

ADDENDUM TO THE

**DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
SUBSEQUENT ENVIRONMENTAL IMPACT REPORT**



**Los Angeles
Rail Rapid Transit Project
Metro Rail**

U.S. DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION

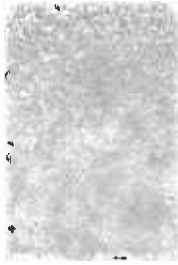


SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT



MAY 20, 1988

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ADDENDUM TO THE
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
SUBSEQUENT ENVIRONMENTAL IMPACT STATEMENT

LOS ANGELES RAIL RAPID TRANSIT PROJECT
METRO RAIL

U.S. DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION
SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT



BRIGID HYNES, CHERIN
Regional Manager
Urban Mass Transportation Administration

DATE: 5/10/88



U.S. Department
of Transportation

**Urban Mass
Transportation
Administration**

REGION IX
Arizona, California,
Hawaii, Nevada, Guam

211 Main Street
Room 1160
San Francisco, California 94105

MAY 10 1988

Dear Sir:

The Urban Mass Transportation Administration (UMTA) in cooperation with the Southern California Rapid Transit District (SCRTD) has prepared the enclosed Addendum to the Draft Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR) for the Los Angeles Rail Rapid Transit Project (Metro Rail). The Addendum analyzes the impacts of an additional alternative alignment for the Metro Rail project beyond the 4.4 mile initial project from the yards and shops near Union Station to the Wilshire Boulevard/Alvarado Street Station, now under construction. Candidate Alignment 6, the alignment proposed in this Addendum, is designed to mitigate some of the impacts of earlier alignments evaluated and presented to the public in the Draft SEIS/SEIR published in November 1987.

The Addendum document also presents updated capital costs and updated information regarding impacts and mitigation measures for construction of Metro Rail through MacArthur Park for all candidate alignments. Lastly, an alternative station location at Sunset Boulevard and Vermont Avenue is presented for Alignments 4 and 6, and the cumulative impacts of a potential Transit Connector between the Hollywood Boulevard/Highland Avenue Station and the Hollywood Bowl is evaluated for Candidate Alignments 3 and 6.

This environmental effort is part of the continuing effort undertaken pursuant to Congressional mandate in response to subsurface conditions along the segment of the Metro Rail alignment passing through the Wilshire Boulevard/Fairfax methane gas zone. Like the Draft SEIS/SEIR this Addendum to the supplemental report is necessary to consider alternative alignments for the middle portion of the original 18.6 mile project considered in the Final Environmental Impact Statement published in December 1983.

The Addendum to the Draft SEIS/SEIR is being circulated as a supplemental document to interested agencies and the public for a 45-day comment period. Written comments on the Addendum document should be sent no later than July 6, 1988, to Mr. Nadeem Tahir, P. E., Manager, Environmental Engineering at the SCRTD, 425 South Main Street, Los Angeles, California 90013 or to Ms. Carmen C. Clark, UMTA Region IX, 211 Main Street, Suite 1160, San Francisco, California 94105. A public hearing on the project will be held on June 21, 1988, at 10 a.m., in the Board Room, second floor, of the SCRTD at 425 South Main Street.

At the conclusion of the comment period, UMTA staff will consider all substantive comments and will prepare the Final SEIS/SEIR, incorporating all comments on the November 1987 Draft SEIS/SEIR and this Addendum, including mitigation measures and revisions as necessary. The Final SEIS/SEIR will include the Locally Preferred Alternative alignment adopted by the SCRTD Board of Directors.

Sincerely,


Brigid Hynes-Cherin
Regional Manager

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

This report is an Addendum to the Draft Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR) for the Los Angeles Rail Rapid Transit Project (November 1987), Metro Rail. The primary purpose of this report is to analyze a hybrid alignment, Candidate Alignment 6, which essentially combines two previously evaluated alignments. Candidate Alignment 6, also called Alignment MM1, was designed to mitigate impacts of earlier rail alignments evaluated in the Draft SEIS/SEIR. This report also provides updated capital costs and updated information regarding impacts and mitigation measures for construction of Metro Rail through MacArthur Park for all candidate alignments. An alternative location for the station at Sunset/Vermont is presented for Candidate Alignments 4 and 6. Also, the cumulative impacts of a possible Transit Connector between the Hollywood/Highland Station and the Hollywood Bowl for Candidate Alignments 3 and 6 are evaluated. A brief history of the Metro Rail Project follows. (A more detailed history is offered in the Summary of the Draft SEIS/SEIR).

1.2 BACKGROUND

In December 1983, the U.S. Department of Transportation/Urban Mass Transportation Administration (UMTA) and the Southern California Rapid Transit District (SCRTD) published a Final Environmental Impact Statement (FEIS) on the Los Angeles Rail Rapid Transit Project. In compliance with the requirements of the California Environmental Quality Act (CEQA), a Final Environmental Impact Report (FEIR) was published in November 1983. These documents provide detailed analyses of the Metro Rail Locally Preferred Alternative (LPA), herein referred to as the "Original LPA." The Original LPA is the central link of a 150-mile regional rapid transit system under development in Los Angeles County in accordance with Proposition A. Proposition A, approved by the voters of Los Angeles County in November 1980, authorized a retail sales tax to fund the improvement of public transit in the County.

The Original LPA, an 18.6-mile subway, was adopted by the SCRTD in 1983. A capital grant application was submitted to UMTA, but UMTA was unable to commit to funding the full 18.6-mile system or a shorter 8.8-mile segment identified in the FEIS. In response, SCRTD proposed a 4.4-mile, five-station Minimum Operable Segment (MOS-1), extending from a yard and shop facility south of Union Station to a Wilshire/Alvarado Station, as an initial segment for funding purposes. In August 1984, UMTA and SCRTD completed an Environmental Assessment (EA) for MOS-1. Construction of MOS-1 was initiated in September 1986.

In March 1985, a fire occurred near Wilshire Boulevard at Third and Ogden Streets. The source of the fire was naturally-occurring methane gas. The City of Los Angeles "Task Force Report on the March 24, 1985 Methane Gas Explosion and Fire in the Fairfax Area" (June 10, 1985) identified specific zones where subsurface conditions indicated a "potential risk" or "potential high-risk" of encountering methane gas during subsurface excavations. The U.S. Congress attached to Public Law No. 99-1980 (December 19, 1985) the stipulation that the SCRTD could not tunnel in any risk zone.

In compliance with the Congressional mandate, the SCRTD initiated the Congressionally Ordered Re-Engineering (CORE) Study to identify an appropriate alignment to link the San Fernando Valley, the Wilshire Corridor, and the Central Business District (MOS-1), while avoiding tunneling through any portion of the risk zones.

At the outset of the CORE Study, an initial set of candidate alignments was developed to avoid the defined risk zones. These alignments were the subject of extensive discussions at public meetings held throughout the Regional Core with groups representing affected and interested neighborhoods, businesses, elected officials and public agencies.

A California State Draft Subsequent Environmental Impact Report (SEIR) was completed and circulated in February 1987. Following circulation of that report, the SCRTD Board of Directors adopted Candidate Alignment 4 as the locally preferred alignment for purposes of that California SEIR. That SEIR was re-issued in November 1987 as a joint Draft SEIS/SEIR. The Draft SEIS/SEIR reflected changes to one of the candidate alignments and additional data developed between February and November 1987. The Draft SEIS/SEIR discusses the anticipated impacts of five candidate alignments and MOS-1 (the Null Alternative). All candidate alignments included two unchanged segments of the Original LPA: (1) the MOS-1 segment from the Metro Rail yard and shop site near Union Station to the Wilshire/Alvarado Station, and (2) the San Fernando Valley segment (See the FEIS or the EA for discussion of these segments). Because of the continuing possibility of funding constraints, potential operable segments (called MOS's to be consistent with the MOS-1 designation) were identified for all candidate alignments. The operable segments permit assessment of impacts at potential temporary terminal stations as development of the system proceeds. A public hearing was held on this Draft SEIS/SEIR on December 18, 1987.

Significant discussion occurred during this Public Hearing regarding Candidate Alignment 4, particularly concerning potential impacts of the aerial segment of this alignment on the broadcast and recording studios along Sunset Boulevard. Representatives of these recording studios stated that the operations of Candidate Alignment 4 would negatively impact the abilities of these studios to continue their business operations. Prior to the December 18 hearing, the Los Angeles Mayor and City Council appointed an Independent Technical Review Panel to evaluate the impacts that Metro Rail noise, vibration and electromagnetic interference would have on the broadcast and recording industry along Sunset Boulevard. The panel received documents and testimony from industry representatives and from the SCRTD. The panel produced a report dated November 13, 1987, entitled "Report of the Independent Technical Review Panel on Noise, Vibration and Electro-magnetic Interference Impacts of the Metro Rail Project (MOS-2)" that recommended measures to mitigate impacts from Metro Rail construction and operation.

1.3 CANDIDATE ALIGNMENT 6

Candidate Alignment 6 (Figure 1) would mitigate the concerns raised by the broadcast industry along Sunset Boulevard in that it would transition to subway outside of street right-of-way northwest of the Sunset/Western Station, pass under the Hollywood Freeway, and remain in subway along Hollywood Boulevard with Metro Rail stations at Hollywood/Vine and Hollywood/Highland. From there, the alignment would traverse north to North Hollywood. Candidate Alignment 6, therefore, avoids the potential noise, vibration and electromagnetic impacts on the TV stations, radio stations, and sound studios along Sunset Boulevard from the Hollywood Freeway to Highland Avenue. Candidate Alignment 6 also would avoid traffic impacts on Sunset Boulevard that otherwise would have resulted from reconstruction of the bridge over the Hollywood Freeway and construction of the transition portal on Sunset Boulevard between Gower Street and Argyle Avenue. It would avoid displacements and relocations that otherwise would have resulted from property acquisitions along Sunset Boulevard (for the transition portal) and that would have been required to maintain the existing number of traffic lanes on Sunset Boulevard. In addition, the shift in the location of the Sunset/Vermont Station and guideway curve evaluated in this Addendum for Candidate Alignments 4 and 6 eliminates the need for displacement of the Self Realization Church that would otherwise occur for the prior Candidate Alignment 4 Sunset/Vermont Station and curve locations.

This Addendum to the November 1987 Draft SEIS/SEIR contains a discussion of the anticipated impacts associated with Candidate Alignment 6. The Addendum also provides updated capital costs and updated information regarding MacArthur Park impacts for all alignments. It incorporates by reference sections of the Draft SEIS/SEIR and the 1983 FEIS. The Addendum contains or references all information needed to compare the new Candidate Alignment 6 to the other project options in the Draft SEIS/SEIR.

1.4 ENVIRONMENTAL REQUIREMENTS

Although this document is an Addendum to the SEIS/SEIR, it will be processed as a Supplement to the 1983 FEIS and as a Subsequent EIR to the 1983 FEIR in compliance with National Environmental Policy Act (NEPA) and CEQA requirements and regulations. This process will include a 45-day public comment period following publication of the Notice of Availability in the Federal Register.

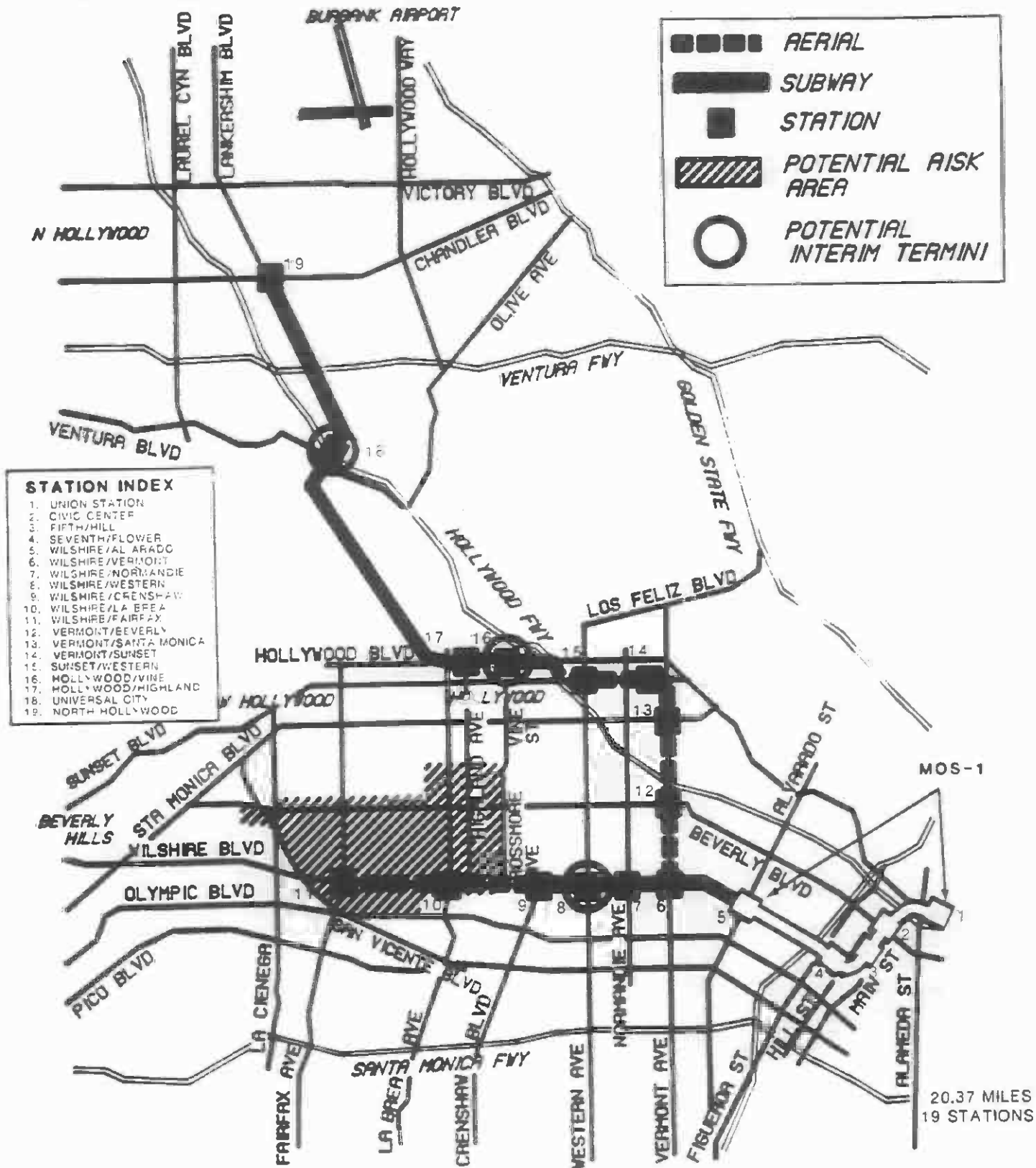
1.5 PUBLIC HEARING

A public hearing will be scheduled for this Addendum during which comments will be received by the SCRTD. During preparation of the Final SEIS/SEIR, consideration will be given to all substantive comments that were received during circulation of the Draft SEIS/SEIR and to all substantive comments that are received during circulation of this Addendum.

FIGURE 1

CORE STUDY AREA CANDIDATE ALIGNMENT 6

VERMONT/SUNSET/WILSHIRE AERIAL, HOLLYWOOD SUBWAY



	AERIAL
	SUBWAY
	STATION
	POTENTIAL RISK AREA
	POTENTIAL INTERIM TERMINI

- STATION INDEX**
1. UNION STATION
 2. CIVIC CENTER
 3. FIFTH/HILL
 4. SEVENTH/FLOWER
 5. WILSHIRE/AL ARABO
 6. WILSHIRE/VERMONT
 7. WILSHIRE/NORMANDIE
 8. WILSHIRE/WESTERN
 9. WILSHIRE/CRENSHAW
 10. WILSHIRE/LA BREA
 11. WILSHIRE/FAIRFAX
 12. VERMONT/EVERELY
 13. VERMONT/SANTA MONICA
 14. VERMONT/SUNSET
 15. SUNSET/WESTERN
 16. HOLLYWOOD/VINE
 17. HOLLYWOOD/HIGHLAND
 18. UNIVERSAL CITY
 19. NORTH HOLLYWOOD

20.37 MILES
19 STATIONS

SOURCE: SCRTD/GENERAL PLANNING CONSULTANT

1.6 FUTURE ACTIONS

The Final SEIS/SEIR will be prepared following selection by the SCRTD Board of Directors of a Final Locally Preferred Alternative for incorporation into the Final SEIS/SEIR. After UMTA publication of the Final SEIS/SEIR, the SCRTD Board of Directors will certify the document, adopt the project, issue findings, and adopt a statement of overriding considerations.

CHAPTER 2: DESCRIPTION OF CANDIDATE ALIGNMENT 6

When MOS-1 is included, Candidate Alignment 6 is a 20.4-mile aerial and subway line with nineteen stations (Figure 1). Full plans and profiles of Candidate Alignment 6 may be examined by referring to relevant segments of Candidate Alignments 3 and 4 in Appendix A to the Draft SEIS/SEIR. Plans and profiles for the segment that would transition between these two alignments east of the Hollywood Freeway are presented in Figures 2 through 6.

Leaving the Wilshire/Alvarado Station, which is common to all alignments, Candidate Alignment 6 proceeds west, passing under MacArthur Park Lake to Wilshire Boulevard at Park View. It follows Wilshire Boulevard to Virgil Avenue, where it turns northwest to the Wilshire/Vermont Station, located on a diagonal in the northern half of the block formed by Wilshire Boulevard, Vermont Avenue, Sixth Street, and Shatto Place. After leaving the Wilshire/Vermont Station, the alignment branches, with one line continuing west in the Wilshire Corridor and the other line turning north along Vermont Avenue to the Hollywood area and the San Fernando Valley. The western branch is the same as for Candidate Alignment 4, described in Section 1.2.1 of Chapter 2 of the Draft SEIS/SEIR.

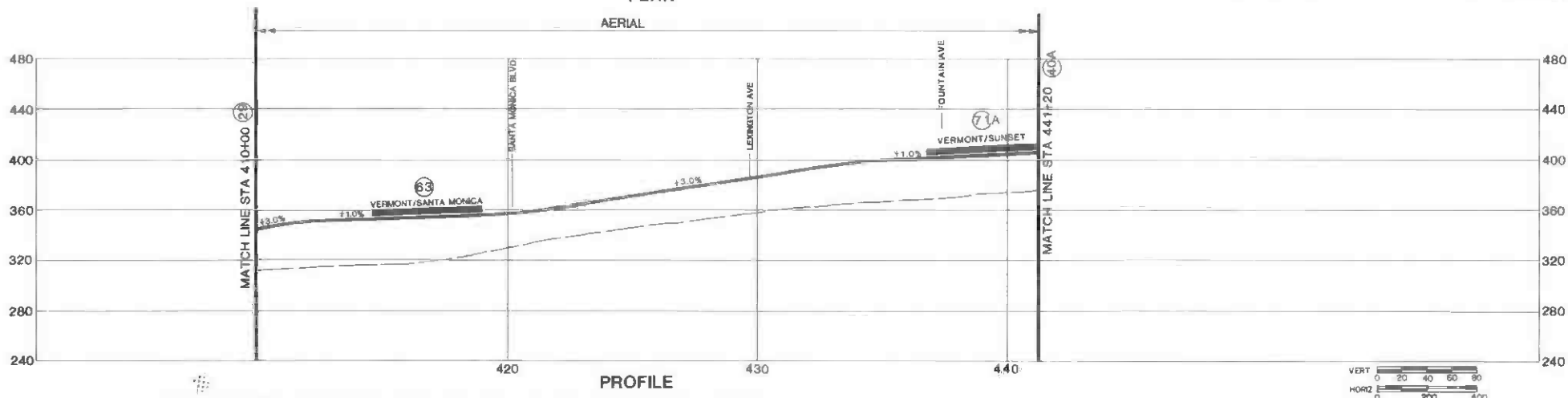
The alignment for the Valley branch leaves the Wilshire/Vermont Station heading northwest and curves back under Vermont Avenue at Third Street. The alignment transitions from subway to aerial between Third and First Streets and continues as an aerial structure in the Vermont Avenue right-of-way through stations at Beverly and Santa Monica Boulevards. Leaving the Vermont/Santa Monica Station, the alignment continues on Vermont north. It then curves west onto Sunset Boulevard, passing through the Sunset/Vermont Station, located in the block directly west of Vermont Avenue and south of Sunset Boulevard. The aerial alignment proceeds west along Sunset Boulevard to the Sunset/Western Station. It then transitions to subway in the block north of Sunset Boulevard between Saint Andrews Place and Wilton Place. The alignment continues in subway under the Hollywood Freeway and then heads west beneath Hollywood Boulevard, with stations at Hollywood/Vine and Hollywood/Highland. West of Hollywood/Highland, the alignment curves northwest through the Santa Monica mountains to the Universal City and North Hollywood Stations.

In summary, Candidate Alignment 6 is a hybrid of Candidate Alignments 3 and 4, following Sunset Boulevard and then Hollywood Boulevard. That section of Candidate Alignment 4 between Wilshire/Alvarado, Wilshire/Fairfax and Sunset/Western remains virtually unchanged for Candidate Alignment 6, except that two stations have undergone shifts in locations: (1) the station in the vicinity of Sunset and Vermont, and (2) the station in the vicinity of Sunset and Western. Figures 5 and 6 show these new station locations. For purposes of comparison, the section of Candidate Alignment 6 between Wilshire/Alvarado, Wilshire/Fairfax and Sunset/Western is defined as "Section A" (Figure 7).

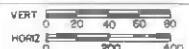
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PLAN



PROFILE

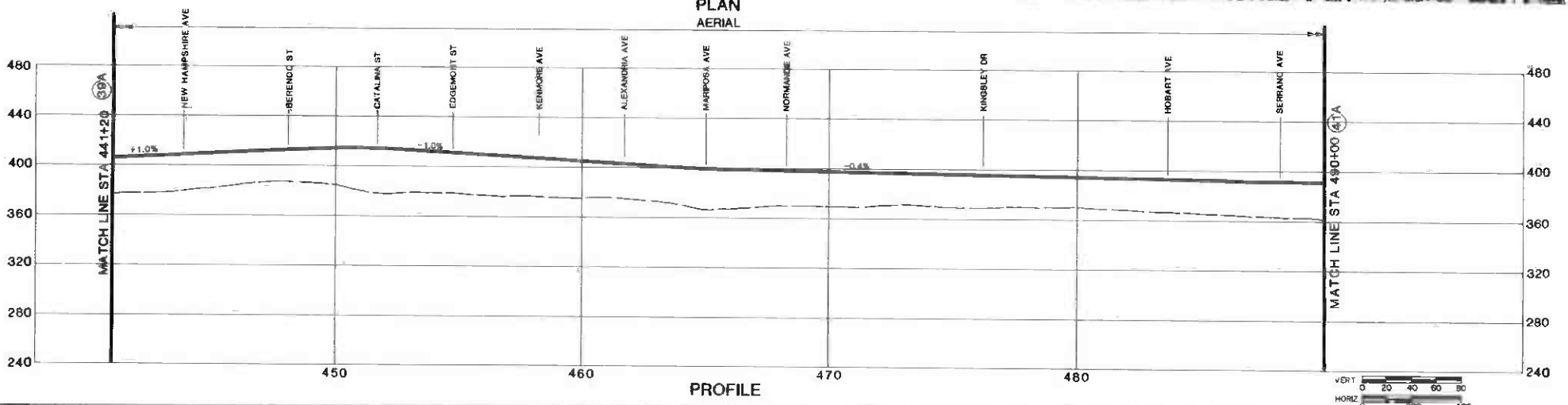


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REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION	SUBMITTED	APPROVED						

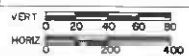
FIGURE 2



PLAN
AERIAL



PROFILE

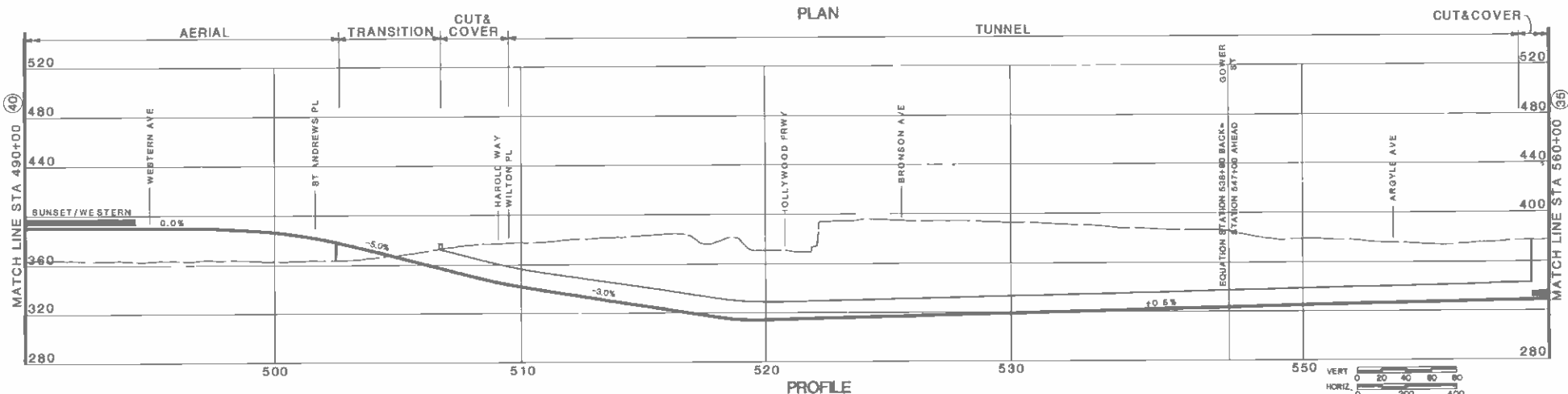


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REV. DATE BY SUB APP DESCRIPTION	REV. DATE BY SUB APP DESCRIPTION	SUBMITTED _____ APPROVED _____	DMJM/PCDD/KE-HWA GENERAL CONSULTANTS				40A

FIGURE 3



PLAN

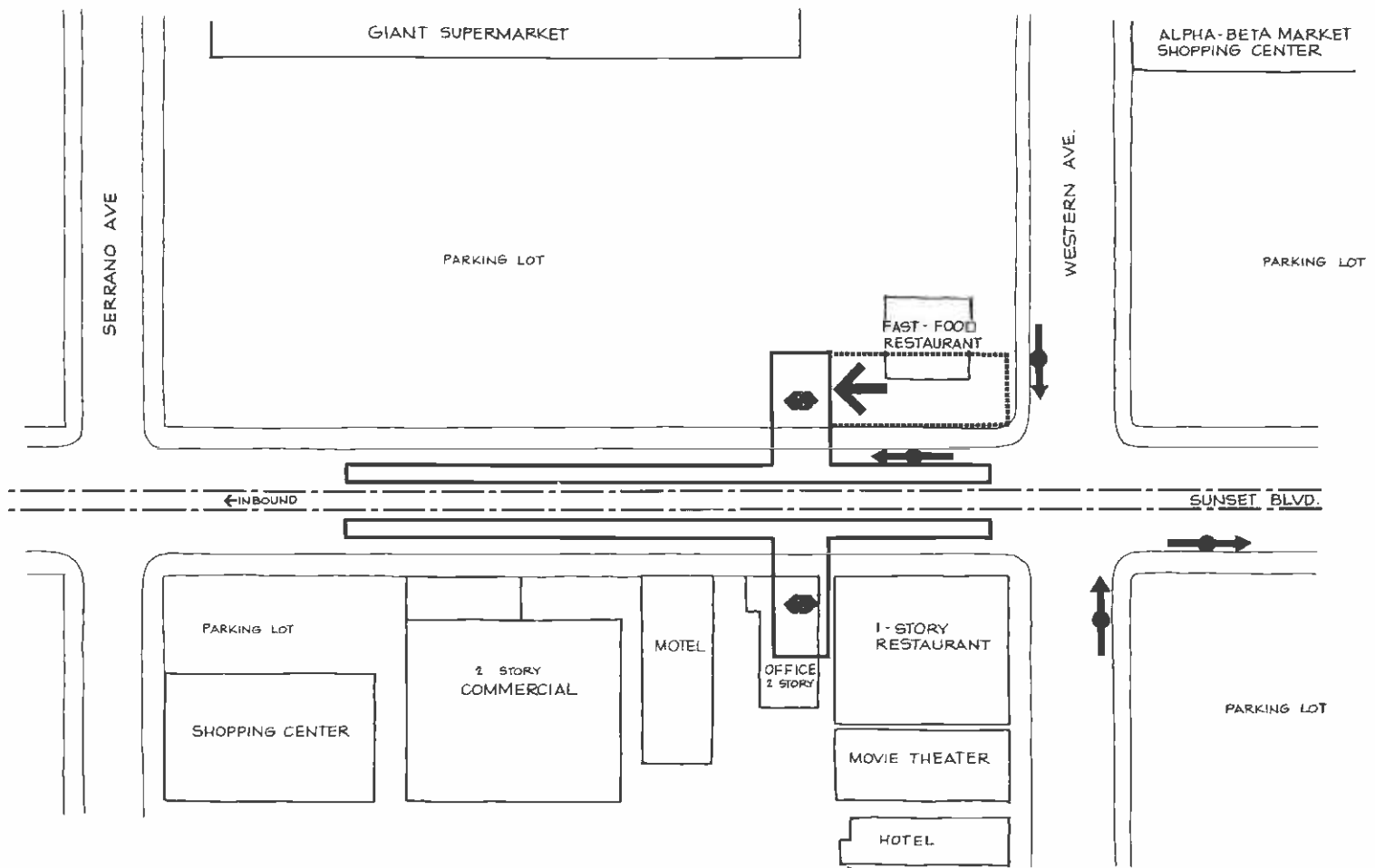


PROFILE

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<p>DATE</p> <p>BY</p> <p>SUB</p> <p>APP</p> <p>DESCRIPTION</p>										<p>DATE</p> <p>BY</p> <p>SUB</p> <p>APP</p> <p>DESCRIPTION</p>		<p>DATE</p> <p>BY</p> <p>SUB</p> <p>APP</p> <p>DESCRIPTION</p>		<p>DATE</p> <p>BY</p> <p>SUB</p> <p>APP</p> <p>DESCRIPTION</p>	
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CORE STUDY
CANDIDATE ALIGNMENT 6
 PLAN AND PROFILE
 STA 490+00 TO STA 538+90 BACK=
 STA 547+00 TO STA 560+00 AHEAD

FIGURE 4



2-5

LEGEND

-  POTENTIAL STATION ENTRANCE LOCATION
-  METRO RAIL STATION (AERIAL)
-  BUS STOP

0 20 40 60 80 100 120 140 150 FT

REV	DATE	BY	SUB	APP	DESCRIPTION


THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION URBAN MASS TRANSPORTATION ADMINISTRATION UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964, AS AMENDED, AND IN PART BY THE TAXES OF THE CITIZENS OF LOS ANGELES COUNTY AND OF THE STATE OF CALIFORNIA.

REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY
DRAWN BY
CHECKED BY
IN CHARGE
DATE
11 JAN 88

SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT

METRO RAIL PROJECT



ND (RO) RAIL TRANSIT CONSULTANTS
GENERAL CONSULTANTS

DMJM/PBDO/KE/HWA
GENERAL CONSULTANTS

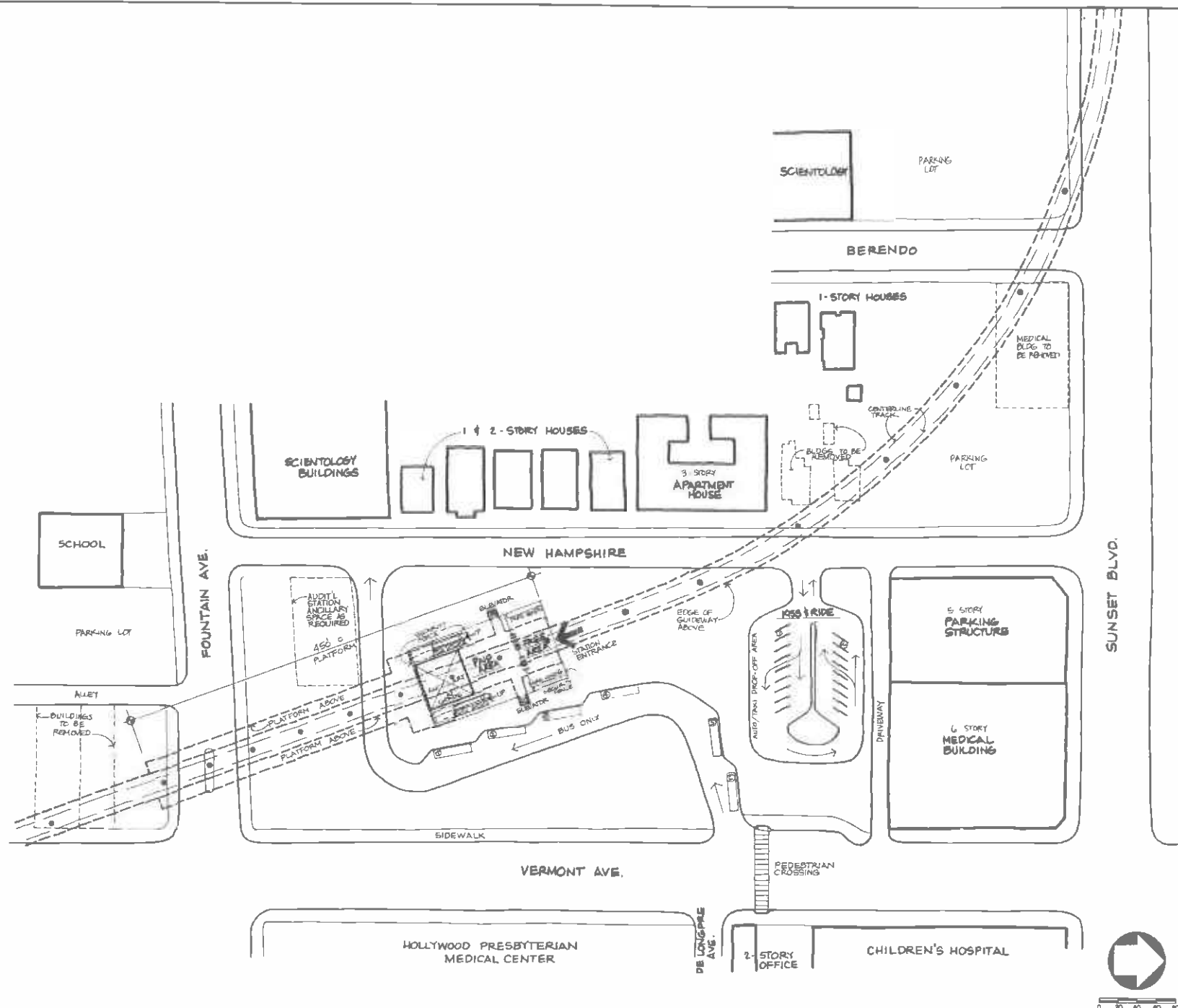
SUBMITTED
APPROVED

CORE STUDY
SUNSET / WESTERN
STATION LOCATION PLAN

AERIAL STATION

CONTRACT NO.	
DRAWING NO.	A 27A
SCALE	AS NOTED
SHEET NO.	

FIGURE 5




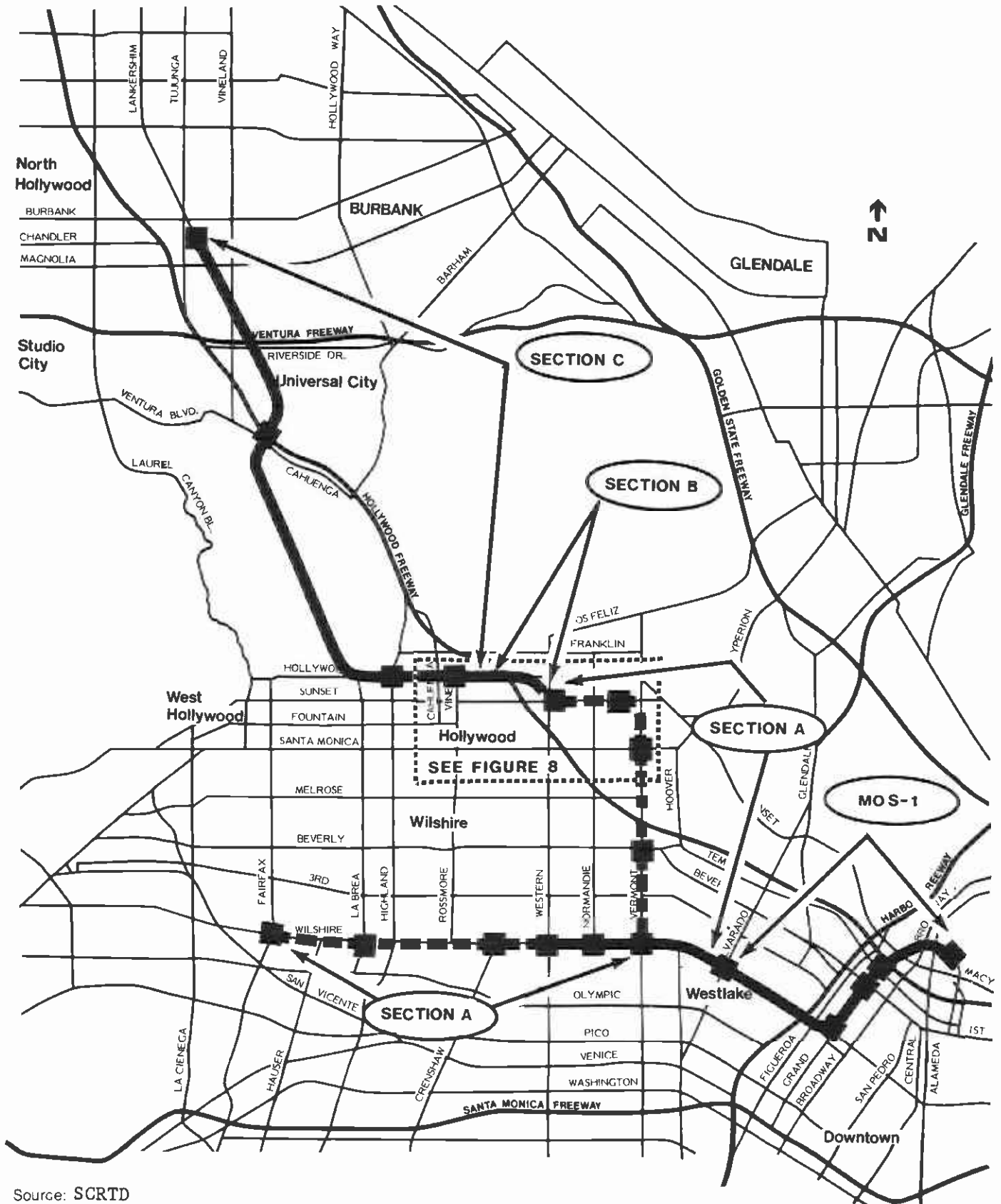
THE PREPARATION OF THIS DRAWING HAS BEEN FINANCED IN PART THROUGH A GRANT FROM THE U.S. DEPARTMENT OF TRANSPORTATION UNDER URBAN MASS TRANSPORTATION AUTHORITY UNDER THE URBAN MASS TRANSPORTATION ACT OF 1964 AS AMENDED AND IS MADE BY THE VOICE OF THE CITIZENS OF LOS ANGELES COUNTY ONE OF THE STATE OF CALIFORNIA.				DESIGNED BY MRTC				SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT METRO RAIL PROJECT 				CORE STUDY VERMONT/SUNSET PRELIMINARY STATION FOOTPRINT				CONTRACT NO. DRAWING NO. A-17B SCALE AS NOTED SHEET NO.			
DRAWN BY CHECKED BY IN CHARGE DATE 10 NOV 1987				DRAWN FROM KE HWA GENERAL CONSULTANTS				SUBMITTED APPROVED											
REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION								

FIGURE 7

CANDIDATE ALIGNMENT 6
SECTIONS A,B,C & MOS-1



Source: SCRTD

That section of Candidate Alignment 3 between Hollywood/Bronson and the North Hollywood Station remains virtually unchanged for Candidate Alignment 6, except that the transition from aerial to subway occurs south of Hollywood Boulevard off-street rather than in the Hollywood Boulevard right-of-way. For purposes of comparison, the section of Candidate Alignment 6 between Hollywood/Bronson and North Hollywood is defined as "Section C" (see Figure 7).

The section of Candidate Alignment 6 between Sunset/Western and Hollywood/Bronson is not a part of any prior alignment. This section of Candidate Alignment 6 is defined as "Section B" (see Figure 7). Candidate Alignment 6 in the Hollywood area is compared to Alignments 3 and 4 in greater detail in Figure 8.

Operable segments for each of the Candidate Alignments are presented in Chapter 2, Section 1 of the Draft SEIS/SEIR and are listed in Chapter 4 of this Addendum. In addition to MOS-1, two operable segments have been identified for Alignment 6 (refer to Figure 1):

- o MOS-2, with temporary terminals at the Wilshire/Western and Hollywood/Vine Stations.
- o MOS-3, the final increment to complete the full alignment with an interim west terminal at the Wilshire/Fairfax Station and north terminal at the North Hollywood Station.

For purposes of reviewing impacts of alternative operable segments, two additional alternative operable segments have been identified for Alignment 6. These alternatives would have temporary terminals at the following stations:

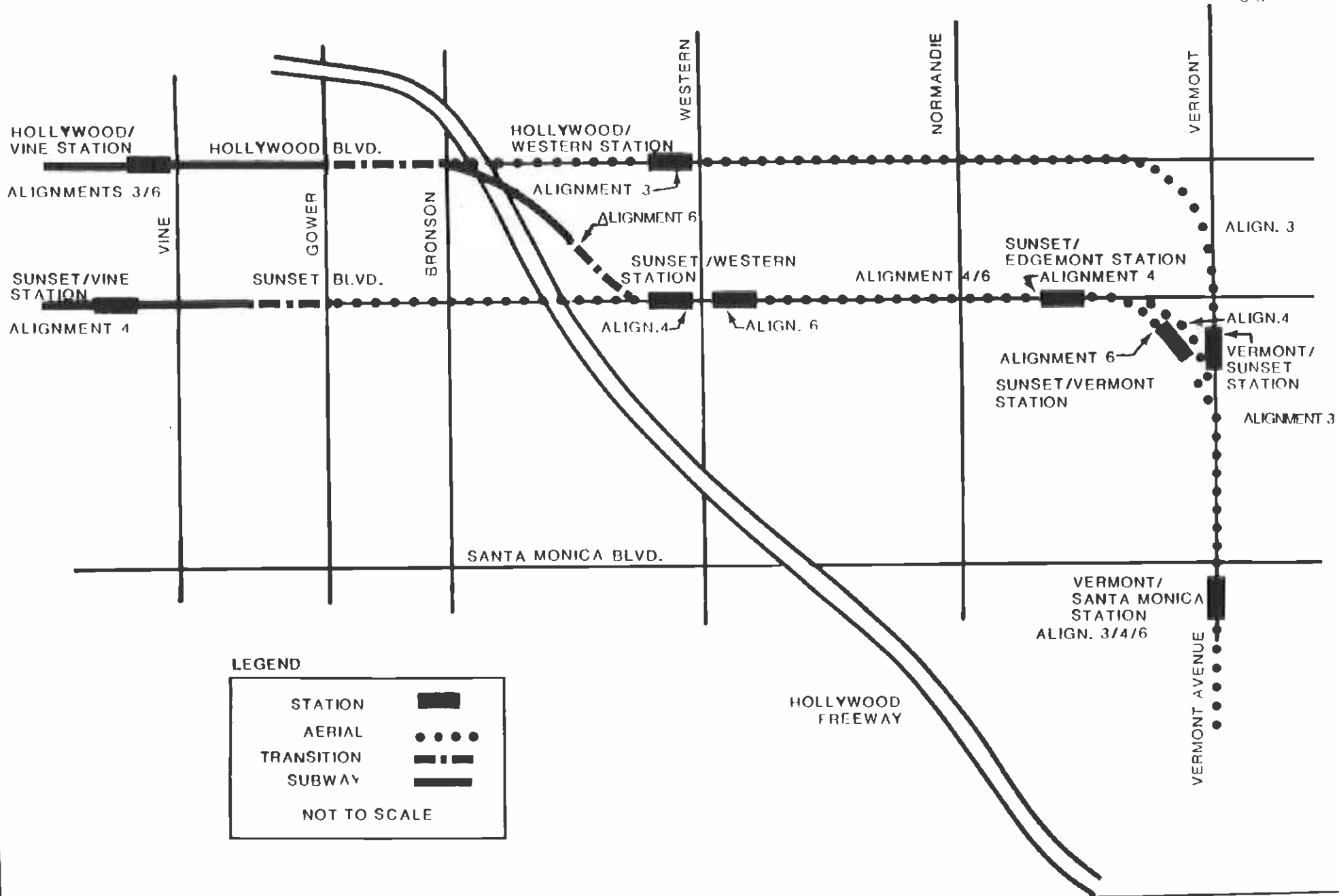
- o MOS-2A: Wilshire/Western Station paired with Universal City Station.
- o MOS-2B: Wilshire/Vermont Station paired with Universal City Station.

Key system characteristics of Candidate Alignment 6, including MOS-1, are presented in Table 1, together with data for other candidate alignments for comparison. Patronage for Candidate Alignment 6 is projected by SCRTD at 342,000 rail boardings per day. This compares to a low of 296,000 rail boardings for Candidate Alignment 1, and falls in the range for Alignments 2 through 5 (324,000 to 354,000 boardings per day).

Rail capital costs for Alignment 6 are estimated to be \$3,108 million in December 1985 dollars. Rail capital costs for the other candidate alignments range from \$2,975 million for Candidate Alignment 2 to \$3,090 million for Candidate Alignment 3. Annual rail operating costs for Candidate Alignment 6 in the year 2000 would total \$40.2 million.

FIGURE 8

COMPARISON OF ALIGNMENT 6 TO ALIGNMENTS 3&4
(FIGURE 7 INSERT)



2-9

TABLE 1

SYSTEM CHARACTERISTICS OF OPTIONS EVALUATED

System Characteristics	Candidate Alignments (Includes MGS-1)						Null Alt.
	1	2	3	4	5	6	
<u>SCRID Rail System</u>							
• Length (Miles)	17.6	20.4	19.9	20.5	19.7	20.4	4.4
• Alignment (Miles)							
- Subway	All	14	16.2	14.1	16.8	14.6	4.4
- Aerial	--	6.4	3.7	6.4	2.8	5.8	--
• No. of Stations	16	19	18	20	17	19	5
• Daily Boardings*	296,000	337,000	324,000	344,000	354,000	342,000	55,000
• Fleet Size (Cars)	110	116	116	116	116	116	30
• Capital Costs (1985\$ Millions)	\$2,985	\$2,975	\$3,090	\$3,088	\$3,027	\$3,108	\$1,151
• Annual Operating (1985\$ Millions)	\$34	\$39	\$39	\$40	\$38	\$40	\$15
• Annual Rail Car Miles of Travel (in 1,000's)	6,300	7,593	7,352	8,779	7,162	7,500	865
<u>SCRID Bus System</u>							
• Peak Buses Req'd	2,025	1,918	1,917	1,899	1,897	1,886	2,051
• Daily Boardings (1,000's)	1,633	1,566	1,537	1,552	1,584	1,548	1,357
• Annual Operating & Maint. Costs (1985\$ Millions)	\$532	\$517	\$516	\$514	\$520	\$512	\$543
• Annual Vehicle Miles of Travel (VMT in 1,000's)	103,642	100,865	101,094	100,320	102,283	100,295	110,928
<u>Automobile</u>							
• Regional Daily Vehicle Miles of Travel (VMT in 1,000's)	259,013	259,008	259,057	259,028	258,964	259,031	260,425

* UMTA considers the SCRID patronage forecasts to be at the high end of the range of reasonable expectations.

Sources: SCRID/General Planning Consultant and Environmental Assessment Los Angeles Rapid Transit Project Union Station to Wilshire/Alvarado, SCRID with the cooperation of U.S. Department of Transportation, Urban Mass Transportation Administration, August, 1984.

CHAPTER 3: IMPACTS OF CANDIDATE ALIGNMENT 6

The following chapter summarizes the impacts associated with Candidate Alignment 6 compared to the other alignments. Key evaluation data for these options are presented in Table 2. This Chapter also provides updated information regarding impacts and mitigation measures for MacArthur Park for all alignments. An alternative location for the Sunset/Vermont Station for Candidate Alignments 4 and 6 is also evaluated. Finally, the cumulative impacts on the Hollywood/Highland Station for Candidate Alignments 3 and 6 of a possible Transit Connector between Hollywood/Highland and the Hollywood Bowl are reviewed.

3.1 TRANSPORTATION

3.1.1 Bus/Rail

Consideration of the candidate alignments has required reassessment of the Supporting Services Plan, which establishes feeder bus routes. For Candidate Alignment 6, projected peak vehicle requirements total 1,886 buses, compared to a range of 1,897 (Alignment 5) to 2,025 (Alignment 1) buses for the other five candidate alignments. Candidate Alignment 3 would require 1,917 buses, and Candidate Alignment 4 would require 1,899 buses.

The SCRTD expects daily rail boardings for Candidate Alignment 6 and the operable segments (including MOS-1) to be:

- MOS-1 + MOS-2: 267,000
- MOS-1 + MOS-2A: 295,000
- MOS-1 + MOS-2B: 290,000
- Full System: 342,000

Total daily regional SCRTD transit system boardings would be 1,890,000, of which 1,548,000 would be on the bus system. Daily rail boardings by mode-of-access are shown in Table 3. The greatest number of rail boardings would arrive on feeder buses. Figure 9 shows the average daily rail boardings at stations in the Year 2000, as well as patronage along the various line sections or "links" of the alignment. The highest link volume is expected to occur between the Seventh/Flower Station and the Wilshire/Alvarado Station, where about 90,000 patrons would be accommodated daily in each direction. The federal Urban Mass Transportation Administration (UMTA) considers the SCRTD patronage forecasts to be on the high end of the range of reasonable expectations.

Boardings at stations for Candidate Alignment 6 are similar to those for comparable stations in Alignments 3 and 4, with some exceptions. The Vermont/Sunset Station of Alignment 6 would attract twice the boardings of a Sunset/Edgemont Station under Alignment 4. This differential is generally recovered at the next two stations, Sunset/Western and Hollywood/Vine. In

TABLE 2
SUMMARY OF EVALUATION DATA FOR PROJECT OPTIONS

EVALUATION AREA	ALTERNATIVE						NULL ALTERNATIVE
	CA 1	CA 2	CA 3	CA 4	CA 5	CA 6	
1. SERVICE							
a. # OF STATIONS	16	19	18	20	17	19	5
b. LENGTH IN MILES							
• Subway	17.6	14.0	16.2	14.1	16.8	14.6	4.4
• Aerial	0	6.4	3.7	6.4	2.8	5.8	0
• Total	17.6	20.4	19.9	20.5	19.7	20.4	4.4
c. METRO RAIL							
• Daily Boardings*	296,000	337,000	324,000	344,000	354,000	342,000	55,000
• Fleet Size	110 CARS	116 CARS	116 CARS	116 CARS	116 CARS	116 CARS	30 CARS
• Annual Rail Car Miles Traveled (1,000s)	6,300	7,593	7,352	6,779	7,162	7,500	865
d. SCRTPD BUS SYSTEM							
• Daily Boardings	1,633,000	1,569,000	1,537,000	1,552,000	1,584,000	1,548,000	1,357,000
• Peak Buses Req'd	2,025	1,918	1,917	1,889	1,897	1,886	2,051
• Annual Vehicle Miles Traveled (1,000s)	103,642	100,865	101,094	100,320	102,283	100,296	110,828
2. COST							
a. CAPITAL COST (MILLIONS OF 12/85 \$s)**							
• Construction and Procurement	\$1,063	\$1,011	\$1,109	\$1,052	\$1,074	\$1,061	
• Contingency, Design, Construction Management	\$452	\$440	\$475	\$463	\$459	\$468	
• Right-of-Way	\$91	\$155	\$116	\$196	\$112	\$200	
• Insurance/Agency	\$226	\$217	\$238	\$226	\$231	\$228	
SUBTOTAL	\$1,834	\$1,824	\$1,939	\$1,937	\$1,876	\$1,957	
MOS-1	\$1,151	\$1,151	\$1,151	\$1,151	\$1,151	\$1,151	\$1,151
TOTAL	\$2,985	\$2,975	\$3,090	\$3,088	\$3,027	\$3,108	\$1,151
b. ANNUAL OPERATING COST (MILLIONS OF 12/85 \$s)							
• Rail	\$34.3	\$39.4	\$39.0	\$40.2	\$37.6	\$40.2	\$15.4
• Bus	\$532.8	\$517.3	\$515.8	\$514.0	\$520.3	\$512.0	\$542.6
Total	\$566.2	\$556.7	\$554.8	\$554.2	\$557.9	\$553.2	\$558.0
3. LAND USE AND DEVELOPMENT							
a. CITY CENTERS							
• # of Centers Served	10	12	11	13	11	13	4
• # of Stations in Centers	12	14	13	15	13	15	5
b. REDEVELOPMENT PROJECTS							
• # of Projects Served	3	3	3	3	3	3	1
• # of Stations in Proj Areas	6	6	7	7	6	7	4

-- continued

TABLE 2 (CONTINUED)

SUMMARY OF EVALUATION DATA FOR PROJECT OPTIONS

EVALUATION AREA	ALTERNATIVE						NULL ALTERNATIVE
	CA 1	CA 2	CA 3	CA 4	CA 5	CA 6	
c. ACCOMODATION OF COMMERCIAL GROWTH**							
(NUMBER OF STATION AREAS)							
● Beneficial Impacts ***	9	9	9	11	9	10	--
● Adverse Impacts ***	4	6	5	6	5	6	--
d. ACCOMODATION OF RESIDENTIAL GROWTH**							
(NUMBER OF STATION AREAS)							
● Beneficial Impacts ***	2	2	3	2	2	3	--
● Adverse Impacts ***	8	10	10	11	9	11	--
e. DISPLACEMENTS							
● Commercial Enterprises	87	137	124	118	64	154	--
● Residential Units	150	204	171	232	183	311	--
● Nonprofit Enterprises	2	6	5	3	3	5	--
● Employees Displacements	1,178	2,635	1,712	2,497	1,489	2,636	--
4. ENVIRONMENT							
a. TRANSPORTATION							
● Traffic (Flow at Critical Intersections)							
-Minor Impacts **	22	24	20	23	18	21	--
-Moderate Impacts **	5	8	6	10	19	9	--
-Major Impacts **	6	9	12	9	11	9	--
● Parking (in Spaces)							
-Expected Deficiency **	4,419	3,687	2,957	3,513	3,973	3,362	0
-Park-N-Ride	7,500	8,500	8,500	8,500	8,500	8,500	2,500
-Kiss-N-Ride	170	255	195	220	220	245	20
b. SOCIAL AND COMMUNITY							
(# of Stations exhibiting characteristics)							
● Minority Communities (33% or More Minority Pop.)							
	12 OF 16	14 OF 19	14 OF 18	13 OF 20	13 OF 17	14 OF 19	5 OF 5
● Youth Populations (10% or More Age 5-19 Yrs.)							
	13 OF 16	15 OF 19	16 OF 16	16 OF 20	13 OF 17	16 OF 19	4 OF 5
● Elder Populations (15% or More Age 65. & Older)							
	8 OF 16	11 OF 19	10 OF 18	11 OF 20	10 OF 17	12 OF 19	3 OF 5
● Zero-Auto Households (33% or More W/O Autos)							
	13 OF 16	14 OF 19	14 OF 18	15 OF 20	11 OF 17	15 OF 19	5 OF 5
c. ACCESSIBILITY ****							
● All LA County Households	13.0	13.3	13.0	13.1	13.3	13.2	--
● Majority Transit Users	10.4	10.7	10.5	10.5	10.7	10.6	--
● Minority Transit Users							
-Asians	14.8	15.2	14.9	14.9	15.1	15.1	--
-Blacks	18.8	19.1	18.7	18.8	18.9	18.9	--
-Hispanics	16.6	16.9	16.6	16.7	16.9	16.8	--
● Zero-Auto Households	18.5	19.0	18.6	18.7	19.0	18.9	--
● Poverty Level Households	16.8	17.1	16.7	16.9	17.0	17.0	--

-- continued

TABLE 2 (CONTINUED)

SUMMARY OF EVALUATION DATA FOR PROJECT OPTIONS

EVALUATION AREA	ALTERNATIVE						BULL ALTERNATIVE
	CA 1	CA 2	CA 3	CA 4	CA 5	CA 6	
d. SUBSURFACE IMPACTS (LIKELIHOOD OF ENCOUNTERING SUBSURFACE GAS BEYOND WILSHIRE/VERMONT STATION --ALL ALIGNMENTS SHARE SOME LIKELIHOOD BETWEEN WILSHIRE/ ALVARADO AND WILSHIRE/ VERMONT.)	MODERATE ALONG VERMONT & HOLLYWOOD ALIGNMENT	LOW (AERIAL)	HIGH ALONG CRENSHAW/ PICO ALIGNMENT	LOW (AERIAL)	MODERATE ALONG WESTERN & SUNSET ALIGNMENT	LOW (AERIAL)	--
e. NOISE AND VIBRATION							
• Subway							
- Impacted Properties With Mitigation Measures	39	25	107	38	47	15	4
- Length of Mitigation Measures (in Feet)							
{Soft Fasteners	9,850	8,400	18,500	8,900	16,300	10,900	0
{Resiliently Supported Ties	600	0	0	400	1,200	0	0
{Floating Slab Trackbed	10,868	10,068	14,500	9,268	12,518	7,868	4,768
• Aerial							
- Impacts With Mitigation Measures	N.A.	35	13	46	17	45	N.A.
- Length of Mitigation Measures (in Feet)							
{Sound Walls	N.A.	32,415	18,100	33,300	15,050	28,990	N.A.
f. AIR QUALITY							
• Intersections With Significant CO Increase **	13	14	19	16	15	15	0
• Reductions of Major Airborne Pollutants (Tons Per Day)	8.29	9.44	9.08	9.64	9.91	9.55	1.54
g. ENERGY USAGE							
• Annual YR2000 Regional Transportation Energy Demand (Billions of BTUs)	640,877	640,787	640,863	640,852	640,696	640,802	643,635
h. CULTURAL/HISTORIC							
• Properties Potentially Affected	0	18	11	15	8	16	--

* UMTA considers the SCRID patronage forecasts to be at the high end of the range of reasonable expectations.

** Excluding information on MOS-1.

*** Year 2000 Maximum Condition.

**** 1 of total L.A. County jobs within sixty minutes door-to-door transit travel time.

TABLE 3

SCR TD PREDICTED DAILY RAIL TRANSIT BOARDINGS BY MODE OF ACCESS*:
 CANDIDATE ALIGNMENT 6
 (Including MOS-1)

Station	Walk	Park-n-Ride	Kiss-n-Ride	Bus	Total
Union Station	4,210	3,746	1,415	22,289	31,660
Civic Center	13,868	0	0	12,359	26,227
Fifth/Hill	31,502	0	0	20,563	52,065
Seventh/Flower	10,037	0	0	24,931	34,968
Wilshire/Alvarado	18,103	0	3,606	8,069	29,778
Wilshire/Vermont	17,741	0	3,421	17,871	39,033
Wilshire/Normandie	3,078	0	1,791	755	5,624
Wilshire/Western	3,221	0	2,158	7,973	13,352
Wilshire/Crenshaw	1,572	0	2,304	3,024	6,900
Wilshire/La Brea	1,589	0	1,292	4,812	7,693
Wilshire/Fairfax	2,425	1,892	965	12,362	17,644
Universal City	1,296	2,530	447	12,438	16,711
North Hollywood	245	2,218	365	7,576	10,404
Vermont/Beverly	1,917	0	207	4,055	6,179
Vermont/Santa Monica	3,258	0	279	4,253	7,790
Vermont/Sunset	1,779	0	349	3,594	5,722
Sunset/Western	3,534	0	632	7,363	11,529
Hollywood/Vine	3,389	0	834	3,150	7,373
Hollywood/Highland	5,510	0	356	5,639	11,505
TOTAL	128,274	10,386	20,421	183,076	342,157

When Operating As A Terminal:

MOS-2:

● Wilshire/Western	3,440	0	2,727	10,660	16,827
● Hollywood/Vine	6,393	0	1,512	14,626	22,531

MOS-2A:

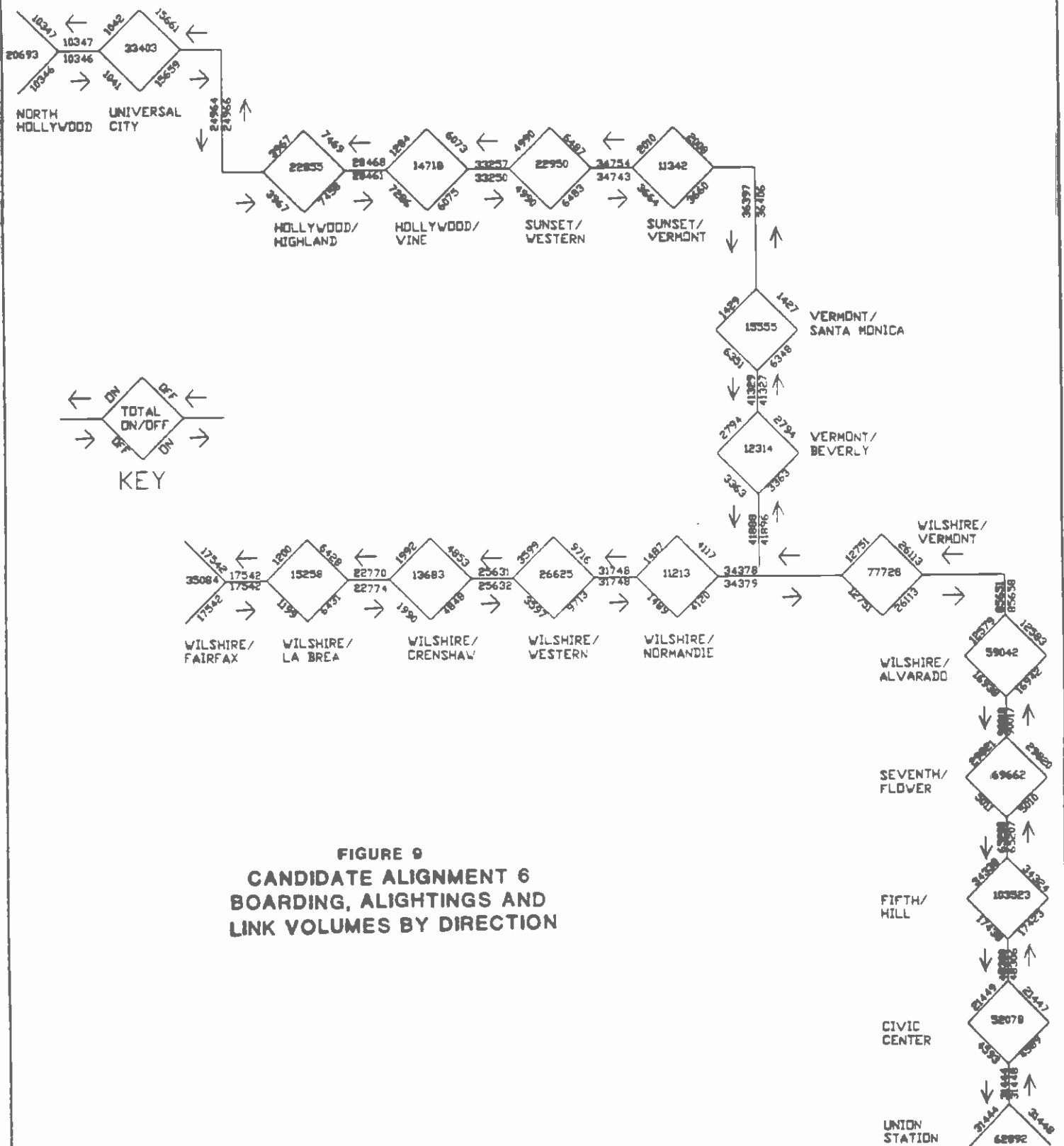
● Wilshire/Western	3,437	0	2,706	10,906	17,049
● Universal City	893	3,241	712	18,069	22,915

MOS-2B

● Wilshire/Vermont	16,835	0	2,925	27,738	47,498
● Universal City	881	3,217	708	14,738	19,544

*UMTA considers the SCR TD patronage forecasts to be at the high end of the range of reasonable expectations.

Source: General Planning Consultant.



fact, when Candidate Alignment 6 between the Vermont/Santa Monica and Hollywood/Highland Station is compared to corresponding station loadings under Alignments 3 and 4, the difference is less than eight percent. Care must be exercised in examining boardings at stations in isolation since they are reflective of a full system as well as individual station locations. The total number of station boardings for Candidate Alignment 6 equals 99 percent of the total number of station boardings for Candidate Alignment 4 and 105 percent of total boardings for Candidate Alignment 3.

Bus access to and from stations would be provided at either off-street bus facilities or on-street bus bays. Bus access facilities are shown in the station layouts in Appendix B of the Draft SEIS/SEIR and Figure 6 of this Addendum. Kiss-and-Ride access would be accommodated either off-street or on-street at all non-CBD stations. Park-and-Ride access is planned at the Union Station, Wilshire/Fairfax, Universal City and North Hollywood stations. Table 4 provides a summary of station access features for Candidate Alignment 6. These station access features are identical to those for the common stations in Candidate Alignments 3 and 4.

Rail service operations of Candidate Alignment 6 would consist of trains running alternately on the Union Station to Wilshire/Fairfax branch and on the Union Station to North Hollywood branch. On each of these branches, trains would operate every ten minutes for most of each weekday and every 7-8 minutes during peak periods (refer to Table 2-3, Chapter 2 of the Draft SEIS/SEIR). Because trains on both branches would operate over the section of line from Union Station to Wilshire/Vermont, this section of line would have a service frequency of five minutes for most of each weekday and 3-1/2 to 4 minutes in the peak periods. In the late evening, trains would operate on each branch at twenty-minute intervals, giving a combined headway on the downtown section of ten minutes. On weekends, service on each branch would be operated at fifteen-to-twenty minute intervals, giving a downtown service interval of 7-1/2 to 10 minutes.

Travel times depend upon the length of the line, the number of stations to be serviced, the speed restrictions encountered at curves on the line and the performance capabilities of the trains. One-way travel times from Union Station to terminal stations for each operable segment are the same as those shown for Candidate Alignment 4 in Table 2-4, Chapter 2 of the Draft SEIS/SEIR.

Trains would consist of either four or six cars, depending upon the capacity required to satisfy ridership levels. For MOS-1 and MOS-2 operations, all trains would consist of four cars. For the full alignment, peak period trains would have six cars and off-peak trains would have four cars.

A fleet of 72 cars would be required for the MOS-1 and MOS-2 system, increasing to 116 for full system operation. Service frequency and train length have been set to ensure that a peak load of 169 passengers per car is not exceeded. This loading standard provides for 59 seated passengers, one patron in a wheelchair, and 109 standees with 3.3 square feet of standing room per passenger. During the off-peak periods, it is expected that the number of passengers in each car would not exceed 100.

TABLE 4

SUMMARY OF STATION ACCESS FEATURES
CANDIDATE ALIGNMENT 6

Station	Right-of Way Location	Bus Facilities		Off-Street Auto Facilities (Spaces)	Kiss -n- Ride
		Bays*	Turnout	Park-n- Ride**	
Union Station	Off-Street	27/20	--	300/2,500	--
Civic Center	Hill	--	Hill	--	--
Fifth/Hill	--	--	--	--	--
Seventh/Flower	Seventh	--	--	--	--
Wilshire/Alvarado	Off-Street	--	Alvarado	--	20
Wilshire/Vermont	Off-Street	3/4	--	--	20
Wilshire/Normandie	Wilshire	0	Normandie	--	--
Wilshire/Western	Wilshire	0/12	Western	--	--
Wilshire/Crenshaw	Wilshire	--	--	--	--
Wilshire/La Brea	Wilshire	TBD	--	--	50
Wilshire/Fairfax	Wilshire	2/10	--	250/1,000	25
Vermont/Beverly	Vermont	--	--	--	--
Vermont/Santa Monica	Vermont	--	--	--	--
Vermont/Sunset	Off-Street	6	Vermont	--	20 ₊
Hollywood/Vine	Hollywood	--	--	--	25
Universal City	Off-Street	8/10	--	1,175/2,500	40
Hollywood/Highland	--	--	--	--	--
North Hollywood	Lankershim	6/6	Chandler	1,800/2,500	65
Sunset/Western	Sunset	--	--	--	--

* Bus facilities identified are boarding/alighting and layover bays, respectively.

** Park-and-ride capacities shown are surface-only spaces to be provided initially followed by surface and structure(s) spaces to be provided ultimately (i.e., initial/buildout).

*** TBD = To be determined

NOTE: Bicycle racks or lockers will be provided at all stations except the three CBD stations and Wilshire/Normandie.

Source: SCRTD.

3.1.2 Traffic

For Candidate Alignment 6, traffic impacts would occur at stations and along the aerial sections of the alignment on Wilshire Boulevard, Vermont Avenue, and Sunset Boulevard. Placement of aerial guideway columns within these street rights-of-way would produce changes in traffic patterns.

The character of these traffic changes and the types of impacts anticipated are discussed in Section 1.2, Chapter 3 of the Draft SEIS/SEIR. As with Candidate Alignment 4, the aerial alignment of Candidate Alignment 6 would be on Sunset, but for a shorter distance. Thus, the traffic impacts of an aerial alignment on Sunset Boulevard would be less for Alignment 6 as compared to Alignment 4. The location of the transition from aerial to subway outside the roadway for Candidate Alignment 6 would result in fewer traffic impacts during construction and would not require the widening of Sunset Boulevard around the transition as required for Candidate Alignment 4.

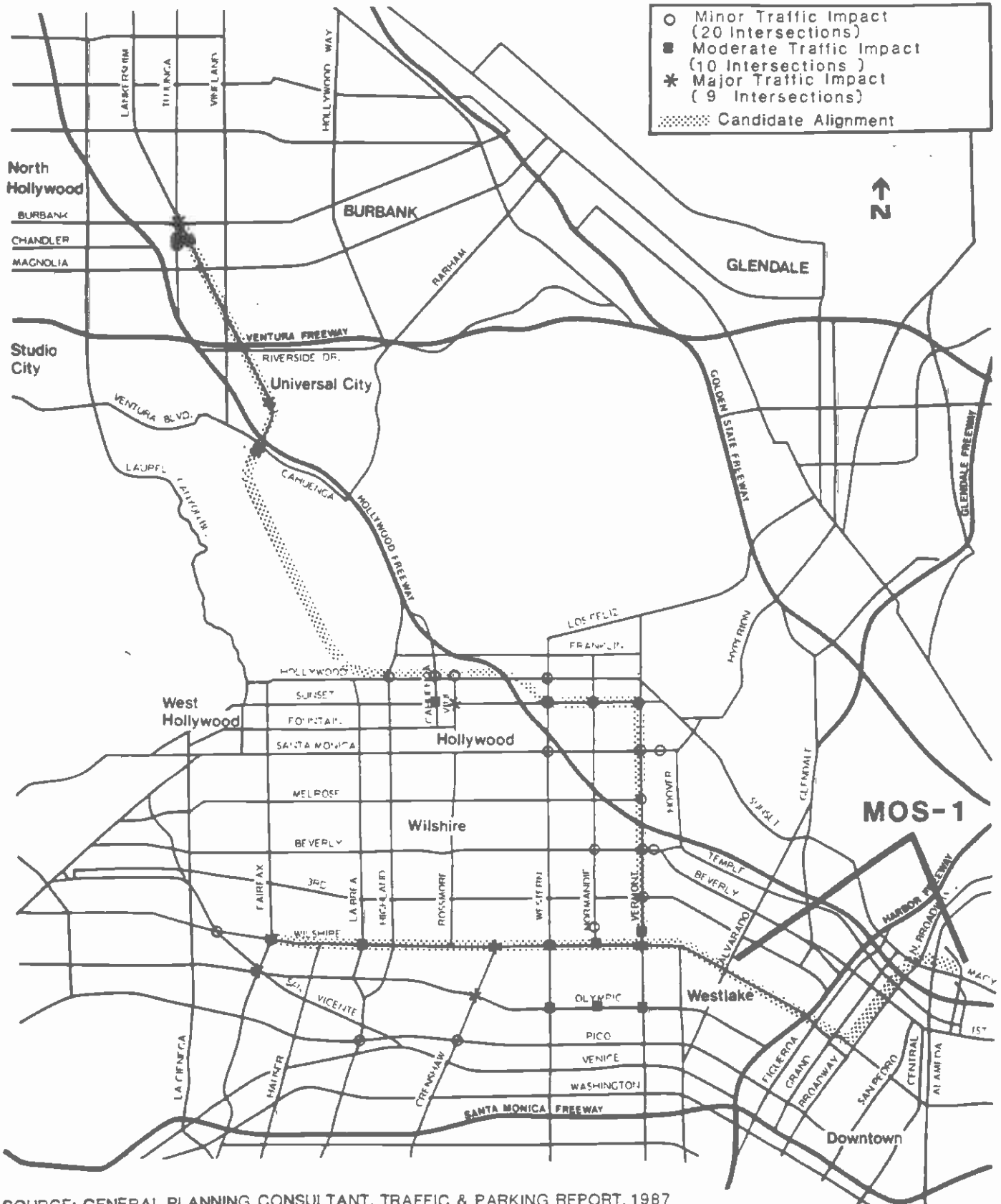
Travel diverted to transit would reduce the number of auto trips in the region. A screenline analysis of conditions with the Metro Rail project indicates that there would be a 2.1 percent reduction in vehicle trips in the east/west direction and a 1.2 percent reduction in the north/south direction in the corridor (see Section 1.2.2 in Chapter 3 of the SEIS/SEIR). Work by the Los Angeles Department of Transportation has indicated traffic decreases of up to five percent at some intersections in the corridor paralleling the Metro Rail alignment. A worst-case scenario is presented here with an assumption of localized increases in traffic volumes at stations, resulting from automobile trips by park-and-ride and kiss-and-ride patrons.

Candidate Alignment 6 would have traffic impacts at critical intersections that are nearly identical to those near corresponding stations for Alignments 3 and 4. Intersections exhibiting major impacts from "stations access traffic" would not change from those previously identified for Alignments 3 and 4. Table 5 summarizes the results of the analysis of impacts of this "station access traffic" on critical volumes and the level of service at critical intersections. The degree of traffic impact (i.e., minor, moderate, and major) for these intersections is shown in Figure 10.

Traffic generated by Candidate Alignment 6 would result in a decrease to level-of-service F at three intersections, while station traffic impacts are rated as major on nine critical intersections of 39 analyzed (See Table 5). For the other candidate alignments, the number of intersections experiencing a decrease in the level of service to F ranges from three to five, while the number of intersections with traffic impacts rated as major ranges from six to twelve.

Traffic impacts for the operable segments of Candidate Alignment 6 would not be significantly different from the full system, except at temporary terminal stations. Terminal stations for Operable Segment MOS-2 would be located at Wilshire/Western and Hollywood/Vine. Operable segment MOS-2A would have terminal stations at Wilshire/Western and Universal City. Terminal stations for operable segment MOS-2B would be located at Wilshire/Vermont and Universal City. Table 6 summarizes the impacts of station access traffic on critical volumes and levels of service at intersections in the vicinity of these temporary terminal stations.

FIGURE 10
IMPACT OF STATION ACCESS TRAFFIC:
CANDIDATE ALIGNMENT 6



SOURCE: GENERAL PLANNING CONSULTANT, TRAFFIC & PARKING REPORT, 1987

TABLE 5
IMPACT OF STATION ACCESS TRAFFIC: CANDIDATE ALIGNMENT 6
(YEAR 2000, WITHOUT MITIGATION MEASURES)

<u>Intersection</u>	<u>NULL ALTERNATIVE</u>		<u>ALIGNMENT 6</u>		Absolute Change in Critical Volume	Expected Impact
	Critical Volume (Vehicle Per Hour)	LOS	Critical Volume (Vehicle Per Hour)	LOS		
Beverly @ Normandie	2,208	F	2,208	F	0	Minor
Vermont @ Third	2,564	F	2,569	F	5	Minor
Santa Monica @ Virgil	1,343	D	1,349	E	6	Minor
Hollywood @ Highland	1,401	E	1,412	E	11	Minor
Chandler @ Tujunga (S)	476	A	487	A	11	Minor
Vermont @ Melrose	1,303	D	1,316	D	13	Minor
Western @ Santa Monica	1,588	F	1,602	F	14	Minor
Vermont @ Beverly	1,499	F	1,519	F	20	Minor
Hollywood @ Vine	1,271	D	1,291	E	20	Minor
Santa Monica @ Vermont	1,351	E	1,372	E	21	Minor
San Vicente @ Wilshire	2,222	F	2,249	F	27	Minor
Hollywood @ Cahuenga	1,712	F	1,768	F	56	Minor
Fairfax @ Beverly	1,558	F	1,586	F	28	Minor
Crenshaw @ Pico	2,532	F	2,560	F	28	Minor
Western @ Hollywood	1,546	F	1,573	F	27	Minor
Beverly @ Virgil	1,975	F	2,004	F	29	Minor
La Brea @ Pico	1,698	F	1,729	F	31	Minor
Chandler @ Tujunga (N)	678	A	718	A	41	Minor
Sunset @ Western	1,737	F	1,782	F	45	Minor
Normandie @ Sixth	1,816	F	1,876	F	60	Minor
Sunset @ Vermont	1,515	F	1,582	F	67	Minor
Vermont @ Sixth	1,609	F	1,693	F	84	Moderate
Normandie @ Olympic	1,484	E	1,568	F	84	Moderate
Western @ Olympic	1,668	F	1,769	F	101	Moderate
Lankershim @ Chandler	797	A	903	B	106	Moderate
Wilshire @ La Brea	1,496	F	1,602	F	106	Moderate
Sunset @ Cahuenga	1,179	C	1,315	E	136	Moderate
Wilshire @ Normandie	1,102	D	1,238	E	136	Moderate
Vermont @ Olympic	1,616	F	1,758	F	142	Moderate
Wilshire @ Western	1,809	F	1,954	F	145	Moderate
Crenshaw @ Olympic	1,595	F	1,783	F	188	Major
Wilshire @ Fairfax	1,687	F	1,956	F	269	Major
Lankershim @ Cahuenga	1,170	C	1,431	E	261	Major
Fairfax @ Olympic	1,799	F	2,095	F	296	Major
Lankershim @ Ventura/ Cahuenga	1,320	E	1,642	F	322	Major
Vermont @ Wilshire	1,483	F	1,833	F	350	Major
Sunset @ Vine	1,634	F	1,930	F	296	Major
Wilshire @ Crenshaw	1,553	F	2,033	F	480	Major
Lankershim @ Burbank	1,168	D	1,769	F	601	Major

Source: General Planning Consultant, Traffic & Parking Technical Report, 1987

TABLE 6
 IMPACT OF STATION ACCESS TRAFFIC: CANDIDATE ALIGNMENT 6:
 MINIMAL OPERABLE SEGMENTS
 (YEAR 2000 WITHOUT MITIGATION MEASURES)

<u>Intersection</u>	<u>NULL ALTERNATIVE</u>		<u>ALIGNMENT 6</u>		<u>Absolute Change In Critical Volume</u>	<u>Expected Impact</u>
	<u>Critical Volume (Vehicle Per Hour)</u>	<u>LOS</u>	<u>Critical Volume (Vehicle Per Hour)</u>	<u>LOS</u>		
<u>MOS-2</u>						
<u>Wilshire/Western</u>						
Western @ Third	1,909	F	1,945	F	37	Minor
Western @ Olympic	1,668	F	1,814	F	146	Moderate
Wilshire @ Crenshaw	1,553	F	1,764	F	211	Major
Wilshire @ Western	1,809	F	2,148	F	339	Major
<u>Hollywood/Vine</u>						
Fountain @ Vine	1,705	F	1,748	F	43	Minor
Hollywood @ Highland	1,401	E	1,443	F	42	Minor
Hollywood @ Cahuenga	1,712	F	1,778	F	76	Moderate
Cahuenga @ Sunset	1,179	C	1,288	E	109	Moderate
Hollywood @ Vine	1,271	D	1,457	E	186	Major
Sunset @ Vine	1,634	F	1,840	F	206	Major
<u>MOS-2A</u>						
<u>Wilshire/Western</u>						
Western @ Third	1,909	F	1,945	F	37	Minor
Western @ Olympic	1,668	F	1,814	F	146	Moderate
Wilshire @ Crenshaw	1,553	F	1,764	F	211	Major
Wilshire @ Western	1,809	F	2,148	F	339	Major
<u>Universal City</u>						
Lankershim @ Ventura/ Cahuenga	1,320	E	1,642	F	322	Major
Lankershim @ Cahuenga Tujunga	1,170	C	1,566	E	396	Major
<u>MOS-2B</u>						
<u>Wilshire/Vermont</u>						
Vermont @ Sixth	1,609	F	1,705	F	96	Moderate
Vermont @ Olympic	1,616	F	1,789	F	173	Major
Wilshire @ Western	1,809	F	2,173	F	364	Major
Wilshire @ Normandie	1,102	D	1,272	E	170	Major
Wilshire @ Vermont	1,483	F	1,876	F	393	Major
<u>Universal City</u>						
Lankershim @ Ventura/ Cahuenga	1,320	E	1,642	F	322	Major
Lankershim @ Cahuenga Tunjunga	1,170	C	1,566	E	521	Major

Source: General Planning Consultant, Traffic & Parking Technical Report,
 1987

The analysis of traffic impacts of Candidate Alignment 6 and its operable segments indicates that certain traffic mitigation measures would be needed in the vicinity of Metro Rail stations, particularly those expected to be major points of access for park-and-ride and kiss-and-ride patrons. Mitigation measures are described in Section 1, Chapter 3 of the Draft SEIS/SEIR. They include parking restrictions, pavement restriping, left-turn restrictions, additional lanes, traffic signal changes, and bus turnout lanes.

Intersections potentially requiring mitigation under Candidate Alignment 6 include: (1) Fairfax/Olympic, (2) Crenshaw/Olympic, (3) Vermont/Wilshire, (4) Lankershim/Ventura/Cahuenga, (5) Lankershim/Burbank, (6) Wilshire/Fairfax, (7) Wilshire/Crenshaw, (8) Sunset/Vine, and (9) Lankershim/Cahuenga. The specific mitigation measure to be applied at each intersection would be identified during final design of the Metro Rail Project. Additional measures may be needed to mitigate the impacts of the aerial segments of Alignment 6. These measures are described in the Draft SEIS/SEIR.

3.1.3 Parking

Metro Rail patrons who drive to stations will increase demand for parking in those station areas. This demand can result in a "spillover" of rail patron parking into the surrounding neighborhood. Spillover would result from a shortage of parking at stations and/or elimination of existing on-street parking by aerial guideway support columns and transition portals.

Parking impacts discussed below represent a "worst case" scenario. Estimates of parking demand from the travel simulation models produced for this analysis did not include constraints on park-and-ride access relative to available parking spaces. Additionally, estimated parking demand did not include the positive effect of Metro Rail in converting auto users to transit users. It is estimated that Candidate Alignment 6, relative to MOS-1, would reduce daily vehicle trips in the region by more than 200,000. The non-home ends of these trips would ordinarily represent demand for parking. The reduction in this number of trips will, therefore, reduce the regional demand for parking. Therefore, parking impacts presented here are greater than those that would actually occur.

Under this worst-case scenario, parking demand for Alignment 6 may exceed the total available parking supply, including SCRTD facilities, in five station areas: Union Station (1,108 spaces), Wilshire/Alvarado (1,206 spaces), Wilshire/Crenshaw (907), Wilshire/Vermont (93 spaces), and Wilshire/Crenshaw (68 spaces). This total deficiency of 3,382 spaces compares to a range of 2,957 for Candidate Alignment 3 to 4,419 spaces for Candidate Alignment 1.

Spillover parking is anticipated at two stations where SCRTD would provide parking facilities. Under the worst-case scenario, spillover parking could occur for Candidate Alignment 6 at Union Station (3,580 spaces) and at Wilshire/Fairfax (2,450 spaces). This impact is expected to be more significant for the Wilshire/Fairfax station area, which is characterized as nearly one-quarter single-family residences.

If parking demand for the Candidate Alignment 6 is lower than this worst-case scenario, the parking impacts described above would be less significant. Thus, mitigation measures may not be necessary in all instances.

Parking impacts of operable segments defined for Candidate Alignment 6 would not be significantly different from the full system, except at temporary terminal stations. For MOS-2, a deficiency is expected at the Wilshire/Western temporary terminus station (1,652 spaces). No deficiency is expected at the Hollywood/Vine terminus. For MOS-2A, a deficiency of 1,655 spaces may be anticipated at the Wilshire/Western station, while Universal City would exhibit no deficiency. For MOS-2B, Wilshire/Vermont and Universal City could anticipate parking deficiencies of 1,424 and 739 spaces, respectively.

Possible parking mitigation measures include: the City of Los Angeles Parking Management Plan (encouraging vanpools, ridesharing, and transit); employer-sponsored rideshare or transit incentive programs to reduce potential parking usage; preferential parking districts within residential neighborhoods adjacent to station areas; more project-provided parking for the Metro Rail Project; an extensive network of feeder bus lines serving the stations; more metered curb spaces in commercial areas; bicycle parking at Metro Rail stations; and preferential parking for carpools and vanpools. Discussion of these mitigation measures appears on pages 3-1-48 and 3-1-49 of the Draft SEIS/SEIR.

3.2 LAND USE AND DEVELOPMENT

The land use and development analysis for the previous five candidate alignments and for the new Candidate Alignment 6 involved the examination of the land use and development potential or areas around stations located along each alignment. Chapter 3, Section 2 of the Draft SEIS/SEIR examines in detail the land use impacts of each of the project options. A summary of impacts and mitigation measures for Candidate Alignment 6 is provided below. A radius of one-quarter mile for each station was used to define the potential impact area.

The impacts for Section A and Section C of Candidate Alignment 6 are nearly identical to those for the corresponding sections of Candidate Alignments 3 and 4, except that the area of influence for the Sunset/Vermont Station of Candidate Alignment 6 is more similar to that for the Sunset/Vermont Station of Candidate Alignment 4. Special consideration is given to the land use implications of the revised Sunset/Vermont Station location and the Sunset off-street transition from aerial to subway (Section B of Candidate Alignment 6) later in this Land Use Section.

3.2.1 Existing Conditions

An evaluation of current land uses in the station areas shows that Candidate Alignment 6 includes six station areas classified as predominantly commercial: Fifth/Hill, Seventh/Flower, Wilshire/Vermont, Hollywood/Vine, University City, and North Hollywood. Five station areas for Candidate Alignment 6 exhibit predominantly residential land use profiles: Wilshire/Crenshaw, Wilshire/La Brea, Wilshire/Fairfax, Vermont/Beverly, and Vermont/Santa Monica. Six station areas are characterized as mixed use: Wilshire/Alvarado, Wilshire/Normandie, Wilshire/Western, Vermont/Sunset, Sunset/Western and Hollywood/Highland. Public facilities comprise the predominant land use in two station areas: Union Station, and Civic Center.

Candidate Alignment 6 would serve the greatest amount of commercial floor area (65,750,000 square feet) of any of the candidate alignments and would be second only to Candidate Alignment 4 in terms of number of employees (189,172), number of dwelling units (55,647), and population (108,489) served within a 1/4 mile radius of stations.

3.2.2 Relationship to Local Plans

The Centers Concept of the Los Angeles General Plan establishes the primary framework for growth of the community. The Centers Concept was adopted by the City of Los Angeles in 1974. Similar concepts have been adopted by the County of Los Angeles and the Southern California Association of Governments. The Concept envisions a series of Centers connected by a regional rapid transit system. Candidate Alignment 6 would promote the concentration of development in designated Centers, help maintain surrounding low-density residential areas and reduce development pressures on sensitive undeveloped areas outside the Regional Core. As shown in Table 2, Candidate Alignment 6 would serve thirteen City Centers with fifteen stations located in these Centers. Along with Candidate Alignment 4, these numbers represent the most Centers served and most stations in Centers among the alignments.

The Los Angeles Community Redevelopment Agency has designated five areas in the Regional Core as redevelopment project areas: North Hollywood, Hollywood, Central Business District, Bunker Hill and Little Tokyo. Similar to Candidate Alignments 3 and 4, Candidate Alignment 6 would serve three Redevelopment Project areas, with seven stations in these areas. Provision of the Metro Rail system to economically stagnant or declining areas is viewed as a potentially beneficial impact with respect to revitalization of these areas.

3.2.3 Commercial Growth Impacts

Commercial growth projected to occur in station areas would be beneficial, if it could be accommodated on commercially-zoned land susceptible to investment. For station areas where the projected growth would require 75 percent or less of the available parcel area, the impact of the growth was assessed to be potentially beneficial. For Candidate Alignment 6, this condition exists at Union Station, Wilshire/Alvarado, Wilshire/Vermont, Wilshire/Normandie, Wilshire/Western, Wilshire/La Brea, Vermont/Santa Monica, Hollywood/Vine, Hollywood/Highland and North Hollywood.

Commercial growth projected to occur in station areas would be adverse, if the land available to accommodate development is inadequate. Therefore, where project growth could require 75 percent or more of the available parcel area, the impact of commercial growth was assessed to be potentially adverse. For Candidate Alignment 6, this would occur at the Fifth/Hill, Seventh/Flower, Wilshire/Fairfax, Wilshire/Crenshaw, Vermont/Beverly and Universal City station areas. However, it is expected that potential adverse impacts could be mitigated in all station areas.

There would be an adverse impact on surrounding residential areas if: (1) an insufficient supply of land exists to accommodate commercial growth, (2) pressure to re-zone residential areas for commercial use exists, and (3) development subsequently spill over into the residential area. Therefore, adverse impacts would be expected at station areas where projected commercial

growth has been assessed to have a potentially adverse impact (i.e., pressure to re-zone is evident) and the predominant land use is residential. Potentially adverse impacts of this nature for Candidate Alignment 6 could occur at the Wilshire/Crenshaw, Wilshire/Fairfax, Vermont/Beverly and Universal City stations. It is anticipated that the potentially adverse effects could be mitigated in all cases.

3.2.4 Residential Growth Impacts

Residential growth in conjunction with Metro Rail would be beneficial when accommodated within the station areas on residentially-zoned land susceptible to development. For station areas where the projected growth would require 75 percent or less of the available parcel area, the impact of the growth was assessed to be potentially beneficial. For Candidate Alignment 6, this condition is expected to occur at the Vermont/Santa Monica, Vermont/Sunset and Sunset/Western station areas.

The impacts of residential growth can be potentially adverse when forecasted levels of residential growth are expected to exceed the supply of land available for residential development. For station areas where projected growth would require 75 percent or more of the available parcel area, the impact of growth was assessed to be potentially adverse. For Candidate Alignment 6, these conditions could occur at the following stations: Civic Center, Fifth/Hill, Seventh/Flower, Wilshire/Alvarado, Wilshire/Vermont, Wilshire/Normandie, Vermont/Beverly, Wilshire/La Brea, Wilshire/Fairfax, Hollywood/Vine and Hollywood/Highland. It is anticipated that these potentially adverse impacts could be mitigated in all cases.

If an insufficient supply of land exists to accommodate residential growth, there would be an adverse impact on surrounding residential areas. Pressure would be present to rezone single family or low-density residential neighborhoods for a higher density residential use, assuming that residential growth attracted by Metro Rail would be multi-family in nature. These impacts conceivable could occur at station areas where: (1) projected residential growth has been assessed to have a potentially adverse impact, and (2) the predominant surrounding land use Community Plan designation, and zoning is single-family residential. Based on these criteria, potentially adverse impacts could occur in the Wilshire/La Brea, Wilshire/Fairfax and Universal City station areas for Candidate Alignment 6. It is anticipated that these potentially adverse effects could be mitigated in all cases.

3.2.5 Maintenance of Stable Land Values

It is expected that land values would increase to some extent at all station areas where development occurs. Potentially adverse impacts could occur in station areas where inadequate land supply exists to accommodate projected commercial and/or residential development. For Candidate Alignment 6, this condition would exist at the five MOS-1 stations and at the Wilshire/Vermont, Wilshire/Normandie, Wilshire/Western, Wilshire/Crenshaw, Wilshire/La Brea, Wilshire/Fairfax, Vermont/Beverly, Hollywood/Vine, Hollywood/Highland and Universal City stations. The greatest pressure is expected to occur where land susceptible to reinvestment (regardless of commercial or residential classification) is exceeded by the combination of projected commercial and residential growth; Civic Center, Fifth/Hill, Seventh/Flower, Wilshire/La Brea, Wilshire/Fairfax, Vermont/Beverly and Universal City. The greatest impact would be at station areas where the predominant land use is single-family residential: Wilshire/La Brea, Wilshire/Fairfax and Universal City. Land values are determined by market forces, at times, beyond the control of public agencies; although these land value issues can be ameliorated through application of appropriate zoning and land use policies.

3.2.6 Preservation of Historic and Cultural Resources

As described in Section 3.16, historic and cultural resources within station areas could be affected either positively or negatively by growth induced by the Metro Rail project. If the floor area ratio allowed by zoning is significantly higher than the floor area ratio of existing structures and projected development pressure is assessed to be high, an adverse impact may occur with a replacement of a structure. Potentially adverse impacts could occur in station areas containing historic or cultural resources, where inadequate land supply exists to accommodate projected commercial or residential growth. For Candidate Alignment 6, this condition exists in the Union Station, Fifth/Hill, Seventh/Flower, Wilshire/La Brea, Hollywood/Vine and Hollywood/Highland station areas. Mitigation measures would be established to promote the restoration/renovation of historic structures rather than displace these structures under the pressure of commercial and residential development.

3.2.7 Maintenance of Compatibility with Existing Land Uses and Community Character

Projected growth in station areas may or may not be compatible with surrounding land uses or with the desired character for a particular station area. Potentially adverse impacts could occur if the projected growth is inconsistent with surrounding uses. This is primarily true for station areas where the predominant land use is residential and where high levels of commercial growth (50% or more) are forecast. For Candidate Alignment 6, these conditions exist for the following station areas: Wilshire/Crenshaw, Wilshire/La Brea, Wilshire/Fairfax and Vermont/Beverly. In these station areas, projected commercial development may be potentially out of scale with surrounding residential areas. Mitigation measures could be employed in each of these areas, however.

3.2.8 Sunset/Vermont Curve

The proposed location of the station on the Sunset/Vermont curve in "Section A" of Candidate Alignment 6 and for Candidate Alignment 4 has several land use implications. The immediate station area is currently developed with hospitals, large medical facilities, commercial facilities (including retail, office and a motel) and low to medium density residential development (See Figure 11). Within a one-quarter mile radius, 46% of the area is public facilities and open space. The remaining area is 21% residential, 21% commercial and 12% vacant or surface parking (see Figure 12). Approximately 1.1 million square feet of commercial floor space (including the hospitals) is currently present within this one-quarter mile radius, with some 6,200 employees. The one-quarter mile radius includes approximately 2,400 dwelling units with a population of some 5,200 residents.

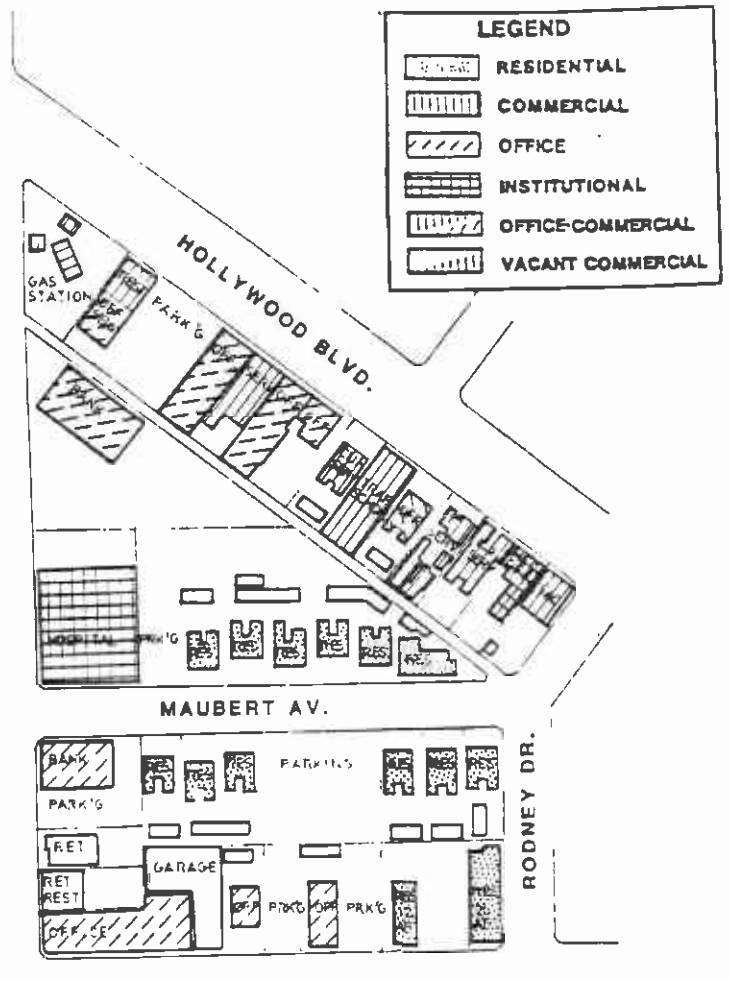
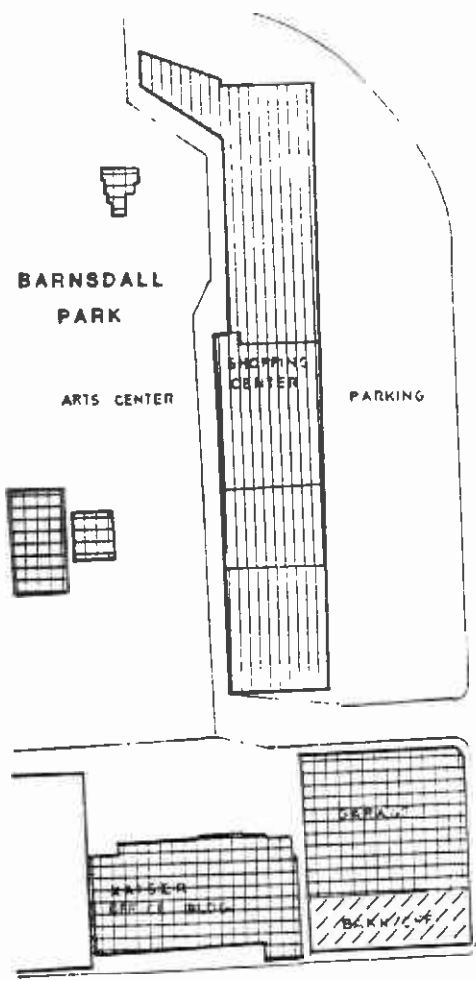
The proposed alignment involves the displacement of several commercial, residential and institutional buildings in the blocks bounded by Sunset Boulevard, Vermont Avenue, Berendo Street, and Lexington Avenue. These displacements are detailed in Section 3.4 of this Addendum.

The parcels proposed for acquisition are currently zoned C2-2 or C2-3, allowing for development of community commercial facilities. Within a one-quarter mile radius of the proposed station, 71% of the current zoning allows for community (low-intensity) commercial and 29% allows for multi-family residential (See Figure 13). The passage of Proposition U, as discussed in Section 2.1.3 of Chapter 3 in the Draft SEIS/SEIR, does not affect the allowable densities in these zoning classifications. The Community Plan for this area calls for 61% multi-family, 13% single-family, 11% community commercial, 9% regional commercial, 5% public facilities/open space and 1% industrial.

Within a one-quarter mile radius, approximately one-third of the commercial area (23 acres) and 15% of the residential area (11 acres) is susceptible to redevelopment (see Section 2.2.3.2, Chapter 3 of the Draft SEIS/SEIR). Introduction of Metro Rail to this community Center area is expected to generate between 300,000 and 550,000 square feet of additional commercial development between 1980 and the year 2000. Commercial growth without Metro Rail is expected to be some 175,000 additional square feet within a one-quarter mile radius.

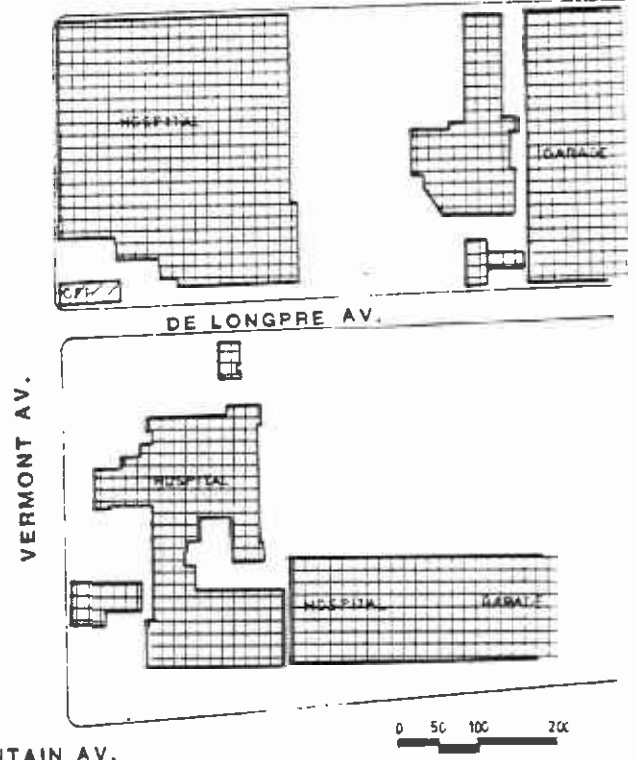
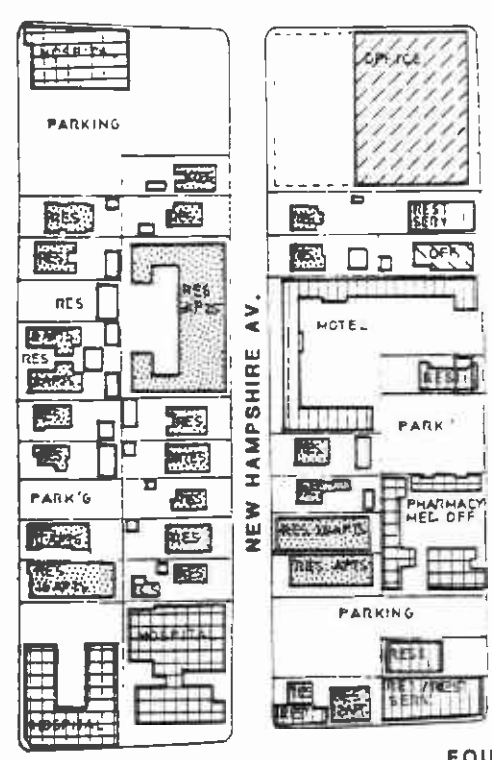
Residential development under the year 2000 maximum impact condition with construction of Metro Rail could introduce some 480 additional dwelling units within a one-quarter mile radius. Without Metro Rail, this residential growth is expected to be around 240 units.

The Sunset/Vermont area is within a designated Community Center. The commercial and residential development projected for this area with construction of Metro Rail would be consistent with the Centers concept and the Community Plan for the area. Acquisition of the parcels described in Section 3.4 could allow for the ultimate redevelopment (joint development) of residential, commercial or hospital facilities around the station and guideway, following the specific identification of the necessary Metro Rail auxiliary (park-and-ride, kiss-and-ride and bus access) facilities. No changes or impacts to Barnsdall Park are anticipated with regard to land use and development associated with Candidate Alignment 6.



LEGEND

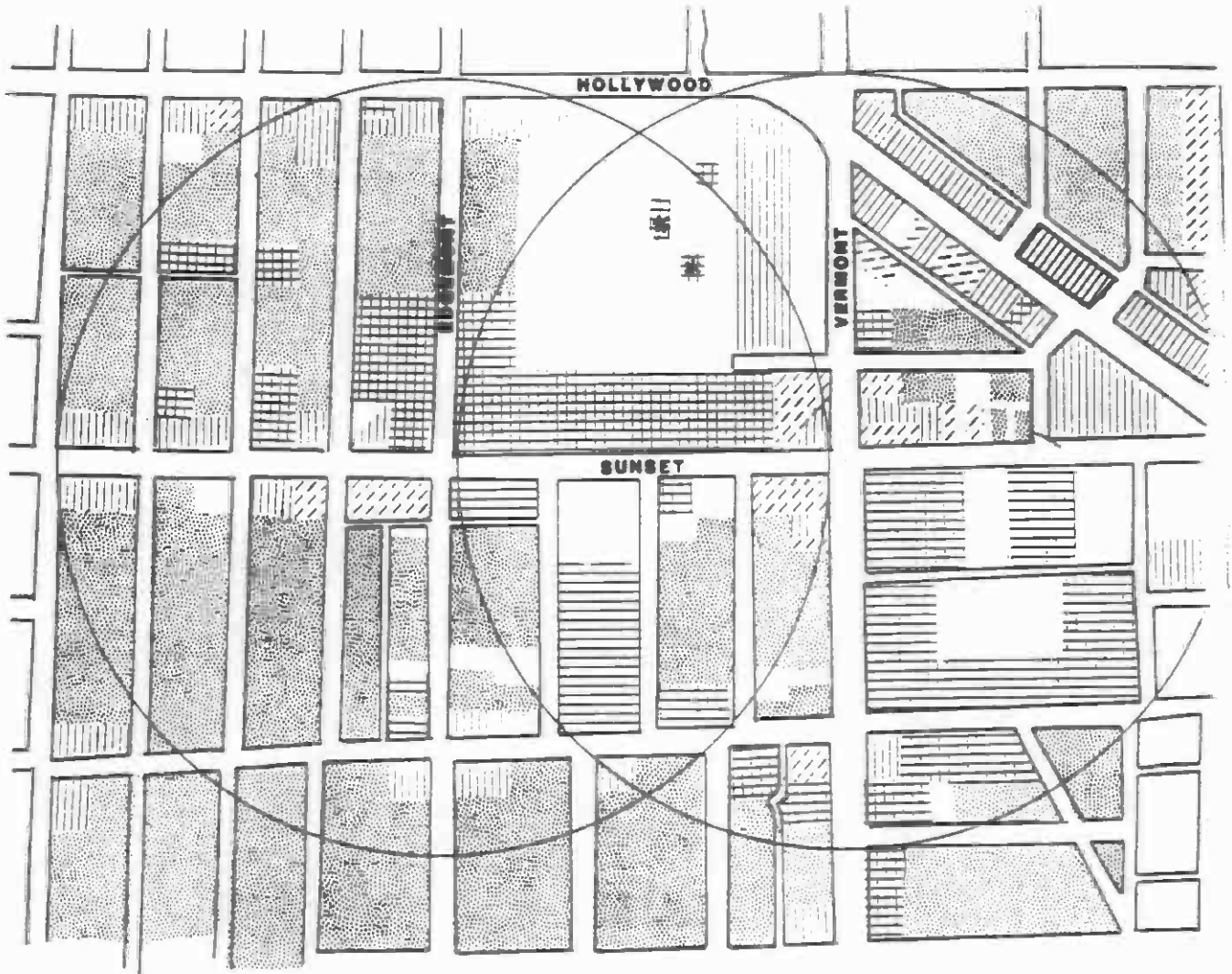
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[Pattern]	VACANT COMMERCIAL



SUNSET AND VERMONT STATION AREA

LAND USES

FIGURE 11













SUNSET/VERMONT



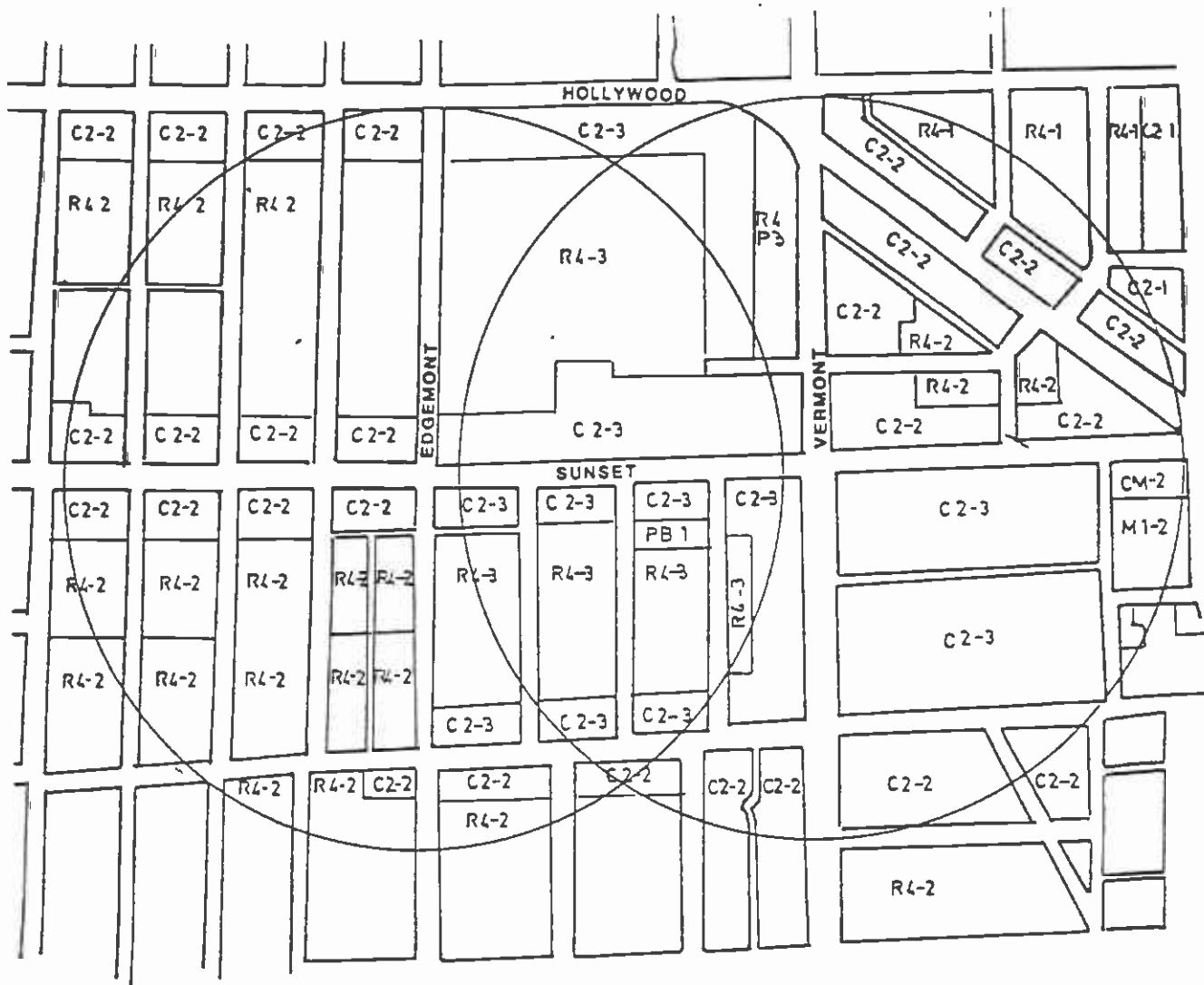
0 250 500 1000

LAND USES

	RESIDENTIAL		VACANT RESIDENTIAL
	COMMERCIAL		VACANT COMMERCIAL
	OFFICE		VACANT OFFICE
	INDUSTRIAL		OFFICE/COMMERCIAL
	INSTITUTIONAL		RESIDENTIAL/COMMERCIAL

* HISTORIC RESOURCES

FIGURE 12



SUNSET/VERMONT



SCALE



ZONING CLASSIFICATION

FIGURE 13

3.2.9 Sunset Off-Street Transition

In "Section B" of Candidate Alignment 6, the placement of an aerial to subway configuration off-street in the block bounded by Sunset Boulevard, Wilton Place, Harold Way, and Saint Andrews Place has several land use implications. The transition block currently contains low intensity commercial development, a motel, a church complex and multi-family residential development. Section 3.4 of the Addendum details the displacements that would be necessary for the Metro Rail transition in this block.

The transition block is located in the Hollywood Redevelopment Project Area. The "Final Environmental Impact Report for the Hollywood Redevelopment Project," dated January 1986, divides the Project Area into seven sub-areas. The transition block is within Sub-area 7, which is generally bounded by Hollywood Boulevard on the north, Serrano Avenue on the east and the Hollywood Freeway on the west and south. Existing land use in this sub-area is mainly commercial (41 acres -- 36% of net land area) and residential (45 acres -- 39% of net land area). Eighty-nine percent of the 2,070 residential units are renter occupied, and 25 percent are overcrowded.

Under the Redevelopment Plan, the sub-area could accommodate a major increase in residential units under a build-out scenario. However, Los Angeles Community Redevelopment Agency (CRA) market studies project a demand for only 540 additional units over the next 20 years. CRA market studies also project a demand for 250,000 square feet of industrial development over the next 20 years, which also is far below theoretical build-out for this sub-area.

The zoning classification for the transition block is R4-2, which allows for multi-family residential development. However, the frontage on Sunset Boulevard for this block is currently developed as commercial. Zoning in the immediate surrounding blocks is C2-2 and M1-2 for properties fronting on Sunset Boulevard and C2-2 for properties fronting on Western Avenue. The remaining parcels not fronting on Sunset or Western are typically zoned R4-2.

The Hollywood Redevelopment Plan adopted by City of Los Angeles designates the transition block as Highway Oriented Commercial for that portion of the block fronting on Sunset Boulevard and High Density Residential for the northern half of the block. The Plan designates the blocks south of Sunset between Western Avenue and the Hollywood Freeway as Highway Oriented Commercial. The block east of the transition block is designated as Highway Oriented Commercial along the Sunset Boulevard and Western Avenue frontages, while the northwest portion of this block is designated as High Density Residential. The blocks north of Harold Way between Western Avenue and the Hollywood Freeway are also designated in the Plan as High Density Residential, except for the southern half of the block immediately to the north of the transition block. This area is designated as Recreational and School Site, allowing for the expansion of the school located on this site. This school expansion is currently underway.

The displacement of the commercial and residential units in the transition block temporarily reduces the housing stock in the Redevelopment Area, which is in conflict with the Hollywood Redevelopment Plan objectives. Buildout residential density in the Hollywood Redevelopment Plan Sub-area discussed above would allow for the construction of additional housing, if suitable sites for this

development were identified. The SCRTD is currently working with the City of Los Angeles and the Community Redevelopment Agency to evaluate the need for and options regarding the mitigation of residential displacements and reduction in the area's housing stock. Acquisition of the properties in the transition block could allow for the ultimate redevelopment of portions of this site for commercial or residential development, following the identification of specific site requirements for the Metro Rail transition.

3.2.10 Mitigation Measures

Mitigation measures for land use impacts are discussed in detail in Chapter 3, Section 2.3 of the Draft SEIS/SEIR. Mitigation measures for Candidate Alignment 6 are summarized below.

Three actions will be appropriate to mitigate the potential adverse impacts of residential growth associated with Candidate Alignment 6: (1) develop residential projects on commercially-zoned land, (2) increase density of new residential development in existing multi-family residential zones, and (3) divert potential residential growth to other station areas where multi-family residential development would be more appropriate. For Candidate Alignment 6, these measures are applicable to the following station areas: Union Station, Civic Center, Fifth/Hill, Seventh/Flower, Wilshire/Alvarado, Wilshire/Vermont, Wilshire/Normandie, Wilshire/Western, Wilshire/La Brea, Wilshire/Fairfax, Vermont/Beverly, Hollywood/Vine, Hollywood/Highland and Universal City.

Three actions will be appropriate to mitigate the potential adverse impacts of commercial growth associated with Candidate Alignment 6: (1) accommodate the demand for commercial development within the station area by re-zoning residentially-zoned parcels for commercial use that are currently vacant or used for parking and are adjacent to existing commercial development, (2) redirect commercial development to other station areas by creating incentive to develop elsewhere, and (3) "expand the station area" by directing commercial development to sites adjacent to the currently defined station area boundaries through the Specific Plan and master planning process. For Candidate Alignment 6, these measures are applicable to the following station areas: Fifth/Hill, Seventh/Flower, Wilshire/Crenshaw, Wilshire/Fairfax, Vermont/Beverly and Universal City.

Two actions will be appropriate to mitigate the potentially adverse impacts associated with historic and cultural resources: (1) promote use of existing tax incentives and rehabilitation loans, and (2) down-zone and create mechanisms to transfer unused development potential. For Candidate Alignment 6, these measures are applicable to the following station areas: Union Station, Fifth/Hill, Seventh/Flower, Wilshire/La Brea, Hollywood/Vine, and Hollywood/Highland.

Special mitigation measures may be needed to mitigate the potentially adverse impacts from development on existing land uses and community character, particularly for the following Candidate Alignment 6 station areas: Wilshire/Crenshaw, Wilshire/La Brea, Wilshire/Fairfax, and Vermont/Beverly.

Where there are substantial displacements (i.e., the proposed station at the Vermont/Sunset curve, and the transition from aerial to subway off-street near Sunset), mitigation measures may involve the redevelopment (joint development)

of appropriate residential, commercial and community facilities consistent with the objectives of the Hollywood Redevelopment Plan. The SCRTD is currently working with the Los Angeles Community Redevelopment Agency and the City of Los Angeles to identify appropriate mitigation measures. Section 3.4 details relocation benefits for acquisition and displacements associated with the Metro Rail project.

3.3 ECONOMIC AND FISCAL IMPACTS

Construction of Candidate Alignment 6 would result in regional and subregional economic and fiscal impacts. Potential economic impacts involve changes in the overall level of economic activity within the Los Angeles region as well as direct development effects in station areas. Potential fiscal impacts would be related to the revenues and service costs associated with implementation of a particular alternative.

3.3.1 Changes In Economic Activity

The number of construction jobs associated with Candidate Alignment 6 and the other candidate alignments is expected to be in the 3,000 to 5,000 range, as was the case for the original LPA described in the 1983 FEIS. When the cumulative effect of direct, indirect, and induced impacts is considered, a dollar spent on operations is conservatively expected to generate between one and two additional dollars in total regional economic activity, as defined by the gross regional product. Applying this relationship, Candidate Alignment 6 together with Alignment 4 would have the greatest potential economic impact, estimated to be between \$40 million and \$80 million per year.

SCRTD will pursue establishment of benefit assessment districts in the vicinity of any stations added to the Metro Rail system. To provide a preliminary indication of the general financial impact of assessment districts, an estimated assessment rate of 30 cents per square foot for property improvements used as offices, commercial, retail and hotel/motels was applied. The projected floor space within one-quarter mile of Metro Rail station areas would generate approximately \$13.5-\$15 million annually for Candidate Alignment 6, excluding the MOS-1 station areas.

SCRTD would need to acquire certain parcels of property for stations, train yards, parking lots, bus facilities, and auxiliary equipment. Careful design of these facilities can sometimes permit "joint" use of the property by private development. Assuming a simple ground lease rate of nine percent of land value, the potential annual lease income of Candidate Alignment 6 in December 1985 dollars to SCRTD would be \$1,863,000. This is based on a gross land value of \$20,695,000. The potential lease income of other alignments ranges from \$1,591,000 for Candidate Alignment 5 to \$2,104,000 for Candidate Alignment 3. Over a representative 65-year lease life, the income-generating potential of these leases (in 1985 undiscounted dollars) is estimated to total \$121 million for Candidate Alignment 6. This compares to a range of \$103-\$137 million for the other alignments.

3.3.2 Fiscal Impacts

Fiscal impacts can be both direct and indirect. Direct impacts include public service costs associated with the construction and operation of the Metro Rail system. Indirect impacts result from changes in tax receipts from changes in land use stimulated by Metro Rail.

The estimated annual loss of property taxes of acquired property is estimated to total \$930,000 for Alignment 6 (based on an 1986 assessed valuation of \$92.6 million). Other alignments range from \$270,000 for Alignment 1 to \$840,000 for Alignment 4. It is anticipated that joint development projects and concentration of growth in the Regional Core would more than offset the reductions in the tax base.

3.4 LAND ACQUISITION AND DISPLACEMENT

The land acquisition and displacement analysis methodology and impacts of Candidate Alignments 1 through 5 are contained in Chapter 3, Section 4 of the Draft SEIS/SEIR. This section contains the land acquisition and displacement impacts of Candidate Alignment 6. The acquisitions and displacements in that portion of Candidate Alignment 6 between Wilshire/Alvarado, Wilshire/Fairfax and Sunset/Western ("Section A" from Figure 7) are similar to those of Alignment 4 for this section. Impacts for the portion of the alignment from Hollywood/Bronson to Lankershim/Chandler ("Section C") are similar to those for Candidate Alignment 3.

3.4.1 Additional Displacements

Additional displacements associated with Alignment 6 result from the off-street portal in the block bounded by Sunset Boulevard, St. Andrews Place, Harold Way and Wilton Place. The turning of the aerial guideway from the middle of Sunset Boulevard immediately east of Saint Andrews Place into the off-street transition portal requires the following commercial acquisitions and displacements:

- The one parcel at Sunset and Saint Andrews containing the KWHY Channel 22 Studios, a recording studio and offices.
- A church complex at the corner of Harold Way and Wilton Place, including two sanctuaries, an assembly hall, a religious school room and other buildings. The complex is used by the First Southern Baptist Church, the Korean Baptist Church and for Hispanic services.
- The gas station and retail convenience store at the corner of Sunset and Wilton Place.
- The auto garage and glass shop on Sunset adjacent to the gas station.
- The 55-room Dunes Motel and Restaurant on Sunset Boulevard adjacent to the auto garage.

- The Leonetti Cine Rental commercial business and camera shop at the corner of Sunset and Wilton Place.

In addition to the above commercial or non-profit displacements, the following residential displacements will also be required:

- The two apartment buildings located at 5628 Harold Way and 5632 Harold Way containing twelve and eleven residential units, respectively.
- Four cottage type rental units at 5640 Harold Way, adjacent to the First Southern Baptist Church.

As a result of discussions with area property owners concerning relocation, the SCRTD has made a slight change in the alignment of the aerial structure as it curves from Vermont Avenue to Sunset Boulevard for Candidate Alignments 4 and 6. This alignment revision has changed the amount and type of properties to be acquired and the businesses and residences to be displaced. Below is a list of the revised commercial and non-profit acquisitions that would be necessary for Alignments 4 and 6:

- On Vermont south of Fountain, the corner of the Pacific Bell parking lot.
- The eight unit mini-mall at the southwest corner of Vermont and Fountain Avenues. It includes two restaurants and three retail stores. Three units are vacant.
- A uniform shop, Brashov's delicatessen, and a video store on the northwest corner of Vermont and Fountain Avenues. The delicatessen is a gathering place for Rumanian and Armenian residents of the area.
- The United Armenian Club (non-profit) on Fountain next to the uniform shop storeroom.
- A liquor store on Fountain next to the club.
- A beauty shop on Fountain west of the liquor store.
- The L.A. Rose Cafe on the northeast corner of Fountain and New Hampshire Avenue.
- Wendy's Hamburger Restaurant on Vermont next to the uniform shop.
- A medical building with nine offices and a pharmacy on Vermont north of Wendy's.
- The El Puerto Restaurant on Vermont next to the medical office building.
- The Travelodge Motel with 71 units next to the El Puerto Restaurant.

- A physical therapy clinic next to the motel.
- A Chinese restaurant next to the clinic.
- A picture frame shop, office machine repair shop, and realty office next to the restaurant.
- On Sunset Boulevard, the Kaiser Hospital facility with three operating rooms and forty beds. This property will have to be relocated into a suitable replacement facility before demolition of the existing building. The SCRTD and Kaiser staffs are coordinating the issues.
- At the southwest corner of Sunset and Berendo, the SCRTD needs 1,600 square feet of the Scientology Church parking lot.

In addition to the above commercial or non-profit displacements, residential displacements will be required:

- The four-story, 36-unit Mt. Vernon Apartments on Vermont Avenue south of Fountain Avenue.
- A three-story, fourteen-unit apartment house on Fountain Avenue west of Vermont Avenue.
- A two-unit apartment behind the L.A. Rose Cafe on the corner of Fountain and New Hampshire Avenues.
- The 24-unit and five-unit apartment buildings on New Hampshire Avenue between Fountain Avenue and Sunset Boulevard.
- Seven single-family or duplex dwellings on New Hampshire Avenue, some with apartments on the rear of the lot. There are a total of fourteen units.
- Although a 36-unit apartment building on New Hampshire is not needed for project right-of-way, the building is very close to the aerial structure and will likely experience noise and vibration levels above project criteria and an invasion of privacy from train occupants viewing second and third floor apartments. This could be construed as an inverse condemnation of the property.

Total displacements associated with Alignments 4 and 6, including those detailed above, are shown in Table 7. Displacements for Candidate Alignments 1, 2, 3, and 5 do not change and are shown in Table 2 of this report and Table 3-29 of the Draft SEIS/SEIR.

TABLE 7
DISPLACEMENTS: CANDIDATE ALIGNMENTS 4 AND 6

Affected Areas	Commercial Establishments					Preliminary Estimate of Total Employment	Total Non-Profit	Total Residential Units
	Parking (Spaces)	Retail	Restau-rant	Office	Total			
CANDIDATE ALIGNMENT 6								
SECTION A								
• Wilshire/Vermont	0(211)	1	1	4	6	356	0	0*
• Wilshire/Western	0(106)	1	0	0	1	38	0	0*
• Wilshire Transition	0(78)	2	1	5	8	885	1	25
• Wilshire/Crenshaw	0(9)	0	0	0	0	0	0	0
• Wilshire/La Brea	1(51)	1	0	0	2	21	0	0
• Wilshire/Fairfax	0(205)	4	2	0	6	75	0	8
• Vermont Transition	0(50)	13	4	0	17	221	0	6
• Vermont/Beverly	0(0)	3	1	0	4	37	0	0
• Vermont/Santa Monica	0(13)	1	1	0	2	20	0	0
• Vermont/Sunset Curve	0(121)	6	2	0	8	126	0	40
Alt. Vermt/Snst Curve	0(246)	15**	7	11	33	219	1	95
• Sunset/Western	0(31)	0	3	7	10	48	0	0
SUBTOTAL SECTION A								
Vermont/Sunset Curve	1(875)	32	15	16	64	1829	1	79
Alt. Vermt/Snst Curve	1(1000)	41	20	27	89	1920	2	134
SECTION B								
• Sunset Transition	0(100)	6***	1	2	9	119	1	27
SUBTOTAL SECTION B								
	0(100)	6***	1	2	9	119	1	27
SECTION C								
• Hollywood/Vine	0(0)	6	1	0	7	49	0	0
• Hollywood/Highland	0(0)	1	0	0	1	50	0	0
• Universal City	0(362)	0	24	0	24	276	0	136*
• North Hollywood*	0(0)	6	18	0	24	222	2	14*
SUBTOTAL SECTION C								
	0(362)	13	43	0	56	597	2	150
Total Alignment 6	1(1337)	51	59	18	129	2545	4	256
Alt. Align. 6 Total	1(1462)	60	64	29	154	2636	5	311
CANDIDATE ALIGNMENT 4 ****								
Total With Alternative Vermont/Sunset Curve	0(1,115)	55	67	22	145	2588	4	287

* Does not include displacements due to parking structures or tail tracks.
 ** Includes the 71-room Travel Lodge Motel.
 *** Includes the 55-room Dunes Motel.
 **** Displacements for all station areas except the Sunset/Vermont Curve remain unchanged.
 See Table 3-29, page 3-4-3 of the Draft SEIS/SEIR.
 Source: SCRFD.

3.4.2 Land Acquisition Guidelines

Metro Rail land acquisitions and displacements will be handled in accordance with the federal and SCRTD adopted acquisition and relocation guidelines. These are contained in Chapter 3, Section 4 of the Draft SEIS/SEIR and are reproduced here as follows:

The Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 91-646) mandates that certain relocation services and payments by SCRTD be made available to eligible residents, business concerns, and nonprofit organizations displaced by the construction and operation of Metro Rail. The Act provides for uniform and equitable treatment of persons displaced from their homes, business, or farms by federal and federally-assisted programs and establishes uniform and equitable land acquisition policies. The State of California's revised Government Code Section 7260, et seq. brings the California Relocation Act into conformance with the Federal Uniform Relocation Act. In the acquisition of real property by a public agency, both the federal and state acts seek: (1) to ensure consistent and fair treatment for owners of real property; (2) to encourage and expedite acquisition by agreement in order to avoid litigation and relieve congestion in the courts; and (3) to promote confidence in public land acquisition. One of the fundamental requirements of the legislation is that no person be required to move from his or her home unless affordable, decent, safe, and sanitary replacement housing is available which is not generally less desirable with regard to public utilities, and public and commercial facilities than the home from which the individual is displaced.

In addition to the legislation discussed above, owners of private property have a federal and state constitutional guarantee that their property will not be purchased, taken or damaged for public use unless they first receive just compensation. Just compensation is measured by the "fair market value" of the property taken, where "fair market value" is taken to be the:

"higher price on the date of valuation that would be agreed to by a seller, being willing to sell, but under no particular or urgent necessity for so doing, nor obliged to sell, and a buyer, being ready, willing and able to buy, but under no particular necessity for so doing, each dealing with the other with full knowledge of all the uses and purposes for which the property is reasonably adaptable and available." (Code of Civil Procedure Section 1263.320a)

The preferred approach is to avoid displacements by modifying either the alignment or station entrance locations. However, it is not always feasible to avoid displacements through such modifications. Where acquisition and relocation are unavoidable, SCRTD will follow the provisions of the Uniform Relocation Act by identifying replacement sites for housing, business, and nonprofit organizations. (UMTA's Circular 4530.1 dated March 1, 1978 covers the appraisal and acquisition of real property, relocation services, moving and replacement housing payments, and other allowable expense payments mandated by the Uniform Relocation Act.) SCRTD will establish a Relocation Advisory Program which will constitute all such assistance by using a staff of experienced real estate specialists.

As part of the Relocation Advisory Program, public information meetings will be held to describe the Program and to identify impacted parcels. These meetings will be held as frequently as necessary in the project station areas and at times that are convenient for potentially affected persons to attend. Individual letters announcing the public meetings will be mailed to the affected owners and occupants. Dates for public meetings will be advertised in local newspapers. Written information which explains the relocation benefits, the related eligibility requirements, and the procedures for obtaining assistance will be distributed. Each residential and commercial occupant will be assigned a Real Estate Specialist for assistance throughout the relocation process.

Policies and procedures to ensure that displaced residential and commercial owners and occupants obtain information regarding acquisition and relocation services are described in SCRTD's "Milestone Report 5: Right-of-Way Acquisition and Relocation Policies and Procedures" and in internal operating procedures. These policies and procedures stipulate that all real property acquired by SCRTD will be appraised for its fair market value and just compensation shall be determined. An offer is made based on the appraisals. Each person or business required to relocate will be given ninety days notice and may be eligible for certain relocation services and payment. No residential occupant will be required to move until other available housing that is decent, safe, sanitary, and within the financial means of the displaced person has been offered. If it is determined that a sufficient amount of affordable, comparable housing is not available for replacement purposes, SCRTD may offer a last resort housing payment to supplement the relocation payments, on a case-by-case basis, qualified residential occupants. Real Estate Specialists will work with businesses to assure that compatible facilities are available.

In some cases, a business may not be able to relocate without a substantial loss of its existing patronage. If so, the business may choose to receive a fixed payment in lieu of actual moving and related expenses in order to mitigate negative impacts and business losses.

3.4.3 Additional Mitigation Measures

As specified in the state, federal and SCRTD adopted guidelines above, the SCRTD is obligated to identify replacement sites for housing, business, and non-profit organizations and to assist the relocatees by paying certain allowable expenses. This obligation presents a special challenge in the case of the church complex at the corner of Wilton Place and Harold Way and for the Kaiser Hospital between Vermont and Highland Avenues. In the case of the church, the SCRTD would contact other church organizations for surplus sanctuaries or schools. The SCRTD would also canvas commercial properties for a suitable facility.

At the hospital, it is unlikely that a replacement facility can be found. The SCRTD will pursue a program wherein a new facility would be built before the existing hospital is vacated.

3.5 SOCIAL AND COMMUNITY IMPACTS

The following discussion examines social and community characteristics near stations and transition zones incorporated in Candidate Alignments 4 and 6 that vary from earlier alignments. Candidate Alignment 6, like all proposed alignments discussed in the Draft SEIS/SEIR, would serve the mixed, retail-office-residential community of Hollywood. It is in this area the alignment would differ from other candidate alignments.

The Hollywood community extends from Santa Monica Boulevard north to beyond Hollywood Boulevard and from Vermont Boulevard west to Fairfax Boulevard. If recent trends continue, the Hollywood Area will experience slight increases in minority and immigrant populations. New residential development, however, is likely to be oriented to higher-income families and individuals.

The Metro Rail project could be a major, positive force in the Hollywood Area, aiding in the elimination of blight and stimulation of redevelopment efforts. Developed in conjunction with implementation of the Community Redevelopment Agency's Hollywood Redevelopment Project, Metro Rail could be a mitigating influence on the area's traffic problems and a source of patrons for new commercial development. Thus, Metro Rail has the potential to be a contributing factor in enhancing overall community cohesion in Hollywood.

Two areas would experience social and community impacts that would differ from prior alignments: (1) the Sunset/Vermont curve, and (2) the off-street transition near Sunset and Saint Andrews Place. These areas are discussed below.

The Vermont/Sunset Station would provide increased access to this designated East Hollywood City Center. Relocation of this station and guideway curve through this urban area for Candidate Alignments 4 and 6 will impact the social and community character of this area. The alternative Sunset/Vermont Station and guideway curve does eliminate the displacement of the Self Realization Church that would have occurred for prior Candidate Alignment 4 station and guideway locations.

Within a one-half mile radius of this station, 65 percent of the residents are White, with Asians forming the largest minority (19%). Thirty-five percent of the area households are without private transportation, and the median family income is 73 percent of the County average.

The location of the station and guideway off-street through this curve will introduce displacements, noise, aesthetic and land use impacts as discussed in corresponding sections of this Addendum. The most significant social and community impacts will occur for those people and businesses that are displaced and for the residents in the block bounded by Sunset Boulevard, Berendo Street, and Fountain and Vermont Avenues. For these residents, the character of their block and the immediate adjacent block to the east will change from a mixed commercial and residential area to a major public transportation facility. Among other impacts, these residents may be significantly impacted by the relocation of their neighbors and familiar local businesses, possibly leading to a reduced sense of community cohesion.

Mitigation of such impacts as displacements, noise, aesthetics and land use are described in corresponding sections of this document. For areas such as the Sunset/Vermont curve and station, the SCRTD will pay careful attention to the application of these measures to reduce, to the extent possible, any disruption that may occur to the cohesion of this neighborhood. In addition, increased accessibility for these residents and for other local businesses and employees should serve as a major neighborhood enhancement.

The transition off-street from aerial to subway in the block bounded by Sunset Boulevard, Wilton Place, Harold Way and Saint Andrews Place for Candidate Alignment 6 will impact the social and community character of this area also.

Within a one-half mile radius of the Sunset/Western Station, which includes the transition block, the population is 71 percent White, 12 percent Hispanic, 10 percent Asian and five percent Black. Over one third (37%) of the households have no access to private transportation. Median income for this area is 56 percent of the County average.

The location of the transition zone off-street will introduce displacements, noise, aesthetics and land use impacts as discussed in corresponding sections of this Addendum. The most significant social and community impacts will occur for those people and businesses that are displaced, although the number of displacements has been held to a minimum following review of various engineering options. For the residents who will remain in the multi-family units on the northeast corner of the transition block, the character of their block will change from a mix of commercial, church complex and residential to a combination of residential and major public transportation facility. Among other impacts, these residents may be impacted by the relocation of their neighbors and public institutions (i.e., the church complex), possibly leading to a sense of reduced community cohesion. The expansion of the school occurring immediately across Harold Way from the transition block could add to this perception.

Displacement of the church complex also could affect the neighborhood's sense of cohesion. The users of the complex (parishioners, school children, etc.) may sense a loss of cohesion and familiarity. As discussed in Section 3.4, various options are under consideration by the SCRTD to identify replacement facilities for this church complex.

Mitigation of such displacement, noise, aesthetics and land use impacts are described in the corresponding sections of this document. For areas such as the Sunset transition, the SCRTD will pay careful attention to the application of these measures to reduce, to the extent possible, any disruption that may occur to the cohesion of this neighborhood. Increased accessibility for area residents and for local businesses and employees should serve as a major neighborhood enhancement, however.

One major social benefit of transit improvements is the increased mobility and accessibility provided to some segments of the population. These "special user groups" typically have limited or no access to private transportation and, therefore, would be major beneficiaries of the new transit services provided by Metro Rail. Table 2 summarizes the attributes of proposed Metro Rail service relative to six segments of the community generally considered to be transit-dependent: minority groups, youths (ages 5 to 19 years), the elderly (ages 65 years and older), transit-disabled persons, households without private transportation, and low-income families. Table 3-31 of the Draft SEIS/SEIR shows the representation of each of these groups within a one-half mile area of all stations proposed for the various candidate alignments. Metro Rail is expected to improve accessibility significantly throughout the Regional Core for persons in these special user groups.

Table 2 also shows the percentage of various groups that would be within a sixty-minute door-to-door transit travel time of potential employment. Overall, Candidate Alignment 6 tends to serve a higher proportion of these transit groups than the other alignments.

3.6 SAFETY AND SECURITY

Safety and security are addressed in Section 6 of Chapter 3 of the FEIS, 1983. The FEIS provides an overview of the safety, fire/life safety, security, and system assurance requirements established to ensure the design, construction, and operation of a safe, secure, and reliable rapid transit system. The safety, fire/life safety, security and system assurance requirements in the FEIS are applicable to Candidate Alignment 6.

To ensure that the operation of Metro Rail will equal or exceed the safety of systems currently in operation, SCRITD has developed safety design criteria and a System Safety Program Plan based on the policies and guidelines established in the "Milestone 7 Report: Safety, Fire/Life Safety, Security, and Systems Assurance." The System Safety Program Plan provides for a systematic approach to an overall and comprehensive safety program.

3.7 AESTHETICS

Because the identification of visual impacts depends on the individual observer's perspective and sense of aesthetics, an analysis of aesthetic impacts can be extremely subjective. Experience shows that the construction of either a subway or aerial alignment will alter, to varying degrees, the visual setting of the community through which the system passes. However, an aerial transit alignment will have a greater visual impact on the existing streetscape than a subway. Depending on the individual's own sense of aesthetics and on the design of the guideway structure, stations, and ancillary facilities, an elevated system could either enhance or impair the visual qualities of the streetscape.

Due to the potential for an aerial alignment to create significant visual impacts, this section concentrates on the aerial segments of Candidate Alignment 6. Section 7, Chapter 3 of the Draft SEIS/SEIR should be referenced for a discussion of impacts associated with the aerial segments of Candidate Alignments 2, 3, 4, and 5. Impacts related to subsurface segments of the candidate alignments are fully addressed in the FEIS, 1983.

3.7.1 Vermont Aerial Alignment

Candidate Alignment 6, like Candidate Alignments 2, 3, and 4, would include an aerial guideway in the right-of-way for Vermont Avenue between Third Street and Sunset Boulevard. The expected aesthetic impacts of this guideway are discussed in Section 7.2.2.2, Chapter 3 of the Draft SEIS/SEIR to which the reader is referred. At Sunset Boulevard, the aerial guideway of Candidate Alignment 6 would transition from Vermont Avenue to Sunset Boulevard, curving behind the new Medical Arts Building near New Hampshire Avenue (refer to Figures 2, 3, and 6). A station would be situated in the block immediately south of the Medical Arts Building, between Vermont Avenue and New Hampshire Avenue. Directly to the west and south of the proposed station and guideway location are several buildings of the Church of Scientology of Los Angeles. Both the medical and church buildings are at least six stories high. The guideway structure may create an undesirable impact on the viewing perspective of the Church of Scientology from Sunset Boulevard. Also, a "new" perspective of the church buildings would be opened from Vermont Avenue. Similar to Alignments 2, 3, and 4, the privacy of tall buildings may be compromised wherever windows face the Metro Rail facility.

As with Candidate Alignment 4, the new alignment and station through the curve of Candidate Alignment 6 would be directly visible from the dwelling units along the west side of New Hampshire Avenue and the east side of Berendo. This effect could be positive or negative, depending on the resident's reaction to SCRTD's landscaping program in the station area. The station and guideway would form a relatively homogenous form where there is now a mix of low-rise commercial/residential uses and parking.

3.7.2 Sunset Aerial Alignment

Like Candidate Alignment 4, Candidate Alignment 6 includes an aerial guideway in the right-of-way for Sunset Boulevard (see Figure 3). Due to the wide (approximately 100-foot) right-of-way, the scale and type of land uses along each side, and the vertical dimension created by the tall palm trees lining each side of the corridor, it is expected that an aerial guideway in the street centerline would result in significant negative visual impacts on the vista.

3.7.3 Sunset Transition

The environs of the Candidate Alignment 6 aerial-to-subway transition at Sunset Boulevard east of the Hollywood Freeway are characterized by a mixture of land uses, including commercial enterprises, multifamily and single-family housing, religious and educational institutions, and parking lots (Figure 14). To the east and north of the transition and portal is a predominantly residential neighborhood with some single-family residences interspersed with garden apartments, generally 2 stories in height. There are three major apartment complexes with 3 or more stories in the immediate vicinity of the transition area. One, to the northwest, is under construction. To the south and southwest are commercial enterprises, notably the Fox Studios across the Hollywood Freeway.

The aerial-to-subway transition on the Sunset segment of Candidate Alignment 6 would occur in the block defined by Wilton Place, Harold Way, St. Andrews Place, and Sunset Boulevard (see Figure 4). A potential mitigation measures would include landscaping with integrated design elements to minimize the visual impact of the transition.

Special attention will be given to the design of the aerial guideway to minimize visual conflicts with the existing characteristics of the areas discussed above. Landscaping accents would be provided in areas where the introduction of the heavy rail facilities would create a discontinuity of the environment (e.g., the Medical Arts area and the area around the portals). The combination of the smooth forms of the guideway and landscaping would soften some of the negative impacts of the guideway mass and structural configurations. The SCRTD will refine the design of the aerial guideway structure during the final design phase of the project in accordance with the criteria identified in the Draft SEIS/SEIR.

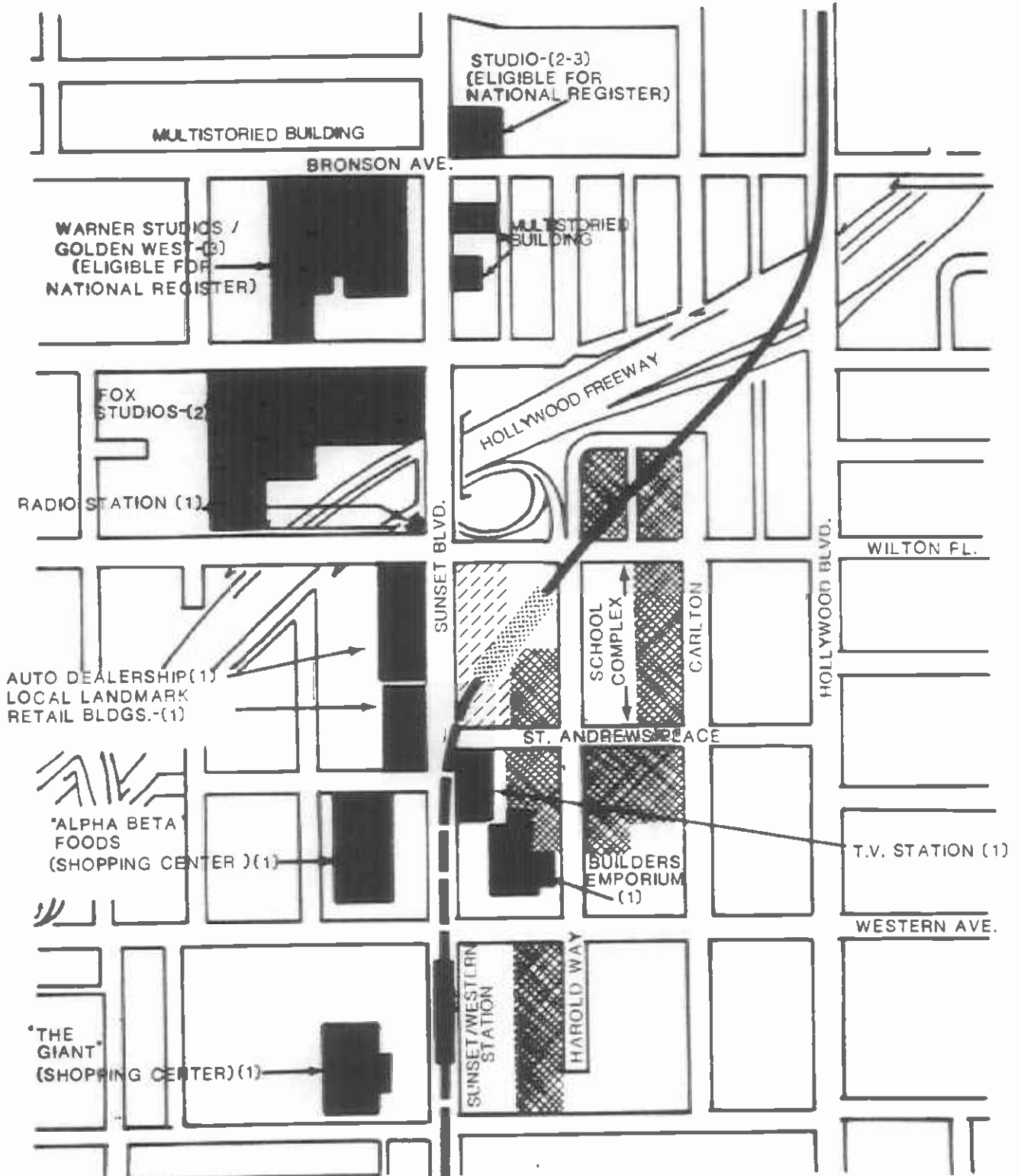
Extensive evaluation of materials, textures, colors, and massing would be conducted to ensure an integrated design solution for aerial stations, especially in the Medical Arts area. Common design motifs would be utilized to create systemwide continuity. Landscaping and plantings in pedestrian areas would be incorporated to mitigate the size and mass of aerial stations. Strict attention would be paid to ensure that station layout and design are compatible with existing buildings and spaces in the immediate vicinity of the station. Trees and other plantings could be installed to provide a buffer between nearby residential areas and the transition and portal facility at the Hollywood Freeway. Smooth forms and "soft" design features would be incorporated to the maximum extent feasible to reduce visual conflicts and distractions for motorists and pedestrians.

3.8 NOISE AND VIBRATION

3.8.1 Introduction

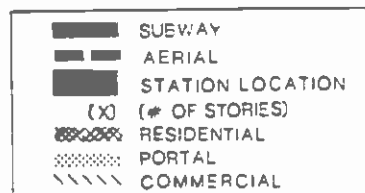
This section presents the existing noise and vibration conditions, the anticipated noise and vibration impacts on sensitive receptors, and the measures necessary to mitigate the impacts of Candidate Alignment 6. It discusses the results of tests to measure the propagation of noise and vibration through the soils along Sunset Boulevard. It compares the impacts of segments of Candidate

COMPOSITE OF IMPACT AREAS,
VERMONT AVENUE/SUNSET BOULEVARD AERIAL



SOURCE: SCRTD/GENERAL PLANNING CONSULTANT

FIGURE 14



Alignment 6 with the equivalent segments of Candidate Alignments 3 and 4, and shows the effectiveness of Candidate Alignment 6 in reducing the noise and vibration impacts that would result from Candidate Alignment 4 along Sunset Boulevard.

3.8.2 Background

In 1986, the SCRTD and its consultant, Wilson, Ihrig and Associates (WIA), began the analysis of noise and vibration impacts from Candidate Alignments 1 through 5 of the CORE Study. This analysis included:

- Measuring ambient levels of noise and vibration at locations along major streets served by the various alignments,
- Calculating noise and vibration levels at sensitive receptors that would result from Metro Rail operations,
- Comparing these levels with project noise and vibration criteria developed in connection with the 1983 Final Environmental Impact Statement (FEIS),
- Comparing the levels with ambient levels measured in the community,
- Developing measures to mitigate the impacts.

These steps are documented by the Draft Supplemental Environmental Impact Report (DSEIR), issued in February 1987, and supported by a series of technical reports prepared by WIA. During and after a March 1987 public hearing on the draft report, the SCRTD received testimony and comments from the broadcast and recording industry based along Sunset Boulevard that the construction and operation of the Metro Rail Project would create noise and vibration levels that would disrupt studio operations. The Mayor and City Council of Los Angeles created an Independent Technical Review Panel (ITRP) to assist in evaluating the situation. The ITRP evaluated noise and vibration reports and analyses presented by the SCRTD and by a coalition of members of the recording and broadcast industry and their consultants. The material provided to the ITRP included:

- Measurements of ambient noise and vibration levels at ten locations along Candidate Alignments 1 through 5,
- Simultaneous measurement of noise and vibration levels inside and outside broadcast and recording studios and hospitals in Los Angeles, New York, Chicago, and Miami.
- A proposal by the studio coalition to establish frequency specific criteria called Preferred Noise Criteria (PNC). They recommended that the noise and vibration criteria at the studios be set at PNC 15.
- Additional calculations to determine ground-borne noise levels from Sunset Boulevard subway, transition zone, and aerial structures in terms of PNC.

After review of available material and testimony from interested parties, the ITRP determined that, with proper mitigation measures, noise and vibration would be reduced to a level that would not interfere with studio operations. Among the recommendations of the ITRP was to conduct further tests of the propagation of noise and vibration through soils along Sunset Boulevard. See existing conditions, below for the results of the tests.

The studies completed by November 1987 were used in preparing the Draft Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (SEIS/SEIR) published in November 1987. The studies are contained in the November 1987 "Technical Report on Noise and Vibration," which is incorporated herein by reference.

Even with favorable findings from the ITRP, the SCRTD realized that substantial opposition to Candidate Alignment 4 remained within the broadcast and recording industry. To deal with this opposition, the SCRTD developed Candidate Alignment 6, a hybrid that would combine portions of Candidate Alignments 3 and 4. Chapter 1 presents more details of the history of the development of Candidate Alignment 6.

Section 8, Chapter 3 of the Draft SEIS/SEIR should be referenced for specific information regarding the source of information and methodology employed in analyzing impacts.

3.8.3 Existing Conditions

In 1981 and 1982, the SCRTD made noise and vibration measurements along Wilshire Boulevard, Sunset Boulevard, Lankershim Boulevard, and other streets in the Metro Rail Project study area. In 1987, noise and vibration measurements were made in the CORE Study area along Vermont and Crenshaw Avenues, Sunset, Hollywood, and San Vicente Boulevards. Measurements were taken inside and outside several studios along Sunset Boulevard and at studios and hospitals in Chicago, New York, and Miami. The SCRTD tested the soil along Sunset Boulevard at four locations to determine how well the soil transmits noise and vibration. The tests showed that the soils are slightly more resistant to the transmission of vibration than observed in downtown Los Angeles. This makes the earlier predictions of ground-borne noise and vibration in studios slightly more conservative.

A revised estimate of ground-borne noise in the Sunset studios area shows that, with a subway depth of 60 feet and horizontal distance to the studio facade of 35 feet, the predicted level of ground-borne noise complies with PNC 15. However, with a shallower depth of 40 feet and a horizontal distance of 10 feet from pocket track to building facade, the predicted level of ground-borne noise in the studios exceeds PNC 15 by five to ten dB. Data on the vibration propagation tests is found in the December 1987 Technical Report, "Ground-Borne Vibration Propagation Investigation for the Proposed Metro Rail Sunset Boulevard Alignment" by WIA.

A review of the noise and vibration reports prepared for the CORE Study leads to the following conclusions:

- The areas along Wilshire and Sunset Boulevards and Vermont Avenue where aerial guideways are proposed are relatively noisy, with rush-hour Leq average noise levels from 69 to 74 dB(A). These levels are consistent with levels in other U.S. cities.
- Noise levels along these major thoroughfares are heavily influenced by vehicle traffic noise.
- Land uses along the routes of the aerial guideways are largely commercial, with lesser proportions of multi-family residential and very little single-family residential.
- Most studios where measurements were taken have a high degree of sound isolation from existing road traffic noise so that traffic noise is generally inaudible inside the studio. In simultaneous interior and exterior measurements, exterior noise levels fluctuated widely due to traffic on Sunset Boulevard, while the interior noise was relatively constant, confirming that there is little correlation between the interior and exterior noise levels within the studios.
- At some studios, traffic noise is audible inside the studios because of inadequate sound isolation provided by the building construction. This intrusion could be sharply reduced with additional insulation and close fitting doors and windows.

3.8.4 Noise Level Criteria

Section 8.2.1, Design Features and Criteria of Chapter 3 of the Draft SEIS/SEIR, contains many of the design features that make modern rail rapid transit systems relatively low in noise and vibration. These built-in design features and the extensive testing on similar systems helps the SCRTD meet the noise and vibration criteria, listed in Table 3-38, Section 3 of the Draft SEIS/SEIR. The noise criteria for high density residential areas in Hollywood are 35dB(A) for groundborne noise and 75 dB(A) for airborne noise received at single family dwellings. For multifamily dwellings, 5dB(A) are added to these numbers, and for commercial buildings, the figures are 10dB(A) higher. The results of noise and vibration from Candidate Alignments 1 through 5 and MOS-1 are shown in the November 1987 Draft SEIS/SEIR in Section 8.2.2 of Chapter 3. Tables 8 and 9 summarize these impacts along with the impacts of Candidate Alignment 6.

During final design, SCRTD will conduct detailed surveys of the selected alignment and determine the use and characteristics of all buildings. This survey will allow selection of mitigation measures needed to reduce noise impacts to the level of adopted criteria or the ambient conditions, whichever is higher. See also Section 3.8.6, "Mitigation Measures."

3.8.5 Impacts of Candidate Alignment 6

The impacts of Candidate Alignment 6 are shown in Tables 8 and 9. These tables also summarize the impacts of noise and vibration from Candidate Alignments 1 through 5 and MOS-1 that are discussed in more detail in Section 8.2.2 of Chapter 3 of the November 1987 Draft SEIS/SEIR.

3.8.5.1 Subway Impacts

If standard design features are assumed for the subway portion of Candidate Alignment 6, noise from train operations would exceed the system criteria as follows. At seven commercial or office buildings, noise levels would be 3 or more dB(A) above the 40 to 50 dB(A) range of the criteria, while at one office, noise would be one or two dB(A) above the criteria. At three apartment buildings, noise levels would be 3 or more dB(A) above the 35 to 45 dB(A) range of the criteria. For eight single family residences, noise levels would be 3 or more dB(A) above the 30 to 40 dB(A) range of the criteria, while noise would be one or two dB(A) over the criteria at fourteen residences. Noise levels would be three or more dB(A) above the criteria for one church, three theaters or museums, and four radio/recording/TV studios. With the application of mitigation measures, impacts are reduced to seven apartment buildings and eight residences. These impacts would occur on the curve from the Wilshire/Vermont Station onto Vermont, in Hollywood, and near Universal City. The criteria would be exceeded by one to two dB(A) in these areas. For Candidate Alignment 6, the approximate length of recommended mitigation measures for both tunnel bores is 10,900 feet of "soft" fasteners and 3,100 feet of floating slab trackbed.

3.8.5.2 Aerial Impacts

The "Noise and Vibration Analysis for the Metro Rail Project CORE Study," Wilson Ihrig & Associates, March 1987, indicates that virtually the entire aerial section along Wilshire Boulevard and much along Vermont Avenue would require the use of sound barrier walls to meet the design criteria. Sound barrier walls also would be required along the Sunset Boulevard section of Candidate Alignment 6. Therefore, the SCRTD would install sound barrier walls along the entire aerial alignment and the transition areas to reduce noise levels as much as possible. Specific impacts associated with the aerial portions of Candidate Alignment 6 are summarized in Table 9 and compared with Candidate Alignments 1 through 5 and MOS-1. These data reflect an analysis of single event passby noise.

On Wilshire Boulevard, impacts would be the same as for other alignments, with noise levels above criteria at 116 offices, seven apartments, 13 residences, one motel, two churches, and six theaters or museums. With the sound barrier wall, noise levels would be lowered by approximately ten dB(A), and impacts would remain one to two dB(A) over criteria at one office, six apartments, eight residences, one motel, and the Theatre of Arts. Impacts of three to five dB(A) over criteria would remain at three buildings of the County Museum of Art, while impacts more than five dB(A) over criteria would remain at the Scottish Rite Temple, United Methodist Church, Ebell Theatre, and the Arts and Crafts Museum.

TABLE 8

SUMMARY OF ANTICIPATED IMPACT OF GROUND-BORNE NOISE AND VIBRATION FROM METRO RAIL OPERATIONS IN SUBWAY

A. Number of Structures that Experience Impacts Without Recommended Mitigation Measures

Structure Type	Null Alt.	Candidate Alignment					
		1	2	3	4	5	6
Commercial/Office	5(4)	29(21)	8(1)	8(1)	10(1)	17(7)	8(1)
Apartments	9(3)	8(0)	8(3)	96(61)	6(3)	42(0)	32(29)
Residential	1(0)	45(4)	45(4)	144(4)	60(4)	69(4)	22(14)
Motel	1(0)	--	--	--	--	1(0)	--
Church	--	3(2)	3(2)	4(3)	3(2)	5(1)	1(0)
School	--	4(4)	--	--	--	--	--
Hospital	1(0)	2(2)	--	--	--	--	--
Theatre and Museum	--	5(3)	3(0)	3(0)	2(0)	4(0)	3(0)
Rec/TV Studio	--	4(0)	4(0)	4(0)	8(0)	8(0)	4(0)

B. Number of Structures that Experience Impacts With Recommended Mitigation Measures

Structure Type	Null Alt.	Candidate Alignment					
		1	2	3	4	5	6
Apartments	3(1)	--	3(3)	53(53)	3(3)	6(6)	7(7)
Residences	--	39(39)	20(20)	52(52)	32(32)	38(34)	8(8)
Church	--	--	2(2)	2(2)	2(2)	--	--
Hospital	1(0)	--	--	--	--	--	--
Rec/TV Studios	--	--	--	--	1(1)	3(3)	--

C. Approximate Length of Recommended Mitigation Measures for Both Tunnel Bores (feet)

Recommended Mitigation	Null Alt.	Candidate Alignment					
		1	2	3	4	5	6
Resiliently Supported Ties		600	--	--	400	1,200	0
"Soft" Fasteners		9,850	8,400	18,500	8,900	16,300	10,900
Floating Slab Trackbed	4,768	6,100	5,300	9,200	4,500	7,750	3,100

Note: Impacts shown are for noise levels above the system criteria. Figures in parentheses are quantity of structures impacted by noise levels 1 or 2 dB(A) above criteria.

Source: "Noise and Vibration Analysis for the Metro Rail CORE Study," Wilson, Ihrig & Associates, Inc., March 1987.
Draft SEIS/SEIR for LA Metro Rail Project," SCRTD, November, 1987.

TABLE 9
SUMMARY OF ANTICIPATED IMPACT OF AIR-BORNE NOISE AND
VIBRATION FROM METRO RAIL OPERATIONS ON AERIAL STRUCTURES

A. Number of Structures That Experience Impacts Without Recommended Mitigation Measures

Structure Type	Candidate Alignment					
	1	2	3	4	5	6
Commercial/Office	--	245(44)	165(65)	294(89)	115(34)	271(81)
Apartments	--	6(0)	--	28(0)	6(0)	27(0)
Residential	--	13(0)	--	24(0)	13(0)	24(0)
Motel	--	1(0)	--	2(0)	1(0)	1(0)
Church	--	2(0)	--	3(0)	2(0)	4(0)
School	--	4(0)	4(0)	4(0)	--	4(0)
Hospital	--	4(0)	4(0)	6(0)	--	6(0)
Park	--	1(0)	1(0)	--	--	--
Theatre and Museum	--	10(0)	4(0)	7(0)	6(0)	7(0)
Rec/TV Studio	--	--	--	2(0)	--	1(0)

B. Number of Structures That Experience Impacts With Recommended Mitigation Measures

Structure Type	Candidate Alignment					
	1	2	3	4	5	6
Commercial/Office	--	--	--	--	--	--
Apartments	--	5(5)	--	6(6)	5(5)	6(6)
Residential	--	8(8)	--	19(8)	8(8)	19(8)
Motel	--	1(1)	--	1(1)	1(1)	1(1)
Church	--	2(0)	--	3(0)	2(0)	3(0)
School	--	4(0)	4(0)	4(0)	--	4(0)
Hospital	--	4(0)	4(0)	4(0)	--	4(0)
Park	--	1(0)	1(0)	--	--	--
Theatre and Museum	--	10(4)	4(3)	7(1)	1(1)	7(1)
Radio, TV & Rec. Studios	--	--	--	2(0)	--	1(0)

C. Length of Recommended Mitigation Measures for Aerial Structures (In Feet)

Recommended Mitigation	Candidate Alignment					
	1	2	3	4	5	6
Sound Walls	--	32,415	18,100	33,300	15,050	28,990

Note: Impacts shown are for noise levels above the system criteria. Figures in parentheses are quantity of structures impacted by noise level 1 to 2 dB(A) over criteria. Inasmuch as MOS-1 is entirely subway, no aerial impacts exist. For other alignments, because of the speed of the train, the proximity of commercial structures to the curbside, and the effectiveness of the sound barrier wall, most of the comm./office buildings that would have been adversely affected without the sound barrier wall are not affected by the lower levels of noise transmitted with the sound barrier wall.

Source: "Noise and Vibration Analysis for the Metro Rail CORE Study," Wilson, Ihrig & Associates, Inc., March 1987.
 "Draft SEIS/SEIR for LA Metro Rail Project," SCRTD, November, 1987.

Impacts without mitigation measures, on Vermont Avenue and Sunset Boulevard include 161 offices, 21 apartments, 11 residences, two churches (see Self Realization Fellowship below), four schools, six hospital buildings, one theatre and one TV studio. With sound barrier walls, impacts would remain three to five dB(A) above project criteria at two buildings of Virgil High School, a theatre near Willowbrook, four buildings of the Kaiser Permanente Hospital, five residences and one church near Alexandria Avenue, and at six residences near Kingsley Street. Noise levels more than five dB(A) above criteria would occur at two buildings of Los Angeles City College and at KWHY TV Studios and Sunwest Recording Studio west of Western Avenue.

A detailed analysis of noise and vibration impacts for studios along Sunset Boulevard is contained in the Draft SEIS/SEIR. A special study of existing conditions on Sunset Boulevard and the potential impacts of Metro Rail operations resulted in the definition of Candidate Alignment 6 to avoid adverse effects on the sound and recording industry along Sunset.

At the Self-Realization Fellowship, intrusive noise levels from Sunset Boulevard traffic are relatively high inside the meeting room and on the grounds. Inside the Temple, noise levels are much lower, although traffic is audible at times. With mitigation, train passby noise levels would be less than the ambient levels in the meeting room and in the Temple and would meet the 75 dB(A) criterion. Sound barrier walls are recommended for the entire 28,990-foot aerial portion of Alignment 6.

3.8.6 Mitigation Measures

Section 8.3., Chapter 3 of the Draft SEIS/SEIR presents the mitigation measures adopted for the Metro Rail Project. The measures can be summarized as follows:

- Standard design features are to be applied to entire Metro Rail system, such as continuous welded rail, lightweight rail vehicle trucks, special grinding equipment, and Resilient Rail Fasteners instead of Fixed Rail Fasteners.
- Additional mitigation features will be used where necessary, such as Resiliently Supported Ties or Floating Slab Trackbed.
- Extraordinary measures will be used if levels must be reduced further in minor shifts in alignment, crossover relocation, non-standard Floating Slab Trackbed, vibration isolation, or tunnel noise abatement.
- Aerial structures require some different measures such as use of concrete and steel structures and sound barrier walls.
- If further air-borne noise level reductions are needed, measures will be directed to the sensitive receptor. The need for structural modifications, additional glazing, or insulation will be determined during final design.

Where noise standards are exceeded, the SCRTD has committed to use any one or a combination of these mitigation measures to meet the noise and vibration criteria adopted for the project or to meet the ambient conditions, whichever is higher. If the ambient noise level exceeds the project criteria, the SCRTD will apply mitigation measures as necessary to prevent project generated airborne noise from increasing the ambient by a significant amount. According to industry-wide guidelines, an increase of up to 3dB(A) generally is not considered significant. This range of measures is expected to be adequate to mitigate noise impacts that could be generated by the project.

3.8.7 Comparison of Segments of Candidate Alignment 6 with Candidate Alignment 3 and Candidate Alignment 4

For "Section A" of Candidate Alignment 6, as shown in Figure 7, the subway portions are the same as for the equivalent section of Candidate Alignment 4 with impacts to eight commercial/offices and six apartments. With mitigation measures, these impacts would drop to three apartments at a level one or two dB(A) above project criteria. The aerial portions are the same as for Candidate alignment 4 except that Candidate Alignment 6 recognizes the impacts to KWHY TV and Sunwest Recording Studios on Sunset just west of Western Avenue. The aerial segment has impacts to 271 commercial/offices, 27 apartments, 24 residences, 1 motel, 4 churches, 4 schools, 6 hospital buildings, 7 theatres, 1 TV studios, and 1 recording studio. With sound barrier walls, impacts would remain at six apartments, 19 residences, one motel, three churches, four school buildings, four hospital buildings, seven theatres, one TV studio, and one recording studio.

"Section B" of Candidate Alignment 6 covers the transition zone and subway. It is different from all other candidate alignments and contributes over-criteria impacts to eleven apartment buildings and one theatre. Mitigation measure eliminate these impacts.

"Section C" of Candidate Alignment 6 is the same as the equivalent segment of Candidate Alignment 3 west of Bronson Avenue on Hollywood Boulevard. This segment is all in subway and has impacts on 15 apartments, 22 residences, one church, two theatres, and four recording studios. The application of mitigation measures reduces the impacts to four apartments and eight residences with noise levels of one to two dB(A) above the criteria.

An inspection of Tables 8 and 9 reveals that Candidate Alignment 6 is effective in reducing the number and severity of the noise and vibration impacts found with Candidate Alignment 4. Without mitigation measures, the combined subway and aerial segments of Candidate Alignment 4 would affect 459 structures with noise or vibration levels over the project criteria while Candidate Alignment 6 would affect 415 structures. With recommended mitigation measures, the combined subway and aerial segments of Candidate Alignment 4 would affect 86 structures while Candidate Alignment 6 would affect 60.

3.8.8 Cumulative Noise Impacts

Section 8.2.4 of Chapter 3 of the Draft SEIS/SEIR discusses the impacts that Metro Rail operations would have on the overall energy equivalent (Leq) noise levels of the community. Along Sunset Boulevard, the rush-hour Leq in August, 1987 averaged 74 dB(A). With six-car trains operating every three minutes in

both directions at seventy miles per hour on an aerial structure with non-absorbent sound barrier walls, Metro Rail rush-hour Leq would be 67 dB(A). This is considerably lower than the ambient levels in the community and would add one dB(A) to ambient levels, raising them to 75 dB(A).

For Candidate Alignment 6, this situation would remain the same. The estimate of the Metro Rail rush-hour Leq is conservative in that operations on branches would be every six minutes in both directions, and train speeds along Sunset would almost always be lower than seventy miles per hour. Therefore, the Leq generated by actual operations would probably be 3 dB(A) lower than indicated in Table 3-41 of the Draft SEIS/SEIR, or 64 dB(A), and would contribute less than one dB(A) to the community noise level.

3.9 AIR QUALITY

Background information on the South Coast Air Basin (SOCAB) and air quality relative to Metro Rail construction is presented in Section 9, Chapter 3 of the Draft SEIS/SEIR.

Impacts on air quality have been assessed from three perspectives: consistency with air quality management and regional transportation planning; a subregional analysis; and a microscale analysis. The subregional analysis provides estimates of project-induced emissions savings for the five primary pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Emission estimates were related to vehicle-miles of travel (VMT) of passenger vehicles. The microscale analysis, examining carbon monoxide (CO) concentrations, used a screening procedure based on idle-time and emission changes related to speed changes. Carbon monoxide concentrations pertinent to both the federal one-hour and eight-hour standards were assessed.

To the extent that Metro Rail reduces automobile VMT, trip generation, and/or congestion by diverting trips to transit, Candidate Alignment 6 would be consistent with the long-range strategies of the AQMP and, therefore, the Clean Air Act.

A subregional pollutant burden analysis was undertaken to determine areawide vehicular emissions with and without Metro Rail. The "pollutant burden" is the total amount of pollutants emitted in a given time period. In this case, it represents the total daily amount of pollutants, in tons and by type, that would be emitted by passenger vehicles in the region in the year 2000. For purposes of impact analysis, a comparison was made between the regional pollutant burden and Metro Rail's expected pollutant burden. The analysis indicates Candidate Alignment 6 would have the third-highest air quality benefits with a reduction in pollutant burden of 9.55 tons daily. Only Alignments 5 (9.91 tons daily) and 4 (9.64 tons daily) rank higher in air quality benefits. While the savings in pollutant burden resulting from each of the candidate alignments may be considered significant compared to the Null Alternative, the difference among candidate alignments in terms of regional pollutant burden is negligible.

A screening methodology was used to determine which intersections associated with Candidate 6 would experience the greatest increase in carbon monoxide (CO) assuming that negative impacts would be limited to those intersections identified in the traffic analysis as "critical," i.e., because of the addition of station access traffic.

A total of fifteen intersections listed below potentially would be susceptible to significant CO increases:

- Normandie/Olympic
- Vermont/Olympic
- Wilshire/Western
- Crenshaw/Olympic
- Lankershim/Cahuenga
- Vermont/Wilshire
- Wilshire/Fairfax
- Sunset/Vine
- Fairfax/Olympic
- Lankershim/Ventura
- Lankershim/Chandler
- Wilshire/Crenshaw
- Lankershim/Burbank
- Wilshire/Normandie
- Sunset/Cahuenga

This compares to a high of nineteen intersections under Alignment 3 and a low of thirteen intersections under Alignment 1. These impacts essentially represent shifts in CO from other locations. The Metro Rail project would yield an overall air quality benefit for the region. These intersections are the same as those for the corresponding sections of Candidate Alignments 3 and 4.

3.10 ENERGY

The assessment of energy impacts is based on vehicle miles of travel by auto, bus, and rail in the six-county Los Angeles region. Energy uses include construction of rail facilities, vehicle manufacture, vehicle maintenance and propulsion, and station operation. The principal difference in energy consumption among the candidate alignments would be related directly to the method of construction (i.e., subway versus aerial guideway) and projected operating levels. Aerial guideway construction requires about one-half the energy of subway construction because of the reduced amount of materials and earth-moving involved. Aerial guideway requires less energy for operations, because less energy is needed to operate heating, ventilation, lighting, and air conditioning.

Operation of each alignment generally would require the same amount of energy. From the construction standpoint, Candidate Alignment 6 would require two percent more energy than Candidate Alignment 2, which would require the least amount of energy. However, the lower energy usage for construction and station operation under Candidate Alignment 2 would be offset by higher energy use for auto propulsion, due to the expectation of lower rail patronage for Candidate Alignment 2. Candidate Alignment 5 would perform best overall, because it would have the highest rail patronage, resulting in the lowest demand for auto manufacturing, maintenance, and propulsion energy. The difference among the candidate alignments on an annualized basis is negligible -- less than three one-hundredths of one percent. The differences between Candidate Alignments 3, 4, and 6 are less than one hundredth of one percent.

3.11 SUBSURFACE CONDITIONS

There are eight known oil fields in various stages of production and/or abandonment in the Regional Core, the area to be served by Metro Rail. All of the candidate alignments would pass over or within 500 feet of four of these fields. The likelihood of encountering subsurface gases associated with these oil fields would be greatest west of the Wilshire/Crenshaw Station. Along Vermont Avenue, the likelihood would be slightly less. Along Sunset and Hollywood Boulevards, the chances would be reduced still further. Candidate Alignment 6 would be slightly shorter than Alignment 4 (0.1 mile), but would have about one-half mile more subsurface conditions.

None of the candidate alignments would completely avoid the possibility of encountering subsurface gas. However, the risk would be greatly reduced if an aerial configuration is employed in areas of highest potential hazard. Where a subway configuration is unavoidable (or most desirable), SCRTD would utilize a barrier in the form of a high-density polyethylene (HDPE) membrane to line the tunnels. This HDPE membrane has a 99 percent calculated effectiveness for preventing the migration of subsurface gases.

The potential for significant seismic effects on Metro Rail has been thoroughly examined. Twelve known faults and folds have been identified in the study area. Two of the twelve are considered "active" or "potentially active." The Hollywood fault is considered active; the Santa Monica fault is considered potentially active. Geologists estimate that the probability of a Richter magnitude seven earthquake associated with these faults (or any other faults in the area) in the next 100 years is five percent.

Five intersections of faults or folds with Candidate Alignment 6 are evident. The segment of the alignment along Wilshire Boulevard between Alvarado Street and Vermont Avenue intersects the MacArthur Park Fault and another unnamed fault. Alignment 6 intersects the Los Angeles Anticline on Vermont Avenue south of Beverly Boulevard, and the Santa Monica Fault on Sunset Boulevard just east of the Hollywood Freeway. The Hollywood Fault is crossed just north of Hollywood Boulevard, where Candidate Alignment 6 turns north to the valley.

3.12 FLOODING IMPACTS

The project area is drained by the Los Angeles River, Tujunga Wash, and Ballona Creek. These watercourses have been channelized for flood control. The construction of Metro Rail would not have a significant impact on flood control facilities, nor is it expected that Metro Rail service and operations would be significantly affected by a 100-year flood in the Regional Core.

3.13 BIOLOGICAL RESOURCES

Like the other project options, Candidate Alignment 6 would not adversely affect unique or endangered biological resources (See Chapter 3, Section 12 of the Draft SEIS/SEIR).

3.14 ELECTROMAGNETIC EMISSIONS

Electromagnetic emissions would be associated with Metro Rail operations. Of the possible modes of electromagnetic emissions, only radiated emissions are of concern. Conducted and induced emissions do not extend beyond the rail and vehicle structure, and therefore, would have no impact upon neighboring operations.

Electromagnetic emissions from operations of trains in subway are attenuated by the tunnel structure and the earth cover to a level of insignificance. The operation of Metro Rail on elevated guideway is not expected to affect adversely other electronic installations operating in the electromagnetic environment. The alignment of Candidate Alignment 6 has been designed in part to avoid sensitive receivers such as recording studios. The Metro Rail system design specifications would result in a system that radiates electromagnetic emissions below the ambient level.

This conclusion is based upon recent measurements of the radiated ambient environment in the Sunset Boulevard area of concern, comparative ambient measures from other metropolitan areas, and the radiated signature of a modern, chopper controlled, heavy rail transit vehicle similar to the vehicle likely to be utilized for Metro Rail. The results of this assessment indicate that radiated emissions would be unlikely to affect neighboring operations. The Draft SEIS/SEIR (Chapter 3, Section 13) contains further information on criteria, the existing environment, and mitigating design features for Metro Rail Project vehicles and equipment.

3.15 CONSTRUCTION IMPACTS

This section describes the methods for line and station construction for Candidate Alignment 6 and potential impacts during construction. It should be noted that these impacts would be temporary.

3.15.1 Construction Methods

Construction methods are described in Chapter 3, Section 13 of the FEIS and in Section 14, Chapter 3 of the Draft SEIS/SEIR. All alternatives with an aerial alignment on Wilshire Boulevard, Vermont Avenue, or Sunset Boulevard would require a transition portal, where the guideway profile changes from aerial to subway. Portals usually require 30-40 feet of right-of-way and are 600-800 feet long. On Wilshire and Vermont, the portals would be constructed within street right-of-way. Some properties would be acquired in these locations (see Table 7) to maintain the current number of traffic lanes. Candidate Alignment 6 would have an off-street portal just north of Sunset. Alignment 4 would have the portal within Sunset Boulevard. An in-street portal for Alignment 4 would require right-of-way acquisition to maintain the same number of traffic lanes on Sunset Boulevard in the future. Moving the portal out of Sunset Boulevard with Alignment 6 would reduce traffic impacts during construction.

3.15.2 Community Impacts

Community impacts include temporary disruption of normal community activities and access to local facilities. Refer to the discussion on pages 3-159 to 3-160 of the FEIS (1983) and Section 14.3, Chapter 3 of the Draft SEIS/SEIR for a discussion of construction impacts on MacArthur Park. Additional analysis of impacts to MacArthur Park has been performed since publication of the Draft SEIS/SEIR and is presented here.

3.15.2.1 MacArthur Park

SCRTD and its Metro Rail Design Consultants, MRTC, have conducted a detailed study, since the preparation of the Draft SEIS/SEIR, to determine impacts and mitigation measures of Metro Rail construction through MacArthur Park.

In accordance with the 4(f) requirements, the study has examined several cut-and-cover and tunnel construction alternatives to minimize impacts on the park. Several mitigation measures also have been identified. The results of the study are contained in a report entitled "Construction Options Through MacArthur Park Lake" dated February 9, 1988. This study is incorporated herein by reference. Summary results from this study have been excerpted and included in this section to update Section 14.3.1 of the Draft SEIS/SEIR, which discusses construction impacts on MacArthur Park.

Impacts to MacArthur Park and the Lake would result from the extension of the Metro Rail line from the MOS-1 interim station terminal at Wilshire and Alvarado. This station is situated approximately mid-block between Wilshire Boulevard and 7th Street. The park and the lake include the area between 7th Street and 6th Street on the south and north and Alvarado and Parkview on the east and west.

There is no way to extend Metro Rail without going through the park, which is situated immediately west of the station. The type of impacts on MacArthur Park and the lake would depend on the construction method used and the operational requirements of Metro Rail. These are discussed as follows.

Need for Pocket Track

The pocket track is necessary to assure the maximum level of safety for Metro Rail operations. The purpose of the pocket track is to remove stalled or otherwise unsafe trains from mainline service during operating hours. The pocket track must be strategically located so that trains can be quickly removed from the mainline to reduce the potential for hazardous operating conditions.

Pocket Track Location

The major reason a pocket track is needed between the Wilshire/Alvarado and Wilshire/Vermont Stations is that Candidate Alignments 1, 2, 3, 4, and 6 all split into two branches at this location, one going north to Hollywood and the other going west along the Wilshire corridor. Locating the pocket track west of Wilshire/Vermont would require construction of two pocket tracks, one for each

TABLE 10

CONSTRUCTION OPTIONS THROUGH MACARTHUR PARK LAKE

Alternative	Tunneling Alternatives			Cut-and-Cover Structure Alternatives		
	A	A-1	A-2	B	B-1	B-2
Cost (In Millions)	\$27.9	\$31.8	\$30.1	\$23.6*	\$24.3*	\$25.4*
Impact of Metro Rail Construction on Park	20 Months	26 Months	26 Months	24 Months	27 Months	27 Months
Impact of Metro Rail Construction on Lake	20 Months	19 Months	22 Months	24 Months	25 Months	15 Months
Lake available for use during construction	None	Half	None	None	Half	None
Permanent improvements for lake and park	(1) None	(1) None	(1) None	(2) Yes	(2) Yes	(2) Yes
Pocket Track	Under Wilshire Blvd.			Under the lake		

*Cost included \$2 million for park improvements.

(1) Only the excavated portion of the lake will be replaced and improved. Fresh water will be added as needed.

(2) Entire lake bed will be cleaned, regraded, restored with permanent lining and bottomed with sand or asphalt cover. Lake will be refilled with fresh water.

branch of the alignment. The construction disruption of locating a pocket track under Wilshire Boulevard just west of the park would double the cost and cause more than double the community disruption from the presently proposed site. This disruption would increase from hundreds of people wanting to use the lake on a seasonal basis, to tens of thousands of people using Wilshire Boulevard on a daily basis for 20 to 27 months. There also would be disruption to the retail establishments on Wilshire Boulevard.

Construction Options

Six primary construction options were examined in detail. These consist of three cut-and-cover options and three tunneling options. These are described briefly below and summarized in Table 10. Detailed descriptions of the options are contained in the referenced report.

Three tunneling construction alternatives include:

- Alternative A, which provides for construction of twin tunnels under MacArthur Park. It includes excavating of the soils and replacing them with lean concrete, draining the lake, tunneling, and repairing the bottom of the lake.
- Alternative A-1, which provides for partial use of MacArthur Lake while constructing an earth dike, cofferdam, and preparing the substrata for construction of twin tunnels under the lake. Part of the lake would be drained, then restored and put back in service prior to tunneling.
- Alternative A-2, which provides for draining the lake completely with use of sloped excavation through the lake bed. Excavation would be carried approximately five feet into the rock and replaced with unreinforced lean concrete. The lake would be restored and put back in service prior to tunneling. Alternative A-2 would require a major portion of the lake for slope excavation and temporary storage of material.

Three cut-and-cover construction alternatives include:

- Alternative B, which provides for cut-and-cover construction of a three-cell subway box structure that extends from Wilshire/Alvarado Station to a point east of Park View Street. It involves decking of Alvarado Street, temporary support to minimize excavation outside the lake, and sloped side excavation through the lake bed. The lake would be drained for construction of the box structure, a permanent lining installed on the lake bottom to keep water from seeping through the lake bed, and the lake restored to its present usage.
- Alternative B-1, which provides for cut-and-cover construction of a three-cell subway box structure and installation of an earth dike and cofferdam allowing partial use of the lake. The lake north of the earth dike would be drained for construction purposes. Excavation would be carried out within the cofferdam. A permanent watertight tremie concrete seal

would be installed to have a dry base for the grade slab. Cast-in-place or precast concrete elements may be used to build a three-cell box structure.

- Alternative B-2, which provides for construction of a three-cell subway box structure by cut-and-cover method using sloped side excavation through the lake bed and by constructing two small dikes at either end of the lake. It involves first completing the subway structure inside the banks of the lake and then building the middle three-cell box structure. Support of excavation would be used for cut-and-cover construction inside the banks and side sloped excavation in the center 600 feet of lake bed. Smaller earth dikes would be built at the banks. The lake would be drained only for construction of this middle 600-foot-long subway box structure in the lake. A major portion of the lake would be kept in full service while constructing the cut-and-cover subway box structures at the east and west banks.

Impacts on Use of MacArthur Park

The Los Angeles Department of Recreation and Parks estimates that the park is used primarily by residents within one-half mile walking distance from the park. This translates to 85,250 people within the specified radius of potential users. All of the construction options offered will require only three to five percent of the park area. Ninety-five to ninety-seven percent of the park area will remain available for use by park visitors.

MacArthur Park is used for numerous activities, one of which is boating on the lake. Under all construction options, almost all of the impacts are on boatribe activity on the lake and not on any of the other majority of park activities. Therefore, the community will be able to continue using the park during construction. The Recreation and Parks Department was not able to provide lake or park utilization data.

Based on site observation, on February 6 and 7, 1988, an estimated 400-500 persons were at the area around the lake at MacArthur Park. In speaking with the boathouse manager, SCRTD staff was informed that there is a maximum 10 boats on the lake on a half hour basis. The rental is \$3.50 per half hour. The boathouse operates six hours from 10:00 a.m. to 4:00 p.m. on weekends all year long, if weather permits. All three concessions are open on weekends and two remain open daily during the week. The total estimated commissions from concessions from concessionaires including the boathouse, yield approximately \$70,000 annually. The park is least utilized on weekdays and during the fall and winter months. It is estimated that up to 250 people for peak days and about 50 people for off-peak days would be unable to use the lake for boating activities. During the approximate 20 month construction period. These persons would, however, be able to continue using all other portions of the park. Additionally, boating activities are available at Echo Park Lake which is a 10 minute bus ride from MacArthur Park.

The lake has been drained in the past. It was drained in 1978, 1983 and most recently, 1984. In each instance, the lake was drained for six months.

Based on the information summarized in Table 10, the construction costs for the cut-and-cover and tunnel alternatives range from 23.6 to 31.8 million dollars. The estimated construction duration ranges from 20 to 27 months. The time the lake would be out of service ranges from 15 to 25 months.

Under the cut-and-cover options, the improvement of the lake bottom is a reimbursable project expense. The reason is, more than 2/3 of the lake bottom will have been excavated to perform construction activities which provides the added benefit of removing bad material. On the other hand, under the tunneling alternatives, there is minimal disruption to the lake bottom, and excavation of unsuitable material and lining of the lake bottom is not needed. Improving the lake bottom under the tunneling alternatives is, therefore, classified as a "betterment" of existing non-project facilities which does not qualify for reimbursement. Any costs so incurred would have to be covered by local agencies. Currently, Metro Rail funding agreements with the City of Los Angeles, the Los Angeles County Transportation Commission (LACTC), and the California Transportation Commission (CTC) project for MOS-1 do not provide for payments of improvements to facilities not related to Metro Rail or necessary for Metro Rail construction or operation. The use of Proposition A transit funds for such activities is precluded under current LACTC guidelines.

The SCRTD has a Master Agreement with the City of Los Angeles which assures compliance with agreed-to mitigation measures. The sequencing of MOS-2 construction will be later refined by preliminary engineering studies, and the final construction schedule must be determined by the contractor within limits set by SCRTD and the City.

Overall mitigation measures will consist of community involvement and awareness as an integral part of the construction activities to minimize construction impacts. During construction, the current hotline number used for MOS-1 construction will be prominently posted and disseminated in a number of locations at or near the construction staging area. Public information activities begun under MOS-1 will be continued and will include meetings with the MacArthur Park Community Council Los Angeles, individual meetings with merchants, community residents, organizations and City Council Members. Dissemination of publications such as "Metrogram" will be made by mail or personal deliveries.

A pocket track is necessary at the Wilshire/Alvarado Station for safe and efficient operation of the Metro Rail system. The analysis completed indicates that construction will be least disruptive to the community and more economical under MacArthur Park Lake rather than under Wilshire Boulevard. Information from the Department of Recreation and Parks indicated small numbers of people use the concessions, including the boats. Based upon the analysis of the construction options and time frames, it is concluded that the Cut-and-Cover Alternative B offers the best construction approach and greater long-term benefits to the City, the Westlake Community, the commuting public, and SCRTD.

The following additional mitigation measures associated with the cut-and-cover options can reduce the impact of Metro Rail construction on the residents surrounding MacArthur Park and on the park's users:

1. Construction could be scheduled so that only one peak summer period would be impacted by the drained lake at an additional cost of \$1.8 million (Alternative B-2).
2. The lake bottom would be entirely rebuilt and improved resulting in fewer and shorter maintenance cycles in the future and reducing the time the lake would need to be drained.
3. Access to and use of the entire park area north of Wilshire will be maintained and the construction area on the south side of Wilshire will be severely restricted. Park visitors will be allowed to continue using the area surrounding the lake with the exception of the narrow access areas over the tunnel segments approaching and leaving the lake.
4. Construction will be expedited so that the total scheduled construction time will be lessened.

3.15.3 Business Disruption

Short-term economic impacts resulting from the construction of Metro Rail are expected to be most intense in downtown Los Angeles, where the density of businesses (particularly ground-floor retail establishments) is very high. These businesses rely heavily on pedestrian accessibility. A generally similar condition exists along Hollywood Boulevard west of the Hollywood Freeway. Construction impacts are expected to be less severe outside the Central Business District and Hollywood because of lower commercial density and fewer pedestrian-orientated businesses.

Businesses most affected by the physical impacts of construction are generally marginal businesses and those that rely heavily upon impulse buying and foot traffic. Less affected are establishments that primarily serve other businesses, provide unusual services, or sell unique or expensive merchandise. Other types of specialized businesses that might suffer some disruption are theaters, motels and hotels, and retail businesses sensitive to noise impact (for example, stores selling stereo equipment).

3.15.3.1 Physical Impacts

Physical impacts from transit construction usually are confined to one block from the construction site and include modification of pedestrian and vehicular movements, temporary disturbances from noise and dust, reduced visibility for storefronts and signs, and reduced on-street parking. Additional information on the physical impacts of Metro Rail construction applicable to Candidate Alignment 6 is presented in Section 14, Chapter 3 of the Draft SEIS/SEIR.

3.15.3.2 Economic Impacts

The potential economic impacts resulting from construction of Metro Rail are difficult to estimate, but their significance can be estimated from the linear feet of cut-and-cover construction, the linear feet of commercial space abutting this construction, the ratio of linear feet of commercial space to linear feet

of cut-and-cover construction and the number of streets intersecting cut-and-cover construction. Economic impacts of aerial guideway construction are much less significant than the impacts of cut-and-cover construction.

Cut-and-cover construction along Candidate Alignment 6 would total 9,050 linear feet, second lowest among the candidate alignments. Alignment 5 would require 11,500 linear feet. Alignment 3 follows closely behind with 11,150 linear feet. Candidate Alignment 4 would have the third greatest impact at 9,900 linear feet followed by Alignments 2 and 1, with 9,750 and 8,900 linear feet, respectively.

Alignment 6 has 7,900 linear feet of commercial frontage abutting cut-and-cover construction, the least of any of the candidate alignments. Alignment 2, with 9,300 linear feet, and Alignment 4, with 9,200 linear feet, affect more commercial frontage during construction than any other alignment. Alignment 5 has the potential for disrupting 9,150 linear feet of commercial frontage (more than half of that at the Wilshire/Western and Wilshire/Normandie Stations). Alignment 3 has 8,850 linear feet of potential disruption, and Alignment 1 would have the least impact with 8,200 linear feet of commercial frontage.

The ratio of commercial frontage abutting cut-and-cover construction to the full length of such construction for Candidate Alignment 6 would fall in the mid-range of values for other alignments.

Vehicular circulation would be impaired whenever cut-and-cover construction crosses a street, occurs along a street, or removes traffic or parking lanes. This, in turn, would impede access to business and could cause a decline in sales. The economic impacts, however, depend on the number of trips affected and the extent to which particular businesses rely on an auto-oriented clientele. The construction of the Hollywood/Vine Station would affect eight streets. Seven streets would be affected by construction of the Wilshire/Western Station. Construction of the remaining stations would intersect four or fewer streets. Alignment 6 would not be substantially different from other alignments with regard to impacts to streets.

For cut-and-cover construction, wooden plank decking constructed to close tolerances will be used for temporary travel surfaces as a means of maintaining traffic flow. Before the start of construction, Worksite Traffic Control Plans (WTCP), including identification of detour requirements, will be formulated in cooperation with the City of Los Angeles and other affected jurisdictions (Country, State). The WTCPs will be based on lane requirements and other special requirements defined by the Los Angeles City Department of Transportation (LADOT) for construction within the city and by the appropriate agencies for construction in those jurisdictions. The excavation and decking of arterial streets crossing the rail alignment will be phased so that the capacity of those streets is not reduced unnecessarily. Contractors will be required to follow, during construction, the WTCP for each site as approved by LADOT. Barring unforeseen circumstances, no designated major or secondary highway will be closed to vehicular or pedestrian traffic except at nights or on weekends. No collector or local street or alley will be completely closed, allowing local vehicular or pedestrian access to residences, businesses, or other establishments. Comprehensive bus rerouting and detour plans will be adopted. LADOT traffic control officers will be utilized as part of the WTCP at intersections affected by cut-and-cover construction.

Because some of the cut-and-cover operations will overlap the sidewalk, a logical program of pedestrian traffic movement and sidewalk restoration shall also be established. Options include restricting construction to non-peak hours, allowing some construction at night if there would be minimal impact on surrounding residents, and developing a means to maintain access (pedestrian and otherwise) to commercial establishments.

3.15.4 Other Impacts

Construction impacts associated with Candidate Alignment 6 on utilities, air quality, noise levels, energy, geology, and hydrology would not differ significantly from impacts presented for the other five candidate alignments. The analysis and mitigation measures would apply as presented in Section 14, Chapter 3 of the Draft SEIR/SEIS and Section 13 of the FEIS.

3.16 CULTURAL RESOURCES

3.16.1 Historic Properties

Candidate Alignment 6 has been developed by combining a section of Candidate Alignment 4 with a section of Candidate Alignment 3.

3.16.1.1 Existing Conditions

Areas of Potential Effect (APEs). After publication of the Draft SEIS/SEIR in November 1987, the SCRTD refined the definition of the APEs to include properties that lie directly over subsurface alignments. The APEs include properties where the alignment is less than 200 feet below grade. The refined APEs contain properties along La Brea Avenue north of Hollywood Boulevard, along Highland Avenue north of Hollywood Boulevard, and in the transition zone north of Sunset Boulevard and west of Western Avenue.

Identification of Historic Properties. Some of the historic properties associated with Candidate Alignment 6 have been previously identified in the November 1987 Draft SEIS/SEIR in Figures 4-3 and 4-4, related to Candidate Alignments 3 and 4. Additional surveys of properties lying within the refined APE uncovered 12 structures and the Camrose Bungalows that are eligible or potentially eligible for listing on the National Register of Historic Places. Some of the properties are common to more than one Candidate Alignment (CA). The thirteen properties and the Candidate Alignments they are associated with, as identified in the SHPO Letter to Los Angeles County Community Development Commission, dated March 19, 1987, are shown below:

Previously Determined Eligible

- 2103 to 2115 1/2 N. Highland Avenue; Highland-Camrose Bungalows (CAs 1, 2, 4, and 5)

Potentially Eligible

- 1725 Sycamore (CAs 3 and 6)
- 1825 N. La Brea Avenue; Harry S. Gordon Residence (CAs 3 and 6)

- 2003 La Brea Terrace; Atkinsons, Farnum, Swain Residence (CAs 3 and 6)
- 2003 1/2 La Brea Terrace; Durfee Residence, Farnum Guest House (CAs 3 and 6)
- 6807 Franklin Avenue; First Methodist Episcopal Church (CAs 4 and 5)
- 1851 N. Highland Avenue; Residence (CAs 4 and 5)
- 1911 N. Highland Avenue; De Keyser Duplex (CAs 4 and 5)
- 1913 N. Highland Avenue; De Keyser Residence (CAs 4 and 5)
- 2035 N. Highland Avenue; Hollywood American Legion (CAs 1, 2, 4, and 5)
- 1521 N. St. Andrews; Residence (CA 6)
- 1525 N. St. Andrews; Residence (CA 6)
- 5600 (rear) Harold Way (CA 6)

Figure 15 also shows historic properties associated with Candidate Alignment 6 and previously discussed in the Draft SEIS/SEIR for the corresponding section of Candidate Alignments 3 and 4.

3.16.1.2 Project Impacts on Historic Properties

The SCRTD considers that the Metro Rail Project would have to "No Effect" on 13 additional properties identified as a result of surveys of the refined APE. The properties along La Brea Avenue and Highland Avenue, north of Hollywood Boulevard would be far enough above the operating subway to reduce noise and vibration levels below the Project criteria. The properties in the transition zone north of Sunset Boulevard and west of Western Avenue would be far enough away from Metro Rail trains and would be shielded by intervening buildings so that noise and vibration levels would be below the project criteria.

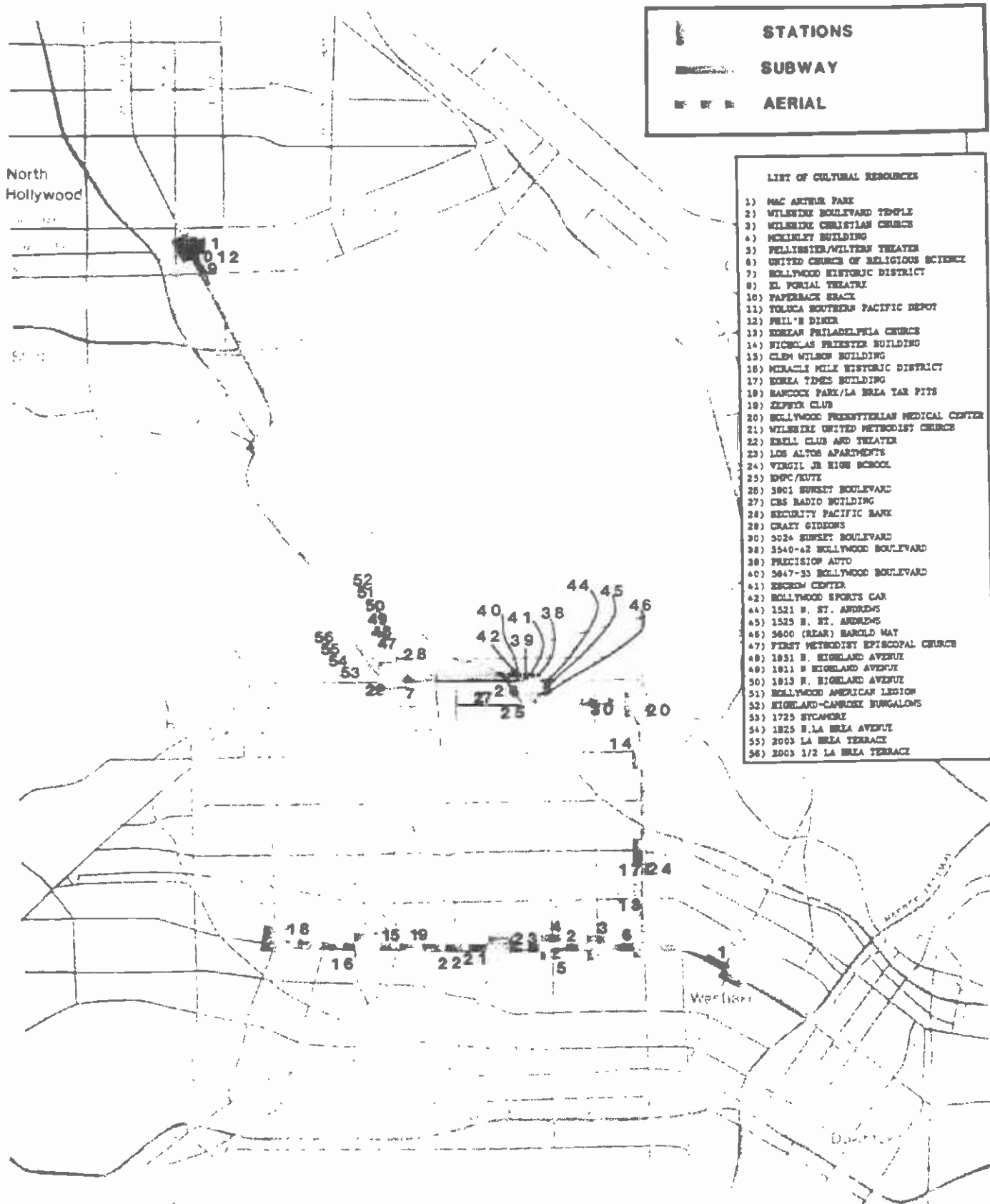
A more detailed discussion of the determination of no effect and no adverse effect is contained in the May 1988 SCRTD Addendum to the Cultural Resources Technical Report.

3.16.2 Archaeological Resources

For a discussion of the archaeological resources affected by the Metro Rail Project, see Chapter 4 of the 1983 FEIS, the 1984 Environmental Assessment for MOS-1, the 1983 Archaeological Resources Technical report, the 1987 Archaeological Resources Technical Report, and the 1987 Draft SEIS/SEIR. The areas affected by Candidate Alignment 6 have been evaluated for archaeological resources under Candidate Alignments 3 and 4, except for the area of the Sunset Transition Zone.

FIGURE 15

CORE STUDY AREA AFFECTED CULTURAL RESOURCES



STATIONS

SUBWAY

AERIAL

LIST OF CULTURAL RESOURCES

- 1) MAC ARTHUR PARK
- 2) WILSHIRE BOULEVARD TRIOLE
- 3) WILSHIRE CHRISTIAN CHURCH
- 4) MCKINLEY BUILDING
- 5) WELLSFLETTER/WILSON THEATER
- 6) UNITED CHURCH OF RELIGIOUS SCIENCE
- 7) HOLLYWOOD HISTORIC DISTRICT
- 8) EL FORNAL THEATRE
- 9) PAPERBACK BRACK
- 11) TOLUCA SOUTHERN PACIFIC DEPOT
- 12) PHIL'S DINER
- 13) KERRAN PHILADELPHIA CHURCH
- 14) NICHOLAS FREESTER BUILDING
- 15) CLEM WILSON BUILDING
- 16) MIRACLE MILK HISTORIC DISTRICT
- 17) KOREA TIDES BUILDING
- 18) BANCROFT PARK/LA BREA TAR PITS
- 19) JEFFER CLUB
- 20) HOLLYWOOD PRESBYTERIAN MEDICAL CENTER
- 21) WILSHIRE UNITED METHODIST CHURCH
- 22) EMILL CLUB AND THEATER
- 23) LOS ALTOS APARTMENTS
- 24) VIRGIL JR HIGH SCHOOL
- 25) EMPC/KUTE
- 26) 3901 SUNSET BOULEVARD
- 27) CBS RADIO BUILDING
- 28) SECURITY PACIFIC BANK
- 29) CRAZY SIDWAYS
- 30) 5024 SUNSET BOULEVARD
- 31) 3540-42 HOLLYWOOD BOULEVARD
- 32) PRECISION AUTO
- 33) 5847-55 HOLLYWOOD BOULEVARD
- 34) ESCROW CENTER
- 35) HOLLYWOOD SPORTS CAR
- 36) 1521 N. ST. ANDREWS
- 37) 1525 N. ST. ANDREWS
- 38) 5600 (REAR) BAROLD WAY
- 39) FIRST METHODIST EPISCOPAL CHURCH
- 40) 1851 N. HIGHLAND AVENUE
- 41) 1811 N. HIGHLAND AVENUE
- 42) 1813 N. HIGHLAND AVENUE
- 43) HOLLYWOOD AMERICAN LEGION
- 44) HIGHLAND-CAMPBELL BUNGALOWS
- 45) 1725 SYCAMORE
- 46) 1825 S. LA BREA AVENUE
- 47) 2003 LA BREA TERRACE
- 48) 2003 1/2 LA BREA TERRACE

TABLE 11
 PROPERTIES AFFECTED*

Properties	Location	Alignment						
		1	2	3	4	5	6	
19. Zephyr Club	5209 Wilshire Boulevard		X		X	X	X	
15. Clem Wilson Building	5217-31 Wilshire Boulevard		X		X	X	X	
23. Los Altos Apartments	4121 Wilshire Boulevard		X		X	X	X	
16. Miracle Mile Historic District	5318-5519 Wilshire Boulevard		X		X	X	X	
18. Hancock Park/ La Brea Tar Pits	Wilshire between Ogden and Curson		X		X	X	X	
21. Wilshire United Methodist Church	4350 Wilshire Boulevard		X		X	X	X	
22. The Ebell Building	4400 Wilshire Boulevard		X		X	X	X	
7. Hollywood Historical District	6223-7501 Hollywood Boulevard				X		X	
24. Virgil Jr. High School	152 North Vermont Avenue		X	X	X		X	
17. Korea Times	141 North Vermont Avenue		X	X	X		X	
14. Nicholas Priester	1101 North Vermont Avenue		X	X	X		X	
20. Hollywood Presbyterian Hospital	1300 North Vermont Avenue		X	X	X		X	
36. Hollyhock House	4800 Hollywood Boulevard (Barnsdall Park)		X	X				
37. Arts & Crafts Building	4800 Hollywood Boulevard (Barnsdall Park)		X	X				
39. Precision Auto	5618-28 Hollywood Boulevard		X	X				
42. Hollywood Sports Cars	5766 Hollywood Boulevard		X	X				
38. Commercial Building	5540-42 Hollywood Boulevard		X	X				
40. Commercial Building	5647-53 Hollywood Boulevard		X	X				
41. Escrow Center	5701 Hollywood Boulevard		X	X				
25. KUTE-KMPC Studios	5858 Sunset Boulevard					X		
26. Studio	5901 Sunset Boulevard					X		
27. CBS Building	6121 Sunset Boulevard					X		
30. Residential/Office Building	5024 Sunset Boulevard					X	X	
35. Witzend Studios	1600 North Highland Boulevard					X	X	
TOTAL			0	18	12	16	8	13

*The impacts are mostly related to noise, vibration and visual/aesthetic considerations. The Null Alternative would have no direct effect on historic properties (see Section 1 of Chapter 4 of the Draft SEIS/SEIR).

Source: Environmental Engineering Section, Transit Systems Development, SCRTD.

3.16.2.1 Sunset/Wilton Transition

Review of selected historical maps suggests that no development had taken place on the subject block prior to 1896. Nine buildings were present by 1921, five of the, fronting on Harold Way and only three on Sunset. In 1921, 25 structures existed; they were oriented on all four sides of the block, although Harold Way was still more developed than the Sunset frontage. Uses were both residential and commercial; this mixture continued during the intensive development between 1921 and 1947, with increasing emphasis on the Sunset Boulevard properties.

The present structures cover evidence of older structures built before 1921. It is possible that evidence of earlier occupation could be present below ground, although the probability for encountering significant resources is regarded as low.

3.16.2.2 Mitigation

The SCRTD will have qualified archaeologists monitor any grading, earth moving, and excavation in the transition zone. If any significant cultural resources are encountered during construction, the SCRTD will implement the general procedures set forth in the "Treatment Plan for Potential Cultural Resources Within Proposed Metro Rail Subway Station Locations in Metropolitan Los Angeles" (1985). This Treatment Plan requires monitoring, preparation of a research design, data recovery, proper curation of any data recovered, and preparation of scholarly reports on the process. This procedure is the same as is being followed for cultural resources encountered during construction of MOS-1.

3.16.3 Paleontological Resources

A discussion of paleontological resources may be found in Chapter 4 of the 1983 FEIS, in the 1987 Paleontological Technical Report, and in Section 4 of Chapter 4 of the Draft SEIS/SEIR. No changes are needed as a result of including Candidate Alignment 6.

3.16.4 Parkland Resources (Section 4(f))

A discussion of the policy and procedures involved in complying with Section 4(f) of the Department of Transportation Act of 1966 (49 USC 1653(f)) is found in Section 5 of Chapter 4 of the 1983 FEIS and in Section 5 of Chapter 4 of the 1987 Draft SEIS/SEIR. The impacts of the Metro Rail Project on MacArthur Park is also discussed in these sections of the earlier documents. Based on limited engineering, the method initially chosen for constructing the rail line through the park had no impacts on the park beyond draining the lake during tunneling operations.

As project engineering has advanced, more details of the construction method, the impacts of construction on the park, and the mitigation measures necessary are available. The District's Engineering Consultant has made an additional study, entitled "Construction Options Through MacArthur Park Lake," dated February 1988, of the impacts the Metro Rail Project would have on MacArthur Park. The study also discusses the alternative means of constructing a tunnel

through MacArthur Park and establishes the need for a pocket track on the trunk line. This study and the mitigation measures it presents apply to all candidate alignments.

Elements of the study are summarized in Section 3.15.2.1 above. In compliance with Section 4(f) procedures, the study evaluates three options for tunneling through the park and three options for building the line through the park by cut-and-cover methods.

The SCRTD has provided the report and its recommendations to city council members. Negotiations are underway with elected representatives and their staffs, neighborhood citizens groups, and responsible agencies to determine the local preference for construction methods and the nature and extent of the mitigation measures to be applied. Additional meetings are scheduled with city council members and with the MacArthur Park Community Council. As design continues, these actions are expected to lead to formal agreements and approvals with the appropriate city agencies based on widespread public involvement and consent.

3.17 CUMULATIVE IMPACTS AT HOLLYWOOD/HIGHLAND STATION FOR HOLLYWOOD BOWL CONNECTOR

Segments of the community have expressed a desire to provide a connection between Metro Rail and the Hollywood Bowl, a world famous 18,000 seat amphitheater that hosts approximately eighty major entertainment events each year. Some 800,000 patrons and 1.5 million tourists visit the site annually. As Candidate Alignment 6 evolved, it became evident that, with a subway configuration under Hollywood Boulevard and a station at Hollywood/Highland, it would not be possible to curve the alignment sharply enough to serve the Hollywood Bowl. This is also true for Alignment 3. Consequently, the potential for providing a transit link between the Hollywood/Highland Station and the Hollywood Bowl has been investigated.

UMTA considers this possible Hollywood Bowl Connector a separate project from Metro Rail because it connects logical termini, has independent utility, and does not restrict the consideration of Metro Rail alternatives. The Connector is presented in this Addendum to satisfy the Council on Environmental Quality requirement that the secondary and cumulative impacts resulting from the Federal project and other reasonably foreseeable future projects (Federal or non-Federal) be assessed. If SCRTD were to seek federal funding for the Connector project, UMTA would require that an alternatives analysis and cost-effectiveness analysis be performed as required by the Surface Transportation and Uniform Relocation Assistance Act of 1987, and that the full environmental evaluation required by the National Environmental Policy Act be conducted.

The primary purpose of the Connector would be to allow the use of Metro Rail by persons attending events at the Hollywood Bowl, enhancing both use of the Bowl and off-peak use of Metro Rail. Provision of a Connector to the Hollywood/Highland Station would increase accessibility to the Bowl and could reduce congestion during Bowl events in the vicinity of Highland and Odin and other nearby intersections. Improved access would put the Hollywood Bowl in a more competitive position for attracting event patrons, enhancing the viability of this National Register eligible property.

3.17.1 Project Options

The "Hollywood Bowl Connector Study," (Metro Rail Transit Consultants, March, 1988) presents preliminary system information for the following construction options: an elevated moving walkway, an elevated people mover, an underground moving sidewalk and an underground people mover. This study is incorporated herein by reference. A bus shuttle system is also under review.

3.17.1.1 Elevated Systems

For the elevated Connector options, a guideway would be positioned in the Highland Avenue right-of-way, taking a traffic lane. Figure 16 provides a preliminary rendering for an elevated people mover along Highland Avenue. The elevated guideway would be built to connect the Hollywood/Highland Station with the Hollywood Bowl parking and ticket areas. The aerial guideway would be supported by piers that would be protected by New Jersey type barriers or the equivalent. The piers and barriers could require a minimum width of six to eight feet from the roadway.

The elevated moving walkway option likely would have a continuous canopy some twenty feet high and twenty feet wide on top of the supporting piers. The elevated people mover would have a cross section some twenty feet wide, with a girder thickness and vertical skirting projecting about five feet above the piers.

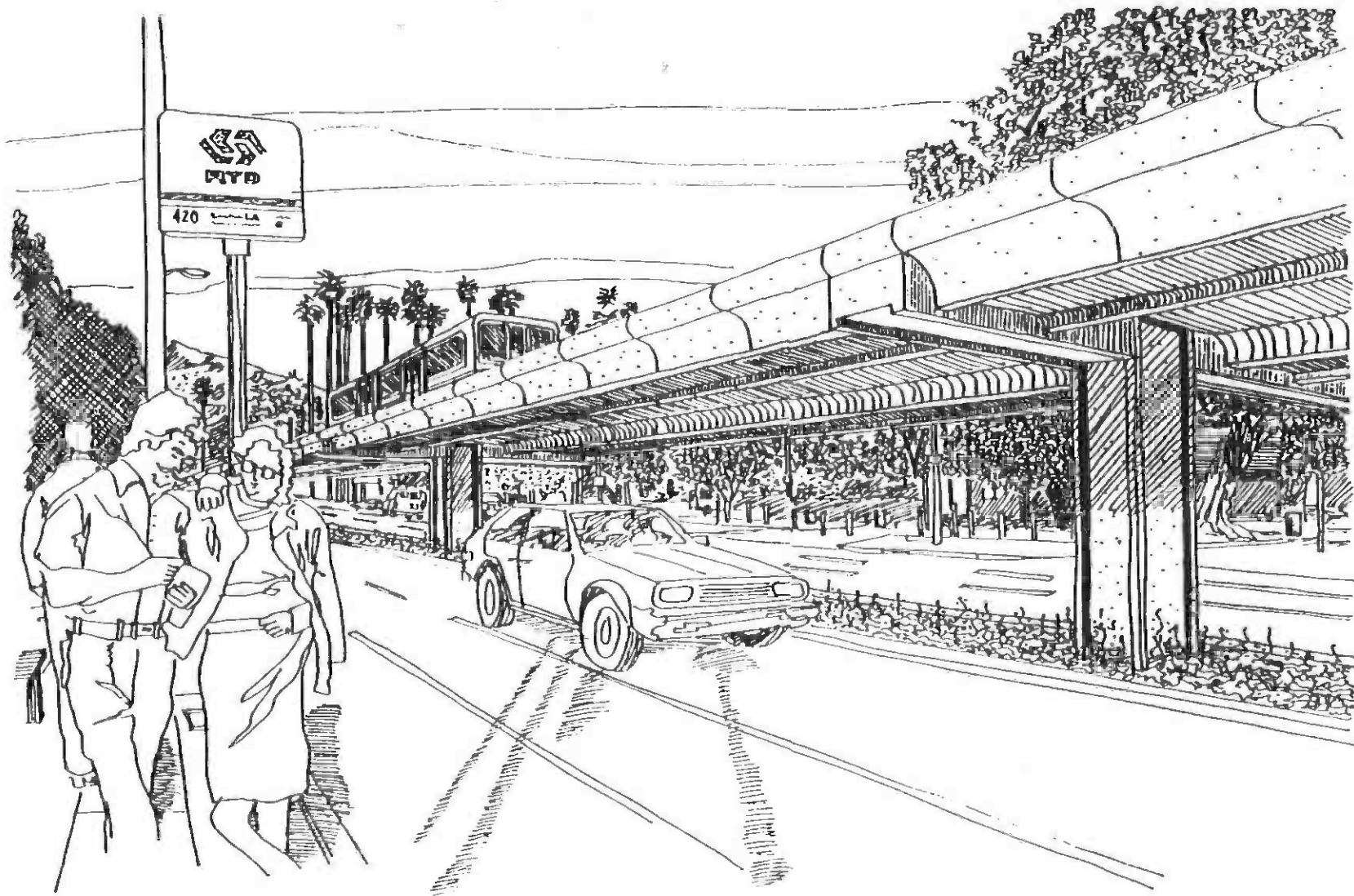
The aerial guideway options would connect to the subsurface Hollywood/Highland Metro Rail Station. Patrons utilizing Metro Rail would transition about fifty feet vertically between the aerial guideway and the mezzanine level of the Hollywood/Highland Station. Preliminary analysis indicates that this transition could occur in the Burger King parking lot on the east side of Highland Avenue midblock between Hollywood Boulevard and Yucca Street. Escalators and elevators for the handicapped would provide a transition first to the ground level and then to the subsurface Hollywood/Highland Station mezzanine level.

The moving walkway likely would consist of two separate reversible belts separating by a stationary walkway. During events, both belts could be operated in one direction to maximize capacity. The middle stationary walkway would be available for reverse travel. Because the moving walkway cannot be constructed around curves, the automatic walkway would be interspersed with sections of stationary walkways.

Preliminary capital cost estimates range from \$24 to \$36 million for the elevated moving walkway and \$25 to \$45 million for the elevated people mover (in 1988 dollars).

3.17.1.2 Subsurface Systems

Subsurface systems could be constructed using tunnelling construction techniques. The underground moving sidewalk option would require use of cut-and-cover construction on Highland Avenue potentially from Hollywood Boulevard to a point just south of the Highland/Franklin intersection, as well



Parsons
Brinckerhoff

Elevated People Mover

FIGURE 16

as off-street near the Hollywood Bowl parking lot. The underground people mover would require use of cut-and-cover construction on Highland Avenue potentially from Hollywood Boulevard to Yucca Street. Additionally, a subsurface maintenance and operation center would have to be accommodated at the Hollywood Bowl, requiring an additional excavated area. Figure 17 provides a preliminary rendering of an underground moving sidewalk.

For the subsurface options, there would be a direct tie between the Hollywood/Highland Metro Rail Station and the Hollywood Bowl Connector. Tunnelling techniques would be used to construct at least the off-street portions of this alignment. The alignment for the subsurface options would be a more direct line between the Hollywood/Highland Metro Rail Station and the Hollywood Bowl Station. The underground options would not be required to follow the curves of Highland Avenue, as would the elevated options.

Capital costs for the underground moving walkway are estimated at \$40 million (in 1988 dollars). Estimated capital costs for an underground people mover range from \$69 to \$74 million.

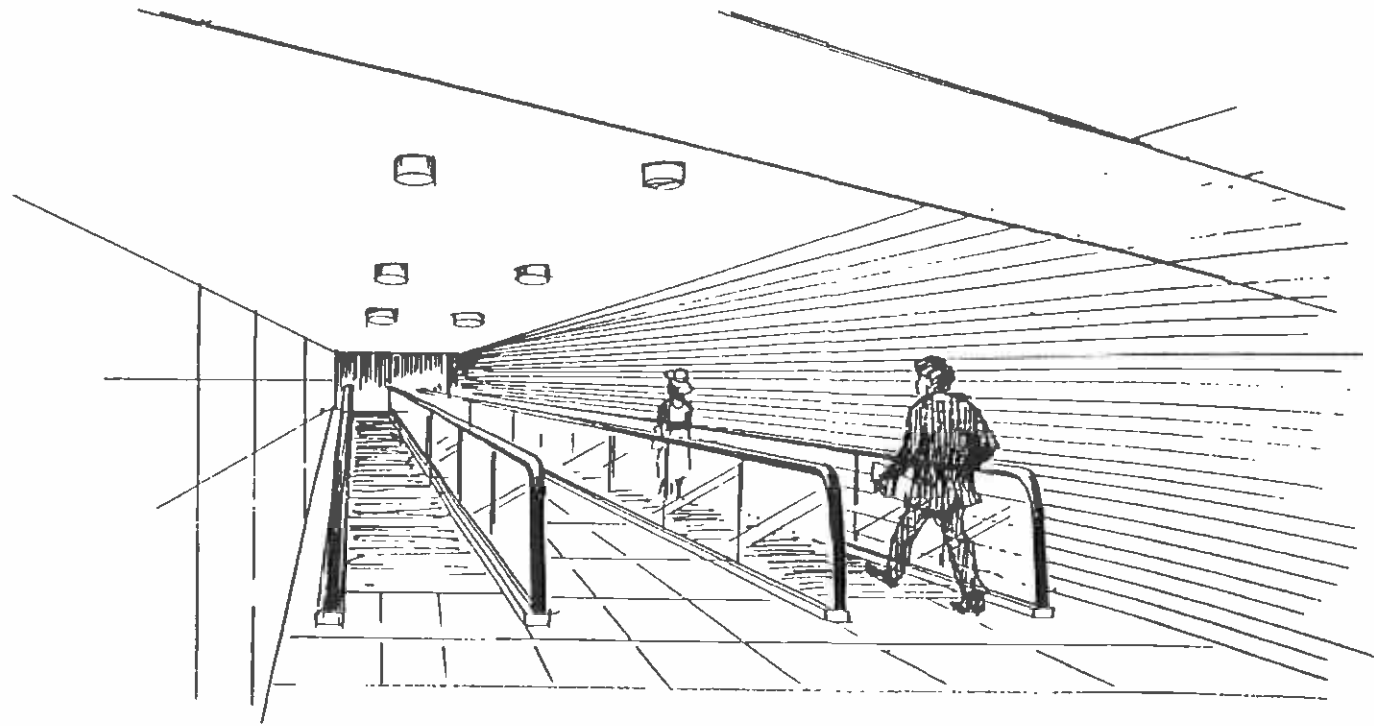
3.17.1.3 Bus Shuttle

A bus shuttle system could operate during performances at the Hollywood Bowl, commencing operation at approximately 6:00 p.m. The shuttle would load passengers at the Hollywood/Highland Metro Rail Station and operate non-stop to the Hollywood Bowl. In-bound passengers would disembark near the Bowl ticket offices. Passengers returning after performances would load buses in the immediate area of Highland Avenue similar to existing SCRTD Hollywood Bowl operations. Regular all day service to the Bowl area would continue to be available on SCRTD Bus Line 212, which operates seven days a week and serves both the Hollywood Bowl and the Hollywood/Highland station area.

For a bus Connector option, buses would queue at the Hollywood/Highland station before events and at the Hollywood Bowl after events. Because of the number of buses required, off-site staging areas would be necessary, with buses called forward to loading areas as they fill. The bus shuttle option would require purchase of approximately 28 to 40 buses. Capital costs for this option range from \$4.8 to \$6.7 million (in 1988 dollars).

3.17.2 Service

Exit time from a Hollywood Bowl event and the point-to-point travel time between the Bowl and the Hollywood/Highland Station represent perhaps the most significant descriptors of system service for these options. Exit time is defined as the amount of time it takes to move people through a given point. With both beltways operating in the same direction, the moving walkway options would have a capacity of about 16,000 patrons per hour. Thus, it would take approximately one quarter of an hour to carry 4,000 people. The people mover options would have an approximate one-way capacity of somewhat less than 10,000 patrons per hour and could serve 4,000 patrons in 25 to 26 minutes.



Parsons
Brinckerhoff

Underground Moving Walkway

(AT CUT & COVER SECTION)

FIGURE 17

The point-to-point travel time represents a patron total one way trip time on the system, exclusive of the wait time. It includes entry to the system, vehicular boarding, vehicular transport, unloading and walking to the mezzanine level of the Hollywood/Highland Station. Travel time for the people mover option would be approximately ten to eleven minutes. Travel time for the underground moving walkway would be approximately 24 minutes, while the elevated moving walkway would have a travel time of approximately 27 minutes.

The combination of the exit time and travel time indicates how long it would take the 4,000th patron to reach the Hollywood/Highland Station under "crush" conditions. These times are estimated at 42 minutes for an elevated moving walkway, 39 minutes for an underground moving walkway, 37 minutes for an elevated people mover, and 35 minutes for an underground people mover. The moving walkway would require less waiting time, but once on the system, it would take a patron longer to arrive at the Hollywood/Highland Metro Rail Station than on a people mover.

3.17.3 Environmental Impacts of Hollywood Bowl Connector on Hollywood/Highland Station Area

A Hollywood Bowl Transit Connector between the Metro Rail Hollywood/Highland Station and the Hollywood Bowl would introduce environmental impacts beyond those described for Candidate Alignment 6. An evaluation of these cumulative and secondary impacts is provided below.

3.17.3.1 Transportation

A subsurface Connector should provide long term benefits to traffic and circulation in the Hollywood/Highland Station area. Metro Rail/Connector access to the Hollywood Bowl would reduce auto trips to special events and would compete with service now provided by charter buses to the Bowl. While it is anticipated that latent demand would continue to fill the Hollywood Bowl and Museum parking lots for large events, provision of a Connector could reduce spillover parking in the neighborhood and reduce the amount of traffic during events.

An aerial guideway would have significant negative impacts on local traffic circulation, affecting left turns and the capacity and level of service on Highland Avenue.

● Left Turns

An aerial guideway could be built within available right-of-way, but left turns would no longer be possible if the piers supporting the elevated guideway were protected by a New Jersey type barrier or equivalent design. While left turns are prohibited today during the peak hours at all intersections except Camrose/Milner, the barrier would prevent turns from midblock locations at all times. Such a barrier could be continuous except for breaks at cross streets. This would reduce access to businesses and residences along Highland Avenue. Drivers would have to use other roadways or would go past their destinations and double back, using U-turns or a series of right turns. Potential impacts of the placement of a barrier are discussed below in sequence extending north from Hollywood Boulevard along Highland Avenue.

At Hollywood Boulevard and Highland Avenue, the southbound approach provides three through lanes and one left-turn lane. The design configuration of the transition necessary to accommodate continued operation of a reversible lane on Highland Avenue and pier placement for the guideway could restrict southbound to eastbound left turns.

In the block between Hollywood Boulevard and Franklin Avenue, the Holiday Inn and Burger King are significant trip generators whose access would be reduced. Yucca Street meets Highland Avenue at a "T" intersection from the east, between Hollywood Boulevard and Franklin Avenue. This intersection is unsignalized. The barrier might be continuous through this section so that left turns to and from Yucca Street could be prohibited. Left turn movements to and from this street are minimal today. Eliminating these movements would cause minor shifts in traffic to other streets.

Available right-of-way is most restrictive through the curve on Highland Avenue at Franklin Avenue (south). Even with planned improvements (see below), building an aerial guideway through this section would require special design, possibly including especially long spans and/or cantilevered construction. Left turns are not allowed northbound on Highland Avenue at Franklin (south). Consequently, there would be minimal impacts on left turns at this intersection.

The next intersection to the north is a "T" intersection formed by Highland Avenue and Franklin Avenue from the east. Placement of pier supports and the barrier in the center of a roadway could impede sight distance. Southbound to eastbound left turns are prohibited already during peak periods so there would be no impacts.

The final intersection affected by the placement of an aerial guideway in the street right-of-way would be at Camrose Drive (west leg) and Milner Road (east leg). Turning movements at this intersection are light, serving local residential neighborhoods. It may be possible to maintain left turns at this location during off-peak hours. A problem could arise if northbound vehicles attempting to access motels on the west side of Highland Avenue attempt to turn left at Camrose Drive, or make U-turns, or turn right onto Milner Road in an attempt to double back to the south. These potential problems could be mitigated if a U-turn channel were provided south of Odin Street using the broad median in Highland Avenue.

● Capacity and Level of Service

More significant than the impacts to left turns would be the impacts to through traffic on Highland Avenue during peak travel periods (7-9 a.m. and 3-7 p.m.). During these periods, special traffic flow maintenance procedures have already been adopted in an effort to maintain flow on one of the most heavily traveled arterial streets in Los Angeles.

A traffic analysis of Highland Avenue is provided in the "Hollywood Circulation Study" (Parsons, et. al., December 1985). This study examined existing and future traffic circulation in the Hollywood area, including Highland Avenue. Future conditions were analyzed for the years 2005 and 2035 (build-out scenario). The report draws a number of conclusions germane to traffic and capacity on Highland Avenue that should be considered in evaluating any use of

surface right-of-way along Highland Avenue for a Hollywood Bowl Connector. These conclusions also led to the City of Los Angeles' present plan for improvements to Highland Avenue and Franklin Avenue at Highland. Conclusions included:

- Because of the topography and street network, much traffic is unavoidably funneled to Highland Avenue resulting in daily traffic volumes of up to 80,000.
- The Franklin Avenue dogleg is the worst of three major discontinuities in the Hollywood area. Traffic today must use Highland Avenue to transition through the dogleg.
- Screenline analysis indicates additional traffic lanes are required on Highland Avenue. By 2005, two more lanes are required. By 2035, five more lanes are required.
- Left turns are already prohibited at signalized intersections on Highland Avenue during the afternoon peak periods. Prohibition of left turns at midblock locations also should be considered.

The Hollywood Circulation Study made two specific recommendations for Highland Avenue for the year 2005 timeframe:

- Widen Highland Avenue within the existing right-of-way to four lanes in each direction between Franklin Avenue and Santa Monica Boulevard. This would require narrowing the sidewalks by five feet on each side. (There are generally fifteen foot sidewalks currently). Install proper lane markings, signage, and overhead blank-out signs for operation of this section as a five-lane/three-lane reversible operation during peak hours.
- At the Highland/Franklin bottleneck, widen Highland Avenue one additional lane in each direction; widen both legs of Franklin Avenue per the City's Capital Improvement Plan; and install permanent reversible lane traffic control devices, including overhead blank-out signs. This additional widening of Highland Avenue would require additional right-of-way.

With these proposed improvements on Highland and Franklin Avenues, the level of service at the north Franklin intersection was projected to improve from E today (1985) to C in 2005 and at the south Franklin intersection from F today (1985) to D in 2005. These projections assumed construction of Metro Rail and/or a comprehensive ridesharing program.

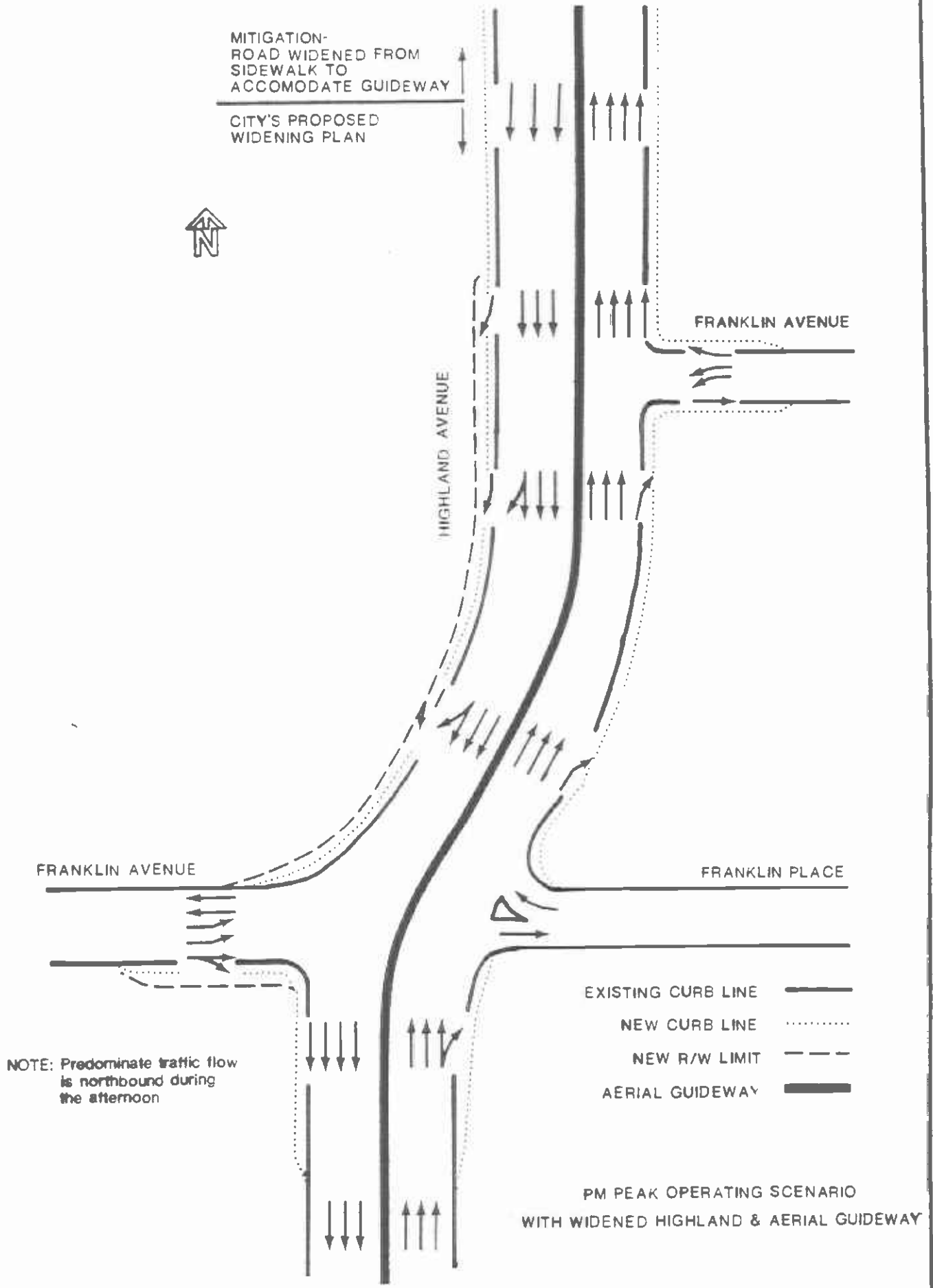
Actual planned improvements are now limited to adding a lane in each direction on Highland between the two Franklin intersections, adding a lane to Franklin eastbound at the south intersection and westbound at the north intersection, and adding a lane southbound at the north intersection. The projected improvements in the level of service anticipated in the Hollywood Circulation Study cannot be achieved with these improvements alone. For purposes of analysis, it has been assumed that, in addition to the planned improvements, an eight lane section

could be carried north from the north Franklin intersection through the Camrose/Milner intersection. This represents the only practical mitigation to the right-of-way requirements of an aerial guideway. South of the south Franklin intersection, pedestrian activity makes encroachment into sidewalk areas infeasible.

Assuming a center lane is taken for the aerial guideway, the lane pattern for the afternoon peak period is depicted in Figure 18. Under the scenario presented in this graphic, a lane would be taken from the non-peak direction of flow in the p.m. peak period. The level of service for this approach would only be significantly affected at the Hollywood/Highland intersection. The level of service at the Hollywood/Highland intersection would be projected to drop in the year 2000 from C to E (Table 12). At both Franklin intersections, the level of service would be F in the year 2000 with or without the project. At Camrose/Milner, the level of service in the year 2000 with or without the project would be D. If mitigation in the form of an eight lane roadway were not possible, the level of service would be lower, even if contraflow operations were instituted. Although the ratio of volume to capacity cannot in reality exceed 1.00 (maximum use of capacity), future demand exceeds capacity, so ratios exceeding 1.00 are shown in Table 12 for comparative purposes.

Placement of the guideway in this analysis has been designed to facilitate northbound p.m. peak flow. Impacts are principally in the a.m. peak, therefore. Lane usage in the morning peak period is presented in Figure 19. The data in Table 12 for the a.m. peak assume operation of a contraflow lane on Highland Avenue during the morning rush hours. The first lane on the east side of the aerial guideway would be designated for southbound use as a contraflow lane, beginning at the Camrose intersection. This lane designation could end at the south Franklin intersection, where traffic would shift back to the west side of the guideway. Contraflow operation on Highland Avenue has been assumed for analysis purposes in an attempt to maximize capacity on Highland (and hence minimize impacts to the level of service). Use of this contraflow lane would present difficult operating conditions, especially at Franklin Avenue, and the contraflow lane would need to violate basic geometric standards through this Franklin Avenue area. If contraflow operation were not instituted in the morning peak, the volume/capacity ratios would further deteriorate.

Lanes are now placed to allow reverse traffic flow during peak traffic hours and Hollywood Bowl events. An aerial guideway would require contraflow operation of traffic on Highland Avenue during Bowl events to maintain the number of traffic lanes provided today.



MITIGATION-
ROAD WIDENED FROM
SIDEWALK TO
ACCOMODATE GUIDEWAY

CITY'S PROPOSED
WIDENING PLAN



FRANKLIN AVENUE

HIGHLAND AVENUE

FRANKLIN AVENUE

FRANKLIN PLACE

- EXISTING CURB LINE ———
- NEW CURB LINE
- NEW R/W LIMIT - - - - -
- AERIAL GUIDEWAY ———

NOTE: Predominate traffic flow
is northbound during
the afternoon

PM PEAK OPERATING SCENARIO
WITH WIDENED HIGHLAND & AERIAL GUIDEWAY

FIGURE 18

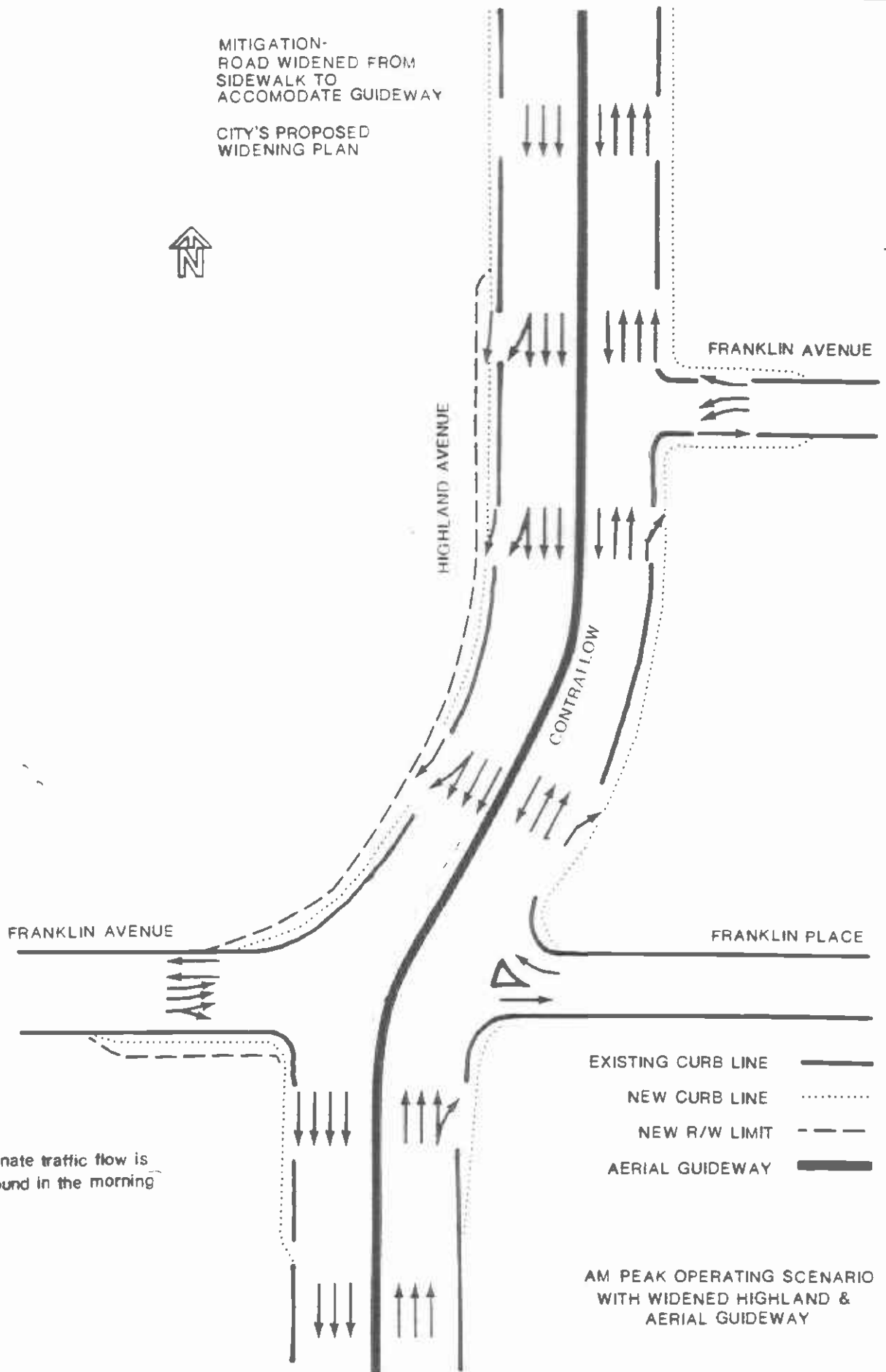
TABLE 12

LEVEL OF SERVICE - HIGHLAND AVENUE
WITH AERIAL GUIDEWAY

	Critical Volume	Volume/ Capacity	Level of Service
A.M. PEAK HOUR			
<u>Highland/Hollywood</u>			
Existing	1,257	0.84	D
2000 No Project	1,493	1.09	F
2000 With Project, No Mitigation Possible	1,755	1.28	F
<u>Highland/Franklin (South)</u>			
Existing	1,256	0.84	D
2000 No Project	1,502	1.00	E
2000 With Project, With Contraflow	2,024	1.42	F
<u>Highland/Franklin (North)</u>			
Existing	879	0.59	A
2000 No Project	1,195	0.80	C
2000 With Project, With Contraflow	1,764	1.18	F
<u>Highland/Camrose/Milner</u>			
Existing	1,022	0.68	B
2000 No Project	1,172	0.78	C
2000 With Project, With 8 Lanes & Contraflow	1,172	0.78	C
2000 With Project, With 7 Lanes & Contraflow	1,304	0.87	D
2000 With Project, With 7 Lanes (no mitigation)	1,527	1.02	F
P.M. PEAK HOUR			
<u>Highland/Hollywood</u>			
Existing	967	0.64	B
2000 No Project	1,166	0.78	C
2000 With Project	1,408	0.94	E
<u>Highland/Camrose/Milner</u>			
Existing	995	0.66	B
2000 No Project	1,230	0.82	D
2000 With Project, With 8 Lanes	1,230	0.82	D
2000 With Project, With 7 Lanes & Contraflow	1,490	0.99	E
2000 With Project, With 7 Lanes (no mitigation)	1,608	1.07	F

MITIGATION-
ROAD WIDENED FROM
SIDEWALK TO
ACCOMODATE GUIDEWAY

CITY'S PROPOSED
WIDENING PLAN



NOTE: Predominate traffic flow is southbound in the morning

- EXISTING CURB LINE ———
- NEW CURB LINE
- NEW R/W LIMIT - - - -
- AERIAL GUIDEWAY ———

AM PEAK OPERATING SCENARIO
WITH WIDENED HIGHLAND &
AERIAL GUIDEWAY

FIGURE 19

3.17.3.2 Land Use And Development

The Hollywood Bowl Connector corridor is mostly commercial on the east side of Highland Avenue, except for apartment development north of Franklin Avenue. On the west side of Highland Avenue, land use is more mixed. There are a number of motels concentrated south of Camrose Drive. The First Methodist Church is on the northwest corner of Highland and Franklin Avenue. Midway between Franklin Avenue and Camrose Drive on the west side is the American Legion Highland Post. There are a number of single family residences fronting onto Highland Avenue north of Franklin Avenue and south of Camrose Drive.

Because the proposed Connector would provide point-to-point service with no intermediate access, there would be minimal effects on land use except for the visual presence of an aerial guideway.

If the station connection at Hollywood/Highland were not self-contained, and had street level entry directly to the Connector, it is possible that the pattern of commercial use in the immediate Hollywood/Highland station area could change as local merchants receive more exposure during special events. Much of this activity would be at night or on weekends. Significant development pressures would not be anticipated near the Hollywood Bowl in that the station would be confined to the Hollywood Bowl site, and patrons would not likely leave the site during special events.

3.17.3.3 Land Acquisition and Displacement

No right-of-way acquisitions have been assumed for an underground Connector although numerous underground easements would be required. Land acquisition would be necessary for both the elevated moving walkway and elevated people mover alternatives. The preliminary location of the elevated guideway transfer station affects two parcels. The first is occupied by a commercial parking lot and a key making shop. The second parcel contains a Burger King restaurant.

A proposed elevated station may be located on the first parcel, but the City's building setback requirements would require acquisition of additional right-of-way from the second parcel. This acquisition would adversely impact the available restaurant parking, so it is assumed that both parcels will be required for an elevated Connector.

Right-of-way would be taken for the widening of Highland Avenue for traffic improvements proposed by the City of Los Angeles. By reducing sidewalk widths, the roadway could be widened within existing right-of-way to accommodate an aerial Connector north of Franklin.

3.17.3.4 Social And Community Concerns

Social and community impacts would be primarily visual and aesthetic, if an aerial guideway were constructed. Residential development is located on the east side of Highland Avenue north of Franklin Avenue (apartments) and on the west side of Highland Avenue in two locations, opposite the point where Franklin Avenue meets Highland Avenue from the east and the block north of Camrose Drive.

The community is aware of impacts associated with Hollywood Bowl events. To the extent these impacts are mitigated by a shorter duration of person flow to and from events or a reduction of spillover parking, effects of a Connector will be positive. To the extent that elements are introduced outside of event periods (elevated fixed guideway), the connector could be viewed as negative.

3.17.3.5 Safety And Security

Design of walkways and people movers is well established as are associated safety criteria. Apart from differences in technology, safety and security issues for the Connector would be similar to those for Metro Rail (see Section 6, Chapter 3 of the 1983 FEIS).

If contraflow traffic operations were instituted to maximize capacity on Highland Avenue with an aerial guideway, accident rates on Highland Avenue could increase. An additional problem can arise if a vehicle breaks down in the single separate contraflow lane, blocking traffic in this lane.

3.17.3.6 Aesthetics

There would be only limited aesthetic impacts if the Connector were subsurface. Connector entrances would have to be constructed at the Hollywood Bowl, changing the landscape and a subsurface people mover would require excavation of an operations/maintenance enter.

There would be visual impacts with an aerial guideway. These impacts could be partially mitigated through use of aesthetically pleasing design, integrated with plantings and landscaping.

The guideway would be approximately 20 feet wide, and the base of the guideway would be about fifteen feet above the street. The guideway would be three to four feet high for a people mover or as much as twenty feet high with a full canopy over a moving walkway. The people mover guideway can be relatively light in form and ribbonlike, but it introduces a new and obvious element into the visual setting. Besides being viewed from the street, an aerial guideway would be visible from surrounding hillsides, especially Whitley Heights to the east and the hill above Camrose Drive on the west. Because of the canopy, the elevated walkway would be more intrusive than the people mover guideway.

3.17.3.7 Noise And Vibration

Vibration would not be significant from either the elevated or the subsurface guideway. Noise from the elevated guideway would at most times be imperceptible, given the location of the guideway in the street right-of-way. An elevated walkway would produce a low level continuous noise that would not be perceptible over background traffic noise. The principal source of noise from an elevated people mover, like that from passenger vehicles on the street, is tire noise. Skirting on the guideway attenuates this noise. The people mover would generate a maximum passby noise level of 77 dBA at fifty feet. Given the presence of trucks, buses, and motorcycles in the vehicle stream, it is anticipated that passby noise received at the residences along Highland from a people mover would be less than levels generated by vehicles on Highland Avenue.

3.17.3.8 Subsurface Conditions

Figure 3-34 in the Draft SEIS/SEIR indicates that the area near the Hollywood/Highland Station is within Group 2 in terms of the likelihood of encountering subsurface gas (Group 1 is most likely, Group 4 is least likely). Figure 3-33 of the Draft SEIS/SEIR indicates that the Connector would cross the Hollywood Fault. Design of any guideway, subsurface or aerial, would take this fault into consideration.

3.17.3.9 Construction Impacts

Construction impacts for the Connector would depend upon the type of guideway constructed. Using a bored tunnel technique, a subsurface guideway would have the least long-term impacts. Disruption at the surface would be limited to excavation portals and cut-and-cover construction, which could occur in the Highland Avenue street right-of-way between Hollywood Boulevard and a point just south of the Highland/Franklin intersection for the underground moving sidewalk. For the underground people mover, cut-and-cover construction could be used in the Highland Avenue street right-of-way between Hollywood Boulevard and Yucca Street and off-street near the Hollywood Bowl parking lot for an operations/maintenance center. Traffic and pedestrian circulation would be disrupted for specific periods of time, although traffic would operate once the trench was decked. The cut-and-cover area would be used as the excavation portal. Through traffic would be maintained, although at reduced capacity. Haul vehicles would have almost immediate access to the Hollywood Freeway but would traverse Highland Avenue. Mitigation measures for this form of construction are identified in Section 14.2.2, Chapter 3 of the Draft SEIS/SEIR. Cut-and-cover construction also would have the greatest impact on utilities.

Construction impacts of an aerial guideway on traffic can be reduced, if girders are lifted into place on pre-cast piers. Because Highland Avenue is heavily utilized for many hours of the day, substantial traffic disruption would be expected unless girder placement occurred at night. Temporary restrictions in pedestrian access to businesses during utility relocation, pier construction, and girder placement would occur. These impacts would be greatest for those businesses whose sole access is directly from the street (no side entrances), as is the case in the block immediately north of Hollywood Boulevard.

3.17.3.10 Cultural Resources

Four locations fronting onto Highland Avenue between Hollywood Boulevard and the Hollywood Freeway have been determined by the State Historic Preservation Officer (SHPO) to be potentially eligible for the National Register of Historic Places: The First Methodist Church at 6807 Franklin Avenue, the American Legion Hollywood Post at 2035 Highland, the Highland/Camrose Bungalow Village (6809-19 Camrose and 2103-2115 1/2 Highland), and the Hollywood Bowl. Other structures of historic merit that have not had a determination of eligibility from the SHPO include the Dekeyser Duplex at 1911 Highland and the Dekeyser Residence at 1913 Highland.

A subsurface guideway would almost certainly have "no effect" on these resources except the Hollywood Bowl. If an aerial guideway were constructed, there would be an "effect" on these resources. All the resources listed are on the west side of Highland Avenue. With the possible exception of the Dekeyser properties

and some of the bungalows, all would have visual exposure to an aerial alignment. A determination of the level of effects would have to be made in conjunction with the State Historic Preservation Office. There would be an effect on the Hollywood Bowl under any Connector option. Even subsurface alignments would require a station within the Bowl property, and the people mover would require an operations/maintenance facility. An aerial configuration would be more intrusive because of its visual presence in Highland Avenue and immediately in front of the Bowl parking lot. Nevertheless, a primary stimulus for providing the Connector is to enhance the viability of the Bowl in support of its historic status and use. The Connector would make the Bowl more competitive in maintaining its traditional role in serving special events in the community thus supporting the characteristics that make it eligible for the National Register.

3.17.4 Conclusions

The physical presence of an aerial Connector would cause visual and aesthetic impacts. It would take a lane from one of the busiest arterials in Los Angeles and either introduce undesirable operating conditions on Highland Avenue in the form of contraflow operations, or prevent the preferred directional usage Highland Avenue during peak periods. It would also require consultation with the State Historic Preservation Officer and compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 4(f) of the National Transportation Act of 1966, as amended. A subsurface alignment also would require compliance with these acts for the Hollywood Bowl. (These acts essentially require a finding that no prudent and feasible alternative exists to use of a National Register property and that all possible planning is done to minimize harm.) If an aerial guideway were constructed, it would probably be necessary to prohibit left turns to and from midblock locations. An elevated guideway would require property acquisition at the south end of the Connector to allow transition from the elevated guideway to the mezzanine level of the Hollywood/Highland Metro Rail Station. Subsurface Connector options present fewer environmental impacts, but are more costly to construct.

These impacts for the Connector are in addition to the impacts associated with Candidate Alignment 6 as described in this Addendum. Inasmuch as connector operations would most likely occur during Metro Rail off-peak periods, the patronage impacts should not require any resizing of the Hollywood/Highland Metro Rail Station.

CHAPTER 4: COST ANALYSIS OF CANDIDATE ALIGNMENTS

Operating costs, capital costs, and bus and rail patronage data for the bus and rail modes are presented in this chapter. Data are also included for the operable segments defined for each project option. Capital costs have been annualized and combined with annual operating costs to determine total annual costs, based on a 30-year life for rail facilities, a 100-year life for right-of-way, a 25-year life for rail cars, and a 12-year life for buses (as defined in "Procedures And Technical Methods For Transit Project Planning," UMTA, February 1986). The annualized capital costs are calculated with a discount rate of ten percent as recommended by the U.S. Department of Transportation. Cost efficiencies are calculated to provide a means of comparing the performance of project options. Additionally, a marginal cost analysis was performed to define the incremental financial burden associated with the construction and operation of an extended rapid rail system beyond that provided by MOS-1 under the Null Alternative.

Capital cost data have been revised since the November 1987 Draft SEIS/SEIR and hence are included here for comparison with Candidate Alignment 6. Capital costs for each alignment are presented in Table 13 for: construction and procurement; contingencies and design; right-of-way; and, insurance and other agency costs.

Revisions to the capital costs are based on comments received from the Project Management Oversight (PMO) contractor relative to their review of capital cost estimates for all candidate alignments as requested by UMTA. Revisions included the following:

- Construction and Procurement.

Contracts that have been let for projects on MOS-1 have a favorable bid experience relative to cost estimates. In an effort to reflect this bid experience, the costs as estimated for post-MOS-1 alignments were reduced to 97 percent of the construction and procurement estimate. This percentage reduction reflects the fact that some unit cost data were changed in light of bid experience while some were not. Bids have averaged about ten percent below estimates for MOS-1 contracts.

- Design and Construction Management.

Prior Method:	Thirteen percent of facilities costs and ten percent of system costs.
Revised Method:	Twenty percent of total facilities and systems costs.

- Agency Fee

Prior Method:	Five percent of total facilities and systems costs.
Revised Method:	Fourteen percent of total facilities and systems costs.

TABLE 13
 CAPITAL COSTS:
 CANDIDATE ALIGNMENTS AND OPERABLE SEGMENTS
 (Millions of 1985 Dollars)

Alignments & Segments	Construction and Procurement	Contingency, Design and Construction Management	Right- of- Way	Insurance and Agency*	Total
MOS-1	586	287	91	187	1,151
Alignment 1					
MOS-2	503	212	31	108	854
Cost to Complete	560	240	60	120	980
Total	1,063	452	91	228	1,834
Alignment 2					
MOS-2	507	220	72	109	908
Cost to Complete	504	220	83	108	916
Total	1,011	440	155	217	1,824
Alignment 3					
MOS-2	507	220	72	109	908
Cost to Complete	602	255	44	129	1,031
Total	1,109	475	116	238	1,939
Alignment 4					
MOS-2	501	222	105	108	936
Cost to Complete	551	241	91	118	1,001
Total	1,052	463	196	226	1,937
Alignment 5					
MOS-2	561	234	17	121	933
Cost to Complete	513	225	95	110	943
Total	1,074	459	112	231	1,876
Alignment 6					
MOS-2	514	230	120	111	975
Cost to Complete	547	238	80	118	982
Total	1,061	468	200	229	1,957

* Agency fees refer to SCRTD expenses for Metro Rail exclusive of consultant fees for design and construction management.

Source: SCRTD

- Insurance Fees

Prior Method: Seven and one half percent of total facilities and systems costs.
Revised Method: No change.

- Contingency Fees

Prior Method: Fifteen percent of facilities costs and ten percent of systems costs.
Revised Method: Fifteen percent of all costs including facilities, systems, right-of-way, and other fees.

These revised, add-on percentages are in substantial conformance with the suggestions included in the Project Management Oversight (PMO) Report (prepared by Hill International and received by SCRTD in November, 1987). The revisions have been reviewed by SCRTD staff and are considered to be reasonable and acceptable. Representatives of Los Angeles County Transportation Commission also consider the revisions to be reasonable and acceptable.

Costs are based on unit costs per linear foot of tunnel, aerial, and cut-and-cover construction and applied to lengths taken off current plan and profile sheets. Average costs are used for each station, with estimates of \$36 million for subway stations and \$9 million for aerial stations, and special costs for three of the stations (North Hollywood, Universal City, and the over-under Station at Wilshire/Vermont). Other costs for tail tracks, crossovers, systems, sound barrier walls, right-of-way, etc. were derived from earlier cost estimates based on specific quantities.

Annual bus and rail operating costs of the candidate alignments in the year 2000 are presented in Table 14 for MOS-1 plus MOS-2 and the full alignments.

The temporary terminals associated with the potential second operable segments for each candidate alignment are listed here in summary form from Chapter 2, Section 1 of the Draft SEIS/SEIR:

1. Candidate Alignment 1
MOS-2; Wilshire/Western and Vermont Sunset
MOS-2A; Wilshire/Western and Vermont/Santa Monica
MOS-2B; Wilshire/Vermont and Universal City
2. Candidate Alignment 2
MOS-2; Wilshire/Western and Hollywood/Vine
MOS-2A; Wilshire/Western and Universal City
MOS-2B; Wilshire/Vermont and Universal City
3. Candidate Alignment 3
MOS-2; Wilshire/Western and Hollywood Vine
MOS-2A; Wilshire/Vermont and Universal City

TABLE 14

YEAR 2000 BUS AND RAIL OPERATING COSTS
(Millions of 1985 Dollars)

<u>Alignment and Segments</u>	<u>Bus</u>	<u>Rail</u>	<u>Total Cost</u>
MOS-1	542.6	15.4	558.0
Alignment 1			
MOS-1 + MOS-2	537.2	24.2	561.4
Full Alignment	531.9	34.3	566.2
Alignment 2			
MOS-1 + MOS-2	535.3	27.8	563.1
Full Alignment	517.3	39.4	556.7
Alignment 3			
MOS-1 + MOS-2	535.3	27.8	563.1
Full Alignment	515.8	39.0	554.8
Alignment 4			
MOS-1 + MOS-2	531.0	27.6	558.6
Full Alignment	514.0	40.2	554.2
Alignment 5			
MOS-1 + MOS-2	533.4	25.7	559.1
Full Alignment	520.3	37.6	557.9
Alignment 6			
MOS-1 + MOS-2	532.6	27.6	560.2
Full Alignment	513.0	40.2	553.2

Source: SCRTD.

4. Candidate Alignment 4
 MOS-2; Wilshire/Western and Sunset/Vine
 MOS-2A; Wilshire/Western and Universal City
 MOS-2B; Wilshire/Vermont and Universal City

5. Candidate Alignment 5
 MOS-2; Wilshire/Western and Sunset/Vine
 MOS-2A; Wilshire/Western and Western/Santa Monica

6. Candidate Alignment 6
 MOS-2; Wilshire/Western and Hollywood/Vine
 MOS-2A; Wilshire/Western and Universal City
 MOS-2B; Wilshire/Vermont and Universal City.

4.1 ANALYSIS OF ANNUAL COSTS OF PROJECT OPTIONS

Table 15 shows a variation in total capital costs among the candidate alignments, ranging from a low of \$1,823.9 million for Candidate Alignment 2 to a high of \$1,956.9 million for Candidate Alignment 6. In total, the cost differential among the project options range \$133.0 million or about seven percent of the total estimated capital cost. A summary of the costs associated with each project option is presented below.

The Surface Transportation and Uniform Relocation Assistance Act of 1987 requires that, after the selection of a Final Locally Preferred Alternative by SCRFD and publication by UMTA of a Final SEIS/SEIR, UMTA negotiate a full funding contract with SCRFD to include construction of MOS-2. These costs must be validated prior to that negotiation.

4.2 COST ANALYSIS OF OPERABLE SEGMENTS

The estimated costs for the various operable segments (MOS-2's) of Candidate Alignment 6 are shown in Table 16. The respective costs of MOS-2, MOS-2A, and MOS-2B for Alignment 6 are \$975 million, \$1,374 million, and \$1,167 million. The range of costs associated with the MOS-2's of other candidate alignments range from a low of \$758 million for MOS-2A on Candidate Alignment 1 to a high of \$1,354 million for MOS-2A on Candidate Alignment 4.

The average costs and marginal costs shown in Table 16 are cost indices expressed in terms of dollars per passenger boarding. The sum of annualized capital cost and annual operating cost is divided by annual passenger boardings to produce average costs for the rail system alone and for the combined rail and bus system. The marginal cost analysis is based on the incremental change in costs and passengers relative to the Null Alternative (see Section 2, Chapter 5 of the Draft SEIS/SEIR). A brief discussion of the average cost and marginal cost indices for MOS-2 is presented below for Candidate Alignment 6. No information on operable segments is provided for the Null Alternative, because it represents MOS-1 only, with no further rail construction.

TABLE 15
COST EVALUATION OF PROJECT OPTIONS

	Candidate Alignments						Null Alt.
	CA1	CA2	CA3	CA4	CA5	CA6	
SYSTEM COSTS (1) (Millions of 1985 Dollars)							
Capital Costs							
• Bus Replacement	344.3	326.1	325.9	322.8	320.1	320.6	348.7
• Rail Construction	1833.8	1823.9	1938.7	1936.7	1875.7	1856.9	0
Annualized Capital Costs (2)							
• Bus Replacement	28.7	27.2	27.2	26.9	26.7	26.7	29.1
• Rail Construction	194.6	193.1	205.5	204.7	198.9	207	0
• Total	223.3	220.3	232.7	231.6	225.6	233.7	29.1
Annual Operating Costs							
• Bus	531.9	517.3	515.8	514.0	520.3	513.0	542.6
• Rail	34.3	39.4	39.0	40.2	37.6	40.2	15.4
• Total	566.2	556.7	554.8	554.2	557.9	553.2	558
Total Annual Costs							
• Bus	560.6	544.5	543.0	540.9	547	539.7	571.7
• Rail	228.9	232.5	244.5	244.9	236.5	247.2	15.4
• Total	789.5	777	787.5	785.8	783.5	786.9	587.1
AVERAGE COST ANALYSIS							
Passengers							
• Bus	487.9	469	459.6	464	473.3	464.9	405.1
• Rail	89.6	103.6	98.5	105.1	107.7	104.2	17
• Total	577.5	572.6	558.1	569.1	581	569.1	422.1
Annual Cost Per Passenger							
• Rail	2.55	2.24	2.48	2.33	2.20	2.37	.91
• Rail + Bus	1.37	1.36	1.41	1.38	1.35	1.38	1.39
Operating Efficiency (3)							
• Rail	.38	.38	.40	.38	.35	.39	.91
• Rail + Bus	.98	.97	.99	.97	.96	.97	1.32
MARGINAL COST ANALYSIS (4)							
Marginal Annual Cost Per Marginal Passenger							
• Rail	2.94	2.51	2.81	2.61	2.44	2.66	N/A
• Rail + Bus	1.30	1.26	1.47	1.35	1.24	1.36	N/A
Marginal Operating Efficiency							
• Rail	.26	.28	.29	.28	.24	.28	N/A
• Rail + Bus	.05	-.01	-.02	-.03	0	-.03	N/A
<p>(1) All System Costs exclude MOS-1 rail construction costs. MOS-1 has approved funding and is under construction.</p> <p>(2) Capital Costs are annualized using a 10% discount rate with an economic life of 30 years for the rail component and 12 years for buses.</p> <p>(3) Operating cost divided by passengers.</p> <p>(4) Marginal analysis is based on the incremental change in costs and passengers compared with the Null Alternative.</p>							
Source: SCRTD and General Planning Consultant.							

TABLE 16
COST EVALUATION OF ALTERNATIVE OPERABLE SEGMENTS

SYSTEM COSTS (1)	CANDIDATE ALIGNMENTS																	
	1			2			3		4			5		6			NULL ALT.	
	MOS-2	MOS-2A	MOS-2B	MOS-2	MOS-2A	MOS-2B	MOS-2	MOS-2A	MOS-2	MOS-2A	MOS-2B	MOS-2	MOS-2A	MOS-2	MOS-2A	MOS-2B		
Capital Costs																		
• Bus Replacement	\$346.5	\$353.1	\$350.7	\$348.7	\$339.5	\$350.7	\$348.7	\$350.7	\$347.3	\$342.0	\$350.7	\$346.5	\$348.3	\$349.9	\$340.7	\$351.7	\$348.7	
• Rail Construction	\$854.1	\$757.7	\$1,275.8	\$908.1	\$1,238.3	\$1,034.0	\$908.1	\$1,100.3	\$935.8	\$1,353.8	\$1,146.8	\$932.8	\$777.3	\$974.7	\$1,373.9	\$1,166.9	\$0	
Annualized Capital Costs (2)																		
• Bus Replacement	\$28.9	\$29.4	\$29.2	\$29.1	\$28.3	\$29.2	\$29.1	\$29.2	\$28.9	\$28.5	\$29.2	\$28.9	\$29.8	\$29.2	\$28.4	\$29.3	\$29.1	
• Rail Construction	\$90.7	\$80.5	\$135.1	\$96.2	\$131.0	\$109.3	\$96.2	\$116.4	\$98.9	\$142.9	\$121.0	\$99.2	\$82.7	\$102.9	\$145.1	\$123.1	\$0	
• Total	\$119.6	\$109.9	\$164.3	\$125.3	\$159.3	\$138.5	\$125.3	\$145.6	\$127.8	\$171.4	\$150.2	\$128.1	\$112.5	\$132.1	\$173.5	\$152.4	\$29.1	
Annual Operating Costs																		
• Bus	\$537.2	\$544.9	\$539.9	\$535.3	\$529.3	\$539.9	\$535.3	\$539.9	\$531.0	\$528.9	\$539.9	\$533.4	\$538.3	\$532.6	\$528.5	\$541.5	\$542.6	
• Rail	\$24.2	\$22.1	\$29.4	\$27.8	\$32.7	\$30.8	\$27.8	\$30.9	\$27.6	\$32.8	\$30.9	\$25.7	\$23.4	\$27.6	\$32.8	\$30.9	\$15.4	
• Total	\$561.4	\$567.0	\$569.3	\$563.1	\$562.0	\$570.7	\$563.1	\$570.8	\$558.6	\$561.7	\$570.8	\$559.1	\$561.7	\$560.2	\$561.3	\$572.4	\$558.0	
Total Annual Costs																		
• Bus	\$566.1	\$574.3	\$569.1	\$564.4	\$557.6	\$569.1	\$564.4	\$569.1	\$559.9	\$557.4	\$569.1	\$562.3	\$568.1	\$561.8	\$556.9	\$570.8	\$571.7	
• Rail	\$114.9	\$102.6	\$164.5	\$124.0	\$163.7	\$140.1	\$124.0	\$147.3	\$126.5	\$175.7	\$151.9	\$124.9	\$106.1	\$130.5	\$177.9	\$154.0	\$15.4	
• Total	\$681.0	\$676.9	\$733.6	\$688.4	\$721.3	\$709.2	\$688.4	\$716.4	\$686.4	\$733.1	\$721.0	\$687.2	\$674.2	\$692.3	\$734.8	\$724.8	\$587.1	
AVERAGE COST ANALYSIS																		
Passengers																		
• Bus	493.3	500.5	498.1	489.2	492.4	498.1	489.2	498.1	486.4	486.1	498.1	491.5	498.4	486.1	484.8	498.7	405.1	
• Rail	73.0	72.4	84.2	78.8	87.6	84.2	78.8	84.2	81.2	89.7	88.5	83.9	80.3	81.0	88.2	88.8	17.0	
• Total	566.3	572.9	582.3	568.0	580.0	582.3	568.0	582.3	567.6	575.8	586.6	575.4	578.7	567.1	573.0	587.5	422.1	
Annual Cost Per Passenger																		
• Rail	\$1.57	\$1.42	\$1.95	\$1.57	\$1.87	\$1.66	\$1.57	\$1.75	\$1.56	\$1.96	\$1.72	\$1.49	\$1.32	\$1.61	\$2.02	\$1.73	\$0.91	
• Rail + Bus	\$1.20	\$1.18	\$1.26	\$1.21	\$1.24	\$1.22	\$1.21	\$1.23	\$1.21	\$1.27	\$1.23	\$1.19	\$1.17	\$1.22	\$1.28	\$1.23	\$1.39	
Operating Efficiency (3)																		
• Rail	\$0.33	\$0.31	\$0.35	\$0.35	\$0.37	\$0.37	\$0.35	\$0.37	\$0.34	\$0.37	\$0.35	\$0.31	\$0.29	\$0.34	\$0.37	\$0.35	\$0.91	
• Rail + Bus	\$0.99	\$0.99	\$0.98	\$0.99	\$0.97	\$0.98	\$0.99	\$0.98	\$0.98	\$0.98	\$0.97	\$0.97	\$0.97	\$0.99	\$0.98	\$0.97	\$1.32	
MARGINAL COST ANALYSIS (4)																		
Marginal Annual Cost Per Marginal Passenger																		
• Rail	\$1.78	\$1.57	\$2.22	\$1.76	\$2.10	\$1.86	\$1.76	\$1.96	\$1.73	\$2.20	\$1.91	\$1.64	\$1.43	\$1.80	\$2.28	\$1.93	N/A	
• Rail + Bus	\$0.65	\$0.60	\$0.91	\$0.69	\$0.85	\$0.76	\$0.69	\$0.81	\$0.68	\$0.95	\$0.81	\$0.65	\$0.56	\$0.73	\$0.98	\$0.83	N/A	
Marginal Operating Efficiency																		
• Rail	\$0.16	\$0.12	\$0.21	\$0.20	\$0.25	\$0.23	\$0.20	\$0.23	\$0.19	\$0.24	\$0.22	\$0.15	\$0.13	\$0.19	\$0.24	\$0.22	N/A	
• Rail + Bus	\$0.02	\$0.06	\$0.07	\$0.03	\$0.03	\$0.08	\$0.03	\$0.08	\$0.00	\$0.02	\$0.08	\$0.01	\$0.02	\$0.02	\$0.02	\$0.09	N/A	

(1) All System Costs represented in Millions of 1985 Dollars. All System Costs exclude MOS MOS-1 has approved funding and is under construction.

(2) Capital Costs are annualized using a 10% discount rate with an economic life of 30 years for the rail component and 12 years for buses.

(3) Operating cost divided by passengers.

(4) Marginal analysis is based on the incremental change in costs and passengers relative to the Null Alternative.

NOTE: This data has not been validated for the purposes of UMTA cost effectiveness determinations.

Source: SCRFD and General Planning Consultant.

For MOS-2, the annualized capital costs of Candidate Alignment 6 are \$102.9 million for rail construction and \$29.2 million for bus replacement. The calculation of annual cost per passenger for the rail and bus system yields indices of \$1.22, \$1.28, and \$1.23 million for MOS-2, MOS-2A, and MOS-2B, respectively. MOS-2A, which extends the rail line to Universal City and Wilshire/Western, has an annualized construction cost of \$145.1 million. MOS-2B also extends the rail line to Universal City but stops at Wilshire/Vermont rather than at Wilshire/Western and has an annualized construction cost of \$123.1 million.

The marginal cost of providing rail service with the implementation of MOS-2 would be \$1.80 per year per passenger over the 30 year life of the system. The marginal cost for the regional transit system (rail and bus) would be \$0.73. The marginal operating efficiency of rail service (or operating cost per passenger per day) would be 19 cents for the rail system and 2 cents for the combined rail/bus system. Comparable marginal costs for MOS-2B are \$1.93 per year per passenger for rail alone and \$0.83 for the rail and bus system.

4.3 PRELIMINARY FINANCIAL PLANNING

Anticipated sources for capital funds for construction of Metro Rail are:

- UMTA Section 3 and Section 9 grants
- State Guideway Fund
- City of Los Angeles
- Local private sources (i.e., Benefit Assessment Districts), and
- Proceeds of the one-half cent sales tax in Los Angeles County, as administered by the Los Angeles County Transportation Commission.

The Full Funding Contract for the construction of MOS-1 provided for the authorization of \$401,648,114 as the Federal share of construction cost, while acknowledging a shortfall of \$203,651,886 in the proposed \$605,300,000 Federal Section 3 requirement for MOS-1. The 1987 Highway Bill (H.R.2) was passed by Congress and included an authorization of \$870,000,000 for Metro Rail. About \$666.3 million will be available for the construction of MOS-2, the second construction segment of Metro Rail (Table 17). The remaining portion of MOS-2 construction costs is to be funded by State, local and private sources as outlined. Additional funding from UMTA Section 9 grants may be authorized as well. The commitments of the funding partners to MOS-2 construction are being finalized at this time.

TABLE 17

METRO RAIL PROPOSED FUNDING SUMMARY FOR OPERABLE SEGMENTS
(Millions of Dollars)

Options		Construction Cost (12/85 \$'s)	Construction Cost (Escalated \$'s)	Funding Sources		
				UMTA Sec. 3	Sec. 9	Non- Federal
MOS-1	(Union Station, Wilshire/Alvarado)	1,151	1,250	605	91	554
Alignment 1						
MOS-2	(Wilshire/Western, Vermont/Sunset)	854	1,069	666	0	403
MOS-2A	(Wilshire/Western, Vermont/Santa Monica)	758	948	666	0	282
MOS-2B	(Wilshire/Vermont, Universal City)	1,276	1,597	666	60	871
Alignment 2						
MOS-2	(Wilshire/Western, Hollywood/Vine)	908	1,137	666	0	471
MOS-2A	(Wilshire/Western, Universal City)	1,238	1,550	666	60	824
MOS-2B	(Wilshire/Vermont, Universal City)	1,034	1,294	666	0	628
Alignment 3						
MOS-2	(Wilshire/Western, Hollywood/Vine)	908	1,137	666	0	471
MOS-2A	(Wilshire/Vermont, Universal City)	1,100	1,377	666	0	711
Alignment 4						
MOS-2	(Wilshire/Western, Sunset/Vine)	936	1,171	666	0	505
MOS-2A	(Wilshire/Western, Universal City)	1,354	1,694	666	60	968
MOS-2B	(Wilshire/Vermont, Universal City)	1,147	1,435	666	0	769
Alignment 5						
MOS-2	(Wilshire/Western, Sunset/Vine)	933	1,167	666	0	501
MOS-2A	(Wilshire/Western, Western/Santa Monica)	777	973	666	0	307
Alignment 6						
MOS-2	(Wilshire/Western, Hollywood/Vine)	975	1,220	666	0	554
MOS-2A	(Wilshire/Western, Universal City)	1,374	1,720	666	60	994
MOS-2B	(Wilshire/Vermont, Universal City)	1,167	1,461	666	0	795

Source: SCRTD; General Planning Consultant.

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LIST OF PREPARERS

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