

EXECUTIVE SUMMARY

Background

The Highway 22 at Bragg Creek study area primarily focuses on the two Highway 22 intersections while considering operations at an intersection of two local roads and at two commercial entrances.

The highway intersections include the four-way Stop controlled intersection of Highway 22/ Highway 758 (White Avenue)/ Burnside Drive which is one of two accesses to the Hamlet of Bragg Creek and the only Bragg Creek access from areas south of the intersection. The other highway intersection is the junction of Highway 22/ Balsam Avenue which allows partial access to the Bragg Creek hamlet and to the west and north sections of the Greater Bragg Creek Area. Operationally, both intersections function acceptably well during the off-peak hours but poorly during the peak traffic hours, particularly during peak weekend periods. The intersection operations during peak summer weekend hours is approaching the point where even small increases in traffic can have a significant negative impact on levels of service. The condition is expected to deteriorate to the point that the peak hour intersection levels of service will drop to F within a five-year (2017) time frame. The unusual and considerably substandard geometry of both intersections probably contribute more to the unsatisfactory intersection operations than do the traffic volumes. Many of the traditional techniques to improving intersection geometry such as approach realignment are not viable due to the extreme right-of-way constraints. Strategies that have a significant negative impact on operational efficiency for Highway 22 are also unacceptable as the highway is a major haul route for goods and equipment. Adding to the design challenges at these intersections is the need to ensure that intersection functionality improvements do not impart a significant negative impact on the community or local businesses and do not sacrifice community cohesiveness.

Traditional ways of improving intersections are being scrutinized, and more and more local jurisdictions and provinces are looking to alternative or unconventional methods that maximize the capacity of the intersection using existing pavement, right-of-way, and facilities. This new and growing “toolbox” of alternative intersection designs contains a variety of ideas and concepts that have been applied successfully under various circumstances and settings. These alternative designs are often site-specific – what works in one location may not work in another. They are context-sensitive solutions that weigh the impacts to the area’s community, environment, and aesthetics against the need to improve traffic efficiency, enhance safety, and accommodate the travel needs all roadway users.

This report examines a variety of site-specific alternatives that were conceived to provide relief for the growing congestion at the Highway 22/ Highway 758/ Burnside Drive intersection and at

the Highway 22/ Balsam Avenue intersection. The effectiveness and impact of each alternative was evaluated and a strategy for improving intersection operations was recommended.

Study Process

The focus of this report was to identify possible ways to improve traffic operations at the Highway 22/ Highway 758/ Burnside Drive intersection and the Highway 22/ Balsam Avenue intersection, however, the local road intersection at Balsam Avenue and Burnside Drive and the south and east Trading Post Mall commercial driveways were also included in the general study area.

Traffic data for the network was assembled using data from the Alberta Transportation database for the Highway 22/ Highway 758/ Burnside Drive junction and supplementing with peak and off-peak traffic count data that was collected from the other study area intersections. The future 10-year horizon (2022) turning movement volumes were projected based on the standard provincial highway growth rate of 2.5% per annum (non-compounded). The traffic operations associated with these volumes were used as a baseline of comparison for each of the examined improvement alternatives.

As listed below, six alternative improvement schemes were initially developed and preliminarily analyzed using the Existing intersection configuration as the basis for comparison. After presenting the initial alternatives to Alberta Transportation, Rocky View County and the Bragg Creek community a seventh improvement scheme (Alternative X) was developed to address valid concerns arising from the stakeholder consultation process.

- Existing** No Change alternative was examined as a basis of comparison for all other improvement Alternatives.
- Alternative A** Oblong Roundabout at Hwy 22/ Hwy 758/ Burnside Dr and No Change at Hwy 22/ Balsam Av
- Alternative B** 3-leg Roundabouts at Hwy 22/ Hwy 758/ Burnside Dr and at Hwy 22/ Balsam Av
- Alternative C** 3-leg Roundabout at Hwy 22/ Hwy 758/ Burnside Dr and Channelized 'T' intersection at Hwy 22/ Balsam Av
- Alternative D** Channelized 'T' intersection at Hwy 22/ Hwy 758/ Burnside Dr and 3-leg roundabout at Hwy 22/ Balsam Av

Alternative E Channelized 'T' intersections at Hwy 22/ Hwy 758/ Burnside Dr and at Hwy 22/ Balsam Av

Alternative F Minor pavement marking and signage improvements at Hwy 22/ Hwy 758/ Burnside Dr and at Hwy 22/ Balsam Av

Alternative X Oblong roundabout at Hwy 22/ Hwy 758/ Burnside Dr and 3-leg roundabout at Hwy 22/ Balsam Av

The following chart is a summary of the outcomes of each improvement alternative as they were ranked according to operational performance and other evaluation criteria.

Summary of Alternatives' Performance and Ranking

Alternative		Combined Ranking Scores						Overall Ranking Score <small>(1=most desirable)</small>
		Safety & Crash Potential	Traffic Operations	Access & Mobility	Community Cohesion	Aesthetics / Gateway Features	Construction Cost Estimate	
No.	Description	Ranking	Ranking	Ranking	Ranking	Ranking	Ranking	
	<i>weight -></i>	25%	25%	20%	10%	10%	10%	
Existing	No Change	7	4	3	1	7	1	6
A	Oblong RA	2	2	2	1	2	6	2
B	RA & RA	1	3	4	2	3	5	3
C	RA & 'T' Int.	4	3	5	2	5	4	4
D	T' Int. & RA	3	4	7	3	4	7	8
E	T' Int. & 'T' Int.	5	1	6	3	8	3	5
F	Minor Rev.	6	5	4	1	6	2	7
X	Oblong RA & RA	2	2	1	1	1	8	1

Each evaluation criteria was weighted as shown in accordance with the level of importance.

Recommended Alternative – Alternative X:

When deciding which alternative is the best solution for this particular intersection, it is important to take into consideration the operational benefits and costs, however, the community impacts and potential impacts on the surrounding environment must also be considered. When looking at all factors in this situation, it is determined that Alternative X which consists of an Oblong Roundabout at Hwy 22/ Hwy 758/ Burnside Dr and 3-leg Roundabout at Highway 22/ Balsam Av is the best fit for this location. This alternative provides acceptable operations at all study area intersections both in the immediate and long-term time frame, while still maintaining the character of the Bragg Creek community. The design of this alternative can incorporate landscaping elements that enhance the community and reinforce the Cowboy Trail identity of Highway 22. This option is more expensive than the other alternatives due to the increased cost of designing and constructing the non-traditional roundabout but the costs were considered acceptable due to the superior operational benefits, access retention, and positive community impact associated with this alternative.

It is therefore concluded that Alternative X provides an innovative, effective solution to the existing capacity deficiencies and safety concerns at the Highway 22/ Highway 758/ Burnside Drive and Highway 22/ Balsam Avenue intersections, and has the ability to accommodate the projected future travel demands of this area. It is further recommended that if funding for the intersection improvements is not expected to be available within a reasonable timeframe that implementation of Alternative F with a selection of recommendations described in the 2004 Safety Assessment Report be considered to address safety concerns.