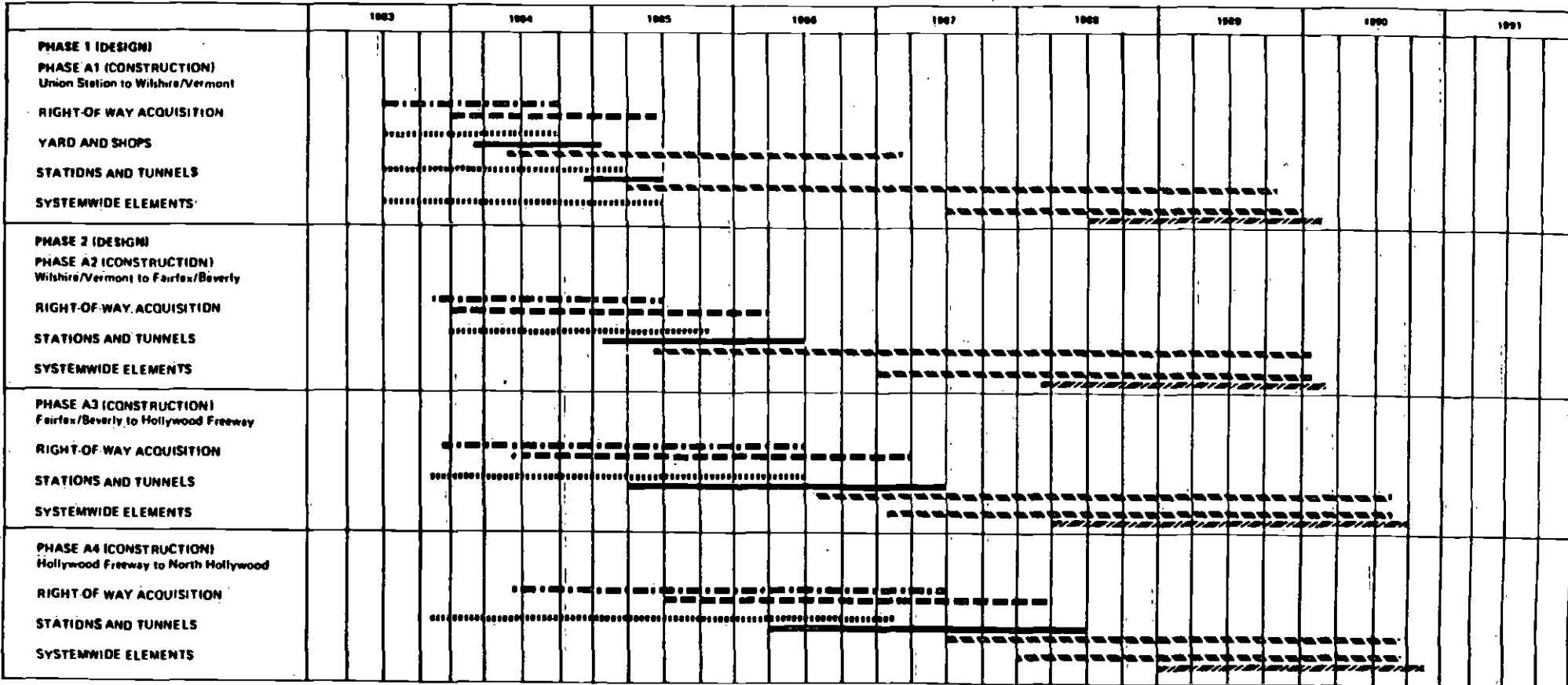


29199165

PROJECT JUSTIFICATION

FIGURE 1

PRELIMINARY MASTER SCHEDULE  
 RIGHT-OF-WAY, DESIGN, ADVERTISE/AWARD, CONSTRUCTION, INSTALLATION/TEST



----- RIGHT-OF-WAY CERTIFICATION  
 ----- RIGHT-OF-WAY PURCHASE  
 ----- DESIGN  
 ----- ADVERTISE/AWARD  
 ----- CONSTRUCTION/FABRICATION  
 ----- INSTALLATION/TEST

B

PHASE I (PHASE A1)  
 PRELIMINARY MASTER SCHEDULE - CONTINUING DESIGN AND CONSTRUCTION

CONTRACTS			1983	1984	1985	1986	1987	1988	1989	1990	
PH I DESIGN	PH A1 CONSTR	DESCRIPTION									
FACILITIES CONTRACTS	A 100	A 130 A 112 A 110	LINLEY AND LEADS SHOPS YARD								
	A 135	A 137 A 135	OPERS CONTROL BLDG STA. UNION								
	A 140	A 157 A 147 A 140	STA. 5TH/HILL, STG II STA. CVC CNTR, STG II LINE. 2 STAS, STG I								
	A 165	A 165	STA. 7TH/FLOWER								
	A 170	A 187 A 170	STA. WLSHR/JALY, STG II LINE. 1 STA: STG I								
	A 195	A 195	STA. WLSHR/VRMNT								
	SYSTEMWIDE CONTRACTS	Z 100	Z 119 Z 111 Z 116 Z 110	TRACKWORK PROC TRACKWORK PROC TRACKWORK PROC TRACKWORK INSTALL							
		Z 200	Z 210	TRAIN CONTROL							
Z 300		Z 311 Z 310	TRACTION PWR PROC TRACTION PWR INSTL								
Z 400		Z 410	COMMUNICATIONS								
Z 500		Z 510	VEHICLES								
Z 600		Z 610	FARE COLLECTION								
CONSTRUCTION MANAGEMENT											
RIGHT-OF WAY											
AGENCY COSTS AND INSURANCE											

..... DESIGN  
 ——— ADVERTISING/AWARD  
 - - - CONSTRUCTION  
 ■■■■■ ENGINEERING DESIGN

USE 2 (PHASES A2, A3, A4)

ELIMINARY MASTER SCHEDULE - CONTINUING DESIGN AND CONSTRUCTION

CONTRACTS			1983	1984	1985	1986	1987	1988	1989	1990	1991	
PH 2 DESIGN	PH A2, A3, A4 CONSTR	DESCRIPTION										
FACILITIES CONTRACTS	A 220	A 237 STA: WSHR/MSY, STG II A 227 STA: WSHR/NOR, STG II A 220 LINE, 2 STAS: STG I										
	A 240	A 240 STA: WSHR/CRENSHAW										
	A 245	A 245 STA: WSHR/LA BREA										
	A 250	A 247 STA: WSHR/FFX, STG II A 250 LINE, 1 STA: STG I										
	A 275	A 275 STA: FFX/BVRLY										
	A 310	A 347 STA: LA @SST, STG II A 327 STA: FFXISM, STG II A 310 LINE, 2 STAS: STG I										
		A 350	A 350 STA: IIRII/CNGA									
	A 410	A 410 LINE										
	A 415	A 415 STA: HOLLYWOOD BOWL										
	A 425	A 425 STA: UNIV CITY										
	A 430	A 430 LINE										
	A 445	A 445 STA: HQ HWD Z 118 TRACKWORK PROC Z 111 TRACKWORK PROC Z 116 TRACKWORK INSTALL										
	SYSTEMWIDE CONTRACTS	Z 200	Z 210 TRAIN CONTROL									
Z 300		Z 311 TRACTION PWR PRDC Z 310 TRACTION PWR INSTL										
		Z 400	Z 410 COMMUNICATIONS									
Z 500		Z 510 VEHICLES										
Z 600		Z 610 FARE COLLECTION										
CONSTRUCTION MANAGEMENT												
RIGHT OF WAY												
AGENCY COSTS AND INSURANCE												

Designations for Phases A3 and A4 would also be a 30 series if contract option at 00000001, e.g., 110 would become Z 130, etc., consistently throughout Systemwide.

..... DESIGN  
 \_\_\_\_\_ ADVERTISING/AWARD  
 \_\_\_\_\_ CONSTRUCTION  
 \_\_\_\_\_ ENGINEERING DESIGN

B

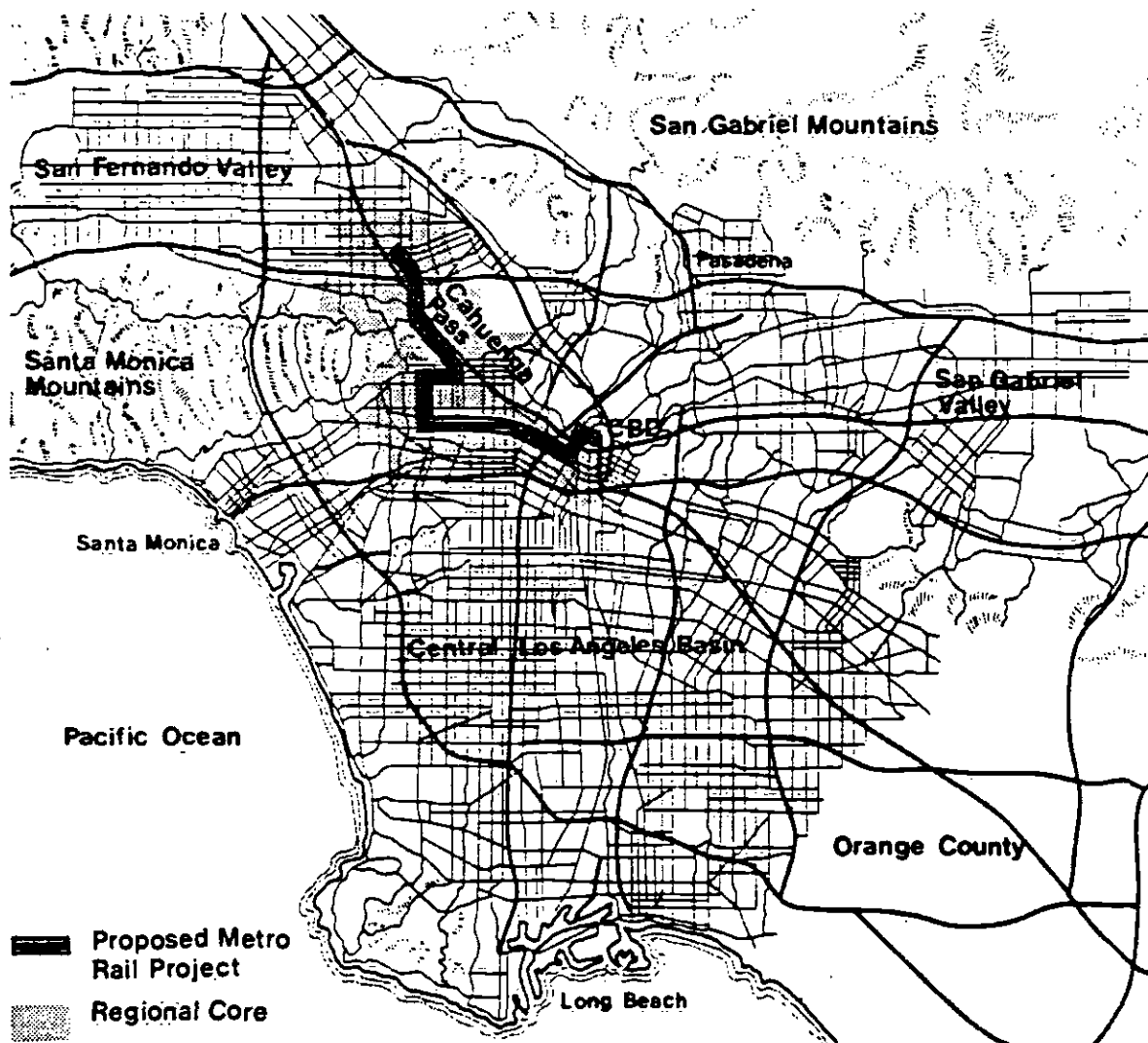
SCHEDULES & BUDGET

## CHAPTER 1

# PURPOSE OF AND NEED FOR PROJECT

## 1. PROJECT LOCATION AND REGIONAL SETTING

The Southern California region, generally defined by the six counties in the Southern California Association of Governments (SCAG)--Los Angeles, Orange, Riverside, San Bernardino, Ventura, and Imperial--covers over 38,500 square miles. Most of the region's population lives in less than one-tenth of the land area, in the Los Angeles Basin between the San Gabriel Mountains and the Pacific Ocean (Figure 1-1). The basin is divided in an east-west direction by the Santa Monica Mountains, which separate the San Fernando Valley from the rest of Los Angeles. Only a few mountain



**Figure 1-1 Regional Setting**

passes, like the Cahuenga Pass, connect the two parts of the city. The remaining nine-tenths of the region is dominated by mountains (the Transverse and Peninsular Ranges) and deserts (Mojave and Colorado).

The Southern California region has grown from a community of 3.3 million people in 1940 to one of the largest metropolises in the world. In January 1980 the six-county SCAG region had an estimated population of 11,535,800--nearly one out of every two Californians--and employment of 5,605,900. SCAG projects that the region will grow to about 14.75 million by the year 2000, a 28 percent increase. The greatest increase will occur in Los Angeles County. Within the county, the greatest growth is projected for areas where population density is already high, particularly the Regional Core.

## **2. REGIONAL CORE**

The Regional Core is the financial, retail, cultural, and entertainment center of Southern California. Two out of every ten Los Angelenos live and four out of every ten work in the 75-square-mile Regional Core.\*

### **2.1 POPULATION AND EMPLOYMENT**

Population in the Regional Core was 832,960 in 1980, a 17 percent increase over 1970. Hollywood, Westlake, and portions of the Central Business District (CBD) were the fastest growing communities, accounting for over three-fourths of the population growth. Much of this increase is directly attributable to the tremendous number of immigrants from Latin America and the Pacific Rim countries of Southeast Asia. The continued arrival of immigrants and economic growth of the region will cause the Regional Core population to reach 1.02 million within 20 years. The increase in population will tax an already overburdened infrastructure, including the transportation system.

Employment in the Regional Core was 811,600 in 1980. Nearly 80 percent of the Regional Core's jobs are in the major employment centers of the CBD, Wilshire, and Hollywood. Employment will climb to nearly one million by the year 2000. In the future, jobs will continue to be concentrated in the CBD, Wilshire, and Hollywood. This concentration of jobs in a relatively small geographic area results in high traffic volumes, congestion, and low travel speeds on the major freeways and arterials in the Regional Core.

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\* The Regional Core defined in this Draft EIS/EIR is slightly larger than the 55-square mile Regional Core of the SCRTD 1980 Alternative Analysis/Environmental Impact Statement/Environment Impact Report. The boundaries have been expanded in this analysis to better account for potential impacts from construction and operation of the Metro Rail Project.

## 2.2 LAND USE

The Regional Core contains a high density business sector stretching from the CBD westward to include Mid-Wilshire and Miracle Mile. Another commercial concentration is found in Hollywood north of Sunset Boulevard. The high-rise skyline that has developed in the CBD indicates its role as the heart of Southern California. High density development is also characteristic of portions of Wilshire, Hollywood, and Westlake. Outside of these areas, the land uses in the Regional Core are devoted predominantly to low and moderate density residential and commercial establishments.

SCAG projections show that density will continue to increase everywhere in the Regional Core (Table 1-1). Significant increases in the "clustering" of people are projected for the CBD; Westlake, Wilshire, and Hollywood will experience substantial growth of population; and population changes will be minor in Universal City and North Hollywood. Employment density will increase most significantly in the CBD, Wilshire, and Universal City/North Hollywood. The greatest population density changes projected are a 72 percent increase in the CBD and a 37 percent increase in Westlake. In absolute terms, the highest population density in the year 2000 will be in Westlake, with 35,870 persons per square mile. The greatest employment density will be in the CBD, with over 55,000 jobs per square mile.

TABLE 1-1  
PROJECTED CHANGE IN REGIONAL CORE DENSITY

Planning Area	POPULATION (persons per sq. mile)			EMPLOYMENT (jobs per sq. mile) <sup>1</sup>		
	1980 <sup>2</sup>	2000 <sup>3</sup>	Percent Increase	1980	2000	Percent Increase
CBD	6,367	10,936	72%	42,855	55,192	29%
Westlake	26,190	35,870	37%	23,654	25,892	9%
Wilshire	15,372	19,129	24%	11,322	13,776	22%
Hollywood	10,208	12,178	19%	6,426	6,836	6%
Universal City/ North Hollywood	6,923	7,186	4%	3,010	3,960	32%
Regional Core	10,888	13,355	23%	10,609	12,869	21%

Sources: <sup>1</sup>SCAG, Draft SCAG-82 Growth Forecast Policy, 1982. SCAG-82B was used with minor adjustment by Sedway/Cooke.

<sup>2</sup>U.S. Bureau of the Census.

<sup>3</sup>SCAG, Draft SCAG-82 Growth Forecast Policy, 1982. SCAG-82B (representing high growth projections) was used, except in Universal City and North Hollywood, where population projections are derived by doubling the projected change between SCAG's low growth forecast (SCAG-82A) and 1980.



## 2.3 TRAFFIC

The freeways that skirt the Regional Core are loaded to capacity and are severely congested during peak commuter periods. In spite of present congested conditions, by year 2000 the demand for daily travel on freeways in the Regional Core is expected to increase nearly 1.5 million vehicle miles, a 24.2 percent increase over 1980 estimates. Existing and projected peak traffic volumes at selected points along the freeways within the Regional Core are compared against the capacity of the freeway in Table I-2. Without major transit improvement, traffic congestion will worsen on all freeways in the area. Two proposed freeways which would have provided direct regional access to the Regional Core were canceled because of public opposition and potential disruption to the community.

TABLE I-2  
COMPARISON OF ESTIMATED PEAK HOUR TRAFFIC VOLUMES AND FREEWAY CAPACITY IN THE REGIONAL CORE

<u>Freeway</u>	<u>Estimated Peak Hour Capacity<sup>1</sup></u>	<u>1980 Peak Hour Volume (am/pm)</u>	<u>2000 Peak Hour Volume<sup>2</sup></u>
<b>Harbor/Pasadena Freeway</b>			
north of First Street	9,000	9,200 (am)	9,200
north of Wilshire Boulevard	9,000	8,900 (pm)	10,100
south of Santa Monica Freeway	7,200	7,800 (pm)	11,500
<b>Hollywood Freeway</b>			
north of Burbank Boulevard	7,200	7,100 (pm)	8,400
north of Barham Boulevard	9,000	8,800 (am)	11,700
north of Franklin Avenue	9,000	8,600 (am)	12,100
west of Western Avenue	9,000	6,400 (am/pm)	9,700
west of Harbor Freeway	9,000	7,800 (am/pm)	13,500
<b>Santa Monica Freeway</b>			
west of La Cienega Avenue	7,200	7,500 (am)	15,100
west of Western Avenue	9,000	7,300 (am)	14,200
west of Harbor Freeway	7,200	7,000 (am)	13,700

Source: Los Angeles City Department of Transportation, 1980 and Year 2000 Base Condition, Traffic Volume Flow Maps; Caltrans

<sup>1</sup>Assumes 1,800 vehicles per hour, corresponding to Level of Service E, multiplied by the number of lanes in the direction of the peak hour flow.

<sup>2</sup>Peak hour volume is derived by multiplying average daily traffic volumes by a peak hour factor and by a factor for the direction of the peak hour flow.

Of particular note is the effect the Santa Monica Mountains have on travel between the San Fernando Valley and the CBD, Hollywood, and Wilshire areas. Traffic movement across the mountains is funneled through a few passes. The Hollywood Freeway, which carries over 78 percent of the traffic through the Cahuenga Pass, already operates at capacity during peak hours. In 1980, the average daily traffic through this pass was approximately 271,000 trips. By the year 2000, demand will increase over 25 percent to 342,000 trips. That demand cannot be accommodated.

Given the absence of convenient freeways and capacity constraints on existing ones, the majority of the traffic moving between major destinations within the Regional Core travels on arterial streets. The projected growth in residential and job development will further burden a circulation system ill-equipped to handle even current demand. By the year 2000, there will be an increased demand on the Regional Core's arterial system of nearly two million more vehicle miles daily, a demand that will result in severe delays. Table I-3 shows the projected growth in travel in the Regional Core.

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TABLE I-3  
TOTAL DAILY VEHICLE MILES TRAVELED IN THE REGIONAL CORE,  
BY ROADWAY TYPE  
(in thousands)

<u>Roadway</u>	<u>1980</u>	<u>2000</u>	<u>Percent Increase</u>
Freeway	6,092	7,566	24.2
Arterial	7,384	9,369	26.9
Local	<u>709</u>	<u>891</u>	25.7
Total	14,185	17,826	25.7

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Source: Los Angeles City Department of Transportation, Working Paper--2000 With Project Traffic Volumes, April 1983.

A measure of how well the arterial system is functioning is the level of congestion at key intersections during peak hours. In 1980, 46 of the Regional Core's key intersections were considered very near or over capacity (Level of Service E or F). When an intersection is at or over capacity, traffic is backed up, motorists may have to wait through several changes of the signal light before crossing, and movement slows down to far below the permissible speed limit. By the year 2000, assuming no major transportation improvements and only currently planned intersection and roadway improvements, it is projected that the number of severely congested key intersections will be more than three times greater than in 1980.

With the projected travel demand resulting from the increased densities in the year 2000, the present Regional Core's freeway and arterial street system simply will not function efficiently.

## 2.4 TRANSIT

SCR TD provides an extensive and well-utilized bus system within the Southern California region. During an average weekday in 1980, SCR TD operated 1,860 peak hour buses which traveled 334,000 miles and carried 1,386,349 passengers. More than 120 separate bus routes offer service to, from, and within the Regional Core. The most heavily patronized corridor is along Wilshire Boulevard. Within a one-half mile band along either side of Wilshire Boulevard (six streets including Wilshire), local bus lines carry about 177,000 daily boardings.

Patronage is expected to continue to increase because of the reduced bus fares made possible through the passage of a 1/2 cent sales tax for transit funding. Though ridership is increasing, limits to effective bus service are being approached:

- Bus operating speeds are hampered by street congestion. Local buses in the CBD about 6-8 miles per hour and only slightly higher speeds are attained on Wilshire and on Hollywood streets.
- Buses operating on several heavily used lines are already over capacity. Adding more buses will not fully alleviate the problem. For example, Wilshire Boulevard carries more than 40 buses past a given point in the peak hour. Buses are often bumper-to-bumper. Even with additional buses, riders would still be traveling on congested streets, so service would not improve. Moreover, additional buses require the hiring and training of new operators and, significantly, labor accounts for 80 percent of transit operating costs. As a result, the cost of adding buses would be high, but the improvements in terms of carrying greater numbers of people at faster speeds would be minimal.
- More than 20 million square feet of office, retail, commercial, and other space is being constructed currently or is in final planning stages in the CBD. If transit is to maintain its modal share for peak trips, some 500 to 700 additional peak hour buses will need to be added to the current total. Due to current and projected congestion levels, the street system cannot accommodate the additional buses needed to meet future travel demand. A high volume rail rapid transit system is a logical solution to relieve overloaded streets and freeways and to add needed capacity to the transit system.

## 3. NEED FOR PROJECT

A rail transit project is needed for several crucial reasons: to improve accessibility and mobility in the Regional Core, to further the attainment of land use and development goals, and to carry out the public mandate for rail transit. Each of these reasons is discussed below.

### 3.1 IMPROVE ACCESSIBILITY AND MOBILITY

The Regional Core is the most densely populated portion of the Los Angeles Urbanized Area. In some areas of the Regional Core, population densities exceed 26,000 people per square mile. Employment in the CBD is nearly 43,000 jobs per square mile. Projections indicate the Regional Core will continue to grow substantially between now and the year 2000. Yet this level of development cannot be accommodated without severely overtaxing an already constrained transportation system, as described earlier in this chapter. The inability of the road network and the bus system to adequately serve the Regional Core will also act as a major deterrent to the development of the area. To accommodate and foster the growth projected and desired for the Regional Core, an efficient, fast means of traveling must be available.

Based upon the analysis performed in the Alternatives Analysis/Environmental Impact Statement/Environmental Impact Report (1980), known as the First Tier EIS/EIR, an 18.6 mile rail rapid transit line serving the Regional Core emerged as the best way of relieving some of the burden on the region's transportation system. That determination was based, in part, on the project's ability to satisfy the following goals for mobility and cost effectiveness, defined by SCRTD and the public:

- Provide a necessary improvement in the level of mobility in the Los Angeles CBD-Wilshire-Hollywood-North Hollywood Regional Core area.
- Integrate the corridor transit system with the other three elements of RTDP (Regional Transit Development Plan) to provide convenient regional access for all corridor residents.
- Maintain and improve transportation system safety and dependability for both users and nonusers.
- Maximize system capital and operational cost effectiveness in the Regional Core in terms of passengers and passenger miles, over a foreseeable range of passenger volumes.

The rail transit system with supporting bus services was ranked superior to ten other alternatives. Its advantages included the highest transit ridership, highest operating efficiency, greatest reduction in vehicular traffic and auto dependency, greatest travel time savings, most economic benefits, greatest accessibility, maximum air quality improvements, and largest energy savings.

### 3.2 SUPPORT LAND USE AND DEVELOPMENT GOALS

An effective transportation system is necessary to support regional and local goals relating to land use and urban form. Such goals include:

- Complement regional and local land development goals including the Centers Concept, which calls for concentrating development in high activity areas while preserving the surrounding lower density residential and recreational areas.

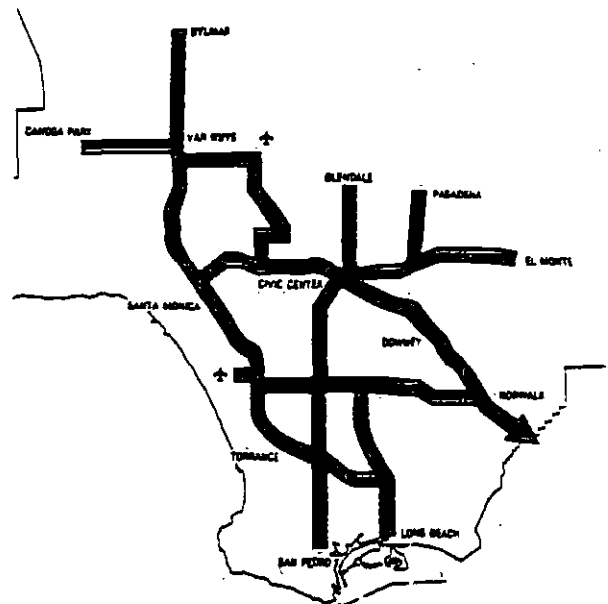
- Support city and county plans for land development along Wilshire Boulevard and for the revitalization of Downtown Hollywood and North Hollywood.

A rail rapid transit system appears best able to realize many adopted local and regional land use and environmental policies. Locally, the Concept of the Los Angeles General Plan and the Urban Form Policy of the county General Plan call for the creation of high density, multiuse centers. Earlier discussion demonstrated that the inability of the roadways and buses to provide sufficient capacity could frustrate the desired concentration of development. A high volume transit system would increase capacity and have the catalytic effect of fostering the Centers Concept. Similarly, the regional growth policy, adopted by SCAG, encourages development within a core area (of which the Regional Core is the most highly urbanized section) and the provision of transportation systems to support and connect a series of growth centers within the region. The proposed rail rapid transit system has been recognized by SCAG as an important ingredient in achieving its development and urban form objectives and has, accordingly, been made an integral part of the Regional Transportation Plan.

### 3.3 CARRY OUT PUBLIC MANDATE

Work on the Metro Rail Project began in earnest after Los Angeles County voters passed State Proposition 5 in 1975. Proposition 5 provided local gasoline tax funds for a rail rapid transit "starter line" for Los Angeles. Los Angeles County voters passed (by a 54.2 percent majority) an even more significant referendum, Proposition A, in November 1980. Proposition A added a half-percent to the county sales tax to provide the local financing for a complete regional rail rapid transit system.

This demonstration of growing voter commitment to rail rapid transit and its funding has come at a time when taxpayers have otherwise been extremely reluctant to sanction continued public spending. The Metro Rail Project is at the heart of the system that appeared on the Proposition A ballot and was subsequently determined by the Los Angeles County Transportation Commission to be the region's first priority rail rapid transit project. The Metro Rail Project would be an initial step toward responding to the mandate of the voters.



Source: Ballot Proposition A, November 4, 1980

**Figure 1-2 Regional Rail Rapid Transit System**

PROJECT DESCRIPTION

## SYSTEM DESCRIPTION

### ROUTE DESCRIPTION AND ALIGNMENT

The proposed route includes 17 stations, with provisions for future construction of a station at the Hollywood Bowl. The bus system would contain 1,969 buses and is described in SCRTD's Milestone 9 Report: Supporting Services Plan. The rail rapid transit route begins at Union Station, where it turns southwest and runs through the CBD along Hill Street. Turning on Seventh Street, the route heads towards the west side of downtown, past the Harbor Freeway, and continues along Wilshire Boulevard past MacArthur Park in the Westlake area. Proceeding along Wilshire Boulevard, the route serves the Mid-Wilshire and Miracle Mile business centers. At Fairfax, the line turns north to serve the Fairfax and West Hollywood communities and then turns eastward along Sunset Boulevard. The line continues for approximately two miles through Hollywood before it veers northwest at Cahuenga Boulevard. The route proceeds under the Santa Monica Mountains through the Cahuenga Pass and enters the Santa Fernando Valley near Universal City. It continues in a northwest direction along Lankershim Boulevard to its final stop at the North Hollywood Commercial Core.

The Project is proposed as a subway system, with virtually all line segments tunneled by proven tunnel boring machines, and stations excavated from street level by cut and cover construction techniques. Preliminary drawings have been prepared to show the alignment and the location where different construction techniques will be used, where special tracks will be installed, where stations will be built, and where the tunnel configuration will change.

### STATION DESIGN FEATURES

The following discussion describes some of the components and features of station design. A detailed presentation can be found in SCRTD's Milestone 10 Report: Fixed Facilities.

**Platform.** Metro Rail station loading platforms would be approximately 450 feet long to accommodate trains consisting of six 75-foot-long cars. The platform size is based on the ultimate system design capacity (generally thought of as being reached about 20 years after system opening) and provides for the safe and efficient circulation of passengers. As a cost reduction measure, center support columns are proposed in the platform area. Platforms may be "center" type, with a single platform flanked by the two tracks, or "side" type, with the tracks between two platforms. The center platform design is planned for most of the stations because it makes it easier for patrons to decide which train to take while they are on the platform, and because station costs are typically lower.

Entrance. Plaza entrances and entrances within existing or planned developments are favored. Where such off-street entrances are not possible, on-street entrances leading directly from the sidewalk to the fare collection area are proposed. Patronage levels are high enough to support entrances at each end of a station only in the CBD and at Wilshire/Fairfax. Particular site considerations also led to a "double-ended" station at North Hollywood.

Mezzanine/Concourse. This is the transition area between the entrance to the station and the train loading platform. Depending on the station site and whether it is an above ground or subway station, this area may be between the street surface and the platform(s), where it is called a mezzanine, or at street level, where it is called a concourse. The mezzanine/concourse provides space for various functions and typically includes the entire fare collection process, directional and information signs, and amenities for patrons' needs and comfort. The space that patrons enter before ticketing is designated a "free" area, and the space after ticketing is designated a "paid" area. As a cost reduction measure, center support columns are proposed in the mezzanine area.

Architectural Design. Certain station elements will be standardized for economy and ease of use and to establish an identity for the system as a whole. Escalators, stairs, and elevators connect access points to fare collection areas and train platforms and all stations will have appropriate lighting and ventilation.

Fare Collection. This subsystem deals with the collection of fares from passengers as well as the provision of change and tickets. Locations and types of fare collection areas vary at individual stations. The number of pieces of individual station equipment will vary according to patronage projections for that station, and arrangements may vary as a function of site specific mezzanine and station configurations. A barrier ticketing system is being designed for the rail transit project.

. Parking. At rail transit stations, two types of parking can be provided:

- o Drop-off and pick-up of patrons by auto (termed "kiss and ride") requires only a small amount of space for temporary parking.
- o "Park and ride" locations provide long term parking where a significant number of patrons are expected to drive themselves to the station. This will consist of surface parking lots initially. Parking structures will be built later to provide planned parking capacity.

Kiss and ride spaces are proposed at seven stations: Wilshire/Alvarado, Wilshire/Vermont, Wilshire/Fairfax, Fairfax/Beverly, Hollywood/Cahuenga, Universal City, and North Hollywood. The projected demand for kiss and ride at other stations



is generally smaller and will be accommodated on streets near the station entrances. Park and ride facilities are proposed at Union Station, Wilshire/Fairfax, Fairfax/Beverly, Universal City, and North Hollywood. In order to reduce the initial cost of the system, construction of parking structures at these locations is planned, but they will be deferred until alternative funding sources have been identified. The total number of park and ride spaces planned is 2,905 surface and 175 in structure, initially and 8,675 all in structure, ultimately. The structures at Universal City and North Hollywood would be about five levels, while those at the other three stations would be four levels. (An alternative at Universal City would provide two structures of three levels each.)

**Bus Access.** An important criterion in the location of stations is their proximity to major bus routes that provide feeder service. Bus access is provided either as off-street terminals or on-street bus bays. Off-street terminals are planned for eight stations. These will include separate areas for passenger boarding/alighting and bus layover and will be used in most cases by buses terminating at the stations. On-street bus bays, or turnouts, will be provided adjacent to ten stations and will generally be used by buses not terminating at the stations.

**Bicycle Access.** Bicycle racks or lockers for bicycles are provided at all but the three CBD and Wilshire/Normandie Stations.

**Equipment Spaces.** These facilities house the equipment required to operate and maintain the station. The facilities include electrical distribution rooms, fan rooms, and traction power substations that supply power to propel the passenger trains, as well as rooms for more general purpose functions such as trash collection, etc. Equipment spaces would generally be located at the track level beyond the platforms and at mezzanine levels beyond the public areas.

#### STATION LOCATIONS

Station locations are shown on the attached map.

#### YARDS AND SHOPS

The central maintenance facility will be a 45-acre major repair shop and storage yard, proposed for the downtown industrial area. The yards and shops provide space for the following functions: storage of trains when not in mainline service; dispatch, receipt, and change in trains for mainline service; interior and exterior cleaning of trains; preventive and corrective maintenance of cars; and testing of cars before revenue service and after major repairs. Operating storage will be provided by two stub-ended tail tracks, 500 feet long, north of the terminal station at Lankershim/Chandler.



# Southern California Rapid Transit District Metro Rail Project

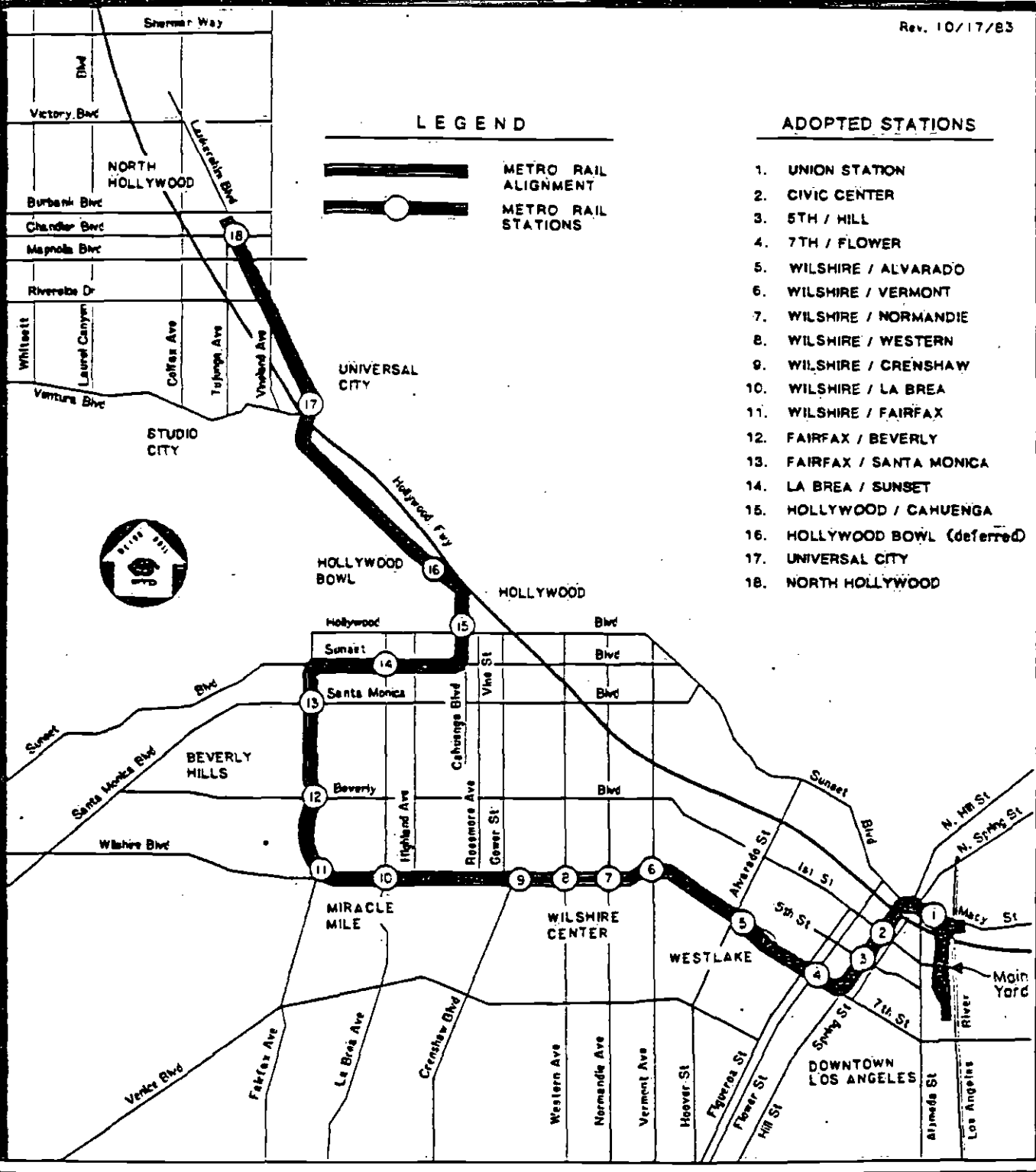
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## LEGEND



## ADOPTED STATIONS

1. UNION STATION
2. CIVIC CENTER
3. 5TH / HILL
4. 7TH / FLOWER
5. WILSHIRE / ALVARADO
6. WILSHIRE / VERMONT
7. WILSHIRE / NORMANDIE
8. WILSHIRE / WESTERN
9. WILSHIRE / CRENSHAW
10. WILSHIRE / LA BREA
11. WILSHIRE / FAIRFAX
12. FAIRFAX / BEVERLY
13. FAIRFAX / SANTA MONICA
14. LA BREA / SUNSET
15. HOLLYWOOD / CAHUENGA
16. HOLLYWOOD BOWL (deferred)
17. UNIVERSAL CITY
18. NORTH HOLLYWOOD



## SUBSYSTEMS

Subsystems, the operating equipment portions of the rail transit project, include passenger vehicles, train control, communications, traction power, and fare collection. The following discussion covers train control, communication, and traction power.

**Train Control.** Metro Rail trains will be equipped for both automatic and manual operation. A central control facility will be located in a separate operations control center in the downtown area near Union Station. The facility will house the necessary displays, control consoles, communication apparatus, and operating personnel responsible for the overall safety and security of passengers, and for the daily operation of:

- o Radio service between various areas for operations and maintenance, security purposes, and emergency needs.
- o Telephone services, including direct line emergency, administrative, maintenance, and public telephone service.
- o Public address and intercommunication systems within the passenger stations.
- o Closed circuit television surveillance at passenger stations.
- o Transmission via wire and cable to carry communications between the stations and Central Control.

**Traction Power.** The traction power subsystem provides power to the passenger vehicles. Substations along the route would convert the higher commercial AC voltage to the lower DC voltage (600-750 volts) used by the trains. From the substations, the energy would be transferred to the third rail that supplies power to the train. Components of the traction power subsystem include transformers, rectifiers, switches, and circuit breakers.

## OPERATING CHARACTERISTICS

The rail transit system will use proven two track, steel wheel, steel rail components. The system's operating characteristics are based on an analysis of hours of operation, train size, vehicle loading, the duration of each station stop (dwell time), and average operating speed. Further information is contained in the Milestone 12 Report: The System Plan.

**Patronage.** It is estimated that more than 360,000 passengers will board the rail system daily in the year 2000. Total estimated transit boardings are nearly 2,430,000, of which about 2,070,000 would be on the bus network. The greatest number of rail boardings arrive by feeder buses. This mode of access accounts for 54 percent of the total rail boardings.

Hours of Operation. Hours of operation for other rail transit systems vary from 14 hours to 24 hours per day. The operating characteristics described here assume a 20-hour day for purposes of estimating fleet size, operating costs, and other system information. The 20-hour day allows a regular period for maintaining the tracks and other parts of the system. The current plan calls for 20-hour per day operation, 7 days a week, but the system is being designed for 24-hour operating capability. Actual operating hours will be determined on the basis of demand.

Estimated Travel Time. A one-way trip from North Hollywood to Union Station would take about 35 minutes. A round trip requiring two turn-arounds could be made in less than 75 minutes.

System Capacity. The ultimate capacity is shown in the table below and shows the maximum number of passengers that could be carried given various schedule headways and passenger loads per car.

---

MAXIMUM PASSENGERS PER HOUR

<u>Maximum Passengers Per Car</u>	<u>6-Car Trains</u>	
	<u>2 Minute Headways</u>	<u>2.5 Minute Headways</u>
170	30,600	24,480
200	36,000	28,800
231	41,580	33,264

---

Source: SCRTD, Milestone 1 Report: Preliminary System Definition and Operating Plan, August 1982.

A system using six-car trains would have an hourly maximum capacity of 30,600 passengers with two-minute headways. Higher passenger loadings per car (up to a packed condition with 231 patrons) provide flexibility for unplanned circumstances. These capabilities are adequate to meet expected growth during the first 20 to 30 years of rapid transit system operation.

**Train Size and Fleet.** The proposed maximum train size is six cars, with each car approximately 75 feet long by 10 feet wide. This train size will provide the required peak capacity to carry projected passenger demand with about 3.5 minutes between trains. A six-car train requires a 450-foot station platform to provide for the convenient loading and unloading of passengers.

A fleet of 130 cars will be required initially, although the ultimate operating capacity of six car trains operating at two minute headways would require a fleet of 230 cars. The fleet size includes vehicles needed for revenue service plus those vehicles required for standby, maintenance, etc.

**Vehicle Loading.** The peak passenger load planned per car over the heaviest link during the peak hour is 170 passengers. This loading standard is based on a capacity of 76 seated passengers plus a 3.3 square foot area for each standing passenger, permitting reasonable standing comfort and movement within the car. For off-peak service, loads will not exceed 91 passengers per car. With the high rate of passenger turnover expected at stations near the heaviest link, few passengers would have to stand for more than one station stop during off peak hours.

## COSTS

Cost estimates include a 15 percent design contingency for facilities, a 10 percent contingency for systems, and an allowance for uncertainties during subsequent engineering design work. The need for this factor diminishes as design progresses to the final stages.

Capital costs are presented in escalated dollars. The escalated capital costs of the project are determined by escalating each design contract to the midpoint of construction. Annual operating and maintenance costs are in 1983 dollars.

**Capital Cost Items.** Capital costs are investments for the design and construction of permanent facilities and procurement of equipment required for the operation and maintenance of the rail rapid transit system. Each major cost item is described below. The estimated total cost for the project in escalated dollars is anticipated to be \$3.309 billion. More information on cost estimates is contained in the SCRTD Milestone 11 Report: Cost Estimate.

**Guideways and Stations.** Includes the basic heavy construction for the transit line and station facilities, and all structures necessary to support the transit vehicle, such as line structures, station shells, yards, and shop buildings.

**Utilities.** Accounts for utilities within construction sites that must be temporarily or permanently relocated, or supported in place and maintained. The estimate includes work on storm and sanitary sewers; water, gas, and steam lines; electric duct lines for power, telephone, telegraph, traffic lights, police, and fire; manholes; catch basins and storm drains; and overhead power and utility lines.

Parking. Covers various SCRTD-provided parking facilities, including bus terminals, park and ride lots, and kiss and ride areas.

Central Control Facility and Main Yard. Includes the facilities necessary for the storage and dispatch of rail vehicles and the control tower, from which all movement within the yard would be directed.

North Hollywood Tail Track. Includes the cost of storage tracks at the northern end of the rail rapid transit system.

Trackwork. Includes procurement and installation of the running rails and turnouts, crossovers, track fasteners, ties, and ballast. These are the facilities required for the vehicles to respond to the command-and-control system and to follow the guideway.

Train Control. Includes the cost of systems for train protection, train operation, and train supervision. Specific facilities include track circuits, switch and lock movements, and signals; yard control power; control consoles and supervisory computers; and automatic train operation and protection.

Communications. Covers the communication system between central control, auxiliary and supervisory personnel, rapid transit vehicles, and stations. Also included are the public address systems and a closed circuit television for security.

Traction Power. Covers the cost of furnishing and installing equipment to provide power for vehicle propulsion and system operation, including all equipment for power transmission, conversion, and distribution.

Fare Collection. Includes facilities like ticket vending machines, bill changers, entry and exit consoles, and handicapped/emergency gates.

Passenger Vehicle. Includes vehicles for rail passengers.

Auxiliary Vehicles. Includes vehicles for servicing the system like locomotives, self-propelled cranes, and flat cars.

Other Construction Related Cost Items. These items include the aspects of construction not related to facilities and structures.

Right-of-Way. Reflects the cost of obtaining easements, the permanent taking of real property required for the construction and operation of the system, and the cost of relocating the displaced residents and businesses.

Engineering Design and Construction Management. Includes indirect costs for project design and for procurement and construction management during construction of the system, and is estimated as a percentage of the total facilities cost.

Agency Cost. Accounts for indirect costs incurred by SCRTD for administration of the project. Included are costs for construction inspection; staff support on design matters, cost estimating, and cost control; special consultants; operational planning and pre-operating and start up costs.

Insurance Costs. Includes insurance for facilities and contractors during construction.

Annual Operating and Maintenance (O & M) Cost Items. Operating and maintenance costs are annual recurring costs necessary for safe and dependable rail rapid transit service. Over the life of the system, they represent a major portion of the total investment for the project. Projections for year 2000 annual O & M costs, including labor costs, are based on the experience of comparable rail rapid transit systems, including BART (San Francisco), MARTA (Atlanta), NYCTA (New York), and CTA (Chicago). Unit costs were developed for each of the following major categories: maintenance of ways and structures, maintenance of vehicles, electrical power, and transportation.

General Administration. Includes the added SCRTD administration expense required as a result of rail operation. It includes the labor cost associated with the incremental labor required for general management, planning and marketing, operations, training and safety, customer relations, administrative management, and finance function.

Maintenance of Ways and Structures. Includes the expenses of maintaining fixed facilities such as subways, aerial structures, tracks, stations, electrical and control equipment, power systems, fare collection equipment, escalators, landscaping, fencing, and parking lots.

Maintenance of Vehicles. Covers the cost of maintaining, inspecting, repairing, and cleaning vehicles.

Electrical Power. Includes the cost of providing traction power for propulsion of the vehicles; auxiliary power for lighting stations, yards, and shops; and operation of system machinery and equipment.

Operations. Provides for all management, train operations, control center, stations and security functions including all labor, materials and other miscellaneous expenditures necessary to operate the transit system.

Subsystem Operations and Maintenance. Includes management, personnel, materials, parts, and equipment to maintain the various subsystems and also includes all electrical power to run the transit vehicles. Subsystems covered by this element are traction power, train control, fare collection and communications.

Liability. Includes expense to estimate the costs of personal injury, property damage, other liability expenses and/or insurance coverage.

Unit Costs. The unit costs for estimating the rail rapid transit system's annual O & M costs were developed from cost accounts and operating statistics provided by each transit system in its Section 15 reports to UMTA and were then applied to the operating statistics projected for the system in year 2000. The Project has annual rail O & M costs of \$47.0 million. (Table below).

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ANNUAL OPERATING AND MAINTENANCE COSTS  
(in million of 1983 dollars)

<u>Item</u>	<u>Cost</u>
General Administration	\$ 3.96
Maintenance of Ways & Structures	5.07
Maintenance of Vehicles	8.31
Electrical Power	8.88
Operations	9.20
Subsystems	9.62
Liability	<u>1.90</u>
 Total Rail Costs <sup>1</sup>	 \$ 46.94

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Source: <sup>1</sup>SCRTD, Milestone 11 Report: Cost Estimate, 1983

Financing. SCRTD is currently securing funds for the construction and operation of the Metro Rail Project. All of the following sources are assumed to be available, but future changes in federal and state policy could affect their availability to SCRTD. Prime sources of funding are divided into federal and nonfederal categories. The projected funding requirements are presented in the attached table. It shows proposed funding sources over a nine-year period assuming a 62% UMTA Section 3/38% non-Section 3 split. As cost estimate and funding availability become more definite, a more specific cash flow can be prepared.

Federal Share. UMTA is the federal agency that provides transit funding. Section 3 funds could finance up to a maximum of 75 percent of the capital costs of the project subject to UMTA's funding constraints. Because of these constraints, SCRTD is proposing to increase the local share so that federal Section 3 levels are reduced to about 62 percent.

Local Share. Non-Section 3 sources of financing include state and local assistance programs, SCRTD revenue programs, and UMTA Section 9. Non Section 3 sources of funding are expected to provide about 38 percent of the capital costs of the Metro Rail Project. The California Transportation Commission (CTC) and the Los Angeles County



Transportation Commission allocate a major source of nonfederal transit funding. Primary local funding programs include the following:

- o Article 19 Mass Transit Guideways Program (Proposition 5) - State program which allows motor vehicle revenues to be used for rail transit projects.
- o Transportation Planning and Development Funds (TP&D) - Fund allocates "spill-over" revenues from the state sales tax on gasoline through AB 2551 (formerly SB 620). Recent legislation, SB 1331, calls for the combining of Article 19 and TPD Funds into one mass transit guideway fund.
- o Proposition A - Measure which allows a 1/2 cent sales tax increase in Los Angeles County to help finance lower bus fares, local transit improvements, and construction of a rail rapid transit system.
- o Joint Development/Value Capture Funds - Techniques to generate revenues for capital and construction costs. Joint development may result in cost efficiencies in the construction of the rail system, a limited recovery of capital costs, and increased farebox revenues. Value capture may create revenues by tapping the increased real estate value around station areas by the Metro Rail Project.
- o Other - Other nonfederal sources of financing to be considered by SCRTD include Equipment Trust Certificates, Grant Anticipation Notes, Certificates of Participation, and Revenue Bonds.

METRO RAIL  
PROPOSED FUNDING SOURCE SCHEDULE

(MILLIONS OF DOLLARS)

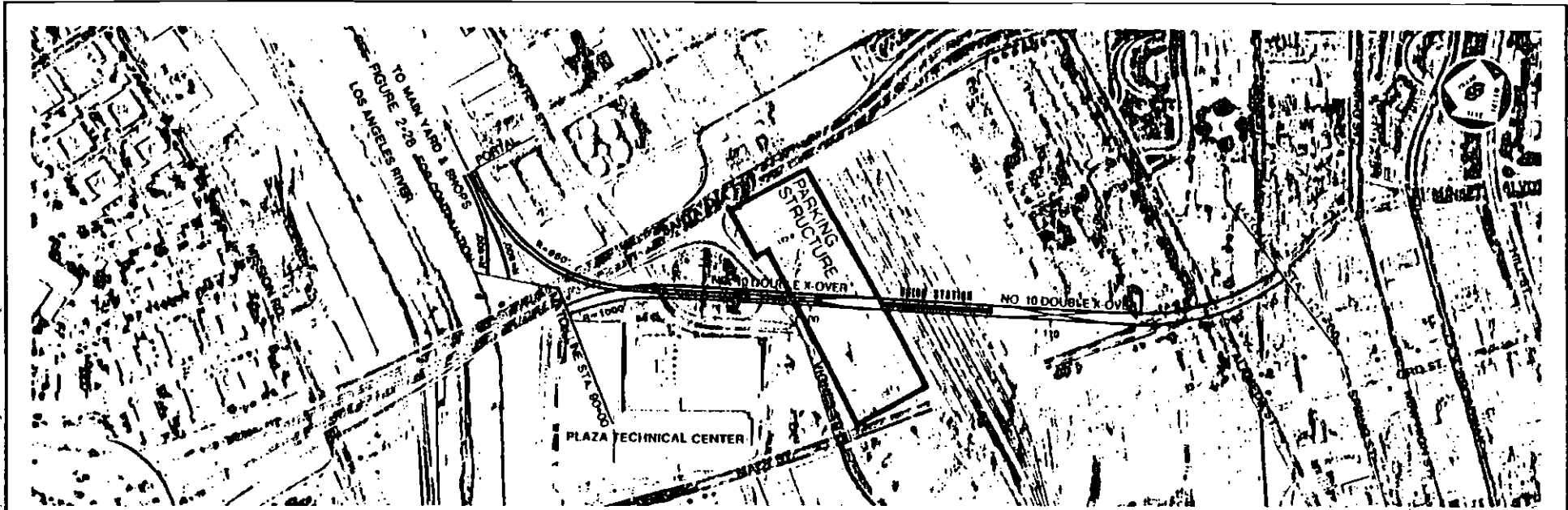
SOURCES	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	TOTAL	PROJECT SHARE %
SECTION 3:											
o 62% Share	0	117.2	336	336	365	365	365	127.8	0	2,012	
o 77% Share*	40	0	0	0	0	0	0	0	0	40	
TOTAL	40	117.2	336	336	365	365	365	127.8	0	2,052	62
STATE	39.3	30	53	72	72	57	57	19.7	0	400	12
LACTC	5.4	38	54	55	56	70	70	42.6	21	412	12
LOCAL/PRIV.	0	0	80	70	20	0	0	0	0	170	5
SECTION 9	0	40	20	20	25	25	26	30	20	206	7
CITY OF L.A.	0	7	7	10	10	11	11	10	3	69	2
ANNUAL TOTALS	84.7	232.2	550	563	548	528	529	230.1	44	3,309	100

\* AVERAGE OF \$15 MILLION AT 80% AND \$25 MILLION AT 75%.

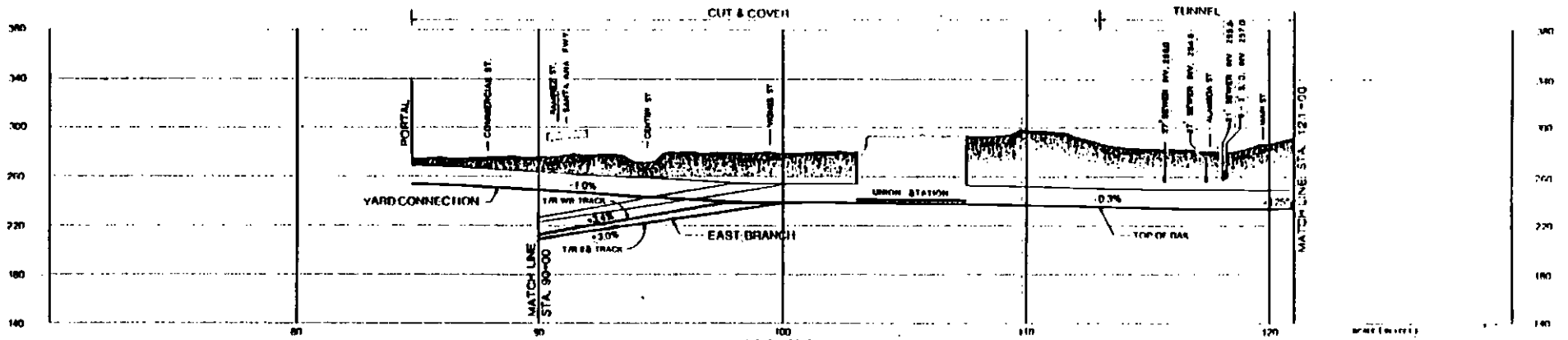
12/13/83  
P&C-13.4

APPROVED:

*[Signature]* 12/15/83  
General Manager/Date



PLAN



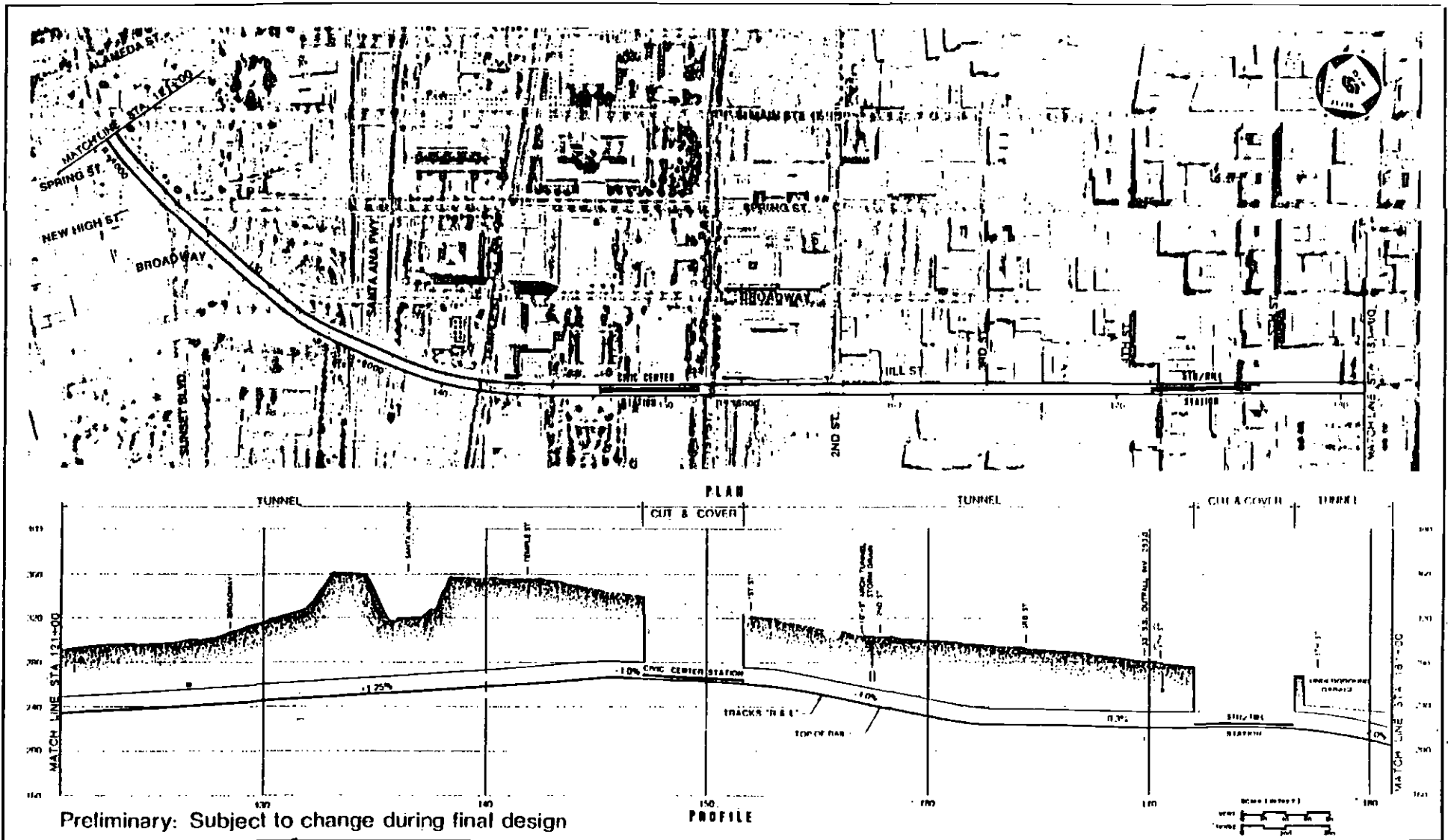
PROFILE

Preliminary: Subject to change during final design

Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

**Figure 2-4.1 Alignment**

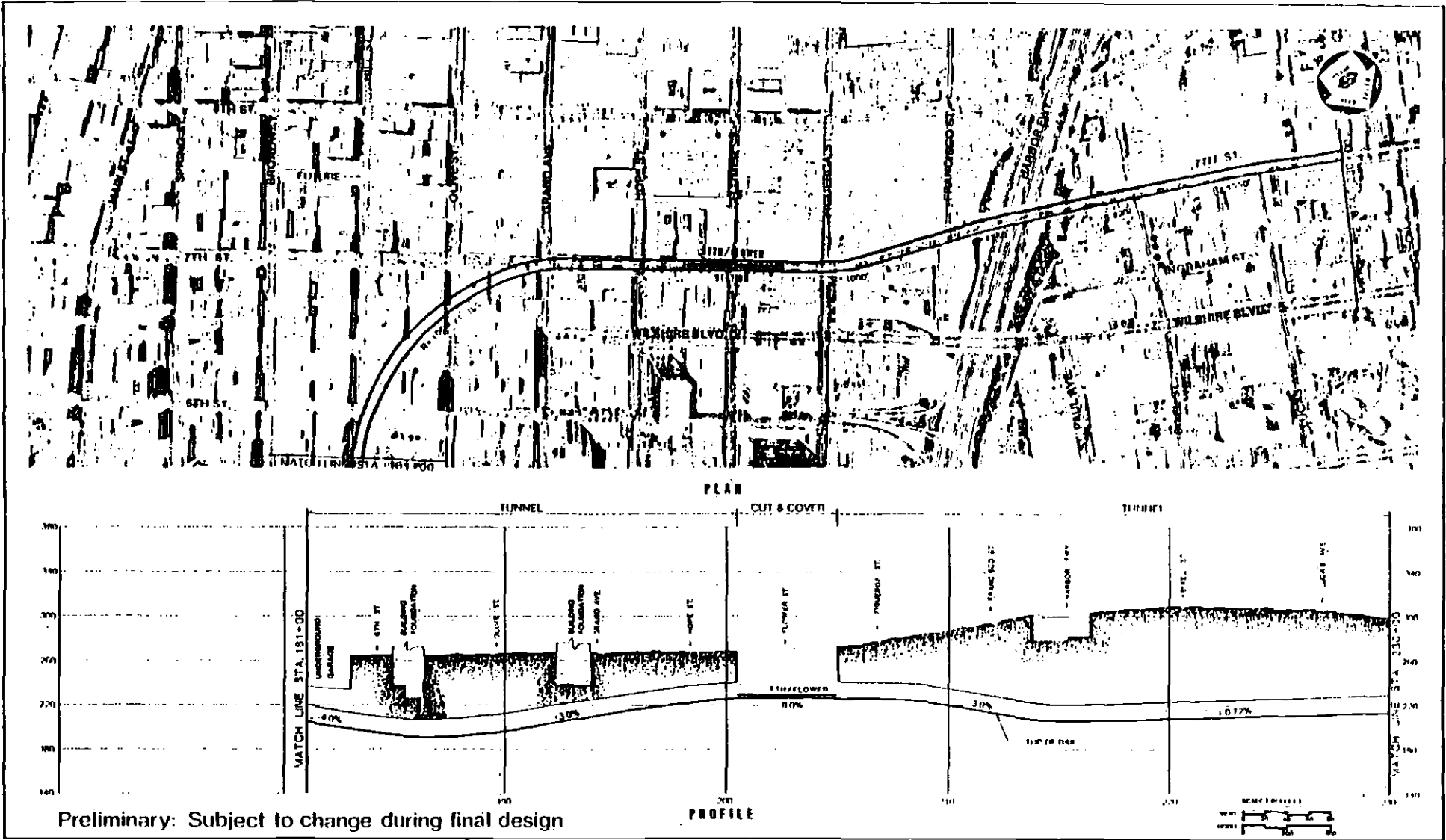
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Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

**Figure 2-4.2 Alignment**

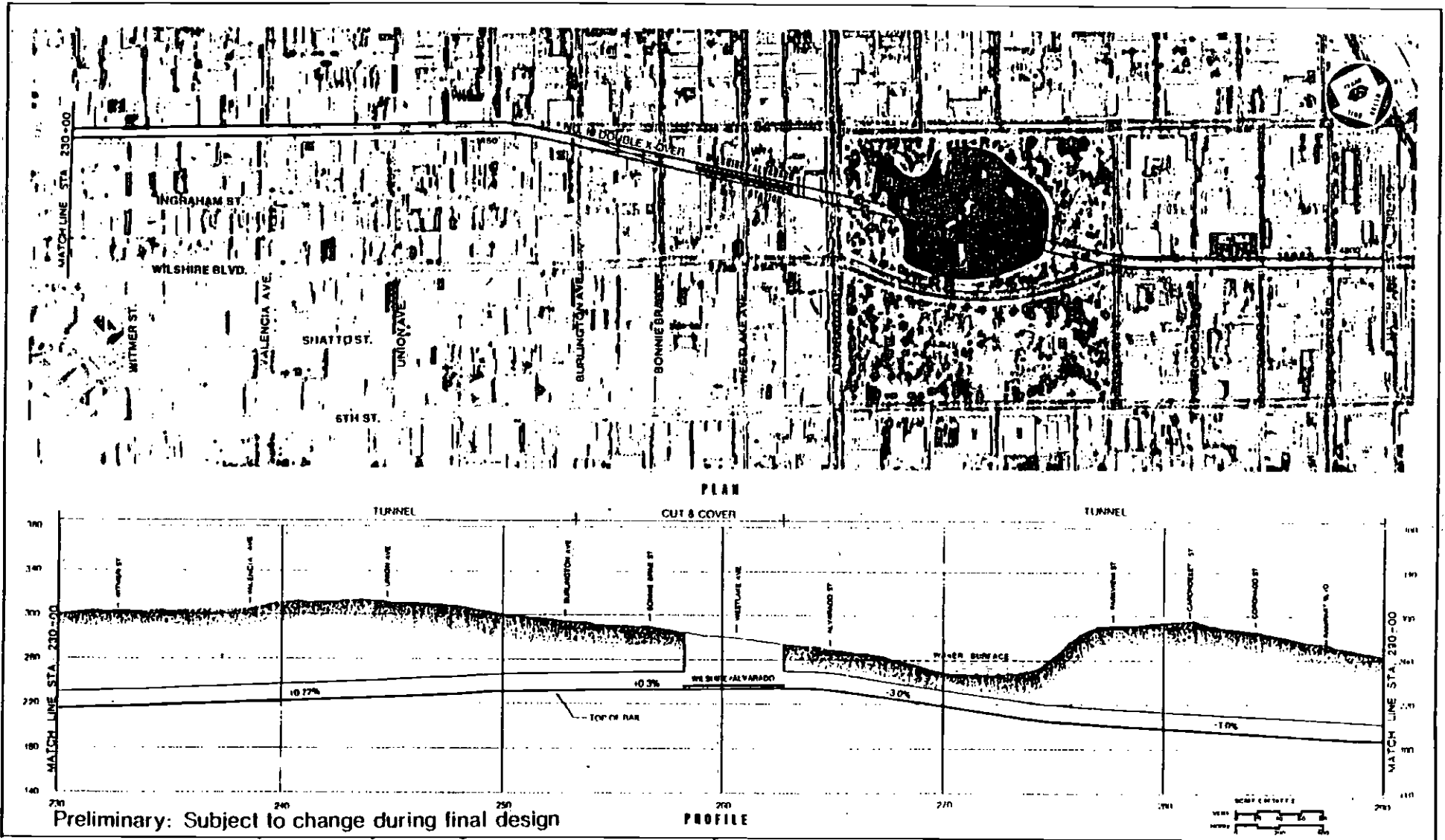
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**Figure 2-4.3 Alignment**

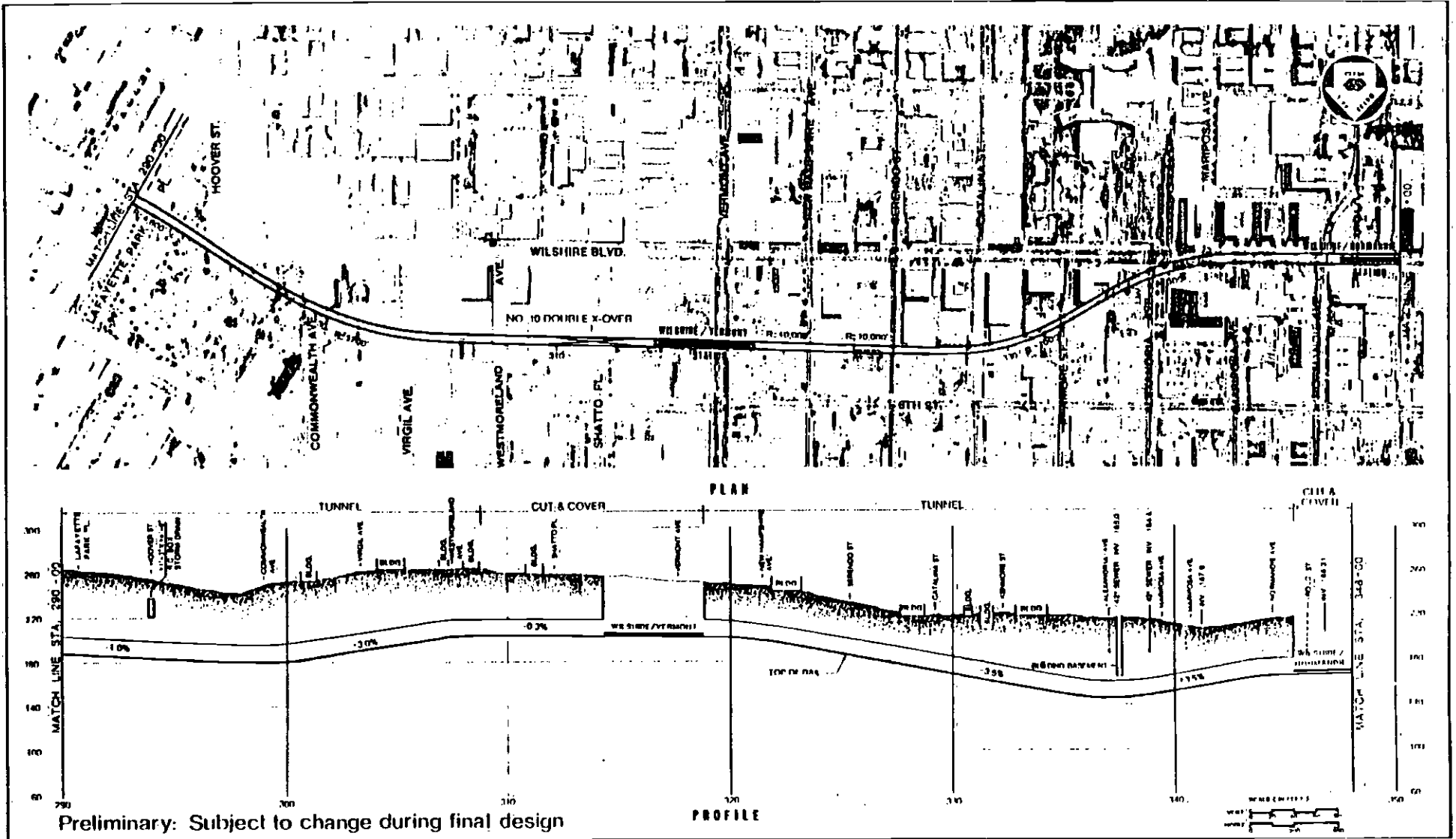
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**Metro Rail Project**  
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**Figure 2-4.4 Alignment**

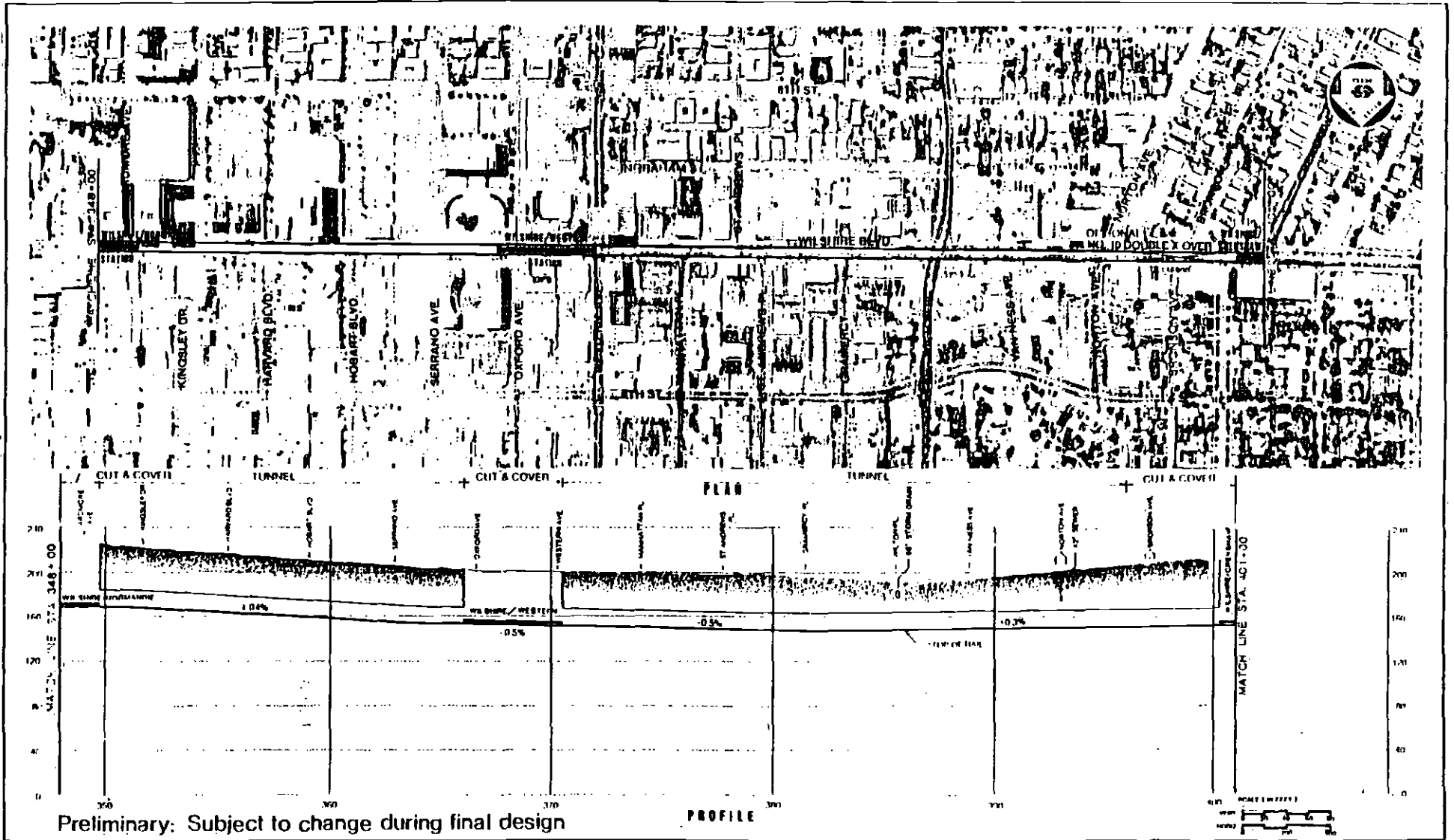
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Southern California Rapid Transit District  
**Metro Rail Project**  
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**Figure 2-4.5 Alignment**

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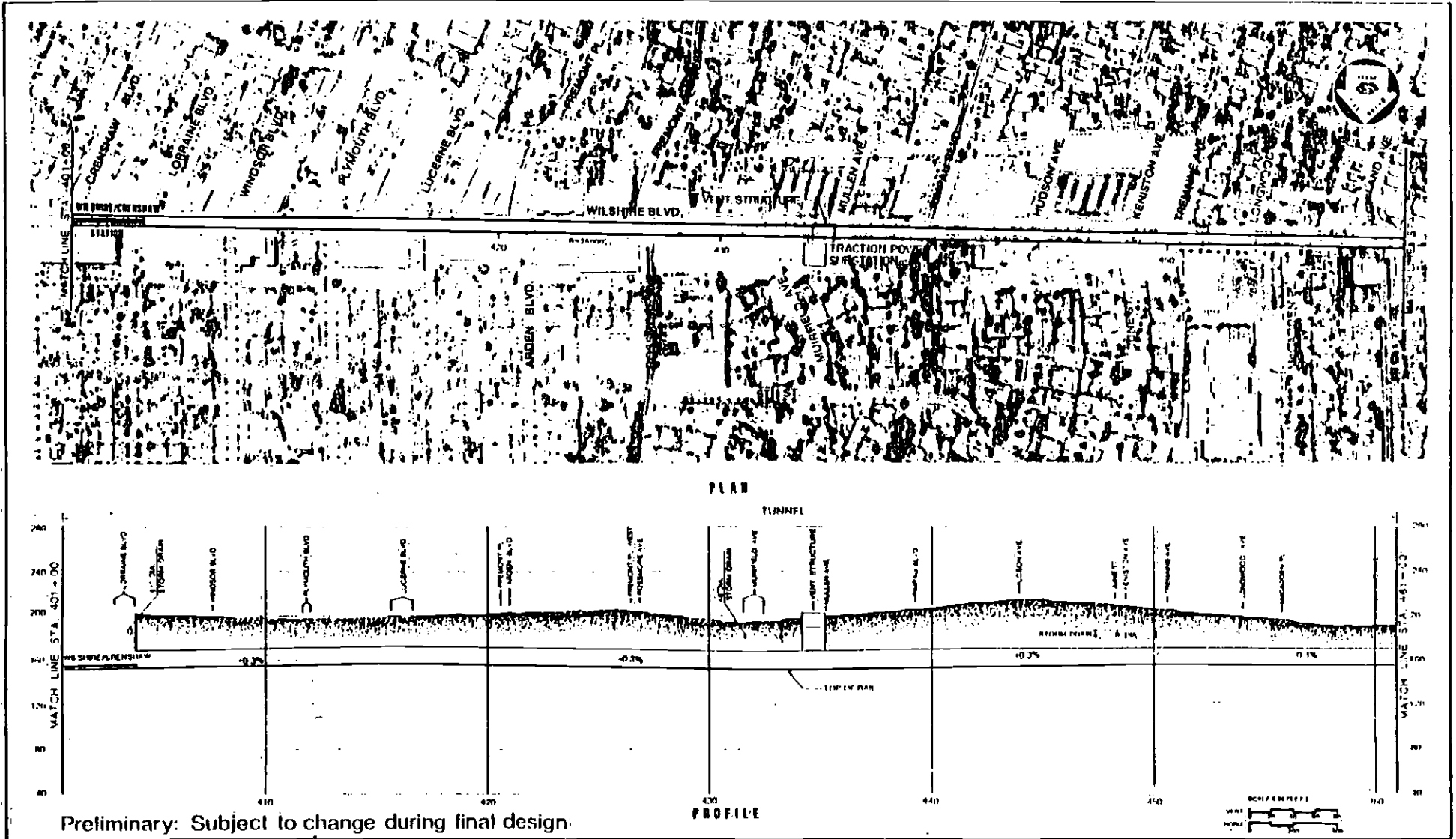


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**Metro Rail Project**  
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**Figure 2-4.6 Alignment**

Source: DMJM/PBQD

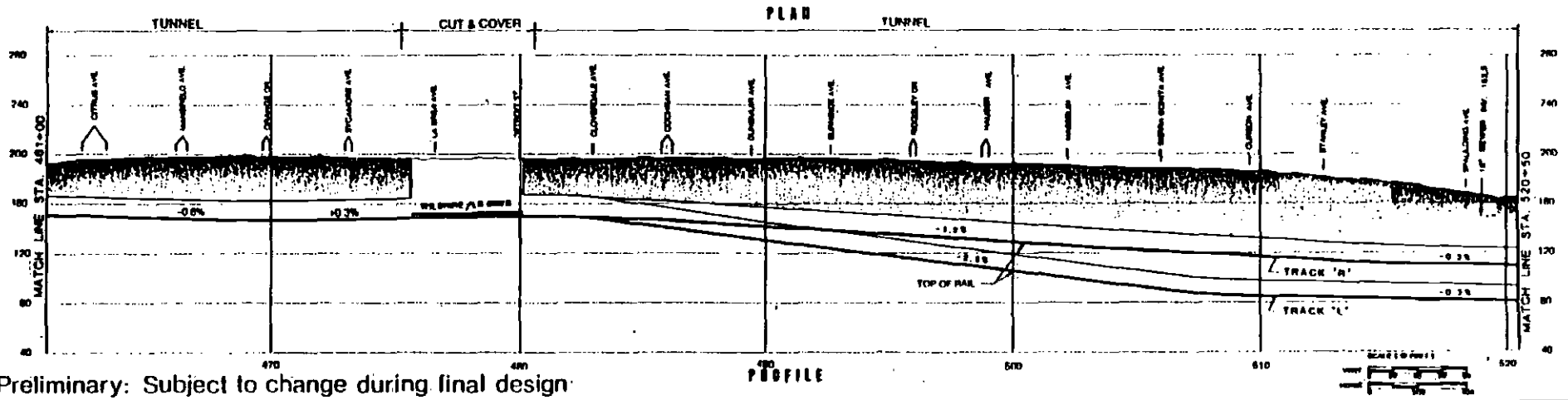




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**Metro Rail Project**  
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**Figure 2-4.7 Alignment**

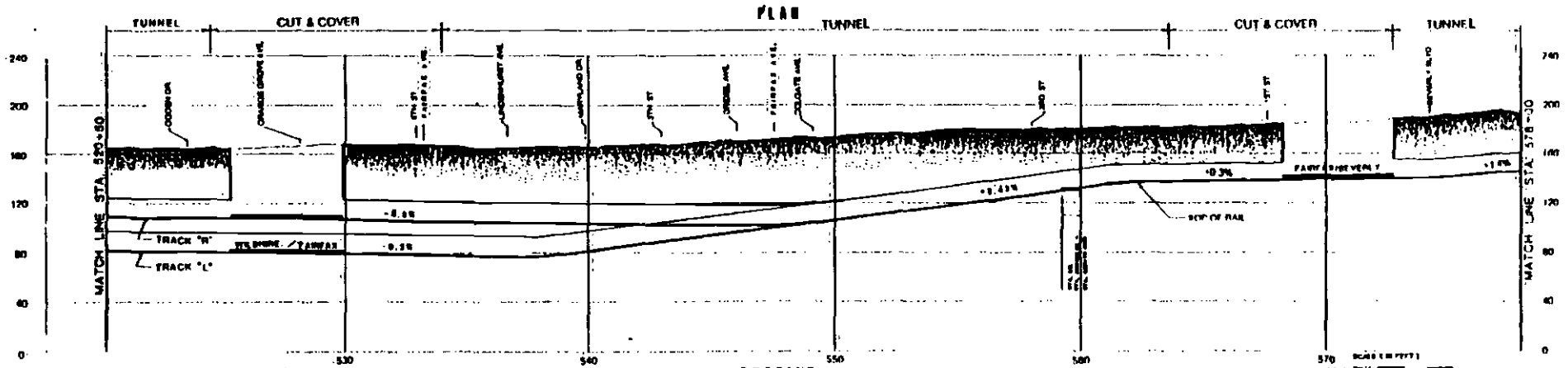
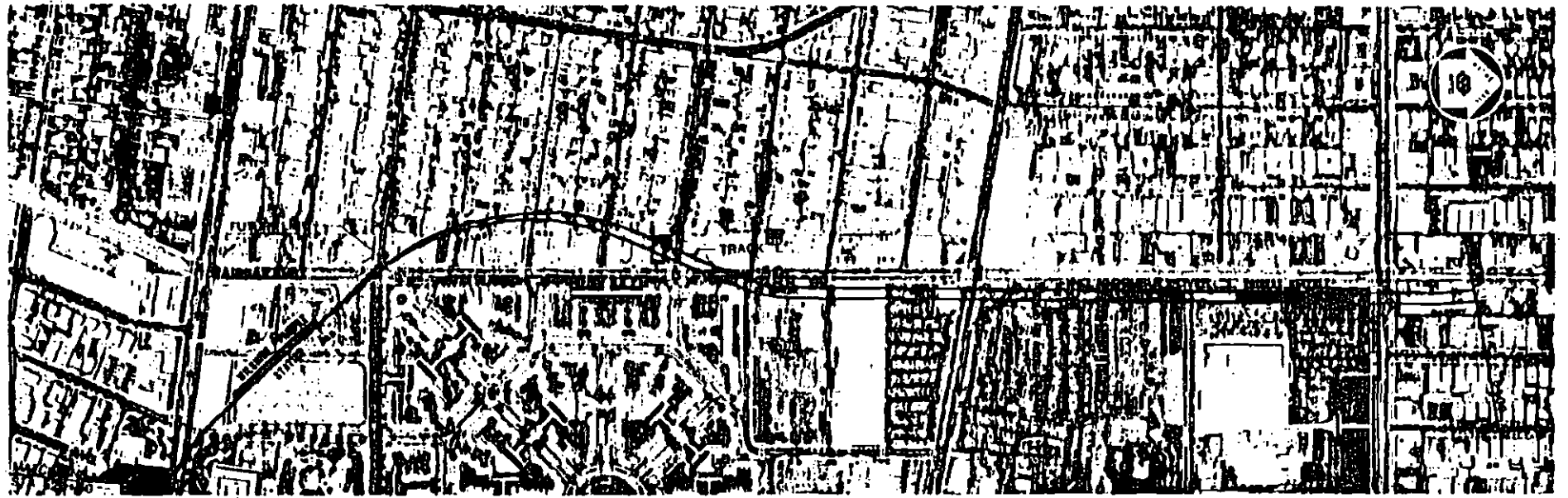
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**Figure 2-4.8 Alignment**

Source: DM/JM/PBQD

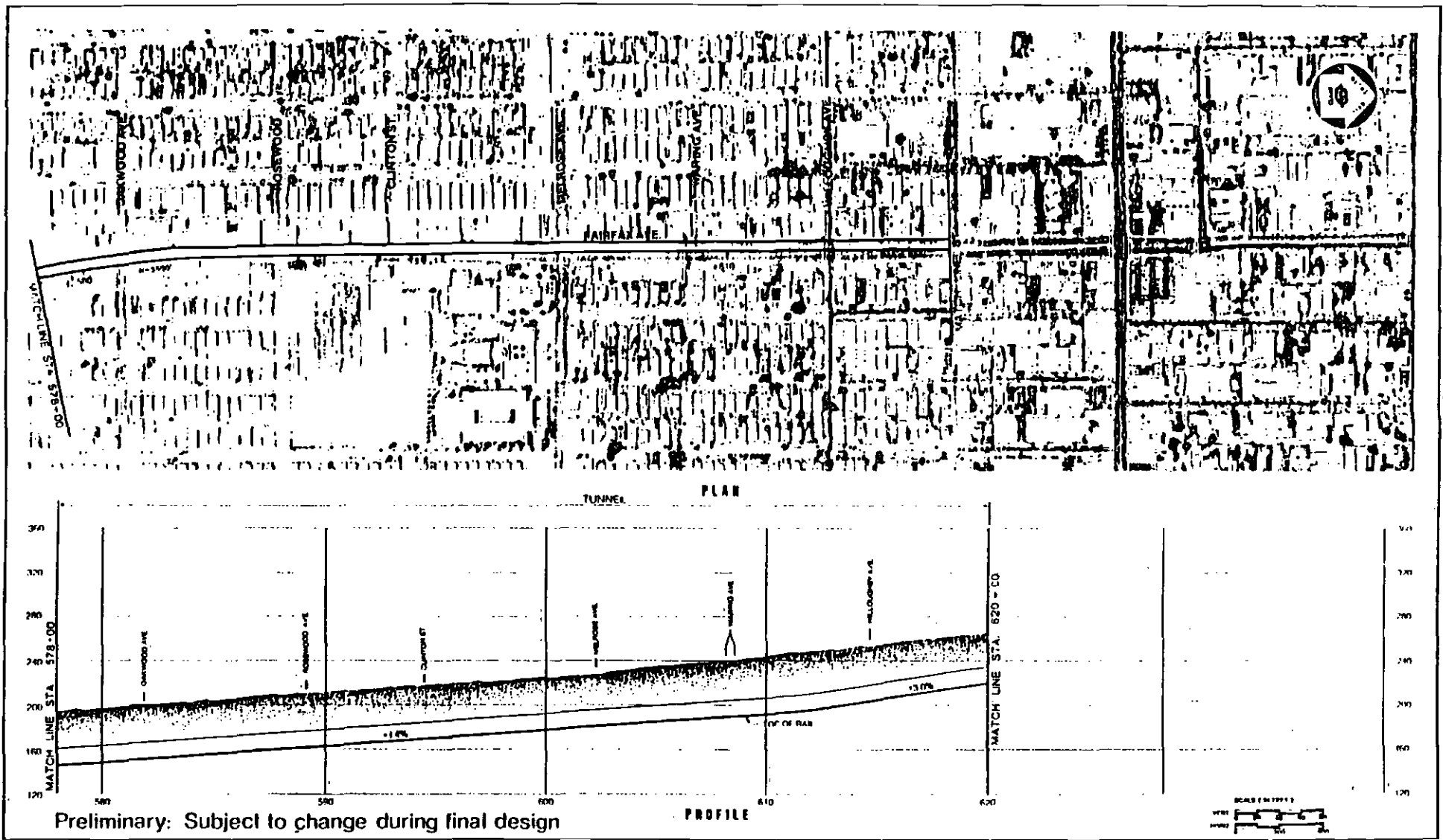


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**Metro Rail Project**  
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**Figure 2-4.9 Alignment**

Source: DMJM/PBQD



Preliminary: Subject to change during final design

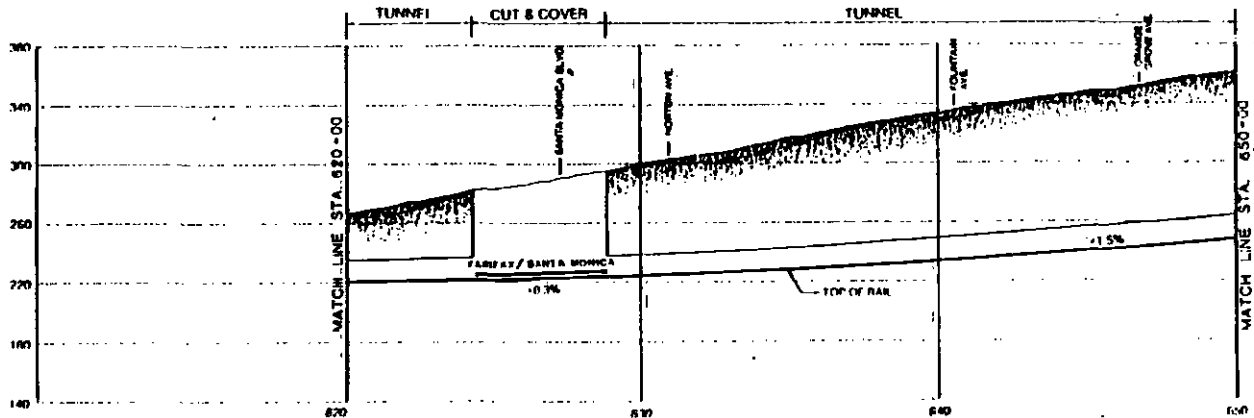
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**Metro Rail Project**  
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**Figure 2-4.10 Alignment**

Source: DMJM/PBQD

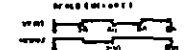


PLAN



PROFILE

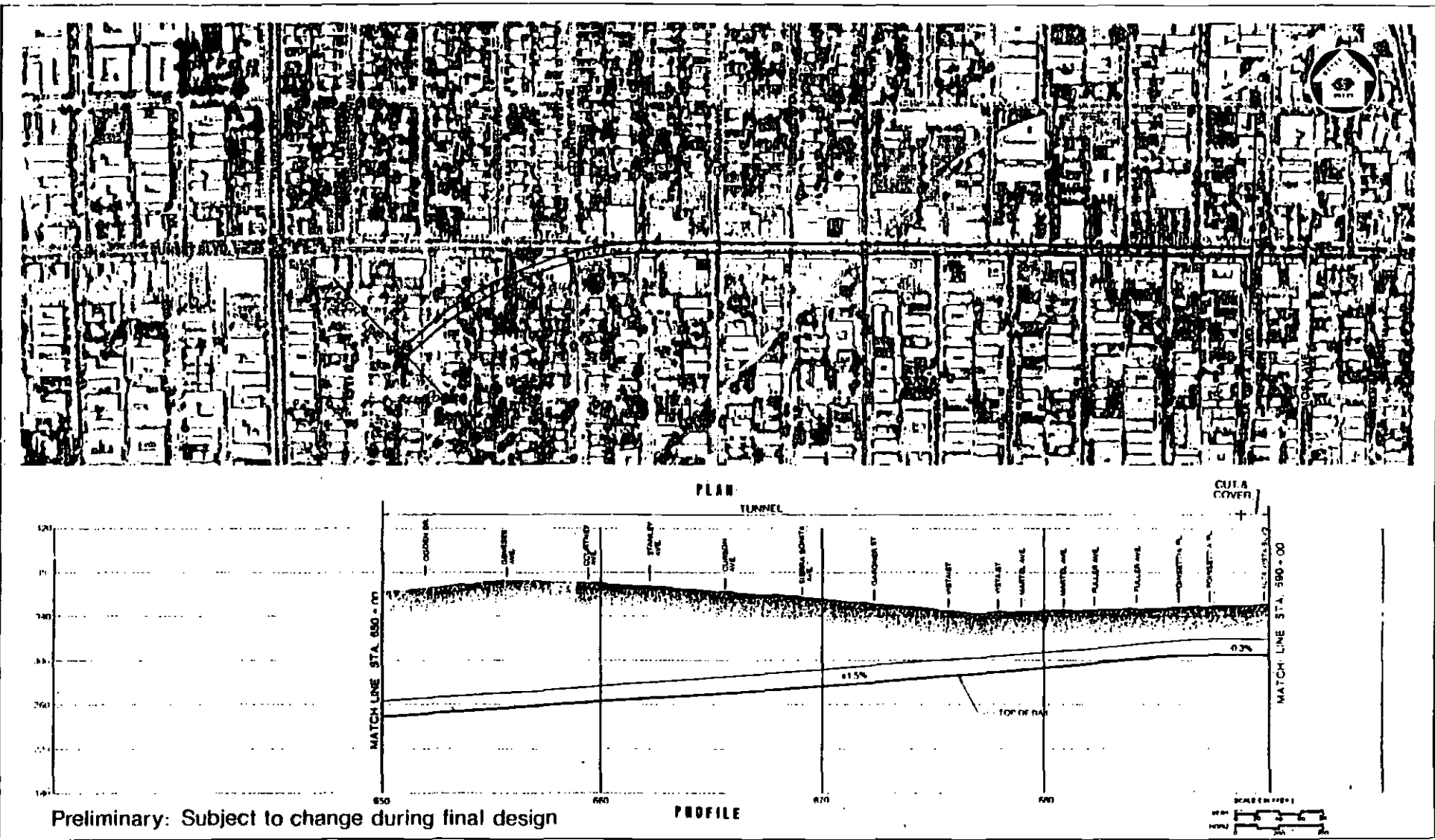
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Southern California Rapid Transit District  
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**Figure 2-4.11 Alignment**

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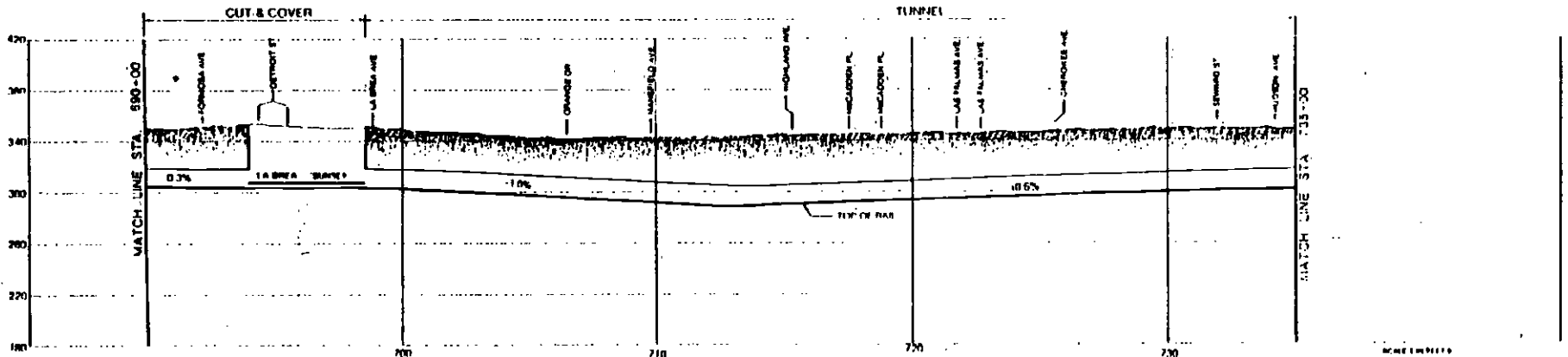
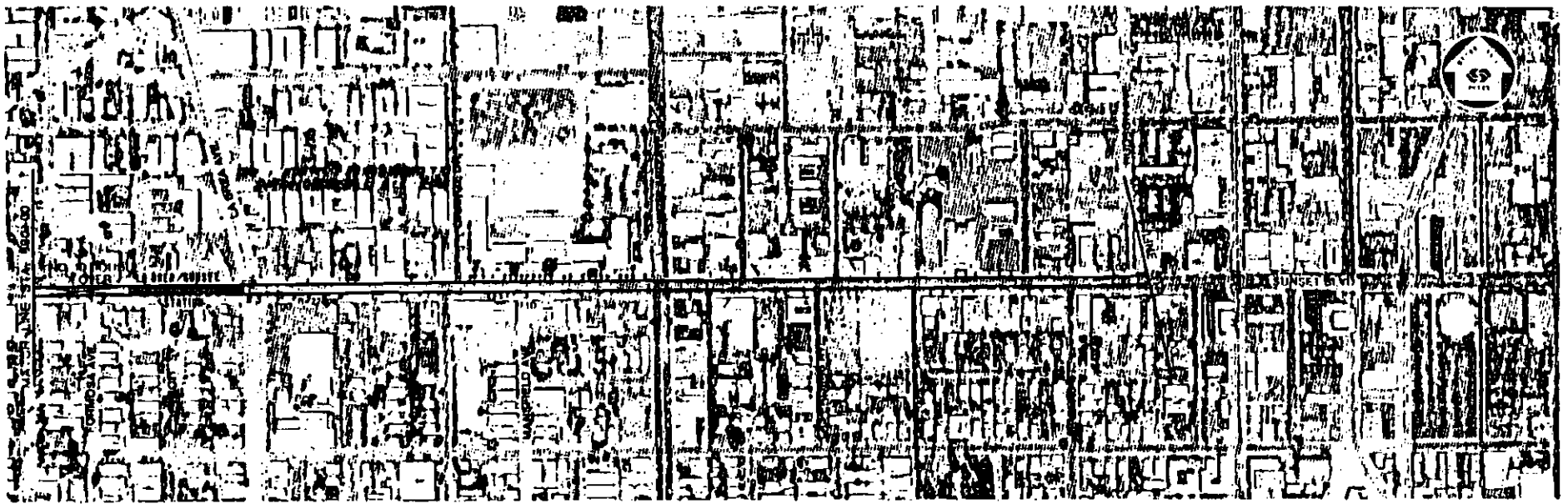


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**Figure 2-4.12 Alignment**

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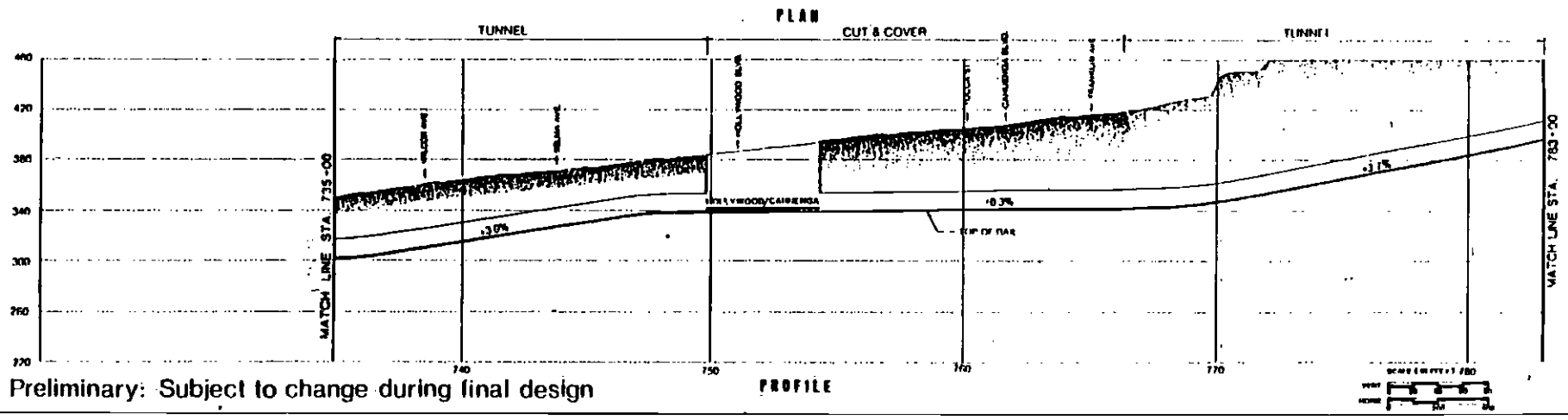
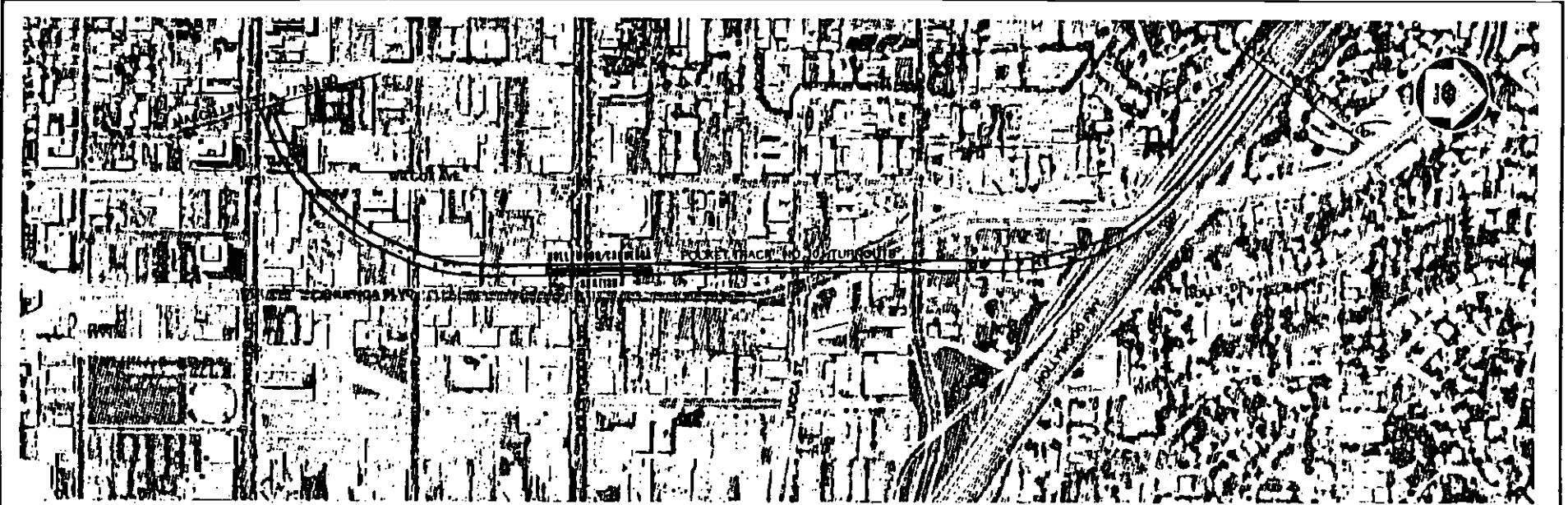


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**Metro Rail Project**  
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**Figure 2-4.13 Alignment**

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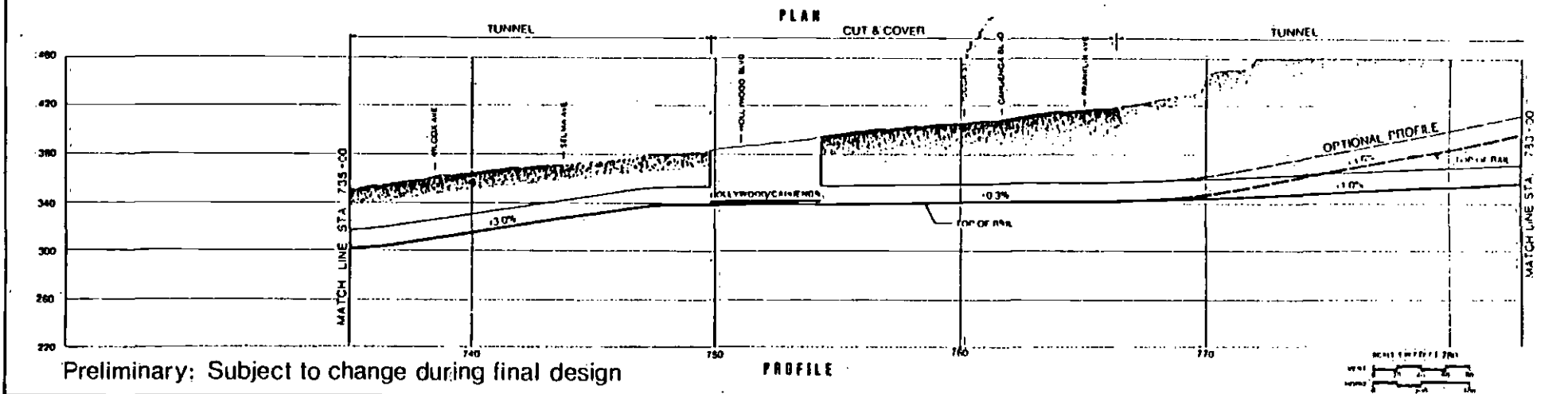
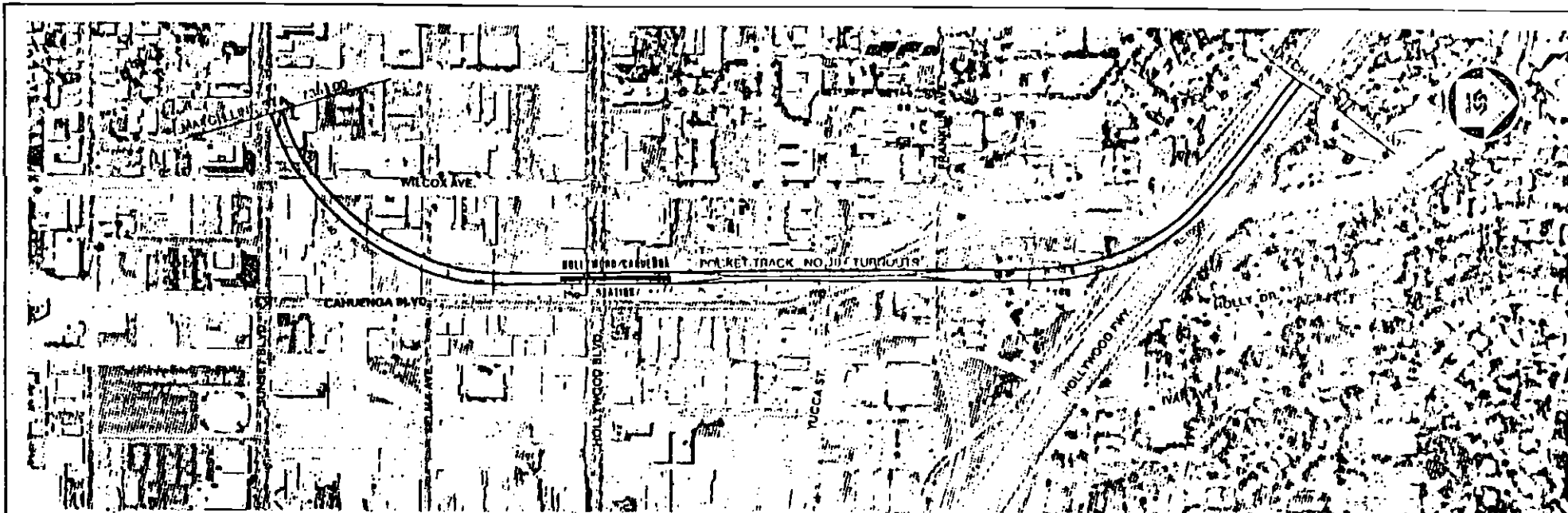
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**Figure 2-4.14 Alignment**

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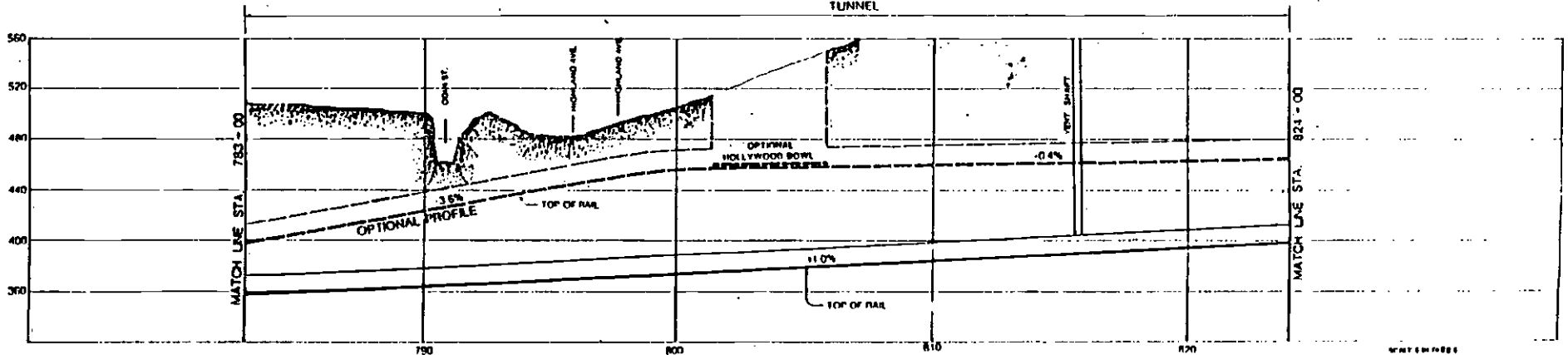
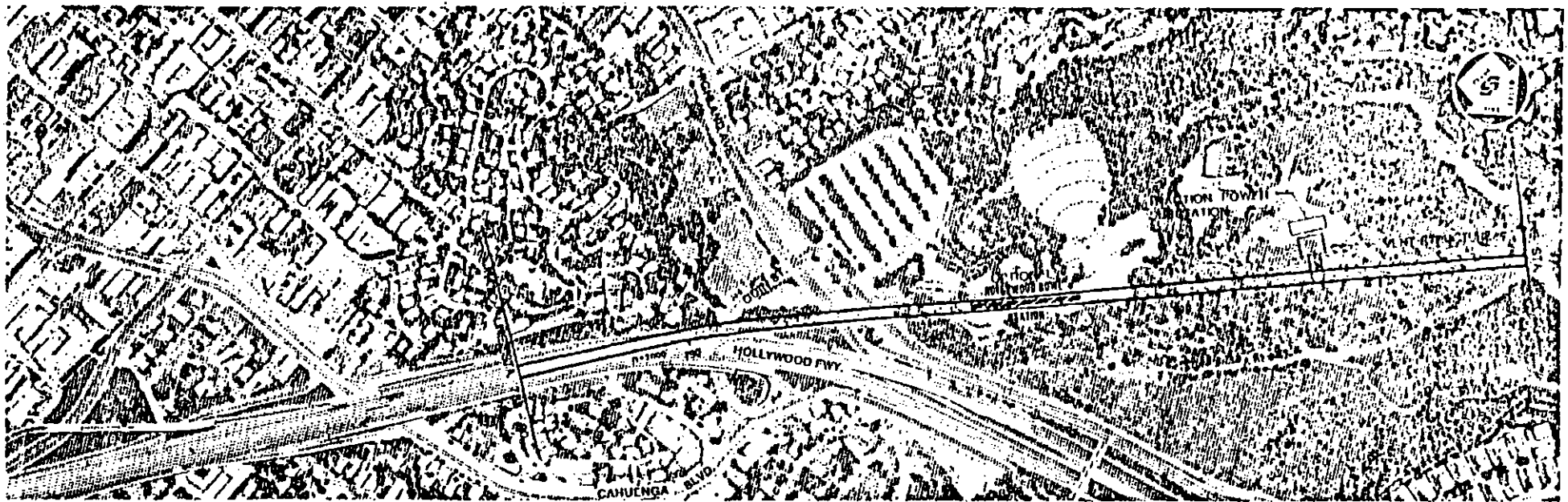




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**Figure 2-4.15 Alignment**

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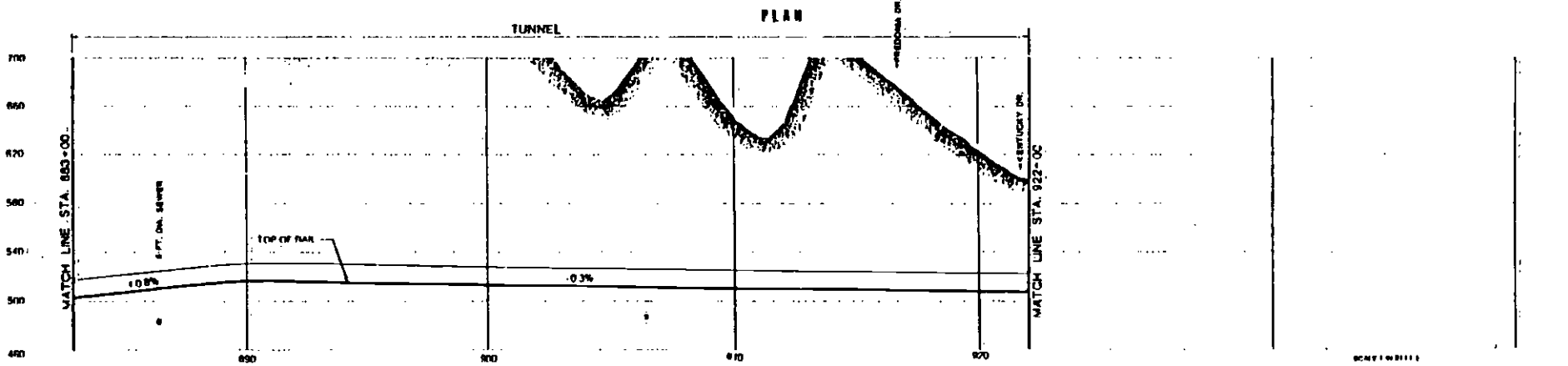
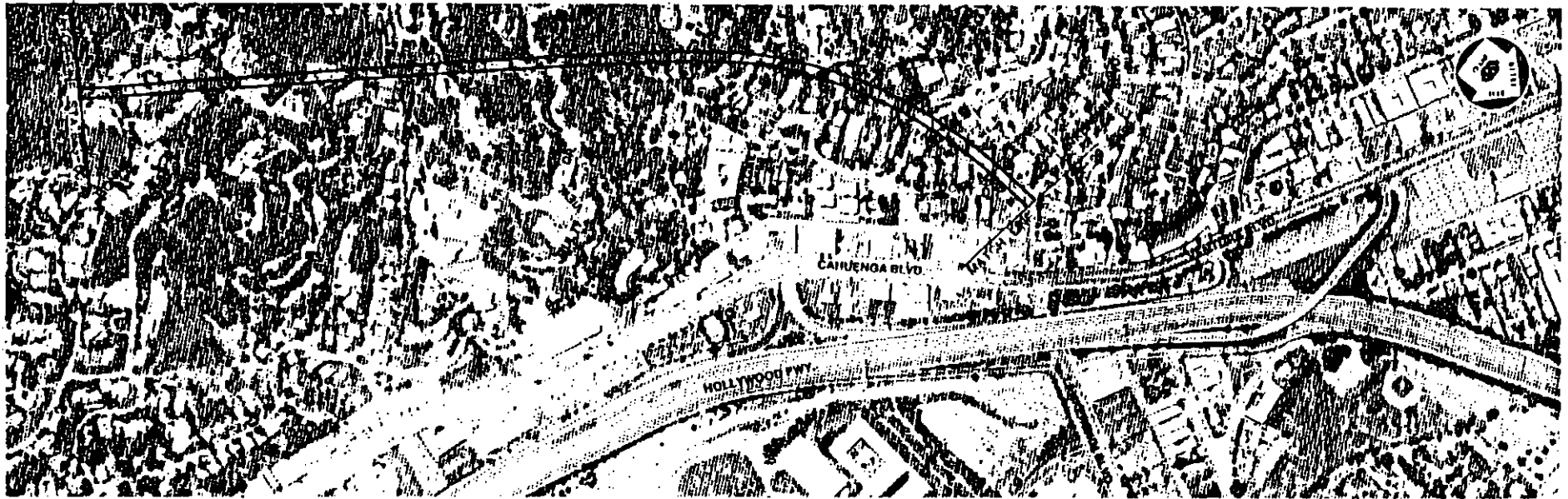


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**Figure 2-4.16 Alignment**

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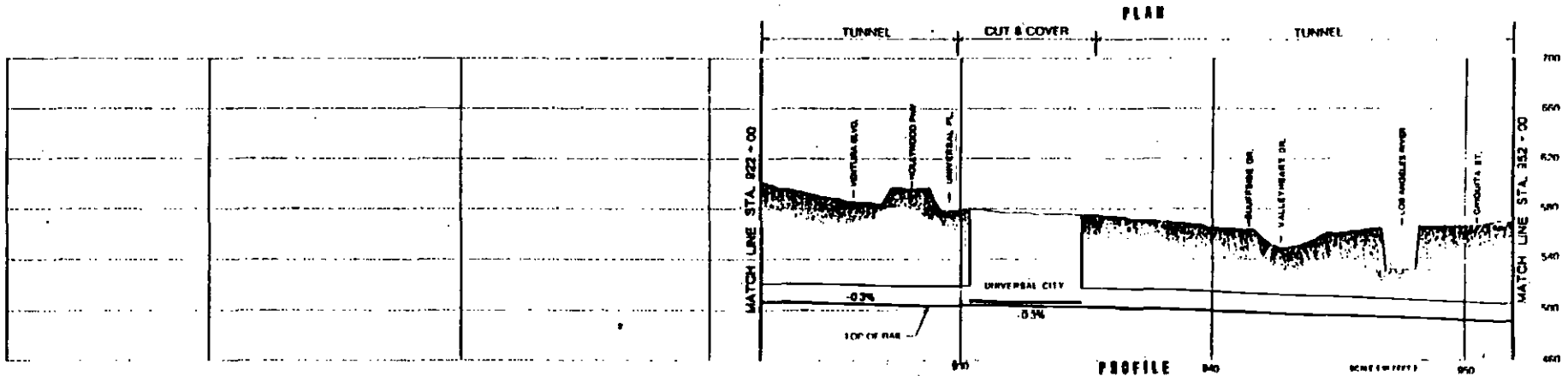


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**Figure 2-4.17 Alignment**

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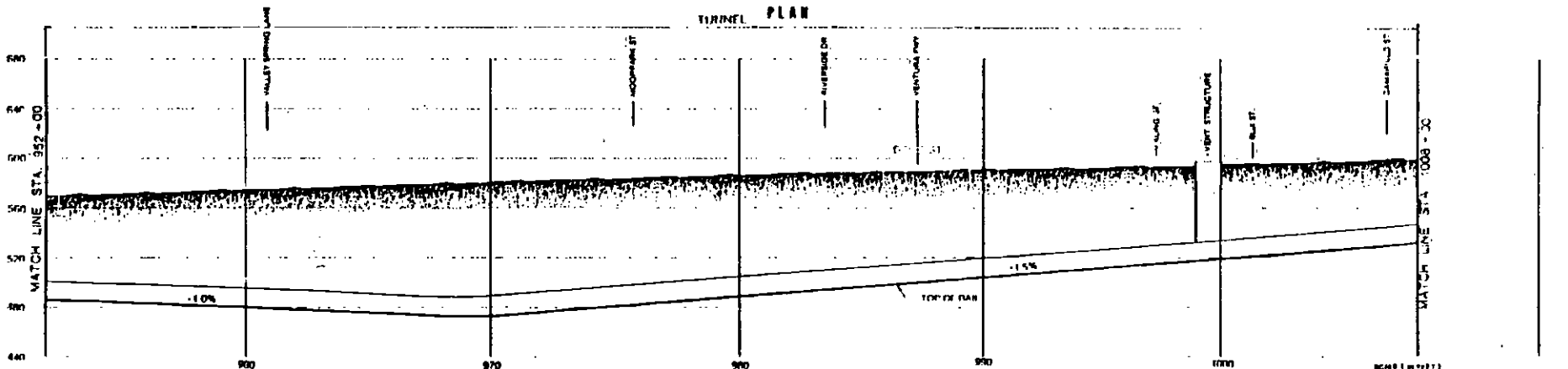
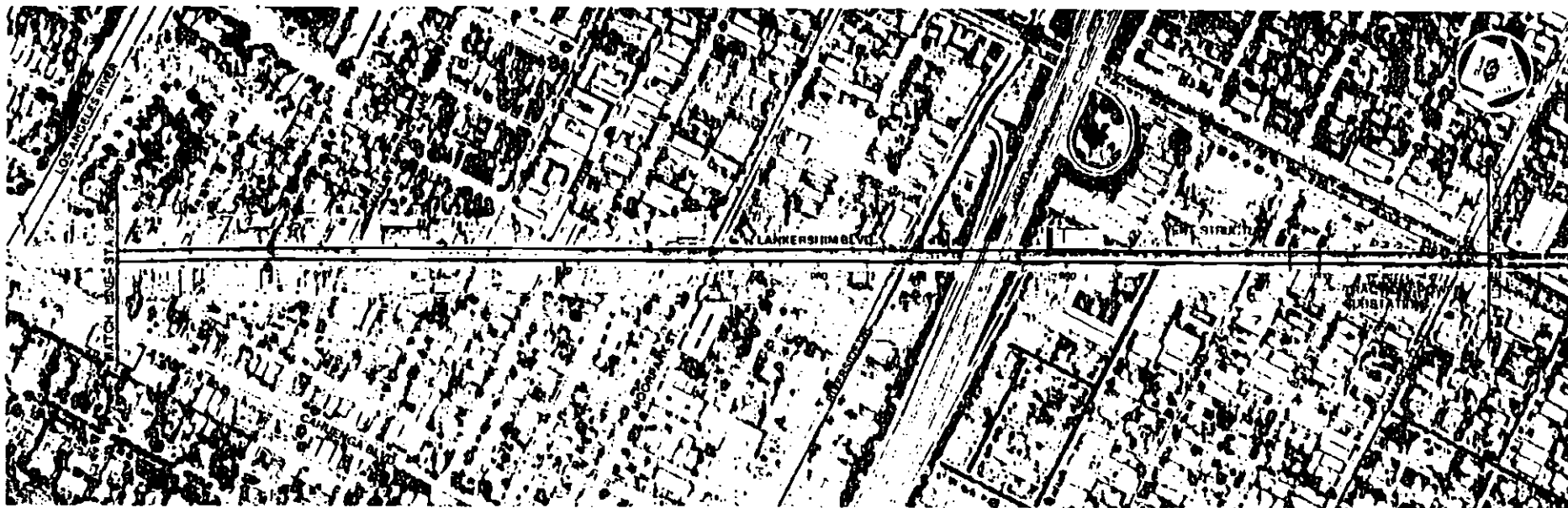


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**Figure 2-4.18 Alignment**

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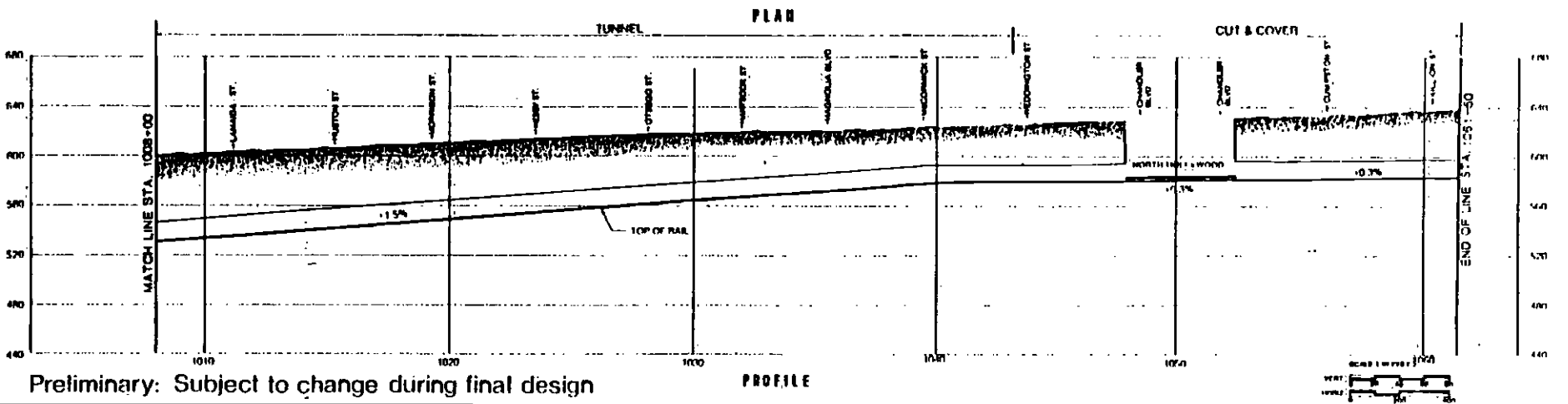


Preliminary: Subject to change during final design.

**Figure 2-4.19 Alignment**

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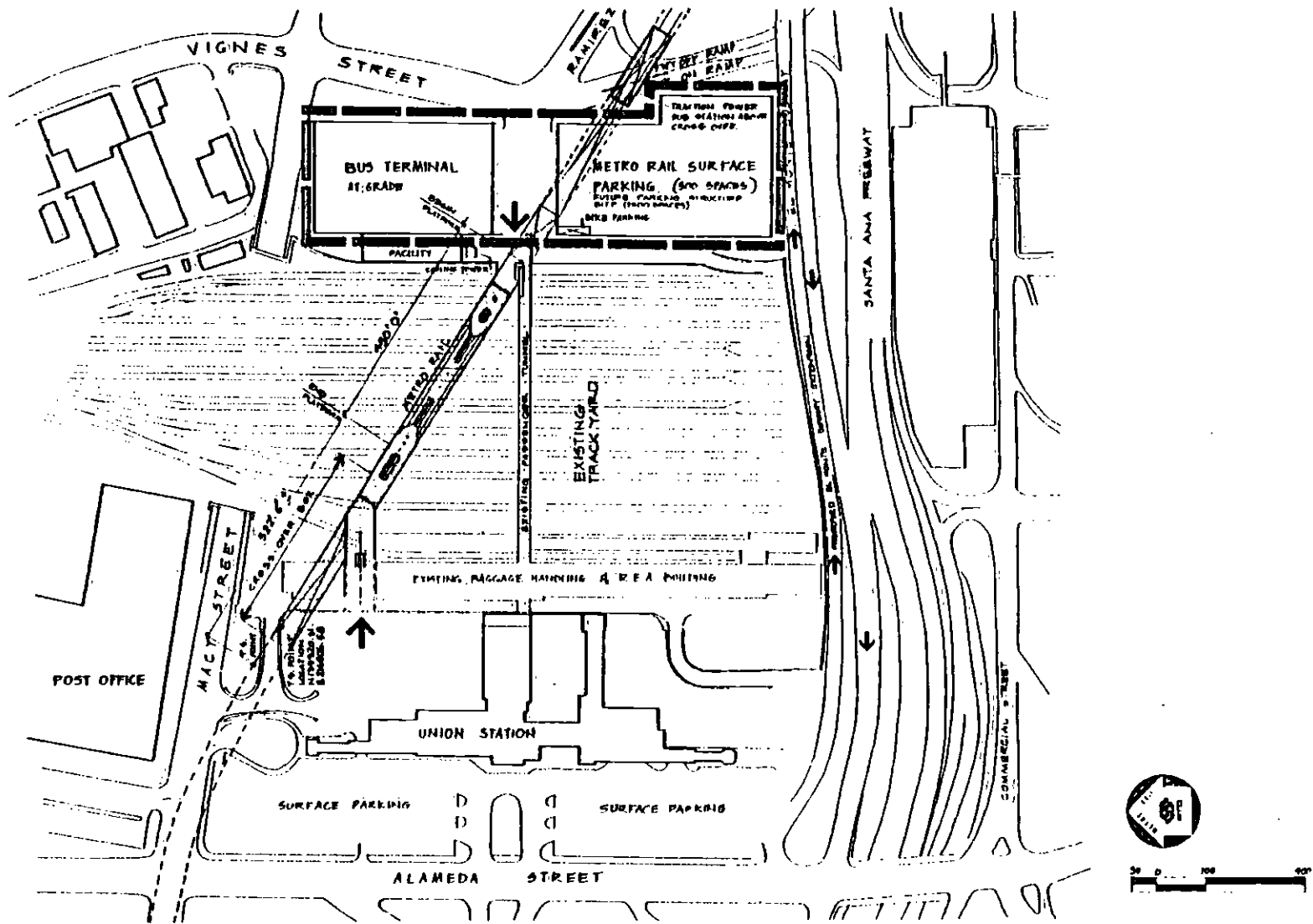
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**Figure 2-4.20 Alignment**

Source: DMJM/PBQD



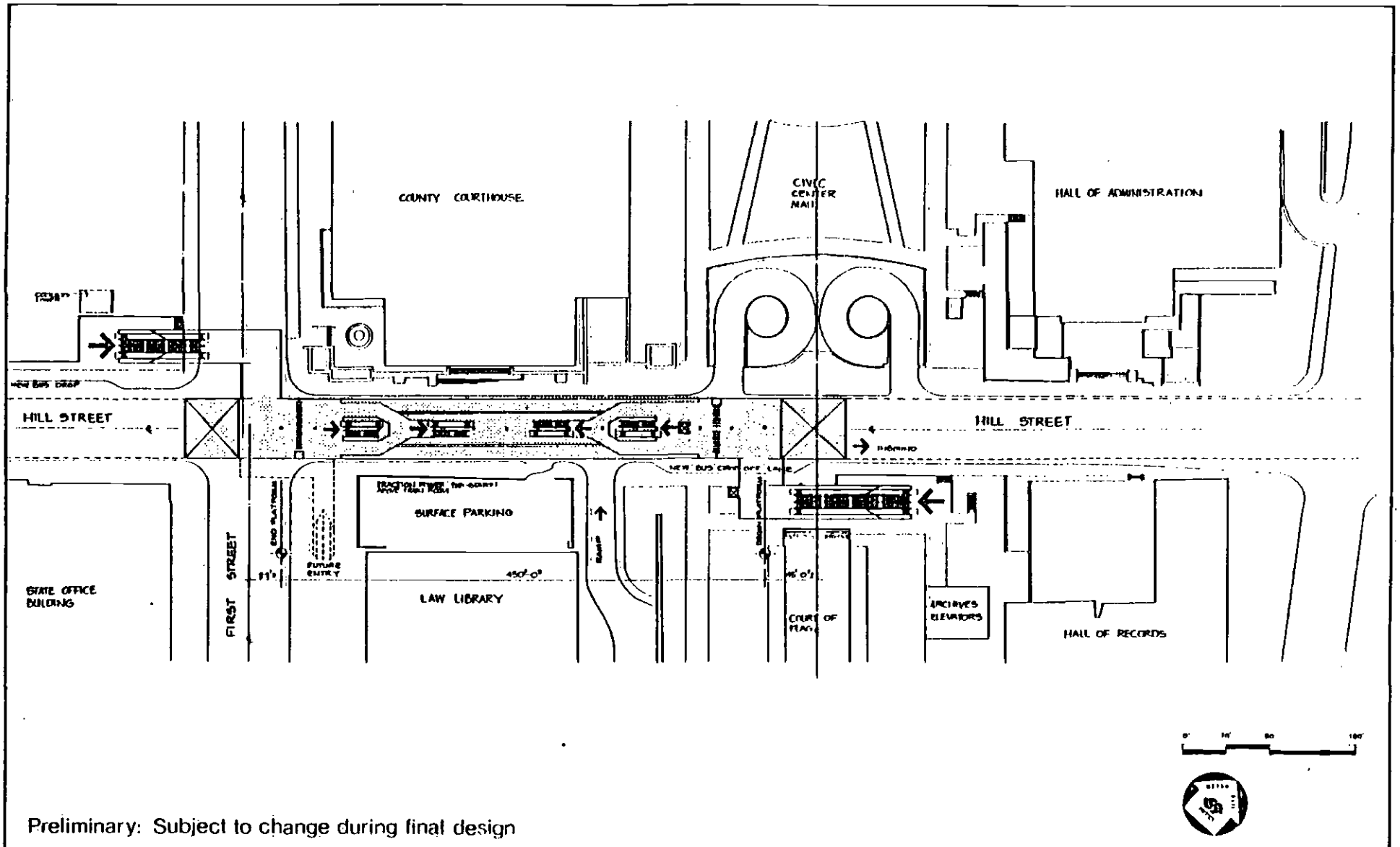
Preliminary: Subject to change during final design

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Figure 2-5

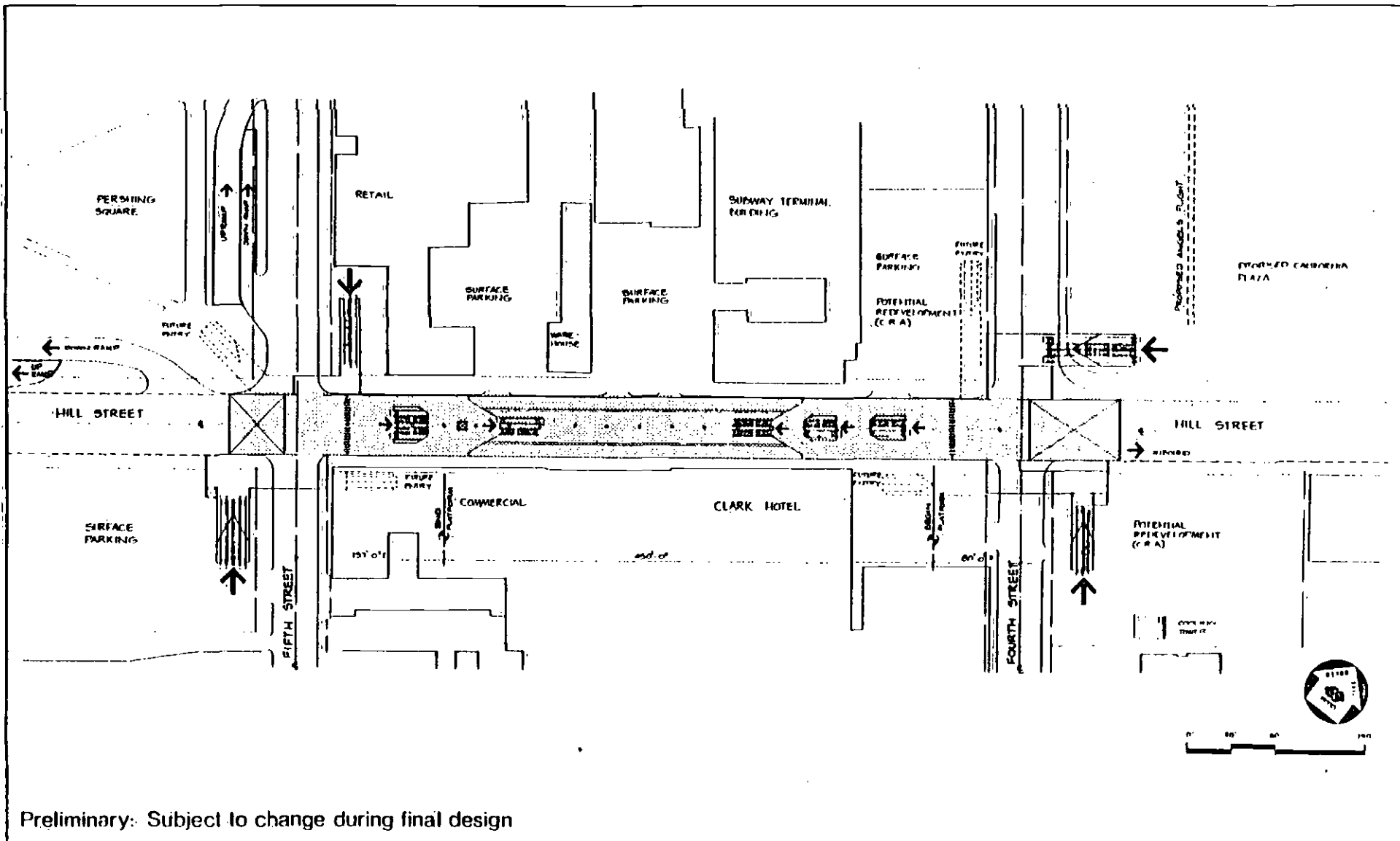
Union Station -

Harry Weese & Associates

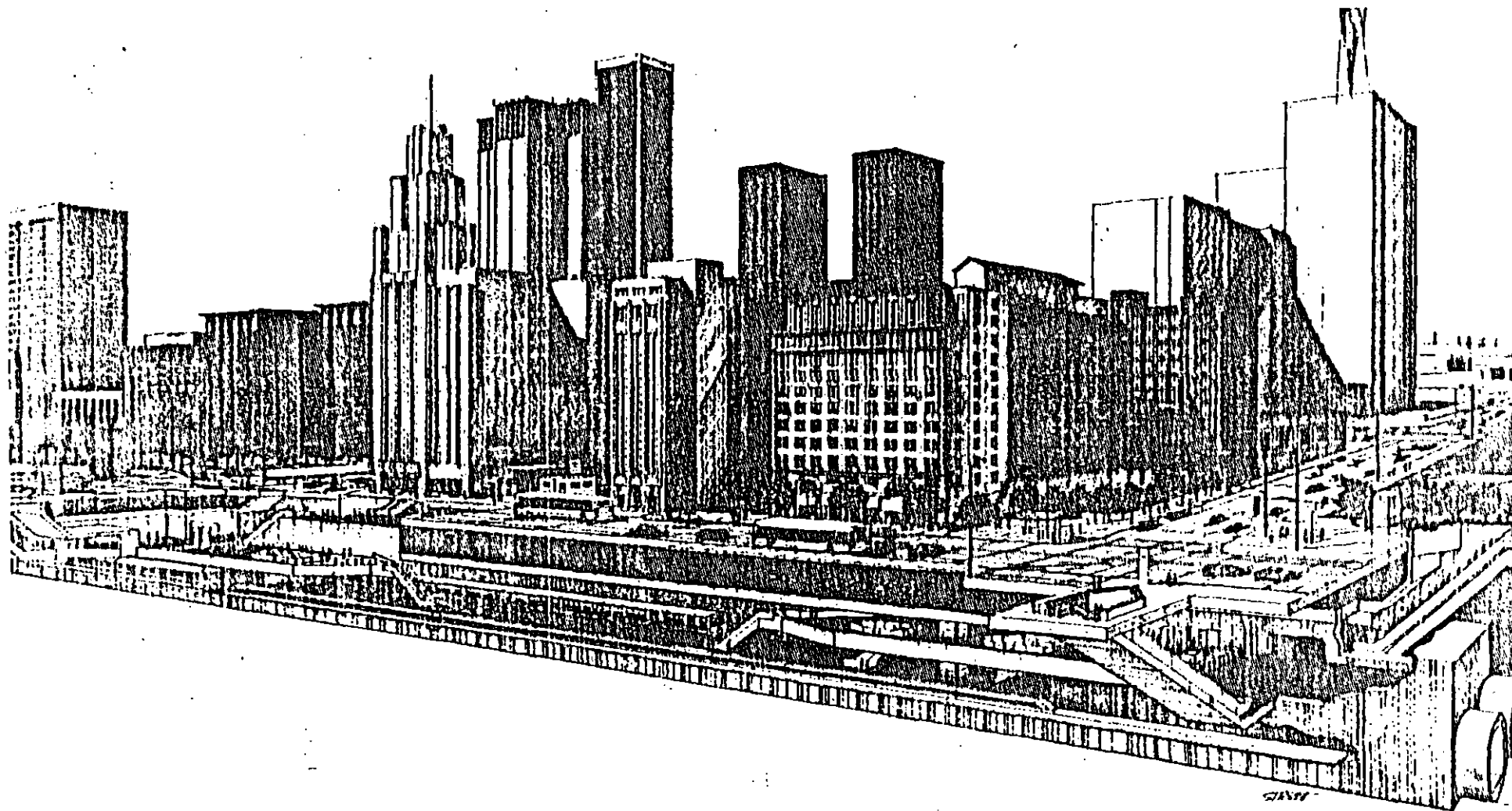


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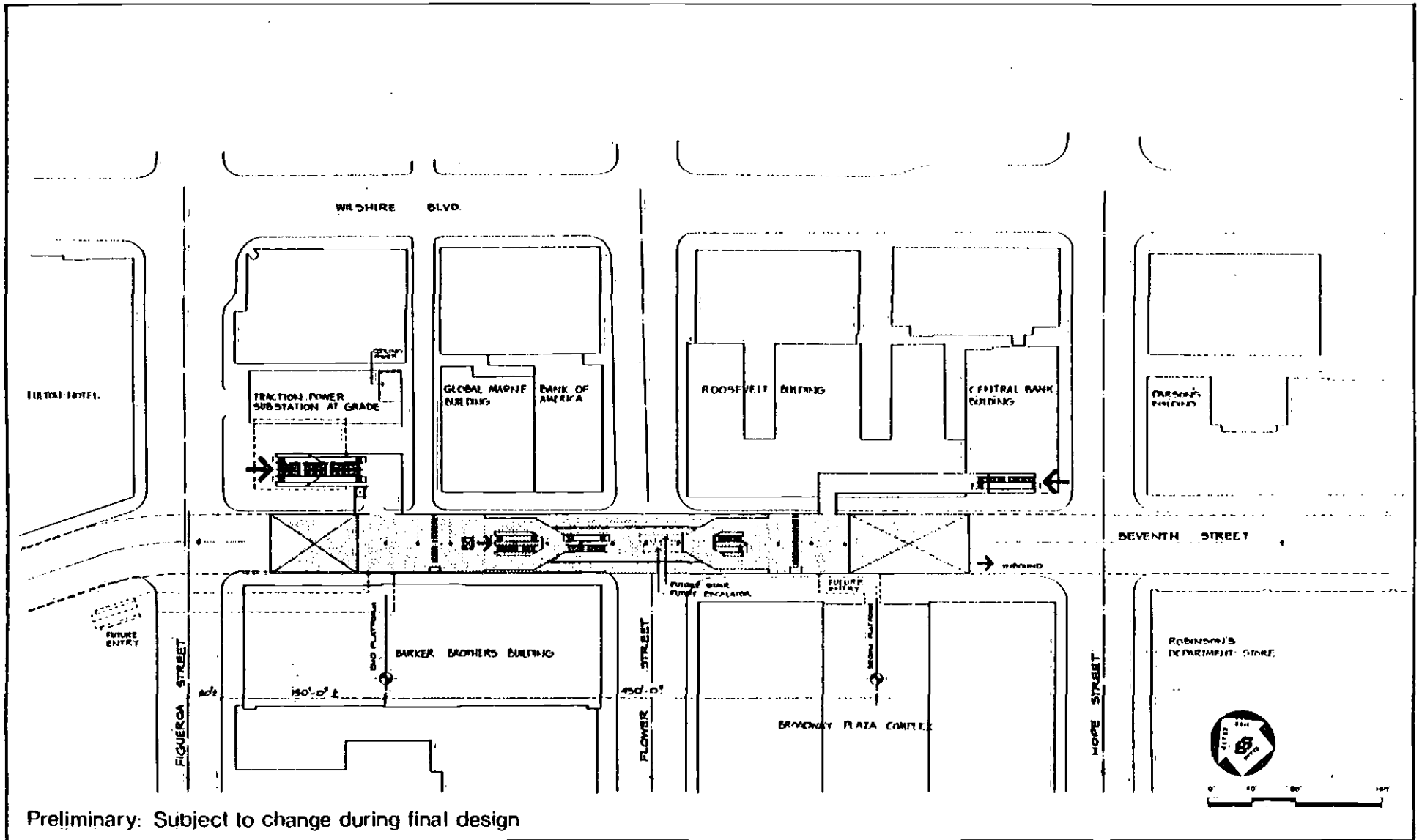
Preliminary: Subject to change during final design



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**Metro Rail Project**  
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**Figure 2-8**

**Fifth/Hill Station**  
Culaway Looking West  
Harry Weese & Associates



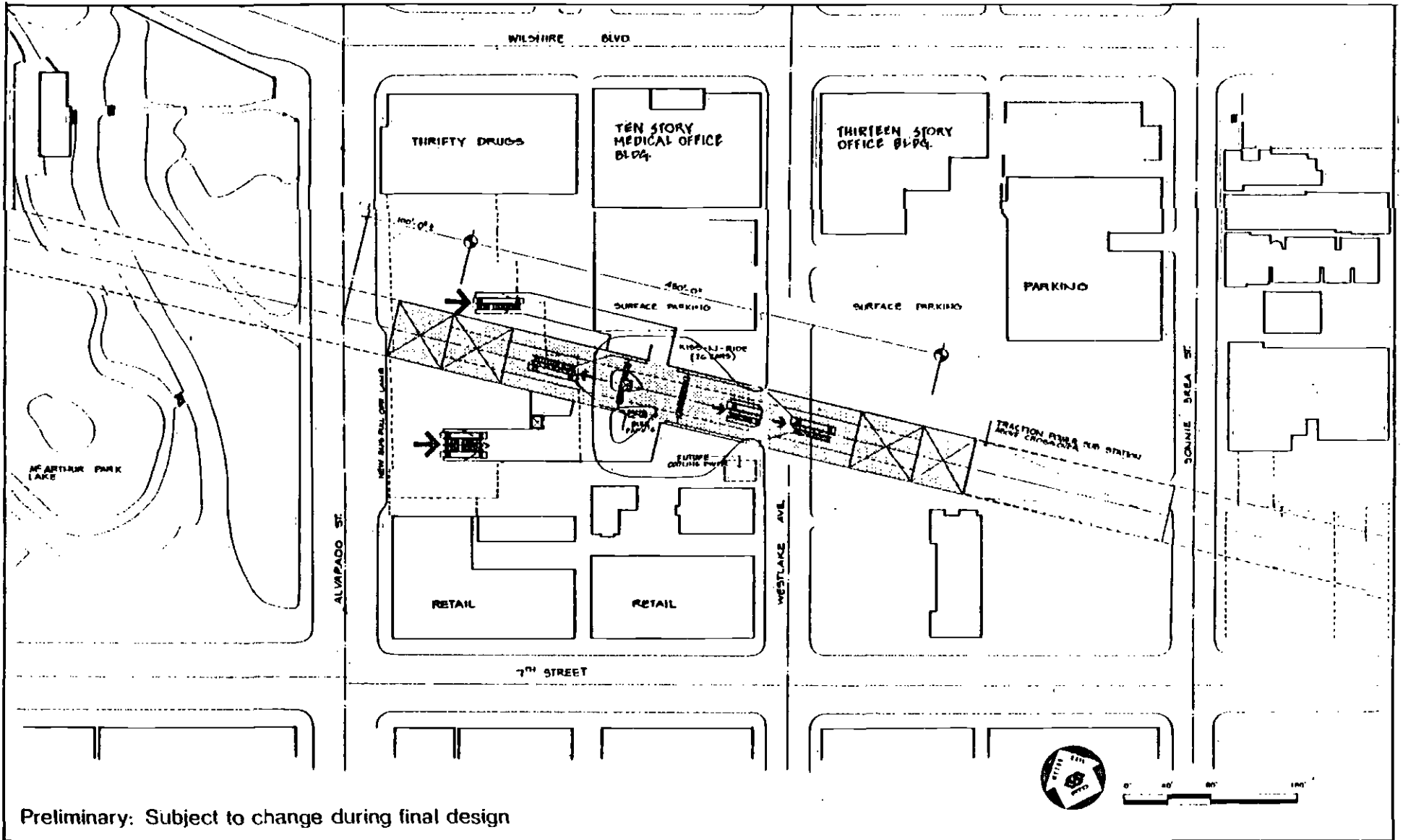
Preliminary: Subject to change during final design

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**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Figure 2-9

Seventh/Flower Station

Harry Weese & Associates



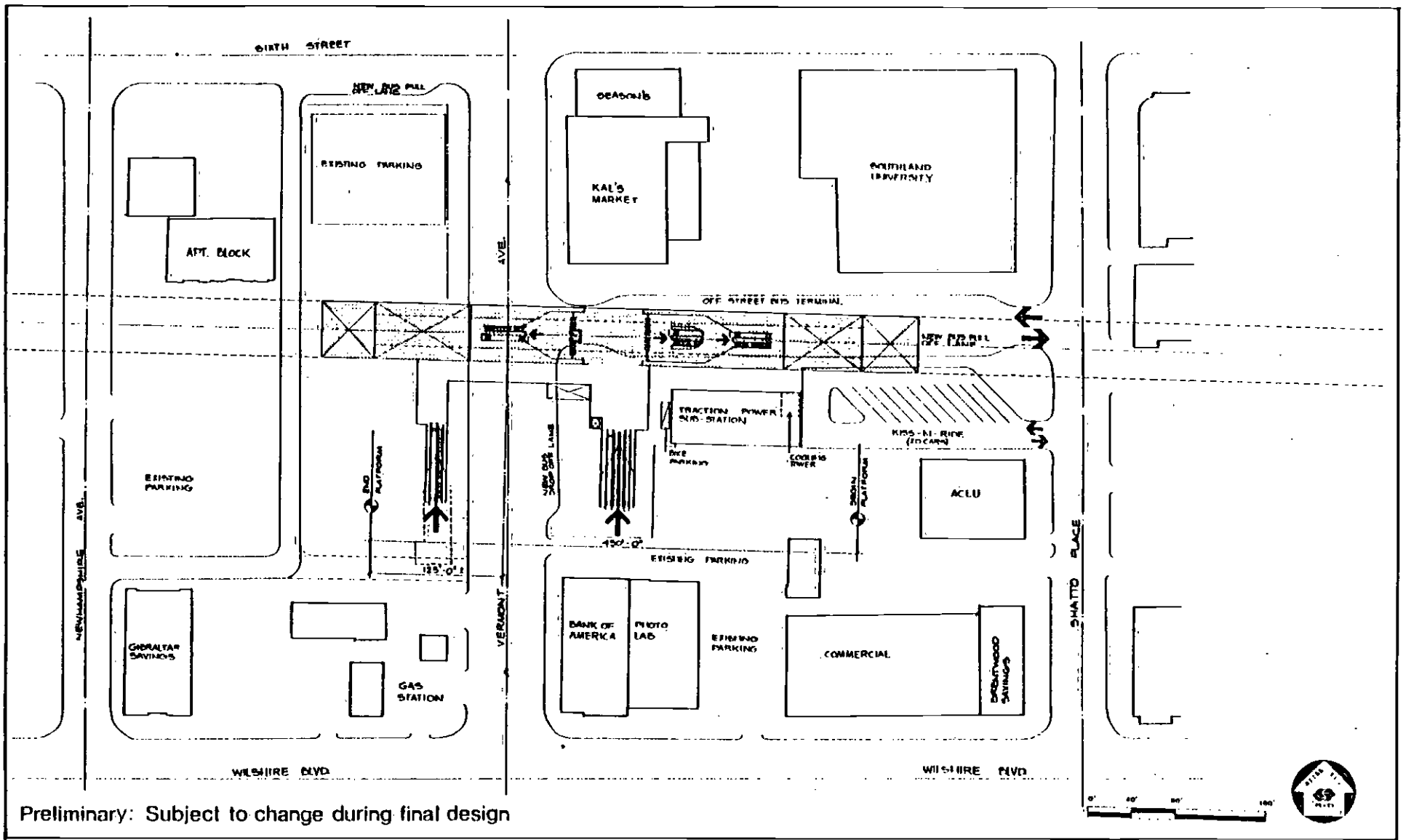
Preliminary: Subject to change during final design

Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Figure 2-10

Wilshire/Alvarado Station

Harry Weese & Associates



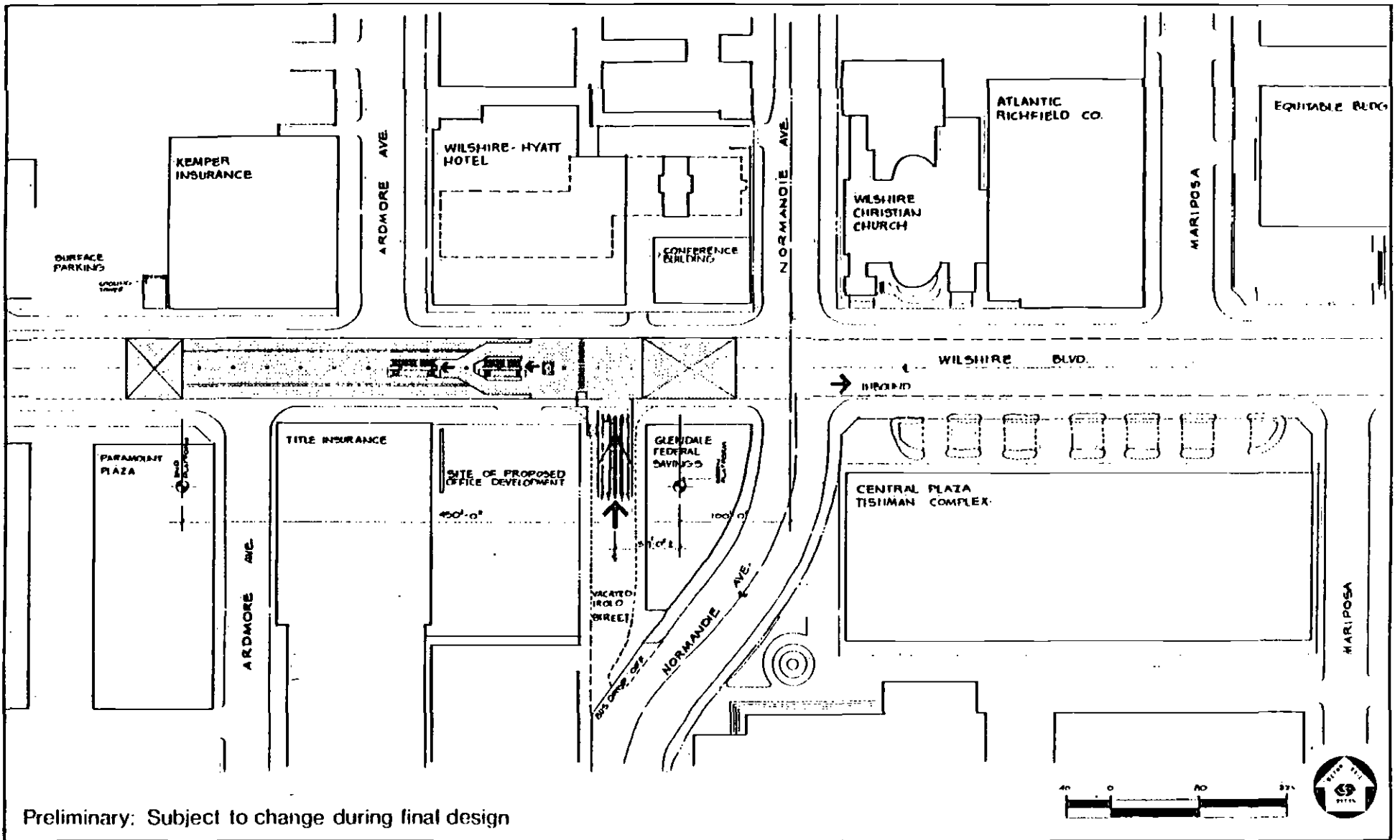
Preliminary: Subject to change during final design

Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

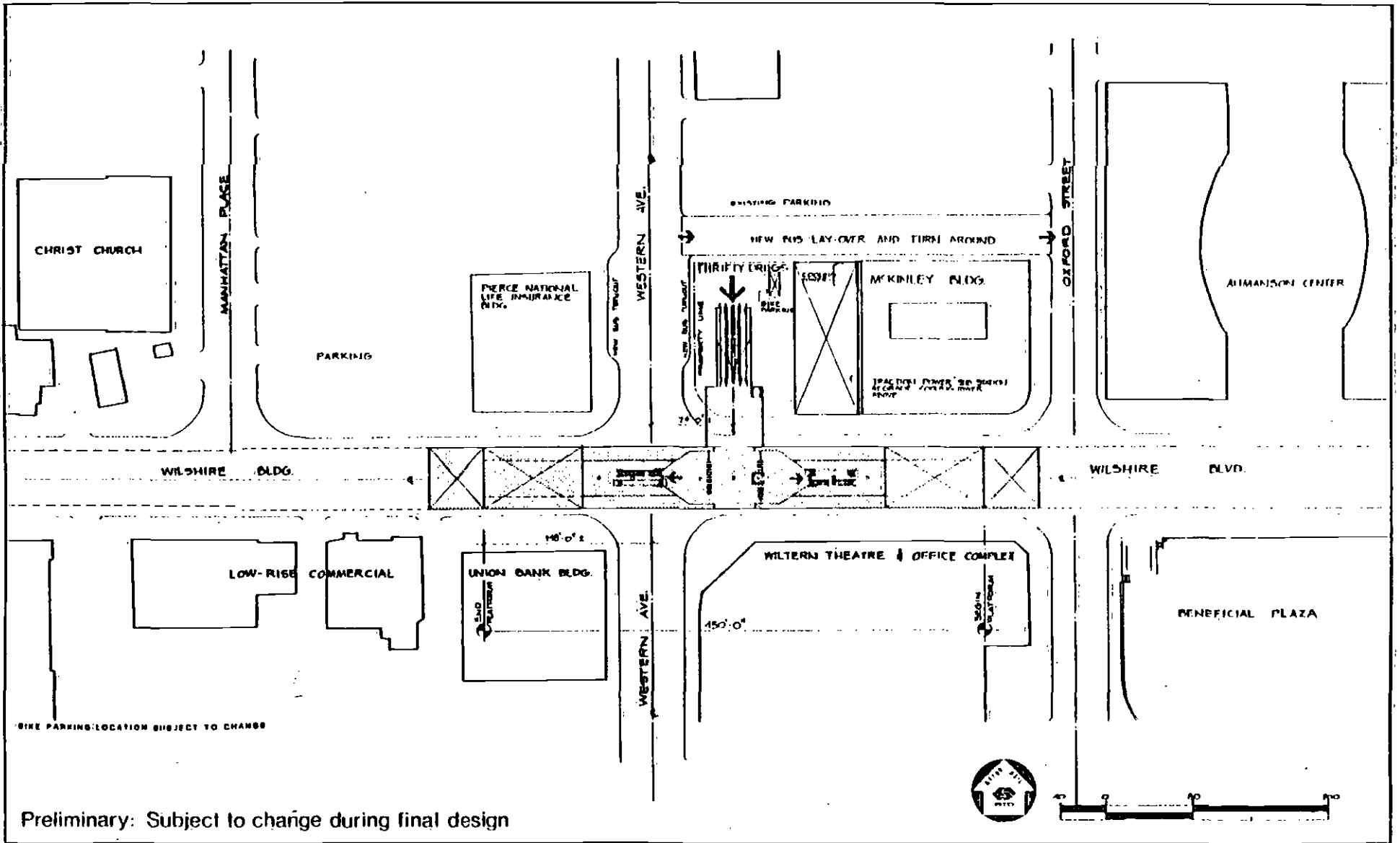
Figure 2-11

**Wilshire/Vermont Station**

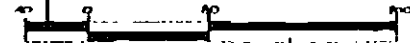
Harry Weese & Associates

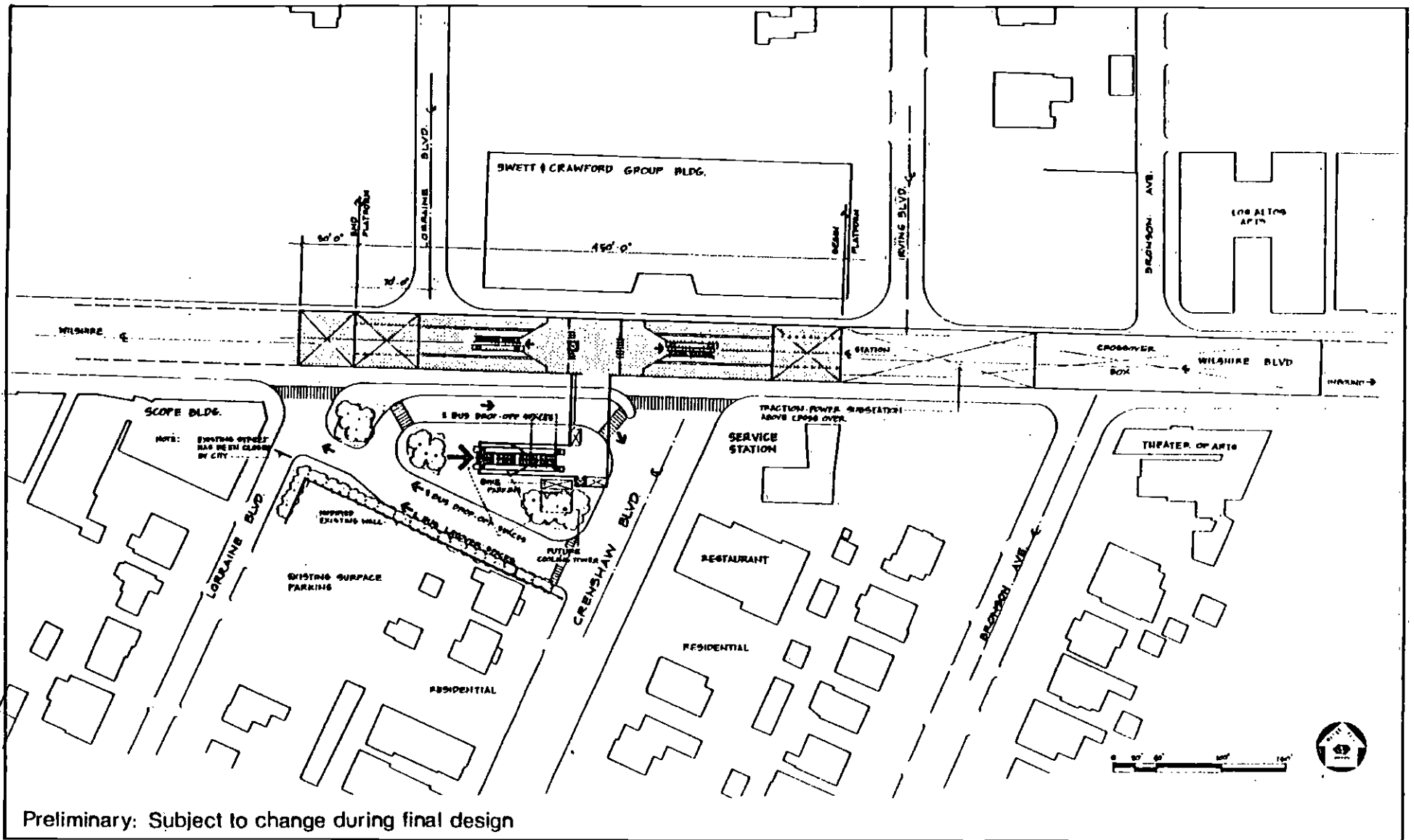


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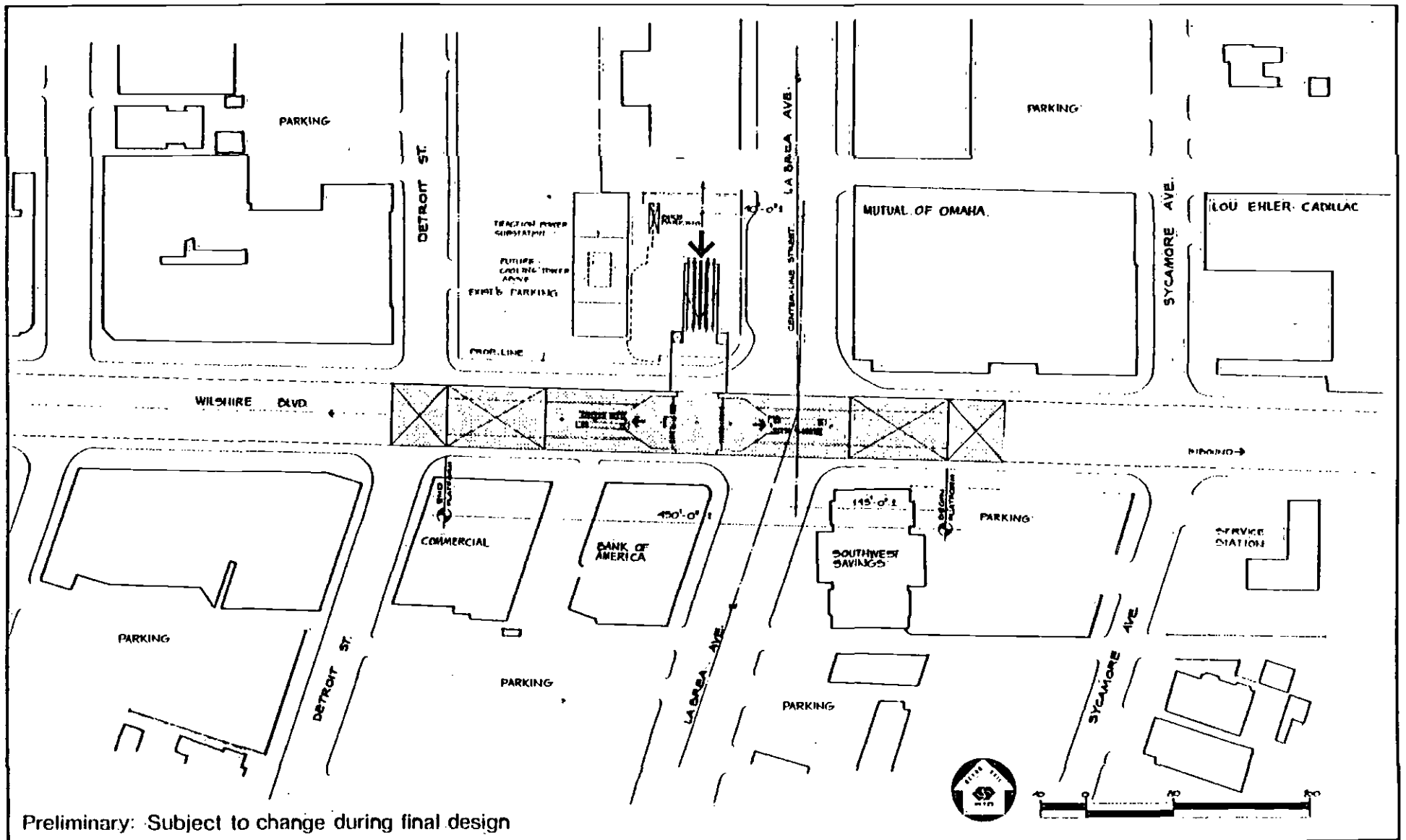


Preliminary: Subject to change during final design

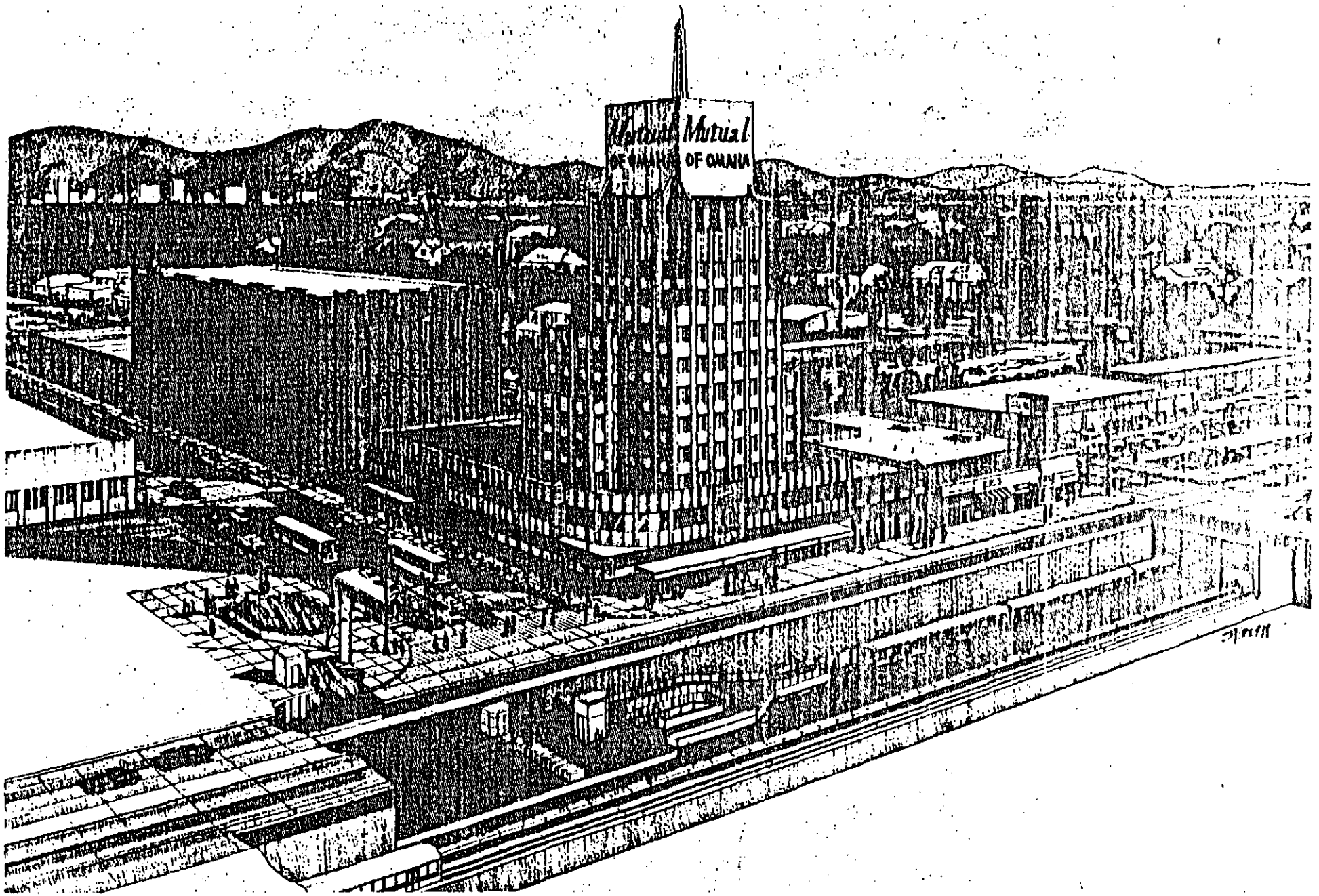








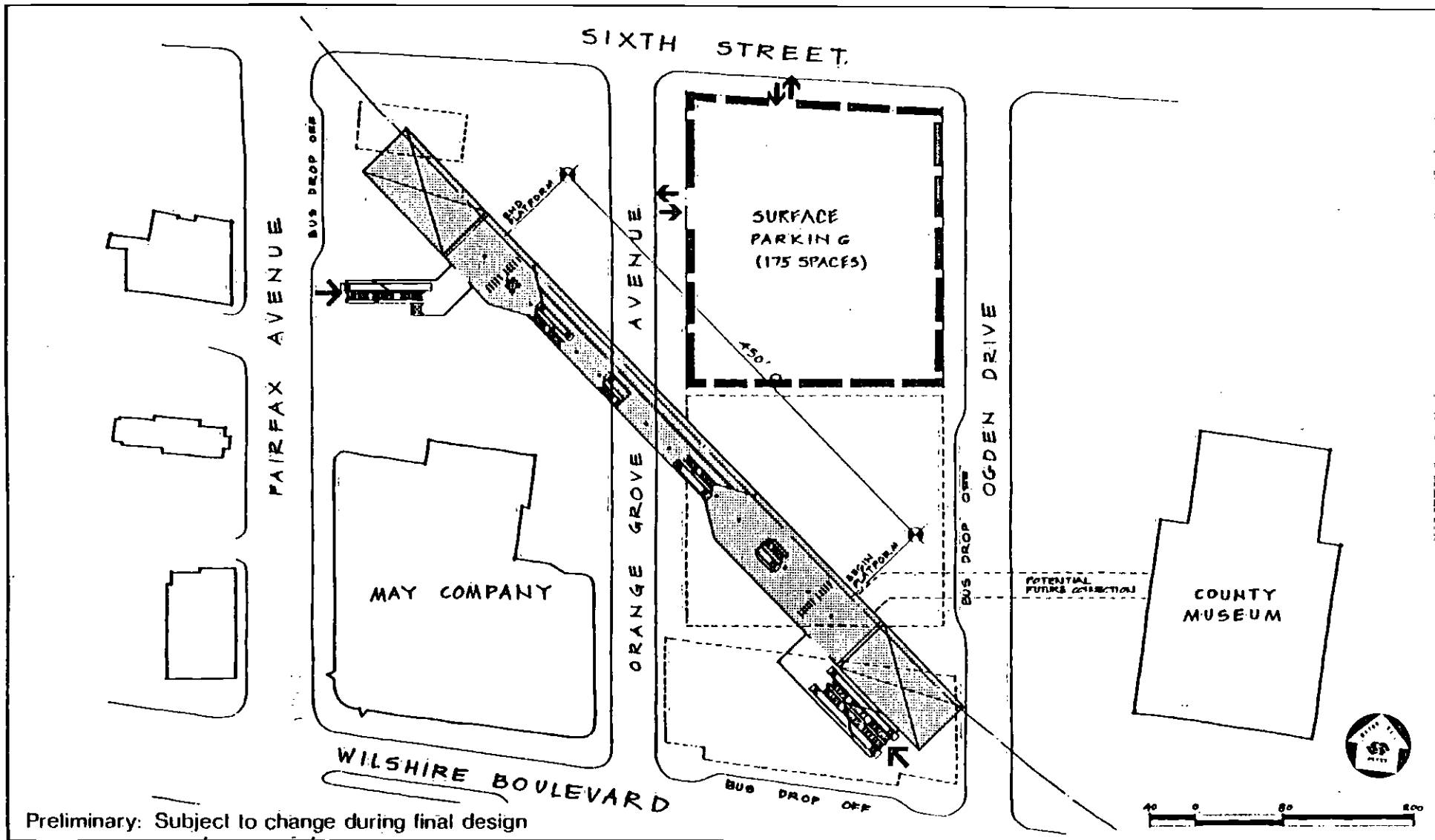
Preliminary: Subject to change during final design



Southern California Rapid Transit District  
**Metro Rail Project**  
PRELIMINARY ENGINEERING PROGRAM

**Figure 2-16**

**Wilshire / La Brea Station**  
Cutaway Looking North  
Harry Weese & Associates



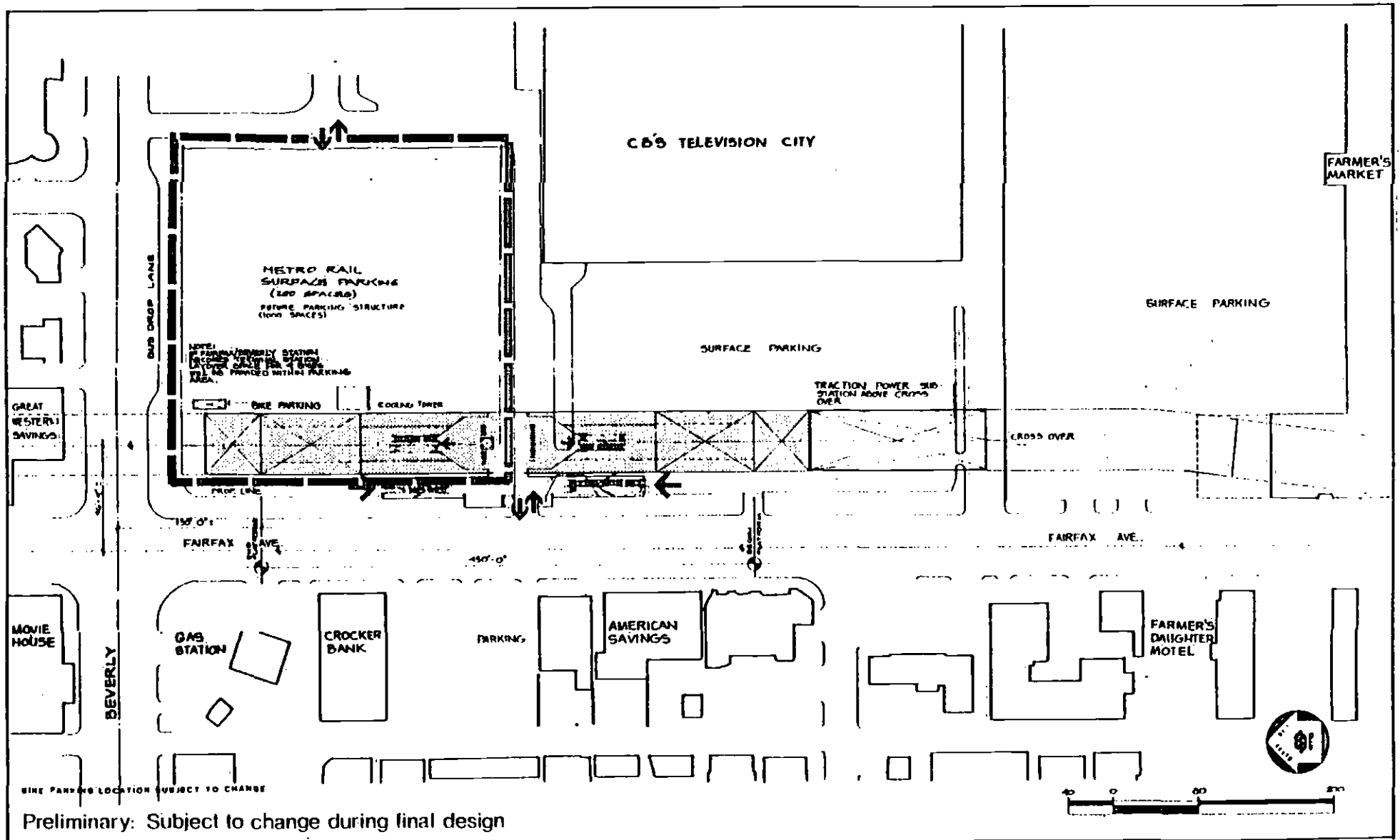
Preliminary: Subject to change during final design

Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Figure 2-17

Wilshire/Fairfax Station

Harry Weese & Associates

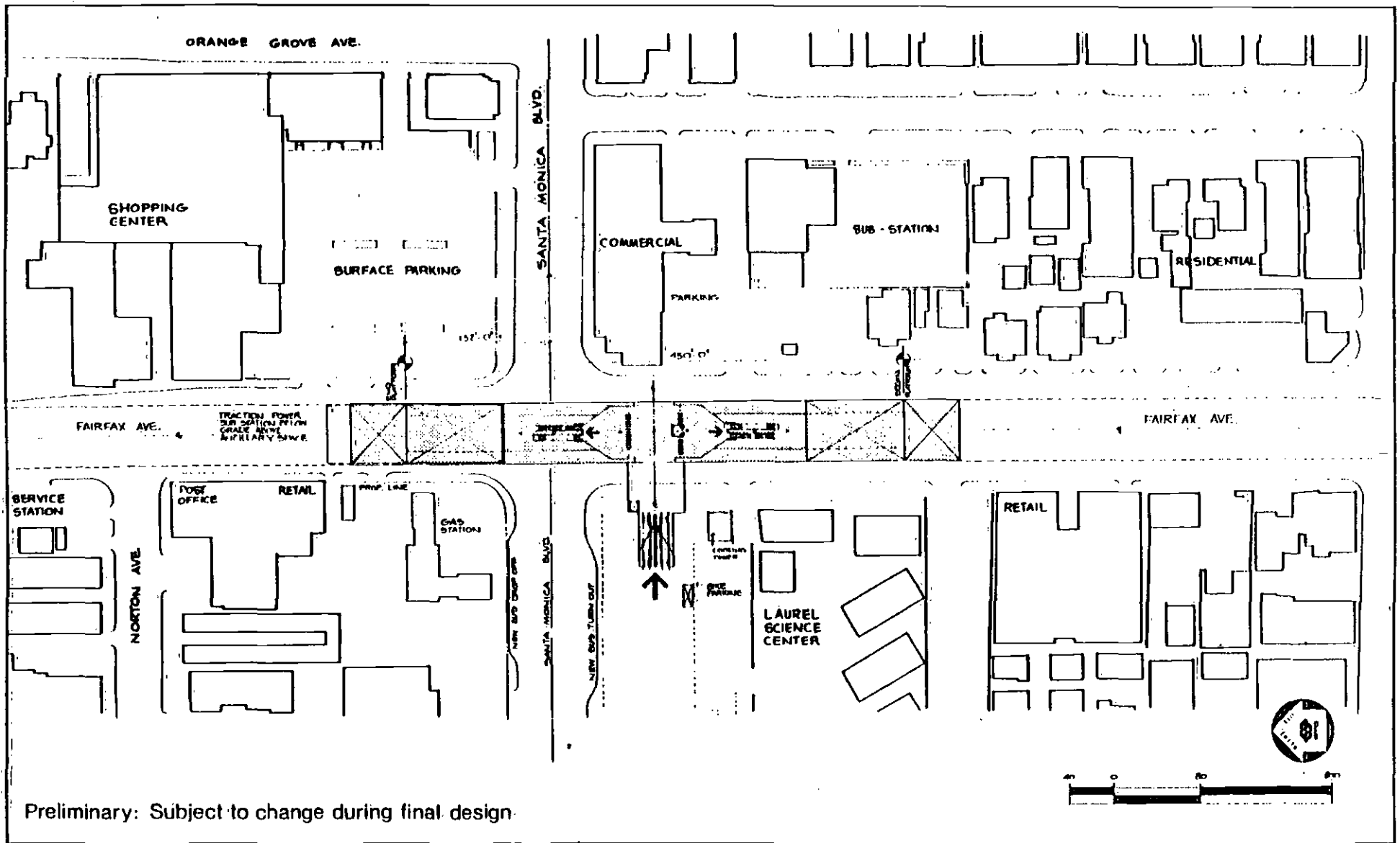


Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Figure 2-18

Fairfax/Beverly Station

Harry Weese & Associates



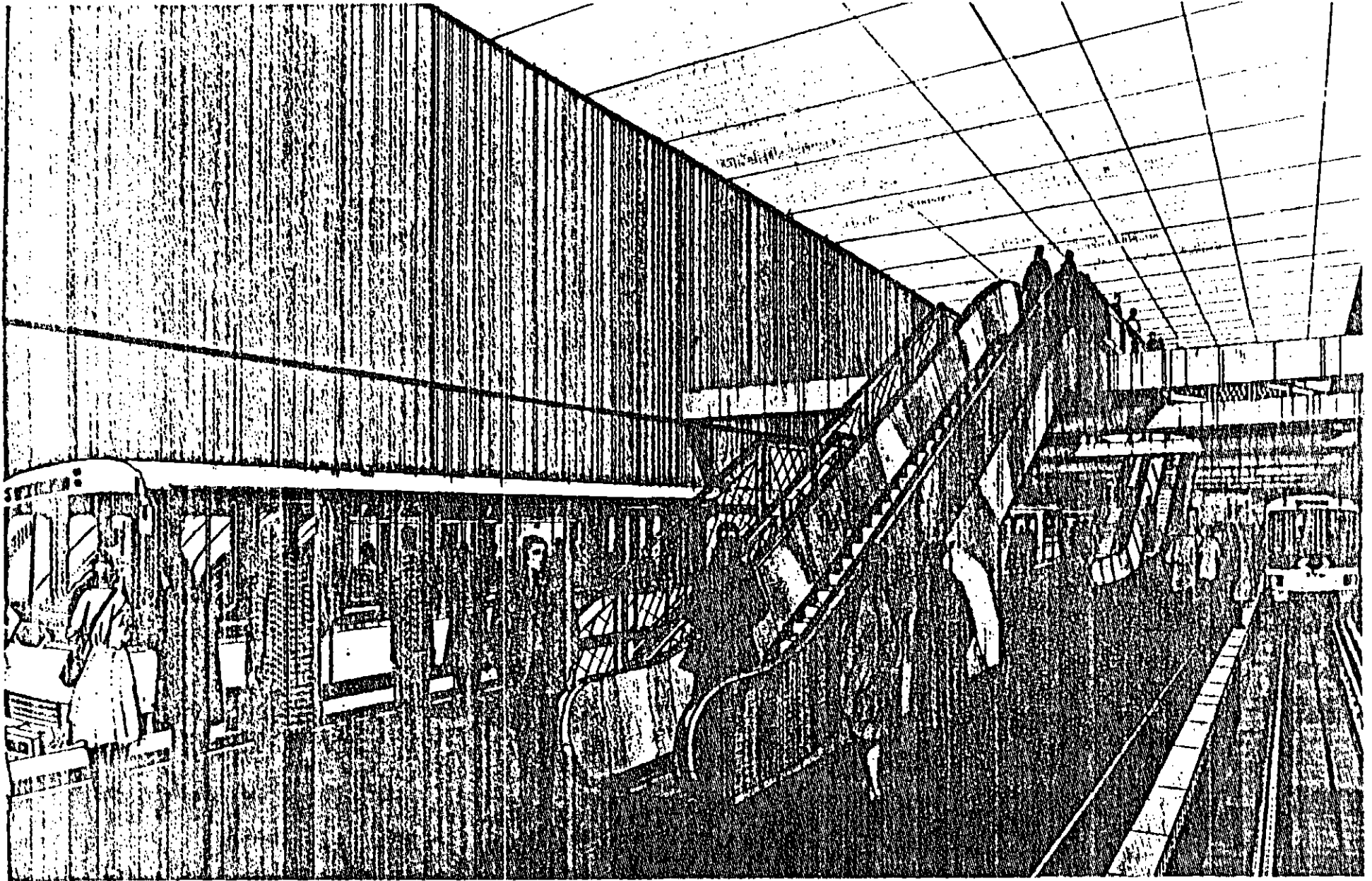
Preliminary: Subject to change during final design.

Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Figure 2-19

Fairfax/Santa Monica Station

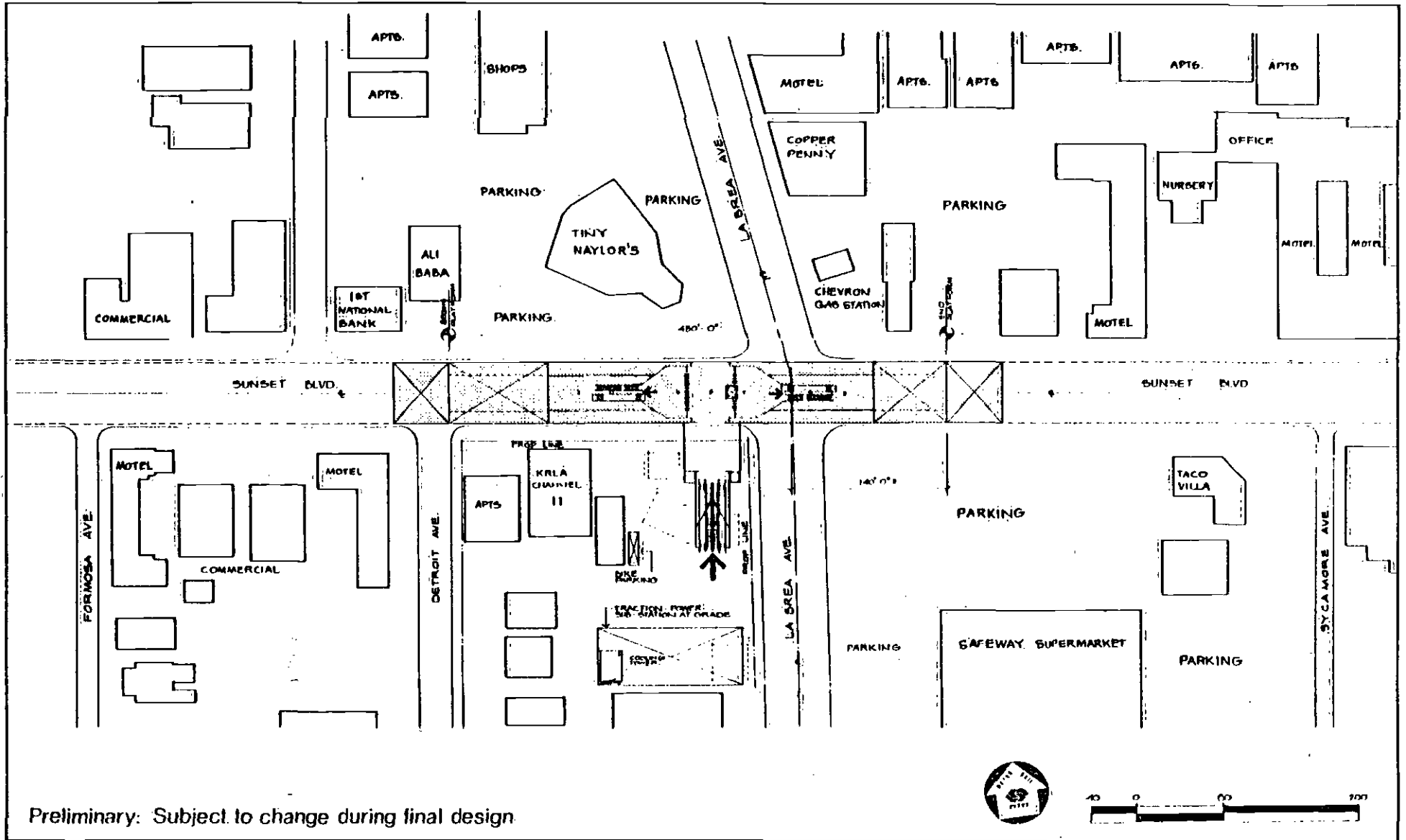
Harry Weese & Associates



Southern California Rapid Transit District  
**Metro Rail Project**  
PRELIMINARY ENGINEERING PROGRAM

**Figure 2-20**

**Illustrative Example of Station Interior**  
Clearspan End Mezzanine  
Harry Weese & Associates



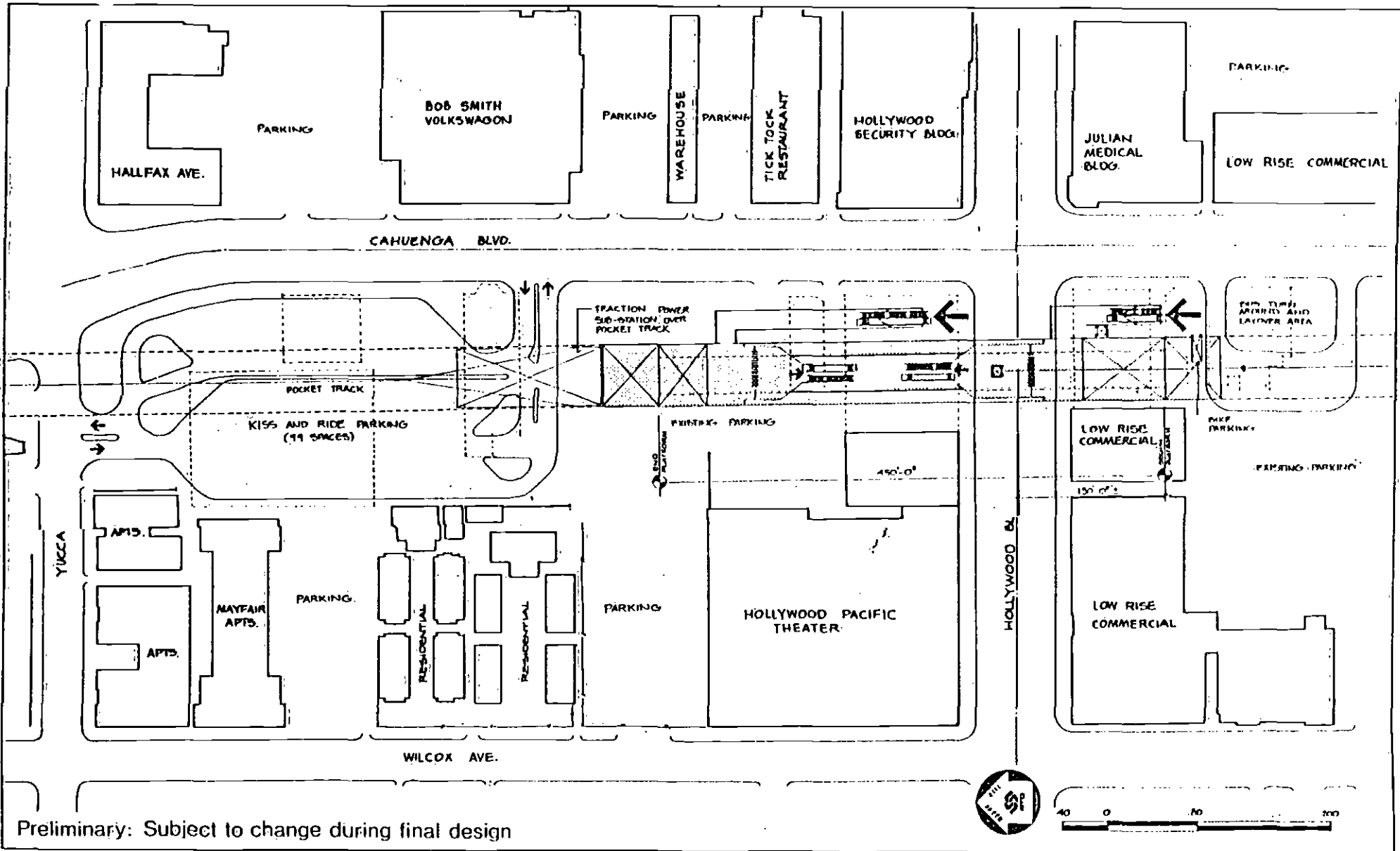
Preliminary: Subject to change during final design

Figure 2-21

La Brea/Sunset Station

Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Harry Weese & Associates



Preliminary: Subject to change during final design

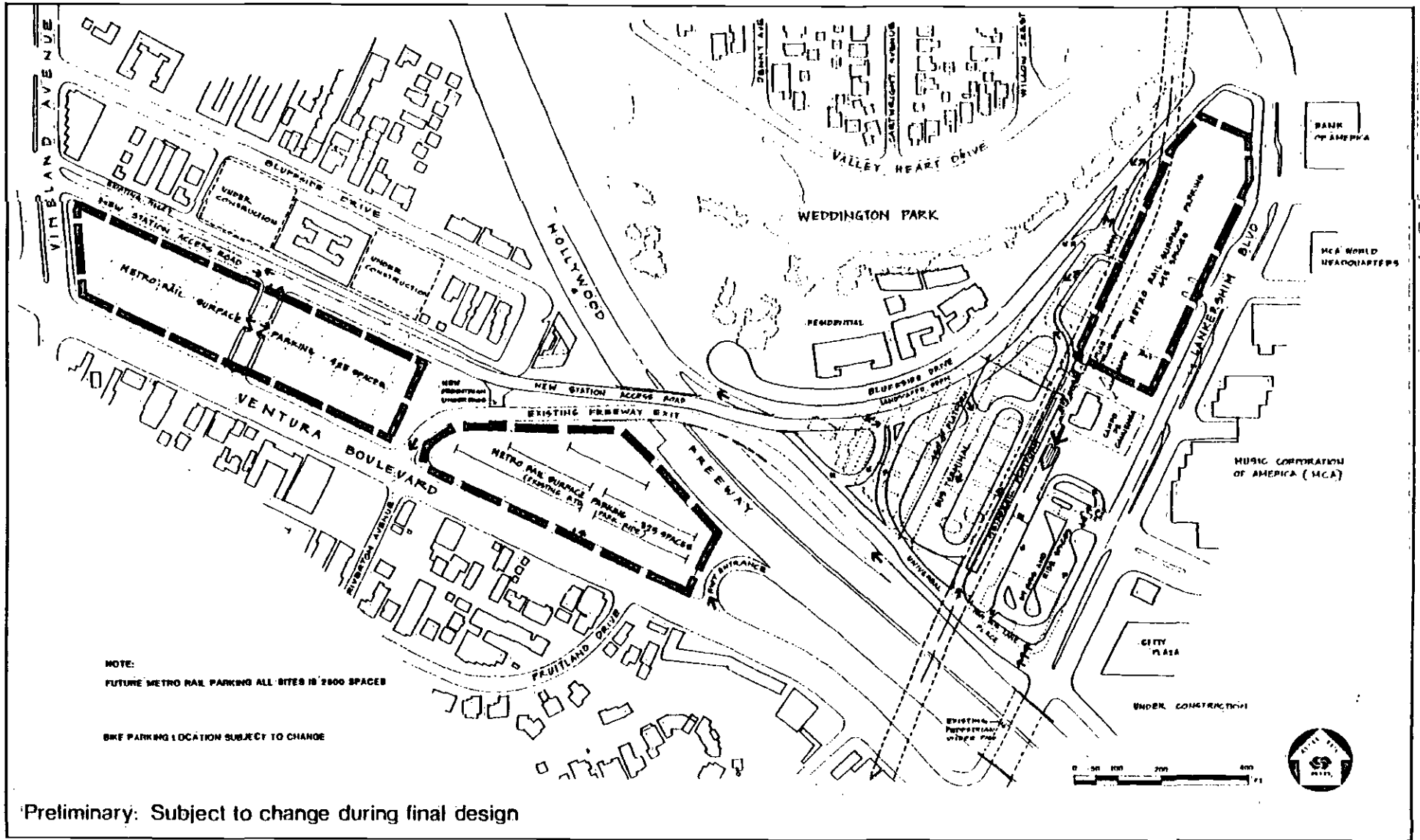
Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Figure 2-22

Hollywood/Cahuenga Station

Harry Weese & Associates





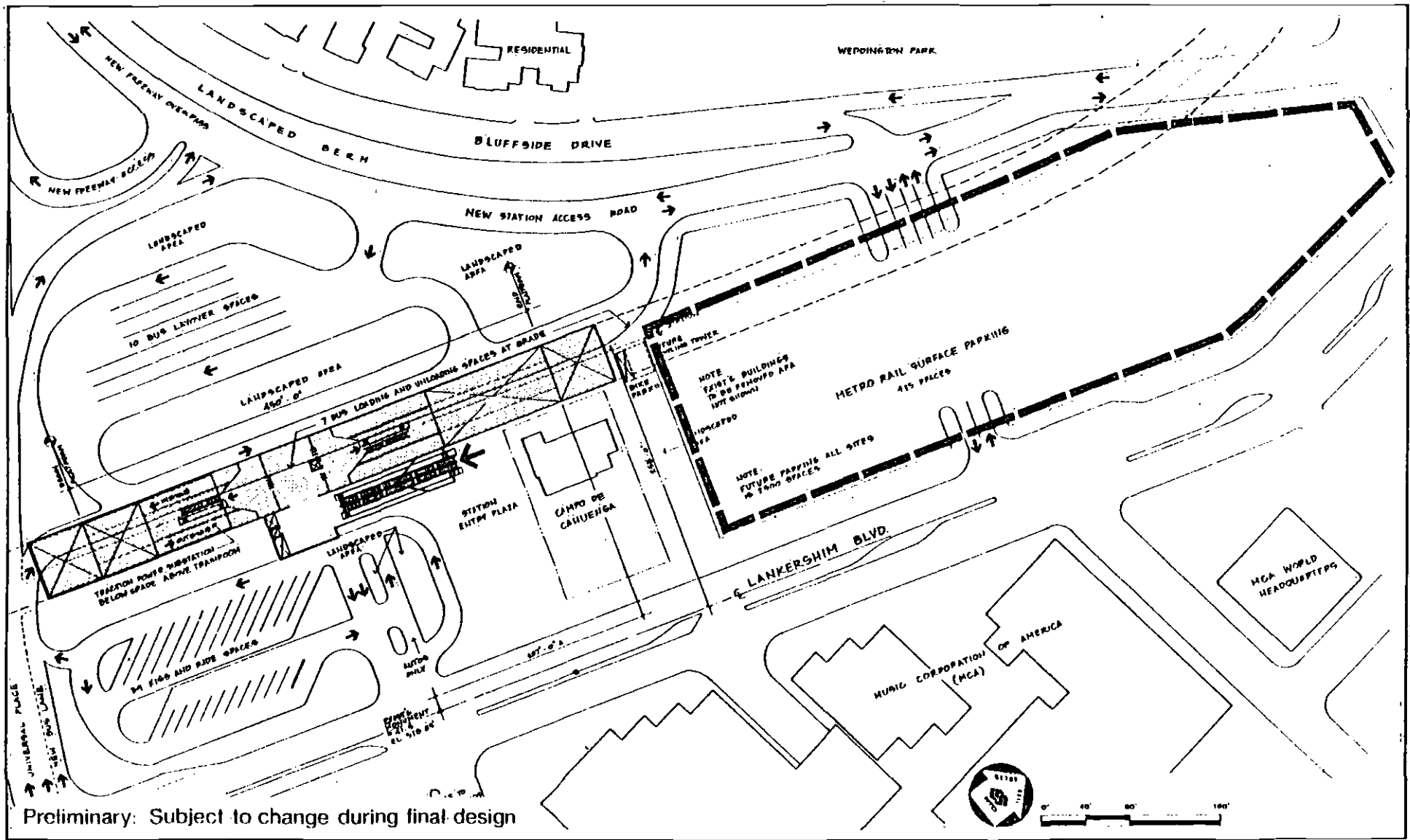
Preliminary: Subject to change during final design

Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

Figure 2-23

Universal City Station Area

Harry Weese & Associates

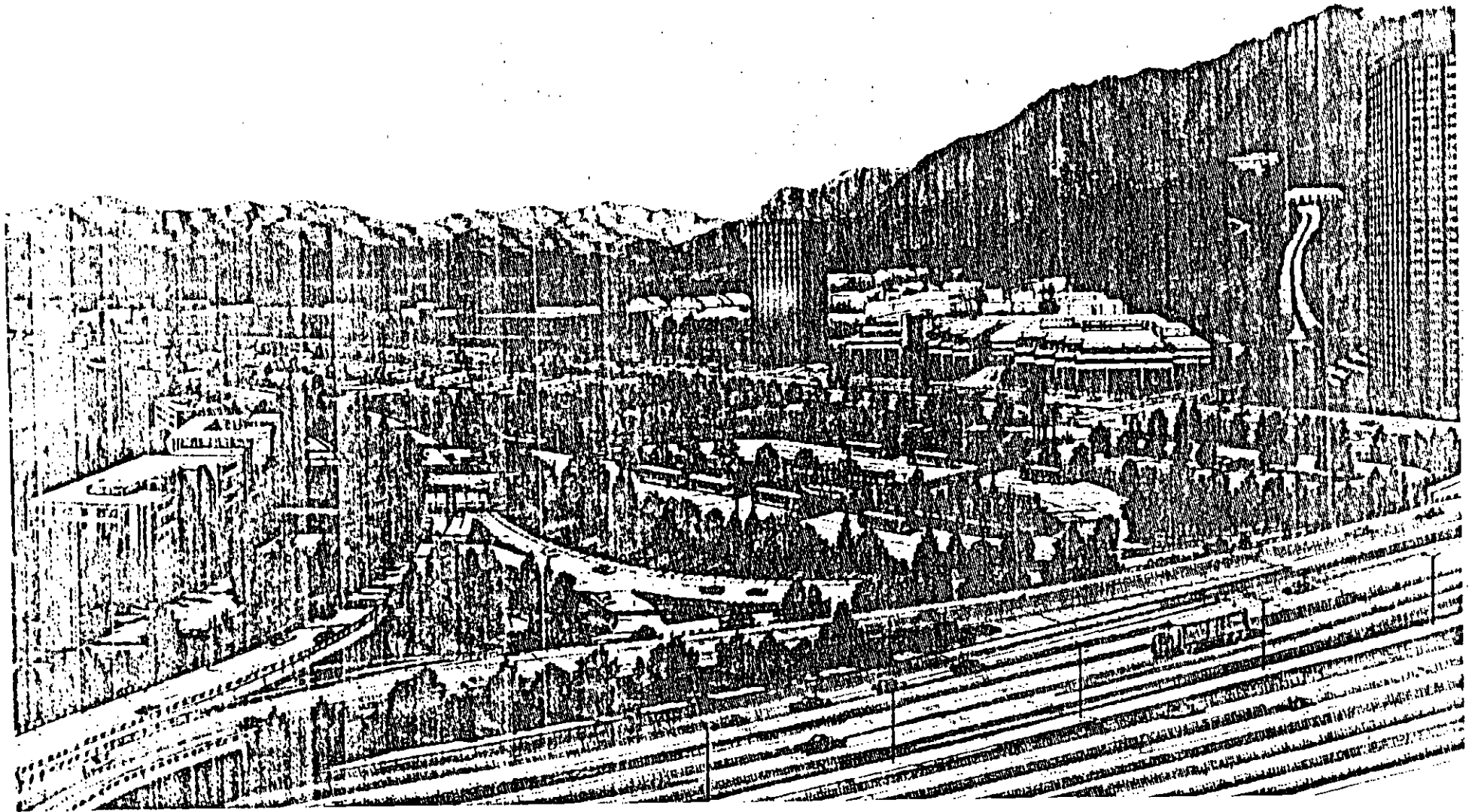


Southern California Rapid Transit District  
**Metro Rail Project**  
 PRELIMINARY ENGINEERING PROGRAM

**Figure 2-24**

**Universal City Station**

Harry Weese & Associates



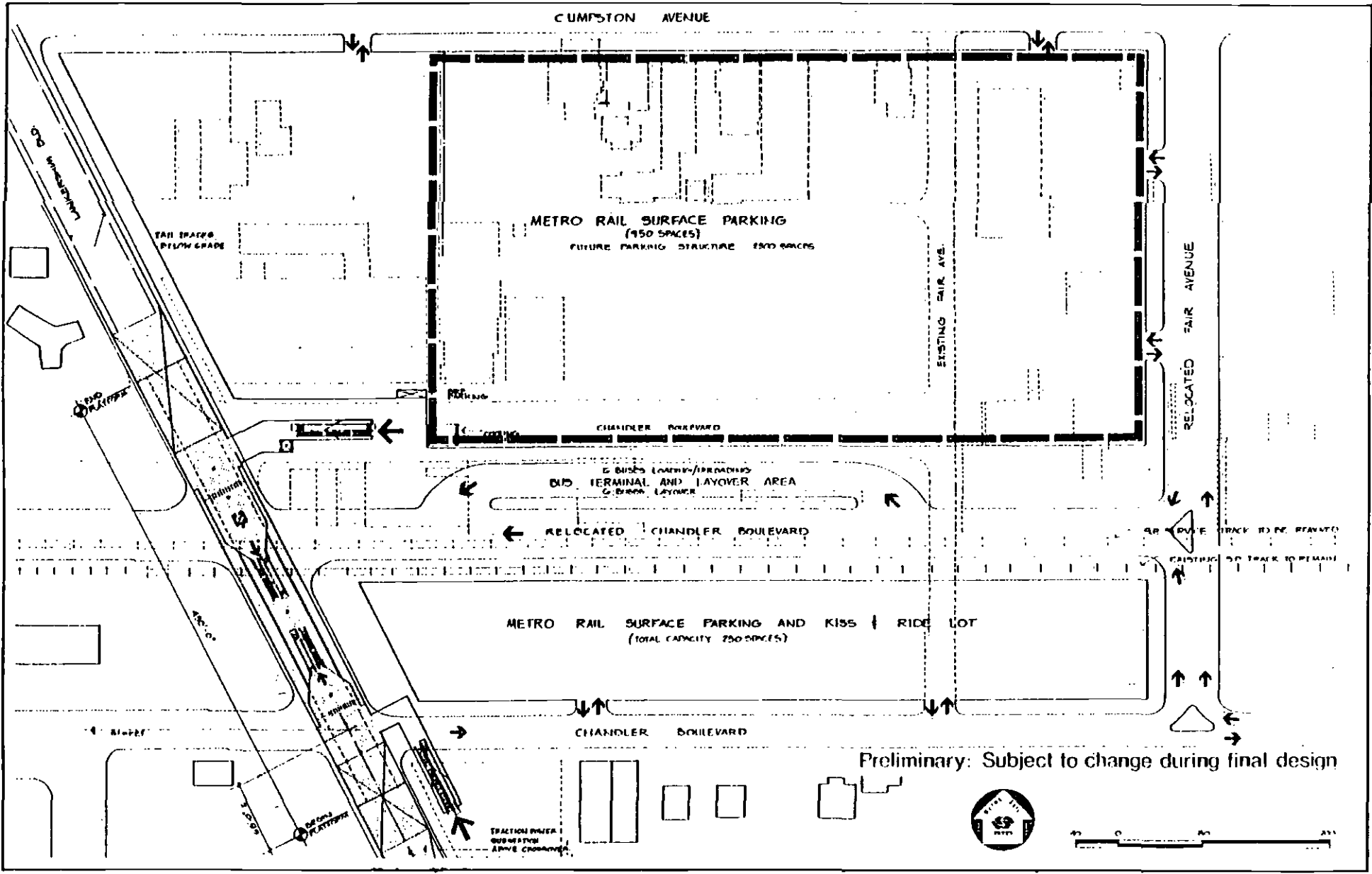
Southern California Rapid Transit District  
**Metro Rail Project**  
PRELIMINARY ENGINEERING PROGRAM

**Figure 2-25**

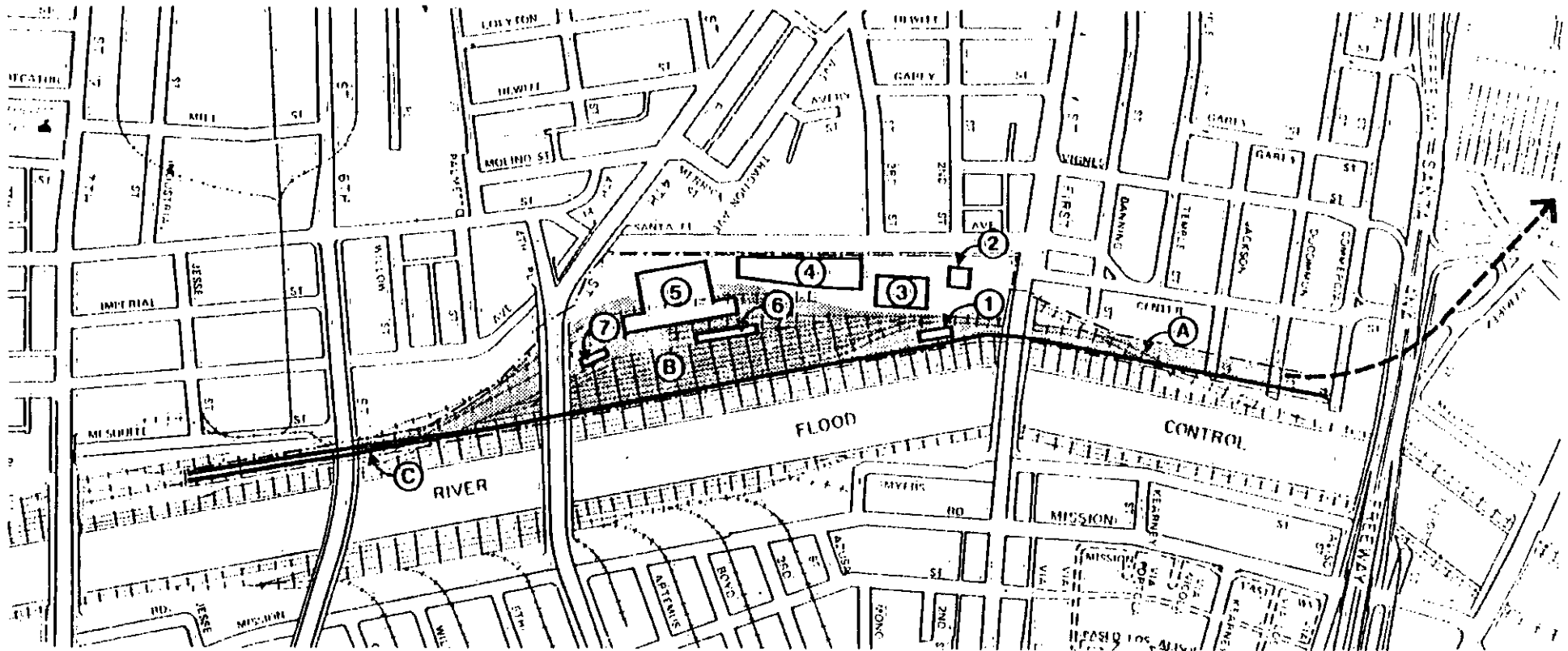
Hollywood Freeway, Lankershim Blvd & Proposed New Access Road



**Universal City Station**

Harry Weese & Associates



Preliminary: Subject to change during final design



- |  |  |
|--|--|
|  Proposed Locations for Buildings and Parking |  Proposed Locations for Tracks |
| ① Test Building  | ⑤ Main Shop Building   |
| ② Transportation Building  | ⑥ Car Washing Facility   |
| ③ Maintenance of Way Shop  | ⑦ Car Cleaner's Building   |
| ④ Parking  |  |
|  | Ⓐ Transfer Zone  |
|  | Ⓑ Storage Yard   |
|  | Ⓒ Tail Track and Test Track  |



Preliminary: Subject to change during final design

<p><b>Southern California Rapid Transit District</b>  <b>Metro Rail Project</b>          PRELIMINARY ENGINEERING PROGRAM</p>	<p><b>Figure 2-27</b></p> <p>Source: DMJM/PBQD</p>	<p><b>Main Yard and Shops</b></p>
--	--	-----------------------------------

OPINION OF COUNSEL



Richard T. Powers  
General Counsel

January 25, 1984

To: John A. Dyer, General Manager  
From: Richard T. Powers, General Counsel  
Subject: UMTA Capital Grant for Metro Rail Final Design  
& Construction

This opinion is written by the undersigned in his capacity as General Counsel of the Southern California Rapid Transit District.

The District is legally empowered and authorized to prepare and file with the Department of Transportation any application or other documents deemed necessary for the planning, improvement, or operation of its transit facilities.

There is presently the following litigation pending to which the District is a party:

1. Rapid Transit Advocates et al. v. SCRTD, UMTA, et al.

No. CV 80-0248 and CV 80-2160; Appellate No's 83-6149 and 83-6150

In 1980, a suit was filed against SCRTD and UMTA to enjoin preliminary engineering and expenditure of state and federal funds on the Metro Rail Project on the grounds of non-compliance with environmental laws and planning requirements. In June of 1983 the claims against UMTA were dismissed. In August of 1983 the claims against RTD were dismissed. Plaintiffs have appealed to the U.S. Court of Appeals for the Ninth Circuits. All briefs have been filed. Oral argument has been set for February 6, 1984.

Page 2

2. Rapid Transit Advocates et al. v. SCRTD  
L. A. Superior Court Case No. C 479 185

In December of 1983 suit was filed by the same group and individual defendants seeking, in effect, to enjoin final design and construction of the Metro Rail Project on the grounds that the state environmental impact report was inadequate and incomplete. No hearing has been set.

Sincerely,

A handwritten signature in cursive script that reads "Richard T. Powers". The signature is written in black ink and is positioned above the typed name.

Richard T. Powers  
General Counsel

122.32



CERTIFICATION



John A. Dyer  
General Manager

CERTIFICATION

I hereby certify that, effective upon execution of the grant contract incidental to Project No. \_\_\_\_\_ the Southern California Rapid Transit District will not engage in charter bus operations outside of the area within which regularly scheduled mass transportation service is provided. I further certify that the Southern California Rapid Transit District will not engage in school bus operations, exclusively for the transportation of students and school personnel, in competition with private school bus operators.

I understand that a violation of either provision will preclude the Southern California Rapid Transit District from receiving any other financial assistance under:

- (1) subsection (a) or (c) of Section 142, Title 23, United States Code;
- (2) paragraph (4) of subsection (e) of Section 103, Title 23, United States Code; or
- (3) The Urban Mass Transportation Act of 1964.

The terms of this certification shall be applicable for so long as, and only to the extent that the Federal law requires the inclusion thereof, and upon enactment of any law which eliminates the prohibition, then this certification shall be deemed amended accordingly.

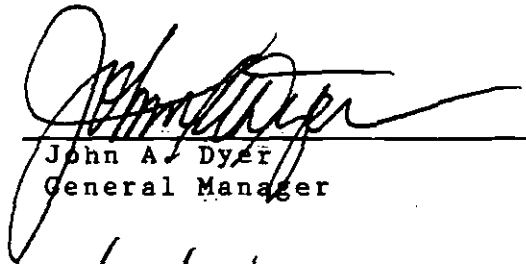
  
\_\_\_\_\_  
John A. Dyer  
General Manager  
  
11/27/84  
\_\_\_\_\_  
Date

EXHIBIT H -- USE OF FACILITIES

EXHIBIT H USE OF PROJECT FACILITIES

The capital improvements comprising this project will be owned and operated by the Southern California Rapid Transit District, a public agency, and are being obtained for use in provision of mass transportation service within its jurisdiction.

It is understood that the grant agreement will contain provisions to assure the continuation of such use during the useful life of the project equipment and that in the event such equipment is sold or otherwise devoted to another use during its useful life, the District will be required to refund a proportionate share of the Federal grant based on the sale proceeds or the market value of the equipment.

EXHIBIT I - LABOR

EXHIBIT I. Labor

(a) Effect on Employees of the SCRTD

Employees of the SCRTD are represented by the United Transportation Union, Locals 1563, 1564, 1565 and 1607, representing operators; by the Amalgamated Transit Union, representing mechanics; and by the Brotherhood of Railway and Airline Clerks; the Transportation Police Officers Association; and the International Brotherhood of Teamsters. The project(s) will not adversely affect the employees of the SCRTD.

The address of the above unions are as follows:

<u>Local</u>	<u>International</u>
United Transportation Union 1126 W. 6th Street, Suite 101 Los Angeles, CA 90017 Mr. Earl R. Clark General Chairman	United Transportation Union 14600 Detroit Avenue Cleveland, Ohio 44107 Mr. Kenneth Moore Director, Bus Department
Amalgamated Transit Union Local No. 1277 1833 W. 8th Street, Suite 100 Los Angeles, CA 90057 Mr. Jerome C. Long President	Amalgamated Transit Union 5027 Wisconsin Avenue, N. W. Washington, D.C. 20016 Mr. John W. Rowland President
Brotherhood of Railway, Airline, and Steamship Clerks 599 S. Barrance Ave., Room 220 Covina, CA 91723 Mr. P. A. Duran Vice General Chairman	Brotherhood of Railway, Airline, and Steamship Clerks 3 Research Place Rockville, Maryland 20850 Mr. R. I. Kilroy President
Transit Police Officers Assoc. P. O. Box 21481 Los Angeles, CA 90021 M. G. Mendoza President	Peace Officers Research Association of California Senator Hotel 1111 "L" Street Sacramento, CA 95814 Joe Moore Local Representative

Teamsters - Local 911  
3140 East Willow Street  
Long Beach, CA 90806  
Arlene Moore-Sini  
Secretary - Treasurer

International Brotherhood  
of Teamsters, Chauffeurs,  
Warehouseman & Helpers  
of America  
25 Louisiana Ave., N.W.  
Washington, D.C. 20001  
Mr. Jackie Presser  
General President

(b) Effect on Other Public Transportation Systems

There are a number of privately and publicly owned transit carriers operating in the District's service area, however, such services do not compete with those provided by the District. A number of the lines of the various carriers provide feeder bus service to the District's lines from communities not served by the District or from local neighborhoods within the District's service area.

The project will not adversely affect any of the common carrier public transportation systems in the area, nor the employees of these systems. The carriers and the areas they service are shown below:

<u>Agency</u>	<u>Area Served</u>
City of Commerce Bus Lines	City of Commerce only
Culver City Municipal Bus Lines	Culver City, western area of Los Angeles
Gardena Municipal Bus Lines	City of Gardena, Torrance, Carson, Compton, Lawndale, and Hawthorne. Inter-urban service to Los Angeles CBD
Long Beach Public Transportation Company	Cities of Long Beach, Seal Beach, Lakewood, Bellflower, Cerritos and harbor area of Los Angeles
Orange County Transit District	Orange County and South-eastern portion of Los Angeles County
Torrance Transit System	Cities of Torrance, Hawthorne, Redondo Beach, Gardena, Lomita, Lawndale and Carson. Interurban service to Long Beach and Los Angeles CBD

<u>Agency</u>	<u>Area Served</u>
Norwalk Transit	Cities of Norwalk, Seal Beach, Bellflower and Downey. Interurban service to Los Angeles International Airport
Santa Monica Municipal Bus Lines	Cities of Santa Monica and Los Angeles
Simi Valley Transit	City of Simi Valley, portions of eastern Ventura County and Chatsworth in the City of Los Angeles
Riverside Transit Agency	City and County of Riverside
OMNITRANS	Western San Bernardino County between Yucaipa and the Los Angeles County line southerly of the City of Victorville

These carriers primarily provide local service within their own cities and some additional service to adjacent areas. Inter-urban services are provided as noted. Many of the municipal carrier lines act as feeders to lines of the Southern California Rapid Transit District. The services of these carriers do not compete with those of the District and will not be affected by the proposed project.

Numerous municipalities have recently been experimenting with shuttle buses, demand-responsive systems, and local circulatory routes. Each of these are contained solely within the individual municipality; funding is being provided through various grants or from the jurisdiction's general fund. All are for the benefit of short-haul passengers, many act as complement to the District's regional, line-haul services.

In addition to the publicly-owned carriers described above, there are privately-owned transit companies which operate in the area served by the District. These companies operate regularly scheduled passenger stage services for the general public, duly certified by the Public Utilities Commission.

<u>Agency</u>	<u>Area Served</u>
Antelope Valley Bus, Inc.	Service in Antelope Valley and San Fernando Valley and from San Fernando Valley to Los Angeles International Airport



Many charter party carriers within the Southern California area have been experimenting with commuter services since the fuel shortage in the winter of 1974. Requiring a Certificate of Public Convenience and Necessity from the State of California, all are operating for a special group of employees generating from specific residential areas and the service is so designated. The carrier is restricted from operating passenger service when many compete with those services provided by the SCRTD.

Provisions for Section 13(c) Agreements

It is understood that the grant agreement will contain provisions, certified by the Department of Labor, that the Southern California Rapid Transit District will warrant that the project will not adversely affect the employment and working conditions of the employees of the SCRTD, and will agree that if any such employees are adversely affected, appropriate protection shall be afforded under the provisions of Section 13(c) of the Urban Mass Transportation Act of 1964, as amended.

Such understandings are contained in an agreement and side-letter executed February 25, 1981 between the District and Local 1277 of the Amalgamated Transit Union, and April 10, 1981, between the District and the Brotherhood of Railway, Airline and Steamship Clerks, Freight Handlers, Express and Station Employees (BRAC) and the United Transportation Union.

It is the intent of the parties to be bound by such agreements through final design and construction of the Metro Rail Project.

Davis-Bacon Act

The Southern California Rapid Transit District assures that all laborers and mechanics employed by contractors or sub-contractors in the performance of construction work financed with assistance under the Urban Mass Transportation Act of 1964, as amended, shall be paid wages at rates not less than those prevailing on similar construction in the locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act, as amended.

EXHIBIT J - PUBLIC HEARING

EXHIBIT J -- PUBLIC HEARING

A Public Hearing was held on December 8, 1983 to afford members of the public an opportunity to comment on the project. The following information is enclosed:

Proof and/or Affidavit of Publication  
Transcript of Public Hearing  
Certification of Public Hearing

**PROOF OF PUBLICATION**

(2015.5 C.C.P.)

STATE OF CALIFORNIA,  
County of Los Angeles,

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the

.....  
LA OPINION  
.....  
a newspaper of general circulation, printed  
and published .....  
DAILY  
.....  
LOS ANGELES  
.....  
in the City of .....  
County of Los Angeles, and which  
newspaper has been adjudged a newspaper  
of general circulation by the Superior Court  
of the County of Los Angeles, State of

..... June 23, 19 69  
California, under the date of.....  
950 176

Case Number .....; that the notice,  
of which the annexed is a printed copy (set  
in type not smaller than nonpareil), has  
been published in each regular and entire  
issue of said newspaper and not in any  
supplement thereof on the following dates,  
to-wit:

..... Nov. 7  
.....  
all in the year 19... 69

I certify (or declare) under penalty of  
perjury that the foregoing is true and  
correct.

Dated at..... Los Angeles  
.....  
California, this..... 7th day of..... Nov., 19 83

.....  
Signature Billie Garner

This space is for the County Clerk's Filing Stamp

Proof of Publication of

Paste Clipping  
of Notice  
SECURELY  
In This Space

G-4876  
Aviso de Intención de Solicitar una audiencia pública sobre la solicitud de subvención para el financiamiento del Diseño final y construcción del Proyecto Metro Rail.  
Por este medio se notifica al público que la Junta de Directores del Distrito de Transporte Rápido del Sur de California (S CRTD), intenta cambiar la audiencia pública del 19 de noviembre de 1983 al 21 de noviembre de 1983 a las 2:30 pm, a la fecha subsecuente conveniente, en el salón de la junta, 623 al sur de la calle Main, Los Angeles, California. El propósito de esta audiencia pública es el de recibir los comentarios de las personas, organizaciones y grupos comunitarios interesados sobre la solicitud de subvención del S CRTD para el financiamiento del diseño final y construcción del Proyecto Metro Rail.  
El proyecto será financiado en un 85% por fondos provenientes de la sección 3 del Acta de transporte público urbano de 1964, enmendada, y el saldo con fondos estatales y locales.  
El "Proyecto" propuesto se conforma con los planes de uso comprensivo del terreno, y el programa de desarrollo del transporte del área urbana y está incorporado en el Plan de mejoramiento del transporte por la asociación de gobiernos del sur de California y la Comisión de transporte del condado de Los Angeles.  
El público podrá examinar de una manera razonable el texto de la solicitud que pide el financiamiento para el diseño final y construcción del Proyecto Metro Rail en la oficina de la secretaria del distrito, segundo piso, 623 sur de la calle Main, Los Angeles, California 90013.  
Todas las personas y entidades oficiales o otras organizaciones interesadas en figurar en la audiencia tendrán la oportunidad de hacerlo.  
Distrito de Transporte Rápido  
del Sur de California  
Por: Michael W. Lewis  
President  
Pub: Nov. 7, 1983. LA OPINION

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when ordering this form.

**PROOF OF PUBLICATION**

(2015.5 C.C.P.)

STATE OF CALIFORNIA,  
County of Los Angeles,

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the

.....  
LA OPINION  
.....  
a newspaper of general circulation, printed  
and published .....  
DAILY  
.....  
LOS ANGELES  
in the City of .....  
County of Los Angeles, and which  
newspaper has been adjudged a newspaper  
of general circulation by the Superior Court  
of the County of Los Angeles, State of  
California, under the date of..... 19 69

950 176

Case Number .....; that the notice,  
of which the annexed is a printed copy (set  
in type not smaller than nonpareil), has  
been published in each regular and entire  
issue of said newspaper and not in any  
supplement thereof on the following dates,  
to-wit:

Nov. 20

.....  
all in the year 19...63

I certify (or declare) under penalty of  
perjury that the foregoing is true and  
correct.

Dated at ..... Los Angeles

California, this.....20th day of..... Nov. 19 83

.....  
Signature Billie Garner

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of Notice  
**SECURELY**  
In This Space

G-6324  
Aviso de Intención de llevar a cabo una audiencia pública  
sobre la solicitud de subvención para el financiamiento  
del Diseño final y construcción del Proyecto Metro Rail

Per este medio se notifica al público que la Junta de Directores del Distrito de Transporte Rápido del sur de California (DSTR) intenta llevar a cabo la audiencia pública programada para noviembre de 1983, el día 9 de diciembre de 1983 a las 2:00 p.m., o tan pronto como sea posible el día de la junta, 428 al sur de la calle Main, Los Angeles, California. El propósito de esta audiencia pública es el de recibir las comentarios de las personas, organizaciones y grupos comunitarios interesados sobre la solicitud de subvención para el financiamiento del diseño final y construcción del Proyecto Metro Rail.

El proyecto será financiado en un 60% por fondos provenientes de la sección 3 del Acta de transporte público urbano de 1964, enmendada, y el saldo con fondos estatales y locales.

El "Proyecto" propuesto se conforma con los planes de uso comprensivo del terreno y el programa de desarrollo del transporte del área urbana y está incorporado en el Plan de Mejoramiento del transporte por la asociación del gobierno del sur de California y la Comisión de transporte del condado de Los Angeles.

El público podrá examinar de una manera razonable el texto de la solicitud que pide el financiamiento para el diseño final y construcción del Proyecto Metro Rail en la oficina de la secretaria del distrito, segundo piso, 428 sur de la calle Main, Los Angeles, California 90013.

Todas las personas y entidades oficiales u otras organizaciones interesadas en figurar en la audiencia tendrán la oportunidad de hacerlo.

Distrito de Transporte Rápido  
del Sur de California

Por: Michael W. Lewis  
Presidente

Fecha: Noviembre 18, 1983  
Pub: Nov. 20 1983, LA OPINION

# PROOF OF PUBLICATION



**Los Angeles Times**

STATE OF CALIFORNIA  
County of Los Angeles

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the notice published. I am the CHIEF LEGAL ADVERTISING CLERK of the Publisher of the LOS ANGELES TIMES, a newspaper of general circulation, printed and published daily in the City of Los Angeles, County of Los Angeles, and the LOS ANGELES TIMES has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under the date of May 21, 1952. Case Number 598, 599; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

November 18

all in the year 1983.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Executed at Los Angeles, California, this

18<sup>th</sup> day of November, 1983

Toni Hargrett  
Signature

**Notice of Intent to Hold a Public Hearing on the Grant Application for the Funding of FINAL DESIGN AND CONSTRUCTION ON THE METRO RAIL PROJECT**

Notice is hereby given that the Board of Directors of the Southern California Rapid Transit District (SCRTD) intends to reschedule the November 21, 1983 public hearing to December 2, 1983 at 2:30 p.m., or as soon as practical thereafter, in the Board Room, 425 South Main Street, Los Angeles, California. The purpose of this public hearing will be to receive comments from concerned individuals, organizations and community groups on the SCRTD's proposed Grant Application for funding of Final Design and Construction on the Metro Rail Project.

The project will be financed 62% from Section 5 of the Urban Mass Transportation Act of 1964, as amended, and the balance of State and local sources.

The proposed "Project" conforms to the proposed comprehensive land use plans and transportation development program of the urban area and is incorporated in the Transportation Improvement Plan by the Southern California Association of Governments and the Los Angeles County Transportation Commission.

Persons may inspect on a reasonable basis the text of the Application requesting funding for Final Design and Construction of the Metro Rail Project in the Office of the District Secretary, Second Floor, 425 South Main Street, Los Angeles, California 90013.

All persons and official bodies and other organizations interested in appearing at the Hearing will be heard at such time.

Southern California Rapid Transit District

By: Michael W. Lewis  
President

Date: November 16, 1983  
President

Date: November 16, 1983

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(2015.5 C.C.P.)

STATE OF CALIFORNIA,  
County of Los Angeles,

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the

**Daily News**

a newspaper of general circulation, printed and published 7 times weekly in the City of Van Nuys, County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under the date of May 26, 1983.

Case Number Ajudication #C349217; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

*Nov-18*

all in the year 19 *83*

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Van Nuys

California, this *18* day of *Nov*, 19 *83*.

*Charlotte Tuchten*

Signature

This space is for the County Clerk's Filing Stamp

**Proof of Publication of**

(Daily News—G-4267)  
**NOTICE OF INTENT TO HOLD A PUBLIC HEARING ON THE GRANT APPLICATION FOR THE FUNDING OF FINAL DESIGN AND CONSTRUCTION ON THE METRO RAIL PROJECT**  
 Notice is hereby given that the Board of Directors of the Southern California Rapid Transit District (SCRTD) intends to reschedule the November 21, 1983 public hearing to December 8, 1983 at 2:30 p.m., or as soon as practical thereafter, in the Board Room, 425 South Main Street, Los Angeles, California. The purpose of this public hearing will be to receive comments from concerned individuals, organizations and community groups on the SCRTD's proposed Grant Application for funding of Final Design and Construction on the Metro Rail Project.  
 The project will be financed 62% from Section 3 of the Urban Mass Transportation Act of 1964, as amended, and the balance from State and local sources.  
 The proposed project conforms to the proposed comprehensive land use and transportation development program of the urban area and is incorporated in the Transportation Improvement Plan of the Southern California Association of Governments and the Los Angeles County Transportation Commission.  
 Persons may inspect on a reasonable basis the text of the Application requesting funding for Final Design and Construction of the Metro Rail Project in the Office of the District Secretary, Second Floor, 425 South Main Street, Los Angeles, California 90013.  
 All persons and official bodies and other organizations interested in appearing at the Hearing will be heard at such time.  
 Date: November 16, 1983.  
 SOUTHERN CALIFORNIA  
 RAPID TRANSIT DISTRICT  
 By: Michael W. Lewis  
 President  
 Publish Nov. 18, 1983.

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SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

PUBLIC HEARING RE: )  
)  
GRANT APPLICATION FOR FUNDING OF )  
FINAL DESIGN AND CONSTRUCTION ON )  
THE METRO RAIL PROJECT )

District Board Room  
425 South Main Street  
Los Angeles, California

Friday, December 8, 1983  
2:30 p.m.

Reported by: AILEEN NEITZERT, CSR NO. 5318

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1 Southern California Rapid Transit District  
 2 Public Hearing re: Grant Application for Funding  
 3 of Final Design and Constructin on the Metro Rail  
 4 Project, taken before Aileen Neitzert, CSR No.  
 5 5318, a Notary Public in and for the County of Los  
 6 Angeles, the State of California, in the District  
 7 Board Room, 425 South Main Street, Los Angeles,  
 8 California, on Friday, December 8, 1983, at  
 9 2:30 p.m.

**BOARD MEMBERS PRESENT:**

16 Michael W. Lewis, President  
 17 Ruth E. Richter, Vice-President  
 18 John F. Day  
 19 Nate Holden  
 20 Marvin L. Hohen  
 21 Nick Patsaouras  
 22 Jay B. Price  
 23 Charles H. Storing  
 24 George Takei

**Also Present:**

25 Helen M. Bolen, Secretary  
 26 John Dyer, General Manager  
 27 Robert Murray, Assistant General Manager  
 28



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PROCEEDINGS

PRESIDENT LEWIS: Can we have the board of directors come to order, please, for the public hearing on the grant application for funding of final design and construction on the Metro Rail Project.

Will the secretary please call the roll.

MS. BOLEN: Michael Lewis?

PRESIDENT LEWIS: Here.

MS. BOLEN: Ruth Richter

MS. RICHTER: Here.

MS. BOLEN: John Day?

MR. DAY: Present.

MS. BOLEN: Jan Hall?

Nate Holden?

MR. HOLDEN: Aye.

MS. BOLEN: Marvin Holen?

MR. HOLEN: Here.

MS. BOLEN: Nick Patsaouras?

MR. PATSAOURAS: Here.

MS. BOLEN: Jay B. Price?

MR. PRICE: Here.

MS. BOLEN: Charles Storing?

MR. STORING: Yes.

MS. BOLEN: Gordona Swanson?

George Takei?

MR. TAKEI: Here.

PRESIDENT LEWIS: Okay. If I may, I'd like to

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1 ask the secretary to make a statement concerning the  
 2 publication of public notices and the dissemination of public  
 3 information in regard to today's public hearing.

4 MS. BOLEN: Thank you, Mr. President.

5 The notice of intent to hold public hearing was  
 6 published in La Opinion, the Los Angeles Times, and the Daily  
 7 News.

8 A copy of the notice of intent was mailed to  
 9 federal, state, and local agencies who have legal authority to  
 10 develop and enforce environmental standards and to those who  
 11 may have an interest in the project.

12 Affidavits of publication and detailed mailing  
 13 lists are filed with the secretary and are available in my  
 14 office for review.

15 That concludes my report.

16 PRESIDENT LEWIS: Okay. Thank you. Let me  
 17 call on the general manager for any comments he may wish to  
 18 add.

19 MR. DYER: Thank you, Mr. President, members of  
 20 board, ladies and gentlemen.

21 This public hearing is being held in accordance  
 22 with the Urban Mass Transportation Act of 1964, as amended,  
 23 specifically Section 5(I)(3), which requires hearings so that  
 24 persons who have an interest and concern about any significant  
 25 economic, social, or environmental concerns in regard to the  
 26 district's application for grants can be heard.

27 Specifically, this is the Metro Rail Design and  
 28 Construction Program for the starter line of some 18.6 miles.



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1 It totals \$2.212 billion.

2 A copy of the application has been available  
 3 and is available during normal working hours in the office of  
 4 the secretary. I'll hold the copy of the application up for  
 5 everybody to look at in terms of its size. It's quite an  
 6 application. But this is what's involved in dealing with a  
 7 project of this size and scale.

8 This concludes my report, Mr. President,  
 9 members of the board, ladies and gentlemen.

10 PRESIDENT LEWIS: Okay. Mr. Murray, as the  
 11 project manager for the project, have you got--

12 MR. HOLDEN: Mr. Chairman--Mr. President.

13 PRESIDENT LEWIS: --anything to add?

14 Yes, Mr. Holden.

15 MR. HOLDEN: Just one other thing. I think  
 16 that we discussed last time that when you advertised for  
 17 public hearings that we also include Los Angeles Sentinel, and  
 18 I hope that will be done next time.

19 PRESIDENT LEWIS: Okay. Duly noted.

20 Mr. Murray, have you got any comments to make  
 21 on the application?

22 MR. MURRAY: Mr. President, members of the  
 23 board, ladies and gentlemen.

24 This application culminates over eight years of  
 25 planning and alternative analysis in which numerous  
 26 transportation corridors and modes were analyzed to determine  
 27 the most cost effective and justified starter line for the  
 28 Greater Los Angeles Metropolitan area. The proposed project



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1 represents the 18.6 mile all in subway locally preferred  
 2 alternative.

3 A transcript of this hearing, along with any  
 4 comments or written responses from the public, will be  
 5 forwarded to the Urban Mass Transportation Administration.

6 Mr. President, that concludes my report.

7 PRESIDENT LEWIS: Okay. Thank you, Mr. Murray.

8 Requests to speak from the public. I have a  
 9 request from Susan Schedlow.

10 Ms. Schedlow.

11 MS. SCHEDLOW: Good afternoon, ladies and  
 12 gentlemen. My name is Susan Schedlow. All I can say is, go  
 13 for it. We need the project.

14 PRESIDENT LEWIS: Thank you. And now for the  
 15 other point of view.

16 (Laughter.)

17 PRESIDENT LEWIS: Is Mr. Ross still present?  
 18 Bill Ross?

19 (No response.)

20 PRESIDENT LEWIS: Took a powder, huh? All  
 21 right. Well, I was all ready for the--oh, yes, here he is.

22 UNIDENTIFIED: Mr. Ross is on the phone.

23 PRESIDENT LEWIS: Okay. Well, we'll wait for  
 24 him.

25 MR. TAKEI: Is he the only other person?

26 PRESIDENT LEWIS: Yeah. All I have is the two.  
 27 So . . .

28 MR. CORNWELL: I might comment on the adequacy

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1 of notice.

2 PRESIDENT LEWIS: Okay. Would you like to  
3 identify yourself, please, and--

4 MR. CORNWELL: Michael Cornwell of 546 South  
5 Norton Avenue.

6 Your Community Relations Department sent out  
7 this document sometime ago about the November 21st hearing,  
8 which was adjourned to today, and there is subsequently--  
9 there is nothing been mailed appraising individuals of the  
10 hearing today other than the public notices referred to by the  
11 secretary.

12 I think that's a woeful oversight on the part  
13 of the board, and undoubtedly it explains the lack of interest  
14 today, because basically people do not know about it.

15 These are--thousands of these are mailed to  
16 rather extensive mailing lists that the Community Relations  
17 Department maintains, and it seems to me as a public citizen  
18 that when such an important hearing is being heard, that the  
19 funds available by the--I think it says it's paid for by UMTA,  
20 in part. But they would have thought to send a corrected  
21 notice saying that this hearing was delayed because you had  
22 not received back the EIR-EIS and appraised the public as to  
23 the hearing today.

24 I, therefore, suggest that you might consider  
25 going out to the public with adequate notice and rescheduling  
26 today's grant application hearing.

27 PRESIDENT LEWIS: Okay. Thank you. Perhaps--  
28 I guess it--is it appropriate to ask somebody to comment on

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1 the notice that was--we did--Mrs. Bolen did read into the  
2 record a statement of the notice that was provided for today's  
3 hearing.

4 MR. CORNWELL: Well, the trouble is, no one  
5 received the notice.

6 PRESIDENT LEWIS: Mr. Ross.

7 MR. DYER: For the record, I might ought to try  
8 to correct. I believe that the Los Angeles Times and the Los  
9 Angeles Daily News combined have a circulation of about  
10 1,200,000 persons a day. La Opinion has a circulation of  
11 about seventy to one hundred thousand a day in Spanish.  
12 That's a pretty substantial notice of a public hearing,  
13 especially in view of the fact it's not an initial notice but  
14 it's a notice of just a change of date.

15 MR. CORNWELL: I agree with you, Mr. Dyer, but  
16 the point is, your Community Relations Department in a rather  
17 well-placed, you know, large-type public notice for November  
18 21st, in my opinion, if they'd been doing their job, would  
19 have sent to everyone on the mailing list that received this--  
20 I receive about four of them myself--would have received  
21 notice that this--the hearing was adjourned and given a new  
22 date.

23 I think we all know that legal notices meet the  
24 legal requirement, but we also know they are inadequate in  
25 terms of attracting people to hearings because no one reads  
26 legal notices except lawyers.

27 MS. RICHTER: We take exception with that, Mr.  
28 Cornwell. I lead every legal notice.



1 MR. TAKEI: He just called you a lawyer.

2 MS. RICHTER: Sorry about that.

3 PRESIDENT LEWIS: Can you imagine that.

4 Thank you.

5 Mr. Ross.

6 MR. ROSS: Yes. Present. Thank you.

7 PRESIDENT LEWIS: Would you like to put us  
8 through our paces?

9 MR. ROSS: Very briefly. I'm William Ross of  
10 the law firm of Rogers & Wells. We are attorneys for the  
11 Rapid Transit Advocates, Incorporated, a California public  
12 benefit nonprofit corporation.

13 My comments are directed to the certification  
14 of the findings with respect to the final environmental impact  
15 statement which was acted on as agenda item 11 earlier as part  
16 and parcel of an argument as to why the grant application  
17 cannot proceed forward at this time.

18 Under applicable law, it is necessary to make  
19 the appropriate findings under the CEQ regulations of the  
20 Federal Government, which are obtained--contained--excuse me--  
21 in Title XXXX, Code of Federal Relations. One of those is  
22 that there be full compliance with applicable state  
23 Environmental Quality Act provisions, if, in fact, compliance  
24 with the local Environmental Quality Act is required, which it  
25 is in this instance.

26 It's represented in the backup material for  
27 agenda item No. 11--several things that I think should be  
28 clarified for the record.





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1 First, with respect to the public hearings--  
 2 that's item No. 3 on page 2--it's indicated that more than 45  
 3 days was allowed for comment between the initial notice of  
 4 certification on June 10, 1983, and the Federal Register.  
 5 This is incorrect. It's the position of Rapid Transit  
 6 Advocates that the 45-day period should be calculated from the  
 7 date of circulation and publication, if any, of the addendum  
 8 to the draft environmental impact statement, which was  
 9 significant and did not contain mere technical changes to the  
 10 original draft.

11 Also, I think it's appropriate to note at this  
 12 time that--and this is by way of comment--I am an attorney  
 13 that has represented several local agencies on CEQA matters  
 14 and NEPA matters, and I would like to express a great deal of  
 15 difficulty with dealing with the district secretary's office.  
 16 We have several written requests concerning the notice of  
 17 determination and final EIR. And it's only through our own  
 18 efforts that we discovered the date of filing and posting with  
 19 the County Clerk.

20 Anyway, proceeding back to item No. 3 on page 2,  
 21 I don't think that accurately reflects the appropriate comment  
 22 time that's required under federal law.

23 More importantly, it's represented in item No.  
 24 6 on page 2 that a notice of determination of the FEIR, which  
 25 again we're saying is a condition precedent to federal  
 26 certification, was filed with the Secretary of Resources in  
 27 the County Clerk shortly after the certification of the same  
 28 on November 10, 1983. I do not believe this is an accurate

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1 statement.

2 Three times today we have communicated with Ms.  
 3 Amelia Contreras, who is the secretary in the California  
 4 Resources Agency, who is immediately responsible for the  
 5 receipt and notification of all notices of determination and  
 6 final environmental impact reports.

7 We checked under three files, that associated  
 8 with the district labeled "Metro Rail," that under State  
 9 Clearing House No. 79061027 and 79061027. Those are numbers  
 10 that have been interchanged both in the State Clearing House  
 11 and the Office of the Resources Agency. And to quote Mrs.  
 12 Contreras, they have received nothing.

13 It is our belief that there is a requirement  
 14 under the California Environmental Quality Act guidelines  
 15 contained in Title IV of the California Administrative Code  
 16 that such a notice in fact be filed. There may, in fact, be  
 17 such a notice, but in checking with the individual that's  
 18 responsible for that agency, I find it somewhat unusual that  
 19 she would say they have received nothing.

20 It is indicated, I would note, on the notice of  
 21 determination that is filed with the County Clerk, which is  
 22 posted November 18, 1983--excuse me--filed November 18, 1983,  
 23 there is no indication of when, in fact, it was posted and  
 24 that is the date that the 30-day statute of limitation must  
 25 run from, that, in fact, a communication was directed to the  
 26 Resources Agency.

27 We believe this matter should be clarified  
 28 before further action is taken. Quite honestly, the defect



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1 can be cleared up within a week's time by a confirmation of  
2 receipt of those documents or it would be the subject of yet  
3 an unascertained paragraph in a pleading.

4 Beyond that, I think there is the more  
5 important issue of the policy of both the district CEQA  
6 guidelines, the state CEQA guidelines, and the guidelines  
7 under the National Act, which foster the policy, if not  
8 expressly require the idea, of cooperation when there is a  
9 joint EIS-EIR; and it is the position of Rapid Transit  
10 Advocates that this is especially true when the EIS-EIR is  
11 tiered. That is the subject of a first-tier EIS-EIR and the  
12 second-tier EIS-EIR as is the case here.

13 We believe that the bifurcation of the  
14 certification required under federal law and that required  
15 under state law is an act consummated by the district which is  
16 contrary to this policy of cooperation and coordination and  
17 actually in the nature of defeating this cooperation of policy  
18 in that it requires individuals who believe in a good faith  
19 manner that there is an insufficiency in the environmental  
20 document to file both an action in state court and federal  
21 court. I do not believe that is the intent of either the  
22 state legislation or the federal legislation.

23 Finally, at the November 21 meeting of this  
24 board, the representation was made by the general manager at  
25 that time that, in fact, the certification or concurrence in  
26 the finding of UMTA had to be delayed because of significant  
27 changes that were made in that document by the federal office  
28 and that that was the reason for the continuance from November



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1 21, 1983, until this date for action by this board.  
2  
3 After review of the tape and after review of  
4 what information we have on that final document, we have a  
5 question. We are not sure that there is anything incorrect  
6 with that, but the problem is, as we understand it, the final  
7 comments from UMTA were not received until last night and only  
8 20 were received at that time. We believe there would be a  
9 requirement of recirculation under both state and federal law,  
10 if, in fact, the changes are substantive rather than technical  
11 or procedural.

12 But, again, with all due respect to this board  
13 and the general manager, we have no way of ascertaining that  
14 fact because we do not know what, in fact, those changes were  
15 or are or what they are constituted.

16 So my inquiry in that area is basically one of  
17 a question, and, again, I have no basis to establish at this  
18 time or claim at this time that there has been any procedural  
19 failing for complying with either federal or state law on that  
20 basis.

21 I would note, however, that, again, I think  
22 that given the district's policies concerning full input on  
23 discussion of environmental issues which are contained in the  
24 district's CEQA guidelines, which are required by applicable  
25 law, that this is an issue that should be resolved before  
26 further action is taken on the grant application.

27 Again, there may be no problem, but at least  
28 the public should be afforded the opportunity to see what the  
changes were.



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1 In a typical attorney fashion, I would say I  
2 find it unusual that at the same meeting that you certify an  
3 additional funding request for work on the EIS-EIR, that the  
4 very supplemental work that's to be done--excuse me--that  
5 would serve as a basis for the federal office to act on the  
6 supplemental work is not available for public review.

7 Again, you know, there may be no substantive  
8 matters that are of concern, but I think it's important that  
9 that document should be at least subject to review prior to  
10 certification, and I guess I would also question if the  
11 document was, in fact, just received last night, how there  
12 could occur--or the presumption of review of that document  
13 allowing certification, which public officials are allowed to  
14 take in this state, could also occur.

15 So with those remarks, I think I'd conclude.  
16 We would, again, note that because the first EIS-EIR is still  
17 subject to litigation in the Ninth Circuit Court of Appeals  
18 and because the second-tier EIS-EIR is contingent upon the  
19 first, we believe there is still a substantial question about  
20 the environmental issues associated with the Metro Rail  
21 Project that is now unresolved and that should be clarified  
22 prior to proceeding forward with the grant application.

23 Thank you.

24 PRESIDENT LEWIS: Thank you, Mr. Ross.  
25 Thorough as always.

26 I have a request from Mr. Roberts.

27 MR. ROBERTS: Yes, sir. Thank you, Mr. Lewis.  
28 You know, I expected more people than this.

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1 PRESIDENT LEWIS: Sorry we wasted your time.  
 2 MR. ROBERTS: Oh, no, you haven't. There are a  
 3 couple things on the subway project. I think the fare as  
 4 projected in the last document Mr. Price gave me that they--  
 5 it was too high. It was somewhere around \$3 for one one-way  
 6 ticket. That to me is too high.  
 7 The bus service should not--the buses should--  
 8 some of them should continue to get on the Hollywood Freeway  
 9 in North Hollywood or University City and go to downtown Los  
 10 Angeles. Not all stop there.  
 11 The staff, in fact, has contradicted itself as  
 12 to whether the surface bus line 50 would continue to run.  
 13 They said in one document it wouldn't, and Mr. Perry said at a  
 14 public meeting it would continue. So, you know, we don't know.  
 15 Line 420 now, the old line 93, is a 24-hour bus  
 16 line from downtown to Van Nuys, and before midnight to  
 17 Northridge, and what I don't want to see is this subway stop  
 18 that type of bus service. As a matter of fact, the subway is  
 19 supposed to stop running at midnight or something. So if it  
 20 does, then the 420 should continue to run but--instead of--  
 21 instead of ceasing to exist and ending in North Hollywood  
 22 somewhere.  
 23 PRESIDENT LEWIS: I'm not sure that that is  
 24 included in the grant application, Mr. Roberts, and there is  
 25 plenty of time to resolve any concerns you may have about the  
 26 support bus system prior to the opening of the subway.  
 27 MR. ROBERTS: Also, if you are going to be  
 28 getting all this money from--you need to have a division that



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1 will--compliance division to make sure that the contractors  
2 are doing the work and doing it properly. In Miami they call  
3 that inspector general. In this--this agency needs a position  
4 like that to coordinate internal and then the--construction  
5 compliance so that you can make sure that you're getting what  
6 you're paying for.

7 PRESIDENT LEWIS: Okay. Thank you.

8 MR. ROBERTS: I could go on, but--

9 PRESIDENT LEWIS: No.

10 MR. ROBERTS: Thank you very much, Mike.

11 PRESIDENT LEWIS: Not necessary.

12 Is there anyone else who wishes to speak on  
13 this matter?

14 (No response.)

15 PRESIDENT LEWIS: Okay. Seeing none, hearing  
16 none--

17 MR. PRICE: Move for adoption.

18 PRESIDENT LEWIS: For lack of a second--

19 MR. HOLEN: Move we adjourn.

20 MS. RICHERT: You have to close the hearing.

21 PRESIDENT LEWIS: I think we have to close the  
22 hearing.

23 MR. PRICE: Move the hearing be closed.

24 MS. RICHERT: Second.

25 PRESIDENT LEWIS: Okay. Is there any objection?

26 (No response.)

27 PRESIDENT LEWIS: So ordered.

28 MR. PRICE: Move the adoption of the

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environmental impact statement.

PRESIDENT LEWIS: I don't think it's--

MS. BOLEN: We have already done that.

PRESIDENT LEWIS: It's not necessary.

MS. RICHERT: Stop while we are ahead, Jay.

PRESIDENT LEWIS: Okay. Our hearing being closed, then we stand adjourned.

(Whereupon, at 2:52 p.m. the hearing was concluded.)





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REPORTER'S CERTIFICATE

STATE OF CALIFORNIA            )  
  )    ss.  
COUNTY OF LOS ANGELES       )

I, Aileen Neitzert, CSR No. 5318, a Notary Public in  
and for the County of Los Angeles, State of California,  
certify:

That the foregoing hearing was taken before me at the  
time and place herein set forth, at which time the said  
hearing was recorded stenographically by me and thereafter  
transcribed under my supervision; and

That the foregoing hearing, as typed, is a true record  
of said hearing.

IN WITNESS WHEREOF, I have subscribed my name and  
affixed my seal this 12th day of December, 1983.

*Aileen Neitzert*  
AILEEN NEITZERT, CSR NO. 5318



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EXHIBIT L -- EIS

EXHIBIT L. PROTECTION OF THE ENVIRONMENT

Refer to Final Second Tier Environmental Impact Statement  
dated December 5, 1983.

JOINT DEVELOPMENT PROGRAM



John A. Dyer  
General Manager

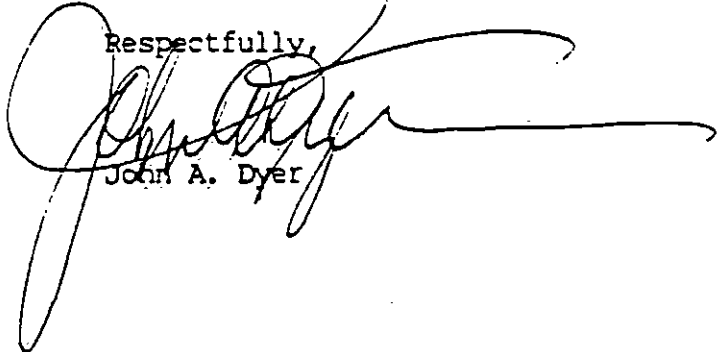
November 25, 1983

TO: Board of Directors  
FROM: John A. Dyer  
SUBJECT: JOINT DEVELOPMENT POLICY AND PROCEDURES

Attached is a copy of the revised Joint Development Policy and Procedures for implementing Joint Development adopted by the Board of Directors on November 21, 1983. The following changes have been incorporated into the text of the document.

- 1) A third General Policy has been added to promote Joint Development projects which enhance access to and use of the Metro Rail System (Page 7, 4.1).
- 2) A sixth Land Use and Property Rights Policy has been added stating the District's policy to solicit proposals for Joint Development of District owned property (Page 9, 4.5 (.6)).
- 3) A fifth General Manager's responsibility has been added to submit for competitive selection proposals for development of District-owned property (Page 11, 5.2 (.5)).

Respectfully,



John A. Dyer

POLICIES AND PROCEDURES  
FOR IMPLEMENTING JOINT DEVELOPMENT

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

November, 1983

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PROPOSED POLICIES AND PROCEDURES  
FOR IMPLEMENTING JOINT DEVELOPMENT

1.0 INTRODUCTION

The costs of transit facilities and their operation and maintenance have risen enormously in the last 20 years. But for the most part, in the United States, the funds to pay for these necessities have not kept pace with increasing costs. Moreover, policy changes at the federal level now require that an even greater share of the capital costs be funded locally. At the local level, it is important that the public cost be shared by those receiving the benefits rather than the public as a whole. Real estate, located close to public transportation facilities, has access advantages which can greatly enhance its economic potential. The business community is beginning to understand this and has expressed a willingness to share in the costs as well as the rewards. Joint Development is a broad framework which can be used to provide this sharing of costs and benefits.

2.0 PURPOSE AND SCOPE

This document outlines the policies and procedures the District will follow in carrying out and implementing Joint Development and in implementing the Board adopted policies contained in Milestone 6. In general, the District is pursuing Joint Development for two primary reasons. First, is to insure a proper integration of land use with the transportation system. Second, is to raise a significant portion of the cost of constructing, operating, and maintaining the system by "capturing" some of the increased property value which results from economic activity generated by the sizeable public investment in Metro Rail. Figure I illustrates and summarizes the overall process which will be fully described in the body of this document.

The purposes of this report are to:

- (1) Describe the Joint Development Program of the District;
- (2) Recommend policies and procedures to implement the program;  
and
- (3) Delineate responsibilities for implementation of the program.

Each of these will be described below.

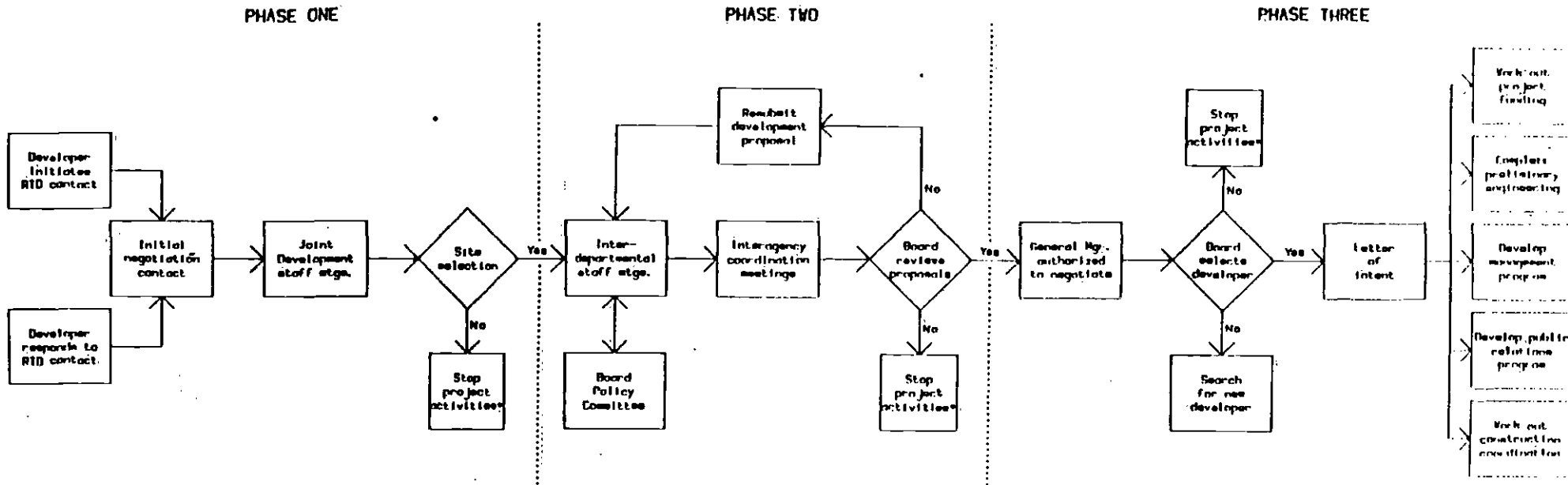
3.0 IMPLEMENTING THE JOINT DEVELOPMENT PROGRAM

3.1 Defining Joint Development

Joint Development includes two distinct but related concepts:

- (1) public/private coventure; and

# JOINT DEVELOPMENT PROCESS



- 3 -

\*Inform Board with letter to developer

- (2) value capture.

When a rapid transit system is being planned and implemented, private or public projects can either be planned and executed in close coordination with a transit station development, or be implemented separate from a station's own development. Either type of project can be designed to physically connect to or functionally support the transit facility. When the public and private sectors cooperate or jointly undertake such real estate developments, the relationship is known as a "public/private coventure". For example, this coventure can be achieved through several means such as:

- (1) Leasing of land or air rights owned by the District;
- (2) Co-development of property with a private owner/developer;
- (3) Coordination of District land acquisition policy with Joint Development policy to ensure efficient use of District property; and
- (4) Sale and lease back of District constructed facilities.

The second component of Joint Development is "value capture". This relates to the public sector's opportunity to gain a portion of the additional value accruing to the private sector property owner/developer because of improved access to public transportation. This opportunity can be achieved by any of a number of actions or combinations thereof. These include, but are not limited to:

- (1) Connector fees;
- (2) Capital construction offsets;
- (3) Donation of land and/or construction easements;
- (4) Provision of public spaces or amenities; and
- (5) Benefit assessments.

### 3.2 Goals and Objectives

As approved by the Board of Directors, Milestone 6 established the District's Joint Development goals. These goals all support the major intent of Joint Development which is to foster land uses around stations that are supportive of the transit system. In turn, the land uses can be supported by the transit system.

The SCRTD goals as established in Milestone 6 include:

- (1) To coordinate comprehensive planning and development around station sites;

- (2) To obtain station facility and related transportation service design and location authority;
- (3) To package real estate projects;
- (4) To provide ombudsman support and interagency representation; and
- (5) To obtain financial leverage and value capture negotiation authority.

The means to accomplish these goals are also contained in Milestone 6. The objectives include:

- (1) Establishment of a Joint Development decision making process which fosters positive relations with the private sector;
- (2) Maintain an active role in all public/private coventure activities;
- (3) Infuse public sector capital or "in lieu" contributions to leverage Joint Development projects as necessary;
- (4) Undertake limited use of eminent domain actions to acquire fee title for land in and around station sites; and
- (5) Use station cost sharing, connector fees, and lease agreements, among other mechanisms, to ensure long term value capture in support of the public benefit.

### 3.3 Joint Development Actions to Date

During Preliminary Engineering in 1982-1983, the District sponsored or participated in a number of activities related to Joint Development. These included holding a series of symposia on urban development together with the Lincoln Institute of Land Policy at the University of Southern California; sponsoring State legislation to facilitate Joint Development and benefit assessment; coordinating efforts with the downtown business community's Transportation Task Force; and sponsoring an ongoing public information television series on both the educational and cable T.V. networks.

In addition to these general efforts, various departments of the District have undertaken specific activities. The District's Community Relations Department conducted numerous public meetings and gave speeches to community and business groups. Many of these were development contacts which were eventually passed directly to other departments for action. The Planning Department subsequently prepared definitive reports and documentation in support of Joint Development and value capture. This Department also became initially involved

in the Specific Plan process originally contracted for by the Metro Rail Department with both the City and the County. Departmental and interagency reviews were held periodically, and recommendations were made to incorporate transit ideas in the overall planning process.

As a follow up to these efforts, the Planning Department negotiated a series of contracts with the City, CRA, and the County to deal with Station Area Master Plans around each of the stations. The roles and responsibilities of each agency were outlined to clarify the process and allow for the joint efforts of all parties, including private sector interests. These contracts will form the basis for institutional relations for the development permit process within each jurisdiction. They will also establish the framework for development of joint negotiation where required among each of the affected agencies.

The Metro Rail Department has just completed the environmental review process, a process which thoroughly explored the Joint Development opportunities associated with the Project. They also originated contracts with the City and County of Los Angeles to develop specific plans for the eventual development and use of property around Metro Rail stations. These actions are presently well under way. Through their architectural consultants, contacts with property owners and developers also have been initiated.

The Legal Department has been responsible, together with Government Affairs, for designing and carrying to the State Legislature the Joint Development enabling legislation referred to earlier. This enabling legislation consists of two specific laws. Both of these bills become effective on January 1, 1984. The first, S.B. 1159, introduced by Senator Art Torres authorizes the District to contract with either a private or public entity for the acquisition, construction, development, and operation of District facilities. It goes on to speak specifically in terms of Joint Development, stating that agreements to plan, develop, finance, or construct transit related facilities or projects adjacent, or physically or functionally related to District facilities are permissible.

The second piece of legislation, S.B. 1238, was introduced by Senator Diane Watson. This law provides for the creation of special benefit assessment districts around Metro Rail Stations. It allows the Board of Directors to levy assessments on property owners within these districts in direct proportion to the benefit their property derives from proximity to Metro Rail. One of the key aspects of this law is that it enables the District to consider issuing bonds based on anticipated revenue to help pay for the project's construction cost, operation, and maintenance.

## 4.0 JOINT DEVELOPMENT POLICIES

The goals and objectives in Milestone 6 provide the general direction and intent of the District's Joint Development activities. From these objectives, a policy framework must be derived to guide District actions. The following policies provide specific parameters for District actions and allow the previously stated goals and objectives to be achieved. Specific Joint Development policies are grouped into four areas covering (1) negotiation with developers, (2) formation of assessment districts, (3) acquisition of land, and (4) use of land and property rights. The policies covering negotiations identify what the District may ask of private developers who wish to enter into Joint Development agreements with the District. The policies governing the formation of assessment districts identify the manner in which assessment districts are to be formed and assessments levied. The manner in which the District will acquire land for the construction and operation of the Metro Rail system are described in the third area of District policies. Finally, the last area of District policies identify the manner in which the District will use the land acquired in support of Metro Rail.

### 4.1 General Policies

The policy of the District will be to promote and reinforce local land use plans in the creation of high-quality development at each station. Where the local governmental entity's adopted land use plans call for maintenance of a residential area, it will be the policy of the District to maintain consistency with those plans.

It shall be the policy of the District to encourage direct connections to the stations from surrounding developments in order to expand the pedestrian domain around the stations and to increase the usability of the system. The District will encourage land uses which promote pedestrian activities and promote the safety and security of patrons.

It shall be the policy of the District to promote joint development projects which directly enhance access to, and use of the Metro Rail system.

### 4.2 Policies for Negotiations

The following policies will govern the negotiation with property owners and/or developers.

- .1 Connector fees will be required from any property owner/developer of any building who requests a physical link to a Metro Rail station. The cost of such connectors, including additional design costs, and maintenance costs will be borne by the property owner/developer and will be negotiated.

- .2 Property owners/developers who propose to be directly connected to stations where there is no benefit assessment district shall be required to pay fees substantially equivalent to benefit assessment as set for other stations. Fees which are collected in lieu of such benefit assessments shall be in addition to all other fees, contributions, or considerations.
- .3 When construction of adjacent Joint Development projects precede or parallel construction of Metro Rail, additional offsets to Metro Rail costs through station cost sharing will be negotiated.
- .4 Land or easements necessary for the construction and operation of the Metro Rail System will be acquired by negotiation, when feasible, with the private land owners. The District will also seek to obtain by negotiation, air or subsurface rights or both after construction has been completed.
- .5 Connector fees or capital offset fees may be in the form of either lump sum payments, participation in the revenue created by the development, "in lieu" dedication payments of private property and/or easements, or a combination of these.
- .6 Joint agreements between the District and developers using District land and/or property rights will be negotiated to create a long-term source of revenue for the operation and maintenance of the system.

#### 4.3 Policies for Benefit Assessment

These general policies will apply to the formation and application of benefit assessment districts.

- .1 The District will seek to include each station within an assessment district.
- .2 The District will not assess single family residential property which is located within an assessment district.
- .3 The District will establish reasonable and uniform economic criteria as the basis for assessment of benefit within each assessment district. These criteria will apply to all private property unless it is determined that the property is not substantially benefited.
- .4 The District may establish varying assessment rates within each assessment district but such rates shall be based upon a substantially equal percentage of the total benefit to the property assessed.

#### 4.4 Policies for Acquisition of Land

The following policies will be employed in the acquisition of property necessary for the construction and operation of the Metro Rail system.

- .1 The District will negotiate, in good faith, the acquisition of necessary land or easements for transit or transit related purposes, and only when reasonable efforts have failed will the District consider the use of its eminent domain powers.
- .2 Land acquisition policy shall include criteria for the most efficient use of District real property in order to carry out the District's responsibilities to achieve maximum public benefit arising out of necessary public expenditures.

#### 4.5 Policies for the Use of Land and Property Rights

The following policies will govern the disposition of land, air, and subsurface rights acquired for the construction or operation of the system and that become available for other uses.

- .1 The District will retain ownership of land and air rights acquired for Metro Rail and will jointly develop these with the private sector for the purpose of establishing long term revenues to support Metro Rail capital, operating, and maintenance requirements.
- .2 The District will insure that all uses of District owned property are consistent with local jurisdiction's adopted land use plans, and are designed to enhance system ridership and provide needed public amenities during Metro Rail operation.
- .3 The District will actively seek to involve disadvantaged, women, and minority business enterprises in Joint Development projects.
- .4 Land and air rights not jointly developed will be considered for lease at the current market rate.
- .5 The District will dispose of real property only when it is economically advantageous or otherwise to the District's benefit.
- .6 The District will solicit proposals for joint development of District owned property through a competitive selection process.



## 5.0 THE JOINT DEVELOPMENT PROCESS AND PROCEDURES

This section describes the process and responsibilities of the Board, the General Manager, and various Departments in the implementation of Joint Development policy established by the Board. It also describes the process for development of negotiating strategies and positions.

### 5.1 Board Responsibilities and Involvement

The Board will establish overall policies and provide direction to the General Manager. Specifically, it will:

- (1) Set overall Joint Development policy;
- (2) Designate two negotiations policy committees to review and establish the basis for negotiating Joint Development projects;
- (3) Approve negotiating agreements in principle and authorize the General Manager to complete final negotiations; and
- (4) Review and approve final agreements.

Negotiations are the key to achieving the Joint Development objectives of the District. How negotiations are carried out will determine the overall success or failure of the Joint Development process. It is imperative that the District's position on any particular project not be made public in order to obtain the best agreement possible. Early public disclosure of the negotiations process may seriously damage our ability to reach a successful agreement. In fact, early exposure may make it impossible. To achieve this essential confidentiality, it is necessary that two negotiation policy committees, consisting of not more than five Board members, be empowered by the Board to (1) approve the initial negotiating position for Joint Development, (2) review the negotiation process and provide appropriate guidance for agreements in principle, and (3) approve the final binding agreement for adoption by the full Board. To insure consistency in this process, the General Manager will report all developers' contacts and proposals to these two policy committees. As the negotiation process progresses, the District's negotiation team will review the negotiating strategy with these committees and report on progress as appropriate.

One committee will have the responsibility for the following stations: Union Station, Fifth/Hill, Wilshire/Alvarado, Wilshire/Normandie, Wilshire/Crenshaw, Wilshire/Fairfax, Fairfax/Santa Monica, Hollywood/Cahuenga and Universal City. The second committee will guide the joint development negotiations for the following stations: Civic Center, Seventh/Flower, Wilshire/Vermont, Wilshire/Western, Wilshire/

La Brea, Fairfax/Beverly, La Brea/Sunset, Hollywood Bowl and North Hollywood. With each committee assigned specific stations through the various stages of negotiation, a detailed and historical comprehension of the conditions of the Joint Development proposals for each station will be attained.

These two negotiation committees will both provide ombudsman support and interagency representation. Both committees will provide planned and directed progress throughout all phases of coordinated planning as it relates to the City, CRA and the County. The requirements of the various agencies involved in the Joint Development Process, as well as the requirements and the needs of the private developer and the District, must be carefully considered to maximize the Joint Development and Value Capture potential.

Finally, the Board of Directors will be advised of all Joint Development contacts initiated by private developers or by District staff when such contacts occur.

## 5.2 General Manager's Responsibilities

The General Manager is responsible for directing and overseeing all staff activities and for reporting on Joint Development to the Board. Specifically, he will:

- .1 Designate and authorize staff to proceed on the Joint Development process in accordance with Board approved policies;
- .2 Advise the Board of development opportunities identified by staff studies or through property owner/developer contacts.
- .3 Carry out negotiations to reach an agreement in principle on Joint Development projects; and
- .4 Seek authorization from the Board to complete negotiations and execute final agreements.
- .5 Submit for competitive selection proposals for joint development of District owned property.

## 5.3 Department Roles and Responsibilities

### .1 Planning Department

- (1) Undertake Joint Development planning including preparation of station master plans;
- (2) Identify development potential at each station and most likely sites for Joint Development projects. Prepare alternative design solutions for particular projects in conjunction with appropriate jurisdictions such as the City, County, and CRA;

- (3) Prepare financial analyses of development proposals and provide staff support to negotiating team(s);
- (4) Coordinate Joint Development projects with the Metro Rail Department;
- (5) Along with the Equal Opportunity Department, conduct Joint Development workshops on development potential at each station with particular emphasis placed on the involvement of disadvantaged developers;
- (6) Initiate efforts to formulate benefit assessment districts and undertake evaluation of benefit by parcel;
- (7) Chair interdepartmental and interagency planning committees concerned with Joint Development planning; and
- (8) Certify that Joint Development projects are in conformance with adopted land use and station master plans.

.2 Metro Rail/Real Estate Department

- (1) Assume lead role for preparation and negotiation of development agreements;
- (2) Respond to and/or initiate property owner/developer contacts. Participate in preliminary meetings with developers;
- (3) Notify developers of status of their request to participate in Joint Development;
- (4) Conduct interagency coordination for joint development negotiations;
- (5) Determine acquisition requirements at each station;
- (6) Determine availability of land for Joint Development at each station site;
- (7) Advise negotiating team on technical matters of station construction and design;
- (8) Approve all development proposals for consistency with station construction;
- (9) Participate in development of Joint Development design solutions; and
- (10) Administer agreements with developers.

.3 Legal Department

- (1) Advise and assist respective departments during negotiation process; and
- (2) Participate in the drafting of agreements and review all documents as to form and content.

.4 Community Relations

- (1) Initiate community meetings with property owners;
- (2) Coordinate community support of Joint Development activities; and
- (3) Any developer contact or other indications of interest will be referred directly to Metro Rail/ Real Estate Department.

5.4 Establishing a Negotiating Policy and Posture

Negotiations will require a broad perspective of the implications of any property owner/developer's proposal. Each proposal must be treated on a case by case basis. An inter-departmental team will be designated by the General Manager to define for board policy committee approval the negotiating position of the District on each particular Joint Development proposal. This team will meet periodically to coordinate interdepartmental effort, formulate negotiating positions, and expedite the development process. This team will also coordinate negotiation strategies with affected local agencies.

5.5 Property and Facilities Management

Once a Joint Development/Value Capture agreement has been negotiated by staff and approved by the Board of Directors, the responsibility for the administration and monitoring of the agreement will rest with the Real Estate Department and the Director of Real Estate. The Director will be assisted by staff from the Purchasing and Accounting Departments. Each group's responsibilities is delineated below.

.1 Real Estate Department

- (1) Monitor agreement compliance;
- (2) Negotiate agreement renewals;
- (3) Coordinate with affected local agencies;
- (4) Prepare Board and Agency reports on active Joint Development projects;

- (5) Overall agreement administration; and
- (6) Serve as liaison for questions on agreements.

.2 Purchasing Department

- (1) Maintain contract files (originals will be kept in District Secretary's Office); and
- (2) Monitor contracts for compliance with purchasing procedures.

.3 Accounting Department

- (1) Monitor payments due to the District;
- (2) Monitor payments due from the District; and
- (3) Provide necessary financial data to Real Estate Department.

6.0 CONCLUSION

Large scale capital projects while needed can no longer be fully funded by the public sector alone. As a precondition for grants, federal and state lawmakers have adopted legislation and policies directing that the private sector participate in funding. The California Transportation Commission recently established guidelines which emphasized that State participation in projects would be linked to private sector financial participation.

Recognizing the impact of these decisions, the District sought enabling legislation allowing participation in coventures with the private sector. The policy framework contained in this document is a continuation of these efforts as the District undertakes a comprehensive approach to Joint Development of transit projects. The policies differ from the efforts by other transit properties to use these mechanisms because, on the whole, they were piecemeal approaches. Their success ratios and returns on investment varied depending on the strategies and skills of the negotiators.

When adopted and implemented, these policies will give the Board and staff comprehensive ability to fully pursue Joint Development in Los Angeles.

## SCPTD Joint Development Planning Program

In FY 1983-84 SCPTD initiated a Joint Development Planning Program to develop a policy framework, data base and planning process to assist in the implementation of joint development activities. Joint development is intended to support the Metro Rail project and to achieve, at a minimum, 5% of the total system capital costs from the private sector. The objectives of this program are as follows:

- 1) Direct a comprehensive station area master planning process at each Metro Rail station;
- 2) Package specific joint development projects;
- 3) Negotiate appropriate and equitable value capture agreements and administer other joint development mechanisms;
- 4) Provide ombudsman support services to facilitate joint development implementation; and
- 5) Monitor the implementation of the Metro Rail station master plans.

To accomplish these objectives the District has established a Joint Development Planning Section within the Planning Department to develop the necessary data base, conduct background planning studies and assist in the development of the policy framework to negotiate joint development and value capture agreements. The District's responsibilities relative to the joint development program are summarized below.

- 1) To complete final engineering design for the Metro Rail system and stations.
- 2) To serve as primary lead in modifying station design relative to specific development projects.
- 3) To provide overall coordination between entities responsible for station area planning.
- 4) To serve as primary lead in negotiating with private developers relative to joint development projects.
- 5) To establish a joint development negotiating process.
- 6) To establish and chair the following interagency advisory bodies to provide technical and policy input into the station area planning process: Professional Development Council, Inter-agency Management Committee and Joint Policy Council.
- 7) To serve as primary lead in the formation and implementation of assessment districts.
- 8) To provide final sign-off authority for all public transit projects.
- 9) To prepare quarterly progress reports on joint development implementation.

The successful implementation of a District sponsored joint development program also requires the full participation of the City of Los Angeles Community Redevelopment Agency, the City of Los Angeles and Los Angeles County. These agencies are currently under contract with the District to provide station area planning within their respective jurisdictions and to provide other technical and policy input into the establishment of a joint development process. The general responsibilities of these agencies within their respective jurisdictions in the joint development process are described below.

- 1) To prepare station area specific plans.
- 2) To prepare station area development plans.
- 3) To review and approve (where applicable) the formation of station area assessment districts.
- 4) To assist the District in the establishment of joint development negotiation process.
- 5) To serve on the following interagency advisory bodies: Professional Development Council, Inter-agency Management Committee and Joint Policy Council.
- 6) To provide final approval of joint development projects relative to their zoning and permit approval powers.
- 7) To review District transit projects.

The first year work program for the joint development planning effort is directed primarily at the completion of specific and development plans around all adopted Metro Rail stations. The specific plans are designed to guide appropriate land uses and intensities of development consistent with adopted policy. The District has contracted with the City of Los Angeles and Los Angeles County to prepare the specific plans within their jurisdictions. The Community Redevelopment Agency has on their own prepared redevelopment plans for areas to be served by the Metro Rail stations. The development plans are intended to implement the specific plans consistent with and supportive of Metro Rail station development and future operation, as well as to maximize joint development opportunities. The District has also contracted with the City of Los Angeles, Los Angeles County and the Community Redevelopment Agency to prepare development plans for their respective jurisdictions.

In addition to the station planning efforts, the District will be contracting with a private consultant to provide marketing research and other work related to joint development implementation. The components of this work activity are detailed below.

- 1) Preparation of development forecasts around Metro Rail stations based upon various policy scenarios.
- 2) Conducting primary research documenting private sector criteria and current awareness of the potential market demand significance of the Metro Rail system and available joint development packaging assistance.
- 3) Conducting a test market and financial feasibility analysis of a potential development project within the Metro Rail corridor alignment.

4) Analysis of the process used in joint development benefit assessment that establishes private/public coventure guidelines.

This information will be incorporated into the development plans and the establishment of a joint development and value capture process to be prepared by the District in cooperation with affected local jurisdictions.

During the first year the District plans to enter into negotiations with various private developers and affected public agencies to secure joint development agreements. The particular developers and station sites are not known at this time and will be dependent on market conditions and final station design and construction time frames.

Pending final modification of State legislation the District will also begin preliminary work on the establishment of benefit assessment districts at each station location. The results of the various planning activities and related studies will be incorporated into the assessment district formation.



MILESTONE PROCESS

## MILESTONE PROCESS

A key element of the Community Participation Program for the Metro Rail Project is centered around 12 basic interrelated decisions, termed "Milestones," for the Metro Rail Project engineering and design. The Milestones are an integral part of the process of designing and developing the rail system.

To maximize awareness of public concerns, SCRTD has established an extensive community participation and data input process to accompany the Milestone Process. This process enables concerned citizens of the Los Angeles area to communicate with SCRTD staff, city and county officials, and the SCRTD Board of Directors regarding Metro Rail Preliminary Engineering issues and related areas of planning and development.

The public has three opportunities to review and comment on the issues covered in each Milestone. The first opportunity is in a Data Presentation Meeting, where the Project Team presents its initial data and discusses the pros and cons of alternatives relative to a particular Milestone. Copies of the data report are distributed to each participant for review and comment, and subsequent meetings are scheduled if necessary to answer participants' questions. The second opportunity is the Draft Report Meeting, where the public reviews and comments on a draft Milestone report and the Project Team responds. The third opportunity is the SCRTD Board hearing, which the Board of Directors convenes before adopting each Milestone Report to give participants a final opportunity to comment on that specific Milestone. This process took about 45 to 60 days for each Milestone.

Public interest in the Milestone Process was low at first, but the continuing information programs have yielded greater attendance at each successive Milestone meeting. An average of over one hundred persons attended each meeting.

# RTD Decision Process Metro Rail Project Milestones

TIME (DAYS)	RTD BOARD ACTIONS	PUBLIC / AGENCY INPUT	STAFF ACTIONS	CONSULTANT ACTIONS
120	1 PRELIM. SYST. DEF. & SYST. OPERATION PLAN	INTERACTION	DEF. SYST. & DEVELOP. PRELIM. OPER. PLAN & EVAL. CRITERIA & PROVISIONS FOR SYST. EXT. POLICY RECOMMENDATIONS. ULTIMATE SYSTEM CAPACITY. OPERATIVE & SERVICE REPT'S. PROVISIONS FOR SYST. EXT. & FUTURE SYMS. CRITERIA FOR EVALUATION OF ALTER. SYSTEMS DESIGN & ANALYSIS	• PATRONAGE FORECAST REPORT • TRADE-OFF STUDIES OF SYSTEM OPERATION & SERVICE BARTON ASCHMAN. BOOZ - ALLEN HAMILTON
120	2 SYSTEM DESIGN CRITERIA	INTERACTION	• DEVELOP PRELIMINARY SYSTEM DESIGN CRITERIA SYSTEMS DESIGN & ANALYSIS	• REVIEW & COMMENT ON SYSTEM DESIGN CRITERIA ALL CONSULTANTS
180	3 ROUTE ALIGNMENT ALTERNATIVES	INTERACTION	• EVALUATE ALTERNATIVES • ASSESS DISRUPTION POTENTIAL POLICY RECOMMENDATIONS CRITERIA FOR EVAL. OF ALTER. ALIGNMENTS WAYS & STRUCTURES	• DEVELOP ALTERNATIVE HORIZONTAL & VERTICAL ALIGNMENTS DMJM / PBO & D
180	4 STATION LOCATION ALTERNATIVES	INTERACTION	• EVALUATE ALTER. LOCATIONS & LAYOUTS • COORDINATE CONSUL. AGENCY, COMM. INTER. PROVIDE POLICY RECOMMENDATION FOR ARCHITECTURAL & URBAN DESIGN STATIONS	• DEVELOP ALTERNATIVE STATION LOCATIONS HARRY WEESE & ASSOC.
210	5 ROW & RELOCATION POLICY	INTERACTION	• DEVELOP PROPOSED ROW & RELOCATION POLICIES GENERAL COUNSEL	
270	6 DEVELOPMENT & LAND-USE POLICY	INTERACTION	PROVIDE POLICY RECOMMENDATIONS FOR: DEVELOPMENT VALUE CAPTURE LAND USE ADVERTISING CONCESSIONS BUS PLANNING DEPT.	• STATION AREA SPECIFIC PLAN INPUT CITY OF L. A. BEDWAT / COOKE
300	7 SAFETY, SECURITY & SYSTEM ASSURANCE POLICY & REPT'S.	INTERACTION	• EVALUATE THE VARIOUS PLANS • COORDINATE CONSUL. AGENCY INTERFACE POLICY RECOMMENDATIONS: SAFETY FIRE PROTECTION SECURITY SYSTEM ASSURANCE SYSTEMS DESIGN & ANALYSIS	• DEVELOP PRELIM. SYSTEM SAFETY & FIRE PROTECTION. SYSTEM SECURITY & SYSTEM ASSURANCE REQUIREMENTS BOOZ - ALLEN HAMILTON KAISER ENGINEERS
360	8 SUBSYSTEM / SYSTEM CONFIGURATION	INTERACTION	• ESTABLISH EVALUATION CRITERIA & EVAL. SYSTEM CONFIGURATION OPERATIONAL PARAMETERS SUBSYSTEM TECHNOLOGY & FARE COLLECTION POLICIES SYSTEMS DESIGN & ANALYSIS	• DEVELOP OPERATIONAL & SUBSYSTEM ALTERNATIVES BOOZ - ALLEN HAMILTON KAISER ENGINEERS
420	9 SUPPORTING SERVICE PLAN	INTERACTION	• DEVELOP & EVALUATE ALTERNATIVE SURFACE FEEDER BUS PLANS & MAKE RECOMMENDATIONS BUS PLANNING DEPT.	
450	10 DEFINITIVE FIXED FACILITIES PLANS	INTERACTION	• ESTABLISH EVALUATION CRITERIA & EVALUATE THE FIXED FACILITY PLANS COORDINATE CONSULANT, AGENCY, PUBLIC INTERFACE STATIONS, WAYS & STRUCTURES. SYSTEMS DESIGN & ANALYSIS	• PREPARE DEFINITIVE DRAWINGS, SPECIFICATIONS & REPORT HARRY WEESE & ASSOC. DMJM / PBO & D KAISER ENGINEERS
480	11 PRELIMINARY COST ESTIMATE	INTERACTION	• EVALUATE COST ESTIMATES DEVELOP ESCALATION FACTORS DEVELOP CONTINGENCY FACTORS ALL DIVISIONS	• DEVELOP CAPITAL, OPERATING & LIFE CYCLE COST ESTIMATES ALL CONSULTANTS
540	12 PRELIM. ENGINEERING SYSTEM PLAN	INTERACTION	• ESTABLISH & RECOMMEND FINAL SYSTEM DEFINITION & SYSTEM SPECIFICATION SYSTEMS DESIGN & ANALYSIS	• DEVELOP SYSTEM SPECIFICATION & FINAL SYSTEM DEFINITION & OPERATING PLAN BOOZ - ALLEN HAMILTON



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of Transportation  
  
Urban Mass  
Transportation  
Administration

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GENERAL MANAGER  
SCRTD  
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*JAN*

Mr. John A. Dyer, General Manager  
Southern California Rapid  
Transit District  
425 South Main Street  
Los Angeles, CA 90013

Re: Project No. CA-03-0130-1  
Milestone Advisement Memoranda  
Nos. 1 and 2

Dear Mr. Dyer:

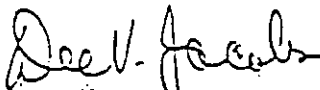
As you know, our staffs have been working together to develop appropriate project administration and management mechanisms for the subject project. Our goals in this regard are the same. That is, as guardians of public funds, both the District and UMTA must have sufficient technical and financial visibility of the project to permit regular evaluations of the actual achievements versus established technical and financial goals. We have agreed that the "baseline" goals for such evaluations will be the most current joint SCRTD-UMTA Statement of Work (SOW), Work Breakdown Structure (WBS), and the project budget, schedule and deliverables.

UMTA will primarily achieve its project visibility through participation in key technical and management meetings, plus review of project deliverables. Such deliverables generally include periodic program/financial status and technical reports, as well as the 12 milestone reports. We have agreed that UMTA would be provided draft versions of the technical and milestone reports as soon as they become available. After our review of these reports, we will summarily transmit our review comments and suggestions by means of advisement memoranda. As agreed, advisement memoranda would be (1) prepared on an as-needed basis following review of technical reports, and (2) prepared for all milestone reports/and forwarded to the District prior to the Board of Directors' hearing on each milestone. To facilitate referencing the various advisement memoranda, and to portions thereof, they will be numbered sequentially and prepared in the form of Milestone Advisement Memoranda and Technical Advisement Memoranda, respectively.

Enclosed for your consideration are our first two advisement memoranda, Milestone Advisement Memoranda Nos. 1 and 2, which document our review comments and suggestions on the District's draft reports for these two

milestones. We look forward to your response to these initial advisement memoranda, including any suggestions you may have on how this format and approach might be improved.

Sincerely,



Dee V. Jacobs  
Regional Administrator

Enclosures



U.S. Department  
of Transportation  
  
Urban Mass  
Transportation  
Administration

Region 9  
Arizona, California,  
Nevada  
March 21

Two Embarcadero Center  
Suite 620  
San Francisco, CA 94111

*OC Affairs*  
*Dist. Analysis*  
*Patricia*

JUL 15 1982

Mr. John A. Dyer, General Manager  
Southern California Rapid  
Transit District  
425 South Main Street  
Los Angeles, CA 90013

Re: Project No. CA-03-0130-1  
Milestone Advisement Memoranda  
Nos. 3 and 4

Dear Mr. Dyer:

Enclosed for your consideration are Milestone Advisement Memoranda Nos. 3 and 4 which document our review comments and suggestions on the District's preliminary draft reports for these two milestones. These milestone technical reviews are essential since each milestone is a public notice of impending critical decisions on proposed alternatives for the Wilshire Corridor Rapid Transit Line.


As you know, Milestone No. 3 evaluates Route Alignment Alternatives, and Milestone No. 4 evaluates station location alternatives. Future milestone reports will address other types of alternatives and, as necessary, additional evaluations of Milestone Nos. 3 and 4 alternatives. Although the information included in the various milestone reports may be sufficient to encourage informed public discussion on the various alternatives, additional material may normally be required for UMTA's more detailed technical reviews. This is especially true where the evaluations of alternatives lead to the selection of a "preferred alternative," such as Milestone Nos. 3 and 4.

A primary UMTA concern is that sufficient engineering and analysis be performed before the selection of each such preferred alternative. This would guard against decisions made too early in the preliminary engineering process that might require a costly revisiting at a point in the project where funds and/or time are not available. In instances where our review of these milestones indicates that additional information is needed, or that further engineering and analysis is necessary prior to the final selection of a preferred alternative, UMTA will normally suggest that the selection decision be deferred until more definitive support of the preferred alternative is obtained. In effect, we will be suggesting that, wherever possible, the number of alternatives be narrowed down to the most promising ones, each of which will be evaluated until a clearcut decision can be made.

From the enclosed milestone advisory memoranda, it may be seen that this general approach has been followed during our review of the Milestone Nos. 3 and 4 reports and other design details provided us by the District for this review. More explicitly, we suggest further evaluation of (1) two alternative horizontal alignments in the Hollywood segment, (2) two alternative vertical alignments in the San Fernando Valley, (3) dipped versus conventional profiles, (4) off-street station options, (5) alternative construction methods, and (6) specific station locations. These suggested evaluations simply highlight areas where we feel the natural course of the alternatives are leading.

We look forward to your response to our comments and suggestions regarding these two extremely important alternatives evaluation and selection milestones.

Sincerely,

  
Dee V. Jacobs  
Regional Administrator

Enclosures

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Suite 620  
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AUG 23 1982

Mr. John A. Dyer, General Manager  
Southern California Rapid  
Transit District  
425 South Main Street  
Los Angeles, CA 90013

Re: Project No. CA-03-0130-1  
Milestone Advisement Memorandum  
No. 5

Dear Mr. Dyer:

Enclosed is Milestone Advisement Memorandum No. 5, which documents our review comments on the District's preliminary draft report for this fifth milestone. As indicated in our memorandum, (1) we find that the District's land acquisition and relocation assistance policies and procedures conform with applicable Federal regulations and statutes; and (2) we have some specific comments for further clarification of the process to the public and real estate owners.

We look forward to your response to our comments and suggestions regarding these important policies and procedures.

Sincerely,

*Dee V. Jacobs*  
Dee V. Jacobs  
Regional Administrator

Enclosure





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Suite 620  
San Francisco, CA 94111

*Alan*

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*Me*  
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Mr. John A. Dyer, General Manager  
Southern California Rapid Transit District  
425 South Main Street  
Los Angeles, California 90013

Re: Project No. CA-03-0130-3  
Milestone Advisement Memorandum  
No. 6

Dear Mr. Dyer:

Enclosed is Milestone Advisement Memorandum No. 6, which documents our review comments on the District's preliminary draft report for this sixth milestone. As indicated in our memorandum, we agree that the milestone report does establish a general framework for land use and development but can be further strengthened by providing substantive details on the District's policy guidance institutional arrangements and technical issues. The memorandum provides both general and specific comments regarding these issues.

We look forward to your response to our comments and suggestions regarding these important aspects of land use and development. In addition, we want to work with you in further defining the Metrorail joint development program as part of the UMTA funded \$18.75 million accelerated joint development and engineering activities.

Sincerely,

*Brigid Hynes-Cherin*

Brigid Hynes-Cherin  
Regional Administrator

Enclosure

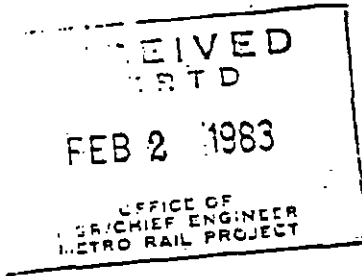
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JAN 27 1983

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JAN 31 1983

GENERAL MANAGER  
S.C.R.T.D.

Mr. John A. Dyer  
General Manager  
Southern California Rapid Transit District  
425 South Main Street  
Los Angeles, California 90013

Re: Project No. CA-03-0130-3  
Milestone Advisement Memorandum  
No. 7

Dear Mr. Dyer:

Enclosed is Milestone Advisement Memorandum No. 7, which documents our review comments on the District's preliminary draft report for this seventh milestone. As indicated in our memorandum, we find that the report does an excellent job in laying out the District's plans for safety, fire/life safety, security and systems assurance. Our specific comments primarily focus on topic areas and implementing steps that might be further clarified to enhance public understanding of the District's approach.

We look forward to your response to our comments and suggestions regarding the District's plans for safety, fire/life safety, security and systems assurance for the Metro Rail system.

Sincerely,

*Alan P. Steiner*  
for Brigid Hynes-Cherin  
Regional Administrator

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Mr. John A. Dyer  
General Manager  
Southern California Rapid  
Transit District  
425 South Main Street  
Los Angeles, California 90013

Re: Project No. CA-03-0130-3  
Milestone Advisement Memorandum  
No. 8

Dear Mr. Dyer:

Enclosed is Milestone Advisement No. 8, which documents review comments on the District's preliminary draft report for this milestone, which selects some of the most important system and subsystem elements on the rail project. The impact of these selections will shape the remainder of the engineering effort and the future operations of the proposed rail system.

As indicated in our memorandum, we believe the analysis is adequate for presentation to the general public. For purposes of SCRTD's Preliminary Engineering effort, some of the data is strictly in support of the decisions made. We believe additional data and analysis should be included in the final SCRTD review before these system and subsystem selections are made. For this reason, many of UMTA's specific milestone comments are couched in a broader context than that strictly required for this milestone.

We look forward to your response to our comments and suggestions regarding these important selections for the system and subsystem elements for the rail project.

Sincerely,

*Brigid Hynes-Cherin*  
Brigid Hynes-Cherin  
Regional Administrator

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APR 5 1983  
GENERAL MANAGER

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- [Signature]  
- J. [Signature]  
- me  
APR 1983

Mr. John A. Dyer  
General Manager  
Southern California Rapid  
Transit District  
425 South Main Street  
Los Angeles, California 90013

Dear Mr. Dyer:

RE: Project No. CA-03-0130-3  
Milestone Advisement Memorandum  
No. 9

SUBJECT	DATE
Engineer	
Non	

Enclosed is Milestone Advisement Memorandum No. 9, which documents our review comments on the District's preliminary draft report for this ninth milestone. As indicated in our memorandum, the capital cost to provide the planned access mode facilities will be large. These planned facilities should be examined in terms of cost and benefits provided particularly in light of UMTA's future availability of funding.

We look forward to your response to our comments and suggestions regarding these important policies and procedures.

Sincerely,  
*Brigid Hynes-Cherin*  
Brigid Hynes-Cherin  
Regional Administrator

Enclosure

*Handwritten:*  
CC STP  
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U.S. Department  
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MAY 16 1983

*W. J. Perdon*  
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MAY 19 1983

Mr. John A. Dyer  
General Manager  
Southern California Rapid  
Transit District  
425 South Main Street  
Los Angeles, California 90013

Re: Project No. CA-03-0130-3  
Milestone Advisement Memorandum  
No. 10

Dear Mr. Dyer:

Enclosed is Milestone Advisement Memorandum No. 10, which documents our review comments on the District's preliminary draft report for Milestone 10, Fixed Facilities. As indicated in our memorandum, we are providing only general comments at this time but will provide more detailed specific comments after the UMTA cost reduction review to be held the week of May 30, 1983.

We look forward to your response to our general comments and suggestions regarding the proposed fixed facilities.

Sincerely,

*Brigid Hynes-Cherin*

Brigid Hynes-Cherin  
Regional Administrator

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TRANSIT SYSTEMS DIV.

Mr. John A. Dyer  
General Manager  
Southern California Rapid Transit District  
425 South Main Street  
Los Angeles, California 90013

Re: Project No. CA-03-0130-3  
Milestone Advise ment Memorandum No. 11

Dear Mr. Dyer:

Enclosed is Milestone Advise ment Memorandum No. 11, which contains our review comments on the Districts' preliminary draft report for this milestone. The report documents the preliminary cost estimate for the initial 18.6 mile segment of the Metro Rail System. As indicated in our advise ment memorandum, our comments are based on our review of the milestone report and on analyses performed during the UMTA Value Engineering review of May 31 through June 6, 1983.

We apologize for the delay in providing review comments on this document; however, it was our desire to include the results of the value engineering review, to the extent possible, in the final document. Our review comments on Milestone 12 will follow shortly.

We look forward to your response to our comments and suggestions regarding the preliminary cost estimate for the Metro Rail System.

Sincerely,

*Brigid Hynes-Cherin*  
Brigid Hynes-Cherin  
Regional Administrator

Enclosure



U.S. Department of Transportation

Urban Mass Transportation Administration

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Comm. Relations		
Fixed Facilities		X
Real Estate		X
Construction Mgmt.		
Bus Facilities		

Mr. John A. Dyer  
General Manager  
Southern California Rapid  
Transit District  
425 South Main Street  
Los Angeles, California 90013

REGION IV  
Arizona California  
Hawaii Nevada

Two Embroidered Centers  
Suite 600  
San Francisco California 94104

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14 OCT 1983  
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Re: Project No. CA-03-0130-4  
Milestone Advisement Memorandum  
No. 12

Dear Mr. Dyer:

Enclosed is Milestone Advisement Memorandum No. 12, which documents our review comments and suggestions on the District's preliminary draft report for this final milestone. As you know, this memorandum was delayed to permit incorporation, as appropriate, of the results of the UMTA value engineering/cost reduction review conducted after your Milestone 12 report preliminary draft was issued.

As indicated in our memorandum, we are pleased to find that the report gives an excellent presentation of the METRO RAIL system plan as envisioned by the District at the end of the preliminary engineering phase of the project. In the main, the specific comments made in our advisement memorandum summarize or otherwise reinforce our comments made for earlier milestone reports or from the above-mentioned UMTA value engineering/cost reduction review.

We look forward to your response to our comments and suggestions regarding this final milestone report. Completion of this final report and the responses thereto marks the end of the preliminary engineering milestone process, which we feel has been highly productive. We commend you, the members of your staff, the many SCRTD consultants, the SCRTD Board, the participating citizens and all others involved in the process for their efforts in ensuring the outstanding success of the milestone process.

Sincerely,

*[Handwritten signature: Henry Hajako]*  
for Brigid Hynes-Cherin  
Regional Administrator

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OCT 20 1983  
TRANSIT SYSTEMS DIV.

Enclosure

P E WORK PROGRAM





**RTD**

John A. Dyer  
General Manager

JUN 23 1983

Mr. George R. Grainger  
Chief Area Engineer  
Urban Mass Transportation Administration  
Federal Building, Room 8323  
300 North Los Angeles Street  
Los Angeles, CA 90012

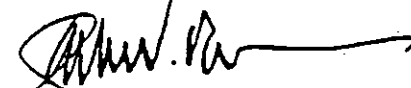
Dear Mr. Grainger:

Attached is a copy of the June 16, 1983 revision to the Work Task Descriptions document that was initially transmitted to UMTA on November 26, 1982. It is cross-referenced to the UMTA/SCRID Work Statement dated April 24, 1980. The descriptions have been revised to incorporate comments received from Mr. Walter Dougherty. UMTA concurrence in this revised Work Task Descriptions is requested.

As previously discussed, completion of these tasks will constitute completion of Preliminary Engineering.


Thank you for your cooperation in this matter.

Sincerely,

  
John A. Dyer

Attachment

Approved By:

  
George R. Grainger

10/12/83  
Date

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JUN 27 1983

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

PRELIMINARY ENGINEERING

Work Task Descriptions

For

Los Angeles Rail Rapid Transit Project

Rev. June 16, 1983

## WAYS AND STRUCTURES

The following describes the work to be accomplished with respect to the Ways and Structures during Preliminary Engineering for the Metro Rail Project. This work constitutes approximately 30% of Final Design. The Metro Rail WBS Number and the corresponding cross reference to the Preliminary Engineering Statement prepared jointly by SCRTD and UMTA are shown for each task.

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1. SPECIAL CONSULTANTS

The District has retained Special Consultants to perform specific work which will supplement the GEC's work. These tasks are as follows:

- B-1            A. Ground Control Work (WBS 12AAA): This work is to be performed by the City of Los Angeles and is complementary to the efforts of Aerial Mapping Contractor, as described below.
- B-2  
B-3            B. Aerial Mapping (WBS 12AAB): Teledyne/Geotronics has been retained by the District to prepare 1" = 200' scale photo plans and 1" = 40' scale topographics maps.
- B-5            C. Geologic Surveys (WBS 12AAC): Converse Consultant have been retained by the District to perform field, laboratory and analytical work necessary to prepare Geotechnical report detailing the subsurface conditions along the approved alignment.
- B-5            D. Seismic Criteria (WBS 12AAD): Converse Consultants have been retained by the District to prepare a detailed seismotectonic study and seismic design criteria for the project.
- B-4            E. Utility Locations Survey (WBS 12AAG): The City of Los Angeles has been contracted to prepare composite utility location drawings along the alignment.
- F. Corrosion Control (WBS 12AAH): The firm of Waters Consultant will perform a detailed investigation and study of matters pertaining to corrosion control likely to affect the transit system.
- C-5            G. Noise & Vibration (WBS 12AAJ): Wilson Ihrig and Associates will perform detailed Noise and Vibration Studies.

C

2. CRITERIA AND STANDARDS (WBS 13A)

Utilitizing previously developed Criteria and Standards, the District will prepare updated criteria which will be used as a baseline for all further engineering effort and which will form part of the overall technical standards during subsequent Project phases. Consistent with the District's concept of progressive development of the Metro Rail System design, further refinements to the design criteria will be permitted, if required, as the design proceeds, but only through formal revision of the controlled document.

D

3. HORIZONTAL AND VERTICAL ALIGNMENT ALTERNATIVES  
(WBS 14AAA)

The District will develop and evaluate alternative horizontal and vertical alignments. Because station location is an integral part of alignments selection, significant interaction exists between the two tasks. Development and evaluation of alternative horizontal and vertical alignment will culminate in the preparation of Milestone 3 report.

D-2

The District Board of Directors will select the preferred horizontal and vertical alignments with the adaption of Milestone 3 report, subject to advisory memo and comments by UMTA.

Additional work performed in this task will be the Special Analysis for Hollywood and North Hollywood segments, as directed by the Board. After the conclusion of this analysis, the Board will select the preferred horizontal and vertical alignments through the two segments.

At the conclusion of this task, the deliverable will be 1" = 200' scale plan and profile drawings showing alternative horizontal and vertical alignments and Milestone 3 Report with the Appendixes.

B-1 4. CIVIL AND STRUCTURAL DESIGNS (WBS 14AAB,  
16AAA)

B-4 This task involves preparation and evaluation of alternative Structural and Civil designs (including Drainage) for the selected horizontal and vertical alignment alternatives. Since a large part of the overall project cost will be expended in the construction of line structures and station structures, great effort will be exerted in developing optimal and cost effective concepts for the structural and civil works of the Project. The transit facilities included in this task are station and line structures; yards and shops are addressed elsewhere.

E-2f

G-4 The scope of this task includes development and evaluation of alternatives for the structural and civil design (including drainage) of Ways and Structures elements, including station construction methodology, station shell structural design, design of passageways and other structural features of the stations, guideways and tunnel structures, guideway and tunnel construction methods, tunnel support designs. Subsequent to the selection of preferred configuration, the task entails preparation of preliminary structural and civil designs, including trackwork. The preliminary drawings will show the type, size and locations of all major structure and include preliminary dimensions and sizes and other details sufficient for the preparation of cost estimates. The preliminary plans will be prepared at 1" = 40' scale. Cross-sections, elevations and details of difficult or unusual construction features and problems will be prepared as needed. The drawings will be prepared for the construction packages resulting from the task entitled, "Contract Packaging". Preparation of preliminary drawings will culminate in the adaption of Milestone 10 report, subject to advisory memorandum and comments by UMTA. The associated sub-tasks and their descriptions are as follows:

I-2

UNTA/SCRTD  
WORK PROGRAM  
REFERENCE

a. General Plans (WBS 16AAV)

The plans shall be grouped as follows:

A. Civil

(i) Horizontal and Vertical Control and Mechanical Features:

Information shown on the drawings shall include street system, track alignment, outline of structure, limits of contract, location of horizontal and vertical control points, relationship of control line to track alignment, survey control data, selected surface elevations, top of rail profile and vertical curve data. Schematic location of pump rooms, chiller plants, vent, fan and emergency access shaft locations shall be shown. Air volumes at shaft locations shall be indicated.

(ii) Control Line ties, Benchmarks and Project Coordinates:

All control points and benchmarks shall be referenced to existing permanent physical features adjacent to the control lines.

(iii) Plans and Profiles

Information shown on the drawings shall include roadways, sidewalks, curbs, buildings, outline of structure, drainage, graphical track centerlines including special trackwork, profiles curve data, ground surface and approximate rock profile. Major utilities shall also be shown in plan and profile where they are an alignment control.

B. Structural

Drawings shall be prepared showing the subway and its dimensions and relationship to existing major buildings, bridges, stations and other facilities.

a. Directive and Standard Drawings (WBS 16AAW)

Standard and Directive drawings and/or typical sections of subway stations, tunnels and other construction features, will be prepared to complete the Preliminary Engineering plans and cost estimates. Maximum use shall be made of applicable Directive and Standard drawings from other transit properties.

Directive and Standard drawings developed shall include, but not be limited to the following types of facilities and/or design conditions:

- o Alignment details
- o Track, tunnel, and elevated structure
- o Grade crossings
- o Grade separation structures
- o Clearances
- o Alignment details
- o Track, tunnel, and elevated structure
- o Portals
- o Stations - underground, aerial and at-grade
- o Pump stations
- o Ventilation and other equipment facilities

G-5

b. Trackwork System (WBS 16AAC)

Preliminary design of all trackwork for the Project including contact rail and appurtenances will be prepared. Crossovers and pocket tracks will be located.

H

c. Standard and Guide Specifications (WBS 16AAN)

Standard Specifications, including General Requirements and Technical Provisions will be prepared in a manner so as to allow their use in

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total, or in part, for final design contract documents. Guide Specifications will also be prepared as they relate to elements of ways and structures design in order to provide guidance to all final design consultants.

In addition, a Standard and Guide Specification Preparation Manual which will provide detailed guidance to the final design specification writers with respect to specification philosophy, format, referencing to the Standard Specifications and other standards and methods of preparing final copies, will be prepared.

A-11h

d. Muck Disposal (WBS 16AAT)

The District will recommend the most cost effective schemes for disposal of the muck generated during the construction of the Project. The recommendations shall be consistent with environmental considerations.

The muck-related data will be reviewed from the geotechnical and environmental reports as well as applicable laws and regulations relating to excavation, hauling and dumping. Potential permanent disposal sites will be identified, including truck route times (hours in day) and environmental restrictions. Cost estimates of the various methods of muck removal and disposal will be prepared and the most viable scheme or combination of schemes recommended.

A-9  
D-2

e. Right-of-Way Requirement (WBS 16AAH)

The District will prepare Right-of-Way maps by superimposing proposed transit on the Project mapping to show property requirements. Tabulation of probable property disposition will be



prepared and preliminary appraisals and property acquisition costs will be estimated. Finally, the District will prepare preliminary relocation plan and costs.

5. YARDS AND SHOPS

The scope of this task involves preparation of functional plan, alternative yard and shop layouts and, preparation of preliminary designs, drawings and specifications, to a 30% level of completion.

F-1

A. Functional Plan (WBS 14AAG)

Utilizing the operational criteria and Design Criteria and Standards, the District will prepare functional plans of the yards and shops and the test track facility to accommodate operational and maintenance functions efficiently and conveniently.

After the functional plans, the functional layout of the yards and shops and the test track facility will be prepared. These layouts will present the location of the various facilities, their relation to each other on the suggested sites, and the space being provided (or required) for each. These facilities will include lead tracks, inspection hoists and pits, offices, storage buildings, transportation building, buildings for yard operations, traction power facilities, test track facilities, parking areas, and other relevant facilities.

F-2

B. Preliminary Designs, Drawings and Specifications (WBS 16AAB)

Preliminary engineering plans will be prepared for all facilities required for the service and maintenance of the rapid transit system, and including but not limited to:

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- o Storage of transit vehicles
- o Storage of maintenance vehicles and tools
- o Storage of materials
- o Cleaning, servicing and washing of transit vehicles
- o Facilities for routine service and inspection of transit vehicles
- o Dispatch or transfer tracks
- o Test track facilities

The information developed above will be used to prepare cost estimates, schedules, requirements for long-lead procurement and requirements for test and evaluation programs.

G-3

6. VENTILATION

The objectives of ventilation and environmental control in rapid transit are to:

- o Provide a comfortable environment for patron and staff.
- o Provide, in the event of a fire, control of smoke and fumes migration; and, an effective means to purge smoke and supply fresh air to patrons and fire department personnel during evacuation and fire fighting operation.
- o Provide for the removal of equipment generated heat through normal operation of system elements including trains, lights and electrification and train control equipment, so that the normal life expectancy of such equipment will not be reduced.
- o Provide positive control of condensate and haze, and removal of objectional or hazardous odors and gases.

During Preliminary Engineering alternatives will be developed and compared and a cost effective system developed to approximately 30% level of completion.

A. Alternative Layouts and Design (WBS 14AAJ)

Utilizing the Subway Environmental Simulation (SES) computer program developed for UMTA, studies will be made to determine whether temperature criteria in subsurface station can be met with ventilation only, or whether supplementary mechanical cooling may be required. Alternative system concepts, including station platform train screens and dipped guideways will be evaluated as life-cycle energy cost saving features. Vehicle design will be coordinated with the environmental control system concepts in order that the normal ventilation and/or mechanical cooling can be kept to a minimum.

B. Preliminary Designs, Drawings and Specifications (WBS 16AAQ)

For the selected concept, the District will prepare site specific preliminary designs, drawings and specifications. Standard and Directive drawings shall also be prepared. Other plans will be incorporated with the General Plans.

The information developed above will be used to prepare cost estimates, schedules, requirements for long-lead procurements and requirement for test and evaluation programs.

B-6

7. UTILITIES

During Preliminary Engineering, utilities that interfere with the construction of the Project will be identified and with the cooperation and assistance of the owners, preliminary plans and cost estimates prepared for their rearrangement.

A. Alternative Layouts and Designs  
(WBS 14AAD)

Utilizing the composite utility and public facilities plans, utilities that must be relocated, abandoned or supported will be identified. Order of magnitude utility relocation cost estimates will be prepared.

B. Preliminary Designs, Drawings and Specifications (WBS 16AAF)

For the selected alignment alternative, preliminary engineering plans will be prepared to further define the work and estimate the costs. The utilities will be located on 1" = 40' scale drawings; blow ups of difficult areas will be developed.

The information developed above will be used to prepare the Project cost estimates, schedules and requirements for long lead procurements.

I

8. COST ESTIMATES

This task involves preparation of cost estimates for Ways and Structures aspect of the project, including structural work for the stations. This task is of extreme criticality and importance in the overall Project. The efforts of this task, combined with the efforts of other Division and Sections will culminate in Milestone 11 report - Preliminary Cost Estimates. The cost estimates will also be submitted to UMTA as a basis for further funding for the Project.

Utilizing the concept of progressive development of system design, the District will prepare cost estimates for Ways and Structures aspects of the Project, including structural work for the stations. All cost estimates shall be aggregated for operable segments.

I-4

I-1

A. Alternative Layouts and Designs  
(WBS 14AAE, 14BAE)

The District will develop procedures to be used in the preparation of project cost estimates by the Ways and Structures, Stations and Subsystems disciplines. These procedures will delineate the overall end product desired and the methods to be used for estimating and consolidating the Preliminary Engineering Cost Estimate.

The District will also prepare cost estimates for Ways and Structures aspect of the Project (including station structural) in sufficient detail to allow meaningful comparative evaluations. The estimates will be arranged to allow aggregation in varying combinations for comparative purposes.

The cost estimate for Ways and Structures will be prepared in an approved report type format. The report will clearly show the baseline estimates, the latest estimates for all contracts and reasons for change. The report will also show contingencies and escalation rates applied.

B. Preliminary Designs, Drawings and Specifications (WBS 16AAK, 16BAM)

For the selected and approved alignments, the District will prepare preliminary cost estimates for Ways and Structures (including station structural) in sufficient detail to provide reliable estimates of construction costs, and where applicable, maintenance costs. They will be prepared by estimators and where appropriate will be of "take off" type, including person hours by labor category, equipment cost, overhead and profit. Cost estimates will be prepared for the full 18

mile system and the "Minimum Operable Segment" (MOS). The cost estimates developed at the conclusion of Preliminary Engineering will be used by the District for developing the required cash flow and other estimates.

I-5

All costs will be estimated in terms of prevailing prices in the Los Angeles area, for the base period specified by the District. The District will also prepare estimates of cost for Final Design. The cost estimates will be of sufficient reliability, so that the District and other governmental agencies can depend on them for making commitments with regard to funding and construction of the Project.

The cost estimates for Ways and Structures will be prepared in an approved report type format, which will be submitted periodically as directed by the District. The report will clearly show the baseline estimates, the latest estimates for all contracts and reasons for change and include construction schedules and construction bid packaging based on various funding scenarios. The report will also show contingencies and escalation rates applied.

B-6

9. MASTER AGREEMENTS (WBS 12G)

Master Agreements deal with the impact on existing utilities of construction of the Metro Rail Project. Specifically these agreements provide for utility rearrangements such as preservation relocation, protection, support and reconstruction of existing facilities and services. If any of these rearrangements are required, public and private utility owners are to be reimbursed for their actual costs so states Part 3 of the California Public Utilities Code, also known

UWTA/SCRTD  
WORK PROGRAM  
REFERENCE

as the District Law. However, reimbursement to the utility owner must be made in accordance with a "prior arrangement".

Not only will this agreement provide the framework for a utility to perform the final design and construction of the management of their facilities, but it will also allow for work required early in Preliminary Engineering. This work will include:

- o Identifying utilities that may be impacted by the Project
- o Consulting with District staff on the most appropriate and cost effective utility rearrangements
- o Preparation of sketches and preliminary designs for utility rearrangements
- o Assist in coordination with other utility owners
- o Estimates of engineering costs for the design of utility rearrangements
- o Estimates of construction costs for utility rearrangement

Since this work is essential to the Preliminary Engineering phase, a timely executed master agreement will go a long way to insure Project design programs, including preliminary design to keep on schedule.

Discussions and negotiations for Master Agreements will be considered with 15 utility owners. They are:

- o Four Corners Pipe Line Co. (Atlantic Richfield Co.)
- o Department of Transportation, State of California
- o City of Los Angeles
- o Department of Water and Power - Water Systems
- o Department of Water and Power - Power Division
- o Los Angeles County Flood Control District
- o Pacific Telephone & Telegraph Co.
- o Santa Fe Railroad
- o Southern California Edison Co.
- o Southern California Gas Co.

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WORK PROGRAM  
REFERENCE

- c Southern Pacific Railroad
- o Western Union Telegraph Co.
- o Los Angeles County Sanitation Districts
- o Los Angeles Union Passenger Terminal

Prior to negotiation with the owners, a draft master agreement will be prepared. This draft will be based upon agreements on Use at BART, WMTA, MARTA and Baltimore, but tailored to the special needs and legal requirement of the District.

The agreement will specify the procedures which the District and the utility will follow in identifying, planning, designing and effecting rearrangements in order for the District to construct the Project and the manner in which the utility will be reimbursed for its costs. It will contain provisions for:

- o Design coordination
- o Performing design
- o Acquiring utility easements and rights-of-way
- o Effecting rearrangements
- o Reimbursement to Utility
- o Credits to District
- o Federal (UMTA) requirements

After the draft is prepared it will be reviewed by the District's legal, engineering and management staff. When a satisfactory draft is produced it will be used as the basis of negotiation with each utility owner. The draft will be sent to each of the fifteen utility owners for review and comments. Negotiations and discussion will continue until all differences, comments and modifications to the draft are satisfactorily resolved. Then the Agreement will be forwarded to appropriate officials for final review and approval.



## STATIONS DIVISION

The following describes the work to be accomplished by the Stations Division during Preliminary Engineering for the Metro Rail Project. This work will approximate 30 percent of the total design.

UMTA/SCRTD  
WORK PROGRAM  
REFERENCE

### STATION DESIGN TASK DESCRIPTIONS

#### A. Project Definition (WBS 12)

Paragraph E

##### 1. Review Codes, Guidelines, Regulations, and other Information (WBS 12F)

The District will define the configuration and standards for the Metro Rail passenger stations; with particular emphasis on those requirements that may be imposed by codes, regulations, guidelines or standards which are applicable. Some of these requirements have the force of law, while others only reflect industry practices or recommendations. The District will review all applicable or relevant codes, regulations, guidelines and standards which should be considered in the station design and will document the effects of these codes. This documentation shall be incorporated into a comprehensive report on the applicability of codes to all Metro Rail stations, and shall include recommendations, if any, regarding additions or changes to the codes deemed appropriate for the Project in accordance with industry practice. Any proposed additions or changes will be discussed with the affected authority or authorities.

#### B. Design and Operational Criteria and Standards (WBS 13)

Paragraph E.2.b.

##### 1. Criteria (WBS 13BAA)

The District will develop and maintain a comprehensive criteria document relative to passenger stations. The criteria will be maintained by the District in a controlled status. The document will be used as a baseline for all further design effort on the stations, and will form part of the overall technical standards for the

# 1 (cont'd)

Metro Rail System design during subsequent Project phases. Consistent with the District's concept of progressive development of the design, further refinements to the design criteria will be permitted, if required, as the design of the stations proceeds, but only through formal revision of the controlled document.

Paragraph E.2.b.

2. Standards and Directive Drawings (WBS 13BAB)

Standards and directive drawings will be prepared by the District for the use of the Final Designers. These drawings will reflect the design of standard elements to be adopted on a system-wide basis, and will either be incorporated directly into the construction contract drawings as a standard, or will be used by the Final Designer as guidance for a similar design.

C. Develop Alternative Layouts and Designs (WBS 14)

Paragraph E.1.

1. Station Location Studies (WBS 14BAA)

The Stations Division, in close cooperation with the Ways and Structures Division and other agencies, will develop alternative station locations. Considerations in these alternatives include cost differentials, neighborhood plans, bus routes, patronage data, future extensions of the system, land use, feasibility of entrances, underground utilities, geologic data, and the design criteria.

In support of the requirements for this task element, the District will:

- a. Prepare scale base drawings, sketches and studies, site descriptions, and general location plans for each alternative station location;

STATION DESIGN TASK DESCRIPTIONS

# 1 (cont'd)

- b. Prepare materials for the Milestone 4 reports and community participation program, including slides, photographic prints, illustrations, and written report data; and
- c. Prepare a report documenting the station location alternatives considered, and providing a comparative analysis of each alternative.

Paragraph E.1.

2. Station Layouts (WBS 14BAB)

For each station type appropriate to the station location alternatives above, the District will develop a prototypical layout indicating the number and general configuration of entrances, vertical circulation elements, mezzanines or concourses, platform(s), and ancillary areas, in sufficient detail that order of magnitude comparative cost estimates can be prepared.

Paragraph E.1.

3. Right-of-Way Requirements (WBS 14BAC)

For comparison among alternative station locations, a rough assessment of the station right-of-way limits at each location will be made by the District. This information will be compiled and coordinated by the Project Ways and Structures Division. Costs, as required, will be provided by the District's Real Estate Department. Products of this task element include reports and maps, as required.

Paragraph E.1.

4. Cost Estimates (WBS 14BAE)

For the most promising station location alternatives, rough-order-of-magnitude (ROM) cost differential estimates will be made. Incorporated into these estimates will be cost differential estimates for the station structure prepared by the Project Ways and Structures Division. In addition, ROM cost estimates will be made for differences in station operations

and maintenance alternatives, as input to the Life-Cycle Cost Analysis (WBS 14DAA).

Paragraph E.1.

5. Escalators and Elevators (WBS 14BAG)

The District will develop alternative numbers, configuration, and arrangement of typical station escalators and elevators to examine both functional and cost differences. Product of this task element is a report on feasible alternatives, with diagrams and drawings as required.

Not Listed

6. Special Studies (WBS 14BAK)

In conjunction with special studies which may be required to complete development and analysis of station alternatives, the District will prepare additional reports, drawings and data.

Not Listed

7. Lighting (WBS 14BAL)

General station lighting concept alternatives will be investigated. Selected alternatives may be incorporated into the station design criteria for the use of Final Designers. The product of this task element is a report on viable alternatives.

Paragraph E.1.

D. Selection of Preferred System Configuration (WBS 15)

The District will develop the evaluation methodology, conduct the evaluation of all viable station alternatives proposed for consideration, and select preferred alternatives, for further development. Recommendations for selection will be based upon cost/benefit trade-off, superior function and/or appearance, and other tangible and intangible factors.

At the conclusion of this task, a report for each station will be prepared describing each of the proposed alternatives, and the rationale for recommendation of the preferred alternatives. Included in the report will be

STATION DESIGN TASK DESCRIPTIONS

diagrammatic drawings of all alternatives, in the simplest form that adequately indicates their differences.

E. Preliminary Designs, Drawings and Specifications (WBS 16)

The work included in these tasks constitute the principal product produced during Preliminary Engineering, and will form the basis for the Final Design to follow. Task output will be included in Milestones, 10, Definitive Fixed Facilities Plans, and 12, Preliminary Engineering System Plan.

Paragraph E.2.

Station Definitive Design (WBS 16B) will advance the design for each station such that the following determinations are included:

- o Parking lot size and location (if any)
- o Basic vehicular and pedestrian circulation paths
- o Number, location and configuration of station entrances/exits
- o Number and location of fare collection equipment
- o Number and location of stairs, escalators, and elevators
- o Basic concourse/mezzanine definition
- o Platform size and location
- o Mechanical/electrical space sizes and locations
- o Basic mechanical/electrical system functions
- o Structural and volumetric limitations

To be indicated in drawings and reports are the results of studies regarding intermodal interface, and adjacent building access.

Station entrances will be sufficiently detailed to show general location, sizes of walls, supports, general architectural treatment and anticipated construction problems so that cost estimates can be prepared consistent with the remainder of the

Preliminary Engineering effort. These estimates will be based on preliminary designs for the different station areas.

Paragraphs E.2.c.,  
E.2.d., E.2.f.

1. Architectural Drawings (WBS 16BAA)

These drawings will form the base plans for station engineering work, including the structural engineering which is the responsibility of the Project Ways and Structures Division. Architectural drawings for each station include the following:

- o Floor plans of all station levels
- o Longitudinal Section
- o Transverse Section(s)
- o Principal Exterior Elevation(s), if required to indicate substantial massing above the surface

Paragraphs E.2.c.,  
E.2.d.

2. Civil Drawings-Site Work (WBS 16BAB11)

The District will develop a site plan for each station showing streets, parking (if any), traffic and pedestrian movements, existing property lines, topography, and indicating locations of all existing and proposed site structures.

Paragraphs E.2.c.,  
E.2.d.

3. Mechanical Engineering Drawings  
(WBS 16BAD)

Floor plans and sections indicating the basic mechanical systems will be provided for each station, and will include heating, ventilation and air conditioning; plumbing; fire protection; elevators and escalators.

Paragraphs E.2.c.,  
E.2.d

4. Electrical Engineering Drawings  
(WBS 16BAE)

Floor plans and sections indicating the basic normal and standby electrical systems will be developed for each station, and will include provisions for power, lighting, and the communication and alarm system(s).

Paragraph E.2.c

5. Elevator/Escalator Requirements  
(WBS 16BAJ)

The District will develop schematic designs and outline specifications of elevators and escalators, which will form the basis for procurement contract(s) during Final Design.

Paragraph E.2.j.

6. Cost Estimates (WBS 16BAM)

The District will prepare cost estimates for final design and construction at each station, in sufficient detail to provide reliable costs. Estimates of station structural costs will be provided by the Project Ways and Structures Division for inclusion in the individual station estimates. The estimates will be arranged to allow aggregating in varying combinations for comparative purposes. They will be prepared by construction estimators and, where possible, will include man-hours by labor category, equipment costs, overhead and profit. The cost estimates developed at the conclusion of Preliminary Engineering will be used for developing the required project cash flow and other related work.

All costs will be estimated in terms of prevailing prices in the Los Angeles area, for the base period specified by the District, including escalation and contingency factors.

In addition to station design and construction cost estimates, the District will prepare estimates for station maintenance and operations costs.

Not Listed

7. Guide Specifications (WBS 16BAN)

The District will prepare guide and standard sections of station construction specifications, to provide guidance for the Final Designers.

Paragraph A.3.b.

8. Schedules (WBS 16BAP)

Comprehensive Final Design and Construction Schedules will be developed, including the station design, procurement and construction contracts necessary to complete the Metro Rail Project. The schedule will include an estimate of pessimistic, optimistic and most likely time to complete each activity. The District will prepare a Master Schedule and a series of other schedules, in varying levels of detail to support the Master Schedule. This effort will be performed in close coordination with other agencies, and consider various funding scenarios.

Paragraph E.2.j.

9. Long-Lead Procurement (WBS 16BAQ)

The District will prepare detailed analysis, recommendations, and bidding packages for items, if any, with long-lead time for procurement.

Not Listed

10. Design Reports (WBS 16BAR)

At the conclusion of the Definitive Design task, the District will prepare a design report for each station, based on the completed drawings and previous reports. These design reports will form the basis for individual station programs to guide the Final Designers.

Included in the design reports will be a summary of the alternatives considered, with an analysis of the evaluation and conclusions; and the design approach and solution for each design discipline.

Not Listed

11. Lighting (WBS 16BAS)

The District will review potential lighting design at each station. Products of this task element will be reports, as required.



Not Listed

12. Station Final Design Statements of Work  
(WBS 16BAU)

The District will prepare Final Design Phase comprehensive work statements for each station, showing all tasks to be accomplished.

Not Listed

13. Station Contract Packaging (WBS 16BAV)

The District will prepare descriptions, analyses, and recommendations for the various station construction contract packages. This work will be performed in close cooperation with the Project's Ways and Structures Division.

Paragraph E.2.c.

14. Supporting Services Plan (WBS 16BAX)

A supporting bus services plan will be developed by the District. The plan will indicate the complete bus network, as related to the Metro Rail Project, and all revisions in bus routes to avoid parallel services and to provide better feeder bus access to the Metro Rail stations.

Paragraph E.2.c

15. Stations Planning (WBS 16BAY)

An extension of the work performed under WBS 14BAM, the District will refine the development potential for the selected alternative at each station, and assess the impacts of station facilities to property both within and adjacent to the stations.

This work will assist in the formation of the Los Angeles City Specific Plan, and will in turn be governed by specific elements of the Plan.

Paragraphs  
A.10., E.2.k.

F. Community Participation

The Preliminary Engineering effort for the stations will include tasks in support of Milestones 4, 10, and 12. These efforts will be directed principally toward synthesizing the extensive technical material developed

during WBS 13, WBS 14, and WBS 16 into a form which clearly and accurately describes the appropriate design issues to a lay audience.

Not Listed

G. Peer Review

A Peer Review Board for Stations has been established and has provided input to the station design criteria developed by the Project staff. This Board may be reconvened as appropriate, during the course of the Preliminary Engineering process.

Metro Rail Project staff will supplement the recommendations of the Peer Review Board with first-hand inspection of stations on-site at transit properties.

## SYSTEMS DESIGN AND ANALYSIS

The following describes the work to be accomplished by the Systems Design and Analysis Division (Systems Design and System Engineering and Analysis Section) during Preliminary Engineering for the Metro Rail Project. This work will constitute about 30% of Final Design.

### UMTA/SCRTD WORK PROGRAM REFERENCE

### SYSTEM DESIGN TASK DESCRIPTIONS

Paragraph G

#### A. Codes, Regulations and Standards (WBS 12F)

The District will prepare a comprehensive and up-to-date compilation of all codes, regulations, standards, and guidelines applicable to the Metro Rail design.

This document will be used in developing subsystems design criteria, in alternatives analysis, and in the preparation of preliminary designs, drawings, and specifications.

Paragraphs C,  
C6; E2g; F1a;  
G1, G2, G6, G7,  
G8, G9, G10

#### B. Design Criteria (WBS 13C)

The District will prepare, for each major subsystem, detailed design criteria based on codes study, Peer Review Board inputs, and review of other Metro Rail Project elements. Design criteria will include:

1. Passenger Vehicle (WBS 13CAA)
2. Automatic Train Control (WBS 13CAB)
3. Communications (WBS 13CAC)
4. Traction Power (WBS 13CAD11)
5. Auxiliary Power (WBS 13CAD12)
6. Miscellaneous Mechanical/Electrical Systems (WBS 13CAE12)
7. Auxiliary Vehicles (WBS 13CAE13)
8. Elevators and Escalators (WBS 13CAE14)

Paragraphs C1c,  
C2, C6, G

#### C. Design Alternatives (WBS 14C)

The District will prepare, for each major subsystem, design alternatives analyses based on the design criteria, manufacturers' information, Peer Review Board comments, and

SYSTEM DESIGN TASK DESCRIPTIONS

C. (Cont'd)

information from other sources. Design alternatives analyses will cover the following:

1. Passenger Vehicle (WBS 14CAA)
2. Automatic Train Control (WBS 14CAB)
3. Communications (WBS 14CAC)
4. Traction Power and Distribution (WBS 14CAD11)
5. Auxiliary Power (WBS 14CAD12)
6. Auxiliary Vehicles (WBS 14CAE13)
7. Elevators and Escalators (WBS 14BAG)

Paragraphs G,  
H,

D. Preliminary Designs, Drawings and Specifications (WBS 16C)

The District will prepare preliminary designs, drawings and specifications for each major subsystem, based on previous design criteria and alternatives analyses and evaluations. Preliminary designs, drawings and specifications will be prepared to establish cost estimates, schedules, requirements for long-lead procurements, and contract packaging, for the following subsystems:

1. Passenger Vehicles (WBS 16CAA)
2. Automatic Train Control (WBS 16CAB)
3. Communications (WBS 16CAC)
4. Traction Power and Distribution (WBS 16CAD11)
5. Auxiliary Power (WBS 16CAD12)
6. Fare Collection (WBS 16CAE11)
7. Miscellaneous Mechanical/Electrical Systems (WBS 16CAE12)
8. Auxiliary Vehicles (WBS 16CAE13)

Paragraphs I,  
I1, I2, I3,  
I4

E. Preliminary Cost Estimates (WBS 17C)

The District will prepare preliminary cost estimates, based on the preliminary designs, drawings and specifications. The cost estimates will include final design, fabrication, construction, testing, project

SYSTEM DESIGN TASK DESCRIPTIONS

E. (Cont'd)

management, and all other costs required to prepare all major subsystems for revenue operation. The preliminary cost estimate package will include the following:

1. Cost estimate methodology
2. Design and construction CPM schedules
3. Estimates for various configuration alternatives based on operable segments, including the entire 18.6-mile segment

Paragraphs A2,  
A3

F. Project Management and Control (WBS 11DAG)

WBS Task 11DAG covers the management and control of the Systems Engineering and Analysis (SEA) Preliminary Engineering effort. It provides the effective management and direction of the overall SEA scope of work by establishing specific tasks in detail, procuring the necessary background information and assuring that proper personnel are assigned to each task. The SEA Section will coordinate the activities of the Special Consultant-SEA, including interaction with Metro Rail Project staff and other consultants, as well as control of the internal aspects of the Special Consultant-SEA contract.

The SEA Section will execute a formal task authorization before each individual task is undertaken by the Special Consultant-SEA. Daily liaison will be maintained with the Special Consultant-SEA, so that the District staff will have a clear understanding of the progress of the work. This will be supplemented by regular progress reports.

The SEA Section will be responsible for providing consistent and reliable data input to the Project Management and Control System (PMCS), which will be used for schedule planning, program control, and preparation of management reports. These data will be

SYSTEM DESIGN TASK DESCRIPTIONS

F. (Cont'd)

developed in a format that is compatible with the PMCS. To facilitate this, the Special Consultant-SEA will update the schedule and budget estimates every month, or when the District authorizes changes in the tasks. The budgets submitted each month will show a comparison between the authorized budgets and the actual costs for work already performed, as well as a similar comparison between the authorized budgets and the estimated costs for future months. The monthly updates of schedules will show a comparison between the authorized schedule and the currently estimated schedule. Whenever the WBS activity network is changed, a revised copy will be included in the next monthly report.

Section A      G. Management Planning

This work encompasses the establishment of key project management documents (in outline or complete form depending upon the particular document). These documents include: 1) a detailed outline of a project management plan (WBS 11A); 2) a design control plan (WBS 13DAG); and 3) project definitions and objectives (WBS 13DAG). The first item mentioned above will be prepared by the SEA Section staff while the next two items will be prepared by the Special Consultant-SEA.

These documents, after appropriate review and comment, will be used in detailing project management plans, and controlling design activities. The program management plan will be developed by all elements of the Metro Rail Project team, using the outline as established herein. Overall coordination on preparation of the program management plan is the responsibility of the Manager/Chief Engineer.

SYSTEM DESIGN TASK DESCRIPTIONS

Paragraphs A1,  
A8e, A8h; C1,  
C2, C3, C6, C7,  
C9; D2; E2; F1;  
G1, G2, G5 thru 10

H. Milestone Report Preparation and Presentation

The purpose of this task is to develop the milestone reports for which System Engineering and Analysis (SEA) has primary responsibility and provide support to those reports throughout their involvement in the Metro Rail Public Participation Program. The milestone reports for which SEA has primary responsibility are:

- o Milestone 1 - Preliminary System Definition and Operating Plan (WBS 12H)
- o Milestone 2 - System Design Criteria (WBS 12H)
- o Milestone 7 - Safety, Security and System Assurance Plan (WBS 15D)
- o Milestone 8 - System and Subsystems Configuration (WBS 15D)
- o Milestone 12 - System Plan (WBS 16DAK)

While the content of these milestone reports will differ in accordance with the subject of each report, each will follow a similar process of development and public review and comment.

In addition to report preparation, support of each milestone report during its involvement in the public participation program will consist of participation in public meetings and preparing written response to public comments and questions as required. Board action relative to each milestone will be reflected in the final milestone report.

SYSTEM DESIGN TASK DESCRIPTIONS

Paragraphs C3;  
E2c; G10

I. Fare Collection Studies

The purpose of this task is to define the fare collection subsystem which will be incorporated into Metro Rail Project design. Design and operational criteria will be prepared in sufficient detail to permit the preparation of drawings and specifications by the GEC-Subsystems and to ensure that the design of other system elements will be fully integrated with that of the fare collection subsystem. The preliminary drawings and specifications will be reviewed for completeness and compliance with the criteria.

The assessment will include examination of fare policies of other rail systems, existing SCRTD fare structure and relevant local conditions and regulations. Alternative fare policies and collection concepts will be developed and analyzed. The analysis will consider such factors as capital and operating costs and dependability as necessary to support selection of a preferred concept. Design and operational criteria, including functional and operational descriptions and typical layouts, will be developed for the selected concept. Fare collection study results will be documented into fare collection technology assessment (WBS 13CAE11) and fare collection alternatives (WBS 14CAE11) reports.

Paragraphs A8e,  
A8g; C1, C2, C3,  
C4, C7, C9; F1;  
G1, G6, G9

J. Operations Planning, Simulation and Analysis

The purpose of this task is to define operational requirements for train service that will serve to guide the design of critical Metro Rail System elements, including stations, traction power, train control, track configuration, and yards and shops. The objective is to ensure that the Metro Rail System will be capable of providing a system capacity necessary to meet demand at pre-



SYSTEM DESIGN TASK DESCRIPTIONS

J. (Cont'd)

scribed levels of service quality and dependability.

A preliminary operating plan (WBS 13DAA) will be issued prior to the completion of milestone reports 1 and 2. This initial version of the system operating plan will define service and operational parameters as input to initial design work. This plan will provide information pertaining to headways, train lengths, vehicle loads, travel times, hours of service and fleet size. Operational requirements will be further defined through analysis of their sensitivity to variation in service parameters and to perturbations in daily operations.

In addition to defining operations for mainline service, operational requirements will also be defined for the storage, maintenance and movement of passenger rail vehicles in the yards and shops of Metro Rail (WBS 13DAJ). The overall task also includes development and application of simulation models required for determination of operating characteristics and validation of the system operation plan (WBS 13DAA, WBS 14DAB, WBS 16DAA).

Following the development of design alternatives for Metro Rail by the design divisions, their impacts on operational requirements will be evaluated. Once the preferred alternative has been chosen, a final system operation plan (WBS 16DAA) will be prepared. This document will reflect the final system configuration and the results of the milestone reviews. Support for the design process shall continue to the conclusion of the Preliminary Engineering phase, by providing either clarification of, or alternatives to the specified operational requirements as design problems arise (WBS 16DAG and WBS 17F).

SYSTEM DESIGN TASK DESCRIPTIONS

Paragraphs A2,  
A7, A8B,  
A10a, A10b,  
A10c, A10d,  
A11c; C1, C2,  
C4, C5, C6,  
C7, C9; D2a;  
E1, E2a thru d,  
E2i; F1, F2,  
F3; G, G1, G2,  
G3, G4, G5,  
G6, G7, G8,  
G9, G10; H

K. Safety, Security and System Assurance

The safety, security and system assurance (S/S/SA) effort covers the work necessary to establish system-wide criteria for these functions and to develop program plans for the three functions.

This task will be managed by the System Engineering and Analysis (SEA) Section of the Metro Rail Project. The Special Consultant-SEA will carry out most of the detailed work. The program plans, which are the last component of this task, will be applicable to the final design, construction, and operation of the system phases, which follow directly after Preliminary Engineering.

Paragraphs A2,  
A8b, A8h,  
A10a, A10b,  
A10c, A10d,  
A11c; C1, C2,  
C4, C5, C6,  
C7, C9; E1,  
E2b, E2c, E2d,  
E2L; G2, G3,  
G4, G5, G6,  
G7, G8, G9,  
G10; H; J

L. Fire Protection

The fire protection effort encompasses the development of special criteria aimed at providing the highest possible degree of safety from the effects of fire and accompanying smoke and fumes. The intent is to prevent fire from occurring if possible and, if not, to minimize the rate of increase of the fire and of combustion products. System elements will be designed to meet these fire/life safety criteria. Design documents such as drawings and specifications will be reviewed to assure compliance with the criteria. Continuing liaison (by means of a special fire/life safety coordination committee) shall be carried out to involve local fire and police organizations in the criteria development as well as the application or use of the criteria in the system design.

The management and direction of this effort is the responsibility of the SEA Section of the Metro Rail Project. The services of a specialty consultant for fire protection have

SYSTEM DESIGN TASK DESCRIPTIONS

L. (Cont'd)

been acquired through the medium of the contract with the GEC-Subsystems. This GEC will also furnish some technical expertise to support this effort.

Sections C; D;  
E; F; G; I

M. System Specification Development

The purpose of this task is to develop a Metro Rail System specification that serves as a single point reference for the system requirements description and interface control. The system specification shall be developed to provide requirements and information for Preliminary Engineering and Final Design that will assure accomplishment of the following objectives:

- o The orderly and systematic control and dissemination of system design requirements and technical decisions
- o The centralized and disciplined control of the system baseline for effective design integration and conformance to project objectives
- o The documentation and dissemination of technical decisions through controlled changes to the system specification.

The specification shall be issued and revised at key intervals (WBS 13DAL, WBS 15F, and WBS 16DAM) during the Preliminary Engineering phase. Each version of the specification will reflect progressive design development and incremental results of the milestone process, culminating with the final system specification at completion of Preliminary Engineering.

SYSTEM DESIGN TASK DESCRIPTIONS

Paragraphs C1,  
C2, C4, C6, C7,  
C9; E2; F1;  
G1 thru 10

N. Cost Estimation

Cost estimation for the Metro Rail Project has two primary purposes:

1. To provide costs for comparative evaluation of alternatives, and
2. To provide a definitive estimate of project cost for grant application and budgeting for final design, construction, and system operation.

The first purpose will be accomplished by development of a life-cycle cost model (WBS 14DAA) which can be applied to competing alternatives to provide estimates of their comparative costs over their economic lives. The role of System Engineering and Analysis, and hence this task, relative to the second purpose, consists of development of a definitive estimate of annual operating and maintenance costs for the selected system design (WBS 17BAB).

The life-cycle cost model will include capital, operating and maintenance costs. It will be capable of accepting input at either the system or subsystem level and for various factors within each major cost category. The model will provide comparison of life-cycle costs in terms of either present value or on an annual equivalent cost basis.

Development of a definitive estimate of system operating and maintenance costs will involve collection of cost data and determination of appropriate factors for conversion of operating and maintenance statistics to annual costs. Statistics to be used for estimating system operating and maintenance costs will be obtained from the system operating plan (WBS 16DAA) and the system maintenance plan (WBS 16DAJ).

SYSTEM DESIGN TASK DESCRIPTIONS

Paragraphs C2,  
C4, C6, C7, C9;  
D2; E2; F1, F2;  
G1 thru 10

O. Maintenance Plan Development

The maintenance plan development task is directed at production of a plan for maintenance of the entire Metro Rail System. The plan will include provision for maintenance of the physical plant: stations, train ways, fixed-in-place subsystems, yards and shops, as well as revenue vehicles. All maintenance requirements including equipment, manpower and procedures will be covered by the plan.

Provisions for system maintenance will be developed initially concurrent with development of design alternatives. The initial provisions will be documented in a preliminary maintenance plan (WBS 14DAG). After selection of the preferred system configuration, the plan will be revised, updated and refined to reflect the selected system design and operating characteristics. This revised plan will be identified as the system maintenance plan (WBS 16DAJ) and will constitute the basis for the development of the system maintenance cost estimate and the basis for maintenance provisions during final design.

Paragraphs A3c,  
A3d, A3g, A8b,  
A8c, A8f, A11d,  
A13

P. Configuration Control

The configuration control task is directed at providing control of the Metro Rail System design. It involves development and implementation of a plan for design control during Preliminary Engineering, plus development of a plan for control of the system design during final design and construction. Configuration control assures design conformance to project objectives, requirements, and criteria, and compatibility between system elements by controlling the physical configuration and operating characteristics of the system.

SYSTEM DESIGN TASK DESCRIPTIONS

P. (Cont'd)

During Preliminary Engineering, configuration control (WBS 14DAH, WBS 15E and WBS 16DAH) will consist of design control to:

- o Identify and document the operational and physical characteristics of the Metro Rail system;
- o Control changes to these characteristics; and
- o Record and report the change process and status.

Design control will include document control and interface management.

In addition to providing development and implementation of configuration control during Preliminary Engineering, this task includes development of a plan for configuration management during final design and construction (WBS 16DAL). That plan will define the procedures for assuring control of the system design during its finalization and implementation. It will focus on control of drawings and specifications and deal extensively with change control.

Sections C; D;  
E; F; G

Q. Evaluation of Alternatives

The purpose of the evaluation of alternatives task is to obtain selection of the preferred system configuration. The preferred system configuration is defined as the system design which best satisfies the Metro Rail Project objectives. Therefore, the evaluation of alternatives must be conducted in a manner that assures the selection will properly reflect project objectives. This will be accomplished via a two-step process. The first step will consist of establishing evaluation criteria and a methodology for applying the criteria to obtain comparative evaluations of alternatives (WBS 15A).

SYSTEM DESIGN TASK DESCRIPTIONS

Q. (Cont'd)

The second step will consist of actual application of the evaluation criteria and methodology to identified system and subsystem alternatives, to arrive at a preferred system configuration (WBS 15B). The methodology must have the flexibility to be applicable to alternatives at the system element and subsystem level, as well as at the system level.



John A. Dyer  
General Manager

May 28, 1982

Mr. Dee Jacobs  
Regional Administrator  
Urban Mass Transportation Administration  
2 Embarcadero Center - Suite 620  
San Francisco, California 94111

Dear Mr. Jacobs:

Attached is a copy of the revised UMTA/SCRTD Work Statement for Preliminary Engineering (P.E.) of the Metro Rail Project. This Work Statement was drafted jointly by District and UMTA staffs during meetings held on May 19-21. The document is basically an update of the original April 1980, Work Statement, revised to include the Milestone Process, which is the policy making process and schedule, and the Work Breakdown Structure (WBS), which is the technical scope of work for the conduct of P.E.

As discussed by the respective staffs, UMTA's role will be in an advisory capacity. All major technical reports and products will be transmitted to UMTA's Region and Headquarters for review and comment. Since the Milestone Reports are the policy decision points, all such Reports will be transmitted to UMTA prior to adoption. UMTA will issue its comments on these Reports in the form of Advisory Memoranda to be received by the District in time to incorporate such comments into the Final Draft Milestone Reports. In addition, the District will also submit other related technical reports to UMTA for comment. UMTA will be kept abreast of general technical progress through its Chief Regional Engineer in Los Angeles. That UMTA representative will be included in periodic briefings and meetings as appropriate.

It is my intent that UMTA be kept closely abreast of the development of this Project, and that we will avail ourselves of the technical expertise of UMTA's staff. Our goal is to make this P.E. the best one to date and that upon completion, UMTA will be in a position to make a timely and positive decision regarding the next stage.



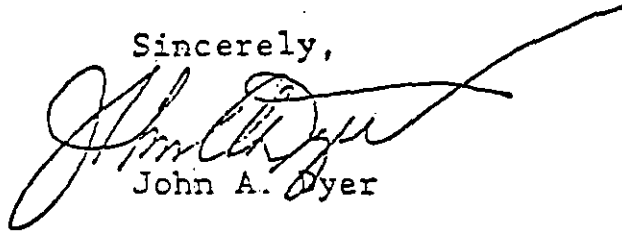
Mr. Dee Jacobs

-2-

May 26, 1982

I think you share our goals in completing this work on time, within budget, and that the final product is comprehensive and fully detailed. We appreciate your cooperation and guidance, and look forward to a continuation of our close working relationship.

Sincerely,

A handwritten signature in cursive script, appearing to read "John A. Dyer", with a long horizontal flourish extending to the right.

John A. Dyer

Enclosures

cc: W. Dougherty  
G. Grainger

## PRELIMINARY ENGINEERING WORK STATEMENT

This document describes the Preliminary Engineering (P.E.) effort for the Southern California Rapid Transit District's Metro Rail Project (the Los Angeles Preferred Alternative), hereinafter referred to as the "Project," and it is a detailed expansion of the basic work tasks set forth in the District's original UMTA grant application. It is an update of the April 30, 1980, Work Statement and is consistent with the changed policy and decision making process for the Project proposed by the District and agreed to by UMTA. The three phases previously described have been replaced by 12 major Milestones. The Milestone Process is described fully in the attached documents, which are incorporated herein by reference and made part of this Statement of Work.

The specific attachments of this Work Statement are:

- A. General Tasks;
- B. Work Breakdown Structure;
- C. General Manager's 11/30/81 memo to Board;
- D. Board approval of Milestone Process;
- E. Decision Process - Metro Rail Project Milestone;
- F. Metro Rail Project Master Schedule; and,
- G. Metro Rail Project P.E. Work Plan/Relationship of Major Deliverables.

The General Tasks (Attachment A) outlines the major engineering tasks to be performed during Preliminary Engineering. The Work Breakdown Structure (Attachment B) is a refinement of the General Tasks and represents the District's work program for the conduct of P.E. The Milestone Process (Attachments C-G) is the District's policy decision making schedule and procedure.

Throughout this document, the words "system," "subsystem" and "components" are used in the following context. The word "system" is most frequently used here in the sense of discrete elements of the Project such as stations, vehicles, fare collection and train control. Major portions of each system will be referred to as subsystems. Similarly, major portions of subsystems will be referred to as components.

### Definition of Preliminary Engineering

Preliminary Engineering takes the Project from a planning stage to a level of design that allows a cost estimate to be made with a sufficiently high level of confidence. The resultant technical and financial information will be a basis for funding decisions. For this Project, the P.E. portion is about 30% of the total design effort. A major objective of P.E. is to investigate the merits of all sound

## PRELIMINARY ENGINEERING WORK STATEMENT

### Definition of Preliminary Engineering (continued)

alternative configurations and designs. These investigations require in-depth analysis of all components, their inter-relations and their costs. The selection of principal project systems are often unique and site specific. The effort, when properly conducted, will permit the Project to move rapidly through final design with a minimum of design changes, disruptions or delays.

The P.E. effort also provides the opportunity to examine proposed project management and control options and to identify and implement the options that are appropriate. The completion of the P.E. effort will provide a reasonable basis for a project cost estimate with an acceptable level of confidence and a configuration to which the final design can be completed.

### Preliminary Engineering Procedure

During the P.E. process, UMTA may request technical data in addition to the material which SCRTD will periodically submit for its review and comments. Detailed reviews will be held at such times as required by either SCRTD or UMTA to ensure that UMTA's oversight responsibilities are met. It will be UMTA's responsibility to provide advisory memoranda in sufficient time so that its views are considered before adoption of any Milestone decision by the SCRTD Board. The submittal of pertinent material at appropriate times to UMTA is the responsibility of SCRTD.

### Scope of Preliminary Engineering

The performance of P.E. for the Project is not limited to the work described under General Tasks. As the P.E. process unfolds, other work items and tasks may become necessary to ensure the proper assessment of system standards and selection of specific systems that make up the total Project. Analysis for the selection of the systems will include investigating a number of viable alternatives. The approved General Tasks may be modified with UMTA's concurrence.

The P.E. process will encompass the General Tasks which are further refined in the Work Breakdown Structure.

Attachments

JACK R. GILSTRAP  
General Manager

April 30, 1980

Mr. Dee Jacobs  
Regional Director  
Urban Mass Transportation Administration  
2 Embarcadero Center - Suite 620  
San Francisco, CA 94111

Dear Mr. Jacobs:

We understand that UMTA is in the process of preparing the "approval package" for our preliminary engineering grant which is scheduled for announcement by the end of next month.

To assist you in this matter we are transmitting herewith a copy of the Preliminary Engineering Work Statement for our Regional Core Rapid Transit Preferred Alternative, as jointly developed by UMTA and District staffs.

As you will note, this Work Statement follows the basic work program set forth in our grant application and is to be considered a detailed amplification thereof. It is scheduled for review and approval by our Board of Directors on May 8.

We understand that this is not to be considered as an inflexible recitation of steps to be followed, but rather as a guideline which may be changed here and there if the need becomes obvious for the more efficient carrying out of the work.

If you have any questions, please call.

Sincerely,



Jack R. Gilstrap

Enclosure

cc: Earnhart  
Grainger  
McFarland  
Steiner

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

PRELIMINARY ENGINEERING

WORK STATEMENT

for

REGIONAL CORE RAPID TRANSIT PREFERRED ALTERNATIVE

April 24, 1980

General TasksA. Project Management

A project management plan will be developed which demonstrates that all phases of the Project have been thought through, giving consideration to methods to be used to execute the project, and the interfaces that will be created between the various participants. The project management plan defines the objectives of the project, the methods and resources proposed to be used in meeting these objectives, the overall management strategy, the responsibilities, authorities and measures of performance for all parties involved in the project.

Since each Rapid Transit Property's project is unique, its project management must be fitted to both the uniqueness of the project and its management philosophy. The following tentative outline will be used in developing the Project Management Plan; the final product may vary somewhat from this outline:

1. Parameters and Constraints
  - a. Project description
  - b. Legal authority and requirements
2. Organization and Staffing
  - a. Statement of organizational philosophy
  - b. Project organization charts
  - c. Key personnel
  - d. Interface points

e. Staff mobilization plan

f. Training plan

3. Management Control

a. Financial Control

(1) Maintaining Baseline Project Cost

(2) Performance Measurement

(3) Contingency Management

(4) Escalation Factor Derivation

(5) Contracting Techniques

(6) Cost Allocation Plan

(7) Cost Accounting System

(8) Authority Force Account Plan

b. Schedule Control

c. Change Control

d. Design Control

e. Construction Control

f. Check-out and Acceptance

g. Documentation Control

h. Reporting

4. Labor Relations and Policy

- a. Wage rates and classifications
- b. Wage and hour requirements
- c. State and local regulations
- d. No Strike Agreements

5. Risk Management and Insurance

- a. Scope
- b. Risk Identification
- c. Evaluation
- d. Risk Control
- e. Insurance
- f. Inflation

6. Procurement of Services

- a. Procedure for Procurement of:
  - (1) Project Control services
  - (2) Design Services
  - (3) Legal Services
  - (4) Construction Contracts



(5) Construction Services Including Inspection

(6) Data Processing

(7) Public Relations

(8) Consulting Services

b. Identification of MBE Opportunities

7. Procurement of Materials and Equipment

a. Procedure for procurement of system-wide components:

(1) Permanent Materials

(2) Construction Equipment

(3) System Components

(4) Rolling Stock

b. Quality Assurance Plan

c. System and Equipment Test and Evaluation Plan

d. Identification of MBE Opportunities

8. Design Program

a. Design Supervision

b. Design Review Process

c. Configuration Management (Trade-Off Evaluations)

- d. Constructibility
- e. Operation and Maintenance Considerations
- f. Change Control
- g. Systems Integration
- h. Reliability, Availability, Maintainability, Dependability and Safety

9. Right-of-Way Acquisition

- a. Identification
- b. Appraisal
- c. Acquisition Plan
- d. Property Management Plan
- e. Relocation Assistance Plan
- f. Demolition
- g. Scheduling and Funding Plan
- h. Resale Plan

10. Community Relations

- a. Community of Organizational Meetings
- b. Interface with State and Local Governmental Agencies

- c. Public Hearings
  - d. Media Interface
11. Construction Program
- a. Construction Management
  - b. Construction Contract Administration
  - c. Construction Safety
  - d. Change Order Control
  - e. Payments and Claims Close-out
  - f. Logistics Plan (Materials, Equipment, Temporary Sites Facilities, Traffic and Utilities Provisions)
  - g. Resource Allocation
  - h. Muck Utilization Plan
12. Requirements for Interagency and Master Utility Agreements, Approvals, Permits
13. Conflict Resolution
14. Planning for Operations Start-up
15. General Joint Development Program

## B. Surveys

This important task includes all the different types of surveys required to properly investigate alternative configurations and construction methods as well as to complete preliminary design work. These surveys include, but are not limited to, control surveys, aerial surveys, geotechnical, utility and demographic surveys.

1. First order Control Surveys: A precise system of survey monuments located along the line providing the base for all design and construction survey work.
2. Aerial Topography resulting in photographs of the line to scale of 1" = 40'.
3. Surface Topographic Surveys: As necessary to supplement aerial work.
4. Major utility surveys obtained from various municipal departments plotted on suitable scales.
5. Subsurface Geologic/Seismic Exploration.
  - a. Compilation and review of existing geology data from City and State agencies.
  - b. Subsurface Test Borings and Seismic Tests.
  - c. Interpretation of boring logs and development of geotechnical report.
  - d. Development of tunnel design criteria by segments of the line based on results of geologic/seismic tests.
6. Identification of Utilities which will be temporarily and/or permanently displaced or relocated, and estimates of cost of same. Negotiation of Master Utility Agreements.
7. Demographics.

C. Design and Operational Criteria Development - Broad System Studies

The following general studies will be performed and evaluated. In each of these studies, investigation will include a thorough analysis of various options, sufficiently detailed to justify the selected option.

The general system criteria for all facilities and sub-systems will be developed for each major element of the P.E. process after the completion of the following evaluations and studies. The completion of this task may require numerous modifications during the P.E. process as new information suggests alterations to the criteria. Design criteria will be fully developed by the end of the Preliminary Engineering process, but may require some modification during final design.

1. Configuration Evaluation

Investigation will include a thorough analysis, sufficiently detailed to demonstrate the energy advantage of the option selected.

- a. Conventional Configuration (relative flat grades)
- b. Energy Gradient Profile (rolling gradients)

Evaluation study to test and demonstrate the feasibility of applying this concept to an operating system.

- c. Feasibility of Regenerative Braking System

2. Evaluation of Operational Alternatives

- a. Analysis to determine the effect of the proposed operations plan on future extensions of the rapid transit system.

- b. Analysis of station spacing, station length and train headway based on studies for

- (1) Future development of the initial project
- (2) Optimum operating speeds for L.A. systems

- c. Analysis of effect of incremental development of ATO vs full utilization.

3. Determination of the effect of patronage volumes in the year 1995 on the initial system.

4. Determination of required Vehicle Size and Train Consist.

Study based on a thorough in-depth review of vehicle types available and considering the following factors: Patronage Volumes, Service Policy, Safety, Reliability, Maintainability, Costs, Availability, and UMTA Rapid Transit Vehicle Standards. Influence on structure costs.

5. Noise/Vibration Study

Study to determine acceptable noise/vibration levels for all systems such as trackway noise, etc., for the proposed Los Angeles system and evaluate abatement techniques. Study should include several different techniques, their reduction potential, costs and recommended treatments.

6. Evaluation of Barrier Free Approach (Honor Fare System)

7. Operable Segments

Determine effects of constructing the proposed L.A. rapid transit line in operable segments considering the 18.6 mile system as the largest segment. Arrange all alternates, estimates or evaluations throughout the P.E. effort to account for the various operable segments established in these studies.

- Define operable segment limits
- Assess the impact of these limits on all systems

8. Bus Routing Analysis

9. Other studies as necessary

D. Way Structure

Work to be performed will include the development of various structure types necessary for the rapid transit line. Alternative alignments will be developed within portions of the corridor. The following types of configurations will be considered during the development of the alternative alignments:

- Tunneling with various profiles
- Surface alignment over Cahuenga Pass
- Aerial along some portions of the corridor north of Cahuenga Pass
- Open cut and cut and cover along some portions of the corridor.

1. The feasibility of utilizing the following construction methods will also be evaluated.
  - a. Cut and Cover
    - Soldier beam temporary structure
    - Slurry wall permanent structure
    - Secant Pile permanent structure
  - b. Cover and Cut (Milan Method)
  - c. Drill and Blast vs TBM vs Road Header methods of excavation of the earth and rock tunnels involved in this project.

The evaluation of the profiles, based on the various construction methods will include the station structures involved. Studies will be detailed sufficiently to allow comparative estimates to be prepared. Alternatives will be evaluated in terms of:

- Costs
- Feasibility of construction
- Impact on community and environment

The completion of this work will lead to the selection of the

## 2. Selected Profile and Development of Plans

The completion of this work will result in a set of preliminary drawings and specifications which will provide a base for a reliable cost estimate.

- a. Details of way structures will be developed for all variations in configuration and cross sections as needed to show transition areas and/or problem areas. These plans will include the location of all crossovers, pocket and layup tracks. Particular construction methods for use where underpinning problems, non-standard elements, or major subsurface utilities are expected will be specified.
- b. Preliminary plans and estimates will be prepared for all necessary public and private utility line changes. All necessary master utility agreements will be completed before completion of P.E. to allow for the effects of the Rapid Transit construction.
- c. Preliminary Right-of-Way drawings will be prepared showing the extent of properties affected and easements required. A schedule of R/W acquisitions and approvals will be prepared in the effort to minimize construction delays. R/W acquisitions easement costs will be estimated.
- d. Prepare cost estimates.

## E. Stations

1. Station design will include the development of alternative station concepts compatible with the various plan/profile alternatives developed under Way Structures. Such studies will include alternative construction techniques. Selection of station types and construction methods will be based on: cost, compatibility with adjacent construction, and design/construction impact on the community and environment.



- 2... The P.E. drawings and specifications will be of sufficient scope to define all functions and elements of public and ancillary spaces, including equipment and materials as appropriate. The preliminary cost estimate prepared on the basis of this design will provide the cost guideline for the final design. The station design process will involve the following factors, and others as appropriate.
- a. Develop and recommend policies and obtain Board approval for such elements as public toilet facilities, station agents, security guards and concession spaces.
  - b. Consistent with phased P.E., develop system-wide architectural, planning and civil standards and criteria, including those for material, noise control, signage and graphics, lighting, mechanical and electrical equipment, vertical circulation elements, and handicapped provisions. Investigate all station elements suitable for standardized design and construction.
  - c. From patronage and other available data, determine required number of station entrances and exits, intermodal interface requirements (including IPM), sizes of control areas and ancillary spaces, numbers of stairs, elevators and escalators, and ticketing facilities.
  - d. Based on the selected Way plan and profile, determine specific station location and develop plans, sections and elevations. Determine location and space allocations of ancillary spaces appropriate for system operation and adaptable to future extensions. Station layouts will provide minimum practical volume while incorporating efficient loading of trains and convenient patron usage. Develop functional parking garage layouts where required, using commercial guidelines where possible.
  - e. Coordinate all station elements with those of Way Structures and Systems groups.
  - f. Select possible construction method for each station and determine how the method affects both station design and surrounding area.

- g. Develop, if practical and feasible, system-wide procurements for electrical and mechanical equipment components.
- h. Complete all utility surveys and agreements to a level that will allow station design and construction to advance without interruption.
- i. Prepare preliminary maintenance procedures and estimate total number and skills of maintenance personnel required at stations.
- j. Prepare cost estimates.
- k. Determine mitigating measures to minimize adverse community and environmental impacts.
- l. Take all appropriate steps necessary for required design approvals for station areas.

#### F. Yard and Shop Facilities

Preliminary engineering work requires the development of all yard functions and the establishment of yard layout criteria before investigating specific site locations. Develop design criteria.

In establishing the criteria,

the following must be determined:

- a. Rapid transit vehicle to be used
- b. Number of trains to be stored initially and in future
- c. Inspection and repair cycle
- d. Maintenance and major repair functions to be performed:
  - (1) In-house
  - (2) Contracted
- e. Maintenance procedures
- f. Number of employees, crew quarters and parking facilities required
- g. Requirements for special shop equipment
- h. Material storage for the operating system
- i. Wayside system maintenance facilities and revenue collection facility
- j. Vehicle test facilities
- k. Vehicle test track

2. Development of Yard and Shop Plans, Details and Preliminary Specifications:

Tasks will include the evaluation of all feasible alternative sites and a final selection of the optimum site. The results of P.E. will be a set of Plans and Specifications and Estimates sufficiently detailed to provide reliable project costs and the preparation of any preliminary documents and obtaining of approvals that might be required.

Alternative locations for outlying storage and maintenance yards will be evaluated based on area requirements, operational characteristics, running time from terminal station, impact on community and environment, cost, operable segments and availability. The probability of acquiring site will be determined and the optimum site selected.

Using data developed in definition stage, alternative layouts will be prepared and the optimum site selected considering availability, costs, neighborhood compatibility, security problems and any other aspects that are significant. The need for future yard expansion will be considered.

Right-of-Way drawings and estimates will be prepared.

G. Project Systems

Development of design criteria to a level consistent with phased P.E.

This will require numerous studies to select those systems and subsystems that are appropriate to this project. Alternative systems will be evaluated in terms of:

- Capital Costs
- Maintenance and Operating Costs
- Safety, Security
- Reliability, Availability, Maintainability, Dependability

- Probable public receptivity
- Impact on environment
- Complexity.
- Incremental growth

Selection of the optimum elements for this project will lead to a set of P.E. plans and specifications sufficiently developed to produce a reliable estimate of project costs. Project needs and schedules will be sufficiently detailed to enable the preparation of all documents required for approvals and the processing of those approvals. The project schedule will include an estimate of the length of time required to perform both the final design and the construction phases for the particular elements and their overall phasing sequence into the project. Where applicable a preliminary maintenance schedule and an estimate of annual man-hours and costs will be prepared for the particular system. An estimate of start up inventory costs for each system will be included with the P.E. cost estimate including pre-operative testing and start up cost and the development of a spare parts program.

#### 1. Vehicles (passenger and revenue collection)

The number of vehicles required will be based upon patronage projection studies and schedule requirements. Vehicle performance requirements will be evaluated in order to assure that scheduled performance can be met.

Each subsystem will be evaluated in terms of total vehicle compatibility, optimum reliability, maintainability and performance.

Estimates will be prepared based on designs and equipment proven in service. Vehicle assurance studies will be conducted to ensure that high performance, reliability and a long life can be expected from the vehicle. Capital, operating and maintenance costs will be estimated on a life-cycle basis.

Generalized designs consistent with phased P.E. will be prepared utilizing the data developed from Section C-4 above. These designs will show:

- Seated capacity and seat arrangement
- Total capacity, with standees
- Overall dimensions
- Number of side doors
- Side elevation
- Truck wheelbase

## 2. Safety and Fire Protection

A system-wide safety and fire protection system plan will be prepared which will be consistent with all applicable local and State codes and which has standards that are comparable to the industry. Local and State approvals for proposed systems will be obtained where necessary.

The following systems will be included in the work done on this task:

- a. Fire detection and protection system
- b. Fire management and control plan
- c. Passenger fire emergency egress plan
- d. Passenger surveillance and security system
- e. System security plan
- f. Gas monitoring system
- g. Passenger gas protection plan

This work will include the development of all plans, specifications and estimates required for P.E., including manpower requirements for normal and maintenance operations.

### 3. Ventilation

The types and extent of ventilation needed will be determined, including natural air system, underplatform exhaust system, mechanical ventilation, both normal and emergency, and air conditioning for stations, line and yard facilities over the entire rail system. Preliminary layouts will be prepared for all systems and costs for installation and operation of all systems will be estimated. A preliminary maintenance schedule and estimate of annual man hours required will be developed. Preliminary drawings and specifications will be prepared as required and costs estimated for all systems.

This work will be done in accordance with the procedures set forth in the Handbook of Subway Environmental Design published by UMTA, dated 1976.

### 4. Drainage

A layout of all drainage drawings required for track structures and major ancillary rooms will be prepared showing all major surps and where drainage water will be discharged.

Need for permits and approvals will be determined. Need for specialized equipment such as oil separators will be determined. Drawings and specifications and cost estimates will be prepared. Authorization to discharge waste water will be obtained as required.

### 5. Trackwork

Complete design criteria for alignment and track systems.

The trackbed requirements to meet noise level and operational criteria developed under the system definition task will be determined. Track weight and gauge will be selected.

Trackwork plans and profiles and specifications will be prepared for the entire system including yards. Costs will then be estimated. The maintenance schedule and number of annual man hours and costs for track maintenance will also be estimated. Of special note is wheel/rail wear problem that should be investigated as it relates to this system.

#### 6. Propulsion Power

Preliminary layouts of the power system will be prepared, locating all major subsystems such as substations and tie breaker stations. Substation size, spacing and equipment required will be evaluated in terms of capital and operating costs using:

- Alternate voltage levels
- Contact rail options
- Back up systems for system assurance

The line voltage equipment type and sizes, traction and ancillary power usage split and power delivery system will be determined; and alternative emergency power supply requirements will be evaluated. Those units which can be pre-packaged in accordance with local union agreements will be determined and pre-purchase options where applicable will be recommended. Basic maintenance schedules and annual costs and hours required for maintenance and operation of system will be determined. A standardized layout will be used where possible. Plans, specifications and cost estimates will be prepared.

7. Ancillary Power Usage (Electrical Distribution for Support Facilities)

Voltage, type of equipment, size and operating requirements for the ancillary power system will be determined along with appropriate room sizes required for the equipment. Plans and specs suitable for sound preliminary estimating will be prepared. Annual maintenance costs and maintenance man hours required will be determined as well as the extent of emergency lighting system required and need for back-up systems (if required).

8. Communications

Study and evaluate appropriate systems for:

- a. Telephone service
- b. Data transmission
- c. Public address system
- d. Closed circuit television
- e. Fire intrusion
- f. Mobile radio
- g. Cable systems

Preliminary drawings and specifications will be prepared where required showing all details essential to the preparation of preliminary cost estimates for all systems. Approvals required to begin final design of systems will be obtained.

9. Train Control

Alternate systems of train control including wayside and cab signalling systems, central control and supervision, will be studied and evaluated considering the initial and life cycle costs and the long term probabilities of state-of-the-art modifications and their effect on the system. The optimum system will be selected based on:



- Cost (initial and life cycle)
- Reliability, Availability, Maintainability, Dependability and Safety
- Maintenance
- Suitability to L.A. project.

The compatibility of various manufacturer's equipment in the same train control system will be studied and evaluated showing advantages or disadvantages, and costs. The number of interlockings required and the location of major relay rooms including their size will be determined. Plans and specifications will be prepared for the system including yard layouts sufficiently detailed for the preparation of preliminary estimates. Annual maintenance costs as well as man hours will be estimated. Those systems which can be pre-packaged in accordance with local labor agreements will be determined. The necessary drawings and cost estimates will be prepared.

#### 10. Fare Collection

Alternative systems of fare collection and control will be studied and evaluated based on the fare structure for this property, and taking possible future expansion into account laying out fare control options. Each system will be evaluated in terms of:

- Costs (initial and life cycle)
- Reliability, Availability, Maintainability, Dependability and Safety
- Maintenance
- Suitability for this area

The annual maintenance hours required will be determined as well as which maintenance items may be contracted for. Drawing specs suitable for a selected system and estimates will be prepared.

H. Development of General Provisions, Standards, Technical Specifications and Drawings

These documents will be prepared and completed to a level consistent with phased P.E. effort and approvals obtained by the Way and Structures, Stations and Systems Engineering groups.

I. Cost Estimates

A Project Cost Estimate is defined as an estimate of the total cost of final design, real estate acquisition, construction, project management and all other costs required to prepare the Project for revenue operations.

All cost estimates will be sufficiently detailed to provide reliable project costs and will be arranged to allow aggregating in varying combinations for comparative purposes. They will be prepared by construction estimators where possible and be the contractor type where man hours, labor category, material costs and all indirect costs are indicated. The cost estimate developed at the conclusion of P.E. will include estimates for the expected project cash flow and other related work.

The following general tasks will be performed:

1. Prepare a statement on how the Project estimate will be developed, including contingency and inflation factor application.
2. A realistic schedule of contract packages will be developed based on a desired construction schedule and MBE requirements. By the end of P.E. a preliminary project CPM for tasks in final design will be developed.

3. A set of cost estimates based on operable segments with the entire 18.6 mile segment as one of the options will be prepared:
4. All estimates for various configuration alternatives will take operable segments into account so that all can be mixed or matched to give a composite whole.
5. Using the approved estimating methodology a project cost estimate will be developed at the end of Phase II and III. Confidence levels will be defined and a contingency included as a percentage of total Project cost.

J. Environmental Impact Statement

A Second Tier Environmental Impact Statement (EIS) will be developed during Preliminary Engineering in accordance with Council on Environmental Quality Regulations (40CFR Parts 1500-1508). This will complete the EIS process for the project and will summarize the First Tier EIS results and document site-specific information that will become available during Preliminary Engineering. The Second Tier EIS will compare the proposed rail transit project with the AA/EIS no build alternative and will be processed in the same manner as the earlier First Tier EIS. Section 4(f) of the Department of Transportation Act of 1966 and Section 106 of the National Historic Preservation Act of 1966 will also be complied with in this EIS.

The following work will be performed:

- Coordinate with UMTA environmental specialists to develop and carry out the scoping process which is outlined in Section 1501.7 of the CEQ Regulations.
- Develop a work program showing how the environmental process will proceed concurrent with preliminary engineering to insure that the Final Environmental Impact Statement will complete circulation concurrent with completion of Phase III preliminary engineering.

- Ensure that the environmental process will accommodate the possibility of temporary terminus points which are consistent with identified operable segment temporary termini.
- Conduct a further assessment to determine the extent of possible impacts on the Hollywood-Vermont corridor, in the event Alternative II is implemented. Mitigation measures will be developed to offset such impacts, if they could be significant.

The following surveys and studies will be required early in the process, as they could affect the critical path of project development:

- Archeological survey through the length of the rapid transit project to accurately identify archeological concerns and problems.
- Historical Building surveys to determine which structures along the Right-of-Way are or will be considered historical.
- Archeological studies to determine the procedures for handling archeological sites and their impacts on the proposed construction.
- Historical Building studies to determine procedures for protecting these structures during the construction period.
- Flood plain studies to identify flood plains, determine their impact on the construction process and the finished rapid transit structures.
- Other surveys and studies as required.

## Attachment A: Phase I Work Statement

The following tasks will be performed in Phase I of the Preliminary Engineering process for the Project. The tasks are intended as guides to the conduct of the Phase I P.E. and serve as a check list to gauge actual performance.

### 1. Project Management

- a. Develop master list for all work to be completed under Phase I.
- b. Conduct special management studies and from the results thereof prepare the Project Management plan. Begin implementing an effective management system which accounts for items listed in Section A of "General Tasks".
- c. Develop and implement management control/information system which will ensure proper cost control of the total project.
- d. Organize project office and hire staff.
- e. Develop cost allocation plan.
- f. Hold Peer Review Board meetings as mutually agreed.
- g. Evaluate consultant compensation alternatives and obtain professional services of A/E firms, other specialty consultants.
- h. Develop District force account plan and procedures as necessary.
- i. Commence obtaining master agreements with the affected utilities, railroads and others.
- j. Develop procurement procedures and guidelines consistent with Federal, State and local policies.
- k. Develop preliminary list for all work to be completed under Phase II.

2. Surveys

Complete all surveys necessary for the initial investigation of the selected routes as stated in Section B of "General Tasks," including the following:

- a. Borings
- b. Control surveys
- c. Aerial photographs
- d. Utility location plans
- e. Geological studies and reports
- f. Demographic

3. Design & Operational Criteria Development - Broad System Studies

Conduct and complete as appropriate all special studies as stated under Section C of the "General Tasks," including the following:

- a. Configuration Evaluation
- b. Evaluation of Operational Alternatives
- c. Determination of Effect of Patronage Volume in Year 1995 on initial project
- d. Determination of Vehicle Size and train consists
- e. Noise/Vibration Criteria Study
- f. Evaluation of Barrier Free Approach
- g. Operable Segments

- h. Bus Routing Analysis
  - i. Other Studies as Necessary
  - j. Develop general criteria to a level consistent with this phase.
4. Stations and Way Structures (refer to Sections D & E of General Tasks)
- a. Complete definition phase to the point where suitable alternative alignments can be developed in conjunction with the evaluation of the structure types and methods.
  - b. Develop alignment criteria.
  - c. Develop general criteria.
  - d. Determine effect of local codes and regulations.
5. Yard and Shop Facilities (refer to Section F, General Tasks)
- a. Complete definition phase to a point where suitable alternative sites may be investigated
  - b. Prepare alternative yard site layouts
  - c. Develop general criteria to a level comparable to this phase of P.E.
  - d. Determine effect of local codes and regulations.
6. Project Systems (refer to Section G, General Tasks)
- a. Begin studies required for all systems, and complete the definition of each as required for this phase of P.E. Develop those systems which have the greatest impact on the Project first.

- b. Determine effect of operable segments on systems and their effect on initial Project.
- c. Determine effect of train control type on Project.
- d. Determine effect of local codes and regulations on Project.
- e. Other studies as required.
- f. Develop general criteria.

7. Cost Estimate

Commence development of the following:

- a. Estimating methodology
- b. Contingency requirements and applications
- c. Cost escalation criteria

8. Environmental Surveys and Studies

- a. Develop scoping process to comply with Council on Environmental Quality Regulations.
- b. Begin studies and surveys required for assessment of impact of the Project.
  - Archeological surveys and studies
  - Historical building surveys and studies
  - Flood plain studies
  - Other studies as required for this stage of P.E.



**RTD**

ATTACHMENT C

John A. Dyer  
General Manager

November 30, 1981

TO: Board of Directors

FROM: John A. Dyer

SUBJECT: Policy and Decision Making Process for  
Metro Rail Preliminary Engineering

RECOMMENDATION

It is recommended that the Board consider the attached narrative description and flow chart showing the major policy decisions identified as milestones to be made during preliminary engineering. This information is submitted as a working schedule for adoption by the Board at this time. From time to time it may be necessary to consider amendments to the schedule.

BACKGROUND

The primary purpose of preliminary engineering on the rapid transit project is to define the system to a level of detail sufficient to enable the responsible transit officials of RTD, the local governmental agencies, and the state and federal funding agencies to make a final decision regarding funding of the final design and construction of the system. In order to make the final decision, a series of major decision points which are identified as milestone points have been established. The milestone decisions are described briefly in Attachment 1 in terms of the substance of what will be decided at each point.

In addition to the substantive description of the milestones, the chart (Attachment 2) shows the schedule for decision making by the Board in terms of the major milestones. Attachment 2 also shows the time sequence for making those decisions. At a very coarse level, the key consultant and Metro Rail staff actions required to furnish the Board with the information necessary to make decisions also are shown. The milestone chart or schedule is arranged in sequence based on a major goal of arriving at the point where the District can complete the major requirements of preliminary engineering and can file the capital grant request for final design and construction funds by July, 1983.

In order to complete the preliminary engineering milestone decision process and the requirements of the Urban Mass Transportation Administration, two other decision processes are required. The first is a process for public input and involvement in the planning and decision making process. In every case, it will be necessary for the public to be involved and have input into the alternatives being considered by consultants and staff prior to the time the alternatives are brought to the Board with a final recommendation by staff in terms of the alternatives to be decided by the Board. The second process that goes in parallel with the preliminary engineering milestone decision process and the public involvement and input process is the environmental impact statement (EIS) process. The EIS process requires a series of interactions in order that the requirements of EIS can be completed in terms of alternatives considered, impacts identified, mitigating measures to be taken in the design process, and a variety of other factors. A separate memorandum on the EIS process is being submitted for your approval.

The preliminary engineering milestone process involves the technical evaluation of a number of alternatives and a recommendation to the Board in terms of which in every case is the most desirable alternative. After a decision is made, the actions of the Board would be the basis upon which the technical aspects of engineering would be undertaken on additional milestones to be decided by the Board at later dates. In short, the policy decisions made by the Board in milestones one and two will govern the basis for arriving at alternatives in succeeding milestones and will form the basis for recommendations to the Board as to the subsequent decisions that should be made. The process is interactive with the decisions of the Board at one point governing the actions of staff and consultants at the next and succeeding milestone points.

It is of critical importance that the milestone decisions be made in a logical and sequential order to facilitate subsequent work. The policy decisions are the major events in the project. At the point a decision is made by the Board on a milestone it means that a major phase of the preliminary engineering work has been completed. Again, the Board will have a number of alternatives presented to it by staff, and, perhaps the public, prior to the time a decision is made. The schedule requires the staff to submit, at least 15 days prior to the scheduled Board action, recommendations based on alternatives that were considered, the strengths and weaknesses of each, and identifying a specific recommended alternative. Based upon the recommendations, it is presumed that the Board will be in a position to make a decision among alternatives or by combinations of various alternatives. It is of critical importance to note that any delay in the process will result in a slippage in the schedule on the balance of the project. If there is substantial public involvement and

input in terms of interaction between consultants and staff and the public, the recommendations submitted to the Board should be of such quality that the issues will be known by the Board and the basis for decision making will be available to the Board prior to the time a decision is required.

The effect of each milestone decision will be to define in absolute terms or to "freeze" the portion of the project which is being decided at a particular milestone such as the alignment, profile, station locations, and other elements of preliminary engineering. The definitive decision will flow through as the basis for completion of succeeding milestones and form the basis for the cost estimates and provide the basic information for completing the preliminary engineering plan and the environmental impact statement. Since each of the milestones will have substantial meaning to the overall program and be of enormous importance to the Board and the community, it is recommended that a public hearing be held by the Board on every milestone prior to a final decision. Based upon the input of the public and others, the public hearing should provide adequate information for decision making and insure that all aspects of each decision were considered adequately prior to the decision making by the Board.

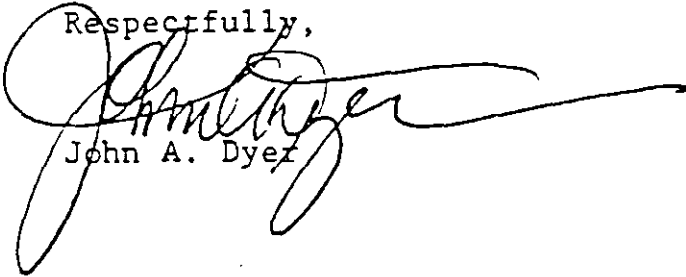
In terms of scope, it is necessary to point out the 12 decisions shown in the preliminary engineering program as milestones, as well as the public involvement process and environmental impact statement process constitute the major decisions to be made which guide all other decisions. They do not include the large number of technical or engineering decisions which will be necessary prior to the completion of preliminary engineering and will occur throughout the entire 18-month process. The important point to note, however, is that the milestone decisions will guide and direct the technical decisions in preliminary engineering not vice versa. If the Board is unable to make a decision at a point in the schedule where the milestone decision is necessary, it will be necessary to continue the milestone process on a particular decision by scheduling additional public hearings as required in order to get the decision made. Otherwise, it will be extremely difficult, if not impossible, to complete preliminary engineering on a timely basis with adequate attention being given to each of the major decision points.

As the milestone decision process begins and each of the decision points are considered, it may well be necessary to amend the schedule in a variety of ways. It may well be that some of the milestone points can be achieved more quickly than is shown in the schedule. It may be necessary to slip the schedule on certain milestone decisions because of the inability of staff and consultants and others to produce the information on a timely basis. It may well be that some of the milestone decisions points can be validated or additional milestones have to be defined based upon information that presently is not available. Under any circumstance, the

November 30, 1981

milestone decision process and flow chart should be recognized as dynamic in nature and subject to change based upon the evolving nature of the preliminary engineering program. If the Board, the staff, and consultants, as well as the public proceed on the basis that the schedule is important only in the sense that the preliminary engineering program is completed by July, 1983, and the major federal requirements are achieved, then it should be sufficiently flexible to enable changes to be made without severe disruptions in the process or the schedules.

Respectfully,

A handwritten signature in black ink, appearing to read "John A. Dyer", written over the typed name. The signature is stylized with a large initial "J" and a long horizontal stroke extending to the right.

John A. Dyer

Attachments

# RTD Decision Process Metro Rail Project Milestones


TIME (DAYS)	RTD BOARD ACTIONS	PUBLIC / AGENCY INPUT	STAFF ACTIONS	CONSULTANT ACTIONS
120	1 PRELIM. SYST. DEF. & SYST. OPERATIVE PLAN	INTERACTION	DEF. SYST. & DEVELOP. PRELIM. OPER. PLAN & FINAL CRITERIA & PROPOSALS FOR SYST. LIT. POLICY RECOMMENDATIONS: INTEGRATE SYSTEM CAPACITY OPERATING & SERVICE NEEDS. PHYSICALLY PLAN ST. LIT. & SERVICE STYL. CRITERIA FOR EVALUATION BY ALTER. SYSTEMS ENGR. & ANALYSIS	• PATHNAME FORECAST REPORT • TRAIL - OFF STUDIES OF SYSTEM OPERATES & SERVICE BOOKS - ALLEN HAMILTON
120	2 SYSTEM DESIGN CRITERIA	INTERACTION	• DEVELOP. PRELIMINARY SYSTEM DESIGN CRITERIA SYSTEMS ENGR. & ANALYSIS	• REVIEW & COMMENT ON SYSTEM DESIGN CRITERIA ALL CONSULTANTS
180	3 ROUTE ALIGNMENT ALTERNATIVES	INTERACTION	• EVALUATE ALTERNATIVES • ASSESS DESIGN POTENTIAL POLICY RECOMMENDATIONS: CRITERIA FOR EVAL. OF ALTER. ALIGNMENTS WAYS & STRUCTURES DIV.	• DEVELOP. ALTERNATIVE HORIZONTAL & VERTICAL ALIGNMENTS DUNN / POG & A
180	4 STATION LOCATION ALTERNATIVES	INTERACTION	• EVALUATE ALTER. LOCATIONS & LAYOUTS • COORDINATE CHIEF, AGENCY, CIVIL, UTILITY • PREPARE POLICY RECOMMENDATIONS FOR: ARCHITECTURE & SIGNALS STATIONS / PLANNING DIV.	• DEVELOP. ALTERNATIVE STATION LOCATIONS HARRY WELKE & ASSOC.
210	5 ROW & RELOCATION POLICY	INTERACTION	• DEVELOP. PROPOSED ROW & RELOCATION POLICY WAYS & STRUCTURES DIV.	
270	6 DEVELOPMENT & LAND-USE POLICY	INTERACTION	• PREPARE POLICY RECOMMENDATIONS FOR: • DEVELOPMENT • ADVERTISING • LAND USE • CONCESSIONS STATIONS / PLANNING DIV.	• STATION AREA SPECIFIC PLAN INPUT CITY OF L.A.
300	7 SAFETY, SECURITY & SYST. ASSURANCE PLAN	INTERACTION	• EVALUATE THE TRAINING PLAN • COORDINATE CHIEF, AGENCY INTERFACE POLICY RECOMMENDATIONS: • SAFETY / FIRE PROTECTION • SECURITY • SYSTEM ASSURANCE SYSTEMS ENGR. & ANALYSIS	• DEVELOP. PRELIM. SYSTEM SAFETY & FIRE PROTECTION, SYSTEM SECURITY & SYSTEM ASSURANCE PLANS BOOKS - ALLEN HAMILTON KAISER ENGINEERS
360	8 SUBSYSTEM / SYSTEM CONFIGURATION	INTERACTION	• ESTABLISH EVALUATION CRITERIA & EVAL. SYSTEM CONFIGURATION • OPERATIONAL PARAMETERS • SUBSYSTEM TECHNOLOGY & FARE COLLECTION POLICIES SUBSYSTEMS DIV. & SYSTEMS ENGR. & ANALYSIS	• DEVELOP. OPERATIONAL & SUBSYSTEM ALTERNATIVES BOOKS - ALLEN HAMILTON KAISER ENGINEERS
420	9 SUPPORTING SERVICE PLAN	INTERACTION	• DEVELOP & EVALUATE ALTERNATIVE SERVICE, FEEDER BUS PLANS & MAKE RECOMMENDATIONS STATIONS / PLANNING DIV. & BUS PLANNING DEPT.	
450	10 DEFINITIVE FIXED FACILITIES PLANS	INTERACTION	• ESTABLISH EVALUATION CRITERIA & EVALUATE THE FIXED FACILITY PLANS • COORDINATE CONSULTANT, AGENCY, PUBLIC INTERFACE STATIONS / PLANNING, WAYS & STRUCTURES, & SUBSYSTEMS DIVISIONS	• PREPARE DEFINITIVE DRAWINGS, SPECIFICATIONS & REPORT HARRY WELKE & ASSOC. DUNN / POG & D KAISER ENGINEERS
480	11 PRELIMINARY COST ESTIMATE	INTERACTION	• EVALUATE COST ESTIMATES • DEVELOP. ESCALATION FACTORS • DEVELOP. CONTINGENCY FACTORS ALL DIVISIONS & SYSTEMS ENGR. & ANALYSIS	• DEVELOP. CAPITAL, OPERATING & LIFE CYCLE COST ESTIMATES ALL CONSULTANTS
540	12 PRELIM. ENGINEERING SYSTEM PLAN	INTERACTION	• ESTABLISH & RECOMMEND FINAL SYSTEM DEFINITION & SYSTEM SPECIFICATION SYSTEMS ENGR. & ANALYSIS	• DEVELOP. SYSTEM SPECIFICATION & FINAL SYSTEM DEFINITION & OPERATING PLAN BOOKS - ALLEN HAMILTON

# RTD METRO RAIL PROJECT MASTER SCHEDULE

Prepared by	C.D.
Checked by	J.C.C.
Date	10/1/81

	1962												1983											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	MONTH	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY	DAY
<b>RTD BOARD ACTION</b>				① PRELIM. SYSTEM DEF. & SYSTEM OPEN PLAN		② SYSTEM DESIGN CRITERIA	③ ROUTE ALIGNMENT ALTERNATIVES	④ ROW & RELOCATION POLICIES	⑤ STATION LOCATION ALTERNATIVES	⑥ DEVELOPMENT & LAND-USE POLICY	⑦ SAFETY, SECURITY & SYSTEM ALTERNATIVE PLAN	⑧ SUBSYSTEM CONFIGURATION	⑨ SUPPORTING SERVICES PLAN	⑩ PRELIM. FACILITIES PLAN	⑪ PRELIM. COST ESTIMATE	⑫ PRELIM. LEGAL SYSTEM PLAN								
<b>MAJOR PRELIMINARY ENGINEERING WORK TASKS</b>	WBS 11 PROJECT MANAGEMENT												WBS 12 PROJECT DEFINITION											
	WBS 13 DESIGN & OPEN. CRITERIA												WBS 14 DEVELOP ALTERNATIVE LAYOUTS & DESIGNS											
													WBS 15 SELECT PREF. SYSTEM & CONFIG.											
													WBS 16 PRELIM. DESIGNS, DWS., & SPEC.											
													WBS 17 COST & SCHEDULE EST.											
<b>SECOND TIER IMPACT ASSESSMENT PROGRAM (WBS 18)</b>	DOCUMENT CONDITIONS, SET SCENARIOS, EST. GOALS/OBJECT.												DEFINE SYSTEMS ALTERNATIVES											
													ASSESS REGIONAL CORE & SUB-AREA IMPACTS											
													ADDRESS IMPACT INFORMATION, DEVELOP MITIGATION MEASURES, SELECT PREF. ALTERNATIVES											
													PUBLIC WORKSHOPS, SURVEYS & MEETINGS											
													COMPLETE DRAFT SECOND TIER EIS											
													DRAFT APPLICATION & SECOND TIER EIS SUBMITTED											
													PUBLISH DRAFT EIS											
													PUBLIC HEARING											
													PREPARE DRAFT FINAL EIS											
													PUBLISH FINAL SECOND TIER EIS											

Report of Committee of the Whole - Cont'd.

R-81-669

RESOLVED, that the report dated November 30, 1981, a copy of which is filed with the Secretary, is hereby adopted as the Policy and Decision Making Process for Metro Rail Preliminary Engineering, with a modification to Milestone 6 to have the District's consultants work with and monitor the work done by the City of Los Angeles;

RESOLVED FURTHER, that the Board of Directors recognizes the fact that it may be necessary to consider amendments to this schedule from time to time.

Under Agenda Item No. 5, President Neusom reported that the workflow schedule for the preparation of the Second Tier Environmental Impact Statement for the Metro Rail Project was also considered by the Committee of the Whole on December 3, 1981 with a recommendation for adoption. On motion of Director Richter, seconded and carried as noted below, the following resolution was adopted:

Ayes:	Hall, Lewis, Neusom, Patsaouras, Price, Richter, Storing, Takei
Noes:	None
Abstain:	None
Absent:	Holen, Meseck, Swanson

R-81-670

RESOLVED, that the report dated November 30, 1981, a copy of which is filed with the Secretary, is hereby adopted as the workflow schedule for the preparation of the Second Tier Environmental Impact Statement (EIS) for the Metro Rail Project.

## ATTACHMENT 1

## Summary of Major Milestones

1. System Definition & System Operation Plan

Approval of: Preliminary description of proposed system and the plan of operation. Criteria for evaluation of alternatives; plan for accommodating possible system extensions. (Decision to be made 120 days from approval of covering memo)

2. System Design Criteria

Approval of the detailed criteria upon which the design of the system and all its subsystems will be based. (Decision to be made 120 days from approval of covering memo)

3. Route Alignment Alternatives

Approval of: Criteria for evaluation of alternative alignments. Consideration of alignment alternative resulting from public input and/or geologic factors. (Decision to be made 180 days from approval of covering memo)

4. Station Location Alternatives

Approval of: Criteria for evaluation of Station location alternatives. Consideration of Station Location Alternatives resulting from public input and/or geologic or other factors. (Decision to be made 180 days from approval of covering memo)

5. Right of Way and Relocation Policies

Consider alternative Right of Way and Relocation policies developed by the staff. (Decision to be made 210 days from approval of covering memo)

6. Development and Land Use Policies

Method of proceeding with Joint Development and Value Capture. Approval of advertising and concession policies. (Decision to be made 270 days from approval of covering memo)



7. Safety and System Assurance Plan

Consider and select from alternative plans for Safety/Fire Protection, Security Systems Assurance. (Decision to be made 300 days from approval of covering memo)

8. System/Subsystem Configuration & Fixed Facility Plan

Evaluate alternative guideway, station & yard shop plans and system operation plans. Evaluate alternative subsystem plans (vehicles, controls, communication, fare collection, etc.) (Decision to be made 360 days from approval of covering memo)

9. Supporting Service Plan

Consider alternative plans for interfacing surface, feeder bus system with Metro Rail. (Decision to be made 420 days after approval of covering memo)

10. Definitive Station Design

Consider definitive drawings for the stations along the line. (Decision to be made 450 days after approval of covering memo)

11. Preliminary Cost Estimate

Consider cost estimate for system/subsystem configuration previously approved. (Decision to be made 480 days after approval of covering memo)

12. Preliminary Engineering System Plan

Consider final system specification - the document which will present the details of the complete rapid transit system. (Decision to be made 540 days after approval of covering memo)

- c. Begin development of necessary processes that will ensure completion of EIS concurrent with completion of P.E.

9. Operable Segments

- a. Define operable segment limits
- b. Assess the impact of these limits on all systems

10. Coordination

Develop all documents and initiate all approvals required at the early stages of P.E. that will minimize uncertainties in the development of the P.E. process.

WBS: 11DAA3112  
Rev. 11 03/15/82

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

METRO RAIL PROJECT

WORK BREAKDOWN STRUCTURE

A B S T R A C TREVISION 11 OF WBS

PAGE NUMBER	AFFECTED OR NEW WBS NUMBER	OLD REVISION DATE	IMPACT
1	11A	Rev. 9 - 12/01/81	Rev. Desc.
1	11C	Rev. 9 - 12/01/81	Deleted
1	11DAA1111	Rev. 9 - 12/01/81	Rev. Desc.
3	11DAA2999	Rev. 7 - 10/12/81	Deleted
4	11DAB1111	Rev. 10- 01/11/82	Was 11DAB11
4	11DAB1112	N/A	Added
4	11DAB1113	N/A	Added
5	11DAB17	N/A	Added
-	11DAJ	Rev. 10- 01/11/82	Deleted
6	12AAC	Rev. 10- 01/11/82	Revised
6	12AAD	Rev. 10- 01/11/82	Revised
6	12AAF	Rev. 10- 01/11/82	Deleted
7	12C	Rev. 10- 01/11/82	Deleted
7	12H	N/A	Added

N/A = Not Applicable

A B S T    A C T

(Continued)

PAGE NUMBER	AFFECTED OR NEW WBS NUMBER	OLD REVISION DATE	IMPACT
8	13AAE	Rev. 10- 01/11/82	Revised
8	13BAA	Rev. 10- 01/11/82	Revised
8	13BAB	Rev. 10- 01/11/82	Revised
9	13CAE11	Rev. 10- 01/11/82	Revised
9	13DAA	Rev. 7 - 10/12/81	Revised
9	13DAB	Rev. 10- 01/11/82	Deleted
10	13DAC	Rev. 10- 01/11/82	Deleted
10	13DAD	Rev. 10- 01/11/82	Revised
10	13DAE	Rev. 10- 01/11/82	Deleted, now part of 13DAD
10	13DAF	Rev. 10- 01/11/82	Deleted, now part of 13DAD
10	13DAG	Rev. 10- 01/11/82	Revised
10	13DAH	Rev. 10- 01/11/82	Deleted
10	13DAJ	Rev. 10- 01/11/82	Revised
10	13DAK	Rev. 10- 01/11/82	Revised
10	13DAL	N/A	Added
10	14AAA	Rev. 10- 01/11/82	Revised
11	14AAJ	Rev. 10- 01/11/82	Revised
13	14BAM	Rev. 10- 01/11/82	New Description

N/A = Not Applicable

A B S T R A C T

(Continued)

PAGE NUMBER	AFFECTED OR NEW WBS NUMBER	OLD REVISION DATE	IMPACT
14	14DAA	Rev. 10- 01/11/82	Revised
14	14DAB	Rev. 10- 01/11/82	Revised
14	14DAC	Rev. 10- 01/11/82	Revised
14	14DAD	Rev. 10- 01/11/82	Revised
14	14DAE	Rev. 10- 01/11/82	Deleted, now part of 14DAD
14	14DAF	Rev. 10- 01/11/82	Deleted, now part of 14DAD
14	14DAG	Rev. 10- 01/11/82	New Description
14	14DAJ	N/A	Added
15	15A	Rev. 10- 01/11/82	Revised
15	15B	Rev. 10- 01/11/82	Revised
15	15C	Rev. 10- 01/11/82	New Description
15	15D	N/A	Added
15	15E	N/A	Added
15	15F	N/A	Added
16	16AAD	Rev. 10- 01/11/82	Revised

N/A = Not Applicable

PM&amp;C-02-01

A B S T R A C T

(Continued)

PAGE NUMBER	AFFECTED OR NEW WBS NUMBER	OLD REVISION DATE	IMPACT
17	16AA	Rev. 10- 01/11/82	Revised
18	16BAB11	Rev. 7 - 10/12/81	Revised
18	16BAG	Rev. 7 - 10/12/81	Revised
18	16BAH	Rev. 7 - 10/12/81	Revised
19	16BAW	Rev. 10- 01/11/82	Deleted
20	16BAY	Rev. 10- 01/11/82	New Description
21	16DAA	Rev. 7 - 10/12/81	Revised
21	16DAB	Rev. 7 - 10/12/81	Deleted
21	16DAC	Rev. 7 - 10/12/81	Revised
21	16DAD	Rev. 7 - 10/12/81	Revised
21	16DAE	Rev. 7 - 10/12/81	Deleted, now part of 16DAD
21	16DAF	Rev. 7 - 10/12/81	Deleted, now part of 16DAD
21	16DAG	Rev. 7 - 10/12/81	Revised
21	16DAH	Rev. 7 - 10/12/81	Revised
22	16DAJ	N/A	Added
22	16DAK	N/A	Added

N/A = Not Applicable

A B S T R A C T

(Continued)

PAGE NUMBER	AFFECTED OR NEW WBS NUMBER	OLD REVISION DATE	IMPACT
22	16DAL	N/A	Added
22	16DAM	N/A	Added
22	17A	Rev. 10- 01/11/82	Revised
22	17BAB	Rev. 10- 01/11/82	Revised
22	17BAC	Rev. 10- 01/11/82	Deleted
23	17D	Rev. 10- 01/11/82	Revised
23	17E	Rev. 10- 01/11/82	Revised
27	18BAH2511	Rev. 10- 01/11/82	Revised
27	18BAH2512	Rev. 10- 01/11/82	Revised
27	18BAH2513	Rev. 10- 01/11/82	Revised
27	18BAH2514	Rev. 10- 01/11/82	Revised
27	18BAH2515	N/A	Added

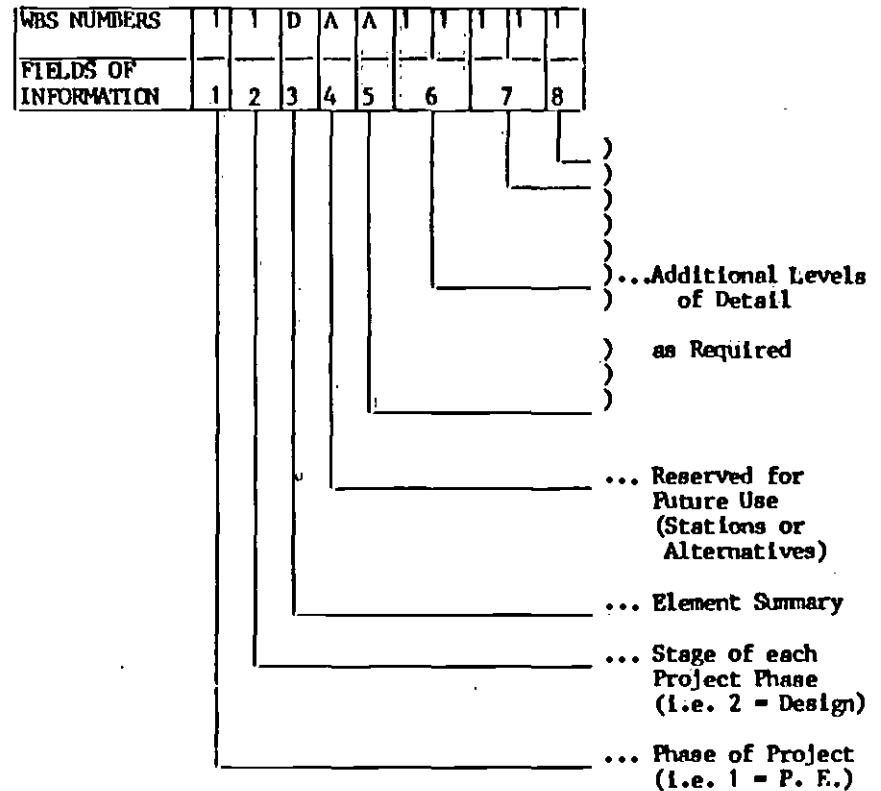
N/A = Not Applicable



TABLE OF ACRONYMS

AA	Alternatives Analysis
AD	Administration
BA	Barton-Aschman
BAH	Booz - Allen & Hamilton Inc.
CITY	City of Los Angeles
CITYFD	City of Los Angeles, Fire Department
CITYPD	City of Los Angeles, Police Department
CITYPLN	City of Los Angeles, Planning Dept.
CITYDOT	City of Los Angeles, Transportation Dept.
CM	Construction Management Division (Future)
CR	Community Relations
CWDD	Converse Ward Davis Dixon
DMJM/PBCD	Daniel, Mann, Johnson, & Menderhall/ Parsons Brinckerhoff Quade & Douglas
EEO	Equal Employment Office
EIS	Environmental Impact Statement
ERA	Environmental Research Associates
GBA	Gage-Babcock Associates
HW	Harry Weese
JDC	Joint Development Corporation
KE	Kaiser Engineers, Inc.
LR	Lindvall Richter
LACo	Los Angeles County, Dept. of Regional Planning
MBE	Minority Business Enterprise
MCE	Manager/Chief Engineer
PC	Program Control
PSG/WATERS	PSG/Waters Consultants
SA	System Engineering and Analysis
SC	Sedway/Cooke
STA	Station Design & Planning Division
SURS	Subsystem Design Division
TAD	Transportation and Distribution
W&S	Ways & Structures Design Division
WIA	Wilson, Ihrig, & Associates

KEY TO WBS ELEMENT CODE



1 - Input is needed by prime consultant before completion of task.  
 R - Review prime consultant product.  
 C - No formal review but periodic coordination.

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<b>Project Management &amp; Control</b>						
11A Preliminary Engineering Project Management Plan	SA					Preliminary Engineering Project Management Plan
11B Program Control System						
11BAA Updates	PC				TAD P	} Coat/Schedule Reports: } Updates to PMCS
11BAB Consultant Services	PC				TAD P	
11BAC Special Studies	PC				TAD P	
11C [Deleted in Rev. 11	SA					
<b>11D Project Management</b>						
11DAA Project Administration						
11DAA11 Manager/Chief Engineer						
11DAA1111 General Project Related Correspondence	MCE					
11DAA1112 Procedural Memos	MCE					
11DAA1113 Quarterly Reports	MCE					
11DAA1114 Special Reports/ Milestone Reports	MCE					
11DAA1115 Copies of Presentations	MCE					
11DAA1116 Admin. Staff Coord. Mtgs.	MCE					

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/ PBOD</u>	<u>HARRY WESE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Project Management &amp; Control (Cont'd)</u>						
11DAA1117	Technical Staff	MCE				
	Coordination Meetings					
11DAA1118	Design Control	MCE				
	Board Meetings					
11DAA1119	Design Progress	MCE				
	Meetings					
11DAA1121	Design Review Mtgs.	MCE				
11DAA21 Administration						
11DAA2111	Office Management	AD				
	and Equipment					
11DAA2112	Personnel	AD				
	Requirements					
11DAA2113	Contracts Admin.	AD				
11DAA2114	Purchase Requisitions/	AD				
	Petty Cash					
11DAA2115	Requests for Proposals	AD				
11DAA2116	Consultant Lists	AD				
11DAA2117	Legal Issues/ Litigation	AD				

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/ PBQD</u>	<u>HARRY WEESE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Project Management &amp; Control (Cont'd)</u>						
11DAA2118 Travel	AD					
11DAA2119 General	AD					
11DAA22 Grants Administration						
11DAA2211 UMTA	AD					
11DAA2212 CalTrans	AD					
11DAA2213 LACTC	AD					
11DAA2219 General	AD					
11DAA23 Interagency Relations						
11DAA2311 UMTA	AD					
11DAA2312 CalTrans	AD					
11DAA2313 LACTC	AD					
11DAA2314 SCAG	AD					
11DAA2315 L.A. County	AD					
11DAA2316 L.A. City	AD					
11DAA2317 Other Cities	AD					
11DAA2319 General	AD					
11DAA31 Program Control						

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/PBQD	HARRY WEESE	Kaiser	OTHER	DELIVERABLE
<u>Project Management &amp; Control (Cont'd)</u>						
11DAA3111 General Correspondence	PC					
11DAA3112 WBS	PC					
11DAA3113 Budget	PC					
11DAA3114 Schedules	PC					
11DAA3115 Labor	PC					
11DAA3116 Reports	PC					
 11DAB Community Relations						
11DAB11 Correspondence						
11DAB1111 General	CR					Weekly and Monthly Progress Reports
11DAB1112 Letters of Support	CR					
11DAB1113 Letters of Complaint	CR					
11DAB12 Publications/Editorial Projects	CR					Newsletters, Brochures
11DAB13 Speakers Bureau	CR					Presentation Materials
11DAB14 Community Meetings	CR					
11DAB15 Special Projects	CR					Special



WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PIQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Project Management &amp; Control (Cont'd)</u>						
11DAB16 Public Participation (Other than community meetings)	CR					
11DAB17 Contracts	CR					
11DAC MBE/EEO/AA	MBE					Quarterly Progress Reports
11DAD Way & Structures						
11DAD11 Coordination, Meetings, and Briefings	WBS	<u>P</u>				Memos as Required
11DAD12 Management Reports	WBS	<u>P</u>				Reports as Required
11DAD13 Statements of Action Needed	WBS	<u>P</u>				Letter Reports.
11DAE Stations						
11DAE11 Stations	STA		<u>P</u>			Monthly Progress Reports
11DAE12 Planning	STA				SC CITY LACo	<u>P</u> <u>P</u> <u>P</u> Monthly Progress Reports
11DAE13 Contract Admin.	STA					
11DAF Subsystems	SUBS			<u>P</u>		Monthly Progress Reports
11DAG Systems Engineering & Analysis	SA				BAH	<u>P</u> Monthly Progress Reports
11DAH Construction Management	CM					

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Project Definition</u>						
12A Special Consultants						
12AAA Ground Control Surveys	W&S				CITY	<u>P</u> Survey Control Work
12AAB Aerial Mapping	W&S				Teledyne	<u>P</u> Aerial Photogrammetry and Topographic Mapping
12AAC Geologic Surveys	W&S	<u>R</u>			OWDD	<u>P</u> Geotechnical Report
12AAD Seismic Criteria	W&S	<u>R</u>			OWDD	<u>P</u> Seismic Design Criteria Report
12AAF [Deleted in Rev. 11]						
12AAG Utility Locations Survey	W&S				CITY	<u>P</u> Utility Locations
12AAH Corrosion Control	W&S	<u>R</u>			PSG/Waters	<u>P</u> Corrosion Control Report
12AAJ Noise & Vibration	W&S	<u>R</u>			WIA	<u>P</u> General Noise & Vibration Report
12AAK Signage & Graphics	STA				Spec.Cnslt	<u>P</u> System Wide Signage and Graphics Report
12AAM Board of Special Geotechnical Consultants	W&S				LR	<u>P</u> Letter Report

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/ PBOD</u>	<u>HARRY WEISE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Project Definition (Cont'd)</u>						
12B Patronage Forecasts	STA				BA	<u>P</u> Phase I and Phase II System Patronage Forecasts
12C [Deleted in Rev. 11]						
12D Peer Review Boards	MCE					Reports on each Peer Review Session
12E Joint Development/Value Capture	STA				Spec. Const	<u>P</u> Joint Development/Value Capture Report
12F Review Codes, Guidelines Regulations, and other Information	W&S STA SUBS	<u>P</u>	<u>P</u>	<u>P</u>		Reports on Results of Reviews Reports on Results of Reviews Reports on Results of Reviews
12G Master Agreements	W&S	<u>C</u>				Master Agreements
12H Milestone Reports # 1 & 2	SA				BAH	<u>C</u> Draft Final Milestone #1 & 2 Data Reports, Draft & Final Milestone #1 & 2 Reports
<u>Design &amp; Operational Criteria &amp; Standards</u>						
13A Ways & Structures						
13AAA Civil	W&S	<u>P</u>				Revised Criteria and Standards Document
13AAB Structural	W&S	<u>P</u>				Revised Criteria and Standards Document
13AAC Trackwork	W&S	<u>P</u>				Revised Criteria and Standards Document



WORK BREAKDOWN STRUCTURE

THE WORDS WBS, TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEISE	KAISER	OTHER	DELIVERABLE
<u>Design &amp; Operational Criteria &amp; Standards (Cont'd)</u>						
13AAD Yards & Shops Facilities	W&S	<u>P</u>	<u>R</u>	<u>R</u>	BAH	<u>R</u> Review Criteria and Standards Document
13AAE Ventilation	W&S	<u>P</u>	<u>R</u>	<u>R</u>	KE/GBA	<u>R</u> Criteria and Standards Document
13AAF Utility Locations Survey	W&S				City	<u>P</u> Utility Locations
13AAG Corrosion Control	W&S	<u>R</u>			PSG/Waters	<u>P</u> Corrosion Control Requirements
13AAH Noise & Vibration	W&S	<u>P</u>	<u>R</u>		WIA	<u>I</u> Review Noise and Vibration Requirements
13B Stations						
13BAA Criteria Review & Recommendations	STA		<u>P</u>		Spec.Cnslt	<u>I</u> Station Design Criteria and Standards
13BAB Standard and Directive Drawings	STA		<u>P</u>		Spec.Cnslt	<u>I</u>
13C Subsystems						
13CAA Passenger Vehicle	SUBS			<u>P</u>		Report on Design and Operational Criteria
13CAB Train Control	SUBS			<u>P</u>		Report on Design and Operational Criteria
13CAC Communications	SUBS			<u>P</u>		Report on Design and Operational Criteria

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Design &amp; Operational Criteria &amp; Standards (Cont'd)</u>						
13CAD Power Systems						
13CAD11 Traction Power & Distribution	SUBS			<u>P</u>		Report on Design and Operational Criteria
13CAD12 Auxiliary Power	SUBS			<u>P</u>		Report on Design and Operational Criteria
13CAE Support Systems						
13CAE11 Fare Collection	SA				BAH	<u>P</u> Letter Report on State of the Art Existing Fare Collection Systems & Current SCRID Fare Structure
13CAE12 Mechanical & Electrical Equipment	SUBS		<u>R</u>	<u>P</u>		Report on Design and Operational Criteria
13CAE13 Auxiliary Vehicles	SUBS			<u>P</u>		Report on Design and Operational Criteria
13CAE14 Elevators & Escalators	SUBS		<u>R</u>	<u>P</u>		Report on Design and Operational Criteria
<u>13D Systems Integration &amp; Systems Criteria</u>						
13DAA System Operating Plan & Simulation Models	SA				BAH	<u>P</u> Preliminary System Operating Plan, Model Description on Operating Alternative Analysis, Energy Management Study Report.
13DAB [Deleted in Rev. 11]						

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/PBQD	HARRY WEFSE	KAISSER	OTHER	DELIVERABLE
13DAC [Deleted in Rev. 11]						
13DAD System Safety, Assurance and Security Criteria	SA			<u>R</u>	BAH CITYFD	<u>P</u> <u>R</u> Draft Criteria Reports Memo Report Reviewing Security Criteria
13DAE [Deleted in Rev. 11]						
13DAF [Deleted in Rev. 11]						
13DAG Project Management Plan	SA				BAH	<u>P</u> Design Control Plan, System Specification Outlines, Project Definition & Objectives
13DAH [Deleted in Rev. 11]						
13DAJ Yards & Shops Operations	SA	<u>R</u>		<u>I</u>	BAH	<u>P</u> Yards & Shops Operating Criteria
13DAK Fire Protection	SA	<u>R</u>	<u>R</u>	<u>R</u>	KE/GBA CITYFD	<u>P</u> <u>R</u> Develop Preliminary Systemwide Fire Protection Criteria Memo Report Reviewing Fire Protection Criteria and Plan
13DAL System Specifications	SA				BAH	<u>P</u> Initial Version of System Specification
<u>Develop Alternative Layouts &amp; Designs</u>						
14A Way & Structures						
14AAA Horizontal and Vertical Alignment	W&S	<u>P</u>	<u>C</u>		SA	<u>R</u> Proposed Alternative Horizontal & Vertical Alignments, Plan & Profile Milestone 3 Report
14AAB Structural/Civil Design	W&S	<u>P</u>	<u>C</u>			Preliminary Drawings Required, Tunnels, Stations, etc.

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/POOD</u>	<u>HARRY WEESE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Develop Alternative Layouts &amp; Designs (Cont'd)</u>						
14AAC Right of Way Requirements	WGS	<u>P</u>				Preliminary Property Identification Report
14AAD Utilities	WGS	<u>I</u>			CITY	<u>P</u> Report on Utility Relocation Requirements Along the Line
14AAE Cost Estimates	WGS	<u>P</u>	<u>R</u>	<u>R</u>	CITY	<u>I</u> Develop Procedures for Making Capital, Operating & Maintenance Cost Estimates. Capital, Operating & Maintenance Estimates for the Most Promising Alternatives
14AAF Construction Methods	WGS	<u>P</u>				Report on Authorized Alternatives
14AAG Yard & Shop Facilities						
14AAG11 Functional Plan	WGS	<u>P</u>		<u>R</u>	BAH	<u>R</u> Functional Plan for Yards & Shops
14AAG12 Facilities Layout	WGS	<u>P</u>	<u>R</u>	<u>C</u>		Tentative Layouts for Authorized Alternatives
14AAH Site Specific EIS	STA	<u>S</u>	<u>R</u>		SC	<u>P</u> Report on Authorized Alternatives
14AAJ Ventilation	WGS	<u>P</u>	<u>C</u>	<u>C</u>	KE/GBA	<u>I</u> Report on Authorized Ventilation System
14AAK Trackwork	WGS	<u>P</u>				Report on Authorized Alternatives
14AAL Community Liaison	WGS/CR	<u>I</u>				
14AAM Tunnel Arrangements	WGS	<u>P</u>				Report on Authorized Alternatives

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	* KAISER	OTHER	DELIVERABLE
14BAM Stations Planning	STA		<u>P</u>			Reports/Drawings as required
14C Subsystems						
14CAA Passenger Vehicles	SUBS			<u>P</u>		Report on Authorized Alternatives
14CAB Train Control	SUBS			<u>P</u>		Report on Authorized Alternatives
14CAC Communications	SUBS			<u>P</u>		Report on Authorized Alternatives
14CAD Power Systems						
14CAD11 Traction Power & Distribution	SUBS			<u>P</u>		Report on Authorized Alternatives
14CAD12 Auxiliary Power	SUBS			<u>P</u>		Report on Authorized Alternatives
14CAE Support Systems						
14CAE11 Fare Collection	SA			<u>R</u>	BAH	<u>P</u> Report on Authorized Alternatives
14CAE12 Mechanical & Electrical Equipment	SUBS		<u>R</u>	<u>P</u>		Design Support, as required
14CAE13 Auxiliary Vehicles	SUBS			<u>P</u>		Report on Authorized Alternatives
14CAF Cost Estimates	SUBS			<u>P</u>		Make Capital, Operating & Maintenance Estimates for the most Promising Alternatives
14CAG Community Liaison	SUBS/CR			<u>I</u>		

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQO	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Develop Alternative Layouts &amp; Designs (Cont'd)</u>						
14D Systems Analysis						
14DAA Life Cycle Cost Model	SA				BAH	<u>P</u> Life Cycle Cost Model Description & Users Manual
14DAB System Simulation and Analysis	SA				BAH	<u>P</u> Letter Reports for Each Alternative Analyzed
14DAC Fire Protection	SA	<u>I</u>	<u>I</u>	<u>I</u>	KE/GBA	<u>P</u> Letter Report on Review of Alternative Configuration from Fire Protection Standpoint
14DAD System Safety, Assurance and Security	SA	<u>I</u>	<u>I</u>	<u>I</u>	BAH	<u>P</u> Reports on Authorized Alternatives & Drafts of Systems Safety, Assurance, and Security Plans
14DAE [Deleted in Rev. 11]						
14DAF [Deleted in Rev. 11]						
14DAG Preliminary System Maintenance Plan	SA	<u>I</u>	<u>I</u>	<u>I</u>	BAH	<u>P</u> Preliminary Maintenance Plan
14DAH Configuration Control	SA				BAH	<u>P</u> Documentation Control System. Periodic Document Status, Audit Reports
14DAJ Bus Fare Collection	SA				BAH	<u>P</u> Report on Bus Fare Collection Issues

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/ PDQD</u>	<u>HARRY WEESE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Develop Alternative Layouts &amp; Designs (Cont'd)</u>						
<u>Selection of Preferred System Configuration</u>						
15A Develop Evaluation Methodology	W&S	<u>1</u>	<u>1</u>	<u>R</u>	BAH	<u>1</u> Criteria and Methodology for Selection of Preferred System Configuration
15B Evaluate Design Alternatives	SA	<u>1</u>	<u>1</u>	<u>1</u>	BAH	<u>P</u> Report on Preferred System Configuration and Basis for Selection
15C Constructability Review	MCE				Spec. Cnslt	<u>P</u> Preliminary Constructability Review & Reports
15D Milestone Reports # 7 & 8	SA	<u>R</u>	<u>R</u>	<u>R</u>	BAH	<u>P</u> Draft Final Milestone # 7 & 8 Data Reports Draft and Final Milestone # 7 & 8 Reports
15E Configuration Control	SA				BAH	<u>P</u> Periodic Document Status, Audit Reports
15F Update System Specifications	SA				BAH	<u>P</u> Revised System Specification

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PROQ	HARRY WEESE	KAISSER	OTHER	DELIVERABLE
<u>Preliminary Designs, Drawings &amp; Specifications (Cont'd)</u>						
16A Way & Structures						
16AA Section A						
16AAA Civil/Structural Design	W&S	<u>P</u>	<u>C</u>			Civil/Structure Plans
16AAB Yard & Shop Facilities	W&S	<u>P</u>	<u>I</u>	<u>C</u>		General Yard & Shop Plans
16AAG Trackwork System	W&S	<u>P</u>				Trackwork Design Report and Plans
16AAD Corrosion Control	W&S	<u>P</u>			PSG/Waters	Incorporate Corrosion Control Measures in General Plans
16AAE Drainage	W&S	<u>P</u>				Included in General Plans Package
16AAF Utilities	W&S	<u>C</u>			CITY	<u>P</u> Preliminary Utilities Relocation and Construction Estimate
16AAG Site Specific Construction Methods	W&S	<u>P</u>	<u>I</u>			Construction Staging Report and Plans for Line and Stations
16AAH Right of Way						
16AAH11 Requirements	W&S	<u>P</u>	<u>I</u>			Right of Way Plans
16AAH12 Preliminary Appraisal	W&S				Spec. Cnslt	<u>P</u> Property Acquisition Costs
16AAH13 Relocation	W&S				Spec. Cnslt	<u>P</u> Relocation Plan & Costs
16AAJ Noise & Vibration Control	W&S	<u>P</u>	<u>R</u>		WIA	<u>R</u> Included in General Plan Package
16AAK Cost Estimates	W&S	<u>P</u>			CITY	<u>I</u> Preliminary Capital, Operating, Maintenance Cost Estimates



WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBOD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Preliminary Designs, Drawings &amp; Specifications (Cont'd)</u>						
16AAL Section Design Statements of Work	W&S	<u>P</u>				Statements of Work to be Done
16AAM Schedules	W&S	<u>P</u>				Final Design & Construction Schedule
16AAN Outline Specifications	W&S	<u>P</u>				Outline Specifications
16AAP Long Lead Procurement	W&S	<u>P</u>				Report with Recommendations
16AAQ Ventilation	W&S	<u>P</u>	<u>I</u>	<u>I</u>	KE/GBA	<u>C</u> Incorporate Final Ventilation Design in General Plans
16AAR Contract Packaging	W&S	<u>P</u>				Report and Drawings
16AAS Planning for Final Design	W&S					Report and Recommendations
16AAT Muck Disposal	W&S	<u>P</u>				Report with Recommendations
16AAU Technical Reports	W&S	<u>P</u>				Reports as Required
16AAV General Plans	W&S	<u>P</u>				General Plans
16AAW Directive and Standard Drawings	W&S	<u>P</u>				Drawings
16AAX Environmental Impact Assessment	W&S	<u>I</u>			SC	<u>P</u> Reports as Required
16AAZ Community Liaison	W&S/CR	<u>I</u>				

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Preliminary Designs, Drawings &amp; Specifications (Cont'd)</u>						
16B Station (Definitive Design)						
16BA Station A - General						
16BAA Architectural Drawings	STA		<u>P</u>			Floor Plans, Sections & Elevations for each Station
16BAB Civil Drawings						
16BAB11 Site Work	STA	<u>R</u>	<u>P</u>			Site Plan(s) for each Station
16BAB12 Street Work	W&S		<u>C</u>		City	<u>P</u> Preliminary Street Plans
16BAC Structural Engineering Drawings	W&S	<u>P</u>	<u>I</u>			Framing Plans & Sections
16BAD Mechanical Engineering Drawings	STA	<u>R</u>	<u>P</u>	<u>R</u>		Mechanical Plans & Sections
16BAE Electrical Engineering Drawings	STA	<u>R</u>	<u>P</u>	<u>R</u>		Electrical Plans & Sections
16BAF Intermodal Interface	STA	<u>R</u>	<u>P</u>			Included in Drawings
16BAG Parking	STA	<u>R</u>	<u>P</u>			Included in 16BAB
16BAH Adjacent Building Access	STA	<u>R</u>	<u>P</u>			Included in 16BAB
16BAJ Elevator/Escalator Requirements	STA	<u>R</u>	<u>P</u>	<u>R</u>		Report and Drawings
16BAK Station Utilities	STA		<u>S</u>		City	<u>P</u> Utility Relocation Plans and Estimates

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PIQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Preliminary Designs, Drawings &amp; Specifications (Cont'd)</u>						
16BAL Property Acquisition	W&S	<u>P</u>	<u>I</u>			Included in 16AAH
16BAM Cost Estimates	STA	<u>I</u>	<u>P</u>			Preliminary Capital, Operating, Maintenance Cost Estimates
16BAN Guide Specifications	STA	<u>I</u>	<u>P</u>			Guide Specifications Estimate (Option)
16BAP Schedules	STA	<u>R</u>	<u>P</u>			Schedule for Final Design & Construction
16BAQ Long Lead Procurement	STA		<u>P</u>			Long Lead Procurement Recom- mendations (Option)
16BAR Design Report	STA	<u>I</u>	<u>P</u>			Design Reports for each Station
16BAS Lighting	STA		<u>P</u>			Design Report
16BAT Community Liaison	STA/CR		<u>I</u>			Reports, Drawings, Sketches
16BAW Station Final Design Statements of Work	STA		<u>P</u>			Statement of Work for each Station
16BAV Station Contract Packaging	STA	<u>R</u>	<u>P</u>			Reports
16BAW [Deleted in Rev. 11]						

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMUM/ PDQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Preliminary Designs, Drawings &amp; Specifications (Cont'd)</u>						
16BAX Supporting Services Plan						
16BAX11 Surface Bus	STA				SCRID Bus Planning	<u>P</u> Letter Report
16BAX12 Feeder Bus	STA				SCRID Bus Planning	<u>P</u> Letter Report
16BAY Stations Planning	STA		<u>P</u>			Reports and Drawings as required
16C Subsystems						
16CAA Passenger Vehicle	SUBS			<u>P</u>		Preliminary Design Drawings & Specifications
16CAB Train Control	SUBS	<u>R</u>		<u>P</u>		Preliminary Design Drawings & Specifications
16CAC Communications	SUBS	<u>R</u>	<u>R</u>	<u>P</u>		Preliminary Design Drawings & Specifications
16CAD Power Systems						
16CAD11 Traction Power & Distribution	SUBS	<u>R</u>		<u>P</u>		Preliminary Design Drawings & Specifications
16CAD12 Auxiliary Power	SUBS		<u>R</u>	<u>P</u>		Preliminary Design Drawings & Specifications
16CAE Support Subsystems						
16CAE11 Fare Collection	SUBS		<u>R</u>	<u>R</u>	BAH	<u>R</u> Preliminary Design Drawings & Specifications
16CAE12 Mechanical & Electrical Equipment	SUBS	<u>R</u>	<u>R</u>	<u>P</u>		Preliminary Design Drawings & Specifications
16CAE13 Auxiliary Vehicles	SUBS			<u>P</u>		Preliminary Design Drawings & Specifications

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/PDQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Preliminary Designs, Drawings &amp; Specifications (Cont'd)</u>						
16CAF Cost Estimates	SUBS			<u>P</u>		Preliminary Capital, Operating, Maintenance Cost Estimates
16CAG Schedules	SUBS			<u>P</u>		Schedules for Final Design
16CAH Long Lead Procurement	SUBS			<u>P</u>		Procurement Recommendations
16CAJ Test & Evaluation	SUBS			<u>P</u>		Test & Evaluation Recommendation
16CAK Community Liaison	SUBS/CR			<u>I</u>		
16CAL Contract Packaging	SUBS			<u>P</u>		Reports
16D System Integration & Interface Control						
16DAA System Operating Plan and Simulation Model	SA				BAH	<u>P</u> Final Operating Plan, Model Description Users Manual
16DAB [Deleted in Rev. 11]						
16DAC Fire Protection	SA	<u>I</u>	<u>I</u>	<u>I</u>	KE/GBA	<u>P</u> Review of Preliminary Engineering Drawings
16DAD System Safety, Security & Assistance	SA	<u>R</u>	<u>R</u>	<u>R</u>	BAH	<u>P</u> System Safety, Security & Assistance Plans
16DAE [Deleted in Rev. 11]						
16DAF [Deleted in Rev. 11]						
16DAG System Analysis Support for Design	SA				BAH	<u>P</u> Simulation Model Definition as Required

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Preliminary Designs, Drawings &amp; Specifications (Cont'd)</u>						
16DAH Configuration Control	SA				BAH	<u>P</u> Interface Matrices Periodic Document
16DAJ System Maintenance Plan	SA	<u>S</u>	<u>R</u>	<u>R</u>	BAH	<u>P</u> System Maintenance Plan
16DAK Mileatone Report 12	SA	<u>R</u>	<u>R</u>	<u>R</u>	BAH	<u>P</u> Milestone #12 Data Report.
16DAL Configuration Management Plan	SA				BAH	<u>P</u> Management Plan For Final Design
16DAM System Specification	SA				BAH	<u>P</u> Final System Specification
<u>Cost/Schedule Estimates</u>						
17A Constructability, Capital Costs and Contract Package Review	W&S				Spec.Conslt	<u>P</u> Reports on Constructability and Review of Capital Costs and Contract Packaging
17B Consolidate Capital, Operating and Maintenance Cost Estimates						
17BAA System Capital Costs	W&S	<u>P</u>	<u>I</u>	<u>I</u>		Capital Cost Estimates
17BAB System Operating and Maintenance Costs	PC/SA	<u>R</u>	<u>R</u>	<u>R</u>	BAH	<u>P</u> Operating and Maintenance Cost Estimates
17BAC [Deleted in Rev. 11]						
17C Compile Cost Estimates for Construction of Alternative Operable Segments	W&S	<u>P</u>	<u>I</u>	<u>I</u>		Estimate for Construction of Alternative Operable Segments

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/ PBOJ</u>	<u>HARRY WEISE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Cost/Schedules Estimate</u>						
17D Estimate Cash Flow Requirements	PC	<u>I</u>	<u>I</u>	<u>I</u>		Estimate Cash Flow Requirements for Capital Grant Application. Prepare Data, Draft and Milestone 11 Report
17E Consolidate & Coordinate Final Design and Construction Schedule and Project Critical Path Plan	PC	<u>I</u>	<u>I</u>	<u>I</u>		Master Final Design and Construction Schedule and Project Critical Path Plan.
17F Support Analysis	SA				BAH	<u>P</u> Reports as Required
<u>Second Tier Impact Assessment Program</u>						
18A Preliminary Tasks						
18AAA Scoping Process	STA				SC	<u>G</u> Notice of Preparation; Summary of Comments on Envir. Work Program
18AAB Work Program Revision	STA				SC	<u>P</u> Revised, Overall Work Program

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/ PBQD</u>	<u>HARRY WEESE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18B EIS Tasks						
18BAA Define Existing Conditions	STA				SC	P Technical Report
18BAB Identify Objectives, Policies, Programs, Legal Obligations, & Institutional Constraints	STA				SC	<u>P</u> Technical Report
18BAC Formulate and Assess Growth Scenarios	STA				SC	<u>P</u> Technical Report
18BAD Define System Alternatives	STA				SC	P Technical Report
18BAE Implications of the System Alternatives	STA				SC	<u>P</u> Technical Report
18BAF Definition of Sub-Areas and Collection of Sub-Area Data	STA				SC	<u>P</u> Technical Report
18BAG Definition of Sub-Area Alternatives	STA				SC	P Technical Report
18BAH Analysis of Sub Area Impacts						
18BAH11 Traffic Volumes & Congestion	STA					
18BAH1141 1980 Traffic Flows	STA				CITYDOT	<u>P</u> 1980 ADT, PkHr, VMT
18BAH1142 1995 "Base" Condition	STA				CITYDOT	<u>P</u> 1995 Projections



WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

<u>WBS ELEMENT NUMBER &amp; DESCRIPTION</u>	<u>PROJECT STAFF</u>	<u>DMJM/ PBOD</u>	<u>HARRY WEESE</u>	<u>KAISER</u>	<u>OTHER</u>	<u>DELIVERABLE</u>
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18BAH1143 1995 "With Project" Conditions	STA				CITYDOT	<u>P</u> 1995 Projections
18BAH1144 Traffic Analysis	STA				SC	<u>P</u> Technical Report
18BAH12 Traffic Circulation						
18BAH1241 1980 V/C Ratios	STA				CITYDOT	<u>P</u> 1980 V/C Ratios
18BAH1242 1995 "Base" Conditions	STA				CITYDOT	<u>P</u> Vehicle Flows
18BAH1243 1995 Station Area Circulation	STA				CITYDOT	<u>P</u> Vehicle Flows
18BAH1244 Station Location Assistance	STA				CITYDOT	<u>P</u> None
18BAH13 Parking						
18BAH1341 Existing Inventory	STA				CITYDOT	<u>P</u> On/Off Street Inventory
18BAH1342 1995 Parking Needs	STA				CITYDOT	<u>P</u> Parking Needs and Impacts at Station Areas Report
18BAH1343 Parking Policies	STA				CITYDOT	<u>P</u> Parking Policies Report
18BAH1344 Assistance in Station Area Parking Needs	STA				CITYDOT	<u>P</u> None
18BAH14 Traffic Control Policies During Construction	STA				CITYDOT	<u>P</u> Traffic Control Policies
18BAH15 Traffic Impact Mitigation Measures	STA				CITYDOT	<u>P</u> Mitigation Measures

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18BAH1143 1995 "With Project" Conditions	STA				CITYDOT	<u>P</u> 1995 Projections
18BAH1144 Traffic Analysis	STA				SC	<u>P</u> Technical Report
18BAH12 Traffic Circulation						
18BAH1241 1980 V/C Ratios	STA				CITYDOT	<u>P</u> 1980 V/C Ratios
18BAH1242 1995 "Base" Conditions	STA				CITYDOT	<u>P</u> Vehicle Flows
18BAH1243 1995 Station Area Circulation	STA				CITYDOT	<u>P</u> Vehicle Flows
18BAH1244 Station Location Assistance	STA				CITYDOT	<u>P</u> None
18BAH13 Parking						
18BAH1341 Existing Inventory	STA				CITYDOT	<u>P</u> On/Off Street Inventory
18BAH1342 1995 Parking Needs	STA				CITYDOT	<u>P</u> Parking Needs and Impacts at Station Area Report
18BAH1343 Parking Policies	STA				CITYDOT	<u>P</u> Parking Policies Report
18BAH1344 Assistance in Station Area Parking Needs	STA				CITYDOT	<u>P</u> None
18BAH14 Traffic Control Policies During Construction	STA				CITYDOT	<u>P</u> Traffic Control Policies
18BAH15 Traffic Impact Mitigation Measures	STA				CITYDOT	<u>P</u> Mitigation Measures

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18BAH16 Geologic Impacts	W&S				SC C/DD/LR	<u>P</u> <u>R</u> Technical Report
18BAH17 Hydraulic Impacts	W&S				SC C/DD/LR	<u>P</u> <u>R</u> Technical Report
18BAH18 Noise & Vibration Impacts	W&S				SC WIA	<u>P</u> <u>R</u> Technical Report
18BAH19 Air Quality Impacts					SC	<u>P</u> Technical Report
18BAH1941 Existing Conditions	STA				SC	<u>P</u> Existing Conditions
18BAH1942 Impacts	STA				SC	<u>P</u> Impacts
18BAH1943 Mitigation Resources	STA				SC	<u>P</u> Mitigation Resources
18BAH21 Ecological Impacts	STA				SC	<u>P</u> Technical Report
18BAH22 Demographic Impacts	STA				SC CITYFLN	<u>P</u> <u>I</u> Impact Assessment
18BAH23 Impacts of Community Cohesion	STA				SC CITYFLN	<u>P</u> <u>I</u> Impact Assessment
18BAH24 Impacts on Accessibility of Facilities and Services	STA				SC CITYFLN	<u>P</u> <u>I</u> Impact Assessment

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18BAH25	Impacts on Safety & Security					
18BAH2511	Fire Protection & Life Safety Standards	SA			CITY	<u>I</u> Memorandum Reports
18BAH2512	Review Standards for Patron & Physical Security	SA			CITY	<u>I</u> Memorandum Reports
18BAH2513	Review System Design (Safety)	SA			CITY	<u>I</u> Memorandum Reports
18BAH2514	Review System Design (Security)	SA			CITY	<u>I</u> Memorandum Reports
18BAH2515	Review Impacts on Safety and Security	SA			SC	<u>P</u> Memorandum Reports
18BAH26	Utility Systems Impacts	STA			SC CITY	<u>P</u> <u>I</u> Technical Reports
18BAH27	Land Use Impact	STA			SC CITY	<u>P</u> <u>I</u>
18BAH2741	Assist in Station Locations	STA			CITY/LN	<u>P</u> Station Location Analysis Report
18BAH2742	Determine Station Specific Plan Boundaries	STA			CITY/LN	<u>P</u> Station Area Boundaries Report

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18BAH2743 Community Participation Program	STA				CITYHLN	P None
18BAH2744 Assist. in Station Locations	STA				LACo	P Station Locations Report
18BAH2745 Determine Station Area Boundaries	STA				LACo	P Station Area Boundaries
18BAH28 Land Use Data Gathering						
18BAH2841 Land Use and Activity Inventory	STA				CITYHLN	P Land Use Inventory
18BAH2842 Update Socioeconomic & Demographic Data	STA				CITYHLN	P Compendium of Soc-Eco & Demo. Data
18BAH2843 Land Use Inventory	STA				LACo	P Land Use Inventory
18BAH2844 Demographic Data Update	STA				LACo	P Compendium of Demographic Data
18BAH29 Land Use Plan Formulation						
18BAH2941 Develop Specific Plan Alternatives	STA				CITYHLN	P Specific Plan Alternatives Report
18BAH2942 Obtain Community Input	STA				CITYHLN	P
18BAH2943 Develop Specific Plan	STA				CITYHLN	P Interim Specific Plan Report
18BAH2944 Review 4(f) and 106 Impacts	STA				CITYHLN	P

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PROQ	HARRY WEISE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18BAH2945 Specific Plan Adoption	STA				CITYPLN	<u>P</u> Resolution of Adoption
18BAH2946 Develop County Zoning Regulations	STA				LACo	<u>P</u> County Zoning Regulations
18BAH2947 Develop County Land Use Plan	STA				LACo	<u>P</u> Land Use Plan
18BAH2948 Land Use Plan Adoption	STA				LACo	<u>P</u> Resolution of Adoption
18BAH2949 Land Use Impact Evaluation	STA				SC	<u>P</u> Technical Report
18BAH31 Energy Impacts	W&S/STA/SUBS/SA				SC	<u>P</u> Technical Report(s)
18BAH32 Urban and Visual Design Impacts	STA		<u>I</u>		SC	<u>P</u> Technical Report
18BAH33 Economic Impacts	STA				SC	<u>P</u> Technical Report
18BAH34 Fiscal Impacts	STA				SC	<u>P</u> Technical Report
18BAH35 Impacts on Historic Open Space Resources						
18BAH3541 Impact on Resources	STA				SC	<u>P</u> Technical Report
18BAH3542 Agree on Effect Determination	STA				SC	<u>P</u> Technical Report
18BAH3543 Memorandum of Agreement	STA				SC	<u>P</u> Technical Report

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18BAH36 Construction	STA/W&S	<u>I</u>	<u>I</u>		SC	<u>P</u> Technical Report
18BAJ Consequences of Sub-Area Impacts and Potential Mitigation Measures	STA				SC	<u>P</u> Technical Report
18BAK Aggregation of Sub-Area Alternatives Including No-Build and their Implementation	STA				SC	<u>P</u> Technical Report
18BAL Describe Sub-Area and Regional Effects of System Variations	STA				SC	<u>P</u> Technical Report
18BAM Describe the Environmental Consequences of System Alternatives Including No Build	STA				SC	<u>P</u> Technical Report
18BAN Mitigation Measures	STA				SC	<u>P</u> Technical Report
18C Documentation						
18CAA Reporting Requirements						
18CAA11 Task Reports	STA				SC	<u>P</u> Task Reports
18CAA12 Initial Reports	STA				SC	<u>P</u> Initial Reports
18CAA13 Periodic Reports	STA				SC CITY LACo	<u>P</u> <u>P</u> <u>P</u> Periodic Reports

WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBCD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18CAA14 Leaflets, Handouts etc.	STA				SC	<u>P</u>
18CAA21 LADOT Traffic Analysis Draft/Final Reports	STA				CITYDOT	<u>P</u> Draft Report Final Report
18CAA22 LA City Planning Draft/ Final Report	STA				CITYPLN	<u>P</u> Draft Report Final Report
18CAA23 LA County Planning Land Use Draft/Final Reports	STA				LACo	<u>P</u> Draft Land Use Report Final Land Use Report
18CAB Preparation of the Draft EIS						
18CAB11 Preparation of Prelimin- ary Draft EIS	STA				SC	<u>P</u> Preliminary Draft EIS
18CAB12 Prepare Camera-Ready Draft EIS, Summary and Appendices	STA				SC	<u>P</u> Draft EIS
18CAC Preparation of the Final EIS						
18CAC11 Collect Comments and Develop Responses	STA/CR				SC	<u>I</u>
18CAC12 Organize and Incorporate Comments and Responses into Preliminary Final EIS	STA				SC	<u>P</u> Preliminary Final EIS



WORK BREAKDOWN STRUCTURE

THE WORDS WBS TASKS AND SUB-TASK SHALL BE CONSIDERED INTERCHANGEABLE WITH WBS ELEMENT AND SUB-ELEMENT.

WBS ELEMENT NUMBER & DESCRIPTION	PROJECT STAFF	DMJM/ PBQD	HARRY WEESE	KAISER	OTHER	DELIVERABLE
<u>Second Tier Impact Assessment Program (Cont'd)</u>						
18CAC13 Prepare Camera-Ready Copy of Final EIS	STA				SC P	Final EIS/EIR; Record of Decision, Certification
18D Organize and Maintain Community and Other Agency Participation						
18DAA Refine, Evaluate Participant Inventories and Resources	STA/CR				SC R	
18DAB Delineate and Execute EIS Participation Program	STA/CR				SC R	

P E DELIVERABLES

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

BS NO.	DESCRIPTION	DELIVERABLE DESCRIPTION	DELIVERABLES DATES	
			PLANNED	ACTUAL
1 DAD	Project Management	Progress Report		Monthly
2 F	Review of Codes, Guidelines and Regulations	Submit List	A	5/20/82
3 AAA	Civil Criteria Review	Revised Criteria Standards	A	12/22/82
3 AAB	Structural Criteria	Incorporated in 13AAA	A	5/26/82
3 AAC	Trackwork Criteria	Criteria Report	A	5/26/82
3 AAD	Yards & Shops Facilities Criteria	Criteria Report	A	5/26/82
3 AAE	Ventilation Criteria	Criteria Report	A	11/16/82
4 AAA	Horizontal & Vertical Alignment	Milestone 3 Draft Report	A	7/22/82
4 AAB	Structural Civil Design	Drawings Milestone 3 Report	A	7/22/82
4 AAC	R.O.W Requirements	R.O.W. Drawings	A	10/07/82
4AAE	Cost Estimates	Cost Estimating Methodology Comparative Cost Estimates	A	11/17/82 7/01/82
4 AAF	Construction Methods	Construction Methods Report	A	12/30/82
4 AAG	Yards & Shops Facilities	Yards & Shops Functional Plan Yards & Shops Facilities Layout	A	8/20/82 7/28/82
4 AAJ	Ventilation Alternatives	Ventilation Report	A	11/03/82

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>BS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLES DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
4 AAK	Trackwork Alternatives	Trackwork Report	A 3/15/83
4 AAM	Tunnel Arrangements	Tunnel Alternatives Report	A 2/10/83
4 AAN	Muck Disposal	Muck Disposal Report	Draft Final A 8/27/82
5 B	Evaluate Design Alternatives	Milestone 3 Final Report	A 2/16/83
6 AAA	Civil/Structural Design	Milestone 10 Draft Report Milestone 10 Report Memo on Utility Relocation Memo on Muck Disposal	A 2/07/83 8/15/83 8/15/83 A 6/31/83
		Design Plan Drawings,	A 7/26/83
6 AAB	Yards & Shops Facilities	Yard & Shop Plans	A 7/26/83
6 AAC	Trackwork System	Trackwork Design Report	A 6/23/83
6 AAH11	R.O.W. Requirements	R.O.W. Drawings	7/26/83
6 AAK	Cost Estimates	Milestone 11 Draft Milestone 11 Report	3/25/83 A 8/31/83
6 AAM	Schedules	Final Design and Construction Schedule	8/31/83
6 AAN	Specifications	Standard and Guide Specifications	A 7/26/83
6 AAP	Long Lead Procurement	Report with Recommendations on Long Lead Procurement	A 7/07/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>WBS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
16 AAQ	Ventilation Design	Ventilation Design Report (Directive Drawings and Guide Specifications included in respective Deliverables)	5/06/83
16 AAR	Contract Unit Description	Report Recommending Contract Packages	8/31/83
16 AAV	General Plans	General Plans	A 7/26/83
16 AAW	Directive & Standard Drawings	Directive Standard Drawings	A 7/26/83
	Design Report (non- WBS Task)	Design Report	8/31/83
11 DAF	Project Management	Progress Report	Monthly
12 F	Review Codes and Standards	<u>Review of Applicable Codes and Standards</u>	
		Passenger Vehicle: Review of Appli- cable Codes and Standards	A 3/19/82
		Train Control: Review of Applicable Codes and Standards	A 3/19/82
		Communications: Review of Applicable Codes and Standards	A 3/19/83
		Traction Power: Review of Applicable Codes and Standards	A 3/19/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>BS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLES DATES</u>	
				<u>PLANNED/ACTUAL</u>
		Auxiliary Power: Review of Applicable Codes and Standards		3/19/82
		Elev/Escal: Review of Applicable Codes and Standards		3/19/82
		Conceptual Fire/Life Safety Criteria	A	9/20/82
		Fire Service Study	A	5/31/83
		Fire and Life Safety Code Analysis	A	9/16/82
3 CAA	Passenger Vehicle Criteria	Review of Passenger Vehicle Criteria	A	3/23/82
3 CAB	Train Control Criteria	Review of Train Control Criteria	A	3/15/82
3 CAC	Communications Criteria	Review of Communications Criteria	A	3/16/82
3CAD11	Traction Power	Review of Traction Power Criteria	A	3/15/82
3CAD12	Auxiliary Power	Review of Auxiliary Power Criteria	A	3/18/82
3CAE12	Mech/Elec Criteria	Review of Mechanical/Electrical Criteria	A	6/07/82
3CAE13	Auxiliary Vehicle Criteria	Review of Auxiliary Vehicle Criteria	A	3/16/82
3CAE14	Elev/Escal Criteria	Review of Elev/Escal Criteria	A	3/12/82

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>BS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES</u>	
				<u>PLANNED/ACTUAL</u>
3 DAK	Fire Protection	Fire/Life Safety Criteria Methane Study	A	4/22/82
4 BAG	Evaluate Elev/Escal Alternatives	Elev/Escal Alternatives Analysis	A	9/15/82
			A	11/23/82
4 CAA	Evaluate Passenger Vehicle Alternatives	Passenger Vehicle Alternatives Analysis	A	6/01/82
			A	12/17/82
		<u>Passenger Vehicle</u>		
6CAA11	Passenger Vehicle Preliminary Specifications and Drawings	Criteria Update/Review		8/30/83
		System Description	A	4/25/83
		Equipment Description	A	5/24/83
		Preliminary Specifications Outline	A	2/23/83
		Drawing List	A	5/12/83
		Preliminary Cost Estimate	A	3/15/83
		Preliminary Specification	A	4/20/83
			A	5/23/83
		Directive Drawings	A	7/28/82

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>IS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
		Contract Drawings	A 4/20/83
		Reference Drawing Requirements	A 5/12/83
		Interface Definition	A 6/30/83
		Clearance Diagram Report	A 4/25/83 A 5/24/83
		Interface List	
		<u>Passenger Vehicle</u>	
CAAI1	Passenger Vehicle Preliminary Specifications and Drawings (cont.)	Calculations, Codes, and Standards	A 4/20/83
		Glossary	A 4/20/83
		Procurement & Construction Schedule	A 6/20/83
		<u>Train Control</u>	
CAB11	Train Control Preliminary Specifications and Drawings	System Description	A 1/14/83
		Equipment Description	A 5/26/83
		Drawing List	A 5/09/83 5/27/83
		Preliminary Cost Estimate	A 3/15/83
		Preliminary Specification Outline	A 5/23/83



METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>ISS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES</u> <u>PLANNED/ACTUAL</u>
		Preliminary Specification	8/30/83
		Directive Drawings	8/30/83
		Interface Definition	A 5/19/83
		Glossary	A 7/25/83
		Criteria Update/Review	A 2/07/83
		Procurement Construction Schedule	A 6/30/83
5CAB11	Train Control Preliminary Specifications and Drawings	Preliminary Cost Estimate	A 3/15/83
		Equipment List	A 8/30/83
		<u>Communications</u>	
5CAC11	Communications Preliminary Specifications and Drawings	System Description	A 2/16/83
		Equipment Description	A 6/07/83
		Preliminary Specifications Outline	A 2/18/83 A 4/29/83
		Preliminary Cost Estimate	A 3/15/83
		Drawing List	A 4/29/83 & A 6/03/83
		Preliminary Specification	A 5/24/83
		Directive Drawings	8/30/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>S NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
		Interface Definition	A 5/18/83
		Procurement & Construction Schedule	A 6/30/83
CAC11	Communications Preliminary Specifications and Drawings (cont.)	Equipment List	A 4/25/83
		Glossary	A 4/25/83 & 7/25/83
		Fire /Life Safety Review	A 4/28/83
		Criteria Update/Review	A 2/14/83
		<u>Traction Power</u>	
CAD11.11	Traction Power Preliminary Specifications and Drawings	System Study	8/30/83
		Utility Company Coordination	A 3/22/83
		System Protection Conceptual Design	A 4/29/83 A 5/31/83
		System Description	A 5/06/83 A 5/31/83
		Preliminary Specification Outline	A 6/09/83
		Drawing List	A 6/09/83
		Interface	A 6/09/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>DIS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
	Yark & Shop Traction Power Configuration		8/30/83
		Procurement & Construction Schedule	A 6/30/83 A 8/16/83
CAD1111	Traction Power Preliminary Specifications and Drawings (cont.)	Preliminary Estimate	A 3/15/83
		Preliminary Specification	A 7/29/83
		Preliminary Drawings	8/30/83
		Interface Definition	8/30/83
		Station Emergency Loads	A 5/09/83
		Equipment List	8/30/83
		Glossary	8/30/83
		<u>Auxiliary Power</u>	
CAD1211	Auxiliary Power Preliminary Specifications and Drawings	Utility Company Coordination	A 3/22/83
		System Study	A 7/06/83
		System Description	A 6/07/83
		Preliminary Cost Estimate	A 3/15/83
		Preliminary Drawings	8/30/83
		Interface Definition	8/30/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>BS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
		Station Emergency Loads Preliminary Specification	A 5/19/83 A 7/19/83
6CAD1211	Auxiliary Power Preliminary Specifications and Drawings (cont.)	Drawing List Preliminary Specification Outline Interface List Equipment List Procurement & Construction Schedule	A 6/09/83 A 6/09/83 A 6/09/83 8/30/83 A 6/30/83
6CAE1111	Fare Collection Preliminary Specifications and Drawings	Work Plan Preliminary Specification Outline Preliminary Specification Drawing List Directive Drawings Interface Definition Equipment List Glossary	A 7/06/83 A 6/22/83 8/30/83 8/30/83 8/30/83 8/30/83 8/30/83 8/30/83
6CAE1211	Mechanical/Electrical Preliminary Specifications and Drawings	System Description Equipment Description	A 7/14/83 8/30/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>BS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
		Preliminary Cost Estimate	A 3/15/83
		Preliminary Specification Outline	A 7/19/83
		Drawing List	A 5/17/83
		Preliminary Specification	A 8/12/83
		Work Plan	A 3/14/83
		Interface Outline	A 7/19/83
		Directive Drawings	8/30/83
		Criteria Update	8/30/83
		Equipment List	8/30/83
		Glossary	8/30/83
		Procurement & Construction Schedule	8/30/83
5CAE1311	Auxiliary Vehicles Preliminary Specifications and Drawings	Work Plan	A 6/06/83
		Preliminary Specification	A 6/07/83
		Criteria Update	8/30/83
		Procurement & Construction Schedule	8/30/83
		Interface Definition	A 8/09/83
		Drawings	A 6/07/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>IBS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
0CAF	Preliminary Cost Estimates	Preliminary Cost Estimates	A 3/15/83
6CAM	Standard Specifications	Common Technical Portions Outline	A 4/29/83
6CAR	Passenger Vehicle End Door Design Study and Vehicle Representatives	Work Plan End Door Study Vehicle Drawings Vehicle Model	A 5/06/83 8/09/83 8/30/83 8/30/83
6CAS	Frequency Allocation Plan	Frequency Allocation Plan	A 4/21/83 A 6/10/83
1DAF	PROJECT MANAGEMENT	MONTHLY REPORTS	MONTHLY
2F	(STA/HWA) Review Codes, Guidelines, and Regulations	Code Analysis and Recommendation	A 6/28/82
3BAA	(STA/HWA) Stations Design Criteria and Standards	Recommendations on Station Criteria	A 3/28/83
4BAA	(STA/HWA) Station Location Location and Studies	Station Locations Report 1st Group (12 Stations) Last Group (4 Stations)	A 10/27/82 1/13/83
4BAB	(STA/HWA) Station Layouts	Report on Diagrammatics on Alternatives 1st Group (12 Stations) Last Group (4 Stations)	A 10/27/82 A 1/13/83

METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>IBS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES PLANNED/ACTUAL</u>
4BAC	(STA/HWA) Right-of-Way Requirements	Preliminary Property Identification Report and ROW Maps	
		1st Group	A 10/20/82
		Last Group	A 1/11/83
4BAE	(STA/HWA) Cost Estimates	Order-of-Magnitude Cost Estimate Estimates for Station Alternatives	A 12/30/82
4BAG	(STA/HWA) Escalator and Elevator Alternatives	Report and Diagrams on Escalator/Elevator Alternatives (see 13BAB11 for Drawings)	A 10/31/82
4BAL	(STA/HWA) Lighting	Report on Alternative Lighting Concepts	A 2/03/83
6BAA	(STA/HWA) General Plans Architectural Drawings	General Plans - 1st Sta. Group	<u>STATION</u> Union 7/22/83
		General Plans - 2nd Sta. Group	Civic Ctr. 7/22/83
		General Plans - Last Sta. Group	5th /Hill 7/22/83
			7th/Hill 7/22/83
6BAB	(STA/HWA) General Plans Civil	General Civil Plans	Wilshire/ Alvarado 6/01/83
		1st Sta. Group	Wilshire/Vermont 6/01/83
			Wilshire/Normandie 5/27/83
		Last Sta. Group	Wilshire/Western 5/27/83
			Wilshire/Crenshaw 6/13/83
			Wilshire/LaBrea 6/13/83
6BAD	(STA/HWA) General Plans Mechanical	General Mechanical Plans	Wilshire/Fairfax 6/17/83
		1st Sta. Group	FairFax/Beverly 6/06/83
			Fairfax/Santa Monica 6/06/83

METRO RAIL PROJECT PRELIMINARY

ENGINEERING PROJECT DELIVERABLES

<u>JBS. NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES</u> <u>PLANNED/ACTUAL</u>
16BAD	(STA/HWA) General Plans (cont.)	General Mechanical Plans Last Station Group LaBrea/Sunset Hollywood Bowl Universal City	P 6/06/83 8/31/83 6/17/83
16BAE	(STA/HWA) General Plans Electrical	General Electrical Plans 1st Sta. Group North Hollywood Last Sta. Group	6/17/83
16BAJ	(STA/HWA) Elevator and Escalator Requirements	Elevator/Escalator Report Drawings (see 16BAA, 13BAB11)	
16BAM	(STA/HWA) Cost Estimates	Preliminary Cost Estimates for Milestone II (NIC) Final Preliminary Cost Estimate	5/25/83
16 BAP	(STA/HWA) Final Design & Construction Schedules	Final Design and Construction Schedules (Input Only)	
16BAR	(STA/HWA) Design Report	Design Reports for Each Station (Consolidated Report)	P 8/31/83
16BAS	(STA/HWA) Lighting	Lighting Design Report (Consolidated in Standard & Directive Dwgs.)	
13BAB11	(STA/HWA) Standard and Directive Drawings	Standard and Directive Drawing	A 5/17/83 A 7/22/83
16BAL	(STA/HWA) Milestone 10 Report	Milestone 10 Report	A 2/21/83 A 4/22/83 P 8/31/83



METRO RAIL PROJECT PRELIMINARY  
ENGINEERING PROJECT DELIVERABLES

<u>WBS NO.</u>	<u>DESCRIPTION</u>	<u>DELIVERABLE DESCRIPTION</u>	<u>DELIVERABLE DATES</u> <u>PLANNED/ACTUAL</u>
16BAN	(STA/HWA) Guide Specifications	Guide Specifications	A 5/24/83 P 8/15/83
16BAU	(STA/HWA) Final Design Statement of Work	Final Design Statement of Work: Stations	A 11/29/83
16BAW	(STA/HWA) Special Studies	Special Studies Relating To Station Preliminary Design (incorporated in 16 BAA except for exiting studies.)	A 6/17/83 P 8/31/83

C P E WORK PROGRAM



U.S. Department  
of Transportation  
**Urban Mass  
Transportation  
Administration**

REGION IX  
Arizona, California,  
Hawaii, Nevada, Guam

Two Embarcadero Center  
Suite 620  
San Francisco, California 94111

July 22, 1983

Mr. John Dyer  
General Manager  
SCRTD  
425 South Main Street  
Los Angeles, California 90013

Subject: CA-03-0130 Amendment No. 4  
Waiver on Special Conditions

Dear Mr. Dyer:

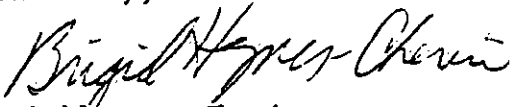
We have reviewed your letters of July 20 and 21, together with the enclosed Continuing Preliminary Engineering Work Program document.

Based on our review, we concur that Special Condition No. 5 in our letter of June 10, 1983, relating to a mutually acceptable statement of work, has been satisfied.

Therefore, you may proceed with Continuing Preliminary Engineering activities. As we have pointed out before, contract authorizations under this phase cannot exceed the level of design specified in the grant application and further defined in the above Work Program. Entering into a scope of work for 100% design at this point would constitute a cost incurred prior to grant award and would be ineligible for UMIA participation.

If I can be of further assistance to you, please let me know.

Sincerely,

  
Brigid Hynes-Cherin  
Regional Administrator

K:K

JUL 21 1983

WBS: 11DAA2211

Ms. Brigid Hynes-Cherin  
Regional Director  
Urban Mass Transportation Administration  
Region IX  
Two Embarcadero Center  
Suite 620  
San Francisco, CA. 94111

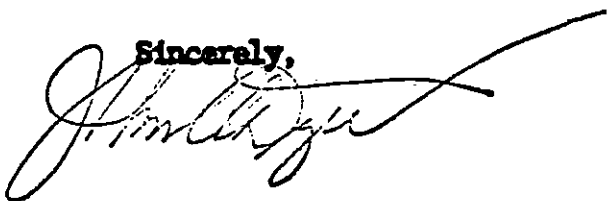
SUBJECT: Continuing Preliminary Engineering Work Program

Dear Ms. Hynes-Cherin:

Enclosed for your approval is the revised Continuing Preliminary Engineering Work Program for the Metro Rail Project. This revised Work Program contains all corrections and additions as discussed with Mr. Grainger on July 21, 1983.

We understand that this information will enable you to waive special condition No. 5 on CA-03-0130 Amendment No. 4, contained in your letter of June 10, 1983.

Sincerely,



John A. Dyer

Enclosure

cc: G. Grainger  
JEC:mo  
bcc: J. E. Crawley  
G. Kagawa(Grants)

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT  
CONTINUING PRELIMINARY ENGINEERING WORK PROGRAM  
FOR  
METRO RAIL PROJECT

JULY 21, 1983

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CONTINUING PRELIMINARY ENGINEERING  
ENGINEERING STATEMENT OF WORK  
JULY, 1983

INTRODUCTION AND PURPOSE

This document describes the general tasks that will be performed during the Continuing Preliminary Engineering (CPE) phase of the Southern California Rapid Transit District Metro Rail Project.

The purpose of Continuing Preliminary Engineering is to enable the District to design the Metro Rail Project to properly interface with ongoing private sector development. This will provide for complete coordination between public and private sector projects which will reduce capital, operating and maintenance cost and will enable the District to benefit from joint development investments.

DEFINITION OF CONTINUING PRELIMINARY ENGINEERING

Continuing Preliminary Engineering (CPE) for the Project is the further development of engineering and architectural designs of specific facilities and systems, and packaging of plans and specifications for discrete units of construction required to refine cost estimates and interface designs with adjacent development.

CPE will take the Project from Preliminary Engineering stage to about the 50-85% overall design level as delineated herein. CPE will produce a detailed design, a refined cost estimate and a completed in place project management plan which will carry the project to completion through the construction phase.

Based on the contract packages developed during Preliminary Engineering, the Continuing Preliminary Engineering design units have been organized in two phases, as follows, for stations and line sections:

Phase I

- A-100: Central yard and shops, including yard lead tracks from Union Station.
- A-135: Union Station
- A-140: Tunnel segment between Union Station and 7th/Flower Station, including Civic Center and 5th/Hill Stations.
- A-165: 7th/Flower Station

A-170: Tunnel segment from 7th/Flower to Wilshire/Vermont Station, including Wilshire/Alvarado Station.

A-195: Wilshire/Vermont Station.

The work covered by these design units will advance the design and engineering of the station and line segments to approximately 85 percent level of completion.

## Phase II

A-220: Tunnel segment between Wilshire/Vermont and Wilshire/La Brea Stations, including Wilshire/Normandie and Wilshire/Western Stations.

A-245: Wilshire/La Brea Station and pocket track.

A-250: Tunnel segment from Wilshire/La Brea to Fairfax/Beverly, including Wilshire/Fairfax Station.

A-275: Fairfax/Beverly Station.

A-310: Tunnel segment from Fairfax/Beverly to Hollywood/Cahuenga including Fairfax/Santa Monica and La Brea/Sunset Stations.

A-350: Hollywood/Cahuenga Station and pocket track.

A-410: Tunnel segment from Hollywood/Cahuenga to Universal City Station.

A-425: Universal City Station.

A-430: Tunnel segment between Universal City Station and North Hollywood Station.

A-445: North Hollywood Station and end line storage track.

The work covered by these design units will advance the design and engineering of the station and line segments to approximately 50 percent level of completion.

In addition to the designs of stations, line sections and central maintenance facilities, the designs of the operational systems will be advanced to comparable levels of completion. Included in the operational systems are passenger vehicles, auxiliary vehicles, traction power, auxiliary power, train control, communications, fare collection, vehicle maintenance, fire protection, central supervisory and systemwide electro-mechanical systems. The system design will be taken to levels that will produce prefinal deliverables suitable for coordinated use by the other designers and for industry review.



It will be essential to verify the operational, performance and dimensional compatibility of the operational systems that will be furnished and installed throughout the stations and facilities. The verification process will be carried into the essential portions of an industry review process, wherein prefinal documents at the 50-85% level of completion will be submitted for review and comments by qualified contractors.

Prefinal deliverables will include draft versions of all the documents that will be needed for the District to contract for procurement, delivery, installation and acceptance of the operational systems. The prefinal documents will include draft specifications, prefinal contract and reference drawings, and construction schedules. The draft specifications will include, in addition to technical requirements, terms, conditions and system assurance requirements, including reliability, maintainability and system safety. Following are descriptions of tasks in the Continuing Preliminary Engineering Program:

#### CPE PROEDURE

As the agency of the U. S. Department of Transportation responsible for issuing and managing federal grants for mass transportation, the Urban Mass Transportation Administration (UMTA) is charged with monitoring technical progress on all phases of the Metro Rail Project. In addition to reviewing applications for funding, UMTA is responsible for overseeing financial, contract and procurement compliance by the District. The overall project management and monitoring function is conducted by the UMTA Region IX office in San Francisco, which has delegated that task to the region's Chief Area Engineer located in Los Angeles.

During the Continuing Preliminary Engineering Program, SCRTD will periodically submit material to UMTA for their review and comments. Detailed reviews will be held each quarter, or at such times as established by either SCRTD or UMTA, and will include team reviews, as necessary, to ensure UMTA's timely concurrence and to ensure that UMTA's oversight responsibilities are met. This may be carried out through the technical advisory memorandum process or other suitable procedures. The submittal of pertinent material at appropriate times is the responsibility of SCRTD.

#### SCOPE OF CONTINUING PRELIMINARY ENGINEERING

The Continuing Preliminary Engineering Program will further develop the engineering design of all system elements. The work will be performed by the District, by a General Consultant under contract to the District or by subcontracts to the General Consultant. The work will be based directly upon the data, products and concepts

established in Preliminary Engineering. The following is the description of the work to be performed during the Continuing Preliminary Engineering Program:

A. Project Management

Description

A project management plan will be completed and implemented which defines the objectives of the project, the methods and resources proposed to be used in meeting these objectives, the overall management strategy, the responsibilities, authorities, measures of performance for all parties involved in the project and established procedures for resolution of problems at all stages of the Project. The Plan will apply to both the design and construction phases. The following tentative outline will be used in developing the project management plan; the final product may vary somewhat from this outline:

1. Introduction
2. Project Definition and Objectives
3. Project Organization and Administration
4. Work Program and Schedule
5. Project Budget and Schedule
6. Project Control System
7. Design Management and Control Plan
8. Construction Management Plan and Procedures
9. Reports/Documents

The Construction Management Plan will include a detailed description of the level of staffing required for managing the Project under two alternative approaches:

- a. In-House Construction Management Staff.
- b. Consultant Construction Management Staff.

Details to ensure a high quality assurance program during CPE will be indicated; costs for both approaches will also be included.

## Products

Final Project Management Plans for both design and construction.

### B. Architectural Design

#### Description

The District will carry the architectural design of all stations, to the 50-85% level of completion, as delineated in the Phase I and Phase II contracts. Included in the work to be prepared by Consultants are designs, drawings, specifications, renderings and models, as necessary, indicating station architectural design features. All station elements will be developed to the level indicated above under the definition of CPE.

- (1) The plans shall include development of designs for those station elements which will be similar for purposes of economy, ease of maintenance, and necessary to retain a balanced system. Station site plans will be individually tailored to the context of the immediate contiguous environment. Architectural plans shall include station configuration drawings and details showing all sitework, concourse and platform layouts, and auxiliary facilities.
- (2) Architectural standard drawings will be prepared for the systemwide elements of continuity for lighting fixtures, maintenance equipment, gates, barriers, surveillance, communications, and related graphics, stairs, escalators, elevators, hardware and number, type and location of fare collection equipment. The elements of variable design include such elements as site design, materials selection, locations for systemwide light fixtures and artwork.
- (3) Special consideration shall be given in the design process such that all facilities used by the handicapped patrons and the disadvantaged shall incorporate design features which fulfill the requirements of the criteria and the American National Standards Institute.
- (4) Criteria shall be developed for the architectural design of yard and shop facilities, and the Central Control Center. Design of yard and shops and the Central Control Center shall include drawings, renderings, models, criteria, standards, plans and specifications.

## Products

Architectural plans, specifications, renderings, models and cost estimates to the 50-85% level of completion.

### C. Structural Design

Element of design shall include development of details for foundations, tunnels, piers, girders and other structural members, including cross-sections, fabrication and installation drawings for cut-and-fill sections, subway sections and at-grade facilities, under varying conditions. These will carry the overall structural design to 50-85% level of completion, as delineated in the Phase I and Phase II contracts. Structural elements of design would also be applicable to and required for tunnel liners and cut-and-cover sections, underpinning and support of structures for utilities. In addition, the District will perform the following:

#### (1) Restoration Design

Prepare the design of the restoration of all facilities to be repaired, restored or rebuilt following construction. Prepare contract drawings for restoration of such facilities.

#### (2) Underpinning

For underpinning methods to be used, prepare a report indicating recommendations for evaluating trouble locations based on detailed design. Determine risks and the need to underpin properties and structures potentially affected by construction. The report shall identify the categories and locations of said structure and the cost of any alternatives.

## Products

Detailed structural design, drawings, specifications and estimates at the 50-85% level of completion.

### D. Civil Design

The District will, through subcontracts, cause to perform civil engineering designs to the 50-85% level of completion, as delineated in Phase I and Phase II contracts. Environmental management considerations will be included. The work will include, but not be limited to, the following:

#### (1) Alignment and Grade

Determine final horizontal and vertical alignment. Alignment shall be mathematized utilizing computer programs.

(2) Utilities Relocation Design

Provide where necessary composite utility drawings, using supplemental drawings as provided by other agencies for facility areas with requirements for utility relocations.

Prepare contract drawings, specifications and cost estimates delineating the existing utilities. These drawings shall include:

- (a) Composite plans
- (b) Cross sections
- (c) Large-scale detail of critical locations

Prepare solutions for relocation, abandonments, temporary support or other disposition of affected utilities. Prepare the design and contract documents for permanent relocation of utilities affected by construction. Design shall be based on a replacement in kind. Design shall also include the method of accomodating the utilities during construction and the location of essential service connections.

Prepare for betterment of relocated or revised facilities:

- (a) A written description of each betterment
- (b) Drawings delineating each betterment
- (c) A cost estimate which identifies the cost differential between the designed facility and a "replacement in kind" facility

Betterments shall be defined as existing when the replacement facility provides an increase in capacity beyond that agreed to in the Master Agreements. This may be a more efficient system, an extension of service, or a more durable facility; or as otherwise defined in the Master Agreement or Implementing Agreement consummated with the utility owner by the District.

Prepare contract documents for relocated or revised facilities.

Designate in the contract documents the utility relocation work items to be performed by others.

(3) Street and Highway Relocation Design

Prepare the design, drawings, specifications and cost estimates of temporary and permanent relocation of streets and highways affected by construction. Design shall be based on agreements designated in the Master

### Products

Civil engineering designs, drawings, specifications and cost estimates at the 50-85% level of completion, as delineated in the Phase I and Phase II contracts.

#### E. Mechanical Design

The District will develop designs of all equipment related to electro-mechanical devices, transit vehicles, yard and maintenance equipment, ventilation, emergency exhaust system, and climate control concepts, including cooling and forced air ventilation. Appropriate elements of the fire protection system and plumbing are to be included in this group of design requirements. These designs will be developed to 50-85% level of completion.

Layout and final space requirements of mechanical service rooms and facilities at passenger terminals and electrical substations are to be included in this design. Designs will be provided for air pumping facilities, including fan and vent shafts and other mechanical elements of the system.

### Products

Mechanical engineering designs, drawings, specifications and cost estimates at the 50-85% level of completion.

#### F. Electrical Design

Criteria and designs will be developed for the traction power systems and subsystems for train propulsion, and general operating power for the other system facilities. These criteria shall describe the power sources, required voltages, current characteristics, general characteristics of substations and standards for equipment quality, performance and reliability. Specifications for automatic operation for standby and emergency requirements shall be established.

This design will include all wiring, cable, terminals, raceways, conduit, panels, relay rooms and other ancillary equipment details and lockers required for the final design.

### Products

Electrical engineering designs, drawings, specifications and cost estimates at the 85% level of completion.

#### G. Train Control and Communications

Criteria and designs will be developed to the 85% level of completion to provide the system with train control and communications systems and subsystem, based on thorough design analyses. Systems will include appropriate indicators designed to monitor pre-determined areas for security, fire, power failures,

equipment failure and unscheduled intrusion of foreign objects into controlled equipment areas. Train control design will include a "centralized train control" display panel will indicate block occupancy, train movements, switch positions and wayside station operation status. Communications design will include a direct communications link between controlled train cab and the control center as well as each wayside station. Daily operational functions shall be recorded to provide an operational history.

Communications criteria will be designed to the 85% level of completion and will be developed to provide for communicating with the vehicle control system under normal and emergency conditions. An independent power source for emergency use shall be specified.

Designs will include provisions for public address system for passenger information and external communication for voice contact between crew and control center and maintenance personnel will be required.

Criteria will be developed to provide the base for design technology for Train Operations. The design of the Train Operations system will include, at a minimum, train dynamics of acceleration and braking, signaling and interlocks, and traffic control. Traffic control will include a simulation via a mimic board located in central control to monitor transfers, turnbacks, routes overall, schedules (headways and dwell times) and performance levels.

An alternatives and "trade-off" analysis of available equipment versus equipment which requires a new design and manufacture will be conducted. This review shall precede all final equipment selection.

### Products

Train control and communications equipment designs, drawings, specifications and cost estimates at the 85% level of completion.

### H. Landscaping Design

Detailed landscape design will be prepared in accordance with approved criteria and standards, which will result in an aesthetically pleasing product performing functional requirements for visual buffering and noise abatement. Landscaping standards shall be adaptable to the various system conditions, and shall be in keeping with the local climatic conditions, as well as reasonable maintenance requirements. The maintenance requirements shall be set forth, including water requirements and number of landscape maintenance personnel required.

## Products

Landscaping designs, drawings, specifications and cost estimates at the 50-85% level of completion, as delineated in the Phase I and Phase II contracts.

### I. Surveying and Aerial Mapping

The District, through subcontracts, will obtain necessary field survey services including, but not be limited to, the following activities:

- o Verify the network of horizontal and vertical control points, which will serve as a basis for all design and construction surveys to be performed throughout the project and to furnish "mile" or "kilometer" markers for use during operation of the system.
- o Establishing additional ground control points required in connection with the controlled aerial photo surveys of the system.
- o Obtaining and providing all necessary project facilities design surveys.
- o Obtaining complete ground topographical surveys of the project area parcels to be acquired for the project, including information on structures and other improvements, etc., within those parcels. This includes geodetic control, cadastral, route location and design and construction surveys.
- o Checking the horizontal and vertical dimensions and positioning of installed facilities.

This work is in addition to survey activities required by construction contractors.

## Products

Completed ground, and ground control surveys and topographic surveys

### J. Subsurface Investigations

The District, through subcontracts, will (i) complete the soils boring program for the Project to enable the design to go to completion, and (ii) prepare subsurface investigation and foundation design reports suitable for final design and construction. This task includes obtaining specific soils engineering information required for individual project sections and facilities.



## Products

Final Project borings, final Geotechnical Investigation Report and foundation design reports.

Final reports on review and evaluations, including recommendations.

### K. Right-of-Way and Property Acquisition

The acquisition of right-of-way is one of the major components of the development and construction of the Metro Rail Project. This process will represent a sizeable portion of the cost of the system. Therefore, it is imperative that comprehensive policies and procedures are developed to assure the timely availability of real estate for construction activities.

The Metro Rail Project will require the acquisition of a variety of real estate interests including full fee takes, partial takes, and easements of various types. Since a majority of the system will be in subway, a large portion of the acquisitions will be for subsurface easement rights. Other easements may include temporary construction easements, aerial easements, utility easements, drainage easements and the like.

A very preliminary review of the real estate requirements of the various alternatives reveal that as many as 500 to 600 parcels may be impacted by the system. The relocations required could vary from 100 to 200 residential and commercial displacements depending on the alignment and construction techniques selected.

Based on the requirements of the Federal Uniform Relocation Assistance and Land Acquisition Policies Act of 1970 and applicable State laws, procedures will be developed for appraisals and acquisition of real property and relocation of displaced persons and businesses; procedures will also be developed for property management by the District. The procedures developed will be utilized in right-of-way acquisition based on defining and certifying right-of-way needs and types of acquisition required for the project. Right-of-way drawings will be complete including property descriptions.

## Products

Certified right-of-way needs, Relocation Plan, Property Management Plan, right-of-way drawings including property descriptions.

### L. Cost Estimates

The District will coordinate or consolidate all cost estimates prepared by the General Consultant or subconsultants for each construction procurement and installation contract. The preparation of estimates, where applicable will be of "take-off" type, including person hours by labor category, equipment cost,

overhead and profit. Where lump sum items are used, a basis for determination will be used. The estimates will show the procedures and state the assumptions used. The estimate back up data will be based on the latest available information pertaining to the labor, equipment and material costs in the District area, and will include the basis for cost escalation. The estimates will include the construction contractor's overhead, profit and contingency rate. The bid items shall be on a balanced basis and no adjustment shall be made for early money or other factors that may be used in unbalancing bid items. All cost estimates will be developed to the 50-85% level of completion, as delineated in the Phase I and Phase II contracts.

#### M. Joint Development

Joint development and value capture involves the incorporation of real estate projects, including collateral areas, into the public transit stations which serve as the points of access to the system. At each station the District will:

1. Develop a detailed survey of existing conditions and site plan that document each build-up condition, environmental problem, blighting condition, conflicting land use and status of current land use. This will also include information on property ownership, recent sales, transactions and new development adjacent to each station area.
2. Identify parcels of land that may be developed or redeveloped at each station area.
3. Develop a joint development study design for each station which will include the following:
  - a. Market potential analysis for various uses commensurate with existing zoning/uses.
  - b. Alternative development site packaging and disposition strategies which reflect projected market conditions.
  - c. Cost/benefit analysis, particularly as they impact transit ridership and dedicated revenues for transit capital and operating costs.
  - d. Design parameters specifying use mix, intensities, lot coverage, floor area ratios, parking requirements, bonus incentives for amenity packages, and transit linkages.
  - e. Land disposition and Parcel Packaging Strategies.
  - f. Financial Plan/Packaging on a parcel specific basis.

- g. Development Program/Staging.
- h. Prospectus for proposed Joint Development.
- i. Evaluation of Proposals for Joint Development.

The following elements will be examined in relation to joint development potential for the project:

(1) Establish Private/Public coventure policy

The District will prepare a private/public coventure financial program that will demonstrate the requisite level of regional and private sector support for the project. Of parallel importance is the need to define the necessary infrastructure investment, land use policy, institutional and legislative decision/actions that will ensure successful implementation of the Metro Rail private/public coventure programs.

(2) Establish Procedural Base

The District will examine the joint development value capture implementation procedure alternatives and recommend either an omnibus solution or an effective short-term approach that can be modified subsequent to future legislative actions.

(3) Establish Public/Private Coventure Program

The District will formalize the policy and procedural aspect of the public/private coventure program. In addition, specific revenue estimates and implementation commitments to be documented in a single document suitable for submittal with a discretionary Section 3 grant application.

(4) Prepare Metro Rail Corridor/Station Development Potential Forecasts

The District will develop Metro Rail corridor/station area development forecasts that can be utilized for development policy analysis as well as the requisite station area masterplanning.

(5) Establish Joint Development Design Parameters

The District will establish the key physical/site plan "rules" for the joint development purposes.

(6) Establish Development Envelope

The District will establish the development envelope for each Metro Rail Station area. The total space and

composition of future short and long-term development to be allowed within each Metro Rail Station area must be defined in the context of a "development envelope" that will be employed in the transit station area master-planning process. If the corridor/station area development forecasts indicate a future market demand in excess of the maximum statutory allowance, consideration will be given to the merits of special exceptions for the few stations where this may occur; at the same time, limited growth stations will be identified and holding capacity guidelines should be agreed to prior to establishing the individual station area development envelope.

(7) Station Area Masterplanning

The District will prepare individual station area master plans for each station. The five stations located in the Los Angeles CBD will receive the highest priority. The station area master plan documents will be prepared at a level of detail equivalent to a redevelopment plan. An equal emphasis will be given to transportation facility/vehicle and pedestrian circulation issues, infrastructure and pedestrian amenities, and land use development. The rules for site plan approval and ombudsman support will also be defined. The citizen and private sector involvement in the Metro Rail Station masterplanning process will be documented and acknowledged.

(8) Citizen Participation

A citizen participation program will be designed to utilize existing mechanisms and established groups/committees of other principal public agencies. The citizen involvement program will be organized and structured to allow for a full discussion of issues and technical presentation of key aspects of infrastructures needs, parking and circulation plans. Private sector interests will also be represented in these key work sessions.

(9) Joint Development Project Packaging

The District will consummate the actual implementation of the joint development/value capture projects in direct relation to the Metro Rail System. There are three key elements to the joint development packaging process. The first elements involves monitoring negotiations with ongoing projects to ensure coordination with the Metro Rail Project and compliance with the adopted public/private coventure program. The second element

relates to site specific project packaging. The third element encompasses carrying out the final development review and approval with provision for the full ombudsman support.

(10) Implementation

During the station masterplanning and joint development/value capture packaging process, a specialized negotiation strategy analysis, leverage funding grant preparation support and project staff/private sector seminar programs will be developed. In order to resolve certain issues such as parking requirements or pedestrian circulation, specialized design or impact studies will be undertaken. Legal contract drafting and legislative monitoring, evaluation and formulation efforts will also be an integral part of the implementation program.

Products

1. Enabling legislation
2. Identification of development opportunities
3. Joint development program for each station
4. Citizen participation program

N. Program Control

The District will establish the necessary financial and management controls for administering and overseeing the General Consultant and subconsultant contracts. Specifically, the District retains responsibility for the following control functions:

- o Policy direction and technical oversight.
- o Subconsultant contract approval, including amendments.
- o Master project control system for cost and schedule adherence.
- o Contract funding authorization.
- o Financial and performance audits.

An automated control system will be used to monitor current status and forecast progress in meeting integrated cost and schedule performance objectives.

Schedule control will be exercised by developing a Project Master Schedule and detailed task schedules for each of the major elements in the master schedule. The project master schedule will

be based on CPM networks for the major elements for both design and construction phases. All CPE scope of services will be identified in the detailed schedules.

Budget control will be exercised by summary and detailed budgets. Budgets will be prepared for increments of scheduled work to establish the baseline for contract performance measurement.

Reporting of the status of CPE will be done by the preparation of monthly Progress Reports. All schedule and budget data will be reviewed to identify deviations from established plans. Program Control will analyze the deviations and isolate the causes and will report possible corrective actions.

### Products

1. Master and detailed schedules
  2. Summary and detailed budgets
  3. Variance Analysis Reports
  4. Progress Reports
0. Construction Management

The District will perform Construction Management services during Continuing Preliminary Engineering phase of the project provide the following:

- o Evaluate criteria and standards for cost-effectiveness and constructibility and recommend cost-saving items.
- o Review standard and directive drawings and provide an evaluation for cost-effectiveness and constructibility.
- o Review the preliminary designs and drawings prepared during Preliminary Engineering and provide an evaluation for cost-effectiveness and constructibility and recommend cost-saving designs.
- o Evaluate preliminary cost estimates prepared during Preliminary Engineering and provide an evaluation.
- o When requested by the District, provide comparative cost studies of alternate materials and construction methods.
- o Review contract packaging, long lead procurements and schedules prepared during Preliminary Engineering and recommend modifications, if necessary.
- o Review Continuing Preliminary Engineering designs, drawings and specifications as they are being developed by the section designers for cost-effectiveness and constructibility.

- o Evaluate alternative automated projected management control systems and recommend one most suitable for use during the construction phase of the Project.
- o Develop manning requirements for construction management during the construction phase, both by in-house as well as consultant personnel. Included will be the in-house staff requirements to manage the Consultant effort.
- o Develop Quality Assurance Program and training procedures for the construction program.

Products

Management Plan, manning requirements, cost estimates, Quality Assurance Plan, Training Manual and guidelines.