TRAFFIC IMPACT ANALYSIS

FOR

ORLAND TRUCK WASH / COMMERCIAL

Orland, CA

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6840-01

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INTRODUCTION

This report summarizes KD Anderson & Associates analysis of the potential traffic impacts associated with development of the Orland Truck Wash / Commercial properties involved in rezoning 5± acres in the area of the County Road 13 / Commerce Lane (County Road HH) intersection in western Orland. The project site is located south of Newville Road and west of Interstate 5 near the Flying J Travel Stop as noted in Figure 1.

The proposed project would create an area zoned for highway commercial, as well as a specific use catering to the trucking industry. Roughly two and one-quarter acres will be occupied by a Truck Wash. An adjoining 2.8 acres is designated for future highway commercial uses. As noted in Figure 2, access to the site is proposed via driveways on Commerce Lane (County Road HH), County Road 13, and County Road 14.

The purpose of this analysis is to identify the potential traffic-related impacts of the project within the context of current traffic conditions and to evaluate the cumulative impacts of the annexation within the context of future traffic conditions in the Orland area. This analysis includes evaluation of existing circulation conditions in the area based upon current weekday a.m. and p.m. peak hour traffic volumes. The extent to which improvements may already be needed to meet minimum standards has been determined. The characteristics of the proposed project have been determined based on probable peak hour and daily trip generation, regional trip distribution and local trip assignment. Forecasts of future year traffic conditions, including other development anticipated under the Orland General Plan have been analyzed with and without the proposed Re-Zone. Mitigation measures needed to ensure satisfactory operation of area intersections under each development scenario have been identified, and the project's fair share contribution at each location has been calculated.

VICINITY MAP

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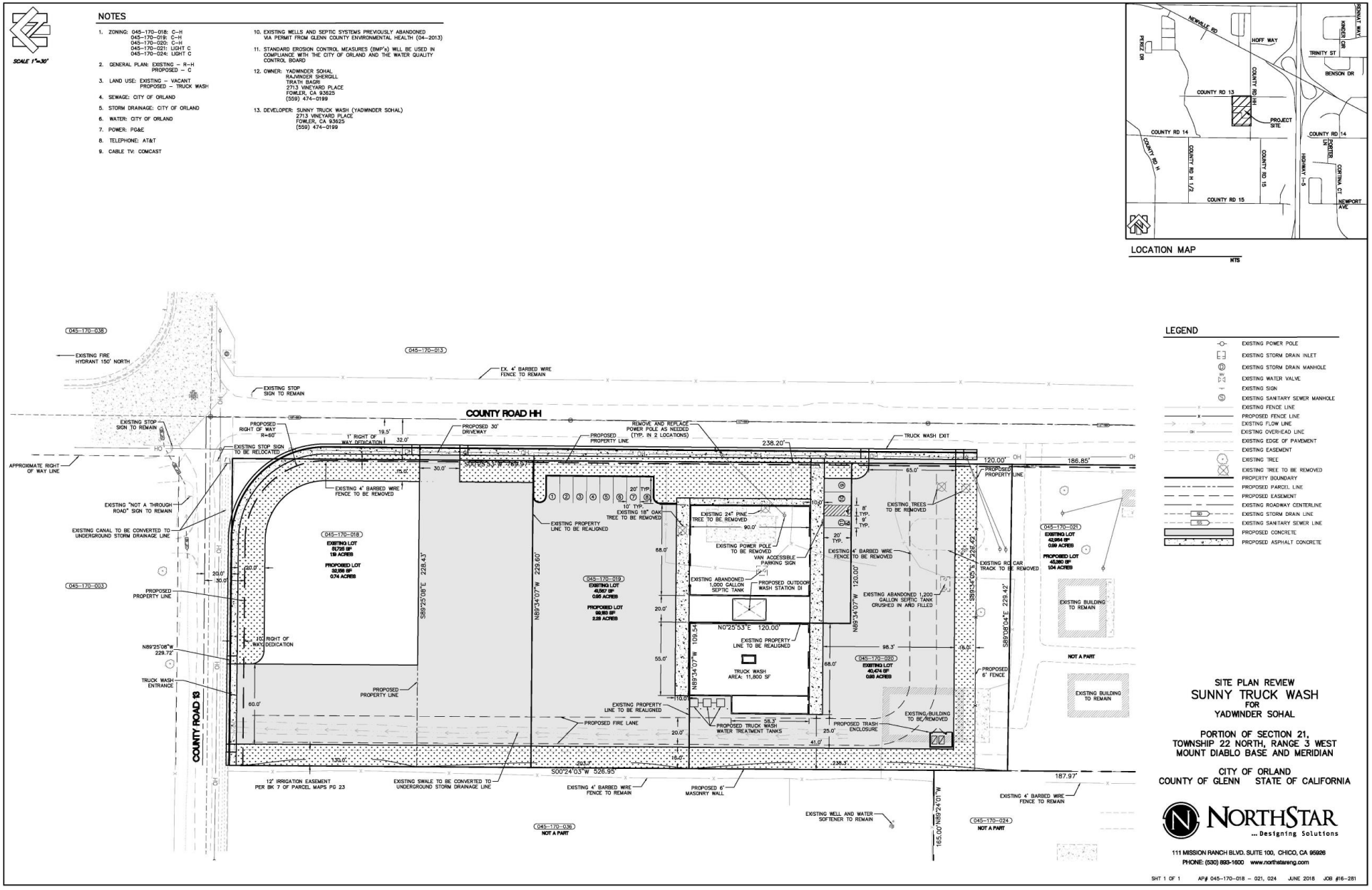
figure 1



SITE PLAN

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figure 2

EXISTING SETTING

Existing Street and Highway System

The proposed project will be served by several major roadways. Regional access is provided by Interstate 5 and State Route 32, which link the site with the other Northern California communities to the north and south and with the City of Orland to the east. Local access to the project site is provided via Newville Road and County Road HH. The following is a description of these facilities, as well as other roadways in the area of the project site.

Interstate 5 (I-5) is a north-south four-lane freeway that adjoins western Orland. Interstate 5 is the primary route through California and begins at the US-Mexico border in southern California and extends northerly to the California-Oregon border. Access to Interstate 5 is controlled and in the area of the project interchanges at South Street (County Road 16) and at SR 32-Newville Road are available. The most recent traffic volume counts published by Caltrans indicate that I-5 carried an *Annual Average Daily Traffic (AADT)* volume of 28,000 to 27,000 vehicles per day through the City of Orland. Trucks comprise 29% of the daily volume south of SR 32 and 25% north of SR 32 according to Caltrans data.

State Route 32 is an east-west route that connects with I-5 in Orland and SR 99 in Chico. The portion of SR 32 in the City of Orland located in the vicinity of I-5 is also known as Newville Road. In the area immediately east of the I-5 interchange Newville Road (SR 32) is a two lane/four lane arterial with left-turn lanes at intersections. The speed limit on SR 32 is 35 miles per hour (mph) east of I-5. According to the Caltrans website, the segment of Newville Road (SR 32) east of the interchange carried 8,500 AADT in 2016, with the volume rising to 10,800 AADT in the area east of the 6th Avenue intersection. The State Route 32 Transportation Concept Report identifies the current daily traffic volume east of I-5 at 9,752, which is more in line with recent peak hour counts. Trucks comprise 12% of the daily traffic on SR 32 through Orland according to Caltrans data.

The **Interstate 5 / SR 32 (Newville Road) interchange** is a partial cloverleaf layout. Northbound and southbound off-ramps terminate at stop sign controlled intersections on Newville Road. Separate on-ramps to I-5 are provided in both directions which eliminates left turning traffic across mainline Newville Road. Caltrans recently approved an all-way stop for the northbound ramp intersection. SR 32 has a two-lane crossing over I-5. Caltrans publishes daily traffic volume information for freeway ramps. The most recent data from 2014 is summarized in Table 1. (Note: these counts were made before the Flying J opened).

Newville Road west of I-5 is a Glenn County road that extends for roughly 7 miles to the Tehama County line near Black Butte Lake. This portion of Newville Road is designated a Minor Arterial in the Glenn County General Plan Circulation Element and an Arterial in the City of Orland General Plan Circulation Element. Newville Road is a two-lane rural road west of I-5 with a posted speed limit of 35 mph. The most recent traffic volume counts made of the Orland GPU EIR in 2009 indicated that Newville Road carried 5,108 vehicles per day west of County Road HH, however this count was made before the Flying J opened.

TABLE 1 DAILY INTERSTATE 5 RAMP VOLUMES		
Direction	**Location**	**Daily Volume (2014)**
Southbound	Off-ramp to Newville Road (SR 32)	1,150
	On-ramp from westbound Newville Road	1,200
	On-ramp from eastbound Newville Road	580
Northbound	Off-ramp to Newville Road (SR 32)	1,600
	On-ramp from eastbound Newville Road (SR 32)	330
	On-ramp from westbound Newville Road (SR 32)	460

County Road HH (Commerce Road) is a north-south street that runs southerly from an intersection on County Road 12 across Newville Road to its southern terminus on County Road 15 (Newport Road). County Road HH provides access to existing highway commercial, light industrial and residential uses west of I-5. County Road HH is designated a Minor Collector in the Orland Circulation Element. The Orland General Plan Circulation Element indicates that County Road HH will be extended south to County Road 16 in the future. Today the portion of County Road HH near the project is called Commerce Road and was widened with the Flying J project. The rural prima facie speed limit of 55 mph is in effect on County Road HH south of Newville Road. The Orland General Plan EIR identifies the daily traffic volume on County Road HH was 945 vehicles per day in the area south of Newville Road before the Flying J opened.

The **Newville Road / Commerce Lane (County Road HH) intersection** is controlled by an all-way stop. Improvements were made with the Flying J, and there are separate left turn lanes on the Newville Road approaches and a separate right turn lane on the northbound County Road HH approach.

County Road 13 is a-two lane local street that connects County Road HH with rural residential areas west of I-5. County Road 13 extends east from the County Road HH intersection along the Pilot Flying J Site to a turn-around near the I-5 right of way. No daily traffic volume counts are available for County Road 13.

The **County Road HH / County Road 13 intersection** is controlled by an all-way stop. There is a separate southbound left turn lane on County Road HH at this intersection.

County Road 14 is a-two lane local street that connects County Road HH with rural residential areas west of I-5 and with County Road HH. No daily traffic volume counts are available for County Road 14.

Alternative Transportation Modes

Sidewalks. Concrete and asphalt sidewalks exist at various locations along most City of Orland streets but become less prevalent on Glenn County roads adjoining the community. As noted in

Table 2, there are few sidewalks in the area west of I-5 although there is existing sidewalk on the north side of Newville Road (SR 32) across I-5.

TABLE 2
SIDEWALK INVENTORY

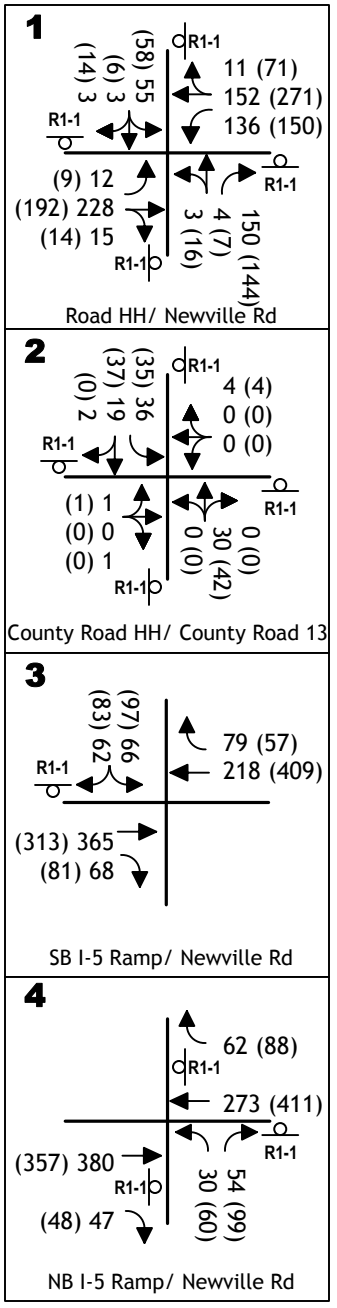
Street	From	To	Side	Sidewalk
Newville Road	County Road HH	Southbound I-5 ramps	North	Partial
			South	No
	Southbound I-5 ramps	Northbound I-5 ramps	North	Yes
			South	No
	Northbound I-5 ramps	9th Street – Tehama Street	North	Yes
			South	Partial
	9th Street – Tehama Street	8th Street	North	Yes
			South	Yes
County Road HH	Newville Road	County Road 13	East	Yes
			West	No
	County Road 13	County Road 14	East	No
			West	No

Bicycle Facilities. Presently there are no formally designated bicycle lanes or bicycle facilities in the City of Orland. However, the City understands the need to move people through the community. The City is planning multi-use pathways along Stony Creek, as well as multi-use pathways within the right-of-ways of undergrounded canals. Additionally, street widths can accommodate bicycle traffic in some areas, and bicycle racks are available at schools and parks.

Public Transit. Public transportation bus service is provided to the City of Orland through Glenn Ride, which is a transit service provided by Glenn County. It is a fixed-route bus system with seven round trips every weekday and three round trips on Saturday from Willows to Chico. There are currently 14 bus stops in Orland. The stop closest to the proposed project is at the 9th Street / Newville Road intersection (i.e., CVS Pharmacy & Burger King).

Existing Peak Hour Traffic Volumes

To quantify existing traffic conditions, peak hour intersection turning movement count data were collected for this analysis at the four existing study intersections. The count data was collected during the 7:00 a.m. to 9:00 a.m. morning peak period and the 4:00 p.m. to 6:00 p.m. evening peak period when the Flying J was in normal operation. New traffic counts were conducted at the I-5 ramps on November 29, 2016 for the City of Orland, and this data was used to adjust counts made at the Newville Road / County Road HH intersection in June 2016 to November levels. Existing peak hour traffic volume data, as well as current intersection traffic controls and intersection lane geometry, are presented in Figure 3.



EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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Level of Service Definition and Calculation

To quantitatively evaluate traffic conditions, and to provide a basis for comparison of operating conditions with and without traffic generated by the proposed project, Levels of Service (LOS) were determined at study area intersections and at freeway ramp terminals.

Level of Service is a quantitative measure of traffic operating conditions using letter grades "A" through "F" to characterize operating conditions at an intersection, on highways and at freeway ramp terminals. LOS A through F represents progressively worsening traffic conditions. The characteristics associated with the various Levels of Service for intersections and freeway merge-diverge areas are presented in Table 3.

TABLE 3
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Freeway Ramp Terminal
A	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/veh	Density < 10.0 pc/ln/mi
B	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and≤ 15 sec/veh	Density > 10 and < 20 pc/ln/mi
C	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and ≤ 35.0 sec	Average traffic delays. Delay > 15 sec/veh and≤ 25 sec/veh	Density >20 and < 28 pc/ln/mi
D	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and≤ 35 sec/veh	Density >28 and < 35 pc/ln/mi
E	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and≤ 50 sec/veh	Density > 35 pc/ln/mi
F	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Demand Exceeds Capacity

Source: Transportation Research Board 2010.

Levels of service were calculated for this study using the methodology contained in the *2010 Highway Capacity Manual* (Transportation Research Board 2012). At signalized intersections and intersections controlled by four-way stop signs, the overall Level of Service for intersections

is based on the average length of delays for all motorists at the intersection. At two-way stop-sign-controlled unsignalized intersections (or one-way stop T intersections), the Level of Service is based on the length of the average delay experienced by motorists on the worst single movement, which is typically a left turn made from the stop-sign-controlled approach to the intersection. It should be noted that overall intersection average Level of Service at un-signalized intersections is better, often much better, than the Level of Service for the worst single movement.

Level of Service calculations for intersections specifically account for the presence of large trucks whose acceleration and deceleration characteristics differ from passenger vehicles. Both calculations include truck percentage as an input and reduce the theoretical facility capacity accordingly to account for the presence of large vehicles. As noted later in this report, current truck percentages were identified in the new traffic counts and adjusted under each scenario as needed to reflect future conditions.

Level of Service Based on Roadway Segment Volume

The Orland General Plan EIR addressed Level of Service at a planning level on roadway segments based on daily traffic volume. The roadway segment Level of Service criteria identifies maximum daily traffic volume thresholds for each Level of Service grade. Thresholds are identified based on facility classification (i.e., arterials, major collectors, minor collectors, and local roadways) and the number of through travel lanes. The thresholds presented in the City of Orland General Plan EIR are shown in Table 4.

Traffic volumes vary substantially during a 24-hour period and at locations within roadway segments. As a result, Level of Service based on roadway segments daily volume is an inherently generalized analysis approach that is intended to approximate conditions at the most congested locations during the peak period of the day.

TABLE 4
LEVEL OF SERVICE THRESHOLDS FOR ROADWAY SEGMENTS
BASED ON DAILY TRAFFIC VOLUME

Classification	Lanes	Maximum Daily Volume at LOS				
		A	B	C	D	E
Arterial	4	18,000	21,000	24,000	27,000	30,000
	2	9,000	10,500	12,000	13,500	15,000
	2+	13,500	15,750	18,000	20,250	22,500
Major Collector	2	7,620	8,890	10,160	11,430	12,700
Minor Collector	2	4,800	5,600	6,400	7,200	8,000
Local	2	2,700	3,150	3,600	4,050	4,500
2+ indicates capacity created on Newville Road by second eastbound lane dropping onto SB SR 32 per Flying J DEIR						

Level of Service Standards

Minimum Level of Service standards are adopted by local agencies and Caltrans for their respective facilities and presented in various documents.

Caltrans is responsible for maintaining and operating I-5 and SR 32. In accordance with guidance from Caltrans District 3, methods described in the *Guide for the Preparation of Traffic Impact Studies* (California Department of Transportation 2002) were used in this analysis. This document notes that:

> "Caltrans endeavors to maintain a target LOS at the transition between LOS 'C' and LOS 'D' (see Appendix 'C-3') on State highway facilities . . ."

Therefore, for this analysis, LOS C and better are considered acceptable, and LOS D and worse is considered unacceptable at intersections along the SR 32. The *Guide for the Preparation of Traffic Impact Studies* specifies application of these criteria to signalized intersections. The document does not specify a minimum acceptable LOS for un-signalized intersections. However, for this analysis, these criteria are also applied to un-signalized intersections.

The City of Orland General Plan Circulation Element identified the minimum standard adopted by the City.

> "**Policy 3.3.A:** Construct street and highway improvements to maintain an overall daily roadway Level of Service of "C" with an a.m. and p.m. peak hour roadway and intersection Level of Service of "D" or better, unless other public health, safety, or welfare factors determine otherwise."

Traffic Signal Warrants Procedures

Traffic signal warrants are a series of standards which provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrants are met, signalization of the intersection may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously-uncontrolled major street, resulting in an undesirable increase in overall vehicle delay at the intersection. Signalization may also increase the occurrence of particular types of accidents. Therefore, if signals are installed where signal warrants are not met, the detriment of increased accidents and overall delay may be greater than the benefit in traffic operating conditions on the single worst movement at the intersection. Signal warrants, then, provide an industry-standard basis for identifying when the adverse effect on the worst movement is substantial enough to warrant signalization.

The City of Orland conducted a complete traffic signal warrant analysis for the I-5 / SR 32 ramp intersections based on November 2016 data. That assessment determined that traffic signals were not immediately justified.

For this traffic impact study, available data are limited to a.m. and p.m. peak hour volumes. Thus, un-signalized intersections were evaluated using the Peak Hour Warrant (Warrant Number 3) from the California Department of Transportation document *Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California)* (MUTCD) (California Department of Transportation 2012). Urban analysis criteria were employed based on the speed limit on Newville Road – SR 32 (i.e., 35 mph).

Current Peak Hour Traffic Conditions

Intersections. Current a.m. and p.m. peak hour LOS were calculated at existing study intersections under Existing conditions. The results of this analysis are presented in Table 5. The LOS calculation worksheets for Existing conditions are presented in the Appendix**.**

As shown in Table 5, all of the study intersections currently operate with peak hour Level of Service that meets the City's minimum LOS D standard but also meet the Caltrans LOS C goal. No improvements at these intersections are needed.

Current traffic volumes at un-signalized study intersections were compared to peak hour traffic signal warrant thresholds, and no location carries volumes that satisfy peak hour warrants.

TABLE 5
EXISTING PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour		PM Peak Hour		Warrants Met?
		Ave Delay (Sec/Veh)	LOS	Ave Delay (Sec/Veh)	LOS	
Newville Road / County Road HH	All-Way Stop	12	B	13	B	No
Newville Road (SR 32) / SB I-5 ramps SB approach	SB Stop	15	B	21	C	No
Newville Road (SR 32) / NB I-5 ramps	All-Way Stop	12	B	15	B	No
County Road HH /Road 13	All-Way Stop	8	A	8	A	No

LOS = Level of Service

PROJECT CHARACTERISTICS

Project Description

Land Use. The proposed project involves rezoning 5 acres to accommodate specific and speculative uses. Specific uses include:

Two-Bay Truck Wash on 2.1 acres

Speculative uses include:

Highway Commercial parcels totaling 2.8 acres

Access. The site plan designates the locations of access to the Truck Wash. Inbound trucks will enter from County Road HH and will exit onto Road 13. Access to other parcels will occur via these driveways, at a driveway on County Road HH just south of County Road 13, and possible driveways on County Road 14.

Trip Generation

The number of vehicle trips that are expected to be generated by development of the project has been estimated based on trip generation rates that are applicable to the nature and size of project land uses. Specific trip generation rates published by the Institute of Transportation Engineers (ITE) were used when available for known uses. Where no published data was available a similar use was observed. Where a range of uses is possible, composite trip generation rates were created based on the typical mix of uses that is possible.

Composite Highway Commercial Uses. A set of composite trip generation rates was created for the Highway Commercial zoning based on a mix of gasoline station, restaurants, motel and specialty retail uses that might typically be expected in small centers near freeways. The resulting "per acre" trip generation rates are noted in Table 6.

Truck Service Facilities. There are no published trip generation rates for facilities that cater to large trucks and provide wash and repair services. For this analysis a similar truck wash in Corning was observed, and its p.m. peak hour automobile and truck activities were assumed to be applicable to the new truck wash uses.

Forecasts. Table 7 notes the overall trip generation estimate. As shown, under these assumptions the uses in the project could generate 2,736 daily trips, with 211 trips in the a.m. peak hour and 221 trips in the p.m. peak hour.

TABLE 6
TYPICAL HIGHWAY COMMERCIAL TRIP GENERATION CHARACTERISTICS

Land Use	Unit	Prototypical		Trips per Unit						
					AM Peak Hour			PM Peak Hour		
		Quantity	Acres	Daily	In	Out	Total	In	Out	Total
Gasoline with C-Store	fueling position			152.84	51%	49%	11.84	51%	49%	13.86
		12	1.0	1,834	72	70	142	85	81	166
Internal	25%			458	18	18	36	21	21	42
External	75%			1,376	54	52	106	64	60	124
Pass-by	50%			688	27	26	53	32	30	62
Net New External Trips	50%			688	27	26	53	32	30	62
Fast Food Restaurant	ksf	1		496.12	51%	49%	45.42	52%	48%	32.65
		3.5	1.0	1,736	81	78	159	59	55	114
Internal	25%			434	20	20	40	15	14	29
External	75%			1,302	61	58	119	44	41	85
Pass-by	62%-56%			729	38	36	74	25	23	48
Net New External Trips				573	23	22	45	19	18	37
Sit Down Restaurant	ksf	5.0		127.15	55%	45%	10.81	60%	40%	9.85
		5.0	1.0	636	30	24	54	30	19	49
Internal	25%			159	8	6	14	8	4	12
External	75%			477	22	18	40	22	15	37
Pass-by	43%			205	9	8	17	9	7	16
Net New External Trips				272	13	10	23	13	8	21
Hotel	rooms	1		8.17	59%	41%	0.53	51%	49%	0.60
		80	1.5	653	25	17	42	24	24	48
Internal	25%			163	6	5	11	6	6	12
Net New External Trips	75%			490	19	12	31	18	18	36

TABLE 6 (cont'd)
TYPICAL HIGHWAY COMMERCIAL TRIP GENERATION CHARACTERISTICS

Land Use	Unit	Prototypical		Trips per Unit						
					AM Peak Hour			PM Peak Hour		
		Quantity	Acres	Daily	In	Out	Total	In	Out	Total
Retail - Shopping Center	ksf	1		42.70	62%	38%	0.96	48%	52%	3.71
		16.0	1.5	683	10	6	16	28	31	59
Internal	25%			171	3	1	4	7	8	15
External	75%			512	7	5	12	21	23	44
Pass-by	34%			174	0	0	0	7	8	15
Net New External Trips				338	7	5	12	14	15	29
Total Gross Trips	Total		6	5,542	217	196	413	226	210	436
			acre	923.67	53%	47%	68.83	52%	48%	72.67
	Internal			1,385	54	49	103	57	53	110
	External			4,155	163	147	310	169	157	326
			acre	692.50	53%	47%	51.66	51%	49%	54.33
Pass-by Trips				1,796			192			188
Total Net New Trips			6	2,359			221			251
				393.17	54%	46%	24.56	51%	49%	41.83

TABLE 7
PROJECT TRIP GENERATION ESTIMATES

Area	ITE Code		Unit	Quantity	Trips Generated						
					Daily	AM Peak Hour			PM Peak Hour		
						In	Out	Total	In	Out	Total
1		2-Bay Truck Wash	-	-	150	7	11	18	11	7	18
		Highway Commercial Rate	acre	1	923.67	53%	47%	68.83	52%	48%	72.67
4		Highway Commercial		2.8	2,586	102	91	193	106	97	203
Total					***2,736***	***109***	***102***	***211***	***117***	***104***	***221***

Trip Distribution. The geographic distribution of project-related trips used in this analysis is based on consideration of the nature of the proposed uses and distribution patterns assumed in the Orland General Plan Update EIR traffic study and Flying J DEIR traffic study.

There are two key factors to be considered. Based on its location, many of the trips associated with the highway commercial uses will be drawn from the stream of traffic passing the site on I-5 or SR 32. Automobile trips would be expected to be drawn from existing traffic on state highways, but a share of the project's automobile traffic may originate in Orland. Truck traffic is expected to be drawn primarily from vehicles that are already part of the 25% of current daily traffic on I-5. Automobile and truck trips could also be drawn from the traffic already visiting the Flying J.

Under normal conditions the trips associated with retail uses are divided between "primary", "diverted linked", "pass-by" and "internal" trips. Primary or "new" trips represent those trips specifically made for the purpose of visiting the site. These trips would affect the project access as well as the local and regional circulation system. Pass-by trips are those made as part of another trip by patrons who simply turn into the project. Pass-by trips would not affect the regional circulation system. Link diverted trips are those that already occur on part of the regional circulation system but may use local streets to reach the project. In this case, trips drawn from existing traffic on I-5 to the project are diverted linked trips. "Internal" trips are those made between complimentary uses in the same area that do not actually use the circulation system.

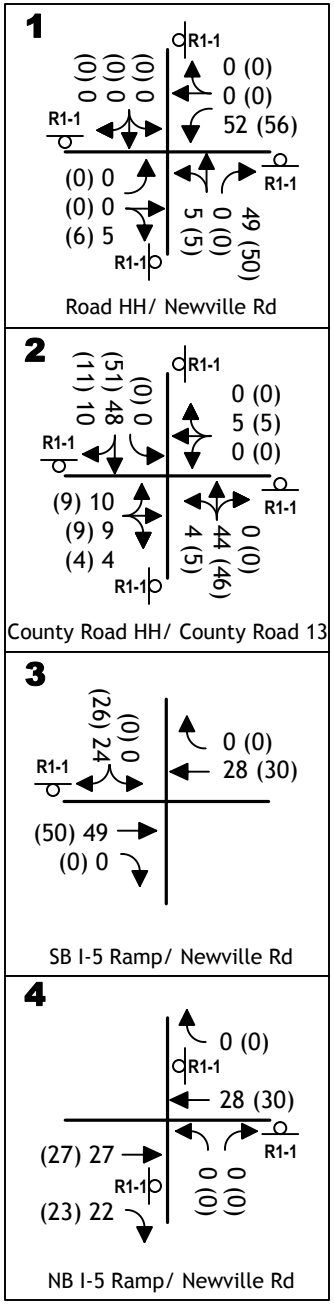
Because the volume of through traffic on Newville Road and County Road HH is low, it has been assumed that the project's trips drawn from traffic on I-5 are diverted-linked trips that would be "new" to the local street system. Trips made by Flying J customers or trips made between complimentary on-site uses on the site would be "internal". The project would create few new "primary" trips on I-5.

Table 8 presents the assumptions made regarding the directional distribution of project trips.

TABLE 8
PROJECT TRIP DISTRIBUTION

Direction	Route	Percentage
North	Interstate 5	22%
South	Interstate 5	16%
	County Road HH	6%
East	Newville Road (SR 32) beyond 8th Street	26%
West	Newville Road	5%
Internal	(Flying J)	25%
Total		**100%**

Trip Assignment. The trips generated by the proposed project were assigned to the study area street system based on the location of site access and the regional distribution patterns noted previously. Figure 4 presents the resulting project trip assignment.



PROJECT ONLY TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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PROJECT IMPACTS

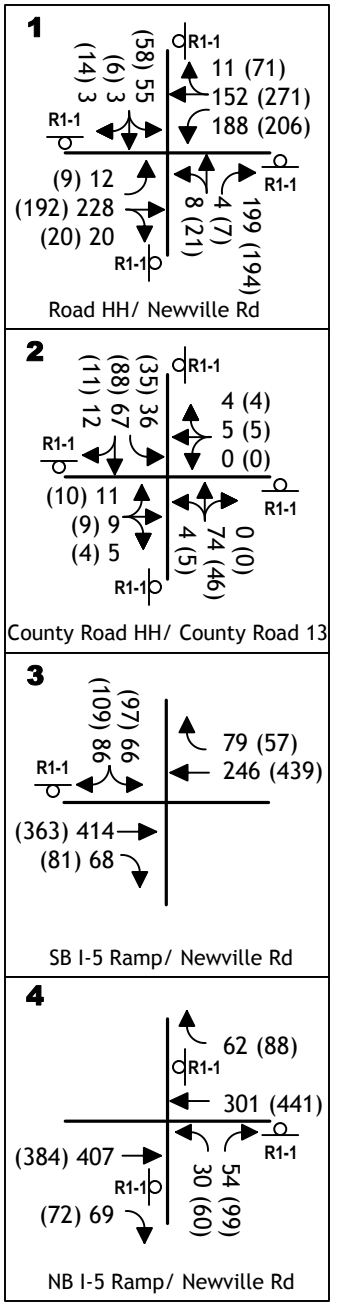
Traffic Operations Analysis

Traffic volumes associated with the project were estimated by superimposing project trips onto current background traffic. Figure 5 presents Existing Plus Project a.m. and p.m. peak hour traffic volumes at study locations.

Peak Hour Intersection Level of Service. Resulting Existing Plus Project peak hour LOS are presented in Table 9. The LOS calculation worksheets for Existing Plus Project conditions are presented in the Appendix.

As shown, the addition of project generated traffic results in slightly longer delays at the study intersections on Newville Road and SR 32. However, at all locations the average delays are indicative of conditions that satisfy the City's LOS D minimum standard.

Traffic Signal Warrants. Projected traffic volumes with the project remain below the level that would satisfy traffic signals.



EXISTING PLUS PROJECT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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TABLE 9
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour			
		Existing		EX plus Project		Existing		EX Plus Project	
		Ave Delay (Sec/Veh)	LOS	Ave Delay (sec/veh)	LOS	Ave Delay (Sec/Veh)	LOS	Ave Delay (sec/veh)	LOS
Newville Road / County Road HH	All-Way Stop	12	B	13	B	13	B	15	B
Newville Road (SR 32) / SB I-5 ramps SB approach	SB Stop	15	C	16	C	21	C	25	D
Newville Road (SR 32) / NB I-5 ramps	All-Way Stop	12	B	13	B	15	B	16	C
County Road HH /Road 13	All-Way Stop	8	A	8	A	8	A	9	A

LOS = Level of Service

Traffic Safety Impacts

The adequacy of the study area circulation system has been evaluated with regards to two issues:

1. Need for left turn lane channelization on Commerce Lane (County Road HH) at the new site access, and
2. Truck turning requirements.

Left Turn Channelization. The project will result in full size trucks and automobile turning into and out of the site via access on Commerce Lane (County Road HH) and via County Road 13. The City of Orland required that the recently constructed Flying J respond to that activity on County Road HH by widening the road to provide a separate southbound left turn lane at the County Road 13 intersection. Ultimately County Road HH will be widened in the area north of County Road 13 when adjoining property is developed to create a continuous Two-Way Left-Turn lane.

Development of the project will create similar turning movements but arguably many fewer trucks than Flying J. Thus, projected traffic volumes do not create the immediate need for a separate northbound left turn lane at the truck wash access, but the project's frontage improvements should be positioned so as to accommodate a continuous southbound left turn lane when west side improvements occur in the future.

Truck Turning Requirements. The project will result in full size trucks (STAA) turning into and out of the site via the access on County Road HH and on County Road 13. The Newville Road / County Road HH intersection has already been widened to accommodate trucks and the northeast corner of the County Road HH / County Road 13 intersection can accommodate truck turns. The project's truck entrance on County Road HH will need to be designed to accommodate truck movements, and the turning requirements of large trucks (i.e., STAA trucks) will need to be reviewed when final plans for project frontage improvements at the County Road HH / Road 13 intersection are prepared.

Impacts to Alternative Transportation Modes

The project may result in pedestrians and bicyclists who would travel between the site and the balance of the Orland area east of I-5. The number of pedestrians is not likely to be appreciable, and the safe path of travel to Orland that was created with the Flying J project remains adequate with the proposed project. Development on the project should, however, be accompanied by sidewalks along the frontage and a crosswalk across Commerce Lane and County Road 13 to the Flying J site should be included.

CUMULATIVE CONDITIONS ANALYSIS

This report section describes the cumulative impacts of the proposed project within the context of two cumulative conditions. The first condition assumes occupancy of other another approved project in this area. The second longer term cumulative condition is based on the Orland General Plan EIR. The text which follows describes the approach used to forecast future "Cumulative" traffic volumes under "No Project" and "Plus Project" conditions.

Methodology / Assumptions – Existing Plus Approved Project

The City of Orland considered and approved an application for a development on 3 acre portion of the property across County Road HH from the Flying J. That project which involved an 80 room hotel and a 6,000 sf high turnover sit down restaurant with access to both County Road HH and County Road 13, was the subject of a traffic analysis conducted in 2016[1].

This project was forecast to generate 107 trips in the a.m. peak hour and 107 trips in the p.m. peak hour. These trips would be assigned to the local street system based on trip distribution assumptions that were similar to those identified for the proposed Truck Wash / Commercial project.

Methodology/Assumptions – Long Term

The Orland General Plan Update EIR traffic study included creation of a local traffic assignment model to address the overall effect of community development as well as through traffic increases on state highways. For this analysis this tool was reviewed to identify assumptions regarding regional through traffic and development on the subject site.

Land Use. The General Plan EIR traffic model assumed development would occur at various locations throughout Orland over the life of the General Plan. The following list summarizes land use development assumed in that study:

- 1,209 single family dwelling units,
- 192 multiple family dwelling units,
- 290,610 building square feet of retail commercial uses,
- 8.90 acres of office land use,
- 61.97 acres of light industrial / commercial use, and
- 23.31 acres of heavy industrial use.

The GPU EIR traffic study made assumptions regarding development in the area west of I-5. A total of 8.3 acres of commercial development was assumed in the area south of Newville Road and north of County Road 14. This development was assumed to be in the general area of the Flying J site.

[1] Traffic Impact Assessment For Hotel / Restaurant Near Flying J Truck Stop In Orland, CA, KDA, August 8, 2016.

As noted above, the City of Orland considered and approved an application for development on a 3 acre portion of the property with an 80 room hotel and a 6,000 sf high turnover sit down restaurant with access to both County Road HH and County Road 13. Together this project and the Flying J would occupy acreage that was similar to but larger than the allocation made in the General Plan EIR.

For this analysis two land use scenarios have been evaluated:

1. No development on project site but development per the General Plan EIR elsewhere in Orland, including the hotel and restaurant on County Road HH.
2. Same as #1 with the proposed project.

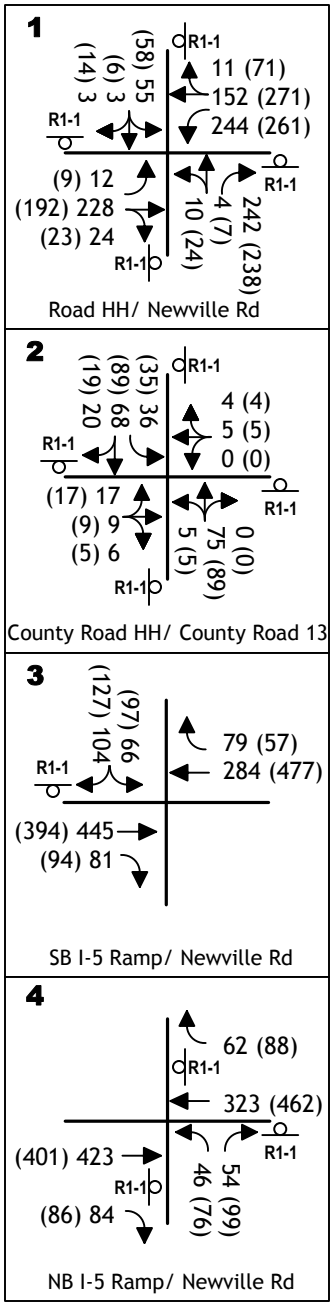
Existing Plus Approved Projects (EPAP) Traffic Impacts

Traffic Volumes. Figure 6 illustrates short term future peak hour traffic volumes assuming that the proposed Truck Wash / Commercial project proceeds and the hotel / restaurant project is occupied.

Intersection Level of Service. Table 10 presents the Levels of Service projected at study intersections if both the proposed and approved projects proceed. As shown the minimum LOS D standard will still be satisfied.

Traffic Signal Warrants. The volume of traffic forecast at study intersections under EPAP and EPAP Plus Project conditions was compared to MUTCD peak hour warrant requirements to see whether traffic signals will be justified. As indicated in Table 11, signal warrants do not carry volumes that satisfy peak hour warrants at the Newville Road / County Road HH intersection, either of the two I-5 ramp intersections, or the intersections on County Road HH south of Newville Road.

As noted previously in the discussion of intersection Levels of Service, funding for these traffic signals has been identified in the City traffic impact mitigation fee program.



EXISTING PLUS PROJECT AND HOTEL-RESTAURANT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

TABLE 10
EXISTING PLUS APPROVED PROJECT (EPAP)
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Existing Plus Project and Hotel-Restaurant		Existing Plus Project and Hotel-Restaurant	
		Average Delay (Sec/Veh)	LOS	Average Delay (Sec/Veh)	LOS
Newville Rd / County Road HH	All-Way Stop	15	C	17	C
Newville Rd (SR 32) / SB I-5 ramps SB approach	SB Stop	18	C	31	D
Newville Rd (SR 32) / NB I-5 ramps	All-Way Stop	14	B	18	C
County Rd HH / Road 13	All-Way Stop	9	A	9	A

LOS = Level of Service

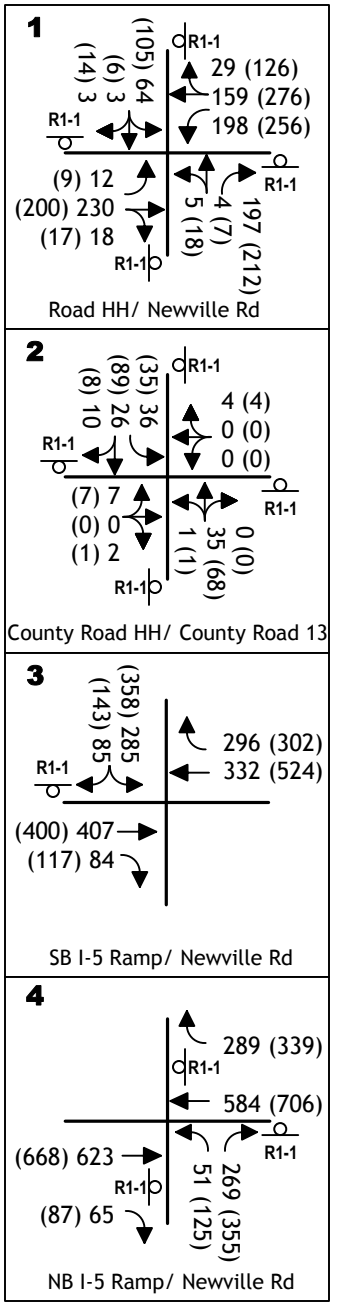
TABLE 11
EXISTING PLUS HOTEL-RESTAURANT AND PROJECT TRAFFIC SIGNAL WARRANTS

Location	AM Peak Hour			PM Peak Hour		
	No Project	With Project	With Project and Hotel / Restaurant	No Project	With Project	With Project and Hotel / Restaurant
Newville Rd / Commerce Lane (County Road HH)	No	No	No	No	No	No
Newville Rd / SB I-5 ramps	No	No	No	No	No	No
Newville Rd / NB I-5 ramps	No	No	No	No	No	No
County Road HH / Road 13	No	No	No	No	No	No

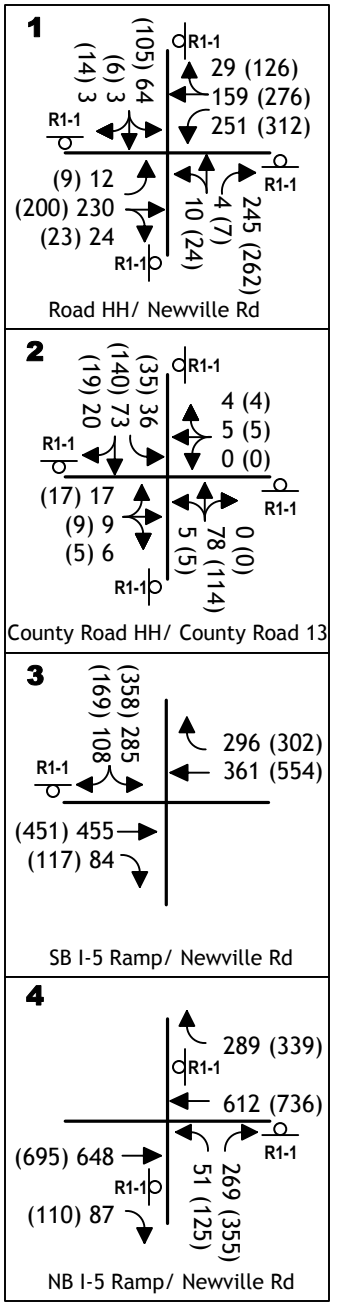
Long Term Cumulative Impacts

Traffic Volume Forecasts. Traffic volume forecasts were created for the two cumulative scenarios using the General Plan EIR traffic model. The model was modified to make use of current traffic volumes in the area of the project and to address the presence of Flying J in those new counts. Figure 7 presents the Cumulative No Project conditions at study area intersections, while Figure 8 presents the peak hour volumes under Cumulative Plus Project conditions.

These figures also illustrate assumed intersection geometry. As shown, while the City's traffic impact fee program includes funds for improvements to study intersections, no improvements have been assumed in order to determine the extent of project impacts. Those funded improvements are presented as mitigations.



CUMULATIVE WITH HOTEL-RESTAURANT
TRAFFIC VOLUMES AND LANE CONFIGURATIONS



CUMULATIVE WITH PROJECT AND HOTEL-RESTAURANT TRAFFIC VOLUMES AND LANE CONFIGURATIONS

KD Anderson & Associates, Inc.
Transportation Engineers

6840-01 RA 7/1/2019

figure 8

Intersection Levels of Service. Projected Levels of Service at study area intersections with and without the project assuming no improvements are made are noted in Table 12. As indicated the two un-signalized intersections on SR 32 at the I-5 ramps intersections are projected to operate with Levels of Service which exceed the City's LOS D standard with and without the proposed project if improvements are not made. The project's trips will exacerbate conditions that are forecast to be deficient, and the project's cumulative impact is significant at these locations.

At the Newville Road / SB I-5 ramps intersection an all-way stop with auxiliary southbound right turn lane would still result in LOS F in the p.m. peak hour. A traffic signal would operate at LOS C with and without the project. A traffic signal at this location is currently included in the City traffic impact mitigation fee program.

Similarly, the Newville Road (SR 32) / NB I-5 ramps intersection would operate at LOS C with a traffic signal. A traffic signal at this location is currently included in the City's traffic impact mitigation fee program.

As indicated, the existing configuration of the Newville Road / Commerce Lane (County Road HH) intersection would deliver LOS C under Cumulative plus Project conditions. Thus, it may not be necessary to install a traffic signal at this location unless coordinated operation of multiple signalized intersections is required. Review of the City's existing traffic impact mitigation fee program indicates that a traffic signal at this location is currently included.

The Levels of Service occurring at the County Road HH / County Road 13 intersection are projected to be LOS B or better with or without the project which satisfies the City's minimum LOS D standard. No additional improvements are needed beyond the project's frontage improvements on the southeast corner.

TABLE 12
LONG TERM CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour			
		Cumulative Plus Hotel-Restaurant		Cumulative Plus Hotel-Restaurant Plus Project		Cumulative Plus Hotel-Restaurant		Cumulative Plus Hotel-Restaurant Plus Project	
		Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
Newville Road / County Road HH	All-Way Stop	14	B	16	B	20	C	24	C
	Signal	32	C	33	C	29	C	29	C
Newville Road (SR 32) / SB I-5 ramps SB approach	SB Stop	127	F	199	F	417	F	540	F
	Signal	25	C	26	C	27	C	29	C
Newville Road (SR 32) / NB I-5 ramps	All-Way Stop	107	F	124	F	163	F	183	F
	Signal	26	C	27	C	26	C	26	C
Commerce Lane (County Road HH) / County Road 13	All-Way Stop	8	A	9	A	9	A	9	A

LOS = Level of Service

Traffic Signal Warrants. The volume of traffic forecast at study intersections under Cumulative and Cumulative plus Project conditions was compared to MUTCD peak hour warrant requirements to see whether traffic signals will be justified in the future. As indicated in Table 13, the Newville Road / Commerce Lane (County Road HH) intersection carries volumes that approach but may not satisfy peak hour warrants. Signal warrants are satisfied at the two I-5 ramp intersections with and without the project. None of the intersections on County Road HH south of Newville Road carry volumes that satisfy peak hour warrants.

As noted previously in the discussion of intersection Levels of Service, funding for these traffic signals has been identified in the City traffic impact mitigation fee program.

TABLE 13
CUMULATIVE TRAFFIC SIGNAL WARRANTS

Location	AM Peak Hour		PM Peak Hour	
	No Project	With Project	No Project	With Project
Newville Rd / Commerce Lane (County Rd HH)	No	No	No	No
Newville Rd / SB I-5 ramps	Yes	Yes	Yes	Yes
Newville Rd (SR 32) / NB I-5 ramps	Yes	Yes	Yes	Yes
County Rd HH / Road 13 intersection	No	No	No	No

Roadway Segment Levels of Service. Table 14 identifies projected daily traffic volumes on study area roads with and without the proposed project and uses that information to determine the planning level LOS for each facility. Because a comprehensive analysis of existing daily traffic volumes was not performed, this analysis makes use of data from the Flying J DEIR traffic study. As noted earlier the City's minimum Level of Service based on daily volume is LOS C.

No Project Conditions. As shown, if the proposed project does not proceed, the long term background traffic volume on SR 32 will exceed the LOS C threshold between the SB I-5 ramps and the NB I-5 ramps. In addition, the daily volume on County Road HH would exceed the LOS C threshold for a 2 lane Minor Collector. Improvements to a Major Collector standard will be needed, and this improvement was acknowledged in the Flying J DEIR.

Cumulative Plus Project Conditions. The addition of trips generated by the project will increase the cumulative traffic volume on study area streets. No streets that were not deficient without the project would now operate with Level of Service that exceeds the LOS C standard.

The volume of traffic on SR 32 over I-5 would be indicative of LOS F, and the project would exacerbate the deficient "No Project" conditions.

Measures to improve the Level of Service on study area roadway segments have been evaluated, however, it is important to note that in urban areas the flow of traffic through major intersections is generally the controlling factor for the quality of traffic flow. Thus, if the intersections can be made to operate with an adequate Level of Service, the intermediate roadway segments typically perform adequately even though the planning level LOS suggests otherwise.

Between the southbound and northbound I-5 ramps the structure over I-5 would theoretically have to be widened to deliver LOS C based on City thresholds. This level of improvement has not been contemplated in the City General Plan or in the SR 32 TCR. Modifications to the SR 32 structure over I-80 are not included in the City's traffic impact mitigation fee program.

On County Road HH development of a two lane Major Collector-Arterial type roadway would provide additional capacity and deliver LOS C under Cumulative Plus Project conditions.

TABLE 14
CUMULATIVE PLUS PROJECT ROADWAY SEGMENT LEVELS OF SERVICE

Street	From	To	Class	Lanes	Cumulative		Cumulative Plus Project		
							Daily Volume		
					Daily Volume	Level of Service	Project Only	Total	Level of Service
Newville Road	Co Rd HH	I-5 SB ramps	Arterial	2+	13,595	B	1,320	14,915	B
SR 32	I-5 SB ramps	I-5 NB ramps		2	**17,030**	**F**	1,020	**18,050**	**F**
County Rd HH Commerce Lane	Newville Road	County Road 13	Minor Col	2	**6,950**	**D**	1,450	**8,400**	**E**
			Major Col	2				8,400	A
	County Road 13	County Road 15	Minor Col	2	1,320	A	1,310	2,630	A

Bold values exceed the City of Orland LOS C threshold for daily volume based on Level of Service.
Highlighted values are a significant impact.
2+ indicates the addition of a second eastbound lane dropping onto the southbound on-ramp

FINDINGS/ MITIGATION MEASURES / RECOMMENDATIONS

The purpose of this section is to summarize significant project impacts and to describe measures which will reduce those impacts to a less than significant level. Based on City of Orland General Plan policy, "unacceptable" conditions are identified as those which exceed the City of Orland's Level of Service D threshold at intersections during peak hours (i.e., LOS E or F) or exceed the LOS C threshold on roadway segments based on daily volume (i.e., LOS D, E or F).

The feasibility of completing identified improvements has been discussed, and the extent to which funding is available to complete cumulative mitigation measures has been evaluated. The proposed project's fair share of cumulative mitigation measures follows as Table 15. Two alternative approaches to the calculation are presented assuming either the project's trips as a percentage of all traffic, or, alternatively as a percentage of future new traffic. Because Pilot Flying J was also conditioned to pay its fair share, the latter calculation is based on the difference between cumulative volumes and the original "existing" condition before Pilot Flying J was opened.

Current Conditions

Currently the study intersections addressed herein operate with Levels of Service which satisfy the City's LOS D minimum and traffic signal warrants are not satisfied. Therefore, no capacity improvements are needed in this area of Orland at this time.

Existing Plus Project Alone Conditions

Two traffic impacts have been identified for Existing Plus Project conditions.

Impact T-1: Impact to Safety based on left turn conflicts at County Road HH / County Road 13 intersection. The addition of project trucks will create conflict relating to the turning requirements of large trucks on the southwest corner of the intersection. Without improvements trucks turning in this area will leave the pavement or conflict with vehicles in opposing lanes. This is a significant safety impact.

Mitigation T-1: Widen the southwest corner of the County Road HH / County Road 13 intersection. The project proponents shall be responsible for widening the intersection to the satisfaction of the City Engineer. With this improvement the project's impact is less than significant.

Impact T-2: Impact to pedestrian safety. Development of the project will result in pedestrians walking between the site and the balance of the City of Orland east of I-5. Because no crossing exists along Commerce lane (County Road HH), pedestrians will be crossing County Road HH at various locations. This is a significant safety impact.

Mitigation T-2: Create safe pedestrian crossing. The project proponents shall incorporate a crosswalk into improvements to the County Road HH / County Road 13 intersection and install sidewalks along the project frontage as development proceeds. With this improvement the impact is less than significant.

Existing Plus Project Plus Approved Project (EPAP) Impacts

Because satisfactory conditions remain, no additional mitigation are required.

Cumulative Plus Project Impacts

Impact T-3: Impact to Level of Service at Newville Road / SB I-5 Ramps intersection. The addition of project generated automobile and truck traffic and cumulative background traffic resulting from other development and through traffic on SR 32 will result in the off-ramp approach to the Newville Road / SB I-5 ramps intersection operating with LOS F conditions. As LOS F exceeds the City's minimum LOS D standard, this is a significant impact.

Mitigation T-3: Contribute Fair Share to the cost of widening the off-ramp to provide a separate right turn lane and installing a Traffic Signal. This improvement would result in Level of Service B conditions, which satisfy the City's minimum LOS D standard. Implementation will require work within the Caltrans right of way and an encroachment permit would be required. A traffic signal is identified in the City General Plan EIR and is in the City's traffic impact mitigation fee program. Because this improvement is not required solely as a result of the project, project proponents should contribute their fair share to the cost of this mitigation. With this mitigation, the project's cumulative impact is less than significant.

Impact T-4: Impact to Level of Service at Newville Road / NB I-5 ramps intersection. The addition of project generated automobile and truck traffic and cumulative background traffic resulting from other development and through traffic on SR 32 will result in the off ramp operating with LOS F conditions. As LOS F exceeds the City's minimum LOS D standard, this is a significant impact.

Mitigation T-4: Contribute Fair Share to the cost of installing a Traffic Signal. This improvement would result in Level of Service C conditions, which satisfy the City's minimum LOS D standard. Implementation will require work within the Caltrans right of way and an encroachment permit would be required. This improvement is identified in the City General Plan EIR and is in the City's traffic impact mitigation fee program. Because this improvement is not required solely as a result of the project, project proponents should contribute their fair share to the cost of this mitigation. With this mitigation, the project's cumulative impact is less than significant.

Impact T-5: Impact to Level of Service at Newville Road / County Road HH intersection. The addition of project generated automobile and truck traffic and cumulative background traffic resulting from other development may not result in satisfaction of traffic signal warrants at the Newville Road / County Road HH intersection, but because the traffic signal is also needed to ensure coordinated operation of the signals along SR 32, this is a significant impact.

Mitigation T-5: Contribute Fair Share to the cost of installing a Traffic Signal. Signalization would result in Level of Service C conditions, which satisfy the City's minimum LOS D standard and would allow coordinated operation of the other intersections with signals. This improvement is identified in the City General Plan EIR and is in the City's traffic impact

mitigation fee program. Because this improvement is not required solely as a result of this project, project proponents should contribute their fair share to the cost of this mitigation. With this mitigation, the project's cumulative impact is less than significant.

Impact T-6: Impact to Level of Service on Newville Road (SR 32) between SB I-5 and NB I-5 ramps based on Daily Traffic Volume. The addition of project generated automobile and truck traffic and cumulative background traffic resulting from other development in Orland will result in total daily traffic volumes on Newville Road that exceed the LOS C standard for a two lane arterial street. This is a significant impact.

Mitigation T-6: Contribute Fair Share to the cost of coordinating Traffic Signals on Newville Road. To deliver LOS C conditions it would be necessary to widen SR 32 to provide additional lanes on the crossing structure. However, this improvement is not included in the General Plan EIR, or the City's traffic impact fee program. Widening the structure is not identified in the SR 32 TCR. Thus, there is no identified funding mechanism for a project of this magnitude and is unreasonable to expect that local development in Orland would be capable of funding this improvement. As noted earlier, short roadway segments can carry high traffic volumes but operate adequately when the intersections have the capacity to handle peak period traffic volumes at a good Level of Service. This is the case with the intersections on SR 32 which are expected to operate at LOS C or better with identified improvements. Coordinating the operation of the study area signals with the operation of the signals further east on SR 32 will be appropriate. Implementation will require work within the Caltrans right of way and an encroachment permit would be required. Because this improvement is not required solely as a result of the project, project proponents should contribute their fair share to the cost of this mitigation.

TABLE 13
FAIR SHARE CALCULATION

	Traffic Volume				Fair Share	
	A	**B**	**C**	**D**		
Location	**Existing**	**Pre Pilot Flying J***	**Project Only**	**Cumulative Plus Project**	**Percent of all Traffic (C/D)**	**Percent of New Traffic C/ (D-B)**
Based on PM Peak Hour Traffic						
Newville Rd / County Rd HH	952	660	39	1,285	3%	6%
Newville Rd (SR 32) / SB I-5 ramps	1,040	771	35	1,879	2%	3%
Newville Rd (SR 32) / NB I-5 ramps	1,063	857	26	2,306	1%	2%

(b/c) is fair share based on all future traffic
< b/ (c-a) > is fair share as a percentage of "new" future traffic only
(*) source: *Traffic Impact Analysis for Pilot Flying J Travel Center and Annexation, KDA, 1/7/2015*

APPENDICES

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	228	20	188	152	11	8	4	199	55	3	3
Future Vol, veh/h	12	228	20	188	152	11	8	4	199	55	3	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	40	2	2	2	2	25	2	2	2
Mvmt Flow	14	259	23	214	173	13	9	5	226	63	3	3
Number of Lanes	1	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	14.1	13.2	12.1	11.4
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	67%	0%	100%	0%	100%	0%	90%
Vol Thru, %	33%	0%	0%	92%	0%	93%	5%
Vol Right, %	0%	100%	0%	8%	0%	7%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	199	12	248	188	163	61
LT Vol	8	0	12	0	188	0	55
Through Vol	4	0	0	228	0	152	3
RT Vol	0	199	0	20	0	11	3
Lane Flow Rate	14	226	14	282	214	185	69
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.026	0.372	0.025	0.476	0.422	0.304	0.138
Departure Headway (Hd)	6.977	5.927	6.641	6.076	7.112	5.902	7.151
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	512	604	538	592	506	608	499
Service Time	4.737	3.687	4.394	3.829	4.863	3.652	5.227
HCM Lane V/C Ratio	0.027	0.374	0.026	0.476	0.423	0.304	0.138
HCM Control Delay	9.9	12.2	9.6	14.3	15	11.2	11.4
HCM Lane LOS	A	B	A	B	B	B	B
HCM 95th-tile Q	0.1	1.7	0.1	2.6	2.1	1.3	0.5

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	9	5	0	5	4	4	74	0	36	67	12
Future Vol, veh/h	11	9	5	0	5	4	4	74	0	36	67	12
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	75	50	2
Mvmt Flow	13	10	6	0	6	5	5	84	0	41	76	14
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.6	7.3	7.8	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	5%	44%	0%	100%	0%
Vol Thru, %	95%	36%	56%	0%	85%
Vol Right, %	0%	20%	44%	0%	15%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	25	9	36	79
LT Vol	4	11	0	36	0
Through Vol	74	9	5	0	67
RT Vol	0	5	4	0	12
Lane Flow Rate	89	28	10	41	90
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.104	0.035	0.012	0.073	0.134
Departure Headway (Hd)	4.206	4.484	4.27	6.389	5.356
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	838	803	843	560	669
Service Time	2.303	2.484	2.271	4.13	3.097
HCM Lane V/C Ratio	0.106	0.035	0.012	0.073	0.135
HCM Control Delay	7.8	7.6	7.3	9.6	8.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0	0.2	0.5

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	414	246	0	66	86
Future Vol, veh/h	0	414	246	0	66	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	5	10	10	8	40
Mvmt Flow	0	470	280	0	75	98

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	750	280
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	470	-
Critical Hdwy	-	-	-	-	6.48	6.6
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	-	-	3.572	3.66
Pot Cap-1 Maneuver	0	-	-	0	370	676
Stage 1	0	-	-	0	754	-
Stage 2	0	-	-	0	617	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	370	676
Mov Cap-2 Maneuver	-	-	-	-	370	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	617	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	497
HCM Lane V/C Ratio	-	-	0.348
HCM Control Delay (s)	-	-	16.1
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.5

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	407	0	0	301	30	54
Future Vol, veh/h	407	0	0	301	30	54
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	5	2	2	5	40	10
Mvmt Flow	463	0	0	342	34	61
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	14.5	11.8	9.8
HCM LOS	B	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	54	407	301
LT Vol	30	0	0	0
Through Vol	0	0	407	301
RT Vol	0	54	0	0
Lane Flow Rate	34	61	462	342
Geometry Grp	7	7	2	2
Degree of Util (X)	0.071	0.098	0.599	0.455
Departure Headway (Hd)	7.485	5.749	4.663	4.788
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	475	617	772	749
Service Time	5.282	3.543	2.713	2.844
HCM Lane V/C Ratio	0.072	0.099	0.598	0.457
HCM Control Delay	10.9	9.2	14.5	11.8
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	0.2	0.3	4.1	2.4

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	192	20	206	271	71	21	7	194	58	6	14
Future Vol, veh/h	9	192	20	206	271	71	21	7	194	58	6	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	40	2	2	2	2	25	2	2	2
Mvmt Flow	10	209	22	224	295	77	23	8	211	63	7	15
Number of Lanes	1	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	13.5	16.6	12.3	11.9
HCM LOS	B	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	75%	0%	100%	0%	100%	0%	74%
Vol Thru, %	25%	0%	0%	91%	0%	79%	8%
Vol Right, %	0%	100%	0%	9%	0%	21%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	194	9	212	206	342	78
LT Vol	21	0	9	0	206	0	58
Through Vol	7	0	0	192	0	271	6
RT Vol	0	194	0	20	0	71	14
Lane Flow Rate	30	211	10	230	224	372	85
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.062	0.366	0.019	0.412	0.445	0.603	0.172
Departure Headway (Hd)	7.338	6.244	7.01	6.434	7.15	5.841	7.29
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	486	574	508	558	502	617	489
Service Time	5.111	4.017	4.785	4.208	4.911	3.601	5.379
HCM Lane V/C Ratio	0.062	0.368	0.02	0.412	0.446	0.603	0.174
HCM Control Delay	10.6	12.6	9.9	13.7	15.6	17.2	11.9
HCM Lane LOS	B	B	A	B	C	C	B
HCM 95th-tile Q	0.2	1.7	0.1	2	2.3	4	0.6

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	9	4	0	5	4	5	46	0	35	88	11
Future Vol, veh/h	10	9	4	0	5	4	5	46	0	35	88	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	75	50	2
Mvmt Flow	11	10	4	0	5	4	5	50	0	38	96	12
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.6	7.3	7.6	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	10%	43%	0%	100%	0%
Vol Thru, %	90%	39%	56%	0%	89%
Vol Right, %	0%	17%	44%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	51	23	9	35	99
LT Vol	5	10	0	35	0
Through Vol	46	9	5	0	88
RT Vol	0	4	4	0	11
Lane Flow Rate	55	25	10	38	108
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.065	0.031	0.011	0.067	0.16
Departure Headway (Hd)	4.22	4.463	4.231	6.365	5.361
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	834	807	851	563	669
Service Time	2.318	2.463	2.232	4.097	3.093
HCM Lane V/C Ratio	0.066	0.031	0.012	0.067	0.161
HCM Control Delay	7.6	7.6	7.3	9.6	9.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0	0.2	0.6

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	363	439	0	97	109
Future Vol, veh/h	0	363	439	0	97	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	10	10	8	40
Mvmt Flow	0	395	477	0	105	118

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	872	477
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	395	-
Critical Hdwy	-	-	-	-	6.48	6.6
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	-	-	3.572	3.66
Pot Cap-1 Maneuver	0	-	-	0	313	518
Stage 1	0	-	-	0	612	-
Stage 2	0	-	-	0	668	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	313	518
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	668	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	25.3
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	396
HCM Lane V/C Ratio	-	-	0.565
HCM Control Delay (s)	-	-	25.3
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	3.4

Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	384	0	0	441	60	99
Future Vol, veh/h	384	0	0	441	60	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	2	2	5	40	10
Mvmt Flow	417	0	0	479	65	108
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	15.9	18.7	10.9
HCM LOS	C	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	99	384	441
LT Vol	60	0	0	0
Through Vol	0	0	384	441
RT Vol	0	99	0	0
Lane Flow Rate	65	108	417	479
Geometry Grp	7	7	2	2
Degree of Util (X)	0.143	0.184	0.604	0.687
Departure Headway (Hd)	7.907	6.164	5.206	5.157
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	453	581	693	705
Service Time	5.654	3.909	3.237	3.157
HCM Lane V/C Ratio	0.143	0.186	0.602	0.679
HCM Control Delay	12	10.3	15.9	18.7
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	0.5	0.7	4.1	5.5

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	228	24	244	152	11	10	4	242	55	3	3
Future Vol, veh/h	12	228	24	244	152	11	10	4	242	55	3	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	40	2	2	2	2	25	2	2	2
Mvmt Flow	14	259	27	277	173	13	11	5	275	63	3	3
Number of Lanes	1	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	15.5	16.4	14.2	12
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	71%	0%	100%	0%	100%	0%	90%
Vol Thru, %	29%	0%	0%	90%	0%	93%	5%
Vol Right, %	0%	100%	0%	10%	0%	7%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	242	12	252	244	163	61
LT Vol	10	0	12	0	244	0	55
Through Vol	4	0	0	228	0	152	3
RT Vol	0	242	0	24	0	11	3
Lane Flow Rate	16	275	14	286	277	185	69
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.032	0.472	0.027	0.511	0.568	0.317	0.148
Departure Headway (Hd)	7.255	6.179	6.998	6.421	7.372	6.159	7.684
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	491	578	508	558	488	580	469
Service Time	5.04	3.964	4.785	4.207	5.152	3.938	5.684
HCM Lane V/C Ratio	0.033	0.476	0.028	0.513	0.568	0.319	0.147
HCM Control Delay	10.3	14.4	10	15.8	19.5	11.8	12
HCM Lane LOS	B	B	A	C	C	B	B
HCM 95th-tile Q	0.1	2.5	0.1	2.9	3.5	1.4	0.5

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	9	6	0	5	4	5	75	0	36	68	20
Future Vol, veh/h	17	9	6	0	5	4	5	75	0	36	68	20
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	75	50	2
Mvmt Flow	19	10	7	0	6	5	6	85	0	41	77	23
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.8	7.4	7.9	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	6%	53%	0%	100%	0%
Vol Thru, %	94%	28%	56%	0%	77%
Vol Right, %	0%	19%	44%	0%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	32	9	36	88
LT Vol	5	17	0	36	0
Through Vol	75	9	5	0	68
RT Vol	0	6	4	0	20
Lane Flow Rate	91	36	10	41	100
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.109	0.046	0.012	0.073	0.148
Departure Headway (Hd)	4.335	4.539	4.309	6.404	5.318
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	831	793	834	558	672
Service Time	2.339	2.543	2.315	4.156	3.069
HCM Lane V/C Ratio	0.11	0.045	0.012	0.073	0.149
HCM Control Delay	7.9	7.8	7.4	9.7	9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.2	0.5

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	445	284	0	66	104
Future Vol, veh/h	0	445	284	0	66	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	5	10	10	8	40
Mvmt Flow	0	506	323	0	75	118

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	829	323
Stage 1	-	-	-	-	323	-
Stage 2	-	-	-	-	506	-
Critical Hdwy	-	-	-	-	6.48	6.6
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	-	-	3.572	3.66
Pot Cap-1 Maneuver	0	-	-	0	332	638
Stage 1	0	-	-	0	720	-
Stage 2	0	-	-	0	593	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	332	638
Mov Cap-2 Maneuver	-	-	-	-	332	-
Stage 1	-	-	-	-	720	-
Stage 2	-	-	-	-	593	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	470
HCM Lane V/C Ratio	-	-	0.411
HCM Control Delay (s)	-	-	17.9
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	2

Intersection	
Intersection Delay, s/veh	14.1
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	423	0	0	323	46	54
Future Vol, veh/h	423	0	0	323	46	54
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	5	2	2	5	40	10
Mvmt Flow	481	0	0	367	52	61
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	15.9	12.8	10.3
HCM LOS	C	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	46	54	423	323
LT Vol	46	0	0	0
Through Vol	0	0	423	323
RT Vol	0	54	0	0
Lane Flow Rate	52	61	481	367
Geometry Grp	7	7	2	2
Degree of Util (X)	0.112	0.102	0.637	0.499
Departure Headway (Hd)	7.713	5.973	4.77	4.891
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	467	604	750	730
Service Time	5.413	3.673	2.841	2.969
HCM Lane V/C Ratio	0.111	0.101	0.641	0.503
HCM Control Delay	11.4	9.4	15.9	12.8
HCM Lane LOS	B	A	C	B
HCM 95th-tile Q	0.4	0.3	4.6	2.8

Intersection	
Intersection Delay, s/veh	16.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	192	23	261	271	71	24	7	238	58	6	14
Future Vol, veh/h	9	192	23	261	271	71	24	7	238	58	6	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	40	2	2	2	2	25	2	2	2
Mvmt Flow	10	209	25	284	295	77	26	8	259	63	7	15
Number of Lanes	1	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	14.8	19.3	14.4	12.5
HCM LOS	B	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	77%	0%	100%	0%	100%	0%	74%
Vol Thru, %	23%	0%	0%	89%	0%	79%	8%
Vol Right, %	0%	100%	0%	11%	0%	21%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	238	9	215	261	342	78
LT Vol	24	0	9	0	261	0	58
Through Vol	7	0	0	192	0	271	6
RT Vol	0	238	0	23	0	71	14
Lane Flow Rate	34	259	10	234	284	372	85
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.071	0.463	0.02	0.446	0.583	0.628	0.182
Departure Headway (Hd)	7.65	6.442	7.456	6.868	7.394	6.081	7.734
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	554	483	528	485	587	466
Service Time	5.35	4.241	5.156	4.568	5.184	3.87	5.748
HCM Lane V/C Ratio	0.072	0.468	0.021	0.443	0.586	0.634	0.182
HCM Control Delay	10.9	14.8	10.3	15	20.1	18.7	12.5
HCM Lane LOS	B	B	B	B	C	C	B
HCM 95th-tile Q	0.2	2.4	0.1	2.3	3.7	4.4	0.7

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	9	5	0	5	4	5	89	0	35	89	19
Future Vol, veh/h	17	9	5	0	5	4	5	89	0	35	89	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	75	50	2
Mvmt Flow	18	10	5	0	5	4	5	97	0	38	97	21
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.8	7.4	8	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	5%	55%	0%	100%	0%
Vol Thru, %	95%	29%	56%	0%	82%
Vol Right, %	0%	16%	44%	0%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	94	31	9	35	108
LT Vol	5	17	0	35	0
Through Vol	89	9	5	0	89
RT Vol	0	5	4	0	19
Lane Flow Rate	102	34	10	38	117
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.123	0.043	0.012	0.068	0.175
Departure Headway (Hd)	4.342	4.62	4.369	6.406	5.356
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	830	779	823	558	668
Service Time	2.348	2.626	2.377	4.158	3.107
HCM Lane V/C Ratio	0.123	0.044	0.012	0.068	0.175
HCM Control Delay	8	7.8	7.4	9.6	9.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.2	0.6

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	394	477	0	97	127
Future Vol, veh/h	0	394	477	0	97	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	10	10	8	40
Mvmt Flow	0	428	518	0	105	138

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	946	518
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	428	-
Critical Hdwy	-	-	-	-	6.48	6.6
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	-	-	3.572	3.66
Pot Cap-1 Maneuver	0	-	-	0	283	489
Stage 1	0	-	-	0	586	-
Stage 2	0	-	-	0	645	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	283	489
Mov Cap-2 Maneuver	-	-	-	-	283	-
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	645	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	31.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	372
HCM Lane V/C Ratio	-	-	0.655
HCM Control Delay (s)	-	-	31.2
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	4.5

Intersection	
Intersection Delay, s/veh	18.2
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	401	0	0	462	76	99
Future Vol, veh/h	401	0	0	462	76	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	2	2	5	40	10
Mvmt Flow	436	0	0	502	83	108
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	17.6	21.3	11.4
HCM LOS	C	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	76	99	401	462
LT Vol	76	0	0	0
Through Vol	0	0	401	462
RT Vol	0	99	0	0
Lane Flow Rate	83	108	436	502
Geometry Grp	7	7	2	2
Degree of Util (X)	0.184	0.188	0.645	0.732
Departure Headway (Hd)	8.036	6.29	5.329	5.246
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	447	569	676	688
Service Time	5.785	4.038	3.365	3.279
HCM Lane V/C Ratio	0.186	0.19	0.645	0.73
HCM Control Delay	12.6	10.5	17.6	21.3
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	0.7	0.7	4.7	6.4

Intersection	
Intersection Delay, s/veh	16
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	230	24	251	159	29	10	4	245	64	3	3
Future Vol, veh/h	12	230	24	251	159	29	10	4	245	64	3	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	40	2	2	2	2	25	2	2	2
Mvmt Flow	14	261	27	285	181	33	11	5	278	73	3	3
Number of Lanes	1	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	16.2	17.2	14.8	12.5
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	71%	0%	100%	0%	100%	0%	91%
Vol Thru, %	29%	0%	0%	91%	0%	85%	4%
Vol Right, %	0%	100%	0%	9%	0%	15%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	245	12	254	251	188	70
LT Vol	10	0	12	0	251	0	64
Through Vol	4	0	0	230	0	159	3
RT Vol	0	245	0	24	0	29	3
Lane Flow Rate	16	278	14	289	285	214	80
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.033	0.488	0.027	0.526	0.591	0.367	0.173
Departure Headway (Hd)	7.382	6.304	7.137	6.559	7.464	6.188	7.824
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	482	568	498	546	482	577	461
Service Time	5.178	4.1	4.936	4.357	5.257	3.979	5.824
HCM Lane V/C Ratio	0.033	0.489	0.028	0.529	0.591	0.371	0.174
HCM Control Delay	10.4	15	10.1	16.5	20.6	12.6	12.5
HCM Lane LOS	B	B	B	C	C	B	B
HCM 95th-tile Q	0.1	2.7	0.1	3	3.8	1.7	0.6

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	9	6	0	5	4	5	78	0	36	73	20
Future Vol, veh/h	17	9	6	0	5	4	5	78	0	36	73	20
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	75	50	2
Mvmt Flow	19	10	7	0	6	5	6	89	0	41	83	23
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	7.8	7.4	7.9	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	6%	53%	0%	100%	0%
Vol Thru, %	94%	28%	56%	0%	78%
Vol Right, %	0%	19%	44%	0%	22%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	83	32	9	36	93
LT Vol	5	17	0	36	0
Through Vol	78	9	5	0	73
RT Vol	0	6	4	0	20
Lane Flow Rate	94	36	10	41	106
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.114	0.046	0.012	0.073	0.156
Departure Headway (Hd)	4.34	4.56	4.331	6.406	5.329
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	830	789	830	558	671
Service Time	2.345	2.566	2.338	4.159	3.081
HCM Lane V/C Ratio	0.113	0.046	0.012	0.073	0.158
HCM Control Delay	7.9	7.8	7.4	9.7	9.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.2	0.6

Intersection	
Int Delay, s/veh	64.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	455	361	0	285	108
Future Vol, veh/h	0	455	361	0	285	108
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	5	10	10	8	40
Mvmt Flow	0	517	410	0	324	123

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	927	410
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	517	-
Critical Hdwy	-	-	-	-	6.48	6.6
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	-	-	3.572	3.66
Pot Cap-1 Maneuver	0	-	-	0	~ 291	567
Stage 1	0	-	-	0	657	-
Stage 2	0	-	-	0	586	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	~ 291	567
Mov Cap-2 Maneuver	-	-	-	-	~ 291	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	586	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	198.8
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	336
HCM Lane V/C Ratio	-	-	1.329
HCM Control Delay (s)	-	-	198.8
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	21.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	124.1
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	648	0	0	612	51	269
Future Vol, veh/h	648	0	0	612	51	269
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	5	2	2	5	40	10
Mvmt Flow	736	0	0	695	58	306
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	164.2	136	20.3
HCM LOS	F	F	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	51	269	648	612
LT Vol	51	0	0	0
Through Vol	0	0	648	612
RT Vol	0	269	0	0
Lane Flow Rate	58	306	736	695
Geometry Grp	7	7	2	2
Degree of Util (X)	0.141	0.6	1.288	1.216
Departure Headway (Hd)	9.569	7.792	6.641	6.722
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	377	468	552	549
Service Time	7.269	5.492	4.641	4.722
HCM Lane V/C Ratio	0.154	0.654	1.333	1.266
HCM Control Delay	13.8	21.5	164.2	136
HCM Lane LOS	B	C	F	F
HCM 95th-tile Q	0.5	3.9	28.7	24.4

Intersection	
Intersection Delay, s/veh	24.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	200	23	312	276	126	24	7	262	105	6	14
Future Vol, veh/h	9	200	23	312	276	126	24	7	262	105	6	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	40	2	2	2	2	25	2	2	2
Mvmt Flow	10	217	25	339	300	137	26	8	285	114	7	15
Number of Lanes	1	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	17.6	31	17.7	15.1
HCM LOS	C	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	77%	0%	100%	0%	100%	0%	84%
Vol Thru, %	23%	0%	0%	90%	0%	69%	5%
Vol Right, %	0%	100%	0%	10%	0%	31%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	262	9	223	312	402	125
LT Vol	24	0	9	0	312	0	105
Through Vol	7	0	0	200	0	276	6
RT Vol	0	262	0	23	0	126	14
Lane Flow Rate	34	285	10	242	339	437	136
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.077	0.559	0.022	0.508	0.752	0.799	0.313
Departure Headway (Hd)	8.177	7.062	8.129	7.54	7.98	6.584	8.282
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	438	510	440	478	454	551	433
Service Time	5.919	4.804	5.881	5.292	5.727	4.33	6.336
HCM Lane V/C Ratio	0.078	0.559	0.023	0.506	0.747	0.793	0.314
HCM Control Delay	11.6	18.4	11.1	17.9	31.3	30.7	15.1
HCM Lane LOS	B	C	B	C	D	D	C
HCM 95th-tile Q	0.2	3.4	0.1	2.8	6.3	7.6	1.3

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	9	5	0	5	4	5	114	0	35	140	19
Future Vol, veh/h	17	9	5	0	5	4	5	114	0	35	140	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	75	50	2
Mvmt Flow	18	10	5	0	5	4	5	124	0	38	152	21
Number of Lanes	0	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	1
HCM Control Delay	8.1	7.6	8.2	10
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	4%	55%	0%	100%	0%
Vol Thru, %	96%	29%	56%	0%	88%
Vol Right, %	0%	16%	44%	0%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	119	31	9	35	159
LT Vol	5	17	0	35	0
Through Vol	114	9	5	0	140
RT Vol	0	5	4	0	19
Lane Flow Rate	129	34	10	38	173
Geometry Grp	5	2	2	7	7
Degree of Util (X)	0.158	0.045	0.012	0.068	0.26
Departure Headway (Hd)	4.411	4.826	4.577	6.42	5.409
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	817	745	784	556	660
Service Time	2.417	2.835	2.59	4.183	3.172
HCM Lane V/C Ratio	0.158	0.046	0.013	0.068	0.262
HCM Control Delay	8.2	8.1	7.6	9.7	10.1
HCM Lane LOS	A	A	A	A	B
HCM 95th-tile Q	0.6	0.1	0	0.2	1

Intersection	
Int Delay, s/veh	185.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	0	451	554	0	358	169
Future Vol, veh/h	0	451	554	0	358	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	5	-5	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	5	10	10	8	40
Mvmt Flow	0	490	602	0	389	184

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1092	602
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	490	-
Critical Hdwy	-	-	-	-	6.48	6.6
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	-	-	3.572	3.66
Pot Cap-1 Maneuver	0	-	-	0	~ 231	436
Stage 1	0	-	-	0	535	-
Stage 2	0	-	-	0	604	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	~ 231	436
Mov Cap-2 Maneuver	-	-	-	-	~ 231	-
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	604	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	$ 540
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	272
HCM Lane V/C Ratio	-	-	2.106
HCM Control Delay (s)	-	-	$ 540
HCM Lane LOS	-	-	F
HCM 95th %tile Q(veh)	-	-	42.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	183.3
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	695	0	0	736	125	355
Future Vol, veh/h	695	0	0	736	125	355
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	5	2	2	5	40	10
Mvmt Flow	755	0	0	800	136	386
Number of Lanes	1	0	0	1	1	1

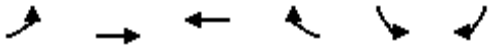
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	217.3	252.1	28.5
HCM LOS	F	F	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	0%
Vol Thru, %	0%	0%	100%	100%
Vol Right, %	0%	100%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	125	355	695	736
LT Vol	125	0	0	0
Through Vol	0	0	695	736
RT Vol	0	355	0	0
Lane Flow Rate	136	386	755	800
Geometry Grp	7	7	2	2
Degree of Util (X)	0.331	0.757	1.409	1.492
Departure Headway (Hd)	9.988	8.202	7.429	7.328
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	363	444	499	504
Service Time	7.688	5.902	5.429	5.328
HCM Lane V/C Ratio	0.375	0.869	1.513	1.587
HCM Control Delay	17.6	32.3	217.3	252.1
HCM Lane LOS	C	D	F	F
HCM 95th-tile Q	1.4	6.3	32.6	37.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	230	24	251	159	29	10	4	245	64	3	3
Future Volume (veh/h)	12	230	24	251	159	29	10	4	245	64	3	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1357	1863	1900	1900	1863	1520	1900	1863	1900
Adj Flow Rate, veh/h	14	261	27	285	181	33	11	5	0	73	3	3
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	40	2	2	2	2	25	2	2	2
Cap, veh/h	24	305	32	321	643	117	505	216	539	635	26	23
Arrive On Green	0.01	0.18	0.18	0.25	0.42	0.42	0.42	0.42	0.00	0.42	0.42	0.42
Sat Flow, veh/h	1774	1661	172	1293	1534	280	1027	518	1292	1312	63	54
Grp Volume(v), veh/h	14	0	288	285	0	214	16	0	0	79	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1832	1293	0	1813	1545	0	1292	1429	0	0
Q Serve(g_s), s	0.6	0.0	12.2	17.0	0.0	6.2	0.0	0.0	0.0	2.2	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	12.2	17.0	0.0	6.2	0.4	0.0	0.0	2.6	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.15	0.69		1.00	0.92		0.04
Lane Grp Cap(c), veh/h	24	0	337	321	0	760	721	0	539	683	0	0
V/C Ratio(X)	0.59	0.00	0.85	0.89	0.00	0.28	0.02	0.00	0.00	0.12	0.00	0.00
Avail Cap(c_a), veh/h	89	0	458	501	0	1065	721	0	539	683	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.2	0.0	31.6	29.0	0.0	15.3	13.7	0.0	0.0	14.3	0.0	0.0
Incr Delay (d2), s/veh	21.2	0.0	11.2	11.6	0.0	0.2	0.1	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	7.2	7.1	0.0	3.1	0.2	0.0	0.0	1.1	0.0	0.0
LnGrp Delay(d),s/veh	60.4	0.0	42.8	40.6	0.0	15.5	13.7	0.0	0.0	14.7	0.0	0.0
LnGrp LOS	E		D	D		B	B			B		
Approach Vol, veh/h		302			499			16			79	
Approach Delay, s/veh		43.6			29.8			13.7			14.7	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		37.4	23.9	18.7		37.4	5.1	37.5
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		17.0	31.0	20.0		17.0	4.0	47.0
Max Q Clear Time (g_c+I1), s		2.4	19.0	14.2		4.6	2.6	8.2
Green Ext Time (p_c), s		0.0	0.9	0.5		0.2	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.9
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	455	361	0	285	108
Future Volume (veh/h)	0	455	361	0	285	108
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1764	1770	0	1627	1900
Adj Flow Rate, veh/h	0	517	410	0	324	123
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	5	10	0	0	0
Cap, veh/h	0	574	576	0	623	237
Arrive On Green	0.00	0.33	0.33	0.00	0.57	0.57
Sat Flow, veh/h	0	1764	1770	0	1085	412
Grp Volume(v), veh/h	0	517	410	0	448	0
Grp Sat Flow(s),veh/h/ln	0	1764	1770	0	1500	0
Q Serve(g_s), s	0.0	22.4	16.3	0.0	14.5	0.0
Cycle Q Clear(g_c), s	0.0	22.4	16.3	0.0	14.5	0.0
Prop In Lane	0.00			0.00	0.72	0.27
Lane Grp Cap(c), veh/h	0	574	576	0	862	0
V/C Ratio(X)	0.00	0.90	0.71	0.00	0.52	0.00
Avail Cap(c_a), veh/h	0	772	775	0	862	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	25.7	23.7	0.0	10.3	0.0
Incr Delay (d2), s/veh	0.0	11.0	2.0	0.0	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.5	8.2	0.0	6.5	0.0
LnGrp Delay(d),s/veh	0.0	36.7	25.7	0.0	12.6	0.0
LnGrp LOS		D	C		B	
Approach Vol, veh/h		517	410		448	
Approach Delay, s/veh		36.7	25.7		12.6	
Approach LOS		D	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				30.0		50.0		30.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				35.0		37.0		35.0
Max Q Clear Time (g_c+I1), s				24.4		16.5		18.3
Green Ext Time (p_c), s				1.7		2.0		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	648	0	0	612	51	269
Future Volume (veh/h)	648	0	0	612	51	269
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1855	0	0	1764	1357	1727
Adj Flow Rate, veh/h	736	0	0	695	58	306
Adj No. of Lanes	1	0	0	1	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	5	0	0	5	40	10
Cap, veh/h	807	0	0	768	601	682
Arrive On Green	0.44	0.00	0.00	0.44	0.46	0.46
Sat Flow, veh/h	1855	0	0	1764	1293	1468
Grp Volume(v), veh/h	736	0	0	695	58	306
Grp Sat Flow(s),veh/h/ln	1855	0	0	1764	1293	1468
Q Serve(g_s), s	29.7	0.0	0.0	29.4	2.0	11.3
Cycle Q Clear(g_c), s	29.7	0.0	0.0	29.4	2.0	11.3
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	807	0	0	768	601	682
V/C Ratio(X)	0.91	0.00	0.00	0.90	0.10	0.45
Avail Cap(c_a), veh/h	1090	0	0	1037	601	682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	0.0	21.0	12.0	14.5
Incr Delay (d2), s/veh	9.2	0.0	0.0	8.9	0.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.2	0.0	0.0	16.0	0.8	4.9
LnGrp Delay(d),s/veh	30.3	0.0	0.0	30.0	12.3	16.6
LnGrp LOS	C			C	B	B
Approach Vol, veh/h	736			695	364	
Approach Delay, s/veh	30.3			30.0	15.9	
Approach LOS	C			C	B	

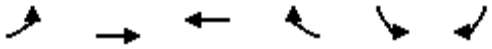
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		41.2		38.8				38.8
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		25.0		47.0				47.0
Max Q Clear Time (g_c+I1), s		13.3		31.7				31.4
Green Ext Time (p_c), s		1.3		3.1				2.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	200	23	312	276	126	24	7	262	105	6	14
Future Volume (veh/h)	9	200	23	312	276	126	24	7	262	105	6	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1357	1863	1900	1900	1863	1520	1900	1863	1900
Adj Flow Rate, veh/h	10	217	25	339	300	137	26	8	0	114	7	15
Adj No. of Lanes	1	1	0	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	40	2	2	2	2	25	2	2	2
Cap, veh/h	18	259	30	377	532	243	535	154	518	562	37	64
Arrive On Green	0.01	0.16	0.16	0.29	0.44	0.44	0.40	0.40	0.00	0.40	0.40	0.40
Sat Flow, veh/h	1774	1640	189	1293	1212	553	1137	385	1292	1196	93	160
Grp Volume(v), veh/h	10	0	242	339	0	437	34	0	0	136	0	0
Grp Sat Flow(s),veh/h/ln	1774	0	1829	1293	0	1765	1522	0	1292	1448	0	0
Q Serve(g_s), s	0.4	0.0	10.3	20.2	0.0	14.8	0.0	0.0	0.0	3.9	0.0	0.0
Cycle Q Clear(g_c), s	0.4	0.0	10.3	20.2	0.0	14.8	0.9	0.0	0.0	4.8	0.0	0.0
Prop In Lane	1.00		0.10	1.00		0.31	0.76		1.00	0.84		0.11
Lane Grp Cap(c), veh/h	18	0	289	377	0	776	689	0	518	663	0	0
V/C Ratio(X)	0.57	0.00	0.84	0.90	0.00	0.56	0.05	0.00	0.00	0.21	0.00	0.00
Avail Cap(c_a), veh/h	89	0	389	565	0	1059	689	0	518	663	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.4	0.0	32.7	27.2	0.0	16.7	14.6	0.0	0.0	15.7	0.0	0.0
Incr Delay (d2), s/veh	25.4	0.0	11.4	12.5	0.0	0.6	0.1	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	6.1	8.5	0.0	7.3	0.5	0.0	0.0	2.1	0.0	0.0
LnGrp Delay(d),s/veh	64.8	0.0	44.0	39.7	0.0	17.4	14.8	0.0	0.0	16.4	0.0	0.0
LnGrp LOS	E		D	D		B	B			B		
Approach Vol, veh/h		252			776			34			136	
Approach Delay, s/veh		44.9			27.1			14.8			16.4	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		36.1	27.3	16.6		36.1	4.8	39.2
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		16.0	35.0	17.0		16.0	4.0	48.0
Max Q Clear Time (g_c+I1), s		2.9	22.2	12.3		6.8	2.4	16.8
Green Ext Time (p_c), s		0.0	1.2	0.4		0.3	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	29.3
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	451	554	0	358	169
Future Volume (veh/h)	0	451	554	0	358	169
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1764	1770	0	1606	1900
Adj Flow Rate, veh/h	0	490	602	0	389	184
Adj No. of Lanes	0	1	1	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	5	10	0	0	0
Cap, veh/h	0	652	655	0	529	250
Arrive On Green	0.00	0.37	0.37	0.00	0.53	0.53
Sat Flow, veh/h	0	1764	1770	0	998	472
Grp Volume(v), veh/h	0	490	602	0	574	0
Grp Sat Flow(s),veh/h/ln	0	1764	1770	0	1473	0
Q Serve(g_s), s	0.0	19.4	26.0	0.0	24.0	0.0
Cycle Q Clear(g_c), s	0.0	19.4	26.0	0.0	24.0	0.0
Prop In Lane	0.00			0.00	0.68	0.32
Lane Grp Cap(c), veh/h	0	652	655	0	781	0
V/C Ratio(X)	0.00	0.75	0.92	0.00	0.73	0.00
Avail Cap(c_a), veh/h	0	772	775	0	781	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	22.0	24.1	0.0	14.5	0.0
Incr Delay (d2), s/veh	0.0	3.5	14.6	0.0	6.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.0	15.4	0.0	10.9	0.0
LnGrp Delay(d),s/veh	0.0	25.4	38.6	0.0	20.5	0.0
LnGrp LOS		C	D		C	
Approach Vol, veh/h		490	602		574	
Approach Delay, s/veh		25.4	38.6		20.5	
Approach LOS		C	D		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				33.6		46.4		33.6
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				35.0		37.0		35.0
Max Q Clear Time (g_c+I1), s				21.4		26.0		28.0
Green Ext Time (p_c), s				1.7		2.2		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.5
HCM 2010 LOS	C

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	695	0	0	736	125	355
Future Volume (veh/h)	695	0	0	736	125	355
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1855	0	0	1764	1357	1727
Adj Flow Rate, veh/h	755	0	0	800	136	386
Adj No. of Lanes	1	0	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	5	0	0	5	40	10
Cap, veh/h	905	0	0	861	533	605
Arrive On Green	0.49	0.00	0.00	0.49	0.41	0.41
Sat Flow, veh/h	1855	0	0	1764	1293	1468
Grp Volume(v), veh/h	755	0	0	800	136	386
Grp Sat Flow(s),veh/h/ln	1855	0	0	1764	1293	1468
Q Serve(g_s), s	28.1	0.0	0.0	34.0	5.5	16.8
Cycle Q Clear(g_c), s	28.1	0.0	0.0	34.0	5.5	16.8
Prop In Lane		0.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	905	0	0	861	533	605
V/C Ratio(X)	0.83	0.00	0.00	0.93	0.26	0.64
Avail Cap(c_a), veh/h	1090	0	0	1037	533	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	19.2	15.4	18.7
Incr Delay (d2), s/veh	4.9	0.0	0.0	12.7	1.2	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	0.0	0.0	19.5	2.1	7.6
LnGrp Delay(d),s/veh	22.6	0.0	0.0	31.9	16.6	23.8
LnGrp LOS	C			C	B	C
Approach Vol, veh/h	755			800	522	
Approach Delay, s/veh	22.6			31.9	21.9	
Approach LOS	C			C	C	

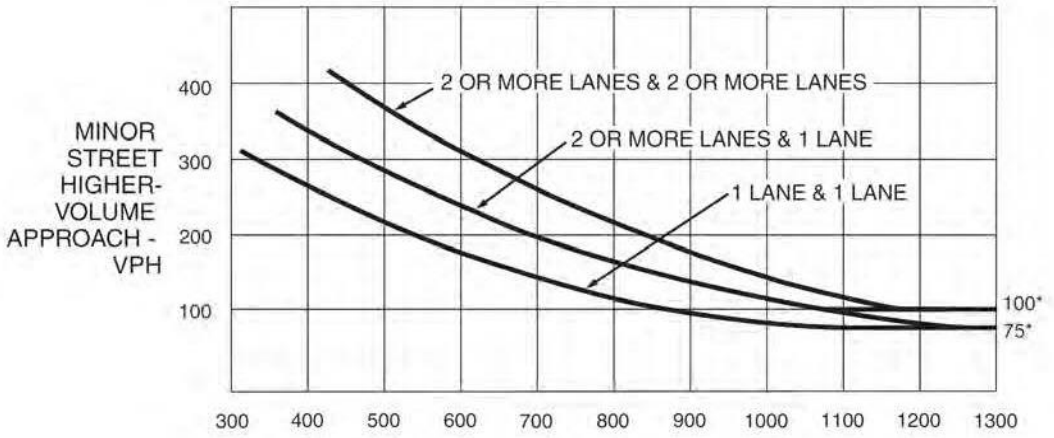
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		37.0		43.0				43.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		25.0		47.0				47.0
Max Q Clear Time (g_c+I1), s		18.8		30.1				36.0
Green Ext Time (p_c), s		1.4		3.3				3.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.0
HCM 2010 LOS	C

Figure 4C-3. Warrant 3, Peak Hour

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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

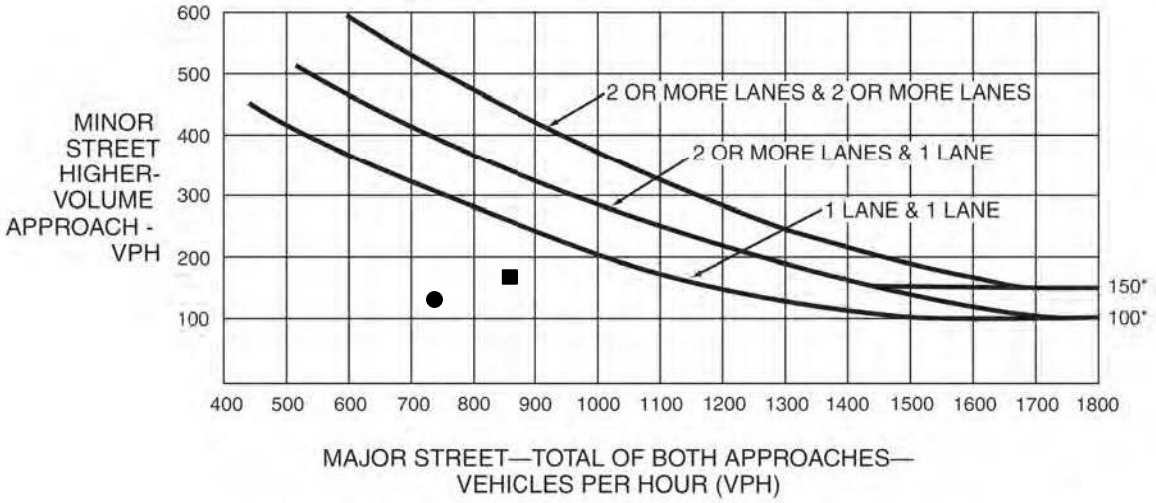


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

ROAD HH – NEWVILLE RD : EXISTING

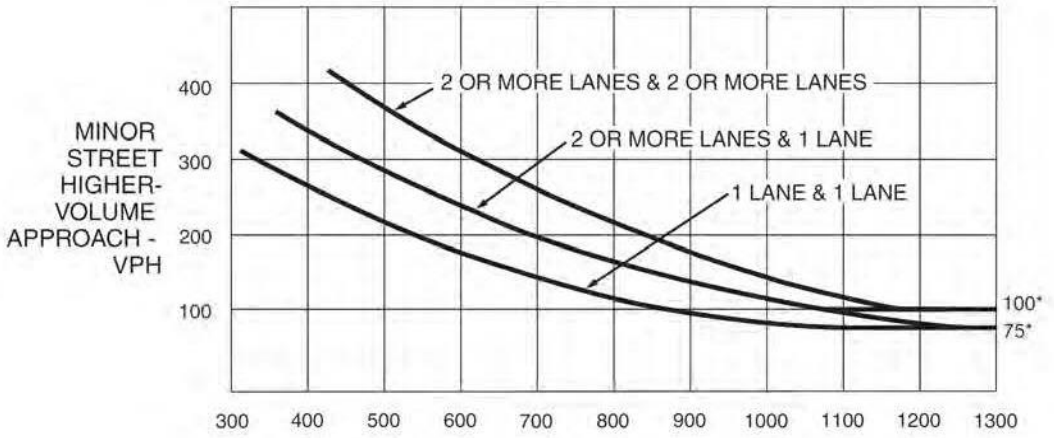
AM (●) : MAJOR 554 MINOR 157
PM (■) : MAJOR 707 MINOR 167

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

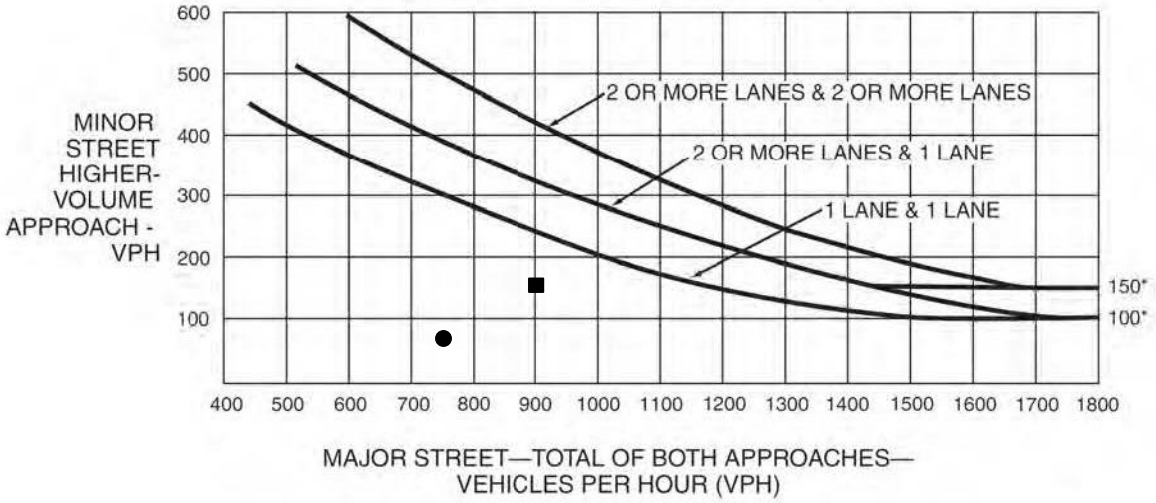


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

SB I-5 RAMP – NEWVILLE RD : EXISTING

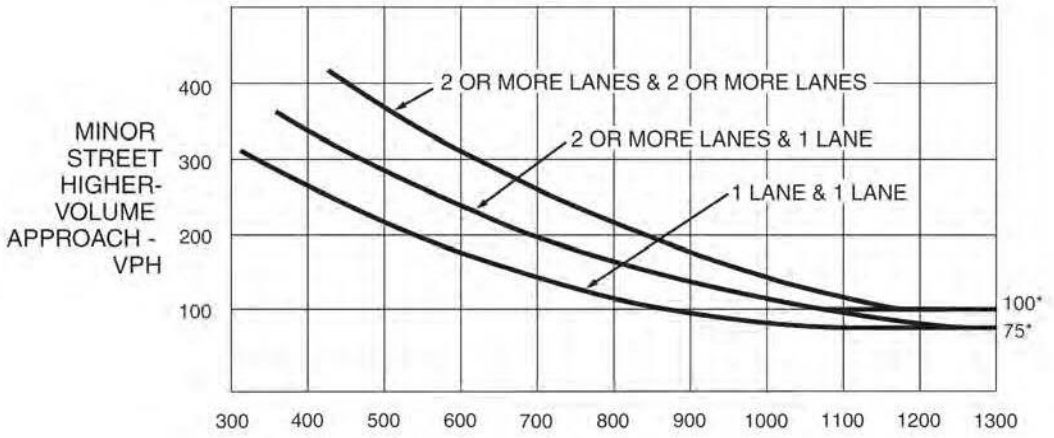
AM (●) : MAJOR 730 MINOR 128
PM (■) : MAJOR 860 MINOR 180

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

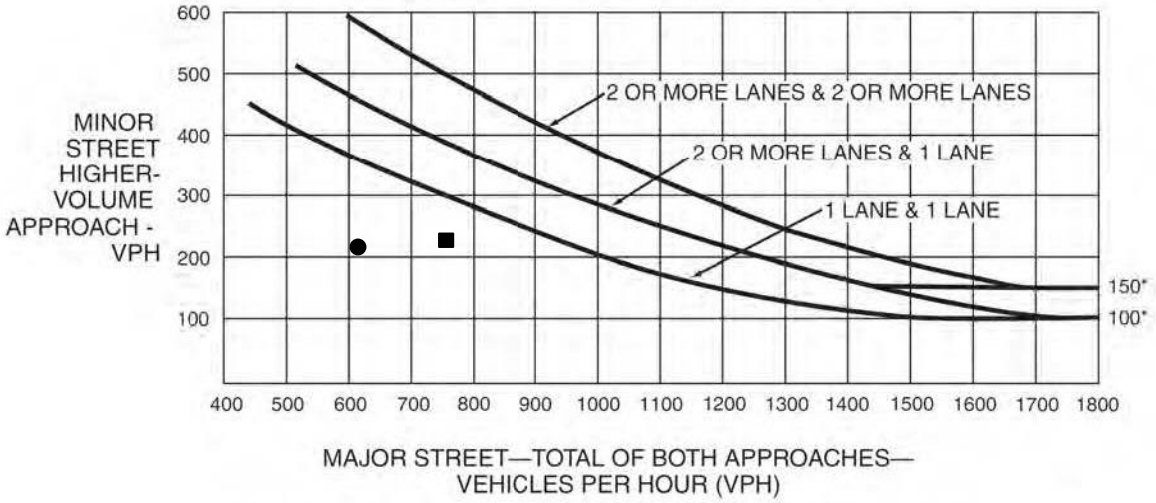


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

NB I-5 RAMP – NEWVILLE RD : EXISTING

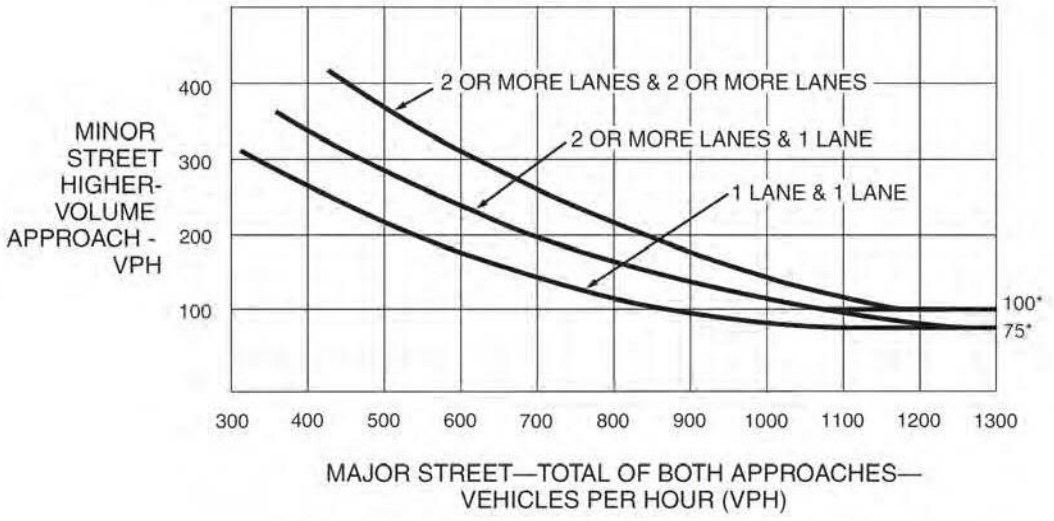
AM (●) : MAJOR 762 MINOR 84
PM (■) : MAJOR 904 MINOR 159

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

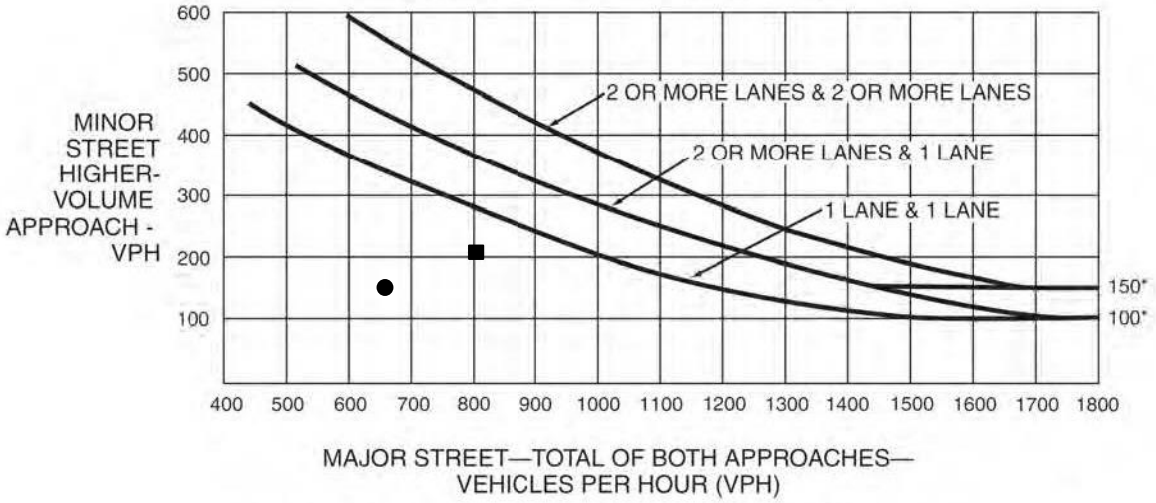


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

ROAD HH – NEWVILLE RD : EXISTING PLUS PROJECT

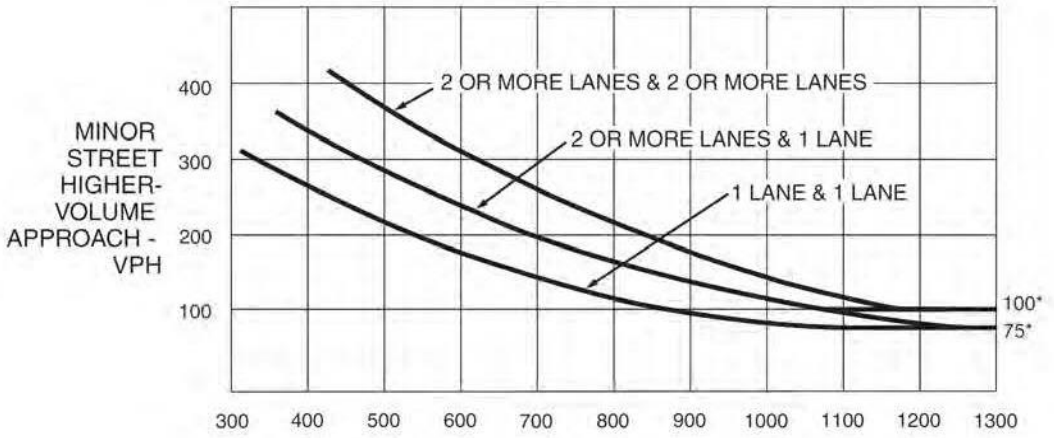
AM (●) : MAJOR 611 MINOR 211
PM (■) : MAJOR 769 MINOR 222

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

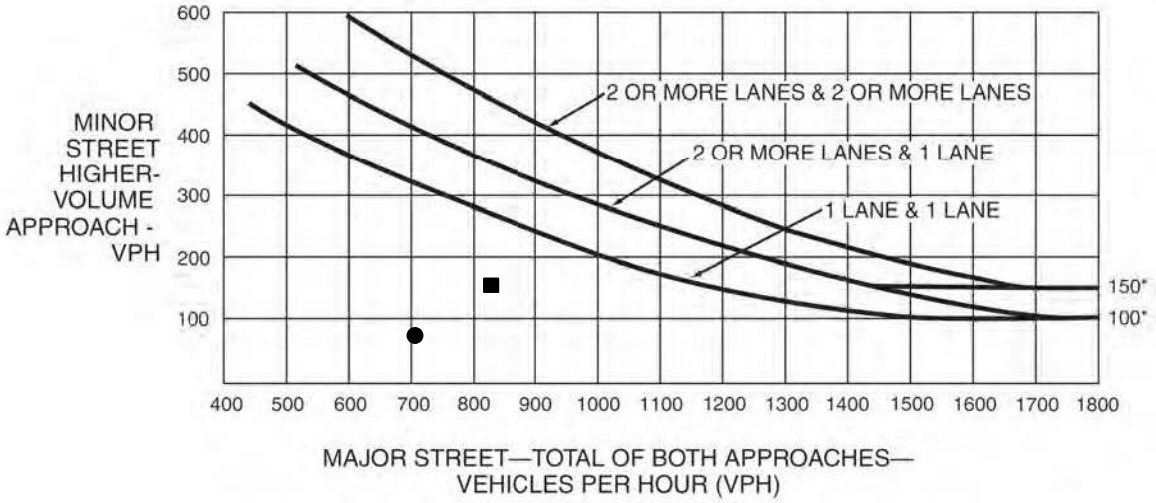


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

SB I-5 RAMP – NEWVILLE RD : EXISTING PLUS PROJECT

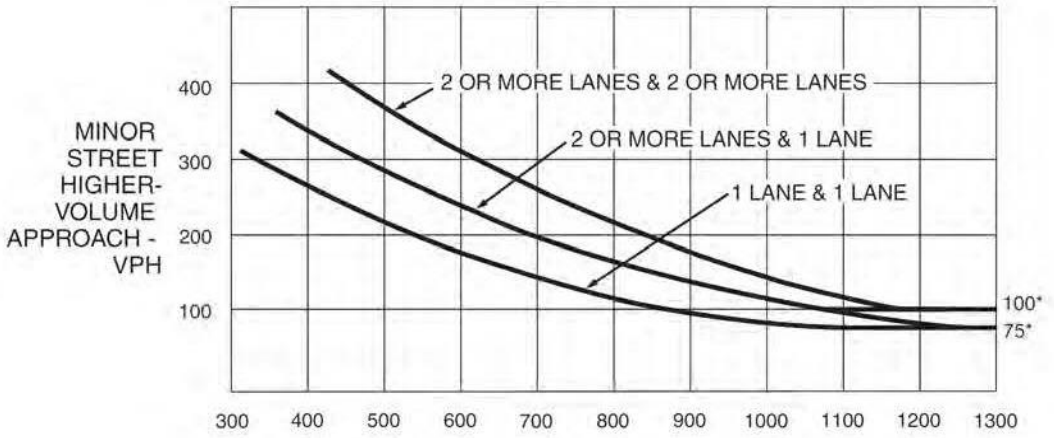
AM (●) : MAJOR 660 MINOR 152
PM (■) : MAJOR 802 MINOR 206

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

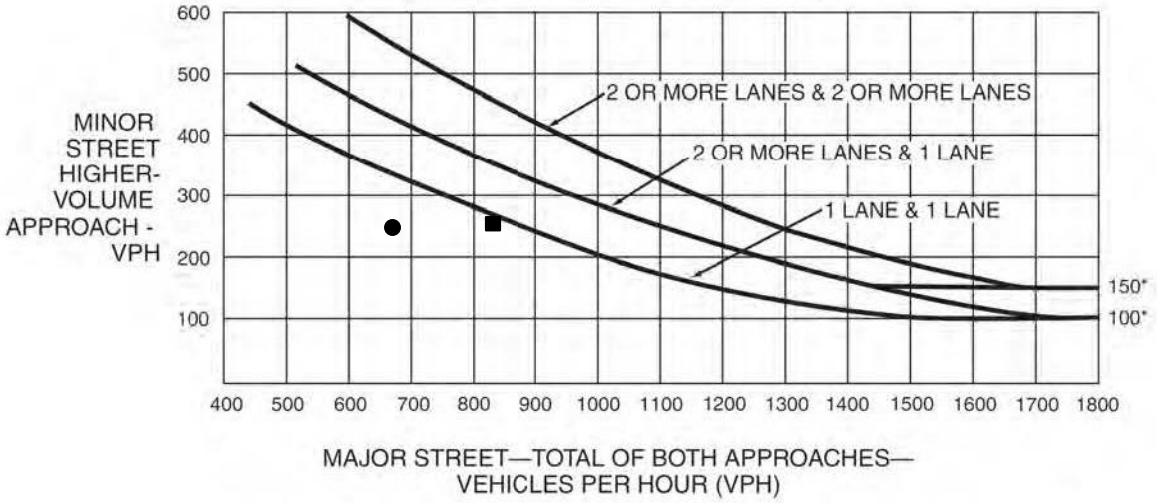


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

NB I-5 RAMP – NEWVILLE RD : EXISTING PLUS PROJECT

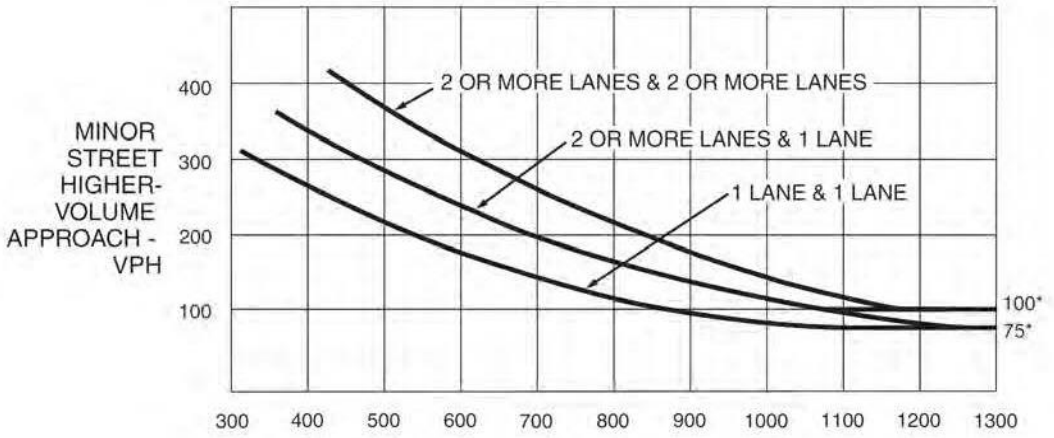
AM (●) : MAJOR 708 MINOR 84
PM (■) : MAJOR 825 MINOR 159

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

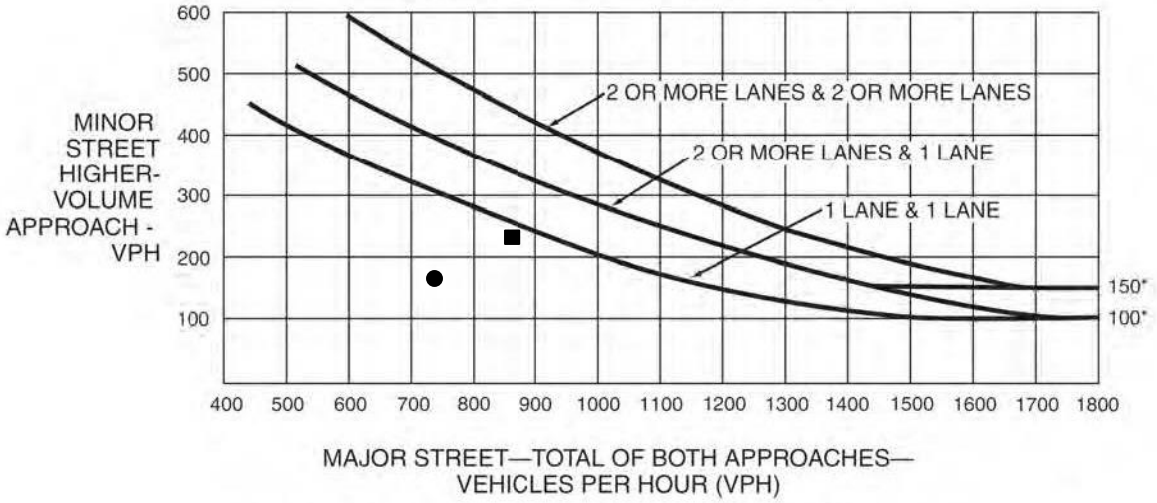


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

ROAD HH – NEWVILLE RD : EXISTING PLUS PROJECT AND HOTEL-RESTAURANT

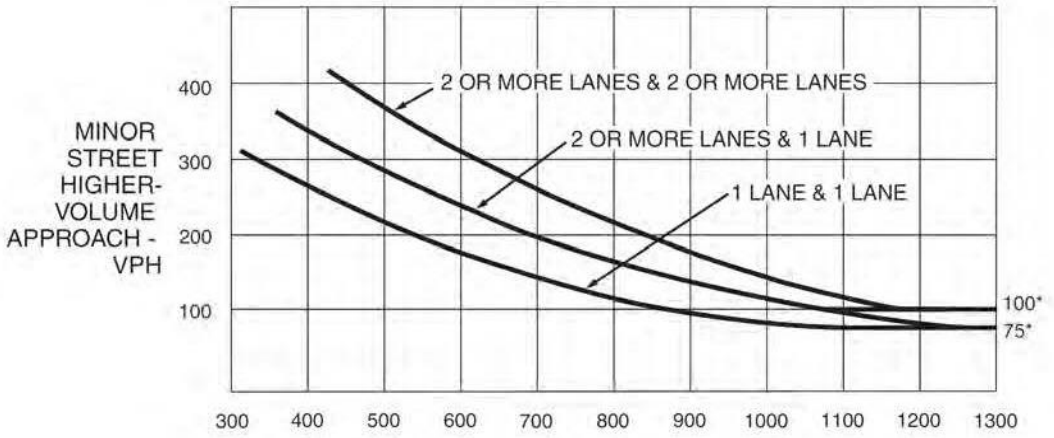
AM (●) : MAJOR 671 MINOR 256
PM (■) : MAJOR 827 MINOR 269

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

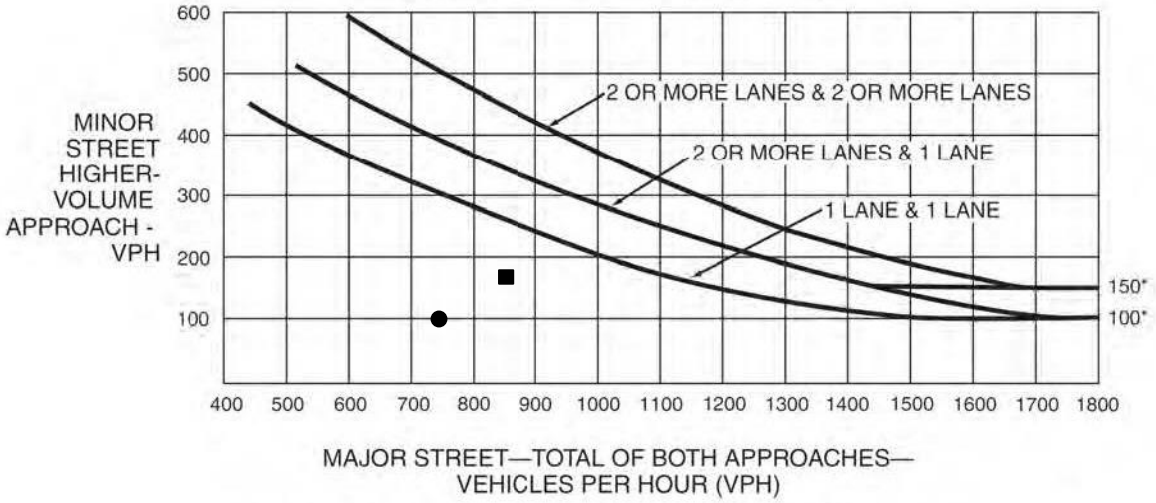


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

SB I-5 RAMP – NEWVILLE RD : EXISTING PLUS PROJECT AND HOTEL-RESTAURANT

AM (●) : MAJOR 729 MINOR 170
PM (■) : MAJOR 871 MINOR 224

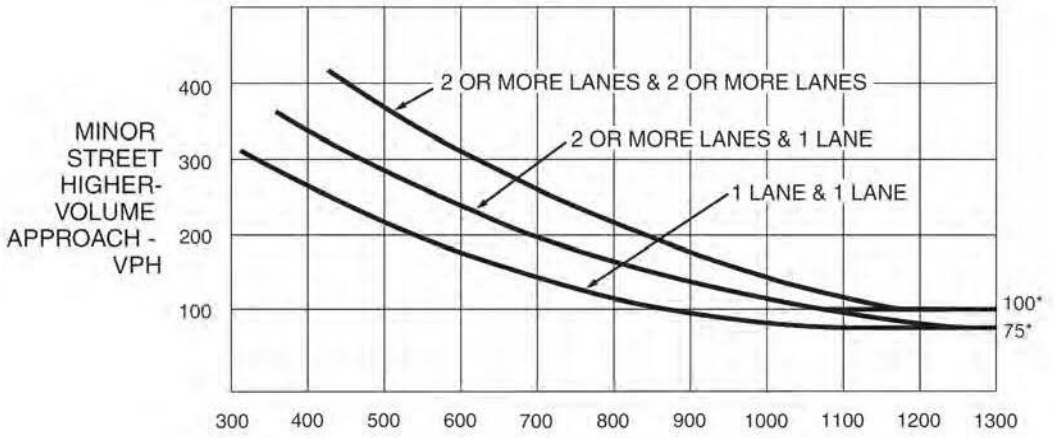
Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

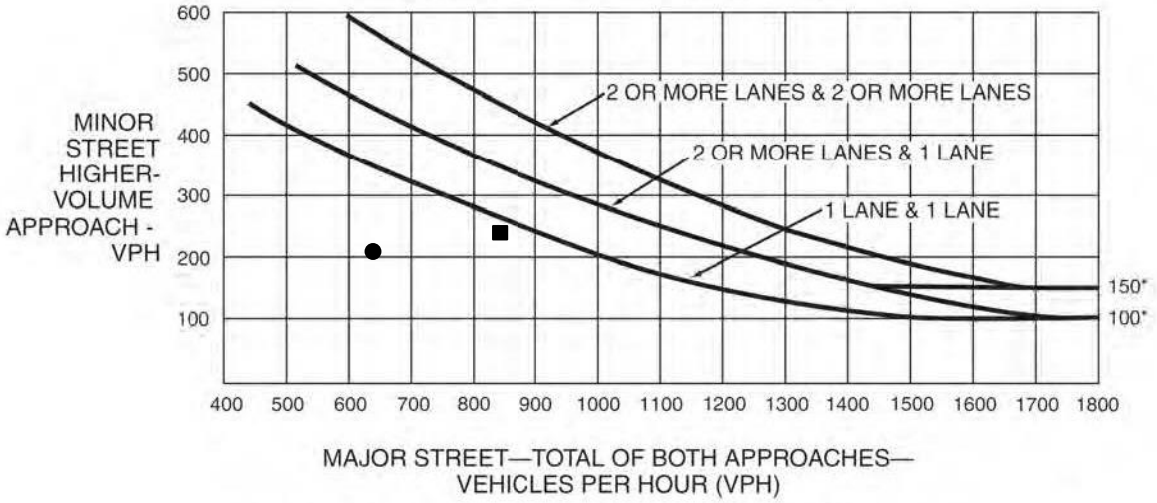


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

NB I-5 RAMP – NEWVILLE RD : EXISTING PLUS PROJECT AND HOTEL-RESTAURANT

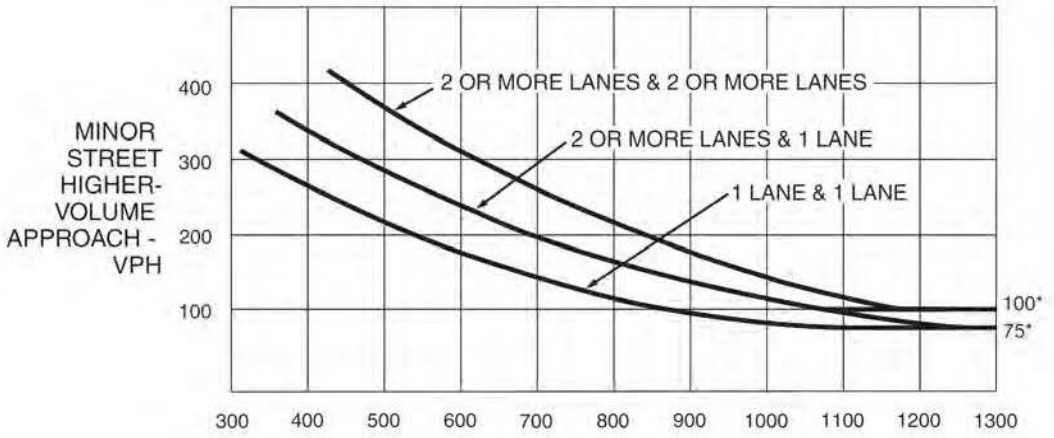
AM (●) : MAJOR 746 MINOR 100
PM (■) : MAJOR 863 MINOR 175

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

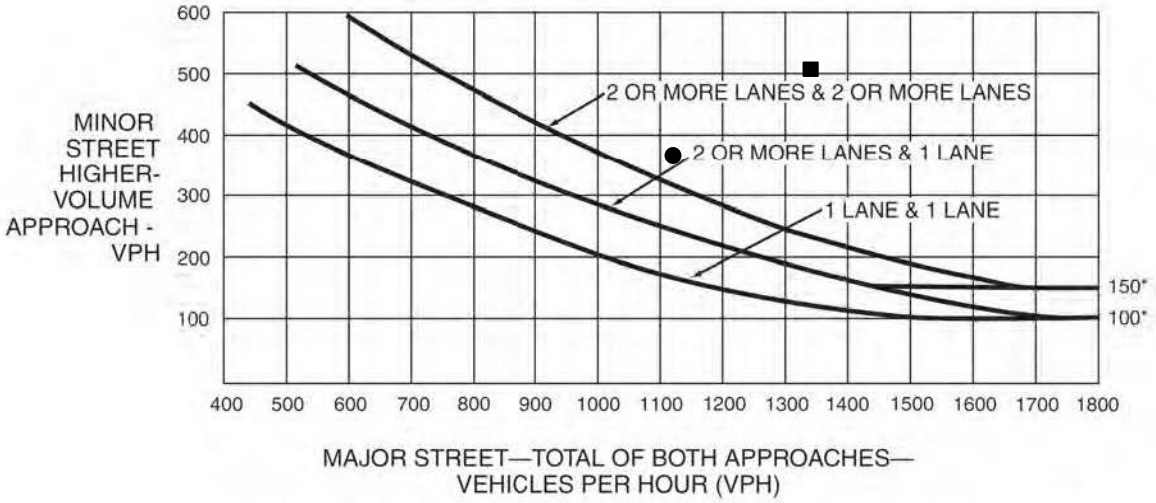


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

ROAD HH – NEWVILLE RD : CUMULATIVE PLUS HOTEL-RESTAURANT

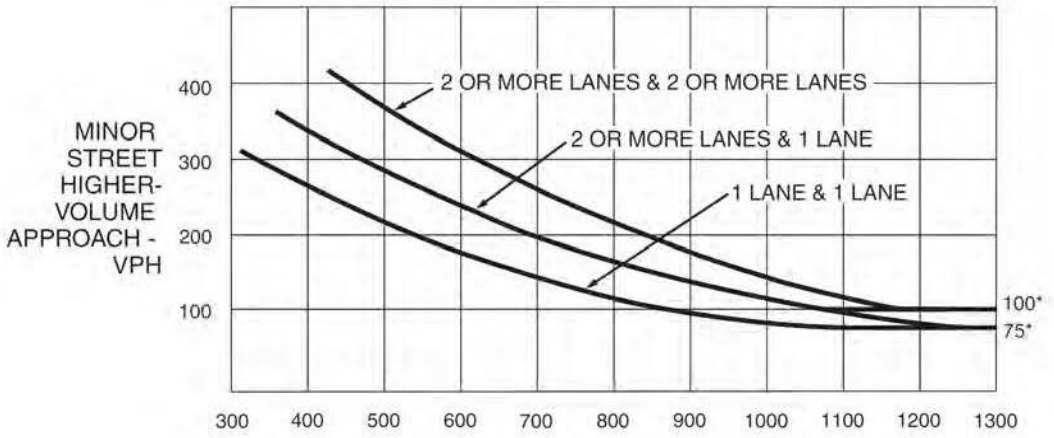
AM (●) : MAJOR 646 MINOR 206
PM (■) : MAJOR 884 MINOR 237

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

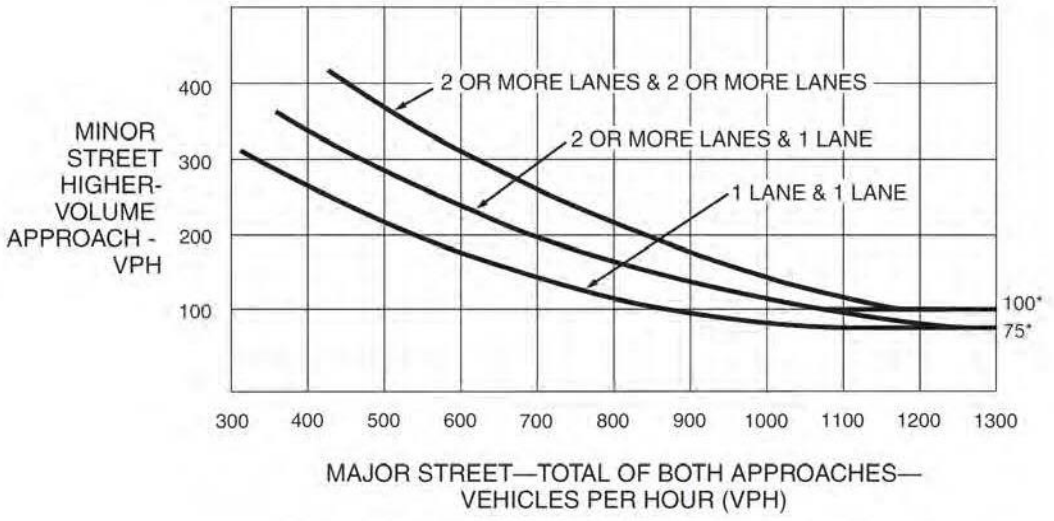
SB I-5 RAMP – NEWVILLE RD : CUMULATIVE PLUS HOTEL-RESTAURANT

AM (●) : MAJOR 1119 MINOR 370
PM (■) : MAJOR 1343 MINOR 501

Figure 4C-3. Warrant 3, Peak Hour

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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

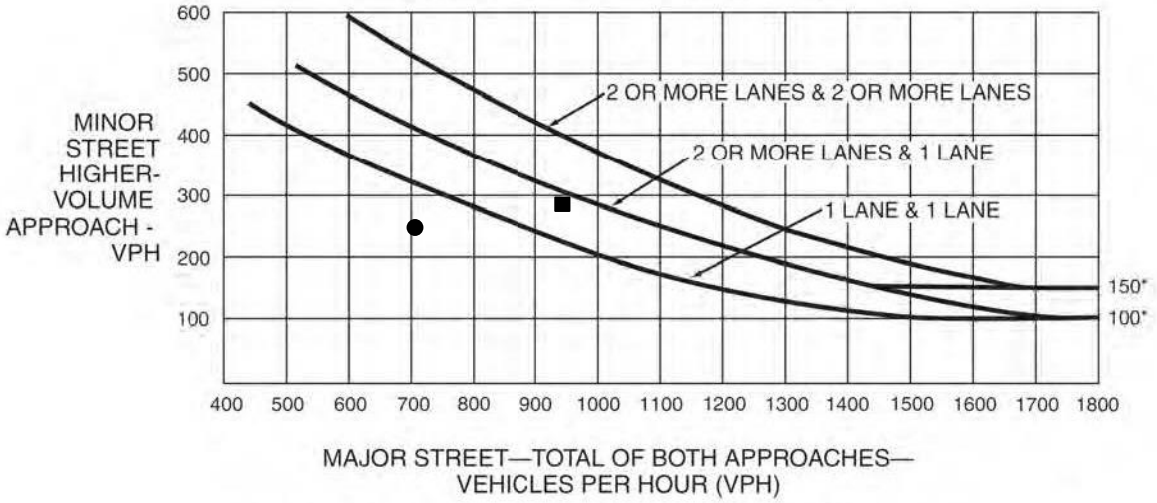


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

NB I-5 RAMP – NEWVILLE RD : CUMULATIVE PLUS HOTEL-RESTAURANT

AM (●) : MAJOR 1561 MINOR 320
PM (■) : MAJOR 1800 MINOR 480

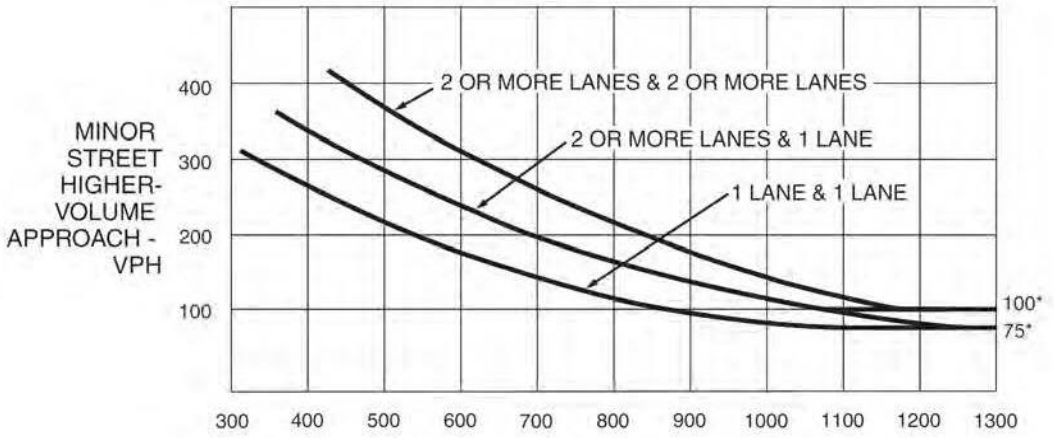
Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)

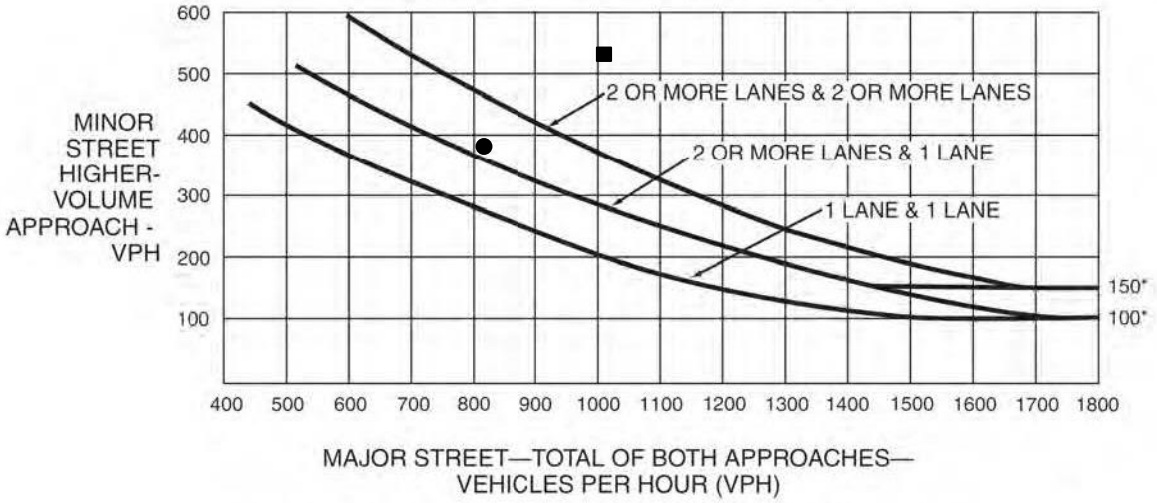


*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

ROAD HH – NEWVILLE RD : CUMULATIVE PLUS PROJECT AND HOTEL-RESTAURANT

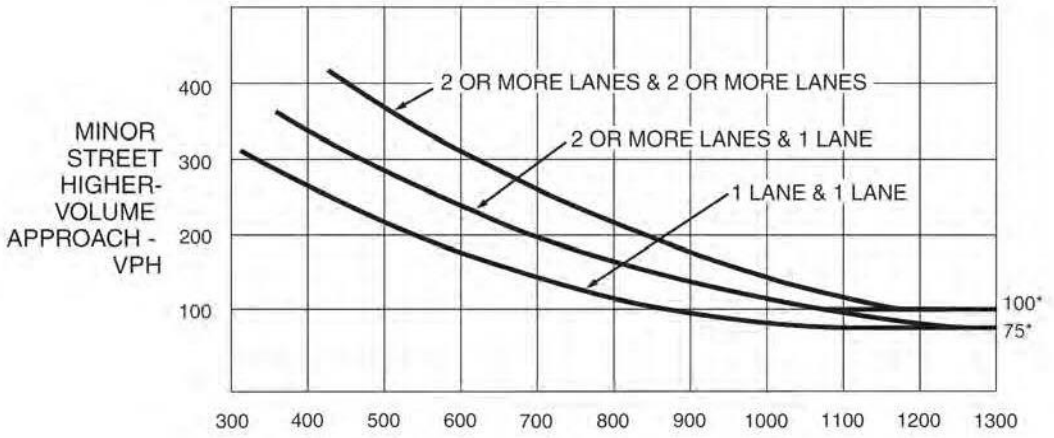
AM (●) : MAJOR 705 MINOR 259
PM (■) : MAJOR 946 MINOR 293

Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

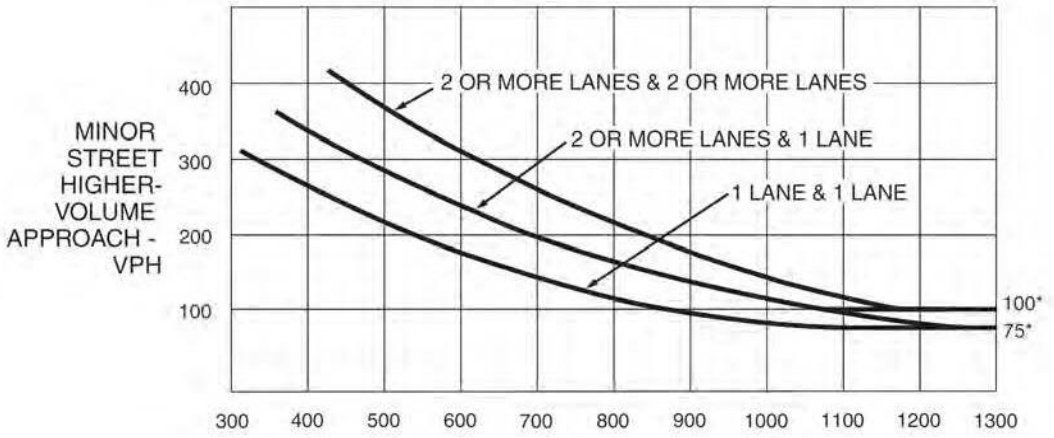
SB I-5 RAMP – NEWVILLE RD : CUMULATIVE PLUS PROJECT AND HOTEL-RESTAURANT

AM (●) : MAJOR 816 MINOR 393
PM (■) : MAJOR 1005 MINOR 527

Figure 4C-3. Warrant 3, Peak Hour

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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

NB I-5 RAMP – NEWVILLE RD : CUMULATIVE PLUS PROJECT AND HOTEL-RESTAURANT

AM (●) : MAJOR 1260 MINOR 320
PM (■) : MAJOR 1431 MINOR 480