



# Memorandum

**TO:** Mr. Chad Mease  
Redstart Construction, Inc.

**FROM:** Stephen B. Corcoran, P.E., PTOE  
Director of Traffic Engineering

**DATE:** December 8, 2022 **Revised April 17, 2023**

**RE:** Townhome Traffic Study  
27 W 280 Bauer Road  
Naperville, Illinois

This memorandum summarizes a traffic analysis conducted for a proposed 12-unit townhome development at 27 W 280 Bauer Road in Naperville, Illinois. The purpose of the study was to observe the existing traffic patterns in the area, to estimate the traffic generated by the development, to determine the traffic impact of the site traffic, and then to identify strategies to address any issues.

## Site Location and Area Land-Use

The subject site is located on the northeast corner of the Mill Street and Bauer Road intersection. One residential building occupies the site. Uses around the site consist of Nike Park to the north, single-family residential to the east, a nursery to the south, and a church to the west. **Figure 1** illustrates the site and the surrounding land-uses and roads. (Note: all figures are located at the end of the report).

## Roadway Characteristics

**Mill Street** is a north-south minor arterial roadway extending south of Ferry Road to Jackson Avenue in Downtown Naperville. Along the site frontage, it has two thru lanes in each direction with center median. At its signalized intersection with Bauer Road, there is separate left-turn lane on both legs. It is under the jurisdiction of the DuPage County Division of Transportation with a 35-mph speed limit south of and 40 mph north of Bauer Road.

**Bauer Road** is an east-west two-lane collector road extending east from East Avenue to Commons Road. At Mill Street, each approach has shared thru/right-turn lane and a left-turn lane. It is under the jurisdiction of the City of Naperville west of Mill Street and Naperville Township to the east. Bauer Road has a 25-mph speed limit.

**Figure 2** illustrates the existing roadway geometrics.

## Existing Traffic Volumes

Weekday morning (7:00 to 9:00 AM) and afternoon (4:00 to 6:00 PM) traffic counts were conducted at the intersection of the Mill Street and Bauer Road. These counts showed the peak-hours of traffic occurred from 7:15 to 8:15 AM and 4:45 to 5:45 PM. The hourly counts were compared to counts from the Year 2020 during the pandemic and found to be significantly higher than the 2020 volumes. No adjustments to the existing counts were made. The existing traffic volumes are shown in **Figure 3** and included in the **Appendix**.

## Site Development Plan

The proposed development plan is to build a 12 townhome with one full access drive on Bauer Road and a right-out only drive on Mill Street.

## Site Trip Generation

The site traffic generated by the development was estimated from data in the Institute of Transportation Engineer's Trip Generation 11<sup>th</sup> Ed. manual which contains trip generation surveys of similar uses. The resulting site traffic volumes are shown in **Table 1**. The peak-hour trips in and out of the site are very low.

**Table 1**  
**Site Traffic Volumes**

Use	Daily Trips	Morning Peak			Evening Peak		
		In	Out	Total	In	Out	Total
<b>Townhomes (12 units)</b>	86	2	4	6	4	3	7

(1) ITE Land Use Code 215 – Single Family Attached Housing

## Trip Distribution

The trip distribution for a residential development is based on a combination of the existing traffic volumes going by the site, location of employment centers, and the road network. The trip distribution for the site is shown on **Table 2** and **Figure 4**.

**Table 2**  
**Directional Distribution**

Approach Route	Percentage
North on Mill Street	40%
South on Mill Street	40%
East on Bauer Road	15%
West on Bauer Road	5%
<b>Total</b>	<b>100%</b>

## Trip Assignment

The future vehicular trips generated by the development were distributed to the area roadways based on the directional distribution analysis and the proposed site plan. **Figure 5** displays the trip assignment for the new site trips. The individual traffic movements into and out of the site vary from 1 to 3 vehicles per hour.

## Projected Traffic Volumes

Total traffic volumes are a combination of the existing traffic volumes, projected non-site growth in those volumes, and the site related traffic. The total traffic volumes were estimated for five years after the construction of the project (2028). Data provided by the Chicago Metropolitan Agency for Planning shows modest growth in traffic volumes along both roads at 0.7% per year. A copy of their letter can be found in the **Appendix**. This growth rate was applied to the existing traffic volumes to obtain the base Year 2028 volumes without the project (**Figure 6**).

The site traffic volumes were combined with the 2028 base volumes to generate the Year 2028 total traffic volumes with the project and are shown on **Figures 7**.

## Future Traffic Conditions

In order to determine the operation of study area intersections and access drives, intersection capacity analyses were conducted with the proposed and nearby developments included. An intersection's ability to accommodate traffic flow is based on the average control delay experienced by vehicles passing through

the intersection. The intersection and individual traffic movements are assigned a level of service (LOS), ranging from A to F based on the control delay created by a traffic signal or stop sign. Control delay consists of the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. LOS A has the best traffic flow and least delay. LOS E represents saturated or at capacity conditions. LOS F experiences oversaturated conditions and extensive delays. The Highway Capacity Manual definitions for levels of service and the corresponding control delay for both signalized and unsignalized intersections are shown in **Table 3**.

**Table 3**  
**Level of Service Criteria for Intersections**

Level of Service	Description	Control Delay (seconds/vehicle)	
		Signals	Stop Signs
A	Minimal delay and few stops	<10	<10
B	Low delay with more stops	>10-20	>10-15
C	Light congestion	>20-35	>15-25
D	Congestion is more noticeable with longer delays	>35-55	>25-35
E	High delays and number of stops	>55-80	>35-50
F	Unacceptable delays and over capacity	>80	>50

The existing and total traffic volumes were applied to the proposed access system and capacity analyses were completed to determine the existing and future operating conditions with the townhomes. **Table 4** summarizes the results of those analyses.

#### Mill Street and Bauer Road

The signalized intersection at Mill Street at Bauer Road operates well now and in the future. The increase in non-site and site traffic growth will increase the average delay by less than a half a second per vehicle. This change in delay is imperceptible to the typical driver. No improvements are required.

#### Site Access on Bauer Road

The proposed full access point into the site is approximately 190 east of the westbound stop bar at Mill Street. The capacity analyses show the peak-hour westbound queues to be less than 170 feet and would not block the new drive. Due to the low volumes, no turn lanes are required on Bauer Road. The drive will have one inbound lanes and one outbound lane under stop sign control.

**Table 4**  
**Intersection Level of Service and Delay (seconds)**

Intersection	Movement	Morning Peak		Evening Peak	
		2022	2028	2022	2028
Mill Street at Bauer Road	Intersection	C-21.6	C-22.0	B-14.5	B-14.8
Right-out Drive On Mill Street	WB Right		B-11.0		B-10.5
Access Drive on Bauer Road	EB Left		A-7.8		A-7.6
	SB Approach		B-10.5		A-9.9

**Site Access on Mill Street**

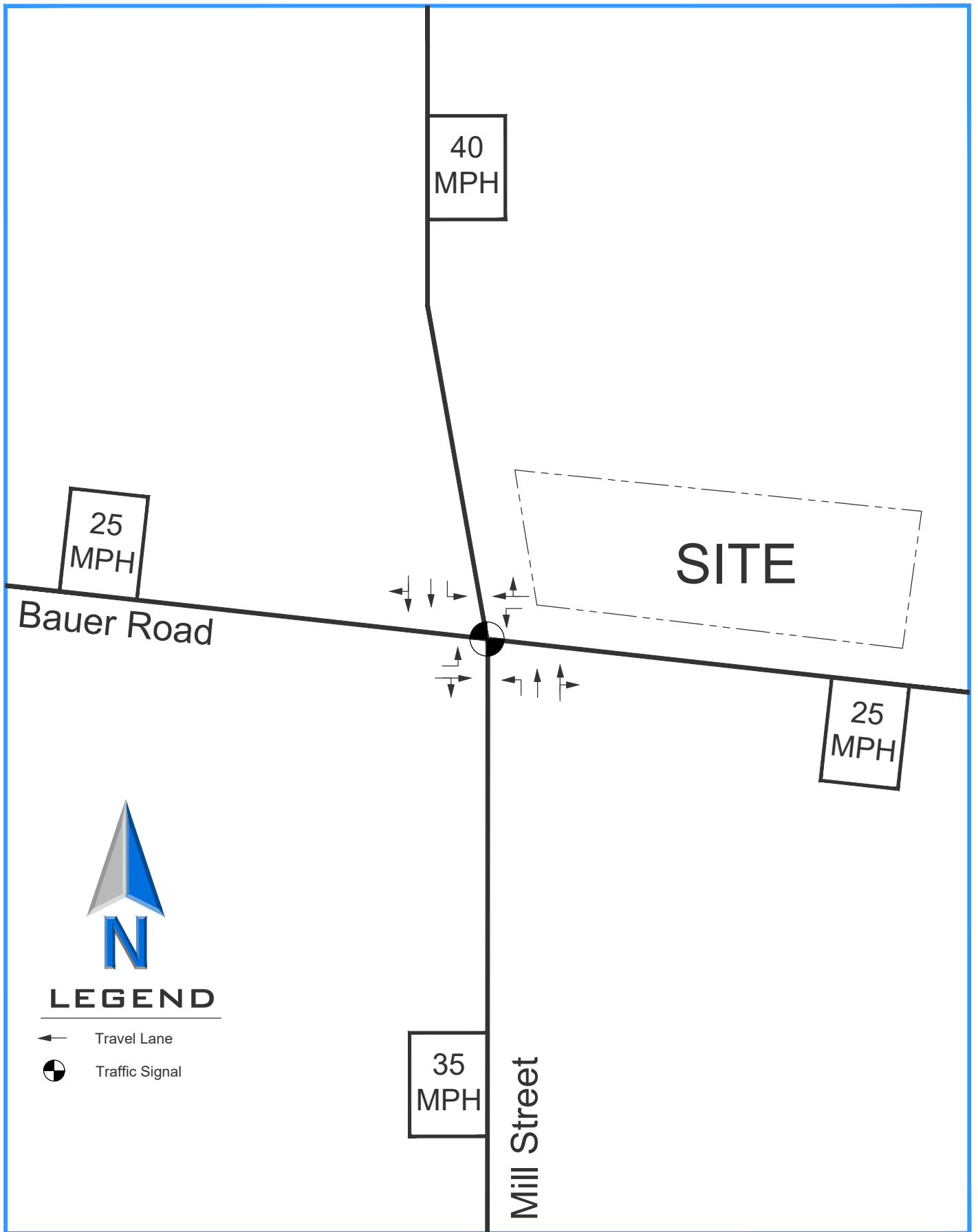
The proposed right-out only drive provides better site circulation for emergency and refuse vehicles so they do not have to back up from the west side of the site. This drive will not adversely impact the northbound traffic on Mill Street. It will have one outbound lane under stop sign control.

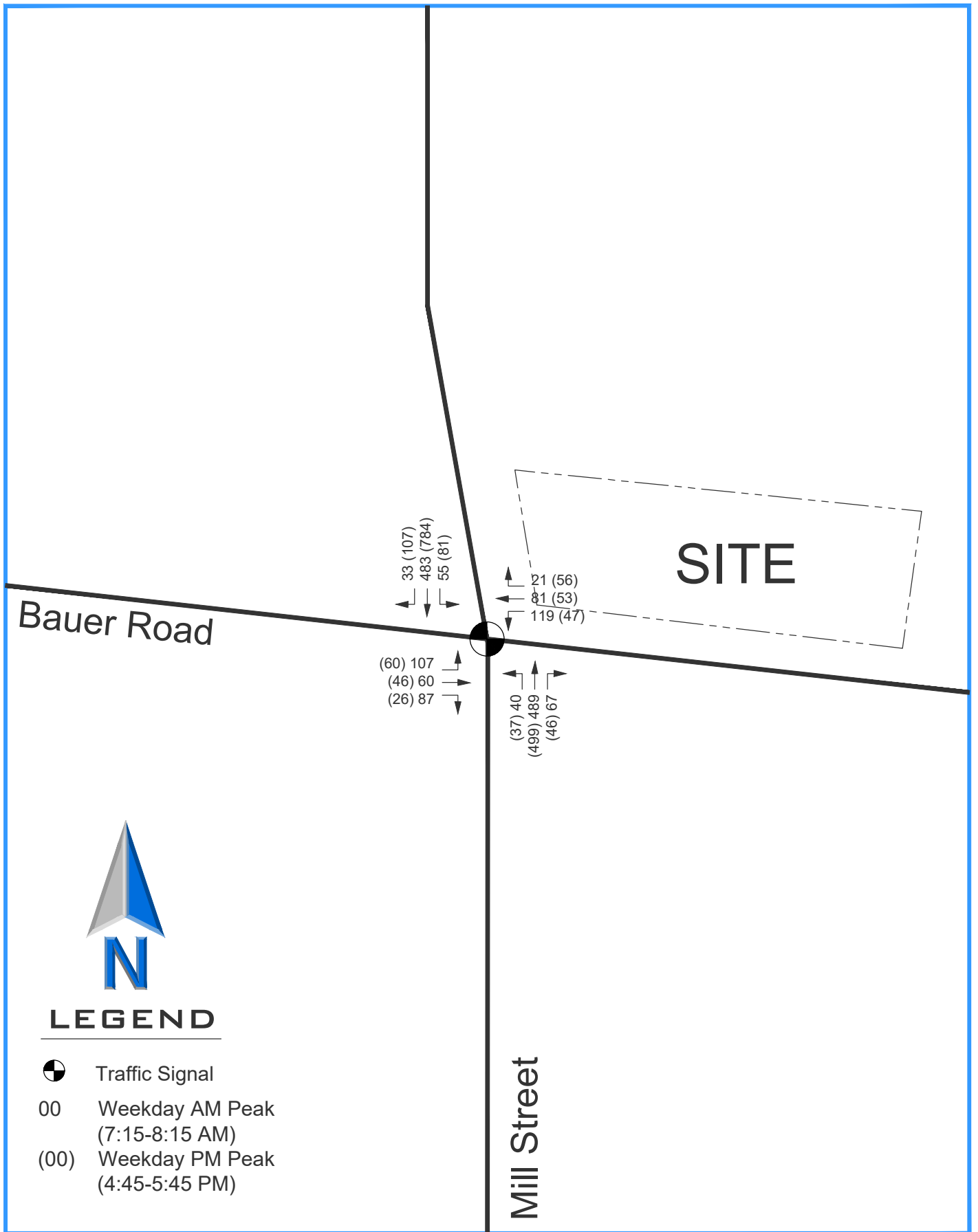
**Conclusions**

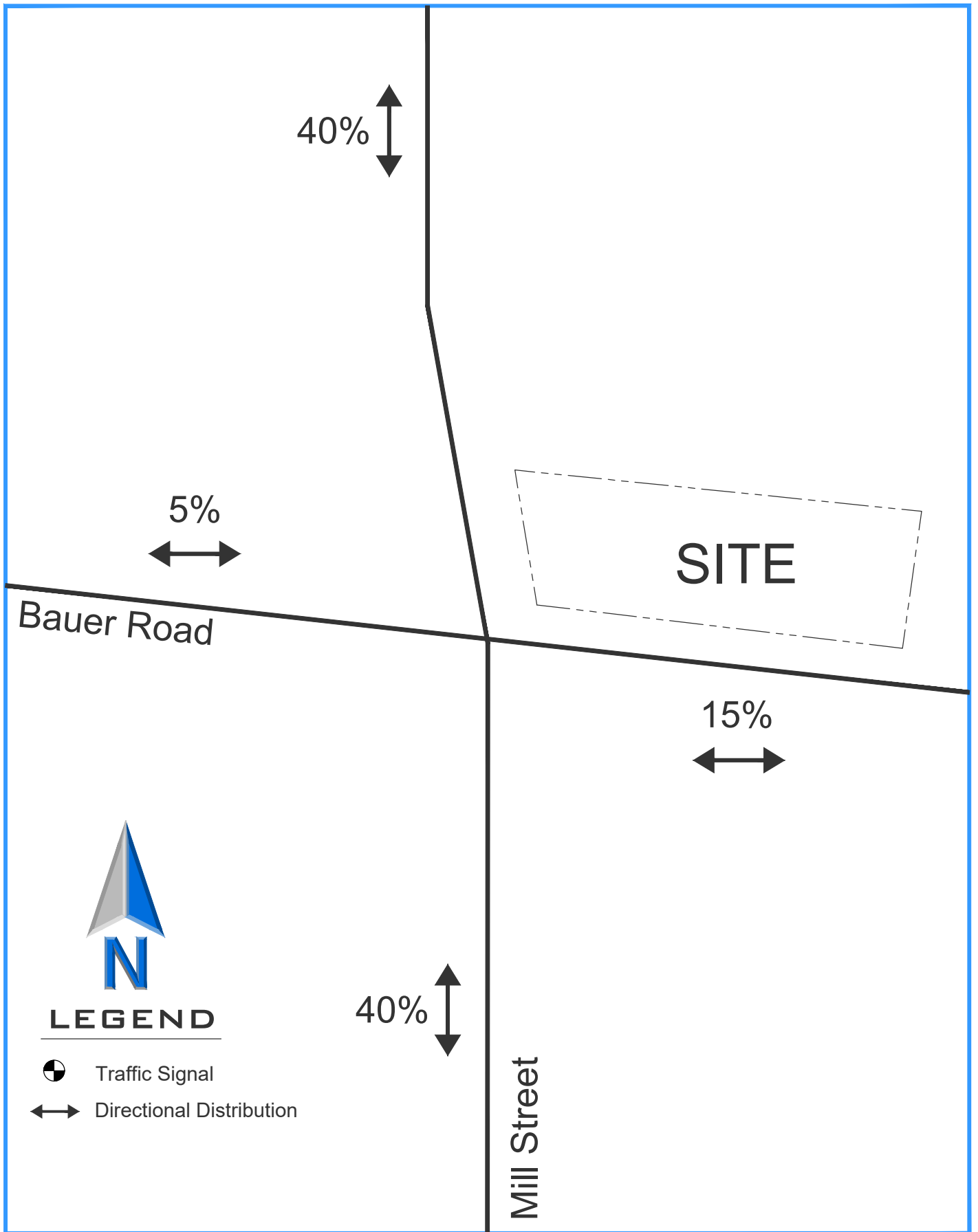
The preceding traffic analysis analyzed the proposed 12-unit townhome development in Naperville and developed the following conclusions:

- The proposed townhome will not adversely impact the level-of-service of study area intersections.
- Trip generation estimates for the site is 6 to 7 vehicles per hour.
- One full access drive on Bauer Road will be adequate to serve the site. Separate turn lanes on Bauer Road are not warranted.
- A right-out only drive on Mill Street will operate well.

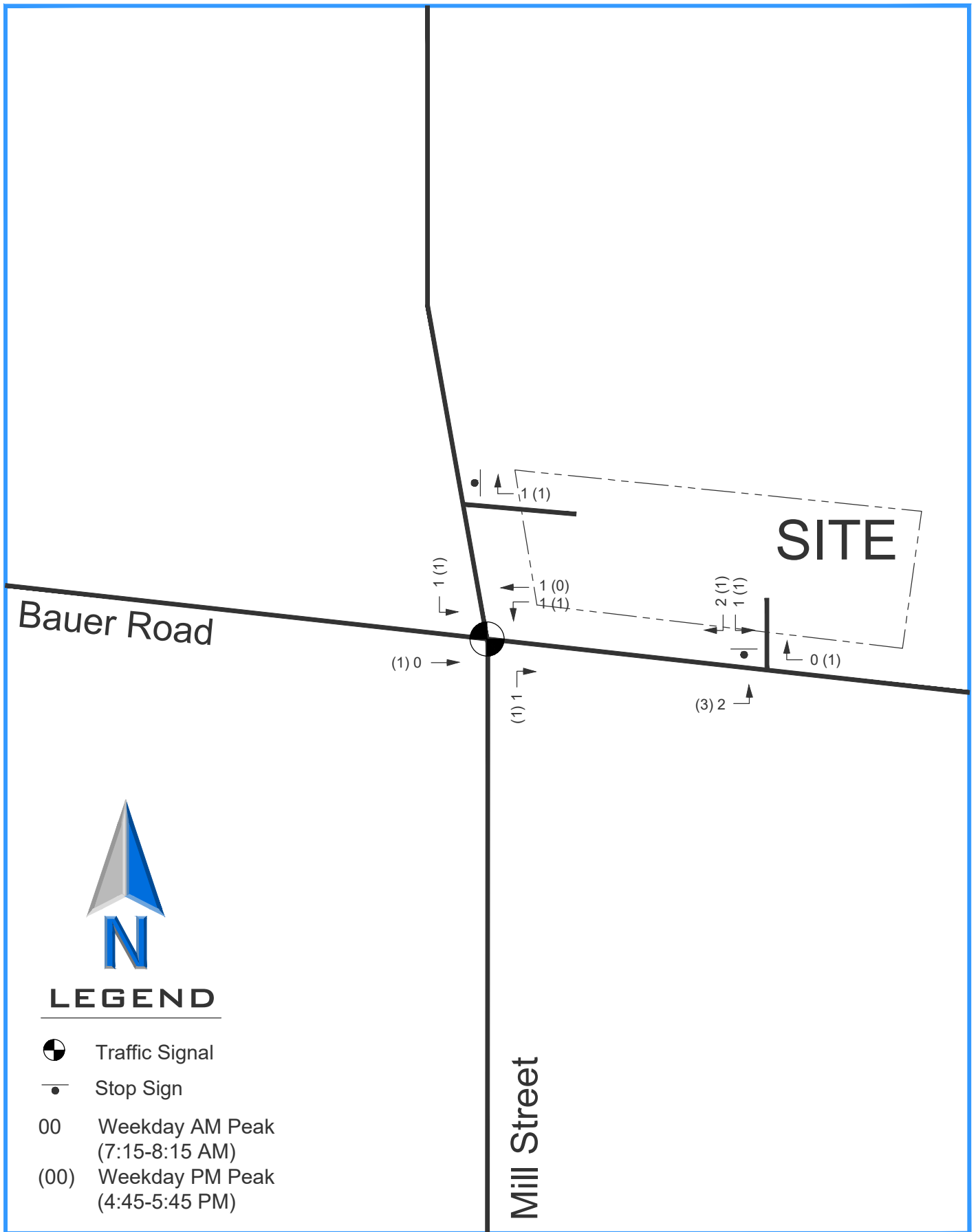


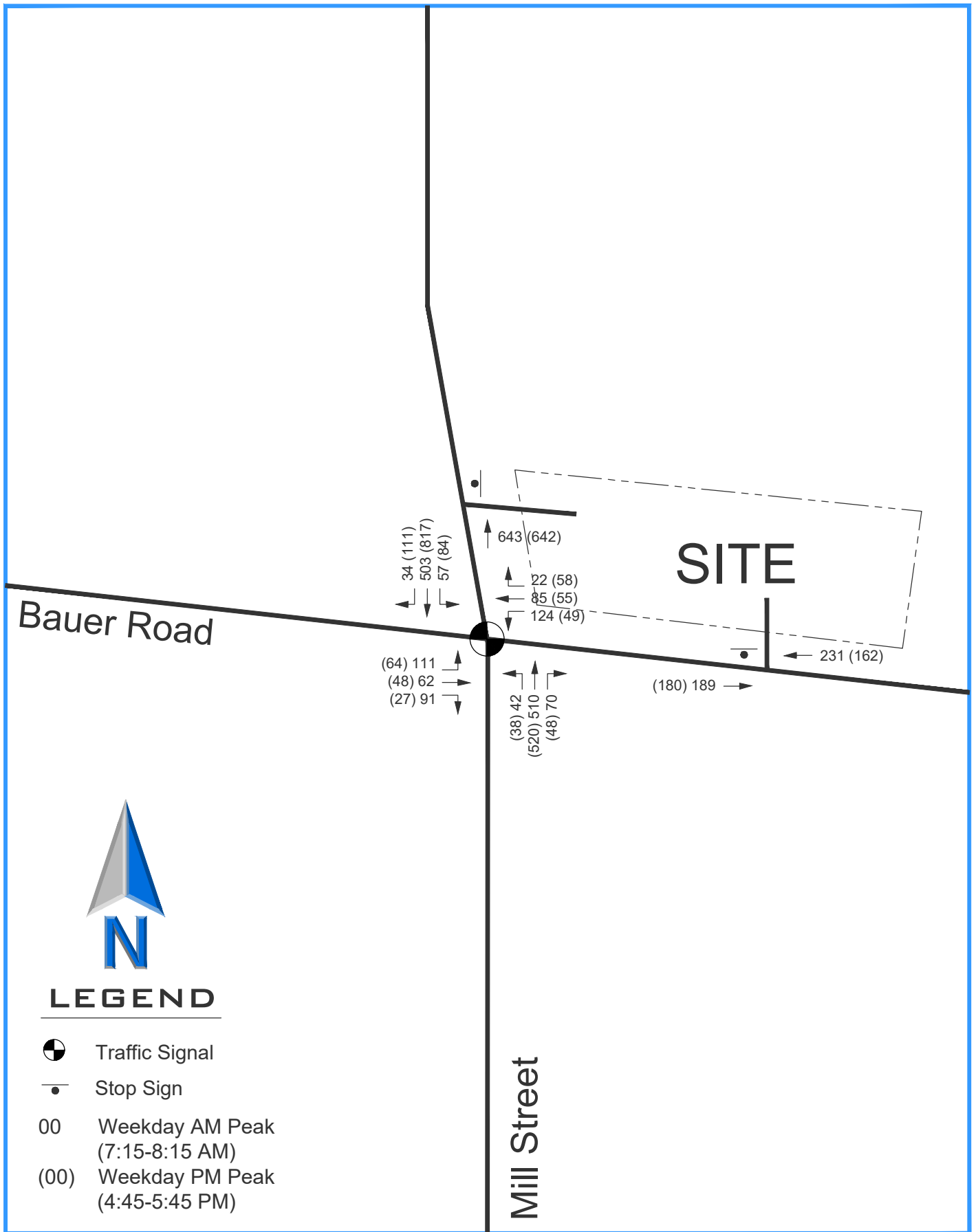


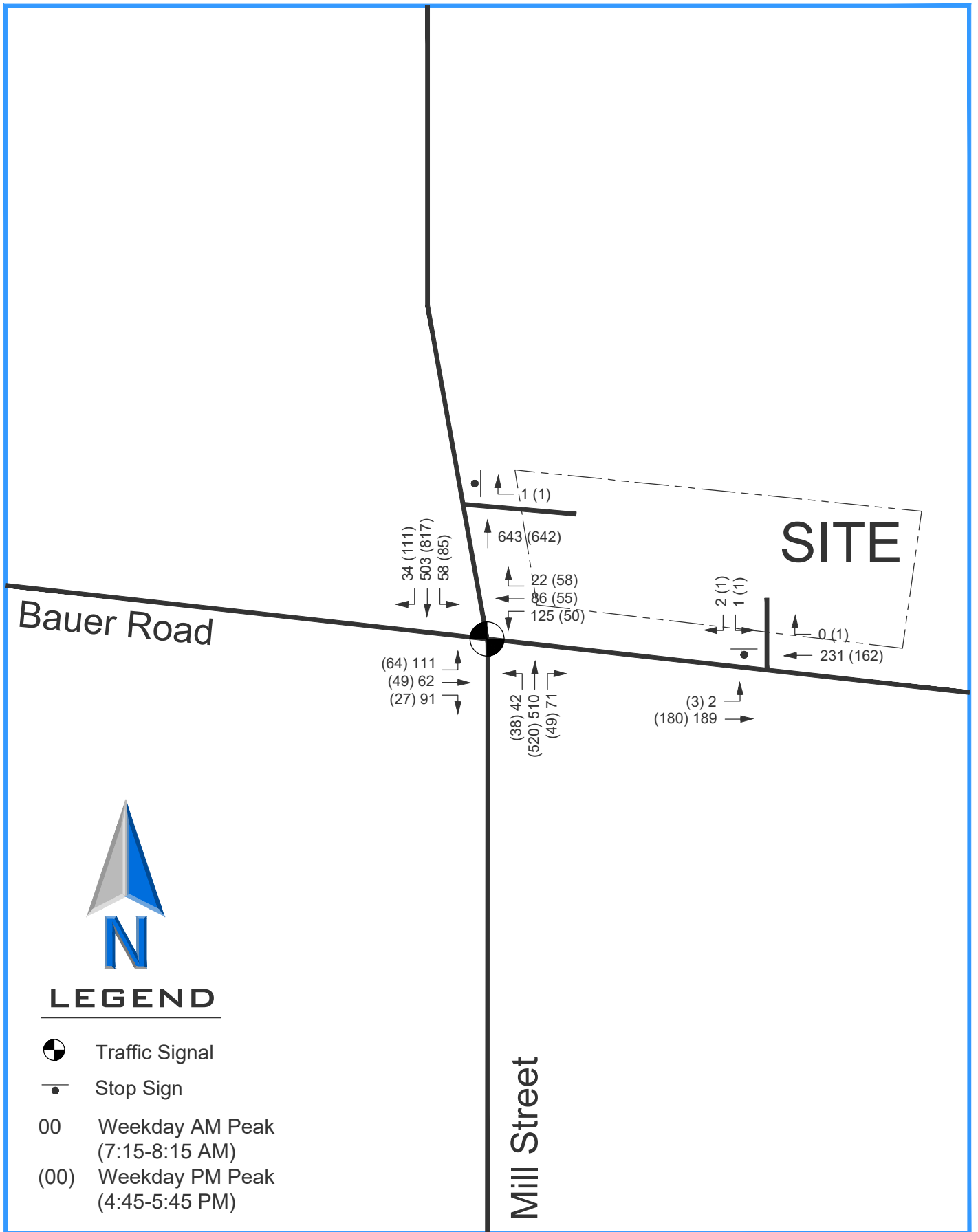












## **Appendix**

- **Traffic Count Data**
- **CMAP Letter**
- **ITE Trip Generation Calculations**
- **Intersection Capacity Analyses**
  - **2022 Existing Conditions**
  - **2028 Total Traffic Volumes**



# Mill Street at Bauer Road

Begin Time	Naperville, Illinois												60 Minute Totals	Peak Hour Factor
	Mill Street Southbound			Bauer Road Westbound			Mill Street Northbound			Bauer Road Eastbound				
	Right Turn	Through	Left Turn	Right Turn	Through	Left Turn	Right Turn	Through	Left Turn	Right Turn	Through	Left Turn		
	<b>Tuesday November 22, 2022</b>													
7:00 AM	4	73	14	1	10	11	7	99	5	8	2	8	242	0.80
7:15 AM	6	121	14	4	12	23	5	93	0	4	4	14	326	<b>0.88</b>
7:30 AM	12	158	15	5	30	38	16	112	4	16	16	18	464	0.87
7:45 AM	4	111	17	11	31	30	15	133	17	26	26	35	450	0.80
8:00 AM	11	93	9	1	8	28	31	151	<b>19</b>	14	14	20	402	0.82
8:15 AM	9	88	12	2	8	13	6	130	4	5	5	13	296	
8:30 AM	9	89	17	5	5	22	2	106	8	8	8	11	290	
8:45 AM	13	122	12	6	3	16	9	110	0	11	11	16	325	
Total	68	855	110	35	107	181	91	934	57	86	86	135	1642	
<b>7:15-8:15 AM</b>	<b>33</b>	<b>483</b>	<b>55</b>	<b>21</b>	<b>81</b>	<b>119</b>	<b>67</b>	<b>489</b>	<b>40</b>	<b>60</b>	<b>60</b>	<b>87</b>		
4:00 PM	19	122	14	13	13	8	8	109	7	8	8	2	344	0.86
4:15 PM	18	126	16	14	14	8	9	121	8	8	8	3	369	0.90
4:30 PM	21	149	19	17	17	10	11	131	9	10	10	3	424	0.93
4:45 PM	17	179	19	20	14	19	9	140	15	15	15	6	468	<b>0.95</b>
5:00 PM	27	206	24	15	12	7	20	128	9	12	12	7	484	0.93
5:15 PM	30	190	18	10	13	10	8	110	6	9	9	6	424	
5:30 PM	33	209	20	11	14	11	9	121	7	10	10	7	466	
5:45 PM	30	188	18	10	13	12	8	109	6	9	9	6	422	
Total	194	1369	148	110	110	85	82	969	66	81	81	39	1842	
<b>4:45-5:45 PM</b>	<b>107</b>	<b>784</b>	<b>81</b>	<b>56</b>	<b>53</b>	<b>47</b>	<b>46</b>	<b>499</b>	<b>37</b>	<b>46</b>	<b>46</b>	<b>26</b>		



Chicago Metropolitan Agency for Planning

433 West Van Buren Street  
Suite 450  
Chicago, IL 60607  
312-454-0400  
cmap.illinois.gov

November 10, 2022

Stephen B. Corcoran, PE), PTOE  
Director of Traffic Engineering  
ERIKSSON ENGINEERING ASSOCIATES, LTD.  
145 Commerce Drive  
Suite A  
Grayslake, IL 60030

**Subject: Mill Street and Bauer Road**  
IDOT

Dear Mr. Corcoran:

In response to a request made on your behalf and dated November 10, 2022, we have developed year 2020 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT (2016)	Year 2050 ADT
Mill Street	19,200	23,800
Bauer Road	4,900	6,100

Traffic projections are developed using existing ADT data provided in the request letter and the results from the October 2022 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2020 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP  
Senior Planner, Research & Analysis

cc: Rios (IDOT)  
2022\_ForecastTraffic\Naperville\du-53-22\du-53-22.docx

**TRAFFIC FORECAST RECORD**

**Record Number:** du-53-22

**Type of Report:** Projection

**Year Sought:** 2020

**Analyst:** JAR

**Organization requesting forecast:** Eriksson Engineering Associates

**Contact:** Stephen B. Corcoran, P.E., PTOE

**Email or Phone:** scorcoran@eea-ltd.com

**Sponsor:** IDOT

**Date request was received:** November 10, 2022

**Date that response was emailed:** November 10, 2022

**Facility Location:** Mill Street and Bauer Road

**Municipality:** Naperville

# Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 46

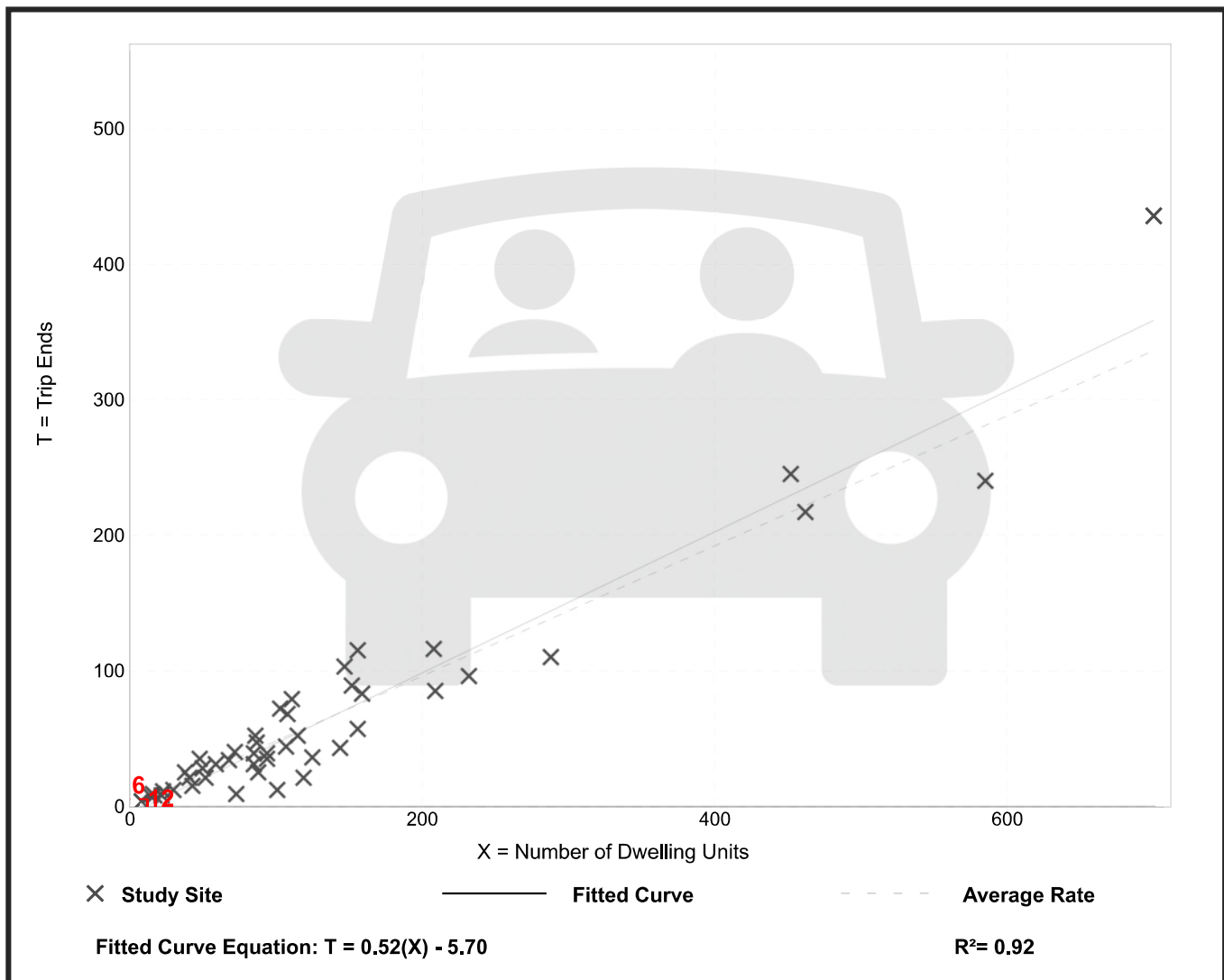
Avg. Num. of Dwelling Units: 135

Directional Distribution: 31% entering, 69% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

## Data Plot and Equation





# Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 51

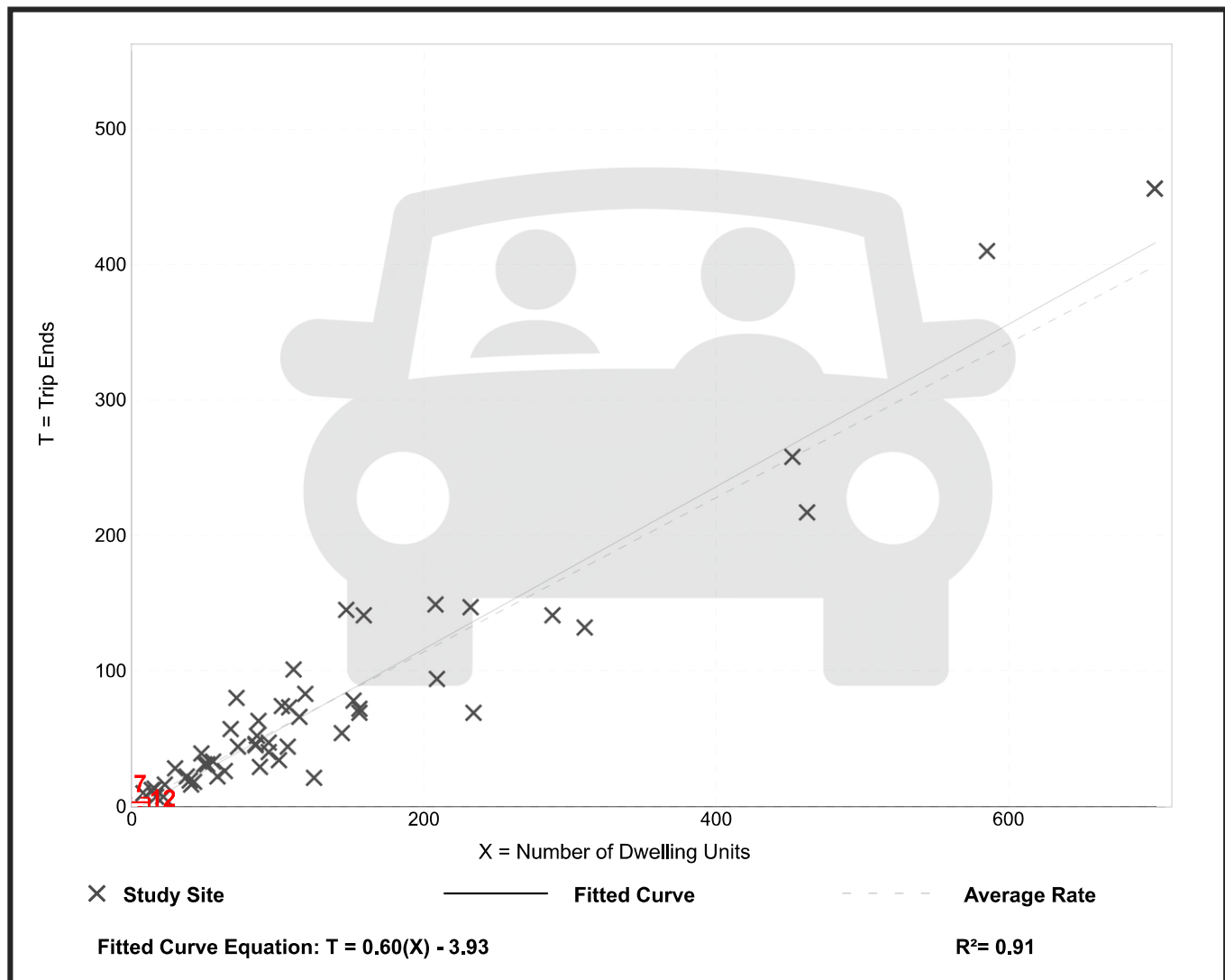
Avg. Num. of Dwelling Units: 136

Directional Distribution: 57% entering, 43% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

## Data Plot and Equation



# Single-Family Attached Housing (215)

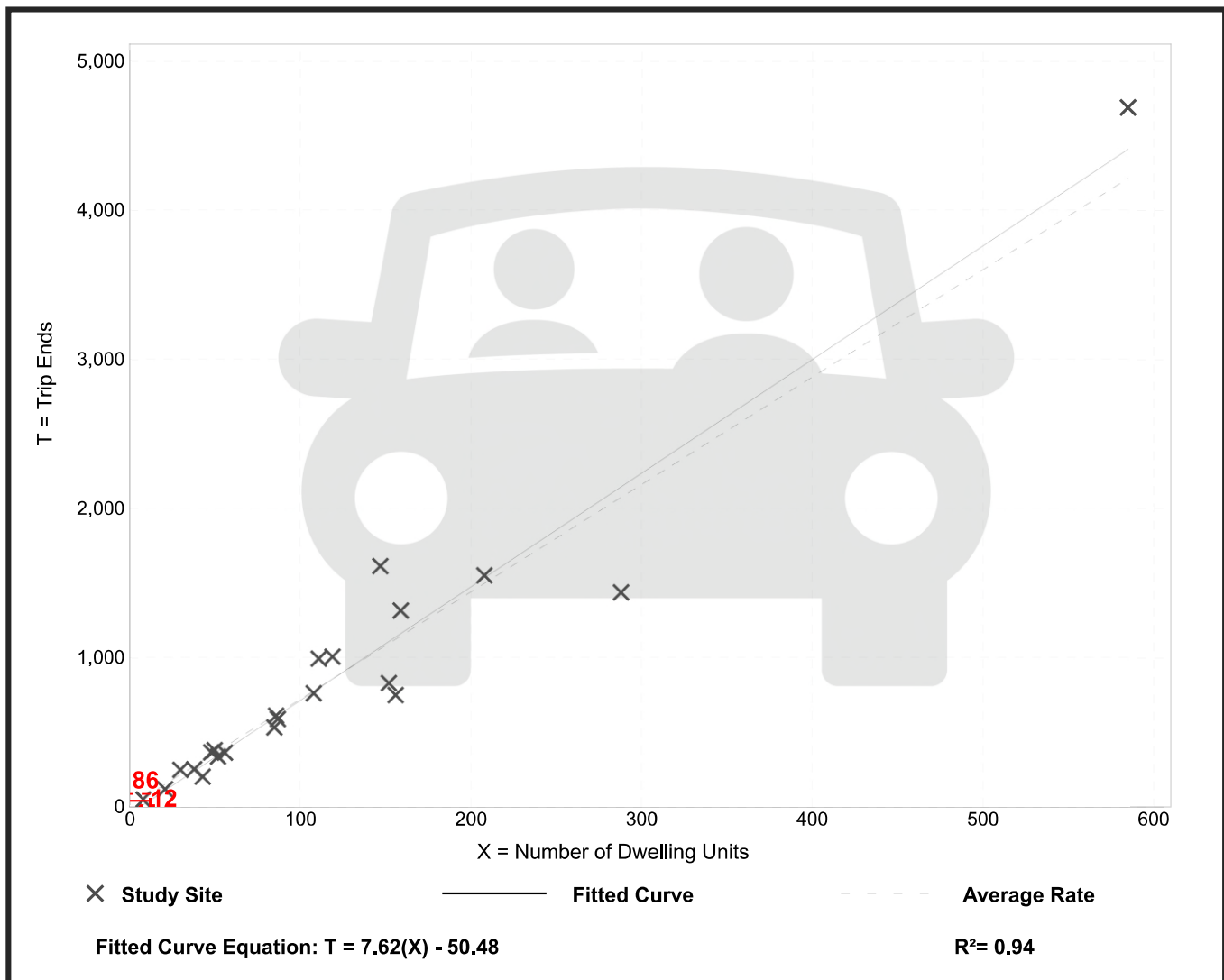
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 22  
Avg. Num. of Dwelling Units: 120  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.20	4.70 - 10.97	1.61

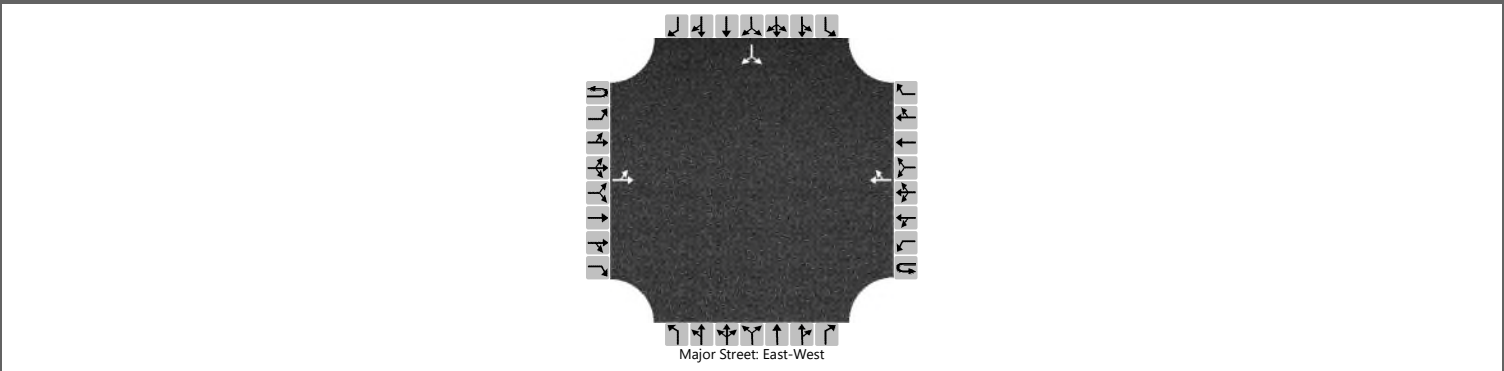
## Data Plot and Equation



# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	SBC			Intersection	Baur Rd/ Site Access		
Agency/Co.	Eriksson Engineering			Jurisdiction	Naperville		
Date Performed	12/8/2022			East/West Street	Baur Road		
Analysis Year	2028			North/South Street	Site Access		
Time Analyzed	AM Peak			Peak Hour Factor	0.82		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Baur Mill Townhomes						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		2	189				231	0						1		2
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

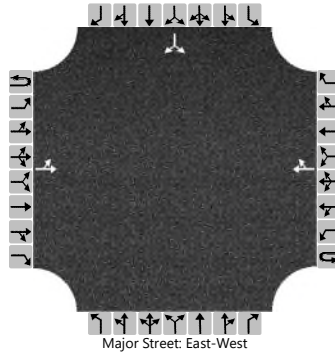
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2													4		
Capacity, c (veh/h)		1275													654		
v/c Ratio		0.00													0.01		
95% Queue Length, Q <sub>95</sub> (veh)		0.0													0.0		
Control Delay (s/veh)		7.8	0.0												10.5		
Level of Service (LOS)		A	A												B		
Approach Delay (s/veh)		0.1												10.5			
Approach LOS		A												B			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	SBC			Intersection	Baur Rd/ Site Access		
Agency/Co.	Eriksson Engineering			Jurisdiction	Naperville		
Date Performed	12/8/2022			East/West Street	Baur Road		
Analysis Year	2028			North/South Street	Site Access		
Time Analyzed	PM Peak			Peak Hour Factor	0.95		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	Baur Mill Townhomes						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		3	180				162	1						1		1
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type   Storage	Undivided															

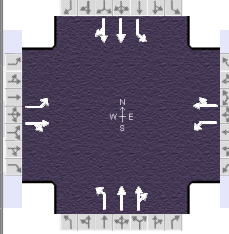
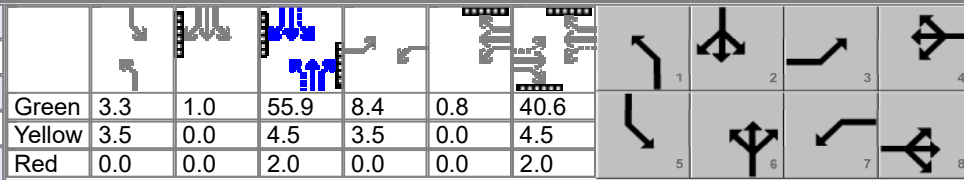
## Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.23
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

## Delay, Queue Length, and Level of Service

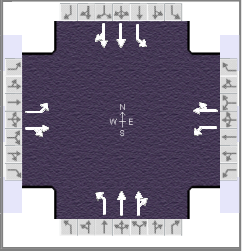
Flow Rate, v (veh/h)		3													2		
Capacity, c (veh/h)		1399													730		
v/c Ratio		0.00													0.00		
95% Queue Length, Q <sub>95</sub> (veh)		0.0													0.0		
Control Delay (s/veh)		7.6	0.0												9.9		
Level of Service (LOS)		A	A												A		
Approach Delay (s/veh)		0.1												9.9			
Approach LOS		A												A			

# HCS Signalized Intersection Input Data

General Information					Intersection Information										
Agency	Eriksson Engineering				Duration, h	0.250									
Analyst	SBC	Analysis Date	12/8/2022		Area Type	Other									
Jurisdiction	DuPage/Naperville		Time Period	AM Peak		PHF	0.82								
Urban Street	Mill Street		Analysis Year	2022		Analysis Period	1 > 7:00								
Intersection	Baur Road		File Name	Mill 2022 AM.xus											
Project Description	2022 AM Peak Hour														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				107	60	87	119	81	21	40	489	67	55	483	33
Signal Information															
Cycle, s	130.0	Reference Phase	2												
Offset, s	0	Reference Point	Begin												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
Green	3.3	1.0	55.9	8.4	0.8	40.6									
Yellow	3.5	0.0	4.5	3.5	0.0	4.5									
Red	0.0	0.0	2.0	0.0	0.0	2.0									
Traffic Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				107	60	87	119	81	21	40	489	67	55	483	33
Initial Queue ( Q <sub>b</sub> ), veh/h				0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate ( s <sub>0</sub> ), veh/h				1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking ( N <sub>m</sub> ), man/h				None			None			None			None		
Heavy Vehicles ( P <sub>HV</sub> ), %				3	3		3	3		5	5		5	5	
Ped / Bike / RTOR, /h				0	0	0	0	0	0	0	0	0	0	0	0
Buses ( N <sub>b</sub> ), buses/h				0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type ( AT )				3	3	3	3	3	3	3	4	4	3	4	4
Upstream Filtering ( I )				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width ( W ), ft				12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft				225	0		165	0		150	0		150	0	
Grade ( P <sub>g</sub> ), %					0			0			0			0	
Speed Limit, mi/h				25	25	25	25	25	25	35	35	35	35	35	35
Phase Information				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Maximum Green ( G <sub>max</sub> ) or Phase Split, s				19.5	32.5	27.3	40.3	15.6	54.6	15.6	54.6				
Yellow Change Interval ( Y ), s				3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5				
Red Clearance Interval ( R <sub>c</sub> ), s				0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0				
Minimum Green ( G <sub>min</sub> ), s				3	6	3	6	3	15	3	15				
Start-Up Lost Time ( I <sub>t</sub> ), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Extension of Effective Green ( e ), s				3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0				
Passage ( P <sub>T</sub> ), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Recall Mode				Off	Off	Off	Off	Off	Max	Off	Max				
Dual Entry				No	Yes	No	Yes	No	Yes	No	Yes				
Walk ( Walk ), s					14.0		10.0		12.0		14.0				
Pedestrian Clearance Time ( P <sub>C</sub> ), s					25.0		20.0		16.0		20.0				
Multimodal Information				EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft				0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50		No	0.50	

# HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Eriksson Engineering			Duration, h	0.250		
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other		
Jurisdiction	DuPage/Naperville	Time Period	AM Peak	PHF	0.82		
Urban Street	Mill Street	Analysis Year	2022	Analysis Period	1 > 7:00		
Intersection	Baur Road	File Name	Mill 2022 AM.xus				
Project Description	2022 AM Peak Hour						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand ( v ), veh/h	107	60	87	119	81	21	40	489	67	55	483	33

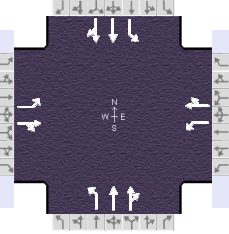
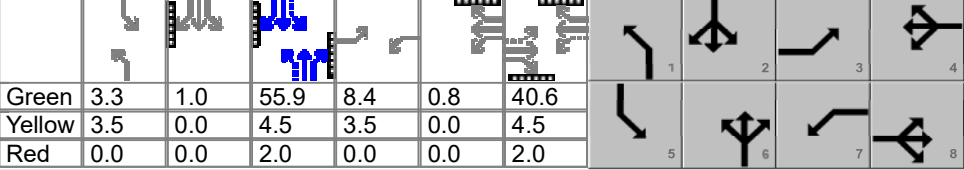
Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.3	1.0	55.9	8.4	0.8	40.6			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5			
				Red	0.0	0.0	2.0	0.0	0.0	2.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	11.9	47.1	12.6	47.9	6.8	62.4	7.8	63.4
Change Period, ( Y+R <sub>c</sub> ), s	3.5	6.5	3.5	6.5	3.5	6.5	3.5	6.5
Max Allow Headway ( MAH ), s	3.3	3.3	3.3	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time ( g <sub>s</sub> ), s	8.3	44.6	9.0	45.4	4.0		4.7	
Green Extension Time ( g <sub>e</sub> ), s	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.99	1.00	0.99	1.00	0.83		0.91	
Max Out Probability	0.01	1.00	0.00	1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate ( v ), veh/h	130	179		145	124		49	346	332	67	318	311
Adjusted Saturation Flow Rate ( s ), veh/h/ln	1767	1677		1767	1789		1739	1826	1749	1739	1826	1784
Queue Service Time ( g <sub>s</sub> ), s	6.3	10.5		7.0	6.5		2.0	12.4	12.4	2.7	10.8	10.8
Cycle Queue Clearance Time ( g <sub>c</sub> ), s	6.3	10.5		7.0	6.5		2.0	12.4	12.4	2.7	10.8	10.8
Green Ratio ( g/C )	0.39	0.33		0.40	0.33		0.47	0.47	0.47	0.48	0.48	0.48
Capacity ( c ), veh/h	183	550		193	598		377	855	819	381	869	850
Volume-to-Capacity Ratio ( X )	0.715	0.326		0.751	0.208		0.129	0.404	0.406	0.176	0.366	0.367
Back of Queue ( Q ), ft/ln ( 95 th percentile)	129.5	199.2		143.5	132.2		37.7	220.6	206.2	51.1	199.3	188.8
Back of Queue ( Q ), veh/ln ( 95 th percentile)	5.1	7.8		5.6	5.2		1.4	8.5	8.2	2.0	7.7	7.6
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.58	0.00		0.87	0.00		0.25	0.00	0.00	0.34	0.00	0.00
Uniform Delay ( d <sub>1</sub> ), s/veh	32.6	32.9		32.2	31.0		19.4	16.3	15.3	18.8	15.4	14.4
Incremental Delay ( d <sub>2</sub> ), s/veh	2.0	0.1		2.2	0.1		0.1	1.4	1.5	0.1	1.2	1.2
Initial Queue Delay ( d <sub>3</sub> ), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh	34.5	33.0		34.4	31.0		19.4	17.7	16.8	18.9	16.6	15.6
Level of Service ( LOS )	C	C		C	C		B	B	B	B	B	B
Approach Delay, s/veh / LOS	33.6	C		32.9	C		17.4	B		16.4	B	
Intersection Delay, s/veh / LOS	21.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.92	B	1.92	B
Bicycle LOS Score / LOS	1.00	A	0.93	A	1.09	A	1.06	A

## HCS Signalized Intersection Intermediate Values

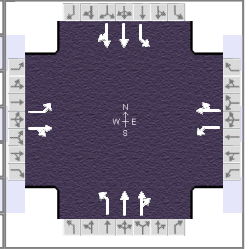
General Information					Intersection Information													
Agency	Eriksson Engineering				Duration, h	0.250												
Analyst	SBC	Analysis Date	12/8/2022		Area Type	Other												
Jurisdiction	DuPage/Naperville		Time Period	AM Peak		PHF	0.82											
Urban Street	Mill Street		Analysis Year	2022		Analysis Period	1 > 7:00											
Intersection	Baur Road		File Name	Mill 2022 AM.xus														
Project Description	2022 AM Peak Hour																	
Demand Information					EB			WB			NB			SB				
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R		
Demand ( v ), veh/h					107	60	87	119	81	21	40	489	67	55	483	33		
Signal Information																		
Cycle, s	130.0	Reference Phase	2															
Offset, s	0	Reference Point	Begin															
Uncoordinated	No	Simult. Gap E/W	On															
Force Mode	Fixed	Simult. Gap N/S	On															
Green					3.3	1.0	55.9	8.4	0.8	40.6								
Yellow					3.5	0.0	4.5	3.5	0.0	4.5								
Red					0.0	0.0	2.0	0.0	0.0	2.0								
Saturation Flow / Delay					L	T	R	L	T	R	L	T	R	L	T	R		
Lane Width Adjustment Factor (f <sub>w</sub> )					1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Heavy Vehicles and Grade Factor (f <sub>HVg</sub> )					0.977	0.977	1.000	0.977	0.977	1.000	0.961	0.961	1.000	0.961	0.961	1.000	1.000	
Parking Activity Adjustment Factor (f <sub>p</sub> )					1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Bus Blockage Adjustment Factor (f <sub>bb</sub> )					1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Area Type Adjustment Factor (f <sub>a</sub> )					1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Lane Utilization Adjustment Factor (f <sub>LU</sub> )					1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Left-Turn Adjustment Factor (f <sub>LT</sub> )					0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000			
Right-Turn Adjustment Factor (f <sub>RT</sub> )						0.904	0.904		0.964	0.964		0.958	0.958		0.977	0.977		
Left-Turn Pedestrian Adjustment Factor (f <sub>LPB</sub> )					1.000			1.000			1.000			1.000				
Right-Turn Ped-Bike Adjustment Factor (f <sub>RPB</sub> )							1.000			1.000			1.000			1.000		
Work Zone Adjustment Factor (f <sub>wz</sub> )					1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
DDI Factor (f <sub>DDI</sub> )					1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Left-Turn Prot. CAV Adj. Factor (f <sub>CAV,prot</sub> )					1.00			1.00			1.00			1.00				
Left-Turn Perm. CAV Adj. Factor (f <sub>CAV,perm</sub> )					1.00													
Movement Saturation Flow Rate (s), veh/h					1767	684	992	1767	1421	368	1739	3145	430	1739	3380	231		
Proportion of Vehicles Arriving on Green (P)					0.07	0.33	0.33	0.08	0.33	0.33	0.03	0.62	0.62	0.04	0.63	0.63		
Incremental Delay Factor (k)					0.04	0.04		0.04	0.04		0.04	0.50	0.50	0.04	0.50	0.50		
Signal Timing / Movement Groups					EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R						
Lost Time (t <sub>L</sub> )					2.5	4.5	2.5	4.5	2.5	1.5	2.5	1.5						
Green Ratio (g/C)					0.39	0.33	0.40	0.33	0.47	0.47	0.48	0.48						
Permitted Saturation Flow Rate (s <sub>p</sub> ), veh/h/ln					1257	1257	1195	0	778	0	743	0						
Shared Saturation Flow Rate (s <sub>sh</sub> ), veh/h/ln																		
Permitted Effective Green Time (g <sub>p</sub> ), s					41.6	26.5	41.9	0.0	56.9	0.0	57.4	0.0						
Permitted Service Time (g <sub>u</sub> ), s					0.0	0.0	0.0	0.0	44.1	0.0	44.5	0.0						
Permitted Queue Service Time (g <sub>ps</sub> ), s					0.0		0.0		0.9		1.3							
Time to First Blockage (g <sub>t</sub> ), s					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
Queue Service Time Before Blockage (g <sub>fs</sub> ), s																		
Protected Right Saturation Flow (s <sub>R</sub> ), veh/h/ln																		
Protected Right Effective Green Time (g <sub>R</sub> ), s																		
Multimodal					EB			WB			NB			SB				
Pedestrian F <sub>w</sub> / F <sub>v</sub>					1.557	0.000	1.557	0.000	1.198	0.000	1.198	0.000	1.198	0.000				
Pedestrian F <sub>s</sub> / F <sub>delay</sub>					0.000	0.137	0.000	0.137	0.000	0.122	0.000	0.122	0.000	0.121				
Pedestrian M <sub>corner</sub> / M <sub>cw</sub>					0.00		0.00		0.00		0.00		0.00					
Bicycle c <sub>b</sub> / d <sub>b</sub>					625.28	30.71	637.45	30.17	859.89	21.12	875.23	20.56						
Bicycle F <sub>w</sub> / F <sub>v</sub>					-3.64	0.51	-3.64	0.44	-3.64	0.60	-3.64	0.57						

# HCS Signalized Intersection Results Graphical Summary

## General Information

Agency	Eriksson Engineering			Duration, h	0.250
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other
Jurisdiction	DuPage/Naperville	Time Period	AM Peak	PHF	0.82
Urban Street	Mill Street	Analysis Year	2022	Analysis Period	1 > 7:00
Intersection	Baur Road	File Name	Mill 2022 AM.xus		
Project Description	2022 AM Peak Hour				

## Intersection Information



## Demand Information

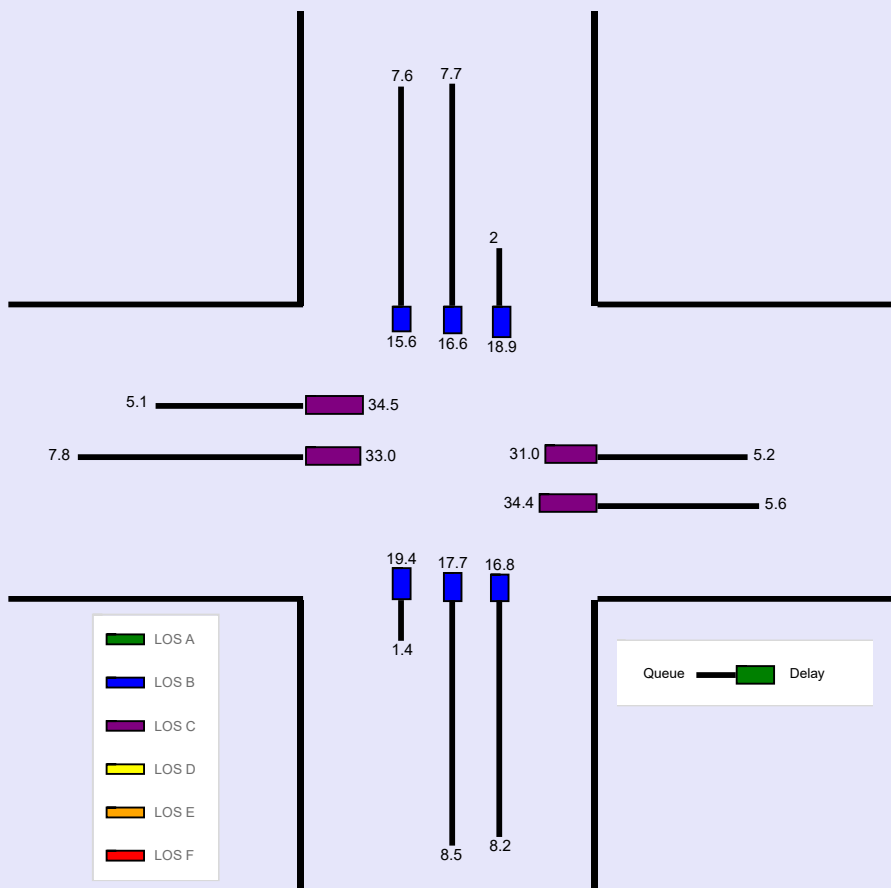
Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	107	60	87	119	81	21	40	489	67	55	483	33

## Signal Information

Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	3.3	1.0	55.9	8.4	0.8	40.6						
Yellow	3.5	0.0	4.5	3.5	0.0	4.5						
Red	0.0	0.0	2.0	0.0	0.0	2.0						

## Movement Group Results

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue ( Q ), ft/ln ( 95 th percentile)	129.5	199.2		143.5	132.2		37.7	220.6	206.2	51.1	199.3	188.8
Back of Queue ( Q ), veh/ln ( 95 th percentile)	5.1	7.8		5.6	5.2		1.4	8.5	8.2	2.0	7.7	7.6
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.58	0.00		0.87	0.00		0.25	0.00	0.00	0.34	0.00	0.00
Control Delay ( d ), s/veh	34.5	33.0		34.4	31.0		19.4	17.7	16.8	18.9	16.6	15.6
Level of Service ( LOS)	C	C		C	C		B	B	B	B	B	B
Approach Delay, s/veh / LOS	33.6 C			32.9 C			17.4 B			16.4 B		
Intersection Delay, s/veh / LOS	21.6						C					



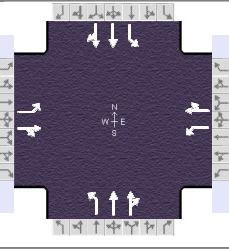
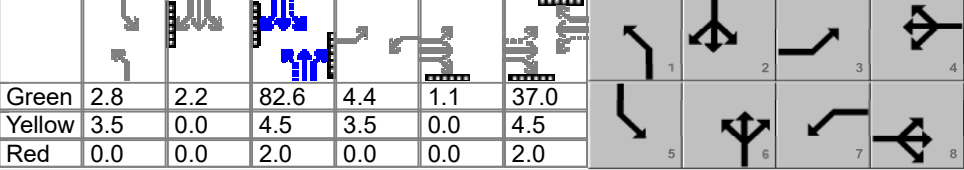


**--- Messages ---**

No errors or warnings exist.

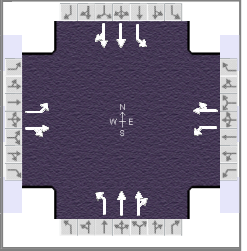
**--- Comments ---**

## HCS Signalized Intersection Input Data

General Information					Intersection Information											
Agency	Eriksson Engineering				Duration, h	0.250										
Analyst	SBC	Analysis Date	12/8/2022		Area Type	Other										
Jurisdiction	DuPage/Naperville		Time Period	PM Peak		PHF	0.95									
Urban Street	Mill Street		Analysis Year	2022		Analysis Period	1 > 7:00									
Intersection	Baur Road		File Name	Mill 2022 PM.xus												
Project Description	2022 PM Peak Hour															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h					60	46	26	47	53	56	37	499	46	81	784	107
Signal Information																
Cycle, s	150.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	2.8	2.2	82.6	4.4	1.1	37.0										
Yellow	3.5	0.0	4.5	3.5	0.0	4.5										
Red	0.0	0.0	2.0	0.0	0.0	2.0										
Traffic Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h					60	46	26	47	53	56	37	499	46	81	784	107
Initial Queue ( Q <sub>b</sub> ), veh/h					0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate ( s <sub>0</sub> ), veh/h					1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking ( N <sub>m</sub> ), man/h					None			None			None			None		
Heavy Vehicles ( P <sub>HV</sub> ), %					3	3		3	3		5	5		5	5	
Ped / Bike / RTOR, /h					0	0	0	0	0	0	0	0	0	0	0	0
Buses ( N <sub>b</sub> ), buses/h					0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type ( AT )					3	3	3	3	3	3	3	4	4	3	4	4
Upstream Filtering ( I )					1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width ( W ), ft					12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft					225	0		165	0		150	0		150	0	
Grade ( P <sub>g</sub> ), %						0			0			0			0	
Speed Limit, mi/h					25	25	25	25	25	25	35	35	35	35	35	35
Phase Information					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Maximum Green ( G <sub>max</sub> ) or Phase Split, s					15.0	37.5	15.0	37.5	21.0	84.0	13.5	76.5				
Yellow Change Interval ( Y ), s					3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5				
Red Clearance Interval ( R <sub>c</sub> ), s					0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0				
Minimum Green ( G <sub>min</sub> ), s					3	6	3	6	3	15	3	15				
Start-Up Lost Time ( I <sub>t</sub> ), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Extension of Effective Green ( e ), s					3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0				
Passage ( P <sub>T</sub> ), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Recall Mode					Off	Off	Off	Off	Off	Max	Off	Max				
Dual Entry					No	Yes	No	Yes	No	Yes	No	Yes				
Walk ( Walk ), s						14.0		10.0		12.0		14.0				
Pedestrian Clearance Time ( P <sub>C</sub> ), s						25.0		20.0		16.0		20.0				
Multimodal Information					EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius					0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft					9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft					0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft					12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking					No	0.50	No	0.50	No	0.50	No	0.50	No	0.50		

# HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Eriksson Engineering			Duration, h	0.250		
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other		
Jurisdiction	DuPage/Naperville		Time Period	PM Peak	PHF	0.95	
Urban Street	Mill Street		Analysis Year	2022	Analysis Period	1 > 7:00	
Intersection	Baur Road		File Name	Mill 2022 PM.xus			
Project Description	2022 PM Peak Hour						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand ( v ), veh/h	60	46	26	47	53	56	37	499	46	81	784	107

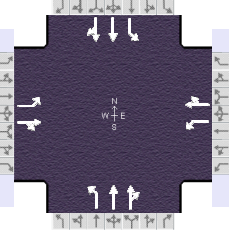
Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.8	2.2	82.6	4.4	1.1	37.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5			
				Red	0.0	0.0	2.0	0.0	0.0	2.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	9.0	44.5	7.9	43.5	6.3	89.1	8.4	91.2
Change Period, ( Y+R <sub>c</sub> ), s	3.5	6.5	3.5	6.5	3.5	6.5	3.5	6.5
Max Allow Headway ( MAH ), s	3.3	3.3	3.3	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time ( g <sub>s</sub> ), s	5.9	42.0	5.1	41.0	3.4		5.0	
Green Extension Time ( g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.93	1.00	0.87	1.00	0.80		0.97	
Max Out Probability	0.03	1.00	0.01	1.00	0.00		0.07	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate ( v ), veh/h	63	76		49	115		39	290	283	85	479	459
Adjusted Saturation Flow Rate ( s ), veh/h/ln	1767	1742		1767	1698		1739	1826	1771	1739	1826	1749
Queue Service Time ( g <sub>s</sub> ), s	3.9	5.0		3.1	8.0		1.4	6.7	6.8	3.0	12.3	12.3
Cycle Queue Clearance Time ( g <sub>c</sub> ), s	3.9	5.0		3.1	8.0		1.4	6.7	6.8	3.0	12.3	12.3
Green Ratio ( g/C )	0.30	0.27		0.29	0.26		0.58	0.58	0.58	0.61	0.60	0.60
Capacity ( c ), veh/h	125	465		112	442		366	1066	1034	536	1092	1046
Volume-to-Capacity Ratio ( X )	0.507	0.163		0.441	0.260		0.106	0.272	0.274	0.159	0.439	0.439
Back of Queue ( Q ), ft/ln ( 95 th percentile)	81.8	102.1		64.5	160.4		26.8	121.3	114	55.7	195.5	180.7
Back of Queue ( Q ), veh/ln ( 95 th percentile)	3.2	4.0		2.5	6.3		1.0	4.7	4.6	2.1	7.5	7.2
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.36	0.00		0.39	0.00		0.18	0.00	0.00	0.37	0.00	0.00
Uniform Delay ( d <sub>1</sub> ), s/veh	43.0	42.1		43.8	44.1		14.0	8.2	7.7	12.4	7.9	7.3
Incremental Delay ( d <sub>2</sub> ), s/veh	1.2	0.1		1.0	0.1		0.0	0.6	0.7	0.1	1.3	1.3
Initial Queue Delay ( d <sub>3</sub> ), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh	44.2	42.2		44.8	44.2		14.0	8.9	8.3	12.4	9.2	8.7
Level of Service ( LOS )	D	D		D	D		B	A	A	B	A	A
Approach Delay, s/veh / LOS	43.1		D	44.3		D	8.9		A	9.2		A
Intersection Delay, s/veh / LOS	14.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.91	B	1.90	B
Bicycle LOS Score / LOS	0.72	A	0.76	A	0.99	A	1.33	A

## HCS Signalized Intersection Intermediate Values

General Information				Intersection Information		
Agency	Eriksson Engineering			Duration, h	0.250	
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other	
Jurisdiction	DuPage/Naperville	Time Period	PM Peak	PHF	0.95	
Urban Street	Mill Street	Analysis Year	2022	Analysis Period	1 > 7:00	
Intersection	Baur Road	File Name	Mill 2022 PM.xus			
Project Description	2022 PM Peak Hour					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	60	46	26	47	53	56	37	499	46	81	784	107

Signal Information																
Cycle, s	150.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin	Green	2.8	2.2	82.6	4.4	1.1	37.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5						
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	2.0	0.0	0.0	2.0						

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor ( $f_w$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor ( $f_{HVg}$ )	0.977	0.977	1.000	0.977	0.977	1.000	0.961	0.961	1.000	0.961	0.961	1.000
Parking Activity Adjustment Factor ( $f_p$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor ( $f_{bb}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor ( $f_a$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor ( $f_{LU}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor ( $f_{LT}$ )	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor ( $f_{RT}$ )		0.939	0.939		0.915	0.915		0.970	0.970		0.958	0.958
Left-Turn Pedestrian Adjustment Factor ( $f_{LPB}$ )	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor ( $f_{RPB}$ )			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor ( $f_{WZ}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor ( $f_{DDI}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ( $f_{CAV,prot}$ )	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ( $f_{CAV,perm}$ )	1.00											
Movement Saturation Flow Rate (s), veh/h	1767	1113	629	1767	826	873	1739	3294	303	1739	3145	429
Proportion of Vehicles Arriving on Green (P)	0.04	0.27	0.27	0.04	0.26	0.26	0.03	0.78	0.78	0.04	0.80	0.80
Incremental Delay Factor (k)	0.04	0.04		0.04	0.04		0.04	0.50	0.50	0.04	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time ( $t_L$ )	2.5	4.5	2.5	4.5	2.5	1.5	2.5	1.5
Green Ratio (g/C)	0.30	0.27	0.29	0.26	0.58	0.58	0.61	0.60
Permitted Saturation Flow Rate ( $s_p$ ), veh/h/ln	1268	1257	1313	0	583	0	819	0
Shared Saturation Flow Rate ( $s_{sh}$ ), veh/h/ln								
Permitted Effective Green Time ( $g_p$ ), s	38.5	26.5	38.0	0.0	83.6	0.0	85.2	0.0
Permitted Service Time ( $g_u$ ), s	0.0	0.0	0.0	0.0	70.5	0.0	76.8	0.0
Permitted Queue Service Time ( $g_{ps}$ ), s	0.0		0.0		0.9		1.0	
Time to First Blockage ( $g_t$ ), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage ( $g_{fs}$ ), s								
Protected Right Saturation Flow ( $s_R$ ), veh/h/ln								
Protected Right Effective Green Time ( $g_R$ ), s								

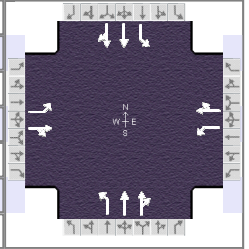
Multimodal	EB		WB		NB		SB	
Pedestrian $F_w / F_v$	1.557	0.000	1.557	0.000	1.198	0.000	1.198	0.000
Pedestrian $F_s / F_{delay}$	0.000	0.150	0.000	0.150	0.000	0.109	0.000	0.106
Pedestrian $M_{corner} / M_{cw}$	0.00		0.00		0.00		0.00	
Bicycle $c_b / d_b$	507.32	41.78	493.30	42.56	1100.97	15.15	1129.65	14.20
Bicycle $F_w / F_v$	-3.64	0.23	-3.64	0.27	-3.64	0.51	-3.64	0.84

# HCS Signalized Intersection Results Graphical Summary

## General Information

Agency	Eriksson Engineering			Duration, h	0.250
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other
Jurisdiction	DuPage/Naperville	Time Period	PM Peak	PHF	0.95
Urban Street	Mill Street	Analysis Year	2022	Analysis Period	1 > 7:00
Intersection	Baur Road	File Name	Mill 2022 PM.xus		
Project Description	2022 PM Peak Hour				

## Intersection Information



## Demand Information

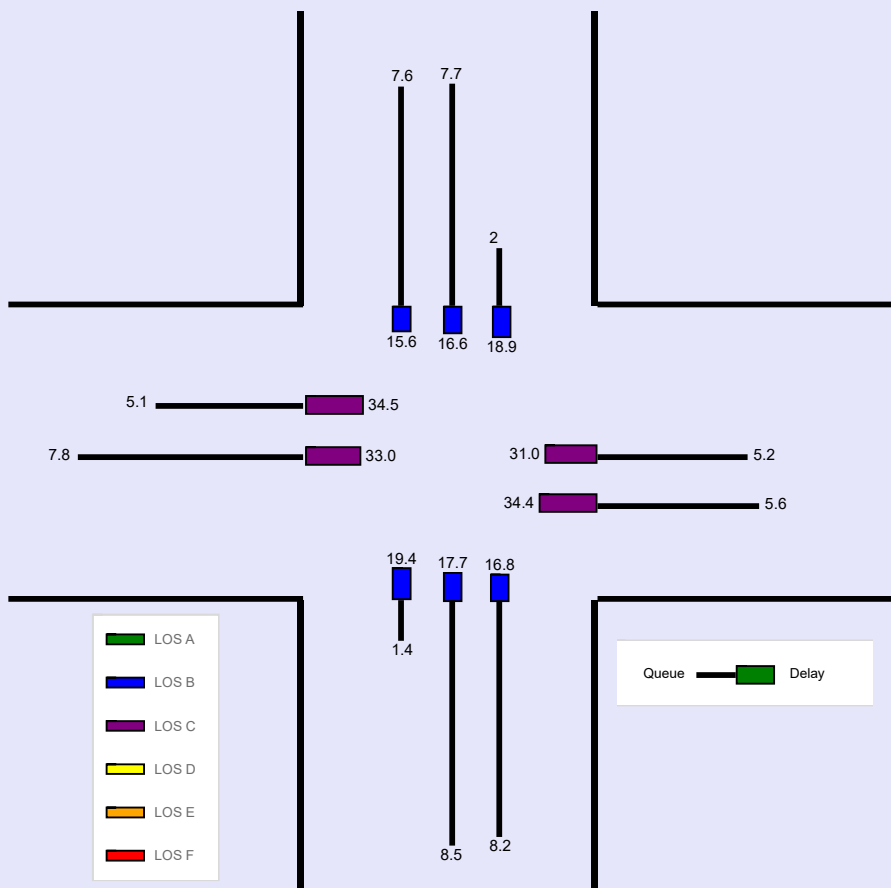
Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	60	46	26	47	53	56	37	499	46	81	784	107

## Signal Information

Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.8	2.2	82.6	4.4	1.1	37.0	[Signal Diagrams 1-4]		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5	[Signal Diagrams 5-8]		
				Red	0.0	0.0	2.0	0.0	0.0	2.0			

## Movement Group Results

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue ( Q ), ft/ln ( 95 th percentile)	81.8	102.1		64.5	160.4		26.8	121.3	114	55.7	195.5	180.7
Back of Queue ( Q ), veh/ln ( 95 th percentile)	3.2	4.0		2.5	6.3		1.0	4.7	4.6	2.1	7.5	7.2
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.36	0.00		0.39	0.00		0.18	0.00	0.00	0.37	0.00	0.00
Control Delay ( d ), s/veh	44.2	42.2		44.8	44.2		14.0	8.9	8.3	12.4	9.2	8.7
Level of Service ( LOS)	D	D		D	D		B	A	A	B	A	A
Approach Delay, s/veh / LOS	43.1		D	44.3		D	8.9		A	9.2		A
Intersection Delay, s/veh / LOS	14.5						B					



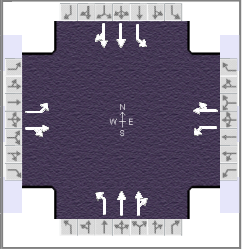
**--- Messages ---**

No errors or warnings exist.

**--- Comments ---**

# HCS Signalized Intersection Input Data

General Information				Intersection Information			
Agency	Eriksson Engineering			Duration, h	0.250		
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other		
Jurisdiction	DuPage/Naperville		Time Period	AM Peak	PHF	0.82	
Urban Street	Mill Street		Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Baur Road		File Name	Mill 2028 AM.xus			
Project Description	2028 AM Peak Hour						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	111	62	91	125	86	22	42	510	71	58	503	34

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On	Green	3.5	1.0	55.7	8.6	0.9	40.2		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5		
				Red	0.0	0.0	2.0	0.0	0.0	2.0		

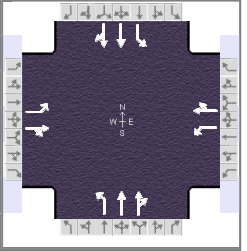
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	111	62	91	125	86	22	42	510	71	58	503	34
Initial Queue ( Q <sub>b</sub> ), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate ( s <sub>0</sub> ), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking ( N <sub>m</sub> ), man/h	None			None			None			None		
Heavy Vehicles ( P <sub>HV</sub> ), %	3	3		3	3		5	5		5	5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses ( N <sub>b</sub> ), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type ( AT )	3	3	3	3	3	3	3	4	4	3	4	4
Upstream Filtering ( I )	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width ( W ), ft	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	225	0		165	0		150	0		150	0	
Grade ( P <sub>g</sub> ), %		0			0			0			0	
Speed Limit, mi/h	25	25	25	25	25	25	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green ( G <sub>max</sub> ) or Phase Split, s	19.5	32.5	27.3	40.3	15.6	54.6	15.6	54.6
Yellow Change Interval ( Y ), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Red Clearance Interval ( R <sub>c</sub> ), s	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
Minimum Green ( G <sub>min</sub> ), s	3	6	3	6	3	15	3	15
Start-Up Lost Time ( I <sub>t</sub> ), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green ( e ), s	3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0
Passage ( PT ), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Max	Off	Max
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk ( Walk ), s		14.0		10.0		12.0		14.0
Pedestrian Clearance Time ( PC ), s		25.0		20.0		16.0		20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft	0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

# HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Eriksson Engineering			Duration, h	0.250		
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other		
Jurisdiction	DuPage/Naperville	Time Period	AM Peak	PHF	0.82		
Urban Street	Mill Street	Analysis Year	2028	Analysis Period	1 > 7:00		
Intersection	Baur Road	File Name	Mill 2028 AM.xus				
Project Description	2028 AM Peak Hour						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand ( v ), veh/h	111	62	91	125	86	22	42	510	71	58	503	34

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.5	1.0	55.7	8.6	0.9	40.2			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5			
				Red	0.0	0.0	2.0	0.0	0.0	2.0			

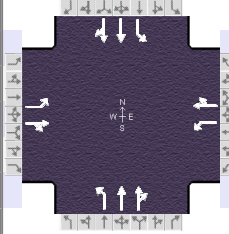
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	12.1	46.7	13.0	47.7	7.0	62.2	8.0	63.2
Change Period, ( Y+R <sub>c</sub> ), s	3.5	6.5	3.5	6.5	3.5	6.5	3.5	6.5
Max Allow Headway ( MAH ), s	3.3	3.3	3.3	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time ( g <sub>s</sub> ), s	8.6	44.2	9.3	45.1	4.1		4.9	
Green Extension Time ( g <sub>e</sub> ), s	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.99	1.00	1.00	1.00	0.84		0.92	
Max Out Probability	0.01	1.00	0.00	1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate ( v ), veh/h	135	187		152	132		51	361	347	71	331	324
Adjusted Saturation Flow Rate ( s ), veh/h/ln	1767	1676		1767	1790		1739	1826	1747	1739	1826	1785
Queue Service Time ( g <sub>s</sub> ), s	6.6	11.0		7.3	6.9		2.1	13.2	13.3	2.9	11.4	11.4
Cycle Queue Clearance Time ( g <sub>c</sub> ), s	6.6	11.0		7.3	6.9		2.1	13.2	13.3	2.9	11.4	11.4
Green Ratio ( g/C )	0.39	0.32		0.40	0.33		0.47	0.47	0.47	0.48	0.47	0.47
Capacity ( c ), veh/h	186	545		199	594		369	853	816	371	867	848
Volume-to-Capacity Ratio ( X )	0.726	0.343		0.767	0.222		0.139	0.424	0.425	0.191	0.381	0.382
Back of Queue ( Q ), ft/ln ( 95 th percentile)	135	207		151.3	141.1		39.7	231.2	216	54	207.4	196.5
Back of Queue ( Q ), veh/ln ( 95 th percentile)	5.3	8.1		5.9	5.5		1.5	8.9	8.6	2.1	8.0	7.9
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.60	0.00		0.92	0.00		0.26	0.00	0.00	0.36	0.00	0.00
Uniform Delay ( d <sub>1</sub> ), s/veh	32.6	33.3		32.2	31.3		19.5	16.6	15.6	18.9	15.6	14.6
Incremental Delay ( d <sub>2</sub> ), s/veh	2.0	0.1		2.3	0.1		0.1	1.5	1.6	0.1	1.3	1.3
Initial Queue Delay ( d <sub>3</sub> ), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh	34.6	33.5		34.5	31.4		19.6	18.1	17.2	19.0	16.8	15.9
Level of Service ( LOS )	C	C		C	C		B	B	B	B	B	B
Approach Delay, s/veh / LOS	34.0		C	33.1		C	17.8		B	16.6		B
Intersection Delay, s/veh / LOS	22.0						C					

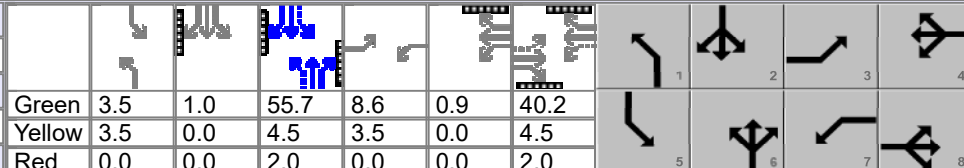
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.92	B	1.92	B
Bicycle LOS Score / LOS	1.02	A	0.96	A	1.11	A	1.09	A



## HCS Signalized Intersection Intermediate Values

General Information				Intersection Information		
Agency	Eriksson Engineering			Duration, h	0.250	
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other	
Jurisdiction	DuPage/Naperville	Time Period	AM Peak	PHF	0.82	
Urban Street	Mill Street	Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Baur Road	File Name	Mill 2028 AM.xus			
Project Description	2028 AM Peak Hour					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	111	62	91	125	86	22	42	510	71	58	503	34

Signal Information																								
Cycle, s	130.0	Reference Phase	2																					
Offset, s	0	Reference Point	Begin																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On	Green	3.5	1.0	55.7	8.6	0.9	40.2	Yellow	3.5	0.0	4.5	3.5	0.0	4.5	Red	0.0	0.0	2.0	0.0	0.0	2.0

Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor ( $f_w$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor ( $f_{HVg}$ )	0.977	0.977	1.000	0.977	0.977	1.000	0.961	0.961	1.000	0.961	0.961	1.000
Parking Activity Adjustment Factor ( $f_p$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor ( $f_{bb}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor ( $f_a$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor ( $f_{LU}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor ( $f_{LT}$ )	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor ( $f_{RT}$ )		0.903	0.903		0.965	0.965		0.957	0.957		0.977	0.977
Left-Turn Pedestrian Adjustment Factor ( $f_{LPb}$ )	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor ( $f_{Rpb}$ )			1.000			1.000			1.000			1.000
Work Zone Adjustment Factor ( $f_{wz}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor ( $f_{DDI}$ )	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor ( $f_{CAV,prot}$ )	1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor ( $f_{CAV,perm}$ )	1.00											
Movement Saturation Flow Rate (s), veh/h	1767	679	997	1767	1425	365	1739	3137	436	1739	3382	228
Proportion of Vehicles Arriving on Green (P)	0.07	0.32	0.32	0.08	0.33	0.33	0.03	0.62	0.62	0.04	0.63	0.63
Incremental Delay Factor (k)	0.04	0.04		0.04	0.04		0.04	0.50	0.50	0.04	0.50	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time ( $t_L$ )	2.5	4.5	2.5	4.5	2.5	1.5	2.5	1.5
Green Ratio (g/C)	0.39	0.32	0.40	0.33	0.47	0.47	0.48	0.47
Permitted Saturation Flow Rate ( $s_p$ ), veh/h/ln	1248	1257	1187	0	760	0	723	0
Shared Saturation Flow Rate ( $s_{sh}$ ), veh/h/ln								
Permitted Effective Green Time ( $g_p$ ), s	41.2	26.5	41.6	0.0	56.7	0.0	57.3	0.0
Permitted Service Time ( $g_u$ ), s	0.0	0.0	0.0	0.0	43.4	0.0	43.5	0.0
Permitted Queue Service Time ( $g_{ps}$ ), s	0.0		0.0		1.0		1.5	
Time to First Blockage ( $g_t$ ), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage ( $g_{fs}$ ), s								
Protected Right Saturation Flow ( $s_R$ ), veh/h/ln								
Protected Right Effective Green Time ( $g_R$ ), s								

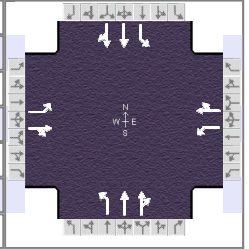
Multimodal	EB		WB		NB		SB	
Pedestrian $F_w / F_v$	1.557	0.000	1.557	0.000	1.198	0.000	1.198	0.000
Pedestrian $F_s / F_{delay}$	0.000	0.138	0.000	0.137	0.000	0.123	0.000	0.121
Pedestrian $M_{corner} / M_{cw}$	0.00		0.00		0.00		0.00	
Bicycle $c_b / d_b$	619.20	30.98	633.16	30.36	856.90	21.23	872.97	20.64
Bicycle $F_w / F_v$	-3.64	0.53	-3.64	0.47	-3.64	0.63	-3.64	0.60

# HCS Signalized Intersection Results Graphical Summary

## General Information

Agency	Eriksson Engineering			Duration, h	0.250
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other
Jurisdiction	DuPage/Naperville	Time Period	AM Peak	PHF	0.82
Urban Street	Mill Street	Analysis Year	2028	Analysis Period	1 > 7:00
Intersection	Baur Road	File Name	Mill 2028 AM.xus		
Project Description	2028 AM Peak Hour				

## Intersection Information



## Demand Information

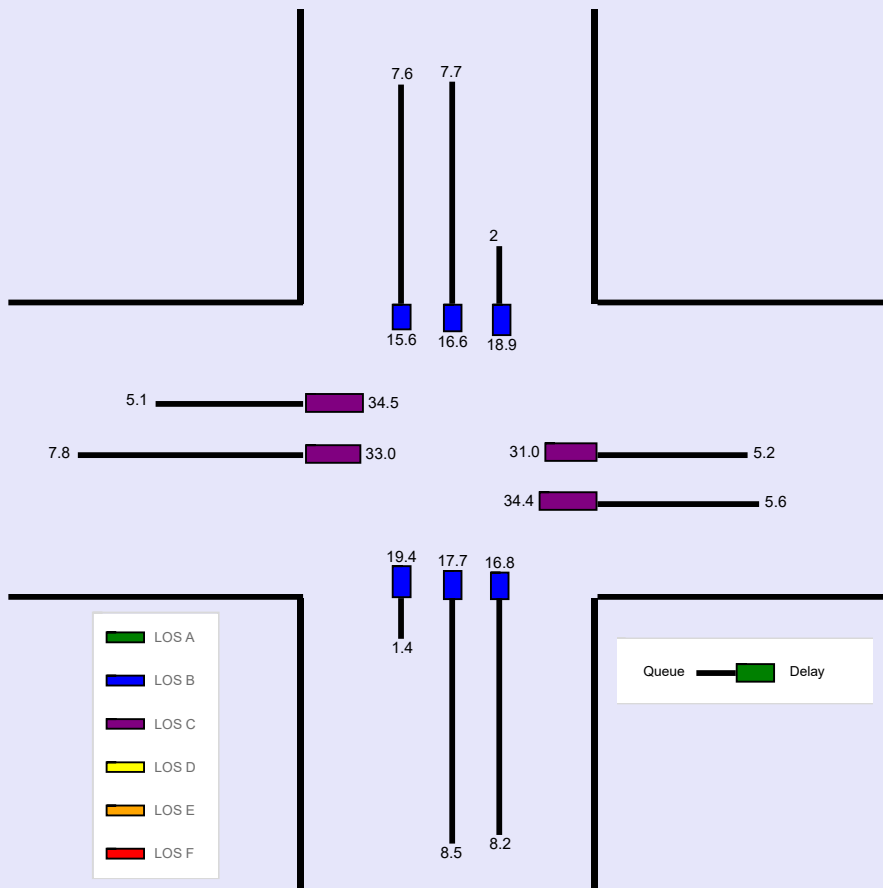
Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	111	62	91	125	86	22	42	510	71	58	503	34

## Signal Information

Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.5	1.0	55.7	8.6	0.9	40.2			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5			
				Red	0.0	0.0	2.0	0.0	0.0	2.0			

## Movement Group Results

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue ( Q ), ft/ln ( 95 th percentile)	135	207		151.3	141.1		39.7	231.2	216	54	207.4	196.5
Back of Queue ( Q ), veh/ln ( 95 th percentile)	5.3	8.1		5.9	5.5		1.5	8.9	8.6	2.1	8.0	7.9
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.60	0.00		0.92	0.00		0.26	0.00	0.00	0.36	0.00	0.00
Control Delay ( d ), s/veh	34.6	33.5		34.5	31.4		19.6	18.1	17.2	19.0	16.8	15.9
Level of Service ( LOS)	C	C		C	C		B	B	B	B	B	B
Approach Delay, s/veh / LOS	34.0 C			33.1 C			17.8 B			16.6 B		
Intersection Delay, s/veh / LOS	22.0						C					

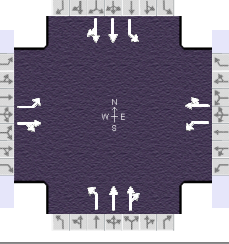


**--- Messages ---**

No errors or warnings exist.

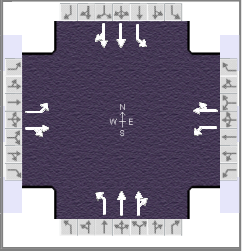
**--- Comments ---**

# HCS Signalized Intersection Input Data

General Information					Intersection Information										
Agency	Eriksson Engineering				Duration, h	0.250									
Analyst	SBC	Analysis Date	12/8/2022		Area Type	Other									
Jurisdiction	DuPage/Naperville		Time Period	PM Peak		PHF	0.95								
Urban Street	Mill Street		Analysis Year	2028		Analysis Period	1 > 7:00								
Intersection	Baur Road		File Name	Mill 2028 PM.xus											
Project Description	2028 PM Peak Hour														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				64	49	27	50	55	58	38	520	49	85	817	111
Signal Information															
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	Begin												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
Green	2.8	2.3	82.4	4.7	1.1	36.7									
Yellow	3.5	0.0	4.5	3.5	0.0	4.5									
Red	0.0	0.0	2.0	0.0	0.0	2.0									
Traffic Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				64	49	27	50	55	58	38	520	49	85	817	111
Initial Queue ( Q <sub>b</sub> ), veh/h				0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate ( s <sub>0</sub> ), veh/h				1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking ( N <sub>m</sub> ), man/h				None			None			None			None		
Heavy Vehicles ( P <sub>HV</sub> ), %				3	3		3	3		5	5		5	5	
Ped / Bike / RTOR, /h				0	0	0	0	0	0	0	0	0	0	0	0
Buses ( N <sub>b</sub> ), buses/h				0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type ( AT )				3	3	3	3	3	3	3	4	4	3	4	4
Upstream Filtering ( I )				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width ( W ), ft				12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft				225	0		165	0		150	0		150	0	
Grade ( P <sub>g</sub> ), %					0			0			0			0	
Speed Limit, mi/h				25	25	25	25	25	25	35	35	35	35	35	35
Phase Information				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Maximum Green ( G <sub>max</sub> ) or Phase Split, s				15.0	37.5	15.0	37.5	21.0	84.0	13.5	76.5				
Yellow Change Interval ( Y ), s				3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5				
Red Clearance Interval ( R <sub>c</sub> ), s				0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0				
Minimum Green ( G <sub>min</sub> ), s				3	6	3	6	3	15	3	15				
Start-Up Lost Time ( I <sub>t</sub> ), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Extension of Effective Green ( e ), s				3.0	4.0	3.0	4.0	3.0	7.0	3.0	7.0				
Passage ( P <sub>T</sub> ), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Recall Mode				Off	Off	Off	Off	Off	Max	Off	Max				
Dual Entry				No	Yes	No	Yes	No	Yes	No	Yes				
Walk ( Walk ), s					14.0		10.0		12.0		14.0				
Pedestrian Clearance Time ( P <sub>C</sub> ), s					25.0		20.0		16.0		20.0				
Multimodal Information				EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius				0.0	No	25.0	0.0	No	25.0	0.0	No	25.0	0.0	No	25.0
Walkway / Crosswalk Width / Length, ft				9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0	9.0	12.0	0.0
Street Width / Island / Curb, ft				0.0	0	No	0.0	0	No	0.0	0	No	0.0	0	No
Width Outside / Bike Lane / Shoulder, ft				12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0	12.0	5.0	2.0
Pedestrian Signal / Occupied Parking				No	0.50		No	0.50		No	0.50		No	0.50	

# HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Eriksson Engineering			Duration, h	0.250		
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other		
Jurisdiction	DuPage/Naperville		Time Period	PM Peak	PHF	0.95	
Urban Street	Mill Street		Analysis Year	2028	Analysis Period	1 > 7:00	
Intersection	Baur Road		File Name	Mill 2028 PM.xus			
Project Description	2028 PM Peak Hour						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand ( v ), veh/h	64	49	27	50	55	58	38	520	49	85	817	111

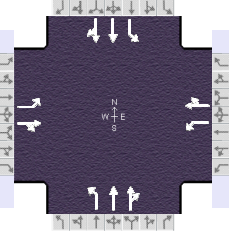
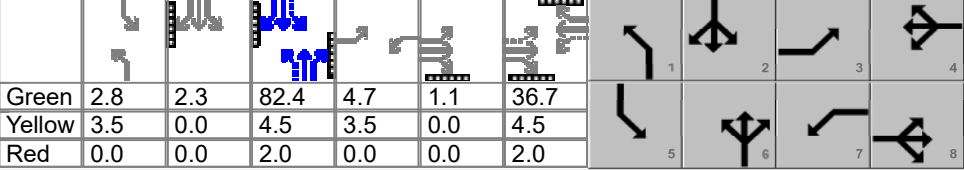
Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.8	2.3	82.4	4.7	1.1	36.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5			
				Red	0.0	0.0	2.0	0.0	0.0	2.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	3	8	7	4	1	6	5	2
Case Number	1.1	4.0	1.1	4.0	1.1	4.0	1.1	4.0
Phase Duration, s	9.3	44.3	8.2	43.2	6.3	88.9	8.6	91.2
Change Period, ( Y+R <sub>c</sub> ), s	3.5	6.5	3.5	6.5	3.5	6.5	3.5	6.5
Max Allow Headway ( MAH ), s	3.3	3.3	3.3	3.3	3.1	0.0	3.1	0.0
Queue Clearance Time ( g <sub>s</sub> ), s	6.2	41.8	5.3	40.7	3.5		5.2	
Green Extension Time ( g <sub>e</sub> ), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.94	1.00	0.89	1.00	0.81		0.98	
Max Out Probability	0.05	1.00	0.01	1.00	0.00		0.09	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate ( v ), veh/h	67	80		53	119		40	303	296	89	499	478
Adjusted Saturation Flow Rate ( s ), veh/h/ln	1767	1744		1767	1699		1739	1826	1770	1739	1826	1749
Queue Service Time ( g <sub>s</sub> ), s	4.2	5.3		3.3	8.4		1.5	7.1	7.2	3.2	13.1	13.1
Cycle Queue Clearance Time ( g <sub>c</sub> ), s	4.2	5.3		3.3	8.4		1.5	7.1	7.2	3.2	13.1	13.1
Green Ratio ( g/C )	0.30	0.27		0.29	0.26		0.58	0.58	0.58	0.61	0.60	0.60
Capacity ( c ), veh/h	128	463		115	438		353	1064	1032	525	1091	1045
Volume-to-Capacity Ratio ( X )	0.525	0.173		0.457	0.272		0.113	0.285	0.286	0.170	0.457	0.457
Back of Queue ( Q ), ft/ln ( 95 th percentile)	87.3	108.4		68.8	167.3		27.6	128.2	120.4	58.4	204	190.3
Back of Queue ( Q ), veh/ln ( 95 th percentile)	3.4	4.2		2.7	6.5		1.1	4.9	4.8	2.2	7.8	7.6
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.39	0.00		0.42	0.00		0.18	0.00	0.00	0.39	0.00	0.00
Uniform Delay ( d <sub>1</sub> ), s/veh	43.0	42.4		43.8	44.4		14.1	8.4	7.8	12.4	8.0	7.5
Incremental Delay ( d <sub>2</sub> ), s/veh	1.2	0.1		1.0	0.1		0.1	0.7	0.7	0.1	1.4	1.4
Initial Queue Delay ( d <sub>3</sub> ), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh	44.3	42.5		44.8	44.5		14.2	9.0	8.5	12.5	9.4	8.9
Level of Service ( LOS )	D	D		D	D		B	A	A	B	A	A
Approach Delay, s/veh / LOS	43.3		D	44.6		D	9.1		A	9.4		A
Intersection Delay, s/veh / LOS	14.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.91	B	1.90	B
Bicycle LOS Score / LOS	0.73	A	0.77	A	1.01	A	1.37	A

## HCS Signalized Intersection Intermediate Values

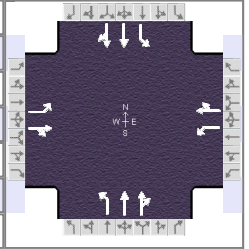
General Information					Intersection Information										
Agency	Eriksson Engineering				Duration, h	0.250									
Analyst	SBC	Analysis Date	12/8/2022		Area Type	Other									
Jurisdiction	DuPage/Naperville		Time Period	PM Peak		PHF	0.95								
Urban Street	Mill Street		Analysis Year	2028		Analysis Period	1 > 7:00								
Intersection	Baur Road		File Name	Mill 2028 PM.xus											
Project Description	2028 PM Peak Hour														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h				64	49	27	50	55	58	38	520	49	85	817	111
Signal Information															
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	Begin												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
				Green	2.8	2.3	82.4	4.7	1.1	36.7					
				Yellow	3.5	0.0	4.5	3.5	0.0	4.5					
				Red	0.0	0.0	2.0	0.0	0.0	2.0					
Saturation Flow / Delay				L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f <sub>w</sub> )				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles and Grade Factor (f <sub>HVg</sub> )				0.977	0.977	1.000	0.977	0.977	1.000	0.961	0.961	1.000	0.961	0.961	1.000
Parking Activity Adjustment Factor (f <sub>p</sub> )				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f <sub>bb</sub> )				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f <sub>a</sub> )				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f <sub>LU</sub> )				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f <sub>LT</sub> )				0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f <sub>RT</sub> )					0.940	0.940		0.915	0.915		0.970	0.970		0.958	0.958
Left-Turn Pedestrian Adjustment Factor (f <sub>LPB</sub> )				1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f <sub>RPB</sub> )						1.000			1.000			1.000			1.000
Work Zone Adjustment Factor (f <sub>wz</sub> )				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
DDI Factor (f <sub>DDI</sub> )				1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Prot. CAV Adj. Factor (f <sub>CAV,prot</sub> )				1.00			1.00			1.00			1.00		
Left-Turn Perm. CAV Adj. Factor (f <sub>CAV,perm</sub> )				1.00											
Movement Saturation Flow Rate (s), veh/h				1767	1124	620	1767	827	872	1739	3287	309	1739	3147	428
Proportion of Vehicles Arriving on Green (P)				0.05	0.27	0.27	0.04	0.26	0.26	0.03	0.78	0.78	0.04	0.80	0.80
Incremental Delay Factor (k)				0.04	0.04		0.04	0.04		0.04	0.50	0.50	0.04	0.50	0.50
Signal Timing / Movement Groups				EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R				
Lost Time (t <sub>L</sub> )				2.5	4.5	2.5	4.5	2.5	1.5	2.5	1.5				
Green Ratio (g/C)				0.30	0.27	0.29	0.26	0.58	0.58	0.61	0.60				
Permitted Saturation Flow Rate (s <sub>p</sub> ), veh/h/ln				1263	1257	1308	0	562	0	800	0				
Shared Saturation Flow Rate (s <sub>sh</sub> ), veh/h/ln															
Permitted Effective Green Time (g <sub>p</sub> ), s				38.3	26.5	37.7	0.0	83.4	0.0	85.2	0.0				
Permitted Service Time (g <sub>u</sub> ), s				0.0	0.0	0.0	0.0	69.6	0.0	76.2	0.0				
Permitted Queue Service Time (g <sub>ps</sub> ), s				0.0		0.0		1.1		1.1					
Time to First Blockage (g <sub>t</sub> ), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Queue Service Time Before Blockage (g <sub>fs</sub> ), s															
Protected Right Saturation Flow (s <sub>R</sub> ), veh/h/ln															
Protected Right Effective Green Time (g <sub>R</sub> ), s															
Multimodal				EB			WB			NB			SB		
Pedestrian F <sub>w</sub> / F <sub>v</sub>				1.557	0.000	1.557	0.000	1.198	0.000	1.198	0.000	1.198	0.000		
Pedestrian F <sub>s</sub> / F <sub>delay</sub>				0.000	0.150	0.000	0.151	0.000	0.109	0.000	0.109	0.000	0.106		
Pedestrian M <sub>corner</sub> / M <sub>cw</sub>				0.00		0.00		0.00		0.00		0.00			
Bicycle c <sub>b</sub> / d <sub>b</sub>				503.82	41.97	489.02	42.81	1098.65	15.23	1128.79	14.23				
Bicycle F <sub>w</sub> / F <sub>v</sub>				-3.64	0.24	-3.64	0.28	-3.64	0.53	-3.64	0.88				

# HCS Signalized Intersection Results Graphical Summary

## General Information

Agency	Eriksson Engineering			Duration, h	0.250
Analyst	SBC	Analysis Date	12/8/2022	Area Type	Other
Jurisdiction	DuPage/Naperville	Time Period	PM Peak	PHF	0.95
Urban Street	Mill Street	Analysis Year	2028	Analysis Period	1 > 7:00
Intersection	Baur Road	File Name	Mill 2028 PM.xus		
Project Description	2028 PM Peak Hour				

## Intersection Information



## Demand Information

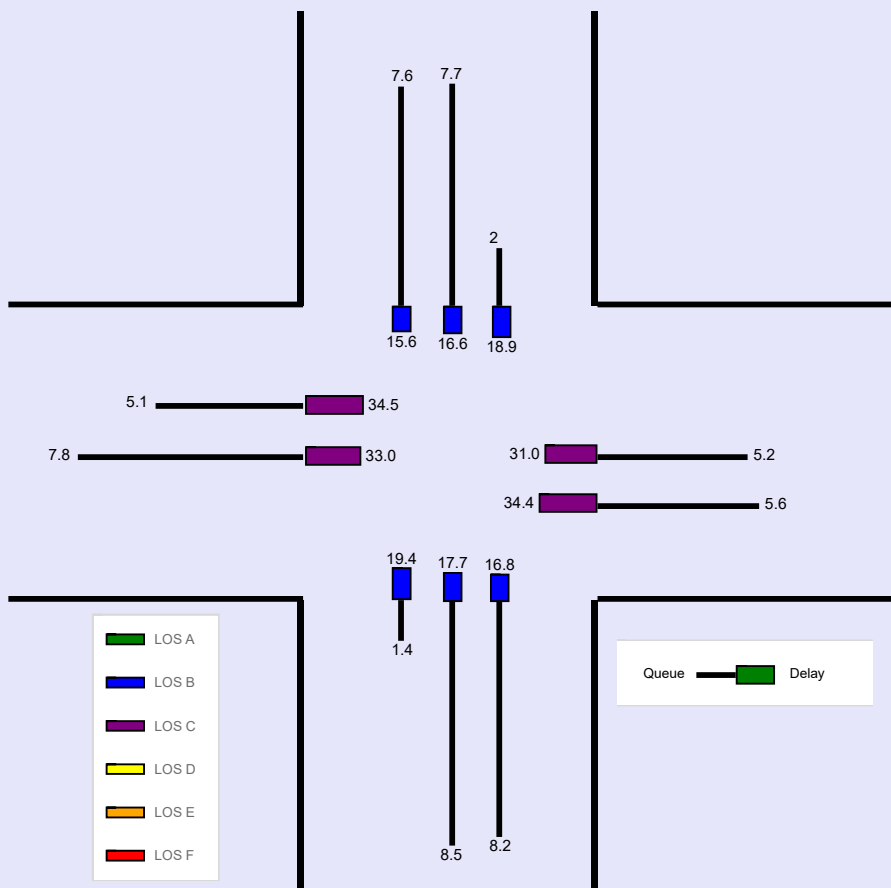
Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Demand ( v ), veh/h	64	49	27	50	55	58	38	520	49	85	817	111

## Signal Information

Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.8	2.3	82.4	4.7	1.1	36.7	[Signal Diagrams 1-4]		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	4.5	3.5	0.0	4.5	[Signal Diagrams 5-8]		
				Red	0.0	0.0	2.0	0.0	0.0	2.0			

## Movement Group Results

Approach Movement	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue ( Q ), ft/ln ( 95 th percentile)	87.3	108.4		68.8	167.3		27.6	128.2	120.4	58.4	204	190.3
Back of Queue ( Q ), veh/ln ( 95 th percentile)	3.4	4.2		2.7	6.5		1.1	4.9	4.8	2.2	7.8	7.6
Queue Storage Ratio ( RQ ) ( 95 th percentile)	0.39	0.00		0.42	0.00		0.18	0.00	0.00	0.39	0.00	0.00
Control Delay ( d ), s/veh	44.3	42.5		44.8	44.5		14.2	9.0	8.5	12.5	9.4	8.9
Level of Service ( LOS)	D	D		D	D		B	A	A	B	A	A
Approach Delay, s/veh / LOS	43.3		D	44.6		D	9.1		A	9.4		A
Intersection Delay, s/veh / LOS	14.8						B					



**--- Messages ---**

No errors or warnings exist.

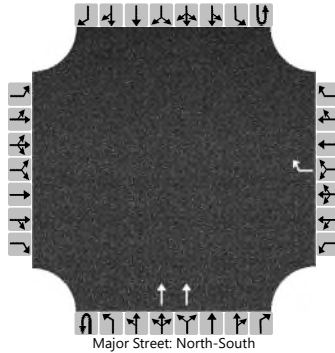
**--- Comments ---**



# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	SBC			Intersection	Mill Street/Site Right-out Dr		
Agency/Co.	Eriksson Engineering			Jurisdiction	DuPage DOT/Naperville		
Date Performed	12/8/2022			East/West Street	Townhome Right-out Drive		
Analysis Year	2028			North/South Street	Mill Street		
Time Analyzed	AM Peak Hour			Peak Hour Factor	0.82		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Baur Mill Townhomes						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	0	2	0	0	0	0
Configuration								R			T					
Volume (veh/h)								1			643					
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type   Storage								Left Only								1

## Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

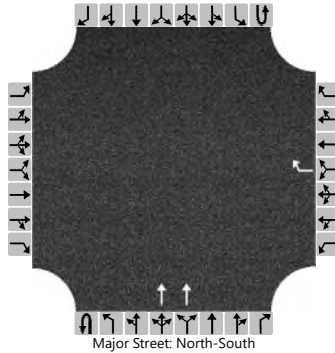
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								1								
Capacity, c (veh/h)								604								
v/c Ratio								0.00								
95% Queue Length, Q <sub>95</sub> (veh)								0.0								
Control Delay (s/veh)								11.0								
Level of Service (LOS)								B								
Approach Delay (s/veh)								11.0								
Approach LOS								B								

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst	SBC			Intersection	Mill Street/Site Right-out Dr		
Agency/Co.	Eriksson Engineering			Jurisdiction	DuPage DOT/Naperville		
Date Performed	12/8/2022			East/West Street	Townhome Right-out Drive		
Analysis Year	2028			North/South Street	Mill Street		
Time Analyzed	PM Peak Hour			Peak Hour Factor	0.95		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	Baur Mill Townhomes						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	0	2	0	0	0	0
Configuration								R				T				
Volume (veh/h)								1				642				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)								0								
Right Turn Channelized								No								
Median Type   Storage								Left Only								1

## Critical and Follow-up Headways

Base Critical Headway (sec)								6.9								
Critical Headway (sec)								6.96								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.33								

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								1								
Capacity, c (veh/h)								655								
v/c Ratio								0.00								
95% Queue Length, Q <sub>95</sub> (veh)								0.0								
Control Delay (s/veh)								10.5								
Level of Service (LOS)								B								
Approach Delay (s/veh)								10.5								
Approach LOS								B								