

Stoney Trail – NW Calgary Ring Road

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## **ABSTRACT**

Paper Title: Stoney Trail - NW Calgary Ring Road  
Title of Session: Geometric Design - Transit/Transportation Corridors Without Boundaries

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Abstract: The City of Calgary is experiencing rapid growth, spurred by Alberta's strong economy.

Recognizing this future growth potential, and following the plan established in the early 1960's, the Alberta Government undertook planning and right-of-way acquisition for a future ring road in the 1970's. Functional design studies were completed to identify a "Transportation and Utilities Corridor" (TUC) around the City, including right-of-way limits.

In the mid 1990's, the first section of Stoney Trail (the North West portion of the ring road) was constructed from the Trans-Canada Highway (TCH) to Crowchild Trail and then subsequently to Country Hills Blvd.

In 2003, Alberta Infrastructure and Transportation (AIT) and the Government of Canada committed funding to complete Stoney Trail across Northwest Calgary to finish linking the TCH and Deerfoot Trail N., Highway 2. This 22 km project includes replacing 4 existing signalized intersections with interchanges, expanding the existing mainline to 4 lanes, and 17 km of new 4-lane Roadway with 2 new Interchanges, 1 Flyover, 2 Signalized Intersections, and one right-in, right-out Intersection. Earthworks for the new sections, including grading for all future interchanges and the ultimate 8-lane Freeway, is being undertaken in the first stage.

This paper will provide an overview of design concepts for interchanges/intersections, plus an update of construction progress to date.

As the Calgary Ring Road is developed, it is a corridor, which is often seen as going from an undeveloped parkland or rural setting to a major freeway, thereby creating a barrier between communities. The paper presents the access plan to provide vehicle and pathway crossing opportunities at interchanges and planning for transit across the

corridor at a later date. The pathways and pedestrian over/underpass locations are being planned and developed as part of the complete transportation corridor. While the freeway is being added to the Provincial and City transportation corridors, it is also providing for other modes of transportation in a coordinated fashion to mitigate its perceived impact as a barrier.

## TEXT

### **Background**

Planning for the Calgary Ring Road began almost 40 years ago. This resulted in establishing the Transportation and Utility Corridor around the City in the 1970's, with much of the right-of-way purchased since then (see **Figure I**).

This long-term planning allowed the City to expand up to and beyond the TUC, while protecting the right-of- way for it.

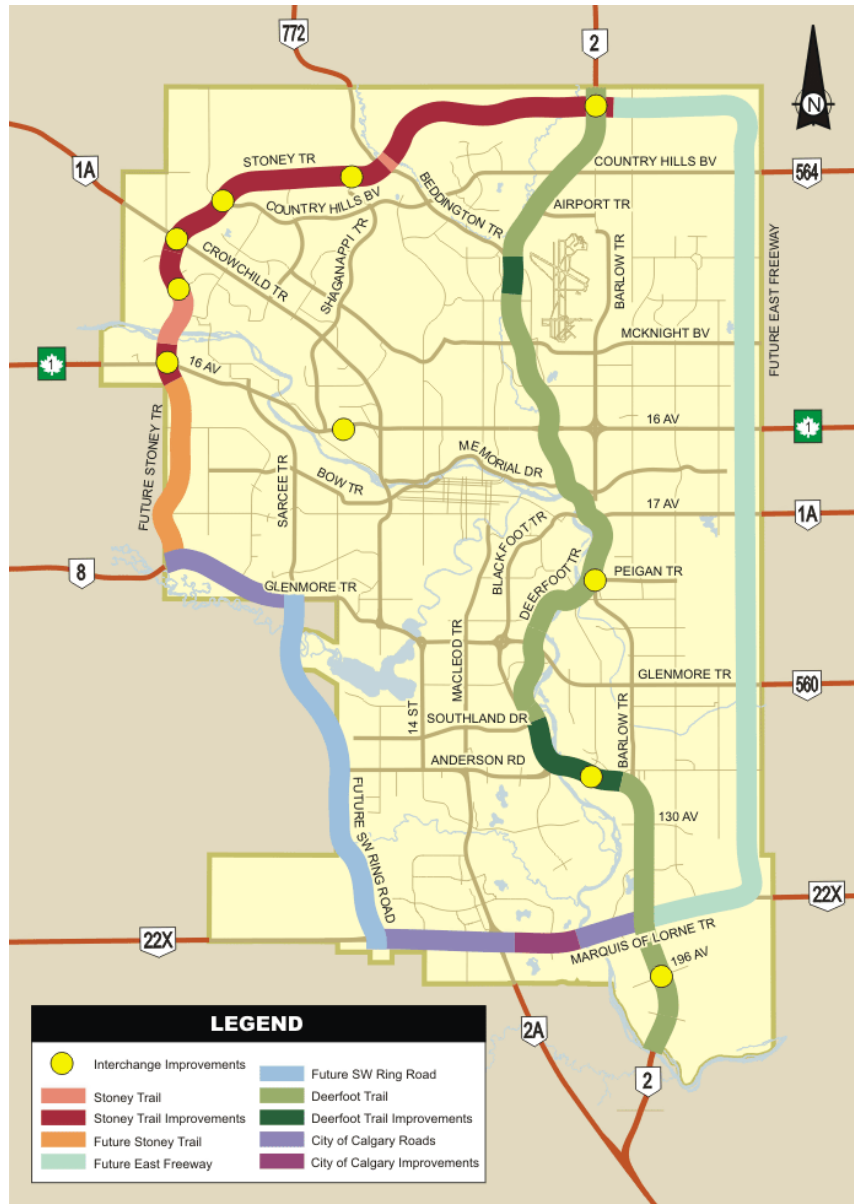


**Figure I – Alberta Infrastructure and Transportation – Calgary Transportation and Utility Corridor**

The North West portion of the TUC Connects the Trans-Canada Highway (Hwy. 1) West to Deerfoot Trail (Hwy. 2) North (shown in red on **Figure II**).

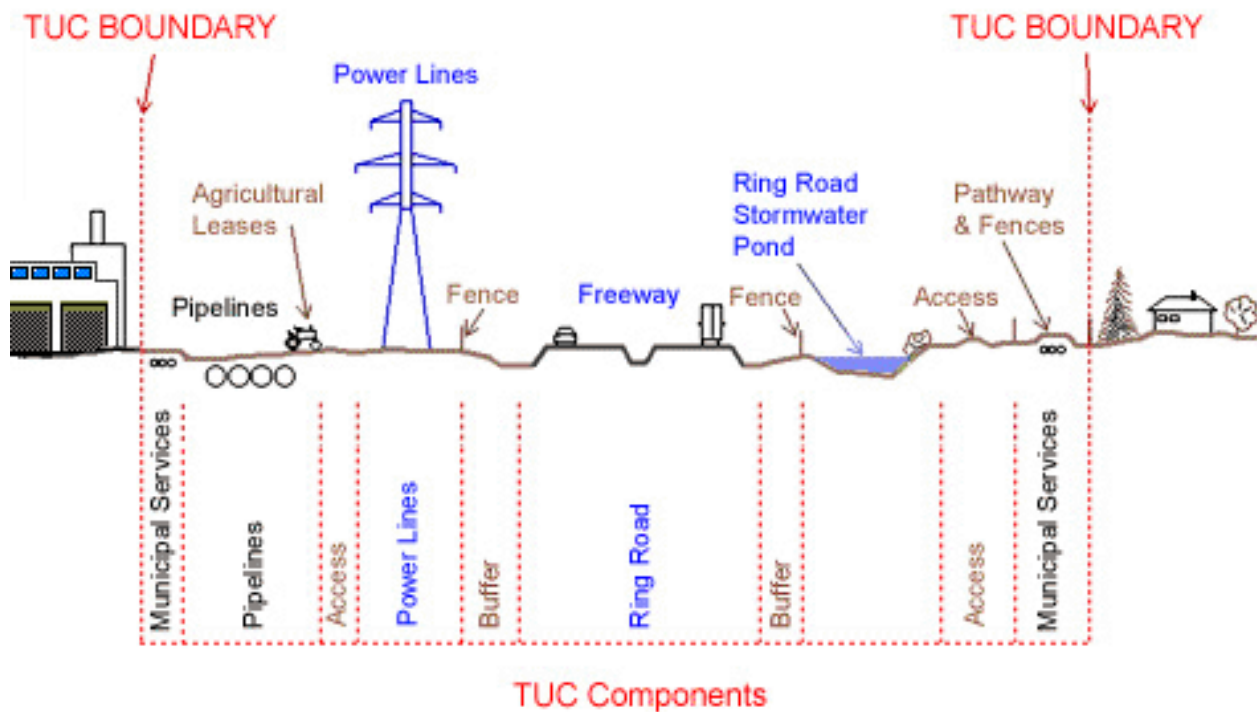
Over the past 30 years, a few sections of roadway have been partially constructed in the TUC (not freeway standard):

- Hwy. 22x (southern section)
- NW Ring Road (Stoney Trail) from Trans-Canada Highway (TCH) to Country Hills Boulevard (CHB)
- SW Ring Road from Anderson Road to Hwy 22X



**Figure II – Calgary Ring Road**

The TUC has a basic right-of way of 300 m, to accommodate a freeway, power lines, pipelines, and municipal utilities.



**Figure III – TUC Cross Section**

In 2003, the Governments of Alberta and Canada agreed to fund the upgrading and extension of Stoney Trail from the TCH to Deerfoot Trail (Hwy. 2), thus completing the NW link between TCH and Hwy. 2 (see **Figure II**).

### Geometric Design

The key geometric design parameters for Stoney Trail are as follows:

- Design Speed Mainline – 110 km/hr
- Vertical Grades Mainline – 3% desired, 5% max
- Lane Widths Mainline – 3.7 metres
- Number of Lanes – 8 basic lanes (ultimate)
- Median Width – 23.2 metres (8 lanes)
- Vertical Clearance – 5.4 metres

**Figure IV** shows the NW Stoney Trail Corridor, and subsequent figures show the geometrics of each Interchange/Intersection. Yellow shows the extent of paving planned at this time. Orange indicates future interchanges. Grading is being done for all future lanes and interchanges wherever practical at this time.

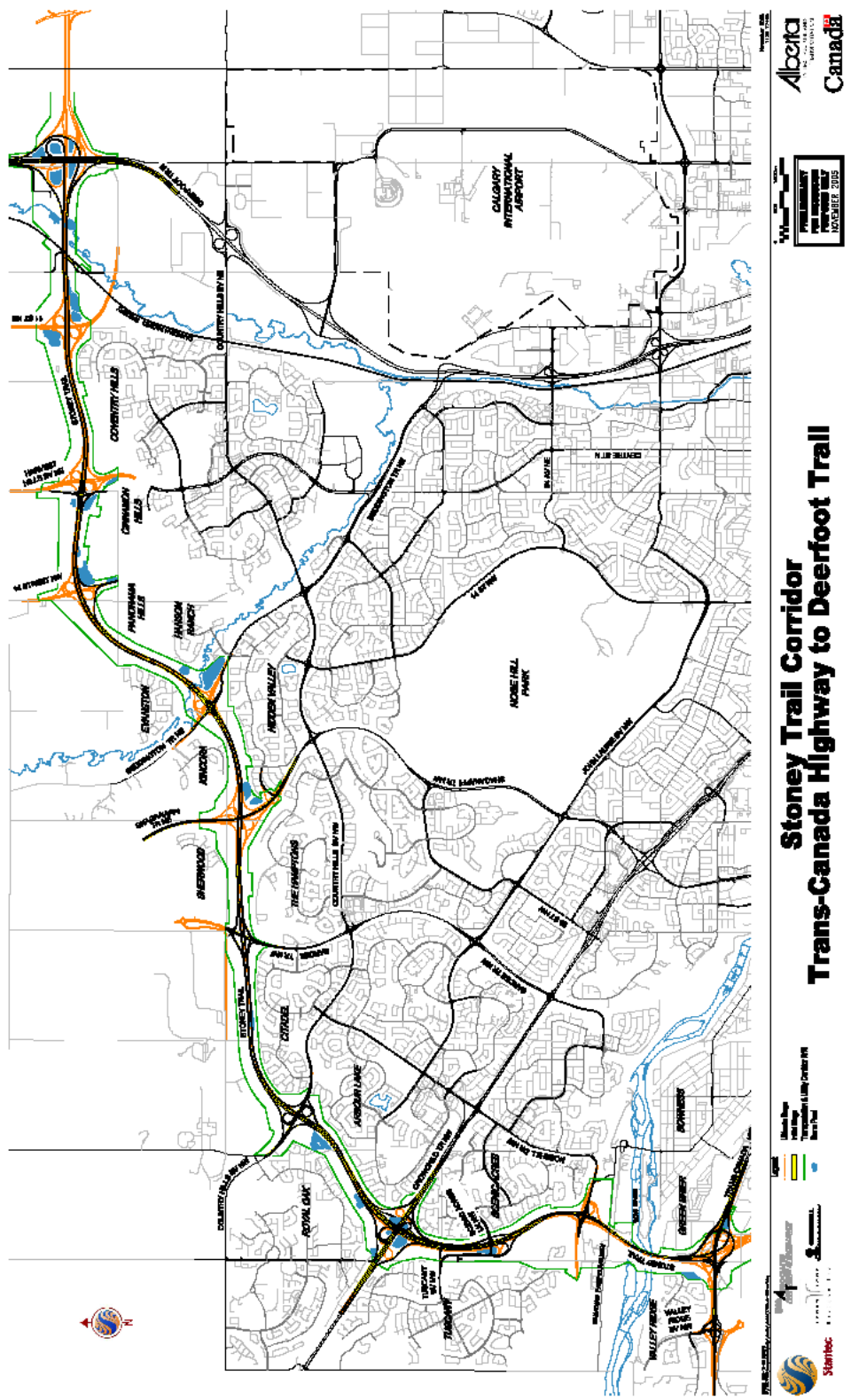


Figure IV – NW Stoney Trail Corridor












**Stoney Trail / Trans-Canada Highway Interchange**

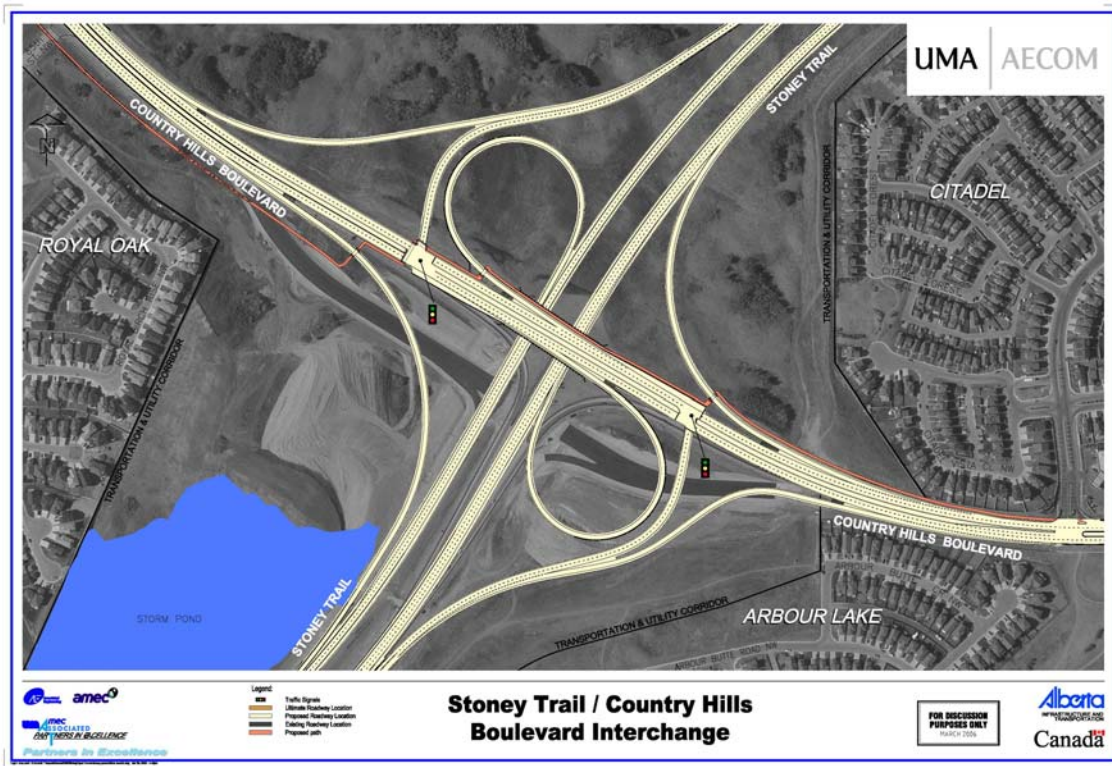
**Figure V – Trans-Canada Highway Interchange**



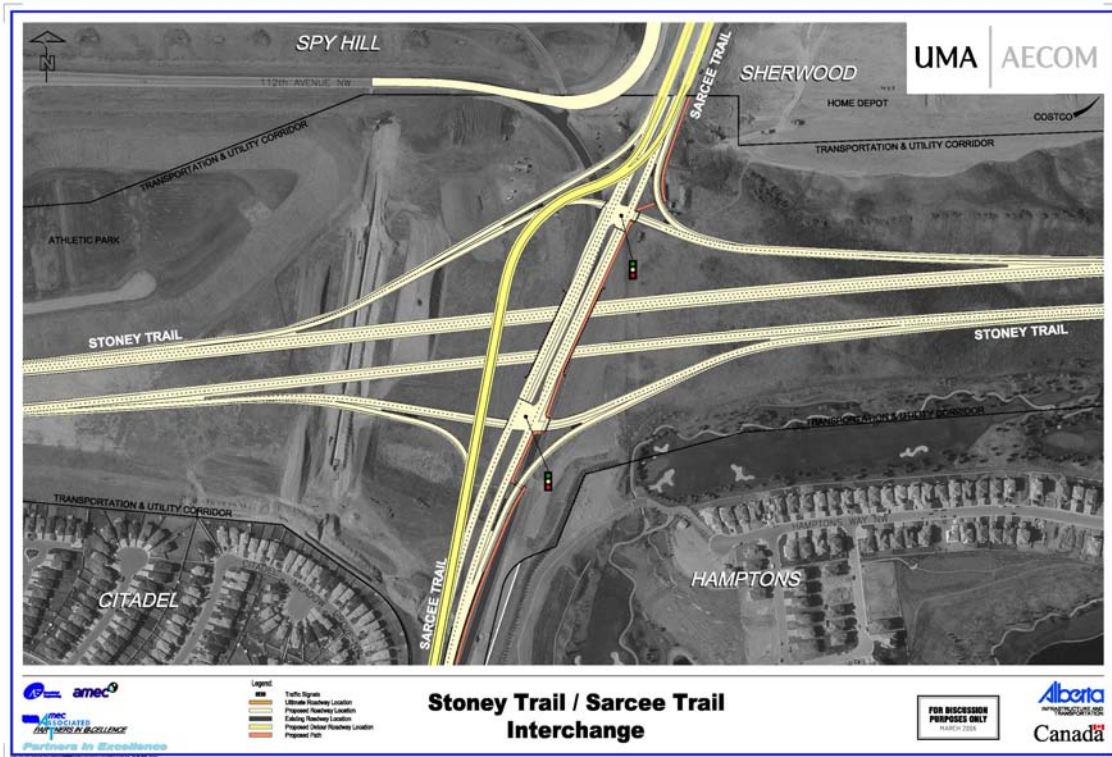





**Stoney Trail / Crowchild Trail / Scenic Acres Link Interchange**

**Figure VI – Crowchild Trail / Scenic Link Interchange**

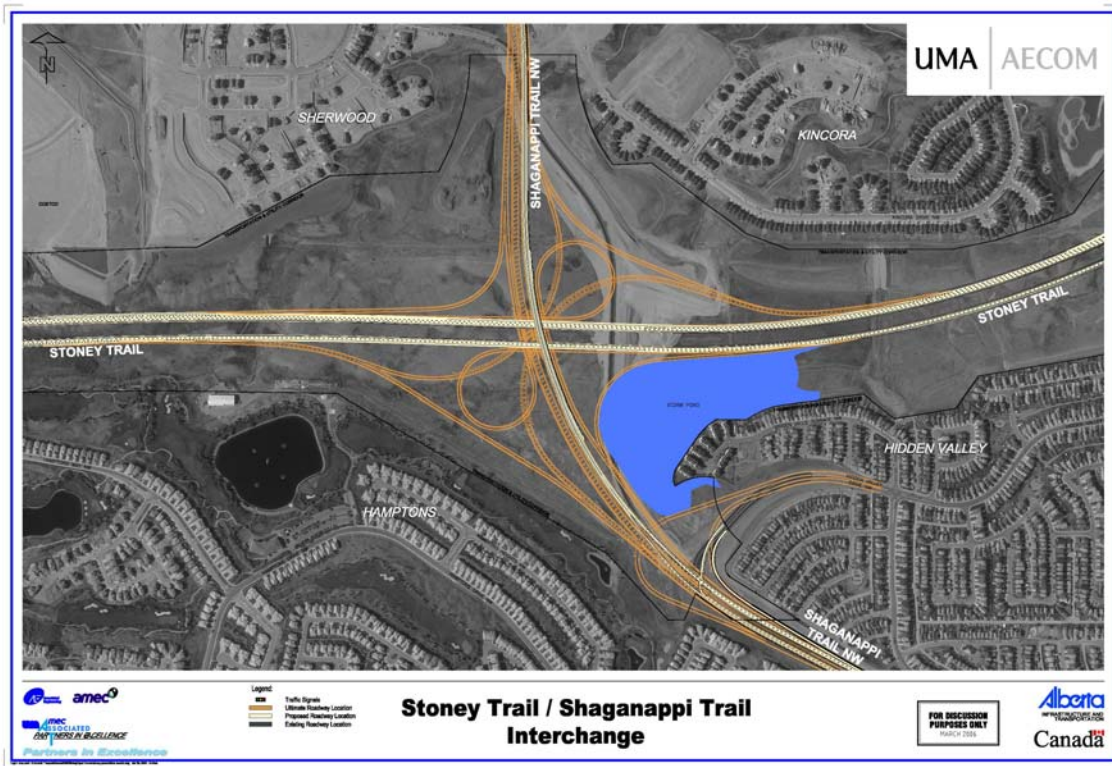


**Figure VII – Country Hills Boulevard Interchange**

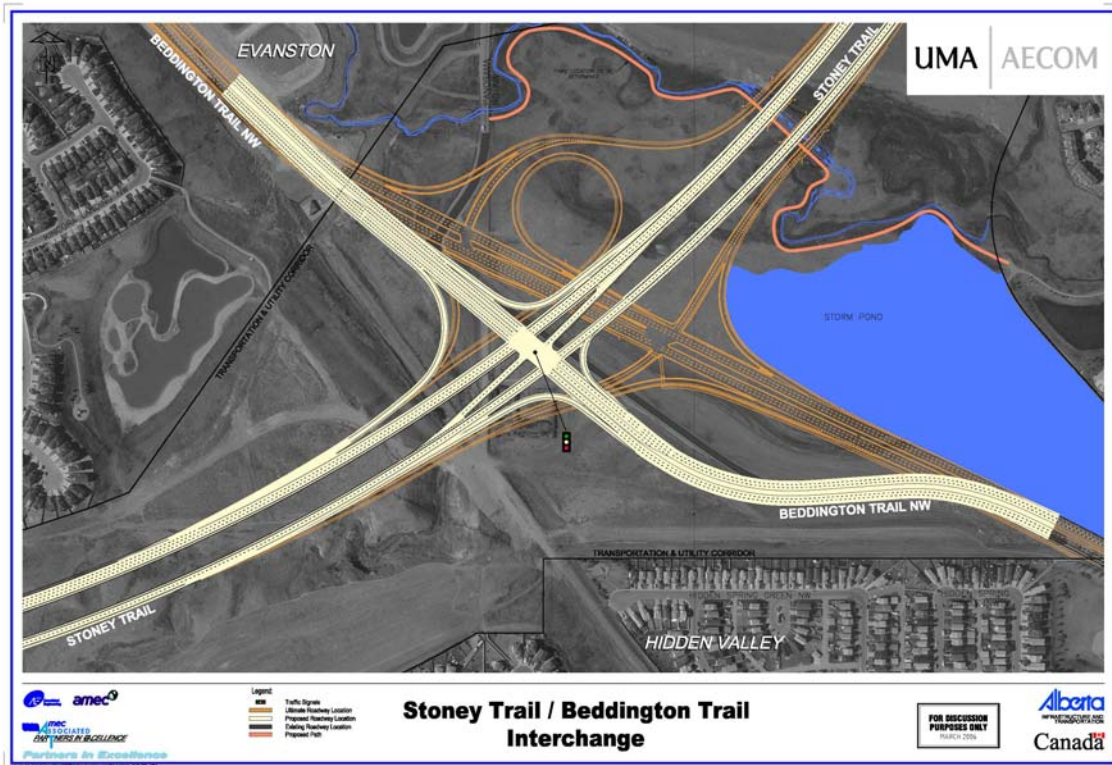


**Figure VIII – Sarcee Trail Interchange**

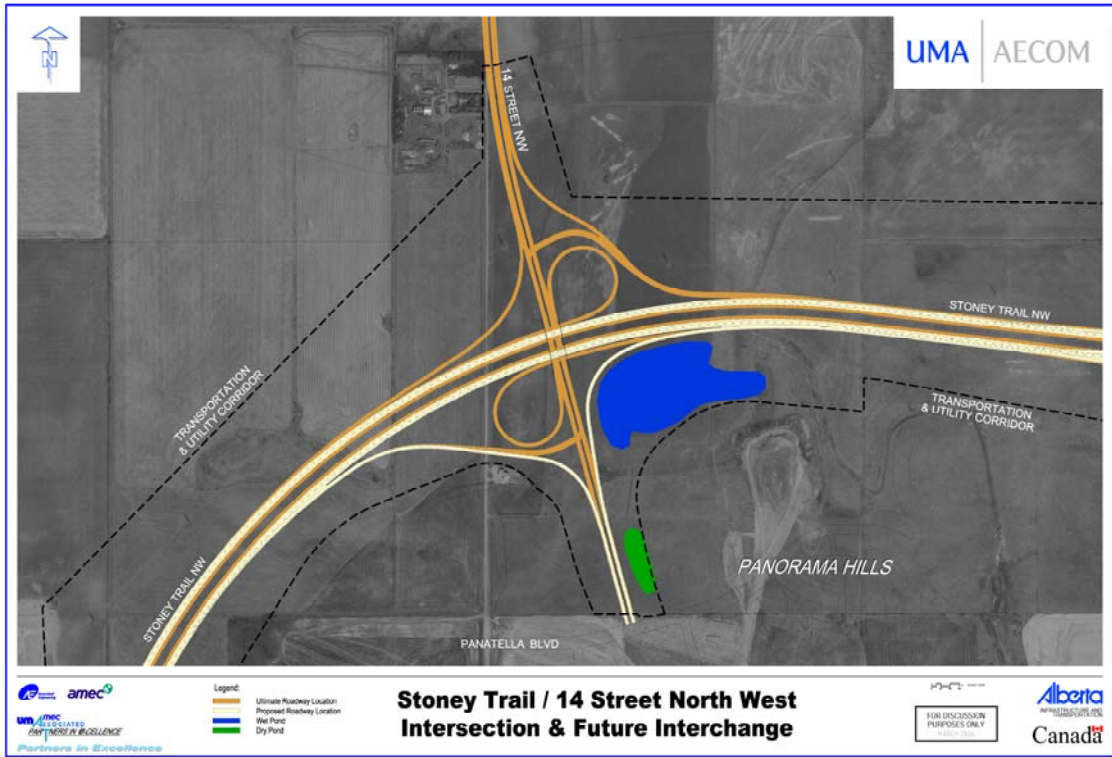




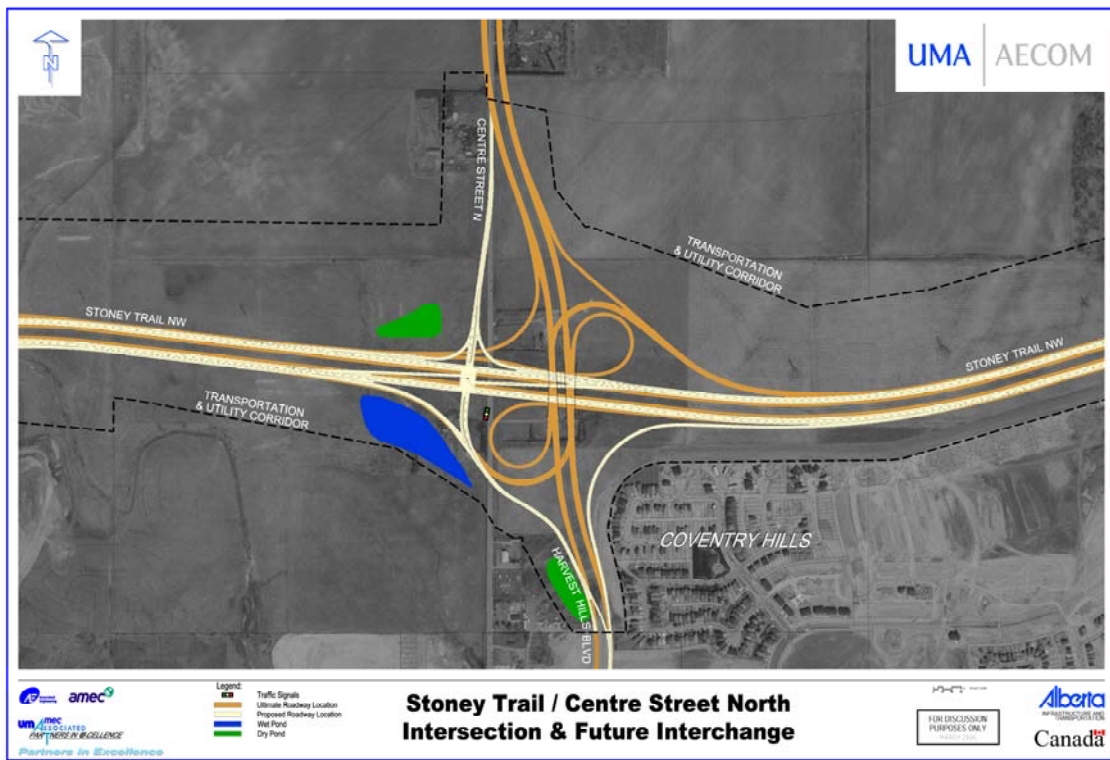
**Figure IX – Shaganappi Trail Flyover**



**Figure X – Beddington Trail Intersection**



**Figure XI – 14 Street Northwest**



**Figure XII – Centre Street North**

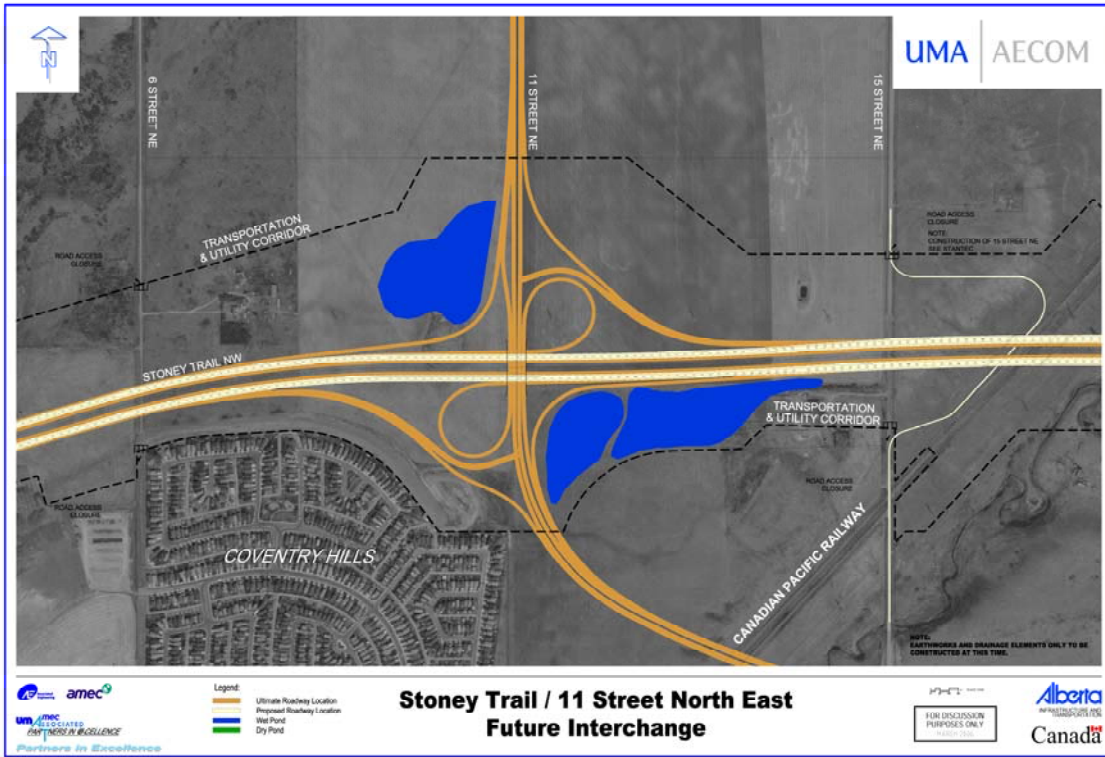


Figure XIII – 11<sup>th</sup> Street North East

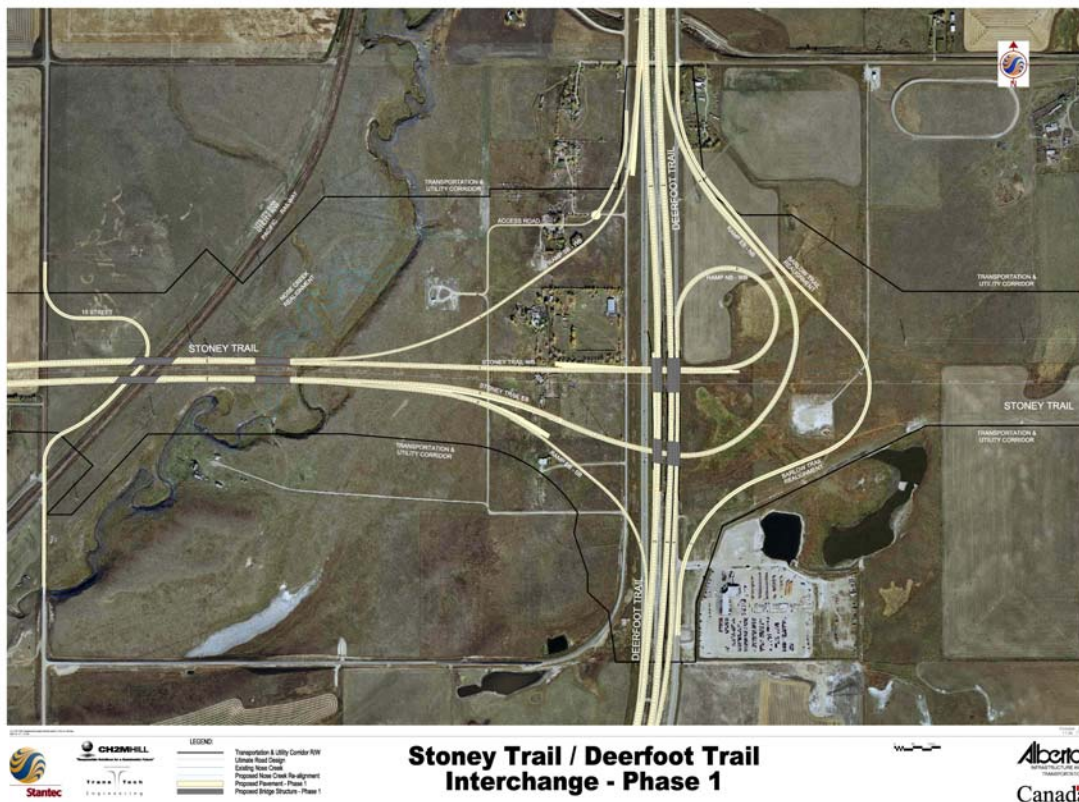
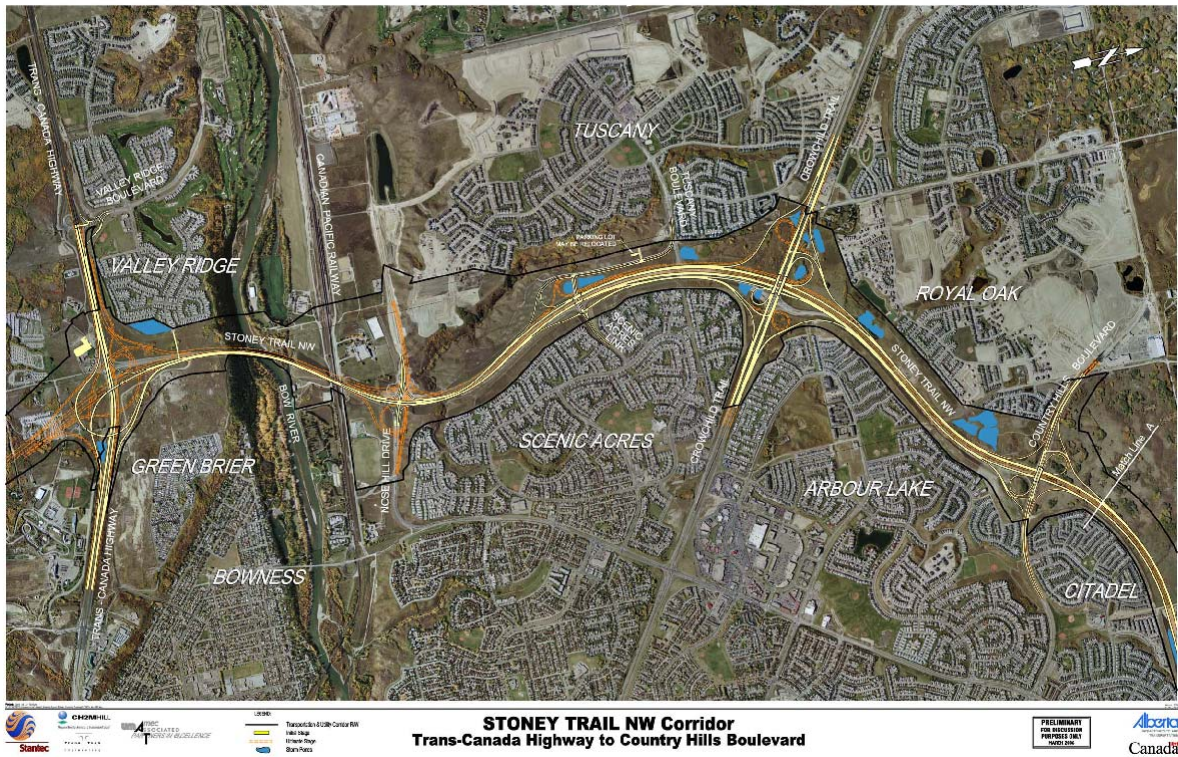


Figure XIV – Deerfoot Trail (Hwy 2) North

## Project Schedule

Construction is underway on several sections as follows as of September 2006 (see Figures XV to XVII):

- Trans-Canada Highway Interchange grading >50% complete
- Trans-Canada Highway bridges >50% complete
- Crowchild / Scenic Detours in operation
- Crowchild / Scenic Interchanges being tendered



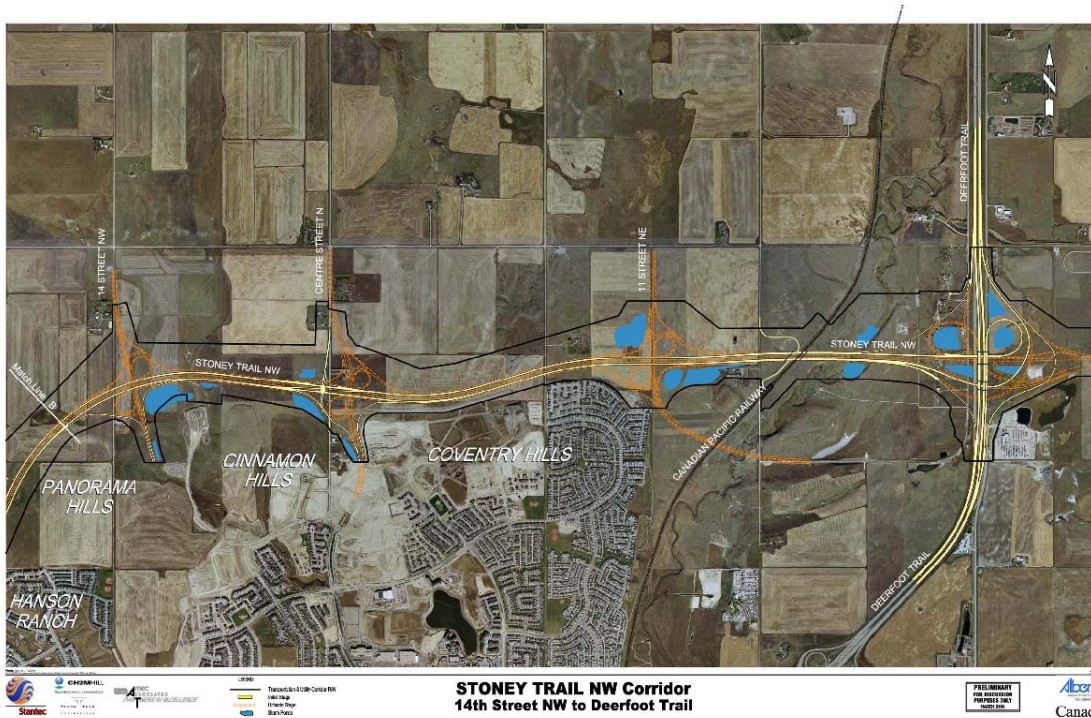
**Figure XV – NW Corridor Trans-Canada Highway to Country Hills Blvd.**

- Earthworks from Country Hills Boulevard to Deerfoot Trail 90% complete
- Country Hills Boulevard Interchange (paving bridge, etc.) being tendered
- Sarcee Trail Interchange being tendered
- Shaganappi Trail fly-over bridge 75% complete
- Beddington Trail Detour in operation
- West Nose Creek Bridges 75% complete



**Figure XVI – NW Corridor Country Hills Boulevard to Beddington Trail**

- 14 Street NW closed
- Centre Street North Intersection under construction
- 11 Street NE – no work planned at this stage
- Deerfoot Trail Interchange Stage 1 work 50% complete

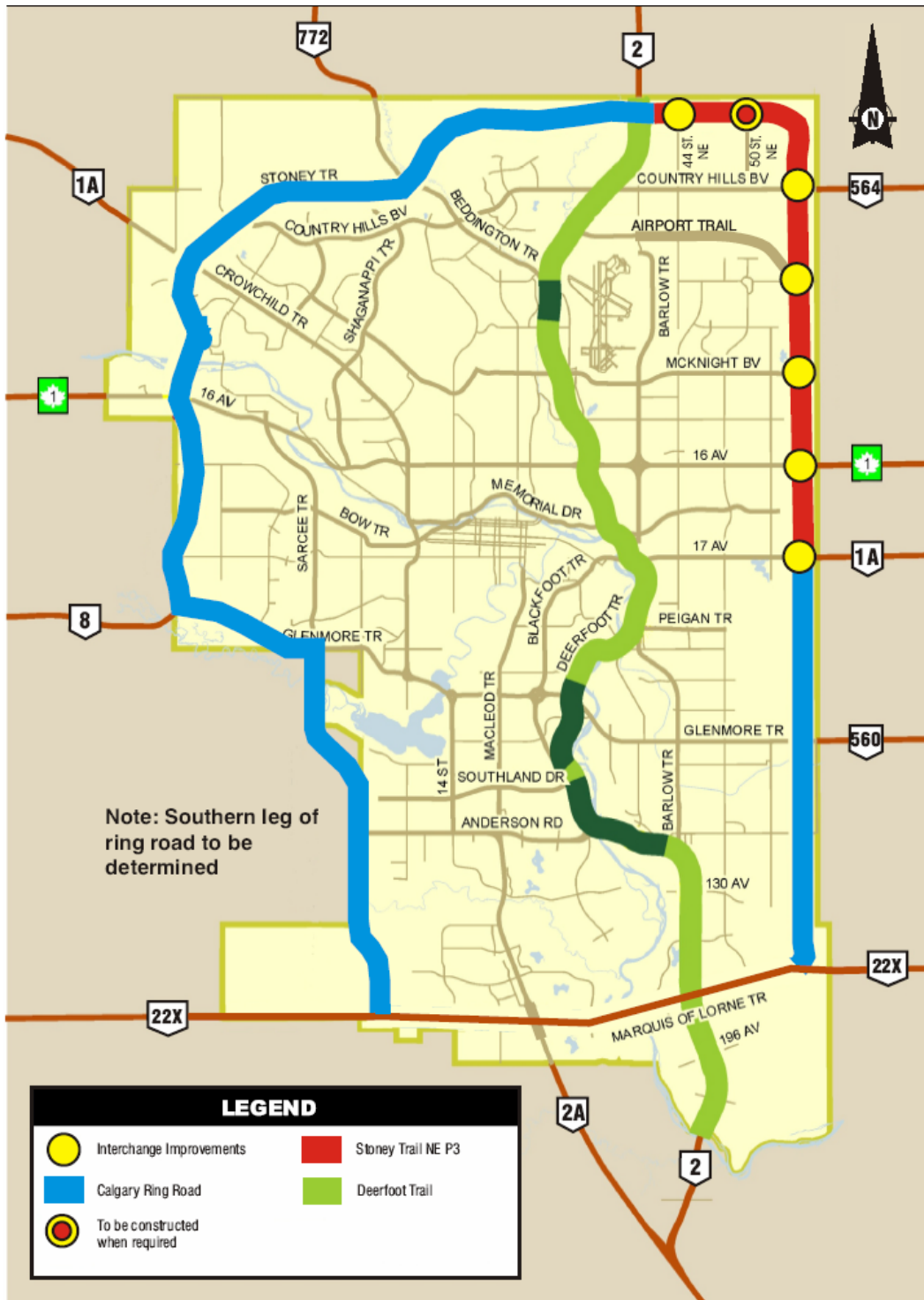


**Figure XVII – NW Corridor 14<sup>th</sup> Street NW to Deerfoot Trail**

Current plans are to open the entire NW Stoney Trail to traffic by the end of 2007.

### What's Next?

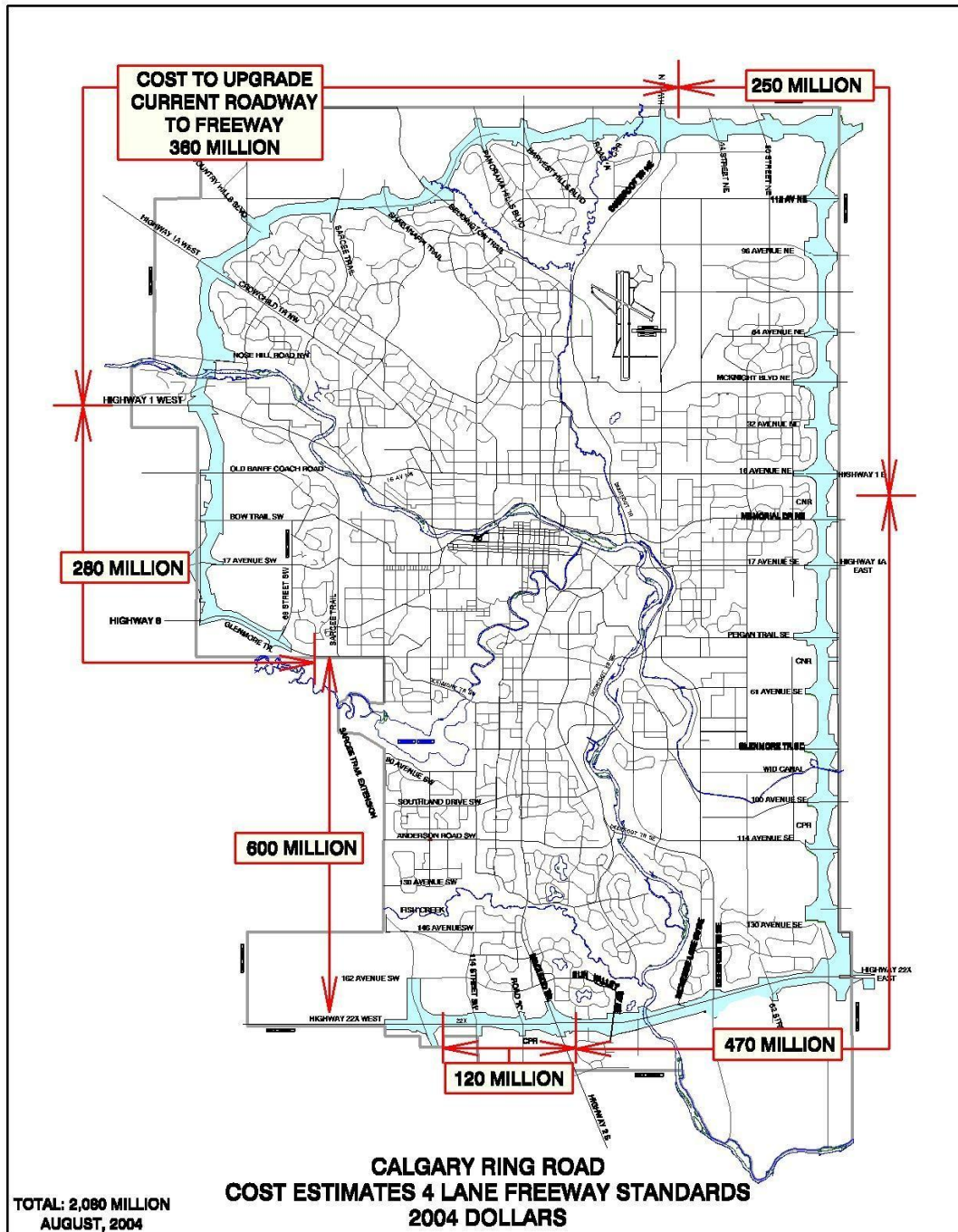
AIT is currently using their new P3 delivery process, which was developed for the SE Anthony Henday Drive project in Edmonton for the NE section of the Calgary Ring Road. Three P3 proponents were selected in April 2006, and are currently developing their design proposals. Final submissions will be later this year, with the Award early 2007. The NEST (North East Stoney Trail) project is scheduled to be open for traffic by October, 2009 (shown in red on the following figure).



**Figure XVIII – North East Stoney Trail**

The project includes the section from Deerfoot Trail to 17th Ave. SE, and includes 21 kilometers of new Freeway, 6 Interchanges and 22 Bridge Structures.

AIT plans to complete the entire ring road within the next 10 years, at a cost of \$2.1B (2004 dollars – see **Figure XIX**).



*Figure XIX – Cost Estimates – 2004 Dollars*



## Mitigating the Barrier Perception

The Stoney Trail Ring Road, operating in a major transportation corridor and utility space, has been perceived as a boundary or a barrier to inter-neighbourhood travel. The roadway is a high volume, high operating speed, moderately noisy road which is not intended for pedestrian or non-vehicular travel modes. The road and utility corridor right of way is fenced and signed to deter non-vehicle use of the area.

Notwithstanding the perceived barrier concept of the TUC, it is possible to mitigate the barrier status of this corridor. The City of Calgary has a vision for Pathways and Bikeways, which reads:

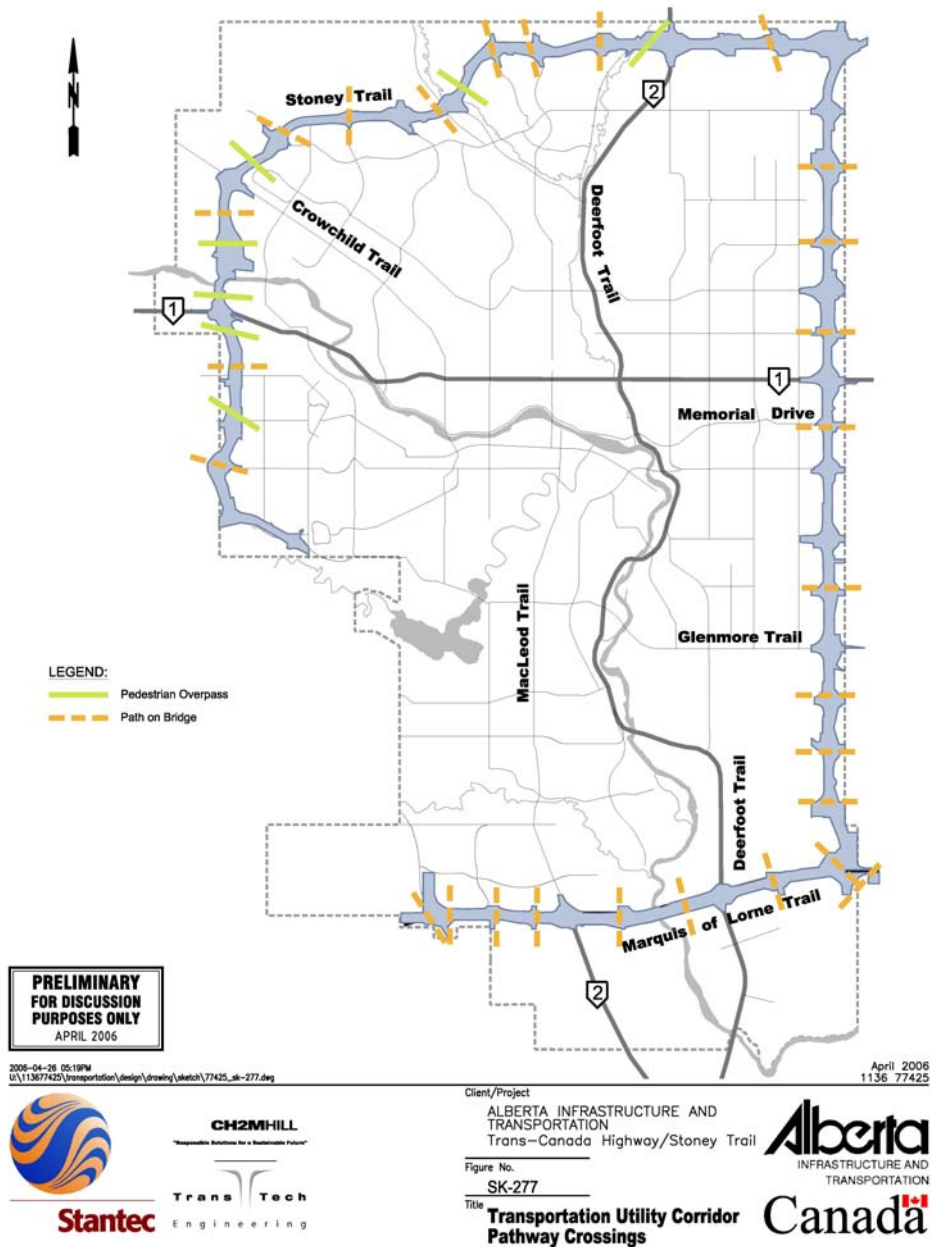
“The City of Calgary is committed to being a healthy place to work and live. It recognizes the importance of walking, running, cycling, wheelchair use, skateboarding, in-line skating and other non-motorized modes of movement as positive contributions to the urban fabric. These non-polluting modes have inherent value as viable, efficient and environmentally friendly means of both transportation and recreation. They facilitate healthy and active living, and contribute to overall community vitality.”

The vision for Calgary is:

“...a city of neighbourhoods which are interconnected by a friendly street and pathway network. The network is available to all Calgarians regardless of age, gender, ability, income or culture. The pathway and bikeway network offers a convenient alternative to the automobile, and provides year round ability to enjoy recreational opportunities.”

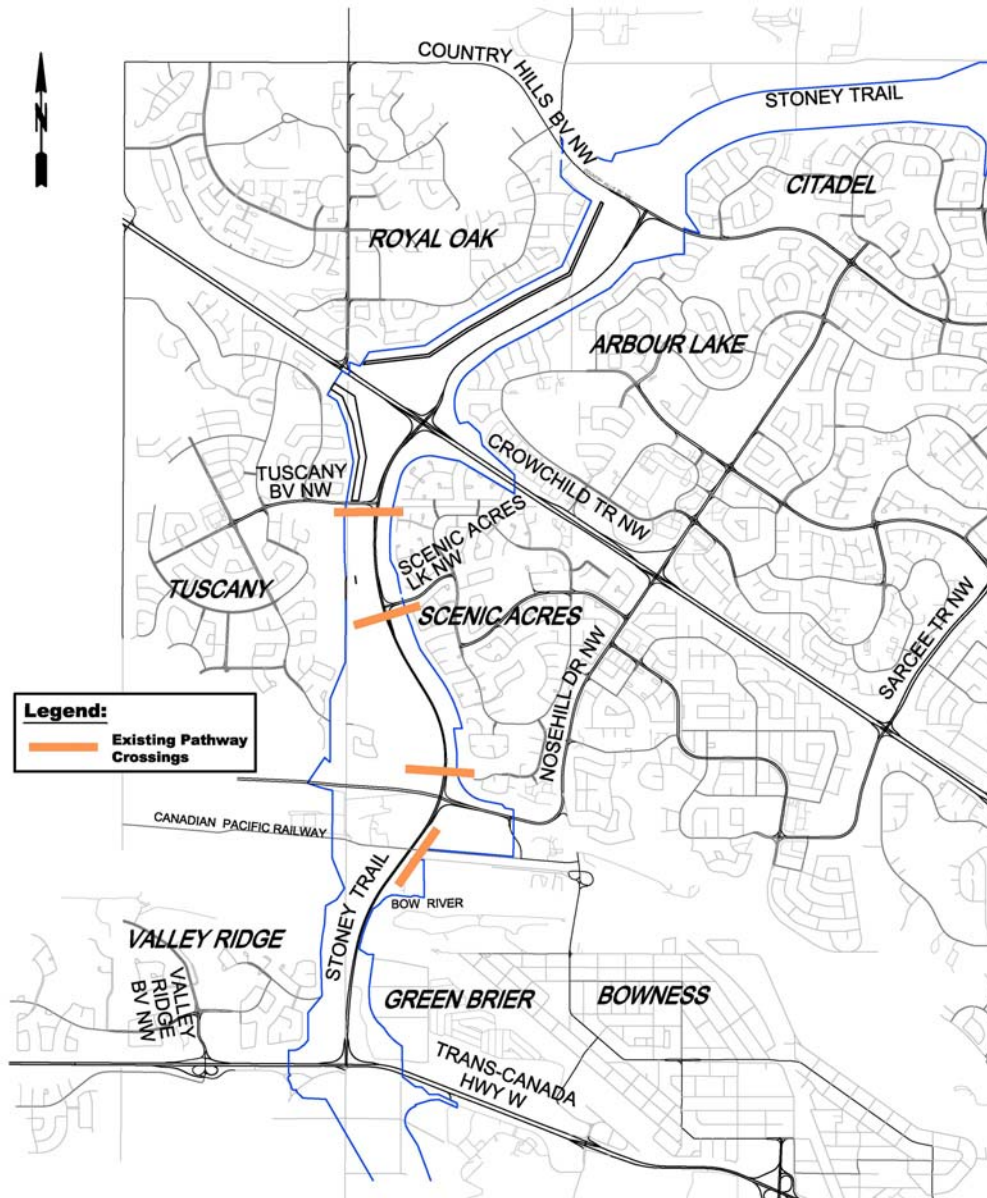
The Province of Alberta is supportive of this vision and includes wide lanes on roadways and overpasses, sidewalks on overpasses and underpasses and generally contributes to enabling this vision to be implemented on cross streets and at independent locations warranted for pedestrian overpasses.

The planning of the Calgary Ring Road has, from the very outset, included strategic crossing locations to ensure a network of pathways and bikeways throughout the length of the ring road. **Figure XX** presents the planned pathway and bikeway crossings already incorporated into the ring road planning.



**Figure XX- Transportation Utility Corridor Pathway Crossings**

All non-systems interchanges accommodate pathways and/or bikeways as part of the bridges and on approach slopes e.g. on a completed bridge. On the N.W. Stoney Trail (Figure XXI) segment, regional pathways have been incorporated into the Stoney Trail crossing of the Bow River (see Figure XXII).



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 TRANSPORTATION  
 Trans-Canada Highway/Stoney Trail

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Title  
**Existing Stoney Trail &  
 Pathway Crossings**



**Figure XXI – Existing Stoney Trail & Pathway Crossings**



***Photo XXII – Stoney Trail Bridge Over Bow River***

Looking at the current project for N.W. Stoney Trail Extension (**Figure XXIII**), the crossings of both West Nose Creek and Nose Creek allow for regional pathways on the banks of the creek. The Nose Creek Pathway system currently extends along Nose Creek from the Bow River to Beddington Trail. Eventually it will follow the creek to the City of Airdrie. The West Nose Creek path branches off the Nose Creek path and proceeds northwest to again cross under Stoney Trail and allow access to recreational opportunities and residential communities north of Stoney Trail.

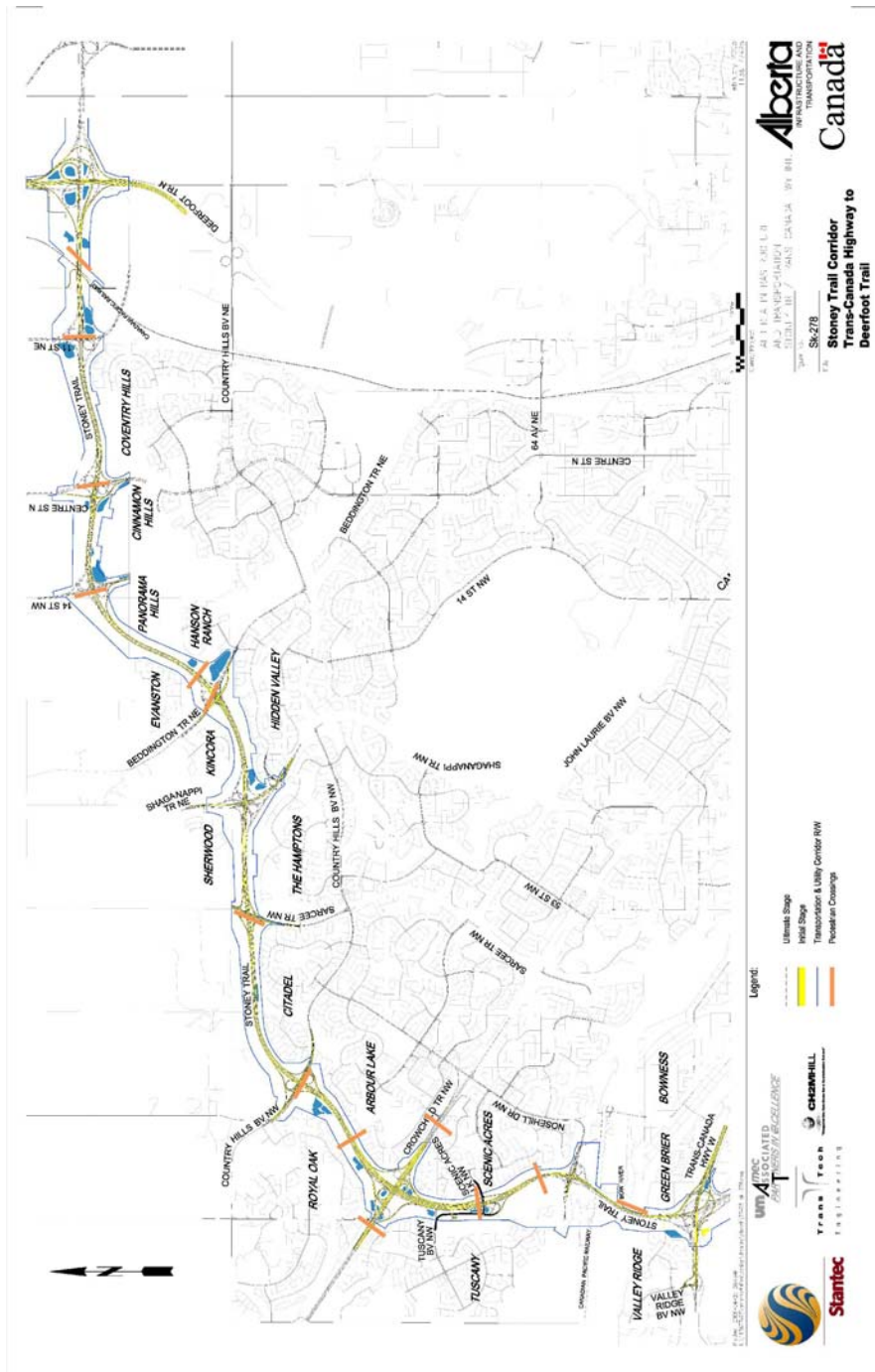
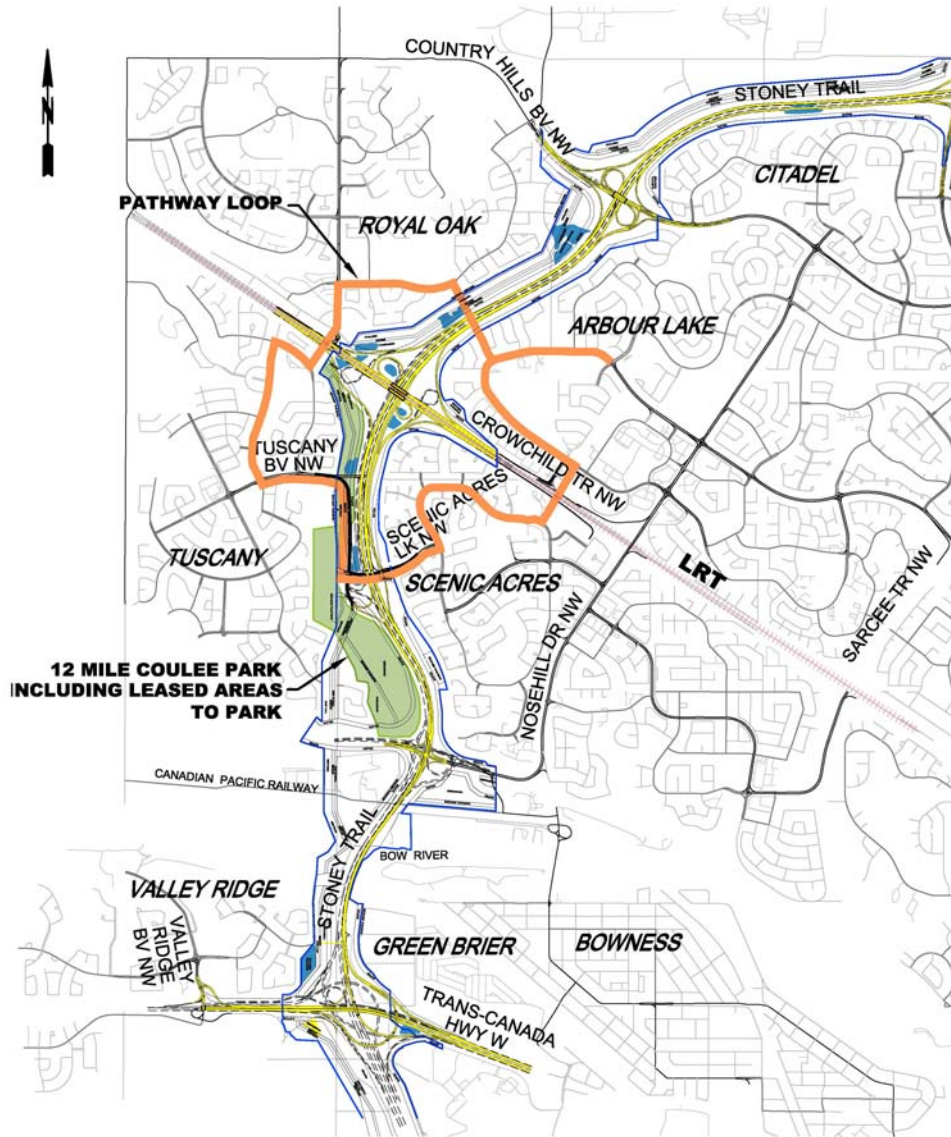


Figure XXIII – Stoney Trail Corridor Trans-Canada Highway to Deerfoot Trail

Looking in more depth at an area of existing residential communities on a segment of the N.W. Stoney Trail, the section from Nose Hill Drive to Country Hills Boulevard provides perhaps a glance at the future of pathway crossings. **Figure XXIV** presents this segment.



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 Trans-Canada Highway/Stoney Trail

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**Pathway Loop**



**Figure XXIV – Pathway Loop**

This area is home to the residential communities of Scenic Acres, Tuscany, Royal Oak, Rocky Ridge and Arbour Lake. The area also contains 12 Mile Coulee Park and the Crowfoot Business/ Commercial centre. Stoney Trail traverses between these communities in a north/south axis. The same communities are bisected in the east/west direction by Crowchild Trail. Crowchild Trail is an urban expressway, which includes planning for a double track LRT in the center median. These two major roadways and plans for the LRT separates Scenic Acres from Tuscany and the 12 Mile Coulee Park and from the Crowfoot Centre as well as from the other residential areas. In a similar fashion, each of the other communities is bisected away from its neighbours by major transportation corridors. Recognizing the importance of 12 Mile Coulee as a local scenic, environmental and recreational area, efforts have been made to cross Stoney Trail. A pathway underpass under Stoney Trail has been provided near the south end of the park. A pathway has been provided along Scenic Acres Link at the center of the park area. Both of these pathways allow excellent cross access across the Stoney Trail corridor. The utility portion of the TUC from Crowchild Trail to Nose Hill Drive has been leased by City of Calgary Parks to provide additional park-like space and pathways.

The existing pathway connection across Stoney Trail at Tuscany Boulevard will be removed as Stoney Trail is expanded and Tuscany Boulevard is relocated to its new interchange connection. Crowchild Trail separates Arbour Lake and the Crowfoot Centre from Scenic Acres and Stoney Trail separates them from Rocky Ridge/Royal Oak. Crowchild Trail will have pedestrian crossing facilities at the Centennial LRT Station and at the Nose Hill Drive/Crowchild Trail interchange. A stand-alone pedestrian bridge will be constructed over Stoney Trail to link Rocky Ridge/Royal Oak and Arbour Lake. West of Stoney Trail, Crowchild Trail will be crossed, initially at an at-grade signalized intersection and ultimately as part of the LRT station facility. This will allow the pathways on TUC land to connect Rocky Ridge/Royal Oak to Tuscany Boulevard and to 12 Mile Coulee Park. The facilities, when completed, will allow unrestricted non-vehicular pathway travel between residential communities, access to a major recreational facility and to a major commercial centre. These pathways also connect to those leading to the City centre and its employment for non-vehicular commuters.

Continuing to plan, to design and to implement pathway facilities into transportation corridor development will allow the City of Calgary to meet its vision for non-motorized access and movement. These facilities show what major vehicular and commuter rail facilities are necessary to the modern city. These corridors need not become barriers to everyday travel on foot, bicycle, or any of the other non-vehicle modes employed by today's residents. Proper planning and design as well as timely implementation can integrate the facilities into the corridor design with a minimum of additional cost and allow for each access. It is prudent for any transportation authority or agency to plan for the maximum logical benefits of all modes of transportation to be incorporated into new projects.

## **REFERENCES**

None

## **TABLES**

None.

## **FIGURES**

Figures are within the text to enhance the flow of the paper.