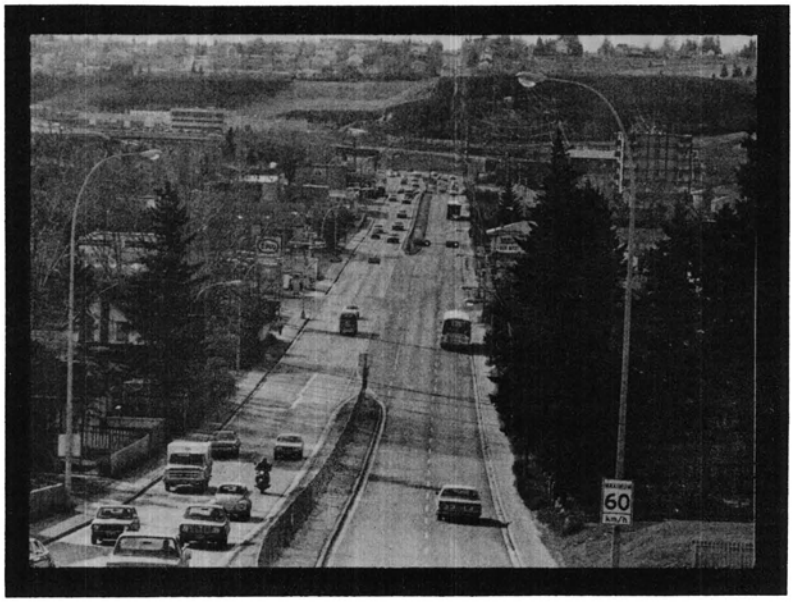
Crowchild Trail North



functional planning study

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TRANSPORTATION DEPT.

CALTS SERIES FIFTY THREE
DECEMBER , 1978

On February 22, 1979, City Council adopted the following resolutions regarding North West Area Transit Study and Crowchild Trail North Functional Study.

1. Commit L.R.T. on the 10th Street North West Corridor for construction in the early 1980's (refer to Exhibit 1.1 in the L.R.T. Corridor Evaluation Report) subject to City Council adopting the Functional Study as indicated in Recommendation 3.

2. Adopt a policy to be taken account of by the Development Officer, Calgary Planning commission, and by the Development Appeal Board of not permitting any new development, redevelopment, change of use or extension of existing buildings in area shown in Exhibits 1(a) and 1(b) until Council has adopted a specific right-of-way, station locations and land use policy for the North West L.R.T. corridor.

3. Instruct the Administration to conduct the following studies with full citizen participation:
   (a) functional study for L.R.T. in the 10th Street Corridor and extending to the North West along Crowchild Trail.
   (b) land use policy study for the same corridor,
   (c) financial impact of implementing the North West L.R.T. line.
   (d) potential impact on downtown parking policies.
   (e) potential impact on the future extension of Shaganappi Trail and/or Sarcee Trail.

4. Instruct the Administration to prepare an amendment to the Calgary General Municipal Plan to include the North-West L.R.T.

5. Adopt the Crowchild Trail North Functional Study for right-of-way protection.

6. Refer back to Administration the Crowchild Trail North Functional Study to review Stage 1, particularly with reference to the early construction of an overpass at Kensington Road.

7. Refer back to Administration the review of alternative designs for 24th Avenue/Crowchild Trail intersection for Stage 2 as part of the functional study for L.R.T.

8. That Council modify the North West Roads Study (C.A.L.T.S. #41) to restructure the priorities of development in the Crowchild Trail Corridor as follows:
   (a) Construction of an L.R.T. line along the Crowchild Trail corridor from downtown to N.W. Calgary.
   (b) Grade separation and widening of the Crowchild Trail facility subsequent to (a) and as subsequently approved.

CROWCHILD TRAIL NORTH

FUNCTIONAL PLANNING STUDY

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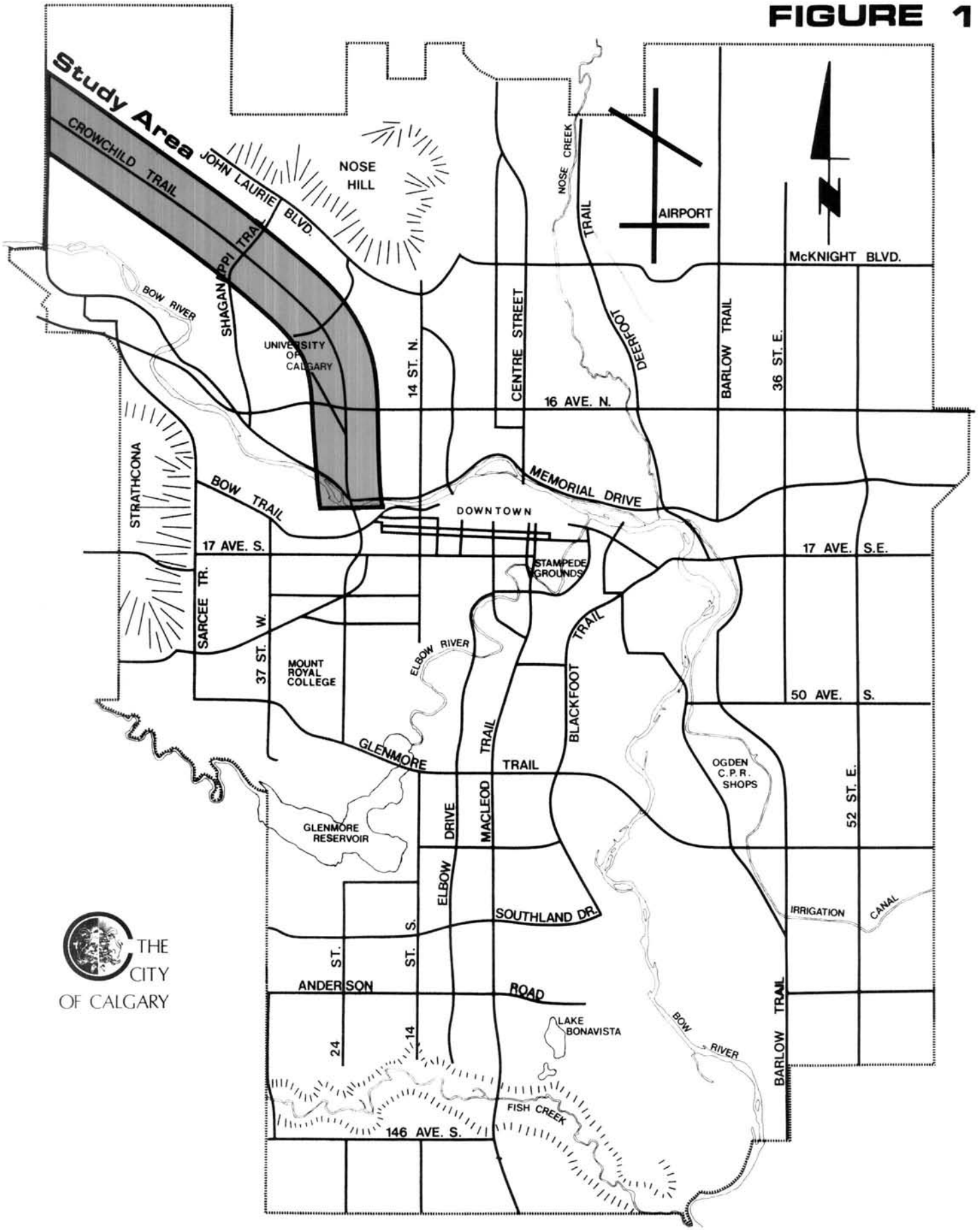
INTRODUCTION

A functional planning study of the Crowchild Trail between Glenmore Trail S. and Nose Hill Dr. N.W. (85th Street) was initiated in 1977 by the City of Calgary Transportation Department. The section of Crowchild Trail from Bow River south to Glenmore Trail was undertaken by the staff of the Transportation Department, while the portion from Bow River north to Nose Hill Dr. was undertaken by Stanley Associates Engineering Ltd. This report presents the results of the study north of the river. The area under study is shown in general in Figure 1, and in more detail in Figure 2.

The main purpose of this study has been to develop a plan for the upgrading of Crowchild Trail between the Bow River and Nose Hill Dr. N.W. (85th Street) that will help to serve the transportation needs of continued population growth in Northwest Calgary. The implications of the recommended improvements to Crowchild Trail in other transportation corridors within the City will be considered in other transportation studies planned or in progress.

FIGURE 1



CROWCHILD TRAIL NORTH
Functional Planning Study
Study Area

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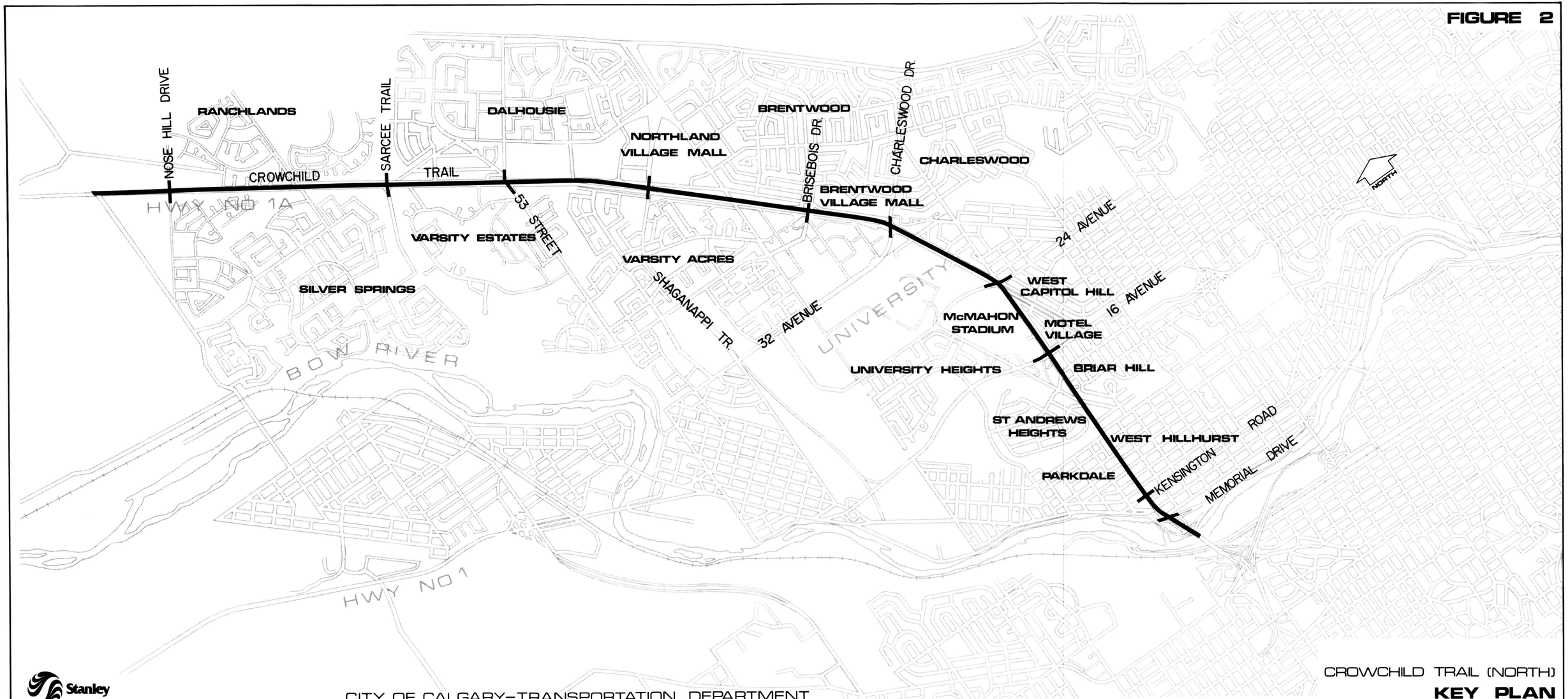
FIGURE 2



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CITY OF CALGARY–TRANSPORTATION DEPARTMENT

CROWCHILD TRAIL (NORTH)

KEY PLAN

BACKGROUND

Over the past decade, the Crowchild Trail has become an increasingly important component of the Calgary roadway system serving the west half of the City. It is evident that the section of Crowchild Trail north of the Bow River has, for the residents of Northwest Calgary, become the main transportation corridor for trips across the Bow River to South Calgary, to the Downtown area and to east-west routes, such as the Trans-Canada Highway, Memorial Drive, and Bow Trail.

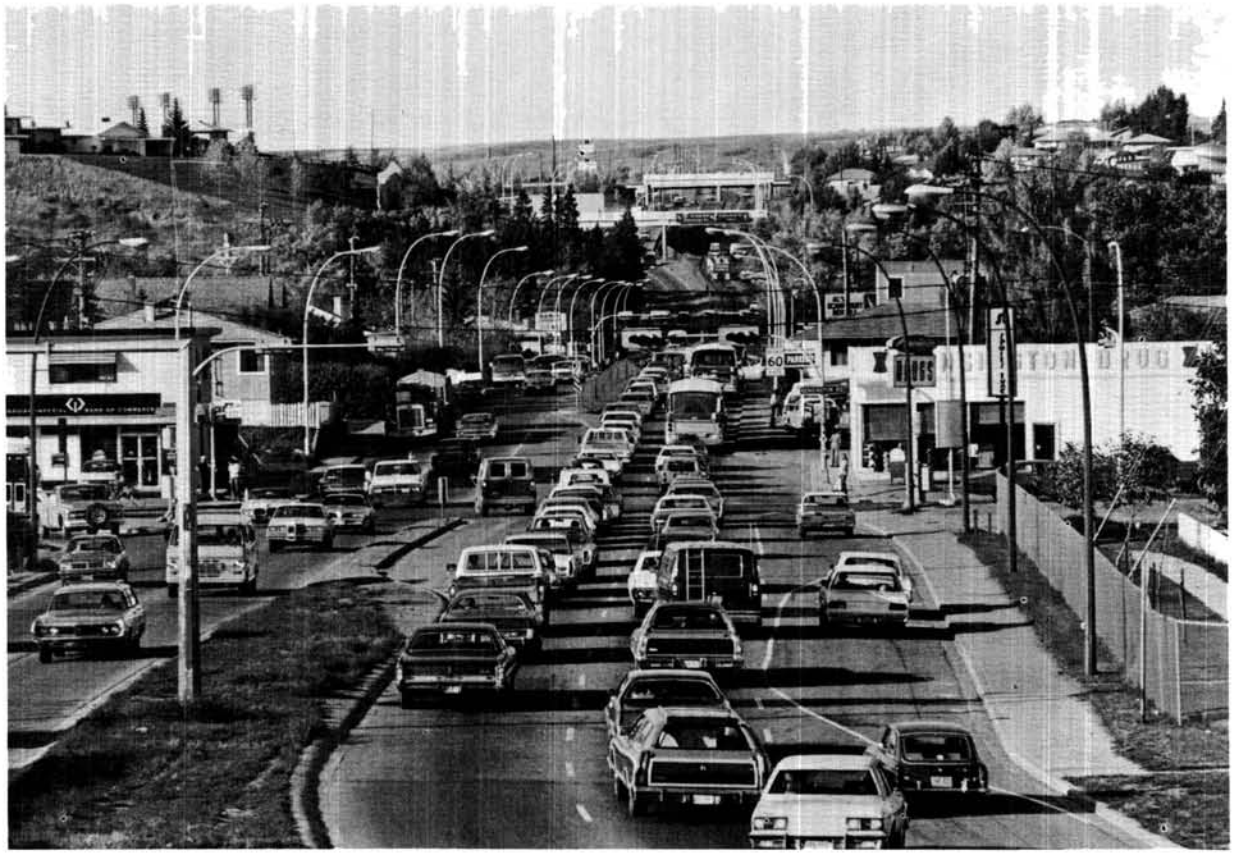
The need to upgrade Crowchild Trail has been documented in several previous transportation studies adopted by City Council. The City Transportation Bylaw (Bylaw 8500), adopted in 1972, set forth the general transportation corridor requirements for future City growth. This Bylaw designated Crowchild Trail as a free flow expressway, including provision for a rapid transit line.

In 1973, the Balanced Transportation Plan recommended that if the anticipated high volumes of traffic on Crowchild Trail are to be accommodated, the Crowchild Trail will eventually need to be upgraded to a free-flow expressway standard south from Charleswood Drive, having grade separated interchanges at Charleswood Drive and 16th Avenue N., and grade separations at University Drive, 5th Avenue, and Kensington Road. Also, in this study, the Crowchild Trail in Northwest Calgary was designated as a future rapid transit corridor.

The Transportation Improvement Priority Study (TIPS), adopted by Council in 1976, recommended the improvements to the Calgary transportation network for the next decade to 1986. This study indicated construction of an interchange at Crowchild Trail and Kensington Road and a widening to six lanes from the Bow River to Charleswood Drive would be required within the time period 1976 to 1986.

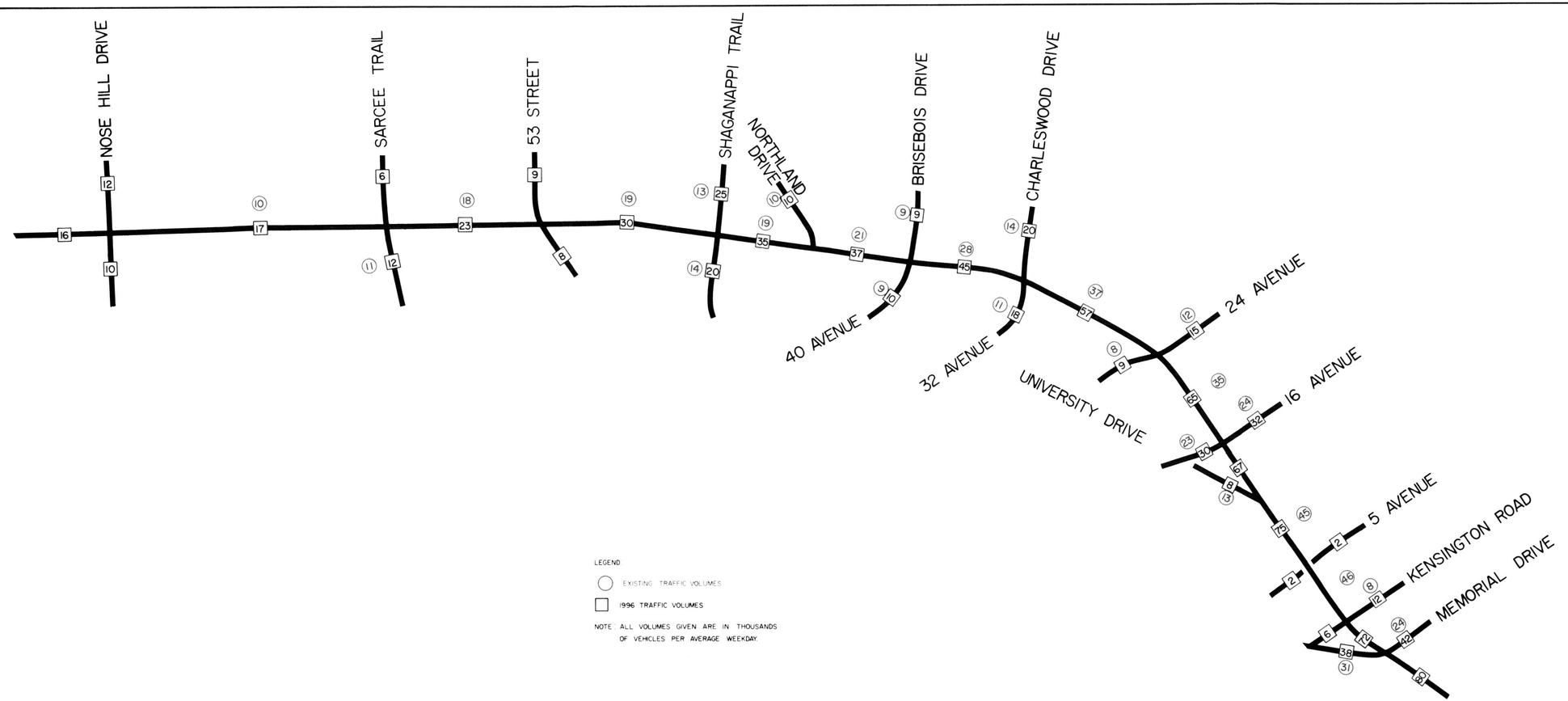
The Northwest Roads Study, adopted by City Council in November of 1976, identified the road and transit improvements required to serve potential population growth in Northwest Calgary. The study recommended that the Crowchild Trail be eventually upgraded from its present four lanes to an uninterrupted six lane divided expressway with interchanges at key crossroads. It further recommended that a Light Rail Transit (LRT) line be considered from downtown to the N.W., utilizing the Crowchild Trail corridor.

The desirability of Crowchild Trail as a major traffic corridor is reflected in the increasing daily traffic volumes on the route. The lower portion of Crowchild Trail between University Drive and the Bow River is already experiencing high levels of peak hour volumes as illustrated in the photo below. This is also true for the intersections at 24th Avenue and at Charleswood Drive.



The Balanced Growth Strategy for Calgary approved by Council in March, 1977 indicates continued residential and commercial growth in the northwest, south, and southwest quadrants of the City. The continued growth in these quadrants, together with continued emphasis on the Downtown Business Core, will steadily increase traffic volumes on the Crowchild Trail corridor for Downtown and cross-river trips. The estimated 1996 traffic volumes in the Study Area associated with the projected growth in the Balanced Growth Strategy are shown in Figure 3.

FIGURE 3



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CITY OF CALGARY–TRANSPORTATION DEPARTMENT

CROWCHILD TRAIL (NORTH)

EXISTING & 1996

TRAFFIC VOLUMES

STUDY APPROACH

Organization

The study has involved the efforts of a technical design team, made up of members of the City of Calgary Transportation Department and the Consultant. Throughout the study, the technical team has received input from other City Departments, as well as Alberta Transportation.

Also, a citizen review team, composed of representatives from various interest groups, communities, business, and activity centres associated with the Crowchild Trail, has provided input and review to the study. A summary of the citizen participation program is documented in Figure 4. Further information regarding the public participation program is supplied in Appendix A.

Consideration of L.R.T.

In the determination of the most feasible roadway design for upgrading Crowchild Trail, provision has been made for a 60-foot median to accommodate a possible Northwest LRT system, from approximately 24th Avenue N.W. to Nose Hill Dr. N.W. (85th Street).

The Northwest Transit Study presently being undertaken by the City Transportation Department is developing a plan for the design and implementation of a Light Rail Transit System for Northwest Calgary. The results of the study will be presented to City Council in conjunction with this report.

FIGURE 4

CROWCHILD NORTH FUNCTIONAL PLANNING STUDY
PUBLIC PARTICIPATION PROGRAM OUTLINE

DATE	LOCATION	PARTICIPANTS	PURPOSE
September 28, 1977	Chief Crowfoot Elementary School	Representatives from local community associations, activity centres adjacent to Crowchild Trail and other interest groups (Citizen Project Team)	Introduce purpose, objectives and work program of the project. Identify local concerns and issues regarding the upgrading of Crowchild Trail. Forty-seven major concerns were discussed. These are documented in Appendix A.
October 6, 1977	Chief Crowfoot Elementary School	Citizen Project Team	Continue the discussion of concerns raised at the first meeting.
October 26, 1977	Chief Crowfoot Elementary School	Citizen Project Team	Further discussion of local issues. Presentation and discussion of alternative interchange designs for Crowchild Trail from Bow River north west to Brisebois Dr. Additional citizen concerns recorded at this meeting are documented in Appendix A.
November 16, 1977	Chief Crowfoot Elementary School	Citizen Project Team	Continue discussion of alternative designs for Crowchild Trail from Bow River to Brisebois Dr. Presentation and discussion of alternative designs for the section of Crowchild Trail from Brisebois Dr. west to 85th Street.
December 14, 1977	Chief Crowfoot Elementary School	Citizen Project Team	Continue discussion of design alternatives and review of design recommended by the Technical Team.
January 27, 28, 1978	Chinook Shopping Centre	General Public	Public Information Centre. Forum for input from public at large. Comment sheets provided for written input.
February 3, 4, 1978	Market Mall Shopping Centre	General Public	Public Information Centre. Forum for input from public at large. Comment sheets provided for written input.
October 25, 1978	Chief Crowfoot Elementary School	Citizen Project Team	Discuss local issues and review the Draft Report.

FIGURE 4

Methodology

The recommended design has evolved after consideration of roadway safety standards, efficient operation, and impacts on adjacent land uses. Where possible, the grade of Crowchild Trail has been depressed to help alleviate traffic noise. Also, where possible, the roadway alignments have been located in order to maximize the use of land already owned by the City and thereby to minimize the acquisition of additional private property. An identification of impacts from the recommended design on the adjacent land uses has been undertaken. This identification has included:

- displacement of homes
- displacement of commercial property
- access restrictions
- transit rerouting
- pedestrian walkways
- air quality
- noise attenuation measures
- landscaping

Geotechnical Considerations

In order to properly assess such factors as groundwater levels, slope stability, and soil conditions, a geotechnical investigation was carried out by R.M. Hardy & Associates Ltd. The complete findings of that study are contained in a separate report noted below.(1)

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(1) Crowchild Trail North Functional Planning Study Geotechnical Investigation, R.M. Hardy & Associates, December 1977.

RECOMMENDED PLAN

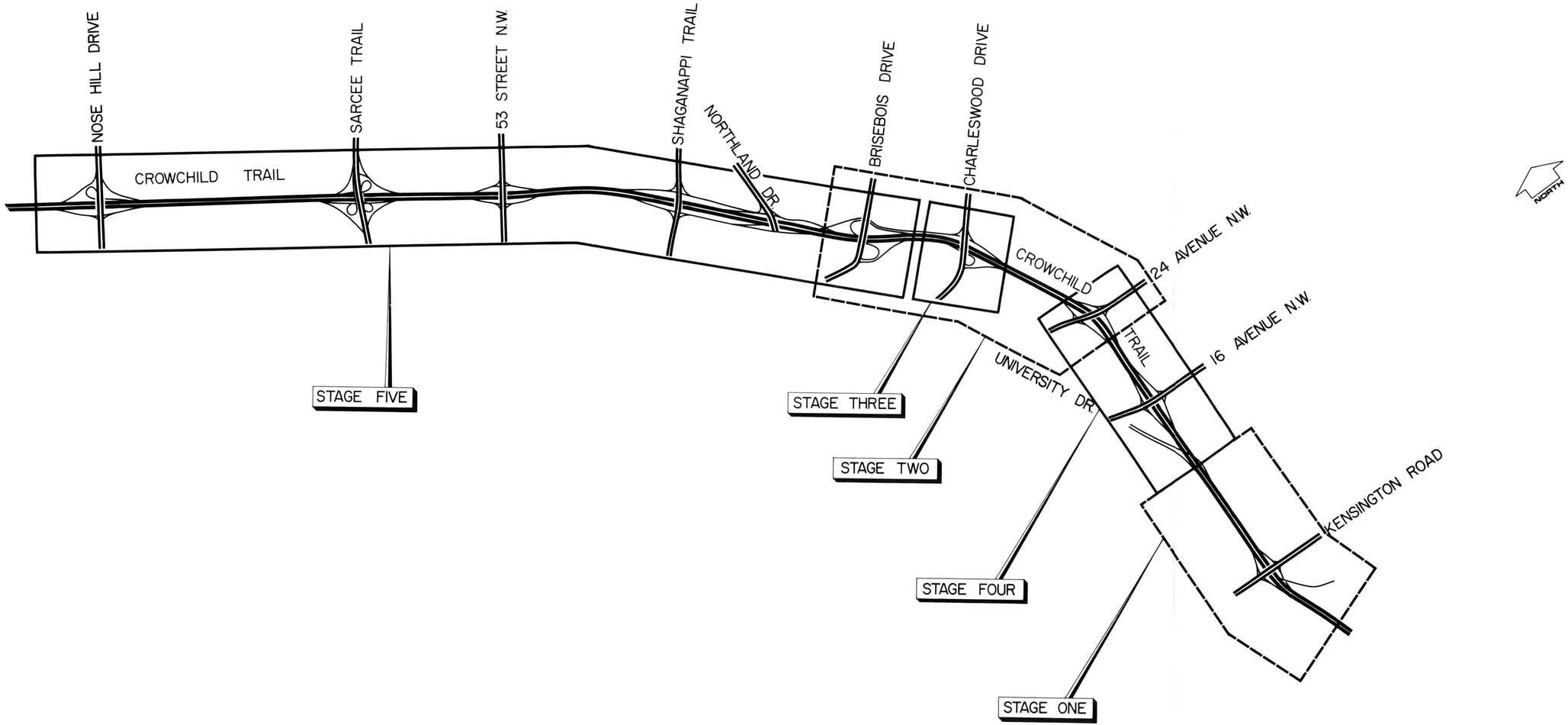
It is recommended that the upgrading of Crowchild Trail to a six lane free-flow expressway be undertaken in a minimum of five stages, recognizing that improvements in the worst problem areas be implemented first, with the remainder undertaken later, as required. The recommended staged improvements are summarized in Table 1, and are illustrated in Figure 5.

Implementation of first stage improvements between the Bow River and University Drive within the next 5 years will help alleviate the existing traffic congestion at Memorial Drive, Kensington Road, 5th Avenue, and University Drive, and will increase the capacity of Crowchild Trail between 24 Avenue North and the Bow River.

Improvements to the section of Crowchild Trail between University Drive and 24th Avenue North, which are relatively costly, will not be required until well after 1996 with the implementation of the Stage 2 improvements between 24 Avenue and Brisebois Drive (widening to six lanes and minor improvements to the intersections at 24 Avenue, 32 Avenue and 40 Avenue). The implementation of Stage 2 will help to increase the free-flow characteristics of Crowchild Trail, alleviate congestion at these intersections, and provide the necessary right-of-way (60 foot median) for the proposed Northwest L.R.T. line. Implementation of Stage 2 should coincide with the construction of the Northwest L.R.T., or by 1986, whichever comes first.

It should be noted that the roadway upgrading recommended in Stages 1 and 2 conforms to the recommendations of the Transportation Improvements Priority Study (T.I.P.S.) adopted by Council in 1976.

FIGURE 5



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CITY OF CALGARY–TRANSPORTATION DEPARTMENT

CROWCHILD TRAIL (NORTH)

STAGING PLAN

TABLE 1 SUMMARY OF RECOMMENDED IMPROVEMENTS AND STAGING

	STAGE	IMPROVEMENTS	TIMING
1.	Bow River to University Drive	An interchange at Kensington - Crowchild Tr. A cul-de-sac at 5th Ave. N. Widening to six lanes to University Dr.	By 1983
2.	24th Ave. N. to Brisebois Dr. N.W.	Widening to six lanes. Improvements to 24th Ave., Charleswood Dr. and Brisebois Dr. intersections.	By 1986, or in conjunction with LRT
3.	Charleswood Dr. N.W.	An interchange at Charleswood - Crowchild Tr.	Between 1986 and 1996, subject to future traffic demands.
4.	University Dr. to 24th Ave. N.	Improvements to Trans-Canada Highway - Crowchild interchange. Improvements to the TCH-University Dr. interchange. An interchange at 24th Ave. Widening to six lanes.	After 1996, subject to future traffic demands.
5.	Brisebois Dr. to 85th St. N.W.	Widening to six lanes. Interchanges at Brisebois Dr., Northland Dr., Shaganappi Tr., 53rd St., Sarcee Tr., and Nose Hill Dr. N.W. (85th St.)	After 1996, subject to future traffic demands.

At the time that the detailed design of the Northwest L.R.T. line is underway, it will be determined if interchanges are required at 24 Avenue and Charleswood Drive, in order to achieve the proper roadway/transit integration.

The improvements in Stage 1 and 2 and the construction of the Northwest L.R.T. line should provide an adequate level of transportation service in the Crowchild Trail corridor for the next two decades. If traffic demands increase at a faster rate than projected, construction of an interchange at Charleswood Drive, which has been designated as Stage 3, will further increase the capacity of the system.

In Stage 4, the upgrading of Crowchild Trail to a six lane free-flow facility between Bow River and Charleswood Drive is completed with modifications to the existing interchanges at University Drive and Trans-Canada Highway and with the construction of an interchange at 24 Avenue (if the 24 Avenue interchange was not constructed with the L.R.T.).

The long range improvements to Crowchild Trail from Brisebois Drive west to 85 Street, designated as Stage 5, can be undertaken as required to serve future traffic demands. The timing for Stages 4 and 5 may be well beyond the 1996 planning horizon, and cannot be determined at this time. However, in the intervening time period, the property lines established for the recommended roadway design can be used to protect the right-of-way as necessary.

The design plan recommended in this study provides for the maximum allowable access to adjacent communities and activity centres along Crowchild Trail, while it ensures safe and efficient operation of the transportation system.

Adjacent residential areas will be shielded from traffic noise by various noise attenuation measures incorporated into the design. Also, the visual impact of the roadway will be reduced by the installation of landscaping and fences in accordance with accepted city standards. Typical cross sections showing both the incorporation of noise attenuation and landscaping features, and the integration of the Northwest L.R.T. line (north of 24 Avenue) are shown for Stages 1 to 4.

Air quality study of areas adjacent to the Crowchild Trail north of the Bow River was undertaken as part of this functional study[1]. In the study, emissions from current traffic volumes were estimated and compared with those from projected traffic volumes in 1996. These emissions were used to calculate air quality which was then compared with Alberta Environment standards.

In assessing emissions from traffic on Crowchild Trail, it is also necessary to take into account current air quality in the City of Calgary. It is generally recognized that the City of Calgary has an air quality problem. Levels of oxides of nitrogen and carbon monoxide exceed Alberta Environment standards on occasion in many parts of the City.

For example, the 1974 air monitoring annual report for the City of Calgary prepared by Alberta Environment concluded that nitrogen dioxide levels in excess of the applicable air quality standards were recorded and occurred mainly during the winter months. It also concluded that carbon monoxide levels exceeding the standard occurred in the fall and winter months. Recent results from the "NAPS" monitoring stations in Calgary (December 1977) confirm that these generally high levels of carbon monoxide and nitrogen dioxide are still occurring in the City.

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(1) Crowchild North Functional Planning Study Air Quality Impact, Stanley Associates Engineering Ltd., November 1977.

Investigations carried out as part of this current study into the air quality impact of the Crowchild Trail North gave calculated results for 1977 similar to those obtained by actual air monitoring over the last few years in Calgary.

Results of the study also indicate that the areas adjacent to the Crowchild Trail will experience better air quality at the 1996 projected traffic volumes, due to more strict emission standards and the more free-flow nature of the improved road system.

The remainder of the report describes for each stage, the components of the recommended improvements, the measures for minimizing impacts on adjacent areas, and the estimated land and construction costs. Alternative plans investigated during the study are contained in Appendix C. These alternatives were found to be less desirable than the recommended design due to land use conflicts, cost factors, community impact and operational or design constraints.

STAGE 1 - BOW RIVER TO UNIVERSITY DRIVE

Grade separation of Crowchild Trail and Kensington Road is required to provide free-flow traffic on Crowchild Trail and to accommodate the heavy turning movement from westbound on Memorial Drive to northbound on Crowchild, and the reverse movement from Crowchild Trail southbound to eastbound on Memorial Drive. As shown in Figure 6, Crowchild Trail will be elevated to pass over Kensington Road, and will return to existing grade between 5th Avenue and Kensington Road.

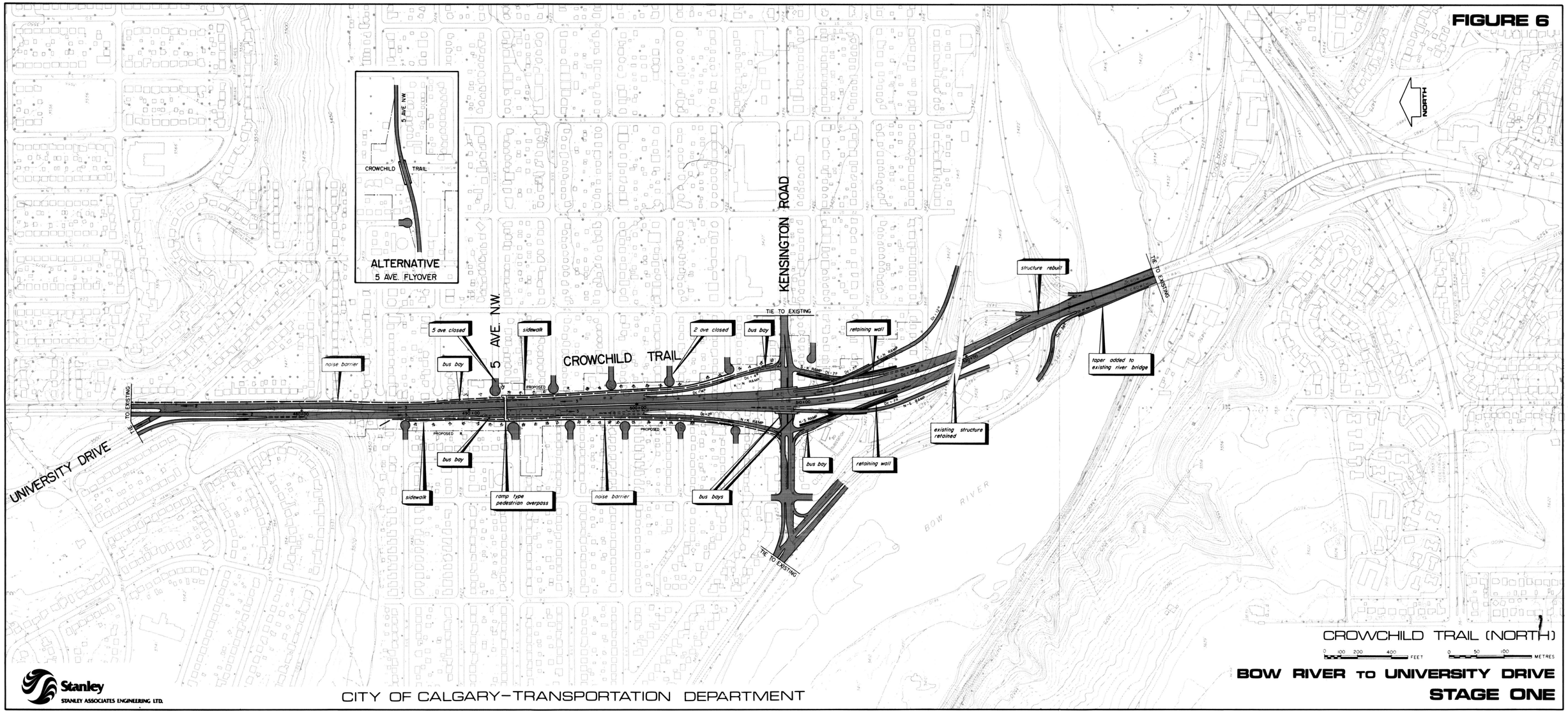
Widening to six lanes will start on the Bow River Bridge and proceed north to tie into the existing four lane Crowchild Trail as shown. The additional third lanes will tie into the existing ramps to and from University Drive.

Safe operation of the Kensington Rd./Crowchild Tr. ramps necessitates that the easterly accesses to the West Hillhurst Community at 2nd and 9th Avenues and the east-west access to West Hillhurst and Parkdale Communities at 5th Avenue be closed. Alternate access to the communities on the east and west sides of Crowchild Trail will be via Kensington Road, Memorial Drive. North of 5th Avenue and east of Crowchild Trail access will be via Kensington Road or 19th Street.

The roadway design provides for pedestrian circulation with the construction of a pedestrian overpass at 5th Avenue and sidewalks on Kensington Road at the overpass. These locations are indicated in Figure 6.

Bus service will be maintained throughout the area but with some modifications. The Blue Arrow Services, and Route 25 (Chinook-University) will be rerouted through the Kensington/Crowchild interchange, with appropriate bus bays on the ramps. Also, a bus stop will be provided along Crowchild Trail at the 9th Avenue N. pedestrian overpass (see Figure 6).

FIGURE 6



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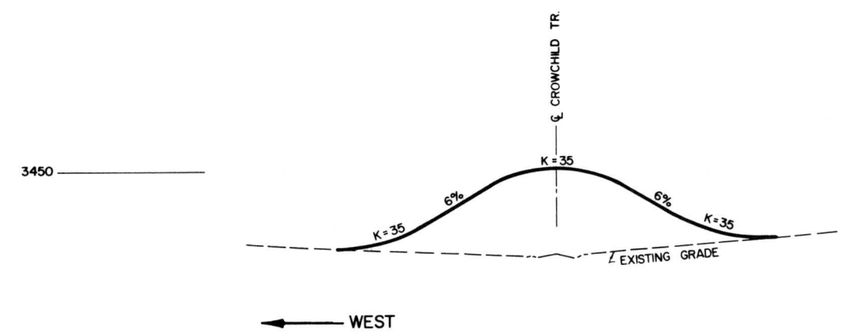
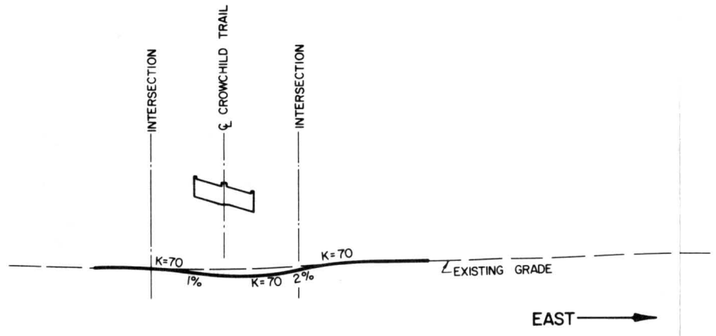
CITY OF CALGARY—TRANSPORTATION DEPARTMENT

BOW RIVER TO UNIVERSITY DRIVE
STAGE ONE

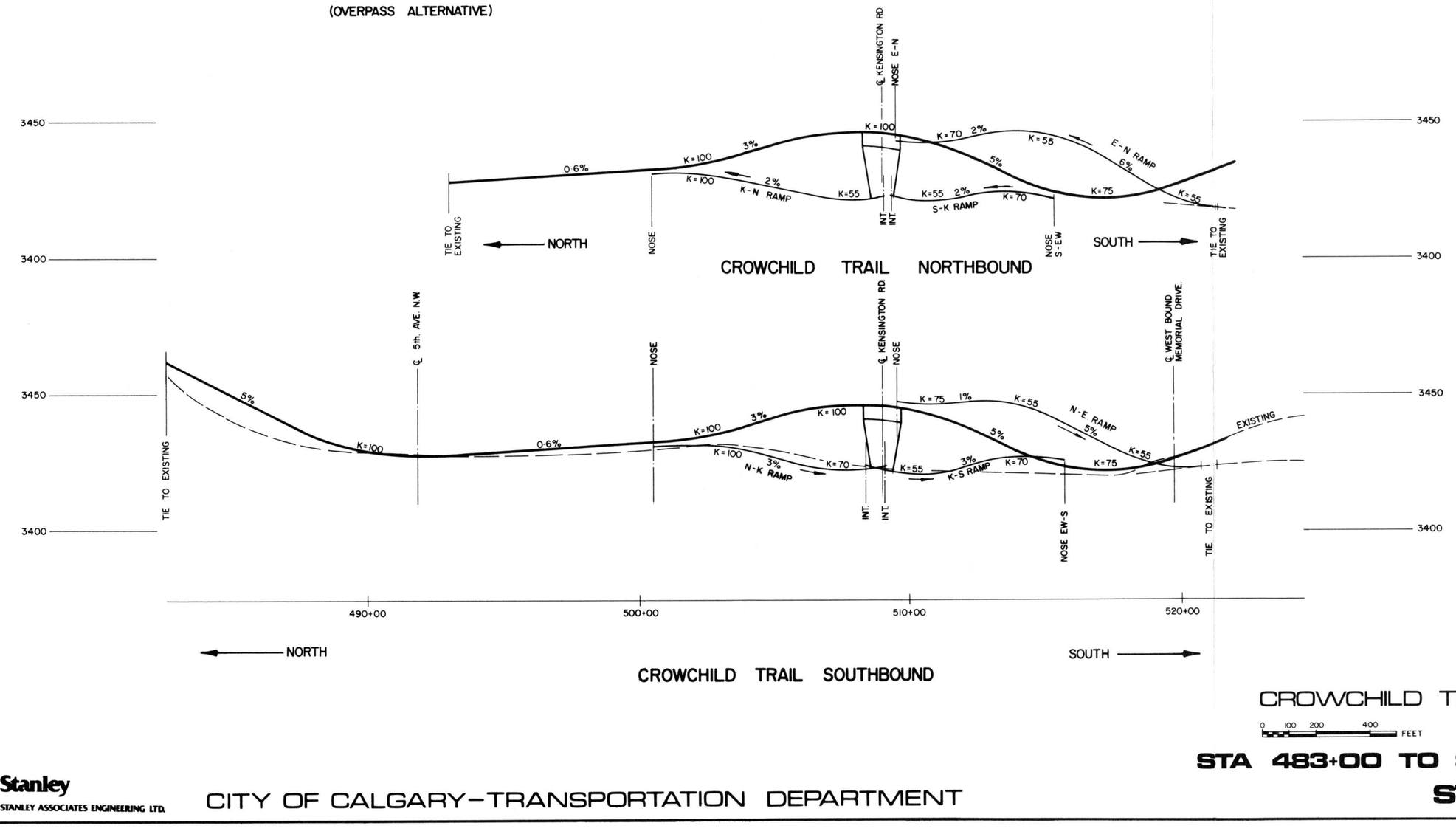
FIGURE 7



5 AVENUE N.W.
(OVERPASS ALTERNATIVE)



KENSINGTON ROAD



CROWCHILD TRAIL NORTHBOUND

CROWCHILD TRAIL SOUTHBOUND

CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET

0 50 100 METRES

STA 483+00 TO STA 524+00

STAGE ONE

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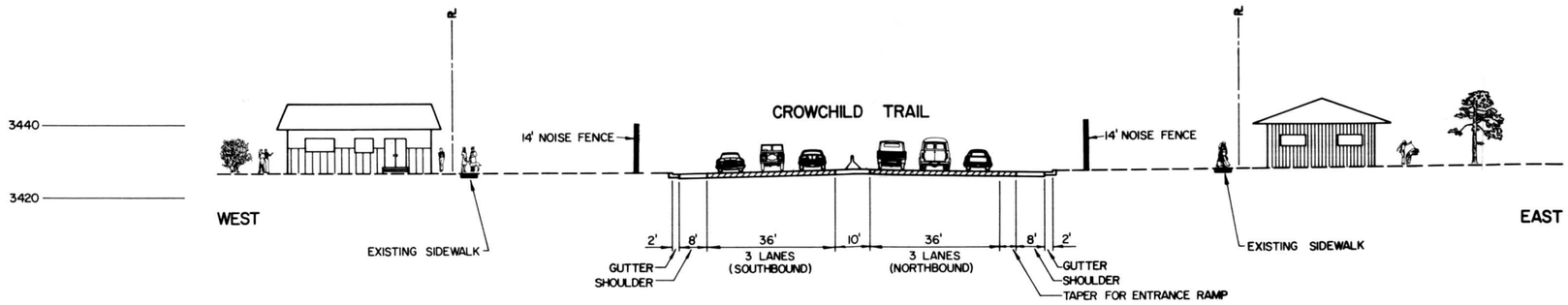
Land requirements for the roadway improvements through this section will affect certain residential and commercial components of the adjacent communities. Residential properties required for these improvements include 16 city owned and 44 private residences.

At the Kensington/Crowchild interchange, a total of 7 businesses will be acquired. Also, between Kensington and 5th Avenue North, an additional 9 businesses will be acquired, since they will no longer have access from Crowchild Trail.

Adjacent communities will be shielded from traffic by noise abatement measures incorporated into the interchange structures and the roadway widening. Noise levels experienced by local residents after these improvements will be reduced or will remain substantially the same as at present. The locations and characteristics of these noise attenuation measures, as well as the landscaping treatment to soften the visual impact, are indicated in Figure 8.

The estimated construction and land costs for implementing Stage 1 are summarized in Table 2. Unit costs used in deriving construction costs are based on 1978 City of Calgary tender prices. Land costs reflect 1978 market values, and do not include costs for existing City owned property.

FIGURE 8



CROWCHILD TRAIL AT 5th AVE. N.W.

CROWCHILD TRAIL (NORTH)

0 10 20 40 FEET 0 5 10 METRES

REPRESENTATIVE CROSS SECTION

STAGE ONE

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TABLE 2 SUMMARY OF ESTIMATED COSTS FOR STAGE 1 (1978 DOLLARS)

CONSTRUCTION		
Roadworks		$2,700,000
Structures		$3,360,000
	Subtotal	$6,060,000
LAND		$6,140,000
	Total	$12,200,000

STAGE 2 - 24TH AVENUE TO BRISEBOIS DRIVE

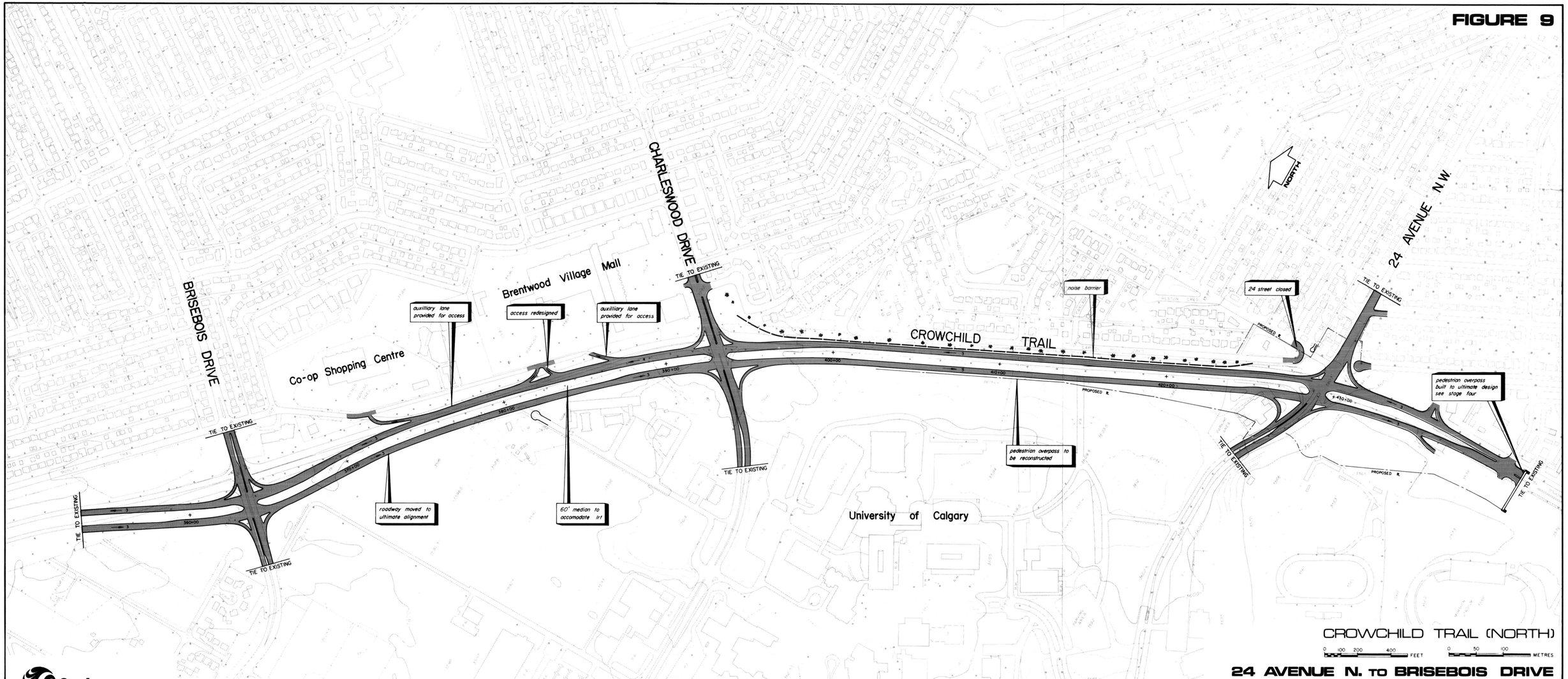
The improvements for Stage 2 are shown in Figure 9. Widening the Crowchild Trail to 6 lanes with a 60-foot median between 24th Avenue and Brisebois Drive will increase the traffic handling capacity of Crowchild and help traffic flow in this area, especially in the vicinity of Charleswood Drive. It will also accommodate the proposed N.W. LRT line, which is to run in the median of Crowchild Trail. The rail line is expected to be extended as far as 53rd Street. In order to accommodate entry of the LRT line into the median of Crowchild, the 60-foot median and road widening will begin at 23 Avenue N. (see Figure 10). At the west end of this stage, the widening will tie back into Crowchild Trail approximately 1500 feet west of Brisebois Drive. Beyond this point a 60-foot median already exists.

The design for Stage 2 also includes improvements to the intersections at 24th Avenue, Charleswood Drive and Brisebois Drive noted in Figure 9.

West from 24th Avenue, it is recommended that the roadway be constructed at the ultimate grade and alignment to be compatible with the proposed LRT alignment and future improvements to 24th Avenue, Charleswood Drive, and Brisebois Drive in Stages 3, 4 and 5. This ultimate alignment and grade will also help to reduce visual and noise impact on adjacent residential areas.

The grade and alignment suggested for Stage 2 requires the property occupied by the Church of Jesus Christ of Latter Day Saints located at 24th Ave. N.W. Alternative designs for the 24 Ave. intersection which avoid taking the Church property in Stage 2 have been reviewed. (These are presented in Figures 9a and 9b). These alternative designs may not be compatible with the proposed integration of the L.R.T. into the median of Crowchild Trail in the vicinity of 24 Avenue. Also, a portion of the Crowchild Trail lying to the east and west of 24 Avenue may have to be reconstructed to accommodate improvements during Stage 4.

FIGURE 9



CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET 0 50 100 METRES

24 AVENUE N. TO BRISEBOIS DRIVE

STAGE TWO

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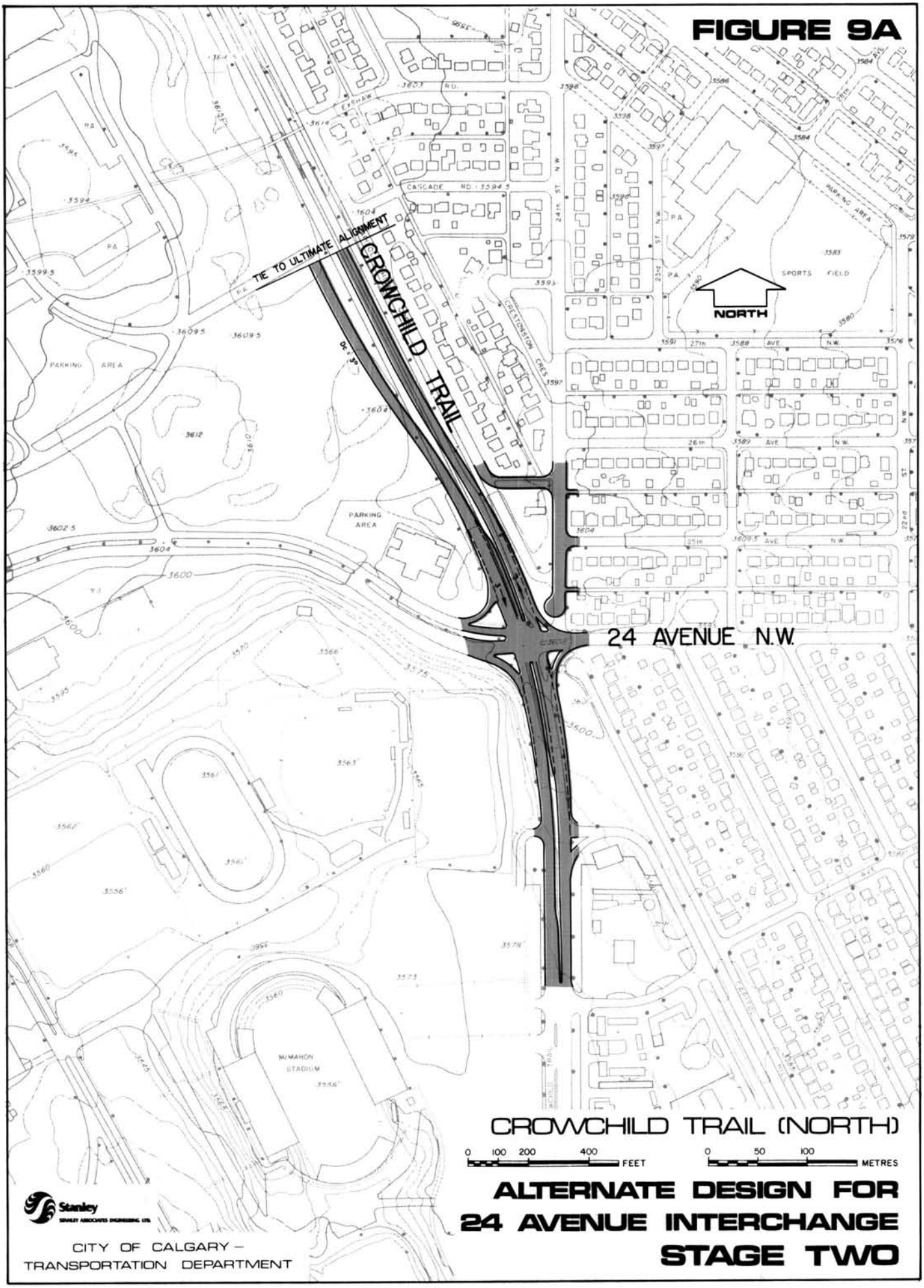
FIGURE 9A
TIE TO ULTIMATE ALIGNMENT
CROWCHILD TRAIL
NORTH
SPORTS FIELD
PARKING AREA
PARKING AREA
CRESTMONT CRES
CASCADE RD
24 AVENUE N.W.
McMAHON STADIUM
CROWCHILD TRAIL (NORTH)
0 100 200 400 FEET
0 50 100 METRES
ALTERNATE DESIGN FOR
24 AVENUE INTERCHANGE
STAGE TWO
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FIGURE 9B

CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET

0 50 100 METRES

ALTERNATE DESIGN FOR 24 AVENUE INTERCHANGE STAGE TWO

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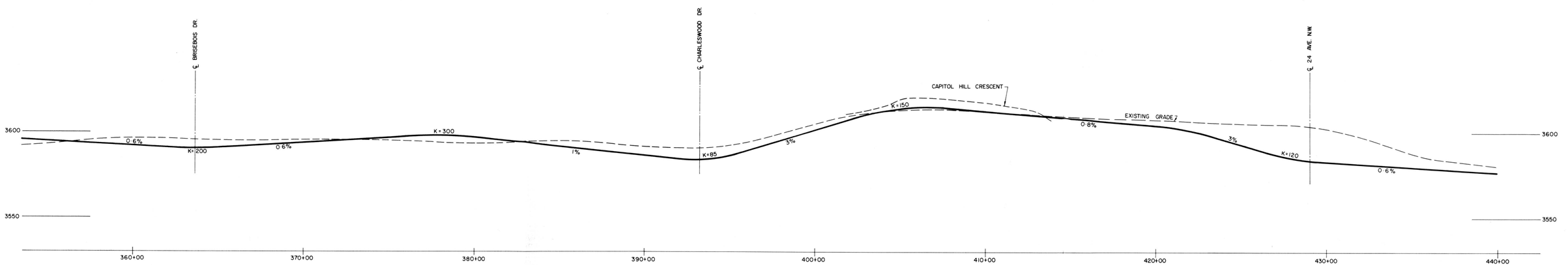
TRANSPORTATION DEPARTMENT

FIGURE 10



CROWCHILD TRAIL

CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET 0 50 100 METRES

STA 355+00 TO STA 440+00

STAGE TWO

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CITY OF CALGARY—TRANSPORTATION DEPARTMENT

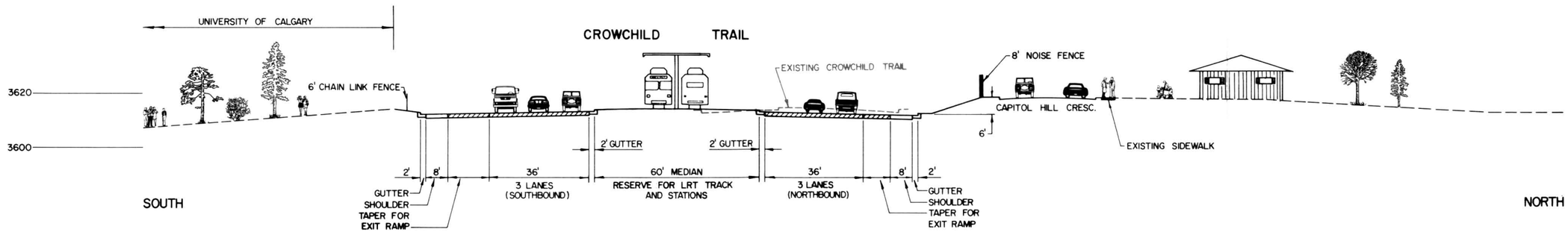
Further analysis of the feasibility of these alternative designs with respect to integration of the L.R.T. will be undertaken as part of the functional planning for the L.R.T.

Between 16th Avenue and 24th Avenue the widened median necessitates that left hand turns into Motel Village from southbound on Crowchild be closed at the northerly access. However, a right-in/right-out in this location will be maintained as shown. Improvements to 24th Avenue will require that the existing intersection of 24th Street with 24th Avenue will be closed as shown in Figure 9. Alternative access to 24th Avenue will be via 25th Avenue and 23rd Street. Safe operation of the improved 6-lane Crowchild facility west of Charleswood Drive will necessitate the closure of the first direct access points from Crowchild Trail to the Brentwood Mall frontage road. Direct access to the frontage road serving the shopping complex between Charleswood Drive and Brisebois Drive will be provided by the second, third and fourth entrances, which have been redesigned to provide more efficient operation. Also, an auxiliary westbound lane will be provided on the Crowchild to facilitate access to the Mall. These changes are illustrated in Figure 9. The other entrances and exits to the Brentwood Mall from Charleswood Dr. will remain as at present.

With regard to pedestrian circulation and transit, a pedestrian overpass linking Motel Village and McMahon Stadium will be provided. Also, the existing pedestrian overpass between 24th Avenue and Charleswood Drive will be reconstructed after the road widening and possibly incorporated into an LRT station at that location. At this time the location of LRT stations in the Crowchild Trail median has not yet been decided. It is likely, however, that stations will be placed in the following locations:

- in the vicinity of McMahon Stadium,
- between 24th Avenue and Charleswood to serve the University

FIGURE 11



BETWEEN 24 & 32 AVENUES N.W.

CROWCHILD TRAIL (NORTH)

0 10 20 40 FEET 0 5 10 METRES

REPRESENTATIVE CROSS SECTION

STAGE TWO

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CITY OF CALGARY–TRANSPORTATION DEPARTMENT

and the community areas to the north of Crowchild Trail,

- between Charleswood Drive and Brisebois Drive to serve Brentwood Mall, and the adjacent communities,
- between Brisebois Dr. and Shaganappi Tr. to serve Northland Village Mall and adjacent communities, and
- near 53rd St. N.W.

Pedestrian access to the LRT stations will be provided by underpasses or overpasses. An illustration of how the LRT line will possibly be integrated into the improved Crowchild Trail is shown in Figure 11.

The majority of land required for the roadway improvements in Stage 2 is already contained within the City owned right-of-way. Additional land required is as follows:

- approximately six acres of University land along the south side of Crowchild Trail to accommodate the road widening,
- the Church of Jesus Christ of Latter Day Saints, located at 24th Avenue, to accommodate the road widening, (depending on the outcome of additional study for LRT)
- one residence in the S.E. quadrant of the 24th Avenue intersection, to accommodate widening of the intersection,
- approximately 1 acre from the Foothills Athletic Park to accommodate the widening,
- the Service Station at 24th Avenue, due to the closure of its access to 24th Avenue.

To help minimize the visual and noise impact of Crowchild Trail, the design of this stage includes depressing the roadway, and appropriate noise fences parallel to the roadway in the residential areas north of 24th Avenue. The location and integration of these features in the design is illustrated in Figure 11.

The estimated land and construction costs for Stage 2 are summarized in Table 3.

TABLE 3 SUMMARY OF ESTIMATED COSTS FOR STAGE 2 (1978 DOLLARS)

CONSTRUCTION		
Roadworks		$3,600,000
Structures		$ 200,000
	Subtotal	$3,800,000
LAND		$1,800,000
	Total	$5,600,000

STAGE 3 - CHARLESWOOD DRIVE

Construction of an interchange at Charleswood Drive when required will aid the free-flow characteristics of Crowchild Trail and better accommodate the increasingly heavy turning volumes at Charleswood Drive and Crowchild Trail. The recommended design for this interchange is shown in Figure 12.

Charleswood Drive will be elevated approximately 15 feet above its present level and will pass over the Crowchild Trail. Traffic on Charleswood Drive wishing to travel west on Crowchild Trail will do so by travelling on a ramp connected to the Brentwood Mall frontage road, and entering Crowchild Trail via one of the Mall exits. Direct access to Brentwood Mall from Crowchild Trail will be via a directional ramp and auxiliary westbound lane as shown in Figure 12.

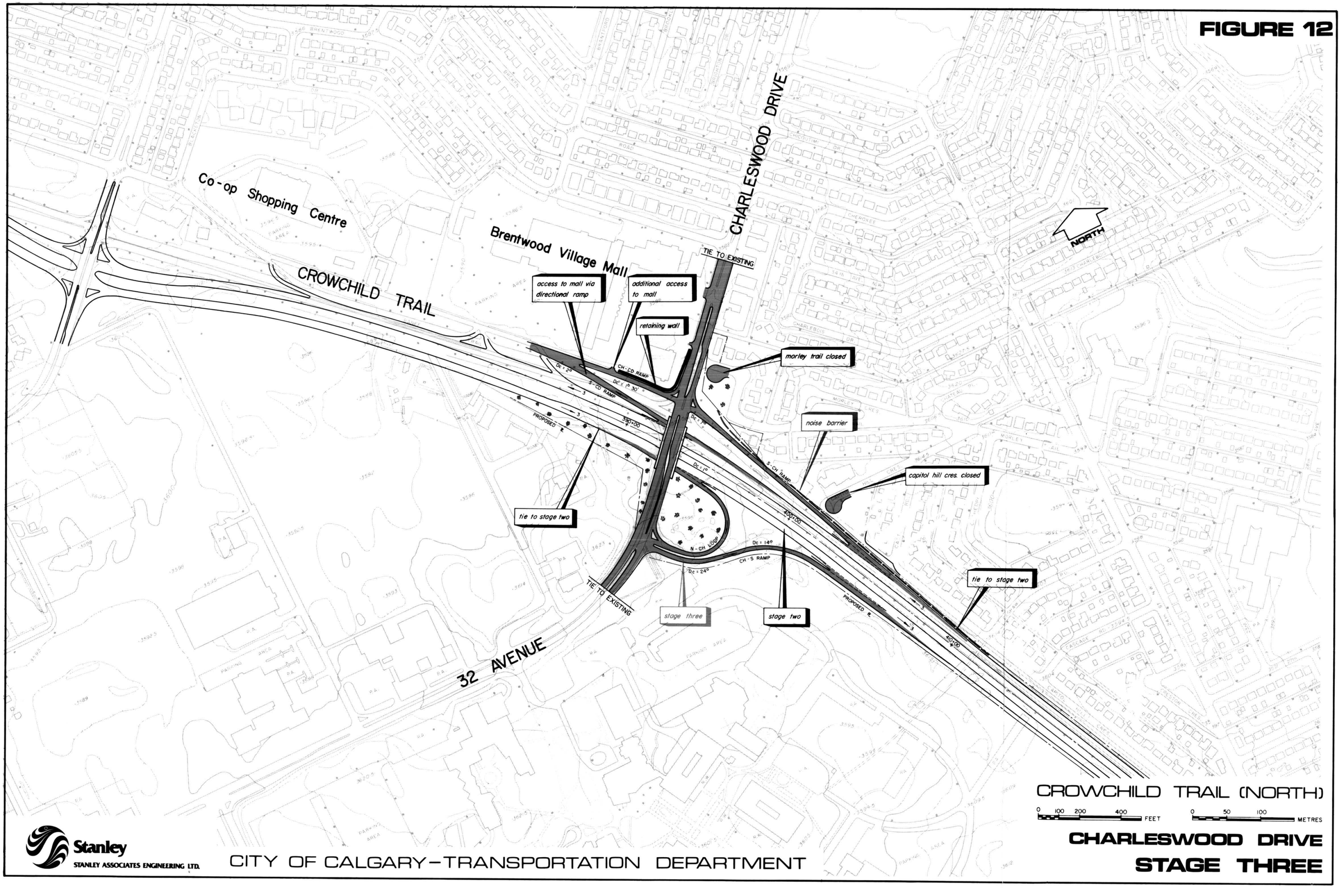
Elevation of Charleswood Drive necessitates that the Morley Trail/Charleswood Drive intersection be closed. Alternative access to this part of the Capitol Hill Community will be via 24th Street and the existing road system to the north as shown in Figure 12. Also, the present access point to Brentwood Mall on Charleswood Drive opposite Morley Trail will be converted into a right-in and right-out only. The existing access further to the north will remain as at present.

The interchange design provides for pedestrian mobility with the construction of sidewalks on both sides of the Charleswood Overpass. If the number 10 bus route has not been replaced by the LRT, the link from Morley Trail to Charleswood Drive will be rerouted to the street system between 24th Street and Charleswood. Also, if Blue Arrow Routes 102 and 103 are still running and have not been replaced by LRT it will be necessary to relocate the existing stops on Crowchild Trail near Charleswood Drive, to the Charleswood off-ramp. These changes are noted in Figure 12.

TABLE 3 SUMMARY OF ESTIMATED COSTS FOR STAGE 2 (1978 DOLLARS)

CONSTRUCTION		
Roadworks		$3,600,000
Structures		$ 200,000
	Subtotal	$3,800,000
LAND		$1,800,000
	Total	$5,600,000

FIGURE 12



CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET

0 50 100 METRES

CHARLESWOOD DRIVE

STAGE THREE

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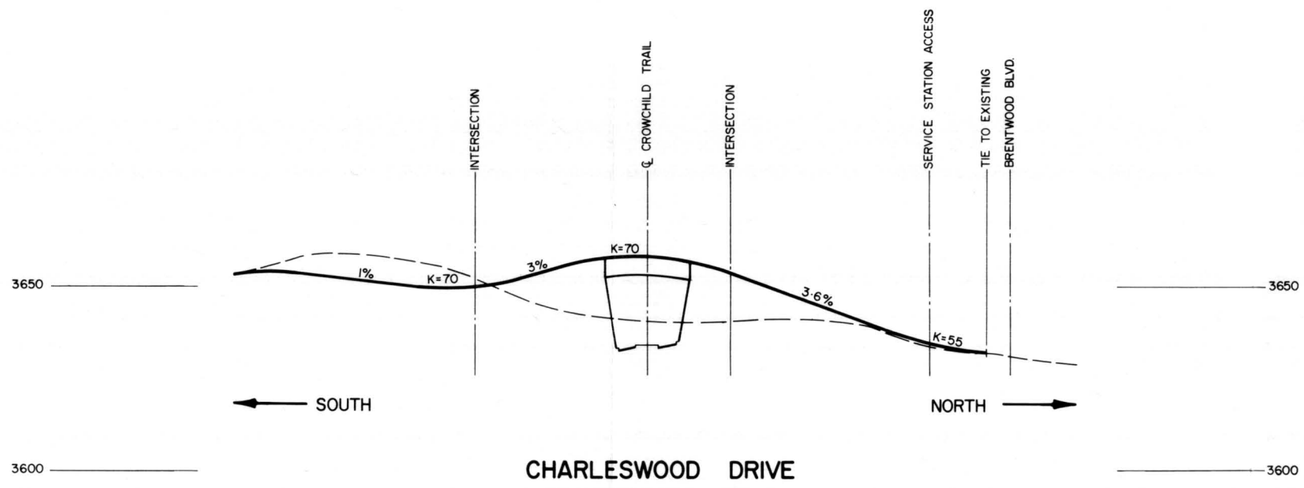
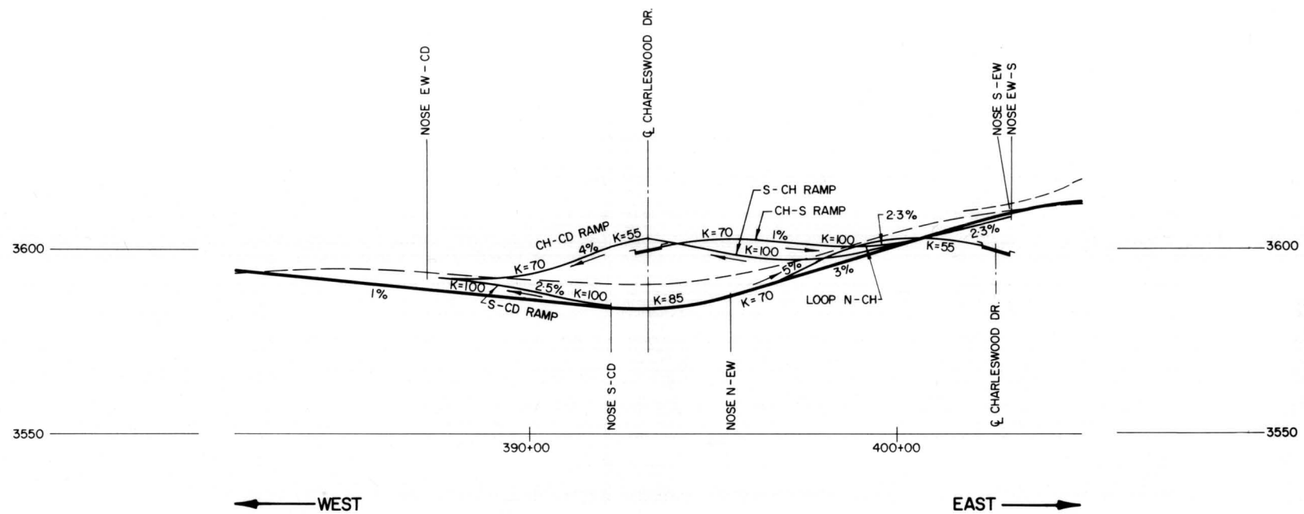
CITY OF CALGARY–TRANSPORTATION DEPARTMENT





CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET

0 50 100 METRES

STA 382+00 TO STA 405+00

STAGE THREE

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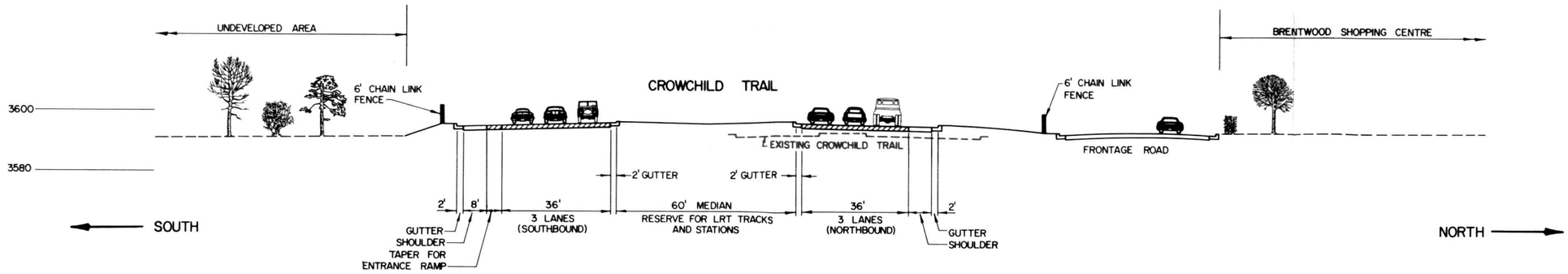
Land required for the Charleswood Drive interchange will affect certain residential, commercial, and institutional components of adjacent communities. Three residences in the N.E. quadrant of the interchange will be acquired to accommodate the ramp from Crowchild Trail to Charleswood Drive. The Brentwood Professional Building will be acquired due to the removal of the parking area on the south and east sides of the building to accommodate the ramp and retaining wall from Charleswood Drive to the Mall Frontage Road. The building itself need not be removed and could possibly function with alternative parking. Finally, approximately 4.8 acres of land will need to be acquired from the University to construct the interchange loop in the S.E. quadrant.

To help minimize visual and noise impact of the interchange on the adjacent communities, landscape berms and sound fences will be constructed in the locations shown in Figure 12. A cross-section of the design is presented in Figure 14.

An estimate of the land and roadway costs for implementing Stage 3 is provided in Table 4.

FIGURE 14



BETWEEN 32 & 40 AVENUES N.W.

CROWCHILD TRAIL (NORTH)

0 10 20 40 FEET 0 5 10 METRES

REPRESENTATIVE CROSS SECTION

STAGE THREE

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TABLE 4 SUMMARY OF ESTIMATED COSTS FOR STAGE 3 (1978 DOLLARS)

CONSTRUCTION		
Roadworks		$1,000,000
Structures		$1,200,000
	Subtotal	$2,200,000
LAND		$2,300,000
	Total	$4,500,000

STAGE 4 - UNIVERSITY DRIVE TO 24TH AVENUE NORTH

As illustrated in Figure 15, Stage 4 consists of the following:

- upgrading to six lanes the remaining four lane section of Crowchild between University Drive and 24th Avenue,
- improvements to the Trans-Canada Highway and University Drive interchanges,
- the construction of an interchange at 24th Avenue (if not already constructed as part of the LRT program).

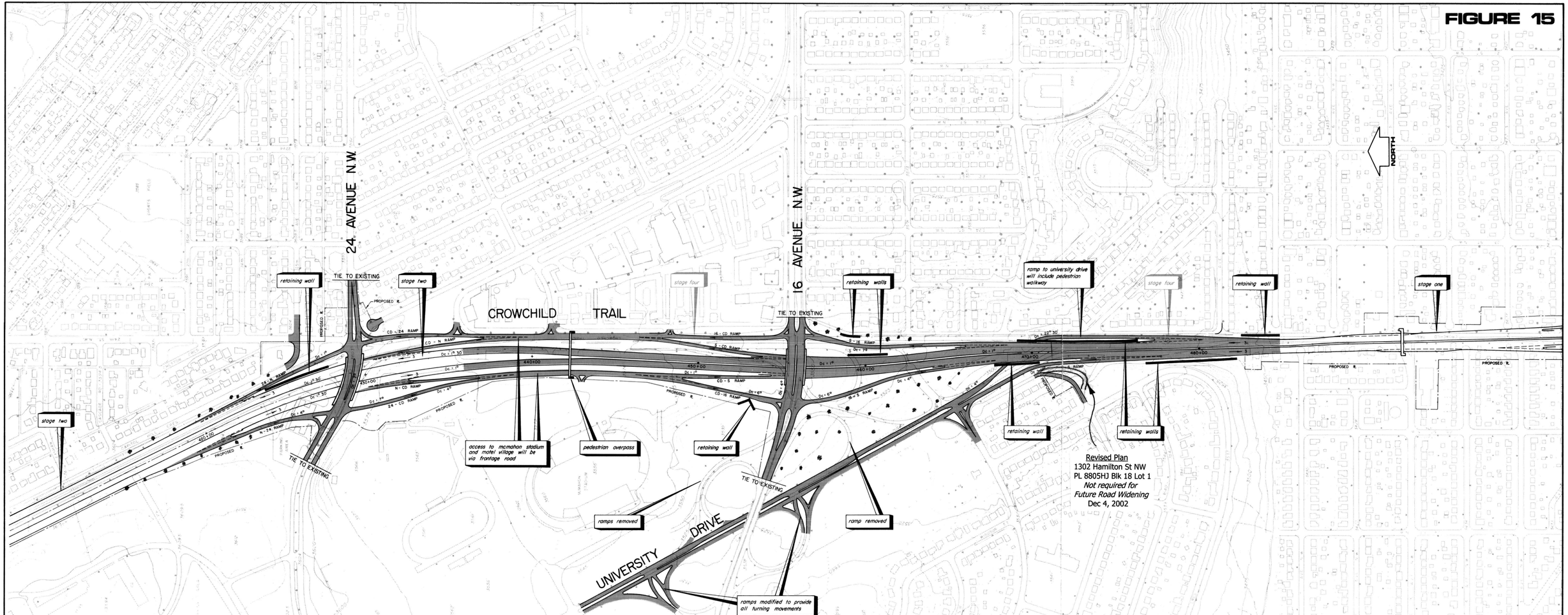
The widening of this portion of Crowchild will be integrated at each end with the widening carried out in Stages 1 and 2.

In order to facilitate a safe free-flow of traffic on the Crowchild Trail the access ramp to University Drive will be reconstructed to exit from Crowchild on the right hand side instead of the existing left hand side, and will pass underneath the main roadway. Also, access from University Drive southbound onto Crowchild Trail will be enhanced by relocating and lengthening the existing merge lane onto Crowchild Trail. The retaining wall along the base of the escarpment just below Toronto Crescent will be rebuilt to accommodate the road widening and the upgraded merging lane from University Drive (see Figure 15).

In keeping with the increasing importance of the Trans-Canada Highway/ Crowchild Trail interchange, the existing interchange which at present provides for direct movements only from southbound to westbound and southbound to eastbound, has been redesigned to provide all movements while maintaining a free-flowing Crowchild Trail.

The Trans-Canada Highway/University Drive interchange has also been modified to provide for direct turning movements (Figure 15). The loop ramps on the east side of University Drive will be closed, to accommodate the interchange improvements at Trans-Canada and Crowchild Trail.

FIGURE 15



CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET 0 50 100 METRES

UNIVERSITY DRIVE TO 24 AVENUE NW

STAGE FOUR

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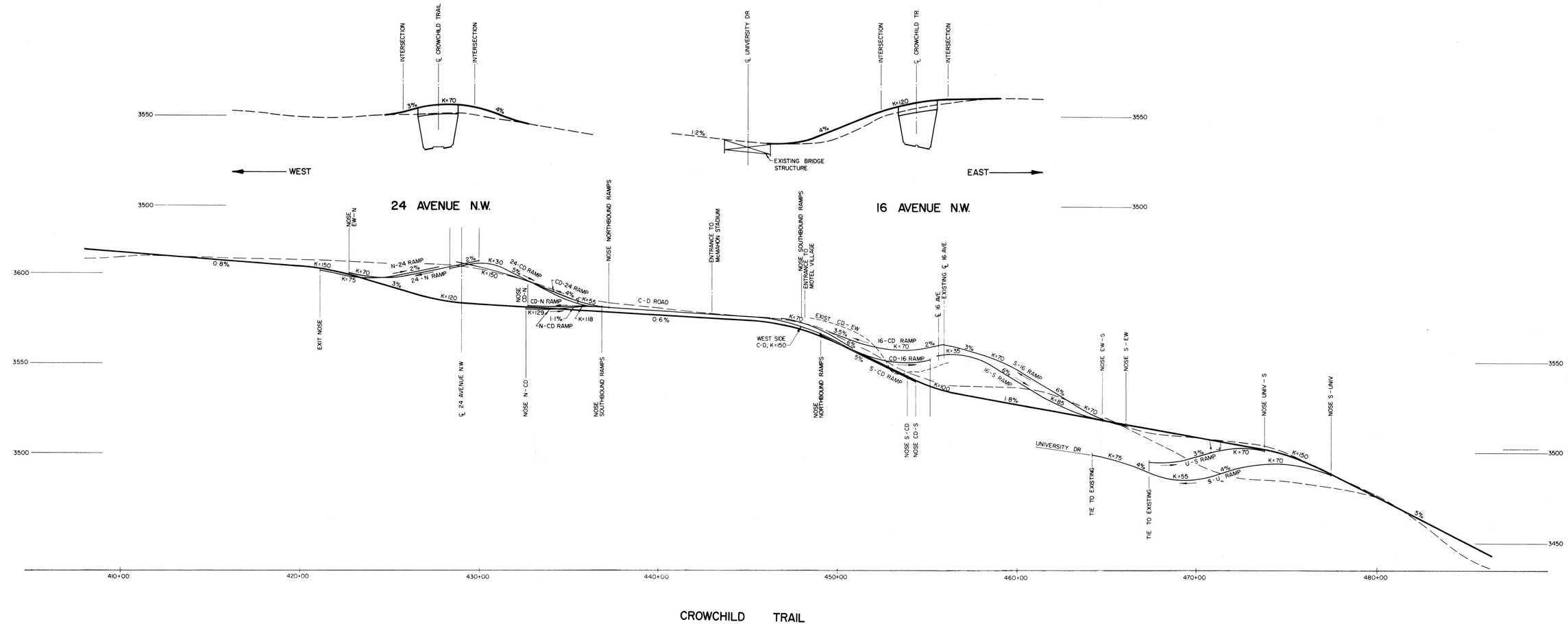
CITY OF CALGARY–TRANSPORTATION DEPARTMENT

FIGURE 16



CROWCHILD TRAIL (NORTH)

0 100 200 400 FEET

0 50 100 METRES

STA 405+00 TO STA 486+00

STAGE FOUR

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The movements provided by these east side ramps will be accommodated by the construction of intersections on the west side ramps, to allow two-way access onto University Drive. These changes are noted in Figure 15. At 24th Avenue the interchange will provide full-turning movements and free-flow on the Crowchild Trail. It is intended in the recommended design that Crowchild Trail will be depressed somewhat and pass under 24th Avenue which will be elevated.

In order to provide a safe and efficient free-flow expressway, several changes in existing access to adjacent land uses are required. The existing direct access to Motel Village and McMahon Stadium and to the Foothills Athletic Park will be replaced by frontage roads on both sides of Crowchild Trail connecting to the Trans-Canada Highway and 24th Avenue interchanges. Traffic desiring to enter any of these activity centres will exit Crowchild Trail at either interchange and proceed along the appropriate frontage road. These frontage roads will also provide access to the existing Blue Arrow Park-n-Ride stations near McMahon stadium and to the possible LRT station serving the area.

The present access onto University Drive from 12th Avenue will be closed and alternative access will be via 13th Avenue.

Provision of adequate pedestrian circulation and transit access is incorporated into the design of this stage. Both the 16th Avenue and 24th Avenue overpasses will incorporate pedestrian sidewalks. The existing pedestrian overpass between 24th Avenue and Charleswood Dr., which will probably by this stage have been integrated with an LRT station, will be maintained. The pedestrian overpasses at 14th Avenue and 9th Avenue will not need to be reconstructed after the widening

of Crowchild Trail. A sidewalk on the northbound ramp from Crowchild Trail to University Drive will provide a safe alternative crossing. The locations and nature of these structures are noted in Figure 15.

The extent to which the LRT will have replaced or supplemented regular fixed route and express bus service in N.W. Calgary at the time that this stage is implemented cannot be determined in this study. Therefore, it is suggested that bus stops, bus bays, and transfer points be integrated into the roadway improvements, where appropriate.

Blue Arrow buses (if not replaced by LRT), will make stops on the frontage roads between 16th Avenue and 24th Avenue, and then rejoin Crowchild Trail. For safety, bus stops for Routes 9, 22 and 25 to the University will be relocated to the places shown in Figure 15. These transit stops will be served by the pedestrian sidewalk constructed on the ramp from Crowchild Trail to University Drive.

Property to be acquired for these roadway improvements beyond what is already owned by the City is as follows:

- the 108 unit Singer Gardens apartment building located between Crowchild and University Drive, to accommodate widening and a ramp to University Drive,

- three residences on University Drive, to accommodate the University Drive to Crowchild southbound ramp,

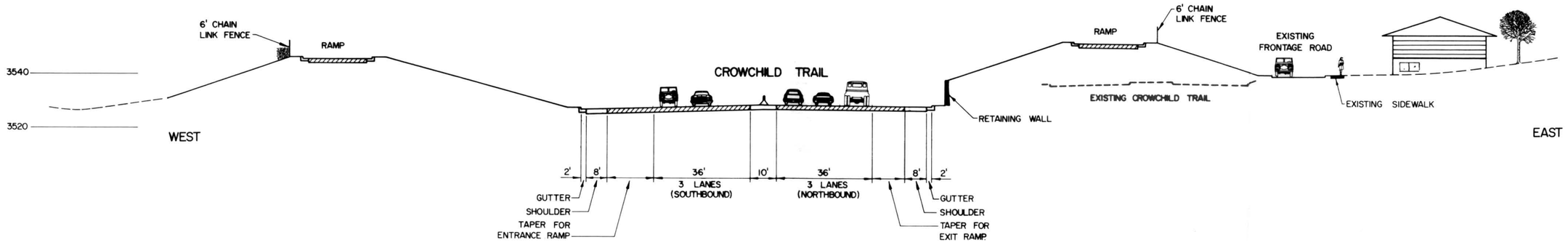
- three residences in the N.E. quadrant and one in the S.E. quadrant of 24th Avenue to accommodate the elevation of 24th Avenue,

- 5.9 acres of land from Foothills Athletic Field, and 8.4 acres of land from McMahon Stadium in the S.E. quadrant of the 24th Avenue interchange and between 16th Avenue and 24th Avenue, to accommodate the southbound ramp from 24th Avenue to Crowchild, and the frontage road.

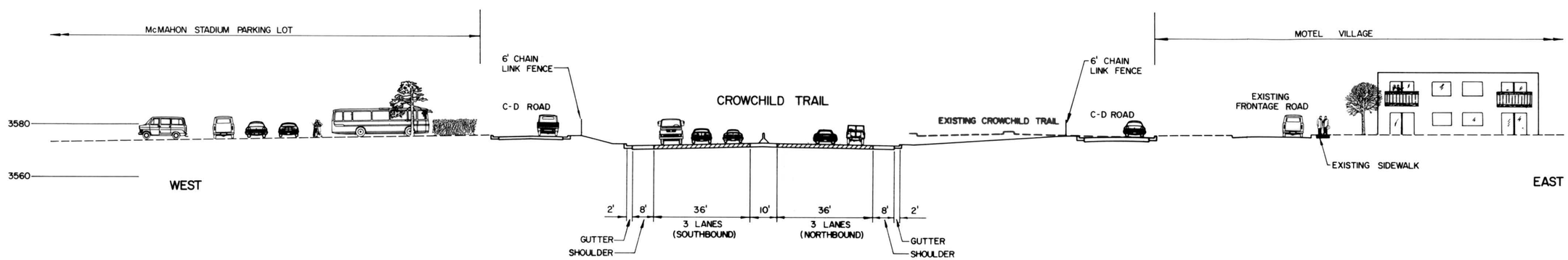
To minimize the visual and noise impact of these improvements on neighbouring land uses, specific noise abatement and landscaping measures have been incorporated into the design. The location and characteristics of these measures are noted in Figure 15. To help illustrate the characteristics of the design improvements, representative cross sections are illustrated in Figure 17.

A summary of the estimated construction land costs for implementing Stage 4 is shown in Table 5.

FIGURE 17



BETWEEN 14 & 16 AVENUES N.W.



BETWEEN 16 & 24 AVENUES N.W.

CROWCHILD TRAIL (NORTH)

0 10 20 40 FEET

0 5 10 METRES

REPRESENTATIVE CROSS SECTIONS

STAGE FOUR

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TABLE 5 SUMMARY OF ESTIMATED COSTS FOR STAGE 4 (1978 DOLLARS)

CONSTRUCTION		
Roadworks		$6,400,000
Structures		$4,600,000
	Subtotal	$11,000,000
LAND		$4,600,000
	Total	$15,600,000

STAGE 5 - BRISEBOIS DRIVE TO NOSE HILL DR. N.W. (85th STREET)

The construction in Stage 5 involves widening of Crowchild Trail from four to six lanes and the construction of interchanges at Brisebois Drive, Northland Drive, Shaganappi Trail, 53rd Street, Sarcee Trail, and Nose Hill Dr.

Because of the extent of construction in this Stage, it is probable that Stage 5 will itself be divided into several stages. A study to determine the extent and sequence of this staging should be undertaken prior to the 1996 planning horizon.

Widening

The widening of Crowchild Trail to six lanes in this section will tie into the widening completed in Stage 2. As was mentioned in the description of Stage 2, a 60-foot median already exists in the Crowchild Corridor west of Brisebois Drive, which will likely have been in use by the N.W. LRT service for some time prior to any construction in Stage 5. Between 53rd Street and Sarcee Trail, four lanes in each direction will be required to provide operational safety for the fairly high number of weaving movements projected to occur between these two interchanges.

Brisebois Drive

Brisebois Drive will be elevated to pass over Crowchild, as shown in Figure 18. The intersection of Brisebois Drive with the Brentwood Mall frontage road will be upgraded to better accommodate traffic to and from the Mall, and traffic moving onto Crowchild Trail northbound.

FIGURE 18

53rd. STREET N.W.

SHAGANAPPI TRAIL

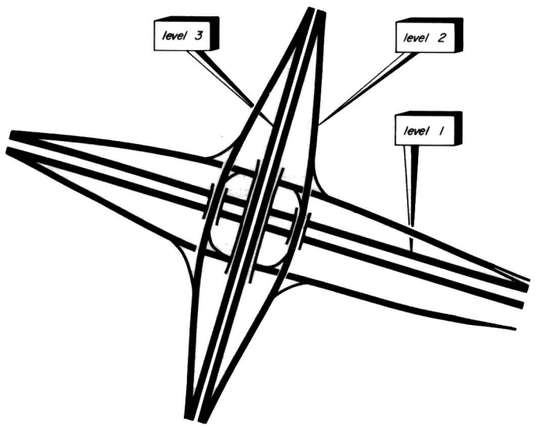
NORTHLAND DRIVE

Northland Village Mall

BRISEBOIS DRIVE

CROWCHILD TRAIL

NORTH



ULTIMATE DESIGN FOR
SHAGANAPPI INTERCHANGE

CROWCHILD TRAIL (NORTH)

0 200 400 800 FEET

0 100 200 METRES

RECOMMENDED DESIGN

STAGE FIVE

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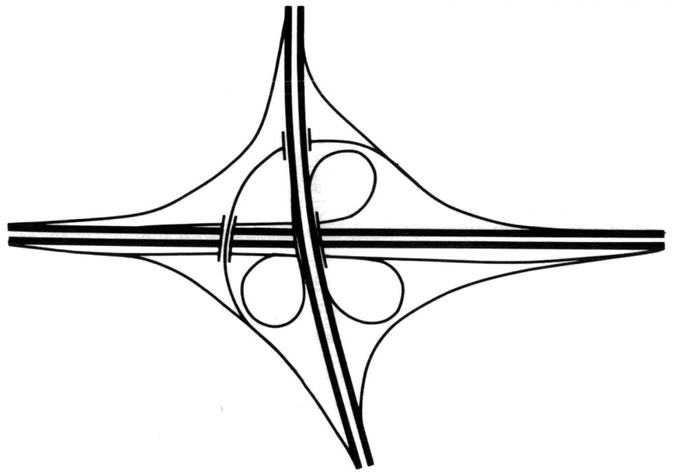
CITY OF CALGARY–TRANSPORTATION DEPARTMENT

FIGURE 18A



POSSIBLE ULTIMATE DESIGN FOR
SARCEE INTERCHANGE

NOSE HILL DRIVE

SARCEE TRAIL

53rd. STREET N.W.

NORTH

Limit of Study

CROWCHILD TRAIL

CROWCHILD TRAIL (NORTH)

0 200 400 800 FEET

0 100 200 METRES

RECOMMENDED DESIGN

STAGE FIVE

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CITY OF CALGARY–TRANSPORTATION DEPARTMENT

At the time that the Brisebois Dr. interchange is constructed, the direct access to Brentwood Mall from Crowchild Trail will need to be closed to facilitate safe operation of both the Charleswood Drive and Brisebois Drive interchanges, the Brentwood Mall frontage road, and a more free-flowing Crowchild Trail. Traffic entering and leaving the Mall will do so utilizing the Charleswood Drive and Brisebois Drive interchanges and the connecting frontage road system as shown.

Morley Trail west of Brisebois Drive will have to be closed in the manner shown in Figure 18, to provide room for the westbound ramp to Crowchild Trail. The alternate access from this area to Brisebois Drive will be via Boulton Road.

Northland Drive

In the recommended design for the Northland Drive interchange, Northland Drive will be elevated to pass over the Crowchild Trail mainline. Turning movements to and from Northland Drive will be via directional ramps as shown. These ramps will continue as collector distributor roads between Brisebois Drive and Shaganappi Trail, tying into the ramps at the Shaganappi Trail interchange. This will allow access to the Northland Village Mall, while maintaining free-flow on Crowchild Trail.

Shaganappi Trail

At Shaganappi Trail the diamond type interchange shown in Figure 18 is recommended, with Shaganappi Trail passing over Crowchild Trail.

The interchange at Shaganappi Trail may ultimately require further
ırading if future traffic distribution requires Shaganappi Trail to be
ıore free-flow facility. This would be the case for instance if
ıganappi Trail was eventually to be constructed across the Bow River
the south. The recommended ultimate design for Shaganappi Trail is
ıwn in the inset in Figure 18. This ultimate interchange can be
ıcribed as a three level split diamond. At the lowest level Crowchild
.il would run free-flow east-west. The second level would contain the
ıps joining Crowchild Trail to Shaganappi Trail, together with a
ınecting system that allows all turning movements. On the top level
ıld run the four lanes of Shaganappi Trail in a free-flow manner.

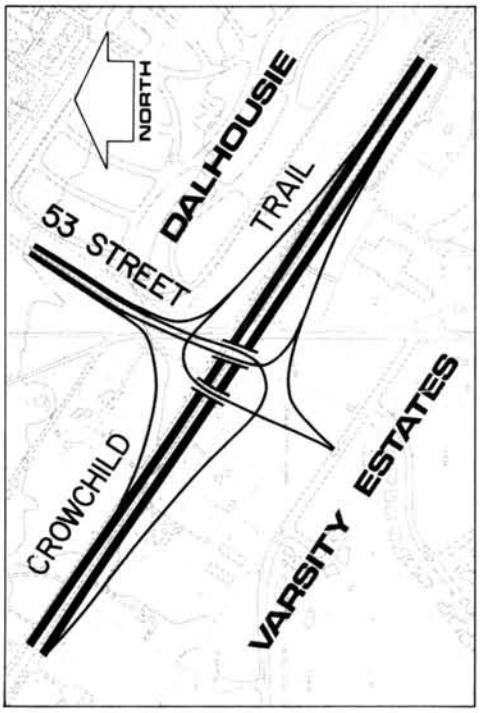
'd Street

53rd Street, maintenance of free flow on Crowchild Trail will require
struction of a grade separated interchange.

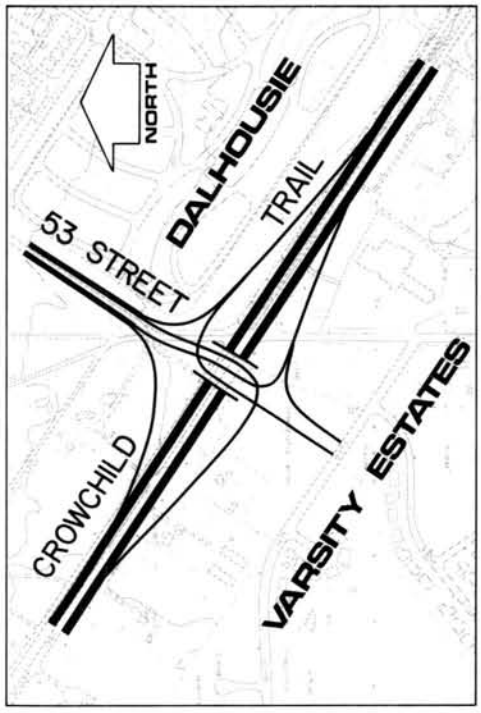
r the past several years, as population in the Silver Springs and
housie Communities has increased, some residents of the Varsity Acres
munity living along 53rd Street south of Crowchild Trail have been
cerned that too much through traffic is utilizing 53rd Street to
vel to Market Mall and Shaganappi Trail. Some of these residents
e expressed a desire to have access to 53rd Street south of Crowchild
il restricted.

the Varsity Acres Design Brief, adopted by Council in June, 1974, the
munity Association suggested that when an interchange becomes warranted
53rd Street and Crowchild Trail, it be designed so as to restrict
thbound traffic on 53rd Street to only left-hand turns from westbound
Crowchild Trail. The Community Association suggested that the Transportation
artment give consideration to an unconventional modified split diamond
e interchange like the one shown in Figure 19a.

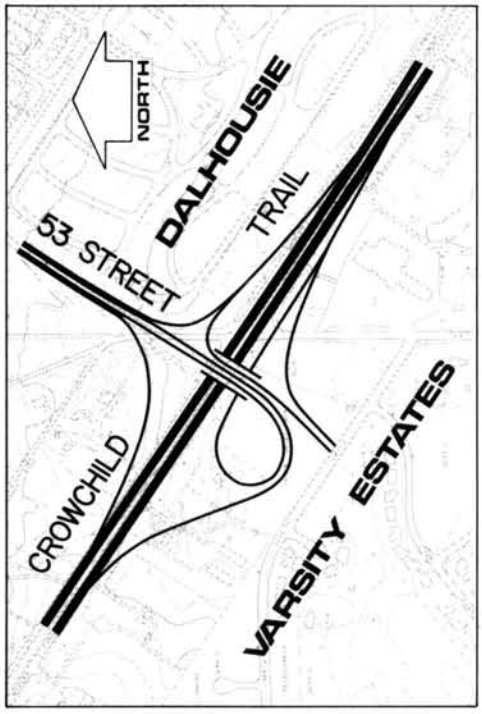
FIGURE 19



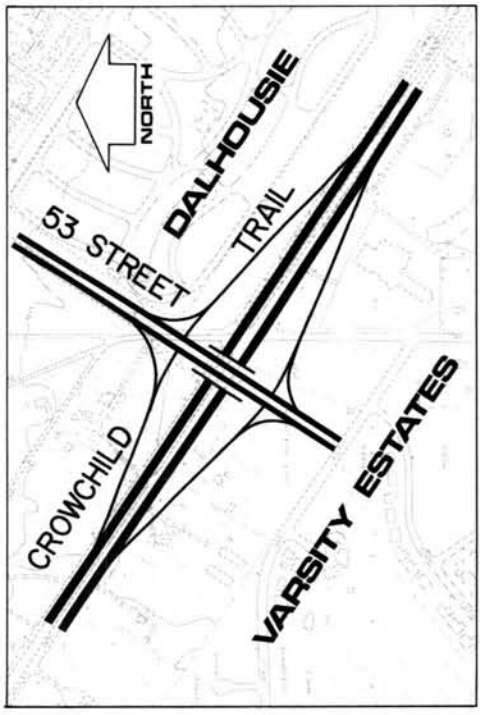
(A)



(B)



(C)



(D)

CROWCHILD TRAIL (NORTH)

0 200 400 800 FEET

0 100 200 METRES

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53 STREET NW

ALTERNATE DESIGNS

The citizen concern over future traffic volumes on 53rd Street was further recognized in the Varsity Acres Design Brief by the recommendation of the following policy:

> "If volumes of 10,000 VPD are exceeded on 53rd Street south of Varsity Estates Drive to 40th Avenue N.W., the City to take action to reduce the volume to 10,000 VPD by such traffic control measures as are considered appropriate; to include the offset interchange at 53rd Street and Crowchild Trail as per diagram submitted by Varsity Community Association; or some other equivalent traffic control devices as may be required." (1)

As part of this Crowchild Trail Functional Study, a number of alternative interchange designs for 53rd Street, including the modified split diamond suggested in the Varsity Acres Design Brief were analysed. These alternatives are shown in Figures 19a, b, c and d.

Figure 19a - Alternative

This interchange configuration is similar to the one submitted by the Varsity Acres Community Association. It is a modified diamond interchange designed to eliminate west to south, south to west and through movements on 53rd Street. The elimination of these turning and through movements will provide the advantage of decreasing the traffic volumes on 53rd Street. The main disadvantages of this configuration are:

- The interchange requires the construction of two overpass structures, with additional cost of approximately $500,000 over the recommended design (Figure 19d).

- Some additional property is required in the southwest quadrant of the interchange. This property is presently being developed as single family residential.

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(1) Varsity Acres Design Brief Adopted June 1974, pg. 28.

- Access to the Crowchild Inn and adjacent commercial facilities will be restricted.

- Although traffic flow will be controlled by signs, it is possible that wrong-way movements will occur on some of the interchange ramps.

Figure 19b - Alternative

This design is similar to the alternative in Figure 19a except that one overpass structure is required and no additional property is required. The main advantage of this design is achieving a reduction in traffic volumes on 53rd Street. However, the main disadvantages of this configuration are:

- The greater possibility of wrong-way movements due to the decrease in spacing between the at-grade intersections.

- Restricted access to Crowchild Inn and the adjacent commercial area.

Figure 19c - Alternative

This interchange configuration provides all directional movements and no through movements on 53rd Street. The main advantages of this design are that it eliminates the opportunity for making wrong-way movements and decreases through traffic on 53rd Street. The main disadvantage of this design is that it requires acquisition of additional property in the southwest quadrant. This property is presently being developed as single family residential.

Figure 19d - Recommended Design

The conventional interchange in this figure is recommended over the other alternatives because it:

- provides all turning movements at Crowchild Trail and 53rd Street,

- allows all-directional access to the Crowchild Inn and adjacent commercial facilities from Crowchild Trail. The other three alternatives restrict access to only westbound Crowchild Trail traffic and northbound 53rd Street traffic, and

- fits the existing right-of-way, not requiring additional property.

As a result of the existing concern of the Varsity Acres residents about shortcutting, the City Traffic Operations Division of the Transportation Department is currently exploring the use of stop signs along 53rd Street as a means of discouraging this shortcutting and of encouraging traffic to use Crowchild Trail directly to Shaganappi Trail.

Sarcee Trail

At Sarcee Trail, in order to accommodate the potentially high turning volumes, the recommended interchange is the partial clover leaf type with loop ramps in three quadrants, as shown in Figure 18a. Sarcee will also pass over Crowchild Trail.

Projected heavy turning movements from southbound on Sarcee Trail to eastbound on Crowchild Trail are accommodated with a separate ramp leading to the loop in the southwest quadrant in order to avoid conflict with the heavy movements from westbound on Crowchild Trail to southbound on Sarcee Trail.

As is the case with Shaganappi Trail, the Sarcee Trail interchange may require further upgrading if future traffic distribution warrants a more free-flow characteristic. This would likely be the case if Sarcee Trail was eventually to cross the Bow River. The recommended ultimate design for Sarcee Trail is shown in the inset in Figure 18a. The main improvement of the ultimate over the design recommended for this stage, is the construction of a high capacity directional ramp to accommodate westbound Crowchild Trail traffic turning south onto the Sarcee Trail. Sufficient right-of-way has already been protected at this location to allow construction of this interchange.

Nose Hill Dr. (85th Street)

The recommended design for Nose Hill Dr. is shown in Figure 18a. The interchange requires that Nose Hill Dr. pass over the Crowchild Trail.

The limit of the Stage 5 improvements recommended in this study is approximately one-half mile west of Nose Hill Dr. The design of roadway improvements beyond this point will depend on future improvements to Highway 1A, an interchange with the proposed Northwest Bypass, and possible extension of the LRT line.

The recommended roadway design for Stage 5 provides for pedestrian mobility and access to transit. The pedestrian/cycle overpass between Shaganappi and 53rd Street will be retained.

At present the only transit service using Crowchild Trail between Brisebois and Nose Hill Dr. is the Silver Springs Pennant Express. However, should additional express bus or fixed route service utilizing Crowchild Trail be implemented in the intervening period, appropriate bus stops, bus bays, and transfer points will be integrated into the roadway improvements.

The vast majority of the land required for the roadway improvements is already under City ownership. The acquisition of additional private residential and commercial properties is limited to the following:

- six residences on the north side of the Brisebois interchange to accommodate the westbound ramp to Crowchild Trail and the upgrading of the Brentwood Mall frontage road

- the Service Station in the N.E. quadrant of the Brisebois interchange, due to the loss of its access to accommodate the frontage road widening

- three residences at the end of Vanguard road on the west side of Shaganappi Trail to accommodate a turning loop ramp

- the Service Station opposite Northland Drive due to the loss of its access to Crowchild Trail

- 3.2 acres for the right-of-way between 53rd Street N.W. and Sarcee Trail N.W.

Noise attenuation and visual landscaping measures have been incorporated into the roadway design for Stage 5.

A summary of the costs for implementing the roadway improvements recommended in Stage 5 is presented in Table 6. Estimated additional cost for implementing possible ultimate upgrading to the Shaganappi Trail and Sarcee Trail are shown in Tables 7a and 7b respectively.

TABLE 6 SUMMARY OF ESTIMATED COSTS FOR STAGE 5 (1978 DOLLARS)

	Brisebois Dr.	Northland Dr.	Shaganappi Tr.	53 Street N.W.	Sarcee Tr.	Nosehill Drive N.W. (85 Street)
CONSTRUCTION						
Roadworks	$ 800,000	$1,300,000	$2,500,000	$1,600,000	$3,850,000	$2,500,000
Structures	1,200,000	900,000	1,200,000	1,100,000	2,650,000	1,500,000
Subtotal	$2,000,000	$2,200,000	$3,700,000	$2,700,000	$6,500,000	$4,000,000
LAND	800,000	400,000	Nil	150,000	80,000	330,000
Total	$2,800,000	$2,600,000	$3,700,000	$2,850,000	$6,580,000	$4,330,000

TABLE 7a ESTIMATED ADDITIONAL COST OF SHAGANAPPI TR. ULTIMATE (1978 DOLLARS)

CONSTRUCTION		
Roadworks		$1,800,000
Structures		$2,880,000
	Subtotal	$4,680,000
LAND		$1,600,000
	Total	$6,280,000

TABLE 7b ESTIMATED ADDITIONAL COST OF SARCEE TR. ULTIMATE (1978 DOLLARS)

Roadworks		$ 460,000
Structures		$ 980,000
	Subtotal	$1,440,000
Land Cost		0
	Total	$1,440,000

A P P E N D I X A

CITIZEN PARTICIPATION PROGRAM

Crowchild Trail North
Function Planning Study

Citizen Project Team Meeting
28 September, 1977

LOCAL CONCERNS & RESPONSES

1. Impact of Feeder Roads

ANSWER: The traffic handling capabilities and turning movements at all feeder roads are being analyzed as part of this study. In general, it appears that the size of feeder roads will remain as is or they will be designed to conform to standards previously established (e.g. Bylaw 8500).

2. Minimize impact of roadway noise, social, and environmental as it affects people

ANSWER: The areas where impact is likely to occur as a result of upgrading the Crowchild Trail North will be identified in the Study. Recommendations will be made as to where further study might prove beneficial toward reaching a decision.

3. Affects on adjacent residents

ANSWER: Yes, this is being considered in the Study (see also Question 2).

4. Will we need 8 lanes instead of 6 lanes in another ten years?

ANSWER: The Crowchild Trail North of the Bow River is being designed to ultimately serve as a 6 lane expressway, and to accomodate a 70,000 vehicle per day (vpd) capacity at the Bow River Bridge. It is recognized that future growth in Northwest Calgary may eventually require an additional river crossing within the City (in addition to the Northwest Bypass). However, there are no long-range plans to enlarge the Crowchild Trail beyond 6 lanes.

5. Are we comparing ourselves to other cities who have had previous experience?

ANSWER: Yes, the City is continuously engaged in studying other cities in North America and abroad, to get ideas on the viability of roadway and transit schemes. Also, roadway designs in all Canadian cities utilize nationally accepted standards based on proven situations.

6. Access to and from Brentwood Mall

ANSWER: Yes, access to and from the Brentwood Mall is being considered. In fact, access to all commercial, social and community areas is being given consideration in the Study (see also Question 2).

7. Balance between community needs and vested interests

ANSWER: This study recognizes all community and vested interests associated with the Crowchild Trail (see also Questions 2 and 6).

8. Affect on tenants in a mall by roadway widening, etc.

ANSWER: See questions 2, 6 and 7.

9. Impact of the major facility on feeder roads. eg: 53rd Street, Brisebois, 24 Avenue, University Drive (forcing them to be Majors).

ANSWER: See Question 1.

10. Bus access to McMahon Stadium.

ANSWER: The Crowchild Trail Functional Planning Study is being coordinated with the Northwest Calgary Transit Study, presently underway. Bus service to McMahon Stadium is being reviewed as part of this Crowchild Trail Study.

11. Will 16 Avenue and Crowchild Trail interchange be upgraded to permit all turning movements (thus preventing filtering through of downstream traffic). This is also true of Highway 1A.

ANSWER: Alternative designs are being developed to permit these turning movements. However, it will be up to City Council to choose the most desireable alternative.

12. Can the wrongs done to people from the original Crowchild Trail construction be righted now?

ANSWER: Undoing previous "wrongs" from the original Crowchild Trail construction is not specifically part of this Study.

13. Are we considering the future growth of the City?

ANSWER: See answer 4.

14. Timing of when and where construction will start, and effects of delays on the viability of this study

ANSWER: As suggested by the Transportation Improvement Priority Study (T.I.P.S.) adopted by Council, the upgrading of the Crowchild Trail north of the Bow River is slated to begin during the next 5 year. Improvements to Crowchild Trail will generally proceed northward from the river, and will be undertaken in stages as needed.

15. Protection of park and ride at 53rd Street N.W.

ANSWER: Yes, this will be preserved.

16. Turning movements of trucks at 85th Street

ANSWER: Turning movements of trucks from 85th Street N.W. to the Crowchild must remain, as it is the only available truck route through the area.

17. How can we safely handle seven lights between 32nd Avenue and 85th Street?

ANSWER: This is an integral part of the Study. A system of service roads, also called collector-distributor (C-D) roads are being analysed that will accommodate both required turning movements and allow Crowchild Trail to be more free-flow facility.

18. How many interchanges will we have?

ANSWER: There will probably be eleven, one at each major intersection.

19. Role of pedestrian and bicycle?

ANSWER: This is being considered. An interchange at the Trans Canada Highway will likely relieve the shortcoming in the present system. This service road will probably remain as a service road for local access.

20. Service road into Briar Hill at 7th or 8th Avenue to 16th Avenue

ANSWER: This is being considered. An interchange at the Trans Canada Highway will likely relieve the shortcomings in the present system. This service road will probably remain as a service road for local access.

21. How will the following be handled:
- 5th Avenue
- Kensington Road
- Memorial Drive

ANSWER: The analysis of these three intersections as well as the other major intersections are integral parts of the Study. Several alternatives are being analysed for each. These will be presented at the October 26th meeting (see also Question 1).

22. How do we handle acquisition and expropriations of land?

ANSWERS: This Study will identify the right-of-way required for each alternative. After the preferred alternative has been determined by Council, the City Land Department will acquire this right-of-way on an opportunity basis. As the time for construction of a particular section of the roadway becomes 3 to 5 years away, a more concerted effort is made to acquire the land. This more concerted effort may require expropriation if agreement for sale cannot be reached.

23. Who makes the decision on the location of the "take line"?

ANSWER: The Study will identify the "take line" required for each alternative, but it is up to City Council to make the final decision. Public hearings will be held prior to such a decision.

24. How do the accepted strategies of the General Plan affect this study?

ANSWER: The "Balanced Growth Strategy" adopted by Council is a basic assumption in this study.

25. Will we consider a system of service roads?

ANSWER: See Question 17

26. Short-term and long-term compensation for business losses

ANSWER: It is not part of this study to determine the short and long term compensation for business. The study will determine, however, the areas which may require further study due to the final design of the road.

27. Relationship of L.R.T. (eg: Location of track and stations)

ANSWER: This Study is being closely coordinated with the Northwest L.R.T. Study being conducted by the City Transportation Department. Although at this time the track alignment and station locations have not been set, adeqquate provisions in the Crowchild Trail North Functional Study are being made for these facilities.

28. Standardization of on and off ramps

ANSWER: Ramps will be standardized as much as feasible, taking into account spacial and other constraints.

29. What kind of roadway are we planning the Crowchild for, an expressway? What is an expressway?

ANSWER: Crowchild Trail North of the Bow River is being planned to be a 6-lane divided roadway, with grade separated interchanges. It is unlikely that the maximum speed will ever exceed 50 mph (80kmph). The upgraded Crowchild Trail will be somewhat less than the Deerfoot Trail, and more like the Shaganappi Trail or John Laurie Boulevard, except it will have interchanges.

30 Signing along the roadway

ANSWER: Recommendations for the placement of adequate signing along the Crowchild Trail are included in this Study.

31. What is the northwest limit of the study?

ANSWER: 85th Street N.W.

32. Study should include social and environmental in the cost/benefit analysis

ANSWER: See Question 2

33. Will weaving movements be eliminated? If not, will enough room be provided (eg: University Drive)

ANSWER: Weaving movements will probably not be eliminated, but will likely be accommodated on the series of service roads (C-D roads) and/or with proper signing along Crowchild Trail.

34. What increases in traffic will completed roadway carry?

ANSWER: The completed roadway will carry about 50% more traffic than today. This will amount to a total capacity of approximately 70,000 to 75,000 vpd.

35. Give us a brief outline of the recommendations and constraints from the Northwest Road Study

ANSWER: See Question 4

36. How will the City Study of the Crowchild Trail Bridge re: 70,000 vehicle trips per day relate to this study? Also re: access to downtown?

ANSWER: These studies are being coordinated through the transportation department. However, it should be pointed out that a significant portion of the traffic travelling south on Crowchild Trail will not be going downtown (see also Question 42).

37. Land use along Crowchild Trail vis-a-vis. L.R.T.

ANSWER: The future land uses associated with any future L.R.T. win Crowchild Trail corridor are being considered in the Northwest L.R.T. Study, not as part of this Crowchild Study.

38. Property requirements in the vicinity of McMahon Stadium

ANSWER: These requirements and associated impact on McMahon Stadium will be determined as part of this Study, in conjunction with discussions with the stadium representatives.

39. Vehicle access to the motel village business complex

ANSWER: See Question 6.

40. Impact of regional growth and satellite cities on city roadways

ANSWER: As mentioned in the answer to Question 4, the Crowchild Trail is being designed to handle 70,000 to 75,000 vpd, to be compatible with the 70,000 vpd restriction at the bridge. It is not within the scope of this Study to determine which percentage of vehicles using this facility will be from inside and outside the City.

41. Effect of citizen input on your design

ANSWER: The fact that you have been invited to participate in this Study indicates that the Transportation Department has decided not to "plan in a vacuum". Local citizen concerns provide a valuable input to the Study that cannot be substituted by technical experts. Two opportunities are provided for citizen input: during the progress of the Study, and when the results are presented to City Council.

42. Is the roadway crosstown or downtown and what percentage of each?

ANSWER: The Crowchild Trail is planned to facilitate traffic movements both downtown and crosstown. The percentage of daily traffic going downtown is estimated to be 30%, and going crosstown S., S.E., and S.W. is estimated to be 50%.

43. What about Blue Arrow, other bus lines, bus-only lanes, and car pool lanes?

ANSWER: The Northwest Transit Study is considering the future requirements for Blue Arrow, bus lines and bus-only lanes in the entire northwest sector of Calgary. As previously mentioned (see Question 10), this Study is being coordinated with the Northwest Transit Study.

44. What effect will this have on the taxes of the people left behind?

ANSWER: This question is beyond the scope of this Study. Residents who wish to have their property reassessed can request the City to do this, or they can petition a reassessment through the court of revision.

45. How realistic are the dollar costs going to be. At what stage will land be purchased or expropriated.

ANSWER: Costs used in this Study will be based on 1977 dollars (see also Question 22).

46. When does the Study go to City Council.

ANSWER: Early in 1978.

47. Do you have a general idea of cost at this time?

ANSWER: The costs are likely to be in the tens of millions of dollars. It is part of the scope of this Study to answer this question.

Crowchild Trail North
Functional Planning Study

Citizen Project Team Meeting
26 October 1977

CITIZEN COMMENTS AND QUESTIONS

(Answers to These Questions Can Be Found in the Report Text)

Re: Bow River to University Drive

1. How many houses are likely to be taken?
2. What is the grade and how high will it be built up?
3. If you are trying to standardize on and off ramps, you are not being too successful. Please explain.
4. Roadway noise - what is going to be done?
5. What is going to happen to 5th Avenue? Close off? Access? Interchange?
6. Off ramp above 7th Avenue at 8th Avenue can this off ramp be left?
7. Widening on west side south of University Drive.
8. Will the median be wide south of 16th Avenue as it is for L.R.T. north of 16th? e.g. for adding exclusive bus lanes?
9. Guardrail divider - will it be heavy and strong enough? We hope so.

Re: University Drive to Charleswood

1. Short cut problem on ramp; therefore 16th Avenue connector is desirable.
2. Superimpose the existing Cloverleaf at 14th Street and 14th Avenue to see how much land it would take. Can it handle the traffic?
3. Why do you want to put additional lights at 16th Avenue? Why the diamonds?
4. To Exhibit 4: add right turn ramp on University from the south to 16t
5. Aren't diamond interchanges against the current City policy?
6. These plans are not a commitment for building. They only identify the right-of-way required.
7. Can the access off the ramp in Exhibit 3 onto Sumac Road be maintained?

Re: Charleswood Drive to Brisbois Drive

1. What is the fate of the church at Brisbois?
2. What about sound inpact and cross sections?
3. What about the Professional Building at Brentwood?
4. It looks like we are going to have another Spandina Expressway.

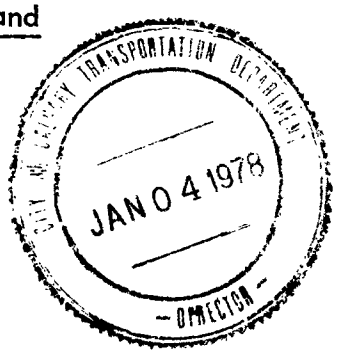
A P P E N D I X B

CITIZEN REVIEW TEAM COMMENTS

2914 / ONE CALGARY PLACE / 330-5TH AVE. S.W. / CALGARY, CANADA T2P 0L4 / (403) 263-4300

January 4, 1978

Delivered by Hand



City of Calgary
Transportation Department
615 Macleod Trail SE
Calgary, Alberta

Attention: Bill Kuyt

Dear Sir:

Re: Crowchild Trail North Functional Road Study would force closure of Brentwood Village Mall Shopping Centre

We have now met with your department several times both publically and privately and have considered the great variety of alternatives. Please convey to City Council our opinions on the effects of upgrading Crowchild especially as they affect Brentwood Village Shopping Centre.

The proposed road design and interchanges at Charleswood Drive and Brisebois would have a devastating effect on Brentwood Village. The loss of four main accesses from Crowchild, and one from Charleswood would destroy the economic viability of the Shopping Centre. Removal of the professional building, or a retaining wall within a few feet of that building would in itself virtually destroy the centre.

We refer specifically to exhibits 6 and 7, the ramifications of which were discussed with City representatives on December 6, 1977. We stated then that neither of the two alternatives is acceptable. We wish to reiterate that we are prepared to consider other alternatives, but we doubt that a design can be put forth that will not seriously affect the centre.

We wish to go on record, therefore, that we object vehemently to the proposed designs. We need the access and egress points to remain as they are!

. . . 2

We request that you append copies of this letter to your report to City Council. We also request that we be provided with a draft copy of the report for our consideration and further comments, before it is finalized for presentation to Council.

We are looking forward to hearing from you.

Yours truly,

STEWART, GREEN PROPERTIES LTD.

Norman N. Green
President

cc: T.A. Montgomery, Transportation Department
F. Byrne, City Clerk
G. Cornish, Commissioner of Planning and Transportation

NNG/gh

IMPERIAL OIL LIMITED

410 - 7220 FISHER ST. S.E. CALGARY, ALBERTA T2H 2H8

MARKETING DEPARTMENT

October 30, 1978

DELIVERED BY HAND

The City of Calgary
Transportation Department
8th Floor
Rocky Mountain Plaza Building
615 MacLeod Trail, S.E.
Calgary, Alberta

Attention: Mr. T. A. Montgomery, P. Eng.
Senior Transportation Planner

RE: Crowchild Trail, North
Functional Planning Study

Dear Sir:

In line with your suggestion, I am writing this letter with the understanding that it will be included in the appendix of the "Final Report" which will be circulated to members of City Council during the latter part of November, 1978.

Imperial owns a very successful service station location at the north-east corner of the intersection of Crowchild Trail and 5th Avenue, N.W. If "Stage One" of the Study is implemented in accordance with the design outlined in Figure 6 of the Report, Imperial will be forced to close out the location in 1984.

Two years ago we lost our service station site at Crowchild Trail and 33 Street, S.W. for similar reasons. We understand the future of one and possibly two more of our existing locations are in jeopardy. All this is happening at a time when new service station sites are becoming increasingly difficult to obtain. Additionally, limitless problems are now being experienced in securing permits from the City to carry out new service station development.

We cannot afford to lose any more of our good existing locations and therefore we must register strong opposition to any roadway plan that will eliminate our access and cause us to close out our operation at Crowchild Trail and 5th Avenue, N.W.

.../2

We also wish to point out that the estimated $6,140,000 required for the acquisition of the necessary properties (land and improvements) in order to implement Stage 1 as contained in Table 2, is in our opinion grossly underestimated. I would suggest the City may require as much as three times this sum.

Yours very truly,

W. N. Boone,
Senior Accounts Executive-Development

WNB/lmd

CROWCHILD TRAIL NORTH FUNCTIONAL STUDY

BRIEF SUBMITTED BY: M.E.N.A.C.E. (Mighty Effort Needed Against Crowchild Expansion)

M.E.N.A.C.E. is a group of concerned citizens from the north-west communities of Parkdale, Banff Trail, Hounsfield Heights - Briar Hill, West Hillhurst, and St. Andrew's Heights, formed to protest the expansion of Crowchild Trail to six lanes incorporating diamond interchanges, along residential streets. On behalf of M.E.N.A.C.E. we would like to report the concerns we have been made aware of on our canvass of the area adjoining Crowchild Trail north of the bridge.

The present Crowchild Trail was put in with NO citizen input, and has caused those residents still living in the same homes, a great deal of distress over the past 10 years. Consider the following reasons:

1. High noise levels.
2. Dirt, dust, and other pollutants.
3. A decrease in property values.
4. Deterioration of homes due to heavy truck traffic causing vibrations, with resultant plaster cracking; and winter sand and salt destroying lawns, gardens, paint, and cement work.
5. Accidents have occurred where property has been damaged through vehicles leaving the roadway.
6. The sidewalks adjoining the roadway are hazardous, and residents feel unsafe walking on them.
7. The University Drive merge lane is extremely dangerous, and many accidents have occurred here.

8. The fences along the median and the hillside landscaping have been poorly maintained much of the time, and have been an eyesore to those who have had to view them day after day.

9. Large retairing walls have been put in causing the noise to be amplified, and are not exactly a scenic view for those facing them directly.

10. Loss of access to the point that we are merely the road-bed area, and rarely use the road.

Keeping the preceding criticisms in mind, is it any wonder that citizens are upset about the prospect of an even larger road with more traffic, higher speeds, more noise, more dirt, more air pollution, less access, greater devaluation of property, and great uncertainty for the next decade as the various phases of this roadway are constructed?

M.E.N.A.C.E. has contacted 440 homes and businesses adjoining Crowchild Trail from the Bow Piver to approximately 32 Ave. N. W. Of these, 398 or 90.5% have said a firm "NO" to further expansion of Crowchild Trail, 20 (4.5%) have said "YES", and 22 (5%) are undecided or indifferent. We have obtained 678 names on our Letter of Protest. The reasons given for rejection of the plan are as follows:

1. Another much-needed river crossing further west has been shelved, and almost all north-west to south traffic will be along this one route. The Crowchild residents feel there is little justification for constructirg a road of this magnitude, when other high priority proposals have been rejected because of disruption to residents and communities. It is our contention that the Crowchild river crossing will not be adequate for a city

that already has completed residential developments as far as 5 miles to the west of this bridge.

2. Crowchild Trail, south-bound, comes to an end at Glenmore Trail, and would then funnel traffic into already over-used and inadequate roads such as 14 St. S.W. and Macleod Trail.

3. The interchanges as planned make this a free flow, high-speed road, again very close to residential streets — many of which are zoned R-1.

4. Noise pollution and air pollution have been poorly monitored, by-laws have not been enforced, and this will continue to be a major problem. We have not received a 1978 measurement figure for traffic noise, nor have we been advised that the noise we put up with every day is within by-law standards. There has been a heavy increase in truck traffic along Crowchild Trail, with resultant high noise levels, since the 85 St. Truck Route has been closed. With expansion, the noise would again increase. Noise abatement measures suggested have as yet been untried, and will include 14 ft. high fences 25 feet from property lines in some areas where homes face directly on to the road. The University Drive flyover also produces a great deal of noise and would require noise abatement as well. This has not been discussed in the city plan.

5. With the closing off of 5 Ave. N.W., loss of access for businesses, as well as homes, will be destructive. In the residential areas, quiet streets will be used as busy access routes in and out of four of our communities.

6. A severe devaluation of property along Crowchild Trail is being felt already.

7. Phase I, at the University Drive merge and exit, will see a temporary 6 lanes constructed, without moving the road-bed. This puts a heavily-travelled 6-lane road very close to homes until at least 1996.

8. The St. Andrew's Heights retaining wall is to be reconstructed to give 20 - 25 feet of space to the road. This is a major undertaking, considering how steep it is now, and the evidence of springs in the hill.

9. L.R.T. will be using the Crowchild Trail Route from the north-west residential districts of Silver Springs, Ranchlands, and Crowchild Ranch to 24 Ave. N. W. Shouldn't L.R.T. be put in the advantageous position of not having to compete with a 6-lane, non-stop expressway? A widened Crowchild Trail will encourage car travel over L.R.T. travel.

10. The Crowchild Bridge capacity is 70,000 vehicles per day. With all the new developments in the north-west and south-west using this one bridge, it will soon reach an over-capacity situation.

As we see it, with the enormous cost of the Crowchild Expansion, it would be much more feasible to upgrade Crowchild Trail to a well planned 4-lane road with buffers and noise abatement, and construct at least one more 4-lane expressway and river crossing west of Crowchild to service the new communities. This would give 8 lanes of freer moving traffic than is now available, another bridge, and would also serve the purpose of directing through traffic away from the inner city. Certainly a north-west to south truck by-pass should also be an essential part of this city's immediate plans.

Respectfully submitted,

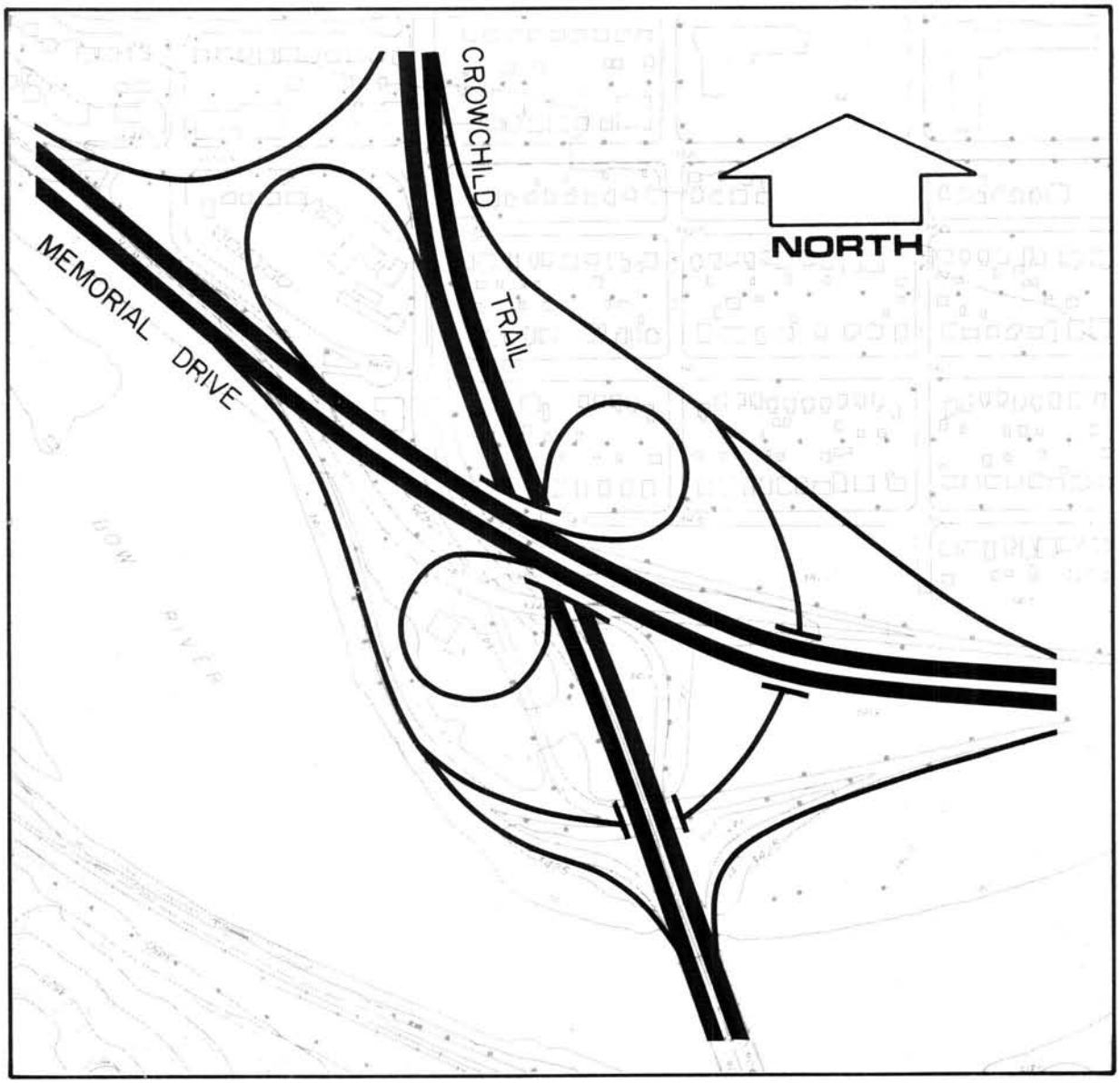
Kenneth A. Brown

for M.E.N.A.C.E.

A P P E N D I X C

ALTERNATIVE INTERCHANGE DESIGNS

The drawings which follow depict some of the more feasible alternatives considered in the study. Included with each drawing, the main reasons for rejecting it are documented. In general, these alternative designs were found to be less desirable than the recommended design due to land use conflicts, cost factors, community impact and operational or design constraints.



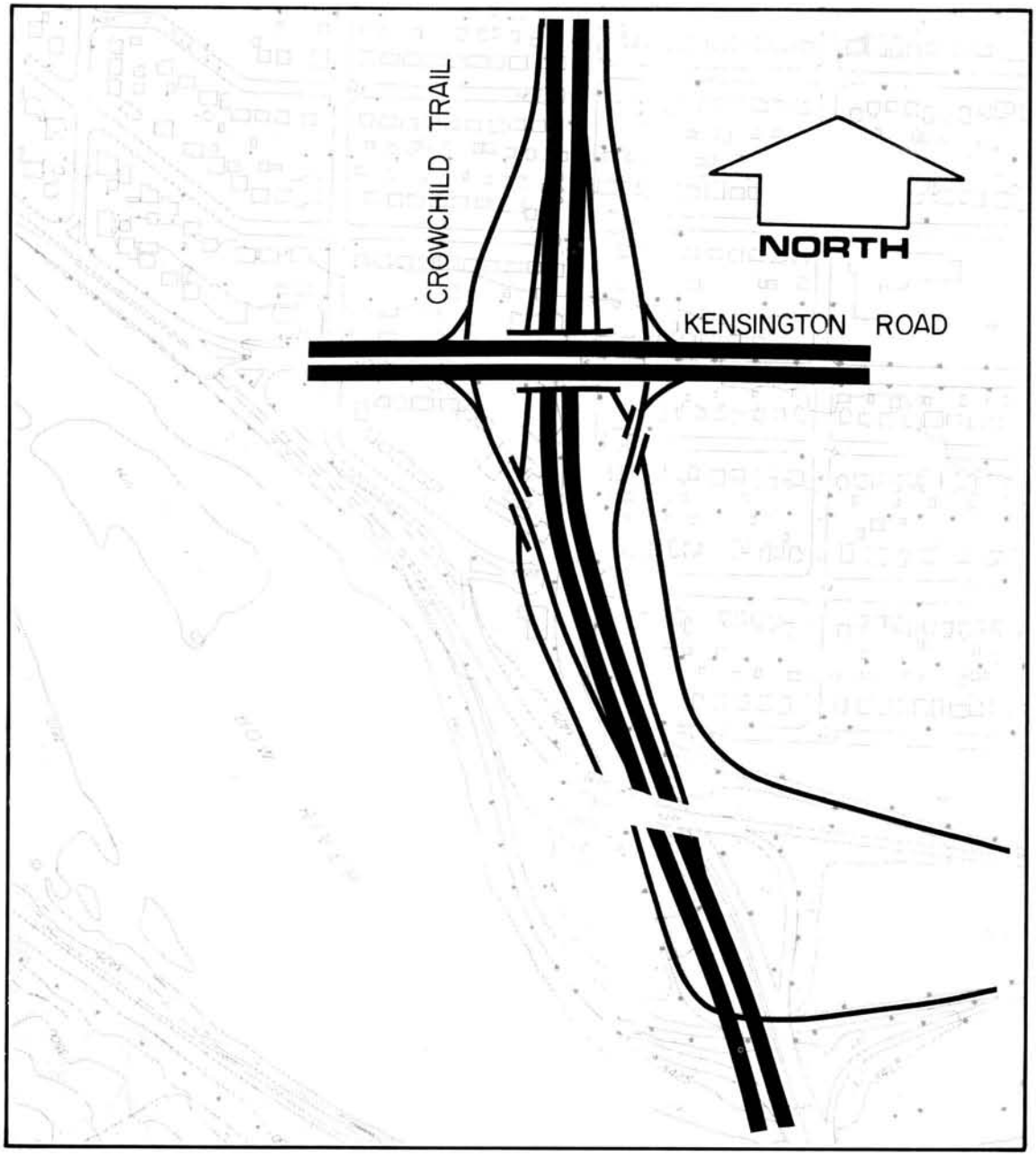
(A)

Alternate Interchange Design

Memorial Drive

(a) Interchange at Memorial Drive

- The existing interchange is rebuilt to provide all the turning movements from Crowchild Trail to Memorial Drive.
- Kensington Road is closed at Crowchild Trail, thus removing access to businesses.
- Due to the proximity of the entrance ramps and exit ramps of Memorial Drive Interchange and University Drive grade-separation, it is not possible to have an interchange at 5th Avenue N.W.
- Accesses to the communities and businesses on both sides of Crowchild Trail will be completely cut off. The only alternative route is though the intersections of 19 St./Memorial or 29 St/Memorial.
- This interchange requires more land than the interchange at Kensington Road, and thus will be more expensive.



(B)

Alternate Interchange Design

Kensington Road over Crowchild Trail

(B) Interchange at Kensington Road

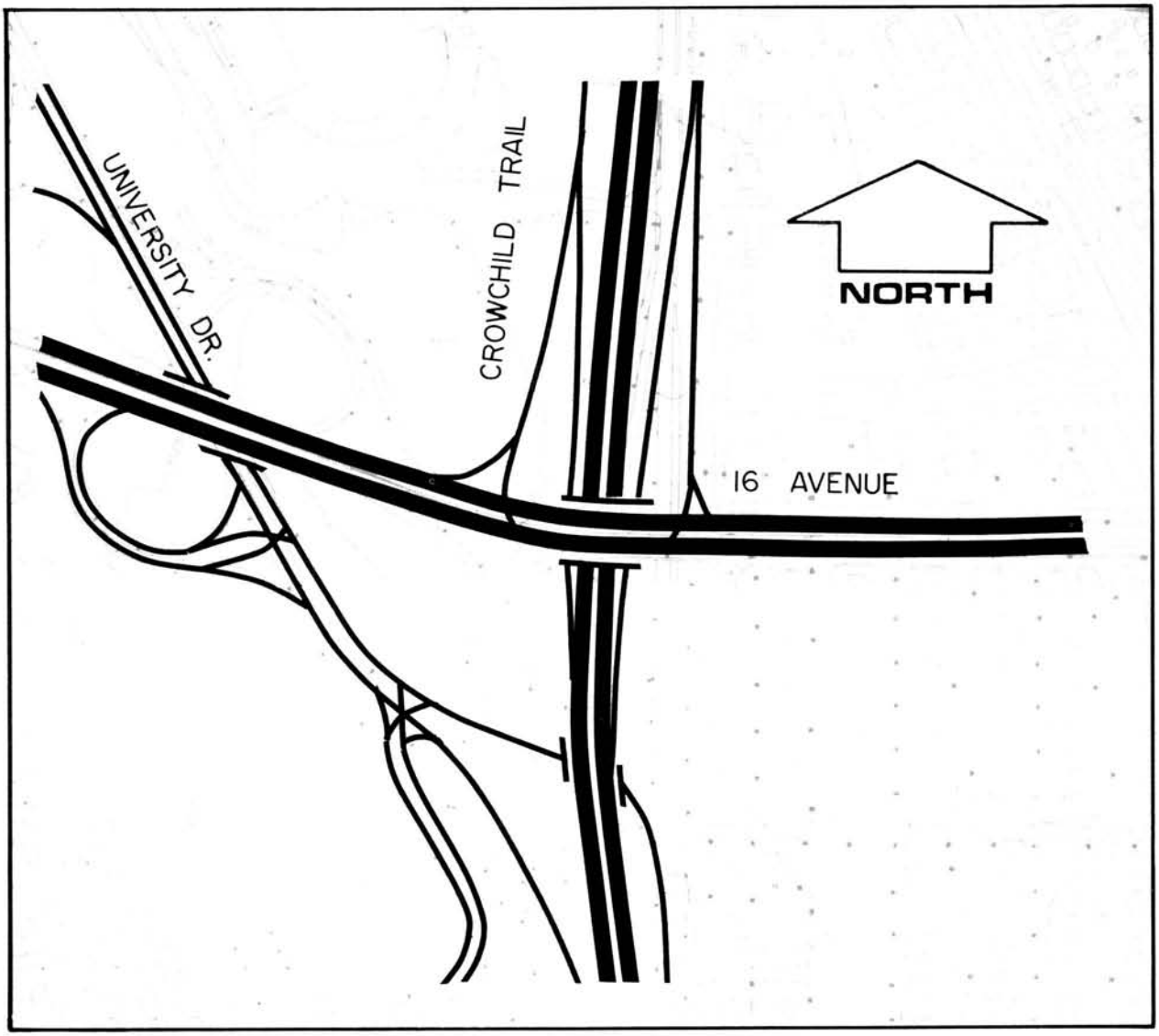
(Kensington Road Over Crowchild Trail)

- Crowchild Trail mainline remains at grade. (It is not possible to lower the mainline because of the flood level of the Bow River.)
- Kensington Road is elevated, thus houses on both sides of Kensington Road must be removed due to the width of the embankment and the access problems.
- Houses are taken due to fill slopes of ramps.
- There is a grade problem for the basket weave section on the south side of the interchange.
- There is also a possible sight distance problem between the intersections on Kensington Road, due to the crest of a vertical curve.

N.B. The grade-separation of the northbound ramps from Memorial Drive to Crowchild over the ramp from Crowchild to Kensington Road is recommended because the predicted traffic volume from Memorial Drive to Crowchild Trail is large and there is insufficient distance between Memorial and Kensington for the traffic to merge and diverge safely. The same is recommended for the west side of the interchange.

(C) 5th Avenue N.W. Overpass (See Figure 6 Stage I)

- May be constructed on embankments with either fill slopes or retaining walls.
- Will fill slopes houses along 5th Avenue will have to be removed.
- With retaining walls it may be possible to construct an access road system for the houses; however, due to the impact or the walls it may be necessary to acquire these houses.



(D)

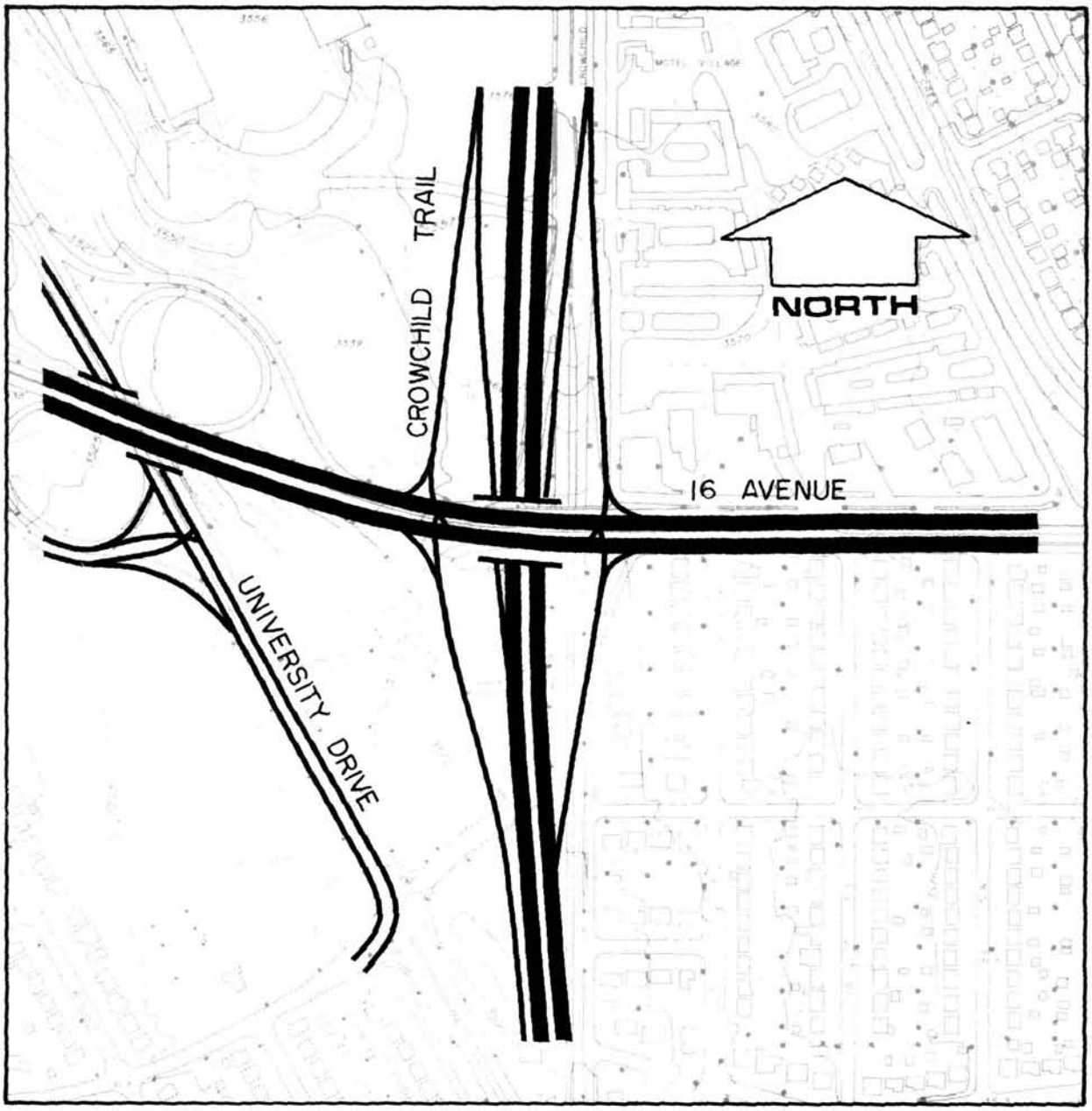
Alternate Interchange Design

16 Avenue

Half Diamond To The North

(D) 16th Avenue Interchange - Half Diamond to the North with University Drive Grade-Separation

- Access to 16th Ave. from and to the south is indirect: via University Drive.
- This alternative may preserve the retaining wall under Toronto Crescent.
- It is rejected due to traffic operation reasons. For example the circuitous route needed for access to 16th Avenue from the south necessitates using University Drive, which becomes overloaded.



(E)

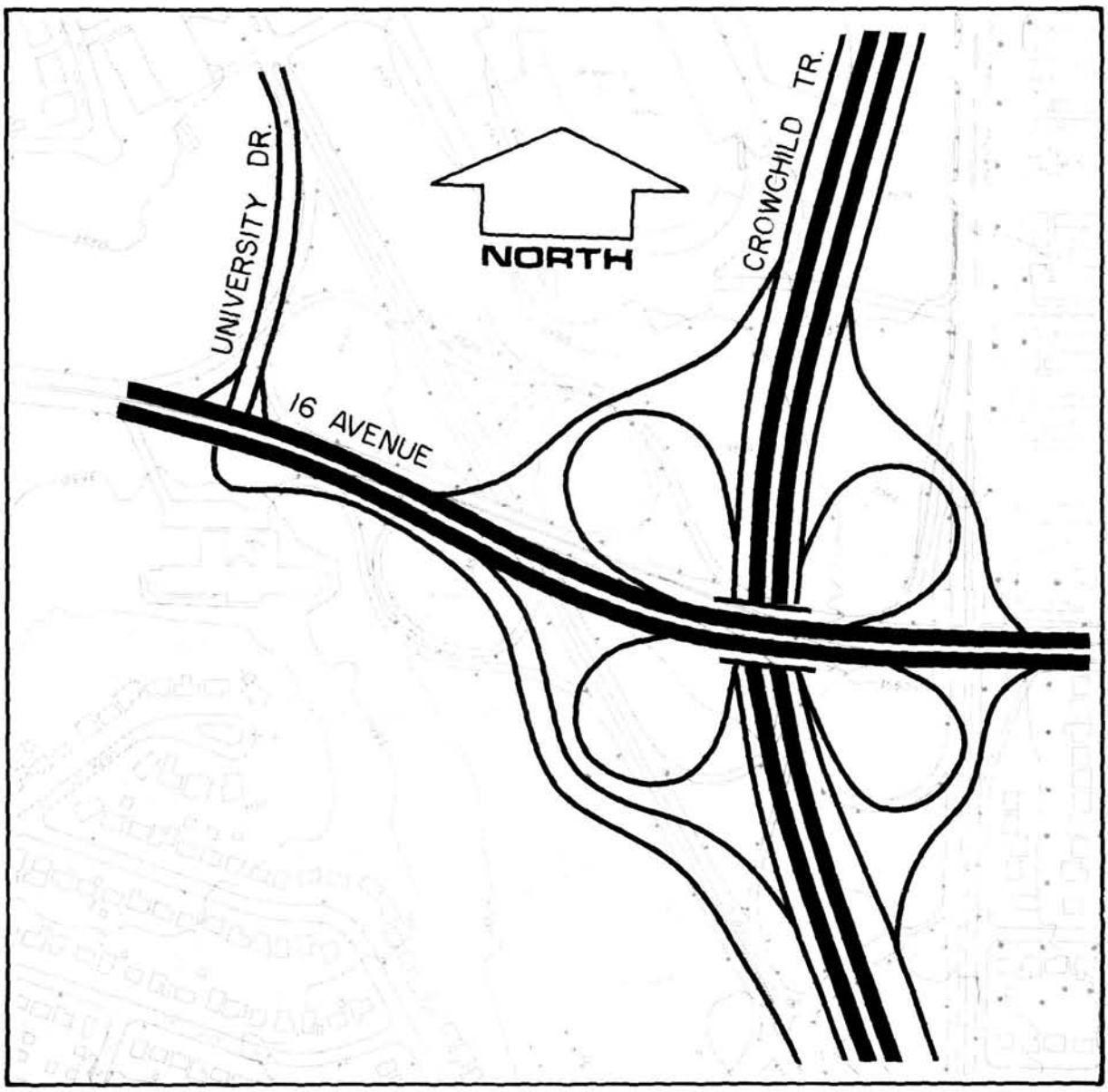
Alternate Interchange Design

16 Avenue

Diamond With University Drive Closed

(E) 16th Avenue Interchange - Diamond Interchange with University Drive Closed

- Access to University Drive from Crowchild is indirect: via 16th Avenue.
- This alternative may preserve the retaining wall under Toronto Crescent.
- It is not accepted due to traffic operation reasons. For example the 24th Avenue interchange becomes overloaded.



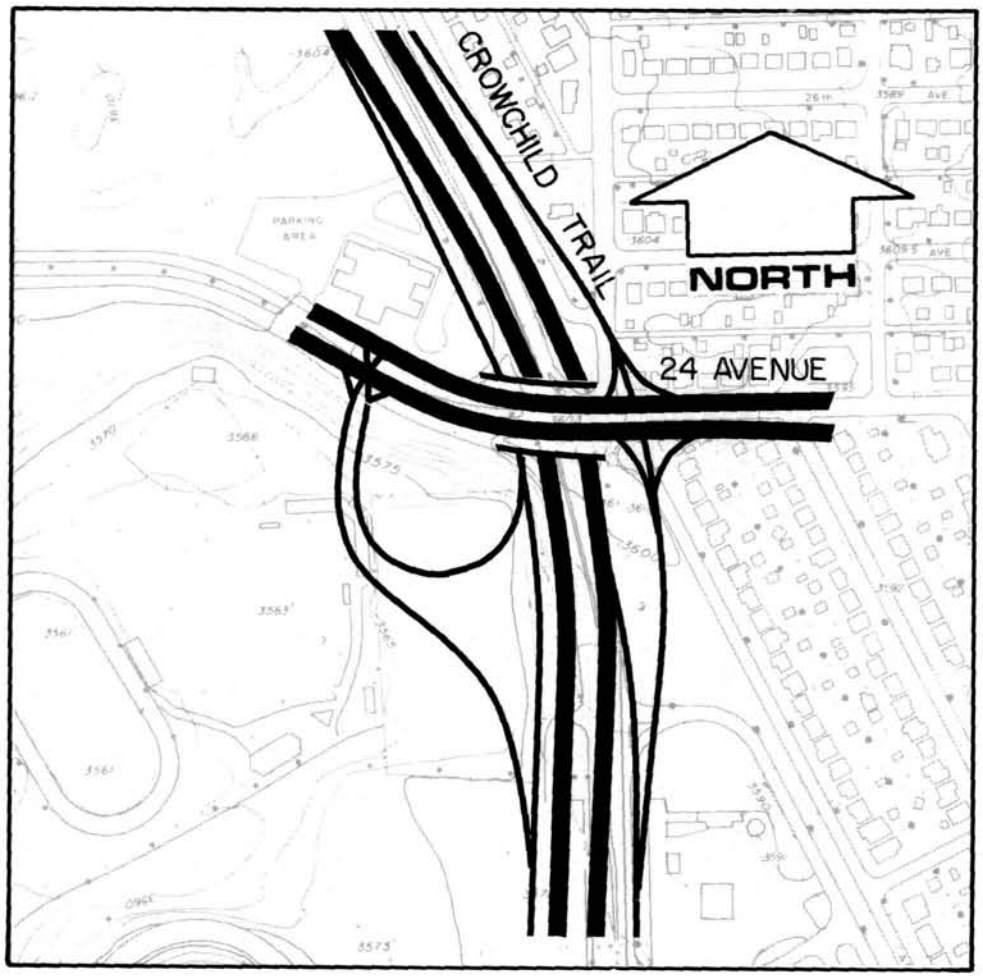
(F)

Alternate Interchange Design

16 Avenue Cloverleaf

(F) Clover Leaf at 16th Avenue

- Connection to University Drive not possible.
- Requires nearly all east parking lot to McMahon Stadium, and removes practice field to south of stadium.
- Requires shifting mainline to west resulting in undesirable alignment.



(G)

Alternate Interchange Design

24 Avenue

Preserving The Chapel At The N.W. Corner

(G) 24th Avenue Interchange - Preserving the Chapel in the N.W. Corner

- This alternative requires more land in the N.E. quadrant. The land cost will be about $2 million more than that of the recommended alternative which requires the removal of the chapel.
- It takes more land in the S.W. quadrant also, thus removing the baseball diamond in the Foothills Athletic Park.
- Reverse curves in the mainline alignment.

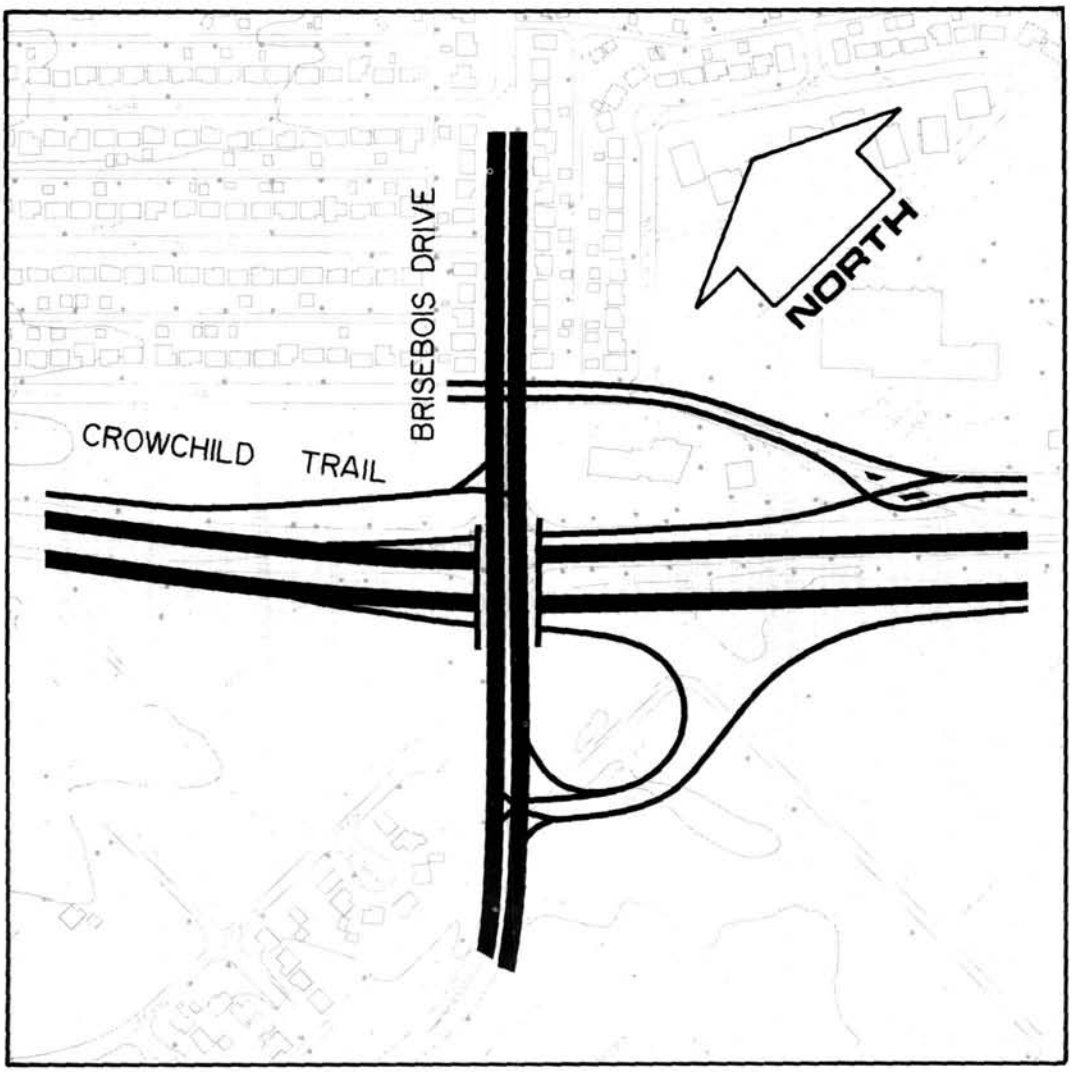
(H)

Alternate Interchange Design

Charleswood Drive

(H) Charleswood Interchange

- A basket weave for separating the Charleswood to Crowchild westbound traffic from the Crowchild westbound to shopping centre traffic.
- This arrangement requires the traffic from Charleswood going to the frontage road and the Co-op Shopping Centre indirectly by going through the Brentwood Shopping Centre parking area.
- The basket weave may not be necessary because of the low traffic volume on the northbound ramp.
- This westbound entrance ramp is not compatible with the recommended interchange at Brisebois Drive and the Stage 5 interchanges.



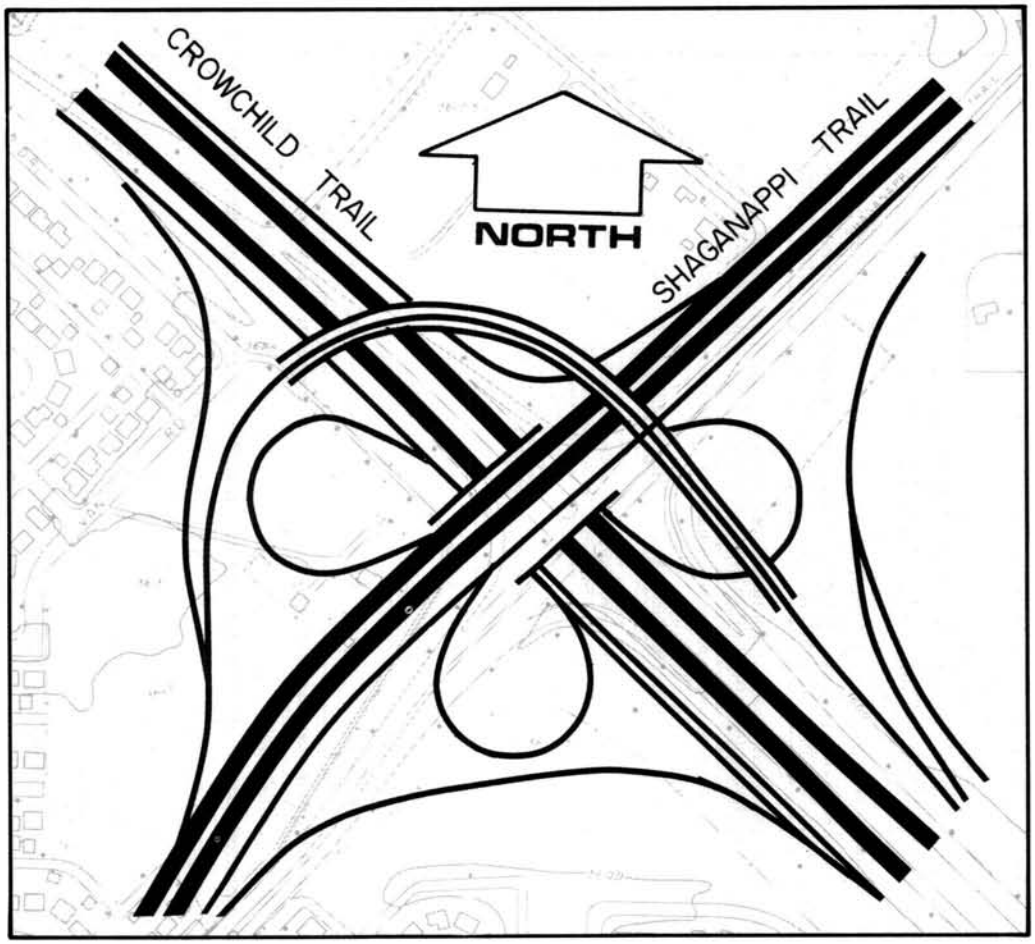
(I)

Alternate Interchange Design

Brisebois Drive

(I) Brisebois Interchange

- Access to Brisebois from Crowchild Trail westbound is via Shopping Centre frontage roads.
- There will be an intersection on the frontage road with an entrance ramp joining the Crowchild westbound.
- However, this westbound entrance ramp is not compatible with the interchanges for the Stage 5 construction.



(J)

Alternate Interchange Design

Shaganappi Trail

(J) Shaganappi Interchange

- This alternative requires more land. It removes a few houses in the S.W. quadrant and takes some land from Northland Shopping Centre in the N.E. quadrant.
- The bridge structures will be expensive.
- The structures will have an impact on the new residential development in the N.W. quadrant.
- This alternative is not providing the same level of service to the Northland Shopping Centre as stated in the Development Agreement.