

**TRAFFIC SAFETY COMMITTEE**

*HIS WORSHIP, THE MAYOR  
AND COUNCILLORS*

**SUBJECT: INTERSECTION OF CARIBOO ROAD AND CARIBOO DRIVE**

**RECOMMENDATIONS:**

1. THAT a marked crosswalk on Cariboo Road at Cariboo Drive, as discussed in this report be implemented.
2. THAT copies of this report be sent to Ms. Kay McDonald (suite 51) and Mr. Arturo Breton (suite 13), 7251 Cariboo Drive, Burnaby, BC, V3H 4Y3.

**REPORT**

The Traffic Safety Committee, at its meeting held on 2007 September 04, received and adopted the *attached* report providing further information on the options for pedestrian crossing protection at the intersection of Cariboo Road and Cariboo Drive.

Respectfully submitted,

Councillor N. Volkow  
Chair

Councillor S. Dhaliwal  
Vice Chair

Councillor G. Evans  
Member

Copied to: City Manager Director Engineering
---

---

**TO:** CHAIR AND MEMBERS  
TRAFFIC SAFETY COMMITTEE

**DATE:** 2007 August 28

**FROM:** ASSISTANT DIRECTOR ENGINEERING,  
TRAFFIC AND ENGINEERING SYSTEMS

**SUBJECT:** INTERSECTION OF CARIBOO ROAD AND CARIBOO DRIVE

**PURPOSE:** To provide the Committee with further information on the options for pedestrian crossing protection at this intersection

---

**RECOMMENDATION:**

1. That a marked crosswalk of Cariboo Road at Cariboo Drive, as discussed in this report be implemented.
2. THAT copies of this report be sent to Ms. Kay McDonald [suite 51] and Mr. Arturo Breton [suite 13], 7251 Cariboo Drive, Burnaby BC, V3H 4Y3

**REPORT****1.0 Introduction**

At the, 2007 March 6 Traffic Safety Committee meeting, the Committee received a report detailing the findings of a traffic study completed at Cariboo Road and Cariboo Drive. The study concluded that warrants were not met for a higher level of pedestrian control or a traffic signal.

As a result of the Cariboo Heights Housing Co-op residents' traffic safety concerns, the report was tabled to give them the opportunity to attend the May 01 meeting as a delegation. At that meeting the residents noted that many homes are occupied by families with young children and seniors. As well there are 6 units designed for people with disabilities. The delegation requested the installation of a pedestrian controlled traffic light at the subject intersection. After some discussion by the Committee there was a consensus that something more needed to be done so the matter was referred back to staff for further review of the options.

In addition, ICBC was asked by the delegation to provide collision stats at this intersection.

To: Traffic Safety Committee  
From: Assistant Director Engineering, Traffic and  
Engineering Systems  
Re: Intersection of Cariboo Road and Cariboo Drive  
2007 August 28..... Page 2

## 2.0 Background

This portion of Cariboo Road is classified as a Major Collector Secondary in the Burnaby Transportation Plan. It is a North/South route connecting SE Burnaby to NE Burnaby via Gagliardi Way, as well as providing access to Highway 1. A bike lane was recently installed on Cariboo Road with the south bound section leaving Cariboo Road at Cariboo Drive to continue on that street. The Cariboo Road is built to a final standard and has separated sidewalks and city lighting on both sides. With the marked curb-side bike lanes Cariboo traffic is now confined to one travel lane in each direction, separated by a median which allows for left turn lanes.

Cariboo Drive is a local residential street which serves 56 multi family units and provides access to Buena Vista Drive and 12 single family homes. The street is built to a final standard adjacent the Co-op. There is a separated sidewalk on the west side leading to the north leg of Cariboo Rd. In the longer term the Cariboo Heights Community Plan shows the single family properties being consolidated into a larger multi family site that will accommodate about 50 units. The final standard of Cariboo Drive would be extended southward at that time. The traffic control requirements at the Cariboo Road/Drive intersection would be further reviewed, as practice, in the development phase.

The ICBC data supplied to the Committee, lists a total of 23 collisions between January 01, 2002 and December 31, 2006 – an average of about 4 per year. However, the information provided does not indicate types of collisions. Right angle collision numbers may be improved by installation of a signal but rear-end and side-swipe collisions would typically increase.

## 2.0 OPTIONS

In conjunction with this intersection review, staff looked at the hierarchy of pedestrian crossing options which are discussed below in ascending order of protection.

### 2.1 Unmarked Crossing Improvements

At the 2007 March committee meeting staff was asked to consider possible improvements to pedestrian control at this intersection. It was noted that crossing Cariboo road can be accomplished in 2 stages given the median. However some pedestrians may feel vulnerable standing at the nose of the median. The median can't be physically extended as its design is based on the left turn requirements of a "standard" 30 ft. 2 axle truck (such as delivery van or fire truck) An enhancement would be to create a refuge by a road marked "bull-nose" at the median as shown in Fig 1. The bull-nose shown would accommodate turning cars and light truck traffic. Drivers could be deterred from encroaching onto it by reinforcing the definition the outside edge with raised "buttons". Larger trucks would need to cross the markings to turn.

The pedestrians' crossing distance to the median can be reduced to about 5m [16 ft] if they ventured off the curb into the bike lane when there is an appropriate gap in bike traffic. Again

To: Traffic Safety Committee  
From: Assistant Director Engineering, Traffic and  
Engineering Systems  
Re: Intersection of Cariboo Road and Cariboo Drive  
2007 August 28..... Page 3

some pedestrians might be apprehensive about doing so. This could in some measure be offset by the addition of a flexible “safe hit” post on the bikeway edge upstream of the crossing motorist. This would improve motorists’ perception of pedestrians waiting to cross.

At present here is no wheel chair ramp on the north east side crossing point of Cariboo Rd. This will be installed as soon as possible subject to the design of crossing improvements discussed in this report.

The cost for this option is estimated to be \$3,000 including the requisite ramp

## **2.2 Marked Crosswalk and Median Refuge.**

In the hierarchy of pedestrian crossing control the marked crosswalk is the next level above an unmarked crossing. However, in the BC Motor Vehicle Act, a marked crosswalk or an unmarked crossing at an intersection are equivalent in terms of the “Rights of way between vehicle and pedestrian”. Crosswalk markings are intended to alert the motorist that a pedestrian may be crossing at that location. For pedestrians the markings indicate that a particular crossing location is to be preferred.

Apart from the Zebra road markings the crosswalk, as shown on Fig. 2, would include warning signs in accordance with application standards and a pedestrian refuge on the centre island creating in effect two separate crosswalks. Wheel chair let-downs with a connector to the separated sidewalks on each side of Cariboo Road would be required.

The cost for this option is estimated to be \$10,000.

## **2.3 Special Crosswalk**

The special crosswalk would include the components of the marked crosswalk option discussed above (2.2) with the addition of an overhead illuminated crosswalk sign with down lighting above the marked crosswalk. Flashing amber lights on the sign are activated by the pedestrian at the roadside. A typical “Special Crosswalk” installation is shown in Fig. 3. There is an existing installation on Dover midway between Nelson and Royal Oak serving Marlborough school. The flashing amber lights are intended to draw the motorists’ attention to the presence of a pedestrian but is not an additional mandatory control. As the flashing lights are activated for both direction of travel advanced warning flashers, a typical for this type of installation, may be required due to the grade and geometry of Cariboo Road.

The cost for this option, inclusive of advance flashers, is estimated to be \$100,000.

## **2.4 Pedestrian Signal**

A pedestrian signal is the next level of control above the special crosswalk. Through traffic on Cariboo road would face the typical flashing green ball followed by a solid green, amber

To: Traffic Safety Committee  
From: Assistant Director Engineering, Traffic and  
Engineering Systems  
Re: Intersection of Cariboo Road and Cariboo Drive  
2007 August 28..... Page 4

and red after activation by a pedestrian. Advanced warning flashers would be required and are included in the cost estimate below. Crosswalks would be sited on the North and South legs of Cariboo Road in accordance with standard practice.

The cost for this option is estimated to be \$190,000.

## 2.5 Full Traffic Signal.

While a full traffic signal would not provide more protection than a pedestrian signal it would address the concern of residents exiting Cariboo Drive, particularly those turning left to Cariboo Road. In situations such as this the problem arises when drivers get impatient waiting for a safe gap in major road traffic and take risks. In many cases the delay is not in excess of that encountered at signals but the impatience of motorists (similar to crossing pedestrians) is driven by the perception that a safe gap may never come. It is noted that Traffic flows on Cariboo Drive are light (440 vehicles per day) and there are many side streets off busy roads with a similar or higher demand.

A signal would be actuated by both vehicles and pedestrians on all legs of the intersection. Advanced warning flashers would be required.

Cost for this option is estimated to be \$250,000

## 3.0 Discussion

### 3.1 Crossing Pedestrians

In the BC Motor Vehicle Act "crosswalk" means

*(a) a portion of the roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by signs or by lines or other markings on the surface, or*

*(b) the portion of a highway at an intersection that is included within the connection of the lateral lines of the sidewalks on the opposite sides of the highway, or within the extension of the lateral lines of the sidewalk on one side of the highway, measured from the curbs, or in the absence of curbs, from the edges of the roadway;*

The "Rights of way between vehicle and pedestrian" are

*179 (1) ... the driver of a vehicle must yield the right of way to a pedestrian where traffic control signals are not in place or not in operation when the pedestrian is crossing the highway in a crosswalk and the pedestrian is on the half of the highway on which the vehicle is travelling, or is approaching so closely from the other half of the highway that he or she is in danger.*

To: Traffic Safety Committee  
From: Assistant Director Engineering, Traffic and Engineering Systems  
Re: Intersection of Cariboo Road and Cariboo Drive  
2007 August 28..... Page 5

*(2) A pedestrian must not leave a curb or other place of safety and walk or run into the path of a vehicle that is so close it is impracticable for the driver to yield the right of way.*

*(3) If a vehicle is slowing down or stopped at a crosswalk or at an intersection to permit a pedestrian to cross the highway, the driver of a vehicle approaching from the rear must not overtake and pass the vehicle that is slowing down or stopped.*

While the motor vehicle act provides the pedestrian with significant rights many motorists are oblivious or ignore their duty to yield. Given their vulnerability pedestrians must be careful in asserting their rights. They should ensure that they only cross when vehicles are fully stopped and they have established eye contact with the driver to confirm a common understanding.

### 3.1 Determination of crossing protection

The Transportation Association of Canada (TAC) establishes national application standards and guidelines on matters such as road design, signal warrants, signing and pavement markings. The TAC “Pedestrian Crossing Control Manual” outlines the application requirements for the hierarchy of control discussed above. It also outlines a warrant system that balances the number of crossing opportunities per hour – a function of traffic volume- against the pedestrian crossing demand during that time. Extra weighting is given to seniors, children and persons with disabilities time. In accordance with the evaluation procedure we look at the pedestrian demand during peak traffic flow and vice versa to determine whether a numerical warrant is met. Other factors such as accident history and the proximity of other crossing also need to be considered. The review discussed in our prior report concluded that the very small number of pedestrians crossing at this location – **only 5 during 6 hours of counts** - did not warrant a marked crosswalk.

A concern with marked crosswalks is that pedestrians may become over-confident and offset the benefit of driver awareness of the crossing. This will be exacerbated if the crosswalk is seldom used and hence is discounted by motorists. A wider concern is that the proliferation of unwarranted crosswalks or indeed other traffic safety devices leads to drivers generally circumventing them.

### 3.2 Future Plans for Development

This area is included in the much wider Cariboo Heights Community Plan adopted by Council. The plan has not yet been “built out”, as noted in 2.0 above, but Cariboo Road construction reflects future intent. Approximately 140 m. south of Cariboo Drive a left turn bay in the median and east side curb returns have been constructed on Cariboo road in anticipation of a future junction of a new road from the East as shown on Fig 4. This new road - Jasmine Terrace - is planned to provide access to 7 multi-family enclaves with a projected 485 units in total. Additionally it would provide a north-eastward access for existing and more extensive future single family development to its south. It is likely that this level of development would warrant full signal control at the intersection of Jasmine Terrace

To: Traffic Safety Committee  
From: Assistant Director Engineering, Traffic and Engineering Systems  
Re: Intersection of Cariboo Road and Cariboo Drive  
2007 August 28..... Page 6

and Cariboo Road. Accordingly pedestrians from the developments off Cariboo Drive would be able to cross at this signal.

Although not shown in the Community plan, it would be beneficial to evaluate whether it is feasible to link Cariboo Drive to the new intersection as an alternative to the more "awkward" existing intersection, which could then be restricted to a right turn movement with no pedestrian control required. The future signalization of the planned Jasmine Terrace/Cariboo Road intersection with a link to Cariboo Drive would address the current resident motorists' requests for full signal control at Cariboo Drive/Cariboo Road and render any higher level of control at that intersection redundant, with consequent sunk costs.

#### 4.0 CONCLUSION/RECOMMENDATION

While the existing unmarked crossing would be sufficient for the majority of the few pedestrians crossing, especially if enhanced as shown in Fig 1, it has been recognized that there are persons with uniquely special needs residing in the Cariboo Heights Co-op. Accordingly it is recommended that the marked crosswalk concept shown in Fig 2 be implemented to better accommodate those needs. The estimated \$10,000 in costs can be met this year from available funds in the traffic management budget of the 2007 Financial Plan.



Peeter Liivamagi, P.Eng.  
Assistant Director Engineering,  
Traffic and Engineering Systems

PL:nep

Copied to: City Manager

FIG 1

# Pedestrian Crossing Option Cariboo Rd. at Cariboo Dr.

Unmarked Crosswalk Improvements

June 05, 2007

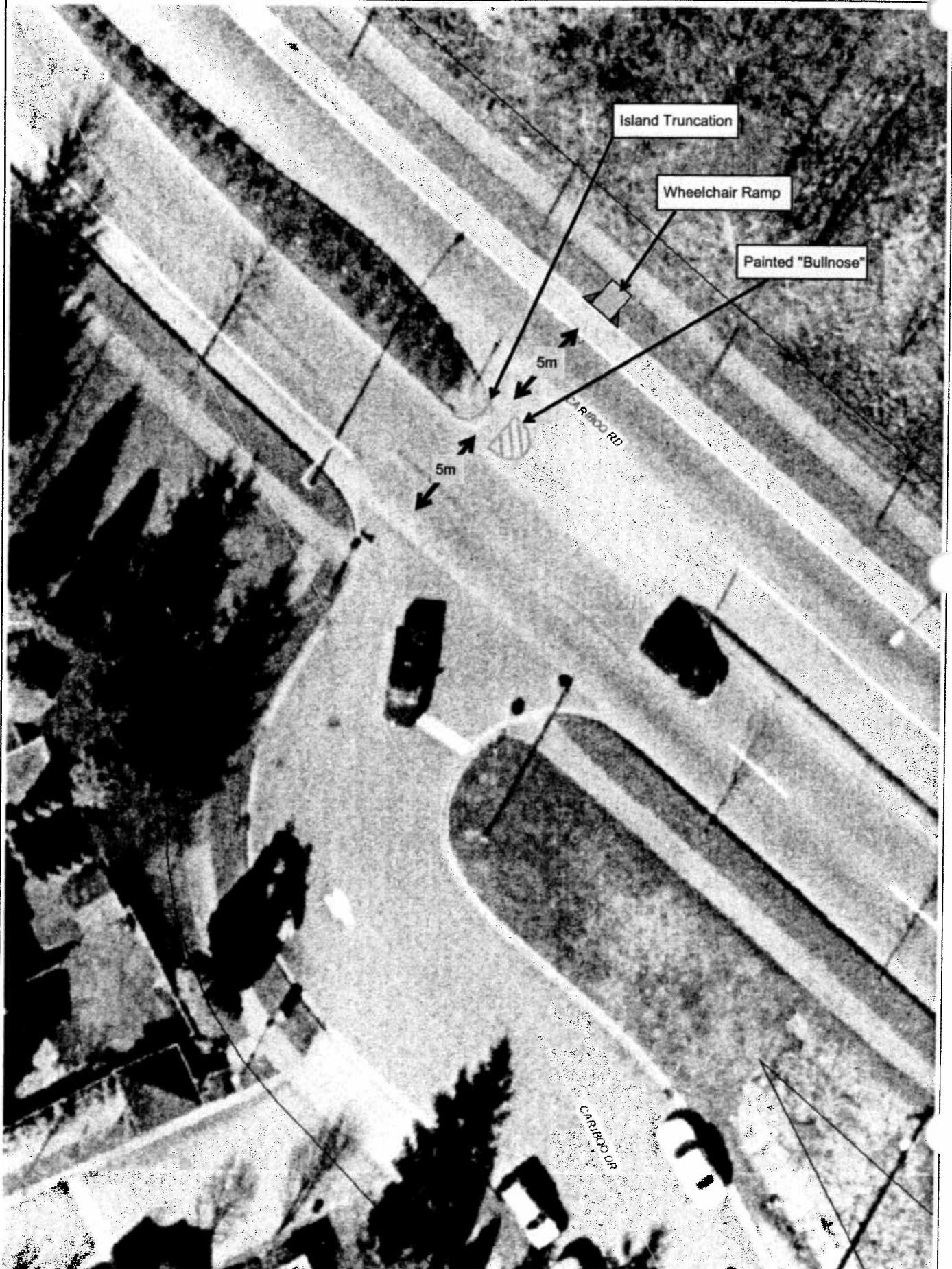




FIG 2

# Pedestrian Crossing Option Cariboo Rd. at Cariboo Dr.

Marked Crosswalk Option

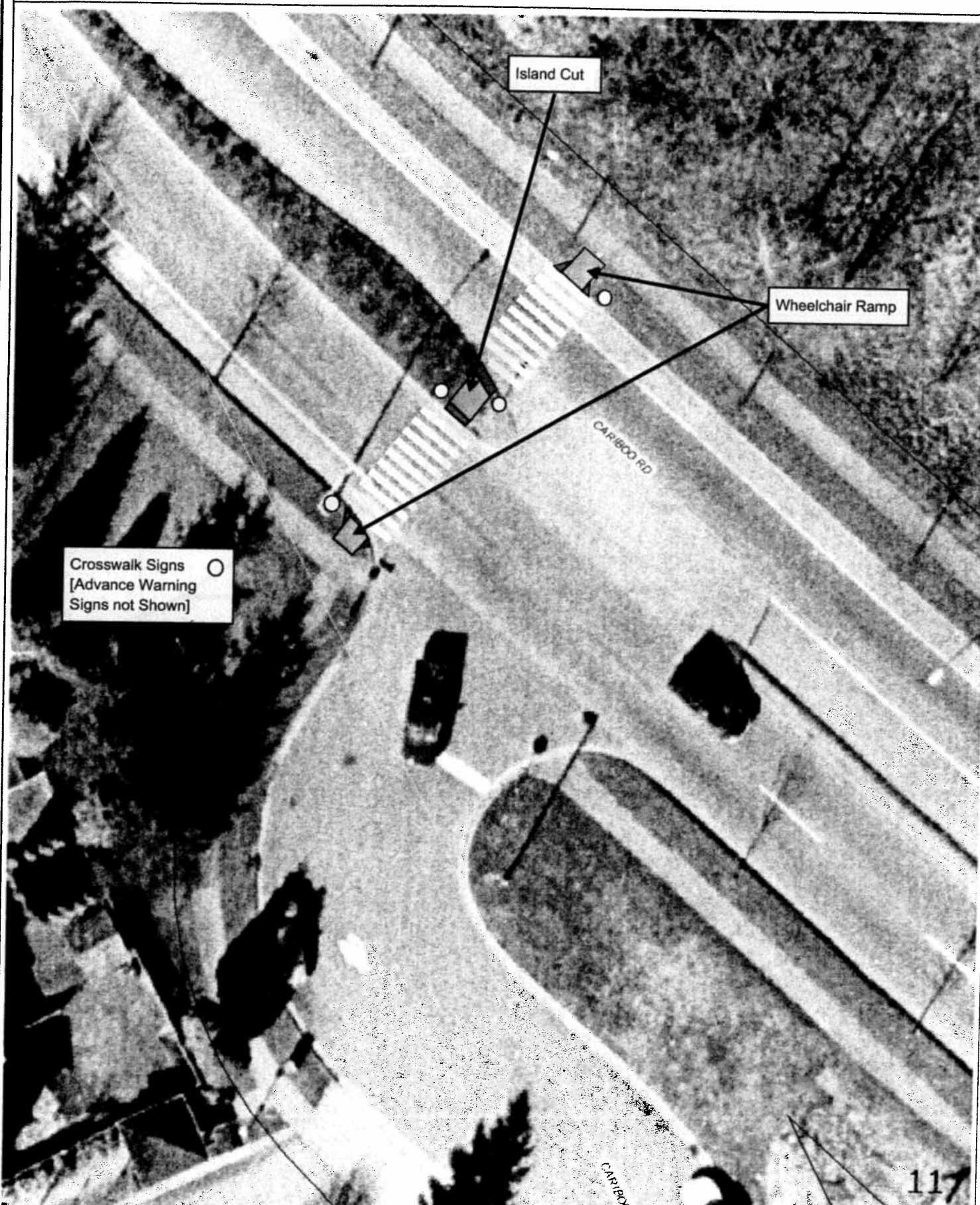


Fig 3. Special Crosswalk Schematic  
(source: TAC Manual)

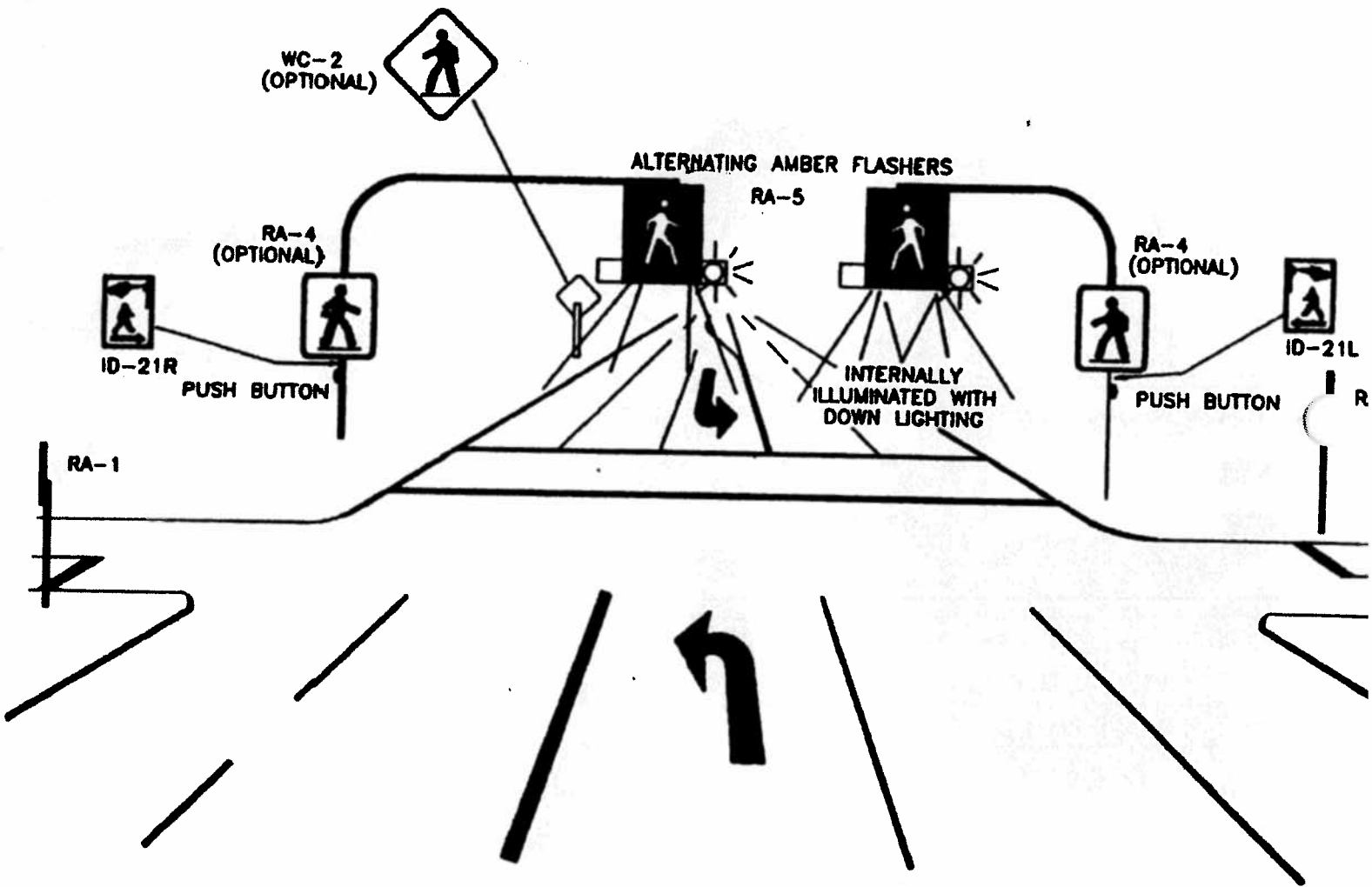


FIG 4

# Cariboo Heights Plans in the Vicinity of Cariboo Drive

June 13, 2007

