

ITEM  
MANAGER'S REPORT NO. 12  
COUNCIL MEETING 19 87/03/16

RE: COMPREHENSIVE TRANSPORTATION PLAN  
IMPLEMENTATION STRATEGY - UPDATE

MUNICIPAL MANAGER'S RECOMMENDATION:

1. THAT the recommendations of the Director Planning & Building Inspection be adopted.

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TO: MUNICIPAL MANAGER 1987 March 04

FROM: DIRECTOR PLANNING & BUILDING INSPECTION Our File: 08.115

SUBJECT: COMPREHENSIVE TRANSPORTATION PLAN  
IMPLEMENTATION STRATEGY - UPDATE

RECOMMENDATIONS:

1. THAT Council approve, as a guideline, the updated Comprehensive Transportation Plan Implementation Schedule shown in Exhibit "D" attached.
2. THAT a copy of this report be sent to the Ministry of Transportation and Highways.
3. THAT a copy of this report be sent to members of the Transportation Committee.

R E P O R T

1.0 INTRODUCTION/SUMMARY

1.1 Purpose

This report is intended to serve the following purposes:

- a) to provide an update for Council on the progress made in the implementation of the Comprehensive Transportation Plan. The last update was provided to Council 1985 04 22 (Item #1, Manager's Report No. 29).
- b) to deal with the scheduling of the Gilley Alternate and related projects relative to each other and in the context of the 5-Year Capital Improvement Program. It will be recalled that Council, at the regular Council meeting held on 1986 July 07, received a report from the Transportation Committee regarding an alternate truck route to Gilley Avenue and adopted recommendations which included the following:

"THAT the section of the proposed Gilley Alternate between Marine Drive and Nineteenth Street be designated for the first phase of the development..... to permit the earliest declassification of Gilley Avenue as a truck route.

THAT the section of Byrne Road between Marine Drive and Marine Way be designated for concurrent first phase development.

THAT the implementation of the remaining components of the Gilley Alternate and the Marine Way/Tenth Avenue connector be included and prioritized within the context of the Implementation Program of the Conceptual Transportation Plan.

THAT the Municipal Manager be requested to bring forward a report on recommended road improvement project priorities for the Municipality."

- c) to lead to the Council's adoption of a guideline implementation schedule of major transportation projects in the Municipality. The previous schedule was adopted by Council on 1980 July 09 and it is now appropriate to update the schedule. The adoption of such a schedule is also a requirement for the Official Community Plan presently under preparation.
- d) to introduce Council to the enhanced transportation analysis and the capabilities that we have available through the regional transportation model and the recently completed Metrotown sub-area model.

#### 1.2 Background

Subsequent to Council's adoption of the Comprehensive Transportation Plan in 1979, the Transportation Committee developed a strategy for the implementation of the plan. This strategy was summarized by a chart of project linkages (attached as Exhibit "A") and was used as a basis for defining a 10-Year Implementation Schedule extending from 1981 to 1990. This Implementation Schedule was approved by Council as a guideline on 1980 July 09 and is attached as Exhibit "B". Both the Project Linkages chart and the Implementation Schedule have been annotated to reflect the progress made towards implementation of the Plan. It is intended that both these exhibits will be replaced by updated versions (respectively Exhibits "C" and "D").

#### 1.3 Conclusions

In addition to discussing progress and scheduling, the report includes some observations arising from this staff review. Principal among these are the following:

- a) The most significant Comprehensive Transportation plan item implemented is SkyTrain and related transit improvements.
- b) Major Improvements to the road network in Burnaby, that are the responsibility of the Ministry of Transportation and Highways, have been limited. Typically the proposed provincial improvements are costly but they also tend to yield the largest benefits. The current highest priority items on the list of Ministry of Transportation and Highways' projects are improvements on Kingsway (principally intersection improvements related to Metrotown development) and widening of the freeway.

- c) The Municipality has made considerable progress on implementing its own list of transportation improvements. The most significant emerging priorities relate to the development of Burnaby Metrotown.
- d) Two major projects are identified as subject to further study and both may ultimately warrant inclusion in the Municipality's Comprehensive Transportation Plan. First is the identification by BC Transit of a new corridor for the north-east sector SkyTrain extension. Second is extension of the Barnet Highway along the Burrard Foreshore.
- e) The use of the EMME2 transportation simulation model has considerably extended our transportation planning analytic capability. This capability will be further enhanced with the recalibration of the model using data obtained through the 1985 Origin/Destination Survey co-ordinated by the GVRD.
- f) Model studies continue to show that the North Burnaby corridor has and will continue to have a greater congestion problem because of the limited scope for adding road capacity as well as the rapid growth of the NE sector and Surrey. The significant transportation improvements that have been made by BC Transit (SkyTrain) and Ministry of Transportation and Highways (Marine Way) and the Municipality (BNR Overpass is an exception) are in South Burnaby.

## 2.0 PROGRESS ON IMPLEMENTATION

This discussion outlining the progress on implementation of the Comprehensive Transportation Plan follows the general order of the adopted Transportation Plan Implementation Schedule (Exhibit "B").

### 2.1 BC Transit Projects

As indicated by the annotation on Exhibit "B", substantial progress has been made on the implementation of projects that are considered to be BC Transit's responsibility. The most significant outstanding transit item is the North Burnaby Area plan which has been postponed annually by BC Transit (for a variety of reasons). It is our hope that this plan will see implementation in 1988.

When the Implementation Schedule was adopted by Council in 1980 it was envisaged that rapid transit would extend as far as Lougheed Mall as part of the "first priority line". Subsequently the provincial government decided that the initial phase of rapid transit should extend as far as New Westminster. Since then the extension across to Surrey has been committed and is now under construction. BC Transit recently reviewed, using the regional transportation model, the north-east sector extension proposal. Their study has identified a new route to Lougheed Mall. This route would be considerably more cost effective than any previously considered alternatives. However, a preliminary design remains to be done before this route choice can be validated.

The Comprehensive Transportation Plan placed considerable emphasis on a commuter rail service along Burrard Foreshore. This was because the plan recognized that proposed road improvements in the North Burnaby corridor would be inadequate for meeting future demand. However, the implementation of the commuter rail project has been stalled by the capital cost requirements of the CPR. Two other potential, but not scheduled, long term projects would also have a bearing on commuter rail. Firstly

there is the extension of SkyTrain to Coquitlam Centre, secondly there is the possible development of a waterfront route (which if used by express buses could be a cost effective substitute for a commuter rail service).

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## 2.2 Ministry of Transportation & Highways Road Projects

Since the adoption of the Comprehensive Transportation Plan, the Ministry of Transportation and Highways has only completed one project of major significance in the Municipality - Marine Way. While the Ministry of Transportation and Highways does not publish its plans except by project announcement, it is our understanding that, after completion of the Annacis System (the Ministry is currently working on the east-west freeway portion through Richmond), the Ministry will proceed with the Cassiar improvement. The Cassiar project is generally regarded as a prerequisite to the widening of the freeway which is probably the most significant road improvement project in the Municipality's Transportation Plan Implementation Schedule.

## 2.3 Municipal Major Road Projects

Exhibit "B" shows that the Municipality has completed a significant portion of the major road projects that are considered its responsibility. It must be acknowledged that this has been possible largely because of Burnaby's success in securing revenue sharing funding assistance from the provincial government.

As further discussed below, the current highest priority road improvements are related to the development of Metrotown. (The development of Metrotown is itself a significant transportation improvement given that it will offer an alternative destination to Vancouver's downtown thereby rationalizing travel patterns).

## 2.4 Road Projects in Dispute

While the Municipality and the Province (MOTH) substantially agree as to what constitutes the major road network in Burnaby, there are some elements in the Transportation Plan that are not wholly accepted by the provincial government. Principal of these is the Hastings/Gaglardi Connector. This route was a part of the "Master Plan" of Simon Fraser University - the present link of Gaglardi Way to Curtis was to be temporary. Apart from this commitment it is also reasonable to assume that the Hastings/Gaglardi Way link would be a provincial responsibility as it joins two provincial facilities.

However, the Ministry of Transportation and Highways' concern has been that the extension of the Gaglardi Way to Hastings would, coupled with a widened Barnet Highway, double load an already congested Hastings. As a counter to the double loading argument, the Municipality has suggested an extension of the Barnet Highway along the Burrard waterfront to Vancouver. Municipal staff have investigated this waterfront route and preliminary work suggests that it is technically feasible and economically worthwhile. The Province however remains uncommitted.

We have explored various strategies for resolving the Hastings/Gaglardi Connector impasse but provincial staff have been reluctant to pursue any negotiation. Our respective positions are outlined in Exhibit "E".

The Ministry of Transportation and Highways and the Municipality are also in disagreement regarding the widening of Broadway to Gagliardi Way. This issue is also outlined in Exhibit "E". The remaining major item of disagreement is the design of the Stormont/Newcombe/McBride connector, but the need for this project is not yet as pressing as the Broadway widening.

### 3.0 COMPUTER MODEL EVALUATION

While the Comprehensive Transportation Plan was being developed by the Committee (circa 1978) the GVRD was using a computer based simulation model to evaluate the Rapid Transit Project proposals. Municipal staff were able to use 1986 model forecasts to evaluate the efficacy of the Transportation Plan that was being proposed. The model then in use forecast that by 1986 east-west road capacity in the North Burnaby corridor (the freeway and all roads to the north) would be outstripped by increased travel demand, principally as a result of accelerated residential growth in the north-east sector. As it was, the level of travel demand forecast by the GVRD model was considerably in excess of what occurred. This was due to the economic recession and, as evidenced by the 1981 Census, more balanced growth with regard to the distribution of homes and work-places than was previously forecast.

Nonetheless the North Burnaby corridor (freeway and other east-west roads to the north) continues to be considerably more stressed by demand than the South Burnaby corridor (east-west arterials south of the freeway). New, more recent, model tests corroborate earlier ones - congestion will continue to increase notwithstanding proposed road improvements in the North Burnaby corridor. This is because this corridor handles the rapidly growing travel demand originating in the NE Sector and North Surrey. It is worth noting that apart from the BNR Overpass, progress on the implementation of the Transportation Plan has been concentrated in South Burnaby where congestion is less severe. The significant North Burnaby corridor improvements fall under the jurisdiction of the Ministry of Transportation and Highways.

The transportation model used by the GVRD in the late 1970s was cumbersome to use. This model has now been replaced by a state-of-the-art transportation model software package developed at the University of Montreal. This package, EME2, uses inter-active graphics to facilitate the analysis from model building to assimilation of results. The model runs on a computer at the GVRD, is managed by Development Services, and Burnaby and other users link to it via telephone line and terminal. We tested the Transportation Plan improvements, as a package, on an early version of an a.m. peak model calibrated against 1981 Census data and projected to replicate 1986 conditions. Results of these tests are described in Appendix A, and have been used to revise and validate the implementation strategy and schedule presented as Exhibits C and D. When the model's capability is enhanced and extended through recalibration (based on the 1985 Origin/Destination travel survey administered by the GVRD) we will be able to use it to further refine and "optimize" the scheduling of individual road projects in terms of their benefits relative to costs. In the interim we have been using the Metrotown (p.m. peak) sub-area model to evaluate transportation proposals such as the Gilley Alternate (discussed below).

### 4.0 GILLEY ALTERNATE AND RELATED ROADS

To evaluate the Gilley Alternate project and related proposals we have used a 1991 model (with all of Metrotown Phase II developed) as a base. The traffic flow pattern resulting from the Gilley

Alternate, the Marine Way/10th Connector and the Griffiths/19th/20th route is shown on Exhibit "F" and individual link loads are tabulated below:

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TABLE 1 : GILLEY ALTERNATE AND RELATED PROJECTS - EVALUATION  
TRANSPORTATION MODEL=EMME2;MT SUBAREA (SCENARIO 6);1991 PMJ

NO. ROAD LINK	FROM	TO	COST (\$M)	LENGTH [KM.]	PREDICTED FLOWS 'BASE TEST	DIFF. INDEX *	COST EFF	
1	BYRNE CONNECTOR	MARINE WAY	1.9	.5	304	1038	734	5
2	CONNECTOR	MARINE DRI	2.6	.4		804	804	8
3	CONNECTOR	GILLEY ALT 10th AVE	3.3	1.4		890	890	3
4	GILLEY ALT CONNECTOR	EDMONDS	4.2	1.3		332	332	10
5	EDMONDS 19th/20th	KINGSWAY	.6	.8	509	584	75	10
6	GRIFFITHS/ 19th/20th	EDMONDS	1.2	.6		1559	1559	1
	EDMONDS	10th AVE	2.5	1.2	1094	1488	394	5
	STRIDE	MARINE DRI 19th/20th			424			

\* Based on a factoring of the capital cost of the link improvement per attracted vehicle km.

For project assessment purposes the changes in traffic flow (i.e. the differences between test and base network traffic volumes) are an indicative variable. However it must be noted that the travel volumes forecast do not include trips resulting from the proposed new development in the area.

The model indicates that Griffiths/19th/20th will attract a substantial portion (30%) of traffic from Rumble west of Griffiths. The package of improvements would also tend to reduce traffic on Marine Way (the Marine Way-10th Connector being a by-pass around the Queensborough bridgehead), Kingsway south of Griffiths and on Gilley south of Rumble. The cost effectiveness index in the Table above suggests that the Griffiths link and the Marine Way/10th connector are most cost effective.

In terms of quantifiable benefits versus costs our analysis indicates that the "package" of improvements is beneficial (yielding an annual gross benefit in excess of \$2M based on reduced vehicle hours travelled on the network). The most beneficial single project in the package is the Marine Way/10th connector. However, it remains to be confirmed whether this project is as beneficial relative to costs as other improvements (such as the Hastings/Gaglardi link).

#### 5.0 PROPOSED IMPLEMENTATION SCHEDULE

The proposed Implementation Strategy/Schedule (Exhibits "C" and "D") are not substantially different from the previous ones (Exhibits "A" and "B"). The most noticeable difference is that completed projects have been omitted and a small number of new projects inserted. The scope of proposed development activity in Metrotown lends some urgency to the early completion projects related to the development of the town centre (to be the subject of a forthcoming report). It is anticipated that the schedule will be used, as a guideline, for the promotion and implementation of transportation initiatives subject to "fine tuning" of relative priorities through the use of the transportation model.



A.L. Parr  
DIRECTOR PLANNING &  
BUILDING INSPECTION

EXHIBIT A  
COMPREHENSIVE TRANSPORTATION PLAN  
IMPLEMENTATION STRATEGY: PROJECT LINKAGES

(REVISED: 1980 JUNE 16)

(ANNOTATION AS AT 1987 MARCH)

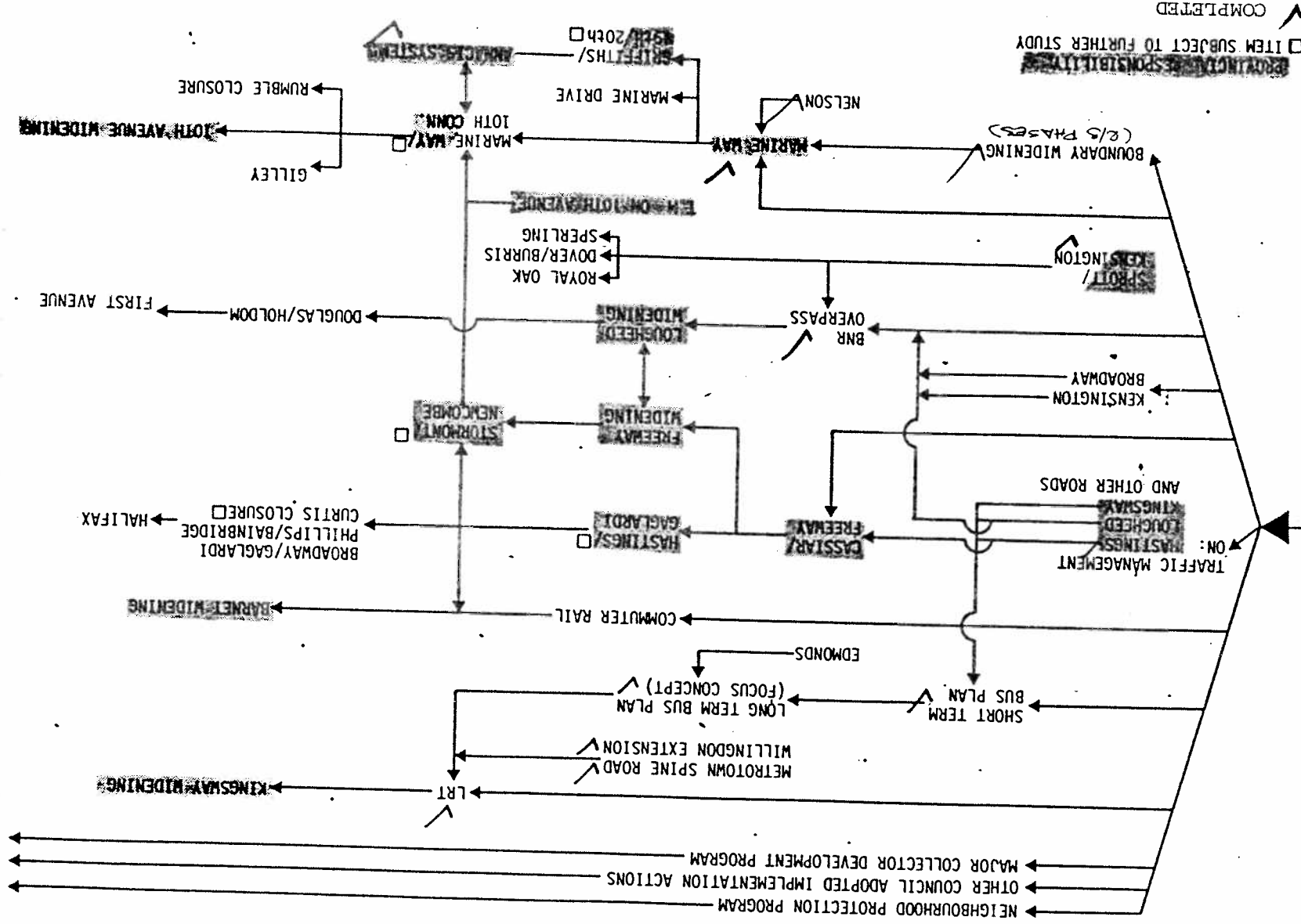
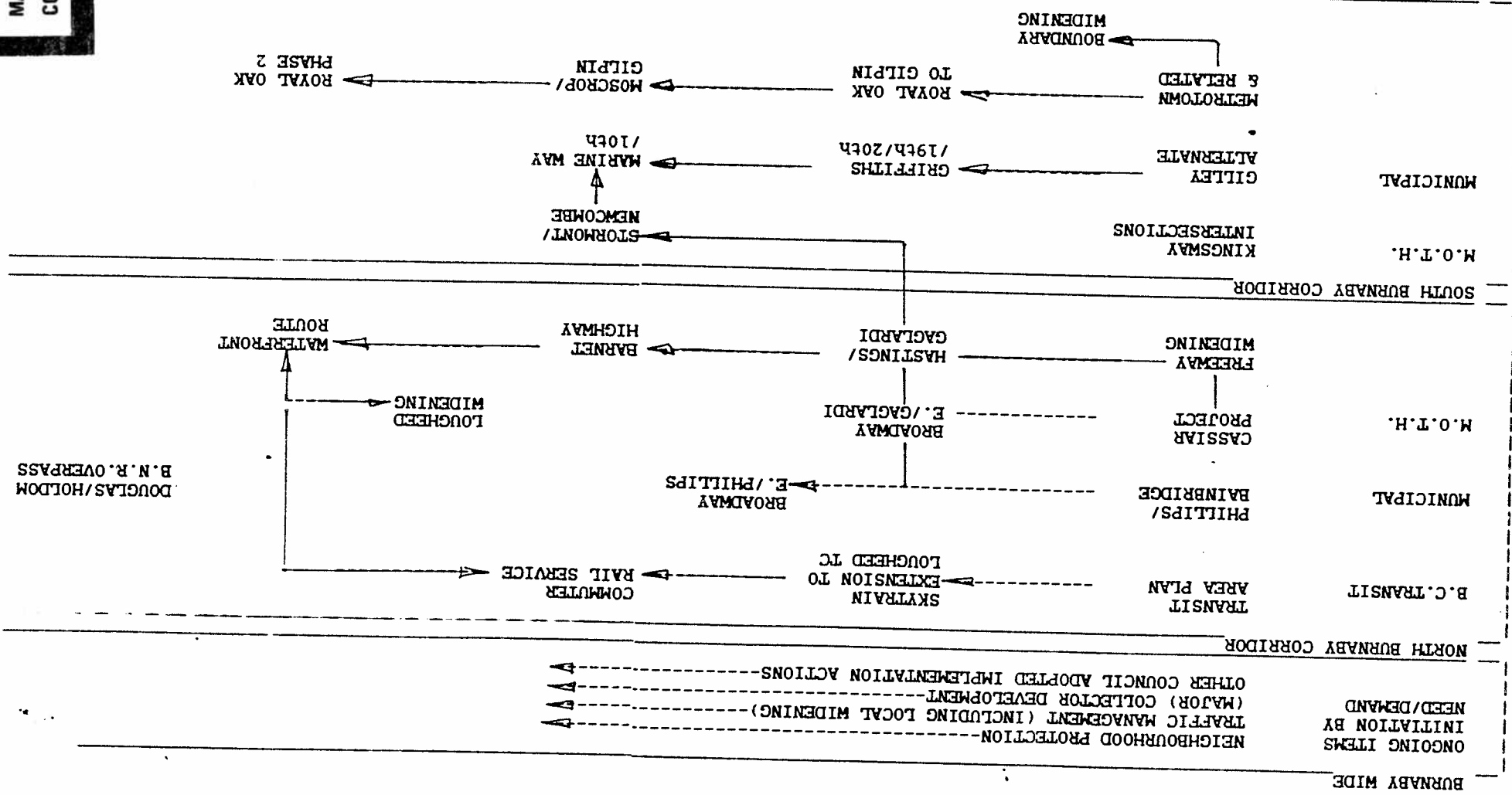






EXHIBIT 'C': TRANSPORTATION PLAN IMPLEMENTATION STRATEGY



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EXHIBIT 'D'

BURNABY COMPREHENSIVE TRANSPORTATION PLAN IMPLEMENTATION  
 PROPOSED SCHEDULE OF MAJOR PROJECTS OUTSTANDING (01987,FEB)

PROJECT NO. CORRIDOR	SCOPE 'FROM' 'TO'	TYPE	YEAR				
			1987	1988	1989	1990	1991
<b>A. PROJECTS CONSIDERED A B.C. TRANSIT RESPONSIBILITY</b>							
A.1	NORTH BURNABY AREA PLAN		<<>>				
A.2	LONGER TERM PROJECTS-SUBJECT TO FURTHER STUDY SKYTRAIN EXPANSION C.P. RAIL COMMUTER N.E. SECTOR DOWNTOWN		<<>>				
<b>B. PROJECTS CONSIDERED A M.O.T.H. RESPONSIBILITY</b>							
<b>B.1 TRAFFIC MGMT AND WIDENING OF CONGESTED INTERSECTION APPROACH</b>							
	KINGSWAY	BOUNDARY 10th AVE	<<>>				
	LOUGHEED	BOUNDARY NORTH RD	<<>>				
	CANADA WAY	KENSINGTON 10th AVE	<<>>		<<>>		<<>>
	HASTINGS	BOUNDARY INLET DR	<<>>		<<>>		<<>>
	10th AVE	MCBRIDE KINGSWAY	<<>>		<<>>		<<>>
	GRANDVIEW	BOUNDARY FREEWAY					
<b>B.2 MAJOR ROAD PROJECTS</b>							
	FREEWAY	STORMONT GRANDVIEW					
	HASTINGS/GAGLA	INLET DR CENTENNIAL					
	STORMONT/MCBRI	MCBRIDE FREEWAY					
	BROADWAY	WIDENING NORTH RD					
	KENSINGTON	WIDENING SPROTT FREEWAY	<<>>				
	SPROTT	WIDENING KENSINGTON	<<>>				
<b>B.3 LONGER TERM PROJECTS-SUBJECT TO FURTHER STUDY</b>							
	LOUGHEED	WIDENING BOUNDARY NORTH RD					
	BARNET	WIDENING INLET DR ST. JOHNS					
	10th AVE	WIDENING MCBRIDE 20th STREET					
	WATERFRONT RTE	NEW LINK INLET DR 2nd NARROWS					
<b>C. PROJECTS CONSIDERED A BURNABY RESPONSIBILITY</b>							
<b>C.1 TRAFFIC MGMT AND WIDENING OF CONGESTED INTERSECTION APPROACH</b>							
<b>C.2 MAJOR ROAD PROJECTS (INCLUDED IN DRAFT 1987/1991 C.I.P.)</b>							
<b>METRO TOWN RELATED IMPROVEMENTS</b>							
S. BERESFORD	IMPROVEMENT PATTERSON	DOW					<<>>
BONSOR	IMPROVEMENT CENTRAL BLVD	BENNETT	<<>>				<<>>
BOUNDARY	WIDENING THURSTON	FIR	<<>>				<<>>
CENTRAL BLVD	NEW LINK OLIVE	WILLINGDON	<<>>				<<>>
GRANGE	INTERSECTION ROYAL OAK	KINGSWAY	<<>>				<<>>
HAZEL	NEW LINK McMURRAY	NELSON					
KINGSBOROUGH	NEW LINK MCKAY	WILLINGDON	<<>>				<<>>
KINGSBOROUGH	NEW LINK WILSON	WILLINGDON	<<>>				<<>>
KINGSWAY	INTERSECTION PATTERSON	IMPERIAL	<<>>				<<>>
KINGSWAY	INTERSECTION BOUNDARY	10th	<<>>				<<>>
NELSON	IMPROVEMENT IMPERIAL	GRANGE	<<>>				<<>>
MCKAY	NEW LINK KINGSWAY	GRANGE	<<>>				<<>>
MOSCROP/GILPIN	NEW LINK WAYBURNE	DEER LAKE PL	<<>>				<<>>
ROYAL OAK	IMPROVEMENT CANADA WAY	GRANGE	<<>>				<<>>
WILSON	NEW LINK KINGSWAY	GRANGE					
<b>MARINE WAY/10th &amp; STRIDE AREA RELATED PROJECTS</b>							
BYRNE/EDMONDS	NEW LINK MARINE WAY	19th	<<>>				<<>>
EDMONDS	WIDENING KINGSWAY	19th	<<>>				<<>>
GRIFFITHS/19th	IMPROVEMENT KINGSWAY	10th	<<>>				<<>>
MARINE WAY/10t	NEW LINK BYRNE/EDMOND	10th					
<b>BIG BEND AREA PROJECTS</b>							
BYRNE ROAD	WIDENING MARINE WAY	FRASER PARK	<<>>				<<>>
BIG BEND LOOP	NEW LINK MARINE WAY	MARINE WAY	<<>>				<<>>
S. BERESFORD	WIDENING ROYAL OAK	McPHERSON					
<b>NORTH BURNABY PROJECTS</b>							
GILMORE	WIDENING	LOUGHEED	<<>>				<<>>
PHILLIPS/BAINB	IMPROVEMENT	LOUGHEED	<<>>				<<>>
BROADWAY	IMPROVEMENT UNDERHILL	PHILLIPS					
BNR OVERPASS	NEW LINK DOUGLAS	HOLDOM	<<>>				<<>>

NO. CORRIDOR TYPE FROM ' TO ' 1987 1988 1989 1990 1991

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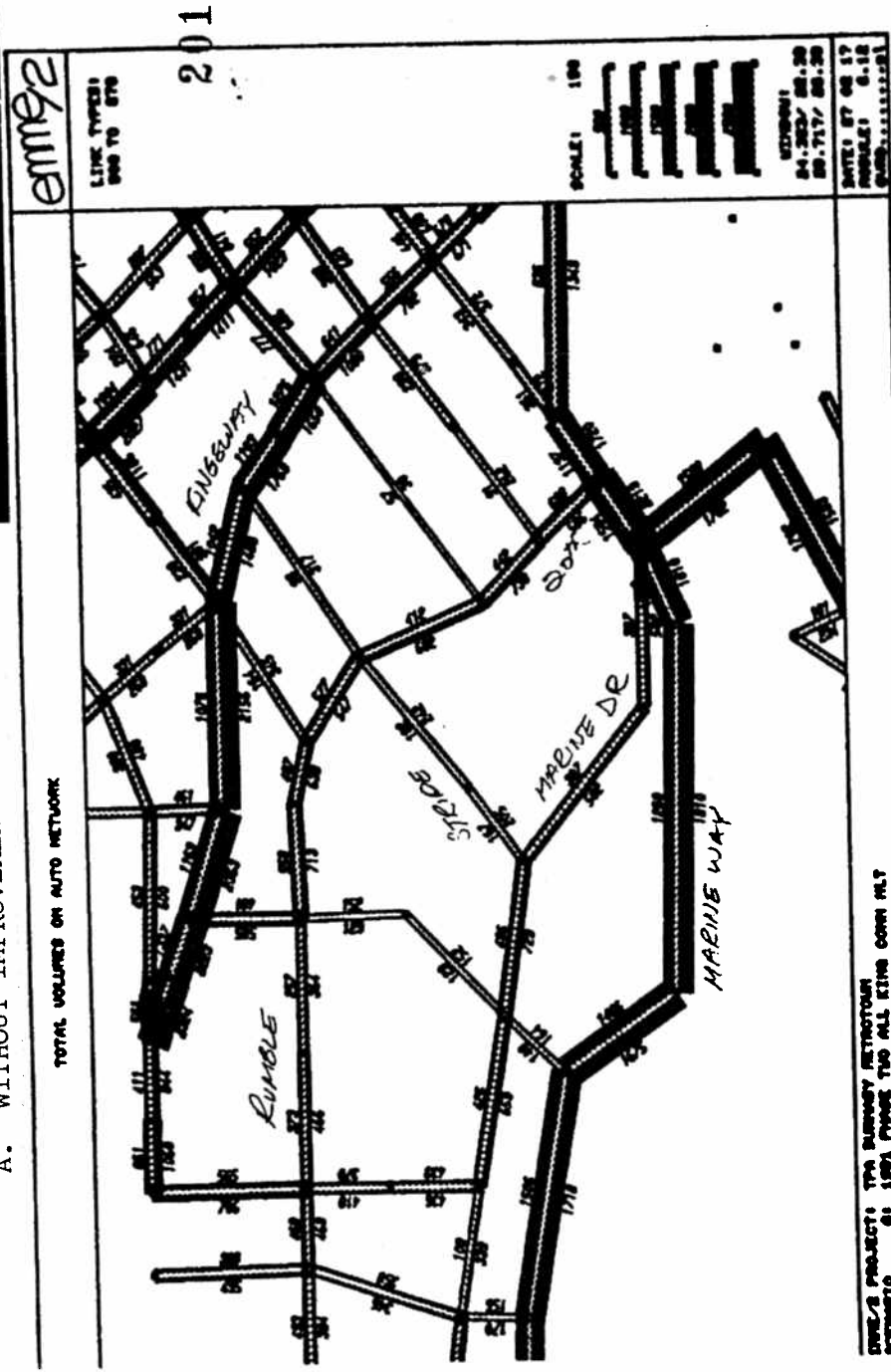
## EXHIBIT "E" HASTINGS/GAGLIARDI LINK AND RELATED UNRESOLVED ISSUES

ROAD LINK/ELEMENT	MUNICIPAL POSITION	PROVINCIAL POSITION
(1) Hastings/Gagliardi Connector	<ul style="list-style-type: none"> <li>- Route is important component of network peripheral route concept.</li> <li>- Scheduled for early implementation.</li> <li>- Improves grade/access to SFU for transit.</li> <li>- Part of SFU master plan hence Provincial responsibility.</li> </ul>	<ul style="list-style-type: none"> <li>- Proposed link would 'double-load' Hastings, hence</li> <li>- Existing link to Parker-Curtia route should be maintained.</li> <li>- Province will not assume responsibility for or fund route.</li> </ul>
(2) Parker/Curtia	<ul style="list-style-type: none"> <li>- Major residential connector.</li> <li>- Commuter through traffic function should be de-emphasized.</li> <li>- Possible physical closure when Hastings/Gagliardi is built.</li> </ul>	<ul style="list-style-type: none"> <li>- Route performs an important arterial function.</li> <li>- Through capacity/continuity should be maintained if not enhanced.</li> </ul>
(3) Barnet Highway	<ul style="list-style-type: none"> <li>- Agreed primary arterial but widening should await implementation of commuter rail &amp; implementation of Hastings/Gagliardi.</li> </ul>	<ul style="list-style-type: none"> <li>- Widening required as an early priority.</li> </ul>
(4) Hastings	<ul style="list-style-type: none"> <li>- Province should maximize available capacity through Traffic System Management (TSM) including parking bans, etc.</li> <li>- Present congestion on Hastings results in part, in commuter traffic 'retrunning' through residential areas.</li> </ul>	<ul style="list-style-type: none"> <li>- Removal of parking should be minimized to allow some on-street parking for merchants.</li> </ul>
(5) Waterfront Route	<ul style="list-style-type: none"> <li>- Only feasible new EW arterial link in North Burnaby.</li> <li>- Extra capacity would relieve Hastings (including 'double loading' problem) &amp; pressure on residential areas.</li> <li>- Long term proposal which should be safeguarded.</li> <li>- As an extension of the Barnet Highway project should be Provincial responsibility.</li> </ul>	<ul style="list-style-type: none"> <li>- Province 'lukewarm' to route &amp; concept.</li> <li>- Province concerned with taking on more responsibility for arterial routes through Burnaby.</li> </ul>
(6) Broadway (East of Gagliardi)	<ul style="list-style-type: none"> <li>- Municipality wants Ministry to 'honor' commitment to widen/improve link (including new bridge over Stoney Creek)</li> </ul>	<ul style="list-style-type: none"> <li>- Ministry would consider improvement if there were greater E/W route continuity (Burnaby is safeguarding Broadway west of Gagliardi continuity).</li> </ul>

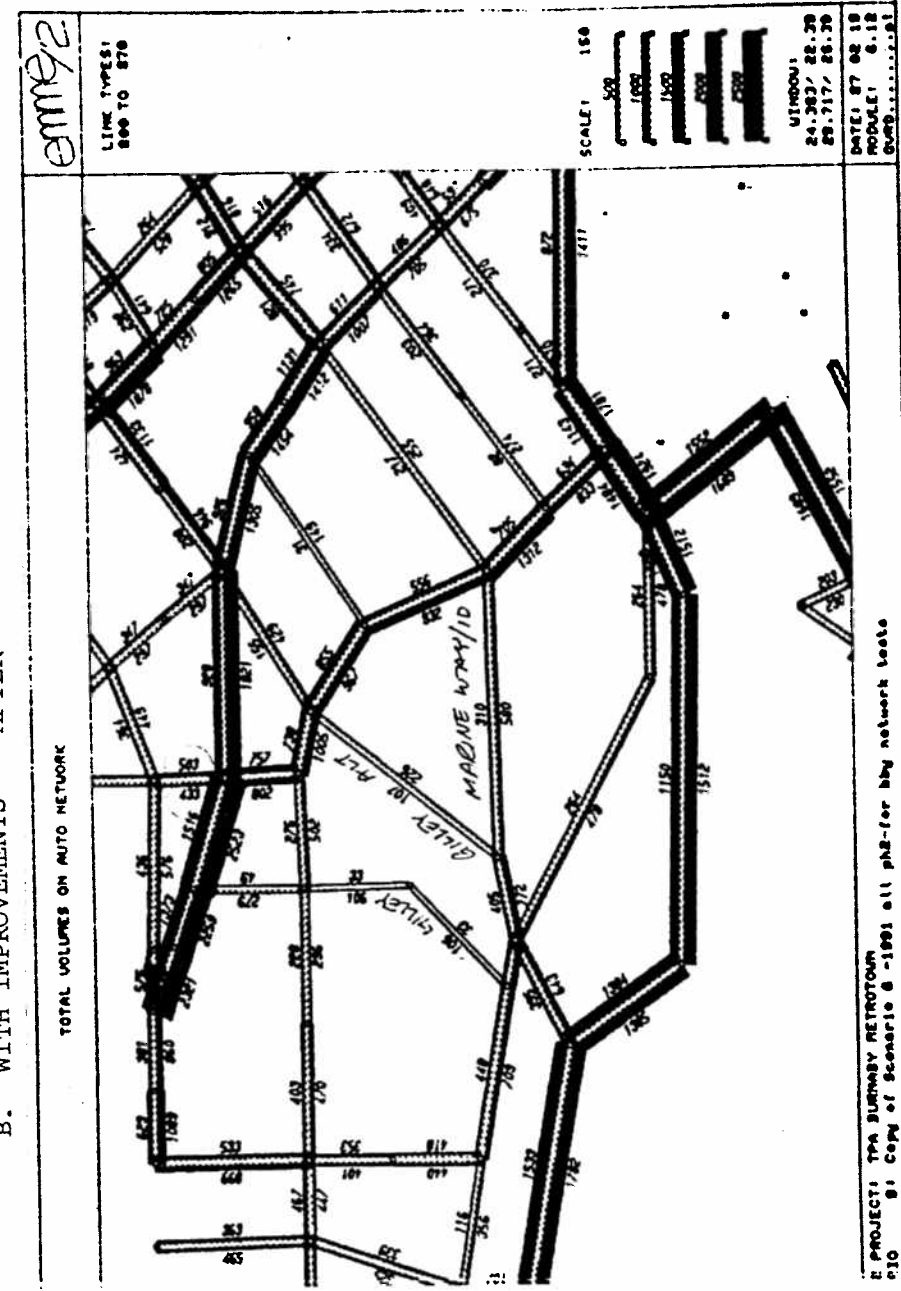
EXHIBIT "F" GILLEY ALTERNATE AND RELATED PROJECT

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A. WITHOUT IMPROVEMENTS - "BEFORE"



B. WITH IMPROVEMENTS - "AFTER"



PLAN RE-EVALUATION

The Municipality's Comprehensive Transportation Plan included an evaluation of the capacity of the Conceptual Transportation Plan to meet forecast future travel demand. The conclusions of that review were as follows:

- "(a) The capacity of north-south roads crossing the Central Valley will be sufficient provided Sperling/Kensington Avenue and Douglas Road south of the Lougheed Highway are improved.
- (b) Marine Way will provide a needed increase in east-west capacity and some relief to traffic crossing Boundary Road south of Canada Way.
- (c) The expected increase in traffic crossing the Burnaby-New Westminster boundary would be handled by the construction of the Stormont/Newcombe/McBride connector and Marine Way.
- (d) In the event that the project high demand figures were realized, the growth of traffic along the east-west corridor between and including Highway 1 and Hastings Street/Barnet Highway will outstrip the extra capacity provided by traffic management and/or widening of Lougheed Highway, Barnet Highway, Broadway east of Gagliardi Way and the Freeway. Should this occur, the required additional capacity in this area would have to be provided through increased transit usage to prevent congestion by-pass movements into residential areas. The development of a commuter rail facility on the C.P. Rail right-of-way along the Burrard Inlet foreshore together with facilities improvements would help promote this needed transit usage."

The evaluation of the Comprehensive Transportation Plan was carried out using travel demand forecasts generated by a computer based regional transportation model. Since those forecasts were made, the economic recession has somewhat abated growth in travel demand. In addition, 1981 census data suggests that the actual growth in labour force and employment has been more balanced throughout the region than was anticipated previously. Nonetheless, the conclusions that were drawn then regarding the sufficiency of the Comprehensive Transportation Plan network are still valid today.

We have used the most recently available traffic counts and the GVRD's new transportation model forecasts to reconfirm the previous conclusions. The previous evaluation of the Burnaby Comprehensive Transportation Plan road network sufficiency looked at morning westbound travel demand entering Burnaby from the east and exiting the Municipality at the Vancouver boundary. For convenience of interpretation these boundary screenlines can be segmented to represent two corridors. The North Burnaby corridor consists of westbound traffic entering from Coquitlam (including the Freeway and all roads to the north). The South Burnaby corridor is comprised of traffic entering the Municipality from New Westminster and includes all roads south of the Freeway. The previous screenline study also included peak hour travel volumes on north-south roads crossing an east to west screenline along the Central Valley immediately north of the Freeway.

The percent volume/capacity ratio as a network sufficiency criterion provides a good measure of the level of traffic congestion. For volume capacity ratios below 70 percent traffic flows freely with minimal delay experienced by drivers. Above 70 percent congestion as measured by average vehicle delay increases exponentially. As volume approaches capacity congestion becomes increasingly severe. If minor disturbances to the traffic stream occur (such as a stalled car) extensive queuing results and stop-and-go traffic may continue long after the clearance of the obstruction. Thus with severe congestion (volume/capacities greater than 90 percent) motorists not only find that their travel times are substantially increased on average but also that journey times become much more variable and difficult to predict on a day to day basis.

The results of the current screenline study are shown on Table 1 for model projections of travel demand for 1986 and 1991 (data for further forecast years is not yet available). For the purpose of evaluating the Comprehensive Transportation Plan network improvements 1986 has been chosen as the base year. There are two reasons for this choice. Firstly, 1986 is sufficiently immediate that we can have a reasonable degree of confidence in the model projections (model projections of westbound travel demand for 1986 correspond closely with screenline travel demand estimates derived from actual traffic counts). Secondly the 1986 base model incorporates the two significant regional transportation improvements that are in the offing, namely A.L.R.T. and the Annacis system.

TABLE 1: SCREENLINE CAPACITY STUDY (VOLUME/CAPACITY %, A.M. PEAK HOUR WESTBOUND)

Demand Year	Modelled Conditions Network for Assignment	Western Screenline (exiting Burnaby)		Eastern Screenline (entering Burnaby)		
		Freeway & Northward	Canada Way & Southward	Barnet to Freeway	Cariboo to Marine Way	Total
1986	1986 'Base'	101	84	101	92	97
1986	Above Plus Plan Proposed Improvements	95	77	85	64	76
1986	Above Plus Waterfront Road Proposal	89	72	86	63	76
1991	1986 'Base'	114	87	113	99	107

The 1986 model has been run, as a base, with 1986 road network. A second model run using 1986 demand utilizes the base network supplemented by the majority of improvements implicit in the Burnaby Conceptual Transportation Plan. The third run of the model is comprised of the transportation plan network supplemented by a waterfront road link (rationale for this proposal is further discussed below).

#### NORTH-SOUTH ROADS

While we have found this most recent version of the regional transportation model to be a good predictor of inter-municipal travel demand it appears to somewhat underestimate travel demand on some of the minor links and the north-south routes in the Municipality. We believe that this is due to the fact that the model is too 'coarse' to accurately represent intra-municipal travel demand. Pending further refinement of the model we have no reason not to believe that there is, on aggregate, a sufficiency of north-south capacity. This of course, does not imply that there is no congestion on some routes, such as Willingdon. However, it must also be realized that to some extent the capacity of some north-south roads is compromised by heavy congestion on the east-west routes.

#### SOUTH BURNABY CORRIDOR

Apart from localized congestion in the Metrotown area the western portion of the South Burnaby corridor would appear to be less congested than the eastern portion. However further refinement of model travel demand projections is required in order to allow us to use it to fine tune the network's efficiency relative to Metrotown development. On the basis of existing model runs, it would appear that proposed improvements in the vicinity of Metrotown (widening of Boundary Road, Kingsway and Royal Oak) are beneficial. In Eastern Burnaby, at the New Westminster boundary, the most significant transportation improvement would be the Stormont/Newcombe/McBride link. With Conceptual Transportation Plan road improvements indicated travel on the alternate routes such as Cariboo Road and Tenth/Canada Way would be considerably reduced. The other peripheral route component in the South Burnaby corridor is the Marine Way/Tenth connector. The lower volume of traffic assigned to it by the model indicates that it is less significant and hence a lower priority project than the Stormont/Newcombe/McBride link. Its primary impact is to bypass traffic around the Queensborough bridgehead. However this link in conjunction with the Griffiths/19th/20th improvement would significantly reduce traffic demand on Kingsway through the Edmonds area. It would also reduce travel demand on the local Stride/14th Avenue links.

It should be noted that the North Burnaby corridor improvements, principally widening of the Freeway, have a beneficial impact on South Burnaby. Model data confirms that congestion in North Burnaby pushes travel demand southward. Thus the North Burnaby improvements particularly Freeway widening will significantly reduce congestion in the South Burnaby corridor.

#### NORTH BURNABY CORRIDOR

The North Burnaby corridor remains the significant problem area of the Municipality. Screenline volume/capacity estimates suggest a uniform level of congestion throughout the corridor. In its western portion the model forecasts confirm major congestion on Hastings and the Grandview link from the Freeway. In the eastern portion of the corridor capacity short-falls are acute on all arterial links. 1991 demand predictions confirm that the traffic situation in North Burnaby will deteriorate more than in South Burnaby. This is largely due to the fact that the limited river crossings effectively throttle demand originating south of the Fraser.

The model predicts that a widened Freeway would attract up to 1,400 additional vehicles per hour at its maximum load point. This would result in traffic decreases on all parallel routes including Hastings. However, the model shows that along Hastings immediately west of Boundary Road there would be a net increase in peak traffic. This is because the Cassiar improvement eliminates the Cambridge Overpass/Skeena Tunnel links between Vancouver and Burnaby Heights.

The predicted decrease in traffic on Hastings in its eastern portion is significant because the Transportation Plan network tested includes both a widened Barnet Highway and the Hastings/Gagliardi connector. It has been the contention of the Ministry of Transportation and Highways that these two projects would adversely double load an already congested Hastings corridor. The widening of the Barnet does attract some extra westbound traffic but this increase is more than offset by a decrease on Gagliardi Way (diverted presumably by Freeway widening).

The Plan model test also included the Bainbridge/Phillips/Burnwood connection to the Gagliardi Way link. The results suggest that this link would be reasonably well utilized and draw traffic off the parallel collectors resulting in a better 'balance' of flows.

As would be expected, widening of Broadway east of Gagliardi Way would attract a substantial number of vehicles to this link. It would appear, however, that the majority of this attracted traffic would be drawn southward along Gagliardi Way to the Lougheed corridor. The widening of the Freeway and the Broadway link also serve to reduce the level of traffic congestion in the Lougheed Mall area by up to 800 westbound vehicles per hour. This is a significant benefit.

Although the Transportation Plan improvements, particularly the widening of the Freeway, would significantly reduce the level of congestion in the North Burnaby corridor, congestion would continue to be a problem particularly along the Hastings corridor. Although their efficiency remains to be tested with the current model, it is reasonable to assume that both the commuter rail proposal and the ALRT extension to Lougheed Mall would address the issue of road capacity shortfalls in North Burnaby. The only other practical way of increasing traffic in the North Burnaby corridor would be to extend Barnet Highway westward to Vancouver along the Burrard Inlet foreshore.

This waterfront link has been proposed as a means of alleviating the Ministry of Transportation and Highways' concerns regarding the double loading of Hastings by an expanded Barnet and a new Hastings/Gagliardi Way link. A preliminary study has suggested that this link would be technically feasible and cost-effective. The model predicts that the waterfront link (in addition to the Burnaby Transportation Plan network) would immediately attract 2,700 westbound vehicles per hour from other routes. This would include the substantial portion of the existing Barnet Highway traffic as well as an additional 900 vehicles per hour from the north-east sector. The volume of traffic on all alternative facilities would be diminished but the most significant benefit would accrue to the Hastings corridor. The traffic volume along Hastings in Burnaby would be decreased by approximately 1,000 vehicles per hour. The additional traffic attracted to the Barnet corridor from the north-east sector by the new link would further reduce congestion in the vicinity of Lougheed Mall as well as reduce demand pressure on the Freeway.

In Vancouver, the waterfront route would result in a redistribution of travel volumes in the vicinity of the Second Narrows bridgehead but beyond those connections, the effects are predicted to be only marginal.

