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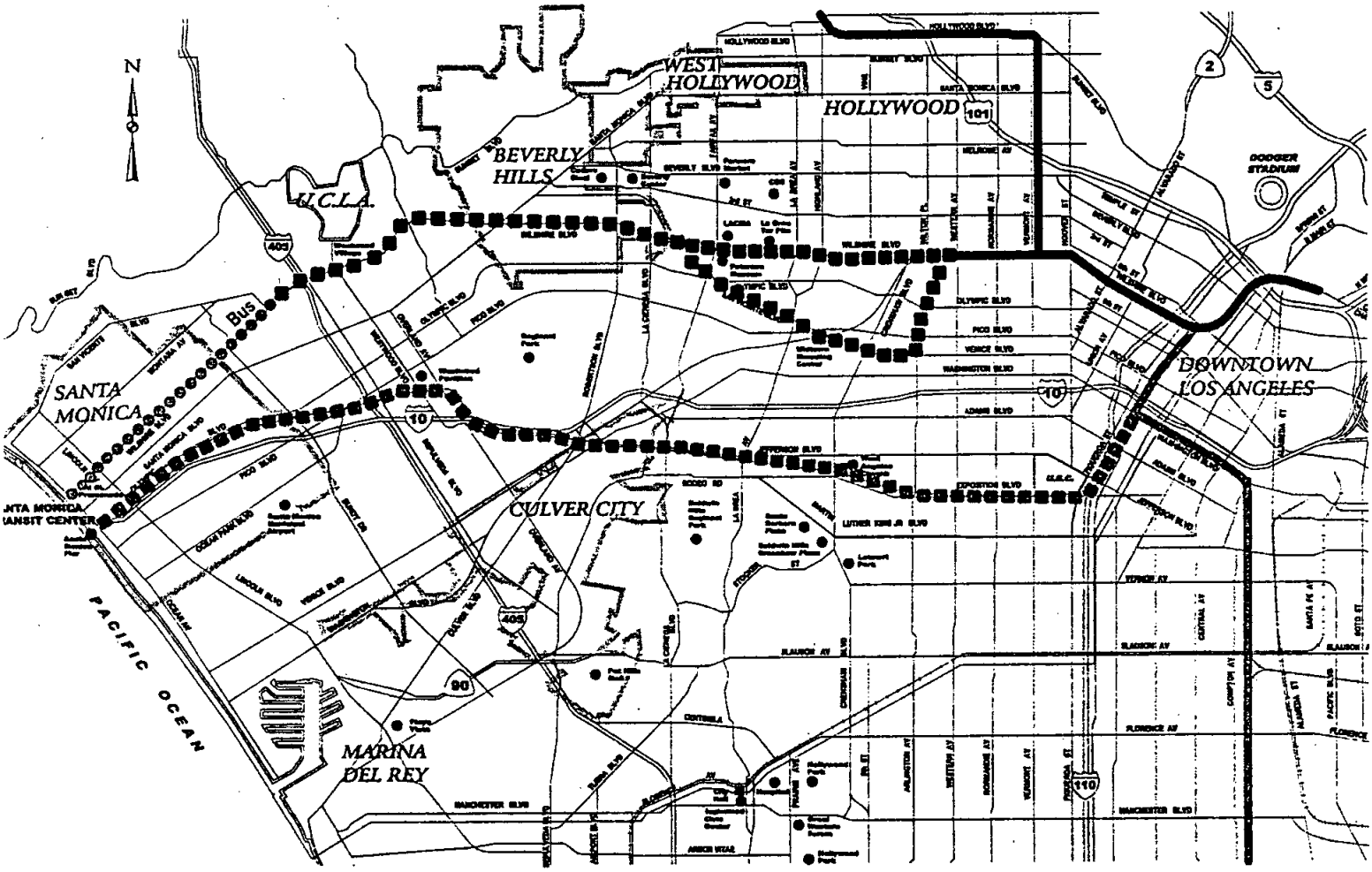
MID-CITY/WESTSIDE TRANSIT CORRIDOR STUDY



Executive Summary

RE-EVALUATION/ MAJOR INVESTMENT STUDY REPORT

Los Angeles County
Metropolitan
Transportation
Authority

February 24, 2000

MID-CITY/WESTSIDE TRANSIT CORRIDOR RE-EVALUATION/MAJOR INVESTMENT STUDY

Executive Summary

February 24, 2000

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Submitted to:

Los Angeles County Metropolitan Transportation Authority

SUMMARY

S.1 Status of Current Transit Investments in the Mid-City / Westside Transit Corridor

The Mid-City Segment of the Metro Red Line was adopted as the Locally Preferred Alternative in 1992. This 2.3-mile extension would have extended Metro Red Line service from Wilshire Boulevard and Western Avenue to Pico and San Vicente Boulevards in the "Mid-City" area via a Crenshaw Boulevard alignment. Engineering design work for the tunneling and stations on this project was suspended in 1994 due to concern about hazardous underground gases along Crenshaw and Pico Boulevards and an optional alignment using Wilton Place, Arlington Avenue, and Venice Boulevard was pursued instead. The MTA was in the process of environmentally clearing this revised alignment when work on the Mid-City Segment, the Metro Red Line East Side Extension, and the Pasadena Blue Line were suspended for financial reasons.

Shortly thereafter, Proposition A (which prohibited the use of local sales tax monies for subway construction) was placed on a county wide ballot and was passed by the voters in November 1998. Meanwhile, the Gas Prohibition zone along Wilshire is still in place as is the Consent Decree that mandates specific financial commitments to the existing MTA bus operation. While there have been some major long term transportation investments in the study area such as the Red Line Subway to Wilshire and Western in 1996 and the purchase of the Exposition ROW in 1990, the more immediate focus has been to complete the Westside Transit Restructuring Plan and to proceed with the Metro Rapid Bus Demonstration Project on Wilshire to be implemented in June 2000.

S.2 Purpose of this Study

In light of the current situation, the KORVE team has been tasked with re-evaluating the suspended subway Locally Preferred Alternative (LPA) and comparing it to a set of fixed-guideway transit improvements that have been identified in a number of other studies conducted to date. KORVE has been tasked with recommending to the Los Angeles County Metropolitan Transportation Authority (MTA) a short-term (0-5 years) and long-term (6-20 years) strategy for improving public transit. Based upon the recommended strategy, KORVE will coordinate with MTA to develop a funding program including federal participation as appropriate. The outcome of this re-examination of conditions in the Mid-City / Westside Transit Corridor will be the selection of one or more alternatives that will enter into more detailed environmental analysis during Phase 2. Upon completion of Phase 2, when the draft environmental documents are completed, MTA will be able to adopt a new Locally Preferred Alternative complete final environmental clearance and seek to renegotiate an amended funding agreement with the Federal Transit Administration.

S.3 Purpose and Need for Transit Investment

The central question is whether a significant investment is warranted for transit improvements in the Mid-City/Westside study area. The answer is yes for the following reasons.

1. **The Need for Transit Improvements has been Established in Previous Studies.** Providing high-capacity transit service improvement has been long recognized in the Mid-City/Westside Area. Since the 1970's, the LACMTA and its predecessors (SCRTD, LACTC) have conducted numerous transportation planning and environmental impact

studies that established the need and feasible locations for either bus, light rail and/or heavy rail east-west service in various parts of the study area.

2. **Study Area Contains A Major Concentration of Activity Centers and Destinations.** The area contains the largest concentration of major activity centers and destinations within the Los Angeles metropolitan region. Many of these centers are located within the most congested portion of the study area north of the Santa Monica Freeway (I-10) and east of the San Diego Freeway (I-405).

3. **The "Centers Concept" Land Use Policy is Transit Based.** Land use policies in the Los Angeles metropolitan region have traditionally been founded upon the framework that access to major activity centers would be facilitated through a network of transit connections. The recently completed Los Angeles General Plan Framework reinforced this concept as a continuing policy framework for the City of Los Angeles. New growth is planned and encouraged to occur only in areas that are served by transit.

4. **There is an Existing Concentration of Transit Supporting Land Uses.** The existing activity centers in the study area are a central part of a large concentration of land uses that are considered to be transit supporting (high-density housing, commercial and retail). In fact, roughly 30 percent of the land area within the study area falls into this category. Patterns of transit supporting land uses are concentrated along the Santa Monica Boulevard/Wilshire Boulevard corridors. A lesser concentration is evident along a southern oriented Venice Boulevard corridor.

5. **High Study Area Population and Employment Densities Support Transit.** Population and employment densities in the study area are the highest within the metropolitan region, averaging approximately 13,883 persons per square mile and 9,167 employees per square mile.

6. **There is a History of Transit Usage in the Study Area.** Existing transit usage within the study area is proportionally higher than any other area in Los Angeles County (13.64 percent for the study area versus 6.8 percent for the County). Because there is a large base of existing transit service and transit patrons, increasing the transit mode share through increased service would represent a natural extension of existing patterns and trends.

7. **There is a Significant Transit Dependent Population in the Study Area.** Part of the underlying reason for high transit usage in the study area is that a significant number of households do not own an automobile and have low incomes. According to the 1990 Census, approximately 18.33 percent of households did not have a vehicle compared to 10.90 percent for the County. The majority of these households are concentrated in the eastern and northeastern portion of the study area. In addition, in 1990, 20.91 percent of the population of the study area was below poverty status compared to 14.76 percent in the County.

8. **Apparent Lack of East-West Transit Service Impairs Mobility for a Significant Proportion of the Study Area Population.** Travel to work time comparisons of various communities within the study area strongly suggests that communities in the Mid-City

portion of the study area (eastern half) are not served by an efficient transit system. Travel to work times are longer than travel to work times in the Westside portion of the study area. This differential strongly suggests that socioeconomic mobility is greatly impaired for residents in the eastern portion of the study area because they cannot conveniently access (via transit) jobs, educational facilities, cultural facilities, and services that are largely concentrated in the western portion of study area.

9. **The Study Area Is Expected to Continue to Capture a Large Share of Regional Population and Employment Growth.** Population and employment forecasts to the year 2020 adopted by the Southern California Association of Governments clearly suggest that the study area will capture a large share of growth over the next 20 years. This growth will place further demands on transit service and well as result in increasing congestion on local roadways and regional highways serving the study area.

10. **Continued Growth in the Business Services Sector (Entertainment and Media Related) Underlies the Future Development Potential in the Study Area.** Growth in the study area will continue to be fueled by the fact that entertainment and media-related businesses are concentrating in the western part of the corridor. Currently, the study area is the center of approximately 1/3 of all new office construction underway in LA County, which makes it the largest office market in Los Angeles. Real estate analysts expect that the demand for production and creative spaces will continue to be robust. The industries and businesses that are attracted to the study area are those that are expected to be the foundation of the local and regional economy for many years into the future.

11. **There are Substantial East-West Travel Patterns that are Not Currently Served by a High Capacity Transit System.** Travel patterns currently indicate that the study area is a primary attraction for work trips with origins in the West and East San Fernando Valleys. A simplified "spider network" of travel patterns derived from origin-destination data in the LACMTA Travel Model suggests north-south travel patterns from the San Fernando Valley convert to east-west demand within the study area. The spider network for 1997 and 2020 conditions both indicate there is strong east-west travel demand along major east-west corridors: Santa Monica Boulevard, Wilshire Boulevard, Santa Monica Freeway and Exposition/Venice Boulevards. None of these corridors are currently served by a high capacity transit system.

12. **Peak Hour Congestion on Study Area Roadways Underlies Need for Transit Improvements.** There is substantial peak hour congestion in the northern portion of the study area. Vehicular travel to the East and West San Fernando Valleys must ultimately pass through the Sepulveda or Cahuenga passes. Access patterns to these routes are congested during the peak travel hours as motorists attempt to pass northward at either the western or eastern ends of the study area.

13. **Local Policies are Oriented Toward Demand Management and Transit Solutions rather than on Physical Roadway Improvements.** Because of the level of buildout and density within the study area, local jurisdictions have generally determined through their local policies that congestion relief improvements should focus on travel demand management rather than on physical improvements such as widening and new roadways.

In a number of cases, local communities desire to eliminate cut through and neighborhood traffic or to support more livable downtown or commercial areas, are supporting initiatives to limit roadway capacity or further slow traffic flow; thus leaving transit improvements as one of the only viable remaining alternatives to reduce traffic volumes and congestion-related delays.

S.4 Corridor Recommendations

Based on the "spider network" analysis (1997 & 2020), there are at least three major east-west corridors:

1. The *Wilshire Corridor* extends 14 miles generally along Wilshire Boulevard from the current Metro Red Line station at Wilshire / Western to downtown Santa Monica.

    a. In the long-term, the recommended strategy is to incrementally extend the Metro Red Line subway westerly from Wilshire / Western. This proposal will require lifting the gas prohibition zone and rescinding Prop A or devising an alternative funding strategy. Based on technical investigations by the KORVE team and those of the Tunnel Advisory Panel, it is technically feasible to safely construct a tunnel for heavy rail transit service through the gas zone.

    b. In the short-term, Bus Rapid Transit (BRT) should be vigorously pursued during Phase 2 of this Study to San Vicente Boulevard when environmental consequences of the selected alternatives will be thoroughly analyzed. In Phase 3, the Final Environmental Documentation will be completed, as well as the Preliminary Engineering. If the Wilshire BRT still looks promising at that point, the final implementation decision should await the final results from the Metro Rapid Bus Phase 1 & 2 Demonstration Project. At the current time, the KORVE team does not have sufficient information to accurately discern the benefits of BRT vis-à-vis Metro Rapid Bus. In other words, are the speed and ridership increases great enough to warrant a permanent transformation of the use, appearance, and function of Wilshire Boulevard, which will occur if BRT is implemented?

2 The *Exposition Corridor* represents a distinct corridor from either the Santa Monica Boulevard Corridor or the Wilshire Corridor, based on investigations to date: it traverses extensive areas targeted by local jurisdictions for economic revitalization; is projected to experience higher than average population and employment growth; and suffers from comparatively poor transit service. It is recommended that both LRT and BRT full-length options be carried forward into Phase 2 with considerations of Minimal Operable Segments to Crenshaw, La Cienega and Venice/Robertson. Initial ridership estimates indicate either option has similar potential, based upon the following key underlying assumptions:

    - Full signal pre-emption at north-south cross streets (for railroad ROW portion of route).

- Top speed of 55 mph in certain segments of the route that are wide and protected.

Key issues to be resolved in Phases 2 & 3 are:

1. How to protect at-grade crossings for buses traveling at up to 55 mph?
2. How to mitigate traffic congestion caused by full signal pre-emption strategy for the LRT and BRT?
3. How to deliver a cost-effective project while avoiding or minimizing localized impacts, such as night-time noise and pedestrian/vehicular safety concerns?

3 *Santa Monica Boulevard Corridor* has long-term merit as a potential transit corridor. The corridor exhibits high travel demand and is lined with transit-supportive land uses. It is recommended that the Santa Monica Boulevard Corridor be further investigated as part of the LRP update.

S.5 Overall Study Area Implementation Strategy

Assuming that the Metro Rapid Bus Project is successful and that Wilshire BRT represents significant benefits above and beyond Metro Rapid Bus, it is anticipated that BRT would be implemented in phases:

1. Wilshire/Vermont to Wilshire/San Vicente (to easterly boundary of Beverly Hills);
2. Beverly Hills westerly boundary (LA Country Club) to Wilshire/Centinela (Santa Monica easterly boundary);
3. Beverly Hills segment; and
4. Santa Monica segment, Centinela to Wilshire/Ocean.

In the long-term (if and when the subway is extended) a decision would have to be made regarding continuation and/or modification of the BRT service.

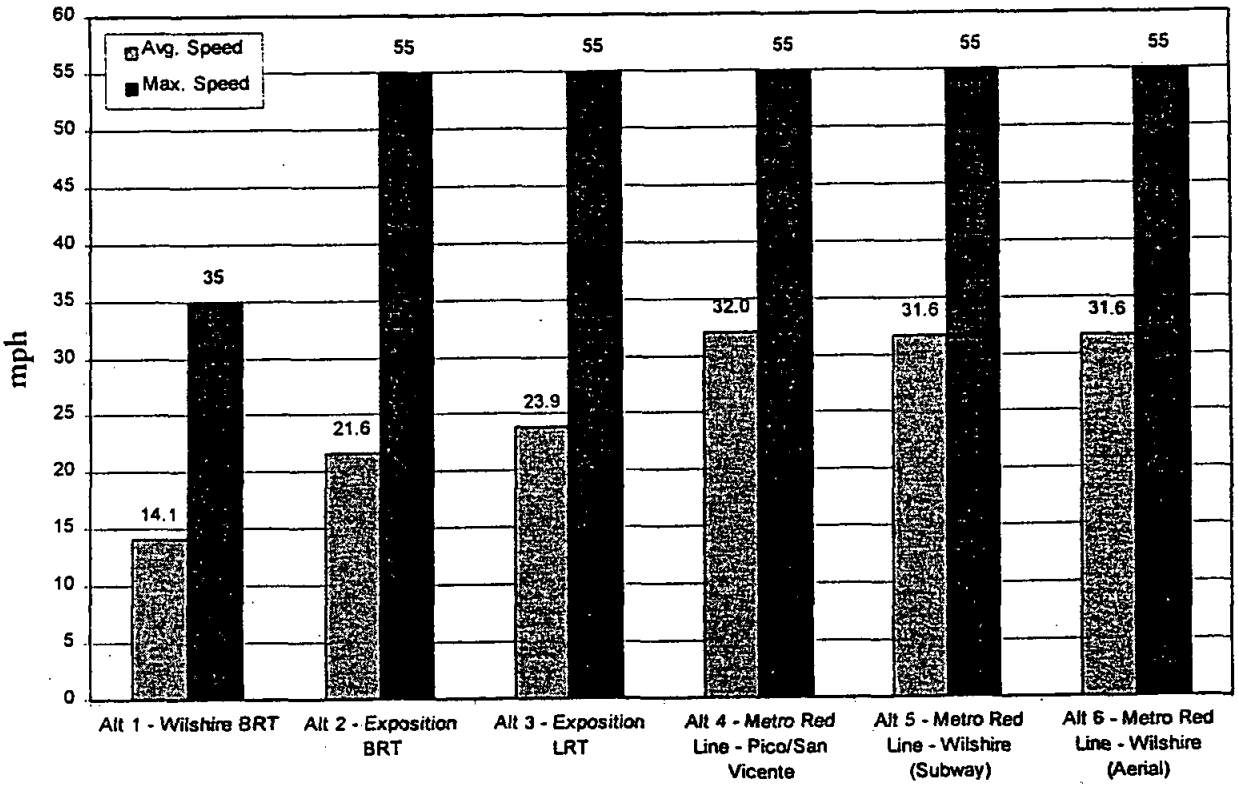
With regard to the Exposition Corridor, the results of Phase 2 – in conjunction with overall MTA funding capability – will provide sufficient information to decide between BRT and LRT. The choice of either alternative will potentially represent both the short and long-term solution, since both represent major investment commitments.

For the mid-term (6-10 years), the combination of the Wilshire BRT with either the Exposition BRT or LRT (choice to be determined in Phase 2), may provide the most cost-effective improvement strategy for the study area.

S.6 *Technical Overview*

Alternatives Considered. In addition to the required No Action and Transportation System Management Alternatives, this MIS examines six fundamental transit proposals to serve the Mid-City/Westside Study Area. As noted previously, these alternatives have evolved from previous studies, primarily the 1992 Re-evaluation Report/Final SEIS/SEIR for the Mid-City Segment; 1994 Metro Red Line Segment 3/Mid-City Extension Reassessment Study; 1996 Mid-City Alternative Alignment Gas Explorations Study; and the 1998 Regional Transit Alternatives Analysis. This MIS is re-evaluating and refining these earlier identified alternatives. The alternatives vary in route, technology, and vertical alignment. A comparison of peak travel speeds is shown graphically in Figure S.1. The route layouts for each alternative are provided below in Figures S.2 through S.7.

Figure S.1
Average and Maximum Speeds



* Note: Average speed calculated for Exposition BRT and LRT were calculated for speeds along the Exposition ROW Corridor plus values for on-street, mixed flow travel in Santa Monica and Downtown Los Angeles.

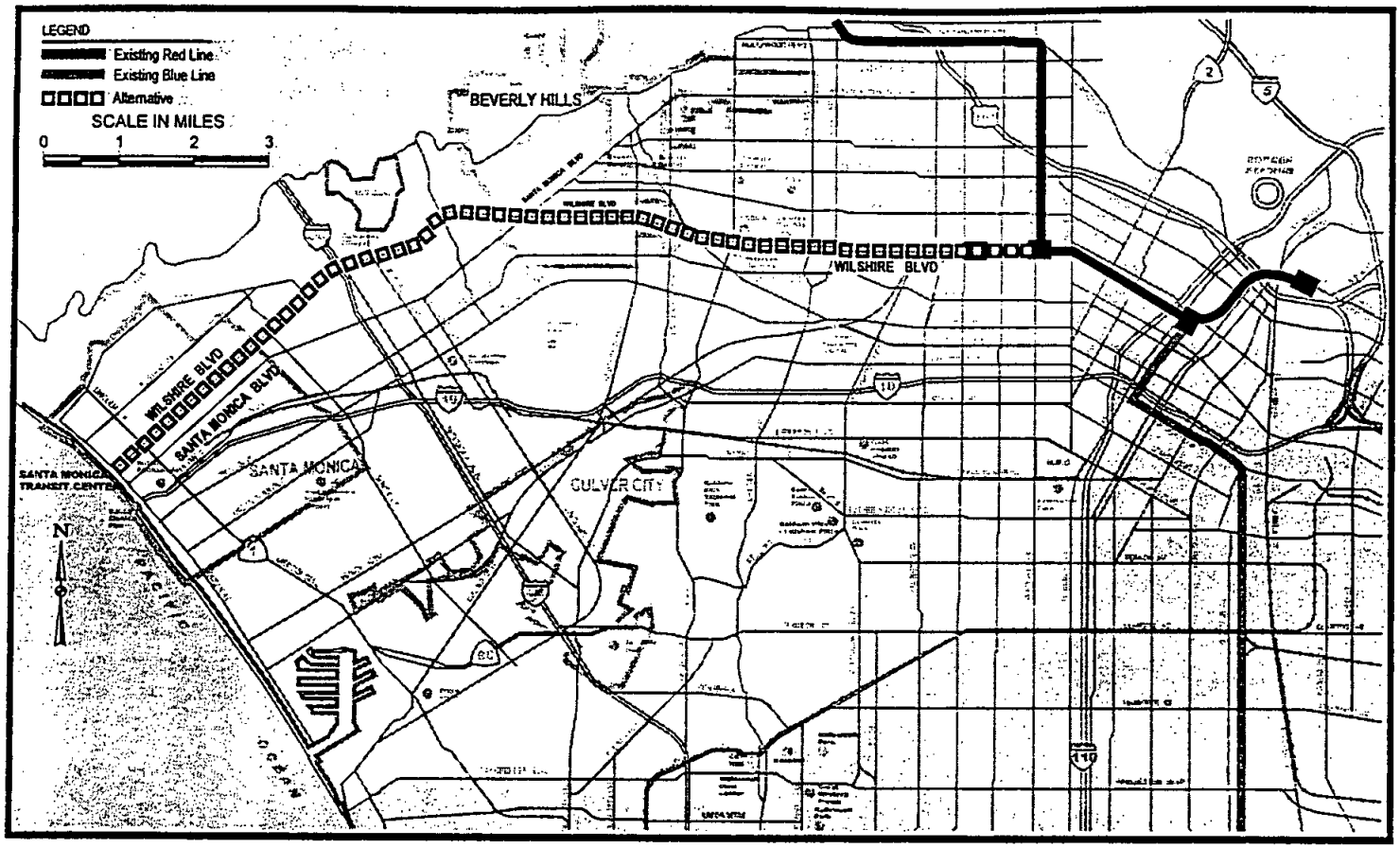


Figure S.2
Alternative 1-Wilshire BRT

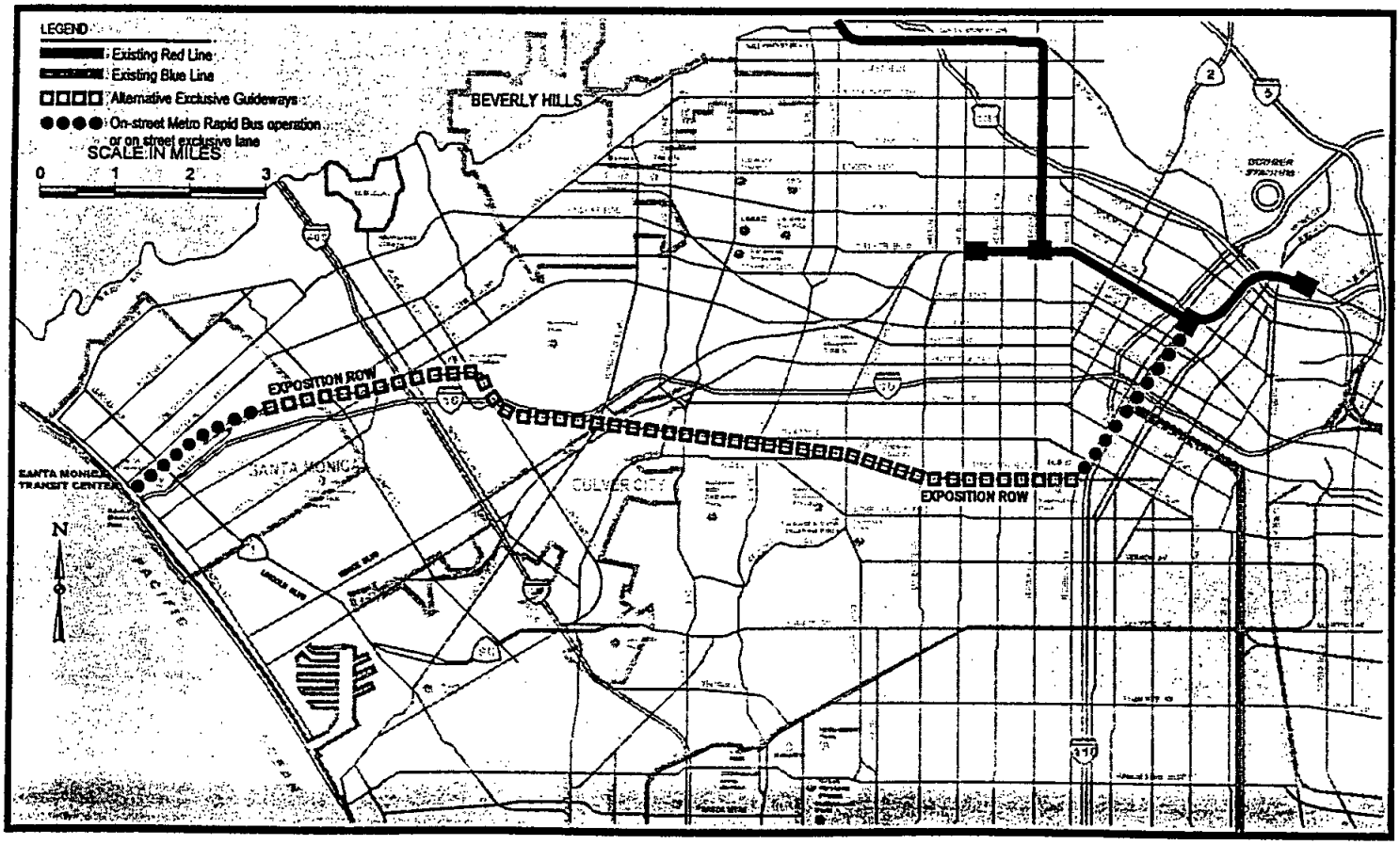


Figure S.3
Alternative 2-Exposition BRT

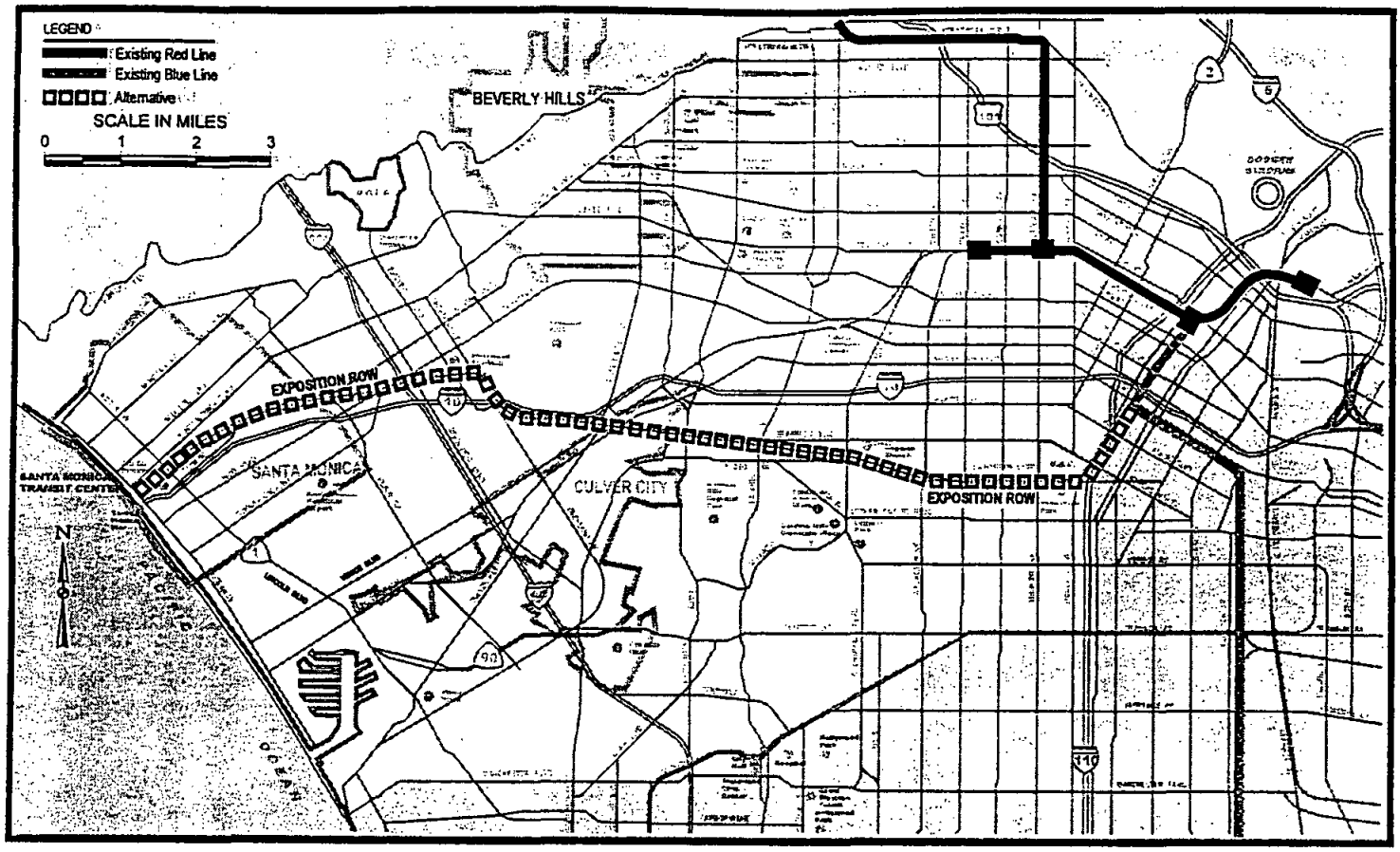


Figure S.4
Alternative 3-Exposition LRT

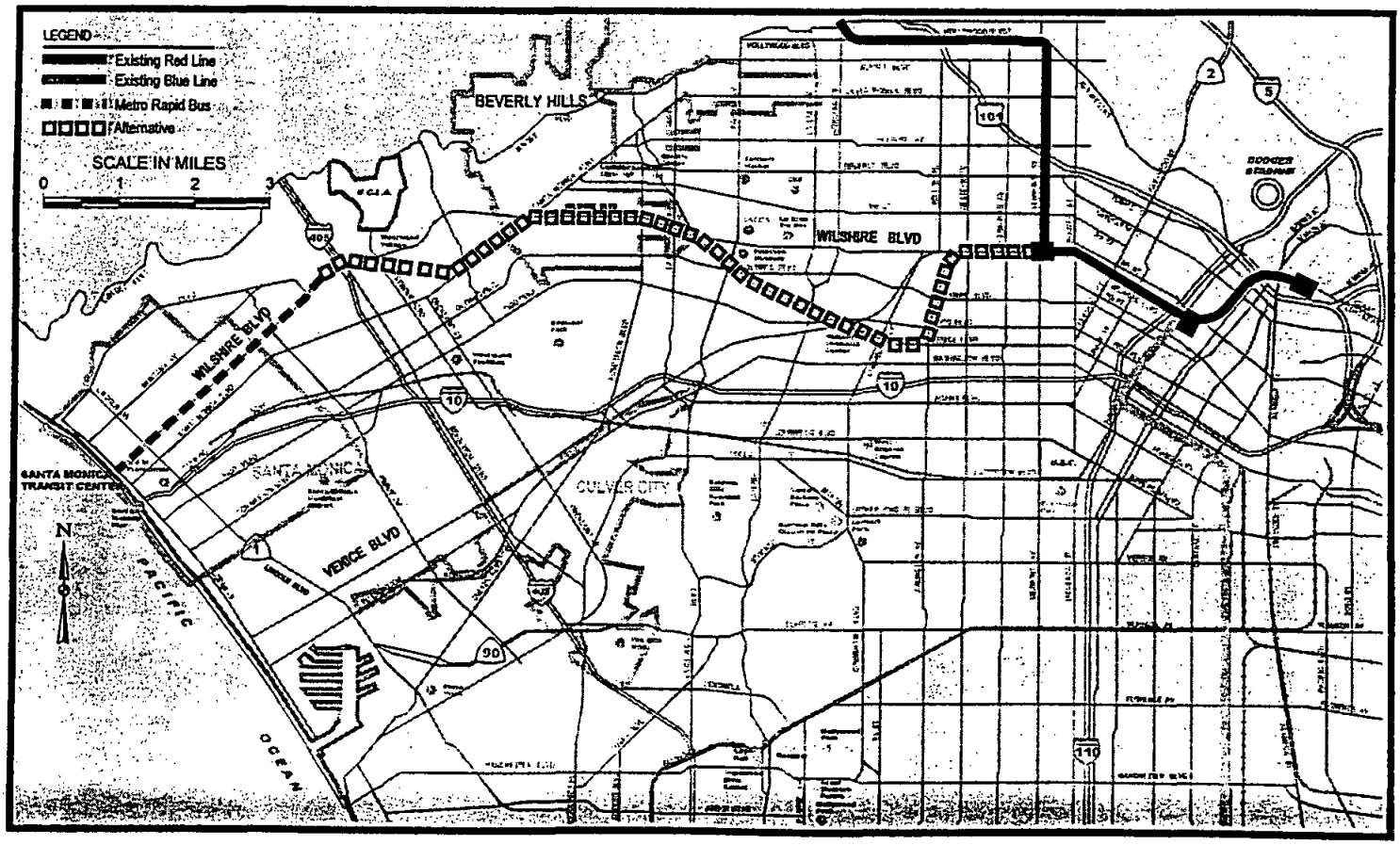


Figure S.5
Alternative 4-Mid-City HRT via Pico/San Vicente

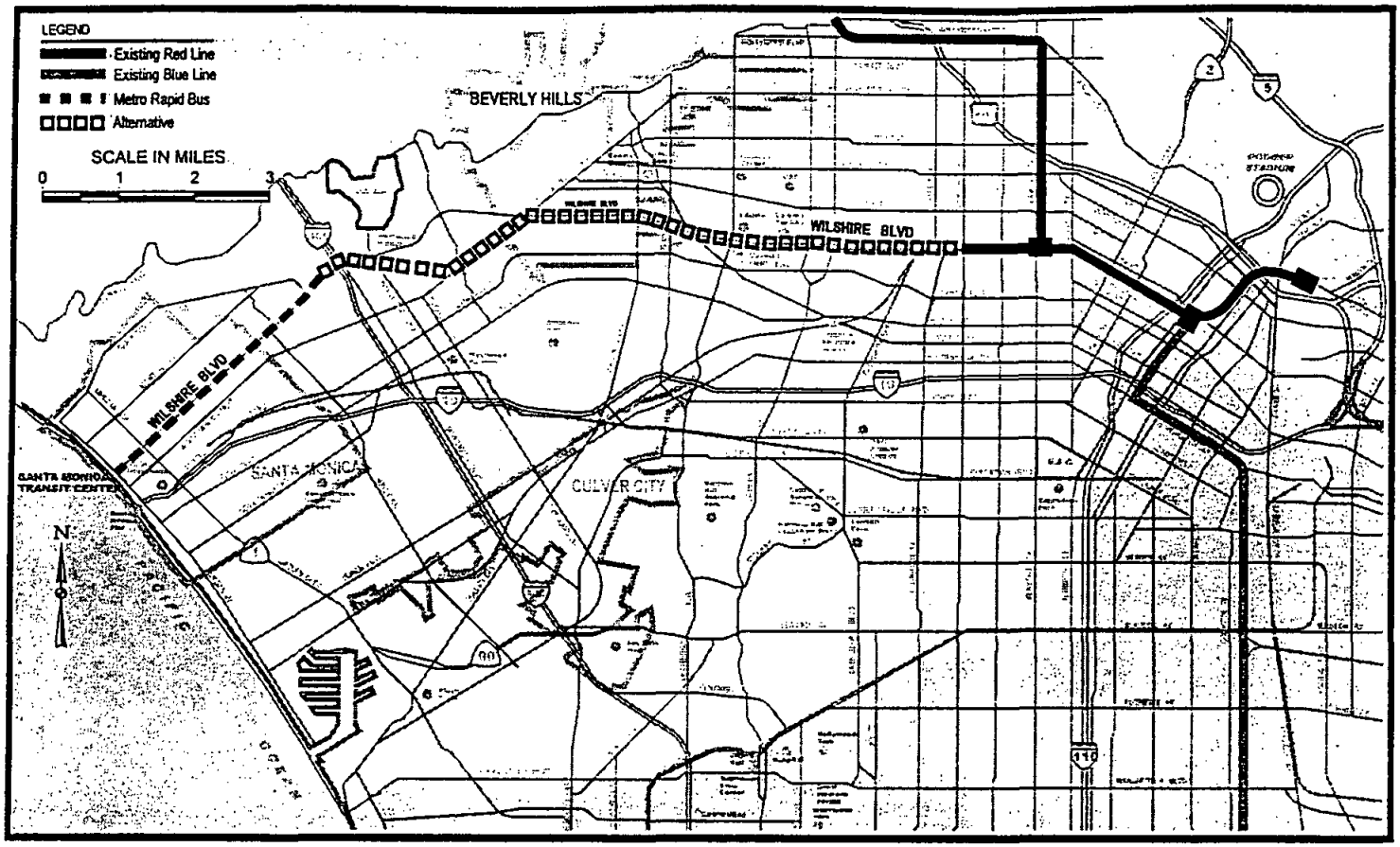


Figure S.6
Alternative 5-Metro Red Line along Wilshire (Subway)

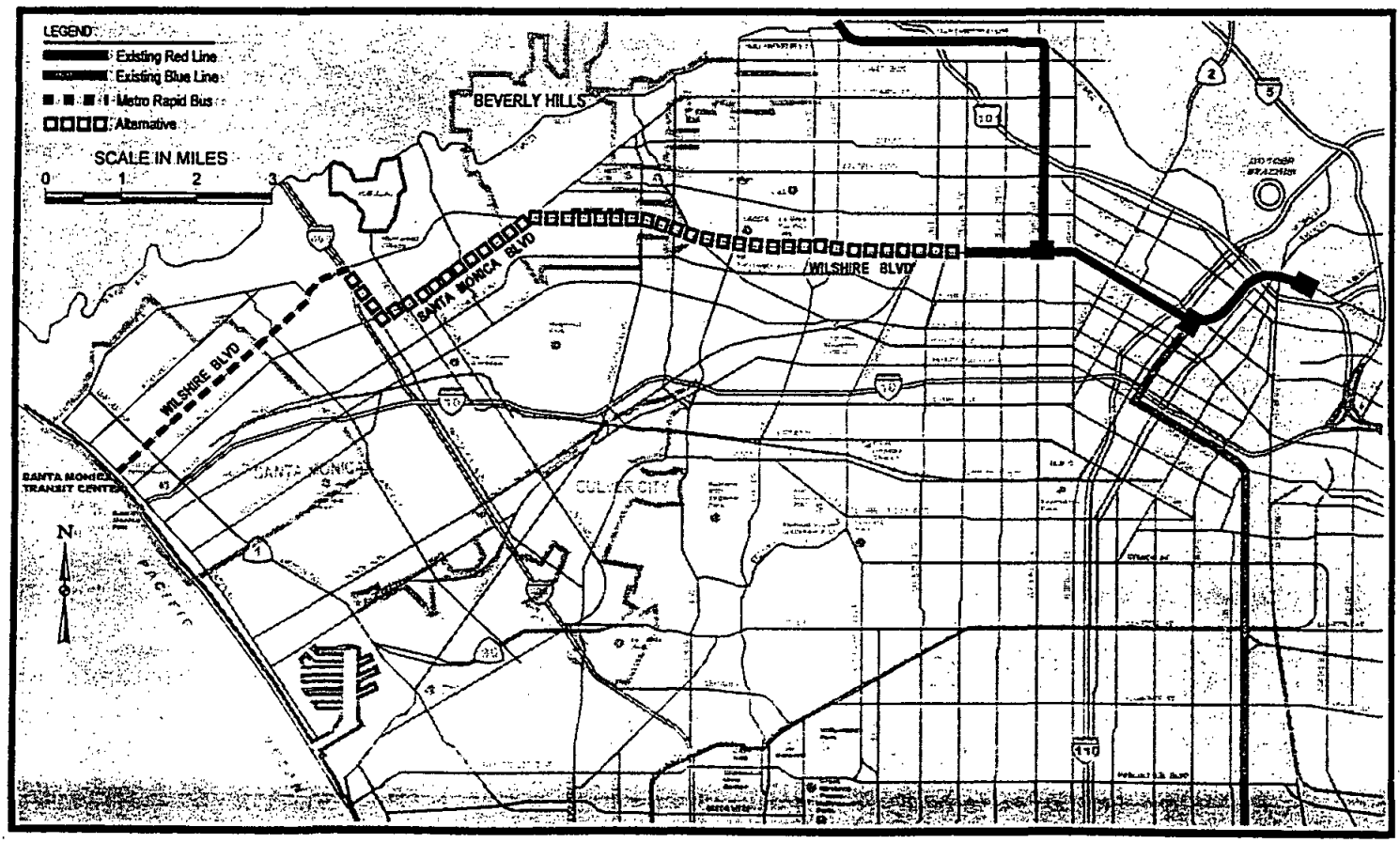


Figure S.7
Alternative 6 - Wilshire (Aerial) HRT

S.7 Evaluation

The alternatives have been evaluated from three distinct perspectives: engineering, environmental, and community response/perception. Findings from each of these perspectives are presented in Table S.1. In addition, Table S.2 presents a summary matrix that compares and contrasts the alternatives (including TSM) for the following key operating costs:

- Capital Cost (full-length and alternative length options);
- Annual Operating Cost;
- New Daily Transit Trips;
- Daily Fixed Guideway Boardings;
- Annualized Cost per New Daily Transit Trip;
- Average and Maximum Speed;
- Travel Time (downtown Los Angeles to downtown Santa Monica);
- Environmental Issues (Qualitative Summary Indicator); and
- Community Concerns (Qualitative Summary).

Table S.1
Evaluation of Considered Alternatives

Alternatives	Engineering	Environmental	Community Response/Perception
#1 Wilshire BRT	• Requires removal of traffic lane in each direction and/or parking • Minimal investment in new traffic signals • Possible reconstruction of median required • Each station requires two separate platforms	• Loss of traffic lanes in Wilshire • Interference/delays to north-south traffic • Some loss of street trees in median possibly required • Highly responsive to transit-supportive land uses	• Poor image as less clean and safe, compared to rail technologies • Traffic diversion into residential neighborhoods from reduced mixed flow lanes • Reconfiguration and reconstruction of landscaped median • Potential to merely shift ridership from current buses
#2 Exposition BRT	• Relatively simple grading and paving required • Fits within existing right-of-way • Several grade separations would need to be built • Maintenance of buses could be spread to several existing facilities	• Interference/delays to north-south traffic • Loss of some street trees in median • Potential impacts to adjacent land uses • Supportive of targeted redevelopment/economic revitalization areas	• Poor image as less clean and safe, compared to rail technologies • Safety concerns near schools and homes and at major intersections • Potential to merely shift ridership from current buses • Bus does not provide adequate capacity compared to LRT

			• Bus more flexible because it can detour around sensitive areas • General environmental concerns including noise, crime, traffic at stations
#3 Exposition LRT	• Fits within existing ROW for majority of route. On-street sections (i.e. at western terminus) would require removal of traffic lane • Several aerial structures would need to be built • A light maintenance yard could be built on MTA property serving both Exposition and Long Beach Blue lines	• Interference/delays north-south traffic • Loss of some street trees in median • Change to visual setting due to overhead lines and support poles • Potential impacts to adjacent land uses • Changes to local circulation due to safety fencing along ROW • Supportive of targeted redevelopment/economic revitalization areas	• Safety concerns for pedestrians and opposing traffic • Noise impacts on nearby residents especially from horns • Vibration effects on nearby residents • Perception that LRT is more appealing than BRT in attracting new riders • LRT needed to provide capacity for ridership • General environmental concerns including noise, crime, traffic at stations
#4 Wilshire HRT - Pico/San Vicente	• Longer alignment than the Wilshire HRT alternative • More wear and tear due to tight turning radii • Additional ventilation required at stations for H_2S and Methane gases • Use of Advanced Tunnel Boring Machine with a full faced cutting wheel would facilitate placement of tunnel sealer	• Potential vibration, ground-borne noise and settlement effects • Exposure to hazardous gases, but can be mitigated • Potential interference with underground utilities • Highly responsive to transit-supportive land uses	• Not worth studying because of: - gas hazards - federal referendum - Proposition A • If pursued, would cause Wilshire traffic and parking impacts
#5 Wilshire HRT - Subway	• Construction potentially close to major buildings along route • Additional ventilation required at stations for H_2S and Methane gases • Use of Advanced Tunnel Boring Machine with a full faced cutting wheel would facilitate placement of tunnel sealer	• Potential vibration, ground-borne noise and vibration effects • Exposure to hazardous gases, but can be mitigated • Potential effect on la Brea Tar Pits and paleontological resources • Potential interference with underground utilities	• Not worth studying because of: - gas hazards - federal referendum - Proposition A • If pursued, would cause Wilshire traffic and parking impacts

		• Highly responsive to transit-responsive land uses	
# 6 Wilshire HRT - Aerial	• Significantly cheaper to build than subway • Would require some reconfiguration of streets at stations • Would require property displacements on both sides of Wilshire Blvd. in station areas.	• Loss of street trees in median • Significant alteration of visual setting, streetscape, and pedestrian experience due to scale, mass, and shadows in impacts • Alteration of views and visual encroachments for building occupants facing Wilshire	• No support • Limited support for an aerial monorail. Some opposition to this concept as well, monorail has same impacts as HRT in areas of property displacement, median reconstruction, loss of left turns. Visual impacts are somewhat less due to smaller guideway structure.

S.8 Conclusion

Basis for Recommendations

Alternative 1 – Wilshire Bus Rapid Transit (BRT)

- Has potential as interim solution to feed Metro Red Line and serve high veolume Wilshire Corridor at low cost.
- Allows faster speeds than Metro Rapid Bus in future as congestion grows
- Further detailed analysis warranted to see how inpacts can be mitigated

Alternative 2 – Exposition Bus Rapid Transit (BRT)

- Offers significant long-term transportation benefits of community impacts can be resolved
- Connection to Downtown Los Angeles, USC, Exposition Park and Harbor Freeway Transitway from key centers in Santa Monica, West Los Angeles and Culver City
- Achieves similar ridership to LRT at less cost

Alternative 3 – Exposition Light Rail Transit (LRT)

- Offers significant long-term transportation benefits of community impacts can be resolved
- Direct connection via Blue Line to Downtown Los Angeles, USC, Exposition Park and Harbor Freeway Transitway from key centers in Santa Monica, West Los Angeles and Culver City

- Less frequent disruption of intersections and adjacent properties than BRT
- Has capacity to serve post-2020 demand

Alternative 4 – Wilshire Heavy Rail Transit (HRT) via Pico/San Vicente

- Not currently feasible due to funding restrictions
- Longer route to Westside than Wilshire Corridor
- Lower density and fewer activity centers served than Wilshire Corridor

Alternative 5 – Wilshire Heavy Rail Transit (HRT) Subway

- Not currently feasible due to funding restrictions and Methane Gas Prohibition Zone
- Underground gas issue may have technical solutions that would permit construction of a subway
- Further analysis of this alternative should be undertaken in Long Range Plan due to high densities and transit use

Alternative 6 – Wilshire Heavy Rail Transit (HRT) Aerial

- Achieves same ridership at lower cost than subway alternative, but would alter the character of Wilshire Boulevard in a permanent and unaccpetable manner
- Considered in 1987 and deleted from further consideration due to visual impacts and intense community opposition
- Monorail option would have similar negative environmental consequences and would attract fewer riders than HRT. No acceptable site has been identified for the necessary storage and maintenance yard

Recommendations

1. Wilshire Corridor
   - Carry forward BRT into environmental clearance to San Vicente
   - Further consideration of Wilshire subway in Long Range Plan

2. Exposition Corridor
   - Carry forward both BRT and LRT into environmental clearance to Santa Monica, with consideration of phased lengths to Crenshaw, La Cienega and Venice/Robertson

ALTERNATIVE	CAPITAL COST (MILLIONS IN 1999 DOLLARS)				ANNUAL OPERATING COST (MILLIONS IN 1999 DOLLARS)		NEW DAILY TRANSIT TRIPS		DAILY FIXED GUIDEWAY BOARDINGS	ANNUALIZED COST PER NEW DAILY TRANSIT TRIP	
	FULL LENGTH	ALTERNATIVE LENGTH OPTION			COMPARED TO NO BUILD	COMPARED TO TSM	COMPARED TO NO BUILD	COMPARED TO TSM		COMPARED TO NO BUILD	COMPARED TO TSM
TSM	$92	N/A	N/A	N/A	$24	N/A	6,600	0	N/A	$16	0
1 Wilshire BRT	$169 To Santa Monica	$62 To San Vicente	N/A	N/A	$41	$17	8,300	1,700 (10,600)	11,000 (34,000)	$24	$60
2 Exposition BRT	$188 To Santa Monica	$76 To La Cienega	$87 To Venice Blvd	N/A	$32	$7	12,400	5,800	23,000	$14	$13
3a Exposition LRT (Baseline)	$589 To Santa Monica	$178 To Crenshaw	$312 To La Cienega	$398 To Venice Blvd	$45	$21	15,300	8,700	38,600	$21	$25
3b Exposition LRT (Minimum Grade Separations)	$431 To Santa Monica	$135 To Crenshaw	$209 To La Cienega	$227 To Venice Blvd	$45	$20	15,300	8,700	38,600	$18	$20
4 Wilshire Blvd HRT Subway (Via Pico/ San Vicente)	$2,643 To Federal	$673 To Pico/ San Vicente	N/A	N/A	$29 (Pico/ San Vicente)	$5 (Pico/ San Vicente)	10,400 (Pico/ San Vicente)	3,700 (Pico/ San Vicente)	11,400 (Pico/ San Vicente)	$28 (Pico/ San Vicente)	$50 (Pico/ San Vicente)
5 Wilshire Blvd HRT Subway (Via Wilshire Blvd)	$2,469 To Federal	$691 To Fairfax	N/A	N/A	$41	$17	15,300	9,200	33,500	$50	$75
					$31 (Fairfax)	$7 (Fairfax)	8,800 (Fairfax)	2,200 (Fairfax)	16,800 (Fairfax)	$40 (Fairfax)	$114 (Fairfax)
6 Wilshire Blvd HRT Aerial (Via Wilshire Blvd)	$1,269 To Sepulveda	$543 To Fairfax	N/A	N/A	$41	$17	15,300 (Est)	9,200 (Est)	33,500 (Est)	$30	$41
					$31 (Fairfax)	$7 (Fairfax)	8,800 (Fairfax)	2,200 (Fairfax)	16,800 (Fairfax)	$29 (Fairfax)	$72 (Fairfax)

NOTE: Brackets [ ] indicate Sensitivity Model Run results assuming full signal preemption.

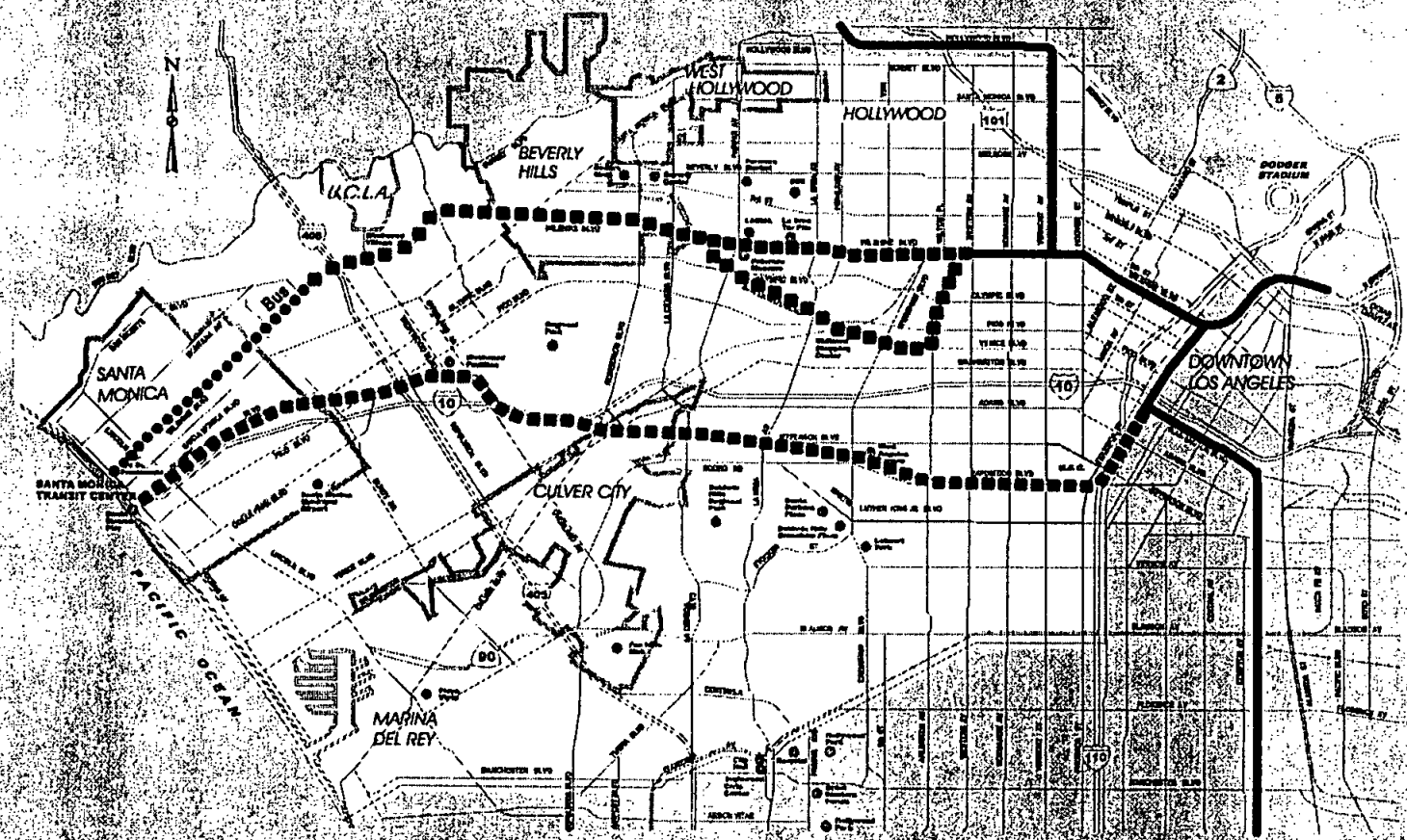
TABLE S.2

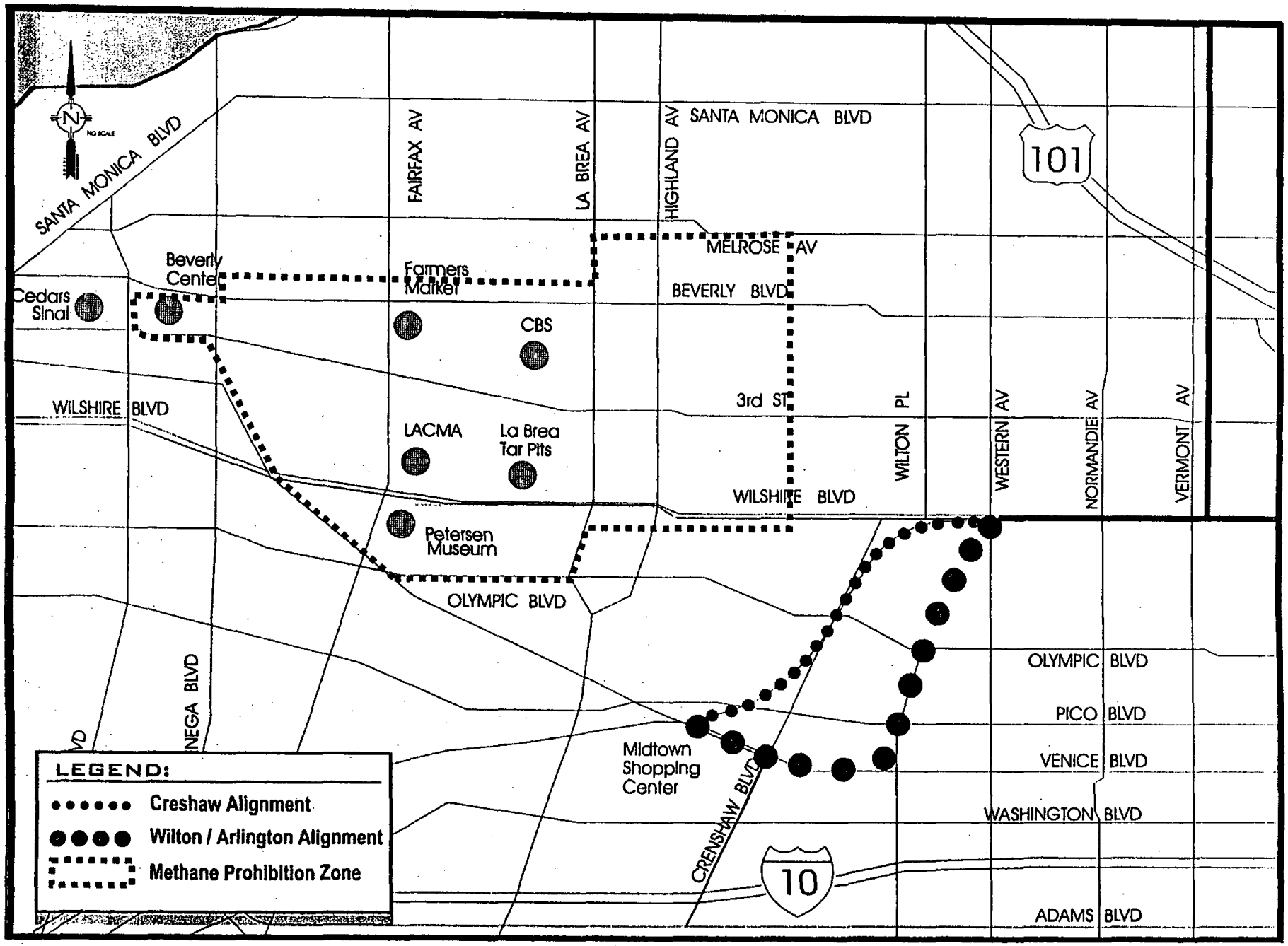
ALTERNATIVES SUMMARY EVALUATION MATRIX

MID-CITY/WESTSIDE TRANSIT CORRIDOR RE-EVALUATION/MAJOR INVESTMENT STUDY SUMMARY OF RESULTS - SLIDE PRESENTATION

Prepared by Korve Engineering, Inc.

February 4, 2000

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Cedars Sinai
CBS
WILSHIRE BLVD
3rd ST
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NORMANDIE AV
VERMONT AV
LACMA
La Brea Tar Pits
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VENICE BLVD
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WASHINGTON BLVD
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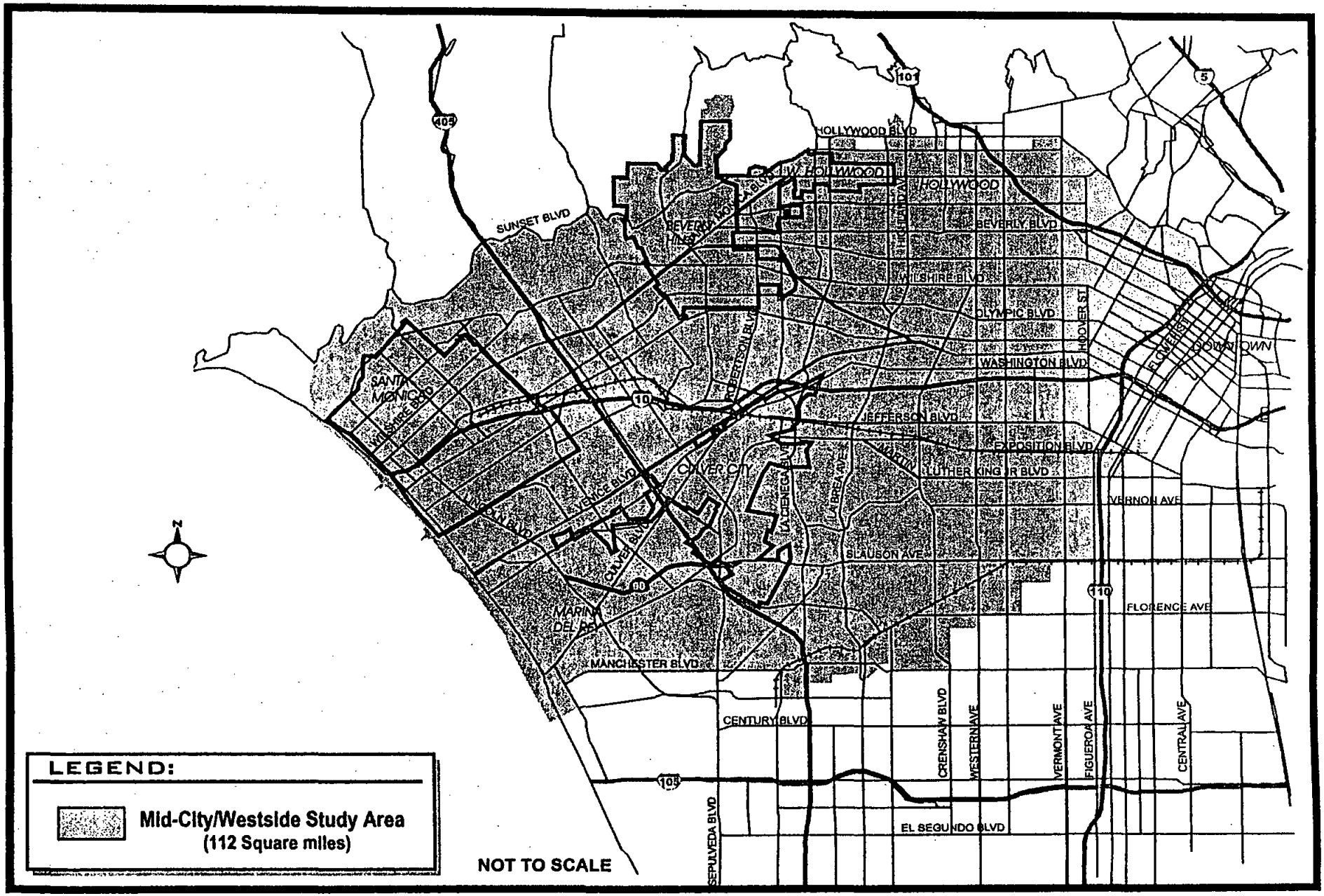
ADAMS BLVD
LEGEND:
Creshaw Alignment
Wilton / Arlington Alignment
Methane Prohibition Zone

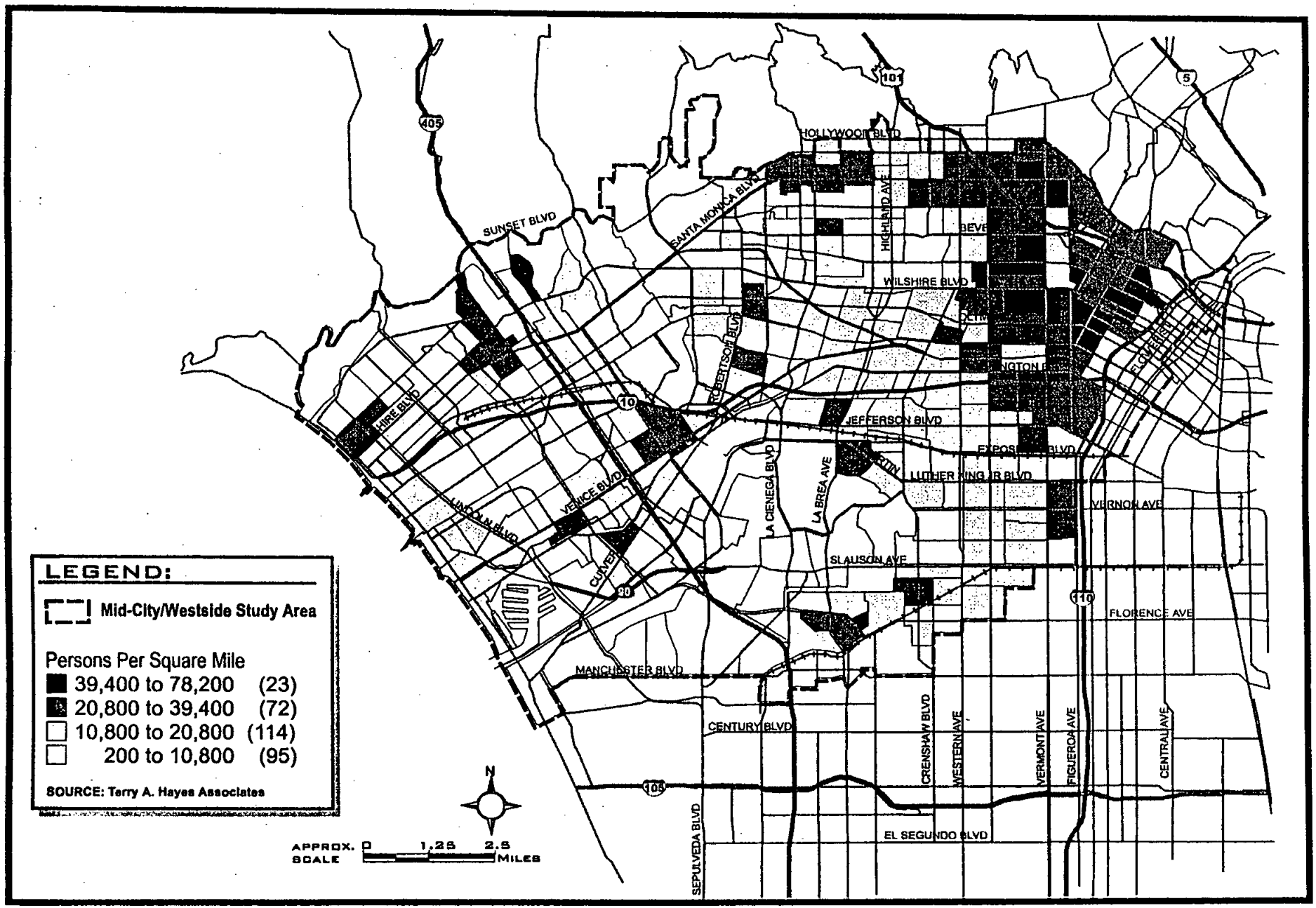

LEGEND:
Mid-City/Westside Study Area
(112 Square miles)
NOT TO SCALE
N
SUNSET BLVD
HOLLYWOOD BLVD
W. HOLLYWOOD
HOLLYWOOD
BEVERLY HILLS
BEVERLY BLVD
WILSHIRE BLVD
OLYMPIC BLVD
WASHINGTON BLVD
SANTA MONICA
JEFFERSON BLVD
EXPOSITION BLVD
CULVER CITY
LUTHER KING JR BLVD
VERNON AVE
SLAUSON AVE
FLORENCE AVE
MARINA DEL REY
MANCHESTER BLVD
CENTURY BLVD
EL SEGUNDO BLVD
SEPULVEDA BLVD
CRENSHAW BLVD
WESTERN AVE
VERMONT AVE
FIGUEROA AVE
CENTRAL AVE
HOOVER ST
ROBERTSON BLVD
LA CIENEGA BLVD
LA BREA AVE
VENICE BLVD
OLYMPIC BLVD
405
10
90
110
105
101
5

PURPOSE & NEED

1. Demographics (1998 & 2020)
   - Population Growth — 1.5 to 1.9 million (27%)
   - Employment Growth — 1.0 to 1.2 million (20%)

2. Transportation Characteristics
   - Home-Work Trip growth (1998-2020) — +41%
   - Zero Auto Households (1990) greater than county average: — 18.3% vs. 10.9%
   - Transit usage (1990) greater than county average: — 13.6% vs. 6.8%

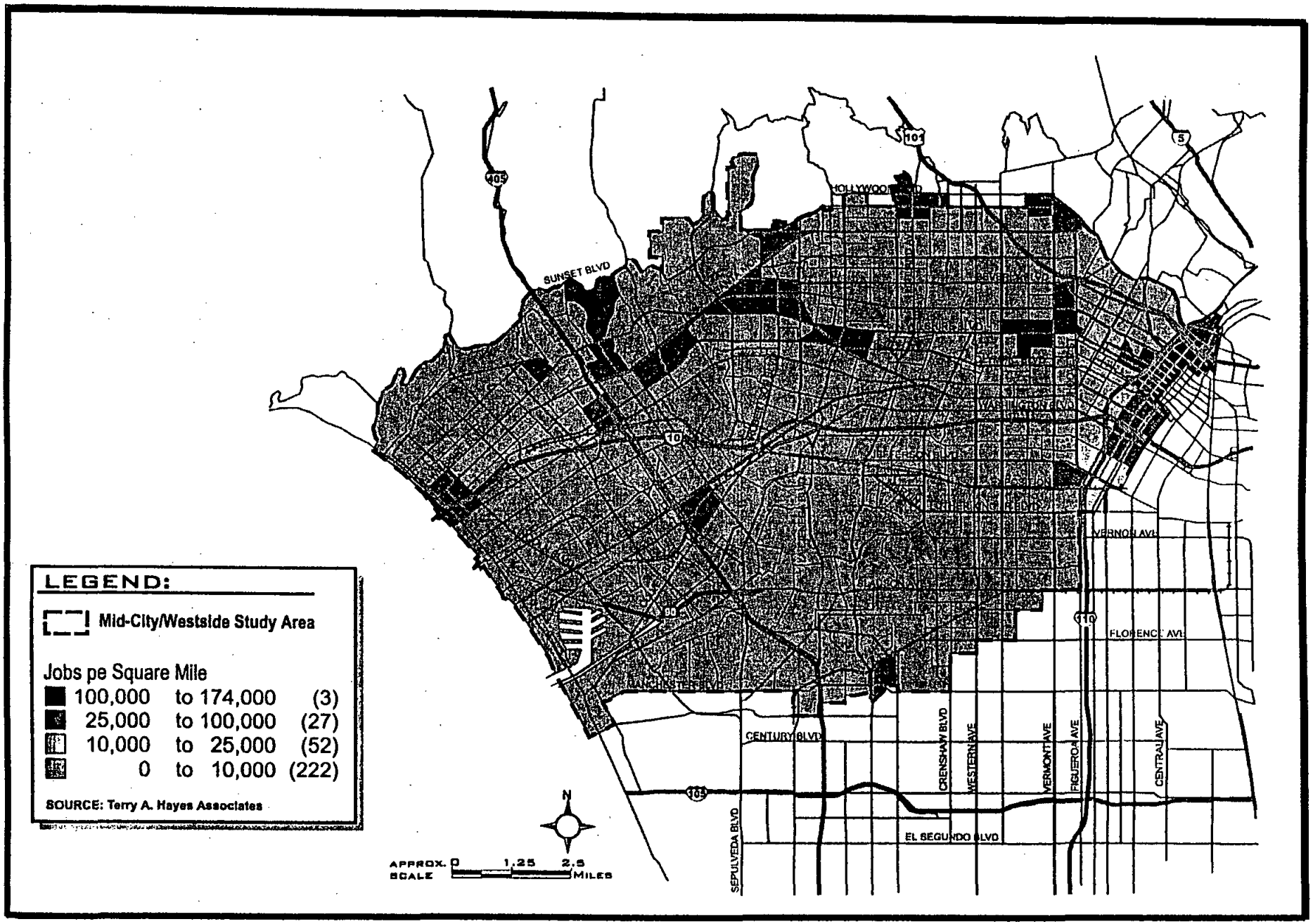
3. Other Key Factors
   - High concentration of region's designated centers
   - No significant East-West transportation improvements committed
   - Existing concentration of transit-supportive land use

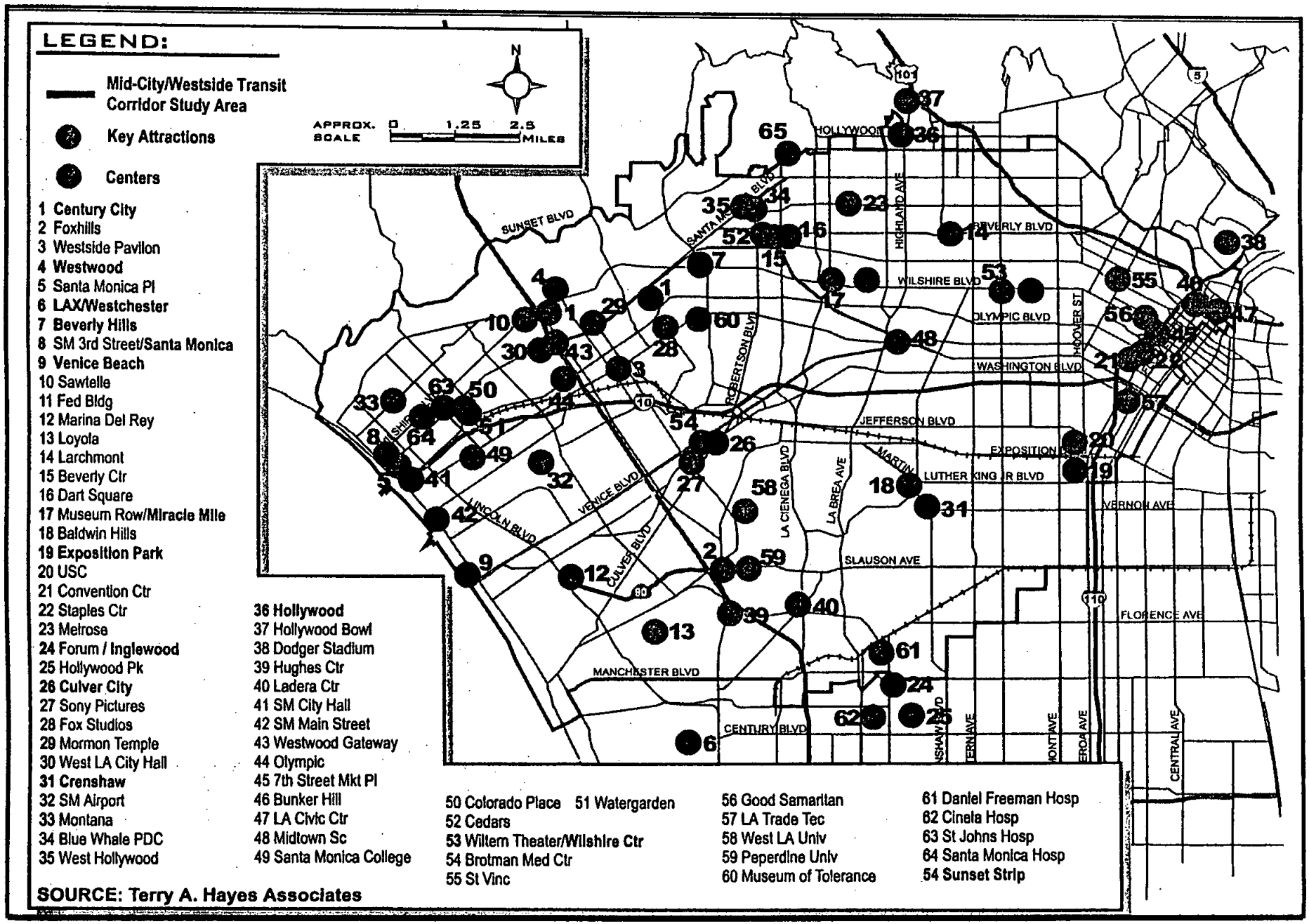


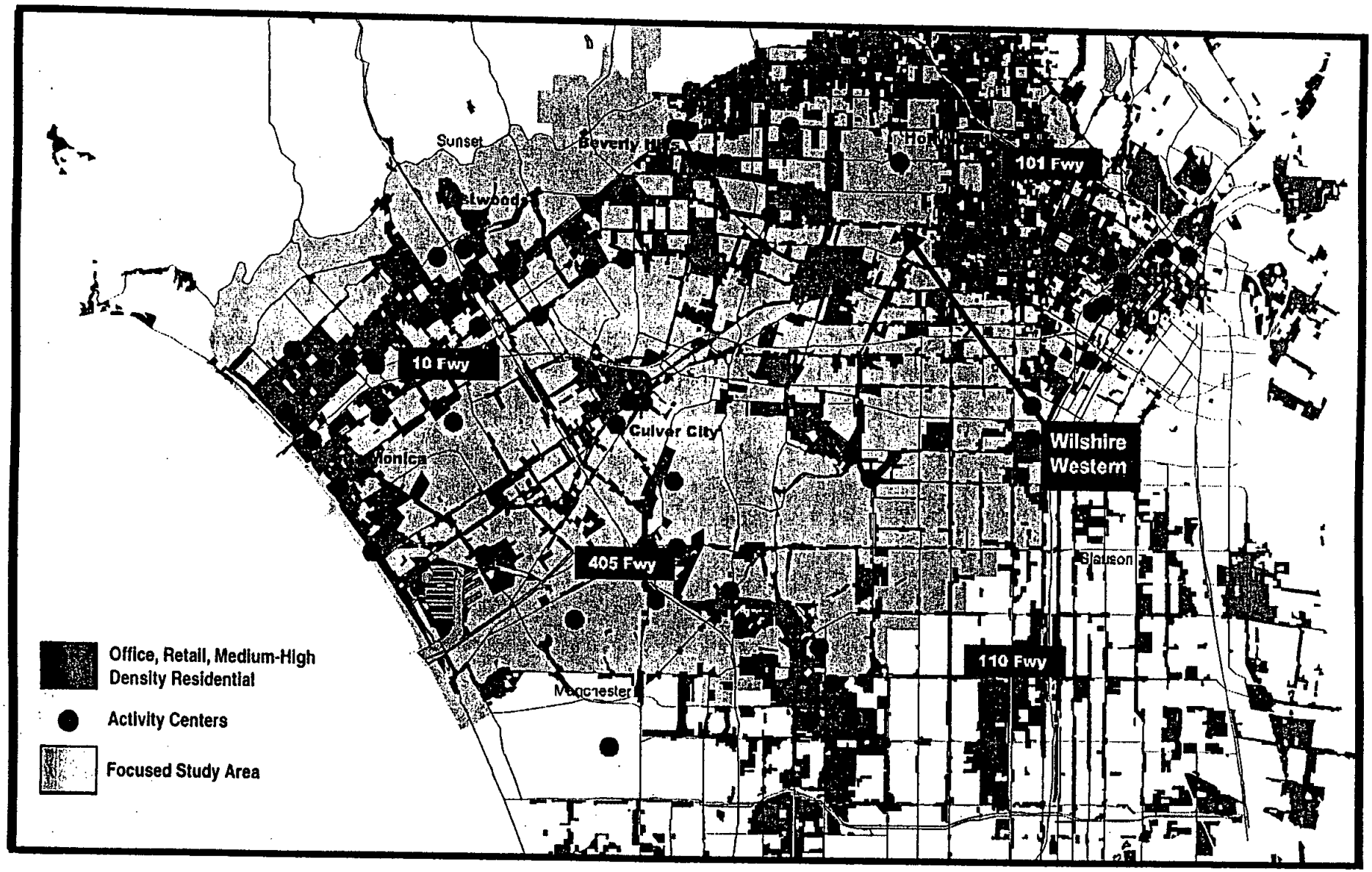
2/4/2000

5

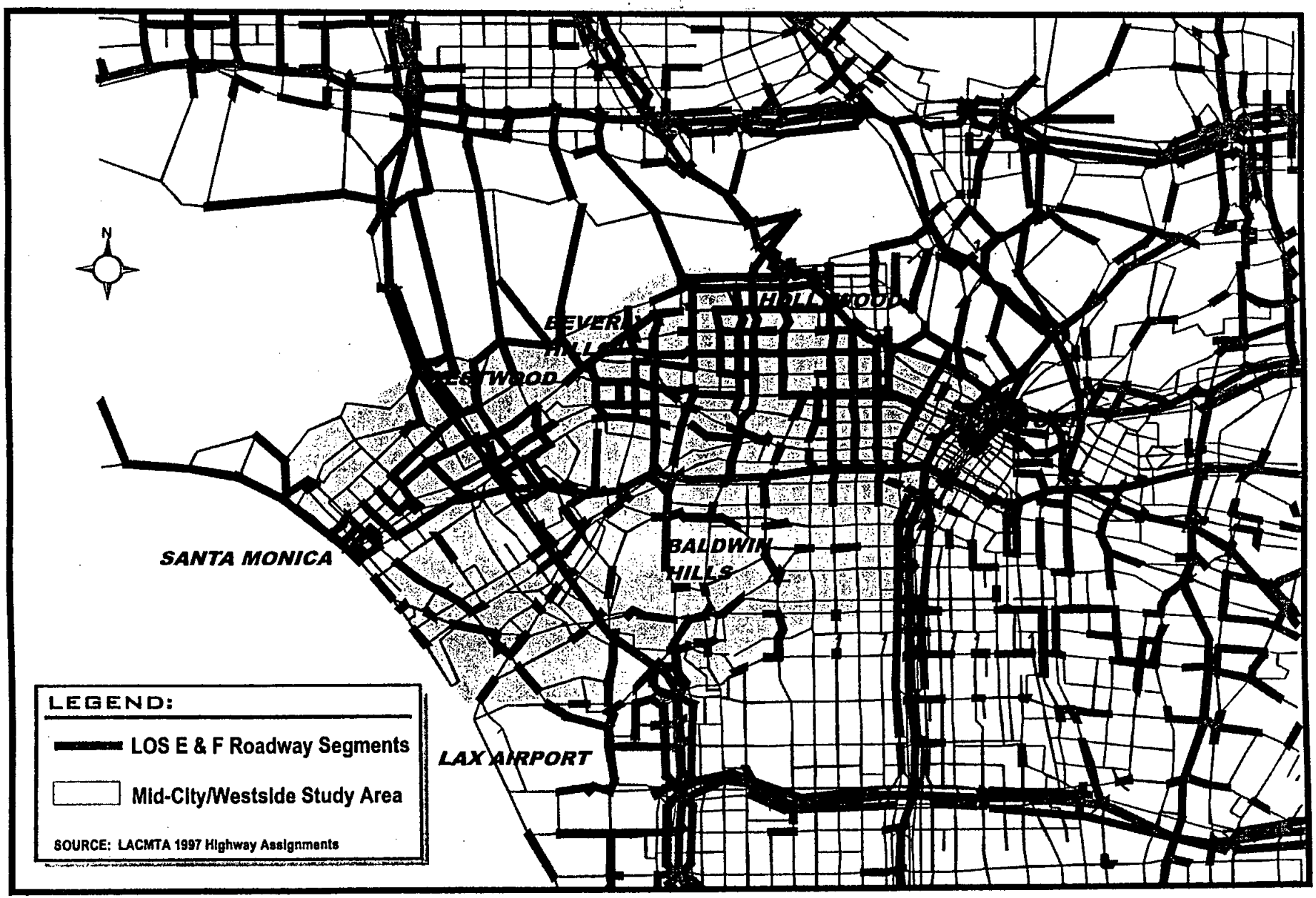
EXISTING POPULATION DENSITY


LEGEND:
Mid-City/Westside Study Area
Jobs pe Square Mile
100,000 to 174,000 (3)
25,000 to 100,000 (27)
10,000 to 25,000 (52)
0 to 10,000 (222)
SOURCE: Terry A. Hayes Associates
APPROX. SCALE
0 1.25 2.5 MILES
N
405
101
5
10
90
110
105
SUNSET BLVD
HOLLYWOOD BLVD
VERNON AVE
FLORENCE AVE
CENTURY BLVD
CRENSHAW BLVD
WESTERN AVE
VERMONT AVE
FIGUEROA AVE
CENTRAL AVE
SEPULVEDA BLVD
EL SEGUNDO BLVD

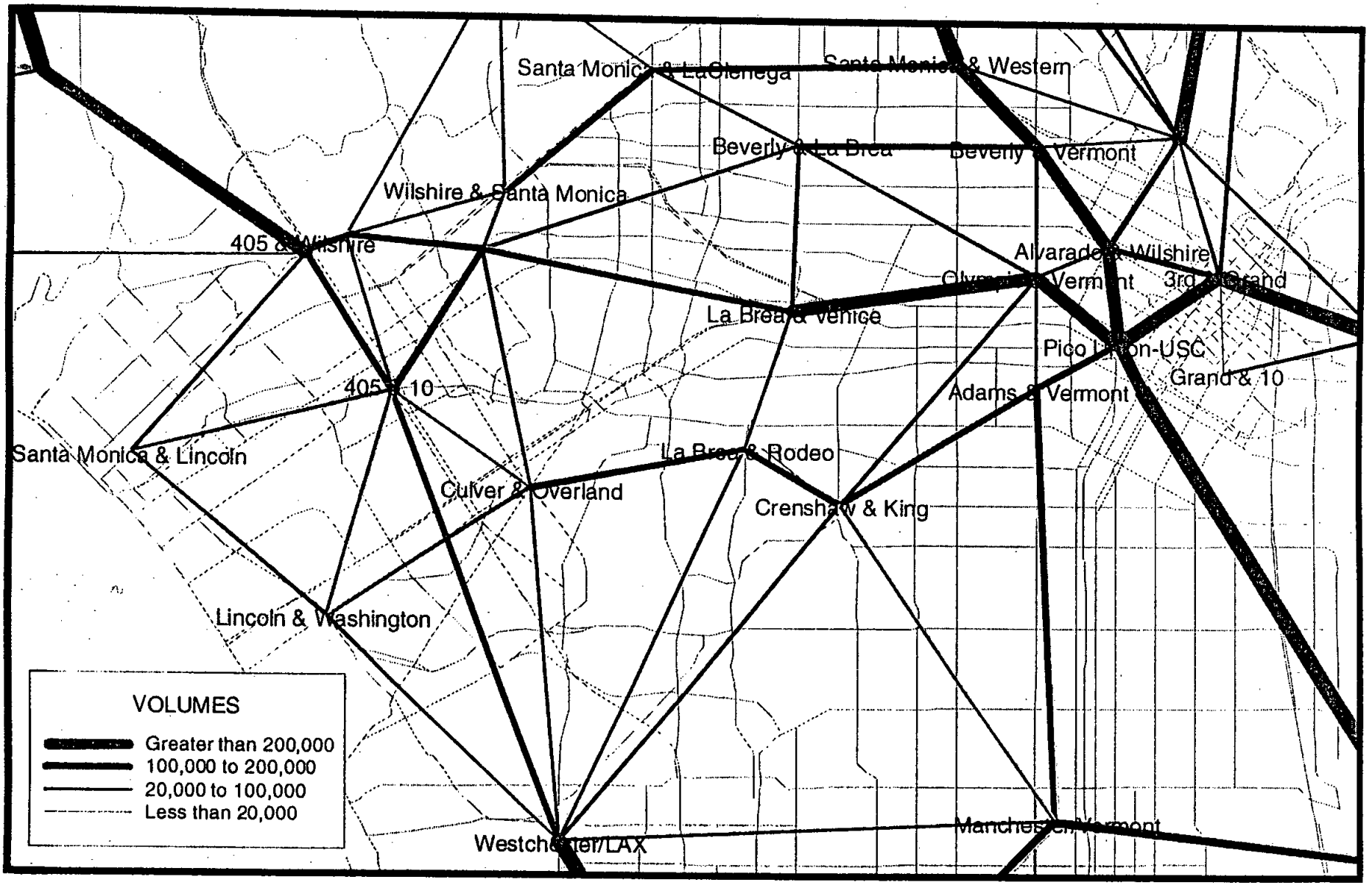

LEGEND:
Mid-City/Westside Transit Corridor Study Area
Key Attractions
Centers
N
APPROX. SCALE
0 1.25 2.5 MILES
1 Century City
2 Foxhills
3 Westside Pavilion
4 Westwood
5 Santa Monica Pl
6 LAX/Westchester
7 Beverly Hills
8 SM 3rd Street/Santa Monica
9 Venice Beach
10 Sawtelle
11 Fed Bldg
12 Marina Del Rey
13 Loyola
14 Larchmont
15 Beverly Ctr
16 Dart Square
17 Museum Row/Miracle Mile
18 Baldwin Hills
19 Exposition Park
20 USC
21 Convention Ctr
22 Staples Ctr
23 Melrose
24 Forum / Inglewood
25 Hollywood Pk
26 Culver City
27 Sony Pictures
28 Fox Studios
29 Mormon Temple
30 West LA City Hall
31 Crenshaw
32 SM Airport
33 Montana
34 Blue Whale PDC
35 West Hollywood
36 Hollywood
37 Hollywood Bowl
38 Dodger Stadium
39 Hughes Ctr
40 Ladera Ctr
41 SM City Hall
42 SM Main Street
43 Westwood Gateway
44 Olympic
45 7th Street Mkt Pl
46 Bunker Hill
47 LA Civic Ctr
48 Midtown Sc
49 Santa Monica College
50 Colorado Place
51 Watergarden
52 Cedars
53 Wiltern Theater/Wilshire Ctr
54 Brotman Med Ctr
55 St Vinc
56 Good Samaritan
57 LA Trade Tec
58 West LA Univ
59 Peperdine Univ
60 Museum of Tolerance
61 Daniel Freeman Hosp
62 Cinela Hosp
63 St Johns Hosp
64 Santa Monica Hosp
54 Sunset Strip
SOURCE: Terry A. Hayes Associates
SUNSET BLVD
SANTA MONICA BLVD
HOLLYWOOD
HIGHLAND AVE
BEVERLY BLVD
WILSHIRE BLVD
OLYMPIC BLVD
HOOVER ST
WASHINGTON BLVD
ROBERTSON BLVD
JEFFERSON BLVD
EXPOSITION
MARTIN LUTHER KING JR BLVD
VERNON AVE
LA CIENEGA BLVD
LA BREA AVE
VENICE BLVD
LINCOLN BLVD
CULVER BLVD
SLAUSON AVE
FLORENCE AVE
MANCHESTER BLVD
CENTURY BLVD
CENTRAL AVE
101
10
90
110
5



TRANSIT SUPPORTING LAND USES

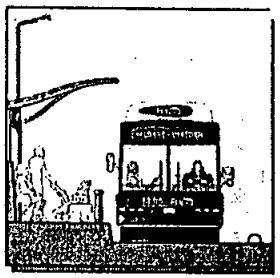


EXISTING LEVEL OF SERVICE E AND F ROADWAY SEGMENTS PEAK PERIOD



2020 DAILY WORK TRIP VOLUMES ON "SPIDER" NETWORK

Candidate Alternatives



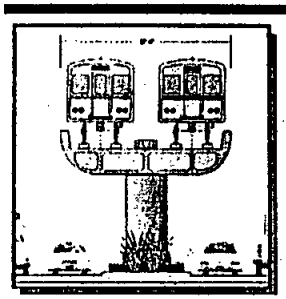
1) Wilshire BRT

2) Exposition BRT

3) Exposition LRT

4) Wilshire-Pico/ San Vicente HRT Subway

5) Wilshire HRT Subway



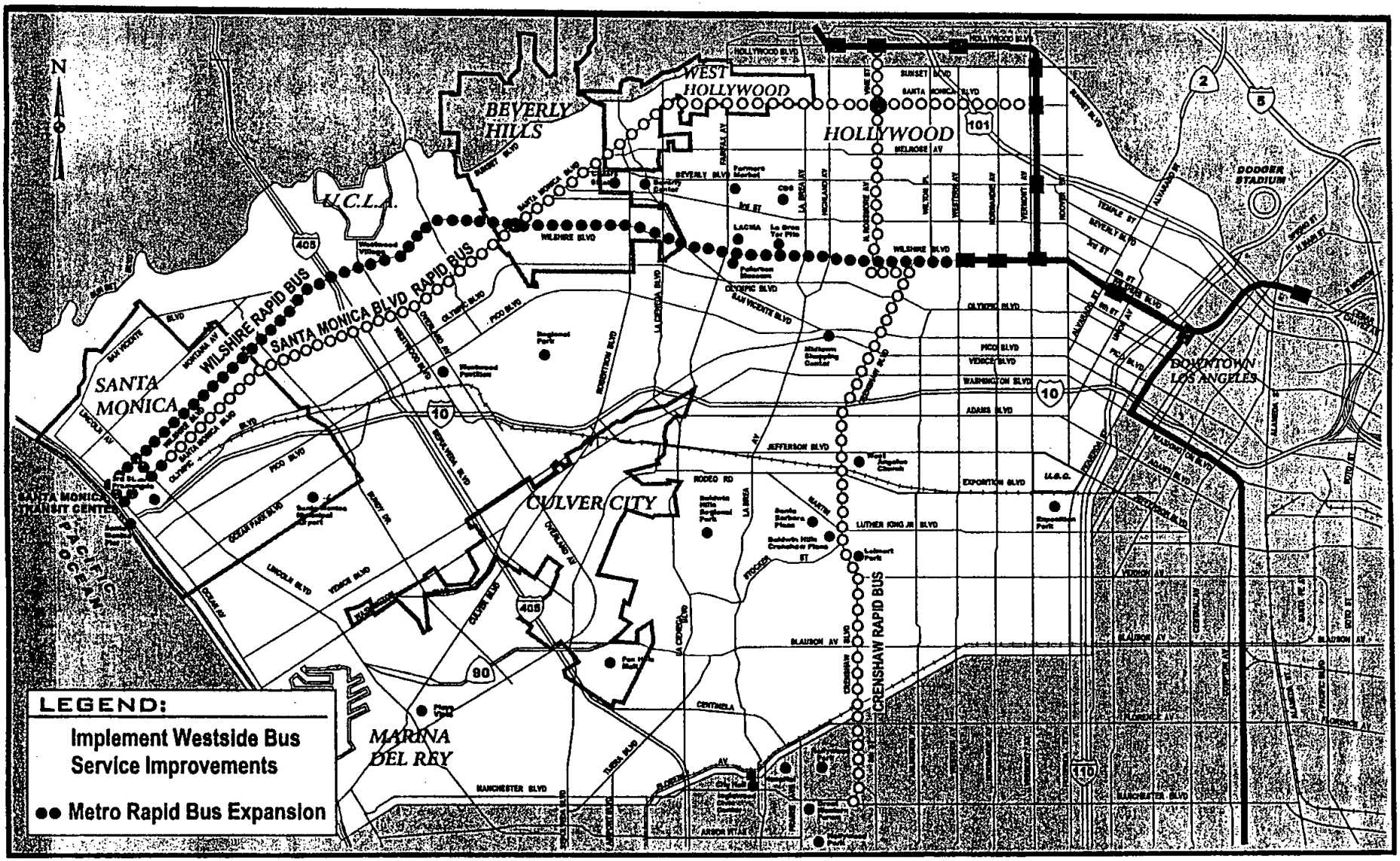
6) Wilshire HRT Aerial Rail

Transportation System Management (TSM) Alternative

Improvement to bus system throughout Study Area

- Complete implementation of Westside Bus Service Improvement Study recommendations

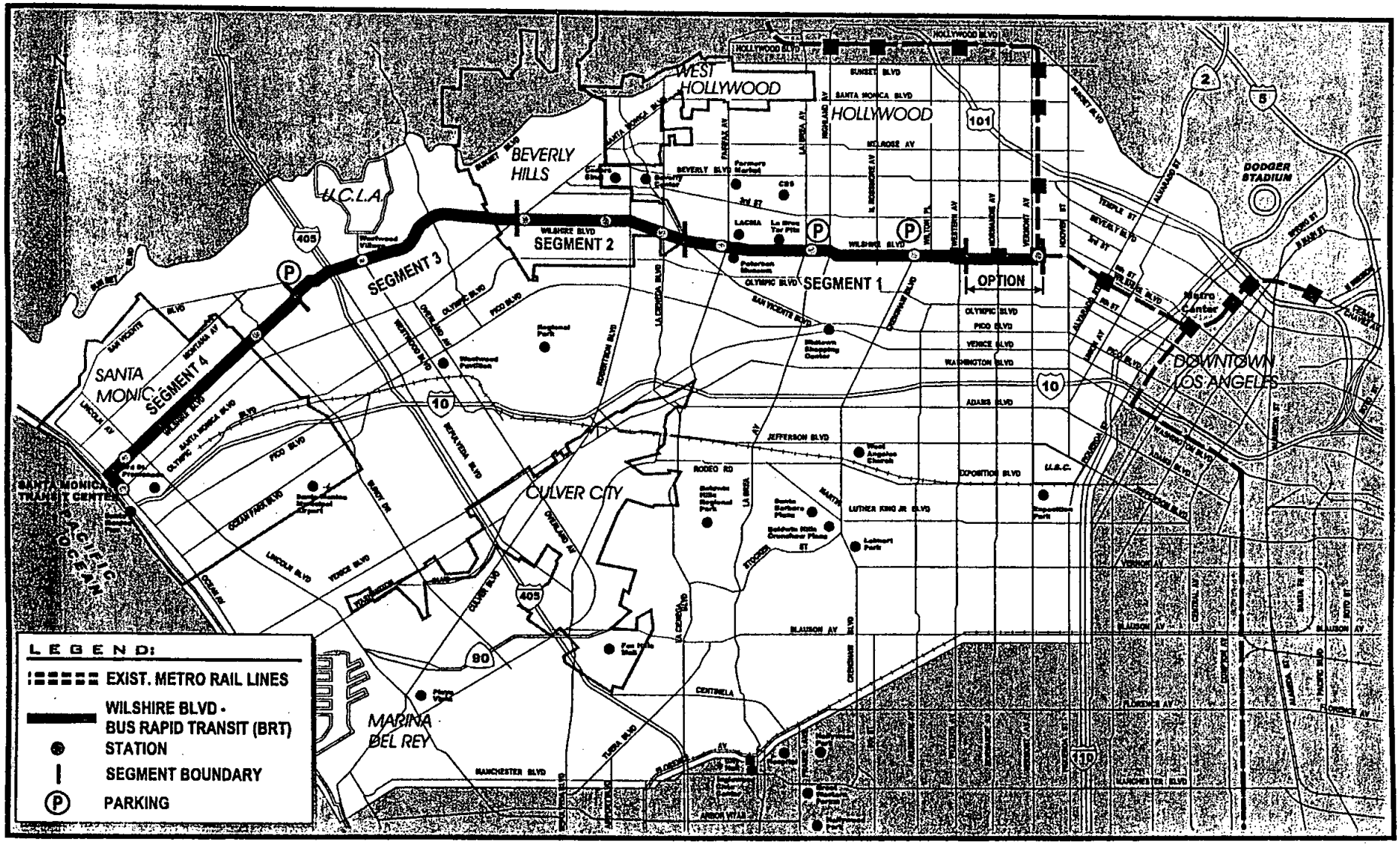
- Three Rapid Bus lines assumed for 2020:
  - Wilshire/Whittier
  - Santa Monica Boulevard
  - Crenshaw Boulevard


N
WEST HOLLYWOOD
BEVERLY HILLS
HOLLYWOOD
U.C.L.A.
SANTA MONICA
WILSHIRE RAPID BUS
SANTA MONICA BLVD RAPID BUS
CULVER CITY
MARINA DEL REY
DOWNTOWN LOS ANGELES
DODGER STADIUM
CRENSHAW RAPID BUS
SANTA MONICA TRANSIT CENTER
PACIFIC OCEAN
LEGEND:
Implement Westside Bus Service Improvements
Metro Rapid Bus Expansion

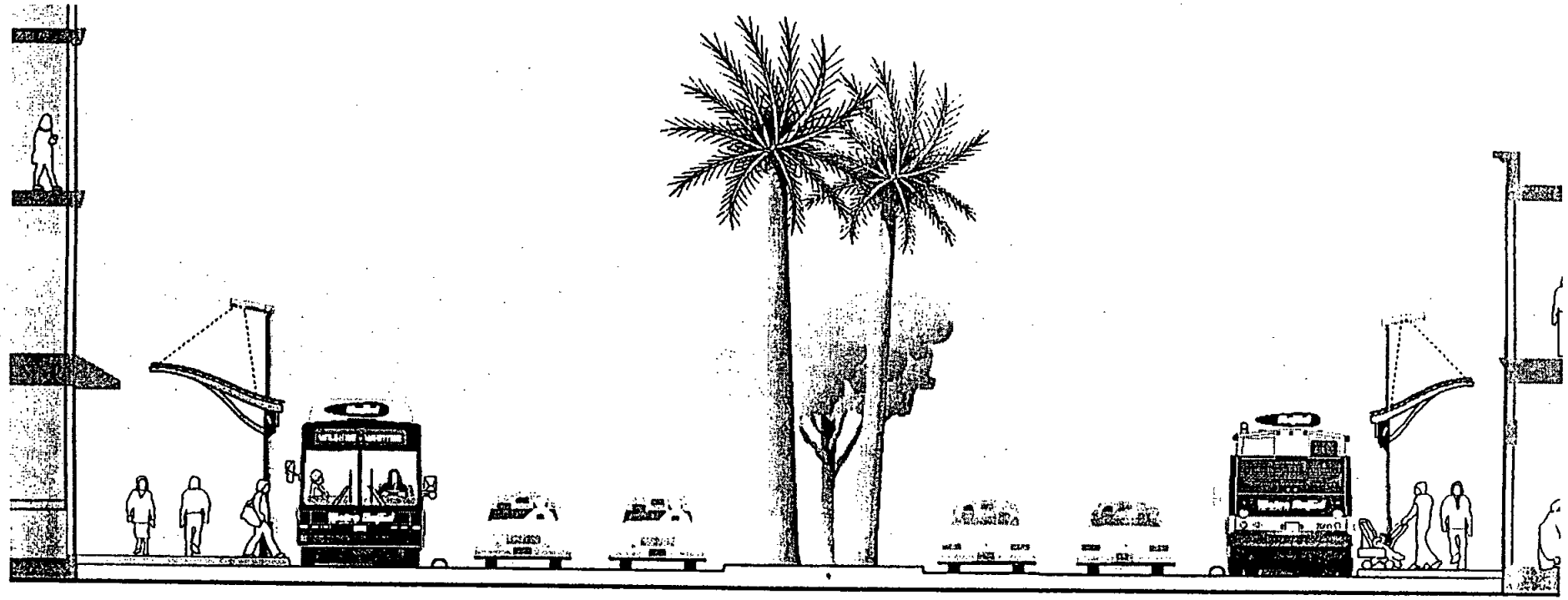
Alternative 1: **Wilshire Boulevard Bus Rapid Transit (BRT)**

Exclusive bus lane on Wilshire Boulevard (curb or center lane)

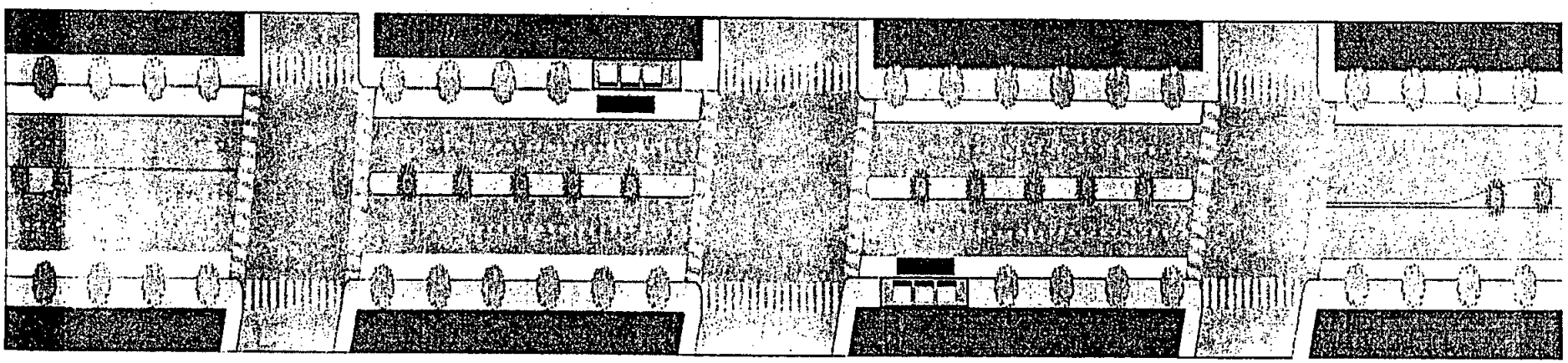
- **Full length project from Wilshire/Vermont Metro Red Line subway station to downtown Santa Monica (14.0 miles)**
- **Alternative length to Wilshire/San Vicente (4.9 miles)**

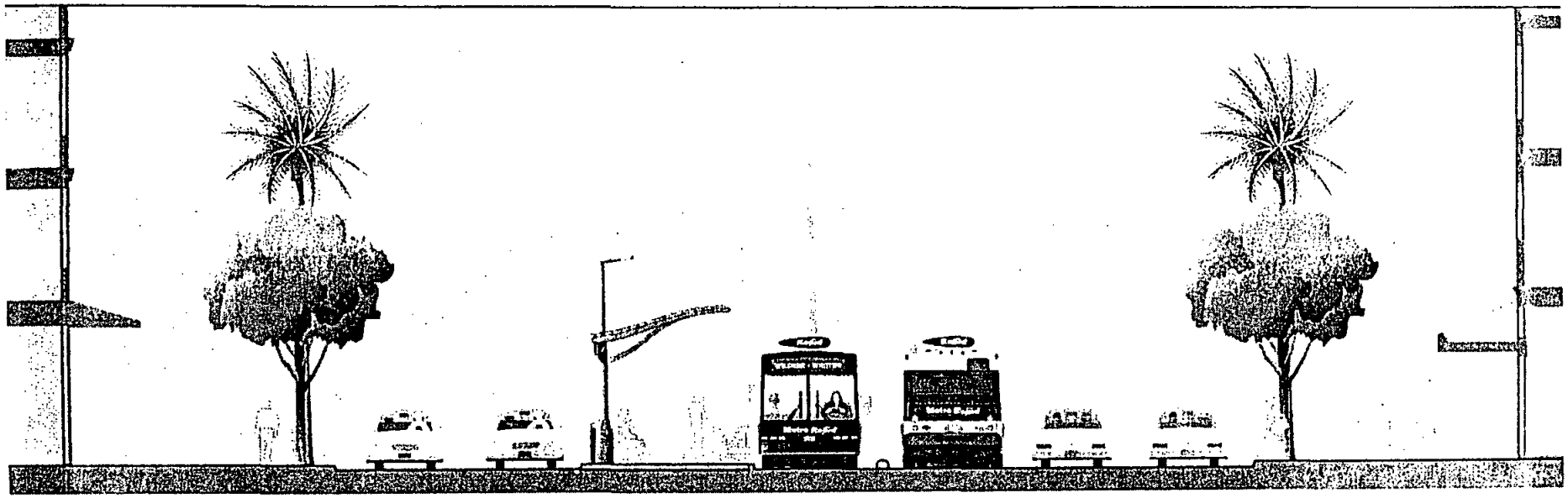


ALTERNATIVE 1

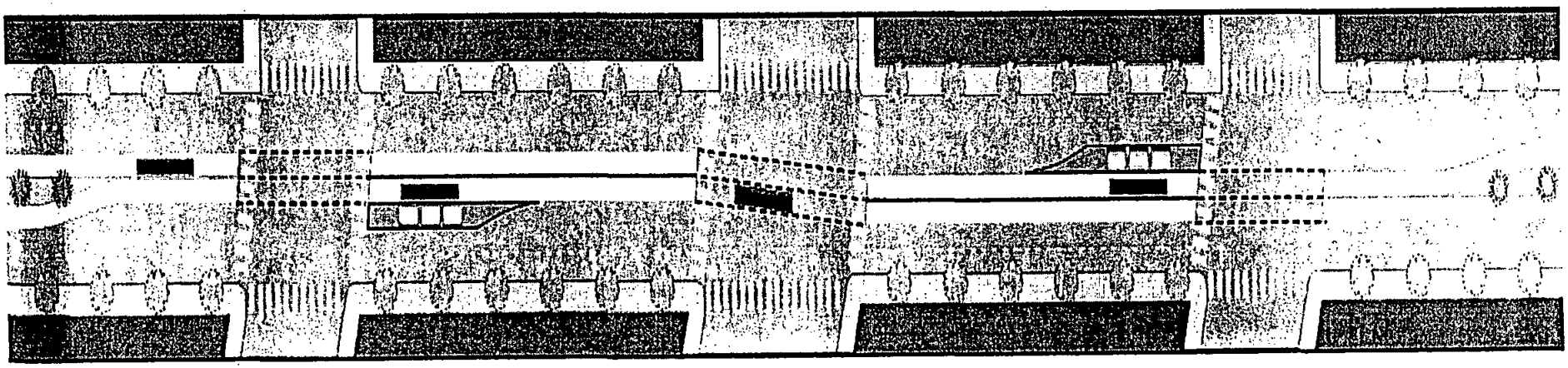


Wilshire Boulevard • BUS STOP ON SIDEWALK (typical)





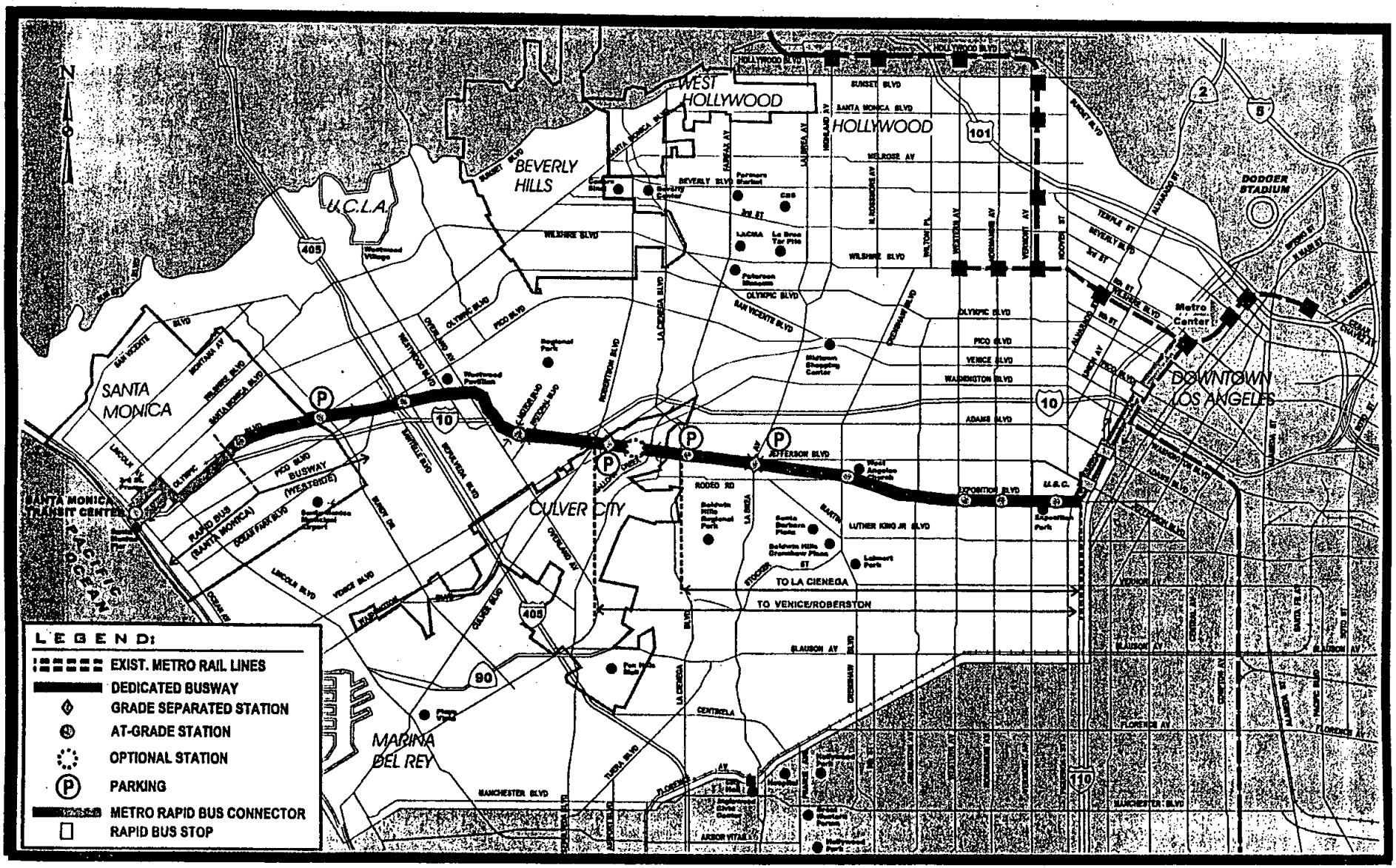
Wilshire Boulevard • BUS STOP ON MEDIAN (typical)



Alternative 2: **Exposition ROW Bus Rapid Transit (BRT)**

Exclusive bus lane on Exposition right-of-way with Metro Rapid Bus connections to downtown Los Angeles and Santa Monica

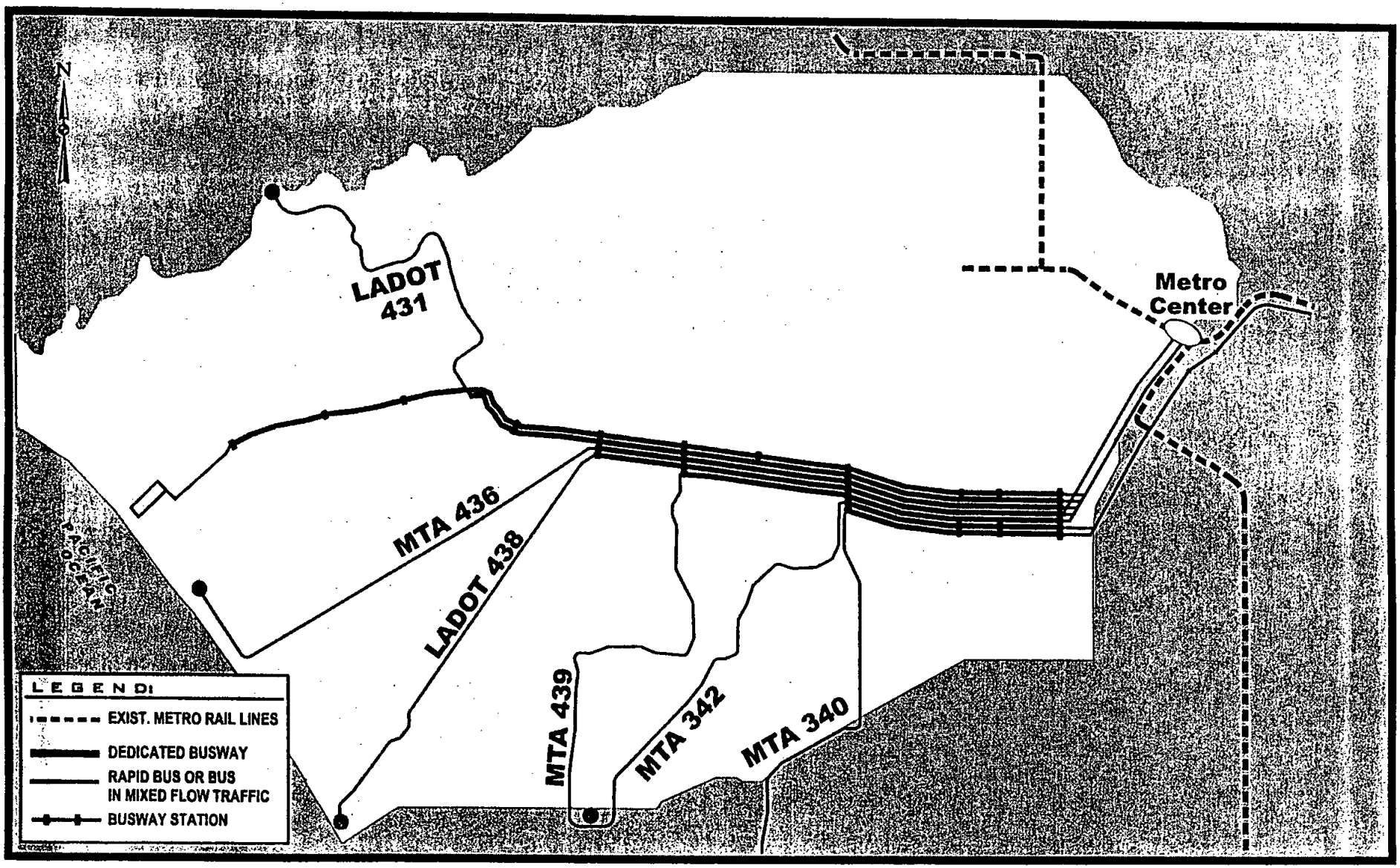
- **Full length project from downtown Los Angeles (7th/Flower to Santa Monica (15.6 miles)**
- **Alternative length to La Cienega Boulevard (7.7 miles)**
- **Alternative length to Venice Boulevard (8.5 miles)**



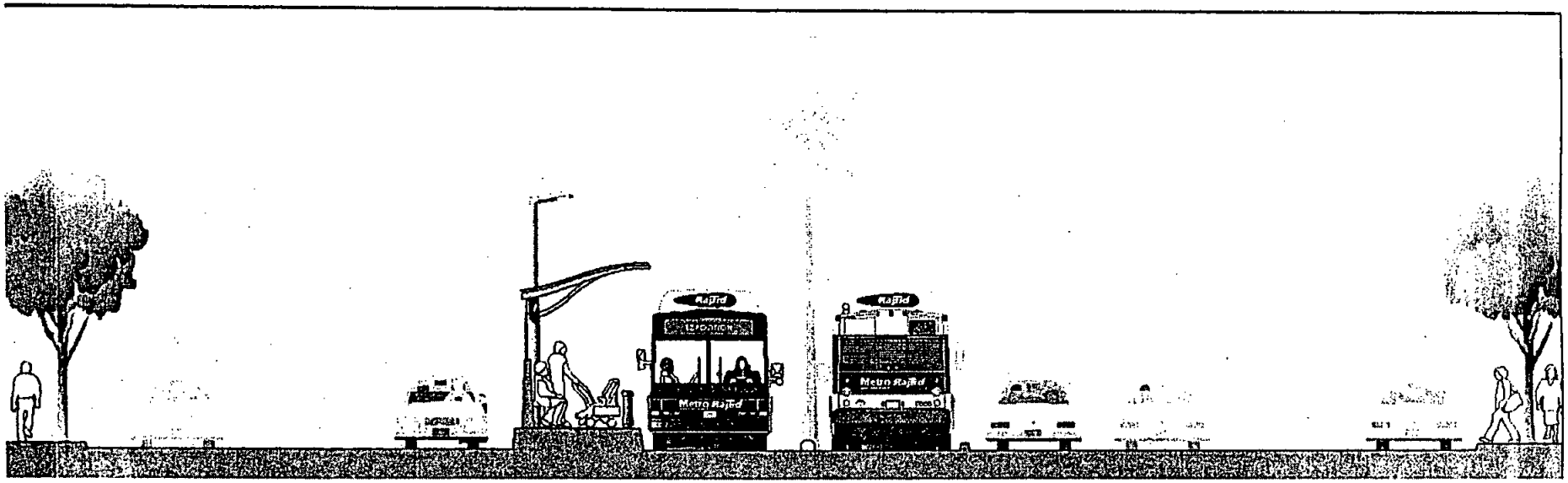
ALTERNATIVE 2

2/4/2000

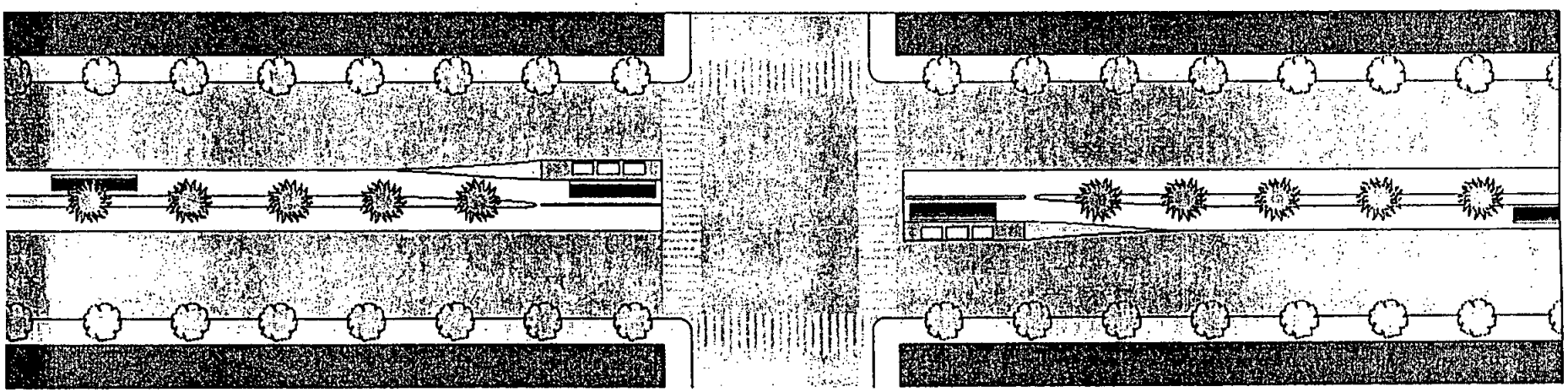
19 EXPOSITION BUS RAPID TRANSIT (BRT)



EXPOSITION BUS RAPID TRANSIT (BRT)
SHOWING EXPRESS FEEDER BUS LINES



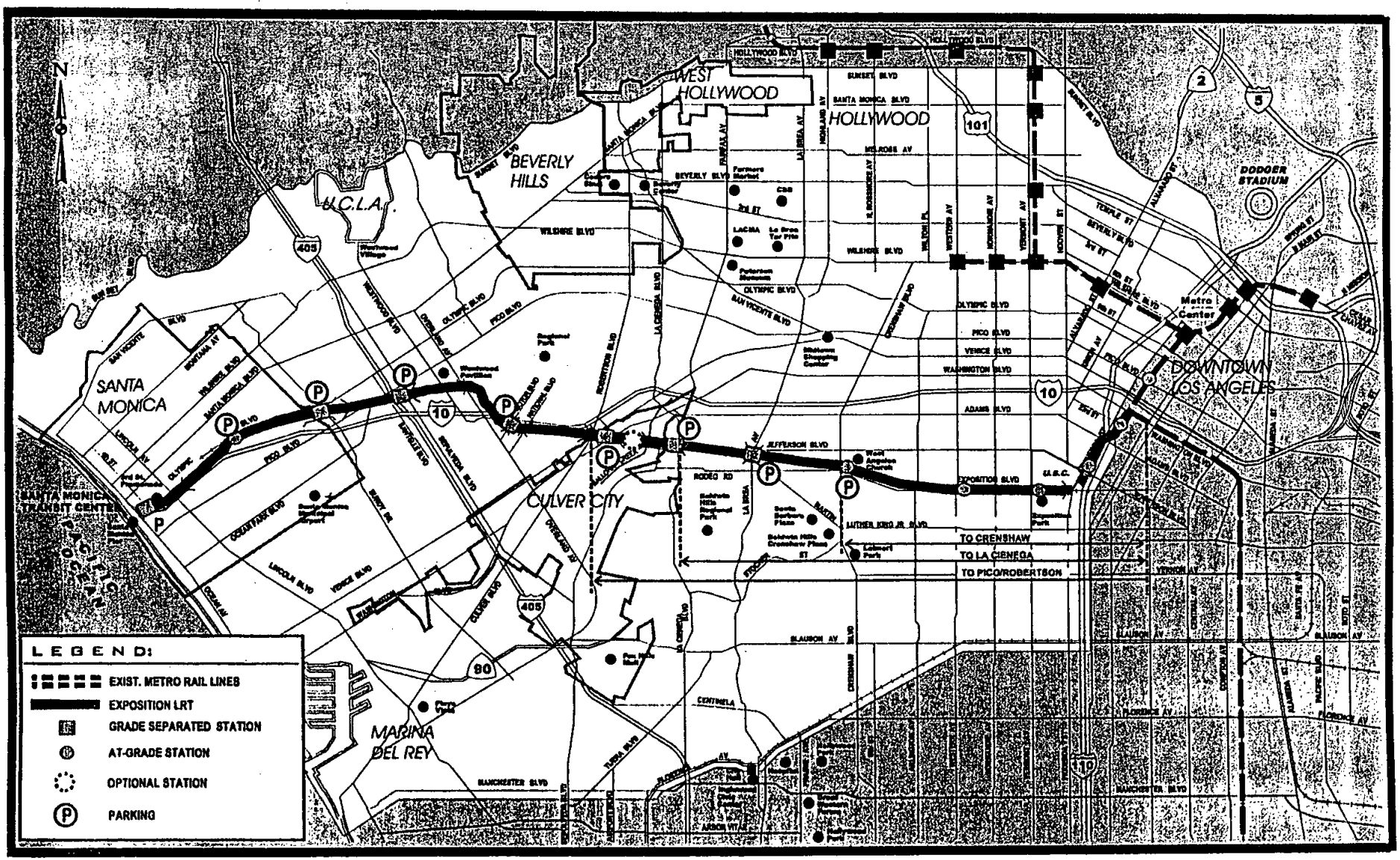
Exposition Boulevard • BUS STOP ON MEDIAN (typical)



Alternative 3a: **Exposition ROW Light Rail Transit (LRT) (BASELINE)**

Blue Line extension on Exposition ROW (with grade separation at 12 major crossings).

- **Full length project from downtown Los Angeles (7th/Flower to Santa Monica (15.1 miles)**
- **Alternative length to Crenshaw Boulevard (5.3 miles)**
- **Alternative length to La Cienega Boulevard (7.7 miles)**
- **Alternative length to Venice Boulevard (8.5 miles)**



ALTERNATIVE 3a

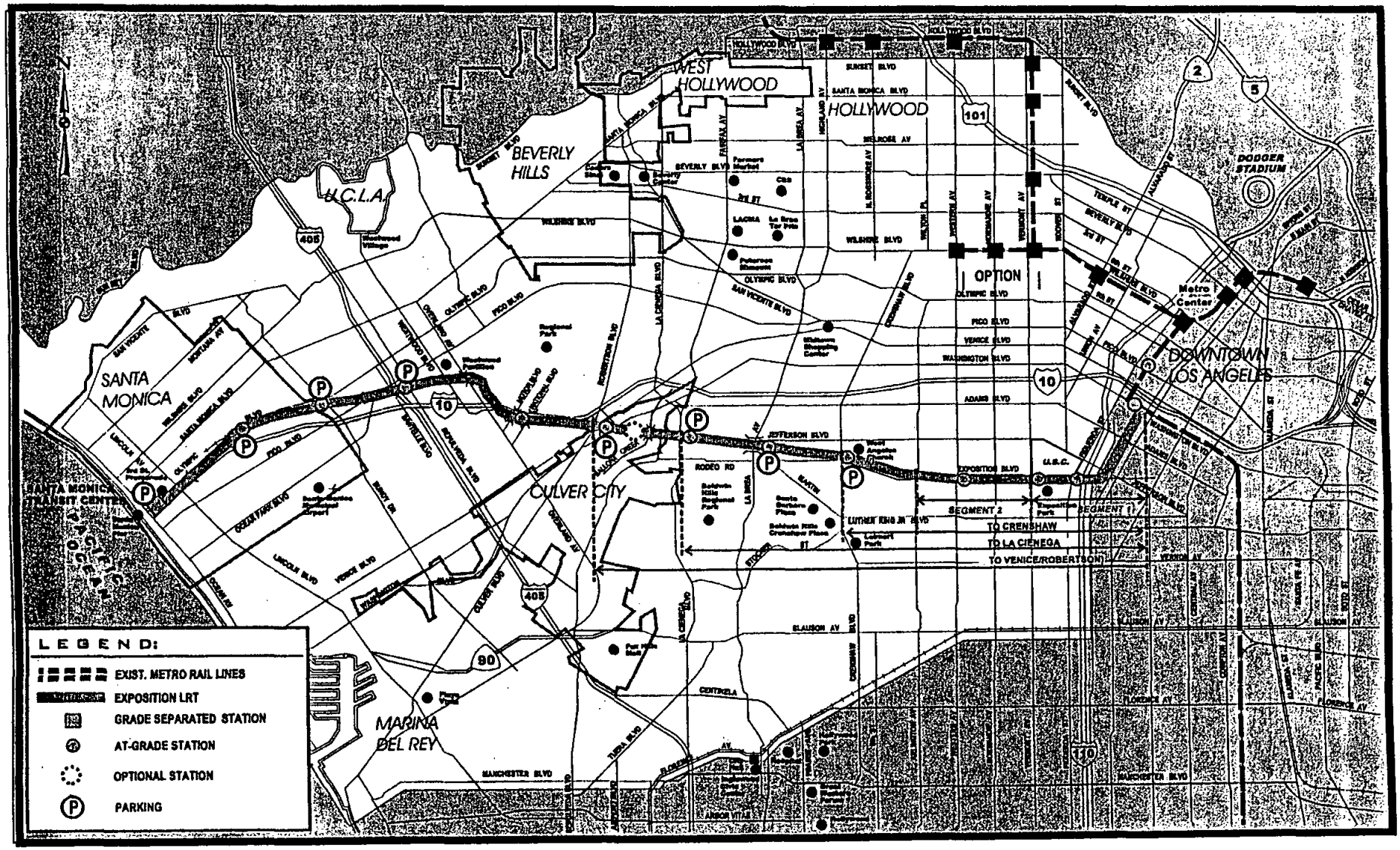
2/4/2000

23 EXPOSITION LIGHT RAIL-TRANSIT (LRT)

Alternative 3b: **Exposition ROW Light Trail Transit (LRT) (MINIMUM GRADE SEPARATIONS)**

Blue Line extension on Exposition ROW (with grade separation at 4 major crossings).

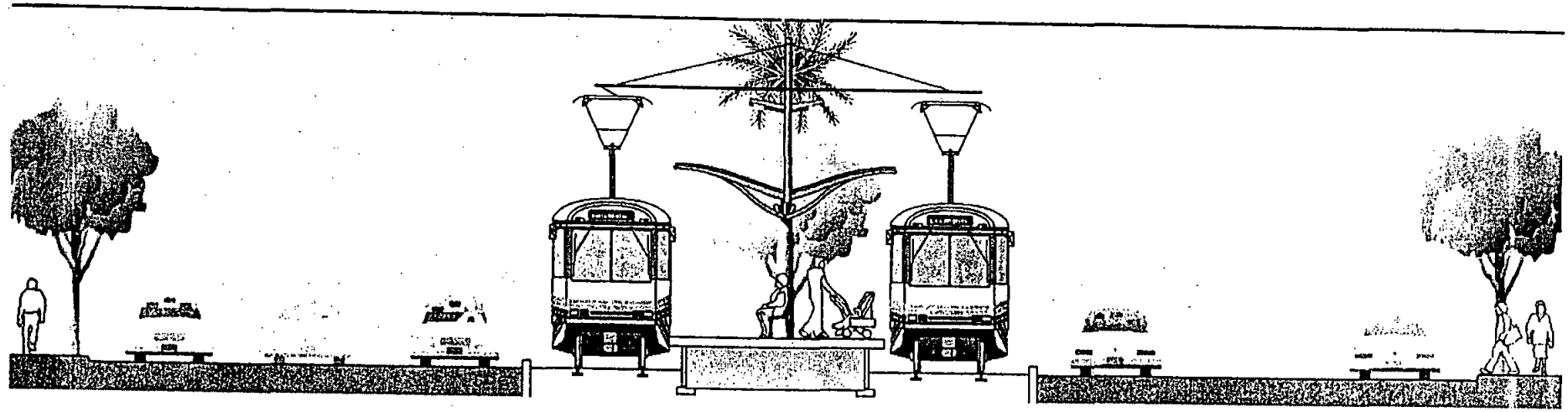
- **Full length project from downtown Los Angeles (7th/Flower to Santa Monica (15.5 miles)**
- **Alternative length to Crenshaw Boulevard (5.6 miles)**
- **Alternative length to La Cienega Boulevard (8.0 miles)**
- **Alternative length to Venice Boulevard (8.8 miles)**



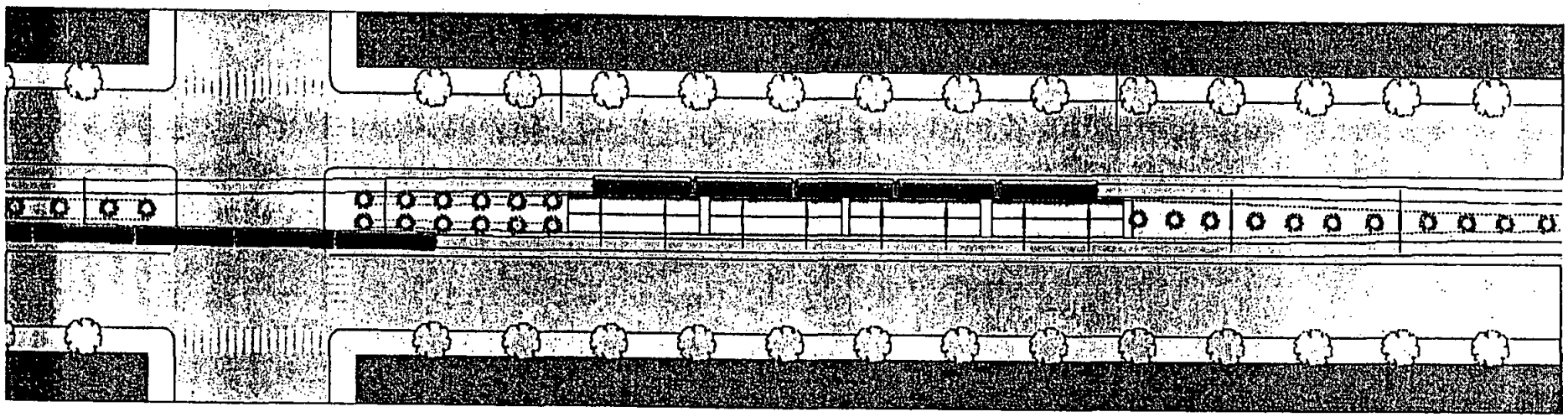
ALTERNATIVE 3b

2/4/2000

25 EXPOSITION LIGHT RAIL-TRANSIT (LRT)



Exposition Boulevard • LIGHT RAIL STATION (typical)

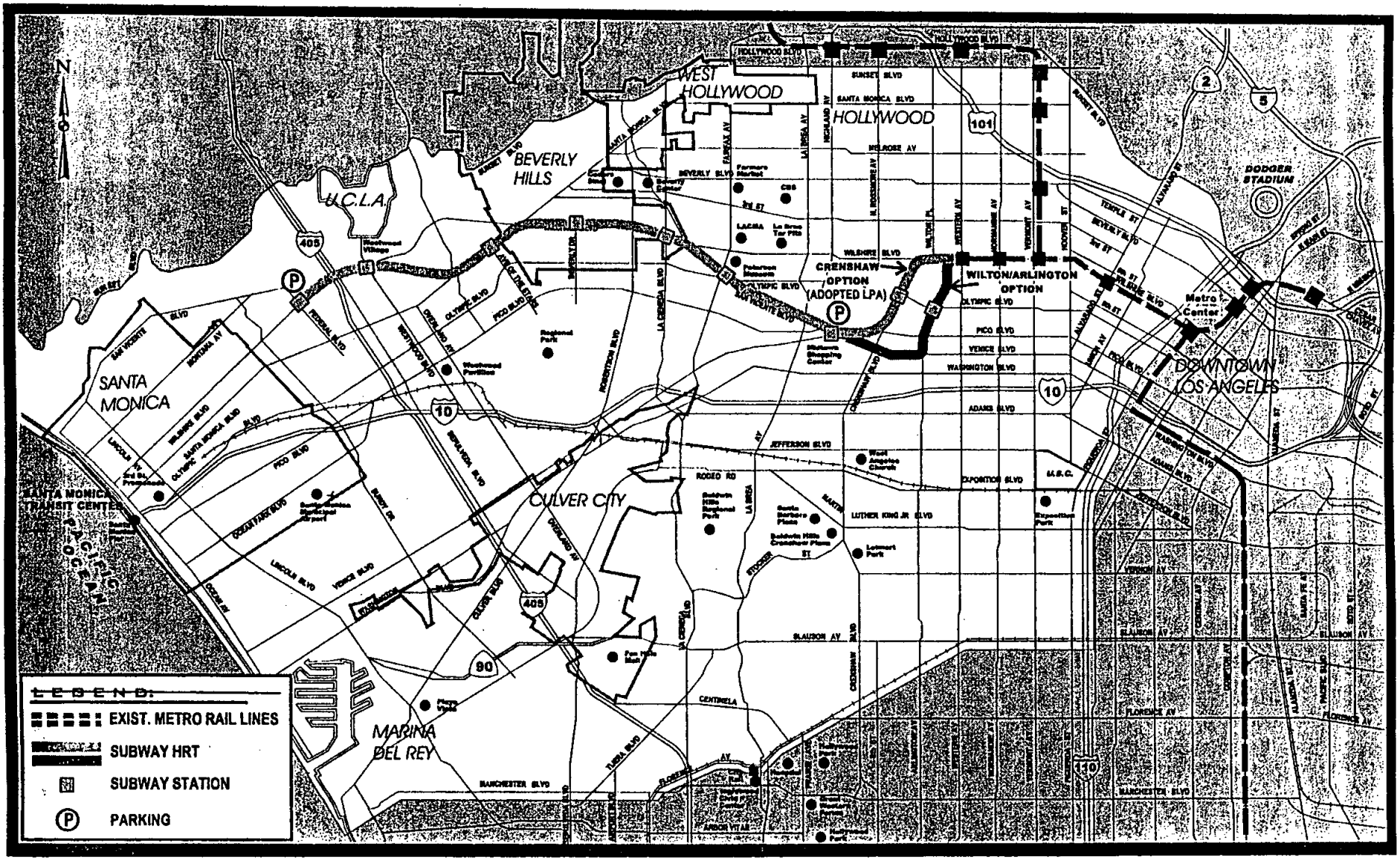


Alternative 4: Wilshire Boulevard Subway Heavy Rail Transit via Pico/San Vicente

Metro Red Line subway extension on Wilshire Boulevard via Pico/San Vicente (Wilton/Arlington alignment).

- **Full length project from Metro Red Line Wilshire/Western station to Wilshire/Federal (10.1 miles).**
- **Alternative length Pico/San Vicente (2.6 miles). Adopted LPA.**

NOTE: **This alternative would not be eligible for local sales tax (Proposition A).**



ALTERNATIVE 4

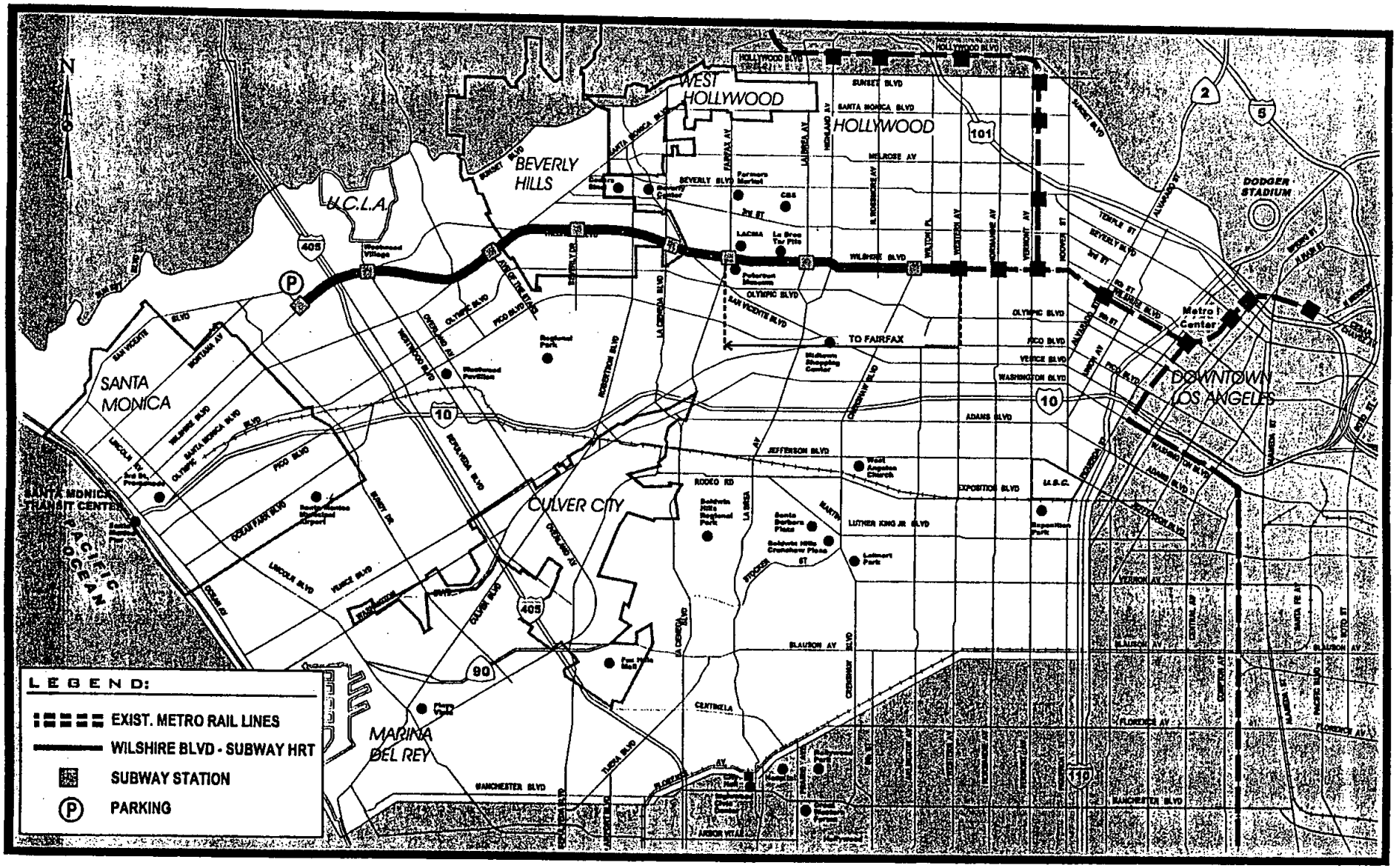
PICO/SAN VICENTE - SUBWAY (HRT)

Alternative 5: **Wilshire Boulevard Subway Heavy Rail Transit via Wilshire**

Metro Red Line subway extension on Wilshire Boulevard

- **Full length project from Metro Red Line Wilshire/Western station to Wilshire/Federal (9.0 miles).**
- **Alternative length Wilshire/Fairfax (3.2 miles).**

NOTE: **This alternative would not be eligible for local sales tax (Proposition A) or federal funding (Methane Zone).**



ALTERNATIVE 5

2/4/2000

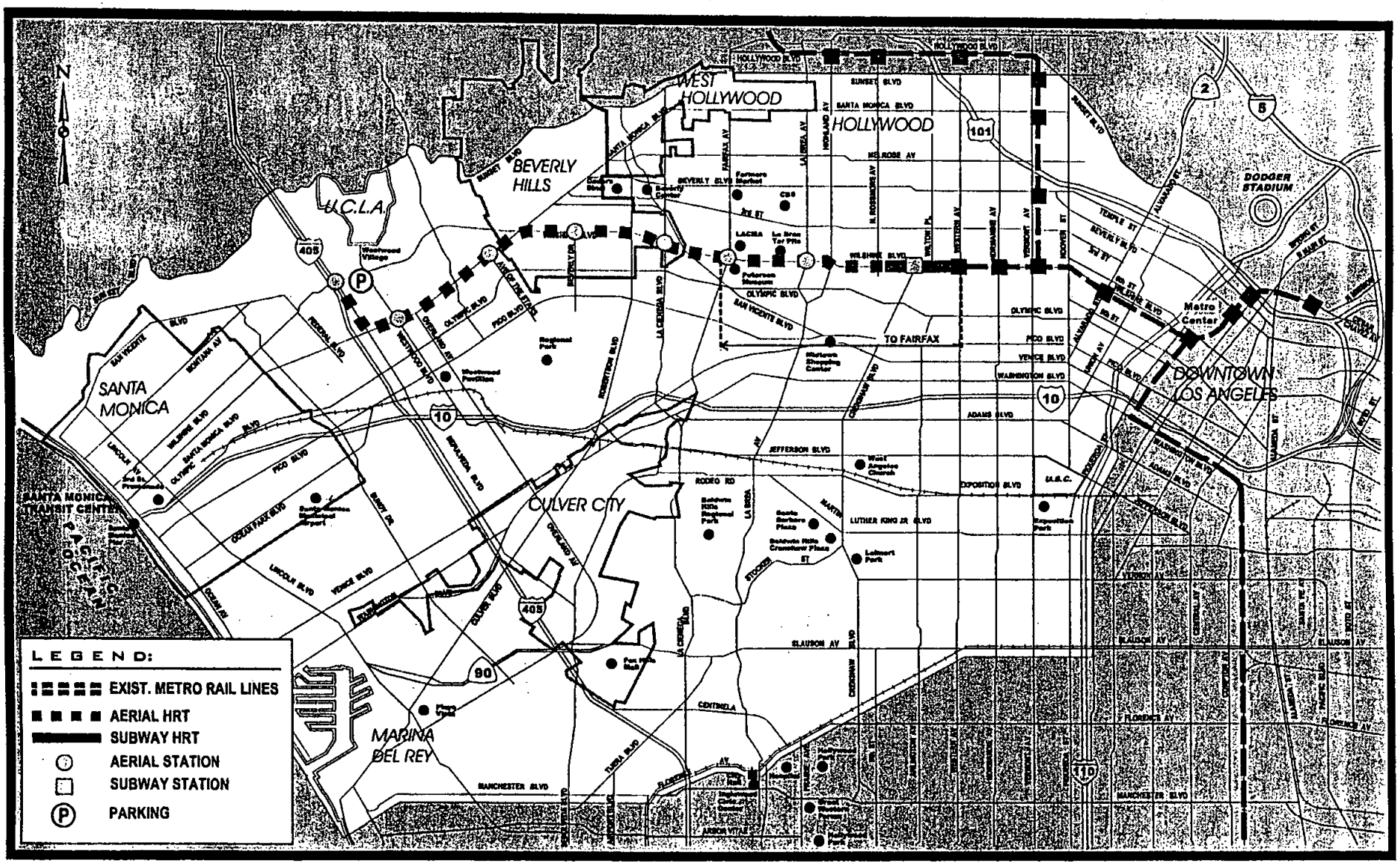
30 WILSHIRE BOULEVARD-SUBWAY (HRT)

Alternative 6: **Wilshire Boulevard Aerial Heavy Rail Transit via Wilshire**

Metro Red Line extension on Wilshire Boulevard with aerial guideway

- **Full length project from Metro Red Line Wilshire/Western station to Wilshire/Sepulveda (8.9 miles)**
- **Alternative length Wilshire/Fairfax (3.2 miles)**

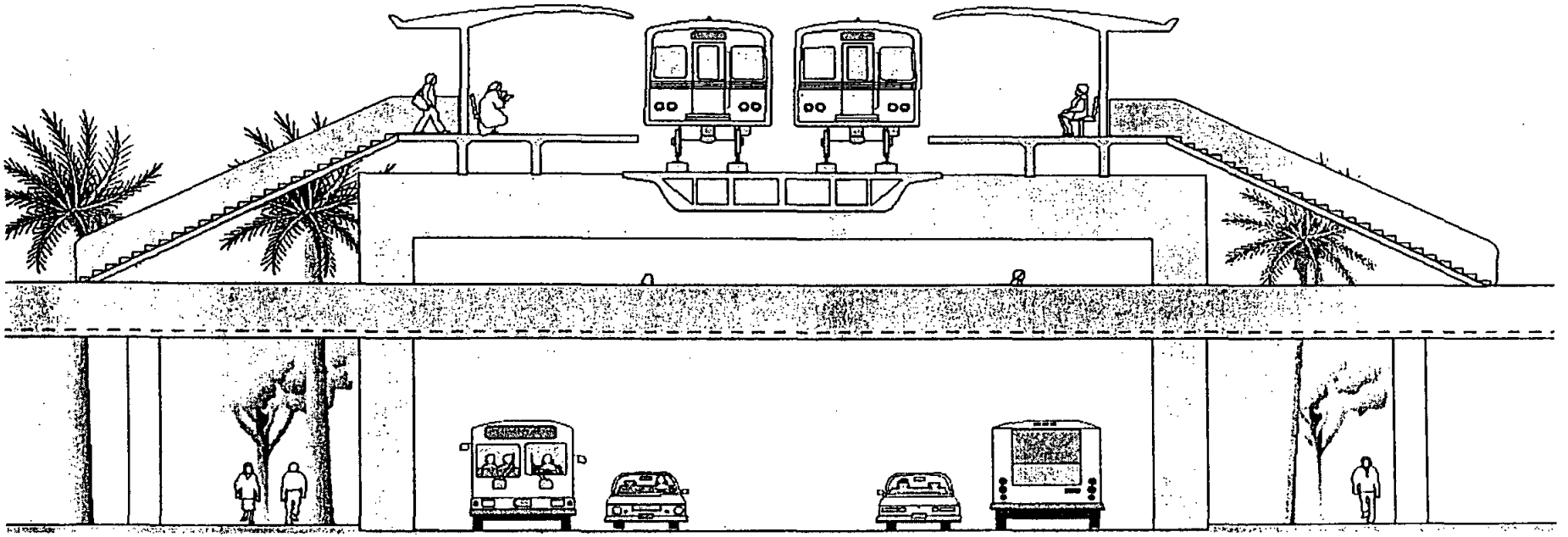
NOTE: **Due to federal and local restrictions on subway, aerial rail would represent the only current Metro Red Line extension that is possible to construct on Wilshire Boulevard without changes to existing law or funding restrictions.**



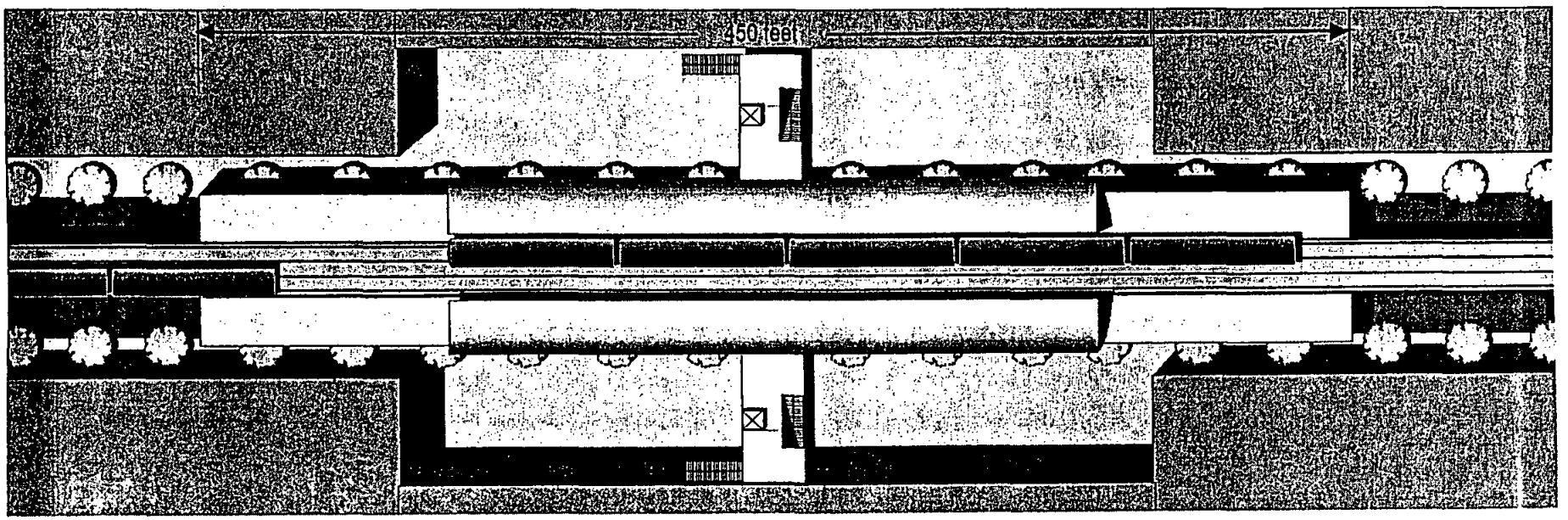
ALTERNATIVE 6

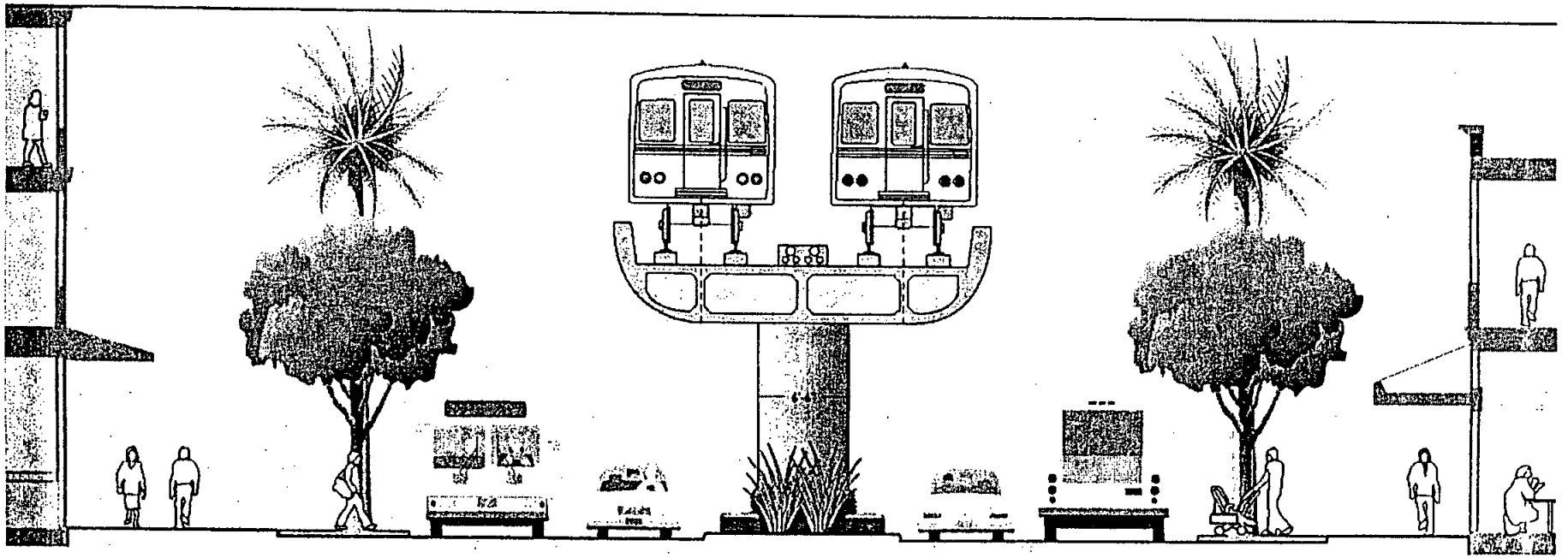
2/4/2000

32 WILSHIRE BOULEVARD - AERIAL (HRT)

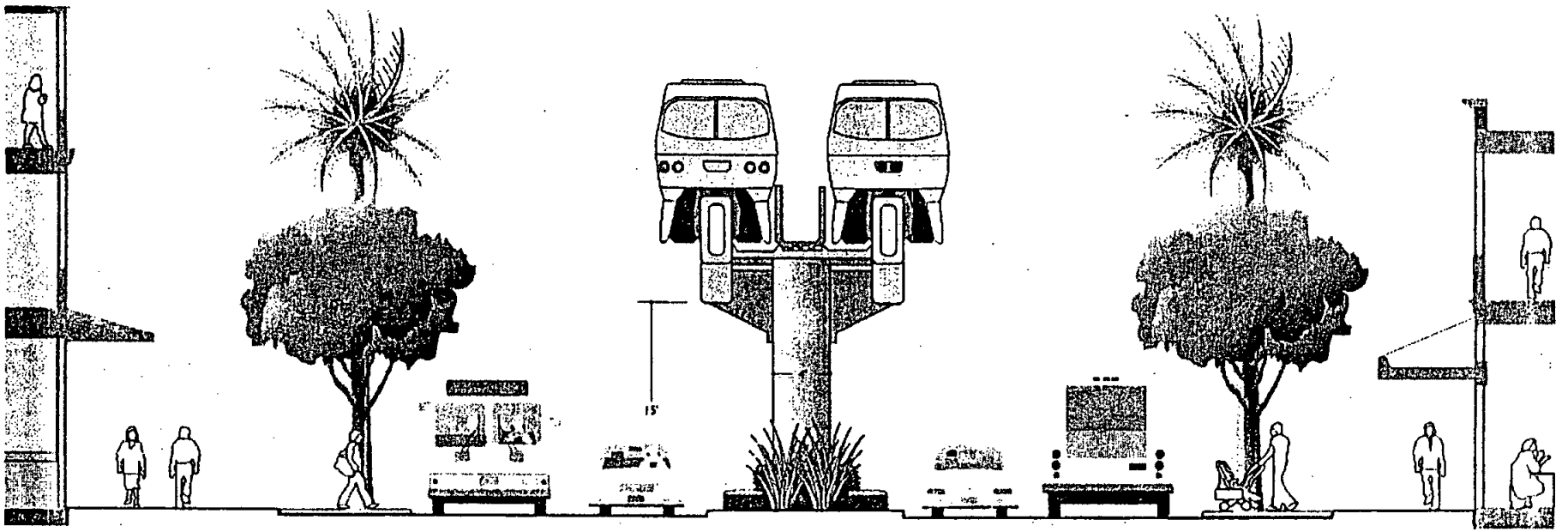


Wilshire Boulevard • AERIAL STATION (typical)





Wilshire Boulevard • AERIAL



Wilshire Boulevard • MONORAIL

Evaluation Criteria

- Costs
- Ridership
- Cost-Effectiveness
- Travel Time Savings
- Environmental Issues
- Community Acceptability

CAPITAL COST

(Millions in 1999 Dollars)

ALTERNATIVE	FULL LENGTH	ALTERNATIVE	LENGTH	OPTION
TSM	$92	N/A	N/A	N/A
1 Wilshire BRT	$169 To Santa Monica	$62 To San Vicente	N/A	N/A
2 Exposition BRT	$188 To Santa Monica	$76 To La Cienega	$87 To Venice Blvd	N/A
3a Exposition LRT (Baseline)	$589 To Santa Monica	$178 To Crenshaw	$312 To La Cienega	$398 To Venice Blvd
3b Exposition LRT (Minimum Grade Separations)	$431 To Santa Monica	$135 To Crenshaw	$209 To La Cienega	$227 To Venice Blvd
4 Wilshire Blvd HRT Subway (via Pico/San Vicente)	$2,640 To Federal	$673 To Pico/ San Vicente	N/A	N/A
5 Wilshire Blvd HRT Subway (via Wilshire)	$2,469 To Federal	$891 To Fairfax	N/A	N/A
6 Wilshire Blvd HRT Aerial (via Wilshire)	$1,269 To Sepulveda	$543 To Fairfax	N/A	N/A

ANNUAL OPERATING COST

(Millions in1999 Dollars)

ALTERNATIVE	COMPARED TO NO BUILD (in millions)	COMPARED TO TSM (in millions)
TSM	$24	N/A
1 Wilshire BRT	$41	$17
2 Exposition BRT	$32	$7
3a Exposition LRT (Baseline)	$45	$21
3b Exposition LRT (Minimum Grade Separations)	$45	$20
4 Wilshire Blvd HRT Subway (via Pico/San Vicente)	$29 To Pico/ San Vicente	$5 To Pico/ San Vicente
5 Wilshire Blvd HRT Subway (via Wilshire)	$41 Full Length $31 To Fairfax	$17 Full Length $7 To Fairfax
6 Wilshire Blvd HRT Aerial (via Wilshire)	$41 Full Length $31 To Fairfax	$17 Full Length $7 To Fairfax

DAILY FIXED GUIDEWAY BOARDINGS

ALTERNATIVE	FULL ALLIGNMENT LENGTH
TSM	
1 Wilshire BRT	11,000 [34,000]
2 Exposition BRT	23,000
3a Exposition LRT (Baseline)	38,600
3b Exposition LRT (Minimum Grade Separations)	38,600
4 Wilshire Blvd HRT Subway via Pico/San Vicente)	11,400 (Pico/ San Vicente)
5 Wilshire Blvd HRT Subway (via Wilshire)	33,500 (Full Length) 15,800 (Fairfax)
6 Wilshire Blvd HRT Aerial (via Wilshire)	33,500 [Est] (Full Length) 15,800 (Fairfax)

NOTE : Brackets [ ] indicate sensitivity model run results assuming full signal preemption.

NEW DAILY TRANSIT TRIPS

ALTERNATIVE	COMPARED TO NO BUILD	COMPARED TO TSM
TSM	6,600	N/A
1 Wilshire BRT	8,300	1,700 [10,600]
2 Exposition BRT	12,400	5,800
3a Exposition LRT (Baseline)	15,300	8,700
3b Exposition LRT (Minimum Grade Separations)	15,300	8,700
4 Wilshire Blvd HRT Subway (via Pico/San Vicente)	10,400 (Pico/ San Vicente)	3,700 (Pico/ San Vicente)
5 Wilshire Blvd HRT Subway (via Wilshire)	15,300 (Full Length) 8,800 (Fairfax)	9,200 (Full Length) 2,200 (Fairfax)
6 Wilshire Blvd HRT Aerial (via Wilshire)	5,300 [Est] (Full Length) 8,800 (Fairfax)	9,200 [Est] (Full Length) 2,200 (Fairfax)

NOTE : Brackets [ ] indicate sensitivity model run results assuming full signal preemption.

ANNUALIZED COST PER NEW DAILY TRANSIT TRIP

(1999 Dollars)

ALTERNATIVE	COMPARED TO NO BUILD	COMPARED TO TSM
TSM	$16	N/A
1 Wilshire BRT	$24	$60
2 Exposition BRT	$14	$13
3a Exposition LRT (Baseline)	$21	$25
3b Exposition LRT (Minimum Grade Separations)	$18	$20
4 Wilshire Blvd HRT Subway (via Pico/San Vicente)	$28 (Pico/ San Vicente)	$50 (Pico/ San Vicente)
5 Wilshire Blvd HRT Subway (via Wilshire)	$50 (Full Length) $40 (Fairfax)	$75 (Full Length) $114 To Fairfax
6 Wilshire Blvd HRT Aerial (via Wilshire)	$30 Full Length $29 (Fairfax)	$41 (Full Length) $72 (Fairfax)

Key Environmental Issues

1. Wilshire BRT

- Traffic Diversion - loss of two lanes (one lane each direction)
- Access & Circulation - significant loss of left-turn lanes (minimum of 43 out of 101 to San Vicente)
- Parking - loss of on-street parking (280 spaces to San Vicente)
- Impact to North / South traffic
- Impaired access to local businesses

Key Environmental Issues

(continued)

2. Exposition BRT

- Safety at grade - crossings (27)
- Impact to North / South traffic
- Noise
- Aesthetics

3. Exposition LRT

- At-grade crossing safety concerns (25-35)
- Impacts on North / South traffic flow
- Noise (especially nighttime due to warning bells/horn)
- Aesthetics

Key Environmental Issues

(continued)

4. Mid-City Subway HRT
   - Gas-related safety and odor concerns
   - Construction impacts
   - Interim terminus-related impacts; especially traffic

5. Wilshire Subway HRT
   - Gas-related safety and odor concerns
   - Construction Impacts

6. Wilshire Aerial HRT
   - Permanent and unavoidable alteration of visual environment
   - Significant impact on historic properties
   - Construction Impacts

SUMMARY OF COMMUNITY SUPPORT

Alternative 1: **Wilshire BRT**

- Limited support
- Community not familiar with alternative
- Some business opposition

Alternative 2: **Exposition BRT**

- Viewed as creating less impacts than LRT
- Limited support
- Opposition still significant in adjacent neighborhoods, unless detours considered

SUMMARY OF COMMUNITY SUPPORT

(continued)

Alternative 3: **Exposition LRT**

- **Several support/advocacy groups**
- **Perceived as more attractive to riders than BRT**
- **Still significant community opposition in adjacent neighborhoods**

Alternative 4: **Mid-City HRT Subway**

- **No Support evident**

SUMMARY OF COMMUNITY SUPPORT

(continued)

Alternative 5: **Wilshire HRT Subway**

- No strong support for near term
- Support as long-term goal if cost, safety and financing impediments removed

Alternative 6: **Wilshire HRT Aerial**

- Strong opposition to HRT
- Wilshire Center Advocacy Group supports
- monorail; other groups oppose