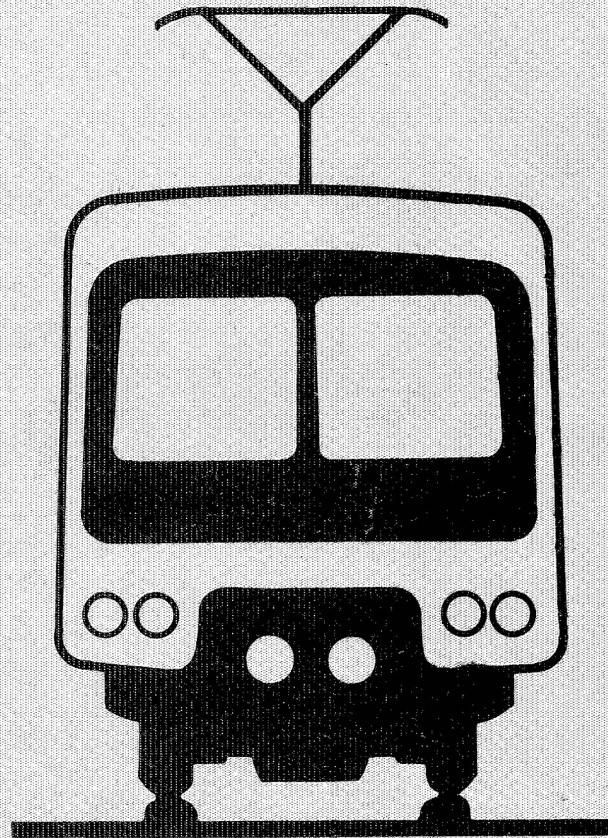


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Long Beach to Los Angeles

LIGHT RAIL TRANSIT FEASIBILITY STUDY



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Prepared by
Los Angeles, District 7
Public Transportation Branch

LONG BEACH

TO

LOS ANGELES

LIGHT RAIL TRANSIT

FEASIBILITY STUDY

Prepared by

California Department of Transportation (CALTRANS)

District 07 - Public Transportation Branch

October 1981

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I. EXECUTIVE SUMMARY

This report evaluates the feasibility of using portions of existing rail lines to develop light rail passenger service between Long Beach and Los Angeles as a starter line for a regional light rail transit system. Caltrans has found that such service could be implemented between the central business districts (CBDs) of both cities, a distance of 22.1 miles, for an estimated construction and equipment cost of \$150 million. The annual operating cost of such service is estimated at \$7,400,000 and annual revenue is estimated at \$4,700,000, for a farebox return of approximately 65 percent. The report presents an action plan which would enable service to begin within five years.

Caltrans' study of light rail transit in the Long Beach-Los Angeles corridor was prepared in the context of developing a regional passenger rail system for Southern California. Earlier Caltrans reports have evaluated commuter rail operations between Los Angeles and various destinations, including Oxnard, San Bernardino, Riverside and South Orange County. The development of light rail on freeway medians is being considered in the Century Freeway, San Bernardino Freeway, Harbor Freeway and Santa Ana Freeway corridors. Several former Pacific Electric lines have been identified for potential light rail use in major transportation corridors in the region. These

adapting portions of the existing Southern Pacific Transportation Company rail line between Willow Street in Long Beach and Washington Boulevard in Los Angeles for light rail use. New rail lines are considered on streets in Long Beach and Los Angeles, extending the service into the CBDs. In Long Beach, a possible route would be along Long Beach Boulevard from Ocean Boulevard to Willow Street. In Los Angeles, there are several north/south streets which could be used to reach the CBD and Union Station. Another option is to extend the line to the Convention Center and use other transit service for distributing passengers throughout the CBD.

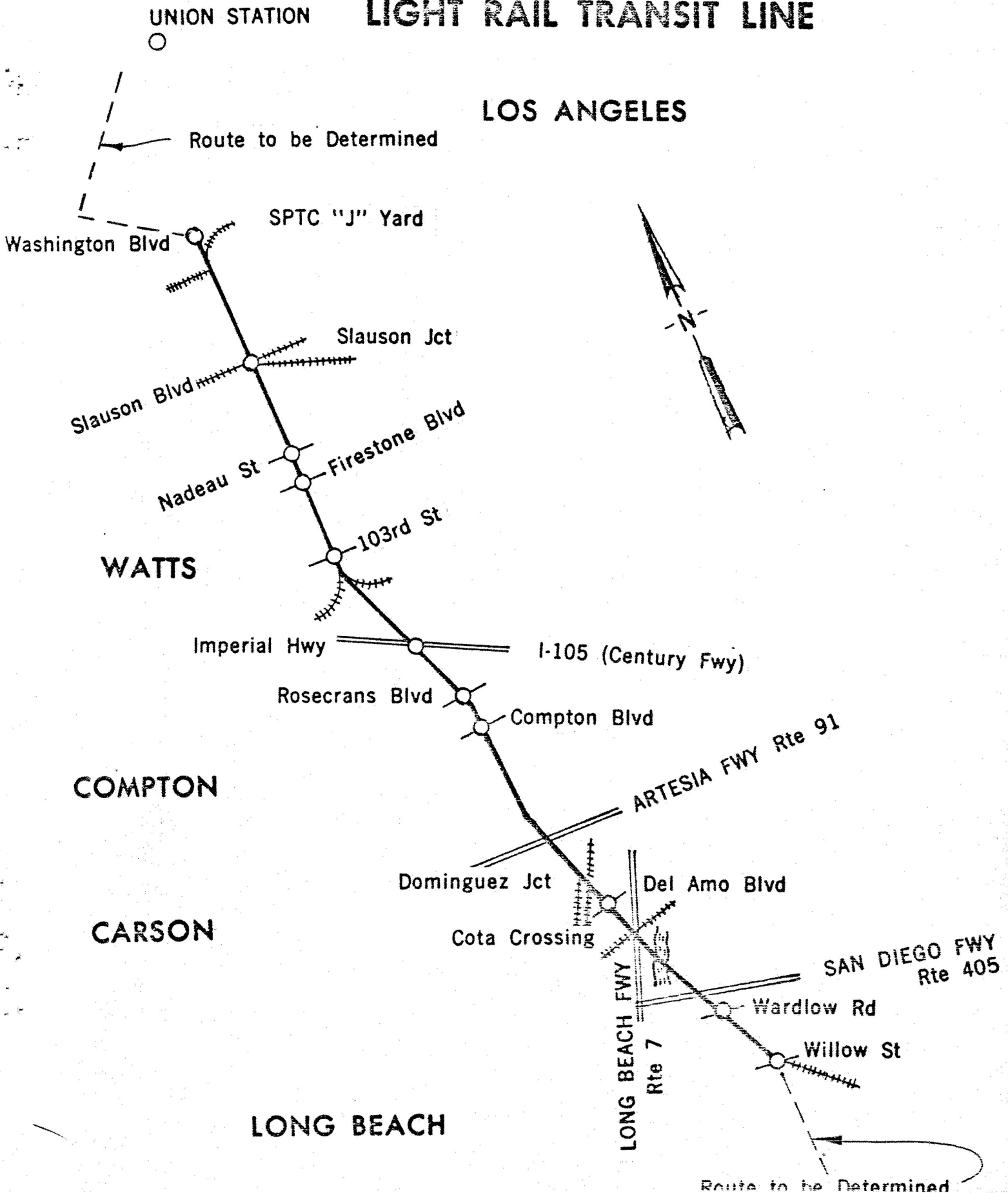
The trunk segment, extending from Willow Street in Long Beach to Washington Boulevard in Los Angeles, is statutorily exempt from the California Environmental Quality Act (CEQA). CEQA does not apply to projects for the institution or increase of passenger or commuter service on rail lines already in use, including the modernization of existing stations and parking facilities. Under CEQA, an initial study would be completed to determine the impacts of new facilities, including the CBD lines and maintenance yards. If the initial study indicates that an environmental document is necessary for the CBD lines and maintenance yards, the environmental work could proceed concurrently with preliminary engineering on the segments exempt from CEQA.

engineering and final design would need to be completed and construction begun by mid-1984 in order to have the system operating in 1986.

The following sketch shows the proposed light rail transit starter line from Long Beach to Los Angeles.

Caltrans

**LONG BEACH TO LOS ANGELES
LIGHT RAIL TRANSIT LINE**



II. INTRODUCTION

A. Background

This study, one of several initiated by Caltrans to identify and evaluate possible opportunities to develop light rail service in the Los Angeles region, considers the utilization of existing portions of Southern Pacific Transportation Company tracks to provide light rail service between Los Angeles and Long Beach.

Caltrans has statewide authority for planning and development of public transportation and is directed by legislation to acquire a portion of Southern Pacific's Wilmington Branch line and prepare plans for the development of the line for public transportation. This study considers the technical feasibility of implementing light rail service by using a portion of the former Pacific Electric (red car) System, currently operated by Southern Pacific. The study addresses near-term feasibility by considering possible routes, system connectivity, cost estimates, service characteristics, revenue and operating costs and the environmental process.

III. HISTORY

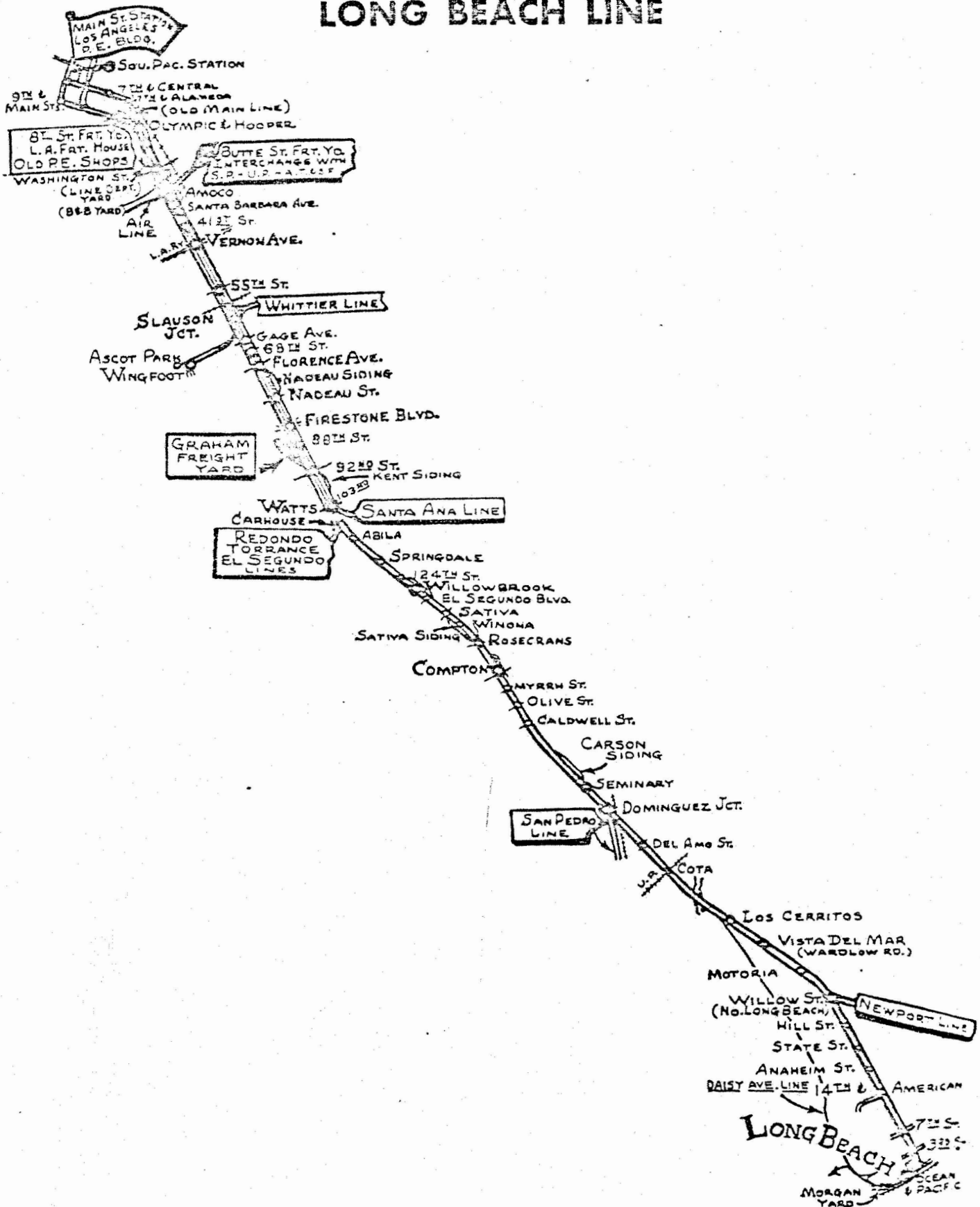
The Long Beach line was the first Pacific Electric line in the Los Angeles region. The line was officially opened to the public on July 4, 1902. It was also the last remnant of the Pacific Electric System to cease passenger operations with service ending on April 8, 1961.

The length of the line from the former Sixth Street and Main Street Station in Los Angeles to the Long Beach terminal on Ocean Boulevard was 20.4 miles.

The running time and frequency of service varied with demand over the years of operation. Scheduled running times for "limiteds" ranged from 36 minutes in 1911 to 60 minutes in 1954. This increase in running time was due mostly to increased interference by auto traffic. In 1946 (one of the highest patronage years), frequency was 15 minutes. Throughout the entire history of the Pacific Electric System, the Long Beach line was among the most patronized lines.

The Long Beach line was among the Pacific Electric lines which had been designed and constructed to exceptionally high standards (for that era), enabling high-speed operation. Moreover, the center portion of the line served local needs and also functioned as the trunk for numerous

LONG BEACH LINE



Courtesy of Interurbans

Figure 1

IV. INITIAL EXAMINATION OF THE FORMER PACIFIC ELECTRIC LONG BEACH LINE

This study identifies the former Pacific Electric route from Willow Street and Long Beach Boulevard in Long Beach to Washington Boulevard in Los Angeles as the trunk line or middle segment of the Los Angeles-Long Beach light rail transit starter line. This trunk line uses Southern Pacific's existing right of way and is the Long Beach line of the former Pacific Electric System. The line is currently in use for freight operations.

The tracks of the former Pacific Electric route, through the CBD in the City of Long Beach on Long Beach Boulevard south of Willow Street and through the City of Los Angeles on San Pedro Street to the former Sixth and Main Street terminal, have been removed and replaced with paving or medians. Therefore, for the purposes of this study it was necessary to identify approximate routes through the central business districts of Long Beach and Los Angeles. These lines are identified primarily to provide a basis for cost estimates and service projections. Implementation of the starter line would require more detailed studies of these CBD links. Final routes would be determined through negotiations with the appropriate cities.

2. "J" Yard to AT & SF Mainline to Union Station

Another option would be to use the existing tracks from the junction through "J" Yard (Clement Junction) and then northerly along the west bank of the Los Angeles River on the Santa Fe mainline to Union Station. This option appears unacceptable for the following reasons:

- a. The route is overly circuitous and would add significantly to commute travel time.
- b. Major activity centers are too distant from this alignment.
- c. Freight interference on the Santa Fe's mainline and through the "J" Yard may prove to be insurmountable.

3. Washington Boulevard/Figueroa Street Alignment

This option would turn west from the Southern Pacific right of way at Washington Boulevard and proceed west to Figueroa Street and then proceed north on Figueroa Street to the Convention Center. Consideration of this route should be retained in terms of future possibilities for providing a

mall and related transit improvements in downtown Long Beach may provide a unique opportunity to achieve an effective Long Beach transportation terminal.

Many precedents exist for shared use of transit mall pathways by both light rail trains and buses. Light rail operation in the mall areas would require careful design to guarantee pedestrian safety and system reliability.

If the opportunity to utilize an at-grade alignment on Long Beach Boulevard in conjunction with a downtown transit mall is not pursued, it would be necessary to terminate the service at Willow Street until a downtown alignment is identified.

V. SYSTEM CONNECTIVITY

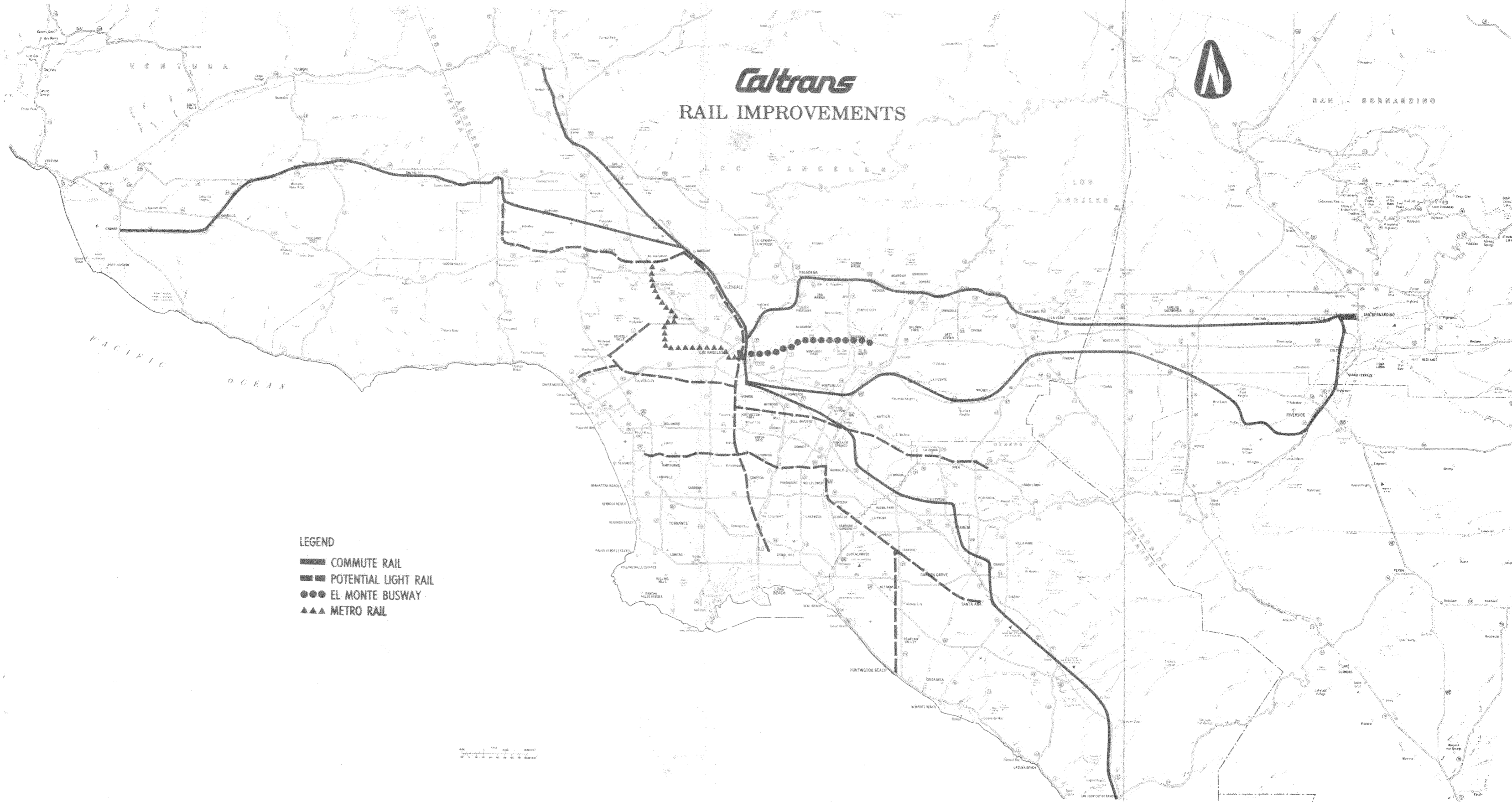
This study considers light rail transit in the Long Beach-Los Angeles corridor as an integral element of a regional transit system that includes commute rail, light rail on freeway medians and light rail on former Pacific Electric lines. Figure 2 shows how a rail element of a regional system might look.

Caltrans has completed feasibility reports on commuter rail operations between Los Angeles and various destinations including Oxnard, San Bernardino, Riverside and South Orange County. Caltrans is negotiating with Southern Pacific on implementation of the Oxnard-Los Angeles service. Amtrak has been requested to operate the San Bernardino and Riverside to Los Angeles services. The Saugus-Los Angeles corridor is also under review for potential commute rail development.





The development of light rail on freeway medians is being considered in the Century Freeway, San Bernardino Freeway, Harbor Freeway and Santa Ana Freeway corridors. The Century Freeway corridor has the potential for early establishment of light rail since this project is now in the design phase, with completion scheduled for 1990.

Several former Pacific Electric lines, in addition to the Wilmington Beach and Long Beach Branch from Long Beach to

Caltrans RAIL IMPROVEMENTS



LEGEND

-  COMMUTE RAIL
-  POTENTIAL LIGHT RAIL
-  EL MONTE BUSWAY
-  METRO RAIL



Los Angeles, have been identified for potential light rail use. These include the Burbank Branch from Chatsworth to Los Angeles, the Santa Monica and Exposition Branch from Santa Monica to Los Angeles, the West Santa Ana Branch from Santa Ana to Los Angeles, and the La Habra Branch from Brea to Los Angeles.

The Long Beach to Los Angeles corridor could serve as a starter line for the regional rail system because of its connectivity with other links. Light rail in the Long Beach-Los Angeles corridor would connect directly with light rail in the Century Freeway corridor, providing access to Los Angeles International Airport and to a future Harbor Freeway Transitway. Additionally, a transfer at the Century Freeway could provide service to Santa Ana via the Century Freeway and the West Santa Ana Branch currently under study. Connections could also be provided to the El Monte Busway and to the proposed Wilshire Metro Rail line.

VI. EXISTING CONDITIONS

This study investigated the existing conditions from Willow Street and Long Beach Boulevard (formerly American Avenue) in Long Beach to Washington Boulevard in Los Angeles. Also, the study looked at various alternates to provide service to the Los Angeles central business district. A main objective was to determine the feasibility of using existing facilities as much as possible for implementation of near-term light rail passenger service.

The existing rail route being studied is owned by Southern Pacific and consists of basically two branches: the East Long Beach Branch (portion from Long Beach Boulevard to Dominguez Junction) and the Wilmington Branch (portion from Dominguez Junction to Washington Boulevard). See Exhibit A for route alignment and Exhibit C for track configurations.

A. Existing Trackage

1. East Long Beach Branch

This segment is single track from Long Beach Boulevard to Dominguez Junction. The track is 90-lb. rail from Long Beach Boulevard to the Los Angeles River Bridge. This section is worn, pitted and cracked in many areas along with contaminated

B. Existing Right of Way (Width-Ownership)

The entire right of way from Long Beach to Olympic Boulevard in Los Angeles, with the exception of easements and joint title, is owned by the Southern Pacific Transportation Company.

The entire right of way width varies from 60 feet to 129 feet except at junctions. For widths at specific locations see Exhibit A.

C. Existing Street and Pedestrian Grade Crossings

There are about 40 at-grade street crossings and two pedestrian crossings located between Willow Street in Long Beach and Washington Boulevard in Los Angeles. Only seven crossings are fully protected (Type 9-Automatic Gate Type). The remainder have some sort of minimum protection; however, they are inadequate for light rail passenger service protection. The two paved pedestrian crossings service schools adjacent to the tracks. These require special safety investigations. For a complete listing of street grade crossings and protection devices see Exhibit B.

5. A concrete overpass is located at Firestone Boulevard which also was the location of a former Pacific Electric station stop. The structure was built to accommodate four tracks.

The Compton Creek Bridge and the Firestone Overpass are currently being considered for removal under the proposed Route 105 abandonment. If light rail is to be implemented on this route, then these two structures would need to be retained.

E. Existing Freight Operations

1. East Long Beach Branch

One switcher operates along the branch around 6 p.m. daily.

2. Wilmington Branch

Operations along this branch are as follows:

- a. A switcher operates out of "J" Yard (Clement Junction) daily between 5 a.m. and 5 p.m.
- b. The El Segundo switcher operates daily from "J" Yard to El Segundo about 7 p.m. and

automatic interlocking. Santa Fe operates one train per day each way. In addition, Santa Fe operates unit coal trains from San Bernardino to the Harbor as needed.

- c. There is also cross-train traffic at Dominguez Junction where the Southern Pacific currently operates on the San Pedro Branch. This is Southern Pacific's main line to the Harbor.

VII. PROPOSED PROJECTS AFFECTING THE TRACKS

A. Century Freeway Trackage Abandonment

Caltrans recently asked that the Southern Pacific Transportation Company initiate proceedings to remove freight service from the Wilmington Branch between Firestone Boulevard and Compton Creek and on the West Santa Ana Branch between the San Pedro Branch and the Long Beach Freeway to facilitate construction of the Century Freeway (I-105).

The Contract and Maintenance Agreement that was negotiated with Southern Pacific calls for the removal of tracks between Firestone Boulevard and Compton Creek, and for the removal of the structures at Firestone Boulevard and Compton Creek. If light rail is to be implemented on the Wilmington line, Caltrans would negotiate a contract with Southern Pacific to retain and acquire the tracks and structures recently identified for abandonment.

B. Century Freeway

As currently planned, the Century Freeway would be

VIII. BASIC TRUNK SEGMENT

For this evaluation, the basic trunk segment is from Long Beach Boulevard and Willow Street in Long Beach to Washington Boulevard in Los Angeles, a distance of 15.8 miles. The following is a discussion of assumptions, needs and costs for the middle segment of the Long Beach to Los Angeles starter line.

A. Trackage, Sidings, and Fencing

The study assumes mostly double track from Willow Street to Dominguez Junction and double track from Dominguez Junction to Washington Boulevard (see Exhibit C which shows existing tracks, sidings and rail junctions).

1. East Long Beach Branch

The existing track should be replaced with 115-lb. rail and reballasted from Willow Street to Dominguez Junction. An additional track should be constructed adjacent to the existing track except on the existing single-track bridge over the Los Angeles River. Dominguez Junction should be redesigned and reconstructed to permit through operations.

About 20 percent of the route between Willow Street and Washington Boulevard has access control.

Access is affected by various existing fences of industrial facilities, residential development or is located in remote areas adjoining a river basin and oil fields. These areas do not warrant fences. The remaining 80 percent, which is located mostly in residential areas, requires fencing on both sides of the railroad right of way.

B. Structures and Maintenance Facilities

All existing structures are adequate. However, a new trestle located between Route 405 (San Diego Freeway) and the Los Angeles River would need to be constructed on existing abutments.

Additionally, consideration should be given to constructing two new bridges, one at "Cota" Crossing and one at Dominguez Junction. This would alleviate anticipated heavy cross-freight movements to and from the Harbor on the Union Pacific line and the Southern Pacific line respectively.

There are two at-grade pedestrian walkways, one located near 105th Street and the other near Caldwell Street. These walkways provide access to schools adjacent to

C. Passenger Stations

The following sites have been tentatively identified (see Exhibit A) as initial light rail passenger stations:

1. Willow Street (at Long Beach Boulevard)
2. Wardlow Road (at Pacific Avenue)
3. Del Amo Boulevard (at Compton Creek)
4. Compton Boulevard
5. Rosecrans Boulevard
6. Route 105 Freeway
7. 103rd Street (Watts Junction)
8. Firestone Boulevard
9. Nadeau Street
10. Slauson Avenue
11. Washington Boulevard

To provide quality service while maintaining maximum mobility, stops are provided along the corridor in such a manner that they will complement the existing bus services, tap the potential rider market and encourage maximum use of the parking facilities provided along the starter line.

In proposing the station stops, consideration was given to:

E. Equipment (Cars)

In order to determine fleet size, it was necessary to assess potential patronage, vehicle requirements and operational capabilities.

1. Potential Patronage

An assessment of the northbound morning peak-period (6-9 a.m.) patronage on ten relevant Southern California Rapid Transit District (SCRTD) routes now operating within the Long Beach line corridor served as a basis for estimating peak-period light rail ridership demand. SCRTD 1979-80 bus occupancy data were interpreted using Vernon Avenue as a screen line. The data indicated that the morning peak period generated a patronage of 5,100. The City of Los Angeles Department of Transportation cordon counts indicate that approximately 50 percent of the peak-hour patronage is experienced in a one-hour surge from 7:30 to 8:30 a.m. Therefore, using SCRTD's data and the City of Los Angeles' cordon count, the morning peak period generated a patronage of 2,500. The weekday patronage is estimated to be 15,000 per day with a reduction to 7,500 per day on the weekend.

2. Vehicle Requirements

For the purposes of this study, vehicle capacity was based on the manufacturer's standard specifications for the Duwag U-2 articulated light rail vehicle (the same vehicle currently in use on the San Diego Light Rail System). This vehicle provides for 64 seated passengers, with sufficient floor space for 95 "comfortable" standees (utilizing the UMTA 2.5-square-foot-per-passenger criterion).

When necessary, each car can handle 95 additional standees, bringing the per-vehicle capacity potential to 254 patrons under crush conditions.

3. Operational Capabilities

For initial operations, it appears that three-car consists at 15-minute headways would meet the peak period/surge hour demand of 2,500 at slightly less than the crush-load factor. The early peak hour may warrant applying only two-car trains at 15-minute headways, enabling extra cars to be positioned to serve in the surge hour for peak-directional three-car consists. This operational philosophy may allow for a smaller initial fleet.

4. Compton Boulevard - SCRTD Routes 29, 33, 53,
92, 114, 842, 844
- GMBL Route G3
5. Rosecrans Boulevard - SCRTD Routes 92, 3306, 840
6. Route 105 Freeway - SCRTD Routes 33, 92, 306,
836, 838
7. 103rd Street (Watts) - SCRTD Routes 33, 306, 334
8. Firestone Boulevard - SCRTD Routes 176, 832
9. Nadeau Street - SCRTD Route 91
10. Slauson Avenue - SCRTD Routes 92, 828
11. Washington Boulevard - SCRTD Routes 32, 33, 92

G. Trunk Segment Cost Estimate

The following cost estimate covers only the limits between Willow Street and Long Beach Boulevard in Long Beach and Washington Boulevard in Los Angeles.

This cost estimate is based on San Diego's MTDB light rail cost and escalates those costs to reflect present

IX. LONG BEACH CBD SEGMENT

For purposes of this study, an alignment connecting to the trunk line at Willow Street and Long Beach Boulevard and proceeding south on Long Beach Boulevard to Ocean Boulevard, a distance of 2.6 miles, will be used.

Additionally, this study assumes a median, at-grade location for the LRT on Long Beach Boulevard.

A. Trackage

Construction of tracks in the median of Long Beach Boulevard would require extensive median reconstruction. It is assumed that there would be two tracks constructed from Willow Street to Ocean Boulevard.

B. Station Stops

Station stops on Long Beach Boulevard would be determined in cooperation with the City of Long Beach. There would be no parking available at the stops along Long Beach Boulevard; however, parking would be available at Willow Street and at Wardlow Road. For purposes of this study, eight stops were assumed at existing bus service transfer points.

X. LOS ANGELES CBD SEGMENT

An arbitrary alignment connecting to the trunk segment at Washington Boulevard and proceeding west on Washington Boulevard to a north/south street approved by the City of Los Angeles and on to the end of the line at Macy Street, a distance of 3.7 miles, was used as the basis for estimating costs. This alignment includes a median, at-grade location for the light rail transit on Washington Boulevard and on the north/south street to Macy Street. It terminates near the Plaza between Aliso and Macy Streets. This alignment would require minimal storage and turn-around area. Based on the City of Los Angeles' plans to reconfigure local streets and provide a pedestrian mall in this vicinity, the concept of a "mini-transit mall" may integrate very well with these proposals. The arbitrary configurations used for estimating are not intended as recommendations for final project location.

Among other reasons, such an alignment is appealing because of the number of activity centers which it would serve on a virtually direct basis. These include:

1. California Mart (Garment District)
2. Occidental Center
3. Greyhound/RTD Terminal
4. Proposed 3rd Street to 4th Street Redevelopment

D. Los Angeles CBD Segment Cost Estimate (3.7 Miles)

	<u>Costs (1981 Dollars)</u>
Trackwork	\$ 7,300,000
Utilities Relocation	3,500,000
Electrification	4,000,000
Electric Sub-Stations	800,000
Protected Grade Crossings	200,000
Signalization	1,200,000
Train Stops	<u>600,000</u>
	Subtotal \$17,600,000
	20% contingencies <u>3,600,000</u>
	Total <u><u>\$21,200,000</u></u>

XI. SUMMARY COST ESTIMATE

Item of Work	Trunk Segment	Los Angeles CBD Segment	Long Beach CBD Segment
Trackwork	\$14,700,000	\$ 7,300,000	\$3,200,000
Utilities Relocation	1,500,000	3,500,000	1,500,000
Electrification	7,600,000	4,000,000	1,700,000
Electric Sub-Station	2,400,000	800,000	400,000
Protected Grade Crossings	2,700,000	200,000	300,000
Signalization	5,200,000	1,200,000	600,000
Train Stops	7,600,000	600,000	400,000
Maintenance Facilities	13,600,000		
Subtotal	55,300,000	17,600,000	8,100,000
20% Contingencies	11,100,000	3,600,000	1,700,000
Total	\$66,400,000	\$21,200,000	\$9,800,000

Trunk Segment	\$ 66,400,000
Los Angeles CBD Segment	21,200,000
Long Beach CBD Segment	9,800,000
"Cota" Crossing Structure	11,000,000
Dominguez Junction Structure	<u>13,200,000</u>
Total construction cost	\$121,600,000
25 Vehicles @ \$1,000,000 ea.	<u>25,000,000</u>
Total Capital Cost (1981 Dollars)	\$146,600,000

XII. SERVICE CHARACTERISTICS

The following assumptions apply to the characteristics of the light rail service.

1. Three-car trains are proposed to operate during peak hours and two-car trains are proposed to operate during off-peak hours. The number of cars in the trains can be reduced if not needed.
2. Hours of operation and headways assumed are as follows:

<u>Hours of Operation</u>	<u>Total Hours</u>	<u>Headway</u>
6 a.m. - 9 a.m.	3	15 min.
9 a.m. - 3 p.m.	6	30 min.
3 p.m. - 6 p.m.	3	15 min.
6 p.m. - 9 p.m.	3	30 min.
9 p.m. - 12 a.m.	3	60 min.

3. Service will operate 365 days per year.
4. A twenty-second dwell time is allowed at each stop.
5. Total running time from Ocean Boulevard in Long Beach to Macy Street in Los Angeles is approximately 50 minutes.

XIII. REVENUE AND OPERATING COST

A. Revenue

Estimated revenue is based on the following:

1. An estimated average weekday (Monday-Friday) patronage of 15,000 per day.
2. An estimated average weekend patronage of 7,500 per day.
3. An average fare of \$1.00 per person per trip.

Estimated annual revenue would then be \$4,700,000.

B. Operating Cost

This study assumes San Diego's MTDB operating cost of \$5.11 per train mile. The operating cost includes items such as: personnel, contracts, materials, supplies, utilities, insurance, administration and other miscellaneous items.

Total daily miles for the entire route of the proposed Long Beach light rail service (Ocean Boulevard to Macy Street) would be 3,960 train miles.

XIV. ENVIRONMENTAL CLEARANCE NEEDS

The trunk segment extending from Ocean Boulevard in Long Beach to Washington Boulevard in Los Angeles is statutorily exempt from the California Environmental Quality Act (CEQA). Section 21080(b)(11) of CEQA provides that CEQA does not apply to projects for the institution or increase of passenger or commuter service on rail lines already in use, including the modernization of existing stations and parking facilities. Under CEQA, an initial study would be completed to determine the impacts of new facilities including the CBD segments and maintenance yards. If the initial study concluded that there would be no significant impacts or significant impacts could be mitigated, a Negative Declaration determination might be appropriate. If the adverse impacts were determined to be significant, an Environmental Impact Report (EIR) would be necessary. The environmental work could proceed concurrently with preliminary engineering on the segments of the line exempt from CEQA.

XV. FUNDING AND IMPLEMENTATION

A. Funding

There are existing State and local funding sources which could be applied to financing the Long Beach-Los Angeles light rail transit service. These include Proposition 5 and Senate Bill 620 (State Mass Transit Assistance Act) funds. Additional funds would be available if Proposition A, a local sales tax measure which was passed by 54 percent of Los Angeles County voters in November 1980, withstands constitutional challenge.

B. Implementation

Light rail transit service from Long Beach to Los Angeles could be operating in five years if immediate steps are taken by appropriate State, regional and local agencies.

The light rail project currently under way in Sacramento provides a model, which could be used to implement the Long Beach to Los Angeles light rail service. In Sacramento a joint powers agency consisting of the City, the Sacramento Regional Transit District and Caltrans has been formed to oversee the

The following actions would be necessary to implement light rail transit between Long Beach and Los Angeles in five years:

1. A memorandum of understanding leading to a joint powers authority agreement requires immediate action. This agreement would define specific responsibilities among the appropriate agencies involved in project implementation.
2. The project needs to be included in Southern California Association of Government's regional transportation plan when updated in March 1982.
3. The project needs to be included in the transit element of LACTC's regional transportation improvement program by March 1982.
4. The project needs to be included in the California Transportation Commission's 1982 State Transportation Improvement Program, which will be adopted in July 1982.
5. Agreement must be reached with Southern Pacific Transportation Company to retain the Firestone Avenue and Compton Creek structures and tracks on the Wilmington Branch line, which are scheduled

EXHIBITS

EXHIBIT B

AT-GRADE STREET CROSSINGS

Location	City	Exist. Protection
Willow Ave	Long Beach	Type 9
Long Beach Bl		" AF
Spring St		Type 8
Wardlow Rd		" 9
Del Amo Bl		" 8
Santa Fe Ave	LA Co	" 9
Alameda St		" 9
Manville St		" 8
Greenleaf Bl	Compton	" 8
Alondra Bl		" 8
Indigo St		" 8
Myrrh St		" 8
Laurel St		" 8
Palm St		" 8
Compton Bl		" 1-R
Palmer St		" 8
Elm St		" 8
Rosecrans Ave		" 8
Stockwell St	LA Co	" 8
130th St		" 8
El Segundo Bl		" 9
124th St		" AF-1R
119th St		" AF-1R
Imperial Hwy		" 9

EXHIBIT B

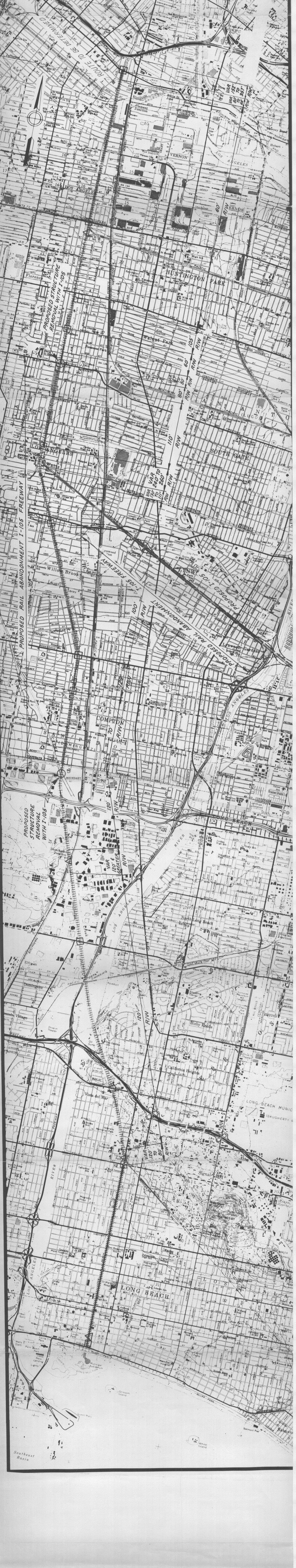
AT-GRADE STREET CROSSINGS

Location	City	Exist. Protection
Wilmington Ave	LA City	Type 1-C 1-R
108th St		" AF
103rd St		" AF
97th St		" AF
92nd St		" 9
Nadeau St	LA Co	" 8
Florence Ave		" 8
Gage Ave		" 9
60th St		" 8
Slauson Ave	LA City	" 9
55th St		" AF
48th St		" AF
Vernon Ave		" 8
41st St		" AF
Santa Barbara Ave		" AF
24th St		" AF
20th St		" 8
Washinton Bl		" AF
16th St		" AF
15th St		" AF
Newton St		" AF
14th St		" AF
Olympic Bl		" 8-9
8th St		" 1-R

EXHIBIT A

LEGEND

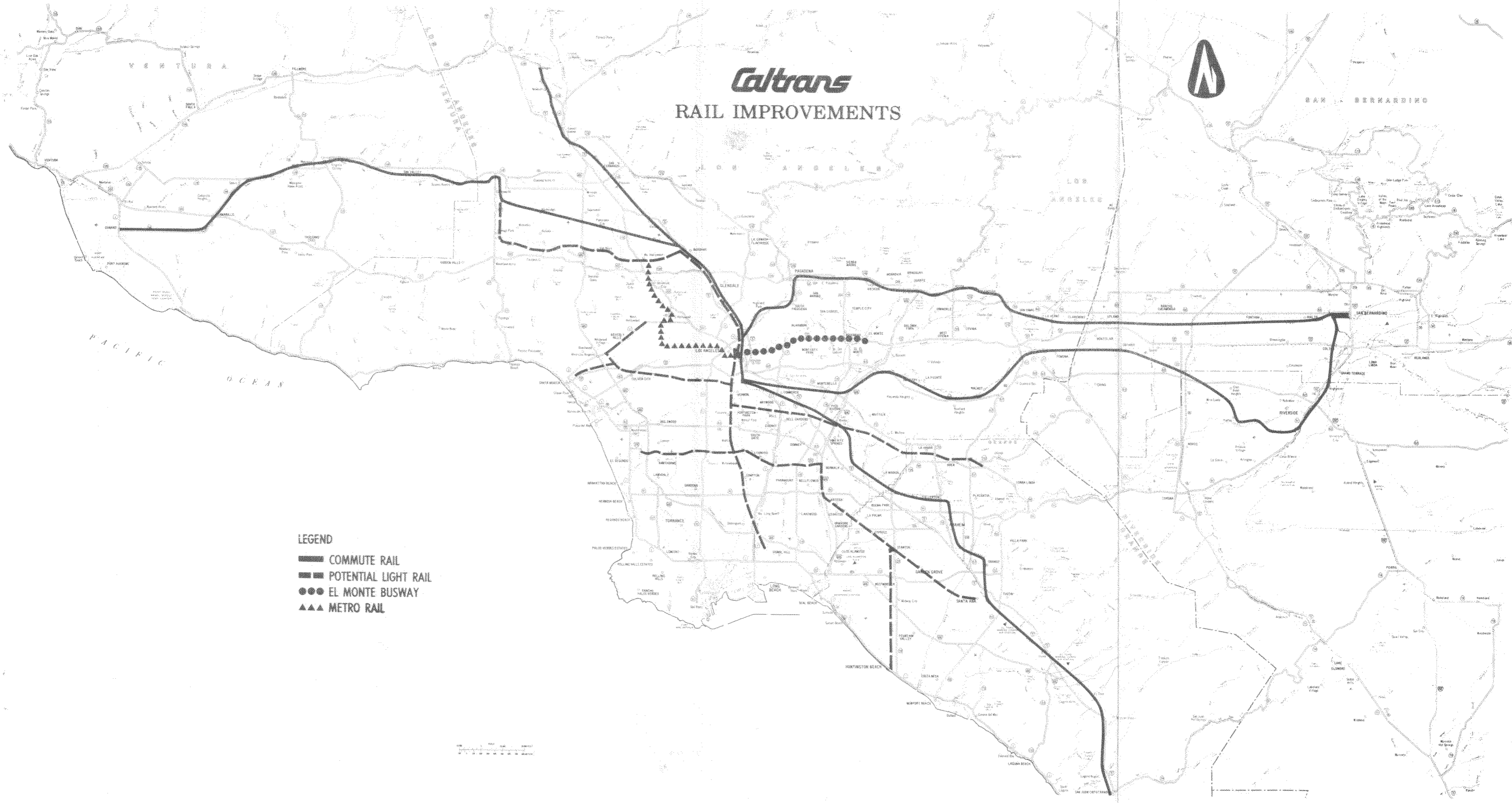
- PROPOSED STATION
- PROP. ELECT. SUB-STATION
- PROPOSED ROUTE







Southeast Basin

White Island

Caltrans RAIL IMPROVEMENTS



LEGEND

-  COMMUTE RAIL
-  POTENTIAL LIGHT RAIL
-  EL MONTE BUSWAY
-  METRO RAIL

