Memo

City of Kelowna

Date: June 7, 2011

File: 1350-70

To: City Manager

From: R. Cleveland, Director, Infrastructure Planning (w/M.Tripathi)

Subject: Reducing Road Speeding - Springfield Road (SR#161524)

Recommendation:

THAT Council, receives, for information, the Report from the Director of Infrastructure Planning dated June 7, 2011 with respect to reducing road speeding, especially on Springfield Road.

AND THAT Council directs staff to report back with an integrated response plan to increased speed control on Springfield Road.

Purpose:

On February 3, 2010, the following Service Request SR#161524 was received:

> 'Please have staff develop a report of options that we could do in regards to speeding in different areas of our city. The Springfield concerns could be our first priority.'

Background:

Safety and operational improvements are identified and prioritized for the City's entire road network by the Departments of Civic Operations and Infrastructure Planning and completed in order of highest need as funding can be identified. Professional safety audits are commissioned to recommend the most effective ways to improve roads and intersections. ICBC often partners with the City when the improvement results in higher public safety and reduced accident claims. They base their financial investments on a business case related to the potential for claim reduction.

The Transportation Association of Canada (TAC) reports that Kelowna has one of the highest accident incident rates in Canada (see Annex 1), but like all statistical reports, this data must be used with caution regarding methodological issues. ICBC provides data on the location of accidents, showing that the majority of them occur along Highway 97 (including the WR Bennett Bridge), Highway 33 and Springfield Road (see Annex 2a). Additional data regarding Springfield Road suggests that the rate of accidents on this road appearing to be increasing between the 2002-2006 period and the 2006-2010 period (see Annex 2b). This has triggered safety interventions by the City since 2008 which appear to be having some positive impact, recognizing that the true impact may take several years of data to confirm.

Regarding safety on Springfield Road, the City (with financial assistance from ICBC) is incrementally implementing the improvements suggested by CH2M Hill in a report entitled "Springfield Road between Durnin Road and Rutland Road South, Kelowna, BC, Safety and Operational Analysis" dated November 2007. The report highlighted that the collision rate was not excessive, although it could be improved.

> *"Collision severity for the corridor as a whole is below the critical collision severity for similar roads. Two intersections, Springfield Road at Durnin Road and Graham Road, exhibited a high proportion of fatal collisions; however these proportions are skewed by the low collision frequency at these intersections. While collision severity does not seem to be a concern along the corridor, the fatal collisions do highlight the safety risks of some of the*

movements along the corridor. Speeds along the corridor were found to be considerably above the posted speed limit and are likely to be a factor contributing to collisions.

For the most part, rear-end collisions were the most common crash type along the corridor. This could be related to the high operating speeds along the corridor and queuing at some of the busiest intersections. The data indicated that some collisions were related to vehicles running red lights. While the extent of running red lights is unknown, it is recommended that the City investigates this matter further. The number of rear-end collisions on right-turn lanes is of concern and suggests that limited sight distance may be a contributing factor. The corridor has limited setbacks and does not allow for adequate visibility at some intersections."

The full program of work suggested by CH2M Hill is shown in Annex 3 and considered revision to signal timings, reduction to the right-turn radii, red light cameras, signalizing the right-turn movements, pavement markings, and the addition of raised medians. The work completed or in progress is shown in the following chart. The 2011 initiative is additional to the CH2M Hill study.

Construction Year	Location	Status	ICBC Contributions	Description
2008	Leckie Rd Intersection	Constructed	$101,400	Extension of EB left turn; Change of EB left turn to protected phase only; Installation of raised median; Installation of right turn signal for SB right turn
2008	Graham Rd Intersection	Constructed	$28,500	Installation of raised median with NB/SB right in right out only
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2009	Gerstmar Rd Intersection	Constructed	$2,900	Moving stop bar forward & adding a painted median
2011	Integrated 3E response	Planning underway	In kind staff time	Coordinated plan to reduce speeding through engineering, enforcement and education initiatives (3E)with City, ICBC and RCMP
2012 (planned)	Ziprick Rd Intersection	Design underway	$19,800 (committed 2011.06.06)	Modification of SB right turn lane
2013 (planned)	Durnin Rd Intersection	Planning	$62,700 (committed 2011.06.06)	Installation of raised medians with NB/SB right in right out only & EB/WB left turns in

The 2011 Integrated 3E response coordinates engineering (new technologies), education and enforcement and other interventions noted in Annex 4 to reduce speeding. This could include any of the following:

- speed sensitive traffic signals to trigger a red light to stop speeding vehicles
- 'green wave' reader boards to indicate if traffic is moving at the right speed to sequence perfectly with the green lights
- Speed boxes painted on the road to increase awareness of the speed limit
- "3-strikes and you're out" enforcement procedures
- Better use of the City web-site to increase real-time awareness of changes in accident rates and driver behavior

This 3E plan is currently being developed by the City, ICBC and the RCMP with an anticipated completion this summer.

Internal Circulation:

Manager, Transportation Services
Traffic Supervisor
Traffic Technician

Financial/Budgetary Considerations:

Annual capital budget submissions are made to Council for road and intersection improvements under "safety and operations".

External Agency/Public Comments:

The RCMP and ICBC have reviewed and support the recommendations of this report.

Considerations not applicable to this report:

Legal/Statutory Authority:
Legal/Statutory Procedural Requirements:
Existing Policy:
Personnel Implications:
Community & Media Relations Comments:
Alternate Recommendation:

Submitted by:

R. Cleveland, Director, Infrastructure Planning

Approved for inclusion: J. Paterson, General Manager, Community Sustainability

Attachments:

- Annex 1: Injuries and Fatalities per Vehicle-km (TAC 1996-2008)
- Annex 2a: ICBC Crash Data for Kelowna, 1996-2008
- Annex 2b: ICBC Reported Collisions at Springfield Rd Intersections (Rutland Rd S & Durnin Rd) 2002-2010
- Annex 3: Recommendations of the CH2M Hill report on safety improvements to Springfield Road between Durin Rd & Rutland Rd S

cc: Director, Civic Operations
Director, Community and Media Relations
ICBC
RCMP

ANNEX 1: Injuries and Fatalities per Vehicle-km (TAC 1996-2008)

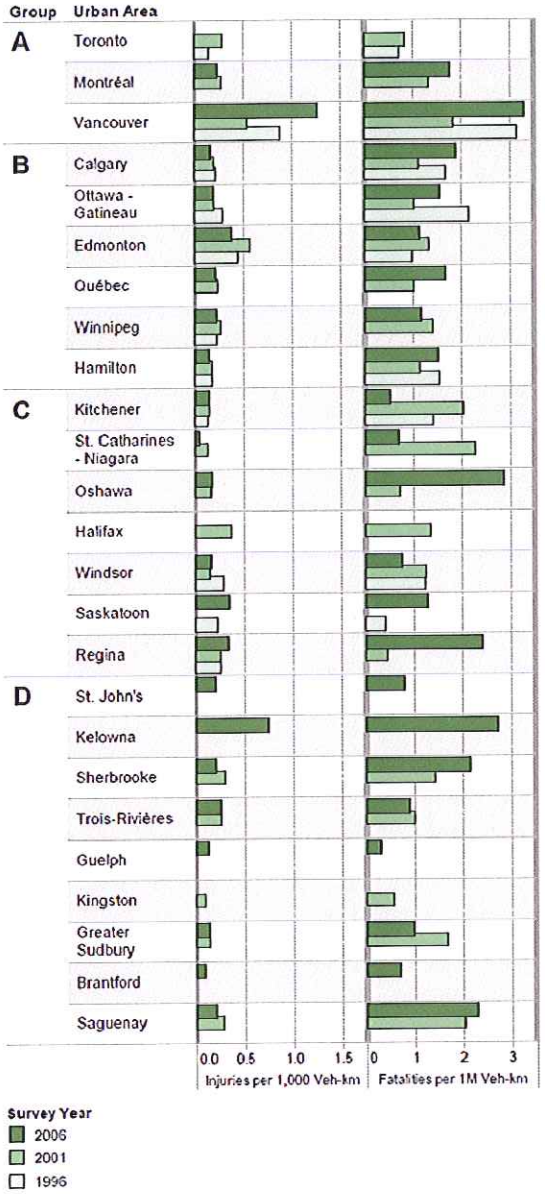
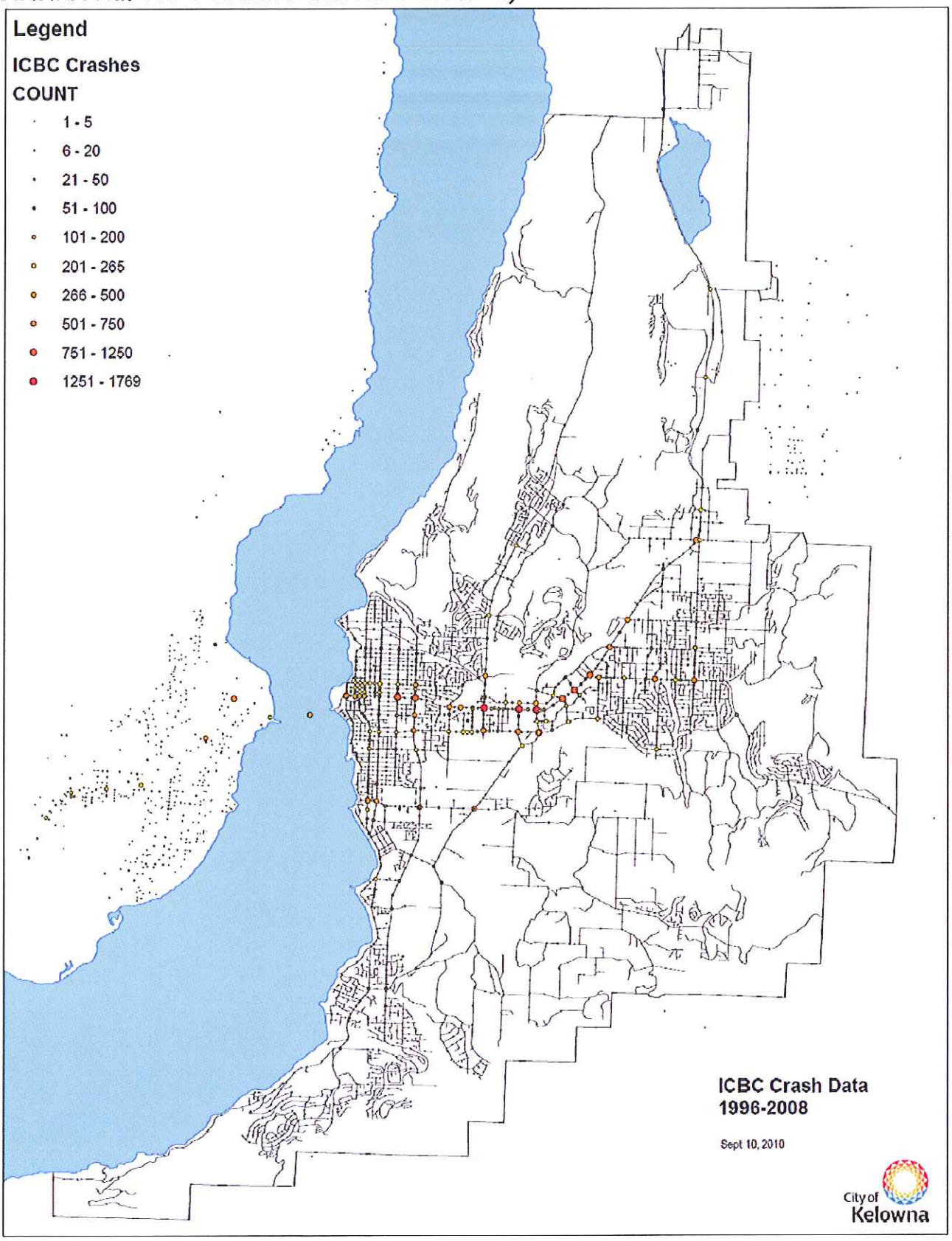


Exhibit 5.10: EUA Injuries and Fatalities per Veh-km, 1996-2006 [23]

[23] Data are missing or incomplete for the omitted EUAs. Barrie, Brantford, Guelph, Kelowna, Moncton and Peterborough were not CMAs in 1996 and 2001.

ANNEX 2a: ICBC Crash Data for Kelowna, 1996-2008



ANNEX 2b: ICBC Reported Collisions at Springfield Rd Intersections (Rutland Rd S & Durnin Rd) 2002-2010

Intersections at Springfield Rd	Number of Collisions		Average Collisions/Year		AADT Entering Intersections		Total Collisions/Million Vehicles Entering Intersections	
	2002-2006	2006-2010	2002-2006	2006-2010	2002-2006	2006-2010	2002-2006	2006-2010
Leckie Rd	84	91	16.8	18.2	36,692	36,533	1.25	1.36
Ziprick Rd	58	78	11.6	15.6	29,391	35,213	1.08	1.21
Rutland Rd S	24	17	4.8	3.4	16,249	17,832	0.81	0.52
Gerstmar Rd	26	42	5.2	8.4	25,926	25,724	0.55	0.89
Durnin Rd	31	40	6.2	8	37,914	37,018	0.45	0.59
Graham Rd	13	8	2.6	1.6	27,184	27,531	0.26	0.16
Hollywood Rd S (West)	7	43	1.4	8.6	21,638	23,535	0.18	1.00
Quigley Rd	4	8	0.8	1.6	(Not in total) 19,695	Not Available	(Not in total) 0.11	Not Available
Total	247	327	49.4	65.4	194,994	203,386	0.68	0.86
% change		32.4		32.4		4.3		26.5

Notes: Red indicates an increasing rate of collisions
Green indicates decreasing rate of collisions
'ADADT' is "Annual Average Daily Traffic" These values are representative: values for first period from 2006 for second period from 2008

ANNEX 3: Recommendations of the CH2M Hill report on safety improvements to Springfield Road between Durin Rd & Rutland Rd S

EXHIBIT ES-1
Economic Evaluation Summary

Location	Mitigation Measure	Collision Reduction Factor (source)	Implementation	Collision per year	Average Collision Cost	Annual Collisions Reduced	Annual Claims Savings	Potential ICBC Investment	Estimated Construction Costs
Springfield Road/ Leckie Road	Extend EBL turn protected	10% EB left turns (TAC)	short	2.40	$20,300	0.24	$4,900	$5,400**	1,000 – 3,000
	Change EBL turn to protected phase only	20% EB left turns (TAC)	short	2.40	$20,300	0.48	$9,800	$10,800**	1,000 – 3,000
	Red-light camera	20% red-light running collision (Elvik)	medium	2.60	$17,200	0.52	$9,000	$10,000	100,000 – 130,000
	Raised median	20% collision along Springfield Road (TAC)	long	16.80	$13,500	3.36	$45,100	$78,300**	130,000 – 160,000
	Modify SBR turn lane (reduce radius)	10% SB right turns (Eng Judge)	long	2.00	$9,900	0.20	$2,000	$3,500	20,000 – 40,000
	Install right-turn signal for the SBR turn lane	20% SB right turns (TAC)	medium	2.00	$9,900	0.40	$4,000	$6,900**	8,000 – 12,000
Springfield Road/ Ziprick Road	Modify SBR turn lane (reduce radius)	10% SB right turns (Eng Judge)	long	5.20	$ 11,000	0.52	$5,700	$9,900	20,000 – 40,000
	Install right-turn signal for the SBR turn lane	20% SB right turns (TAC)	medium	5.20	$11,000	1.04	$11,400	$19,800**	8,000 – 12,000
Springfield Road/ Rutland Road South	Modify SBR turn lane, increase skew angle and add median	30% SB right turns (TAC)	medium	1.00	$12,200	0.30	$3,700	$6,400	30,000 – 50,000
Springfield Road/ Gerstmar Road	Red-light camera	20% red-light running (Elvik)	medium	1.00	$21,400	0.20	$4,300	$7,500	100,000 – 130,000
	Move stop bar forward, and add painted island	10% reduce red-light running (Eng judge)	medium	0.80	$20,300	0.08	$1,700	$2,900	20,000 – 40,000
Springfield Road/ Durnin Road	Raised median - RIRO	30% left and through collision (TAC, Elvik)	long	0.40	$133,500	0.12	$16,100	$27,900**	80,000 – 100,000
	Raised median (with left turns in)	25% collision on Springfield Road (TAC)	long	6.20	$23,300	1.55	$36,100	$62,700**	250,000 – 300,000
Springfield Road/ Graham Road	Raised median - RIRO	30% collisions along Springfield Road (TAC)	long	0.80	$68,300	0.24	$16,400	$28,500**	80,000 – 100,000

** Potential ICBC's contribution will be limited to 75% of the construction cost, up to the amount shown in the Potential ICBC Investment column

ANNEX 4: FURTHER POSSIBLE INTERVENTIONS ALONG SPRINGFIELD (in rank order based on staff review using the following criteria: capital cost, effectiveness, feasibility in terms of engineering & public support.

Measures	Pros	Cons	Capital Costs (5-year Period), $
Additional & regular RCMP enforcement	Doesn't penalize good drivers; Generates revenue; No need for costly road modifications	Additional & dedicated enforcement personnel required to avoid under-enforcement on other roads	$ 250,000
Improved road cross section: multi-use pathway and alternate parking/Boulevard cross section	Multi-use pathway would accommodate all active transportation users; Provides boulevards; Provides on-street parking	On-street bikeway would be removed; Could be costly due to relocation of utilities and existing boulevards	$ 4,000,000
Land use change - rezoning as higher density and/or mixed use	Compact & mixed developments will encourage walking, taking transit or biking; Most of the accesses to Springfield can be closed off; frontage improvements can protect property	Increased traffic volume on Springfield Rd & other nearby roads; No control over the timing of developments means the speeding issue will remain unresolved for a while; difficulty rezoning all properties for multi-family	
Road dieting - converting existing four lane section into three lane one (similar to Enterprise Way)	A proven tool in other places; Central turning lane helps turning onto properties; surplus RoW can be used for other uses	Impacts on other road corridors such as Hwy 97; Reduced capacity; utility relocations might be required; questionable impact for access to properties.	$ 4,000,000
Speed cameras/photo radars	Targets only speed violators: Location can be changed to improve the effectiveness; Revenue generator	Introduced (1996) but scrapped later (2001) in BC	-
Coordinating signals at 40-50 Km/hr	Simple and doesn't cost much	People having speeding habit will run red lights; May need additional signals to be effective due to spacing of signals	$ 300,000
Roundabout at selected intersections	Creates self-enforcing intersections; Left-turn movements become safer & easier; Provides visually appealing landscaping opportunities	Two lane roundabouts are not usual for Kelowna; Additional RoW is required at intersections; Not very good for pedestrians & cyclists; Construction costs are high; Not very effective when traffic AADT exceeds 40,000	$ 2,500,000

Un-coordinating traffic signals	Easy, simple and least cost option	Increased driver frustration & disobedience; Decreases capacity; Produces more noise and CO2; Increases travel time; Unnecessarily penalizes good drivers; may not be effective on racing drivers	$ 250,000
Speed sensitive traffic signals - The signals use pavement loops to detect the speed of a motor vehicle. If the motor vehicle exceeds the speed limit, the traffic signal ahead displays a red light. Drivers learn that speeding on such streets will require them to stop at the light and be further delayed.	Innovative & creative technology; Appears to be simple, less costly & quick to implement	Unknown technology for Kelowna; More research has to be done regarding their effectiveness and feasibility; Good drivers are also penalized	$ 300,000
Red light cameras at selected intersections	Doesn't penalize good drivers; Generates revenue	The City can't do on its own as red light camera falls under provincial jurisdiction; not a very effective measure	$ 300,000
Signs/speed readers/public education	Doesn't involve any hard enforcement tactics	Voluntary approach may not be effective	$ 100,000
Traffic humps/bumps etc	Easy, simple and cheap	The measure is against City's policy not to traffic calm arterial roads; Produces more noise, vibrations & CO2 gases; Penalizes all drivers; Not good for emergency vehicles	$ 50,000
Provide barriers to protect properties	Provides protection to adjacent properties; Removable; Simple to install	Doesn't solve the speeding problem itself; Costly	$ 75,000
Do nothing until conducting more investigation into recent collisions	Prevents us from treating symptoms without understanding the crux of the problem	Will take more time & money for the study	$ 50,000
Improvements & expansion of City road network such as extension of Hollywood Rd S & Clement Ave	If City's road network is improved (expanded), it may provide some flexibility what we can do along Springfield Rd such as reducing capacity	Impacts of these network improvements are uncertain (could produce negative results); Accelerated implementation of these might delay other road projects	$ 50,000,000
Increase posted speed to 60 Km/hr	Decreases 85% speed differential; Increases posted speed compliance; Doesn't cost much	Increases severity of collisions; Further study should be done to confirm whether 60 Km/hr is a safe posted speed for this road	$ 1,500

SPRINGFIELD SAFETY

Council Report - 2011.06.13

City of Kelowna

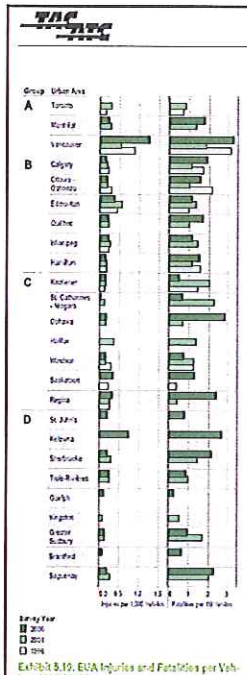


Exhibit 5.10: EUA Injuries and Fatalities per Veh-km, 1998-2006

City of Kelowna

KELOWNA ACCIDENT RATES TAC DATA

- 3rd highest in Canada
- Highest in size category

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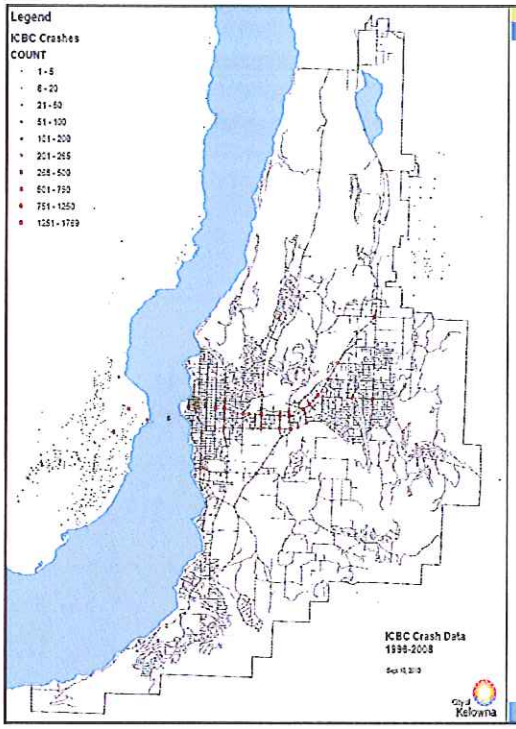

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KELOWNA CRASH DATA (1996-2008): ICBC

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INCIDENTS ON SPRINGFIELD

Nov 15, 2010, at Quigley

Dec 7, 2005, near Hollywood S

March 22, 2011 at Ziprick

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ACTION PLAN FROM CH2M HILL STUDY

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ICBC REPORTED COLLISIONS AT SPRINGFIELD RD INTERSECTIONS (RUTLAND RD S & DURNIN RD) 2002-

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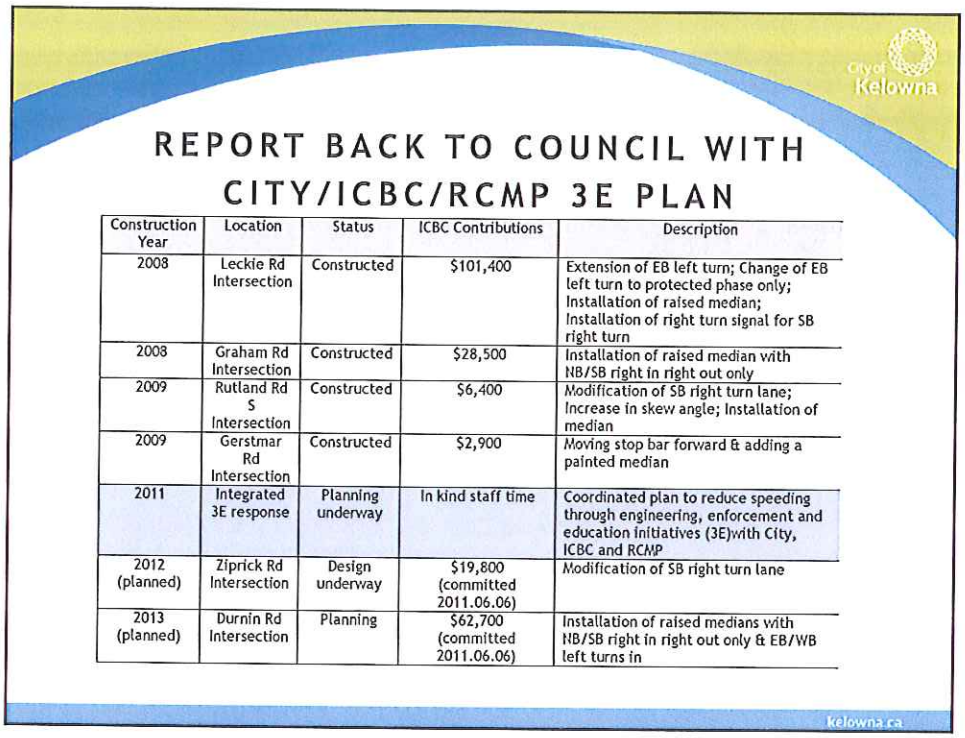

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REPORT BACK TO COUNCIL WITH CITY/ICBC/RCMP 3E PLAN

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