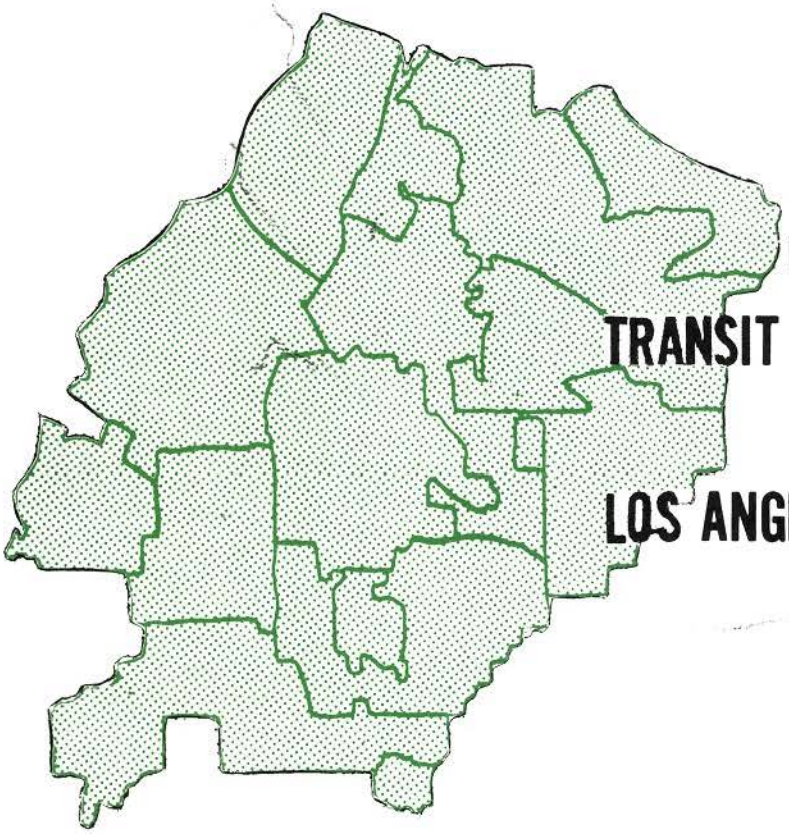
FINAL REPORT



RECOMMENDED TRANSIT IMPROVEMENT PLAN FOR THE LOS ANGELES MID-CITIES AREA

SCRTD

SHORT RANGE
TRANSIT IMPROVEMENT
PROGRAM

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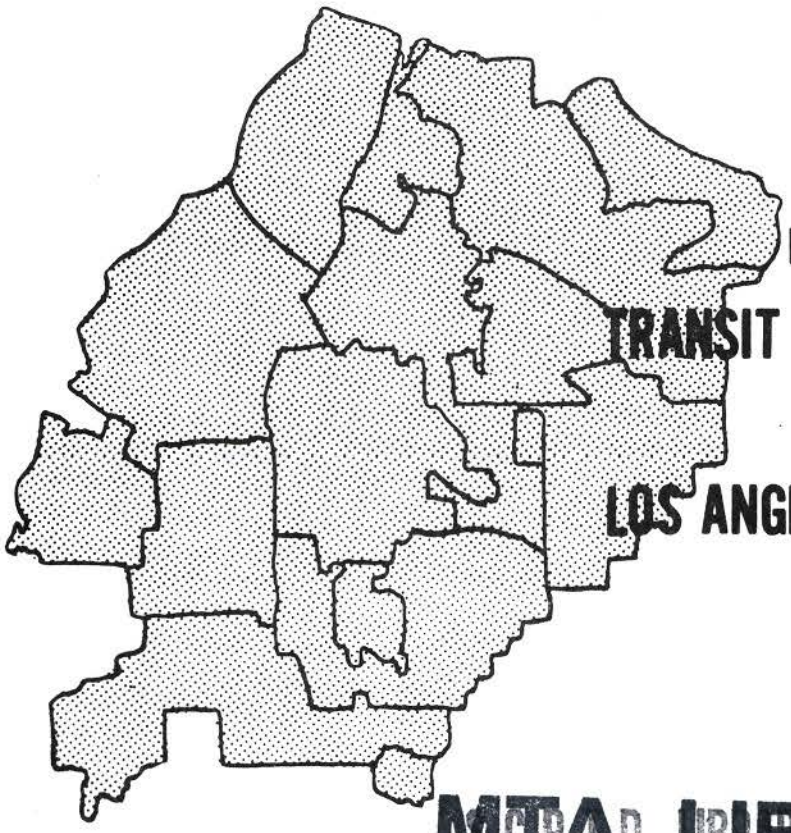


RECOMMENDED TRANSIT IMPROVEMENT PLAN FOR THE LOS ANGELES MID-CITIES AREA

SCRTD

SHORT RANGE
TRANSIT IMPROVEMENT
PROGRAM

PREPARED BY

CENTS
TRANSIT OPERATIONS & PLANNING DIVISION

in conjunction with

SCRTD
PLANNING & OPERATIONS STAFFS

CENTS

Transit Operations Planning

403 W. 8TH STREET · LOS ANGELES, CALIFORNIA 90014 · (213) 628-6318

May 16, 1975

Mr. Howard Beardsley
Assistant Manager for Surface Transportation Planning
Southern California Rapid Transit District
1060 South Broadway
Los Angeles, California 90015

Dear Mr. Beardsley:

We are pleased to submit our Final Report documenting our recommendations for a revised RTD transit system for the Mid-Cities area of southeast Los Angeles County.

The report contains the rationale for the recommendations and it documents the process that was used to exchange ideas and concepts with the planning agencies, elected officials and citizens throughout the development of the recommended system. We are very gratified that the community meetings in each of the twelve cities of the Mid-Cities area are favorably disposed toward the recommendations and are anxious to see an alternative to the current service implemented without delay.

We have included in the report the suggestions for changes in routing and scheduling that emerged at the public meetings, and we have incorporated those that are technically defensible in our recommendations contained in Chapter Six.

The recommended plan reduces travel time by an average of 28 per cent for trips within the area. Access to the system is improved by 57 per cent. An equally vital aspect of the plan is the improvements that it recommends regarding the interconnections between RTD lines and those of the Long Beach Public Transportation Company (LBPTC) and in eliminating certain service duplications between RTD, LBPTC and the Orange County Transit District. We are very proud that our recommendations were accepted by LBPTC and Orange County and that we were able to assist in the technical negotiations.

We are most grateful for the help that we obtained from the staff of the Planning Department and the Community Relations Department. We are particularly indebted to you, Joe Cooper, Russ Wilson and Al Holman who worked alongside of us. Without their help, the plan would have lacked in insight and breadth.

Finally, we would like to commend Mr. George Mc Donald for his foresight in devising the staff augmentation concept wherein the consultant staff and RTD staffs interact on virtually a daily basis to exchange ideas and knowledge. We believe that the concept established a communication process by which the RTD staff was at all times aware of our ideas and was able to bring their considerable experience to bear on them. Due to the high degree of collaboration, the technical recommendations contained in this report were known to the RTD staff long before this report was prepared. Their intimacy with the plan played a key role in communicating the plan to the communities in the Mid-Cities and in eliciting the favorable responses to it.

Sincerely yours,

Wolfgang Jakobsberg
President

Thomas E. Dolan
Project Director

Enclosures

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

This study is a part of an intensive short-term transit improvement program initiated by SCRTD to evaluate the quality and efficiency of bus service in the Los Angeles Metropolitan Area and to recommend those improvements that can be achieved within available or reasonable resources. The program is organized into a series of studies, each concentrating on a specific area serviced by SCRTD. The area assigned to CENTS by SCRTD for evaluation, and the subject of this report, is the Mid-Cities area of Southeast Los Angeles County. This area is populated by over 625,000 people and encompasses approximately 105 square miles.

STUDY OBJECTIVES AND SCOPE

This study, and similar studies covering other areas, is designed to:

1. Evaluate the transit services that are currently being offered to the population living in southeast Los Angeles County from the point of view of the transit system operator(s), the people that use it, and the community in general.

2. Develop a plan for improving SCRTD's bus services in the study area that contains sufficient operational detail to enable its immediate implementation.

The scope of work to accomplish these objectives encompasses the following steps:

1. Estimate the transit needs and travel behavior of the residents of the area.

2. Define the location of trip origins and destinations.

3. Identify service deficiencies and inadequacies within existing public transit services offered within the area.

4. Design new transit routes or alter existing routes so as to better connect trip origins and destinations.

5. Design operating performance for new service.

6. Evaluate the impact of the new service on SCRTD, other transit system operators, current and potential patrons and the community in the area.

This study contains three basic sections: an analysis of the area; an analysis of the existing transit service provided; and recommended changes to the system. The first section includes a description of the area's demography and travel patterns. The second section contains an account of the existing system and the service it is currently providing to the area. Also included is a summary of present patronage, itemization of apparent deficiencies and an account of how the present service meets or fails to meet the mobility requirements of the population.

Section three itemizes the recommended changes in service and evaluates the proposed system from the point of view of the user, the community and

the operator.

The recommended transit system for the area is described in the report by:

- a network map showing the relationship between the routes and the major activity centers (destinations) within the area,
- a matrix of travel times between city halls within the study area,
- the headways, inservice route miles, service hours, trip times, operating speeds of buses along each route, running times along various segments of a route, and number of vehicles,
- layover points,
- a complete data sheet showing profile requirements for each line.

Three alternative levels of service are developed. The Base Level proposes service at a level that will utilize approximately the same number of buses and drivers as used by the current system serving the area. Developmental Level A allows for certain headway improvements which result in a moderate increase in service. Developmental Level B is the ultimate level of service that would be useful in the area assuming no restrictions on resources.

APPROACH

In order to assess the adequacy of the current transit services offered in the Mid-Cities study area and to identify possible service improvements, it is necessary to adopt standards or criteria for measuring service and for judging adequacy. In practice, the number of such criteria that are used and the manner in which the transit system is measured is conditioned by the purpose for which the measurement is undertaken and by such realities as availablity of data and the time involved in acquiring or processing such data relative to the time allotted for arriving at an answer.

Evaluation of the adequacy of the current services had to extend only to the point where answers to the following questions could be attained:

1. Are there patterns of travel within the study area that are sufficiently distinctive that they can serve as criteria for examining the compatibility of existing routes with these mobility requirements?
2. Are there areas of population groups that have no access to the public transit system and that are generally regarded as requiring such accessibility?
3. Are there significant numbers of trips that can only be accomplished on the current system at considerable inconvenience or time consumption?

A precise determination of travel patterns would require data on where

people who live in the area go and where those who come into the area originate. Data at such a level of specificity is available only from origin and destination surveys which do not exist for this area. The 1967-68 LARTS data are, not only, too imprecise for transit route planning, but are also too old, especially in light of the recent growth of the area. Travel patterns were thus deduced from interviews with planning agencies serving the area, representatives from municipal governments, operators of such major activity centers as shopping plazas, hospitals and colleges. The study staff met twice with representatives of 10 cities within the study area. The exceptions were Pico Rivera, which is not officially a part of the study area, and Artesia, which, unfortunately, did not respond. The first meeting was held in each city and included city representatives who had an interest in transportation planning. Each group was acquainted with the purpose of the study and what was hoped to be accomplished. General information about the city such as city plan, maps, transportation system, development, etc., was obtained from each group. After these data were examined and interpreted, a second meeting was held with each city. Each of these meetings was concerned with ascertaining that the proper information about each city had been obtained, and that it was being interpreted correctly. To this end, representatives of each city were shown a series of maps and overlays representing the various transportation, geographical, land use, and socio-economic aspects of each city and were asked to comment and, where feasible, suggest improvements.

Census data were used to determine if there were significant travel patterns for work trips. SCRTD data from traffic checks were used to gauge the principal points where people who board a bus live, where they alight, and, in selected cases, their travel distance. These data are part of the line profiles which are included in the Appendices. Revenue estimates for each line were another source of information for determining the importance of a line. Heavily traveled lines served as indicators of existing major travel corridors.

Travel behavior is also derivable from the demography of the area, that is, the socio-economic character of the population living in subareas of the study. These data came from the 1970 Census data for each census tract comprising the study area. Some data elements have been updated by individual cities to reflect some of the changes that have taken place since 1970. The interviews mentioned earlier helped to identify certain population groups as potential users of public transit. The demographic variables that have traditionally been used to identify groups with a high potentiality for transit use are: low income levels, low incidence of auto ownership, low incidence of drivers per household, minority group affiliation, age (under 16 and over 60), large concentrations of individuals with work trip destinations in the Los Angeles CBD, and high density land use.

A more precise identification of existing and potential transit patronage would have been desirable. This would have necessitated surveying the characteristics of a sample of the patronage on each existing SCRTD transit line. The two month interruption in service produced by the labor strike prevented such a survey. Although the absence of more precise identification of potential transit users is limiting, its impact on new routes or on realigning of existing routes can be minimized by a network of new routes that are well distributed throughout the study area and that connect the

principal communities in the area with each other. Such a network should be accessible by all population groups and it should attract some of those who are now considered potential transit patrons. Where more precise knowledge would help is in determining when it would pay to intensify service beyond the "reasonable level". Such an increment in service should result in a dramatic increase in patronage.

Adequacy of the level of service offered by the existing transit system was measured in terms of travel time, including wait and transfer time, intercity connections, headways, and speed. Although not an exhaustive set, these measures are generally regarded as among the principal criteria for assessing the patronage profiles of each line, the daily schedules of each service. To the extent that drivers adhere to schedules, these measures reflect the service provided on each line.

The deficiencies of the current system were identified by comparing its performance with the following standards for the stated measurements:

Population coverage:	50 bus miles/1000 population
Headways:	60
Number of intercity connections:	4 or more
Trip time:	60
Bus miles/passenger:	0.287, average for RTD system (1974)

These standards express measures by which the community, the transit patron, and the transit operator can judge the performance of a transit system.

Once the deficiencies are known, improvements can be formulated. In the case of this study, a new route structure had to be developed as well as new levels of service on these routes. Recognizing that SCRTD is limited in the number of buses and drivers, and in the amount of support facilities that it can bring to bear in the study area, three levels of service were postulated for each line. Each line was described using the same measures that were used to assess the current system and these were also used to evaluate the alternative systems.

The evaluation of the system takes into consideration the sometimes conflicting viewpoints of the operator of the transit service, the potential user of that service, and that of the community at large. For each line, the optimum level of service is defined. The judgment was based upon the characteristics of the population, the potential number of people that would use the service, and the attractiveness of the destinations served by that route. From this, the optimum service levels for the entire system were synthesized and presented as the recommended system.

CHAPTER 2

THE STUDY AREA

GENERAL DESCRIPTION

The Mid-Cities study area consists of 12 incorporated municipalities within Los Angeles County plus unincorporated portions of the County. The study area, shown in Figure 2-1, is bounded on the west by the Los Angeles River - Rio Hondo, on the north by Puente Hills, on the east by Orange County, and on the south by the City of Long Beach. The City of Pico Rivera, although not officially a part of the study area, was nevertheless included in the analysis because of its location and its impact on potential route and schedule changes. The population and area of each city and unincorporated portions of the study area are shown in Table 2-1.

The topography of much of the study area is flat, the only exceptions being the Puente Hills area in Whittier, and the Los Coyotes Hills in La Mirada. The relative absence of other topographic obstacles (the Los Angeles and San Gabriel Rivers are not major obstacles) has fostered a network of uninterrupted, straight arterial streets. North of Imperial Highway the inclination of the road grid is along a southeast-northwest axis. This pattern is determined by the hills to the northeast and by the railroads. Major roads that follow this inclination are, from north to south: Whittier Boulevard, Washington Boulevard, Telegraph Road, Firestone Boulevard, and the Santa Ana Freeway.

From Imperial Highway south, the area exhibits a more or less conventional square grid pattern aligned along a north-south axis. Major east-west arterials south of Imperial are: Rosecrans Avenue, Alondra Boulevard, Artesia Boulevard, South Street, Del Amo Boulevard, and Carson Street.

There are several major arteries that traverse the entire study area in the north-south direction. Where the two grid patterns meet the orientation changes for such major arteries as Paramount Boulevard, Lakewood-Rosemead Boulevards, Bellflower Boulevard, Studebaker Road, Pioneer Boulevard, Norwalk Boulevard, Carmenita Road, and Valley View Avenue.

The extensiveness of the grid pattern has facilitated movement within the area. The street pattern together with extensive new residential construction that has taken place within the last 10 years, has spurred construction of large shopping plazas and commercial strips. The population has grown from 520,000 to 588,000 between 1960 and 1970, an increase of 13 percent. Between 1970 and 1974 it is estimated that the area's population has increased by 6.5 percent. In contrast, the population of the Los Angeles basin has declined by 2 percent over the same period.

All major activity centers are readily accessible by freeway and arterial highway. The principal shopping plazas include the Quad and Whittwood in Whittier, Stonewood in Downey, La Mirada Center in La Mirada, Norwalk Square in Norwalk, Los Cerritos Center in Cerritos, and Lakewood Center in Lakewood. These centers provide not only shopping for area residents, but employment as well. These centers, shown in Figure 2-9, became major foci for the proposed transit system concept for the area.

DEMOGRAPHY[1/]

The area is inhabited by a predominantly middle class population. The median income of each census tract in the area is shown in Figure 2-2. It

1/ Source: 1970 U.S. Census

TABLE 2-1

POPULATION AND AREA OF MID-CITIES AREA

CITY	SOURCE	POPULATION	SQUARE MILE AREA
Artesia	City Data 1973	14,600	2.00
Bellflower	City Data 6-1971	52,166	6.10
Cerritos	City Data 10-1972	37,739	8.70
Downey	City Data 6-1-1974	92,064	12.70
Hawaiian Gardens	City Data 1974	10,000	.95
Lakewood	City Data 1973	82,400	9.00
La Mirada	City Data 1974	38,900	7.00
Los Angeles County	Census 1970	27,429	12.00
Norwalk	City Data 1974	95,000	12.00
Paramount	City Data 1973	31,650	4.54
Pico Rivera	City Data 1973	53,100	8.40
Santa Fe Springs	City Data 1974	15,500	8.68
Whittier	City Data 1973	74,048	12.04
TOTALS		624,596	104.11

is noteworthy that the income levels are distributed throughout the area although the western half tends toward the lower middle end of the income range while those in the eastern portions comprising the areas of La Mirada and Eastern Whittier are more affluent.

The distribution of incomes and the relatively narrow range of the distribution, i.e. 80 percent of the areas population falls within the income range of $10,000 to $15,000 (1970 Census), contributes to the homogeneity of travel and the diffusion of trip destinations throughout the area. Work trips are an example of this. A major work trip destination from the study area is the Los Angeles CBD, yet Figure 2-3 shows that the total work trips to the Los Angeles CBD range from below 1 to 7 percent with the average around 4 percent.

Regardless of the destination, Figure 2-4 shows that in only a few census tracts are more than 2 percent of the work trips made by public transportation.

The poor, the elderly, and the young have repeatedly been shown to be a subset of the population that is over represented among transit riders. Figure 2-5 is a graphical presentation of the ratio of elderly, i.e. those over 60 years, to the total population. For the most part, the area contains a very low percentage of elderly, there being only a small concentration in Whittier, Downey, and Bellflower in the north and west portions of the study area.

Predictably, the percentage of the population below the poverty level, i.e. household incomes of $3,743 per year, is very small. As shown by Figure 2-6, the below poverty level population is typically under 7 percent. Only a few pockets of poverty exist in a few tracts in Artesia, Paramount/Downey, Pico Rivera, Hawaiian Gardens, and Norwalk. By comparing Figures 2-2 and 2-6, it is evident that the census tracts that comprise the poor correspond closely to those that reflect high percentages of unemployment.

In Southern California there is often a very high correlation between low income and Spanish speaking peoples. For the study area (Figure 2-7), this correlation is evident in only the Pico Rivera and Norwalk areas. Throughout the area, the representation of Spanish speaking people is less than 30 percent of the population. In other census tracts there appears to be no correlation between the average household income and the percent of Spanish speaking residents.

In most suburban areas, transit usage varies inversely with auto ownership. Auto ownership for the Mid-Cities study area, as shown in Figure 2-8, is high, being above 1.6 autos per household. Where auto ownership is low, there is a correlation with low income. There is very little correlation between transit usage for work trips (Figure 2-4), and auto usage. Where transit usage is above average for the area, auto availability tends to be low. However, there are a sufficient number of exceptions, i.e. census tracts in La Mirada and Bellflower, to discourage a convenient generalization.

In summary, the area is populated by a middle income population, most of whom have access to an automobile and make most of their trips by auto.

Figure 2-1

MID-CITIES AREA GEOPOLITICAL BOUNDARIES

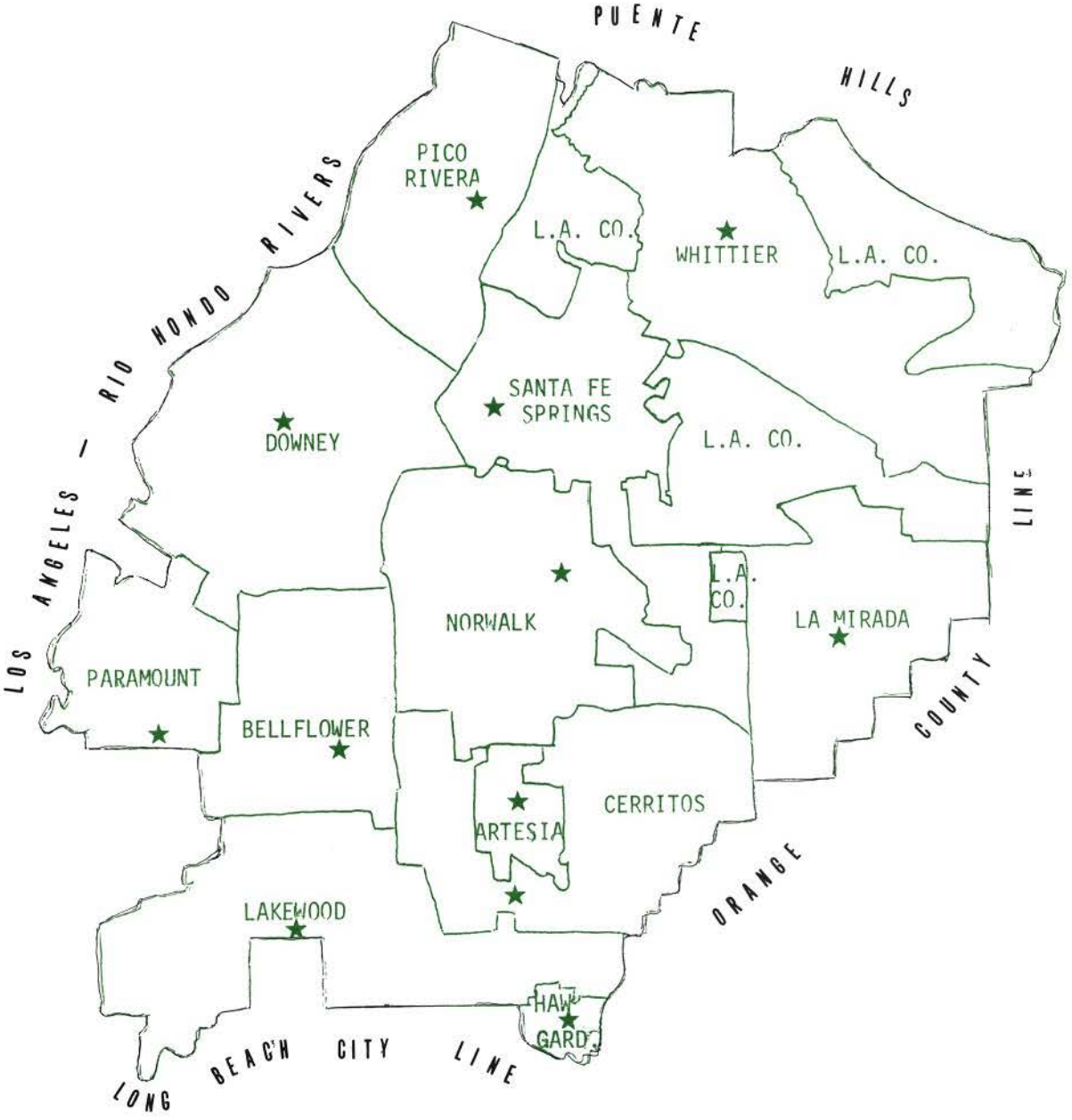
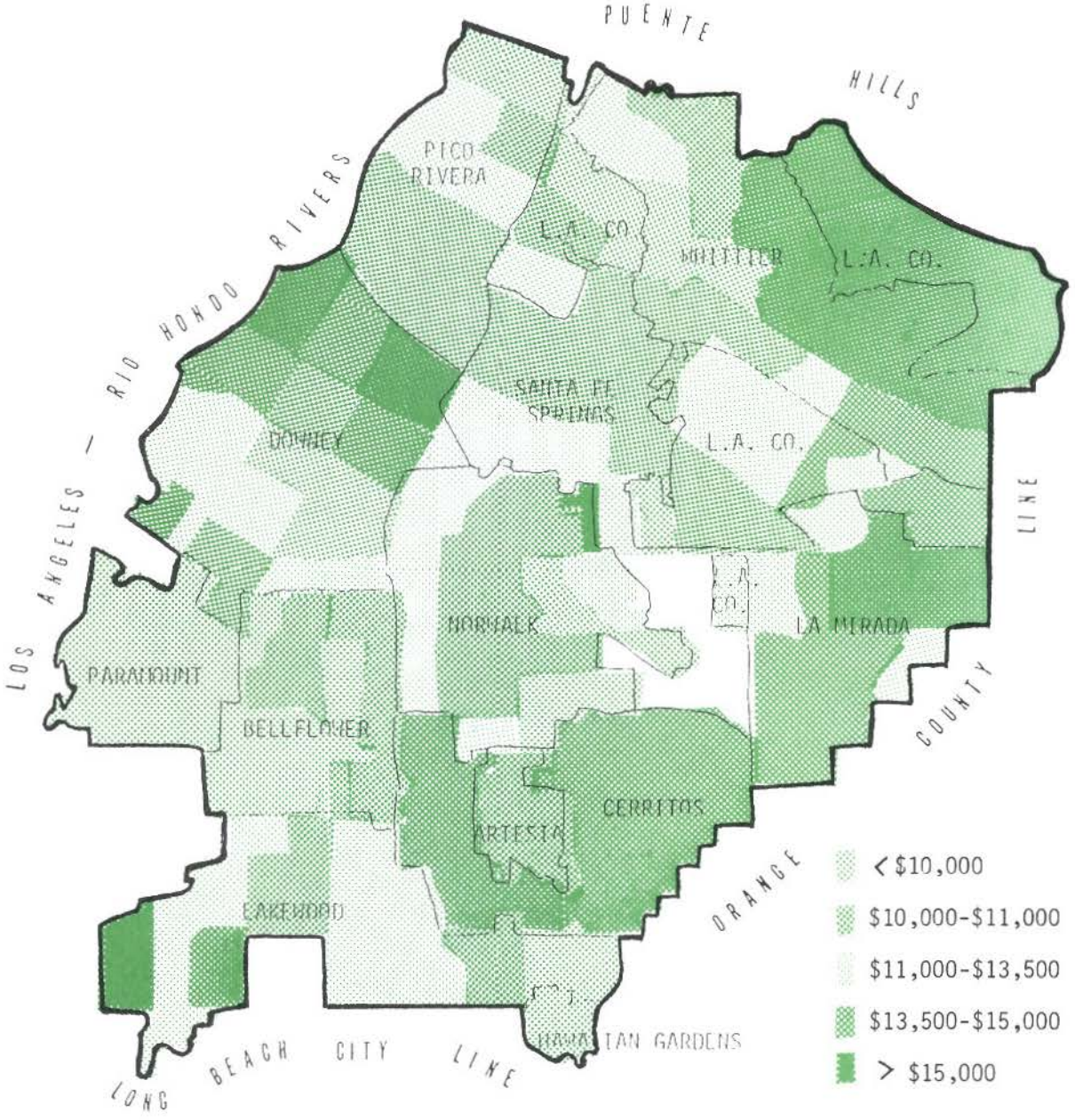


Figure 2-2

MID-CITIES STUDY AREA

MEDIAN INCOME

BY CENSUS TRACT



Source: 1970 U. S. Census

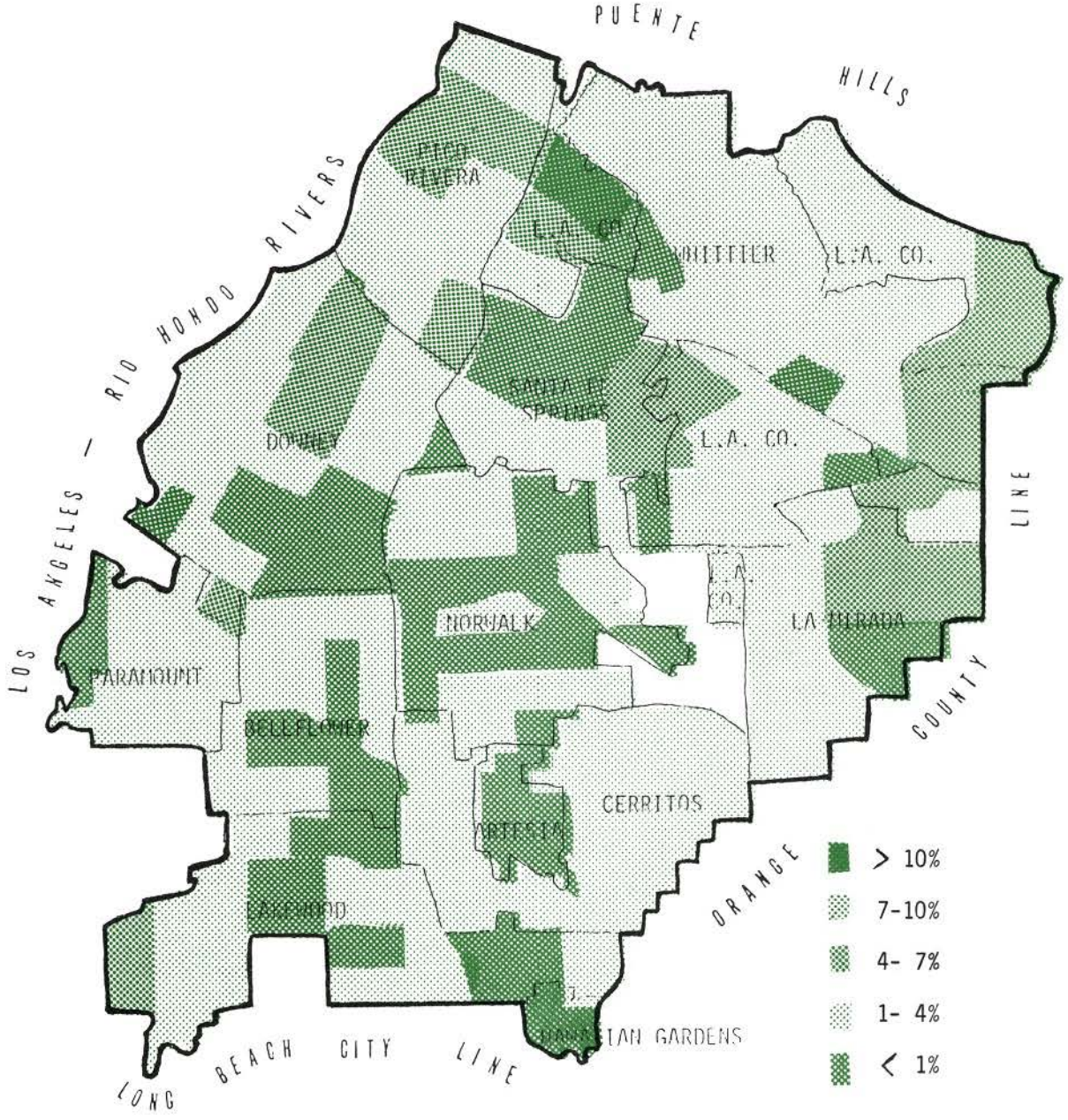
Figure 2-3

MID-CITIES STUDY AREA

% OF RESIDENTS MAKING WORK TRIPS TO

LOS ANGELES CENTRAL BUSINESS DISTRICT

BY CENSUS TRACT



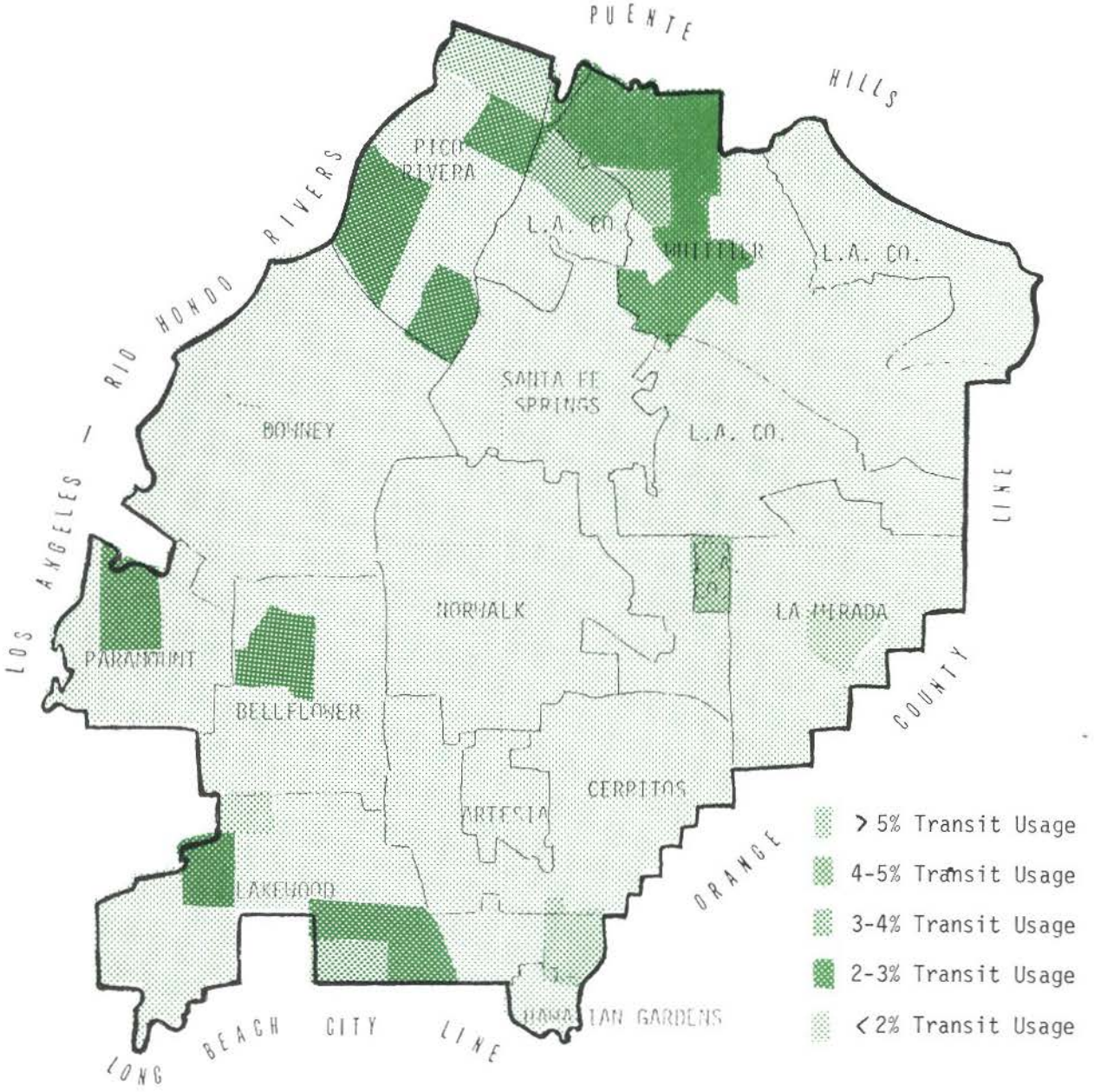
Source: 1970 U. S. Census

Figure 2-4

MID-CITIES STUDY AREA

% USING TRANSIT - JOURNEY TO WORK

BY CENSUS TRACT



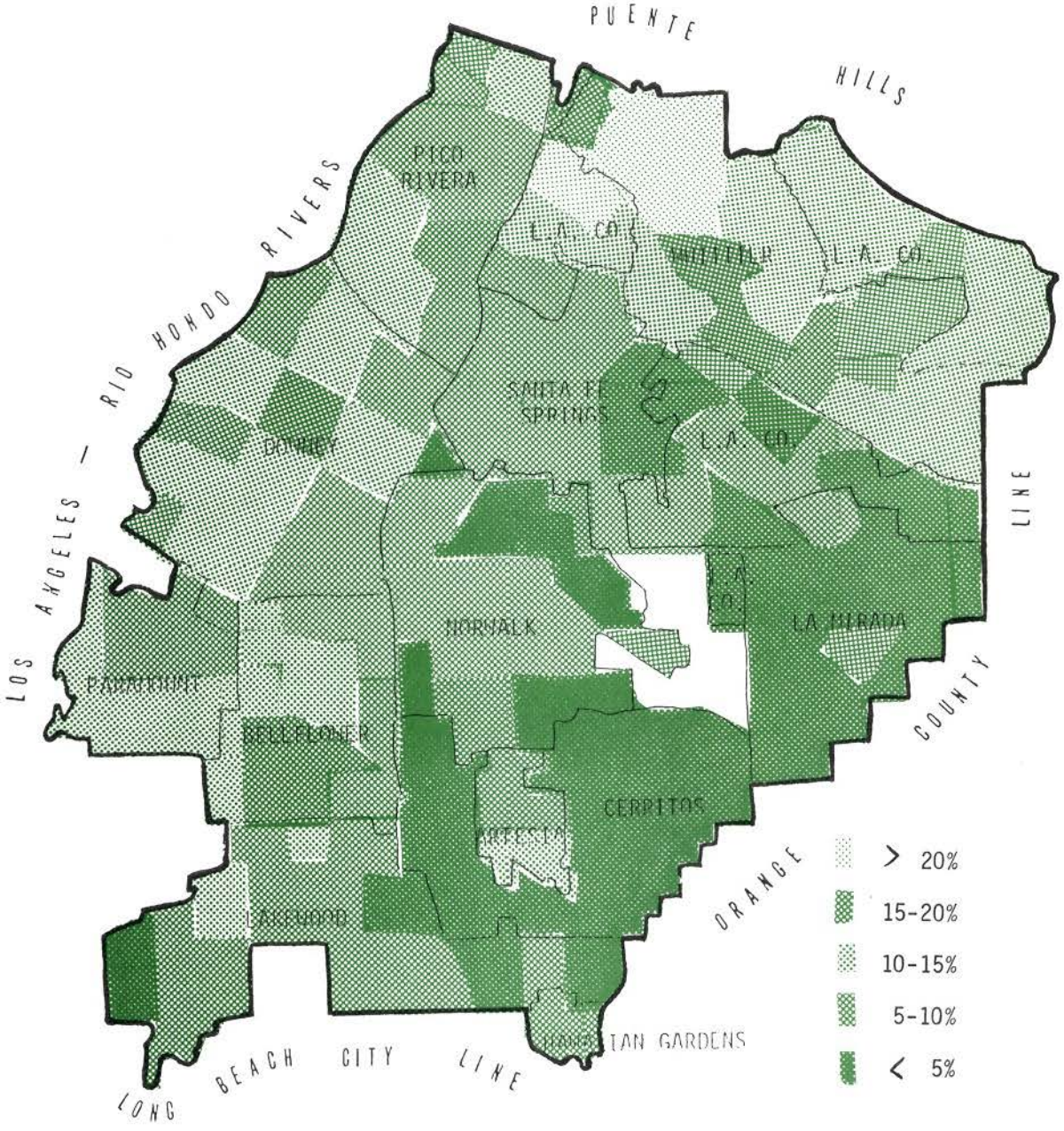
Source: 1970 U. S. Census

Figure 2-5

MID-CITIES STUDY AREA

% OF SENIOR CITIZEN RESIDENTS

BY CENSUS TRACT



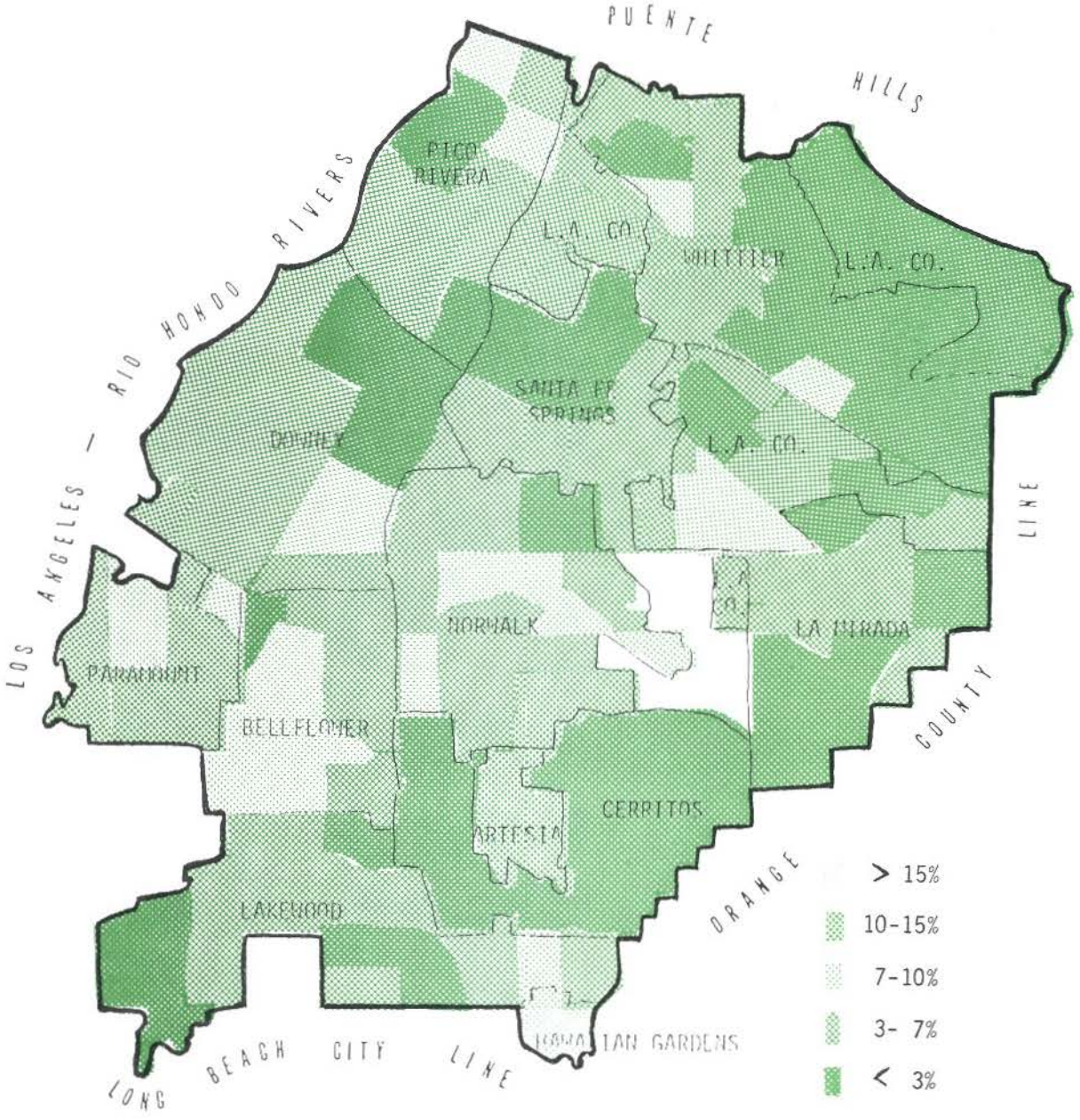
Source: 1970 U. S. Census

Figure 2-6

MID-CITIES STUDY AREA

% OF FAMILIES BELOW POVERTY LEVEL

BY CENSUS TRACT



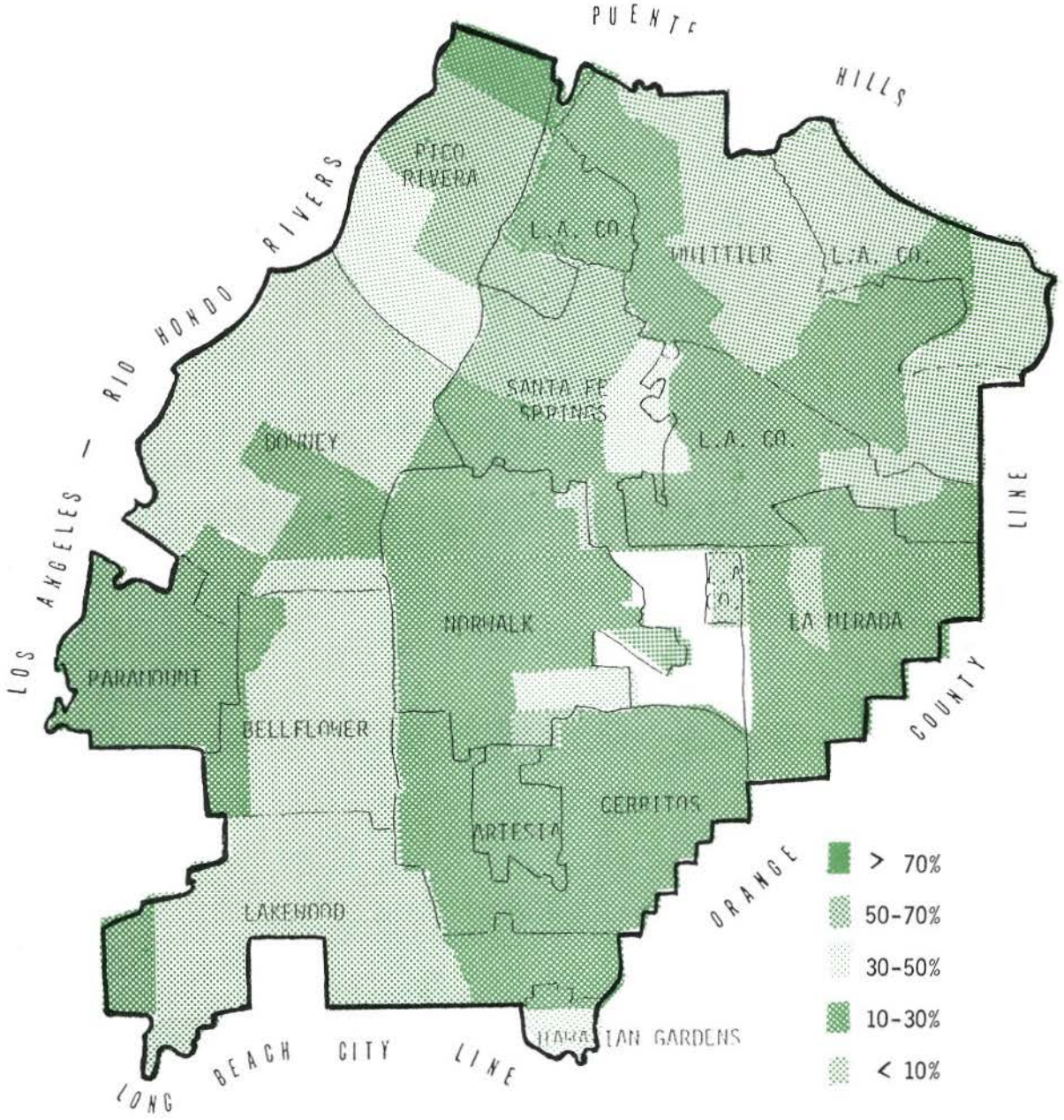
Source: 1970 U. S. Census

Figure 2-7

MID-CITIES STUDY AREA

% SPANISH SPEAKING RESIDENTS

BY CENSUS TRACT



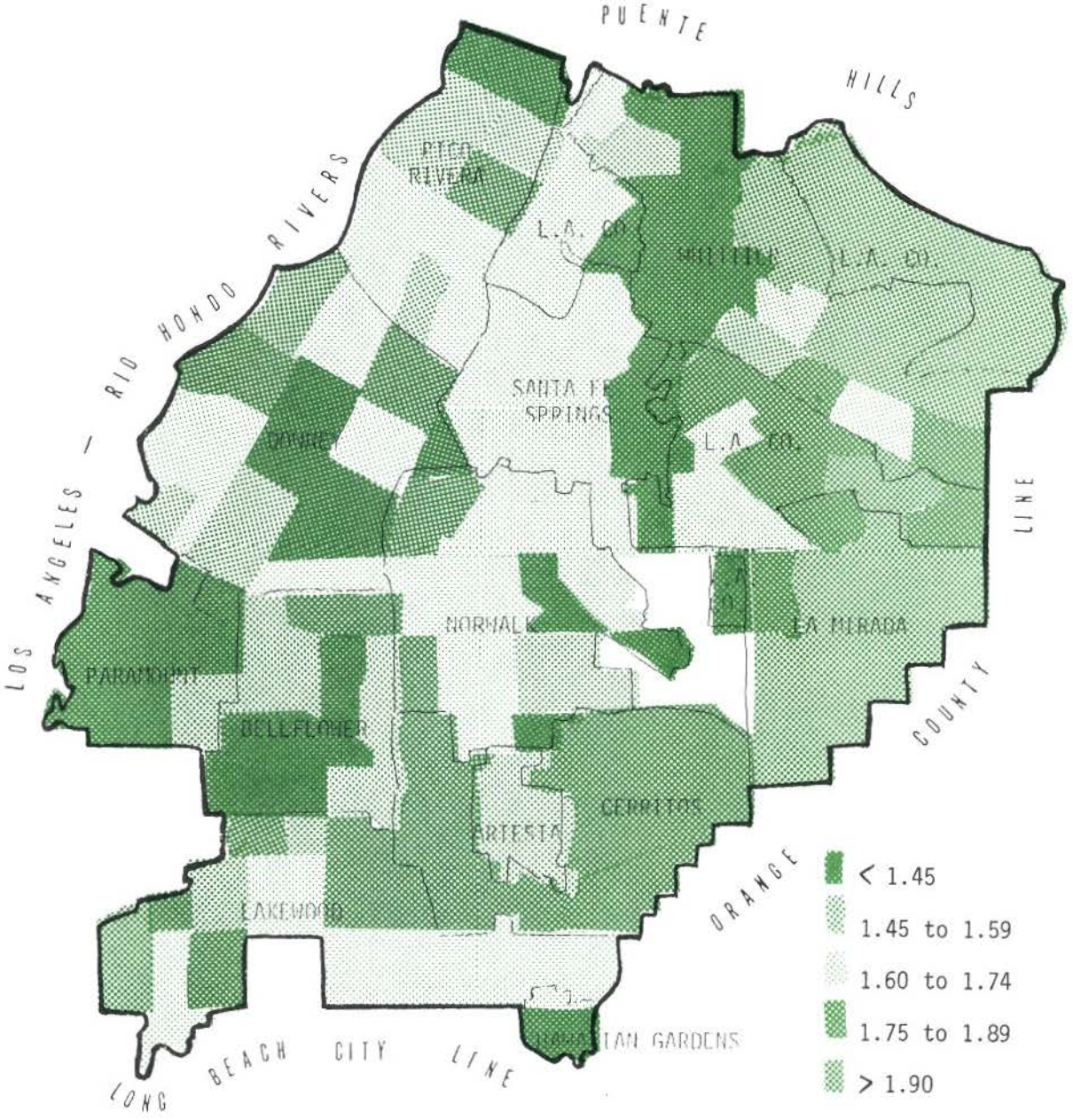
Source: 1970 U. S. Census

Figure 2-8

MID-CITIES STUDY AREA

AUTOMOBILES PER HOUSEHOLD UNIT

BY CENSUS TRACT



Source: 1970 U. S. Census

There are no concentrations of residents that fall into the category of the transit dependent. The preponderence of work trips by residents have destinations within the study area, with less than 4 percent destined for the Los Angeles CBD. There are a large number of possible destinations for work and non-work trips within the area. None of these potential destinations are geographically concentrated, virtually all of the 12 cities have several hospitals, shopping centers, schools and major industries.

TRANSPORTATION FACILITIES AND SERVICE

Highways and Roads

The study are is crossed by three freeways. The San Gabriel River Freeway (I-605) runs in a north-south direction connecting the San Gabriel Valley with Long Beach. The Santa Ana Freeway (I-5) traverses the area in a northwest-southeast direction connecting Orange County with the Los Angeles CBD. This facility is one of the most congested of the freeways in the Los Angeles area during the peak travel periods. The Artesia Freeway (91) traverses the area in an east-west direction connecting Orange County with the South Bay cities. There are several other major arteries that traverse the area, among these are Firestone Boulevard, Norwalk Boulevard, Lakewood-Rosemead Boulevard, Carson Street, Rosecrans Avenue, Imperial Highway, and Pioneer Boulevard to name a few. Figure 2-9 shows these surface facilities as well as the major bus routes that traverse the area. There are, at present, no preferential facilities for public transit.

Description of Public Transit System

Transit services are provided to the Mid-Cities area by RTD, which connects the 12 cities with the region; Long Beach Public Transportation Company (LBPTC), which connects Long Beach with Lakewood, Bellflower and Paramount; the Norwalk Transit System, which operates within that city's borders; the Santa Fe Springs Tram, which operates within the northern section of that city; and the Montebello Transit System, which provides service in Pico Rivera and Whittier. Figure 2-9 is a map of the area and the various transit systems operating within it. Also operating within the study area is the La Mirada Dial-A-Bus System serving the City of La Mirada with demand responsive services.

Currently RTD operates 16 lines within the area. Of these, 4 lines connect 9 of the Mid-Cities with the Los Angeles CBD. Table 2-2 shows the operating miles of each RTD line within the area, the daily one-way trips, the daily passengers per line, the total daily bus miles, the operating and layover hours, the number of vehicles used on the line, and the average operating speed. With no transfers between RTD lines the area's residents can reach several neighboring cities within the area as shown by Figure 2-10. In most cases, residents of an area can use public transit to reach at least 6 cities within the Mid-Cities study area without the need of a transfer.

For each of the 12 cities the City Hall was selected as a general activity center, travel to and from which is illustrated by the accessibility maps included in the Appendices. The peak base and evening headways offered by each line and the hours of service are shown in Table 2-3.

PRESENT PUBLIC TRANSPORTATION SERVING THE MID-CITIES AREA

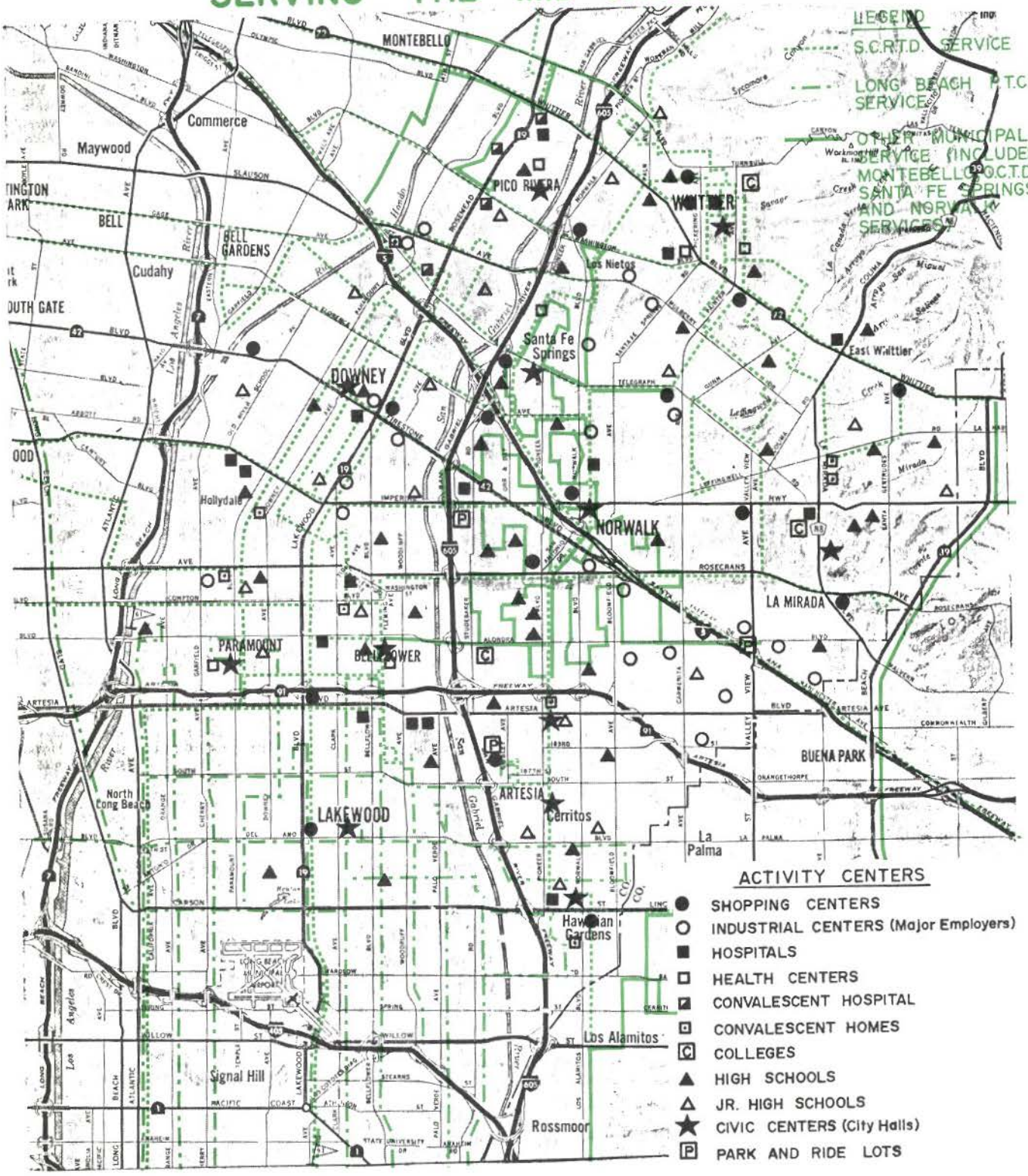


FIGURE 2-9

TABLE 2-2

OPERATING REQUIREMENTS

PRESENT S.C.R.T.D. SERVICE

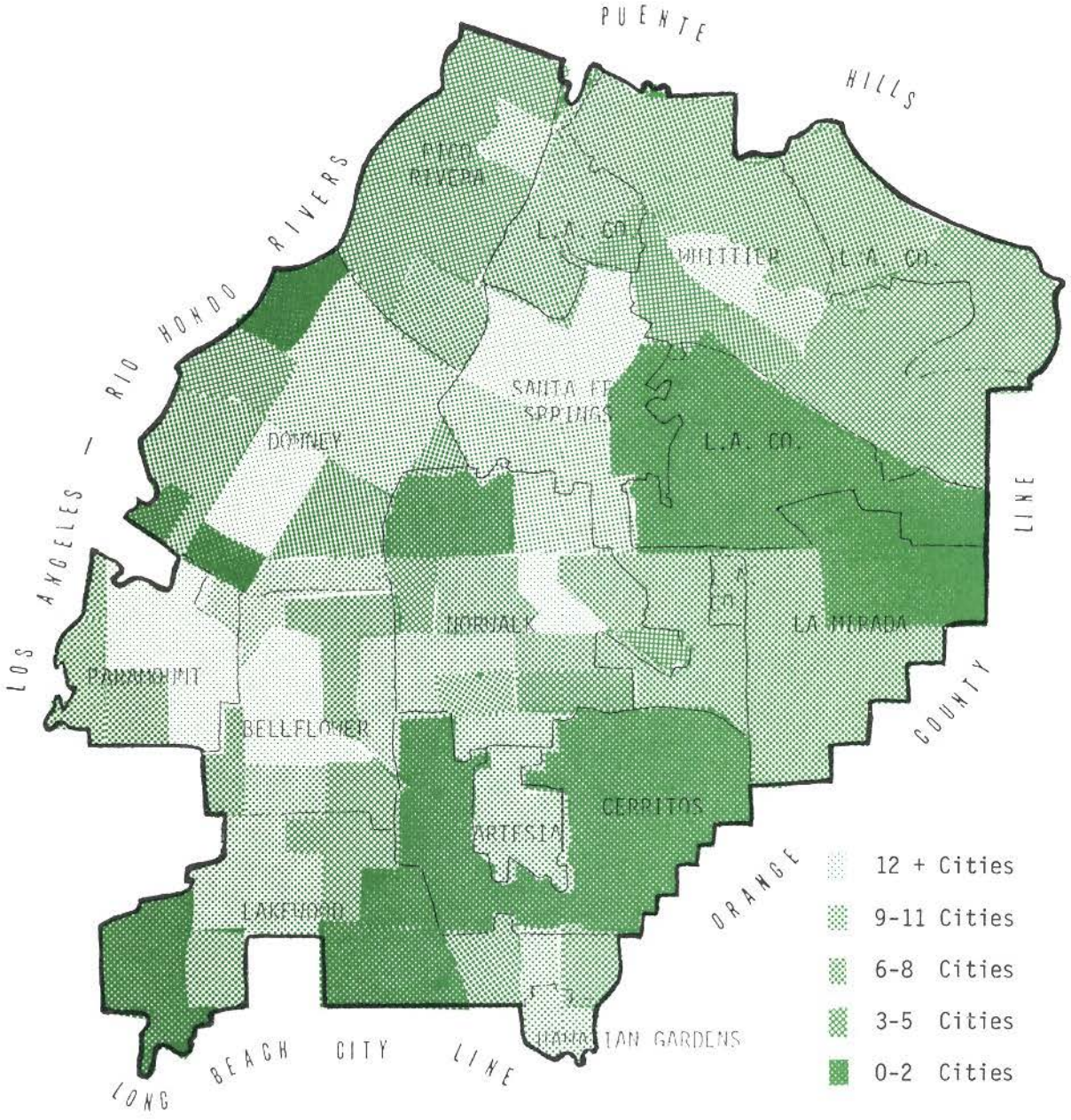
Present Routes	Operating Miles	Operating Hours	Layover Hours	Vehicles Required A.M. Peak	Vehicles Required P.M. Peak	% of Oper. Hours In Layover	Line Speed	Operating Miles Within Study Area	Operating Hours Within Study Area	% of Oper. Miles In Study Area	% of Oper. Hours In Study Are
No. 34	771.56	40.14	11.66	6	6	29.1	19.2	256.20	13.70	33.2	34.1
No. 38	202.00	10.49	1.30	1	1	12.4	19.2	102.36	5.33	50.6	50.8
No. 46	1,271.72	103.66	20.63	8	7	19.9	12.3	0	0	0	0
No. 54	1,637.66	145.74	29.77	12	11	20.4	11.2	0	0	0	0
No. 55	854.51	36.58	5.05	3	6	13.8	23.4	269.10	12.82	31.5	35.0
No. 58	4,344.05	193.64	37.16	16	21	19.2	22.4	827.99	32.00	19.1	16.5
No. 72	2,290.43	134.29	32.16	25	28	24.0	17.1	691.34	42.02	30.2	31.3
No. 77	803.42	76.46	19.53	5	5	25.4	10.5	0	0	0	0
No. 111	575.84	32.28	14.61	4	4	45.3	17.8	274.85	15.61	47.7	48.4
No. 112	177.79	10.16	1.50	1	1	14.8	17.5	75.60	4.50	42.5	44.3
No. 113	498.52	29.59	3.72	3	3	12.6	16.8	362.14	18.65	72.6	63.0
No. 116	364.36	18.42	3.63	2	2	19.7	19.8	308.78	16.03	84.7	87.0
No. 117	422.88	24.44	7.67	2	3	31.4	17.3	422.88	24.44	100.0	100.0
No. 118	182.40	9.90	1.42	1	1	14.3	18.4	93.70	5.35	51.4	54.0
No. 132	593.97	32.82	12.35	4	4	37.6	18.1	593.97	32.82	100.0	100.0
No. 134	248.01	27.88	5.50	2	2	19.7	8.9	69.84	4.08	28.2	14.6
No. 136	139.62	8.30	4.28	1	1	51.6	16.8	139.62	8.30	100.0	100.0
No. 137	530.61	26.78	10.73	3	3	40.1	19.8	170.37	8.81	32.1	32.9
TOTAL	15,909.05	961.57	222.67	99	109	23.2	17.0	4,658.74	244.46	29.3	25.4

Figure 2-10

MID-CITIES STUDY AREA

CITIES CONNECTED WITHOUT TRANSFER

PRESENT SYSTEM



Long Beach Public Transportation Company operates 12 lines or branches of lines within the study area. Passengers can transfer from RTD lines to Long Beach lines in only 7 instances out of 12. In the case of 5 lines, the lines from the two systems come within a few blocks of each other. Long Beach and RTD have competing service over 6.6 street miles within the study area. The principal characteristics of the Long Beach lines such as peak nad base headways, and service hours are shown on Table 2-3. The fare is 25¢ and transfers between SCRTD and LBPTC lines are 10¢.

The Norwalk Transit system consists of 3 lines that operate on 30 minute peak hour headways and 60 minute base hour headways. The lines are intended to provide circulation within Norwalk. They connect directly with RTD lines nos. 38, 58, 116, 132, and 137. The basic fare is 10¢, transfers to RTD lines are not available.

The Santa Fe Springs Tram operates one line with an alternating branch operation; headways are 60 minutes all day long. This line is intended to provide circulation to residents within the Santa Fe Springs boundaries. This line intersects 6 RTD lines. Transfers are not available. This service is free.

The Montebello Transit System operates mostly outside the Mid-Cities area. However, three lines penetrate the study area. Headways and service hours are shown on Table 2-3. The basic fare is 25¢ and the cost of a transfer to any of the 4 RTD lines with which they intersect is 10¢.

In 1973 La Mirada inaugurated Dial-A-Bus service within its city limits. The basic cost is 25¢ per ride. The service hours extend from 7 AM to 7 PM. The Dail-A-Bus service connects with 2 RTD lines. Transfers to RTD lines are not available.

Table 2-3

TRANSIT SYSTEMS HEADWAYS

RTD LINES		HEADWAYS IN MINUTES AM PEAK	BASE	PM PEAK	EVENING
34	L.A.-Lynwood-Paramount-Bellflower	20	60	24	100
38	Long Beach-Whittier-El Monte	240	240	240	-
* 46	E. Florence Ave.-Slauson Ave.	20	30	20	30
* 54	South Gate-Inglewood-Weschester	15	20	15	30
55	L.A.-Newport Beach-Balboa	40	80	40	150
58	Los Angeles-Santa Ana	11	22	8	46
72	L.A.-Whittier-Fullerton	4	20	4	30
* 77	Maywood-Bell	20	20	20	30
111	Bellflower-Huntington Park	40	40	30	200
112	Whittier-Huntington Park	120	120	120	-
113	Compton-Whittier	60	60	60	-
116	Compton-Paramount-Bellflower-Norwalk-La Mirada	60	60	60	-
117	S. Whittier-La Mirada	30	30	30	-
118	Whittier-E. Washington Blvd.	120	120	120	-
124	L.B.-Anaheim-Fullerton-Knotts B.F.-Disneyland	60	80	60	150
132	Hawaiian Gardens-Artesia-Downey-Lakewood	60	60	60	-
134	El Monte-Durfee Ave.-Peck Rd.-Whittier	60	60	60	-
136	Pico Rivera-Passons Blvd.	60	60	50	-
137	El Segundo-Inglewood-Norwalk	60	60	40	-
MONTEBELLO M.B.L.					
10	Whittier Blvd.	11	13	11	20
40	Beverly Blvd.	60	60	60	-
60	Paramount	60	60	60	-
NORWALK TRANSIT SYSTEM					
1	Red	30	30	30	30
2	Blue	15	30	15	30
3	Green	15	30	15	30
SANTA FE SPRINGS DAILY TRAM SCHEDULE		60	60	60	-
LONG BEACH PUBLIC T.C.					
1	Pacific Coast Hwy-Easy Avenue	20	20	20	30
2	Santa Fe-Cherry Avenues	20	20	20	60
6	Atlantic Avenue	20	30	20	60
7	Orange Avenue	20	30	20	60
9	E. 7th St.-Bellflower Blvd.-Woodruff Ave.	15	15	15	30
10	Carson St.-Crosstown	40	40	40	-
11	E. Broadway-Lakewood-Bellflower	15	15	15	30
15	Del Amo Blvd.	30	30	30	-
16	Crosstown Streaker	30	30	30	-

*Included to indicate changes although not operating within the study area.

CHAPTER 3

EVALUATION OF S.C.R.T.D. CURRENT SERVICES

EVALUATION OF MID-CITIES TRANSIT SERVICES

SCRTD routes in the Mid-Cities area evolved from its predecessor Pacific Electric Lines and the private bus systems that replaced the latter during the first half of the century.

The famous Pacific Electric "Red Cars" operated over what was essentially an interurban railroad, carrying both passengers and freight among the small centers of population in the then sparsely settled region. The Southern Pacific Railroad (SP), which along with Henry Huntington controlled the PE and Los Angeles Railways during their glory years, maintained that control for one basic reason, to prevent PE from becoming serious competion to SP. Huntington, on the other hand, saw the transit networks, both Los Angeles Railways and PE, as a means of providing transportation linkages between his multifarious real estate developments and the then only developed center of the basin, Downtown Los Angeles. Neither the SP nor Huntington had any plans for providing the area with a unified transportation service. Rather, it was simply a means of connecting various isolated centers, both preexisting communities and real estate developments, with the Los Angeles CBD.

As the area began to assume a more urbanized character, other services came into being. If an existing transportation need was perceived, usually an independent transit operator, he would normally provide service to meet it. Thus, as industry grew in the South Gate-Cudagy-Bell-Huntington Park-Compton-etc., areas, transit lines connecting such residential enclaves as Whittier and Downey with jobs in these new industrial areas came into being. One of the larger of such transit operations in the study area was the Crosstown Lines.

The independent lines had as their goal the provision of a type of service that would compete with, not complement, the preexisting PE lines. In the same spirit, PE made it as difficult as possible for these independent operations to succeed, keeping them from operating on certain streets, forcing restrictions in their operating rights, etc.

After World War II, the fortunes of the Pacific Electric, which were never really good, turned poor. The operation was sold and soon after the sale buses were substituted for rail. This substitution often meant re-routing, since streets and highways didn't always follow the rail right-of-way. The buses attempted to serve the same centers as had the rail, but some rather obvious redirection was unavoidable.

The network of routes that RTD inherited in the Mid-Cities area was not a system. Rather, the routes represented a series of accommodations and compromises that were meant to serve a mobility pattern that had long changed. As was discussed in Chapter 2, in the decade between 1960 and 1970 the Mid-Cities area had undergone very significant growth. Perhaps more importantly, the pattern of trip making changed dramatically away from trips to the Los Angeles CBD toward work trip destinations within the Mid-Cities study area. The residential growth discussed in Chapter 2 gave rise to such support facilities as shopping plazas, hospitals, and educational facilities which reoriented the personal trips to these major activity centers.

The study area's recent development and the outmoded route structure have combined to render the existing route structure obsolete. The dispersion of origins and destinations requires a similarly dispersed service. Using bus miles per unit of population as a measure of access to transit services, Figure 3-1 shows that the existing RTD network serving the area falls far below the level of 50 bus miles per thousand population that is generally regarded as the minimum acceptable level for suburban areas. Another measure of the soundness of a route structure is the access to destinations that it provides. As is evident from Figures 2-1, 2-9, and Table 2-3 presented in the previous chapter, the current RTD route network often imposes on the present user either 1 or 2 transfers, a long travel time or both. Assuming a travel time of under 60 minutes as a tolerable standard of travel time between adjacent cities in the study area, it is evident from Table 3-1 that travel time in the existing system far exceeds this. In only a few cases is travel time below 60 minutes. In most cases, travel times to adjacent communities are between 80 and 90 minutes and often exceed 2 hours. In a few cases, travel time exceeds three or even four hours. Such travel times are unacceptable even to the transit dependent groups because the duration of travel is several times that required for the activity that precipitated the trip.

For the reasons described above, from the point of view of the transit system operator and the community, the current network of lines and the service on them is far below the average performance of the RTD system. Using bus miles per passenger as a measure, the current total RTD system averages 0.287 miles while the current lines serving the Mid-Cities study area averages 0.957 miles per passenger.

The evaluation of local transit services operated by the municipalities within the study area and by communities adjacent to it has placed new service requirements on RTD and on local municipal operations. By state law, the municipal carriers may operate outside the political boundaries of their jurisdiction only with the consent of SCRTD, while the latter may operate in municipal territory only with consent from the local carrier. These legal constraints have, to an extent, discouraged more effective routing.

Since 1970 three local political jurisdictions within the Mid-Cities area have initiated transit services within their own borders. Norwalk and Santa Fe Springs operate conventional, fixed route service while La Mirada operates a Dial-A-Bus service. These new services are in addition to the services already offered by the Long Beach Public Transportation Company and Montebello Bus Lines.

The effect of these local transit services is that they often duplicate current RTD service by operating over parts of the same routes or they impose the need for interconnecting them with the regional service provided by RTD. Coordination of RTD and local services is presently inadequate. From Figure 2-9 in the preceeding chapter, it becomes evident that the lines from SCRTD and Long Beach are often separated by only a few blocks, creating an inconvenience to passengers of both systems.

Figure 3-1

MID-CITIES STUDY AREA

DAILY MILES OF TRANSIT SERVICE PER 1000 POPULATION

PRESENT SYSTEM

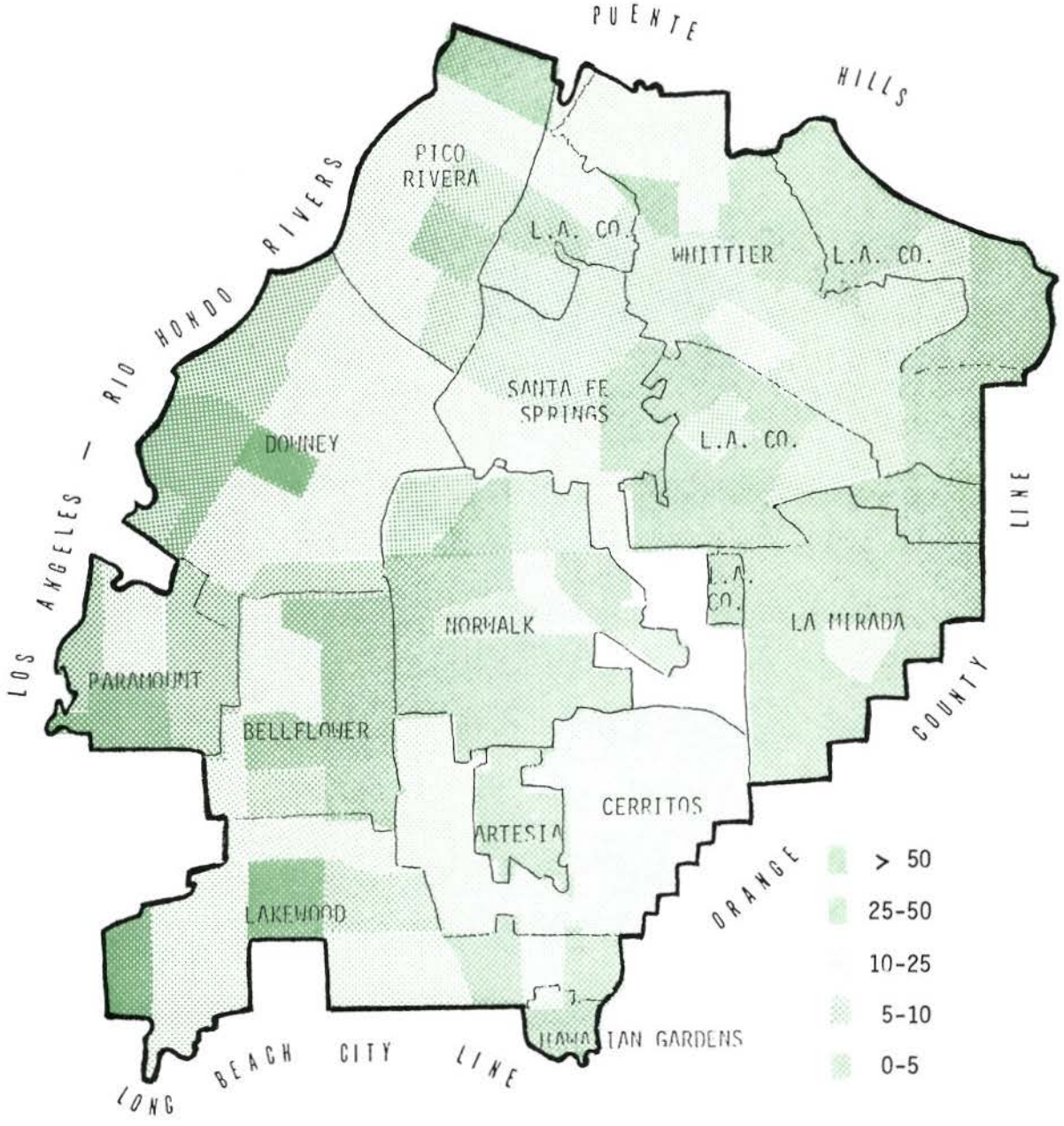


TABLE 3-1

TRAVEL TIME - PRESENT SYSTEM

	PICO RIVERA	WHITTIER	SANTA FE SPRINGS	DOWNEY	PARAMOUNT	NORWALK	LA MIRADA	BELLFLOWER	ARTESIA	LAKEWOOD	CERRITOS	HAWAIIAN GARDENS	TOTAL TRAVEL TIME TO ALL POINTS
PICO RIVERA		45	85	105	151	92	132	185	161	202	176	188	1522
WHITTIER	45		82	93	139	119	87	143	158	269	173	185	1493
SANTA FE SPRINGS	85	82		71	117	37	114	87	76	161	91	103	1024
DOWNEY	105	93	71		76	41	118	80	80	59	95	107	925
PARAMOUNT	151	139	117	76		86	133	36	86	80	101	113	1118
NORWALK	92	119	37	41	86		77	50	39	111	54	66	772
LA MIRADA	132	87	114	118	137	77		97	52	158	97	109	1174
BELLFLOWER	185	143	87	80	36	50	97		80	74	95	107	1034
ARTESIA	161	158	76	80	86	39	52	80		85	45	57	919
LAKEWOOD	202	269	161	59	80	111	158	74	85		100	112	1411
CERRITOS	176	173	91	95	101	54	97	95	45	100		42	1069
HAWAIIAN GARDENS	188	185	107	107	113	66	109	107	57	112	42		1189
TOTAL													13,600

Points are from City Halls of each city.

All times listed are in minutes of bus running time plus average waiting time and transfer time, if applicable.

SPECIFIC DEFICIENCIES

Besides these overall structural weaknesses in the current transit network, certain SCRTD lines present specific opportunities for improvements. As can be seen from Table 3-2, the improvements are of four types:

- eliminating excessive branching of a line. Many lines operate over several routes and it is not always clear to the user which route the bus will follow. Also, headways on a branch line are always a multiple of the operation, which in itself might be inadequate.

- reducing headways or eliminating certain lines because reasonable headways cannot be maintained. Headways in excess of one hour are excessive.

- improved directionality in service. Some service should be north-south, other service east-west in order to develop stable structural elements in the transit network.

- increasing productivity of lines. Certain lines expend too many bus hours or miles per passenger. Reducing bus miles to a level where headways are more than 60 minutes tends to reduce patronage and in the long run lowers productivity.

SUMMARY OF NECESSARY IMPROVEMENTS

The improvements cited above amount to a complete rearrangement of the service that RTD is offering in the area, starting with the development of a service structure that acknowledges the newly emerging travel patterns of the area and then developing a level of service around this structure that is responsive to the behavior of the population of the Mid-Cities area. From the evidence, minor changes such as reductions in headways on existing routes will not serve the patronage, the community, nor the operators. The required structural changes must also harmonize the services that the various operators offer in the Mid-Cities area. Competition, in this instance, is wasteful of public funds and parochial adherence to old franchises which place a barrier to efficient movement of people, is against the public interest.

Table 3-2

ADEQUACY OF EXISTING S.C.R.T.D. SERVICE

LINE	ADQUACY	REQUIRED IMPROVEMENT
No. 34	Remove from Mid-Cities	Terminate in Compton
No. 38	Replace	Improve headway - break into many lines.
No. 46	Improve	Incorporate into through service into Mid-Cities.
No. 54	Improve	Incorporate into through service into Mid-Cities.
No. 55	Improve	Remove from Orange Co. and coordinate with Lakewood Blvd. service.
No. 58	Improve	Eliminate excessive branching.
No. 72	Improve	Extend trunk to Whittwood and remove from Downtown Whittier.
No. 111	Replace	Improve headway and routing direction, branching.
No. 112	Replace	Improve headway and routing.
No. 113	Replace	Eliminate branching, improve headway.
No. 116	Replace	Unify route - improve headway.
No. 117	Replace	Branching - break into several usable routes.
No. 118	Replace	Improve headway and routing.
No. 132	Replace	Unify route direction, end branching, improve headway.
No. 134	Replace	Connect with more useful service.
No. 136	Replace	Extend southward to serve more people and activity centers.
No. 137	Replace	Improve headway and routing.

CHAPTER 4

DESCRIPTION OF PROPOSED SYSTEM

SYSTEM CONCEPT AND STRUCTURE

The mobility requirements of the Mid-Cities residents, and of those who come into this area from other parts of the region, specify a transit network that:

1. Facilitates movements among the principal activity centers within the 12 city area.

2. Provides direct and frequent service from selected points within the Mid-Cities area to as many activity centers throughout the region as possible either by direct service or requiring only a single transfer.

In order to satisfy these requirements, a skeleton of six RTD lines was conceived. Three of the lines are routed in substantially north-south directions, and three are routed in a predominantly east-west direction. These six lines, shown in Figure 4-1, are for the most part routed on the principal thoroughfares in order to connect the major activity centers of the area. The spine of this skeleton is the C-1 line which operates along the Santa Ana Freeway. This freeway is the principal high speed arterial to the Los Angeles CBD and to such major activity centers in Orange County as Disneyland, Knotts Berry Farm and many major industrial employers. Since it virtually bisects the Mid-Cities area diagonally, it is easily accessible from all parts of the area.

A line operating on this spine could collect passengers from all parts of the Mid-Cities area and it would serve to bring people from other parts of the region. The line would operate on the freeway, leaving this facility at selected interchanges within the study area to allow transfer opportunities to other lines that would collect or distribute passengers.

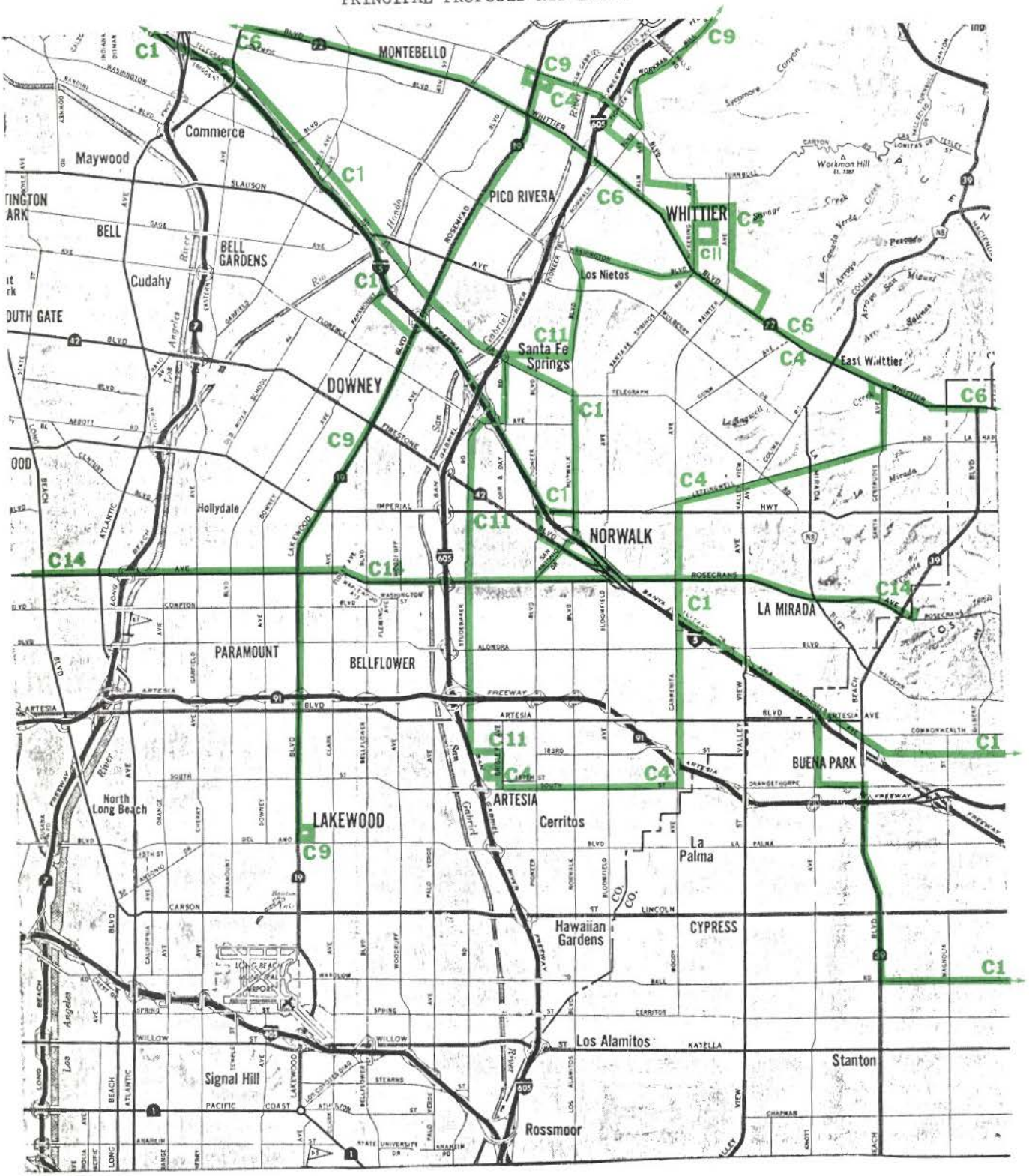
This skeletal system of lines would be augmented by ten complementary RTD lines that interconnect the 12 cities comprising the Mid-Cities study area. These lines have been routed to travel through the principal residential sections and to connect them with the principal activity centers. The entire network of new lines is shown in Figure 4-2. This figure also shows the relationship of the new lines to those of the local municipal operators.

An important consideration in designing the routes for the proposed 16 RTD lines was that of taking full advantage of the municipal bus operations already in existence. The level of service offered by these systems would be uneconomical for RTD to duplicate. The 16 proposed RTD lines, particularly the 10 tributary lines, were routed to provide frequent and efficient interchanges with the existing municipal lines.

In harmonizing the services of the RTD lines and those of the existing municipal lines, the concept paid particular attention to the predominant movement patterns. In cases where such movements could be best streamlined by avoiding a transfer between an RTD and a municipal line and instead extending one or another line to serve a destination, the latter course of action was followed.

FIGURE 4-1

PRINCIPAL PROPOSED RTD LINES



COMPLETE PROPOSED TRANSIT SYSTEM FOR THE MID-CITIES AREA — BASIC SERVICE LEVEL

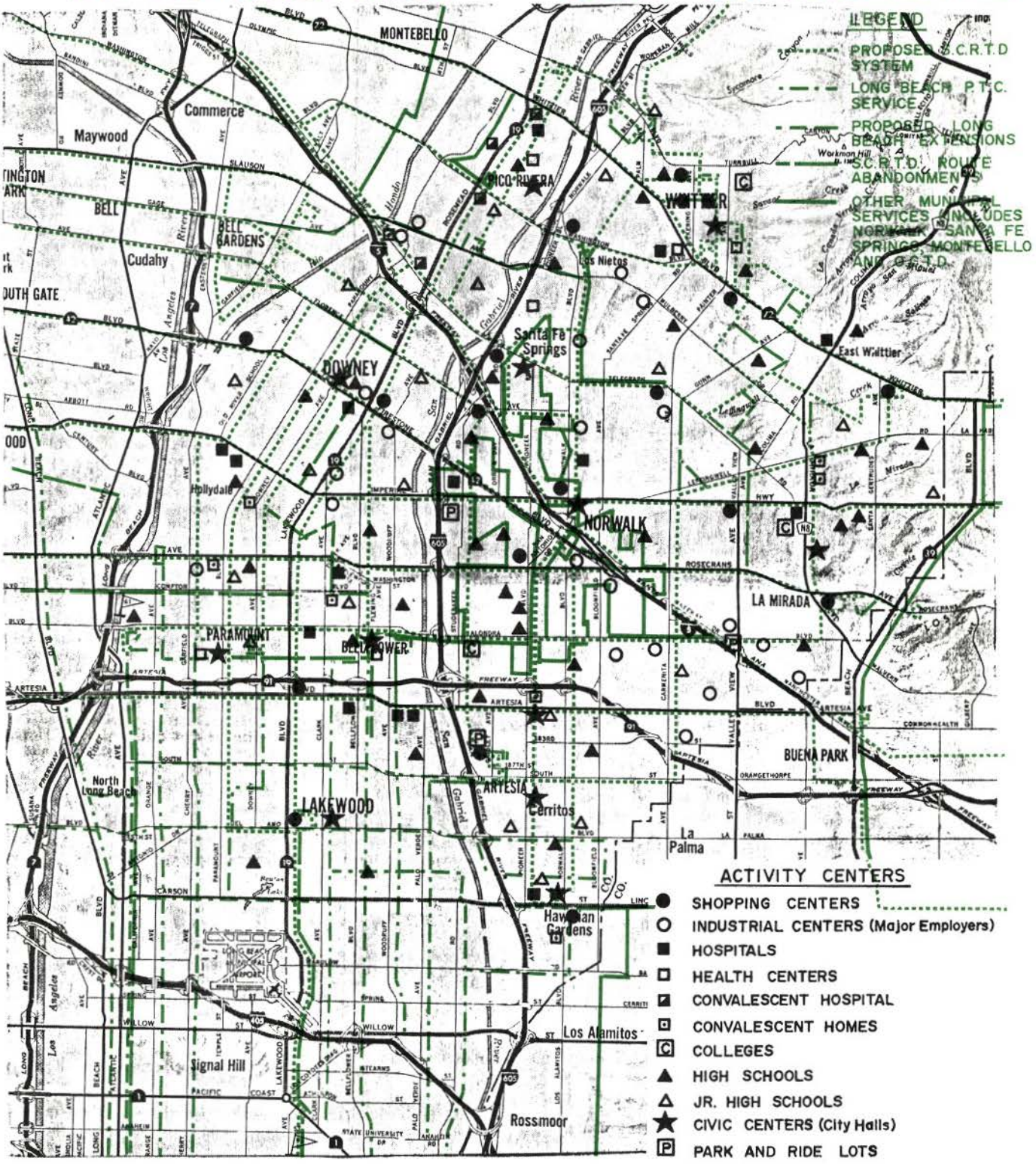


FIGURE 4 - 2

The routing of the 16 proposed RTD lines and the level of service proposed for them was also governed by the desire to offer frequent transfer opportunities and to minimize the delays that attend them. The resultant transit network forms a systematic grid that offers the user fairly uniform travel times for equal distances regardless of origin, destination, or travel direction.

In arriving at levels of service on the grid, the availability of resources, i.e. buses, drivers and support facilities, had to be considered. Accordingly, three service level alternatives were considered. The Base Level Service proposes headways that result in approximately the same number of buses and drivers now serving the Mid-Cities area. What is considered a Base Level Service headway for one line will differ from that of another line. The headways of a line during the peak, base and night hours are governed by either demand for service or, when demand is very light, by a policy decision. The maximum policy headway was chosen as 60 minutes. Certain lines, because of actual or potential patronage or the types of people and destinations that they serve, require more frequent headways.

The next higher service level is Developmental Level A. This level decreases the headways on the entire system to 30 minutes throughout the day, and provides for at least 60 minute headways throughout evening operation on most routes. Developmental Level B is an extension of Developmental Level A, adding to the latter additional tributary lines in selected areas. These are routed so as to approach a more complete and uniform level of accessibility to bus service in the more densely populated portions of the Mid-Cities area.

The transit services concept for the Mid-Cities area specifies simplicity of operation. Headways and routes are kept as uniform as possible in order to simplify the amount of knowledge that users and potential users of the system must have before they can utilize it. Branching of lines, for example, was avoided because they tend to create confusion, especially among occasional patrons, and because they reduce service on each branch.

DESCRIPTION OF THE PROPOSED SERVICE

Each of the 16 proposed lines is described by means of a map and an operating characteristics summary. These are presented in numerical order, starting with Route C-1, at the end of this chapter. The map shows the route alignment within the study area in red. Routes extending beyond the boundaries of the study area are identified by arrows pointing off the map. The operating characteristics summary for each line contains a complete operating description of the service and what is needed to operate it. The routing included for each route lists the streets and directions of operation from terminus to terminus. Locations for layovers are also included, although these are only suggested locations. Also included on the summary sheet is a list of areas served by the route. Each city through which the route passes is listed as well as significant activity centers within the study area such as shopping centers, schools and hospitals. Attractions of major proportions outside of the study area served by a proposed route are also cited.

Minor alterations in the locations of the termini can be made by RTD without significantly altering the overall operation, the requirements of

the individual line or those of the entire system. Each street and layover point has been surveyed by the CENTS staff in order to guarantee operational feasibility.

Each point at which a recommended route intersects with another recommended route within the area is listed as a transfer point in Table 4-1. This listing helps to illustrate how effectively the proposed system accomplishes its major objectives of assisting circulation within the Mid-Cities area.

Service frequency and operating requirements for each route are also described by 16 variables for each possible level of service: Base Level, Developmental Level A and Developmental Level B. The one-way route miles listed pertain to mileage between the farthest point on the route and the average turnaround loop mileage where applicable. The hours of operation are shown to the nearest hour only because it can be anticipated that actual scheduling will deviate slightly from the times specified by CENTS' preliminary schedules. The headways that are shown on the summaries are those that CENTS used in building the preliminary schedules. Total trips, operating miles and hours, vehicles needed and layover time were all extracted directly from preliminary route schedules made by CENTS for each route recommendation for Base Level Service. Schedule estimates for the Developmental Levels are projected from the Base Level data. The estimates shown for running time and operating speed are averages and may vary significantly throughout the hours of operation.

The summaries also contain a list of mileage segments for each recommended route, including time points, mileage, running time and speed. Therefore, it is recommended that for schedule making purposes, RTD use the information included in the line summaries in conjunction with the preliminary schedules that have been prepared for each route.

PROPOSED SKELETAL ROUTES

The skeleton of the proposed system for the Mid-Cities area is a grid consisting of six routes:

Route C-1

The most important of these, and the key line in the entire system, is Route C-1 which would operate within the the Santa Ana Freeway Corridor from the Los Angeles CBD to the Santa Ana CBD. This service would operate as an express via the freeway, exiting at key locations within the study area to allow passengers to transfer to and from other lines. The connecting lines would have their schedules built around the C-1 arrival times at the designated transfer points. Because of the present configuration of many of the access ramps on the Santa Ana Freeway, C-1 is, at times, routed along local streets in order to make the necessary transfer connections. Similarly, because of exit ramp problems on the freeway, some possible transfer points within the study area have not been included in the operation of Route C-1. RTD may wish to look into the possibility of developing on-freeway transfer points at those intersecting lines where ramps impede exit and reentry for transferring purposes. Route C-1 would operate every 15 minutes during the peak hours and every 30 minutes during the base period under the recommended

TABLE 4-1

TRANSFER OPPORTUNITIES AMONG PROPOSED
RTD LINES WITHIN THE MID-CITIES AREA

LINE	C-1	C-2	C-3	C-4	C-5	C-6	C-7	C-8	C-9	C-10	C-11	C-12	C-13	C-14	C-15	C-16
C-1		x		x	x				x			x	x	x		
C-2	x			x	x				x		x		x		x	
C-3												x		x	x	x
C-4	x	x			x	x		x	x	x	x	x	x	x	x	x
C-5	x	x		x		x	x	x	x			x		x	x	x
C-6				x	x			x	x	x	x		x			
C-7					x							x		x	x	x
C-8				x	x	x			x	x	x	x	x	x		x
C-9	x	x		x	x	x		x		x		x		x	x	x
C-10				x		x		x	x		x	x	x	x	x	x
C-11		x		x		x		x		x		x	x	x	x	x
C-12	x		x	x	x		x	x	x	x	x		x		x	
C-13	x	x		x		x		x		x	x	x		x	x	x
C-14	x		x	x	x		x	x	x	x	x		x		x	x
C-15		x	x	x	x		x		x	x	x	x	x	x		x
C-16			x	x	x		x	x	x	x	x		x	x	x	

Base Level Service. Under Developmental Level A, Route C-1 would operate on a 15 minute headway all day with additional trips diverting through Fullerton. In addition, peak hour service would operate via Telegraph Road from Norwalk Square to the Santa Ana Freeway and then operate as an express to the Los Angeles CBD. The Disneyland Flyer service, presently operating on Route 58, would continue unchanged.

Route C-4

Another major north-south route in the proposed grid network is Route C-4 which would operate from Los Cerritos Center via the Whittwood Shopping Center to northern Whittier. At the Base Level Service Route C-4 would operate on a 60 minute headway during both base and peak hour periods. Under Developmental Level A this route would operate on a 30 minute headway during both peak and base hour periods with the 60 minute headway being maintained during night operations.

Route C-6

The major link between the Los Angeles CBD and the northern portion of the study area would be Route C-6 which would operate in the Whittier Boulevard Corridor from Orange County to Los Angeles. Largely operating over the route of the present RTD Route 72, this proposed line would operate on a 5 to 10 minute headway during peak hours and a 20 minute headway during base hours. This headway would be maintained for both Base Level and Developmental Level A service throughout the day. Under Developmental Level A additional service would be extended from the Orange County terminus to Fullerton on a one hour headway.

Route C-9

Route C-9 would operate from the Lakewood Shopping Center to Beverly Boulevard via the Lakewood-Rosemead Boulevard Corridor. In addition, selected trips would be extended throughout the day to the El Monte Station via Rio Hondo College. At the Base Level service on the line would operate every 15 minutes during peak hours and every hour during base hours. Under Developmental Level A the base hour headway would be decreased to 30 minutes with the one hour frequency of service to El Monte remaining unchanged.

Route C-11

Route C-11 is another major north-south line which would operate from Los Cerritos Center to Whittier via the Studebaker Road-Norwalk Boulevard Corridor. This service would operate every 30 minutes during the peak hours and every hour during the base hours at the Base Level Service. Under Developmental Level A this service would operate every 15 minutes during the peak hours, every 30 minutes during base hours with a one hour headway maintained during evening hours.

Route C-14

Route C-14, a major east-west link to the South Bay area, operates from Manhattan Beach to the Orange County line via Rosecrans Avenue. This service would operate every 30 minutes during the peak and every hour during

the base hours with service being increased to 15 minute headways in the peak and 30 minutes in the base hours under Developmental Level A.

In order to more effectively link the Mid-Cities area with surrounding residential areas, six proposed lines have been extended beyond the limits of the study area thereby connecting them with the existing RTD grid.

PROPOSED COMPLEMENTARY ROUTES

These lines are designed to distribute people from their dispersed origins to their diverse destinations. The 10 complementary lines are discussed below and described in the operational characteristics summaries and maps at the end of this chapter. These lines can be subdivided into those that connect with existing RTD service to communities adjacent to the study area and those that are entirely local and facilitate circulation within the study area. The proposed Lines C-2, C-3, C-7, C-8, C-12 and C-15 are the connector routes. Lines C-5, C-10, C-13 and C-16 are the circulatory routes.

Route C-2

Route C-2 would operate from South Bay Shopping Center in Redondo Beach to Buena Park via Artesia Boulevard. It is recommended that this route operate every 60 minutes throughout the day at Base Level Service and that it operate every 20 minutes during peak hours and every 30 minutes during base hours under Developmental Level A.

Route C-3

Route C-3 would operate from South Los Angeles to Paramount via the route of the present RTD Line 46, service to Florence Boulevard to Old River School Road to Garfield. Additional service on this line would terminate at Cecilia and Wilcox outside of the study area. Under the recommended Base Level this service would operate every 30 minutes during peak hours, within the study area, and every 15 minutes in those segments of the route that lie outside the study area. It would operate every hour within the study area during base hours while maintaining a 15 minute headway on those route segments that are outside the study area. Under Developmental Level A service frequency would be increased to every 15 minutes during peak hours throughout the line and every 15 minutes during base hours for those segments of the line that are outside of the study area. Base hour headways for those portions of the line within the study area would be every 30 minutes.

Route C-7

Route C-7 would operate in a manner very similar to that of Route C-3. It would connect Los Angeles and Paramount, operating on Gage Avenue and Downey Boulevard. Like Route C-3, Route C-7 would operate a short service that would terminate outside of the study area. The service extending into the study area would operate on a one hour headway throughout the day while service for the trunk of the line would operate every 20 minutes. Under Developmental Level A, this frequency would be increased to every 30 minutes for operation within the study area and every 15 minutes for the trunk of the line.

Route C-8

Route C-8 would connect La Mirada and South Whittier with the Los Angeles CBD via Washington Boulevard. This service would operate on a one hour frequency throughout the day at the Base Level and would have its frequency increased to operate every 30 minutes during both base and peak hours under Developmental Level A.

Route C-12

Route C-12 would be a key link between the Mid-Cities area and South Bay. It would be routed via the Imperial Highway Corridor from El Sequndo to the La Habra Fashion Square in Orange County. Service on this route would operate every 30 minutes during peak hours and every 60 minutes during base hours. For Developmental Level A headways would be decreased to 15 minutes during peak hours and 30 minutes during base hours.

Route C-15

Route C-15 would operate from Playa del Rey to Hawaiian Gardens via Manchester, Firestone and Norwalk Boulevards. This route, in addition to extending into the Mid-Cities area, would include a segment of the RTD Line 54 in order to accommodate the many trips that terminate outside of the Mid-Cities study area. Service on Route C-15 within the study area would operate every 30 minutes during peak hours and every 60 minutes during base hours with this frequency being increased to headways of 30 minutes throughout the day under Developmental Level A. Service on the trunk of the line, which includes trips that do not extend into the study area, would operate every 15 minutes throughout the day.

The remaining four lines included in the Base Level recommendation operate exclusively within the study area itself, supplementing the operation of the fixed route grid network.

Route C-5

Route C-5 would connect Pico Rivera, Downey and Paramount to the Lakewood Shopping Center via Passons Avenue and Paramount Boulevard. The service would operate every 30 minutes during the peak and every 60 minutes during the base with this frequency being increased under Developmental Level A to operate every 20 minutes during the peak and every 30 minutes during the base.

Route C-10

Route C-10 would operate from the Whittwood Shopping Center to Bellflower via Florence Avenue, Telegraph Road and Bellflower Boulevard. This service would maintain its 60 minute headway throughout the day with the service frequency being increased to every 30 minutes throughout the day under Developmental Level A.

Route C-13

The Norwalk and Pioneer Boulevard Corridor would be served by the operation of Route C-13 which would connect the Quad Shopping Center in Whittier

with Norwalk, Artesia and Hawaiian Gardens. This service would operate every 30 minutes during peak hours and every 60 minutes during base hours with this frequency being increased under Developmental Level A to every 15 minutes during peak hours and every 30 minutes during base hours.

Route C-16

Route C-16 would operate from the La Mirada Shopping Center to Paramount via Alondra Boulevard. Service would be on a one hour headway at the Base Level and a 30 minute headway under Developmental Level A.

Recommended headways for Saturday service on each of the 16 proposed lines would be the same as those headways listed for base hour periods of operation. Sunday service for each route would be the same as that included in the preliminary schedule for periods of night operation.

SUPPLEMENTARY ROUTES - DEVELOPMENTAL LEVEL B

Developmental Level B adds to the basic 16 line grid 4 additional routes. These routes are described below. Their operating characteristics have not been developed to the same level of detail as the basic 16 routes and no operating characteristics summaries exist for them. These 4 additional routes are not essential for an adequate transit system to serve the Mid-Cities area. They would, however, increase the accessibility of the area's residents to the transit system.

Route B-1 - Whittier

This route would operate from Downtown Whittier to Cerritos Center via Painter, Telegraph, Meyer, Valley View to Artesia, Carmenita, 183rd Street to Los Cerritos Center. This service would operate every 30 minutes during peak and every hour during base hours.

Route B-2 - Stonewood

This service would operate from Lakewood Center to the Stonewood Shopping Center to Downtown Whittier via Clark, Compton, Woodruff to San Gabriel Ricer Freeway, Telegraph, Santa Fe Springs Road, Pickering, Wardman to Downtown Whittier. This service would operate every 30 minutes during the peak and every 60 minutes during base hours.

Route B-3 - Rio Hondo College

Service between South Los Angeles and Rio Hondo College would operate from the route of the present Slauson Avenue service to Miller Grove Road to Norwalk Boulevard to Workman Mill Road then into Rio Hondo College. This service would operate on a one hour headway, preferably with arrival and departure times to and from the college coordinated with the major class shift hours at the college.

Route B-4 - South Gate to Whittwood

This service would connect with existing routes in South Gate and would proceed eastward to the Whittwood Shopping Center in East Whittier via Stuart

and Grey Road, Firestone, Orr and Day, Hercules, Pioneer, Lakeland, Leland, Telegraph, Victoria, Mulberry, Santa Fe Street, Scott Street then into Whittwood Shopping Center. This service would operate every 30 minutes during peak hours and every 60 minutes during base hours.

PROPOSED CHANGES TO EXISTING TRANSIT SERVICES

Implementation of the proposed routes would require changes not only in the current RTD lines but also in the lines operated by the Long Beach Public Transportation Company (LBPTC) and those of the Orange County Transit District (OCTD).

Changes in RTD Lines

With the implementation of the 16 proposed bus lines all services from the following 15 present RTD bus lines would be discontinued: Numbers 38, 46, 54, 58, 72, 111, 112, 113, 116, 117, 118, 132, 134, 136 and 137. In addition, RTD Lines 34, 55 and 77 would be revised. An operating characteristics summary describing the revised operation of 55 & 77 have been included at the end of this chapter. Line 55 would continue to operate essentially unchanged except that service will terminate at Seal Beach and its schedule will be incorporated into the operation of Route C-9, Lakewood Boulevard, to coordinate headways and minimize operating requirements. Route 34 would no longer provide service south of Compton and Willowbrook.

Changes in LBPTC Lines

Seven major changes recommended for the LBPTC, shown in Figure 4-3, are described below:

Route 1 (Carson Branch)

The line should be extended to Hawaiian Gardens via Carson Street to Norwalk Boulevard to Wardlow Road back to Studebaker Road.

Route 1 (Palo Verde Branch)

This line should be extended to Los Cerritos Center via Palo Verde Avenue to South Street to Gridley Road then into the shopping center.

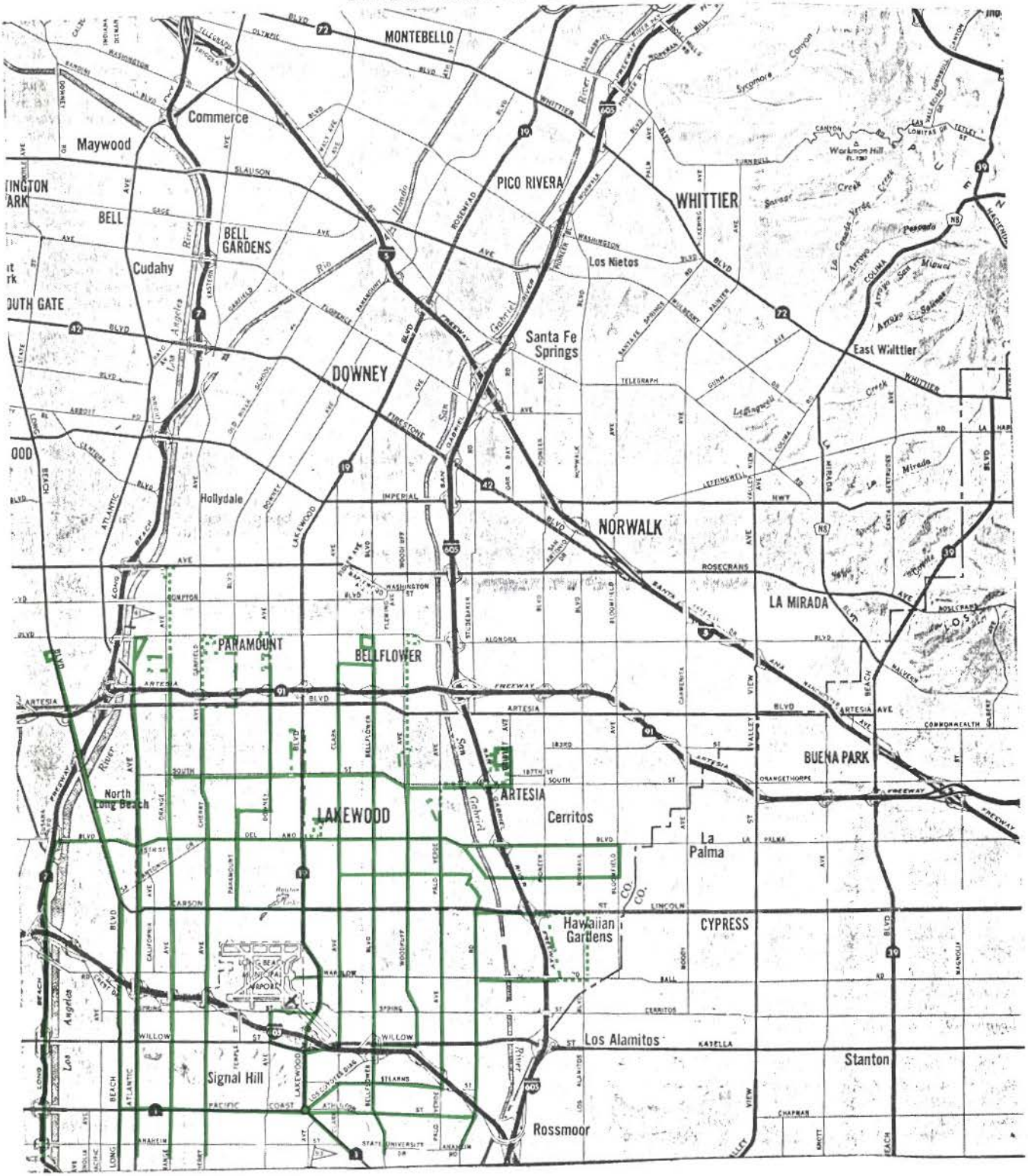
Route 2 (Downey Avenue Branch)

This line should be extended northward to Alondra Boulevard where it would meet two RTD lines, C-16 would operate on Alondra Boulevard, and C-7 would terminate south on Downey Avenue and would loop via Motz Street and Indiana Avenue.

Route 2 (Cherry Avenue Branch)

This line should be rerouted northward on Cherry Avenue and Garfield Avenue to Alondra Boulevard where it would loop via Alondra Boulevard to Minnesota Avenue to Monroe Street. This service would connect with the proposed C-16 Line operating on Alondra Boulevard and another proposed RTD line C-3 that would terminate south on Garfield Avenue at Alondra Boulevard.

FIGURE 4-3
RECOMMENDED CHANGES TO
LONG BEACH PUBLIC TRANSPORTATION COMPANY
SERVICE WITHIN THE STUDY AREA



L.B.P.T.C. service to continue to operate unchanged

Recommended extensions of L.B.P.T.C. service

Recommended areas of abandonment of L.B.P.T.C. service

Route 7 (Orange Avenue Branch)

This line should be extended north to Rosecrans Avenue to connect with the proposed Line C-14. This route will loop via Carlos Street and El Camino Avenue.

Route 9 (Woodruff Avenue Branch)

This line should be extended north along Woodruff Avenue to Alondra Boulevard where it would loop via Carpintero Avenue and Trabuco Street.

Route 11 (Lakewood Boulevard Branch)

This line would be truncated at Del Amo Boulevard and would no longer operate north of Lakewood Shopping Center. This line would be rerouted via Del Amo Boulevard to Greywood Avenue to Hardwick Street at Lakewood Shopping Center and would terminate at that point.

The seven changes in the LBPTC service listed above represented a net daily increase of 174 bus miles. It is recommended that the service frequency of all of the affected lines remain unchanged. Table 4-2 summarizes the recommended LBPTC changes.

Changes in OCTD Lines

The principal recommended change in the operation of the OCTD involves the rerouting of the present Orange County Route 38 to serve the Hawaiian Gardens area. This rerouting would involve operating over the regular route to Lincoln Avenue and Denni Street and then continuing southward on Norwalk Boulevard to Los Alamitos Boulevard where the existing route would then be resumed. This rerouting would not measurably change the existing route miles. Headways would also remain unchanged.

SUMMARY OF OPERATING CHARACTERISTICS OF THE PROPOSED RTD SYSTEMS

The principal characteristics of the proposed system of 16 RTD routes is shown in Table 4-3. This table also lists the current RTD lines serving the areas and compares the operating features with the proposed Base Level Service. The number of vehicles required to provide the new service is a modest increase of 5 percent. Table 4-4 describes each level of service in terms of 9 operating characteristics. It also shows the incremental change in performance from that offered by the existing RTD system. Table 4-5 is a comparison of present and the various proposed peak vehicle requirements.

Table 4-2

RECOMMENDED LONG BEACH PUBLIC TRANSPORTATION COMPANY CHANGES

LINE	CHANGE	TRIPS	DISTANCE	TOTAL MILEAGE
No. 1 - Carson	Extend to Norwalk Boulevard	21	0.97	+20.36
No. 1 - Palo Verde	Extend to Cerritos	42	1.58	+66.18
No. 2 - Downey Avenue	Extend to Alondra	44	0.39	+17.33
No. 2 - Cherry Avenue	Via Garfield to Alondra-Direct	44	-0.88	-38.67
No. 7 - Orange Avenue	Extend to Rosecrans	78	1.24	+96.91
No. 9 - Woodruff Avenue	Extend to Alondra	54	1.52	+81.82
No. 11 - Lakewood	Terminate at Lakewood S.C. Blvd.	60	-1.17	-70.00
	TOTAL DAILY MILEAGE DIFFERENCE			+173.93

Table 4-3

SERVICE REQUIREMENTS COMPARISONS

PRESENT ROUTES	OPERATING MILES	OPERATING HOURS	LAYOVER HOURS	VEHICLES REQUIRED A.M. PEAK	VEHICLES REQUIRED P.M. PEAK	% OF OPER HOURS IN LAYOVER	LINE SPEED	OPERATING MILES WITHIN STUDY AREA	OPERATING HOURS WITHIN STUDY AREA	% OF OPER. MILES IN STUDY AREA	% OF OPER. HOURS IN STUDY AREA
No. 34	771.56	40.14	11.66	6	6	29.1	19.2	256.20	13.70	33.2	34.1
No. 38	202.00	10.49	1.30	1	1	12.4	19.2	102.36	5.33	50.6	50.8
No. 46	1,271.72	103.66	20.63	8	7	19.9	12.3	0	0	0	0
No. 54	1,637.66	145.74	29.77	12	11	20.4	11.2	0	0	0	0
No. 55	854.51	36.58	5.05	3	6	13.8	23.4	269.10	12.82	31.5	35.0
No. 58	4,344.05	193.64	37.16	16	21	19.2	22.4	827.99	32.00	19.1	16.5
No. 72	2,290.43	134.29	32.16	25	28	24.0	17.1	691.34	42.02	30.2	31.3
No. 77	803.42	76.46	19.53	5	5	25.4	10.5	0	0	0	0
No. 111	575.84	32.28	14.61	4	4	45.3	17.8	274.85	15.61	47.7	48.4
No. 112	177.79	10.16	1.50	1	1	14.8	17.5	75.60	4.50	42.5	44.3
No. 113	498.52	29.59	3.72	3	3	12.6	16.8	362.14	18.65	72.6	63.0
No. 116	364.36	18.42	3.63	2	2	19.7	19.8	308.78	16.03	84.7	87.0
No. 117	422.88	24.44	7.67	2	3	31.4	17.3	422.88	24.44	100.0	100.0
No. 118	182.40	9.90	1.42	1	1	14.3	18.4	93.70	5.35	51.4	54.0
No. 132	593.97	32.82	12.35	4	4	37.6	18.1	593.97	32.82	100.0	100.0
No. 134	248.01	27.88	5.50	2	2	19.7	8.9	69.84	4.08	28.2	14.6
No. 136	139.62	8.30	4.28	1	1	51.6	16.8	139.62	8.30	100.0	100.0
No. 137	530.61	26.78	10.73	3	3	40.1	19.8	170.37	8.81	32.1	32.9
TOTAL	15,909.05	961.57	222.67	99	109	23.2	17.0	4658.74	244.46	29.3	25.4
PROPOSED SYSTEM (BASE LEVEL)											
C-1 Santa Ana Freeway	3,847.40	199.43	40.98	12	16	20.1	19.3	1,065.73	55.24	27.7	27.7
C-2 Artesia Boulevard	548.60	36.83	12.27	3	3	33.3	14.9	200.24	13.44	36.5	36.5
C-3 Slauson-Garfield (46)	1,837.00	138.01	26.37	10	10	19.1	13.3	145.12	10.90	7.9	7.9
C-4 Cerritos-Whittwood-Beverly	517.50	37.31	6.70	3	3	18.0	13.9	517.50	37.31	100.0	100.0
C-5 Passons-Paramount	621.56	52.54	15.67	6	5	29.8	11.8	621.56	52.54	100.0	100.0
C-6 Whittier Boulevard	2,554.53	183.16	14.30	24	27	7.8	13.4	906.86	65.02	35.5	35.5
C-7 Gage-Downey	652.30	47.40	6.72	3	3	14.2	13.8	170.25	12.37	26.1	26.1
C-8 Olympic-Washington	576.00	36.13	3.67	3	3	10.2	15.9	292.61	18.35	50.8	50.8
C-9 Lakewood-Rosemead	887.10	78.83	14.58	7	8	18.5	11.3	742.50	65.98	83.7	83.7
C-10 Whittwood-Bellflower	348.40	25.10	5.88	2	2	23.4	13.9	348.40	25.10	100.0	100.0
C-11 Studebaker	437.41	33.33	7.42	4	4	22.3	13.1	437.41	33.33	100.0	100.0
C-12 Imperial Highway	820.80	47.47	4.67	6	4	8.6	17.3	338.99	19.61	41.3	41.3
C-13 Pioneer Boulevard	490.60	34.10	5.03	4	4	14.7	14.4	490.60	34.10	100.0	100.0
C-14 Rosecrans Avenue	1,007.00	63.39	9.27	5	6	14.6	15.9	420.93	26.50	41.8	41.8
C-15 Firestone-Norwalk (54)	2,566.10	201.90	34.85	15	5	17.3	12.7	387.48	30.49	15.1	15.1
C-16 Alondra Boulevard	286.00	24.78	9.50	2	2	38.3	11.5	286.00	24.78	100.0	100.0
RTD No. 34 (revised)	525.00	27.31	10.45	5	5	38.2	19.2	0	0	0	0
RTD No. 55 (revised)	955.43	60.07	5.02	4	6	8.4	15.9	246.50	15.50	25.8	25.8
RTD No. 77 (revised)	513.70	46.44	11.60	3	3	25.0	11.1	0	0	0	0
TOTAL	19,992.43	1,373.53	244.95	121	129	17.8	14.6	7,618.68	540.56	38.1	39.4
DIFFERENCE	+4,083.38	+411.96	+22.28	+22	+20	-5.4	-2.4	+2,959.94	+207.1	+8.8	+14.0

TABLE 4-4

COMPARATIVE OPERATING REQUIREMENTS
ALL SERVICE LEVELS

SERVICE LEVEL	TOTAL DAILY 1-WAY TRIPS	AVERAGE OPER. SPEED (MPH)	DAILY OPERATING MILES	DAILY OPERATING HOURS	TOTAL DAILY LAYOVER HOURS	PER CENT OPER. OF HRS. IN LAYOVER	VEHICLES NEEDED AM PEAK	VEHICLES NEEDED PM PEAK	VEHICLES NEEDED BASE HRS.
PRESENT RTD SERVICE	976	17.0	15,909.05	961.51	222.67	23.2	99	109	61
BASE LEVEL SERVICE	1160	14.6	19,992.43	1,373.53	244.95	17.8	121	129	83
Change	+184	-2.4	+4,083 38	+411.96	+22.28	-5.4	+22	+20	+22
Per Cent Change	+18.9	-14.1	+25.7	+42.8	+10.0	-23.3	+22.2	+18.3	+36.1
DEVELOPMENTAL LEVEL A	1666	14.8	31,244.54	2,104.50	359.00	17.1	169	179	123
Change	+690	-2.2	+15,335.49	+1,142.99	+136.33	-6.1	+70	+70	+62
Per Cent Change	+70.7	-12.9	+96.4	+118.9	+61.2	-26.3	+70.7	+64.2	+101.6
DEVELOPMENTAL LEVEL B	1774	14.5	32,609.60	2,248.25	376.97	16.8	187	197	132
Change	+798	-2.5	+16,700.55	+1,286.74	+154.30	-6.4	+88	+88	+71
Per Cent Change	+81.8	-14.7	+105.0	+133.8	+69.3	-27.6	+88.9	+80.7	+116.4
CENTS RECOMMENDATION	1329	14.5	23,042.87	1,590.52	276.70	17.4	141	150	99
Change	+353	-2.5	+7,133.82	+629.01	+54.03	-5.8	+42	+41	+38
Per Cent Change	+36.2	-14.7	+44.8	+65.4	+24.3	-25.0	+42.4	+37.6	+62.3

TABLE 4-5

COMPARISON OF PRESENT AND PROPOSED VEHICLE REQUIREMENTS

PRESENT SYSTEM Peak Req			BASE LEVEL Peak Req			DEVELOP. LEVEL A Peak Req.			DEVELOP LEVEL B Peak Req.			CENTS RECOMMENDATION Peak Req.			
ROUTE	A M	P.M.	ROUTE	A.M.	P.M	ROUTE	A M.	P.M.	ROUTE	A.M.	P.M	ROUTE	SERVICE LEVEL	A.M.	P.M.
34	6	6	C-1	12	16	C-1	14	18	C-1	14	18	C-1	"A"	14	18
38	1	1	C-2	3	3	C-2	8	8	C-2	8	8	C-2	"A"	8	8
46	8	7	C-3	10	10	C-3	11	11	C-3	11	11	C-3	Base	10	10
54	12	11	C-4	3	3	C-4	6	6	C-4	6	6	C-4	"A"	6	6
55	3	6	C-5	6	5	C-5	9	8	C-5	9	8	C-5	Base	6	5
58	16	21	C-6	24	27	C-6	29	32	C-6	29	32	C-6	"A"	29	32
72	25	28	C-7	3	3	C-7	5	5	C-7	5	5	C-7	Base	3	3
77	5	5	C-8	3	3	C-8	6	6	C-8	6	6	C-8	Base	3	3
111	4	4	C-9	7	8	C-9	7	8	C-9	7	8	C-9	"A"	7	8
112	1	1	C-10	2	2	C-10	4	4	C-10	4	4	C-10	Base	2	2
113	3	3	C-11	4	4	C-11	8	8	C-11	8	8	C-11	"A"	8	8
116	2	2	C-12	6	4	C-12	11	9	C-12	11	9	C-12	Base	6	4
117	2	3	C-13	4	4	C-13	8	8	C-13	8	8	C-13	Base	4	4
118	1	1	C-14	5	6	C-14	11	12	C-14	11	12	C-14	Base	5	6
132	4	4	C-15	15	15	C-15	18	18	C-15	18	18	C-15	Base	15	15
134	2	2	C-16	2	2	C-16	4	4	C-16	4	4	C-16	"A"	4	4
136	1	1	34	5	5	34	5	5	34	5	5	34	St.Ser.	5	5
137	3	3	77	3	3	77	3	3	77	3	3	77	Base	3	3
									B-1	5	5	55	New Rt.	3	6
									B-2	5	5				
									B-3	3	3				
TOTAL									B-4	5	5				
	99	109		117	123		167	173		185	191			141	150

SUMMARY
LINE OPERATING CHARACTERISTICS

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-1

FROM Downtown Los Angeles
TO Santa Ana
VIA Santa Ana Freeway

AREAS SERVED

Los Angeles, Downey, Norwalk, Santa Fe Springs, La Mirada, Buena Park, Anaheim, Santa Ana, Downtown Los Angeles, Downtown Santa Ana, Disneyland, Knotts Berry Farm, Japanese Village

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel. Level A	Devel Level B
Avg. 1 way route miles	38.8	36 8	36.8
Miles w/in study area	10.2	10 2	10 2
% of miles in study area	27 7	28.7	28.7
Hours of operation	5-2 am	5-2 am	5-2 am
Peak hour headway	15	15	.15
Base hour headway	30	15	:15
Total daily 1 way trips	113	210	210
Avg. 1 way running time	1 40*	1.40*	1 40*
Avg. operating speed	24.3*	24.3*	24 3*
Daily operating miles	3847 4	6894.4	6894.4
Daily operating hours	199 43	350.92	350 92
Total daily layover time	40 98	67.20	67.20
% of op. hrs. in layover	20.1	22 2	22 2
Vehicles needed, am peak	12	14	14
Vehicles needed, pm peak	16	18	18
Vehicles needed, base	9	14	14

* Varies greatly depending on time of day of trip

RECOMMENDED LAYOVER POINTS

North - RTD Station
South - Santa Ana Station

TRANSFER POINTS

To Line Number:	Location
C-2	Artesia & Knott
C-5	Paramount & Gallatin
C-9	Lakewood & Gallatin
C-12	Pioneer & Imperial
C-13	Pioneer & Imperial
C-14	Rosecrans & Carmenita
C-4	Rosecrans & Carmenita
	(plus Norwalk and OCTD lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
RTD Station			
Santa Ana Freeway at Paramount	8.87	17	31
Santa Ana Freeway at Lakewood	1.33	5	17
Santa Ana Freeway at Imperial	3.33	6	32
Santa Ana Freeway at San Antonio	.88	5	15
Santa Ana Freeway at Rosecrans	.91	2	25
Santa Ana Freeway at Carmenita	1.48	4	20
Santa Ana Freeway at Knott	2.48	4	35
Knotts Berry Farm	2.36	6	24
Disneyland	7.42	25	18
Santa Ana Station	7.72	18	26

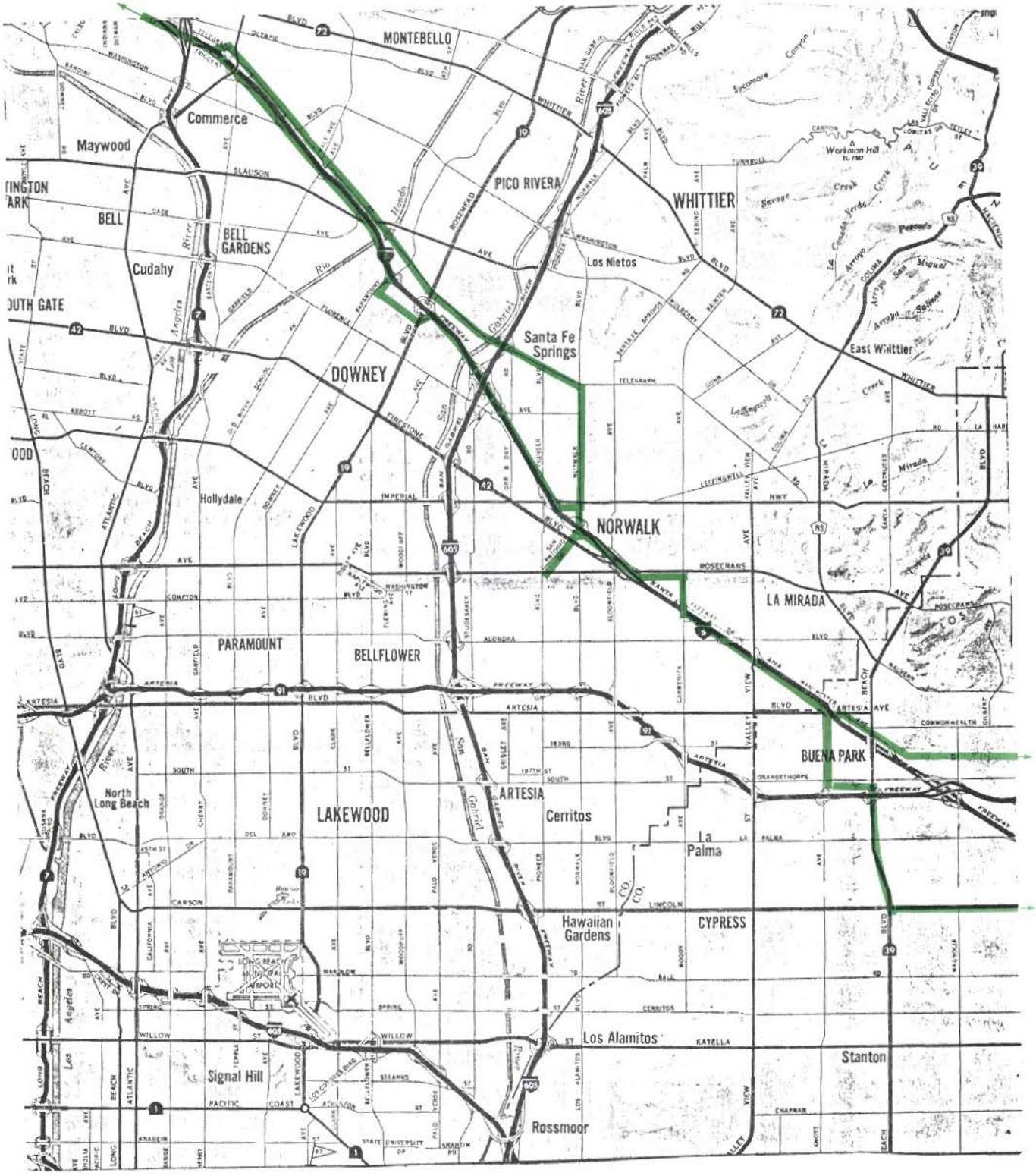
ROUTING

Southbound from RTD Station

N. on Maple Avenue
E on 6th Street
E on Whittier Blvd
S on Boyle Avenue
E on 8th Street
S on Santa Ana Freeway
S on Paramount Blvd
E on Gallatin Road
N on Lakewood Blvd
S on Santa Ana Freeway
S on Pioneer Blvd.
E on Imperial Highway
S. on Santa Ana Freeway
Exit at San Antonio Drive
Exit E. on Union Street
cross San Antonio back onto fwy
S. on Santa Ana Freeway
E on Rosecrans Avenue
S on Carmenita Avenue
S on Santa Ana Freeway
Exit at Beach Blvd exit
S on Knott Avenue
E on Orangethorpe Avenue
S on Beach Blvd
E on Ball Road
S. on Harbor Blvd
E on Katella Avenue
S on Santa Ana Freeway
S on Main Street
W on 2nd Street to Santa Ana Station

Northbound. from Santa Ana Station

S on Sycamore Street
E. on 1st Street
N on Main Street
N on Santa Ana Freeway
S on Katella Avenue
N on Harbor
W on Ball Road
N. on Beach Blvd
W. on Orangethorpe Avenue
N on Knott Avenue
E on Artesia Aveneu to entrance to freeway
N. on Santa Ana Freeway
N. on Carmenita Avenue
W. on Rosecrans Avenue
N on Santa Ana Freeway
N on Norwalk Blvd
W. on Imperial Highway
N on Pioneer Blvd
N. on Santa Ana Freeway
S on Lakewood Blvd.
W on Gallatin Road
N on Paramount Blvd.
N on Santa Ana Freeway
N on Bakersfield off-ramp
N on Soto Street
W on Whittier Blvd
W on 6th Street
S on Central Avenue
W on 7th Street
N. on Maple Avenue to RTD Station


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
North Long Beach
LAKEWOOD
ARTESIA
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-2

FROM South Bay Shopping Center
TO Buena Park
VIA Artesia Boulevard

AREAS SERVED

Redondo Beach, Torrance, Gardena, Los Angeles, Carson, Compton, N Long Beach, Bellflower, Cerritos, Artesia, La Mirada, Buena Park, South Bay Center, Compton College, Bellwood Hospital, Japanese Village, Bellflower Community Hospital

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	21 1	21 1	21.1
Miles w/in study area	7.7	7 7	7 7
% of miles in study area	36.5	36.5	36.5
Hours of operation	6a-7p	6a-11p	6a-11p
Peak hour headway	1·00	20	20
Base hour headway	1 00	30 60	:30 60
Total daily 1 way trips	26	68	68
Avg. 1 way running time	58	58	:58
Avg operating speed	22.3	22 3	22.3
Daily operating miles	548 60	1434.8	1434.8
Daily operating hours	36.83	84.77	84.77
Total daily layover time	12 27	20 43	20 43
% of op. hrs. in layover	33.3	24.1	24.1
Vehicles needed, am peak	3	8	8
Vehicles needed, pm peak	3	8	8
Vehicles needed, base	3	5	5

RECOMMENDED LAYOVER POINTS

East - South on Beach Blvd between Artesia and 5th

West - at South Bay Shopping Center

TRANSFER POINTS

To Line Number	Location
C-1	Knott & Artesia
C-5	Artesia & Paramount
C-9	Artesia & Lakewood
C-11	Artesia & Studebaker
C-13	Artesia & Pioneer
C-4	Artesia & Carmenita
C-15	Artesia & Norwalk
	(plus OCTD and 7 Long Beach lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
South Bay Center			
Artesia at Avalon	5.17	13	23
Artesia at Paramount	4 76	12	24
Artesia at Lakewood	1.00	3	23
Artesia at Bellflower	1.00	2	23
Artesia at Studebaker	1.52	4	23
Artesia at Norwalk	1 58	4	23
Artesia at Carmenita	1.52	4	23
Artesia at Santa Ana Freeway	2.12	5	23
Artesia at Atlantic	4.76	12	24
Artesia at Beach	.91	2	23

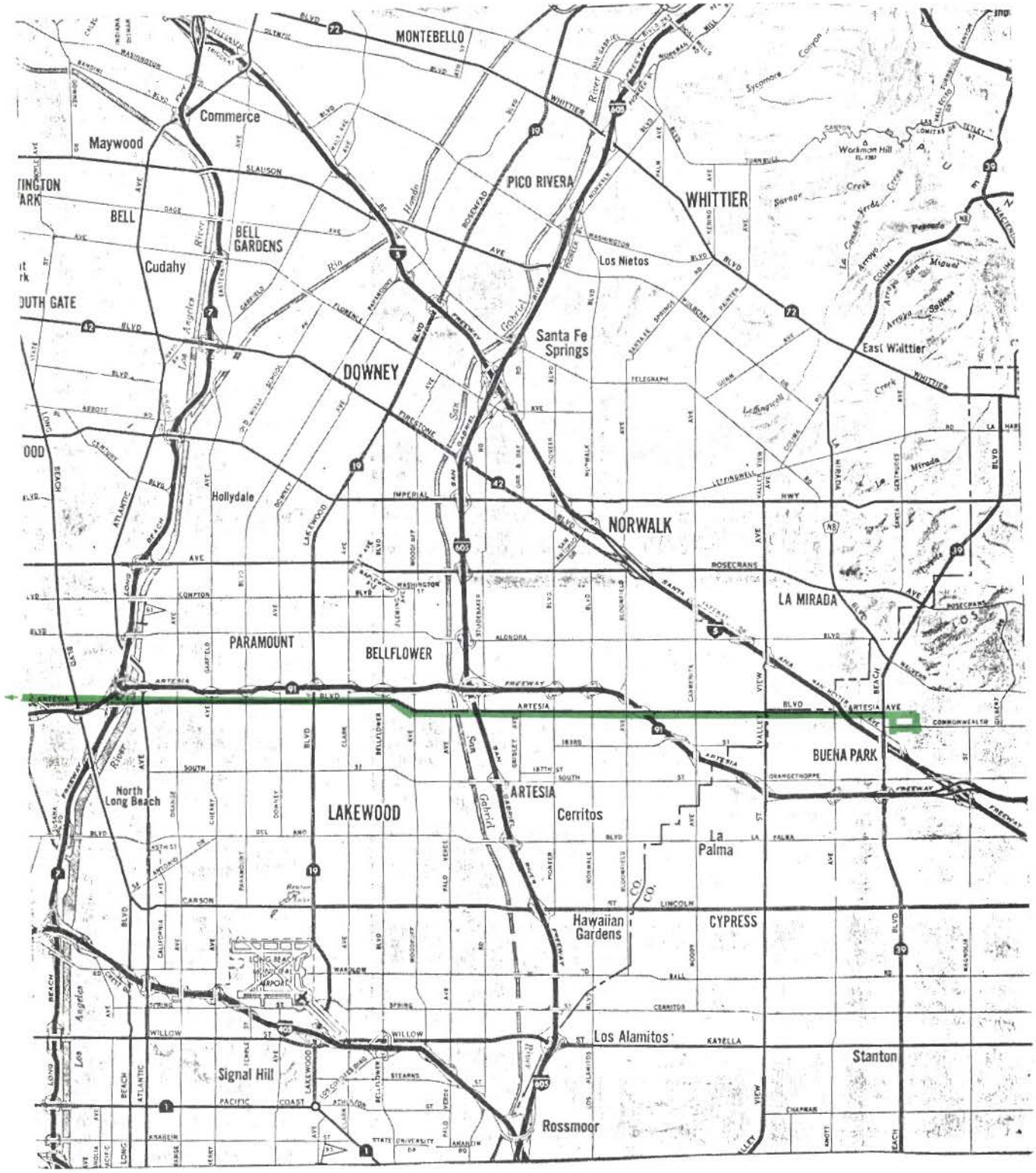
ROUTING

Eastbound from South Bay Shopping Center from layover

N on Shopping Center Drive
E on 177th Street
N on Hawthorne Blvd
E on Artesia Blvd
S on Beach Blvd to layover

Westbound

S on Beach Blvd
W on 5th Street
N on Fullerton Avenue
W on Artesia Blvd
S on Prairie Avenue
W on 177th Street
S on Hawthorne Blvd
W on 179th Street
N on South Bay Shopping Center Drive to layover


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
ARTESIA
BUENA PARK
North Long Beach
LAKEWOOD
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-3

FROM Los Angeles
TO Paramount
VIA Old River School Road

AREAS SERVED

Los Angeles, Huntington Park, Bell, Inglewood, Bell Gardens, Downey, Paramount, Rancho Los Amigos Hospital

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	20 2	20.2	20 2
Miles w/in study area	4 4	4 4	4 4
% of miles in study area	7 9	14 3	14.3
Hours of operation	5a-1a	5a-1a	5a-1a
Peak hour headway	15- 30	15	15
Base hour headway	15-1 00	15 30	15 .30
Total daily 1 way trips	126(33)	126(66)	126(66)
Avg 1 way running time	56-1 17	56-1 17	56-1 17
Avg operating speed	16 5	16 7	16.7
Daily operating miles	1837 0	2028 4	2028.4
Daily operating hours	138 01	149.37	149 37
Total daily layover time	26 37	27 91	27 91
% of op. hrs in layover	19 1	18 7	18 7
Vehicles needed, am peak	10	11	11
Vehicles needed, pm peak	10	11	11
Vehicles needed, base	10	11	11

RECOMMENDED LAYOVER POINTS

South - South on Minnesota Avenue around the corner from Alondra Boulevard.

TRANSFER POINTS

To Line Number	Location:
C-16	Alondra & Garfield (also Long Beach)
C-12	Imperial & Garfield
C-14	Rosecrans & Garfield
C-15	Firestone and Old River School Road

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Slauson at Fairfax			
Slauson at Broadway	5.88	20	17
Slauson at Pacific	3.05	12	16
Pacific at Florence	1.00	6	10
Florence at Atlantic	2 73	11	15
Old River School at Firestone	1 90	6	18
Old River School at Imperial	1 79	6	18
Garfield at Rosecrans	2.18	7	18
Garfield at Alondra	1 21	4	18

ROUTING

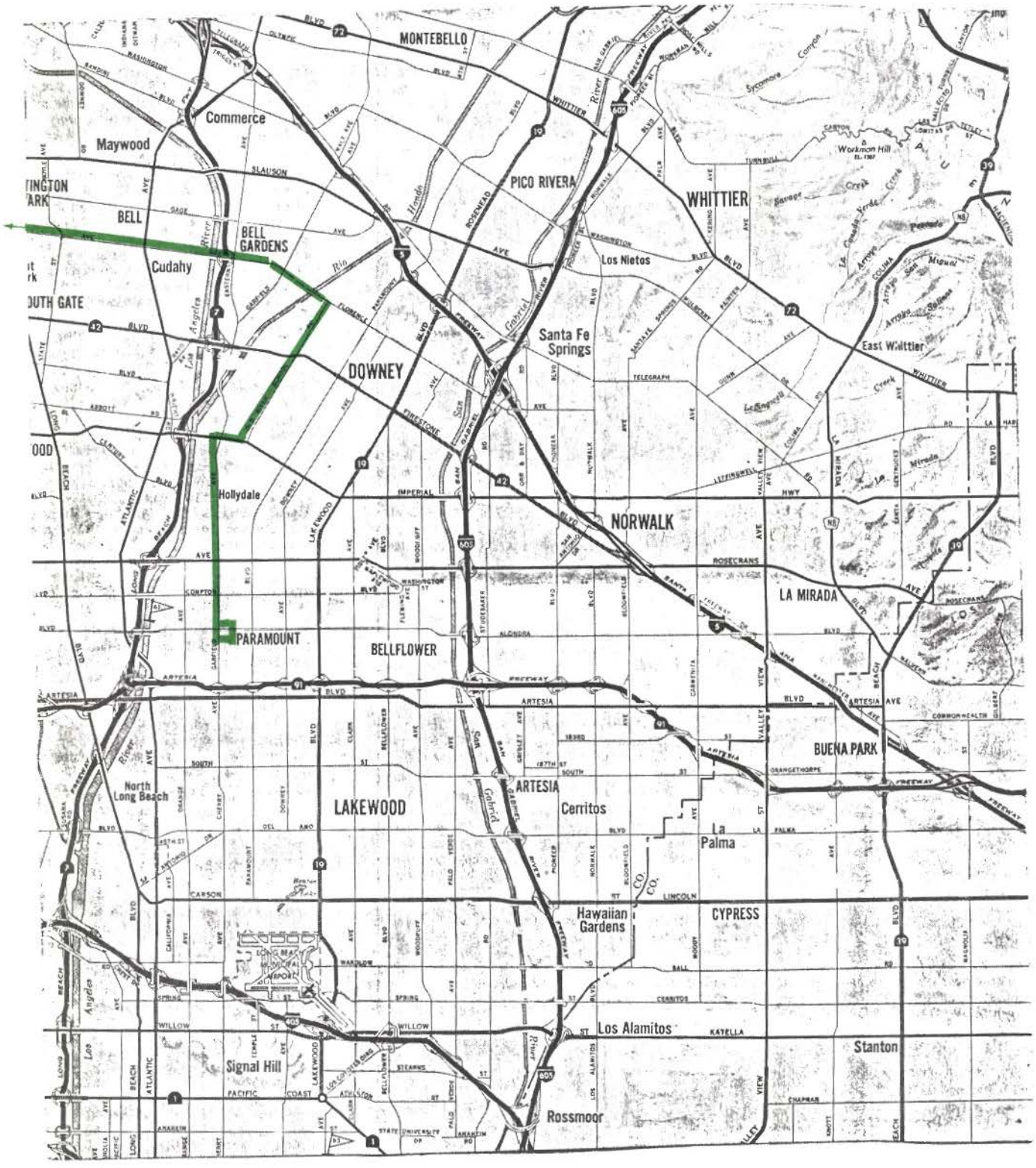
Southbound from present No 46 Line service

S. on Pacific Blvd
E. on Florence Blvd
S. on Old River School Road
W on Imperial Highway
S on Garfield Avenue
E on Alondra Blvd
S. on Minnesota Avenue to layover

(additional service will terminate at Cecelia and Wilcox via present route)

Northbound from layover

S on Minnesota Avenue
W on Motz Street
N on Garfield Avenue
E on Imperial Highway
N on Old River School Road
W on Florence Blvd
N on Pacific Blvd
Then pickup route of present No 46 Line to terminus


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
North Long Beach
LAKEWOOD
ARTESIA
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-4

FROM Pico Rivera
TO Los Cerritos Center
VIA Whittier and Whittwood S C

AREAS SERVED

Pico Rivera, Whitter, S Whittier, Santa Fe Springs, Artesia, Cerritos, Whittwood Shopping Center, Downtc m Whittier, Whittier College, Los Cerritos Center, Whittier General Hospital

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	20 3	20 3	20 3
Miles w/in study area	20 3	20 3	20 3
% of miles in study area	100	100	100
Hours of operation	6a-7p	6a-11p	6a-11p
Peak hour headway	1 00	30	30
Base hour headway	1 00	30- 60	(night)
Total daily 1 way trips	26	60	60
Avg 1 way running time	1 14	1 14	1 14
Avg operating speed	16 9	16 9	16.9
Daily operating miles	517 50	1207 70	1207.70
Daily operating hours	37 31	85 66	85.66
Total daily layover time	6 70	14.20	14.20
% of op hrs. in layover	18 0	16 6	16 6
Vehicles needed, am peak	3	6	6
Vehicles needed, pm peak	3	6	6
Vehicles needed, base	3	6	6

RECOMMENDED LAYOVER POINTS

South - South on Shopping Center Drive in front of Ohrbachs

North - West on Arma Street around the corner from Layman Avenue.

TRANSFER POINTS

To Line Number	Location.
C-1	Carmenita at Rosecrans
C-2	Carmenita at Artesia
C-5	Beverly at Durfee
C-6	Whitter at Ocean View or Whittwood
C-8	Leffingwell at La Mirada or Painter at Mar Vista or La Cuarta
C-9	Beverly at Rosemead
C-10	Whittwood Shopping Center
C-11	Los Cerritos or Phil at Greenleaf
C-12	Carmenita at Imperial
C-13	South & Pioneer or Philadelphia & Greenleaf
C-14	Carmenita & Rosecrans
C-15	South & Norwalk
C-16	Carmenita & Alondra

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Beverly-Rosemead			
Greenleaf at Hadley	4.15	21	12
Ocean View at Whittier Blvd.	2.97	13	14
Whittwood at Shopping Center	1.85	6	20
Leffingwell at La Mirada	2.06	4	30
Carmenita at Imperial	2.18	4	30
Carmenita at Rosecrans	1.00	2	30
Carmenita at Alondra	1.00	2	30
Carmenita at Artesia	1 00	2	30
South at Norwalk	2 52	5	30
Cerritos Center	1 52	8	12

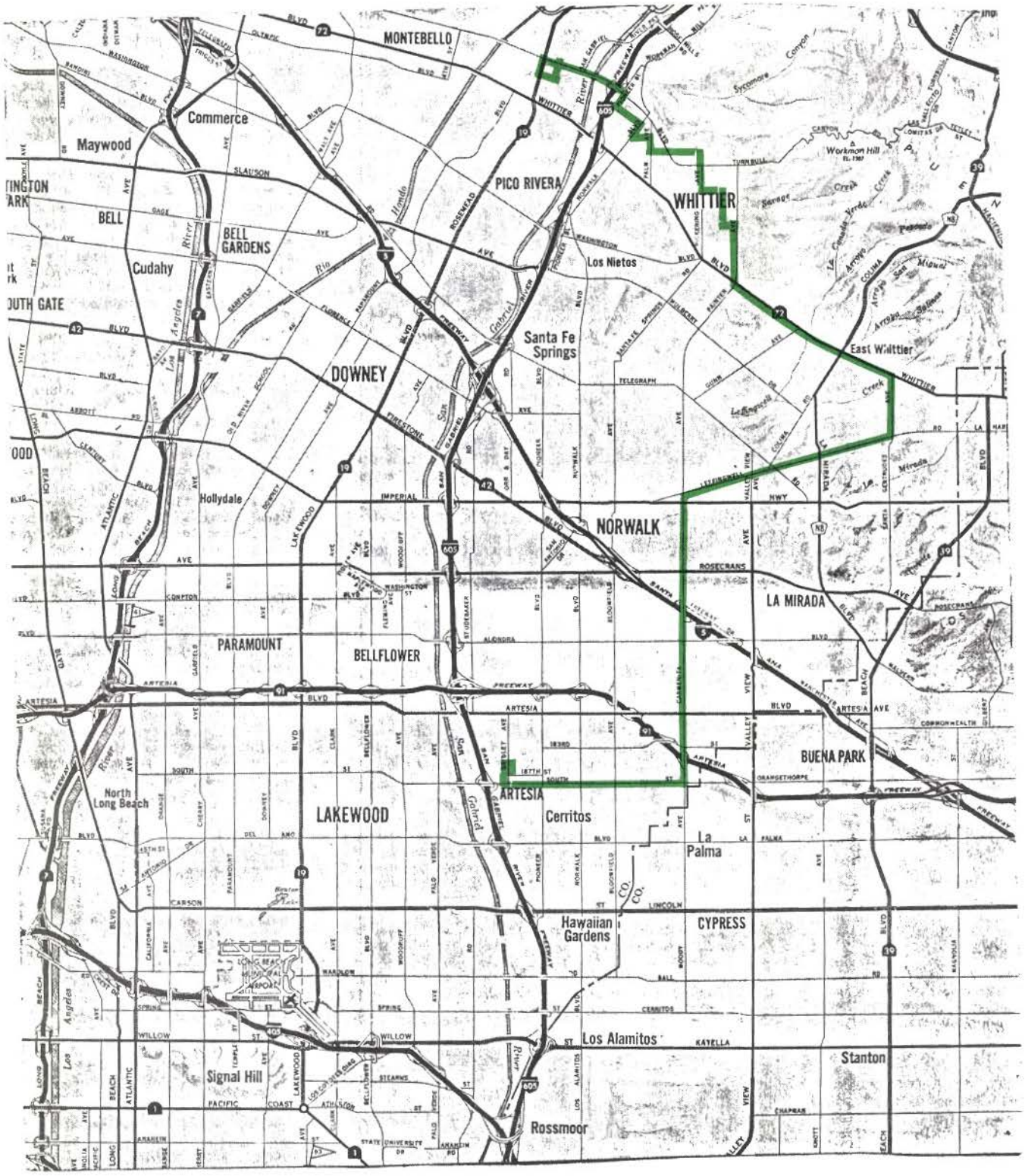
ROUTING

Southbound

W on Arma Street
N. on Rosemead Blvd
E on Beverly Blvd
S on Pioneer Blvd
E on Orange Grove Avenue
S on Norwalk Blvd
E on Monte Vista Drive
S on Palm Avenue
E on Floral Drive
S on Pickering Avenue
E on Hadley Street
S on Greenleaf Avenue
E on Philadelphia Avenue
S on Painter Avenue
E on La Cuarta Street
S on Ocean View Avenue
E on Whittier Blvd
S on Whittwood Drive
E on Whittwood Parkway
S on Santa Gertrudes Avenue
W on Leffingwell Road
S on Carmenita Avenue
W on South Street
N on Gridley Road
W on Los Cerritos Center Dr (at 2nd signal)
S at stop sign on Shopping Center Dr to front of Ohrbachs

Northbound from Los Cerritos Center

E on Shopping Center Drive
S on Gridley Road
E on South Street
N on Carmenita Avenue
E on Leffingwell Road
N on Santa Gertrudes Avenue
W on LaForge Street
N on Woodstead Road
W on Whittwood Parkway
N on Whittwood Drive
W on Whittier Blvd
N on Ocean View Avenue
W on La Cuarta Street
N on Painter Avenue
W on Philadelphia Avenue
N on Greenleaf Avenue
W on Hadley Street
N on Pickering Avenue
W on Floral Drive
N on Palm Avenue
W on Monte Vista Drive
N on Norwalk Blvd
W. on Orange Grove Avenue
N on Pioneer Blvd
S on Layman Avenue
W on Arma Street to layover


MONTEBELLO
Commerce
Maywood
BELL
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PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
North Long Beach
LAKEWOOD
Hawaiian Gardens
CYPRESS
Los Alamitos
Signal Hill
Stanton
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-5

FROM Pico Rivera
TO Lakewood Shopping Center
VIA Passons & Paramount Blvd

AREAS SERVED

Pico Rivera, Downey, Paramount, Lakewood, North Long Beach, Lakewood Shopping Center, three high schools and a medical center

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	15 2	15 2	15.2
Miles w/in study area	15 2	15 2	15 2
% of miles in study area	100	100	100
Hours of operation	6a-10p	6a-1a	6a-1a
Peak hour headway	30	20	20
Base hour headway	1 00	30- 60	(night)
Total daily 1 way trips	41	72	72
Avg 1 way running time	·54	·54	:54
Avg operating speed	16 9	16.9	16 9
Daily operating miles	621.56	1092.76	1092.76
Daily operating hours	52 54	90.76	90 76
Total daily layover time	15.67	26.10	26 10
% of op hrs in layover	29 8	28.8	28.8
Vehicles needed, am peak	6	9	9
Vehicles needed, pm peak	5	8	8
Vehicles needed, base	3	6	6

RECOMMENDED LAYOVER POINTS

North - South on Deland Avenue in advance of Beverly Road.

South - Back of May Co. at Lakewood Shopping Center

TRANSFER POINTS

To Line Number	Location
C-1	Paramount & Santa Ana Freeway
C-2	Paramount & Artesia
C-4	Beverly & Durfee
C-6	Whittier & Durfee or Passons
C-7	Paramount & Suva
C-8	Passons & Washington
C-9	Telegraph & Rosemead or Lakewood S C
C-12	Paramount & Imperial
C-14	Paramount & Rosecrans
C-15	Paramount & Firestone
C-16	Paramount & Alondra
	(also 3 Long Beach Lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Beverly at Deland			
Passons at Whittier	.94	3	17
Passons at Washington	1.49	6	15
Telegraph at Rosemead	1 46	5	18
Paramount at Santa Ana Freeway	1.14	3	18
Paramount at Firestone	1.88	6	20
Paramount at Imperial	1.52	5	20
Paramount at Rosecrans	1.52	5	20
Paramount at Alondra	1.00	3	20
Paramount at Del Amo	2.91	8	20
Lakewood Shopping Center	1 30	5	15

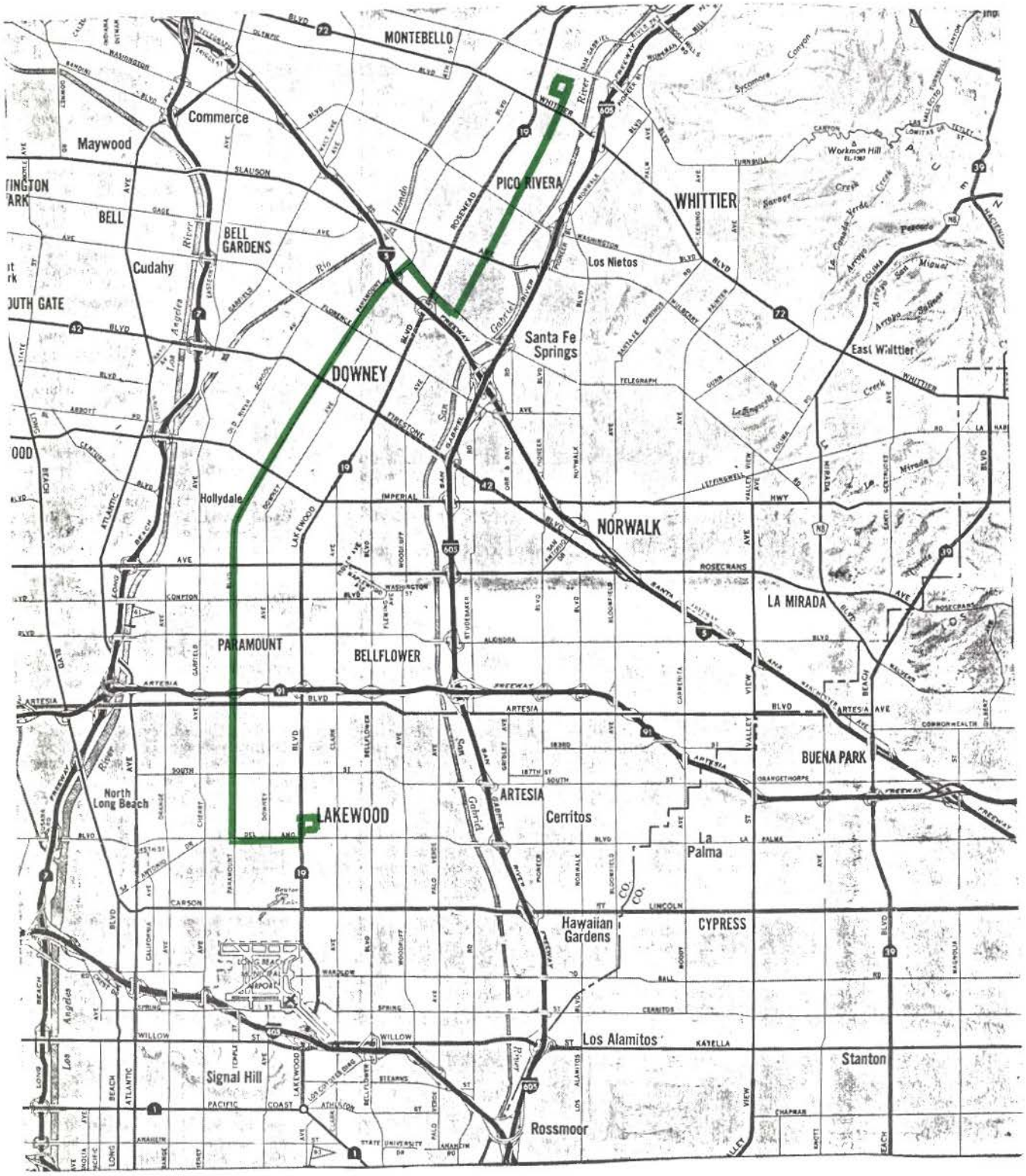
ROUTING

Southbound from layover

S on Deland Avenue
E on Beverly Road
S on Durfee Avenue
E on Whittier Blvd
S on Passons Blvd
W on Telegraph Road
S on Paramount Blvd
E on Del Amo Blvd.
N on Greywood Avenue
W on Drive to May Co

Northbound from layover

S on Hazelbrook Avenue
W on Del Amo Blvd
N on Paramount Blvd
E on Telegraph Road
N on Passons Blvd
W on Whittier Blvd
N on Durfee Avenue
W. on Beverly Blvd
S on Deland Avenue to layover


MONTEBELLO
Commerce
Maywood
BELL
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Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
LAKEWOOD
North Long Beach
Hawaiian Gardens
CYPRESS
Los Alamitos
Signal Hill
Stanton
Rossmoor
Workmon Hill

SUMMARY

LINE OPERATING CHARACTERISTICS

ROUTE NO C-6

FROM Downtown Los Angeles
TO Orange County Line
VIA Whittier Boulevard

AREAS SERVED

Los Angeles, Commerce, Montebello, Whittier, La Habra, Downtown Los Angeles, Downtown Whittier, Whittwood Shopping Center, the Quad Shopping Center, Helles School, Whittier General Hospital.

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	17.8-19.5	17.8-28.8	17.8-28.8
Miles w/in study area	7.1-8.8	7 1-8 8	7.1-8.8
% of miles in study area	35 5	30.8	30.8
Hours of operation	5a-2a	5a-2a	5a-2a
Peak hour headway	05-.10	·05- 10	·05-.10
Base hour headway	:20	:20-.60	(Ful.)
Total daily 1 way trips	154	154	154
Avg. 1 way running time	1·12-1 18	1;12-1 46	1·12-1.46
Avg operating speed	15.0	15.4	15.4
Daily operating miles	2554.53	2947.05	2947.05
Daily operating hours	183.16	206.13	206.13
Total daily layover time	14 30	14.76	14.76
% of op. hrs in layover	7 8	7.2	7.2
Vehicles needed, am peak	28	29	29
Vehicles needed, pm peak	31	32	32
Vehicles needed, base	8	9	9

RECOMMENDED LAYOVER POINTS

East - Back of Broadway in Whittwood or South on Lindauer at Whittier

TRANSFER POINTS

To Line Number.	Location.
C-4	Whittier & Ocean View or Whittwood
C-5	Whittier & Durfee or Passons
C-8	Whittier & Washington or Painter
C-9	Whittier & Rosemead
C-10	Whittwood Shopping Center
C-11	Whittier & Pickering
C-13	Whittier & Broadway or Greenleaf or the Quad
	OCTD Whittier & Beach

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Fifth at Flower			
Whittier at Atlantic	6 42	21-35	11-15
Whittier at Rosemead	4.27	12.16	15-20
Whittier at Broadway	1.91	7	17
Whittier at Greenleaf	1.76	10	11
Whittier at Ocean View	1.24	4	17
Whittier at Santa Gertrudes	1.85	6	20
Whittier at Beach	1 63	5	20

ROUTING

Eastbound

S on Flower Street
E on 6th Street
E on Whittier Blvd
S on Santa Gertrudes Avenue
W on LaForge Road (Orange County trips)
E on Whittier Blvd
N on Hacienda Blvd
W on Laguna Drive
S on Lindauer Drive

Westbound from Whittwood layover

W on LaForge Road
N on Woodstead Road
W on Whittwood Parkway
N on Whittwood Drive
W on Whittier Blvd to L A city line the resume route of present No 72 line (Orange County trips)
S on Lindauer Drive
W on Whittier Blvd
N on Central Avenue
W on 5th Street
N on Figueroa Street
E on 4th Street


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
North Long Beach
LAKEWOOD
ARTESIA
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY

LINE OPERATING CHARACTERISTICS

ROUTE NO C-7

FROM Los Angeles
TO Paramount
VIA Gage Avenue and Downey Boulevard

AREAS SERVED

Los Angeles, Huntington Park, Bell Gardens, Downey, Paramount, Downtown Downey and three high schools

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	13 1	13 1	13 1
Miles w/in study area	6 3	6 3	6.3
% of miles in study area	26 1	34.1	34 1
Hours of operation	5a-1a	5a-1a	5a-1a
Peak hour headway	20-1 00	15-·30	15-·30
Base hour headway	20-1 00	·15-·30	15-.30
Total daily 1 way trips	106(37)	132(54)	132(54)
Avg 1 way running time	17- 45	17-:45	·17-·45
Avg operating speed	16 0	16 0	16.0
Daily operating miles	652 30	999 2	999 2
Daily operating hours	47 40	70 81	70 81
Total daily layover time	6 72	8.36	8.36
% of op. hrs. in layover	14 2	11 8	11 8
Vehicles needed, am peak	3	5	5
Vehicles needed, pm peak	3	5	5
Vehicles needed, base	3	5	5

RECOMMENDED LAYOVER POINTS

North - North on Rugby Street in advance of Slauson Boulevard

South - East on Alondra Boulevard around the corner from Monroe Avenue.

TRANSFER POINTS

To Line Number	Location
C-5	Suva & Paramount
C-12	Downey & Imperial
C-14	Downey & Rosecrans
C-15	Downey & Firestone
C-16	Downey & Alondra (also Long Beach)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Alondra at Downey			
Downey at Rosecrans	1.24	4	20
Downey at Imperial	1.33	4	20
Downey at Firestone	1.52	5	20
Downey at Gallatin	1.55	4	21
Gage at Alamo	3.48	11	19
Gage at Maywood	1.91	6	20
Slauson at Pacific	1.98	10	12

ROUTING

Northbound from layover

E on Alondra Blvd
N on Downey Blvd
W on Gallatin Avenue
S on Paramount Blvd
W on Suva Street
W on Foster Bridge Blvd
N on Perry Road
W on Gage Avenue
N on Pacific Blvd
W on Belgrave Avenue
N on Rugby Street to layover

Southbound

E on Slauson Blvd
S on Pacific Blvd
E on Gage Avenue
S on Perry Road
E on Foster Bridge Blvd
E on Suva Street
N on Paramount Blvd
E on Gallatin Avenue
S on Downey Blvd
W on Monroe Avenue
N on Indiana Avenue
E on Alondra Blvd to layover


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
LAKEWOOD
North Long Beach
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY

LINE OPERATING CHARACTERISTICS

ROUTE NO C-8

FROM Downtown Los Angeles
TO La Mirada
VIA Washington Boulevard

AREAS SERVED

Downtown Los Angeles, Commerce, Montebello, Pico Rivera, Whittier, South Whittier, La Mirada, Downtown Whittier, The Quad Shopping Center, Presbyterian Hospital, La Mirada Shopping Center, La Mirada Hospital.

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel. Level B
Avg 1 way route miles	24 0	24 0	24.0
Miles w/in study area	12 2	12 2	12 2
% of miles in study area	50 8	50.8	50 8
Hours of operation	6a-8p	6a-1a	6a-1a
Peak hour headway	1 00	30	30
Base hour headway	1 00	·30- 60	night
Total daily 1 way trips	24	58	58
Avg 1 way running time	1 20	1 20	1·20
Avg operating speed	17.7	17.7	17 7
Daily operating miles	576.00	1392.0	1392 0
Daily operating hours	36 13	87.29	87 29
Total daily layover time	3 67	8.65	8.65
% of op hrs. in layover	10.2	9 9	9 9
Vehicles needed, am peak	3	6	6
Vehicles needed, pm peak	3	6	6
Vehicles needed, base	3	6	6

RECOMMENDED LAYOVER POINTS

East - North on La Mirada Shopping Center Drive along side of Thrifty store.

TRANSFER POINTS

To Line Number	Location
C-14	La Mirada & Rosecrans
C-4	Painter & Mar Vista or La Cuarta or La Mirada at Leffingwell
C-5	Washington Blvd. & Passons
C-6	Whittier & Washington or Painter or The Quad
C-9	Washington & Rosemead
C-10	Mulberry & Mills
C-11	Washington & Norwalk or Painter & Mar Vista
C-12	La Mirada & Imperial
C-13	Washington & Broadway or Mar Vista & Greenleaf or The Quad
C-16	La Mirada Shopping Center

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
La Mirada Shopping Center			
La Mirada at Leffingwell	2 30	4	31
Mulberry at Mills	1 60	5	21
Laurel at Whittier	1.76	8	14
Mar Vista at Greenleaf	1.21	5	15
Washington at Broadway	2.18	6	22
Washington at Rosemead	1.82	7	16
Washington at Atlantic	3 47	13	16
Washington at Boyle	2.93	11	16
6th at Hope	5 35	21-27	15-12

ROUTING

Eastbound from 6th & Grand

S on Grand Avenue
E on Washington Blvd
N On Pickering Avenue
E on Mar Vista Street
S on Painter Avenue
E on Whittier Blvd
S on Laurel Avenue
E on Mulberry Drive
S on La Mirada Blvd.
E on Excelsior Drive
Entrance to shopping center north at stop sign to side of Thrifty store

Westbound from La Mirada Shopping Center

N on Shopping Center exit drive
W on Rosecrans Avenue
N on La Mirada Blvd
W on Mulberry Drive
N on Laurel Avenue
W on Whittier Blvd
N on Painter Avenue
W on Mar Vista Street
S on Pickering Avenue
W on Washington Blvd.
N on Flower Street
E on 6th Street to Grand Avenue


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
North Long Beach
LAKEWOOD
ARTESIA
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-9

FROM El Monte
TO Lakewood
VIA Lakewood and Rosemead Boulevard

AREAS SERVED

El Monte, Whittier, Pico Rivera, Downey, Paramount, Bellflower, Lakewood, Rio Hondo College, Stonewood Shopping Center, Ford Plant, Lakewood Shopping Center, North American Rockwell, Pico Rivera Hospital.

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	12.6-18	12.6-18	12 6-18
Miles w/in study area	12 6-14	12.6-14	12 6-14
% of miles in study area	83 7	88 3	88 3
Hours of operation	6a-1a	6a-1a	6a-1a
Peak hour headway	15	15	15
Base hour headway	1 00	30- 60	30-.60
Total daily 1 way trips	55	83	83
Avg. 1 way running time	52-1·20	·52-1 20	52-1 20
Avg operating speed	13 0	14 0	14.0
Daily operating miles	887.10	1239.90	1239.90
Daily operating hours	78 83	110.56	110.56
Total daily layover time	14.58	22.0	22 0
% of op. hrs in layover	18 5	19 9	19.9
Vehicles needed, am peak	7	7	7
Vehicles needed, pm peak	8	8	8
Vehicles needed, base	4	6	6

RECOMMENDED LAYOVER POINTS

North - West on Arma around the corner from Layman or at El Monte Station.

South - South on Haxelbrook Road at May Co

TRANSFER POINTS

To Line Number	Location
C-1	Lakewood & Santa Ana Freeway
C-2	Lakewood & Artesia
C-4	Rosemead & Beverly
C-5	Rosemead & Slauson & Lakewood S.C (also Long Beach)
C-6	Rosemead & Whittier
C-8	Rosemead & Washington
C-10	Lakewood & Florence or Bellflower
C-12	Lakewood & Imperial
C-14	Lakewood & Rosecrans
C-15	Lakewood & Firestone
C-16	Lakewood & Alondra

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
El Monte Station			
Rosemead at Arma	5.40	28	12
Rosemead at Whittier	.56	2	19
Rosemead at Washington	1.45	5	19
Lakewood at Santa Ana Freeway	1 97	6	19
Lakewood at Firestone	1.70	5	18
Lakewood at Rosecrans	2.51	11	14
Lakewood at Alondra	1.00	4	14
Lakewood at Artesia	1.03	5	14
Lakewood Shopping Center	2.03	9	14

ROUTING

Southbound

W on Arma Street
S on Rosemead Blvd
S on Lakewood Blvd
E on Candlewood Avenue
S on Hazelbrook Road to May Co stop

(Selected trips) from El Monte Station·

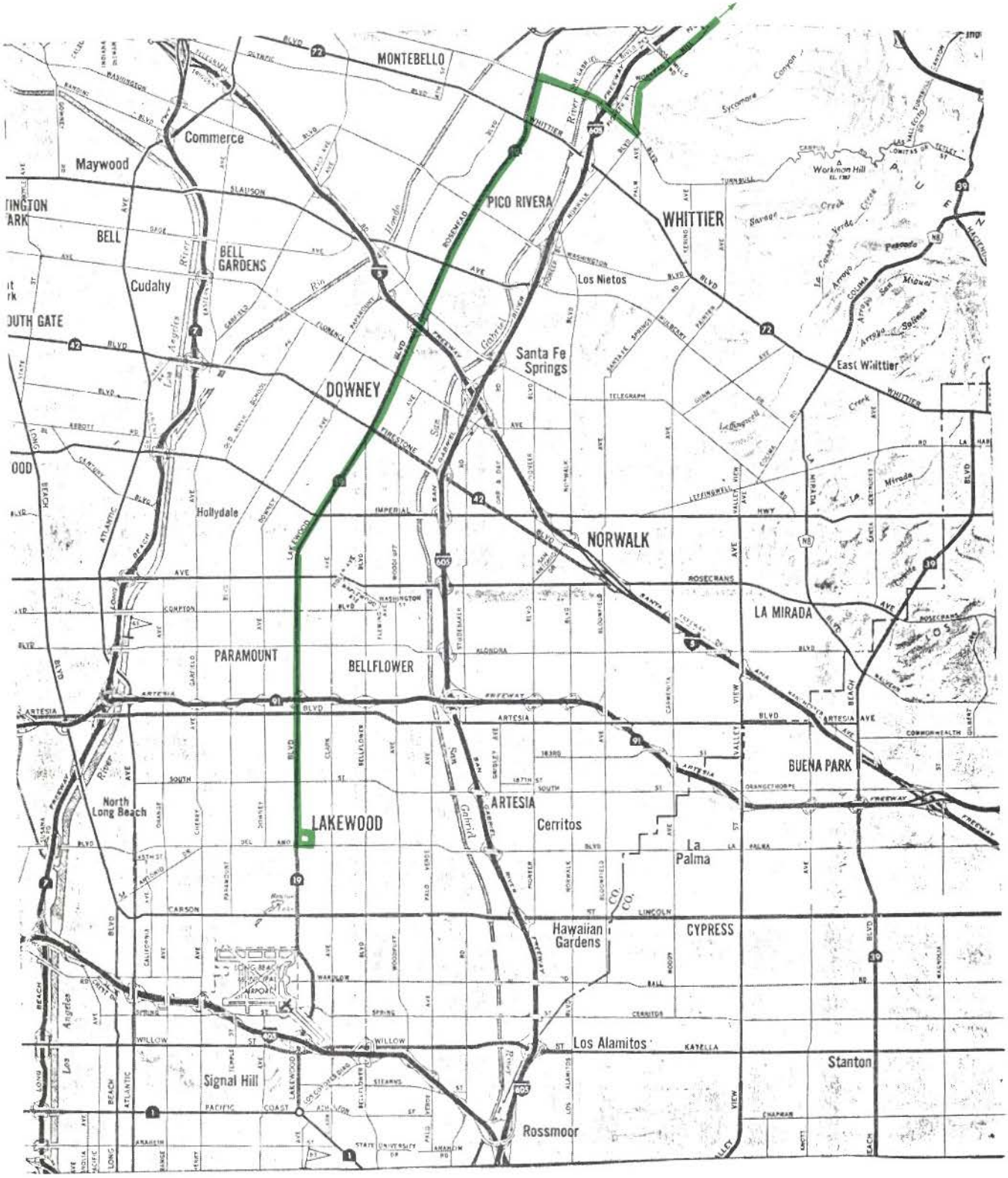
E on Busway Lane
S. on Santa Anita Avenue
E on Ramona Blvd
E. on Valley Blvd
S on Peck Road
E on Elliott Avenue
S on Durfee Avenue
E. on Peck Road
S on Workman Mill Road
W on Beverly Blvd
S on Rosemead Blvd
S on Lakewood Blvd
E on Candlewood Avenue
S on Hazelbrook Road to May Co stop

Northbound from Lakewood Shopping Center

S on Hazelbrook Road
W on Silva Road
N on Lakewood Blvd
N on Rosemead Blvd
E on Beverly Blvd
S on Layman Avenue
W on Arma Street

(Selected trips) Extended via above route to Rosemead & Beverly, then

E. on Beverly Blvd.
W. on Peck Road
N. on Durfee Avenue
W. on Elliott Avenue
N on Peck Road
W on Valley Blvd
W. on Ramona Blvd
N. on Santa Anita Avenue
W. on Busway Lane into El Monte Station - loop the station drive clockwise


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
LAKEWOOD
North Long Beach
Hawaiian Gardens
CYPRESS
Los Alamitos
Signal Hill
Stanton
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-10

FROM	Whittwood Shopping Center
TO	Bellflower
VIA	Florence Avenue & Bellflower Boulevard

AREAS SERVED

Whittier, Santa Fe Springs, Downey, Bellflower, South Whittier, Stonewood Shopping Center, Whittwood Shopping Center, North American Rockwell, Ford Plant, three high schools

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel. Level A	Devel Level B
Avg 1 way route miles	13.4	13 4	13 4
Miles w/in study area	13 4	13 4	13 4
% of miles in study area	100	100	100
Hours of operation	6a-7p	6a-11p	6a-11p
Peak hour headway	1 00	30	.30
Base hour headway	1 00	30-·60	(night)
Total daily 1 way trips	26	60	60
Avg 1 way running time	.45	45	45
Avg operating speed	18.1	18 1	18 1
Daily operating miles	348 40	804.0	804.0
Daily operating hours	25 10	57.99	57.99
Total daily layover time	5 88	13.57	13.57
% of op hrs in layover	23.4	23.4	23 4
Vehicles needed, am peak	2	4	4
Vehicles needed, pm peak	2	4	4
Vehicles needed, base	2	4	4

RECOMMENDED LAYOVER POINTS

West - West on Harvard Avenue between Bellflower and Orchard

East - West on Shopping Center Drive at the back of the Broadway store

TRANSFER POINTS

To Line Number	Location
C-1	Florence & Santa Ana Freeway
C-4	Whittwood Shopping Center
C-6	Whittwood Shopping Center
C-8	Mills & Mulberry
C-9	Lakewood & Florence or Bellflower
C-11	Florence & Studebaker or Orr & Day
C-12	Bellflower & Imperial
C-13	Norwalk & Telegraph or Florence
C-14	Bellflower & Rosecrans
C-15	Lakewood & Firestone
C-16	Bellflower & Alondra

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Whittwood Shopping Center			
Mills at Mulberry	2.73	7	23
Telegraph at Norwalk	2.85	8	21
Florence at Santa Ana Freeway	1.61	5	19
Lakewood at Firestone	2.55	8	19
Bellflower at Imperial	1.33	4	19
Bellflower at Rosecrans	1.00	3	19
Bellflower at Alondra	1.12	5	14

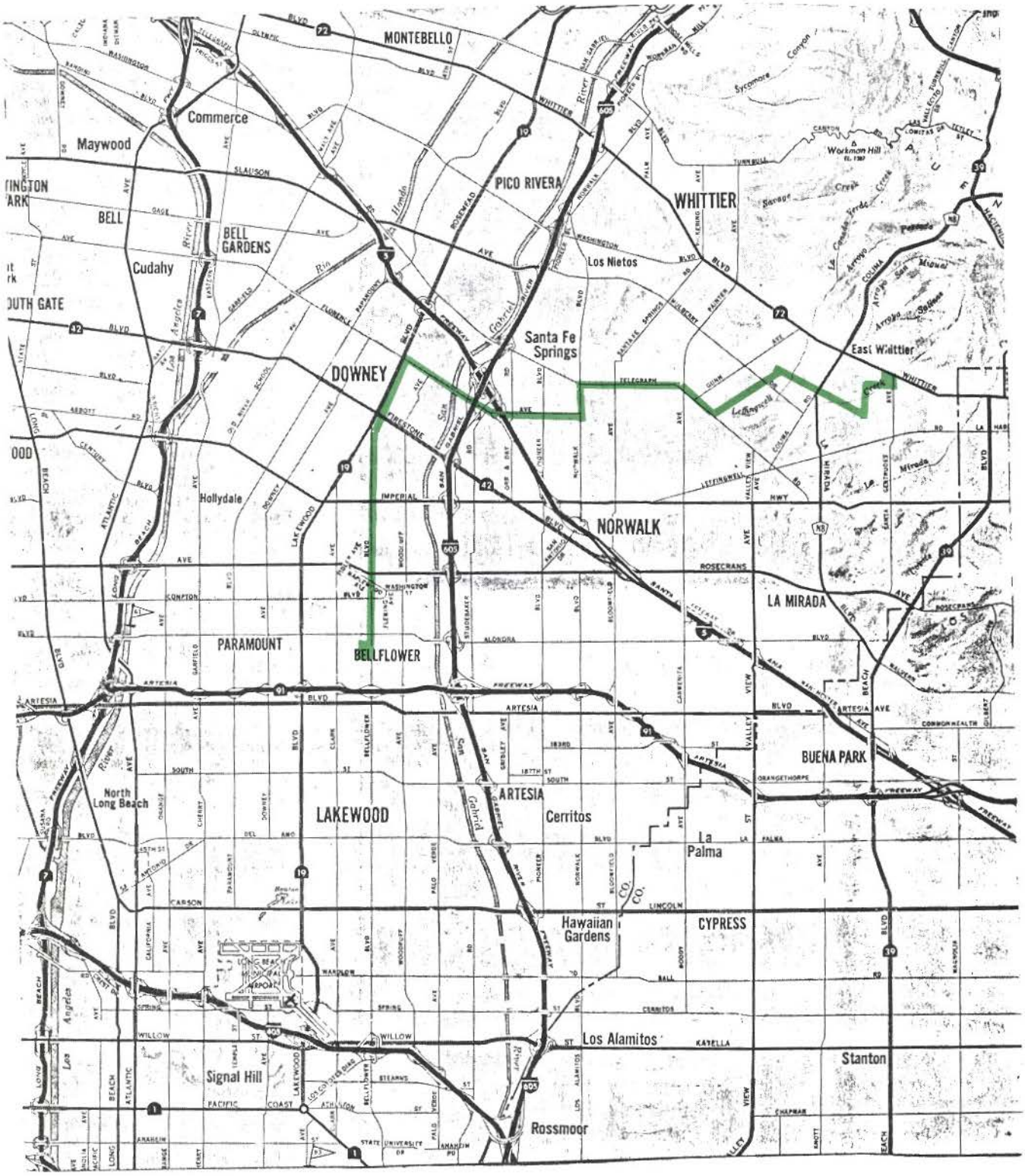
ROUTING

Eastbound

W on Harvard Avenue
N on Orchard Avenue
E on Alondra Blvd
N on Bellflower Blvd
N on Lakewood Blvd
E on Florence Avenue
N on Norwalk Blvd
E. on Telegraph Road
N on Mills Avenue
E. on Lambert Road
N on Scott Street
E. on Cullen Street
N on Whittwood Road
E on Whittwood Parkway
S. the W on Shopping Center Drive to back of Broadway

Westbound

W on Shopping Center Drive
S on Whittwood Road
W on Cullen Street
S on Scott Street
W on Lambert Road
S on Mills Avenue
W on Telegraph Road
S on Norwalk Blvd
W on Florence Avenue
S on Lakewood Blvd.
S on Bellflower Blvd
W. on Harvard Avenue


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
North Long Beach
LAKEWOOD
ARTESIA
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY

LINE OPERATING CHARACTERISTICS

ROUTE NO C-11

FROM Whittier
TO Los Cerritos Center
VIA Studebaker Road

AREAS SERVED

Whittier, Santa Fe Springs, Downey, Norwalk, Cerritos, Downtown Whittier, Los Cerritos Center, Cerritos College, Presbyterian Hospital, Norwalk General Hospital, five high schools

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel. Level B
Avg 1 way route miles	13 6	13 6	13 6
Miles w/in study area	13 6	13 6	13.6
% of miles in study area	100	100	100
Hours of operation	6a-7a	6a-11p	6a-11p
Peak hour headway	30	15	15
Base hour headway	1 00	30-·60	(night)
Total daily 1 way trips	32	72	72
Avg 1 way running time	·48	48	48
Avg operating speed	16.9	16.9	16 9
Daily operating miles	437 41	981 41	981 41
Daily operating hours	33.33	74 72	74 72
Total daily layover time	7.42	16 65	16.65
% of op hrs in layover	22 3	22 2	22.2
Vehicles needed, am peak	4	8	8
Vehicles needed, pm peak	4	8	8
Vehicles needed, base	2	4	4

RECOMMENDED LAYOVER POINTS

South - South on Los Cerritos Shopping Center Drive in front of Ohrbachs.

North - West on Hadley Street around the corner from Greenleaf Avenue

TRANSFER POINTS

To Line Number	Location.
C-1	Florence & Santa Ana Freeway
C-2	Studebaker & Artesia
C-4	Los Cerritos Center or Greenleaf & Philadelphia or Hadley & Pickering
C-6	Pickering & Whittier
C-8	Washington & Norwalk or Pickering & Mar Vista
C-10	Florence & Orr & Day or Studebaker
C-12	Studebaker & Imperial
C-13	Norwalk & Los Nietos or along Greenleaf
C-14	Studebaker & Rosecrans
C-15	Studebaker & Firestone
C-16	Studebaker & Alondra
	(and Long Beach and Norwalk lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Greenleaf at Hadley			
Whittier at Washington	1.27	4	20
Broadway at Washington	1.58	4	22
Florence at Santa Ana Freeway	4.00	11	22
Studebaker at Firestone	1.52	6	16
Studebaker at Rosecrans	1.39	5	16
Studebaker at Alondra	1.00	3	18
Studebaker at Artesia	1 00	3	18
Los Cerritos Center	1.82	9	12

ROUTING

Northbound from Ohrbachs in Los Cerritos

S on Shopping Center Drive
N on Gridley Road
W on 183rd Street
N on Studebaker Road
E on Florence Avenue
N on Orr & Day Road
N on Pioneer Blvd
E on Los Nietos Road
N on Norwalk Blvd
E on Washington Blvd
N on Pickering Avenue
E on Wardman Street
N. on Greenleaf Avenue
W on Hadley Street

Southbound

W on Hadley Street
S on Pickering Avenue
W on Washington Blvd
S on Norwalk Blvd
W on Los Nietos Road
S on Pioneer Blvd
S on Orr & Day Road
W. on Florence Avenue
S on Studebaker Road
E on 183rd Street
S on Gridley Road
W on 1st Shopping Center entrance
S on Shopping Center Drive to Ohrbachs


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
North Long Beach
LAKEWOOD
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY

LINE OPERATING CHARACTERISTICS

ROUTE NO C-12

FROM El Segundo
TO La Habra Fashion Square
VIA Imperial Highway

AREAS SERVED

El Segundo, Los Angeles, Inglewood, Lynwood, South Gate, Downey, Norwalk, Santa Fe Springs, La Mirada, La Habra, Rancho Los Amigos Hospital, South Western Jr College, La Habra Fashion Square, La Mirada Hospital, Paddison Shopping Center, Downey County Hospital, North American Rockwell

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	25 7	25 7	25 7
Miles w/in study area	10.6	10 6	10.6
% of miles in study area	41 3	41.3	41.3
Hours of operation	5a-7p	5a-11p	5a-11p
Peak hour headway	30	15	15
Base hour headway	1.00	·30-.60	(night)
Total daily 1 way trips	32	72	72
Avg 1 way running time	1 18	1·18	1:18
Avg. operating speed	19 2	19 2	19 2
Daily operating miles	820.80	1848 8	1848.8
Daily operating hours	47 47	106.79	106 79
Total daily layover time	4.67	10 50	10 50
% of op hrs in layover	8.6	9.8	9 8
Vehicles needed, am peak	6	11	11
Vehicles needed, pm peak	4	9	9
Vehicles needed, base	3	6	6

RECOMMENDED LAYOVER POINTS

East - N. on Shopping Center Drive along side of Bullocks

West - S on Main Street at Oak Avenue or at Mariposa Avenue

TRANSFER POINTS

To Line Number.	Location
C-1	Imperial & Pioneer or Norwalk
C-3	Imperial & Old River School or Garfield
C-4	Imperial & Carmenita
C-5	Imperial & Paramount
C-7	Imperial & Downey
C-8	Imperial & La Mirada
C-9	Imperial & Lakewood
C-10	Imperial & Bellflower
C-11	Imperial & Studebaker
C-13	Imperial & Norwalk
C-15	Imperial & Firestone

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Imperial at Sepulveda			
Imperial at Hawthorne	2.48	9	17
Imperial at Figueroa	3.95	13	18
Imperial at Long Beach	4.38	15	18
Imperial at Paramount	3.49	11	19
Imperial at Lakewood	.97	3	19
Imperial at Studebaker	2.21	7	18
Imperial at Santa Ana Freeway	1.18	3	23
Imperial at Carmenita	1.88	5	23
Imperial at La Mirada	2.03	5	23
Imperial at Beach	2.58	7	23

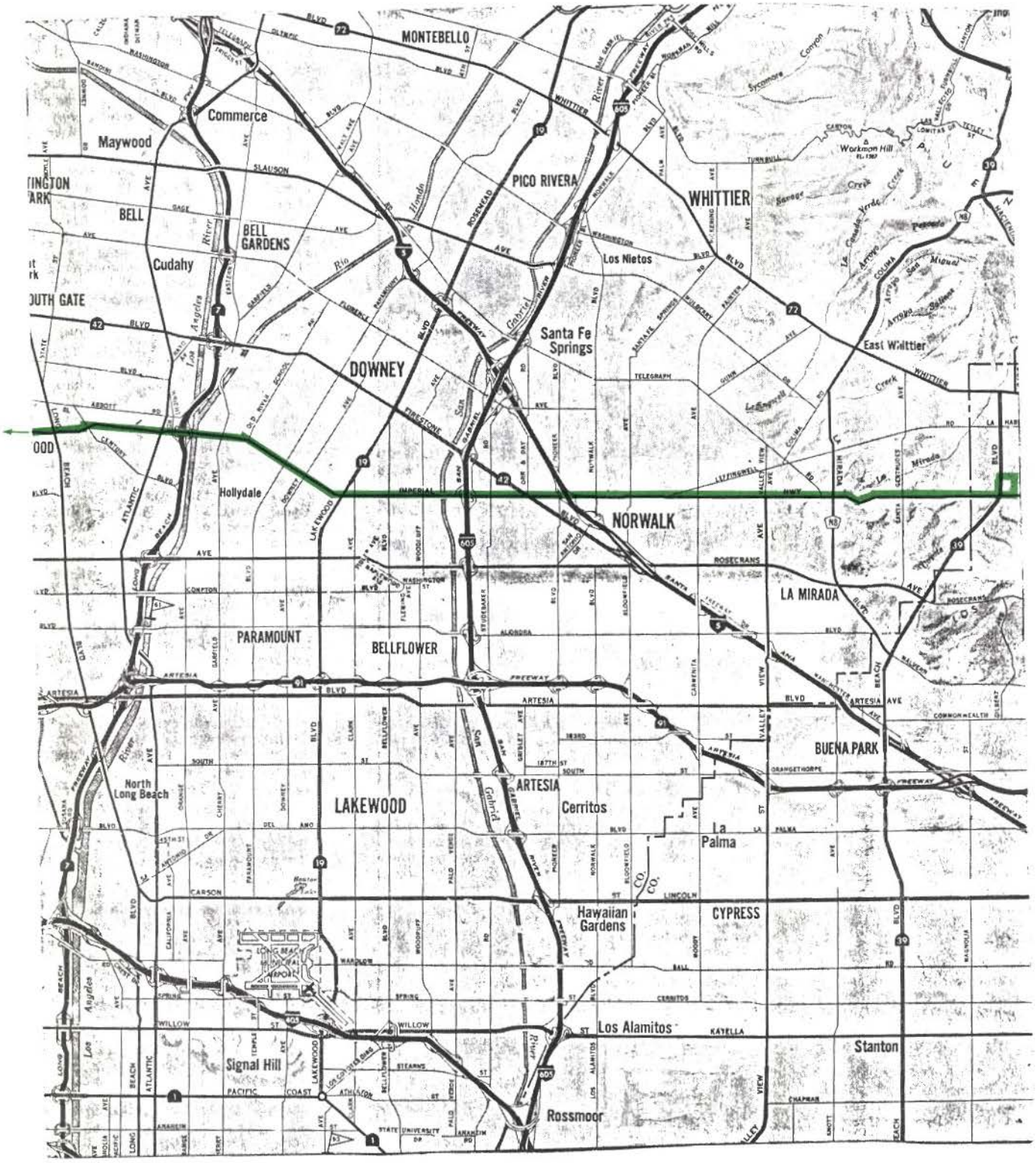
ROUTING

Eastbound

S on Main Street
E on Grand Avenue
N on Sepulveda Blvd
E on Imperial Highway
N on first entrance into La Habra Fashion Square to side of Bullocks

Westbound from side of Bullocks in La Habra Fashion Square circle main drive clockwise

W on Imperial Highway
S on Main Street


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
LAKEWOOD
North Long Beach
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor
Workman Hill

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-13

FROM Whittier Quad Shopping Center
TO Hawaiian Gardens
VIA Norwalk & Pioneer Boulevard

AREAS SERVED

Whittier, Santa Fe Springs, Norwalk, Artesia, Cerritos, Lakewood, Hawaiian Gardens, The Quad Shopping Center, Downtown Whittier, Metropolitan State Hospital, Downtown Norwalk, Norwalk Square, Cerritos Gardens Hospital, three high schools, Paddison Shopping Center

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel. Level A	Devel. Level B
Avg 1 way route miles	15.3	15.3	15.3
Miles w/in study area	15 3	15.3	15.3
% of miles in study area	100	100	100
Hours of operation	6a-6p	6a-11p	6a-11p
Peak hour headway	30	15	:15
Base hour headway	1·00	·30- 60	(night)
Total daily 1 way trips	32	74	74
Avg 1 way running time	55	55	55
Avg. operating speed	12 6	12.6	12 6
Daily operating miles	490 60	1133.2	1133.2
Daily operating hours	34.10	101.56	101.56
Total daily layover time	5.03	11.63	11 63
% of op. hrs. in layover	14 7	11 5	11.5
Vehicles needed, am peak	4	8	8
Vehicles needed, pm peak	4	8	8
Vehicles needed, base	2	4	4

RECOMMENDED LAYOVER POINTS

North - on the back drive of the Quad at the May Co.

South - East on Tilbury Road in front of Hawaiian Gardens City Hall.

TRANSFER POINTS

To Line Number	Location
C-1	San Antonio & Santa Ana Freeway
C-2	Pioneer & Artesia
C-4	Pickering & Broadway or Philadelphia & Greenleaf or Pioneer & South
C-6	Broadway & Whittier or at the Quad
C-8	Greenleaf & Mar Vista or at the Quad
C-10	Norwalk & Telegraph
C-11	Norwalk & Los Nietos or Broadway or others
C-12	Norwalk & Imperial
C-14	Pioneer & Rosecrans
C-15	San Antonio & Firestone or Foster
C-16	Pioneer & Alondra or Carson & Norwalk (also Long Beach, Norwalk and Santa Fe Springs lines

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
The Quad Shopping Center			
Greenleaf at Hadley	1.88	8	15
Whittier at Broadway	1.39	4	20
Washington at Broadway	1.21	3	22
Norwalk at Telegraph	2.09	6	20
San Antonio at Santa Ana Freeway	2.03	6	19
Pioneer at Rosecrans	.88	3	16
Pioneer at Alondra	1.00	3	18
Pioneer at Artesia	1.00	3	18
Pioneer at South	1.00	4	17
Norwalk at Carson	2.85	10	18

ROUTING

Northbound

E on Tilbury Road
S on Norwalk Blvd
W on Carson Street
N on Pioneer Blvd
N on San Antonio Drive
N on Norwalk Blvd
N on Broadway
S on Greenleaf Avenue
E on Whittier Blvd
S on Laurel Avenue
W on back of shopping center drive to May Co

Southbound from the back of the May Co at The Quad

W on Shopping Center Drive
N on Painter Avenue
W on Whittier Blvd
N on Greenleaf Avenue
W on Broadway
S on Norwalk Blvd
W on San Antonio Drive
S on Pioneer Blvd
E on Carson Street
N on Horst Avenue
E on Tilbury Road


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
North Long Beach
LAKEWOOD
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-14

FROM	Manhattan Beach
TO	Orange County Line
VIA	Rosecrans Avenue

AREAS SERVED

Manhattan Beach, Hawthorne, Lawndale, Gardena, Compton, Paramount, Bellflower, Norwalk, Santa Fe Springs, La Mirada, La Mirada Shopping Center, Norwalk Square, Kaiser Foundation Hospital, two high schools

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel. Level A	Devel. Level B
Avg 1 way route miles	26 3	26,3	26 3
Miles w/in study area	11 0	11.0	11 0
% of miles in study area	41 8	41.8	41.8
Hours of operation	6a-10p	6a-10p	6a-10p
Peak hour headway	30	·15	·15
Base hour headway	1 00	30-·60	(night)
Total daily 1 way trips	38	70	70
Avg 1 way running time	1.24	1 24	1 24
Avg operating speed	15 9	15 9	15.9
Daily operating miles	1007.00	1848 6	1848.6
Daily operating hours	63 69	132.66	132 66
Total daily layover time	9 27	16 50	16 50
% of op. hrs. in layover	14 6	12 4	12 4
Vehicles needed, am peak	5	11	11
Vehicles needed, pm peak	6	12	12
Vehicles needed, base	4	8	8

RECOMMENDED LAYOVER POINTS

West - East on 15th Street at Police Station

East - on vacant shopping center parking lot between drives to Rosecrans Avenue on northeast corner of Rosecrans & Beach.

TRANSFER POINTS

To Line Number	Location
C-1	Rosecrans & Santa Ana or Carmenita
C-3	Rosecrans & Garfield
C-5	Rosecrans & Paramount
C-7	Rosecrans & Downey
C-8	Rosecrans & La Mirada
C-9	Rosecrans & Lakewood
C-10	Rosecrans & Bellflower
C-11	Rosecrans & Studebaker
C-15	Rosecrans & Norwalk
C-16	Rosecrans & La Mirada
C-4	Rosecrans & Carmenita (also Long Beach)
C-13	Rosecrans & Pioneer

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Highland and Manhattan Beach			
Rosecrans at Sepulveda	2.51	6	25
Rosecrans at Hawthorne	2.44	9	16
Rosecrans at Figueroa	4.50	13	19
Rosecrans at Long Beach	4.35	15	17
Rosecrans at Paramount	2.85	9	19
Rosecrans at Lakewood	.97	2	23
Rosecrans at Studebaker	2 48	7	23
Rosecrans at Santa Ana Freeway	2.21	5	23
Rosecrans at La Mirada	3 00	8	23
Rosecrans at Beach	1.52	4	23

ROUTING

Westbound from vacant shopping center parking lot

S on parking lot drive
W. on Rosecrans Avenue
S on Highland Avenue
E on 15th Street to Police Station

Eastbound

E on 15th Street
S on Valley Drive
W on Manhattan Beach Blvd
N on Highland Avenue
E on Rosecrans Avenue
N on drive into vacant shopping center parking lot


MONTEBELLO
Commerce
Maywood
BELL
Cudahy
BELL GARDENS
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
DOWNEY
East Whittier
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
North Long Beach
LAKEWOOD
ARTESIA
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Signal Hill
Stanton
Rossmoor
ROSECRANS
Workman Hill

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-15

FROM Playa Del Rey
TO Hawaiian Gardens
VIA Firestone & Norwalk Boulevards

AREAS SERVED

Playa Del Rey, Los Angeles, Inglewood, South Gate, Downey, Norwalk, Cerritos, Artesia, Lakewood, Hawaiian Gardens, Stonewood Shopping Center, three high schools, Ford Plant

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	29 0	29 0	29.0
Miles w/in study area	10 8	10 8	10 8
% of miles in study area	15 1	22 9	22.9
Hours of operation	5a-1a	5a-1a	5a-1a
Peak hour headway	15- 30	15- 30	15-:30
Base hour headway	15-1 00	:15- 30	15-.30
Total daily 1 way trips	126(36)	126(60)	126(60)
Avg 1 way running time	1:02-1.45	1 02-1 45	1 02-1 45
Avg operating speed	15 4	16.0	16.0
Daily operating miles	2566.10	2826.1	2826.1
Daily operating hours	201.90	211.75	211.75
Total daily layover time	34.85	35.12	35.12
% of op hrs. in layover	17.3	16.6	16.6
Vehicles needed, am peak	15	18	18
Vehicles needed, pm peak	15	18	18
Vehicles needed, base	14	18	18

RECOMMENDED LAYOVER POINTS

East - East on Tilbury Street at Hawaiian Gardens City Hall.

West - North on Pershing Drive in advance of Manchester Avenue.

TRANSFER POINTS

To Line Number	Location
C-2	Norwalk & Artesia
C-3	Firestone & Old River School Road
C-5	Firestone & Paramount
C-7	Firestone & Downey
C-9	Firestone & Lakewood
C-10	Firestone & Lakewood
C-11	Firestone & Studebaker
C-12	Firestone & Imperial
C-13	Firestone & San Antonio or Norwalk & Carson
C-14	Norwalk & Rosecrans
C-16	Norwalk & Alondra
C-4	Norwalk & South (also OCTD, Long Beach and Norwalk Lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Pershing at Manchester			
Firestone at Paramount	18 20	1 14	15
Firestone at Lakewood	.97	4	15
Firestone at Studebaker	1.60	5	17
Firestone at San Antonio	1.60	5	17
Norwalk at Alondra	1.60	5	18
Norwalk at Artesia	1.00	3	18
Norwalk at South	1.00	3	18
Norwalk at Carson	2.00	7	18

ROUTING

Eastbound

N. on Pershing Drive
E on Manchester Avenue
N on Lincoln Blvd.
E on 83rd Street
S on Emerson Avenue
E on 88th Street
N on Sepulveda Blvd
E on Manchester Avenue
E on Firestone Blvd
S on San Antonio Drive
E. on Foster Road
S on Norwalk Blvd
W on Carson Street
N on Horst Avenue
E on Tilbury Street to Hawaiian Gardesn City Hall

* Additional trips will operate from Westchester & Lynwood via the present No 54 Line route to these areas

Westbound from Hawaiian Gardens City Hall

E on Tilbury Street
N on Norwalk Blvd.
W. on Foster Road
N on San Antonio Drive
N on Firestone Blvd
W on Manchester Avenue
S on Sepulveda Blvd
W on 88th Street
N. on Emerson Avenue
W. on 83rd Street
S on Lincoln Blvd.
W on Manchester Avenue
S on Tuscany Avenue
W on Manitoba Street
N on Pershing Drive to layover


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
North Long Beach
LAKEWOOD
Hawaiian Gardens
CYPRESS
Los Alamitos
Signal Hill
Stanton
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-16

FROM La Mirada
TO Paramount
VIA Alondra Boulevard

AREAS SERVED

Paramount, Bellflower, Cerritos, Norwalk, Santa Fe Springs, La Mirada, La Mirada Shopping Center, Los Cerritos College, Alondra Community Hospital and three high schools

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel. Level A	Devel Level B
Avg 1 way route miles	11.0	11 0	11 0
Miles w/in study area	11.0	11 0	11.0
% of miles in study area	100	100	100
Hours of operation	6a-7p	6a-7p	6a-7p
Peak hour headway	1 00	30	:30
Base hour headway	1 00	30	.30
Total daily 1 way trips	26	52	52
Avg 1 way running time	34	:34	·34
Avg operating speed	18 7	18 7	18 7
Daily operating miles	286 0	572.0	572.0
Daily operating hours	24.78	48.94	48.94
Total daily layover time	9 50	18 35	18 35
% of op. hrs. in layover	38.3	37.5	37.5
Vehicles needed, am peak	2	4	4
Vehicles needed, pm peak	2	4	4
Vehicles needed, base	2	4	4

RECOMMENDED LAYOVER POINTS

West - North on Atlantic Place in advance of Alondra.

East - North on La Mirada Shopping Center drive along side of Thrifty Store.

TRANSFER POINTS

To Line Number	Location
C-3	Alondra & Garfield
C-5	Alondra & Paramount
C-7	Alondra & Downey
C-8	La Mirada Shopping Center
C-9	Alondra & Lakewood
C-10	Alondra & Bellflower
C-11	Alondra & Studebaker
C-13	Alondra & Pioneer
C-14	La Mirada & Rosecrans
C-15	Alondra & Norwalk
C-4	Alondra & Carmenita
	(also 3 Norwalk and 6 Long Beach Lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Alondra at Atlantic			
Alondra at Paramount	1.61	4	23
Alondra at Lakewood	1.00	3	23
Alondra at Bellflower	1.03	3	23
Alondra at Studebaker	1 48	4	23
Alondra at Pioneer	1.00	3	23
Alondra at Norwalk	58	1	23
Alondra at Santa Ana Freeway	2 12	5	23
La Mirada Shopping Center	2.18	6	23

ROUTING

Eastbound

N on Atlantic Place
E on Alondra Blvd
N on Escalona Road
E on Excelsior Drive into La Mirada Shopping Center
N on Shopping Center Drive to Thrifty Store

Westbound from La Mirada Shopping Center

N on Shopping Center Drive
W on Rosecrans Avenue
S on La Mirada Blvd
W on Excelsior Drive
S. on Escalona Road
W. on Alondra Blvd
S on Hunsaker Avenue
N on Atlantic Place to in advance of Alondra Blvd


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
Cerritos
La Palma
LAKEWOOD
North Long Beach
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO 55 (REVISED)

FROM	Long Beach (Balboa)
TO	Downtown Los Angeles
VIA	Lakewood Blvd & Santa Ana Freeway

AREAS SERVED

Newport Beach, Balboa, Sunset Beach, Seal Beach, Long Beach, Lakewood, Paramount, Bellflower, Downey, Los Angeles, Lakewood Center, Stonewood Shopping Center, Los Angeles Central Business District

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	43 47	43 47	43 47
Miles w/in study area	11.22	11 22	11 22
% of miles in study area	25 8	25 8	25 8
Hours of operation	5a-10p	5a-10p	5a-10p
Peak hour headway	1.00	1.00	1 00
Base hour headway	2 00	2 00	2 00
Total daily 1 way trips	26	26	26
Avg 1 way running time	1 45*	1 45*	1 45*
Avg operating speed	24.8*	24.8*	24.8*
Daily operating miles	955 43	955.43	955.43
Daily operating hours	60.07	60.07	60.07
Total daily layover time	5.02	5 02	5 02
% of op hrs in layover	8.4	8 4	8 4
Vehicles needed, am peak	4	4	4
Vehicles needed, pm peak	6	6	6
Vehicles needed, base	2	2	2

RECOMMENDED LAYOVER POINTS

South - Palm

North - RTD Station

* May vary with time of day of trip

TRANSFER POINTS

To Line Number	Location
C-1	Lakewood & Santa Ana Freeway
C-2	Lakewood & Artesia
C-5	Lakewood & Del Amo
C-6	Whittier & Boyle
C-10	Lakewood & Florence
C-12	Lakewood & Imperial
C-14	Lakewood & Rosecrans
C-15	Lakewood & Firestone
C-16	Lakewood & Alondra
	(Plus several Long Beach Lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time *	Speed *
Palm Parking Lot			
Ocean at Main	7 21	18	24
Pacific Coast Hwy at Broadway	5.82	9	39
Main at Electric	2 86	6	29
Seventh at Ximeno	4 29	15	17
Lakewood at Carson	4 05	11	22
Lakewood at Compton	4 36	11	24
Lakewood at Firestone	2 98	10	18
Lakewood at Santa Ana Freeway	1 70	5	18
Santa Ana Freeway at Paramount	1 33	3	31
RTD Station	8 87	17	31

ROUTING

Southbound. from RTD Station

N on Maple Avenue
E on 6th Street
E on Whittier Blvd
S on Boyle Avenue
E on 8th Street
S on Santa Ana Freeway
S on Lakewood Blvd
W & S on Los Alamitos Traffic Circle
E on Pacific Coast Highway
S on Ximeno Avenue
E on Second Street
S on Marina Drive
S on Electric Avenue
E on Main Street
S on Pacific Coast Highway
S on Ocean Avenue
S on Pacific Coast Highway
S on Balboa Blvd and into layover at parking lot

Northbound from Newport Beach Parking Lot

E on Main Street
N on Balboa Blvd
N. on Pacific Coast Highway
N on Ocean Avenue
N on Pacific Coast Highway
W on Main Street
N on Electric Avenue
N on Marina Drive
W on Second Street
N. on Ximeno Avenue
W on Pacific Coast Highway
E & N on Los Alamitos Traffic Circle
N on Lakewood Blvd
N. & W on Santa Ana Freeway
N on Bakersfield off ramp
N on Soto Street
W on Whittier Blvd
W on 6th Street
S on Central Avenue
W on 7th Street
N on Maple Avenue to the RTD Station


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
North Long Beach
LAKEWOOD
ARTESIA
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO 77 (REVISED)

FROM Huntington Park
TO Bell Gardens
VIA Slauson Avenue

AREAS SERVED

Huntington Park, Maywood, Bell, Bell Gardens
Commerce, Vernon, Los Angeles

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel Level B
Avg 1 way route miles	8 39	8 39	8 39
Miles w/in study area	0	0	0
% of miles in study area	0	0	0
Hours of operation	5a-1a	5a-1a	5a-1a
Peak hour headway	.15	15	15
Base hour headway	30	30	30
Total daily 1 way trips	109	109	109
Avg 1 way running time	27- 34*	.27-·34*	27-:34*
Avg operating speed	14 7*	14 7*	14.7*
Daily operating miles	630.3	630.3	630.3
Daily operating hours	53.7	53.7	53.7
Total daily layover time	11 60	11 60	11 60
% of op. hrs in layover	21.6	21 6	21 6
Vehicles needed, am peak	3	3	3
Vehicles needed, pm peak	3	3	3
Vehicles needed, base	3	3	3

* varies slightly with time of day of trip

RECOMMENDED LAYOVER POINTS

East - West on Loveland Street at Garfield Avenue

West - South on Rugby Avenue between Slauson and Belgrave

TRANSFER POINTS

To Line Number	Location
	None within the study area

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Slauson at Pacific			
Slauson at Maywood	1.29	5	15
Slauson at Heliotrope	1.44	5	17
Slauson at Eastern	1.01	5	12
Eastern at Garfield	2.19	4	33
Garfield at Gage	1.50	5	18
Loveland at Garfield	0.80	3	14

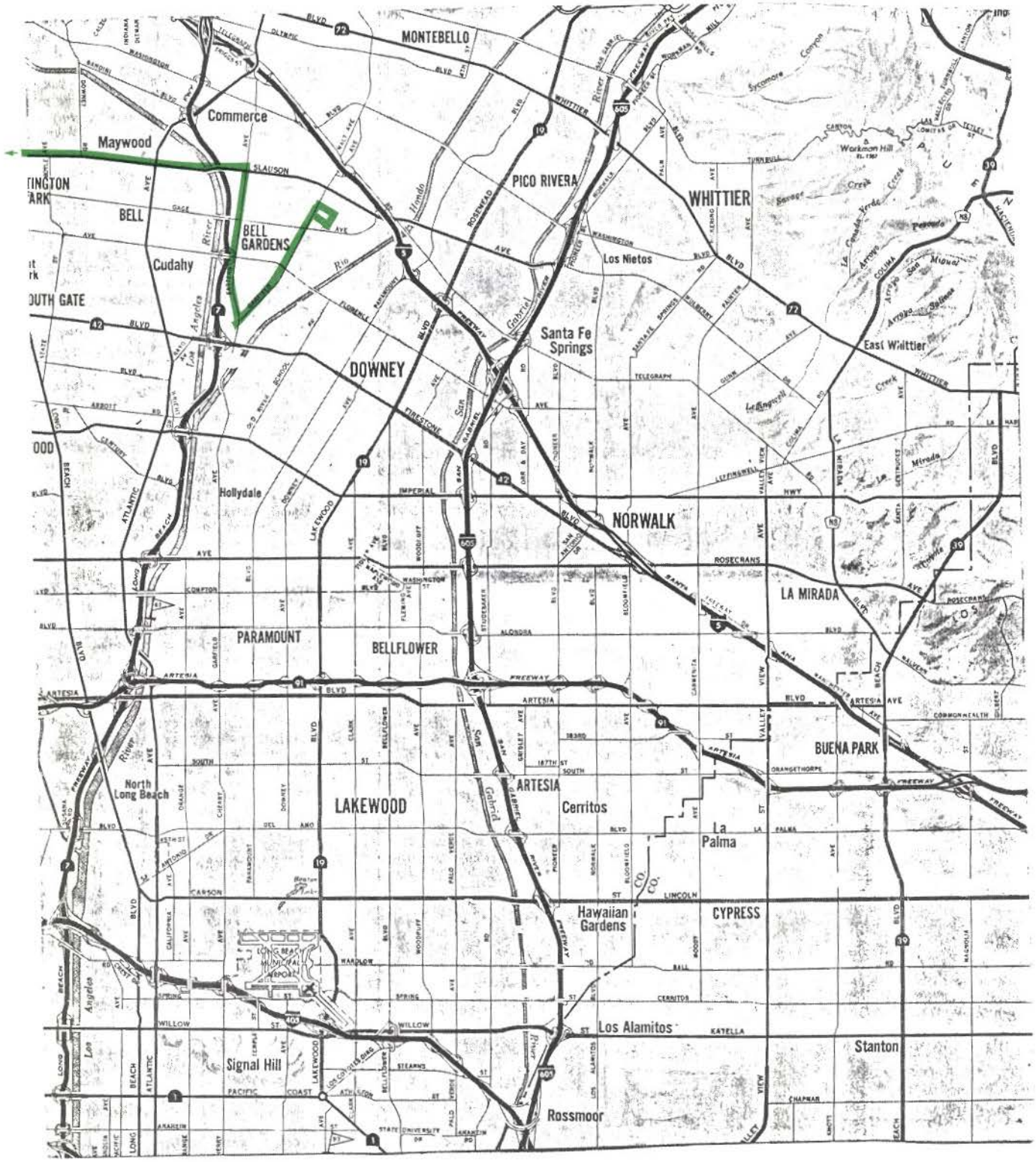
ROUTING

Eastbound

S on Rugby Avenue
E on Belgrave Avenue
N on Pacific Blvd.
E on Slauson Avenue
S on Eastern Avenue
E & N on Garfield Avenue
E on Foster Bridge Blvd
S. on Suva Street
W on Loveland Street to layover

Westbound

W. on Loveland Street
S & W on Garfield Avenue
N on Eastern Avenue
W on Slauson Avenue
S on Rugby Avenue to layover


MONTEBELLO
Commerce
Maywood
SLAUSON
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
BUENA PARK
ARTESIA
LAKEWOOD
North Long Beach
Cerritos
La Palma
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

CHAPTER 5

EVALUATION OF THE PROPOSED TRANSIT SYSTEM

The changes proposed for the transit systems serving the Mid-Cities area affect three groups: the operators of the transit services, the current patrons of bus services, and the community, which includes both the potential users of transit and those who would be served by transit services. The standards to be used in evaluating the effect of the proposed changes on each of these groups are straightforward and will be defined below.

There are usually several alternatives by which the performance of a transit system can be measured and compared to the standards. The choice of a measure is usually dictated by the availability of data, which in turn is constrained by time and study cost considerations.

In a study of this type, where the thrust is to find better ways of serving an area within available transit resources or with practical increases in such resources, the evaluation of proposed transit system changes must demonstrate that:

1. As a minimum, the proposed changes do not appreciably impair the mobility of those who are current transit users. Hopefully, the system changes increase the level of service that is currently offered to them.

2. The changes offer mobility advantages to the community that are not now available.

3. The changes are not disproportionately more costly to RTD than similar service that it offers in other parts of its service area. Hopefully, increases in productivity and efficiency will accompany the service changes.

The evaluation should progress in the order shown by the three stipulations. If, for example, the proposed system is so changed that large segments of the current transit patronage either lose access to it or their travel time is significantly increased, the changes will not be acceptable no matter what else it does for the community or the operator. In this illustration, the community benefits would have to be overwhelming to compensate for the negative impact on ridership. Conversely, if the service available to current patronage is unaffected, then benefits to the community would become meaningful.

EFFECT ON CURRENT TRANSIT PATRONAGE

The principal standards for evaluating the proposed transit services are accessibility, and trip time. Accessibility is measured in terms of:

1. Distance to the bus stop.

2. Time between buses (one hour was considered as a policy limit for the Mid-Cities area).

3. The increase in the number of destinations reachable by transit within 60 minutes. This time limit, though arbitrary, is based on the travel times that people living in suburban areas of similar socio-economic composition tolerate.

Acceptable trip times depend upon trip purpose and level of expectation for neither of which sufficient data exists. For purposes of this evaluation, it was assumed that trip times that increased less than 15 per cent did not adversely affect current patronage; conversely, reductions in trip time of less than 25 per cent were insignificant. Experience with interviews of transit passengers and automobile users, and the elasticity of transit patronage to variability in bus arrival times and trip times, shows that both limits are conservative.

Load factor is important to the passengers because it is a measure of crowding and seat availability. Both with the proposed new transit system and with the existing routes, the load factor is now, and would remain well below 1.0 thereby assuring a seat for every passenger.

Access of current transit users to the proposed transit lines is shown by Figure 4-2, which shows the proposed transit system operating within the Mid-Cities area. Only about 125 of those passengers that currently use transit for work oriented trips, specifically on segments of RTD Lines 38 and 117, would not have access to public transit. This number is approximately 1.5 per cent of the total daily transit commuters in the study area, according to the 1970 census.

Current passengers would find dramatic reductions in headways between the proposed and current systems. Table 5-1 shows that even at Base Level service the proposed system operates at headways of 60 minutes or less. Of the RTD lines that would serve the area, 65 per cent have peak hour headways of 30 minutes or less. Comparing this with the headways of the current system, shown in Table 2-3, only 25 per cent have peak hour headways of 30 minutes or less. Improvements in base hour headways are even more impressive. None of the proposed RTD lines have base headways of more than 60 minutes. By contrast, in the present RTD system, more than 31 per cent of the lines have base hour headways above 60 minutes. Only two lines of the current RTD system have base level headways under 30 minutes, compared to five lines of the proposed RTD system.

Comparing Figures 5-1 and 2-10, shows that the number of cities that a passenger in a given area can reach without transfering has at least doubled for more than 80 per cent of the Mid-Cities passengers.

Trip time for the current and proposed systems was measured by the time required to travel between the City Halls of each of the 12 cities of the Mid-Cities study area. Although the destinations are in themselves meaningless since few people travel between City Halls, they are as useful as any other origins and destinations to make relative comparisons of overall travel mobility between the proposed and current transit systems.

Trip time includes the time it takes to wait for the bus, travel time on the first and any subsequent buses, and transfer time that might be involved based on the headway of the second and any subsequent buses. Walking times to and from the transit line were not considered.

Table 5-2 shows the average transit travel time between any two cities in the study area, using the public transportation system now available. Table 5-3 shows the same information using the transit system recommended in

Figure 5-1

MID-CITIES STUDY AREA

CITIES CONNECTED WITHOUT TRANSFER

PROPOSED SYSTEM

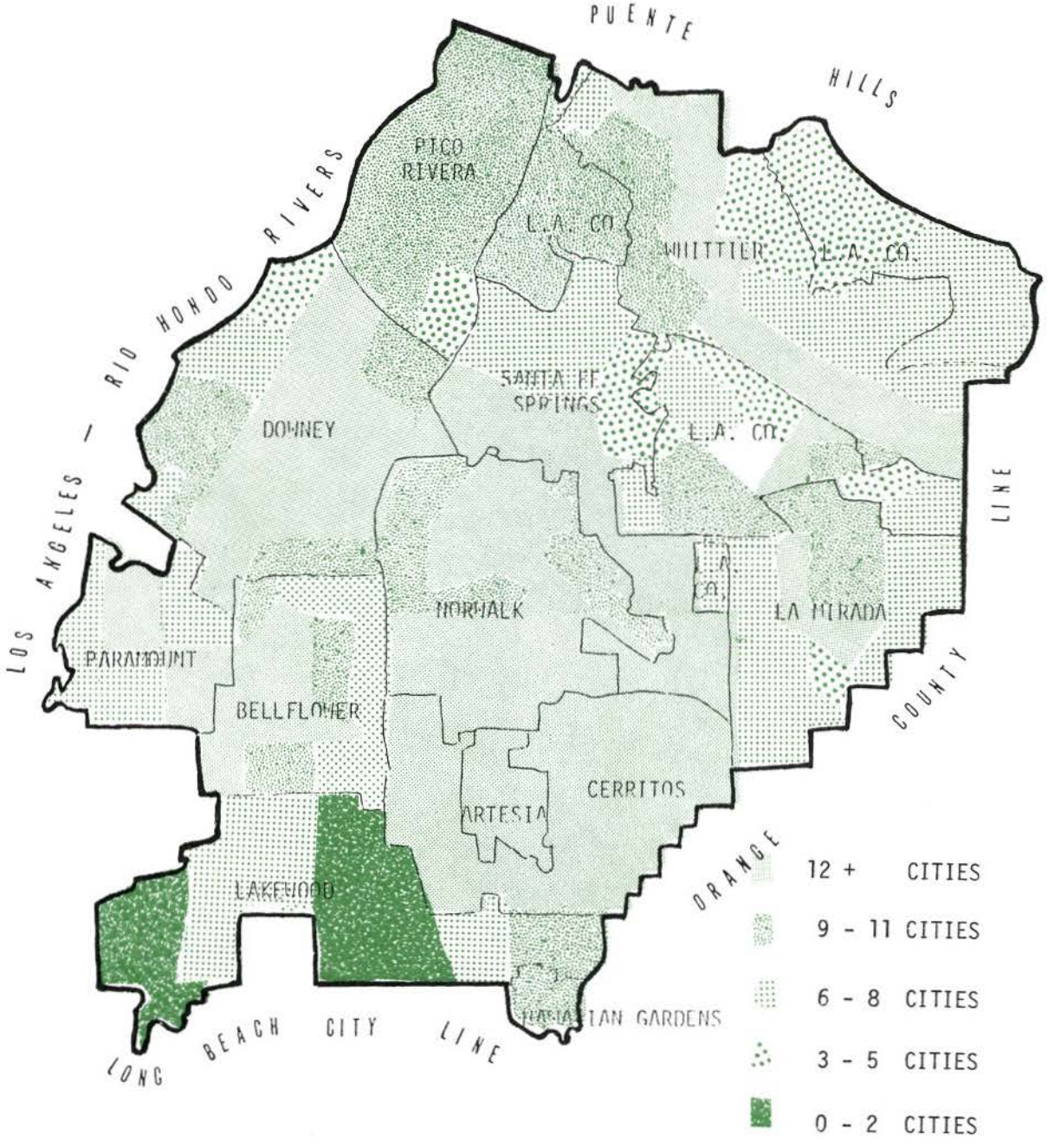


Figure 5-2

MID-CITIES STUDY AREA

DAILY MILES OF TRANSIT SERVICE PER 1000 POPULATION

PROPOSED BASIC SERVICE LEVEL

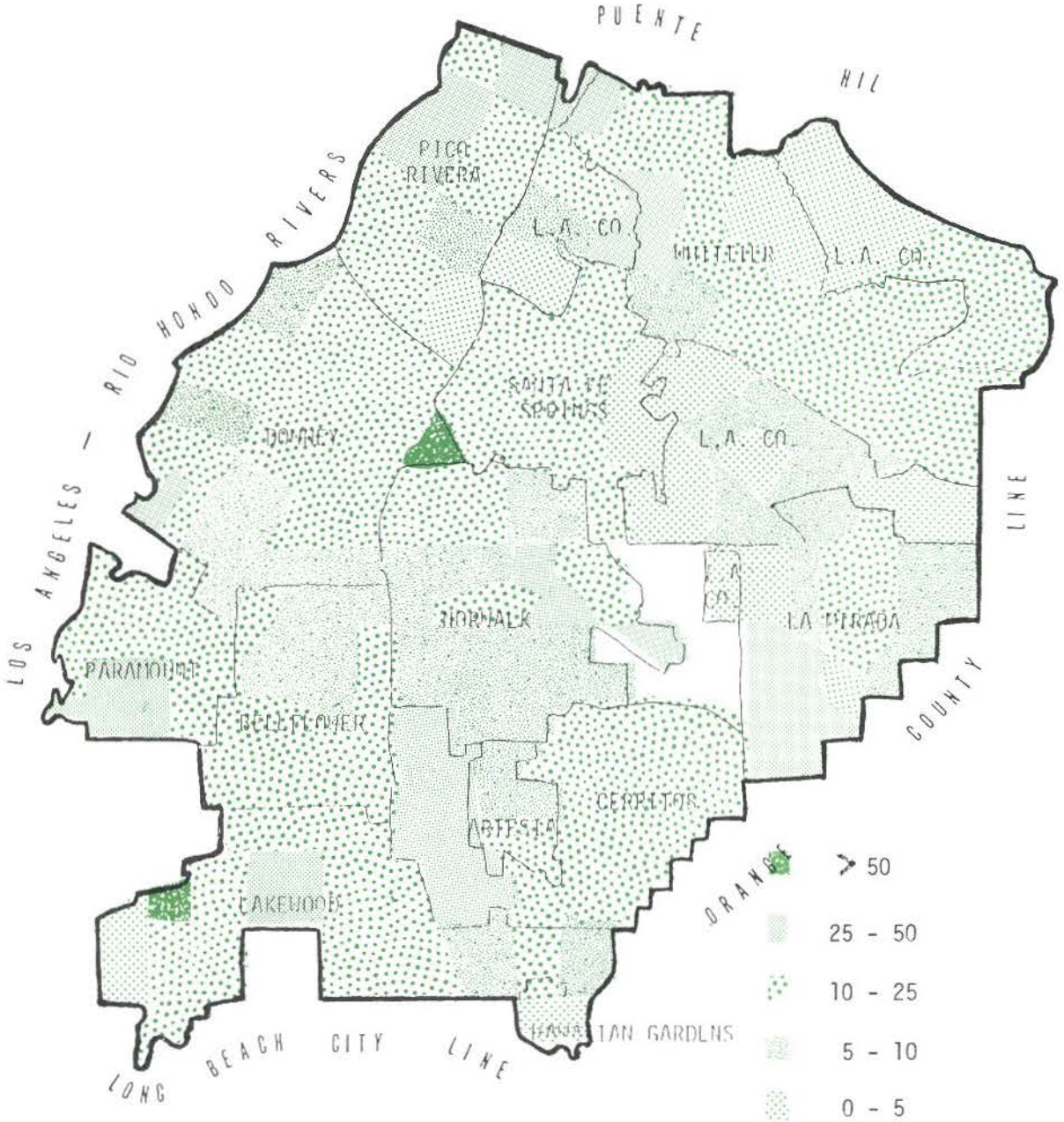


Table 5-1

HEADWAY AND SERVICE HOURS OF PROPOSED SYSTEM

PROPOSED ROUTES M.C.A. - BASE LEVEL	SERVICE HOURS	HEADWAYS IN MINUTES AM Peak	Base	PM Peak	Evening
C 1 Santa Ana Freeway	5A- 2A	15	30	15	60
C 2 Artesia Boulevard	5A- 7P	60	60	60	-
C 3 Slauson-Garfield	5A- 1A	30	60	30	60
C 4 Cerritos-Whittwood-Beverly	6A- 7P	60	60	60	-
C 5 Passons-Paramount	6A-10P	30	60	30	60
C 6 Whittier Boulevard	5A- 2A	10	20	10	40
C 7 Gage-Downey	5A- 1A	60	60	60	60
C 8 Olympic-Washington	6A- 8P	60	60	60	-
C 9 Lakewood-Rosemead	6A- 1A	15	60	15	60
C 10 Whittwood-Bellflower	6A- 7P	60	60	60	-
C 11 Studebaker	6A- 7P	30	60	30	-
C 12 Imperial Highway	5A -7P	30	60	30	-
C 13 Pioneer Boulevard	6A- 6P	30	60	30	-
C 14 Rosecrans Avenue	6A-10P	30	60	30	60
C 15 Firestone-Norwalk	5A- 1A	30	60	30	60
C 16 Alondra Boulevard	6A- 7P	60	60	60	-
RTD 34 (Revised)	5A- 1A	40	60	22	140
RTD 55 (Revised)	5A-11P	75	130	30	65
RTD 77 (Revised)	5A- 1A	15	30	15	60

TABLE 5-2

TRAVEL TIME - PRESENT SYSTEM[1/]

	PICO RIVERA	WHITTIER	SANTA FE SPRINGS	DOWNEY	PARAMOUNT	NORWALK	LA MIRADA	BELLFLOWER	ARTESIA	LAKEWOOD	CERRITOS	HAWAIIAN GARDENS	TOTAL TRAVEL TIME TO ALL POINTS
PICO RIVERA		45	85	105	151	92	132	185	161	202	176	188	1522
WHITTIER	45		82	93	139	119	87	143	158	269	173	185	1493
SANTA FE SPRINGS	85	82		71	117	37	114	87	76	161	91	103	1024
DOWNEY	105	93	71		76	41	118	80	80	59	95	107	925
PARAMOUNT	151	139	117	76		86	133	36	86	80	101	113	1118
NORWALK	92	119	37	41	86		77	50	39	111	54	66	772
LA MIRADA	132	87	114	118	137	77		97	52	158	97	109	1174
BELLFLOWER	185	143	87	80	36	50	97		80	74	95	107	1034
ARTESIA	161	158	76	80	86	39	52	80		85	45	57	919
LAKEWOOD	202	269	161	59	80	111	158	74	85		100	112	1411
CERRITOS	176	173	91	95	101	54	97	95	45	100		42	1069
HAWAIIAN GARDENS	188	185	107	107	113	66	109	107	57	112	42		1189
TOTAL													13,600

1/ Source: RTD schedules dated

Times refer to base hour service.

Points are from City Halls of each city.

All times listed are in minutes of bus running time plus average waiting time and transfer time, if applicable.

TABLE 5-3

TRAVEL TIME - PROPOSED SYSTEM[1/]

	PICO RIVERA	WHITTIER	SANTA FE SPRINGS	DOWNEY	PARAMOUNT	NORWALK	LA MIRADA	BELLFLOWER	ARTESIA	LAKEWOOD	CERRITOS	HAWAIIAN GARDENS	TOTAL TRAVEL TIME TO ALL POINTS	% REDUCTION IN TRAVEL TIME FROM PRESENT SERVICE
PICO RIVERA		45	77	77	58	70	67	99	104	72	96	104	869	43
WHITTIER	45		47	75	103	34	52	100	58	113	64	74	765	49
SANTA FE SPRINGS	77	47		73	86	53	89	58	77	100	83	93	836	18
DOWNEY	77	75	73		75	46	140	74	81	88	87	60	876	5
PARAMOUNT	58	103	86	75		81	123	69	74	41	80	90	880	21
NORWALK	70	34	53	46	81		73	78	39	90	45	48	657	15
LA MIRADA	67	52	89	140	123	73		102	107	138	113	123	1127	4
BELLFLOWER	99	100	58	74	69	78	102		48	18	68	40	754	27
ARTESIA	104	58	77	81	74	39	107	48		57	36	46	727	21
LAKEWOOD	72	113	100	88	41	90	138	18	57		56	51	824	42
CERRITOS	96	64	83	87	80	45	113	68	35	56		40	768	28
HAWAIIAN GARDENS	104	74	93	60	90	48	123	40	46	51	40		769	35
TOTAL													9852	28

1/ Trip times refer to base hour service.
Points are from City Halls of each city.

All times listed are in minutes of bus running time plus average waiting time and transfer time, if applicable.

this study, operating at the Base Level Service. On the average, the reduction in travel time between city halls with the proposed system is approximately 28 per cent. An improvement in travel time of this magnitude is significant, expecially considering that no appreciable increase in operating equipment or expenditure would be incurred to attain it.

In 12 of the 66 origin-destination pairs, the trip time on the proposed system operating at the Base Level of service is higher than that of the current system. This is due primarily to the natural redistribution of service areas from one line routing of PTD service to another caused the complete overhaul of the system. In most cases, the number of daily passengers effected by the poorer service is small (less than 2 per cent); in the few instances where it does matter, Developmental Level A should be used. Thus, proposed Lines C-2, C-4, C-9, C-11, and C-16 should have headways of greater frequency than that which is recommended under the Base Level.

An important benefit to users of transit in the area would be the streamlining of the interconnections between PTD and LBPTC lines and between PTD and OCTD lines. Figure 4-2, shows the existing discontinuities between the existing services and Figure 4-3 shows how these can be corrected The effect of these improvements in these interconnections would:

- improve service to Cerritos College from both the north and south. Access would require either no transfer or, at most, one transfer between RTD and LBPTC lines.

- enable access to major shopping centers within the Mid-Cities area for Long Beach residents, and similar access to Long Beach activity centers with no more than one transfer.

- allow interfacing of the new PTD routes with OCTD service in Hawaiian Gardens and along Beach Boulevard. This would facilitate access for Mid-Cities residents to areas within Orange County.

- Facilitate rapid and convenient service to the Los Angeles CBD or to Orange County via the proposed C-1 route. The improved efficiency of this operation would be made possible by the unique operation of Route C-1 and the connecting lines which would tailor their schedules around the estimated transfer connection times to and from the C-1 express service This coordination of transfer point arrival times would minimize wait time and would provide maximum efficiency and convenience for trips destined to the Los Angeles CBD.

The proposed transit system would also improve the interconnections between RTD lines serving the Mid-Cities area and those that serve the rest of the region. Specifically

- The rerouting of the Whittier Boulevard service as described in Route C-6 would provide a swifter and more efficient service for many more people than does the present Route 72. With mainline service being extended eastward as far as Whittwood Shopping Center, a great many more people could avail themselves of the services and attractions found in the Whittier Boulevard Corridor or the Los Angeles CBD without having to divert through the Downtown Whittier area.

- Routes C-2, C-12, and C-14 would link the Mid-Cities with the South Bay area, providing, for the first time, effective, direct east-west transit service to these communities.

- Routes C-3, C-7, C-8, and C-15 would, in effect be extensions of existing RTD routes serving south-central Los Angeles thereby directly linking the Mid-Cities transit network with dozens of other transit lines serving the Greater Los Angeles area beyond the boundaries of the study area itself.

EFFECT OF TRANSIT ON THE COMMUNITY

It is reasonable to assume that there are individuals living in the Mid-Cities area who would use public transportation if such were available to them and if it had performance attributes that were reasonable for them. Positively identifying the location of such individuals and their desires is well beyond the resources of this study. Instead, proxy measures can be used that indirectly measure the exposure of people to transit. Population coverage, measured as bus miles per 1000 population, is one such measure. A standard for acceptable coverage of populations in suburban areas is 50 or more bus miles per 1000 population.

On the average, the population coverage of the proposed system would increase by 58 per cent. A comparison of Figures 3-1 and 5-2 shows where these increases would occur. Although the increase would be a very significant one for the community, it would nevertheless fall below the 50 miles per 1000 population.

The commercial interests and local governments are directly affected by the number of people that patronize the major shopping centers in the Mid-Cities area. The more transportation options that can be used to gain access to a shopping center, the higher is the probability of increased patronage of these shopping centers. One way of measuring this effect is by the number of lines that converge on a shopping center and the frequency. There is no known standard for this measure; but, with each of the six largest shopping centers in the area being served by no fewer than three transit lines and operating at least every 60 minutes, accessibility to these major activity centers would be significantly improved over the existing service which now often serves these centers with only one or two lines operating on infrequent headways.

A third measure of access is the number of places that can be reached without a single transfer. This measure is the same as that already discussed for the users. Figures 2-10 and 5-1 show the increases in accessibility that would be available to the individual cities of the Mid-Cities area.

Trip time is important to those of the community that have access to transit services and are potential users of it. The effect of the improvements promised by the proposed system would be the same as that discussed in the preceding section.

EFFECT ON THE TRANSIT OPERATORS

The effects of the proposed transit system changes are best measured by changes in productivity and efficiency. One measure of productivity is the number of passengers that the proposed system would carry per bus mile. The

inverse of productivity, i.e. bus miles per passenger, is more visible because the numerator is the variable that is most directly manipulated by the redesign of the current system and is also the one that can be most accurately predicted. An estimate of passengers beyond those that are now riding the RTD system and that would be carried by the new system is highly speculative.

If a conservative assumption is made that the number of passengers served by the new system remains unchanged, the number of bus miles would increase by 58 per cent in the study area. However, the number of total bus miles, which would include those incurred outside the Mid-Cities area would increase only 10 per cent, thus reducing productivity of the proposed lines by only that amount. Assuming that the patronage would eventually increase by the 69 per cent calculated in Appendix A, overall operation productivity would not suffer greatly. It is safe to assume that after perhaps an initial drop immediately after implementation, RTD would expect to compensate for the additional bus miles with sufficient additional passengers to operate at least at current levels of productivity. It can also be anticipated that after the period immediately following the implementation of the proposed system, PTD would expect continued gradual increases in productivity.

The amount of layover time is one measure of efficiency of routing and scheduling. Table 4-4 in the preceding chapter compares the amount of layover time of current RTD routes with that of the proposed transit system. The proposed system reduces the ratio of layover time to operating time by an average of 4.8 per cent.

For the Base Level Service, the proposed RTD transit system serving the Mid-Cities would require only a nominal incease in vehicles.

CONCLUSIONS

The proposed RTD routes will be of benefit to most of the present patrons of RTD. These people would be able to reach more major activity centers than is possible on the existing routes. In most cases,they would be able to make the trip in less time than is now possible, even if the Base Level of service is selected. Although the proposed system would leave a very small number of PTD customers without direct service, the rerouting is expected to bring transit services to many new users.

The proposed RTD routes would increase accessibility to shopping and other major activity centers. Shopping centers should attract more customers and the increased commercial activity should increase tax revenues. Most importantly, connections between the RTD and Long Beach Public Transportation services would be streamlined so that Mid-Cities residents would be able to use transit to Long Beach and those from Long Beach and Lakewood will be able to travel more directly to Cerritos College and such major shopping attractions as Lakewood Center and Los Cerritos Shopping Center.

At the Base Level Service, these improvements would impose upon the operator only an 8 per cent increase in vehicles and 30 per cent increase in operating hours. Because of this, the improvements proposed under Base Level Service could be implemented without delay and could be in operation within 90 days after adoption.

In addition to the recommended system at the Base Level, it is felt that it is also within the capacity of the present RTD facilities to implement selected portions of Developmental Levels A and B that are considered to be essential in the operation of an efficient transit system in this area. Among the additional service improvements that could be implemented immediately are:

- Selected service routed through Fullerton on Route C-1.

- Additional short service trips on Route C-1 operating from Norwalk Square to the Santa Ana Freeway to the Los Angeles CBD via telegraph Road.

- Extension of service to Fullerton on Route C-6 via the route of the present Route 72 to Fullerton from the Orange County Line.

When the operating capacity of RTD increases to the point of allowing partial additional expansion of service at Developmental Levels A and B, the following service improvements should be given first consideration:

1. Increase service on Routes C-11 and C-16 as these are the main routes serving Cerritos College. Route C-11 should operate every 15 minutes during peak hours and every 30 minutes during base hours with service on Route C-16 being increased to operate every 30 minutes all day.

2. Implement Routes B-3 - Rio Hondo College, and B-4 - South Gate to Whittier. These two auxiliary routes included under Developmental Level B would provide more complete mobility in the northern section of the study area by including the eastern portions of the Telegraph Road and Slauson Avenue Corridors in the system network.

3. Increase service on Routes C-2, C-4 and C-9. These routes are important structural elements in the operation of the proposed system which, because of the limited resources available under the Base Level Service operation, were unable to be allotted the intensity of service that their importance may actually demand. Route C-2 should operate every 20 minutes in the peak hours and every 30 minutes during the base hours while Route C-4 should maintain a 30 minute headway throughout the day. Route C-9 should operate every 15 minutes during peak hours and every 30 minutes during the base hours.

CHAPTER 6

RECOMMENDATIONS

RECOMMENDATIONS BY CENTERS FOR STUDY

CENTS recommends that the service that RTD presently provides in the Mid-Cities area be upgraded to that proposed in this report for Base Level Service for all proposed new lines except for Lines C-1, C-2, C-4, C-6, C-9, C-11, and C-16 which should be operated at Developmental Level A as well as continuing to operate Routes 55 and 77 over somewhat revised routes. Although this service level falls short of the standards of service that should prevail in this area, it should offer a significant enough improvement in access, trip time and destination flexibility to stimulate appreciable increase in patronage.

It can be anticipated that the improvements in patronage will come about gradually as people in the area become informed about the new service, and that they will not be uniform in all lines. CENTS recommends, therefore, that upgrading of the service of Developmental Levels A and B be selective and be considered only for those proposed lines where patronage levels warrant it or where service is not incompatible with the travel needs of those that ride it. Since patronage and service responsiveness will not be known until the proposed system is in operation, changes beyond the initial system should not be considered until at least 6 months and, preferably, 12 months from the date of introducing the new system.

Requirements for transit services and the transit services that have been designed to meet these requirements deverge as a function of development and change in the area. Changes in demography, emplacement of other transportation facilities, changes in the amount and distribution of commercial, cultural and other public places are all capable of changing the requirements that the transit system should satisfy. The Mid-Cities area can be expected to continue to grow and change. If the proposed transit system is to remain responsive, it too must change. CENTS strongly recommends that RTD and the other transit operators of the area evaluate their transit services periodically and make those service adjustments that become evident. Such evaluations should include route appraisal as well as level of service review.

CENTS recommends that RTD take the initiative to improve the interconnections between its lines and those of the Long Beach Public Transportation Company and the implementation of the proposed interface between those two systems. The exchange in service territory that accompanies this step is, without argument, in the interests of residents in both Long Beach and the Mid-Cities. The proposed exchange in route miles does not impinge on the subsidy revenues of either operator nor does it precipitate significant additional subsidies.

Similarly, SCRTD should seek to devest itself of routes that are well below the average productivity of its system and that are also served by other transit operators. Both situations occur on a few RTD lines that operate in competition with LBPTC lines or those operated by Orange County.

Recommendations of the Surface Planning Department

Upon completion of the preliminary system recommendations developed by Centers for Study, Surface Planning Department and Community Relations Department representatives commenced with the Community Review Process on the proposals for the Mid-Cities area. The preliminary recommendations were presented to various city councils and technical staff representatives of the various Mid-Cities communities for their review, comments, and further study of the plans as it impacted each individual community and areas immediately adjacent to the communities. This particular aspect of the Community Review Process had been an ongoing activity between the cities, SCRTD, and Centers for Study since the initiation of the project in August, 1974.

Another key aspect of the Community Review Process was that of the public input as related to the preliminary proposals. Presentations were made by District representatives at community meetings which were conducted throughout the Mid-Cities area whereby feedback, comments, criticisms, and suggestions could be solicited from residents of the area and citizens at large.

Upon completion of the Community Review Process, Centers for Study and the Surface Planning Department project staffs examined and evaluated every suggestion, idea, and comment that was retrieved from the individual cities and area citizens; and as a result of these inputs and their subsequent evaluation, the Surface Planning Department has included many of these inputs as a part of the final recommendations that are proposed for implementation.

The Surface Planning Department recommends that the service that SCRTD presently provides in the Mid-Cities are be upgraded to that which has been proposed by Centers for Study except for route modifications on Lines C-9, C-15, and C-16. Base level service is recommended for the following lines.

	Peak	Base
C-3 (Slauson-Garfield)	:15- :30	:15-1:00
C-5 (Passons-Paramount)	:30	1:00
C-7 (Gage-Downey)	:20-1:00	:20-1:00
C-8 (Olympic-Washington)	1:00	1:00
C-10 (Whittwood-Bellflower)	1:00	1:00
C-12 (Imperial Highway)	:30	1:00
C-13 (Pioneer Boulevard)	:30	1:00
C-14 (Rosecrans Avenue)	:30	1:00
C-15 (Firestone-Norwalk)	:15- :30	:15-1:00

In addition to base level service on the above-mentioned lines, development level A service is recommended for the following lines.

	Peak	Base
C-1 (Santa Ana Freeway)	:15	:15
C-2 (Artesia Boulevard)	:20	:30
C-4 (Cerritos-Whittwood-Beverly)	:30	:30-1:00
C-6 (Whittier Boulevard)	:05- :10	:20
C-9 (Lakewood-Rosemead)	:15	:30

	Peak	Base
C-11 (Studebaker Road)	:15	:30-1:00
C-16 (Alondra Boulevard)	:30	:30

It is also recommended that the existing Lines 55 and 77 continue to operate in the Mid-Cities area; however, over somewhat revised route of lines as indicated in Chapter 4.

Although the system proposed is regional or inter-city in design and function, it does not preclude significant improvements of intra-city travel. And the new relationship of passenger, or potential passenger, to travel time via public transportation will result in a perspective of viewing public transportation as a viable alternative to automobile travel by area residents. For instance, the number of cities that a passenger in a given city could reach would, at least, double for more than 80 per cent of the Mid-Cities passengers. Other major accomplishments and improvements of the proposed system area:

1. The provision of through and direct routing within the Mid-Cities area as compared to the existing system;

2. Significant improvements in the coordination and interface with other transit systems which operate within the Mid-Cities area (i.e., Long Beach Public Transportation Company, Orange County Transit District, Montebello Municipal Bus Lines, Norwalk Municipal Bus System, Santa Fe Springs Tram, La Mirada Dial-a-Ride);

3. The establishment of line terminal sites at major regional activity centers and generators that do not presently exist;

4. With an increase of only 50 vehicles more than the presently operating in the area, which includes the required spare units, the proposed system will afford Mid-Cities residents and communities the type of rational service which does not presently exist, such as:

   a. An average decrease in travel times both within the Mid-Cities area and beyond, of over 30 per cent (this masks the more important travel time reductions of over 50 per cent for those destinations where current travel lines approach or exceed two hours);

   b. Southeast Los Angeles County will have direct and through service and linkages with not only downtown Los Angeles, but the San Gabriel Valley and the El Monte Busway station, South-Central Los Angeles, and the South Bay area; and,

   c. The servicing of regional governmental, educational, institutional, commercial, and employment activity generators of Southeast Los Angeles County that are not presently served or are presently served in a disjointed and out-moded manner.

Route of Line Modifications to Proposed Centers for Study Transit System

As a direct result of the Mid-Cities Community Review Process, and the evaluation and re-examination of both local governmental inputs, and suggestions by area residents, the Surface Planning Department recommends that the following route modifications be incorporated into the basic plan. These route modifications will strengthen the overall system and will also aid in accomplishing project goals and objectives for significant improvements in transit service.

Route C-9 (Lakewood-Rosemead)

Route C-9, as proposed by Centers for Study, would operate from the Lakewood Shopping Center to Beverly Boulevard in the City of Pico Rivera, via the Lakewood-Rosemead corridor. In addition, selected trips would be extended throughout the day to El Monte Station via Rio Hondo College.

The Surface Planning Department recommends that the C-9 route not terminate at Beverly Boulevard, but rather, continue on Rosemead Boulevard to the Flair Park office/industrial area in the City of El Monte and then to El Monte Station. By establishing this route of line, the following objectives can be accomplished:

1. A transit link between the Mid-Cities area and the San Gabriel Valley area - including El Monte Station;

2. The provision of transit service to the rapidly growing Flair Park office/industrial center from:

   a. the Mid-Cities/Southeast Los Angeles County area and,

   b. the San Gabriel Valley bus lines which feed into the El Monte Station.

3. The establishment of crosstown service in the Rosemead-Lakewood corridor when correlated with recommendations for transit improvements proposed in the San Gabriel Valley Sub-regional Transit Improvement Study.

As a part of the San Gabriel Valley Subregional Transit Improvement Study, a route designated as Line 461 has been proposed to provide direct service to Rio Hondo College from the northern portion of the Mid-Cities area and into El Monte Station. From Line 461's northern terminal, service is proposed to commence at El Monte Station, then via Ramona Avenue, Valley Boulevard, Peck Road, Workman Mill Road, Beverly Boulevard, Painter Avenue, Whittier Boulevard to Whittwood Plaza. This route is a connector line to a number of Mid-Cities bus routes and will provide direct service to both Rio Hondo and Whittier Colleges; and, has been extended to Whittwood Plaza to take advantage of the proposed Mid-Cities recommendations at this facility.

Route C-15 (Firestone-Norwalk)

The C-15 route will provide vital north-south and east-west mobility for the Mid-Cities area via the Norwalk Boulevard and Firestone Boulevard corridors, respectively. The line will provide direct, through-routing within the Mid-Cities area and beyond, and will make transfer linkages with twelve (12) other proposed routes within the Mid-Cities area. However, within the City of Cerritos, there is a need for public transportation to serve community facilities along the Bloomfield Avenue corridor just east of Norwalk Boulevard. These facilities are a juvenile diversion center, city library, Cerritos High School, and a proposed Los Angeles County Regional Park. These facilities would be frequented by basically a transit-dependent population who otherwise could not travel to these facilities via public transportation.

Re-routing the trunk of the C-15 Line off of Norwalk Boulevard onto Bloomfield Avenue would be one alternative; however, eliminating transit service to many activity generators along Norwalk Boulevard would not aid in achieving the goal of providing direct, through routing for the area. Therefore, the Surface Planning Department recommends that the trunk of Line C-15 remain on Norwalk Boulevard as proposed by Centers for Study, and that short line service be provided on Bloomfield Avenue to serve the community, educational, and regional facilities along this corridor. The route of line for the C-15 short line service would be from downtown Hawaiian Gardens on Norwalk Boulevard to Del Amo Boulevard, Bloomfield Avenue, Rosecrans Avenue, San Antonio Drive, Norwalk Boulevard to Imperial Highway and the Paddison Square Center in the City of Norwalk.

C-16 (Alondra Boulevard)

The C-16 Line, as proposed by Centers for Study, will operate on Alondra Boulevard from the La Mirada Shopping Center in the City of La Mirada to Atlantic Place in the City of Paramount. This line will provide vital east-west mobility through the cities of Paramount, Bellflower, Norwalk, and Santa Fe Springs.

C-16 will also serve a shuttle type of function to Cerritos College by affording transfer opportunities from eleven (11) other proposed Mid-Cites lines to Alondra Boulevard. This will mean that any person, anywhere in the Mid-Cities area, will be able to travel to Cerritos College with a maximum of only one (1) transfer.

Conceptually, Alondra Boulevard serves another purpose which accomplishes another objective of the proposed service improvements. That is, a line of demarcation whereby District service will interface with service being provided by the Long Beach Public Transportation Company. Five (5) Long Beach Public Transportation Company lines are recommended to extend existing service to Alondra Boulevard to interface with proposed District service. These transfer/-interface points are at Woodruff Avenue, Cherry Avenue, Orange Avenue, Downey Avenue, and Atlantic Place.

The Surface Planning Department recommends that the C-16 extend westward to Long Beach Boulevard in the City of Compton in order to provide an additional transfer opportunity with the existing SCRTD Line 66 which carry passengers north to the Huntington Park area or south to the downtown Long Beach area.

System Implementation, Monitoring, and Evaluation

One of the most integral aspects of stabilizing a newly implemented transit system will be that of the monitorization and evaluation process which will delineate the system's impact on the areas served, patronage growth, operational considerations that can only be determined upon implementation, and the system's overall role in the District's regional transit scheme. Only when the proposed system has become fully operational can the actual measurement of service improvement or success can be quantified and evaluated; and, only when the system has been operational will undetermined considerations and deficiencies surface for quantification. It is this post-advanced planning stage which will make the system as formidable as it will ultimately be because it is the maintenance of system data and its analysis, coupled with projections and subsequent recommendations that will refine the new transit network into a truly proficient surface operation.

It is the intention of the Surface Planning Department to closely monitor the initial system's operational and service characteristics and trends with other District departments for a period of six months upon implementation. Six months is the minimum amount of time to which service levels, public education and familiarity with a new system, and new travel behavior and trends can be satisfactorily measured with a fairly reliable degeree of accurate projection and analysis of the system's impact and acceptance. At the end of the six months monitoring period, an evaluation will be conducted based upon the monitoring process which had been administered.

The evaluation will recommend any required system modifications that would be appropriate and necessary; and, it is anticipated that system improvements considered beyond the initial evaluation stage will be a combination of (1) improvements generic to the rectification of initial system imperfections, (2) implementation of alternative routes over initially implemented routes that do not maintain a satisfactory rate of service progression, and (3) experimentation with suggestions and inputs obtained from local governments and citizens--as a result of the Community Review Process--that may not have been recommended for implementation in the initial phase of the system's operation.

TABLE 6-1

VEHICLE REQUIREMENT COMPARISON

PRESENT SYSTEM Peak Req.			BASE LEVEL Peak Req			DEVELOP. LEVEL A Peak Req.			CENTS RECOMMENDATION Peak Req.				S.C.R.T.D. SURFACE PLANNING DEPT. RECOMMENDATION Peak Req.			
ROUTE	A.M.	P.M.	ROUTE	A M.	P.M.	ROUTE	A.M.	P.M.	ROUTE	SERVICE LEVEL	A.M.	P.M.	ROUTE	SERVICE LEVEL	A.M.	P.M.
34	6	6	C-1	12	16	C-1	14	18	C-1	A	14	18	C-1	A	14	18
38	1	1	C-2	3	3	C-2	8	8	C-2	A	8	8	C-2	A	8	8
46	8	7	C-3	10	10	C-3	11	11	C-3	Base	10	10	C-3	Base	10	10
54	12	11	C-4	3	3	C-4	6	6	C-4	A	6	6	C-4	A	6	6
55	3	6	C-5	6	5	C-5	9	8	C-5	Base	6	5	C-5	Base	6	5
58	16	21	C-6	24	27	C-6	29	32	C-6	A	29	32	C-6	A	29	32
72	25	28	C-7	3	3	C-7	5	5	C-7	Base	3	3	C-7	Base	3	3
77	5	5	C-8	3	3	C-8	6	6	C-8	Base	3	3	C-8	Base	3	3
111	4	4	C-9	7	8	C-9	7	8	C-9	A	7	8	C-9	A	8	9
112	1	1	C-10	2	2	C-10	4	4	C-10	Base	2	2	C-10	Base	2	2
113	3	3	C-11	4	4	C-11	8	8	C-11	A	8	8	C-11	A	8	8
116	2	2	C-12	6	4	C-12	11	9	C-12	Base	6	4	C-12	Base	6	4
117	2	3	C-13	4	4	C-13	8	8	C-13	Base	4	4	C-13	Base	4	4
118	1	1	C-14	5	6	C-14	11	12	C-14	Base	5	6	C-14	Base	5	6
132	4	4	C-15	15	15	C-15	18	18	C-15	Base	15	15	C-15	Base	16	16
134	2	2	C-16	2	2	C-16	4	4	C-16	A	4	4	C-16	A	4	4
136	1	1	34	5	5	34	5	5	34	Base	5	5	34	St.Ser.	5	5
137	3	3	7	3	3	77	3	3	55	New Rt.	3	6	55	New Rt.	3	6
									77	Base	3	3	77	Base	3	3
	99	109		117	123		167	173			141	150			143	152

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-9 via Flair Park

FROM El Monte Station
TO Lakewood
VIA. Lakewood and Rosemead Boulevards

AREAS SERVED

El Monte, Pico Rivera, Downey, Paramount Bellflower, Lakewood, Flair Park, Stonewood Shopping Center, Ford Plant, Lakewood Shopping Center, North American Rockwell, Pico Rivera Hospital

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel. Level B
Avg 1 way route miles	12 6-20.5	12.6-20.5	12.6-20.5
Miles w/in study area	12.6	12.6	12.6
% of miles in study area	82.2	75.85	75.85
Hours of operation	6a-1a	6a-1a	6a-1a
Peak hour headway	:15-:30	:15-:30	:15-:30
Base hour headway	:60	:30	:30
Total daily 1 way trips	55	83	83
Avg 1 way running time	:52-1:17	:52-1:17	:52-1:17
Avg operating speed	15.3	15.3	15.3
Daily operating miles	1006.7	1599.5	1599.5
Daily operating hours	86.80	134 53	134.53
Total daily layover time	15.30	22.10	22.10
% of op. hrs. in layover	17.6	16.4	16.4
Vehicles needed, am peak	7	8	8
Vehicles needed, pm peak	8	9	9
Vehicles needed, base	4	7	7

RECOMMENDED LAYOVER POINTS

North - West on Parma around the corner from Layman or at El Monte Station.

South - South on Hazelbrook Road at May Co

TRANSFER POINTS

To Line Number	Location
C-1	Lakewood & Santa Ana Freeway
C-2	Lakewood & Artesia
C-4	Rosemead & Beverly
C-5	Rosemead & Slauson or Lakewood Shopping Center (also Long Beach P T.C.)
C-6	Rosemead & Whittier
C-8	Rosemead & Washington
C-10	Lakewood & Florence or Bellflower
C-12	Lakewood & Imperial
C-14	Lakewood & Rosecrans
C-15	Lakewood & Firestone
C-16	Lakewood & Alondra

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
El Monte Station			
Flair at Telstar	2.40	7	22
Rosemead at Beverly	5.90	18	20
Rosemead at Whittier	0.56	2	19
Rosemead at Washington	1.45	5	19
Lakewood at Santa Ana Frwy.	1.97	6	19
Lakewood at Firestone	1.70	5	18
Lakewood at Rosecrans	2.51	11	14
Lakewood at Alondra	1.00	4	14
Lakewood at Artesia	1.03	5	14
Lakewood Shopping Center	2.03	9	14

ROUTING

Southbound

W on Parma Street
S on Rosemead Boulevard
S. on Lakewood Boulevard
E on Candlewood Avenue
S. on Hazelbrook Road to May Co stop.

(Selected trips)
from El Monte Station:

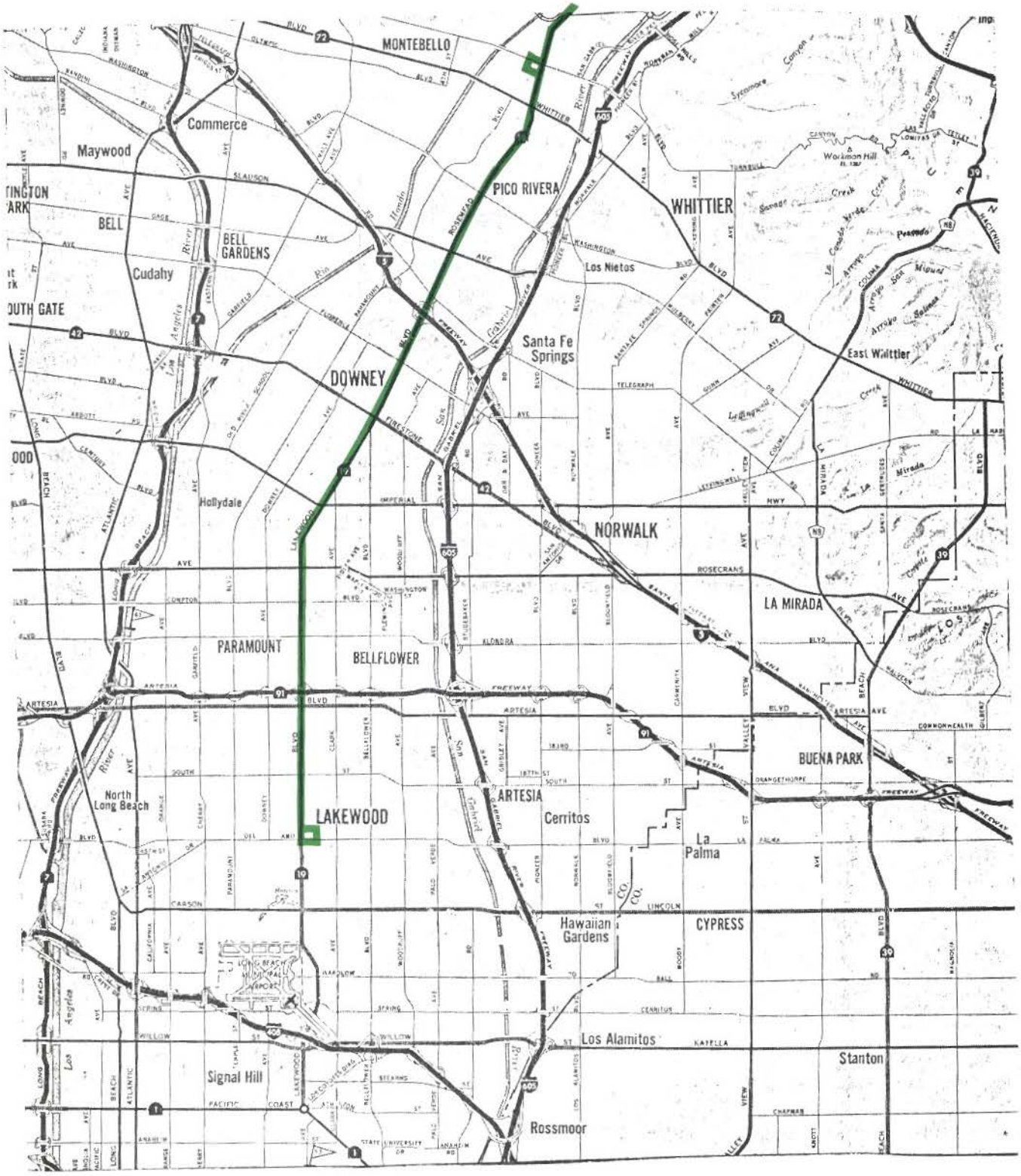
E. on Busway Lane
S. on Santa Anita Avenue
W. on Freeway Entrance Ramp-west
W. on San Bernadino Freeway
N & E on Rosemead Blvd.-South Exit Ramp
S. on Rosemead Boulevard
W. & N. on Freeway Entrance Ramp - East
E on San Bernadino Freeway
S. & E. on Flair Park Exit Ramp
E. on Flair Drive
S. & W. on Telstar Avenue
N. on Un-named Road
W. & S. on Flair Drive
W. on Whitmore Street
S. on Rosemead Boulevard
S. on Lakewood Boulevard
E. on Candlewood Avenue
S. on Hazelbrook Road to May Co. stop.

Northbound: from Lakewood Shopping Center

S. on Hazelbrook Road
W. on Silva Road
N. on Lakewood Boulevard
N. on Rosemead Boulevard
E on Beverly Boulevard
S on Layman Avenue
W on Parma Street

(Selected trips)
Extend Via above route to Rosemead & Beverly, then:

N. on Rosemead Boulevard
E. on Telstar Avenue
N. & E. on Flair Drive
S. & W. on Telstar Avenue
N on Un-named Road
N. on Freeway Entrance - East
E. on San Bernardino Freeway
S. & E. on Santa Anita Ave. Exit Ramp
N. on Santa Anita Avenue
W. into El Monte Station Dr


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
ARTESIA
Cerritos
La Palma
BUENA PARK
North Long Beach
LAKEWOOD
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-15
VIA BLOOMFIELD AVE.

FROM Norwalk
TO Hawaiian Gardens
VIA. Bloomfield Avenue

AREAS SERVED

Norwalk, Cerritos, Artesia, Lakewood Hawaiian Gardens, two high schools, Paddison Shopping Center, Kaiser Hospital, Norwalk Community Hospital, Norwalk Civic Center and Hawaiian Gardens Civic Center

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel. Level B
Avg. 1 way route miles	9.	9.	9
Miles w/in study area	9.	9.	9.
% of miles in study area	100	100	100
Hours of operation	6a-10p	6a-10p	6a-10p
Peak hour headway	1.00	1.00	1.00
Base hour headway	1:00	1.00	1.00
Total daily 1 way trips	32	32	32
Avg 1 way running time	:26	26	.26
Avg operating speed	20.	20.	20.
Daily operating miles	288	288	288
Daily operating hours	13.87	13 87	13.87
Total daily layover time	2.13	2.13	2.13
% of op. hrs. in layover	15.4	15.4	15.4
Vehicles needed, am peak	1	1	1
Vehicles needed, pm peak	1	1	1
Vehicles needed, base	1	1	1

RECOMMENDED LAYOVER POINTS

North - East of Studebaker Road on Firestone Boulevard

South - East on Tilbury Street at Hawaiian Gardens City Hall.

TRANSFER POINTS

To Line Number:	Location:
C-1	Imperial & Pioneer or Norwalk
C-2	Artesia & Bloomfield
C-4	South St & Bloomfield
C-11	Studebaker & Firestone
C-12	Imperial & Firestone or Pioneer or Norwalk or Bloomfield
C-13	Imperial & Norwalk or Hawaiian Gardens City Hall
C-14	Rosecrans & Bloomfield
C-15	DelAmo & Norwalk or Firestone & Studebaker or Imperial
C-16	Alondra & Bloomfield
	(Also OCTD, Long Beach and Norwalk Lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Firestone at Studebaker			
Imperial at Bloomfield	2.05	6	20
Bloomfield at Rosecrans	1.10	4	20
Bloomfield at Alondra	1.20	3	20
Bloomfield at Artesia	1.00	3	20
Bloomfield at Del Amo	1.85	5	20
Norwalk at Carson	1.5	5	20

ROUTING

Southbound

E on Firestone Boulevard
E on Imperial Highway
S on Bloomfield Avenue
S & E on Firestone Blvd.
W on Rosecrans Avenue
S on Bloomfield Avenue
W on Del Amo Boulevard
S on Norwalk Boulevard
W. on Carson Street
N. on Horst Avenue
E on Tilbury Street to Hawaiian Gardens City Hall

Northbound from Hawaiian Gardens City Hall

E on Tilbury Street
N. on Norwalk Boulevard
E. on Del Amo Boulevard
N. on Bloomfield Avenue
E on Rosecrans Avenue
N & W on Firestone Blvd
N on Bloomfield Avenue
W on Imperial Highway
N. on Studebaker Road
E. on Firestone Blvd. to Layover.


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
ARTESIA
Cerritos
La Palma
BUENA PARK
North Long Beach
LAKEWOOD
Hawaiian Gardens
CYPRESS
Los Alamitos
Stanton
Signal Hill
Rossmoor

SUMMARY
LINE OPERATING CHARACTERISTICS

ROUTE NO C-16

FROM La Mirada
TO Paramount
VIA Alondra Boulevard

AREAS SERVED

Paramount, Bellflower, Cerritos, Norwalk, Santa Fe Springs, La Mirada, La Mirada Shopping Center, Los Cerritos College, Alondra Community Hospital and three high schools.

SERVICE FREQUENCY AND REQUIREMENTS

	Base Level	Devel Level A	Devel. Level B
Avg. 1 way route miles	12 25	12.25	12.25
Miles w/in study area	12 25	12 25	12 25
% of miles in study area	100	100	100
Hours of operation	6a-7p	6a-7p	6a-7p
Peak hour headway	1·00	30	30
Base hour headway	1.00	.30	.30
Total daily 1 way trips	26	52	52
Avg 1 way running time	:38	38	:38
Avg operating speed	18.7	18.7	18.7
Daily operating miles	319.0	638.0	638.0
Daily operating hours	25.85	51.07	51.07
Total daily layover time	8.43	16 22	16 22
% of op. hrs. in layover	32.6	31.76	31.76
Vehicles needed, am peak	2	4	4
Vehicles needed, pm peak	2	4	4
Vehicles needed, base	2	4	4

RECOMMENDED LAYOVER POINTS

West - East on Alondra Blvd. in advance of Long Beach Boulevard.

East - North on La Mirada Shopping Center drive along side of Thrifty Store

TRANSFER POINTS

To Line Number	Location
C-3	Alondra & Garfield
C-5	Alondra & Paramound
C-7	Alondra & Downey
C-8	La Mirada Shopping Center
C-91	Alondra & Lakewood
C-10	Alondra & Bellflower
C-11	Alondra & Studebaker
C-13	Alondra & Pioneer
C-14	La Mirada & Rosecrans
C-15	Alondra & Norwalk
C-4	Alondra & Carmenita
RTD 66	Alondra & Long Beach Blvd
	(also 3 Norwalk and 6 Long Beach Lines)

MILEAGE SEGMENTS

Time Point	Miles	Running Time	Speed
Long Bch Alondra at Blvd.			
Alondra at Paramount	2 86	8	23
Alondra at Lakewood	1.00	3	23
Alondra at Bellflower	1.03	3	23
Alondra at Studebaker	1.48	4	23
Alondra at Pioneer	1 00	3	23
Alondra at Norwalk	.58	1	23
Alondra at Santa Ana Freeway	2.12	5	23
La Mirada Shopping Center	2.18	6	23

ROUTING

Eastbound

E on Alondra Blvd
N on Escalona Road
E on Excelsior Drive into La Mirada Shopping Center
N. on Shopping Center Drive to Thrifty Store

Westbound from La Mirada Shopping Center

N on Shopping Center Drive
W. on Rosecrans Avenue
S on La Mirada Blvd.
W on Excelsior Drive
S on Escalona Road
W. on Alondra Blvd.
S on Long Beach Blvd.
W. on Bullis Road
W on Marcelle Street
N. on Poinsetta Avenue
E on Alondra to in advance of Long Beach Blvd


MONTEBELLO
Commerce
Maywood
BELL
BELL GARDENS
Cudahy
PICO RIVERA
WHITTIER
Los Nietos
Santa Fe Springs
East Whittier
DOWNEY
Hollydale
NORWALK
LA MIRADA
PARAMOUNT
BELLFLOWER
ARTESIA
Cerritos
La Palma
BUENA PARK
North Long Beach
LAKEWOOD
Hawaiian Gardens
CYPRESS
Los Alamitos
Signal Hill
Stanton
Rossmoor

APPENDIX A

TABLE A-1

POTENTIAL PATRONAGE ESTIMATES

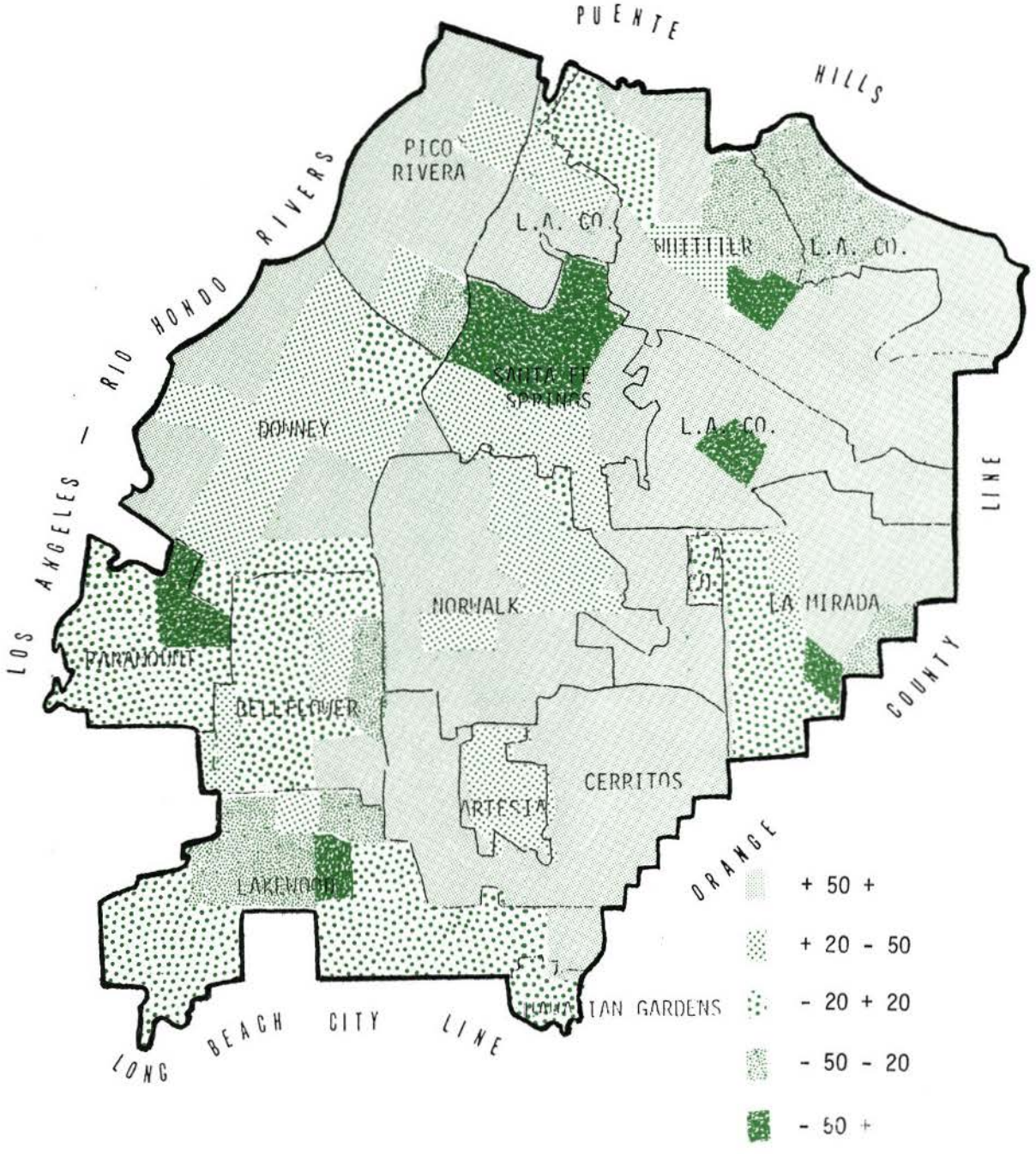
	Present Transit Users (PTU)	Potential Transit Ratio (PR)	% Net change from Socio-economic and Accessibility potential	Overall Potential Users (OPU)	% Change In users	% Change in Passengers Per mile
ARTESIA	53	259	+10	285	+437.0	+49.1
BELLFLOWER	467	584	- 2	574	+ 22.9	- 2.1
CERRITOS	20	433	0	433	+2160.0	-----
DOWNEY	563	1111	+ 2	1132	+101.1	+ 3.7
HAWAIIAN GARDENS	72	115	+ 4	119	+ 65.0	+ 5.6
LAKEWOOD	1308	1871	-14	1630	+ 24.6	-18.4
LA MIRADA	72	275	- 5	261	+263.5	-19.4
L.A. COUNTY	475	488	+13	551	+ 20.0	+14.7
NORWALK	635	1946	+13	2187	+241.0	+19.0
PARAMOUNT	366	610	- 5	580	+ 58.5	- 8.2
PICO RIVERA	1181	928	+21	1118	- 5.5	+16.1
SANTA FE SPRINGS	166	322	- 9	292	+ 76.0	-18.1
SOUTH WHITTIER	123	298	+13	335	+172.4	+30.1
WHITTIER	992	1307	+17	1519	+ 53.1	+21.4
TOTAL	6493	10,547	+ 4.5	11,016	+ 69.7	+ 3.3

APPENDIX B

MID-CITIES STUDY AREA

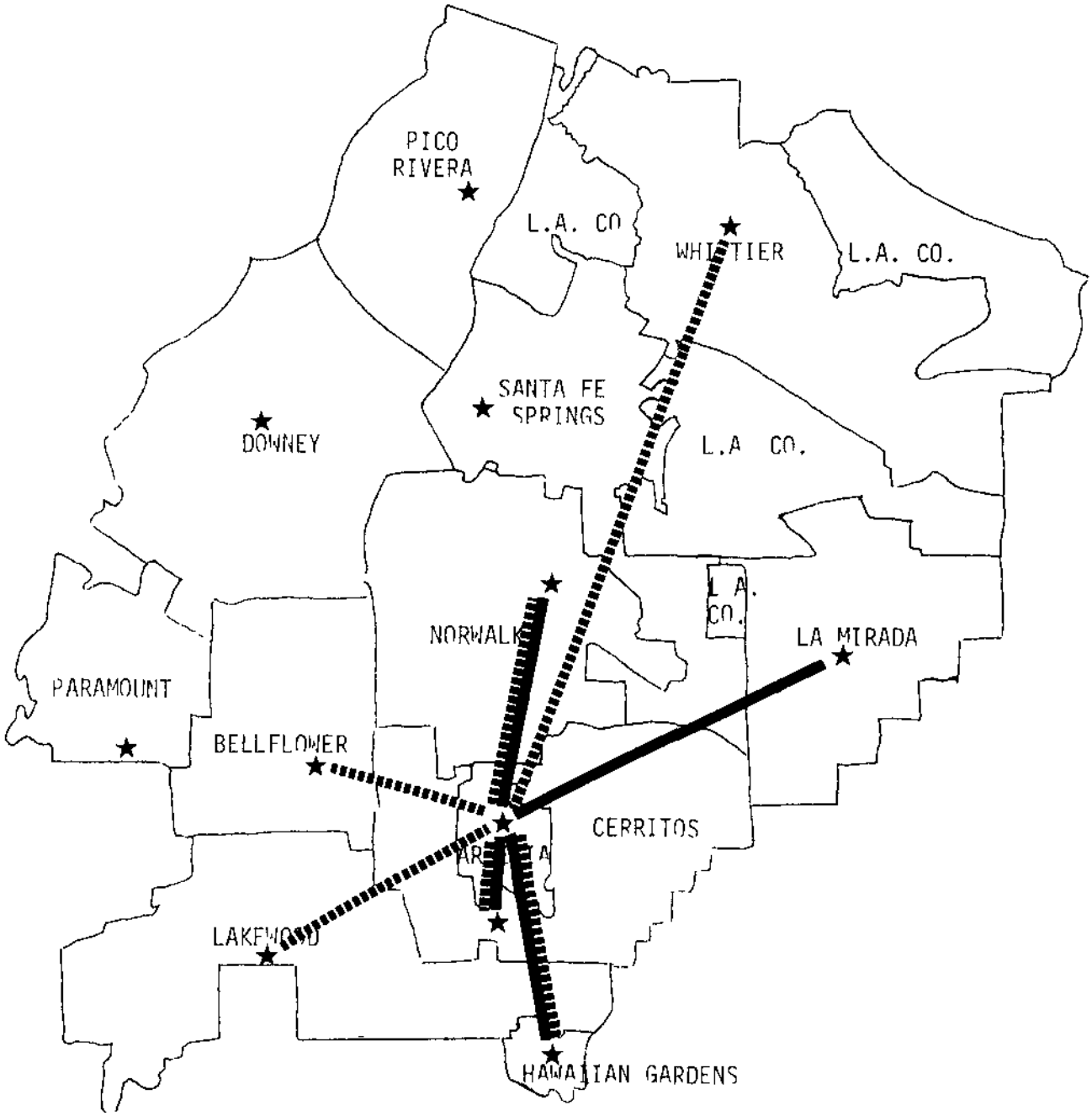
PERCENT CHANGE IN ACCESSIBILITY TO OTHER CITIES

PROPOSED SYSTEM



City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Artesia's City Hall

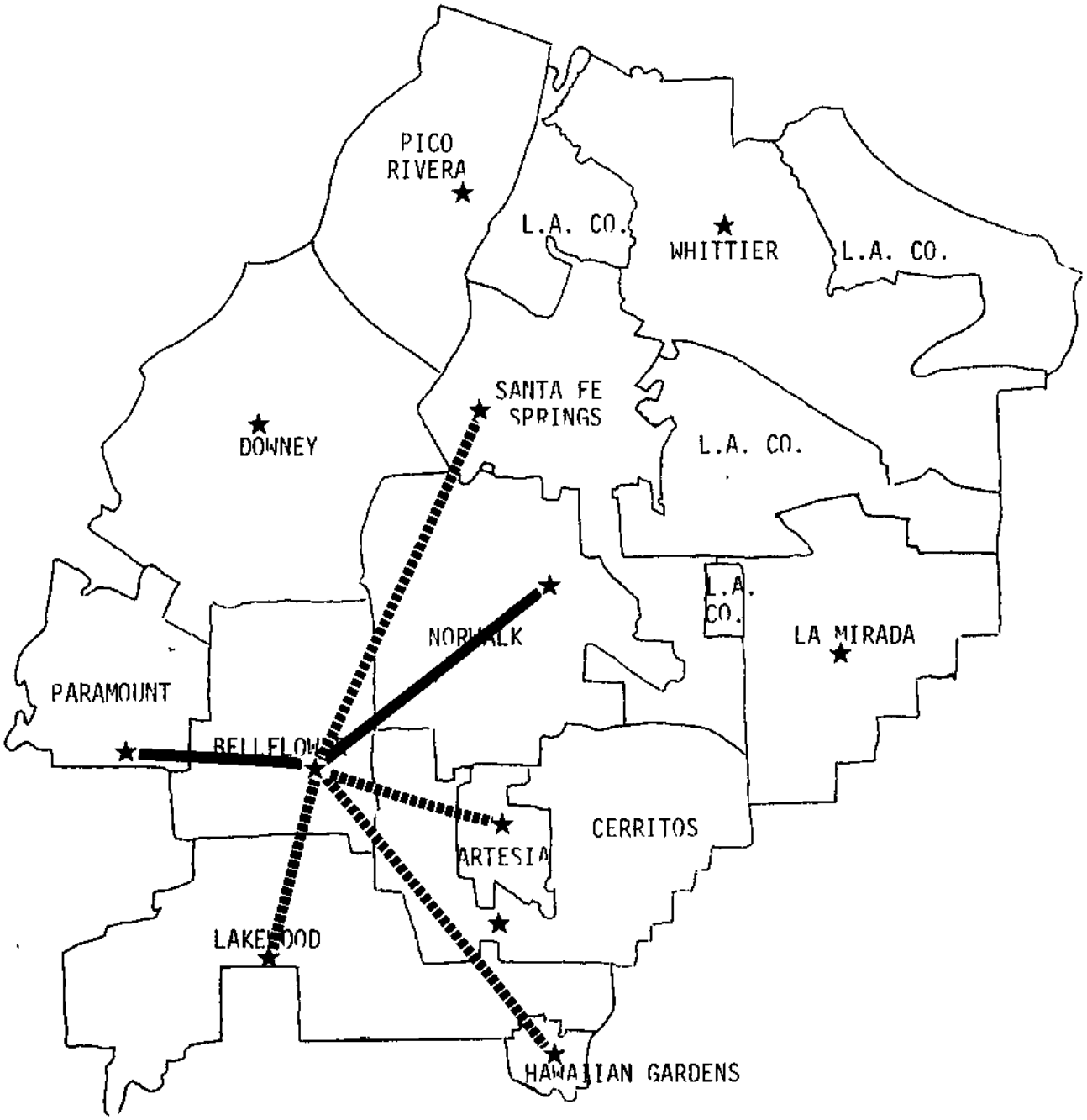


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Bellflower's City Hall

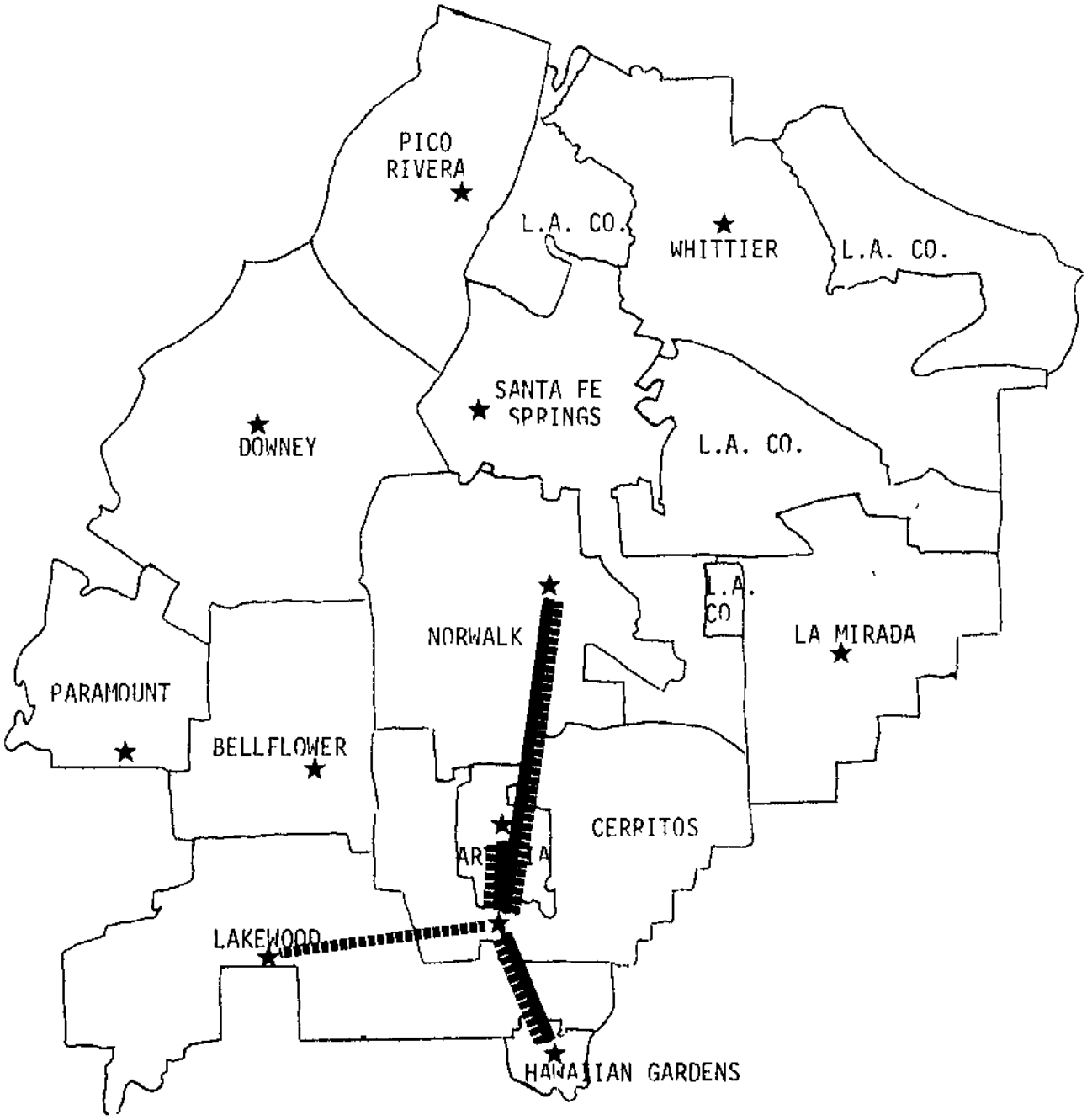


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Cerritos' City Hall

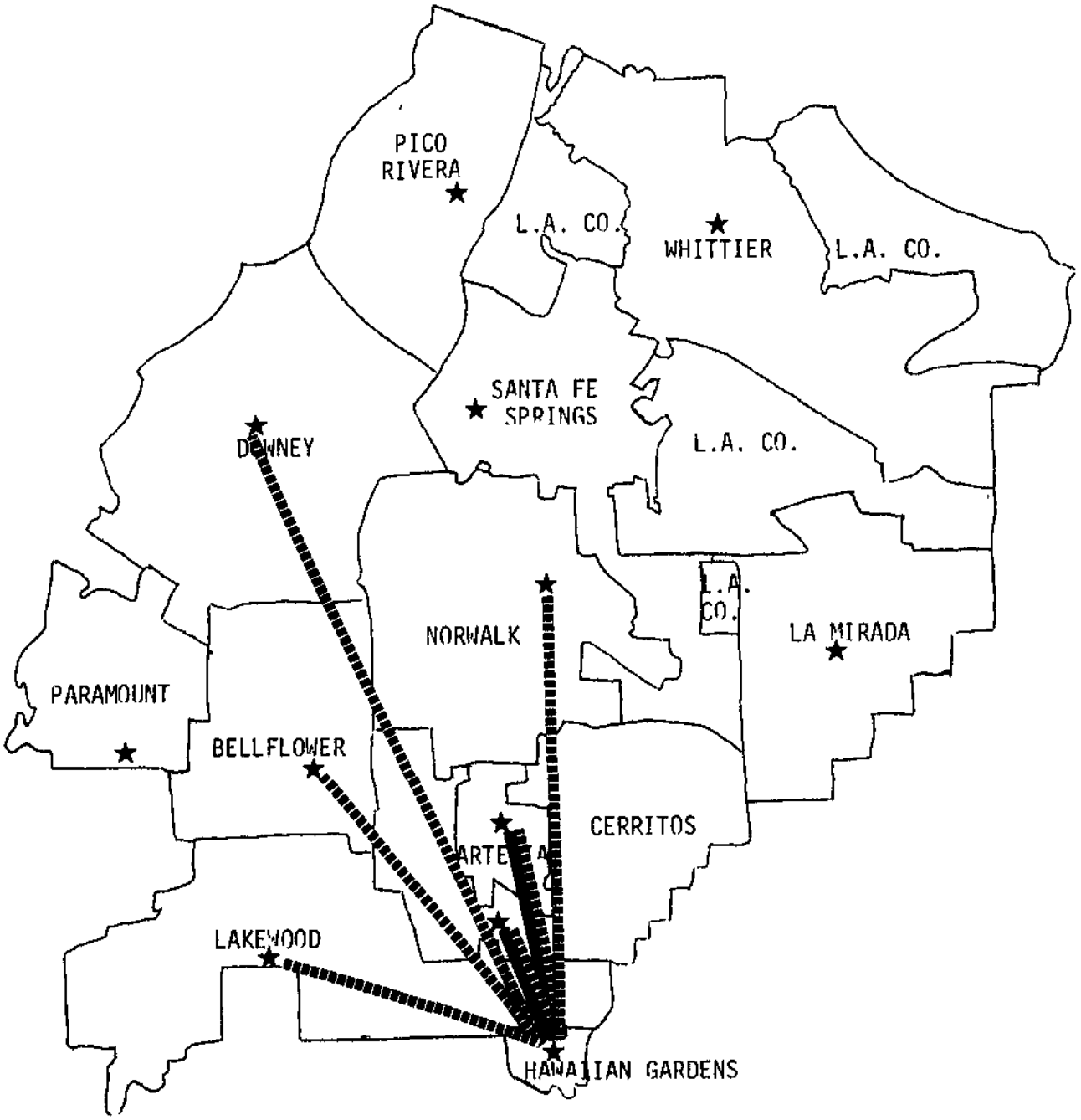


Present Routes and Service

Proposed System (Base Level)

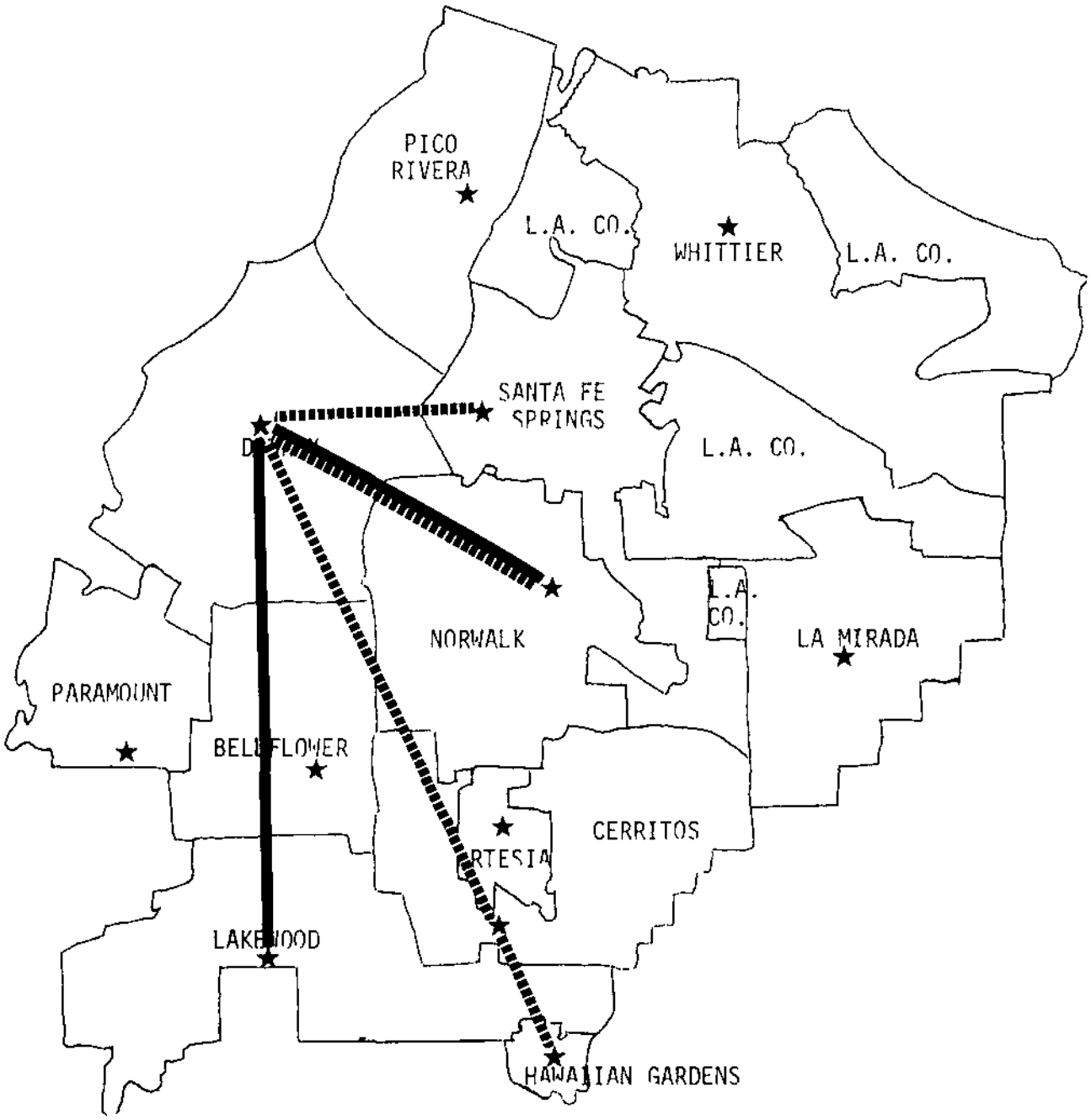
City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Hawaiian Gardens' City Hall



City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Downey's City Hall

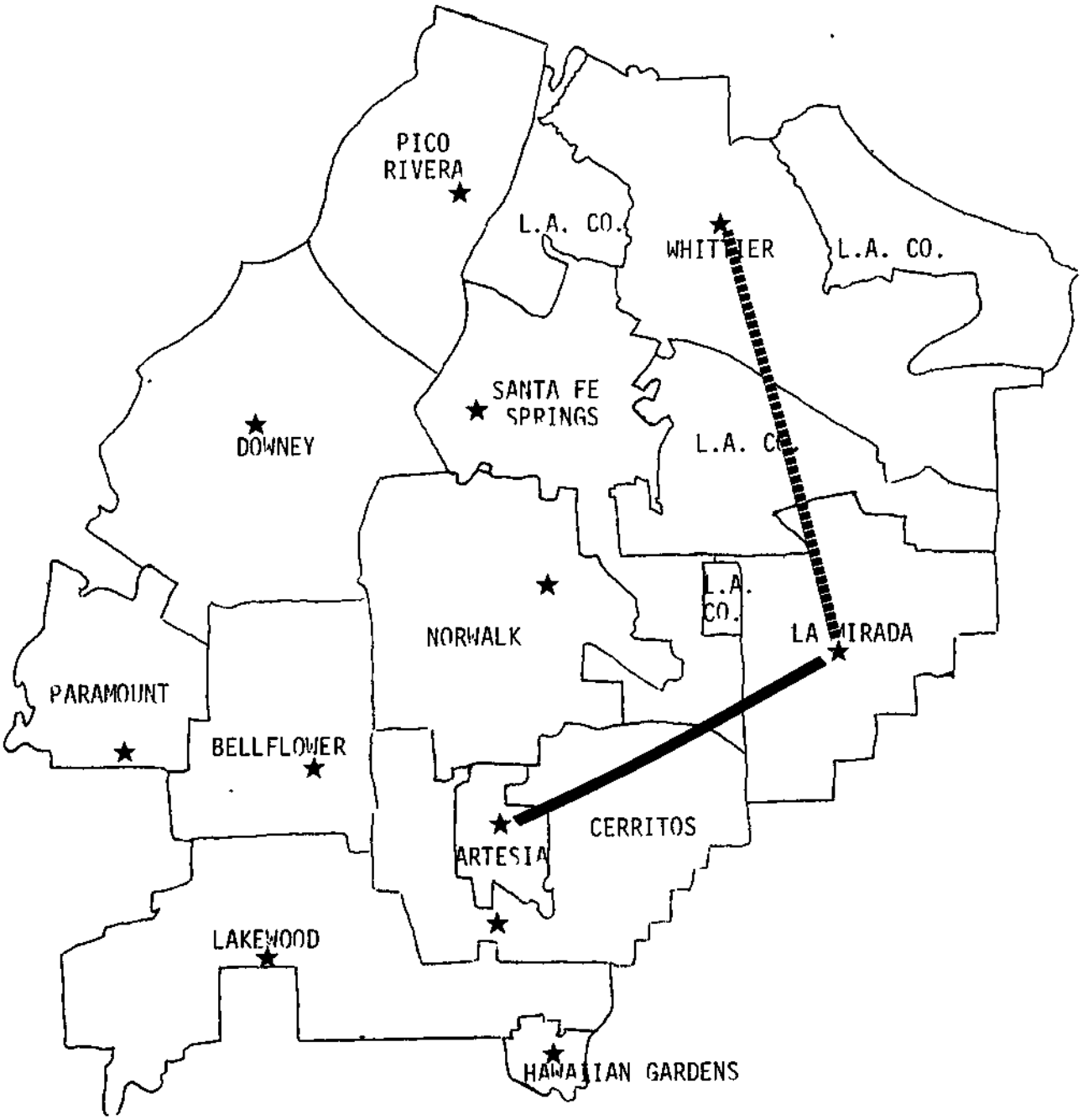


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from La Mirada's City Hall

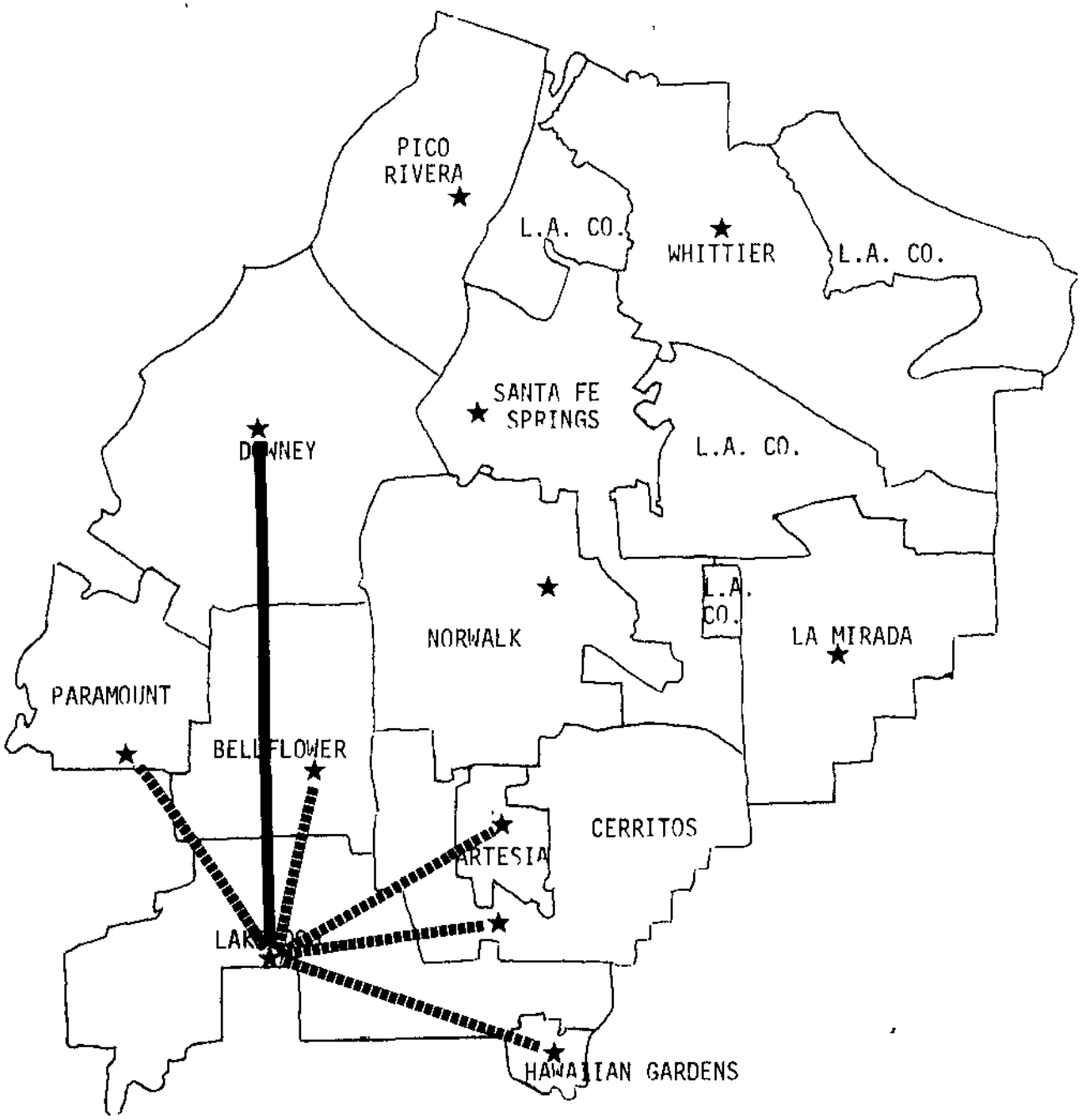


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Lakewood's City Hall

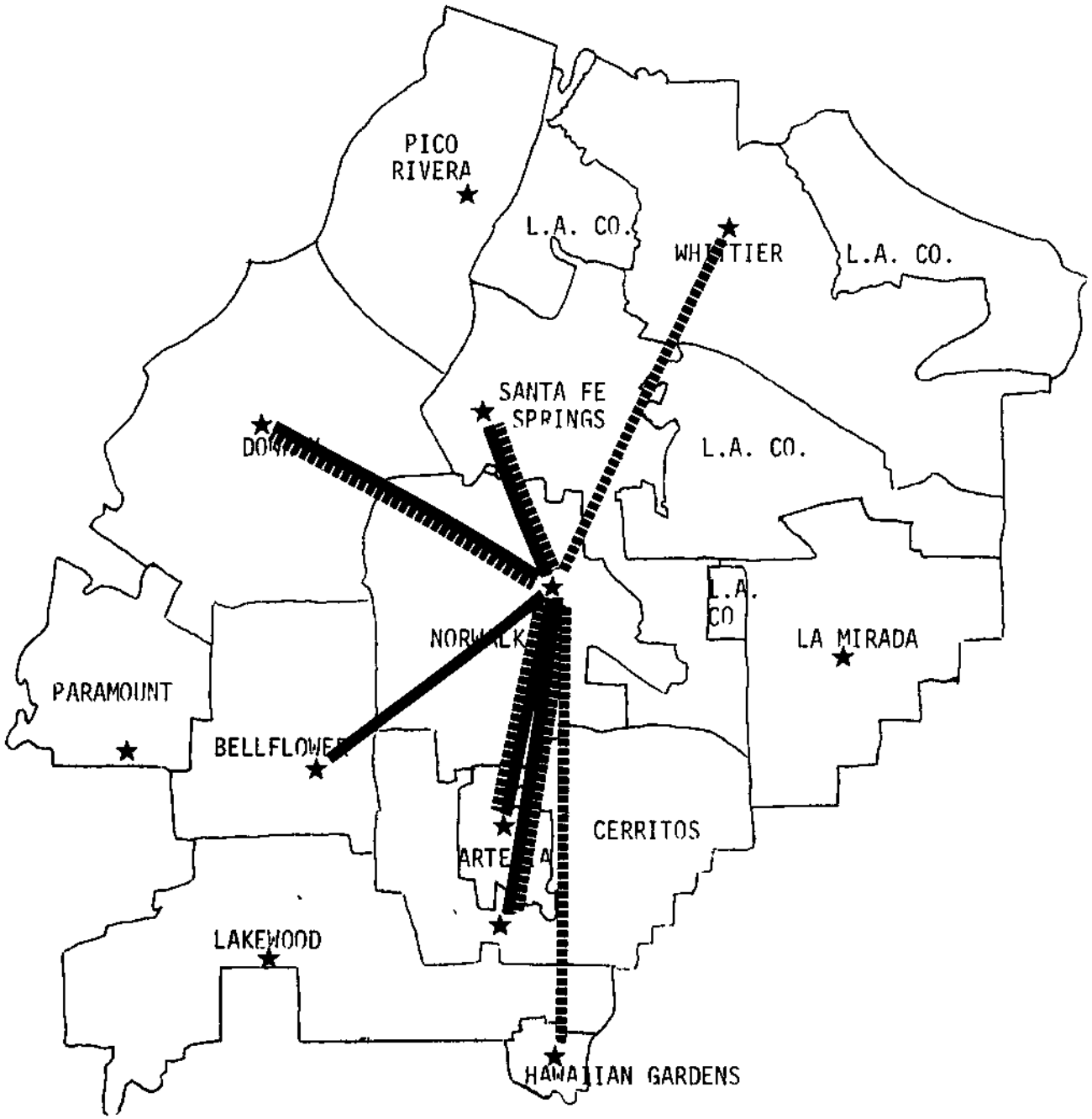


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Norwalk's City Hall

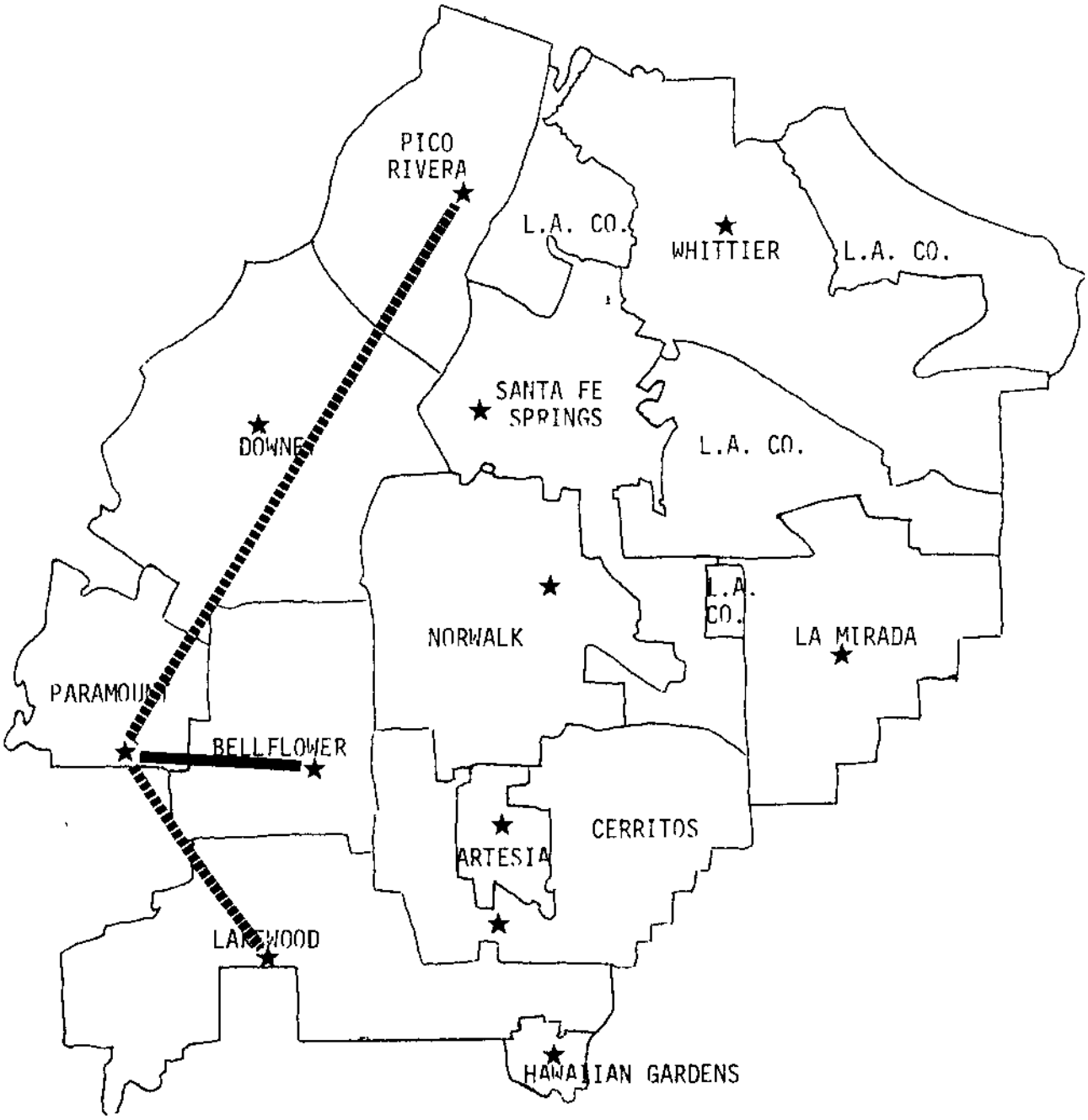


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Paramount's City Hall

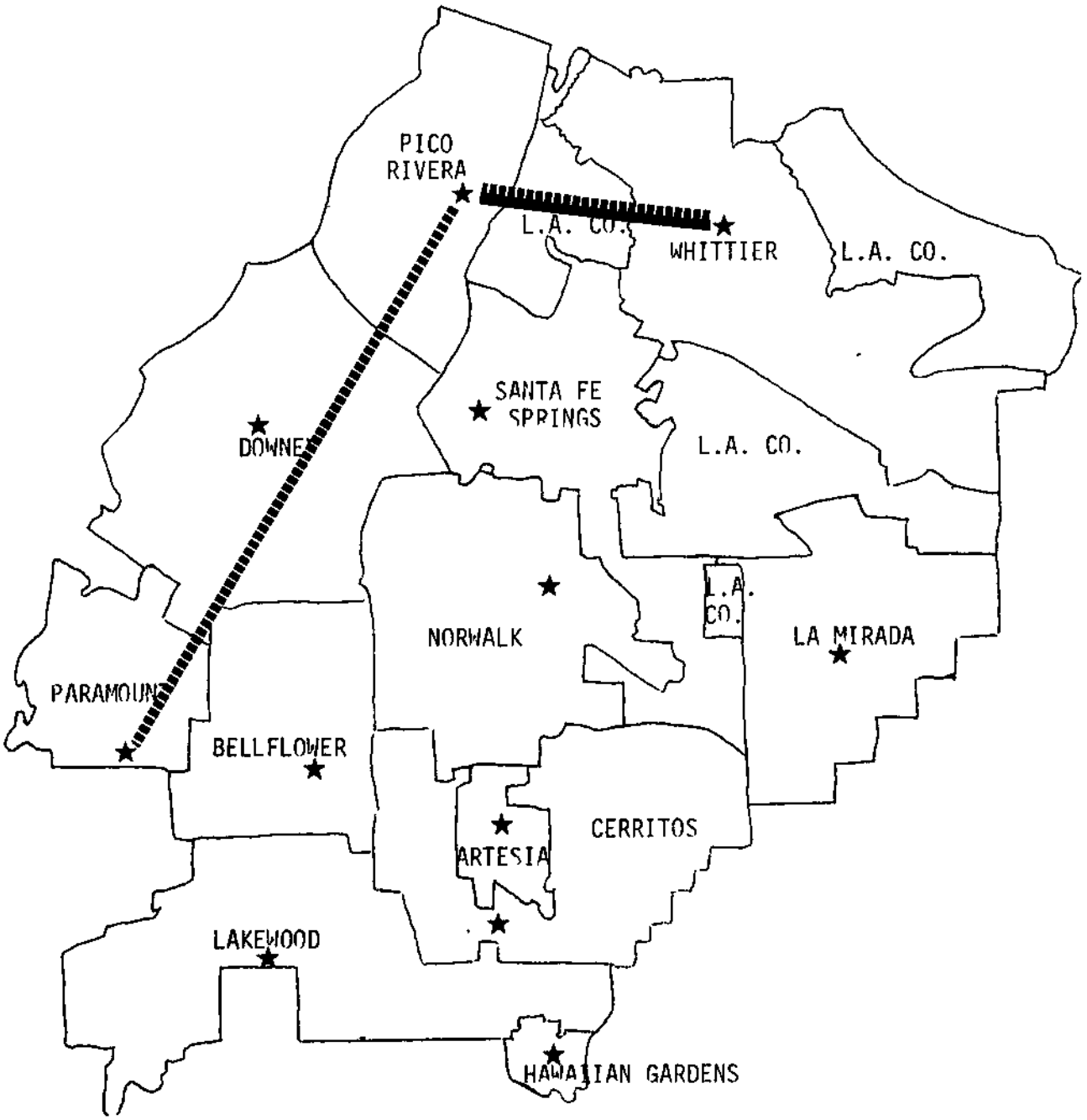


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Pico Rivera's City Hall

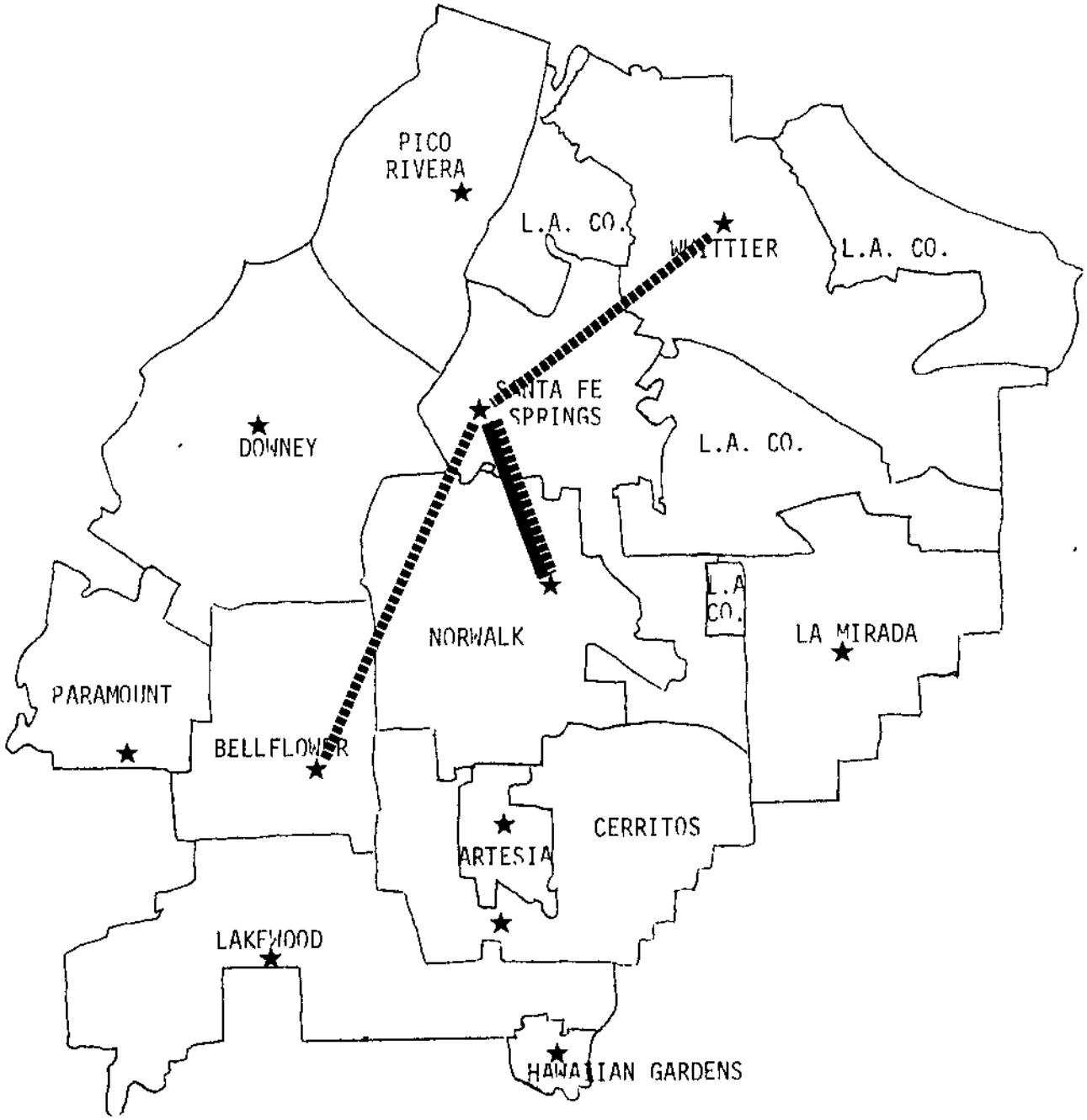


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Santa Fe Springs' City Hall

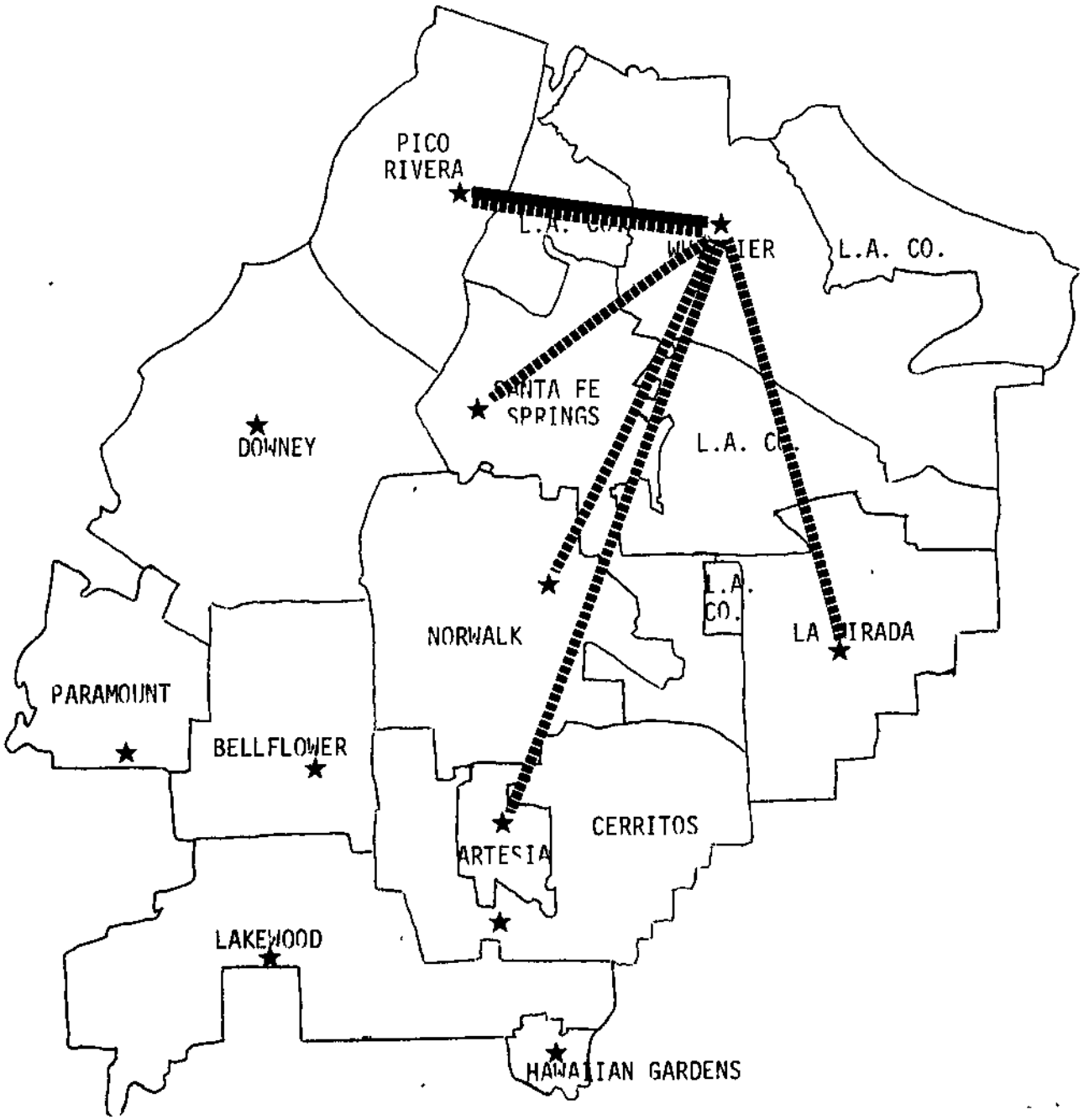


Present Routes and Service

Proposed System (Base Level)

City Halls Accessible by Public Transit within 60 Minutes

Total Travel Time from Whittier's City Hall



Present Routes and Service

Proposed System (Base Level)

APPENDIX C

COMMUNITY REVIEW PROCESS
Mid-Cities Area

Technical Staff Meetings

August	15, 1974	Cerritos
	16	Lakewood
	21	Paramount
	21	Hawaiian Gardens
	22	Long Beach Public Transportation Company
	23	Santa Fe Springs
	23	La Mirada
	26	Downey
	26	Norwalk
	28	Whittier
	29	Bellflower
	29	Artesia
September	5, 1974	Lakewood
	6	Santa Fe Springs
	9	Hawaiian Gardens
	9	Cerritos
	10	Downey
	11	Norwalk
	12	Paramount
	12	Whittier
	13	Bellflower
	13	La Mirada
January	30, 1975	Cerritos
	31	Downey
February	4, 1975	Lakewood
	6	Santa Fe Springs
	6	Paramount
	7	Downey
	11	Artesia
	11	Bellflower
	11	Hawaiian Gardens
	13	La Mirada
	20	Whittier
	25	Pico Rivera

City Council Meetings

March	11, 1975	Lakewood
	18	Paramount
April	29	Whittier

Community Meetings (two sessions each)

February	20, 1975	Lakewood
	26	Santa Fe Springs
March	6	Cerritos*
	26	Whittier
April	3	Norwalk

Other Meetings

February	24, 1975	Downey Chamber of Commerce
March	12	Norwalk Chamber of Commerce
	20	Cerritos Regional Transportation Committee
April	8	Cerritos Sierra Club
	10	Santa Fe Springs Chamber of Commerce
	17	Parnell Park Senior Citizens
	21	Bellflower Coordinating Council
	21	South Whittier Action Council
	25	Gunn Park Senior Citizens
	29	St. Bruno's Senior Citizens
May	8	Bell Gardens-Commerce Rotary Club

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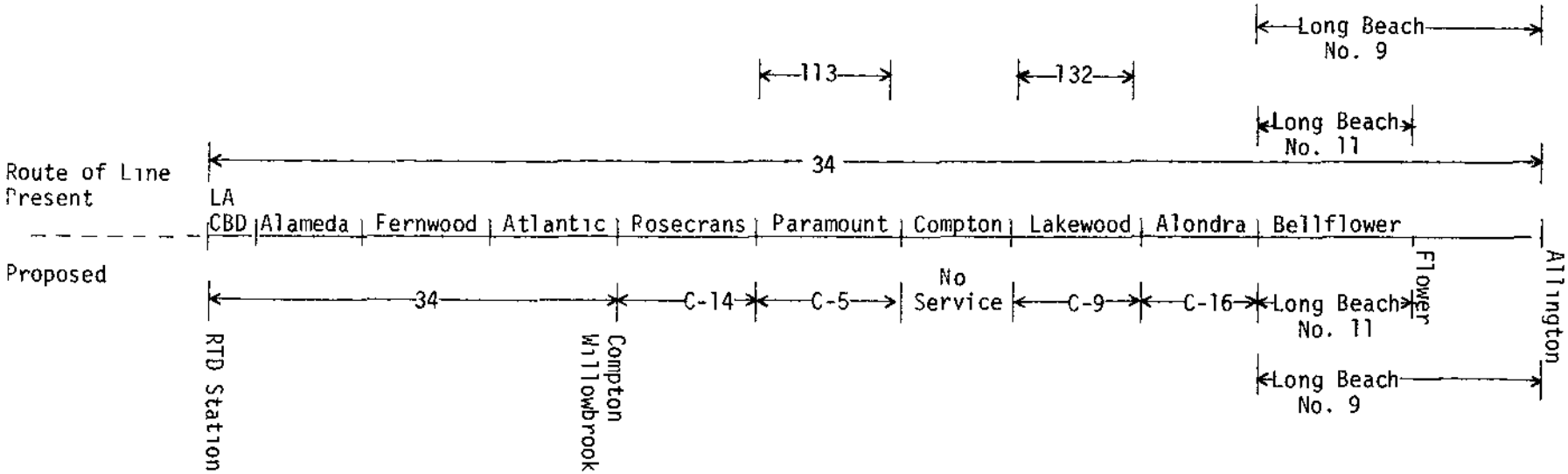
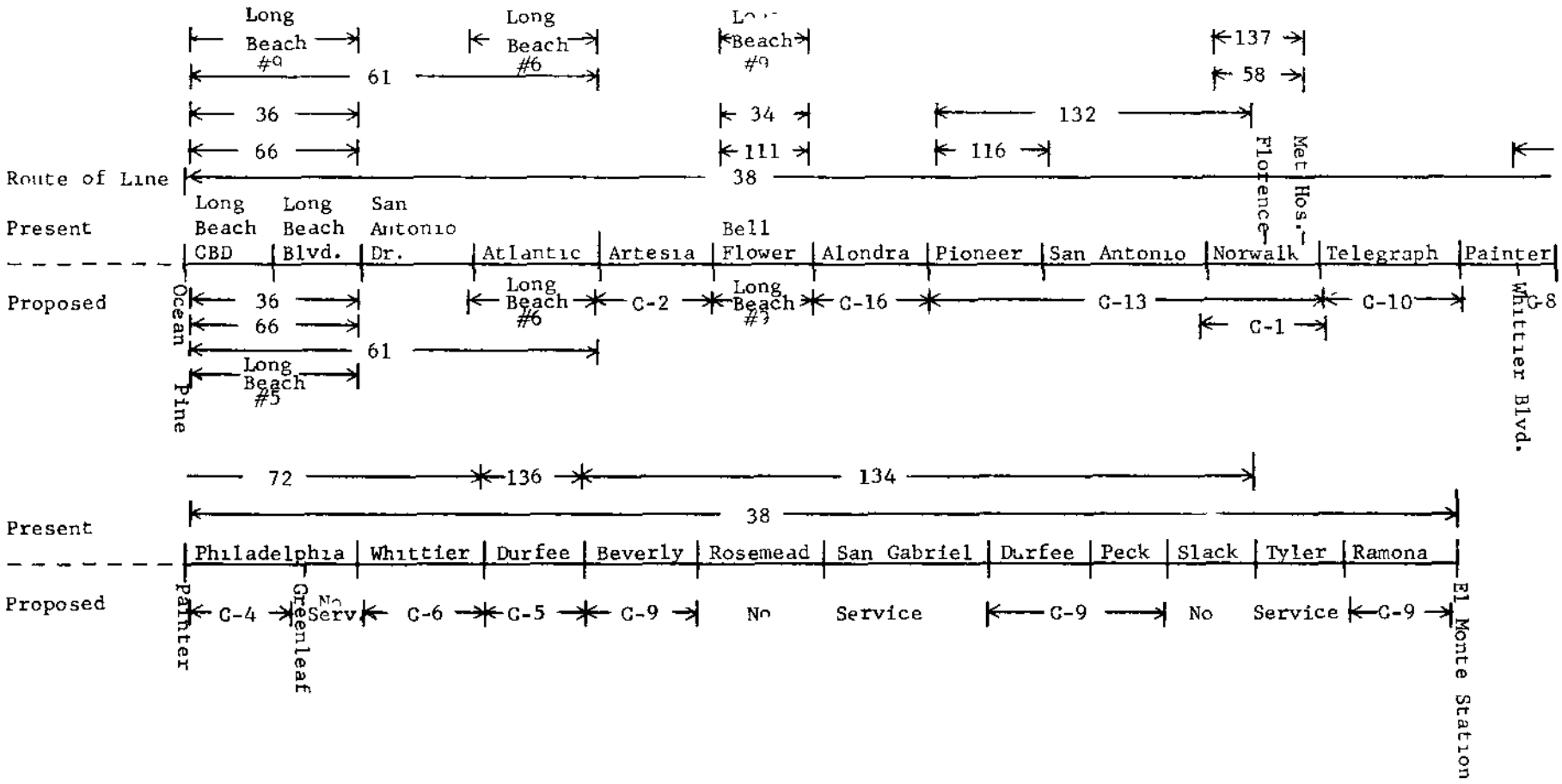
* (In conjunction with the Cities of Artesia and La Mirada)

APPENDIX D

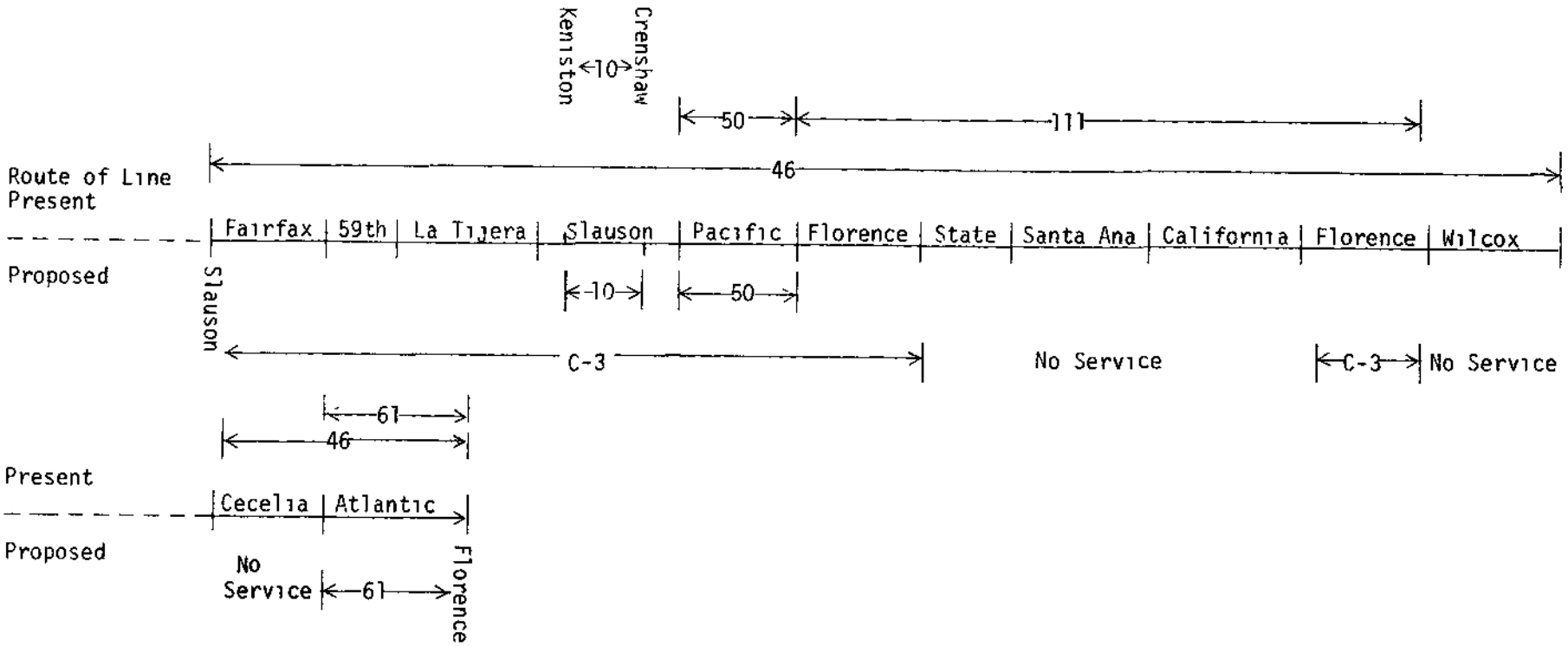
LINE 34


Long Beach
No. 9
113
132
Long Beach
No. 11
Route of Line
Present
34
LA
CBD
Alameda
Fernwood
Atlantic
Rosecrans
Paramount
Compton
Lakewood
Alondra
Bellflower
Proposed
34
C-14
C-5
No
Service
C-9
C-16
Long Beach
No. 11
Flower
Allington
RTD Station
Compton
Willowbrook
Long Beach
No. 9

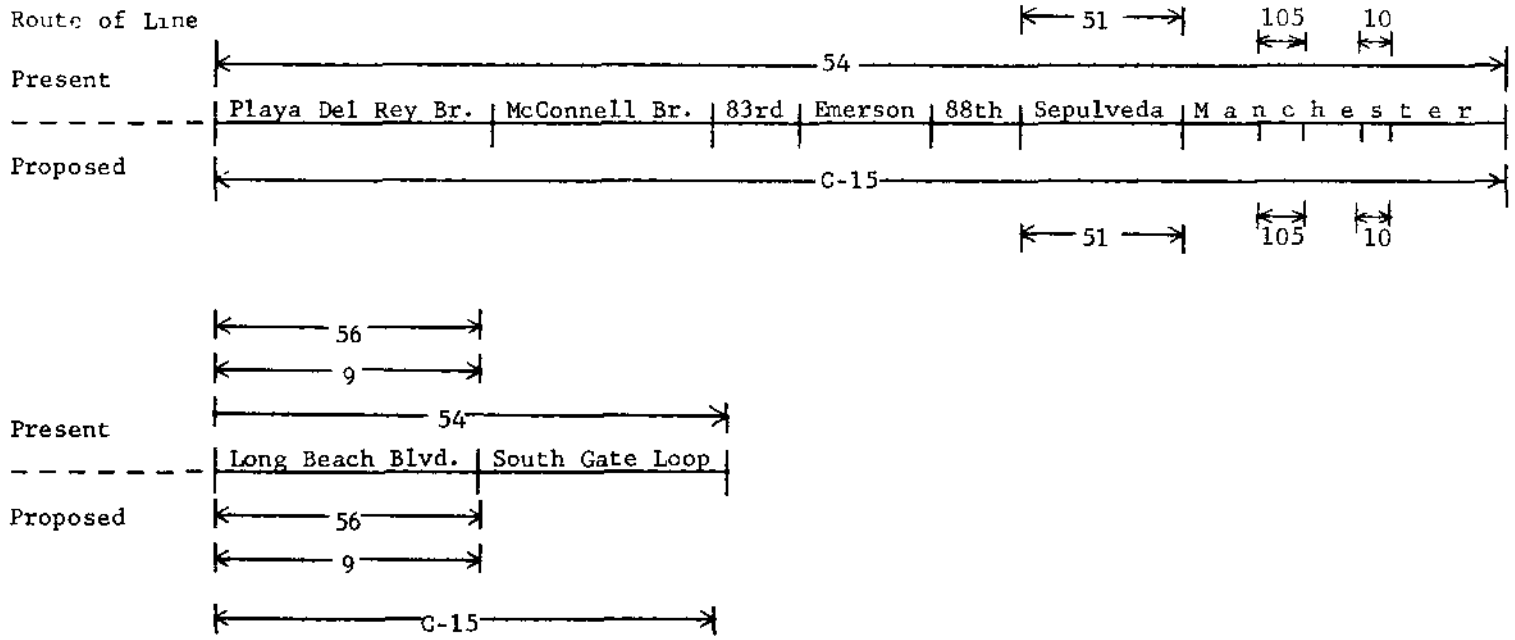
LINE 38


Long Beach #9
Long Beach #6
Long Beach #9
137
58
61
36
34
132
66
111
116
Route of Line
38
Florence
Met Hos.
Present
Long Beach CBD
Long Beach Blvd.
San Antonio Dr.
Atlantic
Artesia
Bell Flower
Alondra
Pioneer
San Antonio
Norwalk
Telegraph
Painter
Whittier Blvd.
Proposed
Ocean
Pine
36
66
61
Long Beach #5
Long Beach #6
C-2
Long Beach #9
C-16
C-13
C-1
C-10
C-8
72
136
134
38
Present
Philadelphia
Whittier
Durfee
Beverly
Rosemead
San Gabriel
Durfee
Peck
Slack
Tyler
Ramona
Proposed
Painter
Greenleaf
C-4
No Serv
C-6
C-5
C-9
No Service
C-9
No Service
C-9
El Monte Station

LINE 46

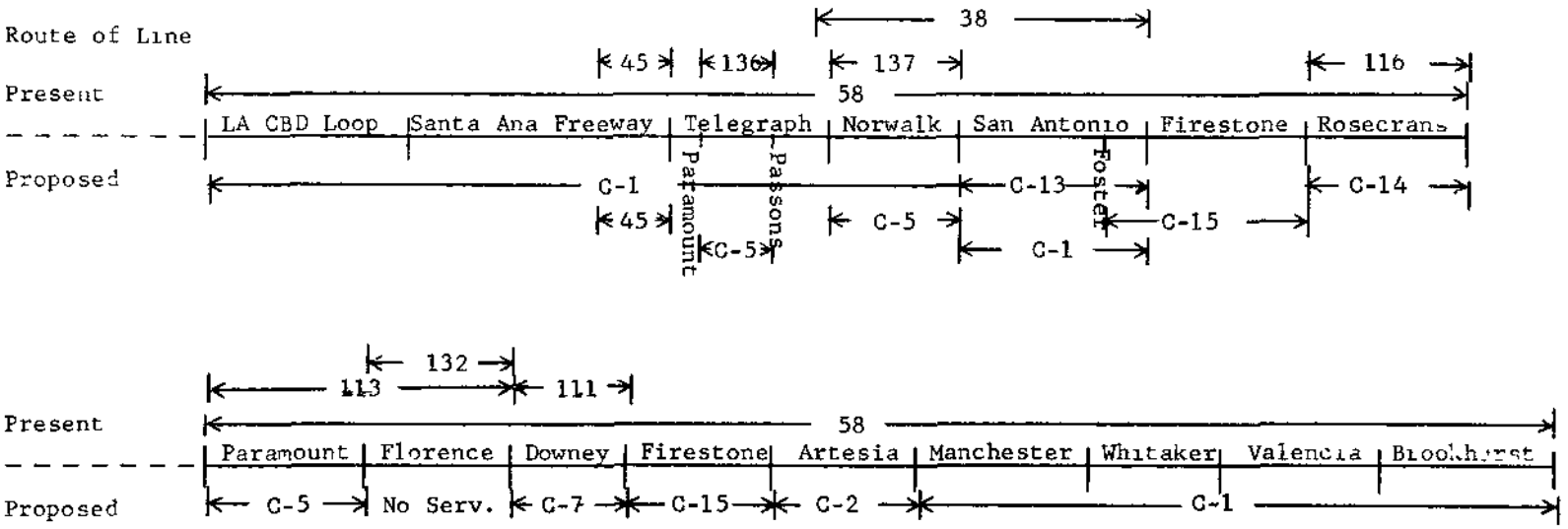

Kenıston
10
Crenshaw
50
111
Route of Line
Present
46
Fairfax
59th
La Tijera
Slauson
Pacific
Florence
State
Santa Ana
California
Florence
Wilcox
Proposed
Slauson
10
50
C-3
No Service
C-3
No Service
61
46
Present
Cecelia
Atlantic
Proposed
No
Service
61
Florence

LINE 54


Route of Line
51
105
10
Present
54
Playa Del Rey Br.
McConnell Br.
83rd
Emerson
88th
Sepulveda
M a n c h e s t e r
Proposed
C-15
51
105
10
56
9
Present
54
Long Beach Blvd.
South Gate Loop
Proposed
56
9
C-15

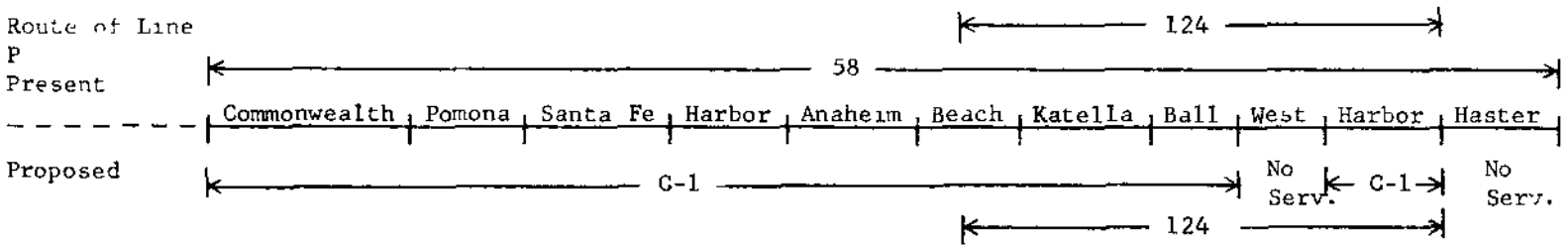
LINE 58

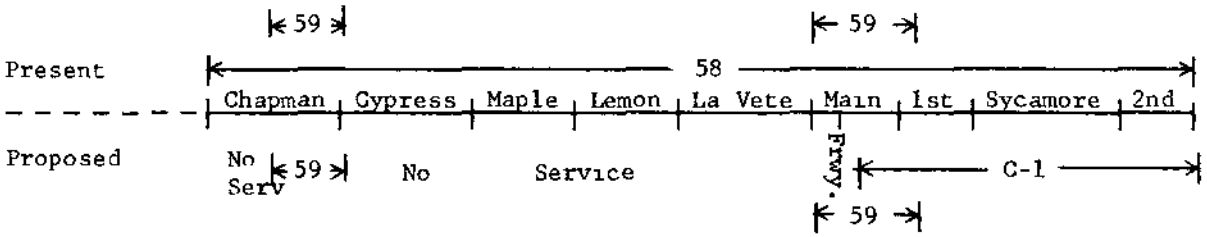
(All Branches)



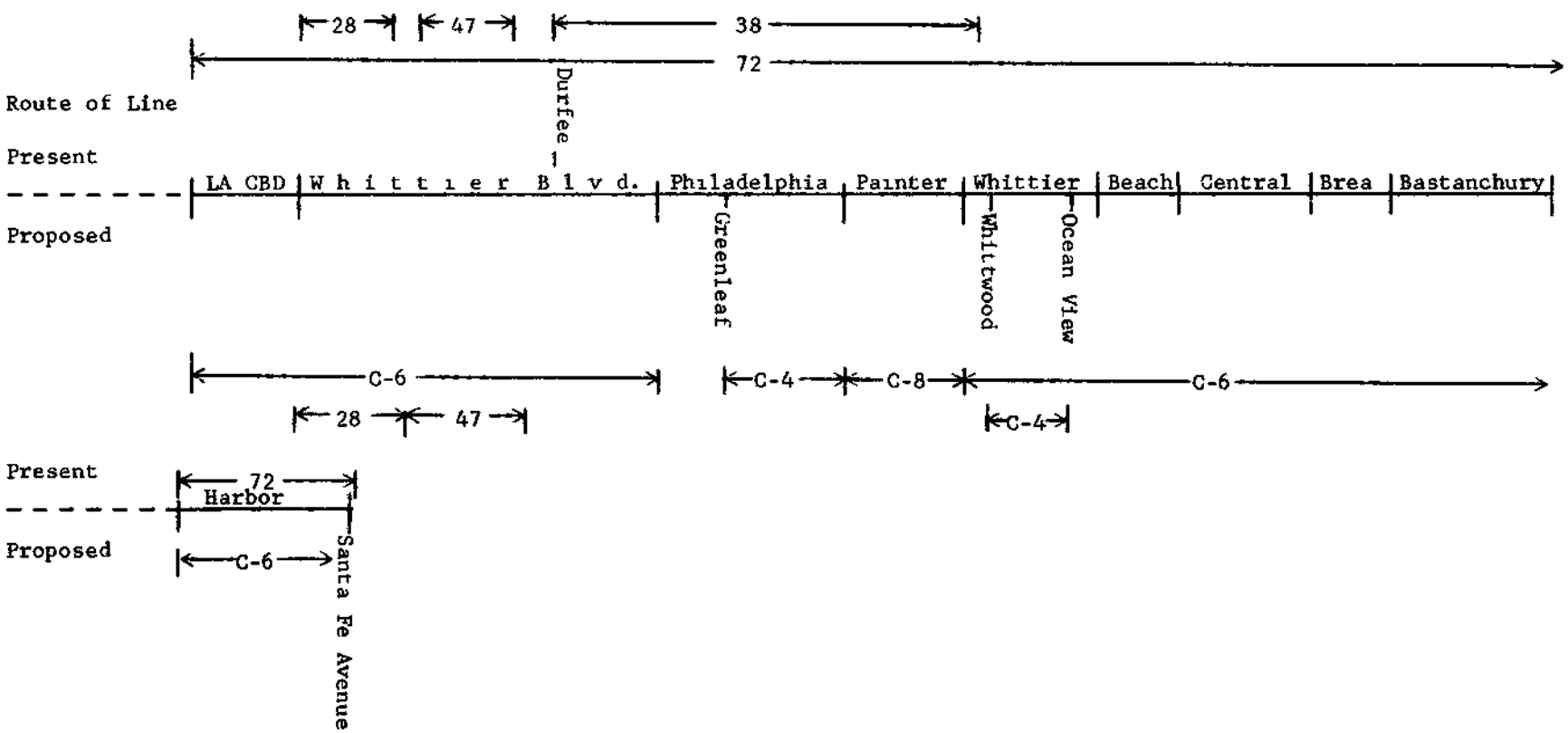
LINE 58

(All Branches)
Cont.

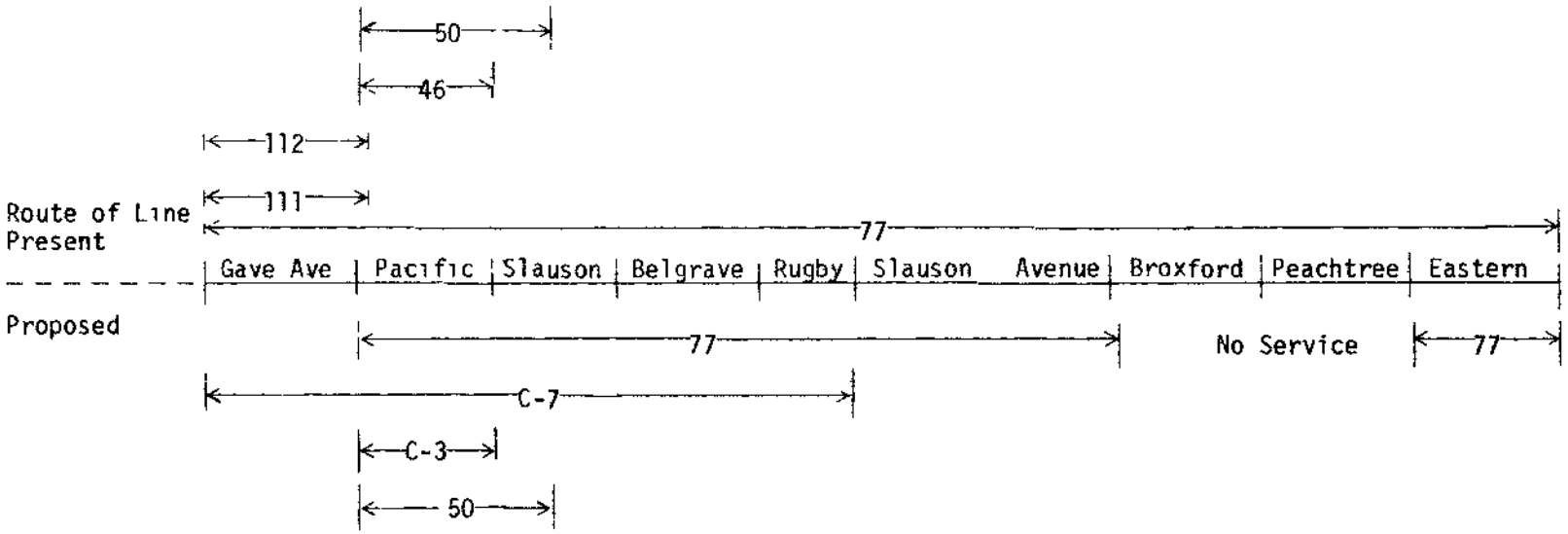




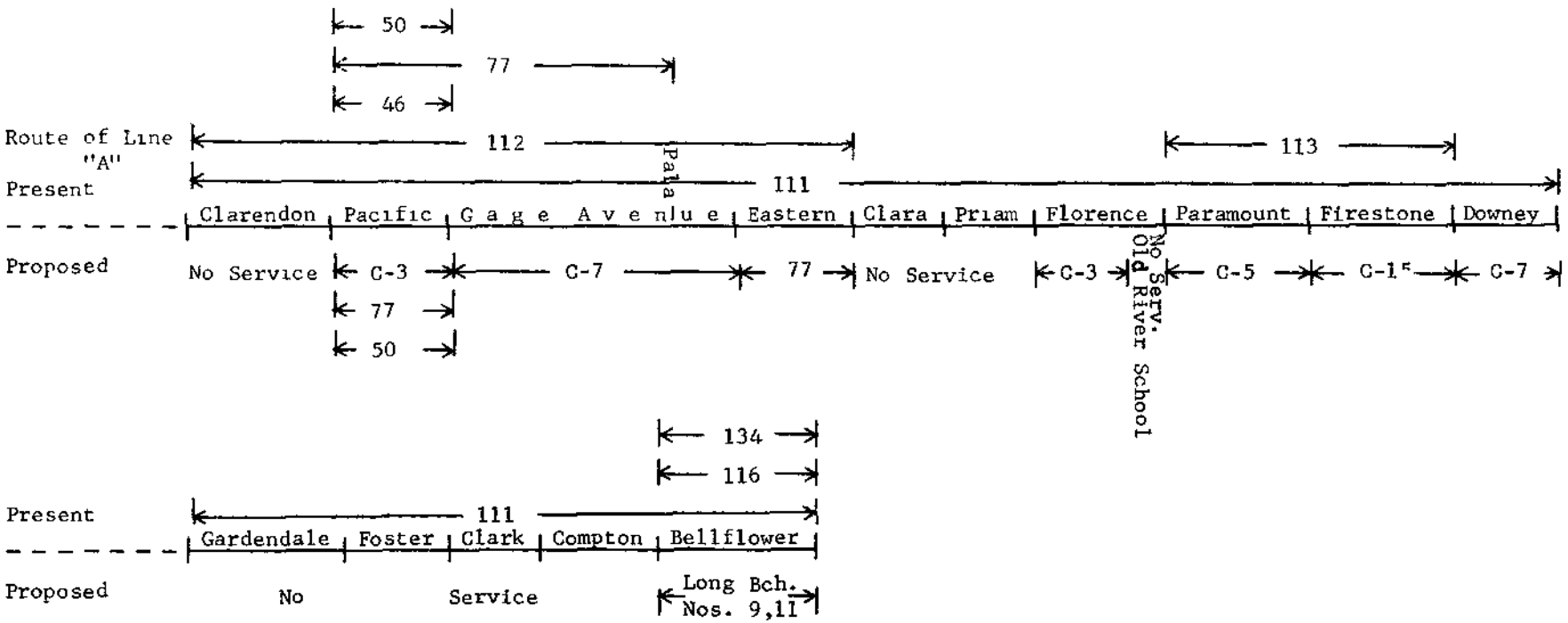
LINE 72


28
47
38
72
Durfee
Route of Line
Present
LA CBD
Whittier Blvd.
Philadelphia
Painter
Whittier
Beach
Central
Brea
Bastanchury
Proposed
Greenleaf
Whittwood
Ocean View
C-6
C-4
C-8
C-6
28
47
C-4
Present
72
Harbor
Proposed
C-6
Santa Fe Avenue

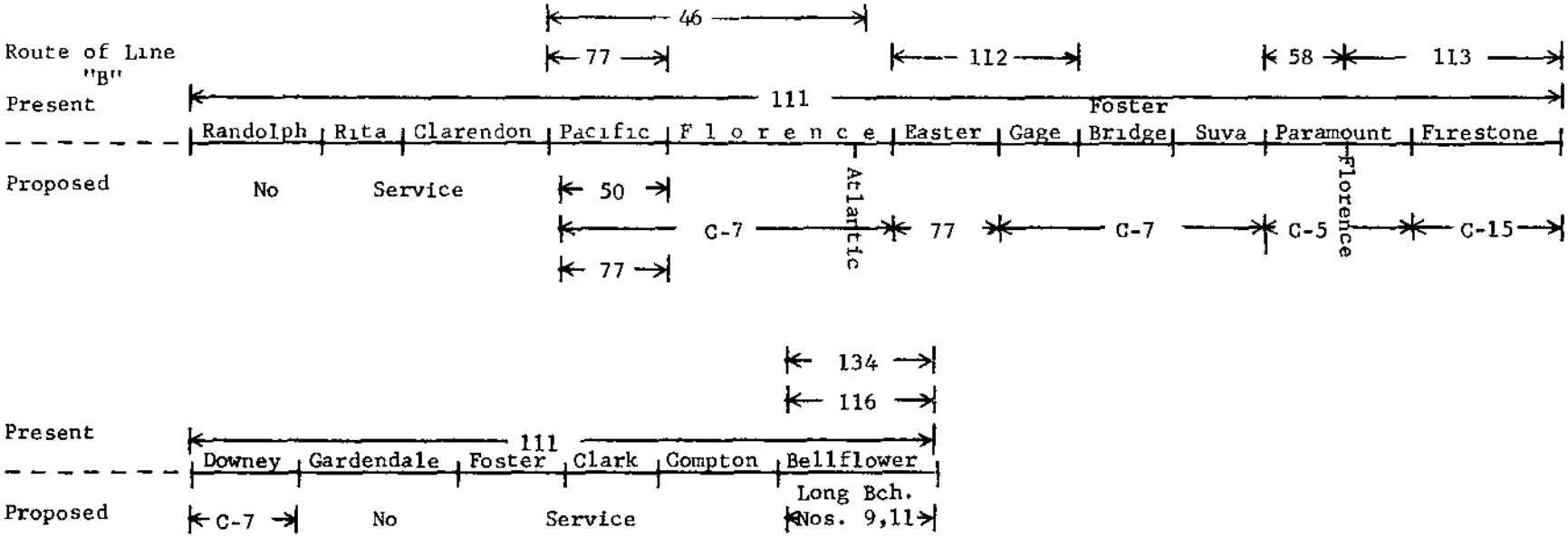
LINE 77


50
46
112
111
Route of Line
Present
77
Gave Ave
Pacific
Slauson
Belgrave
Rugby
Slauson Avenue
Broxford
Peachtree
Eastern
Proposed
77
No Service
77
C-7
C-3
50

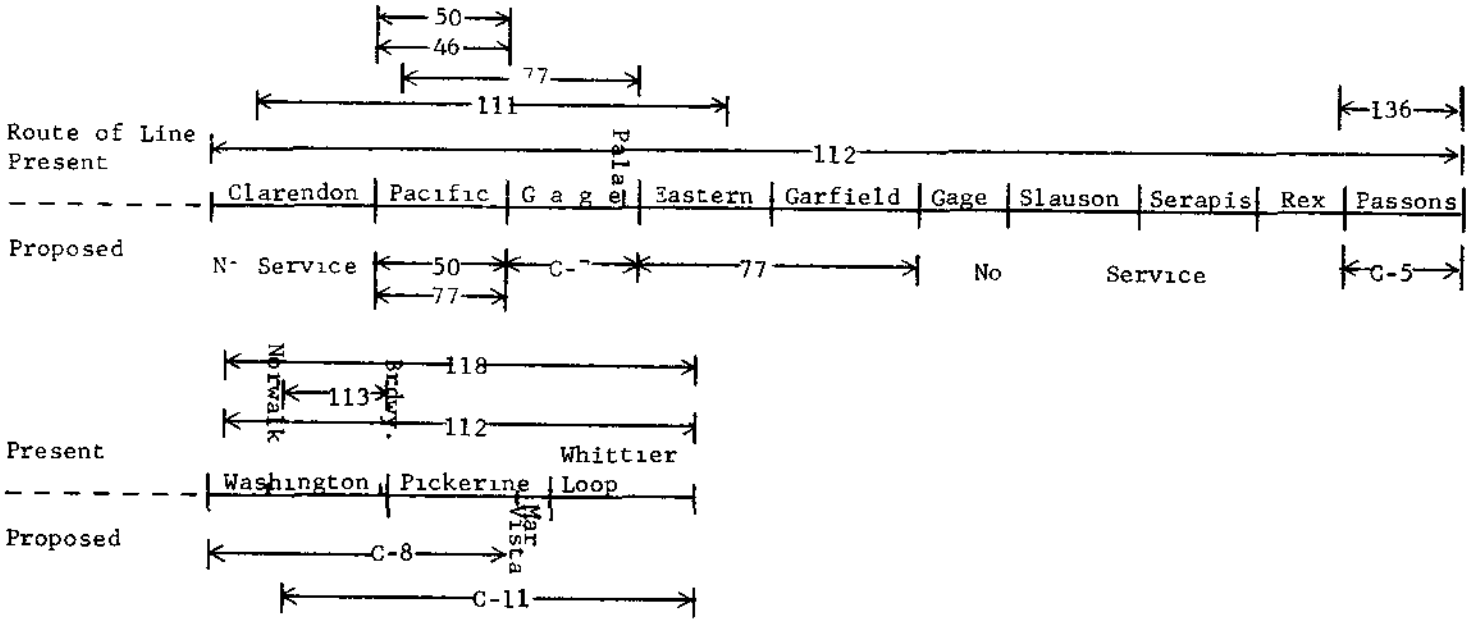
LINE 111


50
77
46
Route of Line "A"
112
113
Present
111
Clarendon
Pacific
Gage Avenue
Eastern
Clara
Priam
Florence
Paramount
Firestone
Downey
Proposed
No Service
C-3
C-7
77
No Service
C-3
C-5
C-15
C-7
77
50
No Serv. Old River School
134
116
Present
111
Gardendale
Foster
Clark
Compton
Bellflower
Proposed
No
Service
Long Bch. Nos. 9,11

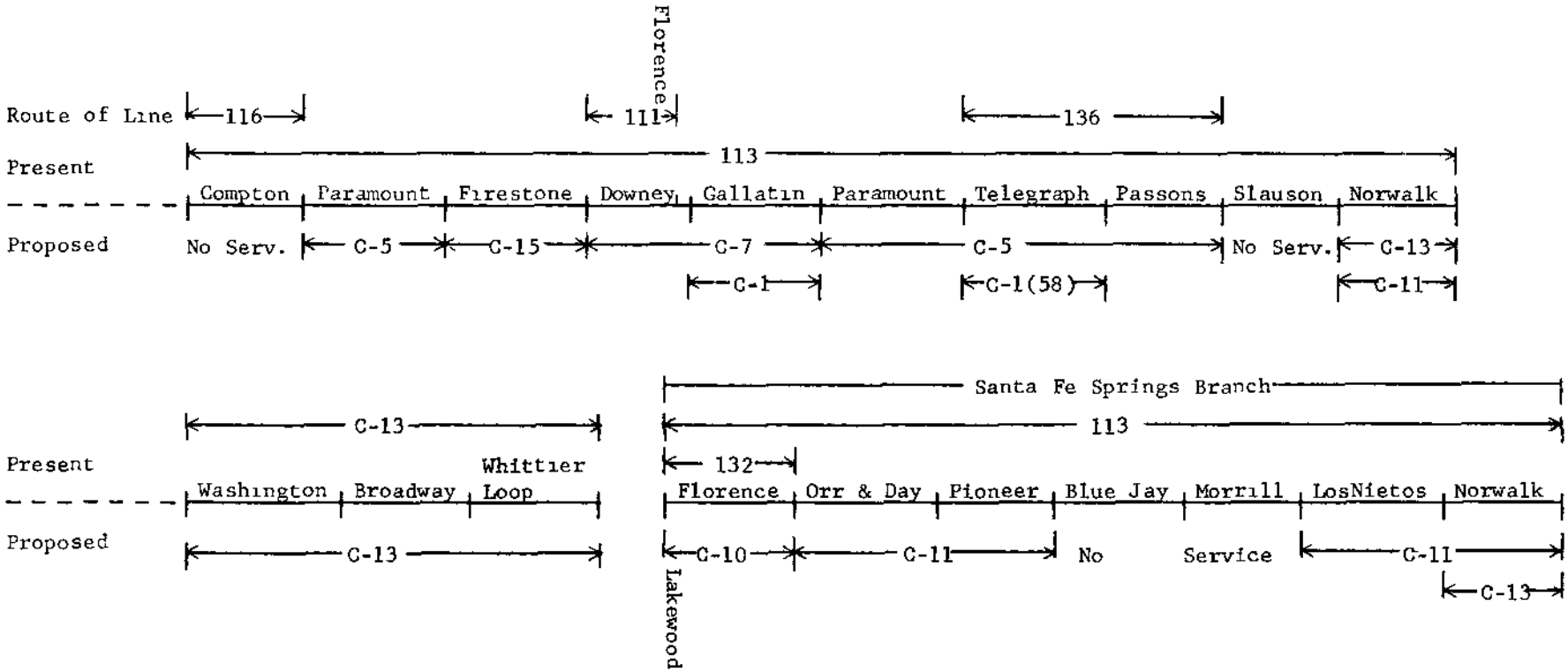
LINE 111


46
Route of Line "B"
77
112
58
113
Present
111
Foster
Randolph
Rita
Clarendon
Pacific
F l o r e n c e
Easter
Gage
Bridge
Suva
Paramount
Firestone
Proposed
No
Service
50
Atlantic
Florence
C-7
77
C-7
C-5
C-15
77
134
116
Present
111
Downey
Gardendale
Foster
Clark
Compton
Bellflower
Long Bch.
Proposed
C-7
No
Service
Nos. 9,11

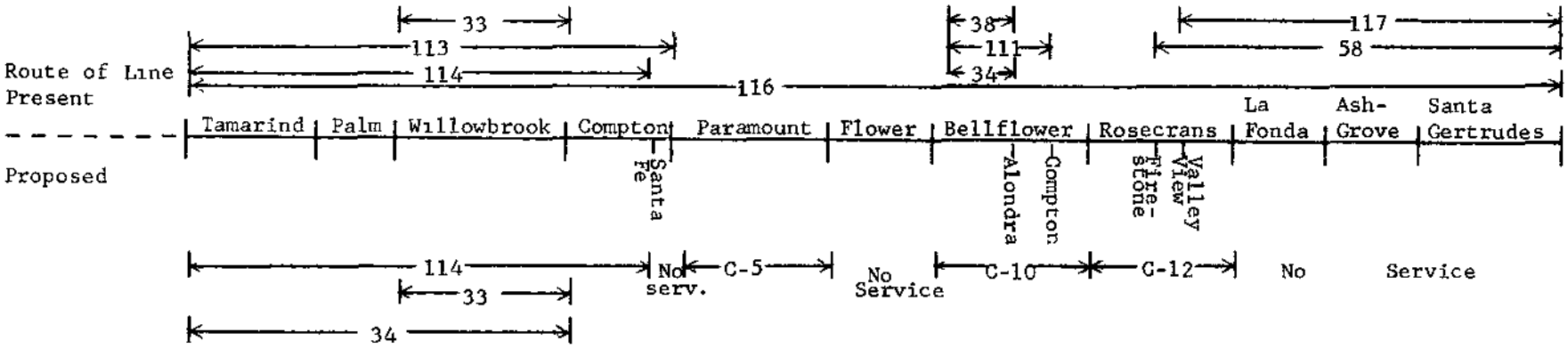
LINE 112


50
46
77
111
136
Route of Line
Present
112
Palace
Clarendon
Pacific
Gage
Eastern
Garfield
Gage
Slauson
Serapis
Rex
Passons
Proposed
N- Service
50
C-
77
No Service
C-5
77
Norwalk
118
Bridwy.
113
112
Present
Whittier
Washington
Pickering
Loop
Mar Vista
Proposed
C-8
C-11

LINE 113

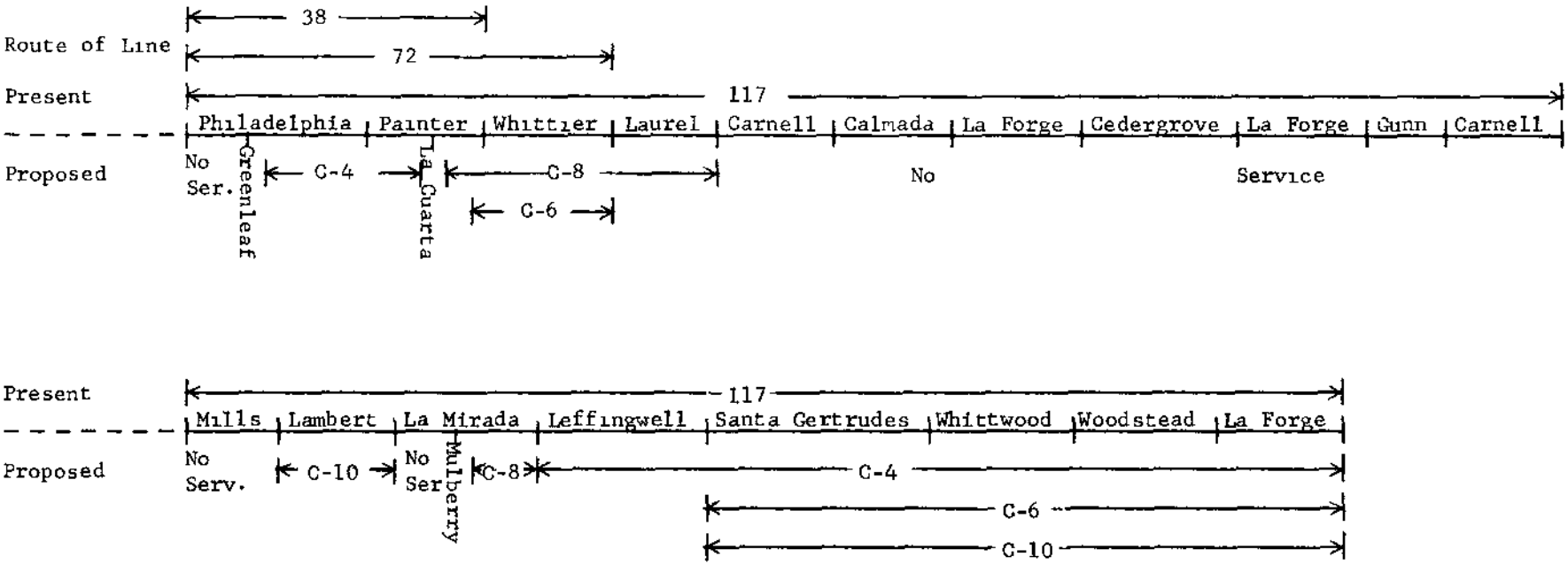

Florence
Route of Line
116
111
136
Present
113
Compton
Paramount
Firestone
Downey
Gallatin
Paramount
Telegraph
Passons
Slauson
Norwalk
Proposed
No Serv.
C-5
C-15
C-7
C-5
No Serv.
C-13
C-1
C-1(58)
C-11
C-13
Present
Washington
Broadway
Whittier Loop
Proposed
C-13
Santa Fe Springs Branch
113
132
Florence
Orr & Day
Pioneer
Blue Jay
Morrill
LosNietos
Norwalk
C-10
C-11
No Service
C-11
C-13
Lakewood

LINE 116


Route of Line
Present
Proposed
33
113
114
116
38
111
34
117
58
Tamarind
Palm
Willowbrook
Compton
Paramount
Flower
Bellflower
Rosecrans
La Fonda
Ash-Grove
Santa Gertrudes
Santa Fe
Alondra
Compton
Firestone
Valley View
114
No serv.
C-5
No Service
C-10
C-12
No Service
33
34

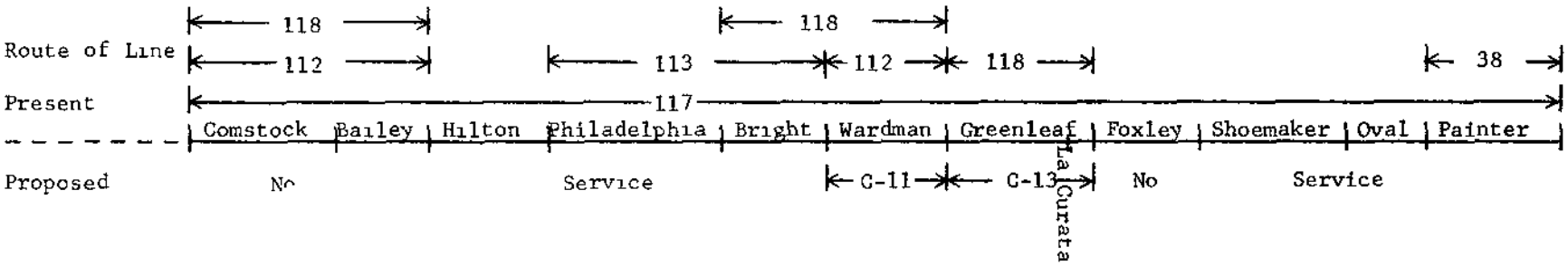
LINE 117

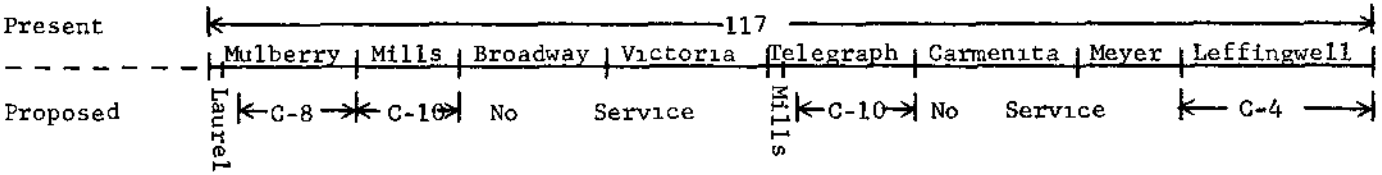
WHITTWOOD BRANCH



LINE 117

SOUTH WHITTIER BRANCH

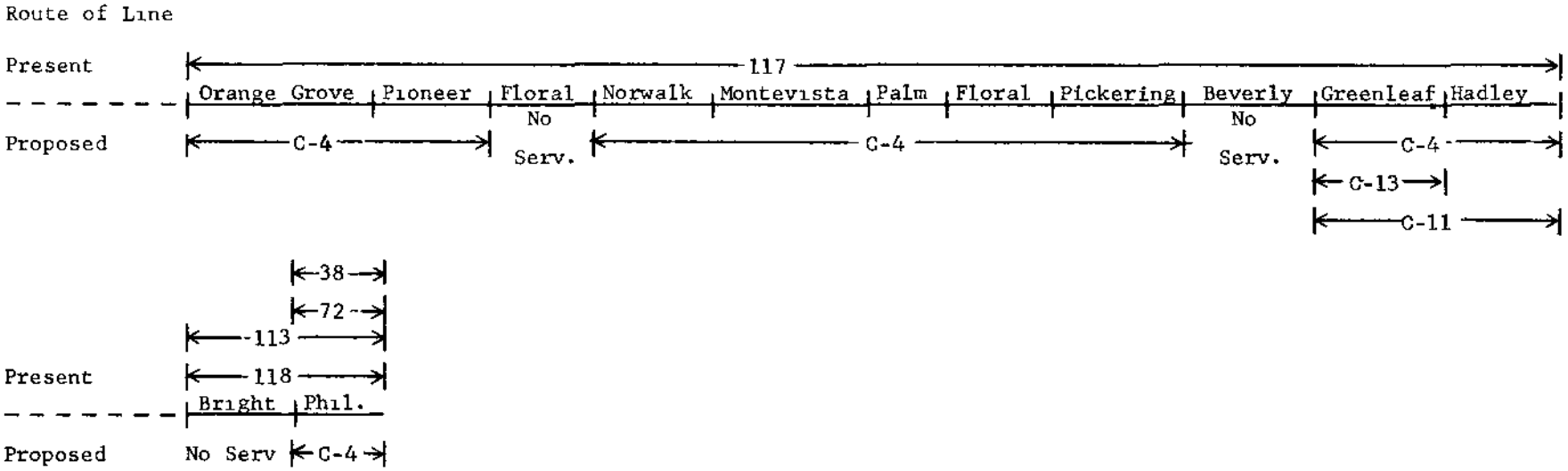




LINE 117

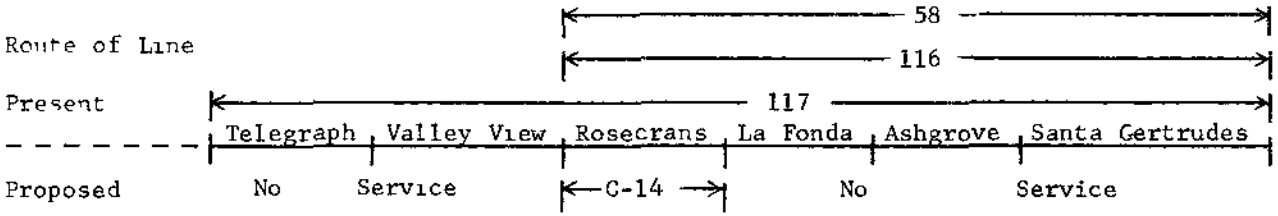
NORTH GREENLEAF BRANCH

Route of Line

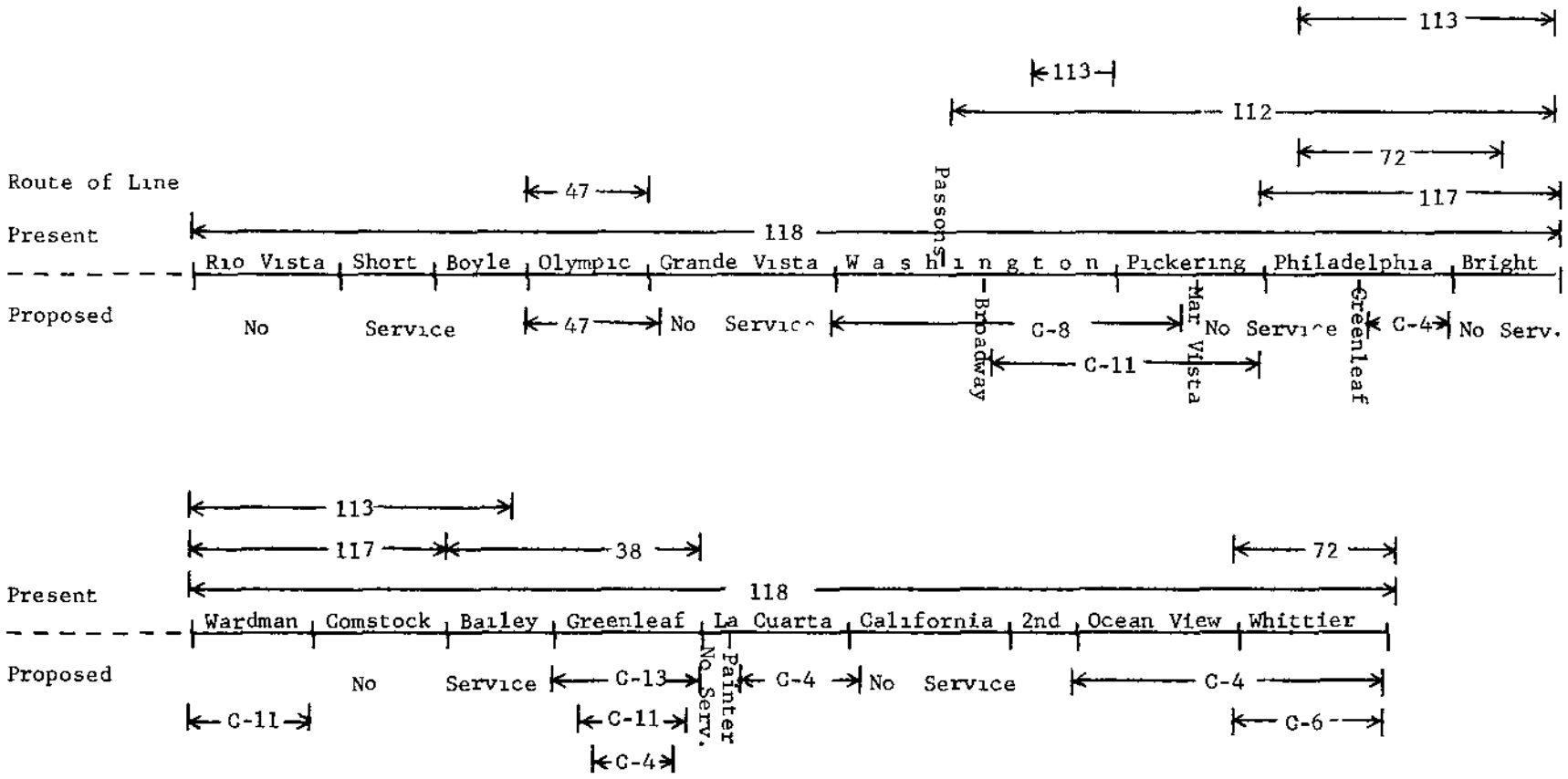


LINE 117

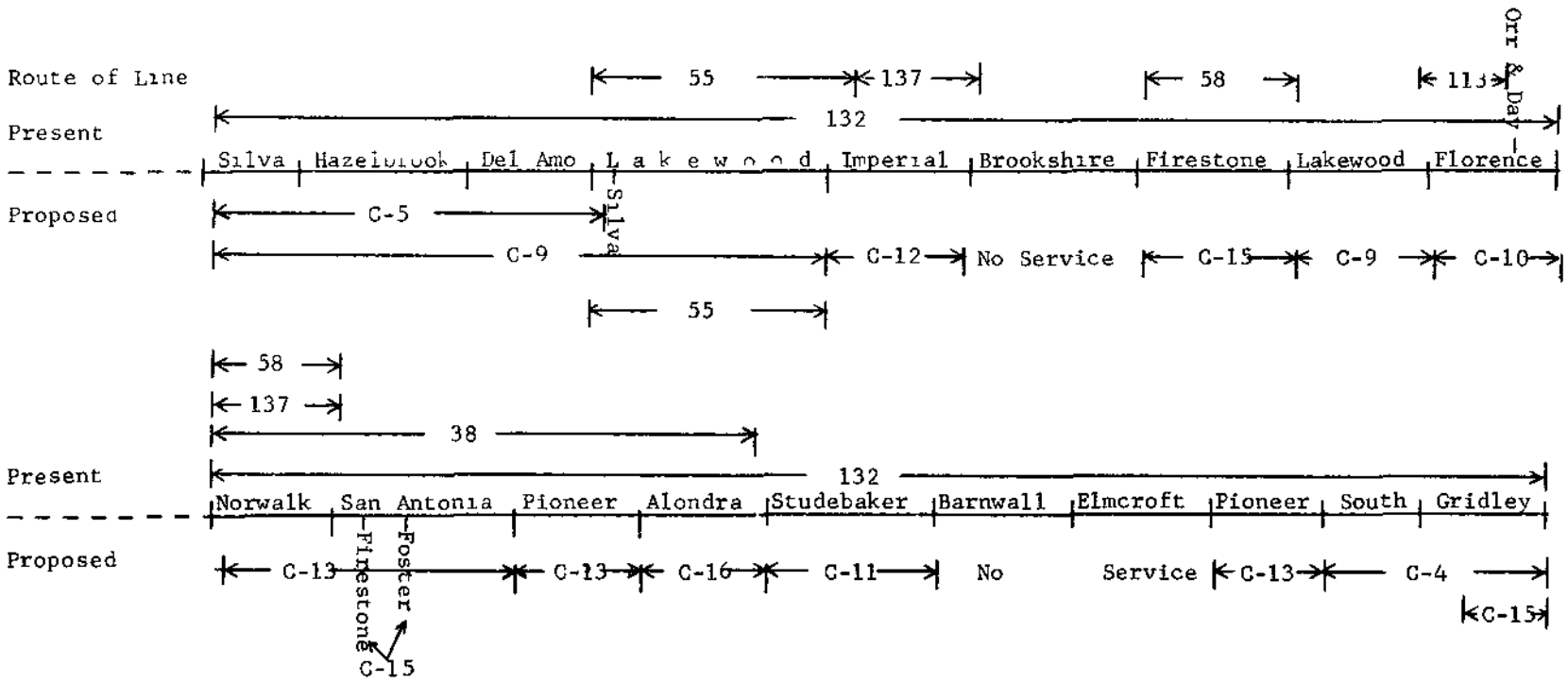
LA MIRADA BRANCH



LINE 118


113
113
112
72
Route of Line
47
117
Passons
Present
118
Rio Vista
Short
Boyle
Olympic
Grande Vista
Washington
Pickering
Philadelphia
Bright
Proposed
No Service
47
No Service
C-8
No Service
C-4
No Serv.
Broadway
C-11
Mar Vista
Greenleaf
113
117
38
72
Present
118
Wardman
Comstock
Bailey
Greenleaf
La Cuarta
California
2nd
Ocean View
Whittier
Proposed
No Service
C-13
No Serv.
Painter
C-4
No Service
C-4
C-11
C-11
C-4
C-6

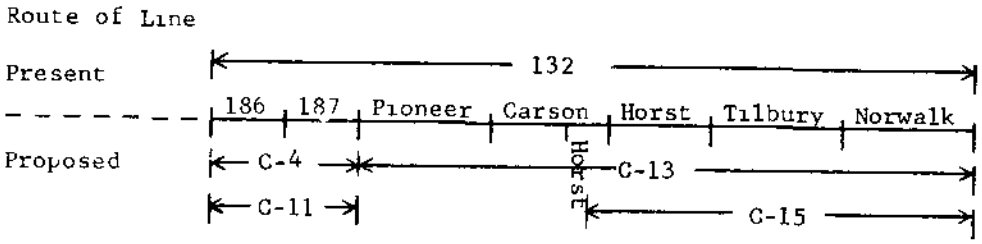
LINE 132


Route of Line
55
137
58
113
Orr & Day
Present
132
Silva
Hazelbrook
Del Amo
Lakewood
Imperial
Brookshire
Firestone
Lakewood
Florence
Proposed
C-5
Silva
C-9
C-12
No Service
C-15
C-9
C-10
55
58
137
38
Present
132
Norwalk
San Antonia
Pioneer
Alondra
Studebaker
Barnwall
Elmcroft
Pioneer
South
Gridley
Proposed
C-13
Firestone
Foster
C-15
C-13
C-16
C-11
No Service
C-13
C-4
C-15

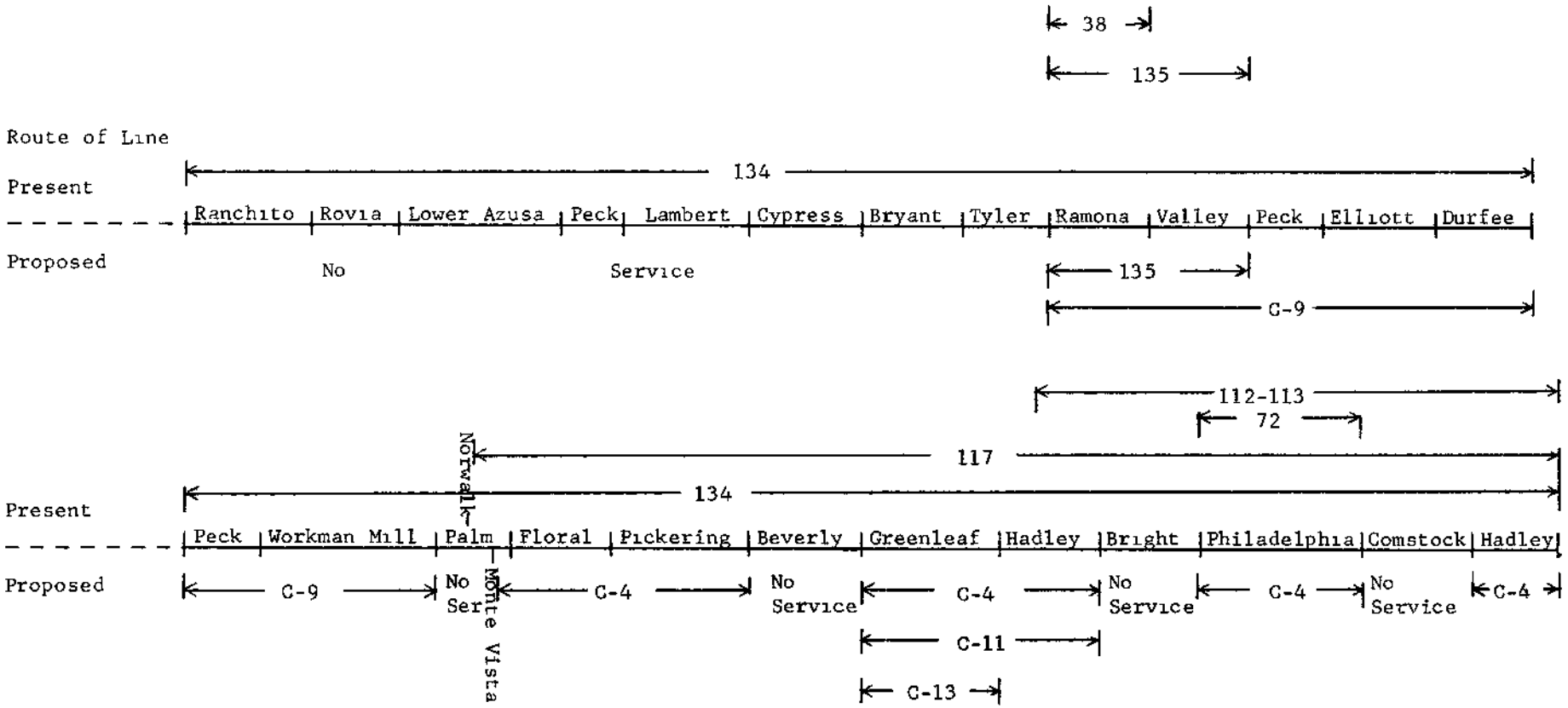
LINE 132

Cont.

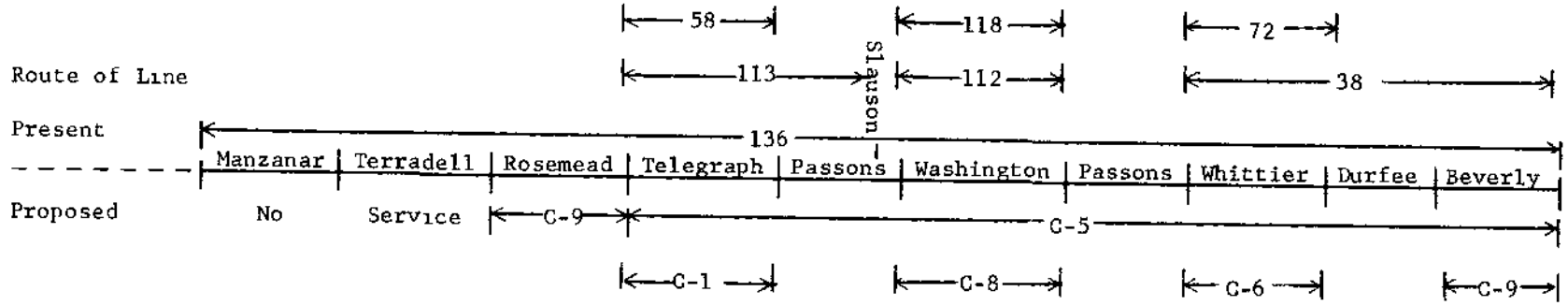
Route of Line

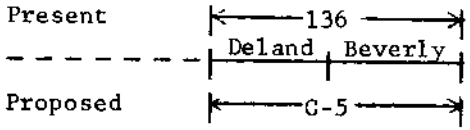


LINE 134

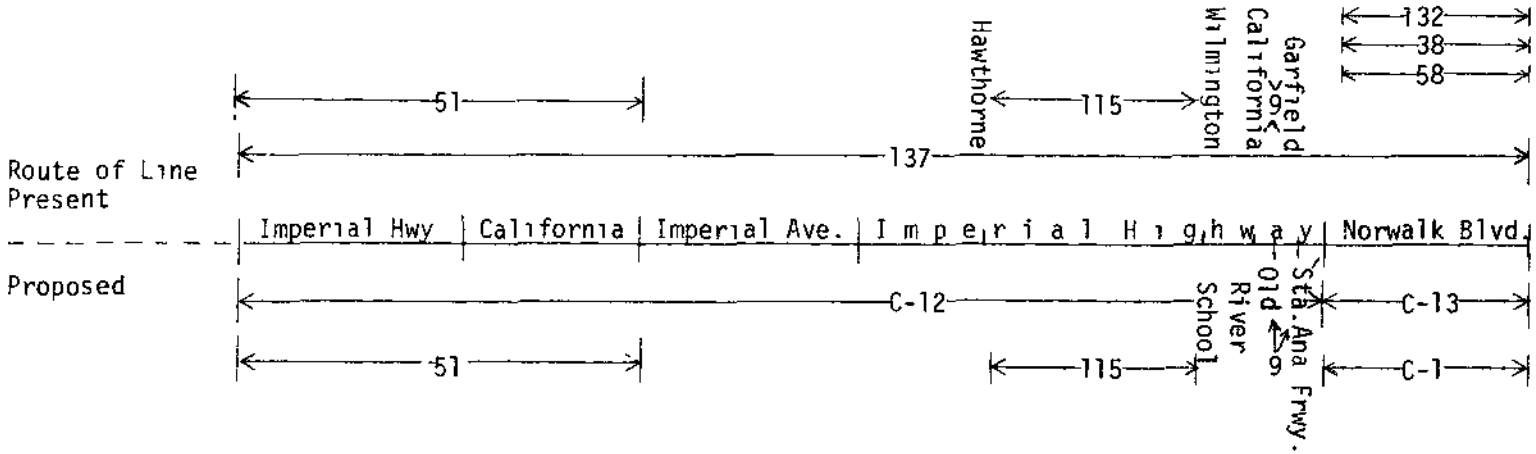

38
135
Route of Line
Present
134
Ranchito
Rovia
Lower Azusa
Peck
Lambert
Cypress
Bryant
Tyler
Ramona
Valley
Peck
Elliott
Durfee
Proposed
No
Service
135
C-9
112-113
72
117
Norwalk
134
Present
Peck
Workman Mill
Palm
Floral
Pickering
Beverly
Greenleaf
Hadley
Bright
Philadelphia
Comstock
Hadley
Proposed
C-9
No Service
Monte Vista
C-4
No Service
C-4
No Service
C-4
No Service
C-4
C-11
C-13

LINE 136

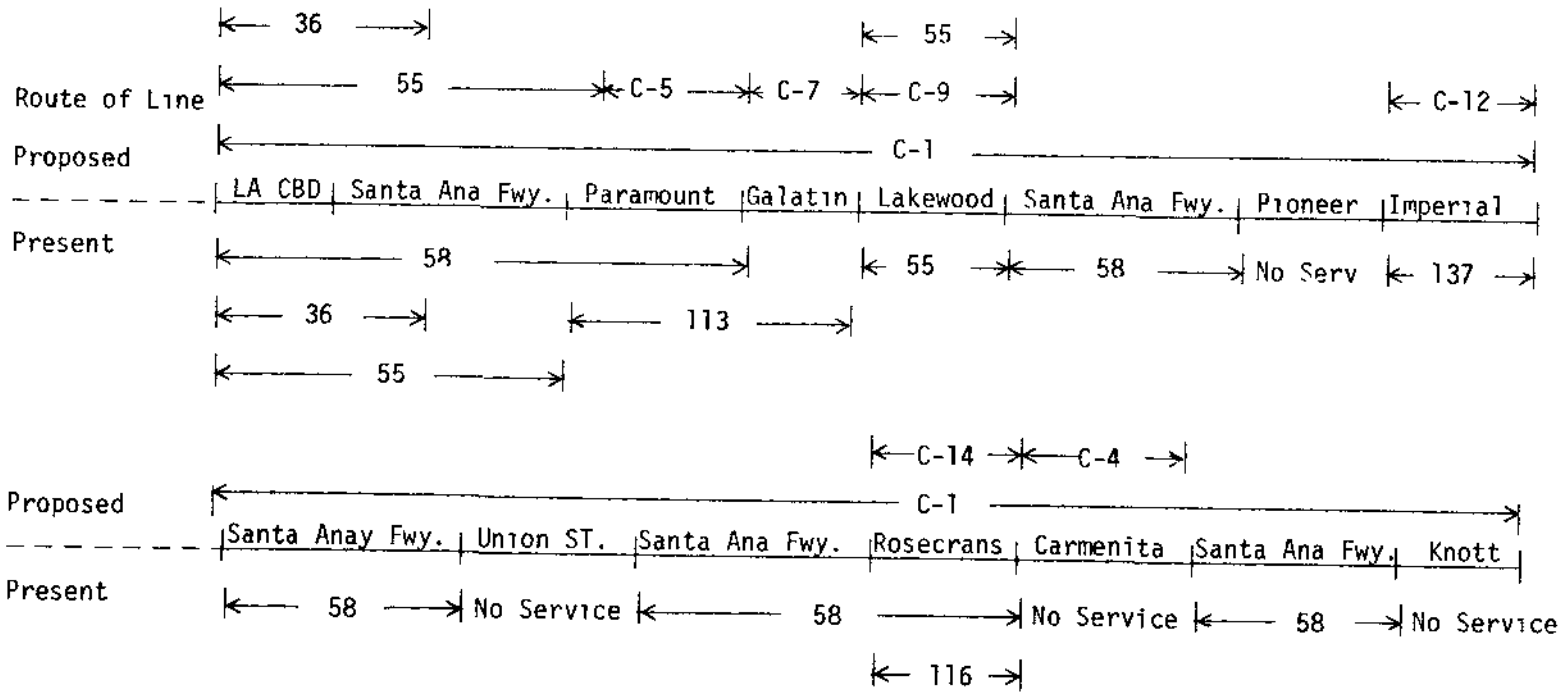

58
118
72
Route of Line
113
Slauson
112
38
Present
136
Manzanar
Terradell
Rosemead
Telegraph
Passons
Washington
Passons
Whittier
Durfee
Beverly
Proposed
No
Service
C-9
C-5
C-1
C-8
C-6
C-9


Present
136
Deland
Beverly
Proposed
C-5

LINE 137

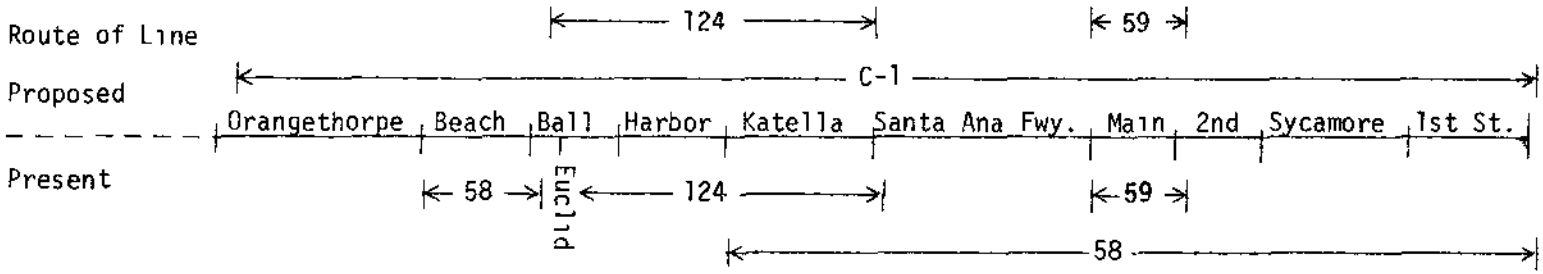

132
38
58
51
Hawthorne
115
Wilmington
Garfield
California
137
Route of Line
Present
Imperial Hwy
California
Imperial Ave.
Imperial Highway
Norwalk Blvd.
Sta. Ana Frwy.
Old
Proposed
C-12
C-13
School
River
51
115
9
C-1

LINE C-1


36
55
Route of Line
55
C-5
C-7
C-9
C-12
Proposed
C-1
LA CBD
Santa Ana Fwy.
Paramount
Galatin
Lakewood
Santa Ana Fwy.
Pioneer
Imperial
Present
58
55
58
No Serv
137
36
113
55
C-14
C-4
Proposed
C-1
Santa Anay Fwy.
Union ST.
Santa Ana Fwy.
Rosecrans
Carmenita
Santa Ana Fwy.
Knott
Present
58
No Service
58
No Service
58
No Service
116

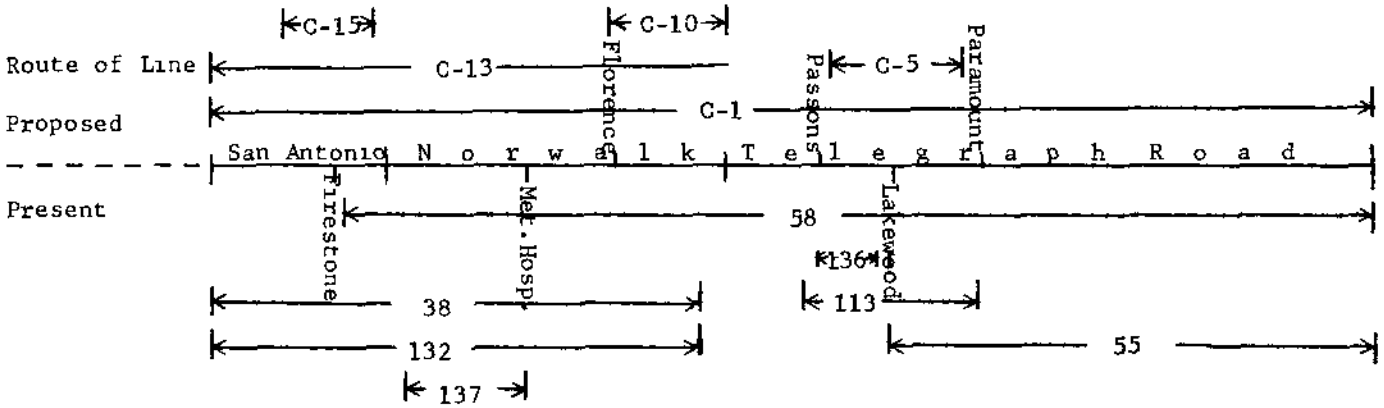
LINE C-1

Cont.


Route of Line
124
59
Proposed
C-1
Orangethorpe
Beach
Ball
Harbor
Katella
Santa Ana Fwy.
Main
2nd
Sycamore
1st St.
Present
58
Euclid
124
59
58

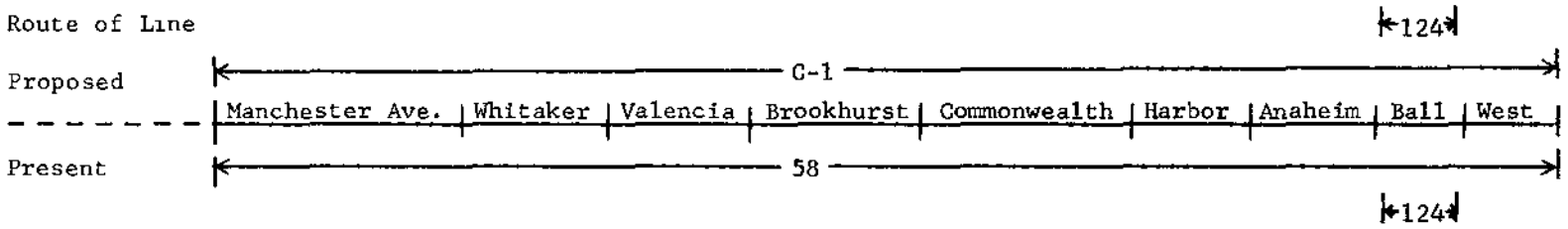
LINE C-1

TELEGRAPH ROAD BRANCH

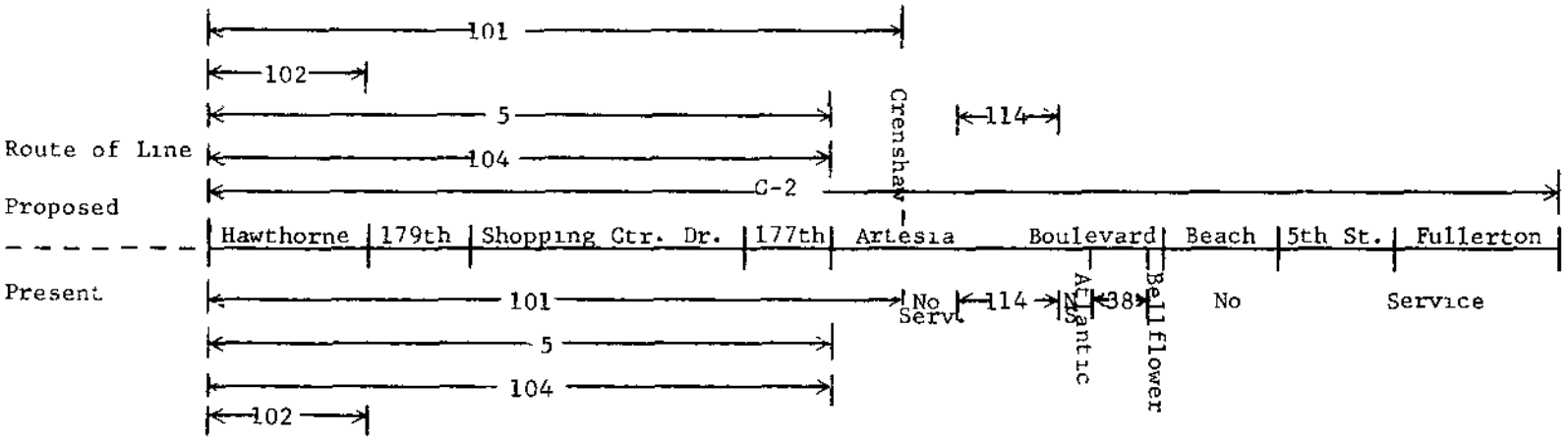


LINE C-1

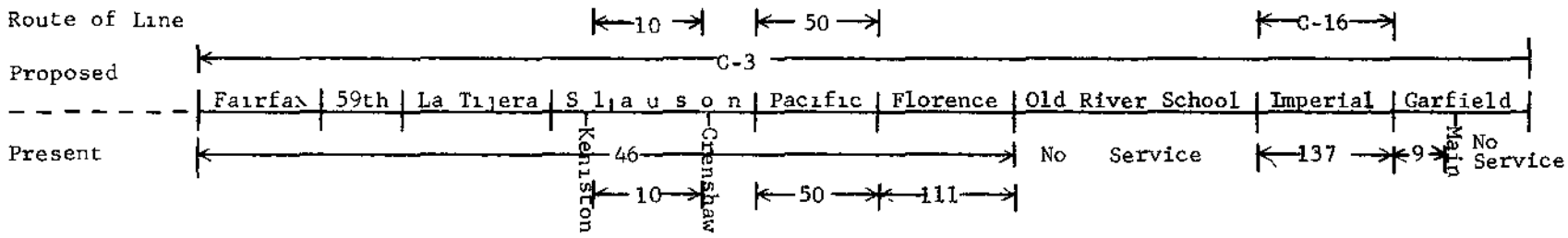
VIA FULLERTON BRANCH

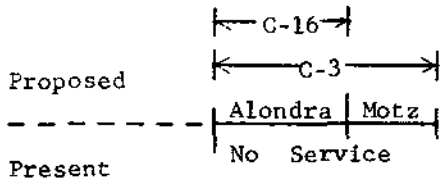


LINE G-2

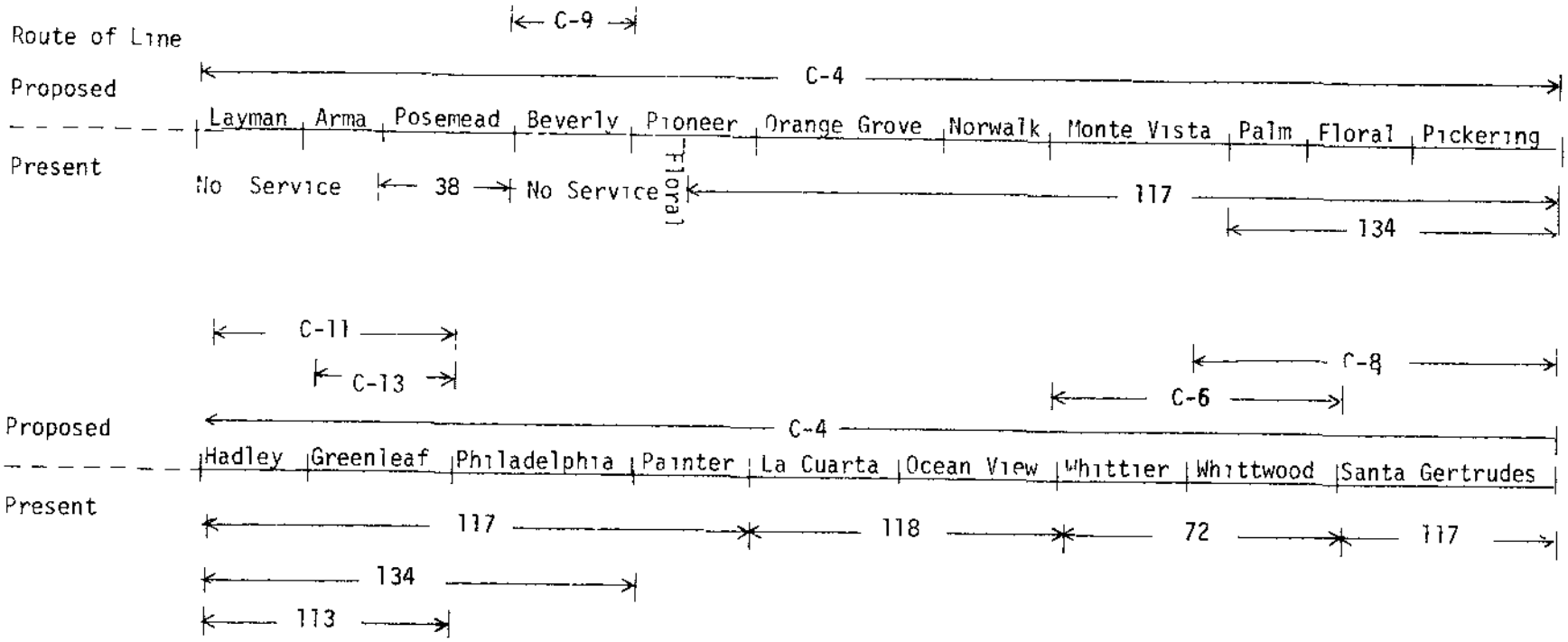

101
102
5
114
Route of Line
104
Crenshaw
Proposed
G-2
Hawthorne
179th
Shopping Ctr. Dr.
177th
Artesia
Boulevard
Beach
5th St.
Fullerton
Present
101
No Serv.
114
Atlantic
38
Bellflower
No
Service
5
104
102

LINE C-3


Route of Line
10
50
C-16
Proposed
C-3
Fairfax
59th
La Tijera
Slauson
Pacific
Florence
Old River School
Imperial
Garfield
Present
46
Kenston
Crenshaw
No Service
137
9
Main
No Service
10
50
111

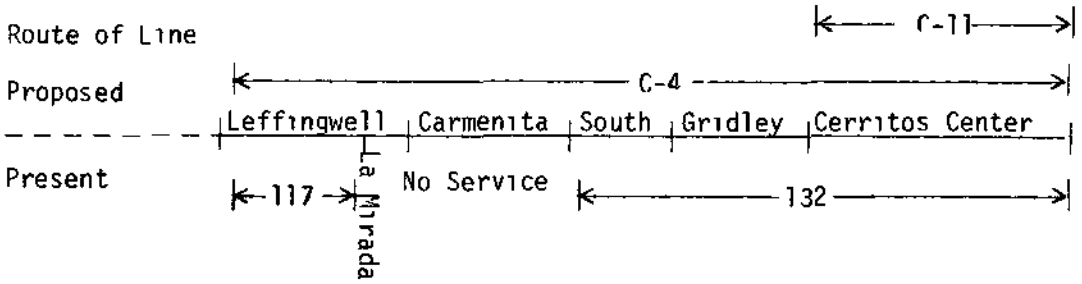

C-16
C-3
Proposed
Alondra
Motz
No Service
Present

LINE C-4

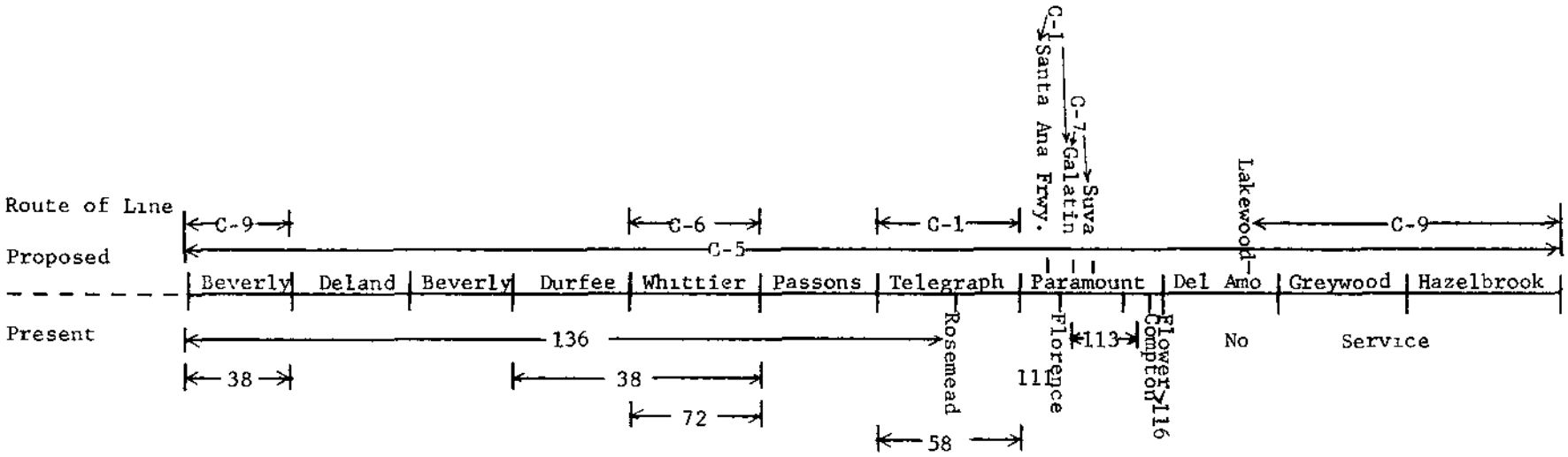

Route of Line
C-9
Proposed
C-4
Layman
Arma
Posemead
Beverly
Pioneer
Orange Grove
Norwalk
Monte Vista
Palm
Floral
Pickering
Present
No Service
38
No Service
Floral
117
134
C-11
C-13
C-8
C-6
Proposed
C-4
Hadley
Greenleaf
Philadelphia
Painter
La Cuarta
Ocean View
Whittier
Whittwood
Santa Gertrudes
Present
117
118
72
117
134
113

LINE C-4

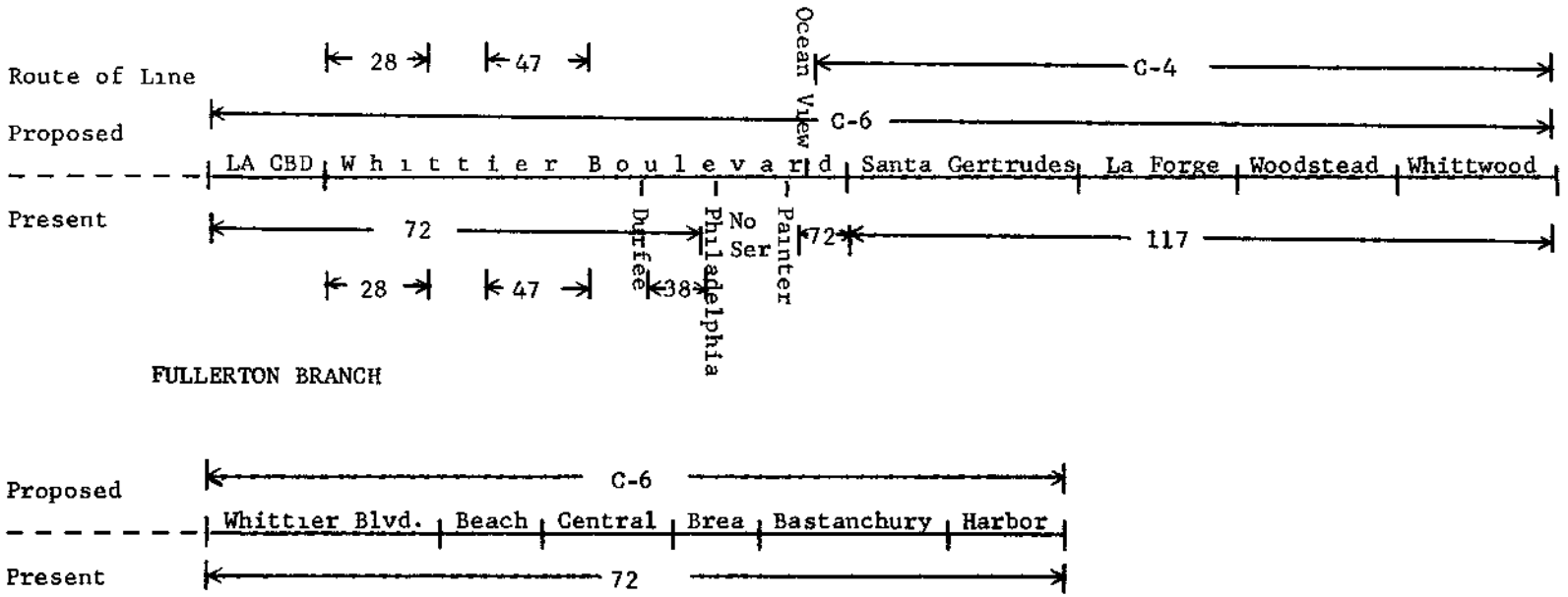
Cont.


Route of Line
C-11
Proposed
C-4
Leffingwell
Carmenita
South
Gridley
Cerritos Center
Present
117
La Mirada
No Service
132

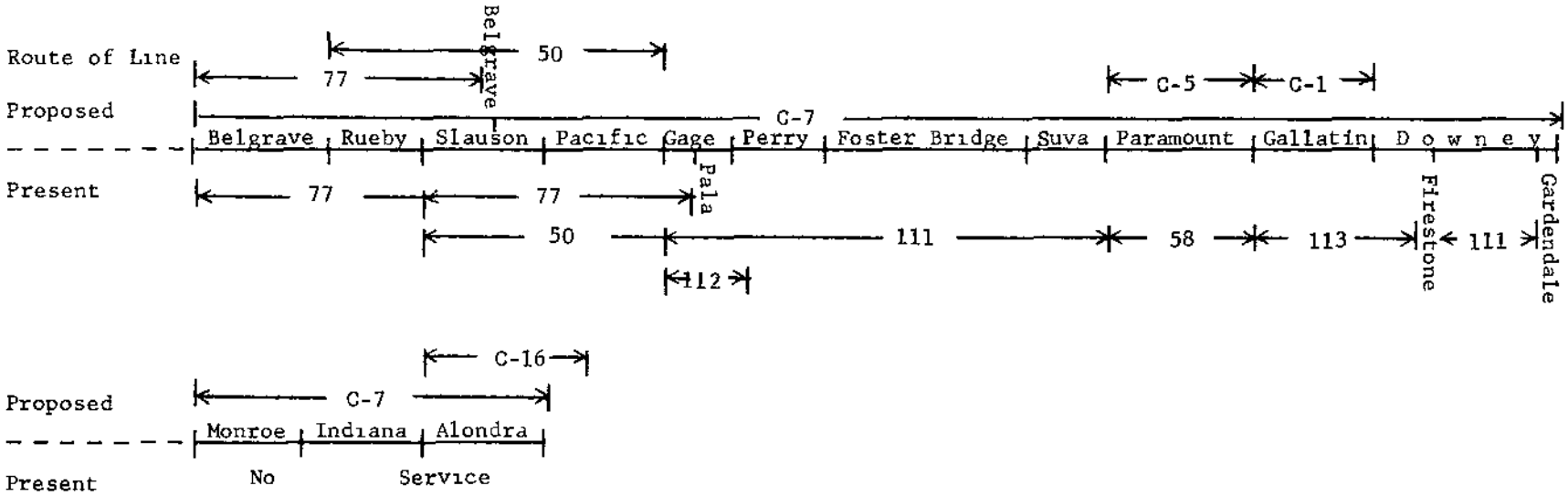
LINE C-5


Route of Line
Proposed
Present
C-9
C-6
C-1
C-5
C-9
C-1
Santa Ana Frwy.
C-7
Galatin
Suva
Lakewood
Beverly
Deland
Beverly
Durfee
Whittier
Passons
Telegraph
Paramount
Del Amo
Greywood
Hazelbrook
136
38
38
72
58
Rosemead
Florence
113
Compton
Flower
116
No
Service

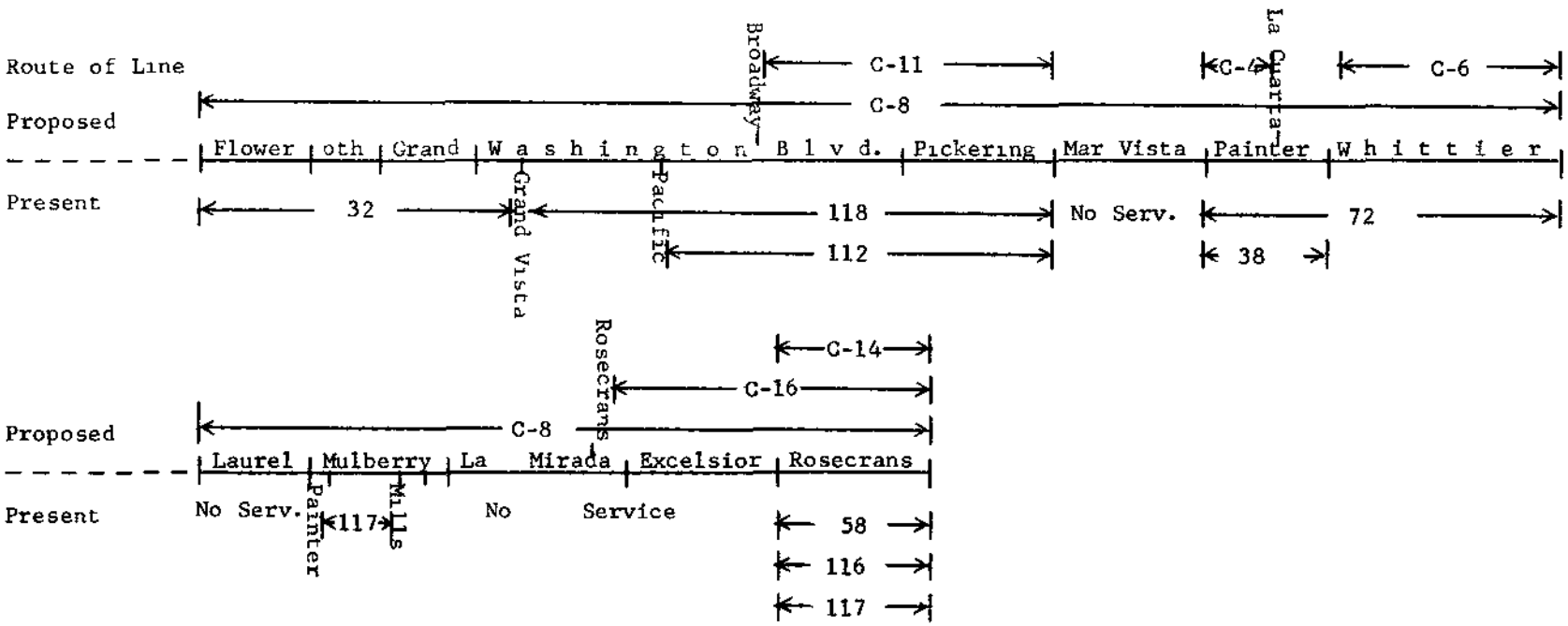
LINE C-6


Route of Line
28
47
Ocean View
C-4
Proposed
C-6
LA CBD
Whittier Boulevard
Santa Gertrudes
La Forge
Woodstead
Whittwood
Present
72
Durfee
Phila
No Ser
Painter
72
117
28
47
38
delphia
FULLERTON BRANCH
Proposed
C-6
Whittier Blvd.
Beach
Central
Brea
Bastanchury
Harbor
Present
72

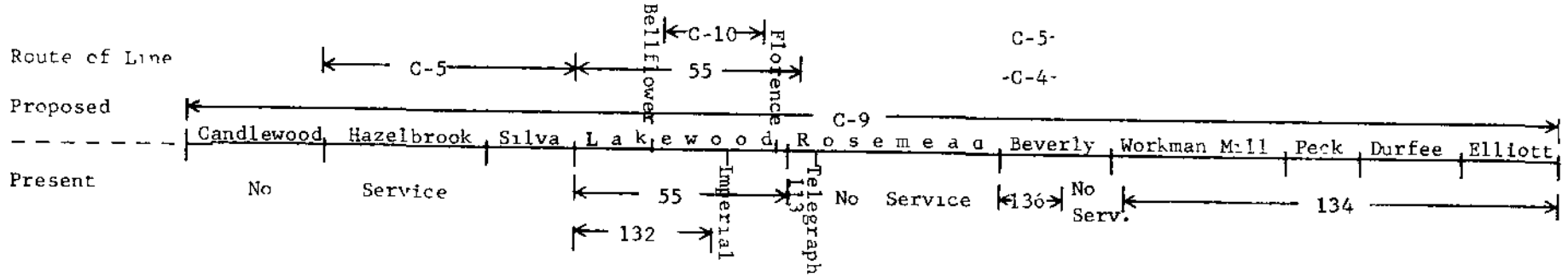
LINE C-7

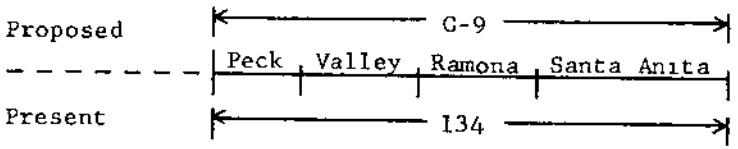

Route of Line
Belgrave
50
77
C-5
C-1
Proposed
C-7
Belgrave
Rueby
Slauson
Pacific
Gage
Perry
Foster Bridge
Suva
Paramount
Gallatin
D o w n e y
Present
77
77
Pala
Firestone
Gardendale
50
111
58
113
111
112
C-16
Proposed
C-7
Monroe
Indiana
Alondra
Present
No
Service

LINE C-8

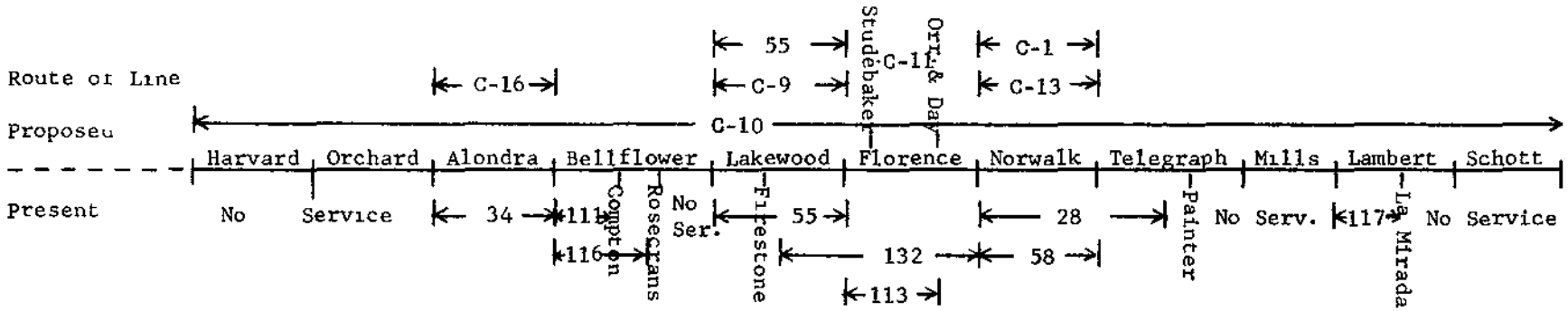

Route of Line
Proposed
Present
Broadway
La Cuarta
C-11
C-4
C-6
C-8
Flower
oth
Grand
W a s h i n g t o n B l v d.
Pickering
Mar Vista
Painter
W h i t t i e r
Grand Vista
Pacific
32
118
No Serv.
72
112
38
Rosecrans
C-14
C-16
C-8
Laurel
Mulberry
La Mirada
Excelsior
Rosecrans
Painter
Mills
No Serv.
117
No Service
58
116
117

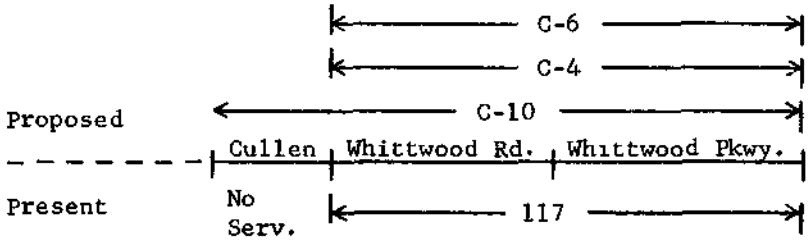
LINE C-9


Route of Line
C-5
Bellflower
C-10
Florence
55
C-5-
-C-4-
Proposed
C-9
Candlewood
Hazelbrook
Silva
Lakewood
Rosemead
Beverly
Workman Mill
Peck
Durfee
Elliott
Present
No
Service
55
Imperial
Telegraph
113
No
Service
136
No
Serv.
134
132

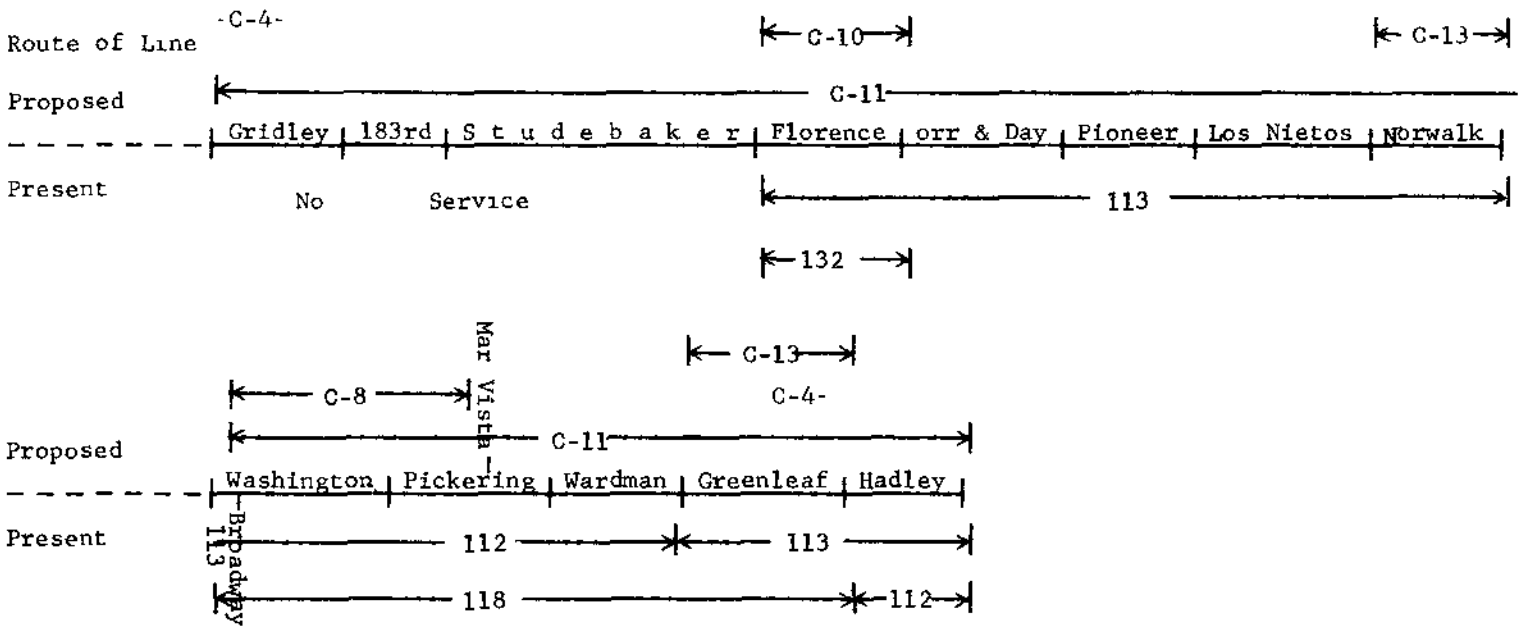

Proposed
C-9
Peck
Valley
Ramona
Santa Anita
Present
134

LINE C-10

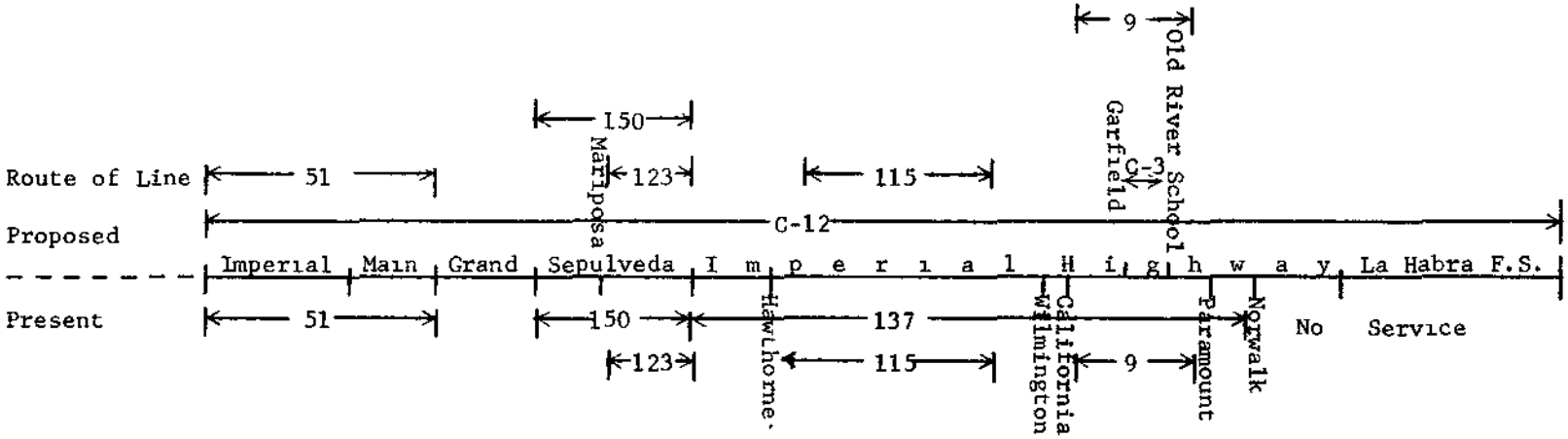

Route or Line
Proposed
Present
C-16
55
C-9
C-11
C-1
C-13
C-10
Studebaker
Orr & Day
Harvard
Orchard
Alondra
Bellflower
Lakewood
Florence
Norwalk
Telegraph
Mills
Lambert
Schott
No Service
34
111
116
Compton
Rosecrans
No Ser.
Firestone
55
132
113
28
58
Painter
No Serv.
117
La Mirada
No Service


C-6
C-4
Proposed
C-10
Cullen
Whittwood Rd.
Whittwood Pkwy.
Present
No Serv.
117

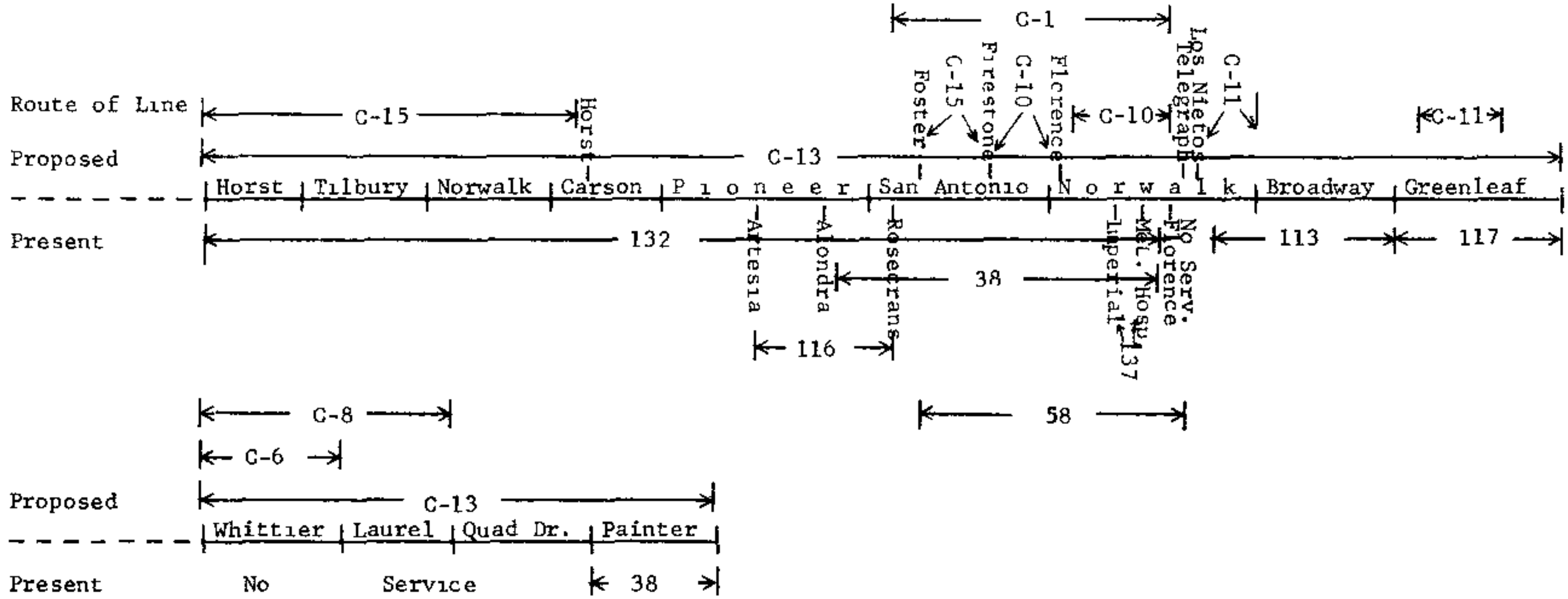
LINE C-11


Route of Line
-C-4-
C-10
C-13
Proposed
C-11
Gridley
183rd
S t u d e b a k e r
Florence
orr & Day
Pioneer
Los Nietos
Norwalk
Present
No Service
113
132
C-13
Mar Vista
C-8
C-4-
Proposed
C-11
Washington
Pickering
Wardman
Greenleaf
Hadley
Present
Broadway
113
112
113
118
112

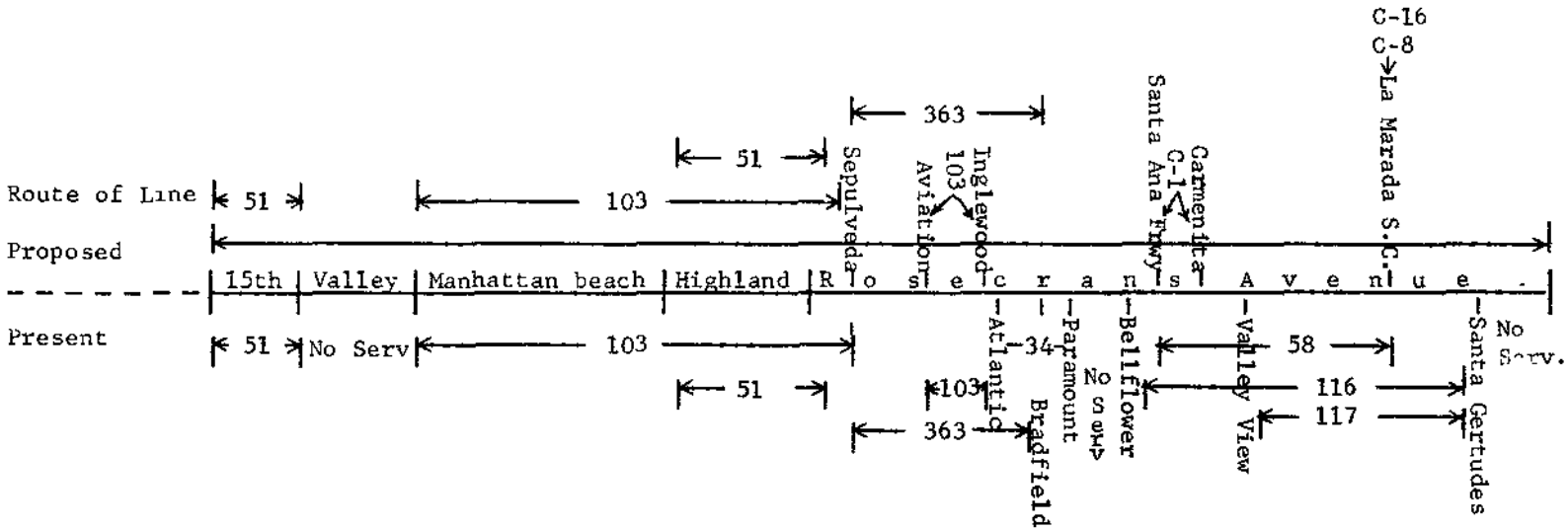
LINE C-12


9
Old River School
150
Garfield
C-3
Mariposa
Route of Line
51
123
115
Proposed
C-12
Imperial
Main
Grand
Sepulveda
I m p e r ı a l H i g h w a y
La Habra F.S.
Present
51
150
137
No Service
123
Hawthorne
115
Wilmington
California
9
Paramount
Norwalk

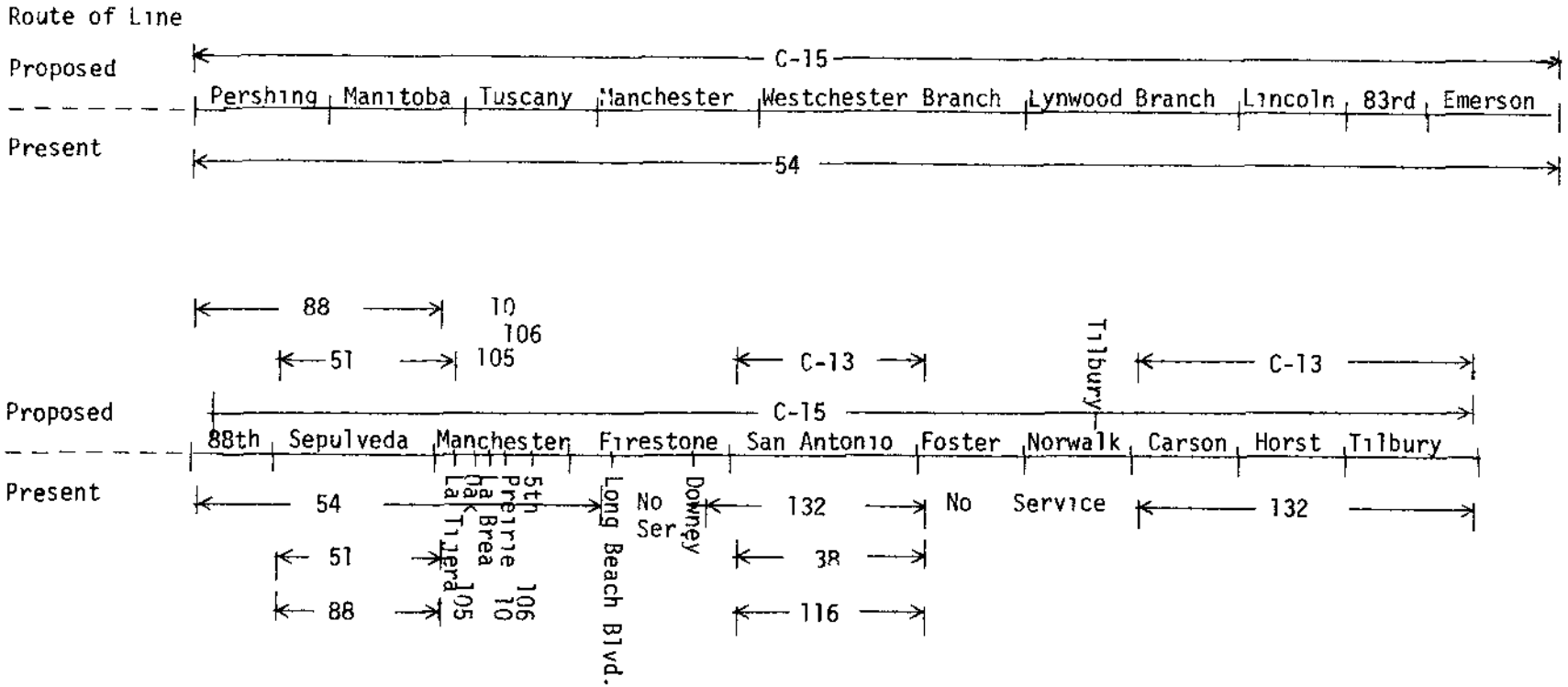
LINE C-13


Route of Line
Proposed
Present
C-1
C-15
Horst
Foster
C-15
Firestone
C-10
Florence
C-10
Los Nietos
Telegraph
C-11
C-11
C-13
Horst
Tilbury
Norwalk
Carson
P i o n e e r
San Antonio
N o r w a l k
Broadway
Greenleaf
132
Artesia
Alondra
Rosecrans
Imperial
Mal. Hosp.
Florence
No Serv.
113
117
38
116
137
C-8
58
C-6
Proposed
C-13
Whittier
Laurel
Quad Dr.
Painter
Present
No Service
38

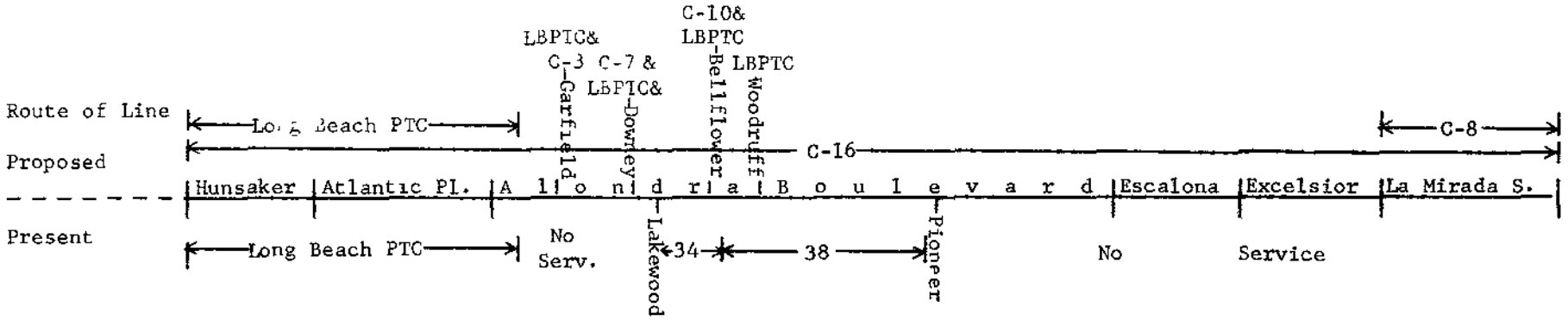
LINE C-14

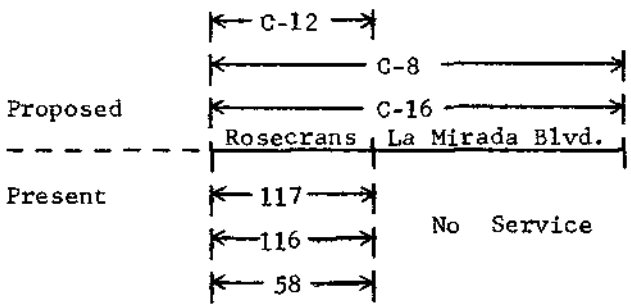

C-16
C-8
La Marada S.C.
363
51
Sepulveda
Inglewood
103
Aviation
Carmenita
C-1
Santa Ana Fwy.
Route of Line
51
103
Proposed
15th
Valley
Manhattan beach
Highland
Rosecrans
Avenue
Present
51
No Serv
103
34
Atlantic
Paramount
Bellflower
Valley View
58
116
117
Santa Gertudes
No Serv.
51
103
363
Bradfield
No Service

LINE C-15


Route of Line
Proposed
C-15
Pershing
Manitoba
Tuscany
Manchester
Westchester Branch
Lynwood Branch
Lincoln
83rd
Emerson
Present
54
88
10
106
51
105
C-13
Tilbury
C-13
Proposed
C-15
88th
Sepulveda
Manchester
Firestone
San Antonio
Foster
Norwalk
Carson
Horst
Tilbury
Present
54
La Tijera
Oak
Brea
5th
Prairie
Long Beach Blvd.
No Ser
Downey
132
No Service
132
51
105
106
10
38
88
116

LINE C-16


Route of Line
Proposed
Present
Long Beach PTC
C-16
C-8
LBPTC& C-3 Garfield
C-7 & LBPTC& Downey
C-10& LBPTC Bellflower
LBPTC Woodruff
Hunsaker
Atlantic Pl.
Alondra Boulevard
Escalona
Excelsior
La Mirada S.
Long Beach PTC
No Serv.
Lakewood
34
38
Pioneer
No Service


C-12
C-8
C-16
Proposed
Rosecrans
La Mirada Blvd.
Present
117
116
58
No Service

CENTS *Transit Operations Planning*