

# MEMO



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	Overnight
	Regular Mail
	Hand Delivery
x	Other: <u>E-mail</u>

TO:	Box Real Estate Development Attn: Russell Pearson
FROM:	Tom Fulton, Vice President Shannon Jeffries, PE, PTOE
RE:	New Longview Development Trip Generation Comparison and Signal Warrant Analysis
DATE:	June 16 <sup>th</sup> , 2021
PROJECT #:	021-02987

This memorandum provides a comparison of expected trip generation for a proposed development located in the northeast quadrant of Kessler Drive and Longview Boulevard in Lee's Summit, Missouri. In addition to review of trip generation, signal warrant analysis will be conducted for the intersection of 3<sup>rd</sup> Street and Kessler Drive.

The proposed project represents a portion of a larger development plan for this area. Analysis of the full development plan was presented in the document *Traffic Impact Study – Kessler View* dated July 2018, and was referenced for the purposes of this memorandum. The referenced traffic impact study represents the total approved development. The approved development plan for the property presented in this memorandum is for 172-units of mid-rise multifamily residential development. The proposed development plan represents a reduction in residential units, proposing 88-units of low-rise multifamily residential development.

### Trip Generation Comparison

A comparison of trip generation for the approved and proposed land uses was conducted for this site. The approved site plan, referenced from the July 2018 traffic impact study, and the proposed site plan are attached to this memorandum. Referencing the approved site plan, the proposed development encompasses area 'I'.

Trip generation was conducted for the proposed site and compared to the approved site trip generation referenced from the approved 2018 report. Trip generation for the proposed site was conducted using the ITE *Trip Generation Manual* (10<sup>th</sup> Edition). The land use that most resembles the proposed site is *Multifamily Housing (Low-Rise) (Land Use 220)*.

**Table 1** illustrates the land use comparison between the approved and proposed sites.

**Table 1: Land Use Comparison**

Land Use	Approved Site Plan	Proposed Site Plan
Multifamily Housing (Mid-Rise)	172 Units	-
Multifamily Housing (Low-Rise)	-	88 Units

**Table 2** illustrates the approved and proposed development expected trip generation for daily, AM, and PM peak hour periods and compares the difference for each.

**Table 2: Daily and Peak Hour Trip Generation Comparison**

Daily Comparison				AM Peak Hour Comparison				PM Peak Hour Comparison			
Approved Site Plan				Approved Site Plan				Approved Site Plan			
	Enter	Exit	Total		Enter	Exit	Total		Enter	Exit	Total
<b>Total</b>	468	468	936	<b>Total</b>	16	43	59	<b>Total</b>	46	29	75
Proposed Site Plan				Proposed Site Plan				Proposed Site Plan			
	Enter	Exit	Total		Enter	Exit	Total		Enter	Exit	Total
<b>Total</b>	312	312	624	<b>Total</b>	10	32	42	<b>Total</b>	33	20	53
Difference				Difference				Difference			
<b>Total</b>	<b>-156</b>	<b>-156</b>	<b>-312</b>	<b>Total</b>	<b>-6</b>	<b>-11</b>	<b>-17</b>	<b>Total</b>	<b>-13</b>	<b>-9</b>	<b>-22</b>

Referencing **Table 2**, the proposed site is expected to generate approximately 312 less trips during a typical weekday, 17 less AM peak hour trips, and 22 less PM peak hour trips when compared to the approved site. Trip generation calculations are attached to this memorandum. Trip generation characteristics including internal capture or pass-by trips were not considered for the purposes of this memorandum.

### Signal Warrant Analysis

This memorandum summarizes a review of applicable traffic signal warrants for the existing and proposed conditions based on data collection for the intersection of 3<sup>rd</sup> Street and Kessler Drive.

The intersection of 3<sup>rd</sup> Street and Kessler Drive is currently two-way STOP controlled with stop signs on the north/south street of Kessler Drive. 3<sup>rd</sup> Street is a four-lane east-west roadway with a posted speed limit of 40 mph. Kessler Drive is a two-lane north-south roadway with a posted speed limit of 25 mph. A dedicated right and left turn lane are provided at the eastbound approach of 3<sup>rd</sup> Street, and a dedicated left turn lane is provided at the westbound approach of 3<sup>rd</sup> Street. No marked crosswalks are provided at the intersection.

### **Data Collection**

A 13-hour traffic count was collected on Tuesday, May 18<sup>th</sup> from 6:00 AM to 7:00 PM for the intersection. Vehicular and pedestrian data was collected. Based on the data collected, the AM peak hour period was recorded as 7:30 AM to 8:30 AM. The PM peak hour period was recorded as 4:45 PM to 5:45 PM. Count data is provided with this memorandum.



### **Signal Warrant Analysis**

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 an intersection. For the purposes of this analysis, the following warrants were reviewed based on the data available:

- Warrant 1: Eight-Hour Vehicular Volume (Existing Conditions)
- Warrant 2: Four-Hour Vehicular Volume (Existing Conditions)
- Warrant 3: Peak Hour Vehicular Volume (Existing Conditions)
- Warrant 3: Peak Hour Vehicular Volume (Existing plus Development Conditions)

For existing conditions, warrants 1, 2 and 3 were evaluated using the count data collected on Tuesday, May 18<sup>th</sup>. Based on existing conditions, the reviewed signal warrants are not met. Supporting documentation is provided with this memorandum.

For existing plus development conditions, warrant 3 was evaluated by adding the expected development trips to the peak hour intersection count. Expected development trips were distributed through the intersection referencing the trip distribution from the approved 2018 report. Using existing plus development peak hour trips, warrant 3 (peak hour warrant) was reviewed. Based on existing plus development conditions, the peak hour warrant is not expected to be met. Supporting documentation is provided with this memorandum.

### **Summary**

The proposed site is a portion of a larger approved development plan. The portion of the development plan presented in this memorandum is expected to represent fewer vehicular trips than the approved use.

The intersection of 3<sup>rd</sup> Street and Kessler Drive does not meet warrants for signalization based on existing conditions. The peak hour warrant for signalization is not expected to be met for existing plus development conditions.

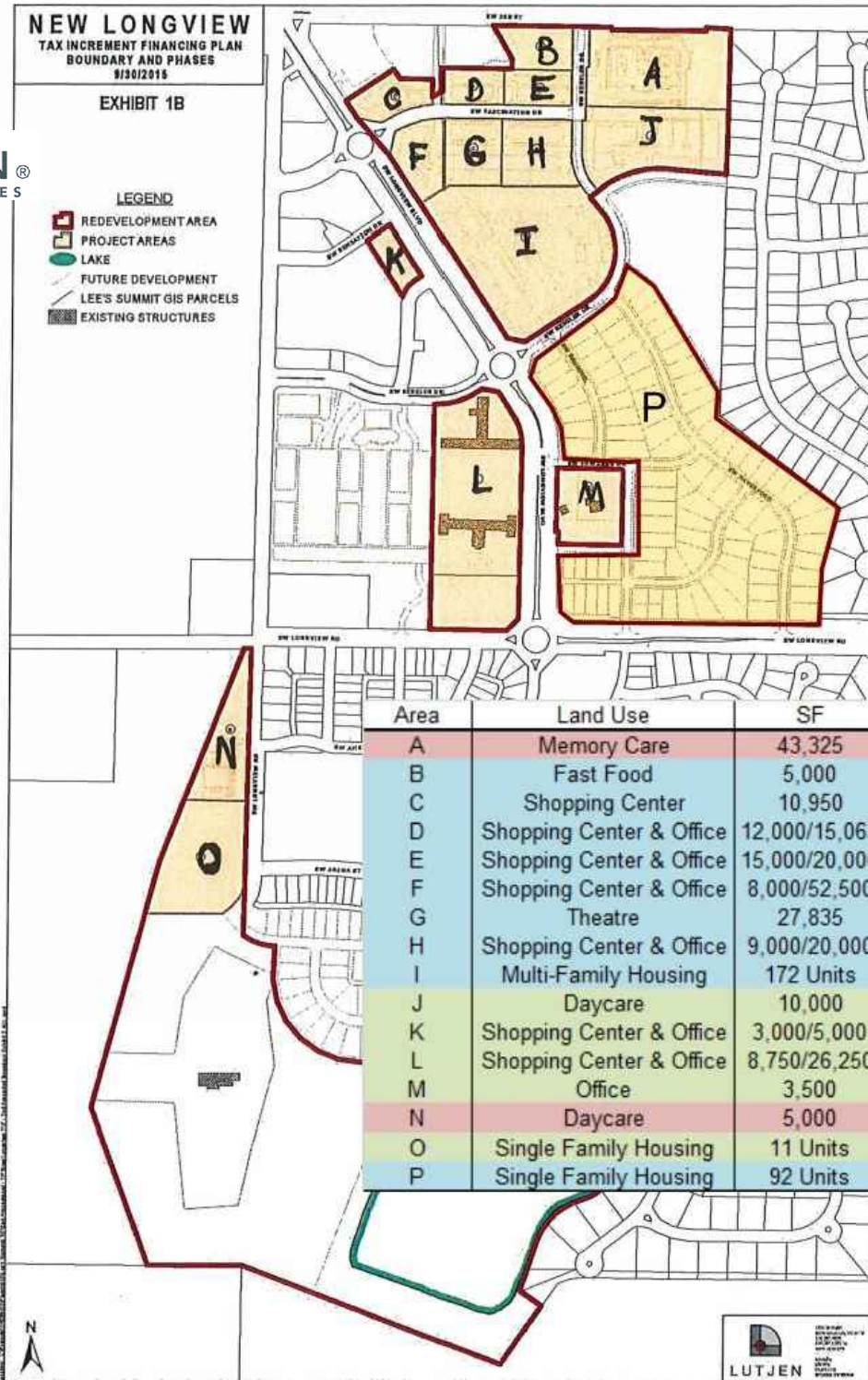
We hope that we have provided adequate information for your request. If you have additional questions, please contact us at 913.381.1170.

# FIGURE 3

## Site Plan

Kessler View  
Lee's Summit, MO

Referenced from:  
Traffic Impact Study - Kessler View  
July 2018





#### 4.2 Phase 1 Development Trip Generation and Distribution

Trip generation and distribution was conducted for Phase 1 development south of 3<sup>rd</sup> Street. Trip distribution followed previously approved studies. **Table 3** provides a summary of trip generation for the approved and proposed projects south of 3<sup>rd</sup> Street.

**TABLE 3: PHASE 1 DEVELOPMENT 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
	<b>Total</b>	<b>10,935</b>	<b>577</b>	<b>328</b>	<b>249</b>	<b>859</b>	<b>400</b>	<b>459</b>

\*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 (10<sup>th</sup> 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 PHASE 1 DEVELOPMENT – 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 Phase 1 development volumes are illustrated in **Figure 5**. More detailed trip distribution information for the previously approved developments can be found in **Appendix C**.

#### 4.3 Existing plus Phase 1 Development Warrant Analysis

**Existing plus Phase 1 Development Signal Warrants:** Based on the existing plus Phase 1 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 Phase 1 Development 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





## NEW LONG VIEW - PRELIMINARY CONCEPT

Lee's Summit, MO

March 15, 2021 / 017-3807



SCALE IN FEET  
0 25 50 100  
1" = 50'

the **olsson** studio  
1814 Main Street / Kansas City, MO 64108  
O 816.842.8844 / [olsson.com](http://olsson.com)

**Trip Generation B - Proposed Site Plan**

**Daily Trip Generation**

ITE Code/Page	Land Use	Size	Trip Gen. Avg. Rate/Eq.	Daily Trips	Trip Distribution		Daily Trips	
					Enter	Exit	Enter	Exit
220	Multifamily Housing (Low-Rise)	88	Units	Equation	624	50%	312	312
<b>Total</b>				<b>624</b>			<b>312</b>	<b>312</b>

**AM Peak Hour Trip Generation**

ITE Code/Page	Land Use	Size	Trip Gen. Avg. Rate/Eq.	AM Peak Hour Trips	Trip Distribution		AM Peak Hour Trips	
					Enter	Exit	Enter	Exit
220	Multifamily Housing (Low-Rise)	88	Units	Equation	42	23%	10	32
<b>Total</b>				<b>42</b>			<b>10</b>	<b>32</b>

**PM Peak Hour Trip Generation**

ITE Code/Page	Land Use	Size	Trip Gen. Avg. Rate/Eq.	PM Peak Hour Trips	Trip Distribution		PM Peak Hour Trips	
					Enter	Exit	Enter	Exit
220	Multifamily Housing (Low-Rise)	88	Units	Equation	53	63%	33	20
<b>Total</b>				<b>53</b>			<b>33</b>	<b>20</b>



# Southwest 3rd Street & Southwest Kessler Dri... - TMC

Tue May 18, 2021

Full Length (6 AM-7 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 837107, Location: 38.913007, -94.446221



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

Leg Direction	Kessler Dr Southbound							3rd St Westbound							Kessler Dr Northbound							3rd St Eastbound							
Time	R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*	Int	
2021-05-18 6:00AM	1	0	0	0	1	0		1	19	0	0	20	0		1	0	0	0	1	0		0	5	0	0	5	0		27
6:15AM	1	0	0	0	1	0		0	25	1	0	26	0		2	0	1	0	3	0		0	11	4	0	15	0		45
6:30AM	4	0	2	0	6	0		0	40	1	0	41	3		3	0	0	0	3	3		4	14	2	0	20	0		70
6:45AM	1	3	4	0	8	0		0	50	7	0	57	1		4	0	1	0	5	0		5	14	4	0	23	0		93
Hourly Total	7	3	6	0	16	0		1	134	9	0	144	4		10	0	2	0	12	3		9	44	10	0	63	0		235
7:00AM	1	2	2	0	5	0		1	64	8	0	73	0		6	0	2	0	8	1		6	9	1	0	16	0		102
7:15AM	7	1	0	0	8	1		0	78	12	0	90	3		4	1	4	0	9	0		1	13	2	0	16	0		123
7:30AM	11	2	2	0	15	0		1	77	8	0	86	0		3	1	3	0	7	0		3	25	3	0	31	0		139
7:45AM	8	3	3	0	14	2		0	98	15	0	113	0		10	1	5	0	16	0		5	34	8	0	47	0		190
Hourly Total	27	8	7	0	42	3		2	317	43	0	362	3		23	3	14	0	40	1		15	81	14	0	110	0		554
8:00AM	14	1	3	1	19	0		3	90	8	0	101	0		6	0	5	0	11	1		4	35	5	0	44	0		175
8:15AM	4	0	3	0	7	1		4	81	13	0	98	0		8	0	3	0	11	0		4	29	6	0	39	0		155
8:30AM	6	0	1	0	7	0		0	76	6	0	82	0		10	1	2	0	13	0		3	19	1	0	23	0		125
8:45AM	4	2	0	0	6	0		3	60	4	0	67	0		5	1	2	0	8	0		8	32	3	0	43	0		124
Hourly Total	28	3	7	1	39	1		10	307	31	0	348	0		29	2	12	0	43	1		19	115	15	0	149	0		579
9:00AM	7	1	0	0	8	0		0	53	3	0	56	0		2	1	1	0	4	0		2	34	2	0	38	0		106
9:15AM	3	0	4	0	7	0		1	52	4	0	57	1		3	0	3	0	6	0		3	22	4	0	29	0		99
9:30AM	4	1	0	0	5	0		1	47	2	0	50	0		2	1	0	0	3	0		1	27	4	0	32	1		90
9:45AM	3	0	1	0	4	0		0	35	2	0	37	0		4	0	0	0	4	0		0	29	3	0	32	0		77
Hourly Total	17	2	5	0	24	0		2	187	11	0	200	1		11	2	4	0	17	0		6	112	13	0	131	1		372
10:00AM	2	1	1	0	4	1		0	40	7	0	47	0		5	3	1	0	9	1		1	25	1	0	27	0		87
10:15AM	3	0	0	0	3	0		0	43	3	0	46	1		6	0	1	0	7	1		2	32	3	0	37	0		93
10:30AM	11	0	3	0	14	0		0	47	4	0	51	0		2	0	5	0	7	1		1	22	3	0	26	0		98
10:45AM	2	0	2	0	4	0		3	34	1	0	38	0		3	0	0	0	3	0		1	29	4	0	34	0		79
Hourly Total	18	1	6	0	25	1		3	164	15	0	182	1		16	3	7	0	26	3		5	108	11	0	124	0		357
11:00AM	6	2	1	0	9	0		1	46	4	0	51	0		12	2	2	0	16	0		0	35	3	0	38	0		114
11:15AM	5	0	2	0	7	1		3	56	9	0	68	0		6	2	5	0	13	0		2	35	0	0	37	0		125
11:30AM	6	1	0	0	7	0		2	40	4	0	46	0		11	2	5	0	18	1		1	37	3	0	41	1		112
11:45AM	4	1	0	0	5	1		0	40	10	0	50	1		7	0	2	0	9	1		1	50	4	0	55	0		119
Hourly Total	21	4	3	0	28	2		6	182	27	0	215	1		36	6	14	0	56	2		4	157	10	0	171	1		470
12:00PM	1	4	0	0	5	0		3	47	7	0	57	0		4	2	2	0	8	1		1	34	1	0	36	0		106
12:15PM	2	1	2	0	5	0		2	50	7	0	59	0		7	1	3	0	11	0		0	57	3	2	62	0		137
12:30PM	2	0	0	0	2	0		4	43	11	0	58	0		8	0	0	0	8	1		1	52	2	1	56	0		124
12:45PM	4	0	1	0	5	0		3	48	8	0	59	0		9	0	3	0	12	0		0	51	8	0	59	0		135
Hourly Total	9	5	3	0	17	0		12	188	33	0	233	0		28	3	8	0	39	2		2	194	14	3	213	0		502
1:00PM	3	1	1	0	5	0		5	48	10	0	63	0		8	2	2	0	12	0		0	57	8	0	65	0		145
1:15PM	1	0	3	0	4	0		3	41	8	0	52	0		6	0	3	0	9	0		1	44	2	0	47	0		112
1:30PM	2	1	3	0	6	1		1	35	10	0	46	0		10	1	3	0	14	0		0	41	8	0	49	0		115
1:45PM	2	1	1	0	4	0		3	33	9	0	45	0		6	1	3	1	11	1		1	42	3	0	46	0		106
Hourly Total	8	3	8	0	19	1		12	157	37	0	206	0		30	4	11	1	46	1		2	184	21	0	207	0		478
2:00PM	0	0	3	0	3	0		3	34	5	0	42	0		3	0	1	0	4	0		0	42	1	0	43	0		92
2:15PM	3	1	2	0	6	0		2	34	10	0	46	0		5	1	4	0	10	1		0	50	3	0	53	0		115
2:30PM	2	0	3	0	5	0		2	48	13	0	63	0		5	1	1	0	7	0		3	53	2	0	58	0		133
2:45PM	3	0	2	0	5	0		4	35	12	0	51	0		8	2	2	0	12	0		2	39	1	0	42	0		110
Hourly Total	8	1	10	0	19	0		11	151	40	0	202	0		21	4	8	0	33	1		5	184	7	0	196	0		450
3:00PM	0	1	2	0	3	0		5	51	6	0	62	0		11	0	8	0	19	0		2	47	0	0	49	0		133
3:15PM	7	0	3	0	10	0		6	78	9	0	93	0		6	1	3	0	10	0		1	47	7	0	55	0		168
3:30PM	6	0	4	0	10	0		5	58	8	0	71	0		7	2	3	0	12	1		2	50	3	0	55	0		148
3:45PM	1	0	1	0	2	0		2	54	9	0	65	0		11	0	3	0	14	0		4	47	0	0	51	0		132
Hourly Total	14	1	10	0	25	0		18	241	32	0	291	0		35	3	17	0	55	1		9	191	10	0	210	0		581
4:00PM	8	0	2	0	10	0		0	36	16	0	52	1		8	2	6	0	16	0		5	66	5	0	76	0		154
4:15PM	9	0	2	0	11	0		4	56	10	0	70	0		11	0	5	0	16	0		3	61	2	0	66	0		163
4:30PM	2	0	1	0	3	1		1	56	9	0	66	0		14	0	2	0	16	1		5	89	8	0	102	1		187
4:45PM	8	0	1	0	9	0		2	57																				



Leg Direction	Kessler Dr Southbound						3rd St Westbound						Kessler Dr Northbound						3rd St Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
6:15PM	9	0	0	0	9	0	2	45	7	0	54	2	7	1	3	0	11	2	1	65	2	0	68	0	142
6:30PM	2	0	2	0	4	1	5	61	8	0	74	0	6	0	1	0	7	0	1	46	6	1	54	0	139
6:45PM	1	2	2	0	5	0	2	43	4	0	49	0	5	0	1	0	6	0	2	48	3	0	53	0	113
Hourly Total	14	2	7	0	23	1	10	204	26	0	240	2	24	1	10	0	35	3	5	221	14	2	242	0	540
<b>Total</b>	226	36	84	1	347	10	103	2702	402	0	3207	13	360	41	147	1	549	21	106	2241	187	5	2539	4	6642
<b>% Approach</b>	65.1%	10.4%	24.2%	0.3%	-	-	3.2%	84.3%	12.5%	0%	-	-	65.6%	7.5%	26.8%	0.2%	-	-	4.2%	88.3%	7.4%	0.2%	-	-	-
<b>% Total</b>	3.4%	0.5%	1.3%	0%	5.2%	-	1.6%	40.7%	6.1%	0%	48.3%	-	5.4%	0.6%	2.2%	0%	8.3%	-	1.6%	33.7%	2.8%	0.1%	38.2%	-	-
<b>Lights</b>	221	34	81	1	337	-	102	2678	393	0	3173	-	349	40	144	1	534	-	104	2210	184	5	2503	-	6547
<b>% Lights</b>	97.8%	94.4%	96.4%	100%	97.1%	-	99.0%	99.1%	97.8%	0%	98.9%	-	96.9%	97.6%	98.0%	100%	97.3%	-	98.1%	98.6%	98.4%	100%	98.6%	-	98.6%
<b>Articulated Trucks</b>	0	0	0	0	0	-	0	1	0	0	1	-	1	0	2	0	3	-	0	4	1	0	5	-	9
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.3%	0%	1.4%	0%	0.5%	-	0%	0.2%	0.5%	0%	0.2%	-	0.1%
<b>Buses and Single-Unit Trucks</b>	5	2	3	0	10	-	1	23	9	0	33	-	10	1	1	0	12	-	2	27	2	0	31	-	86
<b>% Buses and Single-Unit Trucks</b>	2.2%	5.6%	3.6%	0%	2.9%	-	1.0%	0.9%	2.2%	0%	1.0%	-	2.8%	2.4%	0.7%	0%	2.2%	-	1.9%	1.2%	1.1%	0%	1.2%	-	1.3%
Pedestrians	-	-	-	-	-	10	-	-	-	-	-	13	-	-	-	-	-	20	-	-	-	-	-	-	4
% Pedestrians	-	-	-	-	-	100%	-	-	-	-	-	100%	-	-	-	-	-	95.2%	-	-	-	-	-	-	100%
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	-	0
% Bicycles on Crosswalk	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	4.8%	-	-	-	-	-	0%	-

\* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Southwest 3rd Street & Southwest Kessler Drive - TMC

Tue May 18, 2021

Full Length (6 AM-7 PM)

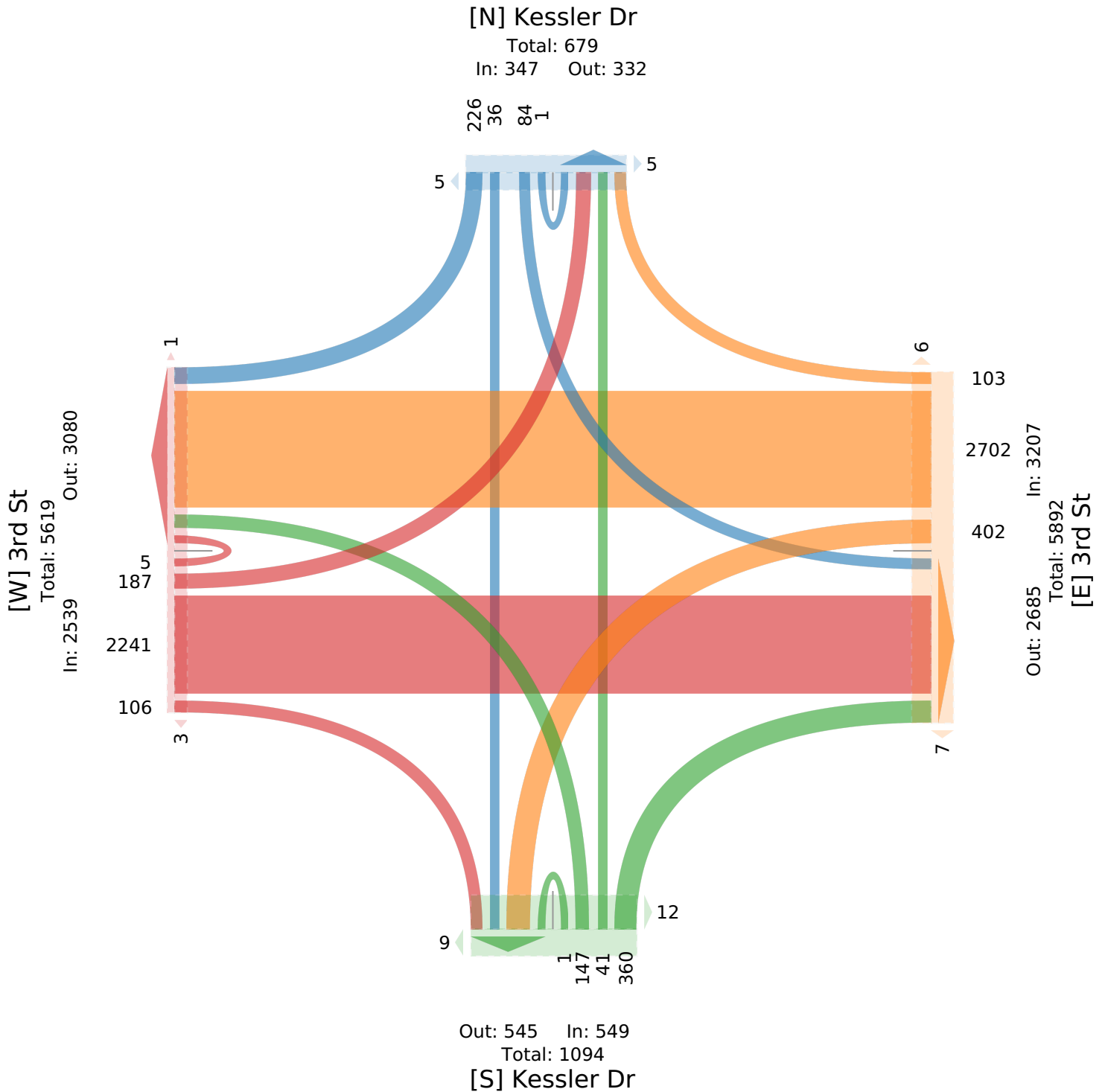
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,  
Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 837107, Location: 38.913007, -94.446221



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



# Southwest 3rd Street & Southwest Kessler Dri... - TMC

Tue May 18, 2021

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 837107, Location: 38.913007, -94.446221



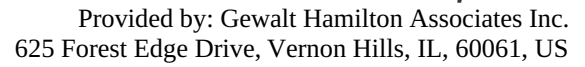
Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Kessler Dr Southbound						3rd St Westbound						Kessler Dr Northbound						3rd St Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2021-05-18 7:30AM	11	2	2	0	15	0	1	77	8	0	86	0	3	1	3	0	7	0	3	25	3	0	31	0	139
7:45AM	8	3	3	0	14	2	0	98	15	0	113	0	10	1	5	0	16	0	5	34	8	0	47	0	190
8:00AM	14	1	3	1	19	0	3	90	8	0	101	0	6	0	5	0	11	1	4	35	5	0	44	0	175
8:15AM	4	0	3	0	7	1	4	81	13	0	98	0	8	0	3	0	11	0	4	29	6	0	39	0	155
<b>Total</b>	37	6	11	1	55	3	8	346	44	0	398	0	27	2	16	0	45	1	16	123	22	0	161	0	659
<b>% Approach</b>	67.3%	10.9%	20.0%	1.8%	-	-	2.0%	86.9%	11.1%	0%	-	-	60.0%	4.4%	35.6%	0%	-	-	9.9%	76.4%	13.7%	0%	-	-	-
<b>% Total</b>	5.6%	0.9%	1.7%	0.2%	8.3%	-	1.2%	52.5%	6.7%	0%	60.4%	-	4.1%	0.3%	2.4%	0%	6.8%	-	2.4%	18.7%	3.3%	0%	24.4%	-	-
<b>PHF</b>	0.661	0.500	0.917	0.250	0.724	-	0.500	0.883	0.733	-	0.881	-	0.675	0.500	0.800	-	0.703	-	0.800	0.879	0.688	-	0.856	-	0.867
<b>Lights</b>	37	6	11	1	55	-	8	344	43	0	395	-	27	2	16	0	45	-	16	120	21	0	157	-	652
<b>% Lights</b>	100%	100%	100%	100%	100%	-	100%	99.4%	97.7%	0%	99.2%	-	100%	100%	100%	0%	100%	-	100%	97.6%	95.5%	0%	97.5%	-	98.9%
<b>Articulated Trucks</b>	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0	-	0	2	1	0	3	-	0	0	0	0	0	-	0	3	1	0	4	-	7
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%	-	0%	0.6%	2.3%	0%	0.8%	-	0%	0%	0%	0%	0%	-	0%	2.4%	4.5%	0%	2.5%	-	1.1%
<b>Pedestrians</b>	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	
<b>% Pedestrians</b>	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn



ID: 837107, Location: 38.913007, -94.446221



# Southwest 3rd Street & Southwest Kessler Dri... - TMC

Tue May 18, 2021

Midday Peak (12 PM - 1 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 837107, Location: 38.913007, -94.446221

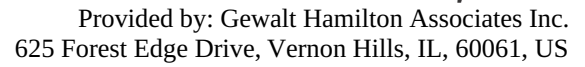


Provided by: Gewalt Hamilton Associates Inc.  
625 Forest Edge Drive, Vernon Hills, IL, 60061, US

Leg Direction	Kessler Dr Southbound						3rd St Westbound						Kessler Dr Northbound						3rd St Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2021-05-18 12:00PM	1	4	0	0	5	0	3	47	7	0	57	0	4	2	2	0	8	1	1	34	1	0	36	0	106
12:15PM	2	1	2	0	5	0	2	50	7	0	59	0	7	1	3	0	11	0	0	57	3	2	62	0	137
12:30PM	2	0	0	0	2	0	4	43	11	0	58	0	8	0	0	0	8	1	1	52	2	1	56	0	124
12:45PM	4	0	1	0	5	0	3	48	8	0	59	0	9	0	3	0	12	0	0	51	8	0	59	0	135
<b>Total</b>	9	5	3	0	17	0	12	188	33	0	233	0	28	3	8	0	39	2	2	194	14	3	213	0	502
<b>% Approach</b>	52.9%	29.4%	17.6%	0%	-	-	5.2%	80.7%	14.2%	0%	-	-	71.8%	7.7%	20.5%	0%	-	-	0.9%	91.1%	6.6%	1.4%	-	-	-
<b>% Total</b>	1.8%	1.0%	0.6%	0%	3.4%	-	2.4%	37.5%	6.6%	0%	46.4%	-	5.6%	0.6%	1.6%	0%	7.8%	-	0.4%	38.6%	2.8%	0.6%	42.4%	-	-
<b>PHF</b>	0.563	0.313	0.375	-	0.850	-	0.750	0.940	0.750	-	0.987	-	0.778	0.375	0.667	-	0.813	-	0.500	0.851	0.438	0.375	0.859	-	0.916
<b>Lights</b>	9	5	3	0	17	-	12	187	31	0	230	-	27	3	8	0	38	-	2	190	14	3	209	-	494
<b>% Lights</b>	100%	100%	100%	0%	100%	-	100%	99.5%	93.9%	0%	98.7%	-	96.4%	100%	100%	0%	97.4%	-	100%	97.9%	100%	100%	98.1%	-	98.4%
<b>Articulated Trucks</b>	0	0	0	0	0	-	0	0	0	0	0	-	1	0	0	0	1	-	0	1	0	0	1	-	2
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	3.6%	0%	0%	0%	2.6%	-	0%	0.5%	0%	0%	0.5%	-	0.4%
<b>Buses and Single-Unit Trucks</b>	0	0	0	0	0	-	0	1	2	0	3	-	0	0	0	0	0	-	0	3	0	0	3	-	6
<b>% Buses and Single-Unit Trucks</b>	0%	0%	0%	0%	0%	-	0%	0.5%	6.1%	0%	1.3%	-	0%	0%	0%	0%	0%	-	0%	1.5%	0%	0%	1.4%	-	1.2%
<b>Pedestrians</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-
<b>% Pedestrians</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-50.0%	-	-	-	-	-	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-50.0%	-	-	-	-	-	-	-

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

ID: 837107, Location: 38.913007, -94.446221





# Southwest 3rd Street & Southwest Kessler Dri... - TMC

Tue May 18, 2021

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 837107, Location: 38.913007, -94.446221



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

Leg Direction	Kessler Dr Southbound						3rd St Westbound						Kessler Dr Northbound						3rd St Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2021-05-18 4:45PM	8	0	1	0	9	0	2	57	14	0	73	0	9	2	5	0	16	0	2	92	6	0	100	0	198
5:00PM	7	0	0	0	7	0	1	67	12	0	80	0	20	0	6	0	26	0	3	107	4	0	114	1	227
5:15PM	8	1	2	0	11	0	3	79	19	0	101	0	17	3	9	0	29	0	5	83	7	0	95	0	236
5:30PM	7	1	2	0	10	0	3	62	12	0	77	0	9	1	5	0	15	0	2	85	5	0	92	0	194
<b>Total</b>	30	2	5	0	37	0	9	265	57	0	331	0	55	6	25	0	86	0	12	367	22	0	401	1	855
<b>% Approach</b>	81.1%	5.4%	13.5%	0%	-	-	2.7%	80.1%	17.2%	0%	-	-	64.0%	7.0%	29.1%	0%	-	-	3.0%	91.5%	5.5%	0%	-	-	-
<b>% Total</b>	3.5%	0.2%	0.6%	0%	4.3%	-	1.1%	31.0%	6.7%	0%	38.7%	-	6.4%	0.7%	2.9%	0%	10.1%	-	1.4%	42.9%	2.6%	0%	46.9%	-	-
<b>PHF</b>	0.938	0.500	0.625	-	0.841	-	0.750	0.839	0.750	-	0.819	-	0.688	0.500	0.694	-	0.741	-	0.600	0.857	0.786	-	0.879	-	0.906
<b>Lights</b>	29	2	5	0	36	-	9	263	56	0	328	-	55	6	25	0	86	-	12	367	22	0	401	-	851
<b>% Lights</b>	96.7%	100%	100%	0%	97.3%	-	100%	99.2%	98.2%	0%	99.1%	-	100%	100%	100%	0%	100%	-	100%	100%	100%	0%	100%	-	99.5%
<b>Articulated Trucks</b>	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
<b>Buses and Single-Unit Trucks</b>	1	0	0	0	1	-	0	2	1	0	3	-	0	0	0	0	0	-	0	0	0	0	0	-	4
<b>% Buses and Single-Unit Trucks</b>	3.3%	0%	0%	0%	2.7%	-	0%	0.8%	1.8%	0%	0.9%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.5%
<b>Pedestrians</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-
<b>% Pedestrians</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-

\* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Southwest 3rd Street & Southwest Kessler Drive - TMC

Tue May 18, 2021

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

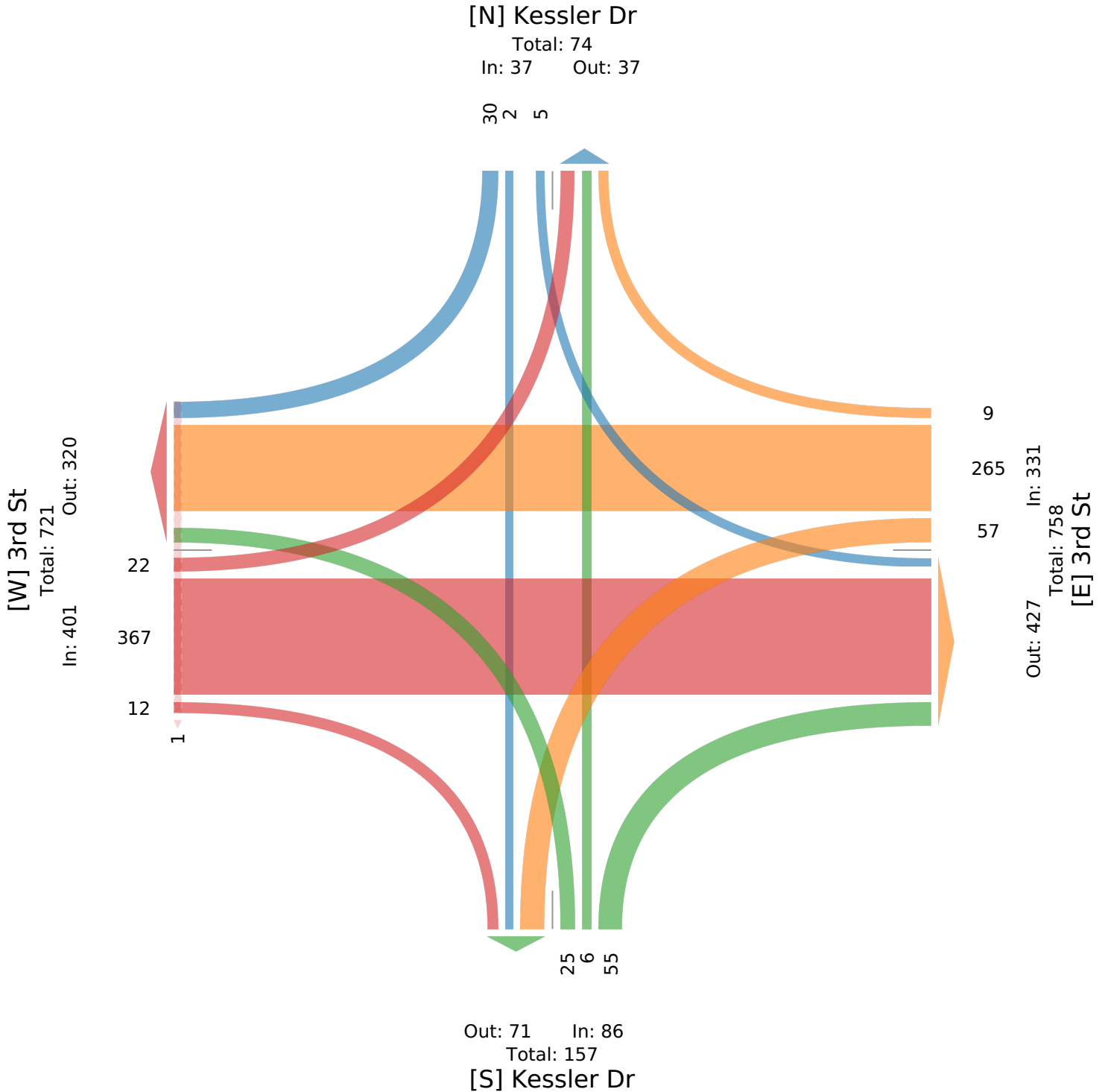
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks,  
Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 837107, Location: 38.913007, -94.446221



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



## TRAFFIC SIGNAL WARRANT ANALYSIS - VOLUME WARRANTS

Major Street : Southwest 3rd Street  
Minor Street : Southwest Kessler Drive  
City : Lee Summit, MO  
County : Jackson

Time Count Began : 6:00am  
Date : May 18th 2021  
Day of Week of Count: Tuesday

Is the intersection in a community with a population less than 10,000 or are speeds greater than 40 mph? no

	Major Street	Minor Street
Adjustment factor for day of week and month of year of count . . .	1 . . . . .	1
Number of Lanes . . . . .	2 . . . . .	1

Time	Major Street			Minor Street		
	Approach Volumes			Approach Volumes		
	EAST	WEST	Total	NORTH	SOUTH	*
Beginning						
12:00 m	0	0	0	0	0	0
1:00	0	0	0	0	0	0
2:00	0	0	0	0	0	0
3:00 am	0	0	0	0	0	0
4:00	0	0	0	0	0	0
5:00	0	0	0	0	0	0
6:00 am	144	63	207	16	12	16
7:00	362	110	472	42	40	42
8:00	348	149	497	39	43	43
9:00 am	200	131	331	24	17	24
10:00	182	124	306	25	26	26
11:00	215	171	386	28	56	56
12:00 n	233	213	446	17	39	39
1:00	206	207	413	19	46	46
2:00	202	196	398	19	33	33
3:00 pm	291	210	501	25	55	55
4:00	261	344	605	33	64	64
5:00	323	379	702	37	83	83
6:00 pm	240	242	482	23	35	35
7:00	0	0	0	0	0	0
8:00	0	0	0	0	0	0
9:00 pm	0	0	0	0	0	0
10:00	0	0	0	0	0	0
11:00	0	0	0	0	0	0
24HR Total	3207	2539		347	549	

**Note:**  $\equiv$  Total of both approaches.  
\* The HIGHEST approach only.

**NOTE:** Basic minimum hourly volumes (unreduced)

**NOTE:** No adjustment made

Warrant #1 - Condition A		
Percent of Warrant Volumes Met		
Major	Minor	
0	0	
0	0	
0	0	
0	0	
0	0	
0	0	
35	11	
79	28	
83	29	
55	16	
51	17	
64	37	
74	26	
69	31	
66	22	
84	37	
101	43	
117	55	
80	23	
0	0	
0	0	
0	0	
0	0	
0	0	
Warranting Volumes	600	150
Hours Met	Warrant Met	0 No

Warrant #1 - Condition B		
Percent of Warrant Volumes Met		
Major	Minor	
0	0	
0	0	
0	0	
0	0	
0	0	
0	0	
23	21	
52	56	
55	57	
37	32	
34	35	
43	75	
50	52	
46	61	
44	44	
56	73	
67	85	
78	111	
54	47	
0	0	
0	0	
0	0	
0	0	
Warranting Volumes		
900	75	
Hours Met	0	
Warrant Met	No	

Warrant #1 - Combination of Conditions A & B		
<p>For this warrant vehicle volume requirements for conditions A and B are reduced to  <b>80% Factor</b></p> <p><b>NOTE:</b> Conditions A and B <b>SHALL BOTH</b> meet a minimum of 8 hours. However, the 8 hours satisfying condition A <b>NEED NOT</b> be the same as the 8 hours satisfying condition B.</p>		
Condition	A	B
Hours Met	0	0
Warrant Met	No	No

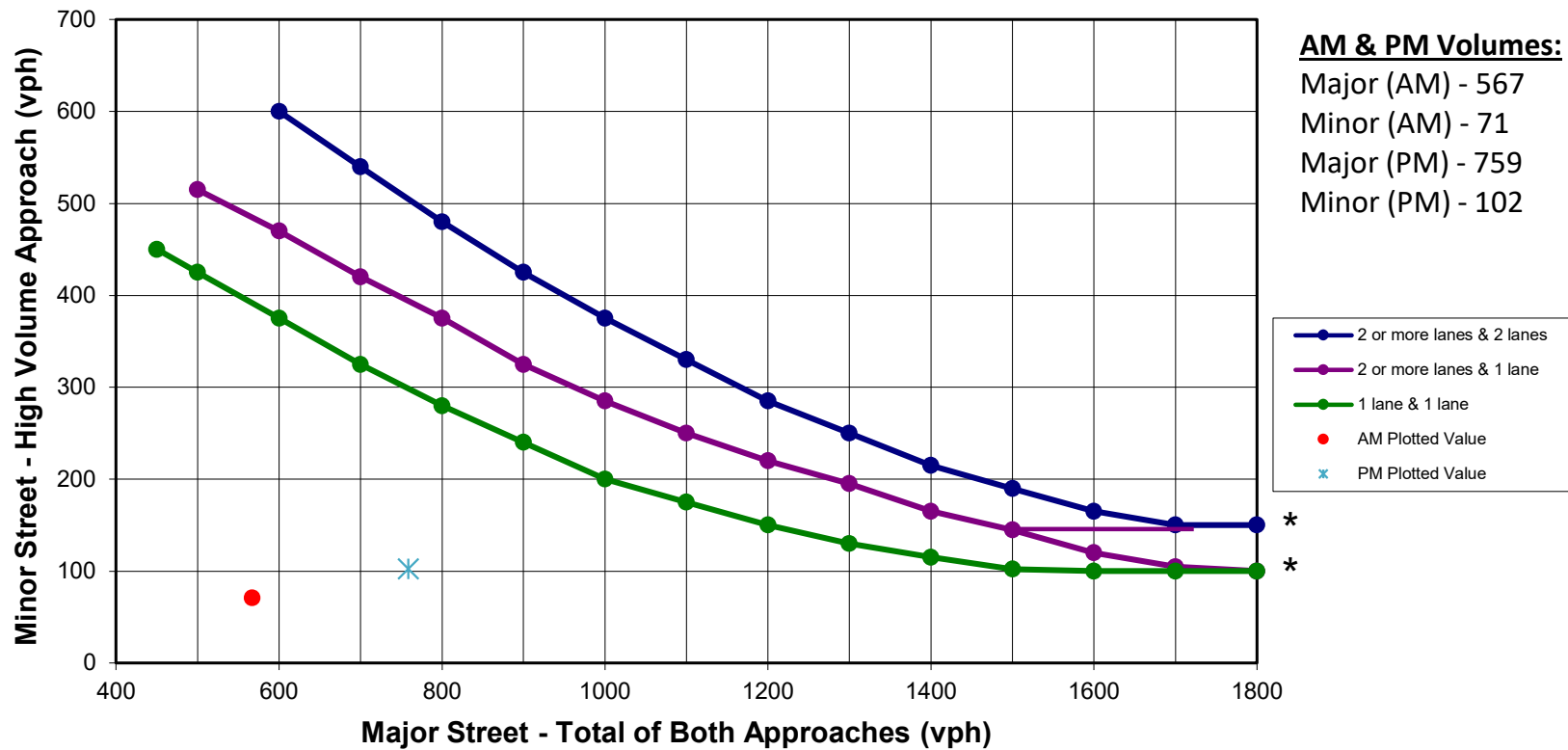
<b>Warrant #2 - Four-Hour Vehicular Volume</b>		
<b>Warrant Volume</b>	<b>Percent of Warrant</b>	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
350	12	
330	13	
0	*****	
0	*****	
0	*****	
360	11	
380	12	
0	*****	
330	17	
280	23	
240	35	
340	10	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
<b>Warranting Volumes From MUTCD Fig. 4C-1</b>		
<b>Hours Met Warrant Met</b>	<b>0 No</b>	

<b>Warrant #3 - Peak Hour</b>		
<b>Warrant Volume</b>	<b>Percent of Warrant</b>	
0	****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
460	14	
400	21	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
0	*****	
<b>Warranting Volumes From MUTCD Fig. 4C-3</b>		
<b>Hours Met</b>		
<b>Warrant Met</b>		<b>No</b>

\*\*\*\*\* Major Street volume is so low that no  
Minor Street warrant exists



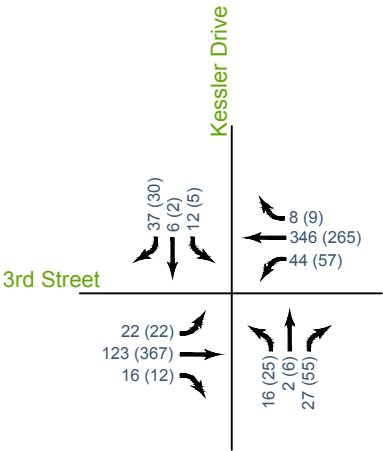
## Peak Hour Volume Warrant (Existing + Development Conditions) 3rd Street and Kessler Drive



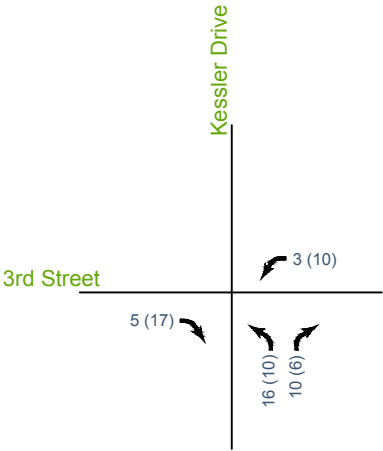
\*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

Existing + Proposed Development  
Trip Distribution

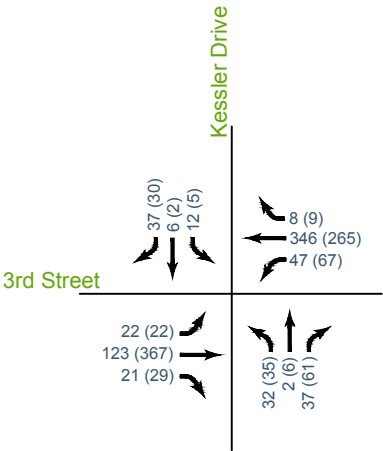
New Longview  
Lee's Summit, MO



Existing Peak Hour Volumes



Proposed Trip Distribution



Existing + Proposed Peak Hour Volumes

LEGEND

AM (PM) Peak Hour Trips