

TO: CITY MANAGER

November 12, 1997

FROM: DIRECTOR PLANNING AND BUILDING

SUBJECT: Highway #1 High Occupancy Vehicle (HOV) Project: Grandview Highway East Upgrading Leading to a New Willingdon On-Ramp

PURPOSE: To seek approval from Council for the design and cost sharing for the upgrading of Grandview Highway East leading to the new Willingdon on-ramp to be constructed as part of the Highway #1 High Occupancy Vehicle (HOV) Project.

RECOMMENDATIONS:

1. **THAT** Council approve the design of Grandview Highway East leading to the new Willingdon on-ramp as outlined in Section 3.0 of this report.
2. **THAT** Council approve the inclusion in the 1998/99 Capital Budget of \$380,000 to fund the City's cost share of the sewer and watermains, sidewalks, street lighting, landscaping and other improvements as outlined in Section 4.0 of this report.
3. **THAT** a copy of this report be forwarded to B. Stone, Project Director, Highway #1 High Occupancy Vehicle Project, 940 Blanshard Street, Victoria, B.C. V8W 3E6.

REPORT

1.0 BACKGROUND

At its regular meeting held on 1997 October 27, Council received a report from the City Manager on the design for a new Willingdon on-ramp to Highway 1, and referred this report back to staff. Council requested staff to contact the Ministry of Transportation and Highways and request they give consideration to a pedestrian overpass in conjunction with the proposal for the Willingdon on-ramp. In response to this request of Council, staff have requested the provision of a pedestrian overpass by the Ministry, and have incorporated the Ministry response in this report. Reflecting the Ministry comments, this report has been updated and a revised Section 3 (viii) added. This amended report is resubmitted to advance the original recommendations for the consideration of Council.

The Ministry of Transportation and Highways is currently proceeding with the final phase of construction of the Highway #1 High Occupancy Vehicle (HOV) Project. Part of this project will involve the development of a new on-ramp to Highway #1 just north of the

Grandview Highway overpass. As access to the on-ramp will be via Willingdon Avenue and Clydesdale Street, development of the on-ramp will require upgrading of Clydesdale which was formerly a municipal street. Clydesdale Street has recently been classified as a Provincial highway and renamed Grandview Highway. To avoid confusion with the existing section of Grandview Highway west of the Grandview Highway overpass to Boundary Road, as shown in **Figure 1**, the section of Grandview Highway east of the overpass to Willingdon will be referred to as Grandview Highway East in this report.

In recognition of the use of Grandview Highway East (formerly Clydesdale Street) for development as a road leading to the on-ramp, the Ministry has been directed to obtain approval from the City of Burnaby prior to commencing property acquisition for the project. Accordingly, City staff have been working with Ministry staff on developing a design for the project which meets the needs of businesses in the area and the residents of Regent Street, as well as reflecting the general public interest in providing a safe facility. As the Ministry wishes to complete construction of the on-ramp by 1998 September, this proposal is being advanced at this time for Council consideration.

2.0 WILLINGDON ON-RAMP PROJECT

The Willingdon on-ramp Project (**Figure 1**) consists of two parts, including the construction of a new Willingdon on-ramp from Grandview Highway East at Ingleton Avenue west to the freeway and the upgrading of Grandview Highway East from Willingdon to Ingleton to accommodate traffic from Willingdon Avenue westbound to the on-ramp.

2.1 Relocation of the Willingdon On-Ramp

Currently, traffic from Willingdon Avenue headed westbound to the City of Vancouver uses an on-ramp which merges with Highway #1 at the same location as traffic exiting from Highway #1 to the Grandview overpass and the signal at Boundary Road and Grandview. As shown in **Figure 1**, both of these movements cross each other or "weave" on the same section of highway, posing a safety hazard. To resolve this issue as part of the Highway #1 HOV project, the Ministry will be relocating the westbound Willingdon Avenue to access Highway #1 at a point north and west of the Grandview overpass. Traffic from Willingdon would access this new on-ramp via Grandview Highway East (formerly Clydesdale Street), which has been a municipal street providing access to office/industrial developments between Boundary and Willingdon (including the Dominion Directory Building).

2.2 Grandview Highway East Upgrading

(i) Current Status

Currently, Grandview Highway East is a two lane interim standard road

adjacent to Highway #1 located between Willingdon Avenue and the Grandview overpass. West of Willingdon, Grandview Highway East is a westbound one-way street, up to a point just east of the Dominion Directory access where it becomes a two-way street. Overall, Grandview Highway East functions as a local industrial street providing access via Gilmore and Ingleton to existing businesses in a large industrial area bounded by Highway #1, Dawson Street, Boundary Road and Willingdon Avenue. Four industrial properties take direct access from Grandview Highway East, including a rear access to the Slough Estates office/industrial park. The street also provides on-street parking which is used by employees and visitors in the area. On its western end, six single family residential properties abut the street close to the location proposed for the new on-ramp.

(ii) Future Conditions

The relocation of the Willingdon on-ramp would change Grandview Highway East from a local industrial street into a link for highway traffic from Willingdon to Highway #1 as shown in **Figure 1**. It would become a one-way road westbound to the new on-ramp, except for a short two way section between Gilmore and the Grandview overpass and would carry estimated traffic volumes of approximately 700-800 vehicles per peak hour compared to the current 150 vehicles per peak hour.

Access to the industrial area north of Grandview Highway East (including Slough Estates) would be continued via Gilmore, but Ingleton Avenue would be closed at Grandview Highway East to accommodate the new on-ramp.

3.0 DESIGN ISSUES

In developing the design concept for the Willingdon on-ramp project, Ministry and City of Burnaby staff addressed a number of design issues including the following:

(i) Residential Property Acquisition

The new on-ramp will be constructed in close proximity to the existing single family residential properties located on Regent Street backing onto the freeway. As a result, the southerly portion of six properties will be required for either ramp or rear lane right-of-way as shown in **Figure 2**. Through construction of a retaining wall abutting these properties on the south, the design would minimize necessary property acquisition and rear lane access would be provided to four of these properties.

It should be recognized, however, that these properties are part of an isolated residentially zoned pocket within an established office/industrial precinct and lack

sufficient access to the urban services and amenities available to other residential areas in Burnaby. The Ministry has indicated that property owners may be offered the opportunity to sell their entire properties to the Ministry. These residential properties are within the Myrtle Street Study Area and are designated for M5 Light Industrial District development. As such the ultimate disposition of these properties would be assembly for office/industrial development.

(ii) Noise Impacts on Regent Street Residences

The development of the on-ramp will move traffic lanes closer to the Regent Street residences, thereby potentially increasing ambient noise levels. To address this concern, the design provides for the installation of concrete security fences atop the new retaining wall which will be built on the south side of the rear access lane of these properties. It is expected that this fence will maintain noise levels after the on-ramp is in operation to either a level equal to or less than current levels.

(iii) Access to the Industrial Area

The industrial area is currently accessed on the south via Grandview Highway East and the north-south streets of Ingleton or Gilmore. While the location of the on-ramp requires the closure of Ingleton Avenue as shown in **Figure 1**, the main access to the industrial area from the City of Vancouver via Grandview Highway East eastbound to Gilmore will be maintained.

(iv) Driveways to Clydesdale Businesses

The design provides for the four existing driveways on Grandview Highway East which provide front access to three businesses and rear access to the Dominion Directory building in Slough Estates. To ensure that turning movements into and out of these driveways will not conflict with through-traffic destined to Highway #1, a separate right-turn lane is provided on the north side of Grandview Highway East adjacent to the driveways to accommodate right turn-in and right turn-out movements.

(v) Sidewalks

Currently, there are some sections of constructed sidewalk on the north side of Grandview Highway East and a continuous sidewalk from the Grandview overpass of Highway #1 to Boundary Road. In order to maintain the safety of pedestrians on Grandview Highway East and to provide improved access to transit operating on Boundary Road and on Willingdon Avenue, a continuous sidewalk should be developed on the north side of Grandview Highway East from Willingdon Avenue to the Grandview overpass. This will require construction of new sections of sidewalk between Ingleton and Willingdon which would be cost shared with the Ministry.

(vi) Parking/Stopping Areas on Grandview Highway East

On street parking, currently permitted on both the north and south sides of Grandview Highway East, is used by the businesses on Grandview Highway East, as well as some employees in Slough Estates. The project design currently does not accommodate on-street parking on Grandview Highway East to serve visitors or employees of businesses in the area. Short term visitor parking, however, could be made available on the north side of Grandview Highway East in the right-turn lane if it is requested by these businesses. The Ministry is discussing this matter with business owners with a view to identifying the extent of demand for retaining parking/stopping areas.

(vii) Impact on Underground Utilities

The upgrading of Grandview Highway East presents an opportunity to replace the existing aging watermains and sanitary sewer forcemains. The existing utilities, although not in conflict with the proposed road improvements, will be subject to construction activities and additional loading, and should be replaced to avoid a future breakage or leakage problem and to avoid disturbing the new construction in the future. The estimated cost of this utility replacement is approximately \$300,000 and is included as part of the City's share of the on-ramp project cost, as outlined in Section 4.0 of this report.

(viii) Pedestrian Crossings

In response to Council's request, the Ministry of Transportation and Highways has been requested by City staff to consider a pedestrian overpass of Grandview Highway East, instead of a marked pedestrian crosswalk. As outlined in a letter (**Attachment A**) from the Project Director, however, the Ministry has advised that a pedestrian overpass will not be provided. In reviewing this issue, it is the view of City staff that a pedestrian overpass would provide the highest level of safety if it were actually used by pedestrians. However, as it is more likely that pedestrians will choose to cross illegally at grade even if an overpass is provided, staff would advise that pedestrians crossing at grade should be afforded the safest crossing possible under the circumstances and that site conditions are conducive to providing a safe pedestrian crosswalk of Grandview Highway east of Ingleton due to the following factors:

- **sight lines** - the crossing would be located on a straight tangent section of Clydesdale with approximately 200 m. of direct line of sight for vehicles to see pedestrians and for pedestrians to see vehicles.

- **crossing opportunities** - the Hamilton Associates Safety Review estimated that the traffic volumes on Grandview Highway East after the project would result in 185 gaps in traffic of six seconds or greater and 50 gaps of ten seconds or greater during the peak hour. As pedestrians would be crossing only a single travel lane of 4.8 m. (15 feet), there would be plenty of safe pedestrian opportunities to cross Grandview Highway East.
- **one way traffic** - as the section of Grandview Highway East to the on-ramp would be a single lane of one way traffic, pedestrians will easily be able to assess the availability of gaps in traffic to determine a safe time to cross.
- **traffic speed** - as Grandview Highway East is not part of the on-ramp, but a road to access the ramp, the posted speed of this section of Grandview Highway East will be 50 k. with a design speed of 60 k. as the speed is equivalent to a municipal street, a pedestrian crossing is appropriate in these circumstances.

City staff would also advise that provision of a pedestrian overpass would have some undesirable implications for the residents of the Regent Street area:

- **impact on residential properties** - provision of the ramping for a pedestrian overpass on the south side of Grandview Highway East would require approximately 2.5 m. of additional property from the residences located in the Regent Street area backing on to the on-ramp. This property is over and above the current 3-4 m. of property currently required. In addition, to accommodate a pedestrian overpass, the profile of the on-ramp would need to be lowered, thereby increasing the height of the retaining walls at the rear of the residential properties.
- **barrier effects** - due to the short crossing distance, pedestrians are unlikely to use a pedestrian overpass unless fencing is installed on both the north and south sides of Grandview Highway East to prevent pedestrians from crossing at grade. City staff remain concerned about the barrier effect of these fences in creating the impression of a walled industrial area and residential community adjacent to the on-ramp.

In conclusion, the provision of a pedestrian crosswalk was supported by a Safety Review conducted by Hamilton Associates, and advised by one of the foremost experts on traffic safety in North America. This review concluded that a pedestrian overpass was not warranted and that a pedestrian crosswalk should be provided, incorporating the following features:

- (i) supporting sidewalks
- (ii) appropriate channelization to direct pedestrians to the crosswalk, including drop-curbs
- (iii) adequate signage to alert drivers well in advance of the crosswalk

The pedestrian crosswalk to be included by the Ministry in the design of Grandview Highway East will reflect these features as recommended by the consultant.

4.0 PROJECT COST SHARING

Under the cost sharing guidelines pursuant to the Highways Act, the Ministry shares with the municipality the cost of those elements which are additional to the basic design necessary to accommodate highway traffic. In working with the Ministry to develop the design City staff have requested the inclusion of a number of design elements on Grandview Highway East to address the needs of Burnaby residents and employees including the following:

- (i) construction of sections of sidewalk and associated drainage to provide a continuous pedestrian facility from Willingdon Avenue to Ingleton Avenue.
- (ii) development of a landscaped boulevard on the north side of Grandview
- (iii) street lighting from Gilmore Avenue to the Slough Estates access.
- (iv) underground utility replacement including water and sewer mains.

The total cost of these cost-shareable works is currently estimated at \$580,000 of which the Ministry's share would be \$200,000 and the City's share would be \$380,000 (net of GST). The City's share comprises \$300,000 for underground utilities and \$80,000 for pedestrian facilities and streetlighting.

5.0 CONCLUSION

The new Willingdon on-ramp to Highway #1 will improve the safety of the highway for both general traffic and carpools. However, the development of the on-ramp will necessitate the upgrading of Grandview Highway East to carry the higher traffic volumes destined to Highway #1. City staff have been working with the Ministry to develop a design which recognizes the needs of businesses on Grandview Highway East, and in Slough Estates for safe access, continuous pedestrian facilities and limited parking/stopping areas as well as the needs of the single family residents on Regent Street for reduced noise levels and appropriate lane access. As some of these facilities are cost shareable with the Ministry, Council approval

of sharing a portion of the costs of the sewer and watermain replacement, and pedestrian facilities including sidewalks, street lighting and landscaping is required for the Ministry to incorporate these facilities in the final design and construction contract for the project.

Staff have discussed the provision of a pedestrian overpass across Grandview Highway East (east of Ingleton) and have been informed that the Ministry will not provide an overpass. Upon review of the site conditions, it has been concluded that a pedestrian crosswalk can safely accommodate pedestrians, assuming it incorporates design features recommended by the traffic consultant. This conclusion is supported by the results of a safety review conducted for the Ministry by Hamilton Associates.



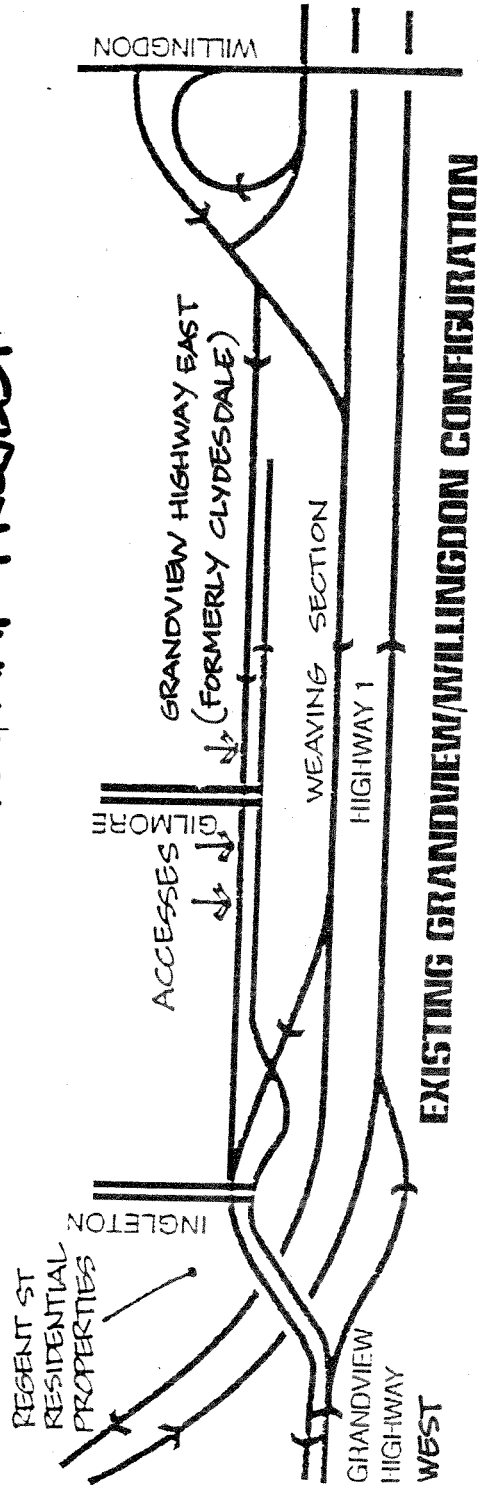
D.G. Stenson, Director
PLANNING AND BUILDING



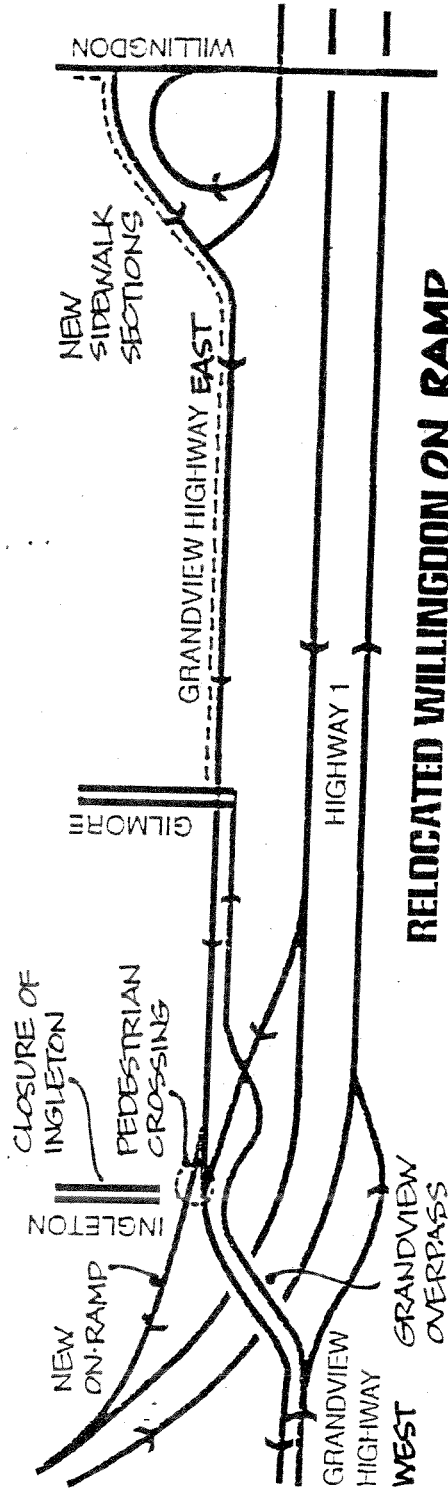
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Attachments

cc: Director Engineering
Director Finance

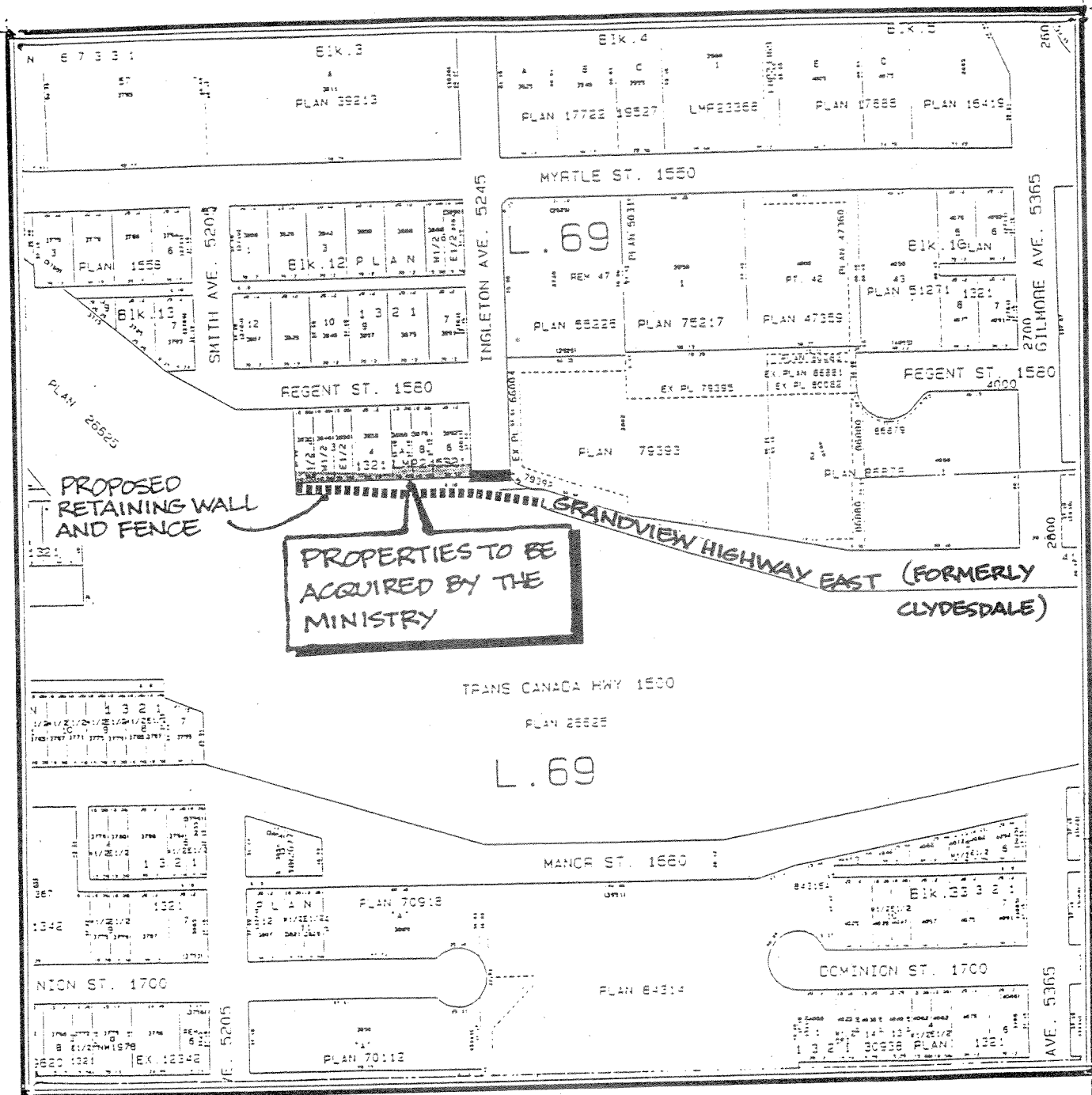
**FIGURE 1
WILLINGDON ON-RAMP PROJECT**



EXISTING GRANDVIEW/WILLINGDON CONFIGURATION

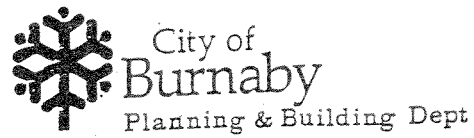


RELOCATED WILLINGDON ON RAMP



PROPERTIES TO BE ACQUIRED BY THE MINISTRY

Date:
 Scale:
 Drawn By:



**WILLINGDON ON-RAMP:
 REGENT STREET
 RESIDENTIAL PROPERTIES**

FIGURE 2



November 11, 1997

Mr. Bob Glover
Manager, Transportation Planning
City of Burnaby
4949 Canada Way
Burnaby, BC V5G 1M2

Dear Mr. Glover:

Re: Willingdon-Grandview Ramp Relocation Project

In response to the request from Council at the October 27, 1997 meeting, the Ministry of Transportation and Highways has reconsidered the installation of a pedestrian bridge over the new westbound on-ramp from Grandview Highway to Highway 1. This letter sets out the Ministry's position on the accommodation of pedestrians from the vicinity of Ingleton Avenue near Grandview Highway to Boundary Road.

Concern has been expressed regarding those pedestrians currently using the sidewalk across the Grandview Highway overpass to access Boundary Road from the Ingleton Avenue area as this movement will be severed by the new westbound ramp to Highway 1. The number of people using this route was counted at about ten in a seven hour period. Consideration was therefore given as to how to safely accommodate these few pedestrians in this corridor.

Since Ministry policy is to not provide at-grade cross walks on freeway ramps, a bridge over the ramp was reviewed. While this would provide a safe route between Ingleton Avenue and the Boundary Road/Grandview Highway intersection, the ramp profile would have to be lowered and additional property acquired from the residences along Regent Street at a total cost estimated to be in the order of \$400,000. The bridge would also introduce an additional fixed object collision risk for vehicular traffic. Based on the provincial Pedestrian Crossing Control Manual for BC, the combined forecast pedestrian and traffic volumes do not warrant the provision of a pedestrian facility. As noted in the safety review conducted by Hamilton Associates, even at pedestrian volumes of 20 per hour a grade separated crossing cannot be justified. The Ministry will not, therefore, consider the installation of a pedestrian bridge.

As an alternative to providing for pedestrian crossings of the ramp, the safety of the public can be served by upgrading the existing pedestrian walkway beneath the Trans Canada Highway at the Boundary westbound on-ramp. The existing walkway will be impacted by the proposed ramp construction along Myrtle Street, however the Ministry will replace this segment and extend it to the cul-de-sac at the west end of Myrtle Street, replace existing vegetation with suitable low-lying landscaping which will not obscure sight lines or night time illumination, replace the existing hand-rail and install a security fence above to prevent pedestrian access to the freeway. The Ministry believes that this will provide an acceptable route to pedestrian traffic wishing to access Boundary Road. This is the option preferred by the Ministry.

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Notwithstanding the above position, the Ministry recognizes Burnaby's concern for the additional distance that people will have to walk if their destination is the Boundary Road/Grandview Highway intersection and the safety hazard if they decide to cross the ramp illegally without a pedestrian crossing in place. Burnaby staff, supported by the Hamilton Associated safety review, have suggested the provision of a marked pedestrian crosswalk. While it would be an exception to policy, MoTH agreed to include the crosswalk in the design presented to Council for consideration at the October 27, 1997 meeting.

I hope that this letter suitably addresses the concerns which Council stated in their motion of October 27 1997. Should you have any further questions, please feel free to contact me.

Yours truly,



B. Stone, P.Eng.
Project Director

cc: J. Dyble, Assistant Deputy Minister, Planning and Major Projects
K. Bessflug, Director, South Coast Region
M. Clark, Chief Highway Engineer
P. Cruickshank, Project Manager, South Coast Region
T. Walton, Senior Project Manager, South Coast Region
J. Mills, Manager, Highway Planning, South Coast Region