



THE CORPORATION
OF THE DISTRICT OF
BURNABY

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BURNABY TRANSPORTATION COMMITTEE

1979 November 22

His Worship, Mayor T.W. Constable,
and Members of Council:

Re: Burnaby Comprehensive Transportation Plan - Implementation Strategy

In accordance with its assigned terms of reference and the direction of Council, the Burnaby Transportation Committee is pleased to hereby submit for the consideration and approval of the Municipal Council a report, and a series of recommendations arising from it, regarding the implementation of "A Comprehensive Transportation Plan for Burnaby". The Implementation Schedule recommended is summarized on the bar chart attached to copies of the report submitted to Members of Council.

Although the Committee is of the opinion that all elements of the transportation plan are important, they feel that major projects should be implemented in accordance with the strategy outlined herewith and that the proposed Implementation Schedule most adequately responds to this strategy. However, because this strategy recognizes that projects cannot be considered in isolation and because the municipality does not have jurisdiction over major elements of the strategy, a commitment will be required from other authorities, principally the Provincial Government, to coordinate and advance their projects that relate to a particular municipally sponsored transportation improvement.

It is the conviction of the Committee that Council's adoption of their recommendations will result in the optimal development of the Comprehensive Transportation Plan as previously adopted by Council on 1979 August 20. The adoption of this program will require a considerable expenditure on the part of the municipality as well as an even greater allocation of resources on the part of other authorities. In the view of the Transportation Committee, however, this expenditure is warranted and necessary if the present and future transportation needs of the community are to be met.

Respectfully submitted,

Alderman B.M. Gunn
Chairman
TRANSPORTATION COMMITTEE

Alderman G. Ast, Member

Alderman W. Lewarne, Member

Mr. R. Tarling, Member

Mr. G. Ramsell, Member

Attach.

/hf

1979 November 21

BURNABY COMPREHENSIVE TRANSPORTATION PLAN - IMPLEMENTATION STRATEGY

1.0 INTRODUCTION

At their meeting of 1979 April 09 the Municipal Council approved in principle a series of transportation policies for Burnaby which were to be a basis for the development of a comprehensive transportation plan. Subsequently, at a special meeting of Municipal Council on 1979 August 20, Council considered and unanimously adopted "A Comprehensive Transportation Plan for Burnaby" as prepared by the Transportation Committee. At that time the Council directed the Transportation Committee "to prepare a recommended prioritized implementation program, to include a full statement of the financial implications of such a program(s)" arising from Transportation Policies and A Comprehensive Transportation Plan for Burnaby.

The purpose of this report is to define a strategy for the implementation of the "Comprehensive Transportation Plan for Burnaby" that best accords with the adopted transportation policies for the municipality. Based on this strategy the Transportation Committee has derived a ten year Implementation Schedule that will enable the projects comprising the transportation plan to be progressed in a priority that accords with the principles of the Transportation Policies and Plan and the framework of the capital budgeting procedure now present in the municipality.

2.0 IMPLEMENTATION STRATEGY

It is the view of the Transportation Committee that improvements required to meet the conceptual transportation plan are inter-related and individual projects cannot be considered in isolation. It is therefore necessary to have concurrence and cooperation of the authorities who have jurisdiction over the elements of the transportation plan over which the municipality does not exercise direct control.

2.1 THE ESTABLISHMENT OF THE KEY PRIORITIES

The Burnaby Transportation Committee has been guided by the Transportation Policies for Burnaby and accordingly the proposed implementation strategy tackles the transportation needs of the municipality on a broad front with particular emphasis being given to the early implementation of traffic management, the protection of residential areas, and the improvement of public transportation. The establishment of key priority areas has enabled the Transportation Committee to develop a system wide approach for the implementation of the projects in the transportation plan.

2.2 PROJECT LINKAGES

The various major elements in the Comprehensive Transportation Plan are related to each other (as shown on Figure 1 attached) and therefore project linkages have considerable influence on project timing. In some cases the full benefit of a project may not be realized unless prerequisite projects are implemented. For example, it would be desirable that the Burnaby Transit Focus Concept (long term bus improvements) be operational in advance of the completion of LRT in order to provide adequate bus feeder service. The implementation of some projects also has a bearing on the timing of others that are functionally related. For example, the widening of the Trans Canada Highway would defer the need for the widening of the Lougheed Highway and vice versa. However, it should be noted that the project linkages defined do not imply a sequential implementation process but rather define the prerequisites that have to be in place in advance of a particular project's completion. It is worthwhile considering this implementation strategy in terms of the major elements inherent in it.

2.2.1 Public Transit Improvements

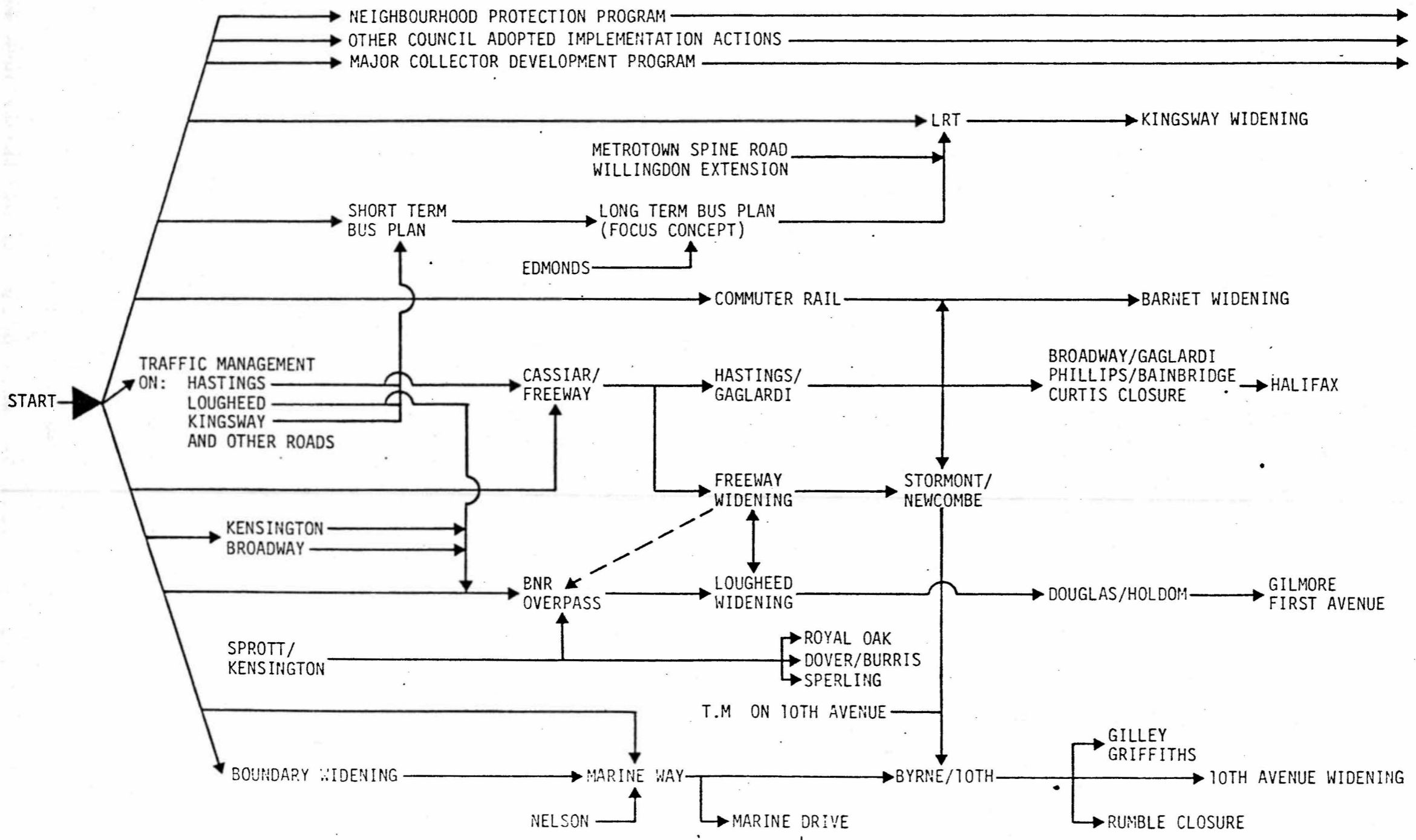
It is the view of the Committee that the added capacity of Commuter Rail along the Burrard Inlet is urgently required in order to meet the forecast high growth in travel demand along the East-West Corridor that extends from the Freeway to the Burrard Inlet. The Committee also assigns a high priority to the early implementation of LRT along the Central Park B.C.H.R. right-of-way. However, because these projects will take a number of years to design and construct certain prerequisites can be progressed in the interim. As a precursor to the implementation of the full transit focus concept the Committee sees the need for an early implementation of short term bus improvements including the extension of services along Hastings, Broadway/Lougheed and Kingsway. The traffic management program proposed by the Committee is related to these short term bus improvements and the measures that will expedite the movement of traffic will be beneficial to buses as well but where necessary priority will be given to high occupancy vehicles. Although the full bus focus concept is seen by the Committee as being a measure that will have far reaching benefits on its own it is an absolute prerequisite for LRT services. In advance of the completion of LRT there is a need for specific road improvements particularly in Metrotown.

2.2.2 Traffic Management

The Committee favours the early progression of traffic management measures on the major roads in the municipality and the highest priority is given to improvements on the Hastings, Lougheed and Kingsway corridors. The initial thrust of traffic management should be towards providing operational improvements without major physical alteration to the roads. As stated previously the traffic management measures should be designed to expedite the flow of people rather than cars and therefore it is expected that in certain instances special priority measures will have to be given to buses and possibly other high occupancy vehicles. Short term traffic management improvements are seen also as an initial prerequisite to a number of major road projects.

2.2.3 Major Road Projects

Along the Hastings corridor traffic management should be in place in advance of completion of the Cassiar improvement in Vancouver and both these measures should be in operation at or in advance of the completion of the Hastings/Gaglardi link road. The Hastings/Gaglardi connector is an important element in the road plan because its completion is considered a prerequisite to the upgrading of the Broadway/Gaglardi connector, the Phillips/Bainbridge collector and



improvements to Halifax. With the Hastings/Gaglardi connector in place it will be possible to de-emphasize Curtis and Parker Streets as a major through route and relegate them to the major collector function that was intended for them.

The Committee sees the widening of the Freeway between the Grandview and Stormont interchange as the most cost effective way of providing the needed extra east-west commuter capacity that would encourage commuters to refrain from "rat-running" through residential areas. However, as a prerequisite to the completion of the Freeway widening the Committee feels that the Cassiar improvement in Vancouver must be operational whilst the Freeway widening itself is seen as being a prerequisite, along with the Hastings/Gaglardi project, to the implementation of a Stormont/McBride connector.

The Committee places a high emphasis on completion of their peripheral road concept which is why they recommended that Council proceed, in conjunction with Vancouver, to improve Boundary Road. The Committee recognizes the relationship between the Boundary Road improvements and the construction of the new Marine Way which should be progressed as rapidly as possible. Marine Way should be completed so that it provides a through route between the Queensborough Bridge head and Boundary Road. The construction of Marine Way and the Stormont/McBride connector would then enable the final element of the peripheral road concept to be implemented (i.e. the Marine Way/Byrne/Tenth Avenue connector).

The Committee considers it absolutely imperative that traffic management measures on the Lougheed are operational in advance of the completion of the proposed Kensington Avenue Overpass of the Burlington Northern Railway. The widening of the Trans-Canada Highway, as discussed above, is also considered to be a desirable prerequisite to this project. The early connection of the Lougheed Highway and the Trans-Canada Highway (Kensington Interchange) with an improved arterial link is needed to alleviate the serious congestion and potential accident hazard that arises from the present level crossing. However, as already noted it is essential that traffic management measures are in place along the Lougheed and that improvements to Kensington Ave. and Sprott St. south of Lougheed are carried out in conjunction with the overpass. North of Lougheed it would be desirable to improve the major collectors (by way of L.I.P.) which would disperse the neighbourhood traffic in that area. Sperling Avenue which currently functions as a truck route would be down-graded when the Hastings/Gaglardi connector is in place. The improvements to Sprott/Kensington that would be carried out in conjunction with the BNR Overpass are considered a prerequisite for the less pressing improvements to the Royal Oak arterial and the Dover/Oakland/Burris collector.

The widening of the Freeway and the provision of the BNR Overpass are related to the subsequent need to widen the Lougheed Highway and ultimately the provision of a railway overpass at Douglas/ Holdom and improvements to Gilmore Avenue. The timing of other projects such as the widening of the Barnet Highway and the widening of Kingsway east of Hall is, in the view of the Committee, less urgent and primarily contingent upon how efficiently other prerequisite improvements, particularly those to public transit, are functioning.

3.0 IMPLEMENTATION SCHEDULE

On the basis of transportation priorities and project relationships, as well as the time required to implement particular projects, the Transportation Committee have defined the attached implementation schedule (Appendix "A"). The ten year time frame has been used in order to enable the consideration of all of the elements in the Comprehensive Transportation Plan. This schedule tabulates the cost of the projects on the basis of total cost, as well as on an annual basis and segregates the projects by category under the jurisdiction of the implementing authority.

3.1 PUBLIC TRANSPORTATION (Table A)

The Committee is of the opinion that all of the public transportation improvements that are in the Comprehensive Transportation Plan should be progressed as quickly as possible and accordingly, the attached schedule shows that work should commence on both Commuter Rail and LRT in 1980 because of the length of time that it would take to plan and implement these projects. Under the existing circumstances, it has not been possible to provide a cost estimate for all of the public transportation elements of the Comprehensive Transportation Plan. Whilst the capital cost of LRT and Commuter Rail are available, they are, of course, items of regional significance and cannot be segregated on a geographic basis as can the road projects. Accordingly, the cost elements shown in the attached schedule are for the whole commuter rail system along the Burrard Inlet as well as the Central Park Line component of the LRT system. At this time there can be no certainty as to what the total cost of the short-term and the long-term bus improvement plans would be or what direct cost, if any, could be allocated to Burnaby. However, the short-term bus improvements, and indeed most of the long-term bus improvements, are not expected to be a major cost item as such because they will result in a rationalization of the bus system that would be in all likelihood more cost effective to operate than the present system. Clearly there will be a capital cost involved in the provision of the transit interchanges at the major foci, however, it has not been possible to estimate what the cost of these interchanges would be or how the costs would be allocated with respect to the complex transit administration structure that has arisen from the UTA Act. It is expected that the major interchanges at Burnaby Metrotown and at Rumble would be considered a part of the LRT project.

3.2 PROVINCIAL HIGHWAYS (Table B)

The implementation schedule that the Committee has proposed requires a provincial government expenditure on roads, over which they have a jurisdiction in Burnaby, of approximately \$67,000,000. This figure excludes the Cassiar/Hastings project which is outside the municipality's boundaries.

The cost estimates for provincial highways include the requisite environmental protection measures. It is estimated that the province should spend approximately \$1,000,000 per annum on traffic management measures within the municipality within the coming decade. Specific cost estimates have been allocated to short term improvements on all the major corridors and these include upgrading of traffic signals and various regulatory measures. The remainder of the costs would be distributed throughout the system to upgrade the physical capacity of congested junctions on the basis of a priority that would result in the most cost effective utilization of funds.

3.3 BURNABY PROJECTS (Table C)

The projects considered a municipal responsibility have been broken down into seven cost categories. The municipality will be required to pursue the various Council implementation actions listed in "A Comprehensive Transportation Plan for Burnaby", and although the cost of these has not been estimated it is expected that most of the expenditure would be allocated to staff resources. A continuing neighbourhood protection program has been proposed by the Transportation Committee but again the cost of this program has not been estimated. Municipal staff have developed broad terms of reference for such a program and with Council approval sought financial assistance from the Provincial Government (1979 Municipal Planning Grant Program) but without success.

3.3.1 Traffic Management (Table C Item 3)

The Municipal Engineer has estimated the costs for traffic management on each of the major corridors. This estimate shows that approximately \$5,000,000 would be required to improve the operational capacity of the major roads under the municipality's jurisdiction. In addition to the cost of regulatory measures and

upgrading of the traffic signalling systems the total cost includes physical improvements at congested junctions. The widening of intersection approaches in order to augment capacity is expensive relative to the cost of control and regulatory measures because it entails both construction and property acquisition. Accordingly, the Committee believes that the initial thrust of traffic management should be to improve signalling and regulatory measures along the major corridors and that the physical improvements to junctions should be carried out in a continuing program that is based on a cost effective prioritization.

On this basis the province would be called on to implement a traffic management program that would involve the continuing annual expenditure of approximately \$1,000,000 within the municipality whilst the municipal program would be approximately \$500,000 per annum. It should be noted that the municipality may be required to cost share certain elements of the provincial traffic management program. For example at the intersections of municipal and provincial roads the cost of signals is usually allocated on the basis of how many approaches fall into each authority's jurisdiction. However, the cost of this sharing has not been estimated because it is usually a function of past policy as well as protracted negotiation at staff level. Therefore it is suggested that \$500,000 per annum be budgeted for municipal traffic management programs.

3.3.2 Shared Cost Projects (Table C Item 4)

The major road projects in Burnaby for which the municipality has prime responsibility and which would be cost shared (primarily with the provincial government under the Revenue Sharing Act) are estimated to cost about \$39,000,000 with the municipal share to be \$16,000,000. The gross cost of the major road projects that are eligible for Revenue Sharing includes the cost of requisite environmental protection measures and it has been assumed that the cost of these will be eligible for Revenue Sharing.

3.3.3 Local Improvement Projects (Table C Item 5)

The scheduled Local Improvement Projects are major collectors which should be upgraded as part of the Local Improvement Program. The total cost of these improvements is approximately \$7,000,000 and the corporation would share this cost with abutting property owners. The scheduling of some of these projects is speculative because they are primarily dependent on land use development.

3.3.4 Developer Cost Projects (Table C Item 6)

It is expected that certain major collectors will be built at the cost of developers and accordingly the cost of these roads has been segregated from the rest of the projects for the purpose of financial analysis. It should be noted that this list is not comprehensive in that some roads may be added to or deleted from this category. There are also roads which although not provided at developer cost will nonetheless provide an indirect return on investment to the municipality by way of encouraging development but the cost of this recovery has not been estimated. The scheduling of developer cost projects as tentative and contingent upon the pace at which land use development takes place.

3.3.5 Other Projects (Table C Item 7)

The "other" road projects listed are major new collectors and because the timing of their development is primarily related to land use requirements their placement within the schedule must be regarded as tentative.

4.0 COST IMPLICATIONS FOR THE MUNICIPAL PROJECTS

The "bottom line" costs by category are listed in Appendix "A" Page 7 (Table D). The gross cost of all road related projects in the municipality is estimated to be \$134,000,000 of which Burnaby would be expected to pay approximately \$39,000,000. The Province would pay approximately \$67,000,000 directly for improvements to its own road network and provide a further \$20,000,000 to the municipality via Revenue Sharing. Approximately \$4,000,000 of the gross total cost is accounted for by anticipated grants from the C.T.C. and cost sharing by adjacent municipalities where projects fall under joint responsibility. At this time it has been estimated that approximately \$5,000,000 worth of road projects in Burnaby would be financed directly by benefitting developers. An estimate has been made of the cost implications to the municipality arising from the preliminary ten year Implementation Schedule and this information is tabulated in Appendix "B" attached.

Two possible ways of raising the revenue to provide the funds to honour the municipal responsibility as contained within the Preliminary Implementation Schedule have been considered, viz.,

- (i) Financing on a "pay-as-you-go" basis, (Table A, Appendix "B")
and
- (ii) Financing on the basis of borrowing, (Table B, Appendix "B")

It has been assumed in both instances that Local Improvement Projects would be financed by borrowing at 10% over a 15 year period and that the cost of the traffic management program would be met from general revenue on a "pay-as-you-go" basis. Both estimates also assume that the Boundary Road project would be financed by ten year borrowing as already approved and that the BNR project would be built from funds on hand. In the borrowing option a 20 year amortization period has been used and an interest rate of 10% has been assumed. All project costs and mill rates are in terms of 1979 dollars without any allowance for inflation.

It is extremely difficult to estimate the financial ramifications of the proposed implementation schedule on the municipality. It is clear, however, that a program of this size (\$39,000,000), no matter how it is financed, will require an increase in the level of the realty taxation rate. In the case of the option by which most of the capital requirement is met by borrowing the annual revenue required to finance the program increases from \$0.8 to \$3.8 million over the ten year period. These figures correspond to 1.3 and 6.1 mills respectively in terms of the current tax base and suggest corresponding increases of 3 and 13% over the 1979 mill rate. The revenue requirements steadily decline after 1990 as the borrowing is amortized.

For the "pay-as-you-go" financing option the annual capital requirement varies from \$2.0 to \$4.9 million and the average annual amount required during the ten year schedule is \$3.5 million. This latter figure is equivalent to 5.6 mills with respect to the current tax base and implies a 12% increase over the 1979 mill rate of 46.5 mills. In terms of the implications arising from such a mill rate increase it should be noted that the average single family residence in Burnaby (actual assessed value of \$63,100) is taxed at a general purposes and debt levy of \$440 and this does not include school taxes, or rates set by other bodies, etc. Thus a 12% increase in the mill rate would increase the tax burden on the average single family residence by \$53. The foregoing analysis, of course, deals with the transportation needs of the community in isolation. It does not consider increases in taxes due to inflation or increases that may be caused by demands for other services, nor does it deal with the question of the priority to be given to transportation in relation to other municipal services and facilities.

5.0 MUNICIPAL CAPITAL IMPROVEMENT PROGRAM

In their approval of the Transportation Policies document, the Council endorsed a number of implementation actions, two of which have a direct bearing on this report, viz.,

" THAT Council instruct staff to prepare and provide the Transportation Committee with the appropriate guidelines and cost effective evaluation mechanisms for the preparation of a 5 year comprehensive transportation budget.

THAT as part of the general approval process, the 5 year comprehensive transportation budget be forwarded to the Capital Improvement Program Committee for its review and recommendation to Council. "

It should be noted that the 5 years in the previous two statements should more appropriately be amended to 6 years to be in line with the current capital budget.

The Transportation Committee is of the opinion that all of the improvements listed in the Implementation Schedule discussed herein are an integral and necessary part of the Council's adopted Transportation Plan. The Committee believes that these improvements should be developed within the next decade as shown in the attached schedule (developed in accordance with the Implementation Strategy) in order to most effectively meet the varying needs of the community. Accordingly, the Committee feels that the Implementation Schedule should be adopted as the basis for the coming expenditures on transportation improvements and that the first six years of the program be incorporated into the municipality's current six year program of Capital Improvements. The projects in the last four years of the Implementation Schedule would therefore be incorporated into subsequent C.I.P.'s.

6.0 DISCUSSION AND CONCLUSIONS

The Committee wishes to stress that the Comprehensive Transportation Plan is based on the framework provided by the Transportation Policies for Burnaby and therefore represents an integrated approach to the solution of Burnaby's pressing transportation problems. Accordingly, the implementation strategy outlined previously must be viewed on the same systematic basis and individual elements of the transportation plan should not be considered in isolation or out of context.

The implementation schedule set out herewith is contingent upon the commitment of the Urban Transit Authority/G.V.R.D. to provide public transportation improvements as well as the willingness of the province to pursue a vigorous and indeed costly program of road improvements within the municipality. It is also contingent upon the province being ready to provide funding via Revenue Sharing for municipal projects. Accordingly, it is necessary that Council utilize this implementation program in its discussions with the U.T.A./G.V.R.D. and the provincial government with respect to gaining their commitment to the Implementation Strategy. In addition the schedule is dependent on the willingness of abutting property owners to approve Local Improvement initiatives and, of course, it is contingent upon the Council and the citizens of the municipality accepting an increase in the level of realty taxation, particularly since inflation has made it difficult to keep taxation at a constant level to pay for the existing programs. It should be emphasized that the Implementation Strategy in terms of the defined project linkages and priorities provides a guide for adjusting the municipal transportation improvement program to account for the changes due to external influences.

The Implementation Schedule is the culmination of approximately 24 months of deliberations and proposes the advancement of prioritized transportation improvements to meet the pressing needs of the Community. Through extensive public involvement and deliberation the Committee developed the "Transportation Policies for Burnaby", as adopted by Council, and from those policies developed "A Comprehensive Transportation Plan for Burnaby", which has also been adopted by the Municipal Council. The development strategy outlined herein provides

direction and a method for achieving this plan in accordance with the stated transportation goal and policies for the municipality. The ultimate achievement of this comprehensive transportation plan is, however, contingent upon the full commitment of all parties involved with the implementation strategy. It will, of course, be up to the municipality to provide the initiative in obtaining the required support of the Province and the GVRD/UTA in the implementation of the required improvements.

7.0 RECOMMENDATIONS

In accordance with its given terms of reference the Committee is submitting the following recommendations to Council with respect to the implementation of the Comprehensive Plan for Burnaby. However, it is the view of the Committee that Burnaby should not commit itself to major elements of the strategy, such as the Burlington Northern Railway Overpass, until such time as a commitment has been made by the relevant authorities to implement those projects, over which they have jurisdiction, which are prerequisite to the major element under consideration, in accordance with the Implementation Strategy. The Committee wishes to state that if Council concurs with this view it should not construe this as a moratorium on all projects, preventing the initiation of local improvement projects, the commencement of roads required to serve land use developments or the construction of road projects that do not have "prerequisites".

THEREFORE IT IS RECOMMENDED:

1. THAT Council approve in principle the Implementation Strategy as defined in this report.
2. THAT Council authorize the inclusion of the first six years of the Transportation Implementation Schedule in the current Capital Improvement Program for planning purposes only.
3. THAT Council utilize this program in its discussions with the G.V.R.D./U.T.A. and the Provincial Government with respect to gaining their commitment to the Implementation Strategy.
4. THAT Council request the Transportation Committee to annually review and recommend the Transportation Capital Improvement Program on the basis of the Implementation Strategy, the progress made by other authorities in implementing their programs, and the availability of funds.
5. THAT Council request the Transportation Committee to report to the Council at such time as the Committee is satisfied that a sufficiently strong commitment by the Provincial Government and the G.V.R.D./U.T.A. has been made to the Implementation Strategy to warrant the Committee recommending that Burnaby commence with particular major projects in the program.
6. THAT Council request the Transportation Committee to consider the current 1980 program and recommend which projects should proceed as presently proposed.
7. THAT Council authorize the Transportation Committee to communicate the Implementation Strategy to the public.

Respectfully submitted,

Alderman B.M. Gunn
Chairman
TRANSPORTATION COMMITTEE
Alderman G. Ast, Member
Alderman W. Lewarne, Member
Mr. R. Tarling, Member
Mr. G. Ramsell, Member

/hf

Attach.

A. PROJECTS CONSIDERED GVRD/UTA RESPONSIBILITY

Project Cost \$000's

Project	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Burnaby Cost	Gross Cost
1. SHORT TERM BUS improvements including:												N/E
(a) Extension of HASTINGS services		██████████										
(b) Extension of BROADWAY/LOUGHEED service		██████████	██████████									
(c) Extension of KINGSWAY services			██████████									
2. LONG TERM BUS improvements including:												N/E
(a) METROTOWN Interchange (Focus)					██████████	██████████						
(b) BRENTWOOD Interchange					██████████							
(c) RUMBLE Interchange						██████████						
(d) LOUGHEED Interchange					██████████							
(e) HASTINGS/WILLINGDON Interchange							██████████					
3. Construction of L.R.T.	██████████	██████████	██████████	██████████	██████████	██████████						300,000
4. Implementation of COMMUTER RAIL along Burrard Inlet	██████████	██████████	██████████	██████████	██████████							30,000
SUBTOTAL												330,000+

N/E = NOT ESTIMATED

B. PROJECTS CONSIDERED PROVINCIAL RESPONSIBILITY

Project Cost \$000's

Project	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Project Cost \$000's	
											Burnaby Cost	Gross Cost
1. TRAFFIC MANAGEMENT to the following roads:												
(a) HASTINGS ST.: Boundary Rd. to Barnet Rd		250										250
(b) LOUGHEED HWY: Boundary Rd. to North Rd.		250										250
(c) CANADA WAY: Kensington to Tenth Ave.			170									170
(d) KINGSWAY: Boundary Rd. to Tenth Ave.			450									450
(e) TENTH AVE: Kingsway to McBride				100								100
(f) Widening of congested intersection approaches	1,000	500	380	900	1,000	1,000	1,000	1,000	1,000	1,000		8,780
2. HASTINGS/GAGLARDI Connector		190	1,805	1,805								3,800
3. BROADWAY from Gaglardi to North Road			19	361								380
4. Widening of FREEWAY from Grandview to Stormont		300	2,850	2,850								6,000
5. STORMONT/NEWCORBE/MCBRIDE Connector						575	5,500	5,425				11,500
6. MARINE WAY:												
(a) Boundary Rd. to Byrne Rd.	2,000	2,000										4,000
(b) Byrne Road to New Westminster	200	1,900	1,900									4,000
7. Widening to the following roads:												
(a) LOUGHEED HWY: Boundary Rd. to North Rd.							150	1,425	1,425			3,000
(b) SPROTT ST: Freeway overpass to Kensington		20	380									400
(c) KENSINGTON AVE: Canada Way to Sprott		18	332									350
(d) BARNET RD: Hastings to Port Moody boundary								188	1,781	1,781		3,750
(e) TENTH AVE: McBride to Byrne Connector								400	9,800	9,800		20,000
(f) KINGSWAY at Central Park & Hall to Tenth Ave.												N/E
SUBTOTALS	3,200	5,428	8,286	6,016	1,000	1,575	6,650	8,438	14,006	12,581		67,180

C. PROJECTS CONSIDERED MUNICIPAL RESPONSIBILITY - Cont'd.

Project Cost \$000's

Project	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Burnaby Cost	Gross Cost
4. COST SHARED PROJECTS	Burnaby	Share	listed in	annual	costs							
(a) NORTH ROAD: New Westminster to Freeway	25	250	250								525	2,250
(b) BOUNDARY ROAD:												
(i) Marine Way to Imperial St.	810	815									1,625	5,000
(ii) Imperial St. to Kingsway	10	190									200	800
(iii) Thurston to 29th Avenue			15	285							300	1,200
(c) BNR OVERPASS: Laurel St. to Lougheed Hwy.	138	1,045	1,045	522							2,750	8,000
(d) WILLINGDON AVE. EXTENSION (Metrotown Coll)				35	665						700	1,400
(e) NELSON AVE: Marine Dr. to Marine Way	7	123									130	260
(f) BYRNE RD/TENTH AVE. conn. Marine Way to 20th Street						162	1,544	1,544			3,250	6,500
(g) ROYAL OAK AVE: Grange to Canada Way			38	712							750	1,500
(h) DOUGLAS RD./HOLDOM AVE. BNR Overpass								250	2,613	2,137	5,000	10,000
(i) KENSINGTON AVE: Sprott to Laurel			77	63							140	280
(j) GILMORE AVE: Lougheed Hwy. to Canada Way									9	181	190	380
(k) GRIFFITHS ST/19th-20th DIVERSION								500			500	1,000
(l) SPROTT ST: Douglas to Freeway		8	152								160	320
SUBTOTAL	990	2,431	1,577	1,617	665	162	1,544	2,294	2,622	2,318	16,220	38,890

Project	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Project Cost \$000's	
											Burnaby Cost	Gross Cost
5. LOCAL IMPROVEMENT PROJECTS (MAJOR COLLECTORS)												
(a) KENSINGTON AVE: Broadway to Hastings	600										600	600
(b) BROADWAY: Kensington to Bainbridge		15	285								300	300
(c) GILMORE AVE: Douglas Rd. to Hastings									24	451	475	475
(d) FIRST AVE: Boundary Rd. to Gilmore Ave.								7	133		140	140
(e) GILLEY AVE: Imperial to Marine Dr.								36	689		725	725
(f) EDMONDS ST: 19th-20th St. to Kingsway					14	261					275	275
(g) SPERLING AVE: Burris St. to Kingsway						16	309				325	325
(h) HALIFAX ST: Sperling Ave. to Phillips			8	157							165	165
(i) MARINE DR: Boundary Rd. to Byrne Rd.			75	712	713						1,500	1,500
(j) SIXTEENTH AVE: 6th St. to Cumberland *						232	233				465	465
(k) RUMBLE ST: Boundary Rd. to Gilley Ave.*									750	750	1,500	1,500
(l) PATTERSON: Marine Dr. to Imperial *								300	300		600	600
SUBTOTAL	600	15	368	869	727	509	542	343	1,896	1,201	7,070	7,070

* Scheduling primarily dependent on land use development.

"PAY AS YOU GO" FINANCING OPTION: Boundary Road Project and Local Improvement Projects would be financed by borrowing; the BNR Overpass would be financed from funds on hand, and the balance would be financed from general revenue.

Cost Element	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990**
Traffic Management											
Annual Cost (\$000's)	500	500	500	500	500	500	500	500	500	500	
(Mills)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	
Cost Shared Projects*											
Annual Cost (\$000's)	367	896	967	1,600	1,255	752	2,134	2,884	3,212	2,908	265
(Mills)	0.58	1.43	1.55	2.57	2.02	1.21	3.42	4.63	5.16	4.67	0.43
L.I.P. Projects											
Annual Cost (\$000's)	-	55	57	85	165	232	278	328	360	534	645
(Mills)	-	0.09	0.09	0.14	0.26	0.37	0.45	0.53	0.58	0.86	1.04
Other Projects (Major Collectors)											
Annual Cost (\$000's)	1,335	1,603	2,242	1,155	985	594	596	710	800	700	
(Mills)	2.15	2.58	3.60	1.86	1.58	0.95	0.96	1.14	1.29	1.12	
Sum to be Raised											
Annual Cost (\$000's)	2,022	3,054	3,766	3,340	2,905	2,078	3,508	4,422	4,872	4,642	910
(Mills)	3.24	4.91	6.05	5.37	6.28	3.33	5.63	7.11	7.83	7.46	1.46
% increase over 1979 mill rate	7	11	13	12	14	7	12	15	17	16	3

* includes Boundary road debt levy and excludes funds on hand for BNR Overpass (BNR residual to be financed over 10 years).

** Debt levy would continue from 1990 to 2004 in steadily declining amounts.

"BORROWING" FINANCING OPTION: All projects would be financed by borrowing except for traffic management which would be financed from general revenue and the BNR Overpass which would be financed from funds on hand.

Cost Element	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990**
Traffic Management											
Annual Cost (\$000's)	500	500	500	500	500	500	500	500	500	500	
(Mills)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	
Cost Shared Projects*											
Annual Cost (\$000's)	325	330	407	651	865	943	962	1,143	1,413	1,721	1,668
(Mills)	0.52	0.53	0.65	1.05	1.39	1.52	1.55	1.84	2.27	2.76	2.68
L.I.P. Projects											
Annual Cost (\$000's)	-	55	57	85	165	232	278	328	360	534	645
(Mills)	-	0.09	0.09	0.14	0.26	0.37	0.45	0.53	0.58	0.86	1.04
Other Projects (Major Collectors)											
Annual Cost (\$000's)	-	157	345	608	744	860	930	1,000	1,083	1,177	1,259
(Mills)	-	0.25	0.55	0.98	1.20	1.38	1.49	1.61	1.74	1.89	2.02
Sum to be Raised											
Annual Cost (\$000's)	825	1,042	1,309	1,844	2,274	2,535	2,670	2,971	3,356	3,932	3,572
(Mills)	1.32	1.67	2.10	2.96	3.65	4.07	4.29	4.77	5.39	6.32	5.74
% increase over 1979 mill rate	3	4	5	6	8	9	9	10	12	14	12

* includes Boundary road debt levy and excludes funds on hand for BNR Overpass (BNR residual financed over 10 years).

** Debt levy would continue from 1990 to 2010 in steadily declining amounts.