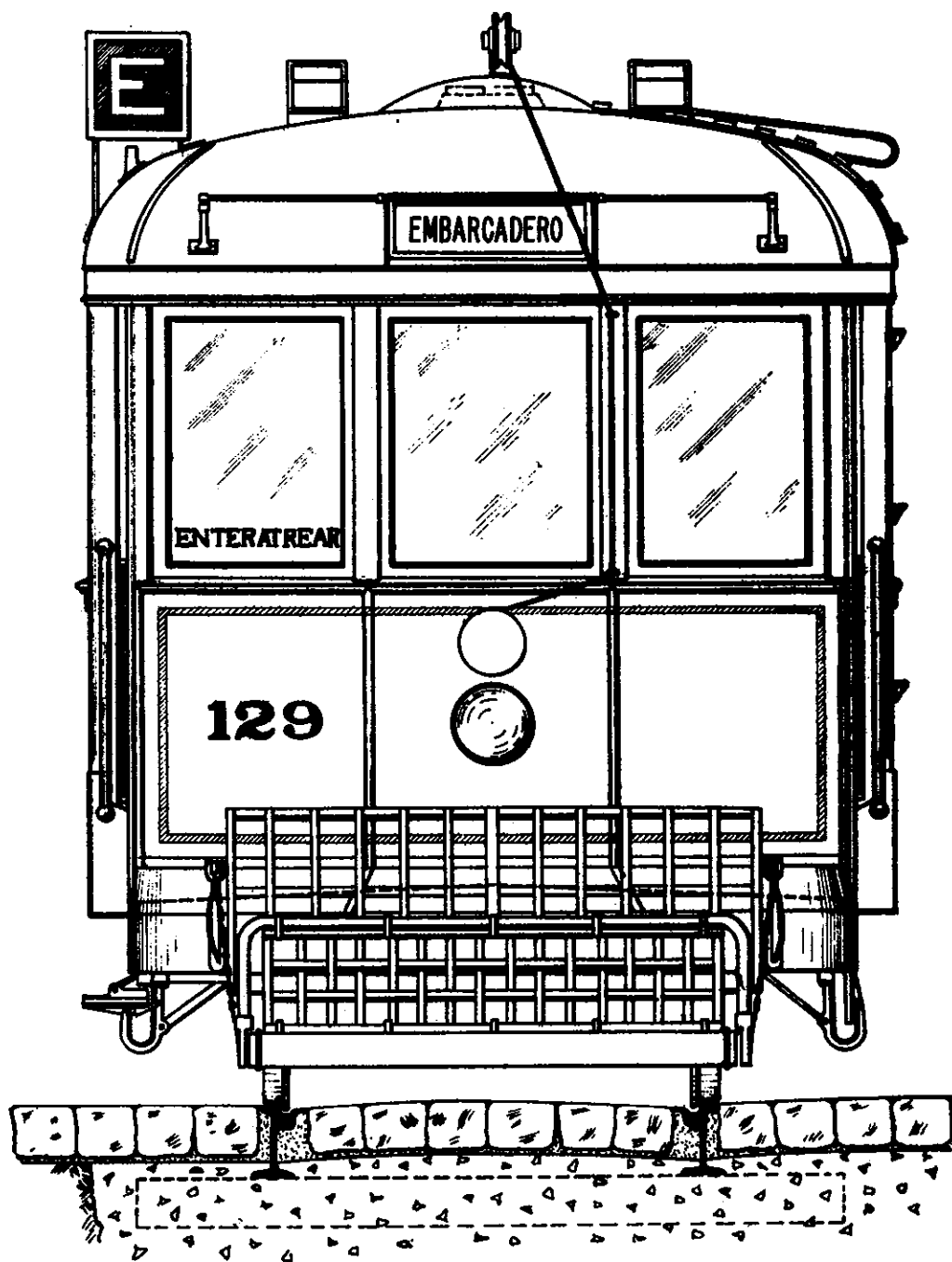


San Francisco Municipal Railway 5-YEAR PLAN 1979-1984

DRAFT



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SAN FRANCISCO MUNICIPAL RAILWAY
5-YEAR PLAN: 1979-1984

Planning Division
February 22, 1979

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FOREWORD

The development of the San Francisco Municipal Railway's 1979-1984 5-Year Plan is a signal event in the history of what Mayor "Sunny Jim" Rolph called "The People's Road." It is really many things - a guide to transit development in San Francisco, an account of recent progress in the City's public transportation services, a link between engineering projects and an overall vision of the Railway and its goals, a municipal response to modern transportation conditions, a recognition of the important role that citizens have in the planning of their transit system. It is also at least one other important thing; this plan is a sign that the Railway is emerging from a dark age of decline and impotence and re-establishing itself as a positive and vigorous force in the advocacy and development of good transit service in San Francisco - and of all the things that good transit can mean: protection of the quality of life in the City's neighborhoods, reinforcement of the City's vital commercial districts, defense against the degradation of the urban environment, the right to live a full life without having to own an automobile. This plan is MUNI's way of saying, as Lewis Mumford has said, that "Trend is not destiny."

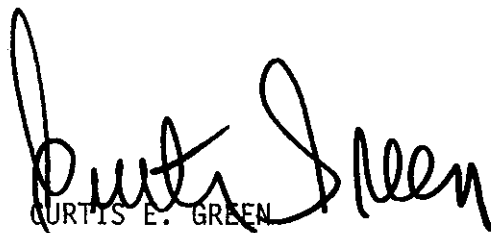
It is an extraordinary pleasure for me to occupy the office of General Manager of the Municipal Railway at this particular moment in its history and to have the opportunity to preside over the transmittal of this important plan to the San Francisco public and its Public Utilities Commission. I have been with the Railway for many years now, and in that time I have seen plans come and go. This plan, speaking from my experience, is different in an important way. It is not the work of a consultant who produces a "finished" document and then leaves the scene. As most of us know, the production of the document itself is only part of the plan. The other part of planning consists of taking proposals before the public for review, comment, and change and taking it through the difficult process of adoption and implementation. Here, this plan is unique because it is the work of the Railway staff itself, and because it has already been taken through the most extensive public participation program which any San Francisco agency has undertaken in modern memory. The 5-Year Plan Outreach Program took several months to complete and involved over 70 meetings with neighborhood groups, merchants' and civic organizations, and the MUNI's own platform staff; in addition, 11 public workshops - one in each supervisorial district - were sponsored by the Railway. The result of this program has been a substantial series of modifications to the route network recommended to the Railway by its consultant - changes in every supervisorial district of the City. I think that the Railway can point with pride to an outreach effort undertaken with an open mind, which has resulted in a substantial modification of the final product. We have learned a lot from the public, and this is reflected in this document.

The recommended route network is, of course, the most ambitious and, perhaps, provocative part of this plan. It involves many changes in the way the Railway provides its services in the City and to a considerable extent involves changing our perceptions of the way transit ought to function in the modern city. I think that it is a sign of the strength of this proposal that it forces us to do this. Much attention has focused in recent years on the Railway's ability to perform its service as designed; until the appearance of this plan, no one has looked at the other half of that question - that the service design itself be adequate and appropriate for the City. The figures have been recited before and are repeated in the plan itself, but the matter of service design is so important that I reiterate the matter briefly here. Seventy-two percent of MUNI's service is radial service from neighborhoods to downtown. Only 28% of its service is on crosstown or neighborhood lines linking districts to their own centers or neighborhoods to one another. Yet, of all the trips San Franciscans make in an average week, only about one in ten is a downtown work trip. Overall, two-thirds of the trips made in the City are not going to or coming from Downtown. It is a remarkable statement: and it attests to the strong desire for crosstown and non-downtown travel, that in most of the districts of the City the majority of transit trips are already not going to or coming from the Downtown area - despite the fact that the MUNI's system is overwhelmingly Downtown-oriented. If we look at the decline in transit ridership and we consider the design of our "product" in terms of the transportation "market", the conclusion is inescapable that the two phenomena are closely linked. No business can, and no public service should, continue indefinitely to produce a product without occasionally redesigning that product to reflect changes in the market. MUNI's product - its network and service design - must be redesigned so that it can have a chance to regain some of the impact it has lost in the City's transportation consumption patterns. In the 50 years since the first call for this plan, transit in San Francisco has lost fully one-half of its annual per capita patronage. This must be turned around. This plan represents MUNI's best hope of turning it around.

While most attention will initially be paid to the issue of the recommended master plan - the new MUNI network - this plan has additional highlights which are of equal long-term importance to the Railway and the people it serves. Its recommendations are expected to increase patronage - and revenues - by more than 10%, without increasing the scale of operations beyond those of 1976; this is an example of transit efficiency that is all the more necessary by Proposition 13. It contains a body of policy outlining the function of the plan as an aid to the Public Utilities Commission in its deliberations. It outlines sections of streets where transit preference measures are most necessary. It discusses the improvements planned or underway to each of the Railway's four operating transit modes. It sets forth the means by which MUNI's capacity to the Downtown area can be increased by over 20% without sacrificing crosstown and neighborhood services and without increasing the total annual hours budgeted for operations. It relates the introduction of MUNI Metro service to the functioning of the whole system. It recommends improvements to deal with the burgeoning transportation problems of the City's Northeastern Waterfront. It proposes methods to better integrate the Railway with the regional transit

systems that connect with it. It recommends a set of service standards. In short, this plan takes a comprehensive look at the demands placed on the MUNI and shows how it can meet those demands over the next five years.

Ultimately, of course, the importance of this plan is not in what it tells UMTA or the Metropolitan Transportation Commission about us, or even what it will accomplish for the Railway itself as an agency. The most valid reason for developing this plan, for taking the time and effort it has taken, is if in its implementation it helps to make San Francisco more the City we want it to be. "Of all inventions," wrote Macaulay, "the alphabet and the printing press alone excepted, those inventions which abridge distance have done most for the civilization of our species." The uniqueness of San Francisco as a civilization owes a lot to the presence of pervasive public transportation in the City. The human scale, the concentration of activities, and the delicate balance of topography and neighborhood structure could only have occurred through the transportation service provided by MUNI and its predecessors and can only be sustained by the wise use of the limited transportation resources we have available to us today and for the future. The Municipal Railway 5-Year Plan is a blueprint for transit's contribution to the life of this great metropolis, as well as a blueprint for its own future. We look forward to its adoption and implementation.



CURTIS E. GREEN
General Manager

I. INTRODUCTION

A. BACKGROUND ON MUNICIPAL RAILWAY

In 1912, the San Francisco Municipal Railway began operation as the first publicly owned and operated transit system in the United States. The Railway now operates 24,461,000 scheduled miles annually, carrying approximately 486,500 initial boarding passengers, and 210,250 transfer passengers, on an average weekday. San Francisco residents ride MUNI an average of 169 times per year, a "riding habit" about four times that of other transit systems.

The Municipal Railway budget for Fiscal Year 1978-79 was \$91,362,360. This paid for 2,982 employees (1,823 of which are drivers) and the cost of maintaining approximately 1,000 vehicles. Unlike most other transit systems, the Municipal Railway operates a wide variety of vehicles: streetcars, electric trolley coaches, diesel motor coaches, and cable cars.

There are over 6,000 designated transit stops in San Francisco, situated along 77 different transit lines (12 routes operate from midnight to 6 a.m.). Over 80% of the City's residents live within two blocks of a MUNI line.

Unfortunately for MUNI, most of its transit routes have been "inherited" from previous private owners. Some of these private companies were so small, they operated only a single transit line; and none of them were coordinated with the others in a systematic way. Moreover, as neighborhoods and business districts have grown and changed over the years, their transit needs have changed. To keep MUNI a vital and useful city service, it has to meet new demands and plan its route network in a comprehensive way.

This 5-Year Plan is just such a "master plan." This is not to say, however, that MUNI has been a static, unchanging system; various changes have been inaugurated periodically.

B. RECENT IMPROVEMENTS

Over the past few years, the MUNI has made several improvements to the route system. Many were initiated by community groups seeking better service and working in cooperation with members of the MUNI staff. These

improvements have ranged from changes in location of bus stops and terminals to the creation of new routes.

Most recently, on December 20, 1978, a new 70-LAKE MERCED was created which incorporated the former 91-STONESTOWN service. (See Figure I-1.) Operating from a terminal at the Zoo, the new 70 takes over the 91's function by connecting Stonestown and San Francisco State University with the Daly City BART station. This provides longer hours of service than did the previous arrangement. In developing the line, MUNI's Planning Staff worked with the Lake Merced Neighborhood Association, residents of the John Muir Apartments and Lake Merced Hill development, and the Transportation Committee of the Associated Students of San Francisco State.

In August, 1978, service was inaugurated on new line 82-CHINATOWN and revised on a number of other lines (See Figures I-2 and I-3). This midday-only line provides motor coach service along a shortened version of the heavily-patronized 30-STOCKTON trolley coach line. The most intensively used segment of this line is on Stockton Street itself; the street also suffers from severe automobile congestion leading to frequent transit delays. The 82 helps ameliorate this condition by adding capacity where it is most needed and by putting coaches into service where they have a chance to "fill in" the gaps in service caused by the "bunching" of through transit vehicles.

The extra buses for the 82-CHINATOWN service were obtained by redesigning the downtown Shoppers Shuttles: new service on the 85 is between Union Square and Embarcadero Center, with the 84 connecting Civic Center and the South-of-Market via Market Street. At the same time, the 19-POLK was rerouted to provide service to the Hall of Justice. To accomplish all this, MUNI Planning Staff worked very closely with Chinatown TRIP (Transportation Research and Improvement Project), a neighborhood based organization.

Also in August, 1978, the special 88-HOSPITAL SHUTTLE to the U.S. Public Health Service Hospital was discontinued. Its service was picked up by extending the northern 10-MONTEREY terminal to the Hospital, thus providing better service to the Hospital and removing a bus terminal from the front of an elementary school. (PTA members from the school had first brought this matter to MUNI's attention.)

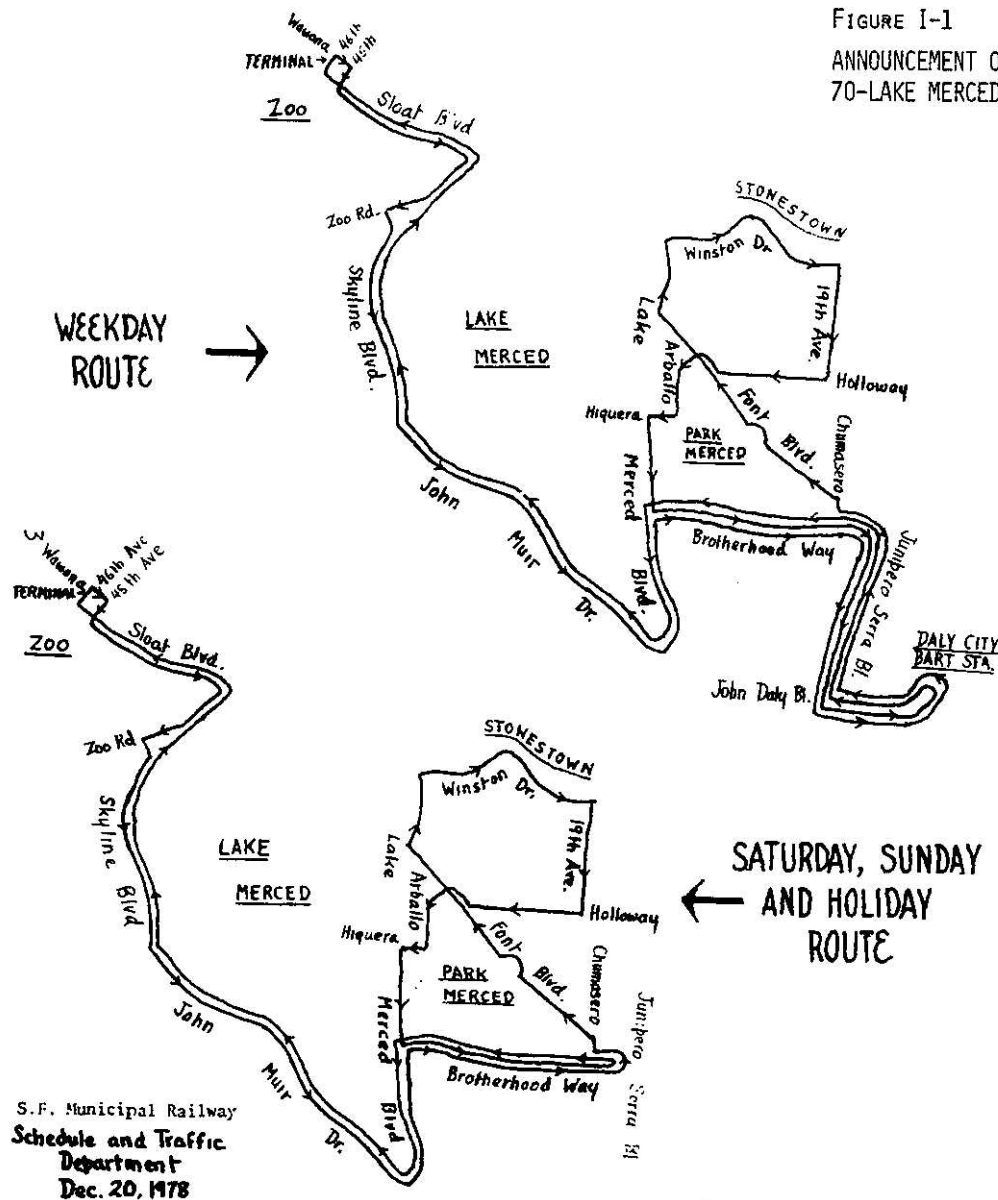
In April, 1977, the 80-GATEWAY EXPRESS was created, linking the Southern Pacific Depot with the Golden Gateway/Embarcadero Center areas. (See Figure I-4.) Recognizing that recent office development in the Lower Market Street area has shifted the focus of the Financial District to the east, away from Montgomery Street; this line provides improved express commute service. And, since regional policy calls for optimum use of the Southern Pacific, this line is important in facilitating local access to the depot.

Two recreational lines were also inaugurated: the 76-FORT CRONKHITE and the 78-GOLDEN GATE PARK. The 76 is a weekend-only line

(Text continues on p.7)

WEEKDAY AND WEEKEND ROUTE OF 70-LAKE MERCED LINE

FIGURE I-1
ANNOUNCEMENT OF NEW
70-LAKE MERCED LINE



S.F. Municipal Railway
Schedule and Traffic
Department
Dec. 20, 1978

NEWS from MUNI

SAN FRANCISCO MUNICIPAL RAILWAY
949 PRESIDIO AVENUE, SAN FRANCISCO, CA 94115
PHONE: 554-2301

ROBERT ROCKWELL
PUBLIC SERVICE DIRECTOR

DECEMBER 1, 1978

In response to requests from residents in the Lake Merced area, the Municipal Railway will inaugurate a revised 70-Lake Merced line service combining the present Nos. 70-Lake Merced and 91-Stonestown lines, effective December 20. The line will provide later hours of operation than the former service, and weekday connections to BART from Parkmerced, Lake Merced Hill, John Muir Apartments, S.F. State University and other points along the line. The line will not serve BART on weekends.

Headways on the new 70-Lake Merced line will be:

Weekdays: Every 24 minutes from 5:54 a.m. to 6:30 p.m.

Every 30 minutes from 6:30 p.m. to 11:30 p.m.

Saturday/Sunday: 45 minutes

Hours of operation: (In effect December 20, 1978)

<u>Weekdays</u>	<u>First Trip</u>	<u>Last Trip</u>
LV Zoo	5:54 a.m.	11:30 p.m.
LV Daly City BART Station, to 19th/Winston	6:02 a.m.	11:46 p.m.
LV 19th Avenue & Winston	6:22 a.m.	11:58 p.m.
LV Daly City BART Station to Zoo	6:35 a.m.	12:09 p.m.

Saturdays: (In effect December 23, 1978)

LV Zoo	7:00 a.m.	11:30 pm.
LV 19th Avenue & Winston	7:20 a.m.	11:50 p.m.

Sundays: (In effect December 24, 1978)

LV Zoo	8:30 a.m.	11:30 p.m.
LV 19th Avenue and Winston	8:50 a.m.	11:50 p.m.

Patrons desiring additional information are requested to call the Municipal Railway's Information Bureau, dial 673-MUNI.

#

Figure I-2
TIMETABLE FOR NEW 82-CHINATOWN LINE

華埠 82

SELECTED CONNECTIONS

CHANGE AT	TO/FROM
Washington Square	15,30†,41†,39
Clay and Stockton	East 55
Sacramento and Stockton	West 55
Sutter and Stockton	West 1†,2,3†,45
Post and Stockton	East 1†,2,3†,45
Geary and Stockton, Geary/Kearny	W.38
O'Farrell and Stockton	E.38
Market	5†,6†,7†,8†,21†,66*,31*,71*,72*
Mission	J†,K†,L†,M†,N†
Howard	9†,11*,12†,14†
Folsom	West 41*
	East 41*

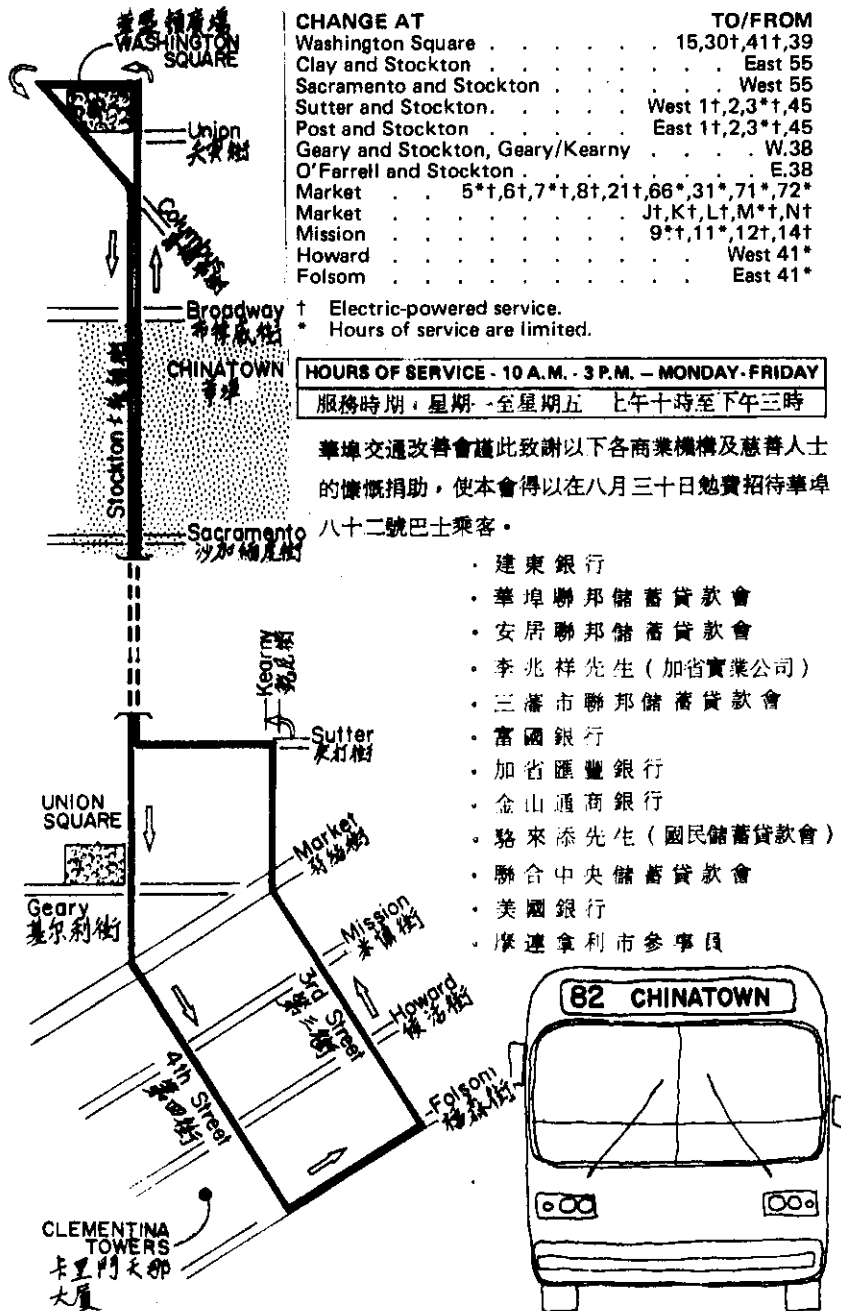
† Electric-powered service.
* Hours of service are limited.

HOURS OF SERVICE - 10 A.M. - 3 P.M. - MONDAY-FRIDAY

服務時期：星期一至星期五 上午十時至下午三時

華埠交通改善會謹此致謝以下各商業機構及慈善人士的慷慨捐助，使本會得以在八月三十日勉費招待華埠八十二號巴士乘客。

- 建東銀行
- 華埠聯邦儲蓄貸款會
- 安居聯邦儲蓄貸款會
- 李兆祥先生（加省實業公司）
- 三藩市聯邦儲蓄貸款會
- 富國銀行
- 加省匯豐銀行
- 金山通商銀行
- 駱來添先生（國民儲蓄貸款會）
- 聯合中央儲蓄貸款會
- 美國銀行
- 摩連拿利市參事員





ATTENTION COMMUTERS!

THE MUNICIPAL RAILWAY IS PLEASED TO ANNOUNCE THE INAUGURATION OF SERVICE ON A NEW EXPRESS ROUTE LINKING THE SOUTHERN PACIFIC DEPOT AT FOURTH AND TOWNSEND STREETS WITH THE EMBARCADERO CENTER-GOLDEN GATEWAY AREA OF THE FINANCIAL DISTRICT.

BEGINNING WEDNESDAY MORNING, APRIL 13, ROUTE 80-GATEWAY EXPRESS WILL OFFER DIRECT SERVICE FROM FOURTH STREET TO THE EMBARCADERO CENTER. BUSES WILL RUN EXPRESS BETWEEN THE DEPOT AND MISSION STREET. EXPRESS FARES WILL APPLY.

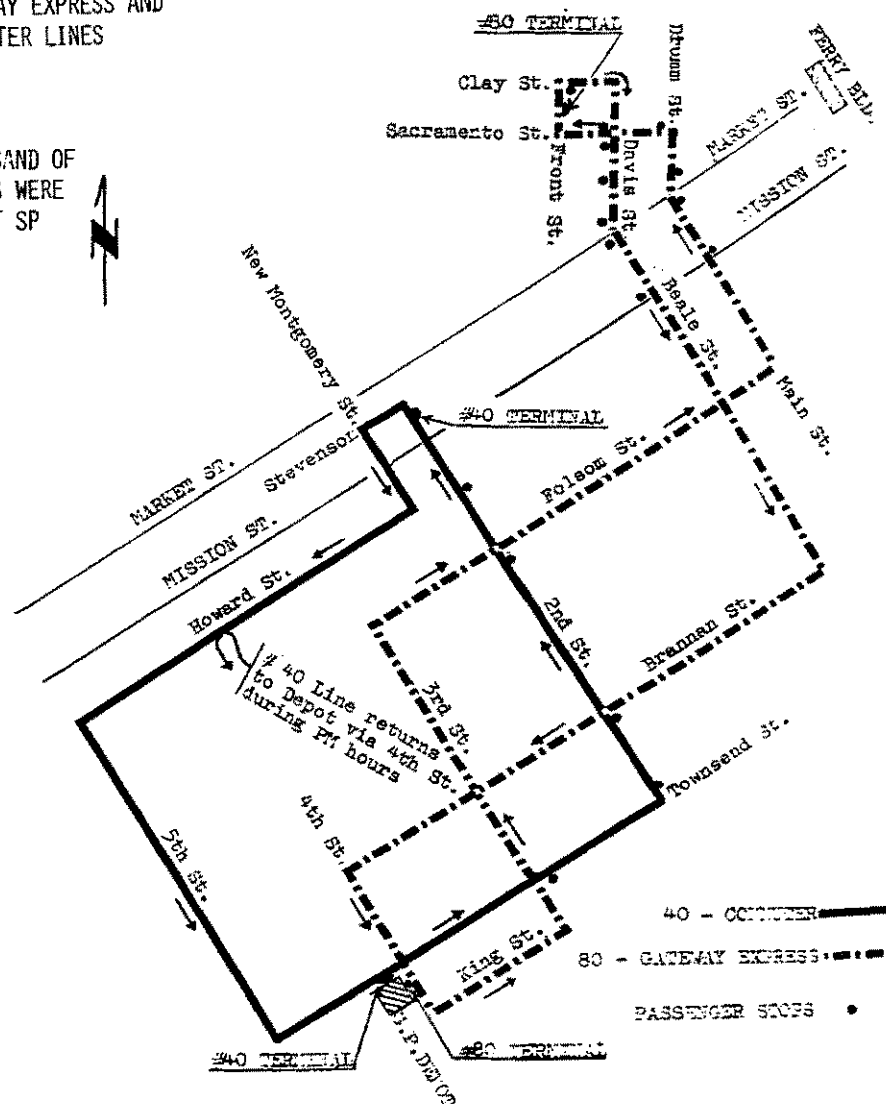
FIGURE 1-4

ANNOUNCEMENT OF NEW 80-GATEWAY EXPRESS AND 40-COMMUTER LINES

(SEVERAL THOUSAND OF
THESE LEAFLETS WERE
DISTRIBUTED AT SP
DEPOTS.)

SAN FRANCISCO MUNICIPAL RAILWAY
Route of existing 40 - ~~COMMUTER~~ Line
and New 80 - GATEWAY EXPRESS Line
EFFECTIVE APRIL 13, 1977

FROM SOUTHERN PACIFIC DEPOT				TO SOUTHERN PACIFIC DEPOT			
Line	Lv. DEPOT	Arr. 2nd & Stevan.	Arr. Front & Clay	Line	Lv. Front & Clay	Lv. 2nd & Stev.	Arr. S.P. DEPOT
80	7:15AM		7:26AM	40		4:02PM	4:10PM
40	7:15	7:23AM		80	4:24PM		4:33
40	7:15	7:23		40		4:32	4:40
40	7:16	7:24		80	4:36		4:45
40	7:25	7:33		40		4:42	4:50
40	7:35	7:43		80	4:47		4:56
80	7:35		7:46	40		4:51	4:59
40	7:43	7:51		80	5:02		5:11
80	7:45		7:56	40		5:01	5:09
40	7:46	7:54		80	5:06		5:15
40	7:53	8:01		40		5:07	5:15
40	7:54	8:02		80	5:11		5:20
80	7:55		8:06	40		5:13	5:21
40	7:58	8:06		40		5:26	5:34
80	8:00		8:11	40		5:35	5:45
40	8:01	8:09		#40-COMMUTER coaches load in AM on Townsend at 4th, alongside of S. P. DEPOT, and make all local stops to 2nd & Stevenson. These coaches are EXPRESS on return trip to the DEPOT. Fare is 25¢ from the DEPOT and 30¢ to the DEPOT.			
40	8:02	8:10					
80	8:05		8:16	#80-GATEWAY EXPRESS coaches load on 4th St., between Townsend & King, directly adjacent to the S.P. DEPOT, and make stops at Mission, Market, California, Sacramento, Davis and at Terminal on Front, between Sacramento & Clay. RETURNING, stops are made on Clay at Front, at Sacramento, California, Pine, Market and Mission. Fare is 30¢ in both directions.			
40	8:06	8:14					
40	8:08	8:16					
80	8:10		8:21				
40	8:12	8:20					
40	8:12	8:20					
80	8:17		8:28				
40	8:18	8:26					
40	8:20	8:28					
80	8:23		8:34				
80	8:28		8:39				
40	8:36	8:44					
80	8:40		8:51				
40	8:50	8:58					
80	8:50		9:01				
40	9:18	9:26					
80	9:18		9:29				
80	10:05		10:16				

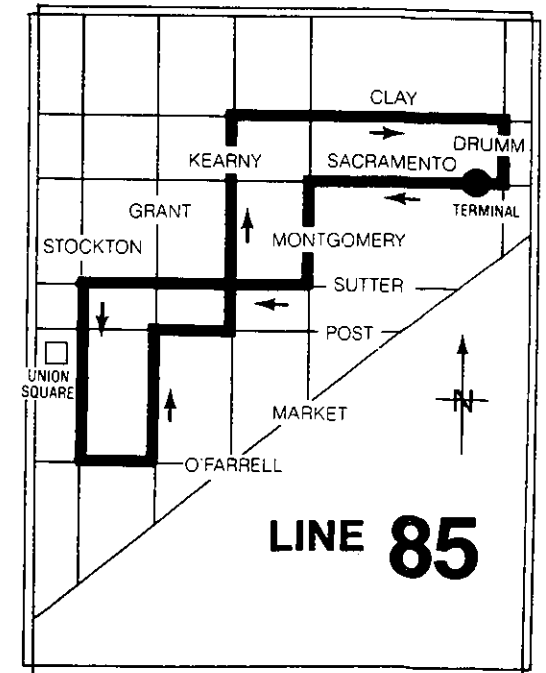
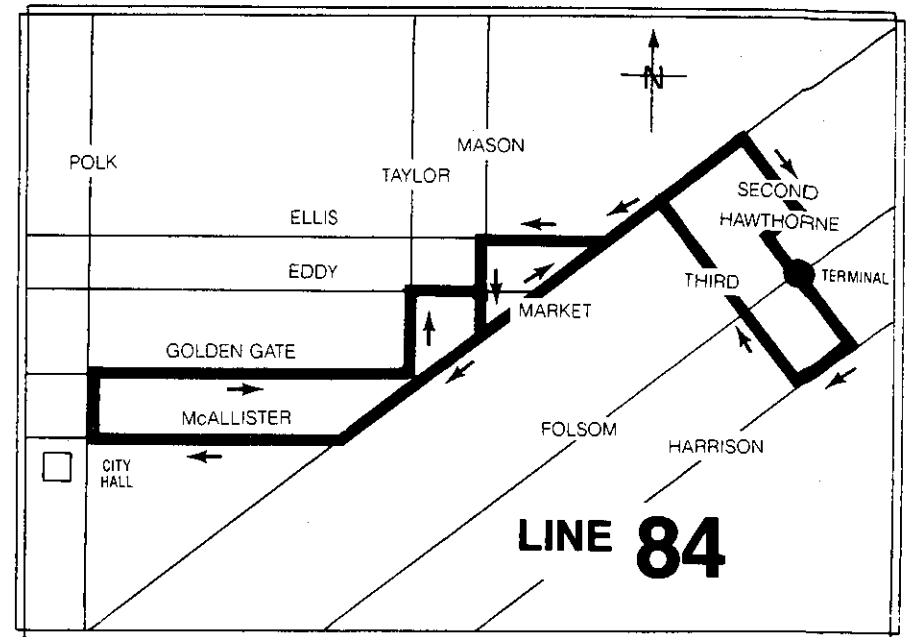
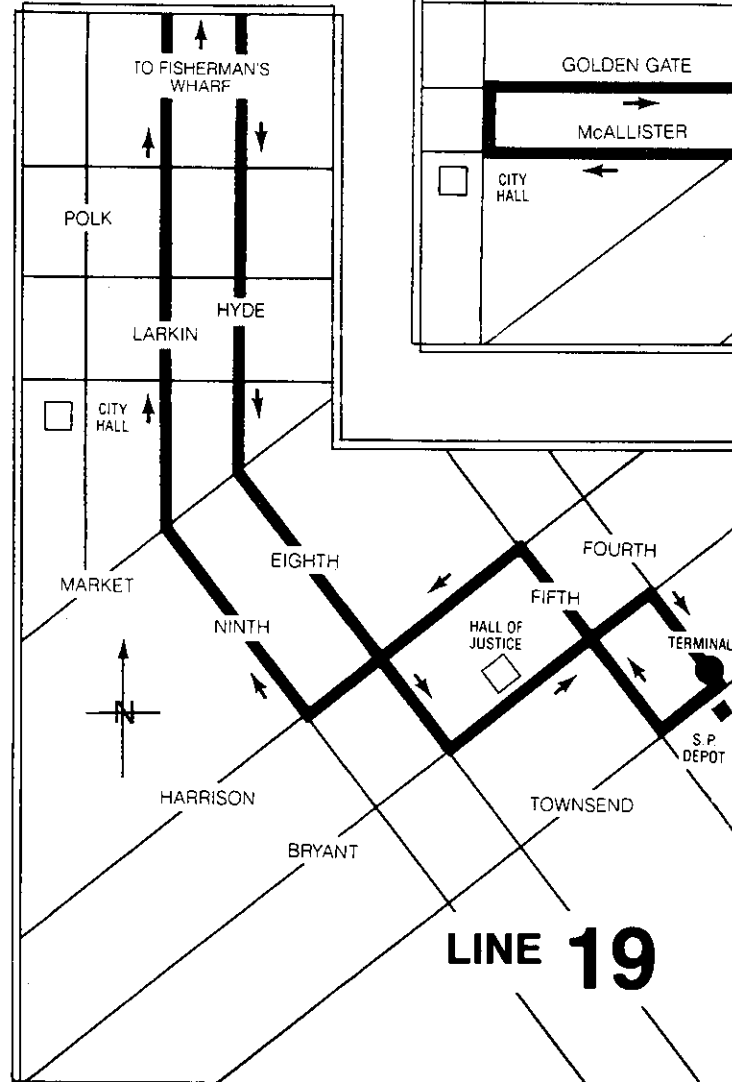
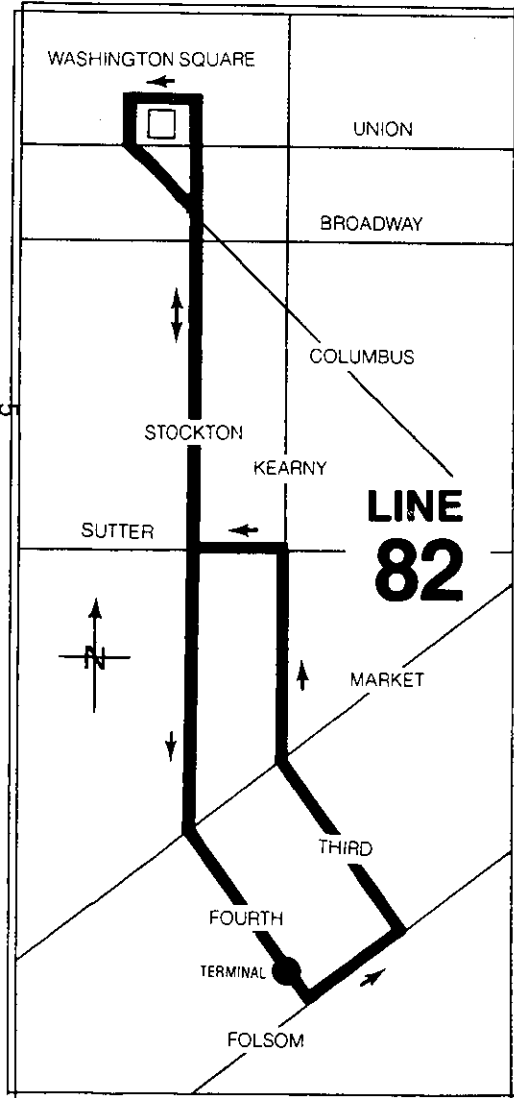


Municipal Railway Schedule and Traffic Dept



New Muni Lines

Figure I-3--MAPS OF NEW LINES



which was in service across the Golden Gate Bridge during the summer of 1976; and the 78 is a Sunday-only shuttle into Golden Gate Park. These lines are described more fully in Chapter V, Section I of this 5-Year Plan.

Although all of these changes -- particularly the 10/88, 19, and 70 lines -- are in conformity with the 5-Year Plan in July of 1978, the Public Utilities Commission expressed its intention not to consider any more route modifications until the 5-Year Plan was prepared.

C. A 5-YEAR PLAN

The 5-Year Plan is a master plan for the programming of transit operations. It describes what currently exists and what is anticipated for the transit system. It covers route design, operations, rolling stock requirements; and evaluates each on the basis of service standards for the system.

This 5-Year Plan is a requirement of the federal Urban Mass Transportation Administration (UMTA). UMTA funds the capital projects for most systems -- new vehicles, new maintenance facilities, track extensions, etc. In order to continue receiving UMTA funds, the transit system must demonstrate that the projects are part of an effectively designed and coherent system. With the 5-Year Plan, the transit operator outlines future system development and which capital projects are necessary for that development. (All these projects are then also covered in the system's Transit Improvement Plan -- TIP -- which outlines only the capital requirements.)

Federal and state requirements call for the development of Regional Transportation Plans which coordinate transportation in the region. In the nine-county Bay Area, the Metropolitan Transportation Commission (MTC) coordinates this effort. San Francisco must submit its 5-Year Plan to MTC by April of 1979, with annual updating thereafter.

The intent of these plans is to coordinate transit design between counties before huge federal expenditures are made. Thus, it is a means of assuring that federal monies are effectively appropriated in a systematic manner.

Within a transit agency, the 5-Year Plan serves to organize and direct transit development. In many cases, including that of the Municipal Railway, the requirement for this Plan meant the creation of a Transit Planning Division where none had existed before.

D. DEVELOPMENT OF THE PLAN

When MUNI was directed to develop a 5-Year Plan, there was no in-house Planning Division to handle the task. Consequently, UMTA provided funds for both the plan work (by consultants) and the creation of a Municipal Railway Planning Division. The plan work was called the Municipal Railway Planning, Operations and Marketing (POM) Study. It resulted in the consultant's recommendations for a comprehensive plan, but it remained for the now-extant MUNI Planning Division to review and revise those recommendations.

The POM Study was headed by a Board of Control consisting of representatives from the City and County of San Francisco, MTC, and UMTA. The Board made policy decisions and functioned as the approval body, with the Project Director (from MUNI) directly responsible to them. In November, 1974, the consultant contract was awarded to Wilbur Smith and Associates. The draft final report was completed June 30, 1977, with a final summary completed in March, 1978.

The POM Report presents recommendations for a 5-Year Plan to accommodate existing and projected travel requirements and to better utilize MUNI's new capital equipment. In addition, the study provides a data base for continuing service improvements and future marketing programs.

The first phase of the Work Program, data collection and analysis, began with a complete inventory of all routes and schedules, major travel generators, patronage, revenues, and costs. Special studies were also undertaken to analyze particular characteristics of MUNI operation, including transit delay, schedule adherence, and driver/passenger behavior.

A key element of the study was an on-board survey of over 130,000 weekday MUNI riders. 15 community meetings were also held, and, based on information received, service standards were adopted. (These are discussed in Chapter III of this 5-Year Plan.) Later, these service standards were used to evaluate existing and alternative transit proposals.

Existing service deficiencies were outlined and highlighted for correction, beginning with an examination of the appropriateness of the route network itself. More than 70% of the Railway's service operates to or through Downtown, yet more than two-thirds of all trips made by city residents are trips to and from areas other than the Central Business District. The present MUNI network does not attract a very significant percentage of these trips, and is not very useful to them. Previous transit studies had highlighted the inadequacy of crosstown service; both the Northwest San Francisco Transit Extension (NWX) Study and the Golden Gate Corridor Study recognized a strong need for better crosstown service.

The existing route network was also found to isolate the Third Street corridor, to provide insufficient service to the growing Northern Waterfront, to include many duplicate and poorly spaced lines, and more. (Service deficiencies are elaborated upon in Chapter V, Section A of this 5-Year Plan.) The transit fleet was also evaluated, with both vehicle design and motor coach storage and maintenance facilities found wanting. (Chapter VI discusses system improvements and rolling stock renewal and replacement.)

The Wilbur Smith POM Report begins by evaluating three test networks. In general, the "grid service" approach was followed as the best way to improve crosstown service. Under the grid system, lines basically run north/south and east/west, so that most destinations can be reached either directly or with one transfer. This is different from the "direct linkage" approach which connects major travel generators. MUNI's present system is largely radial, a form of direct linkage to the Downtown.

Due to financial constraints, each test network was designed to have the same number of vehicles and the same operating cost as existed in 1975-76 (Today the 50 runs which were cut in 1976 would have to be restored, however); and MUNI Metro was assumed fully operational.

The three networks (which are described in Chapter V, Section B) included one with only minor improvements, one with grid restructuring of principal lines, and one with more extensive grid restructuring. Each network was evaluated according to the service standards, but, since patronage is a concise measure of a transit system's acceptance and use, patronage analysis was considered most attentively.

Elements of all three test networks appear in the final POM Recommendations. The grid structure is used, as are line feeders to MUNI Metro and BART and through-routing Downtown (continuous lines crossing the Downtown as opposed to terminating there). Each area of the City has a fast midday service to Downtown and improved regional connections. The principal network deficiencies outlined previously are resolved.

The POM Report represents the consultant's recommendations; it is not an official City position. Once the POM Report was completed, it was subjected to intensive review, both by the public and MUNI's own staff. The MUNI Planning Division presented the Report at over 70 community meetings, describing its major features using slides and route maps. In addition, presentations were made to drivers at each operating division as well as their union representatives. In February and March of 1978, 11 public workshops were held, one in each of the 11 supervisorial districts. Public comment was recorded for later evaluation by MUNI staff. Each attendee was also placed on the mailing list to receive the Municipal Railway's revised plan.

MUNI in-house review was concentrated in the Planning, Transportation, and Scheduling Departments. The lines were carefully evaluated with regard to operational limitations and public sentiment. UMTA Section 9 funds paid for three persons (Transit Planners) whose technical expertise was critical to the revision of the POM Report and the development of MUNI's own 5-Year Plan. It is important that these positions be retained for future implementation, changes, and updates.

The 5-Year Plan must now be presented to San Francisco's Public Utilities Commission. As agreed early in the public outreach efforts, the PUC will hold five meetings out in the neighborhoods. These are scheduled for March 19, 20, 22, 26, and 29, 1979.

At the PUC hearings, the entire Plan will be reviewed and adopted as a planning document. Implementation is a separate action of the commission and will be done in three or more phases, reflecting the need to spread implementation over a number of years. This phased approach is necessary because the network restructuring includes: (1) motor coach route changes unrelated either to MUNI Metro or route electrification, (2) changes related to MUNI Metro, and (3) changes related to the electrification of certain lines. (The availability of MUNI Metro and trolley coach electrification will in itself take several years.) At this time, MUNI is intending to propose that environmental review, as appropriate, take place at the various stages and not on the entire Plan at one time.

Once adopted by the PUC, the 5-Year Plan will be submitted to the Metropolitan Transportation Commission (MTC) as fulfillment of the requirements for a Transit Development Plan (TDP), the "regional 5-Year Plan." The MTC deadline, to assure that federal funding is not interfered with or delayed, is April, 1979.

Phase 1 implementation, the independent motor coach changes, is being submitted to the PUC at the same time as the full 5-Year Plan. Once adopted, formal route "abandonments" must be referred to the Board of Supervisors. According to the City Charter, Section 3.595, the changes go into effect unless they are disapproved by nine members of the Board within 30 days of PUC action. Since this is a matter on referral by the PUC, it goes directly to the full Board at a regular meeting; it does not go to a Board committee first.

Phase 2 route changes are related to the inauguration of N-JUDAH MUNI Metro Service, the first subway line planned for start-up. Basically, they involve changes in routes which parallel the streetcar line to Downtown. No consideration of Phase 2 changes will be made by the Public Utilities Commission until the MUNI Metro N-JUDAH line becomes operational and is demonstrated reliable. As other Metro lines go into operation, the route changes affected by them will also come before the PUC for consideration. (See Chapter V, Section D, Phasing.)

In the meantime, separate capital ventures such as the J-CHURCH extension will follow their own approval, environmental review, funding, and construction sequences.

II. OBJECTIVES AND POLICIES

The purpose of this chapter is to specify and codify a uniform and consistent body of policy relating to the operation and planning, of the Municipal Railway. The service and mobility standards appearing in Chapter III are to be considered a part of this body of policy. These policies, together with their immediate objectives, are intended to promote the attainment of the Municipal Railway's primary goal.

Primary Goal

It is the primary goal of the San Francisco Public Utilities Commission to operate the Municipal Railway so as to provide public transportation service of the highest quality in and between all parts of the City and County of San Francisco at all hours and for all trip purposes, consistent with the financial resources available.

A. TRANSIT SYSTEM

Objective 1: The Municipal Railway's route network shall be so designed as to make the City's transit pattern as relevant as possible to the overall transportation needs of San Francisco.

Policy 1: The Municipal Railway network shall be based on a multi-destinational principle; by this it is meant that the system should be designed so as to facilitate transit travel between any two points in the Municipal Railway's service area.

Policy 2: With the exception of trips beginning or terminating in hilly or remote areas served by neighborhood or shuttle lines, all points in San Francisco shall be accessible by transit from all other points over a reasonably direct path of travel with no more than one transfer and at a single fare.

Policy 3: Municipal Railway service shall be designed to accommodate trips made for all purposes, and special attention shall be given to increasing off-peak and non-work-related patronage.

Policy 4: Service shall be scheduled on the lines of the Municipal Railway so as to meet both policy headway and capacity standards.

Policy 5: Municipal Railway lines using low-capital-intensive modes shall not be operated in competition with high-capital-intensive transit facilities so long as the latter have the capacity necessary to accommodate all of the passenger traffic offered.

Objective 2: Municipal Railway service shall be designed so as to provide optimum transit system speed, cost-efficiency, and passenger convenience.

Policy 6: The Public Utilities Commission and the Municipal Railway shall diligently pursue transit preferential treatments where necessary to reduce automobile interference with transit.

Policy 7: A system of fare collection for the Municipal Railway shall expedite passenger loading, relieve driver responsibility for fare collection, and allow passengers pre-pay options.

Policy 8: Passenger amenities such as route maps, timetables, and transit shelters shall be provided.

B. ROLLING STOCK

Objective 3: The rolling stock of the Municipal Railway shall be designed so as to be appropriate to its function as a reliable, safe, convenient and efficient mass transportation carrier under the transit operating conditions found in San Francisco.

Policy 9: The type of vehicle selected for operation on a line of the Municipal Railway shall be the best-suited to handle the topographical, operating, and passenger load demands of that line.

Policy 10: New vehicles purchased for service on lines of the Municipal Railway shall be specified with double-width front and rear doors, or, if that is not possible, with the greatest possible width attainable.

Policy 11: Electric transit vehicles shall be employed on the lines of the Municipal Railway wherever appropriate in order to reduce the air pollution and noise attributable to transit operation, to reduce the Railway's dependence upon fossil fuels, and to optimize the use of the City's electrical facilities.

C. REGIONAL INTEGRATION

Objective 4: The Municipal Railway shall function as part of a fully coordinated regional public transportation system.

Policy 12: The integration of Municipal Railway services with those of the Bay Area's other transit systems shall be emphasized through route and schedule coordination, by encouraging easy-to-use joint fare and transfer arrangements, by serving common terminals, and by participating in other cooperative regional transit actions as appropriate.

Policy 13: With three exceptions, the carriage of local transit traffic between points in the City and County of San Francisco is solely the responsibility of the San Francisco Municipal Railway; the three exceptions to this policy are: local traffic on BART between Balboa Park, Embarcadero and intermediate stations; local patronage on Golden Gate Transit between points in the City and the Golden Gate Bridge Toll Plaza; service provided by AC Transit between the Transbay Terminal and Yerba Buena and Treasure Islands.

Policy 14: The carriage of transit passengers between regional terminals and stations in San Francisco and other points in the City is solely the responsibility of the Municipal Railway.

Policy 15: Joint fare, ticketing, pass, and/or transfer arrangements with BART -- in order to integrate BART service between Balboa Park and Embarcadero stations into a unified San Francisco transit network -- shall be supported.

Policy 16: The Southern Pacific Transportation Company shall be encouraged to stop all of its trains, aside from the rush-hour expresses, at 23rd Street and Paul Avenue Stations in order to interchange passengers with the Municipal Railway.

D. SYSTEMATIC TRANSIT PLANNING PROCESS

Objective 5: A continuous transit planning process which is systematic, comprehensive and logical; and which is consistent with all relevant city, regional, state and federal policy and process; shall be established and performed for the Municipal Railway.

Policy 17: The Municipal Railway 5-Year Plan, as updated and adopted each year, shall be the official transit master plan and transit planning policy of the San Francisco Public Utilities Commission.

Policy 18: The Municipal Railway 5-Year Plan shall be developed and updated in accordance with the "3-C" (continuous-comprehensive-cooperative) planning process, as stipulated in federal guidelines.

Policy 19: The affairs of the Municipal Railway are to be managed so as to gradually bring the Railway into conformance with the 5-Year Plan.

Policy 20: No change shall be adopted in the route network of the Municipal Railway, nor any change in the level of service on any line, nor any change in the mode used on any line, nor any capital improvement approved except upon the recommendation of the General Manager of the Municipal Railway that such action is consistent with the current 5-Year Plan.

Policies pertaining to both transit accessibility for the elderly and disabled and fare levels will be approved in separate actions of the Public Utilities Commission. They will result from the accessibility and financial studies now being done.

III. TRANSIT SERVICE STANDARDS

The Municipal Railway 5-Year Plan incorporates service standards relating to two areas: operational standards, which set minimum service criteria in terms of routes, vehicles, headways and access distance; and mobility standards, which set minimum service criteria in terms of the ability of a citizen to travel from one point in the Municipal Railway service area to another within a maximum elapsed time or at a minimum travel speed. Mobility standards will be developed in the coming year. It is understood that these service standards will be refined in subsequent 5-Year Plan updates, and it is expected that the minimum and maximum criteria established pursuant to these service standards may, in some cases, vary with the time of day.

A. OPERATIONAL STANDARDS

Minimum operational service criteria were developed by Wilbur Smith & Associates as part of the Planning, Operations and Marketing (POM) Study recommendations to the Municipal Railway. Together with the recommendations made in other areas, these were evaluated by staff and incorporated into the Municipal Railway 5-Year Plan recommendations to be submitted to the San Francisco Public Utilities Commission for adoption.

These proposals are based on the Short Range Transit Goals adopted by the POM Study's Board of Control -- the Transportation Study Coordinating Committee. This Committee included representatives from the Municipal Railway, the Board of Supervisors, the Metropolitan Transportation Commission and the Urban Mass Transportation Administration.

The following standards were developed specifically for San Francisco from a review of established industry practices throughout the United States and were adapted to reflect the unique conditions found in the City and County of San Francisco. These criteria represent desirable standards to be achieved over the short-range time period of this

program.

Operational service standards were developed for the following categories:

1. Routing Criteria
2. Operating Criteria
3. Transit Stop Criteria

1. Routing Criteria

Transit lines cannot operate between an individual's trip origin and destination nor stop at each household; routing and service must be designed to provide the greatest convenience possible for the most people. This service must be provided within limits of economic feasibility as determined by operating costs, passenger revenues, and the existing street system. In the case of the Municipal Railway POM Study, the economic limit was assumed to be the level of service scheduled by the Railway in 1975-1976. The basic measurement values which reflect optimum convenience and economic feasibility were determined to be coverage, directness of service, and transfer potential.

a. Coverage

The transit industry generally considers an area as served if it is within one quarter mile of a transit line. MUNI provides virtually 100 per cent one quarter mile coverage to San Francisco residents. The coverage issue confronting MUNI is, therefore, the spacing and orientation of routes, rather than new areas needing to be served. The intensity of coverage should be described in terms of time of day, development density, terrain, and type of service.

The purpose of service coverage standards is to distribute service uniformly in different areas of the City. It establishes the minimum level of service which should be provided. Service in excess of the standards should be considered to meet special land use, social, and/or heavy travel demands.

Coverage standards were developed based upon MUNI's overall level of service prior to the 1976 run cuts and the magnitude of projected transit travel demands. Standards were prepared for each of MUNI's three route functions: neighborhood/feeder, crosstown and radial service. Special standards were prepared for owl service.

Recognizing that service standards must be easily understood or they will not be utilized, coverage is measured perpendicular to the direction of transit service. Judgment must be employed to account for the presence of travel barriers and other special problems. Pedestrian easements may prove a more cost effective solution to many of these problems than new routes.

The recommended service coverage standards are shown in the following table.

TABLE III-1
RECOMMENDED MINIMUM COVERAGE STANDARDS
(MAXIMUM DISTANCE TO CLOSEST TRANSIT ROUTE)

TYPE	TOPOGRAPHIC OR DEVELOPMENT	MAXIMUM DISTANCE TO CLOSEST ROUTE	
		SERVICE PERIOD ³	
<u>SERVICE</u>	<u>CONDITIONS</u>	<u>Peak and Base</u>	<u>Owl</u>
Feeder	Normal Terrain	1,500 ft	1 mile
	Steep Terrain ¹	1,000 ft.	1 mile
Crosstown	Regular Density	2,000	1 mile
	Low Density ²	3,000 ft.	2 miles
	Downtown	1,000 ft.	2 miles
Radial	Regular Density	1,500 ft.	1 mile
	Low Density ²	3,000 ft.	1 mile

1 Grades of ten per cent, or greater

2 Less than 20 residents/acre

3 Measured perpendicularly

b. Directness of Service

Circuitous routes are usually slow and confusing to potential passengers, particularly those making casual trips who are not often familiar with the intricacies of local neighborhoods. While neighborhood feeder lines usually meander in order to reach areas not along principal streets, radial and crosstown trunk routes should be as direct and straight as possible.

The purpose of standards for direct routing of radial and crosstown service is to improve travel times, safety and public understanding of MUNI's routes. Therefore, it is recommended that radial and crosstown routes not be longer than 1.3 times the straight line distance between the end points of a route.

c. Transfer Convenience

Transfers can be considered in two ways. They offer a source of "friction" to the transit passenger, and hence are a potential impediment to patronage; on the other hand, the availability of many transfer opportunities is a great advantage, since they are the only means by which the number of potential destinations from any given point can be vastly increased. They also are the means by which patronage can be concentrated on the lines on which a massive capital improvement has been made, such as MUNI Metro, thus making sure the greatest use is made of the public's investment.

Presently, many transit trips in San Francisco require round-about trip paths and multiple transfers. The 5-Year Plan recommends a functional grid, which would reduce multiple transfers; it is designed to make it possible for San Franciscans to travel between any two points in the City over a direct path, using routes with frequent service and not having to transfer more than once in most cases.

A necessary product of such an approach to network orientation is that many no-transfer trips that can be made at present would require a single transfer. Since the overall "connectivity" of the system would be greatly improved, the few trips lost by the single transfer (often to a high speed or high service line, such as MUNI Metro or the 38-GEARY) would be more than made up for by the improved travel times and the nearly-eliminated second or third transfers for many trips. Consequently, the Plan recommends that reasonably direct one transfer opportunity be provided for all zones within the City. Topography, however, sometimes makes it difficult or impossible to satisfy this standard, as is the case with feeder or neighborhood lines like the 39-COIT on Telegraph Hill.

2. Operating Criteria

The determination of essential levels of transit service involves consideration of travel time, convenience, and cost of operation. These factors both influence and are influenced by the area served. The measurement values of operating criteria were identified as capacity and reliability.

a. Capacity

The capacity of a system is usually measured by the load factors developed for the system. Load factors are the ratio of the number of passengers on-board a vehicle to the number of passenger seats available on the vehicle. They provide an indication of passenger comfort.

The purpose of load factor standards is to uniformly provide at least a minimum level of comfort to all MUNI riders. (See Table III-2) Load factors in excess of certain levels result in significantly increased passenger loading times, poor schedule adherence, and a low level of passenger comfort. Together with policy headway standards (See Table III-3), they should define the frequency of service on all lines in the City (although the critical strain on MUNI staff and equipment is, of course, the necessity to meet morning and evening peak demands for service). During off-peak hours, the standard calls for every passenger having a seat.

Load factor standards were developed to recognize the characteristics of different MUNI vehicles, varying levels of passenger demand throughout the day, and passenger trip lengths. For example, cable cars and the new MUNI Metro "light rail vehicles" (LRVs) are designed to accommodate a high percentage of standees whereas the small AM General motor coaches with their narrow aisles are not designed for many standees.

TABLE III-2

RECOMMENDED VEHICLE CAPACITIES*

<u>VEHICLE TYPE</u>	<u>SEATED CAPACITY</u>	<u>RECOMMENDED MAXIMUM PASSENGER LOAD</u>
Diesel Coaches		
GMs and Flexibles	48	72
AMGs	40	60
Trolley Coaches Flyers	50	75
Streetcars (current fleet)	53-60	95
Light Rail Vehicles (on order)	68	150
Cable Cars	29 or 34 depending on model	65 or 76

*It should be noted that the Recommended Maximum Passenger Load is less than the maximum passenger load that can be accommodated under "crush" conditions.

TABLE III-3
MAXIMUM HEADWAYS¹
(in minutes)

<u>SERVICE PERIOD</u>	<u>PRINCIPAL RADIAL AND CROSSTOWN LINES</u>	<u>SECONDARY NEIGHBORHOOD AND FEEDER LINES</u>
Peak	10 ²	15
Base	10	20
Evening	15	30
Owl	30	---
Weekend	15	20

¹Maximum headways shown do not apply to express or special service (e.g., shoppers shuttle or sporting events).

²This is the maximum headway; usage on most principal lines will require shorter headways.

b. Reliability

Reliability is probably MUNI's greatest service problem and warrants the necessary resources for control. Individual lines should be checked once a year during the peak and base service periods. Evening, owl and Saturday and Sunday service should be sampled. Increased use of two-way radio equipment by drivers should also be used to record problems. Effective transit priority measures should be used to solve severe traffic problems.

Although Wilbur Smith and Associates recommended several reliability standards, staff examination and refinement of these standards will occur over the next year. They will then be included in the first annual 5-Year Plan update.

3. Transit Stop Criteria

Wayside amenities such as shelters, benches, transit stops and passenger information are important service considerations. The spacing of stops, zone length, and the level of passenger information in particular have an important bearing on MUNI's operating speeds.

a. Stop Spacing

Closely spaced transit stops reduce the length of walking required to ride MUNI, but they tend to increase the jerkiness of the ride, accident rates, and travel times.

The purpose of standards for the spacing of transit stops is to maximize safety, comfort, speed, and capacity while simultaneously minimizing the walking effort required to ride MUNI. Standards will be developed in the first annual update for topography and type of service. For example, express and limited service obviously should have longer spacings between stops than local radial and crosstown routes. Similarly, neighborhood feeder service should have closer stop spacings than radial and crosstown routes inasmuch as feeder lines are not intended to be fast. Since more effort is required to walk in hilly areas than in relatively flat areas, standards will be developed for areas with grades in excess of ten per cent and for relatively flat grades of less than ten per cent.

Special consideration has not been given to closer stop spacings in neighborhood commercial areas, since they generally are environments conducive to walking. Pedestrian traffic in itself is looked on by many of these merchants as a major business asset.

These spacing standards should be applied in such a manner as to locate stops at major hospitals, schools, employment centers, etc. Stops must also be located at transfer points between lines. Occasionally, extra stops will have to be added for these purposes, but exceptions to the standards should be minimized. No stops should be added to the "express" segments of lines designated in the network Master Plan.

b. Lengths of Loading Zones

A "nearside" bus stop (a bus loading zone ahead of an intersection) should preferably be about 100 feet in length, measured from the front of the halted bus to the front of the nearest legal curb parking space behind the bus. An additional 45 feet is desirable for each additional bus expected to stop simultaneously at that location.

A "farside" bus stop (across the intersection) should preferably be 80 feet long, measured from the rear of the halted bus to the rear of the nearest curb parking space ahead. The same additional 45-foot length for stopping by each additional bus is needed as in the case of nearside zones.

A midblock bus zone for a single bus should be 140 feet long, with another 45 feet for each additional bus making a simultaneous stop.

Lengths of loading zones are actually quite site-specific. Grade, how many routes use the stop (e.g., expresses and locals), location of major trip generators, and more determine lengths of transit stops.

c. Transit Centers

At major trip-generating and transfer locations, special facilities are desirable. These facilities should be designed to accommodate large numbers of passengers and to facilitate prompt interchange from one transit line to another. They should include and display racks containing printed timetables of all transit lines serving the particular location and systemwide route maps.

d. Transit Stop Shelters

Shelters should be provided at major activity centers, all major transfer points, and at stops with a high number of boarding and transferring passengers. In determining priority for transit shelter installation, consideration should be given to frequency of service, the degree of exposure, the availability of other shelters, and the availability of space required for shelters.

e. Transit Stop Signing

All transit stops should be identified with readily visible MUNI logos and, where appropriate, multilingual signs and route and schedule information.

B. MOBILITY STANDARDS

Mobility standards set minimum service criteria in terms of the ability of a citizen to travel from one point to another within the service area. These standards can be defined by maximum elapsed travel time or minimum travel speed. At this time, mobility standards for the Municipal Railway have not yet been developed; they will appear in the first annual update of the 5-Year Plan.

IV. EXISTING SERVICES

A. SYSTEM COVERAGE AND USE

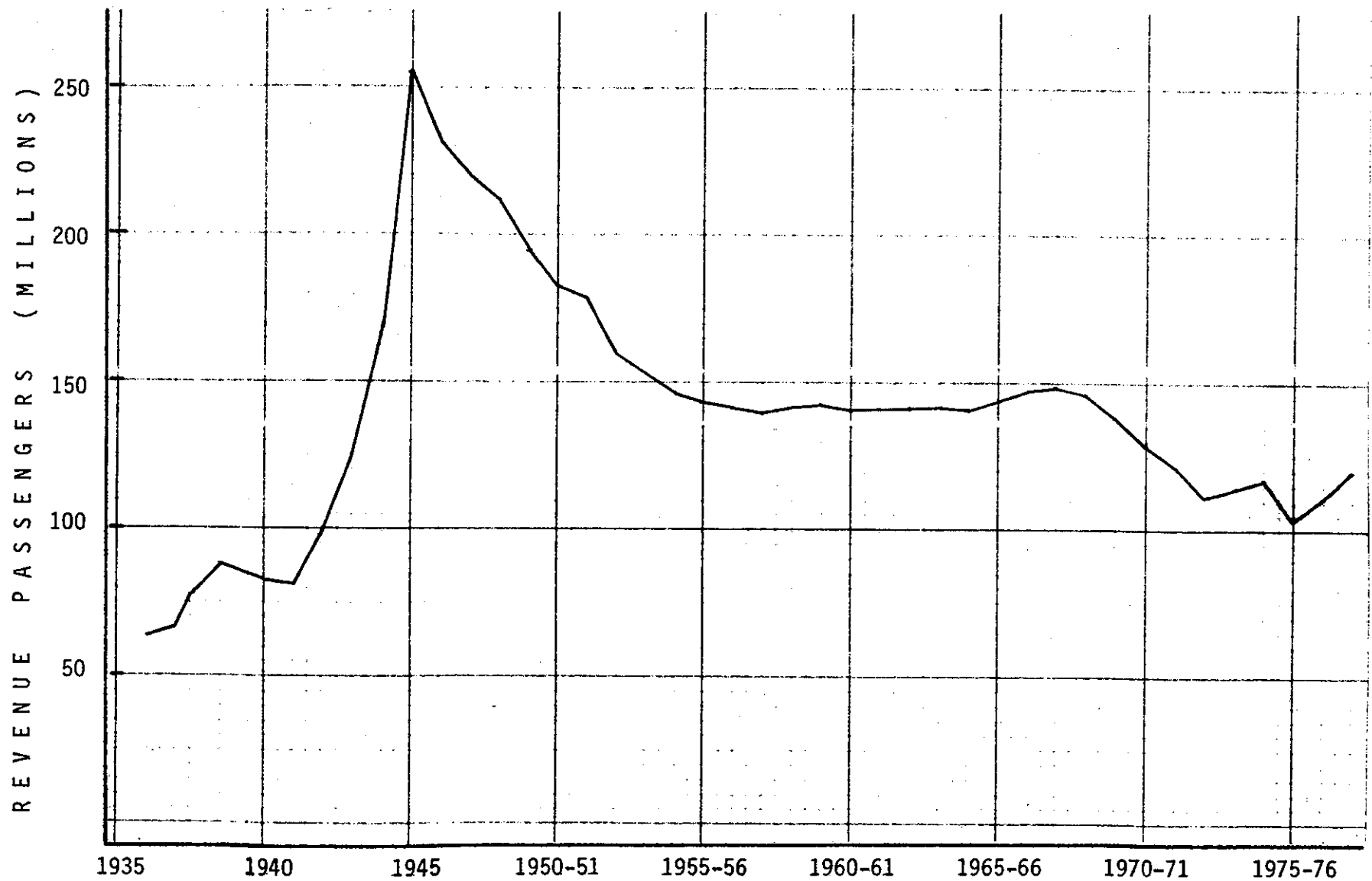
San Francisco Municipal Railway is one of the largest and most heavily used transit systems in the United States. With the possible exception of New York City, MUNI's per capita ridership levels top the list of American systems. Although it still compares favorably with other American transit systems, MUNI has experienced a dramatic decrease in patronage over the last 30 years (See Figure IV-1). The Railway has suffered from the same post-World War II automobile-oriented economic forces as has the rest of the country: in 1947, the system operated over 29 million annual scheduled miles and carried over 307.9 million patrons. In 1977, MUNI's annual scheduled miles remained close to the 1947 figure (25.2 million), but patronage had declined by approximately 200 million yearly riders.

Today, the Railway serves both the 650,000 residents of the City of San Francisco and the 40,000-plus commuters and tourists who use transit to reach their San Francisco destinations. To carry this volume of people, MUNI operates 77 different transit routes with over 1,000 streetcars, cable cars, trolley and motor coaches.

The route structure for this system is essentially radial in nature with most of the routes terminating within the Downtown area. The Downtown focus can easily be observed in the MUNI network map shown in Figure IV-2. In terms of scheduled route mileage, 72% of the system mileage is provided on lines considered radial. Only 18% of the system route mileage is crosstown service. The remaining 10% represents neighborhood feeder service, which connects more isolated areas with major transit routes.

The Downtown emphasis is also reflected in the weekday patronage figures. The heaviest volume of transit travel usually occurs in the morning and evening rush hours. The bulk of MUNI service during the morning peak moves inbound along the radial routes at headways two to three times as frequent as outbound service during the same period. In the afternoon peak period, the reverse occurs. Such concentration of service to and from the Central Business District (CBD) allows MUNI to maintain 40-50 per cent of the Downtown traveler "modal split" (the share of total trips made by different transportation vehicles), while only allowing MUNI to pick up less than one-fifth of the non-Downtown trips.

Figure IV-1
MUNI ANNUAL REVENUE PATRONAGE (1936-1977)

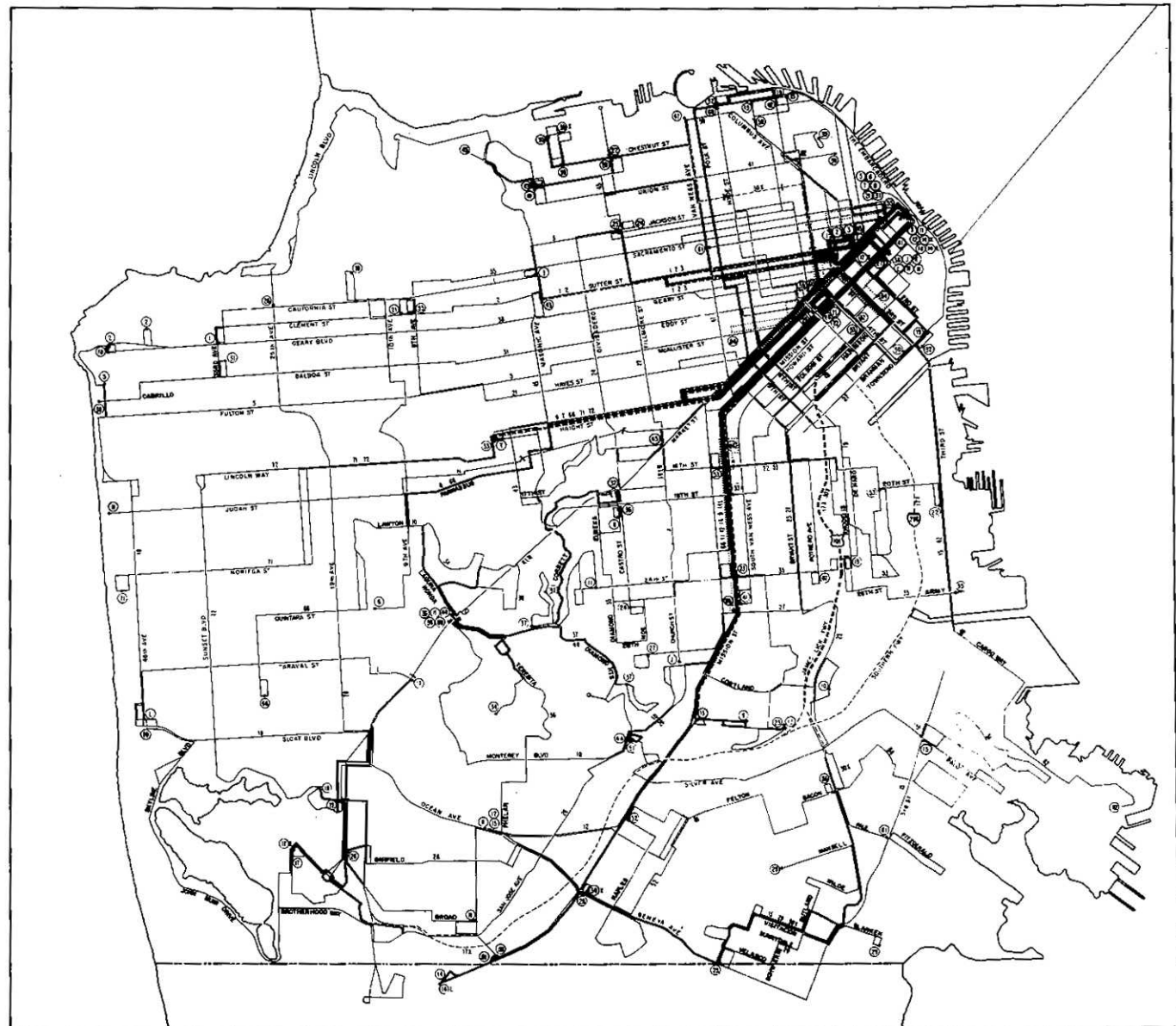


Note: Because of a change in MUNI accounting procedures, patronage from 1936 through 1949 is reported on a calendar year basis; beginning 1950-51, patronage is reported on a Fiscal Year basis.

**Figure IV-2
EXISTING MUNI MIDDAY
TRANSIT ROUTES**

LEGEND

CABLE CAR, MOTOR COACH,
TROLLEY COACH, STREET CAR ————
EXPRESS LINE OR LIMITED ————
END OF LINE (●)



AN ENLARGED VERSION OF THIS MAP APPEARS AT END OF REPORT

During the remainder of the day, MUNI operates a base, or midday, service which forms the principal route structure of the MUNI system. Many of the peak-hour schedules are developed by utilizing the midday vehicle assignments and augmenting these with additional transit vehicles. The extra vehicle assignments, called "trippers," make one or two special peak-hour runs, improving service frequencies on the radial lines. The trippers are removed from service during the midday to allow for the standard headways to continue. Midday schedules are operated on most of the crosstown and feeder/shoppers' shuttle routes even during the peak hours.

After 6 p.m., MUNI provides a reduced evening service which generally follows the midday network, with routes terminating operation at different times throughout the evening. By 1 a.m., the owl (late-night) service along 12 routes has replaced the evening service routes (See Figure IV-3). Ten of the 12 owl lines follow major radial routes to the Downtown area and operate on either hour or half-hour headways until the morning peak begins at 6 a.m.

B. FARES

Fares for the entire operation remain consistent throughout the day. The basic adult fare is 25¢ for all transit modes except the express buses, which cost 30¢. Free transfers are provided for stopovers and an unlimited number of transfers (in one general direction) within the time indicated. People over 65 and under 18 and disabled people can ride all modes for a nickel. Children under five ride free. In addition, MUNI offers its riders monthly passes (either the \$11.00 Fast Pass or the \$2.50 Senior Pass) valid for unlimited riding during integral calendar months and a 50¢ Sunday pass good for all modes at all times on that particular Sunday.

C. SERVICE CHARACTERISTICS BY LINE

Table IV-1 presents a route-by-route description of the 77 MUNI lines, organized by mode. When substantial portions of routes contain coinciding lines, as happens with several of the trolley and motor coach lines, the statistics are combined and are listed in the tables as such. For instance, trolley coach lines 1 and 3 cover much of the same route and are listed together in Table IV-1. In the case of the streetcars, the M-OCEAN VIEW car was suspended during the past fiscal year for track reconstruction. The outer portion of the line was serviced by a motor coach and the inner portion by the L-TARAVALL. In the table, the statistics for lines L and M are combined, but the service provided by the M coach is listed separately.

(Text continues on p. 35.)

Figure IV-3
MUNI OWL ROUTES

LEGEND
60 MINUTE HEADWAYS
30 MINUTE HEADWAYS
OWL LINE NUMBER
END OF OWL LINE

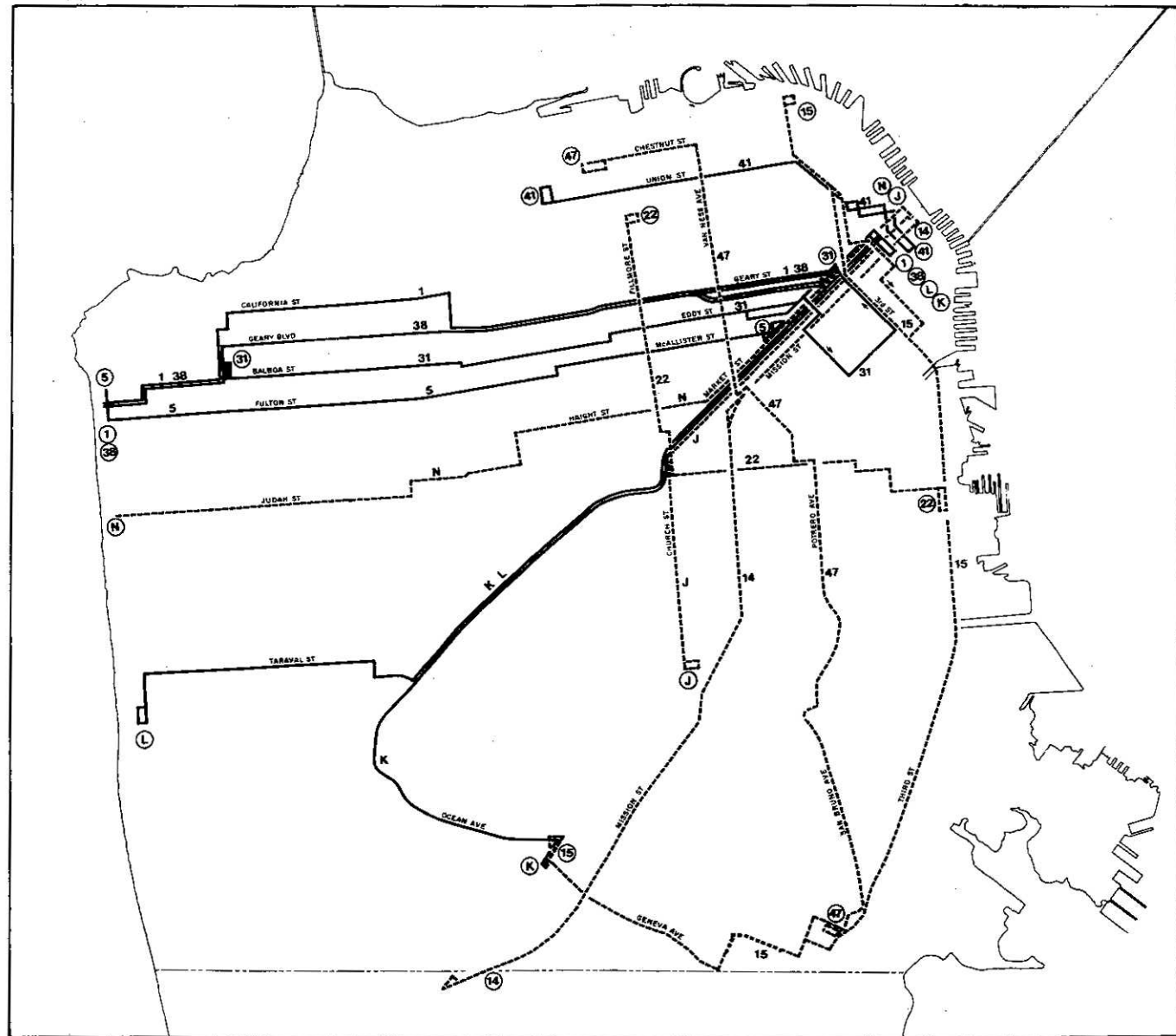


TABLE IV-1 (CONT)
AUGUST, 1978
ROUTE DATA

Line-Mode	Route Type	Average Headways								Equipment								Route Miles (Round Trip)	Annual Vehicle Miles (000s)	Annual Vehicle Hours (000s)	Peak Day Boardings POM Report (000s)	Operating Division
		Weekdays				Sat		Sun/Hol		Weekdays				Sat		Sun/Hol						
		AM	Base	PM	Eve	Base	Eve	Base	Eve	AM	Base	PM	Eve	Base	Eve	Base	Eve					
Streetcars																						
J*	Radial	4½	7	5½	14	14	20	16	20	16	10	13	6	6	3	5	4	8.8	407.7	54.8	17.4	Geneva
K*	Radial	4	6	3½	12	6	20	10	20	52	35	52	15	26	8	9	5	15.3	720.1	73.8	20.9	Geneva
L-M*	Radial	4	6	3	15	10	20	10	20	52	35	52	15	10	5	10	5	16.7	1041.7	106.3	18.7	Geneva
M(Coach)	Radial				30	30	30	30	30									6.2	221.1	20.1	13.5	Woods
N*	Radial	4	5½	3½	13½	8	20	12½	20	21	17	24	9	10	4	6	4	14.2	774.9	83.9	25.5	Geneva
Cable Cars																						
59-60	Radial	8½	6	6	6	6	6	6	6½	11	19	19	18	19	19	19	19	5.9	947.7	106.4	23.8	Cable Car
61	Radial	7½	7	5½	10	15	10	15	10	5	6	7	4	3	4	3	4	2.9	123.6	28.4	7.3	Barn

* - Indicates Owl Service line.

TABLE IV-1 (CONT)
AUGUST, 1978
ROUTE DATA

Line-Mode	Route Type	Average Headways								Equipment								Route Miles (Round Trip)	Annual Vehicle Miles (000s)	Annual Vehicle Hours (000s)	Peak Day Boardings POM Report (000s)	Operating Division
		Weekdays				Sat		Sun/Hol		Weekdays				Sat		Sun/Hol						
		AM	Base	PM	Eve	Base	Eve	Base	Eve	AM	Base	PM	Eve	Base	Eve	Base	Eve					
Trolley Coaches																						
1-3	Radial	6	8	6	13½	14½	20	18	20	24	19	24	7	10	4	5	4	12.4	694.2	88.5	24.4	Presidio
5*	Radial	4	7½	3½	11½	8	15	9	15	20	14	25	8	12	4	5	4	14.3	810.1	81.4	15.8	Presidio
6-7	Radial	5½	10	4½	15	10	10	20	20	24	18	32	10	17	9	5	6	13.3	825.8	98.0	20.6	Potrero
8	Radial	4½	6½	3½	15	9½	15	20	20	15	11	18	4	7	4	3	3	7.1	88.4	50.1	8.3	Potrero
9-12-14*	Radial	6½	9	4½	13	10	12	9	16	38	35	44	15	19	14	25	12	17.6	1579.4	180.6	63.7	Potrero
21	Radial	5½	8	5½	15	12	16	20	20	15	13	17	6	8	5	5	4	11.0	471.8	64.8	13.9	Presidio
22*	Crosstown	3½	5	4	8	7½	8½	7½	10	25	20	22	11	12	11	11	10	11.5	756.9	102.5	34.2	Potrero
30	Radial	3	4½	3	8½	4½	10	6	16	22	18	26	9	18	9	13	7	9.3	730.6	94.9	36.7	Presidio
33	Crosstown	15	24	12	24	24	24	24	24	5	3	5	2	2	2	2	2	9.5	174.3	21.0	2.2	Potrero
41*	Radial	3	10	3½	20	20	20	20	20	20	7	19	3	3	3	3	3	5.6	301.9	46.2	11.2	Presidio
47*	Crosstown	2½	6	4	11	11½	13	10	13	24	13	19	7	7	5	7	5	9.0	520.3	73.8	21.7	Potrero

* - Indicates Owl Service line.

TABLE IV-1
AUGUST, 1978
ROUTE DATA

Line-Mode	Route Type	Average Headways								Equipment								Route Miles (Round Trip)	Annual Vehicle Miles (000s)	Annual Vehicle Hours (000s)	Peak Day Boardings POM Report (000s)	Operating Division
		Weekdays				Sat		Sun/Hol		Weekdays				Sat		Sun/Hol						
		AM	Base	PM	Eve	Base	Eve	Base	Eve	AM	Base	PM	Eve	Base	Eve	Base	Eve					
Motor Coaches																						
2	Radial	2	6	2½	14	14½	19	18	20	32	15	26	6	6	4	5	4	13.3	767.1	74.6	18.7	Kirkland
10	Crosstown	8	9	15	15	15	15	15	15	13	11	13	6	7	6	7	6	18.0	642.6	61.3	19.8	Woods
11-14-40	Radial	7½	15	9	15	20	15	15	15	32	13	30	2	13	2	2	2	25.0	874.6	81.8	10.1	Woods, Potrero
13-27	Radial	20	20	20	30	30	30	30	30	5	5	6	1	1	1	1	1	13.6	186.5	20.9	3.9	Woods
15-42*	Radial	3	10½	3	17	12	16	16	16	40	24	41	12	16	10	12	10	31.3	1636.2	144.6	29.3	Woods, Kirkland
16 Express	Radial	5½		5½						11		11						14.9	247.6	15.9	2.1	Woods
17	Feeder	30	30	30	30	30	30	60	60	7	3	7	1	1	1			5.5	265.9	17.8	1.5	Woods
17 Express	Radial	12	30	11½						7	3	7	1					19.2	335.0	29.5	1.8	Woods
18	Crosstown	13	18	19	20	16	20	20	24	5	4	4	3	4	3	4	2	13.7	391.5	56.6	4.4	Woods
19	Crosstown	7	9	7	15	12	15	12	15	12	10	16	5	7	5	7	5	8.9	677.8	10.1	13.0	Kirkland
23	Feeder	18	18	18	18	24	24	24	24	2	2	2	2	1	1	1	1	4.3	309.3	44.7	1.5	Woods
24	Crosstown	7½	10	9	16	15	16	15	16	9	7	7	3	4	3	4	3	7.5	180.7	19.4	10.6	Kirkland
25	Radial	7	12	6	15	12	20	18	20	14	10	18	7	10	5	6	5	19.4	1117.0	51.7	14.7	Woods

* - Indicates Owl Service line.

TABLE IV-1 (CONT)
AUGUST, 1978
ROUTE DATA

Line-Mode	Route Type	Average Headways								Equipment								Route Miles (Round Trip)	Annual Vehicle Miles (000s)	Annual Vehicle Hours (000s)	Peak Day Boardings POM Report (000s)	Operating Division
		Weekdays				Sat		Sun/Hol		Weekdays				Sat		Sun/Hol						
		AM	Base	PM	Eve	Base	Eve	Base	Eve	AM	Base	PM	Eve	Base	Eve	Base	Eve					
Motor Coaches																						
26	Radial	7½	10	7½	18	15	20	24	20	10	10	12	5	6	4	4	4	16.6	560.2	49.0	9.6	Woods
28	Crosstown	6	12	11	12	12	12	12	12	17	11	15	8	11	8	11	8	27.7	840.9	75.9	14.8	Woods
29	Feeder	30	30	30	30	30	30	30	30	2	2	2	2	2	2	2	2	9.6	125.1	12.6	.9	Woods
30 EXPRESS	Radial	4	12	6						27	10	20						24.3	556.3	34.1	11.0	Kirkland, Woods
31*	Radial	3½	9	4	14	12	20	15	15	19	10	19	5	6	3	5	3	12.1	555.6	56.7	13.6	Kirkland
32	Radial	7½	15	6		20		20		5	3	4		2		2		7.5	133.6	13.4	2.6	Kirkland
34	Feeder	30	30	30						1	1	1						5.5	42.3	3.4	.7	Woods
35	Crosstown	10	14	10	20	20	20	20	20	6	5	7	3	3	3	3	3	9.4	265.6	29.3	6.4	Woods
36	Feeder	15	20	15	30	30	30	30	30	4	3	4	2	2	2	2	2	11.5	228.8	18.3	3.1	Woods
37	Feeder	12	12	12	20	20	20	30		3	3	3	2	2	2	2		6.4	136.0	14.1	1.5	Woods
38*	Radial	2½	3½	2	10	4	10	6	10	32	27	41	10	24	10	14	10	13.8	1380.3	146.6	49.1	Kirkland
39	Feeder	20	20	20	20	20	20	20	20	1	1	1	1	1	1	1	1	2.2	42.5	6.5	.3	Kirkland
41	Radial	10	12	10						5	4	5						7.8	13.1	14.3	1.4	Woods

* - Indicates Owl Service line.

TABLE IV-1
AUGUST, 1978
ROUTE DATA

Line-Mode	Route Type	Average Headways								Equipment								Route Miles (Round Trip)	Annual Vehicle Miles (000s)	Annual Vehicle Hours (000s)	Peak Day Boardings POM Report (000s)	Operating Division
		Weekdays				Sat		Sun/Hol		Weekdays				Sat		Sun/Hol						
		AM	Base	PM	Eve	Base	Eve	Base	Eve	AM	Base	PM	Eve	Base	Eve	Base	Eve					
Motor Coaches																						
43	Crosstown	20	20	20	30	30	30	30	30	5	4	4	2	2	2	2	2	11.4	190.4	21.6	3.6	Kirkland
44	Feeder	20	20	20	20	40	40	40	40	3	2	2	1	1	1	1	1	5.6	93.0	10.4	2.4	Woods
45	Radial	5½	6	10	20	11	17	20	20	12	8	13	3	6	3	3	3	8.7	325.0	42.8	10.6	Kirkland
51	Crosstown	12	15	12	18	16	24	16	24	11	4	5	3	3	2	3	3	8.9	306.1	30.7	8.0	Woods
52	Feeder	20	20	20	20	20	20	20	20	3	1	1	1	1	1	1	1	2.8	72.2	6.9	1.7	Woods
53	Feeder	15	15	15	20	15	30	30	30	3	3	3	3	2	1	1	1	6.2	128.7	15.4	2.0	Woods
54	Feeder	30	30	30		30		30		1	1	1		1		1		3.8	43.1	5.3		Woods
55	Radial	3	6½	2½	17	12	12	15	20	22	11	24	4	5	5	4	3	8.4	443.2	55.2	15.5	Kirkland
66	Radial	15	15	12½	30	30	30	30	30	6	6	7	1	1	1	1	1	14.5	253.3	22.7	4.8	Woods
70	Feeder	20	40	20	40	40	40	40		2	1	2	1	1		1		17.2	102.2	6.8		Woods
71-72	Radial	9	15	9	15	15	20	15	20	17	14	20	13	13	8	11	8	28.8	1125.6	99.6	16.5	Woods
78	Shuttle								12							2		2.8	6.5	.8		Presidio
81	Crosstown	18	20	18	32	30	30	30	30	5	4	4	2	2	2			13.6	24.7	20.8	1.3	Woods

TABLE IV-1 (CONT)
AUGUST, 1978
ROUTE DATA

Line-Mode	Route Type	Average Headways								Equipment								Route Miles (Round Trip)	Annual Vehicle Miles (000s)	Annual Vehicle Hours (000s)	Peak Day Boardings POM Report (000s)	Operating Division
		Weekdays				Sat		Sun/Hol		Weekdays				Sat		Sun/Hol						
		AM	Base	PM	Eve	Base	Eve	Base	Eve	AM	Base	PM	Eve	Base	Eve	Base	Eve					
Motor Coaches																						
82	Shuttle		10								5							3.1	27.8	6.7		Woods
84	Shuttle		12								3							3.9	13.0	1.6	.3	Kirkland
85	Shuttle		8								4							2.1	16.3	3.6	.9	Kirkland
86	Shuttle		15								2							2.8	17.3	2.8		Woods
89	Shuttle		12				12		12		1				1		1	1.0	13.5	1.9	.1	Woods
91	Feeder	20		20						3		3						4.5	70.3	7.4	.3	Woods
92	Feeder	10		10														4.3	41.8	3.6		Woods

Table IV-1 verifies the radial nature of the MUNI route structure. With the exceptions of the 22-FILLMORE, 47-VAN NESS, and 10-MONTEREY, the most extensively operated lines, in terms of vehicle miles, ridership, and frequency levels, are radial. The number of crosstown and feeder routes represents less than 40 per cent of MUNI's service; this is clearly demonstrated in the table.

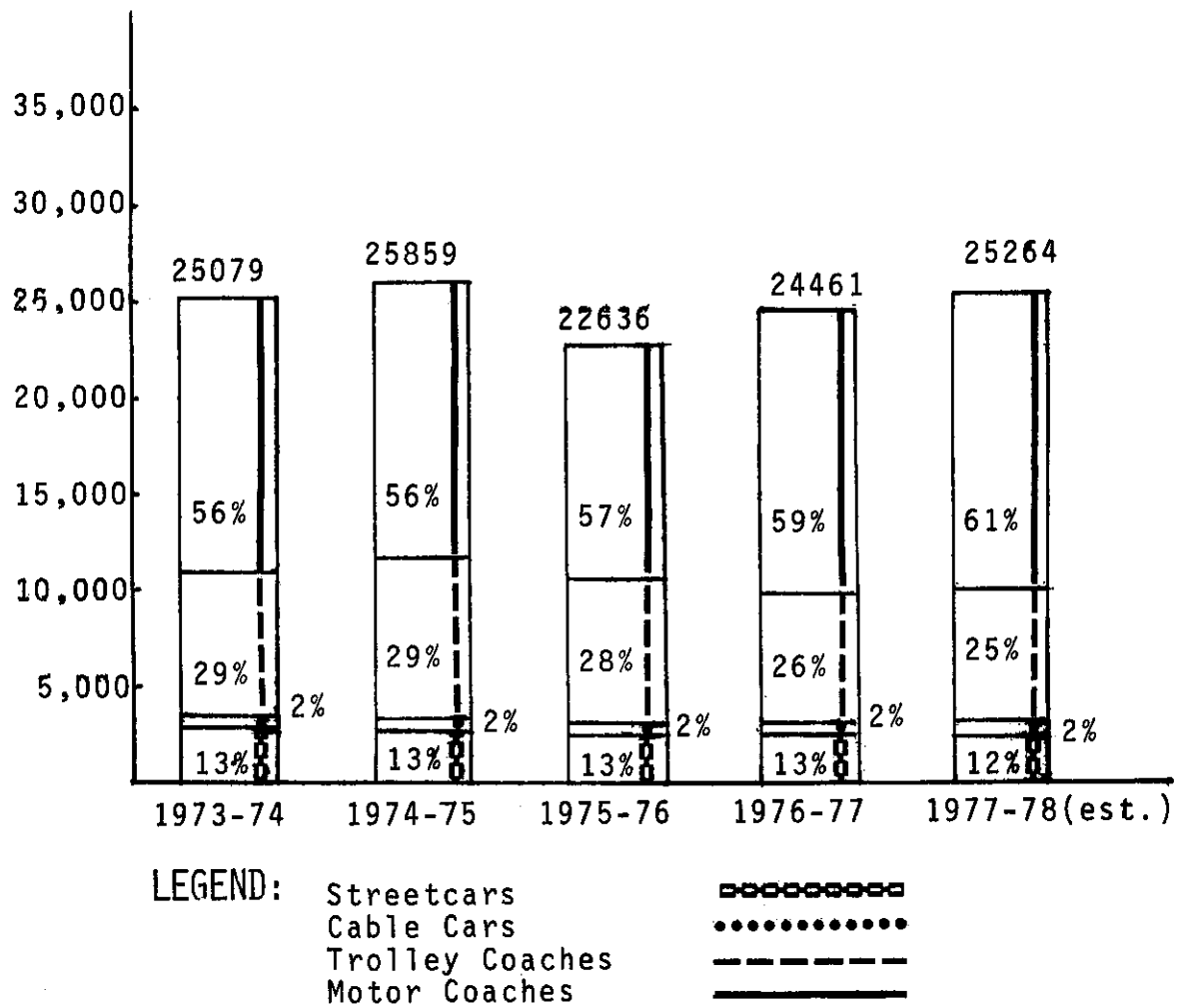
D. 5-YEAR TRENDS

MUNI's service levels, patronage, revenues, and operating costs during the last five years are shown by mode in Figures IV-4 through IV-13. Each graph is based on the statistical information presented in the Municipal Railway's "Statement of Operations by Types of Services," published for each quarter of a given fiscal year (FY, July through June). The data appear to the right of the graph. For FY 1977-78, the figures are estimates based on the quarterly report for July, August, and September of 1977. More complete information for this particular fiscal year will be included in the 5-Year Plan's first annual update.

Over the last five years, MUNI service levels, ridership, and revenues dropped in FY 1975-76 but returned to pre-1975 levels by the last fiscal year. (See Figures IV-4 through IV-8). The sharp decline resulted from both a month-long strike, which halted MUNI service, and run cuts caused by budget constraints and severe maintenance problems. (The San Francisco Public Utilities Commission mandated 50 runs to be cut in 1976, but has pledged to restore them beginning in 1979-80). As service returned and maintenance problems were corrected, which allowed more vehicles to operate on their scheduled runs, ridership and revenues increased. MUNI patronage levels are currently increasing at a rate of approximately seven per cent per year, and with the advent of MUNI Metro and the 5-Year Plan route changes, this rate is expected to accelerate.

Figures IV-6 and IV-7 indicate a major and sudden increase in cable car patronage from 1974-75 to 1975-76. Actually, this apparent jump is almost entirely due to a change in the method used in determining cable system patronage. For a few years prior to 1975, patronage was estimated by formula, with the cars being allocated a percentage of the total estimated patronage of the Railway, a total estimated by dividing the total revenue by an estimated average fare. When it became obvious that this formula allocation was grossly underestimating cable car patronage, figures based on the actual readings from the cable car fare registers were substituted. This method, which reflects the number of actual fares rung up by conductors, plus an estimated share of Fast Pass passengers, was implemented in 1975-76, making it appear that there was a large increase in the number of passengers in that one year. In fact, patronage had been higher than estimated all along.

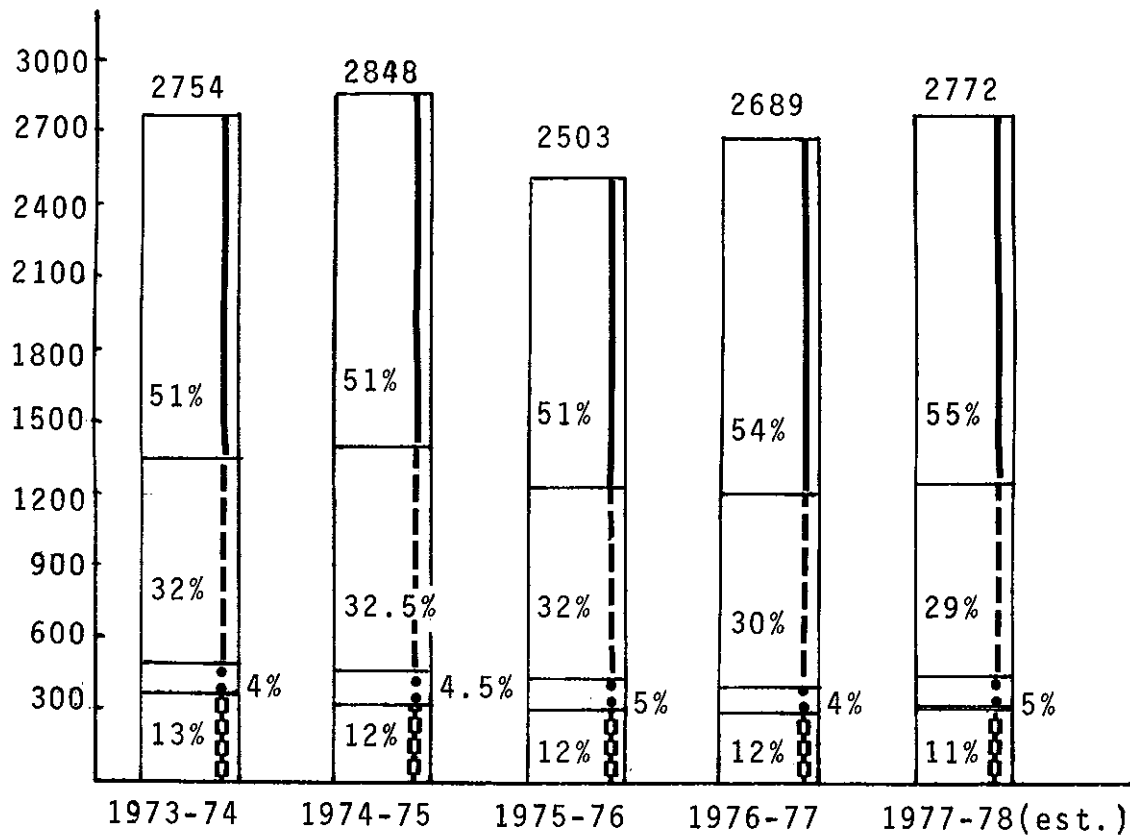
FIGURE IV-4
ANNUAL VEHICLE MILES BY MODE (000's)



TABLE

		1974-75	1975-76	1976-77	1977-78 (est.)
Street-Cars	3304	3254	2886	3073	2956
Cable Cars	515	549	488	483	564
Trolley Coaches	7166	7432	6361	6444	6408
Motor Coaches	14094	14624	12901	14461	15336
Total	25079	25859	22636	24461	25264

FIGURE IV-5
ANNUAL VEHICLE HOURS BY MODE (000's)



LEGEND:

Streetcars	□□□□□□□□
Cable Cars	
Trolley Coaches	-----
Motor Coaches	=====

TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	353	344	307	323	312
Cable Cars	119	130	115	115	132
Trolley Coaches	886	927	799	808	804
Motor Coaches	1396	1447	1282	1443	1524
Total	2754	2848	2503	2689	2772

FIGURE IV-6
ANNUAL REVENUE PASSENGERS (000's)

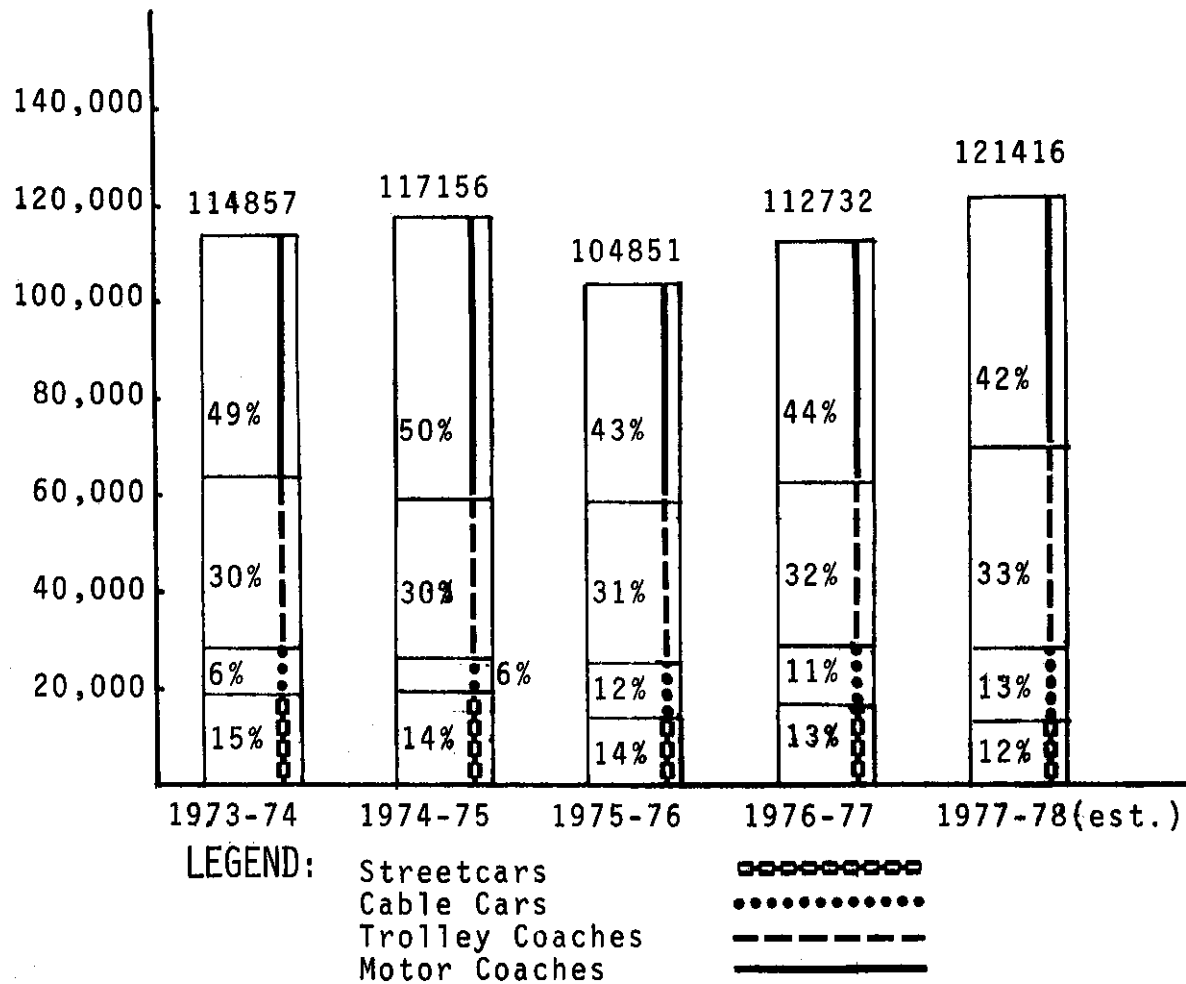


TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	16780	17053	14220	15251	13644
Cable Cars	7063	7172	*12678	12403	16172
Trolley Coaches	34126	34667	32866	36019	40340
Motor Coaches	56888	58264	45087	49059	51260
Total	114857	117156	104851	112732	121416

* Large increase in figures due to an improved method of ridership tabulation on cable cars introduced in fiscal year 1975-76. See Sec.D in text.

FIGURE IV-7
PASSENGERS PER MILE

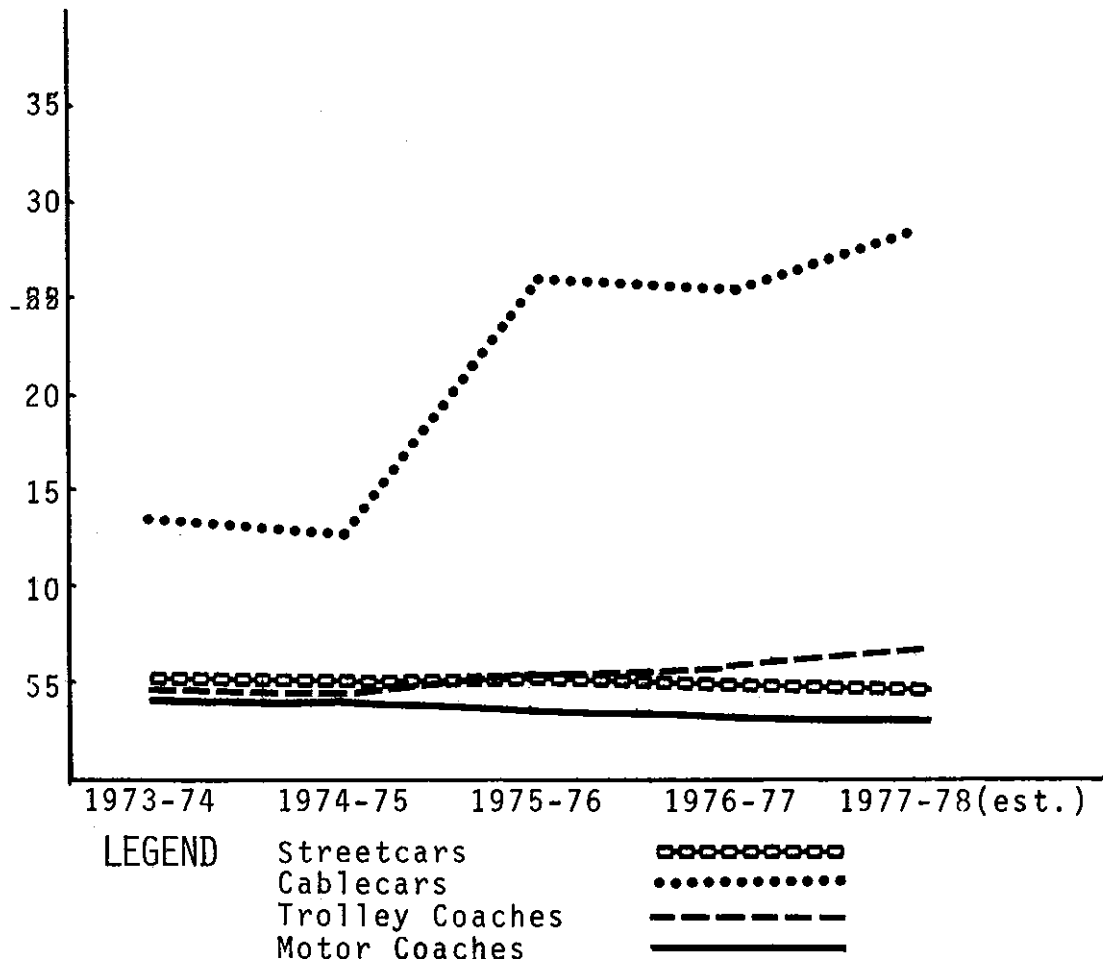


TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	5.08	5.24	4.93	4.96	4.62
Cable Cars	13.71	13.06	*25.98	25.68	28.67
Trolley Coaches	4.76	4.66	5.11	5.59	6.30
Motor Coaches	4.04	3.98	3.49	3.39	3.34
System Wide	4.58	4.53	4.63	4.61	4.81

* The large increase in this figure was due to an improved method of tabulating ridership on cable cars which was introduced on Fiscal Year 1975-76. See Sec.D in text.

FIGURE IV-8
ANNUAL REVENUES BY MODE (000'S OF DOLLARS)

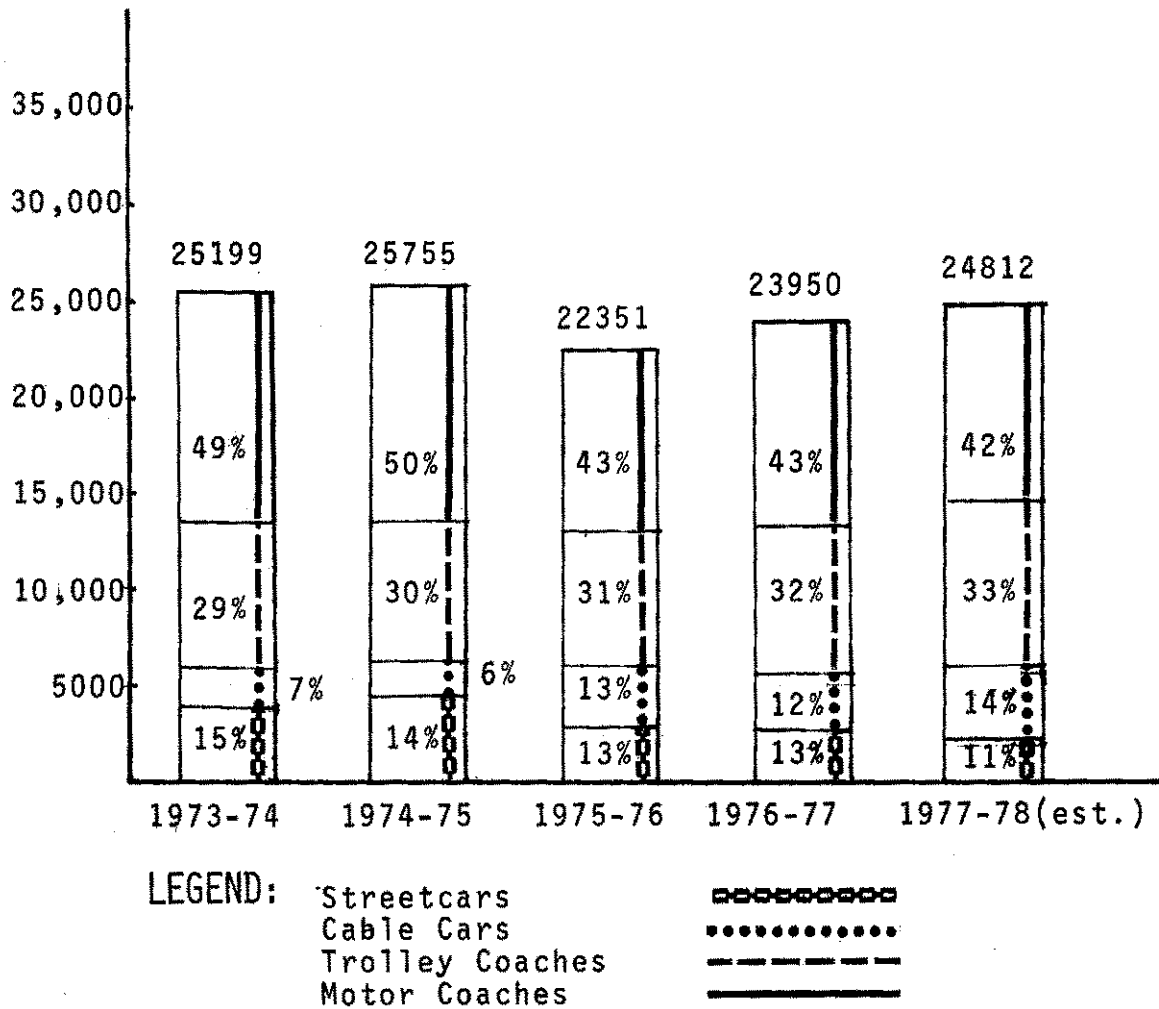


TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	3644	3767	2976	3183	2744
Cable Cars	1769	1571	2966	2893	3620
Trolley Coaches	7401	7642	6913	7561	8116
Motor Coaches	12385	12773	9496	10313	10332
Total	25199	25755	22351	23950	24812

FIGURE IV-9
ANNUAL OPERATING COST BY MODE (000'S OF DOLLARS)

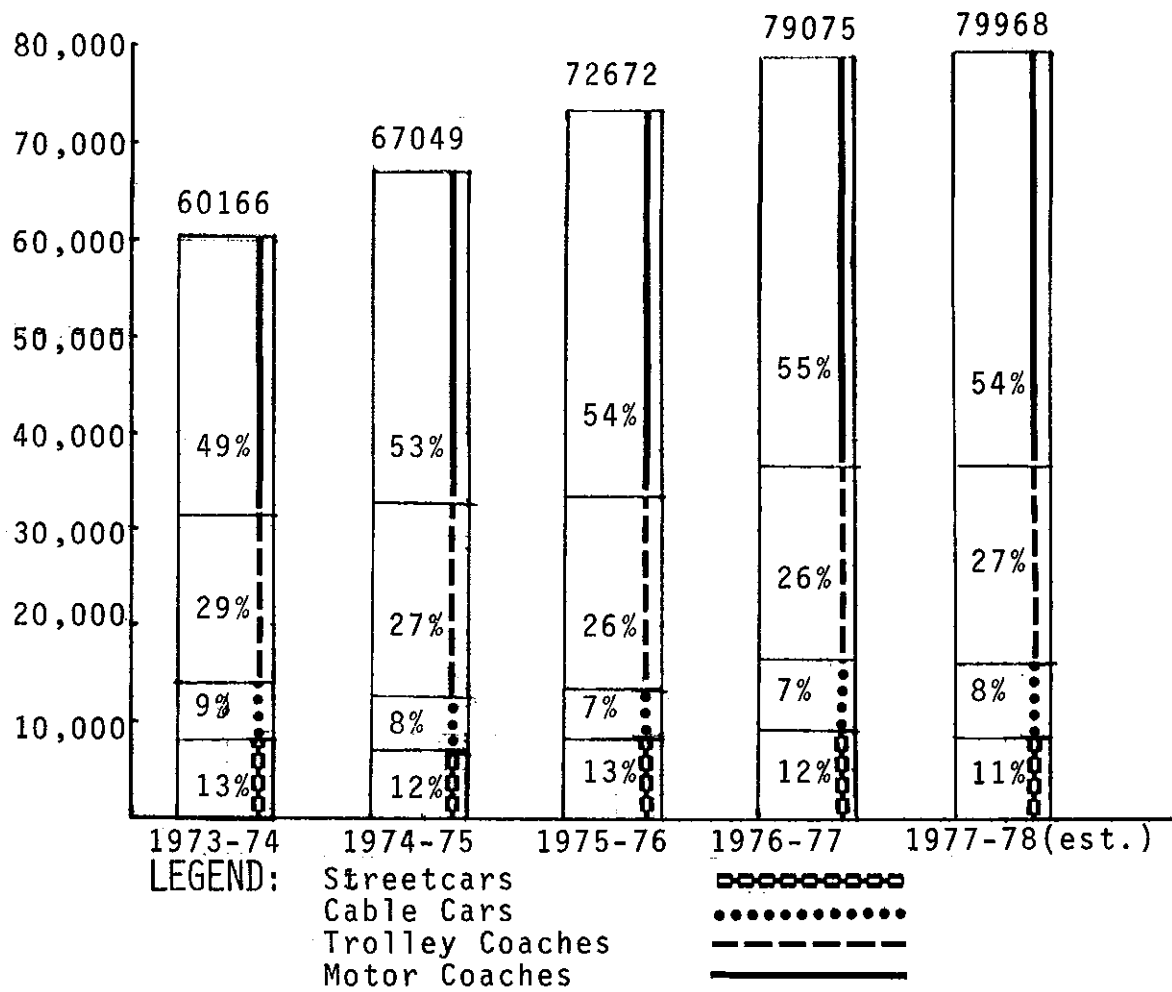
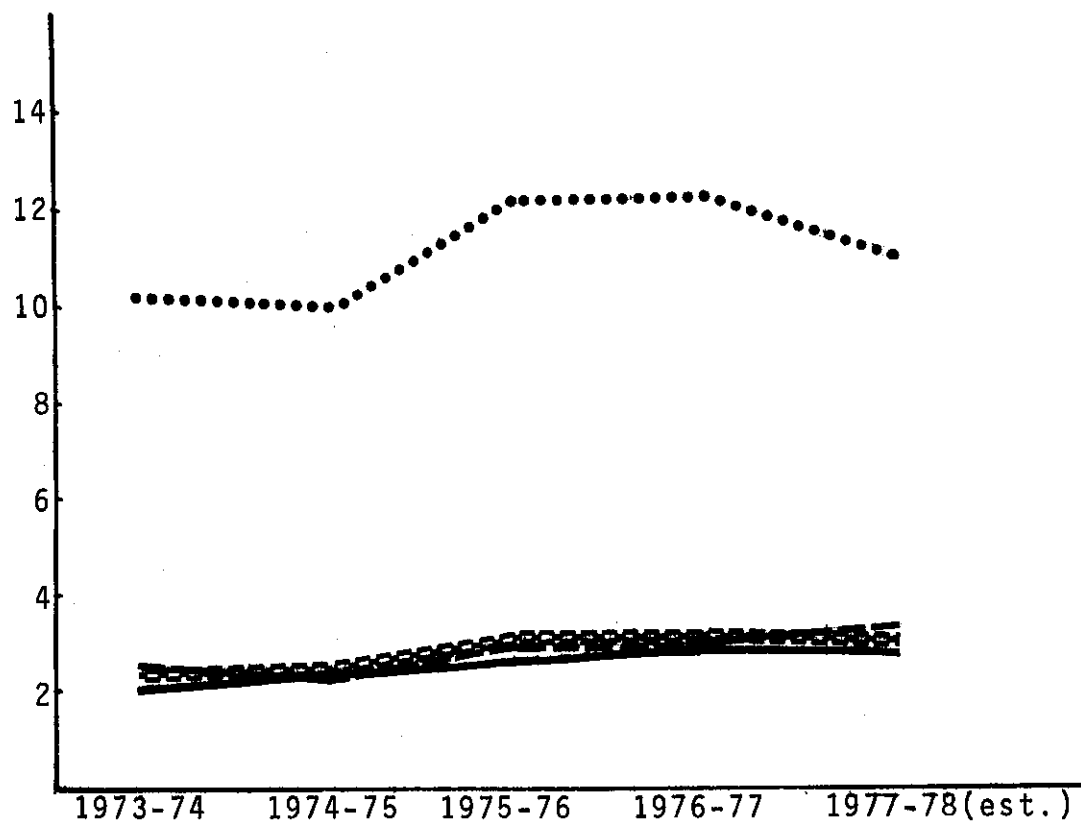


	TABLE				
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	8036	7944	8825	9420	9084
Cable Cars	5259	5472	5201	5916	6184
Trolley Coaches	17350	18324	19091	20506	21544
Motor Coaches	29521	35309	39555	43233	43156
Total	60166	67049	72672	79075	79968

FIGURE IV-10
ANNUAL OPERATING COST PER VEHICLE MILE (IN DOLLARS)



LEGEND:

Streetcars	□□□□□□□□
Cable Cars	●●●●●●●●
Trolley Coaches	— — — — —
Motor Coaches	—————

TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	2.40	2.44	3.06	3.07	3.07
Cable Cars	10.21	9.99	12.25	12.25	10.96
Trolley Coaches	2.42	2.47	3.00	3.18	3.36
Motor Coaches	2.09	2.41	2.74	2.99	2.81
System Wide	2.40	2.59	3.21	3.21	3.17

FIGURE IV-11
ANNUAL OPERATING COST PER VEHICLE HOUR (IN DOLLARS)

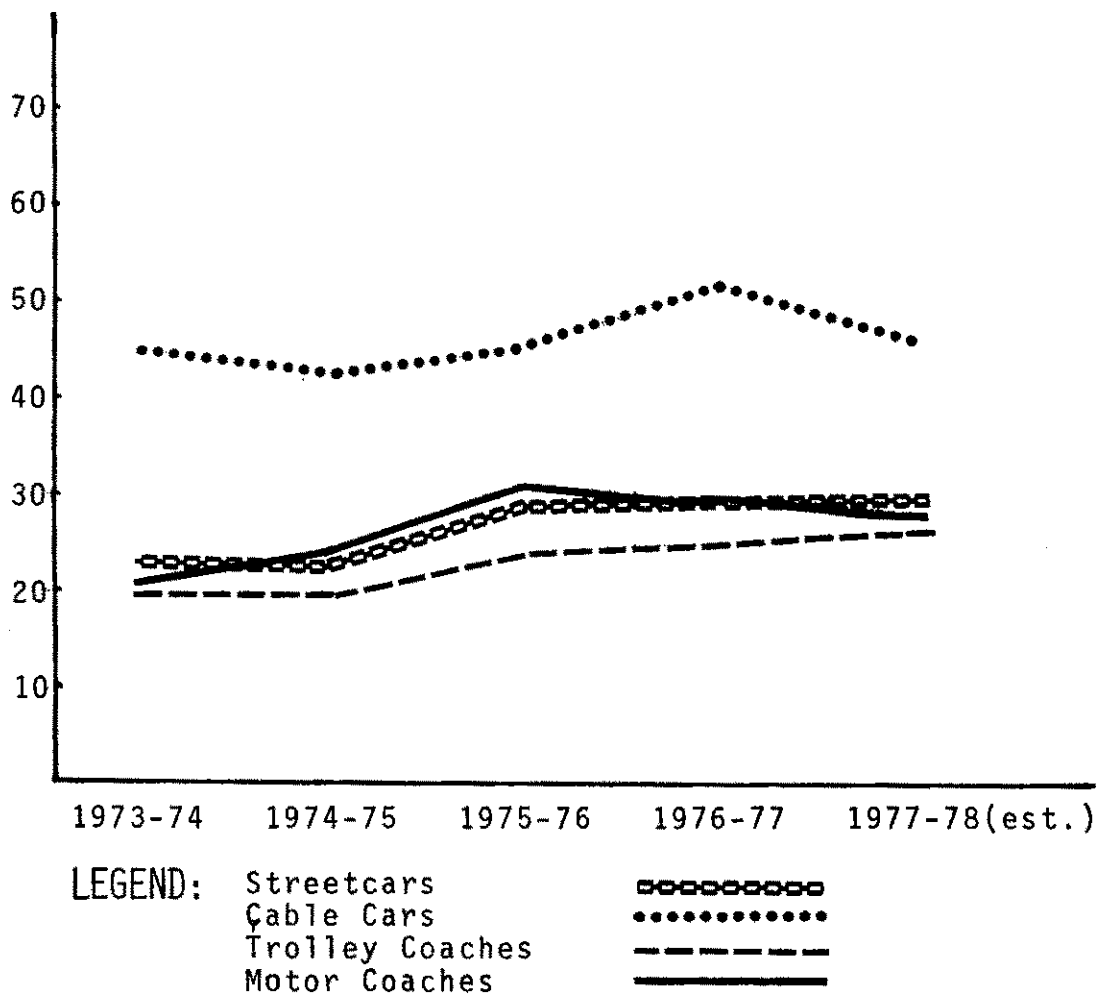
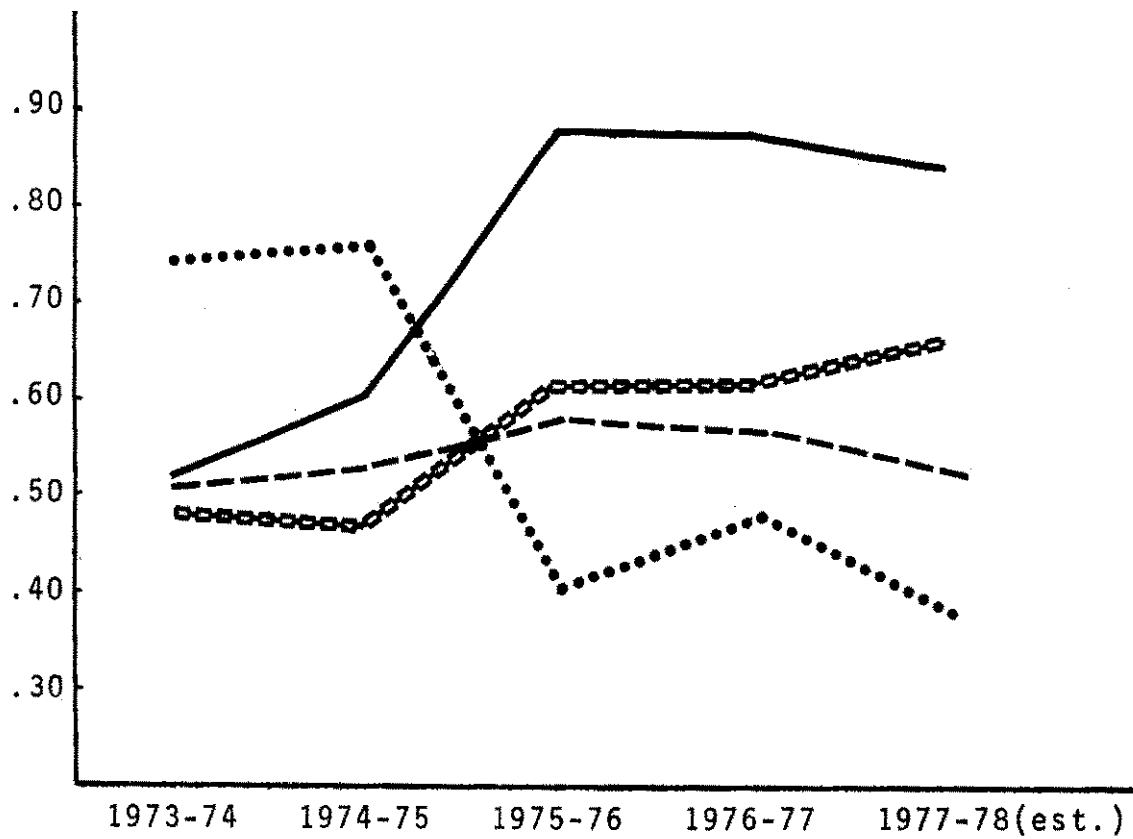


TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-car	22.76	23.09	28.09	29.16	29.12
Cable Cars	44.19	42.09	45.23	51.44	46.85
Trolley Coaches	19.58	19.77	23.89	25.38	26.80
Motor Coaches	21.15	24.40	30.85	29.95	28.32
System Wide	20.22	23.54	20.75	29.24	28.85

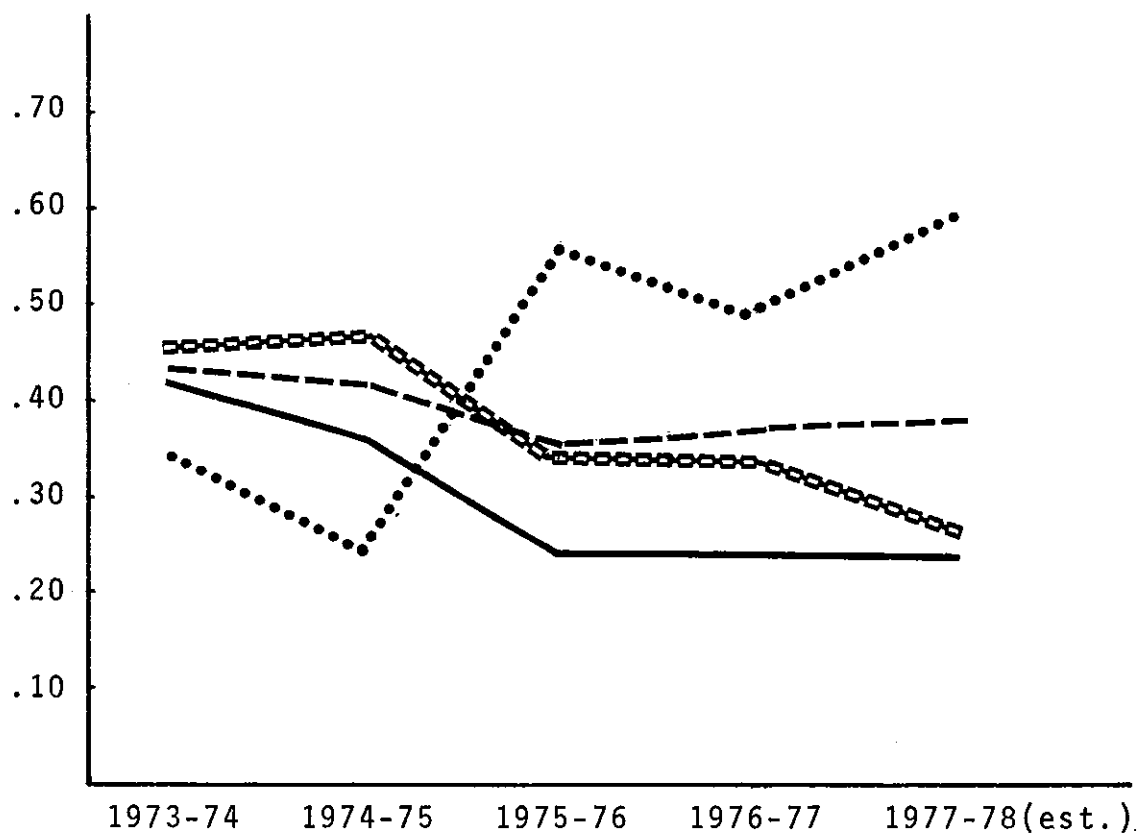
FIGURE IV-12
ANNUAL OPERATING COST PER PASSENGER (IN DOLLARS)



LEGEND: Streetcars
Cable Cars
Trolley Coaches
Motor Coaches

TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	.48	.47	.62	.62	.66
Cable Cars	.74	.76	.41	.48	.38
Trolley Coaches	.51	.53	.58	.57	.53
Motor Coaches	.52	.61	.88	.88	.84
System Wide	.51	.57	.69	.70	.66

FIGURE IV-13
ANNUAL REVENUE PER OPERATING COST (IN DOLLARS)



LEGEND: Streetcars □□□□□□□□
Cable Cars ●●●●●●●●
Trolley Coaches - - - - -
Motor Coaches _____

TABLE					
	1973-74	1974-75	1975-76	1976-77	1977-78 (est.)
Street-cars	.45	.47	.34	.34	.30
Cable Cars	.34	.24	.57	.49	.59
Trolley Coaches	.43	.42	.36	.37	.38
Motor Coaches	.42	.36	.24	.24	.24
System Wide	.43	.38	.31	.30	.31

V. TRANSIT MASTER PLAN

A. DEFICIENCIES OF PRESENT NETWORK

Utilizing the basic MUNI system and the socio-economic land use and travel characteristics of the region, an evaluation of transit services was undertaken by the POM consultants. The evaluation was based upon community input and service standards developed specifically for the service area. The evaluation covered numerous areas of MUNI operations including service quantity, service quality, passenger amenities, operating cost, management and personnel.

As with most other large transit properties, MUNI has numerous areas where improvements are needed. Some of MUNI's deficiencies are associated with broader community problems, such as inadequate police protection, the rapidly increasing cost of labor, and the inadequate provision of service to the disabled. Other inadequacies, however, relate directly to MUNI's current route network, service policies, transit fleet and support facilities, and methods of operation.

1. Inappropriate Route Network

The route structure of the Municipal Railway is predominantly radial in character. 72% of the scheduled service either terminates Downtown or is routed through it. However, this dominant service characteristic is at variance with the actual pattern of all trips being made by San Franciscans.

The trip pattern of a major city such as San Francisco is complex, but it can for general purposes be considered in four broad categories: trips made to the Central Business District (CBD) for work purposes; trips made to the CBD for non-work purposes; trips made to non-CBD destinations for work purposes; and non-CBD non-work trips. While Downtown is and will, in all probability, continue to be the single most important trip generator in the City, it can by no means be said to dominate the overall trip patterns of the City.

The Bay Area Transportation Study (BATS) data on the City's transportation patterns found that about 20% of the trips being made were for work purposes. Based on these data, City Planning Department staff prepared estimates of the general locations of employment of San Francisco residents. These estimates determined that some 56%

of residents employed in San Francisco were working Downtown, while 44% worked outside Downtown in the City. In terms of the total transportation market of San Francisco, these figures represent 11% and 9% respectively. In other words, only about one trip in ten made by San Franciscans in an average week is a Downtown work trip. One can readily see that if the MUNI is designed to function principally as a means of getting people Downtown to work, its role will be a very narrow one, and it will be competing with the automobile for a very small proportion of the transportation needs of the City. Even in the very unlikely event that it were to capture 100% of that market, it would still be carrying only 11% of all the trips made in San Francisco. A broader strategy, serving Downtown work trips but also oriented to accommodating a more significant proportion of all trips in the City is clearly necessary.

Of the 80% of trips made by San Francisco residents which are not made for work purposes, by far the greatest percentage are not going to or coming from Downtown. Even on a weekday, when there is a significant volume of Downtown shopping travel and personal business trips, Downtown accounts for only about 20% of the non-work trips. The rest are scattered - many in areas near home or school, with others dispersed throughout the City for a wide variety of personal reasons. The present network, with its specialized characteristics, can be used for these trips; however, most of them involve long trip times, roundabout paths of travel, low net travel speeds (actual distance divided into transit travel time), and frequently multiple transfers. Thus, except for trips made by schoolchildren, who have no choice, the private automobile constitutes virtually the exclusive form of travel for non-work trips to non-Downtown destinations.

Other general deficiencies of the Railway's present route structure include the following:

- Isolation of the important Third Street Corridor
- Duplicating and poorly spaced radial lines
- Several one-way loop routes
- Insufficient service to and in the growing Northeastern Waterfront area
- Numerous short lines with proportionately excessive layovers

- Inefficient integration of feeder routes with trunk lines
- Inadequate crosstown and cross radial services
- Crosstown owl service deficiencies
- Inadequate transfer arrangements and off-peak connections with regional operators

Service that is provided in a circuitous manner is usually slow and confusing from a passenger standpoint. While neighborhood feeder lines frequently are forced to meander (to reach areas not along principal streets), radial and crosstown service should not. The MUNI route network should provide direct routing of radial and crosstown lines to improve both travel times and public understanding of the Railway's routes.

In several cases, the existing MUNI route network requires two or three transfers to get from one part of San Francisco to another. Weather, time of day, passenger mobility, and transit dependency determine whether the trip is made by transit or not. Unnecessary transferring also serves as a deterrent. The Railway's transit network should require no more than one transfer from almost any area of the City to any other area. Such a route network would reduce waiting time at transfer points and reduce overall travel time, thus making public transit competitive with the private automobile.

2. Slow Loading Vehicles

A major source of delay on MUNI motor coach and trolley coach routes can be attributed to slow loading and unloading through narrow, single-flow doors. Although the new light rail vehicles (LRVs) will have double-width doors allowing easy and fast loading and unloading, MUNI's fleet of motor coaches and trolley coaches do not enjoy these modern transit conveniences. MUNI equipment specifications should consider local traffic characteristics, topography, passenger loading characteristics, and frequency of stops. The need for appropriate specifications, such as double-width doors, on all of MUNI's equipment is essential if MUNI is to provide fast, reliable, and convenient service to its passengers.

One way in which loading time could be reduced is the implementation of a pre-paid fare system. Such a system would encourage passengers to purchase single and multi-ride tickets and monthly passes before boarding the transit vehicle. This modern fare collection system would not only increase the overall vehicle operating speed but

would also reduce the cost incurred in the collection of fares. For further details on the pre-paid fare system see Chapter V, Section G.

3. Low Transit Vehicle Speeds and Fare Collection

The operating speed of a transit vehicle is a function of terrain, street characteristics, traffic controls, traffic congestion, boarding passengers, and bus stop spacing. The faster a vehicle operates, the shorter the travel time, the more attractive it becomes to the public, and the more cost effective it is for MUNI. MUNI currently has an average speed of 9.07 miles per hour. If a one-mile per hour increase in speed could be effected, approximately ten per cent fewer vehicles would be needed to provide the same headways, or ten per cent more service could be provided for roughly the same cost.

4. Failure to Provide Scheduled Service

"Missed service" is scheduled vehicle trips which could not be provided due to (1) a shortage of operators or (2) unavailability of equipment due to mechanical causes. MUNI, which keeps a daily log, generally has a poor record of missed trips. During a one-week period, March 1-7, 1975, 363 trips were missed due to shortage of operators. There were 609 missed trips during the same week resulting from the unavailability of equipment due to mechanical problems.

When trips are missed, passengers accumulate at transit stops. Subsequent vehicles require more time for loading and unloading the additional passengers. This creates service gaps of more than two headways, resulting in overcrowding of vehicles, declining operator morale, decreasing revenue, and an overall bad performance image for the Railway.

Breakdowns and delays attributable to mechanical causes, known as "road calls," also provide a measure of service reliability. Analysis of MUNI's records for fiscal year 1977-78 reveals that trolley coaches experienced a road call due to maintenance defects every 1,033 miles; diesel buses 820; the streetcars every 1,116 miles; and the cable cars every 385 miles. Other transit systems have road calls ranging from 6,000 to 9,000 miles, with a few systems achieving 12,000 to 18,000 miles per road call. Poor reliability not only inconveniences riders, but leads to increased overtime payments and operating costs.

[MUNI's mechanical and maintenance deficiencies are the subject of a separate study by the consultant, Urban Transportation Development Corporation (UTDC). They will not be addressed further in this 5-year plan inasmuch as they involve problems with performance, not design.]

5. Poor Schedule Adherence

Schedule adherence is not only a problem during peak periods, but is also a problem during the midday and on weekends. The principal causal factors seem to be uneven dispatching of vehicles along a given route due to missed trips, vehicle breakdowns, and traffic factors. Among the worst of these traffic factors are angle parking delays, obstruction of traffic lanes by double parking and loading vehicles, delays by left and right-turning vehicles at intersections with heavy pedestrian activity, and general congestion. On MUNI lines with short headways, even a short delay can disrupt the uniform headway of vehicles and produce "bunched" service.

To reconcile vehicle bunching problems, MUNI street inspectors frequently turn back vehicles. Records of these "switchbacks" reveal that the 5, 12, 14, 30 and N lines consistently had the most switchbacks. The streets on which the above lines operate should be prime candidates for transit preferential measures to reduce or eliminate the schedule adherence problems resulting from traffic congestion.

6. Inadequate Operating Divisions and Storage Facilities

MUNI streetcars are stored and maintained at the Geneva barn. All cable cars are similarly operated from one enclosed facility. Trolley coaches are stored at two facilities; Presidio and Potrero. Motor coaches are stored at Kirkland and Woods, with some overflow vehicles kept at the trolley coach facilities.

The current situation not only limits MUNI operational flexibility, but is more difficult to manage efficiently. Severe overcrowding compounds the problem as well; although Kirkland was designed for a storage and service capacity of approximately 175 buses, it has, at times, been assigned 280 buses. The inadequate size of the site requires that buses be parked overnight on the adjacent city streets, and 36 buses which are assigned to the Kirkland Division are stored overnight at the Presidio car barn.

In addition, all of MUNI's vehicles, with the exception of those at Woods, must be parked in less accessible lanes rather than in the

more desirable "herringbone" pattern because of inadequate space. Overcrowding affects more than storage, too; the Kirkland Division has inadequate maintenance and repair facilities to handle the coaches assigned to that division.

The overburdening of the maintenance facilities is only part of the problem. The very location of the operating divisions and their geographical distribution throughout the City are also important in evaluating system efficiency. They are discussed in Section 7, below.

7. Excessive Pull-in and Pull-out Time and Costs

The term, "deadheading," as used in the transit industry, refers to trips made to and from an operating division at either the start or the end of operating revenue service. This generally means that no passengers are carried; consequently, deadheading is a non-productive effort. (In MUNI's case, only diesel coaches deadhead; electric trolleys and streetcars carry passengers on their trips to and from the garages.) In the interest of efficient operation, the amount of deadheading should be kept to the lowest possible; this is usually accomplished by strategically locating operating divisions whenever possible.

As one can see from Figure V-1, the distribution of MUNI operating divisions is not ideal since no facilities are located in the western part of the City. Thus, some expensive deadheading exists when a few diesel coach lines deadhead from yards near Fisherman's Wharf or eastern Potrero Hill to runs starting or ending near Ocean Beach. One possible solution could be the establishment of another operating division which would allow for more efficient diesel coach operations. As part of the 5-Year Plan update, an examination will be made of the possible expansion of Presidio Division (See Chapter VI, Section D.).

8. Complex Management System

MUNI has a number of management and operational procedures and policies which are inefficient and non-responsive to current transit service demands. Only two agencies are vested the authority to abandon routes and to approve service additions; the PUC approves service additions while the Board of Supervisors is solely empowered to grant the abandonment of service. The authority and ability of management have been severely eroded over the years. The Railway is now at the point where it cannot introduce simple schedule changes without public hearings, a vote of the Public Utilities Commission, and concurrence of the Board of Supervisors.

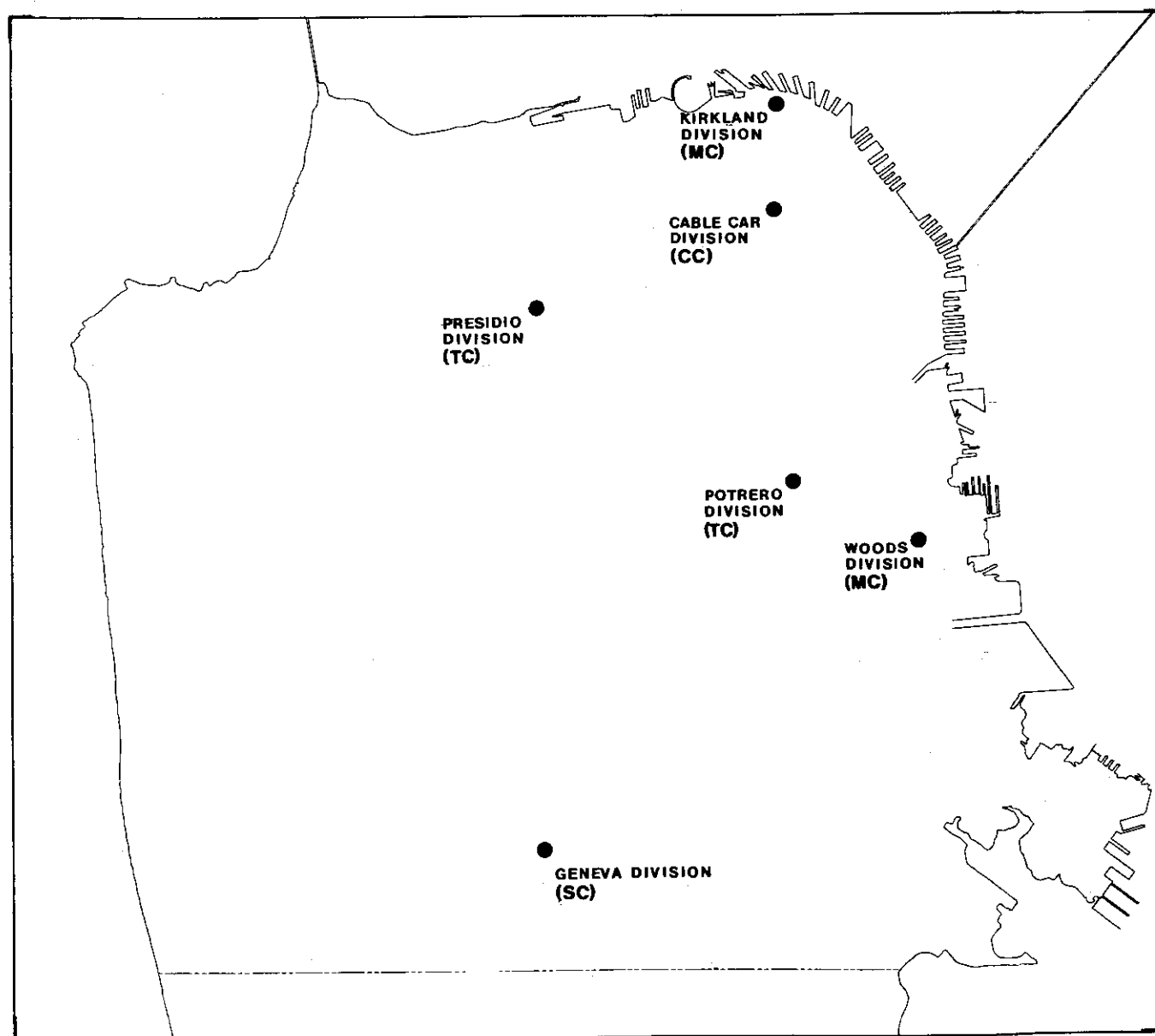
Attempts to introduce improvements are constantly frustrated by the complex administrative web in which the Railway is entangled. An important management reorganization is under way, but that reorganization will only establish clear authority, responsibility, and streamlined administration within the limits

Figure V-1

**MUNI
OPERATING DIVISIONS
& SERVICE FACILITIES**

LEGEND

CABLE CAR	(CC)
STREET CAR	(SC)
MOTOR COACH	(MC)
TROLLEY COACH	(TC)



prescribed by external authority. While it may be argued that tight control over MUNI/PUC prerogatives is necessary to prevent recurrence of former abuses, the clear and present need today is for major change in the way transit service is being provided. A structure ensuring administrative responsiveness through political processes should be relied upon to prevent abuse, while permitting management to carry out essential reform.

9. Inadequate Public Information and Marketing Programs

A constant complaint of MUNI patrons is the lack of transit shelters and benches at transit stops. MUNI's 6000 transit stops have a limited number of transit shelters and, where shelters exist, they are poorly maintained and do not display service hours, headways or the numbers of the MUNI line which serves that particular transit stop. In addition, where there are no shelters, the transit stops are poorly identified.

Marketing and advertising have been sadly neglected at the Municipal Railway for several years. Although timetables are available for almost all MUNI's routes, the riding public is virtually unaware of their existence. The timetables, for the most part, can only be obtained at MUNI operating divisions. The same is true for MUNI information maps and other MUNI publications; new and improved service is poorly publicized outside of the Railway. One of the reasons for the marketing and public information inadequacies is that the Railway is budgeted far less for marketing than other Bay Area transit operations, despite consistent requests for adequate funds.

10. Inadequate Service for the Disabled

Discussion with various public service agencies and the analysis of the POM on-board survey reveal a number of specific areas where MUNI service might be improved in order to more adequately serve disabled people:

- Transit vehicles should be accessible to wheelchair-bound persons.
- Transit vehicles should pull into the curb. Elderly and disabled persons have a difficult time stepping up into transit vehicles stopped in the street.
- The height of the first step into the transit vehicle is critical, especially if the vehicle does not pull into the curb. Many people suggested a lower first step or the possibility of lowering the steps to compensate for the curb height.

- Increased security should be provided both on the vehicle and at the major transit stops.
- Braille markings or uniform transit stop markings (textured curb, poles and signs) should be employed to aid the blind in locating transit stops.
- Identifying markers can be held by disabled people waiting for transit vehicles. This would alert the driver to the presence of a disabled person requiring special treatment.
- Current regulations assisting disabled and elderly riders should be enforced. This includes reservation of front seats and the enforcement of no parking in transit stop zones.
- To assist disabled and elderly patrons, the drivers should be encouraged to call out route numbers and destination stops, to provide more time to board, and to accelerate/decelerate safely.

B. EVALUATION OF ALTERNATIVES

The POM Report discusses two network routing strategies: the "grid" and the "direct linkage". In its idealized form, grid systems are composed of two sets of lines; namely, those operating in an east/west pattern, and those that operate north/south. In actual practice, however, topography will frequently require some modifications to the grid as, for example, in the Twin Peaks area. Despite modification, a grid route network will generally allow travel over the most direct path, with a maximum of one transfer between any two points.

The majority of transit systems in the United States are radial systems which link residential areas with Downtown. With this network, travel to anywhere other than Downtown is often difficult. Transfers are frequently inconvenient (unless one is Downtown, of course, where most of the routes converge), and it sometimes requires as many as two or three transfers to go from one neighborhood to another.

Using either or both the grid and the direct linkage routing strategies, several actions can be taken to improve the efficiency and usefulness of service. These actions can include: the elimination of duplicate service; minimizing of turns, starts, and stops; redistribution of service to where it is most needed; and increasing travel speed. For example, congested streets should be avoided, and through-routing can be used Downtown to reduce the number of terminal turnarounds.

1. The Three POM Test Networks

The POM Study followed a two-step process, with general service alternatives evaluated first. From these, three final networks were selected for further testing. The grid service approach was used because it provided the best potential for improving crosstown service. Due to financial constraints, each alternative was designed to have the same number of vehicles and the same operating cost as existed at the time of the study. (This includes the 50 runs which were cut in 1976.) However, with each alternative, MUNI Metro was assumed fully operational. The final three alternatives included: (1) an alternative which represented minor improvements to the existing service, (2) an alternative which represented a grid modification of existing trunk service, and (3) an alternative which represented a grid modification of existing trunk and neighborhood feeder service. It was not expected that one of the networks would entirely meet San Francisco's travel demands. Rather, the best parts of each test network could be synthesized with elements of MUNI's current service network to produce a single recommended route structure.

A brief description of each network alternative follows, along with maps of each. For more complete information, please refer to the POM Report, pages 149-161.

Test Network I: (Figure V-2, showing only additions to and deletions from the existing network)

35 routes are left unchanged, 20 routes are slightly modified with respect to turnarounds or terminus changes, and 22 routes have new service concepts applied. Two new routes are created to cover the Safeway Store in the Bay View and the residential development along John Muir Drive.

Test Network II: (Figure V-3)

This is a grid restructuring of MUNI's principal routes, which minimizes changes to neighborhood routes. In general, primary routes are straightened and simplified where possible by eliminating unnecessary turns and jogs. Radial and crosstown routes are better spaced by combining routes, moving routes, and creating new routes.

The 1-CALIFORNIA is rerouted via Sacramento/Clay, with increased service. The 10-MONTEREY is made an east-west crosstown route to the Zoo. Line 28 is rerouted via Doyle Drive instead of Lincoln Boulevard (through the Presidio), and the 32-EMBARCADERO is extended to Fillmore Street. A shuttle route was added along Evans to Hunters Point, and new routes were added along 28th Avenue in the Sunset and in Midtown Terrace. The J-CHURCH is extended to San Francisco State, and the M-OCEAN VIEW is cut back there.

FIGURE V-2
TEST NETWORK 1

LEGEND
ADDED ROUTE
DELETED ROUTE

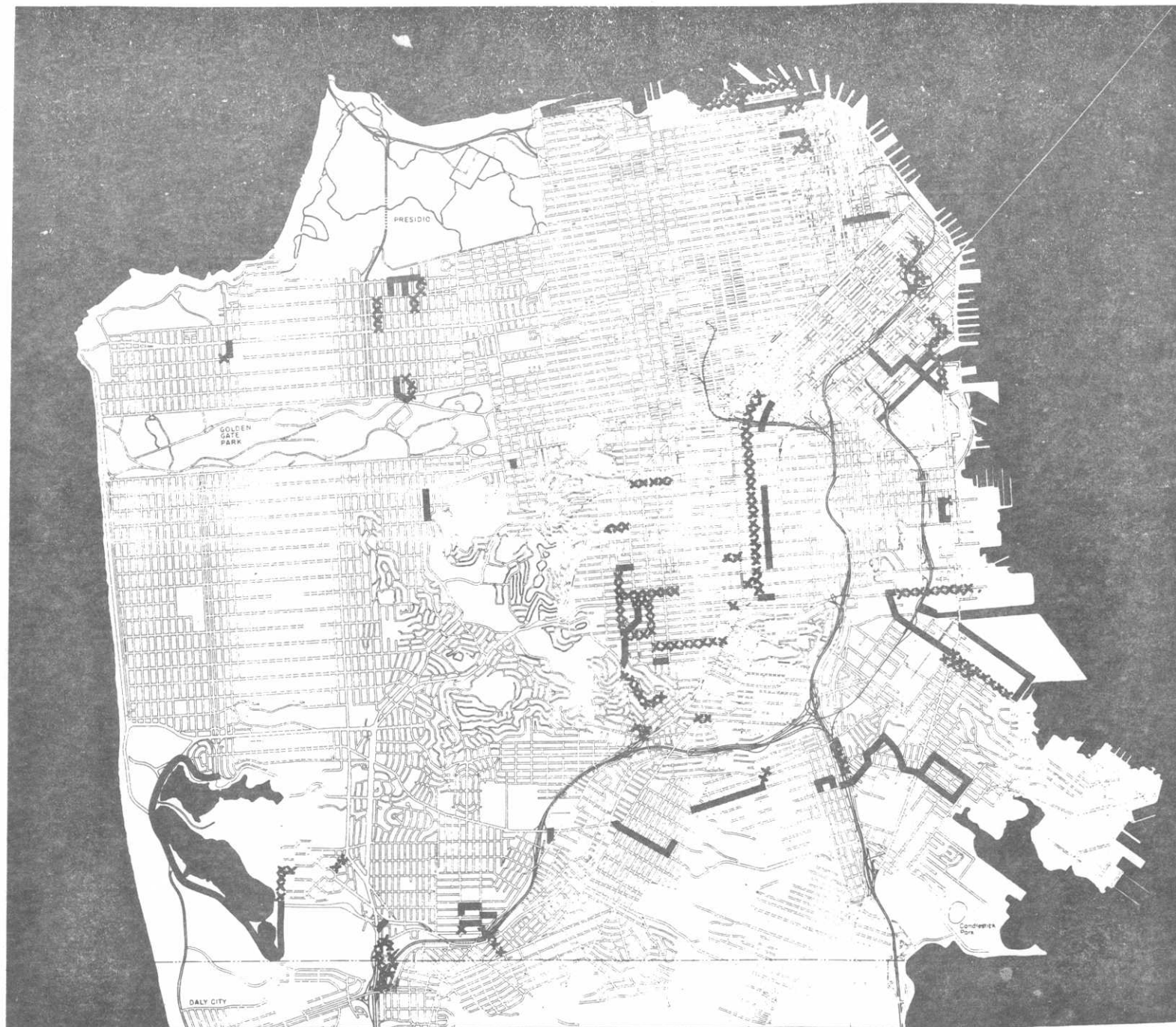


FIGURE V-3
TEST NETWORK 2
MIDDAY ROUTES

LEGEND

RADIAL ROUTES

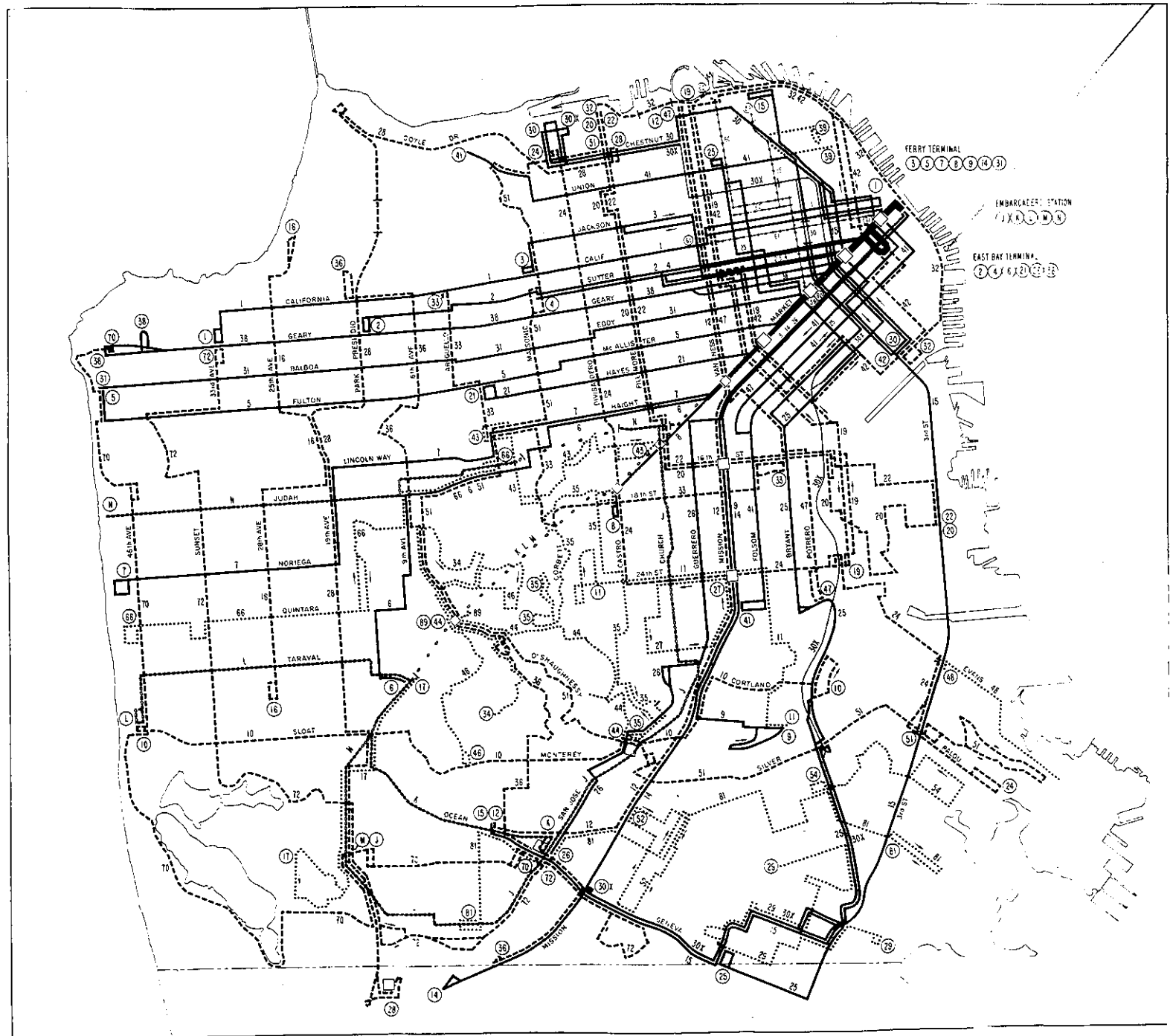
SINGLE ROUTE
EXPRESS SECTION OF ROUTE
3 OR 4 ROUTES ON STREET
5 OR MORE ROUTES ON STREET

OTHER ROUTES

CROSSTOWN
FEEDER
MUNI METRO
CABLE CAR

TERMINALS & STATIONS

ROUTE TERMINUS
MUNI METRO STATION
BART STATION
(Market Street BART Stations
are also MUNI METRO Stations)



Test Network III: (Figure V-4)

Like Network II, this is a grid restructuring of the routes; but Network III maximizes efficiency by through-routing Downtown and by eliminating duplicate service on streets. Infrequent crosstown service is consolidated into several frequently served crosstown lines. The 47-POTRERO is straightened to provide one-transfer service to S. F. General Hospital from almost all parts of the City. The new 42-VAN NESS becomes a circumferential central city route linking the Southern Pacific Depot, BART, AC Transit (at the Transbay Terminal), and MUNI Metro. The 12-OCEAN is a major crosstown covering Van Ness Avenue.

Evaluation

The evaluation criteria consisted of transit coverage, operating cost, travel times, directness of service, number of transfers, system and route patronage, regional access, and special capital needs.

For each test network, the differences between automobile travel time and transit travel time were prepared. This time difference greatly influences patronage, so patronage estimates for each alternative can then be developed. Since the true measure of a transit system is its acceptance and use, patronage analysis serves as a summary of the effectiveness of each plan. A table summarizing patronage analysis follows:

Table V-1
SUMMARY OF PATRONAGE ANALYSIS
(TYPICAL WEEKDAY)

	PROJECTED PATRONAGE	PER CENT INCREASE
EXISTING SERVICE	490,000	-
SCHEDULED SERVICE	504,000	2.8
ALTERNATIVE I	513,000	4.7
ALTERNATIVE II	526,000	7.3
ALTERNATIVE III	537,000	9.6

Regional access was assessed by comparing the per cent of midday routes that intersect with regional carriers. In general, Network III provided the best overall access.

Although all three networks have the same overall vehicle requirements as the existing system, they differ in the proportion of electric trolley coaches and motor coaches. Networks II and III increase the number of electric trolley coaches needed by 32 and 22 per cent, respectively, thus implying increased trolley coach and electrification capital needs.

FIGURE V-4
TEST NETWORK 3
MIDDAY ROUTES

LEGEND

RADIAL ROUTES

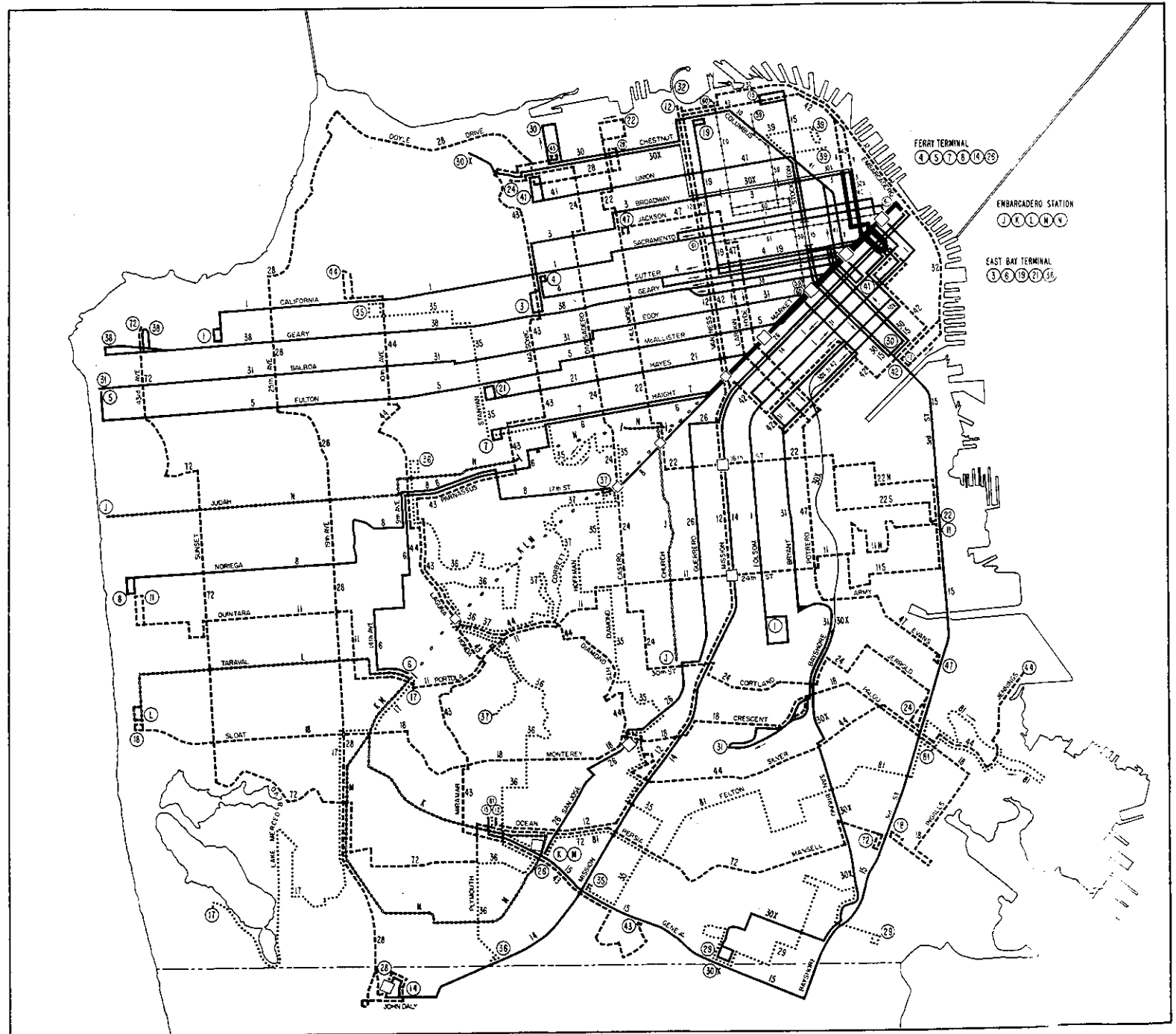
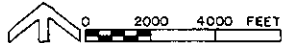
SINGLE ROUTE
EXPRESS SECTION OF ROUTE
3 OR 4 ROUTES ON STREET
5 OR MORE ROUTES ON STREET

OTHER ROUTES

CROSSTOWN
FEEDER
MUNI METRO
CABLE CAR

TERMINALS & STATIONS

ROUTE TERMINUS
MUNI METRO STATION
BART STATION
(Market Street BART Stations
are also MUNI METRO Stations)



To assess service frequencies, the average midday headway was compared for each network:

Table V-2
AVERAGE MIDDAY HEADWAY

	MINUTES
EXISTING	11.0
NETWORK I	10.5
NETWORK II	8.2
NETWORK III	7.2

2. The POM Recommended Plan (Figures V-5 and V-6)

These recommendations incorporate the grid structure, through-routing, and the philosophy of feeding high capacity exclusive right-of-way lines such as BART and MUNI Metro. The number of routes and their variations were reduced to make MUNI easier to understand and use. If a specific benefit could not be achieved, routes were left unchanged so as not to disrupt existing usage. The greater efficiency of these recommendations would allow for 25 additional trips. Vehicle requirements are the same as existing service, but more trolley coaches would be necessary to accomplish the recommended electrifications.

No midday or peak headway would exceed 15 minutes (except the 39-COIT), with crosstown and radial lines operating on no more than ten-minute headways. All owl routes are recommended to have maximum 30-minute headways. (See Figure V-7). Each of the City's six transportation corridors is provided a fast midday service (30X-FREEWAY EXPRESS, 38L-GEARY LIMITED, MUNI Metro, etc.), as portrayed in Figure V-8.

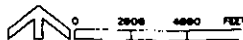
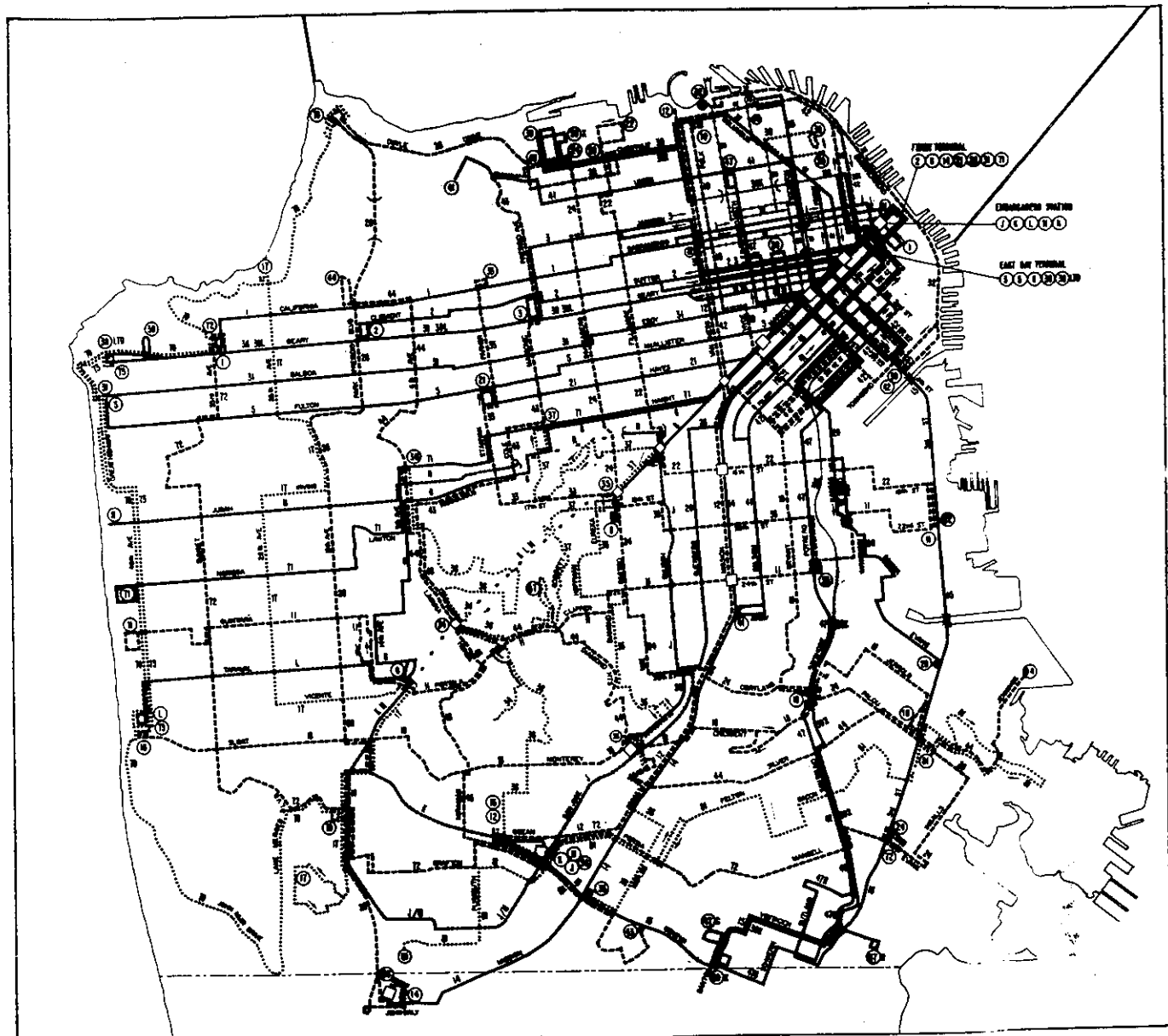
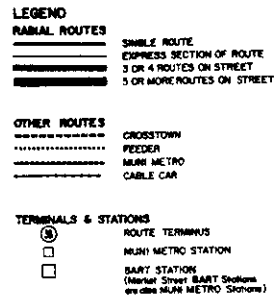
Patronage would be expected to increase by 53,500 daily passengers (approximately 11 per cent). Average trip travel time would be reduced by 13 per cent for a typical trip.

The POM recommended route network was designed to reconcile the principal network deficiencies identified in the analysis of the existing system: (See previous Section A in Chapter V.)

1. The Third Street corridor south of 16th Street would be greatly improved with five major crosstowns (11, 18, 24, 44, and 72); the new radial 20; and a simplified 81 and 15.

(Text continues on p.65.)

Figure V-5
POM RECOMMENDED PLAN
MIDDAY ROUTES



AN ENLARGED VERSION OF THIS MAP APPEARS AT END OF REPORT

FIGURE V-6

POM

RECOMMENDED PLAN
MIDDAY ROUTES

DOWNTOWN ENLARGEMENT

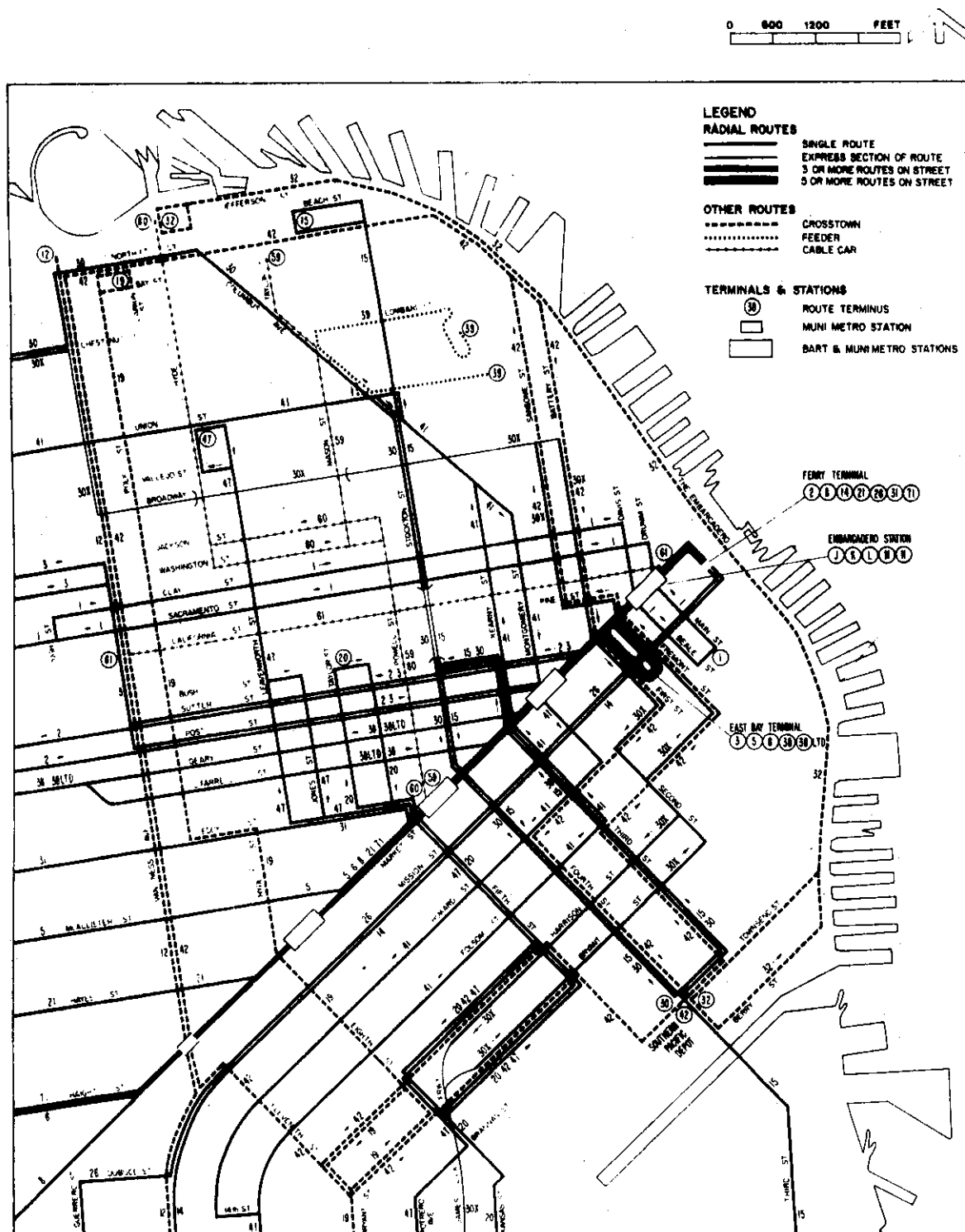


FIGURE V-7
POM
RECOMMENDED
OWL SERVICE

LEGEND

— ALL ROUTES HAVE 30MIN.
HEADWAYS

MAJOR ALL NIGHT GENERATORS

H - HOSPITAL

MUNI - MUNI GARAGE

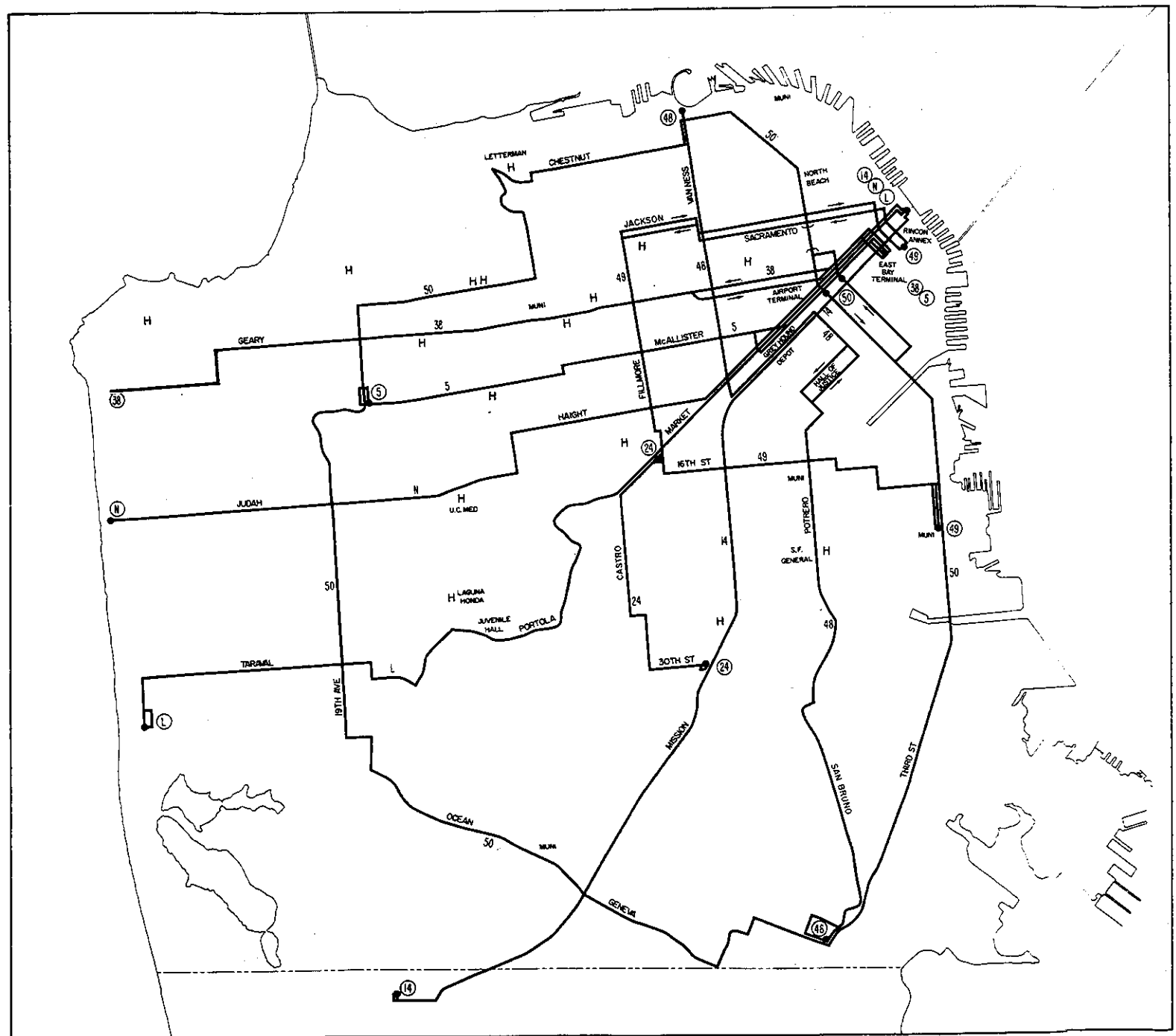


FIGURE V-8
POM
RECOMMENDED
EXPRESS AND PEAK HOUR
SERVICE

LEGEND

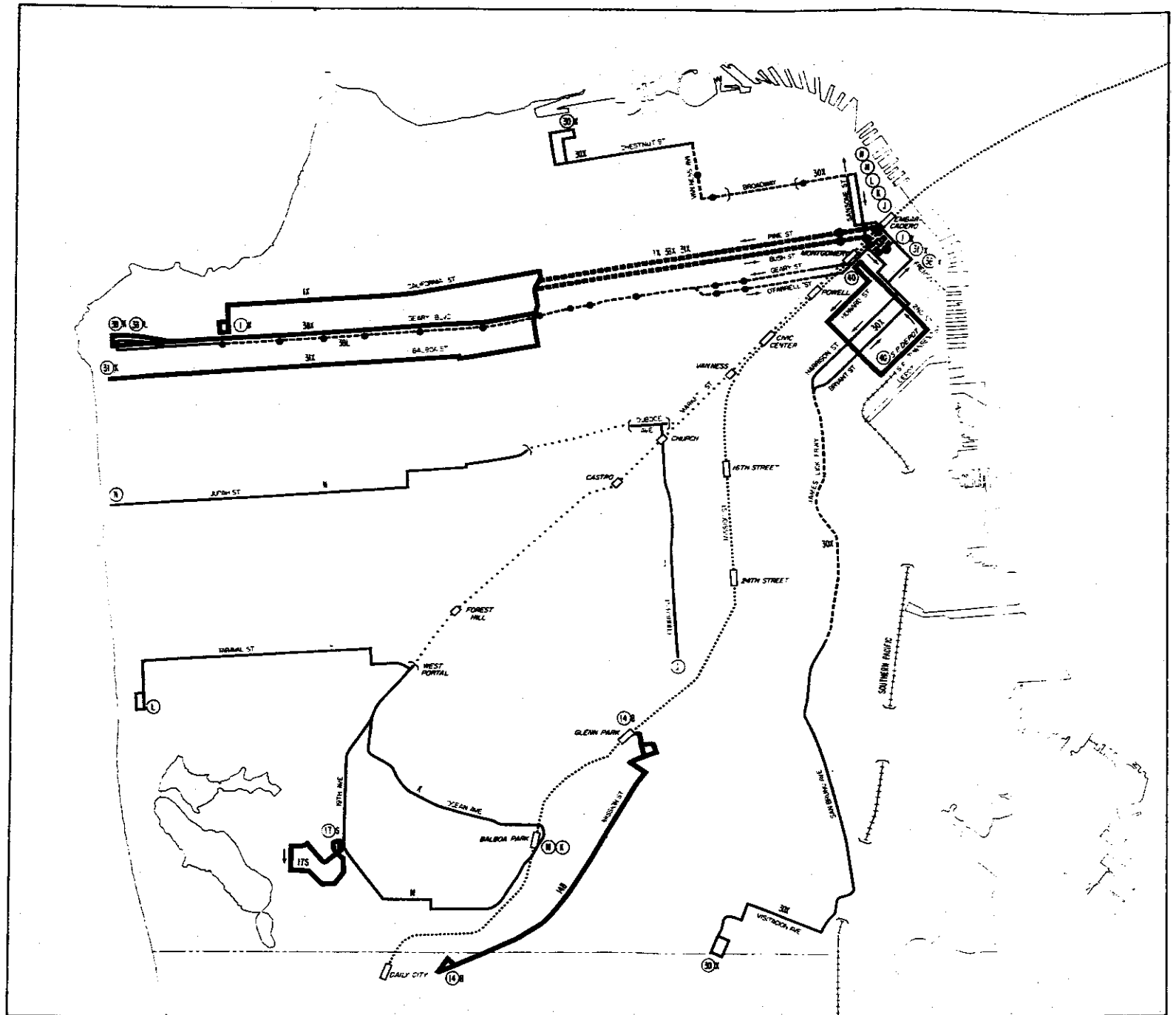
PEAK HOUR
 LOCAL
 EXPRESS

MIDDAY
 LOCAL
 EXPRESS

● EXPRESS STOPS

□ BART STATION
 □ MUNI METRO STATION

STATION NAME



2. Duplication of lines would be corrected with several relocations or consolidations. The 26-VALENCIA would be moved to Guerrero Street, the 41-UNION to Folsom Street, and the 1-CALIFORNIA to Sacramento/Clay.
3. Crosstown travel would be greatly improved by adding crosstown routes that operate at frequent headways.
4. Downtown routes would be reorganized and through-routed to improve service, with a new two-directional 42-line circumferential "loop" added to improve circulation.
5. This same 42-line would also directly serve the new development of the Northern Waterfront.
6. Short routes such as the 13-ELLSWORTH, 29-VISITACION, and 91-STONESTOWN would be integrated with strong routes having improved headways and offering transfer opportunities to many other lines.
7. Turns would be eliminated via through-routing Downtown and straightening lines (eg., 38-GEARY, 5-FULTON).
8. All but one of the current system's one-way loops would be replaced with frequent two-directional service.
9. Routes would be modified to provide direct transfer service to the five MUNI Metro lines.
10. A new crosstown owl service is recommended along Nineteenth and Ocean Avenues.
11. Three owl routes operating on 30-minute headways are recommended to replace the four existing 60-minute headway lines.

The POM recommendations would place virtually all points in the City within one transfer of BART, Golden Gate Transit, AC Transit, SamTrans/Greyhound, and Southern Pacific. The Report also recommends the J-CHURCH extension to the Balboa Park BART station.

3 MUNI 5-Year Plan Outreach Program

The POM recommendations were the subject of extensive public outreach and discussion. A slide show presentation was developed, and sectional enlargements of the proposed routes were done by district. Beginning August 18, 1977 and continuing through April of 1978, over 70 presentations were made before community groups, merchants associations, and labor groups. (See Figures V-9, V-10, and V-11.)

FIGURE V-9
5-YEAR PLAN OUTREACH PROGRAM

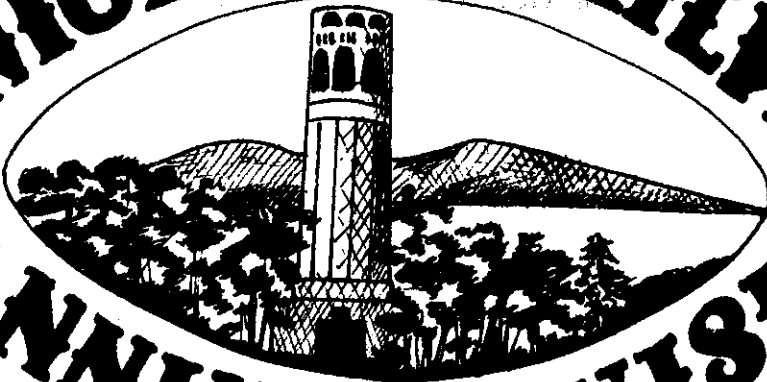
<u>DATE</u>	<u>GROUP/ORGANIZATION</u>	<u>DATE</u>	<u>GROUP/ORGANIZATION</u>
August 18, 1977	SPUR	Feb. 9, 1978	SPECIAL NOE VALLEY MEETING (James Lick PTA, etc. St. Phillips Church)
August 22	SF MUNI COALITION	Feb. 9	GREATER GEARY BLVD. MERCHANTS AND PROPERTY OWNERS
August 23	CAPTRANS	Feb. 11	CRESTLAKE PROPERTY OWNERS ASSOCIATION
Sept. 28	DUBOCE TRIANGLE NEIGHBORHOOD ASSOCIATION	Feb. 23	TWU-LOCAL 250A OFFICERS
Oct. 7	BAY AREA ELECTRIC RY. ASSOCIATION	Feb. 23	BLACK LEADERSHIP FORUM
Oct. 20	FRIENDS OF NOE VALLEY	Mar. 1	MATEO-LAIDLEY-BEMIS BLOCK CLUB (FAIRMOUNT)
Oct. 25	SAN JOSE AVE. BLOCK CLUB	Mar. 2	WESTERN ADDITION NEIGHBORHOOD ASSOCIATION
Nov. 1	ST. MARY'S PARK IMPROVEMENT CLUB	Mar. 8	POTRERO HILL NEIGHBORHOOD HOUSE
Nov. 9	FOREST KNOLLS NEIGHBORHOOD ORGANIZATION	Mar. 8	CLEMENT STREET MERCHANTS ASSOCIATION (Follow-up Mtg.)
Nov. 15	COALITION OF SF NEIGHBORHOODS	Mar. 9	DISTRICT HEALTH CENTER #1
Nov. 16	EUREKA VALLEY PROMOTION ASSOCIATION	March 15	CATHOLIC COMMISSION ON THE AGING
Nov. 18	AIP-NORTHERN CALIFORNIA CHAPTER (Regional Version)	Mar. 15	SELF-HELP FOR THE ELDERLY
Nov. 21	GLEN PARK ASSOCIATION	March 29	NOB HILL ASSOCIATION
Nov. 28	CLEMENT ST. MERCHANTS ASSOCIATION	Mar. 22	GOLDEN GATE VALLEY NEIGHBORHOOD ASSOCIATION
Nov. 28	WEST OF TWIN PEAKS CENTRAL COUNCIL	Mar. 29	ST. FRANCIS HOMES ASSOCIATION
Dec. 5	BALBOA TERRACE HOMES ASSOCIATIONS	Mar. 30	DIAMOND HEIGHTS COMMUNITY ASSOCIATION
Dec. 6	BAYVIEW COORDINATING COUNCIL	Apr. 4	SF STATE
Dec. 8	JUDAH STREET MERCHANTS AND PROPERTY OWNERS ASSOCIATION	Apr. 4	TWU DIVISION MEETING: POTRERO DIVISION
Dec. 8	ST. FRANCIS LUTHERAN CHURCH (CREATIVE RETIREMENT)	Apr. 5	TWU DIVISION MEETING: WOODS DIVISION
Dec. 13	MARKET ST. DEVELOPMENT PROJECT	Apr. 6	TWU DIVISION MEETING: GENEVA DIVISION
Dec. 14	EAST & WEST CASTRO ST. IMPROVEMENT CLUB	Apr. 10	CHINATOWN TRIP (ENGLISH-CANTONESE BILINGUAL)
Jan. 9, 1978	DIST. 1 COMMUNITY CONGRESS	Apr. 11	BAYVIEW-HUNTERS POINT COORDINATING COUNCIL
Jan. 10	SHARP (SUNSET HEIGHTS ASSOCIATION OF RESPONSIBLE PEOPLE)	Apr. 11	TWU DIVISION MEETING: WASHINGTON-MASON DIVISION
Jan. 12	HAIGHT-ASHBURY NEIGHBORHOOD COUNCIL	Apr. 12	TWU DIVISION MEETING: KIRKLAND DIVISION
Jan. 13	PARKSIDE DISTRICT IMPROVEMENT CLUB	Apr. 13	TWU DIVISION MEETING: PRESIDIO DIVISION
Jan. 14	SPEAK WORKSHOP (SUNSET-PARKSIDE EDUCATION AND ACTION COMMITTEE)	Apr. 15	SF MUNI COALITION
Jan. 15	STONESTOWN MERCHANTS ASSOCIATION	Apr. 19	AIP-NORTHERN CALIFORNIA CHAPTER (Regional Version)
Jan. 17	BOARD OF SUPERVISORS	Apr. 19	VISITACION VALLEY COMMUNITY CENTER (ALL PEOPLE'S COALITION)
Jan. 17	CHILDCARE SWITCHBOARD	May 9	MARINA CIVIC IMPROVEMENT & PROPERTY OWNERS
Jan. 18	LOWER POTRERO HILL RESIDENT NEIGHBORHOOD ASSOCIATION	May 18	NOB HILL NEIGHBORS
Jan. 18	RICHMOND DISTRICT COUNCIL	May 19	NATIONAL ASSOCIATION OF PLANNERS (Nor. Cal. region)
Jan. 19	MIRALOMA PARK IMPROVEMENT CLUB	May 24	ULLOA SENIORS
Jan. 20	COMMISSION OF THE AGING	June 5	ST. THERESA'S SENIORS
Jan. 24	BANK OF AMERICA EMPLOYEES	June 7	IRVING STREET MERCHANTS
Jan. 25	GREATER WEST PORTAL NEIGHBORHOOD ASSOCIATION AND EDGEHILL NEIGHBORHOOD ASSOCIATION	Nov. 9	NOB HILL NEIGHBORS
Jan. 26	BLACK LEADERSHIP FORUM		
Jan. 26	LAKE MERCED NEIGHBORHOOD & LAKE MERCED HILL ASSOCIATION		
Jan. 27	INSTITUTIONAL TRANSPORTATION GROUP		
Jan. 29	RICHMOND RAP CAC		
Jan. 31	TELEGRAPH HILL (SPECIAL MEETING, COORDINATING WITH TELEGRAPH HILL DWELLERS)		
Jan. 31	NOE VALLEY MINISTRY		
Feb. 1	PACIFIC HEIGHTS NEIGHBORHOOD COUNCIL		
Feb. 2	JEWISH COMMUNITY CENTER (MONTEFIORE)		
Feb. 5	STANYAN-FULTON NEIGHBORHOOD ASSOCIATION		
Feb. 5	ST. THOMAS CHURCH (BLESSED SACRAMENT SODALITY)		
Feb. 6	FOREST HILL ASSOCIATION		
Feb. 9	MIDTOWN TERRACE HOME OWNERS ASSOCIATION		

Figure V-10

DISTRICT WORKSHOP CALENDAR

<u>DATE</u>	<u>DISTRICT/NEIGHBORHOODS</u>
February 21, 1978	4 -- Western Addition, Civic Center
February 23, 1978	3 -- North Beach, Russian, Nob and Telegraph Hills, Chinatown
February 28, 1978	1 -- Richmond
March 2, 1978	5 -- Haight-Ashbury, Buena Vista, Eureka and Noe Valleys
March 7, 1978	8 -- Excelsior, Portola, Alemany, Visitation Valley, Crocker-Amazon
March 9, 1978	9 -- Glen Park, Bernal Heights, Mt. Davidson, Balboa Park, Ingleside
March 14, 1978	6 -- Mission
March 16, 1978	7 -- Potrero Hill, Bayview, Hunter's Point, South-of-Market
March 21, 1978	10 -- West of Twin Peaks, Southwest
March 23, 1978	2 -- Marina, Pacific Heights, Laurel Village
March 30, 1978	11 -- Sunset

MUNICIPAL RAILWAY PLANNING DIVISION



PRESENTS

FUNDAMENTALS OF SUCCESSFUL TRANSIT a slide presentation & discussion of proposed new muni routes...

ON TUESDAY, JANUARY 31 AT 8:00 PM IN THE
FRANCISCO JR. HIGH AUDITORIUM.

Telegraph Hill and North Beach residents are
invited. For more information call 558-5284.

In February and March of 1978, 11 public workshops were held, one in each of the 11 supervisorial districts. Two meetings offered translations in Spanish and Cantonese. Original outreach had been accomplished by letter to representatives of organizations (Figure V-12), but the district workshops were further publicized with 300,000 telephone bill inserts (Figure V-13), newspaper advertisements and articles (Figure V-14), and posters on all MUNI vehicles (Figure V-15). In all, well over 3,000 persons attended one meeting or another. For "their tremendous effort in the first MUNI Railway Outreach program," the Planning Division received a Certificate of Honor from the San Francisco Board of Supervisors. (See Figure V-16)

At each presentation, minutes were kept of public comments. Written questionnaires were completed at the district workshops (See Figures V-17 and V-18). Everyone who signed in at any meeting or contacted the Municipal Railway by letter or telephone was placed on a mailing list. Summaries of this 5-Year Plan will go to the entire list, with full copies available to organizations on request.

4. Staff Analysis

MUNI in-house review was concentrated in the Planning, Transportation, and Scheduling Departments. Line by line, the routes were reviewed in terms of equipment needs, geographical limitations, operational demands, and public comment. Weekly joint meetings of the Planning and Scheduling Departments are still continuing.

As a result of this extensive staff analysis, the POM recommendations were revised to become MUNI's 5-Year Plan. Basically, the 5-Year Plan follows the same principles as the POM Report -- the grid network, through-routing, limited turns, increased electrification. Revisions were made to accommodate community needs as expressed at outreach meetings or to ameliorate operational difficulties. Because of their fundamental similarities, it is expected that the 5-Year Plan will produce the same benefits as the POM recommendations: shorter travel times, improved regional access, and increased patronage. At this time, a Latent Demand Survey is being developed to assess the level of potential and actual patronage increases.

The route changes called for in the 5-Year Plan are outlined in the next section of this report, along with a statement describing the rationale behind the changes. Staff analysis of owl service will continue over the next year and will be included in the first annual update; no recommendations are made at this time.



Figure V-12

5-YEAR PLAN ORIGINAL OUTREACH LETTER TO ORGANIZATIONS
SAN FRANCISCO MUNICIPAL RAILWAY • 949 PRESIDIO AVENUE, SAN FRANCISCO, CALIF. 94115

November 4, 1977

Golden Gate Heights Association
Mr. Stephen Halpern, President
1744 - 14th Avenue
San Francisco, Ca. 94122

Dear Mr. Halpern:

I am writing about a matter which we know to be of great concern to everyone in San Francisco - the proposal to reorganize the Municipal Railway's transit route system so that it can better serve modern transportation needs.

You may have read in the press recently that the Municipal Railway's Planning, Operations and Marketing, or POM, Study has been completed. The consultants who produced this study, Wilbur Smith & Associates, have recommended a major re-routing plan for Muni vehicles; this proposed plan would affect every neighborhood in the city - including yours. Since the proposals are of such importance to San Franciscans, we wish to make certain that everyone in the city has a chance to see what the recommendations are and to discuss them with members of the Municipal Railway staff. The comments and suggestions of San Francisco residents and MUNI riders will play a crucial role in refining the consultants' recommendations.

The Municipal Railway Planning Division will, between now and the end of January, 1978, be conducting an extensive public outreach program. This program will involve meetings with neighborhood, merchants' and civic organizations all over the city at which the planning staff will make a presentation and discuss the route changes proposed for specific areas, as well as discussing a number of other related issues facing public transit in San Francisco. We would very much like to meet with your organization at your convenience, as your concerns should and must be taken into account in redesigning the City's transit services.

In this regard we would be most pleased if you would telephone our Planning Division so that a date might be established for such a meeting. You may call Tom Matoff, Peter Straus, Michael Cronbach or Luther Freeman of our staff at 558-5284 or 558-5441 to make the arrangements.

My staff and I look forward to the opportunity of working with you.

Yours very truly,

A handwritten signature in black ink, reading "Curtis E. Green". The signature is written in a cursive, flowing style.

Curtis E. Green
General Manager

PUBLIC UTILITIES COMMISSION CITY AND COUNTY OF SAN FRANCISCO

Figure V-13

5-YEAR PLAN WORKSHOPS: TELEPHONE BILL INSERT



SAN FRANCISCO MUNICIPAL RAILWAY • 949 PRESIDIO AVENUE • SAN FRANCISCO, CALIF. 95114

DISTRICT MEETING SCHEDULE

TIME: 7:00 PM SHARP

DATE	SUPERVISORIAL DISTRICT	LOCATION
February 28	1	PRESIDIO JR. HIGH SCHOOL
March 23	2	MARINA JR. HIGH SCHOOL
February 23	3	FRANCISCO JR. HIGH SCHOOL
February 21	4	FRANKLIN JR. HIGH SCHOOL
March 2	5	JAMES LICK JR. HIGH SCHOOL
March 14	6	HAWTHORNE SCHOOL
March 16	7	POTRERO HILL JR. HIGH SCHOOL
March 7	8	WILSON HIGH SCHOOL
March 9	9	DENMAN JR. HIGH SCHOOL
March 21	10	LINCOLN HIGH SCHOOL
March 30	11	JEFFERSON SCHOOL

FOR MORE INFORMATION: Call 558-5284

(This insert printed at Municipal Railway expense)

Muni's striking facelift

By Gerald Adams

FOR months, San Francisco's buses and streetcars have been plastered with signs urging riders to attend various meetings to discuss new routes for Municipal Railway lines.

Those who have failed to heed the signs should be advised: They herald the most radical switch in public transit riding since the streetcars switched from horse-drawn to electrical power.

The changes under consideration by the city Public Utilities Commission would affect all but a handful of lines. Twenty lines would be abandoned altogether. Two lines would be entirely new. All crosstown lines would be greatly extended, usually from shore to shore and from county line to Bay.

The changes that have been charted by planners would also:

- Vastly improve service to high-traffic points such as the University of California Medical Center, San Francisco State University and San Francisco General Hospital.

- All but end multi-transfer journeys. The number of trips that now require more than one transfer would be vastly reduced.

A special report on S.F. transit

Proposed routes, transfer points, See Page 2

- Reduce the property taxpayer's Muni burden by an estimated \$2 million. That's the amount officials forecast would be gained by new business.

- Bring in more than 12 million more riders a year, according to planners.

- Connect parts of The City that have previously been foreign to each other.

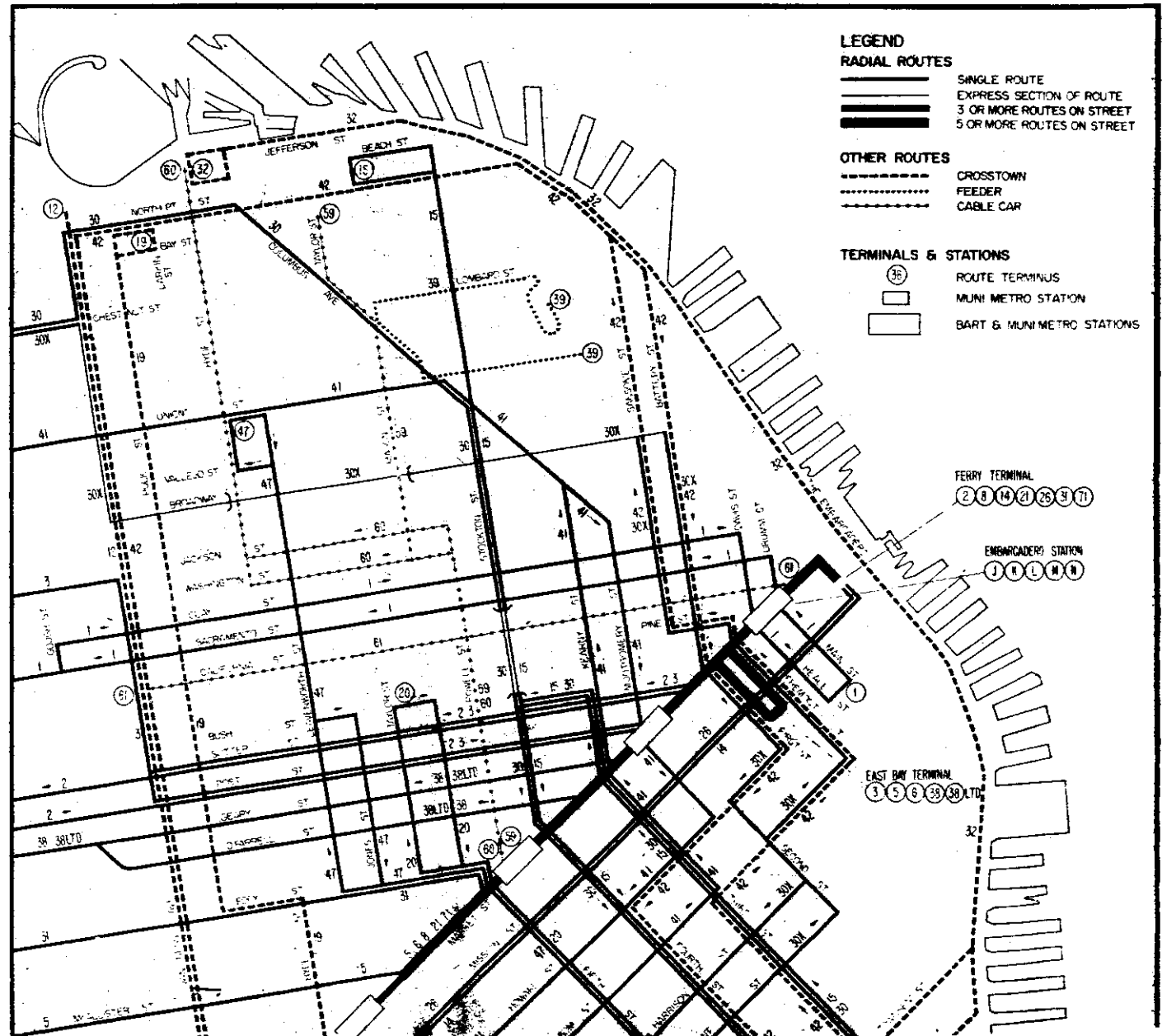


FIGURE V-15

5-YEAR PLAN WORKSHOPS: POSTER ON MUNI VEHICLES

NEW WAYS TO GET FROM HERE TO THERE

Workshops To Discuss Muni Planning Proposals For The Next Five Years...

<u>DATE</u>	<u>DISTRICT</u>	<u>LOCATION</u>
February 28	1	Presidio Jr. High School, 450 30th Ave.
March 23	2	Marina Jr. High School, 3500 Fillmore St.
February 23	3	Francisco Jr. High School, 2190 Powell St.
February 21	4	Franklin Jr. High School, 1430 Scott St.
March 2	5	James Lick Jr. High School, 1220 Noe St.
March 14	6	Hawthorne School, 825 Shotwell St.
March 16	7	Potrero Hill Jr. High School, 655 Deharo St.
March 7	8	Wilson High School, 400 Mansell St.
March 9	9	Denman Jr. High School, 241 Oneida Ave.
March 21	10	Lincoln High School, 2162 24th Ave.
March 30	11	Jefferson School, 1725 Irving St.

ALL DISTRICT MEETINGS WILL BEGIN AT 7:00 PM. FOR MORE INFORMATION call 558 5284

New Routes! New Services!



FIGURE V-16

SAN FRANCISCO BOARD OF SUPERVISORS
CERTIFICATE OF HONOR TO THE MUNI
PLANNING DIVISION

City and County of San Francisco

THE BOARD OF SUPERVISORS
PRESENTS THIS

Certificate of Honor

IN APPRECIATIVE PUBLIC RECOGNITION
OF DISTINCTION AND MERIT, TO

*San Francisco Municipal
Railway Planning Division*

Michael Crumbach, Luther Freeman, Buford Johnson, Thomas Matos, Carl Nervig,
and Peter Straus, for their tremendous effort in the first Muni Railway Outreach
program, reaching residents of the city by holding over 60 meetings with neighbor-
hood, merchant, and labor groups, and holding 11 district workshops to discuss the
Muni Railway's five year plan.

I HEREBY CERTIFY that this
certificate was duly authorized pursuant

to motion adopted by the Board of Supervisors

of the City and County of San Francisco at its
meeting held on May 4, 1978

James H. Smith
President of the Board
Samuel H. Brown
Clerk of the Board
Supervisor Samuel H. Brown
Maker of Motion

State of California



SAN FRANCISCO MUNICIPAL RAILWAY

5-YEAR PLAN

DISTRICT 4 WORKSHOP

FEBRUARY 21, 1978

FRANKLIN JUNIOR HIGH SCHOOL

Figure V-17

5-YEAR PLAN
WORKSHOP AGENDA

AGENDA

- 7:00 Opening Statement and Slide Presentation
- 7:45 Questions and Answers
- 8:15 Small Group Discussions
- 9:15 Reports from Small Groups, and
Discussion of Questionnaires
- 9:45 Discussion of Additional Meetings, if needed, and
City-Wide Workshop of April 8
- 10:00 Adjournment

NAME _____

ADDRESS _____ ZIP _____

ORGANIZATIONAL AFFILIATION (IF ANY) _____

PHONE (DAY AND EVENING) _____

1. Overall, do you approve of the idea of improving crosstown and inter-district service?
2. In general, what do you think about the proposed changes?
 - _____ better than the existing service
 - _____ worse than the existing service
 - _____ some things better, some things worse
 - _____ no opinion
3. What do you like best about the proposed Muni network?
4. What do you like least?
5. Would the proposed Muni service get you to most of your destinations easily? Please explain.
6. If you have any particular suggestions for a specific route, please explain them below. (Use the back if you need more room).

Route #____ (__Proposed or __Existing) Comments:

Route #____ (__Proposed or __Existing) Comments:

Route #____ (__Proposed or __Existing) Comments:

Route #____ (__Proposed or __Existing) Comments:

Route #____ (__Proposed or __Existing) Comments:

C. RECOMMENDED STRUCTURE OF NETWORK

The following section details the 5-Year Plan route proposals on a line by line basis, with each line listed by mode and route number. A description of each revised routing, by street, and an explanation of the rationale for each revision accompanies the route listing.

The alignment of the new routes and the overall grid pattern which they produce can be observed in three supplementary maps. The maps precede the text and illustrate the proposed midday routes (Figure V-19), the Downtown route network (Figure V-20), and the peak hour express routes (Figure V-21). Enlarged, fold-out versions of these maps are included at the end of the Plan.

The 5-Year Plan owl route recommendations are not included at this time, pending further study and analysis. These recommendations will appear in the first annual update of the 5-Year Plan.

Figure V-19
RECOMMENDED PLAN
MIDDAY ROUTES

LEGEND

RADIAL ROUTES

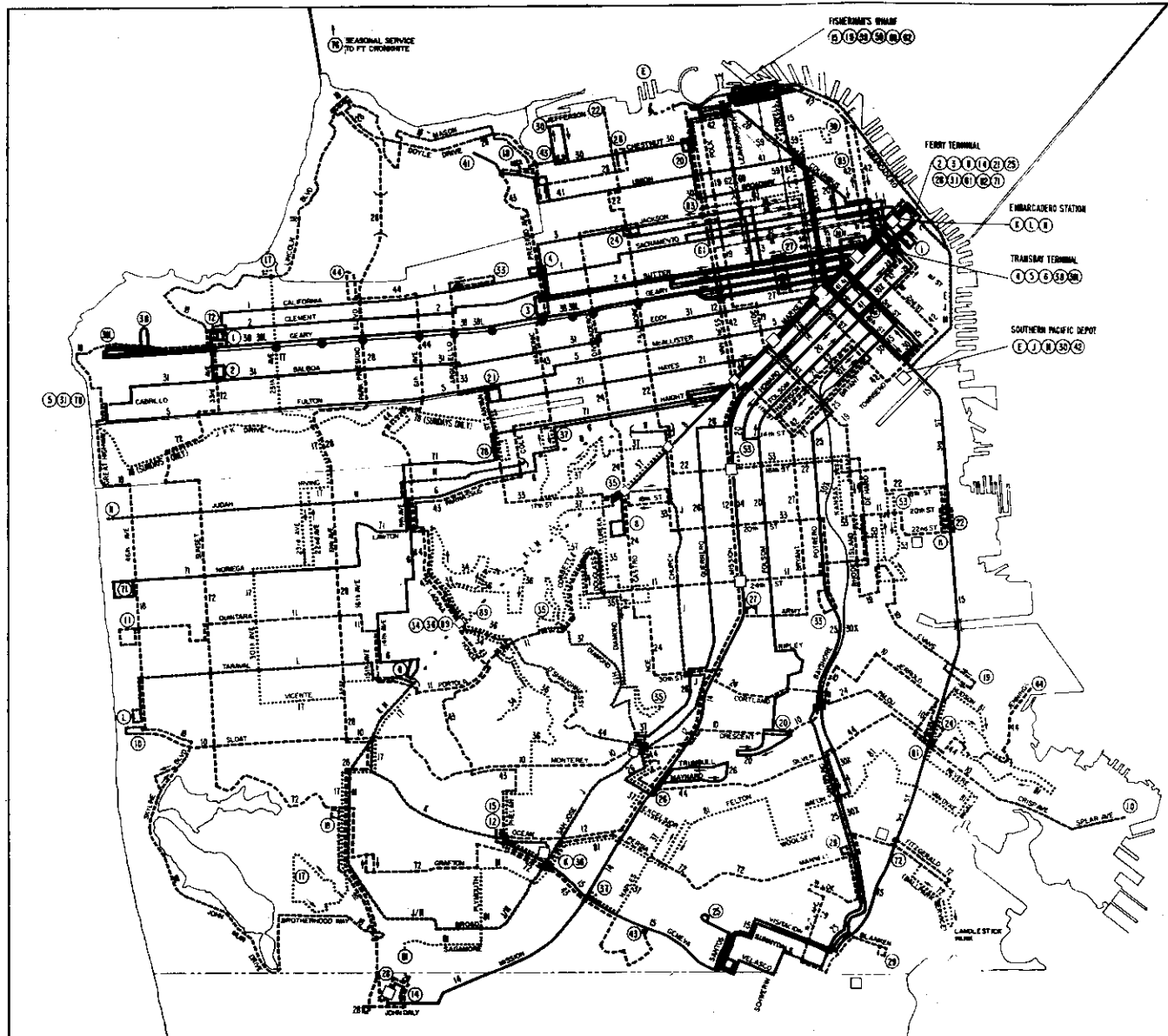
SINGLE ROUTE
 EXPRESS SECTION OF ROUTE
 3 OR 4 ROUTES ON STREET
 5 OR MORE ROUTES ON STREET
 LIMITED STOP SERVICE

OTHER ROUTES

CROSSTOWN
 FEEDER
 MUNI METRO OR STREETCAR
 CABLE CAR

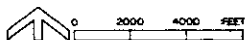
TERMINALS & STATIONS

ROUTE TERMINUS
 MUNI METRO STATION
 S P OR BART STATION
 (Major Street BART Stations
 are also MUNI METRO Stations)



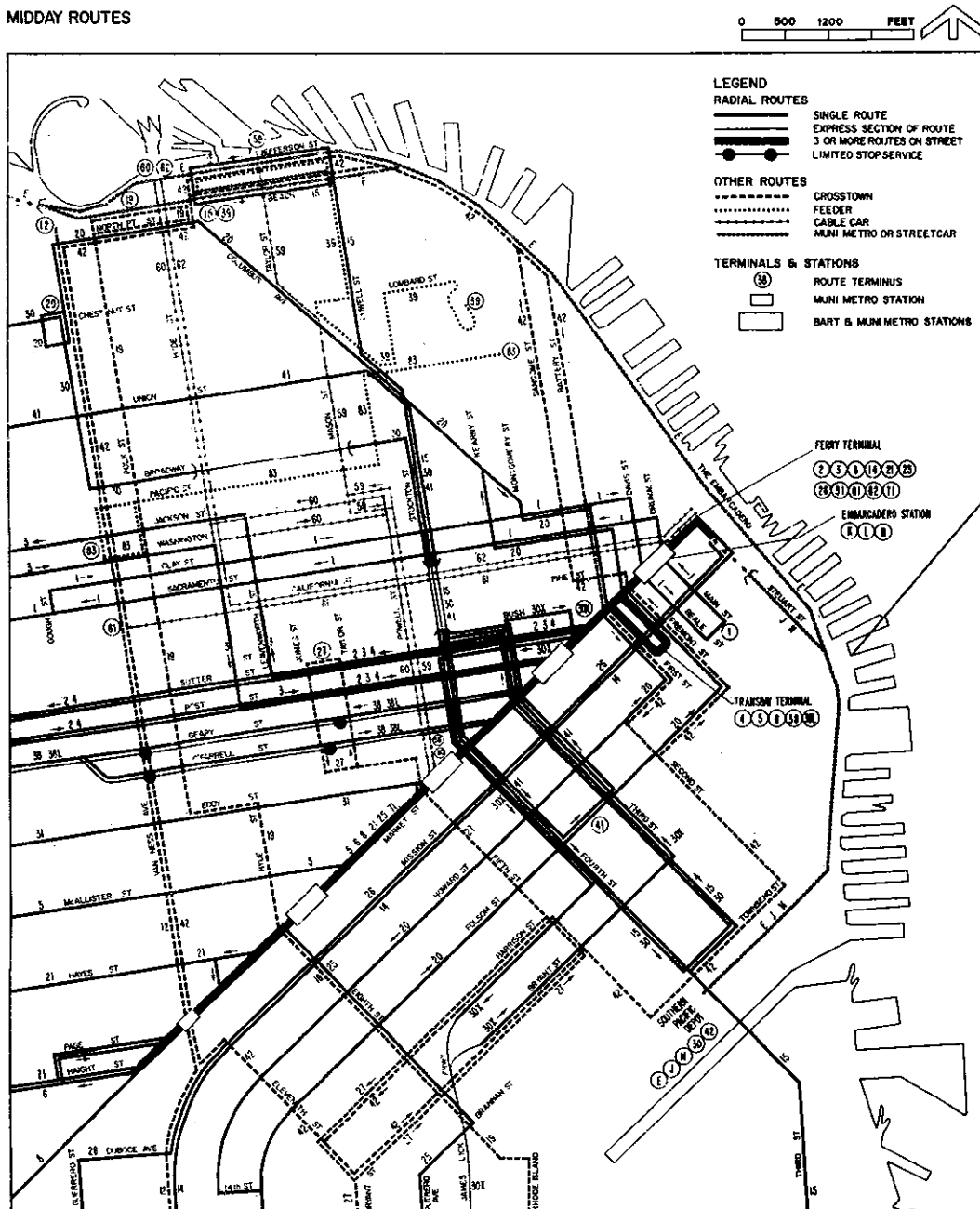
AN ENLARGED VERSION OF THIS MAP APPEARS AT END OF REPORT

San Francisco Municipal Railway
5-YEAR PLAN 1979-1984



San Francisco Municipal Railway 5-YEAR PLAN 1979-1984

Figure V-20
RECOMMENDED PLAN
MIDDAY ROUTES

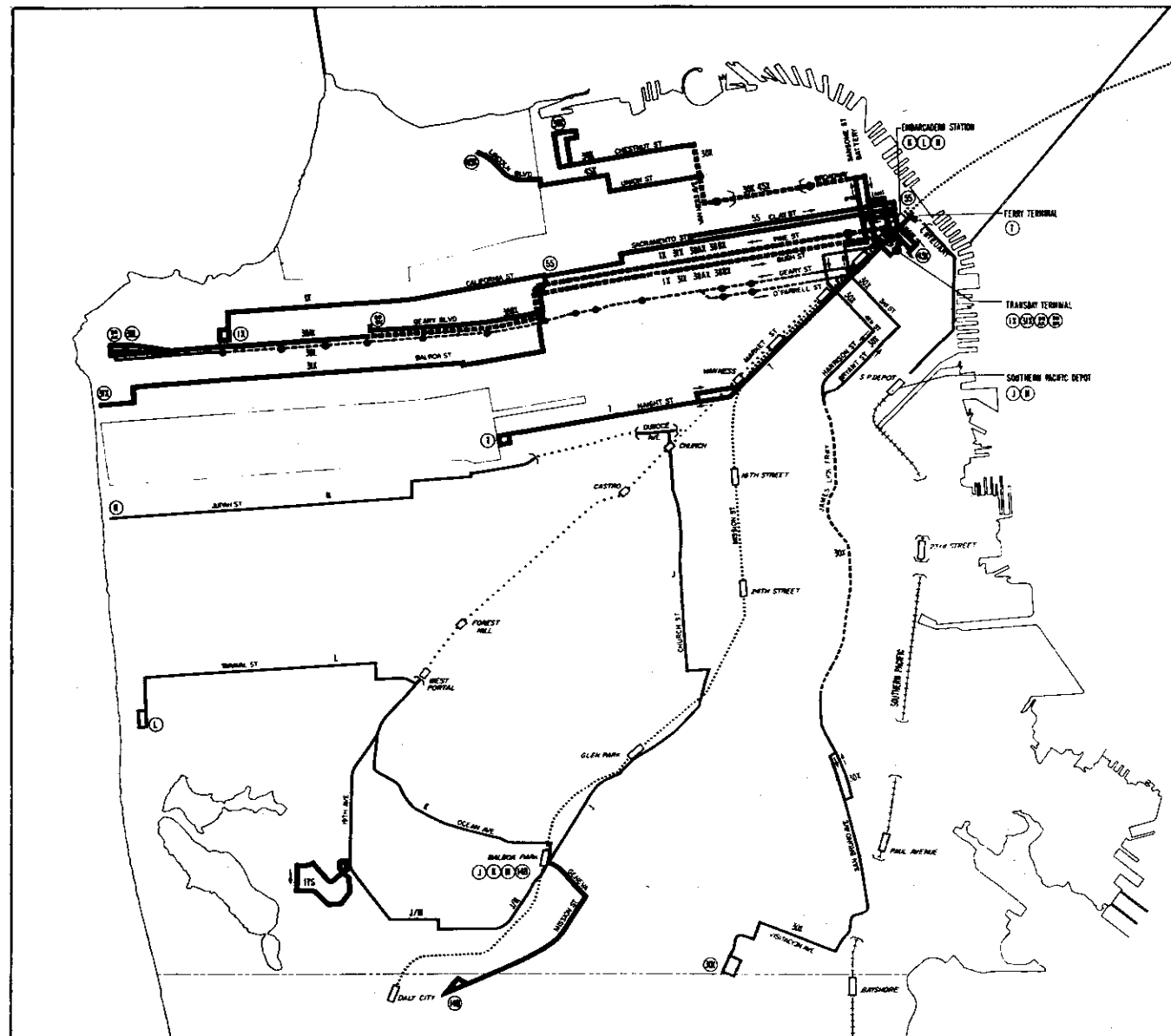


LEGEND

PEAK HOUR
LOCAL
EXPRESS

ALL DAY
LOCAL
EXPRESS
LIMITED STOP SERVICE
S P RAIL
BART
MUNI METRIC

STATION NAME



AN ENLARGED VERSION OF THIS MAP APPEARS AT END OF REPORT

1. MUNI Metro and Streetcar Lines

Line E-EMBARCADERO

Route: From Southern Pacific Depot at Fourth Street via Townsend or King, The Embarcadero, Jefferson, private right-of-way to Fort Mason; return via private right-of-way, Beach, The Embarcadero, Townsend or King, to Southern Pacific Depot at Fourth Street.

New route, replaces present and POM line 32-EMBARCADERO, using common track-age with lines J-CHURCH and M-OCEAN VIEW from Fourth Street to approximately Harrison Street. Requires exclusive transit right-of-way on The Embarcadero and on Jefferson Street, and other transit priority measures on Townsend or King and elsewhere. Vehicles have not yet been selected, but should be both practical for mass transportation purposes and attractive for recreational and tourist usage. Planning and preliminary design work are underway. (See Chapter VI, Section A: "MUNI Metro and Related Rail Projects").

Line J-CHURCH

Present Route: From 30th and Church Streets via Church Street, private right-of-way, Church Street, Duboce Avenue, Market Street, First Street to Transbay Terminal; return from Transbay Terminal via Fremont Street, Market Street, Duboce Avenue, Church Street, private right-of-way, Church Street to 30th Street.

POM Proposal: Recommended extension via 30th Street and San Jose Avenue to Balboa Park BART Station or another southern terminal subject to further study. MUNI Metro service in Market Street subway to Embarcadero Station.

5-Year Plan Proposal: Extend outer end of line per POM recommendation from 30th and Church Streets via 30th Street and San Jose Avenue to Balboa Park BART Station, and combine with line M-OCEAN VIEW to form a two-way J/M loop service with outbound J-line cars returning via line M, and vice-versa. Extend inner terminal from the foot of Market Street (Embarcadero Station) via The Embarcadero and either Townsend or King Streets to a new terminal adjacent to Southern Pacific Depot at Fourth Street.

Route: Outbound J-line MUNI Metro service from the S.P. Depot at Fourth Street via either Townsend or King Streets to The Embarcadero, thence along The Embarcadero to approximately Harrison Street, thence via Steuart Street, subway, Market Street subway, Duboce Avenue, Church Street, private right-of-way, Church Street, 30th Street, San Jose Avenue, Balboa Park BART Station, San Jose Avenue, Broad Street, Orizaba Avenue, Randolph Street, 19th Avenue to San Francisco State University (Holloway Avenue). From this point, cars continue as inbound M-line cars to SP Depot. Outbound M-line cars become inbound J-line cars at this point, routed via 19th Avenue Randolph, Orizaba, Broad, San Jose Avenue, Balboa Park BART Station, San Jose

Avenue, 30th Street, Church, private right-of-way, Church Street, Duboce, Market Street subway, exiting via Steuart Street, The Embarcadero and Townsend or King to SP Depot at Fourth Street. Replaces present line 26-VALENCIA as the through Mission District line to SF State University.

Line K-INGLESIDE

Present Route: From City College Station (Ocean and Phelan Avenues) via Ocean, Junipero Serra Boulevard, West Portal Avenue, Twin Peaks Tunnel, 17th Street, Church Street, Duboce Avenue, Market and First Streets to Transbay Terminal; return from Transbay Terminal via Fremont and Market Streets, Duboce, Church, 17th, Twin Peaks Tunnel, West Portal Avenue, Junipero Serra, Ocean Avenue to City College Station (Phelan Avenue). Outer terminal to be extended with streetcar service from Ocean and Phelan via Ocean Avenue to Balboa Park BART Station replacing line 92-BALBOA PARK SHUTTLE.

POM Route: MUNI Metro service from Balboa Park BART Station via Ocean Avenue, Junipero Serra Boulevard, West Portal Avenue, Twin Peaks Tunnel, Market Street subway to Embarcadero Station; return via Market Street subway, Twin Peaks Tunnel, West Portal Avenue, Junipero Serra Boulevard, Ocean Avenue to Balboa Park BART Station.

5-Year Plan Proposal: Same as POM Proposal.

Line L-TARAVAL

Present Route: From "Zoo" terminal on Wawona Street between 46th and 47th Avenues via Wawona, 46th, Taraval, 15th Avenue, Ulloa, Twin Peaks Tunnel, 17th Street, Church Street, Duboce Avenue, Market and First Streets to Transbay Terminal; return from Transbay Terminal via Fremont, Market, Duboce, Church, 17th, Twin Peaks Tunnel, Ulloa, 15th, Taraval, 46th, Vicente, 47th to "Zoo" terminal on Wawona.

POM Proposal: MUNI Metro service from "Zoo" terminal on Wawona between 46th and 47th via Wawona, 46th, Taraval, 15th, Ulloa, Twin Peaks Tunnel and Market Street subway to Embarcadero station; return via Market Street subway, Twin Peaks Tunnel, Ulloa, 15th, Taraval, 46th, Vicente, 47th to "Zoo" Terminal on Wawona.

5-Year Plan Proposal: Same as POM Proposal.

Line M-OCEAN VIEW

Present Route: From Broad Street and Plymouth Avenue via Broad, Orizaba, Randolph, 19th Avenue, private right-of-way, West Portal Avenue, Twin Peaks Tunnel, 17th, Church, Duboce, Market and First Streets to Transbay Terminal; return via Fremont, Market, Duboce, Church, 17th, Twin Peaks Tunnel West Portal Avenue, private right-of-way, 19th Avenue, Randolph, Orizaba, Broad to Plymouth.

POM Proposal: MUNI Metro Service, Outer terminal extended via Broad Street and San Jose Avenue to Balboa Park BART Station. Operation in Market Street Subway from Twin Peaks Tunnel to Embarcadero Station.

5-Year Plan Proposal: Extend inner terminal to SP Depot via The Embarcadero. Combine with line J-CHURCH into a two-way J/M loop service, with outbound M-line cars returning via line J, and vice-versa.

Route: Outbound M-line MUNI Metro service from the SP Depot at Fourth Street via either Townsend or King Streets to The Embarcadero, thence along The Embarcadero to approximately Harrison Street, thence via Steuart Street, subway, Market Street Subway, Twin Peaks Tunnel, West Portal Avenue, private right-of-way, 19th Avenue to San Francisco State University (Holloway Avenue). From this point, cars continue as inbound J-line cars to SP Depot. Outbound J-line cars become inbound M-line cars at this point, routed via 19th Avenue, private right-of-way, West Portal Avenue, Twin Peaks Tunnel, Market Street Subway, exit via Steuart Street, The Embarcadero and Townsend or King to SP Depot at Fourth Street.

Line N-JUDAH

Present Route: From Judah Street at the Great Highway via Judah, Ninth Avenue, Irving, Arguello, Carl, Sunset Tunnel, Duboce Avenue, Market, First to Transbay Terminal; return via Fremont, Market, Duboce, Sunset Tunnel, Carl, Arguello, Irving, Ninth, Judah to the Great Highway.

POM Proposal: MUNI Metro service from Judah Street at the Great Highway via Judah, Ninth Avenue, Irving, Arguello, Carl, Sunset Tunnel, Duboce Avenue, Market Street Subway to Embarcadero Station; return via Market Street Subway, Duboce, Sunset Tunnel, Carl, Arguello, Irving, Ninth, Judah to Great Highway.

5-Year Plan Proposal: Same as POM Proposal.

2. Cable Car Lines

Line 59-POWELL & MASON

Present Route: From Bay and Taylor Streets via Taylor, Columbus, Mason, Washington, Powell to Market; return from Powell and Market via Powell, Jackson, Mason, Columbus, Taylor to Bay. (Charter mandated route).

POM Proposal: No recommendation

5-Year Plan Proposal: Extend from Bay and Taylor Streets via Taylor to Jefferson, with a new off-street terminal area and turntable constructed on Port land at the Northeast corner of Taylor and Jefferson Streets.

Route: From Jefferson and Taylor Streets via Taylor, Columbus, Mason, Washington, Powell to Market; return from Powell and Market via Powell, Jackson, Mason, Columbus, Taylor to Jefferson.

Line 60-POWELL & HYDE

Present Route: From off-street terminal at Hyde and Beach Streets via Hyde, Washington, Powell to Market; return from Powell and Market via Powell, Jackson and Hyde to Beach. (Charter mandated route).

POM Proposal: No recommendation

5-Year Plan Proposal: No change

Line 61-CALIFORNIA

Present Route: From California Street at Van Ness Avenue via California to Market Street; return from California and Market via California to Van Ness Avenue. (Charter mandated route.)

POM Proposal: No recommendation

5-Year Plan Proposal: Extend eastward from California and Market Streets via Market Street to Justin Herman Plaza and a new terminal at or near the Ferry Building. This will provide a direct link between the Tiburon and Golden Gate Ferries and the center of the Financial District.

Route: From California Street at Van Ness Avenue via California, Market to Ferry; return via Market, California to Van Ness. (See Chapter VI, Section B: "Cable Cars").

Line 62-CALIFORNIA & HYDE

5-Year Plan Proposal: New route

From Hyde and Beach Streets via Hyde, California and Market Streets to the Ferry Building; return via Market, California, Hyde to Beach. Additional service 4-6 P.M. over this route between California and approximately Sansome Streets and Hyde and Filbert Streets.

This is a new route which will take advantage of available operating capacity on the Hyde and California Streets trackage to provide additional cable car passenger carrying capacity to the Northern Waterfront. The additional cars which would be required to operate this new service are not included in the peak scheduled vehicle "ceiling" under which the 5-Year Plan has been designed. The operation of this line should be dependent upon the identification of a new source of operating funds to offset any difference in cost between revenues received from and costs incurred by operation of the additional cars.

3. Trolley Coach and Motor Coach Lines

Line 1-CALIFORNIA

Present Route: Trolley coach service from Geary Boulevard at 33rd Avenue via Geary, 33rd, Clement, 32nd, California Street, Presidio Avenue, Sutter, Laguna, Post, Kearny, Bush, Sansome to Sutter; return via Sutter, Presidio, California, 32nd, Geary to terminal at 33rd. (Nights and Sundays combined with line 3-JACKSON, operating over Fillmore, Jackson and Presidio Avenue between Sutter and Fillmore and Presidio and California).

POM Proposal: Through-routed with Sacramento/Clay service to provide a through east-west trolley coach line in the north-central part of the city.

Route: Trolley coach service from Geary Boulevard at 33rd Avenue via Geary, 33rd, Clement, 32nd, California, Steiner, Sacramento, Gough, Clay, Davis, Beale to Howard; return from Beale and Howard via Howard, Main, Drumm, Sacramento, Steiner, California, 32nd, Geary to 33rd. Supplemented during peak hours by line 55-SACRAMENTO between Drumm Street and Presidio Avenue, and by line 1X-CALIFORNIA EXPRESS between 33rd and Geary and the Transbay Terminal.

5-Year Plan Proposal: Same as POM Proposal.

Line 1X-CALIFORNIA EXPRESS

New route, replacing present route 2X-CLEMENT EXPRESS as part of a strategy to provide three rush hour Richmond District express services spaced at two-block intervals.

POM Proposal: Motor coach service from Geary Boulevard at 33rd Avenue via Geary, 33rd, Clement, 32nd, California Street, Presidio Avenue, Bush Street, Battery Street, First Street to Transbay Terminal; return from Transbay Terminal via Fremont, Front, Pine, Presidio Avenue, California Street, 32nd, Geary to terminal at 33rd. Monday through Friday except holidays, peak-hours only. Operates without passenger stops between Presidio Avenue and California Street, and Kearny Street.

5-Year Plan Proposal: Same as POM Proposal.

Line 2-CLEMENT

Present Route: Motor coach service from 48th and Point Lobos Avenues via 48th, Geary, 42nd, Fort Miley loop, Clement, 43rd, Geary, 33rd, Clement, Arguello, Euclid, Presidio, Sutter, Laguna, Post, Kearny, Bush, Sansome to Sutter; return via Sutter, Presidio, Euclid, Arguello, Clement, 33rd, Geary, 42nd, Fort Miley Loop, Clement, 43rd, Point Lobos to 48th. Operates "limited stop" (i.e., stops at transfer points only between Presidio Avenue and Van Ness) Monday through Saturday, daytime only; local service at other hours.

POM Proposal: Shortened outer terminal to Park Presidio as part of a strategy to concentrate Richmond District service on lines spaced every two blocks. From Geary and Park Presidio via Geary, Park Presidio, Clement, Arguello, Euclid, Presidio Avenue, Sutter, Laguna, Post, Market, Steuart to "Ferry" terminal; return via Steuart, Market, Sutter, Presidio, Euclid, Arguello, Clement, Funston to Geary. No service on Clement west of Funston; service on Geary west of 33rd provided by line 38-Geary.

5-Year Plan Proposal: Retain service on outer Clement. Motor coach service from outer terminal at 33rd and Balboa via 33rd, Balboa, 32nd, Anza, 33rd, Clement, Arguello, Euclid, Presidio, Sutter, Laguna, Post, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Sutter, Presidio, Euclid, Arguello, Clement, 33rd to Balboa.

During the course of the 5-Year Plan Outreach Program the Planning Division staff heard strenuous objections raised by citizens of the Richmond to the discontinuance of Clement Street service west of Park Presidio Boulevard. In addition, a large volume of mail generated by merchants and residents on the issue of retaining Clement Street service was directed to the staff's attention. This degree of public interest and expression of concern for the 2-CLEMENT led to a re-assessment of the POM consultant's recommendations and the staff proposal to retain service on Clement west of Park Presidio.

This decision was only reached after internal staff debate and re-examination of the issues. Initially the POM recommendation was supported by staff since it appeared to offer a more uniform distribution of east-west radial service in the Richmond District, and also carried through on the Northwest Corridor Study (NWX) recommendations for a strong trunk line, on Geary. At present the Richmond has five east-west lines of which three are spaced only one block apart (California, Clement and Geary), Wilbur Smith's POM strategy envisioned a reduction in the number of through Richmond District radial trunk lines from five to four by sacrificing Clement service west of Park Presidio. In return, service on

Geary would be improved considerably with all-day limited and local services, "zoned" rush-hour expresses and use of articulated buses; further, the Clement Street express service, which provides more than ½ the rush hour service, would be moved north one block to California Street and express service would be established on Balboa. Service on Geary west of 33rd would have been picked up by the re-routed 38-GEARY.

Several members of the public also raised an important point at public meetings, most particularly at the District 1 Workshop. It was pointed out that the 1-CALIFORNIA, currently running to the shopping area of the CBD via Sutter and Post Streets, would no longer do so since the POM Study recommended that it be through-routed with the Sacramento/Clay service. With the Clement service gone west of Park Presidio, the nearest shopping district radial line would be the 38-GEARY complex, entering downtown via O'Farrell Street. In the downtown area, eastbound Richmond District radial lines would be on Clay and on O'Farrell Streets, a separation of eight blocks. In effect, people in the Richmond were saying that both the California and Clement services to the Union Square area were being taken away; the remaining California Street service would run over the Nob Hill ridge. This is a valid point, and is a serious criticism of the POM recommended plan. It is this factor which, more than other considerations, but combined with them, has led to the 5-Year Plan's proposed local Clement Street service running as far west as 33rd Avenue. In order to provide connections to Inner Richmond shopping for people on the outer end of the present 38-line, staff further recommends that the 2-CLEMENT be operated south on 33rd Avenue to Balboa Street to make a connection with the extended 31-BALBOA.

Line 2X-CLEMENT EXPRESS

Present Route: Weekday, peak hour only motor coach service from 48th and Point Lobos via 48th, Geary, 33rd, Clement, Arguello, Euclid, Bush to Sansome; some trips from Ft. Miley via 43rd, Geary etc. Outbound from Pine and Montgomery via Pine, Masonic, Euclid, Arguello, Clement, 33rd, Geary, Point Lobos to 48th; some trips via Geary, 42nd to Ft. Miley. No passenger stops between Presidio Ave. and Montgomery Street.

POM Proposal: Replace with new line 1X-CALIFORNIA EXPRESS as part of a strategy to operate three Richmond District express lines at two-block intervals.

5-Year Plan Proposal: Same as POM Proposal.

Line 3-JACKSON

Present Route: Trolley coach service from Presidio Avenue at California Street via Presidio, California, Walnut, Sacramento, Presidio, Jackson,

Fillmore, Sutter, Laguna, Post, Kearny, Bush, Sansome to Sutter; return via Sutter, Fillmore, Jackson, Presidio to California. (Nights and Sundays combined with line 1).

POM Proposal: Replaces present Pacific Heights service of line 25-BRYANT; Outer terminal extended to Geary to provide westward connection to line 38; rerouted from Sutter to Jackson between Fillmore Street and Van Ness Avenue; inner terminal extended to Transbay Terminal.

Route: Trolley coach service from Presidio and Geary via Geary, Masonic, Euclid, Presidio, Jackson, Van Ness, Post, Market, First to Transbay Terminal; return via Fremont, Market, Sutter, Van Ness, Washington, Fillmore, Jackson, Presidio to Geary.

5-Year Plan Proposal: Extend Washington/Jackson service east from Van Ness to Hyde/Leavenworth, maintaining east-west service now provided by line 25-BRYANT; maintain present direction of flow on Washington and Jackson through Pacific Heights. Relocate inner Terminal to "Ferry".

Route: Trolley coach service from Presidio and Geary via Geary, Masonic, Euclid, Presidio, Jackson, Fillmore, Washington, Hyde, Post, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Sutter, Leavenworth, Jackson, Presidio to Geary.

The POM proposal covers the Pacific Heights segment of line 25-BRYANT with this Sutter line, offering better penetration of the shopping and financial districts and access to lower Market Street. However, by routing the line down Van Ness Avenue it precludes the east-west link on Washington and Jackson Streets between Nob Hill and Polk Gulch now supplied by line 25-BRYANT. The proposed POM line 47 would also retain diesel operation on the steep Leavenworth slope of Nob Hill. Even greater duplication than now exists would occur on Van Ness Avenue, with three lines in operation between Jackson and Post Streets.

The 5-Year Plan routing would retain the desirable features of the POM proposal, but without the undesirable effects noted above. A through east-west Jackson Street service would be established between Presidio Avenue and Leavenworth Street for the first time since 1906, and replace the chopped-up three-route service now offered on Jackson. This would strengthen the 3, and provide more work for the 4-SUTTER to do by reducing duplication on Sutter and Post west of Leavenworth Street; line 4 will run all day to provide sufficient service.

Line 4-SUTTER

Presently unused as a route designation, 4-SUTTER was until recently used to denote trolley coaches pulling in to Presidio Division.

POM Proposal: Trolley coach service from Sutter and Presidio via Sutter, Laguna, Post, Kearny, Bush, Sansome to Sutter; return via Sutter to Presidio Avenue. Monday through Friday, rush hours only; Saturday all day.

5-Year Plan Proposal: Extend western terminus north to meet lines 1 and 55 at California Street, and eastern terminus to Transbay Terminal.

Route: Trolley coach service from Presidio Avenue at California Street via Presidio, Sutter, Laguna, Post, Market, First to Transbay Terminal; return via Fremont, Market, Sutter, Presidio, California, Walnut, Sacramento, Presidio to California. Operates daily.

The extension at the western end makes possible a transfer from outer California Street to a line serving Sutter and Post for passengers desiring to follow the route of the present 1-CALIFORNIA. The outer terminal loop will be the same one used by the present 3-JACKSON. Operation to the Transbay Terminal will provide Terminal users direct access to/from Sutter and Post Streets.

Line 5-FULTON (Formerly line 5-McALLISTER)

Present Route: Trolley coach service from Balboa and LaPlaya, via LaPlaya, Fulton Street, Central Avenue, McAllister, Hyde, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, McAllister, Central, Fulton, LaPlaya to Balboa.

POM Proposal: Re-route the one-block Fulton-McAllister jog via Lyon Street instead of Central Avenue to avoid conflicts with Petrini Plaza traffic. Operate eastbound contraflow lane on McAllister from Hyde to Market to eliminate the present Hyde Street jog. Re-route inner Terminal to Transbay Terminal to provide service after streetcars go underground. Route:

Route: Trolley coach service from Balboa and LaPlaya via LaPlaya, Gulton, Lyon, McAllister, Market, First to Transbay Terminal; return via Fremont, Market, McAllister, Lyon, Fulton, LaPlaya to Balboa.

5-Year Plan Proposal: Recent installation of a traffic signal at Fulton and Central permits exiting Petrini Plaza to clear that intersection, and has relieved the previous operating problem found there. Accordingly the staff recommends that the line not be re-routed to Lyon Street from Central Avenue and that the present Central Avenue alignment be retained.

Route: Trolley coach service from Balboa and LaPlaya via LaPlaya, Fulton, Central, McAllister, Market, First to Transbay Terminal; return via Fremont, Market, McAllister, Central, Fulton, LaPlaya to Balboa.

Line 6-PARNASSUS (Formerly 6-MASONIC)

Present Route: Trolley coach service from loop at 14th Avenue and Quintara Street via Quintara, Tenth Avenue, Ortega, Ninth Avenue,

Judah, Parnassus, Clayton, Frederick, Masonic, Haight, Laguna, Page, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Haight, Masonic, Frederick, Clayton, Parnassus, Judah, Ninth, Ortega, Tenth, Quintara to 14th.

POM Proposal: Extend outer terminal via 14th Avenue to West Portal Station to provide connection with MUNI Metro; re-route inner terminal to Transbay Terminal to provide service when streetcars go underground and to offer a direct UC Medical Center-Transbay Terminal route to compensate for loss of line N-JUDAH. Operate eastbound contraflow lane on Haight Street from Laguna to Market to avoid Page Street jog.

Route: Trolley coach service from West Portal Station via Ulloa, Wawona, Taraval, 14th, Quintara, Tenth, Ortega, Ninth, Judah, Parnassus, Clayton, Frederick, Masonic, Haight, Market, First to Transbay Terminal; return via Fremont, Market, Haight, Masonic, Frederick, Clayton, Parnassus, Judah, Ninth, Ortega, Tenth, Quintara, 14th, Taraval, Lenox to West Portal station at Ulloa.

5-Year Plan Proposal: Staff recommends that the present inbound routing via Laguna and Page be retained. The "jog" to Page Street, unlike similarly placed diversions on lines 5 and 21, does not take vehicles out of their way, and does not appear to offer a significant source of operating delay. The advantages of operation in a contraflow lane on Haight do not appear to be sufficient at this time to warrant establishment of the lane.

Route: Trolley coach service from West Portal Station via Ulloa, Wawona, Taraval, 14th, Quintara, Tenth, Ortega, Ninth, Judah, Parnassus, Clayton, Frederick, Masonic, Haight, Laguna, Page, Market, First to Transbay Terminal; return via Fremont, Market, Haight, Masonic, Frederick, Clayton, Parnassus, Judah, Ninth, Ortega, Tenth, Quintara, 19th, Taraval, Lenox to West Portal Station at Ulloa.

Line 7-HAIGHT

Present Route: Daytime, Monday through Saturday trolley coach service from Stanyan and Haight via Stanyan, Waller, Shrader, Haight, Laguna, Page, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Haight to Stanyan.

POM Proposal: Change to operate weekdays, rush-hours only and Saturday; operate eastbound contraflow lane on Haight Street from Laguna to Market.

Route: Trolley coach service from Haight and Stanyan via Stanyan, Waller, Shrader, Haight, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Haight to Stanyan.

5-Year Plan Proposal: As with line 6, retain inbound route via Laguna and Page (see above).

Route: Trolley coach service from Haight and Stanyan via Stanyan, Waller, Shrader, Haight, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Haight to Stanyan. Operates weekdays, rush hours only, and Saturdays. (Retain weekday midday service if needed to provide capacity on Haight Street).

Line 8-MARKET

Present Route: Trolley coach service from 19th and Castro via 19th, Castro, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Castro, 18th, Collingwood, 19th to Castro.

POM Proposal: No change

5-Year Plan Proposal: Minor extension of outer terminal to 20th Street so that 8-line passengers ascending the lower reaches of the Castro Hill will not have to transfer. This request came from outreach meetings with the community and, upon examination, seems to be an excellent suggestion. It has the added advantage of avoiding a turn at the congested 18th and Castro intersection, and also avoiding narrow, congested Collingwood Street.

Route: Trolley coach service from 20th and Castro Streets via 20th , Diamond, 19th, Castro, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Castro to 20th.

Line 9-RICHLAND

Present Route: Weekday, daytime-only trolley coach service from Richland and Andover via Richland, Leese, Mission, Steuart to "Ferry" Terminal; return via Steuart, Mission, Richland, Murray, Crescent, Andover to Richland. Evening and weekend service provided by a shuttle variation of Line 27-NOE. The 9-RICHLAND basically functions as a scheduled short-turn on the Mission Street local services.

POM Proposal: Discontinue service in this form. East-west service in this area would be provided by the proposed new 18-SLOAT line. A short-turn on Mission Street at this point was found by Wilbur Smith to be too close to Downtown; a scheduled short-turn at Lowell Street, using an existing loop, would provide better service south of Bernal Heights, and offer a more frequent service to people transferring to and from lines as far south as Geneva Avenue.

5-Year Plan Proposal: Same as POM Proposal. (18-SLOAT re-designated 10-MONTEREY).

Line 10-MONTEREY

Present Route: Motor coach service from Cortland and Bayshore via Cortland, Mission, 30th Street, Sanchez, Randall, Whitney, Chenery,

Diamond, Monterey, Plymouth, Yerba Buena, Miraloma, Portola, Laguna Honda, Seventh Avenue, Lawton, Ninth Avenue, South Drive and Music Concourse (Golden Gate Park), Eighth Avenue, Cabrillo, Tenth Avenue, California Street, 14th Avenue to U.S. Public Service Hospital; return via 15th Avenue, California, 12th Avenue, Clement, Tenth Avenue, Cabrillo, Eighth Avenue, Music Concourse and South Drive (Golden Gate Park), Ninth Avenue, Lawton, Seventh Avenue, Laguna Honda, Portola, Miraloma, Yerba Buena, Plymouth, Monterey, Diamond, Chenery, Whitney, 30th Street, Mission, Cortland to Bayshore. Extended weekdays, daytime only, via Bayshore, Industrial, Barneveld, Oakdale, Bayshore to Cortland.

POM Proposal: This long, winding crosstown route would be functionally replaced by segments of four new or extended and more direct crosstown routes: 18-SLOAT, 24-DIVISADERO, 43-MASONIC, 44-O'SHAUGHNESSY. This arrangement would offer the benefits of crosstown connections to more parts of the city. Route designation 10-MONTEREY would be discontinued by POM.

5-Year Plan Proposal: For clarity, re-designate POM 18-SLOAT as 10-MONTEREY. Extend east to Navy Yard.

Route: Motor coach service from the "Zoo" at 46th and Wawona via 46th Avenue, Sloat, St. Francis, Santa Clara, Monterey, Diamond, Bosworth, Mission, Crescent, Alemany, Bayshore, Oakdale, Toland, Jerrold, Newhall, Palou, Crisp, Spear Avenue to C Street in Navy Yard; return via Spear, Crisp, Palou, Third, Jerrold, Toland, Oakdale, Bayshore, Alemany, Crescent, Mission, Bosworth, Diamond, Monterey, Santa Clara, St. Francis, Sloat, 47th Avenue, Wawona to 46th Avenue ("Zoo" Terminal).

This line provides direct east-west crosstown service across the southern part of the city, incorporates almost all of the POM line 18-SLOAT, but omits the POM proposed one-way-only (westbound) loop through the Alemany Projects; the Alemany Projects will be served directly on the terminal loop of proposed trolley coach line 20-COLUMBUS. The 10-MONTEREY would also operate the segment of POM line 24-DIVISADERO on Palou east of Third, so that line 24 electrification will not have to extend around a meandering neighborhood route (see line 24).

Line 11-QUINTARA-24TH STREET

Present Route: As line 11-HOFFMAN, motor coach service from 24th and Douglass Streets via 24th, Dolores, 22nd, Mission, Steuart to "Ferry" Terminal; return via Steuart, Mission, 22nd Dolores, 24th, Hoffman, 25th, Fountain, 24th, Hoffman, Grandview, Clipper, Portola, Woodside, Laguna Honda to Forest Hill Station, doubling back via Laguna Honda, Woodside, Portola, Clipper, Grandview, 21st, Douglass to 24th.

POM Proposal: Convert from a downtown radial line to an east-west crowtown service across the center of the city, using Quintara Street in the Sunset and 24th Street in the Mission.

Route: Motor coach service from 46th Avenue and Quintara Street via Quintara, 39th Avenue, Rivera, Sunset Boulevard, Quintara, 16th Avenue, Taraval, 15th Avenue, Ulloa, Claremont, Portola, Clipper, Diamond, 24th Street, Potrero Avenue, 23rd Street, De Haro, 20th Street, Texas, 22nd Street to Third Street; return via 22nd Street, Texas, 20th Street, De Haro, 23rd Street, Potrero, 24th Street, Diamond, Clipper, Portola, Claremont, Ulloa, 15th Avenue, Rivera, 16th Avenue, Quintara, Sunset, Rivera, 39th Avenue, Quintara, 46th Avenue, Rivera, 48th Avenue, Quintara to 46th Avenue.

This proposed route would provide the first direct transit connection ever offered between areas lying directly west and east of Twin Peaks. It would function as a feeder to MUNI Metro at West Portal (15 minutes from downtown) for mid-Sunset residents, and at 24th and Church for residents of upper Noe Valley. It would connect with BART at 24th and Mission, and offer an excellent east-west service across Potrero Hill for the first time. It would supplant present line 66-QUINTARA in providing east-west service on Quintara Street between 15th and 30th Avenues.

5-Year Plan Proposal: With the exception of extensive controversy surrounding present and proposed routings of the 11-line in Noe Valley, the concept of a through east-west service across this part of the city was generally supported in the 5-Year Plan outreach meetings. The 5-Year Plan retains, with some modifications, this re-orientation of the 11.

The changes made to this line in the POM proposal by the 5-Year Plan are located in Golden Gate Heights and in Noe Valley. In the Golden Gate Heights area, between West Portal and upper Quintara Street, Wilbur Smith had recommended one-way operation on 15th and 16th Avenues. Staff investigation found these to be very narrow, much narrower than the typical avenues of the Sunset, and not as good for transit use as 14th Avenue, where transit service is already proposed (see 6-PARNASSUS). It is recommended that the new 11-line use Ulloa, 14th Avenue, Rivera Street and 16th Avenue to reach Quintara Street from West Portal station. This minor change will avoid the narrower streets and also avoids the bad grades of other alternatives. The more important change lies in Noe Valley. Here, the POM Recommended Plan proposed the elimination of service on the present Hoffman-Grand View alignment and also on the small "Fountain" Loop (Hoffman-25th Street-Fountain Street-24th Street). These eliminations led to one of the more important sources of controversy in reviewing the POM proposals.

Wilbur Smith had proposed that a north-south service (the new 35-line) be run on Hoffman from 24th to 21st and on Eureka from 21st to 17th Street. This routing, however, would have made it difficult for residents of Noe Valley to make east-west trips and take advantage of im-

roved crosstown connections; the present 11 alignment does offer this capability, and also provides service to the 24th Street shopping to which of Noe Valley is oriented. The POM plan also assumed that Grand View would be "served" by requiring people to walk down from the 37-CORBETT on upper Market Street, or down to 35 on Hoffman. However, it is difficult and unpleasant to make this pedestrian connection and the resultant service would be inferior to service provided on Grand View itself. Present north-south and east-west services, though inadequate, would in effect be eliminated by the POM plan, in favor of only north-south service by line 35 in Upper Noe Valley. All of these points were raised by citizens in several meetings, and the planning staff, upon investigation including many on-site visits, concurs with them.

Several different means of serving the Hoffman - Douglas alignment and Grand View Avenue were considered by staff, but it is clear that the best alternative, all things considered, is to leave this alignment as a "jog" on the crosstown 11 line. It is true that this will add two minutes to the journey time of those who travel between the Mission and points west of Noe Valley, and that apparently unnecessary diversions from the route are a disincentive to transit use. It is also true that the elimination of unnecessary "jogs" is a basic principle of the re-routing strategy that should be applied wherever an alternative is available or the advantages are overwhelming. Unfortunately, perhaps, there appear to be no good alternatives to serve Hoffman and Douglas Streets, and it is the considered advice of staff that the benefit derived by residents of Noe Valley traveling both east and west over the 11-line as proposed outweighs the disincentive to through passengers. This appears to necessary "jog" and staff recommends its inclusion in a through 11-QUINTARA-24TH STREET motor coach line.

The Fountain Loop is a similar matter, but not precisely alike. This small loop was grafted onto the larger upper Noe Valley loop of the 11-HOFFMAN fairly recently. It is there because it provides transit service to a small topographically isolated "shelf" around 25th and Fountain Streets where many senior citizens live. Citizens advocate groups fought for this addition and, faced with its potential loss, have fought for its retention. It has become, in the neighborhood, something of a "cause celebre", with the proponents of the loop conflicting with residents of adjacent step streets who see little or no benefit from the loop compared with the noise generated by a diesel bus on a steep grade. The principle of reducing diversions from good through routes on main transit lines, which led Wilbur Smith to propose dropping the loop, is also an important consideration here.

Members of the Planning Division staff made several field trips to the loop over the months of plan review and were impressed with the reasons for service advanced by the advocates of retention. However, it was also clear that another diversion in the middle of a major through line with frequent service would not be advisable. After examining several alternatives the staff decided to recommend the route

structure incorporated in this plan. The Fountain Loop will continue to have service. However, because of the difficult terrain, the neighborhood-related nature of the identified service need (neighborhood services to a topographically isolated group of older people), the desire to reduce impacts on adjacent streets, and the desire to minimize diversions on major routes, it is recommended that the Fountain Loop be served by revised line 35-EUREKA (see below). This line will provide access to local shopping on 24th Street (Bell Market, for example), and also good connections to lines going in other directions, including MUNI Metro at Castro Station. It would also run on a longer headway (reduced frequency) to minimize neighborhood impacts (see description of 35-EUREKA).

The proposed route for Line 11-QUINTARA-24TH STREET is: Motor coach service from 46th Avenue and Quintara Street via Quintara, 39th Avenue, Rivera, Sunset, Quintara, 16th Avenue, Rivera, 14th Avenue, Ulloa, Claremont, Portola, Clipper, Grand View, 21st Street, Douglass, 24th Street, Potrero, 23rd Street, De Haro, 20th Street, Texas, 22nd Street, Tennessee, 20th Street, Third Street to 22nd Street; return via 22nd Street, Texas, 20th Street, De Haro, 23rd Street, Potrero, 24th Street, Hoffman, Grand View, Clipper, Portola, Glenview, Portola, Claremont, Ulloa, 14th Avenue, Rivera, 16th Avenue, Quintara, Sunset, Rivera, 39th Avenue, Quintara, 46th Avenue, Rivera, 48th Avenue, Quintara to 46th Avenue.

Line 12-OCEAN-VAN NESS

Present Route: As line 12-OCEAN, trolley coach service from City College Station (Ocean and Phelan Avenues) via Ocean Avenue, Mission Street, Steuart Street to "Ferry" Terminal; return via Steuart, Mission, Ocean to City College Station at Phelan Avenue.

POM Proposal: No change south of Mission Street and South Van Ness Avenue. North of that point the 12 would be re-routed up Van Ness Avenue to create a through north-south crosstown line, and provide direct access from the Mission to the east-west radial lines north of Market.

Route: Trolley coach service from City College Station (Ocean and Phelan Avenues) via Ocean Avenue, Mission Street, South Van Ness Avenue, Van Ness Avenue to loop north of North Point Street; return via Van Ness, South Van Ness, Mission, Ocean to City College Station at Phelan Avenue.

5-Year Plan Proposal: Same as POM Proposal. (However, extension of This line into and through Fort Mason along the route of the former H-POTRERO streetcar line or a similar alignment should be considered in order to provide good access to this key segment of the Golden Gate National Recreation Area; See Chapter V, Section I

Line 13-ELLSWORTH

Present Route: Motor coach service from Richland and Mission via Richland, Murray, crescent to Putnam (Farmer's Market); return via Crescent, Alemany, Ellsworth, Crescent, Andover, Richland, Leese, Crescent, Mission to Richland. Evening and weekend service provided by a variant of line 27-NOE.

POM Proposal: Discontinue; service to be provided by motor coach Line 18-SLOAT.

5-Year Plan Proposal: Discontinue; trolley coach service to be provided by Line 20-COLUMBUS.

Presently the 13-ELLSWORTH is a one-coach neighborhood shuttle that was inaugurated primarily in order to serve the isolated Alemany Projects; most of the remainder of its route is duplicated by the 9-RICHLAND trolley coach. The service suffers from the typical characteristics of short neighborhood shuttle lines: poor headways (infrequent operation), lack of connections, multiple transfers, indirect routings for potential passengers, long travel times, low patronage. The Alemany Projects have not previously been located on a through line because they are at the bottom of the steep Ellsworth Street grade, and because Alemany Boulevard at that point is a one-way street. The I-280 freeway isolates the community from southern connections.

Wilbur Smith proposed to remedy this by placing a mid-route loop on their proposed 18 east-west crosstown line. Westbound coaches would diverge from Crescent Avenue at Putnam (Farmer's Market), make the Alemany-Ellsworth loop and return to Crescent; eastbound coaches would remain on Crescent. Eastbound passengers going to the Projects would have to walk down the hill or else reverse directions by transferring at Farmer's Market. Eastbound passengers coming from the Projects would have to ride up the hill on a westbound bus and transfer to an eastbound bus; to complete their journey they would usually have to transfer again in most cases. While this arrangement would simplify routes in the area, it would subject westbound 18-line passengers to a mid-route detour; it would also provide a diminished service to the Projects in some respects, although westbound passengers coming from the Projects would be served well.

Generally, it was felt by the Railway's planning staff that the arrangement proposed in the 5-Year Plan is superior. It will make the Alemany-Ellsworth loop the terminal loop of a radial trolley coach line running to and from downtown direct, offering excellent connections, providing a through service over Bernal Heights, and electrifying the steepest grade in the system as well as other steep grades; it would offer an added service to Farmer's Market for all San Franciscans. (See Line 20-COLUMBUS.) This proposal would offer most of the benefits of the POM proposal, while avoiding its less desirable features.

Line 14-MISSION (local)

Present Route: Trolley coach service from Mission Street and San Jose Avenue in Daly City via Mission, San Jose, Flournoy, Mission, Steuart to "Ferry" Terminal; return via Steuart, Mission to San Jose Avenue in Daly City.

POM Proposal: Extend outer end of line via Mission Street, John Daly Boulevard, DeLong Street to Daly City BART Station.

Route: Trolley coach service from Daly City BART Station via De Long Street, John Daly Boulevard, Mission Street, Steuart Street to "Ferry" Terminal; return via Steuart, Mission, John Daly, DeLong to Daly City BART Station.

This extension would provide a direct connection at a good terminal to all SAMTRANS lines feeding BART at Daly City; some connections are presently made at Mission Street, but line serving BART from the west (Westlake, Pacifica) do not make it to the "Top of the Hill."

5-Year Plan Proposal: Same as POM Proposal.

Lines 14L-MISSION LIMITED and 14GL-GUERRERO LIMITED

Present Route: These lines provide limited stop (transfer points only) service over the 14-MISSION local route Monday through Saturday. They are really one line; the Mission Limited operates at all times except during the weekday rush hour, when the line is re-routed via Guerrero between 14th and Randall Streets to avoid Mission Street traffic. Motor coach service is provided from Mission and San Jose Avenue in Daly City via Mission, San Jose, Flournoy, Mission, Steuart to "Ferry" Terminal; return via Steuart, Mission to San Jose Avenue in Daly City. During rush hours, motor coach service is provided from Mission and San Jose Avenue in Daly City via Mission, San Jose, Flournoy, Mission, Randall, San Jose Avenue, Guerrero, 14th Street, Mission, Steuart to "Ferry" Terminal; return via Steuart, Mission, 15th Street, Guerrero, San Jose Avenue in Daly City. The limited stop area (transfer points only) is between Mission and South Van Ness and Mission and Highland.

POM Proposal: This service would be withdrawn in favor of increased use of BART in this corridor. New line 14B would provide access from outer Mission Street to Glen Park BART Station.

5-Year Plan Proposal: Same as POM proposal, except line 14B serves Balboa Park BART Station instead of Glen Park.

Line 14X-MISSION EXPRESS

Present Route: Weekday, rush hours only. Motor coach service from Mission Street and San Jose Avenue in Daly City via Mission, San Jose, Flournoy, Mission, Trumbull, Alemany, I-280, Sixth, Mission, Steuart, to "Ferry" Terminal; return via Steuart, Mission, Sixth, Harrison, James Lick Freeway, Alemany, Congdon, Trumbull, Mission to San Jose Avenue in Daly City. Express area: Fifth and Mission to Mission and Trumbull, with some intermediate stops.

POM Proposal: This service would be withdrawn in favor of increased use of BART in this corridor. New line 14B would provide access from

Outer Mission Street to Glen Park BART Station.

5-Year Plan Proposal: Same as POM proposal, except line 14B serves Balboa Park BART Station instead of Glen Park. For service to Stonecrest area, see proposed line 26-GUERRERO.

Line 14B-BART

New line proposed in POM Study to link outer Mission Street with BART at Glen Park, and compensate for the withdrawal of Mission Street express and limited services. The route proposed by Wilbur Smith: weekday, rush-hour-only motor coach service from Mission Street and San Jose Avenue in Daly City via Mission, San Jose, Flourney, Mission, Silver, Alemany, Rousseau, Still, Lyell, Bosworth, Arlington, Wilder, Diamond to Bosworth (Glen Park BART); return via Bosworth, Lyell, Alemany, Silver, Mission to San Jose Avenue in Daly City.

At the request of citizens of Glen Park, who are concerned with problems of traffic congestion in the vicinity of the BART Station, MUNI staff investigated the possibility of diverting this line to Balboa Park BART. Upon examination such a diversion appears feasible and desirable. It will reduce the equipment requirement for this line, while most prospective BART passengers on Outer Mission will still have access via line 12 to Balboa Park and lines 37 and 44 to Glen Park.

5-Year Plan Proposal: Weekday, rush-hour-only motor coach service from Mission and San Jose Avenue in Daly City via Mission, San Jose, Flourney, Mission, Geneva to Balboa Park BART Station; return via Geneva, Mission to San Jose Avenue in Daly City.

Line 15-THIRD

Present Route: Basic route: Motor coach service from City College Station (Ocean and Phelan Avenues) via Ocean, Geneva, Santos, Sunnydale, Hahn, Visitacion, Rutland, Arlet, Bayshore, Third, Fourth, Townsend, Third, Kearny, Columbus, Powell, North Point to Taylor; return via Taylor, Bay, Powell, Columbus, Montgomery, Bush, Battery, First, Howard, Second, Brannan, Fourth, Third, Bayshore, Visitacion, Hahn, Sunnydale, Santos, Geneva, Ocean to City College Station at Phelan Avenue.

There are many variations of this very complex line, which is operationally combined with the 42-SANSOME. Some southbound 15-line coaches, coming from Powell and Beach, are signed 15-NAVY YARD, and operate out Third to Newhall, thence via Newhall, Palou, Ingalls, Oakdale, Griffith, Palou to Third; return via Third, Forth, Townsend and remainder of regular route to Powell and Beach. Some trips on this "Navy Yard via Palou" branch also come from the north end of the 42-SANSOME.

At the north end of the 15, a different terminal loop is in use between 1:00 A.M. and 10:00 A.M. Northbound coaches operate over the regular route as far as Powell and Bay, then, instead of continuing north on Powell to North Point they turn east onto Bay, then north on Stockton to Beach; return via Beach, Powell and "regular" route. The purpose of this variation is to provide morning access to work sites at the east end of the Fisherman's Wharf area; after 10:00 A.M. the terminal is shifted to the west to cater to the tourist market.

In addition, there are a variety of short terminals in use on the present 15-42 complex.

POM Proposal: Wilbur Smith identified numerous variations of the 15-42 complex, and recommended a major simplification. The principal 42-line segment north of Market (Sansome/Battery) would become part of a new 42-VAN NESS LOOP; the southern branches would be handled by through crosstown lines. The 15 would become a single, strong trunk route without branches, and served by articulated coaches. North of Market it would be re-routed to Stockton Street to provide additional capacity through Chinatown.

Route: Motor coach service from City College Station (Ocean and Phelan Avenues) via Ocean, Geneva, Santos, Sunnysdale, Hahn, Visitacion, Third, Fourth, Sutter, Stockton, Beach to Mason; return via Mason, North Point, Stockton, Fourth, Third, Visitacion, Hahn, Sunnysdale, Santos, Geneva, Ocean to City College Station at Phelan Avenue. During rush hours, additional service would be operated over the most heavily used segment of the line between Washington Square and Visitacion and Bayshore.

5-Year Plan Proposal: The staff strongly endorses the route simplification strategy suggested by Wilbur Smith and Associates, as well as the re-routing to Stockton Street north of Market. North of Washington Square it is recommended that use of Powell Street rather than re-routing, be retained. This point was strongly made by residents of the area in outreach meetings held there; after review, the staff concurs with this observation. Those attending the outreach meetings also were in general support of the Stockton Street re-routing between Market Street and Washington Square. In the Fisherman's Wharf area, this line should serve the Jefferson/Beach one-way couplet and Fisherman's Wharf Transit Loop. The line will share the exclusive right-of-way and platforms of the Fisherman's Wharf Transit Loop with streetcar line E-EMBARCADERO, and motor coach lines 39-COIT and 42-DOWNTOWN LOOP. Articulated motor coaches, as in the POM recommendation, are proposed for this line.

Route: Motor coach service from City College Station (Ocean and Phelan Avenues) via Ocean, Geneva, Santos, Sunnysdale, Hahn, Visitacion, Bayshore, Third, Fourth, Townsend, Third, Kearny, Sutter, Stockton, Columbus, Powell, exclusive right-of-way on Jefferson, Hyde to Beach; return via Hyde, Beach, Powell, Columbus, Stockton, Fourth, Third, Bayshore, Visitacion, Hahn, Sunnysdale, Santos, Geneva, Ocean to City College Station at Phelan Avenue.

Line 16X-NORIEGA EXPRESS

Present Route: Weekday, rush-hour-only service from 48th Avenue and Ortega Street via Ortega, 47th Avenue, Noriega, 22nd Avenue, Irving, 19th Avenue, Golden Gate Park (cross over Drive, Park Presidio By-Pass Drive), Golden Gate Avenue, Leavenworth, Eddy, Fifth Street North to Market; return via Market, Turk, Balboa, Tenth Avenue, Cabrillo, Park Presidio Boulevard, Golden Gate Park (Park Presidio By-Pass Drive, Cross Over Drive) 19th Avenue, Irving, 23rd Avenue, Noriega, Great Highway, Ortega to 48th. Express area: Van Ness Avenue to Lincoln Way, except for one stop at Masonic Avenue.

POM Proposal: Discontinuance recommended in favor of the faster service and greater capacity offered by N-JUDAH MUNI Metro service. The superior north-south crosstown service recommended by Wilbur Smith and Associates will make the Judah line more accessible.

5-Year Plan Proposal: Same as POM Proposal. Opposition was expressed at the District 11 workshop to this discontinuance. However, on review staff recommends that the Wilbur Smith position be sustained. There is little justification for paralleling MUNI's own new high-capital-investment rail services with diesel bus express lines offering comparable service as long as the rail lines have available capacity, particularly when the elimination of express services paralleling BART is also recommended. If MUNI is to meet the modern transportation needs of the city, and do so within the constraint of "base-level" operating hours (1976), it cannot afford wasteful duplication; to duplicate here would require needs elsewhere to go not only unduplicated but unmet.

Finally, Wilbur Smith identified the per passenger loss on the 16X as the eighth highest on the system, surpassed only by lines like the 91-DALY CITY, 39-COIT, M-OCEAN VIEW night bus, 86-MISSION SHOPPERS' SHUTTLE. It is an expensive, duplicative service and should not, in the interest of sound management and post-Proposition 13 fiscal responsibility, be retained as long as capacity is available on a comparable line in which the City and federal government have invested many millions of dollars. However, service on this line should not be withdrawn until MUNI Metro is fully operational on line N-JUDAH and shown to be reliable; capacity to absorb the 16-line's patronage must also be available before the 16 service can be discontinued.

Line 17-PARKMERCED

Present Route: Motor coach service from Arballo and Acevedo (northernmost intersection) via Arballo, Garces, Gonzalez, Font, Gonzalez, Crespi, 19th Avenue, Eucalyptus, Junipero Serra, West Portal Avenue to Ulloa (West Portal of Twin Peaks Tunnel); return via West Portal Avenue, Junipero Serra, Eucalyptus, 19th Avenue, Crespi, Gonzalez, Font, Juan Bautista, Font, Arballo to Acevedo.

POM Proposal: Extend inner end of line from West Portal of Twin Peaks Tunnel, creating north-south crosstown service through the Sunset (on 28th Avenue) and the Richmond (on 25th Avenue).

Route: Motor coach service from Arballo and Acevedo via Arballo, Garces, Gonzalez, Font, Gonzalez, Crespi, 19th Avenue, Eucalyptus, Junipero Serra, West Portal Avenue, Ulloa, Wawona, Vicente, 28th Avenue, Irving, 19th Avenue, Golden Gate Park (Cross Over Drive), 25th Avenue, to El Camino del Mar; return via 25th Avenue, Golden Gate Park (Cross Over Drive), 19th Avenue, Irving, 28th Avenue, Vicente, Wawona, Ulloa, West Portal Avenue, Junipero Serra, Eucalyptus, 19th Avenue, Crespi, Gonzalez, Font, Juan Bautista, Font, Tapia, Pinto, Arballo to Acevedo.

5-Year Plan Proposal: Crosstown motor coach service from 25th Avenue and El Camino del Mar via 25th Avenue, Cross Over Drive (Golden Gate Park), 19th Avenue, Irving, 23rd Avenue, Noriega, 30th Avenue, Vicente, 19th Avenue, Ulloa, West Portal, Junipero Serra, Eucalyptus, 19th Avenue, Gonzalez Drive, Font Boulevard, Arballo Drive, Garces Drive to Gonzalez Drive; return via Gonzalez, 19th, Eucalyptus, Junipero Serra, West Portal, Ulloa, 19th, Vicente, 30th, Noriega, 22nd, Irving, 19th, Cross Over Drive, 25th, Seacliff, 26th to Lincoln.

The 5-Year Plan re-routing of this line in the Sunset reflects concerns voiced by residents over the operability of 28th Avenue. Preference was voiced for retention of 30th Avenue, now served by line 66-QUINTARA, and 22nd and 23rd Avenues, now served by lines 16 and 71. While this does make the line somewhat more circuitous, it does not appear likely to affect the line significantly, and the revised routing is therefore incorporated into this recommendation. (In fact, the location of the Sunset Reservoir along 28th suggests that the proposed route will have a better catchment area than the POM Proposal). The re-routing from Vicente to Ulloa east of 19th Avenue is in similar response to neighborhood request, and relocates the line to a street which already has transit service (Line L-TARAVALL east of 15th Avenue).

Line 17S-PARKMERCED LOOP

New peak-hour-only shuttle augmenting service on line 17 in the Parkmerced area.

POM Proposal: Motor coach service, continuous loop from 19th Avenue and Holloway via 19th Avenue, Crespi, Juan Bautista, Font, Tapia, Pinto, Arballo, Gonzalez, Cardenas, Holloway to 19th Avenue.

5-Year Plan Proposal: Same as POM Proposal.

Line 17X-PARKMERCED EXPRESS

Present Route: Weekday, daytime-only motor coach service from Arballo

and Vidal via Arballo, Pinto, Tapia, Font, Juan Bautista, Font, Chumasero, Brotherhood Way, Alemany, Interstate 280, Sixth, Bryant, Third, Market to Second; return via Second, Harrison, James Lick Freeway, Alemany, Sickles, Sagamore, Brotherhood Way, Chumasero, Font, Juan Bautista, Font, Arballo to Vidal. Express area; Chumasero and Brotherhood to Sixth, with passenger stops at Alemany and Ocean.

POM Proposal: Discontinue; replace with local motor coach lines 17 and 175 feeding MUNI Metro.

5-Year Plan Proposal: Same as POM Proposal. Line 17X should not be withdrawn until MUNI Metro service on Line M-OCEAN VIEW is fully operable and reliable, and it is clear that the M has capacity to absorb the 17X's patronage.

Line 18-46TH AVENUE

Present Route: As line 18-SLOAT, motor coach service from Winston and Buckingham via Winston, 20th Avenue, Eucalyptus, Junipero Serra, Sloat, 46th Avenue, Irving, 45th Avenue, Lincoln, Great Highway, Fulton, LaPlaya, Balboa, Great Highway, Point Lobos, Great Highway, Balboa, LaPlaya, Fulton, Great Highway, Lincoln, 46th Avenue, Vicente, 47th Avenue, Sloat, Junipero Serra, Eucalyptus, 20th Avenue, Buckingham to Winston.

POM Proposal: Convert to an east-west motor coach crosstown route extending from the Beach to the Bayview by incorporating the Monterey Boulevard segment of the 10-MONTEREY line and parts of lines 9-RICHLAND and 13-ELLSWORTH. North-south service along the beach would be provided by new routes 70-GOLDEN GATE and 73-46TH AVENUE.

Route: 46th Avenue and Sloat via Sloat, St. Francis, Monterey, Diamond, Bosworth, Mission, Crescent, Alemany, Industrial, Bayshore, Oakdale, Toland, Jerrold, Third to Palou; return via Palou, Newhall, Jerrold, Toland, Oakdale, Bayshore, Industrial, Alemany, Ellsworth, Crescent, Mission, Bosworth, Diamond, Monterey, St. Francis, Sloat to 46th Avenue. Inbound terminal at Cortland and Bayshore evenings.

5-Year Plan Proposal: The east-west motor coach crosstown route identified as Line 18-SLOAT in the POM study is essentially retained in the 5-Year Plan proposal; however, it is re-designated Line 10-MONTEREY and is described above under that name.

The 5-Year Plan proposed Line 18-46TH AVENUE would retain the present north-south portion of route 18-SLOAT, including the connection afforded by the existing 18 to Stonestown. It thereby assumes the function of POM lines 70 and 73.

The proposed line also incorporates the functions of existing Line 70-LAKE MERCED. It should be noted, however, that the simplified routing near Lake Merced is contingent on the installation of additional sidewalks on Lake Merced Boulevard and Brotherhood Way. It is the absence of such features which makes these streets the "freeways" they are today, despite recent development of the surrounding area, and requires the

circuitousness of present line 70. Deletion of existing line 70's connecting service to BART is also contingent on successful MUNI Metro operation of the M-OCEAN VIEW. The present Line 70-LAKE MERCED was developed with neighborhood representatives as an interior route recognizing the shortcomings of present streetcar service and present roadway characteristics.

Route: Crosstown motor coach service from Letterman General Hospital via Letterman Boulevard, Lyon, Gorgas, Funston Avenue, Mason, Crissy Field Avenue, McDowell, Lincoln Boulevard, El Camino del Mar, Legion of Honor Drive, 34th Avenue, Geary, Point Lobos, Great Highway, Balboa, LaPlaya, Fulton, Great Highway, Lincoln, 46th Avenue, Sloat Boulevard, Skyline Boulevard, Zoo Road, Skyline Boulevard, John Muir Drive, Lake Merced Boulevard, Brotherhood Way, Junipero Serra, 19th Avenue to Stonestown; Return via 19th Avenue, Junipero Serra, Brotherhood, Lake Merced, John Muir, Skyline, Sloat, 46th, Lincoln, Great Highway, Fulton, LaPlaya, Balboa, Great Highway, Point Lobos, Geary, 34th, Legion of Honor, El Camino del Mar, Lincoln Boulevard, McDowell, Crissy Field, Mason, Funston, Gorgas, Lyon to Letterman General Hospital.

An extension of this line from Letterman General Hospital to Fort Mason, providing a connection to the central unit of the Golden Gate National Recreation Area from the area's San Francisco coastal segment may be considered. However, this should only be accomplished if funds can be obtained to offset the added operating expense.

Line 19-POLK

Present Route: There are two southern terminals for this motor coach line, with the inner terminal at Powell and Beach near Fisherman's Wharf. SP Depot trips: Fourth and Townsend (SP Depot) via Townsend, 5th, Harrison, 9th, Larkin, Geary, Polk, Beach, Leavenworth, Jefferson, Powell to Beach; return via Powell, Beach, Polk, Post, Hyde, 8th, Bryant, Fourth to Townsend. Potrero Hill trips: 23rd and Kansas via 23rd, De Haro, 16th, Rhode Island, Division, 9th, and thence to Fisherman's Wharf following the same route as above; return via Powell, Beach, Polk, Post, Hyde, 8th, Division, Rhode Island, 24th, Kansas to 23rd.

POM Proposal: Maintain service on Polk, but discontinue SP Depot and Potrero Hill segments. Combine with portions of the 25-BRYANT and 23-CRESCENT for a north-south crosstown line. Service to Fisherman's Wharf, the SP Depot, and Potrero Hill would be provided by the proposed 42-VAN NESS NOOP and the 20-POTRERO HILL.

Route: Motor coach service from Cortland and Bayshore via Cortland, Nevada, Bradford, Alabama, Precita, Bryant, 8th, Hyde, Eddy, Polk to North Point; return via Polk, Eddy, Hyde, 8th, Harrison, 11th, Bryant, Precita, Alabama, Bradford, Nevada, Cortland to Bayshore. Added short-line service between 8th and Mission and Polk and North Point during evening peak hours and Sunday afternoons. Requires contraflow lane on Eighth from Bryant to Market, and on Hyde from Market to Eddy.

5-Year Plan Proposal: Retain routing over Potrero Hill, but discontinue SP Depot branch (service provided by Line 42-DOWNTOWN LOOP).

Route: Crosstown motor coach service from Beach and Polk via Beach, Leavenworth, North Point, Polk, Eddy, Hyde, Eighth, Division, Rhode Island, 26th, Wisconsin, Connecticut, Army, Evans, Phelps, Fairfax, Third to Evans; return via Evans, Army, Connecticut, Wisconsin, 26th, Rhode Island, Division, Eighth, Hyde, Eddy, Polk to Beach.

Retention of service over Potrero Hill by this line was strongly advocated by residents of the Hill. They argued that the 19, which they prefer, is more in accord with the grid structure multi-destinational philosophy advanced by the POM Study than Wilbur Smith's own proposed Line 20-POTRERO HILL. Staff concurs with this view, and agrees that the 19 offers superior service and should be retained on the Hill. It is further recommended that the benefits of this service be extended to the residents of the projects on the south side of the Hill, who have hitherto not enjoyed access to the crosstown 19-POLK. The extended line will also provide better access to the health center on Wisconsin Street.

Line 20-COLUMBUS

New trolley coach service proposed to replace sections of existing lines 15-THIRD, 30-STOCKTON, and 41-UNION discontinued in the 5-Year Plan.

5-Year Plan Proposal: Trolley coach service from Van Ness and Chestnut via Van Ness, North Point, Columbus, Montgomery, Clay, Battery, First (Transbay Terminal), Howard, 14th, Folsom, Ripley, Alabama, Bradford, Nevada, Cortland, Folsom, Crescent to Putnam (Farmer's Market); return via Alemany, Ellsworth, Crescent, Folsom, Cortland, Nevada, Bradford, Alabama, Ripley, Folsom, Fremont (Transbay Terminal), Front, Sacramento, Kearny, Columbus, North Point, Van Ness, Lombard, Franklin, Chestnut to Van Ness.

Line 20-POTRERO HILL

POM Line 20-POTRERO HILL was a new motor coach service proposed by Wilbur Smith to replace the present Potrero Hill branch of the 19-POLK and the Projects and hilltop segments of line 53-SOUTHERN HEIGHTS, and to provide the first direct connection from Potrero Hill to Downtown. North of Market Street the 20 would provide a supplementary service to the Powell cables on the south slope of Nob Hill be operating a short loop on Taylor, Bush and Mason Streets.

POM Proposal: Route: Motor coach service from Third and Evans via Evans, Army, Connecticut, 25th, Dakota, 23rd, Wisconsin, 22nd, Carolina, Southern Heights, De Haro, 16th, Kansas, Eighth, Bryant, Fifth, Fifth North, Eddy, Taylor to Bush; return via Bush, Mason, Eddy, Fifth North, Fifth, Harrison,

Eighth, Kansas, 20th, Rhode Island, Southern Heights, Carolina, 22nd, Wisconsin, 23rd, Dakota, 25th, Connecticut, Army, Evans, Phelps, Fairfax, Third to Evans.

5-Year Plan Proposal: Because Lines 19-POLK and 53-SOUTHERN HEIGHTS will be retained on Potrero Hill, do not establish Line 20-POTRERO HILL. Nob Hill service provided by 5-Year Plan Line 27-BRYANT.

Line 21-HAYES

Present Route: Trolley coach service from California and 8th Avenue via 8th Avenue, Clement, 6th Avenue, Fulton, Stanyan, Hayes, Laguna, Grove, Polk, Market to Ferry; return via Market, Hayes, Stanyan, Fulton, 6th Avenue, California to 8th Avenue.

POM Proposal: Withdraw service west of Stanyan Street, with the 6th Avenue segment becoming part of a new major crosstown service, Line 44-DIAMOND HEIGHTS.

Route: Trolley coach service from Stanyan and Fulton via Fulton, Parker, Hayes, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Hayes, Stanyan to Fulton. Requires contraflow lane on Hayes from Laguna to Market to avoid the Laguna - Grove - Hyde Streets jog.

5-Year Plan Proposal: Similar to POM Proposal. Terminate line at Stanyan; Sixth Avenue service to be provided by Line 44-O'SHAUGHNESSY. Staff recommends that eastbound operation on Hayes extend only to Polk, with coaches reaching Market via the short block of Polk Street. This slight jog appears easier and safer than attempting to enter Market directly from Hayes across the Ninth Street traffic flowing onto Hayes, Larkin and Market. The contraflow lane is desirable, however, from Laguna to Polk, as it will permit the 21 to avoid doubling back on itself to reach and return from Grove Street unnecessarily. It will also enable eastbound coaches to operate across the street from the Performing Arts Center and a block away from its garage, and avoid some of the traffic conflicts these facilities will generate.

Route: Trolley coach service from Stanyan and Fulton via Fulton, Parker, Hayes, Polk, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Hayes, Stanyan to Fulton.

Line 22-FILLMORE

Present Route: Trolley coach service from 3rd and 20th via 20th, Tennessee, 18th, Connecticut, 17th, Kansas, 16th, Church, Hermann, Fillmore, Broadway, Steiner, Union, Fillmore to Marina Blvd. (turn-around), Fillmore to Chestnut; return via Fillmore, Union, Steiner, Broadway, Fillmore, Hermann, Church, 16th, Kansas, 17th, Connecticut, 18th, 3rd to 20th.

POM Proposal: Extend both ends of the line. On the north, extend to Marina Safeway and Fort Mason-Golden Gate National Recreation Area; on the south to 22nd Street.

Route: Trolley coach service from 22nd and 3rd via 22nd, Tennessee, 18th, Connecticut, 17th, Kansas, 16th, Church, Hermann, Fillmore, Broadway, Steiner, Union, Fillmore, Beach to Buchanan; return via Buchanan, Bay, Fillmore, Union, Steiner, Broadway, Fillmore, Hermann, Church, 16th, Kansas, 17th, Connecticut, 18th, 3rd to 22nd.

5-Year Plan Proposal: Retain present Marina District routing via Fillmore to Marina Boulevard; access to Fort Mason to be provided by Line E-EMBARCADERO. Incorporate POM proposed extension in lower Potrero Hill area to 22nd Street.

Route: Trolley coach service from 22nd and Third via 22nd, Tennessee, 18th Connecticut, 17th, Kansas, 16th, Church, Hermann, Fillmore, Broadway, Steiner, Union, Fillmore to Marina Boulevard (turn-around), Fillmore to Chestnut; return via Fillmore, Union, Steiner, Broadway, Fillmore, Hermann, Church, 16th, Kansas, 17th, Connecticut, 18th, Third to 22nd.

Line 23-CRESCENT

Present Route: Motor coach service from Putnam and Crescent (Farmer's Market) via Crescent, Folsom, Cortland, Nevada, Bradford, Alabama, Ripley, Folsom, 24th, Mission, 23rd, Valencia, 24th to Mission; return via 24th, Folsom, Ripley, Alabama, Bradford, Nevada, Cortland, Folsom, Crescent to Putnam.

POM Proposal: Discontinue. Replace with an extension of POM Line 19-POLK-BRYANT.

5-Year Plan Proposal: Discontinue. Replace with new trolley coach route 20-COLUMBUS.

Line 24-DIVISADERO

Present Route: Crosstown motor coach service from Castro and 25th via Castro, Divisadero, Jackson, Fillmore, Pacific, Webster to Jackson; return via Jackson, Divisadero, Castro, 26th, Noe, Clipper, Castro to 25th.

POM Proposal: Electrify and extend service north to Chestnut in the Marina and south to Third and Gilman in Bayview/Hunters Point.

Route: Crosstown trolley coach service from Third and Gilman via Gilman, Griffith, Fitzgerald, Ingalls, Palou, Industrial, Bayshore, Cortland, Mission, 30th, Noe, 26th, Castro, Divisadero, Jackson, Scott, Chestnut to Divisadero; return via Chestnut, Scott, Jackson, Divisadero, Castro, 26th, Noe, 30th, Mission, Cortland, Bayshore, Industrial, Palou, Ingalls, Fitzgerald, Griffith, Gilman to Third.

5-Year Plan Proposal: Basically the same as POM proposal. However, the extension to the north over the Pacific Heights ridge to the Marina has been deleted from the staff recommendations. On the southern end, the proposed operation east of Third Street over Palou and Ingalls has also been deleted; it will be served by Line 10-MONTEREY. The proposal to electrify this hilly route is reaffirmed by the staff.

Proposed Route: Crosstown trolley coach service from Fillmore and Jackson via Jackson, Divisadero, Castro, 26th, Noe, 30th, Mission, Cortland, Bayshore, Industrial, Palou, Mendell, Oakdale, Third to Palou; return via Palou, Industrial, Bayshore, Cortland, Mission, 30th Street, Noe, 26th Street, Castro, Divisadero, Jackson, Fillmore, Washington, Webster, Jackson to Fillmore.

Line 25-SAN BRUNO

Present Route: As Line 25-BRYANT, motor coach service from Geneva and Santos via Santos, Velasco, Castillo, Geneva, Bayshore, San Bruno, Alemany, Bayshore, Army, Bryant, Fifth, Fifth North, Ellis, Leavenworth, Jackson to Fillmore; return via Jackson, Steiner, Washington, Hyde, Bush, Jones, O'Farrell, Mason, Eddy, Fifth North, Fifth, Harrison, 11th, Bryant, Precita, Army, Bayshore, Silver, San Bruno, Bayshore, Geneva to Santos.

POM Proposal: The existing southern leg of the present 25-BRYANT would be replaced by proposed routes 19-POLK-BRYANT on Bryant Street and 47-POTRERO, on San Bruno Avenue; the northern leg would be replaced by proposed Lines 20-POTRERO HILL on Fifth, 47-POTRERO on Fifth and over Nob Hill, and 3-JACKSON in Pacific Heights. Designation number 25 would be retired.

5-Year Plan Proposal: The northern leg of the present 25-BRYANT would be replaced by an extended Line 3-JACKSON. However, the basic structure of the southern leg of the 25-BRYANT, linking downtown to Visitacion Valley, would be retained. The line would be re-routed from Bryant to Potrero through the Mission, and approach Market via Eighth rather than Fifth Street. It is proposed that the line run down Market Street from Eighth to the Ferry; presently, all Market Street lines diverge to the north or west, and it was concluded by staff that one south-of-Market line, at least, should have access to Market Street. This proposal will provide users of line 25 with direct access to Civic Center, and to both the retail and financial districts. At the outer end of the line, an extension via Sunnydale Avenue to an off-street loop near the McLaren Park golf course is proposed; this extension will provide service to McLaren School which offers day care programs.

Recommended Route: From Sunnydale Loop via Sunnydale, Santos, Geneva, Castillo, Velasco, Schwerin, Sunnydale, Bayshore, San Bruno, Alemany, Bayshore, Potrero, Brannan, Eighth, Market, Steuart to "Ferry"; return via Steuart, Market, Eighth, Brannan, Potrero, Bayshore, Alemany, San Bruno, Bayshore, Sunnydale, Schwerin, Velasco, Castillo, Geneva, Santos, Sunnydale to Sunnydale Loop.

Line 26-GUERRERO

Present Route: As Line 26-VALENCIA, motor coach service from Holloway and 19th Avenue (SF State University) via Holloway, Junipero Serra, Brotherhood, Arch, Alemany, San Jose, Baden, Circular, Monterey, Diamond, Chenery, 30th, Mission, Valencia, Market, 8th, Mission, Mint, Jessie to 5th; return via 5th, Mission, Otis, McCoppin, Valencia, Mission, 30th, Chenery, Diamond, Monterey, Circular, Baden, San Jose, Sagamore, Alemany, Palmetto, Junipero Serea, 19th Avenue to Holloway. Express via Guerrero weekday peak periods. Express area: San Jose and Cotter to 14th, and Valencia.

POM Proposal: Cut outer end of line back to the Balboa Park BART Station upon completion of the M-line extension to that point. Additionally, relocate the line from Valencia to Guerrero to provide better route spacing in the Mission District, and extend to "Ferry". New designation.

Route: Motor coach service from San Jose and Geneva (Balboa Park BART) via San Jose, Baden, Circular, Monterey, Diamond, Chenery, 30th, San Jose, Guerrero, Duboce, Mission to Ferry; return via Mission, Otis, Duboce, Guerrero, San Jose, 30th, Chenery, Diamond, Monterey, Circular, Baden, San Jose to Geneva.

5-Year Plan Proposal: The extended J-CHURCH, combined with Line M-OCEAN VIEW, will provide the through service from the Mission District to San Francisco State now provided by Line 26-VALENCIA, and also offer service along San Jose Avenue between Balboa Park and Glen Park. To avoid duplication the outer end of line 26 should be cut back to Glen Park BART from its present SF State terminal and the POM proposed Balboa Park Terminal. It was first thought by staff that the outer terminal should be at Glen Park. However in the course of the outreach program it was found that the poorly-served Stonecrest area, located in a valley between Silver Avenue and I-280, would be virtually without transit with the proposed discontinuance of Line 14X-MISSION EXPRESS. Residents of Stonecrest expressed a desire to have transit service, and, in particular, access to BART. Staff has also been aware, through numerous meetings in Glen Park, of the difficult traffic problems in the vicinity of Chenery and Diamond Streets, and the requests of the neighborhood to avoid having buses terminate there and to favor through-routing solutions. It is the recommendation of staff that the 26-GUERRERO be routed per the POM recommended plan as far as Glen Park BART Station, continuing beyond the station to provide a transit loop through the Stonecrest area; this will provide that neighborhood with access to BART, their first good local transit service, and their first full time radial line.

Recommended Route: Radial motor coach service from Gladstone Drive and Trumbull, via Trumbull, Mission, Silver, Alemany, Rousseau, Still, Lyell, Bosworth, Diamond, Chenery, 30th Street, San Jose, Guerrero, Duboce, Mission, Steuart to "Ferry" Terminal; return via Steuart, Mission, Duboce, Guerrero, San Jose, 30th, Chenery, Diamond, Bosworth, Lyell, Alemany, Silver, Maynard, Gladstone to Trumbull.

Line 27-BRYANT

Present Route: As Line 27-NOE, motor coach service from 29th and Noe via 29th, Mission, Army, Bryant, 5th, Townsend, 2nd, Mission to 1st (Transbay Terminal); return via 1st, Harrison, 2nd, Townsend, 5th, Brannan, Division, Bryant, Army, Valencia, Mission, 29th, Castro, 30th, Noe to 29th. Evening, weekend, and holiday shuttle service including the 13-ELLSWORTH line: From Noe and 29th via 29th, Mission, Richland, Murray, Crescent to Putnam (Farmers' Market); return via Crescent, Alemany, Ellsworth, Crescent, Andover, Richland, Mission, 29th, Castro, 30th, Noe to 29th.

POM Proposal: Discontinue; daytime service to be provided by MUNI Metro J-line downtown, the 42-VAN NESS LOOP South-of-Market, Line 19-POLK-BRYANT on Bryant, and the 24-DIVISADERO line. 13-ELLSWORTH segment of evening and weekend service to be provided by 10-MONTEREY crosstown line at all times.

5-Year Plan Proposal: Because the 19 line will run to Potrero Hill and not on Bryant Street, retain most of the 27 to provide local Bryant Street service. Also provides Nob Hill service, supplementing Powell cables, recommended by Wilbur Smith for the proposed POM line 20. Service west of Army and Mission not proposed for retention.

Proposed route: Motor coach service from 26th Street and Mission via 26th, South Van Ness, Army, Bryant, Fifth, Fifth North, Ellis, Taylor to Sutter; return via Sutter, Jones, Ellis, Fifth North, Fifth, Harrison, 11th Street, Bryant, Army, Mission to 26th Street.

Line 28-NINETEENTH AVENUE

Present Route: The major north-south crosstown route in the western part of the city; alternate coaches run to a northern terminal at Chestnut and Fillmore, and servicing the Presidio and the Marina.

Route: Motor coach service from Geneva and Mission via Geneva, Naples, Curtis, Prague, Cordova, Chicago, South Hill, Prague, Geneva, Howth, Mt. Vernon, Grafton, Garfield, Junipero Serra, Sloat, 19th Avenue, Golden Gate Park (cross over Drive), 25th Avenue, Seacliff, El Camino del Mar, 25th Avenue to California (the "Seacliff" Loop). Alternates with "Pershing Drive" Loop: 25th Avenue, El Camino del Mar, Lincoln, Bowley, Lincoln, El Camino del Mar, 25th Avenue to California. Both loops after 8:00 P.M.; return via 25th Avenue, Golden Gate Park (Cross Over Drive), 19th Avenue, Sloat, Junipero Serra, Holloway, Beverly, Garfield, Grafton, Mt. Vernon, Louisberg, Geneva to Mission. During Stonestown business hours, service routed via Junipero Serra, Winston, 20th Avenue, Eucalyptus, Junipero Serra. Until 8:00 P.M., every other trip is extended via Lincoln Blvd., Merchant Street, through Golden Gate Bridge Toll Plaza, Lincoln Boulevard, McDowell Avenue, Crissy Field Avenue, Mason Street, Halleck Street, Lincoln Boulevard, Funston Avenue, Presidio Boulevard, Letterman Drive, Lombard, Lyon, Greenwich, Webster, Chestnut to Fillmore; return via Fillmore, Greenwich and reverse of above.

POM Proposal: Strengthen the basic function of this line by operating it on major arterial streets and highways, and eliminating unnecessary meanders. Retain 19th Avenue routing in the Sunset District, and extend line 28 past SF State University to the Daly City BART Station. The East-west function of the present 28-line would be performed by the proposed Line 72-SUNSET.

Route: Motor coach service from Daly City BART Station via DeLong Street, John Daly, Junipero Serra, 19th Avenue, Eucalyptus, Junipero Serra, Sloat, 19th Avenue, Golden Gate Park (Cross Over Drive and Park Presidio By-Pass), Park Presidio Boulevard, Doyle Drive, Golden Gate Bridge Toll Plaza, Doyle Drive, Richardson Avenue, Gorgas Avenue, Baker, Lyon, Greenwich, Lyon, Webster, Chestnut to Fillmore; return via Fillmore, Greenwich, Lyon, Gorgas Avenue, Doyle Drive, Golden Gate Bridge Toll Plaza, Doyle Drive, Park Presidio Boulevard, Golden Gate Park (Park Presidio By-Pass, Cross Over Drive), 19th Avenue, Sloat, Junipero Serra, Eucalyptus, 19th Avenue, Junipero Serra, John Daly, DeLong Street to Daly City BART Station.

5-Year Plan Proposal: Same as POM Proposal.

Line 29-RUTLAND

Present Route: As Line 29-VISITACION, motor coach service from Gillette and Lathrop via Gillette, Blanken, Bayshore, Visitacion, Rutland, Sunnydale, Schwerin, Velasco, Santos, Blythdale, Brookdale, Santos, Sunnydale, Hahn, Leland, Sawyer, Visitacion, Rutland, Tioga, Delta, Wilde, San Bruno, Mansell to Visitacion; return via Mansell, San Bruno, Wilde, Delta, Tioga, Rutland, Visitacion, Sawyer, Leland, Hahn, Sunnydale, Santos, Brookdale, Blythdale, Santos, Velasco, Schwerin, Sunnydale, Rutland, Visitacion, Bayshore, Blanken, Nueva, Lathrop to Gillette.

POM Proposal: Discontinue as a separate neighborhood shuttle line. The two legs of the present 29-line would each become branches of the POM proposed line 47, to be designated Line 47G-POTRERO-GENEVA, and 47R-POTRERO-RUTLAND; alternate motor coaches would serve either of the two branches.

5-Year Plan Proposal: The staff recommends against the proposal to graft line 29 onto major radial trunk line by splitting its ends. Instead, the western branch is incorporated into the proposed line 25-SAN BRUNO; the eastern leg remains as an independent neighborhood shuttle line.

Route: Motor coach service from Lathrop and Gillette via Gillette, Blanken, Bayshore, Sunnydale, Rutland, Tioga, Delta, Wilde, San Bruno, Mansell, Girard, Olmstead, San Bruno to Mansell; return via Mansell, San Bruno, Wilde, Delta, Tioga, Rutland, Sunnydale, Bayshore, Blanken, Tocoloma, Lathrop to Gillette.

Line 30-STOCKTON

Present Route: Trolley coach service from Fourth and Townsend (SP Depot) via Townsend, Third, Kearny, Sutter, Stockton, Union, Columbus, North Point, Van Ness, Chestnut, Broderick to Beach; return via Broderick, Jefferson, Divisadero, Chestnut, Van Ness, North Point, Columbus, Stockton, Fourth to Townsend.

POM Proposal: No change.

5-Year Plan Proposal: The staff recommends that Line 30-STOCKTON be routed between Downtown and the Marina via the Broadway Tunnel.

This recommendation follows from the POM Proposal to re-route line 30X, the express route over this line, via the Financial District rather than the Union Square area and shopping district (lower Stockton Street). While this proposal elicited support in the outreach meetings from Financial District workers, it was strongly disapproved of by some other Marina residents who prefer a faster, more direct routing to reach Downtown in the daytime. The Union Square shopping area also offers a strong all-day transportation market, while the Financial District is characterized by very heavy rush-hour peaks and a light off-peak transit demand.

In order to meet both the strong peak demands to the Financial District and the need for a more direct all-day service from the Marina to Downtown, the staff recommends that the local 30 trolleycoach service follow the route of the present express to downtown. As many stops have been added, on citizen request, to the "express" between the Marina and Downtown it virtually functions as a local route already. Putting the 30 local on this alignment will respond to neighborhood requests for local service through the tunnel, without significant disadvantages for Marina-to-Downtown patrons. In fact, this routing will mean that all trips from the Marina can be made with shorter running times - even in the evenings and on weekends when the present express does not operate. In addition, this strategy enables the Railway to operate a direct rush-hour express to the Financial District and a through line on Columbus Avenue (line 20).

Route: Trolley coach service from Fourth and Townsend (SP Depot) via Townsend, Third, Kearny, Sutter, Stockton, Broadway, Van Ness, Chestnut, Broderick to Beach; return via Broderick, Jefferson, Divisadero, Chestnut, Van Ness, Broadway, Stockton, Fourth to Townsend (SP Depot).

Line 30-FREEWAY EXPRESS

Present Route: Motor coach service from London and Geneva via Geneva, Santos, Sunnydale, Hahn, Visitacion, Rutland, Arleta, San Bruno, Bacon, Bayshore, Freeway, Bryant, 3rd, Kearny, Sutter, Stockton, Broadway, Van Ness, Chestnut, Broderick, Beach to Divisadero; return via Beach, Scott, North Point, Divisadero, Chestnut, Van Ness, Broadway, Stockton, 4th, Harrison, Freeway, San Bruno, Bayshore, Visitacion, Hahn Sunnydale, Santos,

Geneva, Mission, Amazon, London to Geneva. Operates weekdays, daytime only. Express area inbound south of Downtown: Bayshore and Sillman to Bryant and 7th; outbound; Harrison and 6th to San Bruno and Sillman. Express area north of Downtown: inbound (northbound): Stockton and Sacramento to Chestnut and Van Ness with all-day stops at Broadway and Polk and at Van Ness and Union, and midday-only stop at Broadway and Powell; outbound (southbound): Chestnut and Van Ness to Stockton and Clay, with all-day stops at Van Ness and Union and at Broadway and Polk, a midday-only stop at Broadway and Powell, and no stop at Stockton and Sacramento.

POM Proposal: Motor coach service from Geneva and Santos via Santos, Sunnydale, Hahn, Visitacion, Bayshore, San Bruno, Silver, Bayshore, Freeway, Bryant, Second, Folsom, Fremont, Front, Pine, Sansome, Broadway, Van Ness, Chestnut, Broderick, Beach to Divisadero; return via Beach, Scott, North Point, Divisadero, Chestnut, Van Ness, Broadway, Battery, First, Howard, Second, Harrison, Freeway, Bayshore, Silver, San Bruno, Bayshore, Visitacion, Hahn, Sunnydale, Santos, Velasco, Castillo, Geneva to Santos. Weekday, daytime service. Express area north of Downtown: Chestnut and Van Ness to Broadway and Sansome/Battery. Express area south of Downtown: Cortland and Bayshore to Sixth and Bryant/Harrison. Articulated motor coaches are proposed for this line.

5-Year Plan Proposal: As noted in the discussion of Line 30-STOCKTON, above, the staff recommends that the north-of-Downtown segment of this line be operated as a rush-hour-only service to the Financial District; this agrees with the most important aspect of the Wilbur Smith recommendation. South of Downtown, however, it is proposed that the line operate throughout the day on weekdays, and that it be oriented primarily to the retail area rather than the Financial District; this route was clearly preferred by residents of the southeastern part of the city, and will have a better all day ridership potential. The north and south segments can be through-routed in the rush hour when service to the Marina via the Financial District is operated. Articulated motor coaches are proposed for this line.

Route: Motor coach service from Geneva and Santos via Santos, Sunnydale, Hahn, Visitacion, Bayshore, San Bruno, Bacon, Bayshore, Freeway, Bryant, Third, Kearny, Bush, Sansome to Sutter; return via Sutter, Stockton, Fourth, Harrison, Freeway, Bayshore, Silver, San Bruno, Bayshore, Visitacion, Hahn, Sunnydale, Santos, Velasco, Castillo, Geneva to Santos. This segment operates all day, weekday, daytime only. Express area: Cortland and Bayshore to Sixth and Bryant/Harrison.

During the weekday rush hour, extend from Bush and Sansome via Sansome, Broadway, Van Ness, Chestnut, Broderick, Beach to Divisadero; return via Beach, Scott, North Point, Divisadero, Chestnut, Van Ness, Broadway, Battery, Market to Sutter. Express area: Van Ness and Chestnut, to Broadway and Sansome/Battery. No intermediate passenger stops should be made; Line 45X-GREENWICH EXPRESS will serve passengers from Union Street, and Line 30-STOCKTON will provide local service through the Broadway Tunnel.

Line 31-BALBOA

Present Route: Motor coach service from 32nd Avenue and Anza via Anza, 33rd Avenue, Balboa, Turk, Divisadero, Eddy, Fifth, Market to Ferry; return via Market, Turk, Larkin, Eddy, Divisadero, Turk, Balboa, 32nd Avenue to Anza. Evenings and weekends, inner terminal at 5th and Market. Weekend and holiday extension to the Legion of Honor via 33rd Avenue, Clement and Legion of Honor Drive. Limited stop service (transfer points only) weekday peaks; Eddy and Divisadero to Turk and Mason.

POM Proposal: Extend service out Balboa from 33rd Avenue to the Beach, replacing the service provided by the current 38-GEARY.

Route: Balboa and LaPlaya via Balboa, Turk, Divisadero, Eddy, Fifth Street North, Market to Ferry; return via Market, Fifth Street North, Eddy, Divisadero, Turk, Balboa to LaPlaya. Requires making Eddy a two-way street between Market and Larkin, or introducing a contraflow lane.

5-Year Plan Proposal: During the course of outreach meetings in the Richmond District, numerous objections were raised to the replacement of the outer end of the 38-line by an extended 31-BALBOA. In some cases there was an objection to going Downtown via Turk and Eddy Streets rather than via O'Farrell and Geary. In other cases, there was concern about the loss of direct access to shopping districts farther north in the Richmond. In still others, there was a misunderstanding by some who had heard that Line 38-GEARY would be discontinued without being informed that a new service would be inaugurated in the area where 38-line bus service would be withdrawn.

The staff recommends the basic approach proposed by Wilbur Smith—through operation on Geary by Line 38-GEARY and through operation on Balboa by Line 31-BALBOA. The extension of Line 2-CLEMENT to 33rd and Balboa will make possible a transfer to a line which reaches the more northerly shopping areas of the Richmond; in addition, improved crosstown services will provide access to various parts of the Geary, Clement and California Street Shopping Districts. The 2 will also offer an alternate route to Downtown via Sutter and Post for those who wish it. The proposed new Line 31X-BALBOA EXPRESS will offer fast rush-hour service to the Financial District for Richmond District residents. This combination of routes will provide excellent service for residents along Balboa Street in the outer Richmond, and appears to meet the specific objections raised by some members of the public. Service every day will be provided to the Legion of Honor by Line 18-46TH AVENUE.

One proposed change was suggested by the public, and is incorporated into the staff recommendation. While the Wilbur Smith staff proposed taking line 31 straight out Balboa from 33rd to LaPlaya, the 5-Year Plan route follows the present 38-line jog to Cabrillo Street west of 45th Avenue to a terminal at Cabrillo and LaPlaya. This diversion conforms better to the topography of the area, is preferred by residents and does not do violence to the POM concept.

Route: Motor coach service from the Beach (Cabrillo and LaPlaya) via Cabrillo, 45th, Balboa, Turk, Divisadero, Eddy, Fifth Street North, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Fifth Street North, Eddy, Divisadero, Turk, Balboa, 45th, Cabrillo to LaPlaya ("Beach").

Line 31-BALBOA EXPRESS

New peak-hour-only motor coach service allowing better spacing of express service in the Richmond. Present express service exists only on Clement and Geary. Line 31X is part of a strategy to provide three Richmond District express services spaced at two-block intervals: California, Geary, and Balboa.

POM Proposal: Motor coach service from Balboa and LaPlaya via Balboa, Turk, Masonic, Bush, First to Transbay Terminal; return via Fremont, Front, Pine, Masonic, Turk, Balboa to LaPlaya. Operates without passenger stops between Presidio Avenue and Pine/Bush Streets, and Kearny Street.

5-Year Plan Proposal: Same as POM proposal, except that this line should follow the present 38-line jog to Cabrillo Street west of 45th Avenue.

Route: Motor coach service from the Beach (Cabrillo and LaPlaya) via Cabrillo, 45th, Balboa, Turk, Masonic, Bush, Battery, First Street to Transbay Terminal; return from Transbay Terminal via Fremont, Front, Pine, Masonic, Turk, Balboa, 45th, Cabrillo to LaPlaya ("Beach"). Operates without passenger stops between Presidio Avenue and Pine/Bush Streets, and Kearny Street.

Line 32-EMBARCADERO

Present Route: Daily, daytime only motor coach service from Fourth and Townsend (SP Depot) via Fourth, Berry, Third, Townsend, Embarcadero, Jefferson to Hyde; return via Hyde, Beach, Embarcadero, Townsend to Fourth (SP Depot).

POM Proposal: No change.

5-Year Plan Proposal: Replace with streetcar line E-EMBARCADERO.

Line 33-STANYAN

Present Route: As Line 33-ASHBURY, trolley coach service from Stanyan and Waller via Waller, Ashbury, Clayton, Market, 18th, Mission, Fourth to Harrison; return via Harrison, 14th, Folsom, 18th, Market, Clayton, Ashbury, Haight, Stanyan to Waller. Evenings and weekends, inner terminal at 18th and South Van Ness.

POM Proposal: Replace with proposed 33-PARKER crosstown line from Children's Hospital to General Hospital.

Route: Trolley coach service from Sacramento and Spruce via Spruce, California, Parker, Hayes, Stanyan, 17th, Diamond, 18th, Church, 20th, Potrero to 24th; return via Potrero, 20th, Church, 18th, Diamond, 17th, Stanyan, Hayes, Parker, Maple, Sacramento to Spruce. This route would provide a stronger L-shaped crosstown line west and south of Line 22-FILLMORE, and use principal thoroughfares in place of the present irrational routing. The present 33-ASHBURY trolley coach line is extremely ineffective, with loads so light that the base headway is only 24 minutes. In the 1927 Wilcox study the route, then a streetcar on the same alignment, was singled out for special criticism. Wilcox found it to be the Market Street Railway's "Champion money loser" and said it did not "...look as if it had been laid out as a primary transportation route. It looks like a line laid out because somebody else wanted a franchise, even though the field was already fully occupied, at least in the downtown section. This line is too unprofitable to continue to be operated all the way down Harrison Street to a dead end. Unless it finds some place to go it will continue to pile up losses." The POM recommendation would finally give the 33 "some place to go" by revising it into a strong crosstown route operating on logical streets, offering a wide variety of transfer opportunities and having useful terminals. In particular, use would be made of 17th Street west of Market, which is the principal through east-west street in this area and enables MUNI to avoid the operationally difficult "switchback" at Market and Clayton Streets; the 17th Street hill can be easily negotiated by trolley coaches. Similarly, crosstown service would be established on Stanyan Street, as recommended in the 1974-75 Northwest Corridor Study (NWX); the line would have terminals at two important institutions that attract many trips from throughout the city - Children's and General Hospitals.

5-Year Plan Proposal: In the course of the outreach program residents of the Jordan Park, Francisco Heights and Stanyan/Fulton neighborhoods presented the planning staff with several arguments for a revision to the new 33 line as proposed. While supporting the concept of the crosstown line, the neighborhoods strongly recommended the use of Arguello Boulevard from Fulton to California rather than Stanyan and Parker. After a further examination of the site and consideration of the arguments presented by the neighborhood, the Railway planning and operating staffs agree that Arguello does offer enough advantages to warrant the change in recommendation. On the south, extend the line to Army Street; install signal pre-empt to permit trolley coaches to turn safely into Army Street.

Route: Trolley coach service from California and Maple (Children's Hospital) via California, Arguello, Fulton, Stanyan, 17th, Eureka, Market, 17th, Church, 20th, Potrero to Army; return via Army, Hampshire, 25th, Potrero, 20th, Church, 18th, Castro, 17th, Stanyan, Fulton, Arguello, Sacramento, Maple to California.

Line 34-WOODSIDE

Present Route: Motor coach service from Myra and Dalewood via Myra, Reposa, Teresita, Portola, Woodside, Laguna Honda (Forest Hill Station), Clarendon, Oak Park, Warren, Seventh, Laguna Honda to Forest Hill Station; return via Laguna Honda, Woodside, Portola, Fowler, Teresita, Reposa, Myra to Dalewood. Weekday daytime only. (The direction of the Forest Knolls Loop was recently reversed at the request of the neighborhood).

POM Proposal: Discontinue 34-line service through Forest Knolls, and combine the section from Myra and Dalewood to Forest Hill Station with the 89-LAGUNA HONDA. Forest Knolls would be provided two-way service by revised line 36-MIRALOMA.

5-Year Plan Proposal: Retain Line 34-WOODSIDE as now operated, without changes. The reversal Of the loop mentioned above was requested by the neighborhood principally so that buses would travel down rather than up, the steep Warren Drive grade. The POM recommendations would place a more intensive two-way motor coach operation on Warren Drive, a feature to which citizens strongly objected. After further investigation, staff recommends against the POM Proposal and in favor of retention of the present route. Saturday service, however, was requested and should be provided.

Line 35-EUREKA

Present Route: Motor coach service from Army and Third via Army, Connecticut, 26th, Kansas, 23rd, San Bruno, 24th, Church, 25th, Diamond, 23rd, Eureka, Market to Castro; return via Castro, 20th, Eureka, 23rd, Diamond, 28th, Noe, 25th, Church, 24th, Vermont, 23rd, Rhode Island, 26th, Connecticut, Army to Third.

POM Proposal: Separate the north-south Noe Valley and the east-west Mission crosstown functions of the present 35-line; the east-west crosstown service would be provided by proposed Line 11-QUINTARA-24TH STREET. As new Line 35-EUREKA, extend over Diamond Heights and through Fairmount District, replacing a branch of present Line 37-CORBETT, to Glen Park; through-route with present Line 52-EXCELSIOR to provide Excelsior District access to BART and MUNI Metro at Glen Park.

Route: Motor coach service from Mission and Geneva via Mission, Amazon, London, Geneva, Naples, Excelsior, Mission, Silver, Alemany, Rousseau, Still, Lyell, Bosworth, Glen Park BART, Diamond, Chenery, Miguel, Addison, Diamond Heights Blvd., Diamond St., 25th, Castro, 24th, Hoffman, 21st, Hoffman, 24th, Castro, 25th, Diamond St., Diamond Heights Blvd., Addison, Bemis, Mateo, Chenery, Glen Park BART, Bosworth, Lyell, Alemany, Silver, Mission, Excelsior, Naples, Geneva to Mission.

5-Year Plan Proposal: As noted in the discussion of proposed Line 11-QUINTARA-24TH STREET, the POM recommended network for Noe Valley was generally found inadequate by both citizens and Railway staff. In addition, meetings with citizens of the Fairmount neighborhood led to a re-evaluation of the proposed operation on the narrow and steep streets above Chenery; the conclusion of staff is that the Railway would be best advised, in the absence of any other overriding reasons, to avoid operating on them. These considerations together result in a substantial change in the nature of the proposed 35-line.

It is recommended by staff that Line 11-QUINTARA-24TH STREET operate over the Hoffman-Douglass loop as it now does, contrary to the POM proposal to operate line 35 over Hoffman and 24th Streets. At the same time, it is recommended that the 35 retain its present more easterly route at a lower elevation, including the POM-proposed diversion to 24th and Castro (in this case extended to Noe to improve access to neighborhood shopping). Beyond this point it is proposed that the line be split into two branches. One of these would operate over the Fountain Loop, and via Grandview and Clipper to serve the Burnett Avenue branch of the present 37-CORBETT. The other branch would operate south on Diamond Street, and cover the Moffitt-Bemis-Addison loop of the present 37 line. The 37 is to become the main through line over Diamond Heights; assignment of its branches to the 35 will make this possible. Alternate coaches from Castro and Market will serve the two branches.

Route: Burnett Avenue Branch: Motor coach service from Castro and Market via Castro, 18th, Eureka, 23rd, Diamond, 24th, Noe, 25th, Diamond, 24th, Hoffman, 25th, Fountain, 24th, Hoffman, Grand View, Clipper, Burnett, Crestline, Parkridge to Burnett; return via Burnett, Clipper, Grand View, 21st, Douglass, 24th, Diamond, 25th, Noe, 24th, Diamond, 23rd, Eureka, Market to Castro.

Diamond Heights Branch: Motor coach service from Castro and Market via Castro, 18th, Eureka, 23rd, Diamond, 24th, Noe, 25th, Diamond, Diamond Heights Blvd., Addison, Farnum, Moffitt, Bemis, Addison to Farnum; return via Addison, Diamond Heights Blvd., Diamond, 25th, Noe, 24th, Diamond, 23rd, Eureka, Market to Castro.

Line 36-TERESITA

Present Route: As Line 36-MIRALOMA, motor coach service from Sickles and Huron, via Huron, Mission, Geneva (Balboa Park BART), Phelan (City College), Judson, Foerster, Teresita, Portola, Woodside, Laguna Honda (Forest Hill Station), Clarendon, Panorama, Marview, Skyview, Cityview, Panorama, Olympia, Clarendon, Laguna Honda to Forest Hill Station; return via Laguna Honda, Portola, Fowler, Teresita, Foerster, Judson, Phelan, Geneva, Mission, Sickles to Huron.

POM Proposal: Discontinue segment south of Balboa Park BART Station, which would be replaced by rush-hour-only line 14B, feeding BART at Glen Park. Retain present route from Balboa Park to Forest Hill Station.

North of Forest Hill, the 36 would provide two-way service over the Midtown Terrace section of the present 36 line, and the Forest Knolls section of the present 34-WOODSIDE. From Warren Drive and Seventh Avenue, the POM line 36 would operate via Lawton Street and Ninth Avenue to a terminal at Ninth and Lincoln (Golden Gate Park).

Route: Motor coach service from Balboa Park BART Station via Geneva, Phelan, Judson, Foerster, Teresita, Portola, Woodside, Laguna Honda, Clarendon, Olympia, Panorama, City View, Skive, Marview, Panorama, Clarendon, Oak Park, Warren Drive, 9th Avenue to Lincoln Way; return via Lincoln, 8th Irving, 9th Avenue, Warren, Oak Park, Clarendon, Panorama, Marview, Skyview, Cityview, Panorama, Olympia, Clarendon, Laguna Honda, Woodside, Portola, Fowler, Teresita, Foerster, Judson, Phelan, Geneva to Balboa Park BART.

5-Year Plan Proposal: The retention of the 34-WOODSIDE on its present alignment, and concerns voiced by the Midtown Terrace community about two-way operation on Cityview Way, led staff to re-examine the POM proposal for this line. While the northern extension to Ninth Avenue and Lincoln Way would be a desirable feature, it becomes less so in the absence of a Forest Knolls segment; Midtown Terrace would, in essence, be placed on an off-line loop, a diversion which would tend to reduce through usage. The Cityview Way grade is very steep (steeper than Sacramento Street), and, while operable, would not be a desirable operating environment. An alternative would be to operate the northbound and southbound coaches over the off-line loop in the same direction; that, however, would almost certainly be a continuing source of confusion and complaint. On balance, it seems better to retain the present one-way loop configuration, and delete service to Golden Gate Park; the Park can be reached by a single transfer at Laguna Honda to proposed Line 44-DIAMOND HEIGHTS. As recommended by Wilbur Smith, it is proposed that service south of Balboa Park be deleted. In keeping with the policy of naming a line for a principal or identifying street on which it runs, it is recommended that this line's designation be changed to 36-TERESITA.

Route: Motor coach service from Balboa Park BART via Geneva, Phelan, Judson, Foerster, Teresita, Partially, Woodside, Laguna Honda (Forest Hill Station), Clarendon, Panorama, Marview, Skive, Cityview, Panorama, Olympia, Clarendon, Laguna Honda to Forest Hill Station; return via Laguna Honda, Woodside, Portola, Fowler, Teresita, Foerster, Judson, Phelan, Geneva to Balboa Park BART.

Line 37-CORBETT

Present Route: Motor coach service with two outer terminals. Burnett Branch: From Parkridge and Burnett via Burnett, Portola, Corbett, 17th, Eureka, Market to Castro; return via Castro, 18th, Diamond, 17th, Corbett, Portola, Glenview, Dawnview, Burnett, Crestline, Parkridge to Burnett.

Diamond Heights Branch: From Farnum and Addison via Addison, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., Clipper, Portola, Corbett, 17th, Eureka, Market to Castro; return via Castro, 18th, Diamond, 17th, Corbett, Portola, Clipper, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., Addison, Farnum, Moffitt, Bemis, Addison to Farnum.

POM Proposal: Combine the Burnett branch of the 37-CORBETT with most of the Buena Vista ridge segment of present Line 43-MASONIC, Diamond Heights branch to be replaced by Line 35-EUREKA.

Route: From Parkridge and Burnett via Burnett, Portola, Corbett, Clayton, Market, 18th, Diamond, Market, 14th, Roosevelt, Buena Vista Terrace, Buena Vista East, Upper Terrace, Loma Vista, Roosevelt, 17th, Clayton, Ashbury, Haight to Masonic; return via Masonic, Frederick, Ashbury, Clayton, 17th, Roosevelt, Park Hill, Buena Vista Avenue East, Buena Vista Terrace, Roosevelt, 14th, Market, 17th, Diamond, 18th, Market, Clayton, Corbett, Portola, Glenview, Dawnview, Burnett, Crestline, Parkridge to Burnett.

5-Year Plan Proposal: Retain POM routing north of Portola and Burnett. South of that point, operate over Diamond Heights to Glen Park, and through-route with present 52-EXCELSIOR. This southern segment replaces present line 44 over Diamond Heights, and the POM proposed through-routing of Line 35-EUREKA. Line 35 will cover the "Diamond Heights" branch of present Line 37-CORBETT on Moffitt and Addison Streets. The 37 becomes the through route over Diamond Heights.

Route: Motor coach service from Mission and Geneva via Mission, Amazon, London, Geneva, Naples, Excelsior, Mission, Silver, Alemany, Rousseau, Still, Lyell, Bosworth, Glen Park BART, Diamond, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., Clipper, Portola, Corbett, Clayton, Market, 18th, Diamond, Market, 14th, Roosevelt, Buena Vista Terrace, Buena Vista Avenue East, Upper Terrace, Loma Vista, Roosevelt, 17th, Clayton, Ashbury, Haight to Masonic; return via Masonic, Frederick, Ashbury, Clayton, 17th, Roosevelt, Park Hill, Buena Vista Avenue East, Buena Vista Terrace, Roosevelt, 14th, Market, 17th, Diamond, 18th, Market, Clayton, Corbett, Portola, Clipper, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., Diamond, Glen Park BART, Bosworth, Lyell, Alemany, Silver, Mission, Excelsior, Naples, Geneva to Mission.

Line 38-GEARY

Present Route: Motor coach service from the Great Highway and Cabrillo via Cabrillo, 45th Avenue, Balboa, 33rd Avenue, Geary, Starr King, O'Farrell, Market, First to Transbay Terminal; return via Fremont, Market, Geary, 33rd, Avenue, Balboa, 45th Avenue, Cabrillo to the Great Highway.

POM Proposal: Local motor coach service from Fort Miley (V.A. Hospital) via 43rd Avenue, Geary, Starr King, O'Farrell, Market, First to Transbay Terminal; return via Fremont, Market, Geary, Point Lobos, 42nd Avenue to Ft. Miley (V.A. Hospital). Articulated motor coaches are proposed for operation on this line.

5-Year Plan Proposal: The POM Study recommended that the Geary line operate over the full length of Geary (and Point Lobos) to 48th Avenue rather than diverting south to Balboa Street at 33rd Avenue. Outer Balboa would be served by Line 31-BALBOA. This proposal will enhance the clarity of the system by establishing through operation on one street of the transit line operated on and named for that street. This approach is included among the recommendations of the Northwest San Francisco Rapid Transit Extension Study of 1974-75 (the "Northwest Corridor" Study) and is supported by the transportation element of the City's Master Plan. The Railway staff endorses this concept, and has structured the 5-Year Plan proposals to incorporate the recommendations of the Northwest Corridor Study in the Richmond District.

Route: Same as POM proposal.

Line 38L-GEARY LIMITED

Present Route: Same as present local 38-GEARY. Limited service, with stops at transfer points only, is operated during weekday rush hours. The limited stop area is between Divisadero and Powell Streets; beyond those points buses make all local stops.

POM Proposal: As with the local 38-GEARY, extend out Geary Boulevard, with service on present route south and west of 33rd and Geary to be provided by the extended 31-BALBOA. POM local service on Geary would operate to the Veterans' Administration Hospital at Fort Miley. The 38L-GEARY LIMITED would run to 48th and Point Lobos. Unlike the present limited stop service on Geary, the 38L would operate all day, and have fewer intermediate stops. Articulated motor coaches are proposed for this line.

Route: Motor coach service from 48th and Point Lobos via 48th, Geary, Starr King, O'Farrell, Market, First to Transbay Terminal; return via Fremont, Market, Geary, Point Lobos to 48th. Operates local from 48th and Point Lobos to 33rd and Geary, and from Powell to the Transbay Terminal. Between 33rd Avenue and Powell Street stops only at 25th Avenue, 19th Avenue, Park Presidio Boulevard, Sixth Avenue, Arguello Boulevard, Parker Avenue, Masonic Avenue, Kaiser Hospital, Divisadero Street, Fillmore Street, Van Ness Avenue and Jones/Taylor Streets.

5-Year Plan Proposal: Same as POM Proposal.

Line 38X-GEARY EXPRESS

Present Route: Motor coach service from the Great Highway and Cabrillo via Cabrillo. 45th, Balboa, 33rd, Geary, Presidio, Post to Montgomery and Market; return via Market, Geary, 33rd, Balboa, 45th, Cabrillo to the Great Highway. Operates weekdays, rush hours only. Express area: Masonic Avenue to Powell Street.

POM Proposal: Discontinue in its present form, and replace by "zoned" express system (lines 38AX and 38BX).

5-Year Plan Proposal: Same as POM Proposal.

Line 38AX-GEARY A EXPRESS

POM Proposal: New line, replacing most of the Outer Richmond express service provided by the present line 38X. The 38AX would, like the POM proposed 38 local and 38L Limited, operate out Geary west of 33rd Avenue. Together with other Richmond expresses (1X, 31X, and 38BX), would use Bush and Pine Streets to/from the Financial District.

Route: Motor coach service from 48th and LaPlaya via 48th, Geary, Presidio, Bush, Battery, First to Transbay Terminal; return via Fremont, Front, Pine, Masonic, Geary, Point Lobos to 48th. Weekdays, rush hours only. Operates local from 48th Avenue to Park Presidio; no passenger stops between Park Presidio Boulevard and Kearny Street.

5-Year Plan Proposal: Same as POM Proposal.

Line 38BX-GEARY B EXPRESS

POM Proposal: New line, replacing Inner Richmond segment of present line 38X. The 38X would pick up and distribute passengers on Geary from Park Presidio to Masonic, and operate as an express to Kearny Street. Like the other Richmond expresses (1X, 31X, and 38AX), this line would use Pine and Bush to and from the Financial District.

Route: Geary and Park Presidio via Geary, Presidio, Bush, Battery, First to the Transbay Terminal; return via Fremont, Front, Pine, Masonic, Geary to Park Presidio. Weekdays, rush hours only. Operates local from Park Presidio to Masonic; no passenger stops between Masonic Avenue and Kearny Street.

5-Year Plan Proposal: Same as POM Proposal.

Line 39-COIT

Present Route: Motor coach service from Coit Tower via Telegraph Hill Boulevard, Lombard, Stockton, Filbert, Powell, Union to Montgomery; return from Union and Montgomery via Union, Columbus, Powell, Filbert, Stockton, Lombard, Telegraph Hill Boulevard to Coit Tower.

POM Proposal: Motor coach service extended from Coit Tower and Telegraph Hill Boulevard along Lombard to Columbus (connecting with 59-POWELL & MASON cable car) Columbus, Union to Montgomery; return via Union, Columbus, Lombard, Telegraph Hill Boulevard to Coit Tower.

5-Year Plan Proposal: It is recommended that this line be divided into two segments. The Coit Tower branch should be operated to connect with the 59-POWELL & MASON cable car and north to the Fisherman's Wharf Transit Loop. In this way, the 39-line can be made into a more effective carrier of tourists to Telegraph Hill, and help to relieve the severe tourist-produced traffic congestion on Lombard Street and Telegraph Hill Boulevard. The present route does not connect the summit of the hill with the most active tourist centers; such a connection has been requested by the Telegraph Hill community to begin to provide alternatives to the tourist automobile. Connections to other transit lines at Washington Square would be retained for residents.

This strategy will isolate the Union Street segment of the present 39-line, and it is recommended by staff that that segment be operated by the proposed new line 83-PACIFIC.

Route: Motor coach service from Coit Tower via Telegraph Hill Boulevard, Lombard, Stockton, Union, Columbus, Mason (cable car connection), Lombard, Powell, Jefferson to Hyde; return via Hyde, Beach, Powell, Lombard, Mason (cable car connection), Columbus, Powell, Union, Stockton, Lombard, Telegraph Hill Boulevard to Coit Tower.

Line 40-COMMUTER

Present Route: Motor coach service from Fourth and Townsend Streets (SP Depot) via Townsend, Second to Stevenson; A.M. return via Stevenson, New Montgomery, Fifth, Townsend to Fourth; P.M. return via New Montgomery, Fourth to Townsend (SP Depot). A.M. local service SP Depot to Stevenson; P.M. express service Stevenson to SP Depot. Operates weekday rush hours only.

POM Proposal: No change

5-Year Plan Proposal: Discontinue upon inauguration of MUNI Metro service to SP Depot (extension of Lines J-CHURCH and M-OCEAN VIEW via Embarcadero and Townsend or King to Fourth). Proposed Line 42-DOWNTOWN LOOP would also provide some of the service now offered by the 40-COMMUTER.

Line 41-UNION

Present Route: Trolley coach service from 26th and Mission via Mission 25th, South Van Ness, Howard, 11th, Folsom, Main, Drumm, Sacramento, Sansome, Washington, Columbus, Stockton, Union, Baker, Greenwich to Lyon; return via Lyon, Union, Columbus, Montgomery, Clay, Davis, Beale, Howard, South Van Ness, 26th to Mission. Evening, Saturday, Sunday, Holiday and owl service from Beale and Howard to Greenwich and Lyon. (Pending completion of overhead construction, motor coaches are being substituted for trolleys between Beale and Howard Streets and 26th and Mission).

POM Proposal: Trolley coach service re-routed along Folsom Street and Montgomery and Kearny to the Presidio. (Re-routing to Folsom already approved, pending installation of overhead.) The Montgomery/Kearny alignment would replace the present 15 route along these streets and the extension in the Presidio would provide coverage abandoned by the present 45-GREENWICH.

Route: From Army and Mission via Mission, 26th, Folsom, 3rd, Kearny, Columbus, Union, Baker, Lombard, Letterman Boulevard, Lincoln, Graham to Sheridan; return via Graham, Lincoln, Letterman, Lombard, Baker, Union, Columbus, Montgomery, New Montgomery, Howard, 14th, Folsom, Army to Mission.

5-Year Plan Proposal: In the course of the outreach program, staff found that residents of and merchants in the Union Street/Cow Hollow/Golden Gate Valley areas preferred an all-day service to the downtown shipping and retail area rather than a all-day service to the Financial District. Under the POM proposal, Line 45-GREENWICH, which now runs Downtown via Van Ness and Sutter/Post would be discontinued in favor of a modified 41 with improved frequencies. Passengers with Union Square destinations would transfer to new lines 15 or 30 at Washington Square. The withdrawal of the 45-line on Union Street is proposed principally to strengthen the 41. Because much of the Union Street patronage goes to the 45, there is not enough to support a high level of off-peak, evening and weekend service on the 41; as a result, service on Union Street east of Van Ness, and on other segments of the 41, is very inadequate.

Following internal review, the Railway staff concurs both with the community request for an all-day service to the Downtown commercial core and with the Wilbur Smith recommendation for discontinuance of all-day service via the present 45. It is also concluded that a peak-hour Financial District oriented service is needed to handle the heavy peak flows to and from that area which now characterizes the present 41-UNION, operate Downtown via Stockton Street to the Union Square area, and south of Market as far as Folsom, replacing the present 82-CHINATOWN and supplementing the proposed new lines 15 and 30. To provide the peak-hour service to the Financial District, staff recommends the partial resurrection of line 45, to be operated as a rush-hour-only express to that area via the Broadway Tunnel and Sansome/Battery Streets (see 45X-GREENWICH EXPRESS, below). In the Presidio, line 41 should terminate at the present Parade Ground loop, which has adequate space and passenger waiting facilities. It is recommended that this line not be through-routed with the Folsom Street service, but rather that Folsom be combined with Columbus Avenue (line 20) to provide better east-west coverage on Folsom/Howard Streets and offer access to the Transbay Terminal.

Route: Trolley Coach service from the Presidio Transit Terminal (Lincoln Blvd. and Anza Ave.) via Lincoln, Letterman, Lombard, Lyon, Union, Columbus, Stockton, Fourth to Folsom; return via Folsom, Third, Kearny, Sutter, Stockton, Union, Baker, Lombard, Letterman, Lincoln to Presidio Transit Terminal.

Line 42-DOWNTOWN LOOP

Present Route: As Line 42-SANSOME, motor coach service from Spear and Cochrane (Naval Shipyard) via Spear, Lockwood, Robinson, Galvez, Donahue, Innes, Middle Point Road, Jennings, Cargo Way, 3rd, 4th, Townsend, 3rd, Kearny, Bush, Sansome, Embarcadero, Bay, Powell to Beach; return via Powell, Beach, Embarcadero, Battery, 1st, Howard, 2nd, Brannan, 4th, 3rd, Cargo Way, Jennings, Middle Point Road, Innes, Donahue, Galvez, Robinson, Lockwood, Spear, H Street, Spear to Cochrane. Line 42 is operationally combined with Line 15-THIRD, and various trips on line 42 either originate or terminate on other branches of the 15 or at various short-turn points. There is no service to Powell and Beach on weekends, all trips terminating at Sansome and Chestnut.

POM Proposal: Convert the 42 to a circumferential line around the Central City area. The line would be disassociated from the 15-THIRD. Motor coach service from SP Depot via Townsend, Third, Folsom, Fremont, Front, Pine, Sansome, Embarcadero, North Point, Van Ness, South Van Ness, Mission, 11th, Bryant, 5th, Townsend to Fourth (SP Depot). The reverse route would follow Townsend west from Fourth then via Fifth, Harrison, 11th, Mission, South Van Ness, Van Ness, North Point, Embarcadero, Battery, 1st, Howard, 4th to Townsend (SP Depot).

5-Year Plan Proposal: The staff found consistent support for the POM proposed loop service in the outreach program, and includes it in the 5-Year Plan recommendations. Two relatively minor changes are proposed: a routing via Second rather than Third between Howard and Townsend to better serve the South of Market, and a routing over the Fisherman's Wharf Transit Loop.

Route: Outer, or counter-clockwise loop: Motor coach service from Fourth and Townsend (SP Depot) via Townsend, Second, Folsom, Fremont (Transbay Terminal), Front, Pine, Sansome, Embarcadero, Jefferson (exclusive right-of-way), Hyde, North Point, Van Ness, South Van Ness, Mission, Eleventh, Bryant, Fifth, Townsend to Fourth (SP Depot).

Inner, or clockwise loop: Motor coach service from Fourth and Townsend (SP Depot) via Townsend, Fifth, Harrison, Eleventh, Mission, South Van Ness, Van Ness, North Point, Leavenworth, Beach, Embarcadero, Battery, First (Transbay Terminal), Howard, Second, Townsend to Fourth (SP Depot).

Line 43-MASONIC

Present Route: Motor coach service from Lyon and Lombard via Lyon, Greenwich, Baker, Lombard, Lyon, Gorgas, West Halleck, Lincoln Boulevard, Presidio Boulevard, Presidio, Geary, Masonic, Haight, Cole, Carmel, Clayton, 17th, Roosevelt, Park Hill, Buena Vista Avenue, Buena Vista Terrace, Roosevelt, 14th to Market return via Market, 15th, Castro, 14th, Roosevelt, 17th, Cole, Haight, Masonic, Euclid, Presidio, Presidio Boulevard, Lincoln Boulevard, West Hallock, Gorgas, Lyon to Lombard.

POM Proposal: The 43 would become a major north-south crosstown line connecting the Presidio with U.C. Medical Center, Forest Hill Station, Balboa Park BART Station.

Route: From Chestnut and Divisadero via Chestnut, Lyon, Lombard, Letterman Boulevard, Presidio Boulevard, Presidio Avenue, Geary, Masonic, Haight, Cole, Parnassus, Judah, 9th Avenue, Lawton, Seventh Avenue, Laguna Honda, Portola, Miraloma Drive, Yerba Buena Avenue, Plymouth, Monterey Boulevard, Miramar, Ocean, Geneva, Naples, Prague, Cordova Way, Chicago Way, South Hill, Prague to Geneva; return via Prague, South Hill, Chicago Way, Cordova Way, Prague, Naples, Geneva, Ocean, Miramar, Monterey Boulevard, Plymouth, Yerba Buena, Miraloma, Portola, Laguna Honda, Lawton, 9th Avenue, Judah, Parnassus, Cole, Haight, Masonic, Geary, Presidio Avenue, Presidio Boulevard, Letterman, Lombard, Lyon, Chestnut, Broderick, Francisco, Divisadero to Chestnut.

5-Year Plan Proposal: In the course of the outreach program, staff found strong support for this crosstown service. One major change is proposed; staff recommends that between Monterey Boulevard and Ocean Avenue the new 43 not follow the route proposed by Wilbur Smith on Miramar Avenue, which is narrow and tree lined, but that it use Phelan Avenue which is an established transit street and provides better access to City College.

Route: Motor coach service from Geneva and Prague via Prague, South Hill, Chicago, Cordova, Prague, Naples, Geneva, Phelan, Judson, Genessee, Monterey, Plymouth, Yerba Buena, Miraloma, Portola, Laguna Honda, Seventh, Lawton, Ninth, Parnassus, Cole, Haight, Masonic, Geary, Presidio Ave., Presidio Blvd., Letterman Blvd., Lombard, Lyon, Broderick, Francisco to Chestnut; return via Chestnut, Lyon, Lombard, Letterman, Presidio Blvd., Presidio Ave., Geary, Masonic, Haight, Cole, Parnassus, Ninth, Lawton, Seventh, Laguna Honda, Portola, Miraloma, Plymouth, Monterey, Genessee, Judson, Phelan, Geneva, Naples, Prague, Cordova, Chicago, South Hill, Prague to Geneva.

Line 44-O'SHAUGHNESSY

Present Route: As Line 44-DIAMOND HEIGHTS, motor coach service from Bosworth and Diamond (Glen Park BART Station) via Bosworth, Arlington, Wilder, Diamond, Diamond Heights Blvd., to Berkeley, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., Clipper, Portola, Glenview, Portola, Woodside, Laguna Honda to Forest Hill station; return via Laguna Honda, Woodside, Portola, Clipper, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., to Berkeley, Diamond heights Blvd., Diamond to Bosworth (Glen Park BART Station).

POM Proposal: Wilbur Smith recommended that the 44 be up-graded into a major L-shaped crosstown line by through-routing it with the 51-SILVER on its south end and extending it across Golden Gate Park on its north end, picking up the cross-Richmond Sixth Avenue segment of the present 21-HAYES.

Route: Motor coach service from U.S. Public Health Service Hospital via 15th Avenue, California, 6th Avenue (Golden Gate Park), John F. Kennedy Drive, Tea Garden Drive, South Drive, 9th Avenue, Lawton, Seventh, Laguna Honda, Woodside, Portola, Clipper, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., Diamond, Bosworth, Lyell, Alemany, Silver, Palou, Lane, Newcomb, LaSalle, Ingalls, Middle Point Road, Jennings to Cargo Way; return via Jennings, Middle Point, Ingalls, LaSalle, Newcomb, Lane, Palou, Silver, Alemany, Rousseau, Still, Lyell, Bosworth, Diamond, Diamond Heights Blvd., Duncan, Diamond Heights Blvd., Clipper, Portola, Glenview, Portola, Woodside, Laguna Honda, Seventh, Lawton, 9th Avenue (Golden Gate Park), South Drive, Concourse Drive, John F. Kennedy Drive, 6th Avenue, California, 14th Avenue to the U.S. Public Health Hospital.

5-Year Plan Proposal: The basic concept of the POM 44 as a strong cross-town line is retained in the staff recommendations. However, Diamond Street in the Glen Park area is steep and very narrow, and is already proposed for service by Line 37-CORBETT; imposition of the 44 would overwhelm this street with noise and congestion. The proposed 37 service alone is a sufficient improvement over the present 44 on Diamond Street. The "Glen Park Traffic Plan," prepared in 1976 by the Glen Park Association with the cooperation of the Railway and other public agencies, recommended part of this route - an extension of the present 51-SILVER west on Bosworth from the BART station to the park itself; it also recommended a shuttlebus service an O'Shaughnessy and Bosworth to enhance access to BART from neighboring communities. In a related matter, the plan also recommended narrowing Bosworth Street east of Elk Street from four to two lanes; the presence of MUNI bus service would not make this narrowing less desirable or necessary, and is supported as part of this recommendation. Finally, O'Shaughnessy Blvd. offers a quick and direct path for through passengers crossing Twin Peaks, where Diamond is a slow, local street affording local access to the neighborhood center and BART.

For the foregoing reasons - the narrowness of Diamond Street, the need for better access to BART, the community request for service on Bosworth and O'Shaughnessy, the desire to reduce travel times for through passengers - staff recommends relocating the POM 44-line from Diamond Street and Diamond Heights Boulevard (which will be served by the proposed new 37 line) to O'Shaughnessy Boulevard and Bosworth Street. The 44 should not be re-routed until such time as the 37 is implemented on Diamond Street. The staff is aware that some residents have expressed opposition to the introduction of bus service on Bosworth Street; however, it appears that the alternative would be less acceptable, i.e., overloading a steep narrow street, which already has buses, with more than it can handle. It is also possible to tie transit service together with the Glen Park Association's proposal to narrow and re-design Bosworth, a proposal which would greatly improve the street environment by reducing traffic speed. A minor change is also proposed in Hunter's Point to provide service to Whitney Young Circle.

Route: Motor coach service from Jennings and Cargo Way via Jennings, Middle Point, Ingalls, Hudson, Whitney Young Circle, Newcomb, Lane, Palou, Silver, Alemany, Lyell, Rousseau, Still, Bosworth (Glen Park BART), O'Shaughnessy, Woodside, Laguna Honda, Seventh Ave. Lawton, Ninth Ave. (Golden Gate Park), South Drive, Concourse Drive, JFK Drive Sixth Ave., California, 14th Ave. to Public Health Service Hospital; return via 15th Ave., California, Sixth Ave. (Golden Gate Park), JFK Drive, Tea Garden Drive, South Drive, Ninth Ave., Lawton, Seventh Ave., Laguna Honda, Woodside, O'Shaughnessy, Bosworth (Glen Park BART), Lyell, Alemany, Silver, Palou, Lane, Newcomb, Whitney young Circle, Hudson, Ingalls, Middle Point, Jennings to Cargo Way.

Line 45-GREENWICH

Present Route: Motor coach service from the Presidio Transit Terminal (Lincoln Blvd. and Anza Ave.) via Lincoln, Letterman, Lombard, Lyon, Greenwich, Steiner, Union, Van Ness, Post, Kearny, Bush, Sansome to Market; return via Sutter, Van Ness, Union, Steiner, Greenwich, Baker, Lombard, Letterman, Lincoln to Presidio Transit Terminal. Weekdays, daytime only, extended from inner terminal via Sansome, California, Davis, Market to Sutter.

POM Proposal: Wilbur Smith recommended that line 45 be discontinued as redundant on lines 41-Union and the Van Ness and Sutter/Post services. In particular, the operation of this line on Union Street reduces the passenger loads of the 41, with the result that patronage is not sufficient to justify good service on that line. Headways over the section of Union Street not served by the 45, therefore, are poor. With the POM network in place, service on the 41 would be much more frequent, but Downtown passengers would have to transfer.

5-Year Plan Proposal: As with the POM recommendation, line 45 would be withdrawn. However, the Railway staff agrees that an all day route linking Union Street and the Downtown commercial core is preferable to one oriented to the Financial District. Under the 5-Year Plan, the 41-UNION is routed to the Union Square area via Stockton Street to replace the Downtown function now provided by the 45. During the rush hour, express service would be provided from Union Street to the Financial District by proposed new line 45X-GREENWICH EXPRESS.

Line 45X-GREENWICH EXPRESS

Present Route: As local Line 45-GREENWICH, motor coach service from the Presidio Transit Terminal (Lincoln Blvd. and Anza Ave.) via Lincoln Blvd., Letterman Drive, Lombard, Lyon, Greenwich, Steiner, Union, Van Ness, Post, Kearny, Bush, Sansome to Sutter and Market; return via Sutter, Van Ness, Union, Steiner, Greenwich, Lyon, Lombard, Letterman, Lincoln Boulevard to Presidio Transit Terminal. Weekday, daytime only, line extended from Bush and Sansome via Sansome, California, Davis and Market to Sutter.

POM Proposal: Discontinue as redundant of line 41, causing it to carry fewer off-peak passengers with a resultant poor service; also duplicative on Van Ness Avenue and Sutter/Post Streets. Its sole unique function be replaced by an extension of line 41 into the Presidio.

5-Year Plan Proposal: As discussed above under Line 41-UNION, staff has agreed that the link provided by the present 45-GREENWICH between Union Street/Cow Hollow/Golden Gate Valley and the Union Square area should be retained; this has resulted in a staff recommendation that the 41-UNION operate via Stockton Street to the Downtown commercial core. To provide a direct, rush-hour-only service from this area to the Financial District, it is recommended by staff that line 45 be retained as a peak period express via the Broadway Tunnel and Sansome and Battery Streets to the Financial District.

Route: Motor coach service from the Presidio Transit Terminal (Lincoln Blvd., and Anza Ave.) via Lincoln, Letterman, Lombard, Lyon, Greenwich, Steiner, Union, Van Ness, Broadway, Battery, Clay, Davis, Beale to Howard; return via Howard, Main, Drumm, Sacramento, Sansome, Broadway, Van Ness, Union, Steiner, Greenwich, Baker, Lombard, Letterman, Lincoln, to Presidio Transit Terminal. Express area: no passenger stops between Union and Van Ness, and Broadway and Sansome/Battery. Operates weekdays, rush-hours only.

Line 47-VAN NESS

Present Route: Trolley coach service from Potrero and Army via Army, Hampshire, 24th, Potrero, 16th, Bryant, 11th, Mission, South Van Ness, Van Ness to North Point; return via Van Ness, South Van Ness, Mission, 11th, Bryant, 16th, Potrero to Army.

POM Proposal: The 47 would be discontinued as a Van Ness-Potrero cross-town route. Instead, it would perform most of the function of the present 25 line, with a few changes: on the north end, it would not run to Pacific Heights, but instead would terminate on Russian Hill; through the Mission, it would run on Potrero Avenue rather than Bryant Street; in Visitation Valley, its "split ends" would cover the present 29-VIS-ITACION line, permitting the abandonment of the 29 as a separate entity.

Route: Motor coach service from Hyde and Union via Union, Leavenworth, Bush, Jones, Eddy, Fifth St. North, Fifth, Harrison, Eighth, Brannan, Potrero, Bayshore, San Bruno to Wilde. Here, line 47R (the Rutland branch) would run via Wilde, Delta, Tioga, Rutland, Sunnysdale, Bayshore, Blanken, Nueva, Lathrop to Gillette; return via Gillette, Blanken, Bayshore, Sunnysdale, Rutland, Tioga, Delta, Wilde to San Bruno Ave. From San Bruno and Wilde, the 47G (Geneva Avenue branch) would run via San Bruno, Bayshore, Sunnysdale, Schwerin, Geneva, Santos, Blythedale, Brookdale to Santos; return via Santos, Geneva, Schwerin, Sunnysdale, Bayshore, San Bruno to Wilde. Both lines would return from San Bruno and Wilde via San Bruno, Bayshore, Potrero, Brannan, Eighth, Bryant, Fifth, Fifth St. North, Eddy, Leavenworth, Green, Hyde to Union.

5-Year Plan Proposal: Present Line 47-POTRERO would be discontinued, and designation number 47 would be retired. Service on Van Ness Avenue would be provided by Lines 12-OCEAN-VAN NESS and 42-DOWNTOWN LOOP. Line 42 would also serve Eleventh Street. Service on Potrero Avenue would be provided by proposed Line 25-SAN BRUNO.

Line 51-SILVER

Present Route: Motor coach service from Bosworth and Diamond (Glen Park (BART Station) via Bosworth, Lyell, Alemany, Silver, Palou, 3rd Street, Newcomb, LaSalle, Cashmere, Hudson, Ingalls, Middle Point to turn around at Hare, Middle Point, Ingalls, Northridge, Jerrold, Earl, Kirkwood, Kiska, Ingalls, LaSalle, Newcomb, Lane, Palou, Silver, Alemany, Rousseau, Still, Lyell, Bosworth, Arlington, Wilder, Diamond to Bosworth (Glen Park BART Station). Saturday, Sunday and holiday route; Silver and Mission via Mission, Maynard, Craut, Silver, Palou, Newcomb, LaSalle, Cashmere, Hudson, Ingalls, Middle Point to turn around at Hare, Middle Point, Ingalls, Northridge, Jerrold, Earl, Kirkwood, Kiska, Ingalls, LaSalle, Newcomb, Lane, Palou, Silver to Mission.

POM Proposal: Through-routed with line 44 to create a major L-shaped crosstown line from the Bayview over Twin Peaks and across the Inner Sunset, Golden Gate Park and the Richmond. Hilltop loop service in Hunter's Point to be provided by Line 81-FELTON-PLYMOUTH.

5-Year Plan Proposal: Same as POM recommendation, although line 44 as recommended by staff differs in some respects from the Wilbur Smith proposal. Hilltop loop service to be provided by line 81. See Lines 44-O'SHAUGHNESSY and 81-FELTON.

Line 52-EXCELSIOR

Present Route: Motor coach service from Brazil and Mission via Mission, Excelsior, Naples, Avalon, Moscow, Brazil, Prague, Russia, Moscow, Geneva, Naples, Brazil to Mission.

POM Proposal: This line would be revised and through-routed with line 35 to provide the Excelsior District with BART and MUNI Metro access, and to improve transfer opportunities. See Line 35-EUREKA.

5-Year Plan Proposal: As with the POM recommendation, this line would be revised and through-routed, in this case with line 37, to provide the Excelsior District with access to BART and MUNI Metro, and to improve transfer opportunities. See Line 37-CORBETT.

Line 53-SOUTHERN HEIGHTS

Present Route: Motor coach service from 18th and Connecticut via 18th, Missouri, 23rd, Wisconsin, 22nd, Southern Heights, Rhode Island, 20th, Vermont, 16th to Mission; return via Mission, 15th, Valencia, 16th, Kansas, Mariposa, Vermont, 20th, Rhode Island, Southern Heights, 22nd, Wisconsin, 25th, Dakota, 23rd, Arkansas, 20th, Connecticut to 18th. Saturday, Sunday and holiday service from 18th and Connecticut to 16th and Bryant.

POM Proposal: The 53 would be discontinued as a separate service. The southern flank of Potrero Hill would be served by new POM line 20, and the central part of the Hill by proposed crosstown route 11-QUINTARA-24TH STREET.

5-Year Plan Proposal: Staff recommends that line 53 be retained on its present route.

Line 54-WILLIAMS

Present Route: Motor coach service from Bacon and San Bruno via Bacon, Phelps, Vesta, Thornton, Bridgeview, Topeka, Reddy, Williams, Van Dyke, Ingalls, Revere, Lane, Williams, Reddy, Topeka, Bridgeview, Thornton, Vesta, Phelps, Bacon, Girard, Burrows, Goettingen, Bacon to San Bruno.

POM Proposal: Line 54 would be through-routed with line 81 to provide access to BART and MUNI Metro, and to offer more transfer opportunities. Service on Revere and Van Dyke Avenues between Lane and Ingalls Streets would be discontinued. Service along Ingalls Street would be provided by trolley coach line 24. See Line 81-FELTON-PLYMOUTH.

5-Year Plan Proposal: Similar to POM proposal. Line 54 would be combined with line 81 to provide a longer through route offering BART and MUNI Metro access and superior transfer connections. East of Third Street, however, the new 81 would continue to operate over the Van Dyke-Ingalls-Revere balloon loop of the present 54. The density of passenger traffic in this area does not appear to warrant extension of the electrification for trolley coach line 24 south of Third and Palou as suggested by Wilbur Smith. See Line 81-FELTON.

Line 55-SACRAMENTO

Present Route: Motor coach service from Sixth Avenue and Clement Street via Clement, Seventh, California, Sixth, Lake, Sacramento, Gough, Clay, Drumm to Sacramento; return via Sacramento, Lake, Sixth Avenue to Clement. Limited stop service (transfer points only) weekdays, peak periods from Fillmore to Kearny.

POM Proposal: The Sacramento and Clay Streets service would be combined with the 1-CALIFORNIA and electrified to provide a through east-west trolley coach service across the northern part of the city. The 55 would be retained as a separate line in the rush hour to provide supplementary service over the most heavily used part of 1-line.

Route: Peak-hour trolley coach service from California Street and Presidio Avenue via California, Steiner, Sacramento, Gough, Clay, Drum to Sacramento; return via Sacramento, Steiner, California, Walnut, Sacramento, Presidio to California.

5-Year Plan Proposal: Same as POM proposal.

Line 66-QUINTARA

Present Route: Motor coach service from 30th Avenue and Vicente via Vicente, 29th Avenue, Ulloa, 30th Avenue, Quintara, 16th Avenue, Lawton, Ninth Avenue, Judah, Parnassus, Clayton, Frederick, Masonic, Haight, Laguna, Page, Market, Fourth, Mission, Fifth to Market; return via Market Haight, Masonic, Frederick, Parnassus, Judah, Ninth Avenue, Lawton, 16th Avenue, Noriega, 15th Avenue, Quintara, 30th Avenue to Vicente. Extended peak periods to 2nd and Market. Feeder service from 9th and Judah to 30th and Vicente evenings, Saturdays, Sundays and holidays. Limited stop service (transfer points only) operated weekdays between Masonic Avenue and Market Street.

POM Proposal: The 66 as a radial line would be withdrawn, and its present north-south and east-west functions in the Sunset District incorporated into separate routes in the West-of-Twin Peaks grid. Quintara Street would be served by east-west crosstown line 11-QUINTARA-24TH STREET, feeding MUNI Metro at West Portal Station; the combination 11-plus-MUNI Metro trip would be equal to or faster than current 66 line trips to Downtown. North-south service on 30th would be replaced with service by Line 17-PARKMERCED-25TH on 28th Avenue. Service to the Sunset Heights - Golden Gate Heights area would be provided by revised Line 71-HAIGHT-NORIEGA.

5-Year Plan Proposal: As with the POM recommendation, discontinue line 66 in its present form. Quintara Street would be served by Line 11-QUINTARA-24TH STREET, feeding MUNI Metro at West Portal Station and offering reduced net travel times to Downtown. Per neighborhood request, north-south service would be retained on 30th Avenue with line 17, rather than relocated to 28th Avenue. Line 71 would serve the Sunset Heights-Golden Gate Heights area. Line designation 66 would be withdrawn.

Line 70-LAKE MERCED

Present Route: Motor coach service from 46th and Wawona via Wawona, 45th, Sloat, Skyline, Zoo Road, Skyline, John Muir Drive, Lake Merced Boulevard, Brotherhood Way, Junipero Serra, John Daly Boulevard, Daly City BART Station, DeLong, John Daly Boulevard, Junipero Serra, Brotherhood Way, Chumasero, Font, Juan Batista Circle, Font, Lake Merced Boulevard, Winston, Nineteenth, Holloway, Font, Arballo, Higuera, Lake Merced Boulevard, Brotherhood, Junipero Serra, John Daly Boulevard, Daly City BART Station, DeLong, John Daly Boulevard, Junipero Serra, Brotherhood Way, Lake Merced Boulevard, John Muir Drive, Skyline, Sloat, 46th to Wawona. This line can be considered to have two branches (Stonestown/SF State/Parkmerced, and John Muir/Zoo) with the Daly City BART Station between them; coaches alternate between the two branches so that it is possible to ride from a point on one branch to a point on another. On Saturdays and Sundays, service to BART is not operated.

POM Proposal: Re-named Line 70-GOLDEN GATE. The 70 would become the Railway's westernmost crosstown line, absorbing the north-south segment of present Line 18-SLOAT and functioning as a "coastal" route from the Golden Gate Bridge to Lake Merced and Stonestown. It would absorb the Lincoln Boulevard segment of present line 28 in the Presidio, and connect the John Muir Apartments to MUNI Metro at Stonestown in lieu of BART at Daly City.

Route: Motor coach service from 19th and Winston via 19th, Buckingham, 20th, Winston, Lake Merced Boulevard, John Muir Drive, Skyline, Great Highway, Sloat, 46th, Lincoln, Great Highway, Fulton, LaPlaya, Balboa, Great Highway, Point Lobos, Geary, 33rd, Clement, Legion of Honor Drive, El Camino del Mar, Lincoln Boulevard, Merchant Road to Golden Gate Bridge toll plaza; return via Lincoln Boulevard, El Camino del Mar, Legion of

Honor Drive, Clement, 33rd, Geary, Point Lobos, Great Highway, Balboa, LaPlaya, Fulton, Great Highway, Lincoln, 46th, Vicente, 47th, Sloat, Great Highway, Skyline, John Muir Drive, Lake Merced Boulevard, Winston, to 19th. Additional service would be operated over this route between the Zoo and 48 th and Point Lobos by Line 73-46TH AVENUE.

5-year Plan Proposal: This line is absorbed into proposed Line 18-46TH AVENUE.

Line 71-HAIGHT-NORIEGA

Present Route: Motor coach service from 48th and Ortega via Ortega, 47th Avenue, Noriega, 22nd Avenue, Lincoln Way, Frederick, Stanyan, Haight, Laguna, Page, Market, Fourth, Mission, Fifth to Market; return via Market, Haight, Stanyan, Frederick, Lincoln Way, 23rd Avenue, Noriega, Great Highway, Ortega to 48th Avenue. Line extended weekdays peak periods only Via Market to "Ferry" Terminal. Limited stop service weekdays and Saturday, daytime only. Limited stop area: Stanyan and Waller to Market.

POM Proposal:

Route: Motor coach service from 48th Avenue and Ortega via Ortega, 47th, Noriega, 16th Avenue, Lawton, Ninth Avenue, Lincoln Way, Frederick, Stanyan, Haight, Market, Steuart to "Ferry" Terminal; return via Market, Haight, Stanyan, Frederick, Lincoln Way, 9th Avenue, Lawton, 16th Avenue, Noriega, Great Highway, Ortega to 48th Avenue.

5-Year Plan Proposal: The POM proposal is incorporated into the 5-Year Plan recommendations, with the exception of the two-way service on Haight Street east of Laguna. As noted above under Lines 6-PARNASSUS and 7-HAIGHT, the advantages of a contraflow arrangement on Haight east of Laguna do not seem sufficient to warrant its installation; accordingly, it is recommended that the present inbound jog via Laguna and Page to Market be retained.

This through route on Noriega from 47th to 16th will enable passengers to transfer to and from Line 28-NINETEENTH AVENUE at a convenient place for the mid-Sunset: 19th and Noriega. It will provide direct access from the mid-Sunset to the shopping area on Noriega near 19th, and also service to Noriega Street shopping from the hilly area of Golden Gate Heights/Sunset Heights. Line 17 will operate over 22nd and 23rd Avenues to provide service for those who now have the 71 and who have expressed a desire to retain it.

Route: Motor coach service from 48th and Ortega via Ortega, 47th, Noriega, 16th, Lawton, Ninth, Lincoln, Frederick, Stanyan, Haight, Laguna, Page, Market, Steuart to "Ferry" Terminal; return via Steuart, Market, Haight, Stanyan, Frederick, Lincoln, Ninth, Lawton, 16th, Noriega, Great Highway, Ortega to 48th.

Line 72-SUNSET

Present Route: As Line 72-HAIGHT-SUNSET, motor coach service from Sunset

and Lake Merced Boulevards via Sunset Boulevard, 36th Avenue, Lincoln Way, Frederick, Stanyan, Haight, Laguna, Page, Market, Fourth, Mission, Fifth, to Market; return via Market, Haight, Stanyan, Frederick, Lincoln Way, 37th Avenue, Sunset Boulevard to Lake Merced Boulevard. Line extended weekday peak periods only via Market and Steuart to "Ferry" Terminal. Line extended daily during business hours to Stonestown via Lake Merced Boulevard, Winston to 19th Avenue. Limited stop service (transfer points only) weekdays and Saturday, daytime only. Limited stop area: Stanyan and Waller to Market.

POM Proposal: With MUNI Metro operation in place, the paralleling Downtown segment of present line 72 would be discontinued. The north-south alignment of the 72 in the Sunset would be extended north across Golden Gate Park and the Richmond to 33rd and Geary to provide transfer opportunities to radial trunk lines north of the park (Fulton, Balboa, Geary, California). On its southern end, the 72 would be extended through Stonestown at all hours to San Francisco State University, at which point the line would extend east across the southern part of the city, serving part of the route of the present 28-line in this area, feeding BART at Balboa Park, and running through McLaren Park on Mansell to connections at San Bruno Avenue and Third Street. The 72 would thus become a major L-shaped crosstown line serving the western and southern areas of the city.

Route: Motor coach service from Third and Paul via Paul, San Bruno, Mansell, Persia, Ocean, San Jose, Geneva, Ocean, Plymouth Grafton, Garfield, Junipero Serra, Holloway, 19th Avenue, Winston, Lake Merced Boulevard, Sunset Boulevard, South Drive (Golden Gate Park), Chain of Lakes Drive, Kennedy Drive, 36th Avenue Park exit, Fulton, 33rd Avenue to Geary; return via 33rd, Clement, 32nd, Geary, 33rd Avenue, Fulton, 36th Avenue Park Entrance (Golden Gate Park), Kennedy Drive, Chain of Lakes Drive, South Drive, Sunset Boulevard, Lake Merced Boulevard, Winston, 19th Avenue, Holloway, Beverly, Garfield, Grafton, Plymouth, Ocean, Geneva, San Jose, Ocean, Persia, Mansell, San Bruno, Paul, Third, Fitzgerald, Jennings, Gilman to Third and Paul.

5-Year Plan Proposal: The staff supports the Wilbur Smith concept of the 72 as a major L-shaped crosstown line which will provide access to Richmond District lines for mid-Sunset District residents, improve access to Golden Gate Park, serve SF State University directly and at all hours, and provide connections to BART. In addition, the line will connect with the Southern Pacific's peninsula passenger service at Paul Avenue Station; as this rail service is upgraded, consideration should be given to stopping all trains (except perhaps the rush hour expresses) at Paul Avenue so that the 72 can collect and distribute passengers from the trains to and from points in the southern and western part of the city (including SF State University, City College, Stonestown and Golden Gate Park).

It is anticipated that considerable patronage will naturally shift from the 72 to the N-JUDAH as a result of the 15-minute time savings subway service will offer, and conversion of the 72 to a crosstown line will follow the inauguration of subway service on a demonstrated reliable basis.

Some minor revisions to the Wilbur Smith routing are proposed. At the southeastern end of the line, staff recommends an extension over Fitzgerald and Gilman to Griffith, presently served by the 81-BACON and reached by the 24 in the POM proposal. As staff recommends that the 24 terminate at Third and Palou, this extension will ensure continuity of service to the Bret Harte/Double Rock neighborhood. On days when there are events at Candlestick Park, this service should be extended to the ballpark via Gilman Avenue and Giants Drive; this will replace the "Ballpark Shuttle" and provide a direct connection to Candlestick from the southern and western parts of the City, and the SP peninsula trains.

Route: Motor coach service from Third and Paul, San Bruno, Mansell, Persia, Ocean, San Jose, Geneva, Ocean, Plymouth, Grafton, Garfield, Junipero Serra, Holloway, 19th Avenue, Winston, Lake Merced Boulevard, Sunset Boulevard, South Drive (Golden Gate Park), Chain of Lakes Drive, Kennedy Drive, 36th Avenue park exit, Fulton, 33rd to Geary; return via 33rd, Clement, 32nd, Geary, 33rd, Fulton, 36th Avenue park entrance (Golden Gate Park), Kennedy Drive, Chain of Lakes, South Drive, Sunset Boulevard, Lake Merced Boulevard, Winston, 19th Avenue, Holloway, Beverly, Garfield, Grafton, Plymouth, Ocean, Geneva, San Jose, Ocean, Persia, Mansell, San Bruno, Paul, Third, Fitzgerald, Griffith, Gilman to Third and Paul. Game days, extend from Griffith and Gilman to Candlestick Park via Gilman and Giants Drive, return via Jamestown and Ingalls to Gilman.

LINE 73-46TH AVENUE

POM Proposal: New route proposed in POM Recommended Network to provide supplementary service over Line 70-GOLDEN GATE between Point Lobos and the Zoo.

Route: Motor coach service from 48th and Point Lobos via 48th, Geary 47th, Point Lobos, Great Highway, Balboa, LaPlaya, Fulton, Great Highway, Lincoln, 46th, Vicente, 47th, Wawona to 46th; return via 46th, Lincoln, Great Highway, Point Lobos to 48th. Operates weekdays only.

5-Year Plan Proposal: This line is not included in the 5-Year Plan network. Its function is absorbed into Line 18-46TH AVENUE.

Line 76-FORT CRONKHITE

Present Route: Motor coach service from a terminal in the Fort Cronkhite parking lot opposite Rodeo Lagoon in Marin County via Mitchell Road, Bunker Road, Baker-Barry Tunnel, Danes Drive, Sausalito Lateral, U.S. 101, Golden Gate Bridge, Doyle Drive, Richardson, Lombard, Van Ness, Market, Eleventh, Mission to South Van Ness; return via South Van Ness, Van Ness, Lombard, Richardson, Doyle Drive, Golden Gate Bridge, U.S. 101, Sausalito Lateral, Baker-Barry Tunnel, Bunker Road, Mitchell Road, Haggett, Kirkpatrick, First to terminal in Fort Cronkhite parking lot. Line operated for one summer season only (1976) on weekends and holidays, under a special appropriation. No service was operated in 1977 or 1978 due to the lack of a federal operating subsidy.

POM Proposal: No recommendation.

5-Year Plan Proposal: This summer-only line should be operated if federal funds can be obtained for an operating subsidy. Tentative negotiations with National Park Service staff suggest that it may be possible to secure a subsidy and operate the line for the 1979 season. If this is done, staff recommends a variation in the route to cover more of Downtown (via Sutter and Post Streets), and provide regional connections to BART, the Transbay Terminal and the SP Depot.

Route: Motor coach service from a terminal in the Fort Cronkhite parking lot opposite Rodeo Lagoon in Marin County via Mitchell, Bunker Road, Baker-Barry Tunnel, Danes Drive, Sausalito Lateral, U.S. 101, Golden Gate Bridge, Doyle Drive, Richardson, Lombard, Van Ness, Post, Market (Montgomery Street BART), First (Transbay Terminal), Howard, Fourth to Townsend (SP Depot); return via Fourth, King, Third, Folsom, Fremont (Transbay Terminal), Market (Montgomery Street BART), Sutter, Van Ness, Lombard, Richardson, Doyle, Drive, Golden Gate Bridge, Sausalito Lateral, Danes Drive, Baker-Barry Tunnel, Bunker Road, Mitchell road, Haggett, Kirkpatrick, First to Terminal in Fort Cronkhite parking lot. Operates Saturdays, Sundays and holidays from Memorial Day through Columbus Day (actual number of days of service subject to negotiation with National Park Service.)

Line 78-GOLDEN GATE PARK

Present Route: Motor coach service from Stanyan and Frederick via Stanyan, Kennedy Drive, Cloverleaf, Kennedy Drive, Tea Garden Drive, South Drive, Concourse Drive, Kennedy Drive, Stanyan, Waller, Shrader, Frederick to Stanyan. Operates Sundays only 10:00 A.M. - 5:00 P.M.; a special 5¢ fare is in effect on this line.

POM Proposal: No recommendation.

5-Year Plan Proposal: It is proposed that this line be extended to Ocean Beach on Kennedy Drive if the Drive is closed for its full length on Sundays. The line would continue to be a Sunday, daytime only service with a special fare.

Route: Motor coach service from Cabrillo and the Great Highway via Cabrillo, LaPlaya, Fulton, Great Highway, Kennedy Drive, Stanyan, Waller, Shrader, Frederick to Stanyan; return via Stanyan, Kennedy Drive, Cloverleaf, Kennedy Drive, Great Highway, Fulton, LaPlaya, Cabrillo to Great Highway.

80X-GATEWAY EXPRESS

Present Route: Motor coach service from Fourth and Townsend (SP Depot) via Fourth, King, Third, Folsom, Main, Drumm, Sacramento, Front to Terminal between Sacramento and Clay; return via Front, Clay, Davis, Beale, The Embarcadero, Townsend to Fourth. Express area: no passenger stops between Fourth and Townsend and Mission Street. Operates weekdays, rush hours only.

POM Proposal: No recommendation.

5-Year Plan Proposal: Discontinue upon inauguration of MUNI Metro service to SP Depot (extension of lines J-CHURCH and M-OCEAN VIEW via The Embarcadero and Townsend or King to Fourth).

Line 81-FELTON

Present Route: Motor coach service from Huron and Mission via Huron, Mission, Sickles, Plymouth, Ocean, Geneva, (Balboa Park BART Station), San Jose, Ocean, Persia, Athens, Avalon, Felton, University, Woolsey, Holyoke, Bacon, San Bruno, Paul, Keith, to terminal on Fitzgerald at Keith; return via Fitzgerald, Griffith, Gilman, Paul, San Bruno, Bacon, Holyoke, Woolsey, University, Felton, Avalon, Moscow, Persia, Ocean, San Jose, Geneva (Balboa Park BART Station), Ocean, Plymouth, Broad, Capitol, Sagamore, Sickles, Huron to Mission.

POM Proposal: Re-designated Line 81-FELTON-PLYMOUTH, the 81 would be through-routed with present line 54-WILLIAMS from Bacon and San Bruno east, and extended to operate the "hilltop" service now provided by Line 51-SILVER. At its west end, the line would be extended to Alemany and Kempton to serve a small area whose service on the present 26-VALENCIA would be discontinued.

Route: Motor coach service from Alemany and Kempton via Alemany, Sagamore, Plymouth, Grafton, Mount Vernon, San Jose (Balboa Park BART Station), Ocean, Persia, Athens, Avalon, Felton, University, Woolsey, Holyoke, Bacon, Phelps, Vesta, Bridgeview, Topeka, Thornton, Reddy, Williams, Third, Newcomb, LaSalle, Cashmere, Hudson, Ingalls, Northridge, Jerrold, Earl, Kirkwood, Kiska, Ingalls, LaSalle, Lane, Palou to Third; return via Third, Williams, Reddy, Thornton, Topeka, Bridgeview, Vesta, Phelps, Bacon Holyoke, Woolsey, University, Felton, Moscow, Persia, Ocean, San Jose (Balboa Park BART Station), Mount Vernon, Grafton, Plymouth, Alemany to Kempton.

5-Year Plan Proposal: Staff endorses the concept in the POM Study of through-routing present line 81 with the 54-WILLIAMS and the Hunters Point segment of the 51-SILVER. Two route revisions are suggested. One would incorporate the Van Dyke-Ingalls-Revere balloon loop of the 54 into the 81, rather than have it covered by the 24 as proposed by Wilbur Smith. This would re-route the connection from Third Street to the hill area of Hunters Point from LaSalle Avenue to Hudson Avenue in order to provide better service to the neighborhood.

Route: Motor coach service from Kempton and Alemany via Alemany, Sagamore, Plymouth, Grafton, Mount Vernon, San Jose (Balboa Park BART Station), Ocean, Persia, Athens, Avalon, Felton, University, Woolsey, Holyoke, Bacon, Phelps, Bridgeview, Topeka, Thornton, Reddy, Williams, Van Dyke, Ingalls, Revere, Third, Hudson, Ingalls, Northridge, Jerrold, Earl, Kirkwood, Kiska, Ingalls, Newcomb, LaSalle, Cashmere, Hudson, Third to Palou; return via Third, Revere, Ingalls, Van Dyke, Williams, Reddy, Thornton, Topeka, Bridgeview, Vesta, Phelps, Bacon, Holyoke, Woolsey, University, Felton, Moscow, Persia, Ocean, San Jose (Balboa Park BART Station), Mount Vernon, Grafton, Plymouth, Sagamore, Alemany to Kempton.

Line 82-CHINATOWN

Present Route: Motor coach service from Fourth and Folsom via Folsom, Third, Kearny, Sutter, Stockton, Filbert, Columbus, Stockton, Fourth to Folsom. Operates weekdays, mid-day only to reduce heavy loads on the central segment of Line 30-STOCKTON.

POM Proposal: No recommendation.

5-Year Plan Proposal: This service should be withdrawn when lines 15-THIRD and 41-UNION are re-routed to Stockton Street. Three local lines operating here will be sufficient to handle the heavy passenger loads.

Line 83-PACIFIC

5-Year Plan Proposal: This is a new line, established in response to neighborhood requests for a local shuttle service on Pacific Street; it will also operate along the Union Street leg of the present 39-COIT, which will be deleted from that line.

Route; Motor coach service from Van Ness and Pacific via Van Ness, Washington, Polk, Pacific, Powell, Union to Montgomery, return via Union, Powell, Pacific to Van Ness.

Line 84-DOWNTOWN SHOPPER SHUTTLE

Present Route: Motor coach service from Hawthorne and Folsom via Hawthorne, Harrison, Third, Market, Ellis, Mason, Market, McAllister, Polk to Golden Gate; return via Golden Gate, Taylor, Eddy, Mason, Market, Second, Howard, Hawthorne to Folsom. Operates weekdays, mid-day only. Special shuttle fare in effect.

POM Proposal: Wilbur Smith recommended that all the shopper shuttles (lines 84, 85, 86) be discontinued. Ridership and revenues on these lines are low, and widespread use of the Fast Pass has reduced the need for any special 10¢ shuttle.

5-Year Plan Proposal: Staff recommends that line 84 not be included in the 5-Year Plan network at this time, pending evaluation of the effects of service changes implemented August 30, 1978. The feasibility of a Downtown free-fare zone should be investigated as one alternative to reduced-fare Downtown shuttles. The question of whether or not to discontinue service on this line can be addressed at that time.

Line 85-DOWNTOWN SHOPPER SHUTTLE

Present Route: Motor coach service from Sacramento and Drumm Streets via Sacramento, Montgomery, Sutter, Stockton, O'Farrell, Grant, Post,

Kearny, Clay, Drumm to Sacramento. Operates weekdays, mid-day only. Special shuttle fare in effect.

POM Proposal: Discontinuance recommended.

5-Year Plan Proposal: As with line 84, staff recommends that line 85 not be included in the 5-Year Plan network at this time, pending evaluation of the effects of the August 30, 1978 service changes. The feasibility of a Downtown free fare zone should be investigated as one long-term alternative to reduced-fare downtown shuttles.

Line 86-MISSION SHOPPER SHUTTLE

Present Route: Motor coach service from Army and Mission via Army, Bartlett, 26th, Mission, 14th, South Van Ness, 15th, Capp to 16th; return via 16th, Mission to Army. Operates weekdays, midday only. Special shuttle fare in effect.

POM Proposal: Discontinuance recommended.

5-Year Plan Proposal: Discontinuance recommended. Checks conducted by staff show that fewer than one-fifth of the very few passengers on this line are using the 10¢ fare. The others are using Fast Passes, Senior Passes, transfers, senior citizens' fares or children's fares - all of which can be used on any line serving Mission Street; this line can be withdrawn without causing significant inconvenience to anyone.

Line 89-LAGUNA HONDA

Present Route: Motor coach service from Forest Hill Station via Laguna Honda, Laguna Honda Main Entrance Road, Clarendon Hall Road, Laguna Honda Hospital and Rehabilitation Center; return via Laguna Honda Main Exit Road, Main Office Road, Clarendon Hall Road, Laguna Honda Main Exit Road, Laguna Honda to Forest Hill Station. Daily service, 10:00 A.M. to 3:00 P.M.

POM Proposal: The 89 would be discontinued as a separate line; service to Laguna Honda Hospital would be through-routed with the remaining southern segment of line 34.

5-Year Plan Proposal: As Line 34-WOODSIDE is to be retained in its present configuration, it is recommended that the 89-LAGUNA HONDA also be kept as an independent line in its present form.

Line 92-BALBOA PARK SHUTTLE

Present Route: Motor coach service from Geneva and San Jose (Balboa Park BART Station) via Geneva, Ocean, 19th Avenue, Sloat to Junipero Serra; return via Junipero Serra, Ocean, San Jose to Geneva.

POM Proposal: No recommendation was made concerning line 92; however, extension of MUNI Metro line K-INGLESIDE to Balboa Park was envisioned.

5-Year Plan Proposal: Discontinue line 92 when line K-INGLESIDE begins service to Balboa Park BART Station.

D. PHASING

The implementation of the adopted 5-Year Plan transit service network must be spread over several years because of the magnitude of the changes being proposed. Many of the proposed changes require the prior completion of various capital projects -- such as putting the MUNI Metro subway into operation, constructing facilities for new trolley coach services, etc. The 5-Year Plan as documented in this report will itself be revised and expanded each year, but it is intended that the routes and projects enumerated herein constitute a reasonable goal for implementation over the coming five years. The various route and service changes proposed divide themselves into three principal groups of changes.

The first group is the set of proposals related to or dependent on the introduction of MUNI Metro subway service on MUNI's five present streetcar lines and on proposed extensions. These proposals are for re-routings of coach lines which today roughly parallel streetcar lines; such lines will be ten to 20 minutes slower than the improved travel times on the corresponding MUNI Metro service. These lines, for example, the 72-SUNSET, would be re-routed to create new inter-district crosstown routes. As each MUNI Metro line becomes operational and is proven reliable, a set of surface route changes will be recommended for implementation a few months afterward.

A second set of re-routing proposals involves the many recommended changes in MUNI's trolley coach services, including re-routings, extensions and conversion of some existing motor coach lines. Although in the long run, trolley coaches are generally less expensive or otherwise superior operationally to diesel buses on the routes proposed for conversion, trolley coaches do require the construction of new trolley coach overhead line facilities; construction of these facilities will require several years. Consequently, this second set of re-routings involves trolley coach lines directly (such as conversion of the 24 and its extension as a quiet hill-climbing trolley through Noe Valley) and changes in diesel bus lines which depend on implementation of the trolley coach expansion proposals (such as re-routing of the 10-MONTEREY to Crescent Street once the 24 trolley coach is operating on Cortland.)

The third set of changes consists of those changes in diesel bus routes which depend neither on operation of MUNI Metro nor on the trolley coach expansion program. This includes proposals such as the strengthening of the 43-MASONIC as an extended north-south crosstown line and implementation of most of the proposed changes to Richmond District service.

While neither of the first two groups of changes can be implemented all at once, the third group of changes essentially can. Overall, the 5-Year Plan changes will be implemented in several phases, but the set of diesel-bus-only changes are proposed for implementation as one basic "Phase 1" package.

Lastly, there are a small number of items, such as changes in the cable car system and construction of a Waterfront rail line, which do not fit into any of these categories, but would be implemented individually as requisite physical improvements are made.

1. Phase 1

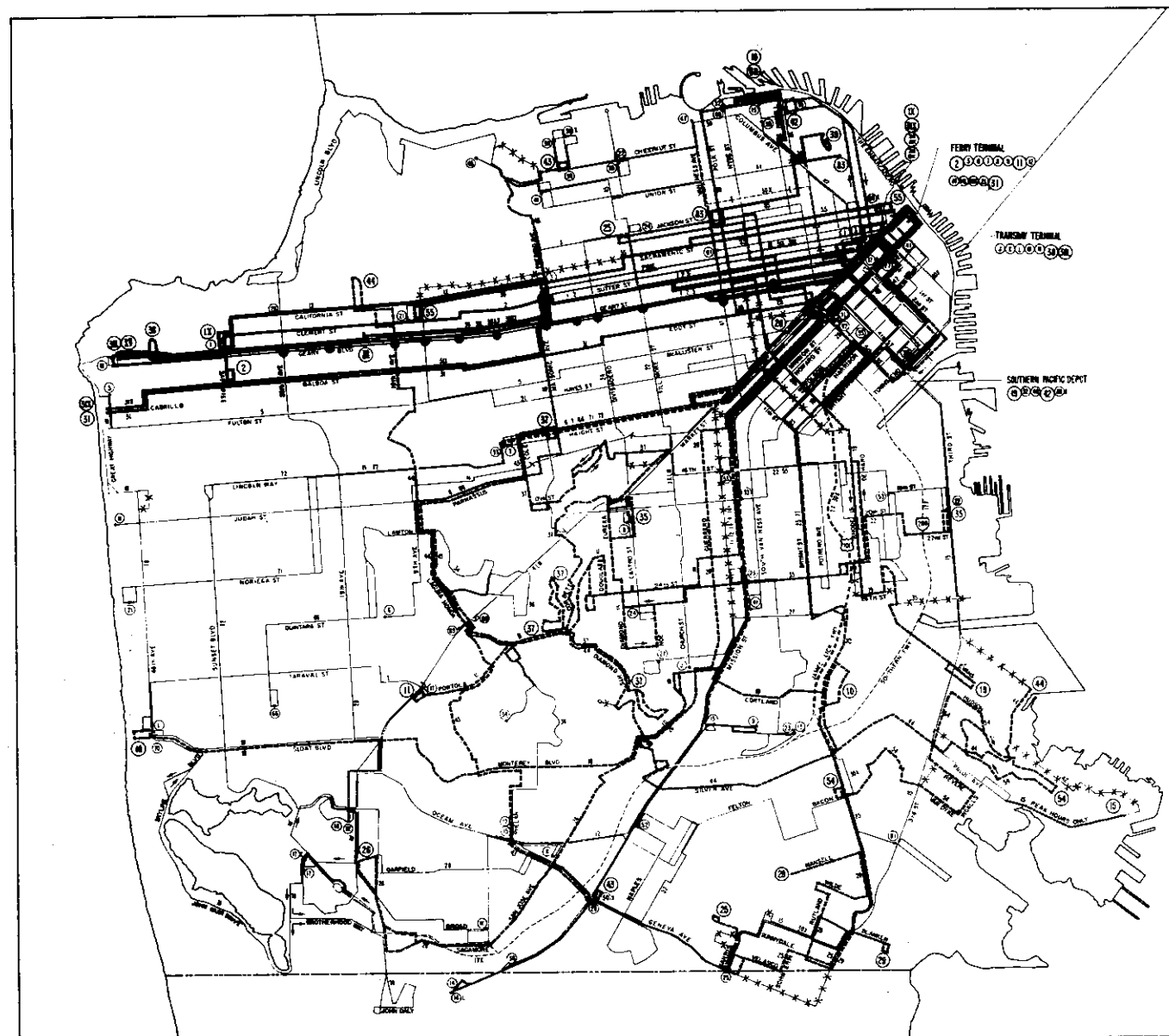
The Phase 1 package includes about a third of the overall changes proposed for this 5-Year Transit Master Plan. Because there are so many changes involved, it is planned that Phase 1 will actually include two subphases, 1A and 1B, which would be implemented a few months apart. This will make it easier both for riders and the Railway itself to adjust to the changes, to take them in "manageable bites," as it were. The Phase 1A package will include most of the service changes proposed for the Richmond and Western Addition plus a few others in the northern half of the City. Phase 1B will concentrate on the southwest part of the City, although the changes will involve areas from Fisherman's Wharf clockwise around the City to Lake Merced and Ingleside, with only the Sunset and Outer Richmond largely unaffected.

The map (Figure V-22) and Tables V-3A and V-3B briefly describe the route changes proposed for Phase 1A and 1B. Where routes are to be implemented in "final form" as described above in Chapter V, Section C, "Recommended Structure of Network," it has been so noted in the table. In several instances, it was necessary to adopt interim routes, with the "final" route to take form in a subsequent phase. These are described more completely in the table. It is recommended that the Public Utilities Commission adopt the Phase 1A and 1B route changes at the same time this overall 5-Year Transit Master Plan is adopted, to allow the first changes, Phase 1A, to be scheduled for implementation about June 1979, and Phase 1B about September.

After the implementation of Phase 1, the remaining proposals will be grouped into "Phases" for implementation at, it is hoped, 3 to 6 month intervals. For example, Phase 2 will probably be scheduled for implementation 3 to 6 months after inauguration of N-line MUNI Metro service, the N-JUDAH being the first street car line scheduled for Market Street subway service. Phase 2 of 5-Year Plan implementation will then include those route changes described below as related to N-JUDAH MUNI Metro service, once this service is demonstrated reliable. If additional streetcar routes commence MUNI Metro subway operation soon after N-line start-up, then Phase 2 should also include bringing the 4, 5, and 6 lines to the Transbay Terminal to replace the present surface streetcar service. Otherwise, they would become part of Phase 3.

**Figure V-22
PHASE I
TRANSIT ROUTES**

- LEGEND**
- EXISTING TRANSIT SERVICE (UNCHANGED)
- LOCAL LINES
 - - - EXPRESS LINES OR LIMITED
- NEW & REVISED TRANSIT SERVICE**
- PHASE 1A
 - PHASE 1B
 - LIMITED STOP SERVICE
 - - - EXPRESS SECTION OF ROUTE
 - ++++ ALL SERVICE ON STREET DISCONTINUED
- TERMINALS**
- ⑥ EXISTING LINES
 - ② NEW & REVISED LINES



San Francisco Municipal Railway
5-YEAR PLAN 1979-1984

0 2000 4000 FEET

AN ENLARGED VERSION OF THIS MAP APPEARS AT END OF REPORT

TABLE V-3A
PROPOSED PHASE 1A ROUTE CHANGES

<u>ROUTE</u>	<u>NATURE OF REVISION</u>
1X-CALIFORNIA EXPRESS	New Peak-hour, peak-direction Express service on "final route" except terminal downtown at California and Davis. Replaces 2X.
2-CLEMENT	Final Route - Local service all day between 33rd and Balboa and the Ferry.
2X-CLEMENT EXPRESS	Replaced by 1X-CALIFORNIA EXPRESS
4-SUTTER	Interim Trolley Coach Route - service as required between Presidio and California and Sutter at Market.
31-BALBOA	Final Route - Cabrillo and Great Highway ("Ocean Beach") to the Ferry. All day local service. Replaces present 38-GEARY west of 33rd Avenue. (No change in owl service at this time) Contraflow lane on Eddy Street to be used as soon as available.
31X-BALBOA EXPRESS	New Peak-hour, peak-direction Express service - "final route" except terminal downtown at California and Davis. Replaces 38X west of 33rd Ave.
38-GEARY	Final Route - Ft. Miley to Transbay Terminal. Replaces present 2-CLEMENT service west of 33rd Avenue. Night and Sunday service from 48th and Point Lobos. No change in present owl route at this time except all trips via Geary. (Alternate trips now operate via California.)
38L-GEARY LIMITED	Final Route - 48th and Point Lobos to Transbay Terminal. Local west of 33rd Avenue and east of Powell Street. Intermediate stops at 25th, 19th, 10th and 6th Avenues, Arguello, Parker, Masonic, Baker (Kaiser Hosp.), Divisadero, Fillmore, Van Ness, and between Leavenworth and Jones. (Daytime service, Monday thru Saturday)
38AX-GEARY A EXPRESS	Peak-hour, peak-direction zoned Express service. "Final Route" except downtown terminal at California and Davis. Local stops between 48th and Point Lobos and Funston, express between Funston and downtown.
38BX-GEARY B EXPRESS	Peak-hour, peak-direction zoned Express service. "Final Route" except downtown terminal at California and Davis. Local stops between Geary at Funston and Presidio at Bush/Pine, express between Presidio Avenue and downtown. (Does not operate west of Funston - see 38AX)
39-COIT	Final Route - Coit Tower to Fisherman's Wharf. (Union-to-Montgomery service provided by 83-PACIFIC)
55-SACRAMENTO	Interim Route - Local service between 6th Avenue and Drum Street as at present, except via final 1 and 55 alignment on California Street west of Steiner Street: Sacramento, Steiner, California to 6th and return. (Service on Lake Street and Sacramento west of Steiner discontinued.)
83-PACIFIC	Final Route - New community service line between Van Ness Avenue and Union and Montgomery. (Replaces 39 on Union Street east of Powell).

TABLE V-3B
PROPOSED PHASE 1B ROUTE CHANGES

<u>ROUTE</u>	<u>NATURE OF REVISION</u>
10-MONTEREY	Interim Route - Final alignment west of Glen Park. New service from Zoo via Sloat Blvd., St. Francis Blvd., Santa Clara and Monterey to Glen Park BART Station, then following the existing 10-Line route east of Glen Park to Cortland and Bayshore. 18-SLOAT also remains on Sloat Blvd. during Phase 1. (Other portions of existing 10-Line are covered by lines 43 and 44 below.)
11-HOFFMAN	Interim Route - no change from existing route except terminal at West Portal station rather than existing Forest Hill Station service. (No change east of Laguna Honda Blvd.)
15-THIRD	No change except <u>all</u> Third Street service is "Line 15." All "short turn" service on Third operates at least to Palou. Interim peak-hour-only service to Navy Yard via Palou, Crisp and Spear Avenues. (See 42-SANSOME below.)
19-POLK	Interim Route - No change in existing route between Potrero Hill and Fisherman's Wharf, excepting between Division and Geary rerouted via contraflow lanes to run in both directions on Eighth and Eddy (then Polk to Geary, etc.), so as to connect with BART at Civic Center station. (If implementation of contraflow lanes is delayed, present route will be maintained north of Division.) Extension of existing route south of 24th and DeHaro via "Final" alignment to Evans and Mendell. (No change in SP Depot branch route at this time excepting operation in contraflow lanes when available.)
25-BRYANT	Interim Route - No change in existing route north of Arleta. Operation in Visitacion Valley from Sunnydale and McLaren Park Golf Course entrance road via Sunnydale, Santos, Geneva, Castillo, Velasco, Schwerin, Sunnydale and Bayshore, replacing portion of existing 29 service. (Note operation on Sunnydale west of Santos is dependent on SFUSD and SF Dept. of Recreation and Parks arranging and repaving a turnaround area at the Golf Course entrance road for MUNI's use.)
26-GUERRERO	Interim Route - No change from existing route except operation via 30th, Guerrero, Duboce, and Mission with terminal remaining at 5th Street, rather than existing route via 30th, Mission, Valencia and Market and Eighth Streets (inbound). Local service all day.
29-RUTLAND	Final Route - except service on Mansell to Visitacion is retained on an interim basis.
35-EUREKA	Interim Route - No change between Market and 23rd Street. West of 23rd rerouted over "Final" 11-route via 23rd, DeHaro, 20th, Texas, 22nd to 3rd with a terminal at 3rd and 20th Streets; and return.
37-CORBETT	Interim Route - Haight and Masonic to Diamond Heights and Burnett loops. Replaces existing 43-ROOSEVELT service between Haight and Masonic, and Castro and 14th via existing 43-route. From Castro via 14th Street, Market and Diamond to 17th Street, returning via Eureka, market and 14th Street. No change from existing 37-CORBETT route between 17th Street and Diamond Heights and Burnett loops.
42-SANSOME	Interim Route - between Fisherman's Wharf and SP Depot (4th and Townsend) via Battery/Sansome segments of "Final" alignment, except using present 42-SANSOME Fisherman's Wharf terminal loop until Beach and Jefferson transit priority lanes are available. (All service south of the SP Depot is provided by line 15-THIRD).
43-MASONIC	Final Route - except southern terminal at Geneva and Mission until 28 realignment in a subsequent phase. Local service between Geneva at Mission, and Chestnut at Divisadero. (Replaces a portion of existing route 10)
44-O'SHAUGHNESSY	Final Route - with two exceptions, operating between Cargo and Jennings, and the U.S. Public Health Hospital in the Richmond. Service operated via 10th Avenue in the Richmond rather than 6th Avenue, pending realignment of 28-line in a subsequent phase. Also operates via Diamond Heights Blvd. rather than O'Shaughnessy pending subsequent realignment of lines 35 and 37. (In Phase 1B, 44 replaces 51-SILVER between Third Street and Glen Park, incorporates existing 44 route between Glen Park and Forest Hill Station, and replaces 10-MONTEREY service between Forest Hill Station and the Richmond.)
51-SILVER	Discontinued - Service incorporated into revised route 44-DIAMOND HEIGHTS.
54-WILLIAMS	Interim Route - Between Bacon and San Bruno, and Earl and Kirkwood, following "Final route" of 81-BACON. (Replaces existing 51-SILVER service in Hunter's Point area east of Third Street.)

If the trolley coach expansion program can be implemented as promptly as it is hoped, MUNI Metro-related changes and trolley coach expansion program changes will overlap and be combined into coordinated implementation phases involving elements of each. Since the timetable for these two programs cannot yet be defined precisely, the phases after Phase 1 can also not be laid out in explicit form. The two sections which follow, however, describe the sets of surface routing proposals which are related to each discrete individual or interrelated group of additions or changes in trolley coach service and to each individual streetcar/MUNI Metro line. Subsequent phases will therefore be made up by combining these sets of proposals as the MUNI Metro and trolley coach expansion services are individually placed into service.

2. Trolley Coach Expansion

At present, an application is pending to the Urban Mass Transportation Administration (UMTA) for a "TOP-1" Trolley Coach Overhead Program to provide 80% federal funds for renovating the existing overhead lines system. It also includes funding for two expansion projects. The first is the provision of a trolley coach loop to Transbay Terminal, a project of the highest priority. (The trolley coach service is necessary to replace the service presently provided by the streetcars which will no longer serve the Terminal when subway service commences on each line). The second project, included because it has been pending since about 1970, consists of the electrification of Folsom Street -- a project made necessary by the conversion of Howard and Folsom Streets to one-way operation in the Downtown area. Approvals for the route changes related to the latter project have already been obtained from the Public Utilities Commission and the Board of Supervisors.

A "TOP-2" proposal will be submitted to UMTA following approval of the 5-Year Master Plan to seek 80% Federal funding for the expansion projects. Environmental review of the new trolley coach installations will occur prior to implementation and construction. The accompanying map (Figure V-23) and Table V-4 indicate the recommended sequence for trolley coach expansion program implementation. The relatively minor projects, along with the two projects included in "TOP-1," are recommended for implementation ahead of the more major extension projects. This would allow the route modification requiring fairly little work to be implemented quickly and early in the 5-Year development program.

The accompany table also indicates, for each trolley coach service change, any accompanying changes in diesel coach or rail services. It should be noted, however, that construction of various overhead line facilities may overlap and is, at any rate, subject to some revision at the design stage. Directly related changes are grouped in the table. Phasing, however, may still not be in the precise order listed.

**Figure V-23
TROLLEY COACH
EXPANSION PLAN**

LEGEND

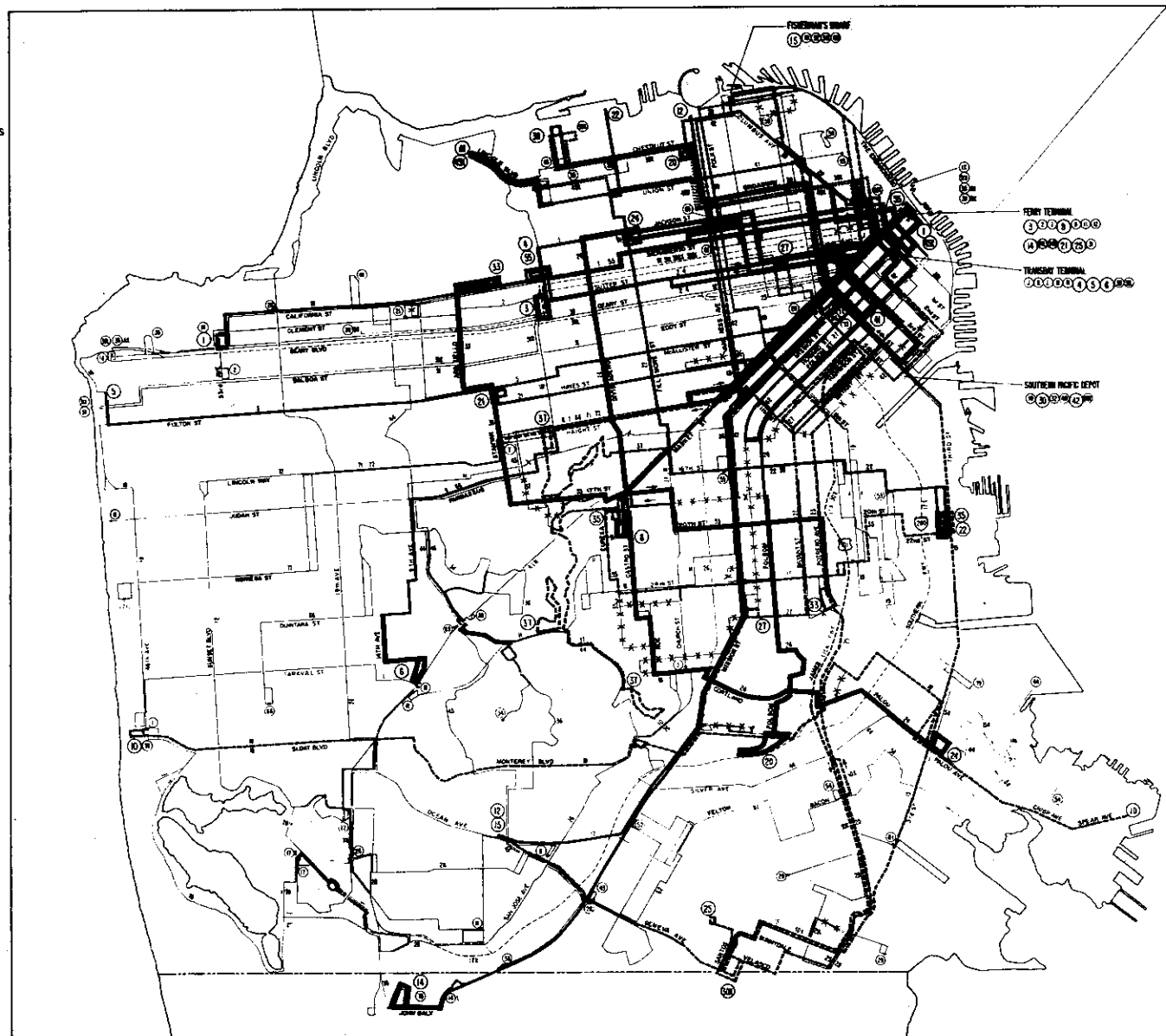
NEW, REVISED AND EXTENDED TROLLEY COACH LINES
 ——— NEW OVERHEAD WIRE & SUPPORT FACILITIES
 ——— EXISTING WIRE

NEW AND REVISED MOTOR COACH LINES
 (TO BE IMPLEMENTED IN CONJUNCTION
 WITH NEW TROLLEY COACH SERVICES)
 ——— ALL DAY LOCAL
 ——— ALL DAY EXPRESS
 ——— PEAK HOUR ONLY LOCAL
 ——— PEAK HOUR ONLY EXPRESS

TERMINALS
 (S) NEW AND REVISED LINES
 (P) PHASE I LINES

PHASE I TRANSIT SERVICE
 ——— LOCAL LINES
 ——— EXPRESS LINES
 - - - - - ALL SERVICE ON STREET DISCONTINUED

San Francisco Municipal Railway
5-YEAR PLAN 1979-1984



AN ENLARGED VERSION OF THIS MAP APPEARS AT END OF REPORT

TABLE V-4
TROLLEY COACH EXPANSION PROGRAM - SERVICE PHASING

TROLLEY COACH ROUTE CHANGED	RELATED MOTOR COACH OR RAIL ROUTE CHANGED	NATURE OF REVISION AND COMMENTS
4-SUTTER		Extension to Transbay Terminal - Final alignment (but Peak-only service)
5-FULTON		Extension to Transbay Terminal
6-PARNASSUS		Extension to Transbay Terminal
	K-INGLESIDE L-TARAVAL	Inauguration of MUNI METRO service on K and L (or J) routes, in addition to N.
41-UNION		Restore thru-service to Army and Mission by extension via Howard and Folsom - Interim Route Discontinue 41-UNION/SOUTH VAN NESS motor coach service
33-STANYAN		Route between Golden Gate Park and 16th and Bryant only - Interim Route Discontinue downtown service by line 33.
12-OCEAN-VAN NESS		Final alignment - City College to Van Ness and Northpoint
33-ASHBURY		Extend from Bryant via 16th and Potrero to Army
47-VAN NESS		Discontinue (Van Ness service replaced by 12 and 42; Potrero Avenue service replaced by 25 and 33.)
	19-POLK	Discontinue SP Depot branch (service replaced by 42-line)
	25-SAN BRUNO	Relocate from Bryant to Potrero between Division and Army (Bryant Street service replaced by 27)
	27-BRYANT	Final alignment north of Army, but existing route south of Army to 29th and Noe.
	42-DOWNTOWN LOOP	Final alignment
22-FILLMORE		Extend to Third and 22nd - Final alignment
8-MARKET		New extended terminal loop via 20th Street
6-PARNASSUS		Extend to West Portal Station - Final alignment
24-DIVISADERO		Convert existing motor coach route to trolley coach operation
21-HAYES		Terminate at Fulton and Stanyan (assuming 44 is operating via 6th Avenue as described under MUNI METRO Phasing below)
33-STANYAN		Extend from Haight and Stanyan via Stanyan, Fulton, Arguello and Sacramento to Maple (returning via California).
20-COLUMBUS		Establish new service - Chestnut and Van Ness to Army and Mission- Final alignment north of Army Street, (Replaces 15-THIRD on part of Kearny, 30-STOCKTON on Columbus, 41-UNION on Howard and Folsom.)
30-STOCKTON		Re-route via Broadway Tunnel - Final alignment
41-UNION		Extend into Presidio, re-route onto final alignment (Terminal at 4th and Folsom) (Replaces 45-GREENWICH in Presidio).
	15-THIRD	Final downtown alignment.
	30X-FREEWAY EXPRESS	Re-route to Financial District; Marina service peaks only - Final alignment and service pattern.
	45X-GREENWICH EXPRESS	New peak hour service - Final alignment
	45-GREENWICH	Discontinue
	82-CHINATOWN	Discontinue - substitute service provided by 15 and 41, in addition to 30, on Stockton.

TABLE V-4 (CONTINUED)

TROLLEY COACH ROUTE CHANGED	RELATED MOTOR COACH OR RAIL ROUTE CHANGED	NATURE OF REVISION AND COMMENTS
1-CALIFORNIA		Final alignment via Sacramento and Clay
4-SUTTER		All-day service (no route change)
55-SACRAMENTO		Peak-hour trolley coach service via Phase 1 motor coach route.
9-RICHLAND		Discontinue
24-DIVISADERO		Final alignment - Webster and Jackson to Third (Replaces 10 on Cortland)
	10-MONTEREY	Final alignment
	27-BRYANT	Final alignment - Discontinue south of Army
	35-EUREKA	If still operating crosstown on 24th Street (refer to MUNI METRO Phasing), discontinue Noe Valley one-way loop service.
33-STANYAN		Re-route via 20th Street - Final alignment east of Castro.
33-STANYAN		Re-route via 17th and Stanyan - Final alignment
	37-CORBETT	Re-route via 18th Street - Final alignment north of Castro and Market.
20-COLUMBUS		Extend south of Army to Farmer's Market - Final alignment. (Replace 13-ELLSWORTH, 23-CRESCENT.)
	13-ELLSWORTH	Discontinue
	23-CRESCENT	Discontinue
14-MISSION		Extend to Daly City BART - Final alignment
3-JACKSON		Extend east of Fillmore via Washington and Jackson, etc. - Final alignment (Replaces 25 north of Market.)
	25-SAN BRUNO	Final alignment to Ferry

Notes

- - As discussed in a separate section of this report, implementation of the recommended program will require acquisition of a number of additional trolley coaches. If acquisition of these vehicles is delayed, interim motor coach operation of lines 3-JACKSON and 4-SUTTER, at least during peak hours when vehicle requirements are critical, should be considered to allow trolley coach service on hill-climbing lines such as the 1, 20, 24, 33, and 55.
- - Proposals for contraflow lanes on Hayes between Laguna and Polk, and on McAllister east of Hyde also require additional trolley coach electrification. These are not listed above, but should be included whenever the contraflow lane proposals can be implemented.

3. MUNI Metro Implementation

Implementation of LRV service in the MUNI Metro Market Street subway will consist of a number of phases. While inauguration of subway service on each of MUNI's five streetcar lines will involve few major changes in the routes of the five rail lines, it will result in significant reductions in travel times -- reductions of 15 to 20 minutes in running times to lower Market Street from points west of Church Street during peak periods.

Presently, the Railway operates a number of major motor coach and trolley coach trunk lines which generally parallel the streetcar lines for the inner portions of their routes, and which serve similar radial neighborhood-to-Downtown functions. These lines, principally the 6, 7, 8, 11, 16X, 17X, 66, 71 and 72, are presently attractive to users because they provide comparable or frequently shorter travel times than the nearby streetcar lines. However, this balance will shift dramatically in favor of the streetcar -- MUNI Metro -- services once the subway's 15-to-20-minute time savings become available. Travel times to Downtown from the outer portions of nearby bus and trolley coach lines will become considerably shorter using MUNI Metro even if a transfer is required. It is expected that many if not most users of the lines listed above will transfer and use MUNI Metro to reach Downtown. This will make it possible to convert many of those lines from routes serving a duplicative radial function into new routes serving needed inter-district, crosstown and feeder functions.

Consequently, for each present streetcar service, there are recommendations for major changes in one or more of the listed key coach lines. There are, in turn, also a number of other secondary changes in motor coach and trolley coach lines which depend on these restructured coach routes. The table of MUNI Metro service changes (Table V-5) identifies the combined groups of surface route changes associated with the start-up of each MUNI Metro line. The order of listing will not necessarily be the order of implementation of MUNI Metro services, but it does correspond to the presently recommended sequence. The phasing-in of subway service is discussed in Chapter VI, Section A, "MUNI Metro and Related Rail Services."

Since usage patterns will not shift quite overnight, it is recommended that each set of surface route changes follow implementation of MUNI Metro service on each rail line by three to six months. This will allow time both to get the "bugs" out of MUNI Metro service and to ascertain that the anticipated shifts of passenger usage actually do take place. (If in fact they do not, these route change proposals would of course be modified accordingly.)

TABLE V-5
MUNI METRO IMPLEMENTATION - RELATED SURFACE ROUTE CHANGES

MUNI METRO SERVICES	RELATED RE-ROUTINGS	NATURE OF REVISION
N-JUDAH		"MUNI METRO Phase 1"
	K-INGLESIDE	Interim Route - Extend to Balboa Park with PCCs
	7-HAIGHT	No route change - but peak hour-only service. (It is anticipated that 71 will provide local capacity east of Stanyan).
	16X- NORIEGA EXPRESS	Discontinue (Replaced by 71 and N MUNI METRO)
	17-PARKMERCED	Final Route - Parkmerced to Seacliff (Replaces 28 on 25th Avenue)
	18-SLOAT/46TH AVE.	Interim Route - Following "final" alignment between Zoo and the Presidio (Replaces 28 on Lincoln Blvd.)
	28- NINETEENTH AVENUE	Final Route - Daly City BART to Chestnut and Fillmore via Park Presidio
	29-RUTLAND	Final Route - Discontinue service on Mansell (Replaced by 72)
	43-MASONIC	Final Route - Southern Hills loop to Chestnut and Divisadero. (Replaces 28 east of Mission)
	44-DIAMOND HEIGHTS	Interim Route - Shift from 10th Ave. to 6th Ave. in the Richmond (Final alignment north of Forest Hill)
	54-WILLIAMS	Combined with 81
	66-QUINTARA	Interim Route - 30th and Quintara to 9th and Judah only - all day
	71-HAIGHT-NORIEGA	Final Route - Local service all-day, Ocean Beach to Ferry
	72-SUNSET	Final Route - Richmond to Fitzgerald/Gilman loop. (Replaces 28 between Stonestown and Balboa Park, replaces 29 on Mansell, replaces 81 east of San Bruno)
	81-BACON	Final Route - Hunters Point to Alemany (incorporates 54)
K-INGLESIDE L-TARAVAL		MUNI METRO Service
	M-OCEAN VIEW	Interim Route - Operates between West Portal and Balboa Park with PCCs
	11-QUINTARA-24TH ST.	Interim Route - Extend from West Portal to Beach via "Final" alignment on Quintara, etc. (Replaces portion of 66)
	14B-BART	Final Route (Discontinue 14X)
	26-GUERRERO or SHUTTLE	Interim Route - Shuttle or branch line service via "Final" alignment to Maynard/Trumbull loop (Replaces portion of 14X)
	66-QUINTARA	Discontinue (Replaced by 11 and 17)
J-CHURCH		MUNI METRO Service
	11-QUINTARA-24TH ST.	Final alignment - Beach to Third (If J subway service precedes L subway service, implement 11 from West Portal to Third only.)
	14L-MISSION LIMITED	Discontinue
	35-EUREKA	Final Alignment - Castro and Market to Diamond Heights and Burnett loops. (Replaces parts of 37)
	37-CORBETT	Final alignment - Haight Street to Geneva Avenue (East of Mission replaces 52)
	44-O'SHAUGHNESSY	Final Alignment - Hunters Point to U.S.P.H. Hospital
	52-EXCELSIOR	Discontinue (Replaced by 37)

(Continued on next page)

TABLE V-5 (CONTINUED)

MUNI METRO SERVICES	RELATED RE-ROUTINGS	NATURE OF REVISION
M-OCEAN VIEW		MUNI METRO Service
	17X-PARKMERCED EXPRESS	Discontinue - but inaugurate 17S-PARKMERCED LOOP to provide additional local service
	18-46TH AVE.	Final Route - Stonestown to the Presidio via Lake Merced (Replaces 70 south of Sloat. Service on Sloat provided by 10.)
	70-LAKE MERCED	Discontinue (Replaced by 18. BART Daly City remains served by 28-line.)
J-CHURCH		Extension via Balboa Park at least to SF State
	26-GUERRERO	Final alignment - Ferry to Maynard/Trumbull loop
J-CHURCH		Extension to SP Depot, probably with J-M loop service
M-OCEAN VIEW		
	40-COMMUTER	Discontinue
	80X-GATEWAY EXPRESS	Discontinue

E. DOWNTOWN SERVICES

During fiscal year 1977-78, the Municipal Railway carried a total of 120,213,759 revenue passengers on 77 routes traversing 817 round trip line miles. Express service was provided on nine lines, limited stop service on nine lines and shoppers' shuttle service on three lines. Of these 77 lines, 47 operate into and out of Downtown San Francisco, the area roughly bounded by the SP Depot, Van Ness/11th Street and Clay. During the peak hours of approximately 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m. weekdays, the greatest number of people use MUNI services.

An analysis of MUNI passenger carrying capacity into and out of Downtown San Francisco during these peak hours has been made by measuring the amount of service provided from various neighborhoods into the central business district. From Figure V-24 and Table V-6, a Central Business District Cordon Analysis, one can compare the peak hour transit capacity at various key locations surrounding the Downtown area. The capacities, in this case, have been determined by the number of streetcars or coaches scheduled to pass the cordon point multiplied by the number of seats plus an additional 50 per cent for standees. (See Table III-2.) The present scheduled capacity on MUNI is estimated at 41,613 passengers into Downtown during the morning peak hour of 7:30 a.m. to 8:30 a.m. and 42,068 outbound during the afternoon/evening peak period of 4:30 p.m. to 5:30 p.m.

MUNI's need to handle increasing number of Downtown passengers has become apparent with the steady proliferation of new office buildings constructed over the past ten years. To give an indication of the magnitude of this situation, the following is a partial list of buildings recently completed, under construction, or slated to be completed, if approved, before 1984. The number of stories which the developer is proposing is listed, but the actual number which emerges at the end of the approval process may differ.

1. State Compensation Insurance Fund - 9th and Market - 17 stories.
2. First California Bank - California and Sansome - 23 stories.
3. Bechtel II - Market and Fremont - 34 stories.
4. Bechtel I - 333 Market - 45 stories.
5. Hibernia Bank - California and Front - 17 stories.
6. 701 Clay - Clay and Montgomery - 19 stories.
7. 595 Market - Market and Second - 27 stories.
8. 444 Market - 38 stories.

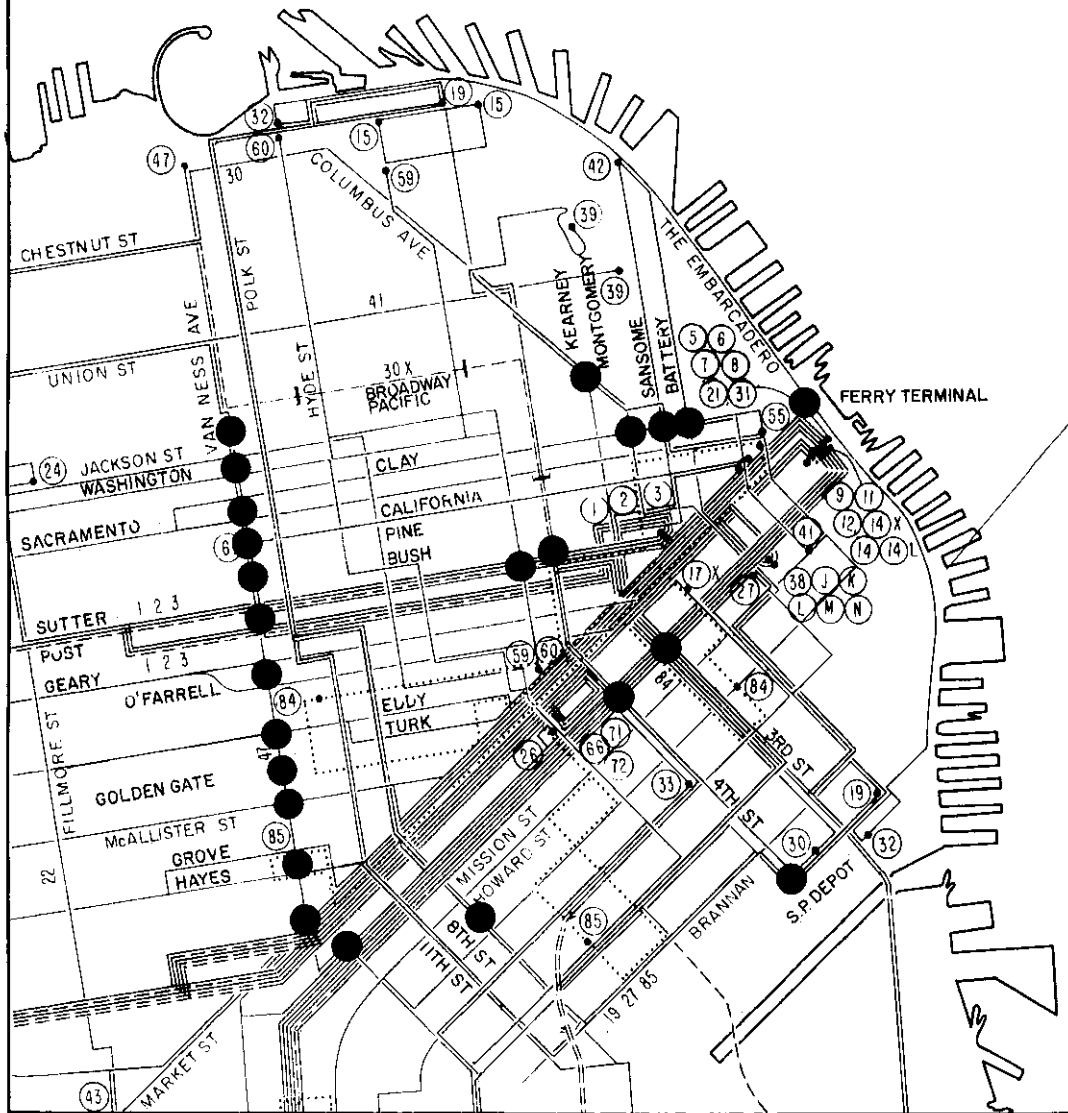
9. Pacific Mutual, 505 Sansome - Sansome and Clay - 18 stories.
10. Howard & Main - 15 stories.
11. 180 Montgomery - Bush and Montgomery - 29 stories.
12. Bank of America Data Center - 5 stories.
13. Pacific Gateway - 33 stories.
14. Federal Reserve Bank - 12 stories.
15. Crocker Tower - 49 stories.
16. ITEL - 101 California - 48 stories.
17. Embarcadero IV - 45 stories.
18. Nieman-Marcus - 4 stories.
19. Saks - 6 stories.
20. One Sansome - 42 stories.

The Environmental Impact Reports (EIRs) prepared for these buildings estimate an additional 30,000 home-work person trips on weekday afternoons generated by these buildings. Not all these people will need to use Municipal Railway services for their trip to or from home; MUNI is currently carrying approximately 40 per cent of such trips. Thus, it has been estimated that these new buildings will generate about 12,000 additional Downtown peak hour trips to be carried by MUNI and BART within San Francisco. The implementation of the 5-Year Plan would increase MUNI's capacity to handle the additional trips, as shown in Table V-6, Cordon Analysis.

The implementation of full MUNI Metro service will be responsible for much of this improved capacity. This increase, measured at Van Ness and Market Streets, is created not only by faster vehicles but also by vehicles with greater seating and standing capacity. The new MUNI Metro light rail vehicle (LRV) can hold 50% more passengers than the present streetcars. In addition, the use of larger capacity buses will improve carrying capacity in the transit corridors from the Richmond and Marina Districts, Third Street, and the James Lick Freeway, as shown in Table V-6. These larger buses, known as articulated (bend-in-the-middle) buses, will feature 50% more seating and standing room than conventional buses.

BART riders are not shown in the Cordon Analysis. If the MUNI Fast Pass could be used for BART trips within San Francisco, then BART would be effectively integrated as part of the Downtown transit net-

Figure V-24
LOCATION OF CENTRAL BUSINESS
DISTRICT CORDON POINTS



Summary of Inbound Peak Capacity
7:30 - 8:30 A.M. Capacity

TABLE V-6
CENTRAL BUSINESS DISTRICT
CORDON ANALYSIS:
INBOUND AND OUTBOUND

Summary of Outbound Peak Capacity
4:30 - 5:30 P.M. Capacity

<u>Cordon Point</u>	<u>Present Peak Hour Capacity</u>	<u>5-Year Plan Peak Hour Capacity</u>	<u>Difference</u>
1. Market @ Van Ness	10,639	14,700	+ 4,061
2. Mission @ 11th Street	3,528	3,024	- 504
3. Grove @ Van Ness	864	864	0
4. McAllister @ Van Ness	1,080	1,152	+ 72
5. Golden Gate @ Van Ness	792	0	- 792
6. Eddy @ Van Ness	1,224	936	- 288
7. O'Farrell @ Van Ness	1,296	2,196	+ 900
8. Post @ Van Ness	3,600	1,440	- 2,160
*9. Bush @ Van Ness	1,008	2,160	+ 1,152
10. California @ Van Ness**	760	760	0
11. Clay @ Van Ness	1,728	2,160	+ 432
12. Washington @ Van Ness	504	1,008	+ 504
13. Powell @ Sutter	910	910	0
*14. Stockton @ Sutter	2,376	5,202	+ 2,826
15. Clay @ Montgomery	2,304	864	- 1,440
16. Battery @ Clay	432	2,034	+ 1,602
17. Market @ Embarcadero	1,080	1,600	+ 520
*18. S.P. Depot	5,760	8,040	+ 2,280
19. Folsom @ 8th Street	432	1,728	+ 1,296
*20. Mission @ 3rd Street	<u>1,296</u>	<u>1,170</u>	<u>- 126</u>
TOTALS	41,613	51,948	10,335

*Articulated coaches $\frac{10,335}{41,613} = 25\%$ increase with 5-Year Plan

**Does not included service on Line 62

<u>Cordon Point</u>	<u>Present Peak Hour Capacity</u>	<u>5-Year Plan Peak Hour Capacity</u>	<u>Difference</u>
1. Market @ Van Ness	9,268	14,916	+ 5,648
2. Mission @ 11th Street	3,960	3,024	- 936
3. Hayes @ Van Ness	864	864	0
4. McAllister @ Van Ness	1,224	1,440	+ 216
5. Turk @ Van Ness	792	0	- 792
6. Eddy @ Van Ness	1,080	1,440	+ 360
7. Geary @ Van Ness	2,304	2,196	- 108
8. Sutter @ Van Ness	3,456	1,440	- 2,016
*9. Pine @ Van Ness	792	1,944	+ 1,152
10. California @ Van Ness	760	760	0
11. Sacramento @ Van Ness	1,944	2,088	+ 144
12. Jackson @ Van Ness	360	864	+ 504
13. Pacific @ Van Ness	0	144	+ 144
14. Powell @ Sutter	1,512	1,512	0
*15. Sutter @ Stockton	2,232	4,500	+ 2,268
16. Columbus & Kearny	2,160	864	- 1,296
*17. Sansome @ Clay	648	2,394	+ 1,746
18. Market @ Embarcadero	1,152	1,600	+ 448
*19. S.P. Depot	5,472	9,048	+ 3,576
20. Howard @ 8th Street	1,296	1,008	- 288
*21. Mission @ 4th Street	<u>792</u>	<u>1,170</u>	<u>+ 378</u>
TOTALS	42,068	53,216	11,148

*Articulated coaches $\frac{11,148}{42,068} = 26\%$ increase with 5-Year Plan

work. This would provide even greater carrying capacity.

These three innovations -- maximum use of the MUNI Metro system, use of articulated buses, and BART acceptance of the MUNI Fast Pass -- are essential if MUNI's Downtown capacity is to be increased. In order to achieve the greatest potential carrying capacity of the new MUNI Metro in the Market Street subway, a loop must be constructed at the foot of Market Street. This would allow inbound cars to be prepared for their outbound trip in the shortest amount of time possible. In addition, transit preferential streets are necessary to minimize transit delay. If transit vehicles move faster, they can make more trips in a given length of time, thus creating more passenger capacity. Streets suggested for transit priority treatment are Sutter/Post, Geary/O'Farrell, Stockton, and Market Streets. (See Chapter V, Section H.)

F. REGIONAL SERVICE INTEGRATION

The City of San Francisco is the single largest trip generator in the Bay Area. 56 percent of the trips to the City made by residents of the other eight Bay Area counties are to non-Downtown destinations, generally for work purposes. Together with the roughly 8 percent of trips made by San Franciscans that leave the City, this underscores the importance of a route structure that facilitates regional transit trips. The MUNI's present service interface with the service of local, regional and interstate carriers is good, but it could be greatly improved with the implementation of the 5-Year Plan's recommendations for route restructuring, fare collection procedures, and regional transfer coordination.

The Municipal Railway is, in terms of patronage and impact on its service area, the most important transit agency in the Bay Area. As a member of the recently organized Regional Transit Association (RTA), the Railway has pursued improved regional inter-connections as a way to widen the range of destinations that can be easily and conveniently reached from the nearest MUNI stop. This would not only increase the transit mobility of San Franciscans, but would also make possible a reduction in the flood of out-of-town automobiles that choke San Francisco's streets and threaten its neighborhoods.

About ten per cent of the Railway's daily passengers are commuters who arrive in the City by transit or automobiles and use MUNI for a part of their journey. A summary of MUNI trips by residents outside San Francisco is shown in Table V-7. While most trips made by residents of San Francisco and other counties are made within county boundaries, a significant number of trips are made every day across San Francisco's city limits. Table V-8 and Figure V-25 show the external origins and destinations of trips using MUNI. Motorists making these trips enjoy a fully inter-connected freeway and street system, which, although

Table V-7
MUNI TRIPS BY NON-SAN FRANCISCO RESIDENTS
(14-Hour Survey Period)

	<u>NUMBER</u> ^{-1/}	<u>PERCENT OF NON-RESIDENT TRIPS</u>	<u>PERCENT OF TOTAL 14- HOUR TRIPS</u>
Alameda County	14,816	30.7	3.2
Contra Costa County	4,976	10.3	1.0
Marin County	2,940	6.1	0.6
Napa County	118	0.2	*
San Mateo County	19,793	41.0	4.3
Santa Clara County	4,524	9.4	1.0
Solano County	130	0.2	*
Sonoma County	683	1.4	0.2
Outside Bay Area	<u>346</u>	<u>0.7</u>	<u>0.1</u>
TOTAL	48,326	100.0	10.5

^{1/} Assumes non-resident MUNI riders make the same percentage of non-home based trips as do resident MUNI riders.

* Less than 0.1 per cent.

Source: Planning-Operations-Marketing Study

TABLE V-8
NON-DIRECTIONAL EXTERNAL-INTERNAL TRAVEL PATTERNS (1)

<u>EXTERNAL AREA</u>	<u>INTERNAL DISTRICT</u>															<u>TOTAL</u>
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	
<u>North Bay</u> (Marin, Sonoma, Napa)	1,586	156	57	0	446	496	93	117	32	174	313	85	101	25	1	3,664
<u>East Bay</u> (Alameda, Contra Costa, Solano)	5,867	2,798	1,336	261	2,588	1,260	1,546	671	1,625	1,493	1,433,	277	678	580	51	22,464
<u>Peninsula</u> (San Mateo, Santa Clara)	13,552	940	390	50	1,225	313	429	672	287	340	1,952	490	1,318	340	36	22,298
TOTAL	20,487	3,858	1,783	331	4,259	2,069	2,068	1,460	1,944	2,007	3,698	852	2,097	945	88	48,326

(1) Includes an estimated 5,550 transfers.

ZONE 1 -- Downtown	ZONE 9 -- Twin Peaks, Laguna Honda
ZONE 2 -- North Beach, Chinatown	ZONE 10 -- SF State, Stonestown
ZONE 3 -- Marina	ZONE 11 -- Mission
ZONE 4 -- Presidio	ZONE 12 -- Glen Park
ZONE 5 -- Western Addition, Japantown	ZONE 13 -- Portola
ZONE 6 -- Richmond	ZONE 14 -- Potrero Hill
ZONE 7 -- Haight Ashbury	ZONE 15 -- Bayview, Hunters Point
ZONE 8 -- Sunset-Parkside	

FIGURE V-25

BAY AREA MUNI TRIPS
AVERAGE WEEKDAY
TRAVEL ANALYSIS DISTRICTS

PERSON TRIPS

25,000 15,000 5,000 1,000



under the jurisdiction of numerous separate agencies (federal, state and local), does not present sudden discontinuities at jurisdictional boundaries. The motorist is usually unaware of these boundaries, perceiving the highway network to be a unified whole (with the possible exception of the bridges, for which a separate toll is charged).

Contrast this closely-interconnected regional street and highway network with the Bay Area's hodgepodge of transit agencies, ungoverned by any overall concept of connections, fares, or marketing. The adventurous few who try to make regional transit trips find multiple fares, separate terminals, and missed connections to be a rule. This is a great disincentive to transit use, and the result is a correspondingly poor modal split.

The 5-Year Plan route restructuring would significantly improve the access to regional transportation services. Virtually all points within the City would be within one transfer of BART, Golden Gate Transit, AC Transit, Southern Pacific, SamTrans, and private carriers such as Greyhound. Most points would be directly accessible to these carriers with no need to transfer.

1. MUNI Connections With Regional Carriers

a. East Bay Corridor

Approximately 54 of the proposed 64 MUNI routes would directly serve BART stations. Any part of the City could be reached with one MUNI transfer from San Francisco BART stations.

AC Transit also serves San Francisco from the East Bay and terminates at the Transbay Transit Terminal. The Transbay Terminal acts as a regional transit hub for four of the six Bay Area transit operators. The State of California has established the San Francisco Bay Area Transportation Terminal Authority (BATTa) to develop a regional transit terminal on the site of the Transbay Terminal. Recommended alternatives for the enlargement and modernization of the terminal to meet projected 1995 regional travel patterns are now being evaluated by BATTa. A Regional transit information center, providing timetables, maps, and transfer information, is part of the design.

The Municipal Railway's 5-Year Plan recognizes the importance of the Transbay Terminal as a regional transit hub and recommends improved overall service to the terminal. The 5-Year Plan's new trolley coach routes would directly serve the terminal, offering excellent transfer opportunities to and from regional transit operators. Figures V-26 and V-27 show present and proposed MUNI service to the Transbay Terminal.

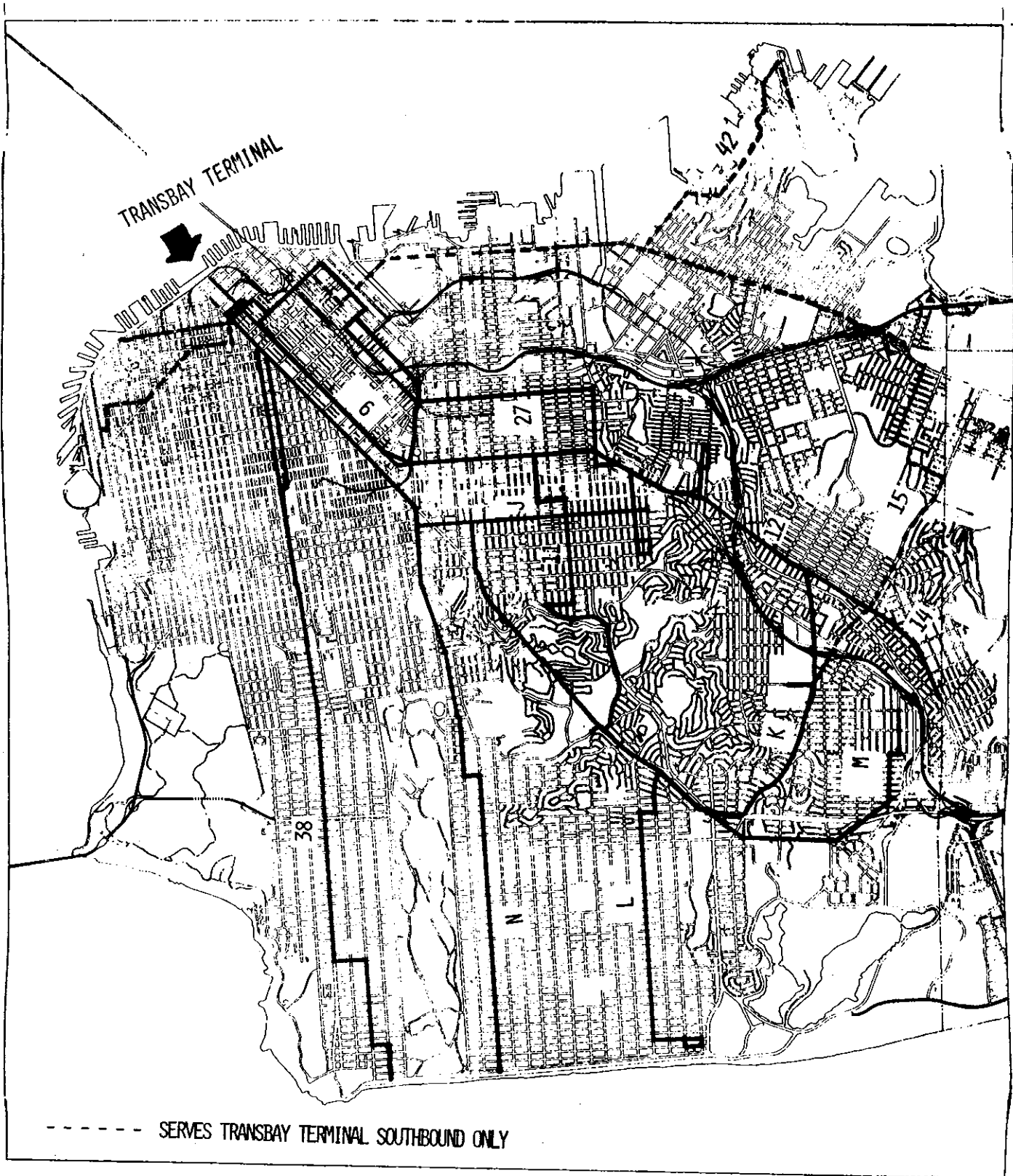


FIGURE V-26
PRESENT MUNI SERVICE TO TRANSBAY TERMINAL



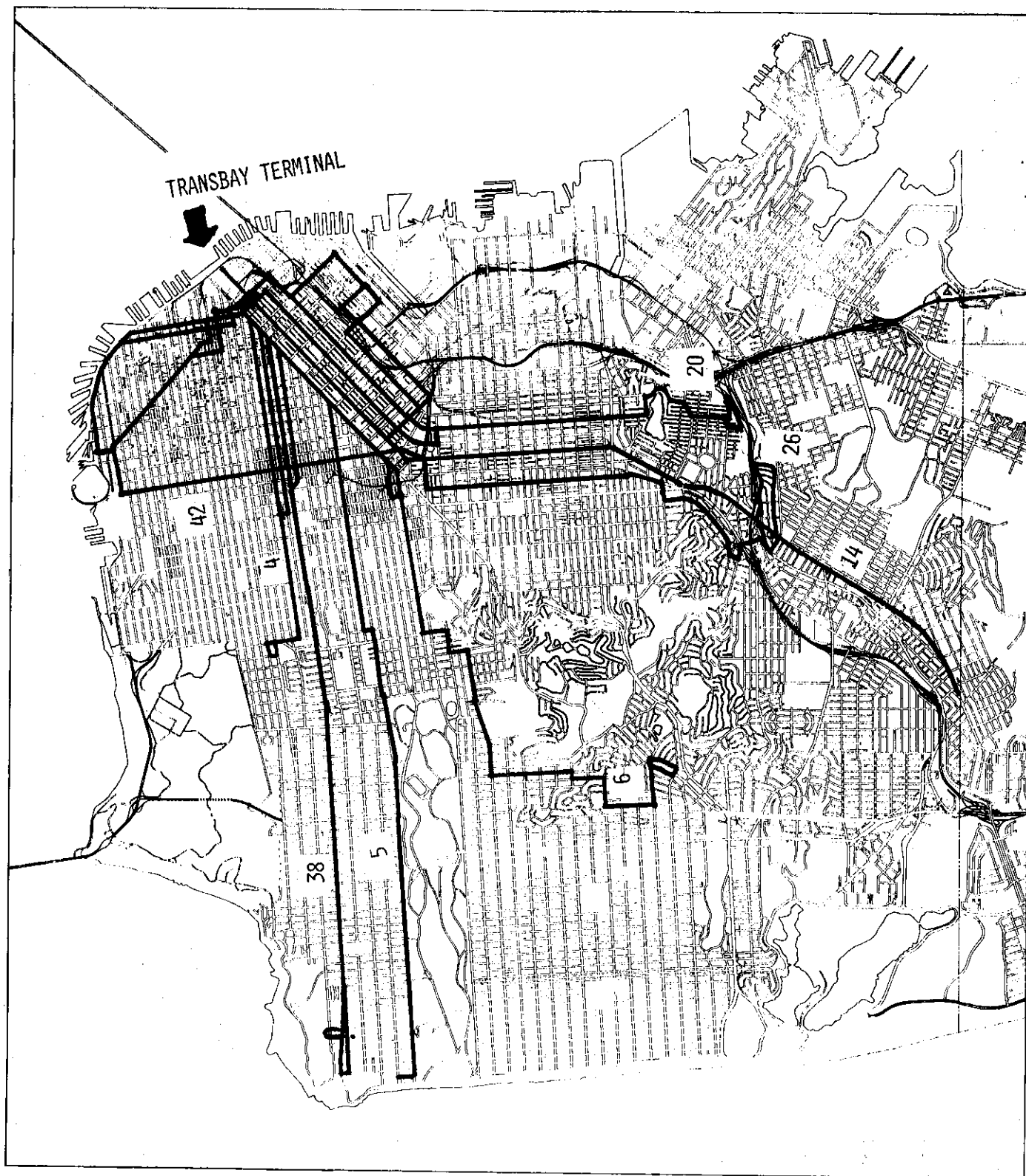


FIGURE V-27
PROPOSED MUNI SERVICE TO TRANSBAY TERMINAL

b. North Bay Corridor

Approximately 39 of the proposed MUNI routes would directly serve the Golden Gate Transit midday routes, including the Sausalito, Tiburon, and Larkspur Ferries.

c. Peninsula Corridor

The Southern Pacific (SP) Depot, at Fourth and Townsend Streets in San Francisco, is the major transfer point to MUNI for passengers arriving on Southern Pacific trains from the Peninsula. A total of 9700 MUNI trips to and from the SP Depot are made on an average weekday, representing about 60 per cent of the 16,000 daily trips made by SP commuters to and from San Francisco.

The 5-Year Plan recommends that the SP Depot be served by key crosstown lines intersecting Market at Van Ness, Stockton/Kearny, Battery and The Embarcadero. With the extension of MUNI Metro to the Depot, all points in the City would be within one transfer of the SP trains, and the most important San Francisco destinations for train users would have direct and high quality service to the Depot. Figures V-28 and V-29 show present and proposed lines serving the Depot. It is also strongly urged that all Southern Pacific Peninsula trains, with the exception of some of the rush-hour expresses, stop at 23rd Street and Paul Avenue Stations in the City. Financial assistance to upgrade these stations is also recommended. This would allow important MUNI crosstown lines 11 and 72, serving destinations like Candlestick Park, SF State and Golden Gate Park, to distribute SP passengers in the City. This is an important consideration to the success of the SP service since 65 percent of the trips to the City from Peninsula are non-Downtown trips.

The 5-Year Plan route proposals also provide important connections with the San Mateo Transit (SamTrans), both at the Transbay Terminal and in Daly City, for passengers going to and from San Mateo County and the San Francisco International Airport.

d. Greyhound

Approximately 15 of MUNI's proposed routes are within a half-block of the Greyhound Terminal on Seventh Street. If, as recommended by the Bay Area Transportation Terminal Authority (BATA), Greyhound relocates its terminal to the proposed, regional Transbay Terminal at First and Mission Streets, overall accessibility would be improved. Currently, Greyhound has proposed to build its own terminal at Seventh and Mission Streets. Their relocation to the Transbay Terminal is now uncertain.

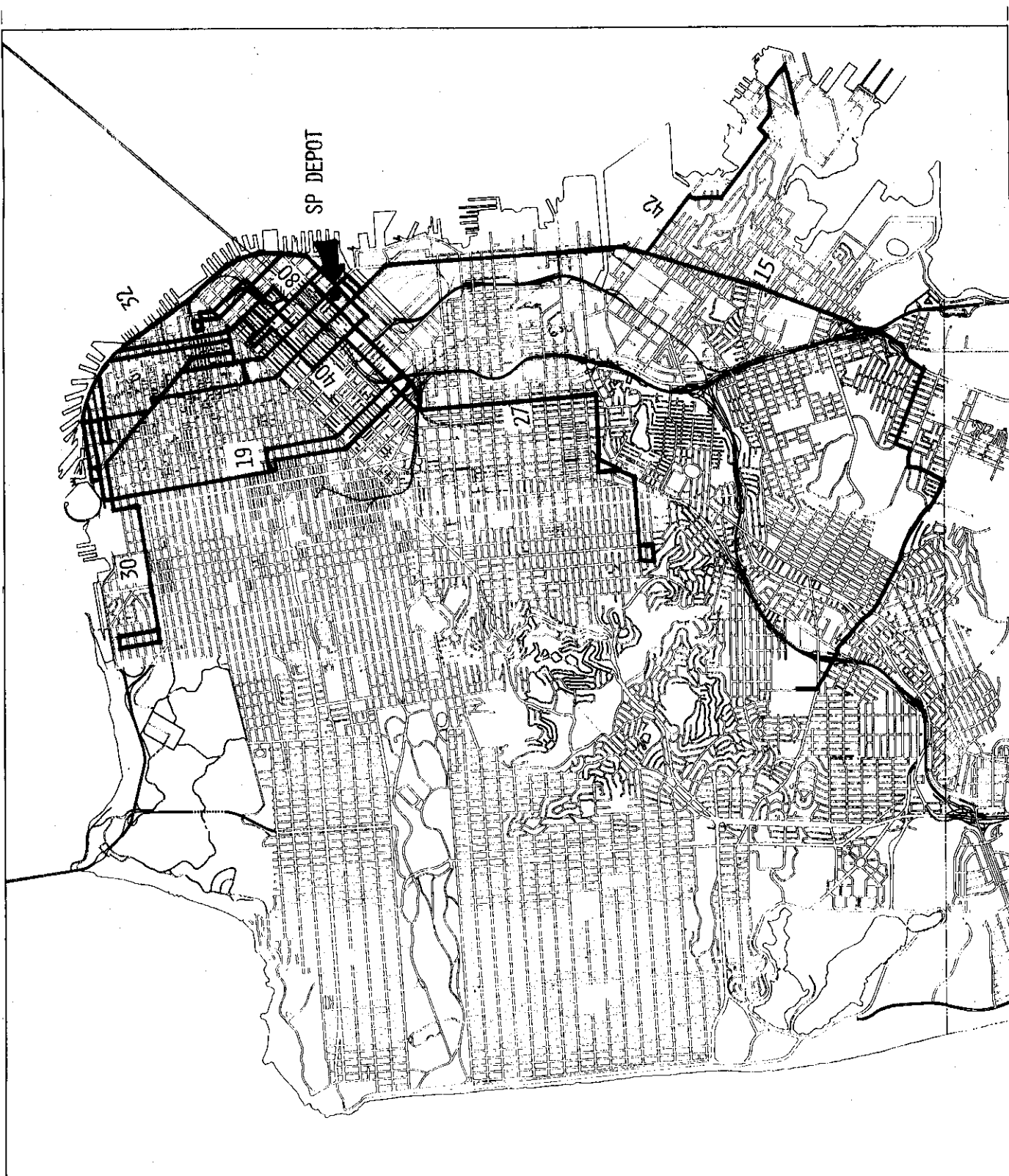


FIGURE V-28
PRESENT MUNI SERVICE TO SOUTHERN PACIFIC

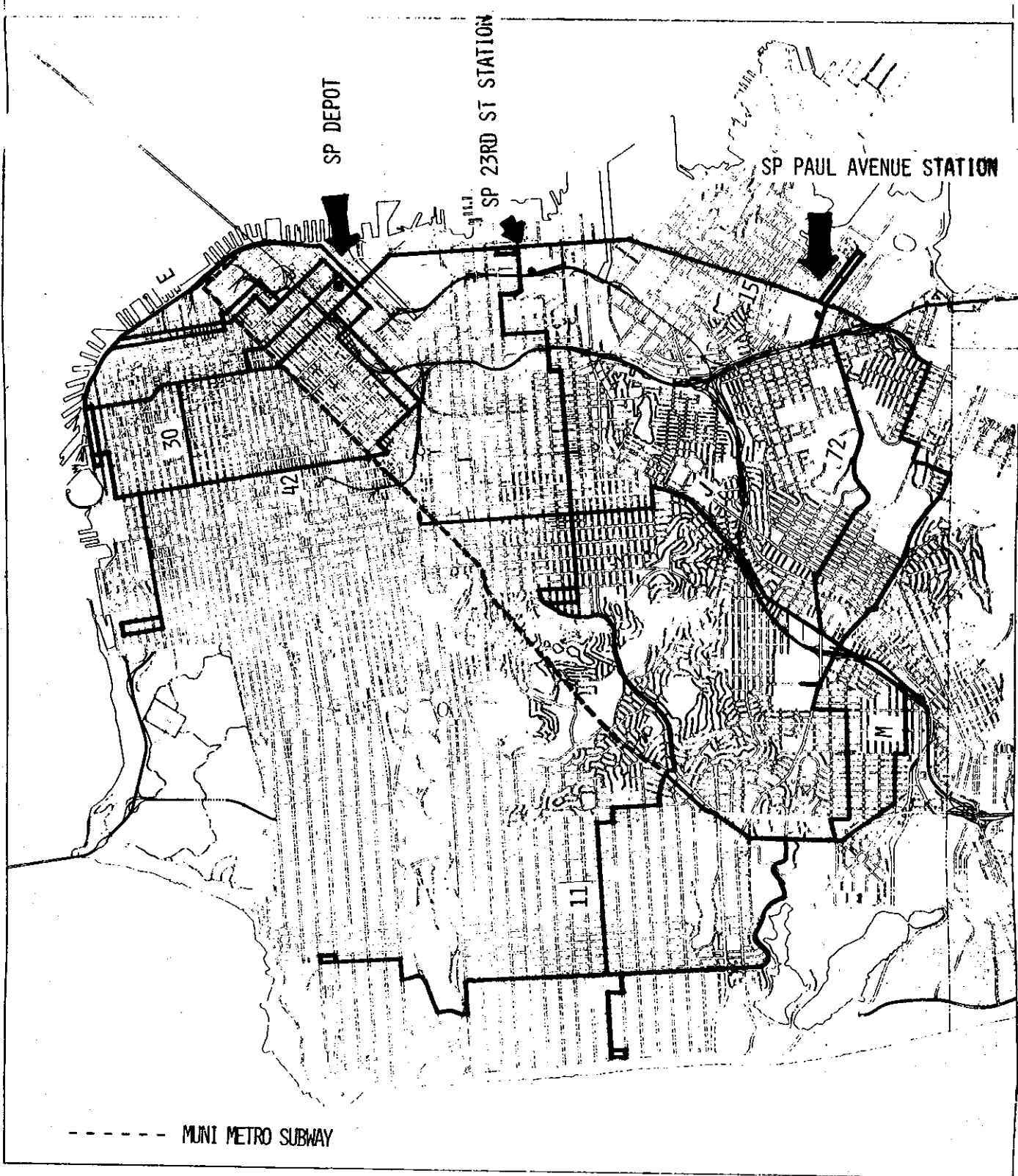


FIGURE V-29
PROPOSED MUNI SERVICE TO SOUTHERN PACIFIC

2. Regional Transfer Coordination

While good route connections are a must for regional transit to function, the convenience and ease of transferring from one transit system to another is also important and can act as an incentive to riding transit. The Railway, in an effort to accommodate regional passengers once they arrive in San Francisco, has some short and long-range recommendations for fare collection and transferring that could make public transportation more convenient, and possibly encourage greater use.

a. MUNI Monthly Passes on BART

One such plan involves the use of the Railway's \$11.00 Fast Pass and \$2.50 Senior Pass on BART within the boundaries of San Francisco. This means that anyone with a monthly pass could board BART at any station between Balboa Park and Embarcadero Station without paying an additional fare. (When MUNI Metro becomes operational, the Railway's pass will be coded with a magnetic strip similar to tickets now used on BART, to make it compatible with BART ticket machines. This would allow MUNI/BART users to pass through the gates without the assistance of a station agent.) In addition to eliminating the payment of an extra fare, this would allow BART to become fully integrated into San Francisco's transit network. Consequently, the benefits of BART would be more available to San Franciscans, who have been financing BART, and Downtown capacity would increase. (See Chapter V, Section E.)

Presently, the MUNI has a discount ticket used as an inter-system transfer with BART. This ticket allows passengers to purchase a round-trip MUNI ticket from a BART station for the price of a one-way MUNI fare. This works well if your trip originates on BART, but serves little or no purpose if a trip originates on MUNI and one wishes to return on BART. Figure V-30 summarizes the MUNI discount ticket operation.

b. MUNI Golden Gate Ferry Transfer

The Railway's planning staff is also working with the staff of the Golden Gate Bridge, Highway and Transportation District (GGBHTD) on a demonstration project to facilitate transferring between MUNI and the Golden Gate Ferries. Until this is realized, the transfer operations of MUNI and Golden Gate Transit will continue to be generally independent of one another. A more efficient transit operation and improved investment return may be possible for both if some degree of transit integration can be achieved.

This transfer project is intended to develop and demonstrate an easy-to-use passenger transfer arrangement between the MUNI's local service and the Golden Gate Ferry service in accordance with the following goals:

Figure V-30

BART/MUNI DISCOUNT TICKET PROCEDURE

BART riders can now purchase round trip MUNI Discount Tickets for 25c at special machines located in all San Francisco BART stations. These allow a BART rider to continue his journey FROM a BART station on the San Francisco MUNI, and return on MUNI TO that same BART station.

25c buys a two part Discount Ticket separated by a perforated line. The bottom part is good for a MUNI local fare away FROM the BART station where it was purchased (good for one hour from time of purchase). The top part is good for a return ride on MUNI TO the BART station where it was purchased, and is valid for 72 hours.

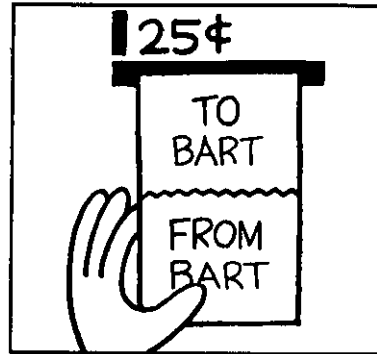
Just remember: Always purchase your MUNI Discount Ticket as you *leave* a BART station. Use the FROM-BART ticket away from the station. Use the TO-BART ticket any time within 72 hours to return to that same BART station.

These Discount Tickets are good for regular 25c MUNI fares only.

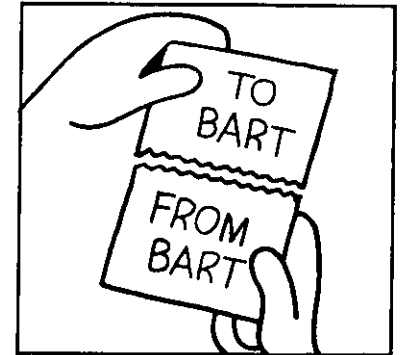
If you need to transfer from one MUNI vehicle to another, ask the MUNI driver for a regular MUNI transfer when you board.

If some problems should arise concerning the use or validity of your Discount Ticket, please pay the regular MUNI fare and report the particulars of the situation to the office of the General Manager, San Francisco Municipal Railway. Telephone 673-M-U-N-I.

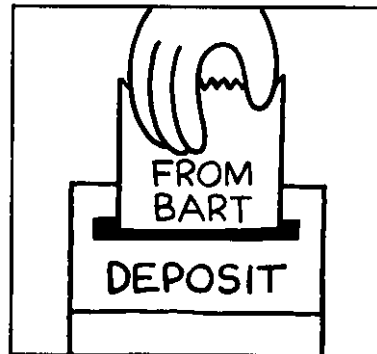
Here's how it works:



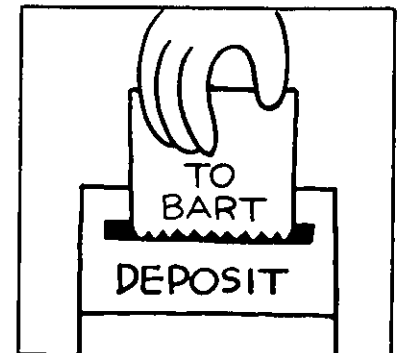
1. Purchase a two-part round trip Discount Ticket for 25c at the special white machines as you leave the BART station.



2. Separate the Discount Ticket into two parts at the perforated line.



3. Show the FROM-BART ticket to the MUNI driver as you board and deposit it in the special DISCOUNT TICKET box on the MUNI . . . Keep the TO-BART ticket. It is valid for 72 hours.



4. When you make a return trip, show the driver the TO-BART ticket and deposit it in special DISCOUNT TICKET box on the MUNI.

- Support and encourage use of the Golden Gate Ferry service as the North Bay high-capacity, mass transit link, much as BART serves that function for the East Bay.
- Integrate the ferry system with local transit in San Francisco.
- Utilize the transfer arrangement to promote patronage on the ferry system and to develop MUNI as the local San Francisco feeder and distribution service for ferry users.

This operation would work in the following manner: passengers arriving in San Francisco on the ferry should obtain transfers on the ferry or at the Marin County ferry terminals. This transfer would allow boarding on MUNI, without payment, to destinations anywhere in San Francisco. MUNI passengers should obtain a MUNI transfer or use a MUNI monthly pass to obtain 25¢ credit toward the ferry fare. Golden Gate Discount Tickets would be punched by the MUNI operator in lieu of the present 25¢ fare. GGBHTD would reimburse MUNI for each punched ticket collected.

c. SP Faresaver Program

The MUNI's SP Faresaver is part of a three-county program to increase the Southern Pacific's Peninsula passenger train patronage by discounting fares. Residents of the counties of San Francisco, San Mateo, and Santa Clara can obtain a 30% discount on multiple-ride tickets by using an identification card issued by their local transit agency. For people who live in San Francisco, the Municipal Railway is the agency administering the discount.

There are six different kinds of multiple-ride tickets in use on SP's trains between San Francisco and San Jose:

- "5-DAY" MONTHLY COMMUTATION TICKETS are good for an unlimited number of rides, excluding Saturdays and Sundays.
- "7-DAY" MONTHLY COMMUTATION TICKETS are good for an unlimited number of rides, including Saturdays and Sundays.
- WEEKLY COMMUTATION TICKETS are good for an unlimited number of rides for the entire week (Sunday through Saturday).
- 20-RIDE "FAMILY" TICKETS are good for 20 rides and can be shared by several members of a family. The 20 rides must be used within two months of the date of purchase.
- STUDENT MONTHLY AND WEEKLY COMMUTATION TICKETS are good for and unlimited number of rides, daily except Saturday and Sunday, for a month or week, respectively. They are issued only to bonafide students. Table V-9 shows multiple ride ticket prices with MUNI's SP FARESAVER.

Table V-9
MUNI'S SP FARESAVER
Multiple-Ride Ticket Prices
Effective March 1, 1978

Between SF and:		<u>Regular Price</u>	<u>30% Discount Voucher</u>	<u>You Pay</u>
ZONE 1	5 d.Mo	33.75	10.10	23.65
	7 d.Mo	36.55	10.95	25.60
	Weekly	9.70	2.90	6.80
	20-Ride	24.40	7.30	17.10
	Std.Mo	21.05	6.30	14.75
	Std.Week	6.50	1.95	4.55
ZONE 2	5 d.Mo	39.40	11.80	27.60
	7 d.Mo	42.80	12.85	29.95
	Weekly	11.05	3.30	7.75
	20-Ride	27.90	8.35	19.55
	Std.Mo	25.05	7.50	17.55
	Std.Week	7.55	2.25	5.30
ZONE 3	5 d.Mo	45.00	13.50	31.50
	7 d.Mo	49.05	14.70	34.35
	Weekly	12.50	3.75	8.75
	20-Ride	31.45	9.45	22.00
	Std.Mo	29.00	8.70	20.30
	Std.Week	8.60	2.60	6.00
ZONE 4	5 d.Mo	50.60	15.20	35.40
	7 d.Mo	55.30	16.60	38.70
	Weekly	14.60	4.40	10.20
	20-Ride	36.60	11.00	25.60
	Std.Mo	32.90	9.85	23.05
	Std.Week	9.55	2.85	6.70
ZONE 5	5 d.Mo	56.25	16.90	39.35
	7 d.Mo	61.90	18.55	43.35
	Weekly	16.50	4.95	11.55
	20-Ride	41.25	12.40	28.85
	Std.Mo	36.95	11.10	25.85
	Std.Week	10.55	3.15	7.40
ZONE 6	5 d.Mo	60.60	18.20	42.40
	7 d.Mo	65.95	19.80	46.15
	Weekly	18.45	5.55	12.90
	20-Ride	46.05	13.80	32.25
	Std.Mo	40.90	12.25	28.65
	Std.Week	11.50	3.45	8.05

d. Sale of the MUNI Fast Pass at SP Depots

If an agreement to sell the MUNI Fast Pass at SP Depots can be arranged with Southern Pacific, the Municipal Railway will print and distribute leaflets informing passengers of the availability and convenience of the MUNI monthly pass. The passes themselves could be sold at the SP Depot in San Francisco and at certain Peninsula depots. The following are additional options for improving MUNI/SP transfer opportunities:

- The combining of the Southern Pacific's three monthly tickets with the MUNI monthly pass. There would be an optional cost of \$11.00 (\$2.50 for Senior Pass) if the monthly ticket is validated for MUNI/SP use.
- A special MUNI monthly pass valid only on the MUNI lines that serve the SP Depot. For the price of a MUNI monthly pass, SP passengers could board any MUNI vehicle serving the depot without an additional charge. Before this can be implemented, the source of funding, possibly the county of origin, must be identified.
- A two-part transfer, similar to the BART/MUNI discount ticket.

G. FARE COLLECTION

A fare collection system for mass transit should attempt to meet a number of objectives, including:

- Successfully collecting a very high proportion of fares (ideally 100 per cent)
- Minimizing the cost incurred in fare collection
- Minimizing the travel time delays due to fare collection
- Encouraging greater off-peak use
- Simplifying fare payment procedures

While MUNI's current fare structure meets a number of these objectives, a more efficient fare collection system is a major consideration of the 5-Year Plan.

The Municipal Railway offers a variety of fare payment plans to its riders. The base fare for adults is 25¢ for local and limited service. The exact fare is required as the operator carries no cash.

Figure V-31 summarizes MUNI's current fare plans for children, students, the elderly, and the disabled. Monthly passes, Fast Pass and Senior Pass, priced at \$11.00 and \$2.50 respectively, are sold in numerous stores and neighborhood banks and may be purchased ten days prior to the month of use. In addition, monthly passes may be purchased from any of MUNI's operating divisions. MUNI sells about 50,000 passes per month. On an annual basis, this is approximately 24 per cent of MUNI's riders.

Presently, MUNI uses the pay-as-you-enter fare collection method for non-Pass holders. Every passenger must file through a narrow, single-width front door past the operator who, in addition to operating the transit vehicle, has to enforce fare collection regulations at every stop. This is a very expensive and time-consuming method of fare collection for a system as heavily used as MUNI. In light of this, the 5-Year Plan is considering some more extensive form of pre-payment fare collection system such as those used throughout Europe. These pre-payment systems have been given a number of generic names. Where automatic ticket-issuing is used, with or without validation, they are called "self-service" systems. On rail systems where no gates or turnstiles are employed, the term "no-barrier" fare system is used. One commonly used, but generally inaccurate, term is "honor" system -- a term which could with greater accuracy be applied to the present fare collection system. In fact, most of these other systems use some form of monitoring to ensure compliance, generally on-the-spot fines for offenders.

1. On-Vehicle Cash Handling

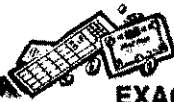
Development of on-vehicle cash handling equipment has been related to two specific areas -- security and data collection. Sophisticated techniques for holding the cash deposited and subsequently transferring it to a master vault have been introduced, while electronic coin sensing and counting has replaced the mechanical coin registration equipment. Again, these enhancements have also increased costs -- with per-vehicle costs for fare collection equipment now being in the range of \$2,000-\$3,000.

2. Ticketing System

One type of pre-payment fare plan is a ticketing system in which the ticket is cancelled or validated at the time of use. Automatic ticket-issuing equipment is provided, either located at stops or stations, or actually on-board the vehicle. Tickets, either single or multiple-ride, are also sold by agents or other outlets such as banks and neighborhood stores. The validation equipment can be either on or off the vehicle.

Figure V-31

MUNICIPAL RAILWAY FARE STRUCTURE



Fares



**EXACT FARE REQUIRED
— OPERATORS CARRY NO CHANGE**

GENERAL FARES

(Apply to persons age 15 through 64)

Regular Local Service

25 cents, transfer, * or FAST PASS.

Express Service

30 cents, transfer plus 5 cents, or FAST PASS.

Candlestick Special

50 cents, transfer plus 25 cents, or FAST PASS.

Shopper Shuttle

10 cents, or FAST PASS. Transfers accepted but not issued.

(FAST PASS — \$11 a calendar month. Good at all times on all lines. Available at more than 100 outlets in San Francisco. Dial 673-MUNI for locations.)

FARES FOR SENIOR CITIZENS

Senior Citizens (Persons over 65 years of age) **

Basic Fare

5 cents, transfer, or SENIOR PASS.

Express Service

5 cents, or transfer, or SENIOR PASS.

Candlestick Special

5 cents, or transfer, or SENIOR PASS.

Shopper Shuttle

5 cents, or SENIOR PASS.
Transfers accepted but not issued.

(SENIOR PASS — \$2.50 a calendar month. Good at all times on all lines. Available at senior centers and other outlets throughout the City. Phone 673-MUNI for location nearest you.)

FARES FOR CHILDREN (ages 5 through 14)

Regular Local Service

5 cents, transfer, or FAST PASS.

Express Service

10 cents, transfer plus 5 cents, or FAST PASS.

Candlestick Special

Going—30 cents, transfer plus 25 cents, or FAST PASS.
Return—50 cents or FAST PASS.

Shopper Shuttle

10 cents or FAST PASS. Transfers accepted but not issued.

CHILDREN (under 5 years)

Children, age 5 or under, ride free (limit one child per accompanying adult).

(Persons 15 through 17, currently enrolled in a San Francisco high school, and possessing a valid Muni identification card bearing their signature and that of the school principal, will pay the 5-cent children's fare. Operators may require proof of age and identity).

MUNI-BART DISCOUNT TICKETS

Passengers regularly using both Muni and BART to reach their destination will find the Muni-BART discount ticket a convenience. They may purchase the ticket from ticket dispensing machines located in all San Francisco BART stations. The discount tickets cost 25 cents and are good for travel in both directions. Instructions for their use are available in BART stations.



SUNDAY-HOLIDAY TOUR TICKET

The 50-cent Sunday-Holiday Tour Ticket (also applies to most holidays) is good for an unlimited number of regular fare rides. It is available from all cable car conductors, starters at the Powell and Market turntable, Muni division offices, and a limited number of businesses immediately prior to the day for which they are issued.

EXCEPTIONS TO THE GENERAL FARE STRUCTURE

1. **DISCOUNT FARE FOR HANDICAPPED**—Persons qualifying as handicapped under standards adopted for bay region transit agencies may ride Muni for 5 cents at all times except during the 7-9 a.m. and 4-6 p.m. weekday rush hours. For information dial 673-MUNI.

2. Although the Municipal Railway no longer sells tokens, they are sometimes tendered by passengers who still have them on hand. In these cases, and when they are used in special promotions, tokens will be honored as a regular local fare.

3. The City Department of Social Services gives tokens to certain clients. Each will be honored as a regular local fare.



TRANSFER RULES

Transfers are issued only at time fare is paid. Please do not place operators in a position of risking disciplinary action by requesting a transfer at any other time.

Passengers are requested to present unwrinkled transfers to operators "face up."

Operators will set time allowable on transfer—for not less than 2 hours, nor for more than 2 hours and 20 minutes from time vehicle is scheduled to leave terminal point.

Transfers will be honored for passage in one general direction when presented within their valid time limit, and on the proper date. A stop-over privilege is permitted anywhere along the route, within the transfer's time limit. Passengers are not permitted to use a transfer to return to area of their trip's origin.

Once a transfer is issued, it is the responsibility of the passenger to retain it. If it is lost, another will be issued only on payment of another fare.



PET RULES

Dogs may be carried on transit vehicles between the hours of 9 a.m. and 3 p.m., and between 7 p.m. and 5 a.m. on payment of full fare.

Guide dogs for the blind, when on leash, may ride free at all hours when accompanied by their masters.

Dogs (other than guide dogs) must be muzzled and on short leash—or carried in enclosed containers. No other animals are to be carried, unless they are in enclosed containers which do not exceed hand baggage size. No more than one animal may be carried at one time on each vehicle.

Muni is one of the few transit systems that allow dogs aboard its vehicles. This privilege has endured because of the cooperation of pet owners in the past. Please be considerate of fellow passengers by being a responsible pet owner and control the behavior of your pet at all times.

* See "Transfer Rules" in next column.

** Operators may require proof that passenger is over 65 years.

All the ticket systems reduce the monitoring role of the driver and per-passenger loading time compared to that required for on-vehicle cash fares. Experience has shown that a reduction in loading time of two and one-half seconds per passenger is possible with these ticketing systems.

3. Passes

The introduction of the MUNI Fast Pass in May of 1974 has proved to be very popular among both riders and drivers alike. The Fast Pass allows unlimited travel for one month, but the implementation of a pre-pay fare system could allow the purchase of passes to cover a period ranging from one day to one year. The system wide use of passes speeds up loading, reduces costs incurred in fare collection, and increases the overall vehicle operating speed.

The importance of the fare collection method as a determinant of operating speed is not generally realized in this country. In the POM Study analysis of delays to Municipal Railway vehicles, the consultant found that delay due to passenger loading time accounted for about 14 per cent of the running time; on the Downtown portions of routes, the delay was commonly more than 20 per cent. Since most of the costs of operating transit vehicles are time-related, these delays are clearly significant in determining the Railway's overall costs. The opportunity for improved system efficiency through reduction of these delays is very attractive because it falls largely within the Railway's jurisdiction.

As the Railway begins to adopt more efficient vehicles, such as the MUNI Metro's light rail vehicles and articulated buses and trolley coaches, the time delays due to intensive passenger loading will become more important. The Railway should respond to the introduction of new equipment in the same way European systems have -- by employing modern fare collection methods that keep as much of the fare collection off the vehicle as possible. Pass, token, and ticket sales which take place off the vehicle not only save operator's time, but also speed the boarding process. Under a "self-service" or "no barrier" fare collection arrangement, which is analogous to the parking meter system, passengers are responsible for paying their fare and having a valid "receipt" for the fare in their possession. This "proof-of-payment" could be a valid transfer, a Fast Pass, or a validated ticket of some kind. Possession of the fare receipt would enable passengers to board vehicles through any door, thus greatly speeding the boarding process. Periodic checks of Railway vehicles would be made by fare inspectors.

A recent study by the staff of the Metropolitan Atlanta Regional Transit Authority (MARTA) concludes that such an arrangement is not only feasible but desirable for American systems. This possibility is almost always rejected out-of-hand, with little or no analysis, on the assumption

that Americans are somehow different than Europeans and that "it can't work here." However, the benefits of such a system are so great that casual dismissal of the proposal is no longer acceptable. In Europe, the self-service fare system has now spread from Germany and Scandinavia to Italy and France; it is almost universally employed in Eastern Europe. Every year, the advantages of the self-service system become more apparent as more cities bring it into operation. It is highly significant that no city that has adopted this method of fare collection has abandoned it.

The adoption of this method in San Francisco would have many worthwhile benefits for the Municipal Railway. It would permit loading to occur at the rear door as well as the front door of buses and trolley coaches without requiring "loaders" (additional MUNI personnel), thus counteracting the slow-loading characteristics of these single-width-door vehicles. Most passengers could ignore the farebox, thus speeding front-door loading. The operator would be almost completely freed from fare collection and "police" duties involved in enforcing fare collection, thus enabling him or her to devote full attention to safe driving and to passengers' inquiries. It would bring many of the advantages of rapid transit to the surface sections of MUNI Metro by making the three double-width doors on each light rail vehicle fully available to boarding passengers.

A "self-service" or "no-barrier" fare collection system would be the only practical way to establish a Downtown free-transit zone, a proposal recommended for further investigation in the Department of City Planning's Transportation: Strategy and Programs. The present method would require passengers on out-bound vehicles to pay their fare while exiting past the operator when beyond the free-zone boundaries. While this practice might be acceptable in Seattle or Portland, where transit patronage is comparatively light, it is out of the question in San Francisco; fare collection would be too difficult if it involved both boarding and disembarking passengers simultaneously. With a self-service fare system, Downtown free transit could easily be accomplished simply by not deploying fare inspectors in the free-fare zone.

Six factors must be considered in relation to the adoption of self-service fare collection systems: (1) legality, (2) acceptability, (3) integrity, (4) compatibility, (5) technology, and (6) economy.

a. Legality

While existing laws are generally adequate to cover prosecution for deliberate fare avoidance, normal court procedures are costly and time consuming. The key point in any self-service system is the ability to impose on-the-spot financial penalties or to issue citations to people who deliberately attempt to defraud the system. In Europe, the laws are written to allow the imposition of on-the-spot fines; similar laws could

be enacted in this country.

b. Acceptability

Public acceptability of a self-service system has already been demonstrated in Europe, and there is little reason to believe that a similar response would not follow in this country. Self-service fare collection, with a marketing approach designed to encourage the use of passes, has proven to be a key element in the success of European transit systems. Before this experience can be related to the Railway, the legality, integrity, and economy of such a system must be determined. This can only be achieved through a demonstration of a self-service fare collection system in revenue operation, with such a demonstration taking priority over the development of advanced technology.

The Urban Mass Transportation Administration (UMTA) has indicated its desire to administer a fare pre-payment demonstration in the Bay Area. If UMTA decides to carry out such a demonstration, then MUNI should use this opportunity to determine the feasibility of fare pre-payment. Particular care must be taken in the selection and training of the personnel performing the on-board checking. They would be encouraged to emphasize their public relations rather than monitoring role -- for example, by assisting passengers and providing information and schedules on request.

c. Integrity

While fraud rates of around one per cent are common in Europe, doubt has been cast on the ability to reach this low level in this country. Padron and Stanger, authors of the MARTA study of no-barrier fare collection, have projected a range of 3 to 5 per cent in the United States, but these figures are purely hypothetical in the absence of firm data on the degree to which the American public will attempt to defraud such a system. This points out the need for a demonstration program. A self-service system which collected 97 per cent of total revenues would compare favorably with any current manual fare collection system. Table V-10 summarizes the level of fraud for a selection of European cities.

d. Compatibility

Light rail systems generally have an interface with other transit modes, and any system of fare collection selected for light rail should be compatible with that used on the other modes. By utilizing the same size and appearance for tickets and transfers, a transfer issued on the connecting mode can be validated in the light rail system, and passengers holding passes can move freely throughout the system.

Table V-10

PUBLISHED FRAUD EXPERIENCE IN EUROPEAN TRANSIT SYSTEMS
(TYPICAL EXAMPLES)

<u>City</u>	<u>% Defrauders</u>	<u>% of Passengers Checked</u>	<u>Amount of Fine (DM)</u>	<u>% of Passengers with multi-Journey Payments</u>
Duisburg	0.41	2.2	10	48
Dusseldorf	0.43	2.2	20	55
Flensburg	0.21	3.0	10	70
Frankfurt	3.06	0.8	20	80
Hagen	0.5	3.0	15	66
Hannover	0.3	3.5	20	83
Koln	1.6	5.0	10	91
Stuttgart	1.05	3.6	10	58
Wien	0.25	2.2	14	26
Antwerpen	0.01	1.47	7	74
Bruxelles	0.05	1.4	7	68
Liege	0.17	2.28	7	35
Verviers	0.05	5.0	7	40
Grenoble	0.13	2.5	7.5	43
Paris	1.12	1.66	13.0	42
Strasbourg	0.8	3.7	7.5	60
Valenciennes	0.1	11.0	7.5	48
Milano	0.52	2.82	11	--
Roma	1.00	0.09	2	--
Utrecht	0.15	2.5	2	89
Basel	0.3	10.0	4	49
Geneve	0.75	2.3	25	56
Lausanne	0.35	5.0	4	30
Luzern	0.27	1.2	4	40
Neuchatel	0.2	5.0	8	42
St. Gallen	0.4	7.0	8	58
Winterthur	0.1	10.0	4	68
Zurich	0.48	9.0	4	63

Source: International Union of Public Transport (3,4)

e. Technology

The technology for on- and off-vehicle equipment for both ticket issuing and validation is available, and could be readily adopted for use on the Railway. Ticket issuing equipment includes both fixed and free-standing, flush (wall-mounted) and mobile units, accepting a variety of coins and bills. Some units allow for ticket selection (round trip, multi-ride or short-period pass). Figure V-32 shows examples of the equipment now being used in Europe to issue and validate tickets. Ticket validation equipment is available either as an integral part of the ticket-issuing equipment or as free-standing equipment for use on a vehicle. Where light rail vehicles operate in stations, ticket validating equipment is frequently provided at the entrance to the platforms to further reduce boarding time. These are already production items so that development costs to convert equipment for MUNI operation would be relatively low. However, costs could increase if rigid compliance with specially prepared specifications (such as requiring English rather than metric units) were insisted upon.

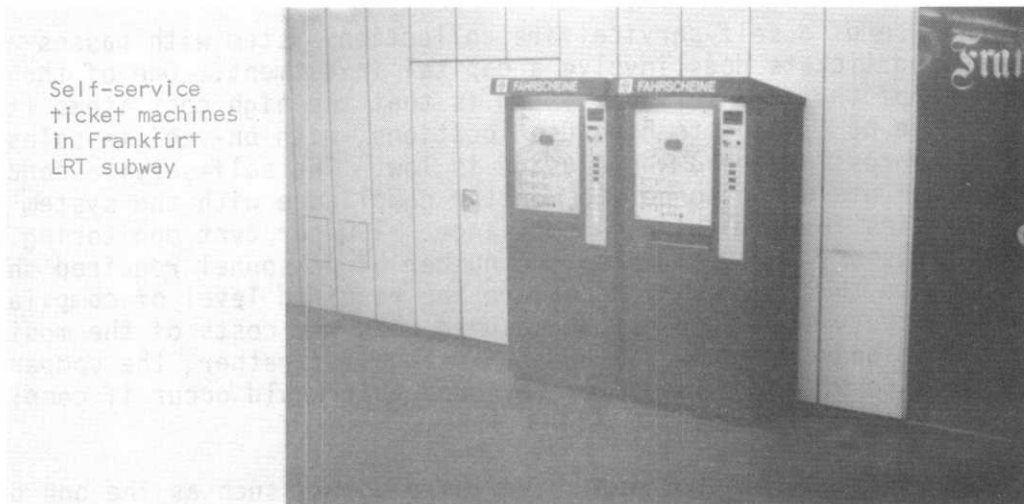
f. Economy

Use of a self-service fare collection system with passes and prepurchased tickets does involve a capital investment. One of the advantages of the self-service system is that the high cost items (ticket vendors) can be limited to high-use locations, with on-vehicle sales (or sales by concessionaires) where usage is low. The self-service concept involves the use of personnel to monitor compliance with the system and levy penalties for willful non-compliance. 100 per cent monitoring is neither necessary nor desirable; the number of personnel required should be limited to that necessary to ensure the required level of compliance. In this respect, it should not be assumed that the costs of the monitoring staff should be covered by the penalties imposed; rather, the comparison should be made with the losses of revenues that would occur if compliance were not being monitored.

A carefully structured demonstration program, such as the one proposed by UMTA, is necessary if these questions are to be answered. The legal ramifications must be investigated in detail, and sensitivity analyses must be performed to determine the level of monitoring necessary to ensure an adequate level of compliance. Cost trade-offs will be necessary to determine the area in which manual and automatic ticket sales are most effective. Finally, the technical feasibility and public acceptance of such a system must be demonstrated in an operating environment, with such a demonstration not delayed until new light rail systems come into operation. The potential economic benefits of self-service fare collection; its wide applicability, not just to light rail, but to all forms of mass transit; and the need to attract the majority of the public, who do not consider mass transit to be an acceptable form of transportation; should make such a demonstration in the San Francisco

Figure V-32

SELF-SERVICE TICKET MACHINES



Bay Area a prime candidate for inclusion in UMTA's program.

Most authorities attribute much of European transit's success to adoption of self-service fare collection systems with passes and pre-purchased tickets. These fare systems have reduced loading times, thereby increasing vehicle operating speeds. Some of these improvements can be achieved through modifications to existing fare collection practices on the MUNI, but the adoption of a self-service fare collection system is essential if a true transit renaissance is to emerge in San Francisco.

H. PRIORITY TREATMENT FOR TRANSIT VEHICLES

The City and County of San Francisco has an official "Transit First" policy, embodied in Board of Supervisors' Resolution Number 189-73, adopted in March, 1973. This policy sets forth the framework for the development of a variety of on-street traffic measures designed to expedite the flow of Municipal Railway vehicles; these are sometimes referred to as "Transportation System Management" (TSM) measures, and are intended to enable the City to get the maximum benefit from its investment in its public transportation system. The principal elements of the policy include the following:

1. Creation and enforcement of exclusive transit lanes;
2. Synchronization of traffic signals with the speed of transit vehicles rather than the speed of automobiles, and the use of signal devices which can be pre-empted by transit vehicles;
3. Extension into the street of sidewalk curbs at bus stops so that buses may pick up passengers without having to leave and re-enter the traveled lane; and
4. Enforcement of traffic and parking regulations which facilitate the movement of transit vehicles.

All of these "Transit First" measures reduce the impact of automobiles on transit operations. In so doing they are consistent with the goals of the 5-Year Plan which provide for faster and more convenient transit service throughout the City, improved cost-efficiency, increased transit patronage, and reduced automobile noise and air pollution. The systematic and thorough implementation of these measures throughout the Railway network can have a great effect upon transit's ability to do its job.

1. Benefits of Priority Treatment

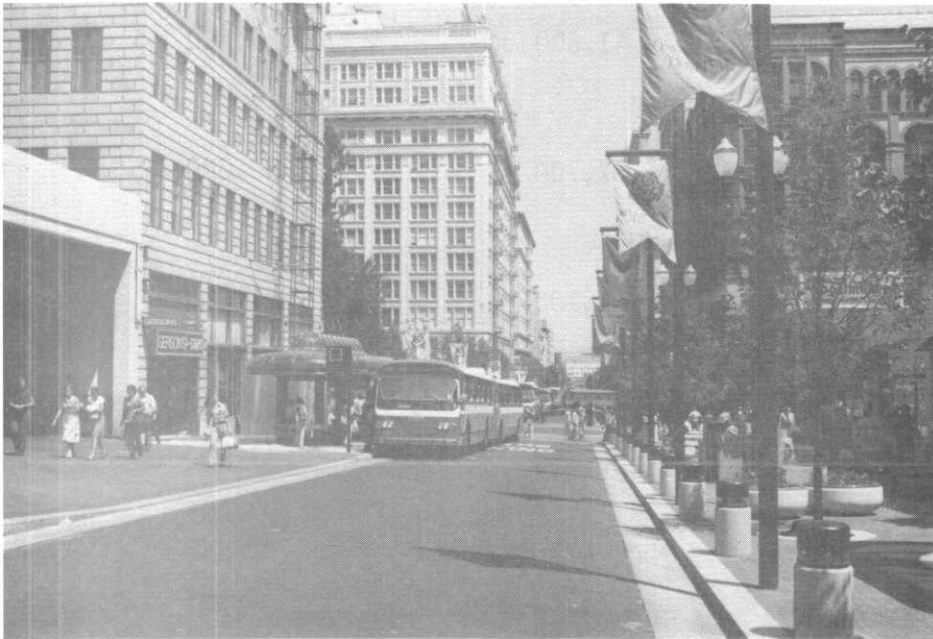
The introduction of transit priority measures makes possible the achievement of several specific benefits. First, transit operating speed can be increased by removal of the interference and delay caused by automobile traffic. If MUNI vehicles move faster, then more patrons can be attracted to the service; the transportation market is highly time-sensitive, and the Railway's ability to attract new passengers depends upon decreasing transit travel times. In addition, if net operating speeds can be increased, then it will be possible for transit vehicles to make more trips in a given length of time, thus creating more capacity to carry passengers. This increased capacity can be distributed throughout the system. Essentially, new service, more patrons, and more revenue can be obtained at no increase in cost -- an effective cost saving and an example of increased efficiency.

The most effective transit first treatment is obtained by segregating the transit vehicles from autos and trucks. Such segregation may consist of special with-flow transit-only lanes, contra-flow transit-only lanes on one-way streets, or transit-only streets and transit-pedestrian malls. (See Figure V-33.) Non-segregating transit preferential treatment can include the already-mentioned signal synchronization and bus stop curb extensions. The former allows transit vehicles to receive green lights at intersections rather than all red, while the latter make it unnecessary for buses to fight their way back into traffic after each stop. The strategic location of transit stops, traffic signs, turn lanes, etc., can reduce transit/automobile conflict as well. Innumerable variations of the above treatments are possible. The exact combination to use on any given street depends upon a number of considerations, such as the volume of transit traffic, the level of automobile use, the width of the street, the availability of alternate routes for automobiles, and the need for curb loading and parking by automobiles and trucks. The greater the transit passenger flow relative to automobile passenger flow, the greater is the justification for allocating the scarce public resources of street space to exclusive transit use. (See Table V-11.)

A second and less obvious benefit of preferential treatment for transit is that schedule reliability, as well as speed, can be improved. Automobile flow tends to be somewhat uneven in congested areas. When automobiles gather ahead of transit vehicles at signals, or block travel lanes or the entrance to or exit from stops, transit movement is delayed and the regularity of transit schedules is disrupted. A brief delay on a heavily-served line causes a transit vehicle to be faced with proportionately larger crowds at each succeeding stop, causing the vehicle to fall back and "bunch" against the following vehicle. A one-minute delay on a three-minute headway can mean a third more patrons at each stop. Bunching wastes capacity, reduces reliability, and discourages patronage. Separating transit vehicles from automobiles also reduces accidents. In fact, merely installing extended curbs at loading zones can reduce

Figure V-33

TRANSIT PREFERENTIAL STREETS



Transit Preferential Street in Portland, Oregon



Transit Preferential Street in Portland, Oregon

Table V-11

TRANSIT PATRONS AND AUTOMOBILE PASSENGERS ON SELECTED STREETS

<u>Street/Route</u>	<u>Transit Patrons</u> (5-Year Plan Projections)	<u>Automobiles*</u>	<u>Auto Passengers</u> (1.3 per auto)
<u>Sutter & Post:</u> 3	11,700		
2 & 4	<u>12,800</u>		
	24,500	24,200	31,500
<u>Geary & O'Farrell</u>			
38	16,600		
38L	<u>25,000</u>		
	41,600	29,400	38,200
<u>Mission:</u> 14	46,400		
26	<u>11,300</u>		
	57,700	10,800	14,000
<u>Van Ness:</u> 12	20,000		
47	<u>13,100</u>		
	33,100	51,000	66,300
<u>Stockton:</u> 15	34,100		
30	25,200		
41	<u>27,500</u>		
	86,800	11,900	15,500
<u>Market:</u> 5	12,800		
6	13,200		
8	6,200		
21	6,700		
25	13,800		
31	22,000		
71 & 7	<u>12,400</u>		
	87,100	7,000	9,100
<u>Fillmore:</u> 22	35,800	7,400	9,600
<u>Powell:</u> 59	11,500		
60	<u>12,300</u>		
	23,800	11,000	14,300
<u>Sacramento & Clay</u>			
1 & 55	33,300	9,900	12,900
<u>Castro:</u> (8)	(6,200) (counted under Market Street)		
24	19,700		
33	11,500		
35	2,300		
37	<u>4,000</u>		
	37,500	13,300	17,300
<u>TOTAL</u>	461,200	17,5900	228,700

Total as Percent of Total MUNI Patronage - 61.9%

* -Automobile counts are from map titled "Twenty-Four Hour Traffic Flow 1974-1976,"
San Francisco Department of Public Works.

accidents. With such wider curbs, the bus can remain in its traffic lane to load passengers. Fewer automobile drivers will therefore be interested in using the same lane as the bus, thus reducing automobile/bus conflict. Separation of the two modes results in fewer sudden stops and starts, preventing both collisions and on-board falls.

2. Current Status

The transportation element of the City's Master Plan, adopted in 1972, identifies a number of streets used by the Municipal Railway which are designated "Transit Arterials." Of these, a number were included, following the passage of the Board's "Transit First" resolution, in a first series of streets to be given a transit priority treatment. The particular measures to be employed would be based on the particular circumstances of the street, and the effort would be coordinated by a "Transit Preferential Streets Coordinating Committee" with representatives of the Municipal Railway, the Department of Public Works and the Department of City Planning. An initial plan was developed in 1973, and recommended various combinations of exclusive lanes, curb "bulbs," peak-hour tow away lanes, traffic signal timing changes, and turning movement restrictions for these streets:

- a. Post/Sutter
- b. Third/Kearny
- c. Fourth
- d. Mission-Duboce to Embarcadero
- e. Mission-16th to 24th Streets
- f. Polk Street
- g. Fillmore
- h. Stockton

(See Transit Preferential Streets Program, published by the San Francisco Department of City Planning, November 26, 1973.)

Of this 1973 plan, only the treatments recommended for Polk and for Post/Sutter have been adopted to date -- and on Post and Sutter only west of Mason. Treatments similar to those on Post and Sutter were adopted for Geary and O'Farrell (west of Mason only) and on Mission from the Embarcadero to 11th Street. (The originally proposed Mission Street treatment was revised at the last moment.)

Together with other measures implemented over the years (from the M-line private right of way of 1926 to the Judah Street raised streetcar median of 1975) the transit priority treatments now in place throughout the city can be summarized as follows:

Exclusive Transit Lanes (with-flow, unless otherwise designated)

Sutter Street, Stockton to Gough	curb lane	1.02 miles
Post Street, Gough to Taylor	curb lane	.74 miles
Mission Street, Beale to 4th	curb lane	.65 miles
4th Street, Berry to King	contraflow lane	.08 miles
Geary Street, Mason to Gough	curb lane	.68 miles
O'Farrell Street, Gough to Hyde	curb lane	.41 miles

Exclusive Rights of Way

Market Street, Fremont to Duboce	streetcar lane, other treatments	2.2 miles
Judah Street, 9th to 19th Avenues	raised streetcar right-of-way	.62 miles
Judah Street, 19th Ave. to LaPlaya	streetcar lane	1.74 miles
Powell Street, Sutter to California	cablecar right- of-way	.39 miles
Powell Street, California to Washington	special treatment	.18 miles
Powell Street Mall, Market to Ellis	transit mall	275 feet
19th Avenue, approximately Eucalyptus to Junipero Serra	streetcar median right-of-way	.91 miles
Junipero Serra Blvd., Ocean to Sloat	streetcar median right-of-way	.23 miles

Peak Hour Only Transit Lanes

Sutter Street, Stockton to Market	PM curb lane	.36 miles
Post Street, Market to Taylor	AM curb lane	.57 miles
Geary Street, Market to Mason	PM curb lane	.30 miles
O'Farrell Street, Hyde to Powell	AM curb lane	.53 miles
Mission Street, 4th to 11th	AM & PM curb lanes	1.03 miles
Sacramento Street, Drumm to Larkin	PM curb lane	1.28 miles
Clay Street, Sansome to Powell	AM curb lane	.45 miles
First Street, Market to Transbay Terminal	PM center lane	.14 miles

Bus Platforms (Extended Curb)

Polk Street, Jackson to Sutter	5 bus platforms	.45 miles
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(For further information see A Report on the Status of the Transit Preferential Streets Program, published by the San Francisco Department of City Planning, July 1, 1977.)

The following is a list of all streets designated as Transit Preferential Streets by the Department of City Planning; to date, most of them do not have transit priority measures implemented on them. Following the adoption of a Master Plan route network for the Municipal Railway, a revised list will be developed and priorities attached to guide the implementation of transit priority measures in the City.

A

A1 - Arleta Avenue, Rutland Street to Bayshore Blvd.

B

- B1 - Balboa Street, Funston Avenue to Arguello Blvd.
- B2 - Battery Street, entire length (Market Street to the Embarcadero)
- B3 - Bay Street, Van Ness Avenue to the Embarcadero
- B4 - Bayshore Blvd., county line to Third Street
- B5 - Beach Street, Polk Street to Powell Street
- B6 - Berry Street, Second Street to Third Street
- B7 - Brannan Street, Thirteenth Street to Second Street
- B8 - Broad Street, Orizaba Avenue to San Jose Avenue

C

- C1 - California Street, Van Ness Avenue to Market Street and 32nd Avenue to Presidio Avenue
- C2 - Carl Street, Irving Street to the Duboce Tunnel (between Clayton Street and Cole Street)
- C3 - Castro Street, Divisadero Street to Twenty-Fourth Street
- C4 - Central Avenue, Fulton Street to McAllister Street
- C5 - Chestnut Street, Scott Street to Van Ness Avenue
- C6 - Church Street, Hermann Street to Eighteenth Street and 22nd to 30th Streets
- C7 - Clement Street, Funston Avenue to Arguello Blvd.
- C8 - Columbus Avenue, entire length (Beach Street to Montgomery)
- C9 - Connecticut Street, Seventeenth Street to Eighteenth Street
- C10 - Cortland Avenue, Mission Street to Bayshore Blvd.

D

- D1 - Divisadero Street, California Street to Castro Street
- D2 - Doyle Drive, Golden Gate Bridge to Richardson Avenue
- D3 - Duboce Avenue, Market Street to the Duboce Tunnel (between Noe Street/Castro Street)

E

- E1 - Eddy Street, Van Ness Avenue to Market Street
- E2 - Eighth Street, Brannan Street to Market Street
- E3 - Eighteenth Street, Connecticut Street to Third Street
- E4 - Eleventh Street, Thirteenth Street to Market Street
- E5 - Ellis Street, Van Ness to Market Street
- E6 - Embarcadero; North Point to Battery Street

F

- F1 - Fillmore Street, Broadway to Hermann Street
- F2 - First Street, Howard Street to Market Street
- F3 - Forty-Seventh Avenue, Wawona Street to Vicente Street
- F4 - Forty-Sixth Avenue, Taraval Street to Wawona Street
- F5 - Fourth Street, Brannan Street to Market Street
- F6 - Fremont Street, Folsom Street to Market Street
- F7 - Front Street, Market Street to Pine Street
- F8 - Fulton Street, Great Highway to Central Avenue
- F9 - Funston Avenue, Ulloa Street to Taraval Street

G

- G1 - Geary Blvd., Fortieth Avenue to Market Street
- G2 - Geneva Avenue, Ocean Avenue to Santos Street

H

- H1 - Hahn Street, Visitacion Avenue to Sunnydale Avenue
- H2 - Haight Street, Stanyan Street to Market Street
- H3 - Hayes Street, Stanyan Street to Market Street
- H4 - Hermann Street, Fillmore Street to Church Street
- H5 - Hyde Street, entire length (Jefferson Street to Market Street)

I

- I1 - Irving Street, Carl Street to Ninth Street

J

- J1 - Jackson Street, Hyde Street to Powell Street
- J2 - Jefferson Street, Hyde Street to the intersection of Embarcadero and Powell
- J3 - Jones Street, California Street to Market Street
- J4 - Judah Street, Fifth Avenue to Lower Great Highway
- J5 - Junipero Serra Blvd., West Portal Avenue to Ocean Avenue

K

- K1 - Kansas Street, Sixteenth Street to Seventeenth Street
- K2 - Kearny Street, Columbus Avenue to Market Street

L

- L1 - Larkin Street, Market Street to McAllister Street
- L2 - Leavenworth Street, Jackson Street to Market Street
- L3 - Lombard Street, Richardson Avenue to Van Ness Avenue

M

- M1 - McAllister Street, Central Avenue to Market Street
- M2 - Market Street, Castro Street to the Embarcadero
- M3 - Mason Street, Washington Street to Columbus Avenue
- M4 - Miraloma Drive, Seventh Avenue to Monterey Blvd.
- M5 - Mission Street, entire length (county line to Embarcadero)
- M6 - Monterey Blvd., Miraloma Drive to Circular Avenue
- M7 - Montgomery Street, Columbus Avenue to Market Street

N

- N1 - Ninth Street, Irving Street to Judah Street
- N2 - Nineteenth Avenue, Eucalyptus Drive to Randolph Street
- N3 - North Point Street, Van Ness Avenue to the Embarcadero

O

- O1 - Ocean Avenue, Junipero Serra Blvd. to Mission Street
- O2 - O'Farrell Street, Franklin Street to Market Street
- O3 - Orizaba Avenue, Randolph Street to Broad Street

P

- P1 - Parnassus Avenue, Fifth Street to Clayton Street
- P2 - Pine Street, Front Street to Sansome Street
- P3 - Polk Street, entire length (Beach Street to Market Street)
- P4 - Post Street, Van Ness Avenue to Market Street
- P5 - Potrero Avenue, Thirteenth Street to Twenty-Fifth Street
- P6 - Powell Street, Jackson Street to Market Street
- P7 - Presidio Avenue, California Street to Geary Blvd.

R

- R1 - Randolph Street, Nineteenth Avenue to Orizaba Avenue
- R2 - Richardson Avenue, Doyle Drive to Lombard Street
- R3 - Rutland Street, Visitacion Avenue to Arleta Avenue

S

- S1 - Sansome Street, entire length (Market Street to the Embarcadero)
- S2 - San Bruno Avenue, Silver Avenue to Bayshore Blvd.
- S3 - San Jose Avenue, Broad Street to Ocean Avenue
- S4 - Santos Street, Geneva Avenue to Hahn Street
- S5 - Second Street, Berry Street to Market Street
- S6 - Seventeenth Street, Kansas Street to Connecticut Street
- S7 - Seventh Avenue, Irving Street to Miraloma Drive
- S8 - Seventh Street, Brannan Street to Market Street
- S9 - Silver Avenue, Mission Street to San Bruno Avenue
- S10 - Sixteenth Street, Market Street to Kansas Street
- S11 - Stanyan Street, Fulton Street to Carl Street
- S12 - Starr King, Geary Blvd. to Franklin Street
- S13 - Stockton Street, Columbus Avenue to Market Street

S (cont'd)

- S14 - Sunnydale Avenue, Santos to Hahn Street
- S15 - Sunset Blvd., Judah Street to Taraval Street
- S16 - Sutter Street, Presidio Avenue to Market Street

T

- T1 - Taraval Street, Funston Street to Forty Sixth Avenue
- T2 - Taylor Street, Columbus Avenue to Jefferson Street
- T3 - Third Street, entire length (Bayshore Freeway to Market Street)
- T4 - Thirteenth Street, Eleventh Street to Brannan Street
- T5 - Twenty-Fifth Avenue, Fulton Street to Lincoln Park
- T6 - Twenty-Fourth Street, Castro Street to Vermont

U

- U1 - Ulloa Street, West Portal Avenue to Funston Avenue
- U2 - Union Street, Lyon Street to Columbus Avenue

V

- V1 - Van Ness Avenue, Mission Street to Aquatic Park
- V2 - Vermont Street, Twenty-Fourth Street to Twenty-Third Street
- V3 - Vicente Street, Forty-Seventh Avenue to Forty-Sixth Avenue
- V4 - Visitacion Avenue, Hahn Street to Bayshore Blvd.

W

- W1 - Washington Street, Hyde Street to Powell Street
- W2 - Wawona Street, Forty-Seventh Avenue to Forty-Sixth Avenue
- W3 - West Portal Avenue, Tunnel to Junipero Serra Blvd.

3. Center City Circulation Program and Related Programs

The City's Transportation Policy Group (representing all of the City's transportation agencies: Public Utilities, Public Works, City Planning, Police, and the Parking Authority), through the Department of City Planning as lead agency, is undertaking a coordination program -- Center City Circulation Program -- sponsored by UMTA. The purpose of this program is to bring together and implement all of the Downtown-related transportation programs in a way that coordinates pedestrian movement, transit flow, commercial traffic, and automobile movement. An important part of this effort is to focus on the implementation of transit priority measures in the extremely congested Downtown core area, where experience indicates that effective transit priority treatment is most difficult. One part of the study will specifically deal with three transit preferential issues: (a) self-enforcement measures (better signing of transit lanes, etc.); (b) non-traditional enforcement (use of meter checkers, MUNI inspectors, etc.); and (c) a transit priority study of Sutter, Post, Geary, and O'Farrell Streets.

A related effort is the Chinatown Circulation Study, which will examine the general transportation problem in Chinatown and various alternatives for improving transit flow in Chinatown. A vital product of this study will be a proposed treatment for improved transit flow on Stockton Street, probably the single most difficult operating environment for the Municipal Railway in the entire City, and yet a street which will become even more important for the Railway in the future.

4. The 5-Year Plan and Transit Priority

As noted above, the complete revision of the City's list of Transit Preferential Streets will follow upon the adoption of a Master Plan for the Railway's route network. However, even at this point, it is possible to present a list of high-priority streets needing immediate transit priority attention. In addition, second priority transit preference and related traffic measures would be necessary in order to implement the recommended route structure.

a. High Priority Streets

1. Stockton Street from Market Street to Union Street (Washington Square)

The situation on this street is acute; action will become even more necessary with the operation of lines 15 and 41 on Stockton. Congestion is extreme from the late morning until the end of the evening rush hour and during most of the day on weekends. There is no street in the entire City where the need for transit preferential treatment is greater, or where, because of the heavy ridership on lines serving the street and the high incidence of transit dependence, the implementation of effective measures is more justified.

As noted above, the Chinatown section of this street is now being studied by the Chinatown Circulation Study; the Railway staff is looking forward to the development of an effective transit priority program for Stockton Street.

2. Downtown sections of Sutter, Post, O'Farrell and Geary (basically east of Mason Street)

To date, transit preferential measures on these streets have been implemented where it has been relatively easy to do so; the more difficult Downtown core sections of these streets, which carry the heavy Richmond radial service to and from the central city, remain to be done. Effective transit priority treatment of these streets should be developed by the Center City Circulation Program.

3. Market Street from Van Ness Avenue to the Embarcadero

Even with the opening of the Market Street subway and the withdrawal of streetcar operation from the surface, Market Street will be the most heavily used transit street in the City. Given the street plan of central San Francisco, with the east-west streets feeding diagonally into Market, it could hardly be otherwise. Under the 5-Year Plan, transit passengers on surface bus and trolley lines are expected to outnumber automobile passengers by as much as ten to one. The Railway has raised the possibility of banning east-west automobile traffic from Market Street, and developing Market as a street for transit, taxis and deliveries only. Similar treatment of main Downtown streets has already been implemented in cities such as Vancouver, Minneapolis, Philadelphia, and Portland, and a pedestrian/light rail mall is proposed for downtown C Street in San Diego. There appears to be no good reason why "the City that knows how" should not join these other municipalities; the Railway staff will look to the analysis of this exciting possibility in the technical work of the Center City Circulation Program.

4. Jefferson Street from the Embarcadero to Hyde, and Hyde from Jefferson to Beach

Exclusive rights-of-way are needed on these streets. They are a prerequisite to the improvement of service in the Fisherman's Wharf area. Line E-EMBARCADERO should not be implemented without the establishment of a physically separated right-of-way on Jefferson.

b. Second Priority 5-Year Plan Preferential Treatment

1. McAllister Street from Hyde to Market

The recommended Master Plan route network calls for two-way operation of line 5-FULTON on this stretch of McAllister, replacing the present roundabout jog which inbound trolley coaches must make (via Hyde Street to Market, thence to Market and McAllister) because of the one-way treatment. Two-way transit service on McAllister was operated for over 70 years, and it was only the growth of accommodation to the automobile at the expense of transit that made a diversion necessary. In the interest of giving transit passengers a direct route to their destination, and to avoid unnecessary jogs and meanders, it is recommended that a contraflow lane be installed on McAllister east of Hyde Street.

2. Hayes Street from Laguna to Hyde

This situation is parallel to that on McAllister Street (above). Inbound line 21-HAYES trolleys are required to diverge from their route at Laguna Street to operate on Grove to Polk, then along Polk to Market and on Market past Hayes.

Once again, this was the result of a now-archaic policy of accommodation to the automobile at the expense of transit. It is recommended that a contraflow lane be installed on Hayes from Laguna to Polk. Despite the recommendations of the POM Study, the continuation of this lane the final block to Market, Larkin, and Ninth is not included here in order to avoid a potential safety problem at that intersection. Trolley coaches on this line can reach Market via the short block of Polk south of Hayes Street.

3. Eddy Street from Larkin to Market

It is recommended that either a contraflow lane be installed on this stretch of Eddy Street or that the street be made into a two-way street for all traffic. This will permit the 31-BALBOA to offer two-way service on Eddy Street through the Tenderloin.

4. Eighth Street from Brannan to Market and Hyde Street from Market to Eddy

It is recommended that a contraflow lane be installed to permit the 19-POLK to offer two-way service on these streets, and to enable it to directly serve the Civic Center BART/MUNI Metro station in the northbound direction. The northbound routing via Ninth and Larkin results in poorer coverage of the service area and misses Civic Center Station by a block.

Following the adoption of a Master Plan for the Railway's route structure, other streets will be identified and placed in priority order for transit preferential treatment. These will be the subject of future 5-Year Plan updates.

I. RECREATIONAL SERVICES

San Francisco is a city of many and varied cultural, social, and recreational opportunities. Art exhibits, beautiful gardens, concerts, and the Pacific Ocean all contribute to the richness of life in this City. Improved MUNI service can contribute to the enjoyment of and access to these recreational pursuits by providing alternatives to automobile driving and parking. Therefore, it is only appropriate that MUNI serve these events and destinations in addition to serving people's work, business, and medical trips. The 5-Year Plan is designed to enable MUNI to handle a greater share of the off-peak trips that are being made in San Francisco. Since off-peak trips are non-work trips, many of the changes will be addressed in this Recreational Element.

1. Crosstown Access to Parks, Beaches

The major areas considered as recreational destinations are parks (Golden Gate Park, Golden Gate National Recreation Area, McLaren Park), museums (Palace of Fine Arts, Palace of the Legion of Honor, DeYoung Museum), Candlestick Park, the Zoo, Lake Merced, and the beaches. The MUNI currently provides service to most of these places, but crosstown service is infrequent and often circuitous.

Golden Gate Park is currently serviced along its border (by the 5-FULTON, the 18-SLOAT, the 71 and 72 lines) and at the Music Concourse (by the 10-MONTEREY). The western interior is not reachable via public transportation. No bus at all enters McLaren Park, in the southeastern corner of the City. Lincoln Park is served only on weekends, when the 31-BALBOA is extended to the Palace of the Legion of Honor. Service through the Presidio and the Golden Gate National Recreation Area (GGNRA) is provided only by every other trip of the 28-NINETEENTH AVENUE, a matter of 24-minute headways.

The 5-Year Plan, by expanding crosstown transit opportunities throughout the City, would open up the parks and beaches to such access as well. Golden Gate Park would be served by the new crosstown 72-SUNSET on John F. Kennedy Drive and Chain of Lakes Drive; the new 33-STANYAN along Stanyan; and the new 17-PARKMERCED which would travel on 25th Avenue, Cross Over Drive, and 22nd/23rd/30th Avenues in the Sunset. The 72-line would allow residents of the southeastern section of the City direct access to Golden Gate Park; the 33-STANYAN would do the same for the Mission and Eureka Valley. The 28 and 18 lines, by crossing the Presidio, would improve service between Golden Gate Park and the Marina District.

The Sunset would acquire an additional east-west crosstown service on Quintara Street in the form of the 11-QUINTARA-24th STREET. The new 11-line would provide access to Ocean Beach for residents of Noe Valley and the Mission. The new 10-MONTEREY on Sloat and Monterey Boulevards would cross the entire length of the City east-west, opening up both the beach and the Zoo city-wide.

The Palace of Fine Arts would be directly accessible via an extension of the 43-MASONIC and the new 18-46th AVENUE through the Presidio. The Palace of the Legion of Honor would also have daily service via the new 18-line.

2. Special Recreational Lines

The new 18-46th AVENUE would be a solid recreational route, as recommended in the Golden Gate Recreational Travel Study, connecting several major recreational destinations: the Palace of Fine Arts, the Presidio,

the GGNRA and beaches, the Palace of the Legion of Honor, Lincoln Park, Ocean Beach, the Zoo, Lake Merced, and Stonestown. This line would operate daily at 12-15 minute intervals.

The new 72-SUNSET would also link many recreational areas: Candlestick Park, McLaren Park, Lake Merced, and Golden Gate Park. This service would run on ten-minute headways; weekends, 15-minute headways.

The MUNI currently provides three express lines to Candlestick Park, beginning about an hour and 45 minutes before game time. These lines are the 47 (from Clay and Van Ness), the 28 (from California and 25th Avenue), and the 30 (from Sutter and Montgomery). In addition, a Ball Park Shuttle operates every 15 minutes from Third and Keith; and local lines 15 and 25 make some trips to the stadium. The 5-Year Plan retains all this service, but the Ball Park Shuttle would be covered by the new 72-SUNSET. This 72-line, by connecting with the Southern Pacific station at Paul Avenue, would provide Ball Park access for Peninsula train riders. To make this possible, Southern Pacific should stop many of its trains (perhaps not the rush-hour expresses) at the Paul Avenue station.

In 1975, the MUNI operated a summer weekend extension of the 32-EMBARCADERO to Fort Cronkhite in the Marin Headlands, using demonstration funds provided by the National Park Service. In 1976, the MUNI subsidized the line, this time designated "76-FORT CRONKHITE." (See Figure V-34.) The route proved popular both summers, but was not continued in 1977/78 because operating funds could not be obtained. Nevertheless, the 5-Year Plan includes the 76 as a special service, with the proviso that a federal subsidy is forthcoming. A revised routing of the 76 would place its southern terminal at the SP Depot, and also have the line serve the Transbay Terminal and Montgomery Street BART Station for regional connections. The line would operate through Downtown on Sutter/Post to Van Ness, then via Van Ness, Lombard, Richardson, Doyle Drive, the Golden Gate Bridge, Bunker Road to Fort Cronkhite. The Gerbode Preserve, Fort Barry and the Marin Headlands Youth Hostel, and Rodeo Lagoon would be served by this line. The service would operate on weekends and holidays from Memorial Day through Columbus Day, with a planned flexibility to handle peak crowds on warm or special days.

In September, 1977, the 78-GOLDEN GATE PARK was inaugurated. (See Figure V-35.) It runs only on Sundays from the Kezar Parking Lot to the Music Concourse in the Park. The fare structure for the 78 is unique; basic fare is 5¢ or any transfer issued on the same day (but without regard to the time of issuance so that visitors leaving the Park can connect with other MUNI lines without payment of an extra nickel fare.) The 5-Year Plan calls for an extension of the 78 into the western reaches of the Park via John F. Kennedy Drive to Ocean Beach. This would continue to be a Sunday-only service, and would be particularly valuable if JFK Drive were closed to automobiles for its entire length (as is proposed for the Golden Gate Park Master Plan).

**SATURDAYS AND SUNDAYS (only)
FROM SAN FRANCISCO**

Leave Mission and South Van Ness	Arrive Van Ness and Geary	Arrive Lombard and Fillmore	Arrive Bridge Toll Plaza	Arrive Fort Cronkhite (Marin)
940	946	955	1000	1025
1020	1026	1035	1040	1105
1100	1106	1115	1120	1145
1140	1146	1155	1200	1225
1220	1226	1235	1240	105
100	106	115	120	145
140	146	155	200	225
220	226	235	240	305
300	306	315	320	345
340	346	355	400	425
420	426	435	440	505
500	506	515	520	545

**SATURDAYS AND SUNDAYS (only)
FROM MARIN HEADLANDS**

Leave Fort Cronkhite (Marin)	Arrive Bridge Toll Plaza	Arrive Lombard and Fillmore	Arrive Van Ness and Geary	Arrive Mission and South Van Ness
1040	1055	1109	1118	1125
1120	1135	1149	1158	1205
1200	1215	1229	1238	1245
1240	1255	109	118	125
120	135	149	158	205
200	215	229	238	245
240	255	309	318	325
320	335	349	358	405
400	415	429	438	445
440	455	509	518	525
520	535	549	558	605
600	615	629	638	645

Times AM shown in medium type.
Times PM shown in *italic type*.

OTHER MUNI LINE CONNECTIONS

CHANGE AT	
Bridge Toll Plaza	28
Lombard and Fillmore	22†
Van Ness and:	
Lombard	47†
Union	41†, 45
Jackson or Washington	25
Clay or Sacramento	55
California	61
Cable Sutter or Post	1†, 2, 3†
Geary or O'Farrell	38
Eddy	31
McAllister	5†
Grove or Hayes	21†
Market	J†, K†, Lt†, M††, N†, 6†, 7†, 8†, 71, 72
Mission	11†, 12†, 14†, 26

† Electric-powered service * Saturdays only

☆GPO 692-049-1976

WEEKEND BUS TO THE BEACH **76** FT. CRONKHITE



FIGURE V-34
76-FORT CRONKHITE
TIMETABLE

Weekend and Holiday motor coach service
over the Golden Gate Bridge to the
Marin Headlands.

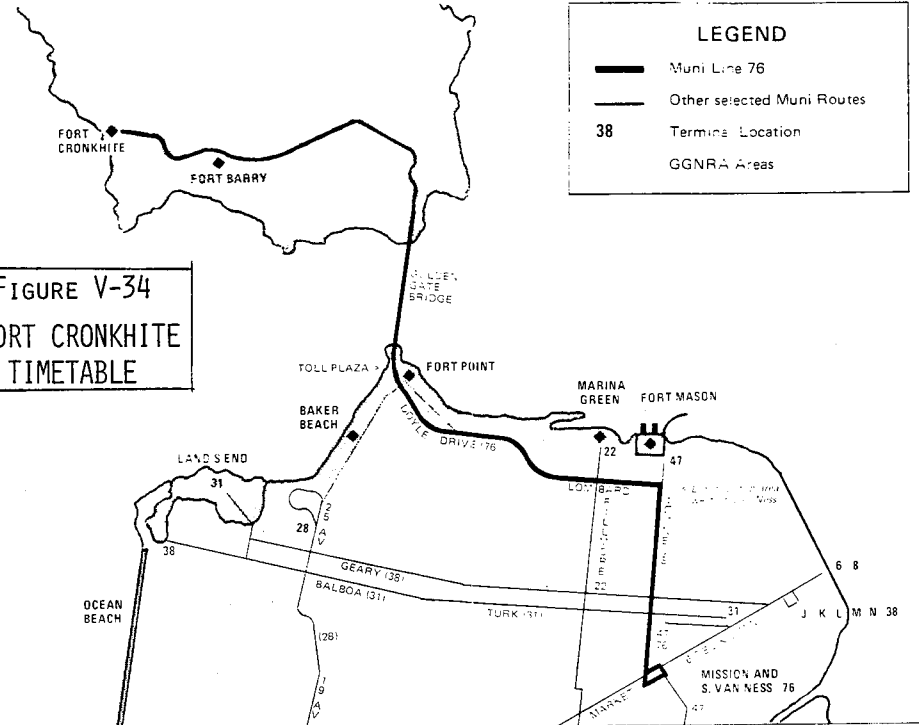
TAKE A PICNIC & WARM CLOTHES



NOW THROUGH COLUMBUS DAY you can ride MUNI to the Marin Headlands. Service on this recreation route operates every 40 minutes.



San Francisco Municipal Railway
Curtis E. Green, General Manager



**Golden Gate National Recreation Area Events
That the 76 Line Will Serve:**

August 15	Turk Murphy Jazz Band at Fort Point, 2 p.m. (Walk down from the toll plaza.)
August 25, 27	"We've Come Back for a Little Look Around," a bicentennial skit, Fort Point, afternoon.
September 26	Turk Murphy Jazz Band at Fort Point, 2 p.m.
September 26	Marin Symphony at Fort Barry Parade Grounds, Marin Headlands (At Bunker/Field Road stop.)
October 9-11	Second Annual Western Bicentennial Folk Festival—Bluegrass, Country, Ethnic and Folk Music at Fort Barry Parade Grounds, Marin Headlands.

Other MUNI Lines Taking You to GGNRA Destinations:

THIS LINE	TAKES YOU TO:
47 Van Ness (Potrero)	Fort Mason
22 Fillmore	Marina Green
28 19th Avenue	Baker Beach
38 Geary	Ocean Beach
31 Balboa	Land's End

MUNI INFORMATION — 673-M-U-N-I

GGNRA Information:

Fort Mason — 556-0560
Fort Point — 556-1693
Fort Cronkhite — 561-7612

Line 78-Golden Gate Park

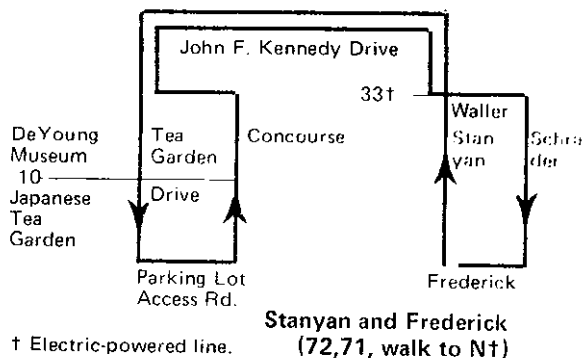
Leave Frederick and Stanyan	Arrive Frederick and Stanyan	Leave Frederick and Stanyan	Arrive Frederick and Stanyan
1000am	1016am	148	204
1012am	1028	200	216
1024	1040	212	228
1036	1052	224	240
1048	1104	236	252
1100	1116	248	304
1112	1128	300	316
1124	1140	312	328
1136	1152	324	340
1148	1204pm	336	352
1200pm	1216	348	404
1212	1228	400	416
1224	1240	412	428
1236	1252	424	440
1248	104	436	452
100	116	448	504
112	128	500	516
124	140	512	528
136	152	Continuous trip route.	

Times AM-medium type

Times PM-italic type.

ROUTE AND TRANSFER GUIDE

This is not a street map. It is a diagrammatic guide to show you the streets the 78 GOLDEN GATE PARK uses and where you can make connections. Line 78 coaches use streets shown at right of or below heavy route lines. Connecting routes (and cross streets) are shown at left or above. The terminal (and routes that connect there) is shown in bold type. This route operates as a continuous trip.



FARES AND TRANSFER PRIVILEGES on this route have been set to encourage people to use transit in the park. The adult fare is 5 cents, no transfers issued. But, drivers on this line honor MUNI transfers from other routes ALL DAY, no matter what the expiration time. Patrons boarding line 78 with a transfer should keep it for the return from the museum area. Pay 25 cents on connecting bus to return home.

Special fares
and transfer
rules!

5 cents a
ride or use
transfer

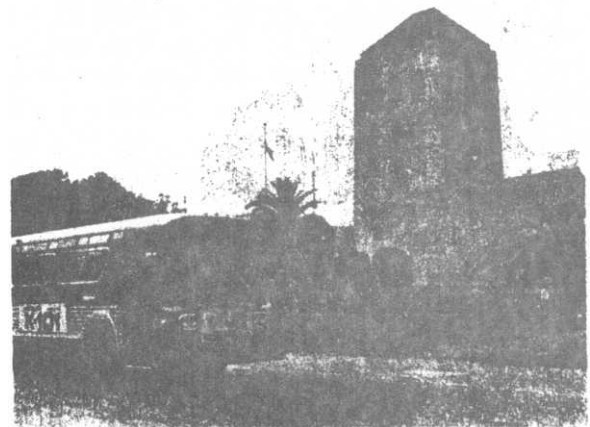
78

Golden Gate Park

Sunday-only 5 CENTS A RIDE motor coach service linking the Kezar Stadium parking lot, the De Young Museum, Japanese Tea Garden, Academy of Sciences and Aquarium.

IN EFFECT JUNE, 1978

(Revision 1-Replaces March, 1978 Schedule)



ENJOY A SPECIAL SUNDAY at the various cultural attractions in Golden Gate Park (like the DeYoung Museum, above). MUNI will get you there. Take Haight routes 71/72 or the N-Judah (walk one block) to Stanyan, at Frederick, to catch the 78 Golden Gate Park shuttle.

MUNI INFORMATION – 673-MUNI

Schedule subject to change
and street traffic conditions



San Francisco Municipal Railway
Curtis E. Green, General Manager

3. Northern Waterfront Proposals/Fort Mason Options

The Fisherman's Wharf/Fort Mason area is the subject of considerable improvement in the 5-Year Plan. The enormous amount of tourist activity and automobile congestion there demands a comprehensive approach: new streetcar and cable car lines, transit linkage with Coit Tower and Telegraph Hill, improved regional access to the area, and transit preferential treatments in selected locations.

In the 5-Year Plan, a Fisherman's Wharf transit loop would operate around Powell, Jefferson, Hyde, and Beach Streets. The new 42-DOWNTOWN LOOP, 15-THIRD, and 39-COIT, as well as the cable cars, would enter the area and fully serve Fisherman's Wharf. Because of the intensive MUNI service, transit priority measures are critical to its operation. Exclusive transit lanes are essential on Jefferson between the Embarcadero and Hyde and on Hyde between Jefferson and Beach. Without such measures, the 5-Year Plan proposals for Fisherman's Wharf cannot be implemented. (See the previous section on Transit Preferential Streets for further details.)

The 32-EMBARCADERO motor coach would be replaced by the E-EMBARCADERO streetcar from the west portal of the Fort Mason Tunnel, through the Tunnel, along the Embarcadero, to the Southern Pacific Depot. Belt Line Railroad track already exists along most of this route, and streetcars would increase the route's capacity. The 12-OCEAN-VAN NESS, an electric trolley route, could also be extended into Fort Mason to provide improved service to the pier area.

The 5-Year Plan also calls for the 3-1/2 block extension of the 59-POWELL & MASON cable car line from Bay Street to Jefferson, thus bringing the line right into the center of Wharf activity. (See Chapter VI, Section B-4 for more details.) A new cable car line, the 62-CALIFORNIA & HYDE, would link the present California line with the present Hyde line along existing cable car tracks from Jackson to California. Although the trackage at the Wharf would be the present 60-POWELL & HYDE line, by avoiding the Powell Street bottleneck, more cars can be placed in service to the Northern Waterfront. Capacity to the Waterfront would also increase in another way; there would be direct cable car service from the Ferry Building (after track extension on the 61-line down Market Street) to the Wharf. The E-EMBARCADERO streetcar would cover this same service via the Embarcadero, thus making possible travel one way via streetcar and one way via cable car. This would permit the overcrowding pressure on the cable cars to be reduced. (See Chapter VI, Section A-3.)

Several new bus routes are recommended to better serve the Waterfront area. The new 42-DOWNTOWN LOOP -- which connects the SP Depot, the Transbay Terminal, and Van Ness Avenue -- would pass right along the Northern Waterfront. Regional access is thus assured.

Residents of the Mission and Bernal Heights would be able to reach the Waterfront via the new 20-COLUMBUS, which travels along Folsom and Columbus Streets. The 15-THIRD, which presently stops at Sansome and the Embarcadero, would directly serve the Wharf and terminate there, thus providing a connection from the Union Square area and a transit option other than the cable cars. The 39-COIT would go from Coit Tower to Fisherman's Wharf, providing an alternative to the private automobile for tourists. The 39-line also allows for a cable car connection at Columbus and Mason.

4. Recreational Charter Service

The Municipal Railway currently provides special charter service for various recreational and cultural outings. (MUNI's very popular car Number One, the first streetcar, which arrived in 1912, is frequently reserved by groups.) Some of the charters are designated a public service and are provided at no charge. (These include transportation for Juvenile Hall, for Police Officer Training, for children's centers, and for senior citizen centers.) The regular charter fee is \$35 per hour, but senior citizen groups can charter the buses at a \$15 minimum. Numerous excursions to Stern Grove, Baker Beach, Speedway Meadows, the Cow Palace and more have been arranged.

In Fiscal Year 1977-78, 244 public service excursions alone were chartered, averaging one per day during the summer months. Paid charters during FY 1977-78 amounted to 616. Such service will continue under the 5-Year Plan, thus providing specialized recreational service for large groups.

VI. SYSTEM IMPROVEMENTS

A. MUNI METRO AND RELATED RAIL SERVICES

The Municipal Railway is presently in the final stages of a capital program representing a \$300 million public investment in the reconstruction and improvement of its streetcar system. The key element of the program is, of course, the construction of a Market Street subway into which MUNI's five existing streetcar lines will run; and it is this subway operation which will be known as MUNI Metro. Apart from the subway, the overall MUNI Metro project has also seen the soon-to-be-complete rehabilitation of MUNI's rail system, including new "light rail vehicles" (LRVs), track, maintenance facilities, power distribution systems and electrical substations.

A MUNI Metro Task Force was established last year to oversee and coordinate the completion of this program and the inauguration of MUNI Metro operations, and it is this task force which has responsibility for developing and maintaining a MUNI Metro Master Plan. The first section which follows represents a coordinated effort between the MUNI Planning Division and the MUNI Metro Task Force and deals strictly with the committed MUNI Metro System.

In addition, a number of extensions to that basic system are currently at various stages of development, and are described in the second section below.

A third section discusses a separate proposal which has been circulated in various forms over recent years, and is being recommended here for formal adoption as part of this 5-Year Plan: the construction and operation of a surface streetcar line along the Northern Waterfront.

1. Inauguration of MUNI Metro

Subway service on all five present streetcar lines will not -- and cannot -- begin at once. Service will be phased in over an extended period. This is principally because subway operation will be both new to MUNI and far more operationally complex than MUNI's present mode of streetcar operation. In many ways, MUNI's operation will also be unique; there will be few precedents, and virtually no American experience from

which to learn, for many aspects of our operation. Hence, the Railway's intent is to learn to "crawl before we run," and subway service will be inaugurated on a single line before multiple line operation is scheduled. Metro Phase 1 will allow the testing and give us the experience necessary for Metro Phase 2; Metro Phase 2 will prepare the Railway for Metro Phase 3. Phasing is also a response to the fact that various components -- new track and electrification facilities, station fare equipment, etc. -- will not all be available at the same early date as a single line could be placed into service, but these factors are secondary in importance.

The phasing-in of MUNI Metro service is currently envisioned as follows:

Metro Phase 0 is a preliminary operating phase. It is designed to introduce the LRVs to the public and to gain operational experience with them. It will also be a way of "putting miles on the cars." About four LRVs will be placed in service as a supplementary K-Shuttle between Balboa Park and West Portal. It is expected that this limited LRV operation can commence early in 1979.

It is also intended, perhaps simultaneously, to permanently extend the K-INGLESIDE service with MUNI's existing "PCC" streetcars to the Balboa Park Station, in place of the present 92-BALBOA PARK service, which was only established as an interim measure pending extension of the K. At the present time, however, it is somewhat uncertain if this K-line PCC extension can be implemented as planned. There is an already critical shortage of operable PCCs which became even more severe following restoration of the M-OCEAN VIEW streetcar service on December 20, 1978. However, the LRV shuttle could, if necessary, be implemented independently, also allowing discontinuance of the 92-line service.

Metro Phase 1 service will be the official initiation of revenue service in the subway. It is being planned around N-JUDAH subway service Monday through Friday, over approximately the same hours of service, 4:30 am to 11:00 pm, as at present. Metro Phase 1 service is targeted for the latter half of 1979. The reasons for inaugurating service on the N-line have been documented previously; in summary, the principal reasons include: (a) the N-JUDAH is MUNI's most heavily used line, so the Metro service will be put where it is needed most, (b) operation of only five (rather than seven) stations will be required, (c) mixing of LRV and PCC revenue operation over common trackage will be minimized, (d) anticipated transfer volumes can most readily be accommodated, and (e) several key 5-Year Plan route changes depend on N-JUDAH MUNI Metro operation (See Chapter V, Section D, Phasing.).

The same number of cars will be scheduled past any point on the N-line as at present, but because the LRV is a larger vehicle, this will

result in at least a 50 per cent increase in capacity at increased comfort levels. Because the LRV cars travel faster, fewer cars need to be used. Surface operation of PCC cars on the N-line on weekends is being recommended to continue during Metro Phase 1, because (a) station staffing costs will be reduced considerably by an initial five-day operation, and (b) the subway will remain available for testing and training on weekends (as well as nights), which will be particularly advantageous during the completion of the LRV delivery and acceptance period. Cash fares in subway stations will probably be deposited at first into temporary mounted fareboxes in the station mezzanines (much as Washington's WMATA subway opened initially), until station fare equipment is installed late in 1979.

Metro Phase 2 service is recommended to begin no sooner than six months following inauguration of Metro Phase 1. This is to ensure familiarity with operation of the vehicles and the subway in a relatively simple operating mode before the inevitable, substantial complexities of a Metro Phase 2 operation is attempted. There are different options for Metro Phase 2 service, but final commitment need not and will not be made until after Metro Phase 1 is in operation, and experience has been gained in terms of LRV availability and reliability. In addition, operating experience with coupling and with terminal operations at the existing Embarcadero terminal must be gained.

Nonetheless, the presently recommended plan for Metro Phase 2 service is to provide subway service with LRVs on Lines N, K and L, with PCCs remaining on the J and a bus, PCC or LRV shuttle on the M. The advantages of this option are that it:

- (a) Provides LRV service on MUNI's three heaviest lines. This is particularly desirable if the required 85 per cent (or better) vehicle availability needed to place all five lines in subway service takes an extended period of time to achieve (or if there are problems with either enroute coupling or with train operation and reversal at the existing Embarcadero Station).
- (b) Still minimizes mixed PCC and LRV revenue operation on common trackage.
- (c) Allows the most orderly phasing in of the remaining lines.
- (d) Allows enroute coupling to be tried first under service conditions at West Portal, where track is level, separated from pedestrians and traffic (in West Portal Station), and where an inspector is available.

Because Metro Phase 2 operation will remove much of our present feeder service to Transbay Terminal, and since "interim" reroutings are to be avoided if at all possible, it is vital that high priority be

given to Hetch Hetchy's program (included in the "TOP" project) to provide necessary trolley coach overhead line facilities. These would allow trolley coach lines 4, 5, and 6 to begin serving the Transbay Terminal no later than the Metro Phase 2 start-up. Any efforts to expedite this project should be explored and pursued -- time is critical.

Metro Phase 3 and, if necessary, Phase 4, which would tentatively see the addition of subway service on the J-CHURCH and M-OCEAN VIEW lines, would be scheduled at least several months downstream from Metro Phase 2. Details for introduction of subway service on these last two lines will be worked out during the Metro Phase 2 period of operation, taking into account not only LRV performance, but also construction schedules for Church Street rerailling, Embarcadero terminal reconstruction, and other projects expected to be underway or soon to commence.

2. Proposals for MUNI Metro System Extensions

Since adoption of the program for subway construction, three proposals have advanced to either the detailed planning or actual implementation stage for modification and extension of the basic MUNI Metro System: the construction of a track extension and turnaround just east of the Embarcadero Station, the extension of the J-CHURCH line from 30th Street to San Jose and Ocean Avenues, and the extension of service South-of-Market from the Embarcadero Station via a surface alignment to a terminal at the Southern Pacific Depot at Fourth and Townsend Streets. Pending the completion of the studies now underway, these three projects are included in this 5-Year Plan.

a. Embarcadero Terminal Reconstruction

When the MUNI's Embarcadero Station was initially constructed by BART, it was designed as a conventional rapid transit stub terminal, mirroring the layout of the BART Station directly underneath. This design has a number of shortcomings with respect to the MUNI's intended mode of operation which, for fiscal as well as institutional and other reasons, were unable to be corrected prior to construction.

A consultant, Sverdrup/Foster, was retained to do a study of MUNI terminal requirements and to recommend what modifications, if any, to the terminal layout would be most appropriate to MUNI's needs. In September 1978, they issued their recommendations in a Design Report for a Track Extension and Turnaround. This report called for construction of a loop turnaround at the foot of Market Street with limited maintenance and storage facilities. (See Figure VI-1.) The recommendation has been endorsed by Railway staff, and, as of this writing, is

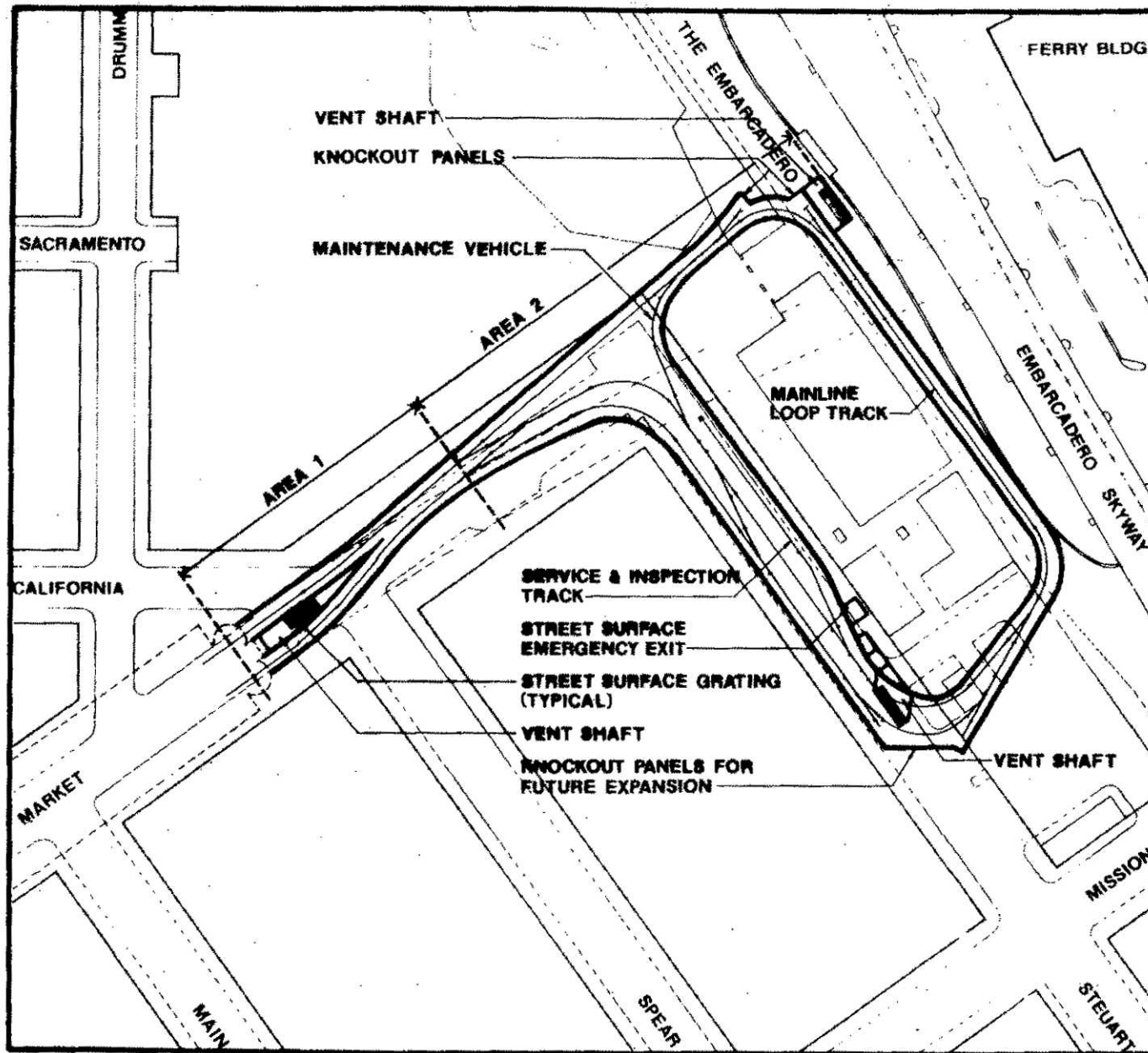
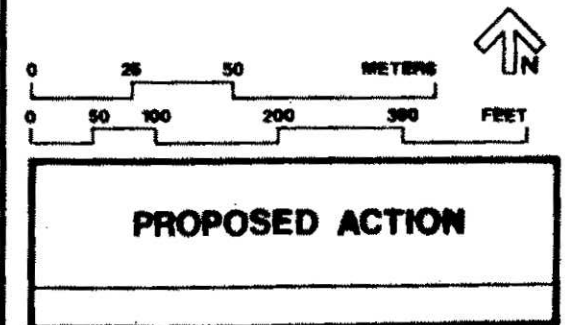


Figure VI-1
 PLAN FOR MUNI METRO
 EMBARCADERO LOOP TURNAROUND



undergoing environmental review prior to being considered for decision by the Public Utilities Commission. The estimated cost of the project would be \$20.0 million in 1978 dollars, or \$28.1 million in 1981 dollars (midway through construction).

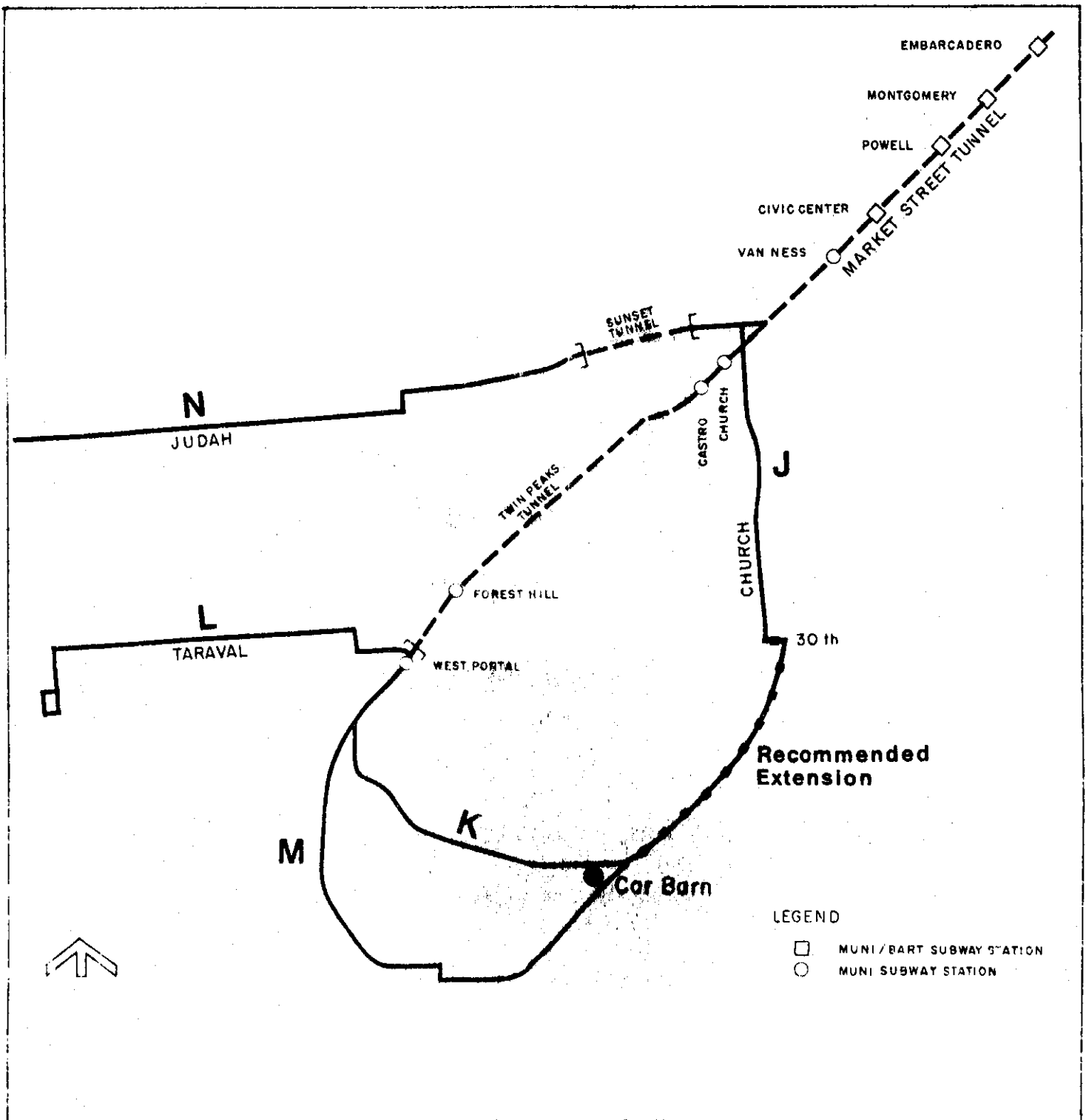
The loop turnaround would significantly increase the reliability of MUNI's operation, and significantly reduce the susceptibility of the system to disruption and delay. The increased operational flexibility of the loop, coupled with the availability of a limited amount of storage and emergency maintenance space, will also increase the overall long-term capacity of the system. The design will permit rapid system recovery from inevitable occasional equipment breakdowns by allowing malfunctioning vehicles to be removed quickly from service. Lastly, the project provides for the beginnings of a line extension past the Embarcadero Station, by providing the layout necessary to separate vehicles proceeding on the extension from vehicles which would terminate at the Embarcadero.

b. J-CHURCH Extension

One of the tasks assigned to Wilbur Smith and Associates during the POM Study called for an investigation of J-CHURCH and N-JUDAH streetcar pull-out and pull-in operations. Their October, 1977, report, New Track Linkage, N-J Lines, recommended the extension of J-CHURCH trackage from 30th and Church via 30th Street and San Jose Avenue to the MUNI Metro Rail Center at Balboa Park, to be operated as a revenue extension of the J-line. (See Figure VI-2.) Revenue extension of the J would provide the following benefits:

- (a) Revenue service would provide a connection linking the Mission District with the southern portion of the City.
- (b) Allowing J and N cars to be placed into and taken out of service via San Jose Avenue and Church Street would provide the convenience of additional pre- and post-peak hour service to J-Line riders, while reducing MUNI's operating costs by \$435,800 (1975 dollars) annually.
- (c) Cars entering J and N-Line service would be isolated from interference with Market Street subway operations, thereby improving overall system reliability.
- (d) In the event of a line blockage in the Twin Peaks Tunnel, K, L and M cars would have an emergency detour route available to and from the Market Street subway, via Church Street.
- (e) Impacts on Ocean Avenue resulting from operation of all pull-in and pull-out cars via that routing would be reduced.

Figure VI-2
RECOMMENDED J-LINE EXTENSION



The Wilbur Smith recommendation for extension of the J-CHURCH line to the Balboa Park Station has been included in this 5-Year Plan. Furthermore, so as to provide a Mission District to SF State/Stonestown connection, it is recommended that J-CHURCH service be extended past Balboa Park, via San Jose Avenue and the existing M-line trackage, at least as far as SF State University. There are a number of potential ways to operate this service, including:

- (a) all J-cars terminating at SF State/Stonestown, all M-cars terminating at Balboa Park,
- (b) all J and M service terminating at SF State/Stonestown,
- (c) alternate J and M cars terminating at SF State/Stonestown and Balboa Park, and
- (d) through operation of the J and M lines as a continuous J-M "balloon loop" route in both directions from Downtown.

The latter option is being recommended in this plan, largely because it provides the most opportunities for through service with minimum transfers. It also eliminates the problem of designing and constructing facilities which do not presently exist for a line terminal near SF State. It does, however, impose additional terminal requirements on the Embarcadero Station -- but the proposal for an SP Depot extension (described below) also provides a likely solution to this.

With the J (or J-M) providing service from the Mission to SF State/Stonestown, it will become possible to restructure the new 26-GUERRERO motor coach line which would otherwise provide this service. The 5-Year Plan consequently envisions the 26 becoming more of a community-oriented service, with somewhat reduced headways, thus diminishing the adverse impacts of motor coaches on the Chenery Street grades in Glen Park. The southern terminal of the 26 would be shifted to the proposed Maynard/Trumbull loop in the Stonecrest area. These changes to 26-GUERRERO service would have the secondary effect of reducing the operator "run" requirements for the 26-line, thereby providing some or all of the additional operator requirements which the extended J-CHURCH service would incur.

In addition to a limited number of regular surface stops along San Jose Avenue, Wilbur Smith also recommended that a stop be provided at or near Bosworth Street, in the median of the limited access roadway via a pedestrian bridge to the Glen Park BART station. Provision of the Glen Park stop is viewed as absolutely essential to the grid connections on which this 5-Year Plan is premised. Furthermore, without a stop at Glen Park, the J-CHURCH extension cannot assume the functions now performed by the 26 motor coach line. Not only is the rerouted 26-GUERRERO integral to the plan, but the operating cost offsets are necessary to help underwrite the additional operating costs of the rail service.

If at all feasible, a routing via 30th Street directly to San Jose is also recommended rather than via Dolores Street. The direct 30th-to-San Jose route seems operationally an equally acceptable route, but would appear to have considerably reduced adverse impacts on the community.

In addition to the Glen Park stop, passenger stops are recommended on 30th Street, at or near Randall Street, and along San Jose Avenue south of Glen Park. An exclusive right-of-way should be sought -- at least between 30th Street and Glen Park wherever feasible -- and loading islands should be provided at all stops on the extended route.

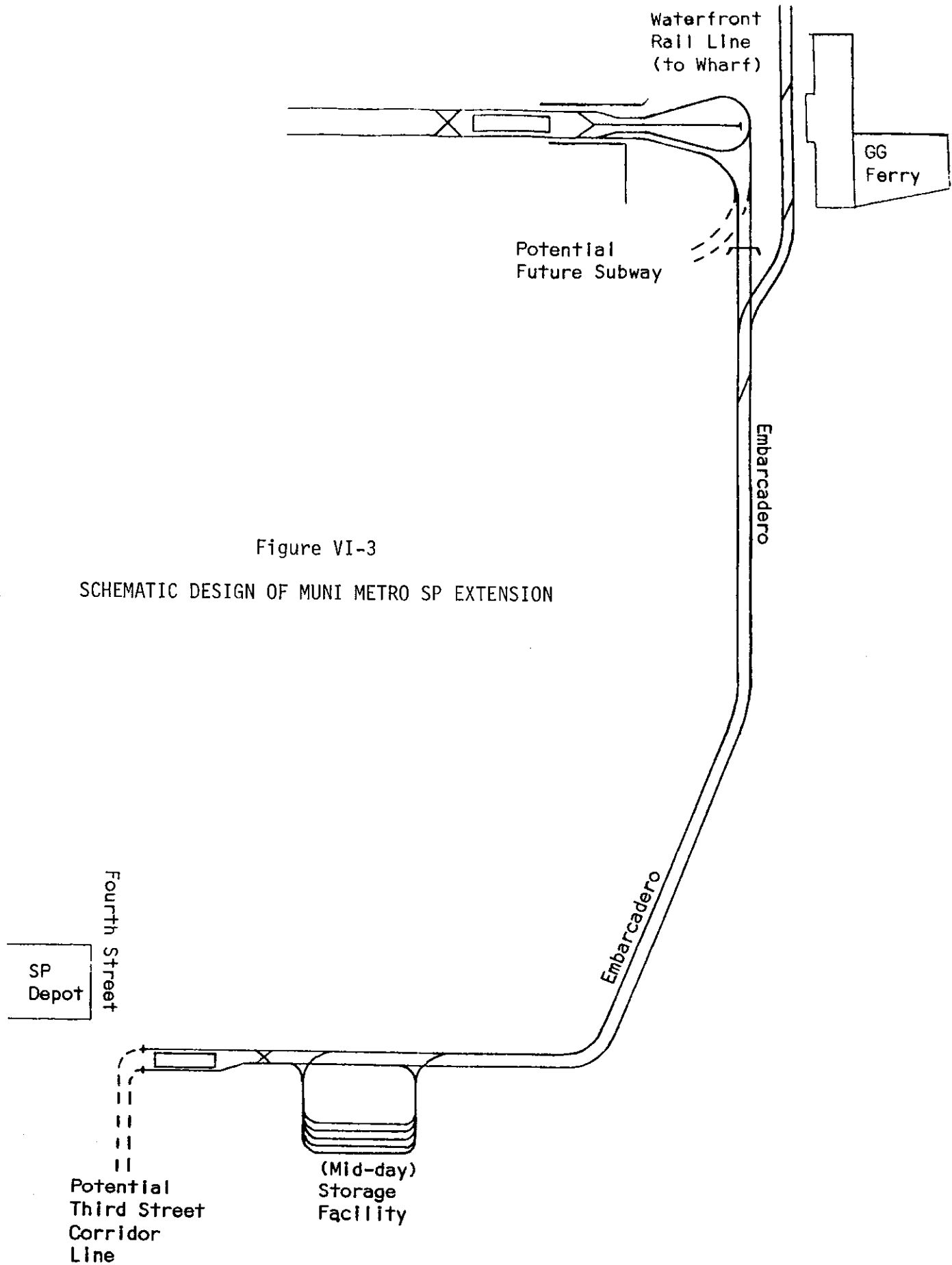
Wilbur Smith's estimate was that the total project cost for the J-extension would be \$3.875 million (1975 dollars), exclusive of any additional LRVs to provide service. Present worth savings over 30 years in reduced pull-in and pull-out operating hours alone are estimated at 3.69 times the capital investment cost, not including costs associated with revenue service. (Furthermore, these estimated costs omitted compensating savings from surface operations and are therefore conservative.) It is estimated that between three and eight additional LRVs, including spares, would be required for operation of revenue service, depending on the method of operation. Although a complete operational analysis remains to be performed, it is estimated that through J-M loop operation would require five additional vehicles (not including SP Depot service). Vehicle requirements are discussed further in Section A-4 below.

c. MUNI Metro SP Extension Project (MMSPX)

Late in 1976, the California Department of Transportation (CalTrans) solicited proposals for projects which would improve the interface between different transportation modes, for possible funding under California Senate Bill 1879. At the time, several projects which might qualify were under consideration by MUNI staff, and were transmitted to CalTrans for evaluation. The most far reaching of these, the one which was eventually approved for funding, proposed the extension of MUNI Metro service, via a surface alignment, from the foot of Market Street to a transfer station at the Southern Pacific Depot, at Fourth and Townsend Streets. (See Figure VI-3.)

This proposal emerged from the earlier separate proposal for a Water-front streetcar line, an idea which was starting to gather momentum and support and which is discussed separately below. In addition, the "Peninsula Transit Alternatives Project" (PENTAP) had called for retention and expansion of the Southern Pacific's Peninsula commute service, coupled with improved access between the SP Depot and destinations in San Francisco.

At the present time, a planning and design study, funded fully through SB 1879 monies, is about to commence. If it is decided to construct this MUNI Metro extension, 80% federal funding for construction will be sought with SB 1879 funds providing the 20% local match. This initial study will see the project through the "Alternatives Analysis" required by UMTA. The study will therefore examine not only the basic light rail extension



proposal, but also alternatives including bus-only improvements and an extension northward of the SP rail service itself.

Nonetheless, it is the MUNI Metro extension which appears most consistent with emerging city policy, as well as with MUNI's long-term transit service objectives. Most recently, an interdepartmental study of the "Northeastern Waterfront Survey Area" under the direction of the Department of City Planning and the Port of San Francisco has been examining future land use and transportation development between the Ferry Building and China Basin. Out of this work has emerged a "most probable" alignment for the MUNI Metro extension alternatives: one in which MUNI Metro tracks would be brought to the surface on Steuart Street between Mission and Howard Streets. Connection to such a ramp and tunnel portal has consequently been incorporated into designs for the Embarcadero terminal modifications discussed above. From the portal, the line would follow Steuart Street in a semi-exclusive alignment south to the (present) Embarcadero, possibly in the median of a relocated Embarcadero roadway. It would continue along the Embarcadero, paralleled by a separate track for Belt Railroad use, to an as yet undetermined point in the vicinity of Townsend or King Streets. A right-of-way, probably on one of those streets, would then carry the line southwest to a terminal transfer station at the SP Depot.

Provision of a light rail extension from the MUNI Metro's Embarcadero Station to the SP Depot offers the opportunity of a low investment extension which could help resolve a surprisingly large number of transportation problems confronting both MUNI and the Bay Region. Such opportunities include the following:

- (a) The Peninsula Transit Alternatives Project called for a major upgrading of West Bay Corridor service to include improved access to Downtown San Francisco for Southern Pacific passengers. The extension of one or more MUNI Metro lines would provide a high-speed, high-capacity link from the SP Depot to the Financial District, Civic Center and other San Francisco points. Operating cost offsets could be achieved by reductions in present surface bus operations on line 32-EMBARCADERO as well as abandonment of the existing 40-COMMUTER and 80-GATEWAY EXPRESS lines, whose functions would be absorbed by the rail extension.
- (b) As discussed above, the most desirable method of operating the recommended extension of the J-CHURCH line is by through-routing the J and the M rail services. However, if the J and the M are through-routed as two one-way loops, it would become necessary to provide a layover point at the inner terminal where schedule recovery time could be taken. The intensity of operations at Embarcadero Station probably precludes regularly scheduling layovers at that point. Extending the J-M trips to the SP Depot, however, would very conveniently allow terminal layovers to be taken there.

- (c) The connection of the Waterfront rail line (see Section A-3 below) to the MUNI Metro trackage under Market Street would provide a physical connection, via the subway, between the proposed Embarcadero rail line and the MUNI's principal rail vehicle maintenance and storage base at Balboa Park, where heavy repair on the waterfront streetcars could be conducted. With minor modifications, the connection would also allow the option of future MUNI Metro operations north to Fisherman's Wharf, as well as south to the SP Depot. Continued development along the Northern Waterfront may eventually justify such service.
- (d) Various sites near the SP Depot, such as under the I-280 Freeway, may be available for an LRV storage facility for midday use. Such a facility could essentially eliminate the labor and operating costs associated with midday pull-ins and pull-outs. It might also be used for overnight storage of N-JUDAH cars, similarly resulting in reduced pull-in and pull-out costs.
- (e) By extending one or more lines to the SP Depot (such as the J and M), operations at the Embarcadero Station would be eased since the number of trains terminating there would be reduced.
- (f) The proposal would allow a low-cost "jumping off point" from Fourth and Townsend, for a future Third Street or Bayshore Corridor rail line, via either Fourth and Third Streets or via the Southern Pacific right-of-way.

It is possible, though not certain, that SB 1879 funds will be able to fund the entire local share of the "MMSPX" Project, if a recommendation and decision to build it does follow from the initial study. As already stated, a significant portion of the operating costs of a service extension would be covered by offsetting reductions in surface bus operations. If service is provided by an extension of the J-CHURCH and M-OCEAN VIEW lines to the Depot (assuming non-coupled, single-car operation of such cars), it is estimated that approximately ten additional LRVs might be required.

3. A Waterfront Rail Service: Line E-EMBARCADERO

The proposal for a local streetcar line along the Northeastern Waterfront has been variously proposed for a number of years. The first serious presentation for such a line appears to be one made by Gerald P. Cauthen in 1974 at the request of then-Supervisor Dianne Feinstein in the report, A Surface Rail System for the San Francisco Waterfront. That proposal suggested use of the San Francisco Belt Line Railroad tracks to operate a line between the Southern Pacific Depot and the Presidio, near Crissy Field. It proposed to serve a variety of transit needs, both for tourists

and commuters, and was designed to substitute for planned freeway capacity along the Waterfront, partly by distributing passengers from "intercept" parking facilities in the South-of-Market area.

When revisions to the then-existing "Northern Waterfront Plan" portion of the City's official Master Plan were prepared, it was seen that improvement of transit service along the Waterfront would serve a number of objectives. Potential alignments for an improved transit service along the lines of a Waterfront streetcar began to be identified. In 1976, the proposal for a Waterfront streetcar was endorsed by the Northern Waterfront Planning Advisory Committee. When the City Planning Commission finally adopted its "Plan for the Northeastern Waterfront" in January, 1977, with subsequent endorsement by the Port Commission, it was not felt appropriate to actually specify the mode. Nevertheless, the plan called for an improved transit service with a Waterfront streetcar clearly implied as the prime option. The following excerpts and illustrations are taken from that plan: (See Figures VI-4 and VI-5.)

III. TRANSPORTATION

OBJECTIVE 1: TO FACILITATE THE MOVEMENT OF PEOPLE AND GOODS WITHIN THE NORTHEASTERN WATERFRONT IN SUCH A WAY AS TO MINIMIZE THE ADVERSE IMPACT OF THIS MOVEMENT.

Policy 2: Improve transit service to, and along, the Northeastern Waterfront. Establish a transit line between the South of Market Area and the Fisherman's Wharf area which would primarily make use of existing railroad tracks, including those on the Embarcadero, and which would connect to numerous other transit lines and to a parking reservoir at the southern end.

OBJECTIVE 2: TO ACCOMMODATE THE REGIONAL MOVEMENT OF PEOPLE AND GOODS, PERMITTING THE THROUGH MOVEMENT OF TRAFFIC, ACCESS TO THE REGIONAL SYSTEM FROM THE MARITIME AND OTHER INDUSTRIAL AREAS OF THE CITY, AND FACILITATING THE MOVEMENT OF REGIONAL TRANSIT WHILE MINIMIZING THE ADVERSE IMPACT OF THIS SYSTEM ON THE NORTHEASTERN WATERFRONT AREA.

Policy 2: Prohibit any increase to the capacity of the roadway system along the shoreline to accommodate automobiles between the Bay Bridge-Downtown area and the Golden Gate Bridge. Improve transit service in this corridor to encourage the reduction of automobile traffic.

Policy 3: Minimize the impact of regional transportation movement along the Northeastern Waterfront by encouraging transit use through the addition and improvement of service and through the use, wherever possible, of exclusive rights-of-way and other types of transit preferential treatment. Prohibit ramping to

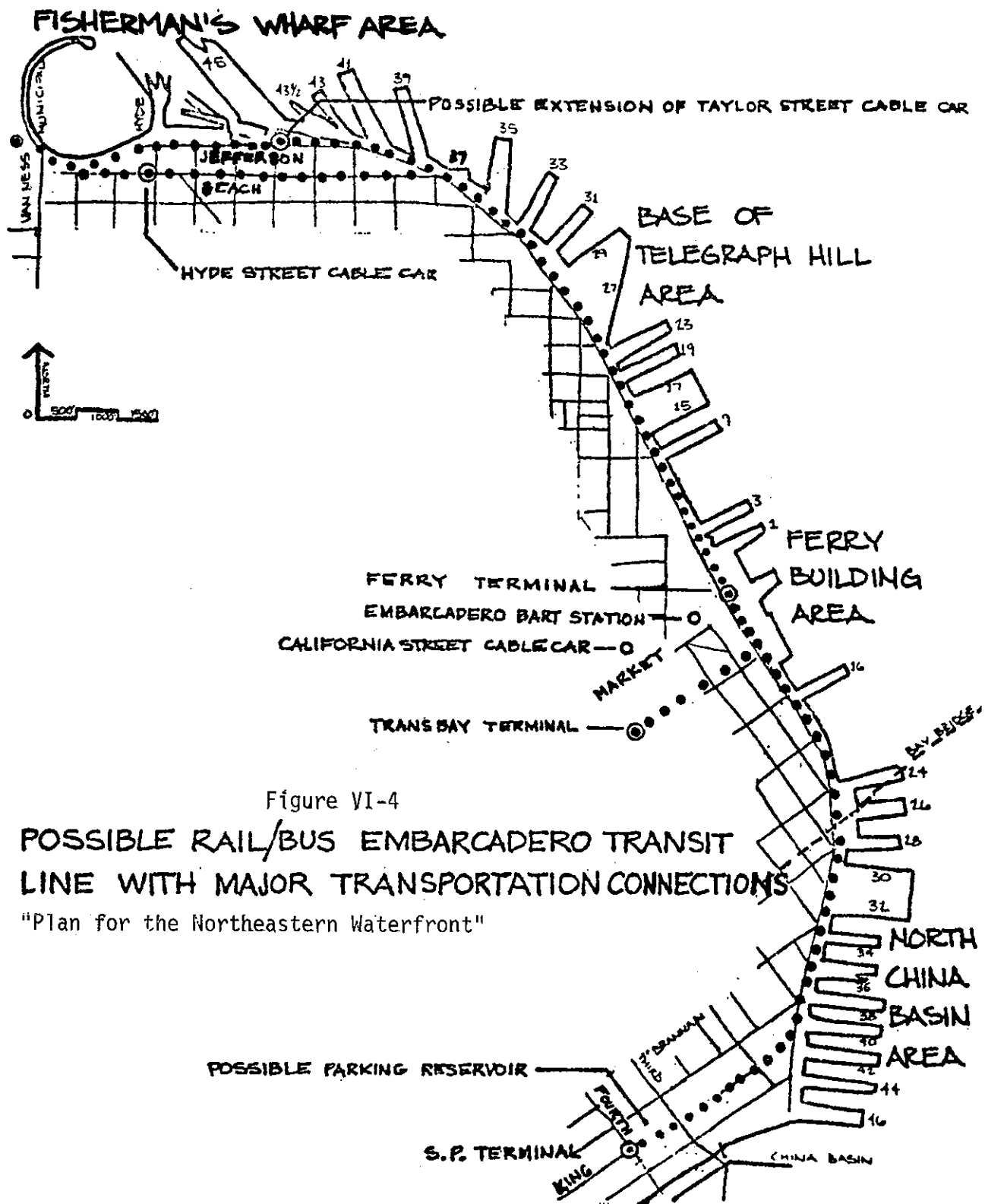
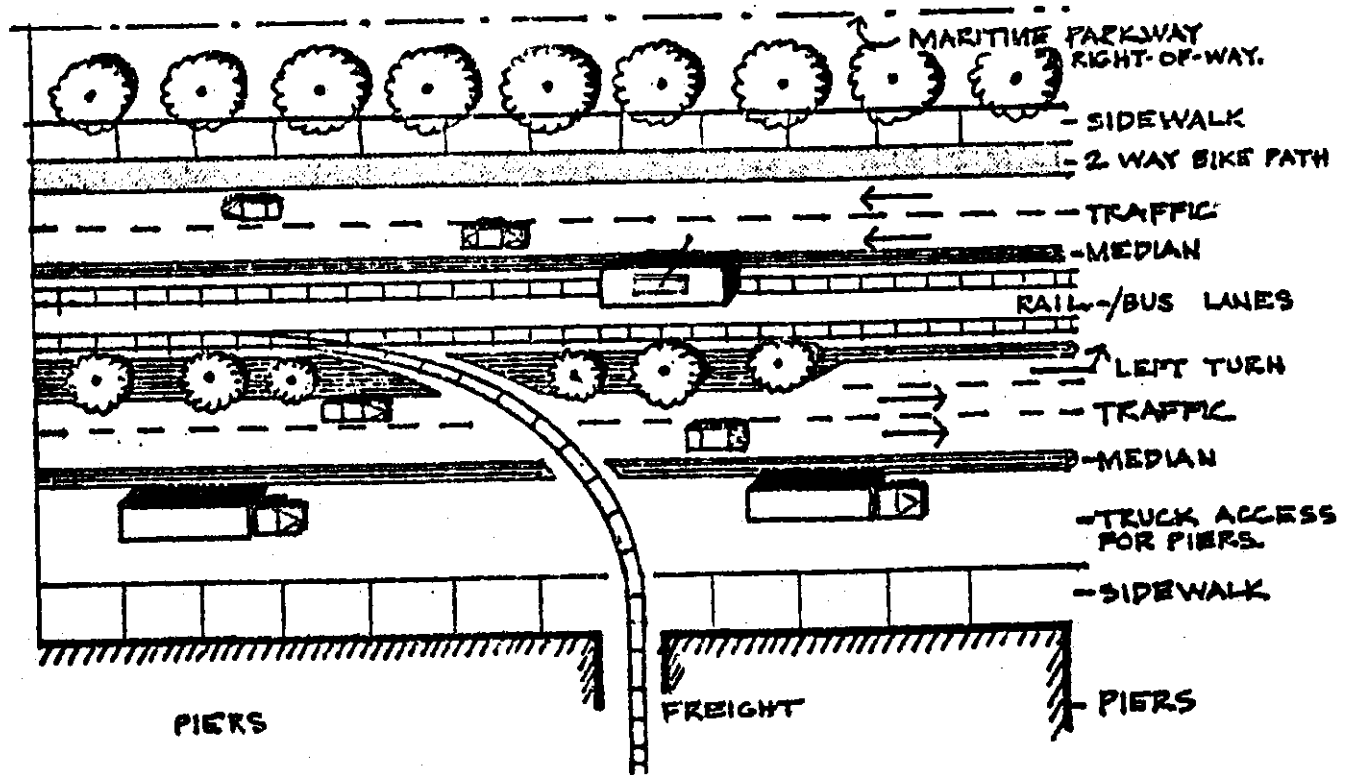


Figure VI-4

POSSIBLE RAIL/BUS EMBARCADERO TRANSIT LINE WITH MAJOR TRANSPORTATION CONNECTIONS

"Plan for the Northeastern Waterfront"



TYPICAL PLAN: 0' 10' 20' 30' 40' 50' 60' 70' 80' 90' 100' 110' 120' 130' 140' 150' 160' 170' 180' 190' 200' 210' 220' 230' 240' 250' 260' 270' 280' 290' 300' 310' 320' 330' 340' 350' 360' 370' 380' 390' 400' 410' 420' 430' 440' 450' 460' 470' 480' 490' 500' 510' 520' 530' 540' 550' 560' 570' 580' 590' 600' 610' 620' 630' 640' 650' 660' 670' 680' 690' 700' 710' 720' 730' 740' 750' 760' 770' 780' 790' 800' 810' 820' 830' 840' 850' 860' 870' 880' 890' 900' 910' 920' 930' 940' 950' 960' 970' 980' 990' 1000'

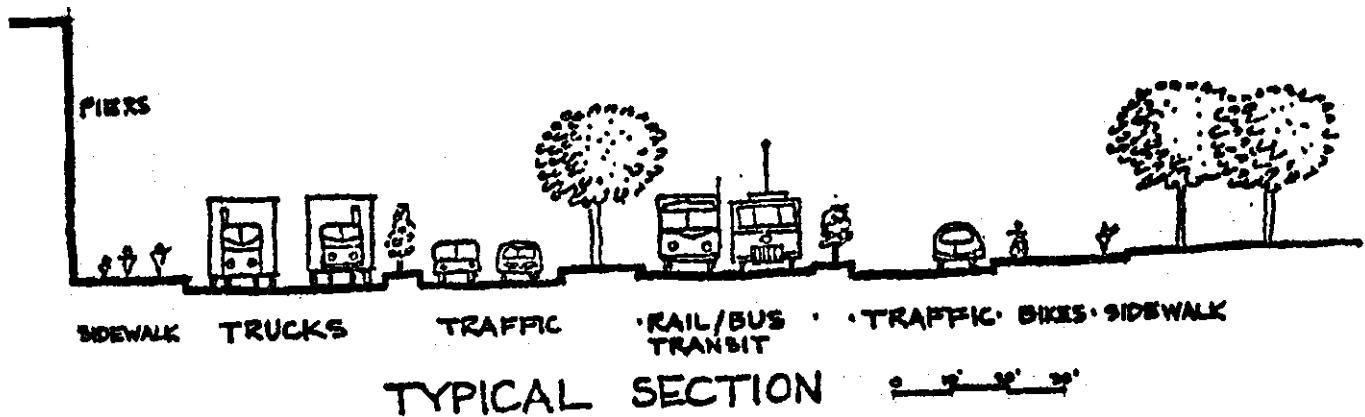


Figure VI-5

POSSIBLE IMPROVEMENTS TO EMBARCADERO BETWEEN WASHINGTON TO NORTHPOINT STREETS.

"Plan for the Northeastern Waterfront"

and from the I-280 Freeway within the area east of Third Street, except that a transit-only ramp to Second Street should be provided.

Policy 5: Make transfers among transit systems as easy, safe and pleasant as possible, and clearly identify loading areas and routes. In particular in the Ferry Building area, design the relationship between the ferries, BART, MUNI surface and subsurface lines, and the Transbay Terminal to facilitate connections among the systems.

Policy 6: Provide parking reservoirs near the Fourth Street ramps of the I-280 freeway for short-term parking and to replace long-term parking in the Northeastern Waterfront as well as the downtown core. Provide frequent transit service between this parking area and the Downtown.

V. SUBAREAS

A. FISHERMAN'S WHARF AREA

OBJECTIVE 3: TO DEVELOP A TRANSPORTATION SYSTEM WHICH IMPROVES ACCESS FOR PEOPLE AND GOODS TO AND AROUND THE FISHERMAN'S WHARF AREA WHILE MINIMIZING THE ADVERSE ENVIRONMENTAL IMPACTS ON THE AREA.

Policy 3: Facilitate access into and within the Fisherman's Wharf area by transit through the provision of exclusive rights-of-way and other preferential treatment, through the extension of additional transit lines, improving frequency, speed, hours of operation, and providing clearly identified loading areas and routes. Establish a rail/bus transit line on Jefferson and Beach Streets, providing access to the Ferry Building and the South of Market area. Extend the Powell and Mason Cable Car line on Taylor Street north of Jefferson Street.

B. BASE OF TELEGRAPH HILL AREA

OBJECTIVE 4: TO DEVELOP A BALANCED TRANSPORTATION SYSTEM WHICH ACCOMMODATES REGIONAL AND LOCAL MOVEMENT WHILE CAUSING MINIMUM IMPACT TO THE ENVIRONMENT.

Policy 1: Improve the Embarcadero between Washington and North-point Streets as an attractive landscaped roadway having two moving lanes in each direction, an exclusive transit right-of-way, bicycle lanes and a separate access roadway to the pier areas.

C. FERRY BUILDING AREA (piers 7 to 24)

OBJECTIVE 7: TO FURTHER DEVELOP THE FERRY BUILDING AREA AS A MAJOR TRANSIT CENTER, IMPROVING TRANSIT ACCESS BY AND TRANSFERS AMONG THE TRANSIT LINES AND SYSTEMS, AND REDUCING THE IMPACT OF TRAFFIC SYSTEMS ON THE AREA.

Policy 3: Develop an improved transit line along The Embarcadero having an exclusive right-of-way.

a. The Proposal: Line E-EMBARCADERO

It is recommended as part of this plan that the long-discussed proposal for a Waterfront streetcar be programmed for implementation over the next five years. Specifically, it is anticipated that construction of the portion south of the Ferry Building might begin in Fiscal Year 1980-81 as part of the "MMSPX" project discussed above; construction north of the Ferry Building could commence construction by Fiscal Year 1982-83.

South of Howard Street, the Waterfront streetcar, to be designated line E-EMBARCADERO, would share the trackage proposed for the MUNI Metro SP extension. At or near Howard Street, the tracks for the E-Line would diverge from the tracks connecting to the Market Street subway, and follow the present Belt Line right-of-way north along the Embarcadero. As presently envisioned, the trackage north of the Ferry Building should be designated for joint MUNI and Belt Line use, to retain nighttime freight access to the piers.

A separated right-of-way, designed for joint use with buses where appropriate, would be provided along the Embarcadero in the median of a relocated roadway. Such a roadway design is consistent with the San Francisco Master Plan policies excerpted above, and has been incorporated into the designs for a reconstructed Embarcadero roadway being prepared by the City's interdepartmental Embarcadero Task Force. Portions of this roadway design are in fact already under construction or even in place in the wake of sewer reconstruction along the Embarcadero.

From Beach and Embarcadero, the line is proposed to operate west-bound along Jefferson Street to Aquatic Park, passing along the shoreline before entering the single-track Fort Mason Tunnel. The western terminal of the line would be at the west portal of the tunnel on Golden Gate National Recreation Area land. Eastbound, the E-line would run through the Fort Mason Tunnel and onto Beach Street, passing in front of the Maritime Museum. It would then continue east along Beach, rejoining the double-track line at the Embarcadero.

Transit priority treatments, including sections of reserved transit-way operation and sections of painted diamond lanes, would be provided along Beach and Jefferson Streets. One such section of exclusive transit

right-of-way has already been constructed along the Embarcadero between Northpoint and Jefferson Streets passing Pier 39 and is in use by the northbound 32-EMBARCADERO bus.

Objectives which would be served by implementation of a Waterfront streetcar are many, including:

1. Significantly improve MUNI's effectiveness in transporting San Francisco visitors to and from the Fisherman's Wharf area by transit rather than by automobile. Traffic conditions near Fisherman's Wharf, including parts of North Beach and Telegraph Hill, are among the worst in the City, and additional parking facilities do not provide an answer to congestion on the streets. At present, MUNI's cable cars almost exclusively handle Wharf and North Beach oriented tourist traffic. By being "fun" to ride, visitors ride them willingly, solving one of transit's biggest problems: convincing people to use transit. The problem with the cable car system is that capacity is nowhere near adequate to handle demand. Consequently, visitors to the City wait long periods to ride the cables once to the Wharf and back -- but will drive on subsequent trips rather than confront the lines, waits, and crowds repeatedly.

The Waterfront streetcar -- particularly if a "historic streetcar" type vehicle is used (as discussed further in Section A-4: Vehicle Requirements) -- has the potential to at least double the present available capacity of the cable car system by providing a similarly distinctive, easily identified, inherently interesting transit service which is "fun" to use. It can be expected that many -- perhaps most -- tourists who now ride the cables in both directions (including those who would if they could get aboard a cable car in the first place), could be persuaded to use the cables in one direction, and use the E-EMBARCADERO streetcar in the other. The E-Line would directly serve such points as Pier 39, the Ferry Building, the Hyatt Regency Hotel, the Eastern terminus of the California Street cable car line, the proposed Waterfront Promenade, and Market Street.

By relieving congestion on the cable lines, operation of the Waterfront streetcar enhances the ability of the cables to provide transit capacity not only to the Wharf, but to North Beach and Chinatown as well -- and for residents as well as for visitors. The existing 32-EMBARCADERO bus along much the same route cannot serve this function because its route is not easily identified, it is not distinctive, and it is simply not a very attractive vehicle system for people to use for this type of service.

2. Serve and support the expanding new commercial developments along the Northeastern Waterfront. As land use along much of the Waterfront continues to shift from maritime, warehousing and light industry to white-collar commercial and administrative activity, there is a corresponding growth in travel to the area, particularly during the traditional peak periods.

The E-line would replace the 32-EMBARCADERO bus in providing transit service to meet those needs, connecting directly with MUNI'S Market Street services, the Golden Gate Ferries, and the SP Peninsula Rail service, as well as with MUNI Metro and BART across Justin Herman Plaza. By operating largely on exclusive rights-of-way and with higher capacity vehicles, the quality of peak-hour service would be significantly enhanced. Off-peak, the expected growth in Wharf-oriented transit travel would justify reductions in base headways. The E-line would also provide distribution to these new developments from parking sites South of Market.

3. Implement the San Francisco Master Plan's transportation policies. These have already been described.
4. Allow continuance of Belt Line Railroad operation along the Embarcadero. Physically, freight railroad operation can be made compatible with street railway service through careful design of trackway components when the rights-of-way for joint operation are prepared. The Belt Line and Port of San Francisco have tentatively agreed it would generally be possible to restrict freight operation to nighttime hours to avoid direct conflicts between freight and transit movements.
5. Allow for possible future MUNI Metro service along the Embarcadero to Fisherman's Wharf. The proposed alignments being developed for the combined Waterfront streetcar and MMSPX projects would allow future operation of selected Market Street MUNI Metro services to the surface and north towards the Wharf as well as south towards the SP Depot.

(This option may, however, conflict with Belt Line operation along the Embarcadero since a separate track for Belt Line use cannot be provided north of the Ferry Building. At the very least, modifications to the LRV fleet would probably be necessary. Consequently, while the future option is preserved, MUNI Metro operation to the north is not being recommended at this time.)

6. Support development of the Golden Gate National Recreation Area. GGNRA staff have supported the development of the Waterfront rail service to satisfy their own planning objectives and transportation requirements for development of this major, new regional recreation facility.

b. Operational requirements

Planning for the Waterfront rail service has so far focused on route and service characteristics of the line. Two obvious related issues have not as yet been resolved and are intended to be developed for inclusion in the 1980 and 1981 5-Year Plan annual updates. These two issues relate to selection of vehicles for operation along the Waterfront and identification of vehicle maintenance and service requirements. The following comments are therefore preliminary in nature and will subsequently be refined.

Basic service on the E-line should be provided using a traditional streetcar-type vehicle, the generic type once known as "iron monsters" in San Francisco. There are a number of specific options available for providing this type of vehicle, several of which are described below in Section A-4. For base service, it is estimated that nine such vehicles would be required, including a conservative spare factor. In addition, perhaps four additional vehicles, which need not be historically styled, should be available for supplementary commuter-oriented peak-hour service. At least initially, PCC cars are proposed to be retained for such service.

A site must be secured for storage and routine daily maintenance for this fleet. The most likely location for such a facility appears to be near the Southern Pacific Depot. For major maintenance and heavy repair, the most desirable option at this time appears to be to take cars (not necessarily under their own power) through the Market Street subway, via the MMSPX ramp connection, and back to the Metro Rail Center at Ocean and San Jose. (It obviously follows from this that vehicles for E-line service should, if at all possible, be designed to fit within the physical clearance envelope of the Market Street subway.)

c. Funding

It is anticipated that federal funding can be utilized for the majority of the capital needs for constructing requisite facilities, including replacement of most of the existing Belt Railroad trackage. Three federal sources have been identified:

- (1) Section 3 UMTA funding (80%)
- (2) Federal Aid-Urban Systems (FAU) funds (83%)
- (3) Interstate Transfer Funds (probably 85%) originally designated for completion of the Embarcadero Freeway.

The present intent is to apply for a combination of FAU and UMTA Section 3 funds. In any event, local funding for up to 20 per cent will be required. It is expected that SB 325 (1971 Transportation Development Act) funds can be utilized for this purpose north of Howard Street. (South of the Howard Street junction with the MMSPX line, as described earlier, SB 1879 funding is likely to be sufficient to cover the required

local share.)

Operating costs will be directly offset, in part, by existing costs of 32-EMBARCADERO service. However, to the extent that a higher level of service is provided, additional operating costs may be incurred. It should be noted that if usage of the E-line develops as expected, it will be heavily used throughout the day, much as the cable cars are today. Under such circumstances, just as the cable cars come closer to covering their total operating costs from passenger revenues than any other mode, it is likely that most of the costs of E-line operation will be covered by farebox revenues. It is entirely conceivable, given both the E-line streetcars' likely larger capacity vis-a-vis the cable cars and the opportunity for one person operation; that a Waterfront streetcar operation will be able to generate sufficient farebox revenues to cover any operating costs over and above those of the existing 32-EMBARCADERO motor coach service.

4. Vehicle Requirements

a. LRVs (Figure VI-6A)

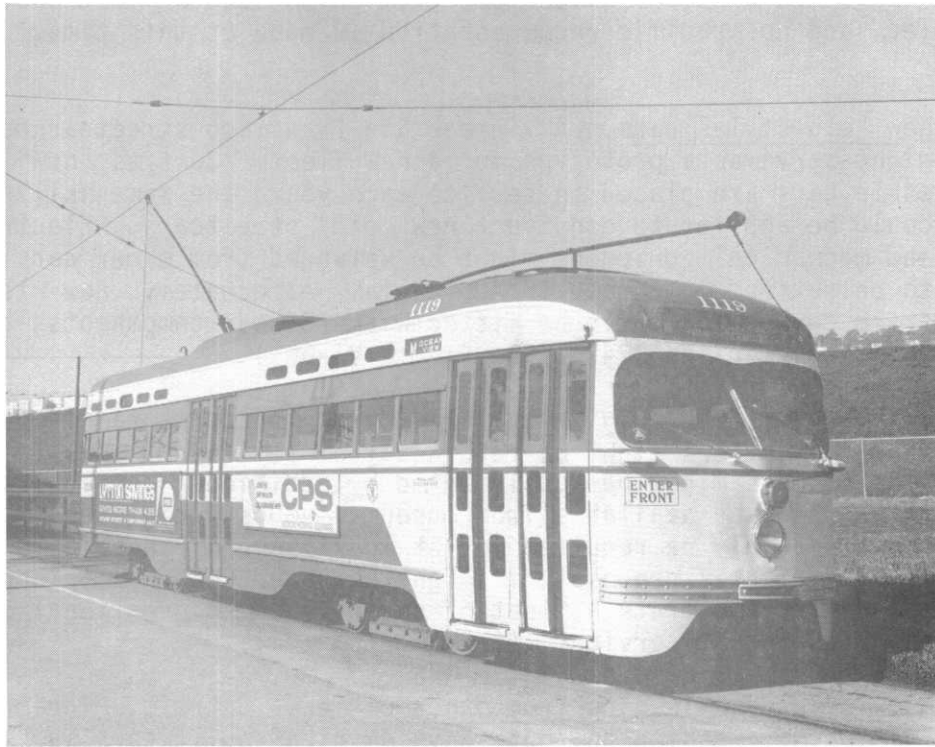
As described above, additional light rail vehicles, compatible with the Boeing-Vertol fleet, will be necessary for service on the J-extension and the MMSPX line. Assuming a requirement of five additional LRVs for J-extension service and ten for MMSPX operation, MUNI should expect a requirement for 15 additional LRVs to be available for service in 1982, when both extensions, if approved expeditiously, could become available. All 100 LRVs are shown in summary Table VI-1 as active in 1979 since deliveries will be completed before the end of the year. Cars will be rotated in active service even if only used for N-JUDAH revenue operations.

b. PCCs (Figure VI-6A)

Removal of PCCs from service is summarized in the table, corresponding to the phasing in of LRV service. Four PCCs are shown as needed for E-line service in 1984. As described below, additional PCCs may be reconstructed with new "old-style" bodies, and other rail operations in the Third Street Corridor may be reflected in subsequent updates to this plan. Therefore, it is recommended that at this time MUNI assume that 35 cars (including the ten double-end cars in the 1006-1015 series) will be retained for possible revenue service, along with available parts inventories. (Some may also be rebuilt as non-revenue equipment.) These, as well as additional cars used as a hedge against LRV start-up, are indicated below as "stored inactive."

Figure VI-6A

PRESENT AND FUTURE MUNICIPAL RAILWAY RAIL VEHICLES



Present Presidents' Conference Committee Car



New MUNI Metro Light Rail Vehicle

c. Conventional Streetcars

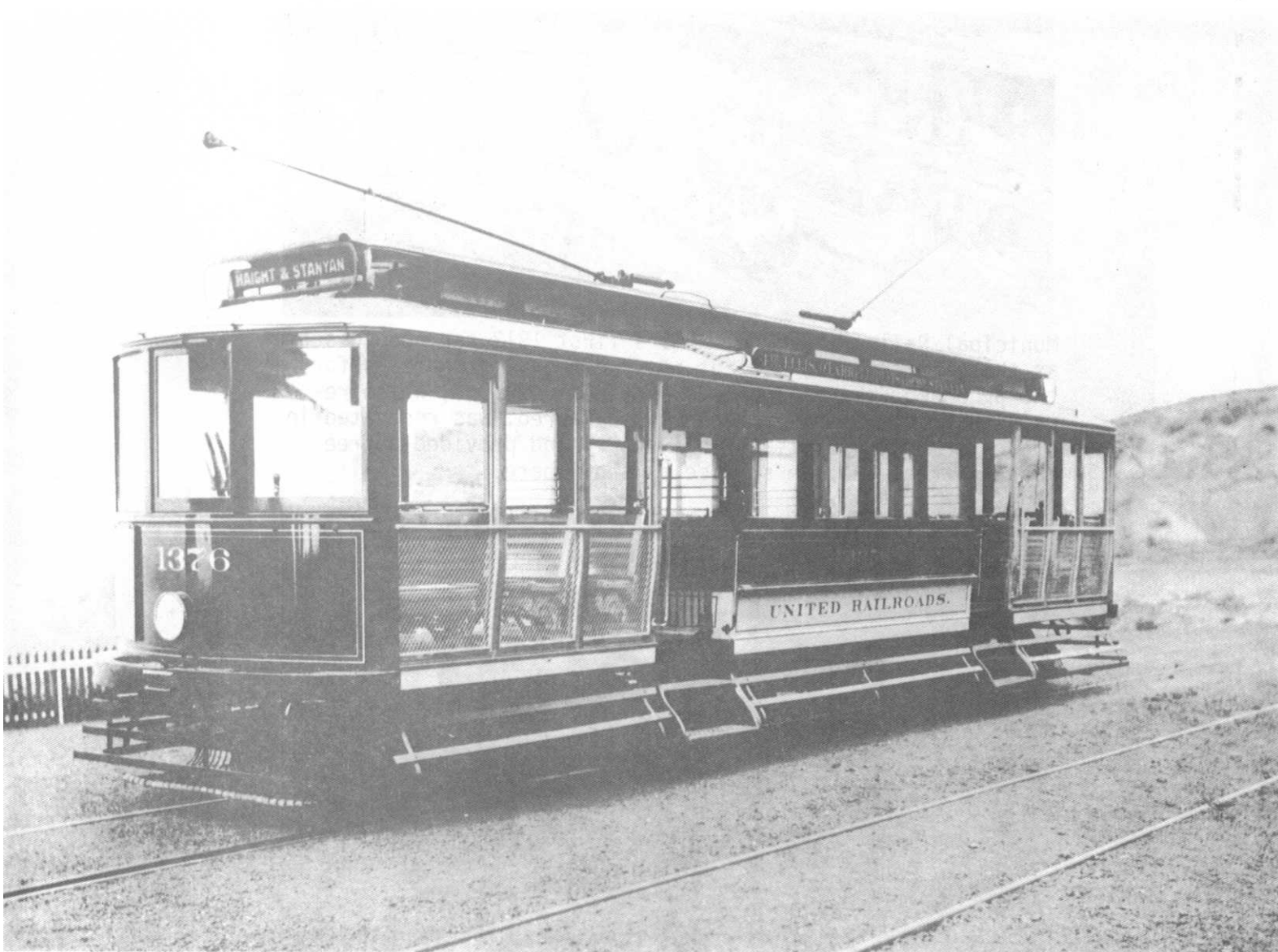
As indicated earlier, it is estimated that nine additional conventional, old-style streetcars will be required to provide E-EMBARCADERO service. There are a number of sources from which such a fleet could be assembled, and no specific recommendation is made at this time. They include:

- (1) New "old-style" cars. A vintage San Francisco streetcar design might serve as a prototype for a new fleet. Just as "new" cable cars are placed in service each year, the same skills could be applied to construct new "old" streetcars. Electrical and mechanical equipment might be salvaged from older cars soon to be retired in Europe or Australia. Alternately, new old-style car bodies could be fitted with PCC car components, as was suggested in 1974. (See Figure VI-6B.)
- (2) Existing old MUNI Equipment. Two "iron monsters" remain on the property, others might be returned from railway museums. This nucleus might be supplemented by additional non-MUNI cars which might be available from museums. Substantial rebuilding would probably be required for at least some of these cars. Similar to this proposal, it might be noted that New Orleans continues to operate a fleet of refurbished, conventional streetcars in regular service. (See Figure VI-7).
- (3) Acquire old-style cars from other cities. Detroit, Michigan, and Yakima, Washington, both have American-built cars in operation today which were acquired from Portugal; and Seattle, Washington, intends to operate cars from Melbourne, Australia. (See Figure VI-8.)
- (4) New cars. One alternative to historic cars still remains the use of LRVs or conventional PCCs in place of historic cars. While this would probably be a less desirable alternative given the nature of the proposed service, it should not be discounted entirely prior to a more thorough analysis of the proposal.

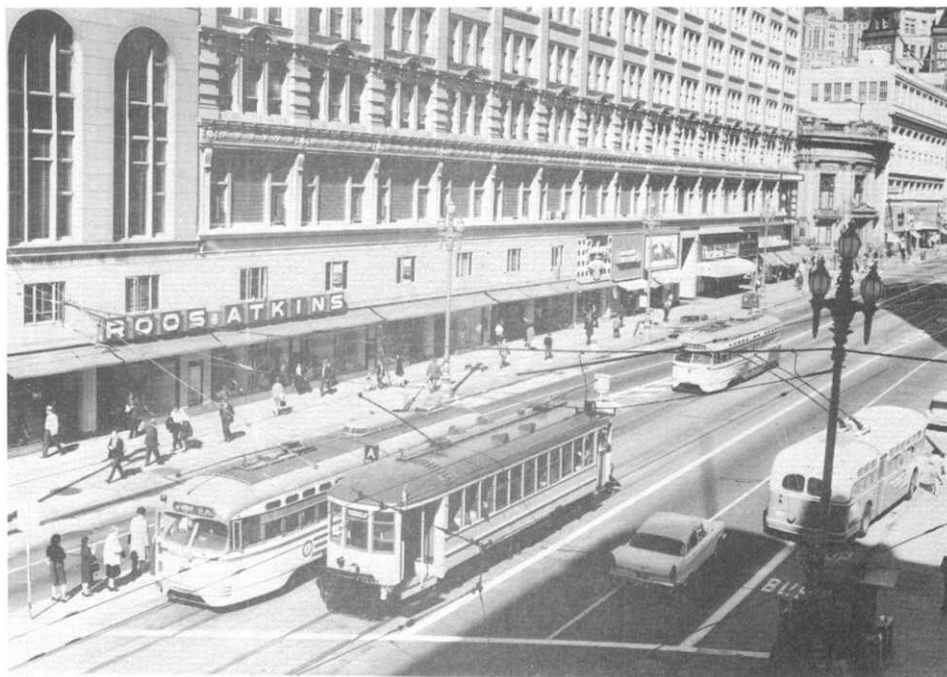
Table VI-1
5-YEAR LIGHT RAIL FLEET DEVELOPMENT SUMMARY

	1979	1980	1981	1982	1983	1984
Active PCCs	85	0	0	0	0	4
Inactive PCCs	30	85	35	35	35	31
LRVs	100	100	100	115	115	115
Conventional Streetcars	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>10</u>
Total Active Fleet	186	101	101	116	116	129
Net Additions to Active Fleet	99	--	--	15	--	13

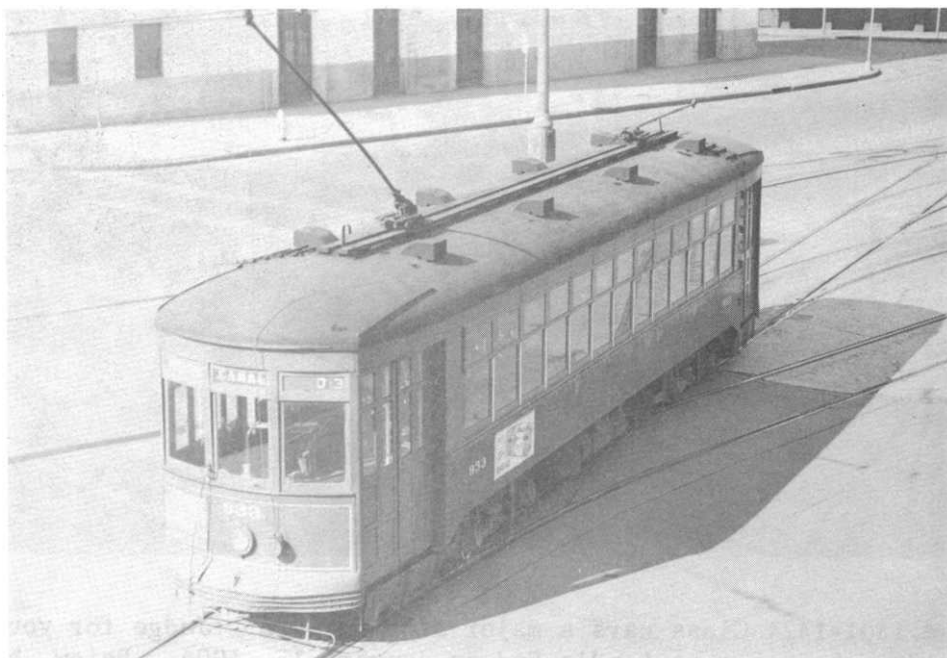
Figure VI-6B
"OLD-STYLE" CAR
(1905-1906)



Were the 1301-1424 Class cars a major step forward? Judge for yourself! Above, 1376 when new; at Land's End on January 15, 1906. Below, hitherto largest city cars were 40-foot electric cars rebuilt from cable cars; here, 1207 on Folsom St., January 5, 1905. These rebuilt cars were in the 950, 1000, 1100, and 1200-1215 Classes. (Both, URR)



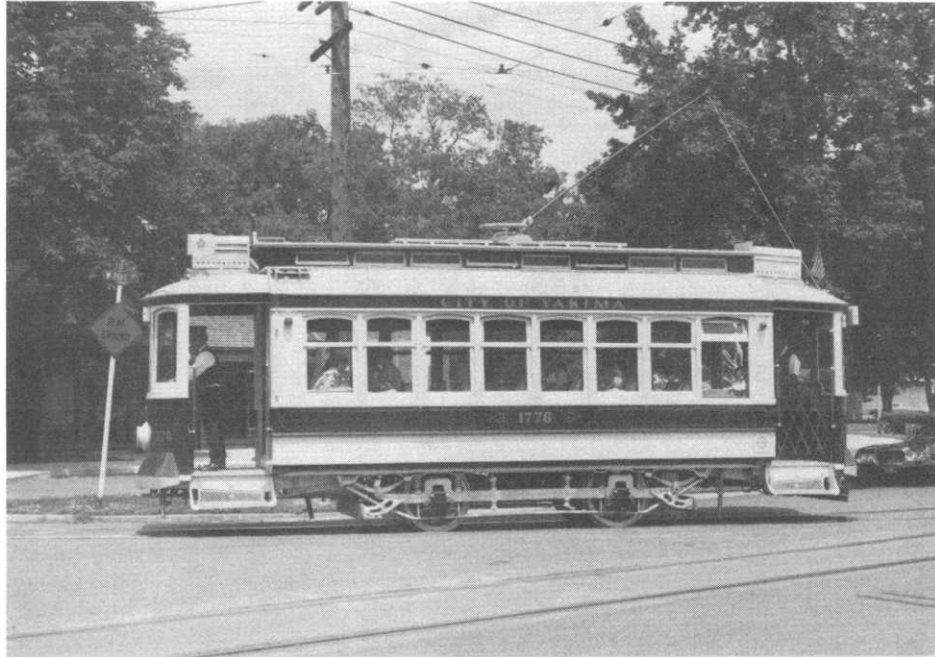
Municipal Railway Car One, MUNI's first 1912 car, could serve as the prototype for a fleet of traditional streetcars for the proposed Embarcadero rail service. Car One, which remains operable and is frequently chartered, was renovated in 1962 for MUNI's fiftieth anniversary and provided a free Market Street shuttle service as shown here.



933 is typical of the cars built in 1923-24 for the New Orleans Public Service. They were partially rebuilt in the 1960's using parts from obsolete trolley coaches, and successfully continue in service on the St Charles Line.

Figure VI-8

"OLD-STYLE" STREETCAR FROM ABROAD

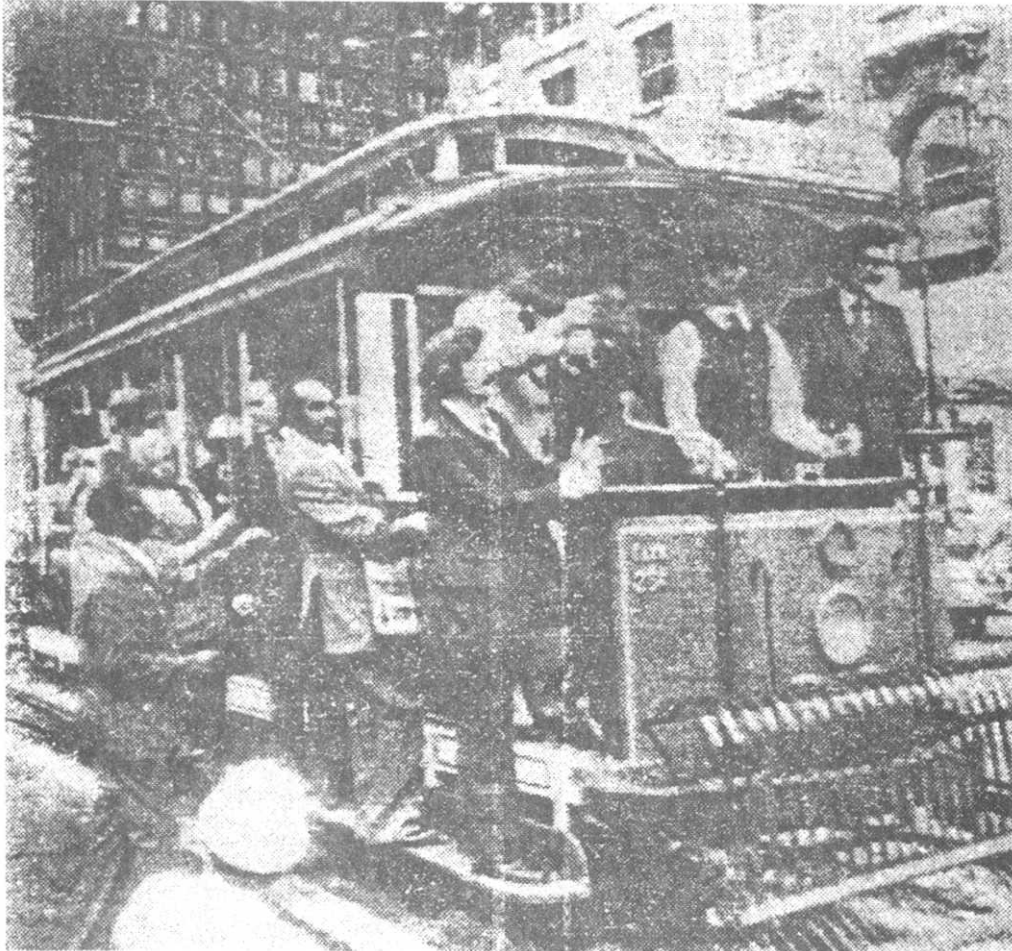


Several American cities, including Memphis and Detroit, have taken steps to obtain antique American-style cars from European systems, where a number remain in service in good-to-excellent condition. Car 1976 is one of two obtained from Oporto, Portugal, and now operated in a special, limited service in Yakima, Washington.

Figure VI-9

"THE TROLLEY'S COMEBACK" IN DETROIT

-S.F. EXAMINER ☆ Tues., Sept 21, 1976



The trolley's comeback

Nostalgia is nice and can even pay off, as Motor City is learning. In the Fifties, Detroit phased out its trolley line as old hat. Yesterday, with federal funds, three fire-engine-red trolley cars clanged up Detroit's main boulevard for the first time in 20 years. Along with a new downtown mall and a restored Greektown, the cars are part of a

multimillion-dollar plan to attract shoppers back to the deteriorating downtown. The man who drove Detroit's last streetcar into its garage 20 years ago — Eddie Carr — was called back to guide the first trolley back into operation. How did it feel to be back in business? "You can't find a better feeling in the world," he sighed.

B. CABLE CARS

A package of improvements is proposed for the City's cable railway system to increase safety, reliability and capacity; make the system more useful for residents; enhance the availability of service; and reinforce City planning policy. These improvements include engineering studies; reconstruction of track, sheaves, pulleys and beams (see glossary); modernization and reconstruction of the powerhouse; transit priority measures; new cars; new services; and extensions.

1. Engineering Study and Powerhouse Rehabilitation

Over the last two or three years the Railway's attention has been increasingly focused on technical analysis of the mechanical aspects of the cable car system, with a view to comprehensive engineering and modernization. The cable railway mode is basically safe and sound, and, while as a technology it has been known for over a century, none of the critical mechanical elements of the existing system are quite that old. For example, while some cars may date, in theory, from the opening of the Ferries and Cliff House Railway in 1887, little of the present cars date from that year. Typically, cable cars have vintage turn-of-the-century roofs on top of much newer bodies (in some cases, brand new).

The cars themselves, of course, are only part of the system. Recently, more attention has been given to the infrastructure of the system: the rails, yokes, sheaves, pulleys and depression beams that make up the track structure and the car barn and powerhouse which house the rolling stock, power machinery, and some maintenance functions.

The present powerhouse was constructed in 1907 on the site of the former structure which was completely destroyed in the earthquake and fire of 1906. Various changes have been made in the structure over the years, such as the replacement of steam engines by electric motors and the partial remodeling of winding machinery in the mid-sixties. The age of the structure and its vulnerability as the single power source for the entire system have led the Railway staff to consider its reconstruction. The intent is to provide a safe and reliable plant, using modern techniques wherever possible, but retaining the historic character of the building and, indeed, of the entire cable railway system.

In order to prepare complete, detailed and sound specifications for the reconstruction of the powerhouse and car barn, the Railway has undertaken a major engineering study of the installation. This study, costing in itself \$415,000, is being done by the consulting firm of Chin and Hensolt. It is expected to be completed in 1979 and will lead to an UMTA capital grant application for 80% financing. Hopefully, some work can commence in October, 1979.

2. Reconstruction of Track and Way

In addition to the car barn and powerhouse itself, much of the remaining physical structure of the cable car system is in need of extensive rehabilitation. Recent depression beam failures have only accentuated the need to replace tracks and related structure and to improve the general condition of the system's physical plant.

Reconstruction and rerailing of the existing cable car system was included in the Municipal Railway's Transit Improvement Program (TIP) when that program was developed some years ago. That, together with replacement of the strand alarm system, which detects frays and other cable defects, are outstanding TIP projects, programmed for 1979-1982. This reconstruction and replacement effort is expected to cost \$10.5 million, with \$8.4 million funded from UMTA Section 3, \$1.8 million from California Article XIX (Proposition 5) funds, and \$300,000 from the San Francisco Municipal Railway Improvement Corporation (SFMRIC).

In 1976, the Ames Research Center of the National Aeronautics and Space Administration (NASA) conducted a study of MUNI's cable railway system to make some observations and recommendations on the system's physical plant and operations. A number of observations relating to the track structure and way were made, of which the most critical related to the design of the system's depression beams (devices that hold the cable down at the foot of a slope, swinging out of the way to permit passage of a grip and then swinging back automatically). The Ames group recommended that a redesigned and standardized beam of modern materials be employed to replace the metal and wood devices now in use. After more detailed study and engineering design, the Railway has installed a prototype beam of metal and polymer plastic at Broadway and Mason Street. It is hoped that the new beam will be more resilient and longer lived than the present beams; if it operates satisfactorily through its three-month test period, it is likely that all 71 beams on the system will be replaced by the new design. Other improvements to the track structure and way are being made on an ongoing basis; the Powell Street and Mason Street cables, for example, were recently combined to simplify maintenance and operations procedures and reduce their cost.

The Chin and Hensolt engineering contract, in addition to design of and preparation of a bid document for reconstruction of the car barn and winding machinery, includes an inventory of the current condition of the remainder of the system - tracks, sheaves, pits, yokes, turntables and so on. Based on this inventory, the firm will develop a comprehensive rehabilitation plan to make the system safe, reliable and dependable, as well as easier to maintain. The complete rerailing of the system called for in MUNI's TIP program when it was originally set up, will be deferred until this work is completed so that the whole job can be done at one time. The cost of this reconstruction, provided management and the Public Utilities Commission decide to undertake it, has not yet been

determined.

3. Improvements to Rolling Stock

As part of the Railway's general efforts to improve the rolling stock of the cable car system, the firm of Thomas Lunde, Inc. has been retained to investigate and design improvements to the cars themselves. Lunde will be developing specific changes to the design of the cars as recommended by the Ames Research staff. Specifically, this \$48,000 engineering contract will lead to a standard design for a new "old" car, using cable railway technology but incorporating modern methods wherever possible; special attention is to be given to development of an hydraulic disc braking system and improved lighting through the installation of an on-board alternator. Lunde will develop a complete standard specification for cable cars which will be used in the Fall of 1979 to solicit bids for the construction of three new cars; funding for these cars is included in the Railway's TIP program.

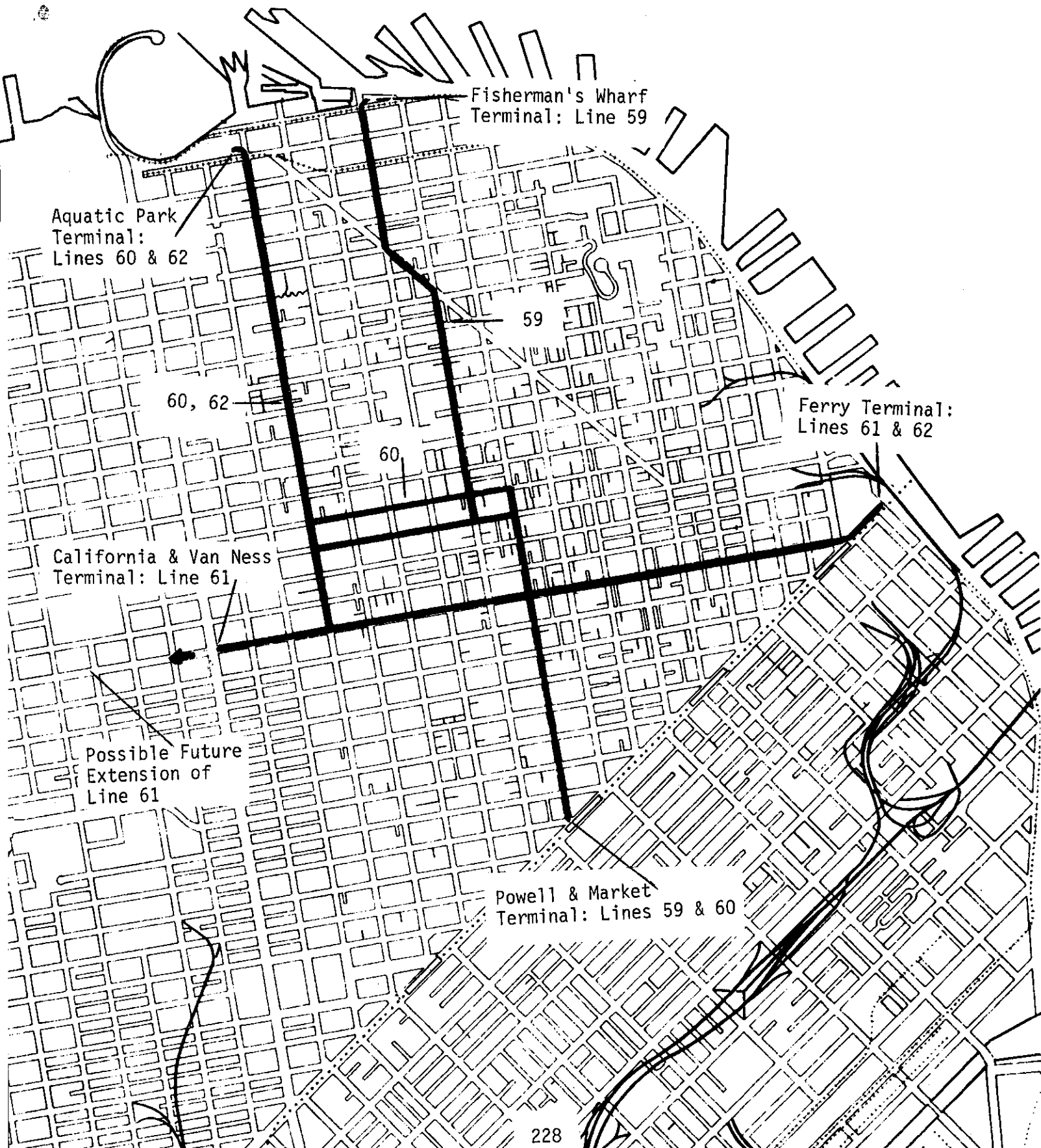
With new cars of a standardized design in operation, a retrofit program (refitting parts to the body) can begin on the remainder of the fleet. The use of standardized parts and procedures will make possible a regularized, more effective, and less costly preventive maintenance program on the cars.

4. Fisherman's Wharf Extension (See Figure VI-10.)

It is proposed that line 59-POWELL & MASON be extended three blocks from its current terminus at Bay and Taylor Streets along Taylor Street to a new off-street terminal on the northeast corner of Taylor and Jefferson Streets at Fisherman's Wharf. This project is a long-standing one which was also included in the original TIP program. It was included in the recommended Northern Waterfront Plan of 1968 prepared by consultant John S. Bolles Associates and reaffirmed in the Northern Waterfront Plan (1969) and the Plan for the Northeastern Waterfront (1977), both adopted by the City Planning Commission. It is part of a comprehensive program to improve the transportation situation in the Fisherman's Wharf area by expansion of transit services, inauguration of a one-way street pattern on Beach and Jefferson Streets, and establishment of a passenger staging area and off-board fare collection to reduce fare evasion. It is also located at the activity hub of the Wharf so that improved service will be provided to passengers destined to the Wharf (the line now stops three blocks short of it). It is not anticipated that additional equipment will have to be pressed into service to meet the operating demands of this extension.

Figure VI -10

PROPOSED CABLE CAR ROUTES



The extended line would involve northbound operation in an exclusive, transit-only "contraflow" lane on the east side of Taylor Street. Southbound, cars will move in a lane in which automobile traffic will be permitted. The extension is estimated to cost \$1.9 million; \$1,520,000 is to be covered by an UMTA Section 3 capital grant in the TIP program, with the 20% local match of \$380,000 programmed for the City's bridge toll revenues.

5. Extension of California Street Line to Ferry

In order to provide an improved Municipal Railway/Golden Gate Ferry interface, as well as a more direct transfer connection between the California Street cable car line and the E-EMBARCADERO streetcar service; it is recommended that cable car line 61-CALIFORNIA be extended eastward from its current terminus at Market, Drumm and California Streets to the Ferry Building. This project, like the extension of line 59-POWELL & MASON, was included in the recommendations of the 1968 Bolles Northern Waterfront Plan, although Bolles generally envisioned the terminus in "Embarcadero Plaza" (now Justin Herman Plaza). The precise location of the terminal should await final decisions about the Embarcadero Freeway and any replacement roadway in front of the Ferry Building. Construction of this link should be coordinated with all other construction projects in this area. It is recommended that the cable cars operate in an exclusive "side-of-the-road" private right-of-way on the north side of Market Street if possible; in this way, conflicting movements with Municipal Railway trolley and motor coaches serving the "Ferry" loop can be eliminated. The achievement of this objective would be enhanced by the removal of through automobile traffic from this part of Market Street.

The opportunity for development of a lucrative "back-haul" passenger traffic is very attractive on this transit line. Present peak-hour commuters on the Golden Gate Ferries, and presumably the Tiburon Ferry as well, are heavily oriented to the Financial District. Line 61 operates up California Street directly through this area, neatly providing a direct link between it and the ferries. Additionally and most importantly -- the ferry commuters would be travelling in the direction opposite the general rush-hour flow in the city. The morning crush is presently east-bound, with available westward capacity available for Marin commuters at no extra operating cost to the City; a similar but reversed situation exists in the evening peak. The combination cable and ferry trip would also probably possess a strong off-peak, recreational riding appeal.

No estimate has been made of the probable scheduling requirements for this extension, but it is at least possible that it is short enough to be operated without the need to assign more equipment to line 61. No engineering estimates have been made of the proposed extension; however, as it is of a length similar to that of the extension of line 59, it appears reasonable to assume an approximate figure of \$2 million.

It is recommended that this cost be split between UMTA and bridge toll financing; since there would be a considerable potential benefit to Golden Gate Ferry commuters, it is possible that some financial participation by the Golden Gate Bridge, Highway and Transportation District could be considered.

6. Proposed New Line 62-CALIFORNIA & HYDE

It is recommended that a new cable car route be established over basically existing revenue and non-revenue cable car trackage. This line, using double-end cars of the California Street (or former Sacramento-Clay Streets) variety, would operate from the Hyde and Beach terminus of present line 60-POWELL & HYDE via Hyde, California and Market Streets to the Ferry. It would return via the reverse of the same route. Initially, the Downtown terminal could be located at the present Drumm Street crossover of line 61-CALIFORNIA.

This new route will make it possible to increase cable car capacity to the Northern Waterfront by 50%. The 1954-57 reduction and consolidation of cable lines placed the entire burden of Northern Waterfront cable car service on Powell Street, whereas a second route over Hyde, Jones and O'Farrell had been available previously. In view of the extensive development of the Northern Waterfront in the ensuing 20 years, it seems obvious that the mid-fifties cable abandonments were, as charged by citizen groups, a mistake. Powell Street has a maximum capacity of 24 cars per hour (2-1/2 minute headways), which allows a maximum of 12 cars per hour on each of the two branches feeding Powell Street (Hyde and Mason). However, Hyde and Mason Streets could each handle more than 12 cars per hour were it not for the Powell Street bottleneck.

Fortunately, the track connection on Hyde Street from Jackson to California has been retained for California Street pull-in and pull-out movements. With this link, a new route can be operated using the available operating capacity of California Street. By constructing a new curve and, at the time cable car tracks are rebuilt, installing some additional trackwork on California Street, the present maximum 24 cars per hour to the Northern Waterfront can be increased to 36. Of these, as many as 14 cars per hour could be double-end cars with a greater capacity than the single end Powell type cars now operated on Hyde and Mason lines; thus, the cable capacity to the Northern Waterfront could be increased considerably, probably by more than 50%.

This new route, the 62-CALIFORNIA & HYDE, between the Financial District and Russian Hill is intended to replace the present Hyde and Chestnut branch of the 25-BRYANT as well as the proposed section of POM line 47 north of Jackson Street. For the evening rush hour, and in order to avoid most of the tourist traffic, the service could be "short-lined" at both ends. Cars could originate short of the Downtown terminal, and the existing

crossover at Hyde and Filbert could be reactivated to reverse cars. The operation of this line should be dependent upon the identification of a new source of operating funds to offset any difference in costs between revenues and operating expenses.

Engineering requirements for the project include: a pull curve at Hyde and California Streets; trackwork on Hyde at Washington and Jackson Streets and on California from Hyde to Jones Streets; new crossover on California in the Financial District, at or near Sansome; new crossover at Hyde and Beach Streets; reactivation of the crossover on Hyde at Filbert; and additional cars. Various track and cable configurations to operate this line have been considered by staff. Although engineering analysis needs to be done to ensure the operability of these alternatives; an initial planning analysis suggests that the main problems may be inadequate storage area for additional cars and inadequate power in the winding machinery. Both of these issues should be given full consideration in the Chin and Hensholt study of the powerhouse and carbarn.

7. Possible Future Westward Extension of Line 61-CALIFORNIA

Over the last year, the Municipal Railway has received some expression of interest in the possible westward extension of the California Street cable car line to serve the Western Addition and Pacific Heights. The most commonly discussed terminals have been Nihonmachi (Japan Center) and the Fillmore Center site near Fillmore and O'Farrell Streets. A possible route, for example, could be west on California from the present Van Ness Avenue terminus to Webster, then south on Webster to an off-street terminal near Geary or O'Farrell.

It is recommended that, over the next year, a study be made of this possible extension; and that all interested citizens, merchants groups, and public agencies be invited to participate. Based on the outcome of this study, recommendations can be made by the Railway to the Public Utilities Commission regarding the possible inclusion of an extension in a future 5-Year Plan update.

8. Rolling Stock

A summary of actions to improve the condition of the cable car fleet has been presented in Section B-3. In addition, an enlargement of the fleet is proposed to provide a sufficient spare factor (for preventive maintenance and standardization retrofit programs) and for the expansion of the system proposed in this 5-Year Plan.

Single-end "Powell" Type Cars (See Figure VI-11.)

Three cars of this type, built to the new standard specifications being developed by Thomas Lunde Inc., are to be constructed. The cars, as noted in Section B-3, have been included in the Railway's TIP program from its inception and will be funded 80 per cent by an UMTA Section 3 capital grant and 20 per cent by bridge tolls. It is expected that these cars will go out for bid in late 1979; delivery dates are uncertain at this time, but it is assumed that one car will be on the property in 1980 and two more in 1981.

Double-end "California" Type Cars (See Figure VI-11.)

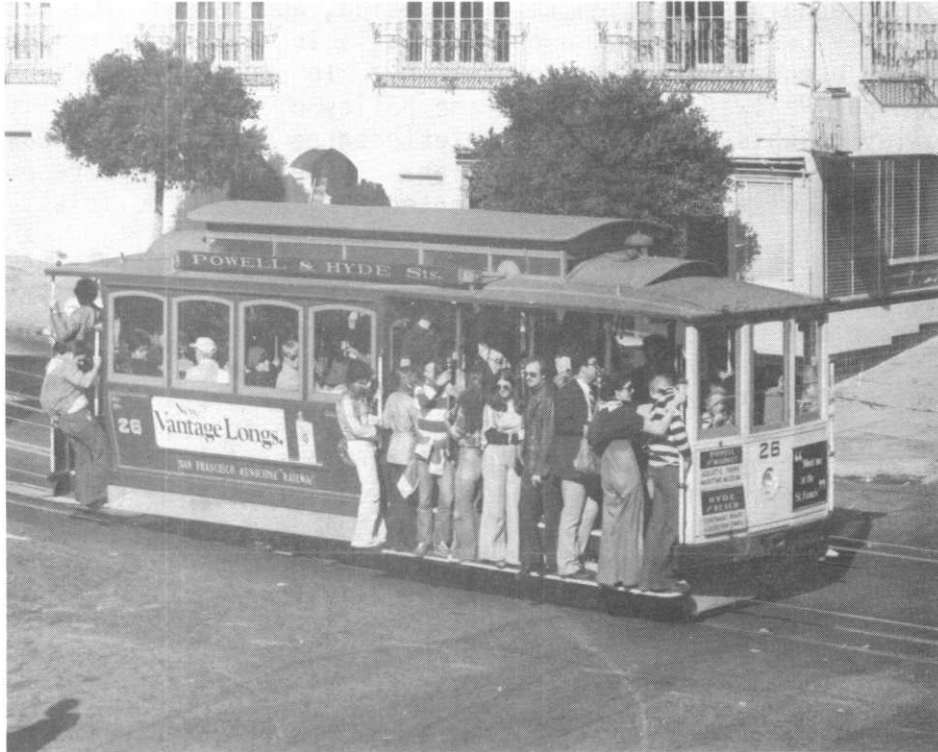
Operation of recommended line 62-CALIFORNIA & HYDE will require enlargement of the Railway's fleet of double-end cable cars. Presently, there are 12 cars on the roster, of which a maximum of seven are scheduled; theoretically this leaves five spares, although at least one of the spares is not an active car. The staff estimates that operation of line 62 could require a maximum of 14 cars, depending on the final level of service specified on all lines; a reasonable spare requirement would bring the total to 20 cars. Assuming that one of those cars would be provided through rehabilitation of the presently inactive spare car, a total of 19 new double-end cars would be needed. Further refinement of engineering requirements for these cars and a more detailed estimate of probable lead and delivery time is necessary; at this time, however, it is estimated that the cars could be delivered in 1982 and 1983.

Table VI-2
5-YEAR CABLE CAR FLEET DEVELOPMENT SUMMARY

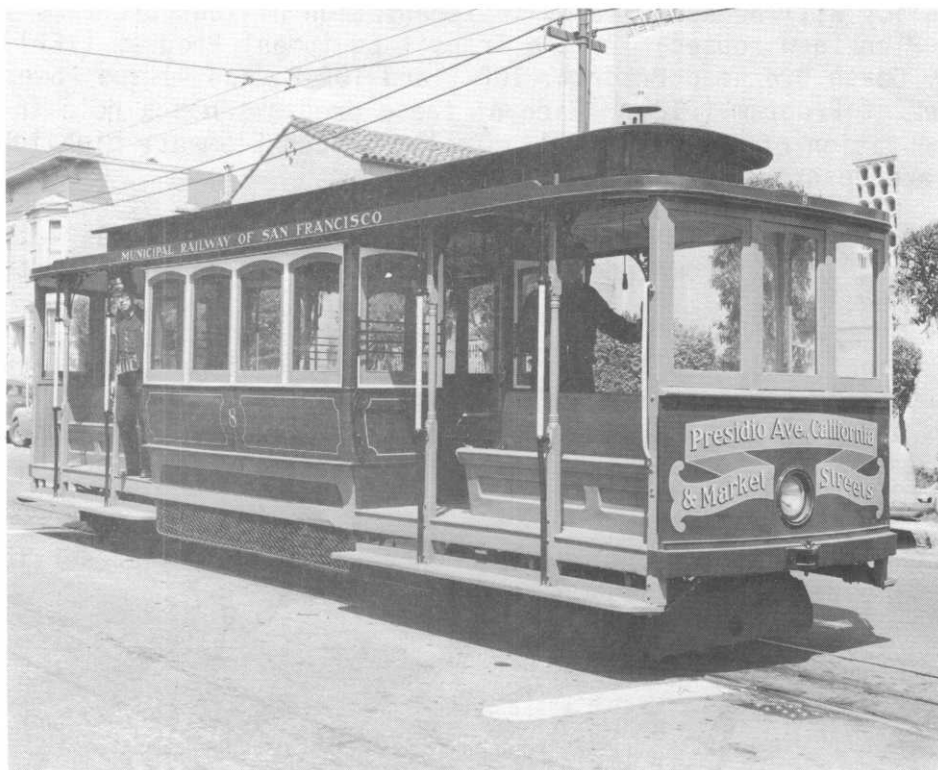
	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Single-End Cars	28	28	29	31	31	31
+ Acquire	0	1	2	0	0	0
- Retire	0	0	0	0	0	0
Subtotal	28	29	31	31	31	31
Double-End Cars	12	12	12	12	12	12
+ Acquire	0	0	0	9	10	0
- Retire	0	0	0	0	0	0
Subtotal	12	12	12	21	31	31
Total Cars	40	41	43	53	62	62

Figure VI-11

CABLE CARS



Single End Powell-Type Cable Car



Double End California-Type Cable Car

C. TROLLEY COACHES

The goals of the Municipal Railway 5-Year Plan Trolley Coach Element are to reduce noise pollution, air pollution, and fossil fuel consumption (particularly petroleum consumption), while increasing patronage, patron comfort and economic benefits to the City. To accomplish these goals, the Municipal Railway shall follow the policy of expanding and improving the trolley coach system to the greatest degree economically feasible within the five-year period of the plan. This policy is in response to and consistent with the following adopted City and PUC policies:

RESOLVED, That the General Manager of Public Utilities and the Commission's staff are directed to conduct their efforts to improve the Municipal Railway in such manner so as to optimize the use of the City's electrical facilities and electrical transit equipment thereby placing emphasis on electric-powered transit in San Francisco with a resulting reduction in pollution of the environment by poisoning of the air and a rising level of objectionable noise which is produced by motor coaches. (PUC Resolution No. 69-0828)

FURTHER RESOLVED, That this Board, as a matter of policy, supports the progressive expansion, according to sound principles of mass transportation planning, economics and design, of San Francisco's electrically, powered transit system as a primary means of reducing air and noise pollution, optimizing the use of the city's electrical facilities, and enhancing the quality of public transportation in San Francisco. (Board of Supervisors Resolution No. 213-78)

This policy will be achieved by implementation of four programs 1) the Master Plan (new routes), 2) the Transit Equipment Program (TEP), 3) the Trolley Coach Overhead Program, TOP-1 and TOP-2, and 4) the Power Improvement Program (PIP). Each of these programs has a role in the implementation of the 5-Year Plan Trolley Coach Element, highlights of which are described below:

- Stage I Electrification. Two new trolley coach lines - the 24 and 1/55 as recommended in the POM Study and included in the 5-Year Plan.
- Retention of trolley coach service on the streets now served by trolley coaches with a few minor exceptions.
- Important extensions of six lines -- 5-Year Plan lines 6, 8, 14, 20, 22, and 41.
- Three major reroutings giving new coverage or faster service on 5 Year Plan lines 3, 30, and 33.

- A vehicle demonstration program to test new vehicle types and accessories such as articulated or double-deck vehicles, and battery pack or auxiliary internal combustion power supplies.
- Pending the outcome of this demonstration program, the addition of 24 articulated trolley coaches to the fleet to provide greater economy and efficiency on heavily patronized lines, and to free standard size trolley coaches for service on new lines.
- A retrofit program to eliminate the jerkiness problem in the present Flyer fleet.
- A demonstration to test improved designs of overhead wire.
- A new trolley coach storage facility at the Geneva car barn site.

The new routes, extensions and connection listed above are described and explained in greater detail in Chapter V, Section C of this Plan. Descriptions of the new trolley wire required are contained in this section.

1. Background

The expansions planned would be particularly economical for the City due to the fact that MUNI has on hand both spare vehicles, purchased at what are now bargain prices, and spare DC power conversion and distribution capacity, built into the system at low cost as part of the PIP power rehabilitation projects. The trolley coach as a technology has been in existence as long as the motor bus -- since before World War I. It did not come into vogue, however, until the 1930's and '40's when fairly advanced versions began replacing wornout streetcar lines. Trolley coaches had the advantage of being able to use the transit system's capital investment in overhead wire without the cost of maintaining track and paved roadway, as generally mandated by local governments for streetcars. They were also seen as being an economical, reliable, quick, and comfortable mode. The MUNI followed this industry trend in the 1940's by converting about half the streetcar lines inherited from the somewhat dilapidated Market Street Railway Company plus a few of its own original streetcar lines to trolley coach. Today, citizens and public officials in San Francisco alike recognize environmental superiority of the trolley coach.

The trolley coach is basically a motor bus with an electric motor substituted for the diesel engine. Two poles mounted on the roof collect electricity from two overhead trolley wires to power the motor. From this basic difference stems the energy, air pollution, noise, and economic advantages of the trolley coach and the one disadvantage -- the need to operate from overhead wire. The various characteristics of trolley coach

technology are discussed in great detail in 5-Year Plan Issue Paper 3: The Environmental and Economic Feasibility of Trolley Coach Expansion. The following is a summary of the environmental and economic justification contained in that paper for adopting a policy of trolley coach expansion:

- Energy

Trolley coaches use less fuel than diesel coaches. Electricity purchased by the MUNI is generated by Hetch Hetchy hydroelectrically, requiring no imported fuel. However, if the electricity for trolley coaches were generated from burning oil, the trolley coach would still use less; MUNI's existing trolley coaches are 11% more efficient than diesel coaches. Trolleys purchased in the future with electronic control and regenerative braking will be about 30% more efficient. (Regenerative braking allows power from braking to be fed back into the overhead wire.)

- Air Pollution

Power for trolley coaches in San Francisco is generated hydroelectrically without pollution. With the new technology now becoming available, even if the electricity were generated by burning coal, the trolley coach would be two to five times less polluting than the motor coach, depending upon the amount of sulphur in the coal.

- Noise and Vibration

Noise from trolley coaches is generally not measurable above street noise.

- Hills

Trolley coaches climb hills, especially steep hills, faster and more reliably than diesels and with less strain. They also use the motor to produce reverse torque to descend hills, thus saving the brakes and increasing safety. The ratio of diesel coach energy consumption, air pollution, and noise to that of the trolley coach increases dramatically on hills.

- Wire

The only disadvantage of the trolley coach is the need to operate from overhead trolley wires. Only two parallel wires in each direction are required, however, and any visual problems can be mitigated by planting trees and by supporting the two wires from well designed bracket arms or eye bolts attached to sturdy buildings. The number of support poles can also be reduced by using street lights designed to double as bracket arm wire supports.

- Patron Appeal

An analysis of available patronage statistics and patron surveys indicates a strong preference on the part of the riding public for the trolley coach over the motor coach. These patronage

statistics strongly suggest that the trolley coach may also attract more patrons to transit. At the 5-Year Plan outreach meetings throughout the City, response to recommendations for electrification was quite favorable.

- Economics

Trolley coaches last about twice as long as diesels in San Francisco and are cheaper to maintain and power. These savings more than offset the cost of maintaining the overhead wire and, on moderate lines (ten-minute headway or better), can offset most or all of the cost of installing the trolley wire. On heavily used lines such as the 55-SACRAMENTO (5-Year Plan 1-CALIFORNIA), the net savings would be substantial.

2. Current Status

a. Rolling Stock

The existing MUNI trolley coach system consists of approximately 58 miles of double-track overhead wire serving 15 trolley coach transit routes. The approximately 82 round-trip route miles require 251 coaches in the evening peak. The entire existing system -- both overhead wire and vehicles -- is in the process of being either replaced or refurbished under the TOP-1 program. The Railway has 345 new Flyer trolley coaches, almost all delivered in 1976 and 1977; these replaced an older fleet purchased between 1948 and 1952. The current peak requirement, including the committed 41-UNION plus 15% spares, is 299 vehicles. The additional 46 vehicles were purchased in anticipation of converting motor coach routes such as the 55-line to electric operation -- an improvement which has been advocated since the 1950's. This acquisition, in keeping with City policy calling for increased use of electric vehicles, has proven most fortuitous, as prices for rolling stock have risen dramatically since then. These coaches were purchased for \$73,000 and would probably cost \$130,000 today, even without wheelchair lifts.

b. Committed Electrifications

In addition to the existing system, the City has approved and the Railway is committed to rebuilding the South-of-Market segment of the 41-UNION line on a new alignment on Folsom Street from Main to Army Street using Howard west-bound from Beale to 14th Street. This new routing, necessitated by the introduction of a one-way street pattern on Folsom and Howard in 1970, was approved at that time by the PUC and Board of Supervisors for operation by trolley coach on Howard and South Van Ness using Folsom east-bound from 11th to Main Street. The BART-MUNI Coordination Study later recommended that the line use Folsom Street in both directions from 14th Street to Army in order to provide a better

spacing of lines in the Mission District. Construction of the line, to be financed with general funds and Hetch Hetchy revenues, was approved, but the project has been delayed due to work on MUNI Metro overhead wire construction and, recently, by a shortage of funds at Hetch Hetchy resulting from the drought. The City has since applied to UMTA for 80 per cent funding to do the work under the TOP-1 program. An extended and modified version of this route is included in the new Master Plan and is designated as the 20-COLUMBUS.

c. Overhead Wire

Most of the existing trolley coach overhead wire system was installed between 1948 and 1952 with some sections installed as early as 1935 and 1939 (for the 33-ASHBURY line and R-HOWARD line, now known as the 41-UNION-HOWARD line).

The TOP-1 program also includes \$11,755,000 for rebuilding the overhead wire system. It is anticipated that 30 per cent of the poles, 30 per cent of the wire, and 100 per cent of the special work (switches, crossings, and turns) will be replaced by the end of 1984, when the program is completed.

d. Electric Power

The Railway's electric transit overhead system is owned and operated by Hetch Hetchy Water and Power, another department of the San Francisco Public Utilities Commission. Hetch Hetchy is now in the process of replacing the entire 600 volt DC electric power conversion and distribution system which was originally installed between 1902 and 1926 and is now obsolete, electrically inefficient, costly to operate, and dilapidated. This project is part of the \$50,513,700 PIP (Power Improvement Program), which involves new rectifier substations, the replacement of the obsolete rotating power conversion equipment with solid state silicon rectifiers, the replacement for both trolley coaches and LRVs of the tattered and unsightly overhead feeder cable system with feeder undergrounded in ducts, and the reconstruction of the streetcar overhead trolley wire system for LRV pantograph operation. (See glossary.)

With foresight, all of the new rectifier substations have been specified with 25 per cent spare capacity for economical future expansion. (It is cheaper to build additional capacity by initially specifying larger units than to add rectifier units later.) Similarly, at least two additional ducts were included in all new underground duct banks. This spare capacity can be put to good use in concert with the feederless system recommended for the new trolley lines proposed in this Plan. (With the feederless system, underground feeders do not have to run along the entire length of a trolley route; they merely have to link the trolley wire to the substation at strategic points.)

3. 5-Year Plan Electrifications

a. Lines 1-CALIFORNIA and 55-SACRAMENTO

These two lines will be through-routed under the 5-Year Plan, with all-day service from 33rd and Geary provided by line 1 and added rush-hour service provided by the 55. The 55-SACRAMENTO diesel bus line, one of the most heavily patronized in the City, is also one of the hilliest routes in the City. One stretch of three blocks from Grant to Mason on Sacramento has successive gradients of 14.8 per cent, 18.7 per cent and 17.1 per cent. The average climb is 120 feet per mile on the existing #55 route -- double the estimated system average of 58 feet per mile. While ascending grades on almost every block of the route, coaches must operate at full throttle for prolonged periods, producing excessive levels of noise and air pollution on narrow streets and straining equipment. Motor coaches are not well suited for this type of service, making maintenance for vehicles on this line excessive and reliability poor. It is now necessary to have a garage truck stationed at the end of the line during the rush hour to replace transmission fluid which has foamed out from overheating. Even with this precaution, it is frequently necessary to ask passengers to get off and walk when buses are too overloaded to move on the steepest hills. The trolley coach, on the other hand, can negotiate such steep grades quietly, without pollution, more rapidly, with far less energy consumption, and without mechanical stress or additional maintenance.

b. Line 24-DIVISADERO

The 1/55 line is probably the most extreme case in the City because of the combination of steep grades and high service level. However, the 24-DIVISADERO, though it does not have the extended steep grade nor as heavy patronage, has nearly the same average climb at 117 feet per mile, has shorter grades that are steeper, and has frequent enough service to justify electrification both environmentally and economically. The 21.2 per cent grade between 26th and Army on Noe as well as others nearly as steep on Noe and Castro on the proposed 24-DIVISADERO line mandate the use of the more powerful trolley coaches. Motor coaches would be unable to negotiate a 21.2 per cent grade with heavy loads and would be too noisy in any case. Therefore, the new line 24 is not intended to begin operation until wire has been installed for trolley coach operation.

c. Line 33-STANYAN

The 33-Line is another example of a trolley coach line which, like the 24, is justified more by environmental and service considerations than by economics. The 5-Year Plan 33-line would continue to serve the

same areas as the present 33; however, it would be extended at the north-west end, and be reoriented to the south on the eastern end. This is a substantial reroute, necessary to provide less circuitous service and service more complimentary to other routes in the system (See Chapter V, Section C.). A key to the plan for this line is the greatly shortened routing over 17th Street. There are continuous steep grades all along 17th Street from Castro Street to Cole Street on the 5-Year Plan 33 routing. This street already has heavy traffic; the addition of a diesel bus line would impact the residents excessively.

d. Line 3-JACKSON and 30-STOCKTON

The 5-Year Plan 3-JACKSON and 30-STOCKTON routes are somewhat different cases in that the electric portions of these lines would be substantially rerouted mid-route, and several other lines would be re-organized (See Chapter V, Section C for lines 3, 20, 30, 30X, 41, and 45X). The electrification of these two good-sized segments is justified as it provides important service improvements and the continuation of two heavily used trolley coach services at relatively low cost.

e. Additional Extensions

The remaining extensions of electrification in the 5-Year Plan are essentially modifications to existing lines to provide better coverage or improve intra-system connections. Those for lines 6, 14, 22 and 41 were recommended in the POM Study, and have been included in the 5-Year Plan. Extensions to lines 8 and 20 originated with the 5-Year Plan.

The 6-PARNASSUS would be extended about 4000 feet to West Portal MUNI Metro station over 14th Avenue. 14th is a new street, constructed years after the installation of the trolley line and a logical place to extend the line. This extension will provide residents of Golden Gate Heights/Sunset Heights access to MUNI Metro and West Portal shopping.

The 8-MARKET would be extended one block farther up the Castro hill. This will save some patrons a steep walk or transfer, and provide the Railway with a better terminal loop.

The 14-MISSION would be extended one-half mile to the Daly City BART station, where important regional connections can be made.

The 20-COLUMBUS would be extended over the steepest uphill grade in the system to provide service over Bernal Heights. It would also provide the isolated Alemany Projects with direct service to Downtown. This extension would be about 1-1/2 miles in length.

The 22-FILLMORE would be extended two blocks to provide better coverage for the Lower Potrero Hill community, and would bring better

transit access to MUNI's own Woods Division.

The 41-UNION would be extended into the Presidio to provide a replacement service for line 45-GREENWICH, which the 5-Year Plan recommends be withdrawn.

f. Extensions Not Recommended

Some extensions to the trolley system proposed by Wilbur Smith are not included in this Plan. At both ends of line 24-DIVISADERO, the POM study proposed electrification which the staff did not feel it could recommend at this time. At the north end, the elongation of the line over Pacific Heights to the Marina elicited much adverse reaction; while this could be a promising line, more work would be needed before this installation could be proposed by staff. At the south end, a meandering proposed extension on flat land beyond Third Street has been dropped by staff in favor of the seemingly more appropriate neighborhood service offered by line 81-FELTON. Extension of line 22-FILLMORE at its north end to Marina Safeway and Fort Mason was also proposed by the POM Study; this proposal has been dropped in favor of the access provided by line E-EMBARCADERO via the Fort Mason Tunnel.

g. Consideration of Further Conversions and Extensions

Further study should be given to the possible electrification of additional routes in the future. 5-Year Plan lines 25-SAN BRUNO, 26-GUERRERO, 31-BALBOA, 42-DOWNTOWN LOOP, and 71-HAIGHT-NORIEGA are all either sufficiently well-served or already operating under sufficient wire to merit their examination. In addition, the possible extension of line 12-OCEAN-VAN NESS into Fort Mason to provide superior access to this central unit of the Golden Gate National Recreation Area should be considered in cooperation with the staff of the National Park Service. The Railway staff is not recommending inclusion of these lines at this time, but further analysis appears to be warranted.

4. New Overhead Construction

The following are not descriptions of the operating routes, but only a listing of additional wire needed to operate the lines. (For route descriptions, see Chapter V, Section C.). All descriptions are for double track overhead construction except where indicated by the phrase "one-track" in parentheses. Where new wire is specified for a line it is not repeated for subsequent lines which share the wire. Special work is not indicated.

Line 1-CALIFORNIA

This line is subject to a major revision in the 5-Year Plan. Essentially, it is rerouted over the existing 55 route east of Presidio Avenue and extended south of Market using wire on the existing 41 line.

Additions: New wire is to be constructed on California between Presidio and Steiner on Steiner between California and Sacramento, on Sacramento between Steiner and Gough, on Sacramento between Gough and Sansome (one track), on Gough between Sacramento and Clay (one-track), and on Clay between Gough and Montgomery (one-track).

Line 3-JACKSON

This line is subject to a major revision in the 5-Year Plan. It is extended on its west end via Presidio Avenue to Geary and on the east end to the Ferry. It is also rerouted over Washington and Jackson from Fillmore to Leavenworth, and over Leavenworth and Hyde Streets between Jackson and Post, replacing part of the present 25-BRYANT.

Additions: New wire is to be constructed on Presidio Avenue from Post to Geary (one-track), on Geary from Presidio to Masonic (one-track), on Masonic from Geary to Euclid (one-track), on Euclid from Masonic to Presidio (one-track), on Jackson from Fillmore to Leavenworth (one-track), on Washington from Fillmore to Hyde (one-track), on Hyde from Washington to Post (one-track), on Leavenworth from Jackson to Sutter (one-track), and on Post

Line 4-SUTTER

This is a new line which will use existing wire on Presidio, Sutter, and Post Streets, with an extension to the Transbay Terminal

Additions: New wire is to be constructed on First Street from Market to the Transbay Terminal (one-track), on the Transbay Terminal apron, and on Fremont from the Transbay Terminal to Market (one-track). A passing wire will also be necessary at Presidio and California. For Post Street, see line 3-JACKSON.

Line 5-FULTON

This line will remain virtually unchanged under the 5-Year Plan except that the line will terminate at the Transbay Terminal instead of the Ferry Terminal, and that it will be routed directly eastbound in a contra-flow transit lane on McAllister from Hyde to Market.

Deletions: Wire is to be removed on Hyde Street from McAllister to Market. (The short-turn wire via Larkin, Golden Gate, and Jones should be retained.)

Additions: Wire is to be constructed on McAllister from Hyde to Market (one-track). For Transbay Terminal loop additions, see Line 4-SUTTER.

Line 6-PARNASSUS

This line will retain its existing routing under the 5-Year Plan with an extension at the western end to West Portal and a new eastern terminus at the Transbay Terminal.

Additions: Wire is to be constructed on Lenox Way from Ulloa to Taraval (one-track), on Ulloa from Lenox to Wawona (one-track), on Wawona from Ulloa to Taraval (one-track), on Taraval from Wawona to 14th Avenue, on 14th Avenue from Taraval to Quintara, and on Haight from Laguna to Market. For the Transbay Terminal Loop see line 4-SUTTER.

Line 7-HAIGHT

This line would not change its routing in the 5-Year Plan.

Line 8-MARKET

Under the 5-Year Plan, this line will continue on its existing route with a new terminal loop at the outer end.

Deletions: Wire is to be removed on Collingwood from 19th Street to 18th Street.

Additions: Wire is to be constructed on 20th Street from Castro to Diamond and on Diamond from 20th Street to 19th Street (one-track).

Line 9-RICHLAND

This line does not exist in the 5-Year Plan.

Deletions: Wire is to be removed on Richland from Leese to Andover, on Andover from Richland to Crescent, on Crescent from Andover to Murray and on Murray from Chestnut to Richland. (Short-term loop via Leese and Richland to Mission to be retained.)

Line 12-OCEAN-VAN NESS

This line will remain unchanged south of South Van Ness and Mission and

will be rerouted over Van Ness north of this point, replacing, in conjunction with the 5-Year Plan 42-DOWNTOWN LOOP, a portion of the 47 line.

Additions: New switches and connections will be required at South Van Ness and Mission.

Line 14-MISSION

This line will continue over its existing route with an extension to the Daly City BART station and a terminal loop at the BART station.

Additions: New wire is to be constructed at the BART station, on John Daly Boulevard from the station to Mission, on Mission from John Daly Boulevard to San Jose, and on Mission from San Jose to Sickles (one-track).

Line 20-COLUMBUS

This is a new trolley coach line which replaces parts of present trolley coach lines 30 and 41, and present motor coach lines 15 and 23.

Additions: Wire is to be constructed on Lombard from Van Ness to Franklin (one-track), on Franklin from Lombard to Chestnut (one-track), on Kearny from Sacramento to Columbus (one-track), on Sacramento from Kearny to Sansome (one-track, new wire to be shared with new 1-CALIFORNIA trolley line), on Front from Sacramento to Market (one-track), on Battery from Clay to Market (one-track), on Fremont from Folsom to Market (one-track), on 1st Street from Howard to Market (one-track), on Folsom from Fremont to 14th Street, on 14th Street from Howard to Folsom (one track), on Folsom from 14th Street to Ripley; thence on Ripley to Nevada, Cortland, Folsom Crescent (one-track); Putnam (one-track), Alemany (one-track), Ellsworth (one-track), and Crescent (one-track) to Folsom.

Line 21-HAYES

The portion of this line west of Stanyan is deleted in the 5-Year Plan and replaced with service on other lines. The remainder of this line will continue unchanged except that the line will be rerouted onto a contraflow transit lane on Hayes between Laguna and Polk to provide shorter and less circuitous routing.

Deletions: Wire is to be removed on Laguna from Hayes to Grove, on Grove from Laguna to Polk, and on Polk from Grove to Hayes.

Additions: Wire is to be constructed on Hayes from Laguna to Polk (one-track).

Line 22-FILLMORE

This line will remain unchanged under the 5-Year Plan except for a one-block extension at the eastern terminus.

Deletions: Wire is to be removed on 20th Street from Third Street to Tennessee.

Additions: Wire is to be constructed on Third Street from 20th Street to 22nd Street (one-track), on 22nd Street from Third to Tennessee (one-track), and on Tennessee from 22nd Street to 20th Street (one-track).

Line 24-DIVISADERO

This is to be a new trolley coach line under the 5-Year Plan following the route of the existing 24 motor coach line, with a major extension over Bernal Heights to Third Street on the southern end.

Additions: Wire is to be constructed on Webster from Washington to Jackson (one-track, connecting with wire to be constructed on Washington and Jackson for the new 3-JACKSON), on Divisadero from Jackson to Waller, on Castro from Waller to 26th Street, on 26th Street from Castro to Noe, on Noe from 26th Street to 30th Street, 30th Street from Noe to Mission, Cortland from Mission to Bayshore, Bayshore from Cortland to Industrial, Industrial from Bayshore to Palou, Palou from Industrial to Mendell, thence a single-track terminal loop via Mendell, Oakdale, Third to Palou.

Line 30-STOCKTON

This line is rerouted via Van Ness and Broadway under the 5-Year Plan. The remainder of this line continues on its existing route.

Additions: Wire is to be constructed on Broadway from Van Ness to Stockton.

Line 33-STANYAN

This line is extended and rerouted virtually in its entirety under the 5-Year Plan, and will be modified in three phases. A portion of this line will use wire of the existing 47-line on Potrero Avenue. A pre-empt signal will be installed to allow safe right turns from Potrero onto Army by MUNI vehicles.

Deletions: Wire is to be removed on 18th Street from Mission to Folsom, on 14th Street from Folsom to Harrison, and on Harrison from 14th Street to 11th Street. Reusable overhead wire facilities on Harrison from 11th Street to 4th Street, on 18th Street west of Mission, and on Market,

Clayton and Ashbury, are to remain in place pending analysis of their potential future use.

Additions: Overhead is to be constructed on Maple from California to Sacramento (one-track), on Sacramento from Maple to Arguello (one-track), on Arguello from Sacramento to California (one-track), on Arguello from California to Fulton, on Stanyan from Hayes to 17th Street, on 17th Street from Stanyan to Eureka, on Eureka from 17th to Market (one-track), on Market from Eureka to 17th (one-track), on 17th from Market to Church (one-track), on Church from 17th to 18th (one-track), on 17th from Castro and Market to Eureka (one-track), on Church from 18th to 20th, on 20th from Church Street to Potrero Avenue.

Line 41-UNION

This line will be rerouted onto Stockton Street south of Union Street, terminating on the southern end at the Folsom turnback loop of the 30 line. The western end of the 41 will be extended-into the Presidio, replacing the Presidio section of the present 45-GREENWICH. The segment of the current 41 route south of Union Street will be replaced by the 5-Year Plan 1 and 20 lines.

Additions: Wire is to be constructed in the Presidio from the transit terminal loop, thence on Lincoln Boulevard from Anza to Letterman Drive, thence on Letterman, Lombard and Lyon to Greenwich.

Line 47-POTRERO

This line is discontinued in the 5-Year Plan. It is replaced by lines 12, 25, 33, and 32.

Deletions: None recommended. Most of the wire currently in use for this line will be utilized by other lines. The remaining sections should be retained pending analysis of their potential future use.

a. Schedule of Overhead Wire Construction.

The existing trolley coach overhead wire system is in poor condition and should be given priority for renewal work. Contractor availability for this specialized type of work is limited in the Bay Area, and, generally, only two contractors can be used economically at one time. Most major jobs such as rewiring or building an entire line should take from three to six months to execute.

It is more economical to do renewal work on an existing line when there are no vehicles using it. Substituting motor coaches for trolley coaches during reconstruction of a trolley line, however, would increase

maintenance and vehicle availability demands for motor coaches at a time when MUNI has difficulty keeping up with existing motor coach maintenance requirements. For this reason, the conversion of the 24 and 1/55 lines as well as other additions which allow certain crucial 5-Year Plan route modifications are scheduled ahead of most renewal projects. This scheduling will free a substantial number of motor coaches for substitute service and relieve one of the more severe maintenance problems -- maintaining motor coach service on Sacramento Street.

The Folsom portion of the 20-line (north of Army) and the Transbay Terminal loop are scheduled first because plans for these new installations are well developed, the projects are small, and they can be implemented relatively quickly upon approval of funding by UMTA. Also, the Transbay Terminal loop is an important element of the 5-Year Plan, and must be constructed quickly in order to maintain service to the Terminal as the streetcars go underground. The reconstruction of trolley wire on Market Street should follow that work immediately, before the conversion of the 24 and 1/55 lines. The wire on this street is in very poor condition due to age, extremely heavy use, and innumerable "temporary" alterations during BART construction and the Market Street Beautification Project. The 24 and 1/55 conversions would not free enough motor coaches to provide substitute service on all the lines on Market; hence, the reconstruction of Market must be accomplished while electric transit vehicles are in service.

A summary of trolley coach overhead wire renewals and new construction appears in Table VI-3. Phasing of the extension program is discussed on pages 145-148 of this report.

5. Rolling Stock

The Municipal Railway presently has 345 new standard trolley coaches. (See Figure VI-12.) Peak vehicle requirements for the 5-Year Plan trolley coach system, including the major new electrifications of Sacramento and Clay Streets (for lines 1 and 55) and of Divisadero Street (for line 24), are estimated to be 331 standard coaches. (This is a preliminary figure; final estimates can be developed when schedules are made for approved lines.) A spare factor of 15% would add another 50 coaches, for a total required fleet of 381 standard trolleys. This is an increase of 36 over the present fleet.

For reasons of economy, it is recommended that 60-foot articulated (or 40-foot double deck) trolley coaches be purchased rather than standard-size coaches. (See Figure VI-12.) Two additional articulated trolleys could be purchased in lieu of three new standard coaches, or a total of 24 articulated trolleys instead of 36 standard trolleys. These large-capacity vehicles would be used on high-density trolley coach lines such

(Text continues on next page,
following Table VI-3.)

Table VI-3

5-YEAR TROLLEY COACH OVERHEAD WIRE RENEWAL AND DEVELOPMENT SUMMARY

<u>Year</u>	<u>TC Overhead Lines Renewed</u>	<u>New TC Overhead Lines</u>
1980	Market Street	Transbay Terminal Loop Folsom St., 18th St. to Army St. Revisions at 16th and Bryant Miscellaneous turnbacks, etc.
1981	1 (West of Presidio)	6 extension (to West Portal) 8 (new terminal Loop) 12 (switch at Mission/S. Van Ness) 22 extension (to 22nd St.) 24 (25th/Castro to Webster/Jackson)
1982	3 (west of Fillmore) 5 21 22	1/55 (Sacramento/Clay) 5 (contraflow segment) 20 (north of Army St.) 21 (contraflow segment) 30 (Broadway Tunnel) 33 (Arguello and Stanyan) 41 extension (into Presidio)
1983	6/7 14 30 41	24 (Castro to Third St.) 33 (20th and Church Sts.)
1984	4 12 33 (18th and Potrero)	3 (east of Fillmore) 14 extension (to Daly City) 20 (south of Army) 33 (17th St.)

Note: Line numbers refer to 5-Year Plan Recommended routes.

as the 14, 22 or 30, supplanting standard coaches which would be placed on other lines. Articulated (or double-deck) trolley coaches have a number of advantages:

- One \$255,000 articulated or double-deck trolley coach can do the work of one and a half \$147,000 standard trolley coaches, two \$215,000 articulated motor coaches, or three \$117,000 standard size motor coaches over the articulated trolley coach's life time of 25 years (assuming a life span of 12-1/2 years for motor coaches).

Figure VI-12
TROLLEY COACHES



Present MUNI Flyer Trolley Coach



European Articulated Trolley Coach

- Maintenance costs for articulated or double-deck trolley coaches should not be greater than for standard-size trolley coaches for such items as traction motors, trolley shoes, or wear and tear of the wire. On the other hand, engine maintenance for an articulated or double-deck motor coach should be higher proportionately (1.5 times) than standard motor coaches.
- Articulated or double deck trolley coaches have better power-to-weight ratios than the diesel versions. This is important in a hilly city such as San Francisco.
- Available articulated or double-deck vehicles have double doors which speed loading significantly. This feature is not available on standard size coaches in this country.
- Articulated coaches make possible an efficient use of labor so that the capacity of the system can be increased beyond the 50 restored runs, and the needs for crosstown service as well as improved Downtown capacity can be met.

Table VI-4 summarizes the 5-YEAR PLAN TROLLEY coach fleet development.

Table VI-4

5-YEAR TROLLEY COACH FLEET DEVELOPMENT SUMMARY

	1979	1980	1981	1982	1983	1984
Standard Trolley Coaches On-Hand	345	345	345	345	345	345
Articulated Trolley Coaches On-Hand	0	0	24	24	24	24
Total Trolley Coaches	345	345	369*	369	369	369

*Equivalent of 381 standard coaches.

a. Vehicle Demonstration

It is recommended that at least two test vehicles, an articulated and a double-deck trolley coach, be purchased and tested before any new trolley coaches are obtained. In the past, whole fleets of new vehicle types have been purchased without testing of a sample, with less than optimum results. Though articulated trolley coaches are manufactured by several firms in Europe and have been highly successful for years, they

would still be new to the only American manufacturer at present of articulated motor coaches, AM General, and new to San Francisco as well.

There are no 40-foot double-deck trolley coaches being manufactured today. There are several manufacturers of double-deck transit motor coaches, however, and they should be readily able to adapt to trolley coach technology. The same electrical equipment used on the articulated trolley coach would be used on a double-deck trolley coach. The principle advantage of the double-deck bus over the articulated is that it has a higher ratio of seated passengers to standees, thus providing a greater comfort level. Also, the novelty and enjoyment of riding in the upper deck may prove valuable in attracting patronage.

b. Auxiliary Power Supply Demonstration

It is recommended that a number of on-board auxiliary Power supply systems be tested on at least four trolley coaches for each system. An auxiliary power supply would allow trolley coaches to maneuver around street blockages such as fires, accidents, or double-parked trucks; through power outages, and past broken overhead wire or switches. If such a program could be executed successfully and swiftly enough, it would eliminate the need for replacing and installing numerous turnback loops when the overhead wire system is rebuilt (as part of TOP-1) and when new lines are created.

Two types of auxiliary power supply are available -- battery and an internal combustion engine-powered generator. A third now under development, the KEW (kinetic energy wheel or flywheel), may also prove feasible. These demonstrations could be financed from UMTA Demonstration Grant Funds (100 per cent) or from the vehicle replacement grant (80 per cent). Retrofitting of existing trolley coaches could also be funded from an UMTA grant.

6. Facilities

New joint facilities are planned at Geneva Division both for the additional LRVs needed for the J-Line extension and for trolley coaches. This facility will reduce dead-head time for the 12 and 14 lines which must now pull out of Potrero Division to the end of the line and will provide additional maintenance capacity.

The extension of the 24-DIVISADERO into the southeast part of the City to Third Street, where there is now no electric transit service, will require the construction of a small substation in the vicinity of Industrial and Bayshore. This would provide AC-to-DC power conversion to supply electric power to the trolley lines. This station should be large enough to supply power for later expansion of the trolley system

and possibly for a Third Street electric line, whether it be trolley coach or light rail. Later electrifications may require some re-equipping or enlarging of existing substations. The 26-GUERRERO and 42-DOWNTOWN LOOP lines, if electrified, would require slightly larger rectifiers than now planned for replacement of obsolete rotary converters at PG&E substations "E" in the Mission and "J" in the financial district. Such changes would be relatively small additional costs.

7. Financial Costs and Benefits of the Trolley Coach 5-Year Plan

The financial costs and benefits of the trolley coach 5-Year Plan are, to a significant degree, influenced by the availability of existing electrical facilities and the recent fortuitous decision to purchase extra replacement trolley coaches at very favorable prices. It will be possible, therefore, to complete the 5-Year Plan electrifications with the addition of only 24 articulated (or double-deck) coaches, one small substation, a short stretch of underground duct work (on Sacramento, assuming the use of the feederless system wherever possible), some feeder installed in existing spare ducts, and the trolley wire itself.

Other electrifications which may be considered would require in addition to the trolley wire only the re-equipping and re-activation of one small substation and the possible slight increase in planned capacity of two others not yet modernized. Also, with the exception of the 24 and 31 lines, all of the proposed and suggested electrifications would use existing trolley wire for substantial portions of their lengths.

The expansion of the trolley coach system will also allow greater use of articulated vehicles on the MUNI system as a whole and, hence, greater diversion of resources to new lines and better service on existing lines. When the new fleet of trolley coaches was ordered in 1974, the use of articulated vehicles was only beginning to be discussed in this country and was not considered a serious option for trolley coaches at the time. Moreover, imported articulated trolley coaches were prohibitively expensive and would have gone against UMTA's "buy American" policies. Also, the purchase of new trolley coaches at the earliest possible date was necessitated by the extremely dilapidated condition of the existing fleet, which varied in age from 25 to 29 years when finally scrapped. Once the purchase was made, however, the option to replace the new trolley coaches with larger vehicles was precluded for another 25 years. At \$73,000 each, however, these coaches were still a very good buy for the City.

A consortium of transit operators was formed to place a large order for articulated buses with an American manufacturer, and now articulated motor coaches are being successfully operated on several properties in the Bay Area, including AC Transit and Golden Gate Transit. This vehicle can readily be adapted to trolley coach technology, making a reasonably-

priced American-manufactured articulated trolley coach now possible.

Taking into account electrical vehicles and equipment on hand, it is estimated that the additional cost of continuing operation of motor coaches on the 24 and 1/55 lines rather than converting to trolley coach is approximately \$4,030,000 for the first 25 years of the life of the investments and \$5,208,000 for the next 25 years. A detailed discussion of the costs and savings from converting these two lines can be found in the 5-Year Plan Technical Memorandum - The Financial Impact of The Conversion of the 24-DIVISADERO, 1-CALIFORNIA and 55-SACRAMENTO Lines from Motor Coach to Trolley Coach.

The use of trolley coaches instead of diesel coaches is advantageous to the economy of San Francisco in other ways as well. It allows for the expenditure of funds locally rather than elsewhere. For example, the use of trolleys allows the use of electricity from the city's own Hetch Hetchy hydro power system to be substituted for imported oil. Similarly, the installation of overhead wire and electrical facilities for trolley coaches is by local labor and local contractors. The replacement of a fleet of diesel coaches, purchased from Detroit, would send money out of San Francisco.

D. MOTOR COACHES

1. Fleet Description

The present motor coach fleet of the Municipal Railway consists of 503 motor coaches ranging from 1960 to 1975 models. The bulk of the fleet is made up of 391 48-passenger buses, as shown in Figure VI-13, which were obtained from General Motors Corporation (GMC) in two groups -- the first in the summer of 1969 and the balance six months later during the winter of 1969-70. These represent the first equipment purchased by the San Francisco Municipal Railway Improvement Corporation, a non-profit corporation set up to replace MUNI's rolling stock. The average age of the GMC fleet is about nine years. The majority of the coaches in this group have received major overhauls to both the engines and transmissions as well as exterior repainting which should render them useful, in part, into the 1980's. In addition, two 1960 vintage Mack coaches have been reduced to short wheelbase coaches primarily for use on the Coit Tower line where such coaches are best suited.

When purchased along with the above-mentioned General Motors coaches, the ten Flxible 48-passenger coaches were labeled "experimental." They featured a Cummins diesel engine and a Spicer transmission longitudinally mounted compared to the General Motors engine and transmission which were uniformly transversely mounted. These ten have always been orphans of the fleet because they are non-standard and little used compared to the majority of the fleet; their early retirement should be anticipated.

The balance of the motor coach fleet is represented by 100 buses built by American Motors in 1975, the first units produced by this manufacturer to be delivered on the West Coast. (See Figure VI-13.) While basically a sound bus mechanically, the all around usefulness of this coach, compared to the GMCs, is limited because of the smaller six-cylinder engine (GMCs have V-8s) and the two-speed transmissions (GMCs are three-speed). This problem is compounded by the fact that the coach is smaller and, consequently, has only 40 seats and narrow aisles. Although they are well suited for some lines, it is recommended that they be improved in such a way as to make them more useful, and that, in the long run, the number of coaches of this size be reduced. The principal cost of bus operation is labor, a cost which is not reduced by the size of the bus. Small buses are, therefore, uneconomical and not beneficial for MUNI.

Slated for delivery in the Fall of 1979 are 25 "Advance Design Buses" to be manufactured by the Grumman Flxible Company. (See Figure VI-13.) These new buses will feature numerous innovative design changes over previous models and are the product of more than five years development and testing. This was largely a result of the

Figure VI-13

MUNI MOTOR COACH FLEET



The backbone of the MUNI motor coach fleet is made up of 391 coaches from General Motors built in 1969 and 1970.



100 forty passenger coaches were received from AM General in 1975. Rebuilding and upgrading the engines and transmissions will make these coaches more useful throughout the MUNI system.



Slated for delivery in late 1979 are twenty five Advance Design Buses. equipped with wheel chair lifts, to be manufactured by Grumman Flexible.

federal Department of Transportation-sponsored program under which prototypes were built for the Transbus program. (Transbus will be described later in this section.) These buses will feature engines and transmissions compatible with our present General Motors coaches and should mix reasonably well with the existing fleet. The buses will have seating for 47 and will be the first vehicles for MUNI to include lifts for disabled people.

All across the country, transit operators are now receiving this Advance Design bus. Few properties have as yet received extensive day-to-day experience with this new type of coach, but it appears to have some shortcomings, including poorer fuel economy, less interior space, mandatory air conditioning, and a substantially higher purchase price. Nevertheless, this is what the American bus manufacturing industry has to offer, and it is a take-it-or-leave-it situation. Some properties have resorted to purchasing the existing type of coach from Canadian manufacturers; however, this course of action is more recently unavailable because of the federal government's "Buy American" policy, which discourages purchases of foreign transit equipment.

2. Future Vehicle Acquisitions

a. Articulated Coaches

The Planning, Operations, and Marketing Study conducted for the Municipal Railway by Wilbur Smith and Associates called for the use of articulated buses on several of the heavy corridor lines, including Geary, Third Street, and the James Lick Freeway. In contrast to the standard 50-passenger city bus, the articulated bus "bends in the middle" and can seat up to 65 or 70 passengers. (See Figure VI-14.)

A number of major domestic transit operators are now acquiring articulated coaches to meet transit demands in an efficient and cost-effective manner. It is recommended that the Municipal Railway closely watch the success and problems encountered by other properties already taking delivery of such equipment, as well as arrange for trial use of any units. This will give MUNI management an opportunity to observe performance of the articulated bus on the grades and in the tight traffic situations that exist in the City.

With the new office construction that has been and is continuing to take place in downtown San Francisco, it is important that MUNI have the extra peak hour capacity to handle the additional riders. The implementation of MUNI Metro in the subway under Market Street will partly achieve this. The use of the high capacity, three-door articulated bus on Geary, Third Street, and James Lick Freeway will also enable MUNI to efficiently provide essential Downtown capacity without sacrificing crosstown service.

Figure VI-14

ARTICULATED MOTOR COACH



One of AC Transit's 30 new AM General articulated coaches normally used in local service on College Avenue in Berkeley and Oakland. Golden Gate Transit assigns 10 similar articulated buses to Marin County local service.

It is presently recommended that the Geary corridor receive the first service changes under the 5-Year Plan, Phase I. Once again, in agreement with the analysis made by Wilbur Smith and Associates, the 5-Year Plan recognizes the need for articulated buses on the Geary Corridor. Consequently, the first replacement coaches for the aging GMCs should be articulated. The anticipated lead time for grant processing and construction-delivery would dictate that the earliest these coaches could arrive would be in Fiscal Year 1981-82. UMTA currently requires a depreciation of 12 years for transit buses; by 1981-82, the GMCs will have reached that age and will be due for replacement. Therefore, no immediate action needs to be undertaken so that replacement coaches can be obtained for delivery in the early 1980's.

b. Transbus (Figure VI-15.)

Transbus started out as a Department of Transportation test program to measure the reaction of the public, bus drivers, and mechanics to this new type of city transit bus. It features a low floor (17 to 23 inches above the level road), large windows, wide doors, and low steps. While these items are all felt to be desirable in any future Municipal Railway transit coach, it is uncertain whether a bus with a low floor would be operationally possible in San Francisco because of the hilly terrain. At this writing, it is not clear just when Transbus will be available on the U. S. market. Consequently, when the Railway retires some of its GMCs and AMGs, it should replace them with whatever type transit coach is available at that time from domestic, or if need be, foreign manufacturers.

3. Motor Coach Rehabilitation: AM Generals

Fiscal Year 1980-81 should include necessary funds for a rehabilitation program on the AM General fleet purchased in 1975. While the shortcomings of this series coach have been previously summarized, some improvements scheduled at the time of major engine overhaul will result in a vehicle better suited for system-wide use of the Municipal Railway. Assuming that UMTA will still require a 12-year retirement span for transit buses, these AM Generals will not be due for retirement until 1987. Consequently, the following is recommended as a rehabilitation program.

General Motors Corporation is expected to have its new 6V-92 series engine available for use in transit buses soon. This engine should be considered as a replacement in the AMGs at the time of needed engine rebuilding. This new engine features a greater cubic inch displacement and has more power than the 6V-71 engine currently found in the AMGs. Tests should naturally be tried with a prototype installation, but it is expected that the 6V-92 will give the performance of an eight-cylinder engine.

Figure VI-15

TRANSBUS



Prototype Transbus

If the new engine proves successful, work will be required on the transmissions to make them compatible with the new engines and able to accept the additional power delivered. At present, all 100 coaches feature the Allison V-H series transmission. It is expected that this transmission will not be able to handle adequately the increased power from the new engines and, consequently, should be rebuilt into an Allison V-S-1. Many of the existing parts in the VH transmission can be used on the rebuilt units.

In conjunction with the rebuilding of the drive line of these units, plans should be considered to make the coaches more appealing to the passenger. One of the passenger complaints concerns the Lexan plastic windows that are heavily scratched from repeated trips through the bus washer. The budget for the rebuilding of the AMGs should not only include replacement sash, of either glass or improved scratch and break resistant plastic; but also interior body repair to reduce the annoying rattles caused by loose doors, "modesty panels" at the stairwells, driver's partition, etc. Finally, needed body work should be completed before the coaches receive an exterior paint job.

Although still limited to a seated capacity of 40 passengers, the above-mentioned improvements should enable the buses to climb any hill in the City and be used on any route, instead of being restricted as they are now. The passenger amenities should aid in the public relations efforts by the Railway.

4. Motor Coach Replacement

The equipment replacement schedule for motor coaches appears in Table VI-5 and basically features the retirement of the obsolete Coit Tower Macks, of the out of service Cummins-powered Flexibles, and of the most worn GMCs. These retirements would be offset by the newly-purchased 25 Advance Design buses. The removal of the worst of the GMCs will enable the shop forces to concentrate more on a preventive maintenance program for the entire fleet rather than a select group of coaches that require excessive labor-hours to keep running.

By 1983, it is expected that more of the GMCs will be in need of replacement and, therefore, 100 Advance Design buses are anticipated to be purchased for service introduction at that time. These buses should be similar to those arriving in 1979 and will feature full accessibility for disabled people, an integral part of the Municipal Railway program.

The staggered purchase and arrival of 25 Advance Design buses in 1979, followed by 100 articulateds in 1981 and 100 Advance Design buses in 1983 will permit a gradual retirement and replacement of motor coaches. Thus, the Municipal Railway should not find itself in a situation where suddenly the entire motor coach fleet is in need

either of major engine overhauls or complete replacement at one time.

Table VI-5

5-YEAR MOTOR COACH EQUIPMENT REPLACEMENT SCHEDULE

<u>Existing Fleet</u>	78-79	79-80	80-81	81-82	82-83	83-84
1960 Macks model C49DT	2	2	2	0	0	0
1969/70 GMC model T8H5305*	391	391	391	280	280	175
1969 Flxible model 111-CC-C3	10	10	10	0	0	0
1975 AMG model 9635-6	100	100	100	100	100	100
1979 Flxible model 870	---	25	25	25	25	25

Future Replacements

1981 Articulateds				100	100	100
1983 Advance Design Buses						100
Total Fleet by Year	503	528	528	505	505	500

Tentative Motor Coach Purchases
Beyond the 5-Year Plan

1985 40-foot Transbus
1987 40-foot Transbus
1989 35-foot Transbus

* Some are air conditioned model T8H5305A.

5. Facilities

The Municipal Railway's motor coach operations are primarily handled from two operating divisions. Kirkland Division, located near Fisherman's Wharf, was built in the late 1940's to handle the increased number of motor coaches operated by MUNI as replacements for streetcar lines. Woods Division, only about two years old, is MUNI's newest operating division

and is located adjacent to the main motor coach repair shops at 22nd and Indiana Streets, on the east side of Potrero Hill.

Kirkland Division is severely over-taxed because of its limited amount of space. It has a design capacity of 175 standard buses, primarily parked in rows. However, it presently houses 209 buses and has been assigned as many as 280, the latter being accomplished through the expedient use of on-street storage. Such storage has become a serious problem for both the Railway and the general public because of the burgeoning commercial and residential development of the Northern Waterfront.

MUNI's Woods Division handles most of the remaining motor coaches assigned to line service. Because of the proximity to the repair shops, many of the inoperable coaches are parked here while awaiting repair work. At the time of the construction of Woods, it was recommended to have what is known as "herringbone" parking, which allows buses to be parked diagonally so that any one coach can be pulled out without having to move any other equipment. While the concept is desirable in most cases, it does not lend itself well to limited quarters, such as those existing at Woods. Consequently, one finds coaches parked either on the street and/or in the aisles, thus defeating the entire concept. Parking coaches in rows would relieve some of the pressure at Woods and increase the parking capacity from 242 standard buses to 304. This would still not alleviate the condition at Kirkland. Some of this excess overflow of coaches is absorbed by judicious shuffling of buses at the two trolley coach operating divisions (both with extremely limited space already), but what is needed to relieve the pressure on motor coaches is an additional operating division. This is especially so in light of the fact that larger articulated buses (half again as long as the standard city bus) are anticipated being purchased and placed into service.

Recently, over 15 sites were examined for consideration as a possible third motor coach division to help relieve the overcrowding that exists at Kirkland and Woods. The salient features of each possibility were all considered with the choices narrowed down to either establishing a new motor coach division at the "U.S. Steel" site or double-decking Presidio Division, now a trolley coach division, so that it could handle a fleet of motor coaches as well. The Planning Division staff concluded that establishing Presidio Division as a joint motor and trolley coach base would be the most sound approach economically and operationally; it would not require the extra administrative costs associated with opening a new seventh division, and it would be located in the part of the City where the coaches would be operating so as to reduce deadheading. This strategy would envision the indefinite retention of Kirkland Division for a reduced number of coaches. The Public Utilities Commission has taken this report under advisement, and requested a more comprehensive review. The matter will be completed later this year, and the Commission's conclusions at that time will be reflected in the first annual plan update.

E. SUMMARY OF ROLLING STOCK RENEWAL AND REPLACEMENT

The first additions to the cable car fleet would occur in fiscal year 1980-81 with the acquisition of a single-end Powell-type car. The following fiscal year, two more similar cars would be added to the fleet, bringing the total for single-end cars to 31. The fleet of double-end California-type cars would have to be expanded from 12 units to 21 in FY 1981-82 for additional service to be implemented on the new 62-CALIFORNIA & HYDE. It is anticipated that this new line will be quite popular with the tourists; therefore, the addition of nine cars is considered necessary.

As new light rail vehicles are received and placed into service, it is anticipated that they will replace the present Presidents' Conference Cars (PCCs) on a nearly one-for-one basis through 1981-82. 100 LRVs will be required for the present system because of the faster operation under Market Street in the MUNI Metro subway. With the expansion of the light rail system to include the extension of the J-CHURCH line through Bernal Cut and along San Jose Avenue, additional light rail vehicles will be required. This addition is shown beginning in FY 1982-83, when the total fleet of LRVs will be increased by five units to a total of 105.

This 5-Year Plan also calls for rail transit service along the Embarcadero from Fisherman's Wharf to the Southern Pacific Depot. 25 of the existing PCC car fleet is anticipated to be supplemented with five vintage San Francisco "Iron Monster" type streetcars beginning with FY 1981-82.

The first change in the motor coach fleet will occur during the Fall of 1979, when 25 Advance Design buses will be added to the fleet. These will be the first vehicles to meet MUNI's full accessibility policy. With the addition of these new coaches, a few of the most-worn GMC coaches obtained in 1969-70 can be scrapped. FY 1980-81 reflects further retirement of the General Motors coaches plus the removal of the 1969 Cummins-powered Flexibles. Receiving 100 high-capacity articulated buses in 1981-82 will allow further replacement of both the GMC coaches and the two remaining short-wheelbase Macks (used primarily for the 39-COIT Under the 5-Year Plan, the final aspect of the replacement program for motor coaches occurs in FY 1983-84 with 100 more coaches, allowing further upgrading of the motor coach fleet.

At the present time, the Municipal Railway has 345 trolley coaches, obtained during the years 1971-77. Sufficient spares exist to allow for some route expansion; but, by FY 1980-81, 24 additional coaches will be needed for full implementation of the electrification expansion program. (These 24 would be articulated trolley coaches.)

A summary of all rolling stock renewal and replacement, by mode, appears in Table VI-6. Vehicle requirements for the 5-Year Plan route network appear in Table VI-7.

Table VI-6

SUMMARY OF ROLLING STOCK RENEWAL AND REPLACEMENT

<u>Cable Cars</u>	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
Single-end	28	28	29	31	31	31
Double-end	<u>12</u>	<u>12</u>	<u>12</u>	<u>21</u>	<u>21</u>	<u>21</u>
Total Cars	40	40	41	52	52	52
 <u>Street/LRV</u>						
A, B, & K Type				5	5	5
PCCs	115	75	50	25	25	25
LRVs	—	<u>25</u>	<u>50</u>	<u>75</u>	<u>105</u>	<u>105</u>
Total Cars	115	100	100	135	135	135
 <u>Motor Coaches</u>						
1960 MACKS	2	2	2	0	0	0
1969-70 GMCs	391	391	391	280	280	175
1969 FLXs	10	10	10	0	0	0
1975 AMGs	100	100	100	100	100	100
1979 FLXs	-	25	25	25	25	25
1981 Articulateds				100	100	100
1983 ABDs	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>100</u>
Total Coaches	503	528	528	505	505	500
 <u>Trolley Coaches</u>						
1971-77 Flyers	345	345	345	345	345	345
Articulated TCs	<u>-</u>	<u>-</u>	<u>20</u>	<u>20</u>	<u>20</u>	<u>20</u>
Total Trolley Coaches	<u>345</u>	<u>345</u>	<u>365</u>	<u>365</u>	<u>365</u>	<u>365</u>
Fleet Total	1003	1013	1034	1057	1057	1052

Table VI-7

MUNICIPAL RAILWAY 5-YEAR PLAN

TENTATIVE RECAPITULATION OF SERVICE AND VEHICLE REQUIREMENTS

LINE	R.T. MILES	AVENUE HEADWAY				MAX EQUIP
		PEAK	BASE	SAT	SUN	
<u>MUNI METRO/STREETCARS</u>						
E-EMBARCADERO	8.2	7.5	10	10	10	7
J-CHURCH	8.8	4				16
K-INGLESIDE	15.3	4	Estimated peak service levels.			
L-TARAVAL	14.6	2.5				52
M-OCEAN VIEW	17.1	4	Schedules now under preparation			
N-JUDAH	11.9	2				<u>21</u> 96
<u>CABLE CARS</u>						
59-POWELL & MASON		8.5	6	6	6	
60-POWELL & HYDE	3.3	8.5	6	6	6	19
61-CALIFORNIA	2.9	7.5	7	10	10	7
62-CALIFORNIA & HYDE	4.8	8.5	6	6	6	<u>14</u> 40
<u>TROLLEY COACHES</u>						
1-CALIFORNIA	12.2	4	5	10	12	22
3-JACKSON	7.9	5	7.5	15	20	15
4-SUTTER	6.0	6	7.5	15	20	8
5-FULTON	13.9	3.8	6	9	10	28
6-PARNASSUS	14.0	4	7.5	10	20	26
7-HAIGHT	8.0	7	-	15	-	10
8-MARKET	7.5	3.5	6	10	20	21
12-OCEAN VAN NESS	14.6	5	8	15	20	13
14-MISSION	16.3	2	3	5	6	48
20-COLUMBUS	15.9	3	4.5	4.5	7.5	20
21-HAYES	8.4	5	7	10	20	12
22-FILLMORE	12.2	3.5	4	7.5	7.5	26
24-DIVISADERO	16.2	6	7.5	12	12	18
30-STOCKTON	8.7	3.8	5	6	10	18
33-STANYAN	10	10	10	15	20	8
41-UNION	8.9	3	5	10	15	26
55-SACRAMENTO	6.5	4	-	-	-	<u>12</u> 331

LINE	R.T. MILES	AVENUE HEADWAY				MAX EQUIP
		PEAK	BASE	SAT	SUN	
1X-CALIFORNIA EXPRESS	12.4	5	-	-	-	11
2-CLEMENT	12	6	7½	15	20	14
10-MONTEREY	14	10	10	15	15	6
11-QUINTARA-24TH STREET	17.8	7½	8½	15	15	14
15-THIRD	22	2	5	7½	12	33*
17-PARKMERCED	17	10	15	20	30	13
18-46TH AVENUE	27.6	12	20	15	15	10
19-POLK	11	7½	9	12	12	13
25-SAN BRUNO	17.4	6	12	6	9	15
26-GUERRERO	12.5	5	8	15	20	17
27-BRYANT	7.9	7½	10	10	15	9
28-NINETEENTH AVENUE	22	5	8	12	12	19
29-RUTLAND	3.7	20	20	20	20	2
30X-FREEWAY EXPRESS	24	4½	10	-	-	27*
31-BALBOA	13.9	8	9	12	15	12
31X-BALBOA EXPRESS	14.2	8	-	-	-	8
34-WOODSIDE	5.5	30	30	30	-	1
35-EUREKA	6.8	10	15	20	20	8
36-TERESITA	8.7	12	15	30	30	5
37-CORBETT	15.6	12	15	20	20	7
38-GEARY LOCAL	13	5	5	6	8	17
38L-GEARY LIMITED	13	5	5	-	-	15
38AX-GEARY A EXPRESS	13	10	-	-	-	5
38BX-GEARY B EXPRESS	13	-	-	-	-	4
39-COIT	3	20	20	20	20	2
42-DOWNTOWN LOOP	15.8	5	8	15	20	22
43-MASONIC	19.5	12	12	15	20	10
44-O'SHAUGHNESSY	19.5	9	12	15	20	21
45X-GREENWICH EXPRESS	7.9	5	-	-	-	10*
53-SOUTHERN HEIGHTS	6.2	15	15	15	30	3
71-HAIGHT-NORIEGA	16.9	7	7½	15	20	15
72-SUNSET	27	10	15	15	15	15
76-FORT CRONKHITE	24.2	-	-	30	30	(5)
78-GOLDEN GATE PARK	8.7	-	-	15	15	(4)
81-FELTON	19.9	12	15	30	30	6
83-PACIFIC	2.6	20	20	20	20	1
89-LAGUNA	1	-	12	12	12	(1)
						390
School Specials						17
						407

() - Means weekends only
Not included in total

* - Line operates with articulated buses

With the implementation of the new services, many routes will be combined and receive new terminal locations. As a result, the present headsign curtains will become obsolete, and it will be necessary to replace them to reflect the route changes. Almost 900 sets of curtains, three for each coach, will be required for the 391 GMCs, ten Flxibles, 100 AMGs, 25 Flxible 870s, and the 345 Flyer trolley coaches. The cost to replace the three curtains on each bus with new ones screened in white on black, white on red, white on blue, and white on yellow is estimated to be \$400.00 per bus.

As mentioned in Chapter II, Policy 10, "New vehicles purchased for service on lines of the Municipal Railway shall be specified with double-width front and rear doors...." This is to allow faster boarding and unloading, thus increasing operating speed. To complement this, aisles should be wide enough to ease passenger flow as well.

Federal regulations require full accessibility for the disabled on all transit vehicles. Beginning with 25 new diesel buses this year, all of MUNI's vehicles will be accessible to the disabled and wheel-chair-bound, either by retrofitting existing vehicles or through purchase of new vehicles.

F. SERVICE QUALITY

Service quality includes those passenger amenities which are important to a transit system's convenience, comfort, and safety. In this section, recommendations for transit shelters, public information, and timed transfers are clarified.

In accordance with the Transit Improvement Program (TIP) "MUNI Transit Shelter Program," the 5-Year Plan recommends installation of the proposed advertising shelters at strategic MUNI stops. TIP outlines a program whereby well-lit shelters would be constructed, maintained, and financed by advertising firms, which would be allowed to display signs on the shelter walls. The necessary legislation to permit such activity came before the Board of Supervisors on November 6, 1978, as an amendment to Part II, Chapter II, Section 603 of the Municipal Code. It has since been referred to the Streets and Transportation Committee for further action.

Since the advertising firms would contract with the San Francisco Public Utilities Commission to finance the construction and maintenance of the shelters, the City and County of San Francisco would bear no costs for the program. In addition, the City would receive a portion of the advertising revenue, estimated at 5 per cent to 10 per cent of the gross or net revenue. It appears that the advertising firms plan to install 500-600 shelters, with an acceptable minimum of 200. In order to ensure a transit shelter program distributed throughout the City, it has been proposed that 52 shelters be located at sites now estimated to be of minimal use to an advertiser and more suitable to the resident transit rider. The remaining shelters will be constructed on sites mutually benefitting both transit patrons and advertising firms.

The shelter locations are to be selected on the basis of whether the site is a transfer point, at or near primary public and private institutions, has adverse weather conditions, and has frequent service with high patronage. The TIP program has established a rank order for these criteria and can, by awarding points to the sites based on their characteristics, similarly rank the sites. In establishing shelter site criteria, the MUNI Planning staff also recommends a "night safety" category for shelter site selection. Routes along parkways and adjacent to parks should receive high priority as shelter locations. For example, the new 28-line will operate along Park Presidio Boulevard throughout the evening. Well-illuminated shelters need to be installed at all stops to minimize the risk of waiting on the poorly lit and well-forested corners.

In addition to the above criteria, site selection must also be scrutinized according to the new routings of the 5-Year Plan network rather than the current route structure. The 5-Year Plan, in emphasizing a grid-pattern which provides accessibility to all parts of the City, makes interconnectivity important for the entire City rather than just for Downtown. Thus, greater attention to new transfer points and neighborhood centers must be given in order to maximize use of the network. A shelter program which distributes sites around the City would encourage use of crosstown routes and major district transfer points. These transfer points should also receive higher priority for shelter sites.

Implementation of the advertisers' shelter program could be established to coincide with the phased route changes of the 5-Year Plan. Since route realignments are proposed for the entire City, the new shelters could serve as significant landmarks for revised transit routes and transfer points. A simultaneous program of new timetables, route information, and shelter construction, along with the route revisions, would be of great assistance to MUNI patrons during the transition period. The availability of space for appropriate route information and timetables on the shelter walls would mitigate patron confusion. The information should be bilingual where appropriate and should also serve the needs of disabled people. It is therefore highly

desirable that the contract with the advertising firms stipulate that space be available for this information service.

In conjunction with MUNI information posted in transit shelters, other important transit nodes should also be considered as information centers. Transportation terminals, Downtown plazas and squares, major institutions, and tourist areas along the Waterfront exemplify principal points which concentrate MUNI riders. If bus shelters are not slated for construction in these locations, the planning staff recommends easily visible and securely posted MUNI route map and timetables for transit serving that particular point. At transit stops which are neither major transportation nodes nor contain passenger shelters, sign-posts similar to those instituted on Polk Street should be installed to identify each stop and the transit lines which serve that stop, especially as the 5-Year Plan route revisions are implemented. The MUNI information number should also be listed on the sign-post, with a statement explaining its use for timetable and route information. If at all feasible, a system route map could be installed on each transit vehicle to alleviate the confusion generated by the proposed route changes.

In addition to shelters and posted information, other service improvements necessary to maximize use of the grid network include frequent service and timed transfers. A MUNI Planning Division issue paper now under preparation, to be entitled "Variables Influencing Transit Use," has found that highly patronized North American transit systems emphasize frequent service over other primary service considerations for attaining their high ridership levels. Many of these systems have also instituted well-interconnected crosstown and radial networks, similar to the MUNI grid plan. In assuring non-peak hour use of the system, many highly patronized systems appear to be concentrating frequent service along principal crosstown and radial routes. When transferring is necessary to reach another section of the city, frequent service along these principal routes decreases transfer and travel times and therefore encourages use of the entire system. If frequent service cannot be maintained, such as during evening and night hours, a synchronized system of timed transfers is employed. In this system, transit vehicles from different directions are scheduled to pass a given transfer point at approximately the same time. This procedure provides a minimal waiting time for patrons needing to transfer. If evening and owl schedules are available to riders, timed transfers appear to encourage nighttime transit use.

GLOSSARY

ACCESSIBILITY -- A measure of the ability of all persons to travel between various origins and destinations.

ARTICULATED TRANSIT VEHICLE -- An extra-long vehicle that has a rear section permanently but flexibly connected to the forward section with no interior barrier to movement between the two parts; vehicles may be motor coaches, trolley coaches or rail vehicles, and vary in length from 60 to 70 feet.

BART (BAY AREA RAPID TRANSIT) -- Rail rapid transit service to parts of Alameda, Contra Costa, and San Francisco counties and to Daly City in San Mateo.

BASE PERIOD -- The time of day during which vehicle requirements and schedules are not influenced by peak-period demands; transit riding is fairly constant and low to moderate in volume, and service is scheduled at constant intervals.

BAY AREA -- The region comprised of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Sonoma, and Solano counties, all of which touch on San Francisco Bay.

BAY AREA TRANSPORTATION STUDY (BATS) -- A comprehensive study of urban transportation in the nine-county Bay Area which was authorized by the California Legislature in 1963 and which was performed under the direction of the BATS Commission.

BAY AREA TRANSPORTATION TERMINAL AUTHORITY (BATTa) -- An organization comprised of transportation agencies which was created in 1974 to develop a new or expanded regional transit terminal in San Francisco on the site of the present Transbay Terminal.

BUNCHING -- The situation in which transit vehicles lose their spacing along a route and travel quite closely together. This results when the first vehicle becomes detained in traffic. Due to the delay, there are increasing numbers of passengers at future stops, causing the vehicle to fall further and further behind until it is right up against the next-scheduled vehicle.

CALTRANS (CALIFORNIA DEPARTMENT OF TRANSPORTATION) -- The State agency created by the State Legislature and responsible for state-wide coordination of multi-modal comprehensive transportation planning and the provision of the state highway system.

CAPACITY -- The maximum number of vehicles that can pass over a given section of a lane or roadway in one or both directions during a given time period under prevailing roadway and traffic conditions.
2. The number of passengers that can be transported over a given section of a transit line in one direction during a given time period under prevailing traffic conditions.

CENTRAL BUSINESS DISTRICT (CBD) -- An area of a city that contains the greatest concentration of commercial activity, the "Downtown."

CHOPPER -- A solid-state, transistor-like device which controls the flow of current to a DC electric motor, thus regulating the speed.

CONSTRUCTION CAPITAL COST -- A nonrecurring cost involved in the construction of a transportation system, including fixed facilities roadways, yards, garages, power distribution and control facilities, stations and access facilities, and administrative and design costs.

CONTRAFLOW LANE -- A highway or street lane on which public transit vehicles operate in a direction opposite to that of the normal flow of traffic.

CORDON LINE -- An imaginary line that encloses a study area and within which are conducted interviews, traffic counts, and so on.

CORRIDOR -- A broad geographical band that follows a general directional flow connecting major sources of trips and that may contain a number of streets, highways, and transit route alignments.

COVERAGE -- The geographical area that a transit system is considered to serve, normally based on acceptable walking distances from loading points, e.g., 0.4 km (0.25 mile).

CURTAIN -- Also known as "headsign curtains," these are the mylar signs that display route/destination information on the front of transit vehicles.

DATA BASE -- Information organized for analysis or used as the basis for a decision.

DEADHEAD -- To move a revenue vehicle without passengers or cargo on board, e.g., on a regular route to and from a garage or from the end of one revenue trip to the beginning of another.

DEPRECIATION COSTS -- The decrease in value of property through wear, deterioration, or obsolescence.

DEPRESSION BEAM -- Devices that hold the cable down at the foot of a slope, swinging out of the way to permit passage of a grip and then swinging back automatically.

DUCTS -- In this case, this refers to the underground tubes parallel to trolley lines which are used to house the feeder cables.

EXCLUSIVE TRANSIT RIGHT-OF-WAY -- A right-of-way that is fully grade separated or access controlled and is used exclusively by transit.

EXPRESS SERVICE -- Service that provides higher speeds and fewer stops than are generally found on other portions of the system or on the same route in local service.

FARE BOX -- A device that accepts coins, bills, or tokens given by passengers as payment for rides.

FARE COLLECTION SYSTEM -- The procedures and devices used to collect fares and to accumulate and account for fares paid.

FEEDER CABLE -- A supplementary cable paralleling a trolley line and connected to the line at regular intervals to provide greater current capacity from the rectifier substations.

FEEDER SERVICE -- Local transit service that picks up and delivers passengers to a rail rapid transit station or express bus stop or terminal.

GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT (GGBHTD) -- A special district which provides bus and ferry service for Marin and parts of Sonoma County and operates and maintains the Golden Gate Bridge.

GOLDEN GATE NATIONAL RECREATION AREA (GGNRA) -- Established by an Act of Congress in 1972, an area within the counties of Marin and San Francisco designated for development of park facilities; includes Fort Mason, the Marin Headlands, etc.

GOLDEN GATE RECREATIONAL TRAVEL STUDY -- A study intended to produce a plan for the solution of current and anticipated recreational travel problems in the GGNRA.

GRID -- A system of theoretical lines that run north/south, intersected at right angles by lines running east/west.

HEADWAY -- The spatial distance or time interval between transit vehicles moving along the same lane or track in the same direction.

INTERFACE -- The point at which two or more modes of transportation meet, 2. The point at which two or more transit system routes meet.

ISLAND, LOADING -- A pedestrian refuge within a street that is provided at regular transit stops for the protection of passengers from traffic while they wait for and board or alight from transit vehicles.

LATENT TRAVEL DEMAND -- The potential number of trips that could be made by people who cannot now travel because of the inconvenience or unavailability of present modes or the inability to use them.

LIGHT RAIL VEHICLE (LRV) -- An electrically powered rail car operating singly or in short trains on fixed duo-rail guideways, which may be grade separated. Passengers load from low or medium-height platforms.

LIMITED SERVICE -- A transit service that operates only during a certain part of the day or in a specified area, and which makes fewer stops than does local service.

LOCAL SERVICE -- A type of operation that involves frequent stops and consequent low speeds, the purpose of which is to deliver and pick up transit passengers as close to their destinations or origins as possible.

METROPOLITAN TRANSPORTATION COMMISSION (MTC) -- Created by the State Legislature in 1970 as the regional body responsible for multi-modal comprehensive transportation planning for the nine-county Bay Area, MTC is also responsible for review of applications for federal and state transportation grants and allocation of certain transportation monies.

MODAL SPLIT -- The proportion of total person-trips that uses each of various specified modes of transportation. 2. The process of separating total person-trips into the modes of travel used.

MODE -- A means of travel, e.g., automobile, transit, or walking.
2. A type of transit vehicle, e.g., streetcar, diesel bus, trolley coach, or cable car.

NETWORK -- The configuration of streets or transit routes and stops that constitutes the total system.

OFF-PEAK -- A period of day or night during which travel activity is generally lower than it is between the hours of 7-9 a.m. and 4-6 p.m. on weekdays.

OPERATING COSTS -- The sum of all costs that can be associated with the operation and maintenance of the system during the period under consideration, generally excluding depreciation on plant and equipment, interest paid for loans on capital equipment, and property taxes on capital items.

ORIGIN -- The location of the beginning of a trip or the zone in which a trip begins.

ORIGIN-DESTINATION STUDY (O-D STUDY) -- A study of the origins and destinations of the trips of vehicles or passengers.

OWL SERVICE -- Service that operates during the late night and early morning hours.

PANTOGRAPH -- A current collector that usually consists of two parallel, hinged, double-diamond frames designed to take power from an overhead contact wire by means of a gliding contact shoe.

PASSENGER -- A person who rides a transportation vehicle, excluding the driver or the crew members of a public transportation vehicle.

REVENUE PASSENGER -- A passenger from whom a fare is collected.

TRANSFER PASSENGER -- A passenger who transfers to a line or route after paying a fare on another line or route.

PASSENGER RIDING COUNT -- A count of the number of passengers who board and leave a vehicle, noting arrival and departure times, at designated stops along the route; performed by a surveyor or checker riding the vehicle.

PASSENGER STANDING COUNT -- An estimation of the number of people aboard a vehicle at the time the vehicle passes a checkpoint; performed by a surveyor or checker on the street.

PATRONAGE -- The number of transit passengers carried during a given time period.

PCC (PRESIDENTS' CONFERENCE COMMITTEE) STREETCAR -- A light-rail car or streetcar first produced in 1935 that accomodates approximately 100 passengers, including standees; its performance and efficiency demonstrated great improvement over any streetcar previously built.

PEAK -- The hours, usually in the morning or afternoon, when demand for transportation service is heaviest.

PEAK SERVICE -- Operation of the maximum number of vehicles during the peak period (usually the morning or evening commuter hours).

PENINSULA TRANSIT ALTERNATIVES PROJECT (PENTAP) -- A project to evaluate, select, and implement a future transit system in the West Bay Corridor, between San Jose and San Francisco; encouraged upgrading of the Southern Pacific Peninsula rail service.

POM (PLANNING, OPERATIONS AND MARKETING) STUDY -- The consultant report, prepared by Wilbur Smith and Associates, which made recommendations to the MUNI for its 5-Year Plan; completed June 30, 1977.

POWER IMPROVEMENT PROGRAM (PIP) -- An 80 per cent federally-funded program for rebuilding and augmenting the Municipal Railway's trolley coach and light rail system power conversion (from AC to DC) substations, as well as undergrounding the overhead feeder cables on most trolley lines.

PUBLIC UTILITIES COMMISSION (PUC), SAN FRANCISCO -- The five-member citizen commission which, under the City Charter, has jurisdiction over the Municipal Railway, the Water Department and the Hetch-Hetchy Water and Power Project.

PULL-IN -- A trip that is concluded by withdrawing the vehicle from revenue service into a storage area. 2. A transit vehicle that is removed from revenue service without having completed its prescribed run. 3. The trip from a finishing point to the station.

PULL-OUT -- A deadhead trip to the point at which the vehicle begins an in-service trip. 2. A transit vehicle that is leaving a yard.

RECAPITULATION OF SCHEDULES -- An information sheet that contains basic schedule data for each line of the system as well as system totals and a summary of schedule allowances expressed in time and money.

RECOVERY TIME -- For transit vehicles, the time allowed at a stop between arrival and departure for the purpose of turning vehicles, recovery of delays, and preparing for the return trip.

RECTIFIER -- A device for converting commercial alternating current (AC) electricity to direct current (DC) for use by electric transit vehicles.

REGIONAL TRANSIT ASSOCIATION (RTA) -- A cooperative management association of the San Francisco Bay Area transit operators; created in December, 1976.

RETROFIT -- A practice wherein parts are fit to the specifications of an already-existing vehicle, e.g., when wheelchair lifts are refit to vehicles that were not originally designed with them.

REVENUE SERVICE -- Line service operation, excluding deadheading or layovers. 2. Any service scheduled for passenger trips.

RIDE CHECK -- A check of a run or of an operator for conditions en route.

ROLLING STOCK -- The vehicles in a transit system, including buses, rail cars, and trolley coaches.

ROUTE -- The geographical path followed by a vehicle or traveler from start to finish of a given trip; several routes may traverse a single portion of road or line.

RUN CUTTING -- The process of organizing all scheduled trips operated by the transit system into runs.

RUNNING HOT -- Running ahead of schedule.

RUNNING TIME -- The time required (actual or scheduled) for a transit vehicle to move from one point to another, including making stops.

SAMTRANS (SAN MATEO COUNTY TRANSIT DISTRICT) -- A special district in San Mateo County which provides bus service in the county and to San Francisco.

SASH -- A term for the side windows of a transit vehicle.

SCHEDULE -- A listing in time sequence of every trip and every time point of each trip from open to close of service on a transit line.

SERVICE FREQUENCY -- The number of vehicles moving in the same direction that pass a given point on a route within a specified interval of time.

SHEAVE -- A large grooved wheel, housed in an underground chamber, which is used to turn or guide the cable used in the cable car system. Sheaves are located, for example, at the ends of cable car lines to "reverse" the cable's direction.

SHUTTLE SERVICE -- A transit service operated on a short route, often as an extension to the service of a longer route.

SIGNAL PREEMPTION -- A mechanical, optical, or sonic technique for altering the normal signal phasing or the sequence of a traffic signal in order to provide preferential treatment for multipassenger vehicles, buses, trains, and so on.

SPLIT RUN -- Two operating assignments separated by a period of time during which the driver is unassigned and not paid by the transit operator.

THROUGH ROUTING -- Joining the ends of transit lines in order to operate them as one longer line; often done in the Downtown area to avoid having lines terminate there and go back to their point of origin.

TRANSFER -- A slip of paper issued to a passenger that gives him or her the right to change from one transit vehicle to another according to certain rules. 2. The change from one transit vehicle or mode to another transit vehicle or mode.

TRANSIT DEPENDENT -- Having to rely on public transportation to meet one's travel needs.

TRANSIT EQUIPMENT PROGRAM (TEP) -- An 80 per cent federally-funded program for vehicle replacement.

TRANSIT IMPROVEMENT PROGRAM (TIP) -- A program and staff within the Municipal Railway that designs and implements system improvements. (This is to be distinguished from another "TIP," the Transportation Improvement Program, which outlines capital improvements to be made over the next five years.)

TRANSIT LANE -- A street or highway lane intended primarily for transit vehicles, either all day or during specified periods, but used by other traffic under certain circumstances, e.g., making a right turn.

TRANSIT PRIORITY -- A means by which transit vehicles are given an advantage over other traffic, e.g., preemption of traffic signals or transit priority lanes.

TRANSPORTATION DISADVANTAGED -- People whose range of transportation alternatives is limited, especially in the availability of relatively easy-to-use and inexpensive alternatives for trip making, e.g., the young, the elderly, the poor, the disabled, and those who do not have automobiles.

TRANSPORTATION IMPROVEMENT PROGRAM (TIP) -- A program of proposed projects to improve an area's transportation system that is prepared for submittal to the U.S. Department of Transportation as part of the grant-in-aid application process.

TRANSPORTATION SYSTEM MANAGEMENT (TSM) -- The portion of the transportation improvement program that outlines non-capital-intensive steps that will be taken to improve the transportation system, e.g., improvements in system and traffic management, such as bus priority or reserved lane systems and restrictions on downtown traffic or parking.

TRIP GENERATOR -- A point from which trips are produced, such as a dwelling unit, a store, a factory, or an office.

TROLLEY COACH -- an electric bus propelled by a direct current motor that draws power through a trolley from overhead electric conductors (trolley wires); the power-collection apparatus (trolley pole or pantograph) is designed to allow the bus to maneuver in mixed traffic over several lanes and pick up passengers at the street curb.

TROLLEY COACH OVERHEAD PROGRAM (TOP) -- A program in which trolley coach overhead wire is refurbished, extended, or rerouted. This is 80 per cent funded by the federal government.

TRUNK SERVICE -- A frequent, high-capacity main line transportation service.

UMTA (URBAN MASS TRANSPORTATION ADMINISTRATION) -- A component of the U.S. Department of Transportation that assists in the development of improved mass transportation facilities, equipment, techniques, and methods; encourages the planning and establishment of areawide urban mass transportation systems; and provides assistance to state and local governments in financing such systems.

YOKE -- The metal and concrete substructures which, at intervals of every few feet, support the cable railway track and related structure.

The San Francisco Municipal Railway 5-Year Plan was prepared by the following members of the Municipal Railway Planning Division staff:

Barbara Brown
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Buford Johnson
Arlicia Lee
Zarina Lodhi
John McKane
Tom Matoff
Charles Nash
Carl Natvig
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Figure IV-2
EXISTING MUNI MIDDAY
TRANSIT ROUTES

LEGEND
CABLE CAR, MOTOR COACH,
TROLLEY COACH, STREET CAR
EXPRESS LINE OR LIMITED
END OF LINE



Figure V-5
POM RECOMMENDED PLAN
MIDDAY ROUTES

LEGEND

RADIAL ROUTES

- SINGLE ROUTE
- EXPRESS SECTION OF ROUTE
- 3 OR 4 ROUTES ON STREET
- 5 OR MORE ROUTES ON STREET

OTHER ROUTES

- CROSSTOWN
- FEEDER
- MUNI METRO
- CABLE CAR

TERMINALS & STATIONS

- ROUTE TERMINUS
- MUNI METRO STATION
- BART STATION
(Market Street BART Stations are also MUNI METRO Stations)

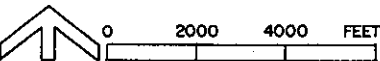
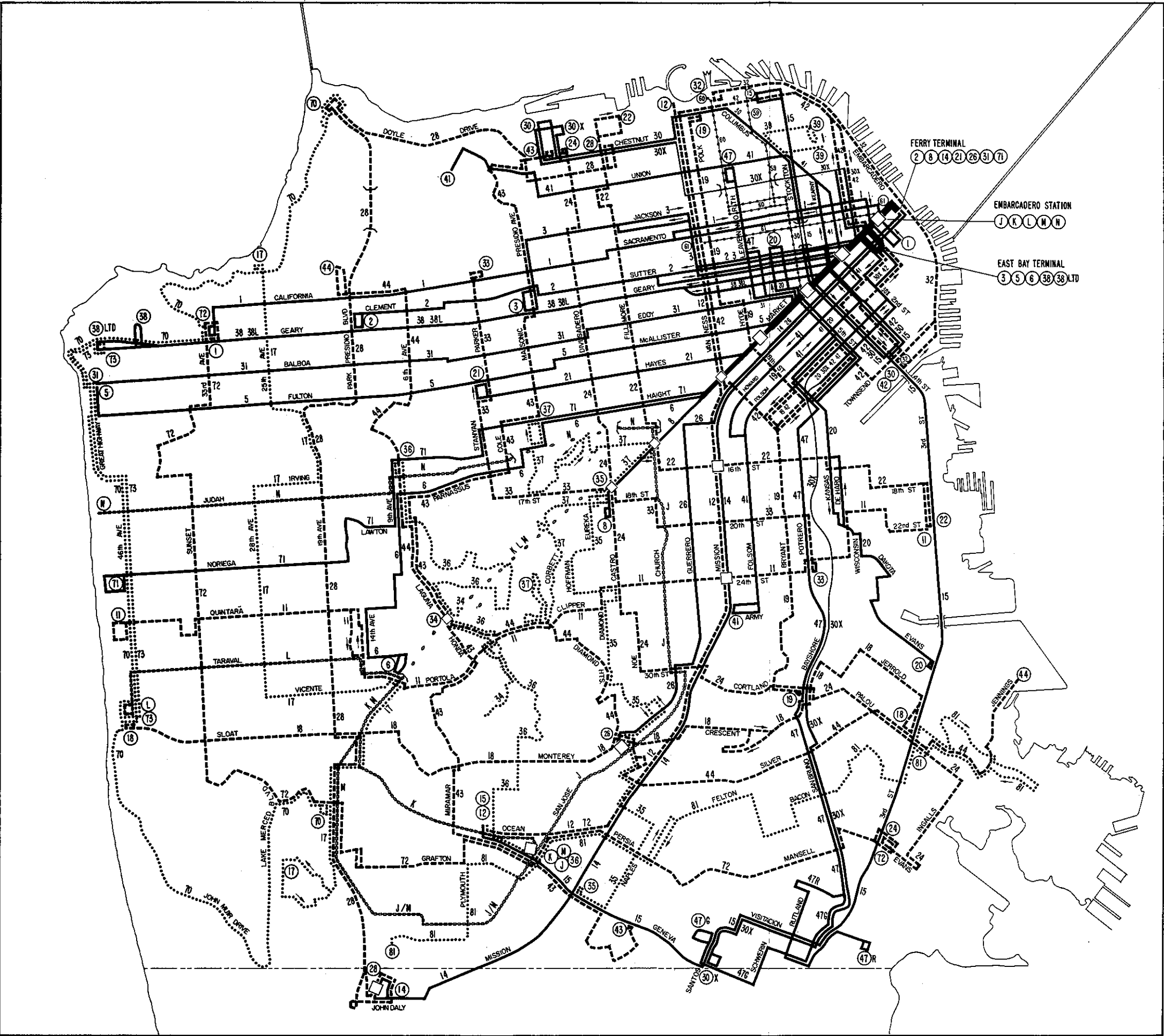
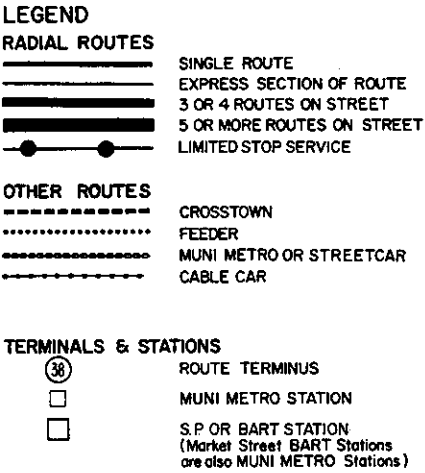


Figure V-19
RECOMMENDED PLAN

MIDDAY ROUTES



San Francisco Municipal Railway
5-YEAR PLAN 1979-1984

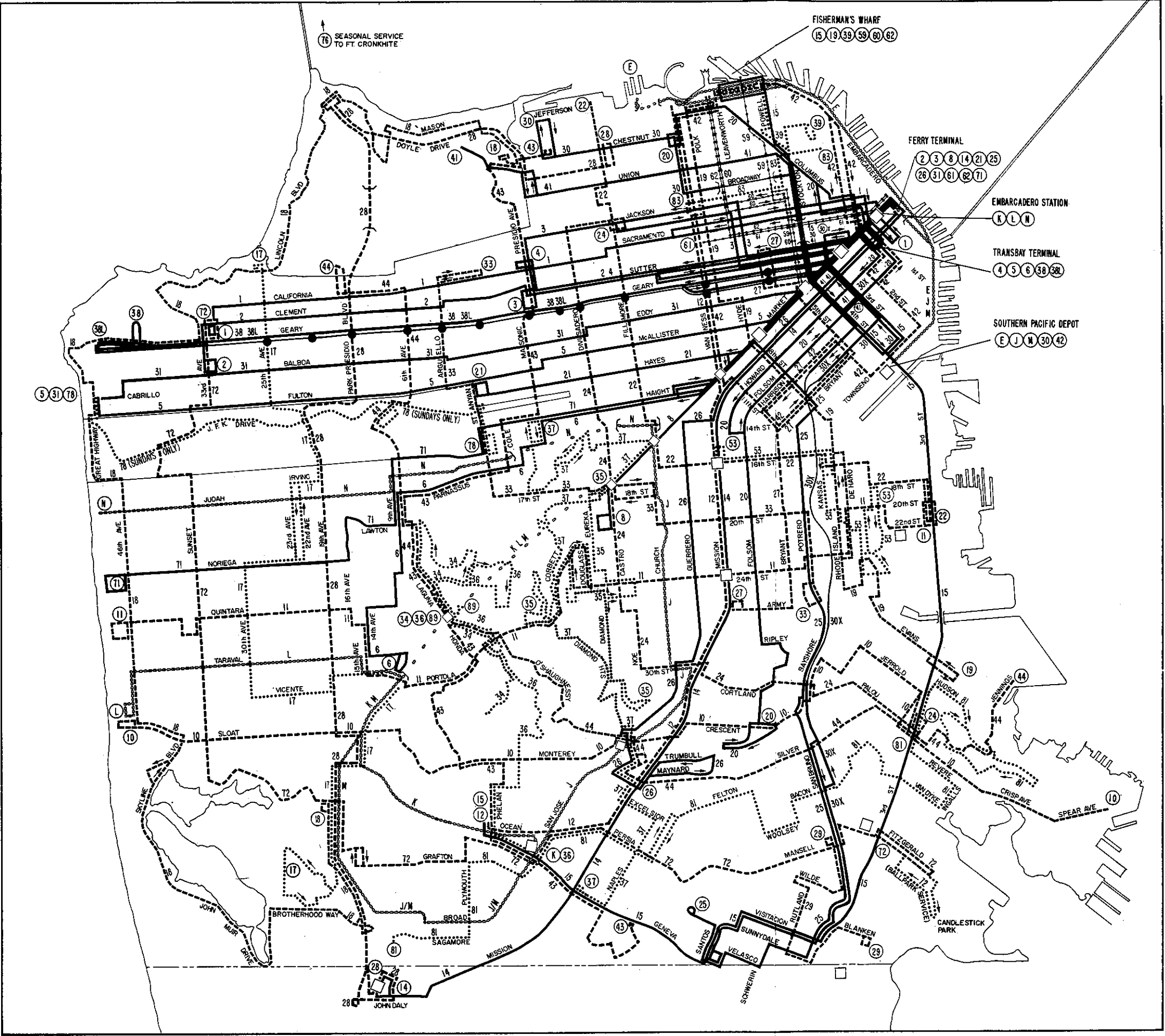
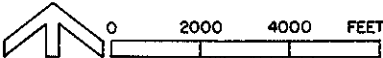


Figure V-21
RECOMMENDED
EXPRESS AND PEAK HOUR
SERVICE

LEGEND

PEAK HOUR
LOCAL
EXPRESS

ALL DAY
LOCAL
EXPRESS
LIMITED STOP SERVICE
S. P. RAIL
BART
MUNI METRO

STATION NAME

San Francisco Municipal Railway
5-YEAR PLAN 1979-1984

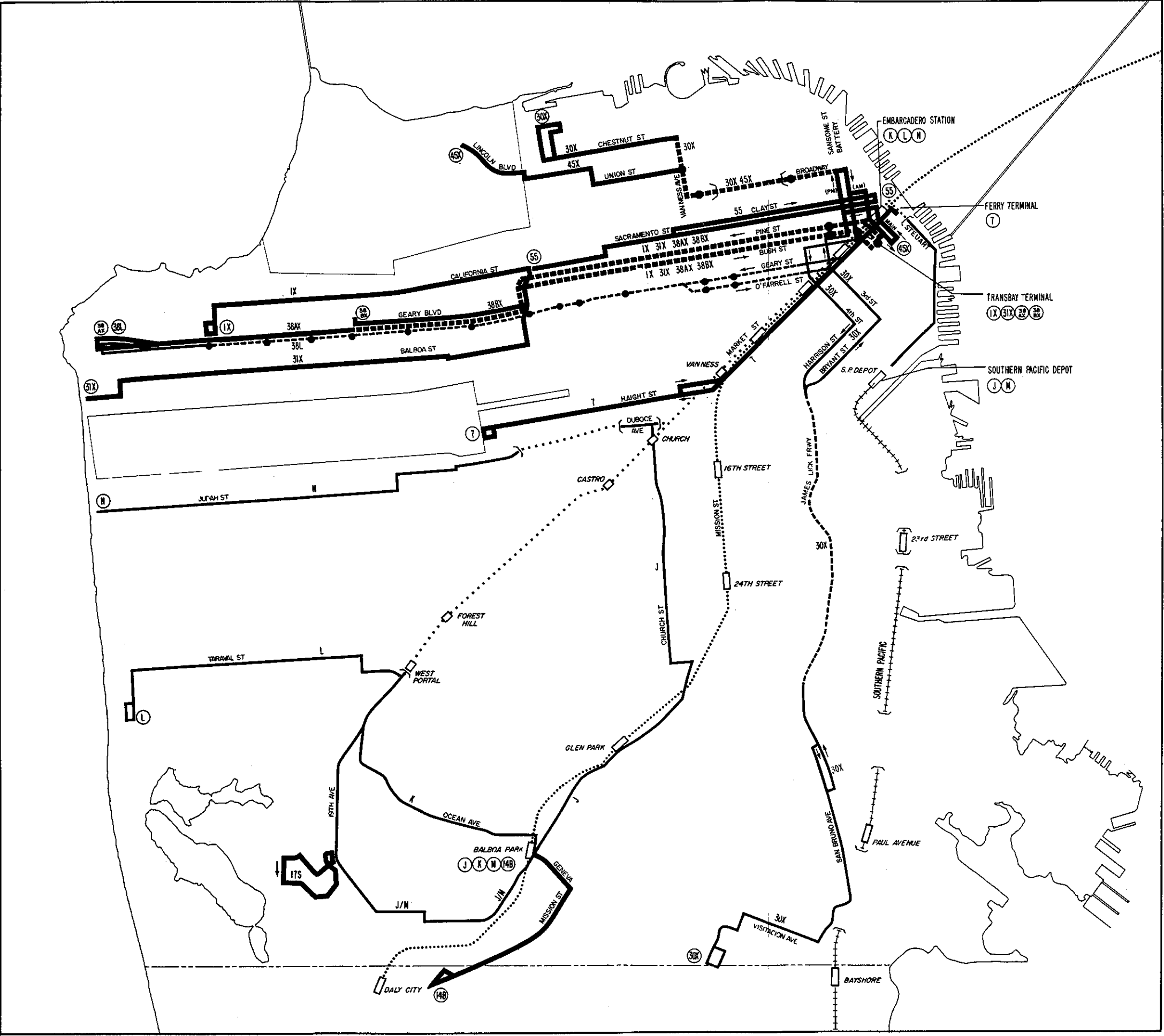
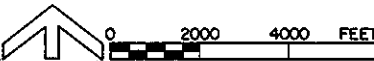


Figure V-22
PHASE I
TRANSIT ROUTES

- LEGEND
- EXISTING TRANSIT SERVICE (UNCHANGED)
- LOCAL LINES
 - - - EXPRESS LINES OR LIMITED
- NEW & REVISED TRANSIT SERVICE
- PHASE IA
 - - - PHASE IB
 - LIMITED STOP SERVICE
 - EXPRESS SECTION OF ROUTE
 - ***** ALL SERVICE ON STREET DISCONTINUED
- TERMINALS
- ⑧ EXISTING LINES
 - ⑫ NEW & REVISED LINES

San Francisco Municipal Railway
5-YEAR PLAN 1979-1984

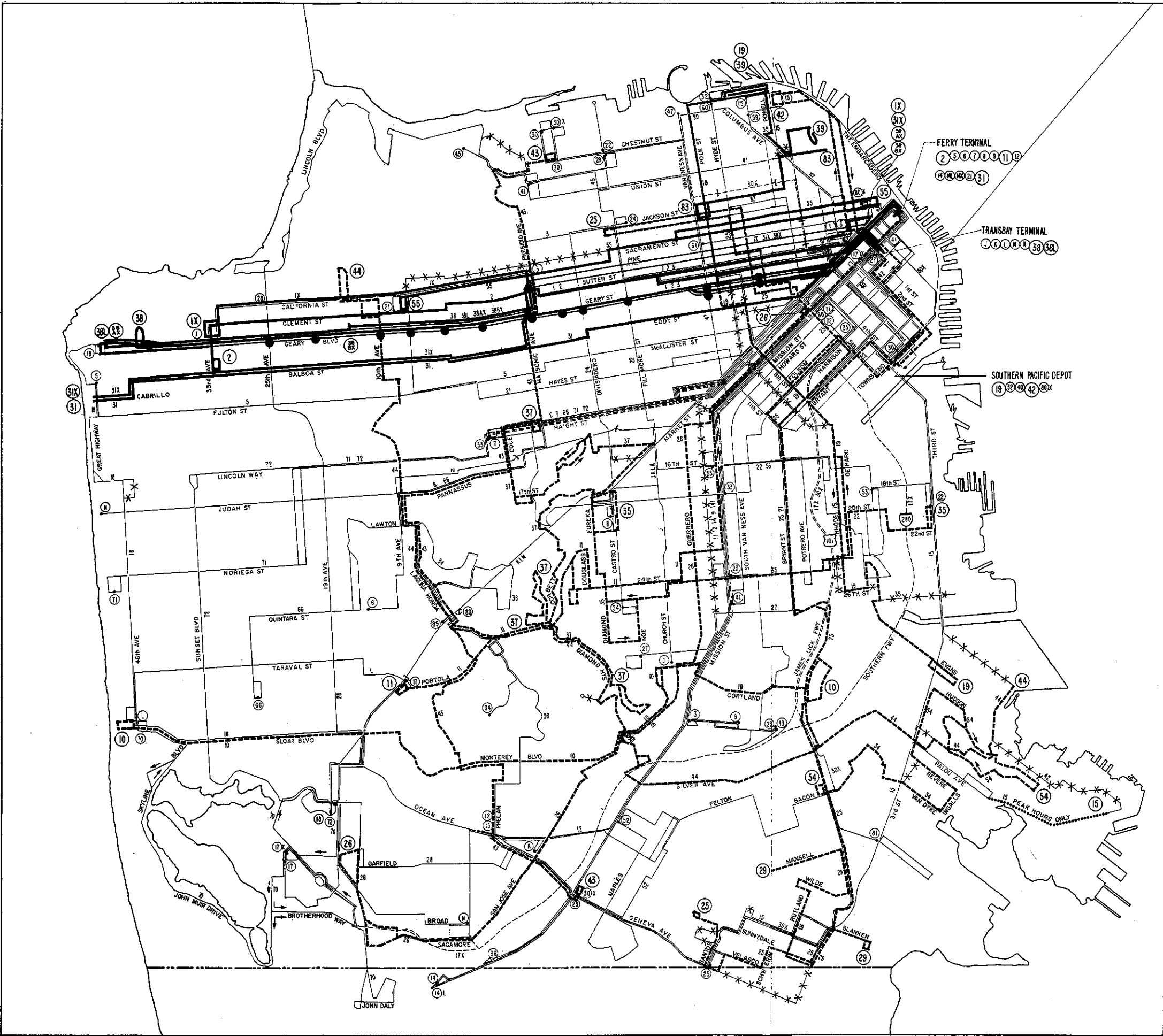


Figure V-23
TROLLEY COACH
EXPANSION PLAN

- LEGEND
- NEW, REVISED AND EXTENDED TROLLEY COACH LINES
NEW OVERHEAD WIRE & SUPPORT FACILITIES
EXISTING WIRE
- NEW AND REVISED MOTOR COACH LINES
(TO BE IMPLEMENTED IN CONJUNCTION WITH NEW TROLLEY COACH SERVICES)
ALL DAY LOCAL
ALL DAY EXPRESS
PEAK HOUR ONLY LOCAL
PEAK HOUR ONLY EXPRESS
- TERMINALS
NEW AND REVISED LINES
PHASE I LINES
- PHASE I TRANSIT SERVICE
LOCAL LINES
EXPRESS LINES
ALL SERVICE ON STREET DISCONTINUED

San Francisco Municipal Railway
5-YEAR PLAN 1979-1984

