

# SAN FERNANDO VALLEY EAST-WEST TRANSIT CORRIDOR

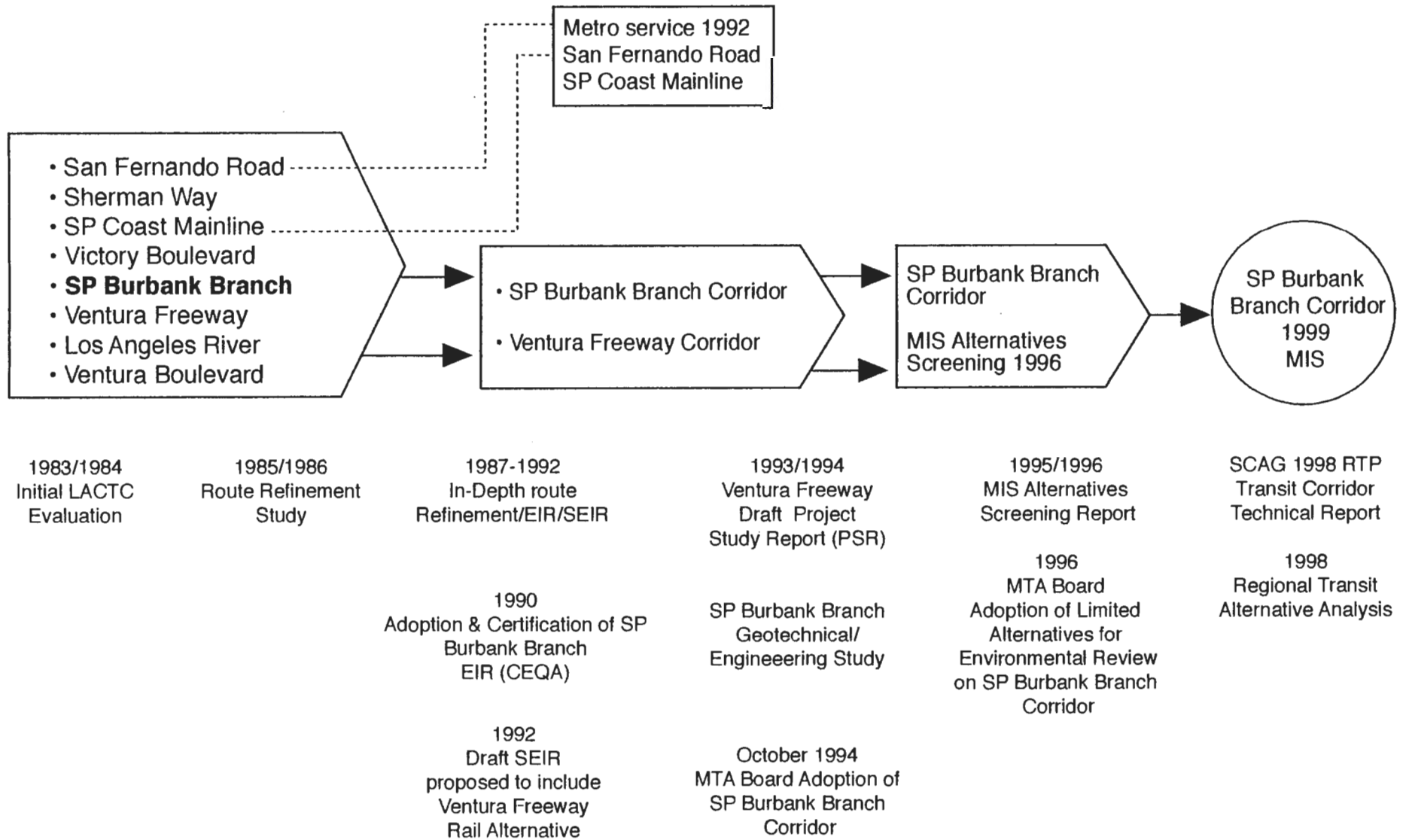
Summary of Results - February 4, 2000



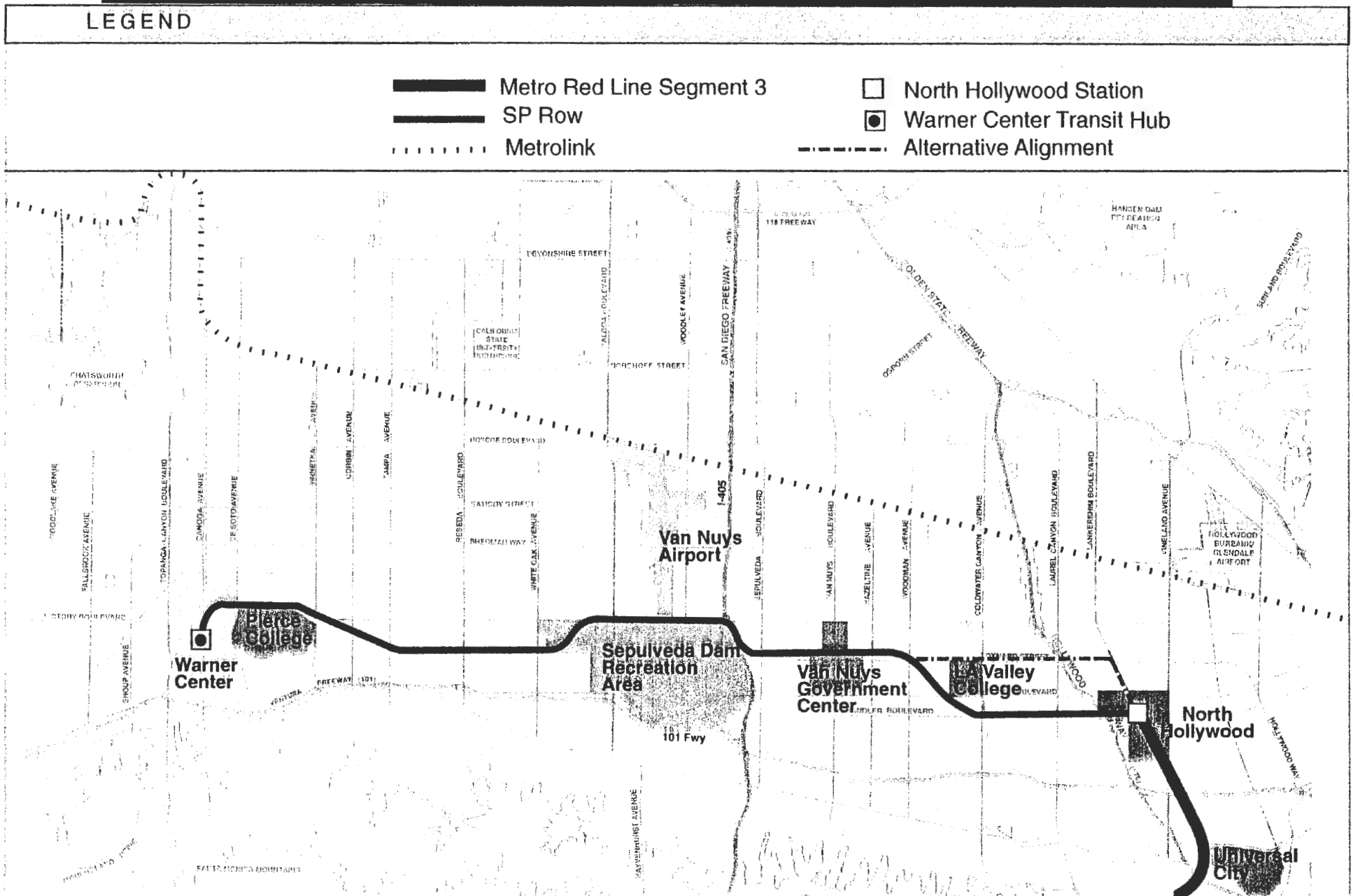
prepared by GRUEN ASSOCIATES



# Previous Studies / Evaluation



# Location of Study Corridor



# Population / Employment / Housing Trends

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- San Fernando Valley: 260 square miles
- Population in the Valley:
  - 1.02 million in 1980
  - 1.38 million in 2000
  - 1.77 million in 2020
- Percent Change in Population 2000-2020:

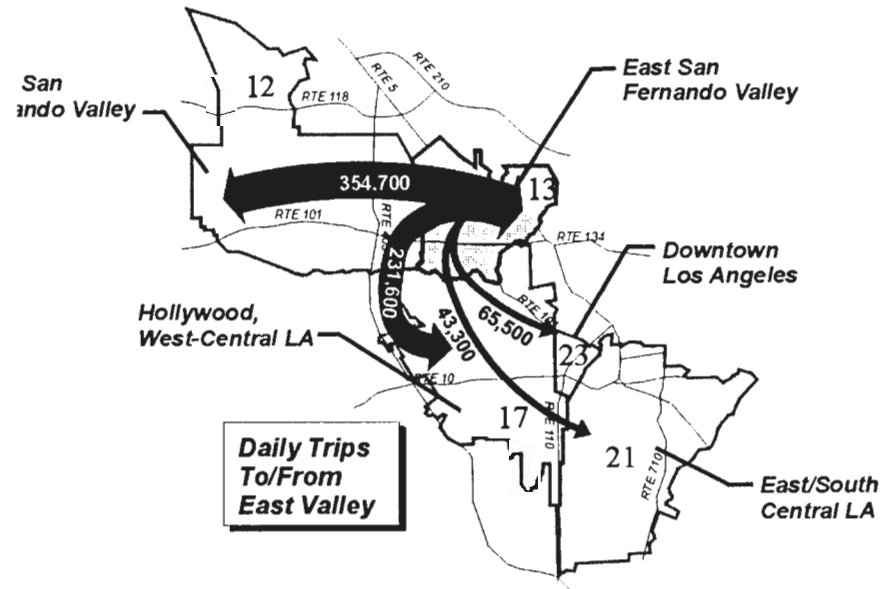
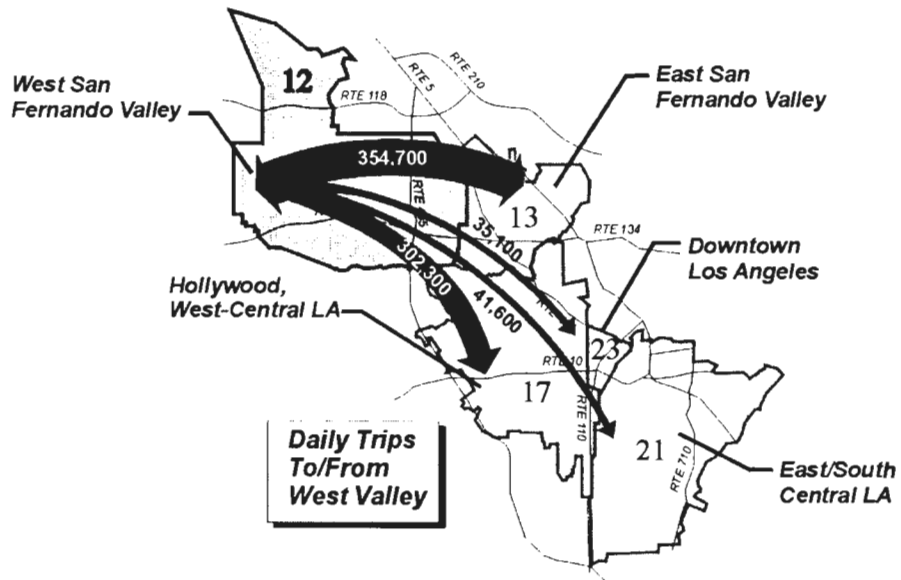
	Population	Employment	Housing
San Fernando Valley	+28%	+21%	+25%
Los Angeles County	+25%	+28%	+27%

## Changing Demographics and Mobility

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- Increase in poverty (8% in 1980 to 11% in 1990)
- Increase in minorities (26% in 1980 to 44% in 1990)
- Increase in non-English speaking population (60% increase between 1980 and 1990)
- Increase in number of workers per household (8% from 1980 to 1990)
- Over 40% of Valley households have access to one or no vehicles.

# Existing Travel Patterns



# Alternatives



1. BRT entirely at-grade
2. BRT with grade separations at Van Nuys and Sepulveda



3. LRT entirely at-grade
4. LRT with multiple changes in profile



5. Red Line (HRT) in the East Valley and BRT in the West Valley
6. Dual-Mode Red Line Extension



7. Diesel Multiple Unit (DMU) vehicles

TSM and No Build

# Description of Alternatives

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## No Build Plus TSM

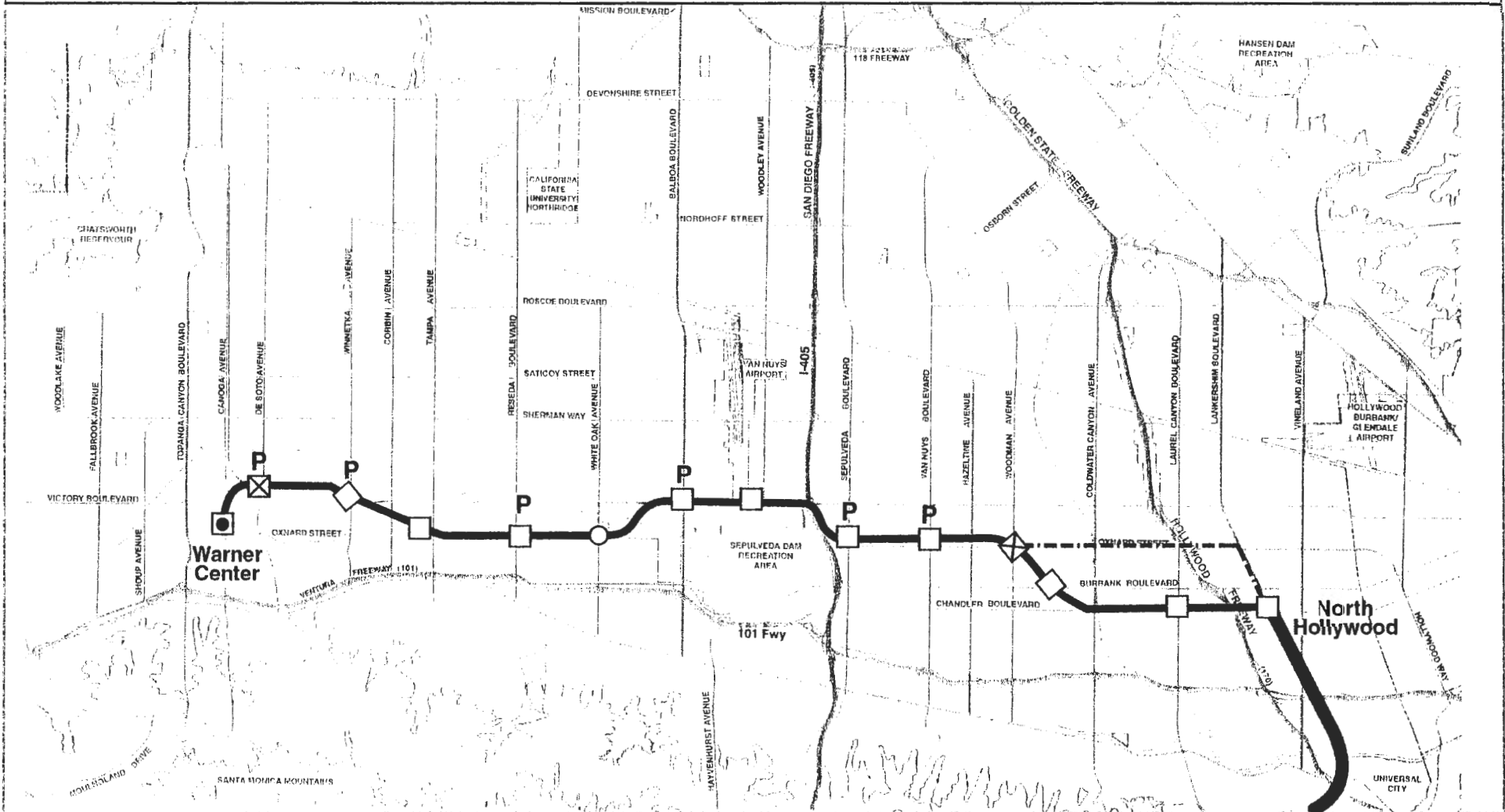
1. Bus Rapid Transit (BRT) From North Hollywood to Warner Center
  - Entirely at-grade
  - 14 miles
2. Enhanced Bus Rapid Transit (BRT) From North Hollywood to Warner Center
  - Fixed guideway busway
  - Two grade separations at Van Nuys and Sepulveda Boulevards
  - 14 miles
3. Light Rail Transit (LRT) From North Hollywood to Warner Center
  - Predominantly at-grade
  - 14 miles
4. Enhanced Light Rail Transit (LRT) From North Hollywood to Warner Center
  - Grade separated at some intersections and through Chandler Boulevard
  - 14 miles
5. Red Line Extension (HRT) From North Hollywood to I-405 With Bus Rapid Transit (BRT) to Warner Center
  - HRT segment has deep-bore, cut-and-cover, open-air, and aerial variations
  - BRT segment similar to Alternative 1 above
  - 6 miles rail, 8 miles bus
6. Dual-Mode Red Line Extension From North Hollywood to Warner Center
  - Predominantly at-grade
  - Vehicle modifications to include third rail and overhead catenary
7. Diesel Multiple Unit (DMU) Vehicles From Burbank to Chatsworth
  - Entirely at-grade
  - 22 miles with limited stops



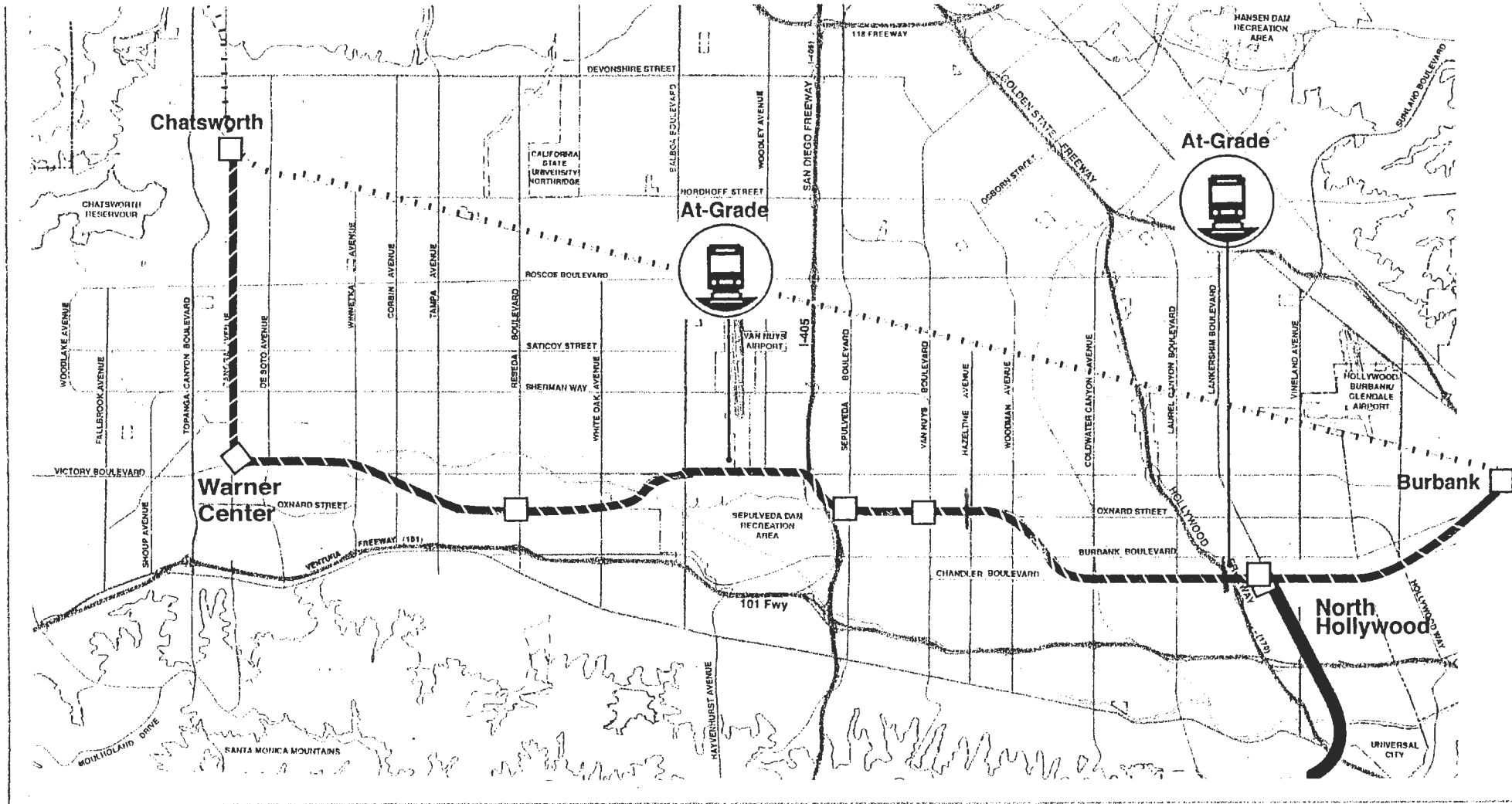
# Alternatives 1 through 6

## SP RIGHT-OF-WAY EAST-WEST TRANSIT CORRIDOR














- P Park and Ride
- ▣ Station
- ▣ Station for Alternatives 1 and 2 only
- Station for Alternatives 4 and 6 only
- ◼ Warner Center Transit Hub
- ▬ Metro Red Line Segment 3
- ▬ SP Row
- - - - Alternative Alignment

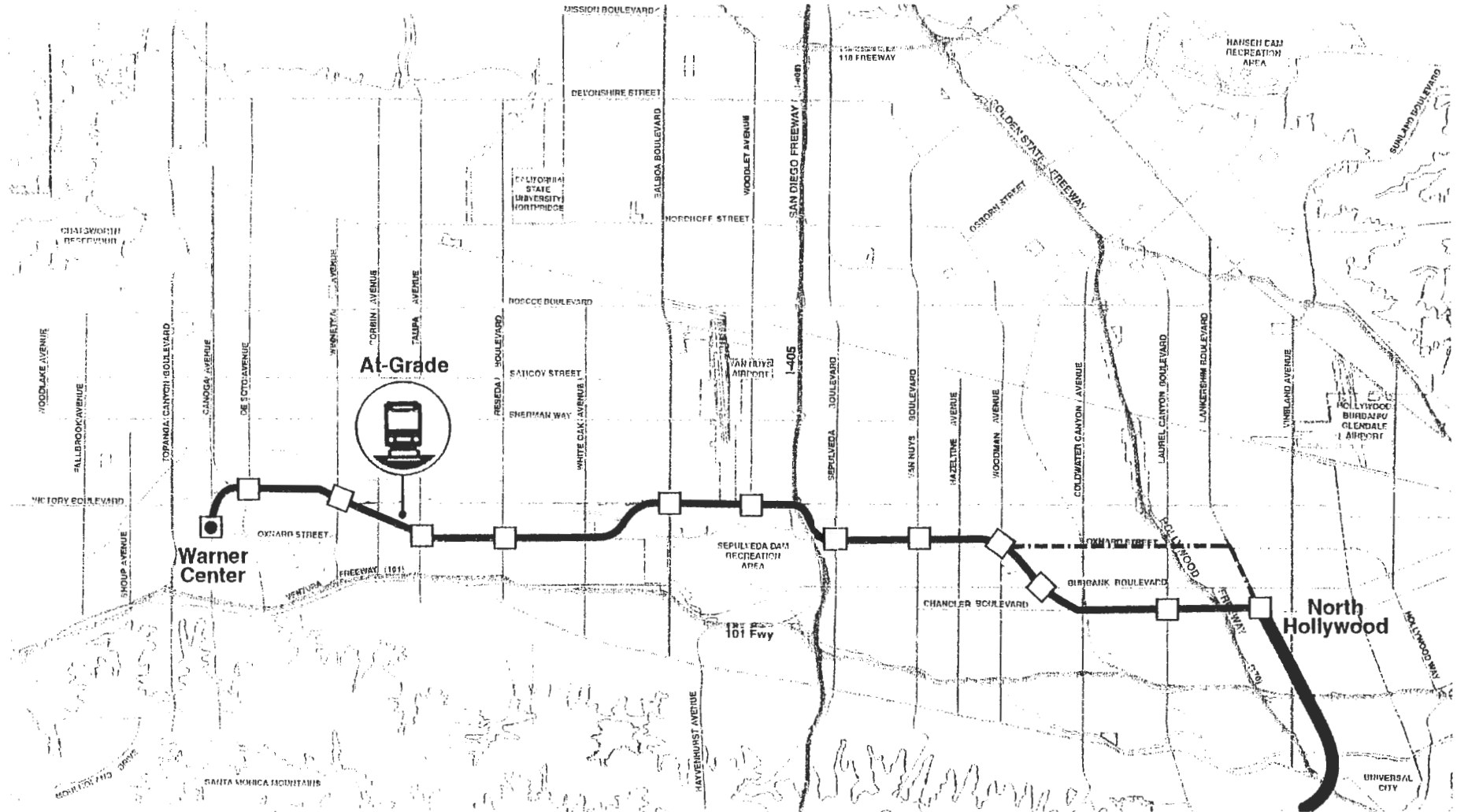


# Alternative 7 – DMU

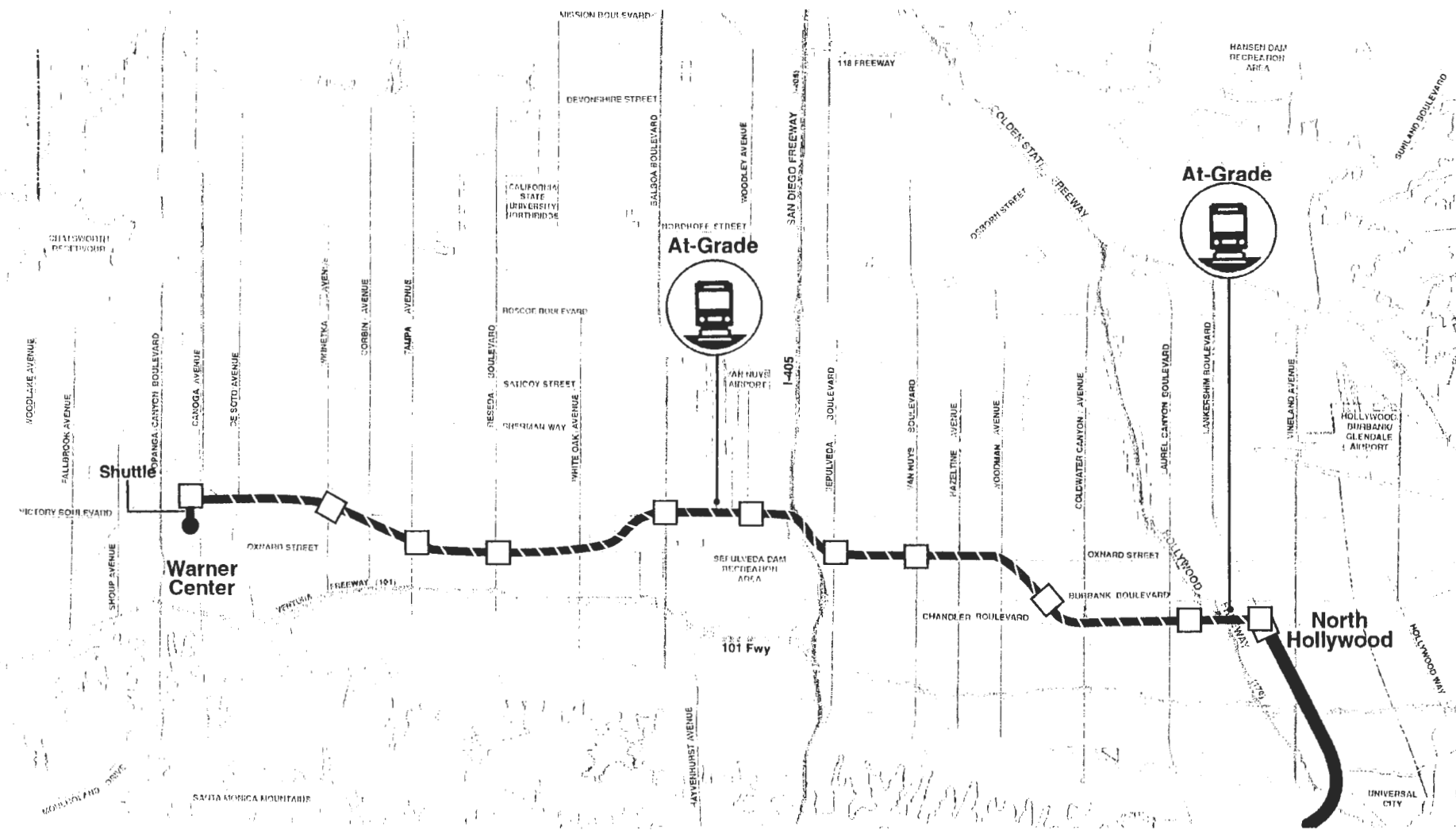
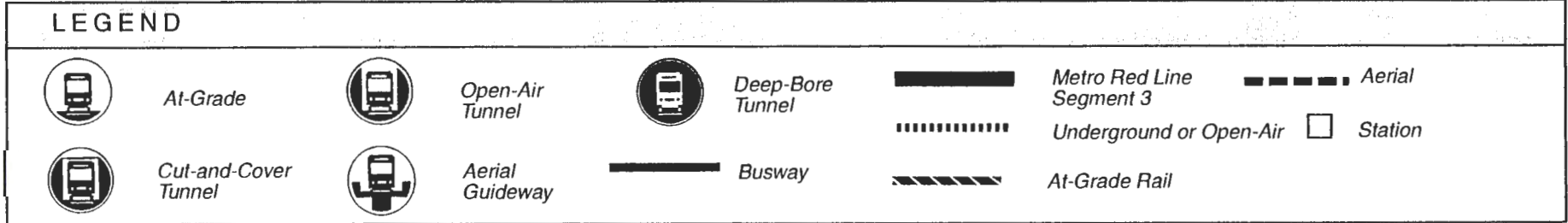


# Alternatives 1 and 2












LEGEND									
	At-Grade		Open-air Channel		Deep-bore Tunnel		Metro Red Line Segment 3		Aerial
	Cut-and-Cover Tunnel		Aerial Guideway		Busway		Under ground or Open Air		Station
					Route Alternative		At-grade Rail		Warner Center Transit Terminal

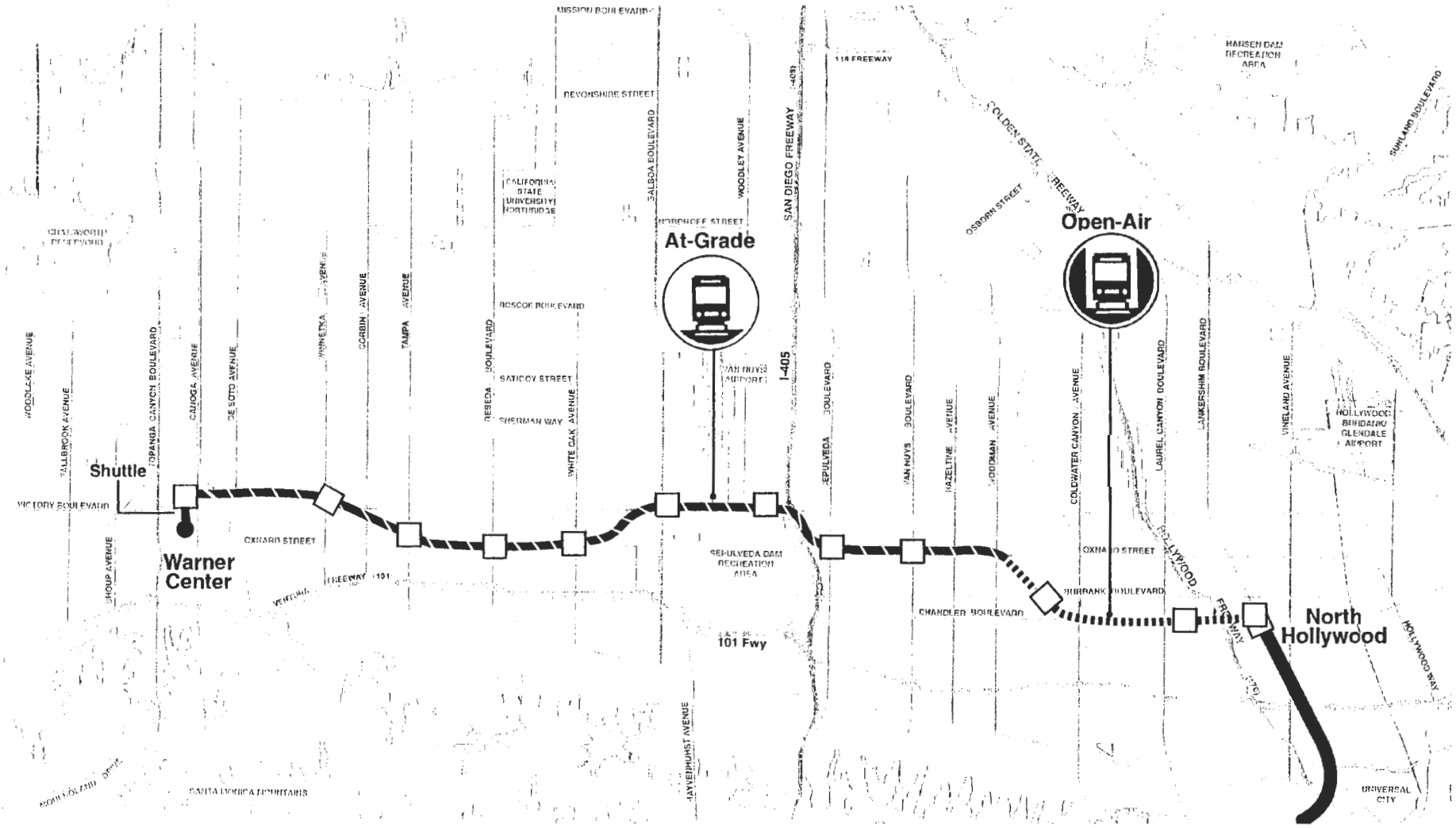


# Alternative 3















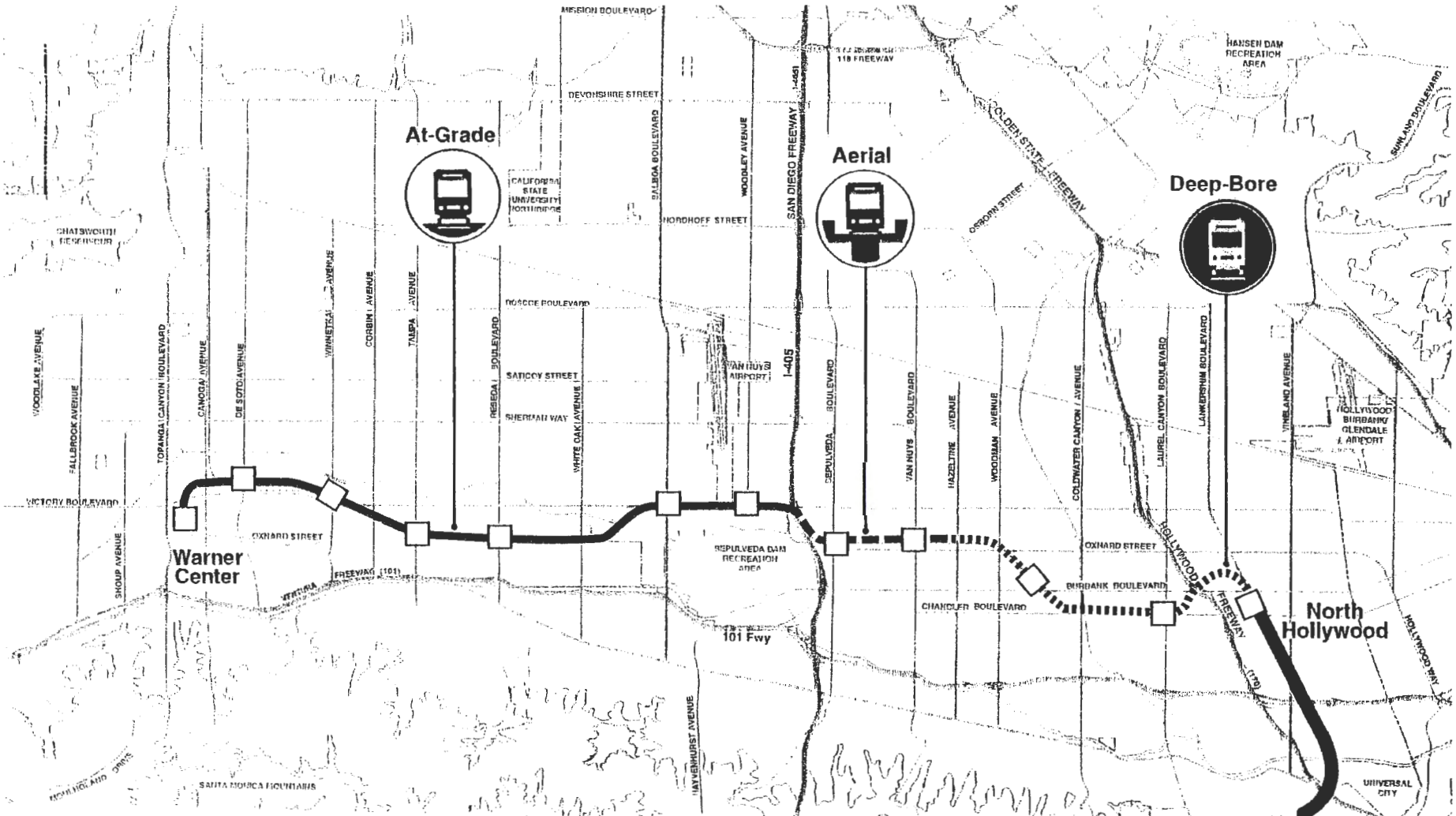
# Alternative 4

LEGEND									
	At-Grade		Open-Air Channel		Deep-Bore Tunnel		Metro Red Line Segment 3		Aerial
	Cut-and-Cover Tunnel		Aerial Guideway		Busway		Underground or Open-Air		Station
							At-Grade Rail		










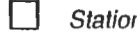




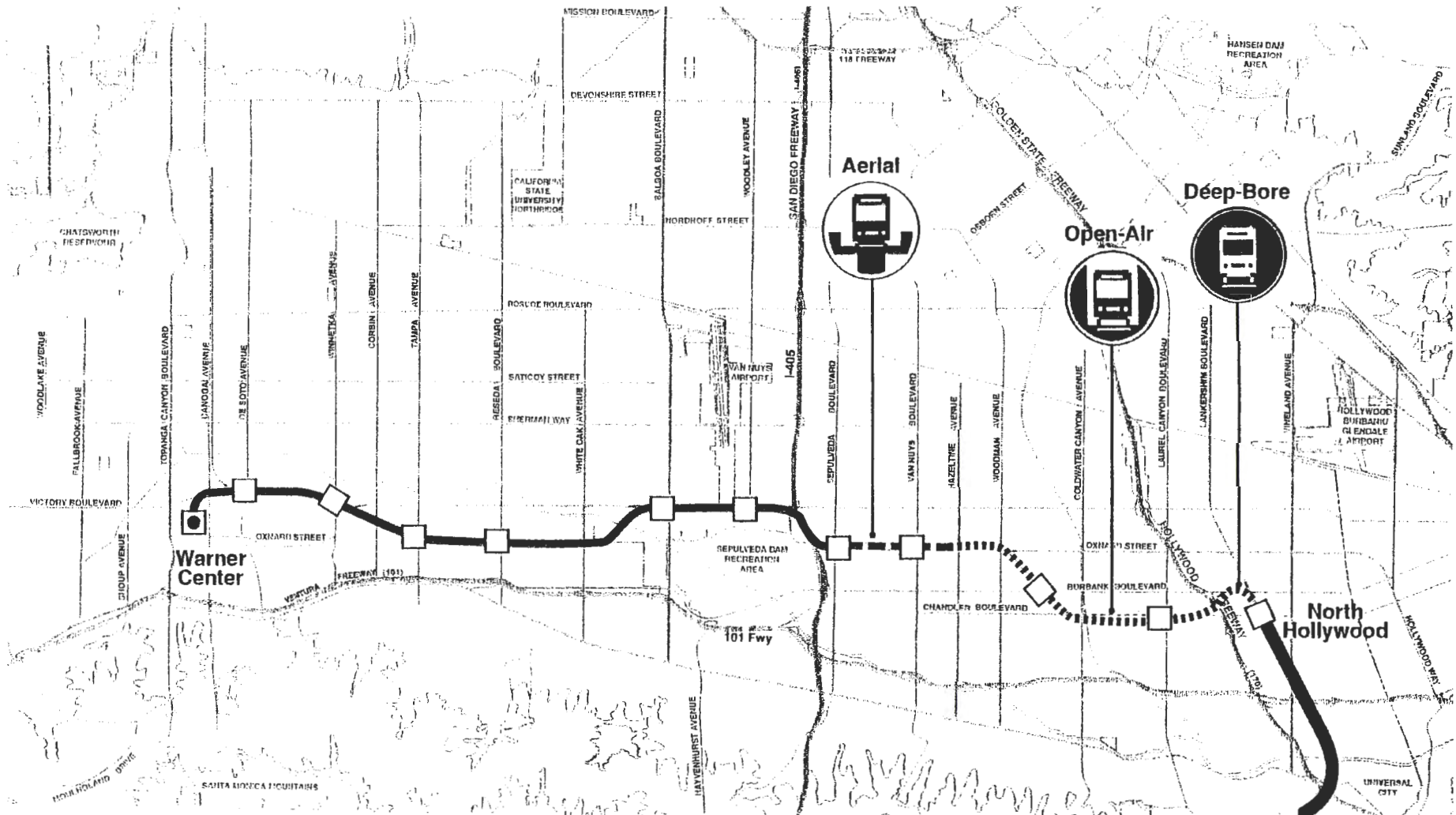
# Alternative 5

LEGEND									
	At-Grade		Open-air Channel		Deep-Bore Tunnel		Metro Red Line Segment 3		Aerial
	Cut-and-Cover Tunnel		Aerial		Busway		Underground or Open-Air		Station
	Aerial Guideway						At-grade Rail		















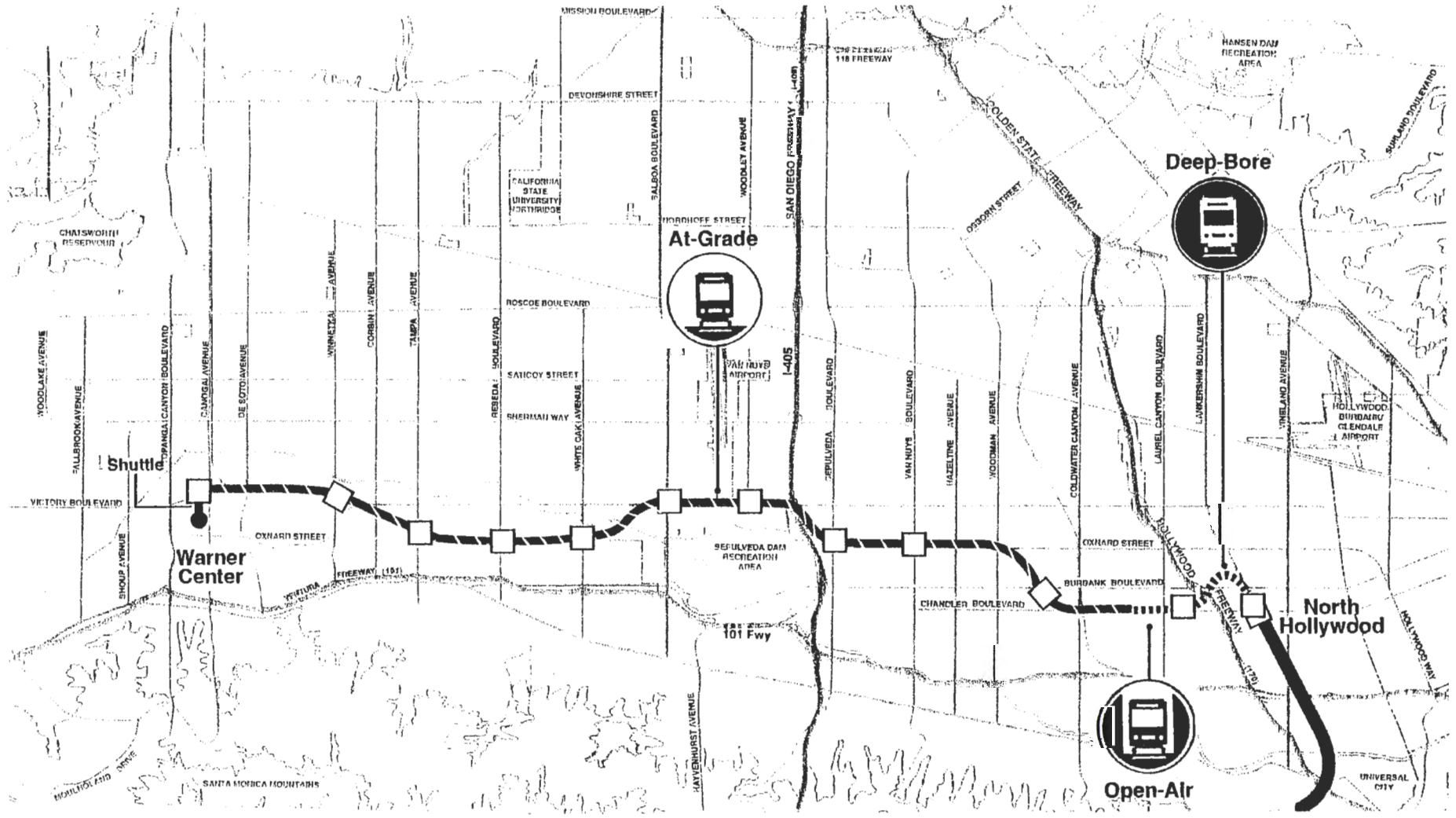
# Alternative 5 (Open-Air)

LEGEND									
	At-Grade		Open-air Chanel		Deep-bore Tunnel		Metro Red Line Segment 3		Aerial
	Cut-and-Cover Tunnel		Aerial Guideway		Busway		Underground or Open-Air		Station
							At-Grade Rail		Warner Center Transit Terminal



# Alternative 6

LEGEND									
	At-Grade		Open-air Channel		Deep-Bore Tunnel		Metro Red Line Segment 3		Aerial
	Cut-and-Cover Tunnel		Aerial Guideway		Busway		Underground or Open-Air		Station
							At-Grade Rail		Warner Center Transit Terminal





# Alternatives Matrix

	1 Bus Rapid Transit (BRT)	2 Enhanced Bus Rapid Transit (BRT)	3 Light Rail Transit (LRT)	4 Enhanced Light Rail (LRT)	5 Red Line - N. Hollywood to 1-405 with BRT to Warner Ctr.	6 Dual-Mode Red Line Extension	7 Diesel Multiple Unit (DMU) - Burbank to Chatsworth
LENGTH	Exclusive lanes: 12.9 miles  Mixed flow: 1.3 miles	Exclusive lanes: 12.9 miles  Mixed flow: 1.3 miles	Rail: 13.6 miles  Shuttle: 0.5 miles	Rail: 13.6 miles  Shuttle: 0.5 miles	Exclusive lanes: Rail: 5.6 mi. Bus: 7.4 mi.  Mixed flow bus: 1.0 mi.	Rail: 13.8 miles  Shuttle: 0.5 miles	Rail: 22 miles
STATIONS	13 stations	13 stations	11 stations	12 stations	12 stations	12 stations	5 stations plus existing at Burbank and Chatsworth
North Hollywood *	At grade	At grade	At grade	At grade	Existing underground	Existing underground	At grade
Laurel Canyon Blvd.	At grade	At grade	At grade	Open air	Cut and cover or open air, Park and Ride (110 spaces)	Open air Park and Ride (110 spaces)	-
Valley College - Fulton Ave. / Burbank Blvd.	At grade	At grade	At grade	Open air Park and Ride (83 spaces)	Cut and cover, open air, or aerial, Park and Ride (83 spaces)	At grade	-
Woodman Ave.	At grade	At grade	-	-	-	-	-
Van Nuys Blvd.	At grade Park and Ride (1060 spaces)	Aerial Park and Ride (1250 spaces)	At grade Park and Ride (1060 spaces)	Aerial Park and Ride (1250 spaces)	Aerial Bus Facility Park and Ride (1250 spaces)	At grade Park and Ride (1060 spaces)	At grade Park and Ride (1060 spaces)
Sepulveda Blvd.	At grade Park and Ride (1200 spaces)	Aerial Park and Ride (1200 spaces)	At grade Park and Ride (1200 spaces)	Aerial Park and Ride (1200 spaces)	Aerial Bus Facility Park and Ride (1200 spaces)	At grade Park and Ride (1200 spaces)	At grade Park and Ride (1200 spaces)
Woodley Ave.	At grade	At grade	At grade	At grade	At grade	At grade	-
Balboa Blvd.**	At grade Park and Ride (240 spaces)	At grade Park and Ride (240 spaces)	At grade Park and Ride (240 spaces)	Aerial Park and Ride (240 spaces)	At grade Park and Ride (240 spaces)	At grade Park and Ride (240 spaces)	-
White Oak Ave.	-	-	-	At grade Park and Ride (700 spaces)	-	At grade Park and Ride (700 spaces)	-
Reseda Blvd.	At grade Park and Ride (400 spaces)	At grade Park and Ride (400 spaces)	At grade Park and Ride (400 spaces)	Aerial Park and Ride (570 spaces)	At grade Park and Ride (400 spaces)	At grade Park and Ride (400 spaces)	At grade Park and Ride (400 spaces)
Tampa Ave.	At grade	At grade	At grade	At grade	At grade	At grade	-
Winnetka Ave.	At grade Park and Ride (350 spaces)	At grade Park and Ride (350 spaces)	At grade Park and Ride (350 spaces)	Aerial Park and Ride (1040 spaces)	At grade Park and Ride (350 spaces)	At grade Park and Ride (350 spaces)	-
De Soto Ave./ Variel Ave.	At grade (130 spaces)	At grade (130 spaces)	-	-	At grade (130 spaces)	-	-
Victory Blvd. / Owensmouth Ave.	-	-	Aerial	Aerial	-	Aerial	At grade
Warner Ctr. Transit Promenade Hub (Shopping Center)	At grade	At grade	Shuttle to rail terminus	Shuttle to rail terminus	At grade	Shuttle to rail terminus	-

# Evaluation Criteria

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

# Capital Cost

(in 1999 \$ millions)

	Full Length (14 miles)	MOS*
TSM	\$95	N/A
Alt. 1 – BRT	\$176	\$80
Alt. 2 – BRT	\$214	\$129
Alt. 3 – LRT	\$534	\$263
Alt. 4 – LRT	\$940	\$593
Alt. 5 – HRT/BRT	\$938	\$864
Alt. 6 – Dual-Mode	\$858	\$426
Alt. 7 – DMU (22 mi.)	\$463	\$204

\* MOS - East Valley except BRT, Woodman to Balboa.  
(Excludes previously acquired ROW - \$159 mil. Full Length, \$79.5 mil. MOS)

# Annual Operating Cost

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(in 1999 \$ millions)

	Over No Build	Over TSM
TSM	\$38	N/A
Alt. 1 – BRT	\$48	\$10
Alt. 2 – BRT	\$48	\$10
Alt. 3 – LRT	\$59	\$21
Alt. 4 – LRT	\$60	\$21
Alt. 5 – HRT/BRT	\$58	\$20
Alt. 6 – Dual-Mode	\$63	\$25

## **Fixed Guideway Daily Transit Boardings**

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Alt. 1 – BRT	20,600
Alt. 2 – BRT	20,600
Alt. 3 – LRT	28,000
Alt. 4 – LRT	28,000
Alt. 5 – HRT/BRT	TBD
Alt. 6 – Dual-Mode	19,600

## **Fixed Guideway New Daily Transit Trips**

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	Over No Build	Over TSM
Alt. 1 – BRT	30,300	5,000
Alt. 2 – BRT	30,300	5,000
Alt. 3 – LRT	33,100	7,800
Alt. 4 – LRT	33,100	7,800
Alt. 5 – HRT/BRT	28,100	2,800
Alt. 6 – Dual-Mode	37,500	12,200

# Cost-Effectiveness

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Annualized Cost Per New Daily Transit Trip

	Over No Build	Over TSM
TSM	\$6	N/A
Alt. 1 – BRT	\$8	\$16
Alt. 2 – BRT	\$8	\$18
Alt. 3 – LRT	\$11	\$26
Alt. 4 – LRT	\$14	\$39
Alt. 5 – HRT/BRT	\$16	\$108
Alt. 6 – Dual-Mode	\$12	\$24

# Travel Time Comparison

	BUS RAPID TRANSIT (BRT)	LIGHT RAIL (LRT)	HEAVY RAIL (HRT) (DUAL-MODE to Warner Ctr.)
Total Runtimes (Warner Center to North Hollywood)	<b>28.6</b> minutes  (TODAY – 55 minutes via Local Bus)	<b>26.0</b> minutes	<b>24.2</b> minutes
Total Runtimes (Warner Center to Downtown)	<b>55.6</b> minutes	<b>53.0</b> minutes	<b>51.2</b> minutes
Average Speed	<b>29.2</b> mph	<b>30.4</b> mph	<b>33.5</b> mph
Average Distance between Stations (miles)	<b>1.16</b> miles	<b>1.20</b> miles	<b>1.35</b> miles
Headways	<b>Peak: Varies - 2 min. at N. Hollywood 3.5 min. at Warner Center</b>	<b>Peak: 4 minutes Base: 8 minutes</b>	<b>Peak: 4 minutes Base: 8 minutes</b>



# **Distinguishing Environmental Effects**

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## **VISUAL AND AESTHETIC CONDITIONS –**

Aerial stations and alignments (Alt. 2, 4, and 5) and overhead wires (Alt. 3, 4, and 6) create adverse effects.

## **PROPERTY ACQUISITION –**

Required for busway realignment at Fulton/Burbank intersection (Alt. 1 and 2), a rail yard (Alt. 3 and 4) and construction staging areas (Alt. 5 and 6).

## **AIR QUALITY, NOISE AND VIBRATION –**

DMU vehicles emit diesel exhaust, and at-grade rail will generate increased noise from warning bells.

## **CULTURAL RESOURCES –**

Historic Lankershim Depot could be used as a light rail station.

## **SAFETY AND SECURITY –**

Safety concerns exist with regard to at-grade rail and bus crossings.

## **Community Acceptance and Barriers for Implementation**

- The outreach process has included more than 120 stakeholder representatives.
- Community and business leaders seem to favor the busway (BRT) alternatives. (Alternatives 1 and 2)
- Previous community opposition to at-grade rail along Chandler Boulevard resulted in the Robbins legislation (SB211). (Alternatives 3, 6, and 7)
- In 1998, Proposition A prevented the use of local funds for subway. (Alternatives 5 and 6)
- Stakeholders want to see the right-of-way improved and landscaped. (All Alternatives)

# Basis for Recommendations

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## ALTERNATIVE 1 – BRT

- Lowest capital and O&M costs.
- Most cost effective per new transit rider.
- On exclusive, landscaped right-of-way with substantial cross valley travel time savings over local and rapid bus.
- Future speeds primarily not affected by future automobile traffic congestion.
- Rail not precluded in the future.

## ALTERNATIVE 2 – BRT

- Same as Alternative 1 with grade separations, if needed in future at congested intersections.

## **Basis for Recommendations (continued)**

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### ALTERNATIVE 3 – LRT

- Ridership greater but three times the capital cost and not as cost-effective as the Busway, Alternative 1.
- Robbins Bill would need to be amended.
- Mixed community support due to overhead wires, warning bells, and pedestrian barrier / safety issues.

### ALTERNATIVE 4 – LRT

- Extensive changes in profile to mitigate community issues at twice the cost of the at-grade LRT.
- Ridership greater but five times the capital cost of Alternative 1 and substantially less cost-effective than Alternatives 1, 2 and 3.

## **Basis for Recommendations (continued)**

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### ALTERNATIVE 5 – HRT/BRT

- Highest capital costs.
- Transfer required at the I-405 to Busway.
- Proposition A limits local funding for subway.

### ALTERNATIVE 6 – HRT

- Highest ridership per new transit trip but almost five times the capital cost of the Busway.
- Transfer not required at North Hollywood.
- Robbins Bill would need to be amended.
- Proposition A limits local funding for subway portion at North Hollywood.

## **Basis for Recommendations (continued)**

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### ALTERNATIVE 7 – DMU

- Higher cost per mile than Busway alternatives with less service (headways 15 minutes instead of 2 ½ - 4 minutes and stops at only 5 stations instead of 13).
- Robbins Bill would need to be amended.
- Potential emissions from diesel vehicles.
- Burbank residents and Chandler Boulevard residents may not support at-grade profiles.

# Recommendations

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- Select Alternative 1, Bus Rapid Transit (BRT) to be studied in Phase II (Draft Environmental Report) from North Hollywood to Warner Center
- Include an option for an initial phase project between Woodman Avenue and Balboa Boulevard.

# Bus Routing Plan with Improved Headways

## LEGEND

### Realigned Services

- Line 240
- ..... Line 422
- - - Line 364

### New Services

- ..... New Service #2
- New Service #1
- - - Potential Future Service Expansion

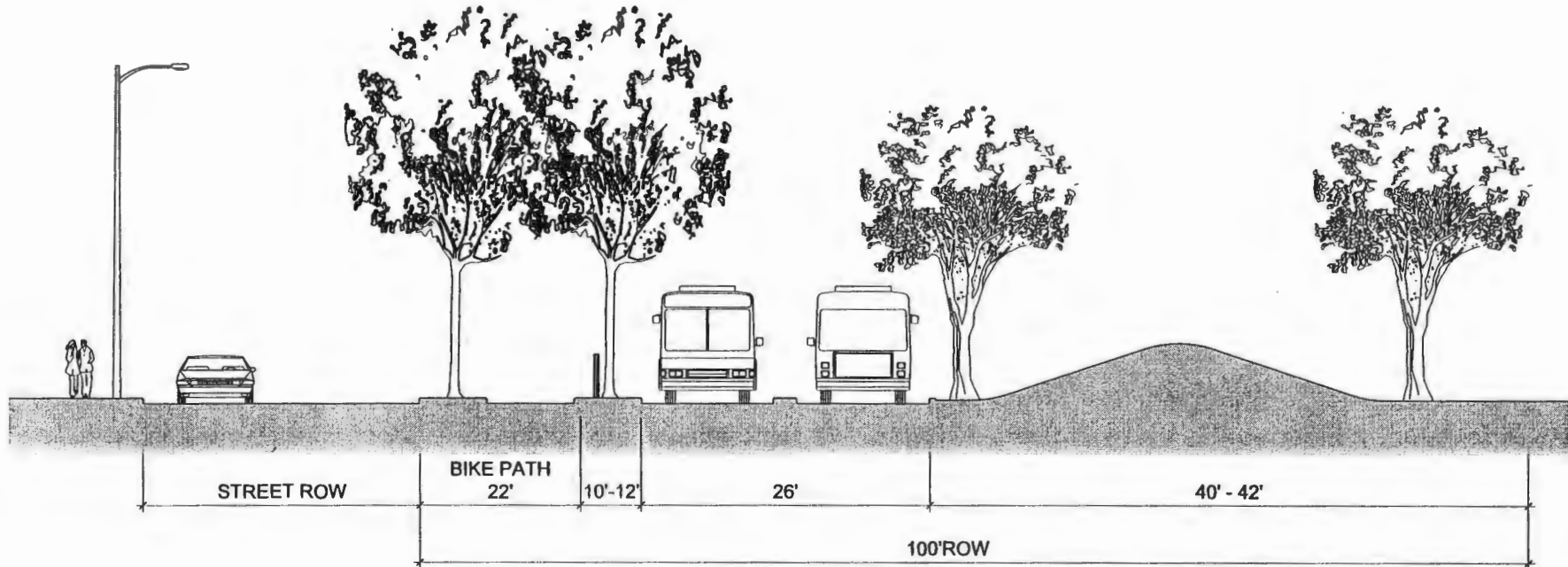
□ Station

← Improved bus headways





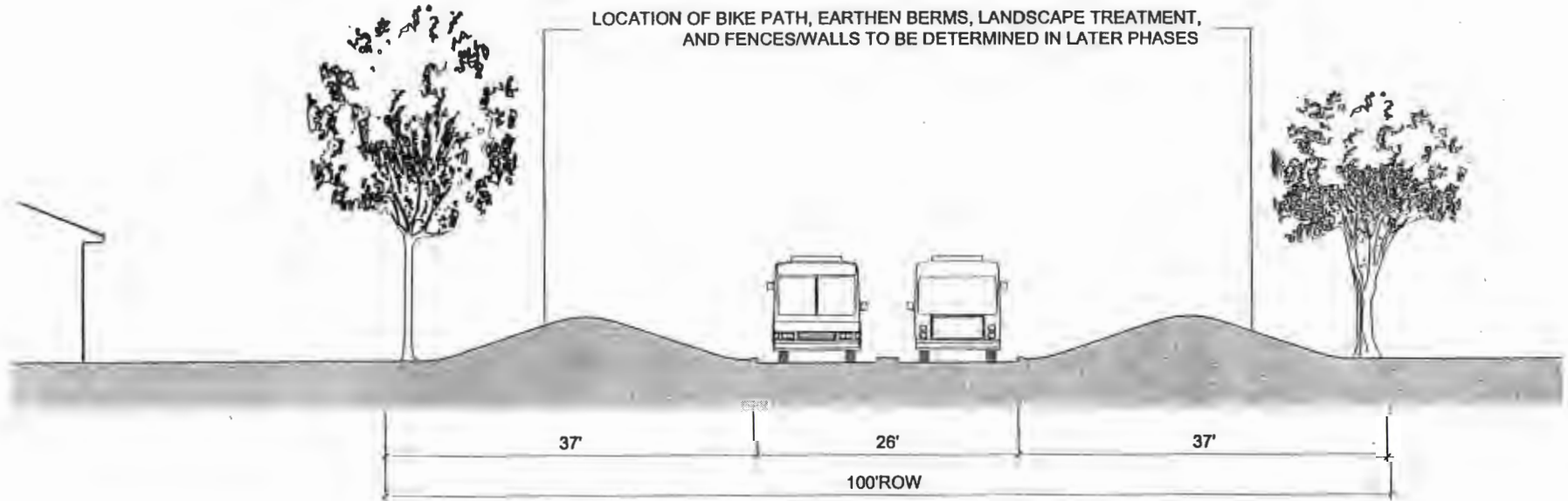
# Busway Sections



Alternatives 1 and 2  
Typical Bus Rapid Transit Adjacent to an Existing Street

# Busway Sections

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Alternatives 1 and 2  
Typical Bus Rapid Transit Adjacent to Rear of Private Property

# San Fernando Valley Busway



# Van Nuys Transit Station



# Busway – MOS

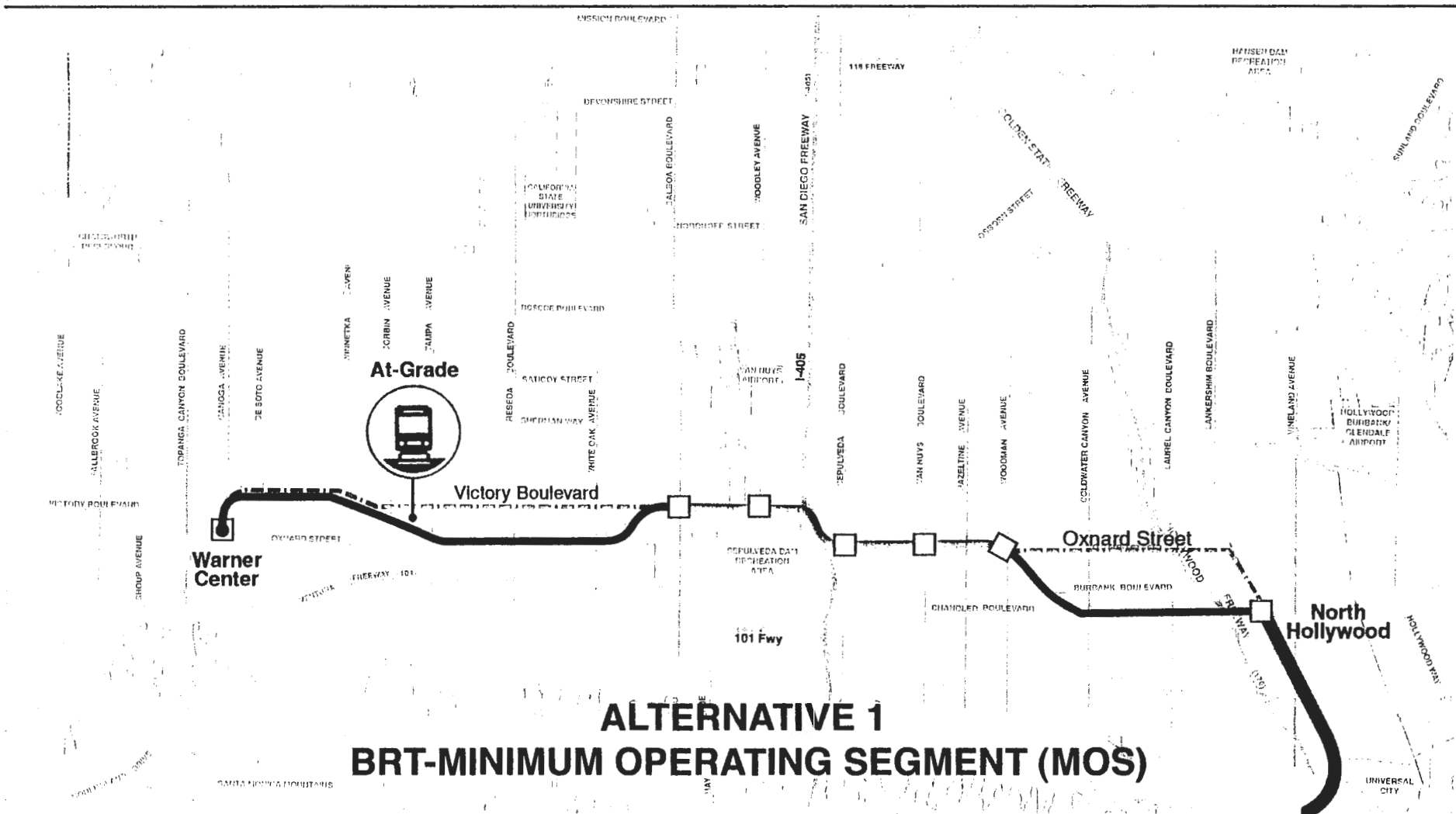


● Warner Center Transit Terminal

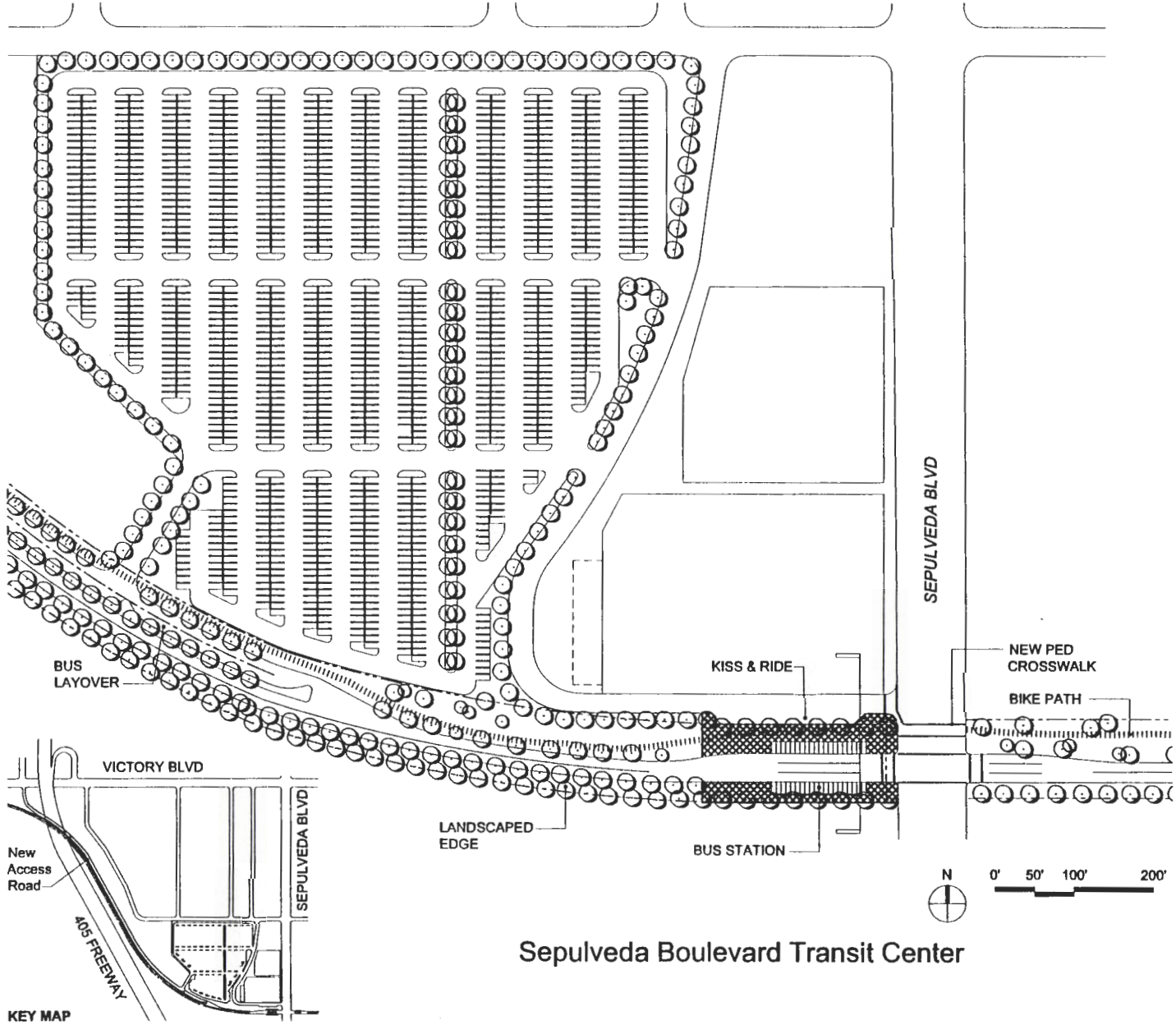
□ Station

— Busway  
 — MOS

— Metro Red Line Segment 3



# Park and Ride



Sepulveda Boulevard Transit Center

# Evaluation Summary Matrix

## San Fernando Valley East-West Transit Corridor Alternatives Summary Evaluation Matrix

Alternative	Capital Cost, Millions, 1999\$		Annual Operating Cost Millions, 1999\$		New Daily Transit Trips		Daily Fixed Guideway Boardings	Annualized Cost Per New Daily Transit Trip		Operating Cost per System Boarding Compared to the No Build	Average Speed & Maximum Speed (MPH)	Travel Time (Minutes), North Hollywood to Warner Center	Distinguishing Environmental Issues	Community Support
	Full Length Project*	MOS Project**	Compared to No Build	Compared to TSM	Compared to No Build	Compared to TSM		Compared to No Build	Compared to TSM					
TSM	\$95***	N/A	\$38	N/A	25,300	N/A	N/A	\$6	N/A	\$2.48	N/A	N/A	Existing conditions	Medium
1. BRT To Warner Center	\$176	\$80	\$48	\$10	30,300	5,000	20,600	\$8	\$16	\$3.11	29.4 Average 55 Maximum	28 ½	Low Visual Impact	Medium
2. BRT To Warner Center	\$214	\$129	\$48	\$10	30,300	5,000	20,600	\$8	\$18	\$3.12	29.4 Average 55 Maximum	28 ½	Low Visual Impact	Medium
3. LRT To Warner Center	\$534	\$263	\$59	\$21	33,100	7,800	28,000	\$11	\$26	\$3.59	32.3 Average 55 Maximum	26	Medium Visual Impact Warning Bell Noise	Low
4. LRT To Warner Center	\$940	\$593	\$60	\$21	33,100	7,800	28,000	\$14	\$39	\$3.61	32.3 Average 55 Maximum	26	Medium Visual Impact	Medium
5. HRT/BRT HRT to I-405 & BRT to Warner Center	\$938	\$864	\$58	\$20	28,100	2,800	TBD	\$16	\$108	\$5.91	TBD Average 70 Maximum	TBD + transfer time	Low Visual Impact	High
6. Dual-Mode Car to Warner Center	\$858	\$426	\$63	\$25	37,500	12,200	19,600	\$12	\$24	\$5.41	35 Average 70 Maximum	24	Medium Visual Impact Warning Bell Noise	Low
7. DMU Burbank to Chatsworth	\$463	\$204	****	****	****	****	****	****	****	****	****	****	Low Visual Impact Diesel Emissions	Low

\* - Excludes previously expended right-of-way cost (\$159.0 million).

\*\* - Excludes previously expended right-of-way cost (\$79.5 million).

\*\*\* - Includes Ventura and Van Nuys Blvds. Rapid Bus, increase in headways on Red Line and bus.

\*\*\*\* - DMU Alternative not modeled. Identified by community during the course of study and could be included for further analysis in later phases of study.