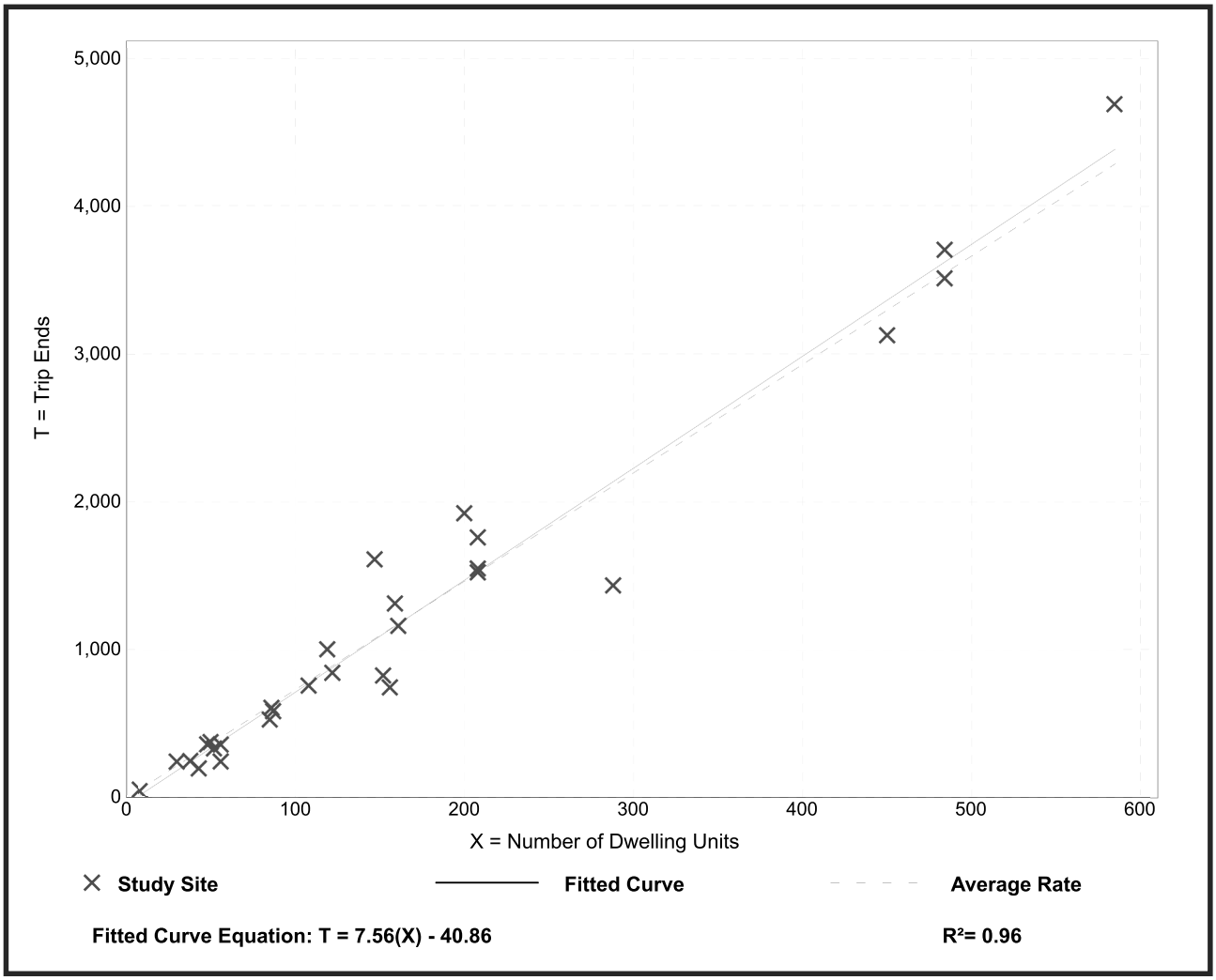
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 29
Avg. Num. of Dwelling Units: 168
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

Data Plot and Equation



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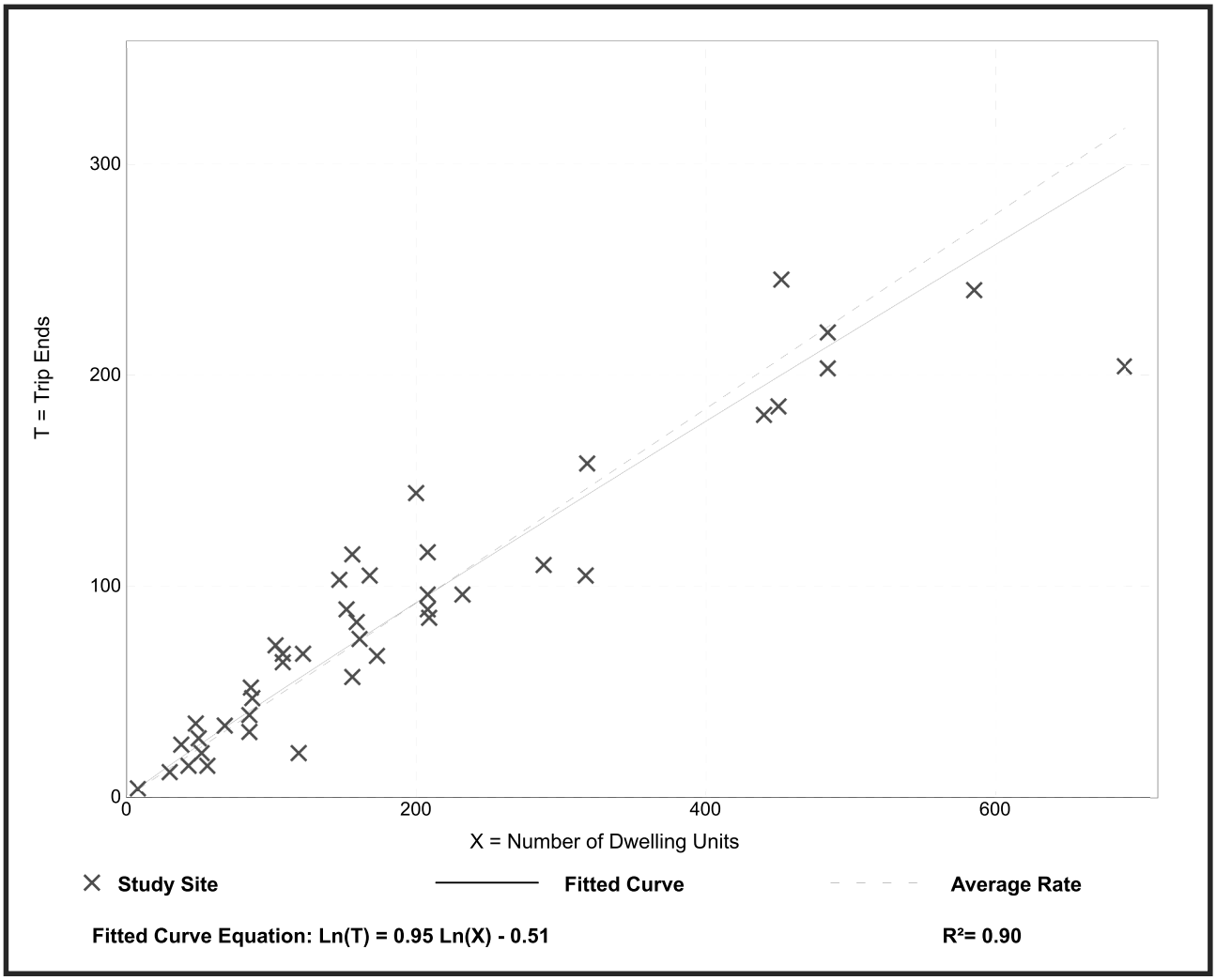
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 42
Avg. Num. of Dwelling Units: 199
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



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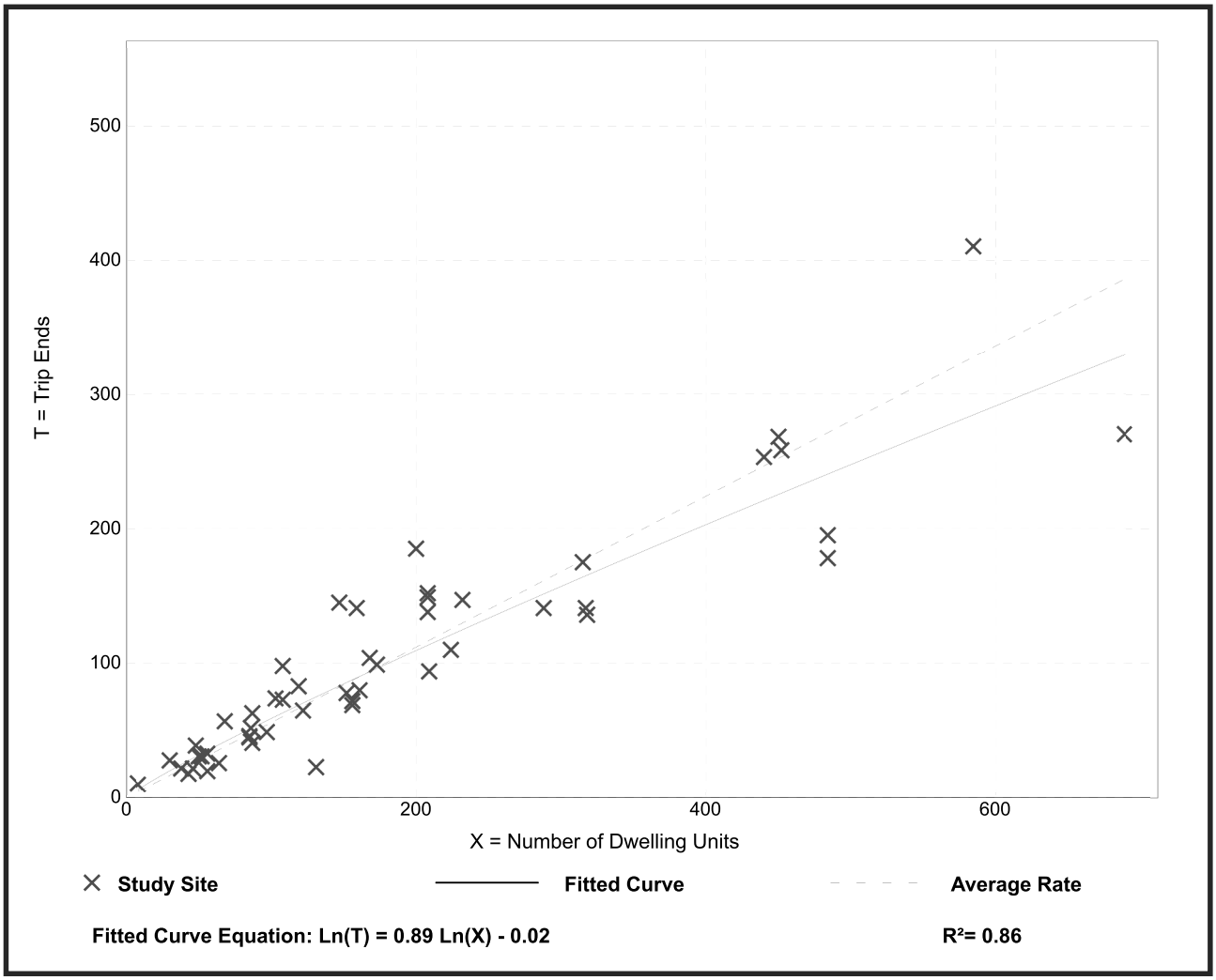
Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



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Small Office Building
(712)

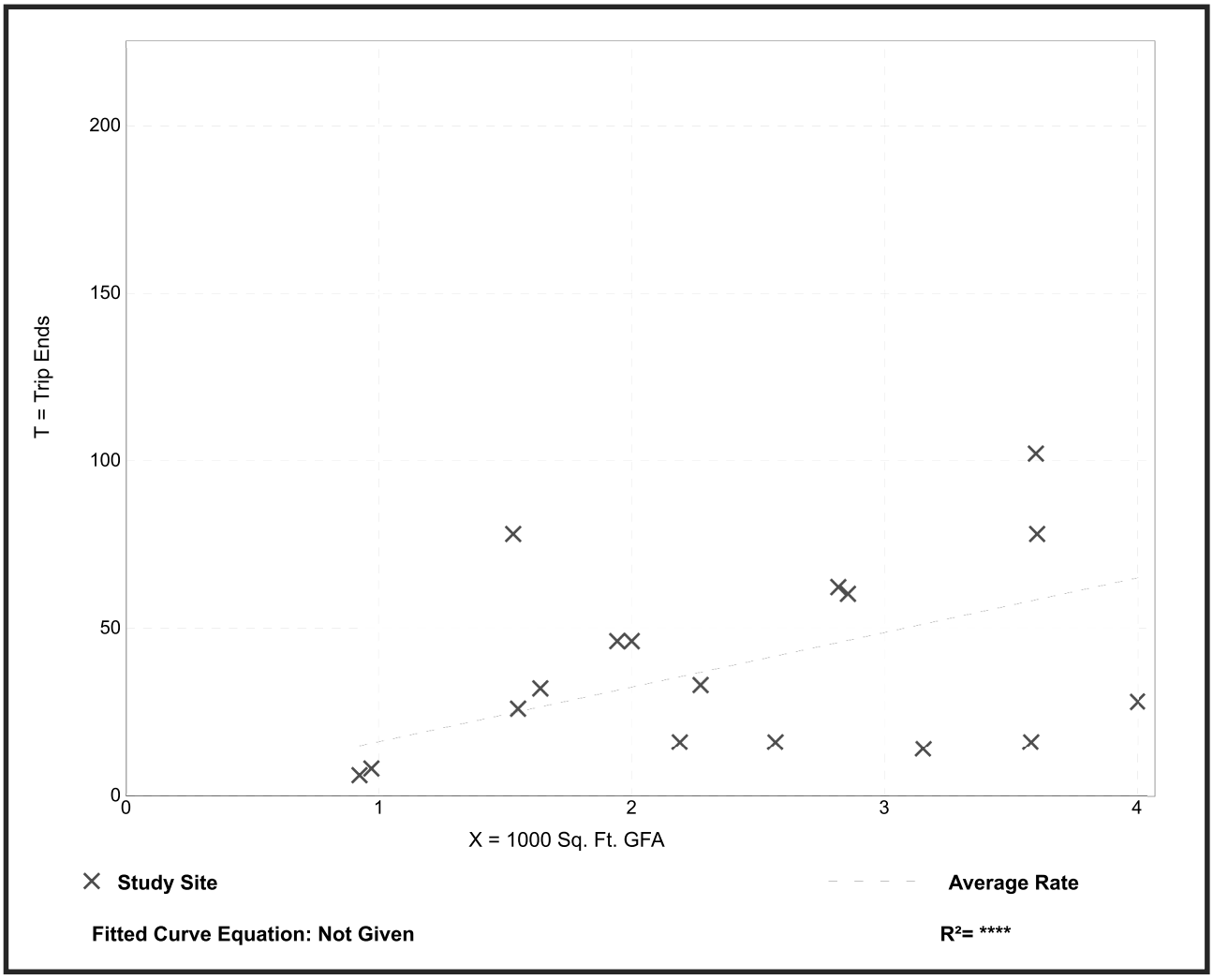
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 17
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
16.19	4.44 - 50.91	11.03

Data Plot and Equation



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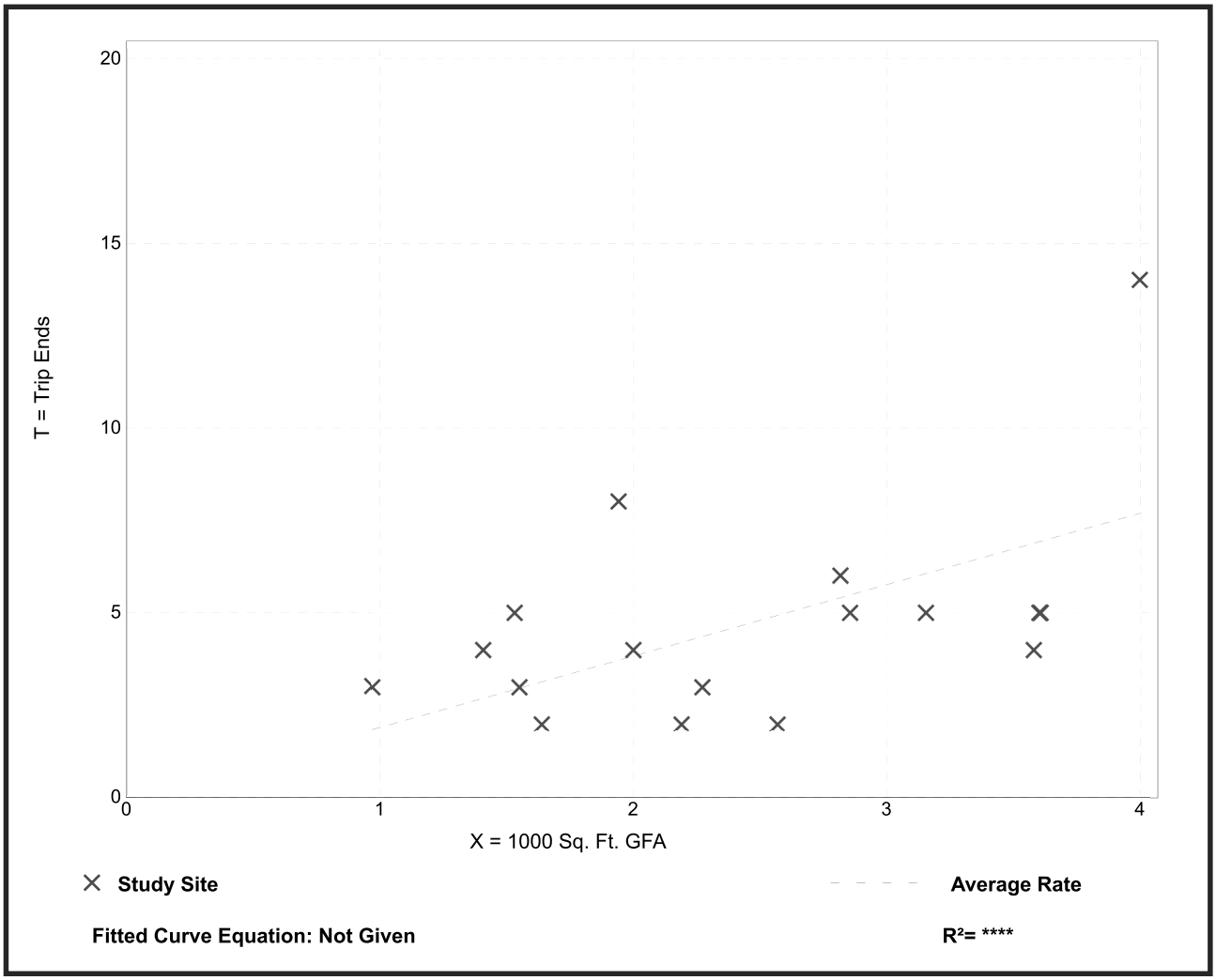
Small Office Building
(712)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 17
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 83% entering, 17% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.92	0.78 - 4.12	0.97

Data Plot and Equation



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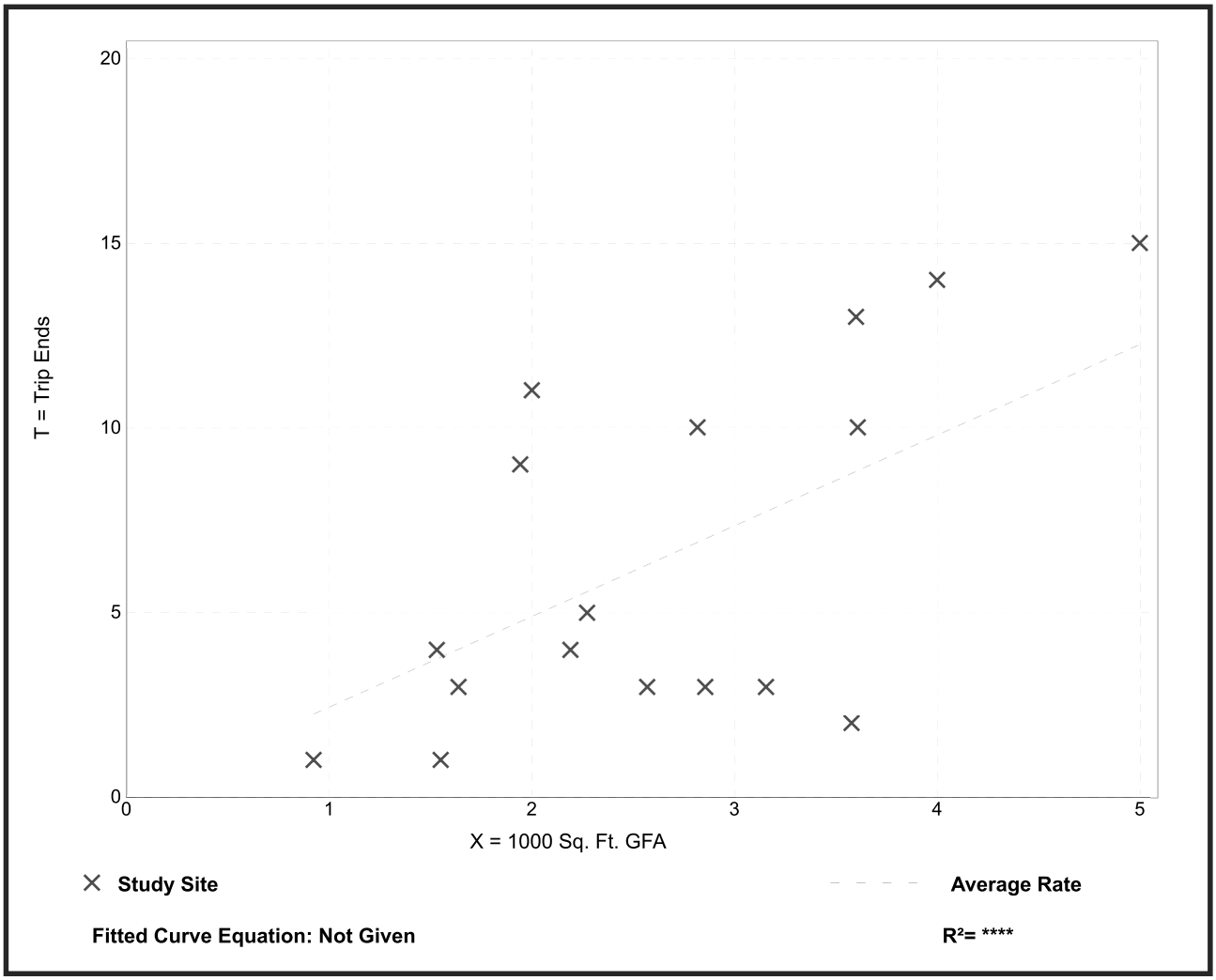
Small Office Building
(712)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 17
Avg. 1000 Sq. Ft. GFA: 3
Directional Distribution: 32% entering, 68% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.45	0.56 - 5.50	1.38

Data Plot and Equation



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Day Care Center
(565)

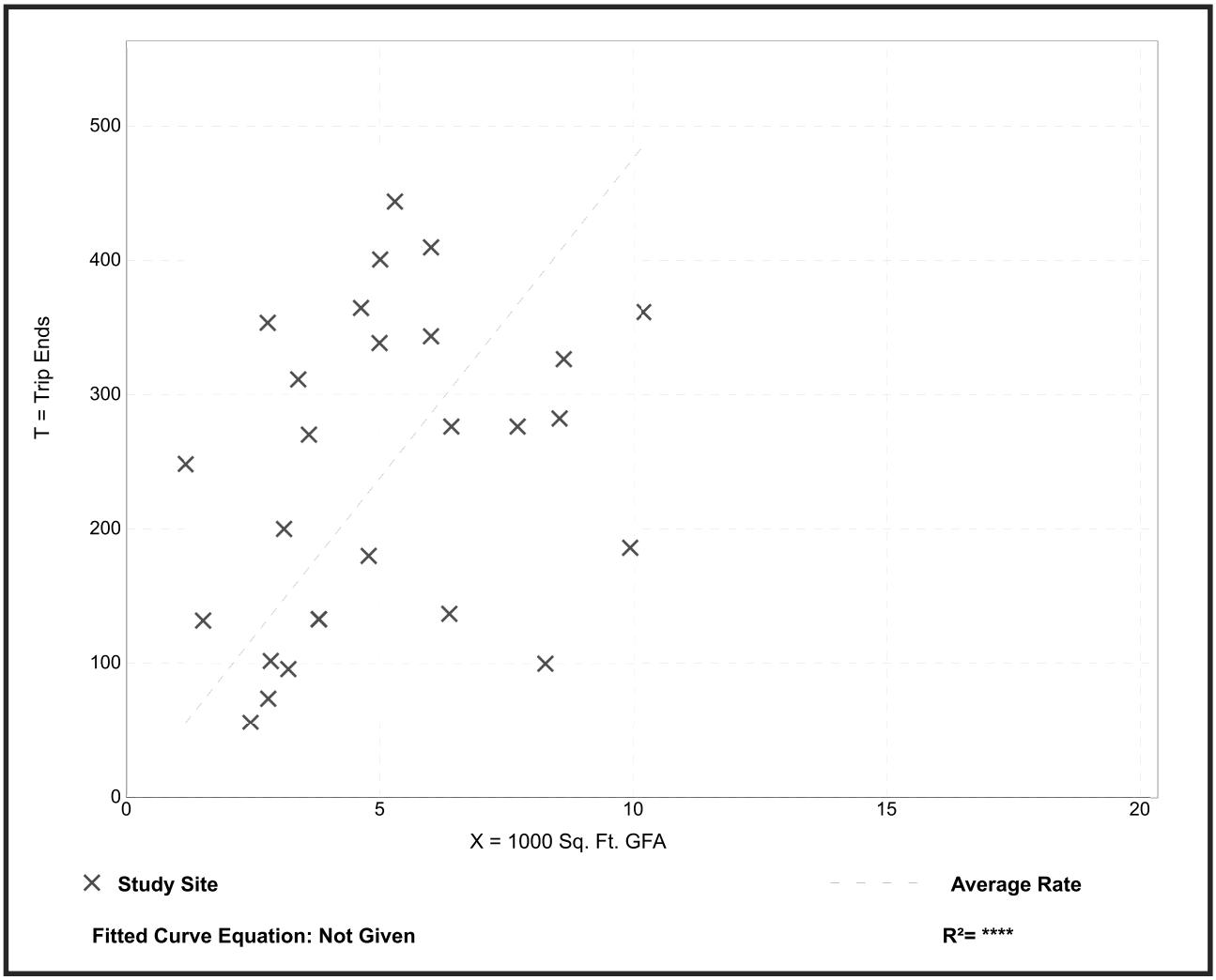
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 27
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
47.62	12.12 - 211.06	29.78

Data Plot and Equation



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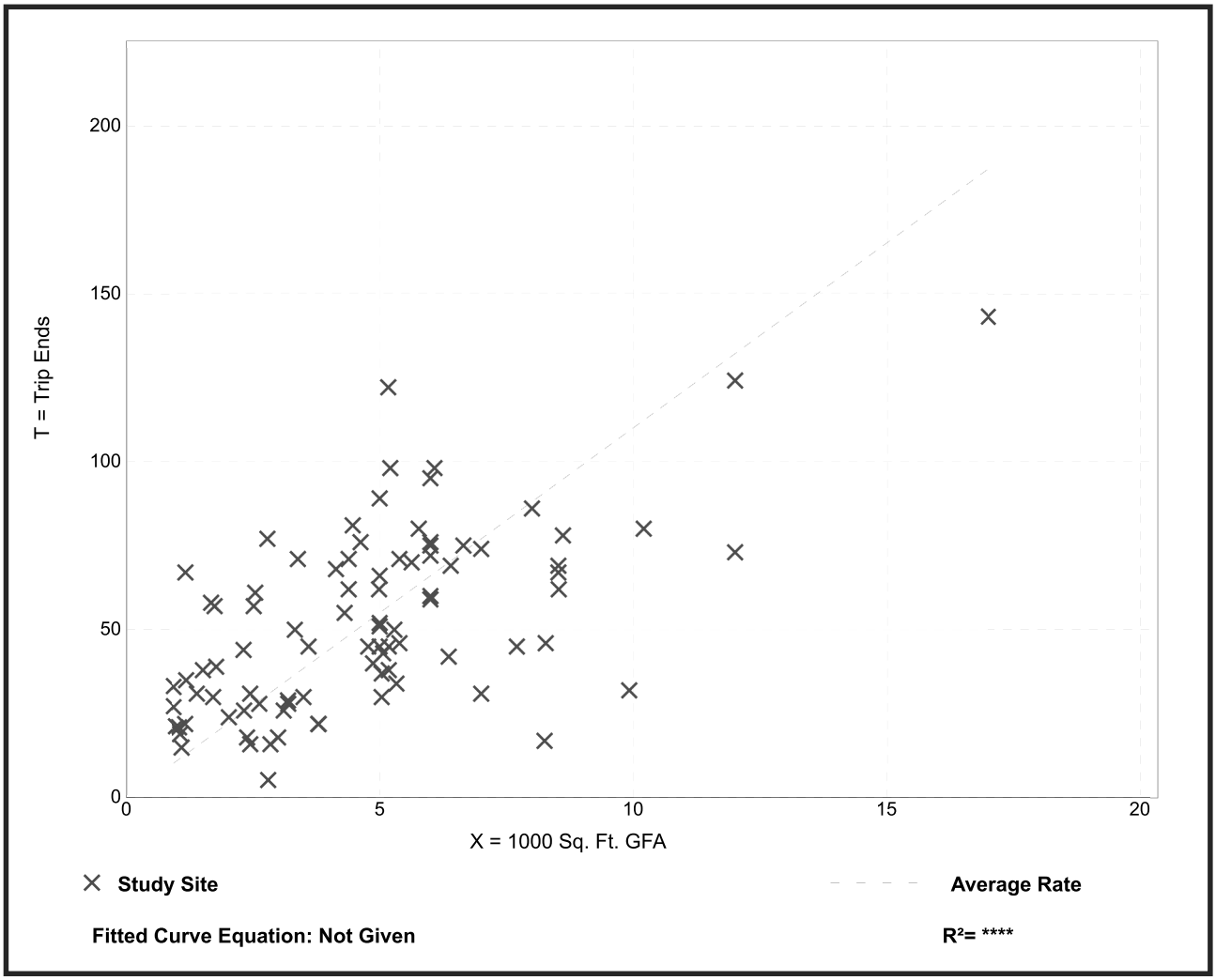
Day Care Center
(565)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 89
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
11.00	1.79 - 57.02	6.08

Data Plot and Equation



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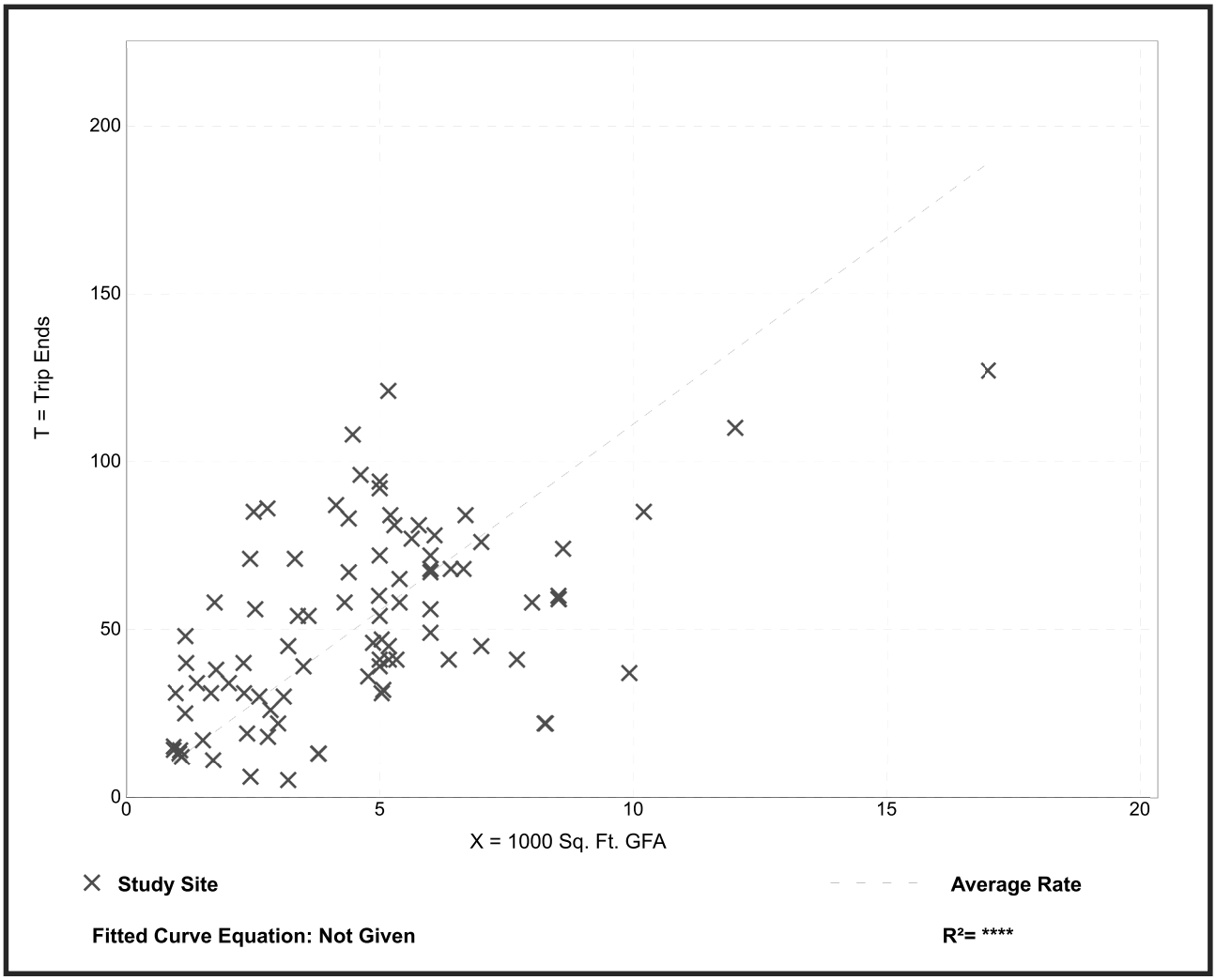
Day Care Center
(565)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 90
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
11.12	1.56 - 40.85	6.28

Data Plot and Equation



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Trip Distribution

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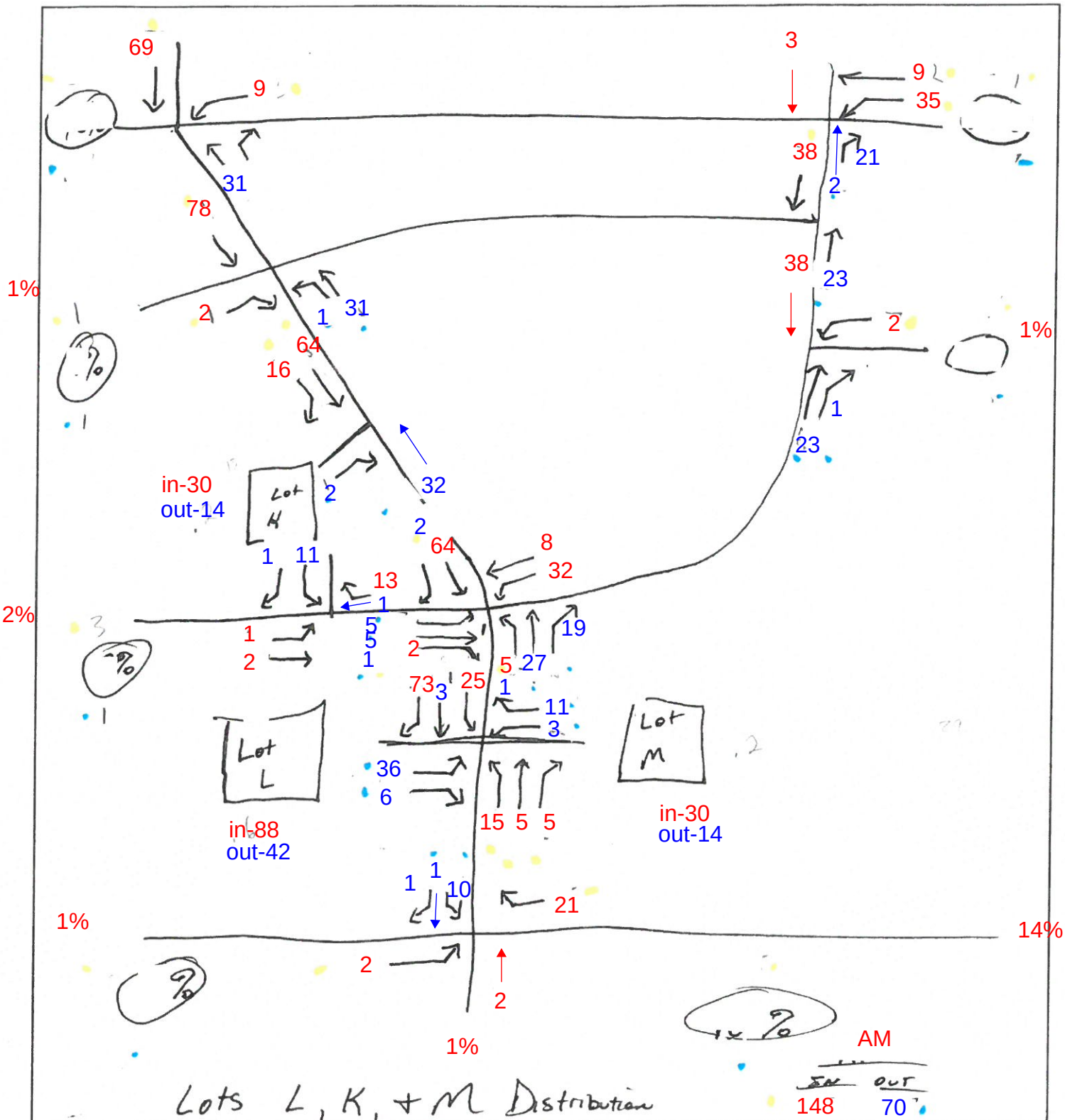
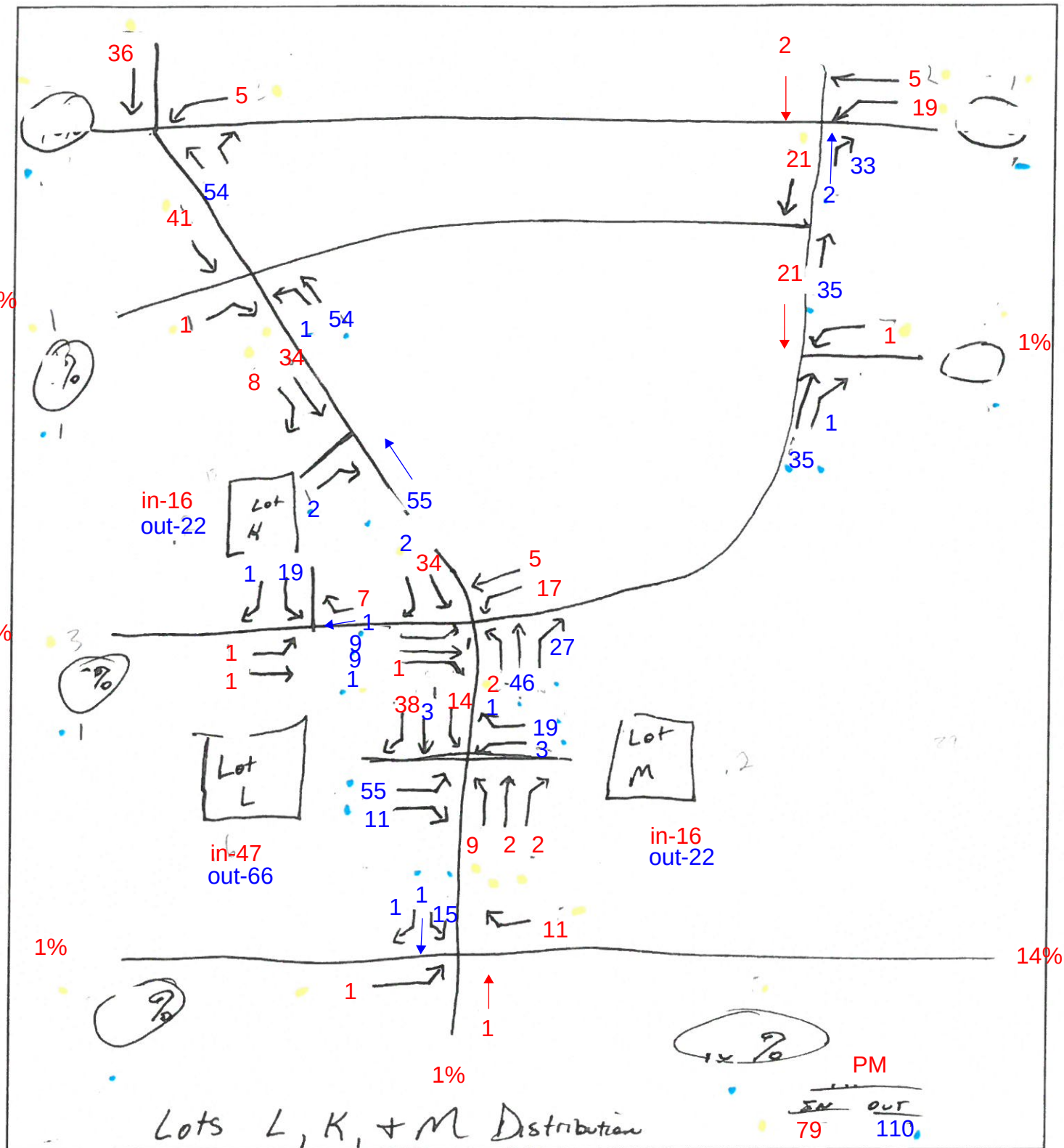


Lots L, K, + M Distribution

project:			
subject			
drawn by: Josh D	date:	project no.:	sheet of

OLSSON ASSOCIATES



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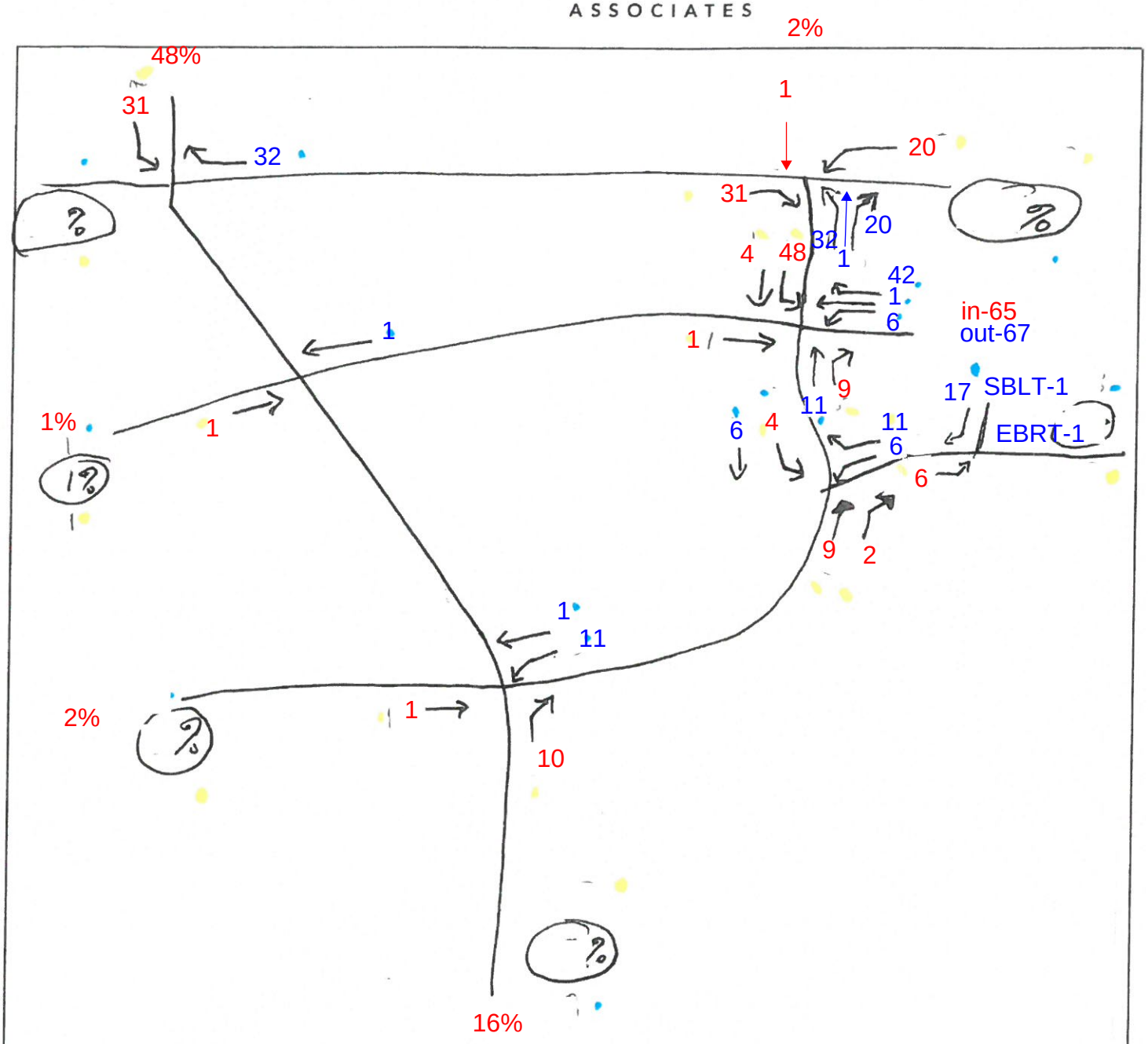

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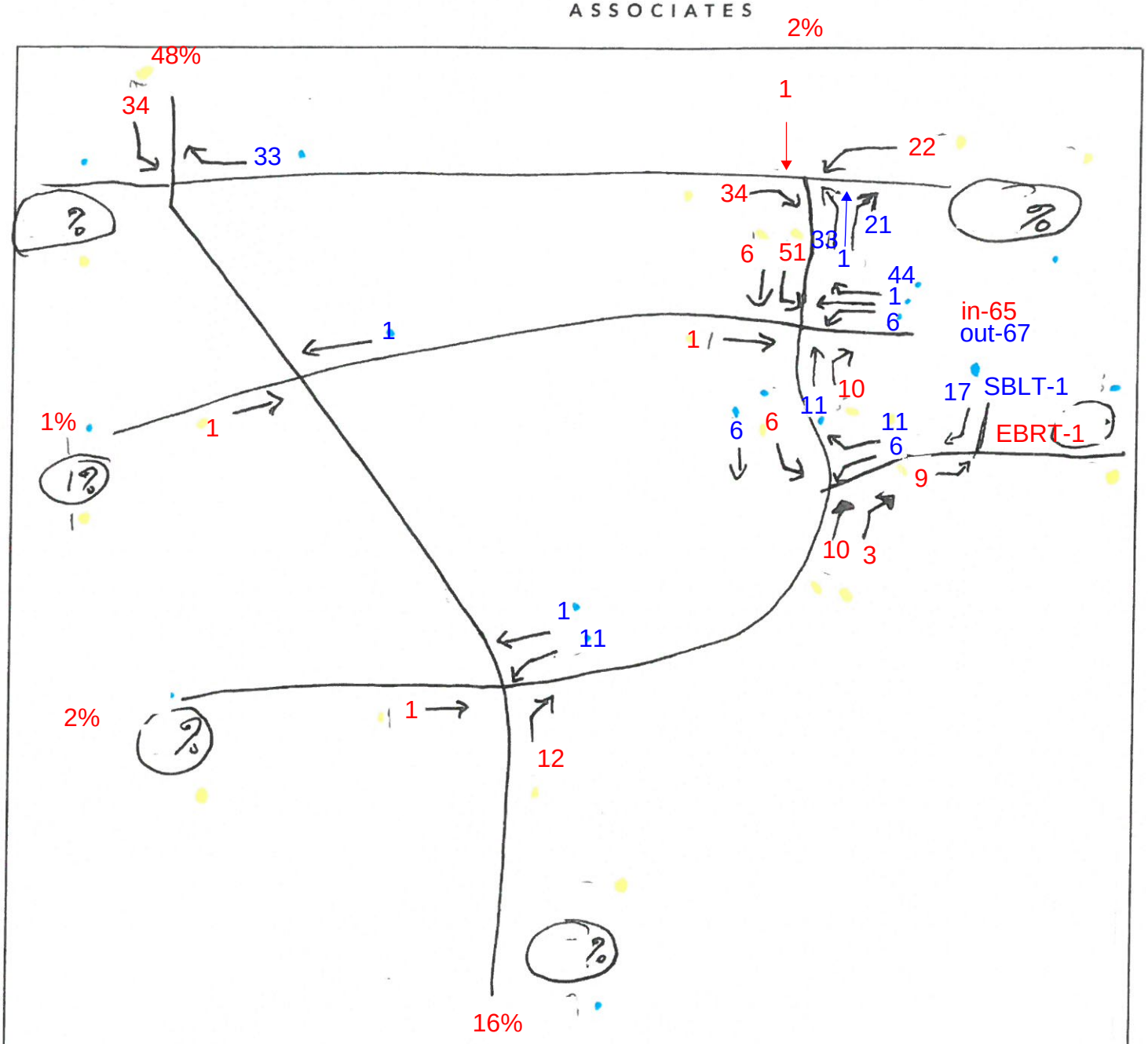
drawn by: Josh P	date:	project no.:	sheet of

OLSSON ASSOCIATES



Lot J Distribution

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subject				
drawn by: Josh P	date:	project no.:		sheet of

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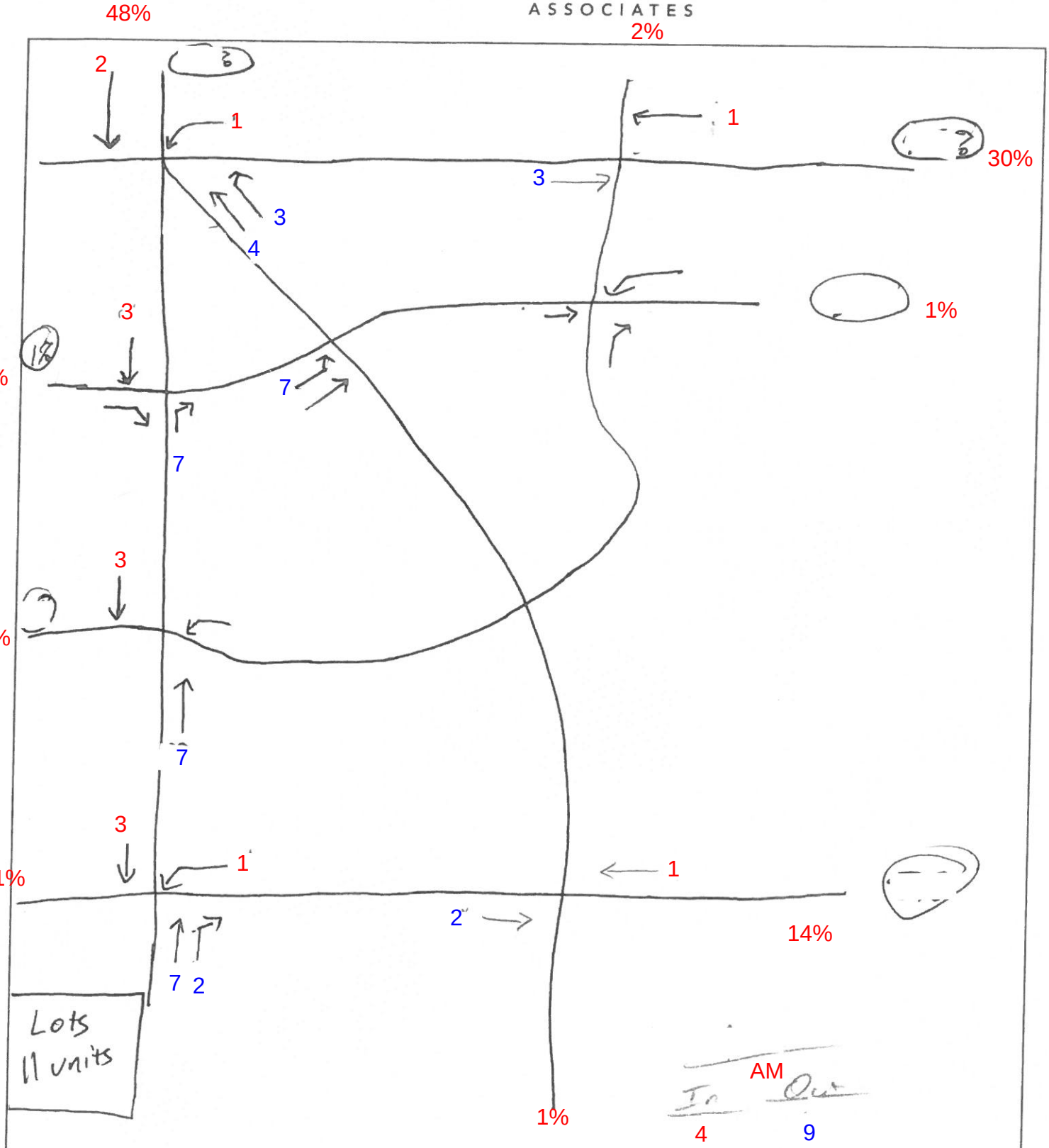

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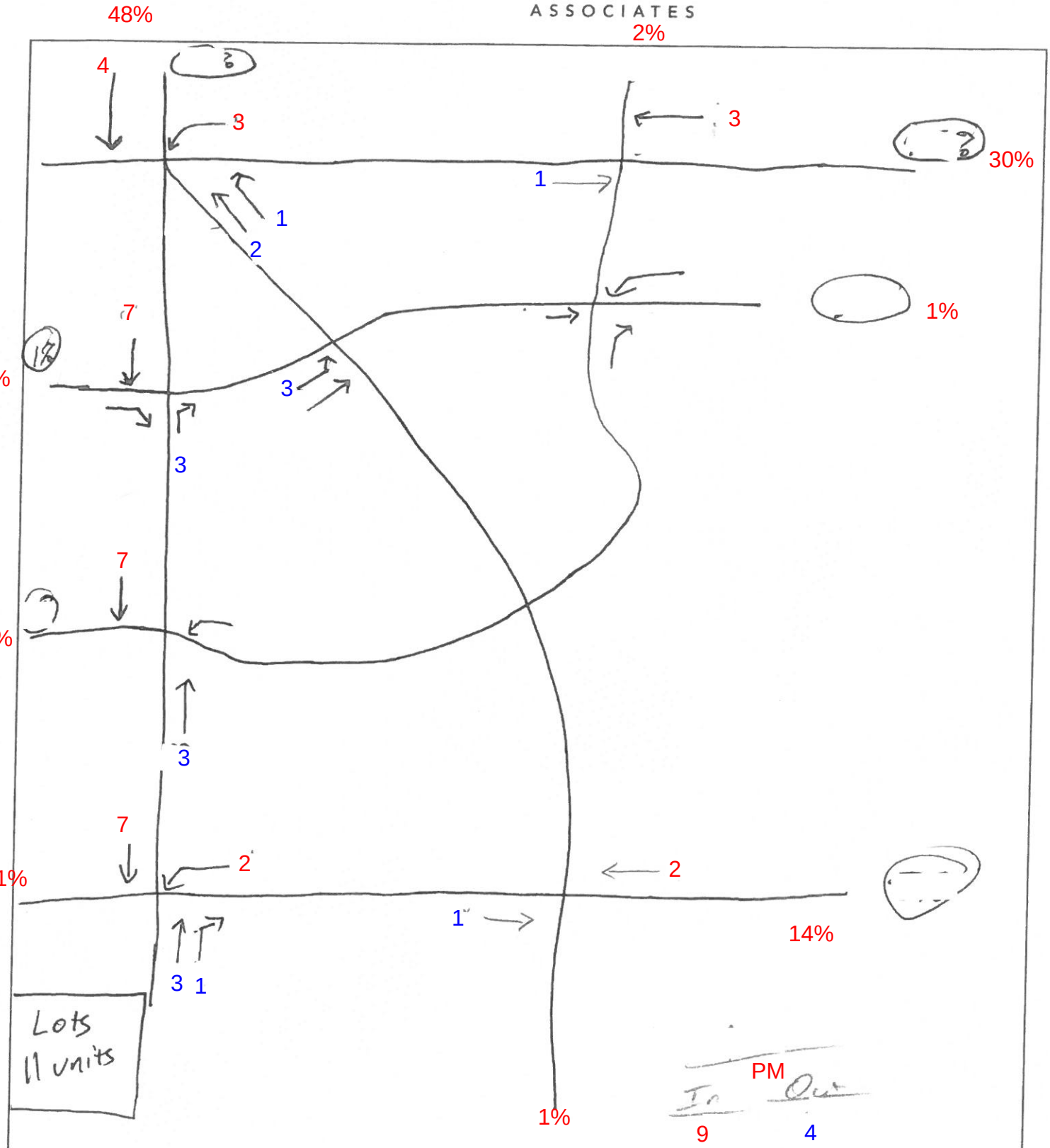


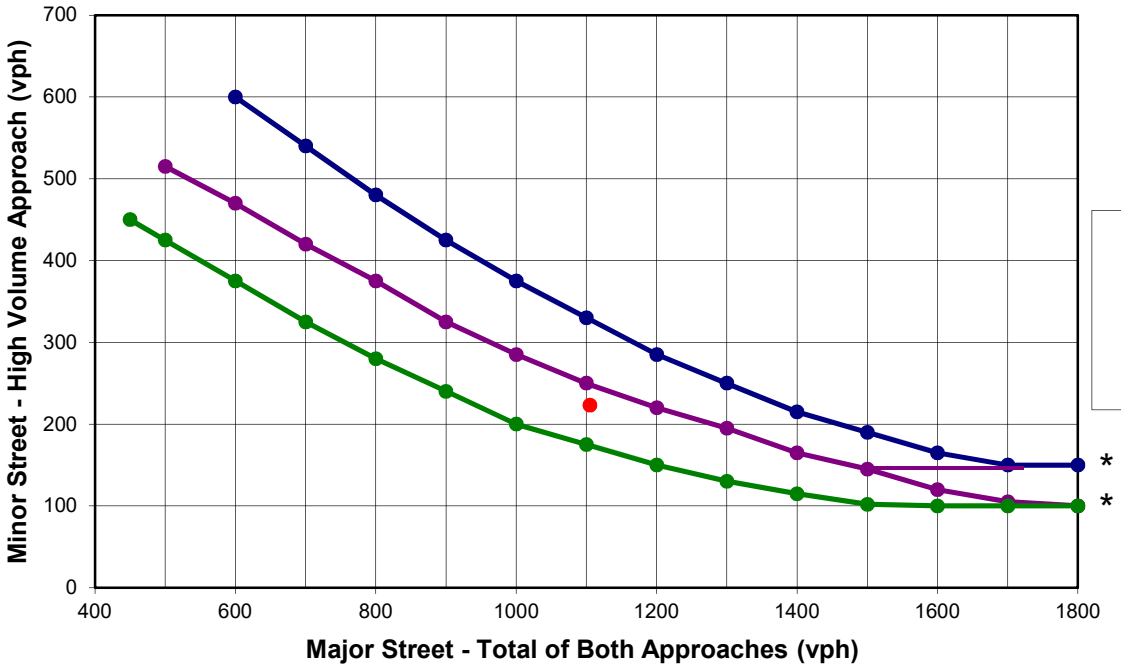
project:

subject

drawn by: JP date: project no.: sheet of

Signal Warrants

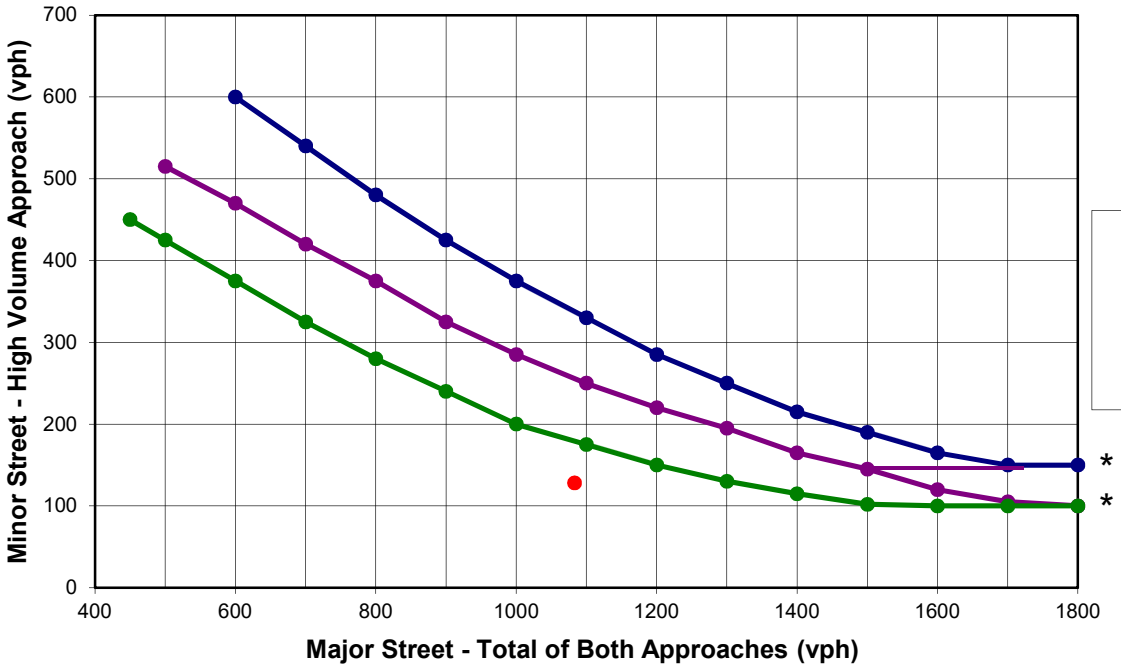
Ex+Full Build AM Peak Hour Volume Warrant
3rd Street & Kessler Drive



Off Chart:
Major - 1105
Minor - 223

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

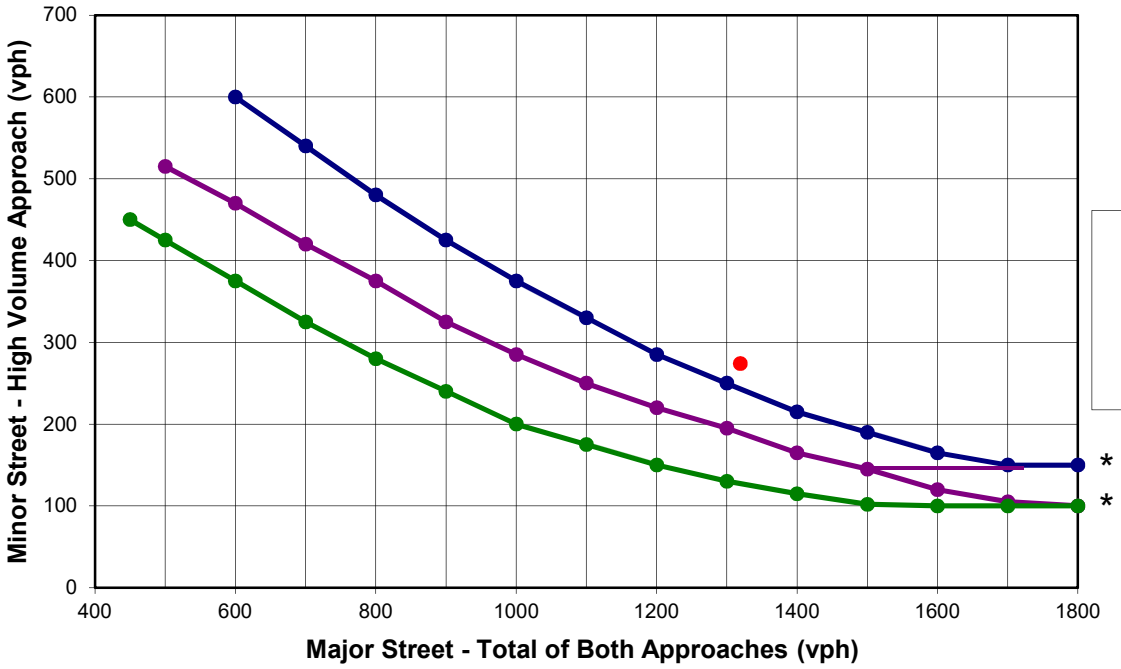
Ex+App+Proposed Dev AM Peak Hour Volume Warrant
3rd Street & Drive 2



Off Chart:
Major - 1083
Minor - 128

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

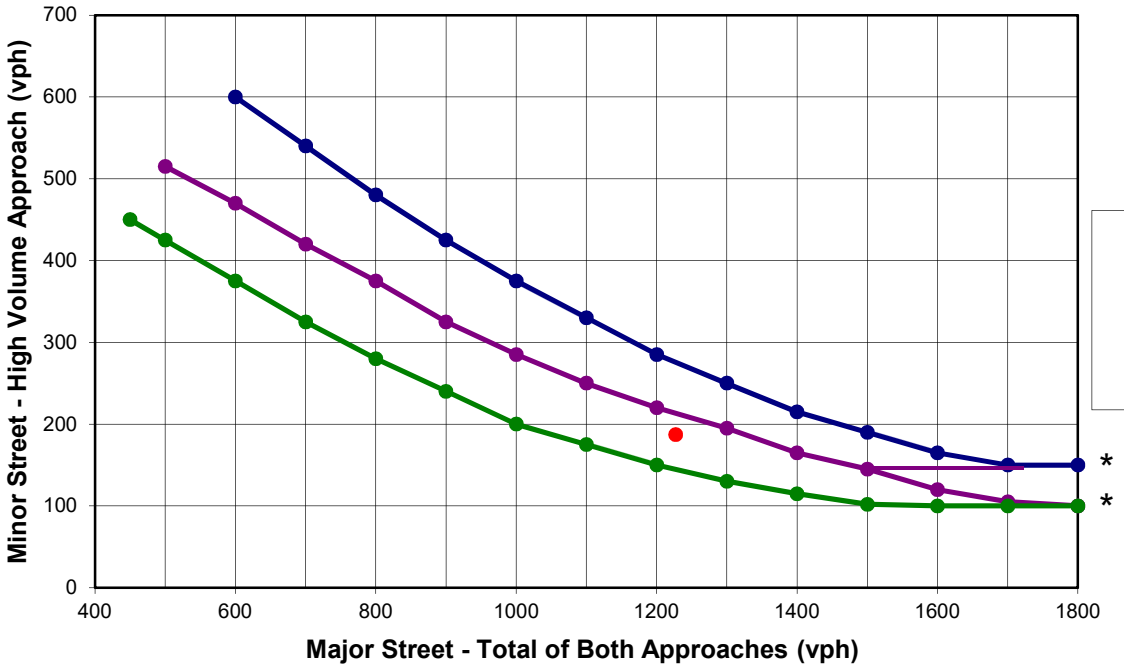
Ex+App Projects S of 3rd AM Peak Hour Volume Warrant
3rd Street & Kessler Drive



Off Chart:
Major - 1319
Minor - 274

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

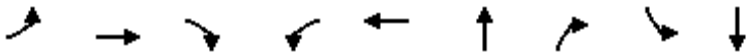
Ex+App Projects S of 3rd AM Peak Hour Volume Warrant
3rd Street & Drive 2



Off Chart:
Major - 1227
Minor - 187

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

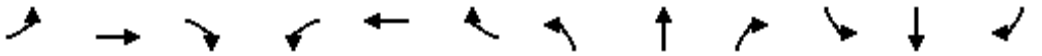
Capacity Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	10	211	77	200	749	137	149	17	33
v/c Ratio	0.05	0.26	0.16	0.49	0.46	0.40	0.28	0.08	0.07
Control Delay	22.0	14.9	0.7	25.2	9.8	18.4	4.6	22.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	14.9	0.7	25.2	9.8	18.4	4.6	22.2	7.8
Queue Length 50th (ft)	2	18	0	35	37	23	0	3	2
Queue Length 95th (ft)	14	53	0	#153	170	71	21	20	14
Internal Link Dist (ft)		257			767	191			209
Turn Bay Length (ft)	175		100	190			95	175	
Base Capacity (vph)	204	1633	819	408	2045	617	819	204	1157
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.13	0.09	0.49	0.37	0.22	0.18	0.08	0.03

Intersection Summary

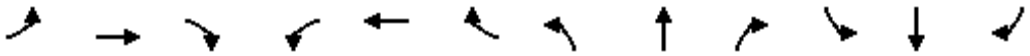
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	184	60	166	676	11	99	8	116	13	12	14
Future Volume (veh/h)	8	184	60	166	676	11	99	8	116	13	12	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	211	77	200	735	14	127	10	149	17	15	18
Peak Hour Factor	0.78	0.87	0.78	0.83	0.92	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	19	607	271	259	1089	21	434	24	274	31	243	292
Arrive On Green	0.01	0.17	0.17	0.15	0.31	0.31	0.17	0.17	0.17	0.02	0.31	0.31
Sat Flow, veh/h	1781	3554	1585	1781	3567	68	1272	141	1585	1781	774	929
Grp Volume(v), veh/h	10	211	77	200	366	383	137	0	149	17	0	33
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1858	1413	0	1585	1781	0	1703
Q Serve(g_s), s	0.2	1.7	1.4	3.5	5.8	5.8	2.7	0.0	2.8	0.3	0.0	0.4
Cycle Q Clear(g_c), s	0.2	1.7	1.4	3.5	5.8	5.8	2.9	0.0	2.8	0.3	0.0	0.4
Prop In Lane	1.00		1.00	1.00		0.04	0.93		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	19	607	271	259	543	567	458	0	274	31	0	534
V/C Ratio(X)	0.53	0.35	0.28	0.77	0.67	0.67	0.30	0.00	0.54	0.54	0.00	0.06
Avail Cap(c_a), veh/h	220	1754	782	440	1096	1146	908	0	782	220	0	1261
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.0	11.9	11.7	13.3	9.8	9.9	12.3	0.0	12.2	15.8	0.0	7.8
Incr Delay (d2), s/veh	20.9	0.3	0.6	4.9	1.5	1.4	0.4	0.0	1.7	14.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.5	0.4	1.3	1.6	1.6	0.8	0.0	0.8	0.2	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	12.2	12.3	18.2	11.3	11.3	12.6	0.0	13.9	29.8	0.0	7.8
LnGrp LOS	D	B	B	B	B	B	B	A	B	C	A	A
Approach Vol, veh/h		298			949			286			50	
Approach Delay, s/veh		13.0			12.7			13.3			15.3	
Approach LOS		B			B			B			B	

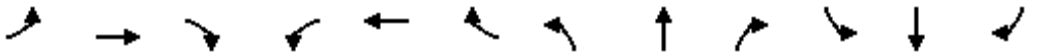
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	4.6	9.6	8.7	9.5		14.2	4.3	13.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	16.0	8.0	16.0		24.0	4.0	20.0				
Max Q Clear Time (g_c+I1), s	2.3	4.9	5.5	3.7		2.4	2.2	7.8				
Green Ext Time (p_c), s	0.0	0.7	0.1	0.8		0.1	0.0	2.1				

Intersection Summary												
HCM 6th Ctrl Delay			13.0									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	13	4	188	41	646	3	467	62	294	367	49
v/c Ratio	0.06	0.05	0.01	0.51	0.11	0.37	0.01	0.52	0.10	0.40	0.19	0.05
Control Delay	28.7	28.8	0.0	27.5	22.4	2.1	29.0	21.5	0.4	22.0	9.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.7	28.8	0.0	27.5	22.4	2.1	29.0	21.5	0.4	22.0	9.1	0.1
Queue Length 50th (ft)	4	3	0	47	9	3	1	61	0	37	22	0
Queue Length 95th (ft)	21	20	0	138	38	38	8	145	0	96	87	0
Internal Link Dist (ft)		339			287			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	309	252	445	515	489	2071	240	1991	1007	1265	2786	1290
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.05	0.01	0.37	0.08	0.31	0.01	0.23	0.06	0.23	0.13	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	10	3	156	32	594	2	406	48	256	305	38
Future Volume (veh/h)	12	10	3	156	32	594	2	406	48	256	305	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	13	4	188	41	646	3	467	0	294	367	0
Peak Hour Factor	0.78	0.78	0.78	0.83	0.78	0.92	0.78	0.87	0.78	0.87	0.83	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	257	218	244	465	1071	10	699		468	1160	
Arrive On Green	0.03	0.14	0.14	0.14	0.25	0.25	0.01	0.20	0.00	0.14	0.33	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	15	13	4	188	41	646	3	467	0	294	367	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	0.4	0.3	0.1	5.2	0.9	9.4	0.1	6.2	0.0	4.1	3.9	0.0
Cycle Q Clear(g_c), s	0.4	0.3	0.1	5.2	0.9	9.4	0.1	6.2	0.0	4.1	3.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	47	257	218	244	465	1071	10	699		468	1160	
V/C Ratio(X)	0.32	0.05	0.02	0.77	0.09	0.60	0.29	0.67		0.63	0.32	
Avail Cap(c_a), veh/h	315	257	218	525	478	1091	245	2026		1291	2865	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.3	19.0	19.0	21.2	14.7	12.6	25.2	18.9	0.0	20.8	12.9	0.0
Incr Delay (d2), s/veh	3.9	0.1	0.0	5.1	0.1	0.9	15.3	1.1	0.0	1.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	2.2	0.3	2.4	0.1	2.3	0.0	1.6	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	19.1	19.0	26.3	14.8	13.5	40.4	20.0	0.0	22.2	13.0	0.0
LnGrp LOS	C	B	B	C	B	B	D	C		C	B	
Approach Vol, veh/h		32			875			470	A		661	A
Approach Delay, s/veh		23.4			16.3			20.1			17.1	
Approach LOS		C			B			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	15.0	12.0	12.0	5.3	21.6	6.3	17.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	6.1	8.2	7.2	2.3	2.1	5.9	2.4	11.4
Green Ext Time (p_c), s	0.9	1.7	0.3	0.0	0.0	1.4	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	13.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	184	60	166	676	11	99	8	116	13	12	14
Future Vol, veh/h	8	184	60	166	676	11	99	8	116	13	12	14
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	175	-	100	190	-	-	-	-	95	175	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	87	78	83	92	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	211	77	200	735	14	127	10	149	17	15	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	749	0	0	288	0	0	1006	1380	106	1273	1450	375
Stage 1	-	-	-	-	-	-	231	231	-	1142	1142	-
Stage 2	-	-	-	-	-	-	775	1149	-	131	308	-
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	-
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	856	-	-	1271	-	-	195	143	928	124	130	623
Stage 1	-	-	-	-	-	-	751	712	-	213	273	-
Stage 2	-	-	-	-	-	-	357	271	-	859	659	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	856	-	-	1271	-	-	148	119	928	85	108	623
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	119	-	85	108	-
Stage 1	-	-	-	-	-	-	742	703	-	210	230	-
Stage 2	-	-	-	-	-	-	273	228	-	703	651	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1.8	63.1	37.3
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	145	928	856	-	-	1271	-	-	85	195
HCM Lane V/C Ratio	0.946	0.16	0.012	-	-	0.157	-	-	0.196	0.171
HCM Control Delay (s)	121.2	9.6	9.3	-	-	8.4	-	-	57.4	27.2
HCM Lane LOS	F	A	A	-	-	A	-	-	F	D
HCM 95th %tile Q(veh)	6.7	0.6	0	-	-	0.6	-	-	0.7	0.6

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	241	53	91	698	84	36
Future Vol, veh/h	241	53	91	698	84	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	185	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	78	83	92	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	277	68	110	759	108	46

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	345	0	877	139
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	600	-
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	-	-	1211	-	288	884
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1211	-	262	884
Mov Cap-2 Maneuver	-	-	-	-	262	-
Stage 1	-	-	-	-	677	-
Stage 2	-	-	-	-	511	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	24.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	332	-	-	1211	-
HCM Lane V/C Ratio	0.463	-	-	0.091	-
HCM Control Delay (s)	24.9	-	-	8.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	2.3	-	-	0.3	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	1	4	3	1	28	12	124	3	48	126	28
Future Vol, veh/h	10	1	4	3	1	28	12	124	3	48	126	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	11	1	4	3	1	30	13	135	3	52	137	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	434	420	152	422	434	137	167	0	0	138	0	0
Stage 1	256	256	-	163	163	-	-	-	-	-	-	-
Stage 2	178	164	-	259	271	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	532	525	894	542	515	911	1411	-	-	1446	-	-
Stage 1	749	696	-	839	763	-	-	-	-	-	-	-
Stage 2	824	762	-	746	685	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	494	499	894	518	489	911	1411	-	-	1446	-	-
Mov Cap-2 Maneuver	494	499	-	518	489	-	-	-	-	-	-	-
Stage 1	742	668	-	831	755	-	-	-	-	-	-	-
Stage 2	787	754	-	712	658	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	9.5	0.7	1.8
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1411	-	-	561	830	1446	-	-
HCM Lane V/C Ratio	0.009	-	-	0.029	0.042	0.036	-	-
HCM Control Delay (s)	7.6	0	-	11.6	9.5	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	276	38	0	782	0	15
Future Vol, veh/h	276	38	0	782	0	15
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
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	300	41	0	850	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	171
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	843
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	843
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	843	-	-	-
HCM Lane V/C Ratio	0.019	-	-	-
HCM Control Delay (s)	9.4	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Traffic Vol, veh/h	232	45	0	789	0	20
Future Vol, veh/h	232	45	0	789	0	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	-	85	-	-	-	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	252	49	0	858	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	126
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	901
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	901
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	901	-	-	-
HCM Lane V/C Ratio	0.024	-	-	-
HCM Control Delay (s)	9.1	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

LANE LEVEL OF SERVICE

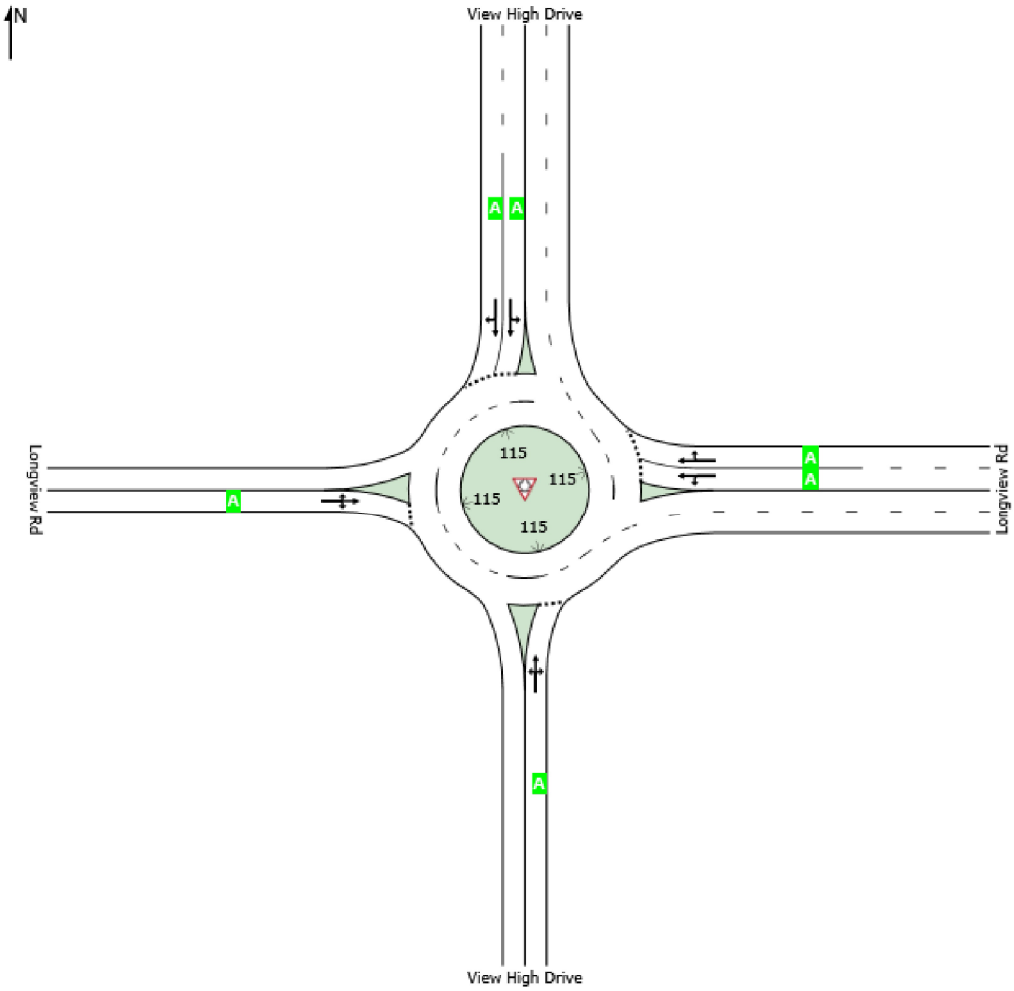
Lane Level of Service

Site: 101 [Ex+App+Dev AM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Ex+App+Dev AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	6	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	25.5
8	T1	23	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	23.7
18	R2	8	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	24.2
Approach		37	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	24.1
East: Longview Rd											
1	L2	8	2.0	0.016	3.1	LOS A	0.1	1.5	0.20	0.08	32.8
6	T1	12	2.0	0.016	3.1	LOS A	0.1	1.5	0.20	0.08	32.4
16	R2	284	2.0	0.222	4.7	LOS A	1.0	24.7	0.23	0.12	31.4
Approach		303	2.0	0.222	4.6	LOS A	1.0	24.7	0.23	0.11	31.4
North: View High Drive											
7	L2	291	2.0	0.233	4.6	LOS A	1.1	26.8	0.11	0.03	30.8
4	T1	55	2.0	0.233	3.9	LOS A	1.1	26.8	0.10	0.03	31.8
14	R2	50	2.0	0.061	3.3	LOS A	0.2	6.0	0.10	0.03	32.1
Approach		396	2.0	0.233	4.3	LOS A	1.1	26.8	0.11	0.03	31.1
West: Longview Rd											
5	L2	68	2.0	0.095	4.4	LOS A	0.3	8.9	0.40	0.30	31.4
2	T1	23	2.0	0.095	4.4	LOS A	0.3	8.9	0.40	0.30	31.1
12	R2	6	2.0	0.095	4.4	LOS A	0.3	8.9	0.40	0.30	30.1
Approach		97	2.0	0.095	4.4	LOS A	0.3	8.9	0.40	0.30	31.3
All Vehicles		834	2.0	0.233	4.4	LOS A	1.1	26.8	0.20	0.10	30.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

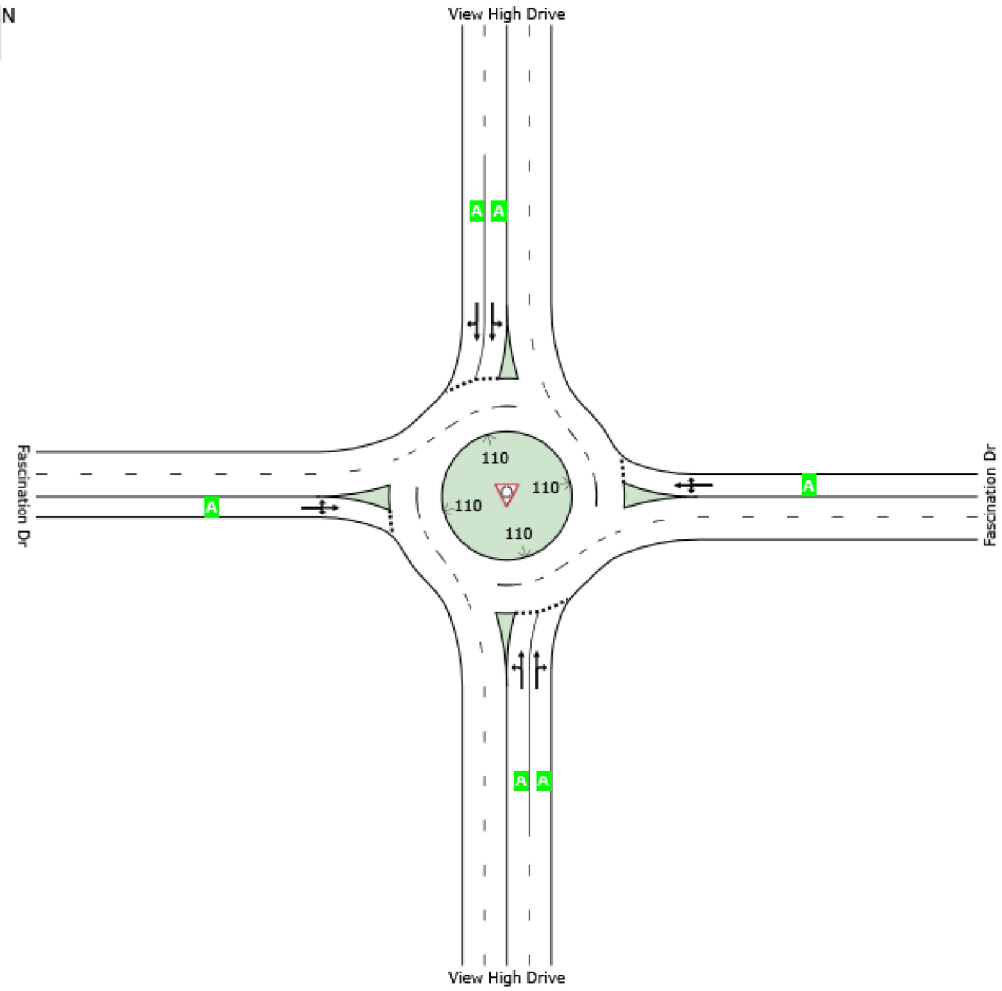
Lane Level of Service

Site: 101 [Ex+App+Dev AM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



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Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Ex+App+Dev AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
5	L2	3	2.0	0.172	4.5	LOS A	0.7	18.6	0.25	0.13	33.0
2	T1	398	2.0	0.172	4.4	LOS A	0.7	18.6	0.24	0.13	32.7
12	R2	23	2.0	0.172	4.3	LOS A	0.7	18.1	0.24	0.12	31.7
Approach		423	2.0	0.172	4.4	LOS A	0.7	18.6	0.24	0.13	32.6
East: Fascination Dr											
3	L2	41	2.0	0.145	5.2	LOS A	0.5	13.9	0.47	0.40	24.8
8	T1	12	2.0	0.145	5.2	LOS A	0.5	13.9	0.47	0.40	23.2
18	R2	84	2.0	0.145	5.2	LOS A	0.5	13.9	0.47	0.40	23.6
Approach		137	2.0	0.145	5.2	LOS A	0.5	13.9	0.47	0.40	23.9
North: View High Drive											
1	L2	49	2.0	0.162	4.2	LOS A	0.7	17.6	0.17	0.07	32.5
6	T1	364	2.0	0.162	4.1	LOS A	0.7	17.6	0.16	0.06	32.6
16	R2	6	2.0	0.162	4.0	LOS A	0.7	17.1	0.16	0.06	31.8
Approach		419	2.0	0.162	4.1	LOS A	0.7	17.6	0.16	0.06	32.6
West: Fascination Dr											
7	L2	51	2.0	0.074	4.5	LOS A	0.3	6.7	0.44	0.35	24.5
4	T1	12	2.0	0.074	4.5	LOS A	0.3	6.7	0.44	0.35	22.9
14	R2	6	2.0	0.074	4.5	LOS A	0.3	6.7	0.44	0.35	23.3
Approach		69	2.0	0.074	4.5	LOS A	0.3	6.7	0.44	0.35	24.1
All Vehicles		1049	2.0	0.172	4.4	LOS A	0.7	18.6	0.25	0.15	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

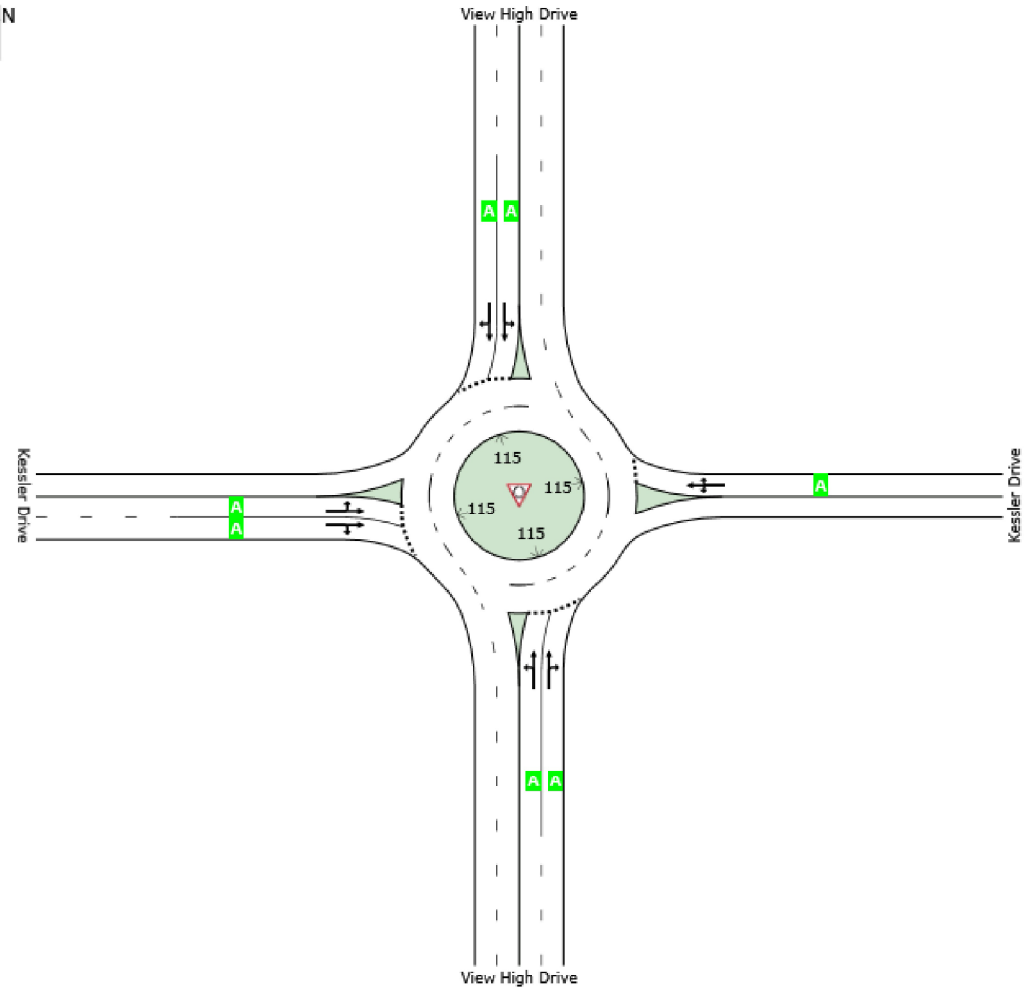
Lane Level of Service

Site: 101 [Ex+App+Dev AM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



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Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Ex+App+Dev AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	3	2.0	0.172	4.5	LOS A	0.7	18.6	0.25	0.13	33.2
8	T1	398	2.0	0.172	4.4	LOS A	0.7	18.6	0.24	0.13	32.8
18	R2	23	2.0	0.172	4.3	LOS A	0.7	18.1	0.24	0.12	31.8
Approach		423	2.0	0.172	4.4	LOS A	0.7	18.6	0.24	0.13	32.8
East: Kessler Drive											
1	L2	41	2.0	0.151	5.3	LOS A	0.6	14.5	0.47	0.40	24.9
6	T1	12	2.0	0.151	5.3	LOS A	0.6	14.5	0.47	0.40	23.2
16	R2	90	2.0	0.151	5.3	LOS A	0.6	14.5	0.47	0.40	23.6
Approach		142	2.0	0.151	5.3	LOS A	0.6	14.5	0.47	0.40	23.9
North: View High Drive											
7	L2	49	2.0	0.162	4.2	LOS A	0.7	17.6	0.17	0.07	32.7
4	T1	364	2.0	0.162	4.1	LOS A	0.7	17.6	0.16	0.06	32.7
14	R2	6	2.0	0.162	4.0	LOS A	0.7	17.1	0.16	0.06	31.9
Approach		419	2.0	0.162	4.1	LOS A	0.7	17.6	0.16	0.06	32.7
West: Kessler Drive											
5	L2	51	2.0	0.059	4.4	LOS A	0.2	5.3	0.44	0.34	24.4
2	T1	12	2.0	0.059	4.3	LOS A	0.2	5.3	0.44	0.32	23.4
12	R2	6	2.0	0.016	4.3	LOS A	0.1	1.4	0.45	0.31	24.2
Approach		69	2.0	0.059	4.4	LOS A	0.2	5.3	0.44	0.34	24.2
All Vehicles		1054	2.0	0.172	4.4	LOS A	0.7	18.6	0.25	0.15	30.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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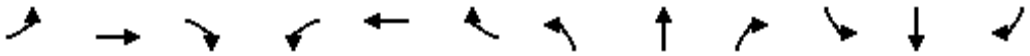
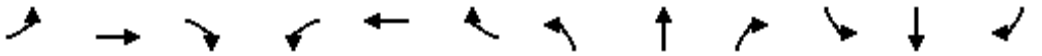
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	23	38	6	133	62	329	15	402	92	746	546	77
v/c Ratio	0.11	0.17	0.01	0.45	0.17	0.20	0.07	0.53	0.17	0.67	0.25	0.07
Control Delay	32.4	33.3	0.0	32.3	25.9	1.8	32.6	26.9	0.7	26.8	10.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	33.3	0.0	32.3	25.9	1.8	32.6	26.9	0.7	26.8	10.5	0.1
Queue Length 50th (ft)	9	15	0	53	18	0	6	83	0	152	62	0
Queue Length 95th (ft)	28	40	0	94	51	19	21	128	0	#288	136	0
Internal Link Dist (ft)		339			287			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	271	222	424	452	468	1675	211	1749	917	1112	2437	1154
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.17	0.01	0.29	0.13	0.20	0.07	0.23	0.10	0.67	0.22	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	30	5	104	48	286	12	350	72	686	475	60
Future Volume (veh/h)	18	30	5	104	48	286	12	350	72	686	475	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	38	6	133	62	329	15	402	0	746	546	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.87	0.78	0.87	0.78	0.92	0.87	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	223	189	188	351	1258	46	606		910	1450	
Arrive On Green	0.04	0.12	0.12	0.11	0.19	0.19	0.03	0.17	0.00	0.26	0.41	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	23	38	6	133	62	329	15	402	0	746	546	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	0.7	1.1	0.2	4.2	1.6	4.3	0.5	6.2	0.0	11.9	6.3	0.0
Cycle Q Clear(g_c), s	0.7	1.1	0.2	4.2	1.6	4.3	0.5	6.2	0.0	11.9	6.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	66	223	189	188	351	1258	46	606		910	1450	
V/C Ratio(X)	0.35	0.17	0.03	0.71	0.18	0.26	0.33	0.66		0.82	0.38	
Avail Cap(c_a), veh/h	273	223	189	456	415	1353	213	1758		1120	2485	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.5	23.2	22.8	25.3	20.0	10.0	28.1	22.7	0.0	20.3	12.1	0.0
Incr Delay (d2), s/veh	3.1	0.4	0.1	4.8	0.2	0.1	4.0	1.3	0.0	4.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.1	1.9	0.7	1.1	0.2	2.5	0.0	4.7	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	23.6	22.9	30.1	20.2	10.1	32.1	24.0	0.0	24.4	12.3	0.0
LnGrp LOS	C	C	C	C	C	B	C	C		C	B	
Approach Vol, veh/h		67			524			417	A		1292	A
Approach Delay, s/veh		25.9			16.4			24.3			19.3	
Approach LOS		C			B			C			B	

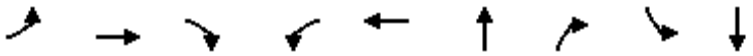
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.4	15.0	11.2	12.0	6.5	28.9	7.2	16.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	13.9	8.2	6.2	3.1	2.5	8.3	2.7	6.3
Green Ext Time (p_c), s	1.5	1.4	0.2	0.0	0.0	2.1	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	19.7
HCM 6th LOS	B

Notes

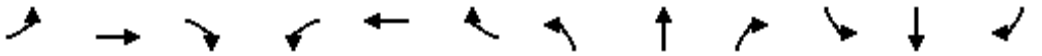
User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	24	758	85	216	413	145	194	4	20
v/c Ratio	0.14	0.67	0.14	0.55	0.21	0.51	0.40	0.03	0.05
Control Delay	32.7	21.5	0.5	28.3	8.4	29.1	6.9	32.7	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.7	21.5	0.5	28.3	8.4	29.1	6.9	32.7	14.7
Queue Length 50th (ft)	7	105	0	61	23	41	0	1	3
Queue Length 95th (ft)	30	239	0	151	90	99	39	10	15
Internal Link Dist (ft)		257			767	191			209
Turn Bay Length (ft)	175		100	190			95	175	
Base Capacity (vph)	168	1621	821	574	2422	489	697	135	906
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.47	0.10	0.38	0.17	0.30	0.28	0.03	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	697	66	179	348	10	106	7	161	3	9	6
Future Volume (veh/h)	19	697	66	179	348	10	106	7	161	3	9	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	758	85	216	400	13	136	9	194	4	12	8
Peak Hour Factor	0.78	0.92	0.78	0.83	0.87	0.78	0.78	0.78	0.83	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	41	1061	473	283	1527	50	391	21	286	8	287	191
Arrive On Green	0.02	0.30	0.30	0.16	0.43	0.43	0.18	0.18	0.18	0.00	0.27	0.27
Sat Flow, veh/h	1781	3554	1585	1781	3513	114	1305	117	1585	1781	1047	698
Grp Volume(v), veh/h	24	758	85	216	202	211	145	0	194	4	0	20
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1850	1422	0	1585	1781	0	1745
Q Serve(g_s), s	0.6	8.5	1.8	5.2	3.2	3.3	4.0	0.0	5.1	0.1	0.0	0.4
Cycle Q Clear(g_c), s	0.6	8.5	1.8	5.2	3.2	3.3	4.1	0.0	5.1	0.1	0.0	0.4
Prop In Lane	1.00		1.00	1.00		0.06	0.94		1.00	1.00		0.40
Lane Grp Cap(c), veh/h	41	1061	473	283	772	804	412	0	286	8	0	478
V/C Ratio(X)	0.58	0.71	0.18	0.76	0.26	0.26	0.35	0.00	0.68	0.52	0.00	0.04
Avail Cap(c_a), veh/h	199	1907	850	677	1430	1489	758	0	673	159	0	1053
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	14.0	11.6	18.0	8.1	8.1	16.7	0.0	17.1	22.2	0.0	11.9
Incr Delay (d2), s/veh	12.5	0.9	0.2	4.3	0.2	0.2	0.5	0.0	2.8	44.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.7	0.5	2.1	0.9	0.9	1.3	0.0	1.7	0.1	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	14.9	11.8	22.3	8.2	8.2	17.2	0.0	19.9	67.1	0.0	12.0
LnGrp LOS	C	B	B	C	A	A	B	A	B	E	A	B
Approach Vol, veh/h		867			629			339			24	
Approach Delay, s/veh		15.1			13.1			18.8			21.1	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	4.2	12.1	11.1	17.4		16.3	5.0	23.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	19.0	17.0	24.0		27.0	5.0	36.0				
Max Q Clear Time (g_c+I1), s	2.1	7.1	7.2	10.5		2.4	2.6	5.3				
Green Ext Time (p_c), s	0.0	1.0	0.4	2.9		0.0	0.0	1.3				

Intersection Summary												
HCM 6th Ctrl Delay			15.2									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	62.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	697	66	179	348	10	106	7	161	3	9	6
Future Vol, veh/h	19	697	66	179	348	10	106	7	161	3	9	6
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	175	-	100	190	-	-	-	-	95	175	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	92	78	83	87	78	78	78	83	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	758	85	216	400	13	136	9	194	4	12	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	413	0	0	843	0	0	1444	1651	379	1271	1730	207
Stage 1	-	-	-	-	-	-	806	806	-	839	839	-
Stage 2	-	-	-	-	-	-	638	845	-	432	891	-
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	-
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	1142	-	-	789	-	-	~ 93	98	619	125	87	799
Stage 1	-	-	-	-	-	-	342	393	-	326	379	-
Stage 2	-	-	-	-	-	-	431	377	-	572	359	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1142	-	-	789	-	-	~ 62	70	619	60	62	799
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 62	70	-	60	62	-
Stage 1	-	-	-	-	-	-	335	385	-	319	275	-
Stage 2	-	-	-	-	-	-	297	274	-	376	351	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	3.9	$ 329.6	53.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	62	619	1142	-	-	789	-	-	60	98
HCM Lane V/C Ratio	2.337	0.313	0.021	-	-	0.273	-	-	0.064	0.196
HCM Control Delay (s)	$ 753	13.4	8.2	-	-	11.3	-	-	69.1	50.5
HCM Lane LOS	F	B	A	-	-	B	-	-	F	F
HCM 95th %tile Q(veh)	14.2	1.3	0.1	-	-	1.1	-	-	0.2	0.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	9.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	701	78	98	362	76	104
Future Vol, veh/h	701	78	98	362	76	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	185	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	78	83	87	78	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	762	100	118	416	97	125

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	862	0	1206	381
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	444	-
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	-	-	776	-	176	617
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	614	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	776	-	149	617
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	357	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	66.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	260	-	-	776	-
HCM Lane V/C Ratio	0.857	-	-	0.152	-
HCM Control Delay (s)	66.5	-	-	10.5	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	7.1	-	-	0.5	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	41	1	12	6	1	44	16	137	3	37	148	40
Future Vol, veh/h	41	1	12	6	1	44	16	137	3	37	148	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	45	1	13	7	1	48	17	149	3	40	161	43

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	472	449	183	455	469	151	204	0	0	152	0	0
Stage 1	263	263	-	185	185	-	-	-	-	-	-	-
Stage 2	209	186	-	270	284	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	502	505	859	515	492	895	1368	-	-	1429	-	-
Stage 1	742	691	-	817	747	-	-	-	-	-	-	-
Stage 2	793	746	-	736	676	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	458	482	859	489	469	895	1368	-	-	1429	-	-
Mov Cap-2 Maneuver	458	482	-	489	469	-	-	-	-	-	-	-
Stage 1	732	669	-	806	737	-	-	-	-	-	-	-
Stage 2	739	736	-	700	654	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	9.8	0.8	1.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1368	-	-	512	802	1429	-	-
HCM Lane V/C Ratio	0.013	-	-	0.115	0.069	0.028	-	-
HCM Control Delay (s)	7.7	0	-	12.9	9.8	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	745	43	0	438	0	32
Future Vol, veh/h	745	43	0	438	0	32
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
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	810	47	0	476	0	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	429
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	574
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	574
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	574	-	-	-
HCM Lane V/C Ratio	0.061	-	-	-
HCM Control Delay (s)	11.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Traffic Vol, veh/h	767	38	0	460	0	15
Future Vol, veh/h	767	38	0	460	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	85	-	-	-	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	834	41	0	500	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	417
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	585
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	585
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	585	-	-	-
HCM Lane V/C Ratio	0.028	-	-	-
HCM Control Delay (s)	11.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

LANE LEVEL OF SERVICE

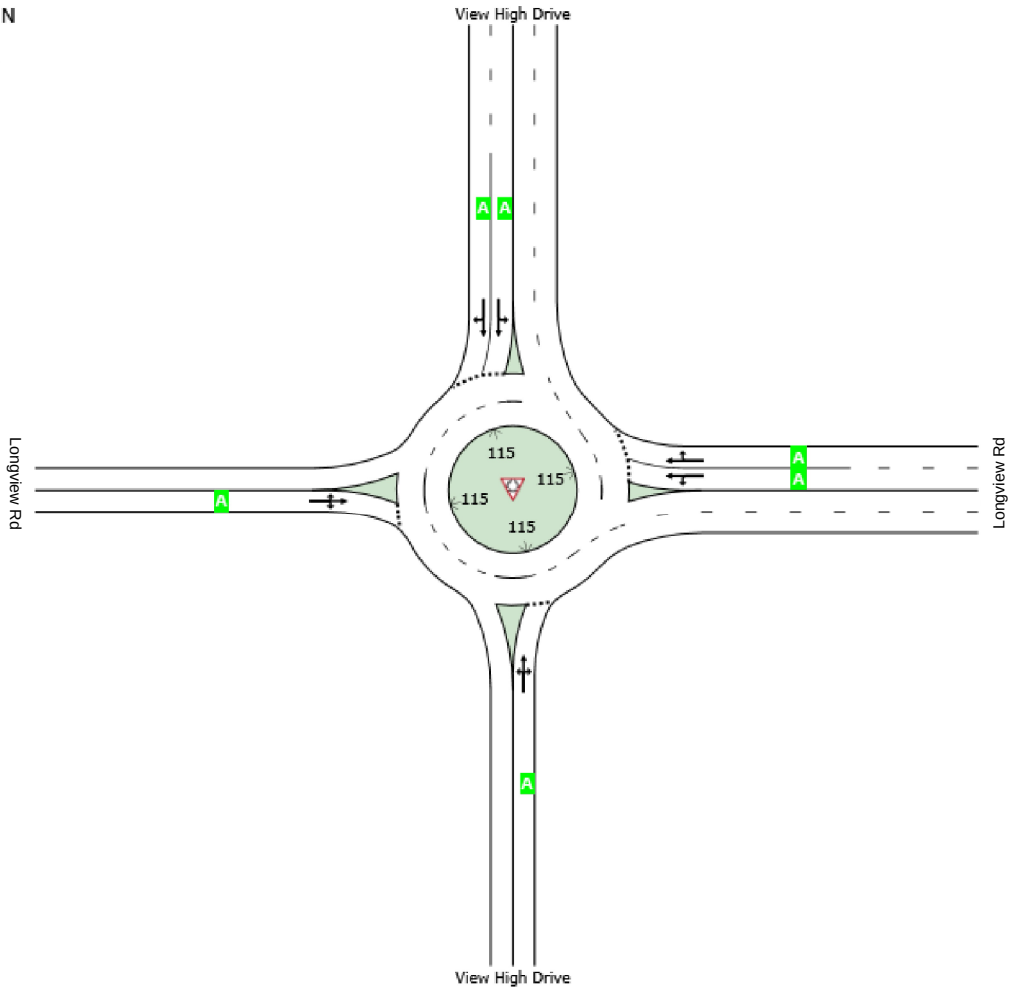
Lane Level of Service

Site: 101 [Full Build PM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Full Build PM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	6	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	25.3
8	T1	17	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	23.5
18	R2	10	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	23.9
Approach		33	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	24.0
East: Longview Road											
1	L2	8	2.0	0.043	3.3	LOS A	0.2	4.1	0.19	0.08	33.4
6	T1	45	2.0	0.043	3.3	LOS A	0.2	4.1	0.19	0.08	33.0
16	R2	224	2.0	0.173	4.2	LOS A	0.7	18.3	0.20	0.09	31.6
Approach		277	2.0	0.173	4.0	LOS A	0.7	18.3	0.20	0.09	31.9
North: View High Drive											
7	L2	474	2.0	0.358	6.0	LOS A	1.9	47.9	0.21	0.09	30.1
4	T1	62	2.0	0.079	3.5	LOS A	0.3	7.8	0.16	0.06	33.2
14	R2	37	2.0	0.079	3.5	LOS A	0.3	7.8	0.16	0.06	32.1
Approach		572	2.0	0.358	5.6	LOS A	1.9	47.9	0.20	0.09	30.5
West: Longview Road											
5	L2	60	2.0	0.142	5.5	LOS A	0.5	13.2	0.50	0.45	24.7
2	T1	54	2.0	0.142	5.5	LOS A	0.5	13.2	0.50	0.45	23.0
12	R2	9	2.0	0.142	5.5	LOS A	0.5	13.2	0.50	0.45	23.4
Approach		123	2.0	0.142	5.5	LOS A	0.5	13.2	0.50	0.45	23.8
All Vehicles		1005	2.0	0.358	5.1	LOS A	1.9	47.9	0.25	0.14	29.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

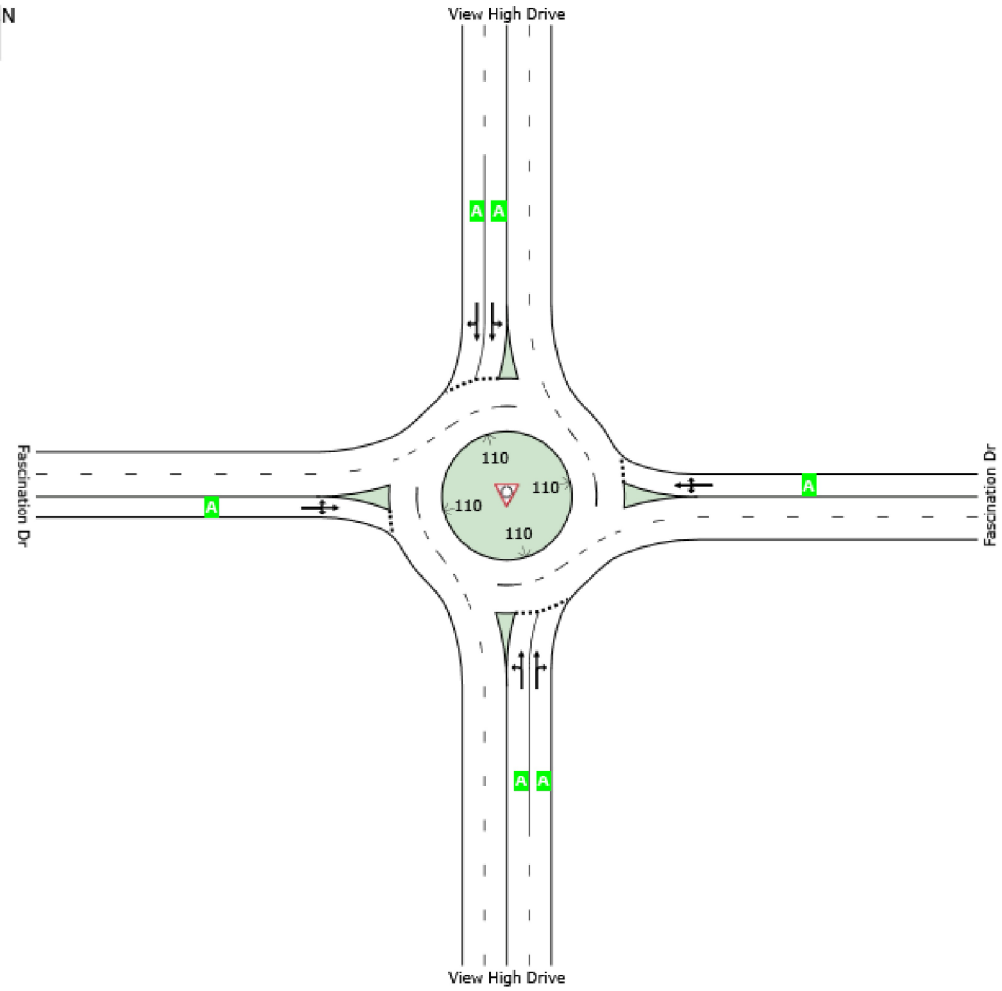
Lane Level of Service

Site: 101 [Full Build PM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Full Build PM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
5	L2	1	2.0	0.149	4.3	LOS A	0.6	15.7	0.25	0.13	33.1
2	T1	344	2.0	0.149	4.2	LOS A	0.6	15.7	0.25	0.13	32.8
12	R2	19	2.0	0.149	4.1	LOS A	0.6	15.3	0.24	0.12	31.8
Approach		364	2.0	0.149	4.2	LOS A	0.6	15.7	0.24	0.13	32.7
East: Fascination Dr											
3	L2	68	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	24.7
8	T1	13	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	23.0
18	R2	136	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	23.4
Approach		217	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	23.8
North: View High Drive											
1	L2	65	2.0	0.215	4.8	LOS A	1.0	24.4	0.22	0.11	32.2
6	T1	466	2.0	0.215	4.7	LOS A	1.0	24.4	0.21	0.10	32.3
16	R2	10	2.0	0.215	4.6	LOS A	0.9	23.8	0.21	0.10	31.6
Approach		541	2.0	0.215	4.7	LOS A	1.0	24.4	0.21	0.10	32.3
West: Fascination Dr											
7	L2	28	2.0	0.068	5.0	LOS A	0.2	6.0	0.50	0.43	24.7
4	T1	24	2.0	0.068	5.0	LOS A	0.2	6.0	0.50	0.43	23.1
14	R2	4	2.0	0.068	5.0	LOS A	0.2	6.0	0.50	0.43	23.5
Approach		56	2.0	0.068	5.0	LOS A	0.2	6.0	0.50	0.43	23.9
All Vehicles		1179	2.0	0.215	4.7	LOS A	1.0	24.4	0.28	0.18	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

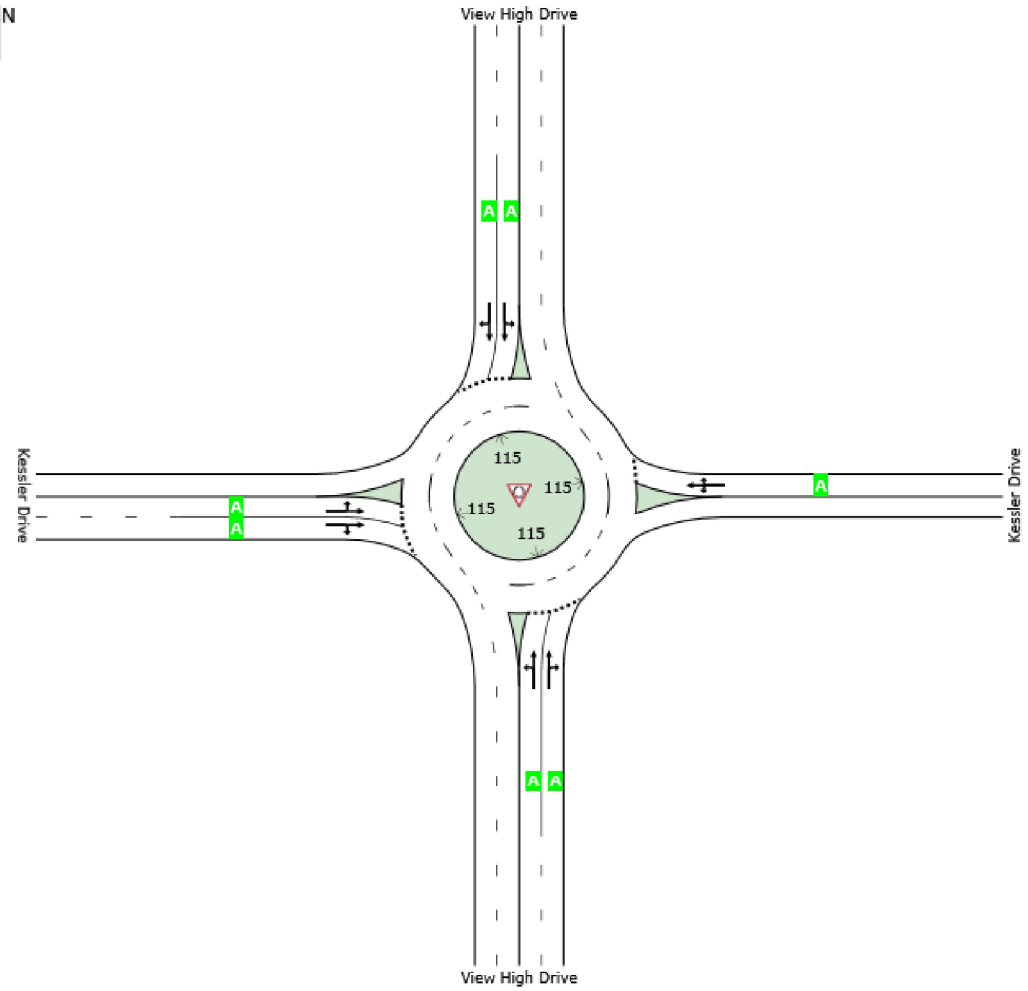
Lane Level of Service

Site: 101 [Full Build PM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Full Build PM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	1	2.0	0.149	4.3	LOS A	0.6	15.7	0.25	0.13	33.3
8	T1	344	2.0	0.149	4.2	LOS A	0.6	15.7	0.25	0.13	32.9
18	R2	19	2.0	0.149	4.1	LOS A	0.6	15.3	0.24	0.12	31.9
Approach		364	2.0	0.149	4.2	LOS A	0.6	15.7	0.24	0.13	32.9
East: Kessler Drive											
1	L2	68	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	24.8
6	T1	13	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	23.1
16	R2	136	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	23.5
Approach		217	2.0	0.215	5.6	LOS A	0.9	22.1	0.45	0.38	23.9
North: View High Drive											
7	L2	65	2.0	0.215	4.8	LOS A	1.0	24.4	0.22	0.11	32.4
4	T1	466	2.0	0.215	4.7	LOS A	1.0	24.4	0.21	0.10	32.4
14	R2	10	2.0	0.215	4.6	LOS A	0.9	23.8	0.21	0.10	31.7
Approach		541	2.0	0.215	4.7	LOS A	1.0	24.4	0.21	0.10	32.4
West: Kessler Drive											
5	L2	28	2.0	0.055	4.9	LOS A	0.2	4.8	0.49	0.42	24.7
2	T1	24	2.0	0.055	4.9	LOS A	0.2	4.8	0.50	0.41	23.2
12	R2	4	2.0	0.014	4.9	LOS A	0.0	1.3	0.50	0.38	24.1
Approach		56	2.0	0.055	4.9	LOS A	0.2	4.8	0.50	0.41	24.0
All Vehicles		1179	2.0	0.215	4.7	LOS A	1.0	24.4	0.28	0.18	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
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LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
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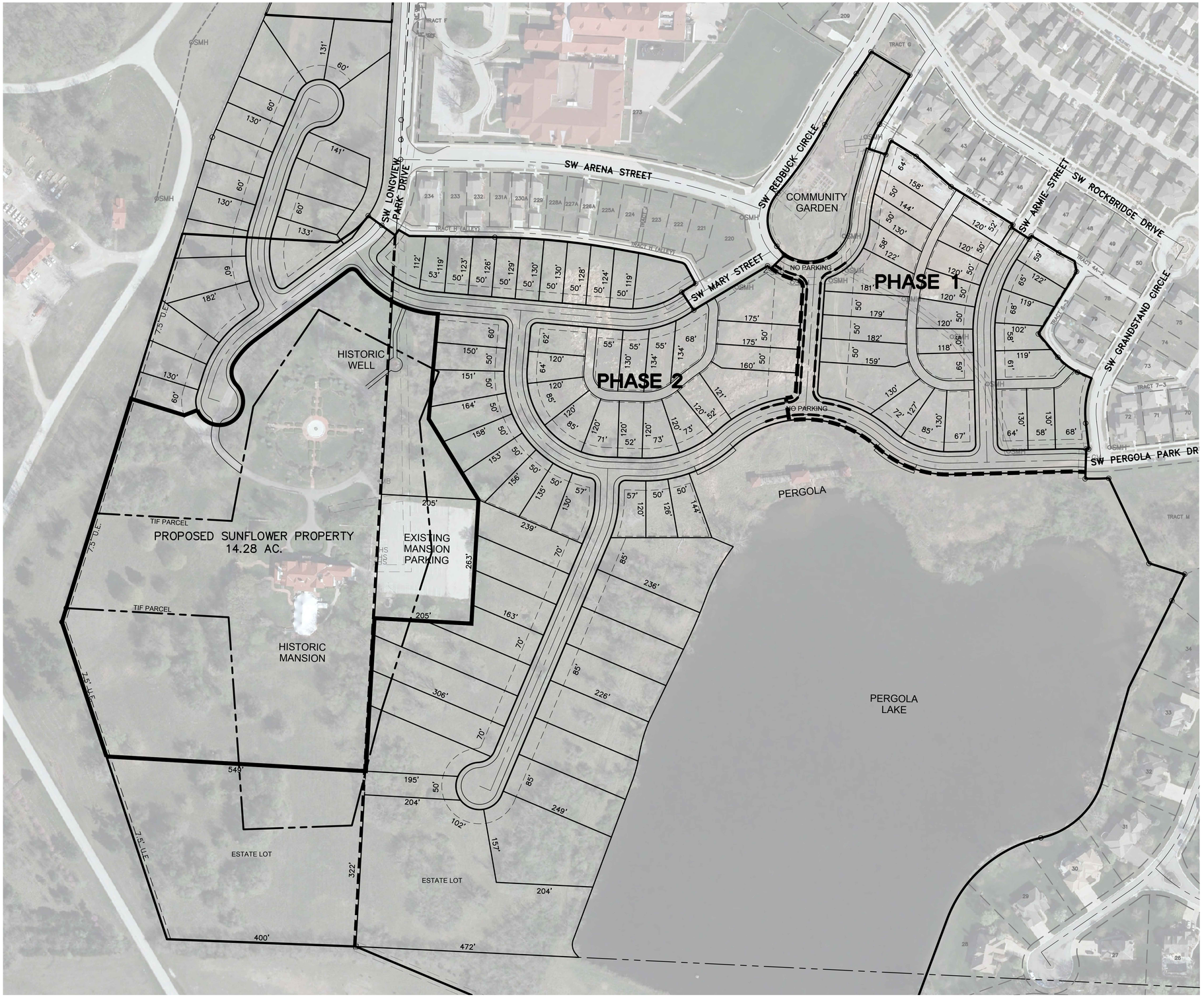
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site Plans



PROPOSED – TND
67 SINGLE–FAMILY UNITS
0 MULTI–FAMILY UNITS
67 UNITS TOTAL
DENSITY: 3.81 UNITS PER ACRE
20' FRONT YARD S.B.
5' SIDE–YARD S.B.
12' STREET SITE–YARD S.B.
3' REAR S.B.

PROPOSED – OTHER
(18) – 60'x130'
5' S.Y.S.B.
(8) – 70'x130'
7.5' S.Y.S.B.
(8) – 85'x150'
7.5' S.Y.S.B.
(2) – Estate Lots
7.5' S.Y.S.B.

North
0' 100' 200'

OLSSON ASSOCIATES
Olsson Associates - Civil Engineering
Missouri Certificate of Authority # 2007022824
1301 Burlington, Suite 100 North Kansas City, MO 64116
TEL 816.361.1177 FAX 816.587.4320 FAX 816.587.1393
www.olssonassociates.com

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

CONCEPT PLAN
NEW LONGVIEW
LEE'S SUMMIT, MISSOURI
2017

drawn by: CJH
checked by: SQB
approved by:
QA/QC by:
project no.: 017-0264 / 14036-01
drawing no.:
date: 2017/05/10

SHEET

DWG: L:\Projects\14036-01\Plans\Concept Plans\2017.04.18 Concept Plan – TND & Land Swap\2017.05.10 – NLV TND.LS – Concept Plan.dwg
DATE: May 10, 2017 3:14pm USER: cholmquist

LAND USE AREAS

- DAYCARE: 1.39 AC.
- TOWNHOMES: 3.83 AC.
- ON-SITE R/W (CURRY RD.): 0.57 AC.
- OFF-SITE R/W (CURRY RD.): 0.01 AC.

SITE INFORMATION

- 44 PARKING SPACES
- 11,500 SF PLAY AREA
- 44 TOWNHOME UNITS

N

0' 20' 40' 80'
SCALE IN FEET

OLSSON ASSOCIATES
Olsson Associates - Civil Engineering
Missouri Certificate of Authority # 2007022824
1301 Burlington, Suite 100 TEL: 816.587.4320
North Kansas City, MO 64116 FAX: 816.587.1393
www.olssonassociates.com

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

CONCEPT PLAN

NEW LONGVIEW
KESSLER VIEW

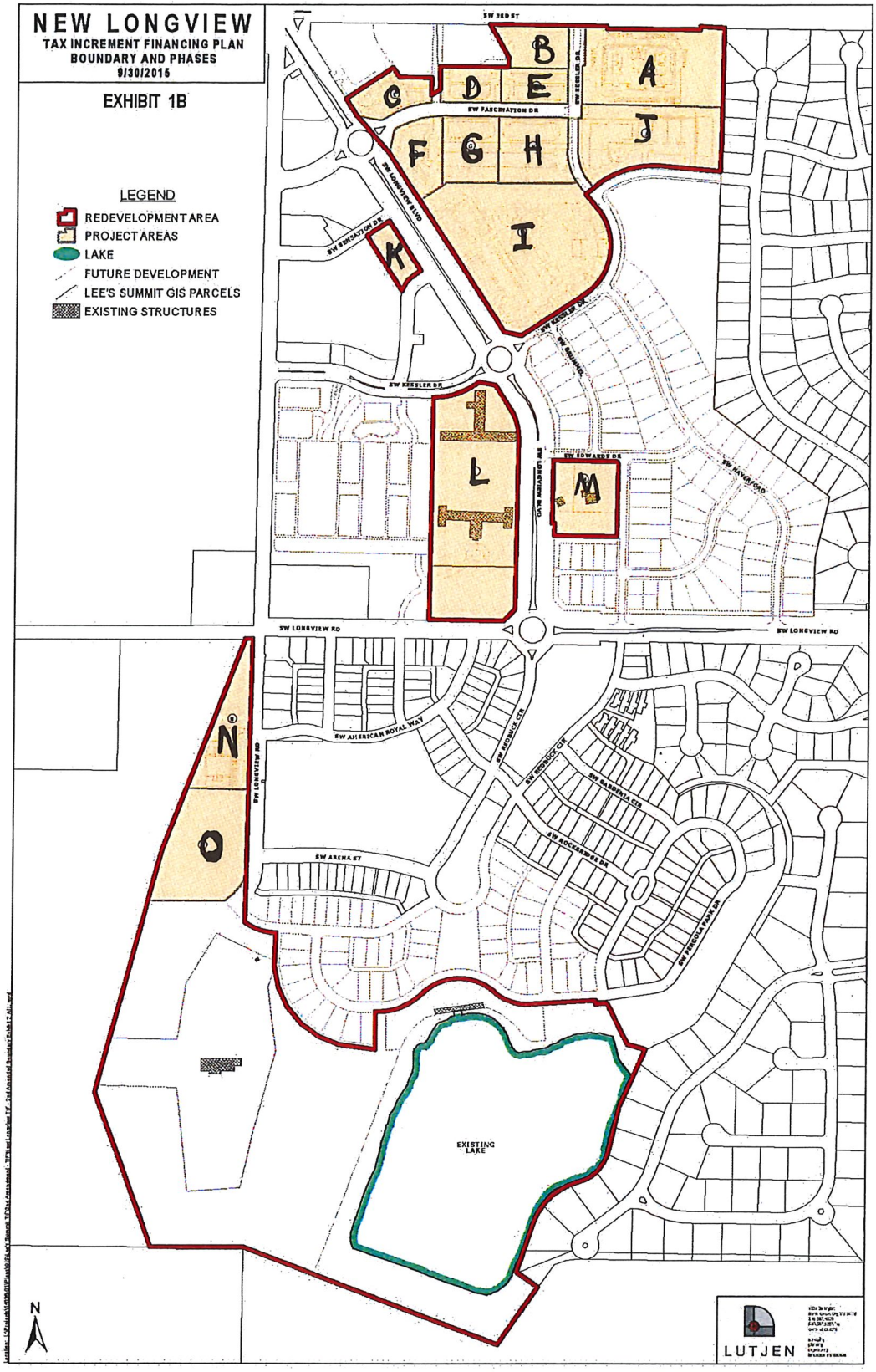
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI 2018

drawn by: CJH
checked by: JFE
approved by:
QA/QC by:
project no.: 14036-01
drawing no.:
date: 2018/03/29

SHEET

DWG: L:\Projects\14036-01\Plans\Concept Plans\2018.03.28 Concept Plan - Primrose Daycare\2018.03.29_Concept Plan.dwg USER: chalmquist
DATE: Mar 29, 2018 2:12pm

Area	Lot(s)	Legal	Use	Original Bld SF	Updated Bld SF	Variance	Estimated Completion	Completed (X)	Notes
A	1	NLVCD 4TH PLAT - LOT 1	memory care	43,325	43,325	-	2017	X	
B	52	NLVCD 3RD PLAT - LOT 52	fast food	5,000	5,000	-	2018		
C	43, 44	NLVCD 2ND & 3RD PLAT - LOT 44 & 43	retail	15,000	10,950	(4,050)	2018		
D	54	NLVCD 3RD PLAT - LOT 54	retail & office	9,000	27,063	18,063	2019		2 story
E	53	NLVCD 3RD PLAT - LOT 53	retail & office	12,000	35,000	23,000	2021		2 story
F	1D, 1E	FASCINATION AT NLV - LOT 1D & 1E	retail & office	22,000	60,500	38,500	2019		
G	1C	FASCINATION AT NLV - LOT 1C	theatre	17,000	27,835	10,835	2020	X	theatre building
H	1A, 1B	FASCINATION AT NLV - LOT 1A & 1B	retail & office	17,000	29,000	12,000	2020		1 & 2 story buildings
I	2	FASCINATION AT NLV - LOT 2	multi-family			-	2019		172 units
J	unentitled	unentitled	daycare	33,000	10,000	(23,000)	2019		
K	7	TOWER PARK COM PH 2 - LOT 7	retail & office	12,500	8,000	(4,500)	2020		
L	2	KESSLER 1ST PLAT - LOT 2	commercial	35,000	35,000	-	2023		Barns
M	2	KESSLER RIDGE AT NLV HISTORIC - LOT 2	office	3,500	3,500	-	2018		Farm Office & Dairy Manager's House
N	1	GODDARD SCHOOL - LOT 1	daycare	8,000	5,000	(3,000)	2017	X	
O	unentitled	unentitled	med den residential	5,000	-	(5,000)	2023		proposed detached residential units
TOTAL				**237,325**	**300,173**	**62,848**			


NEW LONGVIEW
TAX INCREMENT FINANCING PLAN
BOUNDARY AND PHASES
9/30/2015
EXHIBIT 1B
LEGEND
REDEVELOPMENT AREA
PROJECT AREAS
LAKE
FUTURE DEVELOPMENT
LEE'S SUMMIT GIS PARCELS
EXISTING STRUCTURES
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
SW 3RD ST
SW FASCINATION DR
SW LONGVIEW BLVD
SW KESSLER DR
SW EDWARDS DR
SW LONGVIEW RD
SW AMERICAN ROYAL WAY
SW ARENA ST
SW LONGVIEW RD
EXISTING LAKE
N
LUTJEN

RETAIL
3600 SF
1 STORY

RETAIL & OFFICE
27,063 SF
2 STORIES

RETAIL & OFFICE
35,000 SF
2 STORIES

RETAIL
8000 SF
1 STORY

FLEXIBLE-USE
EVENT SPACE -
VEHICULAR ACCESS
CLOSED FOR USE
DURING LARGE EVENTS

TRACT A
5275 SF

OFFICE
7500 SF
2 STORIES

OFFICE
8700 SF
2 STORIES

RETAIL & OFFICE
12,800 SF
2 STORIES

COVERED PARKING STRUCTURE
310 SPACES

OFFICE
52,500 SF
3 STORIES

SW KESSLER DRIVE

OPEN SPACE W/
AMENITIES (GRILLS,
BENCHES, ETC.)

FENCED
OUTDOOR
PLAY AREA

DAYCARE
10,000 SF
1 STORY

FENCED
OUTDOOR
PLAY AREA

(5)
TOWNHOME
UNITS

PRIVATE DRIVE

(6)
TOWNHOME
UNITS

TOWNHOME MAILBOXES

(4)
TOWNHOME
UNITS

0.01 AC. OFFSITE TO BE
DEDICATED AS RIGHT-OF-WAY

TRACT A
4.25 ACRES

0' 25' 50' 100'
SCALE IN FEET

OLSSON ASSOCIATES

MO Certificate of Authority #001592
1301 Burlington, Suite 100
NORTH KANSAS CITY, MO 64116

TEL 816.587.4320
FAX 816.587.1393

www.olssonassociates.com

NO. REV.	DATE	BY	REVISIONS DESCRIPTION
			REVISIONS

PRELIMINARY SITE PLAN

KESSLER VIEW
PRELIMINARY DEVELOPMENT PLAN

LEE'S SUMMIT, MO

2018

drawn by: CJH
checked by: JAB
designed by: NH
QA/QC by: JFE
project no.: 017-3807
date: 2018.03.02

SHEET
03

DWG: F:\2017\3501-4000\017-3807\40-Design\AutoCAD\Preliminary Plans\Sheets\GNCV\01_Development Plans_36x24\C_SIT01_73807.dwg
DATE: May 02, 2018 4:57pm
USER: cholmquist

Appendix E

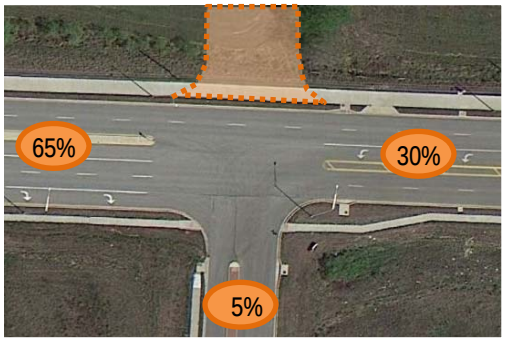
Trip Distribution

Table 3: Trip Generation

Phase	Land Use	Units	Daily Trips	A.M. Peak Hour Trips			P.M. Peak Hour Trips		
				Total	In	Out	Total	In	Out
1	Single-family (ITE 210)	53	586	47	12	35	59	37	22
2 & 3	Single-family (ITE 210)	91	963	73	18	55	97	61	36
	Total	144	1,549	120	30	90	156	98	58

The A.M. and P.M. peak hour trips identified in the table were distributed through the study intersection of 3rd Street and Kessler Drive based on existing travel patterns. To identify the maximum potential impacts of the development on the study intersection all trips were assigned through the intersection. A summary of the trip distribution assumptions used in the analysis are shown in Figure 3.

Figure 3: Trip Distribution Assumptions



Existing plus Phase 1 Development Conditions

An analysis was performed to identify the impacts of Phase 1 on the study intersection using the trip generation estimates and distribution assumptions identified previously. Estimated trips for the remaining portions of the nearby approved New Longview project were considered in the analysis for this scenario. Figure 4 shows the A.M. and P.M. peak hour volumes and lane configurations used in the analyses. The Level of Service results of the analyses are summarized in Table 4 and the Synchro outputs are included in the appendix for reference. Queue results are summarized in Table 5.

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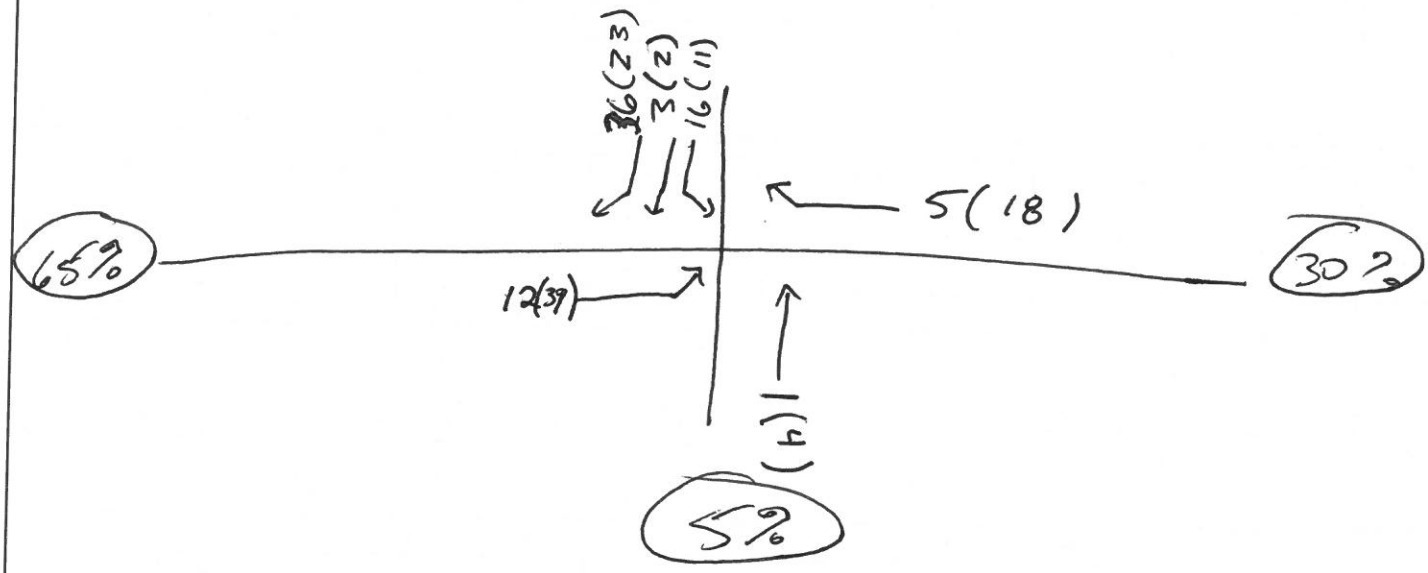
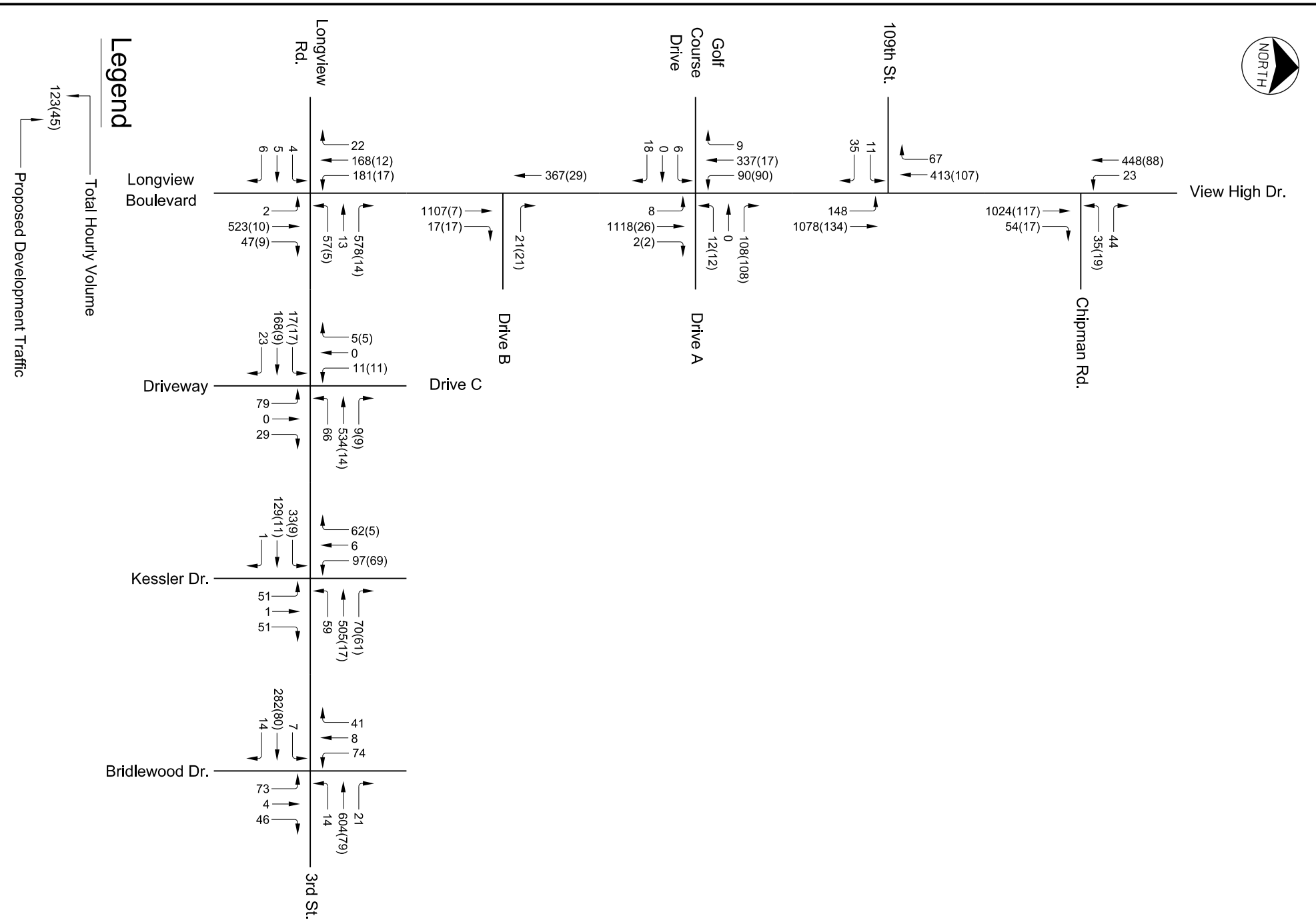


TRIP DIST FOR WINTERSET VALLEY

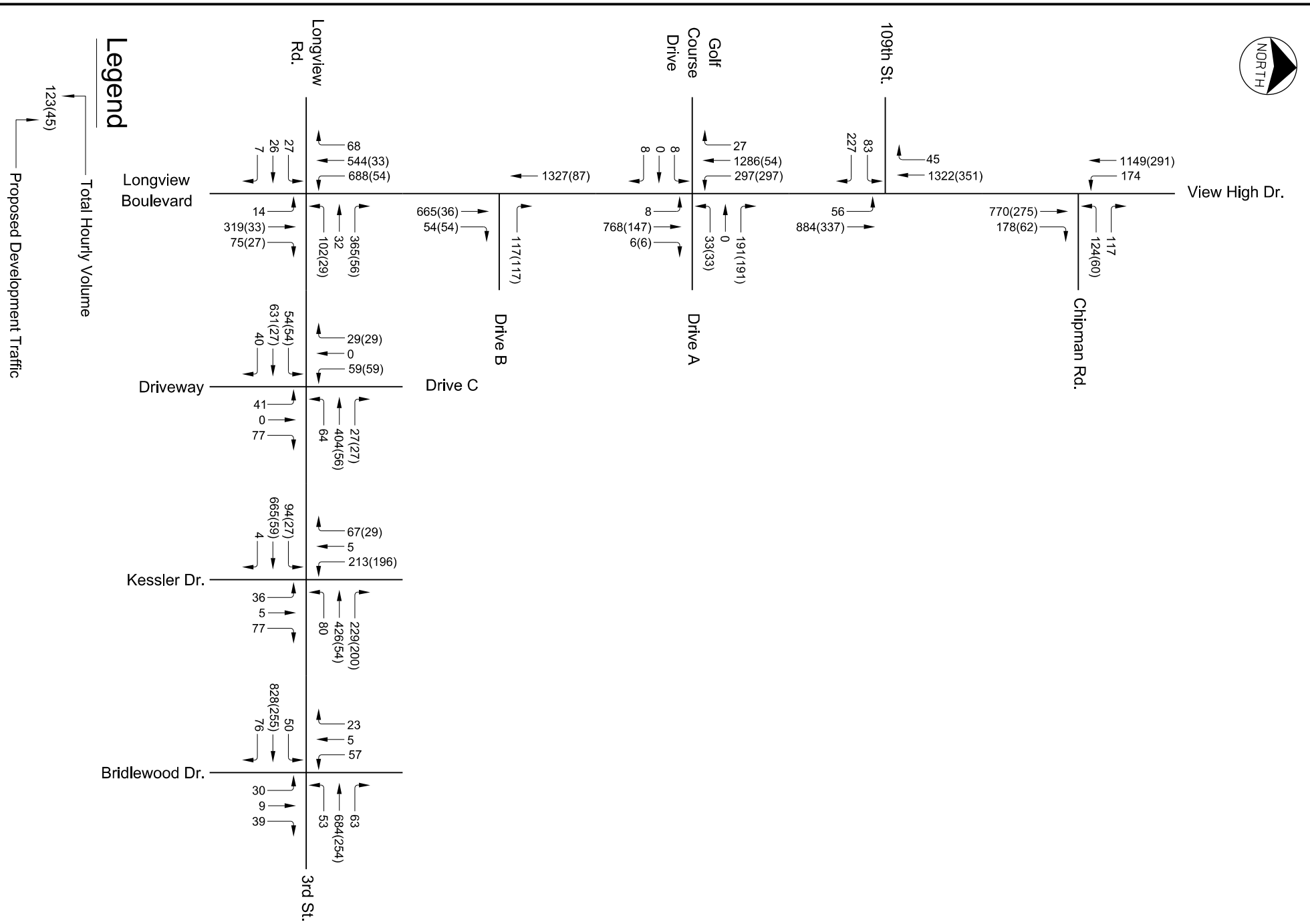
project: Longview

subject

drawn by: Josh P date: project no.: sheet of

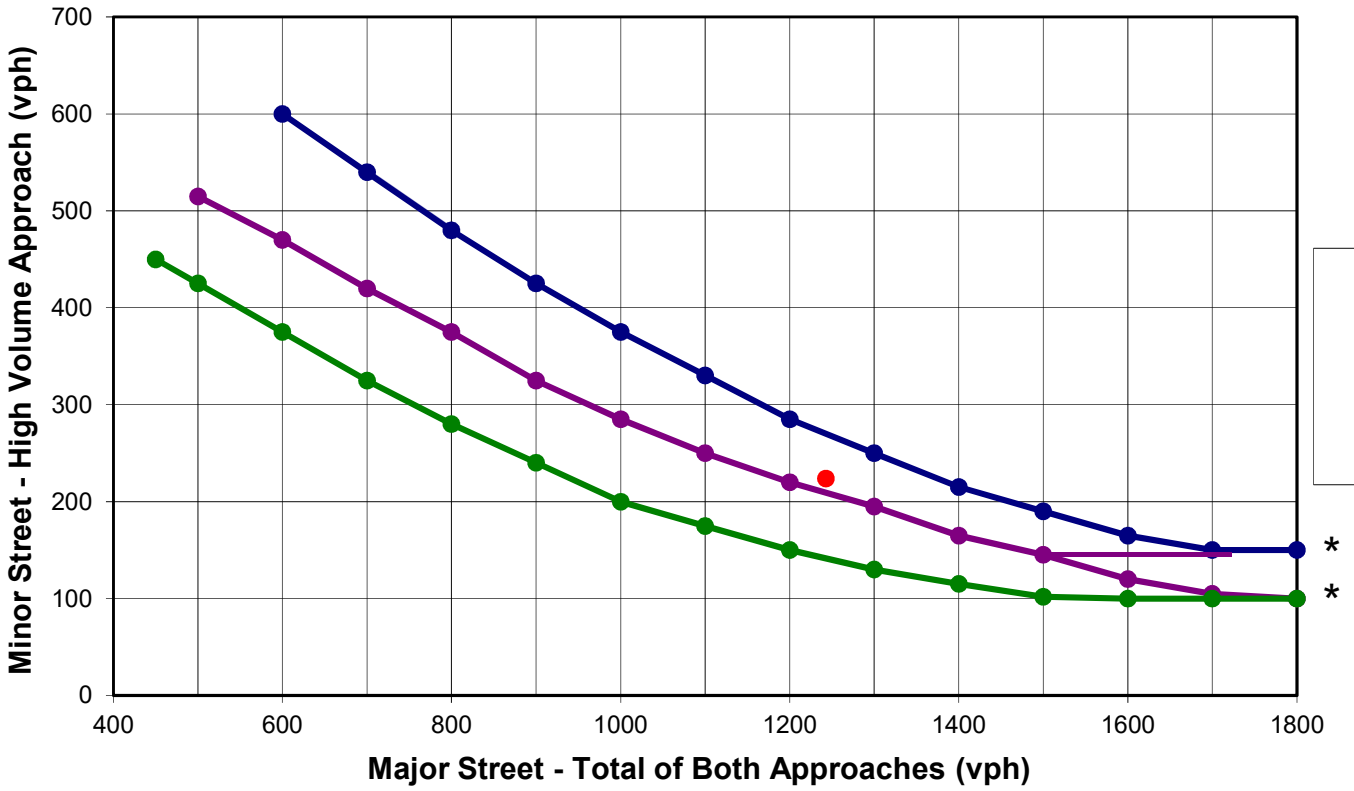


TranSystems	EXISTING PLUS APPROVED PLUS DEVELOPMENT A.M. PEAK HOUR TRAFFIC VOLUMES	3rd Street and View High Traffic Impact Study Lee's Summit, Missouri	July 2016 No Scale Figure A-11

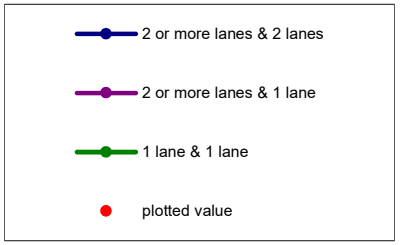


TranSystems	EXISTING PLUS APPROVED PLUS DEVELOPMENT P.M. PEAK HOUR TRAFFIC VOLUMES	3rd Street and View High Traffic Impact Study Lee's Summit, Missouri	July 2016 No Scale Figure A-12

Full Build AM Peak Hour Volume Warrant
3rd Street & Kessler Drive

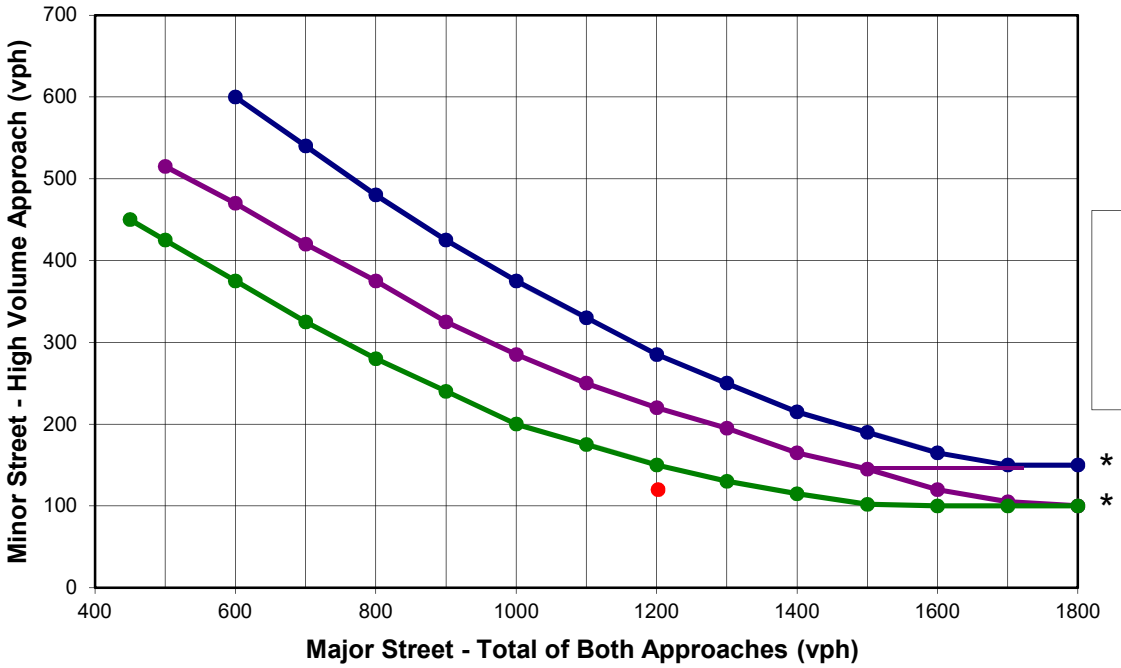


Off Chart:
Major - 1243
Minor - 224



*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

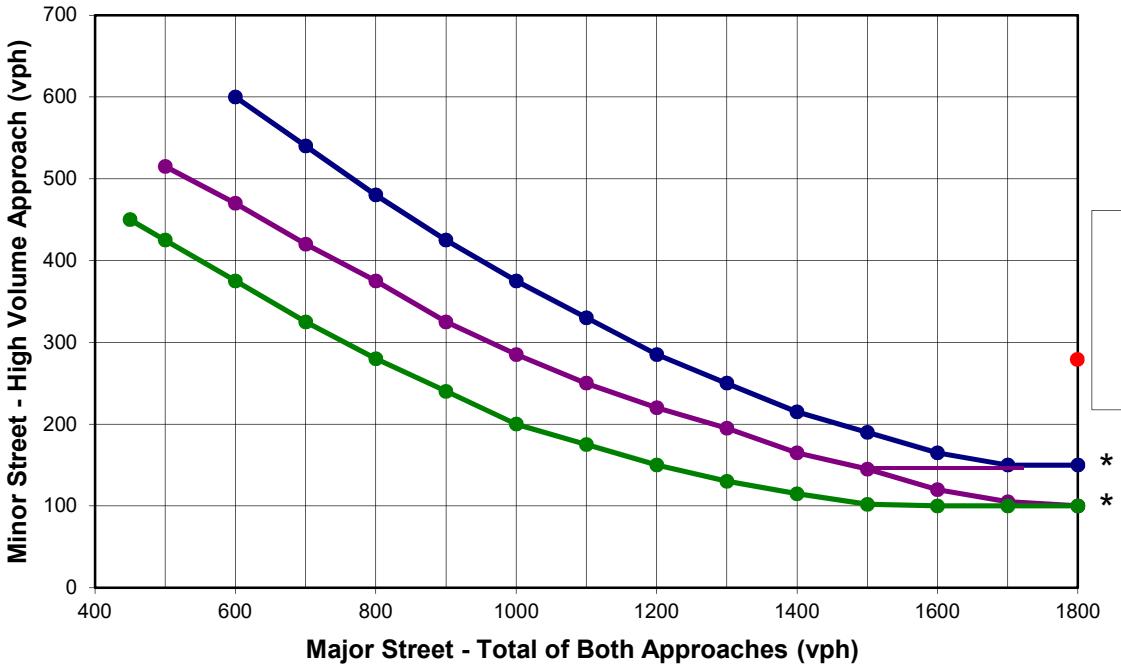
Full Build Peak Hour Volume Warrant
3rd Street & Kessler Drive



Off Chart:
Major - 1202
Minor - 120

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

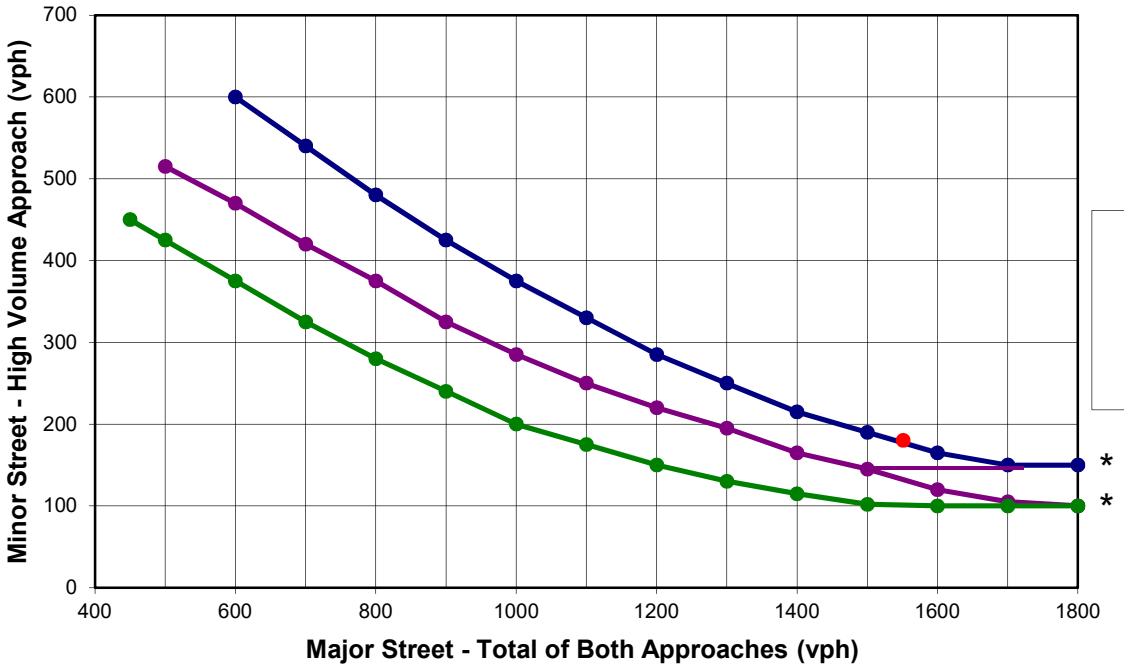
Full Build PM Peak Hour Volume Warrant
3rd Street & Kessler Drive



Off Chart:
Major - 1802
Minor - 279

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

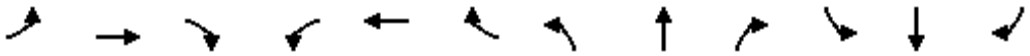
Full Build PM Peak Hour Volume Warrant
3rd Street & Kessler Drive



Off Chart:
Major - 1551
Minor - 180

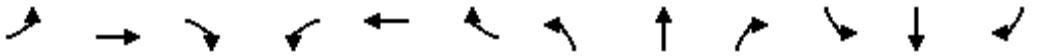
*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

Capacity Analysis



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	15	13	4	196	41	722	3	467	72	329	367	49
v/c Ratio	0.07	0.05	0.01	0.55	0.09	0.40	0.01	0.55	0.12	0.43	0.20	0.05
Control Delay	31.6	31.7	0.0	31.2	22.2	2.6	32.0	24.3	0.4	23.7	10.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	31.7	0.0	31.2	22.2	2.6	32.0	24.3	0.4	23.7	10.2	0.1
Queue Length 50th (ft)	4	4	0	52	10	9	1	65	0	43	23	0
Queue Length 95th (ft)	21	20	0	146	39	52	8	148	0	107	86	0
Internal Link Dist (ft)		339			287			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	292	239	435	486	520	2068	227	1882	966	1196	2645	1235
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.05	0.01	0.40	0.08	0.35	0.01	0.25	0.07	0.28	0.14	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	10	3	163	32	664	2	406	56	286	305	38
Future Volume (veh/h)	12	10	3	163	32	664	2	406	56	286	305	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	13	4	196	41	722	3	467	0	329	367	0
Peak Hour Factor	0.78	0.78	0.78	0.83	0.78	0.92	0.78	0.87	0.78	0.87	0.83	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	47	252	213	253	468	1105	10	686		505	1185	
Arrive On Green	0.03	0.13	0.13	0.14	0.25	0.25	0.01	0.19	0.00	0.15	0.33	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	15	13	4	196	41	722	3	467	0	329	367	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	0.4	0.3	0.1	5.5	0.9	11.0	0.1	6.4	0.0	4.7	4.0	0.0
Cycle Q Clear(g_c), s	0.4	0.3	0.1	5.5	0.9	11.0	0.1	6.4	0.0	4.7	4.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	47	252	213	253	468	1105	10	686		505	1185	
V/C Ratio(X)	0.32	0.05	0.02	0.78	0.09	0.65	0.30	0.68		0.65	0.31	
Avail Cap(c_a), veh/h	308	252	213	514	468	1105	240	1981		1262	2801	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.9	19.6	19.5	21.5	15.0	12.8	25.8	19.5	0.0	21.0	12.9	0.0
Incr Delay (d2), s/veh	3.9	0.1	0.0	5.1	0.1	1.4	15.3	1.2	0.0	1.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	2.3	0.3	2.8	0.1	2.4	0.0	1.8	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	19.7	19.6	26.6	15.0	14.2	41.0	20.7	0.0	22.4	13.0	0.0
LnGrp LOS	C	B	B	C	B	B	D	C		C	B	
Approach Vol, veh/h		32			959			470	A		696	A
Approach Delay, s/veh		23.9			16.7			20.8			17.5	
Approach LOS		C			B			C			B	

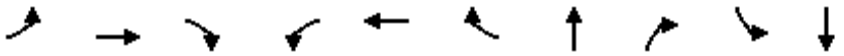
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	15.0	12.4	12.0	5.3	22.3	6.4	18.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	6.7	8.4	7.5	2.3	2.1	6.0	2.4	13.0
Green Ext Time (p_c), s	1.0	1.7	0.3	0.0	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

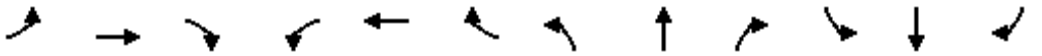
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	37	224	77	200	778	99	139	149	126	90
v/c Ratio	0.25	0.30	0.17	0.68	0.55	0.13	0.51	0.32	0.86	0.14
Control Delay	29.4	17.9	0.8	38.7	14.7	1.3	25.4	5.3	79.5	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	17.9	0.8	38.7	14.7	1.3	25.4	5.3	79.5	5.2
Queue Length 50th (ft)	10	28	0	51	74	0	33	0	35	3
Queue Length 95th (ft)	33	55	0	#153	177	3	72	21	#118	21
Internal Link Dist (ft)		257			767		191			209
Turn Bay Length (ft)	175		100	190		150		95	175	
Base Capacity (vph)	146	1168	632	292	1464	751	418	632	146	849
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.19	0.12	0.68	0.53	0.13	0.33	0.24	0.86	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	195	60	166	716	77	99	9	116	98	15	55
Future Volume (veh/h)	29	195	60	166	716	77	99	9	116	98	15	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	37	224	77	200	778	99	127	12	149	126	19	71
Peak Hour Factor	0.78	0.87	0.78	0.83	0.92	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	713	318	255	1102	492	371	24	260	160	123	458
Arrive On Green	0.03	0.20	0.20	0.14	0.31	0.31	0.16	0.16	0.16	0.09	0.35	0.35
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1203	148	1585	1781	346	1292
Grp Volume(v), veh/h	37	224	77	200	778	99	139	0	149	126	0	90
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1351	0	1585	1781	0	1638
Q Serve(g_s), s	0.8	2.1	1.6	4.3	7.7	1.8	3.7	0.0	3.5	2.8	0.0	1.5
Cycle Q Clear(g_c), s	0.8	2.1	1.6	4.3	7.7	1.8	3.8	0.0	3.5	2.8	0.0	1.5
Prop In Lane	1.00		1.00	1.00		1.00	0.91		1.00	1.00		0.79
Lane Grp Cap(c), veh/h	60	713	318	255	1102	492	395	0	260	160	0	581
V/C Ratio(X)	0.62	0.31	0.24	0.78	0.71	0.20	0.35	0.00	0.57	0.79	0.00	0.16
Avail Cap(c_a), veh/h	179	1429	637	358	1786	797	714	0	637	179	0	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.0	13.6	13.4	16.4	12.1	10.1	15.5	0.0	15.3	17.7	0.0	8.8
Incr Delay (d2), s/veh	9.8	0.2	0.4	7.3	0.8	0.2	0.5	0.0	2.0	18.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.7	0.5	1.9	2.3	0.5	1.1	0.0	1.1	1.8	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	13.8	13.8	23.7	13.0	10.3	16.0	0.0	17.3	36.4	0.0	8.9
LnGrp LOS	C	B	B	C	B	B	B	A	B	D	A	A
Approach Vol, veh/h		338			1077			288			216	
Approach Delay, s/veh		15.4			14.7			16.7			24.9	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	7.6	10.5	9.7	12.0		18.1	5.3	16.3				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s	4.0	16.0	8.0	16.0		16.0	4.0	20.0				
Max Q Clear Time (g_c+I1), s	4.8	5.8	6.3	4.1		3.5	2.8	9.7				
Green Ext Time (p_c), s	0.0	0.7	0.1	0.8		0.2	0.0	2.7				

Intersection Summary												
HCM 6th Ctrl Delay			16.3									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	262	53	91	770	9	84	0	36	11	0	5
Future Vol, veh/h	17	262	53	91	770	9	84	0	36	11	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	100	-	100	185	-	-	0	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	87	78	83	92	92	78	92	78	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	301	68	110	837	10	108	0	46	12	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	847	0	0	369	0	0	976	1404	151	1249	1467	424
Stage 1	-	-	-	-	-	-	337	337	-	1062	1062	-
Stage 2	-	-	-	-	-	-	639	1067	-	187	405	-
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	-
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	786	-	-	1186	-	-	206	138	868	129	127	579
Stage 1	-	-	-	-	-	-	651	640	-	239	298	-
Stage 2	-	-	-	-	-	-	431	297	-	797	597	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	786	-	-	1186	-	-	186	122	868	111	113	579
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	122	-	111	113	-
Stage 1	-	-	-	-	-	-	636	625	-	234	270	-
Stage 2	-	-	-	-	-	-	387	269	-	737	583	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1	36.4	31.9
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	186	868	786	-	-	1186	-	-	111	579
HCM Lane V/C Ratio	0.579	0.053	0.024	-	-	0.092	-	-	0.108	0.009
HCM Control Delay (s)	48	9.4	9.7	-	-	8.3	-	-	41.3	11.3
HCM Lane LOS	E	A	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	3.1	0.2	0.1	-	-	0.3	-	-	0.4	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	1	4	3	1	28	12	125	3	48	129	28
Future Vol, veh/h	10	1	4	3	1	28	12	125	3	48	129	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	11	1	4	3	1	30	13	136	3	52	140	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	438	424	155	426	438	138	170	0	0	139	0	0
Stage 1	259	259	-	164	164	-	-	-	-	-	-	-
Stage 2	179	165	-	262	274	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	529	522	891	539	512	910	1407	-	-	1445	-	-
Stage 1	746	694	-	838	762	-	-	-	-	-	-	-
Stage 2	823	762	-	743	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	491	496	891	515	486	910	1407	-	-	1445	-	-
Mov Cap-2 Maneuver	491	496	-	515	486	-	-	-	-	-	-	-
Stage 1	739	666	-	830	754	-	-	-	-	-	-	-
Stage 2	786	754	-	709	656	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	9.5	0.6	1.8
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1407	-	-	558	828	1445	-	-
HCM Lane V/C Ratio	0.009	-	-	0.029	0.042	0.036	-	-
HCM Control Delay (s)	7.6	0	-	11.6	9.5	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	314	38	0	859	0	15
Future Vol, veh/h	314	38	0	859	0	15
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
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	341	41	0	934	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	191
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	818
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	818
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	818	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Traffic Vol, veh/h	264	45	0	870	0	20
Future Vol, veh/h	264	45	0	870	0	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	-	85	-	-	-	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	287	49	0	946	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	144
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	877
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	877
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	877	-	-	-
HCM Lane V/C Ratio	0.025	-	-	-
HCM Control Delay (s)	9.2	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

LANE LEVEL OF SERVICE

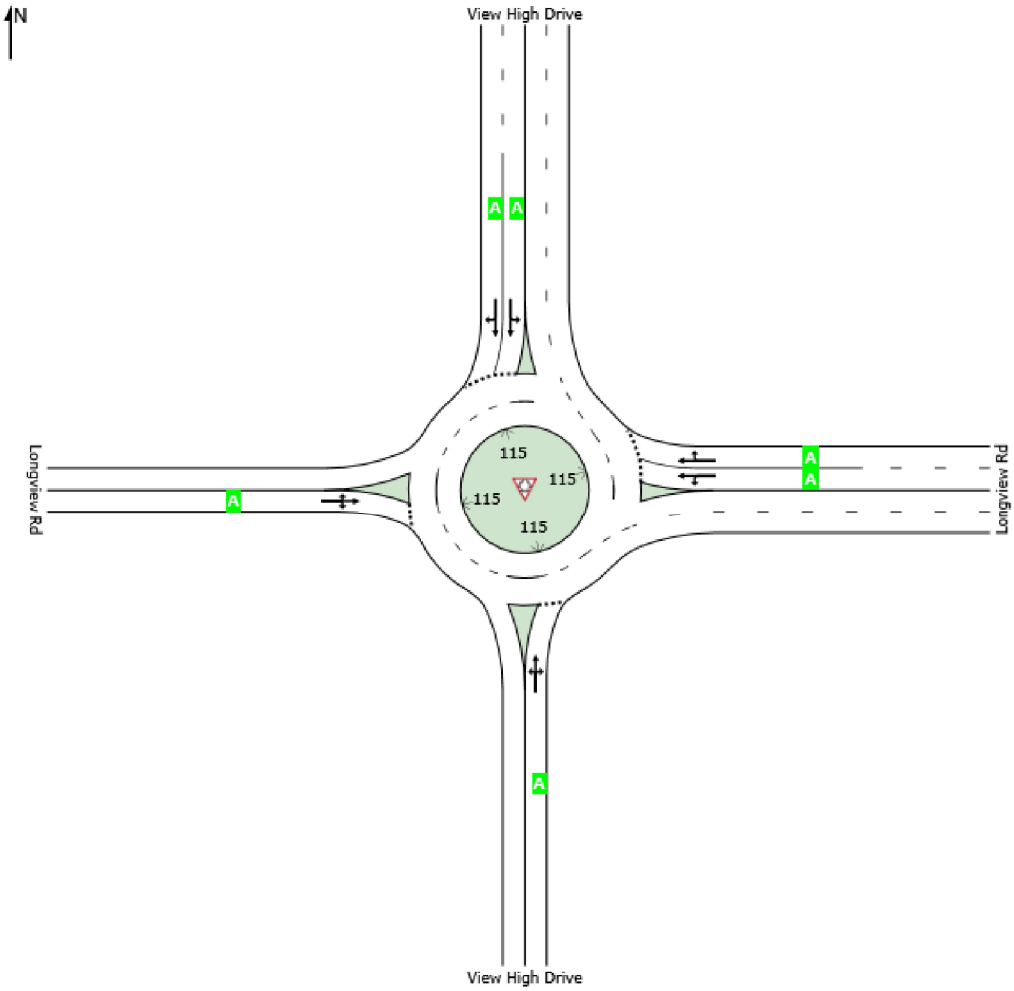
Lane Level of Service

Site: 101 [Full Build AM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Full Build AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	6	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	25.5
8	T1	23	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	23.7
18	R2	8	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	24.2
Approach		37	2.0	0.037	3.9	LOS A	0.1	3.3	0.40	0.28	24.1
East: Longview Rd											
1	L2	8	2.0	0.019	3.1	LOS A	0.1	1.8	0.20	0.08	35.9
6	T1	15	2.0	0.019	3.1	LOS A	0.1	1.8	0.20	0.08	35.6
16	R2	284	2.0	0.222	4.7	LOS A	1.0	24.7	0.23	0.12	34.4
Approach		307	2.0	0.222	4.6	LOS A	1.0	24.7	0.23	0.11	34.5
North: View High Drive											
7	L2	292	2.0	0.234	4.6	LOS A	1.1	27.0	0.12	0.04	33.3
4	T1	55	2.0	0.234	3.9	LOS A	1.1	27.0	0.11	0.03	34.8
14	R2	50	2.0	0.061	3.3	LOS A	0.2	6.0	0.10	0.03	35.3
Approach		397	2.0	0.234	4.4	LOS A	1.1	27.0	0.12	0.04	33.8
West: Longview Rd											
5	L2	68	2.0	0.095	4.4	LOS A	0.4	8.9	0.40	0.30	34.1
2	T1	23	2.0	0.095	4.4	LOS A	0.4	8.9	0.40	0.30	33.9
12	R2	6	2.0	0.095	4.4	LOS A	0.4	8.9	0.40	0.30	32.8
Approach		97	2.0	0.095	4.4	LOS A	0.4	8.9	0.40	0.30	33.9
All Vehicles		839	2.0	0.234	4.4	LOS A	1.1	27.0	0.20	0.11	33.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

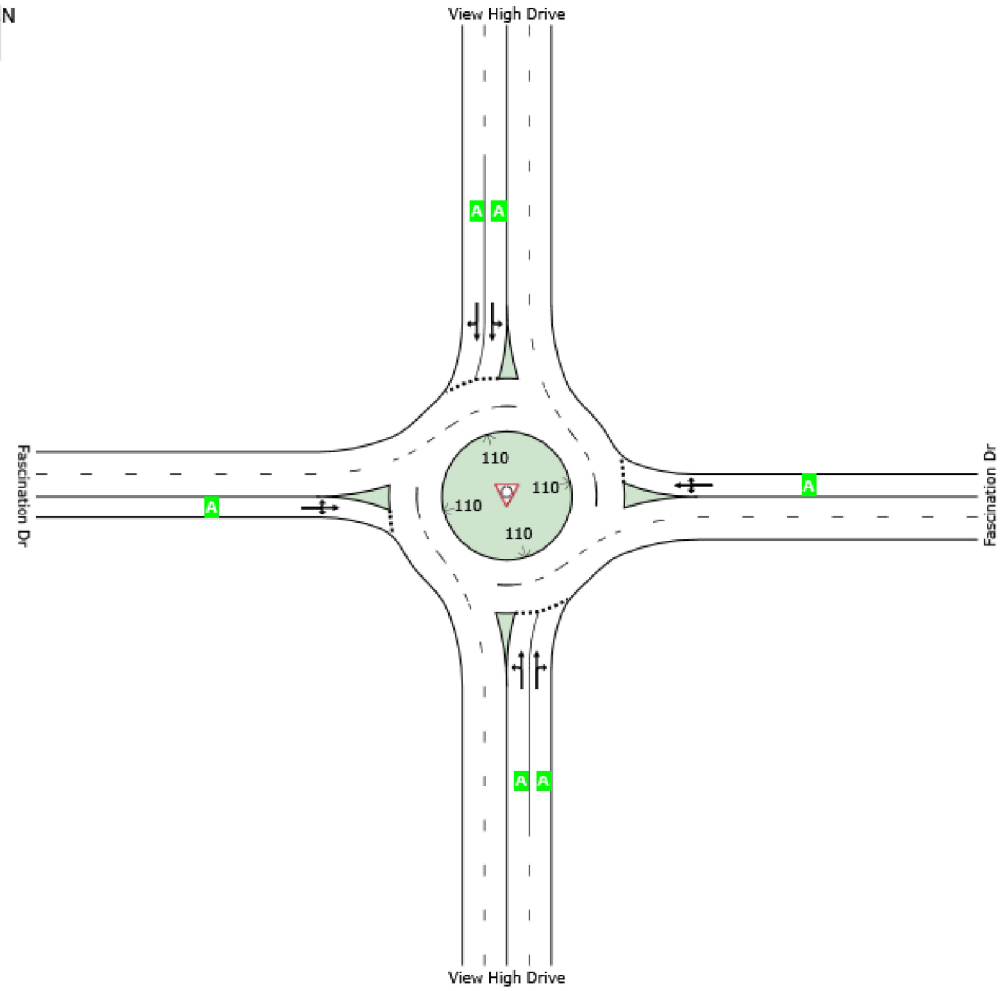
Lane Level of Service

Site: 101 [Full Build AM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



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Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Full Build AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
5	L2	3	2.0	0.175	4.5	LOS A	0.7	18.9	0.25	0.14	33.0
2	T1	403	2.0	0.175	4.4	LOS A	0.7	18.9	0.25	0.13	32.7
12	R2	23	2.0	0.175	4.3	LOS A	0.7	18.4	0.24	0.13	31.7
Approach		429	2.0	0.175	4.4	LOS A	0.7	18.9	0.25	0.13	32.6
East: Fascination Dr											
3	L2	41	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	24.8
8	T1	12	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	23.1
18	R2	84	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	23.5
Approach		137	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	23.9
North: View High Drive											
1	L2	49	2.0	0.166	4.3	LOS A	0.7	18.0	0.17	0.07	32.5
6	T1	364	2.0	0.166	4.2	LOS A	0.7	18.0	0.16	0.06	32.6
16	R2	15	2.0	0.166	4.1	LOS A	0.7	17.5	0.16	0.06	31.8
Approach		428	2.0	0.166	4.2	LOS A	0.7	18.0	0.16	0.06	32.5
West: Fascination Dr											
7	L2	54	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	24.5
4	T1	12	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	22.9
14	R2	6	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	23.3
Approach		72	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	24.1
All Vehicles		1066	2.0	0.175	4.4	LOS A	0.7	18.9	0.25	0.15	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

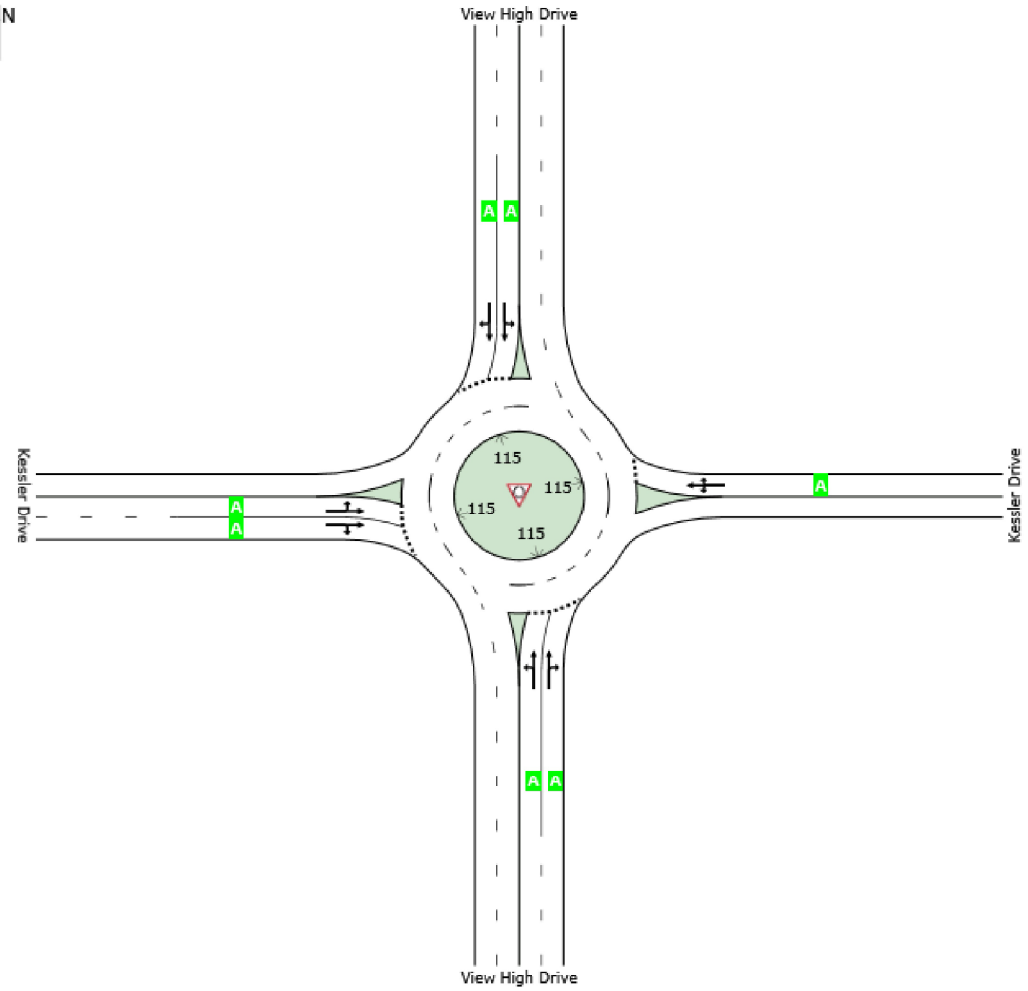
Lane Level of Service

Site: 101 [Full Build AM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Full Build AM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	9	2.0	0.175	4.6	LOS A	0.7	18.8	0.26	0.14	33.1
8	T1	303	2.0	0.175	4.5	LOS A	0.7	18.8	0.25	0.14	32.7
18	R2	114	2.0	0.175	4.3	LOS A	0.7	18.4	0.24	0.13	31.7
Approach		427	2.0	0.175	4.4	LOS A	0.7	18.8	0.25	0.13	32.4
East: Kessler Drive											
1	L2	119	2.0	0.185	5.4	LOS A	0.7	18.4	0.46	0.39	24.5
6	T1	33	2.0	0.185	5.4	LOS A	0.7	18.4	0.46	0.39	22.8
16	R2	28	2.0	0.185	5.4	LOS A	0.7	18.4	0.46	0.39	23.2
Approach		181	2.0	0.185	5.4	LOS A	0.7	18.4	0.46	0.39	24.0
North: View High Drive											
7	L2	8	2.0	0.165	4.6	LOS A	0.7	17.5	0.30	0.18	33.1
4	T1	379	2.0	0.165	4.5	LOS A	0.7	17.5	0.29	0.18	32.8
14	R2	1	2.0	0.165	4.4	LOS A	0.7	17.0	0.29	0.17	31.8
Approach		388	2.0	0.165	4.5	LOS A	0.7	17.5	0.29	0.18	32.8
West: Kessler Drive											
5	L2	96	2.0	0.107	5.0	LOS A	0.4	9.9	0.48	0.41	24.2
2	T1	14	2.0	0.026	4.6	LOS A	0.1	2.4	0.47	0.36	23.7
12	R2	8	2.0	0.026	4.6	LOS A	0.1	2.4	0.47	0.36	24.1
Approach		118	2.0	0.107	5.0	LOS A	0.4	9.9	0.48	0.40	24.1
All Vehicles		1114	2.0	0.185	4.7	LOS A	0.7	18.8	0.32	0.22	29.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
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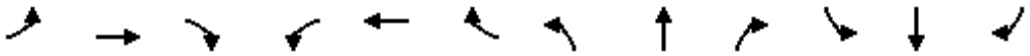
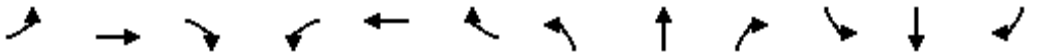
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	23	38	6	151	62	468	15	402	117	920	583	77
v/c Ratio	0.11	0.17	0.01	0.49	0.16	0.27	0.07	0.53	0.21	0.83	0.27	0.07
Control Delay	32.6	33.6	0.0	33.2	25.8	1.7	32.8	27.1	0.9	33.8	10.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	33.6	0.0	33.2	25.8	1.7	32.8	27.1	0.9	33.8	10.8	0.1
Queue Length 50th (ft)	9	16	0	61	18	0	6	84	0	204	69	0
Queue Length 95th (ft)	28	40	0	104	51	21	21	128	0	#389	146	0
Internal Link Dist (ft)		339			287			573			602	
Turn Bay Length (ft)	330		130	250		360	200		175	525		260
Base Capacity (vph)	269	220	422	449	469	1742	209	1738	913	1104	2421	1148
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.17	0.01	0.34	0.13	0.27	0.07	0.23	0.13	0.83	0.24	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	30	5	118	48	407	12	350	91	846	507	60
Future Volume (veh/h)	18	30	5	118	48	407	12	350	91	846	507	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	38	6	151	62	468	15	402	0	920	583	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.87	0.78	0.87	0.78	0.92	0.87	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	210	178	195	346	1341	46	575		1022	1534	
Arrive On Green	0.04	0.11	0.11	0.11	0.18	0.18	0.03	0.16	0.00	0.30	0.43	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	2790	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	23	38	6	151	62	468	15	402	0	920	583	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1395	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	0.8	1.1	0.2	5.1	1.7	6.5	0.5	6.7	0.0	15.9	7.0	0.0
Cycle Q Clear(g_c), s	0.8	1.1	0.2	5.1	1.7	6.5	0.5	6.7	0.0	15.9	7.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	66	210	178	195	346	1341	46	575		1022	1534	
V/C Ratio(X)	0.35	0.18	0.03	0.77	0.18	0.35	0.33	0.70		0.90	0.38	
Avail Cap(c_a), veh/h	257	210	178	428	390	1406	200	1652		1053	2336	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	29.3	25.1	24.7	27.0	21.4	10.1	29.9	24.7	0.0	21.1	12.0	0.0
Incr Delay (d2), s/veh	3.2	0.4	0.1	6.4	0.2	0.2	4.1	1.6	0.0	10.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.5	0.1	2.3	0.7	1.6	0.3	2.7	0.0	7.2	2.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	25.5	24.7	33.4	21.7	10.3	33.9	26.3	0.0	31.5	12.2	0.0
LnGrp LOS	C	C	C	C	C	B	C	C		C	B	
Approach Vol, veh/h		67			681			417	A		1503	A
Approach Delay, s/veh		27.8			16.4			26.5			24.0	
Approach LOS		C			B			C			C	

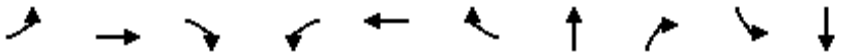
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	15.1	11.8	12.0	6.6	31.9	7.3	16.5
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	19.0	29.0	15.0	7.0	7.0	41.0	9.0	13.0
Max Q Clear Time (g_c+I1), s	17.9	8.7	7.1	3.1	2.5	9.0	2.8	8.5
Green Ext Time (p_c), s	0.5	1.4	0.2	0.0	0.0	2.3	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

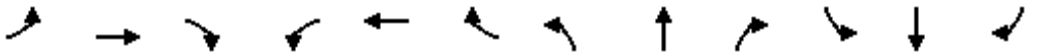
Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	109	886	85	216	493	292	150	194	269	88
v/c Ratio	0.66	0.90	0.16	0.83	0.38	0.38	0.66	0.44	0.84	0.12
Control Delay	56.1	41.6	2.8	60.3	20.6	4.5	42.8	7.7	55.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	41.6	2.8	60.3	20.6	4.5	42.8	7.7	55.3	5.0
Queue Length 50th (ft)	51	212	0	101	94	0	66	0	124	4
Queue Length 95th (ft)	#103	#349	9	#203	140	30	105	39	#207	21
Internal Link Dist (ft)		257			767		191			209
Turn Bay Length (ft)	175		100	190		150		95	175	
Base Capacity (vph)	165	996	534	261	1287	761	307	529	332	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.89	0.16	0.83	0.38	0.38	0.49	0.37	0.81	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	815	66	179	429	228	106	11	161	210	11	58
Future Volume (veh/h)	85	815	66	179	429	228	106	11	161	210	11	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	886	85	216	493	292	136	14	194	269	14	74
Peak Hour Factor	0.78	0.92	0.78	0.83	0.87	0.78	0.78	0.78	0.83	0.78	0.78	0.78
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	1011	451	259	1250	557	294	20	251	316	102	539
Arrive On Green	0.08	0.28	0.28	0.15	0.35	0.35	0.16	0.16	0.16	0.18	0.39	0.39
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1221	126	1585	1781	258	1366
Grp Volume(v), veh/h	109	886	85	216	493	292	150	0	194	269	0	88
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1347	0	1585	1781	0	1624
Q Serve(g_s), s	4.1	16.2	2.8	8.1	7.1	10.0	7.2	0.0	8.0	10.0	0.0	2.4
Cycle Q Clear(g_c), s	4.1	16.2	2.8	8.1	7.1	10.0	7.2	0.0	8.0	10.0	0.0	2.4
Prop In Lane	1.00		1.00	1.00		1.00	0.91		1.00	1.00		0.84
Lane Grp Cap(c), veh/h	140	1011	451	259	1250	557	314	0	251	316	0	641
V/C Ratio(X)	0.78	0.88	0.19	0.83	0.39	0.52	0.48	0.00	0.77	0.85	0.00	0.14
Avail Cap(c_a), veh/h	183	1092	487	287	1301	580	455	0	418	365	0	856
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.9	23.3	18.5	28.4	16.7	17.6	27.2	0.0	27.6	27.2	0.0	13.2
Incr Delay (d2), s/veh	14.8	7.8	0.2	17.2	0.2	0.8	1.1	0.0	5.0	15.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	7.1	0.9	4.4	2.6	3.3	2.3	0.0	3.1	5.5	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	31.1	18.7	45.6	16.9	18.4	28.4	0.0	32.6	42.8	0.0	13.3
LnGrp LOS	D	C	B	D	B	B	C	A	C	D	A	B
Approach Vol, veh/h		1080			1001			344			357	
Approach Delay, s/veh		31.6			23.5			30.7			35.6	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	16.1	14.8	13.9	23.4		30.9	9.4	28.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0	4.0	4.0				
Max Green Setting (Gmax), s	14.0	18.0	11.0	21.0		36.0	7.0	25.0				
Max Q Clear Time (g_c+I1), s	12.0	10.0	10.1	18.2		4.4	6.1	12.0				
Green Ext Time (p_c), s	0.2	0.8	0.1	1.2		0.3	0.0	2.5				

Intersection Summary												
HCM 6th Ctrl Delay			29.1									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	26.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	826	78	98	468	27	76	0	104	59	0	29
Future Vol, veh/h	54	826	78	98	468	27	76	0	104	59	0	29
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	100	-	100	185	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	78	83	87	92	78	92	83	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	898	100	118	538	29	97	0	125	64	0	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	567	0	0	998	0	0	1521	1819	449	1356	1905	284
Stage 1	-	-	-	-	-	-	1016	1016	-	789	789	-
Stage 2	-	-	-	-	-	-	505	803	-	567	1116	-
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	-
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	1001	-	-	689	-	-	~ 81	77	557	108	68	713
Stage 1	-	-	-	-	-	-	255	314	-	350	400	-
Stage 2	-	-	-	-	-	-	518	394	-	476	281	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1001	-	-	689	-	-	~ 64	60	557	70	53	713
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 64	60	-	70	53	-
Stage 1	-	-	-	-	-	-	240	295	-	329	332	-
Stage 2	-	-	-	-	-	-	410	327	-	347	264	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.9	185.8	127
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	64	557	1001	-	-	689	-	-	70	713
HCM Lane V/C Ratio	1.522	0.225	0.059	-	-	0.171	-	-	0.916	0.044
HCM Control Delay (s)	$ 407.6	13.3	8.8	-	-	11.3	-	-	184.4	10.3
HCM Lane LOS	F	B	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	8.5	0.9	0.2	-	-	0.6	-	-	4.6	0.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	41	1	12	6	1	44	16	141	3	37	150	40
Future Vol, veh/h	41	1	12	6	1	44	16	141	3	37	150	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	45	1	13	7	1	48	17	153	3	40	163	43

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	478	455	185	461	475	155	206	0	0	156	0	0
Stage 1	265	265	-	189	189	-	-	-	-	-	-	-
Stage 2	213	190	-	272	286	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	498	501	857	511	488	891	1365	-	-	1424	-	-
Stage 1	740	689	-	813	744	-	-	-	-	-	-	-
Stage 2	789	743	-	734	675	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	454	478	857	485	466	891	1365	-	-	1424	-	-
Mov Cap-2 Maneuver	454	478	-	485	466	-	-	-	-	-	-	-
Stage 1	730	667	-	802	734	-	-	-	-	-	-	-
Stage 2	735	733	-	699	653	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	9.8	0.8	1.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1365	-	-	508	798	1424	-	-
HCM Lane V/C Ratio	0.013	-	-	0.116	0.069	0.028	-	-
HCM Control Delay (s)	7.7	0	-	13	9.8	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	914	53	0	573	0	32
Future Vol, veh/h	914	53	0	573	0	32
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
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	993	58	0	623	0	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	526
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	496
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	496
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	496	-	-	-
HCM Lane V/C Ratio	0.07	-	-	-
HCM Control Delay (s)	12.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱		↑↑		↱
Traffic Vol, veh/h	951	38	0	593	0	15
Future Vol, veh/h	951	38	0	593	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	85	-	-	-	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	1034	41	0	645	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	517
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	503
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	503
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	503	-	-	-
HCM Lane V/C Ratio	0.032	-	-	-
HCM Control Delay (s)	12.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

LANE LEVEL OF SERVICE

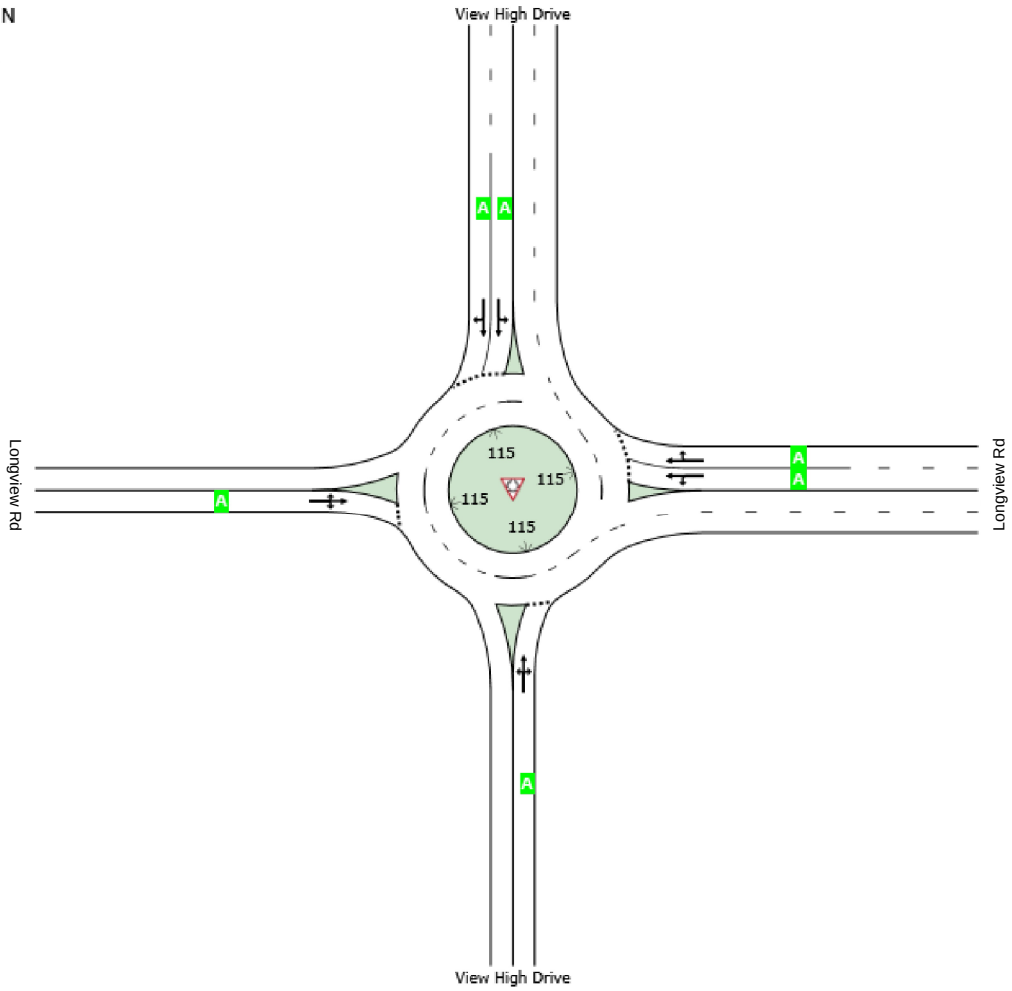
Lane Level of Service

Site: 101 [Future PM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Future PM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	6	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	25.3
8	T1	17	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	23.5
18	R2	10	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	23.9
Approach		33	2.0	0.040	4.7	LOS A	0.1	3.5	0.49	0.40	24.0
East: Longview Road											
1	L2	8	2.0	0.043	3.3	LOS A	0.2	4.1	0.19	0.08	33.4
6	T1	45	2.0	0.043	3.3	LOS A	0.2	4.1	0.19	0.08	33.0
16	R2	227	2.0	0.175	4.2	LOS A	0.7	18.5	0.20	0.09	31.6
Approach		279	2.0	0.175	4.1	LOS A	0.7	18.5	0.20	0.09	31.9
North: View High Drive											
7	L2	475	2.0	0.359	6.0	LOS A	1.9	48.1	0.21	0.09	30.1
4	T1	62	2.0	0.079	3.5	LOS A	0.3	7.8	0.16	0.06	33.2
14	R2	37	2.0	0.079	3.5	LOS A	0.3	7.8	0.16	0.06	32.1
Approach		573	2.0	0.359	5.6	LOS A	1.9	48.1	0.20	0.09	30.5
West: Longview Road											
5	L2	60	2.0	0.143	5.6	LOS A	0.5	13.4	0.50	0.46	24.7
2	T1	55	2.0	0.143	5.6	LOS A	0.5	13.4	0.50	0.46	23.0
12	R2	9	2.0	0.143	5.6	LOS A	0.5	13.4	0.50	0.46	23.4
Approach		124	2.0	0.143	5.6	LOS A	0.5	13.4	0.50	0.46	23.8
All Vehicles		1010	2.0	0.359	5.1	LOS A	1.9	48.1	0.25	0.14	29.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

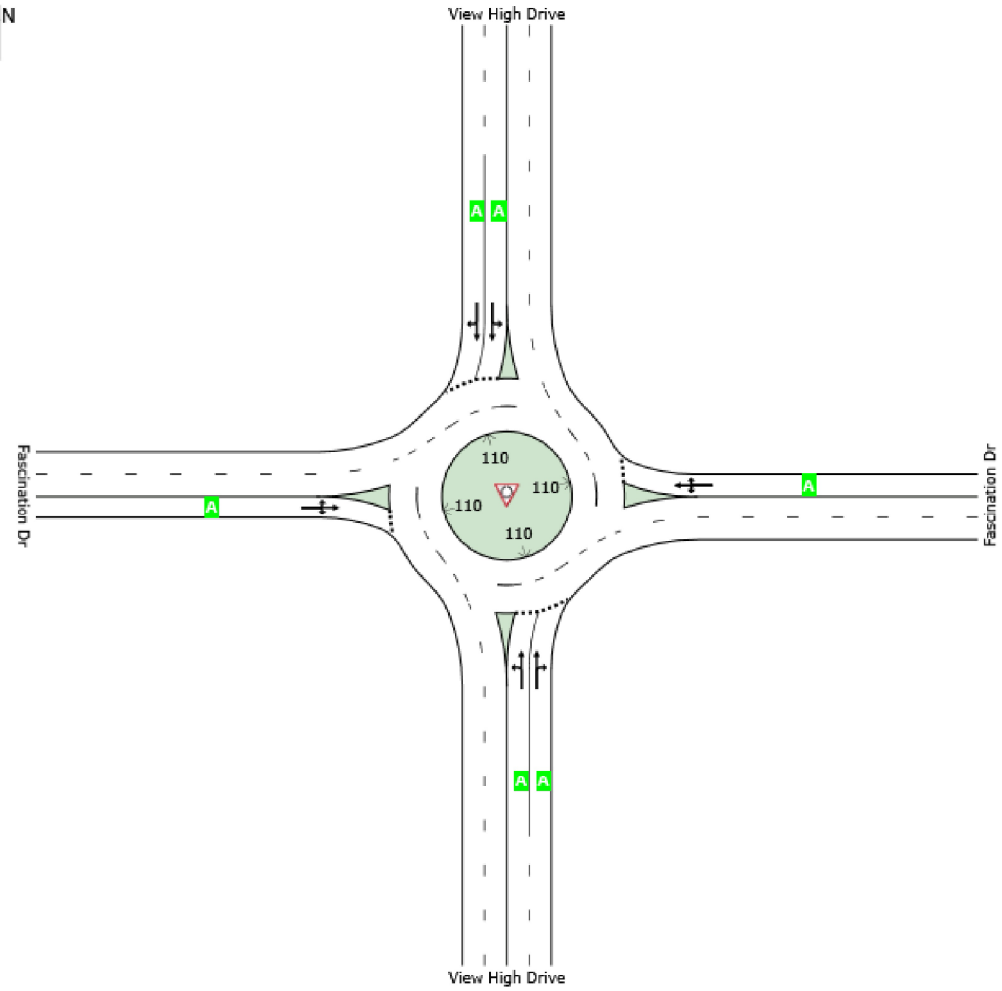
Lane Level of Service

Site: 101 [Future PM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Future AM]

New Site
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
5	L2	3	2.0	0.175	4.5	LOS A	0.7	18.9	0.25	0.14	33.0
2	T1	403	2.0	0.175	4.4	LOS A	0.7	18.9	0.25	0.13	32.7
12	R2	23	2.0	0.175	4.3	LOS A	0.7	18.4	0.24	0.13	31.7
Approach		429	2.0	0.175	4.4	LOS A	0.7	18.9	0.25	0.13	32.6
East: Fascination Dr											
3	L2	41	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	24.8
8	T1	12	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	23.1
18	R2	84	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	23.5
Approach		137	2.0	0.147	5.2	LOS A	0.5	14.0	0.47	0.40	23.9
North: View High Drive											
1	L2	49	2.0	0.166	4.3	LOS A	0.7	18.0	0.17	0.07	32.5
6	T1	364	2.0	0.166	4.2	LOS A	0.7	18.0	0.16	0.06	32.6
16	R2	15	2.0	0.166	4.1	LOS A	0.7	17.5	0.16	0.06	31.8
Approach		428	2.0	0.166	4.2	LOS A	0.7	18.0	0.16	0.06	32.5
West: Fascination Dr											
7	L2	54	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	24.5
4	T1	12	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	22.9
14	R2	6	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	23.3
Approach		72	2.0	0.076	4.5	LOS A	0.3	6.9	0.44	0.36	24.1
All Vehicles		1066	2.0	0.175	4.4	LOS A	0.7	18.9	0.25	0.15	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

LANE LEVEL OF SERVICE

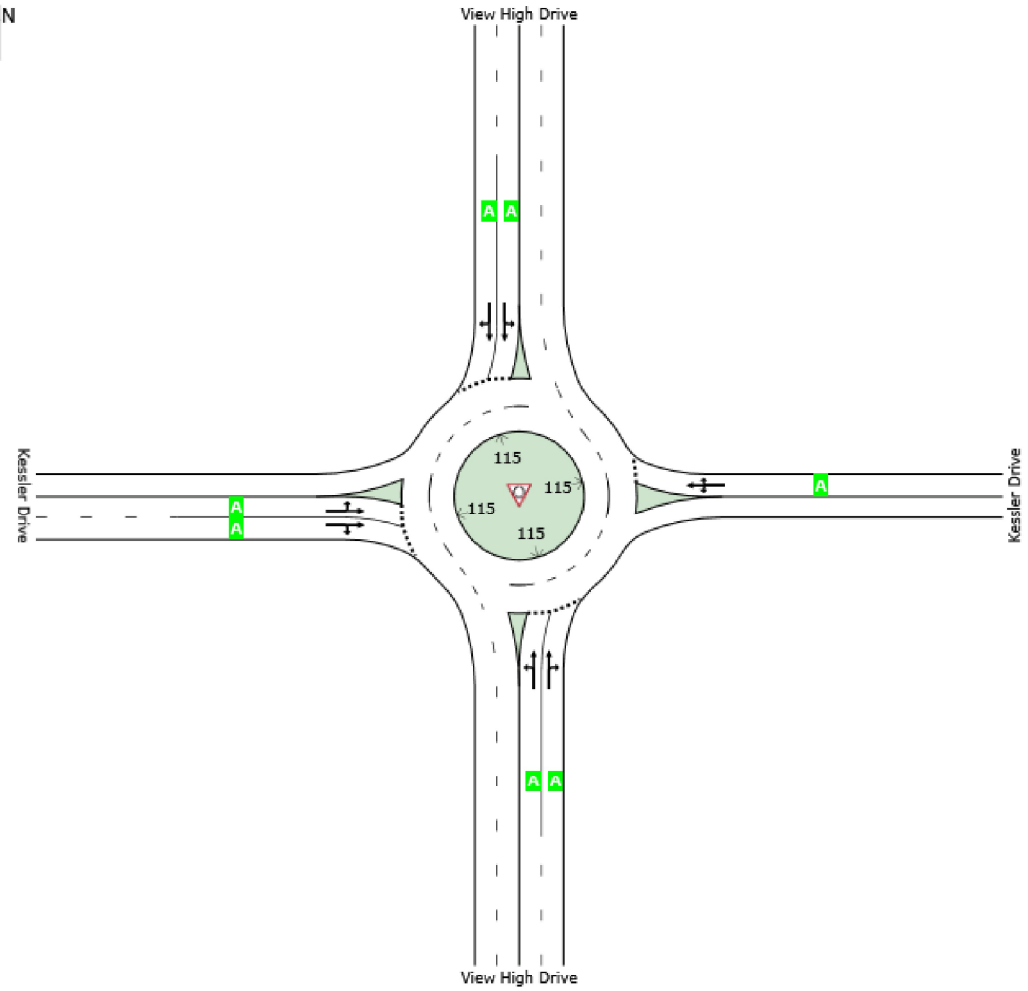
Lane Level of Service

Site: 101 [Future PM]

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 101 [Future PM]

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: View High Drive											
3	L2	5	2.0	0.158	4.4	LOS A	0.7	16.7	0.27	0.15	33.2
8	T1	238	2.0	0.158	4.4	LOS A	0.7	16.7	0.26	0.14	32.8
18	R2	140	2.0	0.158	4.2	LOS A	0.6	16.3	0.25	0.14	31.7
Approach		383	2.0	0.158	4.3	LOS A	0.7	16.7	0.26	0.14	32.4
East: Kessler Drive											
1	L2	19	2.0	0.179	5.1	LOS A	0.7	18.0	0.42	0.32	25.2
6	T1	28	2.0	0.179	5.1	LOS A	0.7	18.0	0.42	0.32	23.4
16	R2	140	2.0	0.179	5.1	LOS A	0.7	18.0	0.42	0.32	23.8
Approach		187	2.0	0.179	5.1	LOS A	0.7	18.0	0.42	0.32	23.9
North: View High Drive											
7	L2	24	2.0	0.201	4.6	LOS A	0.9	22.7	0.17	0.07	32.9
4	T1	486	2.0	0.201	4.5	LOS A	0.9	22.7	0.16	0.07	32.7
14	R2	9	2.0	0.201	4.4	LOS A	0.9	22.1	0.16	0.06	31.8
Approach		520	2.0	0.201	4.5	LOS A	0.9	22.7	0.16	0.07	32.7
West: Kessler Drive											
5	L2	86	2.0	0.100	5.0	LOS A	0.4	9.1	0.48	0.42	24.2
2	T1	18	2.0	0.100	4.8	LOS A	0.4	9.1	0.48	0.38	23.6
12	R2	5	2.0	0.026	4.7	LOS A	0.1	2.3	0.48	0.37	24.2
Approach		109	2.0	0.100	5.0	LOS A	0.4	9.1	0.48	0.41	24.1
All Vehicles		1198	2.0	0.201	4.6	LOS A	0.9	22.7	0.26	0.16	29.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.