SUMMIT POINTE PLAT
TRAFFIC IMPACT ANALYSIS

City of Gig Harbor, WA

4/27/2023

Prepared for: Joe Flansburg
Land Development Manager
Rush Residential
6622 Wollochet Dr. Gig Harbor, WA 98335

Revised:
April 2023

January 24, 2023

Stephanie Seibel
City of Gig Harbor

Subject: Revisions to Summit Pointe Plat Traffic Impact Analysis

This letter is in response to the Summit Pointe Plat Traffic Impact Analysis (TIA) review, with comments dated August 16, 2022. The following addresses the comments from the review.

1. Comment Page 4, Site Plan: Comment acknowledged. An updated site plan is now used.

2. Comment Page 5, TIP: The TIA was updated to use the most recent 2023-2028 Transportation Improvement Program.

3. Comment Page 11, Figure 4: The TIA was updated to include analysis at the SR 16 Ramps & Burnham Drive and Canterwood Boulevard/SR 16 Ramps & Borgen Boulevard/ Burnham Drive roundabouts, as directed by the City. All Figures, narrative and calculations have been updated accordingly.

4. Comment Page 15, TIF: The narrative regarding the TIF was updated to include the calculation format requested by the City.

Please call if you require anything further.

Sincerely,

Aaron Van Aken, P.E., PTOE

SUMMIT POINTE
TRAFFIC IMPACT ANALYSIS

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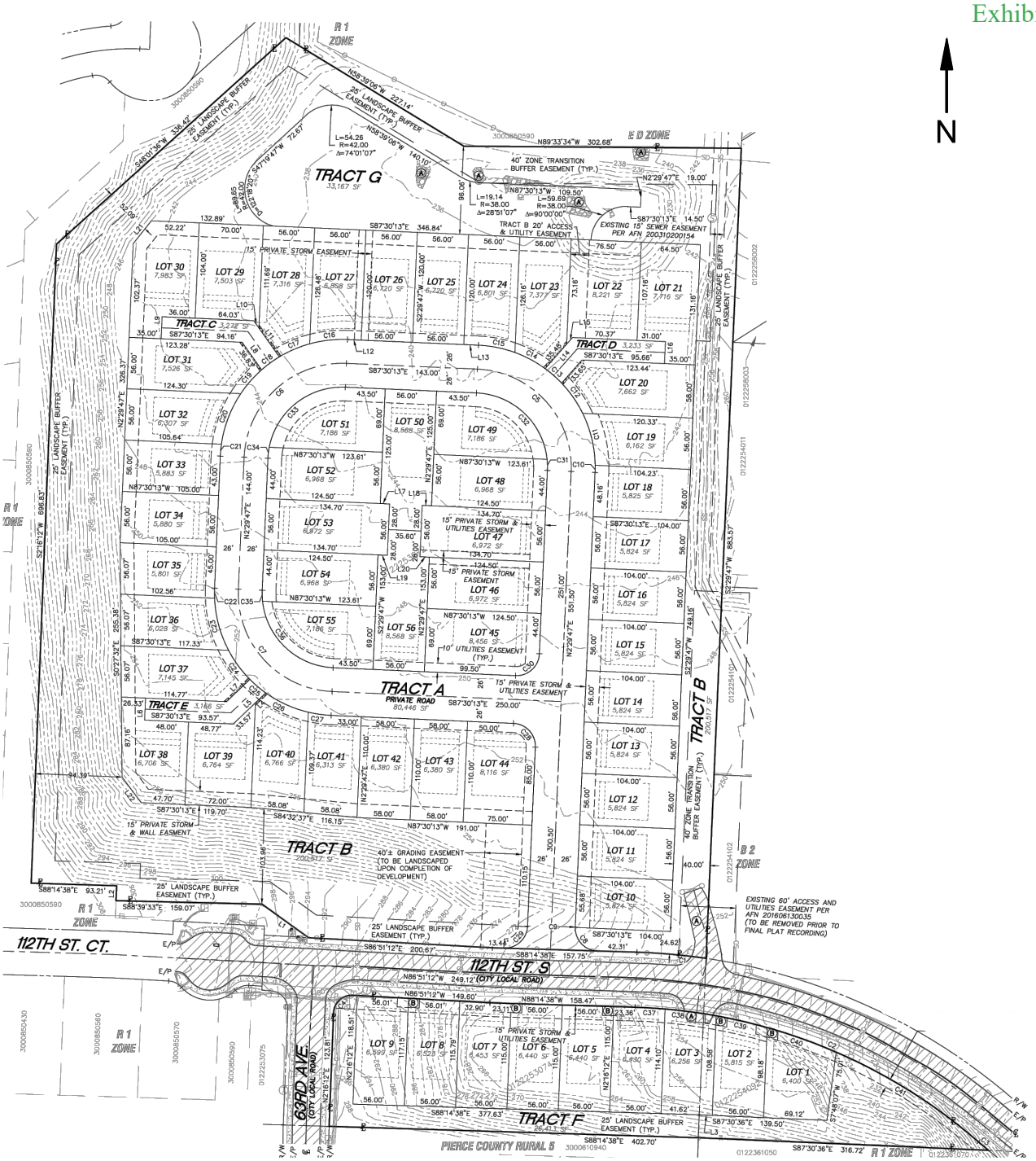
1. INTRODUCTION

The main goals of this study focus on the analysis of existing roadway conditions and forecasts of newly generated project traffic. The first task includes the review of general roadway information on the adjacent street system, baseline vehicular volumes, and entering sight distance data. Forecasts of future traffic and dispersion patterns on the street system are then determined using established trip generation and distribution techniques. As a final step, appropriate conclusions and mitigation measures are defined.

2. PROJECT DESCRIPTION

Summit Pointe Plat is a proposed residential development consisting of up to 56 single-family dwelling units located within the city of Gig Harbor. The subject property is situated on 16.71-acres of undeveloped land recently designated R-2 Medium Density Residential. The subject site is located within tax parcel #'s: 01222530-72; -74; and -94. Access to and from the project is proposed via one new driveway for the lots north of 112th Street, which is to extend north from 112th Street. For the lots located south of 112th Street, individual access points for each unit are proposed. Surrounding development is primarily a combination of mid-to-low density residential, minor commercial and undeveloped land. Figure 1 below shows the aerial vicinity of the project. A conceptual site plan illustrating the proposed site layout and access is presented in Figure 2 on the following page.

Figure 1: Vicinity Map



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SUMMIT POINTE PLAT

SITE PLAN
FIGURE 2

3. EXISTING CONDITIONS

3.1 Existing Roadway Characteristics

Adjacent streets to the site are listed and described below:

Burnham Drive: is a two-lane, minor arterial located east of the subject site. Travel lanes are approximately 11-12 feet in width. As the area is rural in nature, there are no provided sidewalks along either side of Burnham Drive. The posted speed limit is 35 mph.

112th Street: is a two-lane, local roadway bordering the north and south sides of the subject property. Total roadway width is approximately 30 feet in width with complete sidewalks on the south side and discontinuous on the north side. The local roadway has a posted speed limit of 25 mph.

3.2 Roadway Improvement Projects

A review of the current City of Gig Harbor Six-Year Comprehensive Transportation Improvement Program (2023-2028) indicates that there are approximately seven projects currently planned in the subject site vicinity.

- Priority #27: Cushman Trail Phase 5 Design
  - Design Phase 5 of the Cushman Trail from the existing Borgen Boulevard (railhead to the Pierce/Kitsap County line).
- Priority #19: Pedestrian Bridge Crossing
  - Pedestrian bridge over SR 16 in the vicinity of the Burnham Drive Interchange.
- Priority #17: Burnham Drive Bridge Restripe
  - Restripe Burnham Drive bridge between the roundabouts so there are 4 through lanes (2 in each direction).
- Priority #2: Metering Roundabout at SR 16/Burnham Interchange Study
  - Install metering at the eastbound approach (Burnham bridge) of the roundabout located at westbound SR 16/Burnham Interchange.
- Priority #'s 1, 16 and 18: Burnham Drive Improvements (Phases 1A, 1B and 2)
  - Priority #1 – Eagle's Club to 96th Street (Phase 1A): Add shared use path, construct half street improvements and a new bridge at 96th Street for fish passable culvert improvement.
  - Priority #16 – N Harborview Dr to Eagles Club (Phase 1B): Construct a sidewalk or shared use path.
  - Priority #18 – Harbor Hill Dr Extension to SR 16 Interchange (Phase 2): Reconstruction, including minor widening, turn lanes, curbs, gutters, sidewalks, storm sewer improvements, landscaped planter strips, etc.

3.3 Existing Peak Hour Volumes and Patterns

Field data was collected in April and October of 2022 at the study intersections outlined below. Data was collected by our firm and/or obtained from the City of Gig Harbor.

1. Burnham Drive & 112th Street (Heath: 4/7/22)
2. SR 16 Ramps & Burnham Drive (Gig Harbor: 10/11/22)
3. Canterwood Blvd/SR 16 Ramps & Borgen Blvd/Burnham Dr (Gig Harbor: 10/11/22)

Through-volumes along 112th Street across the project frontage were extrapolated from the turning movement count at Burnham Drive & 112th Street. All counts were administered between the weekday peak period timeframe of 4:00 PM - 6:00 PM. The one hour reflecting highest overall roadway volumes was then derived from these counts, known as the peak hour, and used for analysis. Baseline PM peak hour volumes are illustrated in Figure 3 on the following page. The full-count sheets have been included in the appendix.

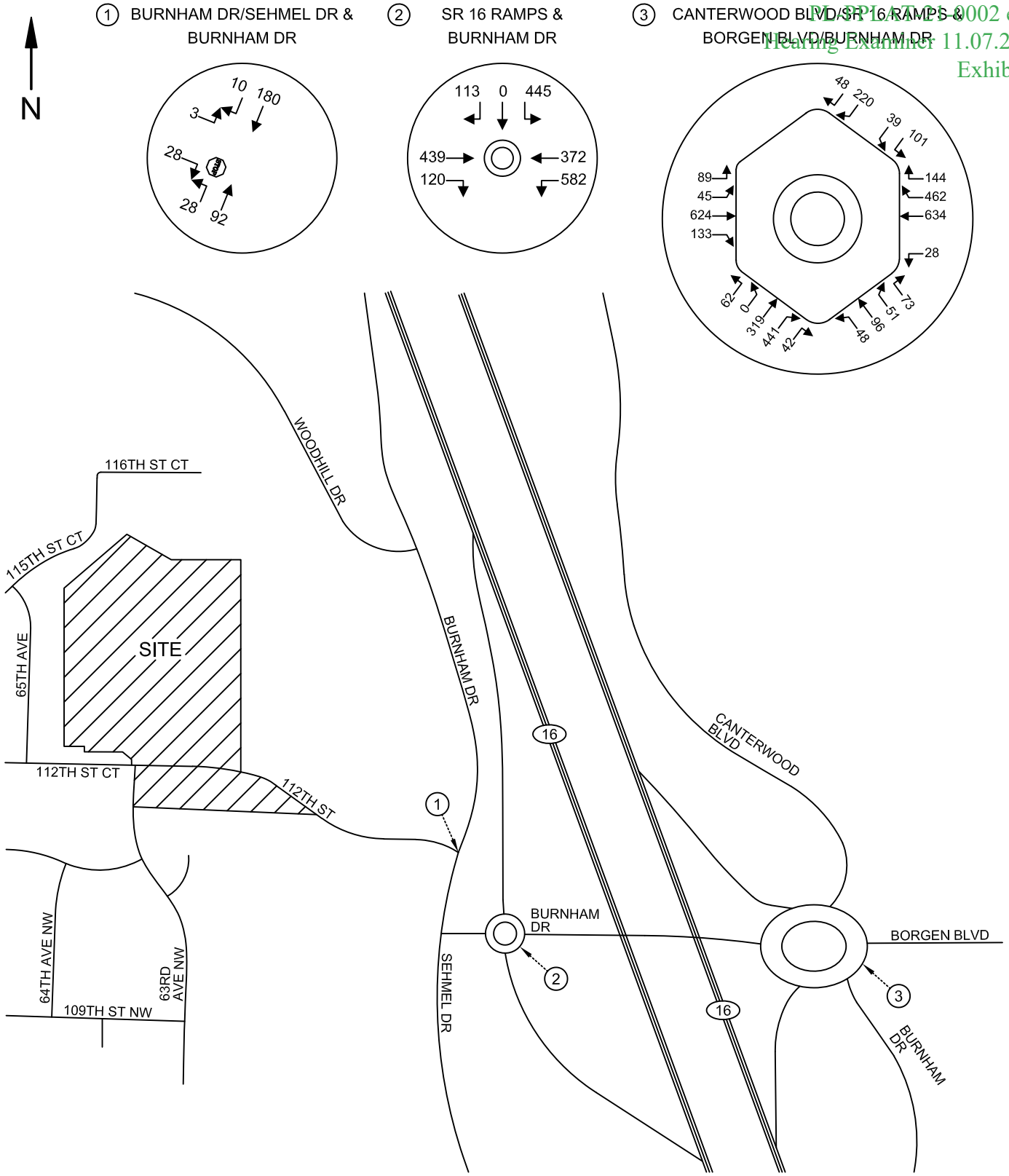
3.4 Non-Motorist Traffic

During field observations and peak hour traffic counts, no non-motorist activity was observed at the nearby study intersection of Burnham Drive & 112th Street. With little to no pedestrian infrastructure along Burnham Drive, no significant change in pedestrian activity is expected.

3.5 Transit Service

A review of Pierce Transit's service system indicates that transit is available within one mile (walking distance) of the proposed Summit Pointe project. The bus stop is located east of SR-16, along Borgen Boulevard servicing Route 100 – Gig Harbor. Route 100 – Gig Harbor provides service from the TCC Transit Center to the Purdy Park and Ride. Weekday service is provided from 6:44 AM – 8:34 PM with approximately 60-minute headways during peak travel times. Please refer to the Pierce Transit website for more detailed information.

Given the proximity to the bus stop, residents of Summit Pointe would have to walk over the SR-16 over-pass. As discontinuous sidewalk paths are available along the route, little to no transit use is expected from the proposed development.



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SUMMIT POINTE PLAT
BASELINE PM PEAK HOUR VOLUMES
FIGURE 3

3.6 Level of Service

Peak hour delays were determined through the use of the *Highway Capacity Manual* 6th Edition. Capacity analysis is used to determine level of service (LOS) which is an established measure of congestion for transportation facilities. The range[1] for intersection level of service is LOS A to LOS F with the former indicating the best operating conditions with low control delays and the latter indicating the worst conditions with heavy control delays. Detailed descriptions of intersection LOS are given in the 2016 Highway Capacity Manual. Level of service calculations were made through the use of the *Synchro 11* and *SIDRA 9.1* analysis programs. For side-street stop-controlled intersections, LOS is determined by the approach with the highest delay. For roundabouts (RAB), LOS is determined by the overall average weighted delay for all approaches. Table 1 below summarizes existing PM peak hour calculated delays at the outlying study intersections.

Table 1: Existing PM Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	Intersection Approach	LOS	Delay
Burnham Dr SW & 112th St	Stop	EB	A	9.6
SR 16 Ramps & Burnham Dr	RAB	WB	A	7.5
		SB	B	17.5
		EB	A	8.9
		Overall	B	10.6
Canterwood Blvd/ SR 16 Ramps & Borgen Blvd/Burnham Dr	RAB	NB	B	12.0
		WB	B	15.4
		SB	A	9.1
		EB	A	5.1
		NEB	A	9.0
		Overall	B	10.5

[1] *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
A	≤10
B	> 10 and ≤20
C	> 20 and ≤35
D	> 35 and ≤55
E	> 55 and ≤80
F	> 80

Stop Controlled Intersections – Level of Service

Level of Service	Control Delay per Vehicle (sec)
A	≤10
B	> 10 and ≤15
C	> 15 and ≤25
D	> 25 and ≤35
E	> 35 and ≤50
F	> 50

Highway Capacity Manual, 6th Edition

Existing PM peak hour LOS is shown to operate at LOS B or better conditions at the intersections of study. No intersection deficiencies are identified under existing conditions.

3.7 Site Access

A single access extending north from 112th Street is proposed to serve as ingress/egress for 47 of the 56 lots. The remaining nine lots would have direct lot access on the south side of 112th Street. Based on the 25-mph posted speed limit along 112th Street, 280 feet of unobstructed view is needed to meet sight distance requirements. Based on preliminary examinations of the proposed access intersection, sight distance looks to be met. Looking west from the proposed approach, 112th Street turns into 112th Street Court with access via a private, gated community. The majority of site-generated traffic is therefore expected to leave the site and travel to and from the east with connection to Burnham Drive. It is important to note any new intersection shall be designed to meet City/AASHTO sight distance standards. Final verification may need to be provided to ensure sight lines can be achieved upon final site plan and access locations.

4. FUTURE TRAFFIC CONDITIONS

4.1 Project Trip Generation

Trip generation is defined as the number of vehicle movements that enter or exit the respective project site during a designated time period such as the peak hour or an entire day. The magnitude of the anticipated vehicle trip generation for the proposed project was derived from the Institute of Transportation Engineers (ITE) publication, *Trip Generation,* 11th Edition. Single-Family Detached Housing (LUC 210) was applied to the dwelling units. Dwelling units was selected as the input variable and ITE average rates were used to determine trip ends. Table 2 below summarizes anticipated vehicular movements for the average weekday daily trips (AWDT), AM peak hour and PM peak hour.

Table 2: Project Trip Generation

Land Use	Dwelling Units	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Single-Family	56	**528**	10	29	**39**	33	20	**53**

Based on the data presented in Table 2, the project can be expected to generate 44 (11 inbound / 33 outbound) AM peak hour trips and 58 (36 inbound / 22 outbound) PM peak hour trips.

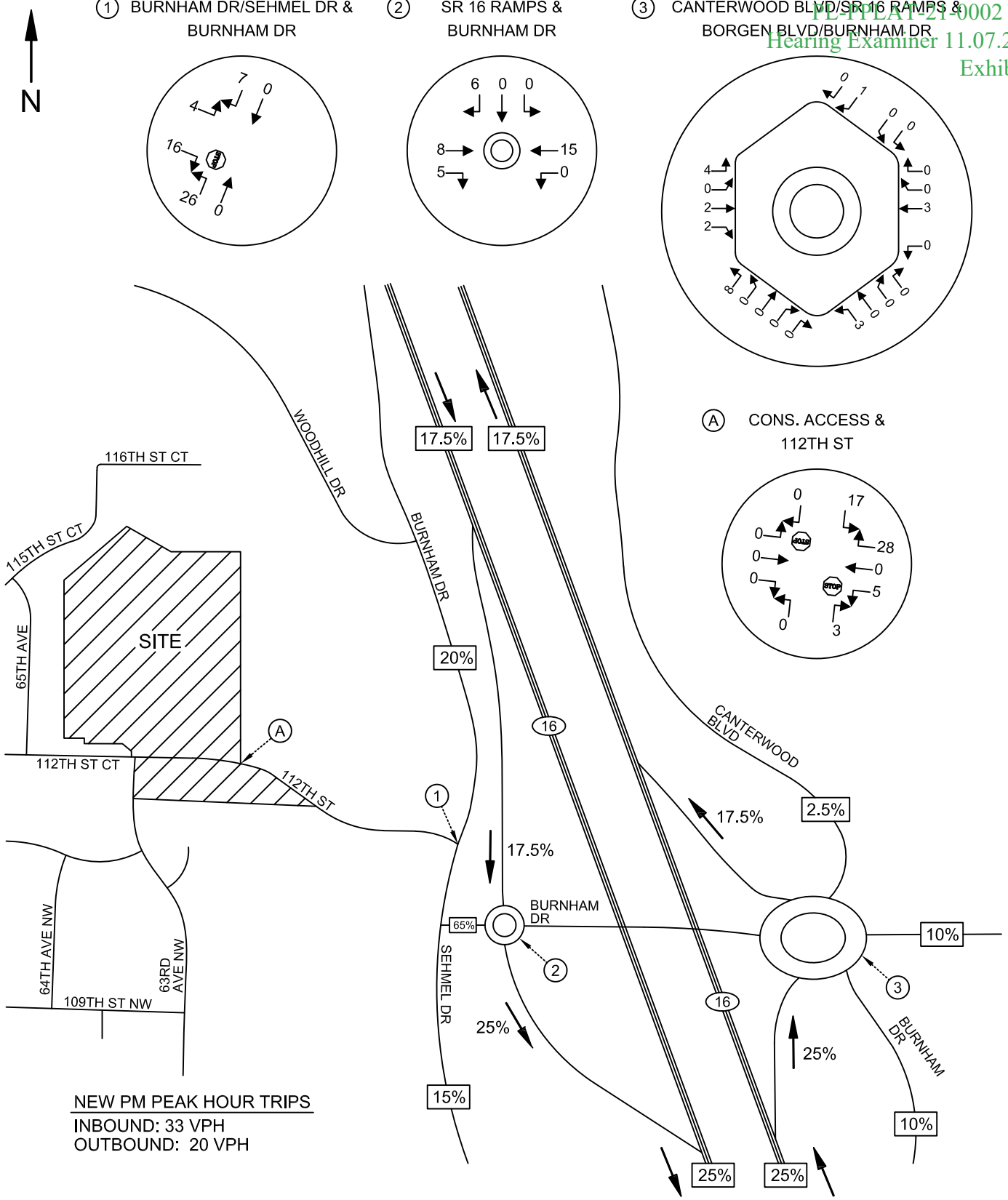
4.2 Trip Distribution and Assignment

Trip distribution describes the process by which project generated trips are dispersed on the street network surrounding the site. Percentages were established based on proximity to nearby arterials and existing travel patterns identified from the peak hour turning movement count. With little connectivity available to and from the west, all site-generated traffic was assigned via Burnham Drive by way of 112th Street. Some activity to the west using 63rd Avenue and subsequently connecting to Sehmel Drive NW could occur. However, this route is expected to be infrequent and was not included in the trip distribution assignment to remain conservative.

Figure 4 illustrates the PM peak hour trip generation and distribution for the project's generated trips. The nine lots on the south side of 112th Street were allocated and evaluated as a south leg to the access intersection.

4.3 Future Peak Hour Volumes

A five-year horizon of 2028 was used for future traffic delay analysis. Forecast 2028 volumes were derived by applying a 3.0 percent compound annual growth rate to the existing volumes shown in Figure 3. This rate is considered conservative as the City's Comprehensive Plan states, total housing supply is anticipated to grow at a rate of approximately 2.1 percent between 2010 to 2030. Forecast 2028 PM peak hour background volumes are shown in Figure 5 while Figure 6 includes the addition of project-generated traffic.



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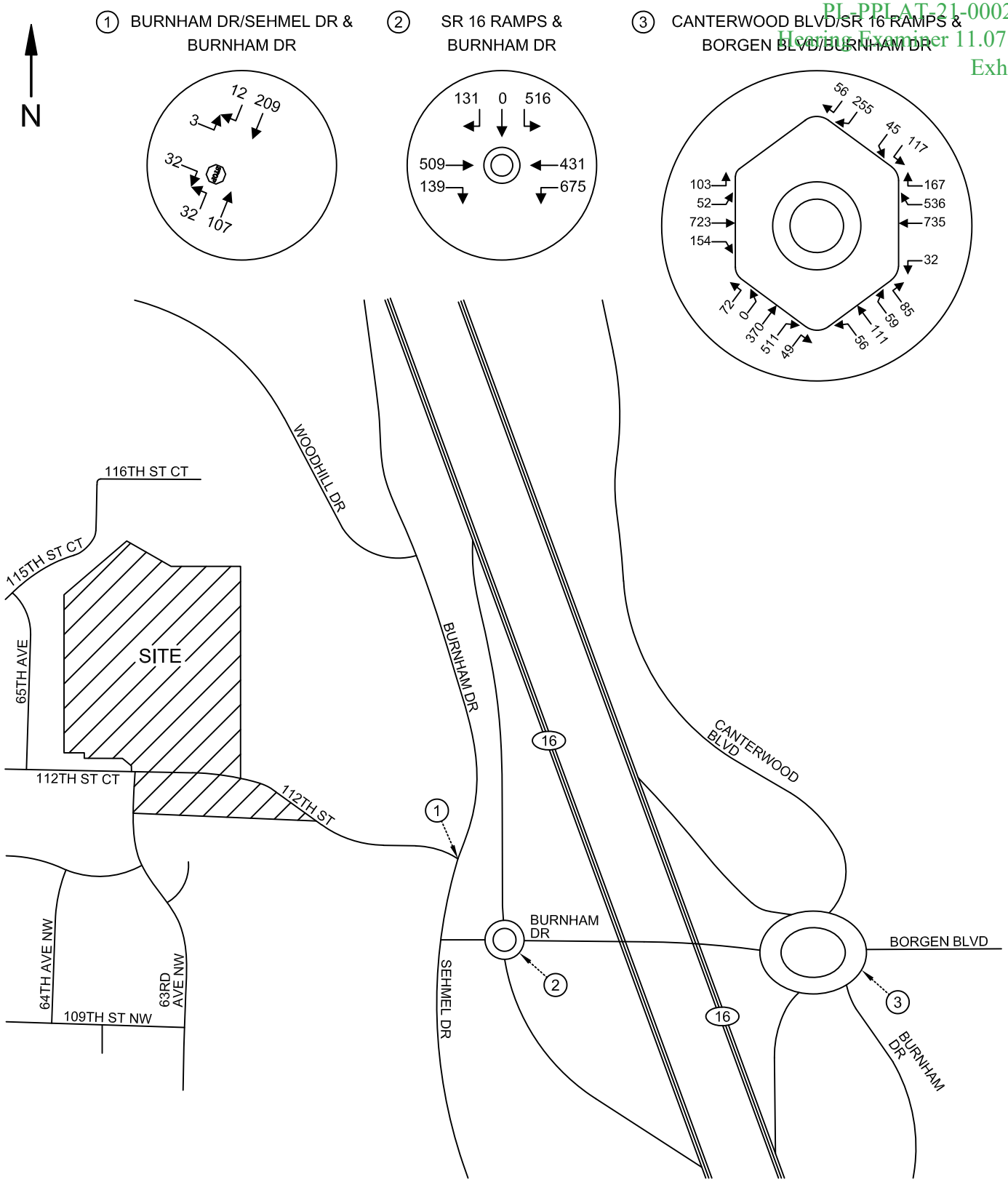
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4



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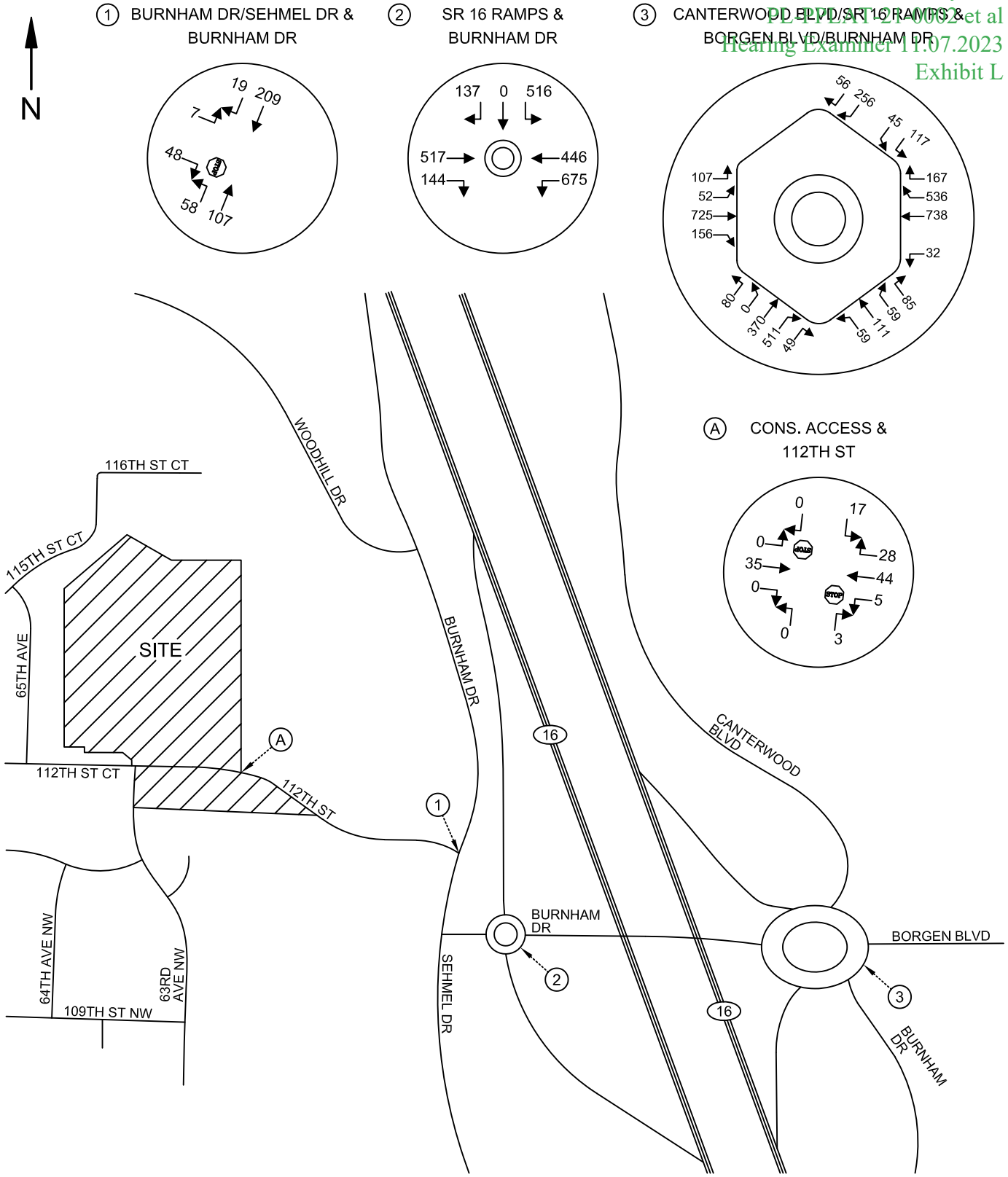
FORECAST 2028 PM PEAK HOUR VOLUMES WITHOUT PROJECT

FIGURE 5



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FORECAST 2028 PM PEAK HOUR VOLUMES WITH PROJECT

FIGURE 6

4.4 Future Level of Service

Level of service analyses were made of the future PM peak hour volumes without (background) and with project related trips added to the key roadways and intersections. This analysis once again involved the use of the *Synchro 11* and *SIDRA 9.1* analysis programs. Delays for the intersection of study and proposed access under future conditions are shown below in Table 3.

Table 3: Forecast 2028 PM Peak Hour Level of Service

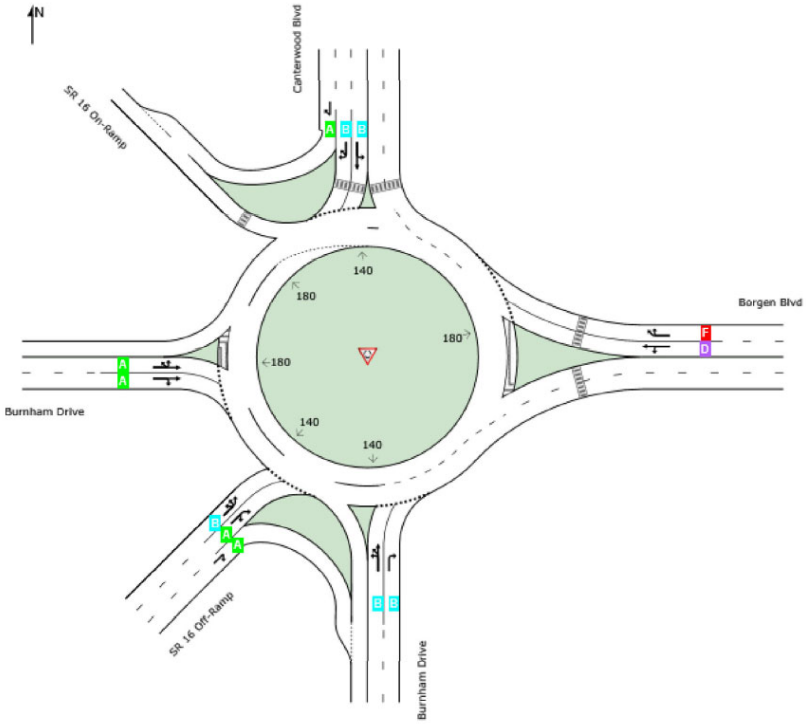
Delays given in seconds per vehicle

			Without Project		*With Project*	
Intersection	**Control**	**Intersection Approach**	**LOS**	**Delay**	**LOS**	**Delay**
Burnham Dr & 112th St	Stop	EB	A	9.9	B	10.2
SR 16 Ramps & Burnham Dr	RAB	WB	A	7.5	A	7.5
		SB	C	28.5	C	30.5
		EB	B	11.8	B	12.0
		Overall	B	14.3	B	14.9
Canterwood Blvd/ SR 16 Ramps & Borgen Blvd/Burnham Dr	RAB	NB	B	14.4	B	14.8
		WB	D	50.3	E	57.0
		SB	B	11.8	B	12.2
		EB	A	5.3	A	5.3
		NEB	B	10.6	B	10.9
		Overall	C	23.4	C	25.7
112th St & Consolidated Access	Stop	SB	-	-	A	9.3

Forecast PM peak hour delays at Burnham Drive & 112th Street are anticipated to operate with LOS B or better conditions without or with project-generated traffic. Service levels at the roundabouts of study are shown to comprise overall average weighted delays of LOS C or better.

However, it should be noted that the east leg of the Canterwood Boulevard/SR 16 Ramps & Borgen Boulevard/Burnham Drive roundabout LOS E service levels. The graphic on the following page depicts LOS for each approach lane of Canterwood Boulevard/SR 16 Ramps & Borgen Boulevard/Burnham Drive under forecast 2028 PM peak hour conditions with project-generated traffic.

Forecast 2028 PM Peak Hour With Project Lane Level of Service:
Canterwood Boulevard/SR 16 Ramps & Borgen Boulevard /Burnham Drive



As illustrated, the right and left lanes of the east approach comprise LOS F and D conditions, respectively. These conditions are also anticipated under forecast conditions without project traffic. It should be noted that the City's TIP proposes to conduct a study pertaining to installing metering at the eastbound approach (Burnham bridge) of the roundabout. Meter installation is anticipated to increase the amount and frequency of gaps in vehicular progression throughout the roundabout. Such a project may therefore generate more gap availability for vehicles at the east approach to enter the intersection, thereby improving service levels at the Borgen Boulevard leg.

Lastly, the consolidated access intersection is anticipated to operate at LOS A conditions with the addition of the project generated traffic. No deficiencies are identified as a result of the proposed development.

4.5 Left Turn Warrants

Left turn lanes are a means of providing necessary storage space for left turning vehicles at intersections. For this impact study, procedures prescribed by the WSDOT Design Manual Exhibit 1310-7a were used to ascertain storage requirements at the study intersection of Burnham Drive & 112th Street. Based on forecast 2028 PM peak hour volumes with project traffic – a left turn lane *would not be warranted* at the study intersection. Refer to the appendix for the warrant nomograph.

5. SUMMARY

Summit Pointe proposes for the construction of a residential development encompassing 56 single-family lots in the city of Gig Harbor. The subject site consists of several parcels totaling 16.71-acres. The subject site is bordered to the south by 112th Street and located west of Burnham Drive and SR-16. Access is proposed via one roadway extending north from 112th Street and providing access to approximately 47 of the 56 lots. The remaining nine lots on the south side of 112th Street would have direct lot access. A conceptual site plan is presented in Figure 2, which highlights ingress and egress.

Based on ITE data, new trips emanating to/from the site are projected at 39 (10 inbound / 29 outbound) AM peak hour trips and 53 (33 inbound / 20 outbound) PM peak hour trips. A five-year horizon of 2028 was analyzed to determine potential project impacts at the outlying study intersections. With the addition of project-generated traffic, LOS is anticipated to operate with acceptable service levels at LOS C or better during the PM peak hour for all outlying study intersections and at LOS A for the consolidated access intersection.

It should be noted that LOS E service levels are identified at the east leg of Canterwood Boulevard/SR 16 Ramps & Borgen Boulevard/Burnham Drive under forecast 2028 PM peak hour conditions both without and with project-generated traffic. However, A City project is proposed, which entails a study of how meter installation at the west leg (Burnham bridge) of the roundabout may improve intersection service levels. No LOS deficiencies are identified as a result of the proposed development. A left turn warrant analysis indicates a left turn lane is not warranted on Burnham Drive at 112th Street under forecast 2028 PM peak hour conditions.

Based on the above analysis, recommended mitigation is as follows:

> Pay Traffic Impact Fees (TIF) as required by the city of Gig Harbor. At the time of this report, impact fees are based on PM peak hour trips. A fee of 5,582.00 per new PM peak hour trip according to most recent fee schedule. Therefore, the estimated TIF is collected at:
>
> 0.94 (trip generation rate) x 56 (single-family residences) x $5,582 (impact fee rate)
> = $293,836.48
>
> Final fee calculations will be provided by the City and are subject to rates in effect at such time.

No other mitigation is identified at this time.

SUMMIT POINTE PLAT
TRAFFIC IMPACT ANALYSIS

APPENDIX

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4600a
Site Code : 00004600
Start Date : 4/7/2022
Page No : 1

Groups Printed- Passenger + - Heavy

	Burnham Dr Southbound			Burnham Dr Northbound			112th St Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
04:00 PM	2	29	31	30	5	35	6	0	6	72
04:15 PM	1	51	52	25	5	30	4	0	4	86
04:30 PM	3	52	55	21	4	25	11	0	11	91
04:45 PM	5	40	45	22	9	31	8	2	10	86
Total	11	172	183	98	23	121	29	2	31	335
05:00 PM	1	37	38	24	10	34	5	1	6	78
05:15 PM	0	29	29	23	13	36	7	1	8	73
05:30 PM	2	33	35	26	9	35	9	0	9	79
05:45 PM	1	29	30	23	4	27	5	0	5	62
Total	4	128	132	96	36	132	26	2	28	292
Grand Total	15	300	315	194	59	253	55	4	59	627
Apprch %	4.8	95.2		76.7	23.3		93.2	6.8		
Total %	2.4	47.8	50.2	30.9	9.4	40.4	8.8	0.6	9.4	
Passenger +	15	294	309	193	59	252	55	4	59	620
% Passenger +	100	98	98.1	99.5	100	99.6	100	100	100	98.9
Heavy	0	6	6	1	0	1	0	0	0	7
% Heavy	0	2	1.9	0.5	0	0.4	0	0	0	1.1

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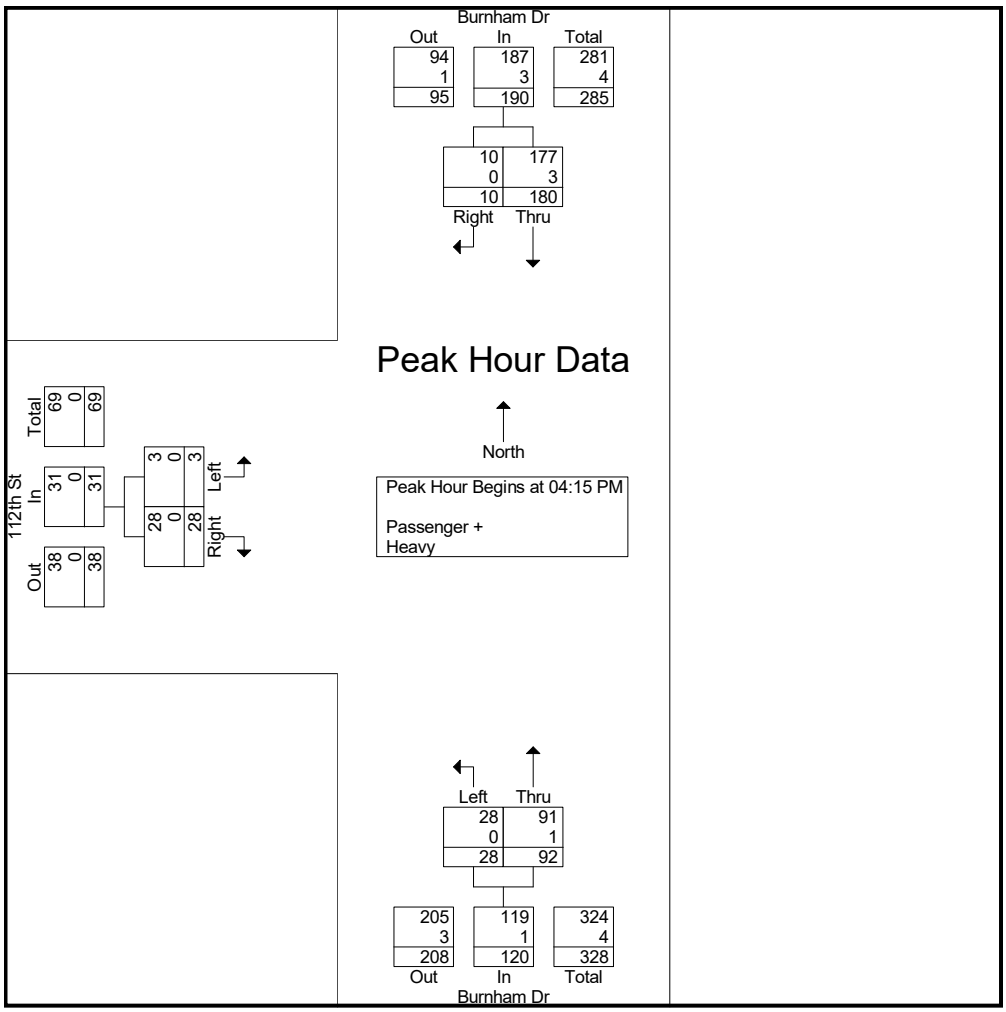
Puyallup, WA 98371

File Name : 4600a
Site Code : 00004600
Start Date : 4/7/2022
Page No : 2

	Burnham Dr Southbound			Burnham Dr Northbound			112th St Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	1	51	52	**25**	5	30	4	0	4	86
04:30 PM	3	**52**	**55**	21	4	25	**11**	0	**11**	**91**
04:45 PM	**5**	40	45	22	9	31	8	**2**	10	86
05:00 PM	1	37	38	24	**10**	**34**	5	1	6	78
Total Volume	10	180	190	92	28	120	28	3	31	341
% App. Total	5.3	94.7		76.7	23.3		90.3	9.7		
PHF	.500	.865	.864	.920	.700	.882	.636	.375	.705	.937
Passenger +	10	177	187	91	28	119	28	3	31	337
% Passenger +	100	98.3	98.4	98.9	100	99.2	100	100	100	98.8
Heavy	0	3	3	1	0	1	0	0	0	4
% Heavy	0	1.7	1.6	1.1	0	0.8	0	0	0	1.2



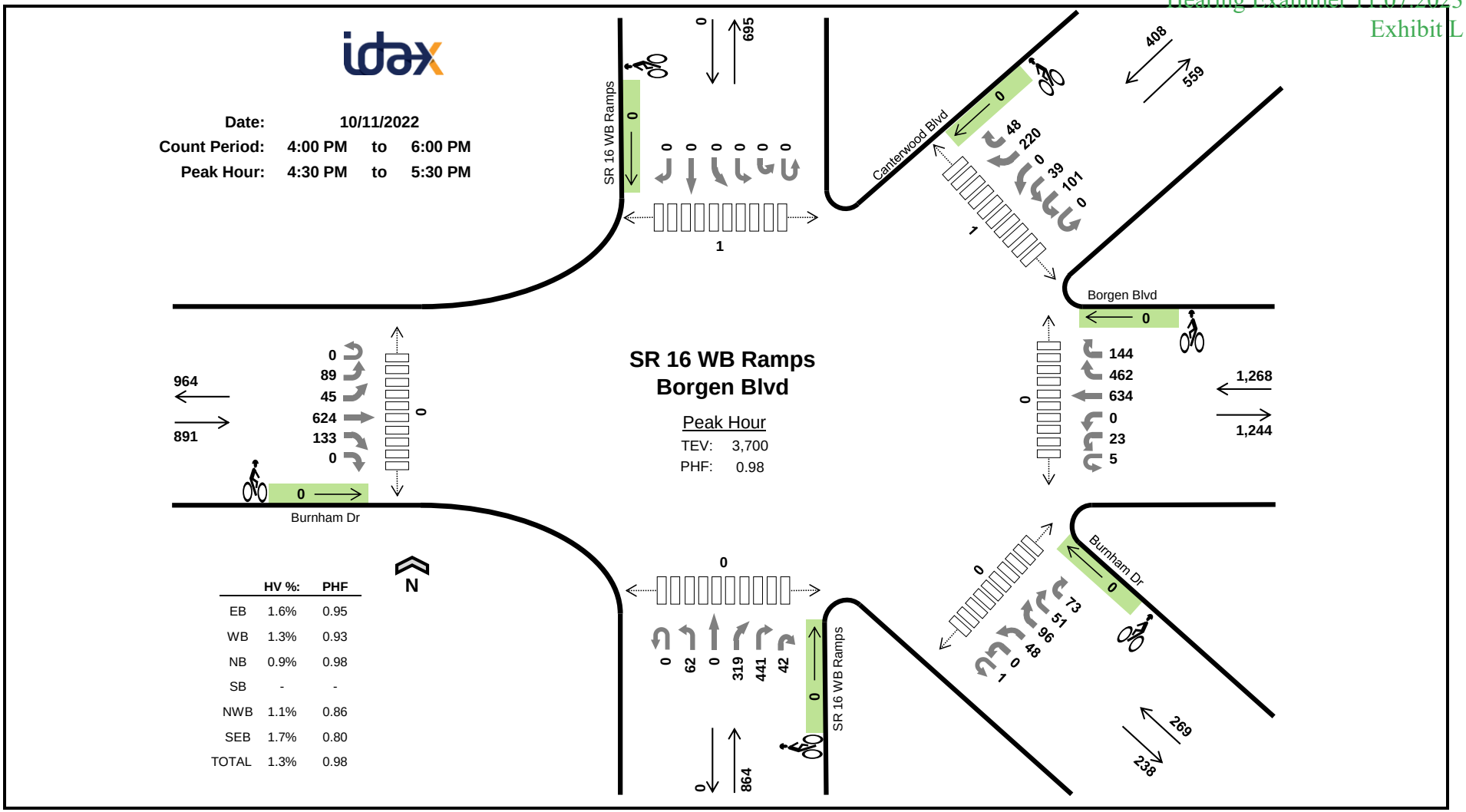

Date: 10/11/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM
SR 16 WB Ramps
Borgen Blvd
Peak Hour
TEV: 3,700
PHF: 0.98
Cantenwood Blvd
Burnham Dr
N
HV %: PHF
EB 1.6% 0.95
WB 1.3% 0.93
NB 0.9% 0.98
SB - -
NWB 1.1% 0.86
SEB 1.7% 0.80
TOTAL 1.3% 0.98

EXHIBIT L

Two-Hour Count Summaries

Interval Start	Burnham Dr Eastbound						Borgen Blvd Westbound						SR 16 WB Ramps Northbound						SR 16 WB Ramps Southbound						Burnham Dr Northwestbound						Canterwood Blvd Southwestbound						15-min Total	Rolling One Hour
	UT	LT	BL	TH	BR	RT	UT	HL	LT	TH	RT	HR	UT	LT	TH	BR	RT	HR	UT	HL	LT	BL	TH	RT	UT	HL	BL	BR	RT	HR	UT	HL	LT	BL	BR	HR		
4:00 PM	0	17	14	164	24	0	1	6	0	116	137	29	0	17	0	89	105	11	0	0	0	0	0	0	0	0	14	23	9	7	0	26	6	0	56	13	884	0
4:15 PM	0	26	15	126	32	0	1	5	0	156	95	36	0	20	0	74	104	20	0	0	0	0	0	0	0	0	10	22	12	23	0	24	11	0	51	6	869	0
4:30 PM	**0**	**24**	**6**	**162**	**24**	**0**	**1**	**7**	**0**	**146**	**129**	**29**	**0**	**13**	**0**	**81**	**117**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17**	**27**	**10**	**13**	**0**	**24**	**9**	**0**	**78**	**16**	**943**	0
4:45 PM	**0**	**16**	**14**	**163**	**29**	**0**	**1**	**4**	**0**	**171**	**116**	**48**	**0**	**18**	**0**	**80**	**110**	**10**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**23**	**11**	**23**	**0**	**28**	**12**	**0**	**52**	**7**	**948**	3,644
5:00 PM	**0**	**27**	**19**	**148**	**40**	**0**	**2**	**6**	**0**	**159**	**98**	**41**	**0**	**15**	**0**	**77**	**106**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**11**	**27**	**19**	**20**	**0**	**19**	**9**	**0**	**49**	**16**	**920**	3,680
5:15 PM	**0**	**22**	**6**	**151**	**40**	**0**	**1**	**6**	**0**	**158**	**119**	**26**	**0**	**16**	**0**	**81**	**108**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**19**	**11**	**17**	**0**	**30**	**9**	**0**	**41**	**9**	**889**	**3,700**
5:30 PM	0	14	13	164	31	0	2	10	0	164	117	29	0	10	0	69	144	14	0	0	0	0	0	0	0	0	7	18	11	23	0	22	6	0	58	5	931	3,688
5:45 PM	0	16	14	146	22	0	0	7	0	139	134	32	0	15	0	91	113	19	0	0	0	0	0	0	0	0	9	22	13	18	0	24	8	0	28	6	876	3,616
Count Total	0	162	101	1,224	242	0	9	51	0	1,209	945	270	0	124	0	642	907	106	0	0	0	0	0	0	1	0	88	181	96	144	0	197	70	0	413	78	7,260	0
Peak Hour All	**0**	**89**	**45**	**624**	**133**	**0**	**5**	**23**	**0**	**634**	**462**	**144**	**0**	**62**	**0**	**319**	**441**	**42**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**48**	**96**	**51**	**73**	**0**	**101**	**39**	**0**	**220**	**48**	**3,700**	**0**
Peak Hour HV	**0**	**5**	**3**	**4**	**2**	**0**	**0**	**0**	**0**	**16**	**1**	**0**	**0**	**1**	**0**	**5**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**2**	**49**	**0**
Peak Hour HV%	**-**	**6%**	**7%**	**1%**	**2%**	**-**	**0%**	**0%**	**-**	**3%**	**0%**	**0%**	**-**	**2%**	**-**	**2%**	**0%**	**0%**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**2%**	**1%**	**2%**	**0%**	**-**	**0%**	**0%**	**-**	**2%**	**4%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals							Bicycles							Pedestrians (Crossing Leg)						
	EB	WB	NB	SB	NWB	SEB	Total	EB	WB	NB	SB	NWB	SEB	Total	East	West	North	South	NE	SE	Total
4:00 PM	10	5	4	0	1	4	*24*	0	0	0	0	0	0	*0*	0	0	0	0	0	0	*0*
4:15 PM	10	7	8	0	0	5	*30*	0	0	0	0	0	0	*0*	0	0	0	0	0	0	*0*
4:30 PM	**4**	**3**	**2**	**0**	**0**	**2**	***11***	**0**	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	**0**	***0***
4:45 PM	**3**	**5**	**2**	**0**	**0**	**3**	***13***	**0**	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	**1**	**0**	***2***
5:00 PM	**6**	**1**	**2**	**0**	**3**	**2**	***14***	**0**	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	**0**	***0***
5:15 PM	**1**	**8**	**2**	**0**	**0**	**0**	***11***	**0**	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	**0**	***0***
5:30 PM	4	1	0	0	0	0	*5*	0	0	0	0	0	0	*0*	0	0	0	0	0	0	*0*
5:45 PM	1	2	2	0	0	0	*5*	0	0	0	0	0	0	*0*	0	0	0	0	0	0	*0*
Count Total	39	32	22	0	4	16	*113*	0	0	0	0	0	0	*0*	0	0	1	0	1	0	*2*
Peak Hr	**14**	**17**	**8**	**0**	**3**	**7**	***49***	**0**	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	**1**	**0**	***2***

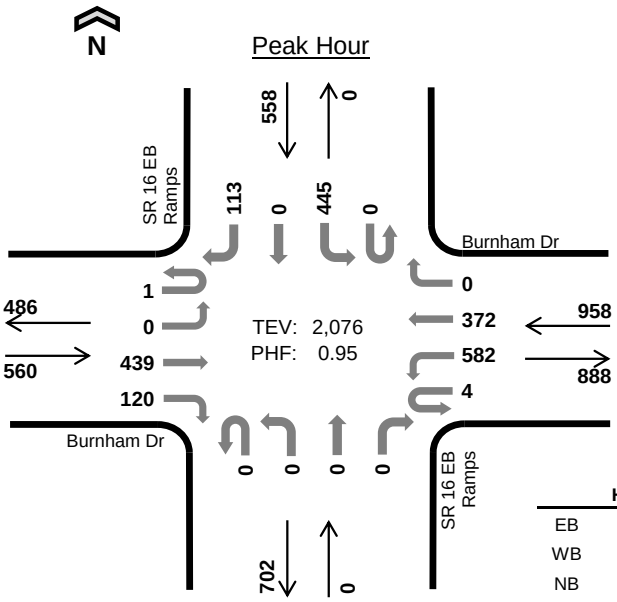
Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Burnham Dr Eastbound						Borgen Blvd Westbound						SR 16 WB Ramps Northbound						SR 16 WB Ramps Southbound						Burnham Dr Northwestbound						Canterwood Blvd Southwestbound						15-min Total	Rolling One Hour
	UT	LT	BL	TH	BR	RT	UT	HL	LT	TH	RT	HR	UT	LT	TH	BR	RT	HR	UT	HL	LT	BL	TH	RT	UT	HL	BL	BR	RT	HR	UT	HL	LT	BL	BR	HR		
4:00 PM	0	1	5	4	0	0	0	1	0	4	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	1	24	0
4:15 PM	0	0	3	1	6	0	0	0	0	5	0	2	0	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	2	0	30	0
4:30 PM	**0**	**1**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**11**	0
4:45 PM	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**13**	78
5:00 PM	**0**	**2**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**14**	68
5:15 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**49**
5:30 PM	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	43
5:45 PM	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	35
Count Total	0	7	14	10	8	0	0	1	0	28	1	2	0	1	0	12	4	5	0	0	0	0	0	0	0	0	1	1	1	1	0	2	1	0	10	3	113	0
Peak Hour	**0**	**5**	**3**	**4**	**2**	**0**	**0**	**0**	**0**	**16**	**1**	**0**	**0**	**1**	**0**	**5**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**5**	**2**	49	**0**

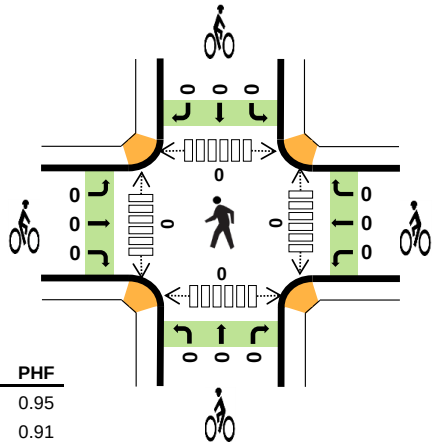
Two-Hour Count Summaries - Bikes

Interval Start	Burnham Dr Eastbound						Borgen Blvd Westbound						SR 16 WB Ramps Northbound						SR 16 WB Ramps Southbound						Burnham Dr Northwestbound						Canterwood Blvd Southwestbound						15-min Total	Rolling One Hour
	UT	LT	BL	TH	BR	RT	UT	HL	LT	TH	RT	HR	UT	LT	TH	BR	RT	HR	UT	HL	LT	BL	TH	RT	UT	HL	BL	BR	RT	HR	UT	HL	LT	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	**0**

SR 16 EB Ramps
Burnham Dr



Date: 10/11/2022
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	2.0%	0.95
WB	2.5%	0.91
NB	-	-
SB	1.1%	0.96
TOTAL	2.0%	0.95

Two-Hour Count Summaries

Interval Start		Burnham Dr Eastbound				Burnham Dr Westbound				SR 16 EB Ramps Northbound				SR 16 EB Ramps Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	0	107	24	1	139	71	0	0	0	0	0	0	115	0	24	481	0
4:15 PM		0	0	100	28	1	133	97	0	0	0	0	0	0	94	0	32	485	0
4:30 PM		**0**	**0**	**107**	**34**	**1**	**180**	**82**	**0**	**0**	**0**	**0**	**0**	**0**	**104**	**0**	**41**	**549**	0
4:45 PM		**0**	**0**	**115**	**32**	**2**	**141**	**107**	**0**	**0**	**0**	**0**	**0**	**0**	**103**	**0**	**27**	**527**	2,042
5:00 PM		**1**	**0**	**119**	**23**	**1**	**130**	**95**	**0**	**0**	**0**	**0**	**0**	**0**	**116**	**0**	**24**	**509**	2,070
5:15 PM		**0**	**0**	**98**	**31**	**0**	**131**	**88**	**0**	**0**	**0**	**0**	**0**	**0**	**122**	**0**	**21**	**491**	**2,076**
5:30 PM		0	0	108	32	0	149	82	0	0	0	0	0	0	109	0	35	515	2,042
5:45 PM		1	0	103	18	2	113	86	0	0	0	0	0	0	99	0	30	452	1,967
Count Total		2	0	857	222	8	1,116	708	0	0	0	0	0	0	862	0	234	4,009	0
Peak Hour	**All**	**1**	**0**	**439**	**120**	**4**	**582**	**372**	**0**	**0**	**0**	**0**	**0**	**0**	**445**	**0**	**113**	**2,076**	**0**
	HV	**0**	**0**	**9**	**2**	**0**	**17**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**41**	**0**
	HV%	**0%**	**-**	**2%**	**2%**	**0%**	**3%**	**2%**	**-**	**-**	**-**	**-**	**-**	**-**	**1%**	**-**	**2%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	10	7	0	2	*19*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	7	7	0	1	*15*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**2**	**4**	**0**	**1**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**3**	**9**	**0**	**2**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**4**	**4**	**0**	**2**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**2**	**7**	**0**	**1**	***10***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	3	0	0	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	2	3	0	0	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	33	41	0	11	*85*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**11**	**24**	**0**	**6**	***41***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Burnham Dr Eastbound				Burnham Dr Westbound				SR 16 EB Ramps Northbound				SR 16 EB Ramps Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	10	0	0	5	2	0	0	0	0	0	0	1	0	1	19	0
4:15 PM	0	0	7	0	0	4	3	0	0	0	0	0	0	1	0	0	15	0
4:30 PM	**0**	**0**	**2**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	0
4:45 PM	**0**	**0**	**2**	**1**	**0**	**5**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**14**	55
5:00 PM	**0**	**0**	**4**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**10**	46
5:15 PM	**0**	**0**	**1**	**1**	**0**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**10**	**41**
5:30 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	1	5	39
5:45 PM	0	0	2	0	0	2	1	0	0	0	0	0	0	0	0	0	5	30
Count Total	0	0	31	2	0	28	13	0	0	0	0	0	0	7	0	4	85	0
Peak Hour	**0**	**0**	**9**	**2**	**0**	**17**	**7**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**41**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Burnham Dr Eastbound			Burnham Dr Westbound			SR 16 EB Ramps Northbound			SR 16 EB Ramps Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Single-Family Detached Housing
(210)

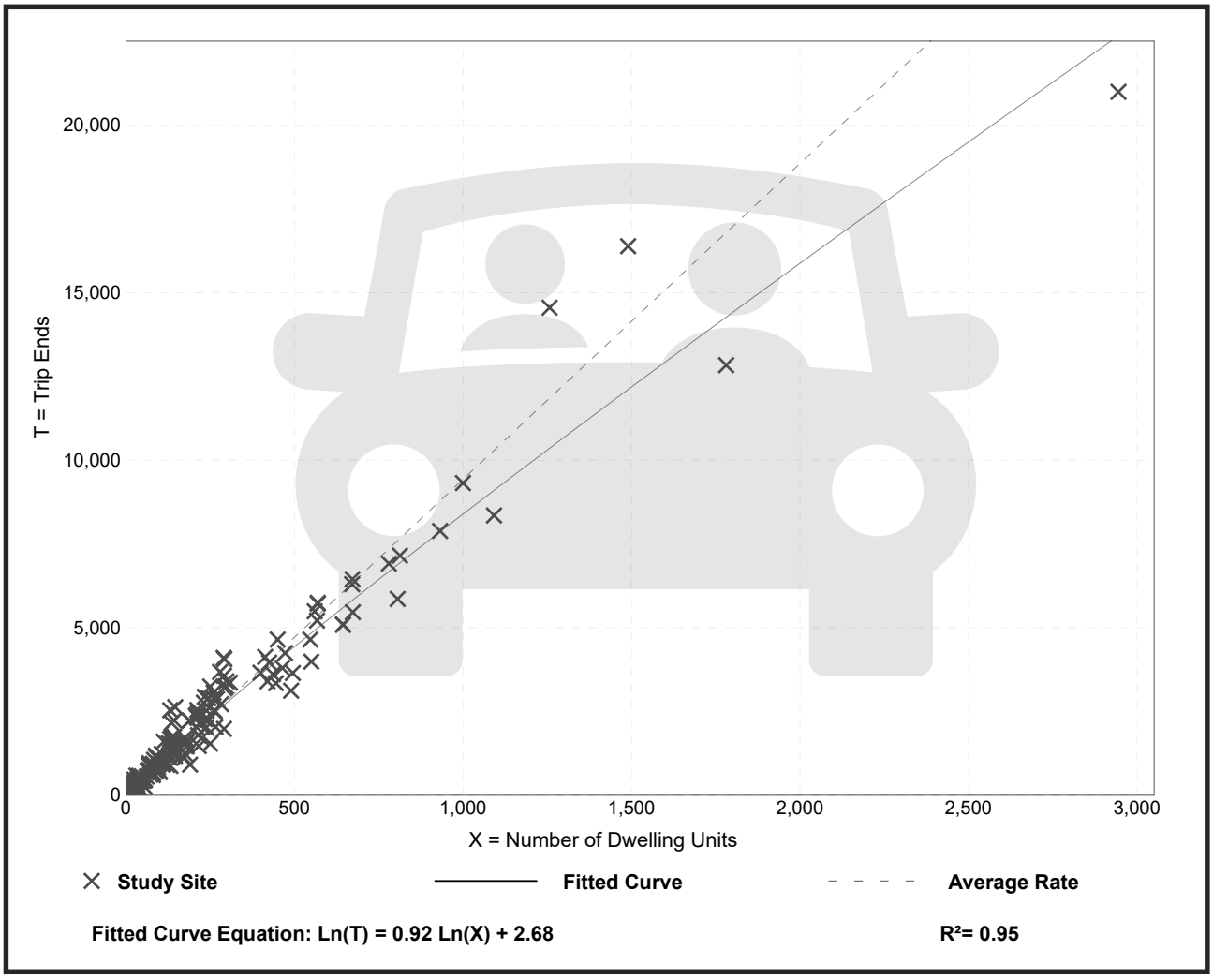
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

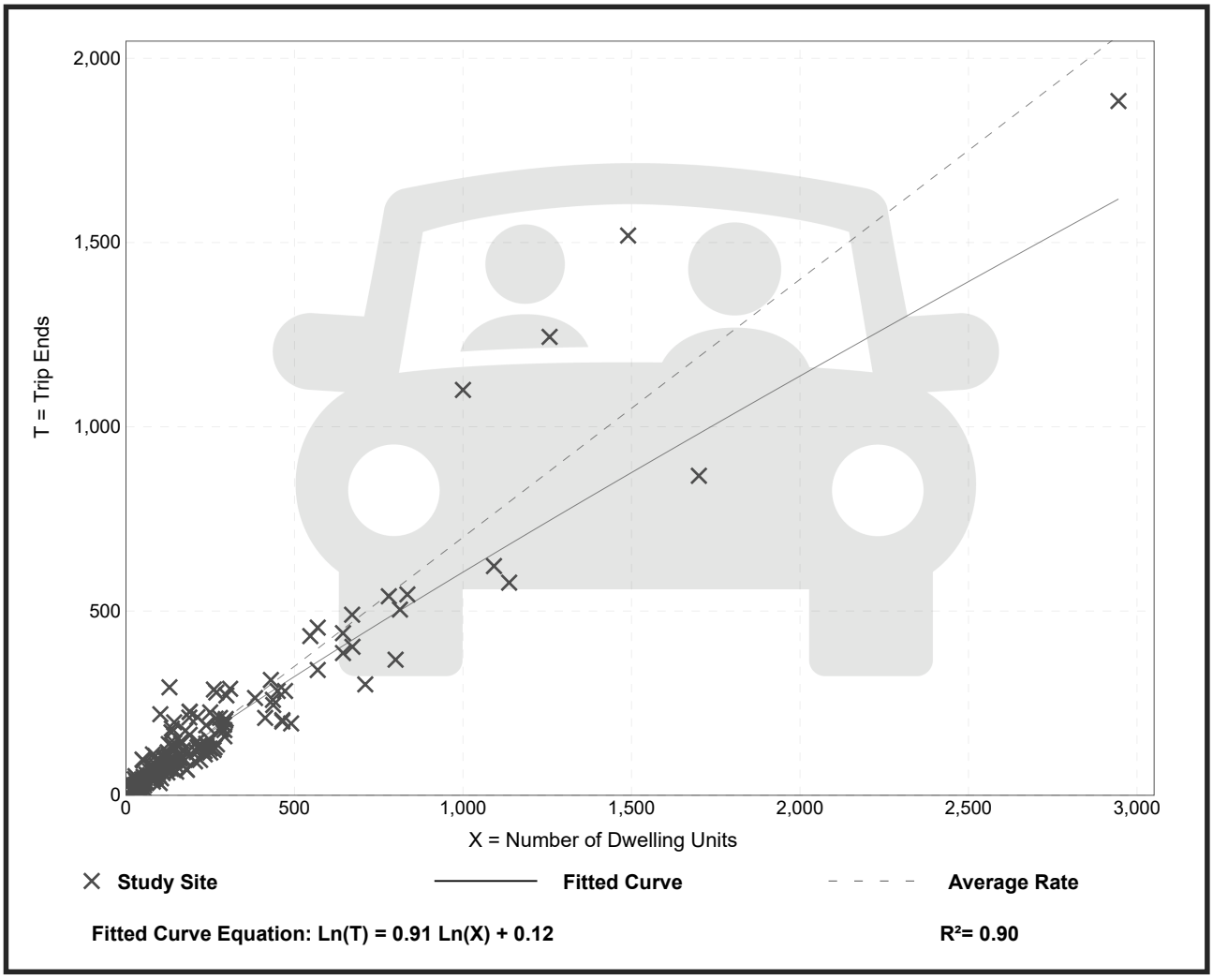
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

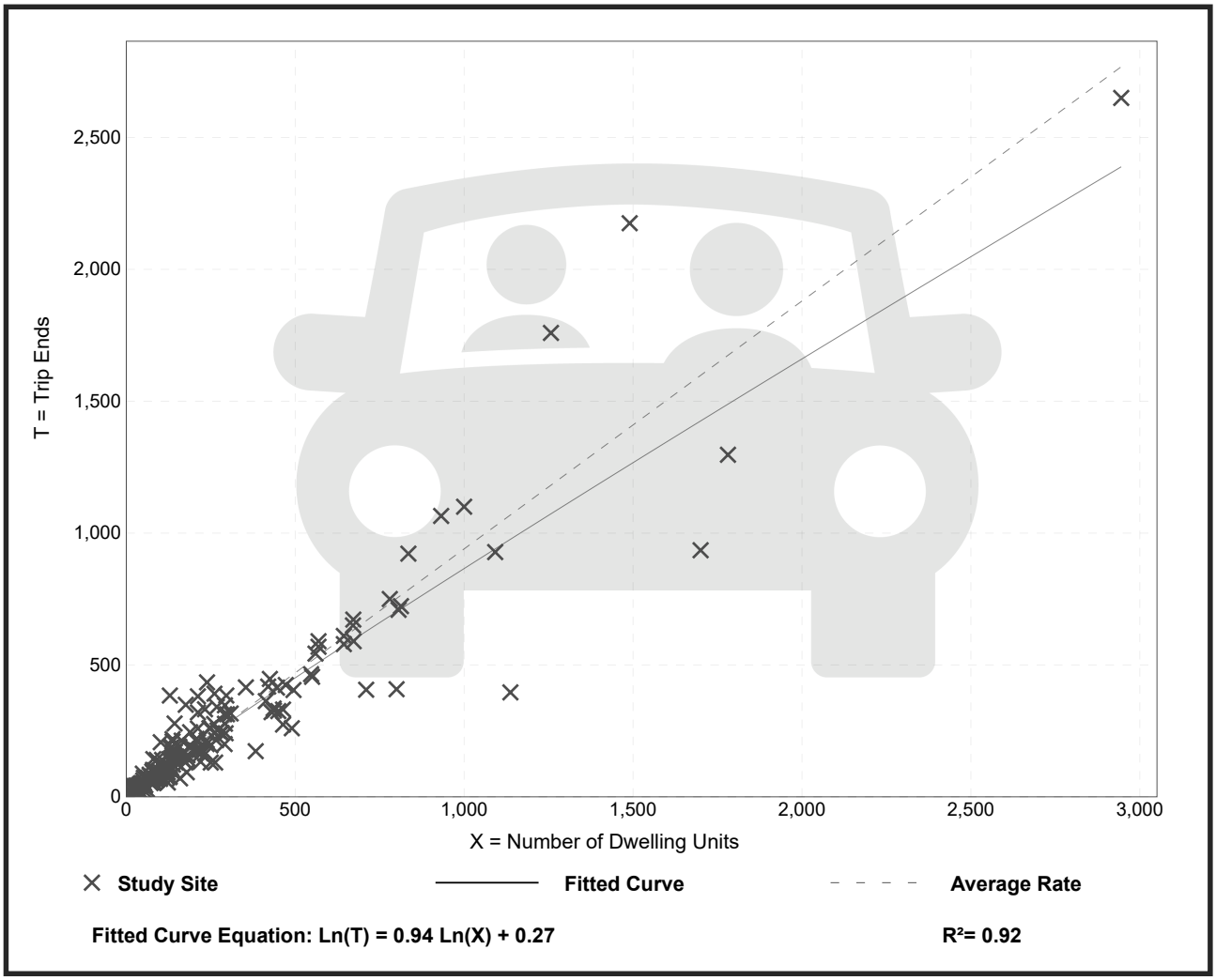
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	28	28	92	180	10
Future Vol, veh/h	3	28	28	92	180	10
Conflicting Peds, #/hr	2	2	2	0	0	2
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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	30	30	98	191	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	359	201	204	0	-	0
Stage 1	199	-	-	-	-	-
Stage 2	160	-	-	-	-	-
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	640	840	1368	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	869	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	623	837	1365	-	-	-
Mov Cap-2 Maneuver	623	-	-	-	-	-
Stage 1	814	-	-	-	-	-
Stage 2	867	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1365	-	810	-	-
HCM Lane V/C Ratio	0.022	-	0.041	-	-
HCM Control Delay (s)	7.7	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

MOVEMENT SUMMARY

Site: 2 [Existing PM Peak Hour (Site Folder: 2. SR 16 EB Ramps & Burnham Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 EB Ramps & Burnham Dr

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: Burnham Dr															
1u	U	All MCs	4	1.0	4	1.0	0.708	12.2	LOS B	10.4	265.2	0.05	0.57	0.05	34.0
1	L2	All MCs	613	3.0	613	3.0	0.708	9.8	LOS A	10.4	265.2	0.05	0.57	0.05	33.9
6	T1	All MCs	392	2.0	392	2.0	0.708	4.0	LOS A	10.4	265.2	0.05	0.57	0.05	34.7
Approach			1008	2.6	1008	2.6	0.708	7.5	LOS A	10.4	265.2	0.05	0.57	0.05	34.2
North: SR 16 EB Off Ramp															
7	L2	All MCs	468	1.0	468	1.0	0.422	18.7	LOS B	3.1	77.5	0.84	0.85	0.96	29.6
4	T1	All MCs	1	1.0	1	1.0	0.422	12.4	LOS B	3.1	77.5	0.84	0.82	0.94	30.8
14	R2	All MCs	119	2.0	119	2.0	0.422	12.4	LOS B	3.1	77.5	0.84	0.82	0.94	30.6
Approach			588	1.2	588	1.2	0.422	17.5	LOS B	3.1	77.5	0.84	0.85	0.95	29.8
West: Burnham Dr															
5u	U	All MCs	1	1.0	1	1.0	0.402	17.3	LOS B	2.2	54.9	0.75	0.81	0.84	33.1
2	T1	All MCs	462	2.0	462	2.0	0.402	9.0	LOS A	2.3	58.8	0.75	0.80	0.83	33.8
12	R2	All MCs	126	2.0	126	2.0	0.402	8.5	LOS A	2.3	58.8	0.75	0.79	0.82	33.6
Approach			589	2.0	589	2.0	0.402	8.9	LOS A	2.3	58.8	0.75	0.80	0.83	33.7
All Vehicles			2186	2.1	2186	2.1	0.708	10.6	LOS B	10.4	265.2	0.45	0.71	0.50	32.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

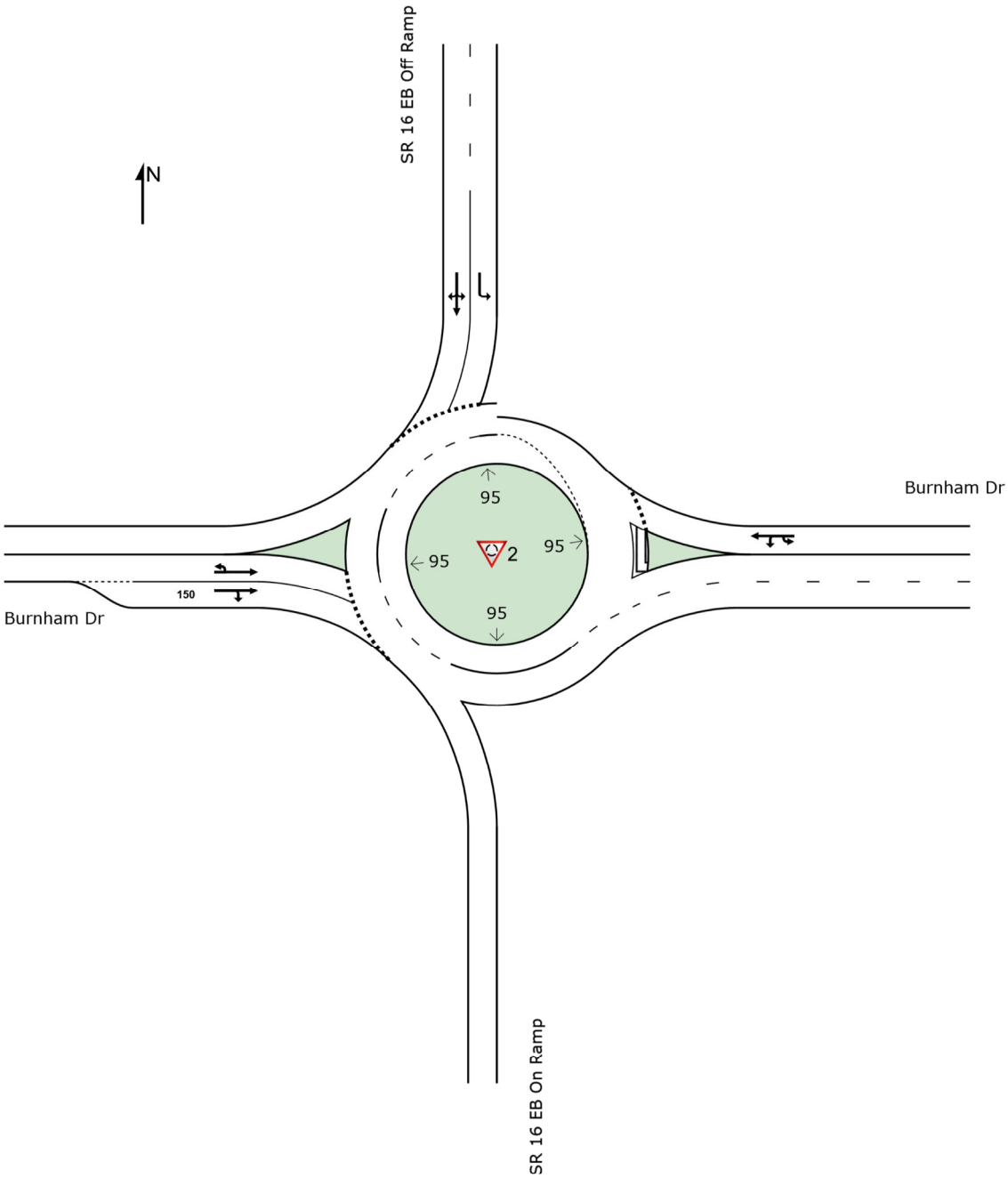
SITE LAYOUT

Site: 2 [Existing PM Peak Hour (Site Folder: 2. SR 16 EB Ramps & Burnham Dr)]

SR 16 EB Ramps & Burnham Dr

Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



LANE LEVEL OF SERVICE

Lane Level of Service

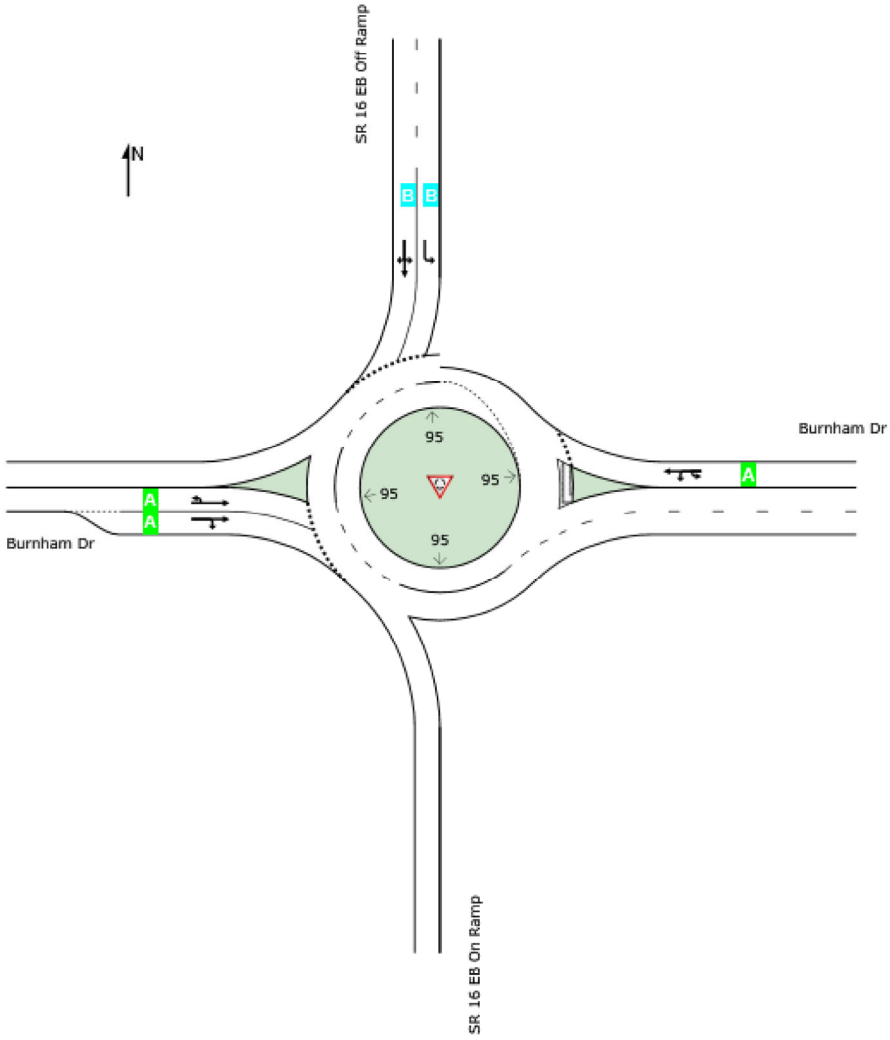
Site: 2 [Existing PM Peak Hour (Site Folder: 2. SR 16 EB Ramps & Burnham Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 EB Ramps & Burnham Dr

Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	B	A	B



Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: 3 [Existing PM Peak Hour (Site Folder: 3. SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Burnham Drive															
3	L2	All MCs	50	2.0	50	2.0	0.304	15.4	LOS B	1.5	37.7	0.78	0.86	0.79	26.1
3a	L1	All MCs	98	1.0	98	1.0	0.304	13.8	LOS B	1.5	37.7	0.78	0.86	0.79	32.0
8	T1	All MCs	52	2.0	52	2.0	0.304	7.8	LOS A	1.5	37.7	0.78	0.86	0.79	32.6
18	R2	All MCs	74	1.0	74	1.0	0.165	10.1	LOS B	0.7	17.2	0.74	0.85	0.74	33.1
Approach			274	1.4	274	1.4	0.304	12.0	LOS B	1.5	37.7	0.77	0.86	0.78	31.4
East: Borgen Blvd															
1	L2	All MCs	29	1.0	29	1.0	0.679	19.1	LOS B	8.8	224.4	0.97	0.91	1.32	32.1
6	T1	All MCs	647	3.0	647	3.0	0.679	11.6	LOS B	8.8	224.4	0.97	0.91	1.32	30.0
16a	R1	All MCs	471	1.0	471	1.0	0.807	19.0	LOS B	12.5	314.2	1.00	1.14	1.73	29.5
16	R2	All MCs	147	1.0	147	1.0	0.807	19.7	LOS B	12.5	314.2	1.00	1.14	1.73	29.3
Approach			1294	2.0	1294	2.0	0.807	15.4	LOS B	12.5	314.2	0.99	1.02	1.52	29.7
North: Canterwood Blvd															
7	L2	All MCs	103	1.0	103	1.0	0.290	15.7	LOS B	1.6	41.5	0.86	0.86	0.86	31.4
4	T1	All MCs	40	1.0	40	1.0	0.290	8.1	LOS A	1.6	41.5	0.86	0.86	0.86	32.3
14	R2	All MCs	224	2.0	224	2.0	0.312	7.2	LOS A	2.1	53.9	0.91	0.80	0.91	32.3
14b	R3	All MCs	49	4.0	49	4.0	0.032	5.1	LOS A	0.0	0.0	0.00	0.45	0.00	36.7
Approach			416	1.9	416	1.9	0.312	9.1	LOS A	2.1	53.9	0.79	0.78	0.79	32.5
West: Burnham Drive															
5b	L3	All MCs	91	6.0	91	6.0	0.330	12.8	LOS B	2.3	60.0	0.46	0.49	0.46	31.8
5	L2	All MCs	46	7.0	46	7.0	0.330	11.5	LOS B	2.3	60.0	0.46	0.49	0.46	31.7
2	T1	All MCs	637	1.0	637	1.0	0.330	3.7	LOS A	2.5	62.2	0.44	0.43	0.44	33.4
12	R2	All MCs	136	2.0	136	2.0	0.330	4.1	LOS A	2.5	62.2	0.43	0.38	0.43	33.8
Approach			909	2.0	909	2.0	0.330	5.1	LOS A	2.5	62.2	0.44	0.43	0.44	33.2
SouthWest: SR 16 Off-Ramp															
5bx	L3	All MCs	63	2.0	63	2.0	0.495	16.3	LOS B	2.8	72.1	0.74	0.90	0.90	25.7
5x	L2	All MCs	1	1.0	1	1.0	0.495	14.7	LOS B	2.8	72.1	0.74	0.90	0.90	31.6
5ax	L1	All MCs	326	2.0	326	2.0	0.495	13.5	LOS B	2.8	72.1	0.74	0.90	0.90	31.5
12ax	R1	All MCs	450	1.0	450	1.0	0.394	5.3	LOS A	2.2	55.3	0.70	0.59	0.72	35.0
12bx	R3	All MCs	43	1.0	43	1.0	0.027	3.7	LOS A	0.0	0.0	0.00	0.46	0.00	36.8
Approach			883	1.4	883	1.4	0.495	9.0	LOS A	2.8	72.1	0.68	0.72	0.76	33.0
All Vehicles			3777	1.8	3777	1.8	0.807	10.5	LOS B	12.5	314.2	0.75	0.77	0.95	31.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings

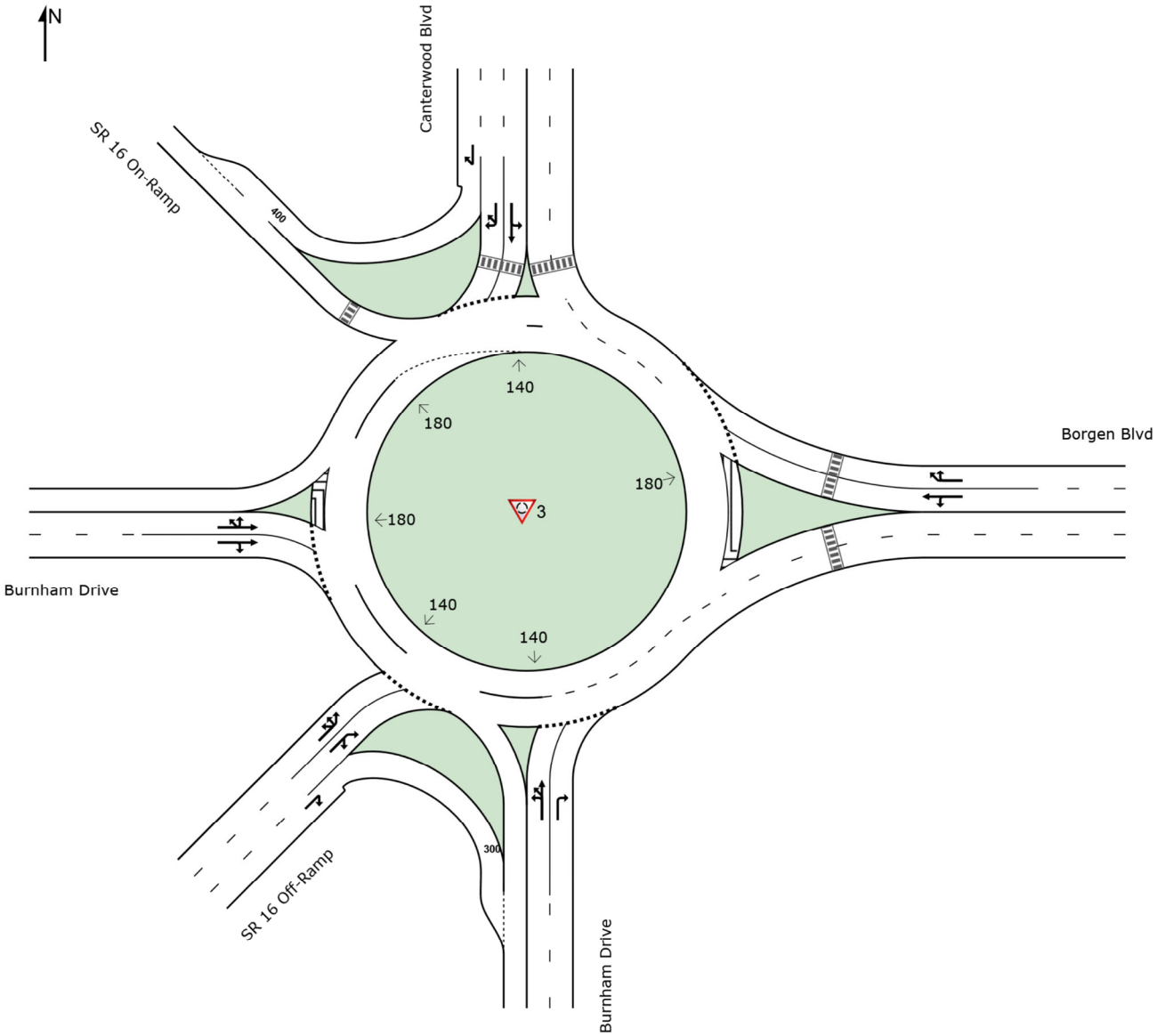
dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

Site: 3 [Existing PM Peak Hour (Site Folder: 3. SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd)]

SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



Elliptical shape restrictions apply to this Roundabout.

LANE LEVEL OF SERVICE

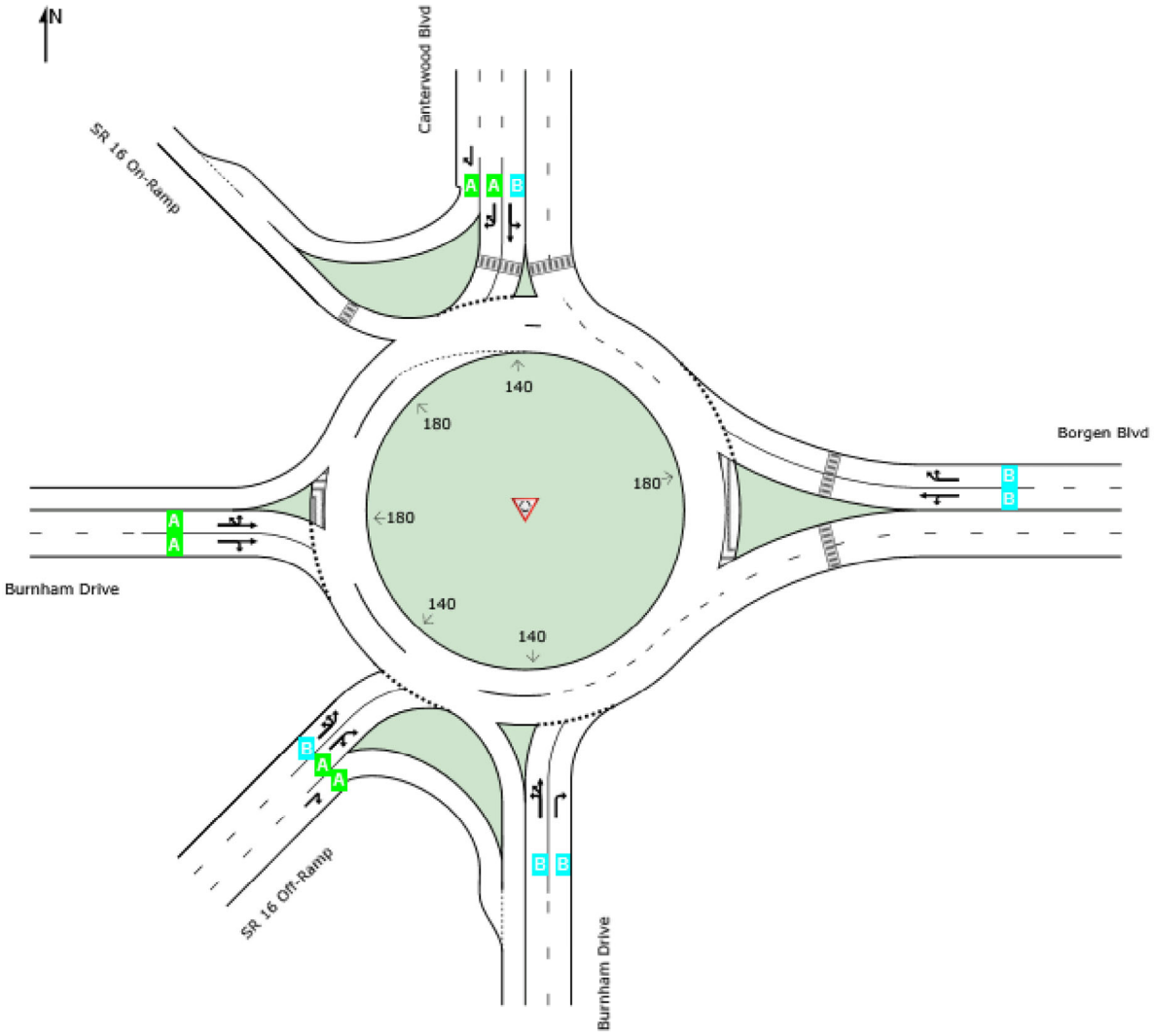
Lane Level of Service

Site: 3 [Existing PM Peak Hour (Site Folder: 3. SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd
Site Category: (None)
Roundabout

	Approaches					Intersection
	South	East	North	West	Southwest	
LOS	B	B	A	A	A	B



Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	32	32	107	209	12
Future Vol, veh/h	3	32	32	107	209	12
Conflicting Peds, #/hr	2	2	2	0	0	2
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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	34	34	114	222	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	415	233	237	0	-	0
Stage 1	231	-	-	-	-	-
Stage 2	184	-	-	-	-	-
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	594	806	1330	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	576	803	1327	-	-	-
Mov Cap-2 Maneuver	576	-	-	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1327	-	777	-	-
HCM Lane V/C Ratio	0.026	-	0.048	-	-
HCM Control Delay (s)	7.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

MOVEMENT SUMMARY

Site: 2 [Forecast 2028 PM Without Project (Site Folder: 2. SR 16 EB Ramps & Burnham Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 EB Ramps & Burnham Dr

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: Burnham Dr															
1u	U	All MCs	4	1.0	4	1.0	0.821	12.2	LOS B	19.4	495.9	0.08	0.56	0.08	33.9
1	L2	All MCs	711	3.0	711	3.0	0.821	9.8	LOS A	19.4	495.9	0.08	0.56	0.08	33.9
6	T1	All MCs	454	2.0	454	2.0	0.821	4.0	LOS A	19.4	495.9	0.08	0.56	0.08	34.6
Approach			1168	2.6	1168	2.6	0.821	7.5	LOS A	19.4	495.9	0.08	0.56	0.08	34.2
North: SR 16 EB Off Ramp															
7	L2	All MCs	543	1.0	543	1.0	0.606	29.8	LOS C	6.6	167.9	0.97	1.06	1.54	25.9
4	T1	All MCs	1	1.0	1	1.0	0.606	23.1	LOS C	6.6	167.9	0.99	1.05	1.55	26.9
14	R2	All MCs	138	2.0	138	2.0	0.606	23.1	LOS C	6.6	167.9	0.99	1.05	1.55	26.8
Approach			682	1.2	682	1.2	0.606	28.5	LOS C	6.6	167.9	0.97	1.06	1.54	26.1
West: Burnham Dr															
5u	U	All MCs	1	1.0	1	1.0	0.539	20.5	LOS C	3.4	87.3	0.84	0.93	1.09	31.6
2	T1	All MCs	536	2.0	536	2.0	0.539	12.0	LOS B	3.8	96.9	0.85	0.92	1.09	32.4
12	R2	All MCs	146	2.0	146	2.0	0.539	11.2	LOS B	3.8	96.9	0.85	0.91	1.09	32.4
Approach			683	2.0	683	2.0	0.539	11.8	LOS B	3.8	96.9	0.85	0.92	1.09	32.4
All Vehicles			2534	2.1	2534	2.1	0.821	14.3	LOS B	19.4	495.9	0.53	0.79	0.74	31.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

LANE LEVEL OF SERVICE

Lane Level of Service

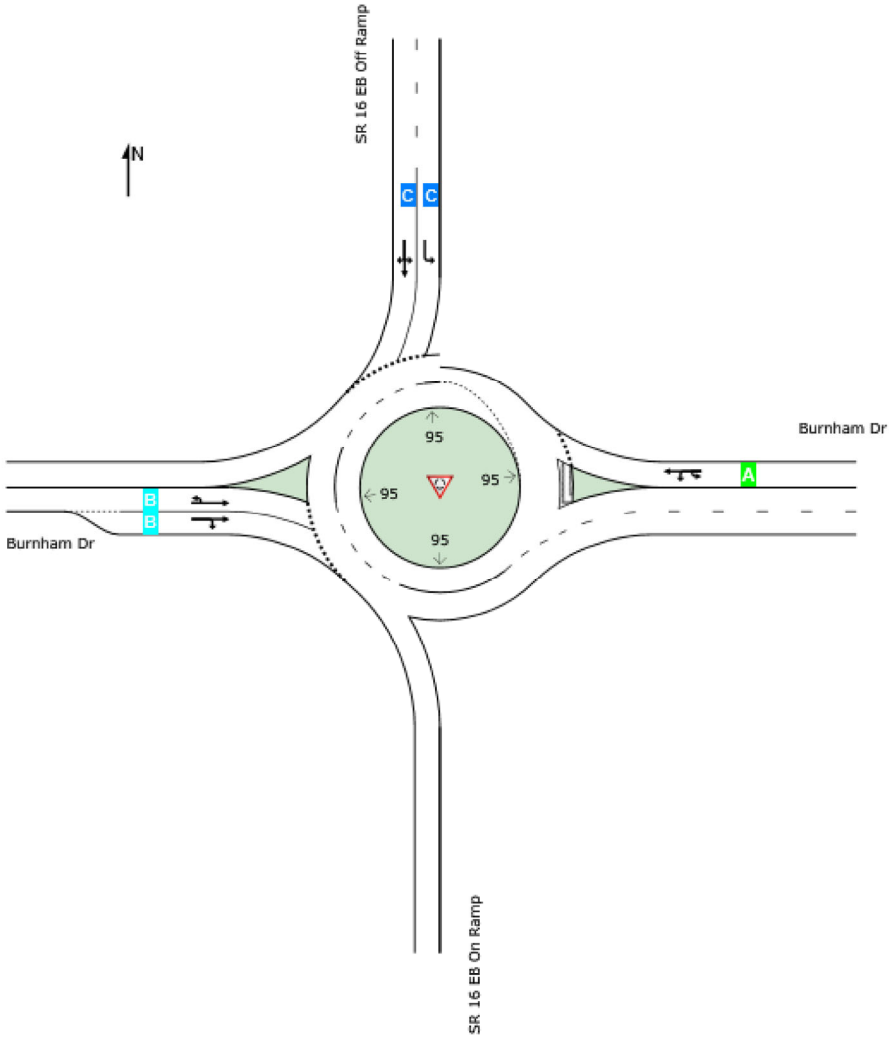
Site: 2 [Forecast 2028 PM Without Project (Site Folder: 2. SR 16 EB Ramps & Burnham Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 EB Ramps & Burnham Dr

Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	C	B	B



Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

MOVEMENT SUMMARY

Site: 3 [Forecast 2028 PM Without Project (Site Folder: 3. SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Burnham Drive															
3	L2	All MCs	57	2.0	57	2.0	0.405	18.2	LOS B	2.3	58.5	0.85	0.95	1.01	25.0
3a	L1	All MCs	113	1.0	113	1.0	0.405	16.6	LOS B	2.3	58.5	0.85	0.95	1.01	30.9
8	T1	All MCs	60	2.0	60	2.0	0.405	10.6	LOS B	2.3	58.5	0.85	0.95	1.01	31.5
18	R2	All MCs	87	1.0	87	1.0	0.221	11.9	LOS B	1.0	24.6	0.80	0.88	0.80	32.2
Approach			317	1.4	317	1.4	0.405	14.4	LOS B	2.3	58.5	0.84	0.93	0.95	30.4
East: Borgen Blvd															
1	L2	All MCs	33	1.0	33	1.0	0.892	34.9	LOS D	20.5	525.0	1.00	1.44	2.23	26.2
6	T1	All MCs	750	3.0	750	3.0	0.892	27.5	LOS D	20.5	525.0	1.00	1.44	2.23	22.8
16a	R1	All MCs	547	1.0	547	1.0	1.087	74.7	LOS F	39.5	994.2	1.00	2.22	4.16	16.9
16	R2	All MCs	170	1.0	170	1.0	1.087	75.4	LOS F	39.5	994.2	1.00	2.22	4.16	16.8
Approach			1500	2.0	1500	2.0	1.087	50.3	LOS D	39.5	994.2	1.00	1.81	3.15	19.1
North: Canterwood Blvd															
7	L2	All MCs	119	1.0	119	1.0	0.404	19.1	LOS B	2.5	64.1	0.93	0.94	1.04	30.1
4	T1	All MCs	46	1.0	46	1.0	0.404	11.5	LOS B	2.5	64.1	0.93	0.94	1.04	31.0
14	R2	All MCs	260	2.0	260	2.0	0.431	10.0	LOS A	3.3	84.2	0.99	0.88	1.10	30.8
14b	R3	All MCs	57	4.0	57	4.0	0.038	5.4	LOS A	0.0	0.0	0.00	0.45	0.00	36.7
Approach			483	1.9	483	1.9	0.431	11.8	LOS B	3.3	84.2	0.85	0.85	0.95	31.3
West: Burnham Drive															
5b	L3	All MCs	105	6.0	105	6.0	0.392	13.1	LOS B	3.0	75.9	0.52	0.50	0.52	31.5
5	L2	All MCs	53	7.0	53	7.0	0.392	11.7	LOS B	3.0	75.9	0.52	0.50	0.52	31.5
2	T1	All MCs	738	1.0	738	1.0	0.392	3.9	LOS A	3.1	79.1	0.51	0.44	0.51	33.1
12	R2	All MCs	157	2.0	157	2.0	0.392	4.3	LOS A	3.1	79.1	0.50	0.40	0.50	33.5
Approach			1053	2.0	1053	2.0	0.392	5.3	LOS A	3.1	79.1	0.51	0.45	0.51	32.9
SouthWest: SR 16 Off-Ramp															
5bx	L3	All MCs	73	2.0	73	2.0	0.643	18.7	LOS B	4.4	111.8	0.83	1.01	1.16	24.8
5x	L2	All MCs	1	1.0	1	1.0	0.643	17.2	LOS B	4.4	111.8	0.83	1.01	1.16	30.6
5ax	L1	All MCs	378	2.0	378	2.0	0.643	15.9	LOS B	4.4	111.8	0.83	1.01	1.16	30.5
12ax	R1	All MCs	521	1.0	521	1.0	0.492	6.3	LOS A	3.2	81.4	0.78	0.73	0.90	34.7
12bx	R3	All MCs	50	1.0	50	1.0	0.032	3.8	LOS A	0.0	0.0	0.00	0.46	0.00	36.8
Approach			1023	1.4	1023	1.4	0.643	10.6	LOS B	4.4	111.8	0.77	0.84	0.97	32.4
All Vehicles			4377	1.8	4377	1.8	1.087	23.4	LOS C	39.5	994.2	0.80	1.09	1.60	26.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings

dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

LANE LEVEL OF SERVICE

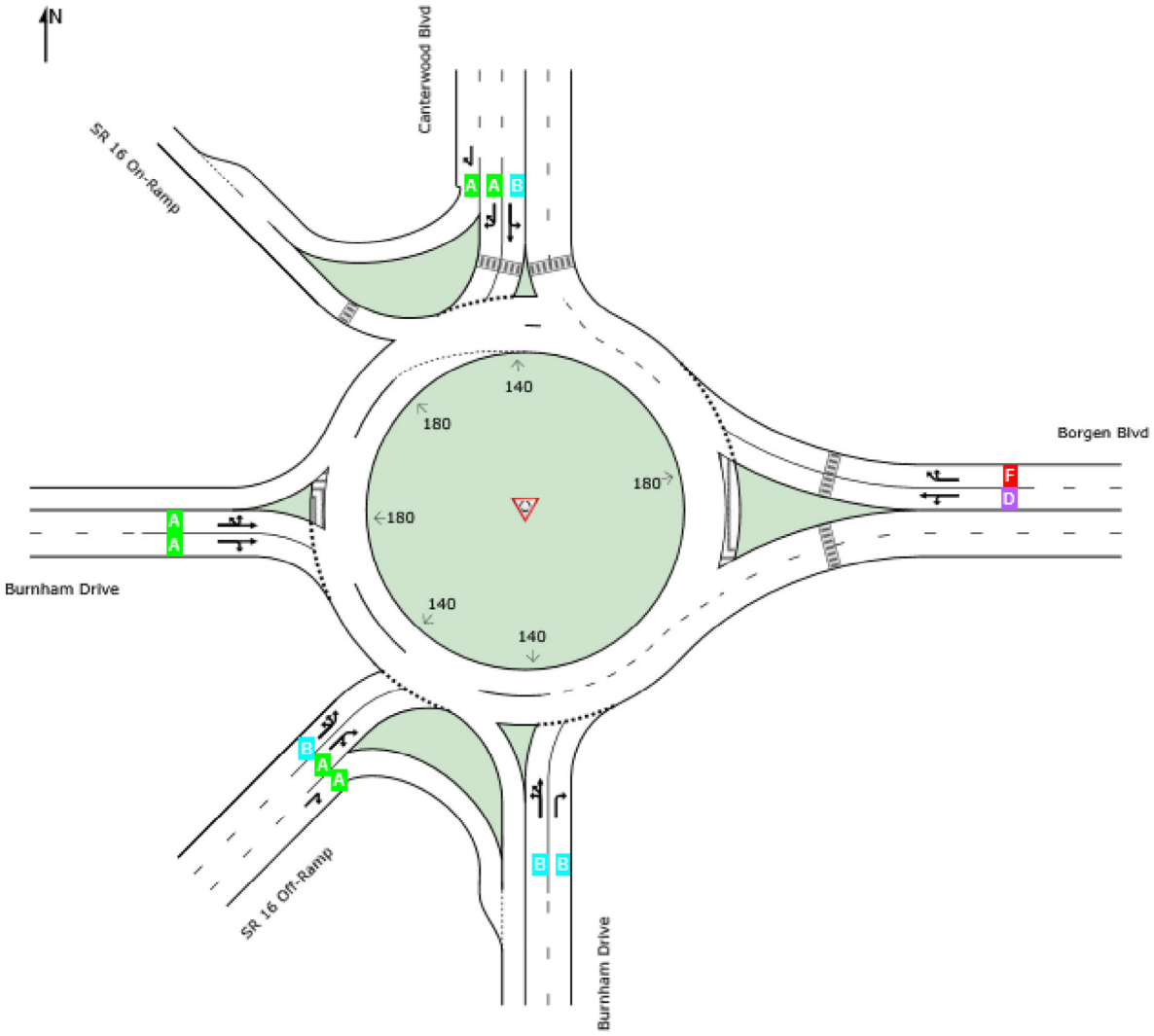
Lane Level of Service

Site: 3 [Forecast 2028 PM Without Project (Site Folder: 3. SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd
Site Category: (None)
Roundabout

	Approaches					Intersection
	South	East	North	West	Southwest	
LOS	B	D	B	A	B	C



Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	48	58	107	209	19
Future Vol, veh/h	7	48	58	107	209	19
Conflicting Peds, #/hr	2	2	2	0	0	2
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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	51	62	114	222	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	474	236	244	0	-	0
Stage 1	234	-	-	-	-	-
Stage 2	240	-	-	-	-	-
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	549	803	1322	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	800	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	519	800	1319	-	-	-
Mov Cap-2 Maneuver	519	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	2.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1319	-	748	-	-
HCM Lane V/C Ratio	0.047	-	0.078	-	-
HCM Control Delay (s)	7.9	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

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	0	35	0	5	44	28	0	0	3	17	0	0
Future Vol, veh/h	0	35	0	5	44	28	0	0	3	17	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	38	0	5	48	30	0	0	3	18	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	38	0	0	111	126	38	113	111	63
Stage 1	-	-	-	-	-	-	38	38	-	73	73	-
Stage 2	-	-	-	-	-	-	73	88	-	40	38	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1520	-	-	1572	-	-	867	764	1034	864	779	1002
Stage 1	-	-	-	-	-	-	977	863	-	937	834	-
Stage 2	-	-	-	-	-	-	937	822	-	975	863	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1520	-	-	1572	-	-	865	762	1034	860	777	1002
Mov Cap-2 Maneuver	-	-	-	-	-	-	865	762	-	860	777	-
Stage 1	-	-	-	-	-	-	977	863	-	937	831	-
Stage 2	-	-	-	-	-	-	934	820	-	972	863	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	8.5	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1034	1520	-	-	1572	-	-	860
HCM Lane V/C Ratio	0.003	-	-	-	0.003	-	-	0.021
HCM Control Delay (s)	8.5	0	-	-	7.3	0	-	9.3
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

MOVEMENT SUMMARY

Site: 2 [Forecast 2028 PM With Project (Site Folder: 2. SR 16 EB Ramps & Burnham Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 EB Ramps & Burnham Dr

Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
East: Burnham Dr															
1u	U	All MCs	4	1.0	4	1.0	0.833	12.2	LOS B	21.2	541.6	0.08	0.55	0.08	34.0
1	L2	All MCs	711	3.0	711	3.0	0.833	9.8	LOS A	21.2	541.6	0.08	0.55	0.08	33.9
6	T1	All MCs	472	2.0	472	2.0	0.833	4.0	LOS A	21.2	541.6	0.08	0.55	0.08	34.6
Approach			1186	2.6	1186	2.6	0.833	7.5	LOS A	21.2	541.6	0.08	0.55	0.08	34.2
North: SR 16 EB Off Ramp															
7	L2	All MCs	543	1.0	543	1.0	0.630	31.9	LOS C	7.2	183.2	0.98	1.09	1.62	25.3
4	T1	All MCs	1	1.0	1	1.0	0.630	25.1	LOS C	7.2	183.2	1.00	1.08	1.64	26.3
14	R2	All MCs	144	2.0	144	2.0	0.630	25.2	LOS C	7.2	183.2	1.00	1.08	1.64	26.1
Approach			688	1.2	688	1.2	0.630	30.5	LOS C	7.2	183.2	0.99	1.09	1.63	25.5
West: Burnham Dr															
5u	U	All MCs	1	1.0	1	1.0	0.551	20.6	LOS C	3.6	90.5	0.84	0.94	1.11	31.5
2	T1	All MCs	545	2.0	545	2.0	0.551	12.1	LOS B	4.0	100.7	0.85	0.93	1.11	32.3
12	R2	All MCs	152	2.0	152	2.0	0.551	11.3	LOS B	4.0	100.7	0.86	0.92	1.11	32.4
Approach			698	2.0	698	2.0	0.551	12.0	LOS B	4.0	100.7	0.85	0.93	1.11	32.4
All Vehicles			2573	2.1	2573	2.1	0.833	14.9	LOS B	21.2	541.6	0.53	0.80	0.77	30.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

LANE LEVEL OF SERVICE

Lane Level of Service

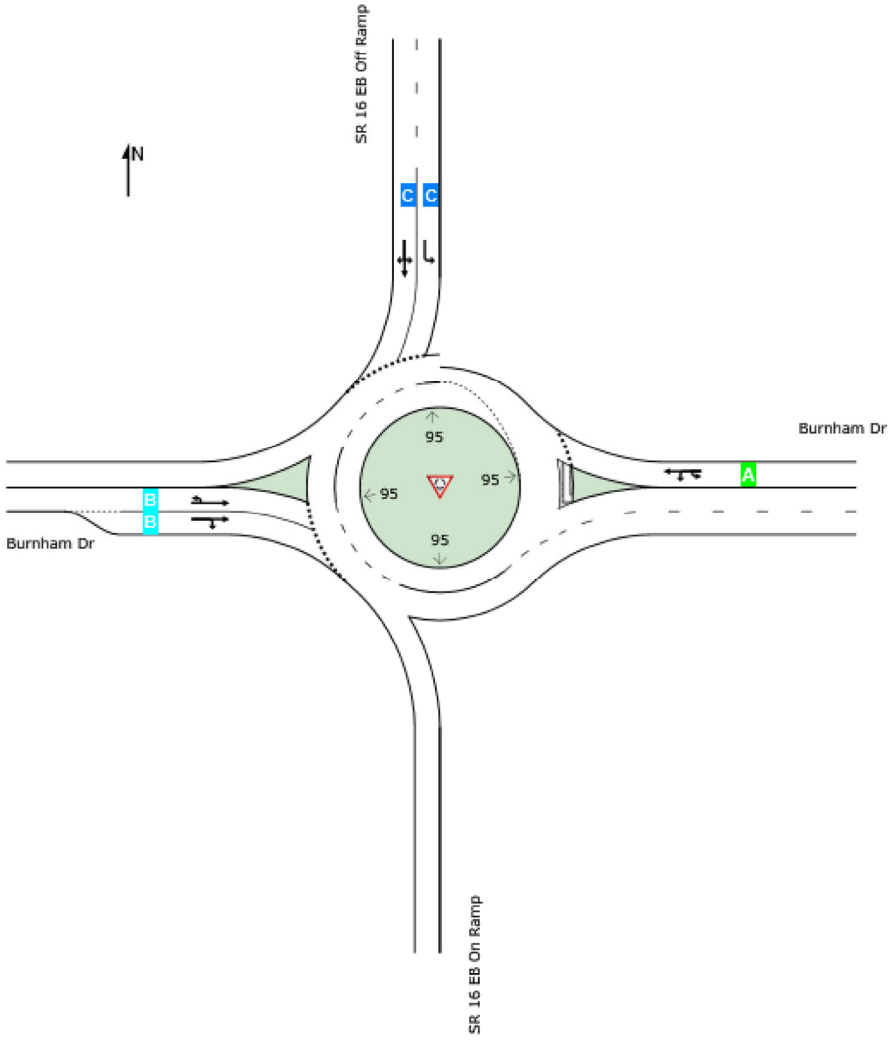
Site: 2 [Forecast 2028 PM With Project (Site Folder: 2. SR 16 EB Ramps & Burnham Dr)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 EB Ramps & Burnham Dr

Site Category: (None)
Roundabout

	Approaches			Intersection
	East	North	West	
LOS	A	C	B	B



Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Organisation: HEATH & ASSOCIATES | Licence: PLUS / 1PC | Processed: Wednesday, January 18, 2023 3:43:54 PM
Project: T:\Sidra\4600\Summit Pointe.sip9

MOVEMENT SUMMARY

Site: 3 [Forecast 2028 PM With Project (Site Folder: 3. SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Burnham Drive															
3	L2	All MCs	61	2.0	61	2.0	0.418	18.6	LOS B	2.4	61.3	0.86	0.96	1.03	24.9
3a	L1	All MCs	113	1.0	113	1.0	0.418	17.0	LOS B	2.4	61.3	0.86	0.96	1.03	30.7
8	T1	All MCs	60	2.0	60	2.0	0.418	11.0	LOS B	2.4	61.3	0.86	0.96	1.03	31.3
18	R2	All MCs	87	1.0	87	1.0	0.224	12.1	LOS B	1.0	25.1	0.80	0.89	0.80	32.1
Approach			321	1.4	321	1.4	0.418	14.8	LOS B	2.4	61.3	0.84	0.94	0.97	30.2
East: Borgen Blvd															
1	L2	All MCs	33	1.0	33	1.0	0.914	38.6	LOS D	22.7	580.1	1.00	1.53	2.40	25.1
6	T1	All MCs	753	3.0	753	3.0	0.914	31.3	LOS D	22.7	580.1	1.00	1.53	2.40	21.6
16a	R1	All MCs	547	1.0	547	1.0	1.114	84.8	LOS F	43.0	1083.3	1.00	2.34	4.49	15.7
16	R2	All MCs	170	1.0	170	1.0	1.114	85.5	LOS F	43.0	1083.3	1.00	2.34	4.49	15.6
Approach			1503	2.0	1503	2.0	1.114	57.0	LOS E	43.0	1083.3	1.00	1.92	3.40	17.8
North: Canterwood Blvd															
7	L2	All MCs	119	1.0	119	1.0	0.409	19.5	LOS B	2.6	65.4	0.93	0.94	1.05	29.9
4	T1	All MCs	46	1.0	46	1.0	0.409	11.9	LOS B	2.6	65.4	0.93	0.94	1.05	30.8
14	R2	All MCs	261	2.0	261	2.0	0.438	10.4	LOS B	3.4	86.7	0.99	0.89	1.12	30.6
14b	R3	All MCs	57	4.0	57	4.0	0.038	5.4	LOS A	0.0	0.0	0.00	0.45	0.00	36.7
Approach			484	1.9	484	1.9	0.438	12.2	LOS B	3.4	86.7	0.85	0.86	0.96	31.1
West: Burnham Drive															
5b	L3	All MCs	109	6.0	109	6.0	0.395	13.1	LOS B	3.0	76.9	0.52	0.50	0.52	31.5
5	L2	All MCs	54	7.0	54	7.0	0.395	11.7	LOS B	3.0	76.9	0.52	0.50	0.52	31.5
2	T1	All MCs	740	1.0	740	1.0	0.395	3.9	LOS A	3.2	80.2	0.51	0.44	0.51	33.1
12	R2	All MCs	159	2.0	159	2.0	0.395	4.3	LOS A	3.2	80.2	0.50	0.40	0.50	33.5
Approach			1062	2.0	1062	2.0	0.395	5.3	LOS A	3.2	80.2	0.51	0.45	0.51	32.9
SouthWest: SR 16 Off-Ramp															
5bx	L3	All MCs	83	2.0	83	2.0	0.660	19.1	LOS B	4.6	117.5	0.84	1.02	1.19	24.6
5x	L2	All MCs	1	1.0	1	1.0	0.660	17.5	LOS B	4.6	117.5	0.84	1.02	1.19	30.4
5ax	L1	All MCs	378	2.0	378	2.0	0.660	16.2	LOS B	4.6	117.5	0.84	1.02	1.19	30.4
12ax	R1	All MCs	521	1.0	521	1.0	0.494	6.4	LOS A	3.3	82.0	0.78	0.74	0.91	34.7
12bx	R3	All MCs	50	1.0	50	1.0	0.032	3.8	LOS A	0.0	0.0	0.00	0.46	0.00	36.8
Approach			1033	1.4	1033	1.4	0.660	10.9	LOS B	4.6	117.5	0.77	0.85	0.99	32.2
All Vehicles			4403	1.8	4403	1.8	1.114	25.7	LOS C	43.0	1083.3	0.80	1.12	1.69	25.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings

dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

LANE LEVEL OF SERVICE

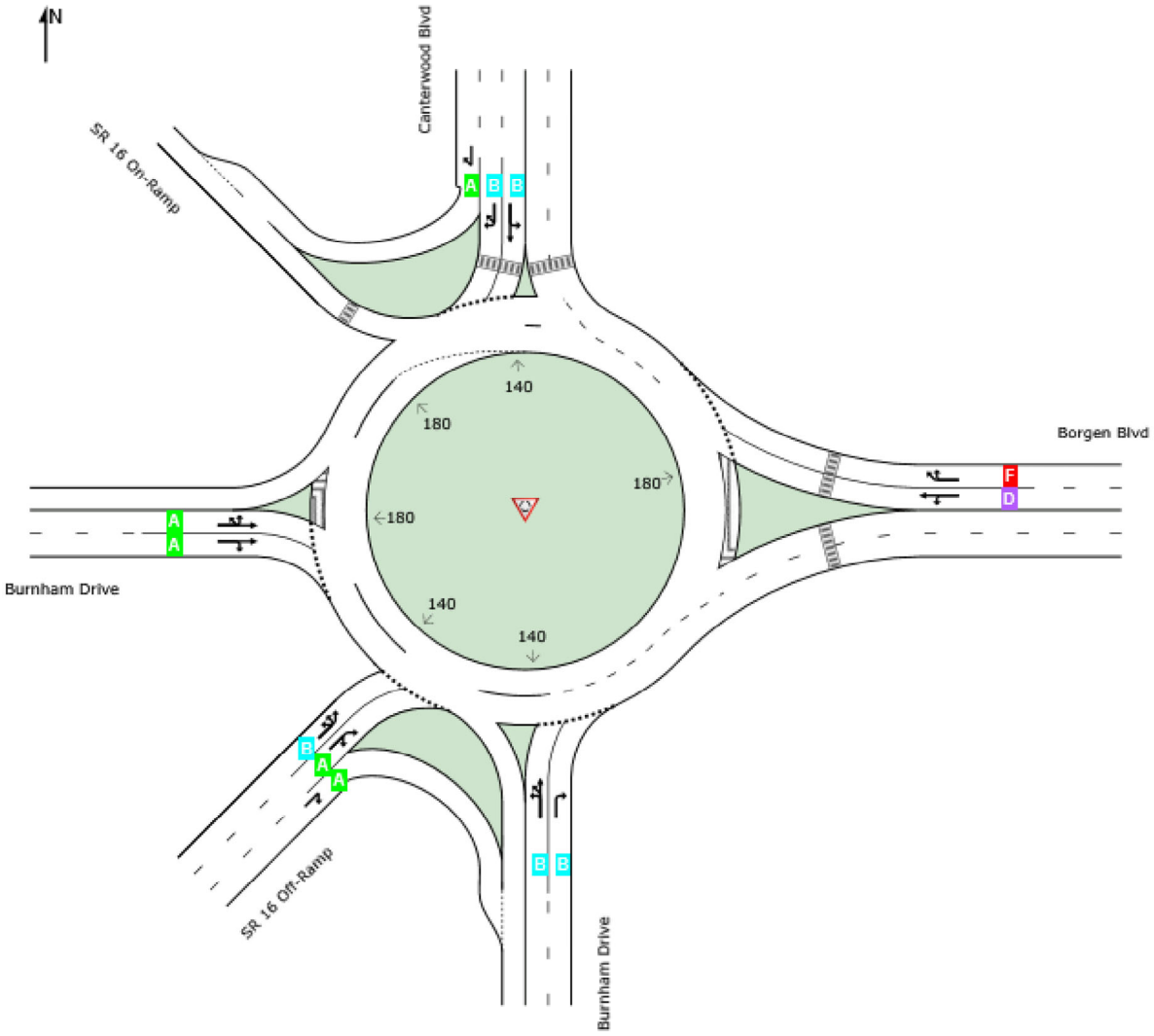
Lane Level of Service

Site: 3 [Forecast 2028 PM With Project (Site Folder: 3. SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

SR 16 WB Ramps/Canterwood Blvd & Burnham Dr/Borgen Blvd
Site Category: (None)
Roundabout

	Approaches					Intersection
	South	East	North	West	Southwest	
LOS	B	E	B	A	B	C



Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used).
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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Project: T:\Sidra\4600\Summit Pointe.sip9

Exhibit 1310-7a Left-Turn Storage Guidelines: Two-Lane, Unsignalized