Project No.: 14132
File No.: 5-L-003

COST

TIME

QUALITY

March 4, 2016

Harry Issler
Al Stober Construction Ltd.
1700 – 1631 Dickson Avenue
Kelowna, BC V1Y 0B5

Dear Harry:

Re: Landmark Neighbourhood
Traffic Impact Analysis

We are pleased to provide the Traffic Impact Assessment of the anticipated traffic generated by the proposed development of the Landmark and Dickson neighbourhood.

This report is based on the review of previously completed traffic studies in the subject area, discussions with City of Kelowna Staff, and our work on previous traffic studies for similar projects in the Okanagan. The background morning and afternoon peak hour traffic volumes, and full buildout and phasing of the Landmark Neighbourhood is included within this submission.

The Traffic Impact Study has been prepared to determine the effect the proposed Residential and Office Development, combined with the anticipated community growth, will have on adjacent roadways and the City of Kelowna major roadway infrastructure. This report addresses the off-site planning, traffic generation and distribution, traffic analysis, and recommendations for major street improvement requirements. A Terms of Reference for the Traffic Impact Assessment was prepared and the study requirements reviewed in a meeting with City of Kelowna Engineering Staff.

A) Introduction

The subject area is located within the Dickson Avenue residential neighbourhood and the Landmark Business Park, as noted in the hatched area on Figure 1 below.

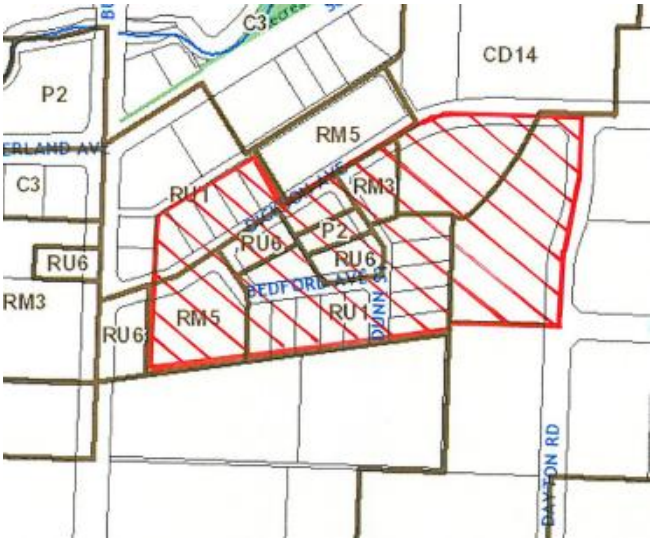


Figure 1 – Study Area with the Current City of Kelowna Zoning

Dickson Avenue, from Burtch Road to Dayton Street is a minor collector that serves single family, town house, and multi-family units, and provides the western entry to the Landmark Business Centre. Bedford Avenue is a local road (90m to the east of the 'T' intersection with Burtch Road) that connects to Dunn Street, with both local streets serving single family homes and multi-family units. Dayton Street, from Springfield Road to Dickson Avenue is a minor collector that serves both the Landmark Business Centre and the Commercial/Industrial area south of the Landmark Business Centre.

The 2020 horizon for the background traffic analysis is based on the completion of the southbound right turn lane on Dayton Street at the Springfield Road intersection and the elimination of the westbound left run from the Dickson Avenue and Burtch Road intersection.

B) BACKGROUND INFORMATION

Existing traffic counts were completed for the following intersections:

- Sutherland Avenue and Burtch Road, November 5, 2015 by City of Kelowna;
- Sutherland Avenue and Burtch Road, July 11, 2014, by City of Kelowna;
- Springfield Road and Dayton Street, November 5, 2015 by City of Kelowna;
- Dickson Avenue and Dunn Street, September 24, 2015, by CTQ;
- Dayton Street and Dolphin Avenue, November 5, 2015, by CTQ; and,
- Dayton Street and Dickson Avenue, November 6, 2015, by CTQ.

The future (2020, and 2030) traffic volumes were prepared based on the assessment of the traffic information listed above and have been factored up by an annual traffic growth rate of 2%. The 2020, and 2030 background AM and PM Peak Hour traffic volumes for intersections adjacent to the subject area are presented in the appendix.

As part of the approval for the apartment building located on the corner of Dickson Avenue and Bedford Avenue (currently under construction by Al Stober Construction Ltd.) offsite improvements were required to the Dickson Avenue and Burtch Road intersection, and the Dayton Street and Springfield Road intersection. Figure 2 shows the development of the median islands that will restrict the left turn from Dickson Avenue.

Figure 2 – Dickson Avenue and Burtch Road

Figure 3 shows the development of the right turn lane on Dayton Street at the Springfield Road intersection.

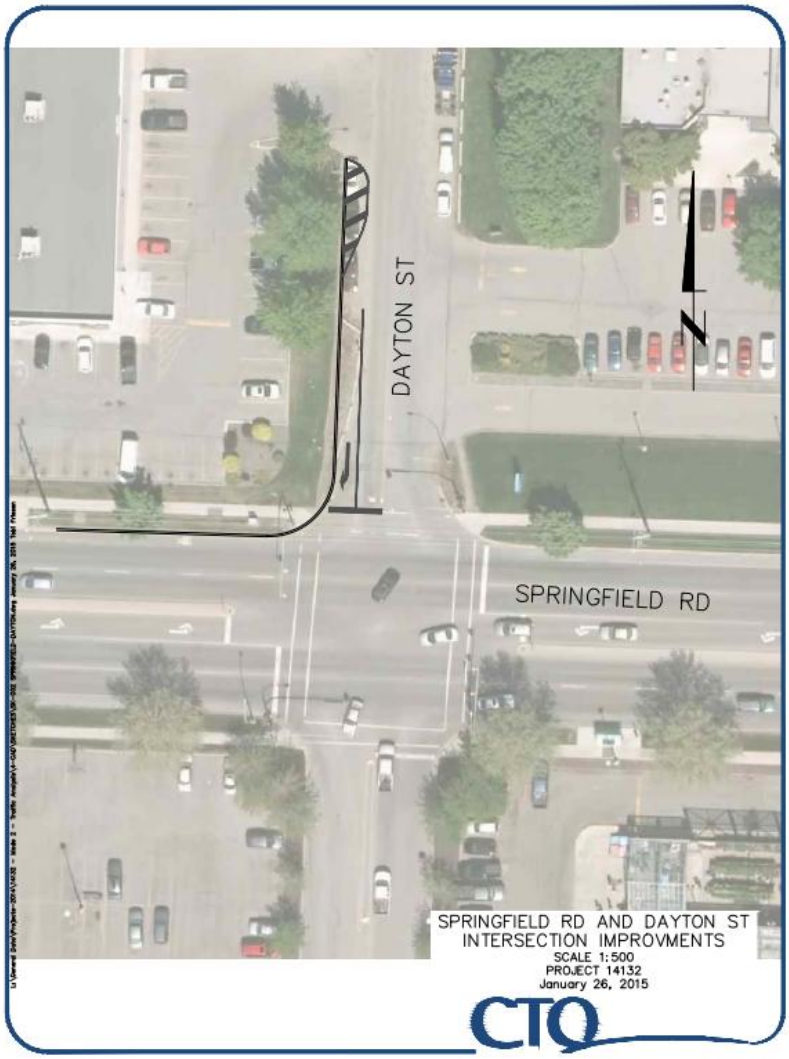


Figure 3 – Dayton Street and Springfield Road

The above noted intersection improvements have been bonded by Al Stober Construction Ltd. (ASC), and the works are anticipated to be completed in 2016.

C) TRAFFIC GENERATION and DISTRIBUTION

The Study area is anticipated to have infill completed in the areas as shown on Figure 4. There is an 80 unit apartment currently under construction on the Corner of Dickson Avenue and Bedford Avenue by ASC. ASC is currently in the planning stages for a 70 unit apartment on Bedford Avenue with completion anticipated by 2018. ASC is planning on developing a 15 unit townhouse with an adjacent commercial unit on Dunn Street in conjunction with the proposed Landmark 7 office tower on Dayton Street with completion anticipated by 2030.

The Dickson neighbourhood is forecast to develop as per the future land use identified within the current Official Community Plan, with a further conversion of the single family homes to a mix of multi-family and town house units. It is anticipated an additional 234 multi-family units will be added by other developers prior to 2030.

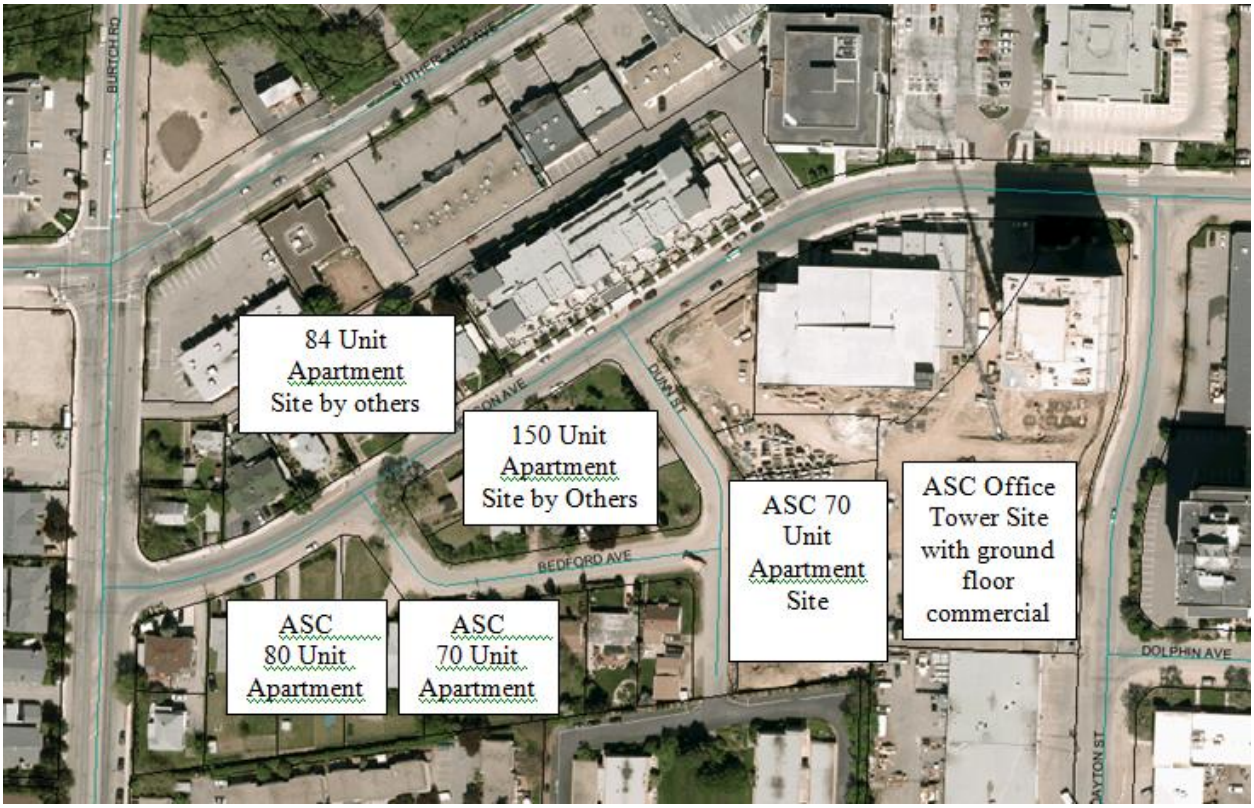


Figure 4 – Anticipated Study Area Buildout

The analysis periods used in this study are the weekday AM and PM peak hours that coincide with the peak hour periods on the adjacent streets. The basis of traffic generation data used for the study is the Institute of Transportation Engineers (ITE) 9th Edition Trip Generation Rates Manual. The AM and PM Peak Hour Rates used to determine the development traffic generations are as per the ITE Trip Generation Rates Manuals.

The anticipated 2020 buildout of the Landmark Neighbourhood consists of the following mix of uses:

- 80 Low Rise Apartment Units (currently under construction);
- 70 Low Rise Apartment Units, on Bedford Avenue; and,
- 70 Low Rise Apartment Units, on Dunn Street.

By 2020 the site is anticipated to generate the following off-site peak hour traffic volumes, as presented in Table 1 below:

Proposed Landmark Centre Phase 1 Development

Description / ITE Code	Units	ITE Vehicle Trip Generation Rates								Expected Units	Total Generated Trips			Total Distribution of Generated Trips			
		Weekday	AM	PM	Pass By	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	PM In	PM Out
Resd. Condo / Townhouse ITE Code 230	Dwelling Unit	5.81	0.44	0.52		17%	83%	67%	33%	80.0	465	35	42	6	29	28	14
Resd. Condo / Townhouse ITE Code 230	Dwelling Unit	5.81	0.44	0.52		17%	83%	67%	33%	70.0	407	31	36	5	26	24	12
Resd. Condo / Townhouse ITE Code 230	Dwelling Unit	5.81	0.44	0.52		17%	83%	67%	33%	70.0	407	31	36	5	26	24	12
											1,279	**97**	**114**	**16**	**81**	**76**	**38**

Table 1 – Landmark Neighbourhood Phase 1 (2020) Buildout Trip Generation Rate Table

The anticipated 2020 buildout for the Landmark Neighbourhood is anticipated to generate the following off-site peak hour traffic volumes:

- AM generation of 97 trips; and,
- PM generation of 114 trips.

The anticipated distribution of traffic generated from the Phase 1 build out is presented in Figure 5 for the AM Peak Hour, and Figure 6 for the PM Peak Hour, on the following page.

Figure 5 – Anticipated Phase 1 AM Peak Hour Traffic Distribution

Figure 6 – Anticipated Phase 1 PM Peak Hour Traffic Distribution

The anticipated 2030 buildout of the Landmark Neighbourhood consists of the following mix of uses:

- Office Tower with 120,000 ft^2 of office space; and,
- 3,000 ft^2 of Neighbourhood Commercial, on the main floor of the office tower.

Phase 2 of the Landmark Neighbourhood is anticipated to generate the following off-site peak hour traffic volumes, as presented in Table 2 below:

Proposed Landmark Centre Phase 2 Development

Description / ITE Code	Units	ITE Vehicle Trip Generation Rates								Expected Units	Total Generated Trips			Total Distribution of Generated Trips			
		Weekday	AM	PM	Pass By	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	PM In	PM Out
Office Park by CoK	KSF^2	25.21	1.85	2.23		72%	28%	36%	64%	120.0	3,025	222	268	160	62	96	172
											3,025	**222**	**268**	**160**	**62**	**96**	**172**

Table 2 – Landmark Neighbourhood Phase 2 Buildout Trip Generation Rate Table

The anticipated 2030 buildout (Phase 1 plus Phase 2) for the Landmark Neighbourhood is anticipated to generate the following off-site peak hour traffic volumes:

- AM generation of 319 trips; and,
- PM generation of 382 trips.

The anticipated distribution of traffic generated from the combined Phase 1 and Phase 2 build out is presented in Figure 7 for the AM Peak Hour, and Figure 8 for the PM Peak Hour, on the following page.

Figure 7 – Anticipated Phase 1 and Phase 2 AM Peak Hour Traffic Distribution

Figure 8 – Anticipated Phase 1 and Phase 2 PM Peak Hour Traffic Distribution

The anticipated buildout by others in the Dickson Area consists of the following mix of uses:

- 150 Low Rise Apartment Units, on Dickson Avenue; and,
- 84 Low Rise Apartment Units, on Dickson Avenue.

By 2030 the buildout by others in the Dickson Neighbourhood is anticipated to generate the following off-site peak hour traffic volumes, as presented in Table 3 below:

Proposed Dickson Avenue Development, by Others

Description / ITE Code	Units	ITE Vehicle Trip Generation Rates								Expected Units	Total Generated Trips			Total Distribution of Generated Trips			
		Weekday	AM	PM		AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	PM In	PM Out
Resd. Condo / Townhouse ITE Code 230	Dwelling Unit	5.81	0.44	0.52		17%	83%	67%	33%	150.0	872	66	78	11	55	52	26
Resd. Condo / Townhouse ITE Code 230	Dwelling Unit	5.81	0.44	0.52		17%	83%	67%	33%	84.0	488	37	44	6	31	29	14
											1,360	**103**	**122**	**17**	**86**	**81**	**40**

Table 3 – Dickson Neighbourhood by Others (2030) Buildout Trip Generation Rate Table

The anticipated 2030 buildout by others for the Dickson Neighbourhood is anticipated to generate the following off-site peak hour traffic volumes:

- AM generation of 103 trips; and
- PM generation of 122 trips.

The anticipated distribution of traffic generated from the Dickson Neighbourhood build out is presented in Figure 9 for the AM Peak Hour, and Figure 10 for the PM Peak Hour, on the following page.

Figure 9 – Anticipated Dickson Neighbourhood AM Peak Hour Traffic Distribution

Figure 10 – Anticipated Dickson Neighbourhood PM Peak Hour Traffic Distribution

D) TRAFFIC ANALYSIS

The operations of the intersections have been analyzed utilizing Highway Capacity Manual Synchro 8 software for signalized and unsignalized intersections. An operational level of service is determined for each movement based upon the calculated delay.

The Levels of Service (LoS) for signalized intersections are as follows:

- LoS A represents less than 10 seconds of average delay and is considered a good operating condition;
- LoS B represents greater than 10 seconds and less than 20 seconds of average delay and is considered a good operating condition;
- LoS C represents greater than 20 seconds and less than 35 seconds of average delay and is considered a fair operating condition;
- LoS D represents greater than 35 seconds and less than 55 seconds of average delay and is considered a fair operating condition;
- LoS E represents greater than 55 seconds and less than 80 seconds of average delay and is considered a poor operating condition; and,
- LoS F represents more than 80 seconds of average delay and is considered a failed operating condition.

The LoS for unsignalized intersections are as follows:

- LoS A represents less than 10 seconds of average delay and is considered a good operating condition;
- LoS B represents greater than 10 seconds and less than 15 seconds of average delay and is considered a good operating condition;
- LoS C represents greater than 15 seconds and less than 25 seconds of average delay and is considered a fair operating condition;
- LoS D represents greater than 25 seconds and less than 35 seconds of average delay and is considered a fair operating condition;
- LoS E represents greater than 35 seconds and less than 50 seconds of average delay and is considered a poor operating condition; and,
- LoS F represents more than 50 seconds of average delay and is considered a failed operating condition.

Generally, and in accordance with the *Ministry of Transportation Site Impact Analysis Requirements Manual*, in urban areas, improvements are considered when the overall intersection performance nears LoS E. For arterial streets, through traffic improvements are to be considered when the performance nears LoS D and the volume to capacity (v/c) ratio is greater than 0.80. The City of Kelowna uses a v/c ratio threshold of 0.90 and LoS of D.

The background and background plus development intersection analysis results for the Weekday AM and PM Peak Hour traffic for the 2020, and 2030 horizon years are presented on the following tables.

Background Traffic Analysis

Table 4 presents the intersection analysis results for the 2020 AM and PM Peak Hour background traffic. The Synchro analysis reports for each intersection are included in the appendix.

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Comment
Sutherland Avenue and Burtch Road	Signal	AM	0.38	9.9	A	
		PM	0.61	12.2	B	NB Left LoS B; Storage length 32m NB Through LoS A; Storage length 49m
Burtch Road and Dickson Avenue	Stop Sign	AM	0.24	2.9	A	
		PM	0.52	4.3	A	WB Right LoS C; Storage length 23m
Burtch Road and Springfield Road	Signal	AM	0.51	12.1	B	
		PM	0.95	30.0	C	SB Left LoS E; Storage length 57m WB Left LoS C; Storage length 73m
Dolphin Avenue and Dayton Street	Stop Sign	AM	0.09	2.6	A	
		PM	0.16	3.7	A	
Dickson Avenue and Dayton Street	Stop Sign	AM	0.11	2.6	A	
		PM	0.17	3.0	A	
Springfield Road and Dayton Street	Signal	AM	0.51	7.9	A	
		PM	0.85	17.0	B	WB Left LoS D; Storage length 32m SB Through and Left LoS D; Storage length 62m SB Right LoS C; Storage length 43m
Dickson Avenue and Dunn Street	Stop Sign	AM	0.22	0.7	A	
		PM	0.08	0.8	A	
Dickson Avenue and Bedford Avenue	Stop Sign	AM	0.22	0.3	A	
		PM	0.09	0.3	A	

Table 4 - 2020 Background AM and PM Peak Hour Intersection Performance

Table 5 presents the intersection analysis results for the 2030 AM and PM Peak Hour background traffic. The Synchro analysis reports for each intersection are included in the appendix.

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Comment
Sutherland Avenue and Burtch Road	Signal	AM	0.50	11.6	B	
		PM	0.85	17.7	B	NB Left LoS C; Storage length 85m NB Through LoS B; Storage length 82m
Burtch Road and Dickson Avenue	Stop Sign	AM	0.26	2.7	A	
		PM	0.56	4.2	A	WB Right LoS C; Storage length 27m
Burtch Road and Springfield Road	Signal	AM	0.66	15.8	B	EB Left LoS C; Storage length 32m
		PM	1.08	70.7	E	SB Left LoS F; Storage length 100m EB Left LoS F; Storage length 35m WB Through LoS F; Storage length 307m
Dolphin Avenue and Dayton Street	Stop Sign	AM	0.09	2.6	A	
		PM	0.16	3.7	A	
Dickson Avenue and Dayton Street	Stop Sign	AM	0.11	2.6	A	
		PM	0.17	3.7	A	
Springfield Road and Dayton Street	Signal	AM	0.61	9.6	A	
		PM	1.10	26.5	C	WB Left LoS F; Storage length 33m SB Through and Left LoS D; Storage length 68m SB Right LoS C; Storage length 55m NB Left LoS D; Storage length 42m
Dickson Avenue and Dunn Street	Stop Sign	AM	0.22	0.7	A	
		PM	0.08	0.8	A	
Dickson Avenue and Bedford Avenue	Stop Sign	AM	0.22	0.3	A	
		PM	0.09	0.3	A	

Table 5 - 2030 Background AM and PM Peak Hour Intersection Performance

Table 6 provides a summary of upgrades required to bring network operation into satisfactory operation, resulting from the projected growth in 2020 and 2030 background traffic.

Intersection	Year	Upgrade
Sutherland Avenue and Burtch Road	2030	No improvements required
Burtch Road and Dickson Avenue	2020	The background traffic analysis is based on the completion of the elimination of the westbound left turn from the Dickson Avenue and Burtch Road intersection. Works to be completed by ASC prior to 2020.
	2030	No improvements required
Burtch Road and Springfield Road	2030	Addition of westbound Right Turn Lane Addition of southbound Left Advance Phase Addition of northbound Through Lane (Conversion of northbound Right Turn Lane to combined Through and Right Lane). SB Left LoS E; Storage length 82m EB Left LoS D; Storage length 44m WB left LoS E; Storage length 140m
Dolphin Avenue and Dayton Street	2030	No improvements required
Dickson Avenue and Dayton Street	2030	No improvements required
Springfield Road and Dayton Street	2020	The background traffic analysis is based on the completion of the southbound right turn lane on Dayton Street at the Springfield Road intersection. Works to be completed by ASC prior to 2020.
	2030	Addition of westbound Left Advance Phase Addition of southbound Left Turn Lane SB Left LoS E; Storage length 67m
Dickson avenue and Dunn Street	2030	No improvements required
Dickson Avenue and Bedford Avenue	2030	No improvements required

Table 6 - Background Traffic Intersection Upgrades

Background plus Development Traffic Analysis

Table 7 presents the intersection analysis results of the 2020 AM and PM Peak Hour background plus Phase 1 of Landmark Area Traffic. The Synchro analysis reports for each intersection are included in the appendix.

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Comment
Sutherland Avenue and Burtch Road	Signal	AM	0.39	8.5	A	
		PM	0.63	12.6	B	NB Left LoS B; Storage length 35m NB Through LoS A; Storage length 52m
Burtch Road and Dickson Avenue	Stop Sign	AM	0.26	3.2	A	
		PM	0.56	4.8	A	WB Right LoS C; Storage length 26m
Burtch Road and Springfield Road	Signal	AM	0.71	11.6	B	
		PM	0.96	30.7	C	SB Left LoS E; Storage length 57m WB Left LoS C; Storage length 74m
Dolphin Avenue and Dayton Street	Stop Sign	AM	0.09	2.5	A	
		PM	0.17	3.6	A	
Dickson Avenue and Dayton Street	Stop Sign	AM	0.14	2.4	A	
		PM	0.18	3.0	A	
Springfield Road and Dayton Street	Signal	AM	0.49	8.2	A	
		PM	0.90	18.4	B	WB Left LoS D; Storage length 29m SB Through and Left LoS D; Storage length 71m SB Right LoS C; Storage length 45m
Dickson Avenue and Dunn Street	Stop Sign	AM	0.22	1.2	A	
		PM	0.09	1.5	A	
Dickson Avenue and Bedford Avenue	Stop Sign	AM	0.22	1.3	A	
		PM	0.13	0.9	A	

Table 7 - 2020 Background plus Phase 1 of Landmark Area AM and PM Peak Hour Intersection Performance

Table 8 presents the intersection analysis results of the 2030 AM and PM Peak Hour background plus Phase 1 and Phase 2 of the Landmark Area Traffic. The Synchro analysis reports for each intersection are included in the appendix.

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Comment
Sutherland Avenue and Burtch Road	Signal	AM	0.66	10.8	B	
		PM	0.90	21.1	C	NB Left LoS D; Storage length 104m NB Through LoS B; Storage length 100m
Burtch Road and Dickson Avenue	Stop Sign	AM	0.36	3.7	A	
		PM	0.79	8.1	A	WB Right LoS D; Storage length 59m
Burtch Road and Springfield Road	Signal	AM	0.86	15.9	B	EB Left LoS D; Storage length 29m
		PM	1.09	67.9	E	SB Left LoS F; Storage length 81m EB Left LoS E; Storage length 54m WB Through LoS F; Storage length 306m
Dickson Avenue and Dayton Street	Stop Sign	AM	0.14	2.4	A	
		PM	0.21	3.4	A	
Dolphin Avenue and Dayton Street	Stop Sign	AM	0.11	2.2	A	
		PM	0.19	3.4	A	
Springfield Road and Dayton Street	Signal	AM	0.94	21.0	C	
		PM	1.23	41.8	C	SB Through and Left LoS F; Storage length 122m SB Right LoS D; Storage length 97m NB Left LoS F; Storage length 60m
Dickson Avenue and Dunn Street	Stop Sign	AM	0.29	2.3	A	
		PM	0.29	3.1	A	
Dickson Avenue and Bedford Avenue	Stop Sign	AM	0.29	0.7	A	
		PM	0.17	1.1	A	

Table 8 - 2030 Background plus Phase 1 and Phase 2 Buildout AM and PM Peak Hour Intersection Performance

Table 9 provides a summary of upgrades resulting from the projected 2020 and 2030 background plus Phase 1 and Phase 2 Landmark Area Development traffic.

Intersection	Year	Upgrade
Sutherland Avenue and Burtch Road	2030	No improvements required
Burtch Road and Dickson Avenue	2020	The background traffic plus Phase 1 and Phase 2 analysis is based on the completion of the elimination of the westbound left turn from the Dickson Avenue and Burtch Road intersection. Works to be completed by ASC prior to 2020.
	2030	No improvements required
Burtch Road and Springfield Road	2030	Addition of westbound Right Turn Lane Addition of southbound Left Advance Phase Addition of northbound Through Lane (Conversion of northbound right turn lane to combined Through and right lane). SB Left LoS E; Storage length 82m EB Left LoS E; Storage length 54m WB left LoS E; Storage length 158m
Dolphin Avenue and Dayton Street	2030	No improvements required
Dickson Avenue and Dayton Street	2030	No improvements required
Springfield Road and Dayton Street	2020	The background traffic plus Phase 1 and Phase 2 analysis is based on the completion of the southbound right turn lane on Dayton Street at the Springfield Road intersection. Works to be completed by ASC prior to 2020.
	2030	Addition of westbound Left Advance Phase Addition of southbound Left Turn Lane SB Left LoS E; Storage length 76m
Dickson avenue and Dunn Street	2030	No improvements required
Dickson Avenue and Bedford Avenue	2030	No improvements required

Table 9 - Background plus Phase 1 and Phase 2 Development Traffic Intersection Upgrades

Table 10 presents the intersection analysis results of the 2030 AM and PM Peak Hour background plus Phase 1 and Phase 2 of the Landmark Area Traffic, plus the development by others in the Dickson Area Traffic. The Synchro analysis reports for each intersection are included in the appendix.

	Control	Period	Critical V/C	Delay (Sec)	Overall LOS	Comment
Sutherland Avenue and Burtch Road	Signal	AM	0.72	11.5	B	
		PM	0.90	21.0	B	NB Left LoS D; Storage length 103m NB Through LoS B; Storage length 98m
Burtch Road and Dickson Avenue	Stop Sign	AM	0.37	4.1	A	
		PM	0.77	7.0	A	WB Right LoS C; Storage length 49m
Burtch Road and Springfield Road	Signal	AM	0.87	16.3	B	EB Left LoS D; Storage length 30m
		PM	1.30	83.0	F	SB Left LoS F; Storage length 94m EB Left LoS F; Storage length 42m WB Through LoS F; Storage length 298m
Dickson Avenue and Dayton Street	Stop Sign	AM	0.14	3.4	A	
		PM	0.20	3.6	A	
Dolphin Avenue and Dayton Street	Stop Sign	AM	0.11	2.1	A	
		PM	0.19	3.3	A	
Springfield Road and Dayton Street	Signal	AM	0.94	21.1	C	
		PM	1.18	31.0	C	WB Left LoS F; Storage length 36m SB Through and Left LoS F; Storage length 83m SB Right LoS D; Storage length 79m NB Left LoS E; Storage length 48m
Dickson Avenue and Dunn Street	Stop Sign	AM	0.23	2.4	A	
		PM	0.26	3.2	A	
Dickson Avenue and Bedford Avenue	Stop Sign	AM	0.30	1.6	A	
		PM	0.17	1.5	A	

Table 10 - 2030 Background plus Phase 1 and Phase 2 Buildout and Development by Others AM and PM Peak Hour Intersection Performance

Table 11 provides a summary of upgrades resulting from the projected 2020 and 2030 background plus Phase 1 and Phase 2 Landmark Area Development traffic.

Intersection	Year	Upgrade
Sutherland Avenue and Burtch Road	2030	No improvements required
Burtch Road and Dickson Avenue	2020	The background traffic plus Phase 1 and Phase 2 and Dickson Area analysis is based on the completion of the elimination of the westbound left turn from the Dickson Avenue and Burtch Road intersection. Works to be completed by ASC prior to 2020.
	2030	No improvements required
Burtch Road and Springfield Road	2030	Addition of westbound Right Turn Lane Addition of southbound Left Advance Phase Addition of northbound Through Lane and Right Turn Lane SB Left LoS E; Storage length 74m EB Left LoS D; Storage length 54m WB left LoS E; Storage length 146m
Dolphin Avenue and Dayton Street	2030	No improvements required
Dickson Avenue and Dayton Street	2030	No improvements required
Springfield Road and Dayton Street	2020	The background traffic plus Phase 1 and Phase 2 and Dickson Area analysis is based on the completion of the southbound right turn lane on Dayton Street at the Springfield Road intersection. Works to be completed by ASC prior to 2020.
	2030	Addition of westbound Left Advance Phase Addition of southbound Left Turn Lane SB Left LoS E; Storage length 114m
Dickson avenue and Dunn Street	2030	No improvements required
Dickson Avenue and Bedford Avenue	2030	No improvements required

Table 11 - Background plus Phase 1, Phase 2, and Dickson Area by Others Development Traffic Intersection Upgrades

E) Alternative Transportation Modes

With the development of the Dickson Area a sidewalk will be added to the south side of Dickson Avenue from Burtch Road to the Landmark 6 Parkade. With the redevelopment of the Dickson area, sidewalks will also be added to one side of both Dunn Street and Bedford Avenue.

ASC has a bond in place for the extension of the sidewalk from Landmark 6 to Springfield Road on the west side of Dayton Avenue. The sidewalk on the west side of Dayton Avenue is planned for installation by ASC by the fall of 2016. The proposed sidewalk configuration is shown in Figure 11 below.

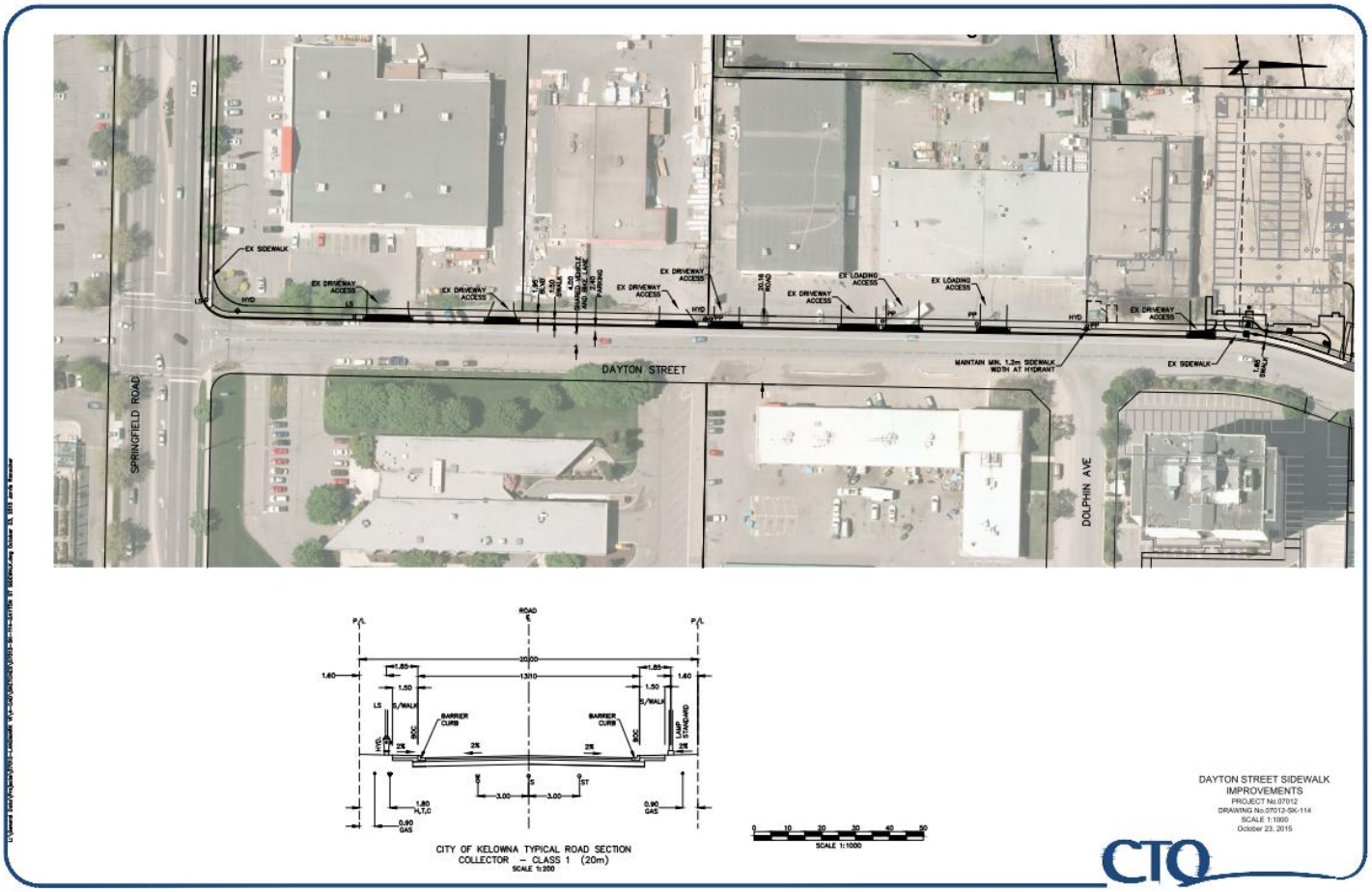


Figure 11 – Dayton Street Sidewalk

A crosswalk is proposed to be installed on Dickson Avenue adjacent to the Landmark 3, 4 and 5 entries. The crosswalk would include curb extensions that would shorten the distance of the roadway crossing, and provide enhanced visual clues for the approaching vehicles. The proposed crosswalk configuration is shown in Figure 12 below. The crosswalk is scheduled for completion by ASC in 2016.

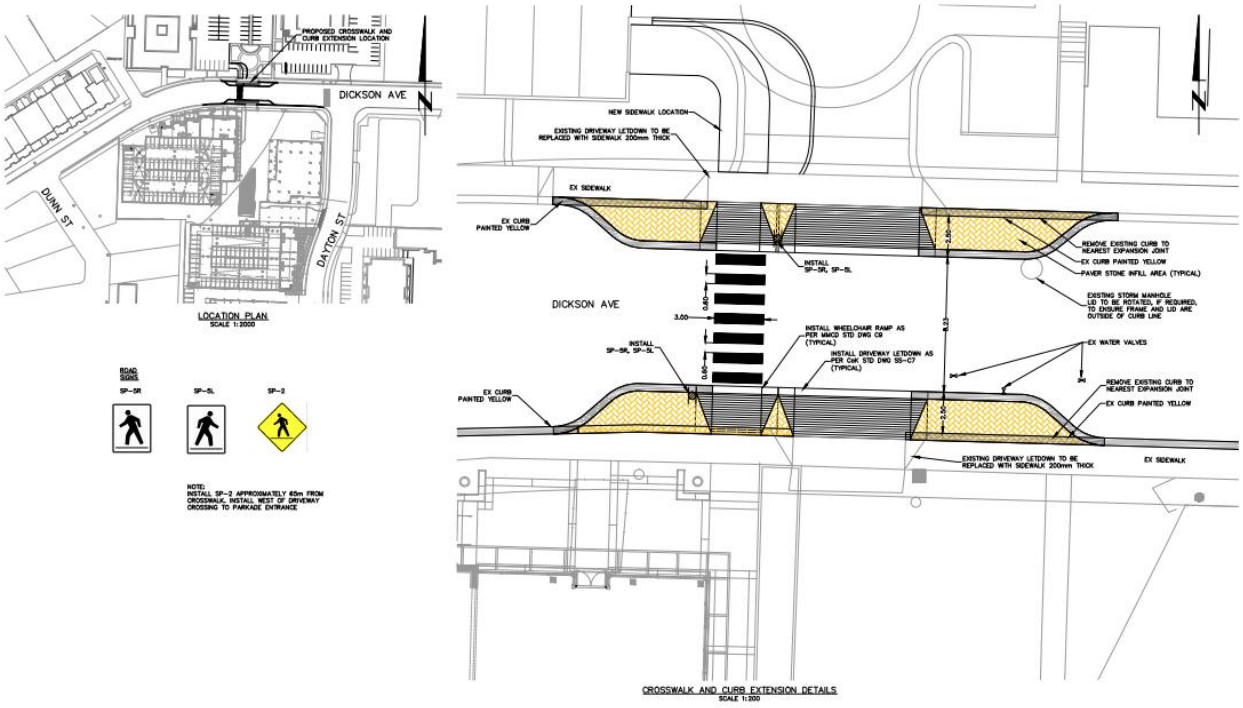


Figure 12 – Proposed Dickson Avenue Crosswalk

With the development of the Landmark 7 Office Tower; a cross walk is recommended mid-block on Dayton Street between Dickson Avenue and Dolphin Avenue, for pedestrian connectivity between Landmark 2 and the midpoint of the Landmark 6 and Landmark 7 office towers. ASC has provided the City of Kelowna Engineering Department with a request to complete the crosswalk construction in 2016.

Landmark Centre Walk Score

Kelowna is considered a car dependant city, where most errands require a car. The average Walk Score for Kelowna is 42. The Landmark area on the other hand is considered very walkable with a Walk Score of 72, as shown in Figure 12, from the WalkScore.com website. Information on the area from Walk Score is presented in Figure 13, and the walking distance covered in 20 minutes from the Landmark area is presented in Figure 14.

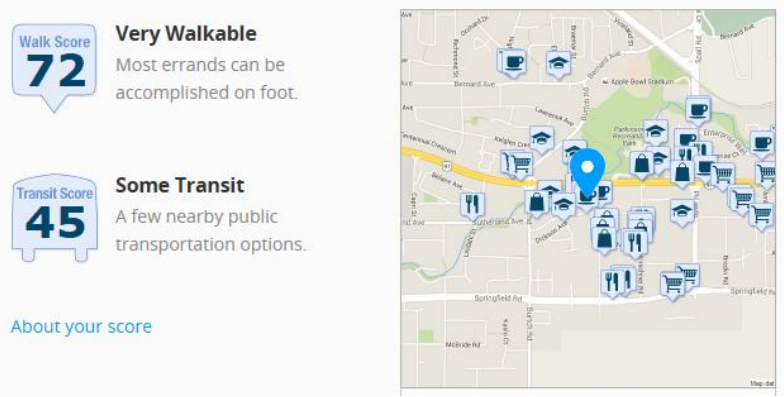


Figure 12 – Walk Score for Landmark Area

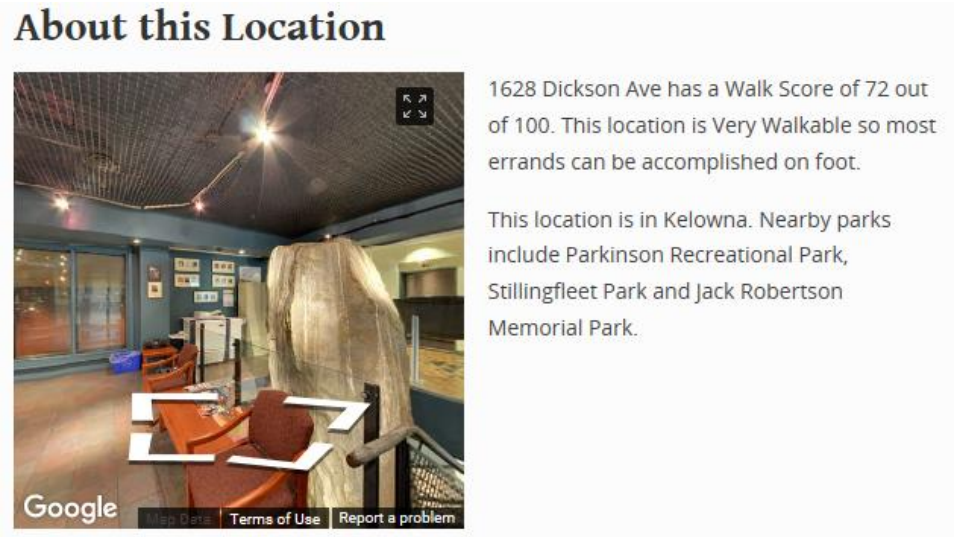


Figure 13 – Walk Score Information

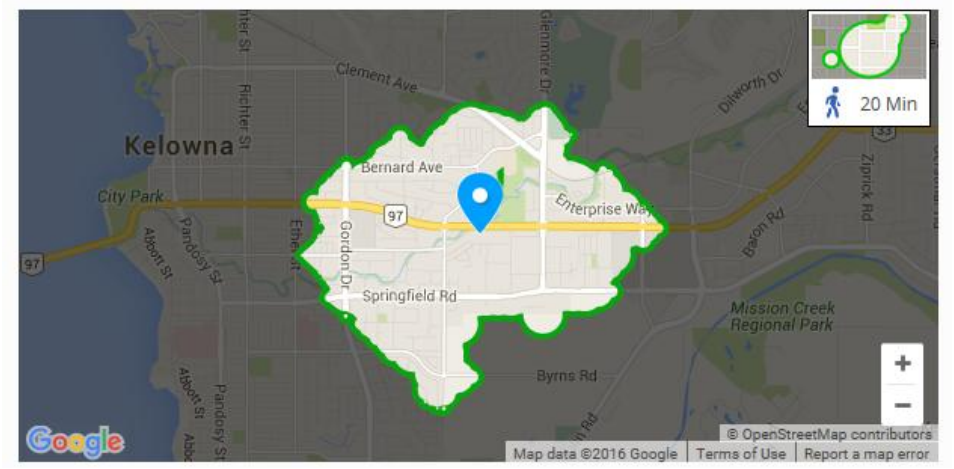


Figure 14 – Walking Distance in 20 Minutes

Transit Operations

The Landmark neighbourhood is well served by transit. Figure 15 identifies the adjacent bus stops for the local routes. Local transit service is provided on Springfield Road (Route 8: University to OK College) and Highway 97 (Route 9: Shopper Shuttle). The Highway 97 Transit Exchange (Route 97: Okanagan) adjacent to Landmark 3 provides rapid bus service between downtown and UBCO. There are currently no plans to bring transit service to the Landmark Centre via either Dayton Street or Dickson Avenue.

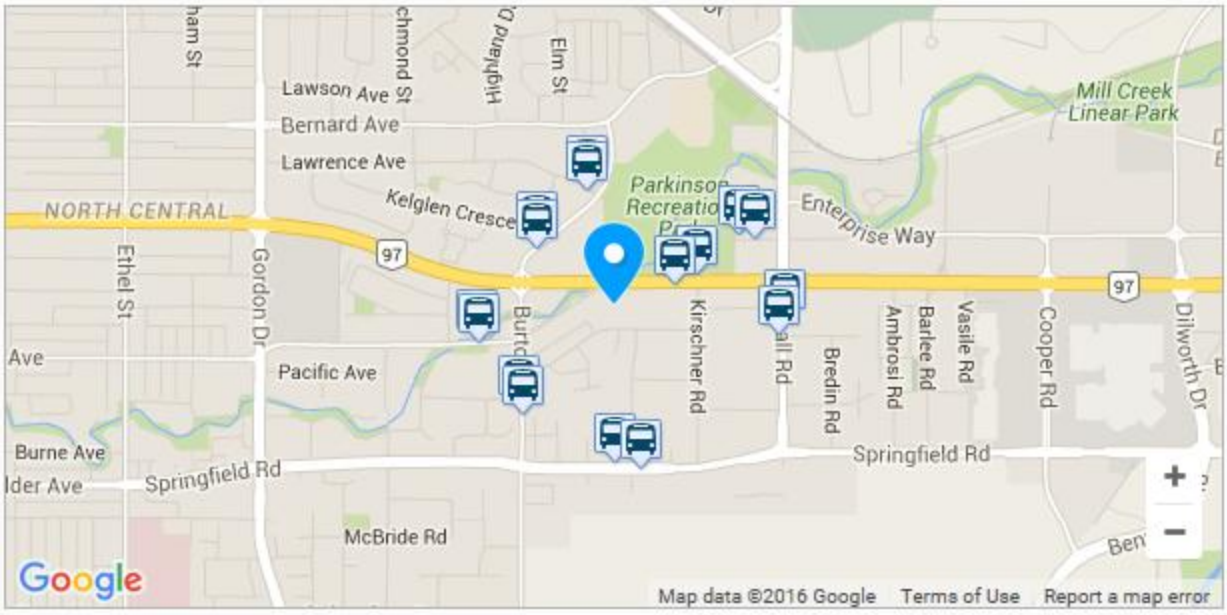


Figure 15 – Landmark Area Bus Stop Locations

Bicycle Network

Springfield Road and Burtch Road have bike lanes developed adjacent to the vehicle travel lanes on the roadway. Sutherland Avenue has a multi-use path developed that links the Highway 97 pedestrian overpass and the Parkinson Recreation Centre with the Burtch Road and Sutherland Avenue corridors.

The cross-section of the Collector roadways for both Dickson Avenue and Dayton Street are based on a share the road width for combined vehicle and bike riders, as per the City of Kelowna Standard Detail SS-R5 Collector-Class 1 (20m right of way), with an asphalt width of 13.1m.

Portions of Dickson Avenue and Dayton Street are currently rural with no curb and gutter or sidewalk. Upgrades resulting from adjacent development will bring the roadways to the Class 1, collector roadway standard.

The completed urban portions of Dickson Avenue adjacent to the Landmark Centre were completed as per the standard in place at the time of construction with an asphalt width of 12.1, with on street parking on both sides of the roadway.

F) CONCLUSION

There are no systems or operational constraints resulting from the anticipated 2020 growth in background traffic plus the Phase 1 development of the Landmark Area, based on the scheduled installation of the right turn lane on Dayton Street at the Springfield Road intersection in combination with the elimination of the left turn from Dickson Avenue at the Burtch Road intersection.

The anticipated growth in background traffic by 2030 will require improvements to the Springfield Road and Burtch Road intersection as follows:

- Addition of a westbound right turn lane;
- Addition of an advance southbound left turn phase; and,
- Addition of North Bound Through lane (Conversion of North Bound Right Lane to a combined trough and right turn).

The anticipated growth in background traffic by 2030 will require improvements to the Springfield Road and Dayton Street intersection as follows:

- Addition of a southbound left turn lane; and,
- Addition of an advance westbound left turn phase.

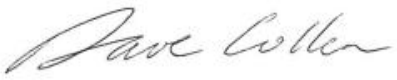
The addition of the anticipated development of the Landmark Area by ASC, combined with the Dickson Area Development by others; did not result in any additional system improvements over and above those resulting from the anticipated growth in the 2030 background traffic.

With the completion of the pedestrian facilities noted above, the Landmark Area will be able to accommodate the anticipated increase in traffic and pedestrian activity beyond the 2030 horizon.

We would be pleased to meet and discuss the findings of this report.

Yours truly,

CTQ CONSULTANTS LTD.



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