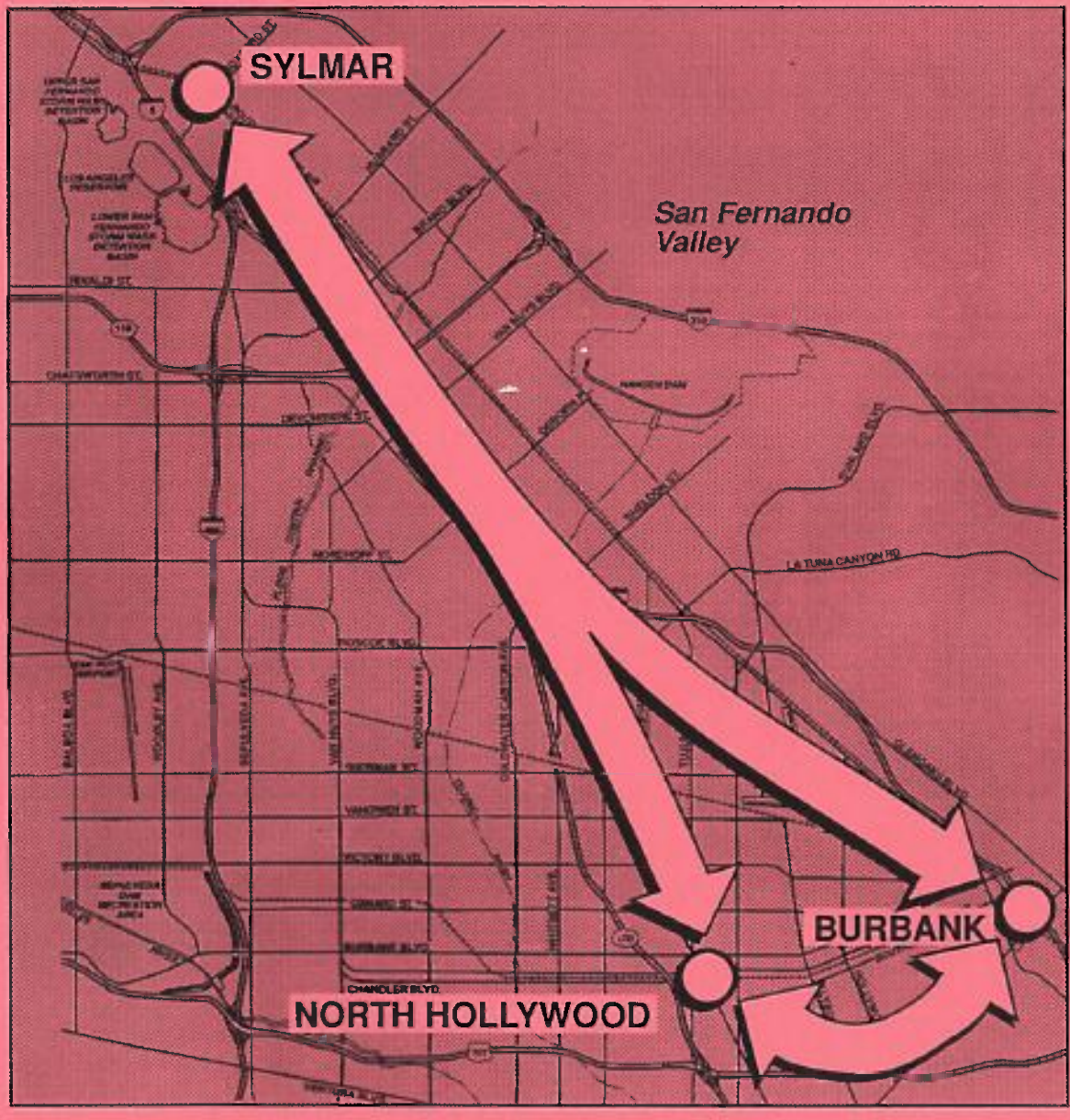
NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

Final Report

October 1992



BRW

Myra Frank & Assoc.

FINAL REPORT

NORTHEAST SAN FERNANDO VALLEY

TRANSIT CORRIDORS STUDY

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1.0 Introduction and Summary

This report documents the analysis and results of the Northeast San Fernando Valley Transit Corridors Study. Figure 1-1 displays the regional location of the Northeast San Fernando Valley Study area.

1.1 STUDY PURPOSE

The purpose of the Northeast San Fernando Valley Transit Corridor Study was to evaluate the feasibility of various transit linkages and technologies in the Northeast San Fernando Valley. More specifically, this Study was designed to address the feasibility of two major transit service objectives:

1. Possible extension of the Metro Red Line from its currently planned terminus in North Hollywood into the Northeast San Fernando Valley via a broadly defined Northeast Valley Corridor. A range of potential alignment options representative of typical corridor conditions in the study area were identified and evaluated for the purpose of identifying typical opportunities, impacts and constraints associated with possible extension of the Red Line.

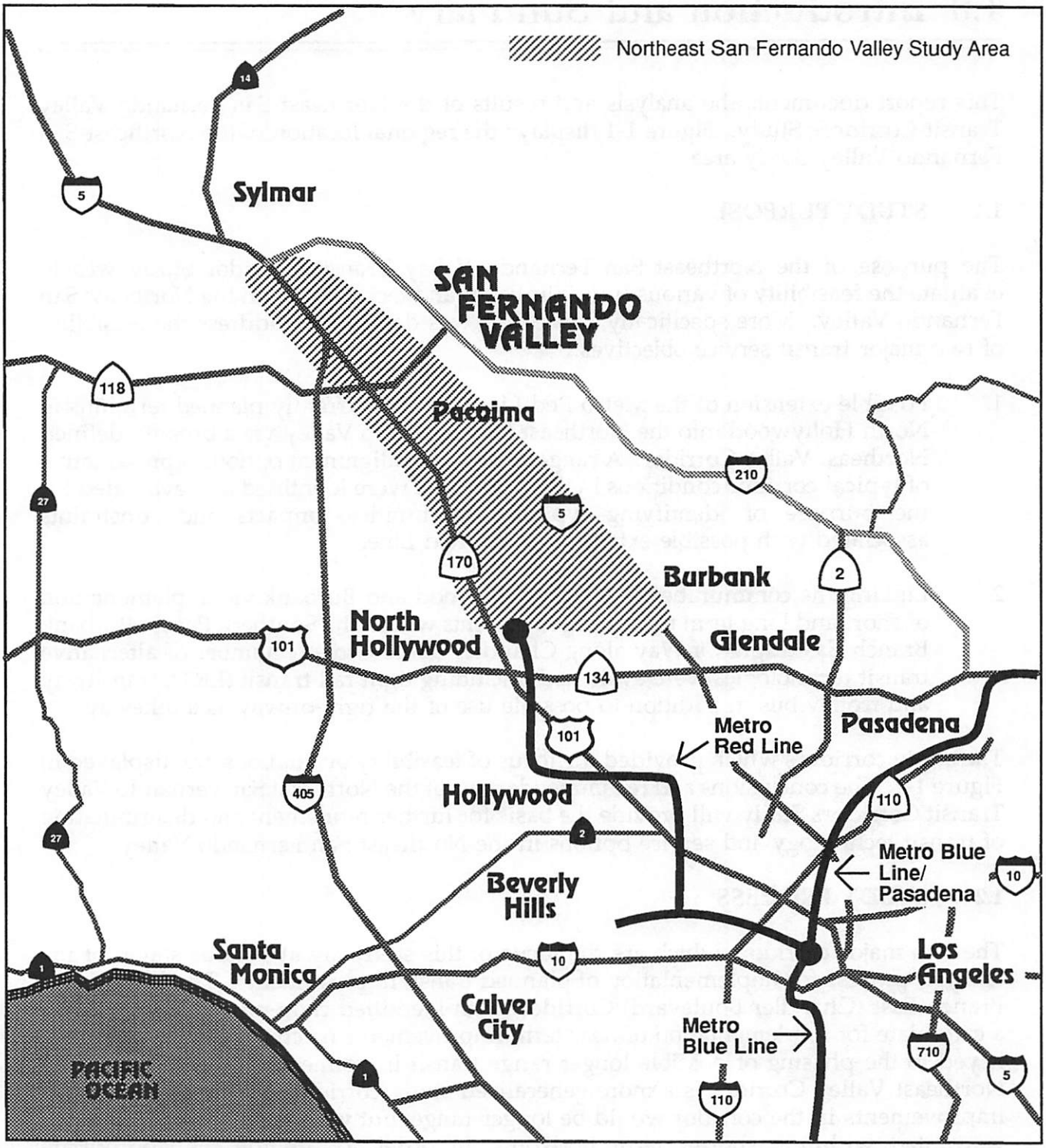
2. Linking the communities of North Hollywood and Burbank via implementation of short and long term transit improvements within the Southern Pacific Burbank Branch East Right-Of-Way along Chandler Boulevard. A number of alternative transit technologies were evaluated, including light rail transit (LRT), transitway and trolley bus in addition to possible use of the right-of-way as a bikeway.

The study corridors which provided the focus of feasibility evaluations are displayed in Figure 1-2. The conclusions and recommendations of the Northeast San Fernando Valley Transit Corridors Study will provide the basis for further refinement and determination of transit technology and service options in the Northeast San Fernando Valley.

1.2 STUDY PROCESS

The two major corridors which are the focus of this study are at various stages of the analysis process for implementation of planned transit improvements. The SP Burbank Branch East (Chandler Boulevard) Corridor, with identified right-of-way, is viewed as a candidate for implementation of near term improvements (such as bikeway facilities) keyed to the phasing of possible longer range transit investments in the corridor. The Northeast Valley Corridor is a more generalized study corridor and any major transit improvements in the corridor would be longer range, but with some features possibly warranted within a shorter term horizon. In order to provide the appropriate perspective, the study approach, objectives, and level of detail varied by corridor as follows:

Regional Location



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Scale: miles

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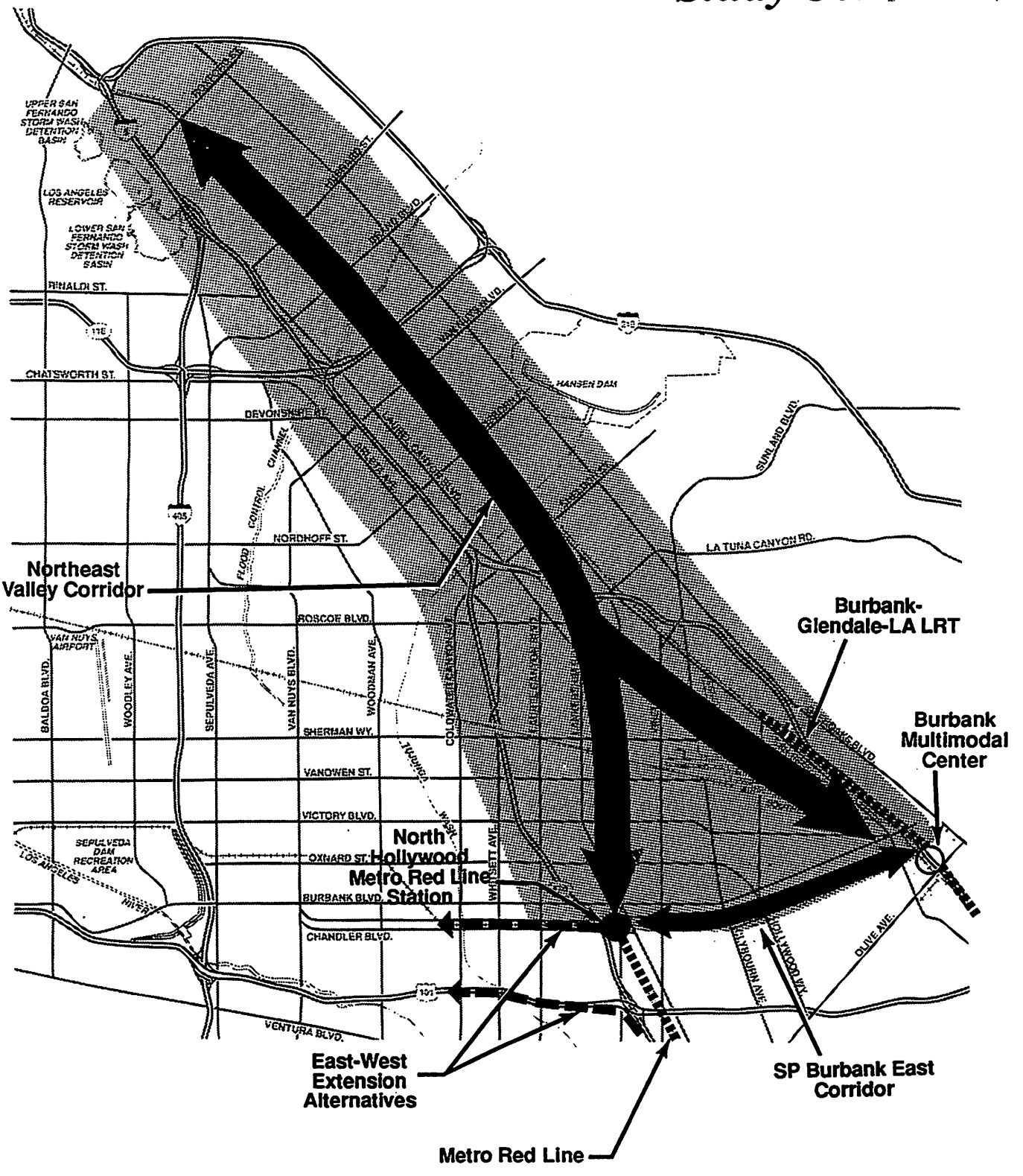
Source: BRW, Inc., 31 July 1992

Northeast San Fernando Valley Study Corridors



Source: BRW, Inc. 6 October 1992

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SP Burbank Branch East (Chandler Boulevard) Corridor: The SP Burbank Branch ROW between North Hollywood and Burbank is presently being considered for possible acquisition by the LACTC in cooperation with the cities of Burbank and Los Angeles. Use of the corridor for implementation of transit and bikeway improvements could include a number of near term options coordinated with the need for longer range transit investments. Because the alignment is for the most part fixed, the primary study objective is the identification of preferred transit technologies and required system linkages. This level of determination requires detailed evaluation of a number of transit technology alternatives and detailed identification of impacts, costs, and phasing options. Plan and profile drawings (400-foot scale) were developed to assist in the evaluation assessment of corridor alternatives.

Northeast Valley Corridor: The extension of the Red Line into the Northeast San Fernando Valley is viewed as a possible long-term option with no definitive corridor or alignment identified. As the first look at possible extension of the Red Line in this manner, the study approach includes a reconnaissance-level assessment of key issues that may affect implementation. A number of route alignments have been selected to illustrate a range of possible options for further consideration, as opposed to identification and selection of preferred alignment locations: "What if issues" are addressed such as:

- If the Red Line were extended into the Northeast San Fernando Valley, how could it be done?;
- What are some of the options that are feasible for further consideration?;
- What issues and impacts are likely?

Typical conditions are identified and evaluated, as opposed to a more exhaustive evaluations of all conditions that may be present in the corridor study area. More generalized plan view drawings (400-foot scale) are developed to assist in the identification of possible impacts. Based upon the results of this initial study, subsequent studies will be required to undertake more detailed analyses, evaluations, and alignment selection tasks.

1.3 SUMMARY OF FINDINGS AND RECOMMENDATIONS

This Study was conducted to evaluate the feasibility of various transit linkages and technologies in the Northeast San Fernando Valley. Previous studies have identified the Study Area as heavily transit dependent and relatively underserved. A number of regional projects identified in the 30-year Integrated Transportation Plan offer opportunities to provide additional connections to the Northeast San Fernando Valley.

This Study evaluated a number of alignment and profile options for possible northeasterly extension of the Red Line from North Hollywood to Sylmar. Transitway,

Light Rail, and bikeway improvements were evaluated for possible application in the SP Burbank Branch East Corridor, to provide an important link between North Hollywood and Burbank.

Each of the corridors were found to provide a number of key opportunities to improve regional transit services to the Northeast San Fernando Valley as discussed below:

SP Burbank Branch East (Chandler Boulevard) Corridor

1. The corridor offers unique opportunities to establish a multimodal transportation corridor between North Hollywood and Burbank.

2. The LACTC and the Cities of Burbank and Los Angeles should ensure the preservation of the corridor right-of-way as a transportation corridor.

3. The provision of bikeway improvements and supporting corridor enhancements as near-term measures will signal LACTC's commitment to alternate modes, while providing a viable interim use for the corridor right-of-way.

4. A Bus Transitway is the preferred longer-term transit improvement for the corridor based upon lower anticipated costs and impacts, enhanced transit operations, and high compatibility with regional transportation systems.

5. The facility and service design of a Bus Transitway should be sensitive to the surrounding residential areas and possible community concerns.

6. A Light Rail Transit (LRT) alignment within the corridor would result in significant costs and unacceptable impacts to adjacent residential areas.

7. The Bus Transitway should be limited to transit vehicles only, and utilization of alternative vehicle technologies and fuel types should be promoted.

8. Establishment of through-linkage capabilities with other regional transit facilities will be the key to the long term success of transit improvements in the corridor.

9. The type of bikeway facility (Class I, II, or III) which will serve as a suitable adjunct to transit improvements in the corridor will need to be refined by subsequent studies.

10. Implementation of a Bus Transitway would allow for future transit guideway implementation should corridor conditions or linkages change.

Northeast Valley Corridor

1. Corridor Options for extension of the Red Line include a variety of right-of-way and profile types.

2. Key Corridor Options include:

   - An elevated Heavy Rail (HRT) guideway in the median of SR-170 and I-5;
   - Northerly extension of Heavy Rail (HRT) via subway below a number of possible arterial roadways with possible linkages with Light Rail (LRT) along the SP Santa Clarita Line.

3. Terminus options include:

   - Burbank Airport
   - LAX/Palmdale Station (I-5/Roxford)
   - LRT/Commuter Rail Stations along the SP Santa Clarita Line
   - A potential regional Park-and-Ride facility located between Victory Boulevard and Sherman Way and providing possible Metrolink access.

4. Total costs will vary from a low of approximately $445 Million for Corridor Option E which includes LRT at-grade, to $1,500 Million for Corridor Option A which includes a HRT aerial guideway within the median of SR-170 and I-5.

5. The ridership potential of the Red Line extension will vary based upon route alignment, travel times between North Hollywood and Sylmar, and the level of transit accessibility and service provided to the principal activity centers and areas of high trip generation in the Northeast Valley Corridor.

6. A link for further consideration is possible extension of the transit technology along the SP Burbank Branch East Corridor (Bus Transitway as recommended by this Study) northward along Lankershim Boulevard to connect with San Fernando Road, the SP Santa Clarita ROW, and possible Metrolink station in Sun Valley.

Based upon the study conclusions, the following are the recommendations resulting from the Study:

1. The LACTC should identify the SP Burbank Branch East ROW as a multimodal transportation corridor.

2. A Bus Transitway should be identified as the preferred transit facility improvement for the SP Burbank Branch East ROW, with a bikeway being the preferred near-term corridor project.

3. The LACTC, in conjunction with the Cities of Burbank and Los Angeles should initiate a study of Chandler Boulevard to identify supporting traffic circulation, land use access, and bikeway improvements.

4. The LACTC should coordinate proposed corridor improvements in the SP Burbank Branch East ROW and Northeast Valley Corridor with other regional transit improvements including bus electrification, alternative fuels, local bus route restructuring, Metrolink, Glendale/Burbank LRT and Commuter Rail.

5. The Northeast Valley Corridor should be incorporated in the 30-year Integrated Transportation Plan as an Unfunded Project. The use of phasing strategies should be considered to increase the funding priority of the Corridor.

6. Future studies of the North Hollywood Red Line terminus should incorporate findings of this Study and should not preclude the extension options identified.

7. When the in-house LACTC modeling capability is available, detailed patronage forecasts should be developed and utilized to identify and refine Red Line extension Corridor Options for further study in the Northeast Valley Corridor.

1.4 REPORT ORGANIZATION

Following this **Introduction and Summary Chapter**, the report is organized into the following sections:

2.0 Study Background - provides relevant study area background information on existing and planned residential and employment activity centers, travel demands, and planned transportation improvements.

3.0 Southern Pacific Burbank Branch East (Chandler Boulevard) Corridor - documents the result of the detailed transit technology and bikeway assessments, including evaluation of environmental impacts, engineering feasibility, transit operations, and cost estimates.

4.0 Northeast Valley Corridor - documents the identification of typical corridor and profile options in the study corridor and the generalized evaluation of environmental impacts, engineering feasibility, transit operations, and capital costs.

5.0 Evaluation Summary of Study Corridors and Implementation Options - provides a summary of study corridor evaluations, key findings, observations and recommendations. Included are identification of implementation options and recommendations for further study.

2.0 Study Background

2.1 STUDY AREA

The study area consists of the northeast portion of the San Fernando Valley. The San Fernando Valley covers approximately 260 square miles located northwest of Downtown Los Angeles. As defined by this study, the study area consists of the northeast portion of the San Fernando Valley, the area bounded by the Hollywood Freeway (SR-170) to the west, Chandler Boulevard to the south, the Foothill Freeway (I-210) to the east, and the junction of the Golden State (I-5) and Foothill Freeways to the north. The study area is heavily urbanized and residential land uses predominate. Local topography is relatively flat with no significant landforms.

2.2 STUDY AREA ACTIVITY CENTERS, POPULATION AND EMPLOYMENT

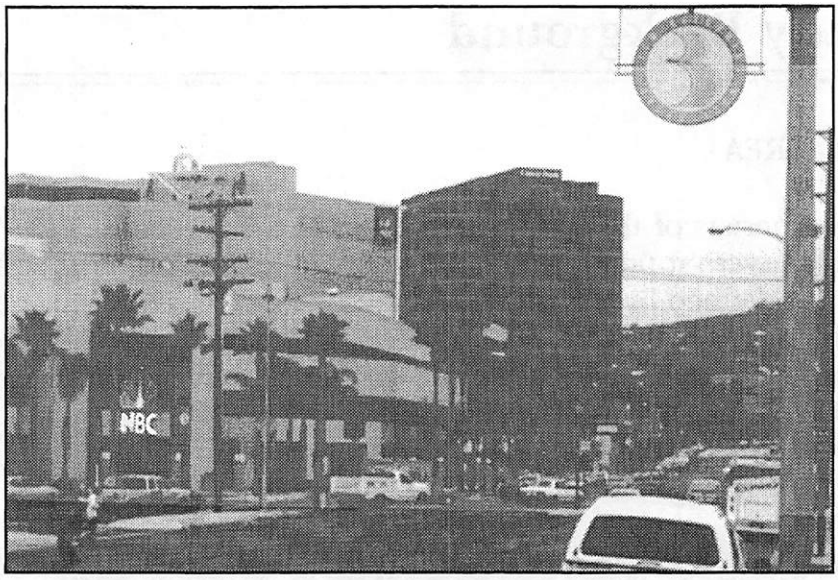
2.2.1 Land Use and Activity Centers

The San Fernando Valley is a highly developed urban environment with a relatively balanced mix of housing and jobs. In 1987, the jobs to housing ratio for the Valley was 1.39, implying a relative balance of housing and employment opportunities. On an individual community basis, however, there are distinct job-rich and housing-rich areas. Job-rich areas in 1987 included Universal City (5.00+), Chatsworth (2.34), San Fernando (2.10), Sun Valley (2.00), and Burbank (1.65). Job-poor communities include Sunland (0.38), Granada Hills (0.82), Sylmar (0.85) and North Hollywood (0.86).

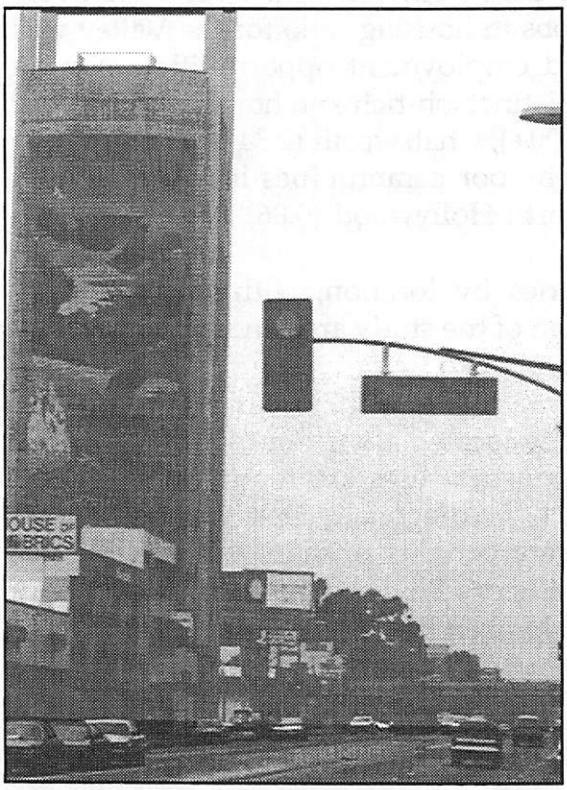
The residential character of the study area varies by location, with lower density development more common in the northern portion of the study area and higher density development more typical of the southern portion.

Major industrial uses in the study area are typically located along Southern Pacific (SP) railroad lines. The greatest concentrations of industrial uses are found along the SP Santa Clarita rail line and San Fernando Road which run diagonally, northwest-southeast through the study area. Commercial development consists primarily of low-density strips located on major arterial roadways, such as Victory Boulevard, Sherman Way, Van Nuys Boulevard, Laurel Canyon Boulevard, and Lankershim Boulevard.

The study area contains several major activity centers including a number of major trip generators depicted in the following photographs.



The Burbank Media District - a major concentration of higher density mixed-use developments and high-rise office uses located in the southern portion of the study area.



Valley Plaza and Laurel Plaza Centers - major retail centers located near the Hollywood Freeway and Victory Boulevard.

Burbank/Glendale/Pasadena Airport - this facility serves approximately 2.0 million passengers annually and is located in the center of the study area.

Figure 2-1 displays major activity centers located within the Northeast San Fernando Valley.

2.2.2 Population and Employment

According to estimates prepared by the Southern California Association of Governments (SCAG), the Valley contained a population of approximately 1,300,000 people housed in just over 479,000 housing units in 1987.

TABLE 2.1

1987 POPULATION DISTRIBUTION

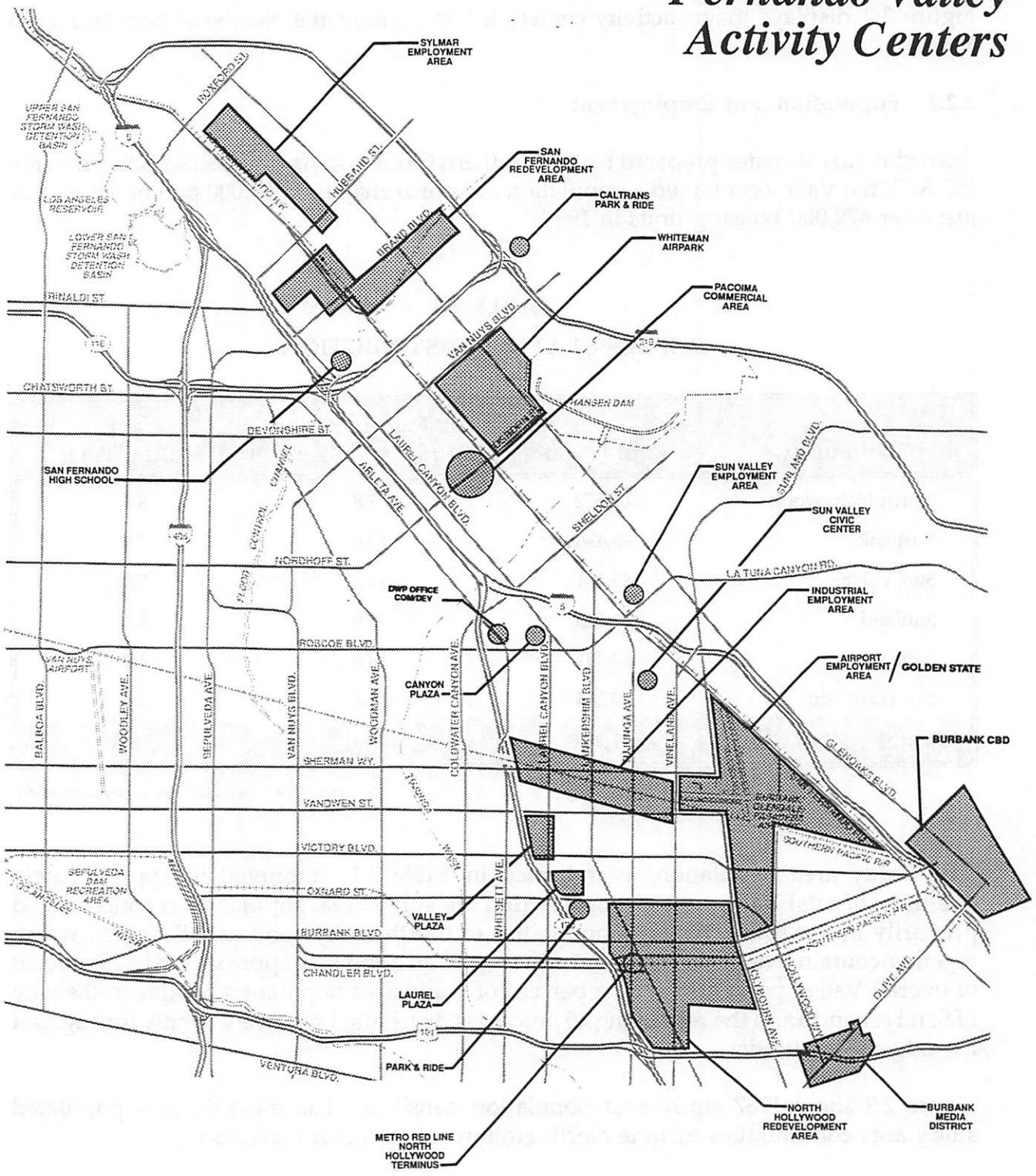
Community	Population	Percent of Study Area Total	Percent of Valley Total
North Hollywood	108,572	27.8	8.6
Burbank	88,436	22.6	7.0
Sun Valley	65,184	16.7	5.2
Sunland	54,603	13.9	4.3
Sylmar	54,081	13.8	4.3
San Fernando	20,264	5.2	1.6
Total	391,140	100.0	31.0

SOURCE: SCAG 1989 and Terry A. Hayes Associates.

1987 Study area population, as indicated in Table 2.1, amounted to approximately one-third of total Valley population. Within the study area, population is concentrated primarily in the south, in the communities of North Hollywood and Burbank, which together contain over 50 percent of study area population and approximately 15 percent of overall Valley population. Five percent of study area population resides in the City of San Fernando and the remaining 45 percent is distributed relatively evenly throughout the other communities.

Figure 2.2 show 1987 study area population densities. The most densely populated study area communities include North Hollywood and San Fernando.

Northeast San Fernando Valley Activity Centers



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Approximate Scale

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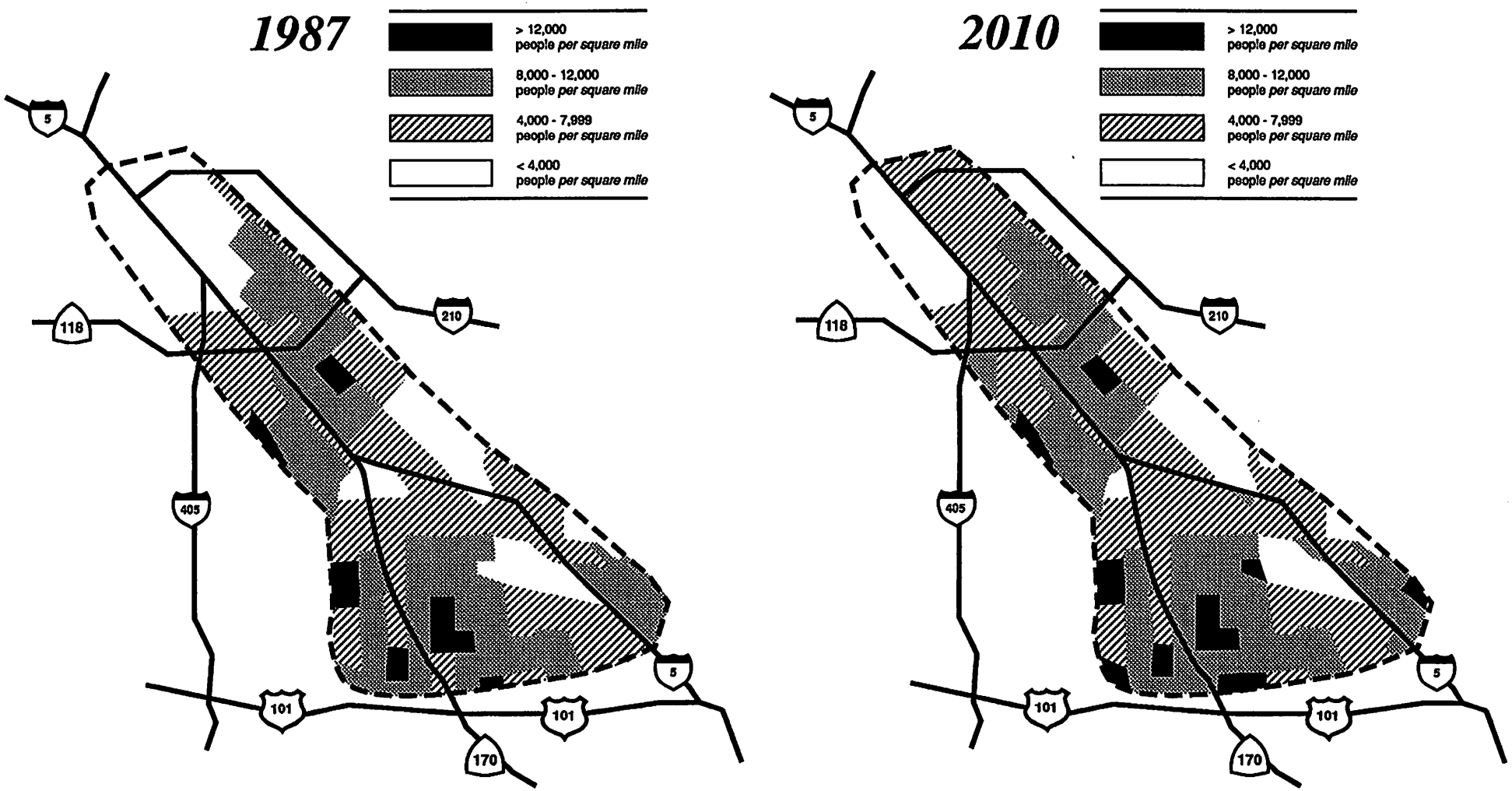
Source: BRW, Inc., MAY 1992

Northeast San Fernando Valley Study Area Population Densities



Source: SCAG; LACTC *Geographic Information Systems*
March 1992

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Not to Scale

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Employment in the San Fernando Valley was estimated for 1987 to be approximately 666,500, approximately 27 percent (180,600) of which occurred in Northeast San Fernando Valley communities. Table 2.2 depicts 1987 study area employment and its distribution throughout the study area. The highest employment levels are found in the City of Burbank, which in 1987 accounted for approximately 35 percent of study area employment and 9 percent of total Valley employment.

TABLE 2.2

1987 EMPLOYMENT DISTRIBUTION

Community	Population	Percent of Study Area Total	Percent of Valley Total
Burbank	62,494	34.6	9.4
Sun Valley	43,260	23.9	6.5
North Hollywood	41,638	23.1	6.2
Sylmar	13,928	7.8	2.1
San Fernando	12,055	6.6	1.8
Sunland	7,256	4.0	1.1
Total	180,631	100.0	27.1

SOURCE: SCAG 1989 and Terry A. Hayes Associates.

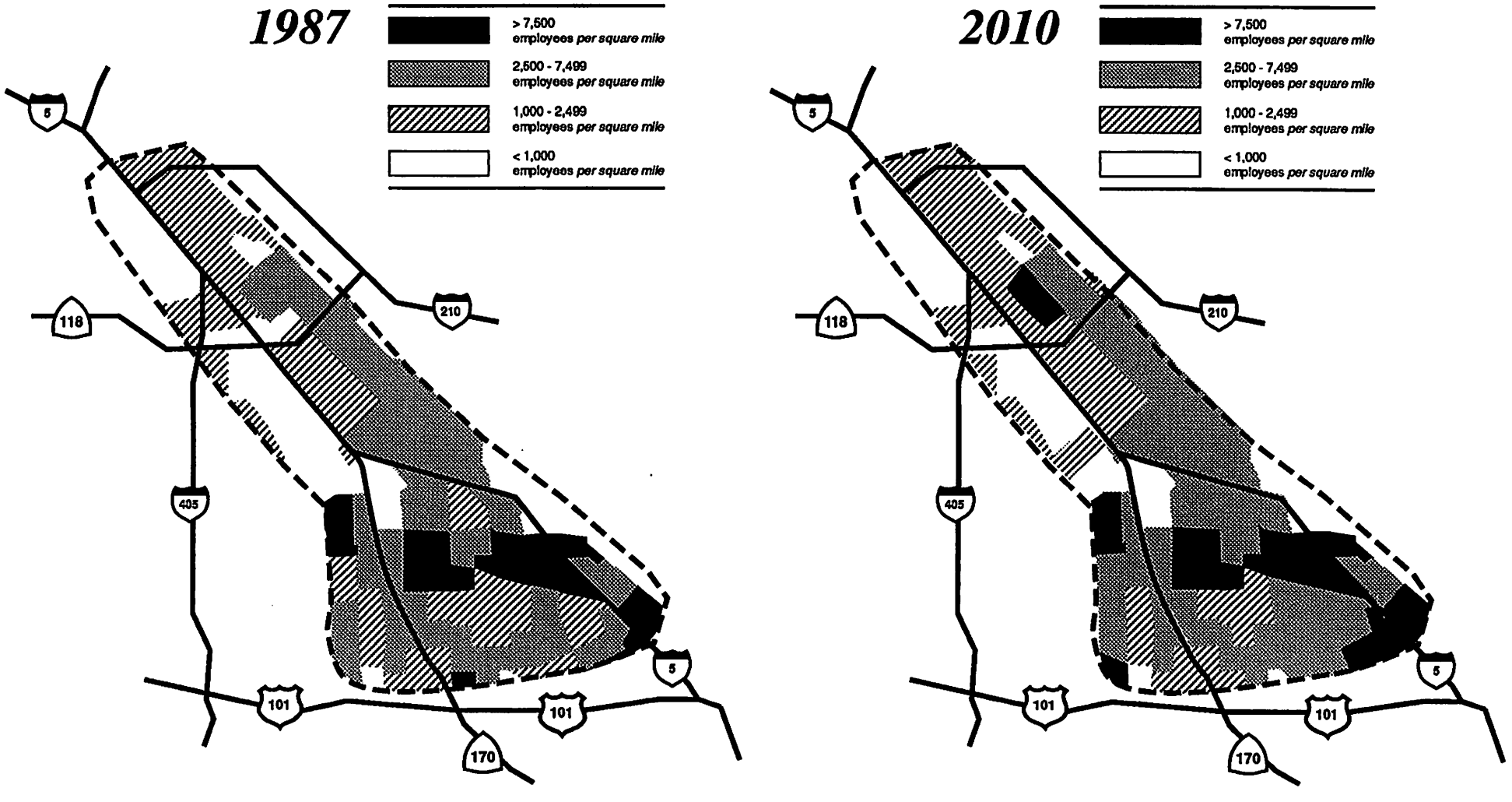
Figure 2-3 depicts study area employment densities. Employment is most concentrated in the communities of San Fernando, North Hollywood and Burbank.

2.2.3 Population and Employment Growth

Both population and employment in the San Fernando Valley are forecast to increase significantly by the year 2010. Valley population is projected to increase by approximately 28 percent and employment by 16 percent.

Table 2.3 displays forecasted study area population for the year 2010 and illustrates the projected change in each community's share of study area and total Valley population. The greatest percentage increases in population are forecasted for the communities of

Northeast San Fernando Valley Study Area Employment Densities



Source: SCAG; LACTC *Geographic Information Systems*
March 1992

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Not to Scale

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Burbank, Sunland, Sun Valley and Sylmar, all of which will increase their share of study area population over 1987 levels.

TABLE 2.3
2010 POPULATION DISTRIBUTION

Community	Population	Change 1987 - 2010	Percent Change 1987 - 2010	Change in Percent Study Area Total	Change in Percent Valley Total
North Hollywood	116,468	+7,896	+7.3	-2.0	-1.4
Burbank	107,557	+19,121	+21.6	+1.2	-0.3
Sun Valley	77,800	+12,616	+19.4	+0.5	-0.4
Sunland	66,136	+11,533	+21.1	+0.7	-0.2
Sylmar	63,307	+9,226	+17.1	+0.1	-0.4
San Fernando	21,000	+736	+3.6	-0.6	-0.3
Total	452,268	+61,128	+15.6	—	—

SOURCE: SCAG 1989 and Terry A. Hayes Associates.

Forecasted population densities for study area communities are also shown in Figure 2-2. As with population growth, the greatest increase in population densities is expected in the communities of Burbank, Sun Valley, Sunland and Sylmar.

As shown in Table 2.4, Northeast San Fernando Valley study area employment is expected to increase at a faster rate than Valley-wide employment (22 percent versus 16 percent). The greatest increase in employment is forecasted for the City of Burbank, which will increase by 32 percent.

TABLE 2.4

2010 EMPLOYMENT DISTRIBUTION

Community	Population	Change 1987 - 2010	Percent Change 1987 - 2010	Change in Percent Study Area Total	Change in Percent Valley Total
Burbank	82,504	+20,010	+32.0	+2.9	+1.2
Sun Valley	48,516	+5,256	+12.1	-1.9	-0.2
North Hollywood	47,069	+5,431	+13.0	-1.8	-0.1
Sylmar	17,870	+3,942	+28.3	+0.4	-0.2
San Fernando	15,879	+3,824	+31.7	-4.9	+0.2
Sunland	8,750	+1,494	+20.6	-0.7	0.0
Total	220,558	+39,927	+22.1	---	---

SOURCE: SCAG 1989 and Terry A. Hayes Associates.

Forecasted 2010 employment densities are also displayed in Figure 2-3. Employment densities are forecasted to increase between 12 and 32 percent among study area communities, with the greatest density increases occurring in Burbank and San Fernando.

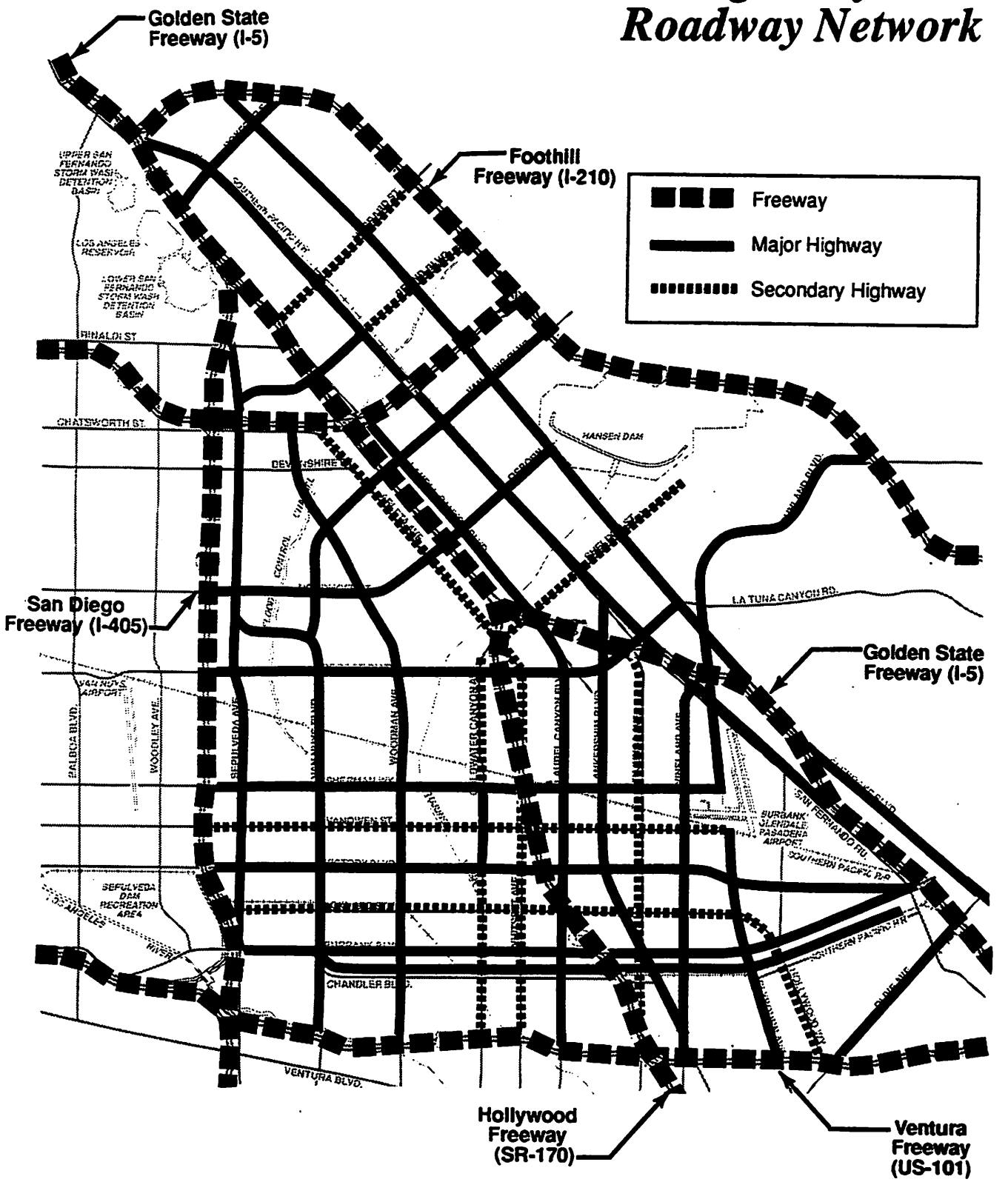
2.3 TRANSPORTATION SYSTEMS AND TRAVEL DEMAND

2.3.1 Existing Freeway and Arterial Systems

The Northeast San Fernando Valley is served by several regional freeways and an extensive underlying grid system of major, secondary and local roadways. An extensive network of express and local bus routes service the study area and although no existing intracity passenger rail service currently exists, several rail projects are in varying stages of planning and construction. Figure 2-4 illustrates the existing study area roadway network.

The wedged-shaped study area is bounded roughly by the north-south running San Diego Freeway (I-405) to the west and the east-west diagonally running Foothill Freeway to the east. The Golden State (I-5) Freeway divides the study area on a north-south diagonal and splits south of Osborne Street to continue southeast as the Hollywood (SR-170) and Golden State Freeways. The Hollywood Freeway passes through the eastern portion of the study area, and as US-101, connects the northeast Valley to the Los

Existing Study Area Roadway Network



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Source: "San Fernando Valley East-West Rail Transit Project, Draft Environmental Impact Statement", LACTC, November, 1989; Various Community Plans, City of Los Angeles Planning Department.

Angeles central business district. The San Diego Freeway defines the extreme western boundary of the study area and connects the Northeast San Fernando Valley with the West Los Angeles, the Los Angeles International Airport and Orange County. The Golden State Freeway continues south from the study area through Los Angeles, and Orange County to San Diego County and constitutes an important north-south route through the state.

Two east-west freeways traverse the study area including the Simi Valley Freeway (SR-118) in the north and the Ventura Freeway (US-101), along the southern Study area boundary. The Ventura Freeway (SR-134) also connects east of the Hollywood Freeway to the cities of Glendale and Pasadena. All of the freeways in the study area serve as major intra-state travel routes.

The Northeast San Fernando Valley also includes an extensive underlying grid system of streets serving local and subregional trip making. Typically, major roadways are spaced at one mile intervals and secondary roadways at half-mile intervals between the major facilities. Generally, all major arterials have full interchanges with the freeway system. Secondary arterials are predominantly grade separated at the freeways, although in several locations they also have partial or full interchanges.

2.3.2 Existing Transit Routes

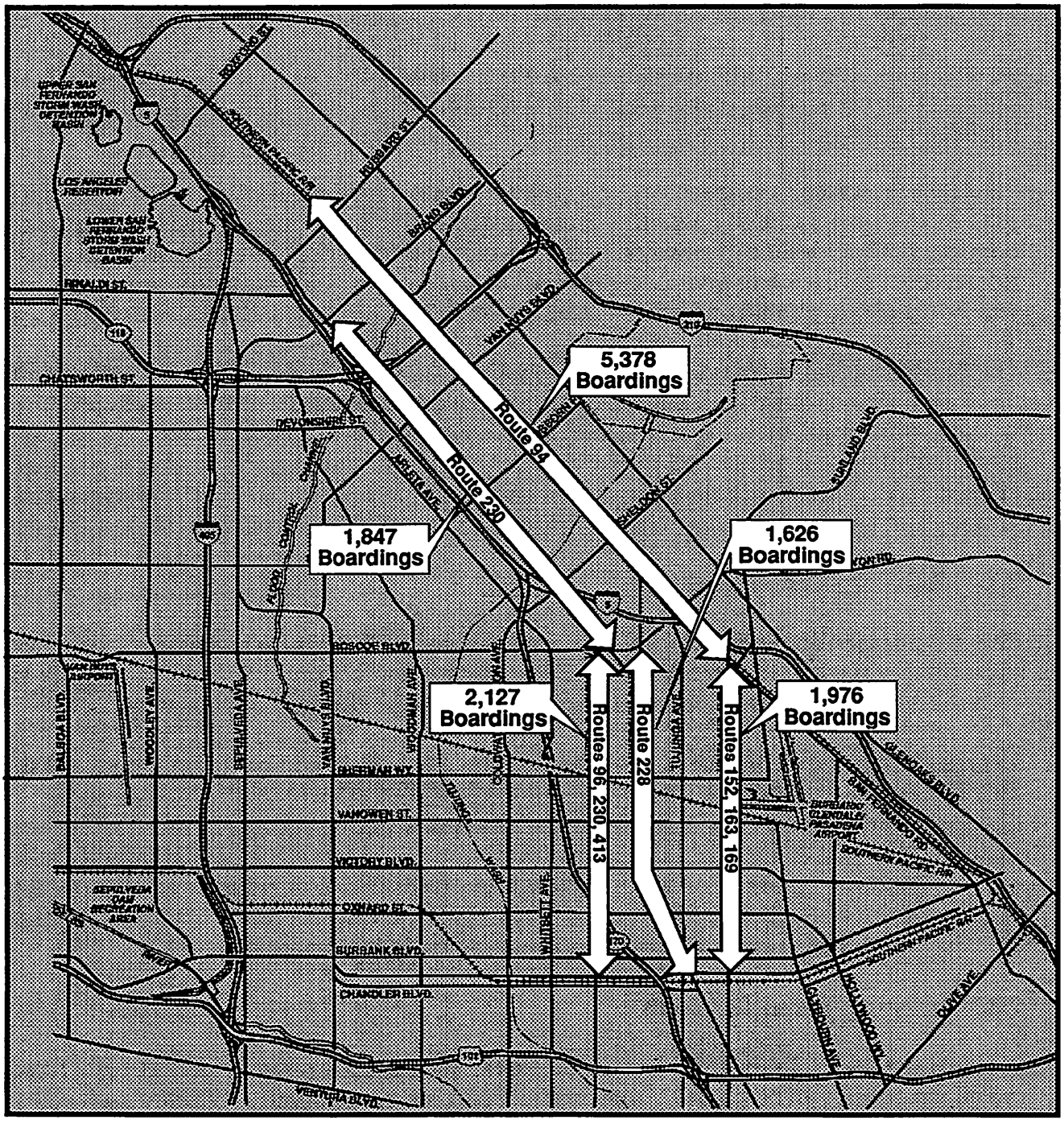
The Northeast San Fernando Valley is served by both local and express bus lines providing service within the Valley and to neighboring communities. Local service is provided throughout the communities of the Northeast San Fernando Valley.

Express bus service connects the Valley to the neighboring and outlying communities and is available to the Los Angeles Central Business District via the Hollywood and Golden State Freeways, to Hollywood via the Hollywood Freeway, to Culver City via the San Diego Freeway, to Pasadena via the Ventura Freeway, and to Thousand Oaks via the Ventura Freeway. Typically bus lines run on major arterials and east-west secondary arterials. Few bus lines operate on north-south secondary arterials. Figure 2-5 displays principal transit routes and existing daily bus boardings.

2.3.3 Existing Travel Demands

According to SCAG's 1986 San Fernando Valley Area Study, recent growth trends have transformed the San Fernando Valley from a bedroom-type community characterized by high out-of-area work commutes to a more self-sufficient subregion with more work trips occurring internal to the subregion. Due to the overall balance between jobs and housing in the study area, the majority of the jobs in the Valley (63 percent) are occupied by workers that live within the Valley. Currently 40 percent of the working residents of the Valley hold jobs outside of the Valley.

Existing Study Area Transit Boardings



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Approximate Scale: miles

2-5

Source: BRW, Inc., 31 July 1992

Among work commute destinations outside the Valley, the most significant destination is in the Los Angeles basin west of downtown. This area includes Mid-Wilshire, Culver City, Beverly Hills, West Los Angeles, and Hollywood. Nearly 40 percent of all work trips which leave the Valley are attracted to this area. Other major destinations include Downtown Los Angeles, Glendale, South Gate/East Los Angeles, and West Los Angeles/Santa Monica.

Four of the five freeways serving the San Fernando Valley (Ventura Freeway, San Diego Freeway, Hollywood Freeway, and the Golden State Freeway) all provide the major connections to the Los Angeles Metropolitan area. During peak travel periods, and occasionally during non-peak periods the freeway system experiences extreme congestion.

The Ventura Freeway (US-101/SR-134) is one of the busiest freeways in the country, carrying in excess of 250,000 vehicles per day at its intersection with the San Diego Freeway. Stop-and-go traffic on the San Diego Freeway during peak travel hours often reduces average speeds to between 20 and 30 miles per hour with the most persistent congestion occurring on either side of the Ventura Freeway.

The Hollywood Freeway (US-101/SR-101) experiences heavy congestion throughout most of the day. Both directions become seriously congested during the PM peak hours and stop-and-go traffic reduces average speeds along stretches to under 20 miles per hour. The Simi Valley Freeway (SR-118) exhibits fairly good operating conditions throughout most of the peak periods although during the AM peak, the segment between the San Diego Freeway and the Golden State Freeway experiences severe congestion with speeds averaging less than 25 mph.

North-south arterial roadways in the Valley are relatively less congested than the east-west arterials during the peak hours. The following summarize Average Daily Traffic Volumes (ADT) for principal arterials in the Northeast San Fernando Valley:

- **Victory Boulevard:** ADT generally ranges from 30 - 36,000 vehicles per day; up to 42,000 ADT near the San Diego Freeway, and almost 47,000 ADT near the Hollywood Freeway.

- **Burbank Boulevard:** Traffic volumes range from 21,000 to 26,000 ADT; peaks near 38,000 vehicles per day near the San Diego Freeway.

- **Van Nuys Boulevard:** ADT ranges from 27,000 to 33,000.

- **Laurel Canyon Boulevard:** Traffic volumes range from 36,000 to 47,000 vehicles near the Ventura Freeway and 26,000 to 31,000 vehicles between Burbank Boulevard and Sherman Way.

- **Lankershim Boulevard:** Daily traffic volumes north of Ventura Boulevard range from 21,000 to 26,000 vehicles.

- **Vineland Avenue:** ADT ranges from 21,000 to 26,000 vehicles per day.

A 1991 evaluation of transit service in the San Fernando Valley (San Fernando Valley Transportation Survey, April 1991) conducted by the Los Angeles County Transportation Commission (LACTC), the Southern California Transit District (SCRTD), the City of Los Angeles Department of Transportation (LADOT) and the Los Angeles County Department of Public Works revealed high transit dependence and utilization among Northeast Valley residents, as well as unfulfilled demand for additional transit service. As shown in Table 2.5, that the Northeast Valley demonstrates the highest utilization of transit for work trips of any subarea in the Valley:

TABLE 2.5
SAN FERNANDO VALLEY TRANSIT UTILIZATION

Mode	Total	West Valley	South Central	South East	North East
Drive Alone	75%	85%	75%	72%	66%
Rideshare	12%	12%	10%	8%	16%
Public Transit	9%	3%	8%	9%	16%
Walk, Bicycle	5%	1%	6%	10%	2%

SOURCE: San Fernando Valley Transportation Survey, April 1991.

Valley-wide, 8 percent of respondents indicated that they were transit dependent, i.e. lack access to an automobile. Of this group, almost half reside in the Northeast Valley. Northeast Valley respondents indicated a strong interest in more direct service, less transfer requirements, more express routes, extended hours of service, and improved service information.

2.3.4 Future Travel Demands

The following trends mark the changes in travel patterns forecasted for the study area by the year 2010:

- Substantial overall increases in trip making (on the order of 10 to 15 percent) in response to population and employment growth

- Little change in the percentage of total study area trips destined to locations outside the study area
- Changes in internal travel patterns in response to the growth in population and employment among study area communities

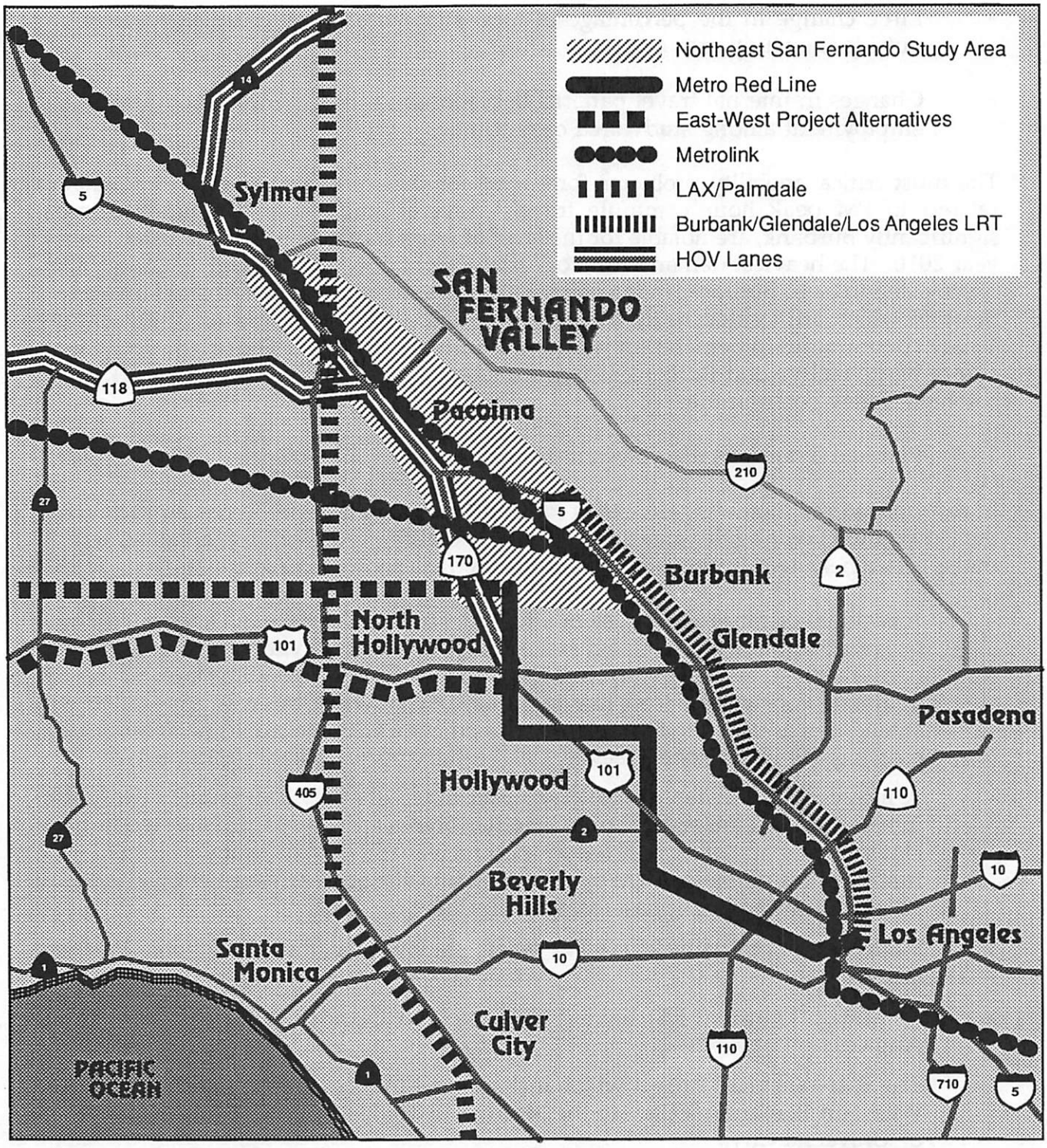
The most critical mobility problems forecasted for the study area in the year 2010 are related to PM peak hour commute travel. Several study area communities, most significantly Burbank, are notable for the level of work travel demand forecasted for the year 2010. The heaviest demand for work travel from outside the San Fernando Valley is projected to be to Burbank, followed by Van Nuys, North Hollywood and Sun Valley, three of which are located in the Northeast Valley. Burbank also ranks third among Valley communities in demand for intracommunity work travel. The origin-destination pair of North Hollywood-Burbank ranks second in terms of inter-community work travel between Valley communities.

2.3.5 Planned Transportation System Improvements

In response to the increasing demands for travel between the San Fernando Valley and the Downtown Los Angeles area as well as the mobility needs within the Valley, several transportation system improvements are planned, as shown on Figure 2-6:

- A regional commuter rail system scheduled to begin service in October 1992 will provide a trunkline route from Los Angeles to Burbank (via I-5), splitting off into two branches. The northern branch will run through the study area along the Southern Pacific Rail Road line to Santa Clarita, while the western branch will extend northwest from the vicinity of its junction with the trunkline to Moorpark, crossing the Hollywood Freeway (SR-170) at approximately Sherman Way.
- A heavy-rail extension of the Metro Red Line, which will ultimately run to the intersection of Lankershim and Chandler boulevards in North Hollywood from Downtown, paralleling the Hollywood Freeway (SR-170) in a subway tunnel. The first segment of the line will open in 1993 and the northern segment will open in phases, with the final phase complete by the year 2001.
- High occupancy vehicle (HOV) lanes planned for the Hollywood Freeway (SR-170).
- Light-Rail Transit (LRT) linking Burbank and Glendale with the City of Los Angeles.
- The East-West Rail Project which includes rail transit alternatives connecting the West San Fernando Valley to the Metro Rail Station in either North Hollywood or Universal City.
- Intercity high speed rail connecting Palmdale Airport with Los Angeles International Airport (LAX) and western Los Angeles is currently being evaluated by the LACTC.

Planned Transportation System Improvements



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

BRW

Myra Frank & Assoc.

0 2 4

Scale: miles

2-6

Source: BRW, Inc., 31 July 1992

3.0 SP Burbank Branch East (Chandler Boulevard) Corridor

This section presents the results of the analysis of modal technology alternatives for the Southern Pacific right-of-way along Chandler Boulevard between North Hollywood and Burbank.

A number of alternative transit technologies were evaluated including light rail transit (LRT), transitway and trolley bus, in addition to possible use of the right-of-way as a bikeway.

3.1 CORRIDOR SETTING

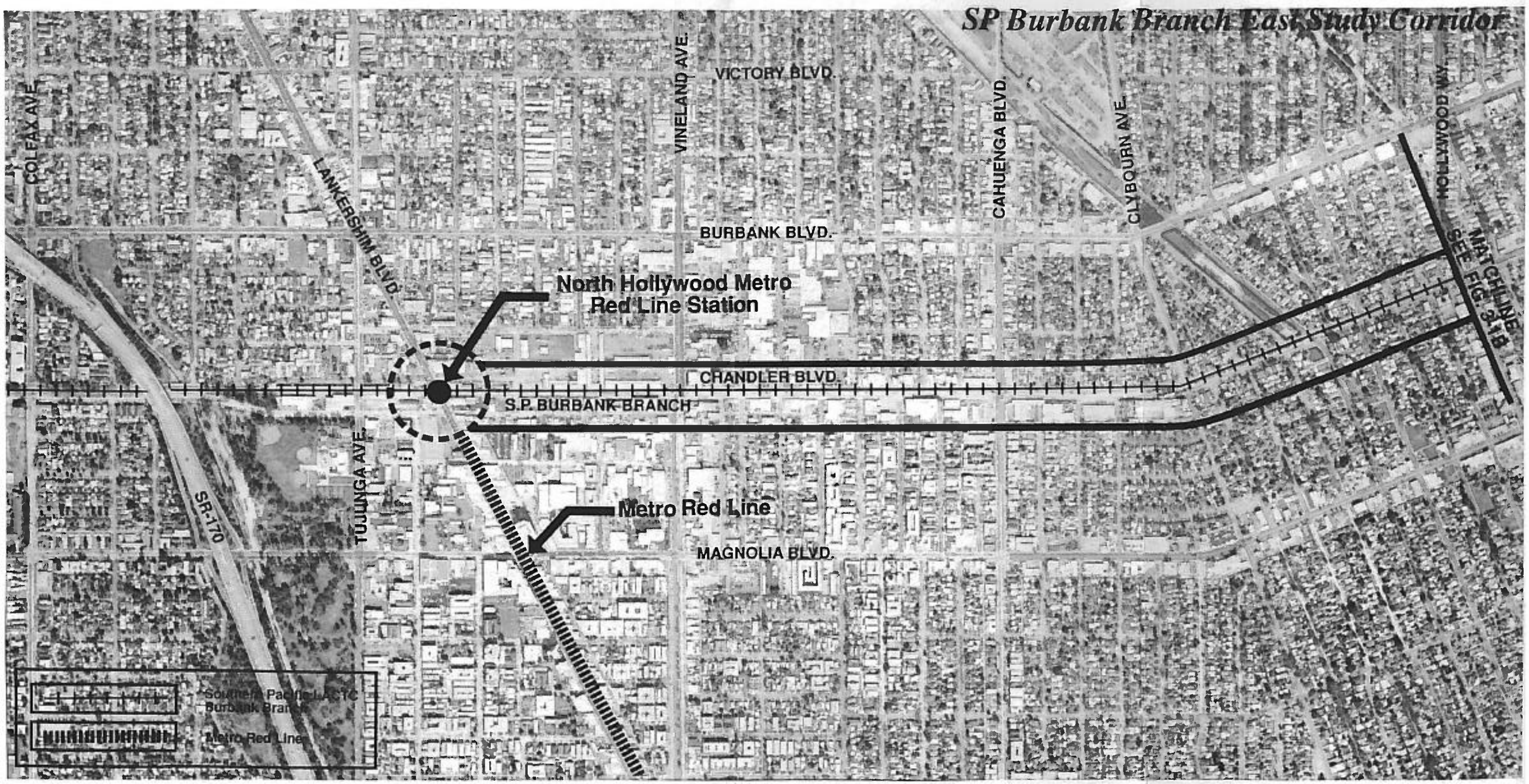
The Burbank Branch of the Southern Pacific Railroad is one of two existing east-west rail lines which pass through the San Fernando Valley. The Burbank Branch follows a southerly route and was originally built to serve local industries in the southern San Fernando Valley. The alignment follows a 15 mile at-grade path between Burbank and Chatsworth, and contains a variety of configurations including tangent track in both median and exclusive right-of-way, angular turns, and numerous grade crossings in dense urban areas. As industrial activity has dwindled due to land use and economic changes, freight service has been reduced and the branch has been used only sporadically in recent years. The northerly route, which passes by Burbank Airport and northern Van Nuys, is a heavily travelled mainline with freight, intercity passenger, and (after October 1992) Metrolink commuter rail service.

The Burbank Branch has already been purchased in part by LACTC, and negotiations with Southern Pacific are continuing to acquire the outer ends of the Branch, including the eastern portion in the Cities of Los Angeles and Burbank, which is the focus of this Study. Figure 3-1 shows the Corridor Study area, including the Burbank Branch and Chandler Boulevard Corridor. The potential acquisition of the property presents an opportunity to establish future linkages between North Hollywood and Burbank as well as between north-south (along the SP Santa Clarita line) and east-west transit services in the southern San Fernando Valley, including the proposed East-West rail project.

The segment of the Burbank Branch within the Study Area is approximately four miles long, extending from Lankershim Boulevard on the west to a junction with the Southern Pacific Railroad, near downtown Burbank, on the east. From west to east, the first mile lies within the Los Angeles city limits and passes through an industrial area with several arterial crossings. Chandler Boulevard parallels the alignment to the north until Clybourn Avenue, where the Burbank city limits begin and Chandler Boulevard becomes two separated local streets, with the railway located in the median. The next two miles consist of a landscaped median alignment through a south Burbank residential area, with several grade crossings. At Mariposa Street the north side lanes of Chandler end in the

vicinity of an industrial area which extends to Victory Boulevard and the SP mainline. The segment east of Victory Boulevard curves to the south towards the Burbank Multimodal Center along Front Street, and contains spur and connecting trackage used to serve industries and link the Burbank Branch to the Southern Pacific mainline. The alignment contains near a dozen major and minor grade crossings, and a few industries including a bakery and lumber yard.

The alignment generally maintains a width of up to one hundred feet, typical of a rail branch line, except where constrained by median or side of street running, where the alignment ranges from thirty-seven and forty-six feet in width (in median) to up to sixty feet (side of street). Few physical constraints exist along the alignment. There is one steel bridge over a flood control channel east of Victory Boulevard, but no grade separations on the branch itself, and the alignment narrows only slightly in areas where it traverses residential areas and through the industrial areas near Victory Boulevard in Burbank. The alignment contains two curves; one near a commercial bakery at Clybourn Avenue near the Burbank/Los Angeles City limit, and the other in the Burbank junction area east of Victory Boulevard. The alignment is crossed just east of Clybourn Avenue by a utility right-of-way with power transmission poles and wires.



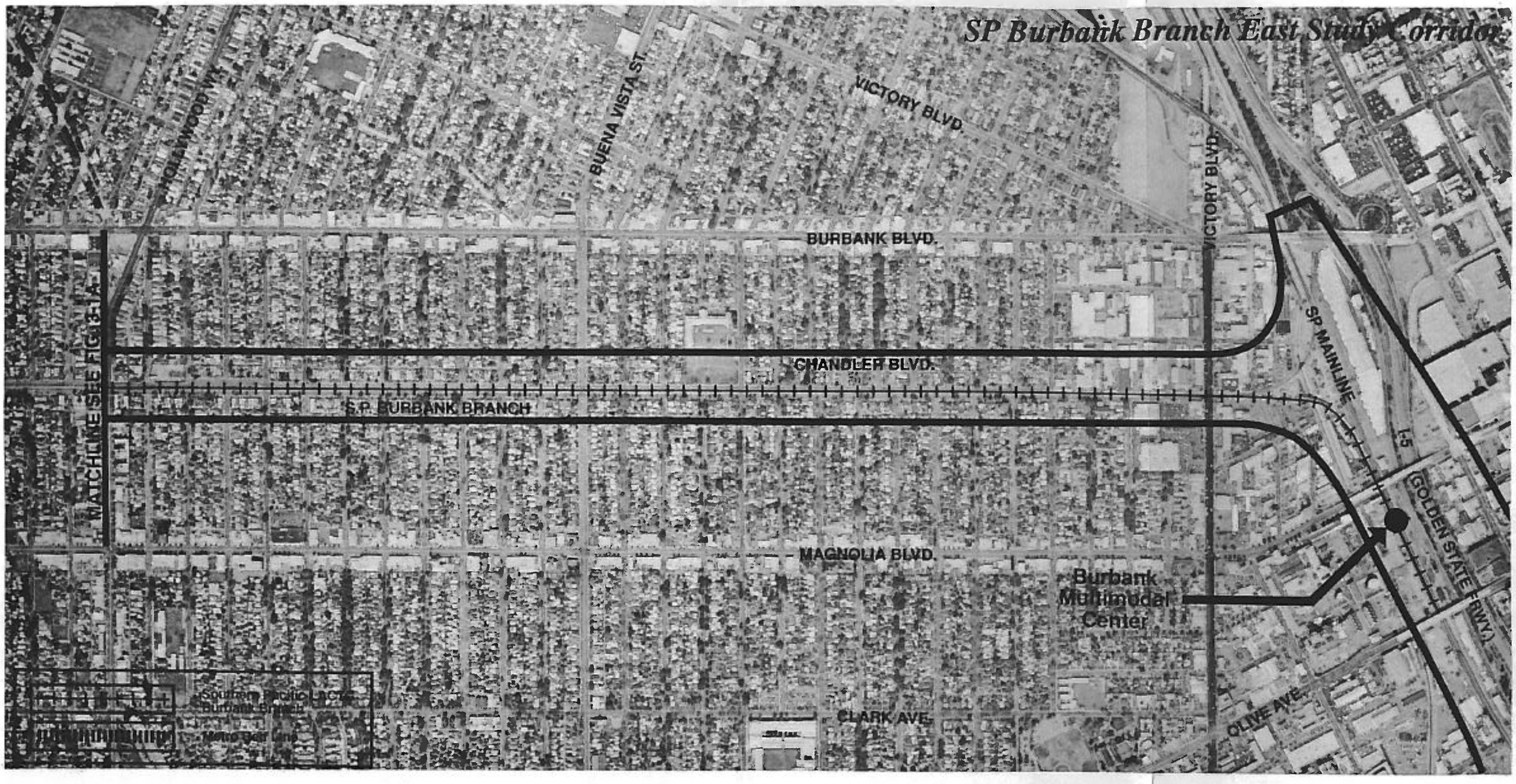
NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC Myra Frank & Assoc. BRW

0 400 800
Approximate Scale (feet)

3-1a

Source: BRW, Inc., 2 July 1992



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

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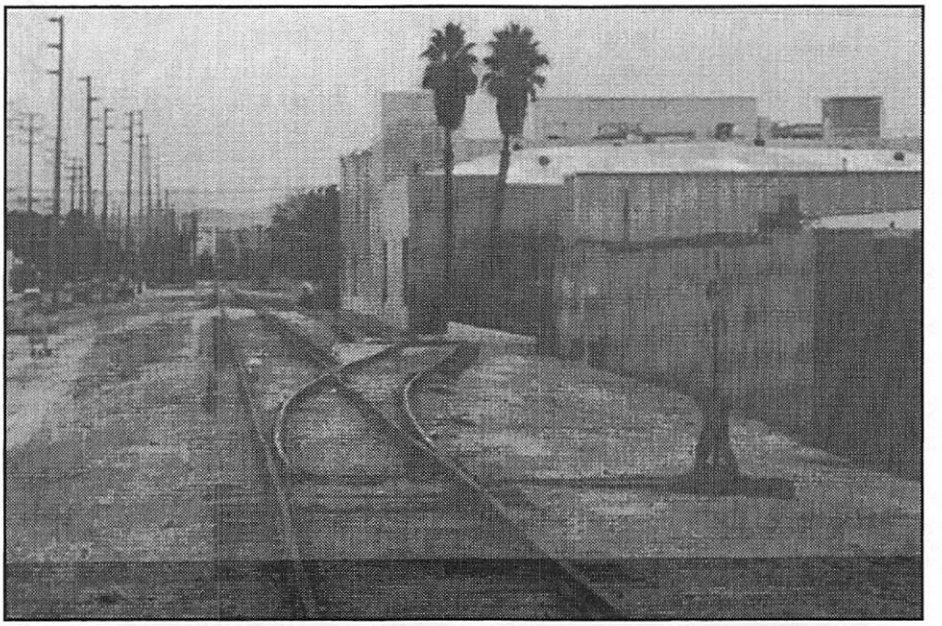
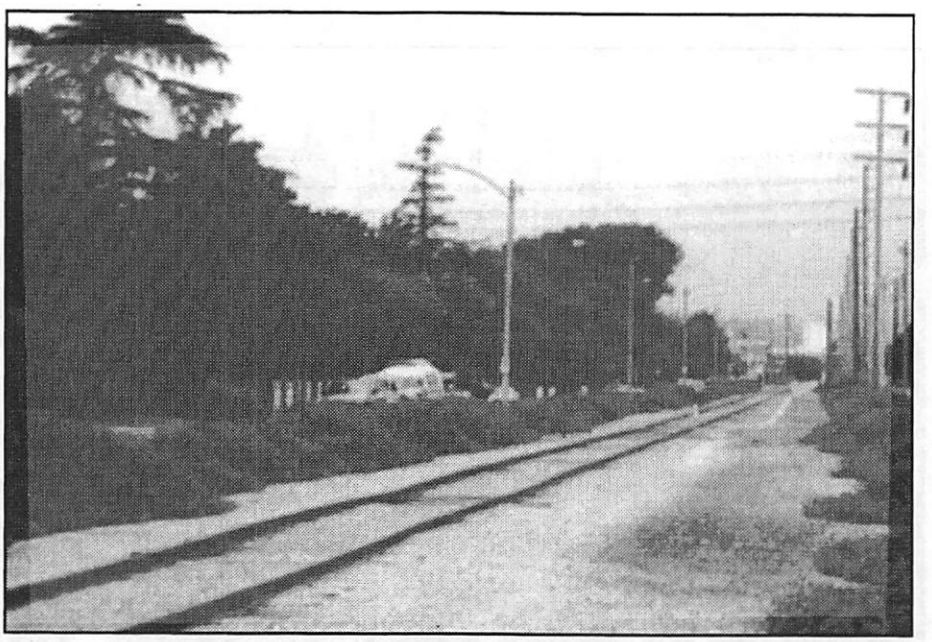
Approximate Scale (feet)

3-1b

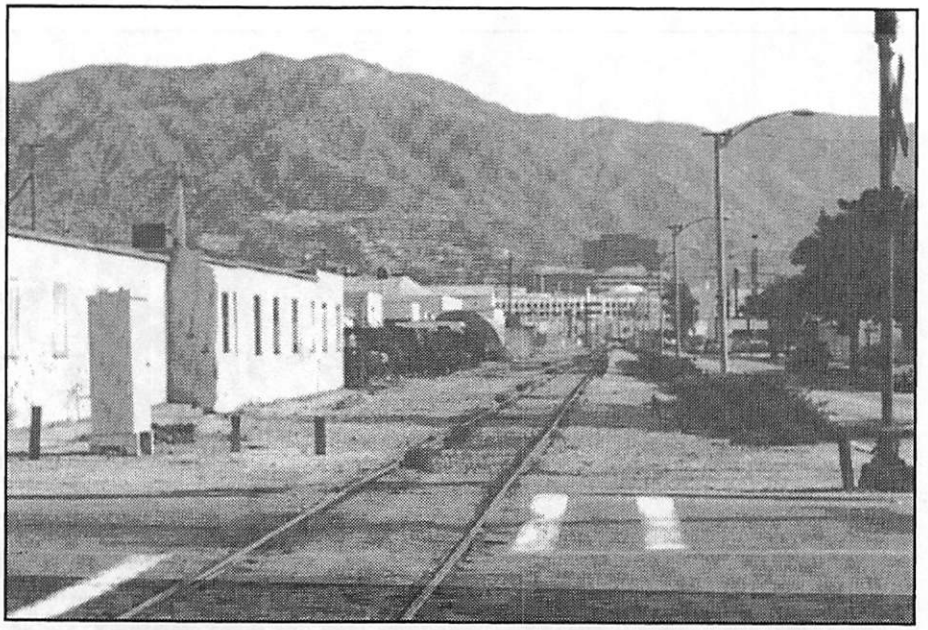
Source: BRW, Inc., 2 July 1992



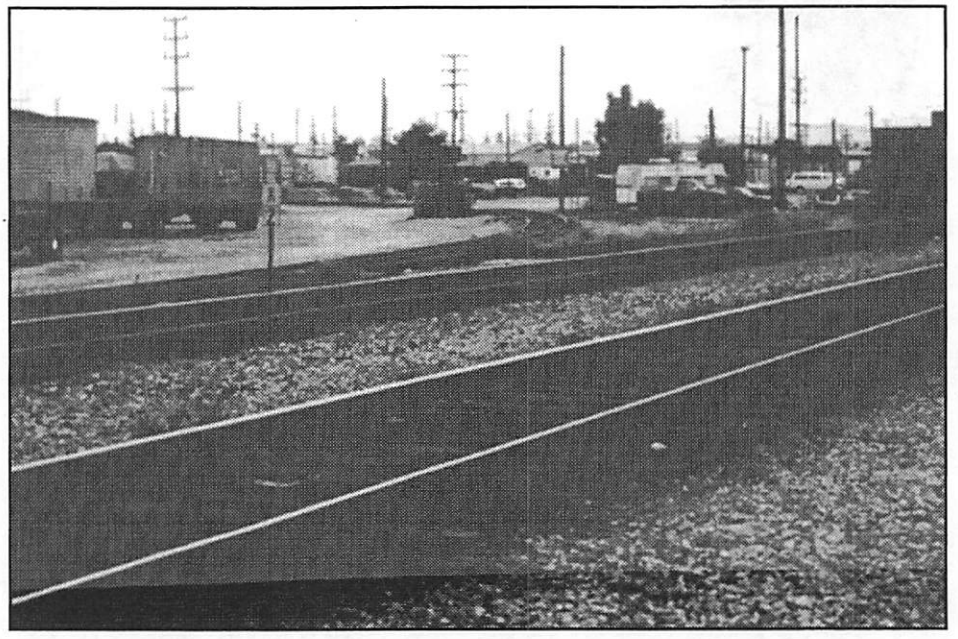
The SP right-of-way in an industrial area within the Los Angeles city limits, near Cahuenga Boulevard.



The SP right-of-way in the median of Chandler Boulevard within Burbank, looking west towards Clybourn Avenue.



The SP right-of-way east of Mariposa St., where the north lanes of Chandler Blvd. end and industrial uses lie along the north edge of the property.



This track leads south to link the east-west Burbank Branch with the north-south SP Moorpark/Santa Clarita mainline, located south of Burbank Junction and north of the Burbank Multimodal Center.

3.2 PROJECT ALTERNATIVES

3.2.1 Identification of Modal Technologies

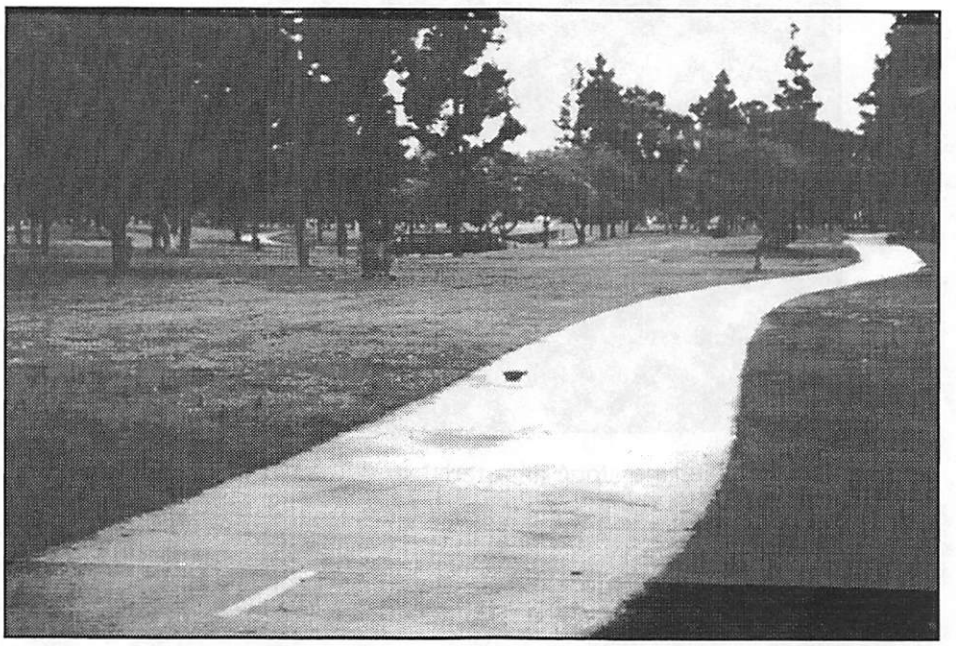
This section provides a detailed description of the characteristics and assumptions associated with the transit modal alternatives for possible implementation within the Southern Pacific Burbank Branch East (Chandler Boulevard) Corridor.

Bikeway

The bikeway alternative consists of a bicycle path or route implemented either separately or in conjunction with a transit modal alternative. A bicycle facility could be utilized as a short term investment to preserve the right-of-way and as part of a multi-modal improvement strategy in the longer term.

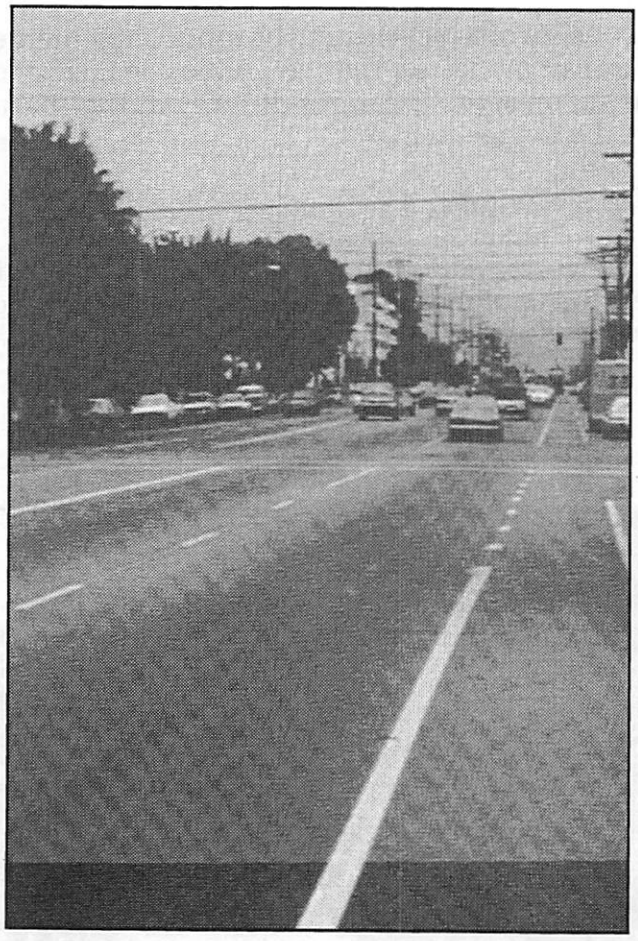
There are three types of bicycle facilities defined as follows:

- Class I - An exclusive bicycle path 12-16 feet in width with a lane in each direction within exclusive right-of-way. Class I paths may exist in parks, utility rights-of-way, or other settings where adequate space permits establishment of a separate facility.



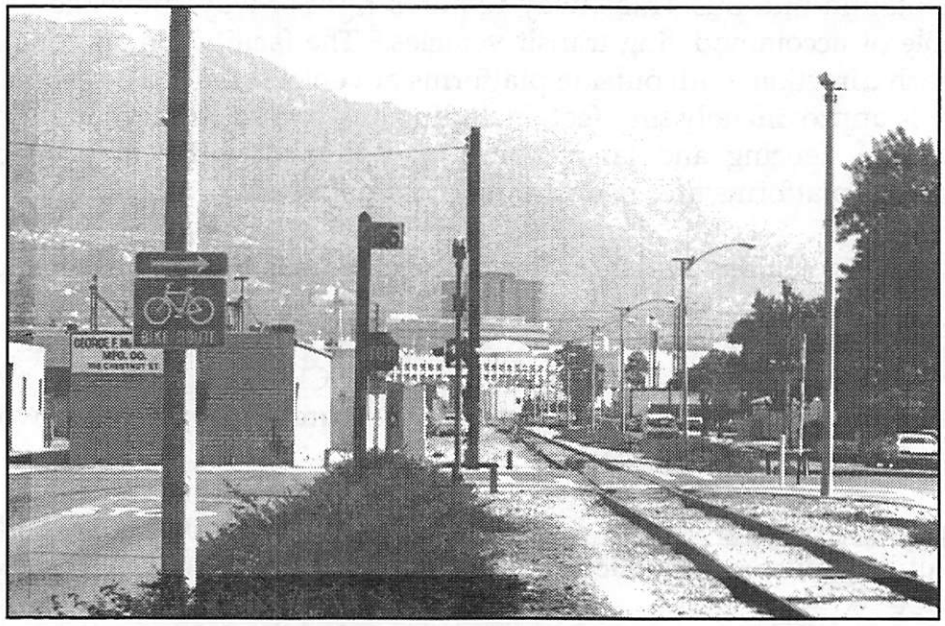
Class I exclusive bicycle lane facility in Long Beach.

- Class II - A bicycle lane typically six to eight feet wide, implemented in an arterial street with the lane designated by striping and signage. Since the lane must co-exist with motor vehicles, one bicycle lane is generally implemented on each side of the street, with the direction of flow parallel to traffic.



Class II bike lane along an arterial street.

- Class III - A street or other public facility designated as a bicycle route by signage only, with no special traffic treatments, striping, or exclusive facilities.



Class III bicycle sign.

Bikeways may contain auxiliary facilities, such as grade separations, traffic bollards, pullout lanes, or even shelters if funding permits. Operations on a bikeway and at intersections are regulated by applicable Motor Vehicle codes to provide for safe conditions for all vehicles. Bicycle facilities are generally quiet and pollution-free since no engines or fuel are consumed in providing propulsion. Intersections between arterial street crossings and a bicycle facility require attention to safety, since this is typically the most hazardous area along a bicycle facility. Grade separations could be implemented at arterial street crossings to enhance the safety of a bikeway, although at considerable expense. Traffic signal phasing can also be adjusted to include a phase for bicycle movement at appropriate signalized intersections, with potential delays to other vehicular traffic.

Transitway

A Transitway is typically defined as a facility with exclusive lanes available to any multi-occupant vehicle user, ranging from carpools to commercial shuttles and transit vehicles. Based upon Study Area characteristics and potential user markets, the Transitway has been defined as an exclusive lane facility available only to transit vehicles, which may

be powered by alternate fuels including Methanol, CNG, or electric Trolley-bus technology. Guided busway technology also might be feasible, but would require aerial structure spanning numerous street crossings along the Corridor. A key consideration is that the facility and service design of a Bus Transitway should be sensitive to the surrounding residential areas and possible community concerns.

The implementation of a Bus Transitway requires right-of-way conversion to a paved facility capable of accommodating transit vehicles. The facility would contain at least one lane in each direction, with outside platforms at vehicle stops. The estimated width of the facility is approximately fifty feet, including space for auxiliary lanes (for passing and breakdowns), fencing and landscaping. Additional width may be needed to accommodate the platforms and pedestrian access paths.

Alternate fuel technologies could be utilized along the Bus Transitway including:

- Methanol Fuel - A liquid uncompressed fuel with clean burning qualities, relatively inexpensive to produce and handle (SCRTD currently has over twenty Methanol-powered buses and intends to procure approximately two hundred more).

- Compressed Natural Gas (CNG) - A compressed form of gas readily available from utility sources. Liquefied natural gas (LNG) represents a variation of this fuel type.

- Ethanol - Similar to methanol, but produced from agricultural products.

- Propane - A gaseous fuel commercially available for vehicular and home uses.

- Dual Mode - A vehicle which uses two power supply sources due to varied operating and facility environments.

A number of zero-emission technologies are available including:

- Electric Fuel Cell/Battery - A fuel cell produces electricity by combining extracted hydrogen and water. While a battery-powered vehicle is similar, the fuel cell can provide a self-sufficient power supply, while the battery-powered vehicle must carry heavy batteries and return to a stationary power source periodically to recharge. SCRTD reportedly will begin operating one fuel cell vehicle during 1993 as part of an industry demonstration program. Battery powered vehicles have operated successfully in short route segments sometimes in conjunction with solar power recharging facilities.

- Trolley-buses - Trolley buses are electric vehicles which are considered identical to ordinary buses, except for the electrical propulsion system, which requires roof-mounted poles and overhead catenary systems of some complexity. In order to

provide for electric trolley-bus operation, overhead catenary and traction power substations must be installed, which may widen or reshape the overall right-of-way requirement depending on the design and integration of the catenary support system with existing or planned utility structures.

Articulated Trolley-bus example.

Alignment Description

A Bus Transitway facility would require a minimum two lane facility along the Burbank Branch right-of-way. The facility would begin at Lankershim Boulevard, with a possible extension west to the vicinity of SR-170 to provide interchange with the freeway or HOV lanes. Outside platform stops would be located at major cross streets including Cahuenga, Hollywood Way, Buena Vista, and Victory Boulevard, in addition to the terminus points. Additional local stops at Vineland, Whitnall, or Mariposa could be added based on demand. At each stop, the facility could widen to the equivalent of three or four lanes to provide for platform space and enable other vehicles to pass in case of a delay. An additional feature of the paved facility is the ability to allow bus routes to access or egress the lanes at intermediate points. The capability exists to use a portion of the facility for a bus route, although traffic protection must be provided at intermediate intersections where transit vehicles would enter and exit, to enhance safety and avoid delays.

Operating Assumptions

Operating Plan assumptions for this technology option include service by articulated vehicles operating every five minutes during peak periods, which total eight hours per day. Base service would be provided every ten minutes, with a total operating day of sixteen hours, from 6 a.m. to 10 p.m. These service standards would comparable to LRT and would have similar feeder bus connections. The maximum end-to-end travel time for the facility is estimated at twelve (12) minutes, given a slightly lower average speed and more stops than LRT. Vehicles utilizing the facility could also be delayed by traffic signals at intersections, with possible delay mitigation provided through prioritization strategies. The estimated vehicle requirement is 6, plus 1-2 spares, for peak hour service. A key element of consideration in evaluating vehicle types is regional compatibility, since the implementation of unique facilities (such as Trolley-bus infrastructure) without connecting or comparable facilities could reduce the cost effectiveness of the facility.

Light Rail Transit (LRT)

Light Rail Transit would require the construction of a modern fixed guideway railway with electrically powered vehicles, similar to the Metro Blue Line. Since the late 1970's, Light Rail Transit has been implemented in several California cities, as well as other cities around the U.S. and in Canada.

Physically, LRT requires a minimum right-of-way width of at least 30 feet, including catenary poles, wayside signal and support housings, and protective fencing. Overhead clearance can be as little as 14 feet under bridges, but desirable clearance is approximately 20 feet with no obstructions. Vehicles are typically 80-90 feet long (about twice the length of a standard bus or trolley-coach) and carry approximately 70 seated and up to 200 standing passengers. LRT can operate in exclusive right-of-way (including grade separations) or along streets (either median or side of street), although speed restrictions may apply when in or near mixed traffic due to regulations imposed by the California Public Utilities Commission. LRT is typically quiet and can achieve speeds up 50-60 miles per hour depending on systems constraints and vehicle design.

Within the Burbank Branch right-of-way, LRT would be physically consistent with the line's previous use as a freight and passenger line, although transit service standards would provide for frequent service, as versus occasional local freight service. Overhead catenary support, signal and grade crossing control systems, and protective fencing would be installed to provide a rail line environment similar to the Blue Line, capable of providing safe, potentially high-speed service at frequent intervals. Stations could be located in the center or outside of the alignment, or both, depending on station site constraints. Stations would include high-level platforms and ramps for accessibility for the disabled.

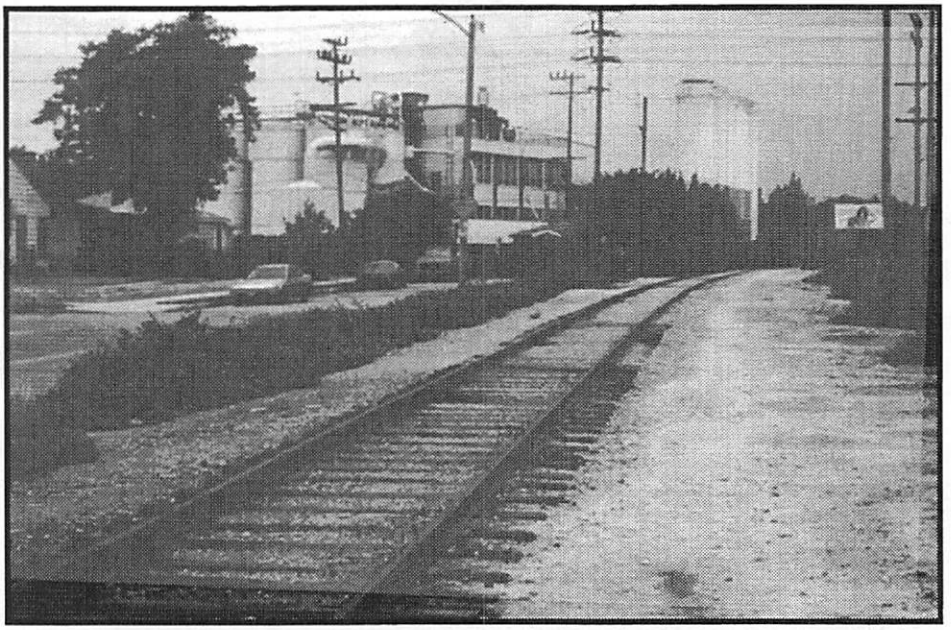
Light Rail Transit: Metro Blue Line train in median of Long Beach Boulevard.

Alignment Description

In the Burbank Branch facility, LRT trains would operate over a double track electrified rail line using the Burbank Branch for the entire segment. The alignment would begin at the Metro Red Line North Hollywood terminus, with a possible transfer to the East-West San Fernando Valley rail service. The LRT at-grade terminus would be located on the east side of Lankershim to avoid a grade crossing at Lankershim. The terminus area is a planned redevelopment area.

Continuing east from Lankershim, along the existing right-of-way, the LRT alignment would pass through an industrial area, with one existing private grade crossing, and arterial crossings at Vineland and Cahuenga Boulevards. A station would be located in the vicinity of Cahuenga Boulevard, to provide service to the industrial area, with a center platform station, with parking provided east of the crossing. Once east of the station, the alignment curves slightly north at Clybourn Avenue entering the Burbank city limits. The line would continue east in the median of Chandler, with speeds from 25-55 mph possible depending on the protection of the right-of-way. Grade crossings would be located at Vineland, Cahuenga, Hollywood Way, California Street, Buena Vista Street, Keystone Street, and Mariposa Street, as well as Victory Boulevard. Closure of some of the local street crossings would enhance safety and travel time as well as reduce construction costs. However, closure of an unimproved dirt crossing at Clybourn Avenue, providing access to Old Country Bakery from the north, could possibly shift

bakery truck traffic to the south through a residential area, which could be a source of local community concerns.



Old Country Bakery, located south of the right-of-way at Clybourn Avenue. Trucks serving the bakery can currently cross the Burbank Branch on an unimproved dirt crossing versus accessing the bakery via a residential area to the south.

A center platform station would be located in the vicinity of Hollywood Way, at approximately the center of the adjacent residential area and a connecting point for SCRTD route 212. Continuing east, slower speeds are likely east of Mariposa due to narrower right-of-way and track curvature. At the Burbank Multimodal Transportation Center, connections with Metrolink, Amtrak, and several bus routes would be available as well as access to the Burbank CBD. The cost-effectiveness of LRT would also depend in part on regional linkages and connections to other LRT lines in order to access system maintenance facilities. With implementation of Burbank-Glendale-LA LRT, access to Burbank Airport could be a key factor in providing regional connections.

Operating Assumptions

LRT operating plan assumptions include daily service from 6 AM to 10 PM with two car trains running every five minutes during the peak hours, and single car trains running every ten minutes during off peak times. The peak period is estimated as four hours in the morning and evening, for a total peak period of eight hours per weekday. The estimated maximum travel time for an LRT train between the North Hollywood Red

Line station and the Burbank Multimodal Center would be ten (10) minutes including station stops. A fleet of up to 4 trains (or 8 vehicles) plus 1-2 spares would be required to cover peak periods, depending on exact scheduling and layover details. The maximum average speed is assumed to be 25 mph, which is comparable to LRT in similar environments.

3.2.2 Identification of Project Alternatives

In considering the modal technologies which could be implemented in the SP Burbank Branch East (Chandler Boulevard) Corridor, phased implementation is a key consideration. Since funding for transit improvements is a competitive process, the possibility of development in stages, or implementation of different technologies during different funding horizons (while not precluding later development as funding permits) may be essential to the successful development of transit improvements in the Corridor. A related issue is the availability of connecting services. For instance, the implementation of LRT between North Hollywood and Burbank as an isolated service makes less economic sense than LRT implementation with the availability of connecting links to accommodate through service.

Corridor alternatives have been defined using a combination of modal technologies by implementation period, as follows:

Near Term Alternatives

1. Right-of-Way Preservation - Under this alternative, the Burbank Branch property would be acquired by LACTC, and the cities of Los Angeles and Burbank, but no transit improvement alternative would be implemented. The Cities and LACTC could cooperatively plan for landscaping, traffic/circulation improvements, and/or property "storage" for future transit use as funding permits. Existing Class III bicycle signage along Chandler Boulevard would be upgraded along the entire segment between North Hollywood and Victory Boulevard in Burbank.

1A. Class I Bike Path - This alternative would provide for implementation of a Class I bike path within the acquired right-of-way, from North Hollywood to the Burbank Multimodal Center. The bicycle path would be an exclusive facility with two lanes, with the remainder of the property used for landscaping, buffer separation, or other similar uses.

1B. Class II Bike Lanes - In this alternative, the bicycle facility would be a pair of Class II bike lanes, would be implemented consisting of separate one-way lanes on the outside of Chandler Boulevard between North Hollywood and Victory Boulevard. The right-of-way would be narrowed slightly to accommodate the widening of Chandler, with the remainder of the property utilized for landscaping, buffer separation, or similar uses.

Longer Term Improvements

2. Paved Bus Transitway Facility - Under this alternative, a paved roadway intended for the exclusive use of transit vehicles would be implemented within the right-of-way. Any remaining property would be used for landscaping, buffer separation, and any required mitigation measures. If the Trolley-bus technology were to be selected for implementation, some additional property could be required for installation of catenary poles and substations.

2A. Paved Bus Transitway with Class I Bike Path - This alternative would provide for implementation of the transit facility in Alternative 2, along with an adjacent Class I bike path within the right-of-way between North Hollywood and Burbank Multimodal Center. The right-of-way would be fully utilized by the two adjunct facilities, with minimal extra space available for landscaping or separation.

2B. Paved Bus Transitway with Class II Bike Lanes - In this alternative, the paved transit facility would be implemented in the right-of-way, with Class II bike lanes implemented separately on each side of Chandler Boulevard between North Hollywood and Victory Boulevard. The right-of-way would be narrowed slightly to accommodate the expansion of Chandler due to the addition of two bike lanes and requirements to maintain parking. The remaining right-of-way would contain space for minimal landscaping, buffer separation, or similar uses.

3. Light Rail Transit - Under this alternative, a double track electrified light rail transit line would be implemented along the right-of-way. Any remaining property would be used for landscaping, buffer separation, and any required mitigation measures.

3A. LRT with Class I Bike Path - This alternative would provide for implementation of the LRT facility in Alternative 3, along with an adjacent Class I bike path within the right-of-way between North Hollywood and Burbank Multimodal Center. The right-of-way would be fully utilized by the adjacent LRT tracks and bike path, with minimal space for buffer separation between the facilities and adjacent streets.

3B. LRT with Class II Bike Lanes - In this alternative, the LRT tracks would be implemented in the right-of-way, which would be narrowed but still contain adequate room for separation and minimal landscaping. The bike lanes would be implemented on both sides of Chandler Boulevard between North Hollywood and Victory Boulevard, which would be widened to accommodate the addition of bicycle lanes.

3.3 EVALUATION OF ALTERNATIVES

3.3.1 Evaluation Criteria

The following general criteria were used to measure the opportunities and constraints associated with implementation of the modal alternatives in the Corridor:

1. **Engineering Feasibility:**

   - Complexity of Construction
   - Additional Right-of-way Requirements
   - Requirements for Structures, Earthwork, and Facilities
   - Utility or Drainage Conflicts

   Key Issues: Will the facility or modal type physically fit within the Corridor? Are there any barriers which could prevent implementation? Could design or construction be costly or complex relative to benefits received?

2. **Transit Operations:**

   - Opportunities to serve community/regional activity centers
   - Potential to increase trip ends for transit users
   - Linkages with existing/planned transit facilities
   - Average speed/travel time
   - Station sites
   - Requirements for terminals/through service linkages

   Key Issues: How would the transit improvement fit into the regional system? What existing or proposed transit services could feed the Corridor? What effect would transit service have on areas around grade crossings, stations, and terminus areas? Would any grade-separations be needed or appropriate?

3. **Conceptual Cost Estimates:**

   - Estimated Capital Costs

   Key Issues: What are the estimated capital costs for each alternative?

4. **Environmental/Land Use Considerations:**

- Impacts to residential Neighborhoods
- Potential Disruptions to Schools, Parks, Open Space
- Compatibility with Adopted Community Plans
- Other issues of local community concern

Key Issues: What types of impacts, and of what significance, could occur to adjacent land uses including residential areas. How would the impacts vary by modal type?

The evaluation was conducted by ranking each alternative under the above criteria in tabular form, using a circular display system to illustrate the results. The circular displays represent rankings from best to worst with three circles representing the following values:

- **Full Circle** - Best ranking, most opportunities and fewest constraints
- **Half-full Circle** - Intermediate ranking, has both characteristics
- **Empty Circle** - Worst ranking, has fewest opportunities and most constraints

The results of each evaluation criteria were summarized into a total ranking, which consisted of the detailed rankings summed and averaged to verify the resulting summary value.

3.3.2 Transit Operations

The analysis of transit operations associated with the SP Burbank Branch East modal alternatives includes several elements, such as potential regional linkages with rail, bus, and bicycle facilities; local transit and bike route connections along the route, and station site evaluations, including access and potential ridership.

The station site analysis considered two modal options: Light Rail Transit, and Transitway Bus/Trolley-bus. Modal characteristics will affect transit station site selection as described below:

Station Stop Spacing: In order to take advantage of the speed and travel time potential of LRT (top speed 55 mph) and Bus/Trolley-bus (top speed currently 45 mph), spacing should allow vehicles to reach top speeds where feasible. The normal desired spacing for LRT is 1 to 1.5 miles, which would allow for two intermediate stations within the SP Burbank Branch East Corridor. The normal desired spacing for Bus/Trolley-bus is .5 to 1 mile, which would allow for four intermediate stations along the Corridor.

Station Size: Light Rail trains operate in multiple car consists, with up to three cars possible in future LACTC rail operations. Since each vehicle is nearly ninety feet long, it is assumed that the desired platform length will be 300-320 feet at all LRT stations,

which will consist of one or two high-level platforms with ramp access to the nearest street(s). Generally a single center platform is best for economy of construction and use, but split platforms (together or opposite) may be considered where right-of-way constraints affect allowable width. For the Bus/Trolley-bus, which stops at low level platforms along the outside of the right-of-way, the desired platform length is 120-130 feet, which is capable of holding two articulated vehicles at the same time. Bus/Trolley-bus platforms may be together or opposite one another at an intersection, depending on access or traffic requirements at the site. Transit riders typically enter the platform from the end nearest the intersection, and a small fence along the outside of the alignment can prevent access outside of the intersection.

The evaluation analyzed each potential station along the four mile Corridor. Figure 3-2 illustrates the sites for the Transitway option while Figure 3-3 shows the LRT stops along the Corridor.

Below are the key findings of the station site analysis:

- The two major stations on the SP Burbank Branch East Corridor will be North Hollywood and Burbank Multimodal Center, since each site offers significant intermodal transit connections, parking capacity, diverse access, and lies along the path of major freeway and arterial travel paths, in all directions.

- The center portion of the Burbank Branch will primarily serve local industries and the southern Burbank residential area, although some longer distance access via local bus routes may occur.

- Dedicated transit parking will be difficult to implement at stations in the center portions due to constrained right-of-way width and adjacent residential uses.

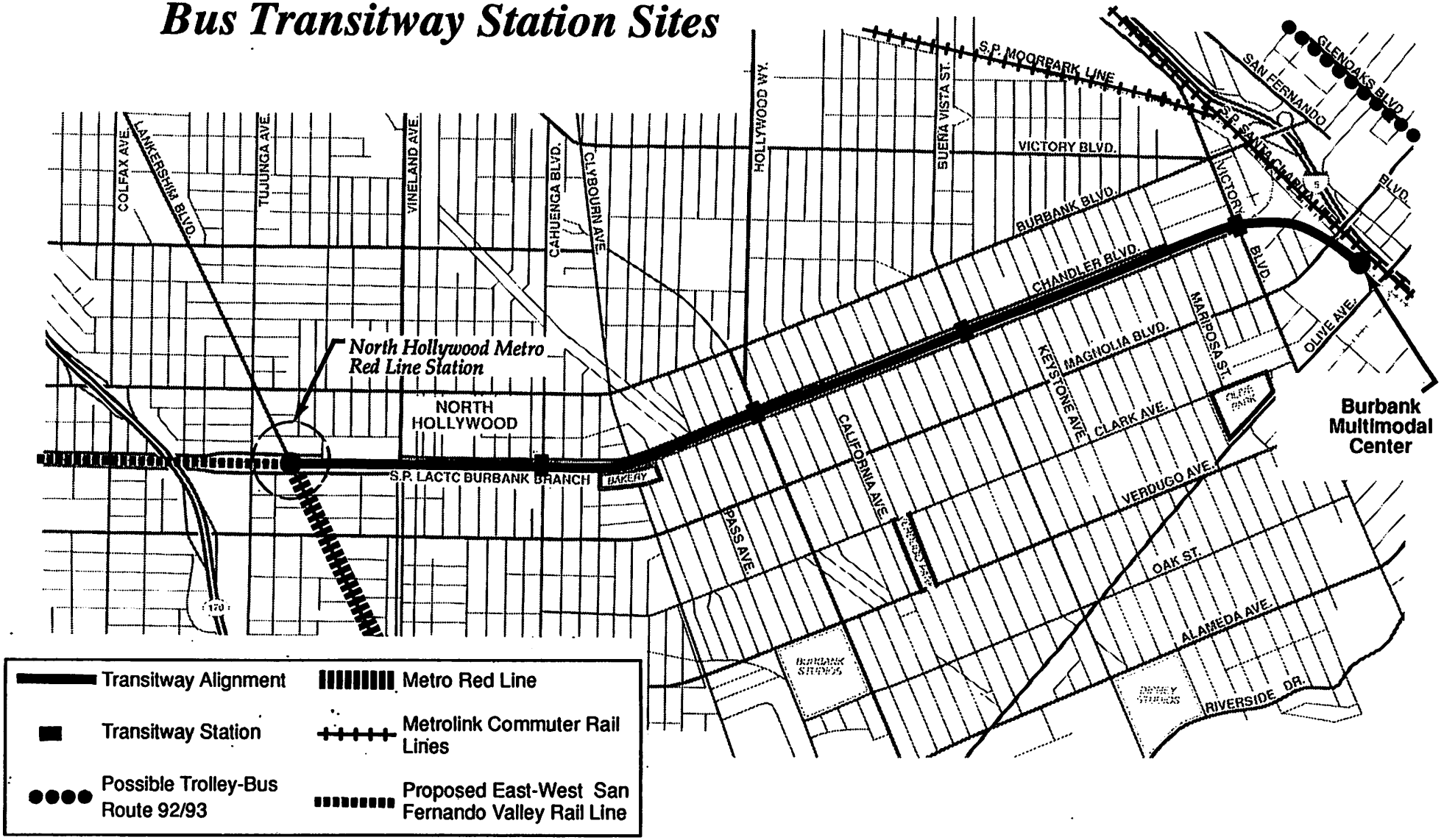
- Station site size will be constrained in the center portion, due to limited right-of-way width and sensitivity of adjacent uses.

- No fatal flaws were found in any station site along the Burbank Branch.

- Transitway transit vehicles may diverge to other routes at either end of the alignment, as part of integrated regional route strategies or to access the new Burbank Multimodal Center. In order to accommodate such movements, special lanes or traffic control may be needed to provide for safe turns or additional stops outside the right-of-way.

- The need for intermediate access points will be minimal. Most users are presumed to travel between the major north-south corridors at each end of the Burbank Branch route, with limited transfers in mid-route. Potential local ridership is estimated as relatively moderate, but could grow substantially should thorough regional services linkages be established.

SP Burbank Branch East Corridor: Bus Transitway Station Sites



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

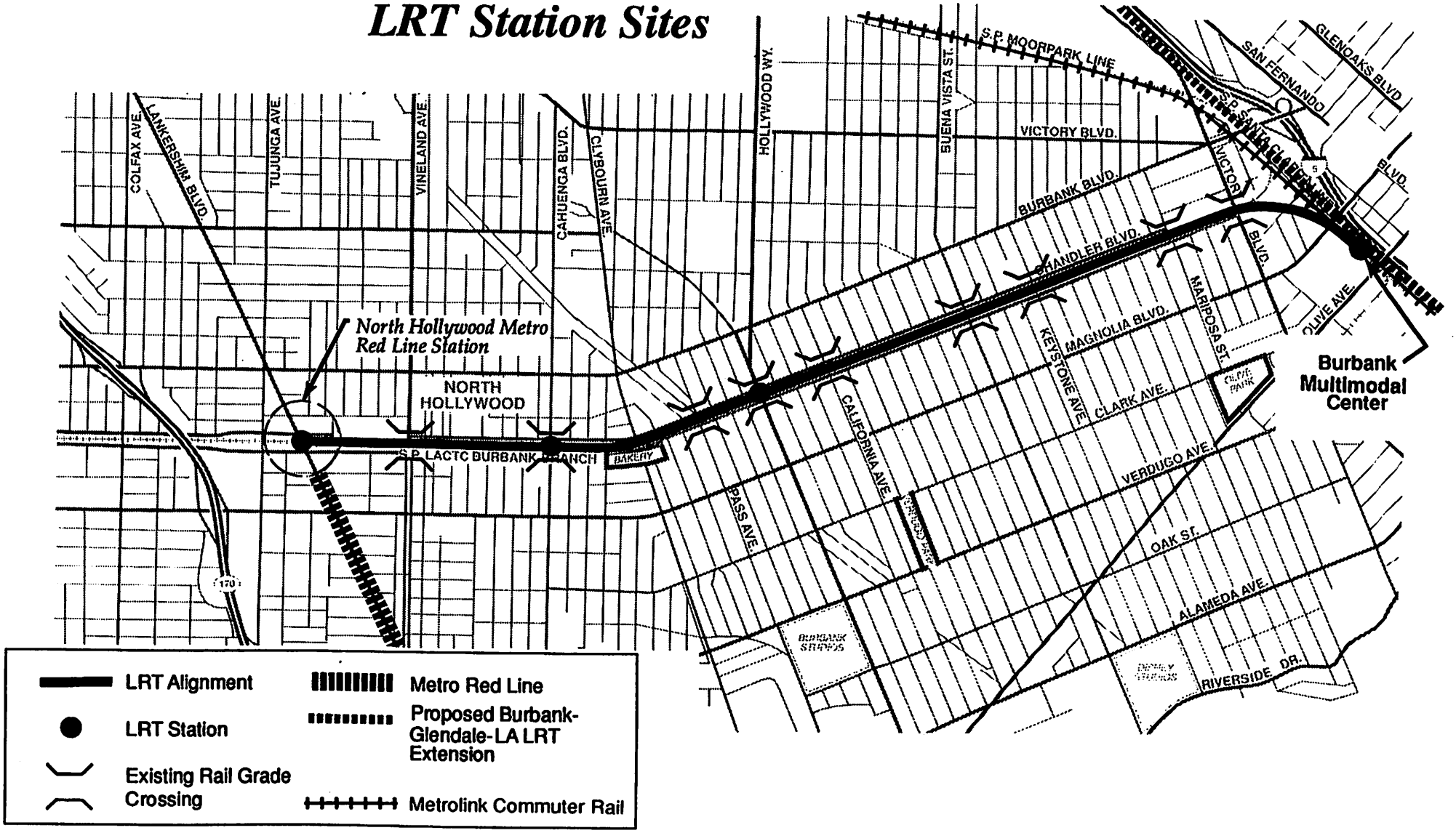
Myra Frank & Assoc.

0 800 1600
Approximate Scale

3-2

Source: BRW, Inc., 17 June 1992

SP Burbank Branch East Corridor: LRT Station Sites



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

Myra Frank & Assoc.

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Approximate Scale

3-3

Source: BRW, Inc., FEBRUARY 1992

- Transitway transit vehicles are assumed to make two more stops than LRT due to the ability of the vehicles and service pattern to make local stops with minimal station capital cost and loss of travel time.

- LRT center platforms are generally preferred to minimize capital cost.

- Split platforms for buses are generally preferred to minimize intersection delays, enhance transfers by placing connecting route platforms in close proximity, and minimizing safety impacts when vehicles stop together at the same station.

The potential to both provide and participate in regional transit linkages, given the station locations and local feeder services is summarized below. The evaluation focused primarily on the two terminus locations, North Hollywood's Metro Red Line Station and the Burbank Multimodal Center.

North Hollywood Metro Red Line Terminus

- Transitway buses - Bus routes could be revised to include the Corridor as part of east-west or north-south express or local services. For instance, a local north-south route on Lankershim Boulevard could be revised to extend east-west along the Corridor to link the Burbank Multimodal Center with North Hollywood and other Northeast Valley points. If the Corridor service were not extended beyond North Hollywood, then terminus options include an at-grade turning loop within the right-of-way, or use of existing streets in a loop configuration in the immediate vicinity of the terminus to provide convenient passenger transfer.

- Light Rail Transit - It is unlikely that LRT would be extended west or north of the North Hollywood terminus, although the selection of technology for both the East-West rail project and the potential Metro Red Line extension to the north could provide for compatible technology. LRT trains would terminate at grade just east of Lankershim Boulevard on the right-of-way, with a small storage area available for layovers and maintenance needs.

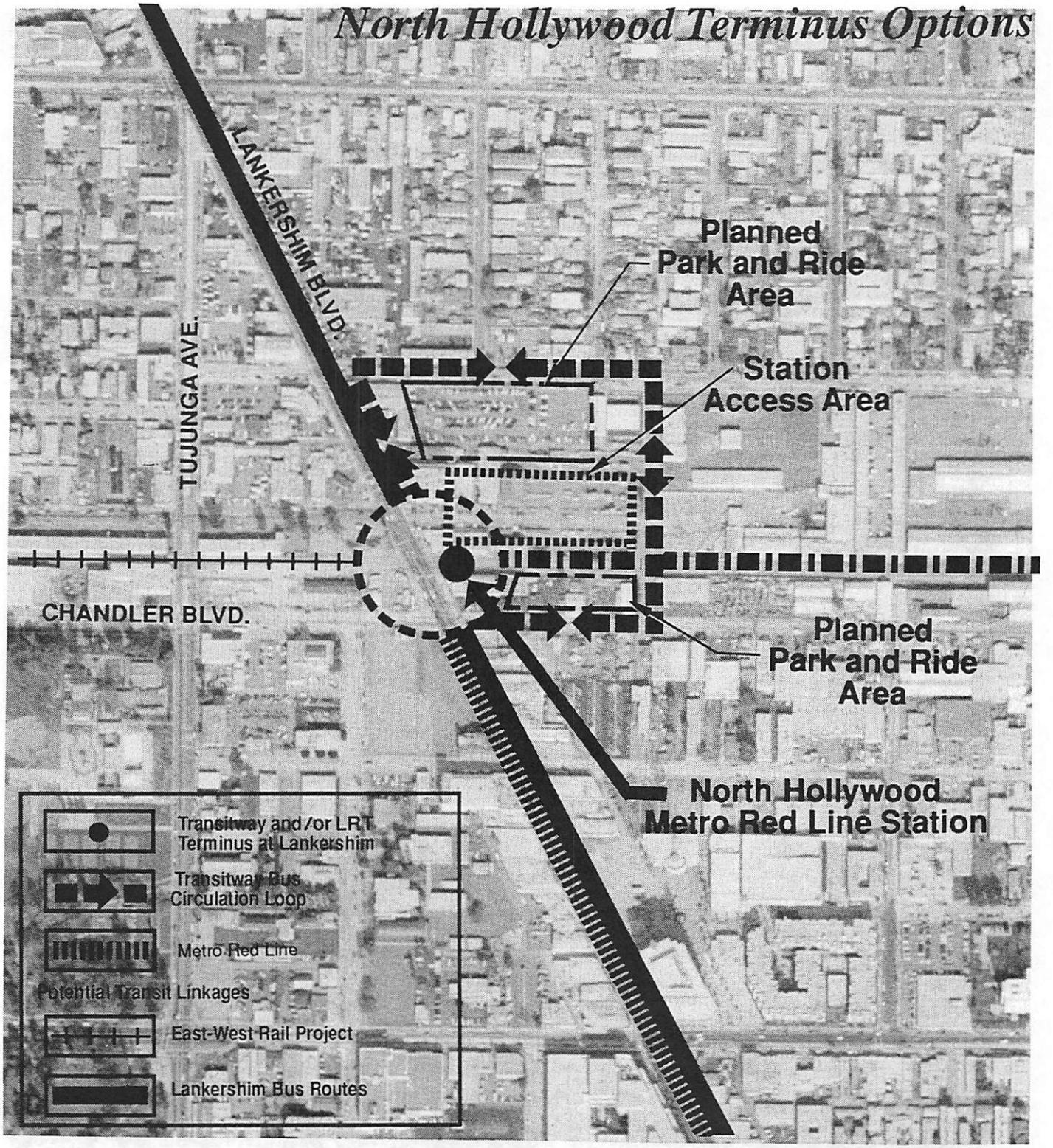
- Bicycle Facilities - Bicycle lanes or routes could be extended to adjacent streets, although currently no connecting bike routes are available at the North Hollywood site.

Figure 3-4 illustrates the potential terminus and linkage options at North Hollywood.

Burbank Multimodal Center

Figure 3-5 illustrates potential linkages at the Burbank Multimodal Center.

1. Transitway buses - Four linkage options have been identified, as follows:



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

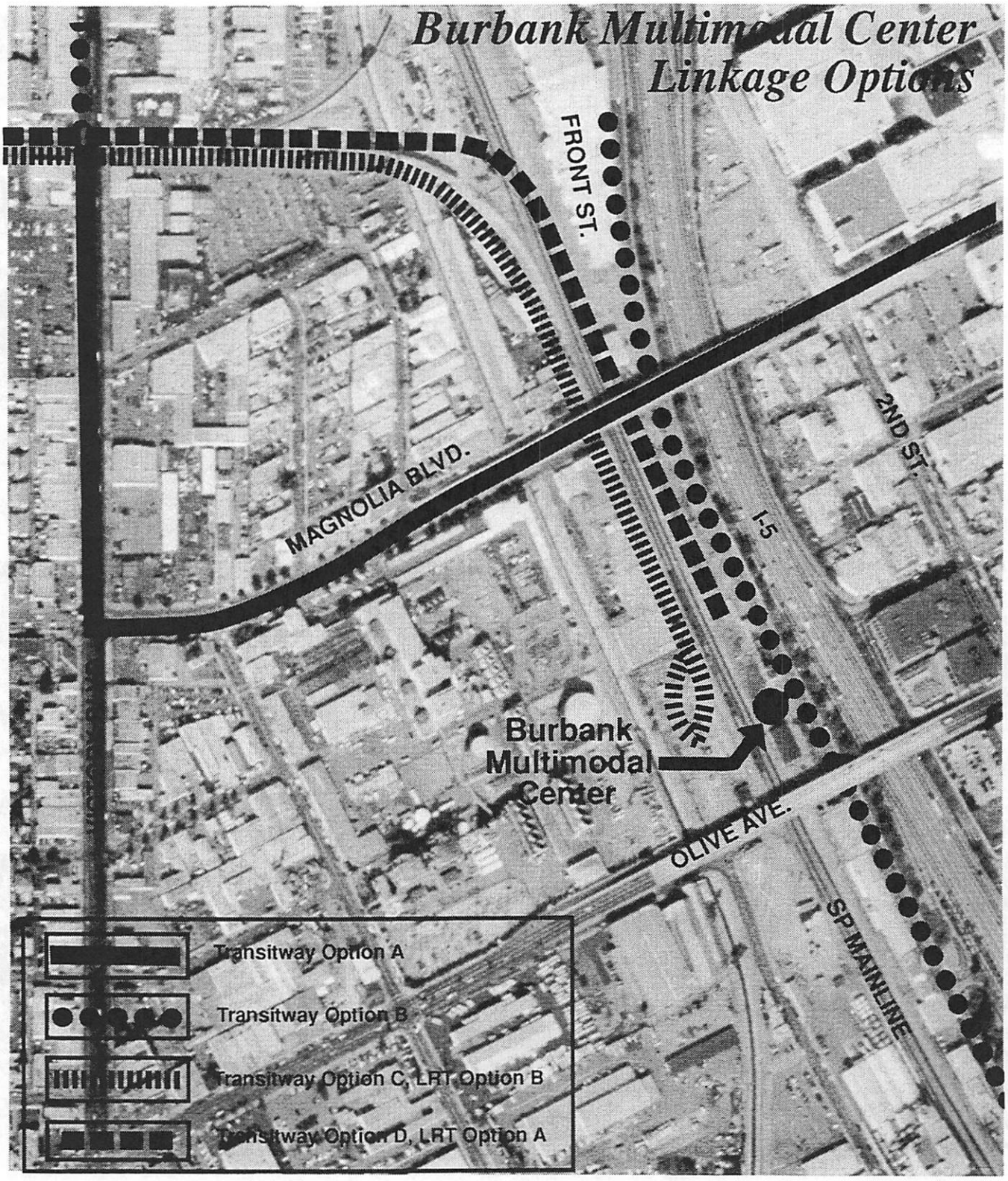
Myra Frank & Assoc.

0 200 400

Approximate Scale (feet)

3-4

Source: BRW, Inc., 2 July 1992



NORTHEAST SAN FERNANDO VALLEY
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BRW

Myra Frank & Assoc.

0 200 400

Approximate Scale
(feet)

3-5

Source: BRW, Inc., 2 July 1992

A. Divert from the right-of-way at Victory Boulevard and turn south to Magnolia Boulevard, then east into the Burbank CBD using the existing Magnolia Boulevard grade separation north of the Transportation Center site. Vertical circulation facilities would be needed to link the bus stop with the Transportation Center. The buses could then continue into the Burbank CBD and beyond if appropriate.

B. Divert from the right-of-way at Victory Boulevard and turn north to Burbank Boulevard, then east to Front Street via the existing Burbank Boulevard grade separation over the SP mainline. At Front Street, the buses would turn south to access the Transportation Center, and then either terminate there or continue via Front Street to Verdugo or back to Burbank Boulevard, depending on the route. This option is more circuitous than using Magnolia Boulevard, and buses would interface with busy and potentially difficult intersections at Burbank Boulevard and Victory Boulevard as well as Burbank Boulevard and Front Street.

C. Remain on the right-of-way to a point opposite the Transportation Center on the west side of the SP mainline, where a platform and turning area would be built. A pedestrian grade separation would be required to enable users to transfer between Transitway buses and other buses and the Metrolink platforms on the east side of the SP mainline.

D. Remain on the right-of-way east of Victory Boulevard, then utilize a new flyover bridge which would extend east and south to link the Transitway with Front Street, and enable buses to stop at the east side of the Transportation Center, similar to option B. This option would involve considerable capital cost since the flyover bridge would be required to fit within the existing area facilities as well as provide adequate clearance for train movements on the SP mainline underneath the flyover.

2. Light Rail Transit - LRT trains would have two options, one of which would provide for regional linkages assuming that the Burbank-Glendale-LA LRT line is extended to Burbank Airport via the Burbank Multimodal Center, with the LRT tracks on the east side of the SP mainline.

A. Remain on the right-of-way east of Victory Boulevard, then use a flyover bridge (similar to the Transitway flyover option) to provide a direct physical connection with the Burbank-Glendale-LA Airport LRT line. Since the track connection would face south, through service would be possible from Los Angeles and Glendale to either Burbank Airport or North Hollywood via the Burbank Branch.

B. Remain on the right-of-way and turn south to a point opposite the Burbank Multimodal Center, where a station and small yard would be implemented

just west of the SP mainline. As with Transitway Option C, a pedestrian grade separation would be required to allow users to transfer between LRT and other rail and bus services on the east side of the SP mainline. In addition, for maintenance purposes, an interlocked connecting track could be installed to link the Burbank Branch East LRT trackage with either the SP mainline or the Burbank Airport LRT line once it is extended to Burbank.

The following summarizes regional transit compatibility, potential transit linkages, feeder service potential, and potential ridership of each of the project alternatives:

Alternative 1 - Right-of-way Preservation/Class III Bike Facilities

This alternative would have minimal impacts on transit compatibility, linkages, or ridership.

Alternative 1A - Class I Bike Lanes in the Burbank Branch right-of-way

This alternative would have minimal impacts on transit compatibility, linkages, or ridership. A potential improvement could be realized by bicyclists, who might shift their route of travel to the exclusive facility rather than travel on nearby Class III facilities, or new bicycle ridership might be generated.

Alternative 1B - Class II Bike Lanes in Chandler Boulevard

This alternative would have minimal impacts on transit compatibility, linkages, or ridership. Bicyclists might shift their route of travel to the Class II facility rather than travel on nearby Class III facilities, or new bicycle ridership might be generated.

Alternative 2 - Transitway within the Burbank Branch right-of-way

Regional Transit Compatibility - Existing parallel or connecting bus routes could be shifted to use the facility, thus enhancing travel time and improving service to users.

Potential Transit Linkages - The Transitway bus service could be extended to become part of a through regional route, such as an express service or a proposed future Trolley-bus route. The choice of linkage options at Burbank Multimodal Center would determine the convenience and cost of establishing a through service link. If no through service were established, the Transitway would still provide a valuable feeder service to Metrolink, the Metro Red Line, the East-West Rail Project, and other potential services from the south Burbank residential and industrial area.

Ridership Potential - Since existing transit services are several blocks away, establishment of the Chandler Boulevard service could provide access to new ridership in both the residential and industrial areas. As additional regional linkages become

established, then increased origin and destination opportunities would become available and possibly stimulate additional ridership.

Alternative 2A - Transitway with Class I Bicycle Lanes

This alternative would be the same as Alternative 2, with the additional result that bicyclists might shift their route of travel to the Class I facility rather than use nearby Class III facilities. In addition, some bicyclists might use the facility to access transit for commutation or other trips, or new bicycle ridership might be generated.

Alternative 2B - Transitway with Class II Bicycle Lanes

This alternative would have the same results as Alternative 2A above.

Alternative 3 - LRT within the Burbank Branch right-of-way

Regional Transit Compatibility - Existing parallel or connecting bus routes could be shifted to connect with LRT, thus enhancing connectivity and improving convenience to users.

Potential Transit Linkages - LRT could become part of a through regional route, such as the Glendale LRT line once extended to Burbank Airport, or even a service in the Northeast Valley along Lankershim Boulevard The choice of linkage options at Burbank Multimodal Center would determine the convenience and cost of establishing a through service link. If no through service were established, LRT would provide feeder service to Metrolink, the Metro Red Line, the East-West Rail project and other potential services from the south Burbank residential and industrial area.

Ridership Potential - Since existing transit services are several blocks away, establishment of the Chandler Boulevard service could provide access to new ridership in both the residential and industrial areas. As additional regional linkages become established, then increased origin and destination opportunities would become available and possibly stimulate additional ridership.

Alternative 3A - LRT with Class I Bicycle Lanes

This alternative would be the same as Alternative 3, with the additional result that bicyclists might shift their route of travel to the Class I facility rather than use nearby Class III facilities. In addition, some bicyclists might use the facility to access transit for commutation or other trips, or new bicycle ridership might be generated.

Alternative 3B - LRT with Class II Bicycle Lanes

This alternative would have the same results as Alternative 3A above.

Figure 3-6 summarizes the transit operations associated with the corridor alternatives.

3.3.3 Environmental Issues

This section summarizes the results of a preliminary review of the potential environmental issues associated with implementation of the project alternatives. The purpose of this review is to identify potential environmental issues that may be of concern to the local community and any constraints which could affect the viability of the alternatives.

The following categories were investigated for potentially significant impacts: noise and vibration, right-of-way acquisition; visual/aesthetics; land use compatibility; natural resources; historic and cultural resources; floodplain and drainage issues; and traffic, circulation and parking.

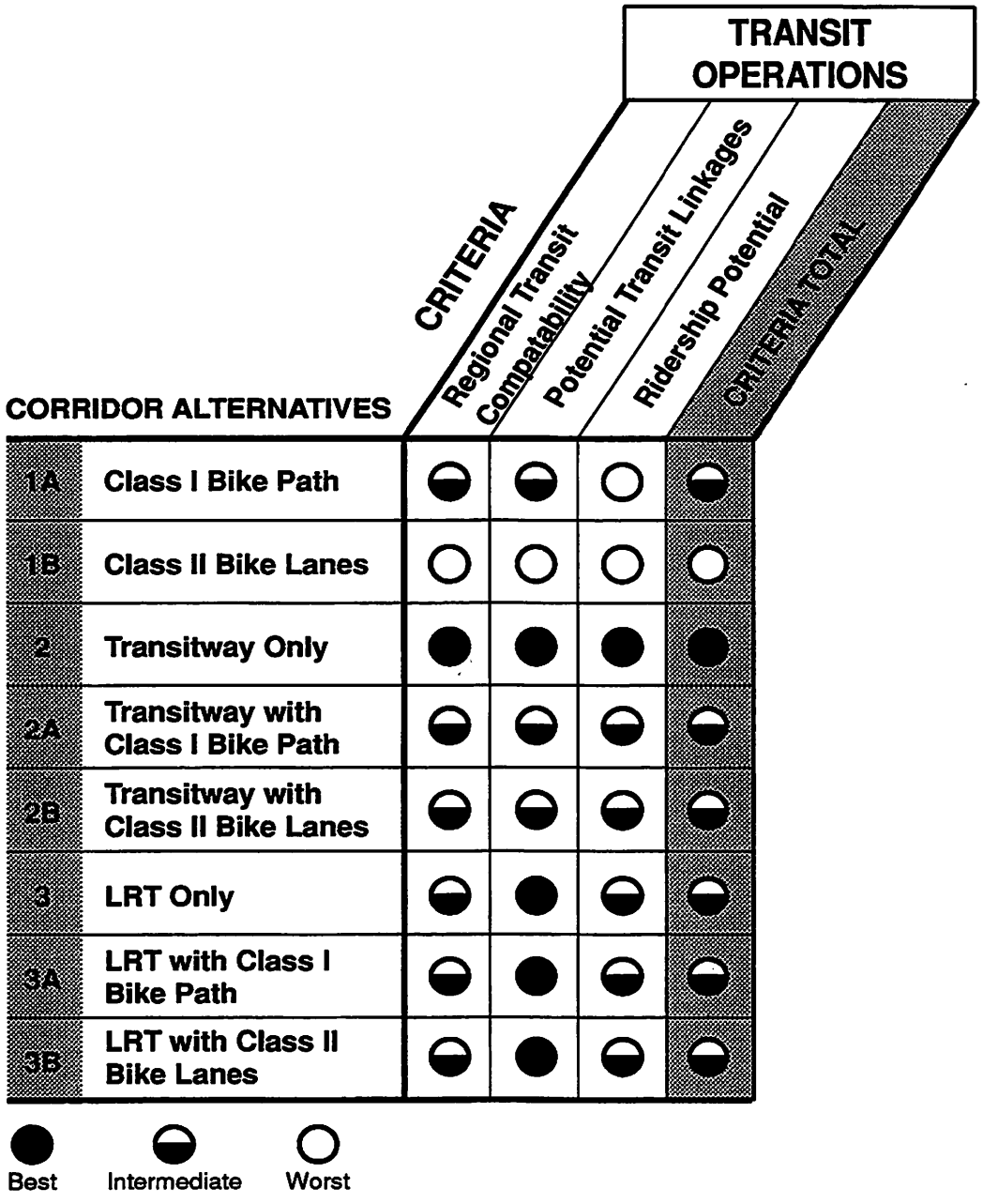
As a result of the survey and review, one potentially significant issue has been identified - light rail transit (LRT) operations could result in a significant increase in noise levels at nearby sensitive receptors. Noise-sensitive land uses are the predominant land use along Chandler Boulevard from west of Clybourn Street to east of North Mariposa Street, a distance of approximately two miles. The area contains mostly single-family residences with some multi-family housing. In addition, Thomas A. Edison Elementary School is located immediately north of Chandler Boulevard, between North Lincoln and Keystone Streets.

Figure 3-7 illustrates land uses along the corridor. Implementation of LRT service would raise noise levels in the community due to the noise generated by passbys of the LRT vehicles (noise from the steel wheel on steel rail is the predominant noise source) and the noise from train horns and warning bells at grade crossings (there are nine grade crossings along the corridor). Although a detailed noise analysis is required to identify the precise impacts of rail operations, it is anticipated the potential increase in noise levels, especially for those sensitive receptors closest to the tracks and grade crossings, could be significant.

Measures to mitigate potential impacts could include building a noise wall or berm, constructing the light rail in a trench, using lower sound level bells at grade crossings, or adjusting the operating plan during nighttime hours (10 PM to 7 AM) to reduce train speeds (at speeds less than 35 mph crossing gates and warning bells are not needed).

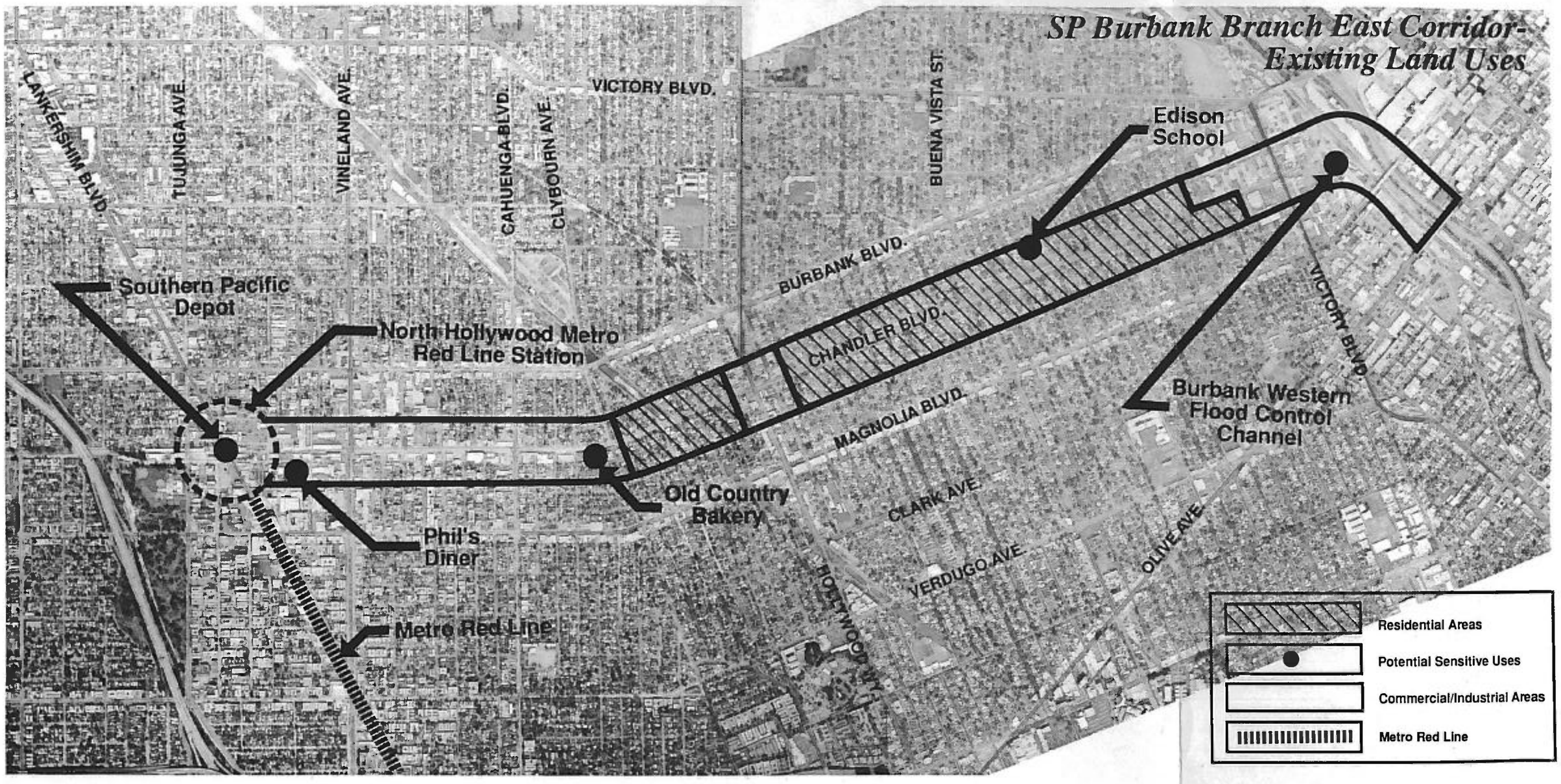
Other impacts which may be less significant but are potential areas of controversy or concern to the community include: visual impacts of the LRT catenary system; traffic and parking impacts; diminished neighborhood access; and potential safety concerns. In addition, two historic resources determined eligible to the National Register are in the vicinity of the proposed alignment; the Lankershim Southern Pacific Depot is located

SP Burbank Branch East
Transit Operations Evaluation Summary



Source: BRW, Inc., 31 July 1992

SP Burbank Branch East Corridor- Existing Land Uses



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

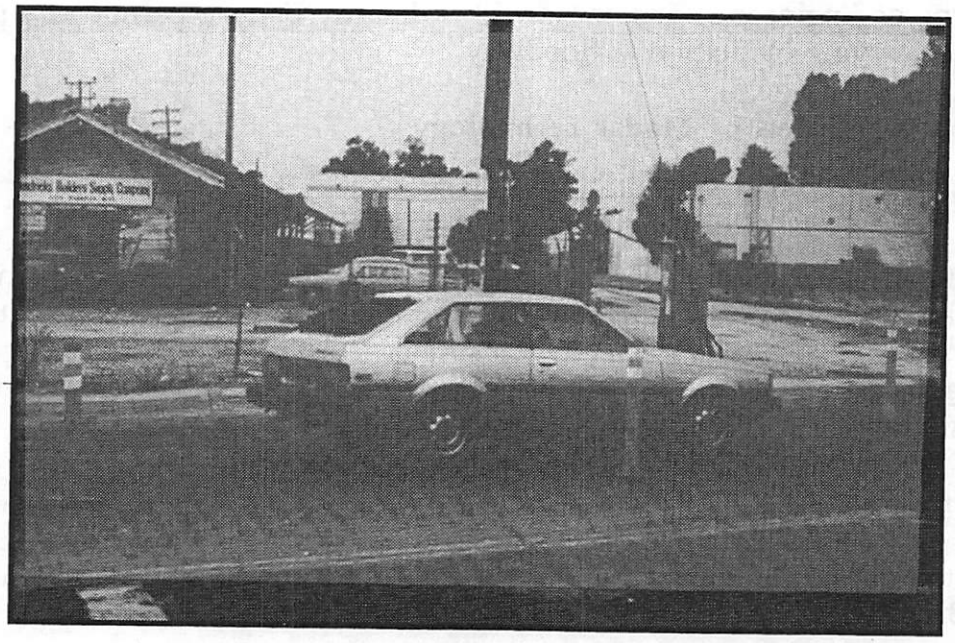
Myra Frank & Assoc.

0 800 1600
Approximate Scale (feet)

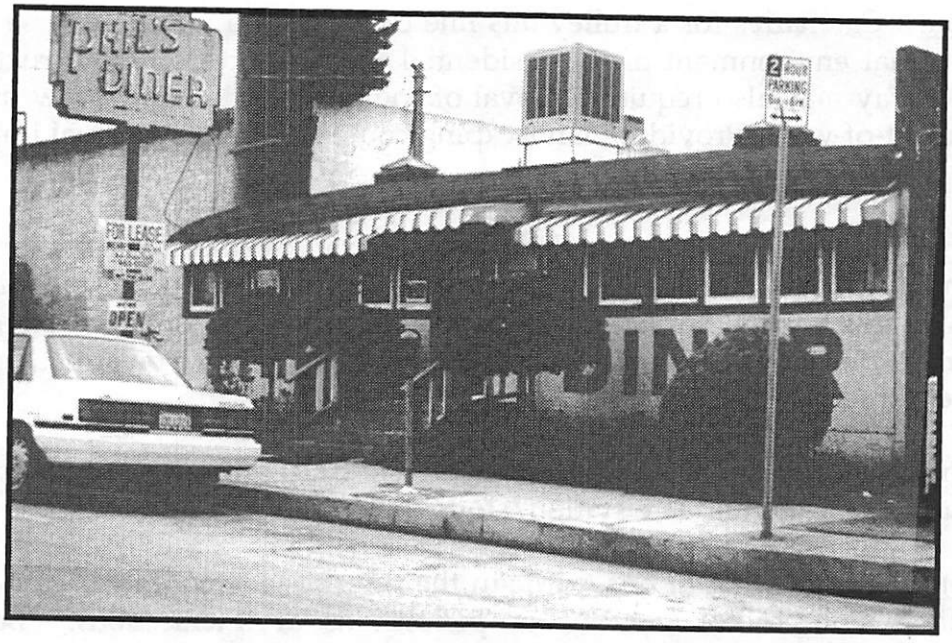
3-7

Source: BRW, Inc., 2 July 1992

at 11275 Chandler Boulevard (just west of Lankershim Boulevard and the western end of the alignment) and Phil's Diner at 11138-11142 Chandler Boulevard (just east of the proposed Lankershim station site on the south side of Chandler).



The North Hollywood SP Depot, located south of the right-of-way just west of Lankershim Boulevard, and currently occupied by a retail business.



Phil's Diner, located on the south side of Chandler Boulevard between Lankershim and Cahuenga Boulevards.

One-hundred year floodplains are located just south of the alignment along Griffith Park Drive and north of the alignment in an area east of Victory Boulevard. The project is not expected to encroach into either of these floodplains. The eastern end of the alignment crosses Burbank Western Channel which is designated as a blueline stream. Construction in the channel may require a Section 404 "Nationwide" permit from the U.S. Army Corps of Engineers. The corps will ordinarily deny a permit to a project if it impairs the carrying capacity of a floodway.

Environmental Impacts by Modal Technology

Bikeway Facilities

Implementation of a Class I bike path and/or Class II bike lanes within the acquired right-of-way would have minimal environmental impacts. Potential impacts include:

- Safety - Potential operational and safety issues at intersections due to conflicts between bicyclists and motor vehicles.

Bus Transitway Facilities

The potential impacts of implementation of a transitway/trolley bus system within the Burbank Branch right-of-way include:

- Noise - Minor increases in noise levels at sensitive receptors due to introduction of bus traffic in quiet residential neighborhood. Electrically powered vehicles would be generally quieter than buses powered by alternative fuels.

- Visual - Catenaries for a trolley bus line could have a minor adverse impact on the visual environment of the residential neighborhoods. Construction of the transitway may also require removal of some vegetation and a few trees within the right-of-way. Providing landscaping could mitigate the visual impact of the loss of existing vegetation.

- Traffic and Parking - Additional bus through traffic could create additional delays at intersections. If buses use surface streets at eastern end of the alignment to gain access to the Burbank station, then traffic flow on local streets and at intersections may be adversely affected. Removal of some on-street parking may be required to accommodate stops.

- Right-of-way Acquisition - Street widening and property acquisition may be required to accommodate station/stops.

- Safety - Introduction of bus traffic in the right-of-way could increase the risk of conflicts with motor vehicles or pedestrians at intersections. Because the catchment area for Thomas A. Edison Elementary School extends south of the rail

tracks, the safety of school children who are required to cross the transitway may an issue of concern to the community.

- Community Access - Transitway could be perceived by residential community as a barrier dividing the community and inhibiting cross alignment pedestrian access.

- Historic Resources - Extension of the transitway west to SR-170 may affect Lankershim Southern Pacific Depot which is located immediately west of Lankershim and south of the existing rail tracks. The Depot has been determined eligible for the National Register. Phil's Diner at 11138-11142 Chandler Boulevard, which has also been determined eligible for the National Register, may experience minor increases in noise levels due to traffic generated by the proposed North Hollywood transitway station, which would be an incremental expansion of the Metro Red Line terminus already planned for the site.

A transitway with bikeway facilities within the acquired right-of-way would result in impacts similar to those described above, in addition to the following:

- Visual - A bikeway within the railroad right-of-way would provide little space for landscaping to mitigate the visual impact of the loss of existing vegetation.

- Traffic and Parking - Bicycle traffic within the median could increase intersection complexity with attendant increases in safety concerns and potential impacts. Routing the bike lanes around station platforms could cause loss of parking of up to three hundred feet opposite each platform location.

- Safety - Increased potential for transit vehicle, vehicular and bicycle traffic conflicts.

LRT Facilities

The impacts of implementing a double-track electrified light rail transit line along the right-of-way are described below.

- Noise - Noise from LRT operations including train passbys, train horns and warning bells could result in significant adverse increases in CNEL noise levels at residences along the alignment. Potential mitigation measures include soundwalls or berms, constructing the light rail in a trench, using lower sound level bells at grade crossings, or adjusting the operating schedule during nighttime hours to reduce train speeds. Even with implementation of mitigation measures, impacts may be significant and adverse. Soundwalls may have an adverse impact on community identity.

- Visual - The poles and overhead wires of the catenary system could have a minor adverse visual impact on the residential areas. Soundwalls constructed to mitigate noise impacts could invite graffiti and be visually intrusive. Construction of the light rail line may also require removal of existing vegetation and a few trees located within the right-of-way. Providing landscaping would buffer the facility from adjacent uses and mitigate the visual impact of the loss of existing vegetation.

- Traffic and Parking - The addition of rail traffic could create additional delays at grade crossings. Traffic generated by stations may adversely affect the level of service at local intersections. Traffic at Hollywood Way station may adversely affect adjacent residential neighborhoods. LRT stations may also result in spillover parking impacts. Cross alignment access to Helms Bakery would be eliminated resulting in additional truck traffic through a residential neighborhood.

- Right-of-way Acquisition - Proposed stations may require acquisition of additional right-of-way for parking displacing existing businesses. An elevated structure at the eastern end of the alignment would require acquisition of some adjacent business property including a storage yard used by lumber company and SP railroad and a commercial building located immediately east of the SP mainline railroad right-of-way.

- Safety - LRT traffic along the right-of-way would result in potential conflicts with motor vehicles or pedestrians at grade crossings. The fact that the catchment area for Thomas A. Edison elementary school, which extends south of the SP rail tracks, would require students to cross the LRT alignment may be an issue of concern to the local community. Signs, warning bells and gates would be provided at grade crossings per PUC requirements to minimize potential risks.

- Community Access - The LRT and fencing along the alignment would be a barrier dividing the residential community and diminishing cross alignment pedestrian access. Some Thomas A. Edison Elementary School students may be forced to take more circuitous routes to school.

- Historic Resources - Phil's Diner at 11138-11142 Chandler Boulevard, which has been determined eligible for the National Register, may experience minor increases in noise levels due to traffic generated by the proposed North Hollywood LRT station.

Implementation of both an LRT facility and bikeway facilities within the SP right-of-way would result in impacts similar to those described above, in addition to the following:

- Visual - Minimal space would be available for landscaping to buffer the facility from adjacent uses and mitigate the visual impact of the loss of existing vegetation.

- Traffic and Parking - The addition of either Class I or Class II bike lanes in the median next to LRT would further increase the complexity of intersections and traffic flow.

- Safety - Class I bikeway within the median may pose special operational and safety problems at intersections due to conflicts with motor vehicle turn movements.

Figure 3-8 summarizes the environmental assessment of the modal technologies within the Study Corridor.

Figure 3-8. Environmental Assessment of Modal Technologies

TECHNOLOGY OPTIONS	Impact to Residential Areas	Compatibility with Adopted Plans	Other Environmental Issues	Criteria Total
Bikeways	●	◒	●	●
Transitway/ Trolley-Bus	◒	◒	◒	◒
LRT	○	○	○	○

● Best ◒ Intermediate ○ Worst

3.3.4 Engineering Feasibility

This section assesses engineering requirements, physical constraints and implementation issues associated with each of the corridor alternatives. To provide a basis for the assessment, the following engineering assumptions were made:

- Bikeway - Class I and II bikeway specifications are based on the Planning and Design Criteria for Bikeways in California published by Caltrans.

- Transitway - The transitway engineering assumptions were based on the HOV Design Criteria published by Caltrans. Since this alternative will be an exclusive bus facility, the design criteria was modified to reduce right-of-way requirements. For example, a breakdown lane was considered optional in constrained areas.

  The power supply system criteria for the trolley-bus option was derived from the Electric Trolley Bus Study for the RTD and the LACTC prepared by Booz-Allen & Hamilton, Inc., June 1991.

- LRT - The design of the LRT was based on the Los Angeles Blue Line Design Criteria.

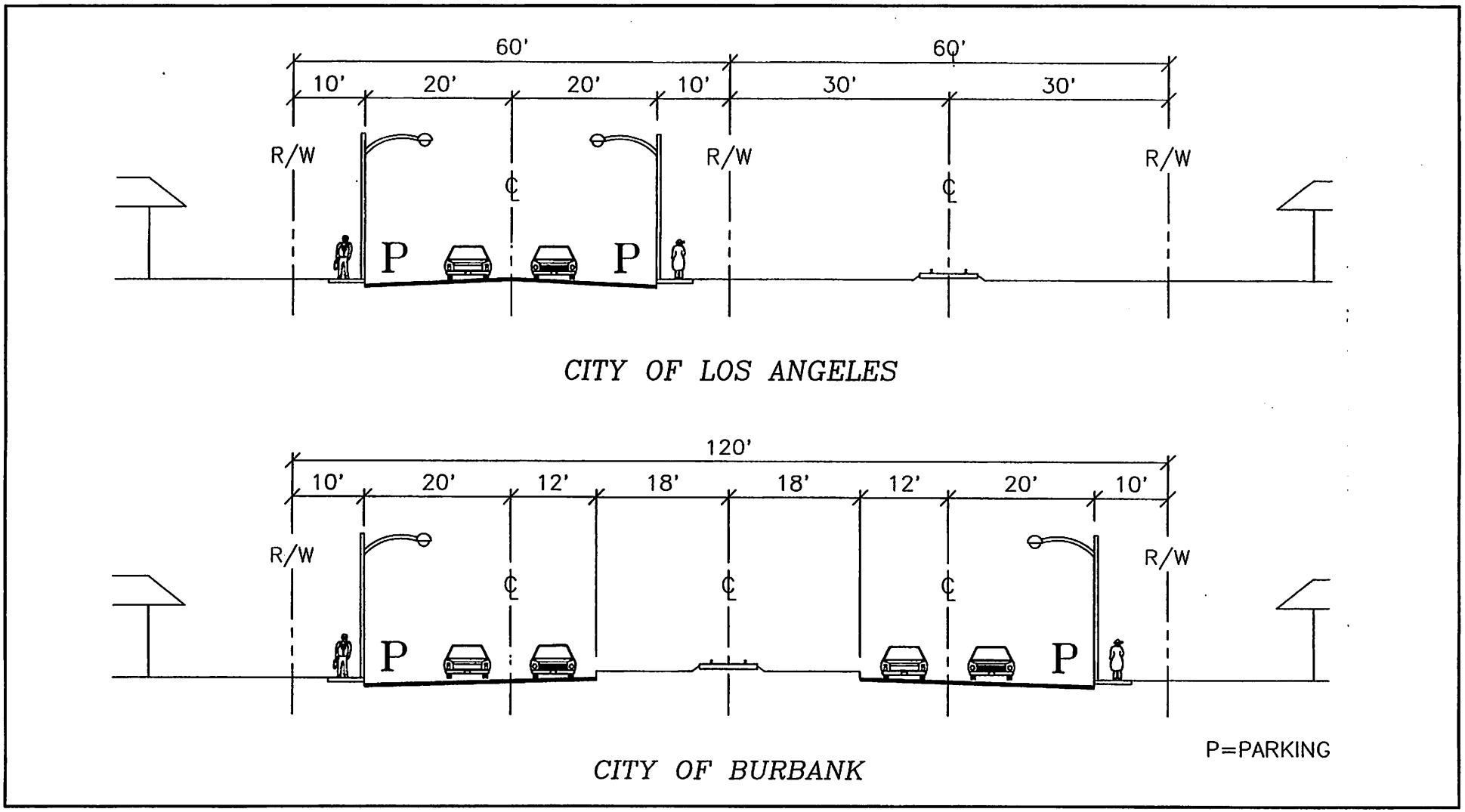
Using the above criteria, aerial photographs, and Chandler Boulevard as-built drawings, plan and profile sheets and typical sections were developed to assist in the engineering assessment.

Existing roadway and right-of-way widths were found to vary through the corridor. The typical right-of-way width in the Los Angeles section is 60 feet for Chandler Boulevard and 60 feet for the railroad. The Chandler Boulevard cross-section in Los Angeles includes two through lanes, one each direction, and parking on both sides of the street. The existing Chandler Boulevard cross-section in the City of Burbank includes two roadways (north and south) separated by a median containing the existing railroad track. Both the south and north roadways contain two-way traffic (one lane each direction) and parking on one side of the street. The existing right-of-way varies within this section; west of Hollywood Way the typical right-of-way for the railroad and both roadways totals 130 feet and east of Hollywood Way the typical total right-of-way is 120 feet. Figure 3-9 displays the existing typical corridor cross-sections within the Cities of Los Angeles and Burbank.

Engineering Feasibility Assessment

Categories and factors were developed to assess the engineering requirements, physical constraints and implementation issues associated with the alternatives. The following categories guided the evaluation:

Existing Chandler Blvd.



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

- Complexity of Construction - Measures the complexity of construction and implementing the alternative modal technologies within the existing right-of-way. Factors examined included:

  - Type of guideway construction - at-grade, aerial or tunnel. At-grade construction is typically easier to construct than aerial and aerial is easier to construct than tunnel.

  - Impacts to existing streets during construction including traffic maintenance during construction requirements. Traffic maintenance during construction can greatly increase the cost and complexity of construction.

  - Construction items. Typically, the more items to construct the more complex the construction.

- Required structures - Structures include bridges, retaining wall, tunnels; indicates how the alignment fits within the corridor. Structures are typically required to mitigate grades, cross roadways and to minimize right-of-way impacts.

- Major Drainage and Utility Conflicts - Measures the impact of an alternative on the existing drainage and utility infrastructure. Major conflicts are typically found to occur with paralleling utilities that are in close proximity to the alignment of the corridor options.

- Requirements for Additional Right-of-Way (ROW) - Measures the additional ROW required for implementing an alternative.

Key points of comparison from the engineering feasibility assessment of the corridor alternatives are summarized below by category:

Complexity of Construction -

- Bikeway options (1A and 1B) would be less costly to construct than Transitway or LRT due to fewer physical installations and few impacts to Chandler Boulevard

- Transitway options would be easier to construct than LRT because construction activities would be similar to any road facility, and there would be no need for a power supply or stray current isolation (unless Trolley-bus were implemented)

- The Trolley-bus would be more complex than a paved Transitway, but still less complex than LRT.

Required Structures -

- All alternatives have minor structural requirements which are typically limited to the bridge over the Burbank Western Flood Control Channel.

- The Transitway and LRT options may require a low retaining wall along the median of Chandler Boulevard due to elevation difference between the north and south roadways.

Major Drainage and Utility Conflicts -

- No major drainage or utility conflicts were identified for any bikeway or transitway options. Trolley-bus implementation could pose some potential utility conflicts.

- Potential cathodic and loading mitigation measures may be required in the LRT alternatives where LRT would cross utility lines.

Issues, opportunities and constraints associated with implementing each of the alternatives within the existing right-of-way are discussed below:

Alternative 1: Right-of-Way Preservation/Class III Bike Facilities

Engineering Feasibility - Appropriate steps would be taken to preserve the property for future use. No significant issues identified.

Alternative 1A: Class I Bike Path

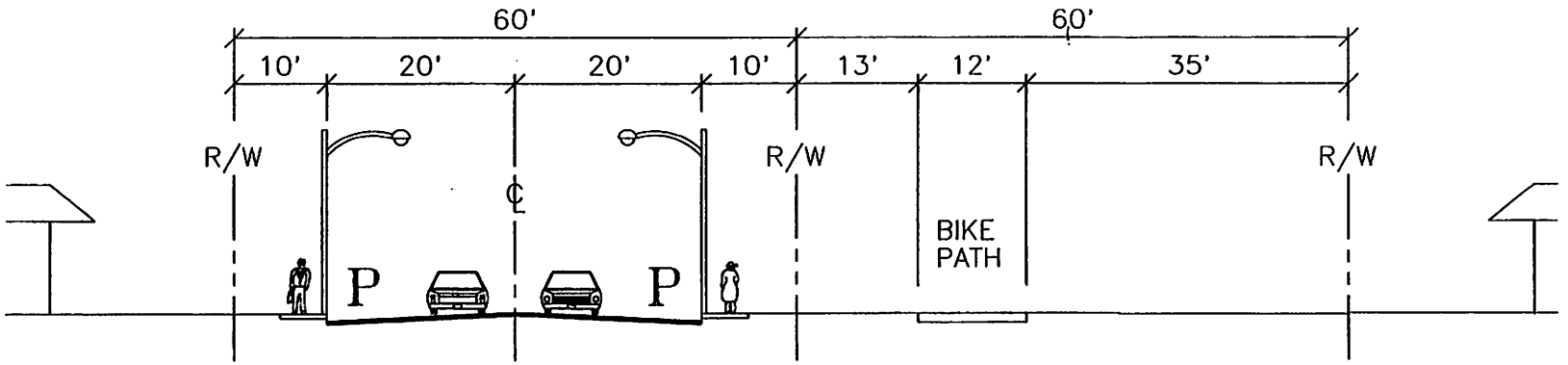
Engineering Feasibility - The Bike Path would be implemented according to Caltrans design criteria, which recommend a minimum twelve-foot wide exclusive facility for bi-directional travel, with an additional three feet of width on each side for a graded, paved shoulder or buffer area, for a total of eighteen feet. Striping would be employed to separate travel lanes and shoulder/buffer areas. Since the facility would be separated from adjacent streets or highways by landscaped right-of-way, as shown in Figure 3-10, Caltrans barrier separation recommendations would not apply. However, intersections treatments are a key concern, and the following potential configurations could be employed in this alternative:

City of Los Angeles Segment

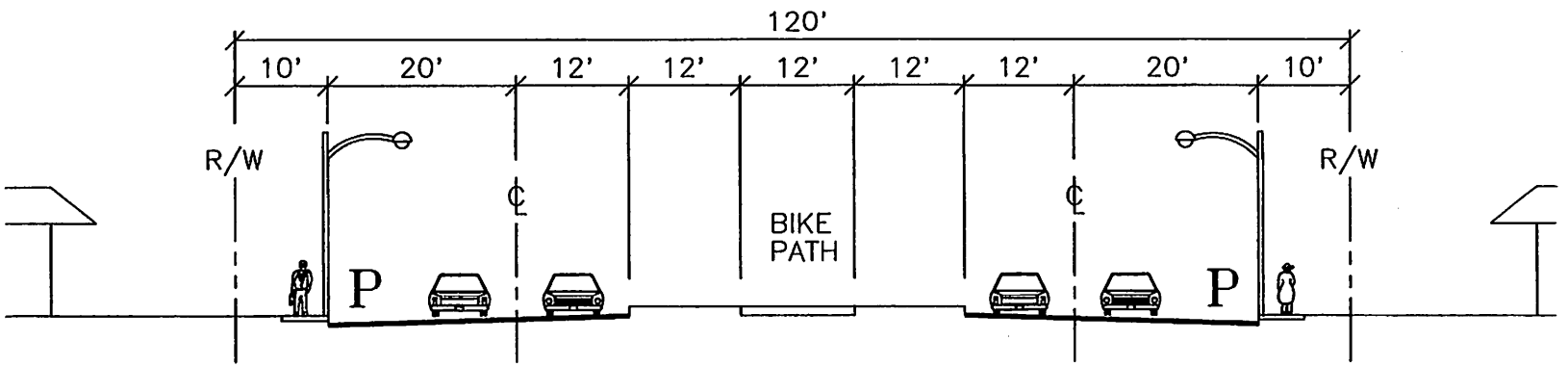
Within the Los Angeles segment of the Chandler Boulevard corridor the bike path would be along the south side of the street and within the rail right-of-way. The bike path would cross each street within the existing pedestrian cross-walk as shown in Figure 3-11.

SP Burbank Branch East Corridor - Class 1 Bike Path

Alternate 1A



CITY OF LOS ANGELES



P=PARKING

CITY OF BURBANK

NORTHEAST SAN FERNANDO VALLEY
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LACTC

BRW

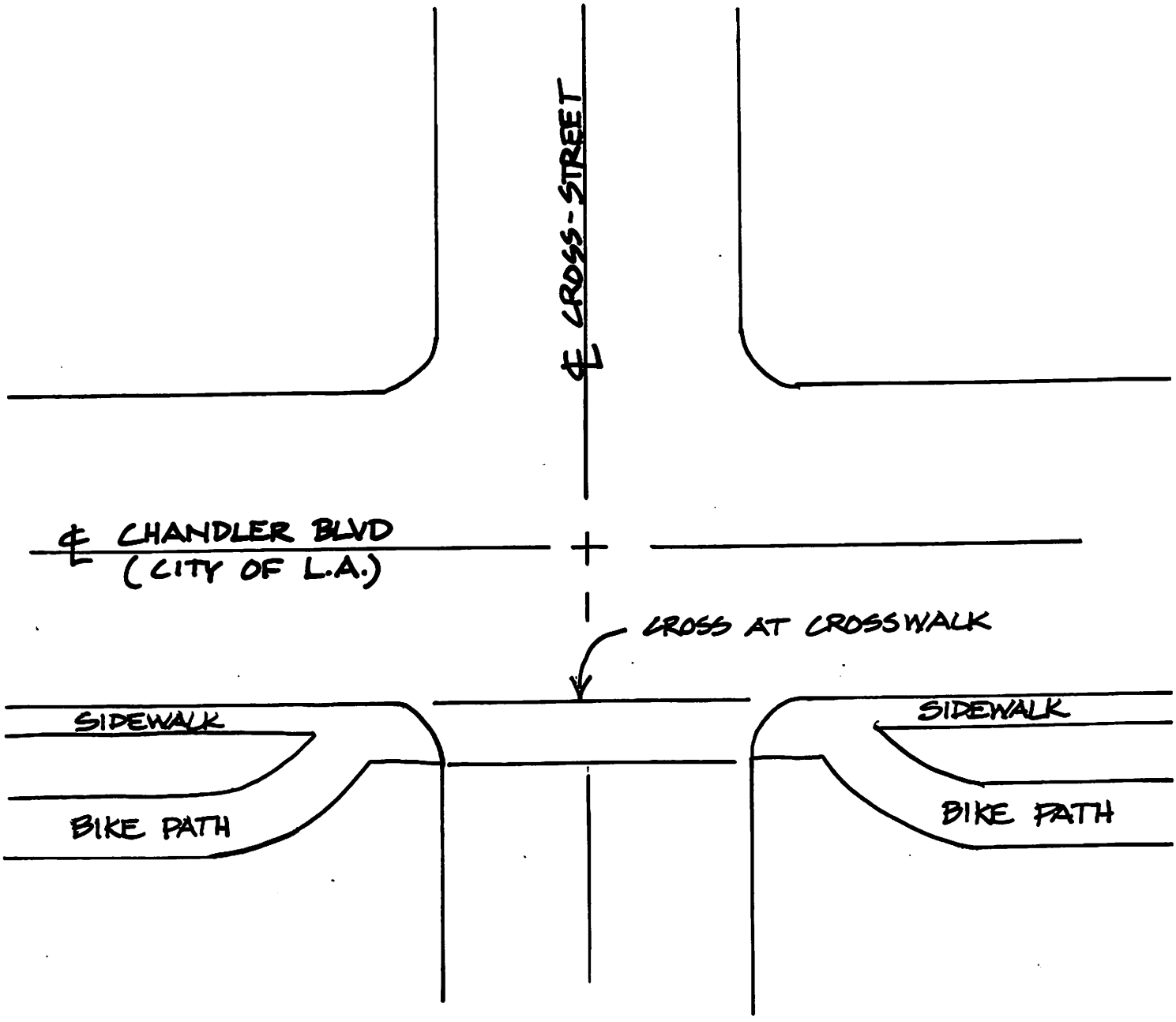
Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

3-10

Bike Path Cross-Street Crossing



TYPICAL BIKE PATH CROSS-STREET CROSSING
CHANDLER BLVD. (L.A. SEGMENT)

NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Not To Scale

3-11

Source: BRW, Inc., 6 May 1992

City of Burbank Segment

Within the City of Burbank segment the bike path is located within the wide median of Chandler Boulevard. At intersection locations, a number of options exist with a median running bike path.

- Controlled crossing (Figure 3-12). The street-crossing could be controlled with either a stop sign or could be controlled with a signal activator/signal modifications. The stop sign controlled crossing would require the bicyclist to check for left-turning and crossing vehicles. The signal controlled crossing would not have crossing conflicts and the existing signal could be modified to allow protected left-turns only, eliminating left turn conflicts. The issue of unnatural right turns would still exist.

- Grade separation (Figure 3-13). A cross-street grade separation would mitigate all issues and would provide a safe street-crossing but would significantly increase implementation costs.

Aside from intersection treatments, this alternative requires no additional right-of-way or structures, has no apparent utility conflicts, and would not be costly to design or construct, unless grade separations at intersections were implemented.

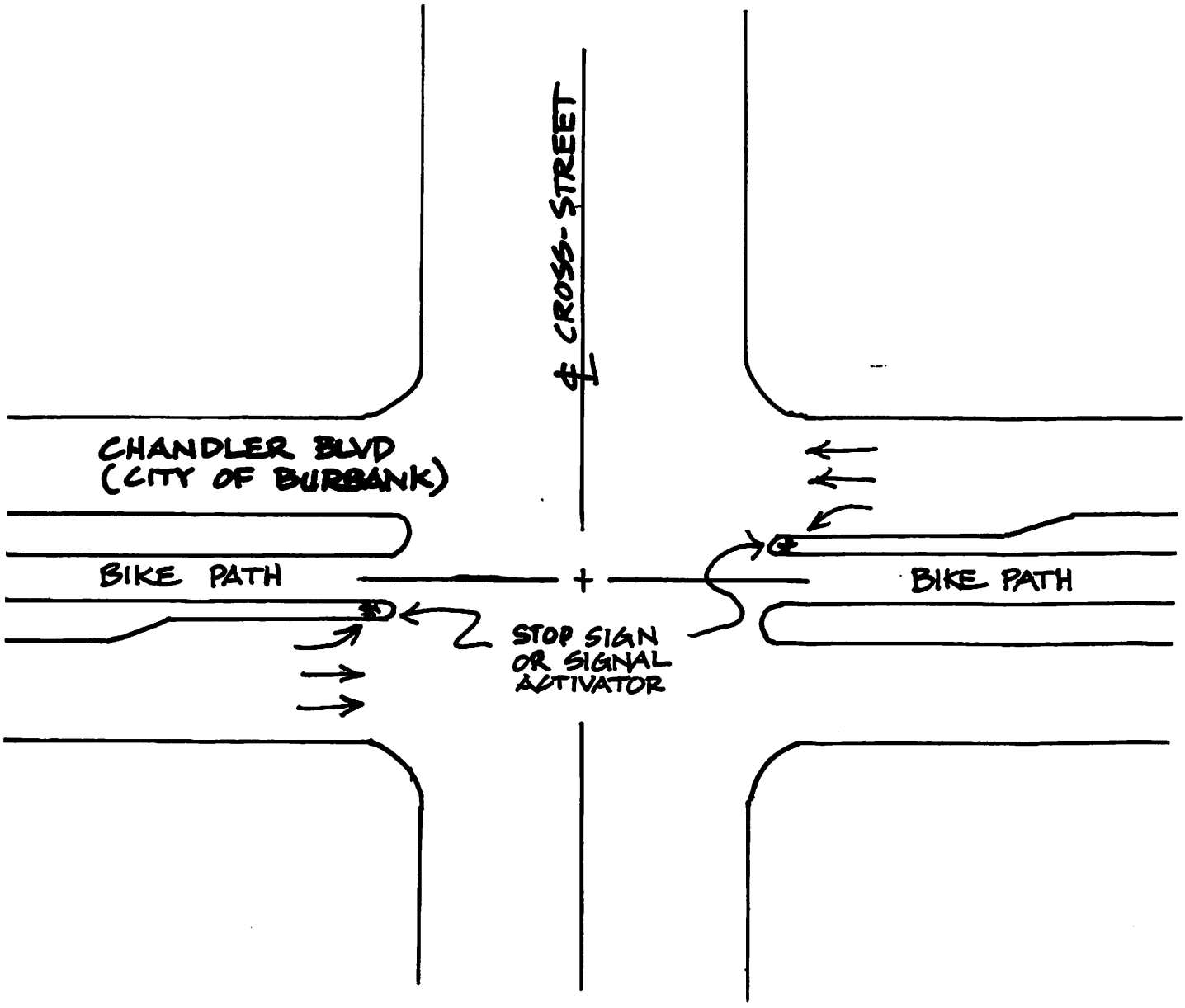
Alternative 1B: Class II Bike Lane

Engineering Feasibility - Since the Bike Lanes would fit within the existing streets with minor reconfigurations, construction complexity would be limited at-grade street modifications, primarily in the Burbank segment. No additional right-of-way is needed, and there are no apparent structural requirements or utility conflicts. Figure 3-14 illustrates the revised layouts in cross-section format for this alternative.

Alternative 2: Transitway Only

The transitway would be implemented within the existing right-of-way and would include two through lanes (one lane each direction) as displayed in Figure 3-15. Shoulders/breakdown lanes would be provided within the Los Angeles section and Burbank section west of Hollywood Way. However, due to the limited median width and to mitigate additional right-of-way requirements, no shoulder/breakdown lanes would be proposed along Chandler Boulevard east of Hollywood Way. Additionally, barriers would be required to separate contra-flow vehicles within the Burbank section of the corridor.

Bike Path Crossing Using Intersection Controls



TYPICAL BIKE PATH CROSS-STREET CROSSING USING INTERSECTION CONTROLS CHANDLER BLVD. (BURBANK SEGMENT)

NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

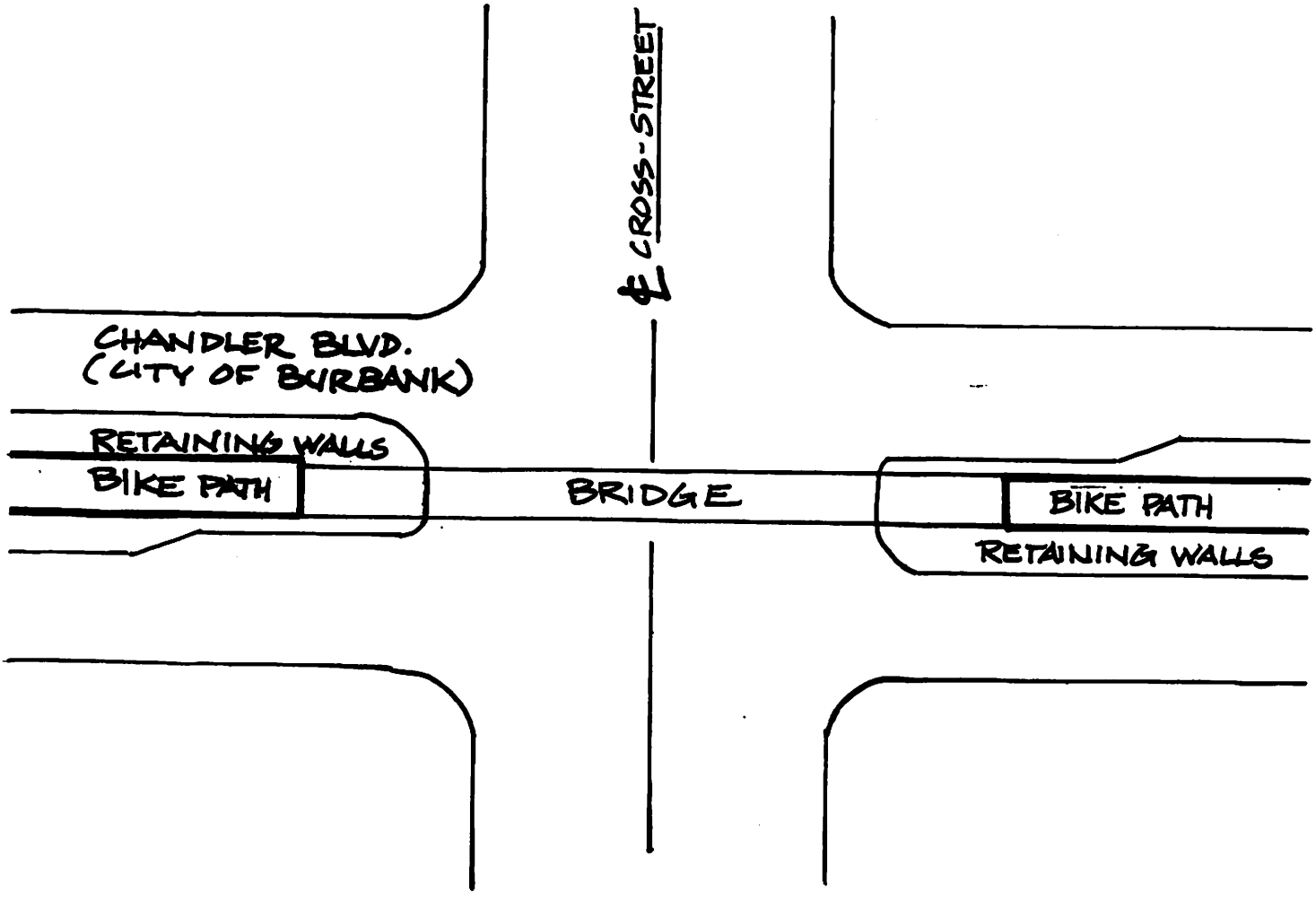
N

Not To Scale

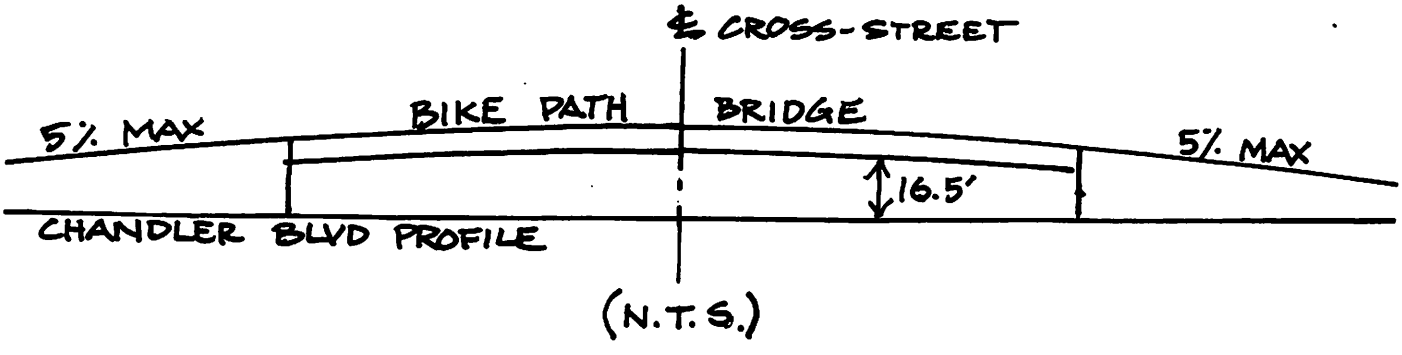
3-12

Source: BRW, Inc., 6 May 1992

Bike Path Cross-Street Grade Separation



TYPICAL BIKE PATH CROSS-STREET GRADE SEPARATION
(N.T.S.)



(N.T.S.)

NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

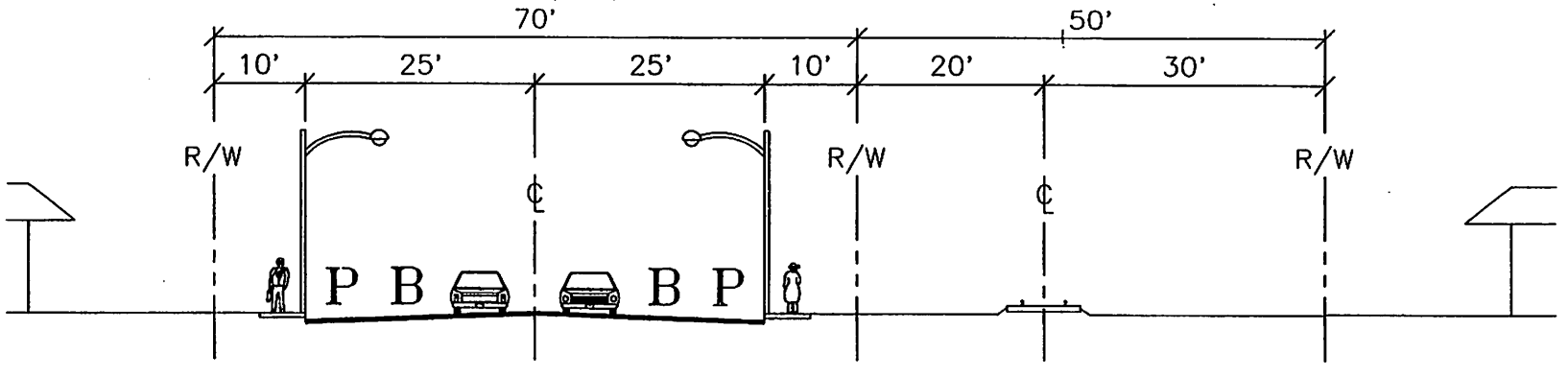
Not To Scale

3-13

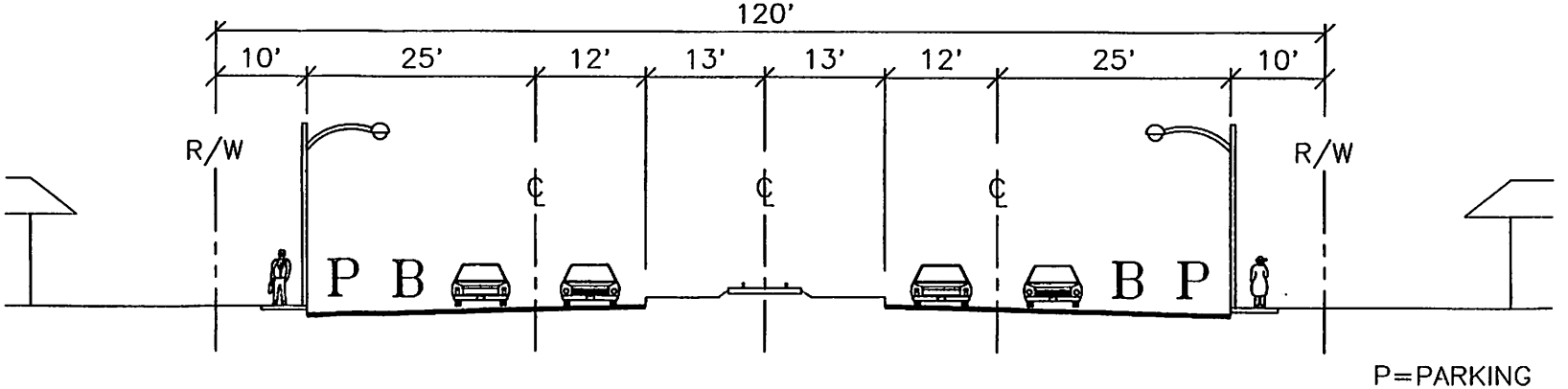
Source: BRW, Inc., 6 May 1992

SP Burbank Branch East Corridor - Class 2 Bike Path

Alternate 1B



CITY OF LOS ANGELES



P=PARKING
B=BIKEWAY

CITY OF BURBANK

NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

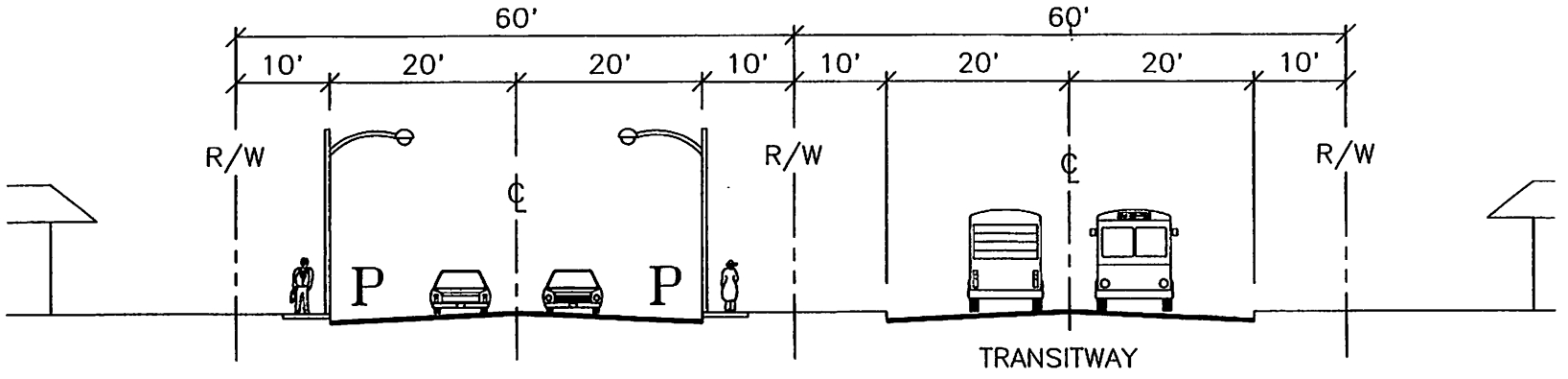
Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

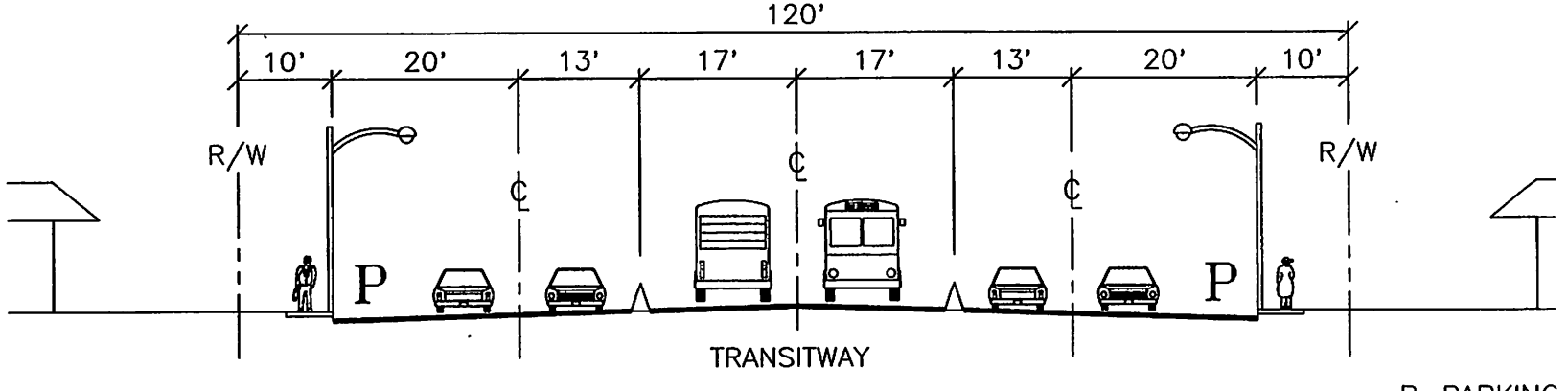
3-14

SP Burbank Branch East Corridor - Transitway

Alternate 2



CITY OF LOS ANGELES



CITY OF BURBANK

NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

3-15

At the bus stop locations west of Hollywood Way, the proposed shoulder/breakdown lane would be replaced with 10 foot wide passenger platforms. East of Hollywood Way, on-street parking could be eliminated at stop locations to mitigate additional right-of-way requirements. Another possible technique which could be employed to provide both parking and the platform facilities would be reductions in lane width to ten feet for brief segments of both sides of Chandler Boulevard opposite platform locations.

Complexity of Construction - The transitway is proposed to be constructed at-grade with no cross-street grade separations. The guideway construction would be very similar to typical street construction and would not be difficult to construct. Impacts to the existing street during construction would be limited to stop locations in the Burbank section of Chandler Boulevard east of Hollywood Way.

Trolley-bus implementation would add complexity to construction by requirements to add the power supply system. Poles, wires and substations would need to be constructed along with the guideway.

Required Structures - Structure requirements for this alternative are minor and limited to a bridge over the existing Burbank Western Flood Control Channel and a possible low retaining wall along the median of Chandler Boulevard due to the elevation difference between the north and south roadways. No cross-street overpasses have been assumed.

Major Drainage and Utility Conflicts - No major drainage and utility conflicts were identified for this alternative. Possible minor storm drain access conflicts exist at Chandler Boulevard median stop locations where the station platforms extend into the existing street. Another potential minor drainage conflict could occur where the existing drainage crosses the Chandler Boulevard median. Both of the minor conflicts can be resolved with minimal adjustments to the existing drainage system.

Required Additional Right-of-Way - Additional right-of-way might be required for the implementation of this alternative. Potential locations identified for additional right-of-way include the Burbank Terminal station for a bus turn-around and station locations along Chandler Boulevard east of Hollywood Way if on-street parking is to remain.

Additional right-of-way may be required for Trolley-Bus power substation locations.

Alternative 2A: Transitway with Class I Bike Path

The transitway would be implemented within the existing right-of-way and would include two through lanes (one lane each direction) and a 12 foot bike path as displayed in Figure 3-16. A shoulder/breakdown lane would be provided for the Los Angeles section of the corridor. However for the Burbank section, because of the constrained median width and to minimize additional right-of-way requirements, no breakdown lanes would be provided. Along with the elimination of the shoulder/ breakdown lane, reduction in transitway lane widths and elimination of parking on one side of the street would be required in the section east of Hollywood Way to minimize right-of-way impacts. Additionally, along the Burbank section barriers would be required to separate contra-flow vehicles and bicycles.

For bus stop locations in the Los Angeles section the shoulder would be replaced with 10 foot wide passenger platforms. For the Burbank section stop locations on-street parking would have to eliminated and lane widths potentially reduced to mitigate additional right-of-way requirements for implementation both the bike path, transitway and bus stop. Another potential technique to provide space for parking and other platform facilities would be to reduce lane width to ten feet opposite platform location. Figure 3-17 displays the configuration of the bikeway and transitway adjacent to a station site.

Complexity of Construction - With the addition of the bike path to transitway within the median, the complexity of construction will increase. The construction will no longer be a typical street-like construction with the addition of the bike path. Construction will include additional bike path pavement, barriers, signing and striping and within the Burbank section additional construction within the existing street resulting in traffic maintenance during construction.

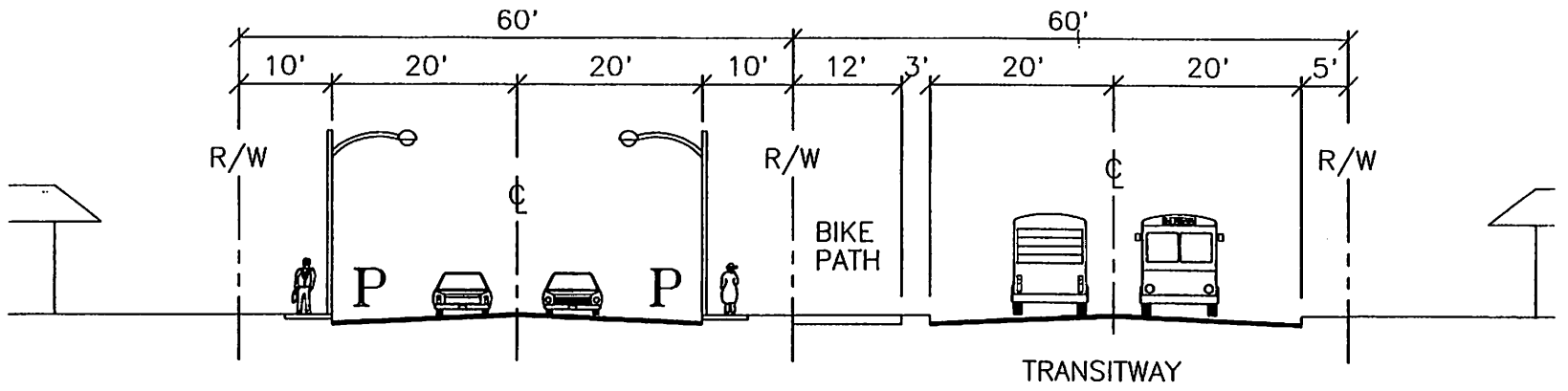
Trolley-bus implementation would add complexity to construction by adding the power supply system including poles, wires and substations along with the guideway.

Required Structures - Structure requirements for this alternative are minor and limited to a bridge over the existing Burbank Western Flood Control Channel and a possible low retaining wall along the median of Chandler Boulevard due to the elevation difference between the north and south roadways. No cross-street over passes were assumed.

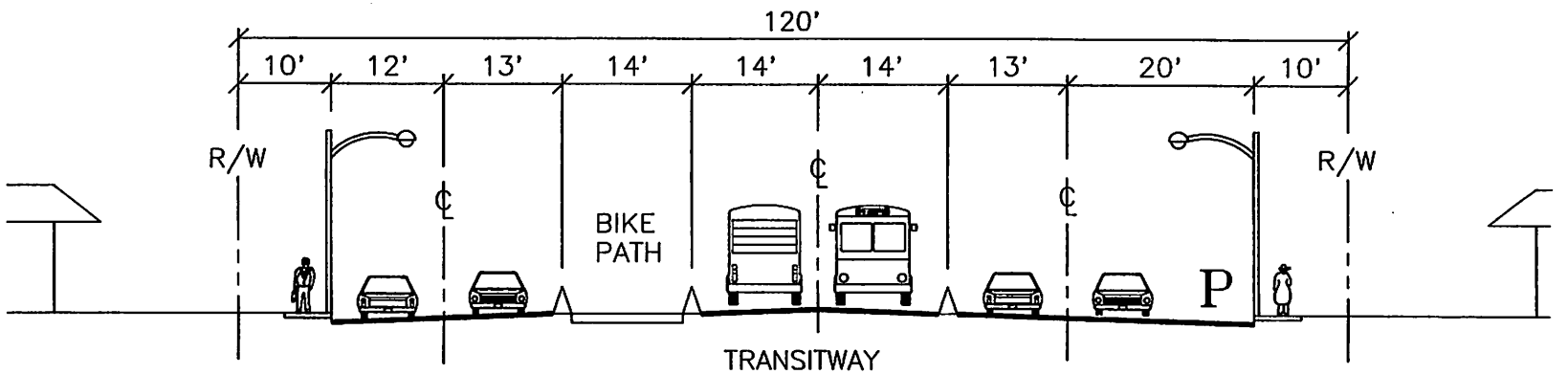
Major Drainage and Utility Conflicts - No major drainage and utility conflicts were identified for this alternative. Possible minor storm drain access conflicts exist at Chandler Boulevard median stop locations where the station platforms extend into the existing street. Another potential minor drainage conflict could occur with drainage crossing the Chandler Boulevard median. Both of the minor conflicts can be resolved with minimal adjustments to the existing drainage system.

SP Burbank Branch East Corridor - Transitway with Class 1 Bike Path

Alternate 2A



CITY OF LOS ANGELES



CITY OF BURBANK

NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

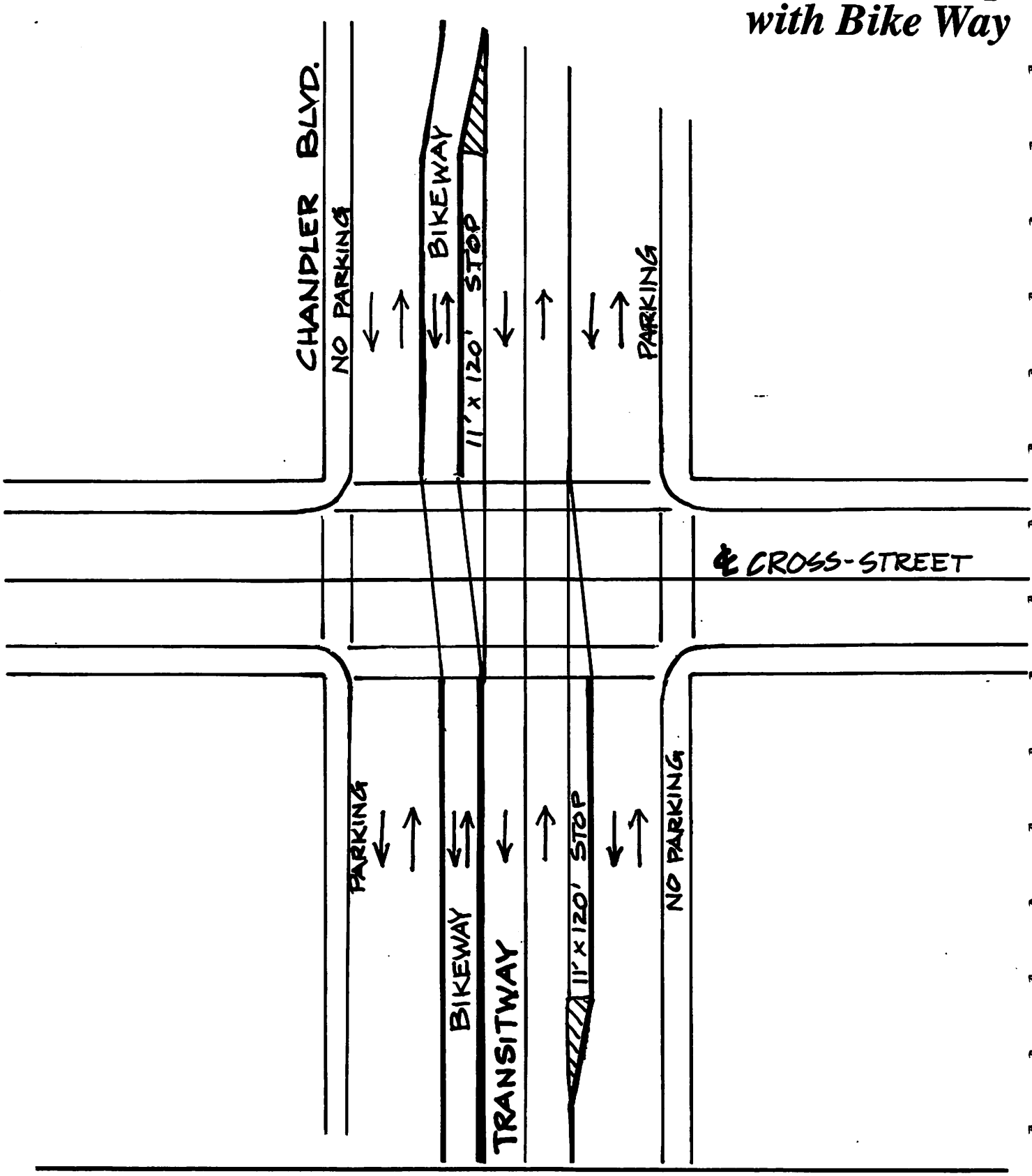
Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

3-16

Transitway Stop with Bike Way



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Not To Scale

3-17

Source: BRW, Inc., 6 May 1992

Required Additional Right-of-Way - It is not possible to maintain the existing street cross-section while implementing the Transitway and Class I Bike Path without requiring additional right-of-way along the Burbank section east of Hollywood Way. However, by eliminating on-street parking on either the north or south roadways and reducing the transitway lane widths to the accepted minimum, no additional right-of-way would be required. At bus stop locations within this section would require eliminating parking and reduction of through lane widths on both the north and south roadways.

Additional right-of-way might also be required for the Burbank Terminal to facilitate a bus turn around.

For the Trolley-Bus alternative, additional right-of-way may be required for power substation locations.

Alternative 2B: Transitway with Class II Bike Lanes

The transitway bus would be implemented within the existing right-of-way and would include two through lanes (one lane each direction) and five foot bike lanes along Chandler Boulevard as displayed in Figure 3-18. Shoulder/breakdown lanes would be provided for the Los Angeles section. However, no shoulder/breakdown lanes would be provided in the Burbank section and parking would be eliminated on either the north or south roadway to minimize right-of-way impacts. Additionally, along the Burbank section of the corridor barriers would be required to separate contra-flow vehicles.

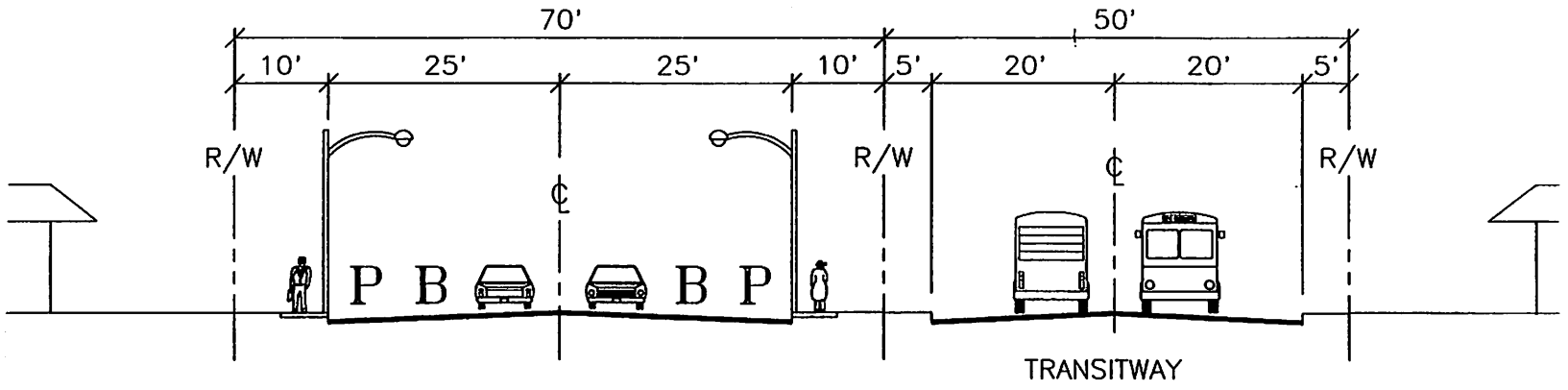
For bus stop locations in the Los Angeles section the shoulder would be replaced with 10 foot wide passenger platforms. For the Burbank section stop locations on-street parking on both roadways would have to eliminated to mitigate additional right-of-way requirements for implementation both the bike lanes, transitway and bus stop.

Complexity of Construction - The construction of a transitway within the right-of-way and bike lanes along Chandler Boulevard will increase the complexity of construction. The transitway is proposed to constructed at-grade with no impacts to the existing Chandler Boulevard within the Los Angeles section. However within the Los Angeles section, the proposed bike lanes would require expanding the existing Chandler Boulevard and require traffic maintenance during construction. The Burbank section would also require construction within the existing street and traffic maintenance during construction.

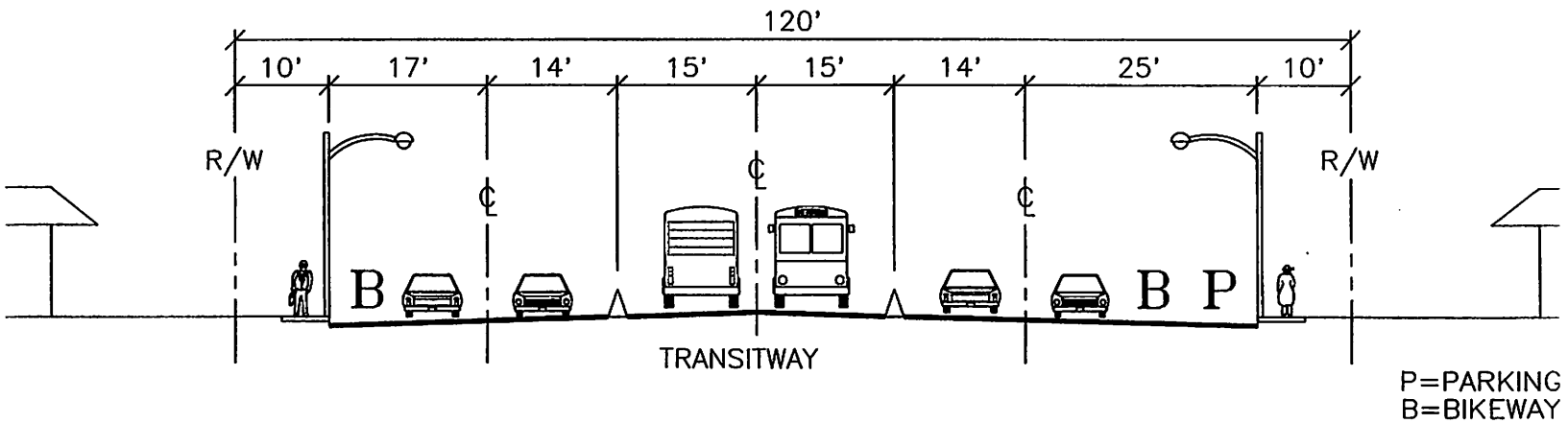
Trolley-bus implementation would add complexity to construction by adding the power supply system. Poles, wires and substations would need to be constructed along with the guideway.

SP Burbank Branch East Corridor - Transitway/Trolley-Bus

Alternate 2B



CITY OF LOS ANGELES



CITY OF BURBANK

NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

3-18

Required Structures - Structure requirements for this alternative are minor and limited to a bridge over the existing Burbank Western Flood Control Channel and a possible low retaining wall along the median of Chandler Boulevard due to the elevation difference between the north and south roadways. No cross-street over passes were assumed.

Major Drainage and Utility Conflicts - No major drainage and utility conflicts were identified for this alternative. Possible minor storm drain access conflicts exist at Chandler Boulevard median stop locations where the station platforms extend into the existing street. Drainage crossing the Chandler Boulevard median could also present possible conflicts. Both of the minor conflicts can be resolved with minimal adjustments to the existing drainage system.

Required Additional Right-of-Way - Maintaining the existing street cross-section while implementing the Transitway and Class II Bike Lanes without requiring additional right-of-way is not possible in the Burbank section east of Hollywood Way. However, by eliminating on-street parking on either the north or south roadways, no additional right-of-way would be required. Figure 3-19 illustrates the configuration of the bike lanes and Chandler Boulevard at an intersection adjacent to a station site.

Additional right-of-way may also be required for this alternative at the Burbank section bus stop locations and at the Burbank Terminal station. The combination of a bus stop and bike lanes would also require additional right-of-way if parking can not be eliminated and lane widths reduced for stops east of Hollywood Way. The bike lane could also be terminated at stop locations to mitigate right-of-way requirements. Additional right-of-way might also be required for the Burbank Terminal to facilitate a bus turn around.

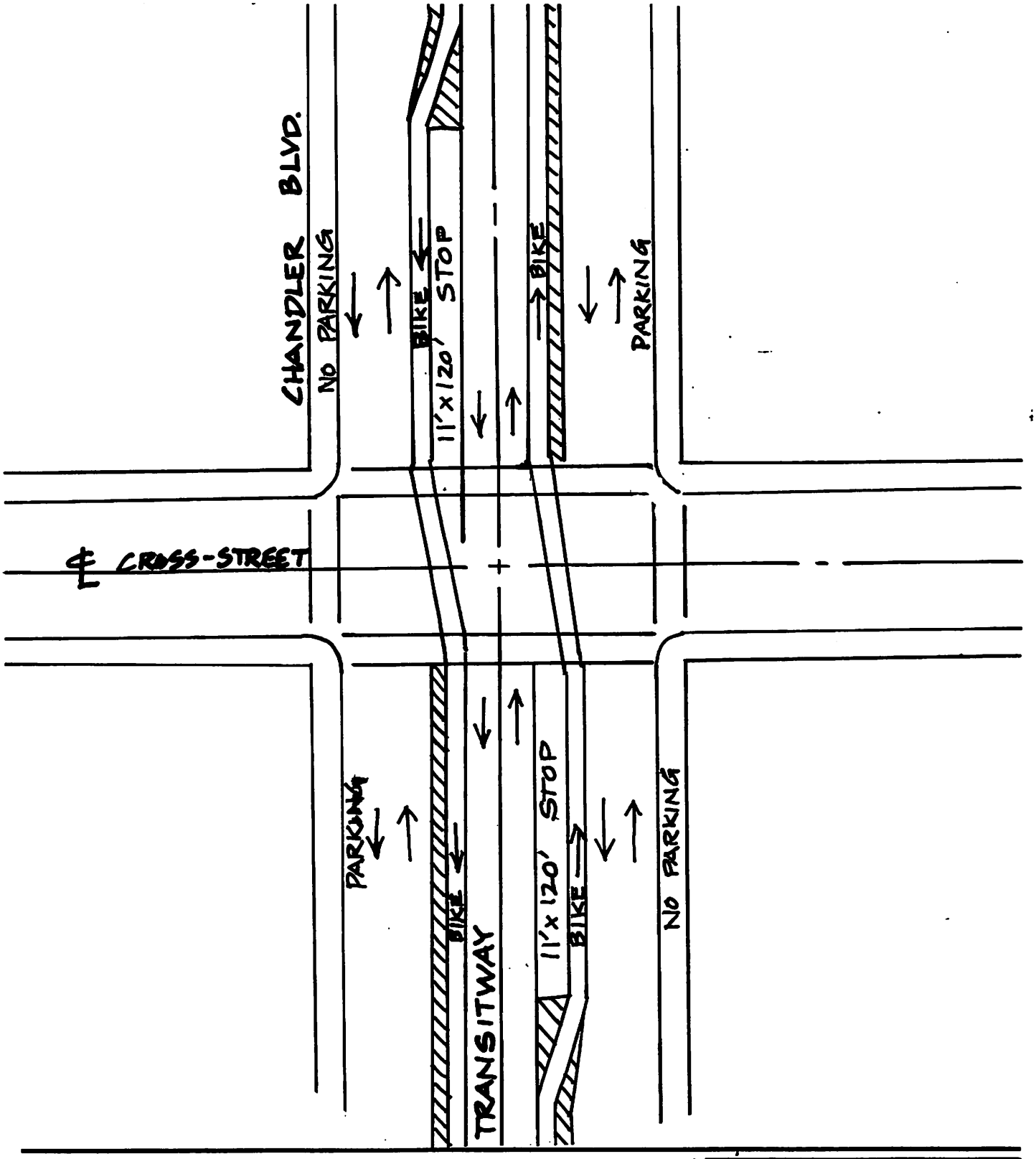
With Trolley-Bus implementation, additional right-of-way may be required for power substation locations.

Alternative 3: LRT Only

The LRT only alternative would be implemented within the existing right-of-way and would include two tracks within the existing railroad right-of-way. Typical sections for this corridor option are displayed in Figure 3-20.

Complexity of Construction - The LRT is proposed to be constructed at-grade and have no impacts to the existing Chandler Boulevard. LRT is typically more complex to construct than roadways due in part to rail installation including special trackwork, the catenary power system and provisions for stray currents/rail electrical isolation.

Transitway Stop with Bike Lane



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

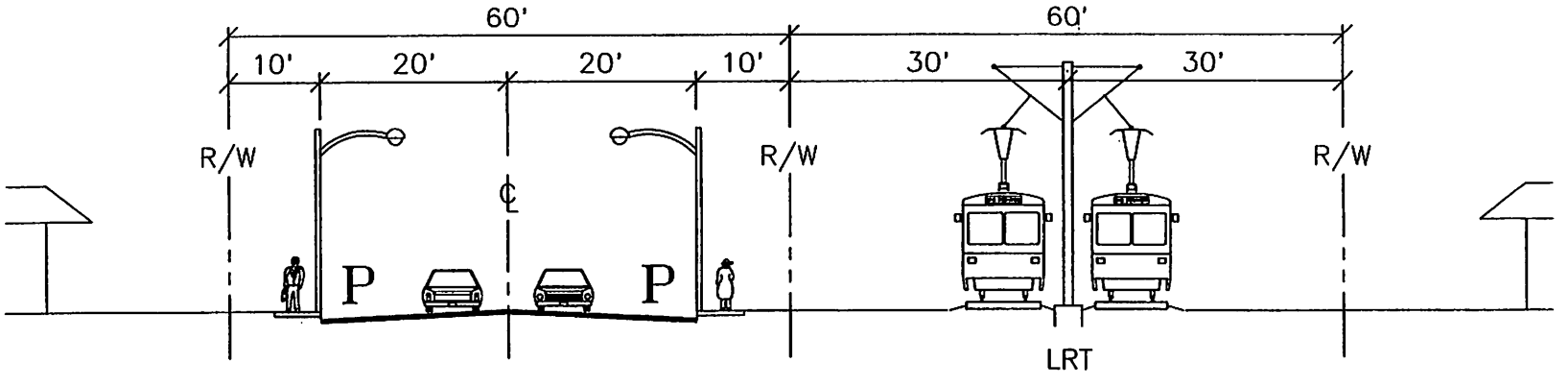
Not To Scale

3-19

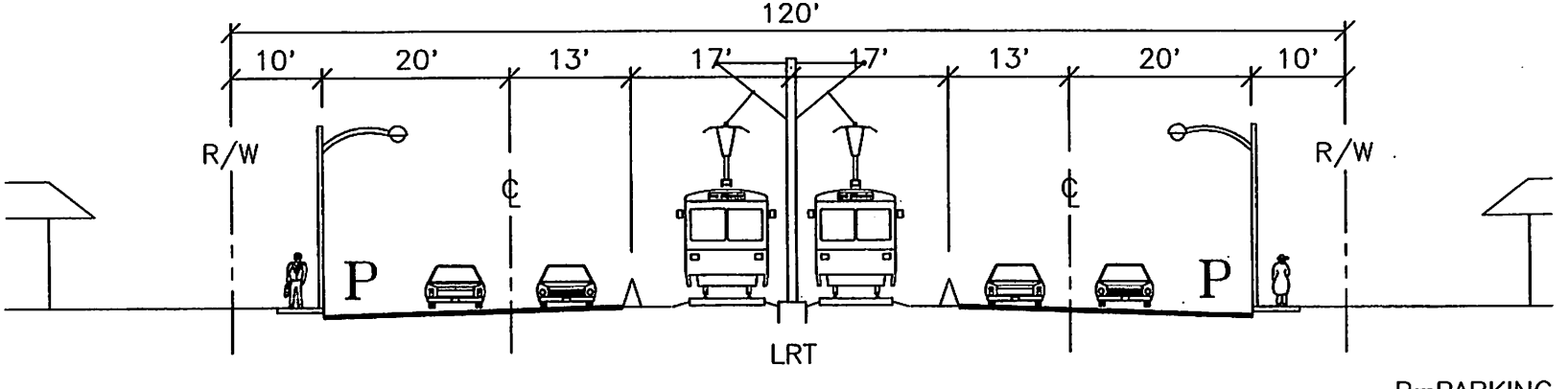
Source: BRW, Inc., 6 May 1992

SP Burbank Branch East Corridor - LRT Only

Alternate 3



CITY OF LOS ANGELES



CITY OF BURBANK

P=PARKING

NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

3-20

Required Structures - Structure requirements for this alternative are minor and limited to a bridge over the existing Burbank Western Flood Control Channel and a possible low retaining wall along the median of Chandler Boulevard due to the elevation difference between the north and south roadways. No cross-street over passes were assumed.

Major Drainage and Utility Conflicts - With the potential of stray currents and loading requirements, crossing utilities might require special cathodic protection or relocation deeper in the ground. Along with the crossing utility protection, a minor drainage conflict occurs due to drainage crossing the Chandler Boulevard median.

Required Additional Right-of-Way - Additional right-of-way might be required for power sub-station locations.

Alternative 3A: LRT with Class I Bike Path

The LRT Alternative with the Class I Bike Path would be implemented within the existing right-of-way and would include two tracks as displayed in Figure 3-21. Along the Burbank section additional barriers would be required to separate contra-flow vehicles and bicycles. For the Chandler section, east of Hollywood Way, on-street parking could be eliminated to implement both the bike path and LRT. At the Hollywood Way station, parking would also have to be eliminated to mitigate right-of-way requirements.

Complexity of Construction - The construction of both LRT and a bike path within the right-of-way will increase the complexity of construction. Along with the complex LRT construction, the bike path would add pavement, barriers, signing and striping and the segment east of Hollywood Way would require street reconstruction resulting in traffic maintenance during construction.

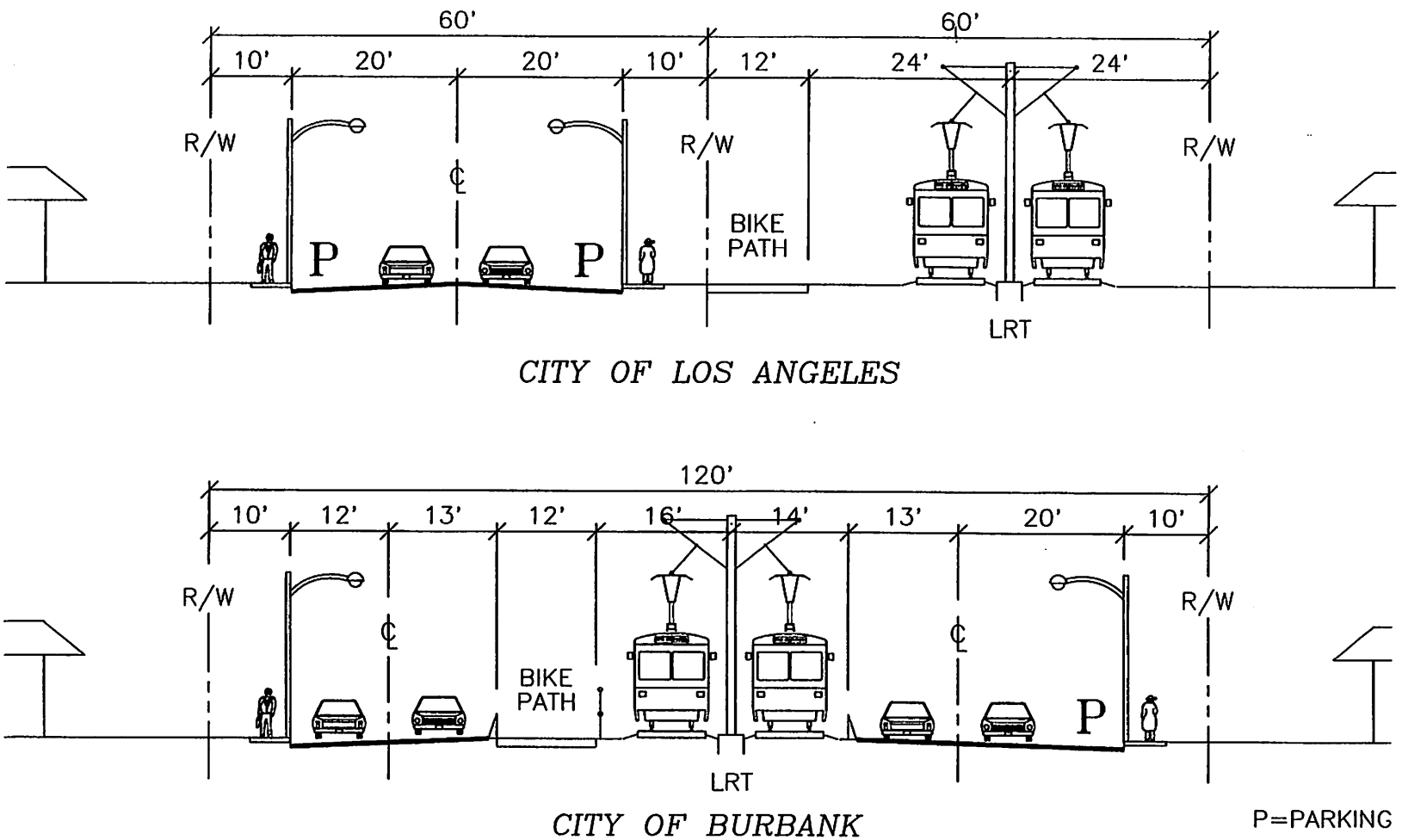
Required Structures - Structure requirements for this alternative are minor and limited to a bridge over the existing Burbank Western Flood Control Channel and a possible low retaining wall along the median of Chandler Boulevard due to the elevation difference between the north and south roadways. No cross-street overpasses were assumed.

Major Drainage and Utility Conflicts - With the potential of stray currents and loading requirements, crossing utilities might require special cathodic protection or relocation deeper in the ground. Along with the crossing utility protection, a minor drainage conflict occurs where drainage crosses the Chandler Boulevard median.

Required Additional Right-of-Way - Along the Burbank section east of Hollywood Way, maintaining the existing street cross-section while implementing the LRT and Class I Bike Path without requiring additional right-of-way is not possible. However, by eliminating on-street parking on either the north or south roadways, no additional right-of-way would be required.

SP Burbank Branch East Corridor - LRT With Bike Path

Alternate 3A



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

3-21

Additional right-of-way may also be required for power substation locations.

Alternative 3B: LRT with Class II Bike Lanes

The LRT Alternative would be implemented within the existing right-of-way and would include two tracks and bike lanes along Chandler Boulevard as shown on Figure 3-22. Barriers would be required to separate contra-flow vehicles within the Burbank section. For the Chandler section, east of Hollywood Way, on-street parking could be eliminated to implement both the bike lanes and LRT to minimize right-of-way requirements. At the Hollywood Way station, parking would also have to be eliminated to mitigate right-of-way requirements.

Complexity of Construction - The construction of a LRT guideway within the right-of-way and bike lanes along Chandler Boulevard will increase the complexity of construction. The guideway is proposed to constructed at-grade with no impacts to the existing Chandler Boulevard within the Los Angeles section. However within the Los Angeles section, the proposed bike lanes would require expanding the existing Chandler Boulevard and require traffic maintenance during construction. The Burbank section would also require construction within the existing street and traffic maintenance during construction.

Required Structures - Structure requirements for this alternative are minor and limited to a bridge over the existing Burbank Western Flood Control Channel and a possible low retaining wall along the median of Chandler Boulevard due to the elevation difference between the north and south roadways. No cross-street over passes were assumed.

Major Drainage and Utility Conflicts - With the potential of stray currents and loading requirements, crossing utilities might require special cathodic protection or relocation deeper in the ground. Along with the crossing utility protection, minor drainage conflicts occur at locations where drainage crosses the Chandler Boulevard median.

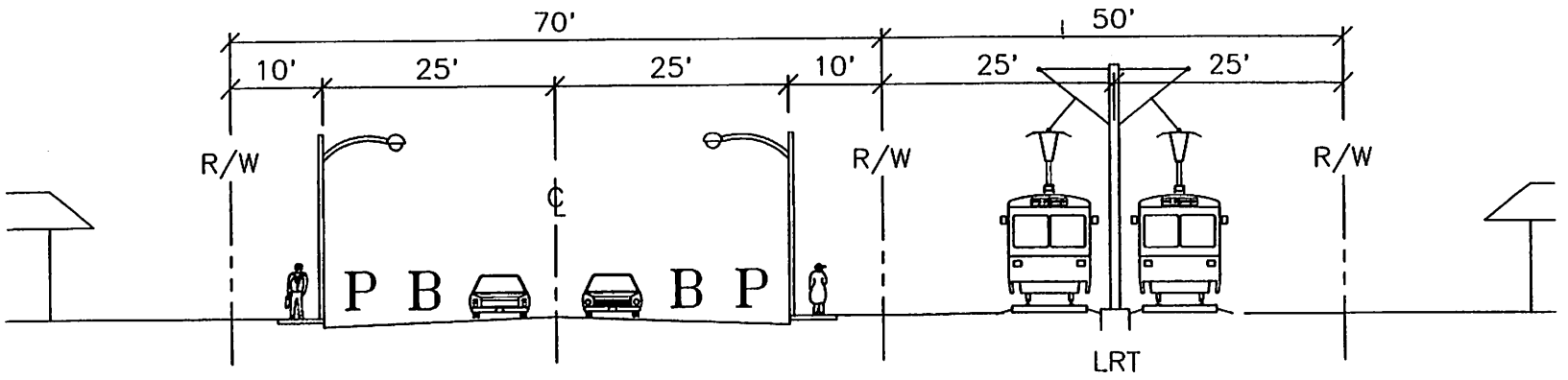
Required Additional Right-of-Way - Maintaining the existing street cross-section while implementing the LRT and class II bike lane requires additional right-of-way along the Burbank section east of Hollywood Way. However, by eliminating on-street parking on either the north or south roadways, no additional right-of-way would be required.

Additional right-of-way may also be required for power substation locations.

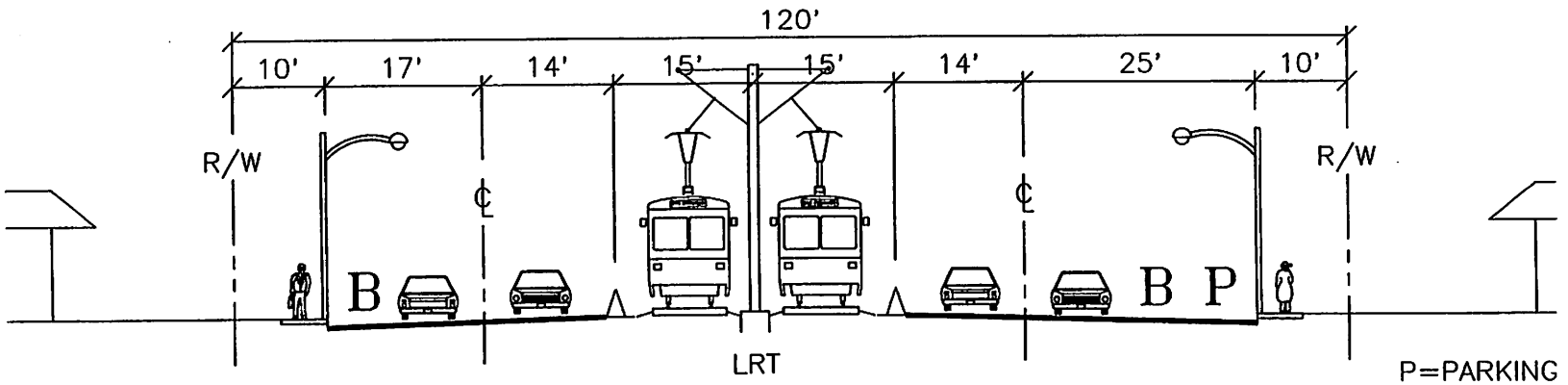
Figure 3-23 contains an evaluation matrix which compares the engineering feasibility of the Corridor alternatives.

SP Burbank Branch East Corridor - LRT With Bikeway

Alternate 3B



CITY OF LOS ANGELES



CITY OF BURBANK

P=PARKING
B=BIKEWAY

NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

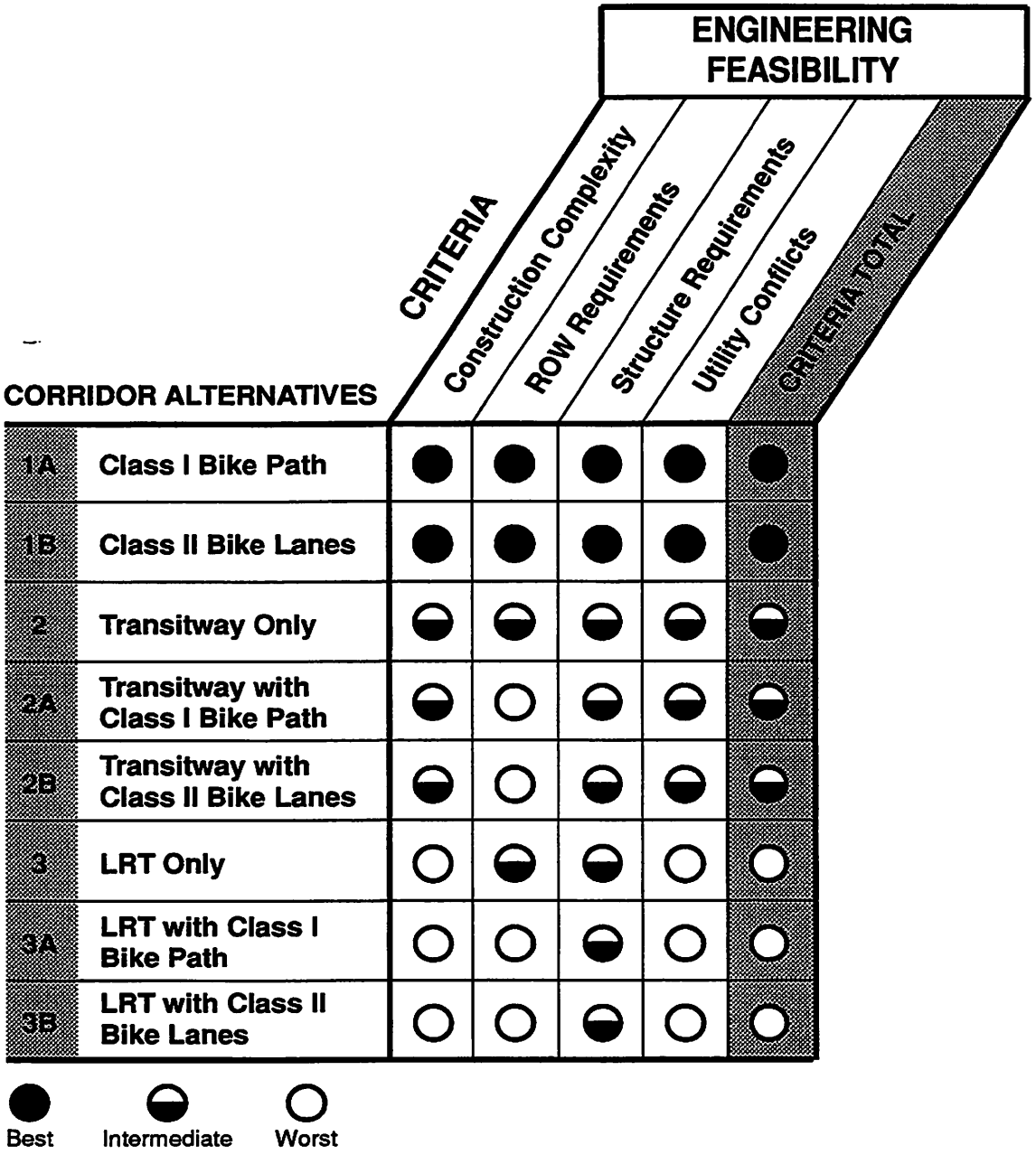
Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

1" = 20'
Approximate Scale

3-22

SP Burbank Branch East Corridor Engineering Feasibility Summary



Source: BRW, Inc., 31 July 1992

3.3.5 Capital Cost Estimates

This section provides capital cost estimates for the alternatives. All capital cost data are order of magnitude estimated based on unit construction costs approved by and utilized for other LACTC or comparable projects, with appropriate contingencies and add-ons for construction projects.

Key cost assumptions associated with each of the corridor alternatives are as follows:

Alternative 1A - Class I Bike Path

- No grade separated crossings.
- Signalized intersections to be modified to include a phasing for the bike lane.

Alternative 1B - Class II Bike Lanes

- Bike lane designed for bicycles and heavy vehicles.
- Street lights to be relocated as part of the street widening required to implement the Class II bike lane.
- Requires street restriping and seal coat.
- Requires removal of curb and gutter along Chandler Boulevard.

Alternative 2 - Transitway Only

- Median street lights to be relocated as part of implementation costs.
- Median located overhead power poles located along Chandler Boulevard to be relocated underground. The cost was assumed to be equally split between the utility company and the LACTC.
- Traffic signals to be modified to include phasing for the transitway.
- Eight articulated vehicles to be purchased.

Alternative 2A - Transitway With Class I Bike Path

- Requires removal of median curb and gutter along Chandler Boulevard from Hollywood Way to Victory Boulevard.
- Eight articulated vehicles to be purchased.

- Bike path pavement section assumes no heavy vehicle traffic allowed on the bike path.
- Median located street lights and overhead power to be relocated as described in the Transitway Only option.
- Traffic signals to be modified to include phasing for the transitway.
- No ROW costs were assumed provided parking can be eliminated and lane widths reduced at station locations.

Alternative 2B - Transitway With Class II Bike Lanes

- Curb and gutter to be removed along Chandler Boulevard from North Hollywood to Victory Boulevard.
- Bike lane pavement section designed to allow heavy vehicles.
- Median located street lights and overhead power to be relocated as described in the Transitway Only option.
- Traffic signals to be modified to include phasing for the transitway.
- Eight articulated vehicles to be purchased.
- No ROW costs were assumed provided on-street parking can be eliminated and lane widths reduced at station locations.

Costs for the Trolley-bus options assumed all costs of the transitway options plus the costs for power distribution including overhead catenary and power feeder systems.

Alternative 3 - LRT Only

- Includes costs for crossing utility locations and cathodic protection.
- Includes costs for landscaping along Chandler Boulevard.
- Traffic signal modifications required at all existing signalized intersection and grade crossing control for unsignalized intersections.
- Costs also include allowances for relocation of the street lights and overhead power located within the median of Chandler Boulevard.
- Maintenance facility and vehicle costs are also included in the cost estimate.

Alternative 3A - LRT With Class I Bike Path

- Bike path pavement section designed for light loadings only.
- No ROW costs were assumed provided on-street parking can be eliminated and lane widths reduced at station locations.

Alternative 3B - LRT With Class II Bike Lane

- Assumes all costs of LRT only option plus bike lane costs.
- Bike lane pavement section design for heavy street running vehicles.
- Requires removal of curb and gutter along Chandler Boulevard.
- Requires street restriping and seal coat.
- No ROW costs were assumed provided on-street parking can be eliminated and lane widths reduced at station locations.

Table 3-1 contains a summary of the Capital costs for all nine alternatives, plus the potential linkage options at both North Hollywood and Burbank Multimodal Center. Detailed breakdown of the costs associated with each alternative is included in the Appendix.

TABLE 3-1
CAPITAL COST ESTIMATES FOR ALTERNATIVES AND TERMINAL OPTIONS
NOTE: All Costs in Millions of 1991 Dollars

Alternative		Constr Costs	Add-On Cost	Total Costs
ALT 1A	CLASS 1 BIKE PATH	1.47	1.27	2.74
ALT 1B	CLASS 11 BIKE LANES	3.30	2.85	6.15
ALT 2	TRANSITWAY ONLY	12.47	8.68	21.15
ALT 2A	T-WAY WITH CLASS I BIKE PATH	12.70	8.88	21.58
ALT 2B	T-WAY WITH CLASS II BIKE LANES	12.74	8.91	21.65
ALT 2	TROLLEY-BUS ONLY	24.47	16.62	41.09
ALT 2A	T-BUS WITH CLASS I BIKE PATH	24.70	16.81	41.51
ALT 2B	T-BUS WITH CLASS II BIKE LANES	24.15	16.34	40.49
ALT 3	LRT ONLY	81.43	38.84	120.27
ALT 3A	LRT WITH CLASS I BIKE PATH	82.31	39.60	121.91
ALT 3B	LRT WITH CLASS II BIKE LANES	82.94	40.14	123.08
	TRANSITWAY EAST TERMINAL OPTIONS			
	OPTION 1 - FLY OVER	8.81	7.60	16.41
	OPTION 2 - WEST OF LRT	1.54	1.33	2.87
	OPTION 3 - SOUTH ALONG VICTORY	2.44	2.10	4.54
	OPTION 4 - NORTH ALONG VICTORY	1.17	0.91	2.08
	TROLLEY-BUS EAST TERMINAL OPTIONS			
	OPTION 1 - FLY OVER	10.01	8.63	18.64
	OPTION 2 - WEST OF LRT	3.24	2.79	6.03
	OPTION 3 - SOUTH ALONG VICTORY	3.64	3.14	6.78
	OPTION 4 - NORTH ALONG VICTORY	2.32	2.00	4.32
	LRT EAST TERMINAL OPTIONS			
	OPTION 1 - FLY OVER	14.64	12.62	27.26
	OPTION 2 - AT-GRADE	8.18	7.05	15.23

SOURCE: BRW, Inc., 16 July 1992.

3.4 SP BURBANK BRANCH EAST (CHANDLER BOULEVARD) CORRIDOR RECOMMENDATIONS

The results of the evaluation of the corridor alternatives are summarized in Figure 3-24. Using the three point circular system, a full circle represents the best option, with a half circle representing an acceptable option, but less preferred than one with a full circle due to more constraints. An empty circle indicates that an options is not preferred due to a significant level of constraints or impacts relative to the other options. The discussion below provides a summary of the recommendations for each option.

Near Term: Right-of-Way Preservation or Bicycle Facilities Only

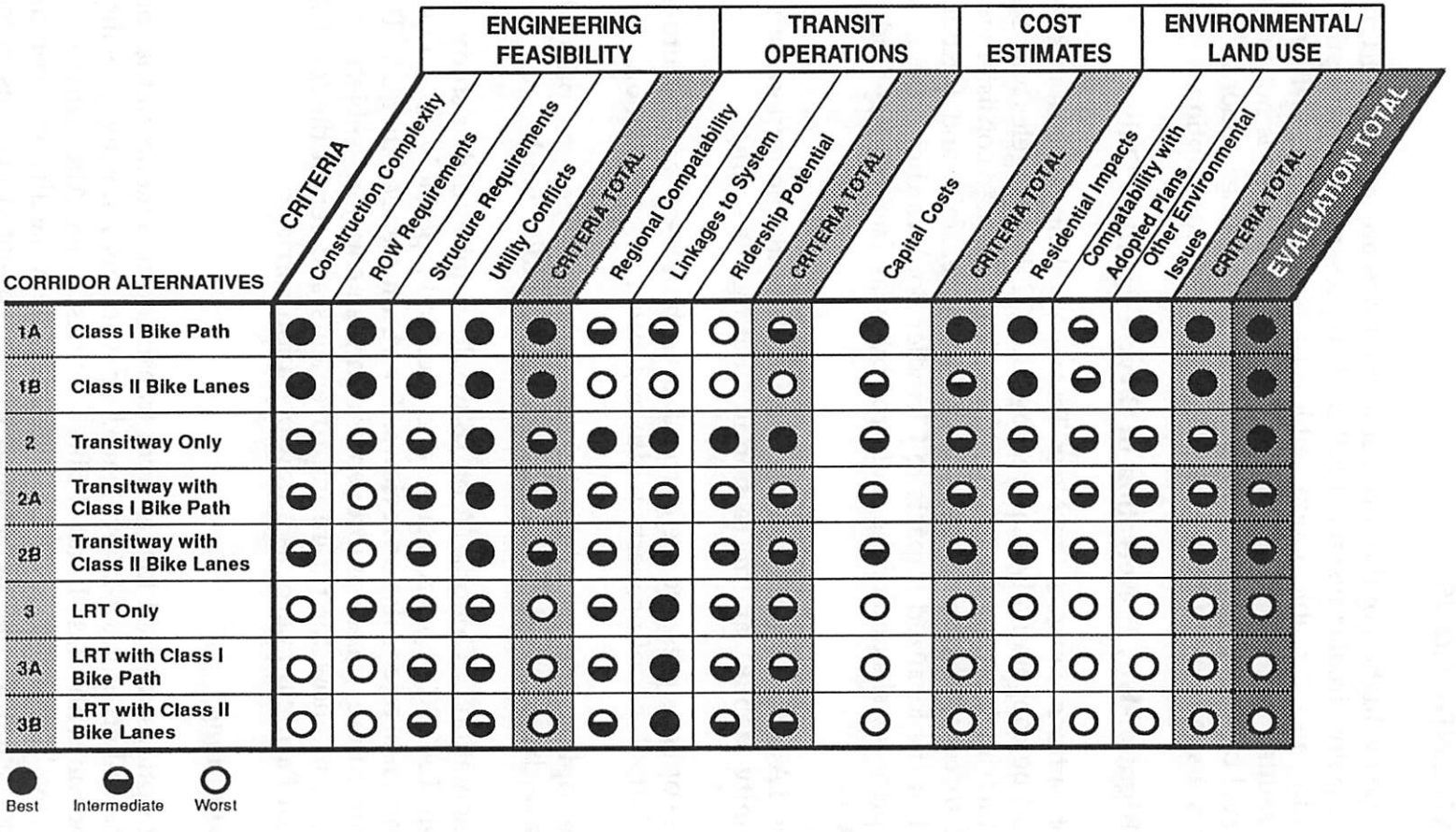
This group of options covered the Near Term period of 1-4 years, wherein the SP property would be cooperatively acquired by LACTC, Los Angeles and Burbank, with short-term or interim, low capacity improvements implemented consistent with available funding. All three options have been found to be feasible, and further studies are recommended of the localized impacts to Chandler Boulevard circulation and adjacent communities prior to selection of the preferred bikeway facility. Key findings from the evaluation were:

- Options 1A and 1B provide a bicycle facility with the opportunity to enhance community mobility and recreation in an attractive setting.
- All three options preserve the Burbank Branch right-of-way for future transit use, with minimal loss of property width and street reconfiguration.
- All three options involve minimal capital expense. although Option 1B is the most expensive due to street reconfiguration on Chandler Boulevard.
- Implementation of Options 1A or 1B would require further study cooperatively between LACTC, Los Angeles, and Burbank, possibly in conjunction with environmental or circulation reviews. It is recommended that LACTC reserve the right for future transit improvement implementation, subject to appropriate processes, to allow for future improvements and retain the legal status of the Southern Pacific property as a transportation corridor.

Longer Term Options

This group of options covered longer term transit improvements in the four to twenty year timeframe. Alternatives 2-2B evaluated a paved Bus Transitway facility both alone and in conjunction with Class I and II Bike facilities, while Alternatives 3-3B provided a comparable evaluation for LRT. A Bus Transitway facility is recommended with adjunct bicycle facilities to be determined by subsequent studies, as noted under the near-term recommendations, for the following reasons:

SP Burbank East (Chandler Blvd.) Corridor
Evaluation Summary



Source: BRW, Inc., 23 July 1992

- A Bus Transitway is less expensive to build and operate relative to LRT.

- LRT has significantly more potential environmental impacts than the Bus Transitway facility, and could represent more service and capacity than required.

- Unless regional linkages become assured, only the Transitway served with non-electric buses offers vehicles the opportunity to link with through routes and services. The LRT and Trolley-bus options require provision for special and costly connections and maintenance facilities to support the associated technologies.

- The paved Bus Transitway would represent less of a barrier to the community and Edison school than LRT or multi-modal facilities, where pedestrians must cross.

- The Bus Transitway allows vehicles to enter and exit and intermediate points, thus increasing the potential utility of the facility to nearby transit routes, as well as increasing origin and destination opportunities for users.

- The Bus Transitway could be ended at Victory to allow vehicles to use existing grade separations to directly access the Burbank Multimodal Center.

- Preservation of the entire right-of-way as a Bus Transitway would still allow for future transit guideway implementation should Corridor conditions change.

- Future studies will be required to address and provide design solutions for the following issues:

  - the implementation of bikeway and transit facilities in the median could create design issues and potential safety hazards to transit vehicles and Class I bike lane users.

  - Any implementation of Class II Bike Lanes could require reducing the width of the median property, which could constrain transit facility design and parking at station sites.

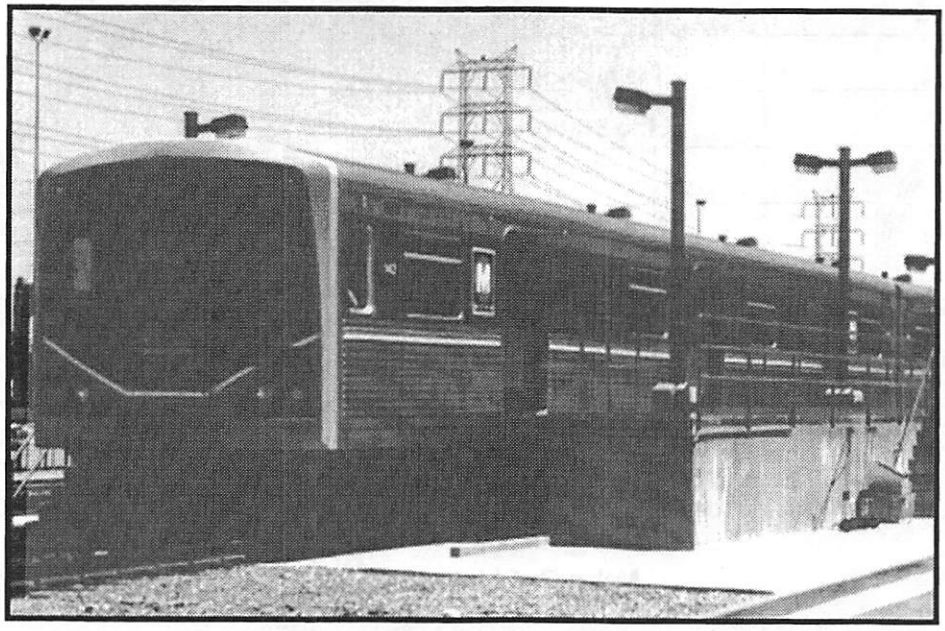
  - Implementation of dual modal facilities along Chandler Boulevard could increase the complexity of intersections, thus increasing congestion and potential safety hazards to area motorists and bicyclists on either Class I or Class II facilities.

4.0 Northeast Valley Corridor

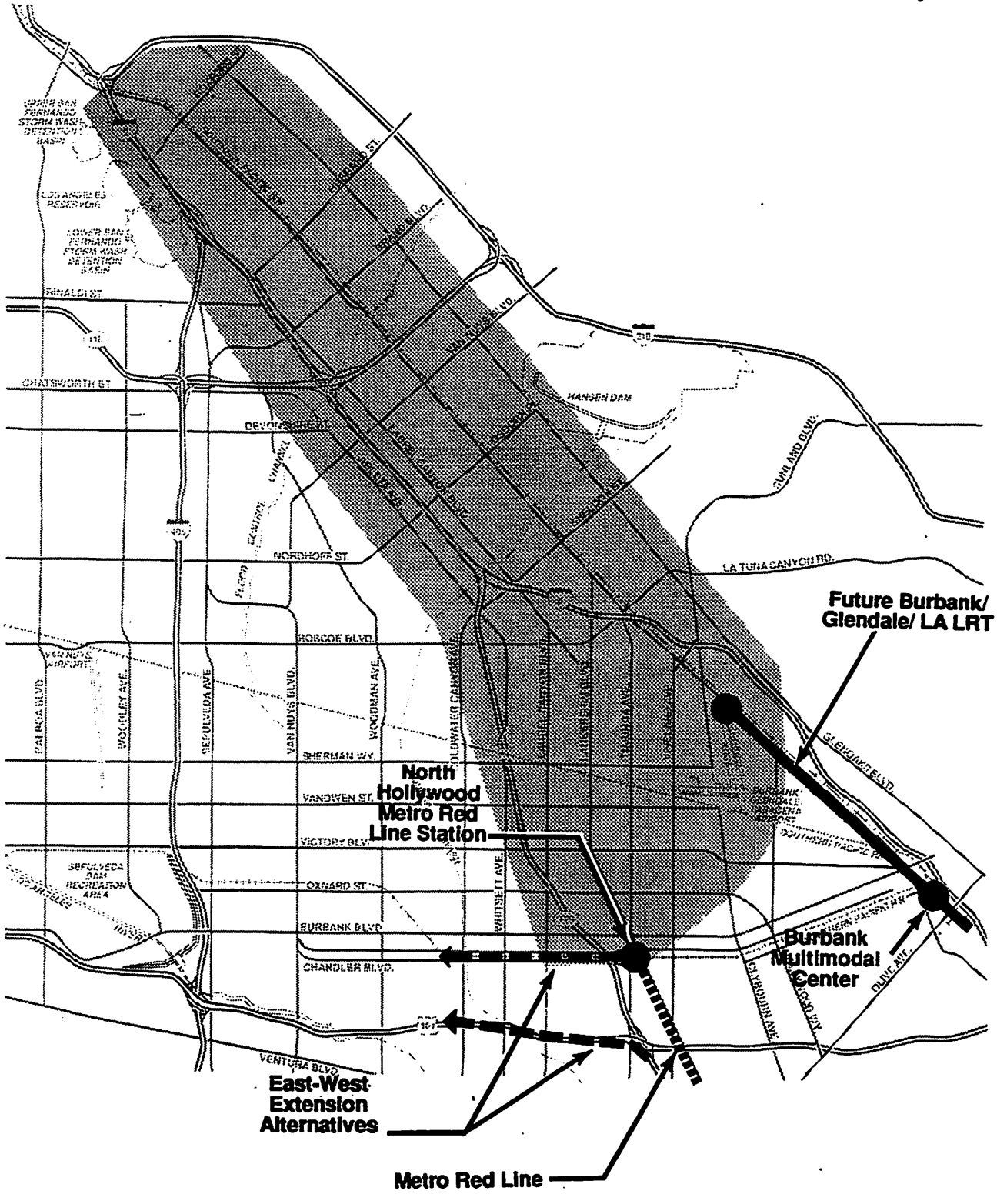
The Northeast Valley Corridor study area was examined to identify and evaluate opportunities for extension of the Metro Red Line from the currently planned terminus in North Hollywood to Sylmar in the Northeast San Fernando Valley. As shown in Figure 4-1, the Northeast Valley Corridor study boundaries include a broad area bounded by the SR-170 and I-5 Freeways on the west, Glenoaks Boulevard on the east, I-210 on the north and Chandler Boulevard on the south. Based upon preliminary evaluation, a number of corridor options were identified as being representative of typical conditions in the study area. The corridor options were evaluated further to determine opportunities, constraints, and possible implementation issues associated with extension of the Metro Red Line into the Northeast San Fernando Valley.

4.1 OVERVIEW OF MODE AND OPERATING CHARACTERISTICS

Heavy Rail transit (HRT) is the primary technology or mode type under study in the Northeast Valley Corridor, with possible connections to a light rail transit (LRT) line along the Southern Pacific Santa Clarita Branch. Heavy Rail generally refers to high speed, high capacity electric rail service on an exclusive guideway, typically provided as line haul suburban radial service for medium to long trips.



Northeast Valley Corridor Study Area



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

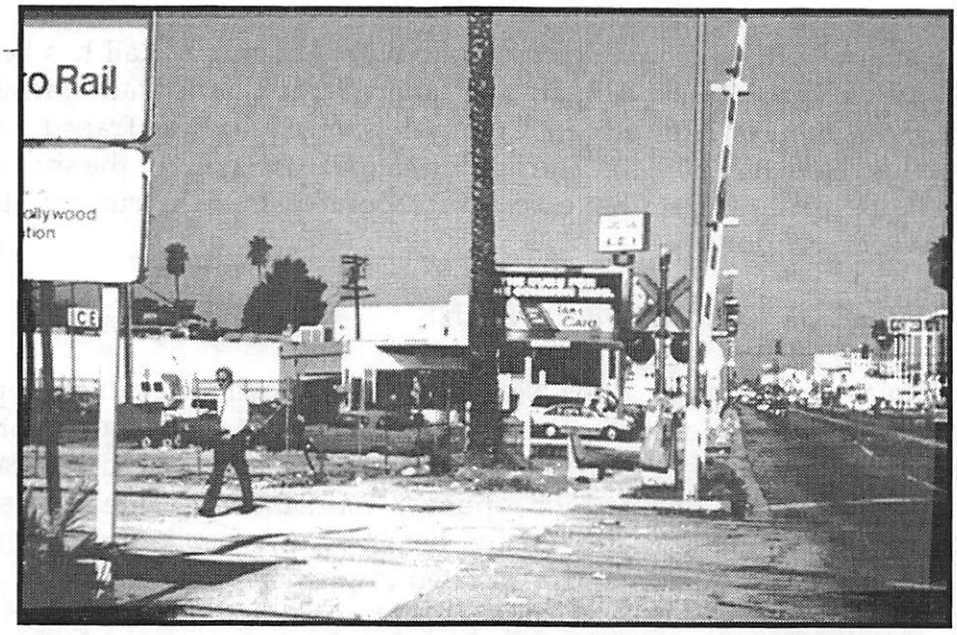
LACTC

Myra Frank & Assoc.

Source: BRW, Inc., July 1992

Heavy Rail can be located at-grade, on aerial guideway, or in subway. The exclusive right-of-way is necessary because of higher operating speeds and safety requirements due to the third rail which provides power to the rotary electric motors that propel the vehicle being located near ground level.

Heavy Rail technology of various age and design is currently used in several eastern cities, as well as BART in the San Francisco Bay area. In 1993, Heavy Rail will make its debut in downtown Los Angeles, when the Metro Red Line opens from Union Station to MacArthur Park, with the entire segment located in a twin tube subway. Current plans call for the extension of the Metro Red Line to North Hollywood by the year 2000.



Characteristics of Heavy Rail include:

- **Speed:** Up to 75 miles per hour.
- **Capacity:** 200 passengers per vehicle, with seating arranged for maximum standee capacity.
- **Stations:** Generally large access controlled facilities with several levels and high level platforms between 400 to 700 feet long with tracks on either side of a center platform; generally spaced every 1-3 miles.
- **Train Size:** 2-10 cars.

- **Right-of-Way:** Exclusive and often grade-separated; generally heavily protected for safety and security reasons.

- **Power Source:** Electric power of 750 or more volts, supplied by catenary or ground mounted third rail.

- **Amenities:** Vehicles and station are designed for crush loading; often feature amenities such as seating areas, art displays, concession areas, safety lighting, passenger information, escalators and elevators.

As noted previously, the study of the Northeast Valley Corridor has also incorporated possible linkages with LRT along the SP Santa Clarita right-of-way as a key component of the corridor options for serving the Northeast San Fernando Valley. Current plans call for the extension of LRT from downtown Los Angeles to the Burbank Airport vicinity (Hollywood Way and San Fernando Road) as part of the 30-Year Plan. A possible further extension of LRT north to Sylmar along with Commuter Rail has been studied by the LACTC (Downtown Los Angeles to Sylmar/Santa Clarita Rail Transit Corridor, Preliminary Evaluation of High Speed, Commuter and Light Rail Transit Alternatives; Gannett Fleming, November,1990). The findings and conclusions of the study regarding LRT along the SP Santa Clarita have been incorporated into the current study of the Northeast Valley Corridor.

4.2 UNIVERSE OF CORRIDOR OPTIONS

Figure 4-2 displays a flow chart of the Northeast Valley Corridor evaluation process. As shown, the reconnaissance-level steps conducted to evaluate the potential for extending the Red Line into the Northeast San Fernando Valley included the identification of the broad array or universe of corridor options; refinement to identify a range of prototypical corridors representative of the broad array of corridor conditions; and determination of typical impacts and associated implementation issues.
For purposes of this evaluation, a corridor option was defined by three primary elements:

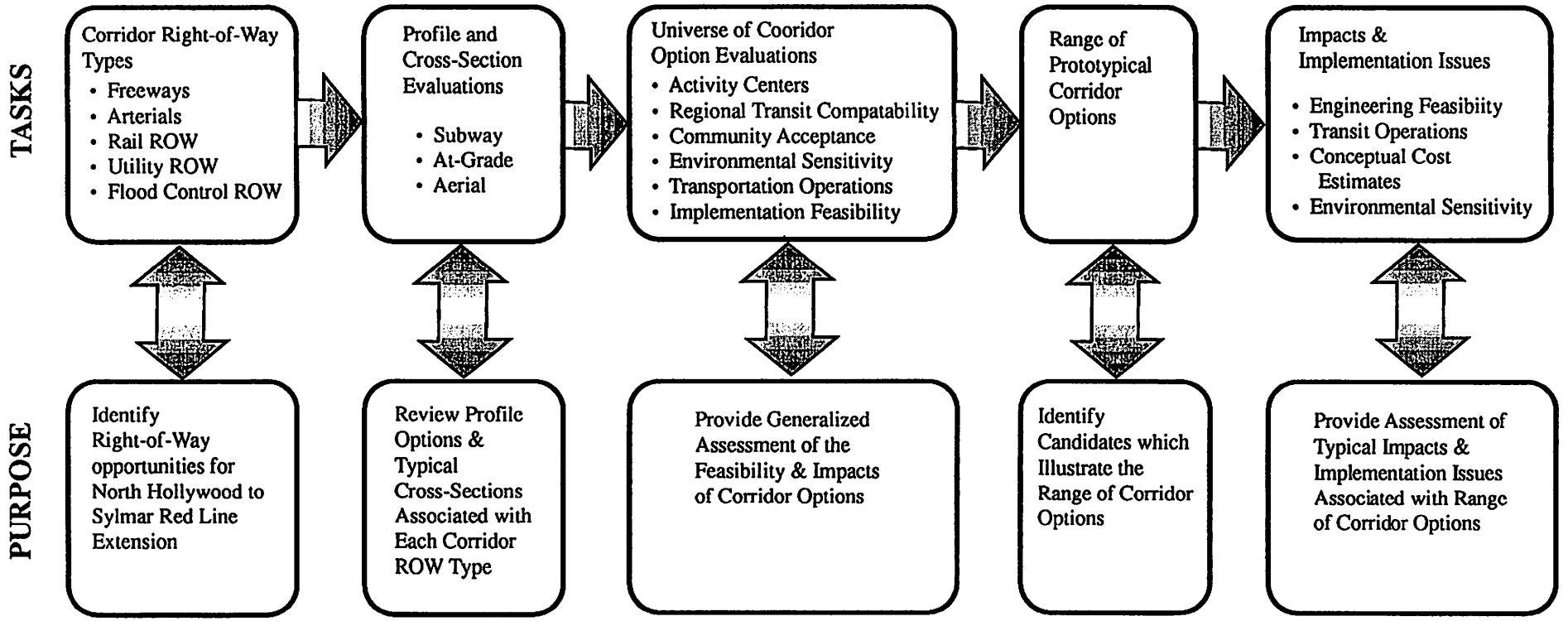
1. Right-of-way type
2. Vertical profile
3. Generalized alignment location

The evaluation process resulted in the identification of prototypical options using each of the above elements for further study. The following section provides more detailed information about the development of the corridor options.

4.2.1 Right-Of-Way Types

Right-of-way (ROW) types within the Northeast Valley Corridor can generally be categorized as follows:

Northeast Valley Corridor Red Line Extension - Reconnaissance Evaluations



Source: BRW, Inc., 17 June 1992

- Freeway ROW
- Arterial Roadway ROW
- Flood Control ROW
- Railroad ROW
- Utility ROW

The following are examples of **corridor right-of-way types** from within the Northeast Valley Corridor Study area:

Freeway:

- SR-170
- I-5

Arterial Roadway:

- Vineland Avenue
- Tujunga Avenue
- Lankershim Boulevard
- Laurel Canyon Boulevard
- Victory Boulevard
- Oxnard Street
- Whitsett Avenue
- Arleta Avenue

Rail Row

- SP Moorpark Line
- SP Santa Clarita Lane

Utility Row:

- LA DWP Utility ROW

Flood Control ROW:

- Tujunga Wash

4.2.2 Vertical Profile Options

Guideway or rail transit technologies generally operate within three possible vertical profile configurations:

1. Subway: Typically located 40-50 feet below finished grade; tunnels are constructed either by boring or cut and cover method; station areas are accessed via portal locations providing access to surface parking and activity areas.

2. At-Grade: Typically located within dedicated rights-of-way; requires exclusive right-of-way treatment generally heavily protected for safety and security reasons; intersection crossings generally require grade-separation.

3. Aerial: Typically located 20-25 feet above grade on support structure; stations can also be on structure or at-grade with appropriate access provided.

Typical construction costs per mile for each of the vertical profile options by right-of-way type are shown in Table 4.1. Construction costs per mile range from a low of $50 million per mile for an at-grade freeway alignment to a high of $125 million for a subway within freeway right-of-way.

TABLE 4.1
TYPICAL CONSTRUCTION COSTS PER MILE
(Million $)

Corridor Type	Profile Type		
	Subway	At-Grade	Aerial
Freeway	$125.0	$50.0	$65.0
Arterial	$110.0	$55.0	$65.0
Rail ROW	$100.0	$50.0	$60.0
Utility ROW	$110.0	$50.0	$70.0
Flood Control ROW	$100.0	$50.0	$70.0

Profile and Typical Cross-Section Evaluations

A screening and evaluation process was conducted of the vertical profile options by corridor right-of-way type to further define potential alignments for extension of the Red Line. To assist in this evaluation, the following criteria and related elements were utilized:

- Environmental sensitivity including impacts to sensitive land uses, traffic/circulation impacts, soils and geology concerns, and biology, wetlands/floodplain impacts.

- Implementation feasibility including excessive grades or natural/structural barriers, major utility or drainage impacts, likelihood of significant construction costs, and right-of-way availability.

- Community acceptance including compatibility with community plans and other issues/concerns of neighborhoods and surrounding land uses.

Figures 4-3(A) through 4-3(O) illustrate typical cross-sections associated with each of the profile options. Included are photographs of example locations from within the Northeast Valley Corridor Study area and a summary of issues, opportunities and constraints associated with each option.

Figure 4-4, shown below, provides a summary in matrix format of the ratings assigned by applying the evaluation criteria to the profile options within each right-of-way type.

Figure 4-4. Profile and Right-of-Way Type Summary Matrix

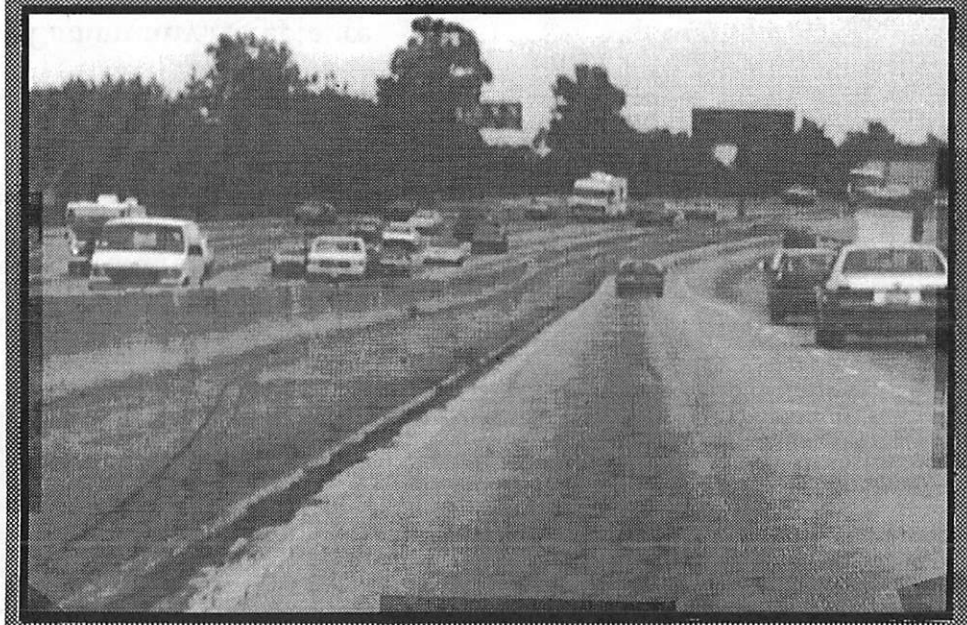
CORRIDOR TYPE	PROFILE TYPE		
	Subway	At-Grade	Aerial
Freeway	◒	○	●
Arterial	●	○	○
Rail ROW	○	●	○
Utility ROW	●	○	○
Flood Control ROW	◒	○	●

● Best ◒ Intermediate ○ Worst

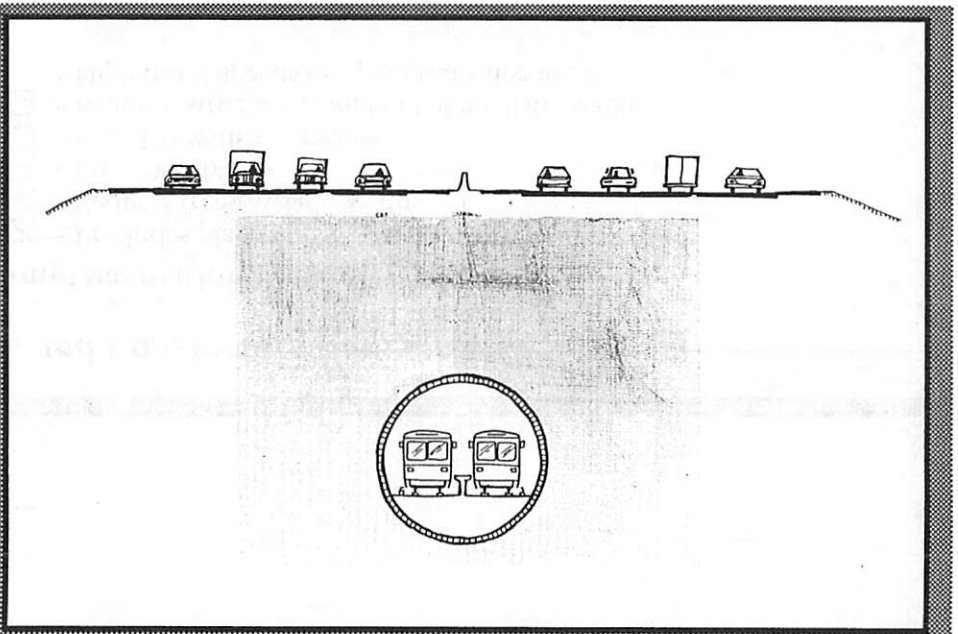
As shown in Figure 4-4, an aerial alignment is generally preferred for Heavy Rail transit alignments along Freeway and Flood Control ROW types. Subway alignments are more desirable within arterial and utility ROW's, and at-grade alignment profiles are generally most compatible with the exclusive nature of rail ROW conditions.

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Freeway**



Profile Type: **Subway**



Issues, Opportunities and Constraints

Environmental

- Subway location limits impacts and need for additional ROW
- Minor adverse impacts only at station locations: loss of landscaping, ROW acquisition and traffic
- Soils and geology could impact tunnel costs
- Caltrans, FHWA approvals and EIS required

Community Acceptance

- Generally high due to use of a recognized transportation corridor with limited impact potential except at station sites

Implementation Feasiblity

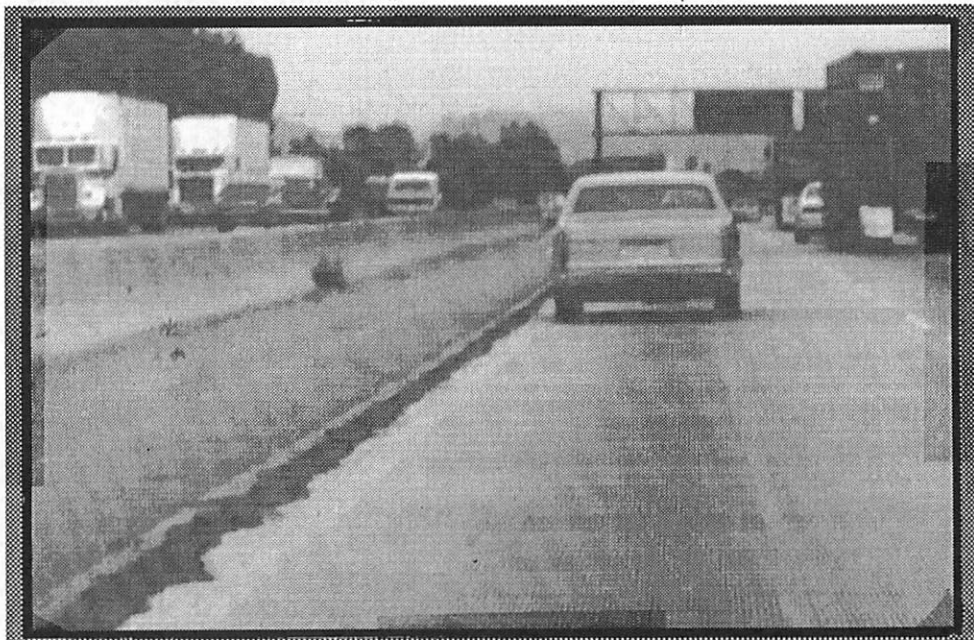
- Continuation of Red Line profile could reduce mobilization costs
- ROW is generally available
- High costs to tunnel
- Station access constrained by freeway
- High speed operation
- Minimal potential for utility conflicts
- Possible impacts to existing bridge structures and potential ground setting above tunnel

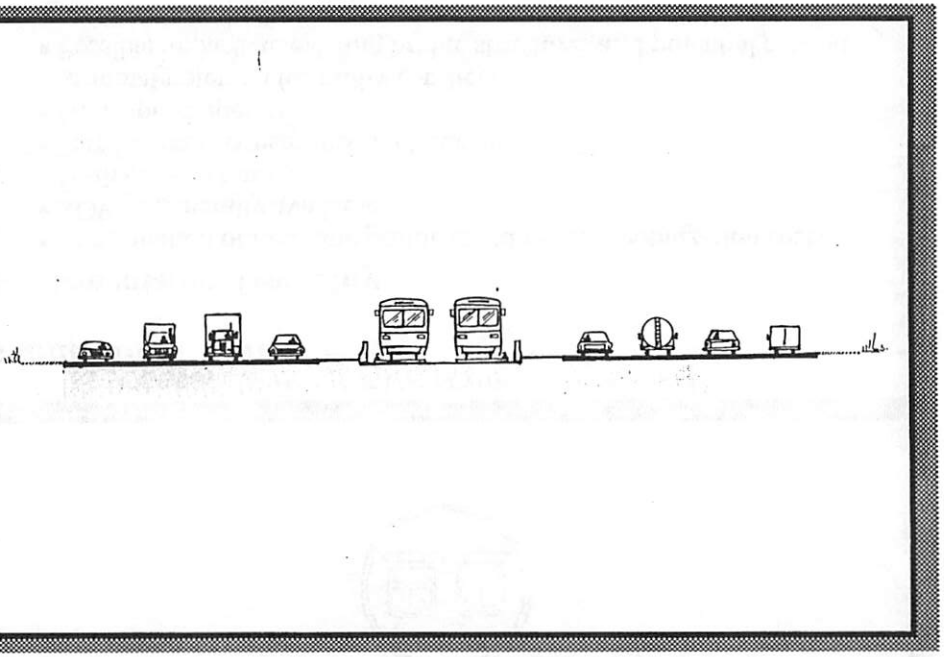
Figure 4-3 (A)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Freeway**

Profile Type: **At-Grade**





Issues, Opportunities and Constraints

Environmental

- Possible increased noise and impacts on sensitive land uses
- Loss of landscaping
- Likelihood of significant construction impacts (noise and traffic)
- Caltrans, FHWA approvals and EIS required

Community Acceptance

- While freeway is recognized transportation corridor, acceptance would be limited due to potential reduction of freeway capacity and/or requirements to increase freeway ROW

Implementation Feasiblity

MEDIAN
- Precludes planned HOV lanes
- Reduces freeway lane widths
- Minor earthwork
- Conflicts with overpasses
- Requires structure in and out of median location
- High travel speeds except at transition areas

SIDE
- Earthwork required along side slopes plus retaining walls
- Requires structure over cross-streets and interchange ramps
- Less traffic impacts during construction
- High travel speeds

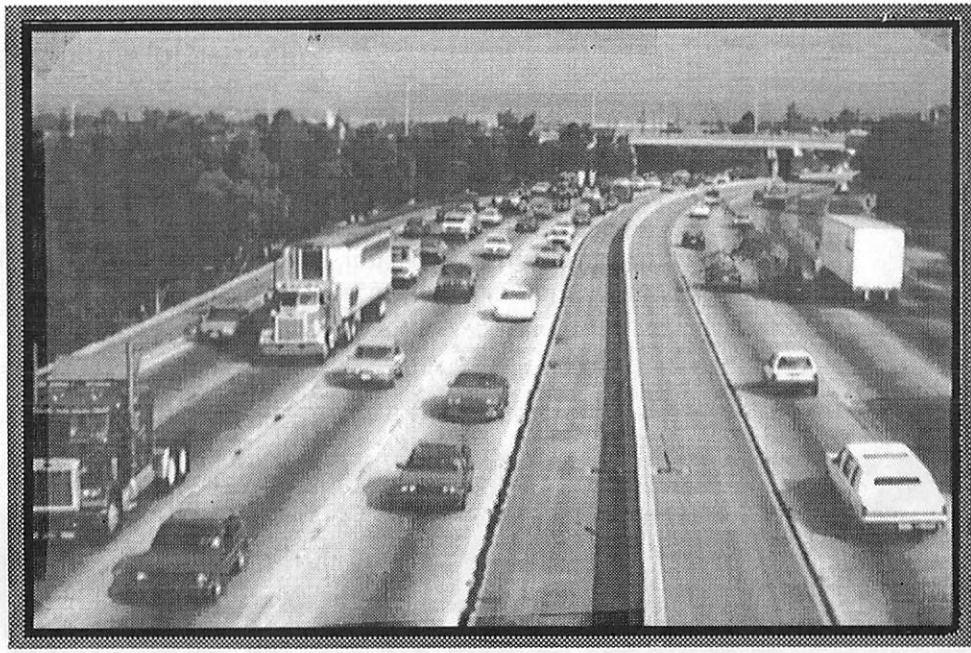
Figure 4-3 (B)

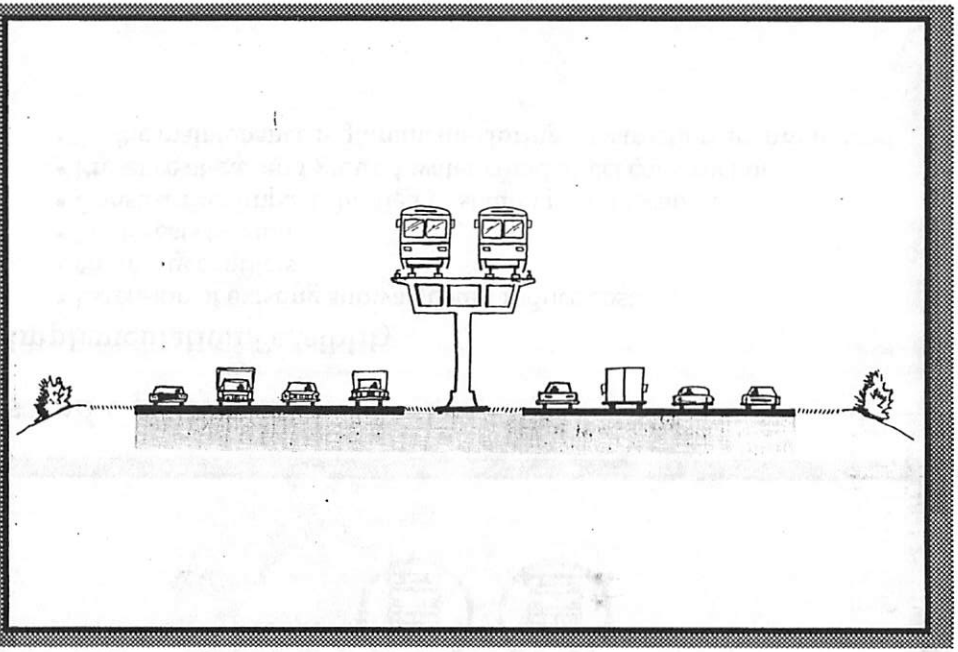
NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION

Profile and Typical Cross-Section Evaluation

Corridor Type: **Freeway**

Profile Type: **Aerial**





Issues, Opportunities and Constraints

Environmental

- Visual impacts of elevated structure
- Limited ROW aquisition required
- Increased noise due to elevated trains
- Construction impacts mitigated by overhead work
- Caltrans, FHWA approvals and EIS required

Community Acceptance

- Generally high due to use of a recognized transportation corridor

Implementation Feasibility

MEDIAN

- Transition grades could be near maximum
- Preserves planned HOV lanes
- No lane reductions or freeway widening
- Station access from either side of freeway
- Additional bridge heights for existing bridges over freeway
- Complex freeway to freeway interchange crossings

SIDE

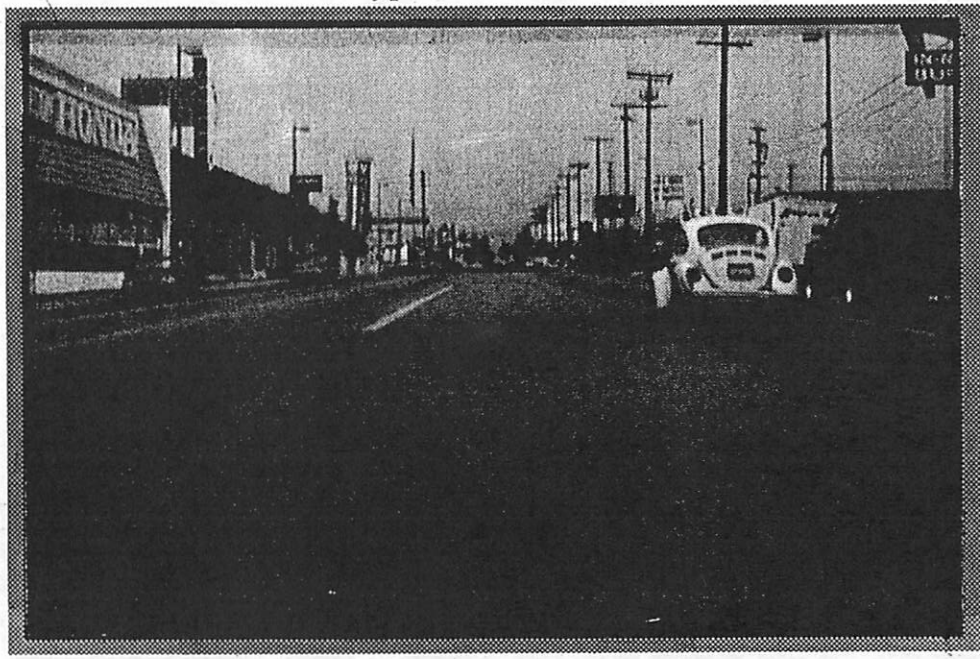
- Complex construction on freeway side slope
- Possible ROW acquisition
- Limits Red Line access to one side of freeway
- Complex structures at freeway cross-streets

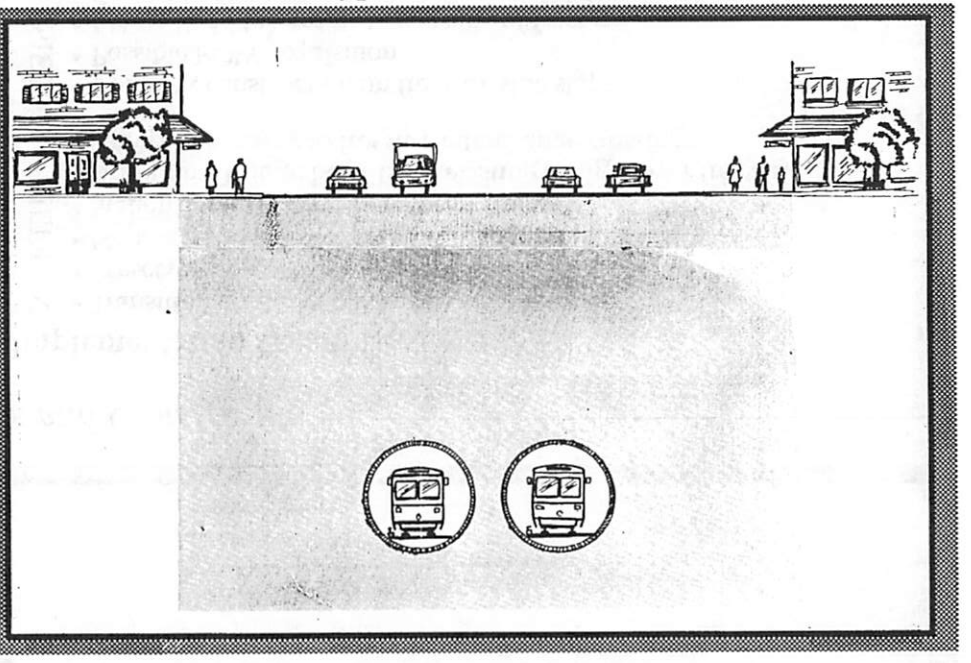
Figure 4-3 (C)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Arterial**

Profile Type: **Subway**





Issues, Opportunities and Constraints

Environmental

- Subway location impacts limited to station locations
- Bored tunnel would limit construction impacts; cut and cover would have significant construction impacts
- Soils and geology could impact construction costs
- Possible vibration impacts on adjacent sensitive uses
- Minimum impacts on traffic and local circulation

Community Acceptance

- Generally high because of direct access to activity centers and limited impacts

Implementation Feasiblity

- Extension of existing subway could reduce costs
- No utility conflicts
- High costs to tunnel
- Construction impacts limited to station portal locations
- Presence of gas and ground water could affect construction
- Traffic maintenance requirements during construction are minimized

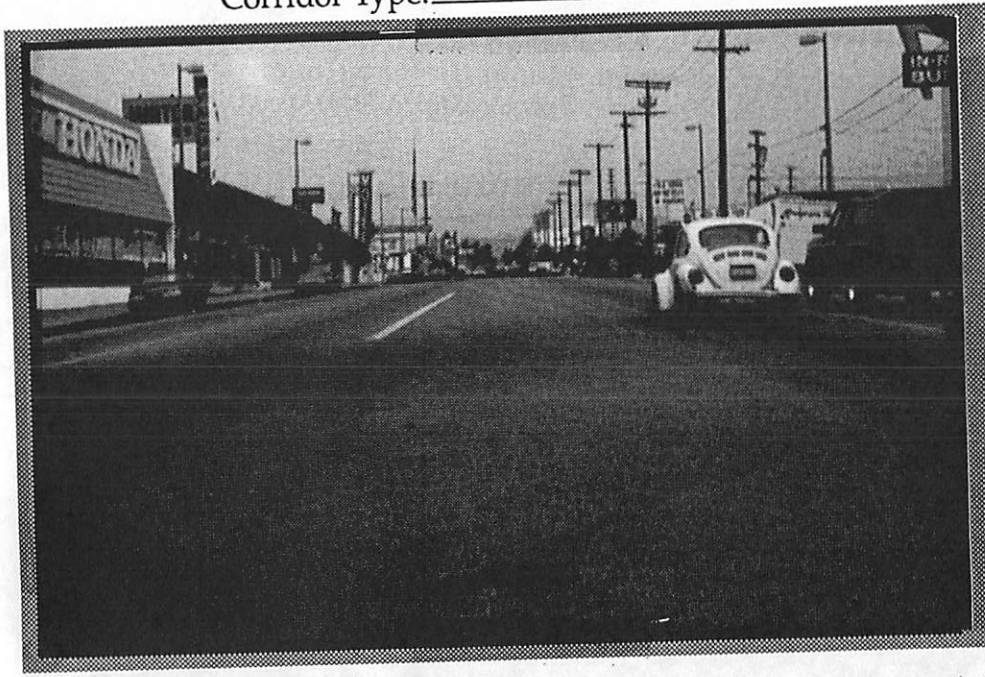
Figure 4-3 (D)

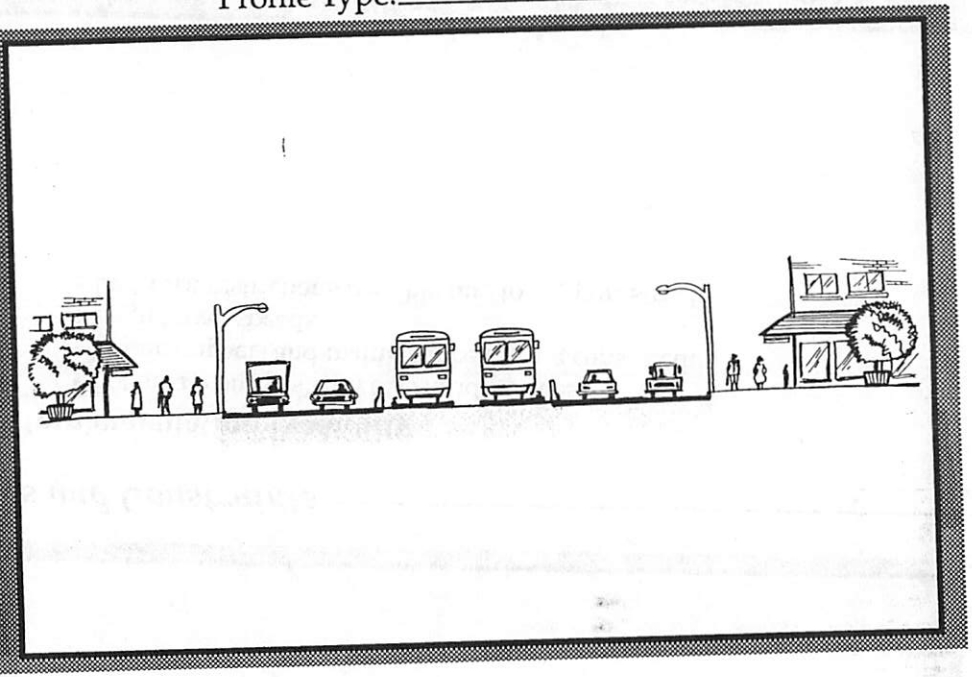
NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION

Profile and Typical Cross-Section Evaluation

Corridor Type: Arterial

Profile Type: At-Grade





Issues, Opportunities and Constraints

Environmental

- Visual impacts of catenary system
- Significant potential for noise and vibration impacts
- Traffic and circulation impacts
- Diminished access to business and commercial land uses
- Construction impacts

Community Acceptance

- Generally low because of:
  - Reduced roadway capacity
  - Safety protective features could impact local circulation
  - Visual intrusion

Implementation Feasiblity

- Safety Requirements for access control
- Reduced roadway capacity, elimination of parking, left turn restrictions
- Addition ROW required at station sites
- High potential for utility conflicts
- Low track work and guideway costs
- Low speed operations
- High construction impacts and traffic maintenance requirements

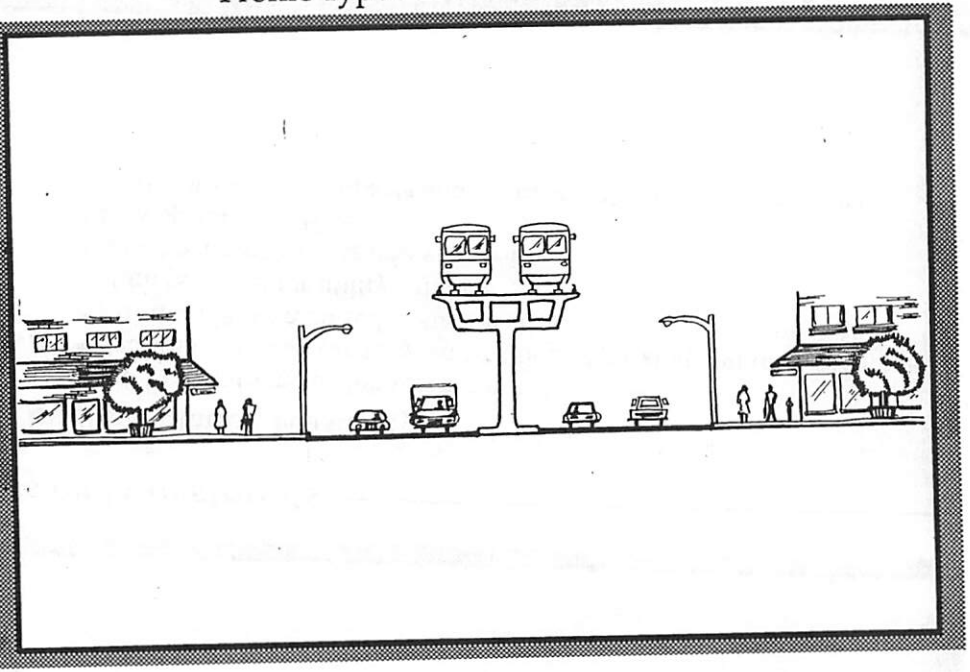
Figure 4-3 (E)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION

Profile and Typical Cross-Section Evaluation

Corridor Type: **Arterial**

Profile Type: **Aerial**



Issues, Opportunities and Constraints

Environmental

- Visual impacts of elevated structure
- Noise and vibration impacts to surrounding land uses
- Limited impacts to traffic and circulation
- Construction impacts

Community Acceptance

- Generally low because of mixed residential and commercial land uses, visual intrusion of the aerial structures, and impacts on property access and circulation

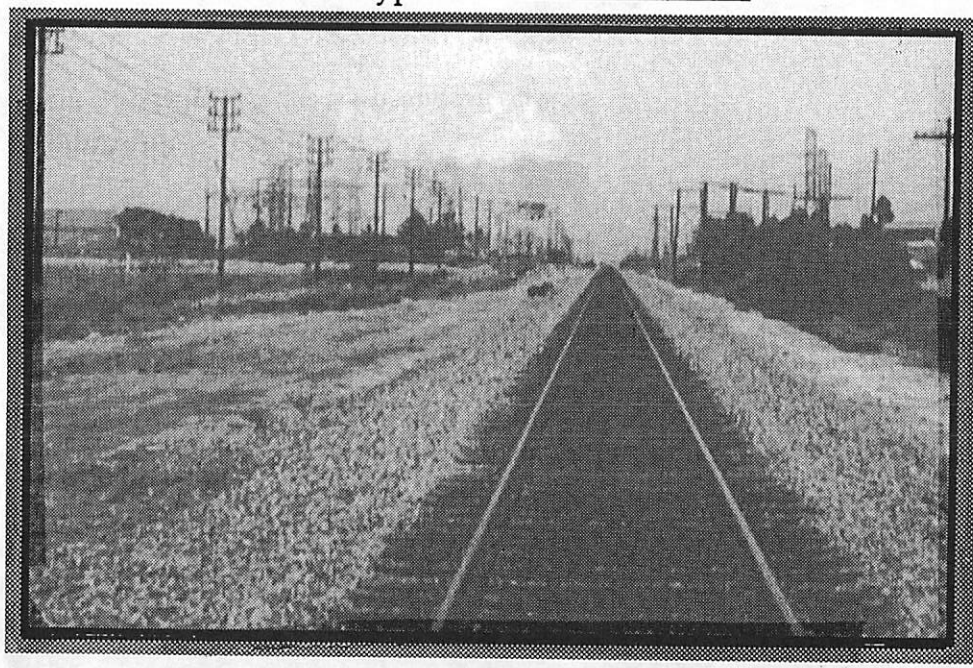
Implementation Feasiblity

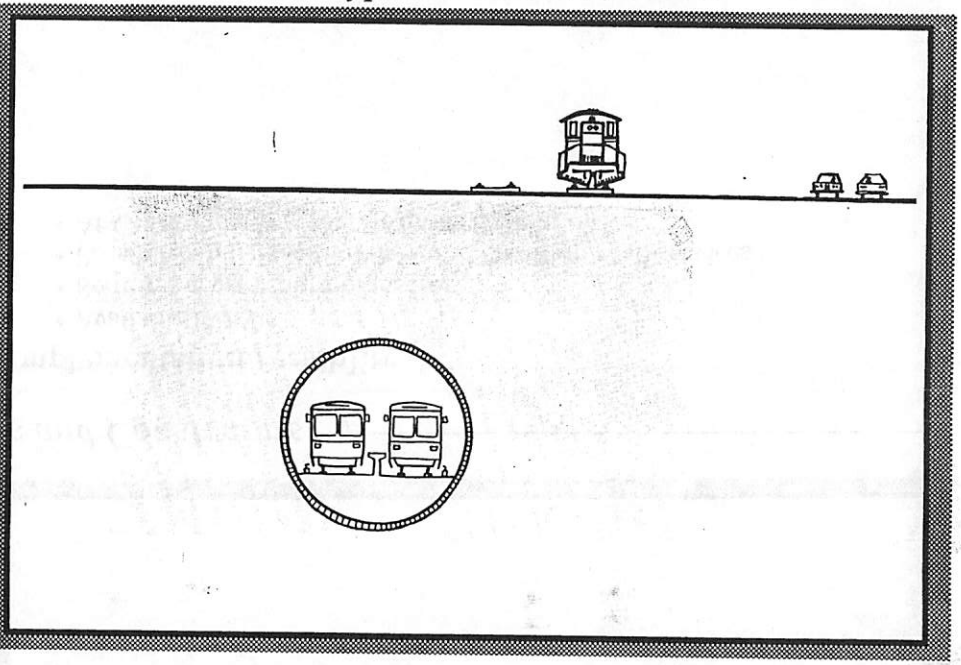
- Potential conflicts with overhead utilities
- Traffic impacts and maintenance during construction
- High travel speeds
- Left-turn restrictions possible due to support structure

Figure 4-3 (F)

Corridor Type: **Rail ROW**

Profile Type: **Subway**





Issues, Opportunities and Constraints

Environmental

- Subway location limits impacts
- Soils and geology could impact tunnel cost
- Access to station sites could be impacted by existing rail facilities

Community Acceptance

- Generally high due to existing rail services and limited impact potential

Implementation Feasiblity

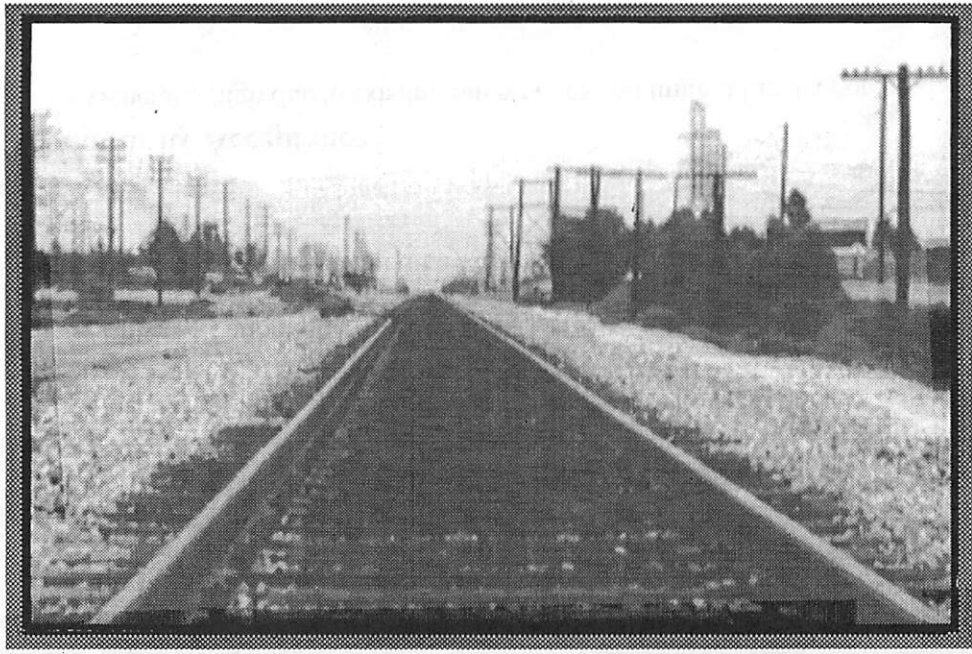
- High costs of tunneling
- Limits additional ROW requirements except at station sites
- Continuation of Red Line profile
- Minimizes impacts to existing rail services

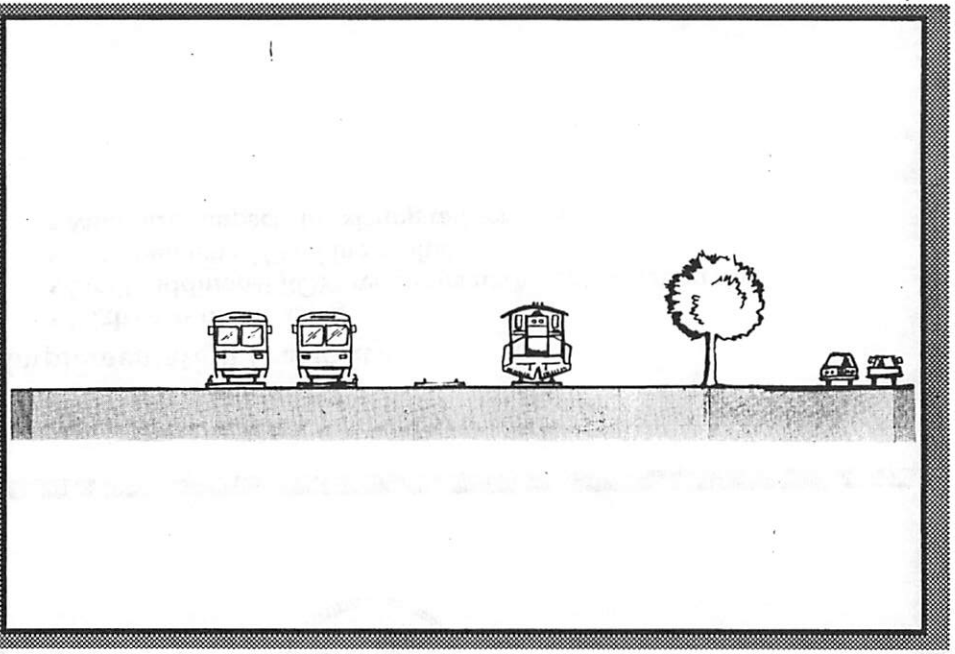
NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION

Profile and Typical Cross-Section Evaluation

Corridor Type: **Rail ROW**

Profile Type: **At-Grade**





Issues, Opportunities and Constraints

Environmental

- Compatibility with existing rail facilities should limit impacts
- Access to station sites could conflict with existing rail services
- Right-of-way would require safety protection

Community Acceptance

- Generally high due to existing rail services

Implementation Feasiblity

- Available ROW
- Requires access control for safety
- Possible conflicts with freight and commuter rail services
- At-Grade crossings require grade seperation

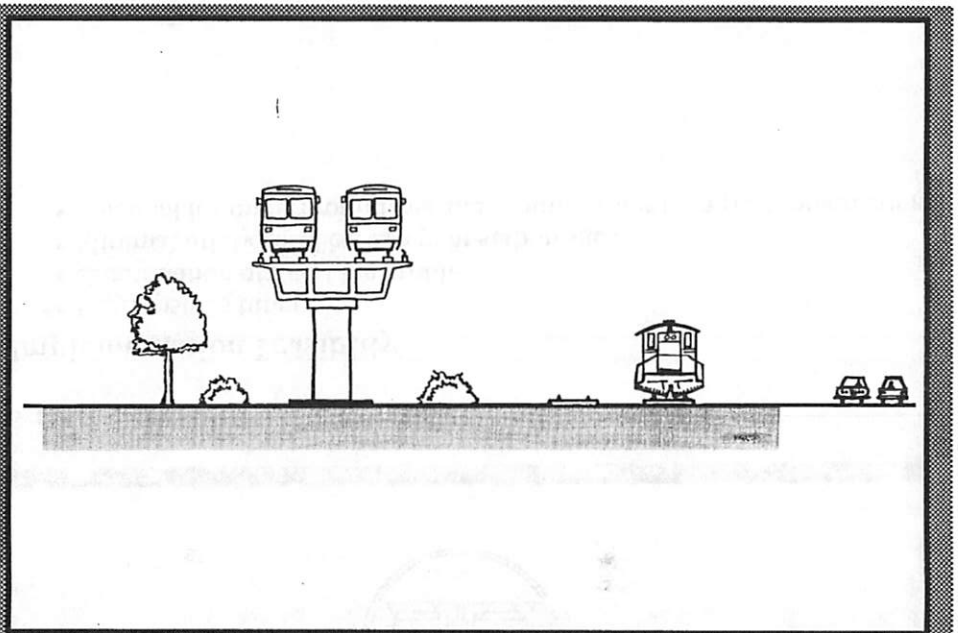
Figure 4-3 (H)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION

Profile and Typical Cross-Section Evaluation

Corridor Type: **Rail ROW**

Profile Type: **Aerial**



Issues, Opportunities and Constraints

Environmental

- Visual impacts of elevated structure
- Increased noise potential

Community Acceptance

- Moderate due to possible concerns about visual intrusion of elevated structures within existing rail corridor

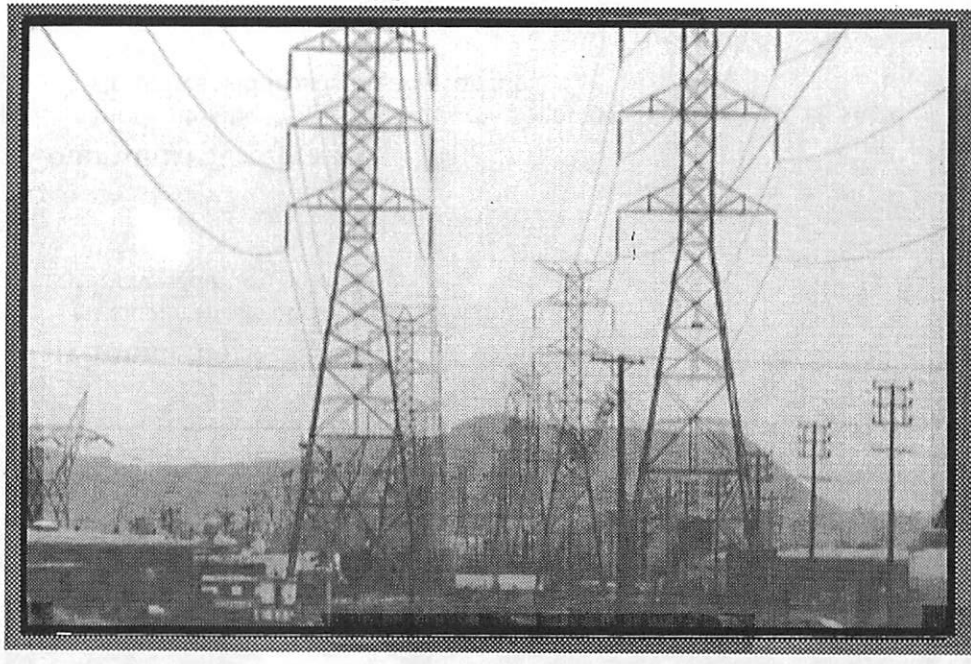
Implementation Feasiblity

- Available ROW
- Could require increase in structure height due to freight tracks within ROW
- Station access could be constrained by existing rail services
- Higher costs than at-grade option

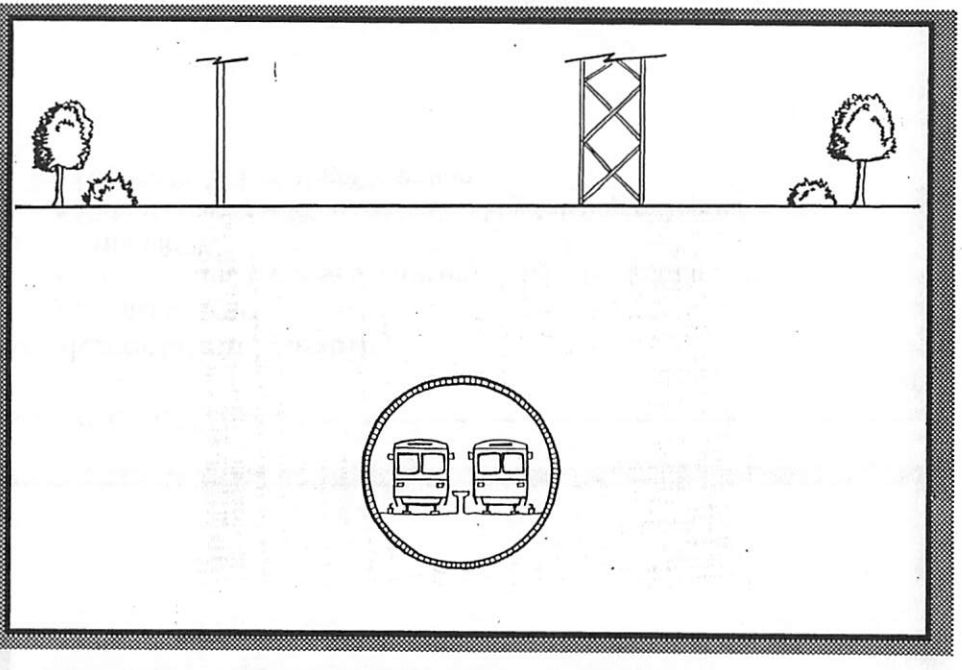
Figure 4-3 (1)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Utility**



Profile Type: **Subway**



Issues, Opportunities and Constraints

Environmental

- Subway location limits impacts to adjacent residential areas
- Health concerns associated with exposure to EMF at station locations
- Soils and geology could impact tunnel costs
- Compliance with PUC regulations would be required

Implementation Feasiblity

- High costs to tunnel
- Continuation of Red Line profile
- Minimal utility conflicts except at station sites
- Potential for underground gas and ground water to impact construction

Community Acceptance

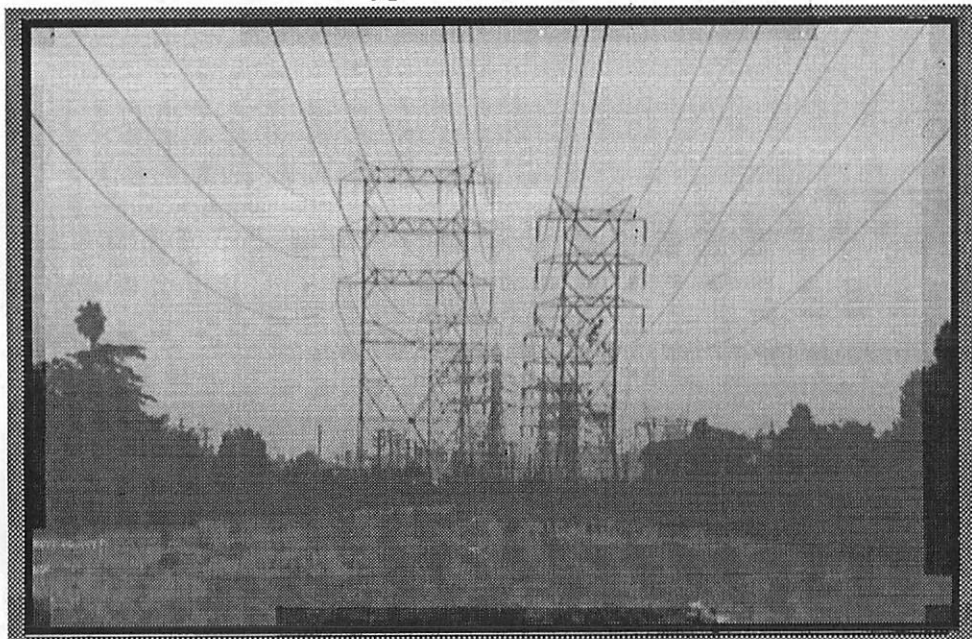
- Generally moderate due to limited impact potential except at station sites. Limited access to activity centers via utility corridors

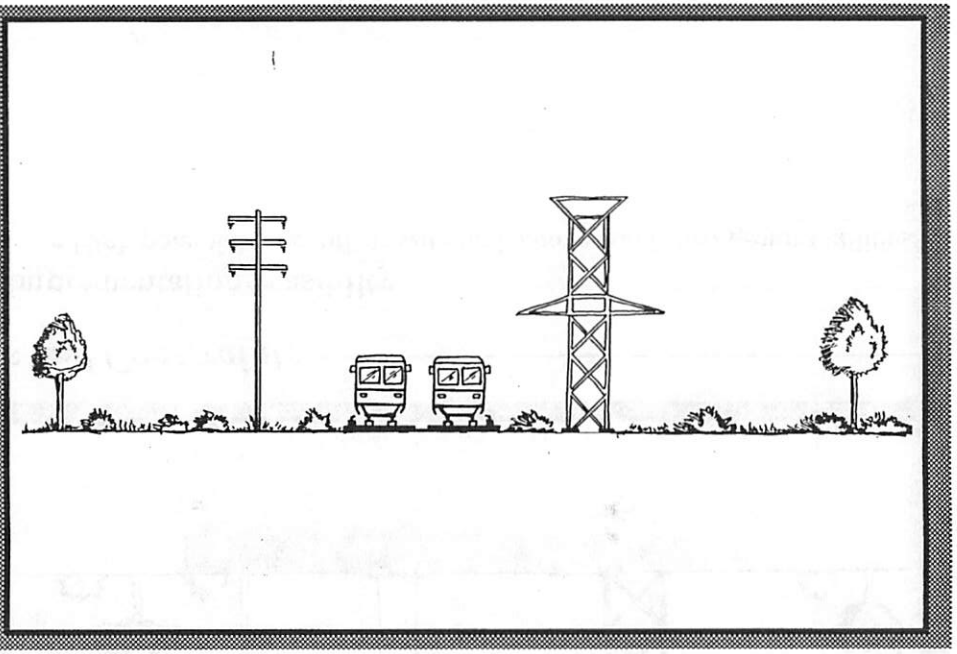
Figure 4-3 (f)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Utility ROW**

Profile Type: **At-Grade**





Issues, Opportunities and Constraints

Environmental

- Health concerns associated with exposure to EMF
- Utility conflicts
- Noise, visual vibration impacts to surrounding residential and commercial areas
- Loss of open space
- Compliance with PUC regulations

Community Acceptance

- Low due to safety concerns, loss of open space, and impacts on adjacent residential areas

Implementation Feasiblity

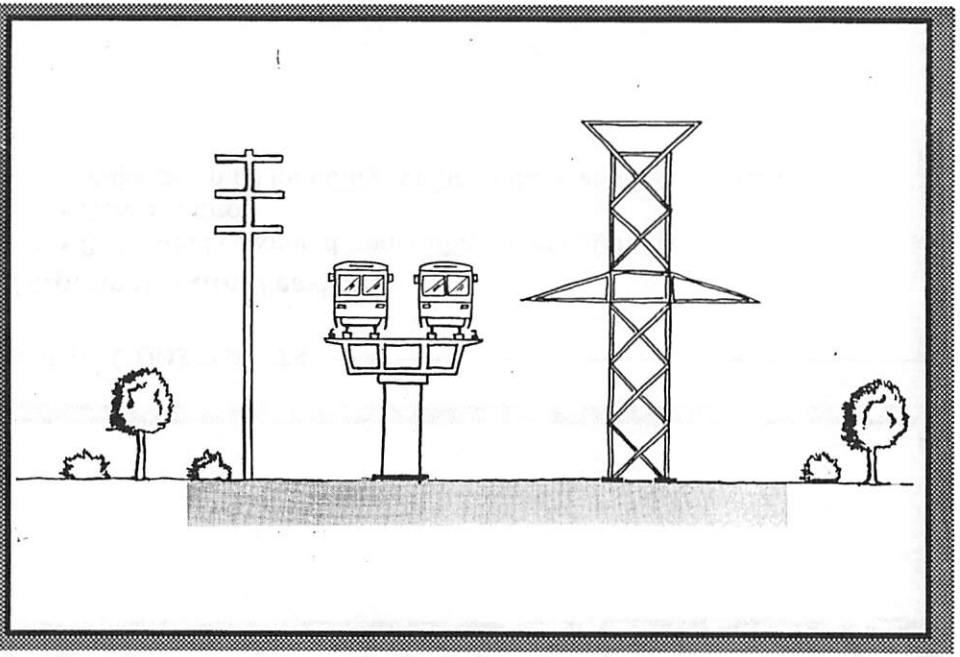
- ROW will be required from utility easement/ROW
- Access control
- Major potential for utility conflicts (above and below ground)

Figure 4-3 (K)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Utility ROW**

Profile Type: **Aerial**



Issues, Opportunities and Constraints

Environmental

- Health concerns associated with exposure to EMF
- Utility conflicts
- Visual impacts of elevated structures
- Noise levels higher for trains on elevated structures

Community Acceptance

- Low due to safety concerns, loss of open space, and impacts on adjacent residential areas

Implementation Feasiblity

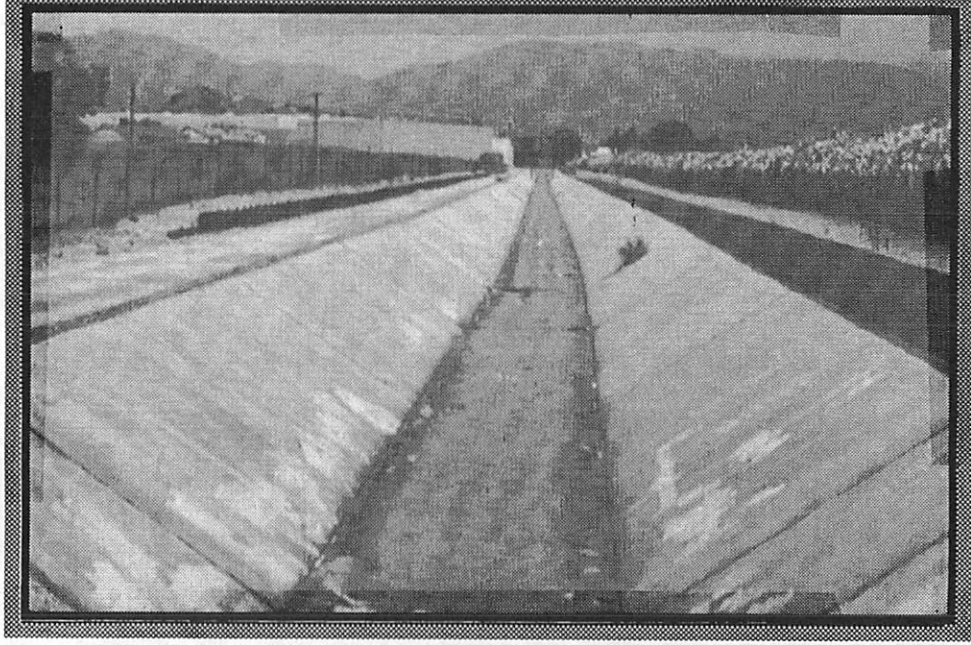
- High potential for conflicts with both above and below ground utilities

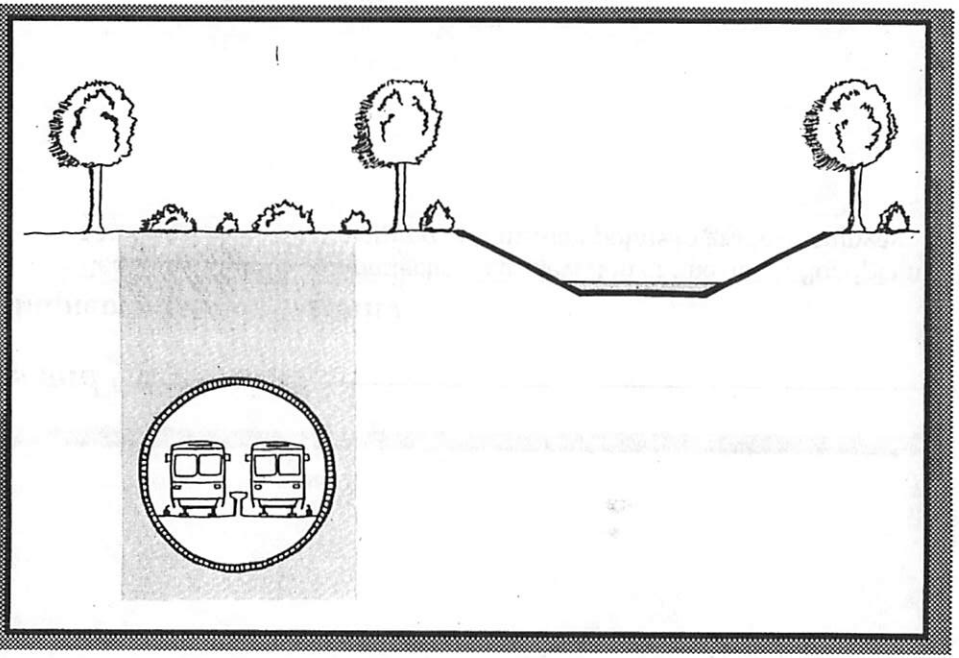
Figure 4-3 (L)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Flood Control ROW**

Profile Type: **Subway**





Issues, Opportunities and Constraints

Environmental

- Subway location limits impacts
- Soils and geology concerns, eg. alluvial fill within floodplain
- Permitting requirements: CA, Game and Fish, U.S. Corps of Engineers
- EIS requirements

Implementation Feasiblity

- High costs to tunnel
- Continuation of Red Line profile
- Drainage concerns and potential for ground settling could require additional mitigation

Community Acceptance

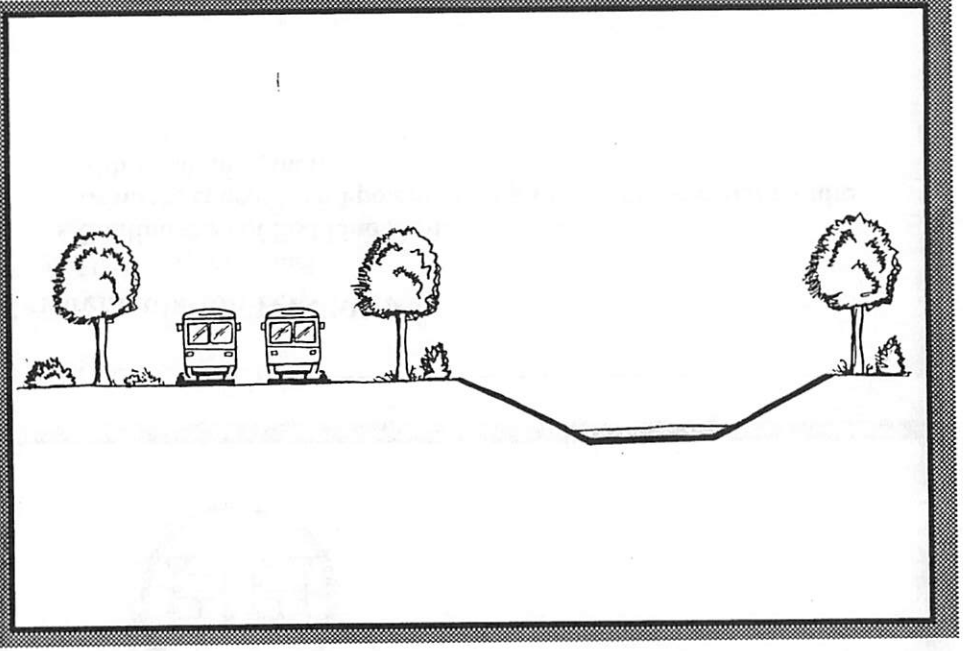
- Generally high due to limited impact potential

Figure 4-3 (M)

NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION
Profile and Typical Cross-Section Evaluation

Corridor Type: **Flood Control ROW**

Profile Type: **At-Grade**



Issues, Opportunities and Constraints

Environmental

- Loss of open space
- Structures within floodplain could adversely affect drainage
- Potential impacts to natural habitats
- Safety concerns: Exposure of persons and property to flood risks
- Permitting requirements: CA, Fish and Game, Corps of Engineers
- EIS requirements

Community Acceptance

- Low due to loss of open space, safety, and flooding concerns

Implementation Feasiblity

- Requirement for flood protection, eg. elevation of line out of floodplain, additional mitigation required at transition points to grade or subway

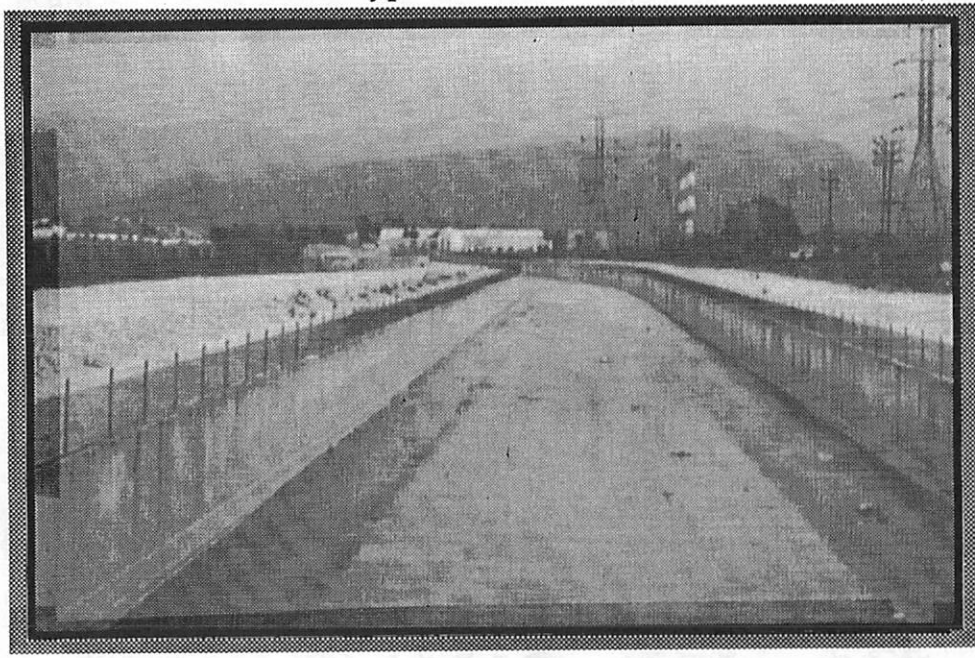
Figure 4-3 (N)

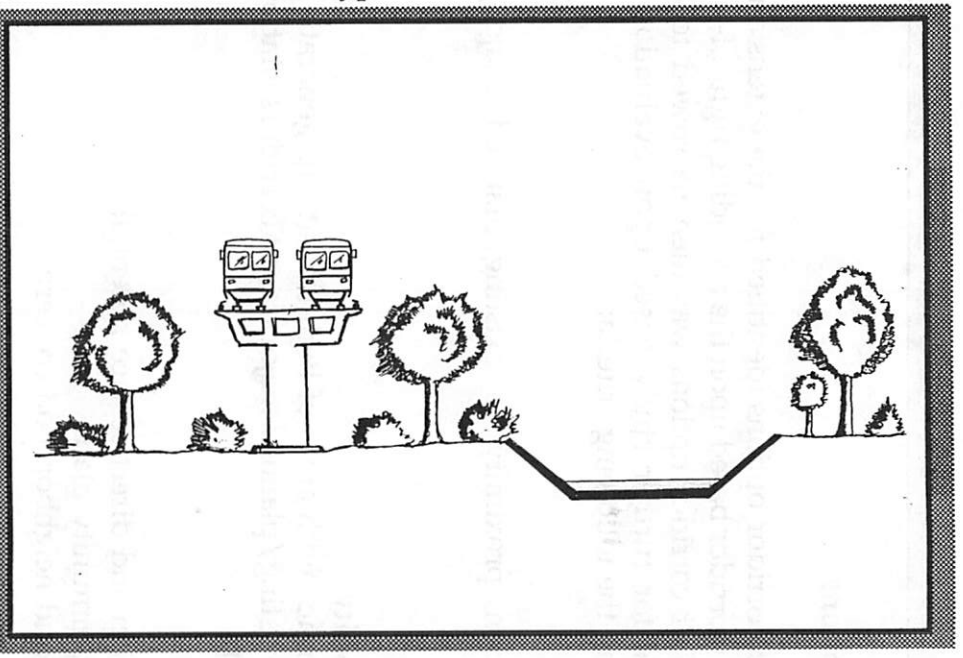
NORTHEAST VALLEY CORRIDOR RED LINE EXTENSION

Profile and Typical Cross-Section Evaluation

Corridor Type: **Flood Control ROW**

Profile Type: **Aerial**





Issues, Opportunities and Constraints

Environmental

- Loss of open space
- Visual impacts associated with elevated structure
- Structures in floodplain could adversely affect drainage
- Potential impacts to natural habitats
- Permitting requirements: CA, Fish and Game, Corps of Engineers
- EIS requirements

Community Acceptance

- Generally moderate due to possible concerns about open space and floodplain impacts

Implementation Feasiblity

- Additional construction costs to protect column foundations from scouring and flood damage

Figure 4-3 (O)

4.2.3 Refinement of Corridor Options

Figure 4-5 displays the universe of corridor options identified for the extension of the Red Line into the Northeast Valley Corridor based upon the preceding right-of-way and profile evaluations. The universe of corridor options was then narrowed to a more focused range of corridor options for further study based upon evaluation of the individual corridor options utilizing the following criteria:

1. **Activity Centers Served**
   - Alignment and station proximity to existing/planned major traffic generators
   - Ridership potential

2. **Regional Transit Compatibility**
   - Opportunities to interface with areas of high transit trip generation.
   - Linkages with other existing/planned major transit corridors, stations, and park-and-ride locations.

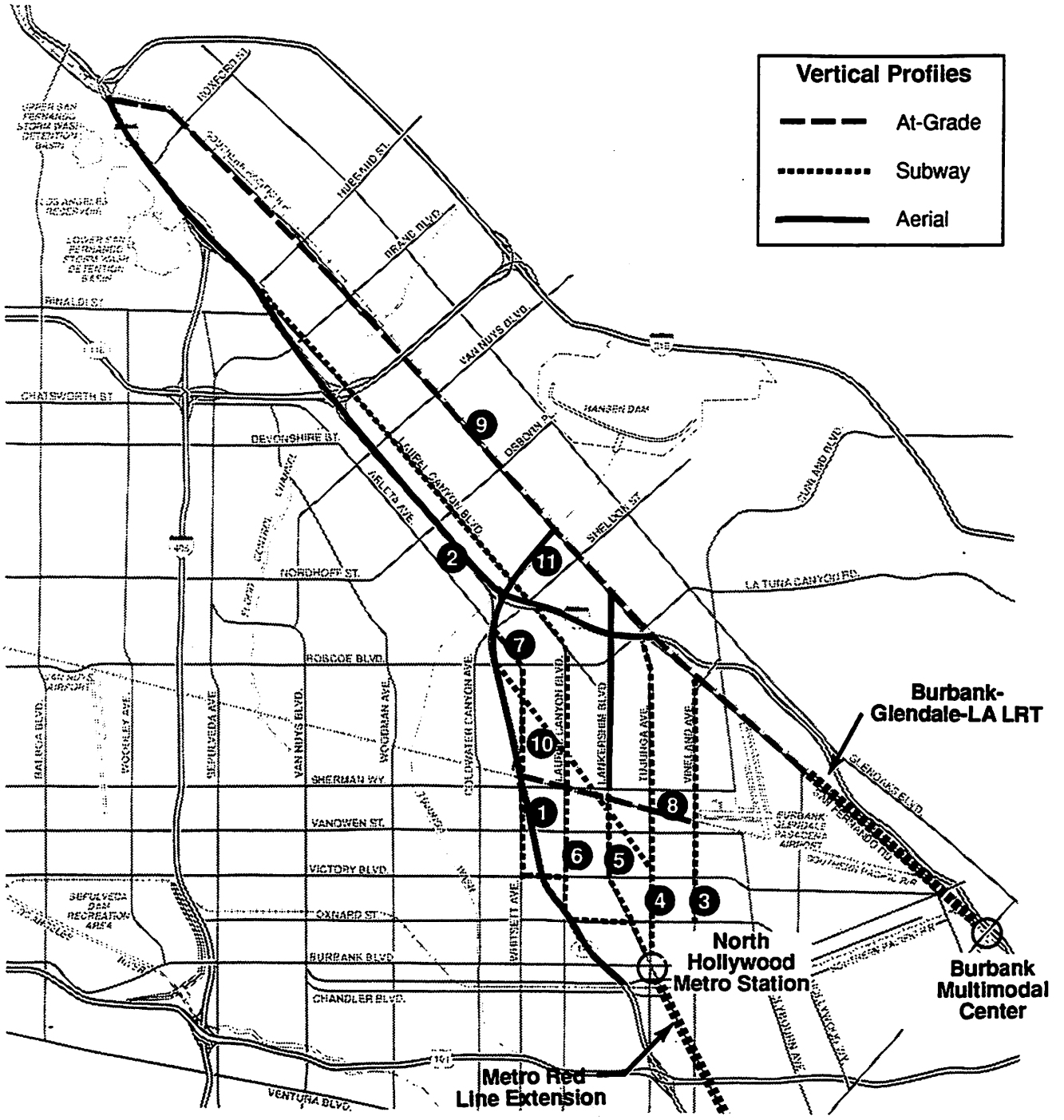
3. **Community Acceptance**
   - Community penetration and direct service potential
   - Compatibility with community plans
   - Other issues of local and neighborhood concern

4. **Environmental Sensitivity**
   - Areas of wetlands/floodplain intrusion
   - Disruptions to schools, parks, and open space
   - Impacts to residential neighborhoods

5. **Transportation Operations**
   - Potential for improved travel time and service quality
   - Relationship to existing and planned transit systems
   - Directness of route and requirements for through routing, looping, branching or shuttle operations.

6. **Implementation Feasibility**
   - Excessive grades or natural/structural barriers
   - Major utility or drainage impacts
   - Horizontal alignments requiring extensive earthwork
   - Requirements for tunnels/bridges
   - Likelihood of significant construction costs
   - Availability of ROW or tunnel portal space

Northeast Valley Corridor Red Line Extension - Universe of Corridor Options



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

0 2500 5000
Approximate Scale

4-5

Source: BRW, Inc., July 1992

In applying the criteria to each of universe of corridor options, subjective evaluations were required, but physical features such as grades, alignment curvature and right-of-way requirements were key considerations. Each corridor option was rated using the above criteria and elements on a scale of +2 to -2, with +2 the highest rating possible.

Low ratings of -1 and -2 were assigned to options where it was perceived that it would be difficult to implement rail transit service due to the likelihood of negative environmental and community impacts, high capital costs, and undesirable or unfeasible operating conditions. Higher ratings of +1 and +2 were assigned to options which would have potentially beneficial impacts, minimal environmental and community impacts, lower anticipated capital costs and desirable operating conditions. A value of zero (0) was utilized as a neutral assessment where no particular negative or positive impacts or benefits were perceived.

After each option was evaluated, the evaluation criteria scores were summed and averaged to obtain a summary rating for each corridor option. Figure 4-6 summarizes the results of the evaluation. The following provides a brief overview of key impacts and issues associated with each corridor option:

Corridor Option 1 - SR-170 from Chandler Boulevard to I-5 Junction
Right-of-Way Type: Freeway
Vertical Profile: Aerial

- Offers the opportunity to minimize travel time and integrate service within an existing high speed high capacity travel corridor.
- Provides walk access to both Valley and Laurel Plaza shopping areas, as well as the Caltrans park and ride site at Oxnard and SR-170.
- A median location on elevated structure would minimize the right-of-way impacts, but special treatments such as additional structures, overpasses, etc. would be required at freeway junctions and interchange locations.
- Provision for the planned HOV lanes would need to be maintained.

Corridor Option 2 - Interstate 5 from San Fernando Road to Sylmar
Right-of-Way Type: Freeway
Vertical Profile: Aerial

- Use of an existing freeway corridor offers opportunities to enhance travel time and interface with other planned regional facilities.
- The route could terminate, or have a major transit center, at Roxford to link with the LAX-Palmdale proposed service.
- Existing freeway median provides ample right-of-way for elevated guideway structure.

Corridor Option 3 - Vineland Avenue from Chandler Boulevard to SP Santa Clarita

Right-of-Way Type: Arterial
Vertical Profile: Subway

- Provides the most easterly course of the options providing a direct connection with the Red Line terminus in North Hollywood.
- Provides a direct connection between North Hollywood and the Burbank Airport and the opportunity to link with possible LRT service to San Fernando and Sylmar.
- Vineland Avenue is a relatively low traveled corridor.
- Diverse mix of land uses along Vineland Avenue, with industrial to the south and residential to the north in the Sun Valley area.
- The alignment would require a number of horizontal curves which could result in possible right-of-way impacts.
- The Burbank Airport crash zone could limit station locations and implementation at and or above grade.
- Tunneling under the Burbank Airport runways could also require special mitigation measures.

Corridor Option 4 - Tujunga Avenue from Chandler Boulevard to the SP Santa Clarita

Right-of-Way Type: Arterial
Vertical Profile: Subway

- Passes through mixed density residential and industrial areas generally lacking a primary activity center focus.
- Has limited ridership potential along with limited linkage potential to existing/planned transit facilities.
- A community park and reclaimed landfill area on the northern end of the route could entail environmental concerns.
- The presence of I-5 on a fill and curving embankment could constrain the siting of a tunnel/subway portal to serve as a Red Line terminus and LRT interface at the northern end of the route in the vicinity of San Fernando Road.

Corridor Option 5 - Lankershim Boulevard from Chandler Boulevard to SP Santa Clarita

Right-of-Way Type: Arterial
Vertical Profile: Subway - Chandler Boulevard to SP Moorpark Line
Aerial - SP Moorpark Line to SP
Santa Clarita

- Provides the most direct route north from the Red Line terminus to the SP Santa Clarita Line, with minimal out-of-direction movements required.
- The North Hollywood redevelopment area, as well as many commercial and residential land uses along Lankershim Boulevard, offer the opportunity to develop a diverse and strong ridership base.

- Transition from subway to aerial facility would best occur north of the SP Moorpark Line viaduct to limit impacts and right-of-way constraints.
- The aerial portion of the line while located in the more industrialized portion of the corridor, could entail visual and traffic circulation impacts that could require special mitigation.

Corridor Option 6 - Oxnard/Laurel Canyon Boulevard from Lankershim Boulevard to I-5 Junction

Right-of-Way Type: Arterial
Vertical Profile: Subway

- Serves a large number of commercial activity centers along the southern portion including Laurel Plaza, Valley Plaza, and Canyon Plaza, which are also the focus of many of the area bus routes.
- Serves a Caltrans Park and Ride Lot with about 100 spaces in the vicinity of Oxnard and SR-170.
- Contains numerous curves (Lankershim/Oxnard, Oxnard/Laurel Canyon and Laurel Canyon/Webb) which could impact travel times.
- The northern portion entails greater constraints due to surrounding lower density residential and potential community impacts.

Corridor Option 7 - Victory/Whitsett/Arleta Avenues from Lankershim Boulevard to SR-170

Right-of-Way Type: Arterial
Vertical Profile: Subway

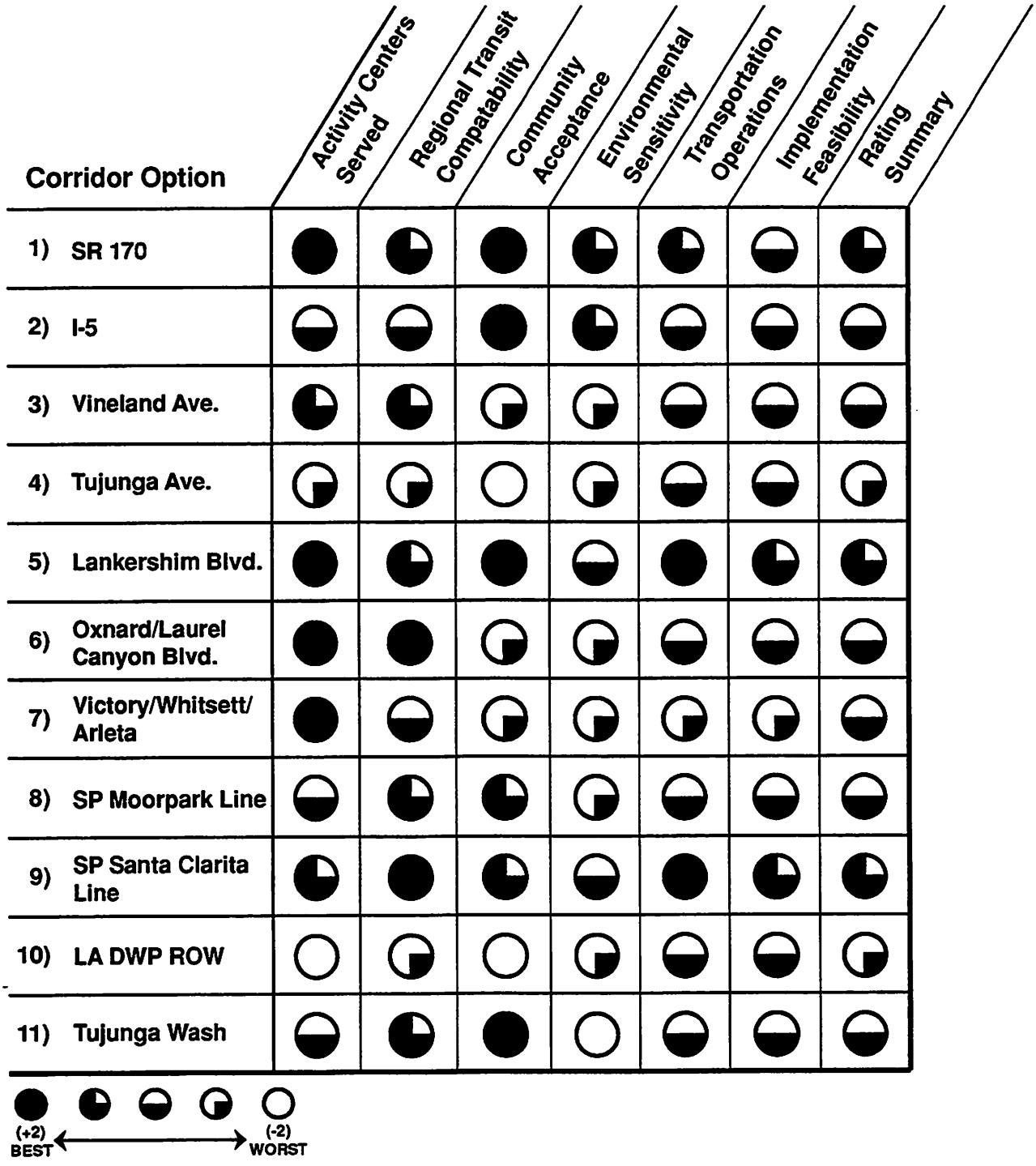
- Option would result in slower travel times due to horizontal curves requiring increased right-of-way and potential impacts on surrounding residential areas.
- Serves mixed commercial land uses along the southern portion with minimum community/neighborhood impacts but the northern portion includes adjacent residential areas with potential impacts of local concern.
- Provides service to Valley Plaza, but overall travel time would be slow due to circuity.

Corridor Option 8 - Southern Pacific Moorpark Line from Vineland Avenue to SR-170

Right-of-Way Type: Railroad
Vertical Profile: At-Grade

- Serves as a potential northwest-southeast link between candidate north-south options, and the northerly routes to Sylmar.

Evaluation Summary of Universe of Corridor Options



Source: BRW, Inc., 30 September 1992

- The railroad ROW includes existing SP rail service and Amtrak/Metrolink service with potential for a joint commuter rail/transit station.
- Passes primarily through industrial areas on wide right-of-way with limited potential for new impacts but provides minimal opportunities to service existing activity centers.
- Limited ridership potential.
- Use of an existing rail corridor would benefit travel times but transition with north-south alignments could constrain operating conditions.
- Rail ROW could provide space, possibility in conjunction with one of the other corridor options, to portal from a subway alignment before continuing at or above grade.

Corridor Option 9 - Southern Pacific Santa Clarita Line from Burbank Multimodal Center to Sylmar

Right-of-Way Type: Railroad
Vertical Profile: At-Grade

- Provides a northerly alignment for potential connections with several north-south options extending from North Hollywood, as well as the future proposed extension of the Glendale/Burbank LRT line.
- The SP right-of-way contains an existing active rail line which LACTC is currently improving for MetroLink commuter rail service.
- Provides a direct northerly path and its existing grade crossings of arterial streets would general provide for high speed operations.
- Serves primarily industrial and commercial areas in the communities of Sun Valley, Pacoima, San Fernando, and Burbank.
- Existing transit routes along San Fernando Road include the heaviest ridership of all the corridor options considered.

Corridor Option 10 - Los Angeles DWP Utility Right-Of-Way from Tujunga Avenue to SR-170

Right-of-Way Type: Utility
Vertical Profile: Subway

- Provides a northwest - southeast path and opportunities to link other north-south alignments.
- Utility ROW contains open space and adjacent low density single-family residential uses, with overhead transmission towers above the entire alignment.
- Various community plans along the right-of-way call for the ultimate conversion of the DWP ROW to open space or other uses compatible with overhead transmission lines, which could limit transit opportunities.
- The corridor would not connect with or provide direct access to existing or planned activity centers.

Corridor Option 11 - Tujunga Wash from Laurel Canyon Road to SP Santa Clarita
Right-of-Way Type: Flood Control
Vertical Profile: Aerial

- Provides an opportunity to provide a connection from the north-south alignment option to the SP Santa Clarita ROW via a flood control easement.
- Wash has been channelized with a concrete ditch and the width of the right-of-way would be adequate for adjacent aerial guideway structures.
- Requires a portal location to transition from the subway profiles of the north-south options to an aerial structure along the flood control ROW.
- Tujunga Wash has been identified as a blueline stream by the U.S.G.S. and is therefore regulated by the U.S. Army Corps of Engineers and the California Department of Fish and Game (CDFG). Construction within the wash may require special permits and measures to mitigate or avoid potential adverse impacts to the streambed or to the drainage capabilities of the wash.
- Possible requirements to flood protect new structures within the wash and/or 100-year flood delineation.

4.3 RANGE OF PROTOTYPICAL CORRIDOR OPTIONS

After preliminary evaluation of the Universe of Corridor Options, five (5) prototypical corridor options were identified using the following criteria:

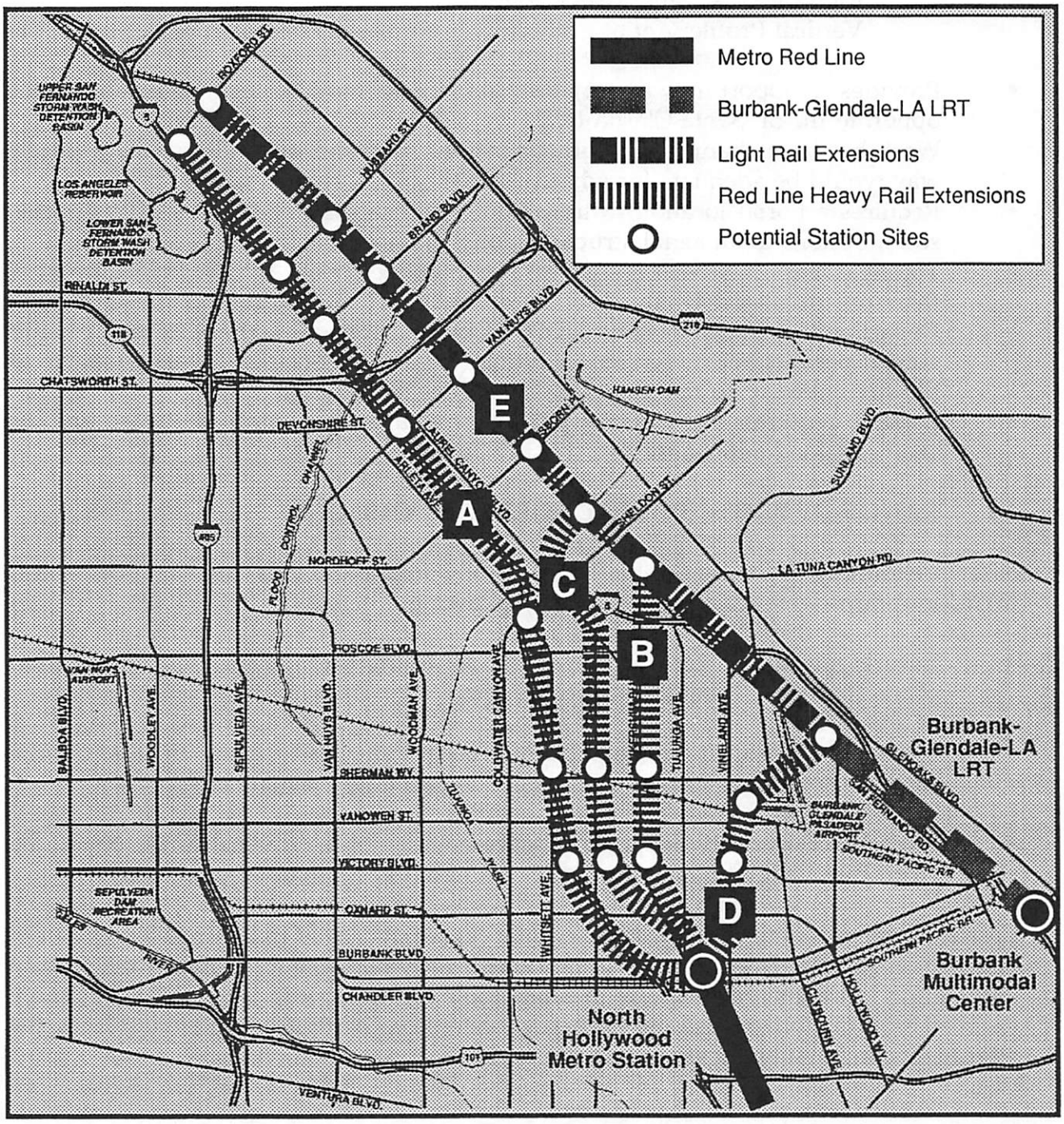
- Ensure generalized corridor alignment feasibility through maximum utilization of the more highly rated corridor options.

- Maximize rail transit service to the Northeast Valley by focusing on areas of high ridership potential and on corridors of higher travel demand.

- Provide for a variety of corridors representative of the diverse conditions in the Northeast Valley to ensure a range of alternatives for subsequent analysis.

Corridor Options identified for further evaluation are displayed in Figure 4-7 and a brief description follows. In order to maintain consistency between the options, the termini and station locations are generally in comparable locations. It is probable that as more detailed examination of these and perhaps other options occur in subsequent studies, the alignments and station locations will be modified and/or refined.

Northeast Valley Corridor Options



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

BRW

Myra Frank & Assoc.

0 1/2 1

Approximate Scale: miles

4-7

Source: BRW, Inc., 31 July 1992

Corridor Option A: SR-170/I-5

This corridor option provides the most westerly alignment route and follows existing freeway facilities. This option provides a connection from the North Hollywood Metro Rail Station, west along the Burbank Southern Pacific line, north in the SR-170 right-of-way, northeasterly along I-5 to a terminus at the proposed LAX/Palmdale Station, north of the I-405 Junction.

The alignment would be in subway along the SP Burbank right-of-way from North Hollywood Metro Rail Station westerly to SR-170. As the alignment approaches SR-170, it would transition above grade to aerial structure running in the median of SR-170 and then I-5, continuing northwesterly to its terminus at the Roxford LAX/Palmdale Commuter Rail Station.

This corridor option is the only alternative that actually extends the Red Line and the Heavy Rail technology as far north as Sylmar. Relative to the other options, it is also unique in that it does not provide a connection with the proposed LRT extension to Sylmar along the Santa Clarita SP line.

Potential station sites along the alignment include the following:

- SR-170 / Victory Boulevard
- SR-170 / Sherman Way
- SR-170 / Arleta Avenue
- I-5 / Van Nuys Boulevard
- I-5 / Brand Boulevard
- I-5 / Hubbard Street
- Roxford LAX/Palmdale Station

Corridor Option B: Lankershim/Santa Clarita SP

This corridor option provides a connection from the North Hollywood Metro Rail Station, north following the Lankershim Boulevard right-of-way to the Santa Clarita SP Rail Line with a intermodal connection to LRT which continues northwesterly to a terminus at the proposed Commuter Rail Station at San Fernando Road and Roxford Street.

This alignment option would begin underground at the North Hollywood Metro Rail Station and continue north in subway under Lankershim Boulevard. Continuing north, the alignment would transition to an aerial structure, just north of the SP Moorpark viaduct and run along a center median within Lankershim Boulevard. At the Santa Clarita SP line an intermodal connection would be provided to LRT which would continue at-grade to the terminus in Sylmar.

Potential station sites along this alignment option would include a combination of below-grade, at-grade, and aerial locations as follows:

- Lankershim / Victory Boulevard
- Lankershim / Sherman Way
- Santa Clarita SP / Osborne Street
- Santa Clarita SP / Van Nuys Boulevard
- Santa Clarita SP / Brand Boulevard
- Santa Clarita SP / Hubbard Street
- Roxford Street Commuter Rail Station

Corridor Option C: Oxnard/Laurel Canyon/Tujunga Wash/Santa Clarita SP

This corridor option provides an alternative alignment extension from Corridor Option B at Lankershim and Oxnard, where it would proceed west within the Oxnard Boulevard right-of-way to Laurel Canyon Boulevard where it would proceed north to the Tujunga Wash and transition east to the Santa Clarita SP. An intermodal LRT connection would then continue northwesterly to a terminus at the proposed Commuter Rail Station at San Fernando Road and Roxford Street.

This alignment option would begin underground at North Hollywood and continue northwesterly via subway to Laurel Canyon Boulevard. The route would then continue north in subway under Laurel Canyon to the vicinity of the Tujunga Wash where it would then transition to aerial structure. At the Santa Clarita SP, an intermodal connection to LRT would continue at-grade to the terminus in Sylmar.

Potential station sites along the alignment include the following:

- Laurel Canyon Boulevard / Victory Boulevard
- Laurel Canyon Boulevard / Sherman Way
- Santa Clarita SP / Sheldon Street
- Santa Clarita SP / Van Nuys Boulevard
- Santa Clarita SP / Brand Boulevard
- Santa Clarita SP / Hubbard Street
- Roxford Street Commuter Rail Station

Corridor Option D: Vineland/Burbank Airport/Santa Clarita SP

This corridor option provides a connection from the North Hollywood Metro Station and the Burbank Airport via a broadly defined alignment using Vineland Avenue right-of-way, north past Vanowen Street where it would then proceed in a northeasterly direction under the Burbank Airport runways to a intermodal connection at Hollywood Way with LRT along the Santa Clarita SP to a terminus at the proposed Commuter Rail Station at San Fernando Road and Roxford Street.

This alignment option would be in subway from North Hollywood, north under the Burbank Airport before transitioning to an at-grade connection with the Santa Clarita Line. LRT would then continue at-grade to the terminus in Sylmar.

Potential station sites along the alignment include the following:

- Vineland Avenue / Victory Boulevard
- Amtrak/Commuter Rail Station along SP Moorpark Line
- Santa Clarita SP / Hollywood Way (Burbank Airport)
- Santa Clarita SP / Lankershim Boulevard
- Santa Clarita SP / Osborne Street
- Santa Clarita SP / Van Nuys Boulevard
- Santa Clarita SP / Brand Boulevard
- Santa Clarita SP / Hubbard Street
- Roxford Street Commuter Rail Station

Corridor Option E: Santa Clarita SP

This corridor option would rely upon exclusive provision of LRT as an extension of the Burbank/Glendale line along the Santa Clarita SP right-of-way from the Burbank Multimodal Center to the proposed Commuter Rail Station at San Fernando Road and Roxford Street. Under this option there would be no direct extension of the Red Line into the Northeast San Fernando Valley or Heavy Rail connection with the Burbank/Glendale LRT Line. The LRT Line would be provided at-grade within the Santa Clarita right-of-way.

Potential station sites along the alignment include the following:

- SP Santa Clarita / Buena Vista Street
- SP Santa Clarita / Hollywood Way
- SP Santa Clarita / Vineland Avenue
- SP Santa Clarita / Lankershim Boulevard
- SP Santa Clarita / Osborne Street
- SP Santa Clarita / Van Nuys Boulevard
- SP Santa Clarita / Brand Boulevard
- SP Santa Clarita / Hubbard Street
- Roxford Street Commuter Rail Station

4.4 CORRIDOR OPPORTUNITIES AND CONSTRAINTS

This section summarizes corridor opportunities and constraints associated with implementation of the corridor options connecting the North Hollywood Metro Red Line station with Sylmar in the Northeast San Fernando Valley. Included are a review of environmental, engineering, transit operations, and capital cost issues.

4.4.1 Environmental Assessment

The purpose of a preliminary environmental review is to identify potential environmental issues and constraints which could affect the viability of the various options and to assist LACTC staff and decision makers in selecting corridor options for further study and consideration.

Provided below is a general discussion of the potential issues associated with the technology and profile options followed by a description of the key issues specific to each corridor option.

Environmental Issues

The following categories were investigated for potentially significant environmental impacts: noise and vibration, right-of-way acquisition; visual/aesthetics; land use compatibility; natural resources; historic and cultural resources; floodplain and drainage issues; and traffic, circulation and parking.

The technologies under consideration include Heavy Rail (extension of the Metro Red Line service along four corridor options) and Light Rail Transit along the SP Santa Clarita line. Profile options under consideration for the Heavy Rail extension include subway and elevated along both freeway median and arterial streets. The Light Rail alignment would be located at-grade and within the SP Santa Clarita line right-of-way.

The impacts generally associated with Heavy Rail in a subway alignment include:

- Construction noise and vibration impacts on nearby sensitive uses.
- Potentially significant ground-borne vibration impacts of rail operations on sensitive uses near the alignment (vibration impacts can be mitigated through use of floating slab track technology).
- Disruption of utilities during construction.
- Right-of-way acquisition for park-and-ride facilities.
- Potential traffic impacts at stations/park-and-ride facilities.

- Localized air quality impacts at park-and-ride facilities.

Elevated Heavy Rail in a freeway median could typically result in the following impacts:

- Construction noise impacts.
- Potentially significant operational noise impacts on nearby noise-sensitive uses (mitigation measures could include barriers along the elevated structure or along freeway right-of-way).
- Adverse visual impacts including obstruction of views and removal of freeway landscaping to accommodate stations/park-and-ride facilities.
- Right-of-way acquisition for stations/park-and-ride facilities.
- Disruption of freeway traffic during construction.
- Traffic impacts at stations/park-and-ride facilities.
- Localized air quality impacts at park-and-ride facilities.
- Use of freeway right-of-way may require preparation of an environmental document(s) in compliance with both CEQA and federal NEPA guidelines.

Elevated Heavy Rail along an arterial street could typically result in impacts similar to those described above including:

- Construction noise and vibration impacts.
- Potentially significant noise impacts due to rail operations (the factors which contribute to increases in CNEL noise levels at nearby sensitive receptors include the steel wheel on steel rail technology, the location or height of the noise source, the frequency of trains, the train schedule and the train speeds).
- Adverse visual impacts including obstruction of views, removal of street landscaping, and shade and shadow.
- Right-of-way acquisition to accommodate the elevated structure and stations/park-and-ride facilities.
- Disruptions of utilities during construction.
- Disruption of street traffic during construction with potential lane closures and detours.

- Traffic impacts at stations/park-and-ride facilities.
- Localized air quality impacts at park-and-ride facilities.

The following impacts are typical of an at-grade light rail alignment within a railroad right-of-way:

- Construction noise impacts.
- Potentially significant noise impacts on adjacent sensitive uses due to LRT operations.
- Vibration impacts on adjacent sensitive receptors due to rail operations.
- Minor adverse visual impacts due to catenary poles and wires.
- Additional traffic delay at grade-crossings and the adverse impact of traffic generated by the LRT stations.
- Disruptions to freight rail traffic during construction.
- Right-of-way acquisition for stations/park-and-ride facilities.
- Localized air quality impacts at park-and-ride facilities.

Impacts by Corridor Options

Corridor Option A (SR-170/I-5)

This alternative proposes an elevated structure in the median of SR-170 and 1-5 to accommodate the extension of Heavy Rail from the North Hollywood Metro Red Line station to approximately Roxford Street in Sylmar. The short segment from the North Hollywood Station to SR-170 would be subway.

The key issues or potential environmental constraints associated with this alternative include:

- Noise and Vibration - The predominant land use bordering this section of the SR-170 and I-5 Freeways is residential. There are also about seven parks and several schools along the alignment. Although many adjacent residential uses are buffered from freeway noise by soundwalls, differences in grade, distance, freeway structures or landscaping, there are some areas where an elevated structure would be in the line of sight of adjacent residences. Therefore, it is anticipated that this alternative could result in potentially significant noise impacts on some nearby noise-sensitive uses. The number of residences affected

and the potential increase in noise levels would require a more detailed analysis. Mitigation measures could include barriers along the elevated structure, additional freeway soundwalls or provision of extra noise insulation for affected structures.

In order to make the transition from the North Hollywood Metro Red Line Station to SR-170, the subway alignment may pass under a park or residences immediately east of the freeway which could be affected by construction noise and vibration impacts and by vibration impacts from heavy rail operations.

- Visual - As identified above, the elevated guideway would be visible to some adjacent residences along the freeway. The aerial structure, as measured to the top of rail, would be about 22 feet above the adjacent freeway lanes. The structure could alter the visual setting, obstruct views of the San Gabriel Mountains from the west side of the freeways, cast shade and shadow, and be an additional source of light and glare.

- Seismicity - According to Alquist Priolo Special Studies Zone Map (U.S.G.S. San Fernando Quadrangle, January 1979), an active fault trace crosses I-5 just south of the juncture with I-405. An active trace also follows the approximate path of I-5 north from the 405 Freeway to just north of Roxford Street. A proposed station at Roxford Street, in conjunction with LAX/Palmdale, would be located within a Special Studies Zone and subject to the provisions of the Alquist Priolo Act. The purpose of the Alquist Priolo Act is to prohibit the location of developments for human occupancy across the trace of an active fault. The area within 50 feet of a fault is presumed to be underlain by active branches of the fault. The act defines a structure for human occupancy as one which is expected to have a human occupancy rate of 2,000 person-hours or more per year. Stations which include a canopy structure or other structures may be subject to the provisions of the Alquist Priolo Act. The Act also requires cities and counties to withhold development permits for sites within zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from faulting.

  There are also several areas along the alignment which are designated as having high to moderate liquefaction potential according to the Los Angeles County Regional Planning Department Liquefaction Susceptibility Map (Plate 4, January 1990). The approximate locations of these areas along the alignment are: the area around the juncture of I-5 and San Fernando Road; the juncture of I-5 and I-405 north to around Roxford Street; and the area around the juncture of I-170 and I-5. Proposed stations at Roxford Street and SR-170/Arleta Avenue may be located in areas subject to high to moderate liquefaction risks.

- Environmental Clearance - A project constructed within the median of an interstate freeway (I-5) is likely to require the preparation of an environmental

document that conforms to both state CEQA and federal NEPA guidelines (e.g. EIR/EIS). Construction within the median of State Route 170 may also require CEQA and NEPA environmental clearance.

Option B (Lankershim Boulevard)

Option B includes the extension of the Metro Red Line north along Lankershim Boulevard to the SP Santa Clarita railroad right-of-way (ROW) and then LRT north along the SP ROW to Sylmar. The section along Lankershim from Sherman Way to the SP ROW may be constructed as an elevated guideway.

The key issues and constraints associated with implementation of this corridor option include:

- Noise and Vibration - Land uses along the subway section of the alignment from the North Hollywood Station to Sherman Way are commercial and industrial. However, the predominant land use from north of Sherman Way to Strathern Street (a distance of about one mile) is multi-family residential. The residences along this section could experience significant adverse noise impacts due to heavy rail trains travelling on an elevated guideway in the street right-of-way. To mitigate potential impacts a barrier could be constructed on the elevated structure. If this segment is constructed as subway rather than aerial, these residences could be affected by the vibration impacts during construction and operation. Vibration impacts can be mitigated by using floating slab track technology.

  The SP ROW from Lankershim to Sylmar is bordered by primarily commercial and industrial uses with some scattered residential areas immediately east of the ROW. These residential areas are primarily located between Branford Street and Osborne Street and between Sayre Street and Oswald Street. A school is located at the southeast corner of Brand Avenue and the SP ROW. Recreation Park is located east of the SP ROW and north of Parkside Drive. Noise from light rail trains including train horns and warning bells at grade crossings may have a significant adverse impact on the residences in these areas. Construction of soundwalls along the SP ROW is a potential mitigation measure. It should be noted that in addition to possible light rail trains, there is currently freight rail traffic along this alignment and beginning in October of 1992 there will be eight commuter rail trains operating each weekday. The cumulative noise impact of this rail traffic on adjacent noise-sensitive receptors may be significant and adverse.

- Visual - An elevated heavy rail guideway along Lankershim could have a potentially significant adverse visual impact on adjacent uses which are predominantly multi-family residential. An aerial structure rising to a minimum height of 22 feet above the roadway surface would alter the character of the

visual setting, cast shade and shadow, obstruct views and be an additional source of light and glare.

The LRT catenary poles and wires along the SP ROW may have a minor adverse visual impact.

- Seismicity - The Alquist Priolo Special Studies Zones map (U.S.G.S San Fernando Quadrangle, January 1979) shows an active fault trace crossing the SP ROW just north of Hubbard Street. A proposed Metrolink commuter rail station lies within the Special Studies Zone containing the active fault trace. The Special Studies Zone extends from Hubbard Street on the south to Sayre Street on the north.

  According to the Los Angeles County Regional Planning Department Liquefaction Susceptibility Map (Plate 4, January 1990), the SP ROW crosses four areas subject to high to moderate liquefaction potential. The approximate locations of these areas are: the Tujunga Wash east of the SP ROW; between S. Brand Boulevard and Workman Street; Polk Street to Bledsoe Street; and the juncture of San Fernando Road and I-5. Stations at Osborne Street and the northern terminus of the alignment may lie within these high to moderate liquefaction potential areas.

Option C (Oxnard/Laurel Canyon/Tujunga Wash)

This option would consist of subway north along Lankershim Boulevard, west along Oxnard Street, then north along Laurel Canyon Boulevard to the Tujunga Wash. The alignment would continue on an elevated structure east along Tujunga Wash to the SP Santa Clarita ROW. LRT service would be provided along the SP ROW north to Sylmar.

The potential issues and constraints associated with implementation of this option include:

- Noise and Vibration - Predominantly residential uses and a church are located along Oxnard Street. Laurel Canyon Boulevard is bordered by primarily commercial uses from Oxnard Street to just north of Saticoy Street. From Saticoy Street to the Tujunga Wash, the land uses along Laurel Canyon Boulevard are predominantly residential. A subway along Oxnard and Laurel Canyon could result in vibration impacts affecting sensitive residential uses along the alignment. To mitigate vibration impacts, floating slab track technology could be employed.

  The SP ROW from the Tujunga Wash to Sylmar is bordered by primarily commercial and industrial uses with some scattered residential areas immediately east of the ROW. These residential areas are primarily located between Branford Street and Osborne Street and between Sayre Street and Oswald Street. A school is located at the southeast corner of Brand Avenue and the SP ROW. Recreation Park is located east of the SP ROW and north of Parkside Drive. Noise from light rail trains including train horns and warning bells at grade crossings may have

a significant adverse impact on the residences in these areas. Construction of soundwalls along the SP ROW is a potential mitigation measure. It should be noted that in addition to possible light rail trains, there is currently freight rail traffic along this alignment and beginning in October of 1992 there will be eight commuter rail trains operating each weekday. The cumulative noise impact of this rail traffic on adjacent noise-sensitive receptors may be significant and adverse.

- Seismicity - The Alquist Priolo Special Studies Zones map (U.S.G.S San Fernando Quadrangle, January 1979) shows an active fault trace crossing the SP ROW just north of Hubbard Street. A proposed Metrolink commuter rail station lies within the Special Studies Zone containing the active fault trace. The Special Studies Zone extends from Hubbard Street on the south to Sayre Street on the north.

  According to the Los Angeles County Regional Planning Department Liquefaction Susceptibility Map (Plate 4, January 1990), the SP ROW crosses four areas subject to high to moderate liquefaction potential. The approximate locations of these areas are: the Tujunga Wash east of the SP ROW; between S. Brand Boulevard and Workman Street; Polk Street to Bledsoe Street; and the juncture of San Fernando Road and I-5. Stations at Sheldon Street and the northern terminus of the alignment may lie within these high to moderate liquefaction potential areas.

- Floodplains and Drainage - The Tujunga Wash in the vicinity of the proposed alignment is a concrete flood control channel which is designated as a blueline stream on the U.S.G.S. Van Nuys Quadrangle). Blueline streams are regulated by the U.S. Army Corps of Engineers. Construction of a structure, excavation, or discharge of dredged or fill material into a blueline stream may require a Section 404 "Nationwide" permit from the Corps. In determining whether to grant a permit, the Corps evaluates projects by weighing the economic benefits of the proposal against its adverse effects. The Corps will usually deny projects which present hazards to navigation or impair the carrying capacity of a floodway. The Section 404 permit may include special terms and conditions which the permit holder is required to follow to minimize potential adverse impacts to water quality and the drainage capabilities of the stream.

Option D (Vineland/Burbank Airport)

This option consists of the extension of Metro Rail Red Line east along Chandler Boulevard via a subway and then north along Vineland Avenue to Burbank Airport and the SP Santa Clarita ROW. At-grade LRT service would be provided north along the SP ROW to Sylmar.

- Noise - There are a mix of residential and commercial uses along Vineland Avenue. Residential areas along Vineland are located between Burbank Boulevard and Oxnard Street, between Erwin Street and Victory Boulevard and

on the west side of Vineland between Kittredge Street and Vanowen Street. Victory-Vineland Park is located west of Vineland and north of Victory Boulevard. The residential uses along Vineland could be adversely by construction vibration impacts and ground-borne vibration from heavy rail trains. Use of floating slab track technology would mitigate potential vibration impacts. The alignment as it transitions from Chandler to Vineland and from Vineland to Burbank Airport property would also travel under residential areas located behind the commercial uses fronting on these major arterials. Residential uses directly above the subway tunnel could be adversely affected by vibration during construction and operation.

The SP ROW from the Burbank Airport to Sylmar is bordered by primarily commercial and industrial uses with some scattered residential areas immediately east of the ROW. These residential areas are primarily located between Branford Street and Osborne Street and between Sayre Street and Oswald Street. A school is located at the southeast corner of Brand Avenue and the SP ROW. Noise from light rail trains including train horns and warning bells at grade crossings may have a significant adverse impact on the residences in these areas. Construction of soundwalls along the SP ROW is a potential mitigation measure. As noted previously, that in addition to possible light rail trains, there is currently freight rail traffic along this alignment and beginning in October of 1992 there will be eight commuter rail trains operating each weekday. The cumulative noise impact of this rail traffic on adjacent noise-sensitive receptors may be significant and adverse.

- Seismicity - The Alquist Priolo Special Studies Zones map (U.S.G.S San Fernando Quadrangle, January 1979) shows an active fault trace crossing the SP ROW just north of Hubbard Street. A proposed Metrolink commuter rail station lies within the Special Studies Zone containing the active fault trace. The Special Studies Zone extends from Hubbard Street on the south to Sayre Street on the north.

  According to the Los Angeles County Regional Planning Department Liquefaction Susceptibility Map (Plate 4, January 1990), the SP ROW crosses four areas subject to high to moderate liquefaction potential. The approximate locations of these areas are: the Tujunga Wash east of the SP ROW; between S. Brand Boulevard and Workman Street; Polk Street to Bledsoe Street; and the juncture of San Fernando Road and I-5. Stations at Osborne Street and the northern terminus of the alignment may lie within these high to moderate liquefaction potential areas.

- Impacts to Airport Operations - Construction of a subway under airport property would require the permission and approval of the FAA. Electronic interference from the electrified heavy rail system may adversely affect the operation of airport electronic navigational systems and equipment.

Option E (SP Santa Clarita ROW)

This option consists of an at-grade LRT system within the SP Santa Clarita ROW from Chandler Boulevard to Sylmar. The potential key issues and constraints have generally been described under the previous corridor options and include:

- Noise - The SP ROW from the Burbank Airport to Sylmar is bordered by primarily commercial and industrial uses with some scattered residential areas immediately east of the ROW. These residential areas are primarily located between Branford Street and Osborne Street and between Sayre Street and Oswald Street. A school is located at the southeast corner of Brand Avenue and the SP ROW. Noise from light rail trains including train horns and warning bells at grade crossings may have a significant adverse impact on the residences in these areas. Construction of soundwalls along the SP ROW is a potential mitigation measure. As noted previously, the cumulative noise impact of possible light rail trains, existing freight rail traffic and upcoming commuter rail traffic on adjacent noise-sensitive receptors may be significant and adverse.

- Seismicity - The Alquist Priolo Special Studies Zones map (U.S.G.S San Fernando Quadrangle, January 1979) shows an active fault trace crossing the SP ROW just north of Hubbard Street. A proposed Metrolink commuter rail station lies within the Special Studies Zone containing the active fault trace. The Special Studies Zone extends from Hubbard Street on the south to Sayre Street on the north.

  According to the Los Angeles County Regional Planning Department Liquefaction Susceptibility Map (Plate 4, January 1990), the SP ROW crosses five areas subject to high to moderate liquefaction potential. The approximate locations of these areas are: north of Chandler Boulevard to Empire Avenue; Tujunga Wash east of the SP ROW; between S. Brand Boulevard and Workman Street; Polk Street to Bledsoe Street; and the juncture of San Fernando Road and I-5. Stations at Osborne Street and the northern terminus of the alignment may lie within these high to moderate liquefaction potential areas.

4.4.2 Engineering Feasibility

The objective of this section is to provide a generalized preliminary assessment of typical engineering requirements, physical constraints and implementation issues associated with the Northeast Valley corridor options. As described earlier, the Corridor options consist of a mixture of Heavy Rail Transit (HRT) with subway or aerial guideways and at-grade Light Rail Transit (LRT). Assumptions used in the assessment of engineering feasibility relied on published design criteria developed for the Metro Red Line (HRT) and the Metro Blue Line (LRT). Using the design criteria, typical sections and 1"=400' scale plan views of the corridor options by mode and guideway type were developed as the basis for the analysis.

Engineering Assessment Methodology

A number of evaluation categories were used to assess engineering feasibility and physical implementation issues as follows:

- Complexity of Construction - Assesses the difficulty of designing and constructing a fixed rail guideway. Factors reviewed included:
  - Vertical Profile, eg. at-grade, aerial or subway. Of the three profile types, at-grade guideway is typically the simplest to construct. Aerial guideway is more complex than at-grade but less complex than subway. However, when the aerial guideway is within an existing roadway, complexity can increase significantly. Subway guideway is typically the most complex to construct.
  - Impacts to existing streets during construction. Existing traffic and access to adjacent properties need to be maintained during construction. The extent of traffic maintenance required during guideway construction will impact the cost and complexity of construction and design.
- Vertical Grades and Horizontal Curvature - Assessment of vertical grades and horizontal curvature provide an indication of how well the corridor options "fit" within the existing and/or available rights-of-way. Excessive vertical grades and sharp horizontal curvature often result from constrained rights-of-way and the need to avoid physical obstacles.
- Potential Utility Conflicts - This evaluation category assesses the likelihood of impact to major utilities including power, water, gas, sanitary sewer and telephone.
- Requirements for additional Right-Of-Way - The need for additional right-of-way can often result due to the physical requirements assessed with implementation of guideways including the need for support structures, stations, parking and buffer areas.

Engineering Feasibility Issues, Opportunities and Constraints

This section applies the evaluation categories to each of corridor options and identifies engineering feasibility issues, opportunities and constraints.

Corridor Option A - SR-170/I-5

Corridor Option A continues the Red Line from North Hollywood to Sylmar along SR-170 and I-5 to Sylmar. The proposed guideway for this option transitions from subway at North Hollywood to aerial structure within the median of both freeway facilities. Typical cross-sections for this option are shown on Figure 4-8 and 4-9.

Complexity of Construction - Constructing an aerial structure within a freeway median is relatively complex due to the requirements for traffic maintenance during construction and construction access along busy freeways; probable requirements for additional structure height at cross-street overpasses and possible rerouting of the alignment out of the median at major freeway to freeway interchanges. The aerial structure within the median of SR-170 is further constrained due to planned construction of high occupancy vehicle (HOV) lanes. Specially designed narrow support columns would have to be constructed to enable a fit within the median and mitigate impacts to the future HOV lanes. Station construction within the median will also add complexity and would involve special provisions for vertical circulation and pedestrian ramps to elevated overhead station locations.

Vertical Grades and Horizontal Curvature - Substandard vertical grades and horizontal curvatures can potentially occur at locations of cross-street overpasses, freeway to freeway interchanges and at the transition points from the SP Burbank right-of-way to the SR-170. Cross-street overpasses could require additional bridge height to provide adequate clearance for the aerial guideway. Substandard vertical grades often result from the need to limit the clearance requirement and associated construction costs.

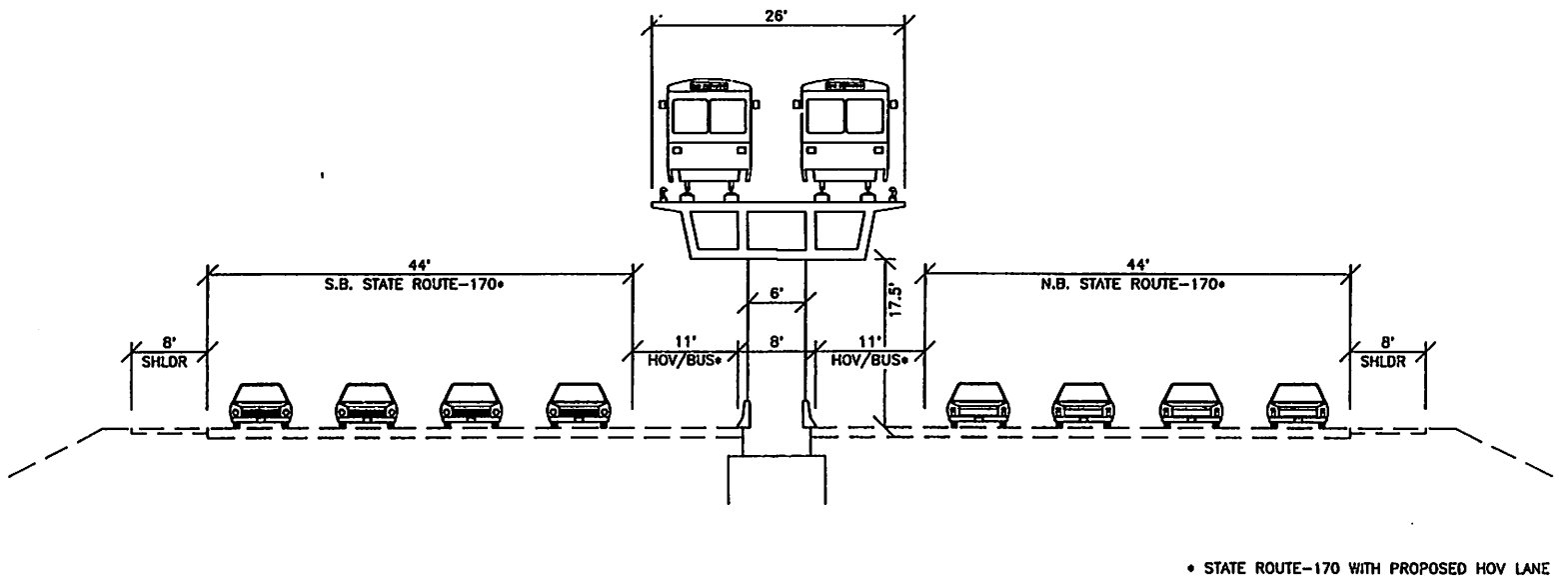
An aerial median alignment will encounter structural obstacles which, at freeway to freeway interchanges, significantly impact construction feasibility. Options include rerouting of the alignment around the interchange or lowering the guideway elevation to the freeway grade. Both options can result in less than desirable vertical grades and horizontal curvatures.

The transition from the SP Burbank right-of-way to SR-170 could likely result in less than desirable radius horizontal curves and the vertical grade could also be less than desirable at the transition from tunnel to aerial structure.

Potential Utility Conflicts - With aerial alignments within the median of freeways, the potential for major utility conflicts are minimized. The potential for utility conflicts do exist however at the transition location from the SP Burbank right-of-way to the SR-70 freeway.

Potential Additional Right-Of-Way Requirements - The potential need for additional right-of-way associated with aerial alignments within the median of freeways is limited to possible rerouting of the alignment at freeway to freeway interchanges and at station locations. Additional right-of-way may also be required at sub-station locations and at the transition from the SP Burbank right-of-way to SR-170.

SR-170 Typical Section



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

LACTC

BRW

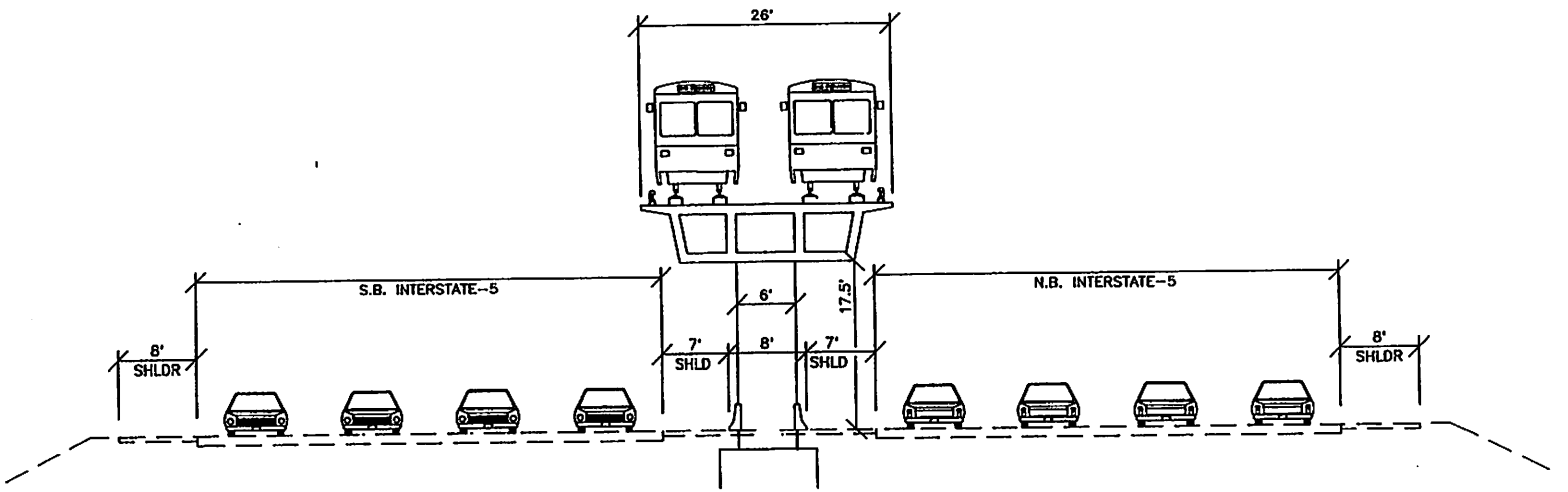
Myra Frank & Assoc.

Source: BRW, Inc., 30 September 1992

Not to Scale

4-8

I-5 Typical Section



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Source: BRW, Inc., 30 September 1992

Not to Scale

4-9

Corridor Options B - Lankershim Boulevard

Corridor Option B includes a HRT subway alignment along the Lankershim Boulevard right-of-way from the North Hollywood Metro Red Line Station to Sherman Way, a HRT aerial alignment from Sherman Way to the SP Santa Clarita right-of-way and at-grade LRT alignment along the SP Santa Clarita right-of-way to Sylmar. Typical sections for HRT arterial subway, HRT arterial aerial and LRT at-grade are displayed in Figures 4-10 to 4-12.

Complexity of Construction - The subway alignment along Lankershim Boulevard would be an extension of the Metro Red Line. The subway is assumed to be of similar construction as the Red Line, utilizing a tunnel boring machine with a subway location approximately 40 feet below existing ground. Tunnels are typically the most complex to construct than any other types of guideway construction. Complexity results from boring through varying geological formations beneath the surface, potential for ground water and natural gas, and potential ground settling. Ventilation and emergency access requirements also add to the tunnel construction complexity.

The subway portal location within Lankershim Boulevard south of Sherman Way where the guideway transitions to aerial structure would also add complexity to the construction. Provisions for traffic maintenance and adjacent land use access will also be required during construction adding overall complexity to the construction. Additionally, special drainage provisions will be required to prevent flooding of the subway at the portal location.

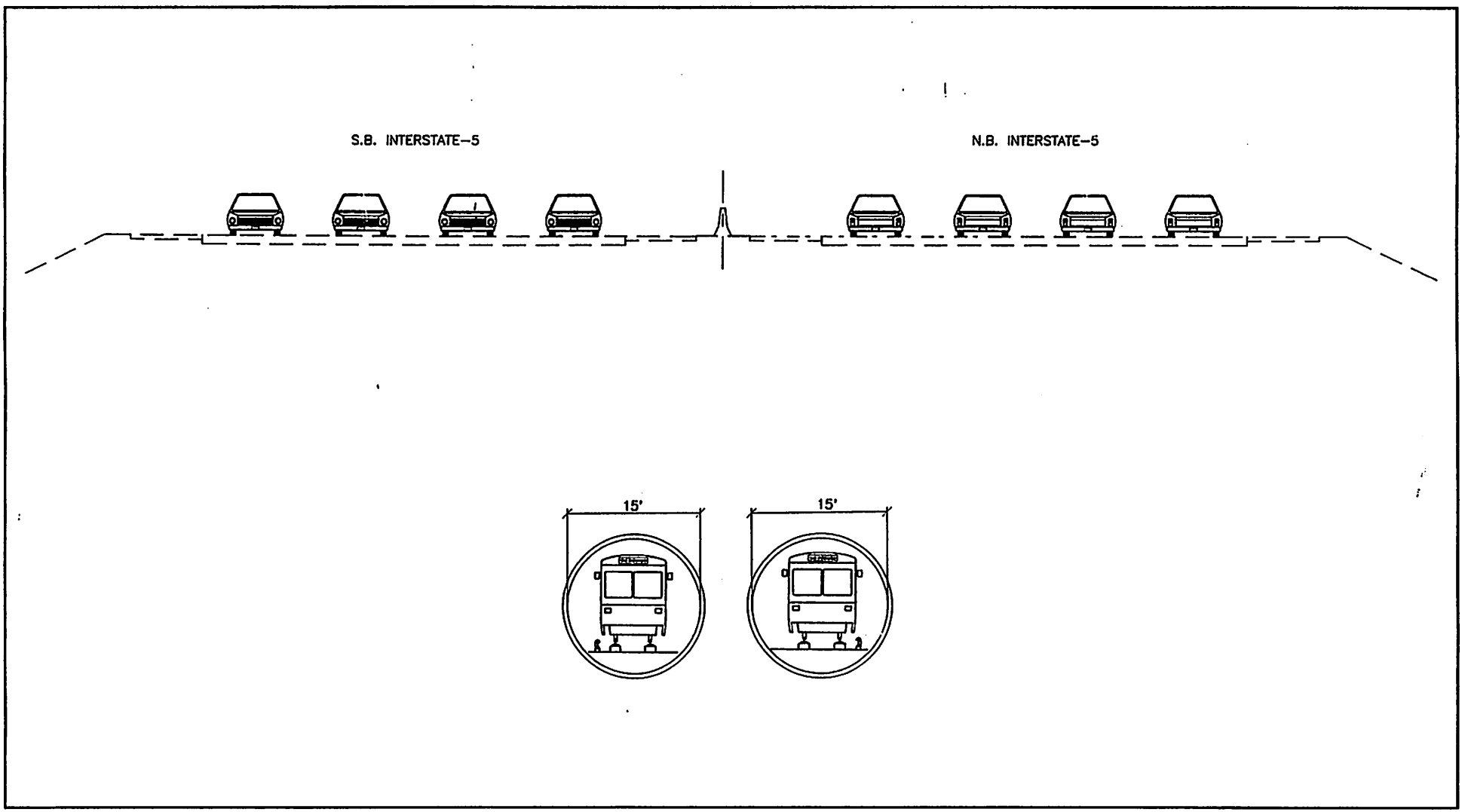
Tunnel stations are also very complex to construct. Station construction requires additional excavation by either cut-and-cover or bored methods, provisions for vertical circulation, additional ventilation requirements, and fire protection.

Construction of the aerial structure within the median of Lankershim Boulevard will also require provisions for existing traffic and adjacent land use access making the construction more complex.

The at-grade LRT section would be constructed within an existing rail corridor and would not require any additional cross-street overpasses. Coordination with other potential rail systems within the SP Santa Clarita right-of-way might increase construction complexity.

Vertical Grades and Horizontal Curvature - The corridor is an extension of the Metro Red Line along Lankershim Boulevard and the alignment is relatively straight and flat. Locations of potentially substandard vertical grades could occur at the transitions from HRT subway to HRT aerial and from HRT aerial to LRT at-grade. The vertical grades in these transition areas result from existing streets and railroad clearance requirements. The transition from subway to aerial is proposed to be accomplished via being at-grade in the vicinity of the existing Moorpark railroad right-of-way to aerial over Sherman Way, for the transition for HRT aerial to LRT at-grade, it was assumed the alignment be at-grade before the proposed Sheldon station.

Subway Typical Section



Source: BRW, Inc., 23 July 1992

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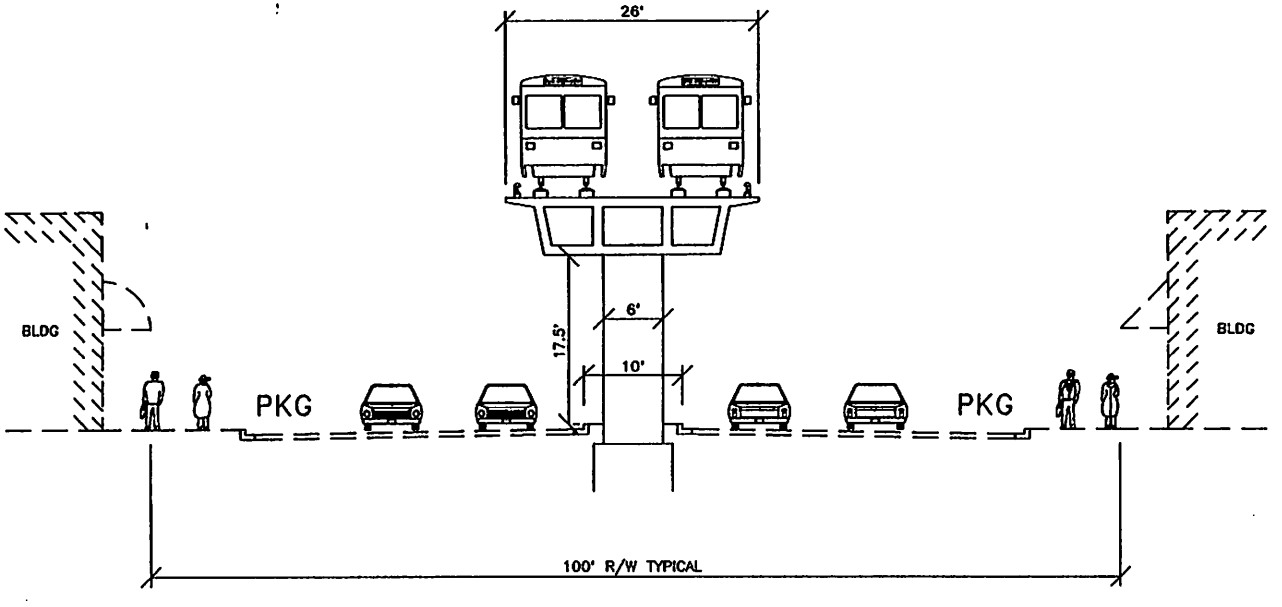
4-10

Aerial Guideway along Arterial Street Typical Section



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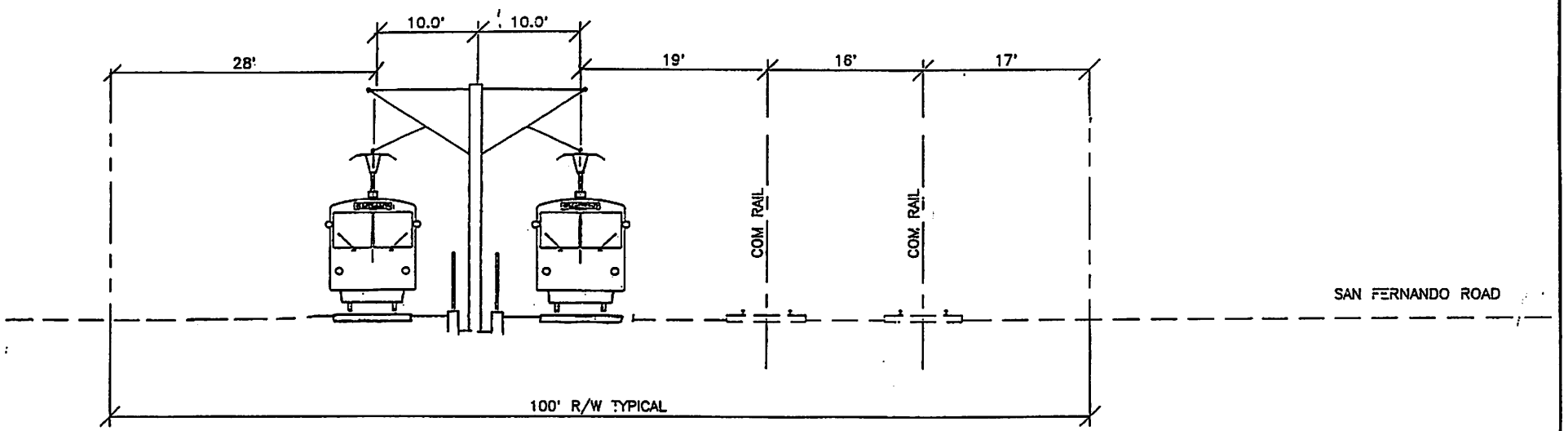
4-11

LRT At-Grade Typical Section



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Locations of potentially substandard horizontal curve occur where the alignment changes directions and both of these transitions are accomplished in short distances and could require maximum vertical grades. Victory Avenue and at the SP Santa Clarita right-of-way. The acceptability of substandard curvature could determine the magnitude and resulting right-of-way impacts.

Potential Utility Impacts - The HRT subway alignment would likely have no impacts to existing utilities. The location of the subway of at least 40 feet below the surface would be low enough to miss most if not all under ground utilities. However, the transition for subway to aerial could have impacts to utilities within the Lankershim Boulevard especially at the portal location.

The HRT aerial center support columns could have impacts to existing utilities within the center portion of Lankershim Boulevard.

The at-grade LRT alignment would have minimal impacts to existing utilities and would be limited to crossing utilities. Crossing utilities could require cathodic protection from the potential of stray currents or require relocation deeper into the ground to maintain proper ground cover.

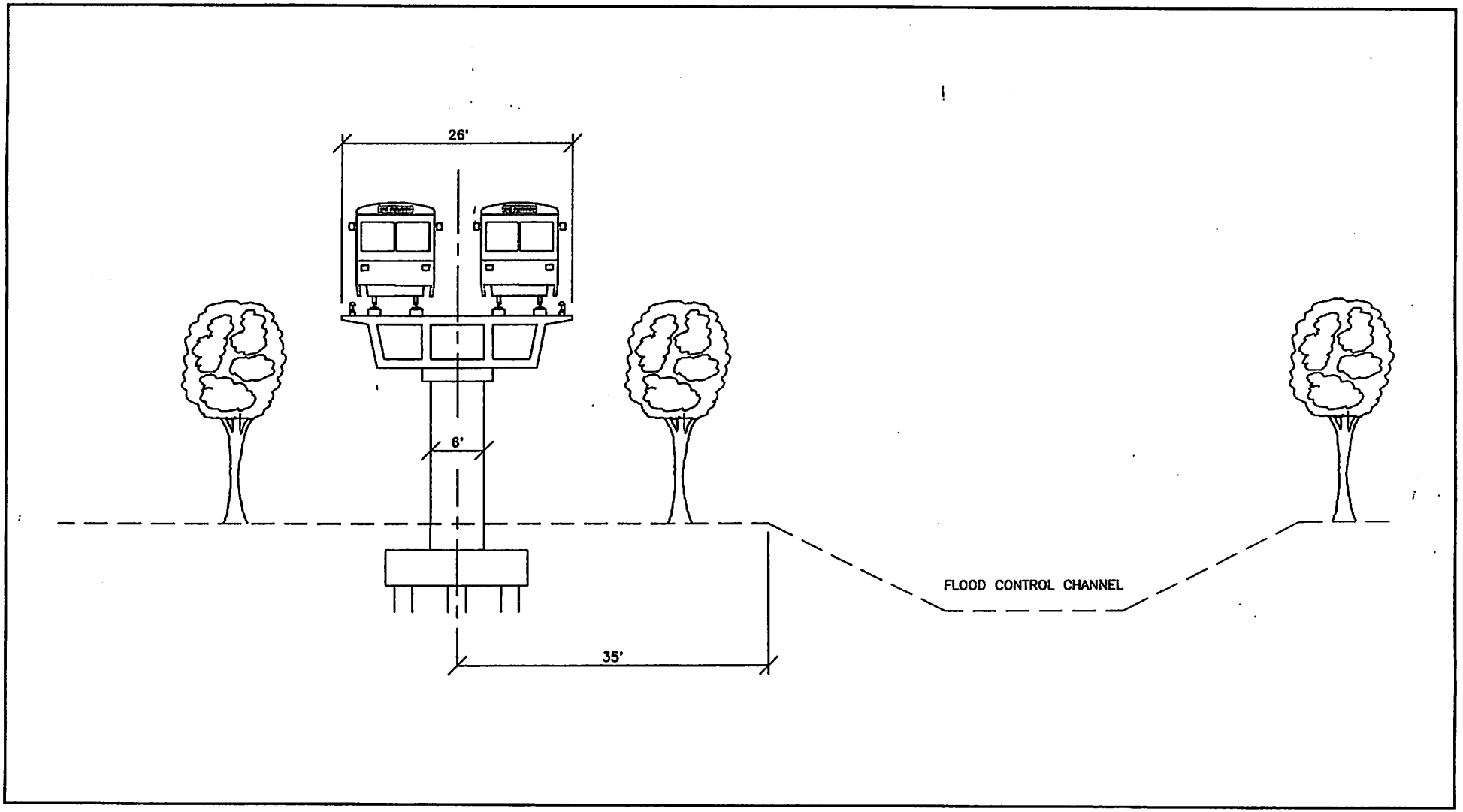
Potential Additional Right-of-Way Requirements - Since Corridor Option B is contained within existing public right-of-way, no additional right-of-way is required. However, at station locations additional right-of-way would be required for park-and-ride lots, vertical circulation and access.

Corridor Option C - Oxnard/Laurel Canyon/Tujunga Wash

Corridor Option C includes a HRT tunnel alignment along the Lankershim Boulevard/Oxnard Street/Laurel Canyon Boulevard right-of-ways from the North Hollywood Metro Red Line Station to Tujunga Wash, a HRT aerial alignment from Tujunga Wash to the SP Santa Clarita right-of-way and an at-grade LRT alignment along the SP Santa Clarita right-of-way to Sylmar. The typical cross-section of the aerial alignment along the Tujunga Wash is displayed in Figure 4-13. The typical sections for the HRT tunnel and LRT at-grade alignments are as displayed in previous Figures 4-10 and 4-12.

Complexity of Construction - The complexity of construction for the subway and LRT at-grade sections would be similar to and as previously described for Corridor Option B. The portal location for the transition from subway to aerial for Corridor Option C would be located near the Tujunga Wash and would require drainage features to protect the tunnel in case of major flooding. The aerial section along the Tujunga Wash should be relatively simple to construct given the unconstrained right-of-way along this section.

Aerial Guideway along Flood Control Channel Typical Section



Source: BRW, Inc., 23 July 1992

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Vertical Grades and Horizontal Curvature - Corridor Option C contains numerous potentially substandard vertical and horizontal curve locations, resulting from the transition from one right-of-way and/or profile type to another.

Locations of potentially substandard vertical grades occur at the transitions from HRT tunnel to HRT aerial and from HRT aerial to LRT at-grade. The transition from tunnel to aerial is proposed to be accomplished from subway at Laurel Canyon Avenue to aerial over Tujunga Wash, and the transition for HRT aerial to LRT at-grade, the alignment would be at-grade before Branford Street. Both of these transitions area accomplished in relatively short distances and could require near maximum vertical grades.

Potential Utility Impacts - The HRT subway alignment would have no potential impacts to existing utilities. The location of the tunnel at 40 feet below the surface would miss most if not all under ground utilities. However, the transition for tunnel to aerial could impact utilities within and along Laurel Canyon Avenue.

The at-grade LRT alignment would result in minimal impacts to existing utilities and be limited to crossing utilities. Crossing utilities could require cathodic protection from the potential of stray currents or require relocation deeper into the ground to maintain proper ground cover.

Potential Additional Right-of-Way Requirements - Corridor Option C is mostly contained within existing public right-of-way. At the transition areas from Lankershim to Oxnard and Oxnard to Laurel Canyon Avenue, the provision of acceptable horizontal radii could result in the tunnel alignment being located outside of publicly owned right-of-way and might require and easement or purchasing of land above the alignment. Additional right-of-way would also be required at station locations for park-and-ride lots, vertical circulation and access.

Corridor Option D - Vineland/Burbank Airport

Corridor Option D includes a HRT subway alignment along the Vineland Avenue right-of-way from the North Hollywood Metro Red Line Station to Sherman Way and from Sherman Way through the Burbank Airport to the SP Santa Clarita right-of-way and an at-grade LRT alignment along the SP Santa Clarita right-of-way to Sylmar. The typical sections for the HRT tunnel and LRT at-grade alignments are as displayed in previous Figures 4-10 and 4-12.

Complexity of Construction - The complexity of construction for the tunnel and LRT at-grade sections are similar to and as described for Corridor Option B.

Vertical Grades and Horizontal Curvature - Corridor Option D contains a number of potentially substandard horizontal curve locations resulting from the need to remain within existing available right-of-way in transition locations from one right-of-way type to another.

Corridor Option D would include minimal potential for substandard vertical grade locations.

Potential Utility Impacts - The HRT subway alignment would have minimal impacts to existing utilities. The location of the tunnel 40 feet below the surface would miss most if not all under ground utilities.

The at-grade LRT alignment would have minimal impacts to existing utilities and would any impacts would generally be limited to crossing utilities. Crossing utilities could require cathodic protection from the potential of stray currents or require relocation deeper into the ground to maintain proper ground cover.

Potential Additional Right-of-Way Requirements - Corridor Option D is mostly contained within existing public right-of-way. At transition areas from SP Burbank right-of-way to Vineland and Vineland to Burbank Airport the tunnel alignment might be located outside of publicly owned right-of-way might require an easement or purchasing of land above the alignment. Additional right-of-way might be required at station locations for park-and-ride lots, vertical circulation and access.

Corridor Option E - SP Santa Clarita ROW

Corridor Option B is proposed to be an at-grade LRT alignment from the Burbank Multimodal Station, south of Chandler Boulevard to Sylmar. The previous Figure 4-12 displays a typical LRT cross-section within the SP Santa Clarita ROW.

Complexity of Construction - The construction of an at-grade LRT alignment located within the existing SP Santa Clarita rail right-of-way will not require any complex construction. The trackwork for the LRT most likely will be simple open ballast, the power distribution to be typical overhead catenary, and no cross-street overpasses are planned. Coordination with other potential rail systems within the right-of-way however might increase construction complexity.

Vertical Grades and Horizontal Curvature - The corridor is relatively straight and flat with the only location of potential substandard vertical grade and horizontal is at the grade separated crossing of the proposed commuter rail line. Substandard grades and curvature could result from minimizing the length of aerial structure over the commuter rail and minimizing potential right-of-way impacts.

Potential Utility Impacts - The LRT at-grade alignment would have minor impacts to existing utilities within the SP Santa Clarita right-of-way. Typically existing rail right-of-ways do not include major paralleling utilities but do contain crossing utilities. The utility impacts associated with this alternative would be limited to the crossing utility protection including cathodic protection and providing adequate ground cover.

Potential Additional Right-of-Way Requirements - Since Corridor Option E is contained within the existing Santa Clarita right-of-way, no additional right-of-way is required. However, at station locations additional right-of-way would be required for park-and-ride lots.

4.4.3 Transit Operations

This section identifies and evaluates possible transit operations associated with the Northeast Valley corridor options. Possible operating scenarios are presented including rail service plans, costs and assumptions for each of the corridor options. Ridership potential and opportunities to interface with other existing and planned transit services are also identified.

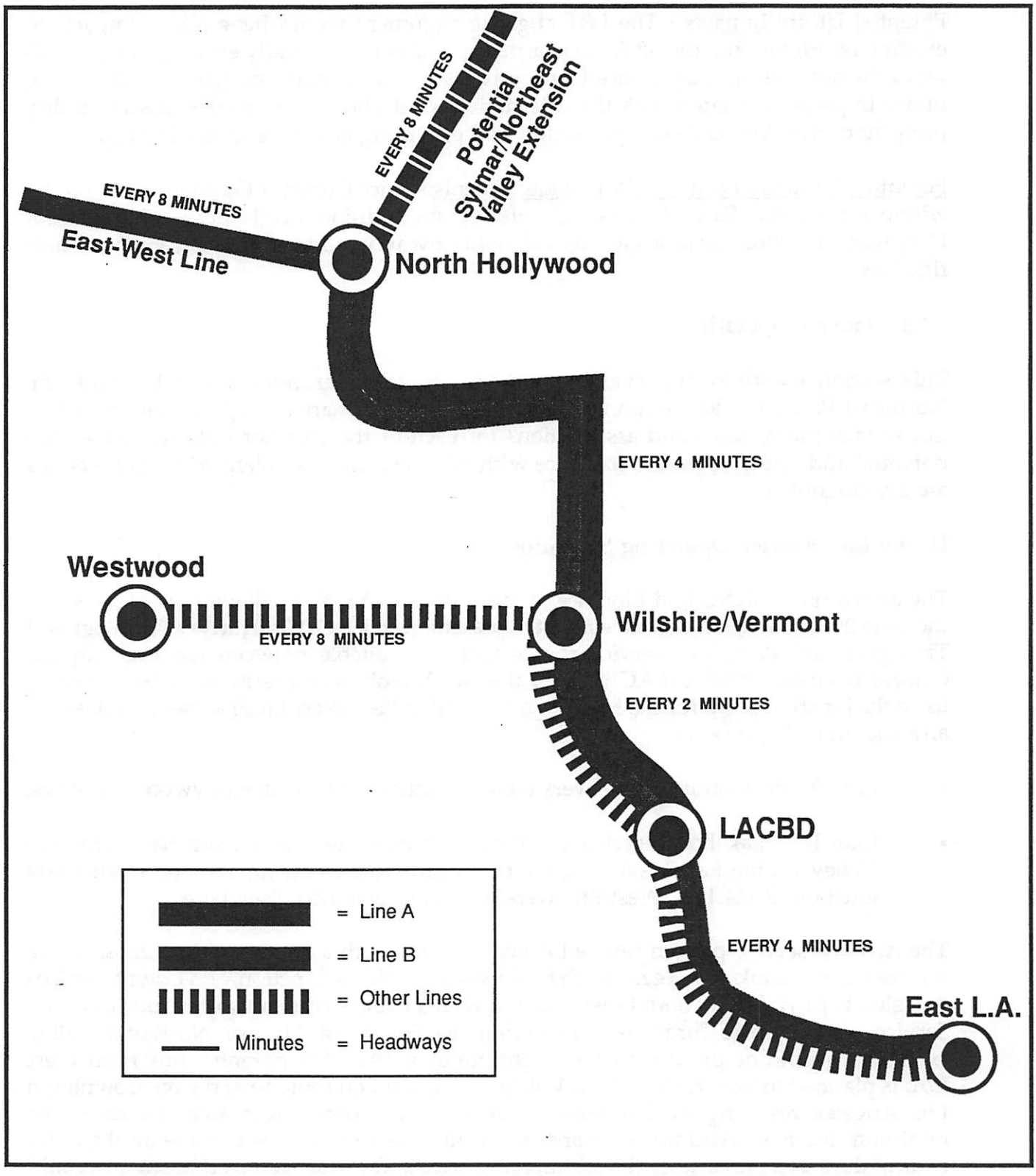
Heavy Rail Service Operating Scenarios

The extension of Metro Red Line heavy rail service to North Hollywood is planned for the year 2001. Based on service estimates presented in LACTC's Thirty Year Integrated Transportation Plan, two service routes will be available between the Los Angeles Central Business District (LACBD) and the North Hollywood terminus (also expected to be the junction point for the San Fernando Valley East-West Line) as described below and shown in Figure 4-14:

- Line A - Peak hour service every eight minutes to the North Hollywood terminus.
- Line B - Peak hour service every eight minutes to the western San Fernando Valley via the East-West Line, via the North Hollywood Junction or an alternate junction, if the East-West line were to be implemented elsewhere.

The two-line service pattern can be likened to a tree with a trunk and branches, where service on the "trunk", between North Hollywood terminus/junction, and downtown Los Angeles, is provided by both Lines A and B with a combined headway of four minutes. Service on the outer "branches", including the East-West Line or Northeast Valley extension, would be provided every eight minutes. Another potential line from West L.A. is planned to join the "trunk" at Wilshire/Vermont en route to and from downtown Los Angeles resulting in 2 minute headway in the downtown area, which is the minimum feasible. Additional "branches" would therefore not be feasible on the outer ends of the service area since the additional service and further reduced headways could not be accommodated below Wilshire/Vermont.

Service Plan- Metro Red Line



NORTHEAST SAN FERNANDO VALLEY
TRANSIT CORRIDORS STUDY

BRW

Myra Frank & Assoc.

Not To Scale

4-14

Source: BRW, Inc., June 1992

A possible operating scenario identified for the Northeast Valley Corridor includes Line A extended north to a terminus in Sylmar or a junction point with the Glendale/ Burbank LRT line extended from the Burbank Airport to Sylmar. Train service would be provided for approximately eighteen hours each day, from 5 AM to 11 PM. Peak weekday service could be provided eight hours per day approximately every eight minutes initially, with off-peak service every ten minutes during base hours and weekends. A yard and shop with light maintenance capability (daily cleaning/washing, minor repair, daily inspection) would be provided at the terminus of the Red Line extension in the Northeast Valley with the main Red Line system maintenance center continuing to be located at the existing main yard and shop near downtown Los Angeles.

The corridor options would extend either heavy rail (HRT) or light rail (LRT) service to the terminus and junction points shown in Table 4.2. Four of the options (A,B,C & D) begin at North Hollywood with heavy rail technology. Corridor Option "A" continues all the way to Sylmar along the SR-170/I-5 freeway corridor , while the other three terminate at respective junction points with the Santa Clarita Line, continuing with LRT to Sylmar. Corridor Option "E" includes a Light Rail line which begins at the Burbank Multimodal Center (at Front Street) and follows the Santa Clarita Line to Sylmar. Mileage data for each option is also shown in Table 4.2.

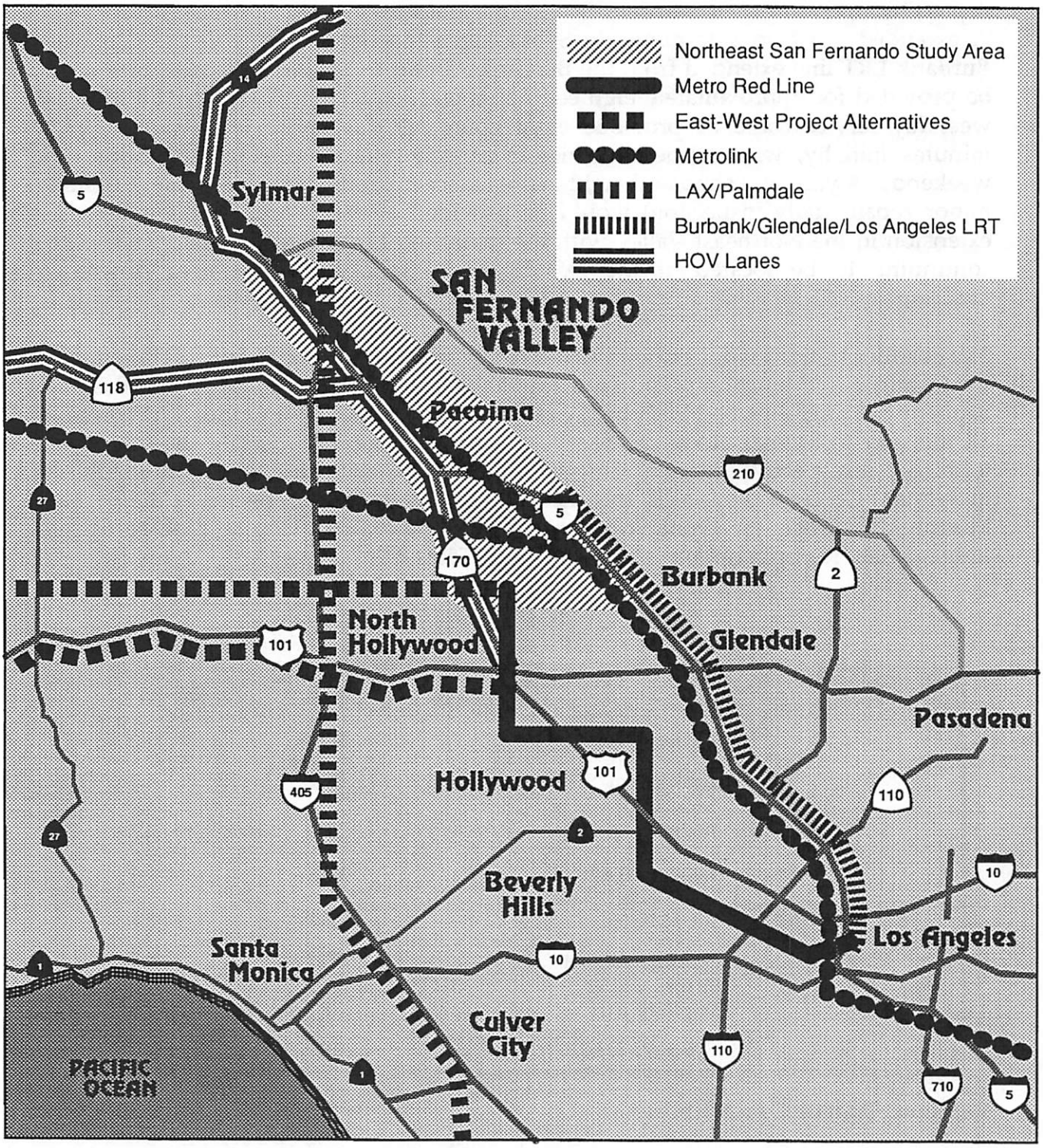
TABLE 4.2

Corridor Option	Terminus/Junction	Mode	Mileage
A	Roxford/I-5	HRT	11.2
B	Lankershim/SP	HRT	4.7
	Santa Clarita Line I-5/I-210 Jct.	LRT	4.7
C	Tujunga Wash/SP	HRT	6.4
	Santa Clarita Line I-5/I-210 Jct.	LRT	3.7
D	Burbank Airport	HRT	4.2
	Transit Center I-5/I-210 Jct.	LRT	8.3
E	Sylmar/I-5/I-210 Jct.	LRT	14.7

Regional Transit Compatibility

This section describes the potential for linking the Northeast Valley Corridor Options with existing and planned regional transit improvement. Existing and planned regional transit facilities within the Corridor Study area are shown in Figure 4-15. Table 4.3 identifies linkage opportunities by Corridor Option:

Planned Transportation System Improvements



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

BRW

Myra Frank & Assoc.

0 2 4

Scale: miles

4-15

Source: BRW, Inc., 31 July 1992

TABLE 4.3

Regional Transit Project	Potential Link Point	Corridor Option
Metrolink Commuter Rail between Santa Clarita, Burbank	Sylmar/San Fernando Station Potential Sun Valley Station	B,C,D
LACBD LAX/Palmdale High Speed Rail	I-5/Roxford	A
Glendale/Burbank LRT Extension beyond Burbank Airport	Various points along SP Santa Clarita line	B,C,D,E
Red Line Extension to North Hollywood and San Fernando Valley East-West Rail Line	North Hollywood Terminus/Junction	All
Trolley-bus Route 92/93 along Glenoaks Blvd	Burbank Airport	D
Trolley-bus Route 560 LAX/I-405/Van Nuys Blvd	Van Nuys Blvd	All
HOV lanes on SR-170 & I-5	Various Points	All
San Fernando Valley Public Transit Restructuring	Various Points	All
Commuter bus routes	Various Points	All
Express buses: 418, 419, North County lines	Sylmar, Sun Valley	All

The following summarizes the regional transit compatibility of each of the Northeast Valley Corridor Options:

- Corridor Option A (SR-170/I-5) - This alignment is the most westerly, and would provide the only direct connection to the proposed LAX-Palmdale line at a transfer station at I-5 and Roxford St in Sylmar. Since the proposed High Speed Rail line will continue south via I-405, this transfer point could funnel substantial numbers of riders from the Antelope Valley to points along the Red Line both in the San Fernando Valley and downtown Los Angeles, including intermediate points such as Hollywood. A large terminus and transfer station with Park-and-Ride facilities would enhance ridership from this station as a key juncture of regional routes.

- Corridor Option B (Lankershim Boulevard) - The Lankershim alignment, with an LRT extension north of the Lankershim/SP Santa Clarita line junction to Sylmar, would offer possible connections to the Metrolink Commuter Rail system, at Sylmar/San Fernando station and at a potential Sun Valley station. Additional

connections could be provided if additional Santa Clarita Line commuter rail stations were to be implemented, or if a Moorpark Line commuter rail station were implemented at the Lankershim/SP Moorpark crossing.

- Corridor Option C (Laurel Canyon Boulevard) - The Laurel Canyon alignment generally provides the same opportunities as Option B, with modified connection opportunities due to the more northerly and westerly route followed by alignment C.

- Corridor Option D (Vineland Avenue) - The Vineland alignment to the proposed Burbank Airport LRT Extension Transit Center would offer similar opportunities to options B and C if extended north to Sylmar. In addition, the linkage to a potential Transit Center at the Airport would provide connections to commercial air service and possibly trolley-bus route 92/93, if it were to be rerouted to serve the proposed new Transit Center.

- Corridor Option E (LRT on SP Santa Clarita Line) - The implementation of LRT on the entire Santa Clarita Line, from Burbank Airport to Sylmar, would extend LRT service from the Blue Line northern hub at Union Station, where connections to Pasadena and possibly south to Long Beach and Expo Park could be made. In the San Fernando Valley, LRT could provide direct connections to Metrolink at the Sylmar/San Fernando and possible Sun Valley stations; and a potential link to the proposed LAX-Palmdale line.

Northeast Valley Corridor Ridership Potential

While the preparation of detailed ridership estimates is beyond the scope of this preliminary assessment, the ridership potential of each corridor option was assessed on a comparative basis by consideration of the following factors:

- Access to major activity centers: Provision of service to areas of high trip generation will increase system ridership; generally provides a good measure of local ridership potential.

- Travel times between major regional origins and destinations: Options with superior travel times between major trip origins and destinations will attract the highest ridership. Generally provides a good measure of regional ridership potential.

For the most part, the activity centers in the Northeast Valley study area tend to be located in three principal geographical locations:

1) Western; between SR-170 and Lankershim Boulevard
2) Eastern; including Burbank Junction and Airport
3) Northern; along San Fernando Road

Table 4.4 displays the level of accessibility (high, medium and low) provided to the various activity centers by each of the Corridor Options.

TABLE 4.4
TRANSIT SERVICE ACCESS TO MAJOR ACTIVITY CENTERS

Activity Center	Corridor Option				
	A	B	C	D	E
North Hollywood	High	High	High	High	Low
Burbank Airport	Low	Low	Low	High	High
Burbank Multimodal Center	Low	Low	Low	Low	High
Sun Valley	Low	Low	Low	High	High
Pacoima	Low	High	High	High	High
San Fernando	Medium	High	High	High	High
Valley Plaza	Medium	Low	High	Low	Low
Laurel Plaza	Medium	Low	High	Low	Low
Canyon Plaza	Low	Medium	High	Low	Low

Each of the Corridor Options provides transit service to a different mix of activity centers based upon alignment location. For example, Corridor Option E provides access to a majority of the activity centers in the eastern and northern areas, but does not provide access to North Hollywood or the other activity centers located in the western portion of the study area. Conversely, Corridor Option C provides a high level of access to North Hollywood, the Valley Plaza area and the activity centers along San Fernando Road, with no direct service to the eastern portions of the Valley.

Table 4.5 displays travel times between selected sets of regional origins and destinations by Corridor Option.

TABLE 4.5
REGIONAL TRAVEL TIMES
(Minutes) *

Origin-Destination Pair	Corridor Option				
	A	B	C	D	E
North Hollywood to Burbank Airport	N/A	25.2	31.6	8.4	N/A
North Hollywood to Sylmar	22.4	28.5	28.9	38.2	N/A
Burbank to Sylmar	N/A	N/A	N/A	N/A	44.1
Sylmar to Downtown Los Angeles	57.2	63.3	63.7	72.4	66.0

* Assumed Operating Speeds:
- 30 MPH for HRT
- 20 MPH for LRT
- 5 min. transfer penalty

As shown in Table 4.5, the travel times between major origin-destination pairs vary by corridor option; as does the service focus. Corridor Option D provides a vastly superior travel time between North Hollywood and the Burbank Airport, due to direct routing. Corridor Option A provides the fastest travel time between North Hollywood and Sylmar and between Sylmar and Downtown Los Angeles due to the use of heavy rail technology along the entire route.

4.4.4 Capital Cost Estimates

This section provides conceptual cost estimates for the construction and implementation of the Northeast Valley Corridor Options. The Rail Construction Corporation (RCC) Metro Rail Generic Unit Cost Guide for Light Rail and Heavy Rail Applications provided the basis for the capital cost estimates. The costs guides are included in the Appendix.

Conceptual order of magnitude costs for construction of each Heavy Rail profile type and Light Rail at-grade were developed on a per mile basis. Since the RCC unit costs reflect typical conditions and construction requirements, the RCC unit costs were adjusted to reflect conditions considered atypical within each right-of-way and profile type as described below:

HRT Subway - Arterial Right-of-Way

- Deep paralleling utilities could require special treatment, resulting in potentially increased construction costs.
- Traffic maintenance during construction at staging and portal locations could be complex, requiring additional costs.
- A subway station within a arterial street constructed by cut-and-cover methods would require additional access and traffic maintenance provisions.

HRT Aerial - Freeway Right-of-Way

- Traffic maintenance during construction would be complex resulting in increased construction costs.
- Specially designed structures could be required within the freeway median to minimize impacts to existing travel lanes. Additional structures could also be required at freeway to freeway interchange locations.
- Utility conflicts would be minimal and limited to overhead crossing utilities.

HRT Aerial - Arterial Right-of-Way

- Traffic maintenance and access to adjacent land uses during construction could be complex, resulting in increased construction costs.
- The potential for major utility conflicts within the median of the arterials is high due to the aerial support structures.
- Roadway reconstruction and widening could be required at intersections to maintain existing lane configurations.

LRT At-Grade

- Requirements for potential cross-street grade separations could increase construction costs.
- Requirements to mitigate potential impacts to crossing or paralleling major utility facilities could increase costs.

Allowances for testing, pre-operations, insurance, agreements, professional services and contingencies were assumed to be 90% of the construction costs and was added to the construction costs.

Since the majority of the corridor options follow existing publicly owned right-of-way, no additional right-of-way costs were assumed. However, additional right-of-way might be required in constrained section and at station locations provisions for including park-and-ride facilities, subway emergency and maintenance access and subway ventilation.

Table 4.6 displays the resulting conceptual cost estimates on a per mile basis for the respective right-of-way and profile types.

TABLE 4.6
PER MILE CONCEPTUAL CONSTRUCTION COSTS BY PROFILE TYPE

Profile Type	Cost/Mile (Millions)
HRT Subway	
Freeway	$125
Arterial	$110
HRT Aerial	
Freeway	$65
Arterial	$70
LRT At-Grade	$15

SOURCE: RCC/BRW, June 1, 1992.

Conceptual capital cost estimates for each corridor option, including construction, add-on and maintenance facility costs are displayed in Table 4.7. Vehicle costs have not been included as part of the costs. Corridor Option A (SR-170/I-5) and Option C (Laurel Canyon Boulevard) at a cost of approximately $1.5 Billion are the most costly to construct whereas Option E (SP Rail ROW) at a cost of approximately $310 million is the least costly to construct. The difference of approximately $1.0 Billion can be attributed to the cost differentials of the proposed transit technologies. Corridor Options A and B have the most length of HRT (Option A is exclusively HRT) which is very costly to implement. Corridor Option E on the other hand is exclusively LRT at-grade within an existing rail right-of-way which is relatively inexpensive to implement.

Implementation costs for Option B (Lankershim Boulevard) and Option D (Vineland) are estimated at approximately $1.1 Billion.

TABLE 4.7
NORTHEAST SAN FERNANDO VALLEY STUDY
CONCEPTUAL CAPITAL COST ESTIMATES
(Costs in Millions of 1991 Dollars)

Option	Length (in miles)	Cost/Mile	Subtotal Cost	Add-Ons*	Maint. Facility	Total Cost	Total Cost Per Mile
A - SR-170/I-5							
HRT Subway	0.6	$125.00	$75.00	$67.50		$142.50	
HRT Aerial	10.6	$65.00	$689.00	$620.10		$1,309.10	
Total	11.2		$764.00		$50.00	$1,501.60	$134.07
B - Lankershim Boulevard							
HRT Subway	2.2	$110.00	$242.00	$217.80		$459.80	
HRT Aerial	2.5	$70.00	$175.00	$157.50		$332.50	
LRT At-Grade	9.9	$15.00	$148.50	$133.65		$282.15	
Total	14.6		$565.50		$75.00	$1,149.45	$78.73
C - Laurel Canyon Boulevard							
HRT Subway	5.1	$110.00	$561.00	$504.90		$1,065.90	
HRT Aerial	1.0	$70.00	$70.00	$63.00		$133.00	
LRT At-Grade	9.9	$15.00	$148.50	$133.65		$282.15	
Total	16.0		$779.50		$75.00	$1,556.05	$97.25
D - Vineland/Burbank Airport							
HRT Subway	3.4	$110.00	$374.00	$336.60		$710.60	
LRT At-Grade	9.9	$15.00	$148.50	$133.65		$282.15	
Total	13.3		$522.50		$75.00	$1,067.75	$80.28
E - SP Rail ROW Burbank Airport to Sylmar							
LRT At-Grade	9.9	$15.00	$148.50	$133.65		$282.15	
Total	9.9		$148.50		$25.00	$307.15	$31.03

*90% of sub-total cost - includes: testing, pre-operations, insurance, master agreements, professional services, and contingencies.

SOURCE: BRW, Inc., 30 July 1992.

4.5 EVALUATION SUMMARY OF NORTHEAST VALLEY CORRIDOR OPTIONS

This section summarizes key points from the evaluation of the Northeast Valley Corridor Option and identifies opportunities, constraints and key issues which may affect implementation. As a preliminary assessment, this is intended to assist the LACTC in determining the relative benefits associated with rail service extensions into the Northeast San Fernando Valley.

4.5.1 Summary of Corridor Issues, Opportunities and Constraints

Corridor opportunities include corridor settings and/or situations which are conducive to the implementation of rail transit service, would result in potentially beneficial impacts, minimal environmental and community impacts, lower anticipated capital costs, and would provide for desirable operating conditions.

Corridor constraints include corridor settings and/or situations where it would be difficult to implement rail transit services due to the likelihood of negative environmental and community impacts, high capital costs and undesirable or infeasible operating conditions.

The following pages summarize key issues, opportunities and constraints associated with each of the Corridor Options.

Corridor Option A (SR170/I-5)

Summary of Issues, Opportunities and Constraints

Environmental:

- Visual impacts of elevated guideway structure, approximately 20-30 feet above freeway.
- Potential significant adverse noise impact to sensitive uses along the alignment (noise is slightly higher for trains on elevated structures). The area adjacent to the alignment is predominately residential.
- Sherman Way and Roxford station impacts may adversely affect adjacent parks.
- High to moderate liquefaction potential at Roxford, Brand and Sheldon stations and other areas along the alignment.
- Construction may require removal of some highway landscaping.
- Construction of elevated guideway in median may disrupt freeway traffic.
- Use of freeway right-of-way may require preparation of an environmental document(s) in compliance with both CEQA and federal NEPA guidelines.

Engineering:

- The aerial facility within the median of the SR-170 will be complex to construct given the future HOV lane facility.
- Freeway to freeway interchanges may require rerouting of the median alignment and substandard horizontal curvature and vertical grades.
- Stations located within the median of the freeway would require provisions for vertical circulation and ramps to elevated station locations.
- With the location of the option within the median of freeways, potential major utility conflicts are minimal and additional right-of-way requirements limited to possible rerouting at freeway to freeway interchanges.

Transit Operations:

- Relies upon exclusive use of Heavy Rail along entire corridor alignment.
- Provides only direct connection to the proposed LAX/Palmdale line at I-5 and Roxford Street station.
- Provides a high level of accessibility to North Hollywood, but no direct access to Burbank Airport, Burbank Transportation Center, Sun Valley and Pacoima. Provides a moderate level of accessibility to San Fernando and Valley Plaza areas.
- Provides the fastest travel times between North Hollywood and Sylmar and between Sylmar and Downtown Los Angeles.

Capital Cost Estimates:

- Specially designed structures would be required within the freeway median to minimize impacts to existing travel lanes.
- Traffic maintenance requirements during construction could be extensive and costly.
- Total capital cost estimate of $1501.60 Million is one of the highest of the Corridor Options evaluated. Total cost per mile is estimated at $134.07 million.

Corridor Option B (Lankershim Boulevard)

Summary of Issues, Opportunities and Constraints

Environmental:

- Potential significant adverse vibration impacts on adjacent residential areas located between Strathern and Sherman Way. Land use adjacent to the alignment is predominately commercial.
- Visual impact of elevated structure. Adjacent land use is predominately commercial with a stretch of multi-family residences between Strathern and Sherman Way.
- Potential significant noise impact on adjacent residential areas (noise is slightly higher for trains on elevated structures).
- Potential adverse noise impacts to noise sensitive receptors along LRT alignment, including the Pacifica of the Valley Hospital, a trailer park, a school, a park, residences and motels. Land use adjacent to the alignment is largely commercial with a few residential clusters east of the ROW.
- LRT traffic along the alignment may result in minor additional delay for cross traffic at intersections.
- Brand Boulevard Station impacts may adversely affect adjacent Kittridge Junior High School.
- Safety concerns due to potential conflicts between LRT vehicles and motor vehicles or pedestrians at grade-crossings. Students of Kittridge Junior High School most likely would be required to cross the tracks.
- Minor visual impact catenary system.
- High to moderate liquefaction potential at Roxford, Burbank, Sheldon and Tujunga Wash stations and other areas along the alignment.

Engineering:

- Construction of a tunnel and stations are complex due to boring, varying geological formations beneath the surface, potential ground water and natural gas and provisions for ventilation and emergency access and ground settling.

- Constructing the aerial facility within the median of Lankershim Boulevard would effect traffic and adjacent land use access during construction and impact existing utilities.

- Possible substandard vertical grades at the transition from tunnel to aerial guideway.

- Additional right-of-way requirement would be limited to station areas.

Transit Operations:

- Provides connection with Metrolink Commuter Rail System at downtown San Fernando Station.

- Provides a high level of accessibility to North Hollywood, Pacoima and Sun Valley, but limited access to Burbank Airport, burbank Transportation Center, Sun Valley and Laurel Plaza areas.

Capital Cost Estimates

- Subway and underground station construction will involve significant costs.

- Capital costs are estimated at $1,149 Million.

Corridor Option C - (Oxnard/Laurel Canyon/Tujunga Wash)

Summary of Issues, Opportunities and Constraints

Environmental:

- Potential significant adverse vibration impact to sensitive uses adjacent to the corridor, including a trailer park, residences and a church. Adjacent land use south of Sherman Way is predominately commercial; adjacent land use between Sherman Way and San Fernando Road is largely residential.
- Excavation in the area of the Tujunga Wash Central Branch may require U.S. Army Corps of Engineers permit.
- Minor visual impact of elevated structure along the Tujunga Wash. Adjacent land use to south is predominately industrial.

Engineering:

- Construction of a tunnel and station are complex due to boring, varying geological formations beneath the surface, potential ground water and natural gas and provisions for ventilation and emergency access and ground settling.
- Portal location near the Tujunga Wash might require special drainage design.
- Due to alignment transitions, substandard horizontal curves may occur. Additional right-of-way may be required.
- Possible substandard vertical grade at the transition from tunnel to aerial guideway at Tujunga Wash.

Transit Operations:

- Generally provides opportunities similar to Option B but with more direct service provision to Valley Plaza and Laurel Plaza areas.

Capital Cost Estimates:

- Subway and underground station construction will involve significant costs.
- Capital cost is estimated at $1,556 Million which is one of the highest of the Corridor Options evaluated.

Corridor Option D (Vineland/Burbank Airport)

Summary of Issues, Opportunities and Constraints

Environmental:

- Potential significant adverse vibration impact to sensitive uses along alignment, including residences, Victory Vineland Park and a school. Land use adjacent to the alignment is predominately commercial with some residential clusters.
- Excavation in the area of the Burbank Western Channel may require U.S. Army Corps of Engineers permit.
- Arroyo Stone Cottage, located on west side of San Fernando Road just north of Vineland, is potentially eligible structure for the National Register of Historic Places.

Engineering:

- Construction of a tunnel and stations are complex due to boring, varying geological formations beneath the surface, potential ground water and natural gas and provisions for ventilation and emergency access and ground settling.
- Option contains a number potentially substandard horizontal curves where the alignment transitions, but no substandard vertical grades or major utility conflicts were identified.
- Potential right-of-way might be required at transition areas where the alignment exits public owned right-of-way and station locations.

Transit Operations:

- Provides direct connections between North Hollywood and the Burbank Airport.
- Longest travel times and out-of-direction travel required from North Hollywood to Sylmar.
- Provides high service access to North Hollywood, Burbank Airport, Sun Valley, Pacoima and San Fernando, with no direct service provided to Valley Plaza and Laurel Plaza areas.

Capital Cost Estimates:

- Subway and underground station construction will involve significant costs.
- Capital cost per mile is estimated at $1,067 Million, which is the lowest of the Corridor Options which include Heavy Rail extension.

Corridor Option E (SP Santa Clarita ROW)

Summary of Issues, Opportunities and Constraints

Environmental:

- Potential adverse noise impacts to noise sensitive receptors along LRT alignment, including the Pacifica of the Valley Hospital, a trailer park, a school, a park, residences and motels, Land use adjacent to the alignment is largely commercial with a few residential clusters east of the ROW.
- LRT traffic along the alignment may result in minor additional delay for cross traffic at intersections.
- Safety concerns due to potential conflicts between LRT vehicles and motor vehicles or pedestrians at grade crossings. Students of Kittridge Junior High School most likely would be required to cross the tracks.
- Minor visual impact of catenary system.
- High to moderate liquefaction potential at Roxford, Brand, Sheldon, Tujunga Wash stations and Burbank Transportation Center.
- Arroyo Stone Cottage, located on west side of San Fernando Road north of Vineland, is potentially eligible structure for the National Register of Historic Places.

Engineering:

- Construction of at-grade LRT will not be complex. The only structure required is where the LRT crosses the commuter rail line at the Burbank Junction.
- No additional right-of-way requirements except at station locations.
- Potential impacts to crossing utilities would be limited to cathodic protection or relocation deeper in the ground to maintain proper ground cover.
- No substandard vertical grades or horizontal curvature.

Transit Operations

- Provides direct connection between Burbank Transportation Center and Sylmar.
- Provides direct connections with Metrolink at the Burbank and San Fernando Stations.
- Provides a high level of accessibility to the Burbank Airport, Burbank Transportation Center, Sun Valley, Pacoima and San Fernando, and no direct service to North Hollywood, Valley Plaza and Laurel Plaza areas.

Capital Cost Estimates:

- Exclusive use of LRT will reduce overall capital costs.
- Total capital cost estimates of $307 Million and per mile cost of $31 Million is the least of the Corridor Options evaluated, by significant amount.

4.5.2 Implementation Options and Considerations

This section provides a generalized review of implementation options and considerations to assist in scoping and refining the need for subsequent studies. The review of Corridor Options for extension of the Red Line and Heavy Rail technology into the Northeast San Fernando Valley focused on a number of prototypical alignments and conditions. Based upon the preliminary assessment documented by this Study, more detailed studies will be required to address preferred alignments, assess detailed impacts, forecast patronage, and develop estimates of overall costs and benefits.

The extension of rail service into the Northeast Valley as envisioned thus far has entailed a number of options primarily focused on terminal locations, rail profile and right-of-way types, and transit technologies as outlined below:

Profile And Right-Of Way Types

Rail profile and right-of-way types associated with the Corridor Options have included aerial profiles along freeway and arterial corridors and subway profiles primarily below arterial streets to provide station access to major activity centers. Freeway alignments generally result in higher costs and significant construction impacts and traffic control requirements. Subway construction, while also expensive, results in limited surface level impacts, generally restricted to portal and station locations. Future studies will need to address the trade-offs between capital costs and impacts as well as the relative benefits associated with being within a heavily traveled freeway corridor versus below grade in an arterial roadway environment.

Transit Technologies

The Corridor Options include Heavy Rail, Light Rail, and a mix of the two transit types. Light Rail has lower capital costs but limited service quality and longer travel times compared with Heavy Rail. Light Rail station spacing results in more local transit access, while Heavy Rail is generally focused on longer distance, regional-level trip making. Future studies will need to address the trade-offs between service quality, patronage, impacts and cost requirements associated with the transit technology types and corridor options.

Terminus Locations

The Corridor Options extend Red Line Heavy Rail to a number of different terminus locations:

1. LAX/Palmdale Commuter Rail Station at I-5/Roxford (Corridor Option A)

2. Proposed LRT/Commuter Rail Stations along the SP Santa Clarita line at:

   - Lankershim Boulevard (Corridor Option B)
   - Osborne Street (Corridor Option C)
   - Hollywood Way (Corridor Option D)

3. The Burbank Airport (Corridor Option D)

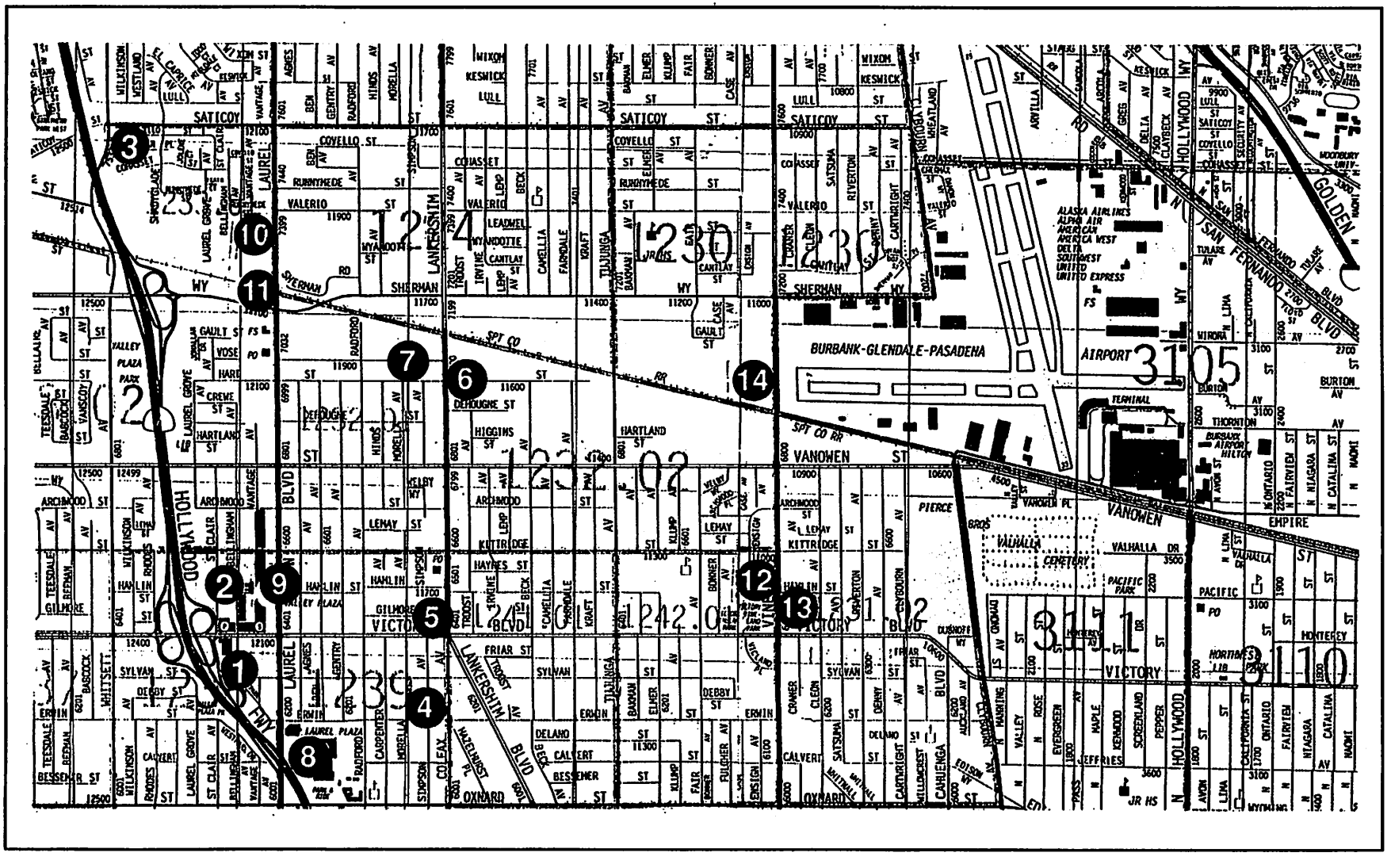
Other Options

An additional termini option, would involve a more limited extension, perhaps one to two miles, to provide intercept parking and/or possible connections with Metrolink. This could be implemented as a shorter-term measure or as part of a phased implementation approach. The provision of intercept parking in a more northerly location could reduce the potential for congestion and access problems at the North Hollywood Red Line Station. From an operational perspective, the potential for timed transfers between bus and rail could be enhanced at a less congested terminal facility.

Each of the Corridor Options were reviewed to identify possible park-and-ride locations between Victory Boulevard and Sherman Way. A parcel size of 10-20 acres can be considered desirable for inclusion of 1000-2000 parking spaces. Fourteen potential sites were identified and were evaluated to determine suitability for park-and-ride operations. Sites identified range in size from 3.5 to 23 acres. The results of the evaluation are provided in Table 4.8. Figure 4-16 displays the potential intercept parking sites.

Another option for further consideration is possible extension of the transit technology in the SP Burbank Branch East ROW (Bus Transitway as recommended by this Study) northward along Lankershim Boulevard to connect with San Fernando Road, the SP Santa Clarita ROW, and a possible Metrolink station in Sun Valley. While this would provide for modal consistency between the two corridors which have been the focus of this Study, it would still be expected that significant transfer activity would occur between the Metro Red Line, the East-West Project and the SP Burbank Branch East Corridor at the North Hollywood station.

Northeast Valley Corridor Intercept Parking Sites



Source: Thomas Bros. Maps and Myra L. Frank & Associates, Inc. 1992

NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

LACTC

BRW

Myra Frank & Assoc.

Not to Scale

4-16

TABLE 4.8
NORTHEAST VALLEY CORRIDOR
INTERCEPT PARKING SITE

Station	Loc. #	Parking Site	Current Use	Surrounding Land Use
Option A: SR-170/I-5				
SR-170/Victory Blvd.	1	Bellingham Ave. south of Victory, between SR-170 and Laurel Canyon Blvd.	Parking lot for large UA Movies/Retail shopping center. Parking lot approx. 8 acres.	Commercial to the north, south and east; Valley Park to the west.
	2	Bellingham Ave., north of Victory, between SR-170 and Laurel Canyon Blvd.	Parking lot for part of Valley Plaza; includes J.C. Penny and older retail stores. Also, an under utilized lot, north of Hamlin St., with a small Sears Gardening Center and auto repair shop. Approx. 6-7 acres of parking area.	Commercial to the south and east; residential to the north; Valley Plaza Park on the west side of the lot.
SR-170/Sherman Way or Moorpark Line	3	Between Saticoy St. and SP line, east of SR-170.	Vacant lot; fenced off. Possibly in preparation for development. Approx. 11.5 acres.	Residential to the north, east and west; industrial to the south.
Option B: Lankershim Blvd.				
Lankershim Blvd./ Victory Blvd.	4	West of Lankershim between Sylvan and Erwin Sts.	Minor commercial/retail uses.	Commercial uses north and south, residential, school, church west on Lankershim.
Lankershim Blvd./ Victory Blvd.	5	West of Lankershim between Gilmore and Hamlin Sts.	Restaurant and parking, minor retail uses.	Strip commercial north and south, residential to the west.
Lankershim Blvd./Sherman Way or Moorpark Line	6	NE corner of Hart/Lankershim.	Utility power line easement, vacant land.	Primarily industrial all around site.
Lankershim Blvd./Sherman Way or Moorpark Line	7	NW corner of Vose/Lankershim.	Utility power line easement, land used for nursery (plant) storage.	Industrial to the west, south, east, SP RR to the north.

TABLE 4.8 (Continued)
NORTHEAST VALLEY CORRIDOR
INTERCEPT PARKING SITE

Station	Loc. #	Parking Site	Current Use	Surrounding Land Use
Option C: Laurel Canyon Blvd.				
Laurel Canyon Blvd./ Victory Blvd.	8	Laurel Canyon Blvd. and Oxnard St.	Parking lot for the Laurel Plaza shopping Center. Total lot size approx. 23 acres.	Residential to north, south and east; SR-170 freeway to the west.
	9	West side of Laurel Canyon Blvd. between Kittridge and Victory Blvd.	Narrow parking lot for strip shopping center (Valley Plaza) featuring Sears and Woolworth; spans three blocks on the west side of Laurel Canyon Blvd. Approx. 10.6 acres of parking area.	Commercial to the east, south and west; residential to the north.
Laurel Canyon Blvd./ Sherman Way or Moorpark Line	10	Northwest corner of SP line and Laurel Canyon Blvd.	Storage lot for trailers, trucks of unknown size.	Industrial
	11	Northwest corner of Sherman Way and Laurel Canyon Blvd.	Truck maintenance facility. Possibly 2-3 acres.	Industrial
Option D: Vineland Ave.				
Vineland Ave./Victory Blvd.	12	Northwest corner of Victory and Vineland.	Parking lot for Target Store, Payless Shoes and Goodyear Tires. Parking area approx. 11 acres.	Residential to north and east; commercial to the south; Victory-Vineland Park adjacent to the west.
	13	Northeast corner of Victory and Vineland.	Parking lot for Leon's Steak House, Alpha Beta Supermarket and a few other retail stores. Total lot approx. 3.5 acres.	Residential to the north; commercial to the east, west and south.
Vineland Ave./Sherman Way or Moorpark Line	14	Northwest corner of SP and Vineland intersection; immediately across Burbank airport.	Vacant lot; most likely part of airport. Approx. 8 acres.	Industrial

4.5.3 Phasing Options

The extension of rail service into the Northeast San Fernando Valley would likely be accomplished via a phased implementation program. Phasing provides the advantages of focusing the commitment of available resources over a manageable time period and also ensures the viability of planned services. Figure 4-17 displays a possible phasing scenario for the extension of rail services into the Northeast Valley Corridor as discussed below:

Corridor Options A, B, C and D (Heavy Rail and Light Rail)

Phase I:
- Extension of Heavy Rail from North Hollywood to vicinity of Sherman Way to link with Metrolink and a possible major intercept parking facility.
- Extension of Burbank/Glendale-LA LRT from Burbank Airport to Sun Valley.

Phase II:
- Extension of Heavy Rail from Sherman Way to SP Santa Clarita to link with Burbank/Glendale-LA LRT Extension and Commuter Rail. If Corridor Option A, extension of Heavy Rail to I-5/Van Nuys Boulevard.
- Extension of Burbank/Glendale-LA LRT from Sun Valley to Pacoima.

Phase III:
- Extension of Burbank/Glendale-LA LRT to Sylmar. If Corridor Option A, extension to LAX/Palmdale Station (I-5/Roxford).

Corridor Option E (Light Rail Only)

Phase I:
- Extend Burbank/Glendale-LA LRT from Burbank Airport to Sun Valley.

Phase II:
- Extend Burbank/Glendale-LA LRT from Sun Valley to Pacoima terminus.

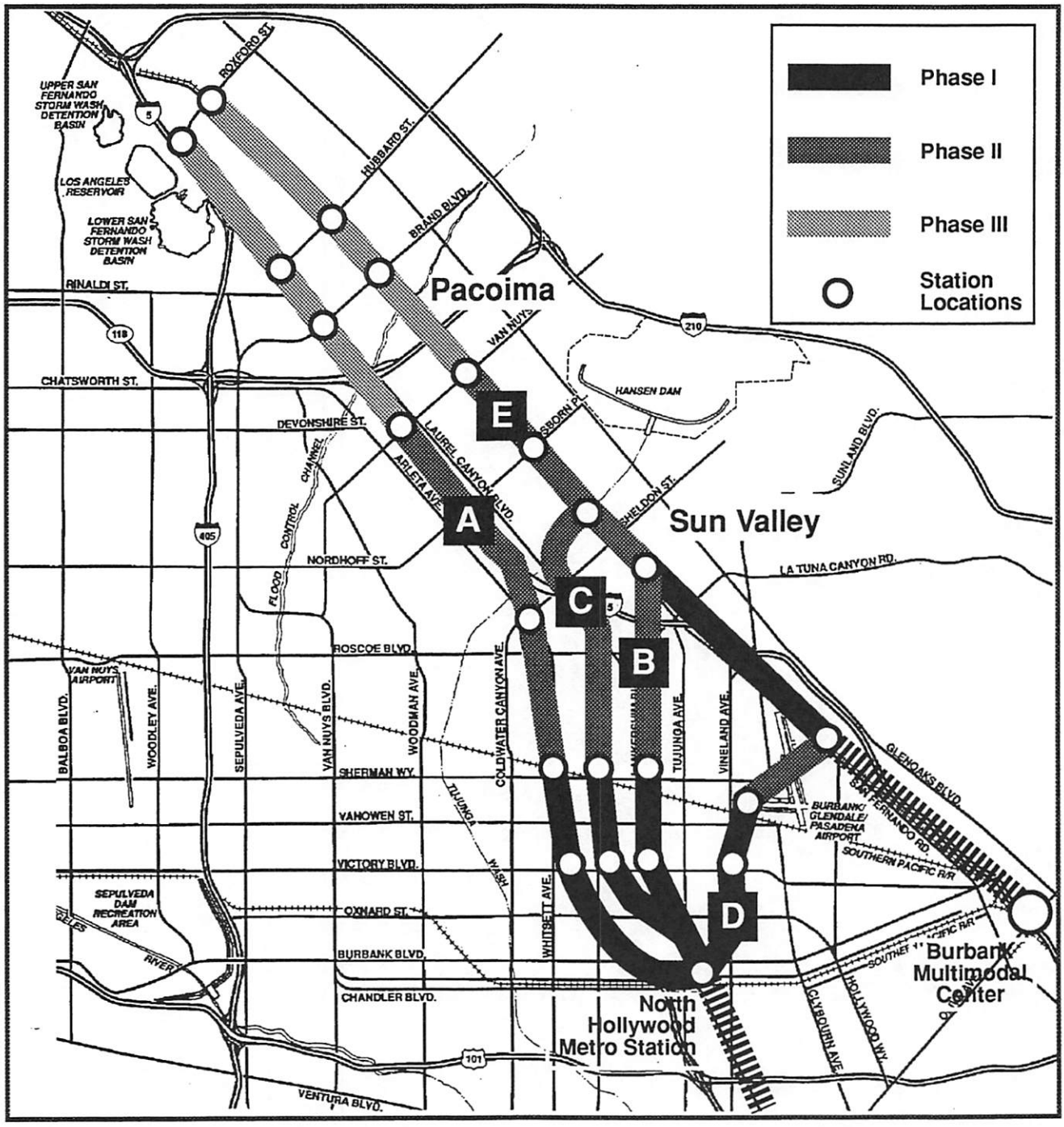
Phase III:
- Extend Burbank/Glendale-LA LRT from Pacoima to Sylmar terminus.

Table 4.9 provides a breakdown of capital cost requirements by phase for each of the Corridor Options.

TABLE 4.9
CAPITAL COST ESTIMATES BY PHASE
(Costs in Millions of 1991 Dollars)

	Northeast Valley Corridor Options				
	A	B	C	D	E
Phase I	$ 493	$ 579	$ 716	$ 672	$ 95
Phase II	521	447	716	263	89
Phase III	508	124	124	124	124
Total	$1,502	$1,150	$1,556	$1,068	$308

Northeast Valley Corridor Rail Extension Phasing Options



NORTHEAST SAN FERNANDO VALLEY TRANSIT CORRIDORS STUDY

BRW

Myra Frank & Assoc.

0 1/2 1

Approximate Scale: miles

4-17

Source: BRW, Inc., 31 July 1992

5.0 Study Conclusions and Recommendations

The purpose of the Northeast San Fernando Valley Corridors Study has been to evaluate the feasibility of various transit linkages and technologies in the Northeast San Fernando Valley. Transit technology alternatives were identified for linking North Hollywood and Burbank using the SP Burbank Branch East ROW and corridor options were identified for possible northerly extension of the Red Line from the currently planned terminus in North Hollywood.

5.1 STUDY CONCLUSIONS

Based upon the technology, corridor, and alignment evaluations and consideration of the study objectives, the following study conclusions are presented:

SP Burbank Branch East (Chandler Boulevard) Corridor

1. The corridor offers unique opportunities to establish a multimodal transportation corridor between North Hollywood and Burbank.

2. The LACTC and the Cities of Burbank and Los Angeles should ensure the preservation of the corridor right-of-way as a transportation corridor.

3. The provision of bikeway improvements and supporting corridor enhancements as near-term measures will signal LACTC's commitment to alternate modes, while providing a viable interim use for the corridor right-of-way.

4. A Bus Transitway is the preferred longer-term transit improvement for the corridor based upon lower anticipated costs and impacts, enhanced transit operations, and high compatibility with regional transportation systems.

5. The facility and service design of a Bus Transitway should be sensitive to the surrounding residential areas and possible community concerns.

6. A Light Rail Transit (LRT) alignment within the corridor would result in significant costs and unacceptable impacts to adjacent residential areas.

7. The Bus Transitway should be limited to transit vehicles only, and utilization of alternative vehicle technologies and fuel types should be promoted.

8. Establishment of through-linkage capabilities with other regional transit facilities will be the key to the long term success of transit improvements in the corridor.

9. The type of bikeway facility (Class I, II, or III) which will serve as a suitable adjunct to transit improvements in the corridor will need to be refined by subsequent studies.

10. Implementation of a Bus Transitway would allow for future transit guideway implementation should corridor conditions or linkages change.

Northeast Valley Corridor

1. Corridor Options for extension of the Red Line include a variety of right-of-way and profile types.

2. Key Corridor Options include:

   - An elevated Heavy Rail (HRT) guideway in the median of SR-170 and I-5;
   - Northerly extension of Heavy Rail (HRT) via subway below a number of possible arterial roadways with possible linkages with Light Rail (LRT) along the SP Santa Clarita Line.

3. Terminus options include:

   - Burbank Airport
   - LAX/Palmdale Station (I-5/Roxford)
   - LRT/Commuter Rail Stations along the SP Santa Clarita Line
   - A potential regional Park-and-Ride facility located between Victory Boulevard and Sherman Way and providing possible Metrolink access.

4. Total costs will vary from a low of approximately $307 Million for Corridor Option E which includes LRT at-grade, to $1,556 Million for Corridor Option C which includes an HRT subway, HRT aerial and LRT at-grade.

5. The ridership potential of the Red Line extension will vary based upon route alignment, travel times between North Hollywood and Sylmar, and the level of transit accessibility and service provided to the principal activity centers and areas of high trip generation in the Northeast Valley Corridor.

6. A link for further consideration is possible extension of the transit technology along the SP Burbank Branch East Corridor (Bus Transitway as recommended by this Study) northward along Lankershim Boulevard to connect with San Fernando Road, the SP Santa Clarita ROW, and a possible Metrolink station in Sun Valley.

5.2 STUDY RECOMMENDATIONS

Based upon the study conclusions, the following study recommendations are presented:

1. The LACTC should identify the SP Burbank Branch East ROW as a multimodal transportation corridor.

2. A Bus Transitway should be identified as the preferred transit facility improvement for the SP Burbank Branch East ROW, with a bikeway being the preferred near-term corridor project.

3. The LACTC, in conjunction with the Cities of Burbank and Los Angeles should initiate a study of Chandler Boulevard to identify supporting traffic circulation, land use access, and bikeway improvements.

4. The LACTC should coordinate proposed corridor improvements in the SP Burbank Branch East ROW and Northeast Valley Corridor with other regional transit improvements including bus electrification, alternative fuels, local bus route restructuring, Metrolink, Burbank/Glendale-LA LRT and Commuter Rail.

5. The Northeast Valley Corridor should be incorporated in the 30-Year Integrated Transportation Plan as an Unfunded Project. The use of phasing strategies should be considered to increase the funding priority of the Corridor.

6. Future studies of the North Hollywood Red Line terminus should incorporate findings of this Study and should not preclude the extension options identified.

7. When the in-house LACTC modeling capability is available, detailed patronage forecasts should be developed and utilized to identify and refine Red Line extension Corridor Options for further study in the Northeast Valley Corridor.

Appendices

A. Detailed Costing Sheets

B. Northeast Valley Corridor Plan Sheets

C. SP Burbank East (Chandler Boulevard) Corridor

LACTC NZ SAN FERNANDO VALLEY STUDY
NORTH HOLLYWOOD TO BURBANK AT VICTORY BLVD
CONCEPTUAL COST ESTIMATES - LRT OPTIONS
BRW INC 7-16-92 BR/DL
NOTE: ALL COSTS IN 1991 DOLLARS

ITEM DESCRIPTION	UNIT COST	UNITS	LRT ONLY QUANTITY	LRT ONLY TOTAL COST	LRT WITH CLASS I BIKE QUANTITY	LRT WITH CLASS I BIKE TOTAL COST	LRT WITH CLASS II BIKE QUANTITY	LRT WITH CLASS II BIKE TOTAL COST
LENGTH OF SEGMENT-		LF	18,000		18,000		18,000	
GUIDEWAY COSTS				0		0		0
CUT & COVER TUNNEL (20-30'DEEP)-	10,000	LF	0	0	0	0	0	0
AERIAL GUIDEWAY CONST (COMPLEX)-	7,000	LF	0	0	0	0	0	0
AERIAL GUIDEWAY CONST (TYPICAL)-	4,500	LF	0	0	0	0	0	0
TRACKWORK-	600	RF	18,000	10,800,000	18,000	10,800,000	18,000	10,800,000
RETAINING WALLS-	40	SF	0	0	0	0	0	0
EARTHWORK				0		0		0
EXCAVATION-	10	CY	40,000	400,000	40,000	400,000	40,000	400,000
EMBANKMENT-	15	CY	0	0	0	0	0	0
UNBALANCE-	10	CY	40,000	400,000	40,000	400,000	40,000	400,000
BIKEPATH								
AC PAVEMENT - 3"	1	SF		0	241,200	120,600	0	0
BASE - 3"	1	SF		0	241,200	120,600	0	0
SIGNING/STRIPING	5	LF		0	17,000	85,000	0	0
CLEAR/GRUB	1	SF		0	241,200	120,600	0	0
K-RAIL	40	LF		0	10,800	432,000	0	0
BIKELANE COSTS				0				
Saw Cut	2	LF		0			28,400	56,800
REMOVE CURB & GUTTER	5	LF		0			28,400	142,000
AC PAVEMENT - 6"	1	SF		0			92,000	92,000
BASE - 6"	1	SF		0			92,000	92,000
CURB & GUTTER	14	LF		0			28,400	397,600
REMOVE/RECOMPACT SUBGRADE	30	SF		0			5,100	153,000
SIGNING/STRIPING	20	LF		0			18,000	360,000
CLEAR/GRUB	1	CY		0			180,000	90,000
SEAL COAT	0	SF		0			489,400	122,350
LANDSCAPING-	100,000	PM	3.4	340,909	3.4	340,909	3.4	340,909
GENERAL UTILITY RELOCATION-	100,000	PM	3.4	340,909	3.4	340,909	3.4	340,909
SPECIFIC UTILITY RELOCATIONS								
STREET LIGHTS	35	RF	12,000.0	420,000	12,000.0	420,000	12,000.0	420,000
ELECT PP TO UG-ASSUME 50% SPLIT	200	RF	6,000.0	1,200,000	6,000.0	1,200,000	6,000.0	1,200,000
DRAINAGE-	75,000	PM	3.4	255,682	3.4	255,682	3.4	255,682
TRAFFIC SIGNAL (MODIFIED)-	125,000	EA	7	875,000	7	875,000	7	875,000
RAILROAD CROSSING CONTROL-	250,000	EA	5	1,250,000	5	1,250,000	5	1,250,000
SISTEMWIDE EQUIPMENT COSTS				0		0		0
TRAIN CONTROL-	530	RF	18,000	9,540,000	18,000	9,540,000	18,000	9,540,000
TRACTION POWER á STATIONS-	1,100,000	STA	3	3,300,000	3	3,300,000	3	3,300,000
TRACTION POWER-	270	RF	18,000	4,860,000	18,000	4,860,000	18,000	4,860,000
COMMUNICATIONS-	200	RF	18,000	3,600,000	18,000	3,600,000	18,000	3,600,000
STATION COSTS				0		0		0
AERIAL STATION-	5,000,000	STA	0	0	0	0	0	0
á GRADE STATION (MEDIAN STREET)-	1,500,000	STA	0	0	0	0	0	0
á GRADE STATION (EXCLUSIVE ROW)-	1,200,000	STA	3	3,600,000	3	3,600,000	3	3,600,000
FARE COLLECTION-	250,000	STA	3	750,000	3	750,000	3	750,000
SIGNS/GRAPHICS-	100,000	STA	3	300,000	3	300,000	3	300,000
SURFACE PARKING LOT-	3,500	SPACE	0	0	0	0	0	0
MAINTENANCE FACILITY & YARD COSTS-								

LACTC NE SAN FERNANDO VALLEY STUDY
NORTH HOLLYWOOD TO BURBANK AT VICTORY BLVD
CONCEPTUAL COST ESTIMATE - TRANSITWAY OPIONS
BRW INC 7-16-92 BR/DL
NOTE: ALL COSTS IN 1991 DOLLARS

ITEM DESCRIPTION	UNIT COST	UNITS	TRANSITWAY ONLY QUANTITY	TRANSITWAY ONLY TOTAL COST	TRANSITWAY WITH CLASS I BIKE QUANTITY	TRANSITWAY WITH CLASS I BIKE TOTAL COST	TRANSITWAY WITH CLASS BIKE ALONG CHANDLER QUANTITY	TRANSITWAY WITH CLASS BIKE ALONG CHANDLER TOTAL COST
COST PER MILE-				6,204,812		6,329,704		6,350,918
TOTAL MILES-			3.4		3.4		3.4	

LACTC NE SAN FERNANDO VALLEY STUDY
NORTH HOLLYWOOD TO BURBANK AT VICTORY BLVD
CONCEPTUAL COST ESTIMATE - TRANSITWAY OPIONS
BRW INC 7-16-92 BR/DL
NOTE: ALL COSTS IN 1991 DOLLARS

ITEM DESCRIPTION	UNIT COST	UNITS	TRANSITWAY ONLY QUANTITY	TRANSITWAY ONLY TOTAL COST	TRANSITWAY WITH CLASS I BIKE QUANTITY	TRANSITWAY WITH CLASS I BIKE TOTAL COST	TRANSITWAY WITH CLASS BIKE ALONG CHANDLER QUANTITY	TRANSITWAY WITH CLASS BIKE ALONG CHANDLER TOTAL COST
LENGTH OF SEGMENT-		LF	18,000		18,000		18,000	
ROADWAY COSTS						0		0
Saw Cut	2	LF	0	0	7,800	15,600	28,400	56,800
REMOVE CURB & GUTTER	5	LF	0	0	9,400	47,000	28,400	142,000
REMOVE AC PAVEMENT	1	SF	0	0	62,400	62,400	54,600	54,600
AC PAVEMENT - 6"	1	SF	617,600	617,600	534,800	534,800	642,400	642,400
BASE - 6"	1	SF	617,600	617,600	578,000	578,000	679,600	679,600
CURB & GUTTER	14	LF	17,000	238,000	12,400	173,600	23,200	324,800
REMOVE/RECOMPACT SUBGRADE	30	SF	48,000	1,440,000	32,000	960,000	34,311	1,029,330
SIGNING/STRIPING	20	LF	17,000	340,000	7,600	152,000	17,000	340,000
DRAINAGE	50	LF	6,200	310,000	6,200	310,000	6,200	310,000
K-RAIL	40	LF	20,200	808,000	26,400	1,056,000	20,200	808,000
CLEAR/GRUB	1	SF	666,800	333,400	330,000	165,000	679,600	339,800
SEAL COAT	1	SF	0	0	0	0	489,400	244,700
FENCE	15	LF	7,600	114,000	7,600	114,000	7,600	114,000
RETAINING WALLS-	40	SF	0	0	0	0	0	0
BIKEWAY								
AC PAVEMENT - 3"	1	SF	0	0	241,200	120,600	0	0
BASE - 3"	1	SF	0	0	241,200	120,600	0	0
SIGNING/STRIPING	5	LF	0	0	17,000	85,000	0	0
CLEAR/GRUB	1	SF	0	0	241,200	120,600	0	0
K-RAIL	40	LF	0	0	10,800	432,000	0	0
SPECIFIC UTILITY RELOCATIONS								
STREET LIGHTS	35	EF	12,000.0	420,000	12,000.0	420,000	12,000.0	420,000
ELECT PP TO UG-ASSUME 50% SPLIT	200	EF	6,000.0	1,200,000	6,000.0	1,200,000	6,000.0	1,200,000
SYSTEMWIDE COSTS				0		0		0
SIGNS/GRAPHICS-	10	EF	18,000	180,000	18,000	180,000	18,000	180,000
LANDSCAPING-	75	EF	18,000	1,350,000	18,000	1,350,000	18,000	1,350,000
TRAFFIC SIGNAL (NEW)-	100,000	EA	0	0	0	0	0	0
TRAFFIC SIGNAL (MODIFIED)-	50,000	EA	7	350,000	7	350,000	7	350,000
STATION COSTS				0		0		0
@ GRADE STATION (EXCLOSIVE ROW)-	350,000	STA	5	1,750,000	5	1,750,000	5	1,750,000
SURFACE PARKING LOT-	3,500	SPACE	0	0	0	0	0	0
VEHICLE COSTS				0		0		0
ARTICULATED VEHICLE-	300,000	EA	8	2,400,000	8	2,400,000	8	2,400,000
R.O.W. COSTS-				0		0		0
TOTAL CONSTRUCTION COSTS-				12,468,600		12,697,200		12,736,030
CONTINGENCY (25%)-				2,517,150		2,574,300		2,584,008
SUBTOTAL-				14,985,750		15,271,500		15,320,038
ADMIN,ENGIN, & CONST MANAGE (25%)-				3,146,438		3,217,875		3,230,609
MOBILIZATION(2%)-				251,715		257,430		258,401
TRAFFIC MAINTENANCE (2%)-				251,715		257,430		258,401
TESTING, INSURANCE, ETC (20%)-				2,517,150		2,574,300		2,584,008
TOTAL COST-				21,152,768		21,578,535		21,650,856

LACTC NE SAN FERNANDO VALLEY STUDY
NORTH HOLLYWOOD TO BURBANK AT VICTORY BLVD
CONCEPTUAL COST ESTIMATE - TROLLEY BUS OPIONS
BRW INC 7-16-92 BR/DL
NOTE: ALL COSTS IN 1991 DOLLARS

ITEM DESCRIPTION	UNIT COST	UNITS	TROLLEY-BUS ONLY QUANTITY	TOTAL COST	TROLLEY BUS WITH CLASS I BIKE QUANTITY	TOTAL COST	TROLLEY BUS WITH CLASS II BIKE ALONG CHANDLER BLVD QUANTITY	TOTAL COST
TESTING, INSURANCE, ETC (20%)-				4,817,150		4,874,300		4,737,208
TOTAL COST-				41,087,768		41,513,535		40,492,196
COST PER MILE-				12,052,412		12,177,304		11,877,711
TOTAL MILES-			3.4		3.4		3.4	

LACTC SE SAN FERNANDO VALLEY STUDY
NORTH HOLLYWOOD TO BURBANK AT VICTORY BLVD
CONCEPTUAL COST ESTIMATE - TROLLEY BUS OPTIONS
BRW INC 7-16-92 BR/DL
NOTE: ALL COSTS IN 1991 DOLLARS

ITEM DESCRIPTION	UNIT COST	UNITS	TROLLEY-BUS ONLY QUANTITY	TROLLEY-BUS ONLY TOTAL COST	TROLLEY BUS WITH CLASS I BIKE QUANTITY	TROLLEY BUS WITH CLASS I BIKE TOTAL COST	TROLLEY BUS WITH CLASS II BIKE ALONG CHANDLER BLVD QUANTITY	TROLLEY BUS WITH CLASS II BIKE ALONG CHANDLER BLVD TOTAL COST
LENGTH OF SEGMENT-		LF	18,000		18,000		18,000	
ROADWAY COSTS				0		0		0
Saw Cut	2	LF	0	0	7,800	15,600	7,800	15,600
REMOVE CURB & GUTTER	5	LF	0	0	9,400	47,000	3,200	16,000
REMOVE AC PAVEMENT	1	SF	0	0	62,400	62,400	54,600	54,600
AC PAVEMENT - 6"	1	SF	617,600	617,600	534,800	534,800	642,400	642,400
BASE - 6"	1	SF	617,600	617,600	578,000	578,000	679,600	679,600
CURB & GUTTER	14	LF	17,000	238,000	12,400	173,600	23,200	324,800
REMOVE/RECOMPACT SUBGRADE	30	SF	48,000	1,440,000	32,000	960,000	34,311	1,029,330
SIGNING/STRIPING	20	LF	17,000	340,000	7,600	152,000	17,000	340,000
DRAINAGE	50	LF	6,200	310,000	6,200	310,000	6,200	310,000
K-RAIL	40	LF	20,200	808,000	26,400	1,056,000	20,200	808,000
CLEAR/GRUB	1	SF	666,800	333,400	330,000	165,000	679,600	339,800
SEAL COAT	1	SF	0	0	0	0	489,400	244,700
FENCE	15	LF	7,600	114,000	7,600	114,000	7,600	114,000
RETAINING WALLS-	40	SF	0	0	0	0	0	0
BIKEWAY								
AC PAVEMENT - 3"	1	SF	0	0	241,200	120,600	0	0
BASE - 3"	1	SF	0	0	241,200	120,600	0	0
SIGNING/STRIPING	5	LF	0	0	17,000	85,000	0	0
CLEAR/GRUB	1	SF	0	0	241,200	120,600	0	0
K-RAIL	40	LF	0	0	10,800	432,000	0	0
SPECIFIC UTILITY RELOCATIONS								
STREET LIGHTS	35	EF	12,000.0	420,000	12,000.0	420,000	0.0	0
ELECT PP TO UG-ASSUME 50% SPLIT	200	EF	6,000.0	1,200,000	6,000.0	1,200,000	6,000.0	1,200,000
SYSTEMWIDE COSTS				0		0		0
TRACTION POWER (SINGLE)-	250	EF		0		0		0
TRACTION POWER (DOUBLE)-	400	EF	18,000	7,200,000	18,000	7,200,000	18,000	7,200,000
SIGNS/GRAPHICS-	10	EF	18,000	180,000	18,000	180,000	18,000	180,000
LANDSCAPING-	75	EF	18,000	1,350,000	18,000	1,350,000	18,000	1,350,000
TRAFFIC SIGNAL (NEW)-	100,000	EA	0	0	0	0	0	0
TRAFFIC SIGNAL (MODIFIED)-	50,000	EA	7	350,000	7	350,000	7	350,000
STATION COSTS				0		0		0
@ GRADE STATION (EXCLUSIVE ROW)-	350,000	STA	5	1,750,000	5	1,750,000	5	1,750,000
SURFACE PARKING LOT-	3,500	SPACE	0	0	0	0	0	0
MAINTENANCE FACILITY & YARD COSTS-				0		0		0
ALL FACIL & EQUIP PER LOCATION	2,000,000	LS	1	2,000,000	1	2,000,000	1	2,000,000
VEHICLE COSTS				0		0		0
ARTICULATED VEHICLE-	650,000	EA	8	5,200,000	8	5,200,000	8	5,200,000
R.O.W. COSTS-				0		0		0
TOTAL CONSTRUCTION COSTS-				24,468,600		24,697,200		24,148,330
CONTINGENCY (25%)-				4,817,150		4,874,300		4,737,206
SUBTOTAL-				29,285,750		29,571,500		28,886,038
ADMIN,ENGIN, & CONST MANAGE (25%)-				6,021,438		6,092,875		5,921,509
START-UP (2%)-				481,715		487,430		473,721
TRAFFIC MAINTENANCE (2%)-				481,715		487,430		473,721

LACTC RE SAN FERNANDO VALLEY STUDY
NORTH HOLLYWOOD TO BURBANK AT VICTORY BLVD
CONCEPTUAL COST ESTIMATE - BIKEWAY OPTIONS
BRW INC 6-30-92 BR/DL
NOTE: ALL COSTS IN 1991 DOLLARS

ITEM DESCRIPTION	UNIT COST	UNITS	CLASS I ONLY QUANTITY	CLASS I ONLY TOTAL COST	CLASS II ONLY QUANTITY	CLASS II ONLY TOTAL COST
LENGTH OF SEGMENT-		LF	18,000		18,000	
ROADWAY COSTS				0		0
Saw Cut	2	LF	0	0	28,400	56,800
REMOVE CURB & GUTTER	5	LF	0	0	28,400	142,000
REMOVE AC PAVEMENT	1	SF	0	0	0	0
AC PAVEMENT - 6"	1	SF	0	0	180,000	180,000
BASE - 6"	1	SF	0	0	180,000	180,000
CURB & GUTTER	14	LF	0	0	28,400	397,600
REMOVE/RECOMPACT SUBGRADE	30	SF	0	0	10,000	300,000
SIGNING/STRIPING	20	LF	0	0	18,000	360,000
DRAINAGE	50	LF	0	0	0	0
K-RAIL	40	LF	0	0	0	0
CLEAR/GRUB	1	CY	0	0	180,000	90,000
SEAL COAT	0	SF	0	0	1,109,200	277,300
FENCE	15	LF	0	0	0	0
RETAINING WALLS-	40	SF	0	0	0	0
BIKEWAY						
AC PAVEMENT - 3"	1	SF	324,000	162,000	0	0
BASE - 3"	1	SF	324,000	162,000	0	0
SIGNING/STRIPING	5	LF	18,000	90,000	0	0
CLEAR/GRUB	1	SF	324,000	162,000	0	0
K-RAIL	40	LF	0	0	0	0
SPECIFIC UTILITY RELOCATIONS						
STREET LIGHTS	35	EF	0.0	0	12,000.0	420,000
ELECT PP TO UG-ASSUME 50% SPLIT	200	EF	0.0	0	0.0	0
SYSTEMWIDE COSTS				0		0
SIGNS/GRAPHICS-	10	EF	0	0	18,000	180,000
LANDSCAPING-	40	EF	18,000	720,000	18,000	720,000
TRAFFIC SIGNAL (NEW)-	100,000	EA	0	0	0	0
TRAFFIC SIGNAL (MODIFIED)-	25,000	EA	7	175,000	0	0
R.O.W. COSTS-				0		0
TOTAL CONSTRUCTION COSTS-				1,471,000		3,303,700
CONTINGENCY (25%)-				367,750		825,925
SUBTOTAL-				1,838,750		4,129,625
ADMIN,ENGIN, & CONST MANAGE (25%)-				459,688		1,032,406
MOBILIZATION (2%)-				36,775		82,593
TRAFFIC MAINTENANCE (2%)-				36,775		82,593
INSURANCE, ETC (20%)-				367,750		825,925
TOTAL COST-				2,739,738		6,153,141
COST PER MILE-				803,656		1,804,921

LACTC NE SAN FERNANDO VALLEY STUDY
NORTH HOLLYWOOD TO BURBANK AT VICTORY BLVD
CONCEPTUAL COST ESTIMATES - LRT OPTIONS
HRH INC 7-16-92 RR/DL
NOTE: ALL COSTS IN 1991 DOLLARS

ITEM DESCRIPTION	UNIT COST	UNITS	LRT ONLY QUANTITY	LRT ONLY TOTAL COST	LRT WITH CLASS I BIKE QUANTITY	LRT WITH CLASS I BIKE TOTAL COST	LRT WITH CLASS II BIKE QUANTITY	LRT WITH CLASS II BIKE TOTAL COST
ALL FACIL. & EQUIP. PER LOCATION	200,000	VEH	14	2,800,000	14	2,800,000	14	2,800,000
VEHICLE COSTS				0		0		0
STANDARD REVENUE VEHICLE-	2,600,000	EA	14	36,400,000	14	36,400,000	14	36,400,000
R.O.W. COSTS-				0		0		0
TOTAL CONSTRUCTION COSTS-				81,432,500		82,311,300		82,938,250
CONTINGENCY (25%)-				11,258,125		11,477,825		11,634,563
SUBTOTAL-				92,690,625		93,789,125		94,572,813
ADMIN,ENGIN, & CONST MANAGE (25%)-				14,072,656		14,347,281		14,543,203
START-UP (2%)-				1,125,813		1,147,783		1,163,456
TRAFFIC MAINTENANCE (2%)-				1,125,813		1,147,783		1,163,456
TESTING, INSURANCE, ETC (20%)-				11,258,125		11,477,825		11,634,563
TOTAL COST-				120,273,031		121,909,796		123,077,491
COST PER MILE-				35,280,089		35,760,207		36,102,731
TOTAL MILES-			3.4		3.4		3.4	