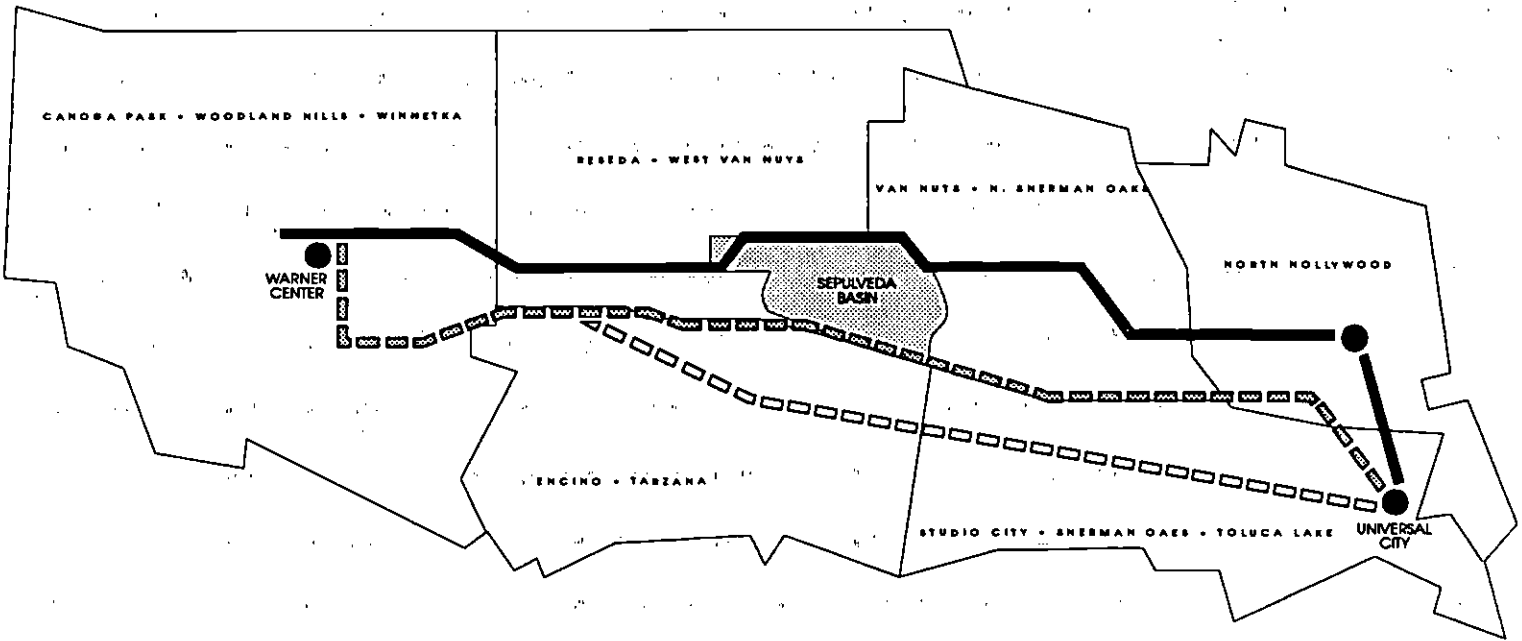


# San Fernando Valley East-West Rail Transit Project



## SUPPLEMENTAL EVALUATION

VENTURA BOULEVARD AND VENTURA FREEWAY ALTERNATIVES



PREPARED FOR THE:

LOS ANGELES COUNTY TRANSPORTATION COMMISSION



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APRIL 1991

**SUPPLEMENTAL EVALUATION  
for the  
SAN FERNANDO VALLEY  
EAST-WEST RAIL TRANSIT PROJECT**

◦  
**SP Burbank Branch Metro Rail Extension (EIR Alternative #3a)  
Ventura Boulevard Metro Rail Extension  
Ventura Freeway Advanced Aerial Technology (Monorail)**

◦  
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## **CHAPTER 1.0 EXECUTIVE SUMMARY**

### **1.1 PURPOSE OF THE SUPPLEMENTAL STUDY**

On February 28, 1990 the Los Angeles County Transportation Commission (LACTC) certified the Final Environmental Impact Report for the San Fernando Valley East-West Rail Transit Project and directed that findings be prepared for one of the ten alternatives studied in the EIR, the Southern Pacific (SP) Burbank Branch Metro Rail Alternative #3a. On March 28, 1990 the Commission adopted a Statement of Findings and a Mitigation Monitoring Program for the SP Burbank Branch, thus completing CEQA environmental clearance of the project.

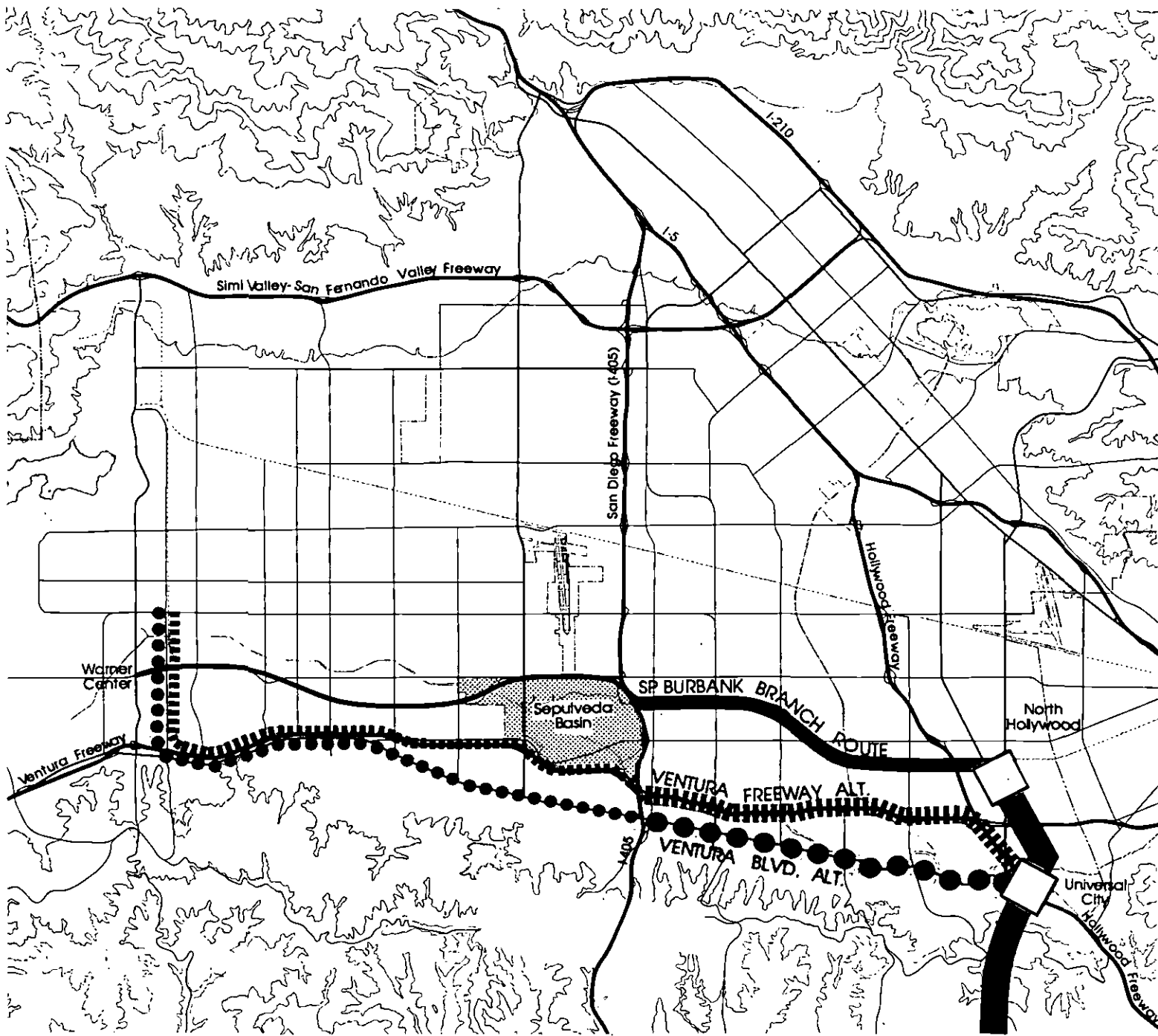
At the same time that the Commission selected the SP Burbank Branch as the preferred alignment from among those studied in the EIR, the Commission directed staff and consultants to prepare a supplemental feasibility study of a Metro Rail Extension along Ventura Boulevard and an advanced aerial technology (monorail) along the Ventura Freeway. The purpose of the supplemental study was to determine if either of these additional routes offered advantages to the adopted SP Burbank Branch route, and whether either or both of them should be carried forward for full environmental and engineering study.

### **1.2 PROJECT ALTERNATIVES**

In order to provide a comparison between the adopted route and the supplemental alignments under study in this report, assumptions contained in the Environmental Impact Report for the SP Burbank Branch were carried forward into the supplemental study. Further, assumptions contained in the previous Ventura Freeway alignment alternatives (EIR Alternatives #4 and #5) were carried forward. Alignment alternatives are illustrated in Figure 1. Key assumptions for each of the alternatives included the following:

◦SP Burbank Branch- This route is 14.0 miles long and extends from the North Hollywood Metro Rail Station to Warner Center via the SP Burbank Branch right-of-way. This right-of-way has been acquired by LACTC for a price of \$115 million. There are a total of 11 stations along this route (4 above-ground stations and 7 subway stations). A total of 4,845 parking spaces are provided in 7 park and ride lots located adjacent to rail transit stations. These station configurations and alignments are consistent with those contained in the FEIR.

◦Ventura Boulevard Metro Rail Extension- This route is 15.7 miles long and extends from the Universal City Metro Rail Station to Warner Center via Ventura Boulevard and Canoga Avenue. This alignment is conceived to be predominantly subway



NOTE: Phased length route options extend from Universal City/North Hollywood to the San Diego Freeway. Full length route options extend from Universal City/North Hollywood to Warner Center.

**KEY**

- SP BURBANK BRANCH
  - VENTURA FREEWAY
  - VENTURA BOULEVARD
- Phased length**
- Full length**



beneath Ventura Boulevard with aerial segments at the west end of the route where Ventura Boulevard runs along the southside of the Ventura Freeway and within the median of Canoga Avenue in Warner Center. There would be a total of 14 stations along this route (5 above-ground stations and 9 subway stations). A total of 4,900 parking spaces are provide in park and ride lots adjacent to rail transit stations.

◦Ventura Freeway Advanced Aerial (Monorail) Technology- This route is 16.2 miles long and extends from the Universal City Metro Rail Station to Warner Center via the east side of the Hollywood Freeway, the median of the Ventura Freeway and the median of Canoga Avenue. This alignment is conceived as a refinement of the EIR Alternatives #4 and #5, in which the rail transit line was located along the sideslope of the freeway. Because of significant displacement and traffic impacts identified in the EIR for such an alignment, a median of freeway alignment has been utilized in this supplemental study, with key constraints, under Caltrans policy, being that the potential rail transit alignment cannot decrease the capacity of the freeway nor decrease the number of travel lanes during rush hour periods while the project is being constructed. There would be a total of 15 stations along this route (14 above-ground stations and 1 subway station). A total of 4,950 parking spaces are provided in park and ride lots adjacent to rail transit stations.

All of the above alternatives include a railyard. The purpose of the yard is to provide for maintenance and/or storage of transit cars. For full length alternatives the yard is located at the northeast corner of Canoga Avenue and Vanowen Street. For Phased Length Options, extending between Universal City/North Hollywood and the San Diego Freeway, the yard is located between the San Diego Freeway and Sepulveda Boulevard for the Ventura Freeway Advanced Aerial (Monorail) Alternative. For the SP Burbank Branch and Ventura Boulevard Metro Rail Extension alternatives, no rail yard is assumed because service can be provided out of the Central Maintenance Yard in Downtown Los Angeles and simple tail tracks can be used in the San Fernando Valley for overnight storage of vehicles.

Technologies studied include:

◦Metro Rail: a segment of this system is currently being built in Downtown Los Angeles as a part of the Metro Red Line that will eventually link Union Station with Universal City and North Hollywood. The system is referred to generically as "heavy rail". Power is supplied via a third rail. The system can be operated either manually or by computer. The system operates on exclusive rights-of-way.

◦Advanced Aerial Technologies (Monorail): This technology has not yet seen widespread application in an American city. Monorail technologies have evolved considerably in recent years and presently are used for over 40 miles of high capacity route service in Japan, as well as in theme parks such as Disneyland and Disneyworld in the United States. For the purpose of conceptual design and costing, the TGI Mark VI Medium-Capacity Monorail System was used. Should the Ventura Freeway alternative be carried forward for further study, it is expected that a range of advanced aerial

technologies would be considered, including Magnetic-Levitation (Maglev) and other types of aerial technologies having the general operating characteristics of monorail.

### 1.3 SUMMARY OF FINDINGS

Table 1 presents a matrix comparison of alternatives. Key comparative factors include the following:

◦Cost- Year 1994 construction cost estimates were developed for the SP Burbank Branch as a part of the FEIR for the project which was completed in February 1990. In order to develop cost estimates for the Ventura Freeway and Ventura Boulevard alternatives that would be compatible with the SP Burbank Branch cost estimates, conceptual engineering drawings at a scale of 1 inch=100 feet were developed for both of the supplemental routes, from which compatible cost estimates could be developed. Key engineering differences between the alternatives that resulted in cost differences include the following:

SP Burbank Branch- Basic cost estimates for this alignment did not change from the FEIR except for the negotiated purchase of the SP Burbank Branch right-of-way by LACTC during the past year at a price of \$115 million. After including additional right-of-way costs for relocation of existing businesses and some limited private property takings that would be required, a total right-of-way cost of \$159 million has been used. This is a reduction from the \$250 million allowed for right-of-way acquisition in the FEIR. The revised 1994 construction costs for this alignment are estimated at \$2.96 billion for the full-length and \$1.29 billion for the phased-length option.

Ventura Boulevard Metro Rail Extension- This alternative is more costly than the SP Burbank Branch due to a number of factors. The route is 1.7 miles longer than the SP Burbank Branch and it requires 3 additional stations to provide a comparable level of service. The Ventura Boulevard route would also contain 2.8 miles more subway construction than the SP Burbank Branch. The 1994 construction costs for this alignment are estimated at 3.91 billion for the full-length and \$1.94 billion for the phased-length option.

Ventura Freeway Advanced Aerial (Monorail)- This alternative is less costly than the SP Burbank Branch due principally to its aerial configuration above the freeway, instead of subway. The Ventura Freeway route has only 0.4 miles of subway construction, compared to 9.8 miles on the SP Burbank Branch. The 1994 construction costs for this alignment are estimated at \$2.17 billion for the full-length and \$0.99 billion for the phased-length option.

◦**Ridership**- Year 2010 ridership projections were developed for the project by the Southern California Association of Governments (SCAG). EIR ridership projections were held constant for the SP Burbank Branch and the Ventura Freeway alternatives because these routes did not change from the EIR alternatives. A supplemental run for the Ventura Boulevard Metro Rail Extension was necessary as this route had not existed during previous patronage modelling runs.

Ridership modelling disclosed that the SP Burbank Branch had the highest projected ridership at 57,800 average weekday trips. The Ventura Freeway route had a projected ridership of 49,200 average weekday trips. The Ventura Boulevard Metro Rail Extension had a projected ridership of 48,600 average daily trips.

◦**Constructability**- Deep-bore and cut-and-cover subway construction techniques that are anticipated for the SP Burbank Branch Route are very time consuming in comparison to above-ground systems. A construction period of three to four years is projected for both the SP Burbank Branch and the Ventura Boulevard Metro Rail Extension alternatives.

The Ventura Freeway Advanced Aerial Technology (monorail) would be buildable in less time than the other alternatives, but because it is located in the median of a very heavily travelled freeway, significant construction difficulties exist. Caltrans has mandated that no capacity be lost from the freeway and that no travel lanes be closed during rush hours. In order to create a construction zone in the median of the freeway that is large enough to work, it will be necessary to work only at night, between approximately 9:00 pm and 5:00 am. Construction equipment and barriers will need to be moved in and out of the median area every night, and construction of about 36 hours per week, including weekends, can be achieved using this method. Furthermore, due to a median width in the freeway of only 6-8 feet, support columns for the aerial guideway have been reduced to steel plate columns approximately 28"-34" square for monorail technology, with integrated crash barriers. Clearances from travel lanes on the freeway to these barriers will be less than one foot in some of the most restricted locations on the inside of the freeway. Such restrictive construction practices, while difficult to implement, have been reviewed by Caltrans and Rail Construction Corporation staff, in addition to LACTC staff and the study consultants, and appear feasible and constructable within the bounds of current construction practices. It is important to note however, that other technologies would have different structural requirements and structural work done for this study is at a conceptual level of detail. Further work would need to be done for any proposed advanced aerial system to determine structural requirements and adaptability to conditions in the restricted median of the freeway.

◦**Land Acquisition & Displacement**- No residential properties would be displaced by any of the alternatives studied in this supplemental study. Along the SP Burbank Branch route, 191.4 acres would be required for construction of the rail transit alignment. The majority of this total is included in the recent purchase from the railroad and the remainder is composed of miscellaneous private parcels and parkland. A total of 37 businesses would be displaced along the SP Burbank route, with an estimated total acquisition cost of \$159 million. Along the

Ventura Boulevard Alternative, 31.7 acres would be displaced including 41 separate businesses. Total acquisition costs are estimated at \$134.5 million. Along the Ventura Freeway Alternative 56.7 acres would be displaced including 33 separate businesses. Total acquisition costs are estimated at \$125.5 million.


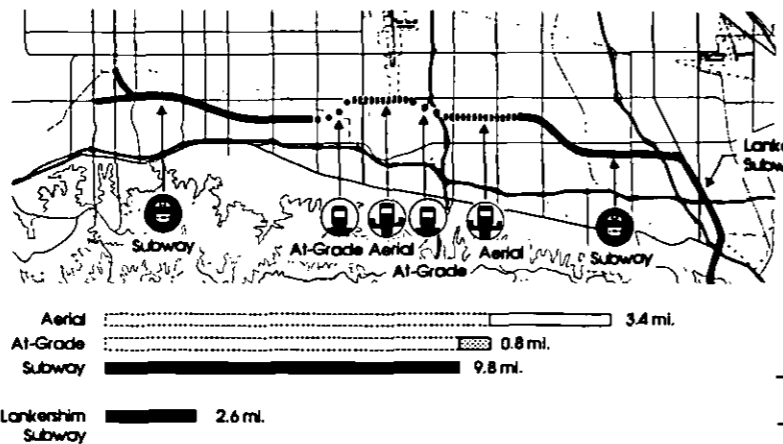

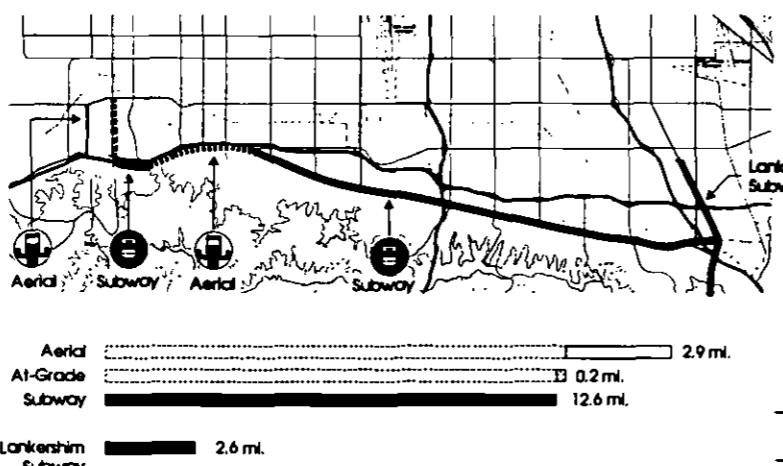

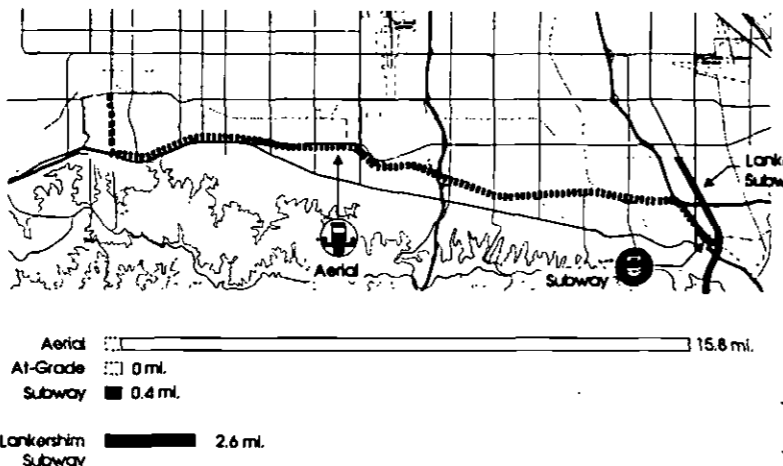
◦**Residential Proximity Impacts-** Because rail transit stations are located in residential areas in some areas, that are instances where homes would be located adjacent to a rail transit station or park and ride lot. Along the SP Burbank Branch, there are 5 stations that would be located in residential areas. The Ventura Boulevard Metro Rail Extension would have no stations located adjacent to residential land uses, while the Ventura Freeway Advanced Aerial Technology Alternative (monorail) would have 4 stations located adjacent to residential land uses.

◦**Traffic Impacts-** Because of heavy traffic congestion along Ventura Boulevard and at intersections close to the Ventura Freeway, traffic impacts from Park and Ride lots would be more difficult to mitigate for the supplemental alternatives than for the SP Burbank Branch adopted route. Significant traffic impacts requiring mitigation are expected at park and ride lots larger than 500 spaces in size. The SP Burbank Branch has 2 park and ride lots larger than 500 spaces. The Ventura Boulevard Metro Rail Extension would have 4 stations larger than 500 spaces. The Ventura Freeway Advanced Aerial Technology Alternative would have 5 stations larger than 500 spaces.

The FEIR identified 11 eleven intersections that would require mitigation along the SP Burbank Branch route. The Ventura Freeway Alternative would have at least 14 intersections that would require mitigation and the Ventura Boulevard Alternative, due to having fewer but larger park and ride lots, would have at least 4 intersections that would require mitigation.

◦**Visual Impacts-** The SP Burbank Branch adopted route is configured in subway for 70% of its total length (9.8 miles of subway out of a total route length of 14.0 miles). It is configured in subway in all residential areas. For these reasons, visual impacts would be confined to areas along the route where the alignment is above ground or at park and ride lots and station areas. The FEIR did not identify significant visual impacts for the SP Burbank Branch route.

The Ventura Boulevard Metro Rail Extension Alternative would be configured in subway for 80% of its total length (12.6 miles of subway out of a total route length of 15.7 miles). The only segment of this route that is above ground is located west of Tampa Avenue, where the route runs along the southside of the Ventura Freeway, and along Canoga Avenue in Warner Center where the alignment runs on an aerial guideway in the median of Canoga Avenue.

ALIGNMENT ALTERNATIVE	ROUTE DESCRIPTION		Train Type	FULL LENGTH OPERATIONS PLAN			STATIONS			COST
	Profile	Route Length		Headway (Peak Hours)	Travel Time (minutes) from Warner Center to Universal City to Union Station		Average Weekday Trips (2010)	Aerial + Subway Total	Residential Adjacencies	Joint Development Potential
SP Burbank Branch Metro Rail Extension 	 <p>             Aerial: 3.4 mi.              At-Grade: 0.8 mi.              Subway: 9.8 mi.              Lankenshim Subway: 2.6 mi.           </p> <p>             3.4 mi.              0.8 mi.              9.8 mi.              14.0 mi.              + 2.6 mi.              16.6 mi.           </p>	3 car trains west of White Oak  6 car trains east of White Oak	12 minutes (Topanga to White Oak)  6 minutes (White Oak to Universal City)	:26	:50	57,800	$\begin{array}{r} 4 + 7 \\ \hline 11 \end{array}$	5	4	\$2.964 (full length)  \$1.294 (phased length)
Ventura Boulevard Metro Rail Extension 	 <p>             Aerial: 2.9 mi.              At-Grade: 0.2 mi.              Subway: 12.6 mi.              Lankenshim Subway: 2.6 mi.           </p> <p>             2.9 mi.              0.2 mi.              12.6 mi.              15.7 mi.              + 2.6 mi.              18.3 mi.           </p>	3 car trains west of Reseda  6 car trains east of Reseda	12 minutes (Van Owen to Reseda)  6 minutes (Reseda to Universal City)	:28	:52	48,600	$\begin{array}{r} 5 + 9 \\ \hline 14 \end{array}$	0	11	\$3.910 (full length)  \$1.941 (phased length)
Ventura Freeway Advanced Aerial Technology (Monorail) 	 <p>             Aerial: 15.8 mi.              At-Grade: 0 mi.              Subway: 0.4 mi.              Lankenshim Subway: 2.6 mi.           </p> <p>             15.8 mi.              0.0 mi.              0.4 mi.              16.2 mi.              + 2.6 mi.              18.8 mi.           </p>	Medium Capacity Monorail	6 minute headways	:30	:57	49,200	$\begin{array}{r} 14 + 1 \\ \hline 15 \end{array}$	4	11	\$2.172 (full length)  \$0.99 (phased length)

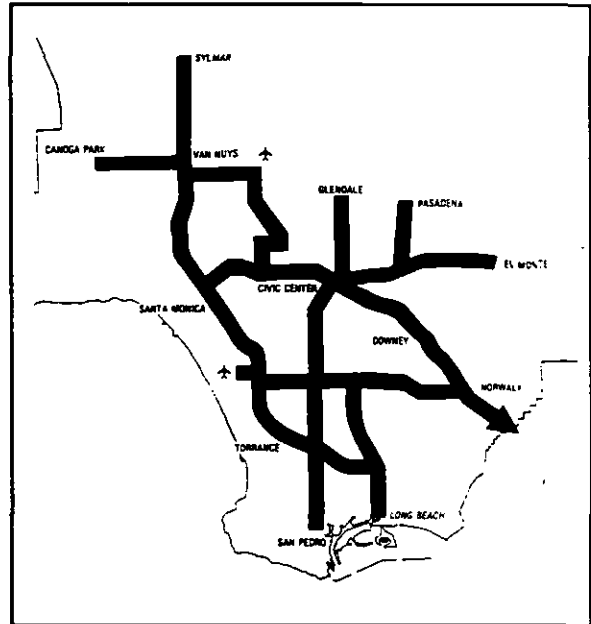
The Ventura Freeway Advanced Aerial Technology Alternative would be configured as an aerial guideway for 98% its total length (15.8 miles of aerial guideway out of a total route length of 16.2 miles). Because the guideway is generally located in the median of the Ventura Freeway, visual impacts from the guideway would be screened by the general environment of the freeway. Station boarding platforms in the center of the freeway however would be quite high (more than 70 feet above surrounding grade) and would therefore be visible for some distance. Residential properties are located adjacent to 4 of these aerial stations. The alignment is also planned to be aerial in Warner Center, where it runs in the median of Canoga Avenue.

o **Land Use & Joint Development**- In accordance with LACTC policies encouraging joint development at station areas, several stations have been identified along the San Fernando Valley transit alignments that are commercially planned and zoned and would have potential for joint development. Along the SP Burbank Branch route 4 stations (Van Nuys, Sepulveda, Reseda and Topanga Canyon) have potential for some joint development at the station areas. Along the Ventura Boulevard and Ventura Freeway route alternatives, 11 stations exist in areas that are planned and zoned for commercial land use.

## CHAPTER 2.0 STUDY CONTEXT

### 2.1 HISTORY OF THE PROJECT

In November of 1980 the voters of the County of Los Angeles approved Proposition 'A'. This proposition authorized LACTC to assess a County-wide one-half percent sales tax to improve and expand existing public transit County-wide and to construct and operate a rail rapid transit system. As shown on the map which accompanied the proposition (Figure 2), one section of the rail rapid transit system was an east-west line serving the San Fernando Valley. Figure 3 illustrates the status in 1991 of the implementation of the Proposition A route system. The development of specific, San Fernando Valley project alternatives is chronologically recounted in Table 3, Historic Development Process, and is summarized below:



**Figure 2**  
**Regional Rail Transit System**

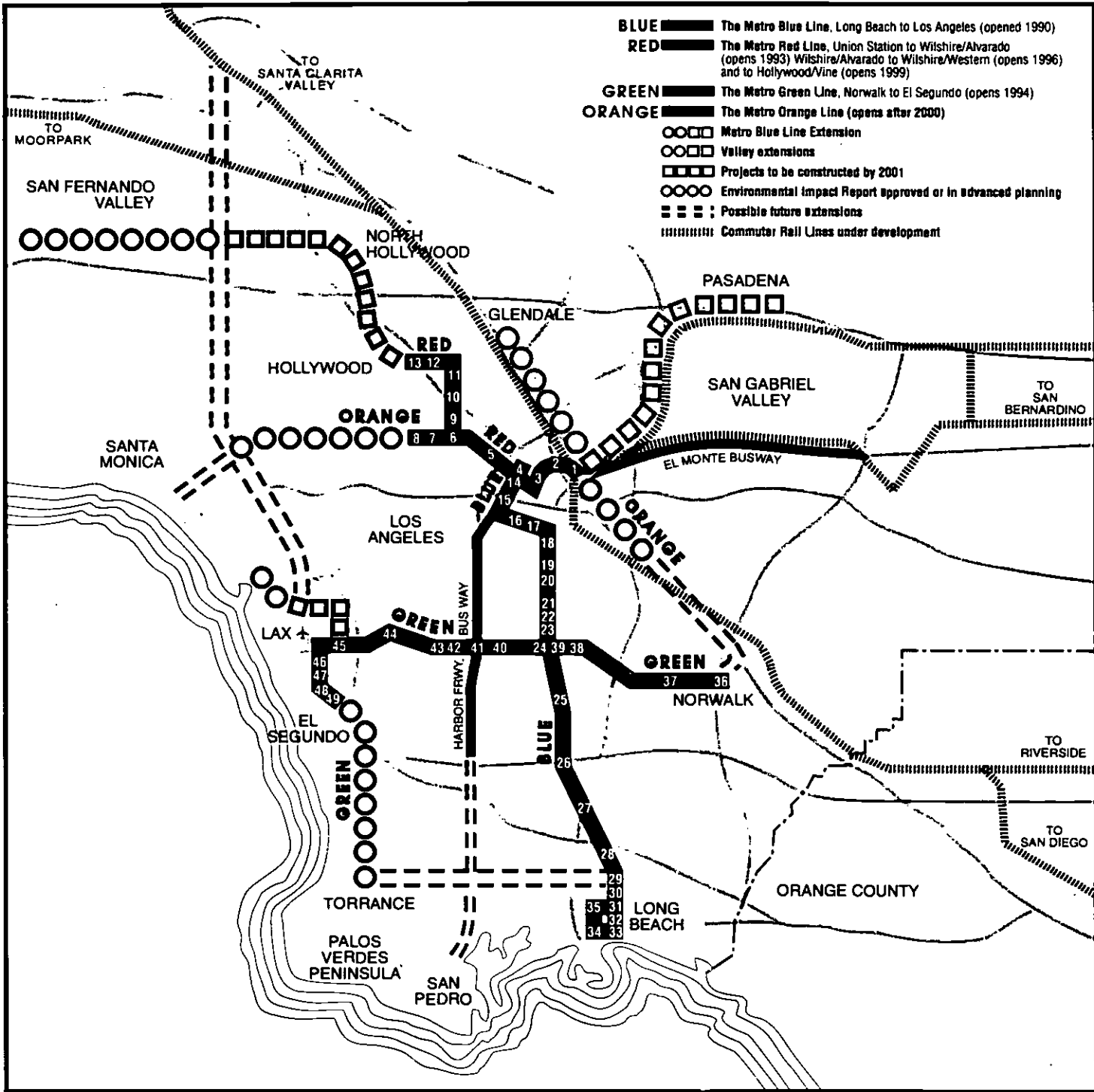
Source: Proposition A Ballot Measure, November 1980

In February of 1987 LACTC authorized the preparation of an EIR for the proposed rail transit project connecting the West San Fernando Valley to the Metro Rail station in either North Hollywood or Universal City. The Commission selected five alternative light rail routes to be studied in addition to the "no project" alternative. These alternatives were studied in a report entitled Initial Alternatives Evaluation Report (Gruen Associates, September, 1987) relative to key engineering and environmental issues. Following publication of this report, a series of citizen meetings were conducted in the San Fernando Valley to obtain citizen input to the project. In general, opposition by residents along all route alternatives was noted during these meetings.

In November, 1987 LACTC voted to defer environmental studies of the project and requested assistance from elected officials serving the San Fernando Valley to decide whether to continue with a rail transit project in the East/West San Fernando Valley corridor and, if so, where the project should be located. The Los Angeles City Council appointed the San Fernando Valley Citizens Advisory Panel which prepared a report entitled Transportation Solutions (August 1, 1988). This report recommended that the Commission proceed with an EIR for three alternative routes: the SP Burbank Branch, the Ventura Freeway and San Fernando Road. In response to the citizens report, on September 28, 1988 the Commission authorized the resumption of the Environmental Impact Report on the Burbank Branch and the Ventura Freeway.



# LOS ANGELES METRO RAIL PLAN



SOURCE: LACTC, January 1991



LOS ANGELES COUNTY TRANSPORTATION COMMISSION

Figure 3  
Los Angeles County  
Metro Rail Plan

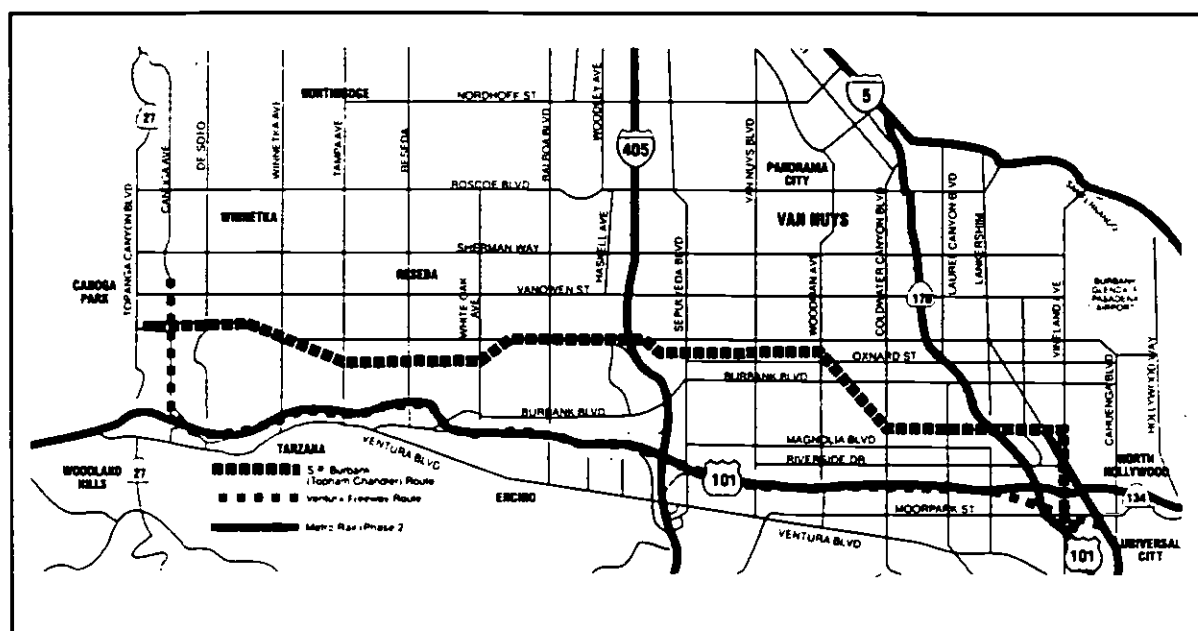


GREEN ASSOCIATES  
ARCHITECTURE PLANNING ENGINEERING



From September, 1988 to April, 1989 when the EIR Notice of Preparation was issued the Commission modified the alternatives to be studied as a part of the EIR. In brief, the Commission added technology and track profile alternatives to those previously under study.

Figure 4 illustrates the two route alignments which were included for study in the EIR. These alternatives included: 1) the Burbank Branch Route Alternative which followed, for the most part, the Southern Pacific Railroad Branch Line right-of-way from Topanga Canyon Boulevard to the Metro Rail North Hollywood or Universal City Station; and 2) the Ventura Freeway Route Alternative which proceeded down Canoga Avenue and then followed, for the most part, the Ventura Freeway from Canoga Avenue to the Universal City Metro Rail Station.



**Figure 4**  
**EIR Route Alignments, February 1990**

Six alternative profile and technology options were evaluated in this EIR for the Burbank Branch Route Alternative:

- 1a. **Burbank LRT Vineland:** A predominantly at-grade, light-rail transit (LRT) facility between Warner Center and Universal City that followed Vineland Avenue between North Hollywood and Universal City. This alternative utilized earth berms and shallow excavated trenches in residential areas to mitigate noise and visual impacts. Transit riders would have needed to transfer at Universal City from LRT to Metro Rail trains.

- 1b. Burbank LRT Lankershim: A predominantly at-grade, LRT facility between Warner Center and North Hollywood, that followed the adopted Metro Rail subway route along Lankershim Boulevard between North Hollywood and Universal City. This alternative was identical to alternative Number 1a, except for the Metro Rail subway segment between North Hollywood and Universal City. Transit riders would have needed to transfer at North Hollywood from LRT to Metro Rail trains.
- 2a. Burbank LRT Deep Trench Vineland: An LRT facility between Warner Center and Universal City that was in a deep trench or subway 25 to 30 feet below grade in residential areas. This alternative connected to Universal City via Vineland Avenue. Transit riders would have needed to transfer at Universal City from LRT to Metro Rail trains.
- 2b. Burbank LRT Deep Trench Lankershim: An LRT facility between Warner Center and North Hollywood that was in a deep trench or subway 25 to 30 feet below grade in residential areas. This alternative was identical to alternative Number 2a except between North Hollywood and Universal City where the adopted Metro Rail subway route was used. Transit riders would have needed to transfer at North Hollywood from LRT to Metro Rail trains.
- 3a. Burbank Metro Red Line Extension: An extension of the Metro Red Line between Warner Center and Universal City that was in deep-bore subway through residential areas 40 to 50 feet below grade. Transit riders would not be required to transfer between the main Metro Red Line and the San Fernando Valley extension and could ride continuously on one train from Warner Center to Downtown Los Angeles.
- 3b. Burbank ART: An automated rail transit (ART) facility between Warner Center and North Hollywood that was in deep-bore subway through residential areas 40 to 50 feet below grade. Single car, fully automated trains would run at two-minute headways (wait time between trains) during peak periods, but transit riders would have been required to transfer at North Hollywood between ART and Metro Rail trains.

Four alternatives profile and technology options were evaluated in the EIR for the Ventura Freeway Route Alternative:

- 4a. Ventura South Side Metro Red Line Extension: An extension of Metro Red Line that was predominantly on aerial guideway between Warner Center and Universal City along the south side of the Ventura Freeway. Transit riders would not have been required to transfer between the Metro Red Line and the San Fernando Valley extension and could ride continuously on one train from Warner Center to Downtown Los Angeles.
- 4b. Ventura South Side ART: An ART facility between Warner Center and Universal City that was routed along the south side of the Ventura Freeway on aerial guideway. Single-car, fully-automated trains would have run at two-minute headways during peak periods, but transit riders would have been required to transfer at Universal City between ART and Metro Red Line trains.
- 5a. Ventura North Side Metro Red Line Extension: An extension of Metro Rail that was partially on aerial guideway and partially in deep-bore subway between Warner Center and Universal City. This alignment followed the north side of the Ventura Freeway in a subway configuration between approximately Reseda Boulevard and Laurel Canyon Boulevard. Transit riders would not have been required to transfer between the Metro Red Line and the San Fernando Valley extension and could ride continuously on one train from Warner Center to Downtown Los Angeles.
- 5b. Ventura North Side ART: An ART facility that was partially on aerial guideway and partially in deep-bore subway between Warner Center and Universal City. Single-car, fully automated trains would have run at two-minute headways during peak periods, but transit riders would have been required to transfer at Universal City between ART and Metro Red Line trains.

All EIR Alternatives were studied with interim terminals near the 405 Freeway as phased length options. Monorail and magnetic-levitation technologies were also considered as options within the fully-grade separated alternatives.

### SP BURBANK BRANCH

- Metro Rail Extension via Lankershim
- SP Burbank ROW acquired at a cost of \$115 million
- Stations and alignment per FEIR/LACTC adoption March 1990

### VENTURA BOULEVARD

- Metro Rail Extension predominantly in subway beneath Ventura Boulevard
- Minimum park-and-ride along boulevard
- Park-and-ride lots located at west end along freeway and remote lots with shuttle
- Joint development opportunities

### VENTURA FREEWAY

- Monorail or Mag-Lev technology
- Median location in Ventura Freeway due to constraints along edges of freeway
- Park-and-ride located in parking structures adjacent to freeway
- Maintain existing capacity of freeway



On February 28, 1990 the Commission certified the Final Environmental Impact Report for the San Fernando Valley East-West Rail Transit Project and directed that findings be prepared for one of the ten alternatives studied in the EIR, the Southern Pacific (SP) Burbank Branch Metro Rail Alternative #3a. On March 28, 1990 the Commission adopted a Statement of Findings and a Mitigation Monitoring Program for the SP Burbank Branch, thus completing CEQA environmental clearance of the project.

In March, 1990 the Commission selected the SP Burbank Branch Metro Rail Extension as the preferred alignment from among those studied in the EIR. At the same time, the Commission directed staff and consultants to prepare a supplemental feasibility study of a Ventura Boulevard Metro Rail Extension and a Ventura Freeway Advanced Aerial Technology (Monorail). The purpose of this supplemental study is to determine if either of these additional routes offer advantages to the adopted SP Burbank Branch route, and whether either or both of them should be carried forward for full environmental and engineering study.

## 2.2 STUDY ASSUMPTIONS & APPROACH

For the purpose of this Supplemental Study, Plan and Profile drawings were prepared at a scale of 1 inch=100 feet for each of the new alternatives.<sup>1</sup> These drawings are bound separately from this report. An Operations Plan was developed by Manual Padron & Associates and is described in Section 4.4 of this report. A Construction Cost Estimate was prepared by Gannett Fleming Transportation Engineers, and is summarized in Section 4.1 of this report. Ridership estimates were developed by the Southern California Association of Governments and are summarized in Section 4.2 of this report. Land acquisition and displacement estimates were developed by Gruen Associates, while the LACTC Real Estate Department prepared preliminary budget estimates of right-of-way values based on these displacement counts. These displacements are summarized in Section 4.5.2 of this report.

The purpose of these supplemental technical analyses has been to bring the two new route alternatives to a same level of engineering study as the adopted SP Burbank Branch alignment so that fair comparisons could be made between the alignments in the evaluation process. Assumptions made in this study for each alignment include the following:

- SP Burbank Branch Metro Rail Extension- This route alignment is identical to EIR Alternative #3a which was adopted by the Commission in March 1990. This alternative is conceived as an extension of the Metro Red Line from North Hollywood to Warner

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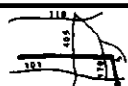






<sup>1</sup>Ventura Boulevard Metro Rail Extension Plan and Profile Conceptual Design Drawings, Gannett Fleming Transportation Engineers, January 1991.

<sup>2</sup>Ventura Freeway Monorail Plan and Profile Conceptual Design Drawings, Benito A. Sinclair & Associates, January 1991.

Center that is configured in subway in residential areas, and on aerial guideway in non-residential areas.

◦Ventura Boulevard Metro Rail Extension- This route alignment is predominantly configured as a subway beneath Ventura Boulevard between Universal City and Reseda Boulevard. West of Reseda Boulevard, the alignment follows an aerial configuration along the southside of the Ventura Freeway and in the median of Canoga Avenue. The rationale for this alignment is to locate Metro Rail along one of the Valley's most heavily travelled streets to serve the major employment centers located there. Because of high land costs and heavy congestion along Ventura Boulevard, Park and Ride Lots for this alternative have been concentrated at the western end of the route, where the alignment runs adjacent to the Ventura Freeway. In these locations, commuters would be intercepted near the freeway and would not be encouraged to enter the more heavily congestion segments of the Ventura Boulevard Corridor. This alternative would also have many joint development opportunities above rail transit stations, and therefore, stations are conceived as being incorporated into existing or future major developments.

◦Ventura Freeway Advanced Aerial Technology (Monorail)- This route alignment is predominantly configured as an aerial guideway in the median of the Ventura Freeway. For the purposes of engineering design, a medium-capacity monorail system has been used (TGI Mark VI Monorail). Because of similar system characteristics, other Monorail or Magnetic-Levitation systems could be used, although the design would be somewhat altered. The principal design rationale of this alignment has been to maintain the existing/planned capacity of the Ventura Freeway without removing travel lanes. A median location for the guideway has been utilized, instead of an edge-of-freeway location, due to prohibitions by Caltrans on the placement of columns in the "gore area" of the freeway between the mainline and the on/off ramps and extensive residential displacements and proximity impacts caused by an edge-of-freeway location.

	'83	'84	'85	'86	'87	'88	'89	'90	'91
<b>LACTC</b>	1. LACTC adopts San Fernando Valley East / West corridor as priority corridor under Proposition A. 2. LACTC conducts preliminary route assessment - see alternatives' discussion below.		LACTC initiates route refinement study to analyze multiple alignments within Burbank Branch ROW.	In response to citizen concerns, LACTC expands route refinement study to include other route alternatives.	1. September: Conceptual engineering / environmental evaluation of LRT alternatives completed. 2. November: LACTC postpones EIR, seeks assistance from elected officials.	Based on Citizen's report, LACTC votes to prepare EIR.		LACTC adopts EIR Alternative #3a, Metro Rail Extension in subway in Residential Areas.	
<b>CITY OF L.A.</b>						City Council appoints San Fernando Citizens Panel on transportation solutions.	Chief Legislative Analyst requests: 1. Full subway and light rail be dropped, 2. Subway in residential areas on Burbank, 3. Assess ART technologies, 4. Assess interim terminal stations.	City Council endorses SP Burbank Branch Metro Rail Extension	
<b>OTHER GROUPS</b>				Substantial local opposition to Burbank Branch route emerges.	Public hearings are held to obtain citizen input.	Citizens panel prepares report entitled <i>Transposition Solutions</i> . Report recommends study of Metro Rail and alternatives below.			
<b>PROJECT PHASE</b>	← PRELIMINARY ROUTE STUDIES →				← ENVIRONMENTAL ANALYSIS →			← SUPPLEMENTAL STUDIES →	
 <b>Ventura Boulevard</b>	Preliminary Assessment: 1. Access problems at stations. 2. Good ridership. 3. Significant acquisition of private commercial property.	Alternative is deleted from further consideration.						Supplemental study authorized of Ventura Boulevard Metro Rail Extension	
 <b>Sherman Way</b>	Preliminary assessment: 1. Major construction within Van Nuys Tunnel. 2. Significant private property acquisition in Reseda CBD.	Alternative is deleted from further consideration.							
 <b>San Fernando Rd.</b>	Not considered as an alternative under preliminary assessment.				Not considered as alternative.	Citizens panel recommends study of route for commuter rail. City Council and LACTC adopt recommendation.	To be studied as commuter rail once study funding issue is resolved.	City and County jointly fund separate study of Sylmar to Downtown Los Angeles Corridor.	
 <b>SP Coast Mainline</b>	Preliminary assessment: 1. Does not serve activity centers. 2. Would attract few riders. 3. Conflicts between freight and transit operations.				Evaluation Report: 1. Engineering: Many at-grade crossings and freight/transit conflicts. 2. Environmental: Limited residential impacts.	Alternative dropped from further consideration.			
 <b>SP Burbank Branch</b>	Preliminary assessment: 1. Minimal property acquisition. 2. Serves activity centers. 3. Good ridership.		Initial route refinement study undertaken.		Evaluation Report: 1. Engineering: Insignificant 2. Environmental: Significant residential impacts.	Route to be studied as: 1. Subway extension of Metro Rail. 2. Mitigated at-grade LRT. 3. Metro Rail extension using a combination of mitigation measures.	NOP to be issued to study route as: 1. At-grade mitigated LRT. 2. LRT in subway in residential areas. 3. Metro Rail extension in subway in residential areas. 4. ART in subway in residential areas.	LACTC adopts EIR Alternative #3a, Metro Rail Extension in subway in Residential Areas.	
 <b>Victory Boulevard</b>	Not considered as an alternative under preliminary assessment.				Evaluation Report: 1. Engineering: Closing of Victory to build aerial guideway, aerial crossing of Hollywood and San Diego Freeways. 2. Environmental: Significant residential impacts.	Alternative dropped from further consideration.			
 <b>Ventura Freeway</b>	Preliminary assessment: 1. Access to freeway would be difficult during construction. 2. Doesn't serve activity centers.				Evaluation Report: 1. Engineering: Problems with freeway operations during construction. 2. Environmental: Significant residential impacts, large private property takes.	Route to be studied as aerial guideway extension of Metro Rail.	NOP to be issued to study route as: 1. Aerial configuration - ART and Metro Rail extension, 2. ART and Metro Rail extension in subway in residential areas, aerial elsewhere.	Supplemental study authorized of Ventura Freeway Advanced Aerial Technology	
 <b>L.A. River</b>	Preliminary assessment: 1. Significant private property acquisition. 2. Difficult construction access. 3. Flood control in Basin may preclude aerial structures.				Evaluation Report: 1. Engineering: Construction phasing problems in the Basin. 2. Impacts: Significant residential impacts.	Alternative dropped from further consideration.			

## CHAPTER 3.0 DESCRIPTION OF ALTERNATIVES

### 3.1 ROUTE ALIGNMENTS, TECHNOLOGIES & STATIONS

This chapter provides a description of the project alternatives being evaluated in this supplemental study. Based on previous route refinement studies conducted by the LACTC, recommendations developed by the San Fernando Valley Citizens Panel on Transportation Solutions appointed by the Los Angeles City Council, and the Environmental Impact Report analysis of ten different route alternatives, two basic route alternatives were identified by the Commission for supplemental study, in addition to the already adopted SP Burbank Branch Metro Rail Extension Alternative. The three alternatives studied in this report are illustrated in Figures 5 and 6 and include the following:

◦SP Burbank Branch Metro Red Line Extension: The previously adopted project route begins at the terminus of the Metro Red Line MOS-3 segment in North Hollywood. The alignment follows the SP Burbank Branch right-of-way along Chandler Boulevard, Oxnard Avenue, Victory Boulevard and Topham Avenue until it reaches Warner Center. The alignment is predominantly configured in deep-bore subway in all residential areas and as aerial guideway in non-residential areas.

◦Ventura Boulevard Metro Red Line Extension: This route alternative begins at the Universal City Metro Rail Station and proceeds in subway beneath Ventura Boulevard to a portal near Tampa Avenue. Between Tampa Avenue and Warner Center the alignment is above-ground on the southside of the Ventura Freeway and in the median of Canoga Avenue, except for a short tunnel for crossing under the Ventura Freeway.

◦Ventura Freeway Route Alternative: This route alternative begins at the Universal City Metro Rail Station and proceeds on aerial guideway along the east side of the Hollywood Freeway and the median of the Ventura Freeway between Universal City and Canoga Avenue. At Canoga Avenue the alignment turns north from the freeway and travels in the median of Canoga Avenue through Warner Center to a terminal station at Vanowen Avenue.

In addition to the basic route alternatives, phasing and technology alternatives were identified for study. These include:

◦Phasing Alternatives: Because of the length of the route alternatives between Universal City, North Hollywood and Warner Center, Phased Length Options were studied. These are defined as shortened segments of the overall route which could be constructed as fully operational, phased segments. For purposes of operations and cost estimating, phased-length options have been defined for this study that extend between the Universal City/North Hollywood Metro Red Line Stations and the San Diego Freeway. For each of the routes studied, the Sepulveda Station would be the end-of-the-line station for the phased-length option.



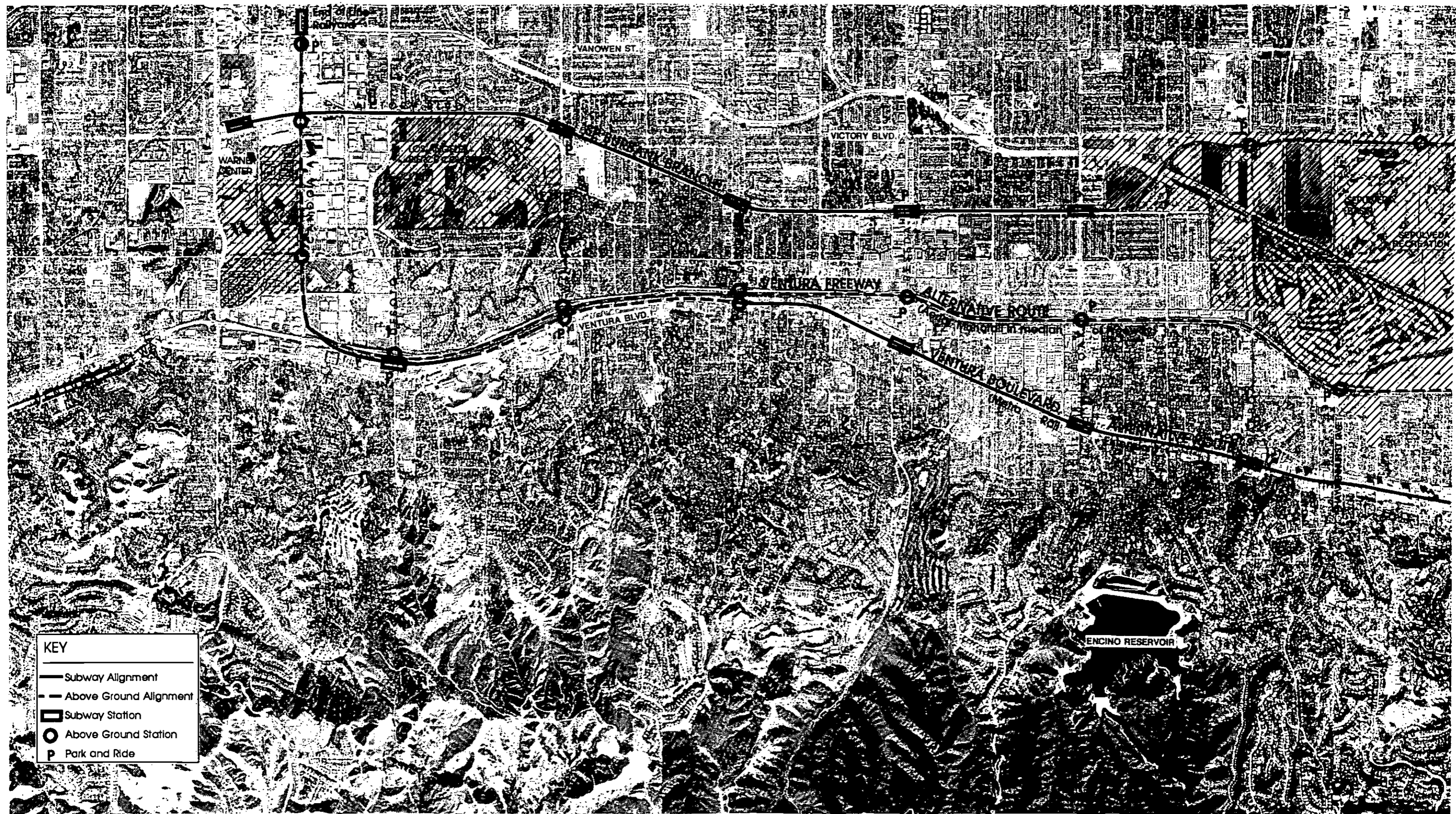


Figure 5  
 ♦ West Valley Alignment Alternatives



**KEY**

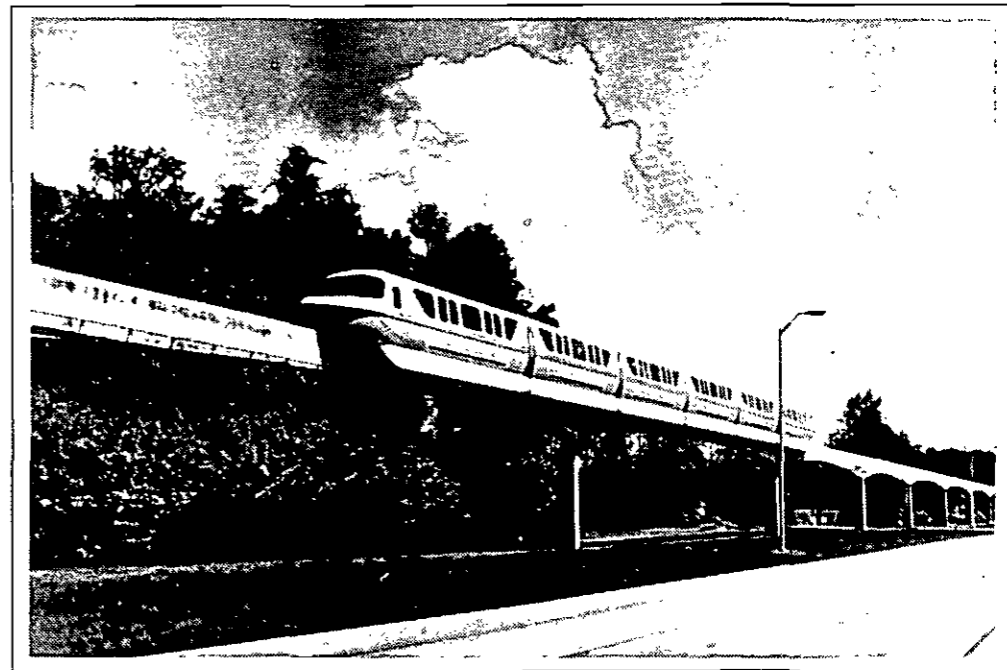
- Subway Alignment
- - - Above Ground Alignment
- Subway Station
- Above Ground Station
- P Park and Ride

\* NOTE: Optional station. Included in study for information purposes

Figure 6  
 ♦ East Valley Alignment Alternatives



METRO RAIL



MONORAIL

◦Technology Alternatives: Two generic transit technologies were identified for study, as shown in Figure 7. Along the SP Burbank and Ventura Boulevard routes, Metro Rail technology would be utilized. This technology is generally referred to as "heavy rail" and is currently being constructed along the Metro Red Line. For either the SP Burbank or the Ventura Boulevard route alternatives Metro Red Line service would be extended so that Metro Rail trains could run directly from downtown Los Angeles to the San Fernando Valley.

Along the Ventura Freeway Route Alternative an Advanced Aerial Technology has been utilized. Various types of Monorail and Magnetic Levitation technologies are possible, however for the purposes of this study a medium-capacity monorail (TGI Mark VI) has been assumed. This technology has the advantage of being lighter than most other technologies with sharper turning radii. These advantages allow the monorail to be fitted into the narrow median of the freeway in a way that was not possible with light rail and heavy rail transit technologies. Should the Ventura Freeway route be selected for further study it is assumed that a range of Advanced Aerial Technologies would be considered for the freeway alignment. Such technologies would include magnetic levitation, advanced light rail, and other types of monorail.

◦Station Alternatives- As shown in Table 4, the SP Burbank Branch route alignment has 11 rail transit stations accommodating 4,845 parking spaces. These spaces are all in at-grade parking lots due to the fact that ample land is available along the former railroad right-of-way. It should be noted that Laurel Canyon Station has been included for informational purposes only. Deletion of this station from the alignment would result in a total of 10 stations along this route accommodating 4,845 parking spaces.

Each of the alternative route alignments studied in this report were sized to accommodate a similar number of parking spaces as the SP Burbank Branch so that a fair comparison could be made between the alignments. The Ventura Boulevard Metro Rail Extension alternative has 14 rail transit stations accommodating 4,900 parking spaces. The parking spaces are concentrated at six stations and would utilize parking structures instead of at-grade parking lots.

The Ventura Freeway Advanced Aerial Technology (Monorail) Alternative has 15 rail transit stations accommodating 4,950 parking spaces. The parking spaces are located at ten station sites, eight of which would feature parking structures instead of at-grade parking lots.

**SP BURBANK BRANCH**  
**Metro Rail Extension**

1.	Laurel Canyon - subway	0*
2.	Fulton Burbank - subway	0
3.	Van Nuys - aerial	325
4.	Sepulveda - aerial	675
5.	Woodley - aerial	440
6.	Balboa - aerial	400
7.	White Oak - subway	475
8.	Reseda - subway	370
9.	Tampa - subway	0
10.	Winnetka - subway	1,160
11.	Tapanga - subway	0
<b>TOTAL PARKING</b>		<b>4,845</b>

**VENTURA BOULEVARD**  
**Metro Rail Extension**

1.	Laurel Canyon - subway	100
2.	Caldwater Canyon - subway	0
3.	Woodman - subway	0
4.	Van Nuys - subway	0
5.	Sepulveda - subway	500
6.	Balboa - subway	0
7.	White Oak - subway	0
8.	Reseda - subway	0
9.	Tampa - aerial	300
10.	Winnetka - aerial	500
11.	DeSata - subway	2,500
12.	Oxnard - aerial	0
13.	Victory - aerial	0
14.	Vanawen - aerial	1,000
<b>TOTAL PARKING</b>		<b>4,900</b>

**VENTURA FREEWAY**  
**Medium Capacity Monorail**

1.	Universal City - subway	0
2.	Laurel Canyon - aerial	0
3.	Caldwater Canyon - aerial	0
4.	Woodman - aerial	500
5.	Van Nuys - aerial	300
6.	Sepulveda - aerial	500
7.	Hayvenhurst - aerial	650
8.	White Oak - aerial	200
9.	Reseda - aerial	100
10.	Tampa - aerial	300
11.	Winnetka - aerial	400
12.	DeSata - aerial	1,500
13.	Oxnard - aerial	0
14.	Victory - aerial	0
15.	Vanawen - aerial	500
<b>TOTAL PARKING</b>		<b>4,950</b>

\* Optional station included in study for information purposes

**San Fernando Valley**  
**East-West Rail Transit Project**

Figure 11  
♦ Station Assumptions

### 3.2 SP BURBANK BRANCH METRO RED LINE EXTENSION (Adopted Route)

This section presents a discussion of the Southern Pacific (SP) Burbank Branch Metro Red Line Extension. This route was adopted by the Commission in March 1990. The SP Burbank Branch corridor is divided into sub-areas that are described and illustrated through text and drawings. Cross-section drawings of typical segments of the route are cross-referenced to oblique aerial photos and text descriptions for each sub-area.

The SP Burbank Branch route follows the existing railroad right-of-way almost exclusively between Warner Center and North Hollywood Metro Red Line Station. The route would extend for 14.0 miles to the North Hollywood Station and 16.6 miles to the Universal City Station. About 13.5 miles of the route would be located within the Southern Pacific right-of-way.

◦SP Burbank Branch Metro Red Line Extension- Warner Center/Canoga Park Area; The westernmost station of the SP Burbank Branch alignment is configured as a subway station under Victory Boulevard just west of Owensmouth Avenue. As shown in Figure 8, the alignment proceeds east along Victory Boulevard in front of the Topanga Plaza Shopping Center, Rocketdyne, Warner Corporate Center and other commercial/industrial uses to a point just east of Variel Avenue, where the alignment enters the Southern Pacific Right-of-Way. Upon crossing DeSoto Avenue, the alignment proceeds within the 100 foot railroad corridor on the north side of Victory Boulevard. Land uses in this segment of the route include single-family residential homes to the north of the alignments and Los Angeles Pierce College to the south of Victory Boulevard.

Winnetka Station would be configured as a subway station. A park-and-ride lot accommodating approximately 1,160 vehicles would be provided at Winnetka Station on the site of the existing Pierce College ballfields and Child Development Center. These uses would need to be relocated across Victory Boulevard to the main campus property. Along Topham Street the route continues as a deep-bore subway within the SP Right-of-Way on the north side of that street.

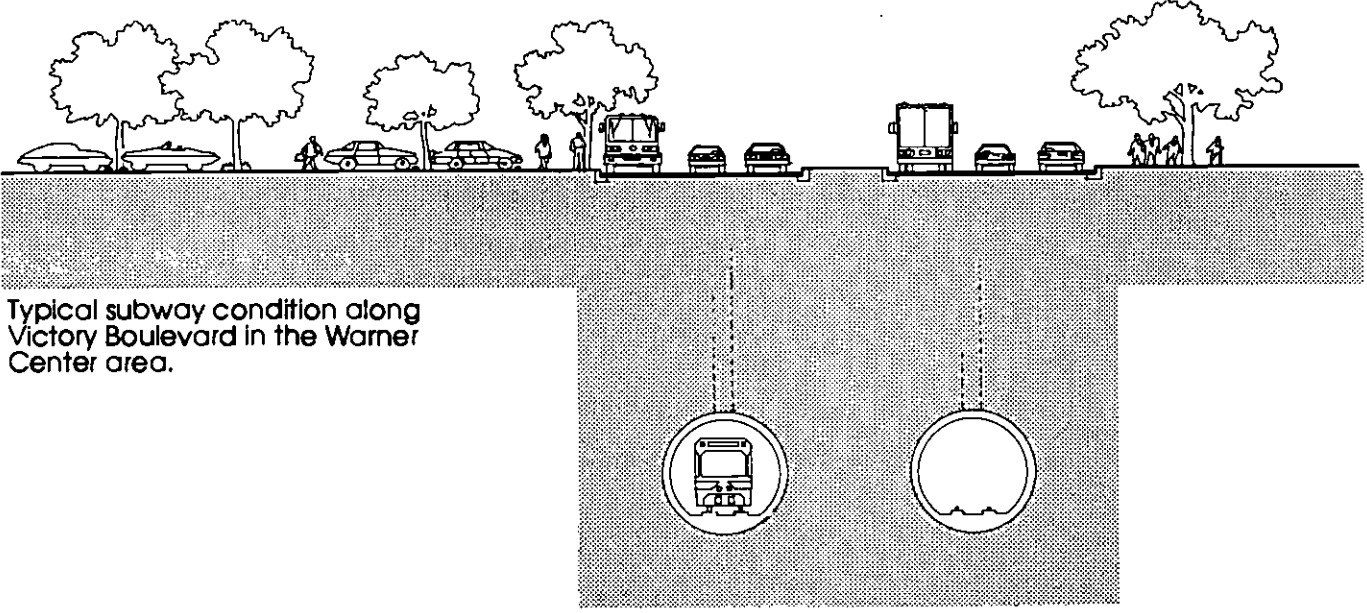
◦SP Burbank Branch Metro Red Line Extension- Reseda/West Van Nuys Area; The route continues within the SP Right-of-Way along the north side of Topham Street. As shown in Figure 9, the deep-bore subway would be located 40-50 feet below existing grade in the middle of the 100 foot wide railroad right-of-way. Tampa Station is planned with simple bus stop and auto drop-off areas. No parking would be provided at this station.

At Reseda Station, parking for 370 vehicles has been provided west of Reseda Boulevard. This parking would displace an existing lumber yard and several industrial structures. The alignment would continue in subway configuration and would pass beneath Reseda Avenue, with station platforms below ground.



SOURCE: L.A. Aerial Photo Inc., 1989

Air view looking east at proposed Topanga Station in Warner Center. Topanga Canyon Boulevard is at the bottom of the photo.



Typical subway condition along Victory Boulevard in the Warner Center area.

◦SP Burbank Branch Metro Red Line Extension- Reseda/West Van Nuys Area (Cont.);

At White Oak Station, parking for 475 cars would be provided. The alignment would continue in subway configuration with station platforms below ground. Land uses in this segment of the route are predominantly single-family residential except near Reseda Boulevard where a mixture of industrial and commercial uses are clustered around the existing freight rail facilities.

◦SP Burbank Branch Metro Red Line Extension- Sepulveda Basin Area; To the east of White Oak Avenue the SP Right-of-Way enters the Sepulveda Basin Flood Control/Recreation Area (Figure 10). The alignment runs at-grade along the railroad embankment in the Sepulveda Basin to a point just west of Balboa Boulevard where the SP Right-of-Way crosses the Los Angeles River Flood Control Channel. A new bridge approximately 350 feet in length would be constructed for this crossing.

At Balboa Station the alignment is located on aerial guideway to grade-separate the crossing of Balboa Boulevard and to minimize earthwork in the Sepulveda Basin. Parking would be provided for 400 cars. Between Balboa Station and Woodley Station the aerial configuration would continue. Existing bicycle and pedestrian pathways would be maintained beside the rail transit alignment to provide access to Sepulveda Basin Recreation Area facilities. Woodley Station would be located above-grade with parking for approximately 440 vehicles.

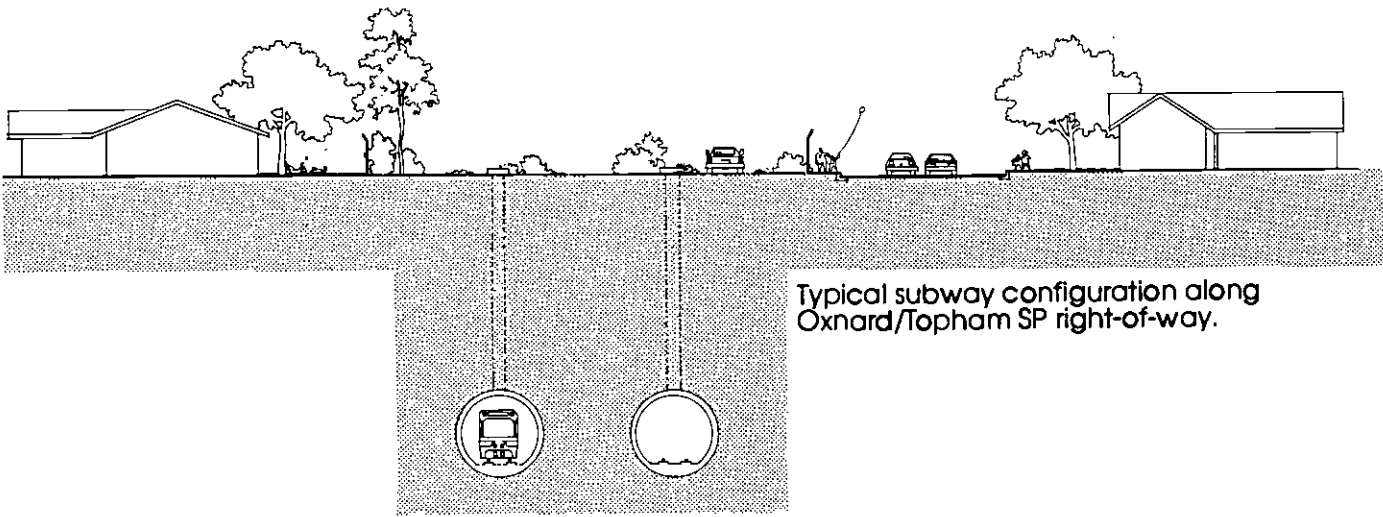
East of Woodley Station the alignment would exit the Sepulveda Basin in an at-grade configuration. The alignment would continue within the existing SP Right-of-Way to cross beneath the San Diego Freeway utilizing the existing underpass. Land uses adjacent to the route in this area are located entirely in the Sepulveda Basin Recreation Area to the south of the alignment. These uses include the Navy and Marine Corps Reserve Center, the planned Bull Creek Park Recreational Lake and Arts Park, the City of Los Angeles Valley Region Headquarters, the US Army Reserve Center, the California Air National Guard and the Tillman Water Reclamation Plant.



SOURCE: L.A. Aerial Photo Inc., 1989

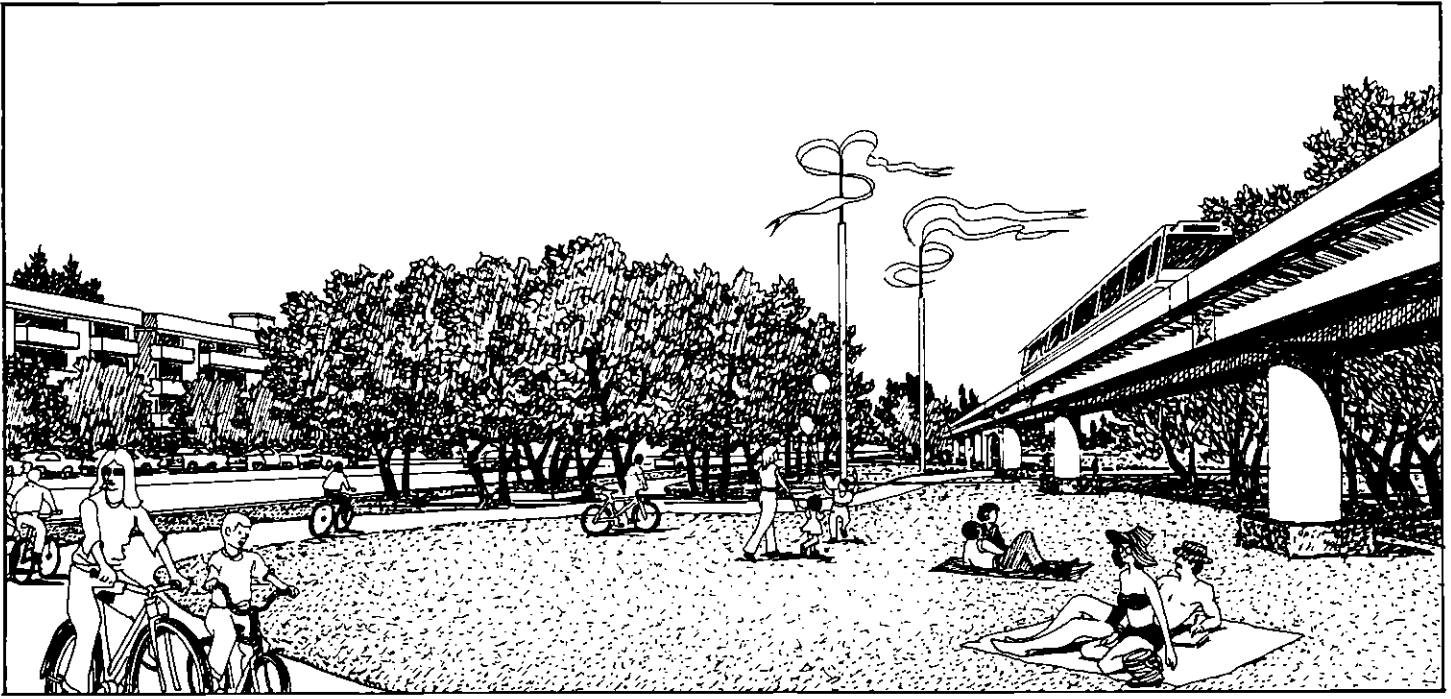


Air view looking east along the Topham SP right-of-way between White Oak and Reseda. Topham Street runs parallel to the railroad R.O.W. in this area.



Typical subway configuration along Oxnard/Topham SP right-of-way.

SOURCE: Gruen Associates

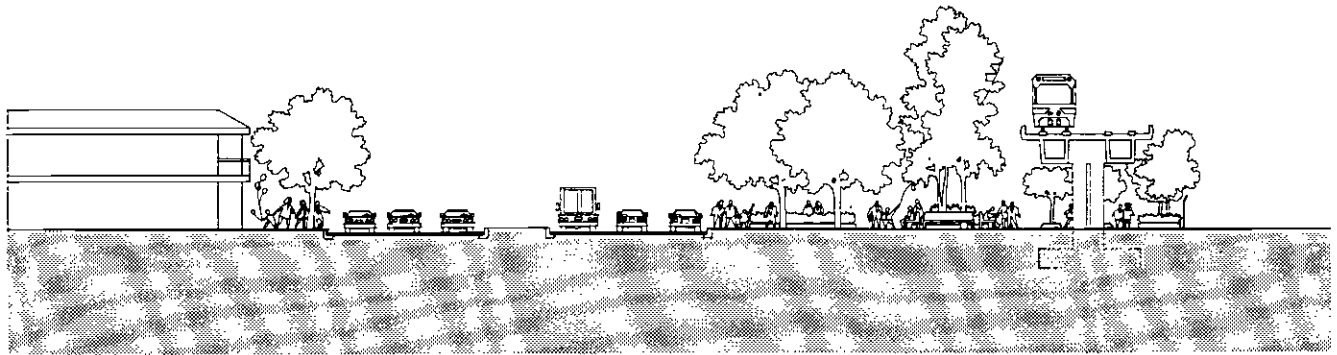


SOURCE: L.A. Aerial Photo Inc., 1989



Views looking east along Victory Boulevard on the north side of the Sepulveda Basin Recreation Area.

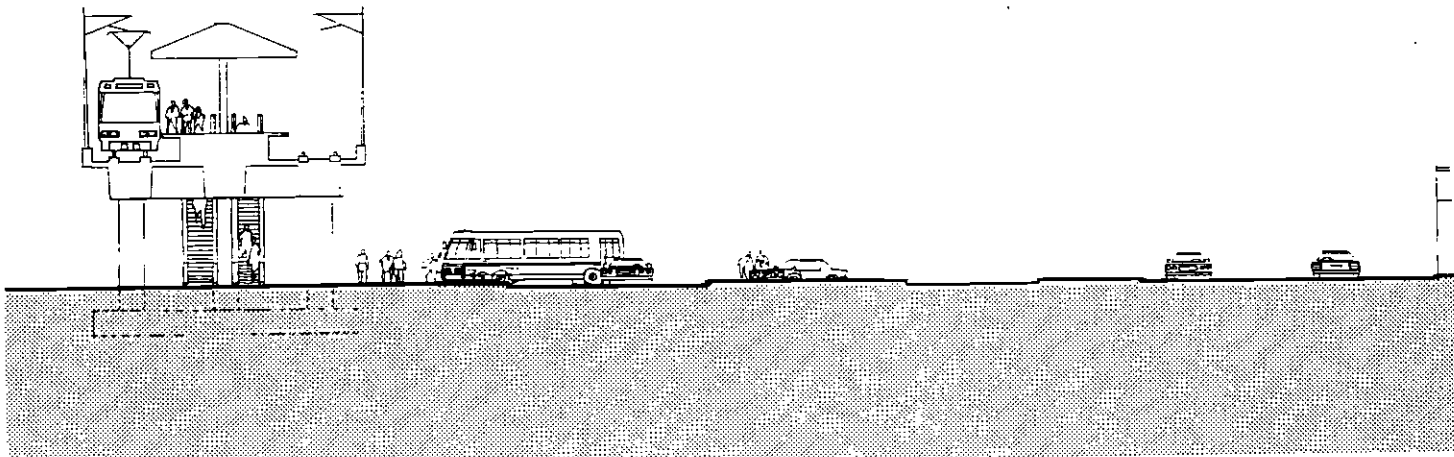
The alignment is aerial in this segment of the route.



SOURCE: L.A. Aerial Photo Inc., 1989



Air view looking east near the Van Nuys Government Center. The proposed rail transit station would be in aerial configuration in this area.



Typical section at Van Nuys Station.

◦SP Burbank Branch Metro Red Line Extension- Van Nuys Area; Because of high traffic volumes along Sepulveda and Van Nuys Boulevards, the alignment alternatives in this area are grade-separated above these two street crossings. As shown in Figure 11, land uses in this area are principally commercial and industrial. At Sepulveda Station, an existing Drive-In Movie Theater would be displaced for a station Park and Ride Lot. The location of this parking lot, immediately adjacent to the San Diego Freeway would allow for possible future direct ramp connections between the freeway and the transit station. At Van Nuys Station, low rise automotive and industrial structures along Oxnard Street give way to mid-rise governmental structures comprising the Van Nuys Civic Center Administrative Complex two blocks north of the alignment.

East of Van Nuys Station, commercial and industrial land uses continue to Hazeltine Avenue where they transition to residential uses. South of the alignment are two to three story multi-family apartments that face towards Oxnard Street. North of the alignment, single-family residences face away from the alignment toward Bessemer Street.

Because of sensitive residential land uses east of Hazeltine Avenue, the profile of the alignment in this area is depressed below grade. Deep-bore subway, 40-50 feet below grade, has been specified for the area between Hazeltine Avenue and North Hollywood Station.

◦SP Burbank Branch Metro Red Line Extension- North Hollywood Area; Through the diagonal segment of the route between Woodman/Oxnard and Fulton/Burbank intersections, the SP Right-of-Way passes through a predominantly residential area with a mix of institutional and commercial land uses. The Los Angeles Valley College is the largest single land use and a Fulton-Burbank Station has been planned to serve this facility. As this would be principally a destination station for students, faculty and employees of the college, no parking has been planned as a part of this station. Other uses along the route in this area include mixed single-family and multi-family residential that back onto the alignment and mixed commercial/institutional uses along Burbank Boulevard. Portions of an existing lumber yard and building supply operation would be displaced for construction of the Fulton-Burbank Station. The route alignment would be configured in subway configuration, 40 to 50 feet below existing grade, throughout this area.

After crossing under the Fulton/Burbank intersection, the alignment would follow the median of Chandler Boulevard. The optional Laurel Canyon Station would be located in subway with bus drop-off areas but no parking provided. Land uses in this route segment include a mixture of single-family and multi-family residential as well as institutional and commercial uses. North Hollywood High School is the single largest institutional use along the route. However, several other schools and religious institutions, including the Valley Cities Jewish Community Center, Emek Hebrew Academy, Shaarey Zedek Talmud Torah, and the Chandler Convalescent Hospital, are located along the south side of Chandler Boulevard.



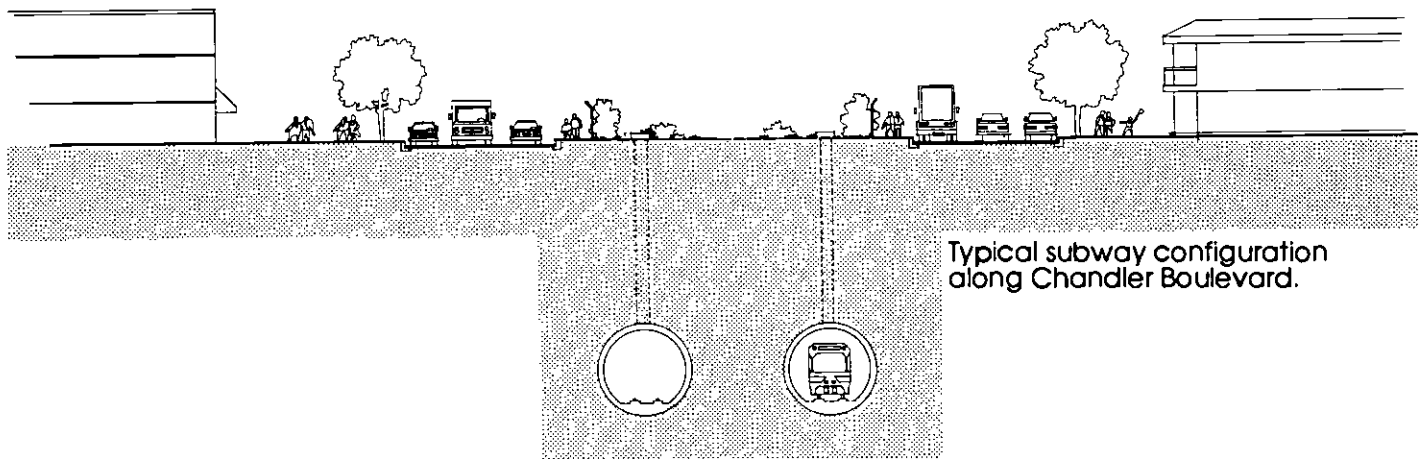
SOURCE: L.A. Aerial Photo Inc., 1989

Air view looking east along Chandler Boulevard at Laurel Canyon.



SOURCE: L.A. Aerial Photo Inc., 1989

Air view looking south along Lankershim Boulevard toward Universal City. The adopted Metro Red Line would be configured in subway between North Hollywood and Universal City in this area.



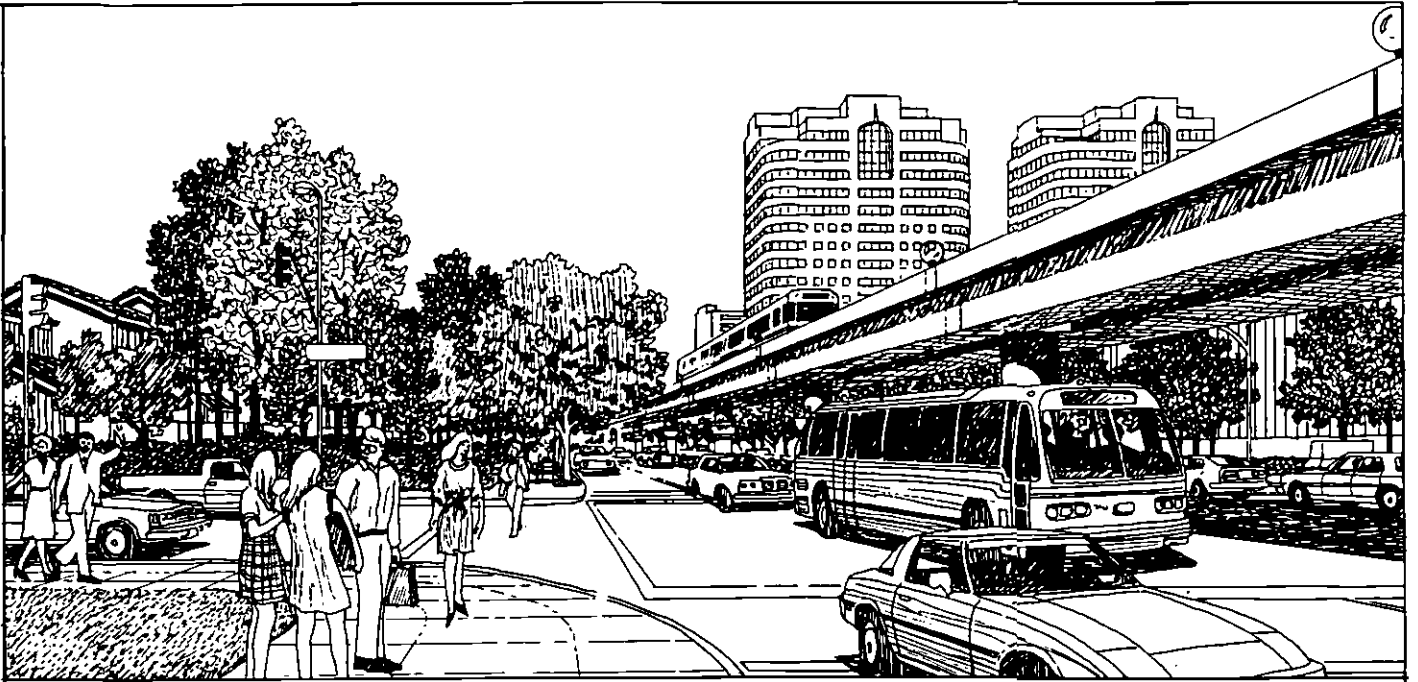
Typical subway configuration along Chandler Boulevard.

◦SP Burbank Branch Metro Red Line Extension- North Hollywood Area (Cont.);

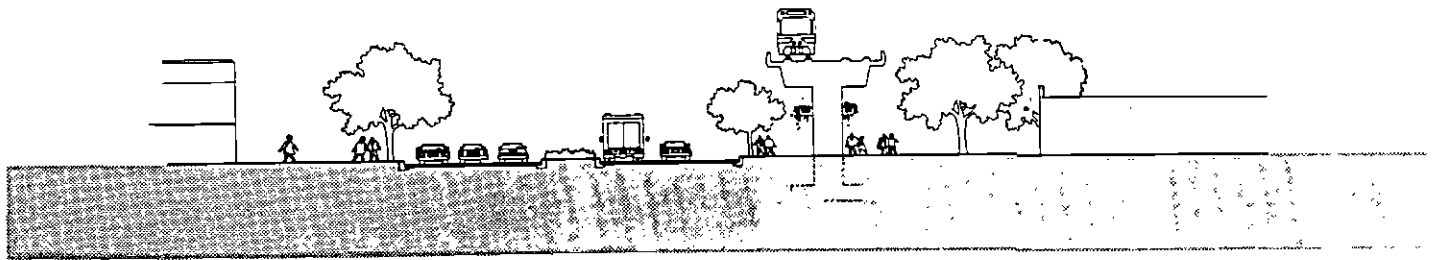
A Metro Red Line Rail Transit Station has been planned at North Hollywood to serve the North Hollywood Redevelopment Area. This station would be constructed as a part of the Metro Rail MOS-3 segment that would run in subway configuration beneath Lankershim Boulevard between North Hollywood and Universal City. Parking for approximately 1000 cars has been planned as a part of the Metro Rail Station Area Plan prepared by the Los Angeles Community Redevelopment Agency and the City Planning Departments.

Because the adopted Metro Rail Station is located at Chandler & Lankershim Boulevards, any Metro Rail Extension would require a curve distance to make a transition onto Chandler Boulevard west of the North Hollywood Station. The alignment would curve north of Chandler Boulevard for about 1000 feet under existing homes to make this transition. An alternative to this alignment would be to shift the North Hollywood Station south to Magnolia Boulevard, allowing a transition into a Chandler Boulevard east-west alignment which does not cross under several blocks on single-family homes. Land uses in the vicinity of the North Hollywood Station are mixed commercial and industrial. Lankershim Boulevard itself is principally commercial uses.

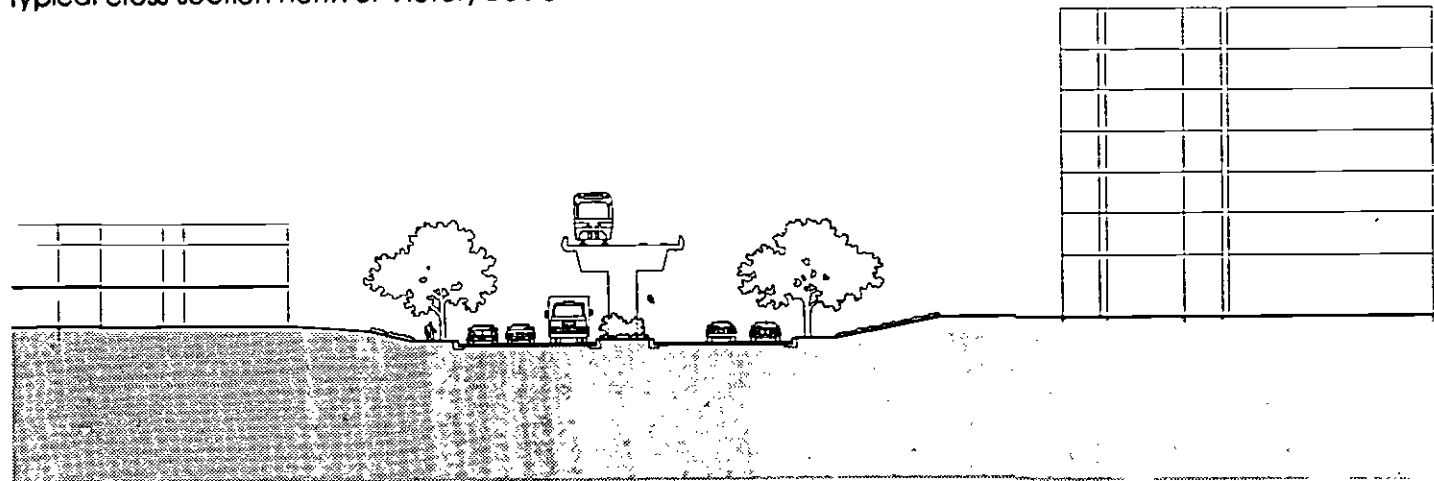
SOURCE: Gruen Associates



Sketch looking north along Canoga Avenue in Warner Center. The Ventura Boulevard and Ventura Freeway Alternatives would both be configured on aerial guideway in the median of Canoga Avenue in this area.



Typical cross-section north of Victory Boulevard.



Typical cross-section along Canoga Avenue between Victory Boulevard and the Ventura Freeway.

### 3.3 VENTURA BOULEVARD METRO RAIL EXTENSION

This section presents a discussion of the Ventura Boulevard Metro Rail Extension Route Alternative. The route is subdivided into sub-areas that are described and illustrated through text and drawings. Cross-section drawings of typical segments of the route are cross-referenced to oblique aerial photos and the corresponding text for each area.

The Ventura Boulevard Alternative is configured in subway beneath Ventura Boulevard for the majority of its length, except for the two end segments. At the west end, the route runs north and south along Canoga Avenue in Warner Center. At the east end, the alignment departs from Ventura Boulevard just east of Tujunga Avenue to proceed along the south side of the Los Angeles River Channel, joining the approved Metro Rail project route along Lankershim Boulevard. The total length of the alignment is 15.7 miles, of which 1.6 miles are along Canoga Avenue, 13.4 miles are along Ventura Boulevard and 0.7 miles follow the Los Angeles River Channel and the planned Metro Rail subway alignment along Lankershim Boulevard to Universal City.

Ventura Boulevard Metro Rail Extension Alternative- Warner Center/Woodland Hills Area: This section runs along Canoga Avenue from the proposed Rail Storage & Maintenance Yard to the Ventura Freeway. The line transitions from an at-grade configuration in the rail yard to an aerial guideway just north of Vanowen Street. Between Vanowen Street and Victory Boulevard, the aerial structure curves into the center median of Canoga Avenue, and continues in this configuration to just south of Burbank Boulevard, where it curves easterly away from Canoga Avenue passing through the Litton Corporation parking lot. The guideway would require the displacement of approximately 500 parking spaces in the Litton lot to accommodate a portal opening for a subway undercrossing of the Ventura Freeway. Within the Litton parking lot the rail line descends to pass beneath the freeway in bored tunnel, proceeding to a subway station at DeSoto Avenue.

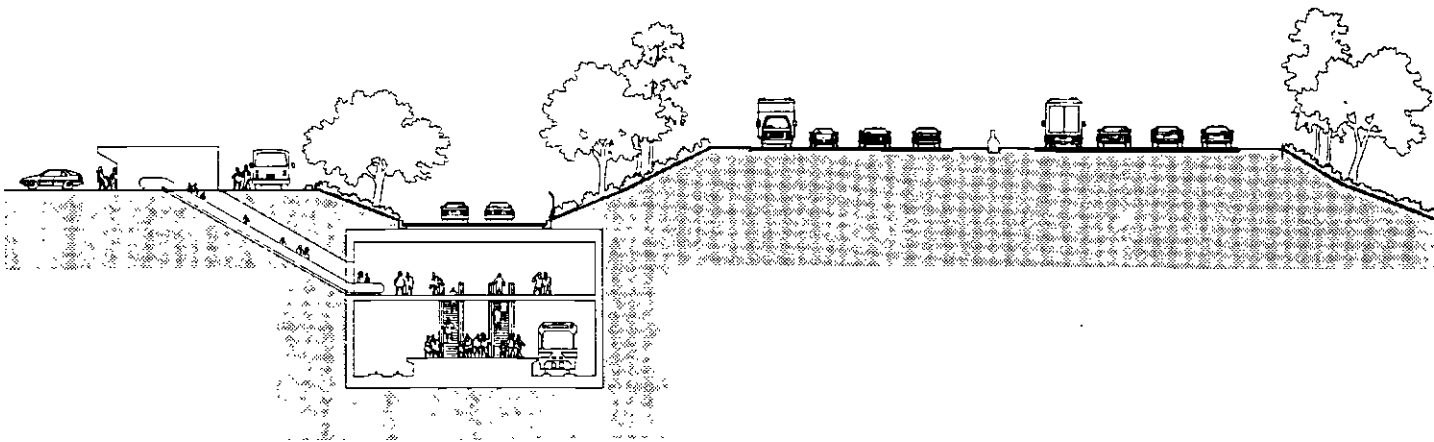
As shown in Figure 13, the aerial guideway structure along Canoga Avenue would utilize a dual box girder system set on single piers spaced 90 to 120 feet apart. Since the support columns for the structure would occupy about 8 feet of street width in Canoga Avenue, the columns are able to be placed within the existing median of the street with some street widening at intersections required to accommodate left-turn traffic movements.



SOURCE: L.A. Aerial Photo Inc., 1989



View looking west at De Soto Station. The existing Target Department Store would be displaced by the alignment. A large park and ride lot accommodating 2,500 cars would be located on the site.



Typical section of Metro Rail Subway at the De Soto Station. The loading platforms would be located beneath the existing eastbound on-ramp.

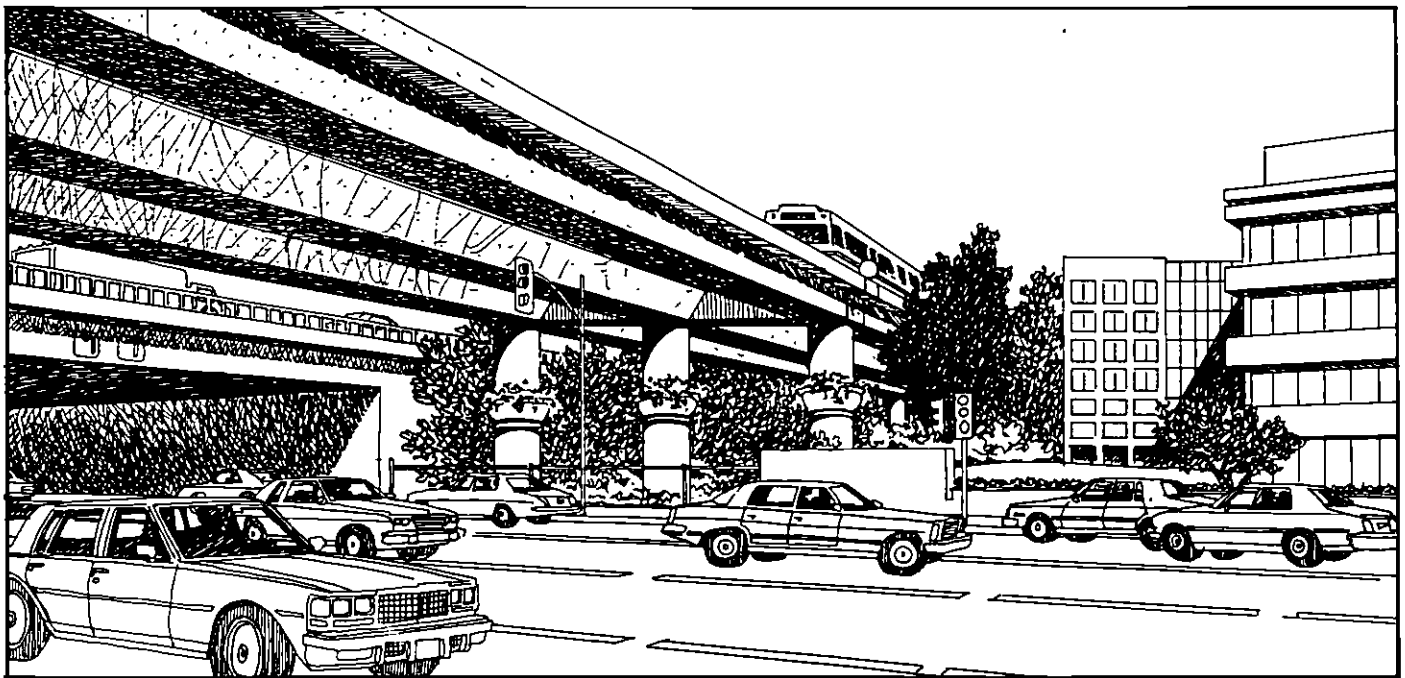
◦Ventura Boulevard Metro Rail Extension Alternative- Warner Center Area (Cont.); Stations in this segment are located at Vanowen Street, Victory Boulevard, Oxnard Street and DeSoto Avenue. The Vanowen Station is a center platform aerial structure located on the east side of Canoga Avenue. Parking for approximately 1,000 vehicles would be provided on an industrial parcel next to the Los Angeles River Flood Channel. The stations at Victory Boulevard and Oxnard Street are side platform aerial structures located over the center median of Canoga Avenue. As these stations are intended to serve the high density employment concentrations at Warner Center, no parking is planned at either the Victory or Oxnard Stations.

◦Ventura Boulevard Metro Rail Extension Alternative- Woodland Hills/Tarzana Area; Between Canoga Avenue and Tampa Station, the Ventura Boulevard Route Alternative is located on aerial guideway along the south side of the freeway. Because of the close spacing between Ventura Boulevard and the Ventura Freeway in this area, the rail transit guideway will pass behind many of the retail and office uses that front onto Ventura Boulevard. In some cases, because structures are built with little or no setback from the freeway right-of-way, building takings would be required. In other cases, displacements are made necessary in order to accommodate station parking requirements. Typical alignment configurations in this area are illustrated in Figure 15. Immediately east of Tampa Station the alignment descends from aerial guideway to enter a subway configuration under Ventura Boulevard.

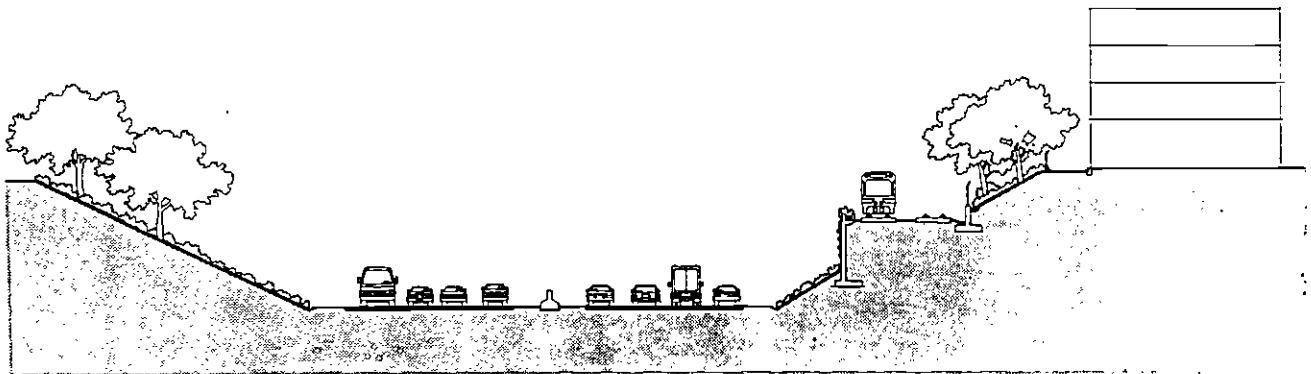
Proposed stations serving this area are located at DeSoto, Winnetka, and Tampa Avenues. As shown in Figure 14, the DeSoto Station is intended to serve as the westernmost station on the Ventura Freeway. As such, a large Park and Ride Lot for approximately 2,500 vehicles has been planned above this subway station. Engineering requirements would require the taking of an existing Target Department Store and an office complex in the area that would be utilized for station parking.

Winnetka and Tampa Stations would be above-ground with center platforms reached from parking areas below. Park and Ride Lot sizes would range from 500 spaces at Winnetka Station to 300 spaces at Tampa Station. Displacements required for station construction include several office and retail uses including the Target Department Store at DeSoto Station and several retail businesses at Winnetka and Tampa Stations. These displacements are itemized in Section 4.5 of this report.

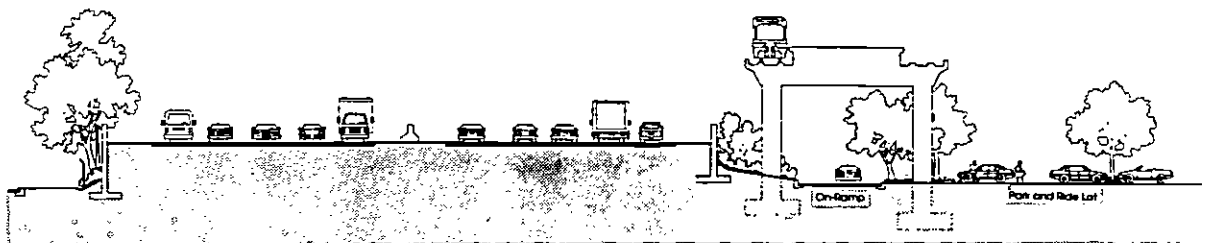
SOURCE: Gruen Associates



Sketch of typical aerial guideway adjacent to the Ventura Freeway in the area between De Soto Station and Tampa Station.



Typical condition between Canoga Avenue and De Soto Station.



Typical condition at Winnetka Station.

◦Ventura Boulevard Metro Rail Extension- Encino/Sherman Oaks/Studio City Area; East of Tampa Station, the alignment of the Ventura Boulevard Route Alternative is configured in subway beneath Ventura Boulevard. A typical view of this area is shown in Figure 16. A total of eight subway stations are located at the major north-south arterial streets. These stations include Reseda, White Oak, Balboa, Sepulveda, Van Nuys, Woodman, Coldwater Canyon, and Laurel Canyon. In general, no parking would be provided at these stations due to the high density of the land uses along Ventura Boulevard. Similar to stations along Wilshire Boulevard, rail transit stations along Ventura Boulevard would provide for bus drop-off and pedestrian walk-in, but would not encourage park and ride.

Because of the need to provide some parking in the East Valley area, two stations are proposed to have limited parking facilities. Laurel Canyon Station is proposed to have a small car parking structure that could be shared with an adjacent shopping center. Sepulveda Station is proposed to have a remote parking facility for approximately 500 cars that would be located near the intersection of the Ventura and San Diego Freeways. A shuttle bus would be required to convey rail transit riders from this parking facility to the rail transit station.

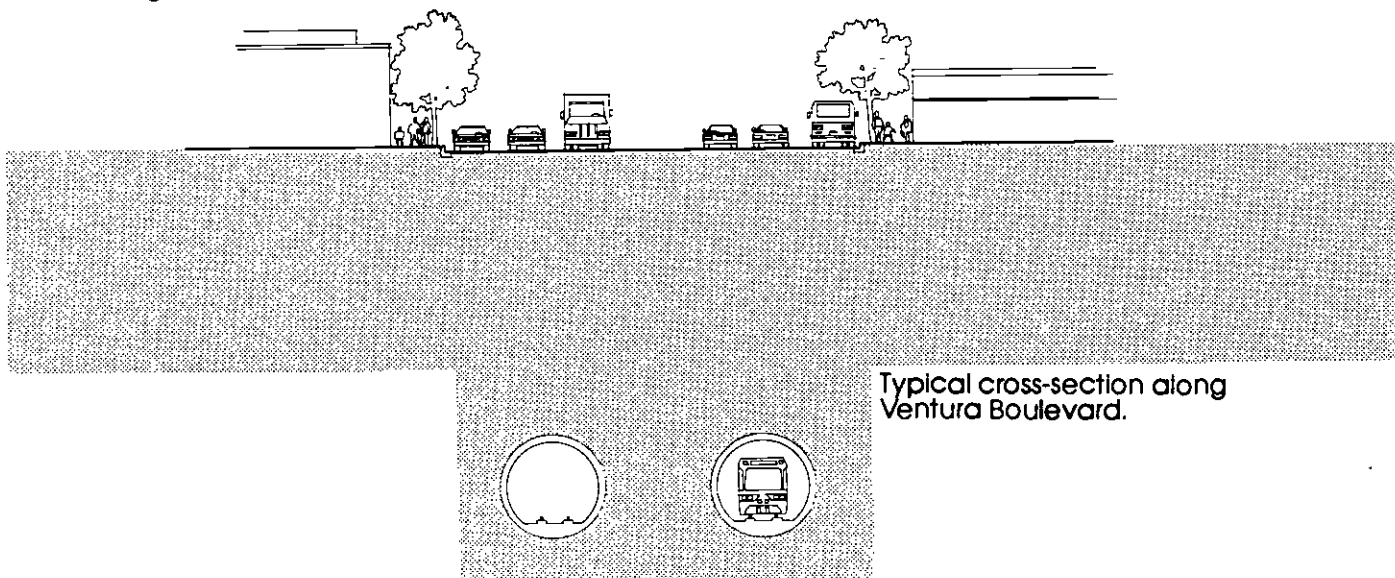
◦Ventura Boulevard Metro Rail Extension Alternative- Studio City/Universal City Area; Two rail transit alignments are possible in this area. If the adopted alignment for Metro Rail MOS-3 segment is followed, the Universal City Station is configured parallel to Lankershim Boulevard and any extension from Universal City to the west would need to travel north out of Universal City Station and turn west near the Los Angeles River Channel before joining Ventura Boulevard near Tujunga Avenue. As shown in Figure 9, this out-of-direction curve is necessitated by the alignment of the Universal City to North Hollywood segment of the Metro Rail Project.

The Ventura Boulevard subway in this area would follow the Los Angeles River route and would join the adopted Metro Rail Red Line Segment 3 near the intersection of Lankershim Boulevard and the Los Angeles River Channel. In order to make this curve, the subway tunnels would need to flare under the river and cross under the Lankershim Boulevard subway tubes in order to merge into the Universal City Station.



SOURCE: L.A. Aerial Photo Inc., 1989

Air view looking west along Ventura Boulevard. Between Tampa and Tujunga Avenues, the alignment is configured in subway beneath Ventura Boulevard.



Typical cross-section along Ventura Boulevard.



San Fernando Valley  
 LACTC East-West Rail Transit Project 

LOS ANGELES COUNTY TRANSPORTATION COMMISSION

Figure 16  
 ♦ Ventura Boulevard Metro Rail Extension  
 -East Valley Area

**GRUEN ASSOCIATES**  
 ARCHITECTURE • PLANNING • ENGINEERING

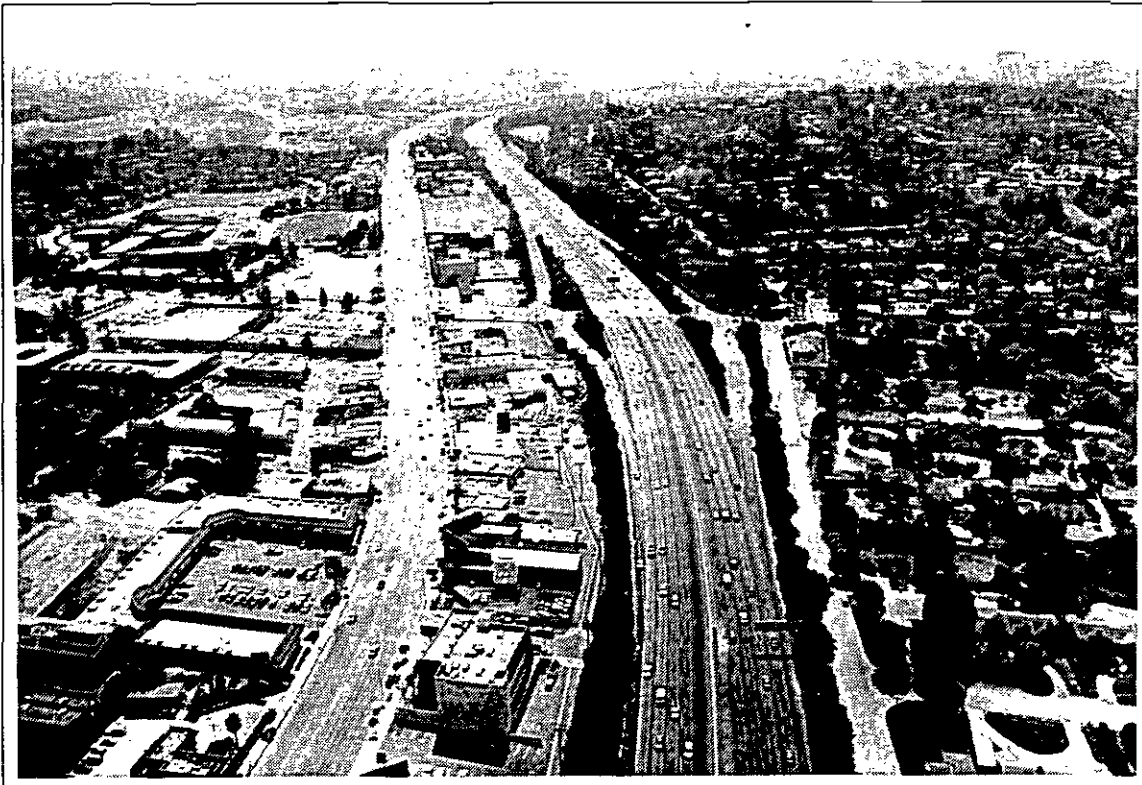
### **3.4 VENTURA FREEWAY ADVANCED AERIAL TECHNOLOGY (MONORAIL) ALTERNATIVE**

This section presents a discussion of the Ventura Freeway Advanced Aerial Technology Alternative. In addition to a discussion of the engineering and planning rationale for this alternative, the section presents cross-section drawings of typical conditions along the route which are cross-referenced to oblique aerial photos.

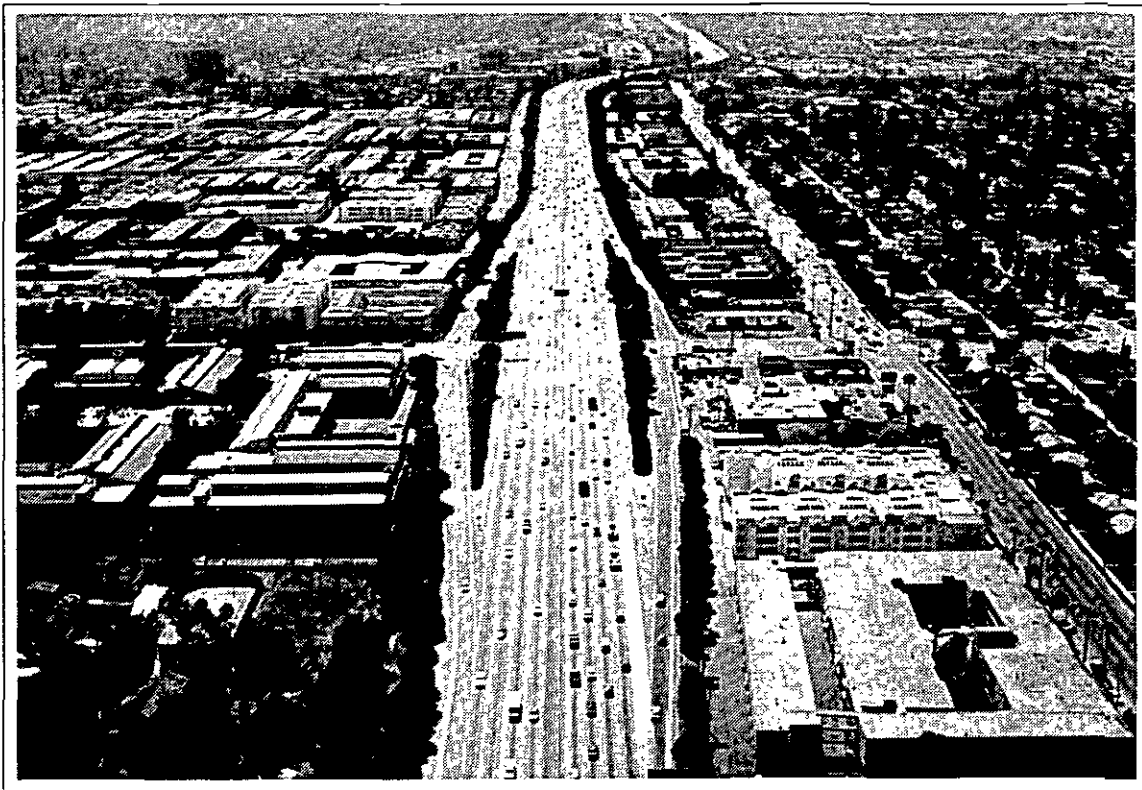
For the purposes of this Supplemental Study, this rail technology for this alternative has been defined as a medium capacity monorail system. Other advanced aerial technologies such as magnetic levitation or other types of monorail would also be possible, however for the purposes of evaluating a particular engineering solution, the TGI Mark VI Monorail was used. Should this alternative be carried forward for further study it is expected that a wider range of advanced aerial technologies would be considered within the right of way of the Ventura Freeway.

The Ventura Freeway route follows the median of the freeway for the majority of its length except for the two end segments. At the west end, the route runs north and south along Canoga Avenue in Warner Center. At the east end, the alignment departs from the Ventura Freeway at the Hollywood Freeway interchange to proceed along the east side of the Hollywood Freeway, joining the approved Metro Rail project route at Universal City Station. The total length of the alignment is 16.2 miles, of which 1.6 miles are along Canoga Avenue, 13.4 miles are along the Ventura Freeway and 1.2 miles follow the Hollywood Freeway to Universal City. There would be a total of 15 stations along this route (14 above-ground stations and 1 subway station). A total of 4,950 parking spaces are provided in park and ride lots adjacent to rail transit stations.

As shown in Figure 17, major commercial streets run parallel to the Ventura Freeway for much of the project area. In the West Valley, Ventura Boulevard runs along the south side of the freeway providing opportunities for station sites to be located along the south side of the freeway. East of Reseda Boulevard, Riverside Drive and Burbank Boulevard run along the north side of the freeway providing opportunities for station sites to be located along the north side of the freeway.



In the West Valley area, Ventura Boulevard runs along the south side of the Ventura Freeway while the residential land uses are generally located to the north of the freeway. Station access has been planned from Ventura Boulevard in this area.



East of Reseda Boulevard, Riverside Drive runs along the north side of the Ventura Freeway while residential land uses are generally located on the south side of the freeway. Station access has been planned from Riverside Drive in this area.

◦History of Ventura Freeway Alignment Studies; Based on conclusions of the Initial Alternatives Evaluation Report, the Draft EIR and the Final EIR,<sup>1</sup> that were based on discussions with the California Department of Transportation, property valuation data and research into major utility constraints, a preferred alignment configuration was developed to the level of Conceptual Engineering Design. The preferred alignment configuration that was carried through the Environmental Impact Report generally followed an edge-of-freeway placement. The route alternative profile configuration was based on the following criteria:

- No encroachment into the planned widening of the Ventura Freeway by Caltrans. This ultimate widening project anticipates ten traffic lanes, a 6-8 foot median and 10-foot roadway shoulders.
- The alignment should minimize crossing above the freeway path in an aerial configuration in order to preserve opportunities for future freeway double-decking.
- Any on-ramps or off-ramps requiring extended closure during construction would be replaced by temporary ramps, and later restored to their original configuration.
- For underground construction, bored tunneling construction methods would be utilized. This was for both cost effectiveness as well as the advantages of passing below major utilities. Station shells and pocket tracks however would generally be constructed using the cut-and-cover method, maintaining minimum depths.

The EIR Alternatives #4 and #5 developed conceptual engineering plans and profiles for alignments following the above criteria, in which the rail transit line was located along the sideslope of the freeway. Because of significant costs, displacement and traffic impacts identified in the EIR for such alignments, an edge of freeway configuration that located columns and stations within the "gore area" of the freeway was considered following release of the Draft Environmental Impact Report. This variation was discussed in the FEIR for the project. Based on discussions and review by Caltrans following the release of the FEIR, it was determined that freeway safety factors would preclude the placement of aerial guideway columns within the "gore area" of the freeway. For this reason, a median of freeway alignment has been utilized in this supplemental study. Such a location would reduce visual and proximity impacts of the

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<sup>1</sup> San Fernando Valley East-West Rail Transit Project; Initial Alternatives Evaluation Report, Gruen Associates. LACTC et al., September 1987, pg 40-47.

San Fernando Valley East-West Rail Transit Project; Draft Environmental Impact Report, Gruen Associates. LACTC et al., November 1989. 4-33 through 4-67.

San Fernando Valley East-West Rail Transit Project-Final Environmental Impact Report, Gruen Associates. LACTC et al., February 1990. pg 3-28 through 3-30.

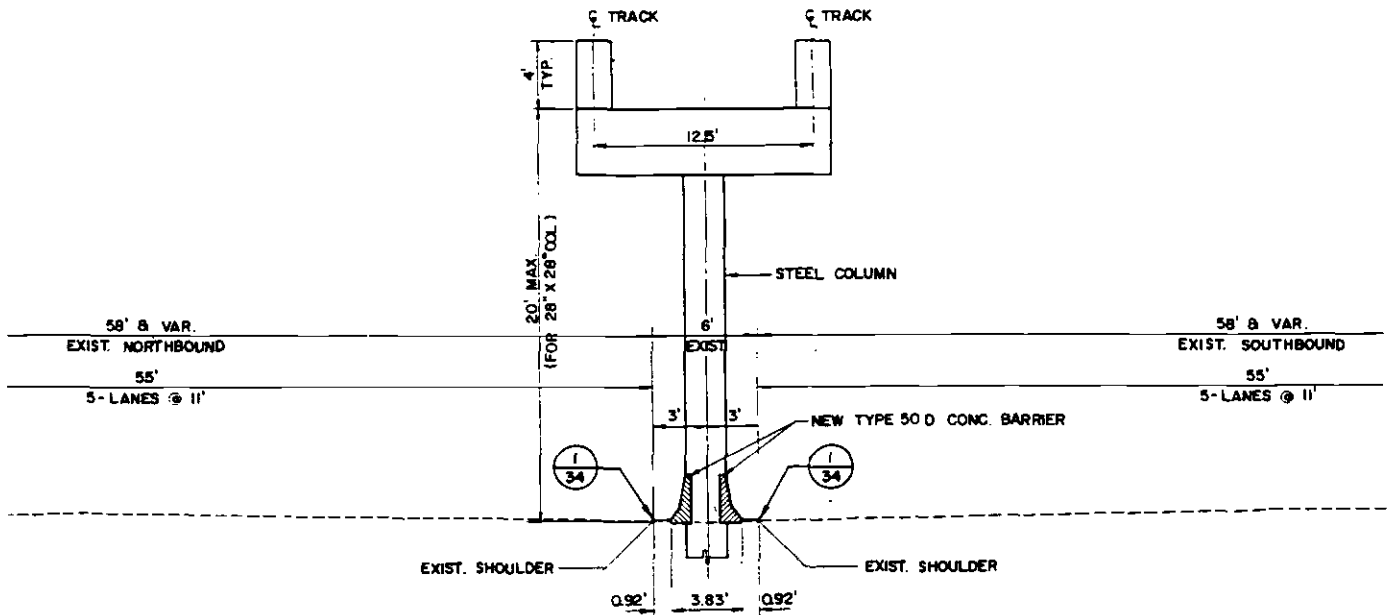


guideway by moving it farther away from homes and businesses along the edge of the freeway. It also allows retention of the mature landscaping that exists along the shoulder of the freeway.

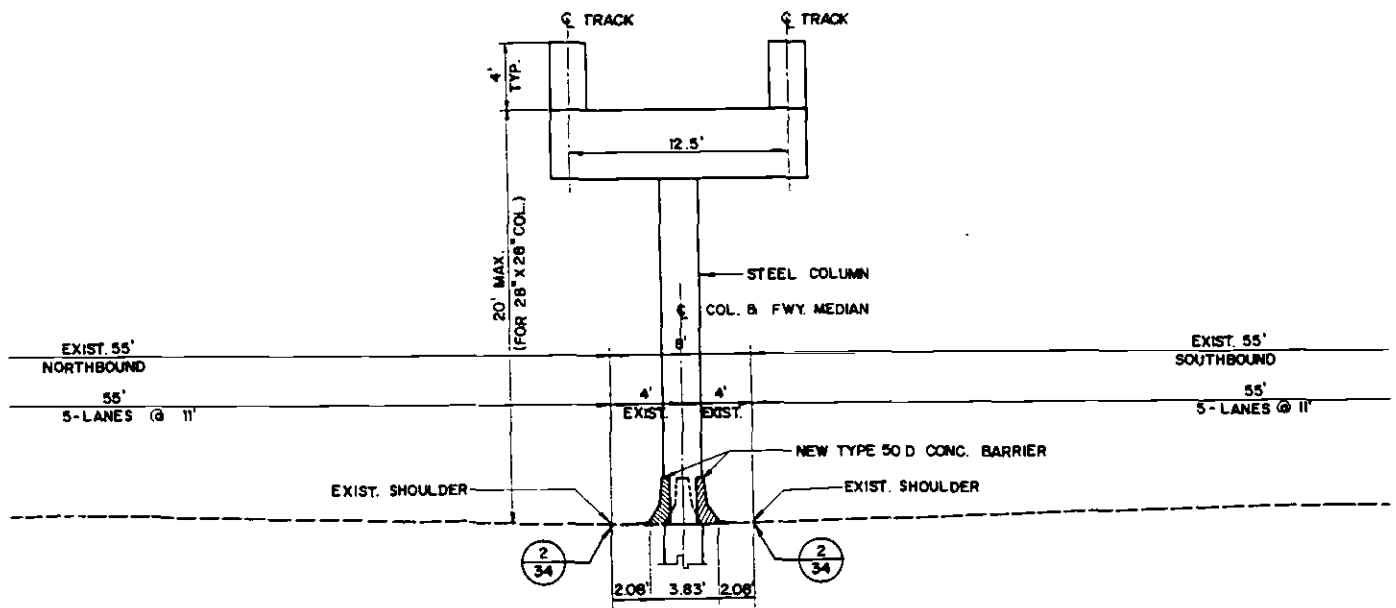
◦Design Criteria for Aerial Guideway in Median of Freeway; Previous studies of Metro Rail or Light Rail transit technologies along the Ventura Freeway found significant problems with a median of freeway guideway location. The principal problem was the lack of available space in which to locate guideway columns that averaged 6-8 feet in diameter. Once the planned widening of the Ventura Freeway has been completed by Caltrans, a total median width of between 6-8 feet will be available. In addition to guideway columns, crash barriers (K-rails) and setbacks must be provided. Using conventional technologies in this environment would have required a widening of the median area, with a resulting widening of the freeway. Widening of the freeway would have been very costly, requiring the reconstruction of most bridges, structures, and the use of retaining walls instead of sideslope at the edges of the freeway. For these reasons, the median of freeway location had been eliminated from consideration for Light Rail and Metro Rail technologies.

The use of an advanced aerial technology such as medium capacity monorail offers certain advantages to conventional technologies for applications in the median of the freeway. Because trains are lighter, support columns can be more slender. Also, turning radii can be tighter with monorail than with Metro Rail or Light Rail thus providing more flexibility in following freeway curves and in entering and exiting the median area. For these reasons, design criteria for a monorail aerial guideway were developed. In order to estimate the projected sizes for guideway support, the following ground rules were established:

- Columns would be spaced generally at between ninety and one hundred feet.
- Column heights would be approximately twenty feet with the possible exception of where elevation of structure would be required to avoid conflicts with existing or other proposed structures. In this latter case, there was an allowance established for a forty foot high column.
- Column sizes were estimated based on a twelve foot center to center distance of guideway for a bi-directional system.
- Estimated nominal train weight was assumed at 27,525 lbs. and a maximum service speed of 55 mph was established.
- Specific consideration was given to the construction of this system in Seismic Zone IV.



Typical Guideway Cross-Section in Freeway Median (6 foot median condition)



Typical Guideway Cross-Section in Freeway Median (8 foot median condition)

SOURCE: Benito A. Sinclair and Associates

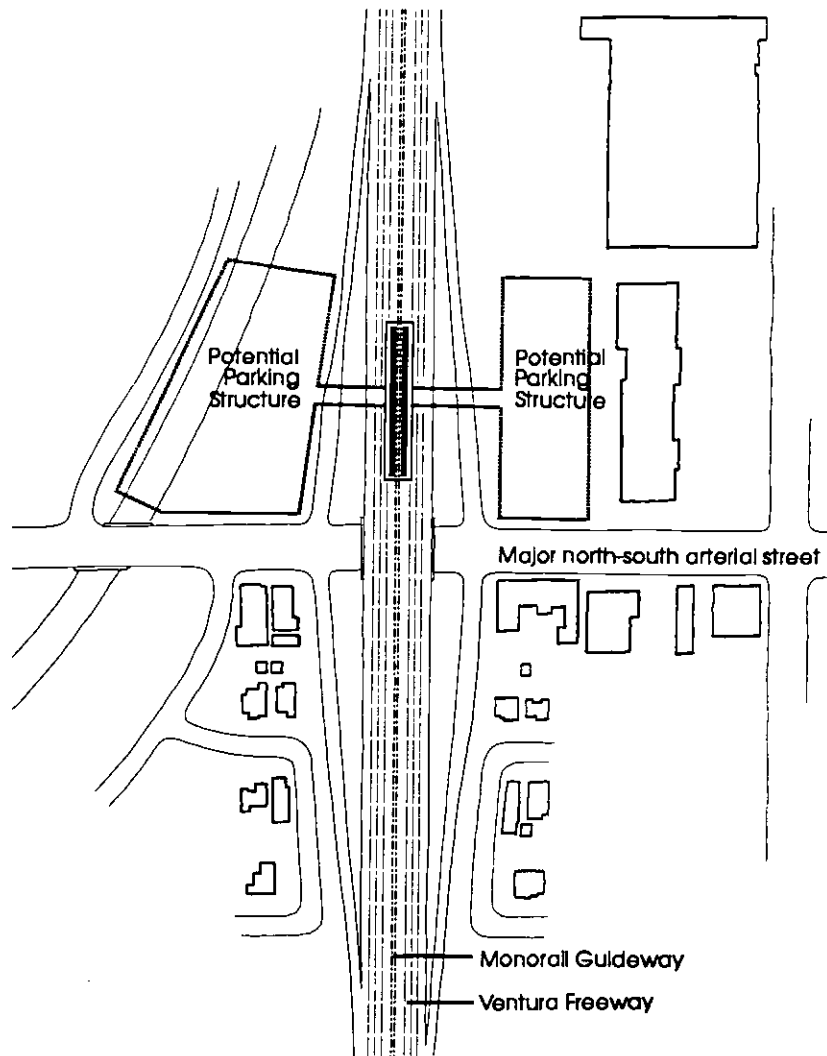
- Estimates did not consider extreme horizontal radii, gradients, gradients or other unusual circumstances.
- Recognition should be given to the fact that many unknowns such as specific geotechnical or seismological conditions could influence the final design of the system and cannot reasonably be accounted for at this time.

Based upon the above criteria, a conceptual guideway design was developed as illustrated in Figure 18. In order to minimize the size of the structural support columns in the median of the freeway, a 28 inch steel plate column was utilized. A crash barrier was incorporated into the design of the column to further reduce right of way requirements in the median. Through the use of this design, no widening of the freeway would be required to accommodate the monorail aerial guideway within the median. Figure 19 illustrates the location of the aerial guideway within the median of the freeway.

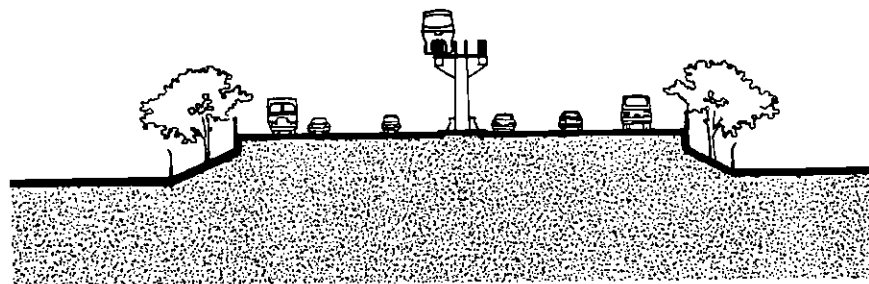
Typical monorail station design is illustrated in Figure 20. A pedestrian overcrossing is required to convey passengers from a side platform station above the median of the freeway to escalators and elevators that would convey them to ground level. Depending on the location and demand, parking structures would be provided adjacent to the freeway to provide park and ride facilities for transit commuters. The size and location of these parking structures are shown in Table 4.

Ventura Freeway Route Alternative- Warner Center Area; This section runs along Canoga Avenue from the proposed Rail Storage & Maintenance Yard to the Ventura Freeway. The line transitions from an at-grade configuration in the rail yard to an aerial guideway just north of Vanowen Street. Between Vanowen Street and Victory Boulevard, the aerial structure curves into the center median of Canoga Avenue, and continues in this configuration to just north of the Ventura Freeway, where it curves easterly away from Canoga Avenue passing through a corner of the Litton Corporation parking lot. The guideway would not require the elimination of parking spaces in the Litton lot as it could pass above the parking area on a aerial easement.

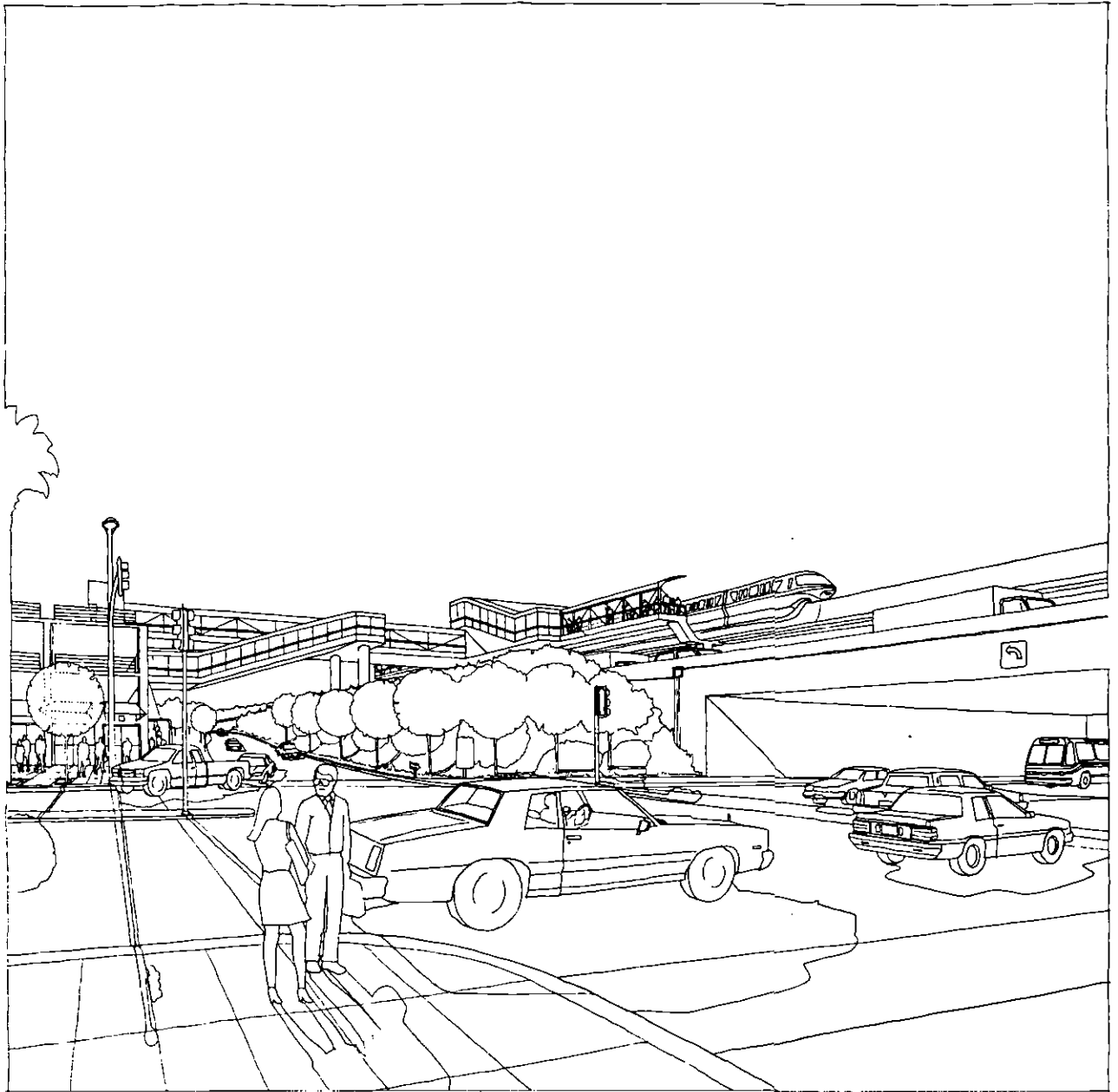
The aerial guideway structure along Canoga Avenue would be located within the existing median. Some street widening at intersections could be required to accommodate left-turn traffic movements. Stations in this segment are located at Vanowen Street, Victory Boulevard and Oxnard Street. The Vanowen Station is a center platform aerial structure located on the east side of Canoga Avenue. Parking for approximately 500 vehicles would be provided on an industrial parcel next to the Los Angeles River Flood Channel. The stations at Victory Boulevard and Oxnard Street are side platform aerial structures located over the center median of Canoga Avenue. As these stations are intended to serve the high density employment concentrations at Warner Center, no parking is planned at either the Victory or Oxnard Stations. The DeSoto Station, by contrast, is intended to serve as the westernmost station on the Ventura Freeway. As such, a parking structure located at the Kaiser Permanente Hospital Employee parking lot that would accommodate approximately 1,500 vehicles has been planned adjacent to



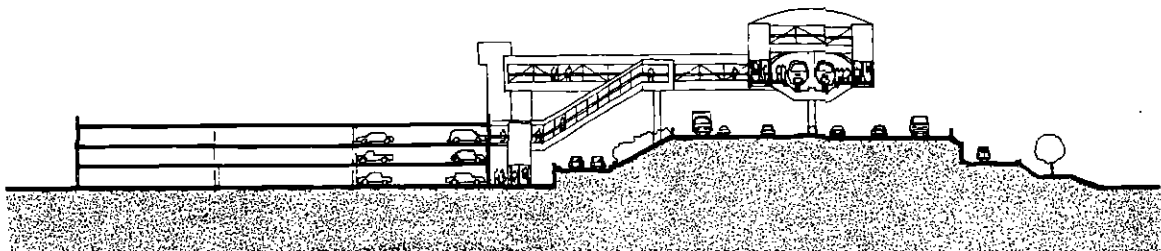
Typical plan view of Ventura Freeway with monorail guideway located in median. Dashed lines indicate potential parking areas on either the north or south side of the freeway.



Typical Cross-Section of freeway with monorail guideway located in median.



Perspective sketch looking toward the proposed monorail station located above a typical Ventura Freeway interchange.



-Cross-section of proposed Ventura Freeway monorail station showing pedestrian bridge to bus drop-off and vehicular parking structure.

the freeway. It is assumed that replacement parking for hospital use would be provided within such a structure.

◦Ventura Freeway Route Alternative- West Valley Area; Between DeSoto Station and the Sepulveda Basin, the Ventura Freeway Route Alternative passes through the communities of Woodland Hills, Tarzana and Encino. The aerial guideway in this area is located above the median of the freeway. Because of the generally close spacing between Ventura Boulevard and the Ventura Freeway in this area, rail transit stations are generally located on the south side of the freeway to provide maximum access from the major commercial streets while, at the same time, minimizing disruption to residential neighborhoods located on the north side of the freeway. Some commercial building takings would be required to accommodate stations.

Proposed stations serving this area are located at Winnetka, Tampa, Reseda, White Oak and Hayvenhurst Avenues. All stations would be aerial with side platforms reached from parking areas located adjacent to the freeway. Park and Ride Lots would provide 400 spaces at Winnetka Station, 300 spaces at Tampa Station, 100 spaces at Reseda Station, 200 spaces at White Oak Station and 650 spaces at Hayvenhurst Station.

◦Ventura Freeway Route Alternative- East Valley Area; Between Hayvenhurst Station and Laurel Canyon Station, the Ventura Freeway Route Alternative passes through the communities of Sherman Oaks, Studio City and North Hollywood. The aerial guideway in this area is located above the median of the freeway. Because of the generally close spacing between Burbank Boulevard, Riverside Drive and the Ventura Freeway in this area, rail transit stations are generally located on the north side of the freeway to provide maximum access from the major commercial streets while, at the same time, minimizing disruption to residential neighborhoods located on the south side of the freeway. Some commercial building takings would be required to accommodate stations.

Proposed stations serving this area are located at Sepulveda, Van Nuys, Woodman, Coldwater Canyon and Laurel Canyon. All stations would be aerial with side platforms reached from parking areas located adjacent to the freeway. Park and Ride lots are planned to provide 500 spaces at Sepulveda, 300 spaces at Van Nuys, 500 spaces at Woodman, and no parking at Coldwater Canyon or Laurel Canyon.

In the Sepulveda Station Area, station parking is located north of the freeway on both sides of the Los Angeles River Flood Control Channel. Traffic access to this station would be from Sepulveda Boulevard and Magnolia Boulevard. The site would also be used as a Rail Storage and Maintenance Yard for a Phased-Length Route Option. Under this alternative, the area north of the LA River that is presently occupied by Los Angeles City Fire Station #88 and the US Army Reserve Training Center would be used to provide the end-of-the-line storage yard for the route length option that ends at Sepulveda Station.

Van Nuys Station is located on the south side of the freeway. Station parking would require displacements including a gas station and an office building.

Woodman Station could locate its access on either the north or south side of the freeway. The south side access would utilize a parcel of land between the LA River Channel and the freeway that is presently used as a car wash. The north side alternative would be located in the parking area of the Fashion Square Shopping Center. In order to maintain parking capacity at the shopping center, the Woodman Station would use a parking structure adjacent to the freeway that could be shared with the shopping center.

The access for Coldwater Canyon Station would be located on the north side of the freeway between the freeway on-ramp and Riverside Drive. Station parking would displace an existing gas station and several retail stores.

The access for Laurel Canyon Station would also be located on the north side of the freeway adjacent to the freeway on-ramp. Station parking would displace an existing gas station.

◦Ventura Freeway Route Alternative- Hollywood Freeway/Universal City Area; There are no rail transit stations planned between the Laurel Canyon and Universal City Stations. The alignment departs from the median of the Ventura Freeway at the interchange with the Hollywood Freeway to an aerial guideway configuration along the side of the Hollywood Freeway. The aerial guideway proceeds south on the sideslope of the freeway, passing through the edge of Weddington Park, before entering Universal City.

Monorail riders would be required to change trains at Universal City from monorail to Metro Rail trains. If the monorail is brought into Universal City Station in a subway configuration, transit riders would have a vertical transfer between trains of approximately 20 feet. If the monorail is brought into Universal City Station in an aerial configuration, transit riders would have a vertical transfer between trains of 70-80 feet requiring the use of multiple banks of escalators and additional time for transfer between the two systems.

## CHAPTER 4.0 EVALUATIVE COMPARISON OF ALTERNATIVES

### 4.1 COST ESTIMATES

This section summarizes the estimated total project costs for the three alignment alternatives, both in current dollars (at the time the EIR-SP Burbank Branch cost estimates were prepared- \$1989) and future dollars (\$1994). Construction cost estimates were developed for the SP Burbank Branch as a part of the EIR for the project which was completed in February 1990. In order to develop cost estimates for the Ventura Freeway and Ventura Boulevard alternatives that would be compatible with the SP Burbank Branch cost estimates, conceptual engineering drawings at a scale of 1 inch=100 feet were developed for both of the supplemental routes, from which compatible cost estimates could be developed. Construction costs have been estimated using quantity takeoffs from the conceptual plan and profile drawings.<sup>1 2 3</sup> Also, a 4.5 percent annual cost escalation has been used to estimate the 1994 costs.

Total project costs include the following elements:

- Construction (guideways, structures, facilities, stations, electrification, trackwork, yards, utility relocations, etc.)
- Transit Vehicles
- Testing and Operations (Start-up)
- Right-of-Way Acquisition
- Professional Services (design, construction management, project administration, affirmative action, community involvement, etc.)
- Owner's Insurance
- Special Programs (such as arts program)

Once these elements are estimated, a construction contingency and project reserve account are added. Table 5 presents a summary of assumptions used in the preparation of the project cost

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<sup>1</sup>San Fernando Valley East-West Rail Transit Project, Engineering and Design Technical Report, October 1989. This document contains plan and profile drawings for the SP Burbank Branch Metro Rail Extension (EIR Alternative #3).

<sup>2</sup>Ventura Freeway Monorail Alignment Plan & Profile Drawings, Benito A. Sinclair & Associates, January 1991.

<sup>3</sup>Ventura Boulevard Metro Rail Extension-Plan & Profile Drawings, Gannett Fleming Transportation Engineers, January 1991.



estimates. Table 6 presents a summary of the 1989 and 1994 total estimated costs for each of the alternative alignments. For reference purposes, cost estimates are also provided for phased length options of each alternative. Tables 7,8 and 9 provide a more comprehensive breakdown of costs for each alternative. Detailed breakdowns of the cost estimates are available in a separate appendix of this report.<sup>4</sup>

A summary of the cost estimate findings includes the following:

◦SP Burbank Branch- Basic cost estimates for this alignment did not change from the FEIR except for the negotiated purchase of the SP Burbank Branch right-of-way by LACTC during the past year at a price of \$115 million. After including additional right-of-way costs for relocation of existing businesses and some limited private property takings that would be required, a total right-of-way cost of \$159 million has been used. This is a reduction from the \$250 million allowed for right-of-way acquisition in the FEIR. The revised 1994 construction costs for this alignment are estimated at \$2.96 billion for the full-length and \$1.29 billion for the phased-length option.

◦Ventura Boulevard Metro Rail Extension- This alternative is more costly than the SP Burbank Branch due to a number of factors. The route is 1.7 miles longer than the SP Burbank Branch and it requires 3 additional stations to provide a comparable level of service. The Ventura Boulevard route would also contain 2.8 miles more subway construction than the SP Burbank Branch. The 1994 construction costs for this alignment are estimated at \$3.91 billion for the full-length and \$1.94 billion for the phased-length option.

◦Ventura Freeway Advanced Aerial (Monorail)- This alternative is less costly than the SP Burbank Branch due principally to its aerial configuration above the freeway, instead of subway. The Ventura Freeway route has only 0.4 miles of subway construction, compared to 9.8 miles on the SP Burbank Branch. The 1994 construction costs for this alignment are estimated at \$2.17 billion for the full-length and \$0.99 billion for the phased-length option.

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<sup>4</sup>San Fernando Valley Route Refinement Alternatives; Cost Estimate Volume 3, Gannett Fleming, January, 1991.

### SP Burbank Branch (Metro Rail Extension)

- 1994 costs per EIR estimates - March, 1990  
(Unit costs held constant for comparison with Ventura Boulevard & Ventura Freeway Alternatives)

### Ventura Boulevard (Metro Rail Extension)

- 3 extra stations in comparison to SP Burbank Branch for Canoga Avenue segment
- Added cost for parking structures instead of SP Burbank Branch at-grade parking
- 1.7 miles longer than SP Burbank Branch
- Added costs in Universal City area due to LA River crossing and rolling of tunnels under Lankershim

### Ventura Freeway (Medium Capacity Monorail)

- 3 extra stations in comparison to SP Burbank Branch for Canoga Avenue segment
- 1 extra station at Universal City in comparison to other alternatives
- Added cost for parking structures instead of at-grade parking
- 2.2 miles longer than SP Burbank Branch
- Special construction (28" steel columns/long span trusses) required in median of freeway
- Added costs for construction staging in middle of freeway



**TABLE 6**  
**Summary of Preliminary Total Costs**  
**(\$ thousands)**

ALTERNATIVE	1989 Costs		1994 Costs	
	Phased Length	Full Length	Phased Length	Full Length
<b>SP Burbank Branch</b> • Metro Rail Extension 3A	\$1,060,464	\$2,400,821	\$1,294,360	\$2,964,004
<b>Ventura Boulevard</b> • Metro Rail Extension	\$1,558,440	\$3,139,176	\$1,941,306	\$3,910,384
<b>Ventura Freeway</b> • Monorail	\$802,474	\$1,744,045	\$999,619	\$2,172,500

Note: EIR cost estimates for the Southern Pacific Burbank Branch Route have been adjusted to reflect actual right-of-way costs of approximately \$159 million. In addition, the 1989 and 1994 totals from Table 7 have been reduced by \$41.8 million and \$78.7 million, respectively, to reflect these fixed right-of-way costs, i.e., no markups for reserves, escalation or administrative/professional services.

**TABLE 7**  
**Preliminary Cost Estimate**  
**SP Burbank Branch Metro Red Line Extension**

Cost	Full Length	Phased Length
1. Guideway/Structures/Facilities/Stations/Yards	\$1,031,884,965	\$409,858,240
2. Mobilization (3% of 1)	\$30,956,549	\$12,295,747
3. Vehicles	\$95,200,000	\$47,000,000
4. Testing and Operations (2.5% of 1-3)	\$28,951,038	\$11,728,850
5. Owner's Insurance (6% of 1-3)	\$69,482,491	\$28,149,239
6. Contingency (20% of 1-3)	\$231,608,303	\$93,830,797
7. Subtotal Construction (1-6)	\$1,488,083,345	\$602,862,874
8. ROW Acquisition	\$159,000,000	\$159,000,000
9. Special Programs (.5% of 1-3)	\$5,790,208	\$2,345,770
10. Utility/Agency Force Accounts (8% of 1 & 2)	\$85,027,321	\$33,772,319
11. Project Reserve (20% of 7)	\$297,616,669	\$120,572,575
12. Subtotal (\$1989) (7-11)	\$2,035,517,543	\$918,553,537
13. Escalation to Mid-Point Cons. (1997) (1.442)	\$2,894,505,946	\$1,306,183,130
14. Project Admin/Prof Services (20% of 13)	\$578,901,189	\$261,236,626
<b>15. GRAND TOTAL (\$1997)</b>	<b>\$3,473,407,136</b>	<b>\$1,567,419,756</b>
<b>16. GRAND TOTAL (\$1994) (15 X .876)</b>	<b>\$3,042,704,651</b>	<b>\$1,373,059,706</b>
<b>17. GRAND TOTAL (\$1989) (15 / 1.422)</b>	<b>\$2,442,621,052</b>	<b>\$1,102,264,245</b>

**TABLE 8**  
**Preliminary Cost Estimate**  
**Ventura Boulevard Metro Rail Extension**

Cost	Full Length	Phased Length
1. Guideway/Structures/Facilities/Stations/Yards	\$1,383,633,000	\$686,827,000
2. Mobilization (3 % of 1)	\$41,508,990	\$20,604,810
3. Vehicles	\$95,200,000	\$47,000,000
4. Testing and Operations (2.5 % of 1-3)	\$38,008,550	\$18,860,795
5. Owner's Insurance (6% of 1-3)	\$91,220,519	\$45,265,909
6. Contingency (20% of 1-3)	\$304,068,398	\$150,886,362
7. Subtotal Construction (1-6)	\$1,953,639,457	\$969,444,876
8. ROW Acquisition	\$150,000,000	\$75,000,000
9. Special Programs (.5 % of 1-3)	\$7,601,710	\$3,772,159
10. Utility/Agency Force Accounts (8 % of 1 & 2)	\$114,011,359	\$56,594,545
11. Project Reserve (20% of 7)	\$390,727,891	\$193,888,975
12. Subtotal (\$1989) (7-11)	\$2,615,980,418	\$1,298,700,555
13. Escalation to Mid-Point Cons. (1997) (1.442)	\$3,719,924,154	\$1,846,752,189
14. Project Admin/Prof Services (20% of 13)	\$743,984,831	\$369,350,438
<b>15. GRAND TOTAL (\$1997)</b>	<b>\$4,463,908,985</b>	<b>\$2,216,102,627</b>
<b>16. GRAND TOTAL (\$1994) (15 X .876)</b>	<b>\$3,910,384,271</b>	<b>\$1,941,305,901</b>
<b>17. GRAND TOTAL (\$1989) (15 / 1.422)</b>	<b>\$3,139,176,501</b>	<b>\$1,558,440,666</b>

**Table 9  
Preliminary Cost Estimate  
Ventura Freeway Monorail**

Cost	Full Length	Phased Length
1. Guideway/Structures/Facilities/Stations/Yards	\$709,444,000	\$303,520,712
2. Mobilization (3% of 1)	\$21,283,320	\$9,105,621
3. Vehicles	\$74,000,000	\$55,000,000
4. Testing and Operations (2.5% of 1-3)	\$20,118,183	\$9,190,658
5. Owner's Insurance (6% of 1-3)	\$48,283,639	\$22,057,580
6. Contingency (20% of 1-3)	\$160,945,464	\$73,525,267
7. Subtotal Construction (1-6)	\$1,034,074,606	\$472,399,838
8. ROW Acquisition	\$150,000,000	\$75,000,000
9. Special Programs (.5% of 1-3)	\$4,023,637	\$1,838,132
10. Utility/Agency Force Accounts (8% of 1 & 2)	\$58,458,186	\$25,010,107
11. Project Reserve (20% of 7)	\$206,814,921	\$94,479,968
12. Subtotal (\$1989) (7-11)	\$1,453,371,350	\$668,728,044
13. Escalation to Mid-Point Cons. (1997) (1.442)	\$2,066,694,059	\$950,931,279
14. Project Admin/Prof Services (20% of 13)	\$413,338,812	\$190,186,256
<b>15. GRAND TOTAL (\$1997)</b>	<b>\$2,480,032,871</b>	<b>\$1,141,117,535</b>
<b>16. GRAND TOTAL (\$1994) (15 X .876)</b>	<b>\$2,172,508,795</b>	<b>\$999,618,961</b>
<b>17. GRAND TOTAL (\$1989) (15 / 1.422)</b>	<b>\$1,744,045,620</b>	<b>\$802,473,653</b>

## 4.2 RIDERSHIP & OPERATIONS

### 4.2.1 Ridership Projections

Year 2010 ridership projections were developed for the project by the Southern California Association of Governments (SCAG).<sup>5 6</sup> Ridership projections developed for the SP Burbank Branch and Ventura Freeway routes were held constant because these ridership projections did not change from the time that the EIR alternatives were prepared. A supplemental run for the Ventura Boulevard Metro Rail Extension was necessary as this route had not been previously modelled.

The Ventura Boulevard Metro Rail Extension patronage forecast was run under the same model input assumptions as were used in both the Patronage Forecasts for the San Fernando Valley Light Rail Transit Alternatives, March 1988, and Patronage Forecasts for the San Fernando Valley East-West Rail Transit Project Alternatives; February 1990. Briefly, the identical 2010 travel demand, generated by the SCAG-82 Modified Growth Forecast for the San Fernando Valley Area Study, was used in this and all previous studies. Zones in the Valley were split for the area study, which resulted in a 1490-zone system. The highway network, essentially the Null system for 2010, was a constant for all model runs. The background transit system consisted of all local and express bus routes operating in the region in 1984, with the exception of those express bus routes which offered competition with either the light rail or metrorail alternatives. The rail transit system common to all of the East-West Rail Transit Project Alternatives as well as this model run included : the Blue Line, two Green Lines, the Coast LRT, the Red Line to Universal City, the Orange Line, the Pasadena LRT and the Harbor Freeway Transitway. Further details can be found in the reports cited above.

The results of previous model runs for the SP Burbank Branch and the Ventura Freeway Route Alternatives, as well as the new runs for the Ventura Boulevard, are summarized in Table 10. Tables 11,12 and 13 provide a breakdown of Average Weekday Passenger Loadings by Station. In order to convert Daily Home-Work Trips to Total Daily Trips, it is necessary to divide by a factor of 0.521. This factor was determined by SCAG to be the appropriate ratio of home-work trips to total trips for this particular area.

Patronage forecasting disclosed that the SP Burbank Branch had the highest projected ridership of the alternatives in this study. SCAG estimated that 57,800 average weekday trips would occur for the SP Burbank Branch Metro Red Line Extension. The Ventura Freeway Advanced Aerial Technology (Monorail) Alternative had an estimated ridership of 49,200 average weekday trips. The Ventura Boulevard Metro Rail Extension had an estimated ridership of 48,600

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<sup>5</sup>Patronage Forecasts for the San Fernando Valley Rail Transit Project Alternatives. Southern California Association of Governments. February 1990 (Forecasts for SP Burbank Branch and Ventura Freeway Alternatives).

<sup>6</sup>Supplemental Forecast: San Fernando Valley-Metro Rail Extension via Ventura Boulevard. Southern California Association of Governments, Memorandum to Mr. Peter DeHaan-LACTC from Mr. Murray Goldman-SCAG. March 13, 1991.

average weekday trips.

**Table 10**  
**Summary of Ridership Projections**  
**(Year 2010)**

Alternative	Average Weekday Trips Year 2010
SP Burbank Branch Metro Red Line Extension	57,800
Ventura Boulevard Metro Rail Extension Alternative	48,600
Ventura Freeway Advanced Aerial Technology (Monorail)	49,200

Source: Southern California Association of Governments

Tables 11, 12 and 13 provide a breakdown of Daily Home-Work Passenger Loadings for each planned station. Table 11 shows station loadings for the SP Burbank Branch Metro Red Line including stations between the San Fernando Valley and Downtown Los Angeles. Table 13 provides similar station-by-station loading for the Ventura Boulevard Metro Rail Extension Alternative including stations between the San Fernando Valley and Downtown Los Angeles. Table 12 provides a breakdown of daily home-work loadings for the Ventura Freeway Advanced Aerial Technology Alternative. Because this line would be a freestanding operation in the San Fernando Valley and would not itself connect to Downtown Los Angeles, station loadings are only provided for stations in the Valley. As previously stated, in order to convert daily home-work trips to total daily loadings it is necessary to divide by a factor of 0.521.

Tables 11 through 13 indicate that the Van Nuys Station, for each of the three alternatives would be the busiest station, other than Universal City and North Hollywood, in the Valley. Other stations with high transit demand include Sepulveda, Reseda and Winnetka Stations on the SP Burbank Branch Metro Red Line Extension; Laurel Canyon, Reseda and Vanowen Stations on the Ventura Freeway Advanced Aerial Technology Alternative; and Laurel Canyon, Reseda and DeSoto Stations on the Ventura Boulevard Metro Rail Extension Alternative.



**TABLE 11**  
**Daily Home-Work Passenger Loadings:**  
**SP Burbank Branch<sup>7</sup>**

LACTC SAN FERNANDO VALLEY EAST-WEST RAIL TRANSIT PROJECT ALTERNATIVES

MODEL RUN "A"

METRO RAIL EXTENSION: UNIVERSAL CITY TO TOPANGA VIA BURBANK BRANCH RIGHT-OF-WAY

DAILY (WEEKDAY) HOME-WORK PASSENGER LOADINGS  
 (WITH P&R CAPACITY-RESTRAINED TRANSIT ASSIGNMENT)

STA NO.	STATION NAME	TRAN NODE	NB VOLUME		VOLUME (READ DOWN)		SB VOLUME		VOLUME (READ UP)			
			IN	ON	OFF	T	D	IN	ON	OFF	T	O
1	WHITTIER/ARIZONA	4607	0	5747	0	0.0	0.0	1097	0	1097	56.7	33.8
2	INDIANA/WHITTIER	4578	5747	729	34	2.8	1.9	1292	22	217	54.1	31.9
3	SOTO/WHITTIER	4563	6442	4288	482	4.5	3.0	2239	188	1115	52.2	30.8
4	UNION STATION	8047	10228	12942	1195	7.1	4.9	3833	783	2377	48.6	28.9
5	1ST/HILL (CIVIC CTR)	8046	21973	393	2986	8.9	5.7	4981	373	1521	47.8	28.1
6	5TH/HILL	8045	19400	581	9024	10.4	6.2	17312	65	12396	46.3	27.6
7	7TH/FLOWER	8031	10957	2095	580	11.9	6.7	28970	218	11874	44.8	27.1
8	WILSHIRE/ALVARADO	8044	12472	718	2228	14.0	7.8	29213	1920	2163	42.7	26.0
9	WILSHIRE/VERMONT	8043	10964	1875	458	18.0	8.8	33752	550	5089	40.7	25.0
10	VERMONT/BEVERLY	5128	12383	1179	4007	18.0	9.8	31443	5559	3250	38.7	24.0
11	VERMONT/SANTA MONICA	5288	9555	531	888	20.0	10.8	28721	3323	801	38.7	23.0
12	SUNSET/EDGEMONT	5284	9420	588	981	21.8	11.6	26089	3184	532	34.9	22.2
13	SUNSET/WESTERN	5257	9015	1223	1179	23.8	12.4	25048	2411	1370	33.1	21.4
14	SUNSET/VINE	5238	9059	892	4045	25.8	13.4	22758	4308	2014	31.1	20.4
15	HOLLYWOOD/VINE	8034	5708	884	815	27.2	14.0	22773	2748	2783	29.5	19.8
16	UNIVERSAL CITY	8033	5985	280	2028	32.1	17.6	19047	4708	980	24.6	16.2
17	NORTH HOLLYWOOD	8032	4217	951	1167	34.8	19.6	13658	5782	393	21.9	14.2
18	LAUREL CANYON	5882	4001	228	346	38.9	20.9	12384	1380	108	19.8	12.9
19	FULTON/BURBANK	3078	3883	157	257	39.3	22.8	11820	726	182	17.4	11.2
20	VAN NUYS BL	3121	3783	159	2504	41.8	24.3	9739	3893	1812	14.9	9.5
21	SEPULVEGA	3171	1438	178	289	43.8	25.3	8079	1884	204	13.1	8.5
22	WOODLEY	5658	1317	55	90	45.8	26.5	7380	780	81	11.1	7.3
23	BALBOA	5654	1282	59	120	47.4	27.5	6308	1141	69	9.3	6.3
24	WHITE OAK	3245	1221	132	244	49.4	28.7	5181	1284	137	7.3	5.1
25	RESEDA	5837	1109	151	520	51.2	29.8	3184	2177	180	5.5	4.2
26	WINNETKA	5832	740	489	131	53.9	31.7	1001	2175	12	2.8	2.1
27	TOPANGA	5828	1098	0	1098	56.7	33.8	0	1001	0	0.0	0.0

Total Daily Home-Work Trips=89,705  
 Total Daily Home Work Trips (Valley Portion)=30,113

**TABLE 12**  
**Daily Home-Work Passenger Loadings**  
**Ventura Freeway Advanced Aerial Technology (Monorail)<sup>7</sup>**

LACTC SAN FERNANDO VALLEY EAST-WEST RAIL TRANSIT PROJECT ALTERNATIVES

MODEL RUN "E"

UNIVERSAL CITY TO VANOWEN/CANOGA VIA AUTOMATED RAILWAY ON VENTURA FREEWAY

DAILY (WEEKDAY) HOME-WORK PASSENGER LOADINGS  
 (WITH P&R CAPACITY-RESTRAINED TRANSIT ASSIGNMENT)

STA NO.	STATION NAME	TRAN NODE	NB VOLUME		VOLUME (RD ON)		STA NO.	TRAN NODE	SB VOLUME		VOLUME (RD UP)	
			IN	ON	OFF	T			IN	ON	OFF	T
1	UNIVERSAL CITY	8033	0	3768	0	1	8033	14933	0	14933		
2	LAUREL CANYON BL	5458	3768	411	242	2	5458	13292	1829	188		
3	COLDWATER CANYON BL	5454	3937	196	261	3	5454	12253	1184	145		
4	WOODMAN AVENUE	5450	3872	370	195	4	5450	11314	1111	172		
5	VAN NUYS BL	5444	4047	349	2557	5	5444	9898	3787	2371		
6	SEPULVEGA BL	5441	1839	145	220	6	5441	9032	1069	203		
7	HAYVENHURST	5850	1764	107	322	7	5850	8012	1184	164		
8	WHITE OAK	5640	1549	188	305	8	5640	7109	1097	194		
9	RESEDA	5638	1430	267	422	9	5638	5425	1948	264		
10	TAMPA AVENUE	5633	1275	245	484	10	5633	3924	1747	248		
11	WINNETKA	5830	1036	39	49	11	5830	3765	207	48		
12	DE SOTO AVENUE	5431	1028	118	413	12	5431	2520	1410	165		
13	OXNARD/CANOGA	5829	731	29	222	13	5829	2372	275	127		
14	VICTORY/CANOGA	5824	538	14	211	14	5824	2313	210	151		
15	VANOWEN/CANOGA	7331	341	0	341	15	7331	0	2313	0		

Total Daily Home-Work Trips=25,615  
 Total Daily Home Work Trips (Valley Portion)=25,615

<sup>7</sup> SOURCE: Southern California Association of Governments

**TABLE 13**  
**Daily Home-Work Passenger Loadings**  
**Ventura Boulevard Metro Rail Extension<sup>8</sup>**

SAN FERNANDO VALLEY EAST-WEST RAIL TRANSIT PROJECT ALTERNATIVES										
METRO RAIL EXTENSION - UNIVERSAL CITY TO VAN OWEN ST. AND CANOGA AVENUE VIA VENTURA BOULEVARD										
DAILY (WEEKDAY) HOME-WORK PASSENGER LOADINGS (WITH P&R CAPACITY-RESTRAINED TRANSIT ASSIGNMENT)										
STA NO.	STATION NAME	TRAN NOOE	NB IN	VOLUME ON	(RO ON) OFF	STA NO.	TRAN NOOE	SB IN	VOLUME ON	(RO UP) OFF
1	WHITTIER/ARIZONA	4607	0	5890	0	1	4607	1292	0	1292
2	INDIANA/WHITTIER	4578	5890	745	55	2	4578	1873	22	303
3	SOLO/WHITTIER	4563	6580	4486	504	3	4563	2497	219	1143
4	UNION STATION	8047	10562	12753	1252	4	8047	3968	889	2360
5	151/HILL (CIVIC CIR)	8046	22063	452	3045	5	8046	5092	446	1570
6	5TH/HILL	8045	19470	612	9032	6	8045	17222	110	12240
7	7TH/FLOWER	8031	11050	2116	667	7	8031	28596	297	11671
8	WILSHIRE/ALVARADO	8044	12499	728	2378	8	8044	28675	1962	2041
9	WILSHIRE/VERMONT	8043	10849	1809	531	9	8043	32815	608	4748
10	VERMONT/BEVERLY	5126	12127	1158	3992	10	5126	30321	5562	3068
11	VERMONT/SANTA MONICA	5268	9293	528	639	11	5268	27589	3311	579
12	SUNSET/EDGEWATER	5264	9182	582	1005	12	5264	24921	3163	495
13	SUNSET/WESTERN	5257	8759	1197	1158	13	5257	23855	2385	1329
14	SUNSET/VINE	5238	8798	685	4025	14	5238	21405	4286	1836
15	HOLLYWOOD/HIGHLAND	8034	5458	873	624	15	8034	21098	2734	2427
16	UNIVERSAL CITY	8033	5707	788	2425	16	8033	13337	8433	672
17	LAUREL CANYON BL	5460	4070	339	478	17	5460	11598	1923	184
18	COLOWATER CANYON BL	5453	3931	22	146	18	5453	11402	237	41
19	WOODMAN AVENUE	5449	3807	50	216	19	5449	10760	733	81
20	VAN NUYS BL	5445	3641	321	1724	20	5445	7254	4068	572
21	SEPULVEDA BL	5443	2238	253	785	21	5443	7525	1065	1336
22	WOODLEY	5439	1706	13	0	22	5439	7692	0	167
23	BALBOA	5435	1719	16	394	23	5435	7752	175	235
24	WHITE OAK	5434	1341	130	378	24	5434	6713	1276	237
25	RESEDA	5636	1093	33	426	25	5636	5377	1561	225
26	TAMPA AVENUE	5633	700	196	111	26	5633	4222	1416	261
27	WINNETKA	5630	785	78	35	27	5630	3389	897	64
28	DE SOLO AVENUE	5433	828	69	329	28	5433	1281	2174	66
29	OXNARD/CANOGA	5629	568	25	162	29	5629	1151	250	120
30	VICTORY/CANOGA	5624	431	12	323	30	5624	1466	4	319
31	VANOWEN/CANOGA	7331	120	0	120	31	7331	0	1466	0

Total Daily Home-Work Trips=88,641

Total Daily Home Work Trips (Valley Portion)=25,297

<sup>8</sup> SOURCE: Southern California Association of Governments

#### **4.2.2 Operations Plan**

Operating plans for the SP Burbank Branch and the two alternative routes under study in this report were prepared in October 1990 by Manual Padron & Associates. In addition to travel times, the operating plans developed schematic track plans showing railyards and crossover track locations.

As shown in Tables 14,15 and 16, travel time from Universal City to Warner Center varied by several minutes between the alternatives. The SP Burbank Branch Metro Red Line would require 23 minutes to travel from North Hollywood to Warner Center, including all station stops along the route. Including 3 minutes for the Universal City to North Hollywood Metro Rail segment results in a total travel time of approximately 26 minutes between Universal City and Warner Center. The Ventura Boulevard Metro Rail Extension Alternative would require 28 minutes to travel from Universal City to Warner Center, while the Ventura Freeway Advanced Aerial Technology Alternative would require 30 minutes to travel from Universal City to Warner Center. For passengers travelling south of Universal City Station, a time penalty of 3-6 minutes would occur during the peak period for the required transfer between monorail and metro rail trains at Universal City. With either the SP Burbank Branch or Ventura Boulevard Alternatives, no transfer would be required. Estimated travel times from Downtown Los Angeles (Union Station) to Warner Center would be 50 minutes via the SP Burbank Branch route, 52 minutes via the Ventura Boulevard Metro Rail Alternative and 57 minutes via the Ventura Freeway Monorail Alternative.

Another important element of the operations plan that would differ depending upon the alignment selected, would be the location of the rail storage and maintenance yard. For the full-length route alternatives, the rail yard would be the same for all three routes. The location would be north of Warner Center in an area bounded by Canoga Avenue, Vanowen and Sherman Way. For the phased-length alternatives that extend from Universal City to the San Diego Freeway, however, there would be a difference between the alternatives. Both the SP Burbank Branch and the Ventura Boulevard Metro Rail Extension Alternatives would utilize Metro Rail technology and would therefore need simply tail tracks for overnight storage of vehicles at the end of the line. Maintenance of vehicles could take place at the Central Maintenance Yard in Downtown Los Angeles. With the Ventura Freeway route however, a freestanding maintenance would be required in the Valley due to the fact that this line would be a new technology with no existing maintenance facilities. For the Ventura Freeway Phased-Length route alternative, a rail yard would need to be located near the interchange between the Ventura and San Diego Freeways. The site would be bounded by Sepulveda Boulevard, the Los Angeles River Channel, the San Diego Freeway and Magnolia Avenue. Such a site would require the relocation of Los Angeles Fire Station #88 and the US Army Reserve Training Center, currently located on the site.

**TABLE 14**  
**SP Burbank Branch**  
**Estimated Running Time**

Station/Line Section	Max. Speed	Dist. (mi.)	Cumul. Dist. (mi.)	Running Time (Min.)	Sta-Sta Time including Dwell	Elapsed Run Time (min.)
North Hollywood (Chandler)	0		0.00			0.00
- curve 714 + 65 to 737 + 60	30	0.49	0.49	1.08	1.08	1.08
Laurel Canyon	60	0.88	1.17	1.02	1.36	2.44
Fulton/Burbank	60	1.70	2.88	2.19	2.52	4.96
- curve 545 + 00 to 561 + 00	60	0.85	3.73	1.09	1.09	6.05
Van Nuys	60	0.83	4.56	1.08	1.42	7.46
Sepulveda	60	0.97	5.53	1.45	1.79	9.25
- curve 429 + 00 to 445 + 00	50	0.40	5.93	0.65	0.65	9.90
- curve 407 + 00 to 422 + 00	60	0.42	6.34	0.44	0.44	10.34
Woodley	60	0.38	6.70	0.61	0.94	11.28
- curve 337 + 00 to 345 + 00	60	0.81	7.52	1.08	1.06	12.34
Balboa	50	0.21	7.73	0.46	0.79	13.13
- curve 280 + 00 to 317 + 00	50	0.32	8.05	0.56	0.56	13.69
White Oak	50	0.93	8.98	1.32	1.66	15.35
Reseda	60	0.91	9.88	1.40	1.73	17.08
Winnetka	60	2.10	11.99	2.59	2.92	20.00
- curve 20 + 00 to 24 + 00	60	1.61	13.60	1.85	1.85	21.84
Topanga	60	0.44	14.03	0.69	1.02	22.86

SOURCE: Manual Padron and Associates, October 1990.

- NOTES:
- Distances based on alignments drawn by Gruen Associates on highway maps, transferred onto plan and profile drawing prepared by Bechtel for Burbank LRT alignment (9/15/87). Horizontal curves shown where design speed is less 60 mph.
  - Travel times estimated with run time model developed by MPA, based on performance characteristics of METRO RAIL vehicle (ref: memo from Joel Sandberg, SCRTO, to Ben Darche, LACTC, 11/30/88). The vehicle performance data includes:
    - Station dwell time = .33 minutes (20 seconds).
    - Maximum operating speed = 70 mph (+4, -1).
    - Performance speed = 60 mph = 85% of maximum speed (70 mph).
    - Constant deceleration rate = 2.0 mphps.
    - Acceleration rate varies from 2.8 mphps (0-30 mph) to (0-60 mph).
  - Speed codes of 30, 50, and 60 mph were assumed.

**TABLE 15**  
**Ventura Boulevard Alternative**  
**Estimated Running Time**

Station/Line Section	Max. Speed	Dist. (mi.)	Cumul. Dist. (mi.)	Running Time (Min.)	Sta-Sta Time including Dwell	Elapsed Run Time (min.)
Universal City	0		0.00			0.00
Laurel Canyon	60	2.27	2.27	2.76	3.09	3.09
Coldwater Canyon	60	1.06	3.33	1.55	1.88	4.97
Woodman	60	1.00	4.33	1.49	1.82	6.79
Van Nuys	60	1.00	5.33	1.49	1.82	8.61
Sepulveda	60	1.00	6.33	1.49	1.82	10.43
Woodley	60	1.00	7.33	1.49	1.82	12.25
Balboa	60	1.00	8.33	1.49	1.82	14.07
White Oak	60	1.00	9.33	1.49	1.82	15.88
Reseda	60	1.10	10.43	1.59	1.92	17.80
Tampa	60	1.00	11.43	1.49	1.82	19.62
Winnetka	60	1.00	12.43	1.49	1.82	21.44
De Soto	60	1.00	13.43	1.49	1.82	23.26
Oxnard	60	1.25	14.68	1.74	2.07	25.33
Victory	50	0.63	15.31	1.14	1.47	26.80
Vanowen	30	0.37	15.68	0.96	1.30	28.10

SOURCE: Manual Padron and Associates, October 1990.

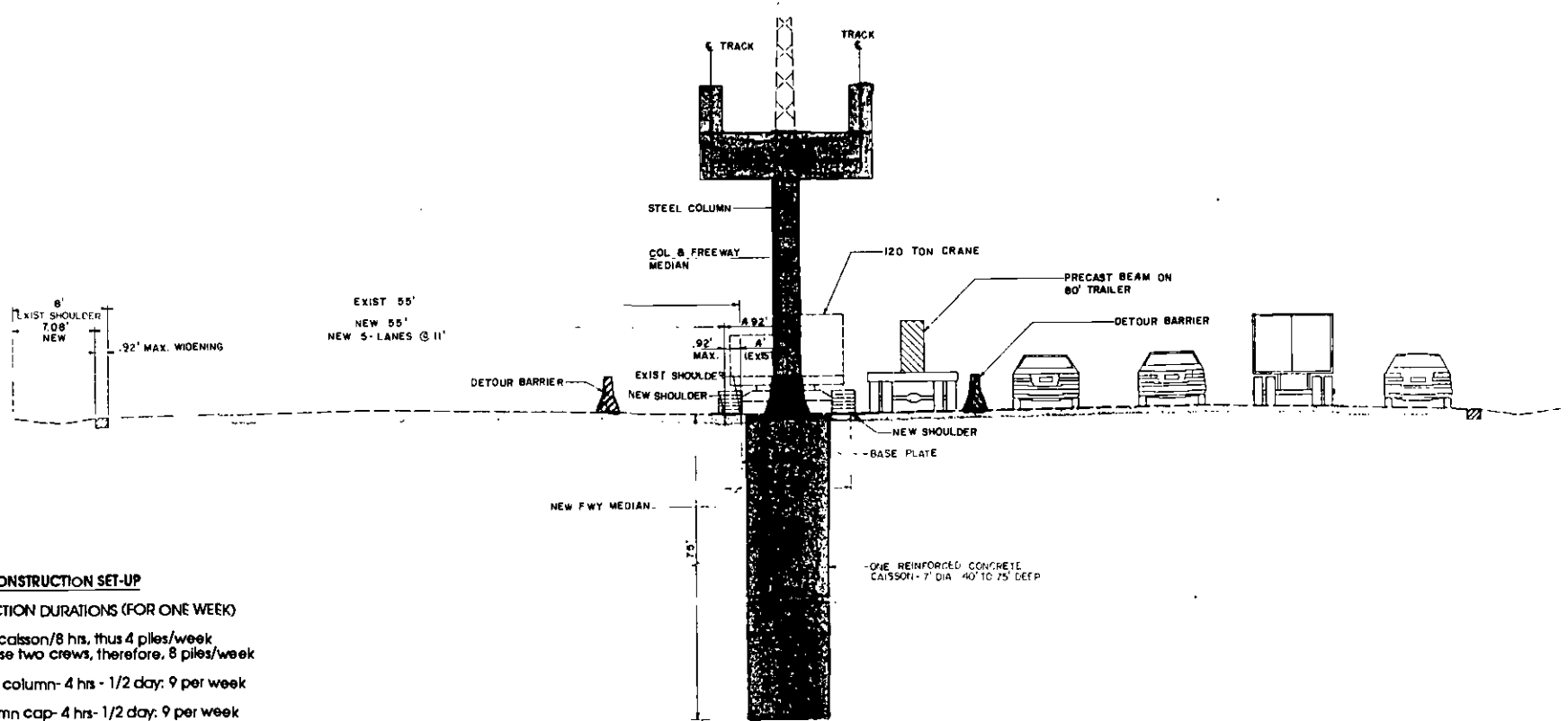
- NOTES:
1. Distances based on alignments drawn by Gruen Associates on highway maps, transferred onto plan and profile drawing prepared by Bechtel for Burbank LRT alignment (9/15/87). Horizontal curves shown where design speed is less 60 mph.
  2. Travel times estimated with run time model developed by MPA, based on performance characteristics of METRO RAIL vehicle (ref: memo from Joel Sandberg, SCRTD, to Ben Darche, LACTC, 11/30/88). The vehicle performance data includes:
    - Station dwell time = .33 minutes (20 seconds).
    - Maximum operating speed = 70 mph (+4, -1).
    - Performance speed = 60 mph = 85% of maximum speed (70 mph).
    - Constant deceleration rate = 2.0 mph/s.
    - Acceleration rate varies from 2.8 mph/s (0-30 mph) to (0-60 mph).
  3. Speed codes of 30, 50, and 60 mph were assumed.

**TABLE 16**  
**Ventura Freeway Alternative**  
**Estimated Running Time**

Station/Line Section	Max. Speed	Oist. (mi.)	Cumul. Oist. (mi.)	Running Time (Min.)	Sta-Sta Time including Owell	Elapsed Run Time (min.)
Universal City	0		0.00			0.00
Laurel Canyon	50	2.79	2.79	3.77	4.10	4.10
Coldwater Canyon	50	0.87	3.66	1.46	1.80	5.90
Woodman	50	0.95	4.61	1.56	1.89	7.79
Van Nuys	50	0.99	5.60	1.61	1.94	9.73
Sepulveda	50	0.92	6.52	1.52	1.86	11.59
Hayvenhurst	50	1.61	8.13	2.35	2.68	14.27
White Oak	50	1.92	10.05	2.72	3.06	17.33
Reseda	50	0.96	11.01	1.57	1.90	19.23
Tampa	50	1.01	12.02	1.63	1.96	21.20
Winnetka	50	0.88	12.90	1.48	1.81	23.01
Oa Soto	50	1.03	13.93	1.66	1.99	25.00
Oxnard	50	1.24	15.17	1.91	2.24	27.24
Victory	50	0.63	15.80	1.18	1.51	28.75
Vanowen	35	0.37	16.17	0.90	1.23	29.98

SOURCE: Manual Padron and Associates, October 1990.

- NOTES: 1. Distances based on alignments drawn by Gruen Associates on highway maps, transferred onto plan and profile drawing prepared by Bechtel for Burbank LRT alignment (9/15/87). Horizontal curves shown where design speed is less 60 mph.
2. Travel times estimated with run time model developed by MPA, based on performance characteristics of METRO RAIL vehicle (ref: memo from Joel Sandberg, SCRTD, to Ben Darche, LACTC, 11/30/88). The vehicle performance data includes:
- Station dwell time = .33 minutes (20 seconds).
  - Maximum operating speed = 70 mph (+4, -1).
  - Performance speed = 60 mph = 85% of maximum speed (70 mph).
  - Constant deceleration rate = 2.0 mphps.
  - Acceleration rate varies from 2.8 mphps (0-30 mph) to (0-80 mph).
3. Speed codes of 30, 50, and 60 mph were assumed.



**TYPICAL CONSTRUCTION SET-UP**

**CONSTRUCTION DURATIONS (FOR ONE WEEK)**

1. Piling- 1 caisson/8 hrs, thus 4 piles/week  
- Use two crews, therefore, 8 piles/week
2. Set steel column- 4 hrs - 1/2 day; 9 per week
3. Set column cap- 4 hrs- 1/2 day; 9 per week
4. Place 80' long beam (2)- 4 hours- 1/2 day; 9 per week

Estimated production: 640 LF/week or 135 weeks or 1 year with 3 complete crews

**NOTES:**

1. Weekday working hours will be from 12 A.M.- 4 A.M.  
Total of 4 hrs/day
2. Weekend working hours will be from 9 P.M. - 5 A.M.  
Total of 8 hrs/day
3. Total available work time per week is 36 hours.

Figure 21  
•Ventura Freeway Advanced Aerial technology  
Typical Construction

### 4.3 CONSTRUCTABILITY

Deep-bore and cut-and-cover subway construction techniques that are anticipated for the SP Burbank Branch Route and the Ventura Freeway Metro Rail Extension Alternatives are more time consuming than the construction of above-ground transit systems. A construction period of three to four years is projected for both the SP Burbank Branch and the Ventura Boulevard Metro Rail Extension alternatives. A construction period for above-ground advanced aerial technologies would generally last from 18-24 months.

For these reasons, the Ventura Freeway Advanced Aerial Technology (monorail) Alternative would be buildable in less time than the other alternatives. Because it is located in the median of a very heavily travelled freeway, however, significant construction difficulties exist. Caltrans has mandated that no capacity be lost from the freeway and that no travel lanes be closed during rush hours. In order to create a construction zone in the median of the freeway that is large enough to work, it will be necessary to work only at night. As shown in Figure 21, construction equipment and barriers would need to be moved in and out of the median area every night, and construction of about 36 hours per week, including weekends, can be achieved using this method. Furthermore, due to a median width in the freeway of only 6-8 feet, support columns for the aerial guideway have been reduced to square 28" steel plate columns with integrated crash barriers. Clearances from travel lanes on the freeway to these barriers will be less than one foot in some locations on the inside of the freeway. Such restrictive construction practices, while difficult to implement, have been reviewed by Caltrans and Rail Construction Corporation staff, in addition to LACTC staff and the study consultants, and appear feasible and constructable within the bounds of current construction practices and concept engineering studies performed to date on the freeway transit alignment.

In the case of the Harbor Freeway Transitway project, the entire freeway was widened to the outside, thus creating a construction zone in the middle of the freeway. No travel lanes were lost during the construction period. The Ventura Freeway cannot be widened without extensive reconstruction of bridges and retaining walls along the shoulder of the freeway. Caltrans will not allow full-time closure of any lane. However, certain work windows will be allotted for the closure of 2 lanes, one in each direction during certain non-peak periods. These hours are between 12:00 midnight and 4:00 a.m. on weekdays; and 9:00 p.m. to 5:00 a.m. on weekends. This provides the contractor with approximately 36 hours per week for construction within the median of the freeway. During the weekday, upwards of 25% of the time will be allocated for construction in the freeway median would be used for mobilization. Also, with the need for exclusively night construction work, a foundation design concept of drilled caisson, instead of driven piles, has been developed to minimize construction noise impacts on freeway adjacent land uses.



◦Freeway Median/Monorail Construction Sequencing: A typical nightly construction sequence in the median of the Ventura Freeway would involve the following steps:

- 1) Establishing a detour to close 2 lanes. Generally, flashing arrow signs in conjunction with cones or temporary concrete barriers would be used. While this is occurring, a crawler crane loaded onto a lowboy trailer would be brought alongside the freeway. At a designated time, the crane and lowboy would slowly proceed to their drilling location across travel lanes to the median of the freeway. Lights and/or sign protection would be necessary during this mobilization.
- 2) Within the median of the freeway, the crawler crane would be off-loaded and set-up. Actual production time would be 2 to 3 hours (weekdays), with an assumed production rate of 1 pile per 8 hours. Also assumed is an average pile depth of 55 feet (a range of 40-70 feet is anticipated). Thus, at this rate, piling will be a critical path construction phase. It is anticipated that 2 cranes would be utilized.
- 3) After the caisson hole has been drilled, a reinforcing cage would be inserted and filled with concrete. Anchor bolts would be cast-in-place at this time, thus completing the piling process. Curing time (minimum 7 days) should be allowed in order for the concrete to achieve its designed compressive strength.
- 4) Erection of the steel columns is assumed to take approximately 4 hours per column. This includes transportation to the site, hookup and placement.
- 5) Placement and connection of the steel cross beam atop the steel square 28-inch column is assumed to take approximately 4 hours each, including transportation, lifting and connection. The entire steel assembly would require fireproofing at a later phase of the construction process.
- 6) Setting the 80-foot precast, post-tensioned concrete longitudinal beams would require two mobile truck cranes (80-100 ton range) that would be of sufficient size to be able to pick up the 45-ton beam simultaneously and set it in place. Hookup and setting of the beam itself should take 1/2 hour. For a 4-hour shift, 2 beams should be able to be set. This is inclusive of travel time to the site and crane set-up. The beams would be tensioned after they have been placed. This work could be done during the day when there are no lane closures. Also, all electrical and other necessary connections to the beam could be done during daylight hours.
- 7) The final nightly task would be to replace the concrete median barrier around the column in order to restore the full number of freeway travel lanes for day use. Each week of this assembly-line procedure would construct approximately 640 linear feet of guideway, from piling to longitudinal beam placement. Hence, in a period of two weeks, the entire assembly would move approximately one-quarter of a mile. At this rate, barring no major complications, the guideway will be built in 135 weeks. By the addition of two more cranes (complete) and additional crews, the entire guideway could conceivably be constructed in 1 year.

◦Freeway Monorail Station Construction Sequencing: A second area in which major construction issues exist would be at guideway crossings of the freeway and at aerial monorail station construction sites. Large beams, spanning at least half the width of the freeway would be necessary to provide support for the aerial guideway when it diagonally crosses from outside the freeway to the median (near Canoga Avenue, and along the Hollywood Freeway) and at proposed aerial station locations. During the construction period, erection of these structures would involve the placement of beams perpendicular to the flow of traffic. During this time it would be necessary to close all traffic lanes. This closure would need to occur at night, in off-peak hours.

Traffic detours around the station site would be used at these times. Once the major beams are set and the superstructure is assembled, all finishing work could be accomplished during daylight hours. This would be done in a similar manner to the guideway construction work performed under traffic. Safety nets and other pertinent safety features will be implemented to allow for daytime construction.

## 4.4 KEY ENVIRONMENTAL ISSUES

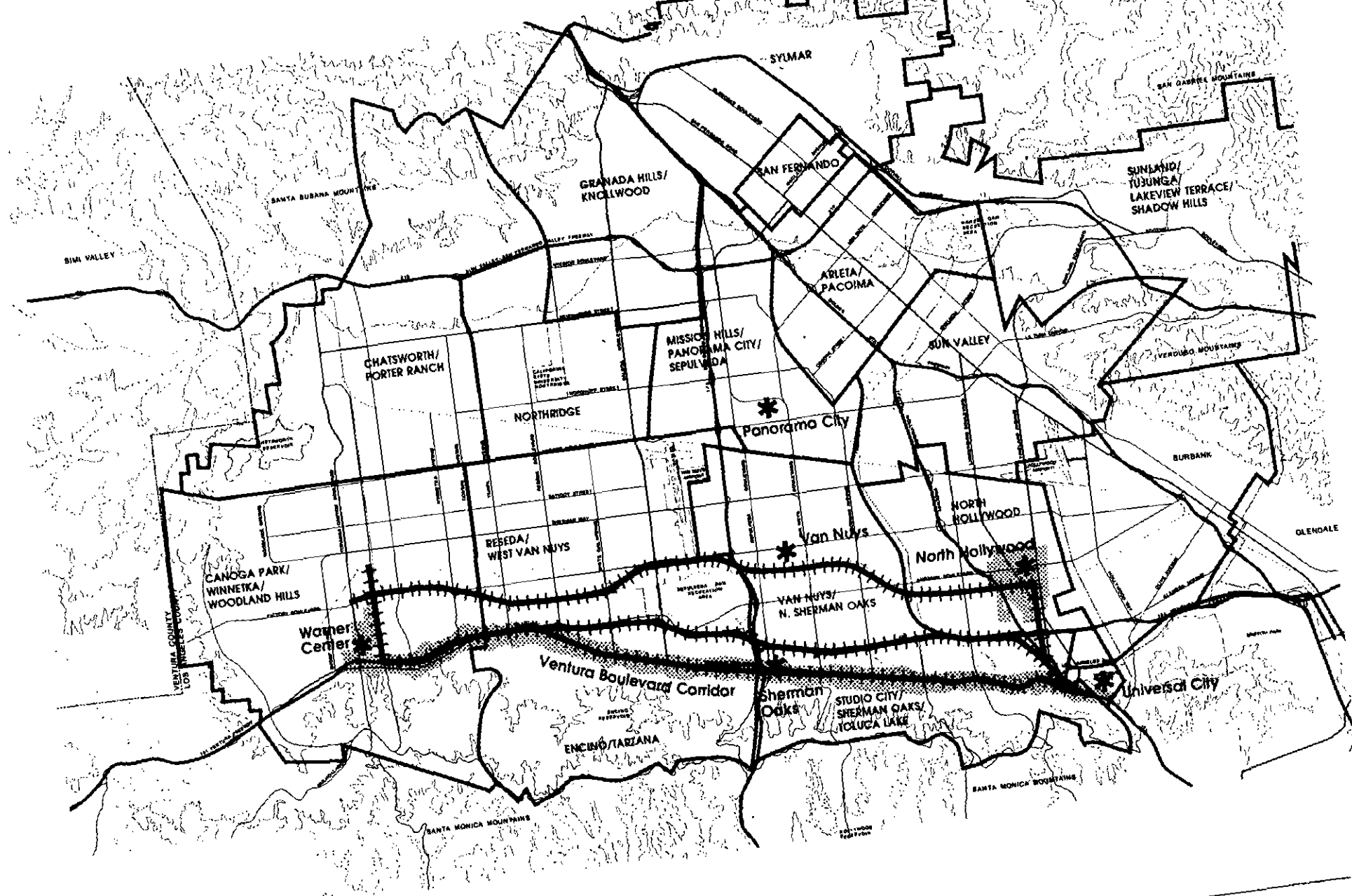
### 4.4.1 Land Use

The three alignment alternatives studied in this report are located within the City of Los Angeles and pass through several Community Planning Areas. These communities include North Hollywood, Van Nuys/ North Sherman Oaks, Studio City/Sherman Oaks/Toluca Lake, Encino/Tarzana, Reseda/West Van Nuys, and Canoga Park/Winnetka/Woodland Hills. In addition certain special planning areas exist along the various routes. These special planning areas include the North Hollywood Redevelopment Area, The Ventura/Cahuenga Boulevard Specific Plan Area and the Warner Center Specific Plan Area. Major civic, recreational and commercial centers served by the various alternatives include the Van Nuys Civic Center, the Sherman Oaks Galleria, LA Valley College, LA Pierce College and the Sepulveda Basin Recreation Area. The following discussion summarizes the relationship between the three alignments and the land use patterns and planning context of each route alternative. These relationships are shown in Table 17 and illustrated in Figure 22.

SP Burbank Branch Metro Red Line Extension; Extending for a total length of approximately 14.0 miles, the SP Burbank Branch Metro Red Line Extension would affect eight planning areas. These areas include six community planning areas: the Canoga Park-Winnetka-Woodland Hills, Encino-Tarzana, Reseda-West Van Nuys, Sherman Oaks-Studio City-Toluca Lake, North Hollywood, and Van Nuys-North Sherman Oaks Community Plans; one specific plan: the Warner Center Specific Plan; and one redevelopment area: the North Hollywood Redevelopment Area.

The Ventura Freeway Advanced Aerial Technology Alternative; Extending for a total distance of 16.2 miles, this alternative would affect seven planning areas. These include five community plans: the Canoga Park-Winnetka-Woodland Hills, Encino-Tarzana, Sherman Oaks-Studio City-Toluca Lake, North Hollywood, and Van Nuys-North Sherman Oaks Community Plans; and two specific plans: the Warner Center and Ventura-Cahuenga Boulevard Corridor Specific Plans.

Ventura Boulevard Metro Rail Extension Alternative; Extending for a total length of approximately 15.7 miles, this alternative would affect five planning areas. Those affected by this alignment include three community plans: the Canoga Park-Winnetka-Woodland Hills, Encino-Tarzana, and Sherman Oaks-Studio City-Toluca Lake Community Plans; and two specific plans: the Warner Center and Ventura-Cahuenga Boulevard Corridor Specific Plans.



- COMMUNITY/DISTRICT PLAN AREA BOUNDARIES
- ▨ SPECIFIC PLAN/REDEVELOPMENT AREAS
- \* ADOPTED CENTERS FROM LOS ANGELES CITY CONCEPT PLAN

Figure 22  
 ♦ Project Area Community Planning Areas

GREEN ASSOCIATES  
 ARCHITECTURE PLANNING ENGINEERING

**Planning Issues;** With respect to the potential effects of each alignment on planning areas in the San Fernando Valley, the three transit alternatives are all located along corridors that are designated for transportation purposes. Several of the plans along the SP Burbank Branch and in North Hollywood and Warner Center recognize future transit service and stations within their communities. Two principal planning documents that would be affected by the selection of an alignment in the Valley include the North Hollywood Redevelopment Area Plan and the Ventura-Cahuenga Boulevard Corridor Specific Plan.

Adopted on February 21, 1979, the North Hollywood Redevelopment Area would be supported by the construction of the Metro Red Line Extension along the SP Burbank Branch alignment. Encompassing an area of 740 acres, the North Hollywood Redevelopment Area is located at the eastern end of the alignment. Since the purpose of the redevelopment plan focuses on encouraging investment and growth in the North Hollywood community, the rail transit alignment would have a beneficial effect on the redevelopment area since the location of the alignment through the community could spur development.

The Ventura-Cahuenga Boulevard Corridor Specific Plan Ordinance would be affected by both the Ventura Freeway Advanced Aerial Technology (Monorail) and Ventura Boulevard Metro Rail Extension Alternatives. Adopted in 1990, the Ordinance would be affected more by the Ventura Boulevard alternative, which has 11 of its 14 stations located in the planning area, than the Ventura Freeway alternative which has 4 of its 15 stations located within the specific plan boundary.

**TABLE 17  
Affected Planning Areas**

Plans	SP Burbank Branch	Ventura Freeway	Ventura Boulevard
<b>Community/District Plans</b>			
Canoga Park-Winnetka-Woodland Hills	•	•	•
Encino-Tarzana		•	•
Reseda-West Van Nuys	•		
Sherman Oaks-Studio City-Toluca Lake		•	•
North Hollywood	•	•	
Van Nuys-North Sherman Oaks	•	•	
<b>Other Plans:</b>			
Warner Center Specific Plan	•	•	•
Ventura-Cahuenga Blvd Specific Plan		•	•
North Hollywood Redevelopment Plan	•		

#### 4.4.2 Land Acquisition and Displacement

In order to estimate the amount of property displacement that would be required for each alignment, concept engineering drawings, prepared by Gannett Fleming and Benito A. Sinclair & Associates, were overlaid on City Tax Assessor Parcel Maps. Those parcels that would require displacement were listed and field checked to verify addresses, improvements and recent construction. Estimates of current value were developed from City of Los Angeles and Damar Corporation Real Estate Information Systems Databases by the LACTC Real Estate Section. No residential properties were displaced by any of the alternatives studied in this supplemental report. Because rail transit stations are located in close proximity to residential uses in some areas, there are instances where homes would be located adjacent to a rail transit stations or park and ride lots. Along the SP Burbank Branch, there are 5 stations that would be located in residential areas. The Ventura Boulevard Metro Rail Extension would have no stations located adjacent to residential land uses, while the Ventura Freeway Advanced Aerial Technology Alternative (monorail) would have 4 stations located adjacent to residential land uses.

The removal of existing non-residential land uses would be required for construction of any of the alternatives under study in this report. Wherever possible, alignments have been laid out to take advantage of publicly-owned corridors such as the Caltrans right-of-way along the Ventura and Hollywood Freeways, utility corridors, or the Southern Pacific Railroad rights-of-way. In areas where no such public or quasi-public right-of-way is available, private property takings will be required. LACTC would either acquire such land or obtain easements from the owners as outlined in the California Public Utilities Code Section 30600. The exercise of the right of eminent domain would also need to comply with the requirements of the California Eminent Domain Law (Code of Civil Procedure Section 1230.010 et seq.). In the acquisition of real property by a public agency, California state law requires those agencies to 1) ensure consistent and fair treatment for owners of real property, 2) encourage and expedite acquisition by agreement in order to avoid litigation and relieve congestion in the courts, and 3) promote confidence in public land acquisition. No person can be required to move from his or her home unless affordable, decent, safe, and sanitary replacement housing is available and not generally less desirable with regard to public utilities, public & commercial facilities and other uses, than the home from which they are being displaced.

Table 18 provides a summary of property displacements required for each of the alternative routes. A summary of displacements for each of the alternative routes includes the following:

● **SP Burbank Branch Route Displacement Impacts:** Approximately 13.5 miles of the 14.0 miles between Warner Center and North Hollywood are located within the Southern Pacific Railroad (SPRR) Right-of-Way, which has recently been acquired by LACTC. Because of this, the majority of displacements for this route alternative are industrial leaseholds within the railroad property. No residential units would be displaced by this route, but a total of 37 separate businesses would be displaced. A total of 191.4 acres of land would be taken, however most of this property is part of the SP acquisition recently completed. Approximately 11.9 acres of parkland would be required, comprised of the Los Angeles Pierce College softball fields at

Winnetka Station and some slivers located along Victory Boulevard in the Sepulveda Basin Recreation Area. Total acquisition cost for this right-of-way is estimated at \$159 million. This includes a negotiated sales price of the SP right-of-way of \$115 million, plus several private land holdings adjacent to the SP right-of-way.

**Table 18**  
**Summary of Displacements**

	SP Burbank <sup>1</sup>	Ventura Blvd.	Ventura Fwy.
Residential Units	0	0	0
Number of Businesses	37	41	33
Parkland (acres)	11.9 acres <sup>3</sup>	0 acres	15.0 acres <sup>4</sup>
Total Acres <sup>5</sup>	191.4 acres	31.7 acres	56.7 acres
Estimated Right-of-Way Cost (\$1991) <sup>6</sup>	\$159.0 mil. <sup>2</sup>	\$134.5 mil.	\$125.5 mil.

<sup>1</sup> Displacement estimates per DEIR, November 1989.

<sup>2</sup> Includes SP R.O.W. sales price of \$115 million and \$44 million for miscellaneous private holdings, relocation, etc.

<sup>3</sup> Includes L.A. Pierce College Recreational Facilities and Sepulveda Basin Recreation Area.

<sup>4</sup> Sepulveda Basin Recreation Area

<sup>5</sup> Based on station locations and alignments shown in Plan and Profile Concept drawings prepared by Gannett Fleming Transportation Engineers and Benito A. Sinclair and Associates, January 1991.

<sup>6</sup> Preliminary budget estimates prepared by LACTC Real Estate Department, James D. Wiley, March 1991. Right-of-way estimates are subject to change based on further refinement of engineering alignments and station locations, and were prepared for the purpose of comparing alternative route alignments based on real estate economics.

● **Ventura Freeway Displacement Impacts:** Approximately 13.4 miles of the 16.5 miles between Warner Center and Universal City are located along the Ventura Freeway. The design rationale for the Ventura Freeway Advanced Aerial Technology Alternative was to remain within the Ventura Freeway right-of-way as much as possible in order to minimize private property displacements. In all cases the greatest effort was made to minimize residential displacements or intrusion of above ground segments into existing residential areas. Property displacements are principally required for the location of rail transit stations adjacent to the freeway. No residential units would be displaced by this route, but a total of 33 separate businesses would be displaced. A total of 56.7 acres of parkland would be required, comprised of land within the Sepulveda Basin Recreation Area adjacent to Sepulveda and Hayvenhurst Stations. Total acquisition cost for this right-of-way is estimated at \$125.5 million.

● **Ventura Boulevard Metro Rail Extension Displacement Impacts:** Approximately 9.9 miles of the 15.7 miles between Warner Center and Universal City are located along Ventura Boulevard. Because this route is principally in subway configuration, displacements are located at station areas for pedestrian access and proposed park and ride lots. Because of the high cost of land in this corridor, parking structures have been assumed for costing purposes instead of parking

lots. No residential units would be displaced by this alternative, but a total of 41 separate businesses would be displaced. No parkland would be taken. A total of 31.7 acres of land would be required at an estimated acquisition cost of \$134.5 million.

#### 4.4.3 Visual/Proximity Effects

Above-ground segments of the rail transit alternatives will be visible from adjacent land uses along each route. In some instances, these above-ground sections could block existing views or change the visual character of the area in which they are located. The SP Burbank Branch corridor runs primarily along the Southern Pacific (SP) Railroad right-of-way between Warner Center and Universal City. A mixture of older industrial and newer residential and commercial uses are found along this right-of-way. The second corridor, the Ventura Freeway alignment travels principally in a heavily travelled transportation corridor along the Ventura Freeway, one to two miles south of the Burbank Branch alignment. Land uses along the route include newer residential communities and mixed commercial uses along Ventura Boulevard, Burbank Boulevard and Riverside Drive. The third corridor, the Ventura Boulevard alignment, is principally a commercial corridor that is one of the heaviest travelled and most densely developed arterials in the San Fernando Valley.

Because the major visual impacts of these alignments can be expected to occur in the above-ground segments of each route, this section reviews the portions of each route that are in above-ground configurations. For the purpose of this Supplemental report, visually sensitive land uses have been defined to include all residential uses, schools, religious institutions, other public buildings, and passive outdoor uses including parks, playgrounds, and recreation areas.

● SP Burbank Branch Route Visual Effects: This route is configured in subway for 70% of its total length (9.8 miles of subway out of a total route length of 14.0 miles). It is generally configured in subway in residential areas. For these reasons, visual impacts would be confined to areas along the route where the alignment is above ground or at park and ride lots and station areas. The FEIR did not identify significant visual impacts for the SP Burbank Branch route.

● The Ventura Boulevard Metro Rail Extension Alternative: This route is configured in subway for 80% of its total length (12.6 miles of subway out of a total route length of 15.7 miles). The only segment of this route that is above ground is located west of Tampa Avenue, where the route runs along the southside of the Ventura Freeway, and along Canoga Avenue in Warner Center where the alignment runs on an aerial guideway in the median of Canoga Avenue.

● The Ventura Freeway Advanced Aerial Technology Alternative: This route would be configured as an aerial guideway for 98% its total length (15.8 miles of aerial guideway out of a total route length of 16.2 miles). Even though this alignment would be in aerial configuration for the majority of its route, the guideway would be screened from adjacent land uses somewhat by the general environment of the freeway. The top of station roof structures above the freeway would be quite high (more than 70 feet above surrounding grade) and could therefore be visible

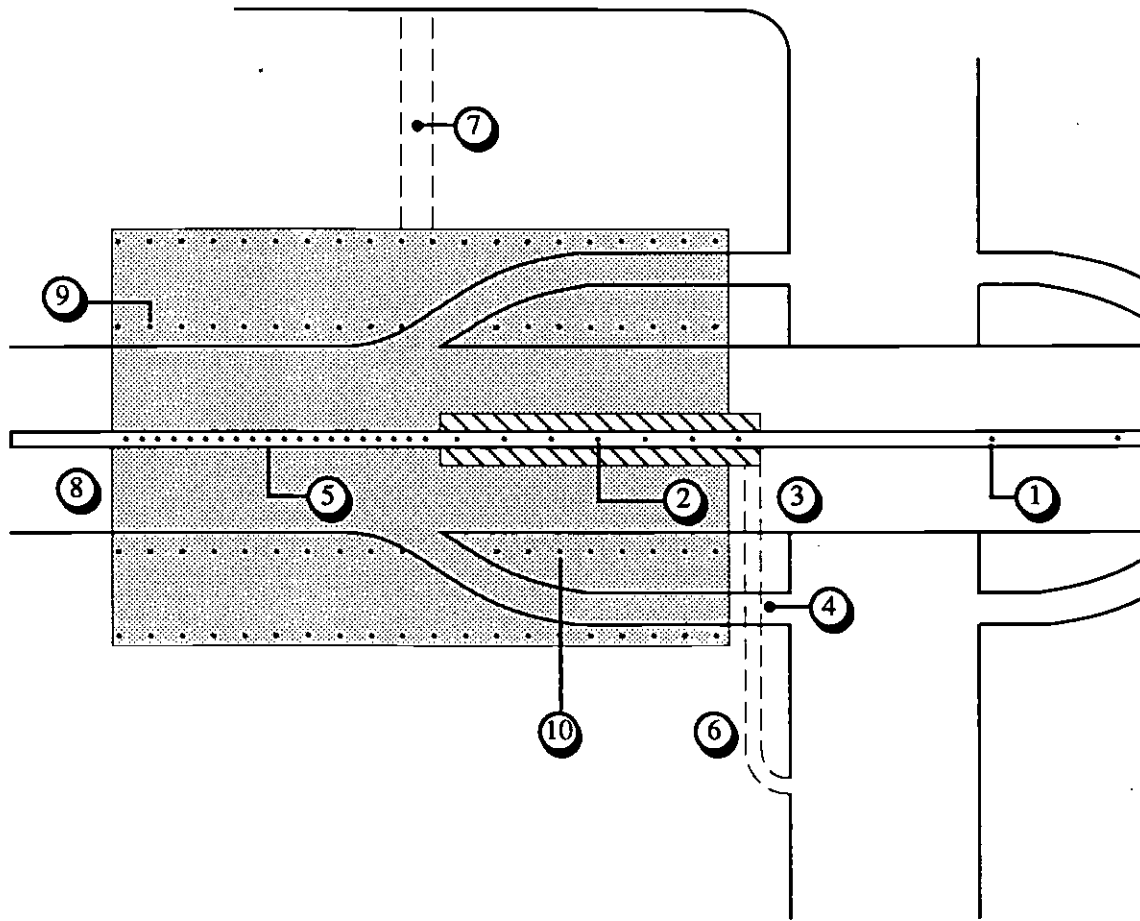


for some distance at station areas. Residential properties are located adjacent to 4 of these aerial stations. The alignment is also planned to be aerial in Warner Center, where it runs in the median of Canoga Avenue.

#### **4.4.4 Traffic Impacts**

Because of heavy traffic congestion along Ventura Boulevard and at intersections close to the Ventura Freeway, traffic impacts from Park and Ride lots would be more difficult to mitigate for the supplemental alternatives than for the SP Burbank Branch adopted route. Significant traffic impacts requiring mitigation are expected at park and ride lots larger than 500 spaces in size. The SP Burbank Branch has 2 park and ride lots larger than 500 spaces. The Ventura Boulevard Metro Rail Extension would have 4 stations larger than 500 spaces. The Ventura Freeway Advanced Aerial Technology Alternative would have 5 stations larger than 500 spaces.

The FEIR identified 11 eleven intersections that would require mitigation along the SP Burbank Branch route. The Ventura Freeway Alternative would have at least 14 intersections that would require mitigation and the Ventura Boulevard Alternative, due to having fewer but larger park and ride lots, would have at least 4 intersections that would require mitigation. Because of high existing and projected traffic congestion in the Ventura Freeway and Ventura Boulevard corridors, impacts and mitigations at station area park and ride lots will require detailed study should either of these alternatives be carried forward for further study.



- ① Monorail columns utilize wide (80-100') column spacing.
- ② Monorail and station columns require medium spacing.
- ③ Poor location for bus stop below bridge- too congested. No garage ramps possible. No pedestrian access through median- too narrow.
- ④ Ramps cannot be moved toward median. Ramps cannot be combined with garage access.
- ⑤ Garage and monorail columns together must be closely spaced.
- ⑥ Pedestrian bridge to major street.
- ⑦ Vehicular drive to garage. Distance needed to gain height. High capacity needed to exit motorists efficiently. Location should be away from ramps.
- ⑧ Garage complicates freeway ramp signage.
- ⑨ Columns limit future freeway expansion or modifications.
- ⑩ No columns allowed by Caltrans at gore point.

San Fernando Valley  
East-West Rail Transit Project

Figure 23  
♦ Design Considerations for Parking  
Structures above Freeway

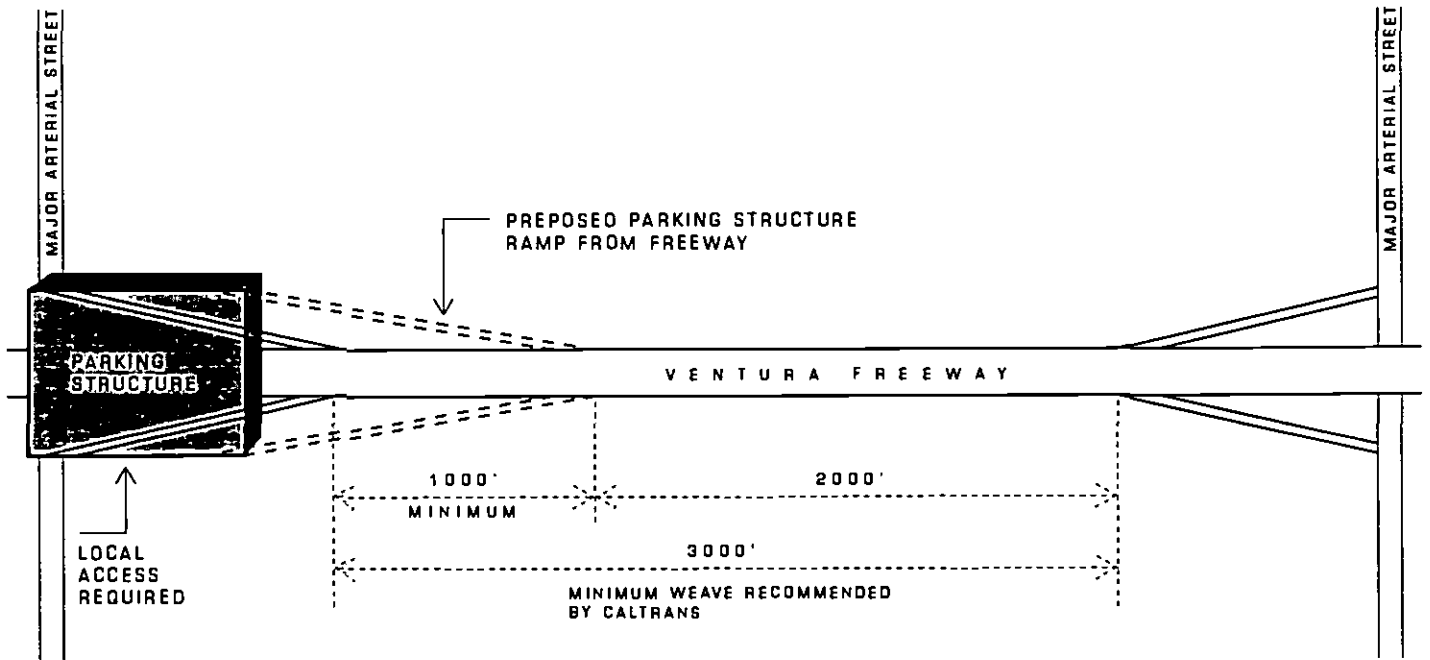
#### 4.5 JOINT DEVELOPMENT

In accordance with LACTC policies encouraging joint development at station areas, several stations have been identified along the San Fernando Valley transit alternative alignments that are commercially planned and zoned and would have potential for joint development. Along the SP Burbank Branch Metro Red Line Extension, 4 stations (Van Nuys, Sepulveda, Reseda and Topanga Canyon) have potential for some joint development at the station areas. Along the Ventura Boulevard route, 11 stations have potential for some development at station areas (Laurel Canyon, Coldwater Canyon, Woodman, Van Nuys, White Oak, Reseda, Tampa, Winnetka, DeSoto, Victory, Van Owen). Along the Ventura Freeway Advanced Aerial Technology Alternative, 11 stations have potential for some potential for joint development at station areas (Laurel Canyon, Coldwater Canyon, Woodman, Van Nuys, Sepulveda, White Oak, Reseda, Tampa, Winnetka, Victory, Van Owen).

Joint development projects along either the SP Burbank Branch or Ventura Boulevard routes could be conventionally constructed as parking and/or commercial structures above subway or above-ground Metro Rail Stations. Such projects have been built throughout the country on other transit systems. For the Ventura Freeway Alternative, however, joint development would be less conventional. Either the development could be constructed in air rights above the freeway or it could be located adjacent to the freeway with direct connection to the rail transit station. Because of the high cost of land adjacent to the freeway and the potential for use of air rights above the freeway, conceptual review of parking structures above the freeway was studied. Design considerations for such structures are illustrated in Figure 23 and 24. Examples of two potential parking structure configurations at station areas are shown in Figures 25 and 26. Table 19 provides a cost comparison between the two alternatives.

A parking structure above the freeway is estimated to cost more than \$23,000 per space under the scenario used in the example. A similar parking structure built on private land adjacent to the freeway was estimated to cost approximately \$15,750 per space. The most expensive option, was surface parking adjacent to the freeway, which was estimated to cost \$34,200 per space.

Direct freeway ramps into parking structures above the freeway were found to be very difficult to construct. The reasons for this difficulty were due principally to weaving distances between successive ramps on the freeway. At one mile interchange spacing there is not enough room to provide additional ramps between existing interchanges while still maintaining a 3000 foot weaving distance between successive ramps.



- Construction work would need to occur at night with use of freeway on/off ramps as a possible detour route.
- Even with direct ramps into the garage from the freeway, local access from surface streets would still be required for emergency access (fire, ambulance).
- L.A. City Fire Department would require 14-foot height clearances and support for truck loading. Standpipe and/or hydrants would be required in the structure to provide access to within 150 feet of any portion of the garage.
- Ramps into the garage could not be provided per Caltrans standards for minimum weave distances. Existing minimum standards of 3,000 feet would need to be reduced to 1,000-2,000 feet.

**TABLE 19**  
**Ventura Freeway**  
**Typical Parking Costs**  
**(1000 cars)**

<b>1. At-Grade Park and Ride Lot Adjacent to Freeway</b>	
• Land at 330 sf/car (\$100/sf)	\$33.0 million
• Paving, Striping, Controls, at \$3.55/sf	\$1.2 million
• TOTAL	\$34.2 million (\$34,200/car)
<b>2. Parking Structure on Private Land Adjacent to Freeway</b>	
• Land (75,000 sf at \$100/sf)	\$7.5 million
• Parking Structure (5 levels at 330 sf/car, long-span) 330,000 sf \$25/sf	\$8.25 million
• TOTAL	\$15.75 million (\$15,750/car)
<b>3. Parking Structure in Air Rights Above Freeway</b>	
• Land (Ramps and base Station only) (15,000 sf at \$100/SF)	\$1.5 million
• Ramps (Circular access 18,000 sf at \$70/sf)	\$1.26 million
• Structure (3 levels at 340 sf/car, 340,000 sf at \$60/sf)	\$20.4 million
• TOTAL	\$23.2 million (\$23,200/car)

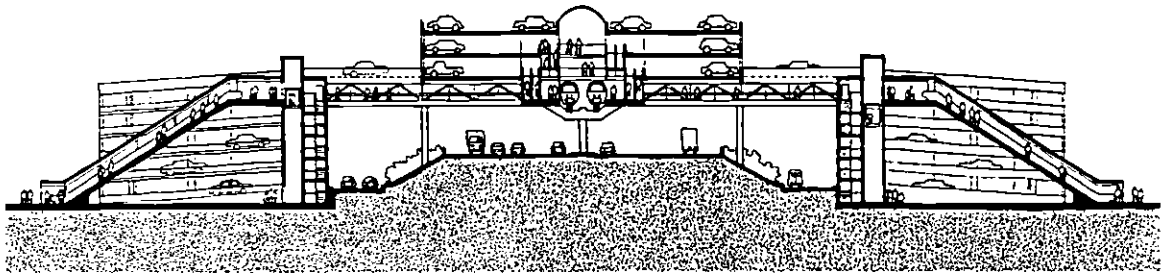
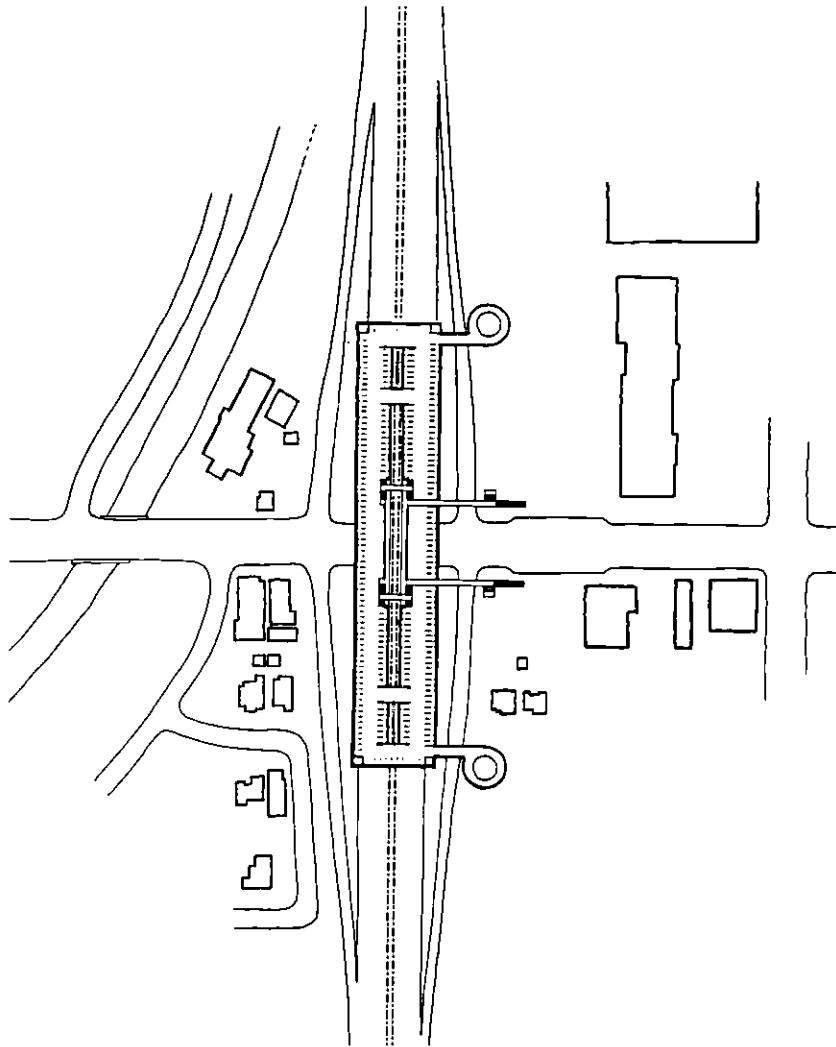
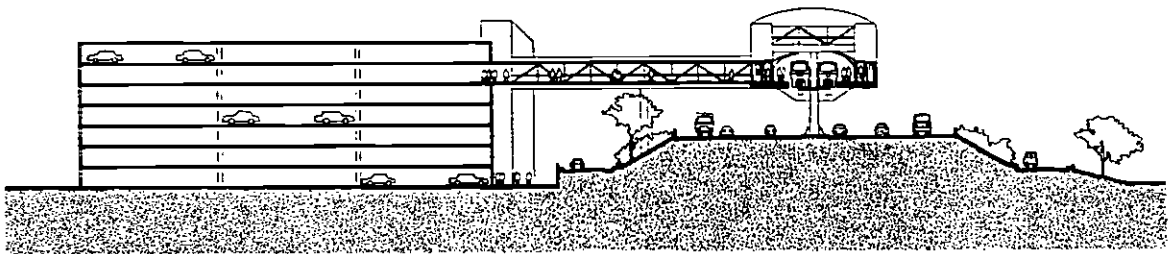
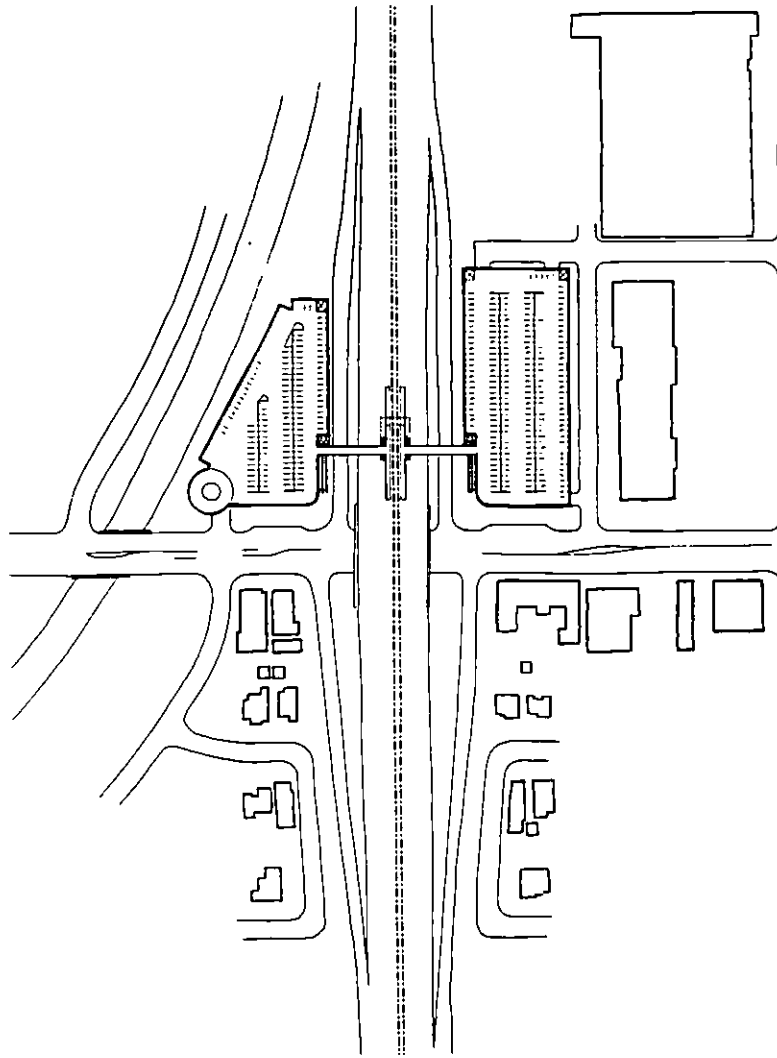


Figure 25  
 •Ventura Freeway Advanced Aerial Technology  
 Typical Parking Structure above Freeway



## **CHAPTER 5.0**

### **REFERENCES, PERSONS CONSULTED AND PREPARERS**

#### **5.1 REFERENCES**

The following reports, documents and other resources were utilized in the preparation of this Supplemental Study:

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August 1988.

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Department of City Planning, as approved March 22, 1990,

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