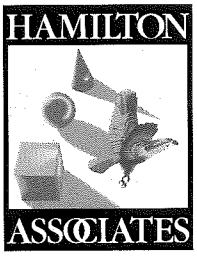
PREDATOR DEVELOPMENTS LTD.

HAMILTON ASSOCIATES

TRAFFIC REVIEW FOR THE PROPOSED PREDATOR RIDGE NEIGHBOURHOOD PLAN VERNON, BRITISH COLUMBIA

Engineering and
Planning Consultants

PREDATOR RIDGE DEVELOPMENTS LTD.



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September 2003

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EXECUTIVE SUMMARY

Since the operation of the Predator Ridge Golf Course and the development of residential housing in 1997, the market of the golf customers and the travel characteristics of residents of the Community have changed. In the 1994 traffic study, it was assumed that 70 percent of the traffic generated by the development would travel to and from the Vernon area. Today, more than 60 percent of the golfers are from outside the Vernon area. Market survey results in 2002 indicated that only 16 percent of traffic traveled to and from the Vernon area.

A travel survey was conducted in July and August, 2003 and the findings were documented in a report *Commonage Road Traffic Profile*, Hamilton Associates, August 2003. The survey included golfers, residents and cottage and lodge guests. One of the findings indicated that 63 percent of golfers were from the Lower Mainland, other parts of Canada and the United States. The Predator Ridge golfer market has changed from the Vernon area to the out-of-town market. In addition to residential development, Predator Ridge Community also includes cottages and lodges for overnight guests as well as related fitness facilities. The current Predator Ridge Golf Course marketing theme of "Come Play, Come Stay" has been quite successful.

The proposed Predator Ridge Neighbourhood Plan includes a 36-hole golf course; 2,120 units of residential, cottages and lodges; a fitness centre; small professional offices and retail units for guests and residents. The development is planned to be completed in three phases: the Short Term phase will include the eastern half of the community, approximately 57 percent of the development. The Medium Term phase will include the mid-section, or 7 percent of the development. The Long Term phase includes the western portion of the development, representing the remaining 36 percent.

Currently, a 300-room Kristall Spa Resort (Kristall) hotel and conference facility, together with resort mansion houses on the north portion of the site, are being proposed on a 188-acre land immediately north of the Predator Ridge Community. The Kristall development is planned to be completed in four phases. The first phase is planned for a 150-room hotel and 600-person conference facility, to be completed in the summer of 2005. Phase II will

include the addition of a 150-room hotel. Phases III and IV, consist of resort housing, and are scheduled for the long term with the construction of the Ellison Parkway. For the purpose of this study, Phases I and II of the Kristall hotel and conference facility are included in all development phases of the Predator Ridge development traffic analysis.

The traffic impacts of the proposed developments were analyzed based on the Short and Long Term development phases of Predator Ridge. Trip generations were based on the Institute of Transportation Engineers (ITE), and modified with results of the survey conducted in August 2003. Traffic generated by the community was then distributed to the road network. For travel to and from Vernon, 80 percent is assumed to use Commonage Road and 20 percent were assumed to use Highway 97.

Commonage Road is planned to be improved over a period of three years. One of the primary reasons to improve Commonage Road is to provide an attractive alternate route to Highway 97. The improvement can be carried out in phases. To attract vehicles onto Commonage Road, clear and adequate directional signs should be installed at the Bailey Road intersection as well as way of finding signs in Vernon. According to current design by the Ministry of Transportation, Commonage Road will be constructed as a through road with Bailey Road traffic controlled by a STOP sign. This design, with proper signing, will attract northbound traffic from Highway 97.

A sensitivity analysis was carried out to assess the capacity performance of the eastbound left turn movement on Bailey Road at Highway 97. With the improved Commonage Road, and which is anticipated to divert 80 percent of the northbound traffic from the left turn movement, there will be spare capacity to accommodate variations in forecast, using assumptions of trip reduction and traffic growth on the highway.

This review concluded that the current road system, with the improvement of Commonage Road north of Bailey Road, will accommodate the traffic generated by the Predator Ridge Neighbourhood Community and the Kristall Spa Resort development.

1.0 INTRODUCTION

1.1 Background

Since 1997, Predator Ridge Developments Ltd. has been developing residential homes and guest cottages in the Predator Ridge Community. As part of the development approval at that time, a study, *Traffic Impact of Proposed Predator Ridge Resort Community, Vernon*, was conducted by Ward Consulting Group in 1994. The study assumed 70 percent of the traffic generated by the development originated from the north, and 25 percent from the south, on Highway 97. The study further assumed that if Commonage Road was paved, it would divert 55 percent of the 70 percent of the traffic using Highway 97.

In a 2002 survey conducted by Consumerscan, 16 percent of the golfers were from Vernon and Coldstream; 21 percent from Kelowna and other areas of Thompson Okanagan. The remaining 63 percent were from the British Columbia Lower Mainland, other parts of Canada and the United States. The Predator Ridge golf market has changed.

To reflect the changing market, and to provide support facilities for the Community, the proposed up-dating of the Predator Ridge Neighbourhood Plan consists of four basic development components:

- Golf course (current 27 holes will be extended to 36 holes);
- Residential homes;
- Guest cottages and lodges; and
- Supporting retail, fitness and professional offices for local residents, golfers and cottage guests.

To augment the changing market, 58 cottages have been constructed to support the golf course marketing theme of "Come Play, Come Stay". A survey conducted by Jaguar Expert Data in 2002 indicated that 4 percent of the cottage guests came from Vernon and the remainder came from outside the Okanagan area.

The Predator Ridge Community has immediate plans to add 9 holes to the existing 27-hole golf course; cottages and lodges for golf overnight guests; a fitness centre and related facilities, and a retail store along with professional offices for the residents of the Predator Ridge Community.

To plan for these expansions, the Predator Ridge Neighbourhood Plan is being updated. The purpose of this traffic review is to provide input and support to the preparation of the Predator Ridge Neighbourhood Plan.

1.2 Study Objectives

The objective of this study is to provide input and support to the preparation of the Neighbourhood Plan. Specifically, the study analyzed the following:

1. Traffic generations and distributions of the Proposed Neighbourhood Plan;

2. The capacity performance of the intersections of:
   a. Highway 97 and Bailey Road;
   b. Commonage Road and Bailey Road;
   c. Predator Ridge Drive and Commonage Road; and
   d. Birdie Lake Drive and Predator Ridge Drive.

3. The identification of roadway improvement requirements, if any.

1.3 Study Methodology

The study was completed by taking the following steps:

1. Conducting surveys of the origins and travel characteristics of golfers, residents, cottage and lodge guests;

2. The determination of traffic generation rates and directional distribution for various land uses;

3. The review of the 1994 traffic impact study;

4. The simulation of traffic distributions and the evaluation capacity performance of the four intersections described above by using the computer modeling software VISSIM and Synchro. The evaluations were conducted for the weekday morning and afternoon peak periods, as well as a Saturday peak period. Traffic simulations and capacity evaluations were conducted for the following scenarios:

    - Short Term Development with Kristall Spa Resort; and
    - Long Term Development and Kristall Spa Resort.

5. The sensitivity analysis of the eastbound left turn movement on Bailey Road at Highway 97;

6. The identification of improvement options when levels of service of traffic movements at the four study intersections are E or worse;

7. The review of findings with the City of Vernon and the Ministry of Transportation; and

8. The preparation of draft and final reports.

1.4 The Proposed Predator Ridge Neighourhood Plan

The Predator Ridge Neighbourhood Plan is being prepared by Ekistics. A copy of the Plan is shown in FIGURE 1.1. The development will be completed in three phases: Short, Medium and Long terms. Generally, the short term includes the east half portion of the Neighbourhood, representing 57 percent of the Community; the medium term (7 percent of development) would extend towards the west and the long term (36 percent of development) will be the western portion of the land. The development details are shown in TABLE 1.1. Traffic analysis for the Medium Term Development Phase was excluded since it consists of only 7 percent of the total Predator Ridge developments.

FIGURE 1.1 THE PROPOSED PREDATOR RIDGE NEIGHBOURHOOD PLAN

TABLE 1.1 DEVELOPMENT PHASING AND DETAILS BASED ON ACTUAL YEILD OF 2,120 UNITS

DEVELOPMENT PHASE	DEVELOPEMNT PARCEL	RESIDENTIAL UNITS	COTTAGE/LODGE UNITS
Short Term	A	158	0
	B	0	23
	C	0	16
	D	0	41
	E	42	0
	F	0	294
	G	248	0
	H	0	0
	I	0	19
	J	182	0
	L	106	0
	M	75	0
Total Short Term		**811**	**393**
Medium Term	K	0	0
	N	98	0
	O	0	0
	P	54	0
Total Medium Term		**152**	**0**
Long Term	Q	116	0
	R	26	0
	S	0	215
	T	27	0
	U	0	0
	V	63	0
	W	159	0
	X	158	0
Total Long Term		**549**	**215**
Project Total		**1,512**	**608**

The development is planned to be completed in 10 to 15 years depending on market conditions. Current facilities consist of a 27-hole golf course, a club house, and 58 cottages and 40 residential homes. These facilities have been utilized integrally as a retreat and golf destination. The marketing plan for the golfing facility and club house excludes weddings and golf tournaments.

The facilities are being marketed as a retreat and golf destination. Current target markets are Alberta, the Lower Mainland and Washington State with the theme "Come Play, Come Stay". Over time, it is anticipated the proportion of golfers from the Vernon area will decrease when most of the tee-times are taken up by out-of-town golfers under the "Come Play, Come Stay" marketing theme and by residents of the Predator Ridge Community.

As part of the proposed Neighbourhood Plan, nine holes will be added to the current 27-hole golf operation. More guest cottages and lodges will be constructed and will continue to be marketed under the current successful "Come Play, Come Stay" theme to customers from the Lower Mainland area, Alberta and Washington State.

Residential units will continue to be constructed in accordance with market demand. The results of the travel characteristics survey of current residents indicate that the majority of residents do not travel to work, nor do they travel to shop outside the typical morning and afternoon peak periods. Based on the survey results, trip generation rates for residential travel are anticipated to be much less than those of typical housing developments. The survey results are shown in a separate report: *Commonage Road Traffic Profile*, Hamilton Associates, August 2003.

Supporting services are also included in the Neighbourhood Plan for Predator Ridge residents. The planned support facilities will consist of a fitness centre (a swimming pool, a spa, one tennis court, a 50-seat theatre and related uses), small retail stores and professional offices. The market for these facilities will be for local residents, golfers and guests of cottages and lodges, since they are located away from and not visible from Highway 97. Customers from outside Predator Ridge are therefore not anticipated.

2.0 TRAFFIC VOLUME FORECAST

The development location and mix of uses of the Predator Ridge Community are unique. In the 1994 Traffic Impact Assessment report, it was assumed that 70 percent of the golfers were from Vernon. As the golf and real estate market changed, the majority of the golfers and cottage/lodge guests were expected to travel from outside the Vernon area. In order to gain a better understanding of the origin of visitors to the Predator Ridge Community, three travel surveys were conducted in July and August of 2003. The details of the survey and the summary of results are shown in a separate report, *Commonage Road Travel Profile*, Hamilton Associates, August 2003. In this section, the trip generation rates and their distributions as they relate to the survey results are discussed.

2.1 Trip Generation by Golf Course Operation

A. Travel Survey of Golf Customers

Surveys of golf customers were conducted on Sunday, July 27, and Monday, July 28, 2003. A total of 255 samples were collected, 139 during Sunday and 116 on Monday. The survey results were compared to one conducted by Consumerscan in September 2002. In 2002, 16 percent of the respondents stated that they were from Vernon, compared to 31 percent in 2003. With the "Come Play, Come Stay" theme, and taking into account for marketing changing to areas outside of Vernon, 25 percent of golf course traffic is assumed to be from Vernon. The remaining 75 percent is considered to be from the south using Highway 97.

B. Trips Generated by Golf Operation

The 1997 Institute of Transportation Engineers (ITE) Trip Generation Manual indicates that golf course operation generates 2.22 vehicles per hole during weekday morning peak hour, 2.74 during weekday afternoon peak hour and 4.59 during Saturday peak hour.

According to the 2003 survey, 53 percent of the golf customers would stay at the guest cottages and lodges, thus would reduce peak hour trip generation rates. Based on the survey results, an average of 30 percent trip reduction is anticipated for golfers who play golf and stay at the cottages and lodges. The calculations for the various reduction factors are shown in APPENDIX A.

The 2003 survey has also indicated that 13 percent of golfers arrived by air. This percentage is anticipated to increase over time when Predator Ridge obtained the licenses to operate shuttle buses. In this study, an average of 20 percent reduction in trip generation is anticipated with air travel and then shuttle bus services.

The adjusted peak hour trip generation rates by the golf course operation are shown in TABLE 2.1. It should be noted that the golf season in Vernon is between mid-April to September, approximately six months. The golf course closes its operation during winter months.

TABLE 2.1 GOLF COURSE TRIP GENERATION WITH AVERAGE TRIP REDUCTION FACTOR

DESCRIPTION	AM PEAK HOUR	PM PEAK HOUR	SATURDAY PEAK HOUR
ITE Rates	2.22 vehicles per hole	2.74 vehicles per hole	4.59 vehicles per hole
Adjustment (see APPENDIX A)	Less 50%	Less 50%	Less 50%
Adjusted Rates	1.11 vehicle per hole	1.37 vehicles per hole	2.30 vehicles per hole
Trips per hour For 27 Holes	30	37	62
Trips per hour For 36 Holes	40	50	83
Directional Distribution	79% In 21% Out	44% In 56% Out	49% In 51% Out
Origin Direction	25% North to Vernon 75% South	25% North to Vernon 75% South	25% North to Vernon 75% South

2.2 Trip Generation by Guest Cottages and Lodges

A. Travel Survey of Guest Cottages and Lodges

Surveys of guests using cottages and lodges were conducted between Wednesday, July 18 and Monday July 28, 2003. A total of 21 samples were collected. Survey results indicated that 96 percent came from areas outside Vernon; 77 percent travel by car; 90 percent of car travel were with one or more passengers; 60 percent stayed two or more nights; and 93 percent of those stayed will play golf.

B. Trips Generated by Cottages and Lodges

According to the 1997 Institute of Transportation Engineers (ITE) Trip Generation Manual, recreation homes generate 0.16 vehicles per unit during weekday morning peak hour, 0.19 during weekday afternoon peak hour and 0.36 during Saturday peak hour. The majority of guests are assumed to arrive randomly during late morning and early afternoon. Trips generated by golfers who were staying at cottages and lodges were adjusted, as shown in APPENDIX B. Trips generated by cottages and lodges are shown in TABLE 2.2. The Short Term Phase will include 393 units and the Long Term Phase will include 215 Units (totaling 608 units). It should be noted that during winter months, when the golf course is closed, the number of vehicles generated by the cottages and lodges will be reduced substantially.

TABLE 2.2 COTTAGE AND LODGE TRIP GENERATION WITH AVERAGE TRIP REDUCTION FACTOR

DESCRIPTION	AM PEAK HOUR	PM PEAK HOUR	SATURDAY PEAK HOUR
ITE Rates	0.16 vehicles per unit	0.19 vehicles per unit	0.36 vehicles per unit
Average Reduction Factor	40%	40%	40%
Traffic for Short Term Phase, 393 units	38 vehicles per hour	45 vehicles per hour	85 vehicles per hour
Traffic for Long Term Phase, 608 Units	58 vehicles per hour	69 vehicles per hour	131 vehicles per hour

2.3 Trip Generation by Residential Homes

A. Travel Survey of Residents

Surveys of residents were conducted on Tuesday, July 29, 2003 for travel made during the previous day. Out of the 40 homes currently sold, a total of 20 surveys were conducted, representing 50 percent of the units sold. Based on survey results, 40 percent of the homes sold are full time residents. The remaining homes are occupied by part-time users.

Survey results also indicated that 95 percent of the households consist of more than one person; 9 percent travel to work during the morning and afternoon peak periods (or assuming 60 percent of the peak period traffic occurs during one hour, the peak hour generation rate is about 5 percent); 75 percent work in Vernon; 25 percent return from work during the afternoon peak hours (or 15 percent during peak hour); 19 percent shop during the morning peak hours (or 12 percent during the peak hour); and 71 percent return during noon to 1600 hours (outside the morning and afternoon peak hours).

B. Trips Generated by Residents

According to the 1997 Institute of Transportation Engineers (ITE) Trip Generation Manual, recreation homes generates 0.16 vehicles per unit during weekday morning peak hour, 0.19 during weekday afternoon peak hour and 0.36 during Saturday peak hour. The 2003 survey results indicated that the corresponding rates are 0.135 vehicles per unit for the morning peak hour, and 0.176 for the afternoon and Saturday peak hours.

The surveyed rates and ITE rates are similar, thus the ITE rates are used as base rates in this analysis. The ITE rates were reduced by 20 percent for those who live in the Community and play golf, and a further 20 percent for unoccupied homes at any time. Trips generated for residents are shown in APPENDIX C and summarized in TABLE 2.3.

The number of residential homes planned for the short term phase is 811 units and for the long term is 1,512 units (including the 811 units).

TABLE 2.3 RESIDENTIAL HOMES TRIP GENERATION WITH AVERAGE TRP REDUCTION FACTOR

DESCRIPTION	AM PEAK HOUR	PM PEAK HOUR	SATURDAY PEAK HOUR
ITE Rates Used in This Study	0.16 vehicles per unit	0.19 vehicles per unit	0.36 vehicles per unit
Reduction Factor (See APPENDIX C)	40%	40%	40%
Short Term Phase 811 Units	78 vehicle per hour	93 vehicles per hour	175 vehicles per hour
Long Term Phase 1,512 Units	145 vehicles per hour	172 vehicle per hour	327 vehicles per hour

2.4 Predator Ridge Community Trip Generation Summary

Using the adjustment factors and calculations described, the total two-way traffic volumes generated by the short term phase and long term phase of the Predator Ridge Community are summarized in TABLE 2.4 and TABLE 2.5.

TABLE 2.4 SHORT TERM PHASE TRIP GENERATION SUMMARY

LAND USE	AM PEAK HOUR	PM PEAK HOUR	SATURDAY PEAK HOUR
Golf Course 36 hole	40	50	83
Cottages and Lodges	38	45	85
Residential Homes	78	93	175
Total Short Term Phase	156	188	343

Units: vehicles per hour

TABLE 2.5 LONG TERM PHASE TRIP GENERATION SUMMARY

LAND USE	AM PEAK HOUR	PM PEAK HOUR	SATURDAY PEAK HOUR
Golf Course 36 hole	40	50	83
Cottages and Lodges	58	69	131
Residential	145	172	327
Total Long Term Phase	243	291	541

Units: vehicles per hour

2.5 Kristall Spa Resort Traffic Generation

A spa resort hotel is proposed on a 188-acre site located immediately north of the Predator Ridge Community. The hotel and related facilities are to be developed to complement the Predator Ridge Community in sharing the cottages and lodges, and as well as golf, spa and recreation facilities. It is expected that there will be a reduction in traffic generation by sharing the usage of facilities. Four phases are planned for the development:

- Phase I – 150-room hotel and related facilities with 600-person capacity conference facility, with access from Birdie Lake Drive in Predator Ridge. Phase I is scheduled to open in May 2005.

- Phase II – An additional 150-room hotel with same access as Phase I.

- Phase III – Resort manor homes on the western terrace upon the construction of the Ellison Parkway. Access will be from the Ellison Parkway.

- Phase IV – Resort neighbourhood on the eastern terrace with access from the Ellison Parkway.

The spa resort hotel is planned for the international market. The travel modes of its customers are 60 percent by plane (and will be picked-up by the hotel's shuttle bus) and 40 percent by car. Kristall Spa Resort (Kristall) considers the shuttle bus pick-up an essential service to their customers.

The detailed traffic analysis for the Kristall Spa Resort is contained in the report *Traffic Review for the Kristall Spa Resort, Vernon, British Columbia*, September 2003, prepared by Hamilton Associates. The traffic generated by the Kristall development is summarized here for information.

The typical traffic generation rates for a resort hotel, shown in the *Trip Generation, 6th Edition*, 1997, published by the Institute of Transportation Engineers, were used as a base and were adjusted to account for the reduction in vehicle trips. The air travel and shuttle bus pick-up of hotel guests is anticipated to reduce the trip generation rate by 45 percent.

The combined traffic generated by the 300-room hotel and the conference facility for the three peak hours are summarized in TABLE 2.6.

TABLE 2.6 COMBINED HOTEL AND CONFERENCE FACILITY TRAFFIC GENERATION SUMMARY WITH AVERAGE TRIP REDUCTION FACTOR

USE	MORNING PEAK HOUR	AFTERNOON PEAK HOUR	SATURDAY PEAK HOUR
Hotel 300 Rooms	51 vehicles per hour	69 vehicles per hour	203 vehicles per hour
Conference Facility	89 vehicles per hour	89 vehicles per hour	89 vehicles per hour
Total Traffic Generated	140 vehicles per hour	158 vehicles per hour	292 vehicles per hour

2.6 Combined Traffic Generation

The short term development phase of the Predator Ridge Community will include the completion of Phases I and II of the Kristall Spa Resort Development. The combined traffic volumes generated by the Kristall and the short and long term phases of the Predator Ridge Community development are shown in TABLE 2.7 and TABLE 2.8 respectively.

TABLE 2.7 COMBINED TRAFFIC GENERATION SUMMARY FOR SHORT TERM PREDATOR RIDGE TRAFFIC

USE	MORNING PEAK HOUR	AFTERNOON PEAK HOUR	SATURDAY PEAK HOUR
Hotel & Conference 300 Rooms	140 vehicles per hour	165 vehicles per hour	292 vehicles per hour
Short Term Phase Predator Ridge	156 vehicles per hour	188 vehicles per hour	343 vehicles per hour
Combined Traffic Volume	296 vehicles per hour	353 vehicles per hour	635 vehicles per hour

TABLE 2.8 COMBINED TRAFFIC GENERATION SUMMARY FOR LONG TERM PREDATOR RIDGE TRAFFIC

USE	MORNING PEAK HOUR	AFTERNOON PEAK HOUR	SATURDAY PEAK HOUR
Hotel & Conference 300 Rooms	140 vehicles per hour	165 vehicles per hour	292 vehicles per hour
Long Term Phase Predator Ridge	243 vehicles per hour	291 vehicles per hour	541 vehicles per hour
Combined Traffic Volume	383 vehicles per hour	456 vehicles per hour	833 vehicles per hour

3.0 2003 (CURRENT) TRAFFIC ANALYSIS

With the current development level at Predator Ridge Community, traffic conditions are found to be performing satisfactorily. The current lane configurations of the intersections are shown in APPENDIX D. Current traffic volumes are shown in APPENDIX E, and the levels of service for each controlled movement are shown in FIGURE 3.1. Levels of service A and B represent an excellent operation with minimum or no delays. Levels C and D are typical operating levels when some delays occur. Levels E and F are congested levels and improvements could be considered.

3.1 Highway 97 and Bailey Road Intersection

With the traffic count obtained in July 2003, the performance of the intersection was found to be satisfactory. The Highway 97 northbound left turn movement was found to be operating at level of service A, the Bailey Road left and right turns were found to be operating at level B or better during all peak periods.

3.2 Bailey Road and Commonage Road Intersection

All movements were found to be operating satisfactorily at level of service A, for all peak periods.

3.3 Commonage Road and Predator Ridge Road Intersection

This is the entrance intersection to the Predator Ridge Community and the Kristall Spa Resort. All movements were found to be operating at satisfactory level of service A for all peak periods.

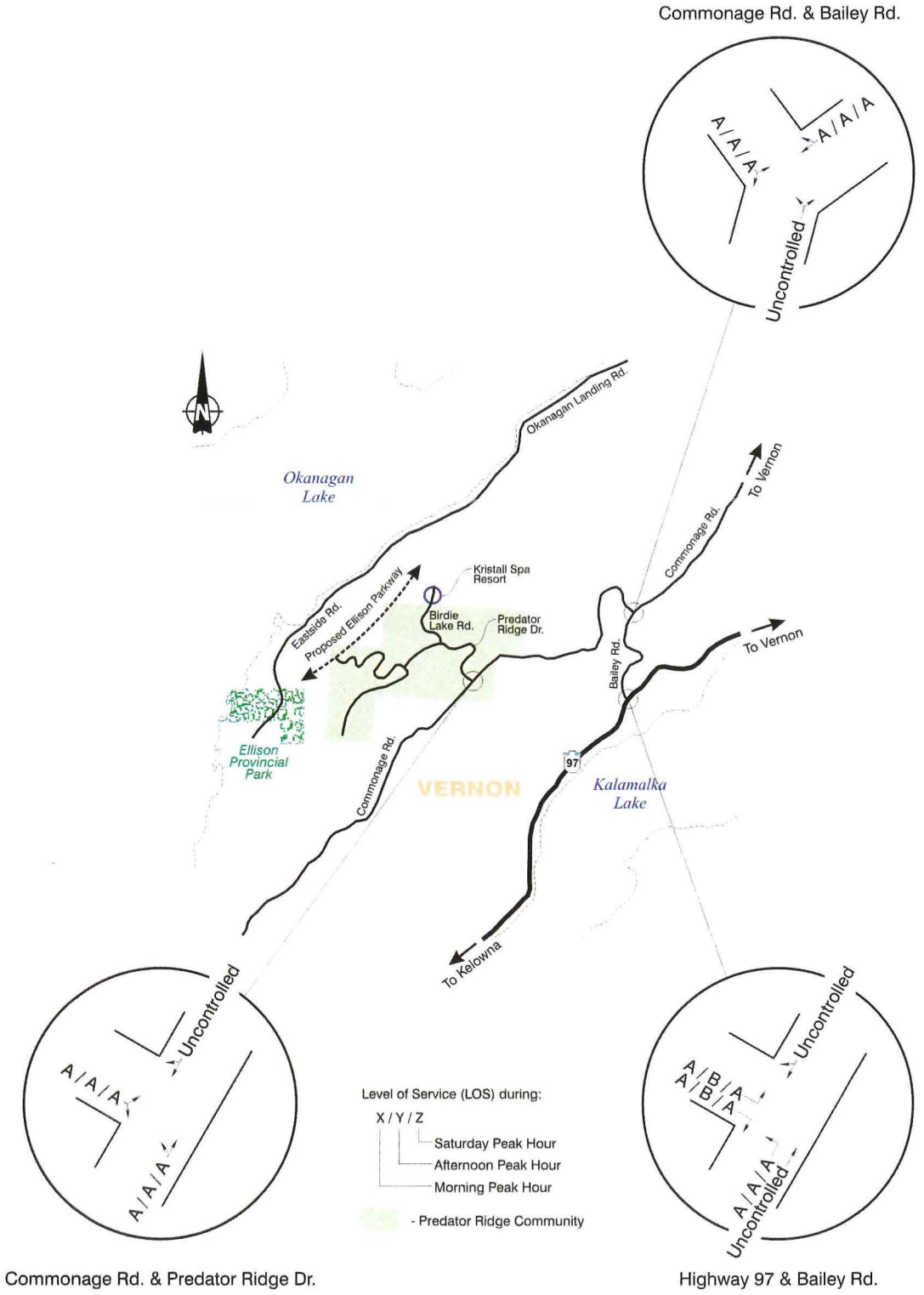

FIGURE 3.1 2003 (CURRENT) TRAFFIC PERFORMANCE

4.0 TRAFFIC PERFORMANCE REVIEW

4.1 Traffic Conditions for the Short Term Development Phase

Intersection performance for the four intersections was analyzed using Synchro and VISSIM computer software. Traffic distribution is summarized in APPENDIX F. The combined traffic volumes for Kristall and Predator Ridge Short Term Phase development are shown in APPENDIX G. The capacity performance levels of service of the intersections are shown in FIGURE 4.1. Output of the detailed capacity calculations are shown in APPENDIX K.

It should be noted that Commonage Road, north of Bailey Road is planned to be improved and paved in three to five years. The improved road will include making Commonage Road a through road and Bailey Road will form the third leg of the T-intersection with a STOP sign. The improved geometry will channel most of the Vernon bound traffic onto Commonage Road thereby reducing the queuing and demand of the Bailey Road eastbound left turn movement at Highway 97. The review of the Bailey Road left turn at Highway 97, included a sensitivity analysis showing various growth rates of through traffic on Highway 97, and the left turn capacity on Bailey Road, is shown in APPENDIX J.

A. Highway 97 and Bailey Road Intersection

When Kristall Phases I and II traffic are added to the traffic generated by the Short Term Phase development of Predator Ridge, the overall level of service of this intersection is acceptable. The Highway 97 northbound left turn movement is anticipated to operate at an excellent level of service B or better for all peak periods.

The Bailey Road left turn and right turn movements are anticipated to operate at levels C or better for all peak periods.

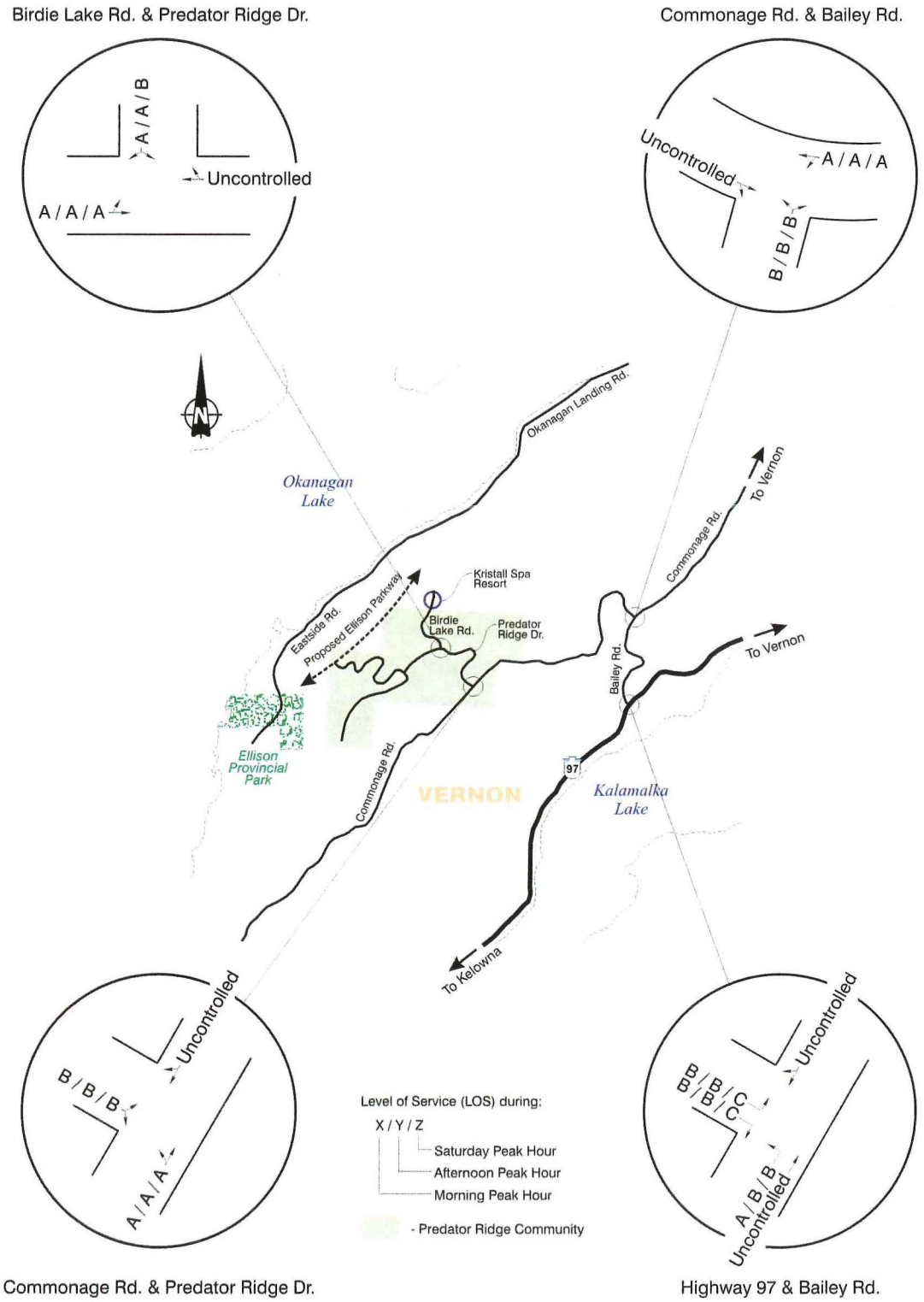

FIGURE 4.1 INTERSECTION PERFORMANCE FOR SHORT TERM PHASE DEVELOPMENT

B. Bailey Road and Commonage Road Intersection

The Commonage Road and Bailey Road intersection is assumed to be re-aligned to make Bailey Road a STOP sign controlled T-intersection. All movements were found to be operating at levels of service B or better, for all peak periods.

C. Commonage Road and Predator Ridge Road Intersection

This is the entrance intersection to the Predator Ridge Community. All movements were found to be operating at levels of service B or better for all peak periods.

D. Predator Ridge Drive and Birdie Lake Road Intersection

Birdie Lake Drive is the road leading to the proposed Kristall Resort Hotel development. This intersection is anticipated to operate at levels of service B or better for all peak periods.

4.2 Traffic Conditions for the Long Term Development Phase

With the Long Term development phase, traffic movements are anticipated to operate at satisfactory levels of service. The long term traffic distribution is shown in APPENDIX H. The 2003 base traffic volumes, combined with long term phase development traffic, are shown in APPENDIX I. The levels of service are shown in FIGURE 4.2. The sensitivity analysis is shown in APPENDIX J and the detailed intersection performance calculations are shown in APPENDIX K.

A. Highway 97 and Bailey Road Intersection

The Highway 97 northbound left turn movement is anticipated to operate at level of service B for all peak periods. The Bailey Road right and left turn movements are anticipated to operate at levels of service D or better all peak periods.

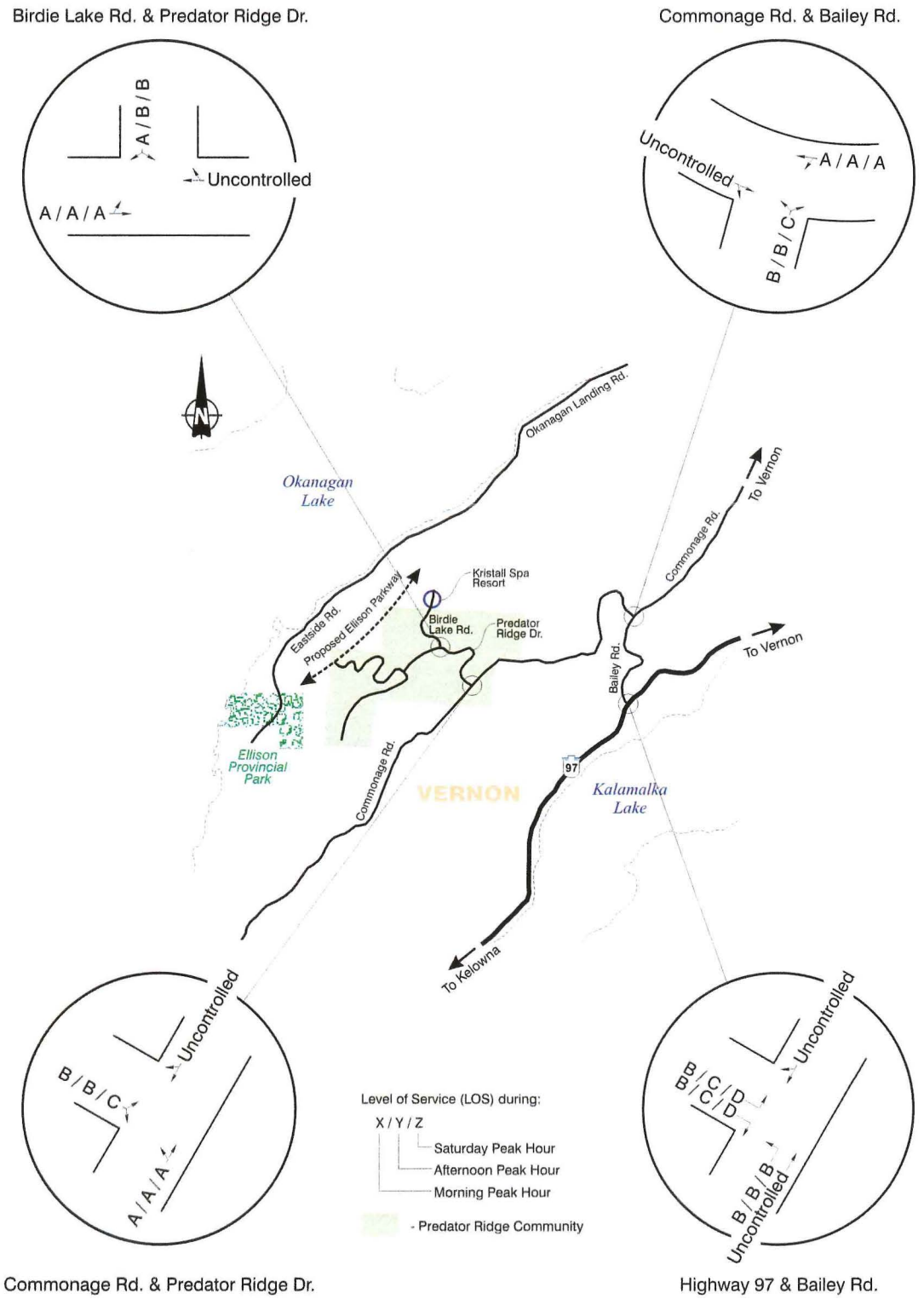

FIGURE 4.2 INTERSECTION PERFORMANCE FOR LONG TERM PHASE DEVELOPMENT

B. Bailey Road and Commonage Road Intersection

The Commonage Road intersection is assumed to be realigned to make Bailey Road a STOP control T-intersection. All movements were found to be operating satisfactorily at levels of service C or better, for all peak periods.

C. Commonage Road and Predator Ridge Road Intersection

This is the entrance intersection to the Predator Ridge Community. All movements were found to be operating at satisfactory levels of service C or better for all peak periods.

D. Predator Ridge Drive and Birdie Lake Road Intersection

Birdie Lake Drive is the road leading to the proposed Kristall Spa Resort development. This intersection is anticipated to operate at levels of service B or better for all peak periods.

4.3 Sensitivity Analysis

The capacity analysis results of the four intersections indicated that they are performing at acceptable levels of service for both the Short Term and Long Term Phases of the Predator Ridge Development, assuming average trip generation reduction rates. A sensitivity analysis was conducted for the eastbound left turn movement on Bailey Road intersection at Highway 97.

With the section of Commonage Road north of Bailey Road improved and assuming 80 percent of the left turn volume traveling on Commonage Road, there is spare capacity for this movement to accommodate variations of assumptions. As shown in APPENDIX K, the left turn capacity with a 15 percent (2 percent growth in seven years for the Short Term Phase) and 35 percent (2 percent growth for fifteen years for the Long Term Phase) traffic growth on Highway 97 will allow a left turn volume of 87 and 60 vehicles per hour at level of service D, respectively.

In the sensitivity analysis shown in APPENDIX K, a total Vernon bound volume (or left turn volume at Highway 97 without any traffic diverted to Commonage Road) of 350 vehicles per hour was assumed. Current volumes for this movement are 20, 25 and 25 vehicles per hour during morning, afternoon and Saturday peak hours. The combined Kristall and Short Term Phase Predator Ridge Development northbound volumes were forecast to be 70, 115 and 150 for the same peak hours. The corresponding volumes for the Long Term Phase are 75, 135 and 180 vehicles per hour.

Without better diversion of traffic to Commonage Road, queuing is anticipated for the eastbound left turn movement on Bailey Road at Highway 97. After diverting 80 percent of Vernon/north bound volumes diverted to Commonage Road, traffic volumes using Highway 97 to travel north were forecast to be 35 to 45 percent and 50 to 75 percent of the 87 and 60 vehicles per hour capacity, respectively.

The results of the sensitivity analysis indicated that for the Kristall and Predator Ridge Short Term Phase Developments, the Bailey Road eastbound left turn capacity at Highway 97 can accommodate twice the forecast volumes. For the Long Term Phase Development, the capacity can accommodate and increase in forecast volumes between 25 and 50 percent. It should also be noted that the golf season at Predator Ridge is between mid-April to September, and the peak period is Saturday afternoon.

The forecast is therefore considered robust to accommodate variations in the forecast, especially for a 15-year forecast with two percent compounded growth rate on Highway 97 through traffic.

5.0 OVERVIEW

The results of traffic analysis indicated the existing and planned road system within Predator Ridge, including the planned improvement of Commonage Road, are adequate to support the proposed Predator Ridge Neighbourhood Plan and the Kristall Spa Resort development.

Commonage Road is planned to be improved over a period of three years. One of the primary reasons to improve Commonage Road is to provide an attractive alternate route to Highway 97 for northbound travel. The improvement can be carried out in phases. The Ministry of Transportation has in place the engineering design for the section of Commonage Road north of Bailey Road. The design depicts a through Commonage Road with Bailey Road westbound traffic controlled by a STOP sign. This design, with proper signing, will attract northbound traffic to use Commonage Road.

A sensitivity analysis was carried out to assess the capacity performance of the eastbound left turn movement on Bailey Road at Highway 97. With the improved Commonage Road, and which is anticipated to divert 80 percent of the northbound traffic from the left turn movement, there will be spare capacity to accommodate variations in forecast, such as the assumptions of trip reduction and traffic growth on the highway.

This review concluded that the current road system, with the improvement of Commonage Road north of Bailey Road, will accommodate the traffic generated by the Predator Ridge Neighbourhood Community and the Kristall Spa Resort development.

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APPENDIX A
TRIP GENERATION FOR GOLFERS

Description	Reduction Factor		
	High	Average	Low
Rate Reductions			
Reduction for Internal Trip for golfers (1)	50%	30%	18%
Adjustment for Fly-ins and shuttle bus pick-ups (2)	30%	20%	14%
Total Reduction (3)	80%	50%	32%
Distribution			
In and outbound direction	Use ITEs		
	Timing		
Origin Direction	Long	Medium	Current
To and from Vernon (4)	5%	10%	25%
To and from S. on Hwy 97	95%	90%	75%

(1) In 2003, there were 58 cottages and lodges. As the development progresses, more cottages and lodges will be constructed. Over time, the marketing theme of "Come Plan, Come Stay" will increase the number of golfers staying multi-nights at Predator Ridge. Cottage guests and golf course employees usually arrive outside the morning and afternoon peak hours. In addition, there will be resident golfers since home owners are also members of the golf course.

(2) The 2003 survey indicated that 13% of golfers travel by air and rent a car, 1% by air and then limo. The PR shuttle buses are ready for operation pending the approval of licenses. A min. of 14% of golfers can be assumed to be picked-up by shuttle buses if they are operating.

(3) In this study, 50% reduction is used, even though it may be more in the long term.

(4) 2002 & 2003 survey results indicated 16% and 31% of golfers were from the Vernon area respectively. For current conditions, 25% was used. Over the long-term, as tee-times are anticipated to be filled by "Come Play, Come Stay" guests, the portion from Vernon will be reduced. In this study, 10% and 5% are used for the medium and long terms respectively.

APPENDIX B
TRAFFIC GENERATION FOR COTTAGES AND LODGES

Description	Reduction Factor		
	High	Average	Low
Rate Reductions			
Internal trips for golfers who stayed at Cottages/Lodges (1)	35%	20%	10%
Adjustment for Fly-ins and shuttle bus pick-ups (2)	40%	20%	12%
Total Reduction (3)	75%	40%	22%
Distributions			
In and Outbound Direction	Use ITEs		
	Time Frame		
Origin Distribution	Long	Medium	Current
To and From Vernon (4)	4%	4%	4%
To and From S. on Hwy 97	96%	96%	96%

(1) 2003 survey indicated that 93% of the guests staying at cottages and lodges played golf. 70% played golf with 3 or more persons in their party. These guests are assumed to generate internal trips without going outside of Predator Ridge during peak hours. Current trip reduction is estimated at 10% since the golfers were from 58 cottages and lodges. As the number of cottages and lodges increase, the number of golfers will increase which will result in reduction in trips going outside.

(2) 2003 survey indicated that 12% travelled by air and rental cars. 12% by others. When shuttle buses are available, the number of travel by air and shuttle bus will increase.

(3) In this study, a reduction of 40% for cottages and lodges is used for the long term.

(4) The 2003 survey indicated that 4% of cottage and lodge guests were from the Vernon area. Over time, this may decrease. However, for this study, 4% is used.

APPENDIX C
TRIP GENERATION FOR COMMUNITY RESIDENTS

Description	Reduction Factor		
	High	Average	Low
Rate Reductions			
Residents who play golf (1)	35%	20%	10%
Unoccupied Homes (2)	30%	20%	10%
Total Reduction (3)	65%	40%	20%
Distributions			
In and Outbound Direction	Use ITEs		
	Time Frame		
Origin Distribution	Long	Medium	Current
To and From Vernon (4)	75%	75%	75%
To and From S. on Hwy 97	25%	25%	25%

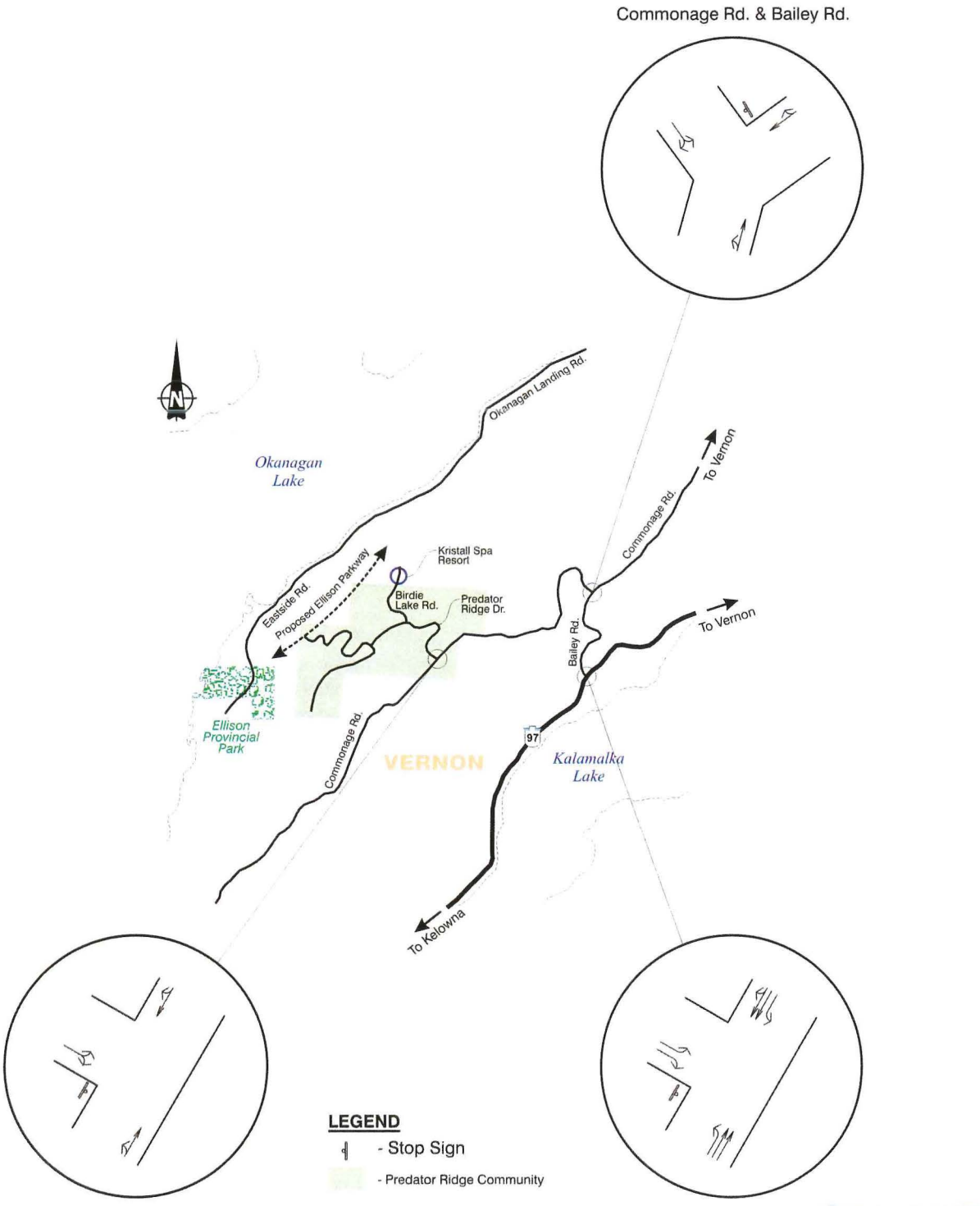
(1) 2003 survey indicated that 35% of the residents golf on the day of the survey. Since the current number of homes is 40, resident golfers represented a small percentage of total golfers. As development progresses, and since home owners are also members of the golf course, the number of resident golfers will increase. Accordingly, since there are finite number of t-times, the number of external golfers will decrease.

(2) The 2003 survey indicated that 40% of the homes are unoccupied. This is because it is a place where some owners plan to spend only a few weeks a year at Predator Ridge. On average, the number of unoccupied homes during the summer months is anticipated to be 25%.

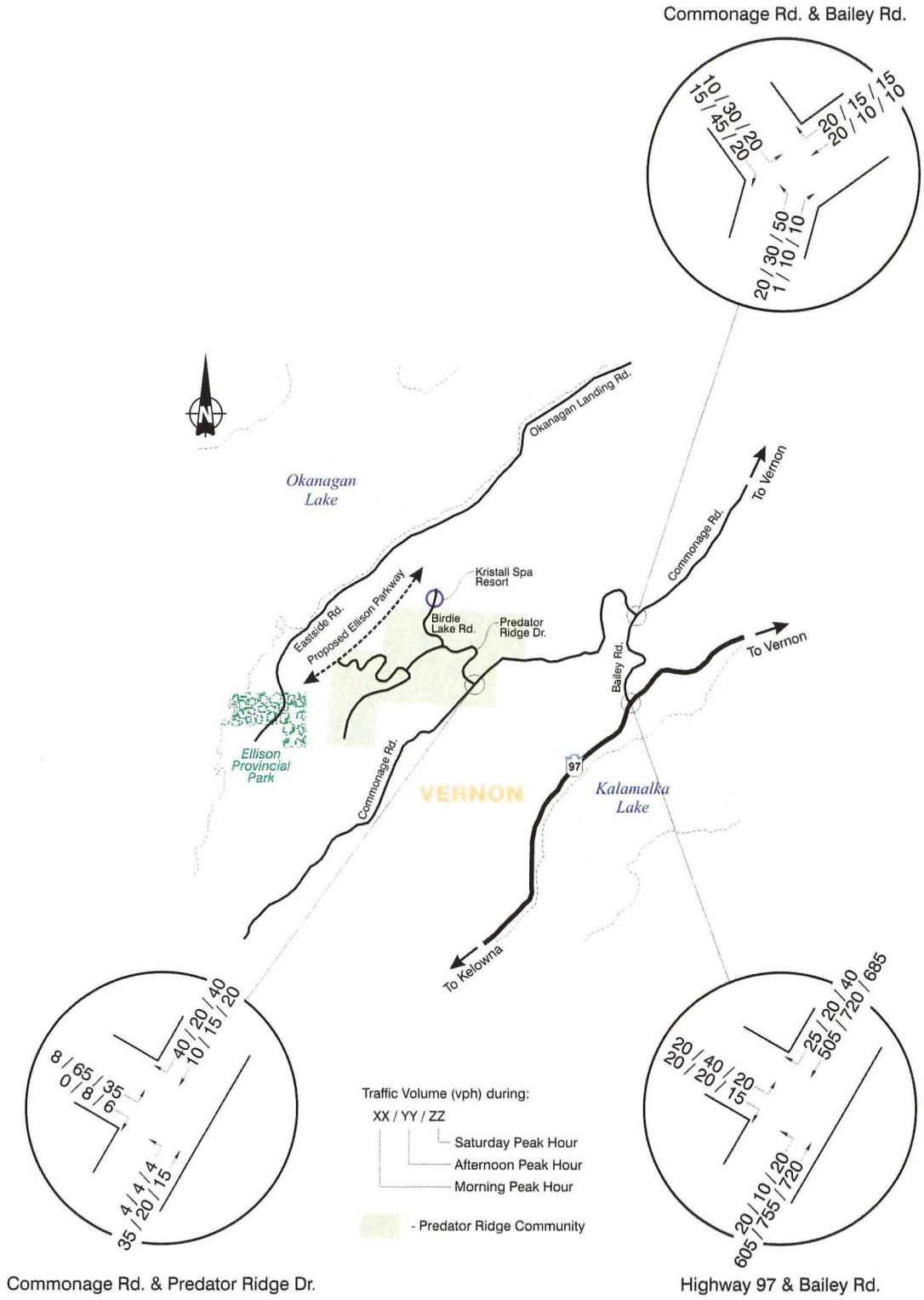
(3) A total of 40% of reduction of trips is used in this study.

(4) The 2003 survey indicated that 75% of employment and 87% of shopping trips are to and from Vernon. This origin distribution is used in this study.

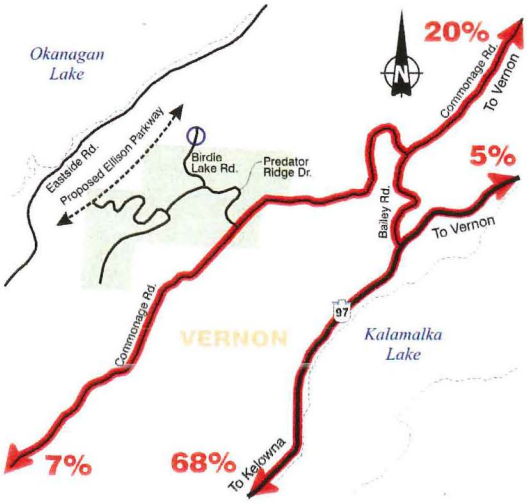
APPENDIX D
LANE CONFIGURATIONS



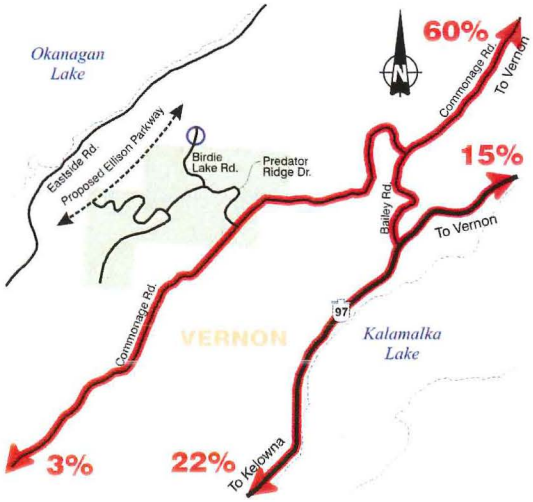
APPENDIX E
2003 TRAFFIC VOLUMES



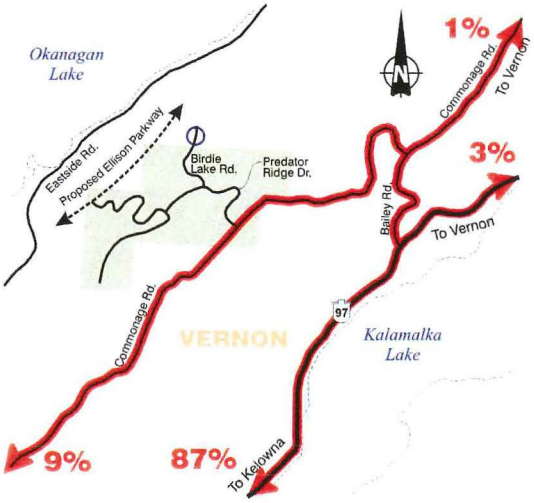
APPENDIX F
TRAFFIC DISTRIBUTION FOR THE SHORT TERM PHASE DEVELOPEMNT



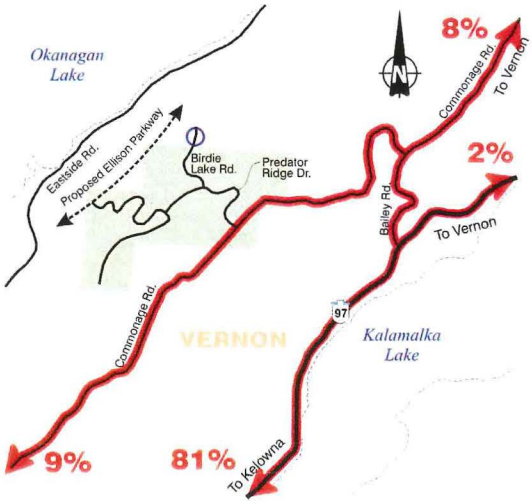
Hotel and Conference Guests and Employees



Predator Ridge Residents



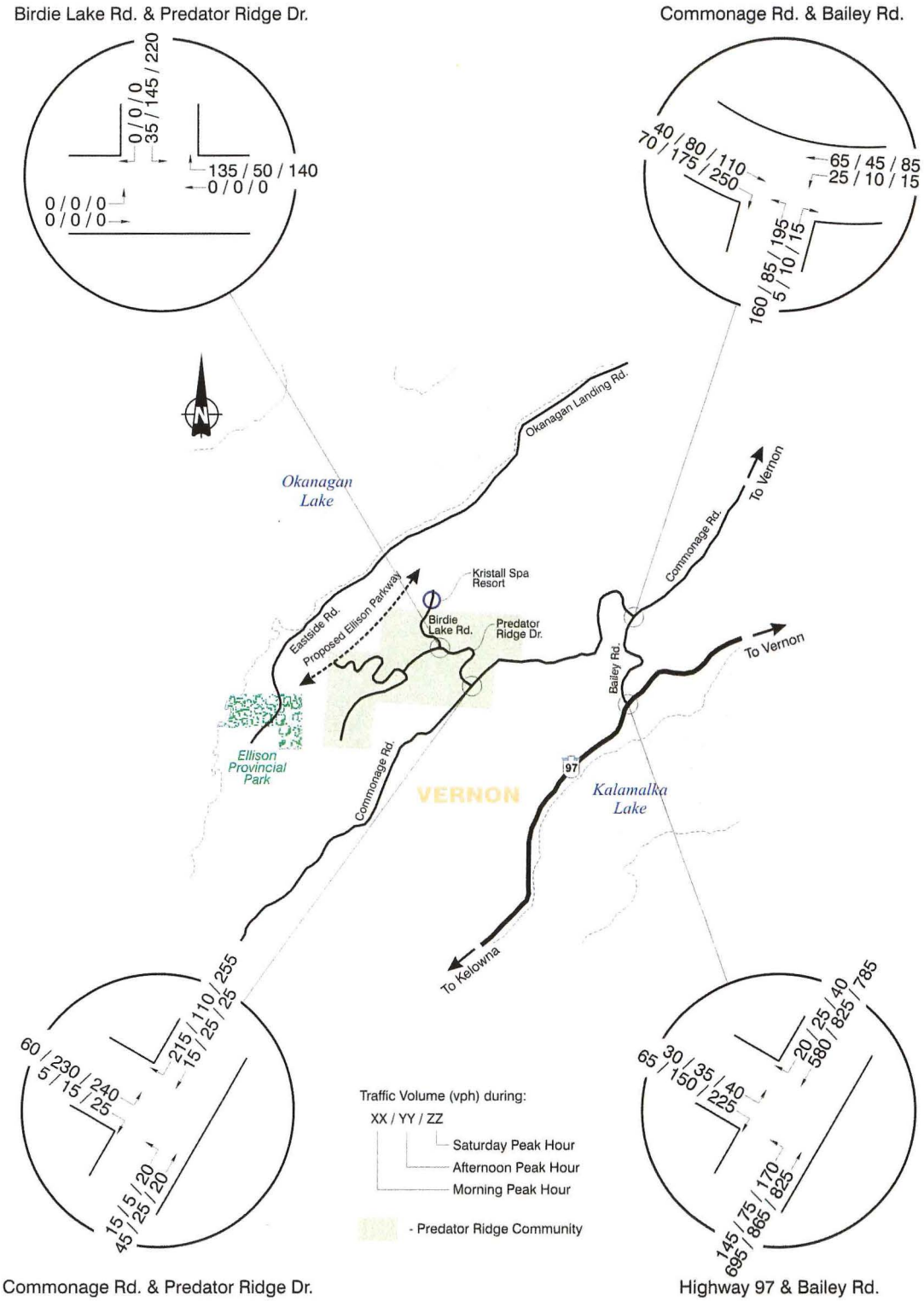
Cottage and Lodge Guests



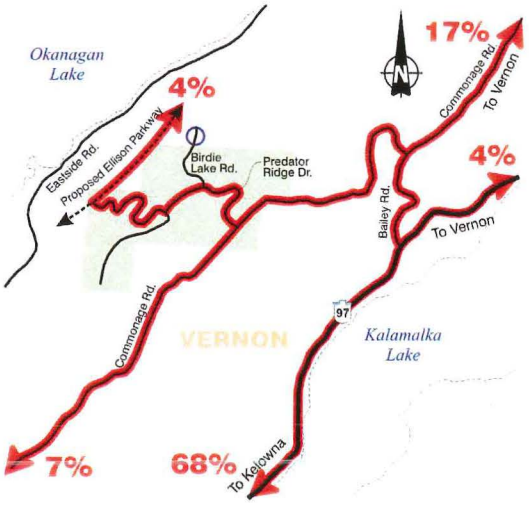
Golfers

- Predator Ridge Community ○ - Kristall Spa Resort

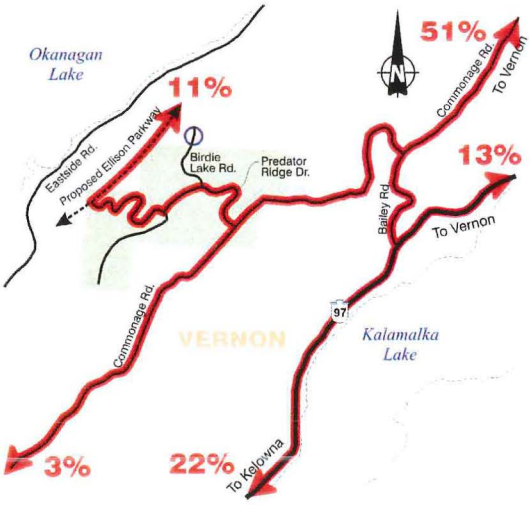
APPENDIX G
TRAFFIC VOLUMES FOR THE SHORT TERM PHASE DEVELOPMENT



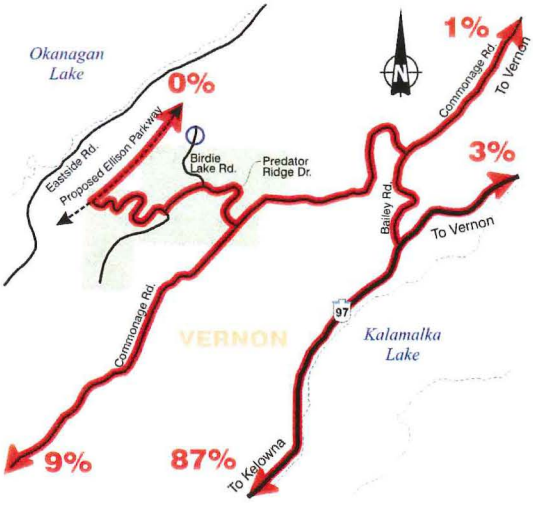
APPENDIX H
TRAFFIC DISTRIBUTION FOR THE LONG TERM PHASE DEVELOPMENT



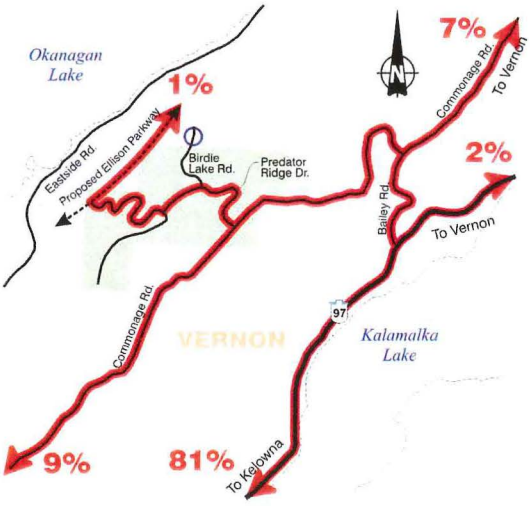
Hotel and Conference Guests and Employees



Predator Ridge Residents



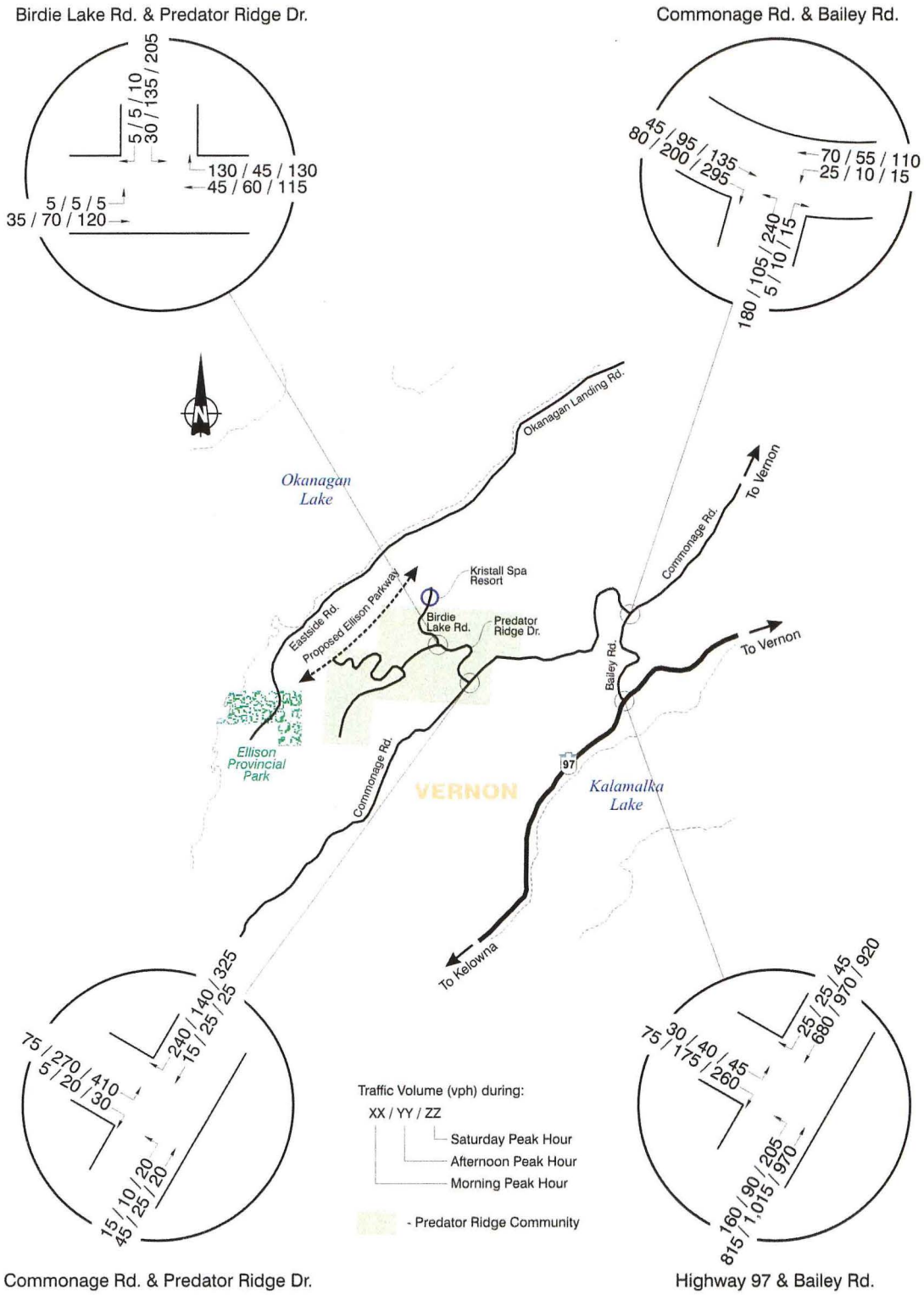
Cottage and Lodge Guests



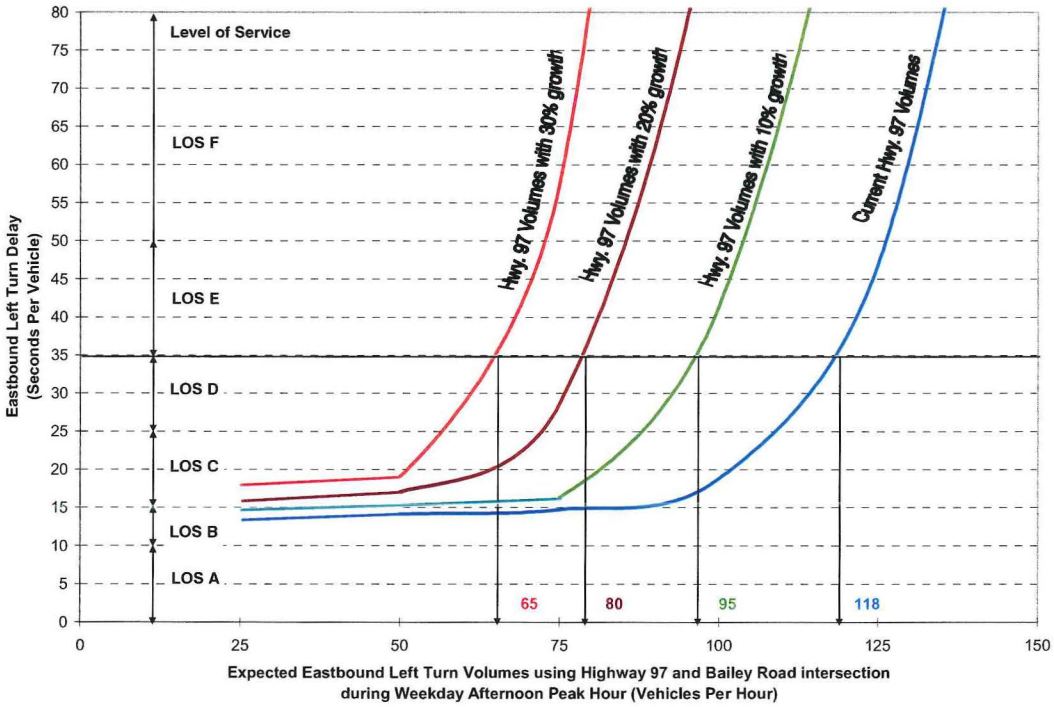
Golfers

- Predator Ridge Community ○ - Kristall Spa Resort

APPENDIX I
TRAFIC VOLUME FOR
THE LONG TERM PHASE DEVELOPMENT



APPENDIX J
SENSITIVITY ANALYSIS



Blue Line = Current Traffic Volume on Highway 97
Green Line = Current Traffic + 10%
Brown Line = Current Traffic + 20%
Red Line = Current Traffic + 30%

Observations:

1. Under current afternoon peak hour traffic volumes on Highway 97, left turn volume could increase to 118 vehicles per hour before the level of service reaches E. Current left turn volume during the afternoon peak hour is 40 vehicles per hour.

2. If the afternoon peak hour traffic volume increased by 30%, the left turn volume can reach 65 before level of service E. Traffic growth on Highway 97 is being confirmed by Mr. Turner of the Ministry.

3. It is assumed here that the afternoon peak hour total left turn volume, including the entire Predator Ridge Community and Kristall Spa Resort, is 350 vehicles per hour. Assuming the demand left turn volume is 350 vehicles per hour (combined left turn volumes for the long term), and it remains unchanged over the growth periods, the portion of this left turn movement to be diverted to Commonage Road in order to maintain a level of service D at Highway 97 is:

   a. 66% (or 232 vehicles per hour) for current traffic volume.
   b. 73% (or 255 vehicles per hour) for current traffic volume + 10%.
   c. 77% (or 270 vehicles per hour) for current traffic volume + 20%.
   d. 81% (or 285 vehicles per hour) for current traffic volume + 30%.

4. We have assumed a diversion of 75% in our study. An 80% diversion could be used.

5. Some of the Bailey Road left turn traffic at Highway 97 wants to travel on Highway 97. But most of the traffic of this movement is going to Vernon to shop of work, or employees coming from Vernon to Predator Ridge to work.

6. The current design by Stantec provides through movements on Commonage Road for those to travel to and from Vernon.

7. If Highway 97 traffic volume increased by 10% over 5 to 7 years, and the development traffic increased by a maximum of 55 (95-40) vehicles per hour during the afternoon peak hour, the Bailey Road eastbound left turn at Highway 97 is anticipated to perform at level of service D without any improvements.

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APPENDIX K

DETAILED PRINTOUTS FOR CAPACITY CALCULATIONS

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	19	21	21	603	506	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	21	23	23	655	550	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	937	289	577			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	97	98			
cM capacity (veh/h)	257	708	992			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	43	23	328	328	367	211
Volume Left	21	23	0	0	0	0
Volume Right	23	0	0	0	0	27
cSH	965	992	1700	1700	1700	1700
Volume to Capacity	0.05	0.02	0.19	0.19	0.22	0.12
Queue Length (m)	1.1	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	8.9	8.7	0.0	0.0	0.0	0.0
Lane LOS	A	A				
Approach Delay (s)	8.9	0.3			0.0	
Approach LOS	A					

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	28.1%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	12	16	20	1	20	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	13	17	22	1	22	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	76	32	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	99			
cM capacity (veh/h)	914	1042	1568			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	30	23	41
Volume Left	13	22	0
Volume Right	17	0	20
cSH	983	1568	1700
Volume to Capacity	0.03	0.01	0.02
Queue Length (m)	0.7	0.3	0.0
Control Delay (s)	8.8	7.0	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	7.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	8	5	4	34	8	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	9	5	4	37	9	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	77	32	54			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	923	1042	1551			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	14	41	54
Volume Left	9	4	0
Volume Right	5	0	46
cSH	966	1551	1700
Volume to Capacity	0.01	0.00	0.03
Queue Length (m)	0.3	0.1	0.0
Control Delay (s)	8.8	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	38	22	8	754	722	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	41	24	9	820	785	20
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	1222	402	804			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	96	99			
cM capacity (veh/h)	170	598	816			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	65	9	410	410	523	281
Volume Left	41	9	0	0	0	0
Volume Right	24	0	0	0	0	20
cSH	768	816	1700	1700	1700	1700
Volume to Capacity	0.08	0.01	0.24	0.24	0.31	0.17
Queue Length (m)	2.1	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	10.1	9.5	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	10.1	0.1			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	30	46	30	10	8	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	33	50	33	11	9	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	92	16	24			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	95	98			
cM capacity (veh/h)	889	1063	1591			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	83	43	24
Volume Left	33	33	0
Volume Right	50	0	15
cSH	987	1591	1700
Volume to Capacity	0.08	0.02	0.01
Queue Length (m)	2.1	0.5	0.0
Control Delay (s)	9.0	5.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	5.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	64	8	4	18	16	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	70	9	4	20	17	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	58	29	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	99	100			
cM capacity (veh/h)	947	1045	1568			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	78	24	41
Volume Left	70	4	0
Volume Right	9	0	24
cSH	957	1568	1700
Volume to Capacity	0.08	0.00	0.02
Queue Length (m)	2.0	0.1	0.0
Control Delay (s)	9.1	1.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	14.4%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	22	16	20	720	684	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	24	17	22	783	743	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		4				
Median type	None					
Median storage veh)						
vC, conflicting volume	1197	390	780			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	97	97			
cM capacity (veh/h)	174	609	833			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	41	22	391	391	496	285
Volume Left	24	22	0	0	0	0
Volume Right	17	0	0	0	0	37
cSH	782	833	1700	1700	1700	1700
Volume to Capacity	0.05	0.03	0.23	0.23	0.29	0.17
Queue Length (m)	1.3	0.6	0.0	0.0	0.0	0.0
Control Delay (s)	9.9	9.4	0.0	0.0	0.0	0.0
Lane LOS	A	A				
Approach Delay (s)	9.9	0.3			0.0	
Approach LOS	A					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	20	22	48	12	10	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	22	24	52	13	11	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	136	18	26			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	97			
cM capacity (veh/h)	829	1060	1588			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	46	65	26
Volume Left	22	52	0
Volume Right	24	0	15
cSH	936	1588	1700
Volume to Capacity	0.05	0.03	0.02
Queue Length (m)	1.2	0.8	0.0
Control Delay (s)	9.0	5.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	5.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	36	63	4	16	20	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	39	68	4	17	22	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	71	45	67			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	93	100			
cM capacity (veh/h)	931	1025	1534			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	108	22	67
Volume Left	39	4	0
Volume Right	68	0	46
cSH	989	1534	1700
Volume to Capacity	0.11	0.00	0.04
Queue Length (m)	2.8	0.1	0.0
Control Delay (s)	9.1	1.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	17.0%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	31	65	143	695	580	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	34	71	155	755	630	23
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	1330	327	653			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	72	89	83			
cM capacity (veh/h)	122	669	929			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	104	155	378	378	420	233
Volume Left	34	155	0	0	0	0
Volume Right	71	0	0	0	0	23
cSH	791	929	1700	1700	1700	1700
Volume to Capacity	0.13	0.17	0.22	0.22	0.25	0.14
Queue Length (m)	3.4	4.6	0.0	0.0	0.0	0.0
Control Delay (s)	10.2	9.6	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	10.2	1.6			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	39	69	27	65	162	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	42	75	29	71	176	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			117		209	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		77	100
cM capacity (veh/h)			1471		764	980

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	117	100	178
Volume Left	0	29	176
Volume Right	75	0	2
cSH	1700	1471	766
Volume to Capacity	0.07	0.02	0.23
Queue Length (m)	0.0	0.5	6.8
Control Delay (s)	0.0	2.3	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	2.3	11.1
Approach LOS			B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	62	4	15	46	13	214
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	67	4	16	50	14	233
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	213	130	247			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	100	99			
cM capacity (veh/h)	766	919	1319			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	72	66	247
Volume Left	67	16	0
Volume Right	4	0	233
cSH	773	1319	1700
Volume to Capacity	0.09	0.01	0.15
Queue Length (m)	2.3	0.3	0.0
Control Delay (s)	10.1	2.0	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	2.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	5	5	137	33	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	5	5	149	36	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	154				96	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	99
cM capacity (veh/h)	1426				900	980

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	11	154	41
Volume Left	5	0	36
Volume Right	0	149	5
cSH	1426	1700	910
Volume to Capacity	0.00	0.09	0.05
Queue Length (m)	0.1	0.0	1.1
Control Delay (s)	3.8	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	3.8	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	35	149	74	807	827	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	38	162	80	877	899	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	1511	462	924			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	61	70	89			
cM capacity (veh/h)	99	547	735			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	200	80	439	439	599	325
Volume Left	38	80	0	0	0	0
Volume Right	162	0	0	0	0	25
cSH	645	735	1700	1700	1700	1700
Volume to Capacity	0.31	0.11	0.26	0.26	0.35	0.19
Queue Length (m)	10.0	2.8	0.0	0.0	0.0	0.0
Control Delay (s)	13.1	10.5	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	13.1	0.9			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	43.4%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	79	173	11	45	87	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	86	188	12	49	95	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			274		253	180
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		87	99
cM capacity (veh/h)			1289		729	863

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	274	61	104
Volume Left	0	12	95
Volume Right	188	0	10
cSH	1700	1289	740
Volume to Capacity	0.16	0.01	0.14
Queue Length (m)	0.0	0.2	3.7
Control Delay (s)	0.0	1.6	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	1.6	10.7
Approach LOS			B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	228	16	7	24	23	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	248	17	8	26	25	110
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	121	80	135			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	72	98	99			
cM capacity (veh/h)	870	980	1450			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	265	34	135
Volume Left	248	8	0
Volume Right	17	0	110
cSH	876	1450	1700
Volume to Capacity	0.30	0.01	0.08
Queue Length (m)	9.7	0.1	0.0
Control Delay (s)	10.9	1.7	0.0
Lane LOS	B	A	
Approach Delay (s)	10.9	1.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	5	5	51	143	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	5	5	55	155	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	61				49	33
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				84	99
cM capacity (veh/h)	1542				956	1040

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	11	61	161
Volume Left	5	0	155
Volume Right	0	55	5
cSH	1542	1700	959
Volume to Capacity	0.00	0.04	0.17
Queue Length (m)	0.1	0.0	4.6
Control Delay (s)	3.7	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	3.7	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	19.3%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	40	224	170	827	787	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	43	243	185	899	855	43
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	1696	449	899			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	31	56	75			
cM capacity (veh/h)	63	557	751			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	287	185	449	449	570	329
Volume Left	43	185	0	0	0	0
Volume Right	243	0	0	0	0	43
cSH	620	751	1700	1700	1700	1700
Volume to Capacity	0.46	0.25	0.26	0.26	0.34	0.19
Queue Length (m)	18.6	7.3	0.0	0.0	0.0	0.0
Control Delay (s)	15.7	11.3	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	15.7	1.9			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	48.6%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	110	251	13	84	195	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	120	273	14	91	212	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			392		376	256
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		66	98
cM capacity (veh/h)			1166		618	783

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	392	105	227
Volume Left	0	14	212
Volume Right	273	0	15
cSH	1700	1166	627
Volume to Capacity	0.23	0.01	0.36
Queue Length (m)	0.0	0.3	12.5
Control Delay (s)	0.0	1.2	14.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.2	14.0
Approach LOS			B

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	339	24	18	22	26	254
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	368	26	20	24	28	276
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	229	166	304			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	51	97	98			
cM capacity (veh/h)	747	878	1256			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	395	43	304
Volume Left	368	20	0
Volume Right	26	0	276
cSH	754	1256	1700
Volume to Capacity	0.52	0.02	0.18
Queue Length (m)	23.4	0.4	0.0
Control Delay (s)	14.9	3.6	0.0
Lane LOS	B	A	
Approach Delay (s)	14.9	3.6	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	5	5	139	219	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	5	5	151	238	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	157				97	81
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				74	99
cM capacity (veh/h)	1423				898	979

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	11	157	243
Volume Left	5	0	238
Volume Right	0	151	5
cSH	1423	1700	900
Volume to Capacity	0.00	0.09	0.27
Queue Length (m)	0.1	0.0	8.3
Control Delay (s)	3.8	0.0	10.5
Lane LOS	A		B
Approach Delay (s)	3.8	0.0	10.5
Approach LOS			B

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	32	74	161	814	680	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	35	80	175	885	739	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	1544	382	764			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	58	87	79			
cM capacity (veh/h)	84	616	845			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	115	175	442	442	493	271
Volume Left	35	175	0	0	0	0
Volume Right	80	0	0	0	0	25
cSH	700	845	1700	1700	1700	1700
Volume to Capacity	0.16	0.21	0.26	0.26	0.29	0.16
Queue Length (m)	4.5	5.9	0.0	0.0	0.0	0.0
Control Delay (s)	11.2	10.4	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	11.2	1.7			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	43	79	27	70	181	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	47	86	29	76	197	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			133		224	90
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		74	100
cM capacity (veh/h)			1452		748	968

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	133	105	199
Volume Left	0	29	197
Volume Right	86	0	2
cSH	1700	1452	750
Volume to Capacity	0.08	0.02	0.27
Queue Length (m)	0.0	0.5	8.1
Control Delay (s)	0.0	2.2	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	2.2	11.5
Approach LOS			B

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	76	5	17	46	13	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	83	5	18	50	14	260
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	231	144	274			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	99	99			
cM capacity (veh/h)	746	903	1289			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	88	68	274
Volume Left	83	18	0
Volume Right	5	0	260
cSH	754	1289	1700
Volume to Capacity	0.12	0.01	0.16
Queue Length (m)	3.0	0.3	0.0
Control Delay (s)	10.4	2.2	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	2.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	35	43	131	30	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	7	38	47	142	33	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	189				169	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	100
cM capacity (veh/h)	1385				817	934

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	45	189	34
Volume Left	7	0	33
Volume Right	0	142	1
cSH	1385	1700	821
Volume to Capacity	0.00	0.11	0.04
Queue Length (m)	0.1	0.0	1.0
Control Delay (s)	1.1	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	1.1	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	38	173	90	1016	969	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	41	188	98	1104	1053	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	1815	541	1082			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	30	61	85			
cM capacity (veh/h)	59	486	641			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	229	98	552	552	702	379
Volume Left	41	98	0	0	0	0
Volume Right	188	0	0	0	0	28
cSH	544	641	1700	1700	1700	1700
Volume to Capacity	0.42	0.15	0.32	0.32	0.41	0.22
Queue Length (m)	15.8	4.1	0.0	0.0	0.0	0.0
Control Delay (s)	16.3	11.6	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	16.3	0.9			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	48.8%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	93	200	11	57	106	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	101	217	12	62	115	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			318		296	210
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		83	99
cM capacity (veh/h)			1242		689	830

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	318	74	125
Volume Left	0	12	115
Volume Right	217	0	10
cSH	1700	1242	698
Volume to Capacity	0.19	0.01	0.18
Queue Length (m)	0.0	0.2	4.9
Control Delay (s)	0.0	1.3	11.3
Lane LOS		A	B
Approach Delay (s)	0.0	1.3	11.3
Approach LOS			B

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	269	18	9	24	23	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	292	20	10	26	25	153
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	147	102	178			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	65	98	99			
cM capacity (veh/h)	839	954	1398			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	312	36	178
Volume Left	292	10	0
Volume Right	20	0	153
cSH	845	1398	1700
Volume to Capacity	0.37	0.01	0.10
Queue Length (m)	13.0	0.2	0.0
Control Delay (s)	11.7	2.1	0.0
Lane LOS	B	A	
Approach Delay (s)	11.7	2.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	2	69	58	47	135	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	2	75	63	51	147	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	114				168	89
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	99
cM capacity (veh/h)	1475				821	970

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	77	114	153
Volume Left	2	0	147
Volume Right	0	51	7
cSH	1475	1700	827
Volume to Capacity	0.00	0.07	0.19
Queue Length (m)	0.0	0.0	5.1
Control Delay (s)	0.2	0.0	10.3
Lane LOS	A		B
Approach Delay (s)	0.2	0.0	10.3
Approach LOS			B

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	46	262	206	969	922	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	50	285	224	1053	1002	51
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)		7				
Median type	None					
Median storage veh)						
vC, conflicting volume	2002	527	1002			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	43	67			
cM capacity (veh/h)	35	496	687			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	335	224	527	527	668	385
Volume Left	50	224	0	0	0	0
Volume Right	285	0	0	0	0	51
cSH	485	687	1700	1700	1700	1700
Volume to Capacity	0.69	0.33	0.31	0.31	0.39	0.23
Queue Length (m)	39.7	10.8	0.0	0.0	0.0	0.0
Control Delay (s)	27.3	12.8	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	27.3	2.2			0.0	
Approach LOS	D					

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	55.1%	ICU Level of Service	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	136	296	13	110	238	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	148	322	14	120	259	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume			470		457	309
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		53	98
cM capacity (veh/h)			1092		555	731

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	470	134	274
Volume Left	0	14	259
Volume Right	322	0	15
cSH	1700	1092	562
Volume to Capacity	0.28	0.01	0.49
Queue Length (m)	0.0	0.3	20.2
Control Delay (s)	0.0	1.0	17.3
Lane LOS		A	C
Approach Delay (s)	0.0	1.0	17.3
Approach LOS			C

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	49.5%	ICU Level of Service	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	410	28	22	22	26	323
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	446	30	24	24	28	351
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
vC, conflicting volume	276	204	379			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	36	96	98			
cM capacity (veh/h)	700	837	1179			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	476	48	379
Volume Left	446	24	0
Volume Right	30	0	351
cSH	707	1179	1700
Volume to Capacity	0.67	0.02	0.22
Queue Length (m)	39.8	0.5	0.0
Control Delay (s)	19.9	4.1	0.0
Lane LOS	C	A	
Approach Delay (s)	19.9	4.1	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	56.4%	ICU Level of Service	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	120	114	130	206	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	7	130	124	141	224	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
vC, conflicting volume	265				338	195
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				66	99
cM capacity (veh/h)	1299				654	847

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	137	265	234
Volume Left	7	0	224
Volume Right	0	141	10
cSH	1299	1700	661
Volume to Capacity	0.01	0.16	0.35
Queue Length (m)	0.1	0.0	12.1
Control Delay (s)	0.4	0.0	13.4
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	13.4
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A

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