



LSC TRANSPORTATION CONSULTANTS, INC.

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January 11, 2021

Mr. Mike Lovick  
Cherry Creek School District  
4850 S. Yosemite Street  
Greenwood Village, CO 80111

Re: Cherry Creek Elementary  
School No. 45  
Aurora, CO  
LSC #200810

Dear Mr. Lovick:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Cherry Creek Elementary School No. 45. As shown on Figure 1, the site is located south of Valleyhead Way and west of S. Blackstone Parkway in Aurora, Colorado.

## **REPORT CONTENTS**

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected long-term background and resulting total traffic volumes on the area roadways; recommendations to mitigate growth in background traffic and the impact of the proposed school.

## **LAND USE AND ACCESS**

The site is proposed as a 650-student K-6 Elementary School. On opening day (2022), the site is expected to have about 300 students mostly from within the Blackstone development. At buildout, the school is expected to reach 650 students drawing from the Serenity Ridge and future Butterfield developments. Full movement student drop-off/pick-up access is proposed to S. Blackstone Parkway and a bus loop is proposed on S. Valleyhead Way. Figure 2 shows the conceptual site plan.

The January, 2003 *High Plains Country Club TIA* (Master TIA) by LSC was completed for the overall Blackstone development and assumed a 300-student elementary school on the site.

## **ROADWAY AND TRAFFIC CONDITIONS**

### **Area Roadways**

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **S. Blackstone Parkway** is a north-south, two-lane divided collector roadway east of the site. The intersection with S. Valleyhead Way/E. Links Place is stop-sign controlled. The posted speed limit in the vicinity of the site is 25 mph. The through lanes in each direction are about 16 feet wide.
- **S. Valleyhead Way/E. Links Place** is an east-west, two-lane local roadway north of the site. The intersection with S. Blackstone Parkway is stop-sign controlled. No speed limit is posted.

### Existing Traffic Conditions

Figure 3 shows the November, 2020 existing daily traffic volumes in the site's vicinity on a typical weekday. The weekday peak-hour traffic and daily traffic volumes are from the attached traffic counts conducted by Counter Measures in November, 2020. These volumes were collected during the ongoing pandemic so adjustments were made as noted in Figure 4.

### 2022 and 2041 Background Traffic

Figure 4 shows the estimated 2022 and 2041 background traffic. The daily volumes were estimated based on the Master TIA less school trips. The peak-hour side road traffic volumes were estimated based on the number of homes served by each and the through traffic volumes were estimated based on the average daily traffic and the relationship between daily and peak-hour traffic for a single-family home.

### 2022 and 2041 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for unsignalized intersections.

The intersections in the study area were analyzed to determine the 2022 and 2040 background levels of service using Synchro. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **S. Blackstone Parkway/S. Valleyhead Way/E. Links Place:** All movements at this stop-sign controlled intersection are expected to operate at LOS "A" during all three peak-hours through 2041.
- **S. Blackstone Parkway/E. Long Place:** All movements at this stop-sign controlled intersection are expected to operate at LOS "A" during all three peak-hours through 2041.

### TRIP GENERATION

Table 2 shows the estimated typical weekday, morning peak-hour, and afternoon peak-hour trip generation for the expansion based on the rates from *Trip Generation, 10<sup>th</sup> Edition*, 2017, by the Institute of Transportation Engineers (ITE).

In Phase 1 (2022) with 300 students, the site is projected to generate about 567 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 109 vehicles would enter and about 92 vehicles would exit the site. During the afternoon school peak-hour, which generally occurs for one hour between 2:00 and 4:00 p.m., about 46 vehicles would enter and about 56 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:30 p.m., about 24 vehicles would enter and about 27 vehicles would exit the site.

At full capacity with 650 students, the site is projected to generate about 1,210 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 232 vehicles would enter and about 197 vehicles would exit the site. During the afternoon school peak-hour, which generally occurs for one hour between 2:00 and 4:00 p.m., about 98 vehicles would enter and about 120 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:30 p.m., about 52 vehicles would enter and about 57 vehicles would exit the site.

### **TRIP DISTRIBUTION**

Figure 5 shows the estimated short-term and long-term directional distribution of the site-generated traffic volumes on the area roadways. These estimates were based on the location of the site with respect to the estimated overall service area for the school.

### **TRIP ASSIGNMENT**

Figure 6a shows the estimated 2022 site-generated traffic volumes based on the 2022 directional distribution percentages (from Figure 5) and the 2022 trip generation estimate (from Table 2).

Figure 6b shows the estimated 2041 site-generated traffic volumes based on the 2041 directional distribution percentages (from Figure 5) and the buildout trip generation estimate (from Table 2).

### **2022 AND 2041 TOTAL TRAFFIC**

Figure 7 shows the estimated 2022 weekday total traffic which is the sum of the 2022 background traffic volumes (from Figure 4) and the 2022 site-generated traffic volumes (from Figure 6a).

Figure 8 shows the estimated 2041 weekday total traffic which is the sum of the 2041 background traffic volumes (from Figure 4) and the 2041 site-generated traffic volumes (from Figure 6b).

### **PROJECTED LEVELS OF SERVICE**

The intersections in the study area were analyzed to determine the 2022 and 2041 total levels of service. Table 1 shows the level of service analysis results. The level of service reports are attached.

- **S. Blackstone Parkway/S. Valleyhead Way/E. Links Place:** All movements at this stop-sign controlled intersection are expected to operate at LOS “B” or better during all three peak-hours through 2041.
- **S. Blackstone Parkway/E. Long Place/Site Access:** All movements at this stop-sign controlled intersection are expected to operate at LOS “D” or better during all three peak-hours through 2041.

## **INTERNAL SIGNING AND STRIPING DETAILS**

The internal signing and striping details are included in the detailed site plan separate from the traffic study.

## **PEDESTRIAN ACCOMMODATIONS**

A significant number of students are expected to walk to school from the east side of S. Blackstone Parkway. An east-west marked crosswalk with a pedestrian-activated rectangular rapid flashing beacon (RRFB) is recommended on the north leg of the S. Blackstone Parkway/Valleyhead Way/E. Links Place intersection. The school should provide an experienced crossing guard at the location to assist students with crossing S. Blackstone Parkway. The width of the raised median will require two separate RRFB installations and two crossing guards (one for each RRFB).

## **POTENTIAL IMPACTS OF QUEUING**

### **Vehicles Entering the Site**

The school will manage drop-off/pick-up operations to reduce the likelihood of backups onto S. Blackstone Parkway. The raised median on S. Blackstone Parkway combined with the existing 16-foot wide travel lanes will result in any backups out of the site to effectively block through traffic on S. Blackstone Parkway. Auxiliary turn lanes are recommended as detailed in the section below.

### **Vehicles Exiting The Site**

The site is proposed to have separate left/through and right-turn lanes exiting onto S. Blackstone Parkway. The school may need to require exiting traffic to only turn right onto S. Blackstone Parkway to increase the release rate from the site.

## **AUXILIARY TURN LANES ON S. BLACKSTONE PARKWAY**

A northbound left-turn lane is recommended on S. Blackstone Parkway to reduce the likelihood of queue spillback out of the site which would block northbound through traffic. The recommended length is 150 feet plus a 75-foot transition taper. The existing northbound lane is about 16 feet wide so only about 8 feet of widening into the median should be needed to provide separate 12-foot northbound left and northbound through/right lanes.

A southbound right-turn lane is recommended on S. Blackstone Parkway to reduce the likelihood of queue spillback out of the site which would block southbound through traffic. The re-

commended length is 225 feet plus a 75-foot transition taper. The existing southbound lane is about 16 feet wide so only about 8 feet of widening into the median should be needed to provide separate 12-foot southbound left/through and southbound right lanes.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Trip Generation**

1. In Phase 1 (2022) with 300 students, the site is projected to generate about 567 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 109 vehicles would enter and about 92 vehicles would exit the site. During the afternoon school peak-hour, about 46 vehicles would enter and about 56 vehicles would exit the site. During the afternoon peak-hour, about 24 vehicles would enter and about 27 vehicles would exit the site.
2. At full capacity with 650 students, the site is projected to generate about 1,210 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 232 vehicles would enter and about 197 vehicles would exit the site. During the afternoon school peak-hour, about 98 vehicles would enter and about 120 vehicles would exit the site. During the afternoon peak-hour, about 52 vehicles would enter and about 57 vehicles would exit the site.

### **Projected Levels of Service**

3. All movements at the intersections analyzed are expected to operate at LOS "B" or better through 2041 with the following exception: The eastbound left/through movement at the S. Blackstone Parkway/E. Long Place/Site Access intersection is expected to operate at LOS "D" in the 2041 morning peak-hour once the site reaches capacity. It may be appropriate to force drivers to turn right onto S. Blackstone Parkway to reduce backups into the site.

### **Conclusions**

4. The impact of the proposed Cherry Creek Elementary School No. 45 can be accommodated by the existing and planned roadway network with the following recommendations.

### **Recommendations**

5. The main access approach to S. Blackstone Parkway should have separate left/through and right-turn lanes as shown in Figure 2.
6. A northbound left-turn lane is recommended on S. Blackstone Parkway to reduce the likelihood of queue spillback out of the site which would block northbound through traffic. The recommended length is 150 feet plus a 75-foot transition taper. The existing northbound lane is about 16 feet wide so only about 8 feet of widening into the median should be needed to provide separate 12-foot northbound left and northbound through/right lanes. Coordination will be needed with the HOA because the HOA owns the median within S. Blackstone Parkway.

7. A southbound right-turn lane is recommended on S. Blackstone Parkway to reduce the likelihood of queue spillback out of the site which would block southbound through traffic. The recommended length is 225 feet plus a 75-foot transition taper. The existing southbound lane is about 16 feet wide so only about 8 feet of widening into the median should be needed to provide separate 12-foot southbound left/through and southbound right lanes.
8. A significant number of students are expected to walk to school from the east side of S. Blackstone Parkway. An east-west marked crosswalk with a pedestrian-activated rectangular rapid flashing beacon (RRFB) is recommended on the north leg of the S. Blackstone Parkway/Valleyhead Way/E. Links Place intersection. The school should provide an experienced crossing guard at the location to assist students with crossing S. Blackstone Parkway. The width of the raised median will require two separate RRFB installations and two crossing guards (one for each RRFB).

\* \* \* \* \*

We trust our findings will assist you in gaining approval of the proposed Cherry Creek Elementary School No. 45 development. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By   
Christopher S. McGranahan, PE, PTOE  
Principal

CSM/wc

1-11-21

Enclosures: Tables 1 and 2  
Figures 1 - 8  
Traffic Counts  
Level of Service Definitions  
Level of Service Reports

**Table 1**  
**Intersection Levels of Service Analysis**  
**Cherry Creek Elementary School #45**  
**Aurora, CO**  
**LSC #200810; January, 2021**

Intersection Location	Traffic Control	2022 Background Traffic			2022 Total Traffic			2041 Background Traffic			2041 Total Traffic		
		Level of Service AM	Level of Service School PM	Level of Service PM	Level of Service AM	Level of Service School PM	Level of Service PM	Level of Service AM	Level of Service School PM	Level of Service PM	Level of Service AM	Level of Service School PM	Level of Service PM
<u>S. Blackstone Parkway/S. Valleyhead Way/E. Links Place</u>	TWSC												
NB Approach		A	A	A	A	A	A	A	A	A	A	A	A
EB Approach		A	A	A	A	A	A	A	A	A	B	A	A
WB Approach		A	A	A	A	A	A	A	A	A	A	A	A
SB Approach		A	A	A	A	A	A	A	A	A	A	A	A
Critical Movement Delay		9.2	9.0	9.5	9.8	9.2	9.7	9.2	9.0	9.5	10.9	9.7	9.9
<u>S. Blackstone Parkway/E. Long Place</u>	TWSC												
NB Approach		--	--	--	A	A	A	--	--	--	A	A	A
EB Left/Through		--	--	--	B	B	B	--	--	--	D	B	B
EB Right		--	--	--	A	A	A	--	--	--	B	A	A
WB Approach		A	A	A	B	A	A	A	A	A	B	B	A
SB Approach		A	A	A	A	A	A	A	A	A	A	A	A
Critical Movement Delay		8.8	8.7	8.8	13.1	10.4	10.1	8.8	8.7	8.8	33.2	12.3	11.0

**Table 2**  
**ESTIMATED TRAFFIC GENERATION**  
**Cherry Creek Elementary School #45**  
**Aurora, CO**  
**LSC #200810; January, 2021**

Trip Generating Category	Quantity	Trip Generation Rates <sup>(1)</sup>							Vehicle-Trips Generated						
		Average Weekday	AM Peak-Hour		PM School Peak-Hour		PM Peak-Hour		Average Weekday	AM Peak-Hour		PM School Peak-Hour		PM Peak-Hour	
			In	Out	In	Out	In	Out		In	Out	In	Out	In	Out
<b>PHASE 1 (2022)</b>															
Elementary School <sup>(2)</sup>	300 Students	1.89	0.362	0.308	0.153	0.187	0.082	0.088	567	109	92	46	56	24	27
<b>BUILDOUT</b>															
Elementary School <sup>(2)</sup>	640 Students	1.89	0.362	0.308	0.153	0.187	0.082	0.088	1,210	232	197	98	120	52	57

Notes:

(1) Source: *Trip Generation*, Institute of Transportation Engineers, 10th Edition, 2017.

(2) ITE Land Use No. 520 - Elementary School



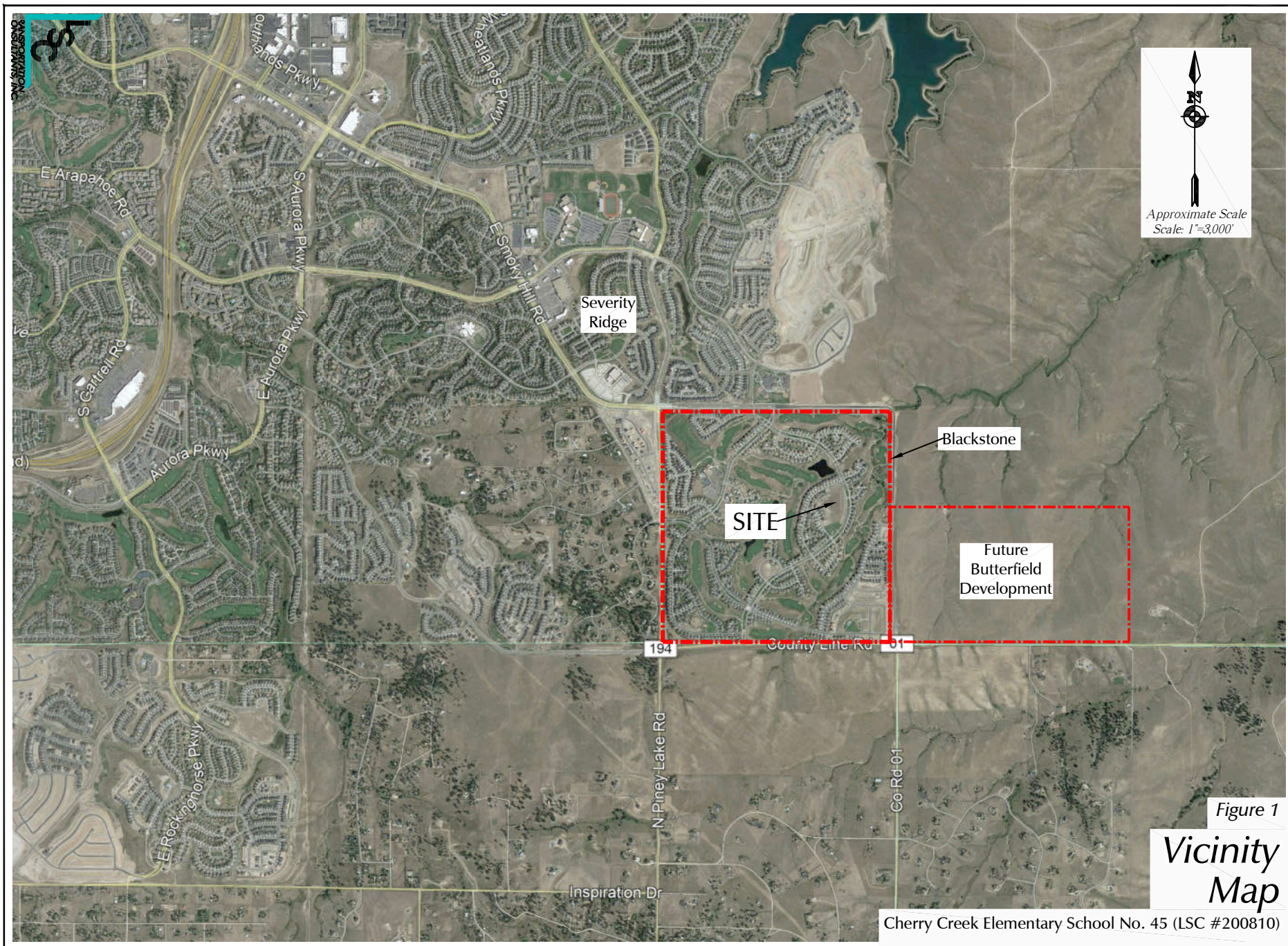


Figure 1

## Vicinity Map



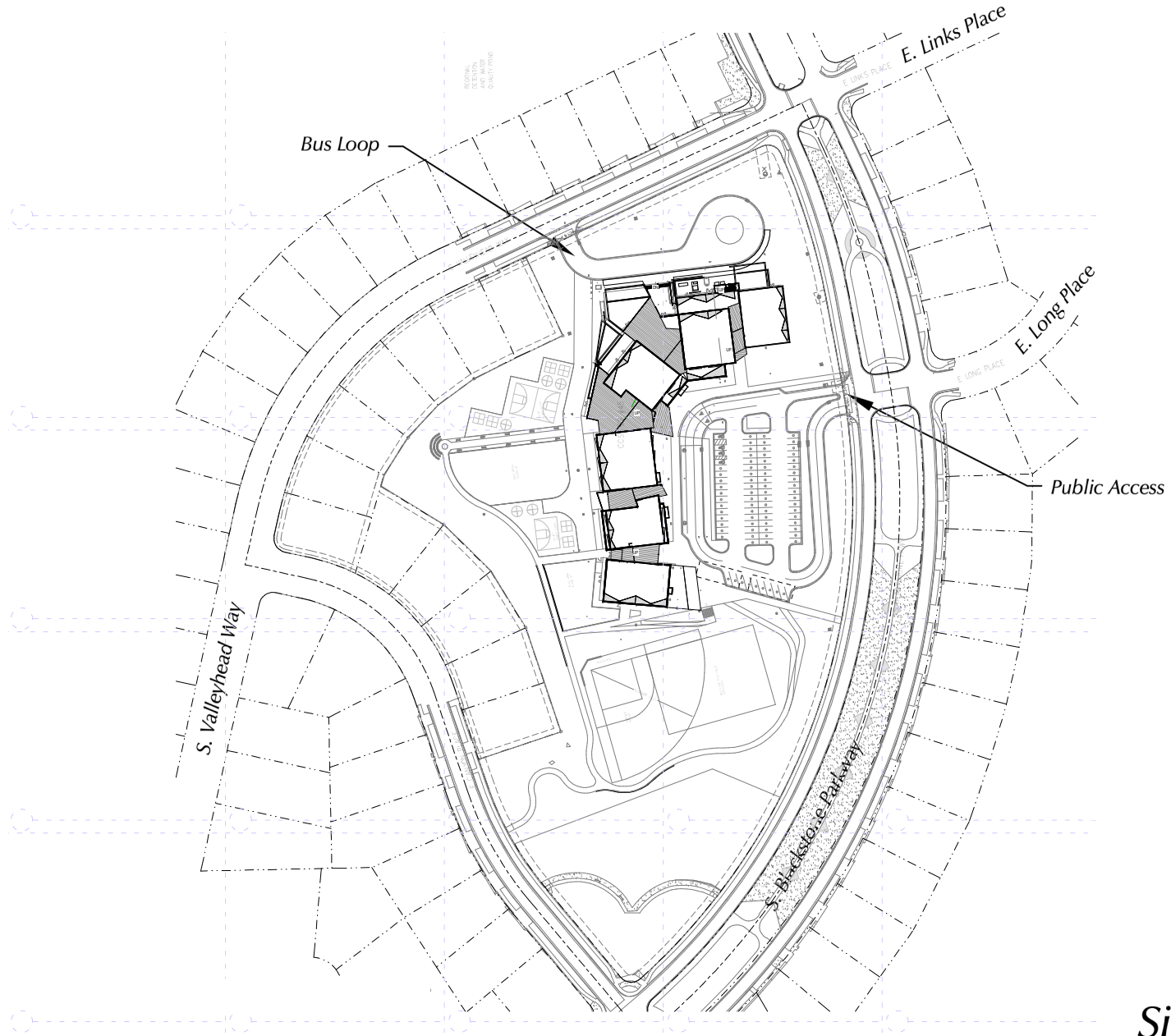


Figure 2

## Site Plan

Cherry Creek Elementary School No. 45 (LSC #200810)

- ① West of Jamison Circle  
 11/17/20 = 1,285vpd  
 11/18/20 = 1,339vpd  
 11/19/20 = 1,238vpd  
 Average = 1,287vpd  
 Assume = 1,300vpd
- ② South of Kettle Place  
 11/17/20 = 1,092vpd  
 11/18/20 = 1,124vpd  
 11/19/20 = 1,106vpd  
 Average = 1,107vpd  
 Assume = 1,120vpd
- ③ North of Canyon Place  
 11/17/20 = 510vpd  
 11/18/20 = 555vpd  
 11/19/20 = 540vpd  
 Average = 535vpd  
 Assume = 550vpd
- ④ North of County Line Road  
 11/17/20 = 443vpd  
 11/18/20 = 493vpd  
 11/19/20 = 513vpd  
 Average = 483vpd  
 Assume = 500vpd

 = Posted Speed Limit (mph)



Approximate Scale  
 Scale: 1"=1,200'

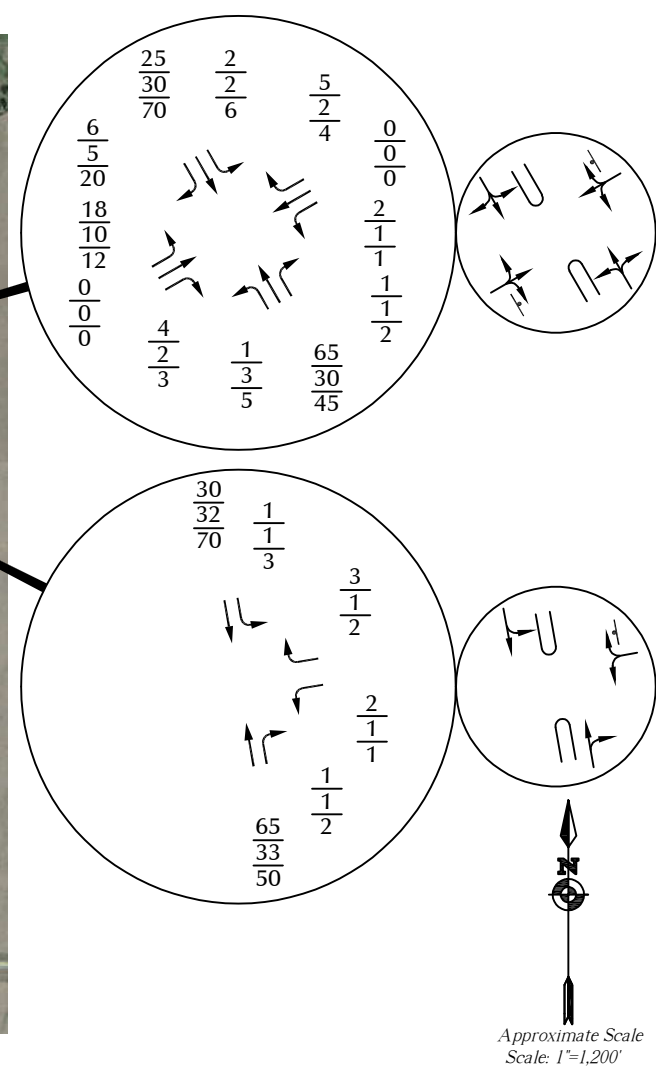
Note: These volumes were collected during the ongoing pandemic so will be adjusted as noted in Figure 4.

## Existing November, 2020 Daily Traffic Volumes

Cherry Creek Elementary School No. 45 (LSC #200810)

Figure 3





LEGEND:

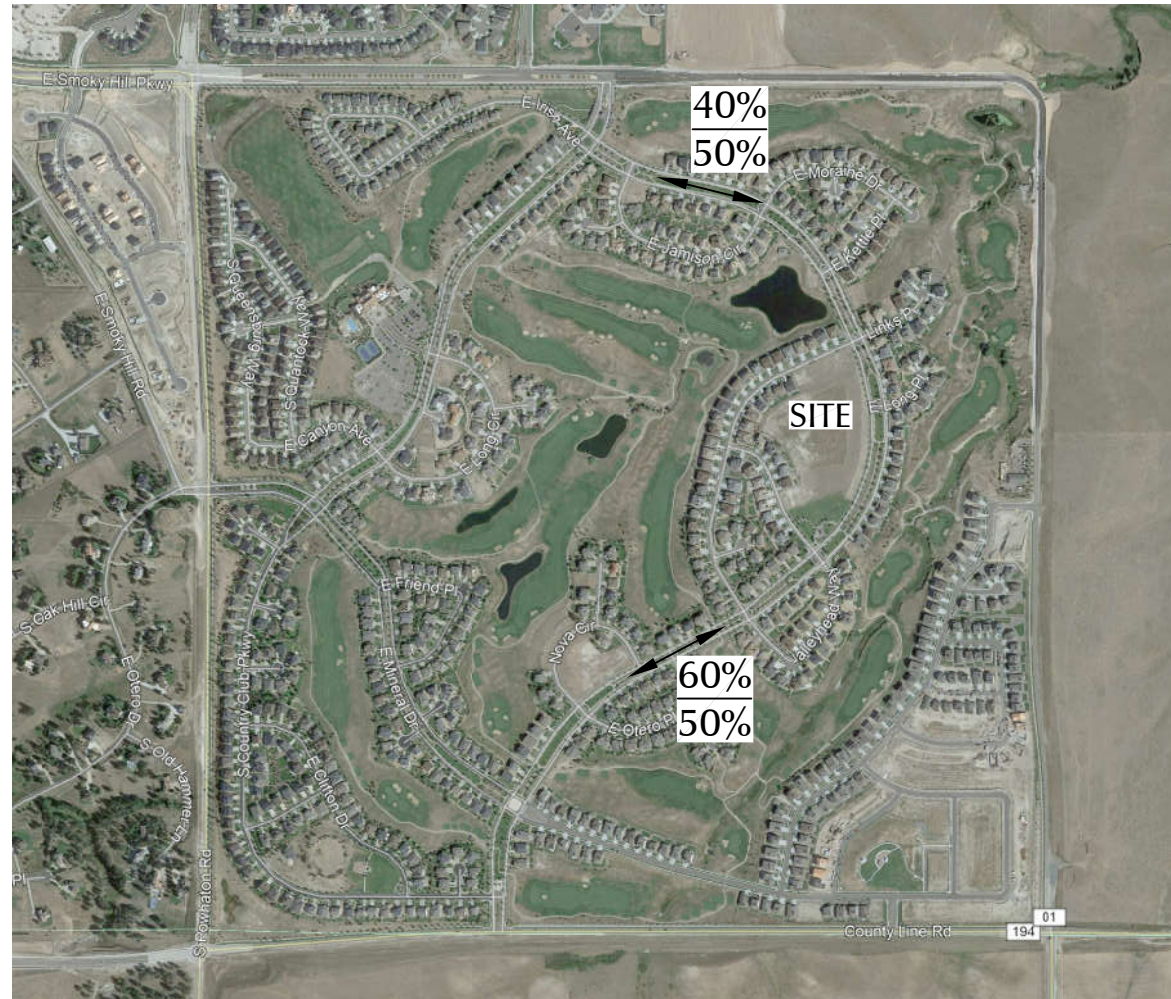
- ┃ = Stop Sign
- $\frac{26}{35}$  = AM Peak Hour Traffic / PM School Peak Hour Traffic
- $\frac{28}{28}$  = PM Peak Hour Traffic
- 1,000 = Average Daily Traffic

Note: The sideroad volumes were estimated based on the number of homes served by each and the through traffic volumes were estimated based on the average daily traffic and the relationship between daily and peak hour traffic from single family homes.

## 2022 and 2041 Background Traffic, Lane Geometry and Traffic Control

Cherry Creek Elementary School No. 45 (LSC #200810)

Figure 4



Approximate Scale  
Scale: 1"=1,200'

Note: 2022 assumes 300 students from within the Blackstone boundary and 2041 assumes the balance of the 350 students coming from either the future Butterfield development to the east (80%) or the existing Serenity Ridge development to the northwest (20%).

LEGEND:

$\frac{5\%}{5\%} = \frac{2022 \text{ Percent Directional Distribution}}{2041 \text{ Percent Directional Distribution}}$

Figure 5

## Directional Distribution of Site-Generated Traffic

Cherry Creek Elementary School No. 45 (LSC #200810)





Note: Assumes 300 students all from within the Blackstone development.

# LEGEND:

$\frac{26}{35}$	AM Peak Hour Traffic
$\frac{35}{28}$	= PM School Peak Hour Traffic
$\frac{28}{1,000}$	PM Peak Hour Traffic
1,000	= Average Daily Traffic

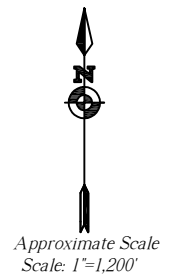
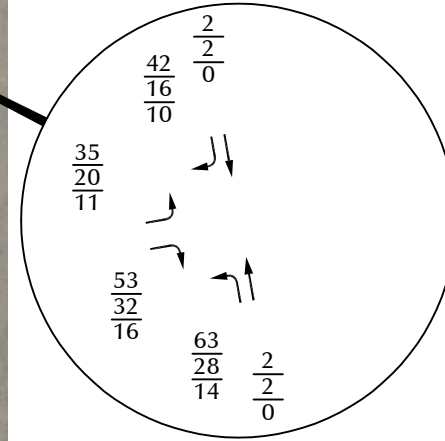
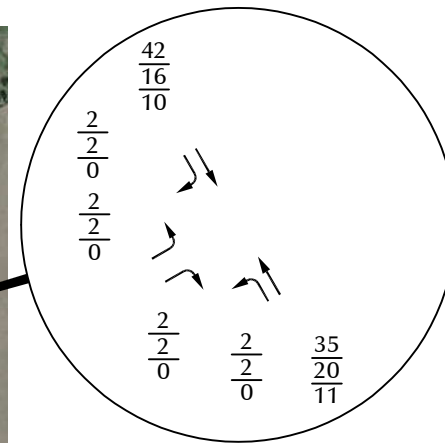


Figure 6a

## 2022 Assignment of Site-Generated Traffic

Cherry Creek Elementary School No. 45 (LSC #200810)



Note: Assumes 650 students from the Backstone development, the future Butterfield development to the east and the existing Seventy development to the northwest.

LEGEND:

$\frac{26}{35}$	AM Peak Hour Traffic
$\frac{35}{28}$	= PM School Peak Hour Traffic
$\frac{28}{1,000}$	PM Peak Hour Traffic
1,000	= Average Daily Traffic

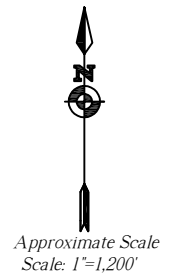
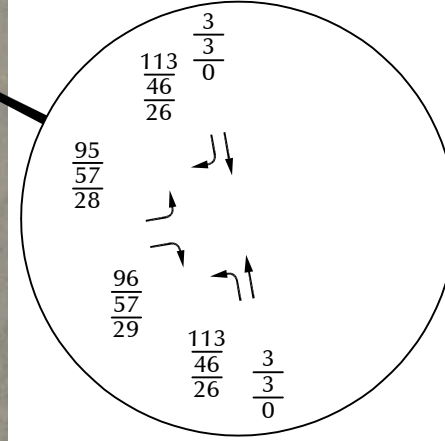
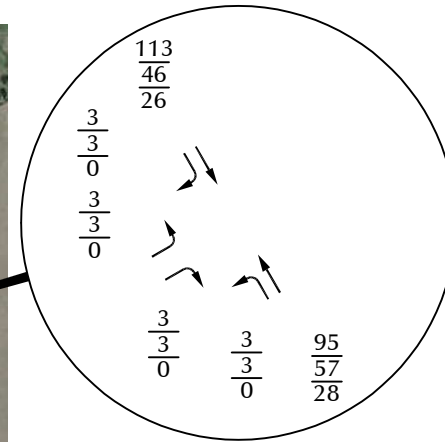
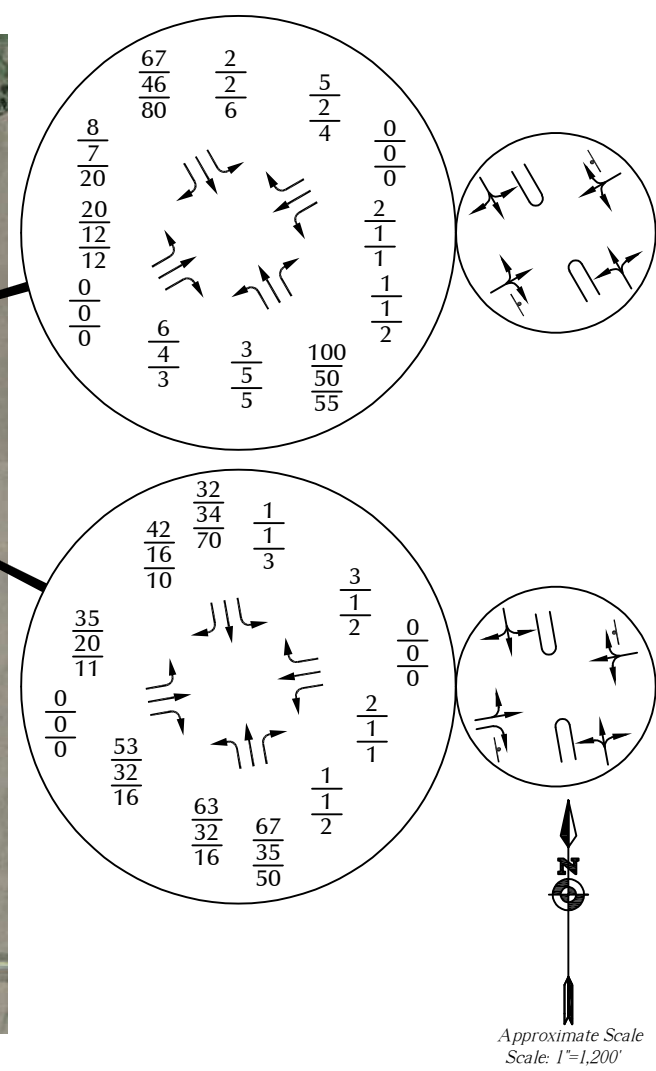


Figure 6b

## 2041 Assignment of Site-Generated Traffic

Cherry Creek Elementary School No. 45 (LSC #200810)



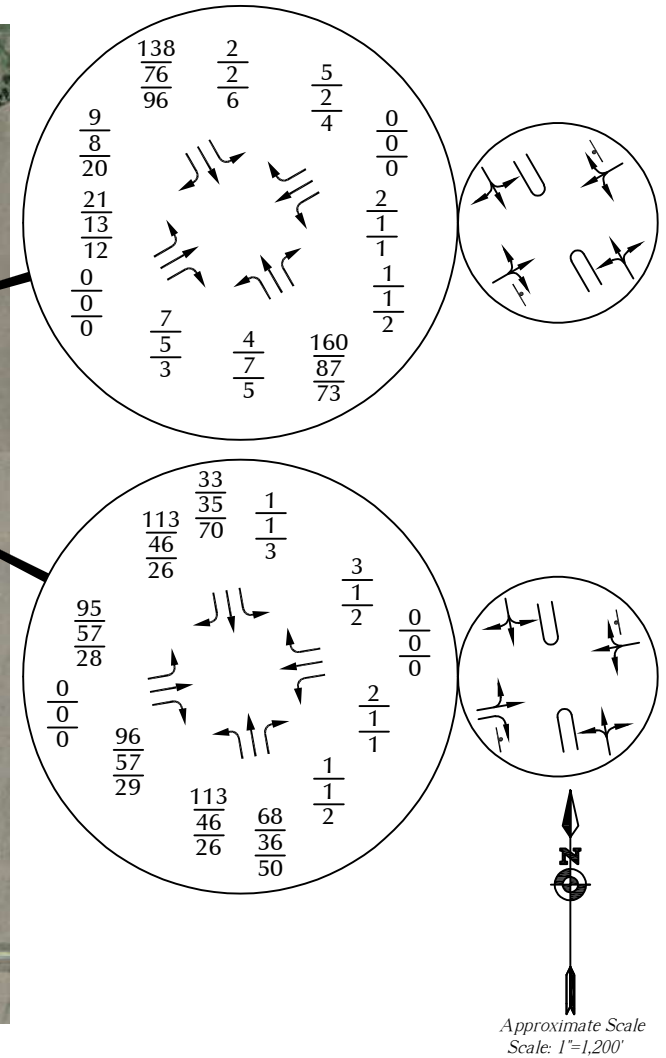


LEGEND:

- └ = Stop Sign
- $\frac{26}{35}$  = AM Peak Hour Traffic / PM School Peak Hour Traffic
- $\frac{28}{28}$  = PM Peak Hour Traffic
- 1,000 = Average Daily Traffic

Figure 7  
**Year 2022 Total Traffic,  
Lane Geometry and Traffic Control**  
Cherry Creek Elementary School No. 45 (LSC #200810)





## LEGEND:

⊥ = Stop Sign

$\frac{26}{35}$  = AM Peak Hour Traffic  
 $\frac{28}{35}$  = PM School Peak Hour Traffic  
 $\frac{28}{28}$  = PM Peak Hour Traffic

1,000 = Average Daily Traffic

Figure 8

## Year 2041 Total Traffic, Lane Geometry and Traffic Control

Cherry Creek Elementary School No. 45 (LSC #200810)

BLACKSTONE PKWY N/O CANYON PL  
 City: AURORA  
 County: ARAPAHOE  
 Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201613  
 Station ID: 201613

Start Time	17-Nov-20 Tue	NORTHBOU	SOUTHBOU								Total
12:00 AM		0	0								0
01:00		0	0								0
02:00		0	0								0
03:00		0	0								0
04:00		3	0								3
05:00		5	2								7
06:00		8	2								10
07:00		13	16								29
08:00		16	26								42
09:00		15	14								29
10:00		14	16								30
11:00		21	14								35
12:00 PM		23	19								42
01:00		12	14								26
02:00		21	12								33
03:00		24	19								43
04:00		22	28								50
05:00		19	24								43
06:00		16	18								34
07:00		12	13								25
08:00		4	11								15
09:00		2	3								5
10:00		3	1								4
11:00		1	4								5
Total		254	256								510
Percent		49.8%	50.2%								
AM Peak	-	11:00	08:00	-	-	-	-	-	-	-	08:00
Vol.	-	21	26	-	-	-	-	-	-	-	42
PM Peak	-	15:00	16:00	-	-	-	-	-	-	-	16:00
Vol.	-	24	28	-	-	-	-	-	-	-	50

BLACKSTONE PKWY N/O CANYON PL  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201613  
Station ID: 201613

Start Time	18-Nov-20 Wed	NORTHBOU	SOUTHBOU							Total
12:00 AM		0	0							0
01:00		0	0							0
02:00		0	0							0
03:00		1	0							1
04:00		0	1							1
05:00		4	1							5
06:00		8	0							8
07:00		11	12							23
08:00		20	20							40
09:00		18	10							28
10:00		26	22							48
11:00		18	17							35
12:00 PM		26	19							45
01:00		21	17							38
02:00		24	14							38
03:00		24	20							44
04:00		31	26							57
05:00		27	34							61
06:00		15	15							30
07:00		10	10							20
08:00		7	14							21
09:00		3	3							6
10:00		3	1							4
11:00		0	2							2
Total		297	258							555
Percent		53.5%	46.5%							
AM Peak	-	10:00	10:00	-	-	-	-	-	-	10:00
Vol.	-	26	22	-	-	-	-	-	-	48
PM Peak	-	16:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	31	34	-	-	-	-	-	-	61

BLACKSTONE PKWY N/O CANYON PL  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201613  
Station ID: 201613

Start Time	19-Nov-20 Thu	NORTHBOU	SOUTHBOU							Total
12:00 AM		0	0							0
01:00		0	0							0
02:00		0	0							0
03:00		1	1							2
04:00		1	0							1
05:00		2	1							3
06:00		8	2							10
07:00		13	15							28
08:00		19	9							28
09:00		21	20							41
10:00		20	18							38
11:00		15	18							33
12:00 PM		19	19							38
01:00		15	16							31
02:00		28	19							47
03:00		25	21							46
04:00		33	36							69
05:00		19	21							40
06:00		16	24							40
07:00		8	11							19
08:00		2	5							7
09:00		10	6							16
10:00		2	0							2
11:00		0	1							1
Total		277	263							540
Percent		51.3%	48.7%							
AM Peak	-	09:00	09:00	-	-	-	-	-	-	09:00
Vol.	-	21	20	-	-	-	-	-	-	41
PM Peak	-	16:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	33	36	-	-	-	-	-	-	69
Grand Total		828	777							1605
Percent		51.6%	48.4%							
ADT		ADT 535	AADT 535							

Location: BLACKSTONE PKWY N/O COUNTY LINE RD  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201620  
Station ID: 201620

Start Time	17-Nov-20 Tue	NORTHBOU	SOUTHBOU							Total
12:00 AM		1	0							1
01:00		0	0							0
02:00		0	0							0
03:00		0	0							0
04:00		0	0							0
05:00		0	3							3
06:00		0	12							12
07:00		8	22							30
08:00		9	20							29
09:00		18	16							34
10:00		16	24							40
11:00		14	15							29
12:00 PM		14	13							27
01:00		10	10							20
02:00		20	26							46
03:00		20	12							32
04:00		13	26							39
05:00		16	15							31
06:00		25	12							37
07:00		10	3							13
08:00		7	2							9
09:00		3	1							4
10:00		5	0							5
11:00		0	2							2
Total		209	234							443
Percent		47.2%	52.8%							
AM Peak	-	09:00	10:00	-	-	-	-	-	-	10:00
Vol.	-	18	24	-	-	-	-	-	-	40
PM Peak	-	18:00	14:00	-	-	-	-	-	-	14:00
Vol.	-	25	26	-	-	-	-	-	-	46

Location: BLACKSTONE PKWY N/O COUNTY LINE RD  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201620  
Station ID: 201620

Start Time	18-Nov-20 Wed	NORTHBOU	SOUTHBOU							Total
12:00 AM		0	1							1
01:00		0	1							1
02:00		0	0							0
03:00		0	0							0
04:00		0	1							1
05:00		0	0							0
06:00		3	11							14
07:00		7	22							29
08:00		15	22							37
09:00		8	15							23
10:00		13	10							23
11:00		9	20							29
12:00 PM		23	10							33
01:00		20	25							45
02:00		12	28							40
03:00		28	32							60
04:00		28	26							54
05:00		26	22							48
06:00		12	10							22
07:00		8	5							13
08:00		10	2							12
09:00		4	0							4
10:00		2	2							4
11:00		0	0							0
Total		228	265							493
Percent		46.2%	53.8%							
AM Peak	-	08:00	07:00	-	-	-	-	-	-	08:00
Vol.	-	15	22	-	-	-	-	-	-	37
PM Peak	-	15:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	28	32	-	-	-	-	-	-	60

Location: BLACKSTONE PKWY N/O COUNTY LINE RD  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
1889 YORK STREET  
DENVER, COLORADO 80206  
303-333-7409

Site Code: 201620  
Station ID: 201620

Start Time	19-Nov-20	NORTHBOU	SOUTHBOU								Total
12:00 AM		1	0								1
01:00		0	1								1
02:00		0	0								0
03:00		0	3								3
04:00		0	0								0
05:00		0	3								3
06:00		3	8								11
07:00		11	25								36
08:00		10	18								28
09:00		18	20								38
10:00		10	20								30
11:00		10	17								27
12:00 PM		18	26								44
01:00		14	16								30
02:00		14	20								34
03:00		18	30								48
04:00		27	30								57
05:00		23	26								49
06:00		22	14								36
07:00		8	6								14
08:00		10	2								12
09:00		6	2								8
10:00		2	0								2
11:00		0	1								1
Total		225	288								513
Percent		43.9%	56.1%								
AM Peak	-	09:00	07:00	-	-	-	-	-	-	09:00	
Vol.	-	18	25	-	-	-	-	-	-	38	
PM Peak	-	16:00	15:00	-	-	-	-	-	-	16:00	
Vol.	-	27	30	-	-	-	-	-	-	57	
Grand Total		662	787								1449
Percent		45.7%	54.3%								
ADT		ADT 483	AADT 483								

Location: BLACKSTONE PKWY N/O JAMISON CIRCLE  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201601  
Station ID: 201601

Start Time	17-Nov-20 Tue	NORTHBOU	SOUTHBOU							Total
12:00 AM		0	0							0
01:00		0	0							0
02:00		0	0							0
03:00		2	0							2
04:00		4	1							5
05:00		14	1							15
06:00		32	3							35
07:00		56	24							80
08:00		49	30							79
09:00		36	24							60
10:00		41	28							69
11:00		49	34							83
12:00 PM		59	49							108
01:00		38	36							74
02:00		58	34							92
03:00		59	50							109
04:00		66	73							139
05:00		45	76							121
06:00		39	44							83
07:00		26	39							65
08:00		4	18							22
09:00		11	8							19
10:00		6	7							13
11:00		4	8							12
Total		698	587							1285
Percent		54.3%	45.7%							
AM Peak	-	07:00	11:00	-	-	-	-	-	-	11:00
Vol.	-	56	34	-	-	-	-	-	-	83
PM Peak	-	16:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	66	76	-	-	-	-	-	-	139



Location: BLACKSTONE PKWY N/O JAMISON CIRCLE  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201601  
Station ID: 201601

Start Time	18-Nov-20 Wed	NORTHBOU	SOUTHBOU							Total
12:00 AM		4	0							4
01:00		1	0							1
02:00		0	2							2
03:00		1	1							2
04:00		1	0							1
05:00		16	2							18
06:00		28	2							30
07:00		48	21							69
08:00		<b>58</b>	34							<b>92</b>
09:00		54	24							78
10:00		53	28							81
11:00		44	<b>36</b>							80
12:00 PM		59	54							113
01:00		35	36							71
02:00		63	34							97
03:00		67	48							115
04:00		<b>70</b>	68							<b>138</b>
05:00		51	<b>80</b>							131
06:00		36	52							88
07:00		26	28							54
08:00		8	30							38
09:00		11	9							20
10:00		3	6							9
11:00		1	6							7
Total		738	601							1339
Percent		55.1%	44.9%							
AM Peak	-	08:00	11:00	-	-	-	-	-	-	08:00
Vol.	-	58	36	-	-	-	-	-	-	92
PM Peak	-	16:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	70	80	-	-	-	-	-	-	138

Location: BLACKSTONE PKWY N/O JAMISON CIRCLE  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201601  
Station ID: 201601

Start Time	19-Nov-20 Thu	NORTHBOU	SOUTHBOU							Total
12:00 AM		0	0							0
01:00		0	0							0
02:00		0	0							0
03:00		0	0							0
04:00		3	0							3
05:00		12	4							16
06:00		28	4							32
07:00		56	14							70
08:00		44	27							71
09:00		51	26							77
10:00		36	34							70
11:00		35	35							70
12:00 PM		59	36							95
01:00		46	49							95
02:00		54	48							102
03:00		50	40							90
04:00		57	70							127
05:00		57	63							120
06:00		27	58							85
07:00		19	20							39
08:00		12	19							31
09:00		18	14							32
10:00		3	2							5
11:00		2	6							8
Total		669	569							1238
Percent		54.0%	46.0%							
AM Peak	-	07:00	11:00	-	-	-	-	-	-	09:00
Vol.	-	56	35	-	-	-	-	-	-	77
PM Peak	-	12:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	59	70	-	-	-	-	-	-	127
Grand Total		2105	1757							3862
Percent		54.5%	45.5%							
ADT		ADT 1,287	AADT 1,287							

Location: BLACKSTONE PKWY N/O KETTLE PL  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201607  
Station ID: 201607

Start Time	17-Nov-20 Tue	NORTHBOU	SOUTHBOU							Total
12:00 AM		0	0							0
01:00		0	0							0
02:00		0	0							0
03:00		0	0							0
04:00		5	1							6
05:00		10	1							11
06:00		25	3							28
07:00		44	26							70
08:00		32	27							59
09:00		30	26							56
10:00		32	28							60
11:00		38	30							68
12:00 PM		40	45							85
01:00		27	34							61
02:00		44	28							72
03:00		48	49							97
04:00		62	66							128
05:00		38	72							110
06:00		28	42							70
07:00		16	36							52
08:00		8	17							25
09:00		7	6							13
10:00		4	10							14
11:00		2	5							7
Total		540	552							1092
Percent		49.5%	50.5%							
AM Peak	-	07:00	11:00	-	-	-	-	-	-	07:00
Vol.	-	44	30	-	-	-	-	-	-	70
PM Peak	-	16:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	62	72	-	-	-	-	-	-	128

Location: BLACKSTONE PKWY N/O KETTLE PL  
City: AURORA  
County: ARAPAHOE  
Direction: NORTH/SOUTH

**COUNTER MEASURES INC.**  
**1889 YORK STREET**  
**DENVER, COLORADO 80206**  
**303-333-7409**

Site Code: 201607  
Station ID: 201607

Start Time	18-Nov-20 Wed	NORTHBOU	SOUTHBOU							Total
12:00 AM		2	0							2
01:00		1	0							1
02:00		0	2							2
03:00		1	1							2
04:00		2	0							2
05:00		10	2							12
06:00		22	3							25
07:00		34	18							52
08:00		39	30							69
09:00		30	22							52
10:00		44	32							76
11:00		36	34							70
12:00 PM		42	47							89
01:00		28	31							59
02:00		46	40							86
03:00		50	49							99
04:00		58	62							120
05:00		43	76							119
06:00		26	52							78
07:00		20	24							44
08:00		6	26							32
09:00		10	10							20
10:00		2	6							8
11:00		0	5							5
Total		552	572							1124
Percent		49.1%	50.9%							
AM Peak	-	10:00	11:00	-	-	-	-	-	-	10:00
Vol.	-	44	34	-	-	-	-	-	-	76
PM Peak	-	16:00	17:00	-	-	-	-	-	-	16:00
Vol.	-	58	76	-	-	-	-	-	-	120

Site Code: 201607  
Station ID: 201607

Start Time	19-Nov-20	NORTHBOU	SOUTHBOU								Total
12:00 AM		0	0								0
01:00		0	0								0
02:00		2	2								4
03:00		0	1								1
04:00		3	0								3
05:00		6	2								8
06:00		22	3								25
07:00		42	19								61
08:00		44	28								72
09:00		30	28								58
10:00		30	34								64
11:00		25	35								60
12:00 PM		45	37								82
01:00		36	48								84
02:00		42	51								93
03:00		45	40								85
04:00		48	69								117
05:00		46	68								114
06:00		23	50								73
07:00		14	22								36
08:00		7	12								19
09:00		16	18								34
10:00		2	3								5
11:00		3	5								8
Total		531	575								1106
Percent		48.0%	52.0%								
AM Peak	-	08:00	11:00	-	-	-	-	-	-	08:00	
Vol.	-	44	35	-	-	-	-	-	-	72	
PM Peak	-	16:00	16:00	-	-	-	-	-	-	16:00	
Vol.	-	48	69	-	-	-	-	-	-	117	
Grand Total		1623	1699								3322
Percent		48.9%	51.1%								
ADT		ADT 1,107	AADT 1,107								

## LEVEL OF SERVICE DEFINITIONS

From *Highway Capacity Manual*, Transportation Research Board, 2016, 6th Edition

### UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. <u>The delay could be up to 15 seconds.</u> Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. <u>Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.</u>
D	25 to 35 seconds	<u>This is the point at which a traffic signal may be warranted for this intersection.</u> The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. <u>There is a high probability that this intersection will meet traffic signal warrants.</u> The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. <u>The only remedy for these long delays is installing a traffic signal or restricting the accesses.</u> The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.




HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2022 & 2041 Background  
AM Peak

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	4	2	0	5	1	65	1	2	25	6
Future Vol, veh/h	18	0	4	2	0	5	1	65	1	2	25	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	5	2	0	6	1	74	1	2	28	7
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	116	113	32	115	116	75	35	0	0	75	0	0
Stage 1	36	36	-	77	77	-	-	-	-	-	-	-
Stage 2	80	77	-	38	39	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	861	777	1042	862	774	986	1576	-	-	1524	-	-
Stage 1	980	865	-	932	831	-	-	-	-	-	-	-
Stage 2	929	831	-	977	862	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	855	775	1042	857	772	986	1576	-	-	1524	-	-
Mov Cap-2 Maneuver	855	775	-	857	772	-	-	-	-	-	-	-
Stage 1	979	864	-	931	830	-	-	-	-	-	-	-
Stage 2	923	830	-	972	861	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.2		8.8			0.1			0.4			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1576	-	-	884	945	1524	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.028	0.008	0.001	-	-				
HCM Control Delay (s)	7.3	0	-	9.2	8.8	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC  
9: S. Blackstone Parkway & E. Long Place

2022 & 2041 Background  
AM Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	3	65	1	1	30
Future Vol, veh/h	2	3	65	1	1	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	74	1	1	34
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	111	75	0	0	75	0
Stage 1	75	-	-	-	-	-
Stage 2	36	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	886	986	-	-	1524	-
Stage 1	948	-	-	-	-	-
Stage 2	986	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	885	986	-	-	1524	-
Mov Cap-2 Maneuver	885	-	-	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.8	0		0.2		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	943		1524	-	
HCM Lane V/C Ratio	-	0.006		0.001	-	
HCM Control Delay (s)	-	8.8		7.4	0	
HCM Lane LOS	-	A		A	A	
HCM 95th %tile Q(veh)	-	0		0	-	






HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2022 & 2041 Background  
PM Peak

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	12	0	3	1	0	4	5	45	2	6	70	20
Future Vol, veh/h	12	0	3	1	0	4	5	45	2	6	70	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	0	3	1	0	5	6	51	2	7	80	23
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	173	171	92	171	181	52	103	0	0	53	0	0
Stage 1	106	106	-	64	64	-	-	-	-	-	-	-
Stage 2	67	65	-	107	117	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	790	722	965	792	713	1016	1489	-	-	1553	-	-
Stage 1	900	807	-	947	842	-	-	-	-	-	-	-
Stage 2	943	841	-	898	799	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	781	716	965	784	707	1016	1489	-	-	1553	-	-
Mov Cap-2 Maneuver	781	716	-	784	707	-	-	-	-	-	-	-
Stage 1	896	803	-	943	839	-	-	-	-	-	-	-
Stage 2	935	838	-	890	795	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.5		8.8			0.7			0.5			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1489	-	-	812	959	1553	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.021	0.006	0.004	-	-				
HCM Control Delay (s)	7.4	0	-	9.5	8.8	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC  
9: S. Blackstone Parkway & E. Long Place

2022 & 2041 Background  
PM Peak

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	2	50	2	3	70
Future Vol, veh/h	1	2	50	2	3	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	2	57	2	3	80
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	144	58	0	0	59	0
Stage 1	58	-	-	-	-	-
Stage 2	86	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	849	1008	-	-	1545	-
Stage 1	965	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	847	1008	-	-	1545	-
Mov Cap-2 Maneuver	847	-	-	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	935	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.8	0		0.3		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	948	1545	-	
HCM Lane V/C Ratio	-	-	0.004	0.002	-	
HCM Control Delay (s)	-	-	8.8	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0	0	-	

HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2022 & 2041 Background  
PM School Peak




Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	0	2	1	0	2	3	30	1	2	30	5
Future Vol, veh/h	10	0	2	1	0	2	3	30	1	2	30	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	2	1	0	2	3	34	1	2	34	6
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	83	82	37	83	85	35	40	0	0	35	0	0
Stage 1	41	41	-	41	41	-	-	-	-	-	-	-
Stage 2	42	41	-	42	44	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	904	808	1035	904	805	1038	1570	-	-	1576	-	-
Stage 1	974	861	-	974	861	-	-	-	-	-	-	-
Stage 2	972	861	-	972	858	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	900	806	1035	900	803	1038	1570	-	-	1576	-	-
Mov Cap-2 Maneuver	900	806	-	900	803	-	-	-	-	-	-	-
Stage 1	972	860	-	972	859	-	-	-	-	-	-	-
Stage 2	968	859	-	969	857	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9		8.7			0.6			0.4			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1570	-	-	920	988	1576	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.015	0.003	0.001	-	-				
HCM Control Delay (s)	7.3	0	-	9	8.7	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-				

HCM 6th TWSC  
9: S. Blackstone Parkway & E. Long Place

2022 & 2041 Background  
PM School Peak

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	33	1	1	32
Future Vol, veh/h	1	1	33	1	1	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	38	1	1	36





Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	77	39	0
Stage 1	39	-	-
Stage 2	38	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	926	1033	-
Stage 1	983	-	-
Stage 2	984	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	925	1033	-
Mov Cap-2 Maneuver	925	-	-
Stage 1	983	-	-
Stage 2	983	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	976	1571
HCM Lane V/C Ratio	-	-	0.002	0.001
HCM Control Delay (s)	-	-	8.7	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2025 Total  
AM Peak

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	0	6	2	0	5	3	100	1	2	67	8
Future Vol, veh/h	20	0	6	2	0	5	3	100	1	2	67	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	0	7	2	0	6	3	114	1	2	76	9
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	209	206	81	209	210	115	85	0	0	115	0	0
Stage 1	85	85	-	121	121	-	-	-	-	-	-	-
Stage 2	124	121	-	88	89	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	748	691	979	748	687	937	1512	-	-	1474	-	-
Stage 1	923	824	-	883	796	-	-	-	-	-	-	-
Stage 2	880	796	-	920	821	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	742	689	979	741	685	937	1512	-	-	1474	-	-
Mov Cap-2 Maneuver	742	689	-	741	685	-	-	-	-	-	-	-
Stage 1	921	823	-	881	794	-	-	-	-	-	-	-
Stage 2	873	794	-	913	820	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.8		9.2			0.2			0.2			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1512	-	-	786	871	1474	-	-				
HCM Lane V/C Ratio	0.002	-	-	0.038	0.009	0.002	-	-				
HCM Control Delay (s)	7.4	0	-	9.8	9.2	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				





HCM 6th TWSC  
9: S. Blackstone Parkway & Site Access/E. Long Place

2025 Total  
AM Peak

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	35	0	53	2	0	3	63	67	1	1	32	42
Future Vol, veh/h	35	0	53	2	0	3	63	67	1	1	32	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	88	50	88	50	88	88	88	88	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	0	106	2	0	3	126	76	1	1	36	84
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	410	409	78	462	451	77	120	0	0	77	0	0
Stage 1	80	80	-	329	329	-	-	-	-	-	-	-
Stage 2	330	329	-	133	122	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	552	532	983	510	504	984	1468	-	-	1522	-	-
Stage 1	929	828	-	684	646	-	-	-	-	-	-	-
Stage 2	683	646	-	870	795	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	512	484	983	423	458	984	1468	-	-	1522	-	-
Mov Cap-2 Maneuver	512	484	-	423	458	-	-	-	-	-	-	-
Stage 1	845	827	-	622	588	-	-	-	-	-	-	-
Stage 2	619	588	-	775	794	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.7		10.6		4.8		0.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1468	-	-	512	983	643	1522	-	-			
HCM Lane V/C Ratio	0.086	-	-	0.137	0.108	0.009	0.001	-	-			
HCM Control Delay (s)	7.7	0	-	13.1	9.1	10.6	7.4	0	-			
HCM Lane LOS	A	A	-	B	A	B	A	A	-			
HCM 95th %tile Q(veh)	0.3	-	-	0.5	0.4	0	0	-	-			

HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2025 Total  
PM Peak

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	0	3	1	0	4	5	55	2	6	80	20
Future Vol, veh/h	12	0	3	1	0	4	5	55	2	6	80	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	0	3	1	0	5	6	63	2	7	91	23
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	196	194	103	194	204	64	114	0	0	65	0	0
Stage 1	117	117	-	76	76	-	-	-	-	-	-	-
Stage 2	79	77	-	118	128	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	763	701	952	765	692	1000	1475	-	-	1537	-	-
Stage 1	888	799	-	933	832	-	-	-	-	-	-	-
Stage 2	930	831	-	887	790	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	755	695	952	757	686	1000	1475	-	-	1537	-	-
Mov Cap-2 Maneuver	755	695	-	757	686	-	-	-	-	-	-	-
Stage 1	884	795	-	929	829	-	-	-	-	-	-	-
Stage 2	922	828	-	879	786	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.7		8.9		0.6		0.4					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1475	-	-	788	940	1537	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.022	0.006	0.004	-	-				
HCM Control Delay (s)	7.5	0	-	9.7	8.9	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC  
9: S. Blackstone Parkway & Site Access/E. Long Place

2025 Total  
PM Peak

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔			↔	
Traffic Vol, veh/h	11	0	16	1	0	2	16	50	2	3	70	10
Future Vol, veh/h	11	0	16	1	0	2	16	50	2	3	70	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	88	50	88	50	88	88	88	88	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	0	32	1	0	2	32	57	2	3	80	20
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	219	219	90	234	228	58	100	0	0	59	0	0
Stage 1	96	96	-	122	122	-	-	-	-	-	-	-
Stage 2	123	123	-	112	106	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	737	679	968	721	671	1008	1493	-	-	1545	-	-
Stage 1	911	815	-	882	795	-	-	-	-	-	-	-
Stage 2	881	794	-	893	807	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	722	663	968	684	655	1008	1493	-	-	1545	-	-
Mov Cap-2 Maneuver	722	663	-	684	655	-	-	-	-	-	-	-
Stage 1	891	813	-	863	778	-	-	-	-	-	-	-
Stage 2	860	777	-	862	805	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.3			9.1			2.6			0.2		
HCM LOS	A			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1493	-	-	722	968	871	1545	-	-			
HCM Lane V/C Ratio	0.021	-	-	0.03	0.033	0.004	0.002	-	-			
HCM Control Delay (s)	7.5	0	-	10.1	8.8	9.1	7.3	0	-			
HCM Lane LOS	A	A	-	B	A	A	A	A	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	0	-	-			








HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2025 Total  
PM School Peak

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	0	4	1	0	2	5	50	1	2	46	7
Future Vol, veh/h	12	0	4	1	0	2	5	50	1	2	46	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	0	5	1	0	2	6	57	1	2	52	8
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	131	130	56	133	134	58	60	0	0	58	0	0
Stage 1	60	60	-	70	70	-	-	-	-	-	-	-
Stage 2	71	70	-	63	64	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	841	761	1011	839	757	1008	1544	-	-	1546	-	-
Stage 1	951	845	-	940	837	-	-	-	-	-	-	-
Stage 2	939	837	-	948	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	836	757	1011	832	753	1008	1544	-	-	1546	-	-
Mov Cap-2 Maneuver	836	757	-	832	753	-	-	-	-	-	-	-
Stage 1	947	844	-	936	834	-	-	-	-	-	-	-
Stage 2	933	834	-	943	841	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.2		8.8			0.7			0.3			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1544	-	-	874	942	1546	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.021	0.004	0.001	-	-				
HCM Control Delay (s)	7.3	0	-	9.2	8.8	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC  
9: S. Blackstone Parkway & Site Access/E. Long Place

2025 Total  
PM School Peak

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	0	32	1	0	1	32	35	1	1	34	16
Future Vol, veh/h	20	0	32	1	0	1	32	35	1	1	34	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	88	50	88	50	88	88	88	88	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	0	64	1	0	1	64	40	1	1	39	32
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	226	226	55	258	242	41	71	0	0	41	0	0
Stage 1	57	57	-	169	169	-	-	-	-	-	-	-
Stage 2	169	169	-	89	73	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	729	673	1012	695	660	1030	1529	-	-	1568	-	-
Stage 1	955	847	-	833	759	-	-	-	-	-	-	-
Stage 2	833	759	-	918	834	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	703	643	1012	629	631	1030	1529	-	-	1568	-	-
Mov Cap-2 Maneuver	703	643	-	629	631	-	-	-	-	-	-	-
Stage 1	914	846	-	797	726	-	-	-	-	-	-	-
Stage 2	796	726	-	859	833	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.4			9.6			4.5			0.1		
HCM LOS	A			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1529	-	-	703	1012	781	1568	-	-			
HCM Lane V/C Ratio	0.042	-	-	0.057	0.063	0.003	0.001	-	-			
HCM Control Delay (s)	7.5	0	-	10.4	8.8	9.6	7.3	0	-			
HCM Lane LOS	A	A	-	B	A	A	A	A	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0	0	-	-			

HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2041 Total  
AM Peak

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	0	7	2	0	5	4	160	1	2	138	9
Future Vol, veh/h	21	0	7	2	0	5	4	160	1	2	138	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	8	2	0	6	5	182	1	2	157	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	362	359	162	363	364	183	167	0	0	183	0	0
Stage 1	166	166	-	193	193	-	-	-	-	-	-	-
Stage 2	196	193	-	170	171	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	594	568	883	593	564	859	1411	-	-	1392	-	-
Stage 1	836	761	-	809	741	-	-	-	-	-	-	-
Stage 2	806	741	-	832	757	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	587	565	883	585	561	859	1411	-	-	1392	-	-
Mov Cap-2 Maneuver	587	565	-	585	561	-	-	-	-	-	-	-
Stage 1	833	759	-	806	738	-	-	-	-	-	-	-
Stage 2	797	738	-	823	755	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.9		9.8		0.2		0.1	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1411	-	-	641	758	1392	-
HCM Lane V/C Ratio	0.003	-	-	0.05	0.01	0.002	-
HCM Control Delay (s)	7.6	0	-	10.9	9.8	7.6	0
HCM Lane LOS	A	A	-	B	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-

HCM 6th TWSC  
9: S. Blackstone Parkway & Site Access/E. Long Place

2041 Total  
AM Peak

Intersection												
Int Delay, s/veh	10.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	95	0	96	2	0	3	113	68	1	1	33	113
Future Vol, veh/h	95	0	96	2	0	3	113	68	1	1	33	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	88	50	88	50	88	88	88	88	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	190	0	192	2	0	3	226	77	1	1	38	226
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	684	683	151	779	796	78	264	0	0	78	0	0
Stage 1	153	153	-	530	530	-	-	-	-	-	-	-
Stage 2	531	530	-	249	266	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	363	372	895	313	320	983	1300	-	-	1520	-	-
Stage 1	849	771	-	533	527	-	-	-	-	-	-	-
Stage 2	532	527	-	755	689	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	311	304	895	211	261	983	1300	-	-	1520	-	-
Mov Cap-2 Maneuver	311	304	-	211	261	-	-	-	-	-	-	-
Stage 1	694	770	-	436	431	-	-	-	-	-	-	-
Stage 2	434	431	-	592	688	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	21.6		14.2		6.2		0					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1300	-	-	311	895	399	1520	-	-			
HCM Lane V/C Ratio	0.174	-	-	0.611	0.215	0.014	0.001	-	-			
HCM Control Delay (s)	8.4	0	-	33.2	10.1	14.2	7.4	0	-			
HCM Lane LOS	A	A	-	D	B	B	A	A	-			
HCM 95th %tile Q(veh)	0.6	-	-	3.8	0.8	0	0	-	-			

HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2040 Total  
PM Peak

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	0	3	1	0	4	5	73	2	6	96	20
Future Vol, veh/h	12	0	3	1	0	4	5	73	2	6	96	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	0	3	1	0	5	6	83	2	7	109	23
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	234	232	121	232	242	84	132	0	0	85	0	0
Stage 1	135	135	-	96	96	-	-	-	-	-	-	-
Stage 2	99	97	-	136	146	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	721	668	930	723	660	975	1453	-	-	1512	-	-
Stage 1	868	785	-	911	815	-	-	-	-	-	-	-
Stage 2	907	815	-	867	776	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	713	662	930	716	654	975	1453	-	-	1512	-	-
Mov Cap-2 Maneuver	713	662	-	716	654	-	-	-	-	-	-	-
Stage 1	865	781	-	907	812	-	-	-	-	-	-	-
Stage 2	899	812	-	860	772	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.9		9			0.5			0.4			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1453	-	-	748	909	1512	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.023	0.006	0.005	-	-				
HCM Control Delay (s)	7.5	0	-	9.9	9	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC  
9: S. Blackstone Parkway & Site Access/E. Long Place

2040 Total  
PM Peak

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	28	0	29	1	0	2	26	50	2	3	70	26
Future Vol, veh/h	28	0	29	1	0	2	26	50	2	3	70	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	88	50	88	50	88	88	88	88	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	0	58	1	0	2	52	57	2	3	80	52
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	275	275	106	303	300	58	132	0	0	59	0	0
Stage 1	112	112	-	162	162	-	-	-	-	-	-	-
Stage 2	163	163	-	141	138	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	677	632	948	649	612	1008	1453	-	-	1545	-	-
Stage 1	893	803	-	840	764	-	-	-	-	-	-	-
Stage 2	839	763	-	862	782	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	655	607	948	591	588	1008	1453	-	-	1545	-	-
Mov Cap-2 Maneuver	655	607	-	591	588	-	-	-	-	-	-	-
Stage 1	860	801	-	809	736	-	-	-	-	-	-	-
Stage 2	806	735	-	808	780	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10		9.4		3.5		0.2					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1453	-	-	655	948	816	1545	-	-			
HCM Lane V/C Ratio	0.036	-	-	0.085	0.061	0.004	0.002	-	-			
HCM Control Delay (s)	7.6	0	-	11	9	9.4	7.3	0	-			
HCM Lane LOS	A	A	-	B	A	A	A	A	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	0	-	-			

HCM 6th TWSC  
3: S. Blackstone Parkway & S. Valleyhead Way/E. Links Place

2040 Total  
PM School Peak

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	5	1	0	2	7	87	1	2	76	8
Future Vol, veh/h	13	0	5	1	0	2	7	87	1	2	76	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	6	1	0	2	8	99	1	2	86	9
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	212	211	91	214	215	100	95	0	0	100	0	0
Stage 1	95	95	-	116	116	-	-	-	-	-	-	-
Stage 2	117	116	-	98	99	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	745	686	967	743	683	956	1499	-	-	1493	-	-
Stage 1	912	816	-	889	800	-	-	-	-	-	-	-
Stage 2	888	800	-	908	813	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	739	681	967	735	678	956	1499	-	-	1493	-	-
Mov Cap-2 Maneuver	739	681	-	735	678	-	-	-	-	-	-	-
Stage 1	907	815	-	884	795	-	-	-	-	-	-	-
Stage 2	881	795	-	902	812	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.7		9.2		0.5		0.2					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1499	-	-	791	869	1493	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.026	0.004	0.002	-	-				
HCM Control Delay (s)	7.4	0	-	9.7	9.2	7.4	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

HCM 6th TWSC  
9: S. Blackstone Parkway & Site Access/E. Long Place

2040 Total  
PM School Peak

Intersection												
Int Delay, s/veh	6.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	57	0	57	1	0	1	46	36	1	1	35	46
Future Vol, veh/h	57	0	57	1	0	1	46	36	1	1	35	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	88	50	88	50	88	88	88	88	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	0	114	1	0	1	92	41	1	1	40	92
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	314	314	86	371	360	42	132	0	0	42	0	0
Stage 1	88	88	-	226	226	-	-	-	-	-	-	-
Stage 2	226	226	-	145	134	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	639	601	973	586	567	1029	1453	-	-	1567	-	-
Stage 1	920	822	-	777	717	-	-	-	-	-	-	-
Stage 2	777	717	-	858	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	606	561	973	491	530	1029	1453	-	-	1567	-	-
Mov Cap-2 Maneuver	606	561	-	491	530	-	-	-	-	-	-	-
Stage 1	860	821	-	726	670	-	-	-	-	-	-	-
Stage 2	726	670	-	757	784	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.8		10.4		5.2		0.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1453	-	-	606	973	665	1567	-	-			
HCM Lane V/C Ratio	0.063	-	-	0.188	0.117	0.003	0.001	-	-			
HCM Control Delay (s)	7.6	0	-	12.3	9.2	10.4	7.3	0	-			
HCM Lane LOS	A	A	-	B	A	B	A	A	-			
HCM 95th %tile Q(veh)	0.2	-	-	0.7	0.4	0	0	-	-			