CHAPTER 2
ALTERNATIVES CONSIDERED

CHAPTER 2 - ALTERNATIVES CONSIDERED

Three alternatives ~~are under~~ were ~~consideration~~ considered in ~~this~~ the Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR) for the San Fernando Valley East-West Transit Corridor released in May 2001. These alternatives were arrived at after consideration in an extensive screening and selection process, described in Section 2-1, which culminated in the recommendations of a Major Investment Study (MIS) released by the MTA in February 2000. Based on the recommendations in the MIS, the Board approved further study of a Bus Rapid Transit (BRT) exclusive ~~guideway~~ busway between the North Hollywood Metro Red Line station and Warner Center Transit Hub, 14 miles to the west. In addition, two baseline alternatives, the No Build and Transportation System Management (TSM) alternatives ~~are under~~ were ~~consideration~~ considered in ~~this~~ the Draft EIS/EIR. ~~Following the recommendations made in the MIS, on February 24, 2000 the MTA Board of Directors approved the development of a Draft EIS/EIR for these alternatives:~~

In July 2001, the MTA Board selected the Full BRT Alternative including the alignment along the Chandler Boulevard median as the Locally Preferred Alternative for the Final EIS/EIR. In addition, the Board directed staff to study the Lankershim/Oxnard On-Street Alignment variation for potential weekend service should the Board choose to not operate on Chandler Boulevard on weekends. Section 2-2.3 describes the Full BRT Alternative (Locally Preferred Alternative) in detail. This section includes refinements to the Full BRT Alternative developed during the preliminary engineering of the BRT Alternative, in response to comments received on the Draft EIS/EIR and community meetings held regarding design of the project after the Draft EIS/EIR was prepared. Section 2-2.4 describes the Lankershim/Oxnard On-Street Alignment, which would function as the weekend service option. Below is a summary of the alternatives considered in the Draft EIS/EIR and in this Final EIS/EIR:

1. **No Build -** The "No Build" alternative reflects conditions in the San Fernando Valley if no new transit improvements are made in the next twenty years. The No Build would include existing commitments, such as the Metro Rapid Bus demonstration project along Ventura Boulevard and High-Occupancy Vehicle (HOV) lanes along some freeways in the Valley. This alternative is used in comparison with "build" alternatives in order to better understand their impacts.

2. **Transportation System Management (TSM)** - The TSM alternative is a federally mandated "basic improvements" alternative. In other words, the TSM is composed of low-cost, non-capital intensive enhancements to transit service in the Valley. The San Fernando Valley TSM alternative is largely composed of increasing the frequency of transit service along major arterials.

3. **Bus Rapid Transit (BRT) -** The "build" alternative under consideration is a bus rapid transit system along an exclusive busway between the North Hollywood Metro Red Line station and the Warner Center Transit Hub along the former Southern Pacific Burbank Branch right-of-way (SP ROW; ~~also~~ now known as the MTA ROW). This BRT alternative would also include the Valley-wide bus service improvements of the TSM alternative, plus additional transit service improvements along some north-south arterials

that intersect the busway. The Full BRT Alternative, including the Chandler Boulevard median alignment, is the Locally Preferred Alternative selected by the MTA Board.

Lankershim/Oxnard On-Street Alignment – Also under consideration is a variation on the baseline BRT alternative that would also operate between the North Hollywood Metro Red Line station and the Warner Center Transit Hub. However, this variation would include a segment in which buses would run on-street in mixed traffic. This on-street segment would run from the North Hollywood Metro Red Line station, north on Lankershim Boulevard to Oxnard Street, and then west on Oxnard to Woodman Avenue. At Woodman, buses would enter the railroad right-of-way and continue to Warner Center on exclusive busway. The MTA Board directed that the Lankershim/Oxnard On-Street Alignment variation be considered as a weekend service option in lieu of operating on Chandler Boulevard on the weekend.

Minimum Operable Segment (MOS) - A segment of the full project between Woodman Avenue and Balboa Boulevard ~~is being~~ was studied as an initial phase. This shorter busway segment would ~~still~~ provide enhanced cross-Valley bus service. In addition to the busway, buses would run on-street along Oxnard Street to the east of the MOS and on Victory Boulevard to the west of the MOS to complete their runs from North Hollywood to Warner Center.

Section 2-2 provides detailed descriptions and graphics of these alternatives.

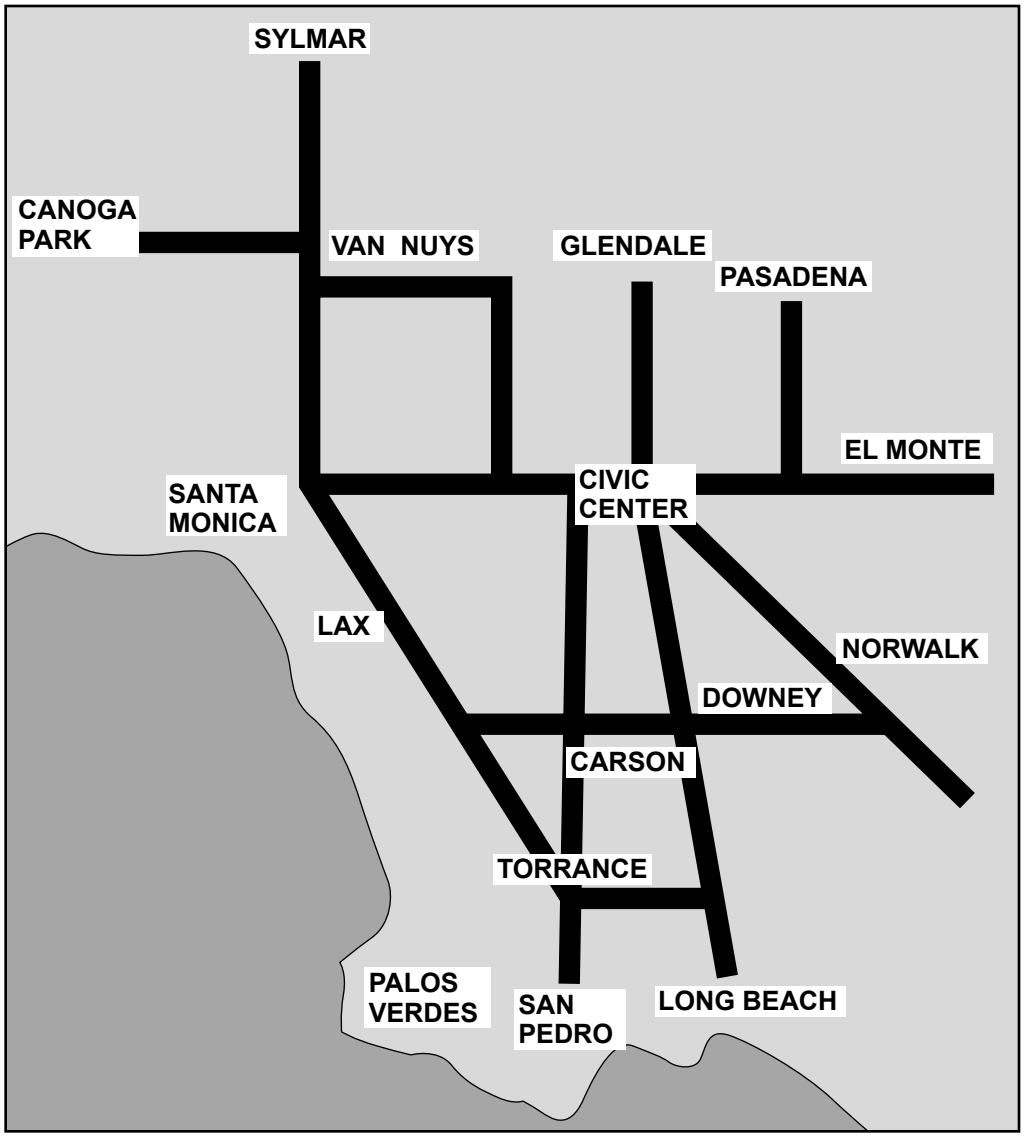
2-1 SCREENING AND SELECTION PROCESS

2-1.1 Successive Evaluation and Re-Evaluation of Candidate Alternatives

2-1.1.1 Background

In November 1980, Los Angeles County voters approved Proposition A, authorizing the Los Angeles County Transportation Commission (LACTC, now the MTA) to assess a county-wide half-cent sales tax to improve and expand the county's existing public transit system, and to construct and operate a rail rapid transit network. In June 1990, voters approved Proposition C, which added another half-cent to the local sales tax to fund further expansion of transit systems and allow expedited construction of area transportation projects. The passage of these two propositions led the LACTC to formulate the 30-Year Integrated Transportation Plan, adopted in April 1992, which called for construction of over 400 miles of rail transit in Los Angeles County and beyond, at a cost of approximately $187 billion. The map accompanying Proposition A on the ballot included a rail transit line running east-west through the San Fernando Valley (see Figure 2-1). The 30-Year Plan included this same corridor as a candidate for rail service.

However, in March 1995 the MTA adopted a scaled-down version known as the Long Range Plan, with a 20-year time frame extending to the year 2015. The Long Range Plan was drafted in response to Intermodal Surface Transportation Efficiency Act (ISTEA) requirements for fiscally-



Source: MTA, 1999.

Figure 2-1: Proposition A Rail Transit System

constrained transportation planning and addressed an anticipated decline in sales tax revenues due to the severity of the recession affecting the Los Angeles region. The Long Range Plan limited investment in the county's transit network to $72 billion, eliminating several previously proposed rail lines and designating five proposed rail projects as candidate corridors "should funding become available." Nonetheless, the east-west corridor through the San Fernando Valley from North Hollywood to I-405 remained a funded corridor (see Figure 2-2).

In July 1997, work on the San Fernando Valley Transit Corridor Study was suspended pending the adoption of an MTA Recovery Plan. In January 1998, the Metro Red Line Eastside and Mid-City subway projects were suspended, pending the adoption of a Recovery Plan and the evaluation of more cost-effective solutions for each corridor. As a result, there are $649 million in federal funding commitments to the heavy rail system that are under review, pending action by the MTA to develop alternatives to the previous heavy rail subway extensions.

In November 1998, the Regional Transit Alternatives Analysis (RTAA Study) was completed which identified several lower-cost options for the Eastside, Mid-City/Westside, and San Fernando Valley corridors. Previously prepared Major Investment Studies have been reevaluated and updated to reflect this new information. New alternatives must also be environmentally cleared in conformance with state and federal regulations to become eligible for future funding grants. Amended Locally Preferred Alternative (LPA) decisions ~~will be~~ were sought from the Board for the Eastside and Mid-City/Westside corridors. A first time LPA decision ~~will be~~ was sought from the Board for the San Fernando Valley East-West Transit Corridor. The Full BRT Alternative was selected as the Locally Preferred Alternative in July 2001. The Board also directed that consideration be given to the Lankershim/Oxnard On-Street Alignment variation as a potential weekend service alternative to Chandler Boulevard.

2-1.1.2 Previous Study Process

A series of studies ~~have~~ has been conducted over the past 12 years to identify promising transit alternatives and rail technologies for the San Fernando Valley East-West Transit Corridor (see Figure 2-3). The major periods of study (dates in bold) and the studies resulting from those efforts (italics) are summarized below:[1]

- **1983/1984** - *Preliminary Route Assessment, 1983* - Initiated by the Los Angeles County Transportation Commission (LACTC, now the MTA), this study provided a preliminary assessment of various above-ground rail transit alternatives for an east-west corridor through the San Fernando Valley. The alignments initially considered were: SP Coast Mainline, Sherman Way, Los Angeles River, SP ROW, Ventura Freeway, and Ventura Boulevard.

  Conclusion: The results of this initial analysis process led LACTC to remove the Sherman Way and Ventura Boulevard alternatives from further consideration and carry the remaining alternatives forward. Based on the preliminary assessment of the remaining candidate routes, LACTC selected a light rail line generally following the SP ROW as a representative route for system planning purposes.

[1] For all studies conducted prior to this EIS/EIR, the Southern Pacific ROW is referred to as the SP ROW. For all references pertaining to this EIS/EIR, the SP ROW, which was purchased by MTA, is referred to as the MTA ROW.

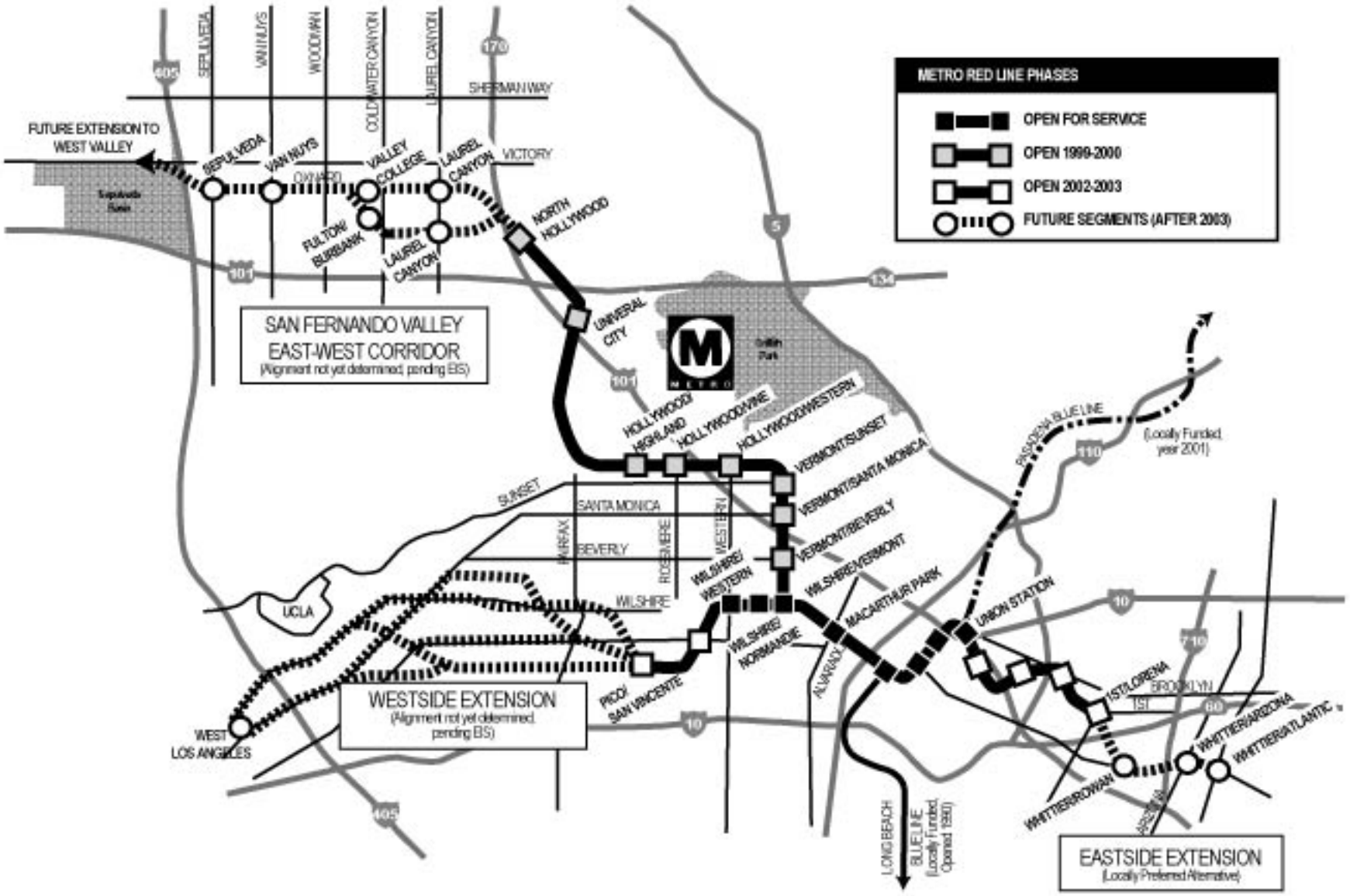
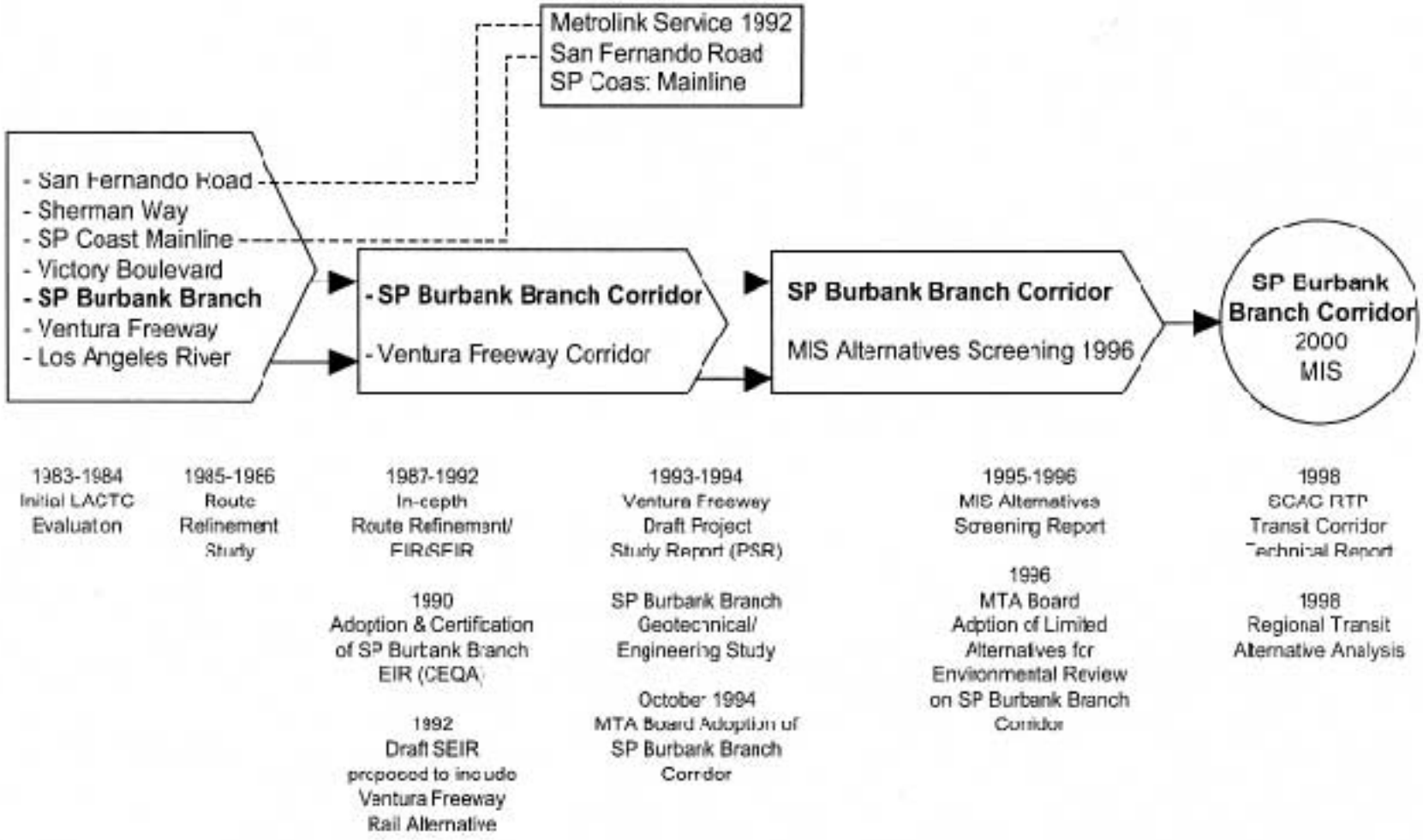


Figure 2-2: 1995 MTA Long Range Plan



Source: Gruen Associates, 2000.

Figure 2-3: Alternatives Evaluation Process

- **1985/1986** - *Route Refinement Study, 1985-86* - This study focused on options within the SP ROW.

  Conclusion: In response to local opposition to the SP ROW, LACTC broadened the range of alternatives under consideration to include again three other routes: the SP Coast Mainline, the Los Angeles River, and the Ventura Freeway; and to add Victory Boulevard.

- **1987 -** *Initial Alternatives Evaluation Report, 1987* - This study, a precursor to the EIR authorized by the LACTC in 1987, discussed the engineering considerations, environmental impacts, and land use impacts that would be associated with implementation of light rail transit service along the five alignments identified in the Route Refinement Study.

  Conclusion: Following completion of the report, the LACTC retained the SP ROW and Ventura Freeway alignments for consideration in an environmental impact report, and eliminated the SP Coast Mainline, Victory Boulevard, and Los Angeles River alignments from further consideration.

- **1990 - 1992** - *San Fernando Valley East-West Rail Transit Project Environmental Impact Report (EIR), 1990* - The EIR documented the costs, ridership, and environmental impacts associated with various rail transit options on the SP ROW and the Ventura Freeway. For the SP ROW, both HRT and LRT systems were examined. For the Ventura Freeway, an HRT extension and driverless automated rail systems operating adjacent to the freeway were evaluated.

  Conclusion: The EIR identified an extension of Metro Rail (the Red Line) along the SP ROW in deep-bore subway tunnels through residential areas, as the environmentally superior alternative; however, it was also the most costly. The EIR was certified by the LACTC in February 1990, and one month later the LACTC adopted a statement of findings and approved a mitigation monitoring plan, thus completing environmental clearance for the project under California law.

- *San Fernando Valley East-West Rail Transit Project Subsequent Environmental Impact Report: Ventura Freeway Advanced Aerial Technology Alternative (SEIR), 1992* - The Ventura Freeway was revived as a candidate alignment in 1992, when the LACTC completed a Subsequent EIR (SEIR) to determine whether an aerial transit system in the freeway median might be more cost-effective than the previously adopted Red Line subway extension along the SP ROW.

  Conclusion: The SEIR concluded that the Ventura Freeway project would be less expensive than the SP Burbank project, but would attract fewer riders.

- **1993/1994** - *Ventura Freeway Rail Transit Draft Project Study Report (PSR), 1994* - The PSR provided an analysis of constructibility, operations, capacity enhancement, and costs to install an aerial light rail transit system in the median area of the Ventura Freeway (Route 101) between Canoga Avenue in Warner Center and the Universal City Metro Red Line

Station. The report provided cost estimates for two alternatives: Alternative I provided minimum widening of the freeway for additional safety for drivers, and Alternative II rebuilt the freeway to full Caltrans and FHWA standards.

Conclusion: The PSR did not provide conclusions but rather summarized the findings of the: project background, need and purpose of the project, alternative evaluation, system planning, hazardous material/waste, traffic management plan, environmental clearance, and funding/scheduling.

- **1994** - *SP Burbank Branch Pre-Preliminary Engineering Study, 1994* - Subsequent to completion of the SEIR (1992), the LACTC initiated preparation of pre-preliminary engineering studies for both the Ventura Freeway and SP ROW project alternatives. These studies revealed that a transit project could not be constructed in the freeway median without widening the freeway to meet design standards imposed by Caltrans. New seismic safety criteria adopted after the Northridge earthquake in 1994 also raised the cost of constructing a transit project on the Ventura Freeway. Faced with a substantially more expensive Ventura Freeway project, the MTA (successor to the LACTC) obtained revised cost estimates for the SP ROW project.

  Conclusion: The revised cost estimates for the SP ROW project revealed that the cost of constructing a subway along the SP ROW could be reduced through the use of open-air subway alignments and stations.

- **1994** - *MTA Board Adoption of SP Burbank Branch Corridor* - In October, 1994, the MTA examined the results of the pre-preliminary engineering study and the revised cost estimates, and received public testimony regarding the alternatives.

  Conclusion: The MTA's Board of Directors endorsed an extension of the Red Line in subway along the SP ROW, rather than vote to pursue a Ventura Freeway median aerial rail transit system.

- **1994** - *Study of Restructuring Public Transit Service in the San Fernando Valley (SFV Restructuring Study)* - This study developed a number of service restructuring objectives. Many of these objectives were performance-related objectives that were intended to allow the MTA and the Los Angeles Department of Transportation (LADOT) to deploy current resources more efficiently and effectively. A significant element of the study was the six proposed transit centers that would facilitate passenger connections and timed-transfer operations.

  Conclusion: The study recommended a number of service changes throughout the San Fernando Valley, including the development of hub-and-spoke systems where lines converge on a transit center in order for timed transfers to take place and initiation of community-based services to increase local service frequencies and minimize the need to transfer for short trips. A number of non-traditional service options such as community-based transit, smart shuttles, dial-a-ride systems, taxis and service routes were explored for possible implementation in the SFV. (Service routes are short distance fixed route services that are

tailored to "micro" transit needs with routes and schedules varying by time of day and day of week.) These recommendations are consistent with SCAG's Regional Transportation Plan (RTP) Actions.

- **1995/1996** - *Major Investment Study (MIS) Alternatives Screening Report, 1996* - An alternatives screening report was prepared as part of the MIS conducted in 1995/96. The report evaluated the relative cost-effectiveness of a broad range of project alternatives (discussed in detail in Section 2.1.2 below). Alternatives included all of the previously studied rail transit options included in the 1990 EIR and 1994 Geotechnical/Value Engineering studies. Diesel Multiple Unit (DMU) vehicles, an alternative form of rail transit, were also considered. Also, bus service improvements including dedicated busway enhancements to existing bus service were evaluated. Discussions with the Southern California Association of Governments (SCAG) MIS Peer Review Group (formerly called the Interagency Review Committee) were held in June 1995 and September 1996.

  Public scoping workshops were held in November 1995 to further expand the list of feasible alternatives for study. Extensive community outreach was conducted as a part of this study. The comments provided have heavily influenced subsequent studies, including the 2000 Major Investment Study.

  Conclusion: The Report provided cost estimates and ridership forecasts for 10 corridor transportation alternatives. The report also contained cost-effectiveness indices, which compared the capital and operating costs with the expected benefits in travel time savings and new transit ridership, for each of the 10 corridor alternatives.

- **1996** - *MTA Board Adoption of a Reduced Number of Alternatives for Environmental Review* - The MTA Board reviewed the cost-effectiveness of the 10 corridor alternatives evaluated in the *MIS Alternatives Screening Report*.

  Conclusion: Based on the cost-effectiveness review, the MTA Board adopted the staff recommendations to approve the findings of the *MIS Alternatives Screening Report* and carry forward a reduced number of alternatives for environmental review.

- **1998** - *Restructuring Plan: Analysis and Documentation of the MTA's Financial and Managerial Ability to Complete North Hollywood Rail Construction and Meet the Terms of the Bus Consent Decree* and *MTA Board Adoption of Restructuring Plan, May 1998* - The Restructuring Plan was prepared to satisfy requirements that MTA prepare a "financially constrained rail recovery plan, which complies with the Consent Decree for enhanced bus service." The Plan demonstrated to the Federal Transit Administration (FTA) the MTA's financial capability to complete the Metro Red Line Segments 2 and 3 to Hollywood and North Hollywood. The Restructuring Plan also assumed the continued suspension of three future rail projects: the Metro Red Line Mid-City and Eastern Extensions, as well as the Metro Blue Line to Pasadena.

  Conclusion: As part of the Restructuring Plan, the MTA committed to completing a Regional Transit Alternatives Analysis (RTAA) by mid-October 1998 that would analyze

viable and effective options for improving transit to parts of Los Angeles County. This analysis included the corridors where MTA had suspended work on planned rail projects and where there were high concentrations of transit dependent residents.

- **1998** - *1998 RTP Transit Restructuring For Use in the MTA Re-evaluation Study, San Fernando Valley, Transit Corridor Technical Report, August 1998* - This study by the Southern California Association of Governments (SCAG) provided a preliminary investigation of potential public transit improvements in the study area, specifically by exploring the potential development of the four transit corridors addressed in the SCAG Regional Transportation Plan (RTP). These included: Valley East-West Corridor, Canoga Corridor, Van Nuys Corridor, and Roscoe Corridor.

  Conclusion: No specific alternative, corridor alignment or technology was recommended. The study was intended by SCAG to identify issues and provide information that would be helpful in future work on transit improvements in the San Fernando Valley area.

- **1998** - *Regional Transit Alternatives Analysis, November 1998* - The RTAA provided a framework for the MTA to make policy decisions and recommendations on a countywide basis (e.g., Metro Rapid Bus), and in the Eastside, Mid-City, and San Fernando Valley corridors. The study provided recommendations for:

  - Prioritizing system investments,
  - Providing allocations to non-transit priorities,
  - Providing allocations to operate existing services at a reliable and integrated standard,
  - Providing allocations to related municipal operators,
  - Managing financial risk,
  - Expanding countywide bus service, and
  - Identifying a process for future corridor investment decisions.

  For the San Fernando Valley corridor, three alternatives were advanced to final evaluation:

  (a) a heavy rail extension to I-405,
  (b) a light rail/DMU alternative from the North Hollywood Station to Warner Center, and
  (c) a bus transitway from the Metro Red Line North Hollywood Station to Warner Center.

  Conclusion: Conclusions for the San Fernando Valley corridor indicated that the MTA should continue planning, environmental and community work in the corridor. The MTA Board directed the Chief Executive Officer of the MTA to promptly implement this continued planning process.

  Included in the approval of the RTAA was the adoption of a Countywide Bus System Enhancement Program that directed staff to "proceed with the preparation for presentation to the Board of a thorough plan for a Metro Rapid Bus demonstration project of three lines, including at least one line serving each of the Eastside, Mid-City, and San Fernando Valley."

- **1998** - *LADOT/MTA Internal Bus Transitway Feasibility Studies (not published)* - These studies examined a system of transit improvements with increased capacity, preferably on exclusive rights-of-way (ROWs) that have the possibility of being implemented earlier than rail. The bus transitway system could serve as an interim project that could later be upgraded to a higher capacity system. Four corridors were evaluated: the Downtown Connector, Exposition, San Fernando Valley Burbank-Chandler, and Crenshaw-LAX. The study was not intended to be a comprehensive review of each alignment, but rather a study to provide policy makers with information necessary to determine whether a more in-depth analysis should be conducted. The findings presented for each corridor were not cumulative as three of the corridors overlapped.

  Conclusion: For the San Fernando Valley Burbank-Chandler Corridor, it was determined that based on engineering analysis, it would be feasible to construct and operate exclusive bus lanes on the SP ROW. If further analysis were warranted, the next steps would be to complete an Environmental Impact Report/Statement (EIR/EIS), preliminary engineering (PE), and the identification of funds to complete the required technical analysis and to construct and operate the facility.

- **1999** - *Los Angeles Metro Rapid Bus Demonstration Program Implementation Plan, 1999* - In 1998, the MTA Board directed staff to proceed with Phase One of a two-phase Metro Rapid Bus demonstration project. Phase One comprises the demonstration phase. The three lines included: Eastside, Mid-City, and San Fernando Valley. The purpose of the demonstration program was to address the need for faster travel choices for bus riders, especially the transit-dependent, on an interim basis prior to the completion of the fixed guideway corridor projects.

  Beginning in 2000, ~~The~~ the MTA ~~will~~ began to operate a 14-station, 16-mile Metro Rapid Bus line along Ventura Boulevard ~~during the demonstration phase~~, extending from the Universal City Red Line station to the Warner Center Transit Center. Phase II of the Plan proposes adding three other Metro Rapid Bus lines in the San Fernando Valley. A line along San Fernando Road would link the Los Angeles CBD with the East Valley. The Van Nuys Boulevard line would connect the Valley to West Los Angeles, and a Roscoe Boulevard line would link the North Hollywood Red Line station with the Warner Center along a route several miles north of the San Fernando Valley East-West Transit Corridor. The plan also indicates that if a bus transitway becomes the preferred alternative, as it has in the former SP (now MTA) ROW, that busway could be integrated into the Metro Rapid Bus network.

  ~~Conclusion: Implementation of Metro Rapid Bus within the Ventura Boulevard corridor in the San Fernando Valley and a Wilshire/Whittier demonstration project will open at the same time as the Red Line station at North Hollywood. Subsequent to implementation, a Metro Rapid Bus Demonstration Program report will be prepared. The report will describe the demonstration, issues, and performance of the program relative to established benchmarks. The report will also advise MTA regarding whether to move ahead with full implementation of the Metro Rapid Bus Program, implement a modified program, or cease implementation. The Rapid Bus line along Ventura Boulevard has opened, along with the Metro Red Line to North Hollywood. Evaluation of these new transit services is underway.~~

Conclusion: The Metro Rapid Bus demonstration program along Ventura and Wilshire/Whittier Boulevards has been a success with travel times reduced and ridership increased along these corridors. In the 2001 Long Range Plan adopted by MTA, numerous other routes are under consideration for rapid bus service, including Van Nuys and Roscoe Boulevards in the San Fernando Valley. As described in the Long Range Plan, these rapid bus routes would be part of an integrated transit network for the Valley which would also include the BRT along the former SP (now MTA) ROW. In addition, the MTA will begin study of a San Fernando Valley North-South Transit Corridor in 2002 that could potentially include Metro Rapid Bus or another variation of BRT service along north-south arterials in the Valley.

2-1.2 1996 MIS Alternatives Screening Report

The *1996 MIS Alternatives Screening Report* provided cost estimates and ridership forecasts for 10 San Fernando Valley East-West Transit Corridor transportation alternatives. Alternatives considered in the *Alternatives Screening Report* included the following:

- Alternative 1: Red Line Extension to I-405 Freeway
  (Southern Pacific Right-of-Way [SP ROW])

  1a) Deep-Bore Subway, Hollywood Freeway to Hazeltine Avenue
  1b) Cut-and-Cover Subway, Hollywood Freeway to Hazeltine Avenue
  1c) Open-Air Subway, Hollywood Freeway to Hazeltine Avenue
  1d) Aerial, Hollywood Freeway to I-405

- Alternative 2: Red Line Extension to I-405 (Oxnard Street)

- Alternative 3: Light Rail Transit to I-405

  3a) At-Grade, North Hollywood Freeway to I-405
  3b) Cut-and-Cover Subway, Hollywood Freeway to Fulton/Burbank

- Alternative 4: Red Line Extension to Valley Circle (SP ROW)

  4a) Deep-Bore Subway, White Oak to De Soto
  4b) Cut-and-Cover Subway, White Oak to De Soto
  4c) Open-Air Subway, White Oak to De Soto
  4d) Aerial, I-405 to Valley Circle

- Alternative 5: Red Line Extension to Valley Circle (Sherman Way)

- Alternative 6: Light Rail Transit to Valley Circle

  6a) At-Grade with Open-Air Segment
  6b) At-Grade with Open-Air/Cut-and-Cover Segment

- Alternative 7: Alternate Rail Technology - Diesel Multiple Units (North Hollywood to Chatsworth)

- Alternative 8: Busway (North Hollywood to Warner Center)

- Alternative 9: Enhanced Bus (Transportation Systems Management)

- Alternative 10: No Build

Following a review of the key features, cost, ridership, environmental issues, and cost-effectiveness of the above alternatives, on May 22, 1996, the Metropolitan Transportation Authority (MTA) Board of Directors adopted the staff recommendations to approve the findings of the *MIS Alternatives Screening Report* and carry forward a reduced number of alternatives for environmental review. Primarily based on cost-effectiveness criteria, the following alternatives were carried forward in the MIS process: 1, 2, 6, 9, and 10. The following alternatives were consequently removed from further consideration: 3, 4, 5, 7, and 8.

The MTA Board also directed that the actions listed below proceed and these were incorporated into the alternatives analysis for the 1997 Administrative Draft MIS/EIS/SEIR:

- East Valley (east of I-405) - Identify and develop community-sensitive alternative solutions to deep bore subway in the area covered by state-mandated subway legislation. *(This area is approximately 3.5 miles in length and covers the segment of the SP ROW between the Hollywood Freeway and Hazeltine Avenue. In 1991, the California Legislature enacted Public Utilities Code Section 130265, which limits any rail transit project "within the right-of-way of the Burbank Branch line of the Southern Pacific Railroad,"* to *"a subway system which is covered and below grade.")*[2] Also consider cut-and-cover subway, open-air subway, and the addition of a station at Laurel Canyon Boulevard.

- West Valley (west of I-405) - Continue to evaluate the Enhanced Bus (TSM) and the predominantly At-Grade LRT Alternatives. Remove from further consideration the less cost-effective Red Line Extension, Busway, and ART Alternatives.

- Technology/Construction - Although the Red Line Extension to the West Valley (Alternative 4) was recommended for elimination from further consideration based on its high cost, the *MIS Alternatives Screening Report* recommended that consideration of modifications to the Red Line vehicle design be considered to permit dual mode (third rail + overhead pantograph) electrification. Such a vehicle would allow the Red Line to be extended into the Valley in a predominantly at-grade configuration that would not be possible with a conventional Red Line vehicle. This alternative, unlike light rail, would not require passenger transfers at the North Hollywood Station. This alternative was therefore added to the list of alternatives for the 1997 Administrative Draft MIS/EIS/SEIR with the following descriptions:

[2] This legislation has been determined to not be applicable to the currently proposed project.

- **Alternative 11: Dual Mode Red Line Extension to I-405**

  11a) Predominantly At-Grade, North Hollywood to I-405
  11b) Same as 11a + Cut-and-Cover Subway on Chandler Boulevard

- **Alternative 12: Dual Mode Red Line Extension to Valley Circle**

  12a) Predominantly At-Grade, North Hollywood to Valley Circle
  12b) Same as 12a + Cut-and-Cover Subway on Chandler Boulevard

An Administrative Draft MIS/EIS/SEIR was prepared for these twelve alternatives in March 1997, and submitted to FTA for review. Due to the restructuring program (Recovery Plan), discussed above in the background section, the FTA declined to review the document at that time.

2-1.3 2000 MIS Alternatives

2-1.3.1 Development of the 2000 MIS Alternatives

In 1999, the MTA directed that separate MIS/EIS/EIRs be undertaken for the Eastside, Mid-City, Westside, and the San Fernando Valley. The analyses of alternatives considered in the 1996 MIS Alternatives Screening Report and Administrative Draft MIS/EIS/SEIR were used to define a new set of alternatives to be considered in the 2000 MIS for the San Fernando Valley. The technical designation "busway" was changed to "Bus Rapid Transit" to reflect new FTA terminology. Light rail and heavy rail alternatives were also considered.

Table 2-1 compares the 2000 MIS Alternatives to the previous alternatives considered in the MIS Alternative Screening Report in 1996.

Table 2-1: Development of Alternatives for the MIS

Alternatives Considered in MIS Screening Report May 22, 1996	Deleted from Consideration in MIS Alternatives Screening Report May 22, 1996	Added to Study MIS Alternatives Screening Report May 22, 1996	Included in 2000 MIS
1. Red Line Extension to I-405 (SPROW)			Alternative 5 plus busway to Warner Center
2. Red Line Extension to I-405 (Oxnard)			Deleted
3. Light Rail Transit to I-405	Deleted 5/22/96		Deleted
4. Red Line Extension to Valley Circle (SPROW)	Deleted 5/22/96		Deleted
5. Red Line Extension to Valley Circle (Sherman Way)	Deleted 5/22/96		Deleted
6. Light Rail Transit to Valley Circle (6a and 6b)			Alternative 3 (modified 6a) & 4 (6b) with terminus at Warner Center

Table 2-1: Development of Alternatives for the MIS			
Alternatives Considered in MIS Screening Report May 22, 1996	**Deleted from Consideration in MIS Alternatives Screening Report May 22, 1996**	**Added to Study MIS Alternatives Screening Report May 22, 1996**	**Included in 2000 MIS**
7. Alternative Rail Technology	Deleted 5/22/96		Alternative 7
8. Busway	Deleted 5/22/96		Alternatives 1 & 2
9. TSM			TSM
10. No Project			No Project
11. Dual Mode Red Line Extension to I-405		Added 5/22/96	Deleted
12. Dual Mode Red Line Extension to Valley Circle		Added 5/22/96	Alternative 6 with terminus at Warner Center

Source: Myra L. Frank and Associates, 1997; Gruen Associates, 2000.

In addition to the No Build and TSM alternatives, the 2000 MIS included seven "build alternatives," summarized in Table 2-2.

Table 2-2: 2000 MIS Build Alternatives		
Name	**Profile**	**Alignment**
Bus Rapid Transit (BRT)	At-grade	North Hollywood to Warner Center
Enhanced Bus Rapid Transit (BRT)	At-grade with two grade separations (aerial) at Van Nuys and Sepulveda	North Hollywood to Warner Center
Light Rail Transit (LRT)	At-grade	North Hollywood to Warner Center
Enhanced Light Rail Transit (LRT)	Multiple variations in profile	North Hollywood to Warner Center
Red Line Extension / Bus Rapid Transit (BRT)	4 options for heavy rail segment: a) Deep-bore tunnel b) Cut-and-cover tunnel c) Open-air depressed guideway/ channel d) Aerial guideway BRT segment: At-grade	North Hollywood to I-405 via Red Line and I-405 to Warner Center via BRT
Dual-Mode Red Line Extension	Deep-bore tunnel to Laurel Canyon, then at-grade to Warner Center	North Hollywood to Warner Center
Diesel Multiple Unit (DMU) Vehicles	Single-track at-grade rail with 15 minute headways	Burbank to Chatsworth

Source: Myra L. Frank and Associates, 1997; Gruen Associates, 2000.

In the 2000 MIS, build alternatives were primarily located on the SP ROW and all but Alternative 7 had common termini, the North Hollywood Red Line Station and the proposed Warner Center Transit Hub. Alternative 7, the Diesel Multiple Unit (DMU) Vehicle alternative, extended from Burbank Boulevard to Chatsworth Street along the SP ROW. Sub-alternatives addressed variations in profile or smaller segments for phasing depending on financial considerations.

2-1.3.2 Evaluation Process

The MIS released in February 2000 provided cost estimates and ridership forecasts for the seven "build" alternatives in the corridor, as well as No Build and Transportation System Management (TSM) alternatives. A cost-effectiveness index was calculated for all alternatives, comparing capital and operating costs with expected new transit ridership. Public outreach and preliminary environmental analysis were also considered. The factors considered in the evaluation included:

- Capital Cost
- Operating Cost
- Ridership (Linked Trips and Boardings)
- Cost-Effectiveness (Annualized Cost Per New Daily Transit Trip)
- Average Travel Times
- Distinguishing Environmental Characteristics
- Community Support

2-1.3.3 MIS Recommendation

The evaluation of alternatives resulted in the staff recommendation that Alternative 1, Bus Rapid Transit, be evaluated further as a part of this Draft Environmental Impact Statement/ Environmental Impact Report (Draft EIS/EIR) process, including consideration of a minimum operable segment (MOS) from Woodman Avenue to Balboa Boulevard. The MTA Board endorsed this recommendation, authorizing the MTA to proceed with work on Draft Environmental Impact Statements/Reports for the corridor in cooperation with the FTA and to consult with the FTA on any issues related to the recommended alternatives under consideration.

2-2 DETAILED DESCRIPTION OF ALTERNATIVES

This section provides detailed descriptions of the alternatives ~~being~~ analyzed in ~~this~~ the Draft EIS/EIR. In addition to the two baseline comparative alternatives (the No Build and TSM Alternatives), this document includes the Bus Rapid Transit (BRT) Alternative, as approved for further analysis by the MTA Board. The BRT Alternative includes three variations: (1) the BRT Alternative (the Locally Preferred Alternative), (2) the BRT Alternative with Lankershim/ Oxnard On-Street Alignment variation (the weekend service option), and (3) the Minimum Operable Segment (MOS). These variations are described further in Sections 2-2.3, 2-2.4, and 2-2.5. Details of bus operations for all variations are described in Section 2-2.6.

In July 2001, the MTA Board selected the Full BRT variation of the BRT Alternative as the Locally Preferred Alternative, and identified the Lankershim/Oxnard On-Street Alignment variation for consideration as a potential weekend service option in lieu of weekend service on Chandler Boulevard. This section also includes refinements to the Full BRT and Lankershim/Oxnard On-Street Alignment variations developed during Preliminary Engineering of the BRT Alternative.

2-2.1 No Build

The No Build Alternative reflects the conditions anticipated for the year 2020, based on SCAG's growth forecast, if no major transit improvement investments are made within the valley's East-West Transit Corridor. This scenario would mean that the MTA-owned SP ROW ~~(also known as the MTA ROW since it was purchased by MTA)~~ (referred to as the MTA ROW for purposes of this environmental document) would not be used for a transit project. This alternative is used as a baseline for comparison to the busway alternative, as well as the TSM alternative, described below.

All existing highway and arterial facilities are assumed to be in place, as well as all other funded transportation improvements in the RTIP (Regional Transportation Improvement Program), the STIP (State Transportation Improvement Program), the MTA HOV Master Plan and the MTA Call for Projects, and major projects to be implemented by others, such as the City of Los Angeles. No new roadways and no major widening of any arterial highways in the San Fernando Valley are anticipated under this alternative by 2020. Traffic signal system improvements such as the Automated Traffic Surveillance and Control (ATSAC) system will be operational along selected arterial corridors through the Valley.

The transit network would include the existing routes and rail-bus interfaces, as applicable. Services are improved on the most crowded bus lines. The urban rail network would include:

- The Blue Line from Long Beach to 7th and Flower and the Gold Line from Union Station to Pasadena;
- The Green Line from Norwalk to El Segundo;
- Red Line Segments from North Hollywood to Union Station, and from Western to Union Station;
- The current Metrolink system, plus
- Any funded improvements in the RTIP, the STIP, and the MTA Call for Projects.

Applicable routes are revised to implement the Red Line bus-rail interface plans.

2-2.2 Transportation System Management (TSM)

The goal of the TSM alternative is to improve mobility within the San Fernando Valley in general, and the East-West Transit Corridor in particular, through enhancement of the existing bus system rather than construction of a fixed guideway transit project. The TSM alternative serves as a baseline for comparing the relative benefits, costs, and performance of the build

alternative. Major capital expenditures for street widening that would require property displacement, land takings, and relocation of homes and businesses have not been considered. The Transportation System Management alternative is therefore defined as the optimal level of bus service that could be provided on the existing highway and roadway network. (see Figure 2-4) This TSM alternative has been refined from the TSM alternative described in the February 2000 MIS, with some variation in the definition of the alternative.

The TSM alternative route network remains generally the same as the No Build alternative. However, the TSM alternative contains improvements to be implemented on major arterials, improving basic transit service levels across much of the Valley. TSM improvements would include various projects to enhance the performance of bus transit on major arterials, where bus service frequencies would be increased. Key remaining recommendations of the *San Fernando Valley Transit Restructuring Study* are assumed to be implemented.

Headways, the length of time between arrivals at bus stops, would be significantly reduced on routes contained within the TSM alternative. Table 2-3 describes the service improvements along TSM routes. Not all San Fernando Valley bus routes were upgraded as a part of the TSM alternative, and therefore not all currently operating San Fernando Valley bus routes are listed below.

TSM corridors would offer significant service improvements. Base period headways on many routes would be reduced from 60 minutes to 30 or 40 minutes, an improvement of 33 to 50 percent. Both east-west and north-south routes would be improved, giving the Valley a comprehensive grid of higher frequency bus service. In general, the length of time between bus arrivals on any route would never be more than 40 minutes. Major transit corridors would continue to be improved, with headways reduced along Sherman Way, Vanowen Street, Van Nuys Boulevard, Sepulveda Boulevard, and Reseda Boulevard to 10 minutes or less during peak periods.

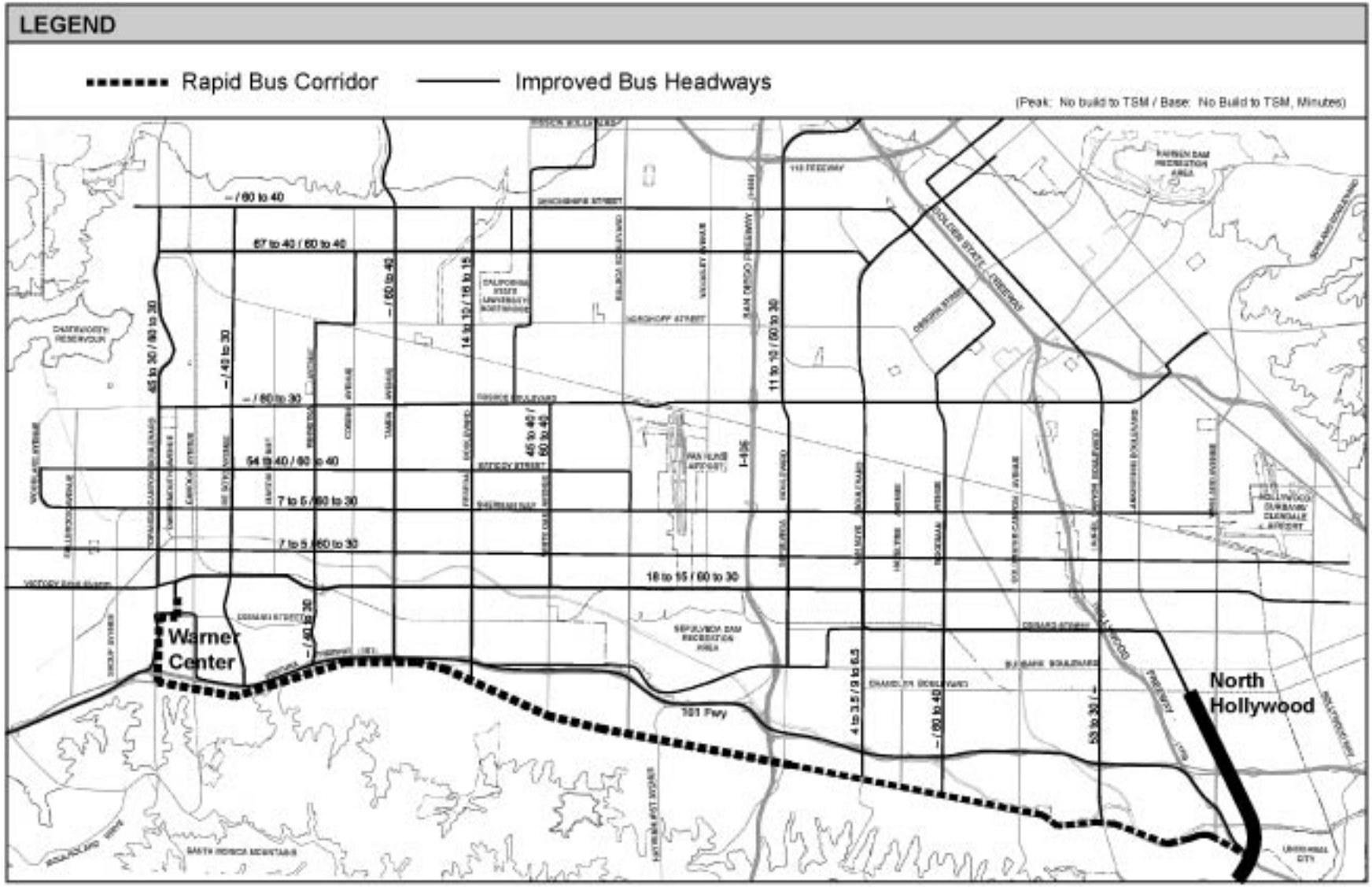


Figure 2-4: Map of Transportation System Management (TSM) Alternative

*Table 2-3: TSM Alternative Bus Service Improvements**			
Street Name (Direction)**	**MTA Route Number*****	**Percent Peak Period Headway Reduction (No Build to TSM in minutes)**	**Percent Base Period Headway Reduction (No Build to TSM in minutes)**
Devonshire Street (E-W)	158	-	33% (60 to 40)
Lassen Street (E-W)	168	40% (67 to 40)	33% (60 to 40)
Roscoe Boulevard (E-W)	152	-	50% (60 to 30)
Saticoy Street (E-W)	169	26% (54 to 40)	33% (60 to 40)
Sherman Way (E-W)	163	29% (7 to 5)	50% (60 to 30)
Vanowen Street (E-W)	165	29% (7 to 5)	50% (60 to 30)
Victory Boulevard (E-W)	164	17% (18 to 15)	50% (60 to 30)
Laurel Canyon Boulevard (N-S)	230	43% (53 to 30)	-
Woodman Avenue (N-S)	158	-	33% (60 to 40)
Van Nuys (N-S)	156, 233	12% (4 to 3.5)	28% (9 to 6.5)
Sepulveda Boulevard (N-S)	234	9% (11 to 10)	40% (50 to 30)
White Oak Avenue (N-S)	239	11% (45 to 40)	33% (60 to 40)
Reseda Boulevard (N-S)	240	29% (14 to 10)	6% (16 to 15)
Tampa Avenue (N-S)	154	-	33% (60 to 40)
Winnetka Avenue (N-S)	243	-	25% (40 to 30)
De Soto Avenue (N-S)	243	-	25% (40 to 30)
Topanga Canyon Boulevard (N-S)	245	33% (45 to 30)	50% (60 to 30)

Notes:
*Table lists only routes along which service improvements have been made. Existing service would continue on other bus routes in the Valley that are not listed here.

**Street names refer to the arterial along which the major portion of the respective MTA bus route runs. Not all of the street may be served, and smaller portions of other streets may be served by the same line.

***MTA Route Numbers are local service route numbers. Express and limited service, as well as overlapping local service, may be in operation along the same routes.

Source: Myra L. Frank and Associates, 1997; Gruen Associates, 2000.

2-2.3 Bus Rapid Transit (BRT) From North Hollywood to Warner Center, the Locally Preferred Alternative

Bus Rapid Transit (BRT) represents an improvement over conventional on-street bus service. Buses would operate in an exclusive right-of-way, formerly used by the Southern Pacific Railroad (SP ROW, now MTA ROW) for freight and by the Pacific Electric Red Cars on Chandler Boulevard. This alternative is similar to Alternative 1 from the February 2000 MIS, with some modifications. Exclusive bus lanes in the rail right of way would remove buses from street traffic, eliminating congestion delays. BRT also decreases end to end travel time by limiting stops and implementing signal priority at intersections. Because there is no need for overhead electrification, busways are less expensive to build and less visually intrusive than light rail. The design of the busway and its stations will support either typical 40-foot buses or longer articulated buses with increased capacity. Valley-wide transit service would be improved as a part of the BRT alternative. The service improvements of the TSM alternative would be implemented, as well as additional improvements on select north-south streets that intersect the busway. Fare prepayment would also be part of the BRT project operation.

A major advantage of operating within exclusive lanes is the consistent and relatively quick, reliable travel times that are possible when compared to on-street bus operation in congested traffic. Exclusive lanes and partial traffic signal priority can provide consistent travel times for patrons using the busway. Determination of bus operating speeds is based on several factors, including the number of station stops, the number of intersection crossings, sight distances and other safety concerns, and the acceleration and deceleration curves of the buses. ~~For the purposes of this environmental document, an average speed of 37 miles per hour (mph) (29 mph including station stops and intersection delay) has been assumed. Furthermore, i~~It has been assumed that in the Chandler Boulevard median, buses would not operate faster than the posted speed limits on the adjacent north and south roadways. Buses operating on-street would also not exceed posted speed limits.

During Preliminary Engineering, a more detailed analysis of operating ~~speeds~~ assumptions along the busway ~~will be made~~ was conducted in consultation with the City of Los Angeles Department of Transportation. Based on the more detailed analysis conducted during Preliminary Engineering, the environmental analysis of the BRT Alternative was revised to reflect a range of operating assumptions for the BRT, specifically in terms of signal delay at intersections. Signal delay for the BRT will likely vary over time as traffic conditions and signal technology evolve. Therefore, this EIS/EIR addresses a range of signal delay assumptions that are detailed in a separate technical appendix available for review at the MTA office. Transit model runs were conducted for a range of scenarios with varying levels of signal delay. The lower-bound set of operating assumptions would result in a runtime of 28.8 minutes for an all-stops bus travelling from North Hollywood to Warner Center. The upper-bound set of operating assumptions would result in a runtime of 40.0 minutes for an all-stops bus travelling from North Hollywood to Warner Center. Buses operating on a limited-stop basis, as described in Section 2-2.6.3, would require approximately 4½ minutes less to travel from North Hollywood to Warner Center. The average speed including all station stops and intersection delay would vary from 29 mph to 21 mph. While the Final EIS/EIR analyzes the potential environmental impacts of a

range of operating assumptions, the specific operating parameters would not be determined until the design/build phase of the BRT.

A busway in the corridor would draw on the experience of the City of Curitiba in Brazil as well as other busways operating outside of and within the United States. Curitiba has been a pioneer in the development of exclusive busways. The exclusive bus transitway planned for the San Fernando Valley would emulate many of the features that have made bus transit efficient and successful in other locations. Table 2-4 compares key features of exclusive busways elsewhere to the busway planned in the San Fernando Valley.

Table 2-4: Busway Features Planned for the San Fernando Valley

Busway Feature	San Fernando Valley
1. Simple Route Layout	Yes
2. Frequent Headways	During Peak Period
3. Less Frequent Stops	Once per mile
4. Level Boarding and Alighting	Low-floor or partial low-floor buses
5. Color-coded Buses and Stations	Under consideration
6. Station Stops	Yes
7. Signal Prioritization	Yes
8. Exclusive Bus Lanes	Yes
9. Higher Capacity Buses	Under consideration
10. Multiple-Door Boarding and Alighting	Under consideration
11. Fare Prepayment	~~Under consideration~~ Yes
12. Feeder Network	Yes

Source: Gruen Associates, 2000.

2-2.3.1 The MTA Right-of-Way

The proposed San Fernando Valley exclusive busway would be approximately 26 feet wide and would consist of two 13-foot travel lanes. This 26-foot-wide roadway would ~~typically~~ be located ~~on~~ within the 100-foot-wide MTA right-of-way (MTA ROW)~~, with variations in right-of-way of 225 feet near Valley College, 60 feet in the median of Chandler Boulevard between Lankershim Boulevard and Whitsett Avenue, and 30 feet (this segment only 0.16 miles long) near Balboa Boulevard.~~ Although typically 100 feet wide, the MTA ROW does vary in width in some locations.

- A 125-foot-wide segment extends for approximately 650 feet west of Tujunga Avenue.

- A 30-foot-wide segment, extending approximately 900 feet, is located west of Balboa Boulevard. North of this segment is an office building with a parking structure, and south of this segment is a Navy/Marine Corps Reserve Center (NMCRC). In this segment, modified

treatment of the right-of-way includes a 12-foot wall along the NMCRC facility property line and a concrete barrier topped by a wire mesh fence along office building property line in order to address the unique safety and security concerns of this segment (refer to Volume 3, Plan and Profile Drawings).

- Between Camellia Avenue and Whitsett Avenue, the MTA ROW is 60 feet wide as it runs in the median of Chandler Boulevard.

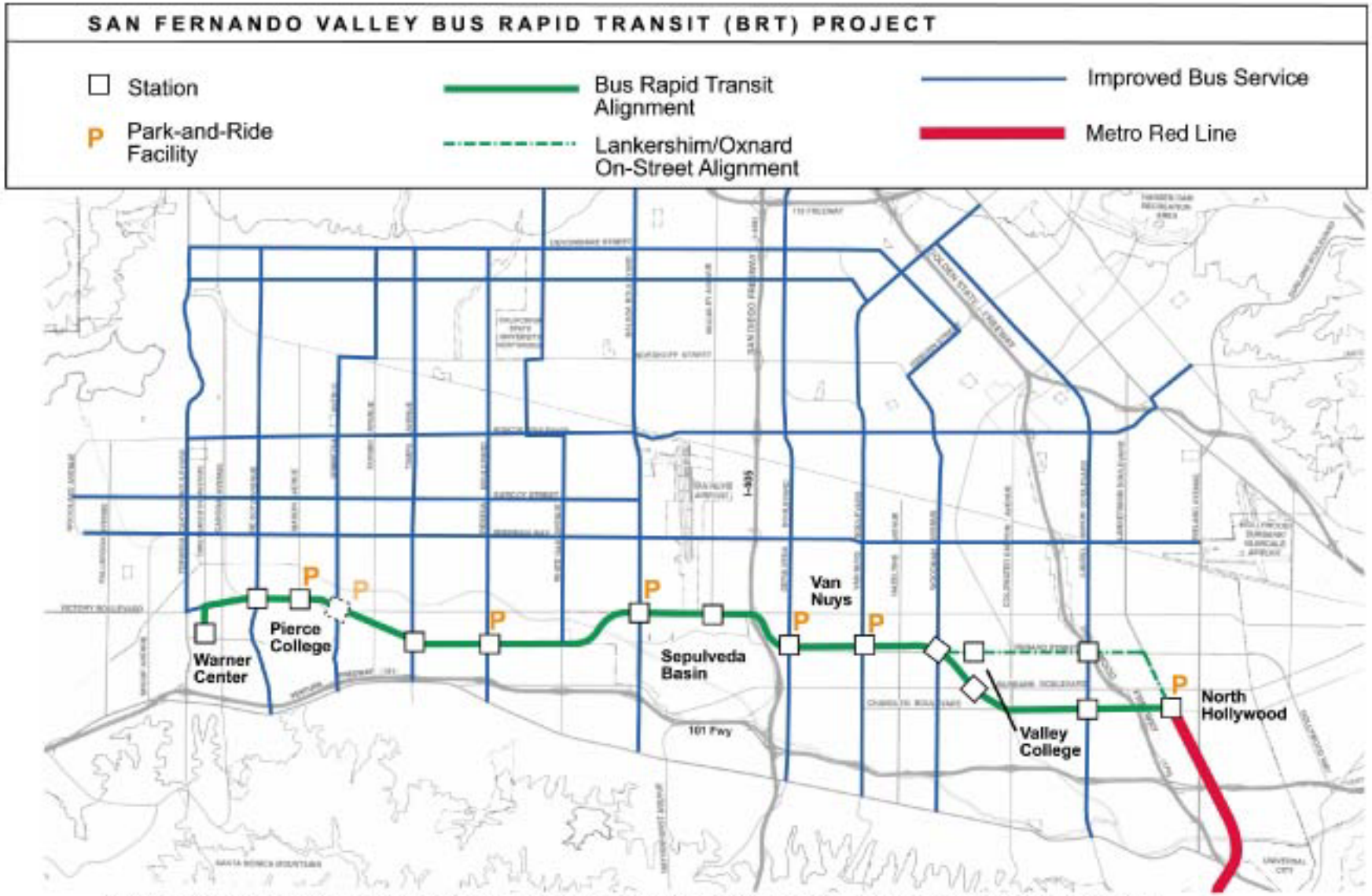
- In some locations, the MTA ROW is approximately 225 feet wide, such as near the intersection of Fulton Avenue and Burbank Boulevard, and near Van Nuys and Reseda Boulevards.

The ~~100-foot-typically wide~~ right-of-way would provide adequate room for landscaping and space for a ~~potential~~ bikeway adjacent to the busway. In some locations, adjacent streets would be widened into the MTA ROW in order to provide right- or left-turn pockets. Modified treatment of the right-of-way would be necessary in narrower segments. A bicycle/pedestrian facility was included in the Preliminary Engineering of the BRT Alternative, and would be constructed with the busway. ~~The City of Los Angeles is currently planning a bikeway as a separate project.~~ This ~~proposed~~ Class I bikeway would run from ~~Mason~~ Variel Avenue to ~~White Oak~~ Coldwater Canyon Avenue and would occupy approximately ~~22~~ 15 feet of the 100-foot right of way. In the Sepulveda Basin, the bikeway alignment would make use of existing bikeways. Along Chandler Boulevard east of Coldwater Canyon Avenue, a Class II bike lane would be installed with the busway. Buses would be the only vehicles typically allowed within the transitway. Signage would be posted that would list restrictions on autos, trucks, motorcycles, bicycles, and pedestrians within the busway lanes. Emergency vehicles would only use the exclusive lanes when responding to emergencies within or immediately adjacent to the right-of-way.

2-2.3.2 Route Alignment

The Bus Rapid Transit Alternative (Locally Preferred Alternative) primarily consists of a fixed busway, exclusive bus lanes on the ~~SP~~ MTA ROW between the North Hollywood Metro Rail station and the planned Warner Center Transit Hub (see Figure 2-5). An on-street alternative alignment (weekend service option) along Lankershim Boulevard and Oxnard Street in the East Valley is described in Section 2-2.4.

In the East Valley, the alignment extends west from the North Hollywood Metro Red Line station at Chandler and Lankershim Boulevards. (The alternatives for bus circulation at the North Hollywood station are described below.) The alignment continues westward in the median of Chandler Boulevard, crossing the intersection of Fulton Avenue and Burbank Boulevard diagonally near Valley College. The route then parallels Oxnard Street to Sepulveda Boulevard (see Figure 2-5). The alignment crosses under the I-405 in an existing underpass, entering the West Valley.



Note: Two Alternatives under consideration for Pierce College Station; Potential Weekend Service on Lankershim/Oxnard not shown
Source: Gruen Associates, MMA, 2000

Figure 2-5: Map of Bus Rapid Transit Alternative Full BRT and Lankershim/Oxnard Variations

In the West Valley, the alignment continues along the northern ~~perimeter~~ portion of the Sepulveda Flood Control Basin and Recreation Area until just after Balboa Boulevard, where it heads southwest, crossing the Los Angeles River before White Oak Avenue. The alignment continues west in the ~~SP~~ MTA ROW, paralleling Topham Street and then Victory Boulevard after passing Winnetka Boulevard. ~~Near~~ At the intersection of Victory Boulevard and ~~De Soto~~ Variel Avenue, the alignment leaves the ~~SP~~ MTA ROW and continues south on-street on ~~Victory Boulevard~~ Variel Avenue to ~~Owensmouth Avenue~~ Oxnard Street. At ~~Owensmouth~~ Oxnard Street, buses would head ~~south~~ west on-street to a terminus at the planned Warner Center Transit Hub, along Owensmouth Avenue between Erwin and Oxnard Streets, adjacent to the Promenade Shopping Mall. Buses would return to the MTA ROW via Erwin Street and Variel Avenue.

~~At the North Hollywood Terminus, several alternatives for access from and to the North Hollywood Metro Rail Station (see Figure 2-6 and Figure 2-7) are under consideration for the SP ROW alignment:~~

- ~~Alternative 1 – Buses would use the existing bus plaza at the Metro Red Line station on the east side of Lankershim, as shown on Figure 2-6.~~

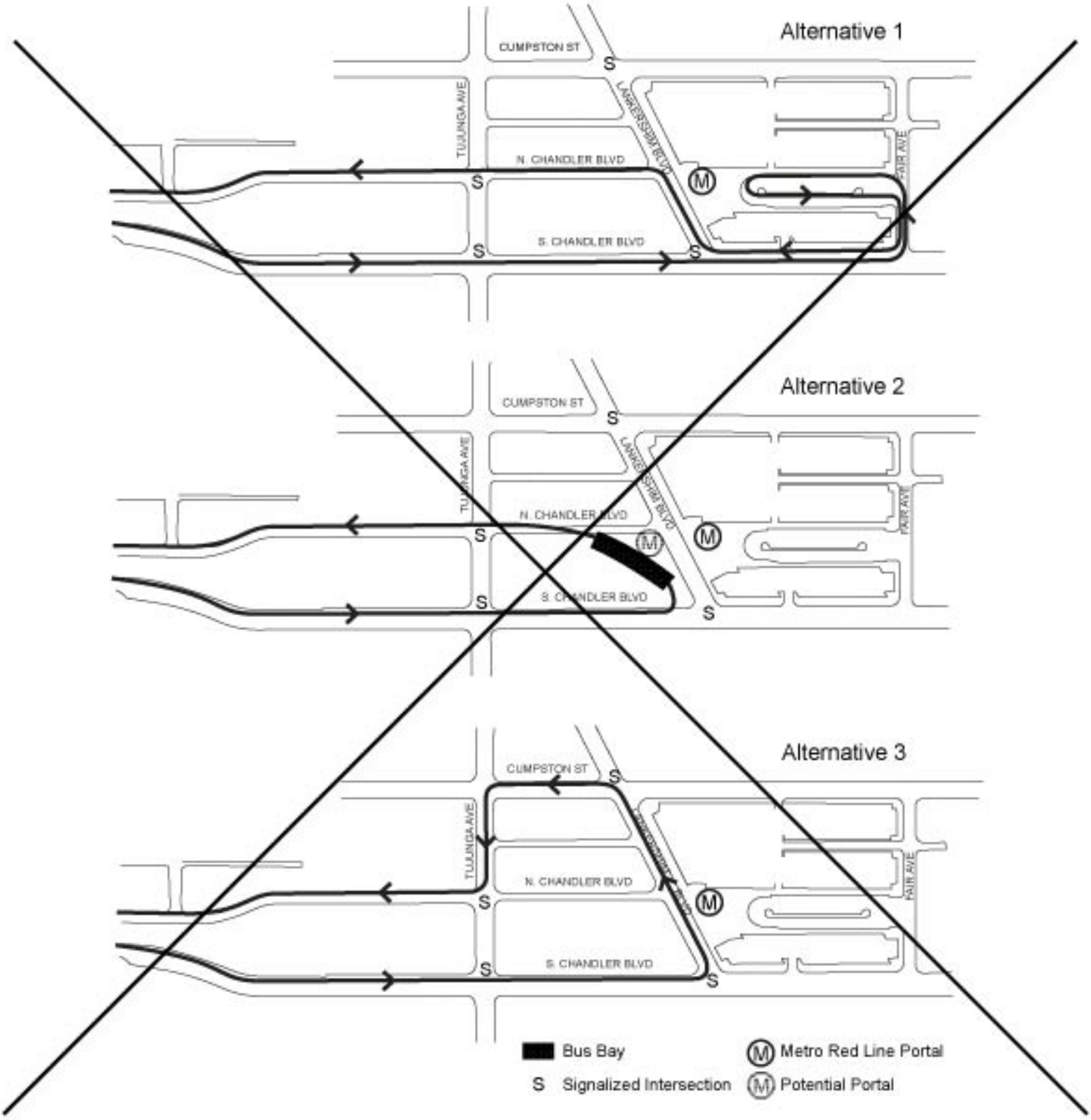
- ~~Alternative 2 – As shown on Figure 2-6, buses travelling east would leave the SP ROW at Camellia Avenue and head east along the one-way south roadway of Chandler Boulevard. Just before Lankershim Boulevard, buses would enter a bus plaza that would incorporate the historic Toluca rail depot. This bus plaza would operate as new station at North Hollywood. Bus patrons transferring to the Metro Red Line would cross Lankershim at grade at the intersection of Chandler (South Roadway) and Lankershim. Under consideration is a portal to the Red Line subway on the western side of Lankershim, allowing passengers to transfer between the busway and the Metro Red Line subway without having to cross Lankershim at grade. After depositing passengers, buses would head west of the one-way north roadway of Chandler, reentering the busway at Camellia.~~

~~Two variations of Alternative 2 are also under consideration (see Figure 2-7).~~

- ~~Alternative 2a – Buses traveling east from the Laurel Canyon station would continue along the exclusive busway within the Chandler Boulevard median, instead of exiting the right-of-way at Camellia Avenue. The busway would pass between existing commercial and industrial leases in the vicinity of Tujunga Avenue. The bus terminus would be located between Tujunga Avenue and Lankershim Boulevard. Passengers would get off and board buses near the historic Toluca Depot. Buses returning to the Laurel Canyon station would operate on street along North Chandler Boulevard, reentering the SP ROW at Camellia Avenue. Buses would layover in space accessible via the exclusive busway provided just east of Tujunga Avenue.~~

- ~~Alternative 2b – This variation is similar to Alternative 2a. However, buses would not leave the SP ROW on the return trip west. Buses would turn within the SP ROW and proceed toward Laurel Canyon Boulevard along the exclusive busway, again passing between the existing commercial and industrial leases in the vicinity of Tujunga Avenue. Bus layover space would be provided within the exclusive busway.~~

- ~~Alternative 3 – As shown on Figure 2-6, Buses would also leave the SP ROW at Camellia Avenue, heading east on the south roadway of Chandler Boulevard. Buses would turn left~~



Source: Meyer Mohaddes Associates, 2000.

Figure 2-6: North Hollywood Terminal Alternatives

~~(north) onto Lankershim Boulevard, and stop on the east side of Lankershim in front of the existing Metro Red Line subway portal. After dropping off and picking up passengers, buses would head north two blocks along Lankershim to Cumpston Street, providing enough time and space for buses to transition from the bus stop on the right side of Lankershim to the left turn lane. At Cumpston, buses would turn left, heading west to Tujunga Avenue. At Tujunga they would head one block south to the north roadway of Chandler Boulevard. Buses would travel on street to Camellia, where they would enter the SP ROW.~~

~~At the western end of the alignment, buses would leave the SP ROW at Variel Avenue and proceed along several potential on-street routes through Warner Center (see Section 2-2.3.5).~~

During the Preliminary Engineering of the BRT Alternative, the alternatives described in the Draft EIS/EIR for the eastern terminus of the alignment adjacent to the North Hollywood Metro Red Line station (see Figure 2-7 and 2-7a) were investigated and one alternative was selected for further refinement (see Volume 3 Plan and Profile Drawings). This alternative, called Alternative 2c, is similar to Alternative 2b of the Draft EIS/EIR.

In Alternative 2c, buses traveling east from the Laurel Canyon station would continue along the exclusive busway within the Chandler Boulevard median, instead of exiting the right-of-way at Camellia Avenue as in Alternatives 1, 2, and 3. The busway would pass between existing commercial and industrial uses west of Tujunga Avenue. The bus terminus would be located between Tujunga Avenue and Lankershim Boulevard. Passengers would be dropped off and picked up along a bus turnaround north of the historic Lankershim Depot.

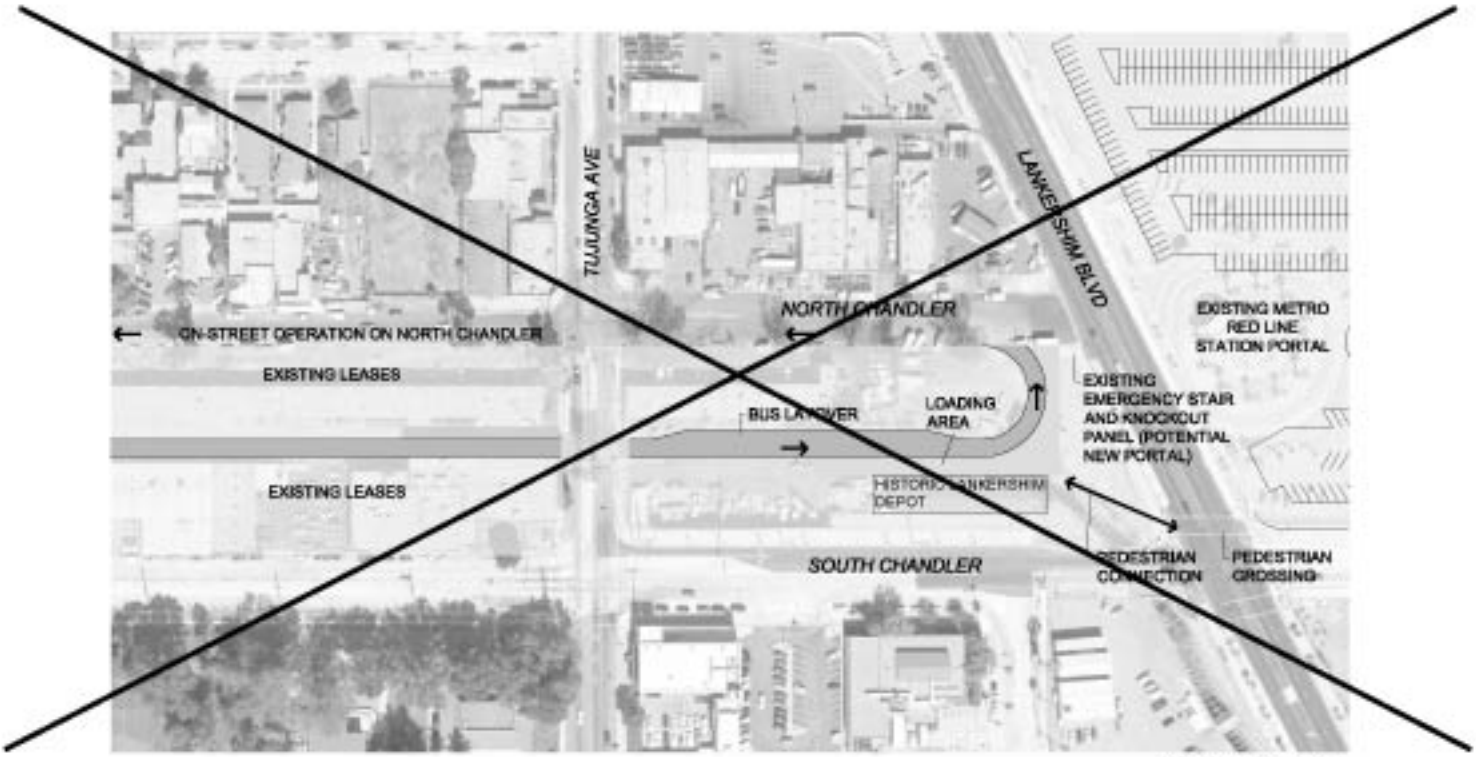
Buses would turn within the MTA ROW and proceed west toward Laurel Canyon Boulevard along the exclusive busway, again passing between the existing commercial and industrial uses in the vicinity of Tujunga Avenue. Bus layover space would be provided within the exclusive busway. The design of the turnaround developed during Preliminary Engineering would not require displacement of the lease at the southeast corner of Tujunga and North Chandler. However, this option has been retained in the Final EIS/EIR should MTA choose to expand the bus turnaround in the future.

Routing for on-street bus service within Warner Center is shown on Figure 2-26.

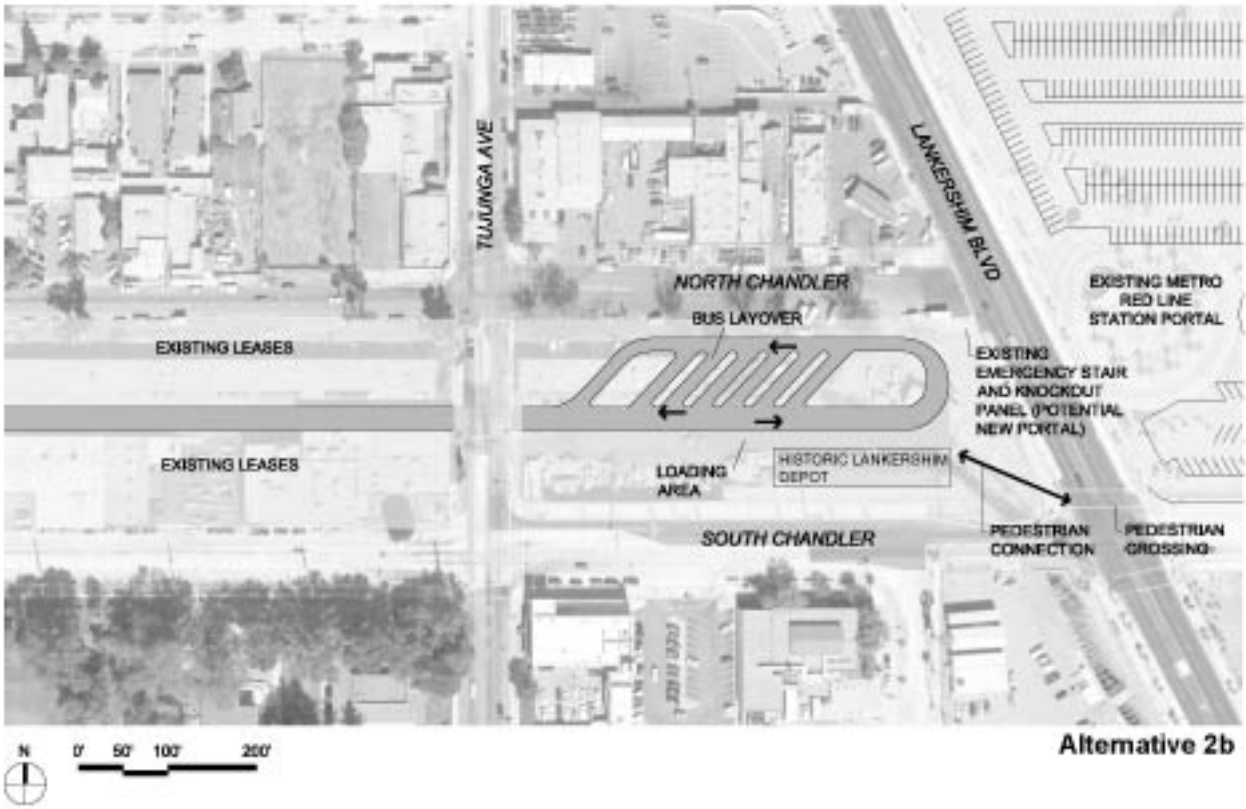
2-2.3.3 Bus Routing Plan

Figure 2-8, the Busway Routing Plan illustrates how the San Fernando Valley transit network will interface with the busway. As a base, the improvements associated with the TSM Alternative (Section 2-2.2) would also be implemented as part of the BRT Alternative. In addition, other bus service improvements would be made. Located on the busway is new end to end bus service. In addition, an existing route on Victory Boulevard is rerouted to take advantage of the busway. A new feeder route on Reseda also channels onto the busway. A commuter express route from Thousand Oaks is channeled onto the busway rather than remaining on the increasingly congested Ventura Freeway, serving selected busway stops only.

Section 2-2.6.3 provides headways and route information for new and existing lines using the busway. The combined service frequency for all routes using the busway would vary based on



Alternative 2a



Alternative 2b

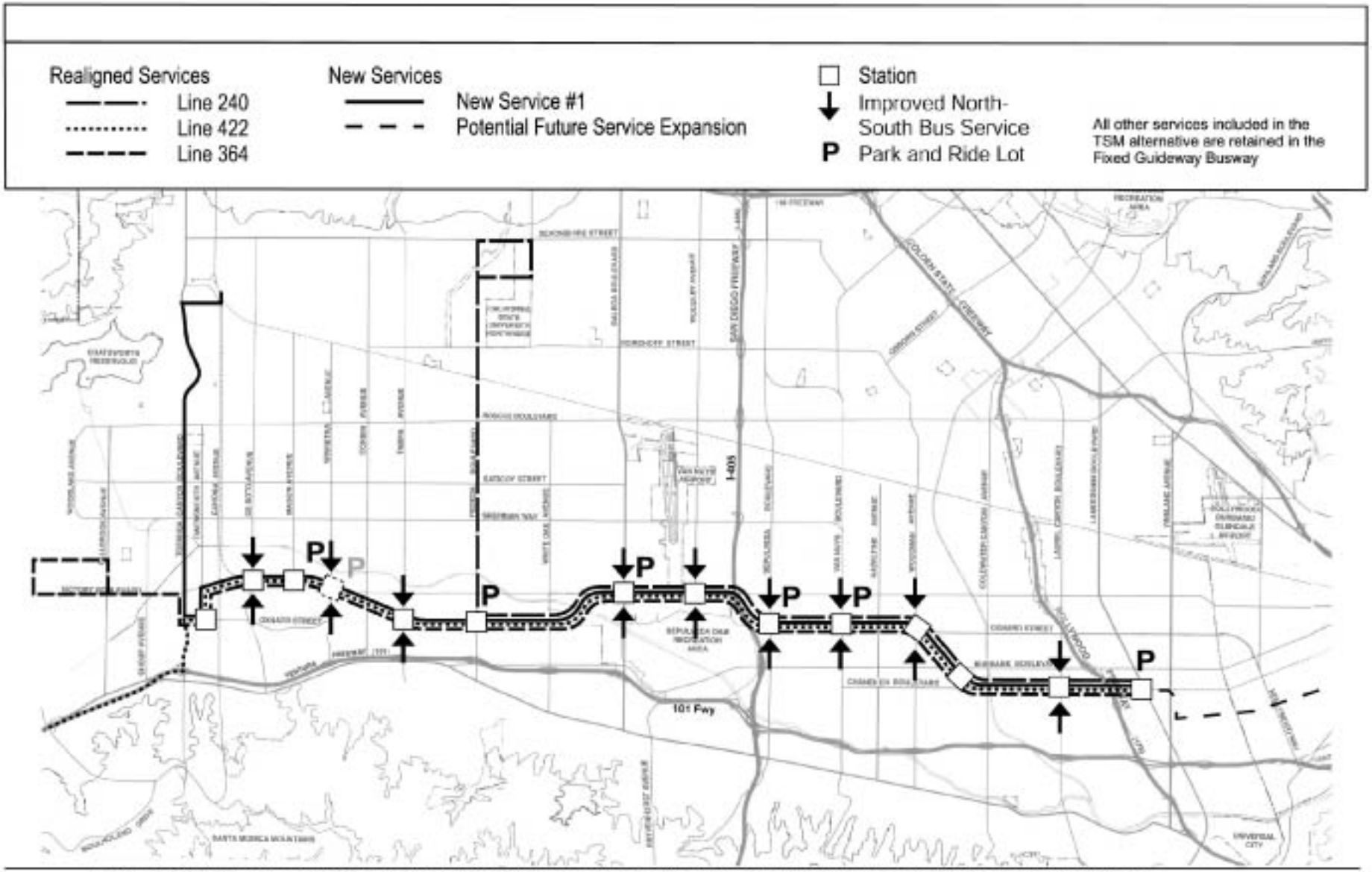
Note: Refer to Volume 3 for refinements developed during Preliminary Engineering.

Source: Gruen Associates, 2000.

Figure 2-7: North Hollywood Terminal Alternatives 2a and 2b

Source: Gruen Associates, 2001; STV, 2001.

Figure 2-7a: Preferred North Hollywood Terminal Alternatives - Full BRT Alternative 2c



Note: Two Alternatives under consideration for Pierce College Station; Potential Weekend Service on Lankershim/Oxnard not shown
Source: Gruen Associates, MMA, 2000

Figure 2-8: Bus Routing Plan

ridership demand. In the immediate future, combined service frequency might result in a bus every 10 minutes during the peak hour along the right-of-way. This ~~DEIS/DEIR~~ Final EIS/EIR evaluates the impacts of the highest potential bus operating frequency of 2½ to 5 minutes in the year 2020.

The BRT Alternative also includes improved headways on north-south streets. These service improvements would be in addition to the TSM improvements described above. These additional service improvements would facilitate the use of the busway by commuters living outside the immediate busway corridor. These headway improvements would be implemented on:

- Woodman Avenue
- Woodley Avenue
- Balboa Boulevard
- Reseda Boulevard
- Tampa Avenue
- Winnetka Avenue
- De Soto Avenue
- Topanga Canyon Boulevard

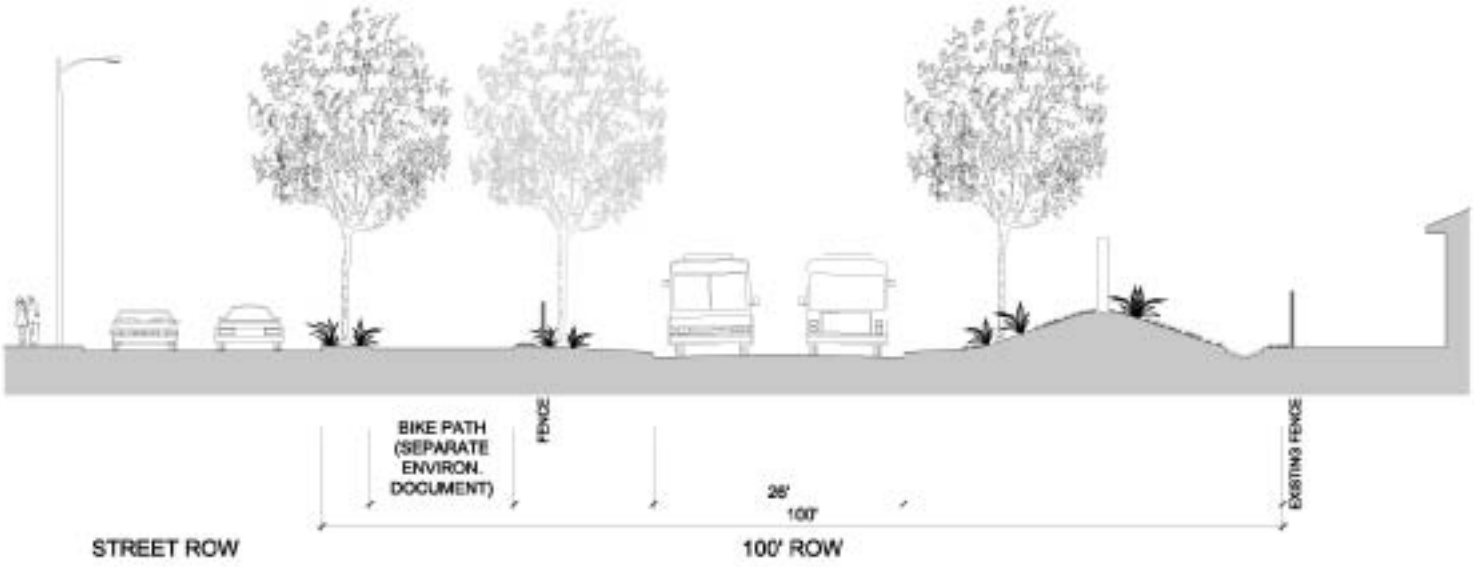
Combined with the improvements associated with the TSM alternative, north-south transit service would also be improved on Laurel Canyon Boulevard, Van Nuys Boulevard, and Sepulveda Boulevard, improving service to every station planned along the busway.

2-2.3.4 Concept Design

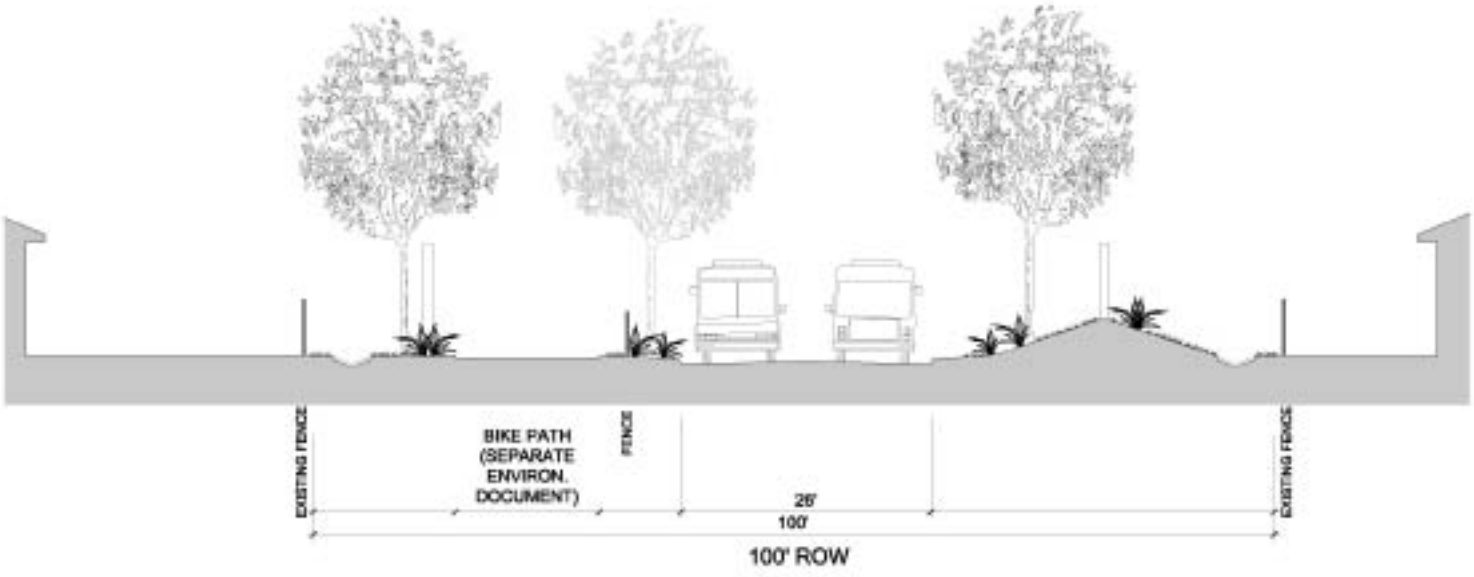
The 26-foot wide, at-grade busway would typically be located in the center of the ~~SP~~ MTA ROW~~, which is approximately 100 feet wide~~. The wide right-of-way provides an opportunity to take the busway beyond conventional bus network design. The busway would be more like a typical rail alignment in terms of its exclusive right-of-way and stations. Furthermore, this width provides adequate space for landscaped treatment such as berms, trees, fences/walls, and shrubs to buffer the busway from adjacent homes and businesses (see Figure 2-9 and Figure 2-10).

a. Urban Design Concept

The urban design concept for the right-of-way is a multi-modal transportation facility ~~with~~ within a greenway. The route would be landscaped, including trees, defining the busway and softening the view from residential areas. The busway concept has also been designed for flexibility. The wide right-of-way would also be maintained, and would ~~be available to~~ also accommodate ~~future transit enhancements such as~~ the planned bikeway and pedestrian path~~s~~ described in greater detail below. Figure 2-11 provides conceptual renderings of how the busway and stations could look within the context of the San Fernando Valley. (Trees in this figure and others are shown at maturity and not at time of planting. In general, drought-tolerant ground cover and native shrubs would be provided. Appendix K describes the landscape concept

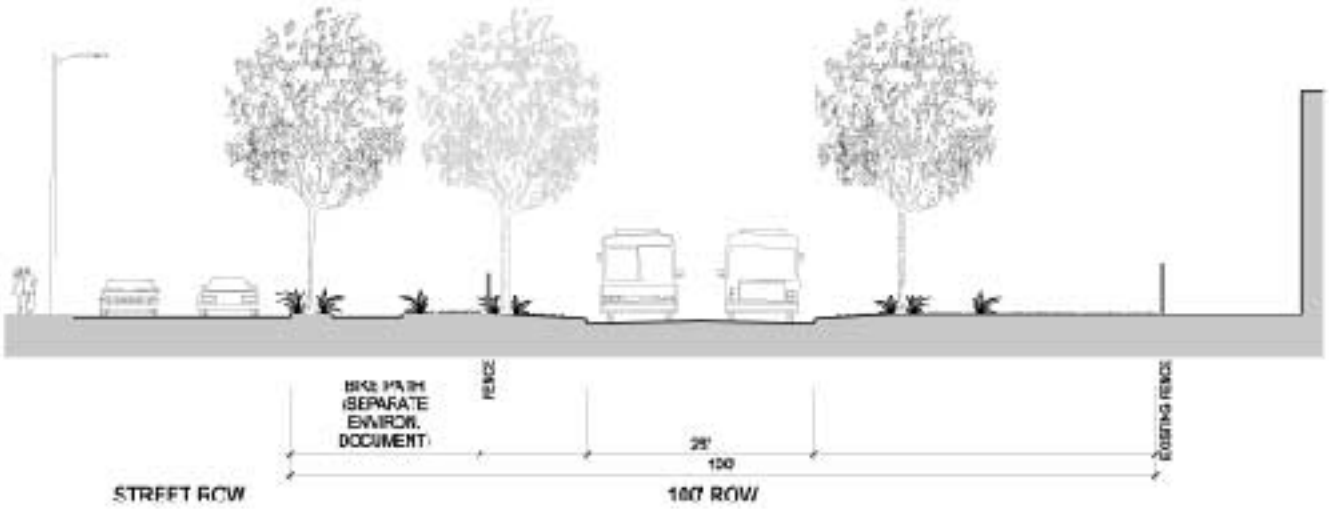


Typical Bus Rapid Transit Adjacent to an Existing Street and Private Property

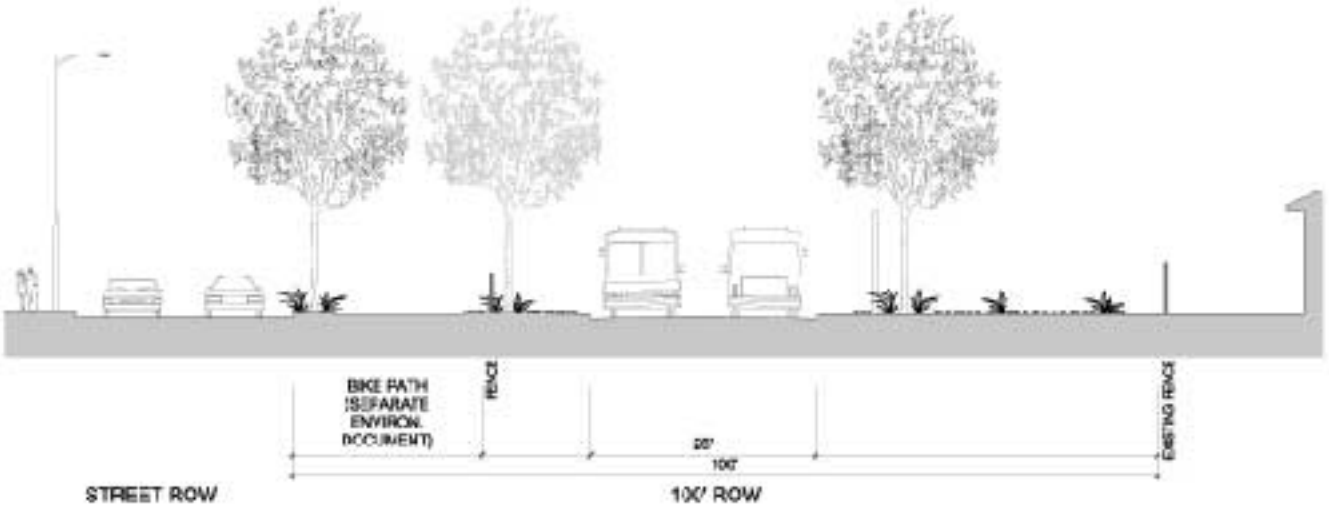


Typical Bus Rapid Transit Adjacent to Private Property

Figure 2-9: Typical Busway Sections



Typical Bus Rapid Transit Adjacent to an Existing Street and Existing Non-Residential



Typical Bus Rapid Transit Adjacent to an Existing Street and Residential When a Berm is Not Practical

Source: Gruen Associates, 2000.

Figure 2-10: Typical Busway Sections, continued

Typical Busway (BRT) Between Stations

Note: Please see Volume 3 Station Plans for refinements to the station design

Van Nuys Boulevard BRT Station

Source: Gruen Associates, 2001.

Figure 2-11: Urban Design for BRT Alternative

developed during the Preliminary Engineering phase. The landscape plans will be further refined with the community during design development. Station design is described in Section 2-2.3.5.

Several types and heights of fencing would be used along the corridor depending on the adjacent uses and visibility from public streets. For example, ~~picket~~ wire mesh fencing approximately 4 to 5 feet high would be used between the busway and the planned bikeway. Taller wire mesh fencing would be used at the perimeter of the right-of-way for security purposes, where necessary. Noise walls would be incorporated, where necessary, on top of earthen berms or adjacent to the property line, protecting sensitive users.

b. Bike Path

Between Variel and Coldwater Canyon Avenues, except through the Sepulveda Basin, space for a Class I bike path/pedestrian path would be accommodated within the MTA ROW adjacent to the busway. This path has been developed in conjunction with the City of Los Angeles Department of Transportation. Through the Sepulveda Basin (between White Oak and Haskell Avenues), the proposed bicycle/pedestrian alignment would diverge from the MTA ROW and make use of existing bicycle/pedestrian facilities. Cyclists would rejoin the MTA ROW at either end of the Basin. The path, which was designed together with the BRT during Preliminary Engineering for the BRT Alternative, would typically be 15 feet wide (see Figures 9 and 10). Near BRT stations and at other locations with restricted width, the path would be 8 feet wide. The path would be separated from the busway by an approximately 4- to 5-foot-high wire mesh fence. The path would be provided with lighting along most of its length, and cyclists and pedestrians would cross streets at signalized crossings. Along Chandler Boulevard east of Coldwater Canyon, Class II bike lanes would be designated along the North and South Chandler roadways. The bike lanes would continue to the eastern terminus of the BRT at Lankershim Boulevard. Separate environmental documentation for this bicycle/pedestrian facility is being prepared.

~~Between Mason Avenue and White Oak Boulevards, the City of Los Angeles plans to construct a bike path within the SP ROW adjacent to the busway. Although this bike path is not a part of this alternative, space for a continuous bike path would be provided within the right of way adjacent to the street (Topham Street and Victory Boulevard). The busway would be located alongside the bike path with a 12-foot buffer between the two modes, leaving a 30 to 40-foot landscaped buffer adjacent to residential areas. Along other parts of the SP ROW, the busway has been designed to incorporate a potential bikeway within the right of way, with the exception of the Chandler Boulevard segment where bike lanes could be striped on the street.~~

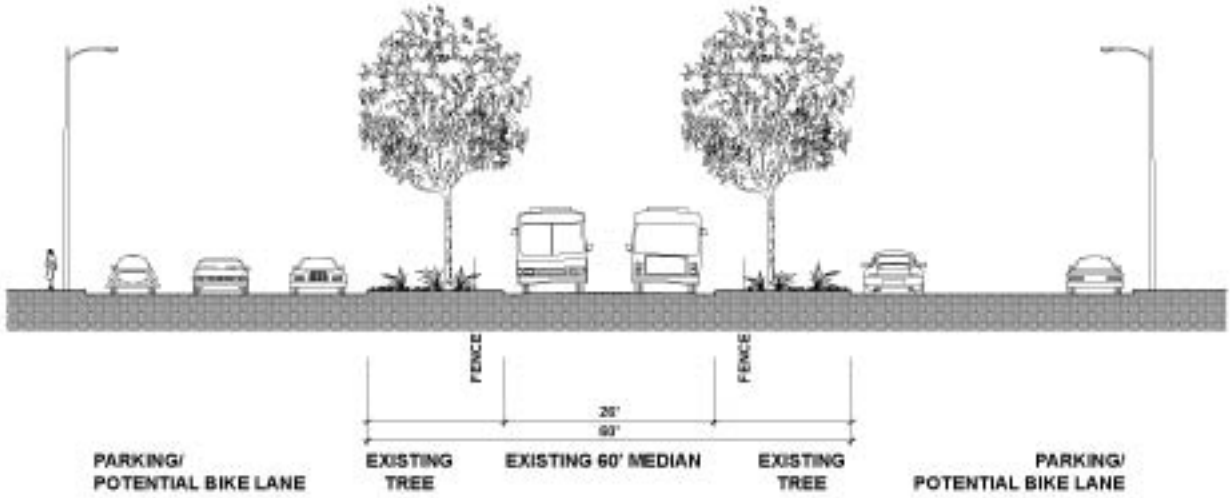
c. Chandler Boulevard Segment

Along Chandler Boulevard in the East Valley, the ~~SP~~ MTA ROW is in the median, typically 60-feet wide but 100-feet wide west of Whitsett Avenue. To address community concerns expressed in previous studies, ~~there are two~~ several busway cross-section options ~~under~~ were ~~consideration~~ considered during the development of the Major Investment Study:

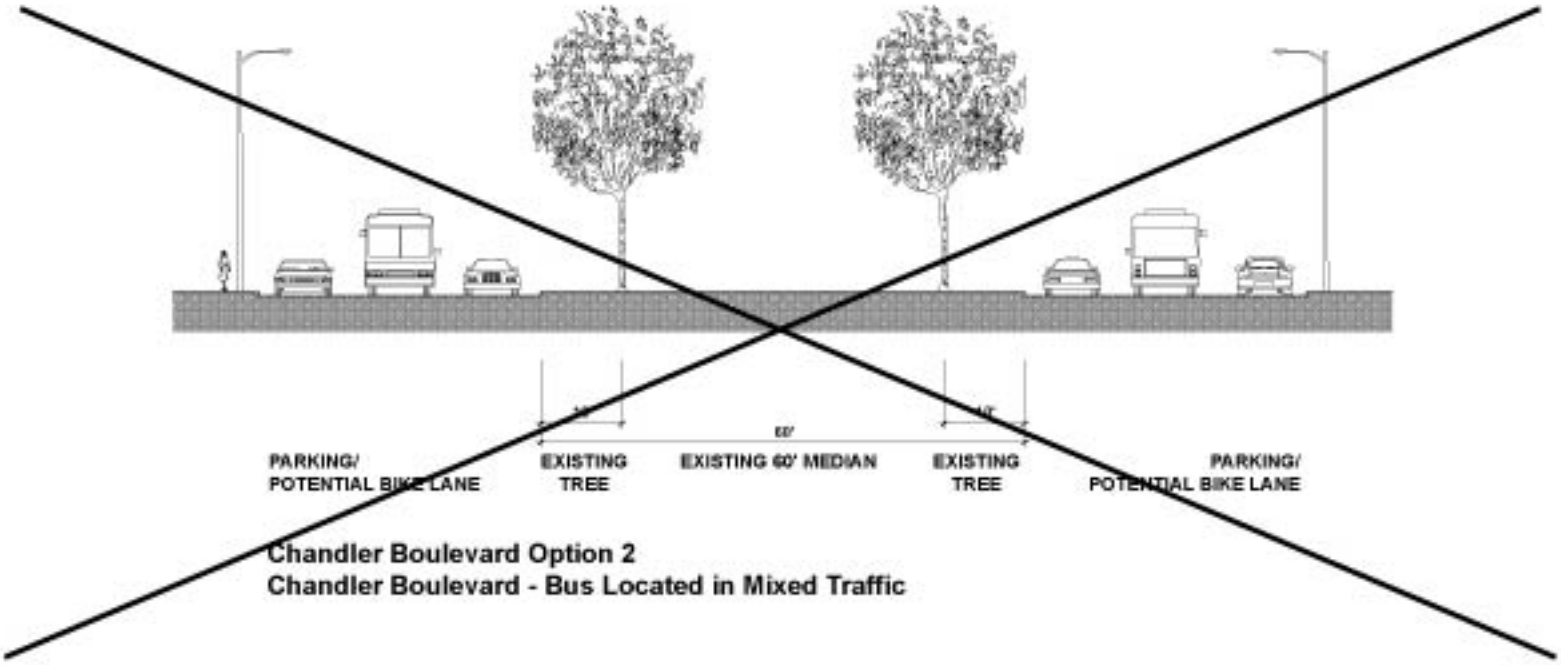
- Option 1 locates the 26-foot wide bus transitway in the middle of the 60-foot right-of-way allowing for approximately 15 feet of landscaping on either side of the busway adjacent to both sides of Chandler Boulevard (see Figure 2-12). This option was pursued for environmental analysis in the Draft and Final EIS/EIR. This allows most existing ~~eucalyptus and recently planted new~~ trees to be preserved~~,~~ whenever possible and new trees to be planted~~, and space for other streetscape amenities~~. ~~Low~~ Approximately 4- to 5-foot-high fencing ~~might~~ would be provided on either side of the busway.~~, if needed for safety considerations. As a separate project, the bikeway could~~ Class II bike lanes would be striped on-street next to the parking lane to accommodate the bikeway, and the street would be widened into the north side of the median ~~to accommodate the bikeway~~, where necessary ~~to a maximum of 35 feet in each direction~~.

- Option 2 locates buses on Chandler Boulevard in mixed traffic and the existing median would be unchanged from today (see Figure 2-12**)**. After initial consideration, this option was not selected for further analysis in the Draft and Final EIS/EIR due to greater noise impacts on adjacent sensitive uses and increased operation in congested traffic than Option 1.

Figure 2-13 shows how the busway would operate within the 100-foot-wide right-of-way Whitsett as a part of Option 1. ~~Twenty-four~~ Approximately 37 total feet would be available on either side of the busway for potential new landscaping, a bikeway, and pedestrian amenities. As a part of the BRT Alternative, a number of pedestrian amenities would be constructed within the Chandler Boulevard median. These amenities were refined and developed during the Preliminary Engineering of the BRT Alternative. Along Chandler Boulevard, all existing crossings of the MTA ROW would be retained. On the Jewish Sabbath, pedestrian signals would operate on a timer and would not need to be manually engaged. Two signalized mid-block crossings of the MTA ROW would be constructed along Chandler Boulevard, one at Agnes Avenue and the other at Goodland Avenue. In addition to the mid-block crossings, two pedestrian paths would be constructed within the MTA ROW paralleling portions of Chandler Boulevard where sidewalks are not currently installed. The first pedestrian path would be constructed in the median between Ethel and Coldwater Canyon Avenues, north of the South Chandler roadway. The second pedestrian path would be constructed between the mid-block crossing at Goodland and Bellaire Avenue, south of the North Chandler roadway. In addition, a pedestrian path would be constructed on the north side of the realigned North Chandler roadway near Ethel and the Chabad facility. Refer to Volume 3 of the Final EIS/EIR for plans of these amenities. In ~~addition~~ some locations, a few feet ~~could~~ would be taken from ~~both~~ either side~~s~~ of the median to provide extra width along Chandler Boulevard for the on-street bike lanes. In addition, portions of the MTA ROW at cross streets would be used to create left-turn pockets.

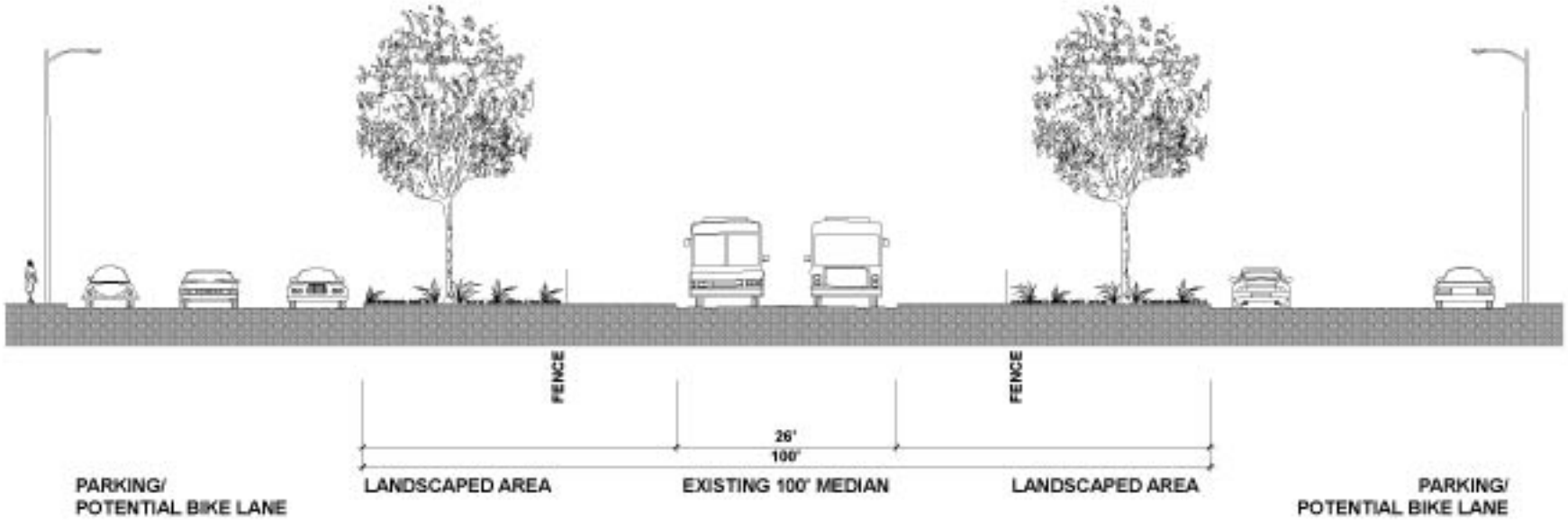


Chandler Boulevard Option 1
Bus Rapid Transit in Center of Median



Chandler Boulevard Option 2
Chandler Boulevard - Bus Located in Mixed Traffic

Figure 2-12: Typical Chandler Boulevard Sections (60-foot Right-of-way)



Chandler Boulevard 100' Section
Bus Rapid Transit in Center of Median

Source: Gruen Associates, 2000.

Figure 2-13: Typical Chandler Boulevard Sections (100-foot Right-of-way)

d. Public Art and Design Excellence

Following policy established by the FTA for design and art in transit projects (Circular 9400.1A), MTA commits to the idea that: "Good design and art can improve the appearance and safety of a facility, give vibrancy to its public spaces, and make patrons feel welcome. Good design and art will also contribute to the goal that transit facilities help to create livable communities." To continue its commitment to these ideals, design excellence would be an important criterion for selection of busway design team members and for evaluation of design proposals.

To ensure design excellence, the MTA would follow the award-winning model for "Excellence in Public Architecture" established by the General Services Administration of the United States government. That process attracts large numbers of qualified design firms through a streamlined process and utilizes the insight of outside peer advisors.

❑ Public Art and the Design Process

As part of the process of designing any of the alternatives, artists would be hired to participate in the project. MTA Metro Art staff would invite interested members of the residential, business, and institutional communities along the alignment to form a Metro Art Advisory Group. This process of community participation follows FTA policy (Circular 9400.1A), which states, "To create facilities that are integral components of communities, information about the character, makeup, and history of the neighborhood should be developed and local residents and businesses could be involved in generating ideas for the project."

A budget would be established for public art that will be based on a percentage of the hard costs (construction costs) for the project and will cover design fees and fabrication and installation of art elements. Again, as directed by the FTA (Circular 9400.1A), "Funds spent on the art component of the project should be appropriate to the overall costs of the transit project and adequate to have an impact."

❑ Graphics and Wayfinding

The quality of graphic signage and wayfinding within the system and within the adjacent neighborhood greatly affect the ease and comfort with which patrons use the system. Station names, station identification, directional signage, logos, maps, and informational signage would adhere to the MTA Graphics Standards. The guiding principle for the standards is to simplify Metro signage systems in a way that makes sense for patrons, through uniformity in text styles, a rational hierarchy of sign sizes, clear directional arrows, and other design elements.

2-2.3.5 Transit Priority/Traffic Signals, Control, and Safety

a. Transit Priority

The City of Los Angeles Department of Transportation (LADOT) has made significant progress in developing the software and hardware that will be implemented to allow transit priority treatment at signalized intersections. The use of loop detectors embedded in the pavement in advance of traffic signals will now allow the traffic signal controllers to detect a bus as a distinct object separate from a car or truck. Demonstration projects or similar devices have been implemented on several arterial streets in 2000 to test the software and hardware.

There are typically three types of interaction (none of which decrease the amount of crossing time allocated for pedestrians) between the signal system and transit system to provide the most efficient operation for both the transit system and vehicular traffic.

- Preemption grants the right-of-way to a mass transit vehicle by interrupting the normal signal cycle sequence. (This strategy is not expected to be used in the East-West BRT project.)

- Full Priority may extend or shorten the traffic signal green indication of the transit phase. The transit phase may be a parallel vehicle phase or an independent phase. Full priority also allows the skipping of a traffic phase if needed to advance the required transit and/or compatible vehicle phase. Typically the phase skipped is a low volume phase during that period of time, which results in improved operations for the transit service with minimal impact to the traffic operation. (This strategy may be considered for low volume smaller street crossings.)

- Partial Priority allows the traffic signal controller to advance the start (early green), or retard the end (extend green) of the transit phase and any compatible vehicle phase. Partial Priority does not skip any vehicle phase to extend or bring up early the transit phase. (This strategy will be used for most of the BRT crossings.)

The concept for the bus priority treatment along the transitway will be to locate the bus detectors far enough in advance of each signalized cross street so that the traffic signal system will have sufficient warning to adjust the signal phases on the cross street so that the bus will have the greatest chance to receive a green indication when it reaches the cross street. In some cases this will occur by lengthening the green phase (green extend) for the transitway and the parallel street, and in other cases it may occur by shortening the green phase on the north-south cross street (early green). The proper location of the advance loop detectors will avoid abrupt changes in a signal cycle (e.g., a green phase will not be truncated prior to a specified minimum amount of time) by placing the detectors far enough in advance of the cross street so that the bus traveling at the planned speed will arrive at the cross street and have a green signal indication.

It may not be feasible to provide this same level of priority treatment for buses traveling in both directions, if headways become too short. In that case, the peak direction of passenger demand would be given the higher level of priority treatment. At each cross street where there are nearby traffic signals, the transitway will also be signalized and the buses will have their own signal

indications. LADOT will also have to consider the traffic demand on north-south streets in determining the level of priority for buses.

The BRT Station locations help determine, to some extent, the type of priority that is most appropriate. A street crossing where the BRT station is on the far side would most likely utilize the extended feature to assure the bus makes it through the crossing and to the station. While a street crossing that has the station on the near side would utilize the early green feature to get the bus moving more readily.

b. Traffic Signals, Control, and Safety

Bus Rapid Transit (BRT) signals and vehicle signals will be placed at each crossing to control the bus, vehicle, pedestrian, and bicycle traffic at the crossing. Typically the BRT crossings will be two-phased (BRT phase and vehicle phase) with the exception of the crossings along Chandler Boulevard, the intersection of Fulton Avenue/Burbank Boulevard, and locations where pre-signals will be placed.

Wherever possible, the bus signals and the adjacent existing intersection signals will be integrated to create one signalized intersection controlling both automobiles and buses. Only at the Woodman/Oxnard intersection, where the transit corridor crosses the two streets at a diagonal offset from the intersection, and at other mid-block locations where signals currently don't exist, will the bus signals be offset from, but interconnected with, the adjacent traffic signals. In those portions of the corridor where the transitway is adjacent to and parallel to an arterial street, the buses will typically receive a green signal indication simultaneously with the parallel street. Bus operating speeds will be slightly higher than adjacent mixed-flow traffic, but because intersection crossings would be controlled with signals, warning devices would not be required. The stop bar for traffic approaching the transit crossing will be located before the transit crossing so that there will not be any traffic stopped between the adjacent traffic signal and the transit crossing. Pedestrian crossing protection will be provided at all locations permitting such crossings, via typical pedestrian signal heads. Pedestrians will be allocated crossing time according to LADOT standards.

At locations where the BRT will run parallel and adjacent to a major roadway (e.g. Victory Boulevard) "pre-signals" for vehicle traffic will be placed on the leg approaching the BRT crossing to prevent vehicle queuing on the BRT right of way or between the right of way and the adjacent street. The pre-signals are placed beyond the BRT crossing with the stop bar located in advance of the BRT crossing. The departure lanes of the intersection crossing the BRT busway will also be equipped with an additional traffic signal to control traffic departing the intersection. This will stop vehicles in advance of the BRT crossing and will allow the vehicles already beyond the pre-signal to move through the intersection. This additional safety feature reduces the potential of vehicles being queued on the BRT right-of-way.

A brief clearance interval will be required in the north-south signal phase to insure that no vehicles are stopped on the transit crossing or between the transit crossing and the adjacent east-west street.–Turn movements from the adjacent east-west street will also require separate signal phases with red arrows when the transit vehicles are crossing the north-south street. In addition, where necessary separate right turn lanes will be created to hold the vehicles in queue until the

BRT vehicle passes and the right turn lane receives the green arrow. This will be necessary to prevent a left or right turn across the transitway crossing when a transit vehicle is moving in conjunction with the through traffic on the parallel arterial. The signal modifications will also include "active" No-Right-Turn indications and "Bus Coming" signs to prevent right turns across the BRT crossing from parallel streets and major adjacent driveways. MTA will obtain approval from appropriate state authorities for "Bus Coming" signs.

At locations where the transit corridor is located in the median of a roadway (e.g., along Chandler Boulevard), the buses will run simultaneously with the through traffic on the roadway and left turn movements will be controlled by specially created exclusive left-turn lanes and red arrows from newly installed left turn phases at the modified signals. Along Chandler Boulevard, buses in the median as well as other east-west vehicle traffic would receive progressive green signals. Signals would be timed so that vehicles travelling at or near the designated speed limit (35 mph) would receive consistent green lights as they proceed along Chandler Boulevard. This method of synchronizing signals along a road is called "signal progression along a green band" (SPGB) By using SPGB, no additional signal priority would be necessary for the BRT along Chandler Boulevard. Table 2-5 provides a summary of the traffic control strategies at each of ~~33~~ 40 intersections/cross streets.

Crossing protection will be provided for pedestrians in both the median configuration and at typical street intersections with traffic signals.

Table 2-5: Traffic Control Strategies Along the San Fernando Valley East-West Transit Corridor

Transitway Cross Street	Transitway Location vis a vis Adjacent Cross Street	Intersection Strategies		Comments
		Modify Signal	New Signal	
Tujunga Ave	in median	X ~~(2)~~	X	~~Full priority~~ Signal Progression along green band on Chandler (SPGB)
Colfax Ave	in median	X		(SPGB)
Agnes Avenue	in median		X	Pedestrian crossing only
Laurel Canyon Blvd	in median	X		Far Side Station, extend green SPGB
Corteen Pl	in median	X		~~Full priority or close crossing~~ SPGB
Whitsett Ave	in median	X		SPGB
Bellaire Ave	in median	X		~~Full priority~~ SPGB
Goodland Avenue	in median		X	Pedestrian crossing only
Coldwater Canyon Ave	in median	X		SPGB
WB Chandler/ Railroad	Transition from median		X	~~Full priority~~ SPGB
Ethel Ave	mid-block; not adjacent		X	~~New stop bars~~ Partial priority*
Fulton Ave / Burbank Blvd	Diagonal crossing	X		Exclusive BRT phases, partial priority

Table 2-5: Traffic Control Strategies Along the San Fernando Valley East-West Transit Corridor

Transitway Cross Street	Transitway Location vis a vis Adjacent Cross Street	Intersection Strategies		Comments
		Modify Signal	New Signal	
Oxnard St/ Woodman Ave	Diagonal, offset to north and east of intersection	X	X ~~(2)~~	Complex signal phasing; extend green, partial priority, dual stop for BRT
Hazeltine Ave/Bessemer St	South of Bessemer		X	Partial priority
Tyrone Ave	South of Bessemer		X	Park-and-ride access, partial priority*
Van Nuys Blvd	mid-way btwn Bessemer & Aetna		X ~~(2)~~	Signals for transitway and Park-and-Ride access; w/b hold at station for green, e/b extend green, partial priority
Vesper Ave	mid-way btwn Bessemer & Aetna		X	Park-and-ride access, partial priority*
~~Cedros Ave~~	~~mid-way btwn Bessemer & Aetna~~		~~X~~	~~Park-and-Ride access~~
Kester Ave	mid-block, not adjacent		X	New stop bars, partial priority
Sepulveda Blvd	mid-block, not adjacent		X	W/b extend green, e/b hold at station for green, partial priority
Haskell Ave	South of Victory	X		Access road to park-and-ride, no BRT crossing of Haskell
Woodley Ave	South of Victory	X		Adjust stop bar (s/b approach) extend green, pre-signal, partial priority
Balboa Blvd	South of Victory	X	X	Closely spaced separate signals, w/b hold at station for green, e/b extend green, partial priority
White Oak Ave	North of Oxnard	X		Adjust stop bar (s/b approach), pre-signal, partial priority
Zelzah Avenue	North of Oxnard		X	Pedestrian crossing ony
Lindley Ave	North of Oxnard	X		Adjust stop bar (s/b approach), pre-signal, partial priority
Reseda Blvd	North of Oxnard	X		Adjust stop bar (s/b approach) W/b extend green, e/b hold at station for green, pre-signal, partial priority

Table 2-5: Traffic Control Strategies Along the San Fernando Valley East-West Transit Corridor

Transitway Cross Street	Transitway Location vis a vis Adjacent Cross Street	Intersection Strategies		Comments
		Modify Signal	New Signal	
Wilbur Ave	North of Topham	X		Adjust stop bar (s/b approach), pre-signal, partial priority
Tampa Ave	North of Topham	X		Adjust stop bar (s/b approach), pre-signal, partial priority
Corbin Ave	North of Topham	X		Adjust stop bar (s/b approach), pre-signal, partial priority
Victory Blvd/Topham St	North of Topham	X		Adjust stop bar, pre-signal, partial priority
Winnetka Ave	mid-block, not adjacent		X	New stop bars, partial priority
Mason Ave	North of Victory	X		Adjust stop bar (s/b approach), pre-signal, partial priority
De Soto Ave	North of Victory	X		Adjust stop bar (s/b approach), pre-signal, partial priority
Variel Ave	Transition to in-street running	X		Add phases for transit, partial priority
~~Warner Center~~	~~To be Determined~~	~~X (6)~~		~~On-street operation~~
Erwin St	On-Street along Variel Ave	X		Partial priority, Metro Rapid Bus operation
Oxnard St	On-Street along Variel Ave	X		Partial priority, Metro Rapid Bus operation, unsignalized
Canoga Ave	On-Street along Oxnard St	X		Partial priority, Metro Rapid Bus operation
Owensmouth Ave	On-Street along Oxnard St	X		Partial priority, Metro Rapid Bus operation
Erwin St	On-Street along Owensmouth Ave	X		Partial priority, Metro Rapid Bus operation
Canoga Ave	On-Street along Erwin St	X		Partial priority, Metro Rapid Bus operation
Total		~~29~~ 28	~~14~~ 17	
Note: * = Location to be considered for full priority.				

Source: Meyer Mohaddes Associates, Inc., 2000, 2002.

At ~~29~~ 28 locations, traffic signals will need to be modified, typically to add the signal phase for the transit vehicles crossing the roadway or intersection. Some of the modifications also entail relocating the stop bars and providing pre-signals and clearance intervals for vehicles crossing the transit corridor. In addition, the signal modifications will include upgrades to signal controllers and software to accommodate the transit priority treatment at the crossings. ~~Consideration will be given to the use of p~~Pre-signals and queue cutters will be used to prevent traffic from stopping or blocking the busway.

A total of ~~14~~ 17 new signals will be installed at crossings where the transit signal is off-set from the nearest traffic signal by more than about 100 feet and it would constitute a separate signal, which would be interconnected to the adjacent traffic signal. All minor street crossings ~~including those crossing the park and ride lots adjacent to the Van Nuys station~~ will be signalized as part of this project. There will not be any non-signalized or stop sign controlled intersections, except when the BRT will be running on-street, such as Metro Rapid Bus in Warner Center and at the National Guard entrance from Hedges Way. ~~The~~ More precise signal operation plan and signal programming details at ~~more complex~~ intersections will ~~require more detailed analysis in subsequent phases of project development,~~ be developed as part of final design. ~~Consideration will be given to the use of pre-signals and queue cutters to prevent traffic from stopping or blocking the busway.~~ Two mid-block signalized pedestrian crossings on Chandler Boulevard will also be provided; one at Agnes Avenue (just east of Laurel Canyon Boulevard), and another at Goodland Avenue (just east of Coldwater Canyon Avenue), as well as a signalized pedestrian crossing at Zelzah Avenue.

2-2.3.6 Station Locations and Conceptual Design

The busway alternative includes ~~11 new~~ 13 station stops spaced approximately 1 mile apart, ~~plus the~~ including a new bus station adjacent to the North Hollywood Metro Red Line station (see ~~Figure 2-6~~ and Figure 2-7) and the existing Warner Center Transit Hub (being planned by the City of Los Angeles). Stations would be located at major intersections and at higher-density locations such as the Van Nuys Civic Center, Pierce and Valley Colleges, Warner Center, and North Hollywood. Park-and-ride facilities would be included at six stations, four of which would be new lots, one of which would be an expanded facility at Balboa Boulevard, and one of which would be the existing lot at the North Hollywood Metro Red Line station.

a. Station Concept

Each station area would actually be comprised of two separate platforms along the busway, one for eastbound travel and another for westbound travel. As refined during preliminary engineering, each platform would be divided into two "zones," a prepayment zone and the platform itself. The prepayment zone would typically be located adjacent to the public street, sidewalk, kiss-and-ride, or park-and-ride facility. In this zone, patrons would purchase and validate tickets for the BRT, and other amenities such as bicycle racks, bicycle lockers, and telephones would be located in this area. The other zone, encompassing the BRT platform itself, would be fenced and access would be limited to paid transit patrons.

Station platforms would be able to accommodate three conventional buses or two articulated buses. Stations would be designed to accommodate low-floor ~~traditional~~ standard 40-foot or 60-foot single-articulated buses. ~~A canopy,~~ Canopies, for shade and shelter, would partially cover portions of the platforms, including the payment zone. ~~The modular design of the canopy would allow as much or as little of the platform to be covered as would be necessary, depending on ridership.~~ The ~~modular~~ station design would establish a unifying theme throughout the line, giving the busway corridor a clear visual and functional impression in the context of the Valley. Site amenities such as seating, lighting, screen walls where needed, bicycle racks/lockers, and ticket vending machines, ~~may~~ would be included at each station. Artist-designed elements, including screen walls at station entries and decorative paving of platforms, would be located at stations. Stations ~~may~~ may be equipped with an Advanced Travelers' Information System (ATIS), electronic signage that would inform travelers of the wait time until the next bus and provide other real-time transitway operating information. ~~During preliminary engineering, a more detailed determination of station amenities will be made.~~

Park-and-ride facilities at six stations would provide commuters with approximately ~~3,000~~ 2,900 to 3,200 parking spaces in addition to the existing parking spaces at the Metro Red Line station and at Balboa Boulevard, for a total of approximately ~~4,000~~ 4,000 to 4,300 spaces. Pedestrian amenities and landscaping would be provided adjacent to the stations, as described above. Park-and-ride lots would also be landscaped. Conceptual drawings do not show all landscaping in the park-and-ride lots in order to not obscure the underlying parking configurations.

b. Individual Stations

Table 2-6 lists the stations along the busway and the number of park-and-ride spaces.

These new, at-grade stations would be in locations that have current north-south bus routes. Characteristics of individual stations are described below. The station concept graphics in this section provide an overview of the BRT stations in their context. Refer to Volume 3, Plan and Profile Drawings, for refinements developed during Preliminary Engineering.

❑ North Hollywood Transit Center

The easternmost station would be located adjacent to the existing Metro Red Line North Hollywood Station. The station would be located ~~either at the existing bus plaza adjacent to the Metro Red Line portal,~~ in a new bus terminus adjacent to the historic Lankershim Depot across from the existing Red Line portal~~,~~ or on Lankershim Boulevard. ~~These alternatives are~~ This concept is described in greater detail in Section 2-2.3.1. An existing ~~850~~ 915 park-and-ride spaces are provided in the Metro Rail parking lot (see Figure 2-6~~ and~~ Figure 2-7, Figure 2-7a, and Volume 3, Plan and Profile Drawings).

The North Hollywood terminus would be located directly north of the historic Lankershim Depot. A portion of rail track along the north side of the building would be retained, and a landscaped plaza at the southeast corner of the site, being restored as part of the overall Depot restoration, would provide access from the intersection of Lankershim Boulevard and South Chandler Boulevard to the BRT platforms.

Table 2-6: Station Attributes (Full BRT Alternative)		
STATIONS	**PARK AND RIDE**	**ON-STREET / BUSWAY**
North Hollywood[1]	~~850~~ 915 spaces – existing[2]	~~On-Street~~ Busway
Laurel Canyon Boulevard	-	Busway
Valley College (Fulton Avenue/Burbank Boulevard)	-	Busway
Woodman Avenue	-	Busway ~~(South of Oxnard)~~
Van Nuys Boulevard	~~1060~~ 981 spaces[4]	Busway
Sepulveda Boulevard	~~1200~~ 1210 spaces[4]	Busway
Woodley Avenue	-	Busway
Balboa Boulevard[3]	~~240~~ 285 spaces (150 existing)[4]	Busway
Reseda Boulevard	~~400~~ 534 spaces[4]	Busway
Tampa Avenue	-	Busway
Pierce College (Mason Avenue/~~Victory Boulevard~~ Winnetka Avenue~~)~~	~~350~~ 100-389 spaces[4]	Busway
De Soto Avenue	-	Busway
Warner Center Transit Hub (Owensmouth Avenue between Erwin and Oxnard Streets)	-	On-Street
	TOTAL SPACES: ~~4080~~ 4025-4314 (~~3080~~ 2960-3249 new spaces)	
Notes: (1) Park-and-ride constructed as part of the Metro Red Line, and recently restriped for more compact spaces. (2) All spaces are fully utilized at the present time. However, this park-and-ride could be expanded as a part of joint development at the Metro Red Line site. (3) LADOT existing park-and-ride. (4) Modified based on Preliminary Engineering design; see Volume 3.		

Source: Gruen Associates, 2000; MTA, 2001.

❑ Laurel Canyon Station

This station would be located within the median of Chandler Boulevard (see Figure 2-14). ~~Street trees planted between the left turn pocket and the main roadway would provide a buffer between the stations and residences along the Boulevard. If buses along Chandler Boulevard were to operate in mixed traffic, station platforms would be located along the curb lanes of Chandler, on the far sides of Laurel Canyon Boulevard (with respect to the direction of traffic flow).~~ The station platforms, left turn pockets, pedestrian crossings and waiting areas, the busway, and some low landscaping would occupy approximately 300 feet of the median on the east and west sides of Laurel Canyon Boulevard.

At-Grade Station with Side Platform

0' 5' 10' 20'

Note: Refer to Figure 3-4 for typical conceptual intersection improvements.
***Refer to Volume 3 engineering drawings**

N 0' 50' 100' 200'

Figure 2-14: Laurel Canyon Boulevard Station Design Concept

Source: Gruen Associates, 2000.

❑ Valley College (Fulton-Burbank) Station

A station to serve Valley College would be located at the intersection of Fulton Avenue and Burbank Boulevard (see Figure 2-15), approximately 1.5 miles from the Laurel Canyon Boulevard station. The busway would cross this intersection at a diagonal. The westbound platform would be sited at the northwest corner of the intersection and the eastbound platform would be site at the southeast corner. The wide right-of-way north of this station would also provide room for landscaping or ~~the preservation of existing leases~~ potential new parking, in addition to ~~a potential City of Los Angeles~~ space for a bike path.

❑ Woodman Avenue Station

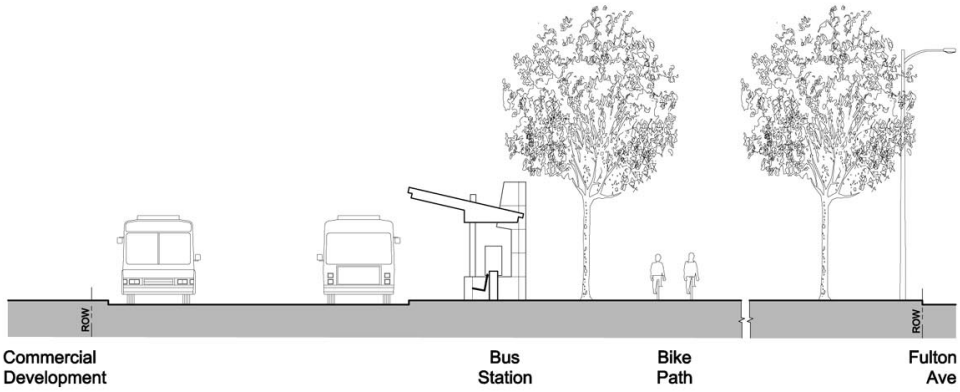
A station would be located in the ~~SP~~ MTA ROW, with both platforms just south Oxnard Street, east of Woodman Avenue (see Figure 2-16), about three-quarters of a mile from the Valley College station. New pedestrian crosswalks would be installed, as well as landscaped edges along the right of way. Parking along the commercial developments along either side of the right-of-way just east of Woodman Avenue and north of Oxnard Street would be reconfigured but maintained. Landscaping would be provided to continue the greenway concept.

❑ Van Nuys Transit Center

Both platforms of this station, a mile from the Woodman Avenue station, would be located adjacent to the Van Nuys Civic Center in the former railroad right-of-way between Aetna and Bessemer Streets. Parking for up to approximately ~~1,040~~ 981 cars would be possible in the former right-of-way (see Figure 2-17 and Figure 2-18). New amenities would include a new plaza adjacent to the station platforms and kiss-and-ride facility, as well as landscaping around the station and park and ride lot. Van Nuys Boulevard currently has some of the heaviest transit use in the Valley, and this station is anticipated to facilitate frequent feeder service and accommodate a high number of transit users.

❑ Sepulveda Transit Center

This station would be located ~~adjacent to~~ near the San Diego Freeway, about one mile from the Van Nuys Transit Center, and would have the capacity for approximately ~~1,200~~ 1,210 cars in ~~at~~ a former drive-in movie theater that is now owned by the MTA (see Figure 2-19). This station has high ridership potential because of its location ~~adjacent~~ between to the I-405 Freeway and Sepulveda Boulevard. In order to be centrally located close to the park-and-ride lot, platforms would be approximately 700 feet from Sepulveda Boulevard. Lighting, landscaping, and signage would direct bus riders transferring from buses on Sepulveda Boulevard to the station platforms. Landscaping and an 8-foot-high wall (a community enhancement) would screen the facility from Cameron Woods, the neighborhood to the north. The entire park-and-ride lot would be landscaped.



At-Grade Station with Side Platform

0' 5' 10' 20'

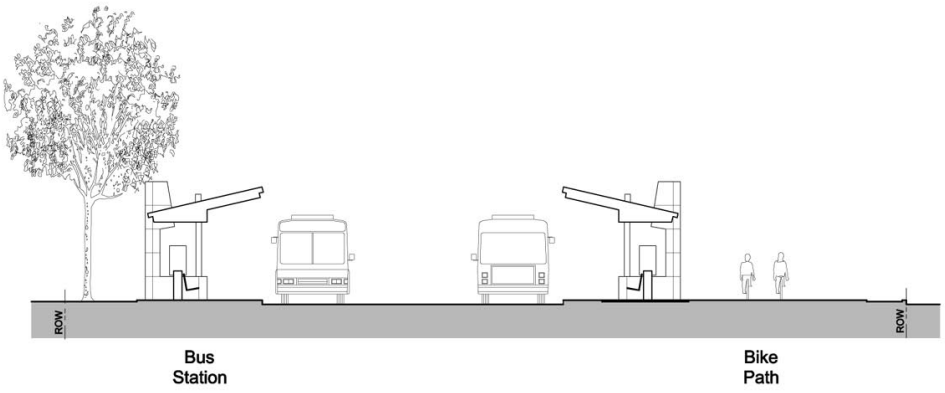
Note: Refer to Figure 3-5 for typical conceptual intersection improvements.

***Refer to Volume 3 engineering drawings**

N 0' 50' 100' 200'

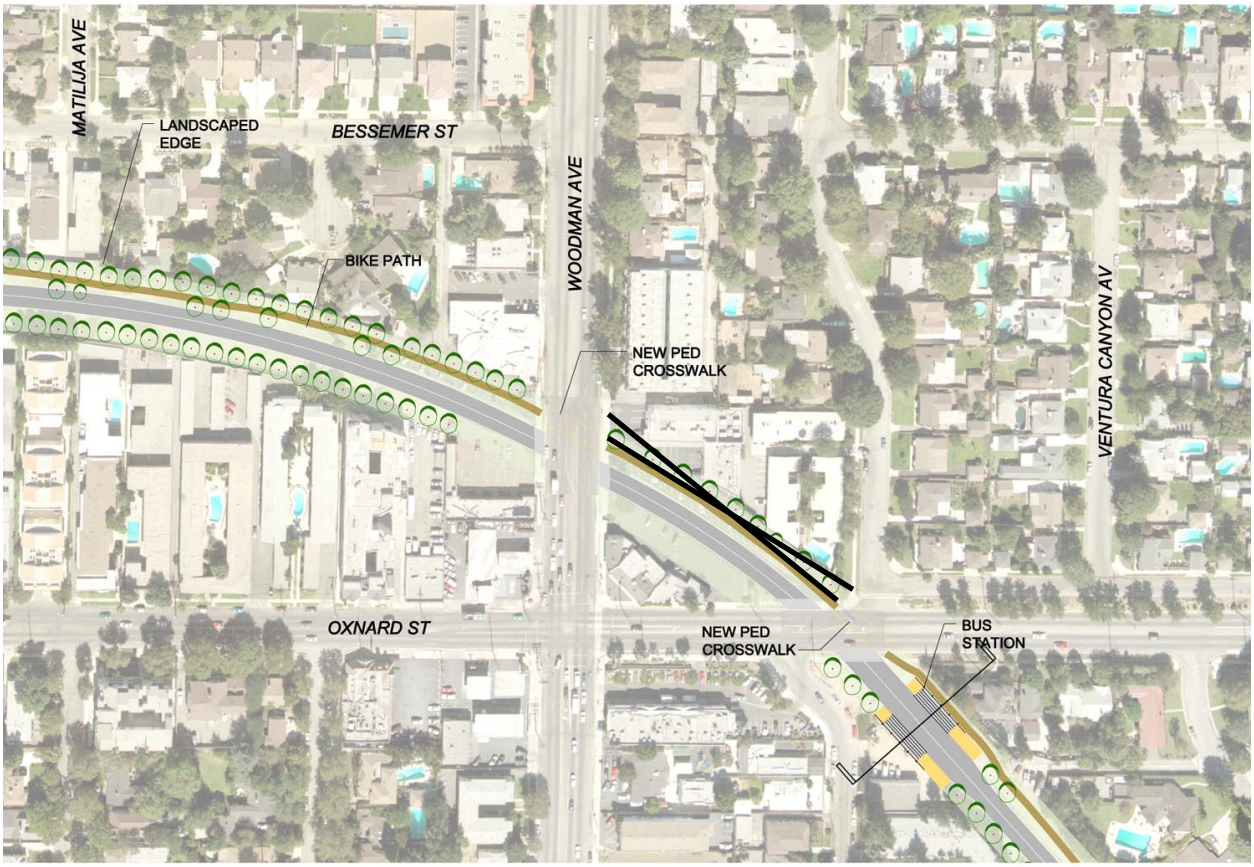
Source: Gruen Associates, 2000.

Figure 2-15: Valley College Station Design Concept



At-Grade Station with Side Platform

0' 5' 10' 20'



Note: Refer to Figure 3-7 for typical conceptual intersection improvements.

***Refer to Volume 3 engineering drawings**

N 0' 50' 100' 200'

Source: Gruen Associates, 2000.

Figure 2-16: Woodman Avenue Station Design Concept