

September 20, 2021



Davidson Drive Holdings LLC c/o ez develop, inc.
Israel Vanchozker
Joseph Herskovitz
412 N. Main St
Monroe, NY

RE: Traffic Impact Study for Proposed Light Industrial Development, Lake Station Road, Town of Chester, Orange County, New York; CM Project No. 121-204

Dear Sirs:

As requested, Creighton Manning Engineering, LLP (CM) has completed a Traffic Impact Study for the proposed industrial development located on Lake Station Road in the Town of Chester, Orange County, NY. This study is based on traffic engineering industry standards and the Preliminary Concept Plan prepared by Arden Consulting Engineering, PLLC, last revised September 16, 2021 which is included under Attachment A.

1.0 Project Description

The subject site is defined on the Orange County Tax Map as Section 17, Block 1, Lots 22.1 through 22.8, and is currently undeveloped. The proposed project will construct a new 166,024-square-foot light industrial use building which includes a 4,000-square-foot office space and be supported by 76 parking spaces inclusive of four ADA-accessible spaces for passenger vehicles and 13 parking spaces for tractor trailers. Vehicular access is proposed via Davidson Drive, currently an unbuilt public paper street which will be terminated by a break-away gate north of the subject site's access driveways that will allow for emergency access. The site will provide two full movement driveways; one of the driveways will be fully dedicated for tractor trailers accessing the site. It is anticipated that the largest shift will consist of 45 employees. The proposed project is expected to be completed and operational by 2023. A map illustrating the site location in relation to the Davidson Drive right-of-way is shown in Exhibit 1.



Exhibit 1 – Site Location

2.0 Existing Conditions

Roadways Serving the Site

- **Lake Station Road** is classified as an Urban Local road and is under the jurisdiction of Town of Chester Highway Department. The roadway runs primarily east-west from Bellvale Road (CR 82) in the Town of Chester to Kings Highway (CR 13) in the Town of Warwick. In the vicinity of the project, Lake Station Road provides one 12-foot-wide travel lane in each direction. Turn lanes are not provided at intersections or driveways. The posted speed limit is 30 miles per hour. There are no sidewalks provided along the roadway.
- **Bellvale Road (County Road 82)** is classified as an Urban Major Collector roadway and is under the jurisdiction of the Orange County Department of Public Works (OCDPW). The roadway runs primarily north-south from County Road 13 to Gibson Hill Road. In the vicinity of the project, Bellvale Road provides one 12-foot-wide travel lane in each direction with four-foot-wide shoulders. Turns lanes are not provided at intersections or driveways. The posted speed limit is 45 miles per hour. There are no sidewalks provided along the roadway.
- **Kings Highway (County Road 13)** is classified as an Urban Minor Collector road and is under the jurisdiction of the OCDPW. The roadway runs primarily north-south from NYS Route 17M to the Village of Warwick. In the vicinity of the project, Kings Highway provides one 11-foot wide travel lane in each direction with variable width shoulders. Turn lanes are typically not provided at intersections or driveways. The posted speed limit is 55 miles per hour. There are no sidewalks provided along the roadway.
- **Paradise Lane:** is classified as Urban Local roadway and is under the jurisdiction of Town of Chester Highway Department. The roadway runs north-south from Lake Station Road to the dead end and serves residential homes. The roadway is approximately 38 feet wide. There is no posted speed limit and there are no sidewalks provided along the roadway.

Study Intersections

- **Lake Station Road/Paradise Lane:** This is a three-leg unsignalized intersection. The eastbound Lake Station Road approach is uncontrolled and provides one shared lane for through/right-turn movements. The westbound Lake Station Road approach is uncontrolled and provides one shared lane for left-turn/through movements. The northbound Paradise Lane is stop-controlled and provides one shared lane for left-turn/right-turn movements onto Lake Station Road. Exhibit 2 is a Nearmap image that shows the study intersection.



Exhibit 2 – Lake Station Road/Paradise Lane

- **Lake Station Road/Bellvale Road:** This is a three-leg unsignalized intersection. The eastbound Lake Station Road approach is stop-controlled and provides one shared lane for left-turn/right-turn movements onto Bellvale Road. The northbound Bellvale Road approach is uncontrolled and provides one shared lane for left-turns/through movements. The southbound Bevalle Road provides one shared lane for through/right-turn movements. Exhibit 3 is a Nearmap image that shows the study intersection.
- **Lake Station Road/Kings Highway:** This is a three-leg unsignalized intersection. The westbound Lake Station Road approach is stopped-controlled and provides one shared lane for left-turn/right-turn movements onto Kings Highway. The northbound Kings Highway approach is uncontrolled and provides one shared lane for through/right-turn movements. The southbound Kings Highway approach is uncontrolled and provides one shared lane for left-turn/through movements. Railroad crossing is located xx-feet east of the intersection. Exhibit 4 is a Nearmap image that shows the study intersection.



Exhibit 3 – Lake Station Road/Bellvale Road

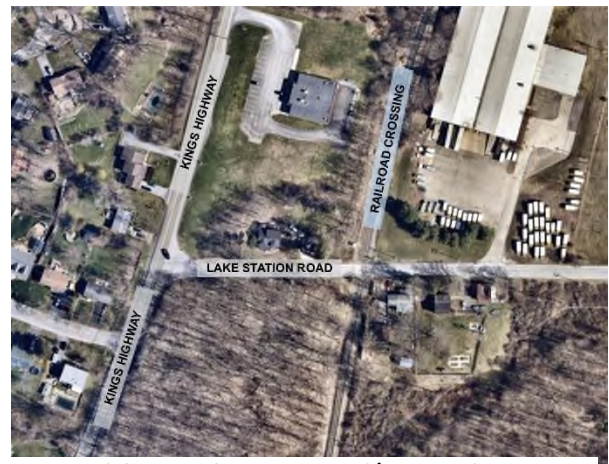


Exhibit 4 – Lake Station Road/Kings Highway

Data Collection

Turning Movement Counts (TMCs) were conducted at the intersections of Lake Station Road/Kings Highway and Lake Station Road/Bellville Road on Thursday July 22, 2021 from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. These periods coincide with the anticipated peak-hour operation times of the proposed use as well as the adjacent street traffic. The observed peak hours were 8:00 AM to 9:00 AM and 4:15 PM to 5:15 PM. During 15-minute spot counts conducted at the intersection of Lake Station Road/Paradise Lane there were no vehicles observed entering or exiting Paradise Lane. Therefore, CM used the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10th Edition, to estimate trips entering and exiting based on the seven residential dwelling located along Paradise Lane and those trips being evenly distributed at the intersection of Lake Station Road/Paradise Lane.¹

It is important to note that the Novel Coronavirus/COVID-19 pandemic was anticipated to have an effect on the turning movement counts. CM cited historical traffic data published by the NYSDOT on the Traffic Data Viewer to compare the observed counts on Kings Highway/Lake Station Road intersection. The comparison showed that the observed AM volumes were lower than historical data, and observed PM volumes were higher than historical data. A calibration factor was applied to the AM volumes to develop pre-pandemic traffic volumes. Figure 1-1 shows the 2021 Existing traffic volumes for the study area.² The raw TMC data is included under Attachment B.

¹ Estimates were determined using LUC 210 – "Single-Family Detached Housing"

² AM Calibration Factor = 1.1 | PM Calibration Factor = 1.0

3.0 Traffic Assessment

Trip Generation

Trip generation determines the quantity of traffic expected to travel to/from a given site. The Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10th Edition, is the industry-standard resource used for estimating trip generation for proposed land uses based on data collected at similar uses. Upon review of the *Trip Generation Manual*, Land Use Code (LUC) 110 "General Light Industrial" was applied for the proposed development. It should be noted that the ITE description for LUC 110 states that the study sites are typically inclusive of minimal office space. Table 1 summarizes the trip generation estimate for the weekday AM peak hour and weekday PM peak hour for passenger vehicles (PV) and trucks.³

Table 1 – Trip Generation Summary for Proposed Use

Land Use	Independent Variable	Weekday AM Peak Hour			Weekday PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
General Light Industrial – LUC 110 PV	166,024 SF	56	7	63	5	45	50
General Light Industrial – LUC 110 Trucks	166,024 SF	1	1	2	1	1	2
Total Site-Generated Trips		57	8	65	6	46	52

Table 1 shows that the project is expected to generate 65 total trips during weekday AM peak hour and 52 trips during the weekday PM peak hour. It is important to note that there is no "pass-by" component of the traffic associated with the proposed development. Additionally, the magnitude of the new traffic associated with this development is less than the NYSDOT and ITE threshold of 100-site generated trips on any one intersection.

Future Traffic Volumes

To evaluate the impact of the proposed project, traffic projections were prepared for the anticipated year of completion – 2023. In order to conservatively forecast the 2023 traffic volume, a 1.0% growth rate was applied to the existing traffic volumes and compounded annually for two years. CM contacted the Town of Chester Planning Board Chair, Don Serotta, and the Town of Warwick Planning Board Secretary; both Towns identified no other planned development projects that could potentially increase traffic within the study area. The 2023 projected No-Build traffic volumes are shown on Figure 1-2 and represent the traffic volumes *without* the proposed project.

Traffic generated by the project was distributed on the adjacent roadway based on existing observed travel patterns in the project area and the probable travel routes of truck drivers and employees. The proximity of the site to NYS Route 17 is expected to influence trip-making behavior of the truck drivers. The analysis assumes that all truck trips (100%) will be drawn to and from Exits 127 and 126 on NYS Route 17. Therefore, truck drivers will utilize the Bellvale Road and Lake Station Road intersection to gain access to and from the site. The distribution of employee vehicles is expected to be more balanced between Kings Highway and Bellvale Road. In general, all site-generated traffic is expect to ingress and egress the site via the new Davidson Drive connection to Lake Station Road.

The primary trip distribution pattern for the proposed development is shown on Figure 2 for passenger vehicles and Figure 4 for trucks. The associated site-generated traffic volumes are shown on Figures 3 for passenger vehicles and Figure 5 for trucks. The site-generated trips were then added to the 2023 No-Build traffic volumes, resulting in the 2023 Build traffic volumes shown on Figure 6.

³ The Fitted Curve results were utilized in accordance with the ITE guidance to use those results when there are more than 20 studies for the land use.

Traffic Operations

Intersection Level of Service (LOS) and capacity analysis relate traffic volumes to the physical characteristics of an intersection. Intersection evaluations were made using Synchro Version 11 software, which automates the procedures contained in the Highway Capacity Manual. Table 2 summarizes the results of the level of service calculations for the Existing, No-Build, and Build conditions during the weekday AM peak hour and weekday PM peak hour. The detailed level of service analyses are included under Attachment C.

Table 2 – Level of Service Summary

Intersection	Control	Weekday AM Peak Hour			Weekday PM Peak Hour		
		2021 Existing	2023 No-Build	2023 Build	2021 Existing	2023 No-Build	2023 Build
Kings Highway/Lake Station Road	U						
Lake Station Road, WB LR		C (16.6)	C (16.9)	C (17.6)	B (14.6)	B (14.9)	C (15.5)
Kings Highway, SB LT		A (0.7)	A (0.7)	A (0.8)	A (0.4)	A (0.4)	A (0.4)
Lake Station Road/Paradise Lane/Davidson Drive	U						
Lake Station Road, EB [L]TR		--	--	A (1.7)	--	--	A (0.2)
Lake Station Road, WB LT[R]		A (0.1)	A (0.1)	A (0.1)	A (0.2)	A (0.2)	A (0.2)
Paradise Lane, NB L[T]R		A (8.9)	A (8.9)	A (9.2)	A (8.9)	A (8.9)	A (9.0)
[Davidson Drive, SB] [LTR]		--	--	A (9.9)	--	--	A (9.9)
Lake Station Road/Bellvale Road	U						
Lake Station Road, EB LR		A (9.3)	A (9.4)	A (9.6)	A (9.4)	A (9.4)	A (9.9)
Bellvale Road, NB LT		A (4.0)	A (3.9)	A (4.5)	A (5.2)	A (5.2)	A (5.2)

U = Unsignalized intersection

S = Signalized intersection

EB, WB, NB, SB = Eastbound, Westbound, Northbound, and Southbound intersection approaches

L, T, R = Left-turn, Through, and/or Right-turn movements

X (Y.Y) = Level of service (Average delay in seconds per vehicle)

The impact of the project can be described by comparing the analysis of the No-Build and Build operating conditions. The following observation are evident from the analysis:

- **Kings Highway/Lake Station Road:** The level of service analysis indicates that the minor street approach of the three-leg intersection will operate at an acceptable LOS of C or better in the Build condition, which is consistent with the anticipated LOS for the intersection in the No-Build condition.
- **Lake Station Road/Paradise Lane:** The level of service indicates that the northbound and southbound minor approaches of the intersection will operate at an acceptable LOS of A or better in the Build condition, which is consistent with the anticipated LOS of the intersection in the No-Build condition.
- **Lake Station Road/Bellvale Road:** The level of service analysis indicates that the minor street approach of the three-leg intersection will operate at an acceptable LOS of A or better in the Build condition, which is consistent with the anticipated LOS for the intersection in the No-Build condition.

4.0 Site Access, Circulation, and Parking

CM reviewed the site access, site circulation and parking layout as shown on the Site Plan prepared by Arden Consulting Engineers, PLLC, last revised September 16, 2021. Vehicular access is proposed via Davidson Drive, currently an unbuilt public paper street. Davidson Drive will provide access to the site via two driveways located approximately 380 and 980 feet north of Lake Station Road and connect to the already built portion of Davidson Drive to the north. However, all site-generated traffic is expected to use Lake Station Road for ingress and egress.

The southerly site access is a 26-foot-wide driveway dedicated for passenger vehicles only. The northerly site access is a 30-foot-wide driveway designated for passenger vehicles and trucks; the truck parking area is 152 feet in width, which will allow these vehicles to turn around completely within the confines of the site as necessary. The site will be supported by a total of 76 off-street parking spaces inclusive of four ADA-accessible spaces and 13 parking spaces for trucks. The proposed number of off-street parking for passenger vehicles meets the Town of Chester zoning requirements for the combined total of the office use component (1 space/200SF) and the industrial use component (2 spaces/3 employees).

5.0 Conclusion

The subject site is located on the parcel defined as Section 17, Block 1, Lots 22.1 through 22.8 on the Orange County Map. The proposed project will construct a new 166,024-square-foot light industrial use building which includes a 4,000-square-foot office space. It is anticipated that the largest shift will consist of 45 employees. The following is noted regarding the proposed project:

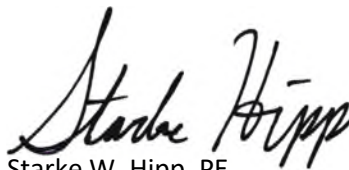
- Turning movement counts were conducted on Thursday July 22, 2021, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. The morning peak hour occurred from 8:00 AM to 9:00 AM, and evening peak hour occurred from 4:15 PM to 5:15 PM.
- Trips generated by the seven residential dwellings located on Paradise Lane were estimated using ITE LUC 210 – “Single-Family Detached Housing” and then evenly distributed onto Lake Station Road.
- The site is expected to generate 65 total trips during the weekday morning peak hour and 52 total trips during the weekday evening peak hour.
- The level of service analysis indicates that the Build condition of the study intersections, Kings Highway/Lake Station Road, Lake Station Road/Davidson Drive/Paradise Lane, and Bellvale Road/Lake Station Road, will operate at the level of service consistent with the No-Build conditions.
- The project is not expected to have a significant adverse impact on surrounding roadway network.

Please do not hesitate to call our office if you have any questions or comments, or require additional information.

Respectfully submitted,
Creighton Manning Engineering, LLP



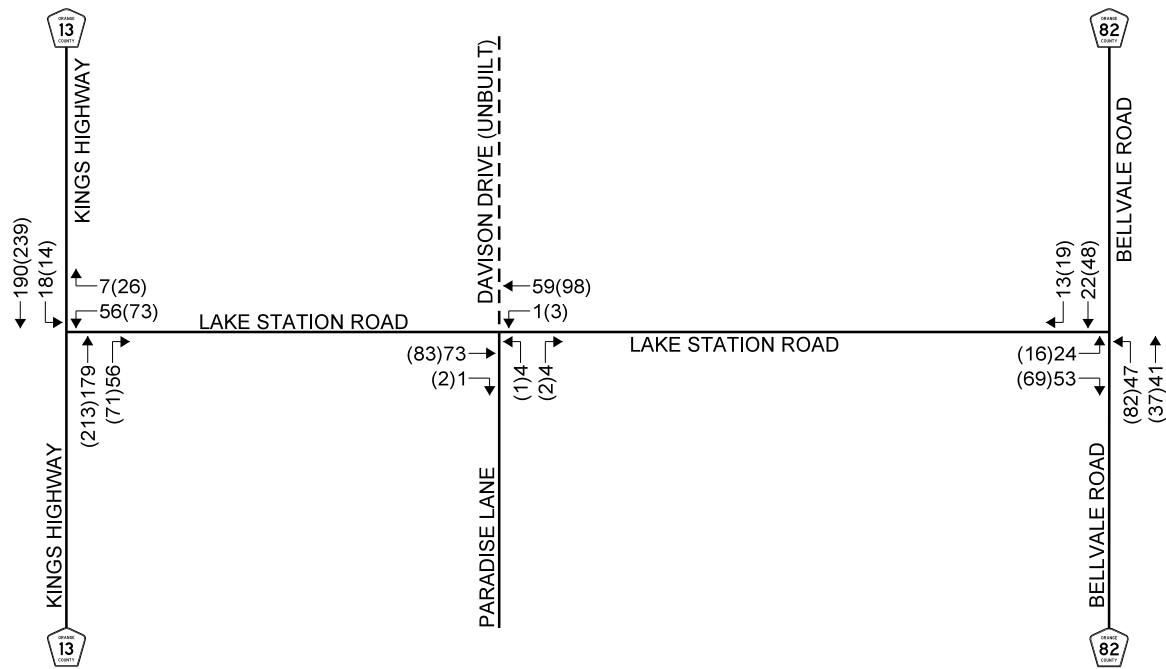
Frank A. Filiciotto, PE
Associate
cc:



Starke W. Hipp, PE
Project Engineer

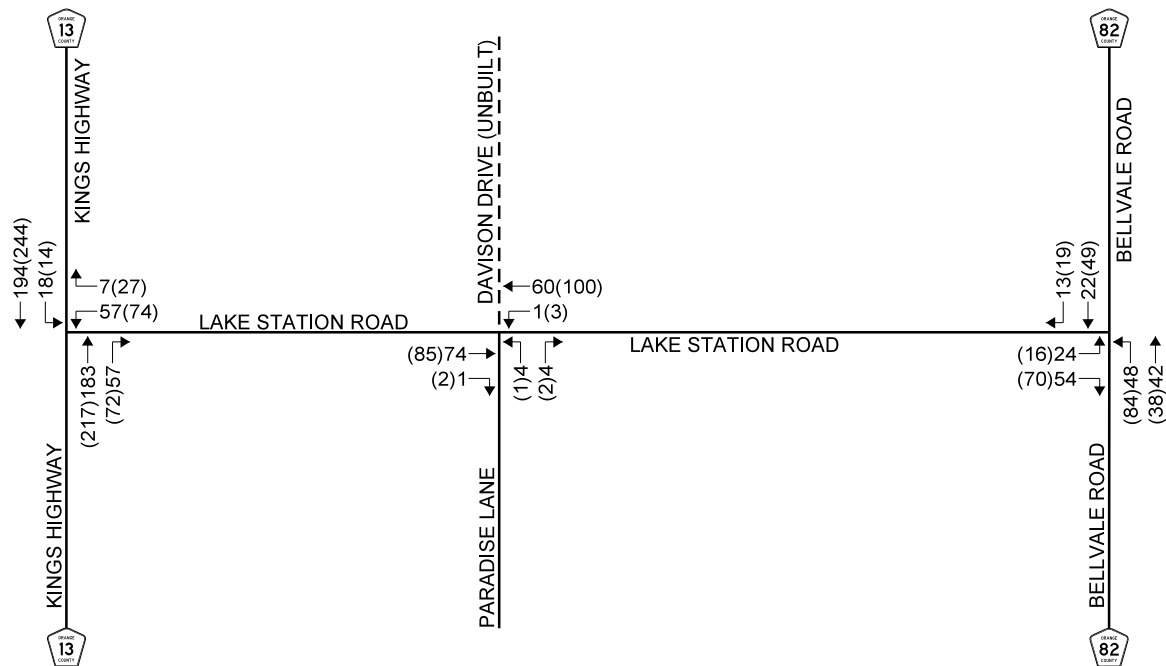
①

2021 EXISTING TRAFFIC VOLUMES



②

2023 NO-BUILD TRAFFIC VOLUMES



LEGEND:
AM (PM)

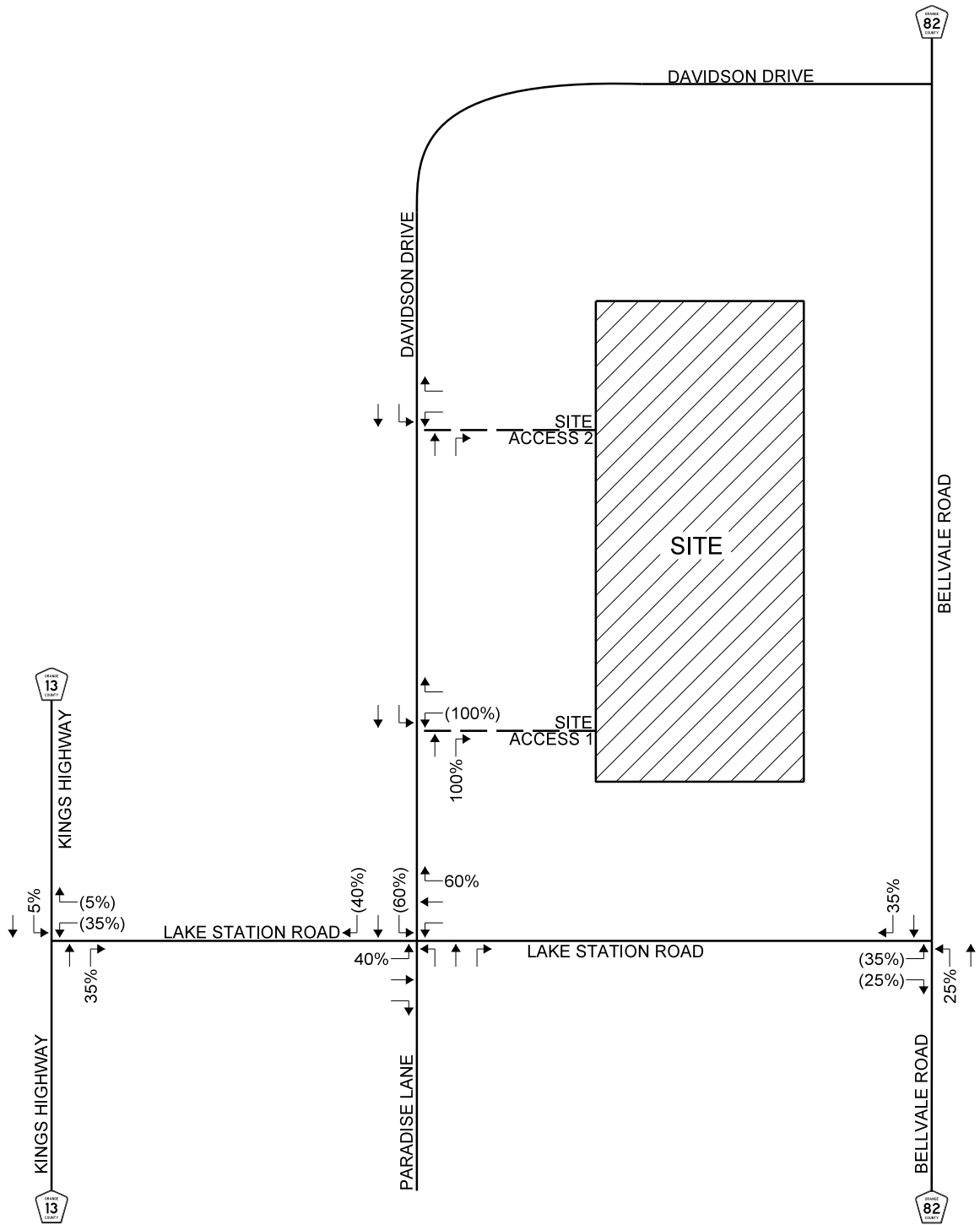
2021 EXISTING AND 2023 NO-BUILD
TRAFFIC VOLUMES

DAVIDSON DRIVE HOLDINGS, LLC
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK



PROJECT: 121-204 DATE: 08/2021 FIGURE: 1

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LEGEND:
AM (PM)

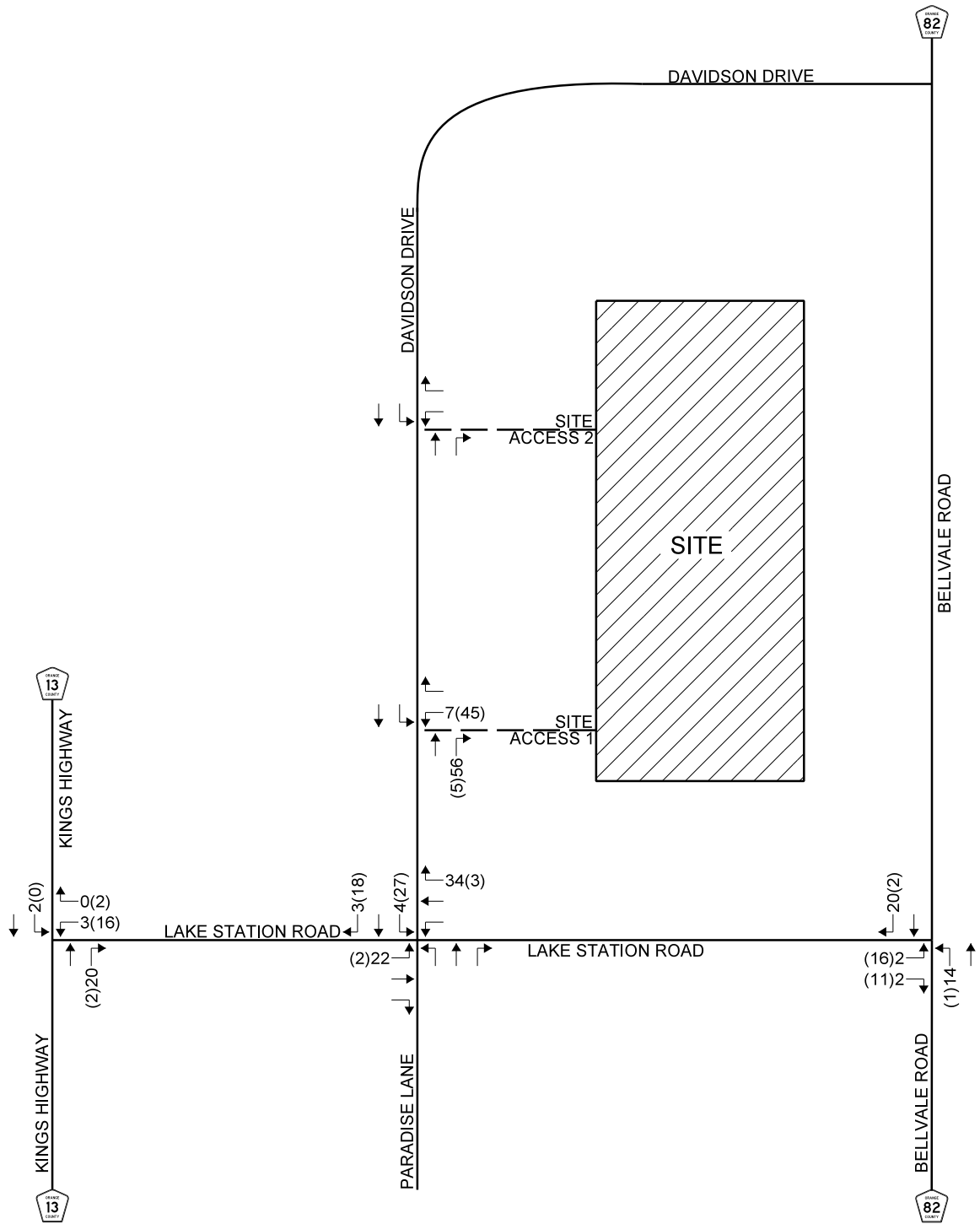
PASSENGER VEHICLE - TRIP DISTRIBUTION

DAVIDSON DRIVE HOLDINGS, LLC
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK



PROJECT: 121-204 DATE: 08/2021 FIGURE: 2

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LEGEND:
AM (PM)

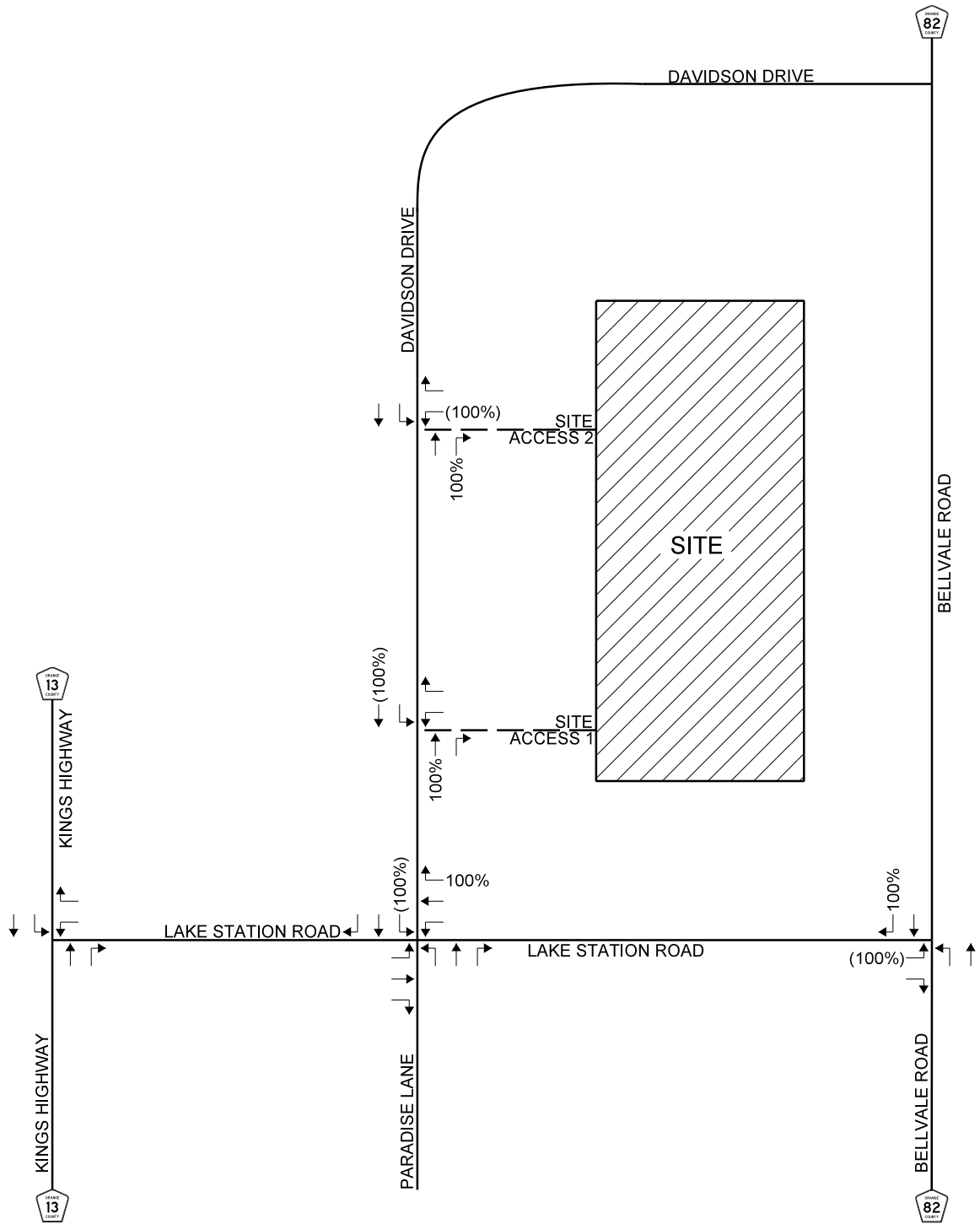
PASSENGER VEHICLE - TRIP ASSIGNMENT

DAVIDSON DRIVE HOLDINGS, LLC
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK



PROJECT: 121-204 DATE: 08/2021 FIGURE: 3

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LEGEND:
ENTERING (EXITING)

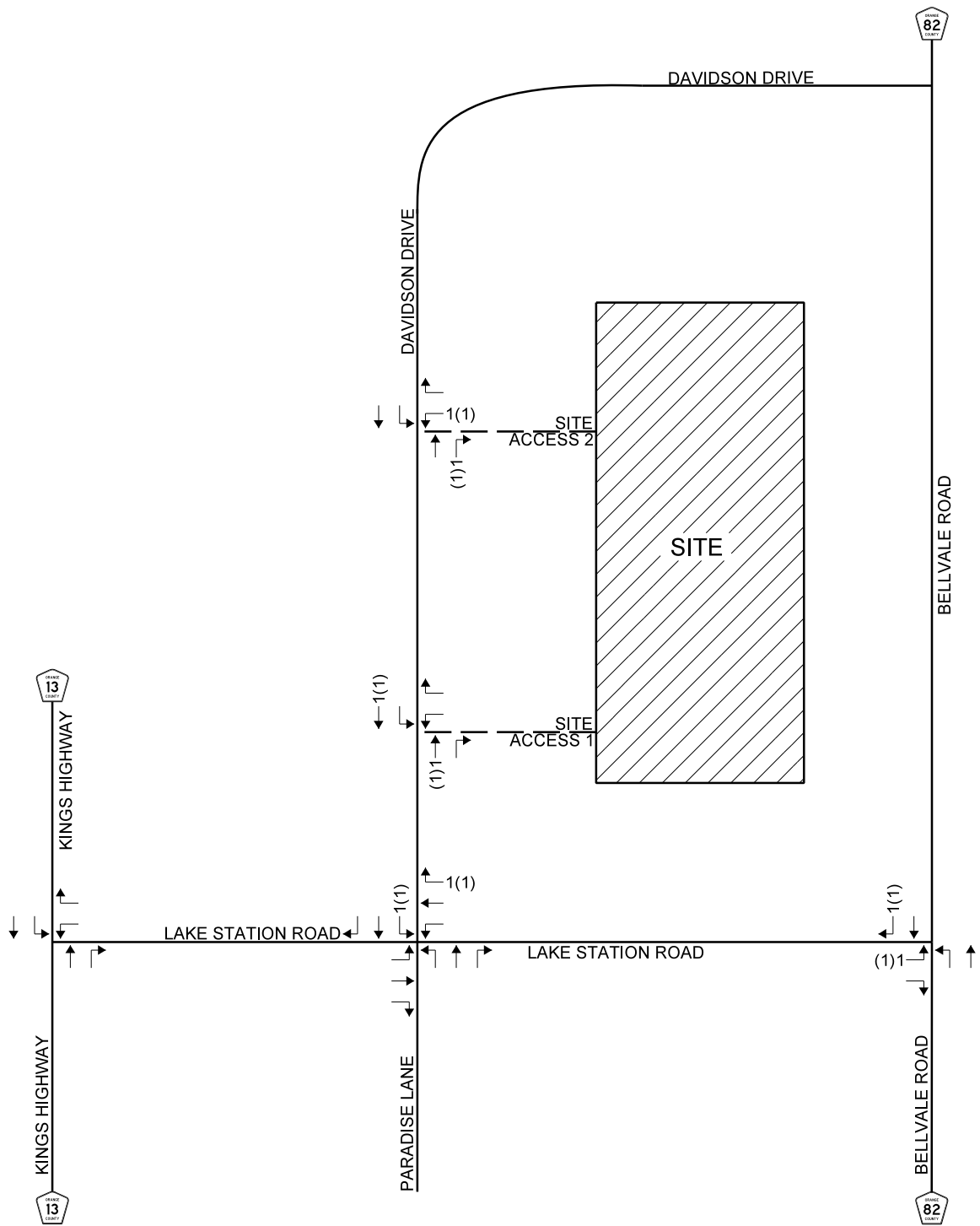
TRUCK - TRIP DISTRIBUTION

DAVIDSON DRIVE HOLDINGS, LLC
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK



PROJECT: 121-204 DATE: 08/2021 FIGURE: 4

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LEGEND:
AM (PM)

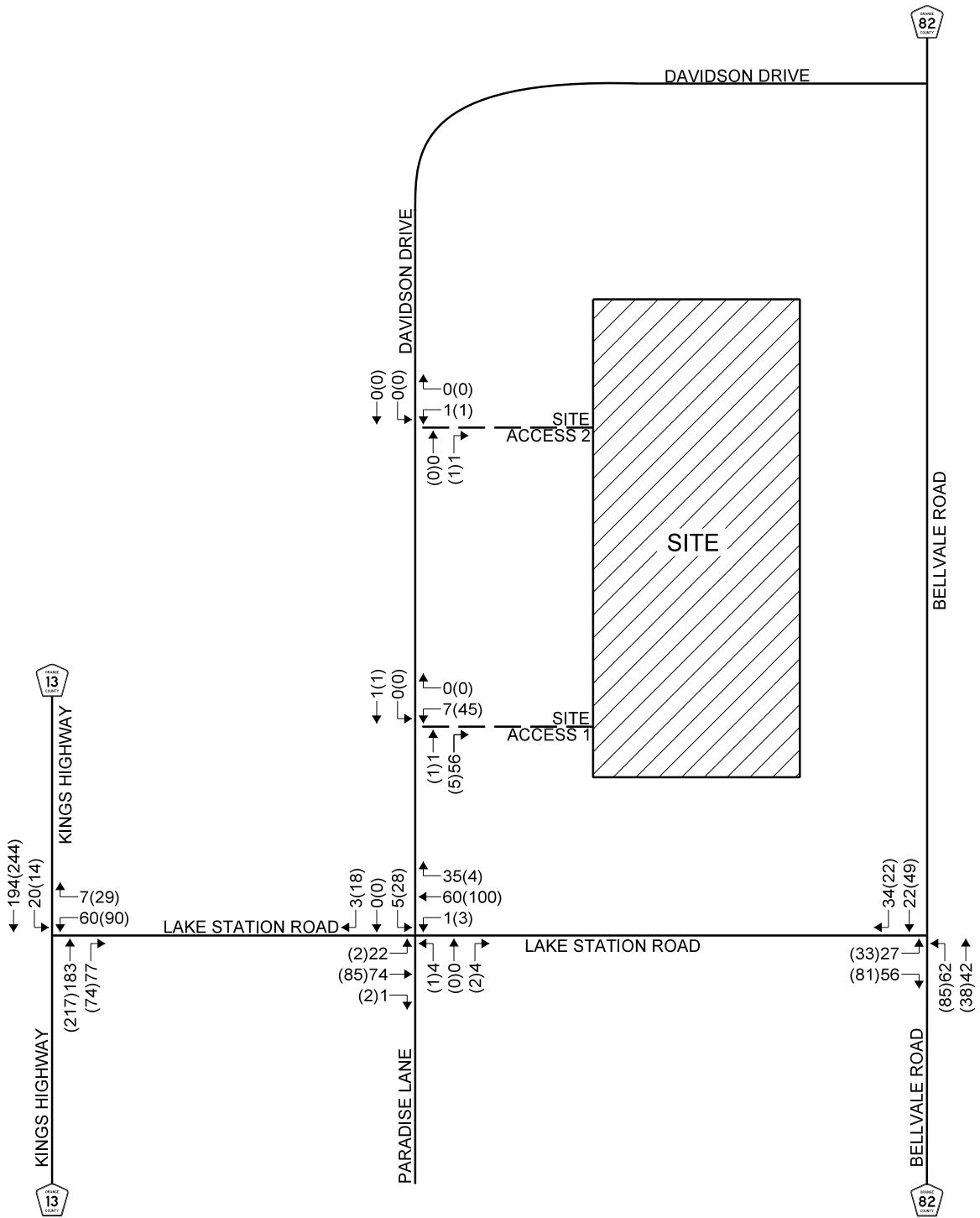
TRUCK - TRIP ASSIGNMENT

DAVIDSON DRIVE HOLDINGS, LLC
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK



PROJECT:	121-204	DATE:	08/2021	FIGURE:	5
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LEGEND:
AM (PM)

2023 BUILD
TRAFFIC VOLUMES

DAVIDSON DRIVE HOLDINGS, LLC
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK



ATTACHMENT A
SITE PLAN

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT
LAKE STATION ROAD
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

TABLE OF ZONING REQUIREMENTS:

ZONE 1P (LIGHT ENTERPRISE)
LIGHT INDUSTRIAL USE BUILDING

LOT DIMENSIONS

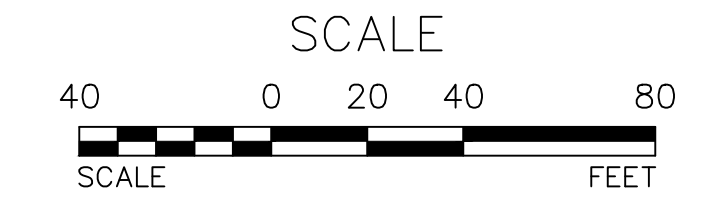
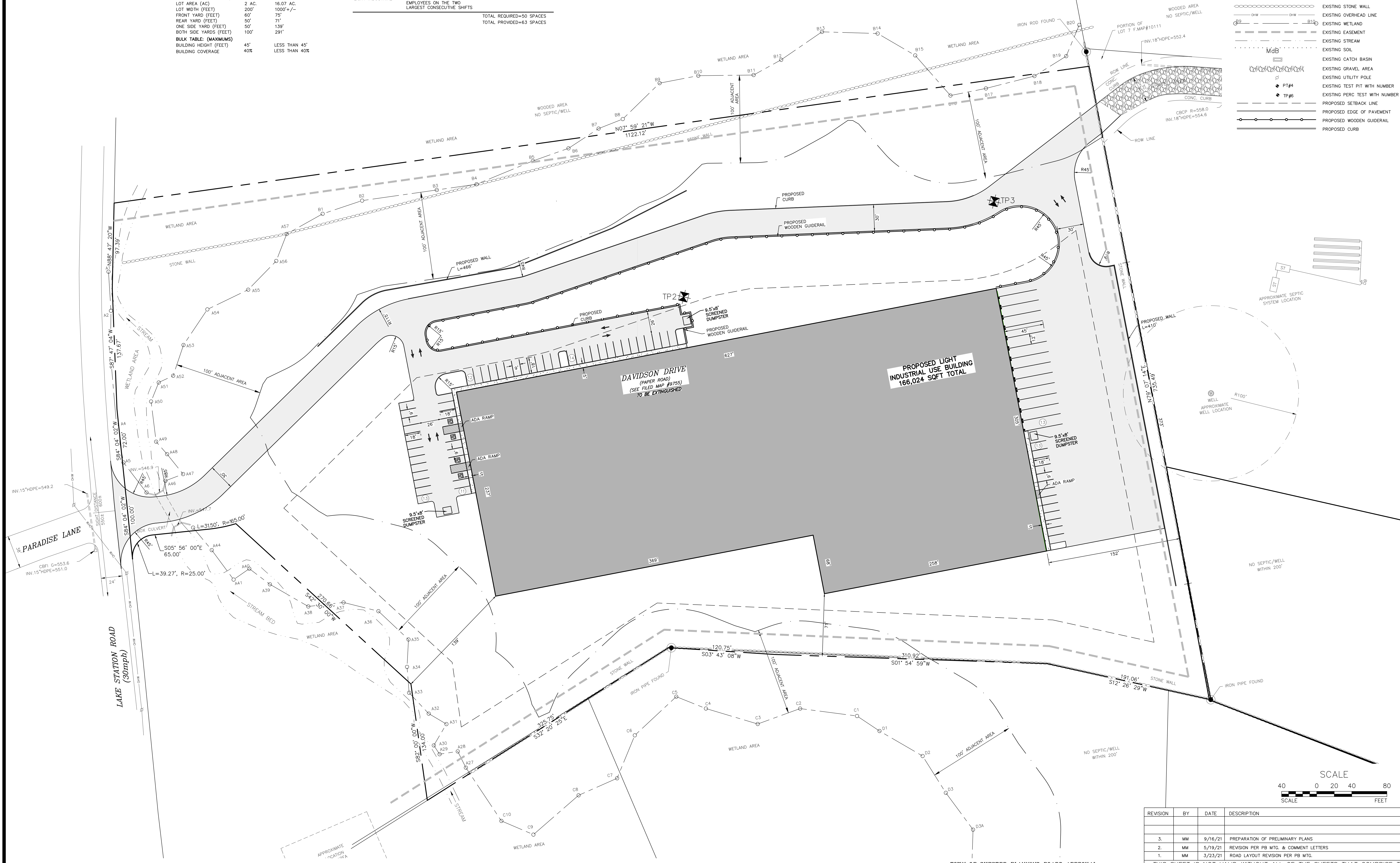
BULK TABLE: (MINIMUMS)	REQUIRED	PROVIDED
LOT AREA (AC)	2 AC	16.07 AC
LOT WIDTH (FEET)	200'	1000'+/-
FRONT YARD (FEET)	60'	75'
REAR YARD (FEET)	50'	71'
ONE SIDE YARD (FEET)	50'	139'
BOTH SIDE YARDS (FEET)	100'	291'
BULK TABLE: (MAXIMUMS)		
BUILDING HEIGHT (FEET)	45'	LESS THAN 45'
BUILDING COVERAGE	40%	LESS THAN 40%

PARKING CALCULATION TABLE

PROPOSED USE	PARKING REQUIREMENT	REQUIRED SPACES
OFFICE	ONE SPACE/200 SQ.FT.	4,000/200=20 SPACES
LIGHT INDUSTRIAL	2 SPACES PER 3 EMPLOYEES ON THE TWO LARGEST CONSECUTIVE SHIFTS	2/3*45 EMPLOYEES=30 SPACES
		TOTAL REQUIRED=50 SPACES
		TOTAL PROVIDED=63 SPACES

LEGEND:

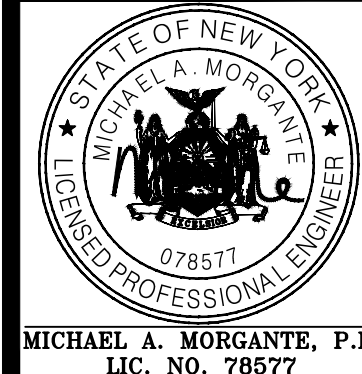
---	490	EXISTING MAJOR CONTOUR
---		EXISTING MINOR CONTOUR
---		EXISTING EDGE OF PAVEMENT
---		EXISTING PROPERTY LINE
---		EXISTING ADJACENT PROPERTY LINE
---		EXISTING STONE WALL
---		EXISTING OVERHEAD LINE
---		EXISTING WETLAND
---		EXISTING EASEMENT
---		EXISTING STREAM
---		EXISTING SOIL
---		EXISTING CATCH BASIN
---		EXISTING GRAVEL AREA
---		EXISTING UTILITY POLE
---		EXISTING TEST PIT WITH NUMBER
---		EXISTING PERC TEST WITH NUMBER
---		PROPOSED SETBACK LINE
---		PROPOSED EDGE OF PAVEMENT
---		PROPOSED WOODEN GUIDERAIL
---		PROPOSED CURB



REVISION	BY	DATE	DESCRIPTION
3.	MM	9/16/21	PREPARATION OF PRELIMINARY PLANS
2.	MM	5/19/21	REVISION PER PB MTG. & COMMENT LETTERS
1.	MM	3/23/21	ROAD LAYOUT REVISION PER PB MTG.

THIS SHEET IS NOT VALID WITHOUT ALL OF THE SHEETS THAT COMPRISE THE SET

ARDEN CONSULTING ENGINEERS, PLLC
P.O. BOX 340 MONROE, N.Y.
T: 845-782-8114 E: MAM@ARDENCONSULTING.NET



SITE PLAN & LOT LINE COMBINATION FOR
DAVIDSON DRIVE HOLDINGS, LLC
LAKE STATION ROAD
TOWN OF CHESTER, COUNTY OF ORANGE, NY

SITE PLAN

JOB#:
20-030
SCALE:
AS NOTED
DATE:
12-17-21
DRAWN:
MM
CHECKED:
MM
SHEET NO.
04 OF 17

WARNING- IT IS A VIOLATION OF NEW YORK EDUCATIONAL LAW, SECTION 2209.2, FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATIONAL LAW, SECTION 2209.2.

ONLY MAPS WITH EMBOSSED SEALS ARE GENUINE COPIES OF THE ORIGINAL WORK AND OPINION. MAPS NOT BEARING EMBOSSED SEALS SHOULD NOT BE RELIED UPON SINCE OTHER THAN EMBOSSED-SEAL COPIES MAY CONTAIN UNAUTHORIZED AND UNDETECTABLE MODIFICATIONS, DELETIONS, ADDITIONS AND CHANGES.

ATTACHMENT B
TURNING MOVEMENT COUNTS

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT
LAKE STATION ROAD
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

121-204 Bellvale Rd/Lake Station Rd - AM - TMC

Thu Jul 22, 2021

Full Length (7 AM-9 AM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857862, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

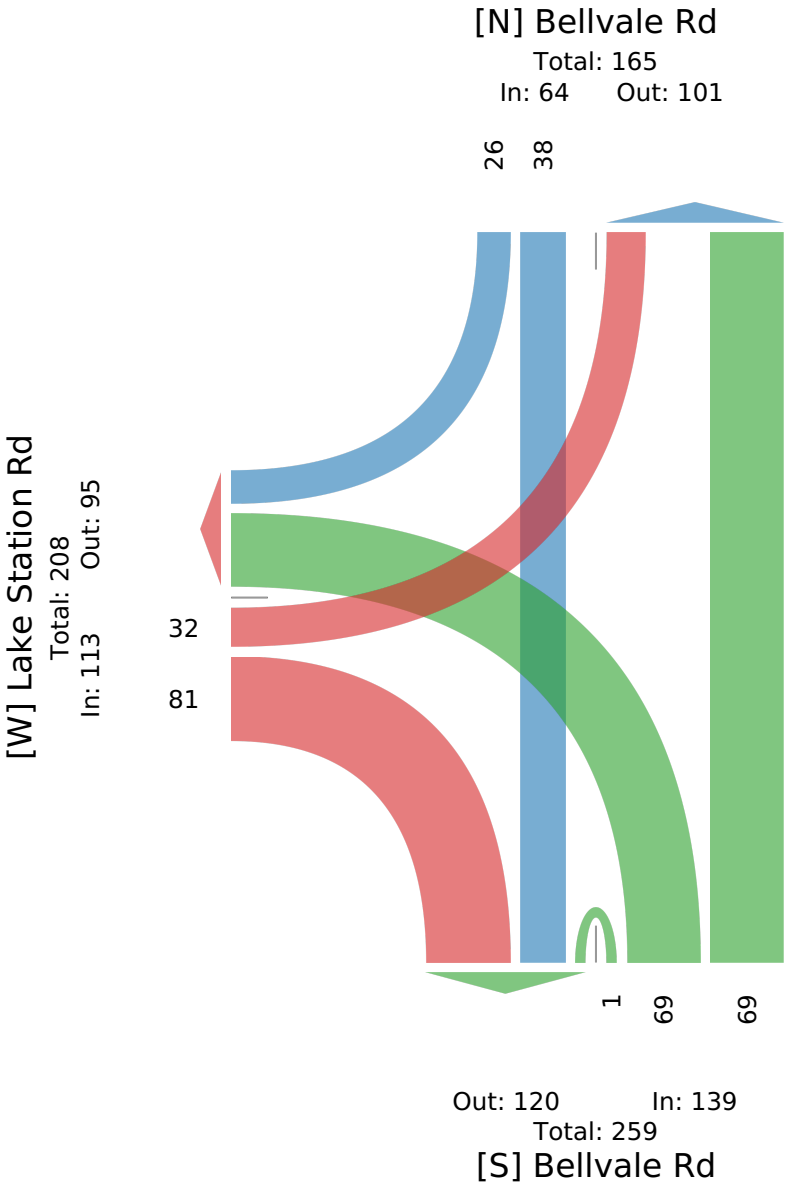
Leg Direction	Lake Station Rd Eastbound				Bellvale Rd Northbound				Bellvale Rd Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2021-07-22 7:00AM	1	6	0	7	9	7	0	16	1	6	0	7	30
7:15AM	6	6	0	12	5	13	0	18	2	4	0	6	36
7:30AM	3	13	0	16	6	6	0	12	10	1	0	11	39
7:45AM	1	11	0	12	9	6	0	15	5	4	0	9	36
Hourly Total	11	36	0	47	29	32	0	61	18	15	0	33	141
8:00AM	5	10	0	15	7	9	0	16	5	3	0	8	39
8:15AM	3	11	0	14	9	7	0	16	4	2	0	6	36
8:30AM	6	16	0	22	8	9	0	17	3	3	0	6	45
8:45AM	7	8	0	15	16	12	1	29	8	3	0	11	55
Hourly Total	21	45	0	66	40	37	1	78	20	11	0	31	175
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	32	81	0	113	69	69	1	139	38	26	0	64	316
% Approach	28.3%	71.7%	0%	-	49.6%	49.6%	0.7%	-	59.4%	40.6%	0%	-	-
% Total	10.1%	25.6%	0%	35.8%	21.8%	21.8%	0.3%	44.0%	12.0%	8.2%	0%	20.3%	-
Lights	29	78	0	107	67	62	0	129	33	25	0	58	294
% Lights	90.6%	96.3%	0%	94.7%	97.1%	89.9%	0%	92.8%	86.8%	96.2%	0%	90.6%	93.0%
Articulated Trucks and Single-Unit Trucks	1	3	0	4	1	5	1	7	5	1	0	6	17
% Articulated Trucks and Single-Unit Trucks	3.1%	3.7%	0%	3.5%	1.4%	7.2%	100%	5.0%	13.2%	3.8%	0%	9.4%	5.4%
Buses	2	0	0	2	1	2	0	3	0	0	0	0	5
% Buses	6.3%	0%	0%	1.8%	1.4%	2.9%	0%	2.2%	0%	0%	0%	0%	1.6%

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

121-204 Bellvale Rd/Lake Station Rd - AM - TMC
Thu Jul 22, 2021
Full Length (7 AM-9 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857862, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



121-204 Bellvale Rd/Lake Station Rd - AM - TMC

Thu Jul 22, 2021

AM Peak (8 AM - 9 AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857862, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

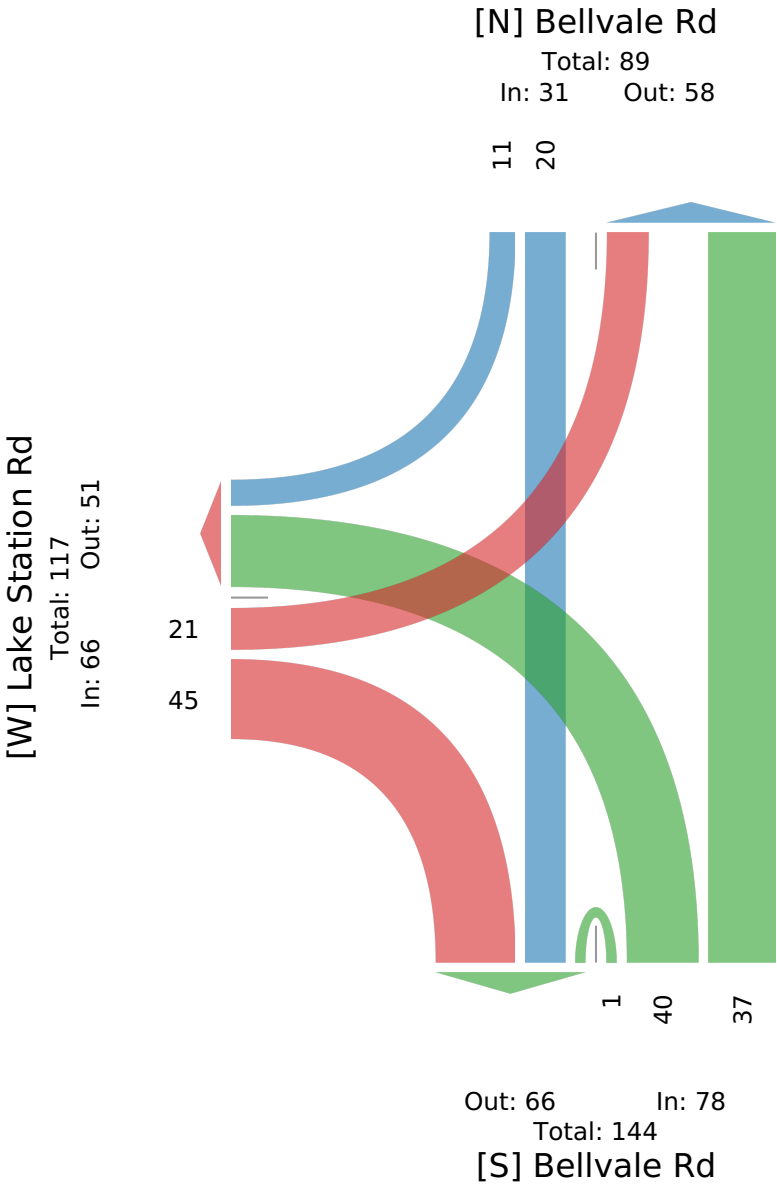
Leg Direction	Lake Station Rd Eastbound				Bellvale Rd Northbound				Bellvale Rd Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2021-07-22 8:00AM	5	10	0	15	7	9	0	16	5	3	0	8	39
8:15AM	3	11	0	14	9	7	0	16	4	2	0	6	36
8:30AM	6	16	0	22	8	9	0	17	3	3	0	6	45
8:45AM	7	8	0	15	16	12	1	29	8	3	0	11	55
Total	21	45	0	66	40	37	1	78	20	11	0	31	175
% Approach	31.8%	68.2%	0%	-	51.3%	47.4%	1.3%	-	64.5%	35.5%	0%	-	-
% Total	12.0%	25.7%	0%	37.7%	22.9%	21.1%	0.6%	44.6%	11.4%	6.3%	0%	17.7%	-
PHF	0.750	0.703	-	0.750	0.625	0.771	0.250	0.672	0.625	0.917	-	0.705	0.795
Lights	19	44	0	63	38	35	0	73	17	11	0	28	164
% Lights	90.5%	97.8%	0%	95.5%	95.0%	94.6%	0%	93.6%	85.0%	100%	0%	90.3%	93.7%
Articulated Trucks and Single-Unit Trucks	1	1	0	2	1	1	1	3	3	0	0	3	8
% Articulated Trucks and Single-Unit Trucks	4.8%	2.2%	0%	3.0%	2.5%	2.7%	100%	3.8%	15.0%	0%	0%	9.7%	4.6%
Buses	1	0	0	1	1	1	0	2	0	0	0	0	3
% Buses	4.8%	0%	0%	1.5%	2.5%	2.7%	0%	2.6%	0%	0%	0%	0%	1.7%

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

121-204 Bellvale Rd/Lake Station Rd - AM - TMC
Thu Jul 22, 2021
AM Peak (8 AM - 9 AM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857862, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



121-204 Bellvale Rd/Lake Station Rd - PM - TMC

Thu Jul 22, 2021

Full Length (4 PM-6 PM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857863, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

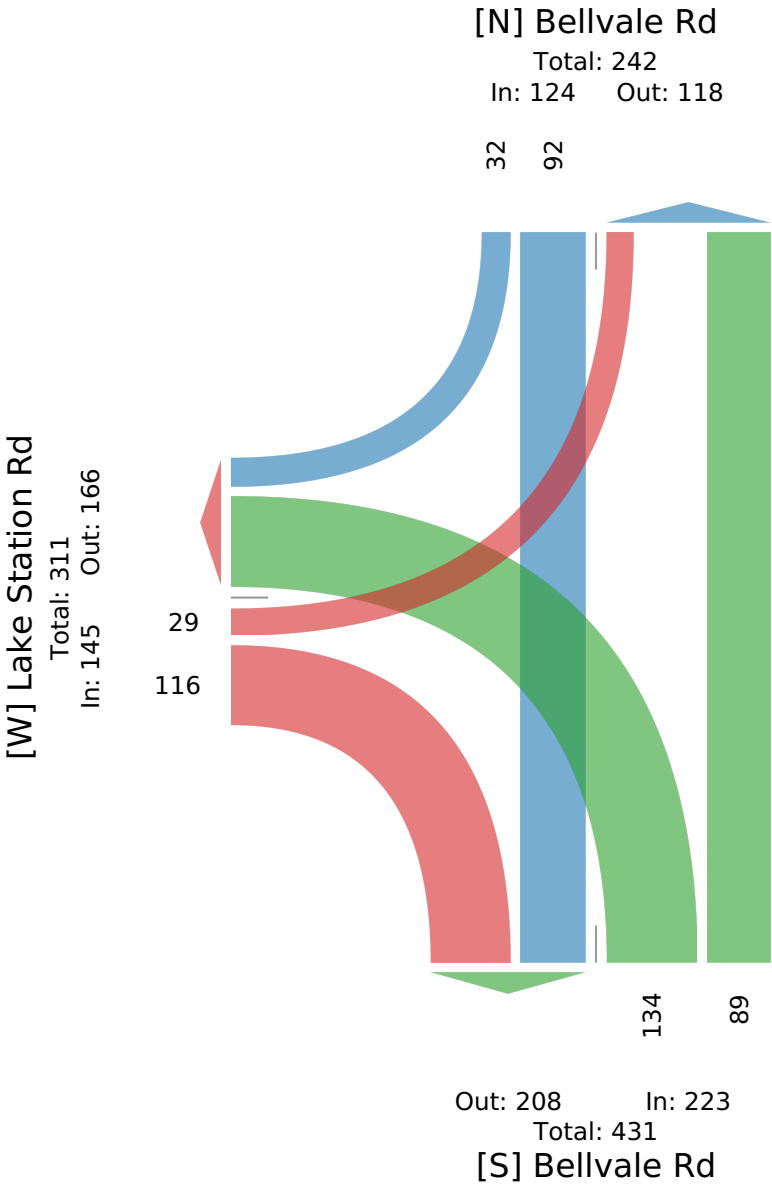
Leg Direction	Lake Station Rd Eastbound				Bellvale Rd Northbound				Bellvale Rd Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2021-07-22 4:00PM	5	14	0	19	16	12	0	28	7	5	0	12	59
4:15PM	5	26	0	31	20	8	0	28	10	3	0	13	72
4:30PM	6	15	0	21	22	6	0	28	8	6	0	14	63
4:45PM	2	13	0	15	13	10	0	23	15	3	0	18	56
Hourly Total	18	68	0	86	71	36	0	107	40	17	0	57	250
5:00PM	3	12	0	15	15	13	0	28	15	4	0	19	62
5:15PM	2	11	0	13	16	13	0	29	11	5	0	16	58
5:30PM	3	16	0	19	16	12	0	28	13	3	0	16	63
5:45PM	3	9	0	12	16	15	0	31	13	3	0	16	59
Hourly Total	11	48	0	59	63	53	0	116	52	15	0	67	242
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	29	116	0	145	134	89	0	223	92	32	0	124	492
% Approach	20.0%	80.0%	0%	-	60.1%	39.9%	0%	-	74.2%	25.8%	0%	-	-
% Total	5.9%	23.6%	0%	29.5%	27.2%	18.1%	0%	45.3%	18.7%	6.5%	0%	25.2%	-
Lights	29	114	0	143	132	87	0	219	90	32	0	122	484
% Lights	100%	98.3%	0%	98.6%	98.5%	97.8%	0%	98.2%	97.8%	100%	0%	98.4%	98.4%
Articulated Trucks and Single-Unit Trucks	0	1	0	1	1	2	0	3	2	0	0	2	6
% Articulated Trucks and Single-Unit Trucks	0%	0.9%	0%	0.7%	0.7%	2.2%	0%	1.3%	2.2%	0%	0%	1.6%	1.2%
Buses	0	1	0	1	1	0	0	1	0	0	0	0	2
% Buses	0%	0.9%	0%	0.7%	0.7%	0%	0%	0.4%	0%	0%	0%	0%	0.4%

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

121-204 Bellvale Rd/Lake Station Rd - PM - TMC
Thu Jul 22, 2021
Full Length (4 PM-6 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857863, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



121-204 Bellvale Rd/Lake Station Rd - PM - TMC

Thu Jul 22, 2021

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857863, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

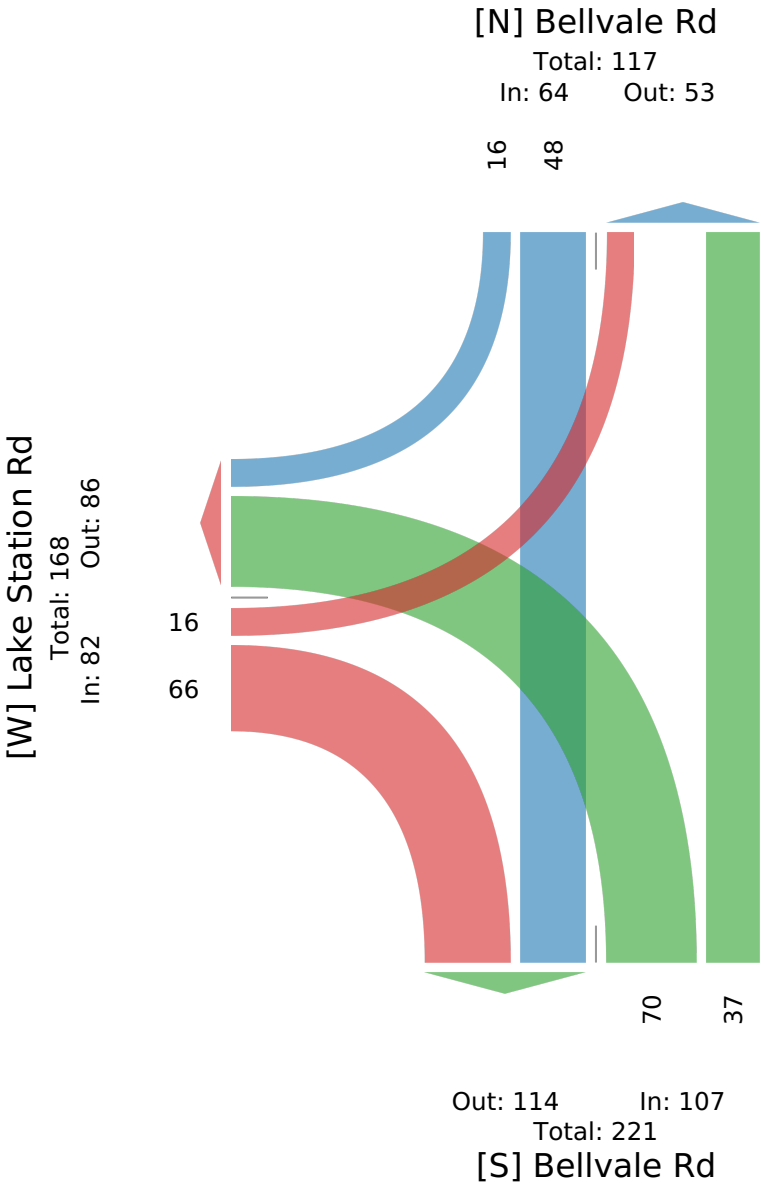
Leg Direction	Lake Station Rd Eastbound				Bellvale Rd Northbound				Bellvale Rd Southbound				
Time	L	R	U	App	L	T	U	App	T	R	U	App	Int
2021-07-22 4:15PM	5	26	0	31	20	8	0	28	10	3	0	13	72
4:30PM	6	15	0	21	22	6	0	28	8	6	0	14	63
4:45PM	2	13	0	15	13	10	0	23	15	3	0	18	56
5:00PM	3	12	0	15	15	13	0	28	15	4	0	19	62
Total	16	66	0	82	70	37	0	107	48	16	0	64	253
% Approach	19.5%	80.5%	0%	-	65.4%	34.6%	0%	-	75.0%	25.0%	0%	-	-
% Total	6.3%	26.1%	0%	32.4%	27.7%	14.6%	0%	42.3%	19.0%	6.3%	0%	25.3%	-
PHF	0.667	0.635	-	0.661	0.795	0.712	-	0.955	0.800	0.667	-	0.842	0.878
Lights	16	64	0	80	69	36	0	105	46	16	0	62	247
% Lights	100%	97.0%	0%	97.6%	98.6%	97.3%	0%	98.1%	95.8%	100%	0%	96.9%	97.6%
Articulated Trucks and Single-Unit Trucks	0	1	0	1	0	1	0	1	2	0	0	2	4
% Articulated Trucks and Single-Unit Trucks	0%	1.5%	0%	1.2%	0%	2.7%	0%	0.9%	4.2%	0%	0%	3.1%	1.6%
Buses	0	1	0	1	1	0	0	1	0	0	0	0	2
% Buses	0%	1.5%	0%	1.2%	1.4%	0%	0%	0.9%	0%	0%	0%	0%	0.8%

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

121-204 Bellvale Rd/Lake Station Rd - PM - TMC
Thu Jul 22, 2021
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857863, Location: 41.29903, -74.277448



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



121-204 Kings Hwy/Lake Station Rd - AM - TMC

Thu Jul 22, 2021

Full Length (7 AM-9 AM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857857, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

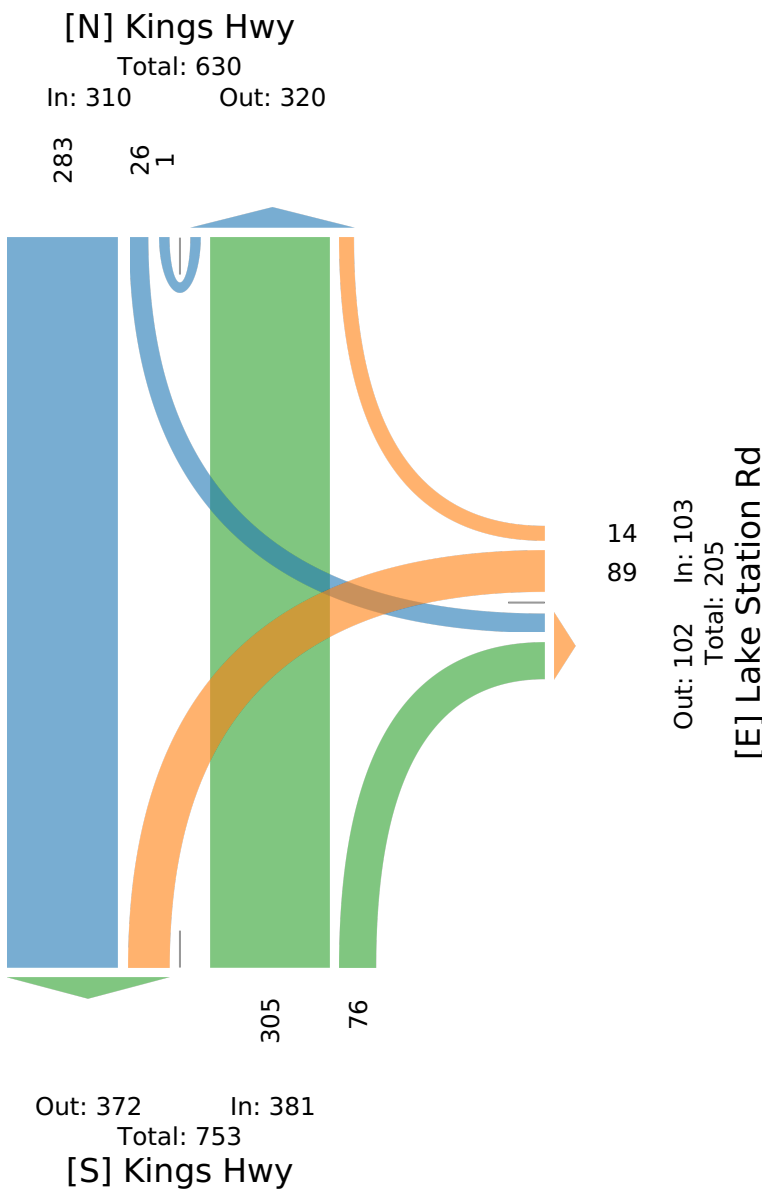
Leg Direction	Lake Station Rd Westbound				Kings Hwy Northbound				Kings Hwy Southbound				
Time	L	R	U	App	T	R	U	App	L	T	U	App	Int
2021-07-22 7:00AM	7	3	0	10	25	3	0	28	2	16	0	18	56
7:15AM	7	2	0	9	33	8	0	41	3	27	0	30	80
7:30AM	11	2	0	13	37	9	0	46	3	37	0	40	99
7:45AM	13	1	0	14	47	9	0	56	3	30	0	33	103
Hourly Total	38	8	0	46	142	29	0	171	11	110	0	121	338
8:00AM	10	0	0	10	27	12	0	39	4	36	0	40	89
8:15AM	14	1	0	15	40	15	0	55	3	30	0	33	103
8:30AM	11	4	0	15	40	13	0	53	3	42	0	45	113
8:45AM	16	1	0	17	56	7	0	63	5	65	1	71	151
Hourly Total	51	6	0	57	163	47	0	210	15	173	1	189	456
9:00AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	89	14	0	103	305	76	0	381	26	283	1	310	794
% Approach	86.4%	13.6%	0%	-	80.1%	19.9%	0%	-	8.4%	91.3%	0.3%	-	-
% Total	11.2%	1.8%	0%	13.0%	38.4%	9.6%	0%	48.0%	3.3%	35.6%	0.1%	39.0%	-
Lights	85	13	0	98	283	71	0	354	24	266	1	291	743
% Lights	95.5%	92.9%	0%	95.1%	92.8%	93.4%	0%	92.9%	92.3%	94.0%	100%	93.9%	93.6%
Articulated Trucks and Single-Unit Trucks	3	0	0	3	17	3	0	20	1	13	0	14	37
% Articulated Trucks and Single-Unit Trucks	3.4%	0%	0%	2.9%	5.6%	3.9%	0%	5.2%	3.8%	4.6%	0%	4.5%	4.7%
Buses	1	1	0	2	5	2	0	7	1	4	0	5	14
% Buses	1.1%	7.1%	0%	1.9%	1.6%	2.6%	0%	1.8%	3.8%	1.4%	0%	1.6%	1.8%

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

121-204 Kings Hwy/Lake Station Rd - AM - TMC
Thu Jul 22, 2021
Full Length (7 AM-9 AM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857857, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



121-204 Kings Hwy/Lake Station Rd - AM - TMC

Thu Jul 22, 2021

AM Peak (8 AM - 9 AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857857, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

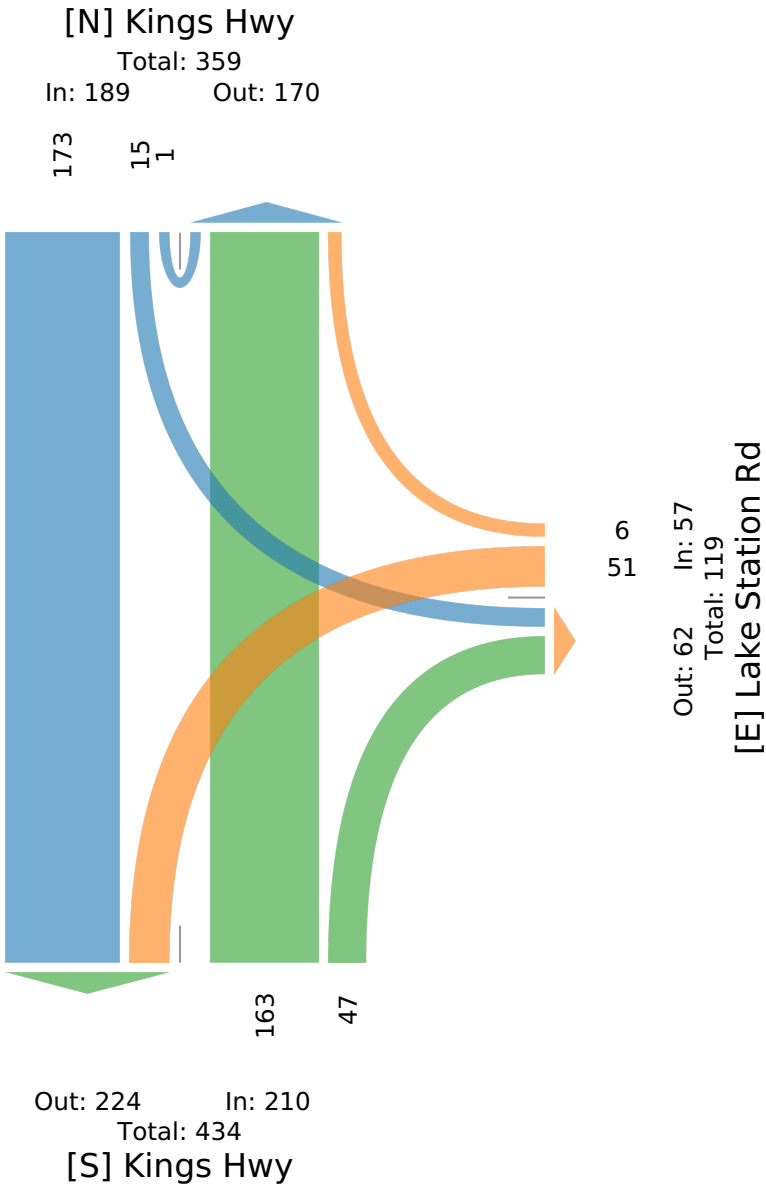
Leg Direction	Lake Station Rd Westbound				Kings Hwy Northbound				Kings Hwy Southbound				
Time	L	R	U	App	T	R	U	App	L	T	U	App	Int
2021-07-22 8:00AM	10	0	0	10	27	12	0	39	4	36	0	40	89
8:15AM	14	1	0	15	40	15	0	55	3	30	0	33	103
8:30AM	11	4	0	15	40	13	0	53	3	42	0	45	113
8:45AM	16	1	0	17	56	7	0	63	5	65	1	71	151
Total	51	6	0	57	163	47	0	210	15	173	1	189	456
% Approach	89.5%	10.5%	0%	-	77.6%	22.4%	0%	-	7.9%	91.5%	0.5%	-	-
% Total	11.2%	1.3%	0%	12.5%	35.7%	10.3%	0%	46.1%	3.3%	37.9%	0.2%	41.4%	-
PHF	0.797	0.375	-	0.838	0.728	0.783	-	0.833	0.750	0.665	0.250	0.665	0.755
Lights	48	6	0	54	153	44	0	197	14	162	1	177	428
% Lights	94.1%	100%	0%	94.7%	93.9%	93.6%	0%	93.8%	93.3%	93.6%	100%	93.7%	93.9%
Articulated Trucks and Single-Unit Trucks	2	0	0	2	9	2	0	11	1	8	0	9	22
% Articulated Trucks and Single-Unit Trucks	3.9%	0%	0%	3.5%	5.5%	4.3%	0%	5.2%	6.7%	4.6%	0%	4.8%	4.8%
Buses	1	0	0	1	1	1	0	2	0	3	0	3	6
% Buses	2.0%	0%	0%	1.8%	0.6%	2.1%	0%	1.0%	0%	1.7%	0%	1.6%	1.3%

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

121-204 Kings Hwy/Lake Station Rd - AM - TMC
Thu Jul 22, 2021
AM Peak (8 AM - 9 AM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857857, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



121-204 Kings Hwy/Lake Station Rd - PM - TMC

Thu Jul 22, 2021

Full Length (4 PM-6 PM)

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857858, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

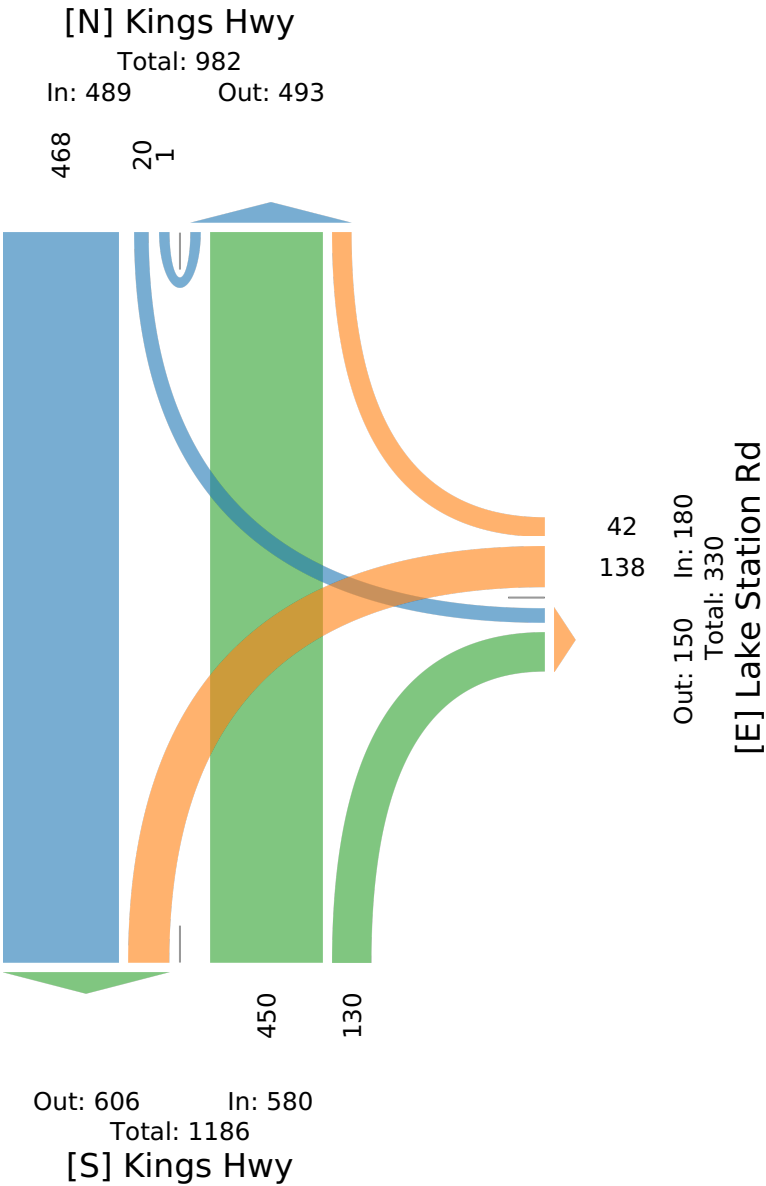
Leg Direction	Lake Station Rd Westbound				Kings Hwy Northbound				Kings Hwy Southbound				
Time	L	R	U	App	T	R	U	App	L	T	U	App	Int
2021-07-22 4:00PM	21	6	0	27	57	15	0	72	1	50	0	51	150
4:15PM	17	5	0	22	56	25	0	81	1	55	0	56	159
4:30PM	22	11	0	33	47	19	0	66	5	53	0	58	157
4:45PM	12	4	0	16	56	14	0	70	4	70	0	74	160
Hourly Total	72	26	0	98	216	73	0	289	11	228	0	239	626
5:00PM	22	6	0	28	54	13	0	67	4	61	0	65	160
5:15PM	12	3	0	15	71	19	0	90	0	62	1	63	168
5:30PM	12	5	0	17	49	14	0	63	1	52	0	53	133
5:45PM	20	2	0	22	60	11	0	71	4	65	0	69	162
Hourly Total	66	16	0	82	234	57	0	291	9	240	1	250	623
6:00PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	138	42	0	180	450	130	0	580	20	468	1	489	1249
% Approach	76.7%	23.3%	0%	-	77.6%	22.4%	0%	-	4.1%	95.7%	0.2%	-	-
% Total	11.0%	3.4%	0%	14.4%	36.0%	10.4%	0%	46.4%	1.6%	37.5%	0.1%	39.2%	-
Lights	138	38	0	176	442	126	0	568	20	462	1	483	1227
% Lights	100%	90.5%	0%	97.8%	98.2%	96.9%	0%	97.9%	100%	98.7%	100%	98.8%	98.2%
Articulated Trucks and Single-Unit Trucks	0	2	0	2	6	3	0	9	0	5	0	5	16
% Articulated Trucks and Single-Unit Trucks	0%	4.8%	0%	1.1%	1.3%	2.3%	0%	1.6%	0%	1.1%	0%	1.0%	1.3%
Buses	0	2	0	2	2	1	0	3	0	1	0	1	6
% Buses	0%	4.8%	0%	1.1%	0.4%	0.8%	0%	0.5%	0%	0.2%	0%	0.2%	0.5%

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

121-204 Kings Hwy/Lake Station Rd - PM - TMC
Thu Jul 22, 2021
Full Length (4 PM-6 PM)
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857858, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



121-204 Kings Hwy/Lake Station Rd - PM - TMC

Thu Jul 22, 2021

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)

All Movements

ID: 857858, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US

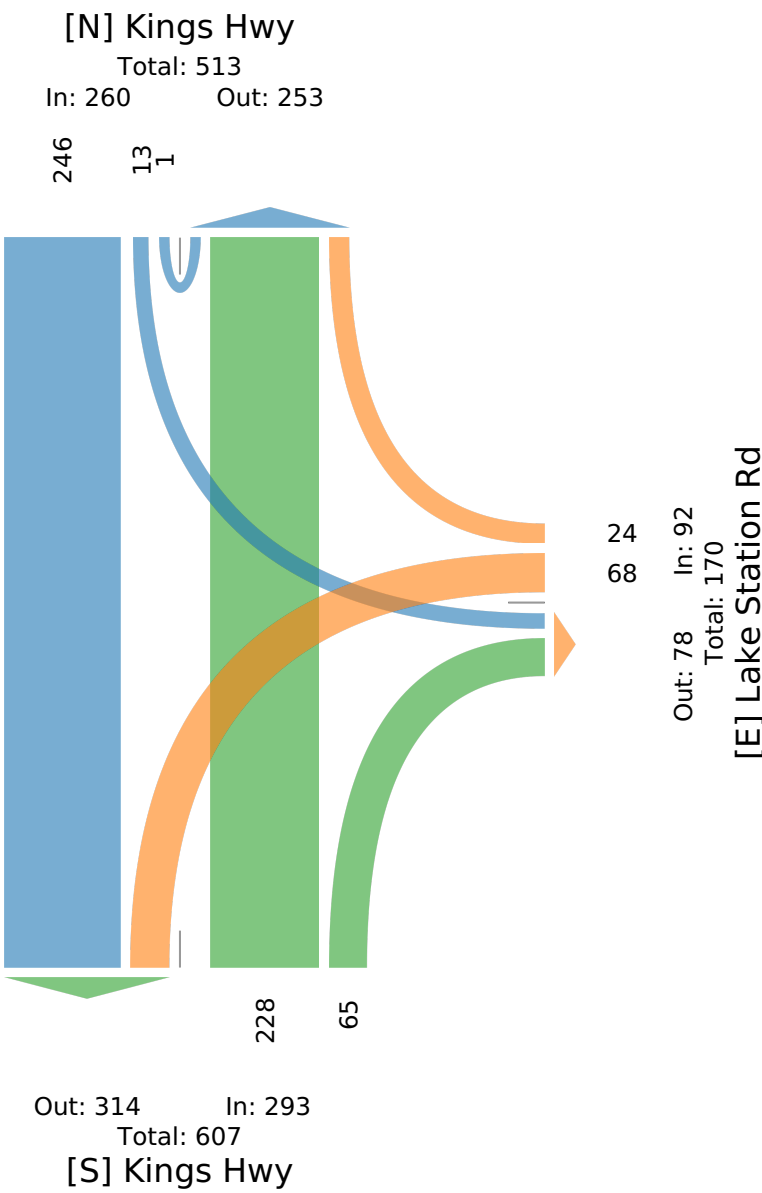
Leg Direction	Lake Station Rd Westbound				Kings Hwy Northbound				Kings Hwy Southbound				
Time	L	R	U	App	T	R	U	App	L	T	U	App	Int
2021-07-22 4:30PM	22	11	0	33	47	19	0	66	5	53	0	58	157
4:45PM	12	4	0	16	56	14	0	70	4	70	0	74	160
5:00PM	22	6	0	28	54	13	0	67	4	61	0	65	160
5:15PM	12	3	0	15	71	19	0	90	0	62	1	63	168
Total	68	24	0	92	228	65	0	293	13	246	1	260	645
% Approach	73.9%	26.1%	0%	-	77.8%	22.2%	0%	-	5.0%	94.6%	0.4%	-	-
% Total	10.5%	3.7%	0%	14.3%	35.3%	10.1%	0%	45.4%	2.0%	38.1%	0.2%	40.3%	-
PHF	0.773	0.545	-	0.697	0.803	0.855	-	0.814	0.650	0.879	0.250	0.878	0.960
Lights	68	23	0	91	224	64	0	288	13	242	1	256	635
% Lights	100%	95.8%	0%	98.9%	98.2%	98.5%	0%	98.3%	100%	98.4%	100%	98.5%	98.4%
Articulated Trucks and Single-Unit Trucks	0	1	0	1	3	0	0	3	0	3	0	3	7
% Articulated Trucks and Single-Unit Trucks	0%	4.2%	0%	1.1%	1.3%	0%	0%	1.0%	0%	1.2%	0%	1.2%	1.1%
Buses	0	0	0	0	1	1	0	2	0	1	0	1	3
% Buses	0%	0%	0%	0%	0.4%	1.5%	0%	0.7%	0%	0.4%	0%	0.4%	0.5%

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

121-204 Kings Hwy/Lake Station Rd - PM - TMC
Thu Jul 22, 2021
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks and Single-Unit Trucks, Buses)
All Movements
ID: 857858, Location: 41.295737, -74.291344



Provided by: Creighton Manning Engineering, LLP
2 Winners Circle, Albany, NY, 12205, US



ATTACHMENT C
LEVEL OF SERVICE ANALYSIS

PROPOSED LIGHT INDUSTRIAL DEVELOPMENT
LAKE STATION ROAD
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

LOS Definitions

The following is an excerpt from the Highway Capacity Manual, 6th Edition (HCM).

Level of Service for Signalized Intersections

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay *and* volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a surrogate measure of driver discomfort and fuel consumption. The v/c ratio quantifies the degree to which a phase's capacity is utilized by a lane group. The following paragraphs describe each LOS.

LOS A describes operations with a control delay of 10 s/veh or less and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh and a v/c ratio no greater than 1.0. This level is typically assigned when the v/c ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a v/c ratio greater than 1.0. This level is typically assigned when the v/c ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

A lane group can incur a delay less than 80 s/veh when the v/c ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and v/c ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

Average control delay and queue length at roundabout controlled intersections are calculated using SIDRA Intersection. The physical geometry such as entry lane width and approach flare, and traffic volume at the roundabout are factors that influence the intersection's performance. The average delay reported using SIDRA Intersection is based on the signalized HCM Method of Delay for Level-of-Service.

Level of Service Criteria for Unsignalized Intersections




Level of service (LOS) for Two-Way Stop-Controlled (TWSC) intersections is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns by using criteria given in Exhibit 20-2. LOS is not defined for the intersection as a whole or for major-street approaches for three primary reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at a typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay for all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. LOS F is assigned to the movement if the volume-to-capacity (v/c) ratio for the movement exceeds 1.0, regardless of the control delay.




The LOS criteria for TWSC intersections are somewhat different from the criteria used in Chapter 18 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable than they are at signals, which can reduce users' delay tolerance.




The LOS criteria for All-Way Stop-Controlled (AWSC) intersections are given in Exhibit 21-8. LOS F is assigned if the v/c ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.




Exhibits 20-2/21-8:
Level-of-Service Criteria for Stop Controlled Intersections




Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	$v/c \leq 1.0$	$v/c \geq 1.0$
10.0	A	F
>10.0 and ≤ 15.0	B	F
>15.0 and ≤ 25.0	C	F
>25.0 and ≤ 35.0	D	F
>35.0 and ≤ 50.0	E	F
>50.0	F	F




Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	7	179	56	18	190
Future Vol, veh/h	56	7	179	56	18	190
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, %	7	-	4	-	-	3
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	0	6	6	7	6
Mvmt Flow	74	9	236	74	24	250
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	571	273	0	0	310	0
Stage 1	273	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	7.86	6.9	-	-	4.17	-
Critical Hdwy Stg 1	6.86	-	-	-	-	-
Critical Hdwy Stg 2	6.86	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.263	-
Pot Cap-1 Maneuver	381	731	-	-	1223	-
Stage 1	687	-	-	-	-	-
Stage 2	663	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	372	731	-	-	1223	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	16.6	0		0.7		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	393	1223	-	
HCM Lane V/C Ratio	-	-	0.211	0.019	-	
HCM Control Delay (s)	-	-	16.6	8	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	




Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	73	1	1	59	4	4
Future Vol, veh/h	73	1	1	59	4	4
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, %	1	-	-	-5	-7	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	0	0	4	0	0
Mvmt Flow	91	1	1	74	5	5
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	92	0	168	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	76	-
Critical Hdwy	-	-	4.1	-	5	5.5
Critical Hdwy Stg 1	-	-	-	-	4	-
Critical Hdwy Stg 2	-	-	-	-	4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1515	-	883	988
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	981	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1515	-	882	988
Mov Cap-2 Maneuver	-	-	-	-	882	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	980	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		8.9	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	932	-	-	1515	-	
HCM Lane V/C Ratio	0.011	-	-	0.001	-	
HCM Control Delay (s)	8.9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	




Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	53	47	41	22	13
Future Vol, veh/h	24	53	47	41	22	13
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, %	-2	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	10	2	5	5	15	0
Mvmt Flow	30	66	59	51	28	16
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	205	36	44	0	-	0
Stage 1	36	-	-	-	-	-
Stage 2	169	-	-	-	-	-
Critical Hdwy	6.1	6.02	4.15	-	-	-
Critical Hdwy Stg 1	5.1	-	-	-	-	-
Critical Hdwy Stg 2	5.1	-	-	-	-	-
Follow-up Hdwy	3.59	3.318	2.245	-	-	-
Pot Cap-1 Maneuver	783	1039	1545	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	752	1039	1545	-	-	-
Mov Cap-2 Maneuver	752	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.3	4		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1545	-	929	-	-	
HCM Lane V/C Ratio	0.038	-	0.104	-	-	
HCM Control Delay (s)	7.4	0	9.3	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	73	26	213	71	14	239
Future Vol, veh/h	73	26	213	71	14	239
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, %	7	-	4	-	-	3
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	4	2	2	0	2
Mvmt Flow	74	26	215	72	14	241
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	520	251	0	0	287	0
Stage 1	251	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Critical Hdwy	7.8	6.94	-	-	4.1	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	425	746	-	-	1287	-
Stage 1	722	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	419	746	-	-	1287	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.6	0		0.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		474	1287	
HCM Lane V/C Ratio	-	-		0.211	0.011	
HCM Control Delay (s)	-	-		14.6	7.8	
HCM Lane LOS	-	-		B	A	
HCM 95th %tile Q(veh)	-	-		0.8	0	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	83	2	3	98	1	2
Future Vol, veh/h	83	2	3	98	1	2
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, %	1	-	-	-5	-7	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	94	2	3	111	1	2
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	96	0	212	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	117	-
Critical Hdwy	-	-	4.1	-	5	5.5
Critical Hdwy Stg 1	-	-	-	-	4	-
Critical Hdwy Stg 2	-	-	-	-	4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1510	-	848	985
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	956	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1510	-	846	985
Mov Cap-2 Maneuver	-	-	-	-	846	-
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	954	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.2		8.9	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	934	-	-	1510	-	
HCM Lane V/C Ratio	0.004	-	-	0.002	-	
HCM Control Delay (s)	8.9	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	69	82	37	48	19
Future Vol, veh/h	16	69	82	37	48	19
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, %	-2	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	3	1	3	4	0
Mvmt Flow	18	78	93	42	55	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	294	66	77	0	-	0
Stage 1	66	-	-	-	-	-
Stage 2	228	-	-	-	-	-
Critical Hdwy	6	6.03	4.11	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	2.209	-	-	-
Pot Cap-1 Maneuver	724	999	1528	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	679	999	1528	-	-	-
Mov Cap-2 Maneuver	679	-	-	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.4	5.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1528	-	918	-	-	
HCM Lane V/C Ratio	0.061	-	0.105	-	-	
HCM Control Delay (s)	7.5	0	9.4	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-	




Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	57	7	183	57	18	194
Future Vol, veh/h	57	7	183	57	18	194
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, %	7	-	4	-	-	3
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	0	6	6	7	6
Mvmt Flow	75	9	241	75	24	255
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	582	279	0	0	316	0
Stage 1	279	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Critical Hdwy	7.86	6.9	-	-	4.17	-
Critical Hdwy Stg 1	6.86	-	-	-	-	-
Critical Hdwy Stg 2	6.86	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.263	-
Pot Cap-1 Maneuver	374	724	-	-	1216	-
Stage 1	681	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	365	724	-	-	1216	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	16.9	0		0.7		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	386	1216	-	
HCM Lane V/C Ratio	-	-	0.218	0.019	-	
HCM Control Delay (s)	-	-	16.9	8	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	




Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	74	1	1	60	4	4
Future Vol, veh/h	74	1	1	60	4	4
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, %	1	-	-	-5	-7	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	0	0	4	0	0
Mvmt Flow	93	1	1	75	5	5




Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	94	0	171
Stage 1	-	-	-	-	94
Stage 2	-	-	-	-	77
Critical Hdwy	-	-	4.1	-	5
Critical Hdwy Stg 1	-	-	-	-	4
Critical Hdwy Stg 2	-	-	-	-	4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1513	-	880
Stage 1	-	-	-	-	970
Stage 2	-	-	-	-	980
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1513	-	879
Mov Cap-2 Maneuver	-	-	-	-	879
Stage 1	-	-	-	-	970
Stage 2	-	-	-	-	979

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	929	-	-	1513	-
HCM Lane V/C Ratio	0.011	-	-	0.001	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	54	57	52	22	13
Future Vol, veh/h	24	54	57	52	22	13
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, %	-2	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	10	2	5	5	15	0
Mvmt Flow	30	68	71	65	28	16
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	243	36	44	0	-	0
Stage 1	36	-	-	-	-	-
Stage 2	207	-	-	-	-	-
Critical Hdwy	6.1	6.02	4.15	-	-	-
Critical Hdwy Stg 1	5.1	-	-	-	-	-
Critical Hdwy Stg 2	5.1	-	-	-	-	-
Follow-up Hdwy	3.59	3.318	2.245	-	-	-
Pot Cap-1 Maneuver	748	1039	1545	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	712	1039	1545	-	-	-
Mov Cap-2 Maneuver	712	-	-	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	828	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.4	3.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1545	-	910	-	-	
HCM Lane V/C Ratio	0.046	-	0.107	-	-	
HCM Control Delay (s)	7.4	0	9.4	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-	




Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	27	217	72	14	244
Future Vol, veh/h	74	27	217	72	14	244
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, %	7	-	4	-	-	3
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	4	2	2	0	2
Mvmt Flow	75	27	219	73	14	246
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	530	256	0	0	292	0
Stage 1	256	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	7.8	6.94	-	-	4.1	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	417	740	-	-	1281	-
Stage 1	716	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	412	740	-	-	1281	-
Mov Cap-2 Maneuver	412	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.9	0		0.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		467	1281	
HCM Lane V/C Ratio	-	-		0.218	0.011	
HCM Control Delay (s)	-	-		14.9	7.8	
HCM Lane LOS	-	-		B	A	
HCM 95th %tile Q(veh)	-	-		0.8	0	




Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	88	2	3	100	1	2
Future Vol, veh/h	88	2	3	100	1	2
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, %	1	-	-	-5	-7	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	100	2	3	114	1	2

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	102	0	221
Stage 1	-	-	-	-	101
Stage 2	-	-	-	-	120
Critical Hdwy	-	-	4.1	-	5
Critical Hdwy Stg 1	-	-	-	-	4
Critical Hdwy Stg 2	-	-	-	-	4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1503	-	841
Stage 1	-	-	-	-	965
Stage 2	-	-	-	-	954
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1503	-	839
Mov Cap-2 Maneuver	-	-	-	-	839
Stage 1	-	-	-	-	965
Stage 2	-	-	-	-	952

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	927	-	-	1503	-
HCM Lane V/C Ratio	0.004	-	-	0.002	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	70	84	38	48	19
Future Vol, veh/h	16	70	84	38	48	19
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, %	-2	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	3	1	3	4	0
Mvmt Flow	18	80	95	43	55	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	299	66	77	0	-	0
Stage 1	66	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6	6.03	4.11	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.327	2.209	-	-	-
Pot Cap-1 Maneuver	720	999	1528	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	674	999	1528	-	-	-
Mov Cap-2 Maneuver	674	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	832	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.4	5.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1528	-	917	-	-	
HCM Lane V/C Ratio	0.062	-	0.107	-	-	
HCM Control Delay (s)	7.5	0	9.4	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-	

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	7	183	77	20	194
Future Vol, veh/h	60	7	183	77	20	194
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, %	7	-	4	-	-	3
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	6	0	6	5	6	6
Mvmt Flow	79	9	241	101	26	255
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	599	292	0	0	342	0
Stage 1	292	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	7.86	6.9	-	-	4.16	-
Critical Hdwy Stg 1	6.86	-	-	-	-	-
Critical Hdwy Stg 2	6.86	-	-	-	-	-
Follow-up Hdwy	3.554	3.3	-	-	2.254	-
Pot Cap-1 Maneuver	363	710	-	-	1195	-
Stage 1	668	-	-	-	-	-
Stage 2	654	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	354	710	-	-	1195	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	17.6	0		0.8		
HCM LOS	C					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)		-	-	374	1195	-
HCM Lane V/C Ratio		-	-	0.236	0.022	-
HCM Control Delay (s)		-	-	17.6	8.1	0
HCM Lane LOS		-	-	C	A	A
HCM 95th %tile Q(veh)		-	-	0.9	0.1	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	74	1	1	60	35	4	0	4	5	0	3
Future Vol, veh/h	22	74	1	1	60	35	4	0	4	5	0	3
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	0	4	0	0	4	3	0	0	0	20	0	0
Mvmt Flow	28	93	1	1	75	44	5	0	5	6	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	119	0	0	94	0	0	251	271	94	251	249	97
Stage 1	-	-	-	-	-	-	150	150	-	99	99	-
Stage 2	-	-	-	-	-	-	101	121	-	152	150	-
Critical Hdwy	4.1	-	-	4.1	-	-	5.7	5.1	5.5	7.3	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	4.7	4.1	-	6.3	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	4.7	4.1	-	6.3	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.68	4	3.3
Pot Cap-1 Maneuver	1482	-	-	1513	-	-	779	710	986	667	657	965
Stage 1	-	-	-	-	-	-	909	824	-	865	817	-
Stage 2	-	-	-	-	-	-	946	838	-	810	777	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1482	-	-	1513	-	-	763	695	986	653	643	965
Mov Cap-2 Maneuver	-	-	-	-	-	-	763	695	-	653	643	-
Stage 1	-	-	-	-	-	-	891	808	-	848	816	-
Stage 2	-	-	-	-	-	-	941	837	-	790	761	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.7			0.1			9.2			9.9		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	860	1482	-	-	1513	-	-	743
HCM Lane V/C Ratio	0.012	0.019	-	-	0.001	-	-	0.013
HCM Control Delay (s)	9.2	7.5	0	-	7.4	0	-	9.9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0

Intersection

Int Delay, s/veh 5.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
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Lane Configurations						
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Traffic Vol, veh/h	27	56	62	42	22	34
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Future Vol, veh/h	27	56	62	42	22	34
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Conflicting Peds, #/hr	0	0	0	0	0	0
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Sign Control	Stop	Stop	Free	Free	Free	Free
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RT Channelized	-	None	-	None	-	None
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Storage Length	0	-	-	-	-	-
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Veh in Median Storage, #	0	-	-	0	0	-
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Grade, %	-2	-	-	0	0	-
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Peak Hour Factor	80	80	80	80	80	80
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Heavy Vehicles, %	12	2	4	5	15	3
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Mvmt Flow	34	70	78	53	28	43
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Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	259	50	71
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Stage 1	50	-	-
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Stage 2	209	-	-
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Critical Hdwy	6.12	6.02	4.14
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Critical Hdwy Stg 1	5.12	-	-
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Critical Hdwy Stg 2	5.12	-	-
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Follow-up Hdwy	3.608	3.318	2.236
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Pot Cap-1 Maneuver	729	1021	1517
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Stage 1	953	-	-
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Stage 2	822	-	-
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Platoon blocked, %			
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Mov Cap-1 Maneuver	690	1021	1517
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Mov Cap-2 Maneuver	690	-	-
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Stage 1	902	-	-
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Stage 2	822	-	-
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Approach	EB	NB	SB
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HCM Control Delay, s	9.6	4.5	0
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HCM LOS	A		
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Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	1517	-	883	-	-
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HCM Lane V/C Ratio	0.051	-	0.117	-	-
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HCM Control Delay (s)	7.5	0	9.6	-	-
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HCM Lane LOS	A	A	A	-	-
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HCM 95th %tile Q(veh)	0.2	-	0.4	-	-
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Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	90	29	217	74	14	244
Future Vol, veh/h	90	29	217	74	14	244
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, %	7	-	4	-	-	3
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	4	2	1	0	2
Mvmt Flow	91	29	219	75	14	246
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	531	257	0	0	294	0
Stage 1	257	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	7.8	6.94	-	-	4.1	-
Critical Hdwy Stg 1	6.8	-	-	-	-	-
Critical Hdwy Stg 2	6.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	-	-	2.2	-
Pot Cap-1 Maneuver	417	739	-	-	1279	-
Stage 1	715	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	412	739	-	-	1279	-
Mov Cap-2 Maneuver	412	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	15.5	0		0.4		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	462	1279	-	
HCM Lane V/C Ratio	-	-	0.26	0.011	-	
HCM Control Delay (s)	-	-	15.5	7.8	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	1	0	-	

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	85	2	3	100	4	1	0	2	28	0	18
Future Vol, veh/h	2	85	2	3	100	4	1	0	2	28	0	18
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	1	-	-	-5	-	-	-7	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	2	0	0	1	20	0	0	0	4	0	0
Mvmt Flow	2	97	2	3	114	5	1	0	2	32	0	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	119	0	0	99	0	0	235	227	98	226	226	117
Stage 1	-	-	-	-	-	-	102	102	-	123	123	-
Stage 2	-	-	-	-	-	-	133	125	-	103	103	-
Critical Hdwy	4.1	-	-	4.1	-	-	5.7	5.1	5.5	7.14	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	4.7	4.1	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	4.7	4.1	-	6.14	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.3
Pot Cap-1 Maneuver	1482	-	-	1507	-	-	793	738	982	725	677	941
Stage 1	-	-	-	-	-	-	946	848	-	876	798	-
Stage 2	-	-	-	-	-	-	922	836	-	898	814	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1482	-	-	1507	-	-	774	736	982	721	675	941
Mov Cap-2 Maneuver	-	-	-	-	-	-	774	736	-	721	675	-
Stage 1	-	-	-	-	-	-	945	847	-	875	796	-
Stage 2	-	-	-	-	-	-	900	834	-	895	813	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.2			9			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	901	1482	-	-	1507	-	-	794				
HCM Lane V/C Ratio	0.004	0.002	-	-	0.002	-	-	0.066				
HCM Control Delay (s)	9	7.4	0	-	7.4	0	-	9.9				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2				

Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	81	85	38	49	22
Future Vol, veh/h	33	81	85	38	49	22
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, %	-2	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	1	3	4	5
Mvmt Flow	38	92	97	43	56	25
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	306	69	81	0	-	0
Stage 1	69	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Critical Hdwy	6.03	6.03	4.11	-	-	-
Critical Hdwy Stg 1	5.03	-	-	-	-	-
Critical Hdwy Stg 2	5.03	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.209	-	-	-
Pot Cap-1 Maneuver	708	995	1523	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	662	995	1523	-	-	-
Mov Cap-2 Maneuver	662	-	-	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	821	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.9	5.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1523	-	869	-	-	
HCM Lane V/C Ratio	0.063	-	0.149	-	-	
HCM Control Delay (s)	7.5	0	9.9	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-	