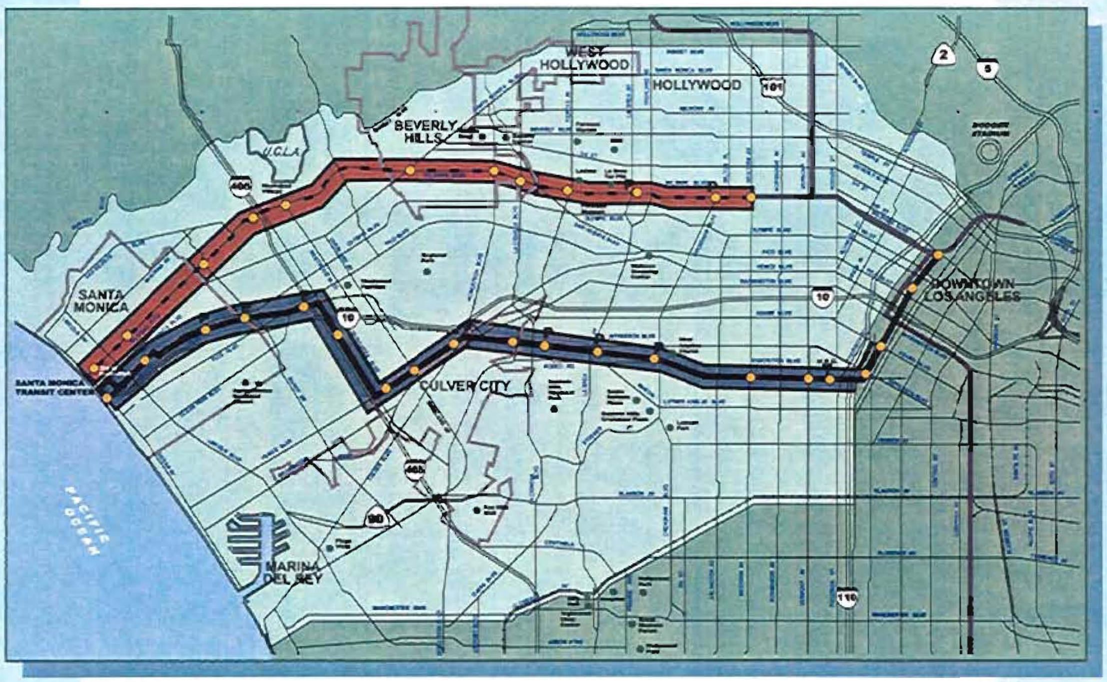
MID-CITY/WESTSIDE TRANSIT CORRIDOR

DRAFT EIS/EIR

Wilshire Bus Rapid Transit
&
Exposition Transitway

Draft Environmental Impact Statement/
Environmental Impact Report

SCH No. 2000051058



April 6, 2001

U.S. Department of Transportation
Federal Transit Administration

Los Angeles County
Metropolitan Transportation Authority

4669263

**DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT**

For

THE MID-CITY/WESTSIDE TRANSIT CORRIDOR PROJECT;
Wilshire Bus Rapid Transit & Exposition Transitway
LOS ANGELES, BEVERLY HILLS, CULVER CITY, SANTA MONICA, CALIFORNIA

State Clearinghouse Number 2000051058

Prepared Pursuant to the

National Environmental Policy Act of 1969, §102 (42 U.S.C. §4332); Federal Transit Laws (49 U.S.C. §5301(e), §5323(b) and §5324(b)); Title 49 U.S.C. §303 (formerly Department of Transportation Act of 1966, §4(f)); Executive Order 12898 (Environmental Justice); and California Environmental Quality Act, California Public Resources Code 2100, *et seq.*

By the

**FEDERAL TRANSIT ADMINISTRATION
U.S. DEPARTMENT OF TRANSPORTATION**

And the

**LOS ANGELES COUNTY
METROPOLITAN TRANSPORTATION AUTHORITY**

MAR 2 0 2001
Date of Approval

Leslie Rogers
Regional Administrator
Federal Transit Administration

2/21/01
Date of Approval

Julian Burke
Chief Executive Officer
Los Angeles County
Metropolitan Transportation Authority

G3

Draft Environmental Impact Statement
Draft Environmental Impact Report
California State Clearinghouse Number: 2000051058

RESPONSIBLE AGENCIES: Federal Transit Administration, U.S. Department of Transportation
Los Angeles County Metropolitan Transportation Authority

TITLE OF PROPOSED ACTION: Mid-City/Westside Transit Corridor Improvements;
Wilshire Bus Rapid Transit & Exposition Transitway
Los Angeles County, California

ABSTRACT: This report documents the financial, transportation and environmental characteristics and impacts of the following alternatives being considered for the Mid-City/Westside Transit Corridor: 1) Wilshire Boulevard Bus Rapid Transit (BRT); 2) Wilshire BRT plus Exposition Transitway BRT; 3) Wilshire BRT plus Exposition Transitway Light Rail Transit (LRT); 4) Transportation Systems Management (TSM); and 5) No Project.

The Wilshire BRT would operate at-grade beginning at the Metro Red Line Wilshire/Western Station and extend westward along Wilshire Boulevard through the cities of Los Angeles, Beverly Hills and Santa Monica. A total of 14 stations (spaced approximately one mile apart) would be provided for this alternative. The Exposition BRT and LRT alternatives would only run in conjunction with the Wilshire BRT. The Exposition BRT and LRT alternatives would travel mostly at grade along an existing railroad right-of-way from the Long Beach Blue Line in downtown Los Angeles thorough Culver City to the City of Santa Monica. The Exposition BRT and LRT would provide an additional 20 stations. For both the BRT and LRT alignments on Exposition, the route detours off Exposition Blvd. from about Venice/Washington to Sepulveda/Exposition via Venice Blvd. and Sepulveda Blvd. Also being evaluated is a Minimum Operable Segment (MOS) for the BRT & LRT Exposition Blvd. alternatives that could be implemented if funding becomes constrained. The MOS would construct the project west to Venice Boulevard.

This report is a combined Draft Environmental Impact Statement (DEIS) and Draft Environmental Impact Report (DEIR), satisfying the requirements of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). This DEIS/DEIR examines potential areas of impact including transportation (effects on transit, highways, travel corridors, station areas, and parking), land use and development, acquisitions and displacements, demographics and neighborhoods, community facilities and services, fiscal and economic conditions, visual and aesthetic conditions, air quality, energy, noise and vibration, geotechnical considerations, biological resources, Section 4(f) considerations, environmental justice and construction. Mitigation measures for the impacts are proposed where applicable.

FOR ADDITIONAL INFORMATION CONCERNING THIS DOCUMENT, PLEASE CONTACT:

Mr. Ervin Poka
Federal Transit Administration
Metropolitan Office
201 No. Figueroa Street, Suite 1460
Los Angeles, CA 90012
(213) 202-3952

Mr. David Mieger
Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza
MS 99-22-5
Los Angeles, CA 90012
(213) 922-3040

Mr. Raymond Sukys
Federal Transit Administration
201 Mission Street, Room 2210
San Francisco, CA 94105
(415) 744-3116

COMMENTS: Comments regarding this document may be submitted in writing or may be made orally at the public hearings. Written comments should be submitted to the Los Angeles County Metropolitan Transportation Authority at the above address. Information on the public hearing dates is available from the Los Angeles County Metropolitan Transportation Authority. Comments are due by June 15, 2001.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

MID-CITY/WESTSIDE TRANSIT CORRIDOR
DRAFT EIS/EIR

EXECUTIVE SUMMARY

S-1 Draft EIS/EIR Purpose & Intended Uses

This Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR or Draft EIS/EIR) has been prepared under the requirements of the National Environmental Quality Act (NEPA) and the California Environmental Quality Act (CEQA) to describe the environmental setting and consequences of the construction and operation of the Mid-City/Westside Transit Corridor Project to the public and involved local, State, and Federal agencies. The report also identifies and evaluates alternatives, and proposes mitigation measures to reduce potentially significant environmental impacts. The environmental review process also provides an opportunity for public participation to further inform the environmental analysis. The Los Angeles County Metropolitan Transportation Authority (MTA) and the U.S. Department of Transportation, Federal Transit Administration (FTA) are the lead agencies for compliance with CEQA and NEPA, respectively, and will take separate actions on this EIS/EIR and the project.

This DEIS/EIR does not make recommendations regarding the approval or denial of the project..

An EIS is an informational document, which will inform public agency decision makers, and the public of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe

Illustrative View of Wilshire BRT Concept.

TABLE OF CONTENTS FOR THE DRAFT EIS/EIR

The document is divided into nine chapters as outlined below:

For more information contact:

Mr. David Mieger
Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza, MS 99-22-5
Los Angeles, CA 90012
E-mail- MidCityWestside@mta.net
Project Phone Line- (310) 366-6443

reasonable alternatives. The MTA and the FTA shall consider the information in the EIS along with other information, which may be presented to the agency, prior to the adoption of the project. Other agencies, such as the California Department of Transportation (Caltrans), the cities of Los Angeles, Beverly Hills, Culver City and Santa Monica will also be involved in reviewing and approving the project. On the Federal level, agencies with potential reviewing/permitting authorities include the Advisory Council on Historic Preservation, the Occupational Safety and Health Administration, and the Environmental Protection Agency.

S-2 Environmental Review Process

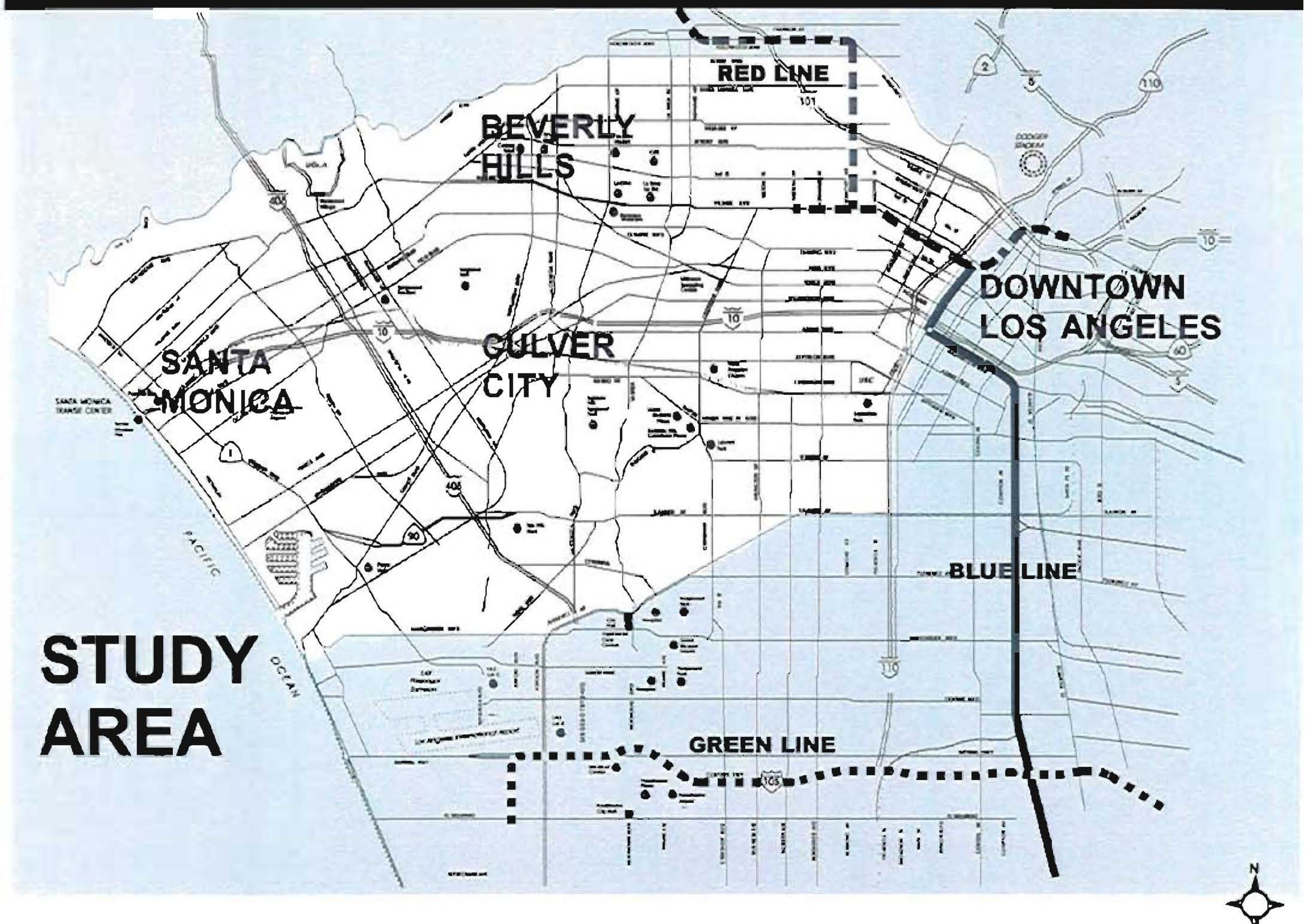
Compliance with the requirements of NEPA and CEQA must be achieved before the proposed project can be approved. The goal of both legislative acts is to ensure that local and federal decision-makers are aware of the environmental consequences of a decision before it is made.

One of the first steps in the environmental review process was to publish a Notice of Intent (NOI) to prepare an EIS in the Federal Register. The notice was published on May 19, 2000 (Vol 65, No 98) and provided a brief description of the proposed project and invited comment on issues that would be addressed in the environmental document. A Notice of Preparation (NOP) of an EIR, the CEQA equivalent of the NOI, was also prepared and circulated by the State of California on May 8, 2000.

In addition, various means were used to invite public comment about the project. Six public scoping workshops were held between May 23rd and June 8th, 2000 that were attended by more than 380 persons. Letters of invitation were mailed to over 12,000 addresses along the Wilshire and Exposition alignments. In addition, articles and advertisements were run in a number of Westside newspapers including the Los Angeles Times, Jewish Journal, Korea Times, The Sentinel, La Opinion as well as numerous community publications. The 30-day public scoping comment period extended through June 23, 2000, and all comments received about the project were documented and reviewed as a part of the preparation of the DEIS/EIR. Additionally, MTA staff have attended more that 42 community meetings with business, civic and homeowners associations during the scooping period and subsequent preparation of the Draft EIS/EIR.

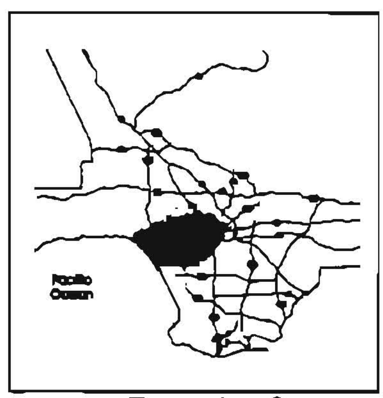
During the public review period for the Draft EIS/EIR, the Draft EIS/EIR is placed in public libraries and other repository sites as an effective way of providing ongoing information about the project. The document is available on the MTA website (www.mta.net) and information about public hearings and other ongoing project activities is available via the project telephone line (310-366-6443). Public hearings are held to receive oral and written testimony on the Draft EIS/EIR from the general public. The MTA provides notice of these public involvement meetings in compliance with CEQA and NEPA. For a detailed description of the environmental review process, and project-related public involvement opportunities, please refer to Section 6.0 (Community Participation) of this EIS/EIR.

Responses and letters on the DEIS/EIR will be compiled during public review and incorporated into the Final EIS/EIR. In May or June 2001, the MTA Board of Directors is expected to select a Locally Preferred Alternative for the project, based on the analysis and comments received to date. At the time, work on the Final EIS/EIR will commence with an expected completion date of late 2001. The MTA and the FTA cannot construct the project until the



The Mid-City/Westside Corridor Study Area encompasses 112 square miles. It includes the City of Los Angeles, Beverly Hills, Santa Monica, Culver City and unicorporated portions of Los Angeles County (Veterans West Los Angeles, and Baldwin Hills). Approximately 16 percent of the population and 24 percent of the jobs in Los Angeles County are concentrated in the area. The area encompasses the most well known employment, entertainment, educational/cultural activity centers in the region, including USC, UCLA, Santa Monica college, Los Angeles Trade Tech College, Rodeo Drive (Beverly Hills), Westwood Village, Hollywood Boulevard, Sunset Strip, Century City, Westside Pavilion, Paramount and Sony Studios, Third Street Promenade (Santa Monica), Wilshire Boulevard Miracle Mile, Los Angeles County Museum of Art, Page Museum, Petersen Automobile Museum, Afro-American Museum, Museum of Science and Industry, Los Angeles County Museum of Natural History, Los Angeles Memorial Coliseum and Sports Arena, Los Angeles Convention Center and the newly-opened Staples Center.

Final EIS/EIR is certified with all necessary mitigation measures and an adopted Mitigation Monitoring Program. Following certification of the EIS/EIR by the MTA Board, the FTA will consider the Final EIS/EIR and issue a public "Record of Decision" (ROD) for the project. Only at that time will the project become eligible for state and federal construction funding.



S-3 History, Purpose & Need for the Project

The need for high-capacity transit service improvements has been long recognized in the Mid-City/Westside area of Los Angeles. Since the 1970's, the MTA and its predecessors the Southern California Rapid Transit District (SCRTD) and the Los Angeles County Transportation Commission (LACTC) have conducted numerous transportation planning and environmental impact studies that have established the need for, and environmental impacts resulting from, improved east-west oriented transit service in various parts of the Study Area. Several planning and environmental studies prepared in the late 1980's and early 1990's identified the potential for the westward extension of the Metro Red Line system, which currently terminates at Wilshire Boulevard and Western Avenue.

These efforts led to the adoption of a Locally Preferred Alternative (LPA) for the Metro Red Line Segment 3 (Mid-City Area) in 1994. A Full Funding Grant Agreement was executed with the Federal Government and the project was carried into the construction phase. However, in January 1998, the MTA suspended work on extensions of the Metro Red Line heavy rail subway extension to the Mid-City area due to funding shortfalls. The Federal Government had committed to fund $245 million, or approximately 50% of the cost of the project. However, state and local funds that were needed to match this grant were not available. The project would have provided two stations further west along the Metro Red Line from its current terminus at Wilshire/Western to the Mid-City Shopping Center near the intersection of Pico & San Vicente boulevards. The Metro Red Line Subway was envisioned to ultimately extend as far west as Century City, Westwood and the I-405 Freeway.

Also, in November 1998, Los Angeles County voters passed an initiative prohibiting further use of local sales tax dollars to build subways, although these funds can be used for above/ground bus and rail transit improvements. Significant portions of the funds necessary to build the subway extension to Pico-San Vicente were anticipated to have come from local sales tax revenues.

MTA is now looking at alternatives to the previously approved subway extension that can provide above/ground transit mobility for this area in a more cost-effective manner. The need for these improvements is most critical. The Westside of Los Angeles has the highest population and employment density in the Southern California region, as well as the highest proportion of transit ridership. The Los Angeles Westside has a current population of 1.5 million persons, expected to grow by 300,000 over 20 years. The number of jobs is also projected to increase by over 200,000. No significant expansion of existing freeway and street networks is planned to accommodate this growth. The enhancement of public transit provides an opportunity to move more people in a way that is more energy-efficient, and does not require the building of more freeways or widening of streets.

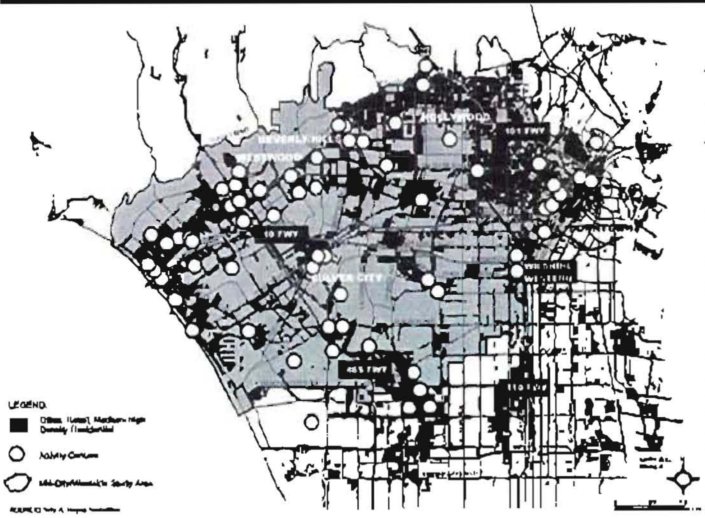
Why Transit Improvements?

Study Area Contains A Major Concentration of Activity Centers and Destinations. The area contains the largest concentration of major activity centers and destinations within the Los Angeles metropolitan region. Many of these centers are located within the most congested portion of the Study Area.

The "Centers Concept" Land Use Policy is Transit Based. Land use policies in the Los Angeles metropolitan region have traditionally been founded upon the framework that access to major activity centers would be facilitated through a network of transit connections.

There is an Existing Concentration of Transit Supporting Land Uses. The existing activity centers in the Study Area are central part of a large concentration of land uses that are considered to be transit supporting (high density housing, commercial and retail). Roughly 30 percent of the land area within the Study Area falls into this category.

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



There is a History of Transit Usage in the Study Area. Existing transit usage within the Study Area is proportionally higher than any other area in Los Angeles County (13.64 percent for the Study Area versus 6.8 % for the County).

There is a Significant Transit Dependent Population in the Study Area. Part of the underlying reason for high transit usage in the Study Area is that a significant number of households are autoless and have low incomes. According to the 1990 Census there are approximately 18.3% of households did not have a vehicle compared to 10.9% for the County.

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

Continued Growth in the Business Services Sector (Entertainment and Media Related) Underlies the Future Development Potential in the Study Area. Growth in the Study Area will continue to be fueled by entertainment and media related businesses concentrating in the western part of the corridor. Currently, the Study Area is the center of approximately 1/3 of all new office construction underway in LA County, which makes it the largest office market in Los Angeles.

There are Substantial East-West Travel Patterns that are Not Currently Served by a High Capacity Transit System. Travel patterns currently indicate that the Study Area is a primary attraction for work trips with origins in the San Gabriel Valley, San Fernando Valley and Southbay areas. These trips are represented by very high traffic volumes on the I-10 and I-405 Freeways.

Peak Hour Congestion on Study Area Roadways Underlies Need for Transit Improvements. There is Substantial Peak Hour Congestion in the Northern Portion of the Study Area. Vehicular travel to the East and West San Fernando Valleys must ultimately by-pass through the Sepulveda or Cahuenga passes. Access patterns in to these routes are congested during the peak travel hours as motorist attempt to pass northward at either the western or eastern ends of the Study Area.

Local Policies are Oriented Toward Demand Management and Transit Solutions rather than on Physical Roadway Improvements. Because of the level of build out and density within the Study Area, local jurisdictions have generally determined through their local policies that congestion relief improvements should focus on travel demand management rather than on physical improvements such as widening and new roadways. In a number of cases, local communities desire to eliminate cut through and neighborhood traffic or to support more livable downtown or commercial areas, are supporting initiatives to limit roadway capacity or slow even further traffic flow. Thus, leaving transit improvements as one and only viable remaining alternatives to reduce traffic volumes and congestion-related delays.

New red "Rapid Buses" were introduced along the Wilshire/ Whittier route in June 2000. These buses run on compressed natural gas and are low-floor design, meaning that no steps are required to enter and exit the buses.

S-4 Options to Subway: Bus Rapid Transit & Light Rail Transit

Because of the high costs of rail construction and the limited availability of funding resources, there has been a strong movement in recent years to find lower cost but effective transit solutions. A model that has been attractive to many cities in this regard has been the exclusive lane bus system that has been developed in Curitiba, Brazil. U.S. cities that are currently developing Bus Rapid Transit systems based on the Curitiba model include Boston, Charlotte, Cleveland, Eugene Oregon, Hartford, Honolulu, Miami, Santa Clara California and San Juan, Puerto Rico.

New Metro Rapid bus stations are being installed along Ventura & Wilshire/ Whittier routes. Such stations feature variable message signs that identify "Next bus in __ minutes" to transit riders waiting for their bus.

Buses in Curitiba, Brazil are "double-articulated" meaning that they are longer than conventional 40-foot MTA buses by incorporating articulated joints that allow the length of the vehicle to be expanded to 60 feet or 76 feet. Longer vehicles effectively double the capacity of the bus line and provide more seats to relieve overcrowding.

Los Angeles became one of the first U.S. cities to implement a BRT based bus system when the MTA initiated the Metro Rapid Bus program on Wilshire Boulevard and Ventura Boulevard on June 24, 2000. BRT features that have been implemented to date include:

1. Simple Route Layout
2. Frequent Headways
3. Less Frequent Stops
4. Level Boarding & Alighting
5. Color-coded Buses & Stations
6. Enhanced Station Stops
7. Traffic Signal Prioritization

Since the implementation of service, the Wilshire line has seen an increase in ridership of 27%. A total of 82,000 boardings now occur each day on the Wilshire/Whittier route (Lines 20,21,720), making it the heaviest used bus line in Southern California. This apparent success is offset, however, by heavy traffic congestion during rush hour periods that slows bus speeds to below 5 mph on many segments of the route. Buses are also very crowded, even though a number of additional buses have been added to service. Larger sized vehicles would help to reduce overcrowding and increase the comfort of the transit riders.

The additional features of a full Bus Rapid Transit system, if added to the current Metro Rapid lines, could continue to expand ridership and provide attractive alternatives to the private automobile. These features include:

·Bus Lanes- Similar to diamond lanes on freeways, dedicated bus lanes on city streets provide 4-5 times more people moving capacity than existing automobile lanes. When buses move faster than "gridlocked" cars, people are encouraged to leave their cars home and try public transit. New concrete bus lanes further provide a smoother and safer running surface for the buses;

·Higher Capacity Buses- Existing 40' long MTA buses can be replaced with "articulated" 60' or 80' long vehicles that have the capacity to double the number of passengers carried per vehicle. This will reduce overcrowding, provide more seats for transit users and carry more people without increasing the number of buses on the street;

·Multiple Door Boarding & Alighting- Up to 5 sets of doors can be provided on newer buses, allowing faster boarding and alighting at stations. Station stops that often exceed one minute can be reduced to as little 20 seconds, thereby reducing travel time;

·Fare Prepayment- Ticket vending machines at station stops reduce bus boarding times by replacing fareboxes onboard the buses. Transit riders board and alight from buses at the closest available door, rather than at a line at the front of the bus;

·Bus Feeder & Circulator Lines- Buses are necessary to bring people to and from the Metro Rapid line. People often must rely on transfers to reach their ultimate destination, and convenient shuttle buses and feeder lines help to integrate service;

·Coordinated Land Use Planning- The most successful transit systems are located in cities that develop strong linkages between land use and transit. As shown on the previous page, approximately 30% of the existing land uses in the Mid-City/Westside Transit Corridor are "transit supportive", i.e., higher density business, multi-family and institutional uses that generate high demands for transit service.

Light Rail Transit – As a lower cost alternative to heavy rail, light rail transit is currently being implemented in most large American cities. California cities, in addition to Los Angeles, with light rail systems include San Diego, San Jose, San Francisco and Sacramento. Most other western cities now have, or are developing such systems, including Portland, Seattle, Vancouver, Salt Lake Phoenix, Denver, Dallas, St Louis and Minneapolis/St Paul.

Advantages of light rail over traditional heavy rail include the fact that trains can run in both exclusive guideways or in mixed-traffic as traditional "streetcars" with other traffic. LRT trains run on electric propulsion so they are non-polluting.

The Metro Blue Line between Downtown Los Angeles and Downtown Long Beach (shown below) was the first modern light rail system built locally. Opened in 1990, the line today carries more than 62,000 daily boardings making it the most heavily used light rail line in the country. The Metro Green Line was opened in 1995 and now carries more than 27,000 daily boardings. In 2003, the Pasadena Light Rail Line will open. More recently, light rail was adopted as the preferred alternative for the Eastside Corridor, as a replacement for the suspended heavy rail subway.

A light rail transit option is evaluated in the DEIS/EIR for the Exposition right-of-way as a lower-cost, above-ground option to the suspended Mid-City/Westside subway project.

S-5 Alternatives

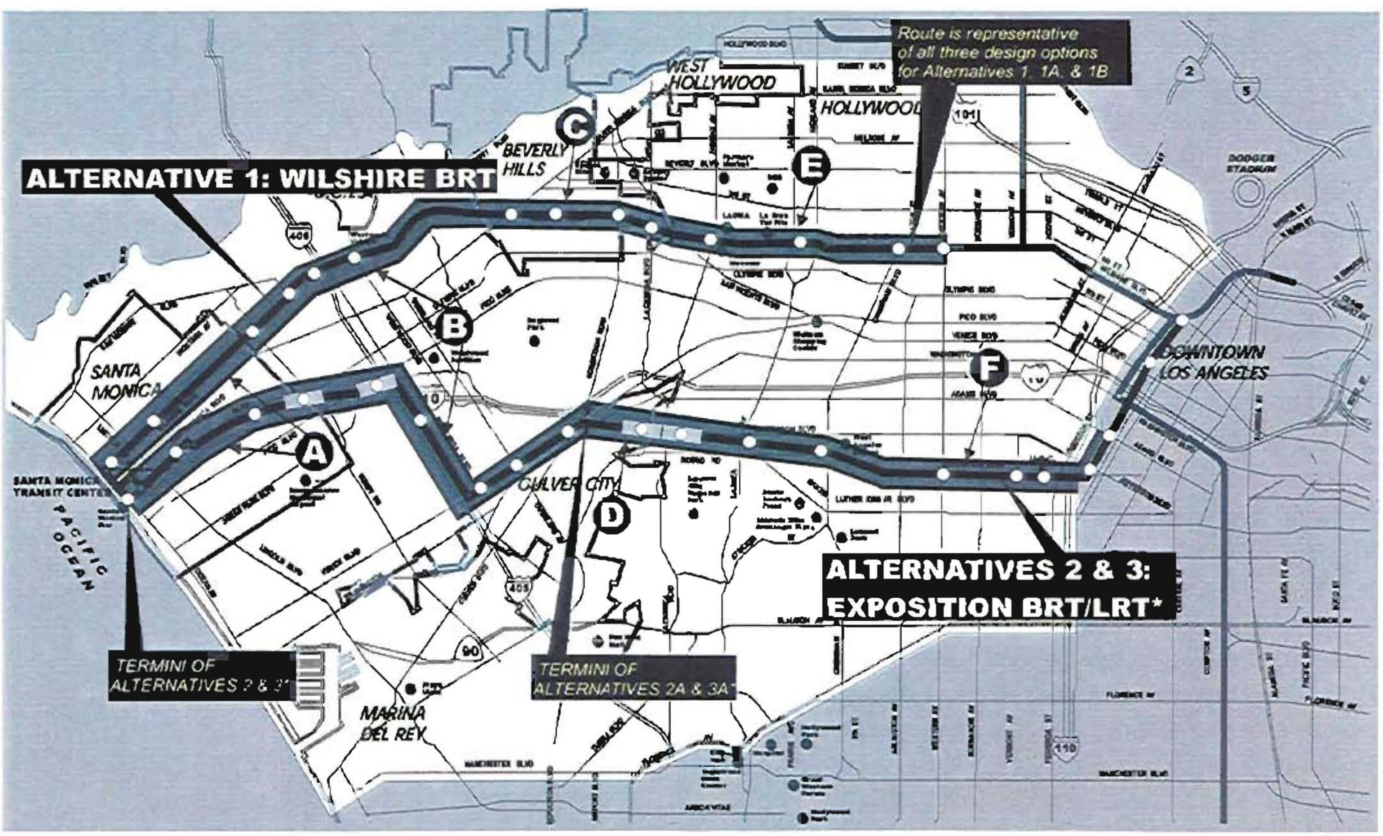
In February and March 2000, following their review of the findings of the Major Investment Study, the MTA Board of Directors considered and provided specific direction on alternatives to be evaluated in the Draft EIS/EIR. The primary direction was to evaluate an exclusive lane for Bus Rapid Transit along Wilshire Boulevard from Wilshire/ Western to downtown Santa Monica. Additionally, the Board directed that Bus Rapid Transit and Light Rail Transit be evaluated along the MTA-owned Exposition (Expo) Right-of-Way.

While allowing further consideration of Exposition BRT and LRT, the MTA Board was explicit in their direction that the Exposition route be considered as a supporting corridor only, such that Exposition would not supplant Wilshire Boulevard as the primary Westside transit route. Thus, the Exposition BRT and LRT alternatives considered in the EIS/EIR document are always considered in combination with the Wilshire BRT Alternative. The MTA Board further directed that the Exposition route not use the former railroad right-of-way in the Cheviot Hills/Rancho Park area between Venice Boulevard and Sepulveda Boulevard, and rather use these streets themselves for the BRT and LRT options.

The DEIS/EIR considers the following full project alternatives:

- No Project
- TSM - Transportation Systems Management
- Alternative 1 - Wilshire BRT
- Alternative 2 - Wilshire BRT and Exposition BRT
- Alternative 3 - Wilshire BRT and Exposition LRT

Also evaluated are Minimum Operable Segments (MOS) for each of the Expo combination alternatives. For the purposes of analysis, the Venice/Robertson intersection was identified as the interim terminus for purposes of environmental analysis. Alternative #2A and #3a end their respective Expo projects near the intersection of Venice and Robertson Boulevards.



LEGEND: A Santa Monica · B West Los Angeles · C Beverly Hills · D Culver City · E Los Angeles · F South Los Angeles

* Alternatives 2, 2A, 3, 3A, also include the Wilshire BRT route

The Wilshire Boulevard Route extends through the most dense areas of the region, linking Downtown Los Angeles with Santa Monica. The view to the right is looking east along Wilshie from Beverly Hills.

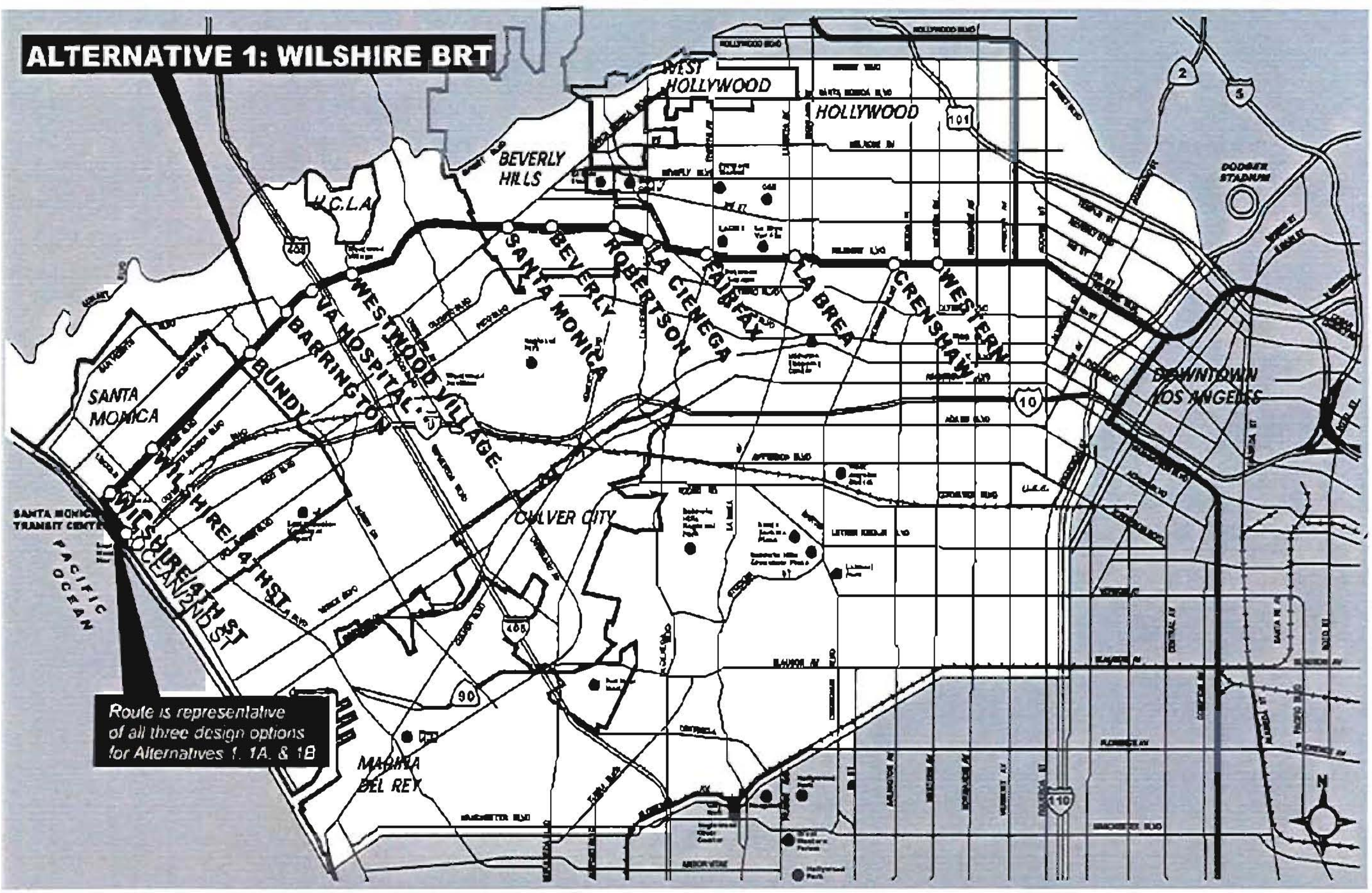
ALTERNATIVE #1 - WILSHIRE BRT

The Wilshire BRT Alterntive would build on the success of the Wilshire/Whittier Metro Rapid Bus to enhance service between Wilshire/Western and Downtown Santa Monica.

Metro Rapid Bus service would continue to be provided over the 26-mile length of the present service from Whittier to downtown Santa Monica. In the 13.2-mile segment between Wilshire/Western and downtown Santa Monica, a dedicated bus lane would be provided in each direction along Wilshire Boulevard. This alternative includes three design options: 1) the baseline center lane concept; 1a) the median adjacent lane concept; and 1b) the curb lane concept.

Station locations would be at the same intersections as the present Metro Rapid Bus service, although they may be shifted in some locations depending upon the design option that is developed.

New "articulated" bus transit vehicles would be used which could double the passenger carrying capacity of the line. Additionally, dedicated lanes could move 4 to 5 times the number of people as one of the existing automobile lanes on new, repaved, concrete roadways. A smoother ride with more speed and schedule reliability for transit users would significantly enhance the benefits of public transit along Wilshire Boulevard.



LEGEND:

Existing Metro Rail Lines

Alternative 1: Wilshire BRT

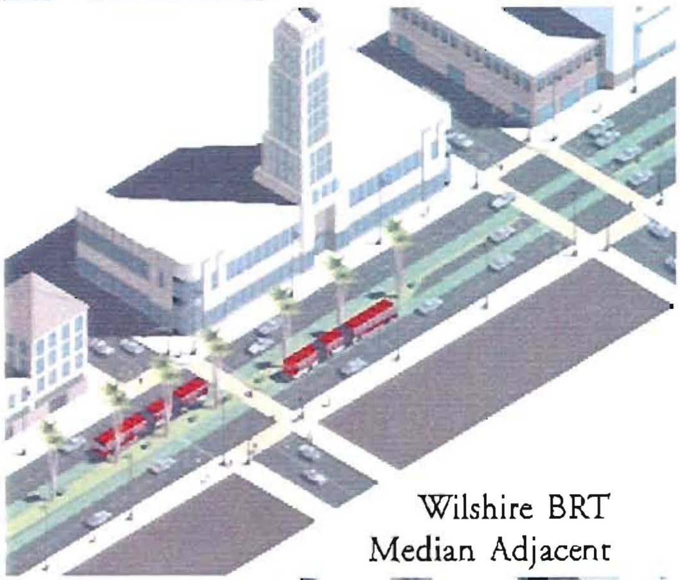
Station Location (General

Optional Station

Wilshire BRT
Baseline

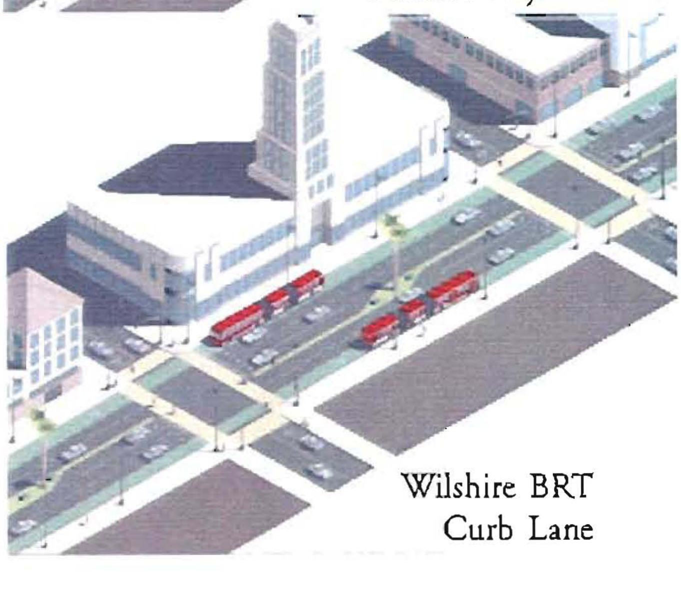
Alternative 1: The baseline BRT design is taken literally from the busway in Curitiba, Brazil, in which the middle portion of the street is dedicated to an exclusive busway. This design would require the removal of existing landscaped medians and on-street parking on Wilshire Boulevard, and for this reason, was opposed by many Wilshire Boulevard stakeholders during the Scoping Workshops.

As a result of these community comments, design options 1a and 1b were developed to eliminate impacts to the medians, as well as to provide greater design flexibility to deal with other environmental impacts such as loss of left turn pockets and loss of on-street parking. These features can be retained under design options 1a and 1b.



Wilshire BRT
Median Adjacent

Alternative 1a: The Median Adjacent design option would preserve the existing medians along Wilshire Boulevard. The exclusive bus lane would be located in the lane next to the median. Where medians currently do not exist along Wilshire, new medians could be constructed. This concept could also preserve all existing left turn lanes. It would require, however, that vehicles would have to transition across the exclusive bus lane to enter the left turn pockets. This alternative would relocate on-street parking to new, off-street locations. On-street parking could be retained in most areas, however, if a peak period busway concept were developed instead of a 24-hour facility.



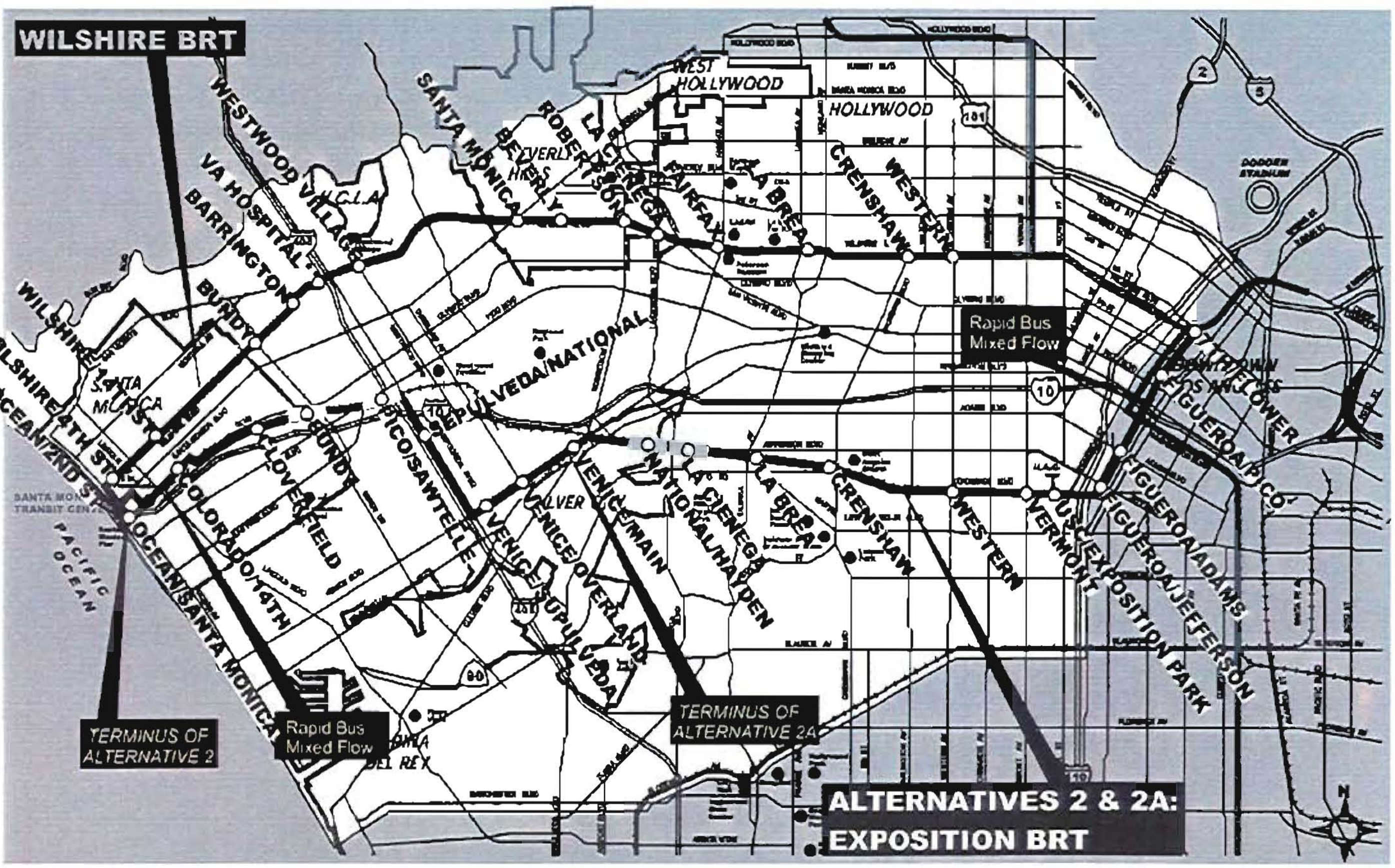
Wilshire BRT
Curb Lane

Alternative 1b: The Curb Lane design option would also preserve the existing medians along Wilshire Boulevard. This option would require the reconstruction of the outside curb lane to create a flat driving surface to remove the dips and cross street crowns. This option would result in reduced travel speeds for BRT, when compared to the previous two alternatives, because the BRT would be in the same lane with local buses and right-turning vehicles. This alternative would relocate on-street parking to new, off-street locations. On-street parking could be retained in most areas, however, if a peak period busway concept were developed instead of a 24-hour facility. A curbside bus lane is currently in operation in Downtown Los Angeles on Figueroa Street (AM peak period) and Spring Street (24-hour).

ALTERNATIVE #2 - WILSHIRE BRT AND EXPO BRT

This alternative would include Alternative 1, 1a or 1b as discussed previously along Wilshire Boulevard. The incremental addition for this alternative would be the construction of an exclusive busway using the Exposition right-of-way owned by MTA. The bus service would originate in downtown Los Angeles and the articulated buses would operate in the curb lane along Figueroa and Flower Streets to join the Exposition right-of-way near USC and Exposition Park. The busway would then proceed westbound along the Exposition right-of-way to Venice Boulevard. At that point, the exclusive busway would be leave the right-of-way and proceed in the center of Venice and Sepulveda Boulevards until it would rejoin the right-of-way at the intersection of Sepulveda/Exposition. West of Sepulveda the busway would again use the railroad right-of-way, until it intersects with Olympic Boulevard in Santa Monica. From this point the bus service would operate in mixed flow along Olympic Boulevard, 17th Street, and Colorado Boulevard until its terminus at the Santa Monica Transit Mall west of Lincoln Boulevard. Elevated grade separations would be constructed at La Cienega/Jefferson, Pico/Sawtelle and Bundy, due to high traffic volumes on these cross streets. Parking lots for up to 2,800 cars would be provided at seven stations along the Exposition alignment including Crenshaw, LaBrea, La Cienega, Venice/Washington, Pico/Sawtelle, Bundy and Cloverfield.

Alternative #2 would provide a full-length Exposition busway from Downtown Los Angeles to Downtown Santa Monica. Alternative #2A would provide the Expo Busway only between Downtown Los Angeles and Venice/Robertson Station.



LEGEND:

Existing Metro Rail Lines

Alternatives 2 & 2A: Exposition BRT (includes Wilshire BRT)

Optional Station

Station Location (General)

Elevated

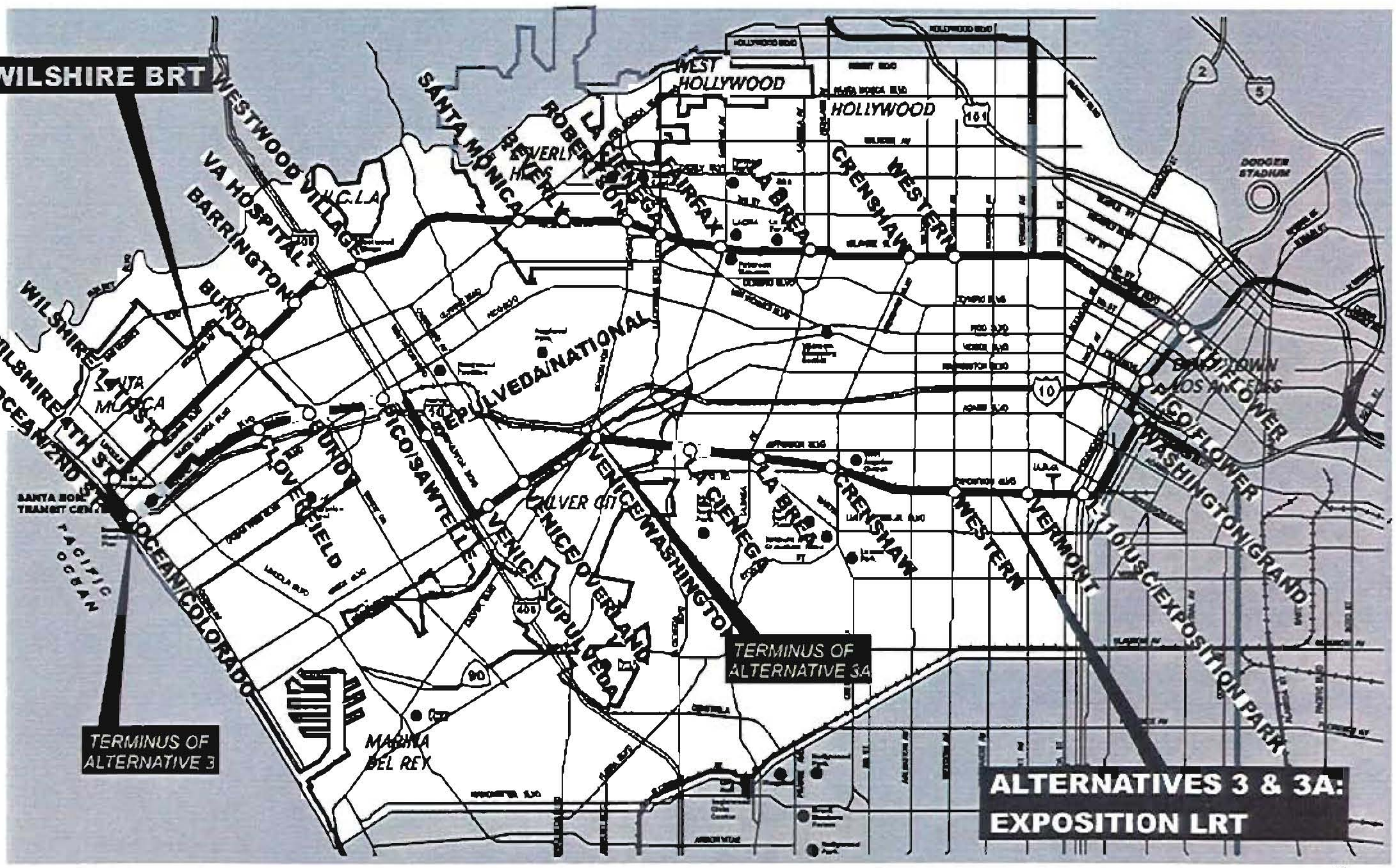
T Optional Tunnel

The illustration above and to the left shows a typical conditions for the Expo BRT route when the busway is located in the center of the street. The busway could either run in the median area itself or in the lane adjacent to the median.. This condition would occur along Venice, Olympic and Exposition Boulevard just west of Vermont. The illustration to the left shows a busway that is being developed in Eugene, Oregon, adjacent to the University of Oregon.

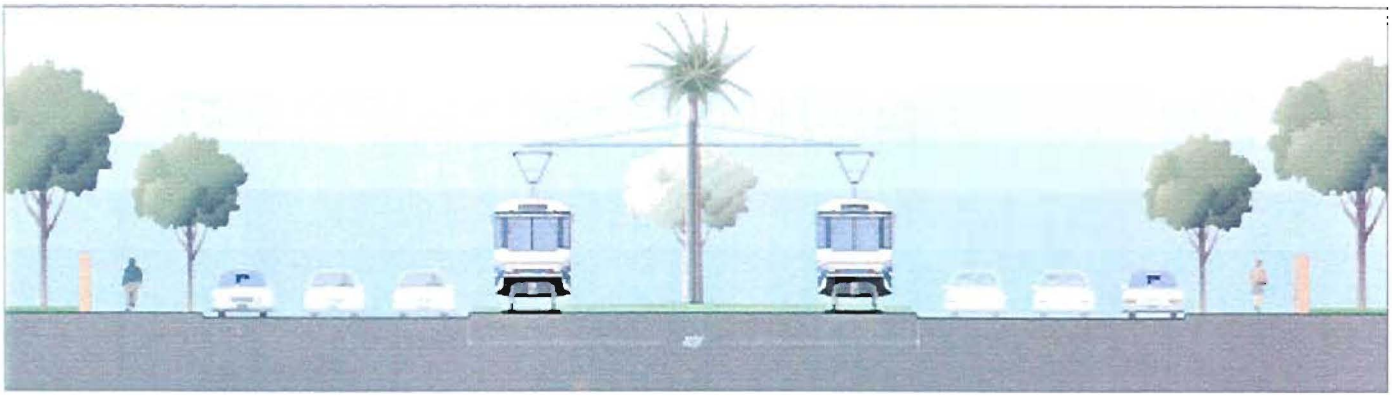
The illustration above and to the right show a typical condition along the Exposition right-of-way where the busway would run along the side of the existing street. Sound walls, landscaping, pedestrian crosswalks and a bike path would be incorporated into the design to beffer adjacent land uses and protect pedestrians.median running busway along the Exposition right-of-way. The illustration to the right shows the Eugene, Oregon project in a similar condition. Similar to the Expo project, a bikepath has been incorporated into the design along with new lighting and landscaping.

ALTERNATIVE #3 – WILSHIRE BRT AND EXPOSITION LRT

This alternative would include Alternative 1, 1a or 1b as discussed above along Wilshire Boulevard. The incremental addition of this alternative would be the construction of an exclusive light rail guideway using the Exposition right-of-way owned by MTA. The LRT service would originate in downtown Los Angeles and the LRT vehicles would operate in mixed flow along Hill Street until reaching the Exposition right-of-way. The LRT guideway tracks would be located within the Expo railroad right-of-way until reaching Venice Boulevard. At that point, a guideway would be constructed in the center of Venice and Sepulveda Boulevards until the railroad right-of-way is rejoined at Sepulveda and Exposition. West of Sepulveda, the LRT vehicles would use the Exposition right-of-way, until it intersects with Olympic Boulevard in Santa Monica. From this point the LRT service would operate in the center traffic lane adjacent to the landscaped median of Olympic Boulevard. The guideway would cross over Lincoln Boulevard and the Santa Monica Freeway and terminate in the Santa Monica Civic Center area west of Main Street. Elevated grade separations would be constructed at La Cienega/Jefferson, Pico/Sawtelle and Bundy, due to high traffic volumes on these cross streets. An aerial segment would also be constructed to cross the Santa Monica Freeway near Lincoln in Santa Monica. Parking lots for up to 2,900 cars would be provided at eight stations along the Exposition alignment including Crenshaw, LaBrea, La Cienega, Venice/Washington, Pico/Sawtelle, Bundy, Cloverfield and Ocean.



LEGEND:
Existing Metro Rail Lines
Alternatives 3 & 3A: Exposition LRT (Includes Wilshire BRT)
Optional Station
Station Location (General)
Elevated
T Optional Tunnel



The illustration above shows a typical operation of the Light Rail Systems when the trains operate in the median of Exposition, Venice, Sepulveda & Olympic Boulevards. The illustration to the right shows a typical condition where the trains would operate along the side of the existing street. Soundwalls and new landscaping would be provided under both conditions.

The photo below shows the highly successful Portand, Oregon light rail system. The line extend from Downtown Portland to the eastern and western suburbs of the city. Light rail speeds have been reduced in pedestrian areas to encourage the development of transit freindly zones supported by new landscaping, paving materials, streetlights and other ammenities.

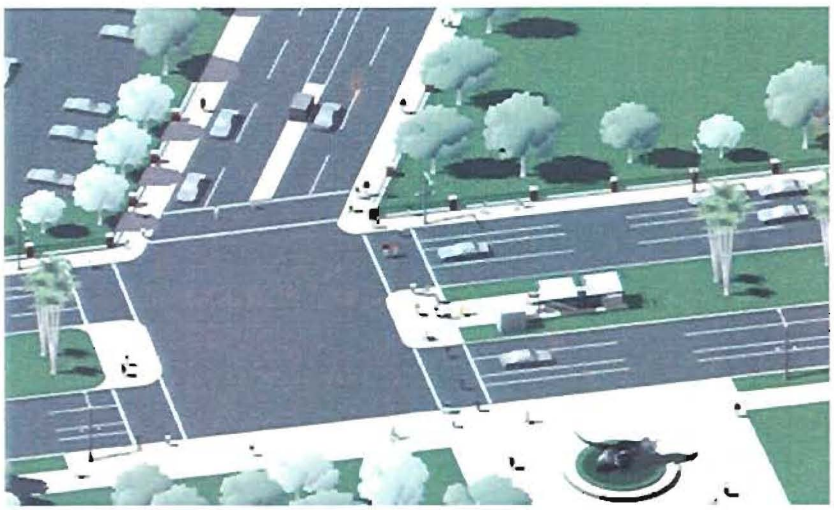
USC/EXPOSITION PARK TUNNEL DESIGN OPTION

When the MTA Board authorized additional environmental evaluation of the Exposition Right-of-Way Alternatives, they also directed that a subway tunnel be considered along Exposition Boulevard between Figueroa Street and Vermont Avenue as a possible mitigation measure for project traffic impacts.

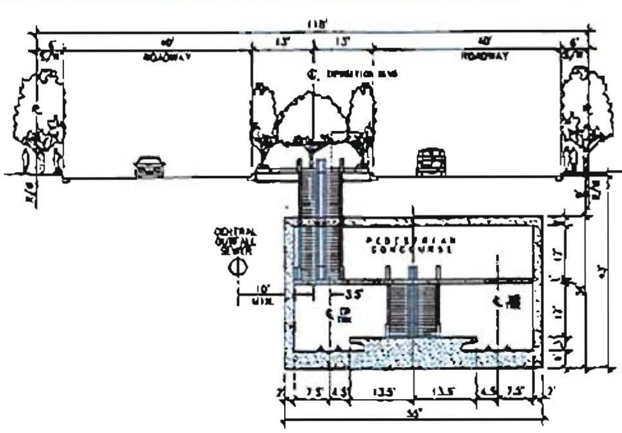
During the course of the environmental evaluation, it was determined that the at-grade alignments of LRT as well as a BRT alignment running in mixed traffic flow along this segment of Exposition Boulevard would not result in impacts that would require a tunnel during normal peak period or mid-day conditions.

During times of special events at Exposition Park, however, this segment of Exposition Boulevard is often closed to through traffic. Instances of this occur during the LA Marathon and other running or bicycling events. USC football games, Coliseum soccer matches and events at the Sports Arena or Exposition Park Museums/Cultural Facilities also result in occasional closure of the boulevard to traffic. Extremely heavy pedestrian traffic crossing Exposition Boulevard occurs during these events. In instances where these special events cause street closure of Exposition Boulevard, the Expo LRT project could be required to cease operating on this segment of Exposition Boulevard during the hours of such events. The BRT operation could be rerouted to follow alternative streets.

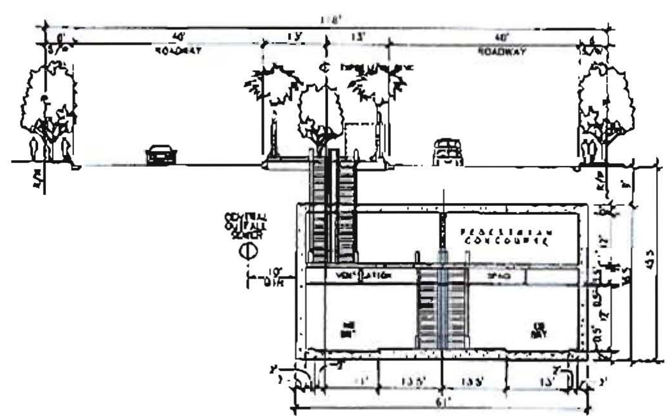
The cost of the subway segment adds approximately $120 million to the LRT alternative and $150 million to the BRT alternative. The tunnel is approximately 3,200 feet long and 45 feet deep. The higher cost of the BRT tunnel over LRT is attributable to the wider tunnel required for buses and the forced ventilation requirements of buses internal combustion engines.



Illustrative view (looking north) of the proposed subway station location considered as part of the Exposition BRT and LRT tunnel design option located at Watt Way between the University of Southern California and Exposition Park.



55 -Ft LRT Subway Cross Section



61-Ft BRT Subway Cross Section

The BRT at-grade option (Alternative #2) operates in a curbside lane in the USC/Exposition Park segment of the route in order to preserve the landscaped median that was installed by USC above the existing MTA owned railroad tracks. On street parking could be preserved and a similar protected pedestrian crosswalk installed to provide a safe crossing of Exposition Boulevard.

The LRT at-grade option (Alternative #3) would be located in an enlarged median area with grass cover between the railroad tracks. A signalized pedestrian crossing would be installed to protect pedestrians from the LRT vehicle and automobiles. This option provides room for a Class II bikeway on Exposition Boulevard that could be constructed as the same time as the project

S-6 COMPARISON OF ALTERNATIVES

The summary table below compares the alternatives in terms of overall length, number of stations, projected daily boardings, incremental new daily transit trips and number of park and ride spaces provided. The phrase "Incremental New Daily Transit Trips" used in the table is a measure to predict the number of new transit riders that would be attracted to the project who do not presently use public transit. The measure does not count existing bus or rail riders who would move from an existing transit line to the proposed new service. The measure counts complete one-way trips from origin to destination and does not include transfers. By contrast, daily boardings includes both former bus and automobile users who opt to take the new service.

Alternative 1 (Wilshire BRT) - This alternative is 13.2 miles in length from Wilshire/Western to Ocean/Colorado in Santa Monica. The fourteen stations are located at the same intersections as the present Metro Rapid Bus service. This alternative assumes that the existing Whittier/Wilshire Metro Rapid Bus service would continue to operate over the total distance of 26 miles, but that it would operate in a dedicated lane for the western half of its route between Wilshire/Western Station and Ocean/Colorado in Santa Monica. The 14 stations are projected to attract 39,600 daily boardings and 12,200 incremental new daily transit trips[1]. Because of the densely developed nature of the Wilshire Corridor, no new park and ride spaces are provided for this alternative. It should be noted that there is no difference between the three design options in terms of ridership or other overall performance indicators.

Alternative 2 (Wilshire BRT + Expo BRT) – In addition to the Wilshire BRT alignment described above, this alternative adds the Exposition BRT project to create a combination alternative comprised of both the Wilshire BRT and the Expo BRT projects. The combined project length of the Wilshire BRT and Expo BRT is 29.9 miles, with 13.2 miles on Wilshire BRT and 16.7 miles on Expo BRT. A total of 34 stations are provided on both routes, including 14 stations on Wilshire BRT and 20 stations on Expo BRT. The combination project would attract 65,300 daily boardings and 19,500 incremental new daily transit trips. A total of 2,800 parking spaces are provided in new lots located along the Expo right-of-way.

SUMMARY PROFILE OF MID-CITY/WESTSIDE ALTERNATIVES

Alternative		Length (miles)	Stations	Daily Transit Boardings	Incremental New Daily Transit Trips	Park and Ride**
1	Wilsire BRT (Center Median)	13.2	14	**39,600**	12,200	None
1A	Wilshire BRT (Median Adjacent)	13.2	14	**39,600**	12,200	None
1B	Wilshire BRT (Curb Lane)	13.2	14	**39,600**	12,200	None
2	Wilshire BRT & Expo BRT (Full Length) +	29.9 (13.2 + 16.7)	34(14+20)	**65,300** (36,300 Wilshire + 29,000 Expo)	19,500	2,800 spaces (6 lots)
2A	Wilshire BRT & Expo BRT (MOS) +	22 (13.2 + 8.8)	26 (14+12)	**56,900** (36,400 Wilshire +20,500 Expo)	18,500	796 spaces (3 lots)
3	Wilshire BRT & Expo LRT (Full Length) +	30.5 (13.2 +17.3)	31(14+17)	**83,900** (32,500 Wilshire + 51,400 Expo)	27,200	8 lots with 3,600 spaces
3A	Wilshire BRT & Expo LRT (MOS) +	22.8 (13.2 + 9.8)	24 (14 + 10)	**65,500** (38,300 Wilshire + 27,200 Expo)	15,600	4 lots with 796 spaces

Source: Korve and Manuel Padron Associates, 2000.

KEY COST FEATURES OF THE ALTERNATIVES								
Alternative		Project Cost (in 1999 Millions of Dollars)				Incremental New Daily Transit Trips	Annualized Capital and O&M Cost per New Daily Transit Trip
		Capital	Bus Vehicles	LRT Vehicles	Total Project		
1	Wilshire BRT (Center Median)	$304.6	$49.4	na	$354.0	12,200	$9.00
1a	Wilshire BRT (Median adjacent)	$304.6	$49.4	na	$354.4	12,200	$9.00
1b	Wilshire BRT (Curb Lane)	$313.7	$49.4	na	$363.1	12,200	$9.20
2	Wilshire BRT and Exposition BRT	$304.6 + $290.9	$58.4	na	$653.9	19,500	$11.90
2a	Wilshire BRT and Exposition BRT (MOS)	$304.6+ $128.9	$47.4	na	$480.9	18,500	$9.10
3	Wilshire BRT and Exposition LRT	$304.6+ $554.9	$26.6	$117.8	$1,003.9	27,200	$12.80
3a	Wilshire BRT and Exposition LRT (MOS)	$304.6 + $252.8	$35.6	$55.8	$648.8	15,600	$15.30

Alternative 2A (Wilshire BRT + Expo BRT MOS) - This alternative is identical to Alternative 2 except that the Expo BRT project would only extend from Downtown Los Angeles to Venice/Washington Station in Culver City over a distance of 8.8 miles. Buses would operate in mixed traffic conditions west of Venice/Washington Station, instead of using a dedicated busway facility. A total of 26 stations are provided on both routes, including 14 stations on Wilshire BRT and 12 stations on Expo BRT. The combination project would attract 56,900 daily boardings and 18,500 incremental new daily transit trips. A total of 796 parking spaces are provided in new lots located along the Expo right-of-way.

Alternative 3 (Wilshire BRT + Expo LRT) – In addition to the Wilshire BRT project described above, the alternative adds the Exposition LRT project to create a combination alternative comprised of both the Wilshire BRT and the Expo LRT projects. The combined project length of the Wilshire BRT and Expo LRT is 30.5 miles, with 13.2 miles on Wilshire BRT and 17.3 miles on Expo LRT. A total of 31 stations are provided on both routes, including 14 stations on Wilshire BRT and 17 stations on Expo LRT. The combination project would attract 83,900 daily boardings and 27,200 incremental new daily transit trips. A total of 3,600 parking spaces are provided in new lots located along the Expo right-of-way.

Alternative 3A (Wilshire BRT + Expo LRT MOS) - This alternative is identical to Alternative 3 except that the Expo LRT project would only extend from Downtown Los Angeles to Venice/Washington Station in Culver City over a distance of 9.8 miles. Light Rail trains would terminate approximately midway between Downtown Los Angeles and Santa Monica and feeder bus service would operate in mixed traffic conditions west of Venice/Washington Station. A total of 24 stations are provided on both routes, including 14 stations on Wilshire BRT and 10 stations on Expo LRT. The combination project would attract 65,500 daily boardings and 15,600 incremental new daily transit trips. A total of 796 parking spaces are provided in new lots located along the Expo right-of-way.

TOTAL COST

The capital construction and vehicle costs associated with each alternative are shown above. The overall costs range from just over $354 million for Alternative 1 (Wilshire BRT) to about $1.0 billion for Alternative 3 (Wilshire BRT + Expo LRT). The total cost for Alternative 2 (Wilshire BRT+ Expo BRT) is about $654 million.

The Minimum Operable Segment (MOS) from Downtown Los Angeles to Venice/Robertson is shown for Alternative 2A (Wilshire BRT + Expo BRT) at $480 million and for Alternative 3A (Wilshire BRT + Expo LRT) at $649 million.

COST PER NEW TRANSIT RIDER

One of the most important factors in the federal evaluation of project worthiness is a factor called the Cost per New Transit Rider. This calculation compares the annualized cost to build and operate the project in comparison to the projected number of new transit riders. A new transit rider is defined as a person who is attracted to ride public transit as a result of the project instead of driving a car. The table above shows both the incremental cost compared to No Project, as well as to the Transportation Systems Management Alternative (TSM).

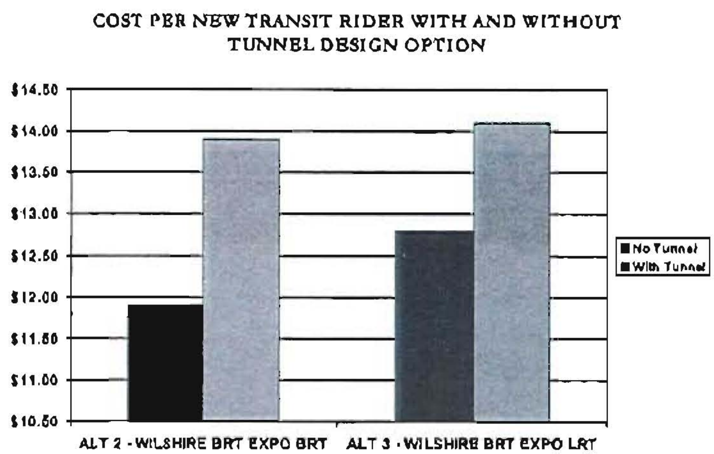
Alternative 1 (Wilshire BRT) is projected to cost about $9.00 per rider to attract 12,200 new daily transit riders. In comparison, Alternative 3 (Wilshire BRT + Expo LRT) is projected to cost $12.80 per rider to attract 27,200 new daily transit riders. In this particular comparison a 42% increase in cost per rider results in a 113% increase in transit ridership for Alternative 3.

Alternative 2 (Wilshire BRT + Expo BRT) occupies the middle ground with a cost per new transit rider of $11.90.

Based on this comparison, all of the alternatives appear to be competitive under FTA rating criteria with projects from other cities. More detailed financial analysis will be required prior to the approval of funding grants for the any one of the project alternatives.

Cost Implications of Subway Tunnel Design Option

As discussed above, the MTA Board requested that the environmental document evaluate a subway tunnel segment extending along Exposition Boulevard from approximately Figueroa Street to Vermont Avenue. This segment bisects the University of Southern California (USC) and Exposition Park, which include a number of museums and the Los Angeles Memorial Coliseum. This design option would increase the cost of Alternative 2 (Wilshire BRT + Expo BRT) from approximately $654 million to $802 million. Likewise, this design option would increase Alternative 3 (Wilshire BRT + Expo LRT) from $1 billion to $1.12 billion. The cost per new transit rider for the inclusion of the subway design option would increase the cost by 17% ($11.90 to $13.90) for Alternative 2, and increase the cost per rider for Alternative 3 from $12.80 to $14.10, a 10% increase.



S-7 AREAS OF CONTROVERSY & ISSUES TO BE RESOLVED

The California Environmental Quality Act requires that areas of controversy or issues to be resolved be identified as part of the public environmental record. The public outreach program has revealed that there are a variety of such issues for various communities, civic organizations and agencies within the corridor. As highlighted below many of these issues will need to be addressed by the MTA Board as part

of their deliberations on the Locally Preferred Alternative. Others will require further study as a part of the next phase of the project. In many cases there are solutions, but these options and potential mitigations are presented to inform policy actions.

Issue #1 - Wilshire BRT: Conversion of two mixed flow traffic lanes

The Wilshire BRT project would require the conversion of two mixed-flow traffic lanes into exclusive bus lanes. Although this would increase the people moving capacity of Wilshire Boulevard, it would also reduce the capacity of the Boulevard for automobiles and divert cars onto other streets. Over a period of time following the opening of the Wilshire BRT project, general automotive traffic would redistribute to streets other than Wilshire Boulevard to re-establish a balance between the many alternative routes. Mitigation measures have therefore been identified in the DEIS to improve traffic signals at more than 500 intersections throughout the Westside to handle this increased traffic flow on other streets, thereby increasing the traffic handling capacity on these other streets and thereby mitigating much of the impact of diverted traffic from Wilshire Boulevard. Although traffic signal improvements would mitigate a significant amount of the traffic impacts of the project, they would not completely mitigate all impacts in all locations.

Issue #2 - Wilshire BRT: Removal of Landscaped Medians

The Wilshire BRT Alternative 1 baseline alternative would require removal and reconstruction of landscaped medians that have been recently installed in the center medians in Wilshire Center, Miracle Mile and Beverly Hills. Business leaders in these areas have expressed strong opposition to the removal of these medians and, as a result, Alternatives 1a and 1b have been developed that do not require removal of the landscaped medians. These new design options, in fact, provide the opportunity to add new medians in segments of Wilshire Boulevard that do not presently have landscaped medians.

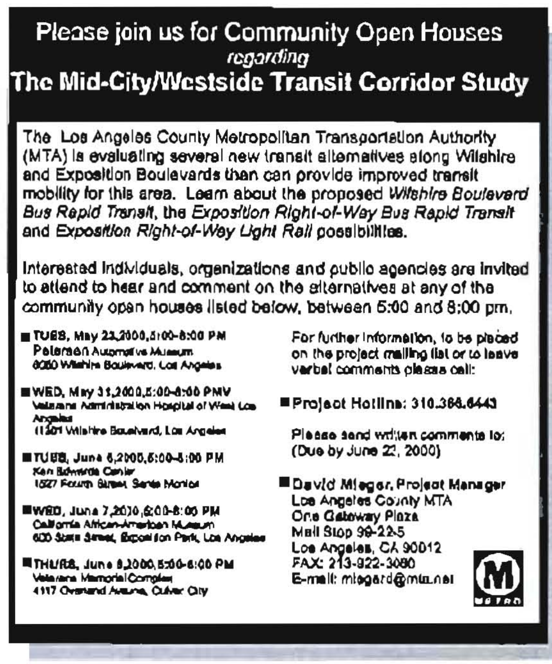
Issue #3 - Wilshire BRT: Removal of On-Street Parking in Los Angeles & Beverly Hills

Exclusive bus lanes on Wilshire Boulevard would require relocation of 1211 of the 1321 on-street parking spaces (92%) along Wilshire Boulevard to new off-street locations. Business and community leaders along Wilshire Boulevard have expressed opposition to the relocation of these spaces, because it would locate the parking farther away from homes and businesses than the existing spaces. Since parking is prohibited in 702 of the 1211 spaces during rush-hour periods (58% - or everywhere except Santa Monica), an alternative peak-hour only bus lane has been proposed between Wilshire/Western and the Santa Monica city boundary which could be implemented without displacing on-street parking. Although the implementation of a peak-period only lane would eliminate one of the major project impacts, it would also reduce the effectiveness of the bus lanes to only a portion of the day. There would be no benefits for bus transit during non-peak periods, particularly during the midday, when segments of the boulevard experience high congestion levels.

An example of a successful peak-hour only bus lane was identified in Nagoya, Japan, and such a lane would offer significant benefits over the present Rapid Bus Service. Retention of the 702 on-street parking spaces in the cities of Los Angeles and Beverly Hills would reduce the project expenses for replacement parking mitigation by approximately $35 million.

Issue #4 - Wilshire BRT: Removal of On-Street Parking in Santa Monica

Community meetings in Santa Monica have indicated a strong objection to the relocation of the 509 on-street parking spaces to new, off-street locations for an exclusive bus lane. Furthermore, the proposed mitigation measure of implementing a peak period only lane would not save these spaces, since parking is permitted in Santa Monica on a 24-hour basis extending throughout the peak periods. Existing Metro Rapid Bus speeds are relatively good in Santa Monica, where congestion levels are not as severe as other segments of the boulevard east of the city. Therefore, the Wilshire BRT could continue to operate as a Rapid Bus in Santa Monica (no exclusive lane), with relatively modest impacts on overall travel times or ridership. This would allow the retention of all on-street parking in that city and thereby eliminate one of the significant project impacts. Retention of the 509 on-street parking spaces in the city of Santa Monica would reduce the projected project costs for replacement parking by approximately $25 million.


Please join us for Community Open Houses
regarding
The Mid-City/Westside Transit Corridor Study

The Los Angeles County Metropolitan Transportation Authority (MTA) is evaluating several new transit alternatives along Wilshire and Exposition Boulevards than can provide improved transit mobility for this area. Learn about the proposed *Wilshire Boulevard Bus Rapid Transit*, the *Exposition Right-of-Way Bus Rapid Transit* and *Exposition Right-of-Way Light Rail* possibilities.

Interested individuals, organizations and public agencies are invited to attend to hear and comment on the alternatives at any of the community open houses listed below, between 5:00 and 8:00 pm.

- **TUES, May 23, 2000, 5:00-8:00 PM**
  Petersen Automotive Museum
  6060 Wilshire Boulevard, Los Angeles
- **WED, May 31, 2000, 5:00-8:00 PM**
  Veterans Administration Hospital of West Los Angeles
  11301 Wilshire Boulevard, Los Angeles
- **TUES, June 6, 2000, 5:00-8:00 PM**
  Ken Edwards Center
  1527 Fourth Street, Santa Monica
- **WED, June 7, 2000, 5:00-8:00 PM**
  California African-American Museum
  600 State Street, Exposition Park, Los Angeles
- **THURS, June 8, 2000, 5:00-8:00 PM**
  Veterans Memorial Complex
  4117 Overland Avenue, Culver City

For further information, to be placed on the project mailing list or to leave verbal comments please call:

- **Project Hotline: 310.366.6443**

Please send written comments to:
(Due by June 22, 2000)

- **David Mieger, Project Manager**
  Los Angeles County MTA
  One Gateway Plaza
  Mail Stop 99-22-5
  Los Angeles, CA 90012
  FAX: 213-922-3060
  E-mail: miegard@mta.net

Issue #5 - Wilshire BRT: Removal of Left Turn Pockets

The Wilshire BRT Baseline Alternative 1 would require that left turns from Wilshire Boulevard cross both the eastbound and westbound exclusive busway lanes. Such turns require left turn arrows and special traffic signal phases to insure safe operation. These left turn signals, however, remove green time that is needed to provide signal priority for buses on Wilshire Boulevard, and would effectively eliminate any signal priority for buses, thereby eliminating one of the major benefits of the proposed project. An optional design (Option 1a) would provide a permissive left-turn pocket, where vehicles would cross one direction of the bus lane prior to reaching the intersection, thereby not requiring a dedicated left-turn signal phase. This would allow the retention of bus signal priority for transit buses on Wilshire Boulevard. The City of Los Angeles Department of Transportation (LADOT) has indicated that such permissive left-turn pockets may not be acceptable. If a design solution cannot be found for this issue, the Wilshire BRT Alternatives 1 and 1a would be required to remove all left turn pockets as a part of their basic design, thereby significantly increasing the traffic impacts of the project (Alternative 1b would not require the removal of any left-turn pockets). This potential impact would require more detailed engineering review before a definitive definition of this impact can be defined, and would be evaluated as a part of the Final EIS/Preliminary Engineering.

Issue #6 - Wilshire BRT: Possible Street Widening

Segments of Wilshire Boulevard that have curb to curb dimensions of only 70' (Wilshire Center, Park Mile, Beverly Hills) may need to be widened if lane width requirements presently requested by LADOT are to be met. Although no property takings are anticipated, this would reduce sidewalk widths and introduce secondary impacts to the utilities and businesses in these areas. The non-standard lane widths included in the present Wilshire BRT proposed design would require widening only in very limited instances at intersections at station areas. This potential impact would require more detailed engineering before a definitive definition of this impact can be defined, and would be evaluated as a part of the Final EIS/Preliminary Engineering.

Issue #7 - Exposition BRT/LRT: USC/Exposition Park Subway

The University of Southern California and other Exposition Park stakeholders have requested consideration of a subway segment for both the BRT and LRT alternatives between Figueroa and Vermont. Earlier studies had indicated the need for a grade separation at Exposition/Figueroa to mitigate traffic impacts. The present study does not indicate that the need for such a grade separation, based on the reduced traffic impacts of the present downtown connector route which follows Hill Street, rather than Flower Street. Nonetheless, the impacts of the above-ground BRT or LRT projects are considered by many community representatives in the area to be too severe to be supportable as an at-grade system on Exposition Boulevard. In particular, advocates for a tunnel solution at Exposition Park cite special events such as the Los Angeles Marathon and other major Coliseum sporting events as situations where at-grade transit service (particularly light rail) would have to be curtailed.

Closure of Exposition Boulevard occurs approximately 12-15 times per year and duing such periods, BRT service could be re-routed around the area (as is currently done during special events like the marathon), and light rail service could continue at reduced speeds or but with transfers to buses linking separated parts of the LRT route. If LRT were not allowed to operate on Exposition Boulevard during special events, the LRT could continue to operate in from downtown to north of Exposition Park and from west of Vermont to Santa Monica. The two segments would be linked during special events by bus service.

The estimated additional project expense of building a subway for BRT is $150 million. The estimated additional project expense of building a subway for LRT is $120 million. The cost differential is primarily related to the wider tunnel needed for buses as well as the need for an extensive ventilation system for the buses combustion engines. As the project financial plan does not presently include a sub-

way segment, additional funding would be required if the subway design option were to be incorporated into the Expo BRT or LRT project.

Issue #8 - Expo BRT/LRT: Sepulveda Boulevard Shared Lane

A dedicated bus or LRT facility on Sepulveda Boulevard would require widening of the street curb-to-curb dimension to approximately 84 feet. The community has expressed strong opposition to any such widening, as it would require the narrowing of sidewalks and landscaped parkway areas to 8 feet and the removal of 157 on-street parking spaces (approximately 30% of the total of 526 on-street parking spaces located along this segment of Sepulveda Boulevard). Off-street parking would need to be developed as a mitigation measure for this impact.

Alternatively, this impact could be reduced or eliminated if the BRT were operated as a Rapid Bus (no dedicated lane) in this segment or the LRT were operated as a streetcar (no dedicated lane) in this segment. The implementation of Rapid Bus or Streetcar LRT service in this segment would reduce one of the significant project impacts, but would also reduce the effectiveness of the BRT/LRT, particularly during the rush hour periods, when significant traffic congestion levels would slow the transit running times. This potential impact would require more detailed engineering before a definitive definition of this impact can be defined, and would be evaluated as a part of the Final EIS/Preliminary Engineering.

Issue #9 - Exposition BRT/LRT: Equity of At-grade Alignment

A number of residential areas along the Exposition route have expressed concerns regarding the potential proximity effects of bus or light rail operations at-grade in residential areas. These concerns have been expressed in South Los Angeles, Baldwin Hills and East Culver City neighborhoods. The communities have placed strong emphasis on mitigation treatments in other residential areas and maintain that an equitable treatment would be place bus or LRT operations in a subway configuration adjacent to their areas. For LRT operations, placing the LRT in a shallow cut or trench with adjacent earth berms or low soundwalls could reduce these types of community concerns. Because of the 10-foot height of bus exhaust stacks (a primary noise source) the shallow cut would have to accompanied by a 7 to 8 foot wall or berm.

Other neighborhoods have been concerned about the overall alignment for Exposition and the MTA Board's explicit direction for the preferred Exposition alignment to depart from the MTA owned right-of-way between Venice and Sepulveda in order to avoid the neighborhoods in the Cheviot Hills section of the corridor. Both the cities of Los Angeles and Culver City have asked the MTA to revisit this decision because of the impacts to Venice and Sepulveda boulevards due to the LRT alignment using these city thoroughfares.

Issue #10 - Wilshire BRT/Exposition LRT: Pedestrian and Vehicular Safety

As noted in the description for Alternative 1 and 1a, station platforms would be constructed in the center median of Wilshire Boulevard. The safety of transit patrons getting to these center platforms as well as the size of platforms has been identified as an issue of concern. Within the City of Santa Monica segment, the large number of unsignalized pedestrian crosswalks has been a concern of the City. The Wilshire BRT proposal would provide signals at all crosswalks, however, the volume of pedestrian activity in Santa Monica remains a concern.

The conversion of the former Exposition railroad right-of-way for an exclusive bus or light rail facility has raised concerns regarding both cross street vehicular safety and pedestrian crossing safety. The proposed BRT or LRT project would include fencing along segments of the route, and special designs would be implemented to designate pedestrian crossings of the transitway. A parallel bikepath will be designed in such a way to provide continuous separation between the bikeway and the transitway. Near areas of pedestrian activity, signalized pedestrian crossings would be employed to protect pedestrians from both cars and transit vehicles.

At vehicular intersections, crossing gates would be utilized where transit speeds are greater than 35 mph. Such gates may not be possible in certain areas due to noise or traffic concerns, and in such cases, transit speeds would be slowed to less than 35 mph.

Issue #11 - Expo LRT: Non Revenue Connector

The Exposition light rail alternative will require a non-revenue connector track to connect the Expo line to the Long Beach Blue Line. This connector is necessary to get rail vehicles to storage and maintenance facilities that are located along the Long Beach Blue Line route. Residents and community organizations in the areas south of Downtown Los Angeles have expressed opposition to the use of the Exposition right-of-way that is east of the Harbor Freeway for such a connector. They have asked tht the MTA evaluate alternative routes.

Because this issue was only recently identified during the conceptual engineering of the Expo LRT project and was not known during the Scoping Comment Period, further engineering and planning will be necessary to determine if such alternatives are feasible. Full evaluation and environmental review of these alternatives will be included prior to completion of the Final EIS if the LRT project is advanced to the next phase of the study.

ENVIRONMENTAL ANALYSIS

To meet the requirements of Federal and State law, the environmental evaluation of the Mid-City/Westside Transit Corridor Alternatives addresses a variety of impact topics. The tables that follow provide a synopsis of the key findings within each topic area. The format of the tables first presents an overview of the topic. This is then followed by a description of the impact. The magnitude of the impact is identified, along with mitigation measures, and a conclusion is reached regarding the level of significance of the effect after the implementation of the mitigation measure or measures. A summary for each general environmental topic is shown below. The summary should be viewed as guide to more detailed information in the attached topics or in the body of the environmental document as a whole.

SIGNIFICANT ENVIRONMENTAL ISSUES

Of the environmental topics addressed, several of these topics stand out and warrant specific consideration in the overall assessment of the transit options. Key impact attributes of the alternatives are shown in the table below. Attributes designated as "S" (remains significant after mitigation measures) and "LTSM" (less than significant after mitigation) should be noted.

Alternative #1: Wilshire BRT - For this alternative, four impact categories were identified with significant residual impacts after mitigation. These include traffic, parking, acquisition/displacement and construction impacts.

- Traffic- Most traffic impacts can be mitigated to levels than are less than significant, however, residual intersection impacts remain at a few locations for each of the alterntives and on the I-10 Freeway for Alternatives 1 and 2. Alternative 1 (Wilshire BRT) would require the conversion of two traffic lanes on Wilshire Boulevard and thereby divert automobile traffic onto other streets. Even with mitigation of these impacts

SUMMARY COMPARISON OF THE BUILD ALTERNATIVES

IMPACT TOPIC	ALT 1 WILSHIRE BRT	ALT 2 WILSHIRE BRT	ALT 2 EXPOSITION BRT	ALT 3 WILSHIRE BRT	ALT 3 EXPOSITION LRT
TRAFFIC	S	S	S	S	S
PARKING	S	S	S	S	S
SOCIOECONOMICS	LS	LS	LSM	LS	LSM
LAND USE/NEIGHBORHOODS	LS	LS	LSM	LS	LSM
ACQUISITION/DISPLACEMENT	S	S	LSM	S	LSM
VISUAL QUALITY	S(1), LS(1A,1B)	S(1), LS(1A,1B)	LSM	S(1), LS(1A,1B)	LSM
AIR QUALITY	LS	LS	LSM	LS	LS
NOISE AND VIBRATION	LS	LS	S	LS	LSM
GEOLOGY/SEISMICITY	LS	LS	LSM	LS	LSM
WATER RESOURCES	LS	LS	LSM	LS	LSM
BIOLOGY	N	N	N	N	N
ENERGY	B	B	B	B	B
SAFETY AND SECURITY	LS	LS	LSM	LS	LSM
COMMUNITY FACILITIES	LS	LS	LSM	LS	LSM
HAZARDS	LSM	LSM	LSM	LSM	LSM
CULTURAL RESOURCES	LSM	LSM	LSM	LSM	LSM
CONSTRUCTION IMPACTS	S	S	S	S	S

S= SIGNIFICANT AFTER MITIGATION
LS = LESS THAN SIGNIFICANT
LSM = LESS THAN SIGNIFICANT AFTER MITIGATION
N = NO IMPACT
B = BENEFICIAL

by the provision of improved traffic signals and other traffic management programs, the diversion itself will increase traffic on streets other than Wilshire Boulevard. The project would reduce the total number of cars on the road and would have a beneficial impact on the people-carrying capacity of Wilshire Boulevard, however, the adverse impact to automobile drivers cannot be reduced to levels of insignificance. Traffic level of service at intersections along with the loss of on-street curb parking is expected to remain significant at a number of locations even after the implementation of mitigation measures.

- **Parking-** The loss of on-street parking is considered a significant impact to residents and businesses along Wilshire Boulevard. A Replacement Parking Program has therefore been developed to replace these lost spaces with new, off-street facilities. As an alternative, the use a of peak period lane could reduce or eliminate these impacts in most areas of the boulevard, by allowing on-street parking to remain in non-peak periods, but the effectiveness of the project would be reduced if operation of the dedicated transit lane were restricted to peak periods only.
- **Acquisition/Displacement-** For the baseline Alternative #1, replacement parking would be developed to replace the on-street parking spaces lost on Wilshire Boulevard. The MTA would endeavor to provide such replacement parking through shared parking agreements in existing facilities. In the event that sufficient parking spaces could not be developed in existing facilities, it may become necessary to acquire property for off-street parking. This could cause adverse impacts in these areas in the event that appropriate relocation sites could not be found and properties needed to be acquired. The Replacement Parking Strategy, however, would not be needed if the MTA Board adopts a peak hour only approach for the BRT exclusive lane on Wilshire.
- **Construction-** Traffic and noise impacts during the construction period would remain as impacts after mitigation because of the likelihood that construction staging zones would close up to two of the three lanes of traffic in either direction on Wilshire Boulevard. Because of high traffic volumes during weekday periods, such lane closures could generally only occur at night or on weekends when traffic volumes are less. Nighttime construction work would impact the residential neighborhoods that are located directly on Wilshire Boulevard in the Hancock Park and Westwood communities.

Environmental impact attributes of the Wilshire BRT Alternative also indicate that there are several factors, including visual quality, safety/security and community faculties that require the effective implementation of mitigation measures to reduce impacts to acceptable levels. The DEIS/EIR identifies that there are techniques to successfully mitigate these impacts through community design and planning review during the design phase of the project.

<u>Alternative #2: Wilshire BRT/Exposition BRT</u>- For this combined alternative, impacts associated with the Wilshire BRT alternative would be supplemented by the incremental impacts associated with the Exposition BRT route. Along the Expo BRT route, four impact categories were identified with significant residual impacts after mitigation. These include traffic, parking, noise/vibration and construction impacts.

- **Traffic-** Significant impacts would remain at 5 intersections following mitigation along the Expo BRT route. These include 4 intersections along Venice and Sepulveda Boulevards where the dedicated bus lane would leave the railroad right-of-way and require the reconfiguration of traffic lanes on city streets. One additional intersection would be impacted at Pico/Sawtelle.
- **Parking-** Loss of parking along Sepulveda Boulevard would constitute a significant impact if off-street replacement parking locations cannot be found. The Bergamot Art Center in Santa Monica would also be a significant secondary impact of the construction of the park and ride lot that is planned to serve the proposed transit station at that location. The MTA would coordinate with the City of Santa Monica for a relocation site for Bergamot Station and/or develop a station plan for shared use of the site.
- **Noise-** Noise impacts of bus transit vehicles would require the construction of sound walls in many segments of the route where residential and other sensitive land uses are located adjacent to the route. Bus

transit vehicles are somewhat unique since the principal noise is generated from the exhaust pipe location at the top of the bus, rather than from the wheels. The need to construct noise walls of up to 12-feet in height to mitigate this high source of noise may not be feasible in all areas. Alternatively, newer bus technologies are being investigated such as hybrid electric propulsion which are much quieter than existing CNG powered engines. Such vehicles would significantly reduce the need for sound walls or other noise mitigation measures. Also, design specifications for existing bus transit vehicles could be developed to require quieter running engines. Design treatments such as earth berms and partially depressed sections can help to reduce the height of required soundwalls. In cases where residual noise impacts remain after mitigation, property-specific pre-construction surveys would be necessary to identify supplemental mitigation measures such as soundproofing of windows, walls and/or doors, to reduce noise levels to acceptable levels.

- **Construction**- The construction of the bus transit lane on Venice and Sepulveda Boulevards would require the closure of general-purpose lanes during periods of construction. This may require that some of the construction work occur during nighttime and weekend periods when noise impacts would be generated at adjacent residential and other sensitive receptors.

<u>Alternative #3: Wilshire BRT/Exposition LRT</u>. For this combined alternative, impacts associated with the Wilshire BRT would be supplemented by the incremental impacts associated with the Exposition LRT route. Along the Expo LRT route, four impact categories were identified with significant residual impacts after mitigation. These include traffic, parking, noise/vibration and construction impacts.

- **Traffic**- Significant impacts would remain at 3 intersections following mitigation along the Expo LRT route. These are all located along Sepulveda Boulevards where the light rail transitway would leave the railroad right-of-way and require the reconfiguration of traffic lanes on city streets. The operation of the light rail line as a streetcar in this area could eliminate this impact, but would significantly reduce the speed of the transit line.
- **Parking**- This impact is the same as the Expo BRT alternative. Loss of parking along Sepulveda Boulevard would constitute a significant impact if off-street replacement parking locations cannot be found. Displacement of the Bergamot Art Center in Santa Monica would also be a significant secondary impact of the construction of the park and ride lot that is planned to serve the proposed transit station at that location.
- **Noise/Vibration**- Noise impacts of light rail transit vehicles would require the construction of sound walls in many segments of the route where residential and other sensitive land uses are located adjacent to the route. Light rail noise is less intrusive that bus transit noise. The principal source of light rail noise is from the wheels and the undercarriage. Sound walls that are 4-8 feet in height are very effective in mitigating this type of noise, as opposed to bus transit noise that is generated from the top of the exhaust, consequently requiting higher walls of up to 12 feet in height. Light rail is less favorable than bus in the case of vibration impacts, which are generated over a greater distance due to the heavier vehicles and the nature of steel wheels instead of rubber tires. Vibration impacts are a concern for light rail primarily in areas where homes are closer than 50 feet from the track. Mitigation measures can dampen this vibration considerably, but in cases where residual vibration impacts remain after mitigation, property specific pre-construction surveys would be necessary to identify supplemental mitigation measures such as soundproofing of foundation and other structural components of the affected structures. Design treatments such as earth berms and partially depressed sections can help to reduce the height of required soundwalls. With these additional mitigation measures, vibration impacts could be reduced to acceptable levels.
- **Construction**- The construction of the bus transit lane on Venice and Sepulveda Boulevards would require the closure of general-purpose lanes during periods of construction. This may require that some of the construction work occur during nighttime and weekend periods when noise impacts would be generated at adjacent residential and other sensitive receptors on a temporary basis during the

construction phase of the project.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The guidelines to the California Environmental Quality Act require that environmental documents identify the environmentally superior alternative among the build options being considered by a Lead Agency. The assessments presented in the body of this report indicate that Alternative #3: Wilshire BRT/Exposition LRT Alternative would result in highest percentage of transit benefits to the traveling public with comparable environmental impacts to Alternative #2. Alternative #1, the Wilshire BRT stand-alone alternative, by definition, would have fewer impacts than the other alternatives with which it is combined, but it offers fewer transit benefits than Alternative #2 and #3.

TRAFFIC AND CIRCULATION - Transit System. (Section 3.2) - This category is the change in the number of transit trips compared to the No Action Alternative, as well as the overall change in the level of service for transit riders.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	12,200 new daily transit trips	19,500 new daily transit trips	27,200 new daily transit trips
Degree	Beneficial effect	Beneficial effect	Beneficial effect
Mitigation	None required	None required	None required
Conclusion	Beneficial effect	Beneficial effect	Beneficial effect

TRAFFIC AND CIRCULATION - Highway Performance. (Section 3.2) - This impact category addresses changes in vehicle trips throughout Los Angeles County as well as characterizes changes in the average speed of vehicles on county streets.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Total daily vehicle trips decrease by about 8,500 countywide. Average vehicle speeds decrease slightly from 25.71 mph to 25.70 mph, due to the conversion of two general purpose lanes on Wilshire Boulevard to transit use.	Total daily vehicle trips decrease by about 13,500 countywide. Reduced vehicle speeds due to Wilshire BRT lane closure are offset by benefits of Expo BRT to result in an average vehicle speeds increase from 25.71 to 25.72 mph due to reduced number of cars.	Total daily vehicle trips decrease by about 20,500 countywide. Reduced vehicle speeds due to Wilshire BRT lane closure are offset by benefits of Expo LRT to result in an average vehicle speeds increase from 25.71 mph to 25.72 mph due to reduced number of cars.
Degree	Less than significant	Beneficial	Beneficial
Mitigation	None Required. See Arterial Street System impacts.	None Required	None Required
Conclusion	Less than significant	Beneficial	Beneficial

ENVIRONMENTAL EVALUATION

TRAFFIC AND CIRCULATION - Freeway Impacts (Section 3.2) - This category addresses the impact on regional freeway traffic volumes with a particular focus on the Santa Monica Freeway (I-10) that traverses the study corridor.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Most freeways experience a slight drop in traffic volumes in both peak hours except for Increases in traffic volumes on Santa Monica Freeway (up to 1.25%) due to diversion of Wilshire Boulevard traffic.	Most freeways experience a slight drop in traffic volumes in both peak hours except for Increases in traffic volumes on Santa Monica Freeway (of up to 1.14%). Construction of the Exposition project helps to reduce the impact of diverted Wilshire Boulevard traffic.	Most freeways experience a slight drop in traffic volumes in both peak hours except for Increases in traffic volumes on Santa Monica Freeway (of up to 0.52%). Construction of the Exposition project helps to reduce the impact of diverted Wilshire Boulevard traffic.
Degree	Significant on I-10 only	Significant on I-10 only	Less than significant
Mitigation	None feasible on the freeway	None feasible on the freeway	None required
Conclusion	Significant Impact to I-10	Significant Impact to I-10	Less than significant

TRAFFIC AND CIRCULATION - Arterial Street System. (Section 3.2) - The removal of street lane capacity along Wilshire Boulevard would have the affect of diverting traffic to other streets in the study area. The amount of traffic diversion could constitute significant impacts in some cases. According to the transportation model output, the implementation of east-west transit improvements could also have the unintended affect of increasing north-south traffic on some blocks as traffic redistributes. These increases could constitute significant impacts in certain instances.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Loss of 2 lanes from Wilshire Blvd diverts up to approximately 1300 vehicles per day to other streets resulting in increased volumes of up to 8% on these streets.	Same impact as Wilshire due to conversion of two automobile lanes on Wilshire Boulevard and diversion of traffic onto other streets. Expo route would have a similar impact to segments of the route on Exposition Boulevard, Venice Boulevard and Sepulveda Boulevards, where the baseline project would convert one automobile lane to transit use.	Same impact as Wilshire due to conversion of two automobile lanes on Wilshire Boulevard and diversion of traffic onto other streets. Expo route would have a similar impact to segments of the route on Exposition Boulevard, Venice Boulevard and Sepulveda Boulevards, where the baseline project would convert one automobile lane to transit use.
Degree	Significant	Significant	Significant
Mitigation	Implement ATCS traffic signal improvement system to affected intersections in the study area (approx 450 in City of Los Angeles and approx 50 in Beverly Hills and Santa Monica).	Implement ATCS traffic signal improvement system . In addition to Wilshire BRT mitigation measure, implement ATCS traffic signal improvement system to affected intersections along to Exposition route.	Implement ATCS traffic signal improvement system . In addition to Wilshire BRT mitigation measure, implement ATCS traffic signal improvement system to affected intersections along to Exposition route.
Conclusion	Less than significant after diverted motorists redistribute themselves to new routes where intersections improvements have been implemented.	Less than significant after diverted motorists redistribute themselves to new routes where intersections improvements have been implemented	Less than significant after diverted motorists redistribute themselves to new routes where intersections improvements have been implemented

TRAFFIC AND CIRCULATION - Traffic Diversion. (Section 3.2) - The loss of left turns combined with the reduction in street capacity could divert traffic on to adjacent residential streets to either avoid points of congestion or to find a route the avoids a restricted left turn area. Some residential streets close to areas where left --turn pockets are maintained would experience increased traffic due to the diversion of traffic from left turn pockets that are closed. Increases in traffic along residential streets are anticipated in these circumstances. Because the modeling method used in this assessment does not include residential streets in the analysis network, it is recommended that a field monitoring program be implemented by affected local jurisdictions to determine the amount of diverted traffic in residential areas combined with a MTA- funded program of Neighborhood Traffic Management Measures.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Loss of 105 left turn pockets (48%) along Wilshire Boulevard reduces traffic on residential side streets where left-turns are eliminated, but increases traffic on other streets where left-turn pockets remain, or where traffic must make right-turn "around the block" movements in lieu of lefts.	Same as Wilshire Alts plus loss of 1 left turn pocket on Sepulveda diverts traffic to side streets.	Same as Wilshire Alts plus loss of 1 left turn pocket on Sepulveda diverts traffic to side streets.
Degree	Significant for Alt 1 Possibly Significant for Alt1A No impact for Alt 1B	Same as Alt 1, Less than Significant along Expo BRT	Same as Alt 1, Less than Significant along Expo LRT
Mitigation	Implement Residential Street Traffic Monitoring Program. Where warranted implement Neighborhood Traffic Management Measures (Alt 1 and 1A).	Implement Residential Street Traffic Monitoring Program. Where warranted implement Neighborhood Traffic Management Measures (Alt 1 and 1A). None Required for Exposition	Implement Residential Street Traffic Monitoring Program. Where warranted implement Neighborhood Traffic Management Measures (Alt 1 and 1A). None Required for Exposition
Conclusion	Less than significant	Less than significant	Less than significant

TRAFFIC AND CIRCULATION - Intersection Traffic. (Section 3.2) - This analysis focuses on the evening peak hour of travel. A significant impact is defined as a change of 0.02 in the volume to capacity ratio for an intersection operation level of service at E or F.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Alt 1 - 14 intersections along the Wilshire Corridor are impacted. 1A - 13 intersections along the Wilshire corridor are impacted. 1B - 11 intersections along the Wilshire corridor are impacted.	14 intersections along the Wilshire corridor are impacted. 22 intersections along the Exposition Corridor are impacted. 2A - 14 intersections along the Wilshire corridor are impacted. 19 intersections along the Exposition Corridor are impacted.	14 intersections along the Wilshire corridor are impacted. 17 intersections along the Exposition Corridor are impacted. 3A - 14 intersections along the Wilshire corridor are impacted. 16 intersections along the Exposition Corridor are impacted.
Degree	Significant	Significant	Significant
Mitigation	Signal timing modifications at 8 locations. Physical improvements at 4 locations. 1A - Signal timing modifications at 9 locations. Physical improvements at 2 locations. 1B - Signal timing modifications at 8 locations. Physical improvements at 1 locations.	Signal timing modifications at 15 locations. Physical improvements at 14 locations. 2A - Signal timing modifications at 9 locations. Physical improvements at 9 locations.	Signal timing modifications at 15 locations. Physical improvements at 12 locations. 3A - Signal timing modifications at 8 locations. Physical improvements at 8 locations.
Conclusion	Significant unavoidable impacts remain at Westwood/Wilshire and La Cienega/Wilshire after mitigation measures are implemented.	Some impacts as Wilshire BRT, plus significant impacts remain at 5 Expo intersections: * Venice/Overland * Venice/Sepulveda * Sepulveda/Palms * Sepulveda/National * Pico/Sawtelle In order to reduce or eliminate impacts of the BRT on Venice and Sepulveda Boulevards, Rapid Bus operation could be considered that would remove the dedicated lane for transit.	Significant impacts remain at one Wilshire intersection (Wilshire/Westwood) and at 3 Expo intersections: * Sepulveda/Pico * Sepulveda/Palms * Sepulveda/National In order to reduce or eliminate impacts of the LRT on Sepulveda Boulevard, a streetcar operation could be considered that would remove the dedicated lane for transit.

TRAFFIC AND CIRCULATION - Special Event Traffic (Section 3.2) - Periodically during the year streets such as Exposition Boulevard are closed to accomodate a special event such as the Los Angeles Marathon, Bike Tour, LA Street Race (vehicles), etc. These events would affect transit operations, particularly for fixed guideways such as Light Rail.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	LA Marathon would require the curtailment of BRT service in affected areas.	Same as Wilshire BRT. Events in and around Exposition Park would require modifications, detours and transfers for bus transit riders.	Same as Wilshire BRT. Special events in and around Exposition Park could require curtailment of LRT service during periods when Expostion Boulevard is closed to traffic.
Degree	Less than significant to transit operations with re-routing of buses on event day(s).	Less than significant to transit operations with re-routing of buses on event day(s).	Significant to LRT operations
Mitigation	BRT service shall be temporarily re-routed to non-affected streets.	BRT service shall be temporarily re-routed to non-affected streets.	LRT operations could be truncated on either side of the closed segment with bus bridges. Or, slower operating speeds with flagmen could be utilized to keep trains operating during periods of special events. Alternatively, a LRT subway tunnel design option could eliminate this effect in Exposition Park area.
Conclusion	Less than significant	Less than significant	Less than significant if one of the above mitigation measures were adopted.

PARKING - On-Street Parking (Section 3.3) - To accommodate transit improvements within existing street rights-of-way in a number of instances will require the removal of on street parking. On-street parking is an important factor in local business accessibility to patrons. On-street parking in most business areas also serves as a buffer between street traffic and pedestrians on the sidewalk. In residential areas, any loss on on-street parking is a concern to residents.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Loss of 1,211parking spaces along Wilshire Blvd.	Loss of 1,211parking spaces along Wilshire Blvd. Loss of 157 parking spaces along Sepulveda Blvd (30% of the total Sepulveda on-street parking spaces).	Loss of 1,211parking spaces along Wilshire Blvd; Loss of 10-12 parking spaces on Hill Street Loss of 157 parking spaces on Sepulveda Blvd (30% of the total Sepulveda on-street parking spaces).
Degree	Significant	Significant	Significant for Wilshire Blvd and Sepulveda Blvd. Less than significant for Hill Street
Mitigation	Replacement Parking lots would be developed to provide 1,211 off-street parking spaces distributed along Wilshire Boulevard. or, Operate the BRT only during peak periods when on-street parking is prohibited in all areas except Santa Monica.. In Santa Monica, a peak period lane would not mitigate this impact since parking is not prohibited during the peak periods.	Same as Wilshire Boulevard plus additional Replacement parking lots would be developed to provide 157 off-street spaces along Sepulveda Blvd, or, Operate the BRT as a Rapid Bus on Sepulveda without a dedicated lane.	Same as Wilshire Boulevard plus additional Replacement Parking of 157 spaces along Sepulveda Blvd. or, Operate the LRT as a streetcar on Sepulveda without a dedicated lane.
Conclusion	Less than significant if parking replacement strategy is implemented or if BRT is implemented during peak period only in areas outside of Santa Monica.	Less than significant if parking replacement strategy is implemented or if BRT is implemented during peak period only, or if BRT is operated as a Rapid Bus on Sepulveda without a dedicated lane.	Less than significant if parking replacement strategy is implemented, or if BRT (Wilshire) is implemented during peak period only, or if LRT is operated as streetcar on Sepulveda.

PARKING - Station Area Spillover Parking (Section 3.3) - Spillover parking results from parking demand exceeding supply. For transit this potential is greatest at end-of-the-line stations in suburban areas or stations areas where high levels of vehicle access are anticipated. Wilshire Boulevard is not anticipated to attract a significant number of park and ride patrons because it is primarily a destination for home to work transit trips and access to stations will primarily be via walking or bus transfer. The commercial nature of the corridor has resulted over time in the institution of on-street parking restrictions in most areas, and therefore spillover parking is already prohibited or regulated in most areas.A greater amount of park and ride activity is anticipated along the Exposition route.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Limited park and ride activity anticipated at Wilshire stations.	Limited park and ride activity anticipated at Wilshire stationsPotential spillover parking on streets surrounding the following stations: Expo Venice/Main Expo National/Hayden	Limited park and ride activity anticipated at Wilshire stations Potential spillover parking on streets surrounding the following stations: Expo/La Brea Expo/Ocean
Degree	Less than significant	Less than significant	Less than significant
Mitigation	None required.	Local jurisdictions to monitor parking conditions on streets surrounding stationsImplement on-street parking controls (e.g., time limits, permit parking) as needed	Local jurisdictions to monitor parking conditions on streets surrounding stationsImplement on-street parking controls (e.g., time limits, permit parking) as needed
Conclusion	Less than significant	Less than significant	Less than significant

SOCIOECONOMICS - Effects on Local Businessess (Section 3.4) - Many neighborhood oriented and highway oriented commercial businesses throughout the corridor must depend on curb parking. The removal of this parking to provide for additional street capacity to accommodate an exclusive BRT lane or LRT guideway would in most cases result in a significant impact to these businesses.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Business access reduced due to the loss of on-street parking along Wilshire Boulevard.	Same as Wilshire. Expo BRT would displace parking along Sepulveda Boulevard affecting business near National Blvd.	Same as Wilshire. Expo LRT would displace parking along Sepulveda Boulevard affecting businesses near National Blvd.
Degree	Significant	Significant for Wilshire BRT only	Significant for Wilshire BRT only
Mitigation	Implementation of Replacement Parking or Limit BRT to Peak Hour Operations only.	Same as Wilshire	Same as Wilshire
Conclusion	Less than significant if Replacement Parking Strategy is implemented. Not significant if peak hour only BRT operations implemented., except in Santa Monica.	Same as Wilshire	Same as Wilshire

SOCIOECONOMICS - Effects on Population (Section 3.4) - There is no expected direct impact of transit improvements on population. The transit improvements are not specifically bundled with transit-oriented residential developments, however, the presence of convenient transit service could increase the likelihood of such development and attract additional population. It is not expected that this induced population growth would exceed population projections for the corridor.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Improvements designed to accommodate projected population growth.	Improvements designed to accommodate projected population growth.	Improvements designed to accommodate projected population growth.
Degree	Less than significant	Less than significant	Less than significant
Mitigation	None required	None required	None required
Conclusion	No Effect	No Effect	No Effect

SOCIOECONOMICS - Mobility for Transit Dependents (Section 3.4) - The eastern portions of both the Wilshire BRT route and the Exposition routes pass through areas of Mid-City and South Los Angeles that have concentrations of auto-less households and low income households. Transit stations are located in these areas and reduced travel times and greater accessibility for transit dependent persons are anticipated.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Increase in level of transit service in transit dependent areas.	Increase in level of transit service in transit dependent areas.	Increase in level of transit service in transit dependent areas.
Degree	Less than significant	Less than significant	Less than significant
Mitigation	None required	None required	None required
Conclusion	Beneficial	Beneficial	Beneficial

LAND USE/NEIGHBORHOODS - Compatibility of Transit Operations and Stations (Section 3.5) - Transit stations are expected to attract pedestrian and vehicular activity. In commercial areas these changes are not expected to be significant. Where stations are adjacent or near homes or apartments, transit induced changes in pedestrian and vehicular activity could be the source of nuisances, including visual, noise, parking, circulation, air quality, safety and security impacts.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Proposed stations would be located in commercial areas and would be compatible with existing land uses and pedestrian activities.	Same effects along Wilshire BRT route. Proposed stations along the Exposition route would in a number of cases be located adjacent to either multi-family or single family residences, and pedestrian and vehicular activity in these areas could create nuisances.	Same effects along Wilshire BRT route. Proposed stations along the Exposition route would in a number of cases be located adjacent to either multi-family or single family residences, and pedestrian and vehicular activity in these area could create nuisances
Degree	Not Significant	Not significant in commercial areas. Significant in residential areas.	Not significant in commercial areas. Significant in residential areas.
Mitigation	None required	In residential areas, station area plans shall be developed to address pedestrian, vehicular access, buffers, staionorientation and other design issues.	In residential areas, station area plans shall be developed to address pedestrian, vehicular access, buffers, staionorientation and other design issues.
Conclusion	Less than significant	Less than significant	Less than significant

LAND USE/NEIGHBORHOODS - Compatibility of Park and Ride Facilities (Section 3.5) - Providing parking at stations will undoubtedly attract additional vehicles to station areas and affect circulation during peak periods. The affect of this increased activity could affect adjacent businesses and residents, particularly during peak travel periods.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	No park and ride lots are proposed. Existing MTA lots at Wilshire/Crenshaw and Wilshire/La Brea would be used for replacement parking. These lots are already used for parking and no additional impact is anticipated, however, other sites that may be identified as part of the Replacement Parking Strategy could be adjacent to residential land uses and create proximity impacts (noise, light, glare, visual, etc.)	Same impacts along Wilshire route. Park-and-ride lots along the Exposition Route are proposed at locations at, or immediately adjacent to, the stations, in areas with predominantly industrial or commercial uses to help minimize disruptions to sensitive land uses.	Same impacts along Wilshire route. Park-and-ride lots along the Exposition Route are proposed at locations at, or immediately adjacent to, the stations, in areas with predominantly industrial or commercial uses to help minimize disruptions to sensitive land uses.
Degree	Potentially significant for replacement parking sites located adjacent to residential uses.	Potentially significant for Replacement Parking element of Wilshire BRT. Not significant for Exposition.	Potentially significant for Replacement Parking element of Wilshire BRT. Not significant for Exposition.
Mitigation	Off street parking adjacent to residences shall be screened and laidout to minimize nuisances and disruption.	Same as Wilshire BRT Route. None required for Exposition BRT	Same as Wilshire BRT Route. None required for Exposition BRT
Conclusion	Less than significant	Less than significant	Less than significant

LAND USE/NEIGHBORHOODS - Accessibility and Community Cohesion (Section 3.5) - Because the proposed transit routes link many existing Mid-City and Westside activity centers (schools, museums, entertainment, other institutions), impacts on accessibility are expected to be beneficial. Because, proposed transit improvements would operate within existing public rights-of-way, increased transit service in these areas would not create new barriers that would adversely affect the functions within neighborhoods or the interaction between neighborhoods.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Increased access to existing activity centers. Increased transit service on Wilshire Blvd would not affect physical connections between neighborhoods.	Increased access to existing activity centers. Increased transit service on Wilshire Blvd or along the Exposition ROW, Venice or Sepulveda would not affect physical connections between neighborhoods.	Increased access to existing activity centers. Increased transit service on Wilshire Blvd or along the Exposition ROW, Venice or Sepulveda would not affect physical connections between neighborhoods.
Degree	Not significant	Not significant	Not significant
Mitigation	None required	None required	None required
Conclusion	Beneficial	Beneficial	Beneficial

LAND USENEIGHBORHOOD - Neighborhood Character/Quality of Life (Section 3.5) - The future character of station areas is determined by existing land use policies. In most cases, because the proposed transit improvements are within existing major arterials and stations are located at intersections with major arterials, the higher activity levels associated with the proposed stations are substantially consistent with local planning policies which historically have placed higher development levels (residential and/or commercial) at these locations. Because of the relatively lower development levels along the Exposition routes, there will likely be a need to involve the local community to ensure that important aspects of neighborhood character are maintained and not adversely affected by the introduction of new transit stations and parking facilities.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	The medium to high density character of the Wilshire Boulevard corridor would be consistent with increased levels of transit service and higher activity levels at station locations. The Cities of Los Angeles, Beverly Hills, and Santa Monica, in general, all plan for mixed-uses within station areas to allow for maximum use of the transit system.	Same affects as Wilshire BRT. The low to medium density character of many areas along Exposition route, would likely be more affected by increased transit service and higher activity levels at station locations, particularly those stations in low-medium density residential areas.	Same affects as Wilshire BRT. The low to medium density character of many areas along Exposition route, would likely be more affected by increased transit service and higher activity levels at station locations, particularly those stations in low-medium density residential areas.
Degree	Less than significant	Less than significant on Wilshire. Potentially Significant on Exposition.	Less than significant on Wilshire. Potentially Significant on Exposition.
Mitigation	None required	Along the Exposition ROW, station area plans shall be developed in coordination local jurisdictions, area residents and businesses.	Along the Exposition ROW, station area plans shall be developed in coordination local jurisdictions, area residents and businesses.
Conclusion	Less than significant, and provides transportation and land use planning benefits.	Less than significant, and provides transportation and land use planning benefits.	Less than significant, and provides transportation and land use planning benefits.

LAND USE/ACQUISITION/DISPLACEMENT/RELOCATION (Section 3.6) - This impact category address three types of changes that would result from the proposed project. 1) Acquisition of private or other public agency owned property for guideway or station park and ride lots;2)acquisition of private property to implement the Replacement Parking Strategy along Wilshire Boulevard; and 3) the termination or non-renewal of leases held by the MTA along the former Exposition railroad right-of-way.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	No acquisition needed to construct exclusive lane or stations. Acquisition could be necessary to successfully replace lost curb parking with off-street locations.	Same Wilshire BRT impacts. Exposition BRT would require non-renewal or termination of MTA leases and licenses between Vermont and Venice, and from Sepulveda to Olympic. Bergamot Station, a commercial arts center in Santa Monica has been developed in recent years on a site that is designated for a transit station & parking facility.	Same Wilshire BRT impacts. Exposition BRT would require non-renewal or termination of MTA leases and licenses between Long Beach Blvd and Venice, and from Sepulveda to Olympic. Bergamot Station, a commercial arts center in Santa Monica has been developed in recents years on a site that is designated for a transit station & parking facility.
Degree	Replacement Parking Strategy could have significant effects.	Significant	Significant
Mitigation	Replacement Parking Strategy would focus on utilizing existing parking lots and vacant land for implementation of new parking. Displacement of existing structures or buildings would only occur as a last resort, in consultation with affected cities.	Same as Wilshire BRT for Replacement Parking Mitigations. Most leases along the MTA-owned Exposition right-of-way would be allowed to run their course, as they are of short duration. Other leases would be terminated in accordance with MTA property acquisition policies. Bergamot Station should be evaluated for potential shared use of the site with the transit facility. This should be conducted as a part of the preliminary design phase of the project.	Same as Wilshire BRT for Replacement Parking Mitigations. Most leases along the MTA-owned Exposition right-of-way would be allowed to run their course, as they are of short duration. Other leases would be terminated in accordance with MTA property acquisition policies. Bergamot Station should be evaluated for potential shared use of the site with the transit facility. This should be conducted as a part of the preliminary design phase of the project.
Conclusion	Significant if Replacement Parking Strategy results in the need for off-street acquisitions. and suitable sites cannot be identified.	Significant Impact for Wilshire Replacement Parking. Less than significant for terminated or non-renewed ROW leases and licenses. Less than significant for Bergamot Station if joint development plans can be developed.	Significant Impact for Wilshire Replacement Parking. Less than significant for terminated or non-renewed ROW leases and licenses. Less than significant for Bergamot Station if joint development plans can be developed.

VISUAL QUALITY - Median Landscaping (Section 3.7) - The character of many of Los Angeles' older boulevards, and Wilshire Boulevard in particular is reinforced by the landscaped median with the notable specimen palm trees. In recent years new landscaped medians have been constructed in the Wilshire Center, Miracle Mile and Beverly Hills segments of Wilshire Boulevard. Portions of the Exposition railroad right-of-way bisect the east and west bound lanes of Exposition Boulevard between Figueroa and Rodeo. The landscaping in the segment between Figueroa and Vermont (USC/Exposition Park) has been significantly improved with berms and grass in recent years. Proposed LRT improvements within the Exposition Park area would retain the existing median and convert the adjacent roadway lane to a trackbed for LRT operations.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Alternative 1 requirement for the removal and reconstruction of landscaped medians would result in an adverse visual impact. Median Adjacent Alternative 1A and Curb Lane Alternative 1B would avoid removal and reconstruction of existing Wilshire landscaped medians.	Same as Wilshire BRT Impacts. Installation of dedicated BRT in middle of Exposition Blvd from Vermont to Rodeo would require removal and reconstruction of most of existing median that is currently landscaped, including segment that has substantial number of trees in ROW, including some specimen trees of notable height.	Same Wilshire BRT Impacts. Same as Exposition BRT LRT would also require the removal of up to 5 of the existing 44 Coral trees from the median of Olympic Blvd west of Cloverfield. Other Coral trees in Olympic Blvd median would likely require trimming to avoid conflicts with overhead catenary wiring.
Degree	Significant for Alternative 1. Not applicable for Alternatives 1A and 1B.	Significant	Significant for Wilshire Blvd, Exposition Blvd, Olympic Blvd.
Mitigation	Relocate specimen trees in existing median to new locations, either as street trees (along the parkway or within the sidewalks) or within the new or reconstructed median. Consider Alternatives 1A or 1B to maintain medians.	Relocate specimen trees in existing median to new locations, either as street trees (along parkway or within sidewalks) or within new or reconstructed median.	Relocate specimen trees in existing median to new locations, either as street trees (along parkway or within sidewalks) or within new or reconstructed median. Create a grass trackbed for LRT in segment in Exposition Park.
Conclusion	Significant for Alt 1	Same as Wilshire. Less than significant for Exposition BRT with design of appropriate landscaping plan.	Same as Wilshire. Other effects on Exposition LRT are less than significant with design of appropriate landscaping plan.

VISUAL QUALITY - New Elevated Structures. (Section 3.7) - The Wilshire BRT route would not require the construction of any elevated structures. Transit improvements on Exposition would require elevated structures to avoid traffic and circulation impacts at major cross streets. The introduction of elevated structures would change the visual character of areas which are relatively open or low-scale in character.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	No Impact	Installation of elevated segments at La Cienega Blvd., Pico/Sawtelle Blvd., and Bundy Drive would introduce new visual elements and would obstruct north-south views for motorists along these arterials.	Installation of elevated segments at La Cienega Blvd., Pico/Sawtelle Blvd., and Bundy Drive would obstruct or adversely change views and would result in significant adverse visual impacts.
Degree	None	Not significant at La Cienega because motorists view is affected temporarily for a short distance. Possibly significant at Pico/Sawtelle because of cumulative effect with elevated San Diego Freeway Structure Significant at Bundy because of the low scale residential character of surrounding land use.	Same as Exposition BRT
Mitigation	None required	Mitigation of these impacts caused by elevated segments would require conversion to grade design, which would result in potentially significant traffic impacts and therefore is considered infeasible. At grade or below grade solutions are infeasible at these locations due to the high cost that would range from \$50 - \$100 million per below ground grade separation. Structure design, screening and landscaping shall be included as part of the station area planning process conducted with local communities.	Same as Exposition BRT
Conclusion	Less than significant	Less than significant at Pico/Sawtelle and Bundy after community planning and design process completed.	Same as Exposition BRT

VISUAL QUALITY - Spillover Light and Glare (Section 3.7) - The primary source of spillover lighting impacts and glare impacts would be parking areas at either replacement off-street locations in the Wilshire Boulevard corridor or at park and ride lots along the Exposition route. It is expected that all parking areas would have nighttime lighting and perimeter walls. The lots would be screened from adjacent land uses.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Without mitigation, security lighting for off-street parking areas could be a source of light and glare.	Without mitigation, security lighting for off-street parking areas on Wilshire and park and ride lots on Exposition could be a source of light and glare. Platform and Station area illumination would also be a source of light/glare in residential areas.	Without mitigation, security lighting for off-street parking areas on Wilshire and park and ride lots on Exposition could be a source of light and glare. Platform and Station area illumination would also be a source of light/glare in residential areas.
Degree	Significant	Significant	Significant
Mitigation	Lighting in all parking areas shall be directed away from adjacent residences. Provide landscaping, fences, or other measures of sufficient height to shield adjacent residences from light and glare produced by vehicle headlights that utilize the parking lots.	Same as Wilshire BRT. Exposition Station areas and platforms shall be designed to minimize spillover lighting or glare on adjacent residential areas using a combination of building design, landscape screening and light tilt and orientation.	Same as Wilshire BRT. Exposition Station areas and platforms shall be designed to minimize spillover lighting or glare on adjacent residential areas using a combination of building design, landscape screening and light tilt and orientation.
Conclusion	Less than significant	Less than significant	Less than significant

VISUAL QUALITY - Privacy (Section 3.7) - The focus of this environmental topic is whether the proposed transit improvements will compromise the privacy of residents located adjacent to the route because new views or vantage points are created along the guideway or in station areas.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Installation of replacement parking could be located adjacent to existing residential uses, which could provide opportunities for patrons on the parking lots to have views into residences.	At Pico/Sawtelle and Bundy where the route would be located on aerial structures, bus riders would have access to views into residences or the yards of residences at those locations. Similarly, bus patrons waiting at these elevated stations could have views that result in loss of privacy for residential uses located near stations.	At Pico/Sawtelle and Bundy where the route would be located on aerial structures, bus riders would have access to views into residences or the yards of residences at those locations. Similarly, LRT patrons waiting at these elevated stations could have views that result in loss of privacy for residential uses located near stations.
Degree	Significant	Significant	Significant
Mitigation	Provide landscaping, fences, or other measures that would reduce or eliminate direct views from replacement parking lots into adjacent residences.	Provide landscaping or other screening structures to obstruct views into private residences from elevated station platforms. Specifics to be determined through station area community design process.	Provide landscaping or other screening structures to obstruct views into private residences from elevated station platforms. Specifics to be determined through station area community design process.
Conclusion	Less than significant	Less than significant	Less than significant

AIR QUALITY - Regional Emissions. (Section 3.8) - The primary indicator of the overall air quality benefit of transit improvements is the change in regional air pollutant emissions as some proportion auto drivers/passengers is diverted to transit use throughout the region.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Project would result in a reduction of 26 tons/year of carbon monoxide (CO); 92 tons/year of nitrogen dioxide (NOX) and 1 ton/year of reactive organic gas (ROG). The project would have a negligible effect on particulate matter (PM10).	Project would result in a reduction of 148 tons/year of carbon monoxide (CO); 3 tons/year of nitrogen dioxide (NOX) and 1 ton/year of particulate matter (PM10). The project would result in a 5 ton/year increase in reactive organic gas (ROG).	Project would result in a reduction of 212 tons/year of carbon monoxide (CO); 35 tons/year of nitrogen dioxide (NOX), 13 tons/year of reactive organic gas (ROG) and 1 ton/year of particular matter (PM10).
Degree	Slight Positive Change	Slight Positive Change for all pollutants except reactive organic gas (ROG).	Slight Positive Change
Mitigation	None required	None required	None required
Conclusion	Beneficial	Beneficial. Reactive organic gas (ROG) increase Less than significant.	Beneficial

AIR QUALITY - Carbon Monoxide Hot Spots. (Section 3.8) - The air pollutant most indicative of localized adverse impacts from vehicular traffic in and around station areas is carbon monoxide (CO). Typically, the slower traffic moves, the greater the CO emissions and concentrations. Well over 90 percent of CO emissions are generate by motor vehicles.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	CO levels at 31 study area intersections would range from 4.3 to 6.6 parts per million for the 8-hr period compared to 4.0 to 6.9 parts per million for No Project conditions.	CO levels at 31 study area intersections would range from 4.0 to 7.7 parts per million for the 8-hr period compared to 4.0 to 6.9 parts per million for No Project conditions.	CO levels at 31 study area intersections would range from 4.0 to 7.3 parts per million for the 8-hr period compared to 4.0 to 6.9 parts per million for No Project conditions.
Degree	Less than significant. Increases would not exceed federal or state standards	Negligible change from No Project condition. Increases would not exceed federal or state standards	Less than significant. Increases would not exceed federal or state standards
Mitigation	None required	None required	None required
Conclusion	Less than significant	Less than significant	Less than significant

NOISE AND VIBRATION - Noise (Section 3.9) - The source of noise from BRT and LRT vehicles and operations are quite different. Bus noise is primarily generated from the raised exhaust stack and from the engine and tire areas. LRT noise is primarily related to mechanical undercarriage, metal-metal noise from wheels and on rail and from warning horns, and crossing gate bells.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Wilshire Boulevard has very high levels of existing automobile, delivery track and bus traffic. The larger buses would increase noise on Wilshire Blvd by 1 dB or less and would not result in a substantial change.	Same as Wilshire BRT Exposition BRT would result in 681 residential noise impacts.	Same as Wilshire BRT Exposition LRT would result in 135 residential noise impacts.
Degree	Less than significant . FTA criteria would not be exceeded.	Significant. 597 residences would exceed FTA moderate impact criteria and 84 would exceed FTA severe impact criteria.	Significant. 108 residences would exceed FTA moderate impact criteria and 27 would exceed FTA severe impact criteria.
Mitigation	None required	Include noise limits in specifications for BRT vehicles; Construct 21,750 feet of sound barriers 12 feet in height; provide noise control at receptor locations.	Implement wheel and rail maintenance program for LRT; Construct 12,750 feet of sound barriers 4 to 8 feet in height; provide noise control at receptor locations.
onclusion	Not significant	For the Expo BRT Alternative, residual impacts remain at 22 residences following the construction of sound walls. For these properties, site specific pre-construction surveys shall be conducted to identify further mitigation measures such as sound insulation of individual homes.	For the Expo LRT Alternative, residual impacts remain at 15 residences following the construction of soundwalls. For these properties, site specific pre-construction surveys shall be conducted to identify further mitigation measures such as sound insulation of individual homes.

NOISE AND VIBRATION - Vibration (Section 3.9) - Ground borne vibration from rail transit is typically a source of annoyance for humans and may possibly affect businesses or institutions with vibration sensitive equipment. Ground borne vibration from rail transit is not typically the source of physical building damage. No measurable vibration is expected from rubber tired BRT vehicles.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	No vibration from rubber-tire vehicle, only low frequency air-borne noise.	Same as Wilshire BRT.	Same as Wilshire BRT. Impacts at 138 residences, 22 multi-family bldgs, 1 hospital and 1 school.
Degree	Less than significant	Less than significant	Significant
Mitigation	None required	None required	Conduct bldg-specific vibration analysis; Install ballast mats along 15,700 ft
Conclusion	Less than significant	Less than significant	Significant. Impact would remain at 31single-family residences and 3 multi-family bldgs. Special studies shall be conducted for these properties to identify further mitigation measures.

GEOLOGY/SOILS/SEISMICITY (Section 3.10) - The primary concern is this impact area is the potential exposure to transit patrons and to the general public of the construction of elevated structures in areas prone to geotechnical technical hazards such as areas with active faults or areas with geologic conditions which may compromise the integrity of elevated structures during an earthquake.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	BRT would cross hazardous areas, however it would not require subsurface excavation nor the construction of structures.	Same as Wilshire BRT. Exposition route would construct elevated structures in fault zones and in liquefaction areas.	Same as Wilshire BRT. Exposition route would construct elevated structures in fault zones and in liquefaction areas
Degree	No impact	Significant on Exposition route	Significant on Exposition route
Mitigation	None required	Implementation of recommendations from site specific geotechnical studies at each elevated structure.	Implementation of recommendations from site specific geotechnical studies at each elevated structure.
Conclusion	No impact	Less than significant following implementation of special study recommendations.	Less than significant following implementation of special study recommendations.

WATER RESOURCES - Stormwater Runoff and Flooding. (Section 3.11) - Typically stormwater runoff related impacts result from improvements that substantially increase the amount of impervious (hard) surface or projects that substantially alter existing drainage patterns. The proposed transit improvements evaluated in this report do not create these types of changes and stormwater runoff effects are not expected.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Construction of BRT lanes on Wilshire Boulevard would not substantially change existing impervious surface or drainage patterns. Alternative 1B would require reconstruction of many storm drains in order to provide an improved curb-lane running surface for buses. Construction of this alternative would be approved by the engineering bureau of each city.	Same as Wilshire BRT. Exposition BRT would require limited grading and may marginally increase impervious surfaces. No substantial change in drainage patterns would occur.	Same as Wilshire BRT. Exposition LRT would require limited grading and may marginally increase impervious surfaces. No substantial change in drainage patterns would occur.
Degree	Negligible	Less than significant	Less than significant
Mitigation	None required	None required	None required
Conclusion	No Effect	No Effect	No Effect

WATER RESOURCES - Groundwater. (Section 3.11) - Groundwater is typically adversely affected when improvements disrupt groundwater flow patterns or pave over areas necessary for water to percolate into aquifers below the ground surface. Improvements contemplated along the Wilshire and Exposition routes would not require excavation at groundwater depths nor would the added paved surfaces be substantial enough to affect ground water recharge.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	BRT would not require excavation nor increase impervious surfaces.	Conversion of Exposition railroad right-of-way to BRT use would incrementally increase impervious surface by constructing a paved roadway over the previous railroad track bed.	Conversion of Exposition railroad right-of-way to LRT use would negligibly increase impervious surface.
Degree	No Impact	Less than significant	No impact
Mitigation	None required	None required	None required
Conclusion	No Impact	Less than significant	No Impact

BIOLOGICAL RESOURCES (Section 3.12) - The Mid-City/Westside Corridor is a well developed urbanized area. The proposed transit alignments do not pass through any open space or ecological areas.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	No Impact	No Impact	No Impact
Degree	None	None	None
Mitigation	None required	None required	None required
Conclusion	No Impact	No Impact	No Impact

ENERGY RESOURCES (Section 3.13) - This impact category addresses the net change between the fuel consumption of automobile drivers/passengers diverted to transit versus the fuel consumption of transit vehicles need to provide the increased service. All energy consumption is addressed as British Thermal Units (BTU's).

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Construction of the proposed project would result in a reduction in fuel consumption due to the shifting of travellers from automobiles to transit. The project would result in a 0.02 % reduction compared to No Action.	Construction of the proposed project would result in a reduction in fuel consumption due to the shifting of travellers from automobiles to transit. The project would result in a 0.03% reduction compared to No Action.	Construction of the proposed project would result in a reduction in fuel consumption due to the shifting of travellers from automobiles to transit. The project would result in a 0.04% reduction compared to No Action.
Degree	Small but beneficial impact	Small but beneficial impact	Small but beneficial impact
Mitigation	None required	None required	None required
Conclusion	Beneficial	Beneficial	Beneficial

SAFETY (Section 3.14) - The focus of this topic is whether the proposed improvements create unique hazards to pedestrians or to motorists.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Pedestrians will be required to cross Wilshire Blvd only at signalized intersections. Pedestrians will be required to queue on median island platforms in Wilshire Boulevard. Curb Lane Alt 1B would not require pedestrians to use median island platforms.	Same as Wilshire BRT. Exposition BRT route passes adjacent to schools and parks where pedestrian activity is high. Pedestrians will be required to cross BRT lanes only at signalized intersections.	Same as Wilshire BRT. Exposition LRT route passes adjacent to schools and parks where pedestrian activity is high. Pedestrians will be required to cross LRT lanes only at signalized intersections.
Degree	Alt 1. Significant at unsignalized crosswalks. Significant if station median island platforms are too small to accommodate pedestrian queues. Less than significant for motorists. Alt 1A -Significant for vehicle left turns. Alt 1B - Less than significant for vehicle right turns.	Significant	Significant
Mitigation	All pedestrian crosswalk crossings shall be signalized.; Median island stations shall be of sufficient width and length to meet anticipated pedestrian queues, platform barriers may also be installed; posting warning signs, and identifiable BRT lane demarcations; left turning motorists shall have a dedicated left turn pocket and signal phase.	Crossing gates shall be installed at all streets crossing the Exposition ROW where BRT operates at speeds above 35 mph. Pedestrian crossing gates shall be installed near schools; Fencing shall be installed in all segments with BRT speeds greater than 35 mph; school and community safety education/information programs shall be implemented.	Crossing gates shall be installed at all streets crossing the Exposition ROW where BRT operates at speeds above 35 mph. Pedestrian crossing gates shall be installed near schools; Fencing shall be installed in all segments with LRT speeds greater than 35 mph; school and community safety education/information programs shall be implemented.
Conclusion	Beneficial impact to pedestrians. Less than significant for motorists.	Less than significant	Less than significant

SECURITY (Section 3.14) - The concern of this topic is crime, and whether proposed transit improvements would place system users in situations conducive to criminal activity.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	Not significant for station platform locations. Possibly significant for off-street replacement parking lots behind commercial buildings.	Same as Wilshire. Several stations and parking lots along Exposition BRT route are located in areas with less visibility from the street.	Same as Wilshire. Several stations and parking lots along Exposition LRT route are located in areas with less visibility from the street.
Degree	Possibly significant for off-street replacement parking lots.	Significant for stations and parking lots in isolated commercial and industrial areas.	Significant for stations and parking lots in isolated commercial and industrial areas.
Mitigation	Provision of adequate lighting for off street parking lots and pedestrian pathways to these lots. Security patrols shall include off-street lots.	All stations shall be equipped with surveillance cameras; Station and parking areas shall be adequately lighted; stations shall be designed to eliminate shadowed areas obstructions to visibility; stations and parking lots shall be patrolled.	All stations shall be equipped with surveillance cameras; Station and parking areas shall be adequately lighted; stations shall be designed to eliminate shadowed areas obstructions to visibility; stations and parking lots shall be patrolled.
Conclusion	Less than significant	Less than significant	Less than significant

COMMUNITY FACILITIES (Section 3.15) - This topic is concerned with either the loss of community facilities or reduced accessibility of community facilities created by a physical feature of the proposed transit improvement.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	13 facilities would be located within 1/4 mile of transit stations. There is a potential loss of support street parking at 3 facilities. There are possible vehicular access disruptions at 8 facilities. No pedestrian barriers are created.	34 facilities would be located within 1/4 mile of transit stations (13 Wilshire, 21 Exposition) The Bergamot Art Center would be impacted by a transit station & par and ride facility. There is a potential loss of support street parking at 3 community facilities (3 Wilshire, 0 Exposition). There are, possible vehicular access disruptions at 13 facilities (8 Wilshire, 5 Exposition). No pedestrian barriers are created.	29 facilities would be located within 1/4 mile of transit stations (13 Wilshire, 16 Exposition. The Bergamot Art Center would be impacted by a transit station & park and ride facility. There is a potential loss of support street parking at 11 community facilities (3 Wilshire, 8 Exposition) There are, possible vehicular access disruptions at 16 facilities (8 Wilshire, 8 Exposition). No pedestrian barriers are created.
Degree	Beneficial for regional accessibility to facilities.Significant for facilities with on street parking space loss and where circulation access is made more indirect.	Beneficial for regional accessibility of facilities. Significant for facilities with reduced parking and vehicular access disrupted.	Beneficial for regional accessibility of facilities. Significant for facilities with reduced parking and vehicular access disrupted.
Mitigation	Alt 1B - Curb Lane would be less disruptive to left turn circulation patterns near facilities; a plan shall be developed to replace lost parking and maintain vehicular access at impacted facilities.	Coordinate with City of Santa Monica for relocation site for Bergamot Station and/or develop station plan for shared use; Develop plan to replace lost parking and maintain vehicular access at impacted facilities.	Coordinate with City of Santa Monica for relocation site for Bergamot Station and/or develop station plan for shared use; Develop plan to replace lost parking and maintain vehicular access at impacted facilities.
Conclusion	Less than significant	Less than significant	Less than significant

HAZARDS (Section 3.16) - The focus of this topic is the identification of site or building contamination issues that would adversely affect workers during the construction process or station patrons once the system is in operation.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	No impact anticipated for route. Acquisition of replacement parking areas could entail contaminated commercial sites	Same for Wilshire BRT. Prior environmental studies reveal that there are areas of contamination along the Exposition Route including both sites and buildings.	Same for Wilshire BRT. Prior environmental studies reveal that there are areas of contamination along the Exposition Route including both sites and buildings.
Degree	Significant for contaminated replacement parking sites	Significant for contaminated replacement parking sites and for Exposition ROW areas.	Significant for contaminated replacement parking sites and for Exposition ROW areas.
Mitigation	None for Wilshire Boulevard guideway route. Replacement parking lots would require preparation of Phase I Assessments and implementation of cleanup recommendations.	Replacement parking lots and work within Exposition ROW would require preparation of Phase I Assessments and implementation of cleanup recommendations.	Replacement parking lots and work within Exposition ROW would require preparation of Phase I Assessments and implementation of cleanup recommendations.
Conclusion	Less than significant.	Less than significant	Less than significant

CULTURAL RESOURCES - Paleontological. (Section 3.17) - The topic relates to fossils that may present in soil layers a strata beneath ground level.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	BRT component would require up to 2 feet of excavation and could affect paleontological resources.	BRT component would require up to 2 feet of excavation and could affect paleontological resources. The Design option for a tunnel may also result in alteration, removal, and destruction of resources that could be present beneath the USC and Exposition Park areas.	LRT component would require up to 1.5 feet of excavation and could affect paleontological resources. The Design option for a tunnel may result in alteration, removal, and destruction of resources that could be present beneath the USC and Exposition Park areas.
Degree	Significant	Significant	Significant
Mitigation	Prior to any earth moving at the project site, a qualified vertebrate paleontologist approved by the LACMVP will be retained by the MTA or its designated contractor to supervise the mitigation program described in detail in Section 3.17.	As required for Wilshire at-grade component Prior to any earth moving at the project site, a qualified vertebrate paleontologist approved by the LACMVP will be retained by the MTA or its designated contractor to supervise the mitigation program described in detail in Section 3.17.	As required for Wilshire at-grade component Prior to any earth moving at the project site, a qualified vertebrate paleontologist approved by the LACMVP will be retained by the MTA or its designated contractor to supervise the mitigation program described in detail in Section 3.17.
Conclusion	Less than significant	Less than significant	Less than significant

t of

CULTURAL RESOURCES - Archaeological. (Section 3.17) - This topic primarily relates to artifacts and human remains from previous cultures that have existed in California. Grading and subsurface excavation could affect these resources.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	BRT component would require up to 2 feet of excavation and could affect archaeological resources.	BRT component would require up to 2 feet of excavation ralong the majority of the route and up to several feet for caissons for aerial structures. Tunnel Design Option may affect archaelogical resources	Up to 1.5 feet of excavation required for LRT lane construction along the majority of the route and up to several feet for caissons for aerial structures. Tunnel Design Option may also affect archaelogical resources.
.Degree	Significant	Significant	Significant
Mitigation	Monitoring and scientific recovery of archaeological resources through the preparation and implementation of a data recovery plan	As required for Wilshire BRT Tunnel Design Option would require monitoring and scientific recovery of archaeological resources through the preparation and implementation of a data recovery plan	As required for Wilshire BRT Tunnel Design Option would require monitoring and scientific recovery of archaeological resources through the preparation and implementation of a data recovery plan
Conclusion	Less than significant.	Less than significant	Less than significant

CULTURAL RESOURCES - Historical Resources. (Section 3.17) - This topic pertains to properties along the route that satisfy federal and or local criteria for designation as an historic resource. The most critical concern are those properties either listed or eligible for listing on the National Register of Historic Places.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	The curb adjacent design option could require removal or relocation of potentially historic electroliers and other fixtures along Wilshire Boulevard.	The Exposition BRT component of the project would require the removal and demolition of the Southern Pacific Railroad/Pacific Electric Railway which is eligible to the National Register of Historic Places.	The LRT component of the project would require the removal and demolition of the Southern Pacific Railroad/Pacific Electric Railway which is eligible to the National Register of Historic Places. The Historic setting of the USC/Exposition Park area will be altered under this alternative.
Degree	Significant for curb adjacent design option	Significant	Significant
Mitigation	For the curb design option, an Historic American Engineering Record (HAER) documentation shall be pepared for representable historical electroliers, streetlights and other fixtures. A Memorandum of Agreement between SHPO and MTA shall be required.	As required for the Wilshire BRT curb adjacent design option. Historic American Engineering Record (HAER) documentation shall be prepared for the Pacific Electric Railway; A Memorandum of Agreement between SHPO and MTA will be required.	Historic American Engineering Record (HAER) documentation shall be prepared for the Pacific Electric Railway. A Memorandum of Agreement between SHPO and MTA will be required; Alternative Design of Overhead Catenary System would reduce the visual impacts on the structures in Exposition Park
Conclusion	Less than significant	Less than significant	Less than significant

CONSTRUCTION IMPACTS (Section 3.18) - Typically these are short term effects, however, it is expected that work within major streets would be disruptive to motorists and to adjacent businesses and residents.

	Wilshire BRT	Wilshire BRT/ Exposition BRT	Wilshire BRT/ Exposition LRT
Impact	The total duration of all construction activities would be expcted to extend for 24 months for Alt 1 and1A and 32 months for Alt 1B(curb lane).	The total duration of all construction activities would be expected to extend for 24-32 months for Wilshire BRT; Duration 36-42 months for Expo BRT.	The total duration of all construction activities would be expected to extend for 24-32 months for Wilshire BRT; Duration 36-42 months for Expo LRT
Degree	Significant for traffic disruption, air quality, nighttime noise, impacts on businesses, and water quality.	Significant for traffic disruption, air quality, noise, impacts on businesses, and water quality, worker exposure to contamination.	Significant for traffic disruption, air quality, noise, impacts on businesses, and water quality, worker exposure to contamination and cultural resources.
Mitigation	Maintain at least one through travel lane open in each direction at all times on Wilshire. Limit construction to nighttime hours in areas where lane closures are required. Implement dust control measures; use noise temporary barriers in sensitive areas and limit noisiest activities to daytime hours; implement mitigation measures as specified in socioeconomic, water resources assessments.	Maintain at least one through travel lane open in each direction at all times on all affected streets. Limit construction to nighttime hours in areas where lane closures are required along Wilshire, Venice and Sepulveda. Implement dust control measures; use noise temporary barriers in sensitive areas . Limit noisiest activities to daytime hours; implement mitigation measures as specified in socioeconomic, water resources, hazardous materials assessments.	Maintain at least one through travel lane open in each direction at all times on all affected streets. Limit construction to nighttime hours along Wilshire, Venice and Sepulveda. Implement dust control measures; use noise temporary barriers in sensitive areas. Limit noisiest activities to daytime hours; implement mitigation measures as specified in socioeconomic, water resources, hazardous materials, cultural resource assessments.
Conclusion	Significant for traffic. Less than significant for all other topics.	Significant for traffic. Less than significant for all other topics.	Significant for traffic. Less than significant for all other topics.

1.0 HISTORY/PURPOSE AND NEED

1.1 INTRODUCTION

This section provides a background and history of the events and actions that have led to the evaluation of the alternatives considered in this EIS/EIR. In addition, this section provides the purpose and need for transit service in the Mid-City/Westside area. For a detailed description of Alternatives Considered, the reader is referred to Section 2.0, which immediately follows this chapter of the document.

1.2 BACKGROUND AND HISTORY

The need for high-capacity transit service improvements has been long recognized in the Mid-City/Westside area of Los Angeles ("Study Area" or the "Mid-City/Westside Study Area"). Since the 1970's, the MTA and its predecessors the Southern California Rapid Transit District (SCRTD) and the Los Angeles County Transportation Commission (LACTC) have conducted numerous transportation planning and environmental impact studies that have established the need for, and environmental impacts resulting from, improved east-west oriented transit service in various parts of the Study Area. Several planning and environmental studies prepared in the late 1980's and early 1990's identified the potential for the westward extension of the Metro Red Line system, which currently terminates at Wilshire Boulevard and Western Avenue.

1.2.1 Wilshire Boulevard Corridor

The original Locally Preferred Alternative (LPA), adopted in 1983, for the Mid-City/Westside Study Area was an 18.6-mile heavy rail subway line extending from Los Angeles Union Station to North Hollywood. Due to budget constraints, the Urban Mass Transit Administration (UMTA), precursor to the present-day Federal Transit Administration (FTA), was unable to provide funding for the entire LPA alignment. In 1984, a 4.4-mile minimum operating segment (MOS), extending from Union Station to a station at Wilshire/Alvarado, was chosen and a full funding contract for this segment was signed into legislation on December 19, 1985. Construction of this segment began in 1986.

In 1985, a "naturally-occurring" methane gas fire at a Ross "Dress-For Less" store, located along the selected LPA alignment, resulted in an investigation by a special City of Los Angeles Task Force. Conclusions from this investigation lead to a Congressional prohibition on federal funding for subway construction within the designated Methane Gas Risk Zone, as determined by the Task Force's 1985 report on subsurface conditions in the region. As mandated by the Congressional prohibition, a Congressionally Ordered Re-Engineering (CORE) study was conducted. The intent of this study was to determine an appropriate alignment through which to link the Los Angeles Central Business District, the San Fernando Valley and the Wilshire Corridor. Over 40 candidate alignments were reviewed and 6 alignments studied in detailed environmental reports.

In July 1988, a new LPA was chosen (see Figure 2.2). This new LPA, building from the previously adopted MOS currently under construction, would travel from Los Angeles Union Station to Wilshire Boulevard/Vermont Avenue and split into two separate lines, one traveling west to

Wilshire Boulevard/Western Avenue and the other proceeding north to Hollywood and North Hollywood. The branch to Wilshire/Western was opened in 1996. The branch to North Hollywood was opened for service in June, 2000.

The 1990 approval of Proposition C created a new local funding source for Southern California Rapid Transit District (SCRTD) and further study of a Metro Red Line extension to the west was conducted in 1992. The 1992 Final Supplemental Environmental Impact Statement/Final Supplemental Environmental Impact Report (FSEIS/FSEIR) adopted LPA for the Mid-Cities segment showed the construction of a subway from the existing Wilshire/Western station to Pico/San Vicente (Figure 2.3).

In 1993, geotechnical tests conducted to provide detailed information concerning the nature and extent of hydrogen sulfide gas along the Mid-City Segment LPA alignment found concentrations much greater than preliminary tests had identified. This discovery prompted the 1994 Metro Red Line Segment 3/Mid-City Extension Reassessment Study that identified possible vertical alternative alignments for the LPA to mitigate impacts from the hydrogen sulfide gas. The conclusions of this study initiated a new Supplemental Environmental Impact Statement/Supplemental Environmental Impact Report (SEIS/SEIR) in 1996 to assess the environmental impacts of shallow cut-and-cover and aerial configurations along the original Crenshaw Boulevard alignment.

The environmental process determined that the impacts of this alignment were highly negative to the community. In an effort to mitigate these impacts, the March 1996 Mid-City Alternative Alignment Gas Exploration Study was conducted to investigate a deep-bore tunneling option along the Wilton Place/Arlington Avenue alignment, approximately one-quarter mile east of the current LPA (Figure 2.4). Results of geotechnical tests done along this alignment produced significantly lower hydrogen sulfide levels. As a result, the Draft SEIS/SEIR underway for the Mid-City Segment added a Wilton/Arlington alignment.

In 1998, MTA conducted a restructuring plan to document its ability to complete the North Hollywood rail construction and meet the terms of the Bus Consent Decree adopted by the MTA Board of Directors on May 13, 1998. The FTA approved this restructuring plan on July 2, 1998. This plan documented that MTA did not have sufficient local matching funds to finance heavy rail subway projects in the Eastside and Mid-City study areas that was necessary to meet the requirements of the original Full Funding Grant Agreements for these projects and work on these projects was subsequently suspended. As a provision of this plan, MTA was to study "viable and effective options" throughout Los Angeles County, emphasizing study areas containing suspended heavy rail projects.

1.2.2 Exposition Right-of-Way (ROW) Corridor

The Exposition ROW Corridor is located just south of downtown Los Angeles and extends approximately 12 miles to the west along the former Southern Pacific Railroad right-of-way, purchased by MTA in 1990, to 17th Street in downtown Santa Monica. This corridor has been recognized as a possible transit corridor and was included within MTA's 30-Year Integrated Transportation Plan.

The Exposition Right-of-Way Preliminary Planning Study was completed by BRW in May of 1992 to identify the transportation improvement alternatives available along this corridor. The transit alternatives evaluated for development in this corridor were light rail transit (LRT), trolley bus technology, a transitway facility, and a bicycle path. Four alignments utilized by various modes were recommended and future steps for further study were developed.

A follow-up study, Exposition Right-of-Way Final Draft Phase I Summary Report, was completed for the Exposition Right-of-Way Corridor in December 1994. This study took the recommendations of the 1992 Preliminary Planning Study and more clearly defined the alternatives under consideration. Specific items covered by this study were design enhancements for both the busway and light rail alternatives recommended for further analysis.

1.2.3 Additional Mid-City/Westside Studies

Several studies have been conducted that are contained within the Mid-City/Westside study area. These studies range in scope from a system-wide analysis to alternatives available for a particular corridor to options associated with a specific mode of transportation.

System-wide Studies

To evaluate new fixed guideway projects, the MTA commissioned the Regional Transit Alternatives (RTAA) Study. The RTAA Study accomplished several important objectives for the MTA. First, the RTAA study identified the amount of funding available for new projects between FY 1999 and FY 2004. Secondly, it developed several funding allocations and established a framework for further fixed guideway development within the Eastside, Mid-City/Westside and San Fernando Valley study areas. Finally, the study provided a preliminary evaluation of fixed guideway alternatives in the three study areas and recommended that a Major Investment Study be conducted to provide more detailed information of these alternatives.

On November 9, 1998, the results of the RTAA study were presented to the MTA Board. The Board approved the recommended rapid bus plan, which would be conducted in a demonstration project for three rapid bus lines serving the Eastside, Mid-City/Westside and San Fernando Valley study areas. The Board also reaffirmed its commitment to fund fixed guideway transit improvements in the suspended rail corridors. Also, a funding commitment of $220 million through FY 2004 was made a priority for the Eastside and Mid-City/Westside study areas.

As a necessary parallel step in obtaining greater flexibility in project definition for the Eastside and Mid-City/Westside Study Areas, the MTA sought to expand the definition of Segment 3 of the Metro Red Line, which was defined in both Intermodal Surface Transportation & Efficiency Act (ISTEA) and the Segment 3 Full Funding Grant Agreement as "heavy rail subway." With the cooperation and assistance of the Los Angeles congressional delegation, the MTA obtained revised definitional language in the Transportation Equity Act for the 21st Century, which was signed into law by the President on June 9, 1998. This action was taken with the specific intent of being able to utilize the Segment 3 funding balance in the future for any type of fixed guideway project in the Westside and Mid-City Study Areas. The TEA-21 legislation expanded the definition of the Segment 3 project to include "any fixed guideway project" (not just heavy rail subway) in the transportation corridors to be served by the three extensions of Segment 3. It also authorized the start of final design and construction for the Segment 3 project during the FY1998-2003 funding cycle under section 5309 (new starts funding).

The second legislative action was the passage of Proposition A Ballot Initiative. Voters approved this new County law on November 3, 1998. This initiative contained the provision that Proposition A County sales tax revenues and Proposition C County sales tax revenues could not be utilized in funding the cost of planning, design, construction or operation of any New Subway. "New Subway" was defined as any subway other than the Metro Red Line Segments 1,2 or 3 (North Hollywood). Under this initiative, sales tax revenues cannot be used to fund subway development in the Westside or Mid-City/Westside study areas. The initiative does not prohibit the use of sales tax revenue to develop light-rail, at-grade rail, elevated rail systems or busways in either of these study areas. Also, the initiative does not prevent the use of State or Federal revenues or local revenues other than sales tax to design, construct or operate a new subway in either area.

Mode-Specific Studies

The Westside Bus Improvement Study, completed in March 1998, examined existing bus operations in the area bounded by Hoover/Hyperion, the Pacific Ocean/Malibu, Mulholland Drive, and the I-10 Freeway/Culver City southern boundary/Jefferson Boulevard. Key conditions identified by the study were: patron overcrowding on specific lines/times; slow arterial bus operations; and lack of continuity of service due to bus stockpiling. The study developed recommendations for greater service through use of "Metro Rapid bus" service and high capacity vehicles; creating greater coordination with Metro Red Line openings; providing greater continuity and connections; eliminating duplicate service lines to reduce congestion; and creation and implementation of a "seamless" fare structure.

The 1999 Mid-City Bus Transit Restructuring Study was a follow-up to the 1993 Inner City transit Needs Assessment Study and contained the goal of increasing ridership, operations and integration while improving cost-efficiency and cost-effectiveness of the transit system. Study area boundaries for this study were: the I-105 Freeway, the Pacific Ocean/La Cienega Boulevard, Slauson Avenue/Marina Freeway, and Alameda Street. This study recommended that a three-tier restructuring strategy be implemented that would address the needs of the following service sectors: core service on basic routes; inter-community connectors; and local shuttles, feeders and demand responsive services.

As a result of MTA's RTAA Study, the Los Angeles Metro Rapid Bus Demonstration Program was developed in March 1999. This program was created to address the need for faster travel service for existing bus riders. The first two lines of this service were opened in June, 2000 and are described more fully in Chapter 2.0. One of the two demonstration lines, the Wilshire-Whittier Metro Rapid Bus, directly serves the alternatives under consideration in this DEIS. Ridership of the Wilshire-Whittier and underlying local bus services along Wilshire and Whittier Boulevards in July, 2000 was more than 102,000 boardings per day. This high ridership figure further underscores the critical need for transit services along the Wilshire Boulevard corridor.

Expansion of the Metro Rapid program to a countywide level is to be based upon performance results and public acceptance obtained from the demonstration corridors. Further expansion of the program could include the Exposition Right-of-Way as a transitway corridor.

1.3 PURPOSE AND NEED OF THE PROJECT

The purpose and need for the proposed project was presented in detail in the *Mid-City/Westside Transit Corridor Major Investment Study (MIS)*, released in February, 2000, which is incorporated by reference herein and summarized below. This study primarily focused on the Wilshire Boulevard Corridor for the development of a BRT exclusive busway to connect activity centers such as downtown Santa Monica, Westwood, Century City, Beverly Hills, Miracle Mile, Wilshire Center, and downtown Los Angeles. A second corridor along Exposition Boulevard was also studied for both BRT and Light Rail Transit (LRT) services. The BRT alternative would connect downtown Los Angeles to downtown Santa Monica using the Exposition Right of Way (ROW), currently owned by MTA. The LRT alternative would connect downtown Los Angeles to downtown Santa Monica using the same route as the BRT along the Exposition ROW. Section 1.4 (below) provides a detailed description of the alternative screening process the MTA undertook, which resulted in the alternatives being evaluated in this Draft EIS/EIR.

1.3.1 The Mid-City/Westside Study Area Location and Demographics

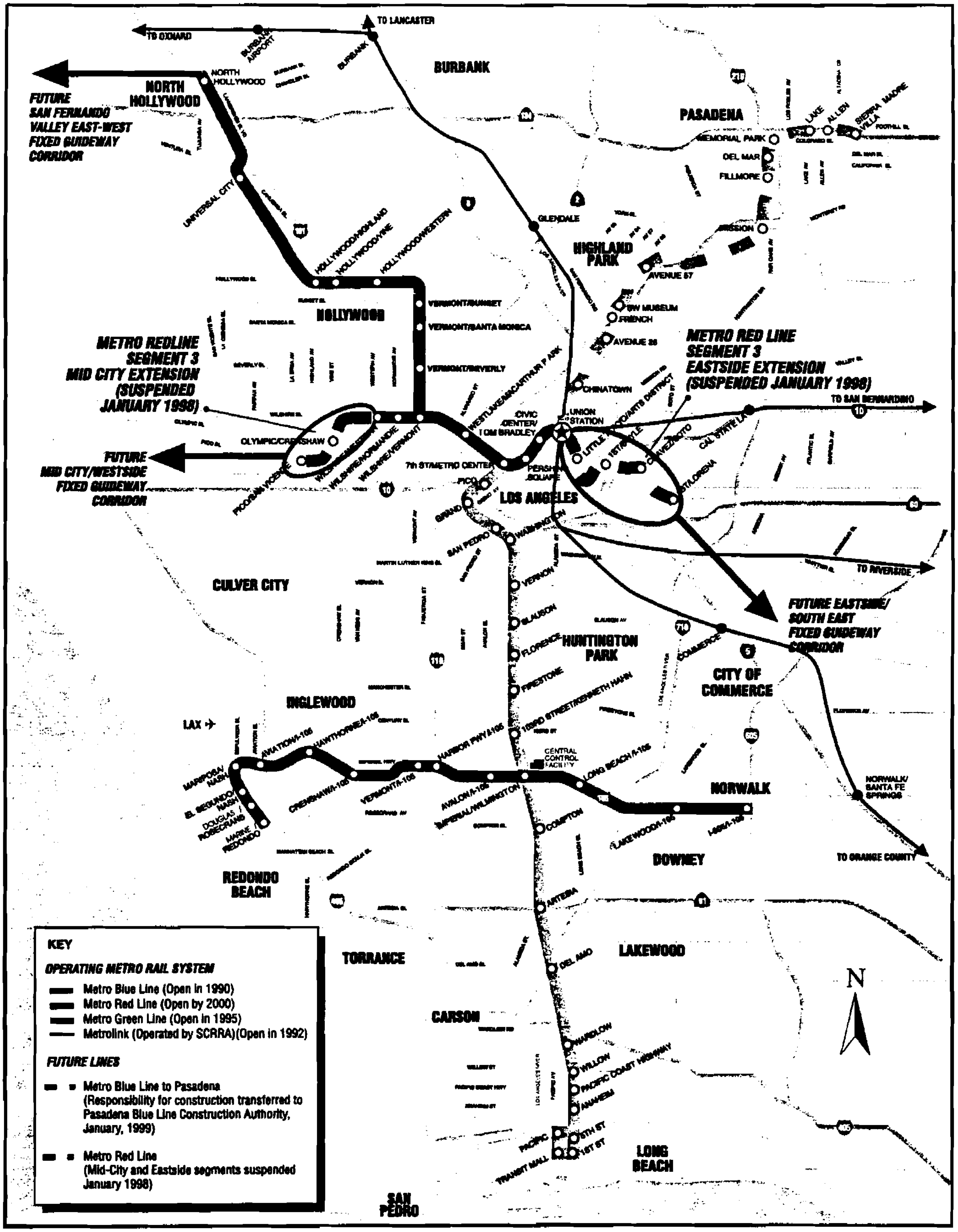
The Study Area is located in western Los Angeles County and encompasses approximately 112 square miles, and is roughly bounded by the Pacific Ocean on the west; Sunset Boulevard and the Hollywood Freeway (US 101) on the north; Hope Street and Figueroa Street on the east; and Slauson and Manchester Boulevards on the south. Portions of the City of Los Angeles, unincorporated areas of Los Angeles County (e.g., Baldwin Hills) and the cities of West Hollywood, Beverly Hills, Santa Monica, and Culver City are within the Study Area.

Approximately 16 percent of the population and 24 percent of the jobs in Los Angeles County are concentrated in the Study Area. According to a market trend analysis conducted by Grubb & Ellis, 27 percent of Los Angeles County's 161 million square feet of new office space is located on the Westside, which makes it the largest office market in the County (Grubb & Ellis, Office Market Trends, Third Quarter, 1999). The Mid-City/Westside Study Area represents one of three corridor Study Areas where potential expansion of the Los Angeles fixed-guideway system is being evaluated, as illustrated in Figure 1-1.

The existing Metro Red Line system has four basic segments:

- Segment 1 (Union Station to Westlake/MacArthur Park) was competed and opened for service in 1993;
- Segment 2A (Westlake/MacArthur Park to Wilshire/Western) was completed and opened for service in 1996;
- Segment 2B (Wilshire/Vermont to Hollywood/Vine) was completed and opened for service in June 1999;
- Segment 3-North Hollywood (Hollywood/Vine to North Hollywood) was completed and opened for service in June 2000.

The other two regional Study Areas include the Eastside and the San Fernando Valley. These two Study Areas are being evaluated under separate studies and are not included in this report. All of these study areas are part of the MTA's long range planning activities and will be coordinated to



SOURCE: Los Angeles Metropolitan Transportation Authority

FIGURE 1-1
MTA SYSTEM MAP WITH EXPANSION STUDY AREAS

provide a comprehensive transit system. However, each of these extensions has its own purpose and utility for the location in which it is placed.

Regional transportation planning for southern California's five counties area is the responsibility of the Southern California Association of Governments (SCAG), the Metropolitan Planning Organization (MPO) for the area. In 1998, SCAG Regional Council adopted the Regional Transportation Plan (RTP) entitled "Community Link 21" to establish the goals, objectives and policies for the transportation system and establish the implementation plan for transportation investments over the next 20 years. The RTP includes regional performance indicators with objectives against which specific transportation investments can be measured. The performance indicators illustrate that travel conditions on the Westside will worsen by 2020 and the area will not meet regional objectives for mobility, accessibility, reliability, or safety, without the implementation of additional transportation improvements, as illustrated by Table 1-1.

TABLE 1-1
MID-CITY/WESTSIDE RTP PERFORMANCE INDICATORS

Performance Indicator	Measurement	Objective	1990 Results	2020 Baseline Forecast
Mobility	Average Work trip travel time	22 minutes	23 minutes	29 minutes
	PM peak hour highway speed	33 mph	25.2 mph	22.6 mph
	Percent of Peak travel in Delay	33%	32%	40%
Accessibility	Work Opportunities Within 25 Minutes	88%	56%	61%
Environment	Meet Federal & State Standards	Meet Air Plan Emission Budgets	82 tons per day ROG	16 tons per day ROG
Reliability	Percent Probability of On-Time Arrival	63% Transit 76% Highway	100% 100%	74% 52%
Safety	Fatalities per Million Passenger Miles	0.008	n.a.	0.010

Source: SCAG, Regional Transportation Plan, 1998.

Average travel time to work (mobility indicator) will increase by 26 percent over 1990 conditions to 29 minutes and will exceed the regional objective of 22 minutes by 32 percent. Average travel speeds on all parts of the highway network (arterials and freeways) will decline to 22.6 mph, 32 percent below the regional objective. Approximately, 40 percent of travel in peak hours will be wasted due to delay.

The percentage of job opportunities within 25 minutes of employees' homes (accessibility indicator) will improve in the subregion due to the high employment growth, but 39 percent of the workers on the Westside will have to travel more than 25 minutes to work, compared to the regional objective of 22 minutes. The continued implementation of reduced emission vehicles (environment indicator) will reduce the amount of reactive organic gases produced on the Westside, but the reliability of the transportation system will decline. A commuter probability of arriving at a destination on time (reliability indicator) will decrease to 74 percent if riding transit and to 52 percent if traveling by car, illustrating how unpredictable travel will become as increased congestion will cause the subregion to exceed the regional safety objective.

1.3.2 Major Themes Supporting Transit Need in the Study Area

Given the RTP forecasts and the data provided in the MIS for the Proposed Project, several themes emerge regarding the need for transportation improvements in the Study Area. These themes are described below.

The Need for Transit Improvements has been Established in Previous Studies

Providing high capacity transit service improvement has been long recognized in the Mid-City/West Area. Since the 1970's, the MTA and its predecessors (SCRTD, LACTC) have conducted numerous transportation planning and environmental impact studies that established the need and feasible locations for either bus, light rail, and/or heavy rail east-west service in various parts of the Study Area.

Study Area Contains A Major Concentration of Activity Centers and Destinations

The area contains the largest concentration of major activity centers and destinations within the Los Angeles metropolitan region. Many of these centers are located within the most congested portion of the Study Area north of the Santa Monica Freeway (I-10) and east of the San Diego Freeway (I-405). Of all the areas within the Los Angeles metropolitan area, the Mid-City/Westside Study Area best exemplifies the centers concept. These centers represent more specific destinations in the Study Area. These destinations correspond with, as well as add to, the location and number of activity centers identified in the Centers Concept. As shown in Figure 3.5-2 (which is presented in Section 3.5, Land Use/Neighborhoods and Communities, of this document), a large concentration of activity centers is located in the Study Area. Over 60 locations have been identified.

Not only does the Study Area encompass the western portion of the traditional/historical downtown area, but it also encompasses the most well known employment, entertainment, educational/cultural activity centers in the region, including USC, UCLA, Santa Monica College, Los Angeles Trade Tech College, Rodeo Drive/Beverly Hills, Westwood Village, Hollywood Boulevard, Sunset Strip, Century City, Westside Pavilion, Paramount and Sony Studios, Los Angeles County Museum of Art, Page Museum, Petersen Automotive Museum, Wilshire Miracle Mile, Santa Monica Pier, Third Street Promenade, Los Angeles Memorial Coliseum, Los Angeles Convention Center, and the newly-opened Staples Center. Currently, the portion of the Metrorail system built or under construction to date only interconnects a small portion of the centers in the eastern portion of the Study Area, such as downtown to Hollywood to Universal City and to Mid-Wilshire. The remaining centers are served by two major freeways (Interstate 10 - Santa Monica Freeway, and Interstate 405 - San Diego Freeway), as well as by less than a dozen major east-west and north-south arterials. As discussed later in this chapter, as growth continues to be concentrated in the existing centers and a few emerging Westside centers (such as Playa Vista and Culver City) in the future, there is a finite limit to the physical and operational capacity of these highways and arterials to meet travel demands generated by the centers.

The "Centers Concept" Land Use Policy is Transit Based

Land use planning in the Los Angeles area has traditionally viewed the urban area not as a central downtown served by adjacent areas, but rather a collection of urban centers. These centers are "little downtowns" in and of themselves. The Centers Concept Plan, originally formulated for the

Los Angeles area in the 1960's and 1970's by Calvin Hamilton (Director for the Department of Los Angeles City Planning Department) and Norman Murdock (Director for the Los Angeles County Regional Planning Department), acknowledged there were urban centers of various types throughout the region that represented concentrations of economic activity or a mix of economic activities and higher density housing (refer to Figure 1-2). The Centers Concept envisioned that the centers would be interconnected via an infrastructure of transit. The City of Los Angeles General Plan Framework, revisited and reconfirmed the Centers Concept. The Framework more clearly defined targeted growth areas, mixed use centers, and mixed used corridors that would serve centers that were envisioned to be interconnected via the emerging Metrorail transit system. The City of Los Angeles, in working directly with the Los Angeles County Metropolitan Transportation Authority, developed a series of Transportation and Land Use Guidelines, which specifically tied the size, and intensity of centers to the supporting transit infrastructure and transit station locations.

There is an Existing Concentration of Transit Supporting Land Uses

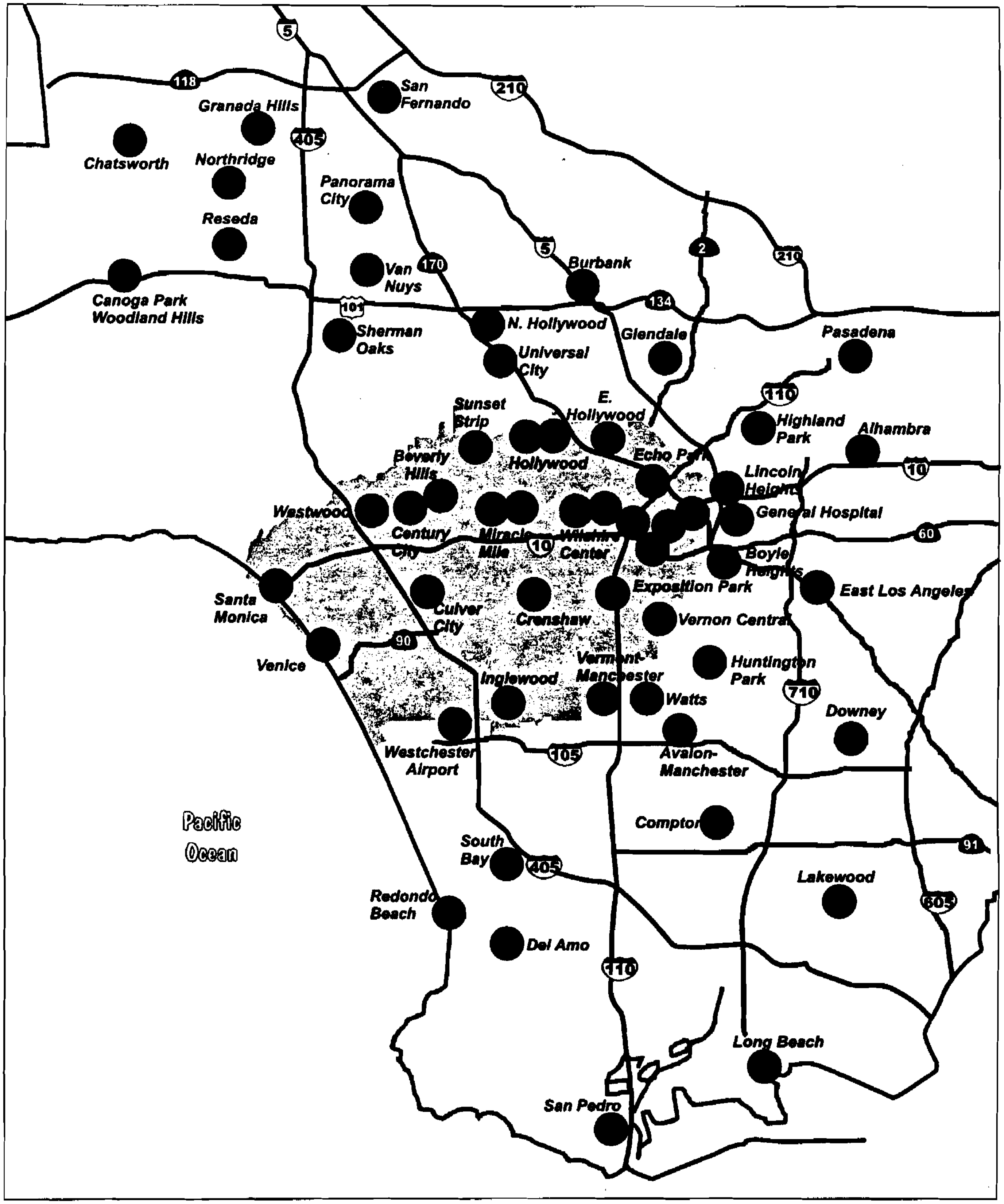
The existing activity centers in the Study Area are a central part of a large concentration of land uses that are considered to be transit supporting (high-density housing, commercial, and retail), as illustrated by Figure 1-3. In fact, roughly 30 percent of the land area within the Study Area falls into this category. These transit related uses tend to be concentrated in three major corridors in the Study Area: a northern corridor approximating Santa Monica Boulevard; a central corridor represented by Wilshire Boulevard; and a less well-defined southern corridor centering along Venice Boulevard. Currently only the eastern portions of these land use corridors are served by the Metrorail System. The remaining high density areas are served by conventional bus service from LACMTA, Culver City, LADOT and Santa Monica.

High Study Area Population and Employment Densities Support Transit

Population and employment densities in the Study Area are the highest within the metropolitan region, averaging approximately 13,883 persons per square mile and 9,167 employees per square mile. (3.4-1 and 3.4-2 respectively, located in Section 3.4, Socioeconomics.) The more densely populated areas are concentrated in the east and northeastern portion of the Study Area, while the greatest employment densities are in the western and northwestern portion of the Study Area.

According to the West Los Angeles Transit Corridor Technical Report prepared by SCAG in 1998, "the population density in the SCAG Study Area in 1990 was about 9,600 persons per square mile, which was more than four times the County." Population density for the MTA Study Area in 1997 was approximately 13,883 persons per square mile, over 6 times that of the LA County 2,300 persons per square mile. According to SCAG's forecasts, the population density will increase to over 17,000 persons per square mile by the year 2020, compared with 3,017 persons per square in the County.

Employment densities are also higher than the County. In 1997, the Study Area employees per square mile were 9,167, compared with a County employment density of 1,070 employees per square mile. These densities will increase by the year 2020 to 10,829 employees per square mile in the Study Area and 1,433 employees per square mile in the County.



LEGEND:

Mid-City/Westside Study Area

Centers

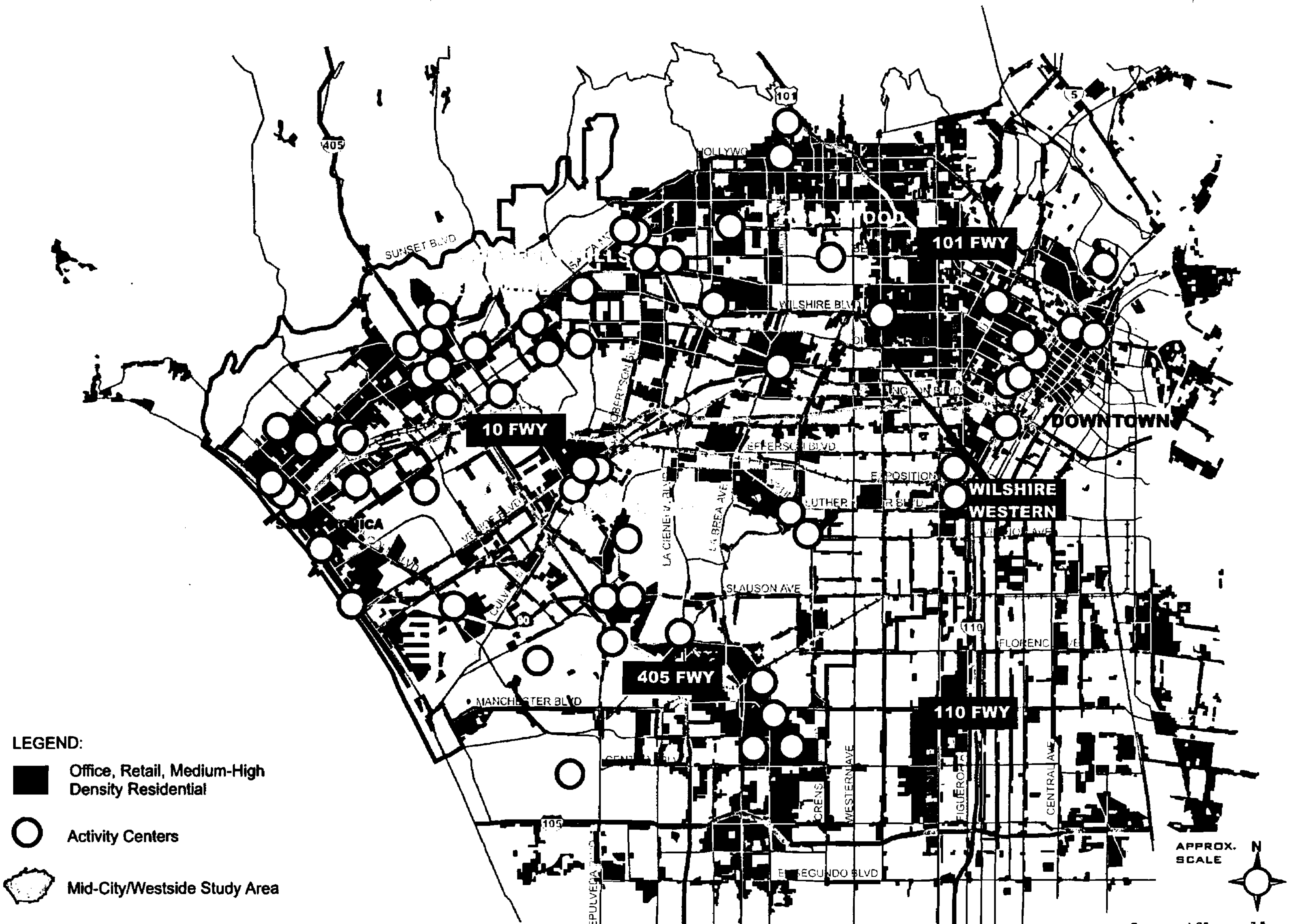
SOURCE: Adapted from the City of Los Angeles, Department of City Planning, 1974

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 1-2

LOS ANGELES CENTERS CONCEPT



SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 1-3

TRANSIT SUPPORTING LAND USE

The West Los Angeles Transit Corridor Technical Report, prepared by Southern California Association of Governments (SCAG), as part of the 1998 RTP Transit Restructuring Study provides information on the current overall usage of transit services in the Study Area.

The two study area corridors have been identified as having significant transit usage, and the preliminary analysis in the RTP identified a deficiency of service. In fact, the total transit usage as a percentage of all trips is greater within the Study Area as a whole than it is along these corridors. The reason may be an accessibility problem. Table 1-2 illustrates the existing transit mode choice at the Study Area level and at various distances from the corridors:

TABLE 1-2
SUMMARY OF MODE CHOICE

Level	All Modes	Drive Alone	Carpool	Transit	Others
1/4 Mile of Corridors	100.00%	63.82%	12.76%	11.89%	11.53%
1/2 Mile of Corridors	100.00%	62.88%	12.96%	12.35%	11.81%
1 Mile of Corridors	100.00%	61.63%	12.87%	13.70%	11.80%
Study Area	100.00%	62.37%	13.58%	13.64%	10.41%

Source: 1990 Census Transportation Planning Package (CTPP)

Mid-City/Westside transit ridership is best summarized using the Census Transportation Planning Package (CTPP) transportation data collected as part of the 1990 Census. Based on the census data, 41 percent of all work transit trips in Los Angeles County originate in the Study Area. The remaining 59 percent originate at various points in the County and may potentially run through the Study Area. West L.A. (as defined by this report) contains 18 percent of Los Angeles County's population, implying that the transit needs of West L.A. are higher than the service presently provided. In addition to the high transit mode split of 14%, the Study Area has a significantly higher use of transit than the rest of Los Angeles County. This demand warrants a much higher percentage of transit investment than it has received in the last fifteen years.

Local Redevelopment Plans Depend Heavily On Transit Improvements

Figure 3.5-3 (Section 3.5, Land Use/Neighborhoods) illustrates a composite picture of the location of redevelopment areas, enterprise zones and other investment areas targeted by local jurisdictions within the Study Area. There are almost 20 such areas within the Study Area. The ultimate success of redevelopment and revitalization of these areas largely rest on transportation accessibility and links to transit. Some improvements and strategies being employed – such as Santa Monica Boulevard improvements in West Hollywood and in Santa Monica – focus on increasing pedestrian amenities, and reducing or eliminating vehicular traffic, which places increasing demand on increased transit access and level of transit service to help support existing and future land use development objectives.

There is a History of Transit Usage in the Study Area

Existing transit usage within the Study Area is proportionally higher than any other area in Los Angeles County (13.6 percent for the Study Area versus 6.8 percent for the County). Because there is a large base of existing transit service and transit patrons, increasing the transit mode share through increased service would represent a natural extension of existing patterns and trends.

Because the Study Area represents a significant concentration of educational, cultural entertainment, and office centers, and because the area is the most densely populated area within the region (over 13,883 persons per square mile), there has traditionally been a substantial amount of transit service and transit use. According to the SCAG Transit Corridor Technical Report, "the proportion of workers who took the bus [in the Study Area] was double that of the County [13.64 percent for the Study Area versus 6.8 percent for the County]. This is further substantiated by the Census Transportation Planning Package (CTPP), transportation data collected as part of the 1990 Census. This data indicates that "41 percent of all work transit trips in Los Angeles County originate in the Study Area."[1]

There is a Significant Transit Dependent Population in the Study Area

Part of the underlying reason for high transit usage in the Study Area is that a significant number of households are autoless and have low incomes. According to the 1990 Census, approximately 18.3 percent of households in the Study Area are without a vehicle compared to 10.9 percent for the County. The majority of these households are concentrated in the east and northeastern portion of the Study Area, as illustrated by Figure 3.4-5 in Section 3.4 (Socioeconomics). Figure 3.4-4 illustrates that 20.9 percent of the population of the Study Area was below poverty status compared to 14.7 percent in the County, and households in the Study Area had a weighted income of $5,451 less than that of Los Angeles County.[2]

The Study Area Is Expected to Continue to Capture a Large Share of Regional Population and Employment Growth

As reflected by Table 1-3, population and employment forecasts to the year 2020 adopted by SCAG clearly suggest that the Study Area will capture a disproportionate share of growth over the next 20 years, thereby placing further demands on transit service and resulting in increased congestion on local roadways and regional highways serving the Study Area.

According to SCAG's most recent adopted forecast (April 1998), the Study Area is expected to grow by 356,265 (18.85 percent increase) persons and 186,200 (15.35 percent increase) employees between 1997 and 2020. The forecast strongly suggests that both the Mid-City and West Los Angeles portions of the Study Area are expected to attract significant growth.

TABLE 1-3
POPULATION & EMPLOYMENT FORECAST

Year	1997	2010	2015	2020	1997-2020
Population					
MTA Study Area	1,555,005	1,725,512	1,813,919	1,911,270	18.85%
LA County	9,524,890	10,868,869	11,513,385	12,249,104	22.24%
% of LA County (MTA)	16.28%	15.88%	15.75%	15.60%	
Employment					
MTA Study Area	1,026,685	1,134,474	1,170,729	1,212,885	15.35%
LA County	4,345,926	5,223,383	5,511,845	5,817,654	25.30%
% of LA County (MTA)	23.62%	21.72%	21.24%	20.85%	
Source: SCAG Forecast, April, 1998.					

1 SCAG West Los Angeles Transit Corridor Technical Report, 1998, pp. 15 and 18, respectively.
2 Op. Cit., p. 10.

Continued Growth in the Business Services Sector (Entertainment and Media Related) Underlies the Future Development Potential in the Study Area

Growth in the Study Area will continue to be fueled by the fact that entertainment and media related businesses are concentrated in the western part of the Study Area. As further indicated in the Grubb & Ellis report, other sectors in the Westside economy contribute to regional, as well as statewide economic growth: "in the 1980s and 1990s five sectors emerged to propel California economic base forward: foreign trade, high tech manufacturing, professional services, tourism, and entertainment. The West Los Angeles market is home to most of these industries which have been a principal catalyst to economic growth, and a driving force for the office market."[3] Over the past decade there has been an ever increasing number of these businesses located in West Los Angeles/Century, Santa Monica, and Culver City. Although the specific "Dreamworks Studio Campus" at Playa Vista has been put on hold, it is anticipated that there will be a significant increase in production and postproduction type businesses on the Westside. Many of the current office and warehouse space vacancies are featuring references to the availability of "creative space" rented in 10,000+ square feet increments.[4]

Growth in the Study Area will continue to be fueled by the fact that entertainment and media related businesses concentrating in the western part of the corridor. US Census County Business Patterns data indicate that these new service businesses are locating in West Hollywood, Beverly Hills, West Los Angeles, Culver City and Santa Monica, as shown in Figure 3.4-3. Real estate analysts expect that the demand for production and creative spaces will continue to be robust. The industries and businesses that are attracted to the Study Area are those that are expected to be the foundation of the local and regional economy for many years into the future.

In addition the Mid-City/Westside area is the center of approximately one-third of all new office construction underway in LA County.[5]

Existing and Projected Travel Demand Patterns and Justification for Transit Services

The Study Area attracts thousands of trips each day from all areas of the Los Angeles region. Growth levels in both population and employment documented above will further exacerbate travel demand. Based on the output of the LACMTA Transportation Model, there are currently strong interaction patterns between the Study Area and the West and East San Fernando Valleys, as well as from the South Bay.

Over 45 percent of daily work trips generated by the Study Area are internal trips that have both the origin and the destination within the Study Area. This includes almost 5 percent to and from downtown and over 41 percent within the remaining parts of the Study Area. The San Fernando Valley is one of the most predominant origin/destinations for works trips to and from the Study Area, with 9.4 percent of the total. When north Los Angeles County and the Glendale area are added to this group, areas to the north of the Study Area represent over 17 percent of all work-trip

---

3 Ibid.

4 Creative space indicates both the creative use of buildings built with a standard utilization in mind, and a tenant profile catering to expensive and skilled labor force companies want to nurture in the workplace." Grubb & Ellis, 2000 Real Estate Forecast, 1999, p. 7.

5 Grubb & Ellis Office Market Trends, West Los Angeles, Third Quarter 1999, p. 1.

interactions. Another predominant origin/destination outside the Study Area is the South Bay/Long Beach area with nearly 15 percent of the total work trips. San Gabriel/Pomona Valleys with 7.5 percent and the southeast County area, with 8.3 percent of the total work trips are also significant origin/destination points.

Nearly 19 percent of the work trips to/and from the Westside portion of the Study Area are internal. There is a strong interaction between the west and north parts of the Study Area (20.5 percent of all work trips). Over 16 percent of the work trips related to the west-side are to/from San Fernando Valley and points north.

The interaction of work trips between the northern portion of the Study Area (areas generally north of the Santa Monica Freeway and including Downtown) and other communities indicate that nearly 30 percent of the work trips to/and from this area are internal. This part of the Study Area has the strongest interaction with San Fernando Valley and points north, with over 22 percent of the total work trips to/from this area. The work-trip interaction between this area and other parts of the Study Area are between 8 to 9 percent of total work trips.

The interaction of work trips between the southern portion of the Study Area (areas generally south of the Santa Monica Freeway) and other communities indicate that only 13.4 percent of the work trips to/and from this area are internal and the subarea has a strong interaction with the Westside, at 10.7 percent, and with the north side (including Downtown), at 22.6 percent of the total work trips. The southern part of the Study Area also has a strong interaction of work trips with South Bay and Southeast, with almost 33 percent of the total work trips to/from this area. On the other hand, the work-trip interaction between this area and San Fernando Valley and points north is relatively less, with only 10.6 of the total work trips.

Based on the overall interaction patterns between the Study Area and surrounding areas a simplified "spider network" was constructed to identify potential corridors of travel patterns and the magnitude of travel activity. The thickness of the lines on the network is proportional to the identified level of travel demand for home-to-work trips between the two adjacent communities. The level of travel also includes potential through travel from other communities that would use major routes connecting the two adjacent communities.

The 1997 data identifies heavy work-travel demand between the Mid-City/Westside Study Area and the San Fernando Valley along both the Sepulveda and Cahuenga passes. Work-travel demand is also heavy to the south-east and east along the San Bernardino and Golden State freeway corridors. Within the Mid-City/Westside Study Area, three distinct parallel east-west corridors can be observed, which connect Downtown Los Angeles to points west of the San Diego Freeway: a northern corridor approximating Santa Monica Boulevard; a central corridor represented by Wilshire Boulevard; and a less well-defined southern corridor on, or south of the Santa Monica Freeway.

The 2020 conditions reveal that work-travel demand along every corridor is expected to increase significantly in the future. This is the case for trips between communities in the Study Area, as well as travel to and from the San Fernando Valley and the east side. Several east-west corridors within the Study Area show travel demand well in excess of 200,000 daily two-way work-trips. The pattern of three distinctive east-west corridors within the Study Area is again apparent for 2020 conditions, with all community-to-community movements showing significant increases in demand.

The spider network for 1997 and 2020 conditions both indicate there is strong east-west travel demand along major east-west corridors: Santa Monica Boulevard, Wilshire Boulevard, Santa Monica Freeway and Exposition/Venice Boulevards. None of these corridors are currently served by a high capacity transit system.

Travel growth projection characteristics for the Mid-City/Westside Study Area were obtained and summarized from the Los Angeles County MTA's travel demand model.[6] Three of the most meaningful categories of travel characteristics are:

- **Total Daily Person Trips** - the number of <u>one-way</u> trips made by all <u>persons</u> within a 24-hour period
- **Daily Home-Work Person Trips** - the number of <u>one-way</u> trips made by all persons between <u>home and work</u> location within a 24-hour period
- **Daily Transit Person Trips** - the number of <u>one-way trips</u> made by all persons on <u>transit</u> (bus and rail) within a 24-hour period

A summary of these statistics compiled for 1998 and 2020 are presented in Table 1-4. Statistics related to the entire region are shown on the left side of the table, whereas the information on the right side pertains to the Study Area.

<u>**All Trips**</u>

As seen in the first section of the table, in 1998 there were a total of approximately 50.7 million daily person trips made in the five-county region. As the second row of figures shows, 10.3 million, or 20.3 percent of these total daily trips are two-way home to work trips, and almost 1.6 million of the daily trips, or 3.2 percent are made on transit. As the table also illustrates, there are nearly 8.5 million daily person trips made in the Study Area, of which 2.3 million, or 27.5 percent are home to work trips, and over 675,000 trips, or 8 percent are made on transit.

When compared to the region as a whole, it can be seen that the Study Area has a higher percentage of work trips (by 7 percentage points) of all daily trips. This is a reflection of relatively higher population density as well as abundance of employment opportunities in the Study Area. The more notable observation, is the significantly higher transit percentage for Study Area trips compared to the overall regional transit percentage. The Study Area's 8 percent transit mode split is 2.5 times higher than the regional 3.2 percent mode split. This is a clear indication of two characteristics related to the Study Area: high transit dependency in certain Study Area communities and relatively high levels of transit services, which are provided in the Study Area.

The significance of the Study Area's travel characteristics compared to the region is shown on the third row of the table. This part of the table has some revealing facts. Whereas, the Study Area's total daily person trips account for 16.7 percent of the total trips in the region, more than one out of every five home-work trips in the region (22.7 percent), are related to the Study Area. This again,

---

6 The travel demand model provides statistics, which describe the magnitude and overall travel characteristics of the five County southern California area in general, and Los Angeles County in particular. The model can be used to get information about existing travel patterns as well as to develop future travel forecasts. The model provides data on total daily and peak hour travel by various modes, including personal vehicle (single occupant or carpool) and transit (bus and rail). This model is used to develop travel forecasts on highways and patronage (ridership) forecasts for transit services.

points to the higher population and employment opportunities in the Study Area. The Study Area's share of regional transit trips is extremely significant. The statistics show that 42.2 percent (more than 2 out of every 5) daily transit trips made in the region have either an origin or a destination in the Study Area.

Internal Trips

Travel statistics, which are presented in Table 1-4, are related to all trips that either originate or are destined to the Study Area. The last three rows of Table 1-4 provide information about Study Area's internal trips. Internal trips are those, which have both ends of the trip (origin and destination) entirely within the Study Area. As can be seen, in 1998 there were a total of 4.4 million daily trips, which stayed entirely within the Study Area. Over 652,000 of these, or 14.7 percent, were work trips, and 411,000, or 9.3 percent of the total internal trips, were transit trips.

TABLE 1-4
SUMMARY OF PERSON TRAVEL CHARACTERISTICS - MID-CITY/WESTSIDE STUDY AREA

	Region			Corridor		
Person Trips and Growth, 1998-2020	**1998***	**2020**	**% Growth**	**1998**	**2020**	**% Growth**
Total Daily Person Trips	50,705,715	65,952,425	30.1%	8,479,289	9,596,260	13.2%
Daily Home-Work Person Trips	10,271,754	13,092,874	27.5%	2,328,448	2,666,914	14.5%
Daily Transit Person Trips	1,597,598	2,018,584	26.4%	674,979	815,057	20.8%
	Region			**Corridor**		
Home-work and Transit Trips as a Percentage of Total Trips	**1998**	**2020**		**1998**	**2020**	
Total Daily Person Trips	100.0%	100.0%		100.0%	100.0%	
Daily Home-Work Person Trips	20.3%	19.9%		27.5%	27.8%	
Daily Transit Person Trips	3.2%	3.1%		8.0%	8.5%	
Corridor Trips as a Percentage of Regional Trips				**Corridor**		
				1998	**2020**	
Total Daily Person Trips				16.7%	14.6%	
Daily Home-Work Person Trips				22.7%	20.4%	
Daily Transit Person Trips				42.2%	40.4%	
Corridor Internal-Internal Trips and Growth				**Corridor**		
				1998	**2020**	**% Growth**
Total Daily Person Trips				4,438,461	4,878,137	9.9%
Daily Home-Work Person Trips				652,708	681,254	4.4%
Daily Transit Person Trips				411,736	449,720	9.2%
Internal-Internal Home-work and Transit Trips as a Percentage of Total Trips				**Corridor**		
				1998	**2020**	
Total Daily Person Trips				100.0%	100.0%	
Daily Home-Work Person Trips				14.7%	14.0%	
Daily Transit Person Trips				9.3%	9.2%	

TABLE 1-4 SUMMARY OF PERSON TRAVEL CHARACTERISTICS - MID-CITY/WESTSIDE STUDY AREA						
Internal Trip Retention Percentage in the Corridor				**Corridor**		
				1998	**2020**	
Total Daily Person Trips				52.3%	50.8%	
Daily Home-Work Person Trips				28.0%	25.5%	
Daily Transit Person Trips				61.0%	55.2%	

Key: Region = Five-County Southern California MTA Modeling Area
Corridor = Mid-City/Westside Study Area

*Note: According to SCAG's 1997 regional model, the total daily person trips are estimated at 52 million, daily HBW person trips are 8.8 million. The MTA model is being revised and the data is higher in both categories.

Source: Compiled by Meyer, Mohaddes Associates from LACMTA Travel Demand Model Trip Tables.

When comparing the internal trips to total trips generated by the Study Area, it can be seen that a relatively large portion of the total trips, more than half (52.3 percent) stay within the Study Area. This is an indication of availability of travel opportunities (both home and work) for all trips in the Study Area, which results in high trip retention. However, the percentage of retention for work trips is significantly lower at less than one out of four (28.0 percent). This shows that many residents commute to work destinations outside the region. When analyzing the internal capture of transit trips, the trends are even higher than all trips, showing 61 percent of all transit trips generated by the Study Area staying entirely within the Study Area's boundaries.

Future Trends

Forecasts of travel statistics were also made available form the MTA model for 2020. These data are also presented in Table 1-4, in conjunction with the corresponding 1998 information. Comparison of 1998 and 2020 data for each category, both for the region and the Study Area, provides information about expected growth in magnitude of travel and the relative significance of this growth when compared to the expected regional growth.

The region's 50.7 million total daily trips are expected to grow by 30.1 percent to nearly 66 million by 2020. Home to work trips will grow similarly by 27.5 percent, from 10.3 million to 13.1 million. The expected growth in regional transit trips is also relatively consistent, at 26.4 percent, from 1.59 million to just over 2 million. There is, however, a notable difference between the Study Area and the region as it relates to growth in travel. Overall, the three travel indicators show lower growth for the Study Area, compared to the region as a whole. This is a reflection of relative maturity and built-out nature of the Study Area. While the 1998 to 2020 growth of the regional statistics were between 26 and 30 percent, the Study Area' are in the 13 to 21 percent range. In the 23-year span, total daily trips in the Corridor are expected to grow by 13.2 percent, from 8.5 million to 9.6 million. The growth in home-work trips is slightly higher, at only 14.5 percent, from 2.3 million to 2.7 million. However, the Study Area's transit trips are expected to increase at a much higher rate than total trips, by 21 percent, from the 1998 level of 675,000 to 815,000 by 2020.

As seen in the second row of tables, the share of daily home-work and transit trips as a percentage of the total trips is expected to remain very similar to 1998 trends, both for the region and the Study Area. However, as the overall regional transit mode split shows a slight decrease (from 3.2 to 3.1

percent), while the Study Area's transit mode split is expected to increase slightly (from 8 to 8.5 percent).

With the expected high regional growth levels, share of Study Area trips as a percentage of total regional trips show declines in all categories in 2020 compared to 1998. All daily trips will be 14.6 percent, home to work trips will drop to 20.4 percent, and transit trips will fall slightly to 40.2 percent. It should be pointed out that regardless of these declines, the Study Area's share of regional travel would still be fairly significant in all categories.

It was discussed earlier that the Study Area's total trips in all categories lagged behind the region in projected growth, when the growth in internal trips is analyzed, the Study Area shows similar trends. Total internal trips are expected to grow at only 9.9 percent. Internal home-work trips are projected to grow by 4.4 percent. Internal transit trips are expected to grow by 9.2 percent.

The last two rows of tables also point to the fact that in 2020, home to work and transit trips will make up slightly lower percentage of total daily trips compared to 1998, and the percentage to retention for each trip category will decrease slightly.

Several key highlight points can be concluded from the above statistics:

- The Mid-City/Westside Study Area is a highly significant origin and/or destination point for trips in Southern California, especially for transit trips, over 42 percent of which have one end in the Study Area;
- The Study Area has a significantly higher transit mode split than the region as a whole, and the trend is expected to increase (from nearly 2.5 to 2.7 times the regional mode split); and
- The Study Area currently has a very high internal trip retention (over half of all trips), and despite growth in regional trips, is expected to maintain these high internal trip retention percentages.

Another primary indicator of changing travel patterns in the Study Area is traffic volume along the Santa Monica Freeway (refer to Table 1-5). This facility bisects the Study Area and is the primary transportation facility serving east-west travel between downtown Los Angeles and Santa Monica.

The travel patterns on the freeway illustrate how longer-distance trips in the Study Area may be oriented. Over the last 20 years those patterns have significantly changed as well. In the 1970's commute patterns were heavily oriented from the Westside toward downtown Los Angeles. The freeway was heavily congested in the eastbound direction in the morning peak hours and in the westbound direction in the afternoon peak hours. With the significant increase in jobs on the Westside, the commute patterns have reversed. The Santa Monica Freeway is now more congested in the westbound direction in the morning and the eastbound direction in the evening, and traffic volumes are very heavy in both directions all day long. Existing conditions are illustrated in photographs taken of the Santa Monica Freeway. Many of the commute trips to the Westside originate east of downtown.

While the total daily traffic volume on the Santa Monica Freeway has remained relatively constant over the last ten years, the peak hour volumes have increased significantly at the two ends of the freeway in the Study Area near the San Diego Freeway and near Downtown. In the Mid-City section, the traffic volume has generally decreased during the last ten years. Table 1-5 provides a comparison of volumes between 1989 and 1998 on Santa Monica Freeway within the Study Area.

TABLE 1-5
TRAFFIC VOLUME TRENDS ON SANTA MONICA FREEWAY

Segment	1989 Traffic Volumes		1998 Traffic Volumes	
	Peak Hour	Daily Volume	Peak Hour	Daily Volume
West of I-405	14,900	230,000	16,700 (+12%)	231,000 (+0.4%)
Overland to I-405	14,700	266,000	19,100 (+30%)	272,000 (+2%)
La Brea to Crenshaw	20,000	314,000	20,300 (+1.5%)	293,000 (-7%)
Hoover to I-110	18,500	337,000	22,000 (+19%)	325,000 (-4%)

Source: MMA, 1999.

Peak Hour Congestion on Study Area Roadways Underlies the Need for Transit Improvements

There is substantial peak hour congestion in the northern portion of the Study Area. Vehicular travel to the East and West San Fernando Valleys must ultimately by-pass through the Sepulveda or Cahuenga passes. Access patterns in to these routes are congested during the peak travel hours as motorist attempt to pass northward at either the western or eastern ends of the Study Area.

The majority of congested segments are concentrated north of the Santa Monica Freeway and east of the San Diego Freeway. The densest concentration of congested segments is located in the northeastern portion of the Study Area, and reflects Study Area traffic flowing toward access points to the eastern San Fernando Valley, Glendale and Burbank. The other major area of congestion occurs on the San Diego Freeway and Wilshire Boulevard area where travel to the western San Fernando Valley is concentrated.

Total morning and evening peak hour freeway and arterial traffic volumes in the peak direction were compared to the total available capacity. This was done for both existing 1997 and future 2020 conditions. The following paragraphs summarize some of the key observations.

Existing Conditions (1997)

- North-south travel demand on all facilities crossing Wilshire Boulevard is currently 15 percent over the available capacity.
- North-south travel demand on all facilities crossing Venice Boulevard is 10 percent over the available capacity.
- East-west travel demand on all facilities crossing La Cienega Boulevard is 10 percent over the available capacity.

Future (2020) Conditions

- All corridors within the Study Area (north-south and east-west) show increase in travel demand compared to existing conditions.
- All corridors show either no change or significant increases in overall highway capacity deficiency compared to existing conditions.

- Most significant increases in travel demand are expected to be for north-south travel across Jefferson Boulevard and for east-west travel across Vermont Avenue.
- North-south travel demand across Wilshire Boulevard will be 14 percent over the available future capacity.
- North-south travel demand across Venice Boulevard will be 21 percent over the available future capacity.
- East-west travel demand across Vermont Avenue will be 21 percent over the available future capacity.

Local Policies are Oriented Toward Demand Management and Transit Solutions rather than on Physical Roadway Improvements

Because of the level of buildout and density within the Study Area, local jurisdictions have generally determined through their local policies that congestion relief improvements should focus on travel demand management and increase ride sharing and transit usage rather than on highway/arterial physical improvements, such as road widening or new roadways. In a number of cases, local communities, which desire to eliminate cut through and neighborhood traffic to support more livable downtown or commercial areas are supporting initiatives to limit roadway capacity or slow traffic flow, leaving transit improvements as the only viable alternative to reduce traffic volumes and congestion-related delays.

To assist in the implementation of the Regional Comprehensive Plan and the associated Regional Transportation Plan, SCAG has decentralized local jurisdiction participation into specific subregions. The Study Area is encompassed by the Westside Cities Subregion (Santa Monica, West Hollywood, Beverly Hills and Culver City), as well as by the Los Angeles Subregion (consisting solely of the City of Los Angeles).

In each of the cities on the Westside, policy makers have taken strong positions against the wholesale widening of streets and narrowing of sidewalks to accommodate more travel lanes. Localized transportation system management (TSM) improvements, such as additional turn lanes or signal phasing changes, have been supported, but the Mid-City/Westside arterial network is essentially built out. In this highly urbanized area, the types of transportation improvements that have the support of the policy makers are transit improvements, intelligent transportation systems projects, and livable communities programs. Future increases in travel demands will have to be accommodated by making the existing highway network work better, to the limited extent that it can, but more likely through increased usage of transit and other (i.e., non-motorized) modes of transportation. Throughout the Westside, efforts are also underway in all of the jurisdictions to make it harder for automobile traffic to seek alternate routes through residential neighborhoods. These traffic calming programs will further concentrate commute traffic on the already congested arterial streets.

1.4 ALTERNATIVES SCREENING PROCESS

One of the most important aspects of the environmental review process is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a proposed project. In addition to mandating consideration of the No Action Alternative, both NEPA Regulations (40 CFR 1502.14) and CEQA Guidelines (Section 15126(d) emphasize the selection of a reasonable range of technically feasible alternatives and the preparation of a comparative analysis of these alternatives to allow for adequate consideration by decision-makers. NEPA Regulations (Section 1502.14(c)) provide for the inclusion of reasonable alternatives including those that may not be within the jurisdiction of the lead agency. CEQA Guidelines state that the discussion of alternatives shall focus on alternatives capable of eliminating or reducing significant adverse environmental effects of the proposed project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. Finally, CEQA Guidelines declare that an EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote or speculative.

To better understand how and why alternatives were selected for or eliminated from further consideration, the process used to develop the alternatives is presented below. The development of the alternatives involved a lengthy, multi-stepped process, and included:

- An alternatives identification and screening process conducted during the MIS phase of study (as described above in Section 1.3 above);
- Actions taken by the MTA Board based on findings from the MIS (as described below in Section 1.4.2); and
- Design modifications based on input provided by the public during the EIS/EIR scoping period (as in Section 6.0 of this EIS/EIR).

1.4.1 Alternatives Screening Methodology

As mentioned above, the development of the alternatives involved an extensive screening process. The screening process serves two overall purposes:

1) To eliminate alternatives that do not conform to NEPA/CEQA requirements; and
2) To distinguish alternatives to the project from other EIR elements (such as suggested mitigation measures).

Alternatives to the proposed project were initially selected for this study based on the planning efforts that have occurred prior to this study (as described in Sections 1.2 and 1.3 above), input from the public during the EIS/EIR scoping hearings, agency suggestions, and public comments on the draft MIS. The alternatives screening process consisted of the following steps:

- Develop project objectives;
- Determine significant impacts to be avoided;
- Develop broad list of alternatives;
- Develop screening criteria for feasibility;
- Screen alternatives;
- If alternative is determined to be infeasible, eliminate from further consideration and provide explanation for its elimination; and
- If alternative is determined to be feasible, carry alternative forward into the next, more detailed evaluation in the EIS/EIR.

Infeasible alternatives and alternatives that clearly offered no potential for environmental advantages were removed from further consideration and analysis. In the final phase of the screening analysis, the advantages and disadvantages of the remaining alternatives were carefully weighed with respect to potential for overall environmental advantage, technical feasibility, and consistency with project and public objectives. These criteria are discussed in the following subsections.

Potential to Eliminate Significant Environmental Effects

If an alternative clearly does not provide any environmental advantages as compared to the proposed project, it is eliminated from further consideration. At the screening stage, it is not possible to evaluate potential impacts of the alternative or the proposed project with absolute certainty. However, it is possible to identify elements of an alternative that are likely to be the sources of impact and to relate them, to the extent possible, to general conditions of the subject area or to other concepts which encompass the bounds of the issue which the alternative is intended to address.

Feasibility

For the screening analysis, the technical and regulatory feasibility of various potential alternatives was assessed at a general level. Specific feasibility analyses are not needed for this purpose. Infeasibility was defined more by kind than by degree. The assessment was directed toward reverse reason, that is, was anything about the alternative infeasible on technical or regulatory grounds.

Consistency with Project Objectives

The objectives of the project are described in Section 1.3 (Purpose and Need) above. For the screening purposes, the following general project objectives were taken into consideration:

- Provide high capacity transit service to the Westside;
- Develop high capacity transit system at a relatively low cost;
- Build upon successes of Rapid Bus currently operating in the Wilshire/Whittier corridor; and
- Develop high capacity system that incorporates many of the elements found in the Curitiba rapid bus system, which has many of the components envisioned for the Mid-City/Westside Transit Corridor.

The screening analysis does not focus on relative economic factors of the alternatives (as long as they are feasible) since the CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impeded to some degree the attainment of project objectives or would be more costly." NEPA (40 CFR Part 1502.23) requires that the merits and drawbacks of the various alternatives need not include a monetary cost-benefit analysis, and states that economic concerns should not overshadow qualitative considerations. Likewise, the question of market demand is not considered.

1.4.2 Summary of Screening Results

Proposed alternatives identified by the MTA (Lead Agency), other affected public agencies, and the members of the general public are listed below according to the determination made for analysis.

Alternatives Evaluated in the Mid-City/Westside Transit Corridor Study Re-Evaluation/Major Investment Study (MIS)

As discussed in Sections 1.2 and 1.3 (above), the alternatives evaluated in the Mid-City/Westside MIS evolved over a seventeen year time span and reflect a certain evolutionary process influenced by expanded knowledge of the existing geotechnical conditions, improved methods of construction developed from on-going Metro Rail experience, and greater community awareness and understanding of general transit needs. This process was derived from previous studies of the selected LPA associated with the Wilshire Corridor and the emergence of the Exposition right-of-way (ROW), currently owned by MTA, as a viable future transit improvement opportunity.

Based on the previous study efforts conducted for the Study Area, a set of alternatives were selected for screening in the MIS phase prior to the preparation of this EIS/EIR. The alternatives evaluated in the MIS, and the recommendation to either study an alternative further or eliminate it from further consideration are described below.

- Wilshire Bus Rapid Transit (BRT) – This alternative has the potential as an interim solution to feed Metro Red Line and serve high volume Wilshire Corridor at a low cost. The Wilshire BRT allows faster speeds than Metro Rapid Bus in future as congestion grows. Further detailed analysis warranted and recommended.
- Exposition Bus Rapid Transit (BRT) – This alternative offers significant long-term transportation benefits and provides connection to Downtown Los Angeles, USC, Exposition Park and Harbor Freeway Transitway from key centers in Santa Monica, West Los Angeles, and Culver City. This alternative achieves similar ridership to LRT at less cost. Further detailed analysis warranted and recommended.
- Exposition Light Rail Transit (LRT) – This alternative offers significant long-term transportation benefits and provides connection to Downtown Los Angeles, USC, Exposition Park and Harbor Freeway Transitway from key centers in Santa Monica, West Los Angeles, and Culver City. This alternative has less frequent disruption of intersections and adjacent properties when compared with the BRT and has the capacity to serve post-2020 demand. Further detailed analysis warranted and recommended.
- Wilshire Heavy Rail Transit (HRT) (via Pico/San Vicente Boulevards) – This alternative provides a longer route to the Westside than the Wilshire Corridor and travels in a corridor with lower density and serves fewer activity centers than the Wilshire Corridor. This alternative is also not currently feasible due to funding restrictions of heavy rail transit. Therefore, this alternative is deleted from further consideration.
- Wilshire Heavy Rail Transit (HRT) Subway – This alternative has an underground gas issue, which may have technical solutions that would permit construction of a subway at a later date. However, this alternative is also not currently feasible due to funding restrictions and the Methane Gas Prohibition Zone. Further analysis of this alternative should be undertaken in the Long Range Plan due to high densities and transit use. However, for purposes of this study, this alternative is deleted from further consideration.
- Wilshire Heavy Rail Transit (HRT) Aerial – This alternative achieves the same ridership at a lower cost than the subway alternative, but would alter the character of Wilshire Boulevard in a permanent and unacceptable manner. Monorail option would have similar negative

environmental consequences and would attract fewer riders than HRT. This alternative was deleted from further consideration.

The MIS conclusions and recommendations listed above were then forwarded to the MTA for their consideration.

MTA Board Action Regarding Alternatives

At the MTA's regular February 2000 Board meeting, the Wilshire BRT alternative was selected for environmental clearance, from Mid-City to Downtown Santa Monica. The Board also raised questions regarding the ridership potential of the Exposition Corridor during the February meeting and passed a motion stating that the Exposition ROW could not supplant Wilshire Boulevard as the primary Mid-City/Westside transit route.

The Exposition ROW was addressed in a March 17, 2000 document entitled "Comparative Ridership Potential of Exposition Corridor." Subsequently, during the MTA March 2000 Board meeting, the Exposition BRT and LRT alternatives from Downtown Los Angeles to Downtown Santa Monica were also selected for environmental review along with the previously selected Wilshire BRT. The MTA Board also eliminated the westerly segment of the Exposition ROW (from Venice/Robertson to Exposition/Sepulveda Boulevards) from further consideration in the evaluation of the Exposition BRT or LRT alternatives. In addition, the Board also directed consideration of a subway configuration along the Exposition Corridor between Figueroa and Vermont.

In June 2000 the MTA Board directed that the Wilshire BRT should be submitted to FTA with a request for rating and a request for permission to enter preliminary engineering. The Board deferred requesting a rating for the Exposition ROW until after the Draft EIS/EIR was completed.

The alternatives being considered and evaluated in this EIS/EIR are described in the following section (Section 2.0, Alternatives Considered).

2.0 ALTERNATIVES CONSIDERED

2.1 DEVELOPMENT OF ALTERNATIVES

2.1.1 Introduction

This section discusses the alternatives considered in this environmental document. Section 1.0 of this EIS/EIR presents the historical background and development of alternatives for this study. As discussed in Section 1.0, prior to the preparation of this EIS/EIR, a lengthy process occurred that identified and screened numerous alternatives. Subsequent to this screening process, a set of alternatives was presented to the public and interested stakeholders within the Mid-City/Westside corridor for their review and comment.

2.1.2 Input from Public Scoping Process/Stakeholder Meetings Regarding Alternatives

After completion of the MIS, a public scoping and outreach effort was held from May 23 to June 23, 2000. During this period, the public had the opportunity to attend scoping meetings, and review and comment on the proposed project and project alternatives (see Section 6.0 of this EIS/EIR for more information on the process and the results). Subsequent to this scoping period, a series of meetings were held with representatives of the Wilshire and Exposition route communities. In addition, numerous outreach meetings were held with various interested stakeholders. Comments made at these meetings resulted in the development of several design options for the proposed project and project alternatives.

Comments made regarding the impacts to the landscaped medians and left-turn lanes led to the creation of two design options for the Wilshire BRT system, in addition to the baseline. One of the design options would run in the lane adjacent to the median ("median-adjacent"), while the other design option would run in the curb lane ("curb-adjacent"). Both design options, described in more detail below, would preserve the landscaped median and could preserve all left-turn lanes.

The public also raised concerns regarding the loss of parking on Wilshire and Sepulveda Boulevards. Discussions with the Wilshire communities indicated that the loss of parking could be completely eliminated through the implementation of a peak-period BRT lane on Wilshire Boulevard. During the peak period, no parking is presently allowed in the Cities of Los Angeles and Beverly Hills. The City of Santa Monica does permit peak-period parking, and would be impacted by either the peak-period or 24-hour lane. Similarly, having the Exposition BRT buses operate in mixed-flow similar to the Rapid Bus can mitigate any loss of parking on Sepulveda Boulevard. These issues are further discussed in Section 3.3.

Based on the evaluation conducted in the MIS, the actions taken by the MTA Board, and input received from the public and stakeholders during the outreach process, a No Action, Transportation System Management, and three build alternatives with design options have been included for further analysis in the detailed evaluation in the EIS/EIR. These alternatives are described below.

2.2 ALTERNATIVES EVALUATED IN THIS EIS/EIR

This EIS/EIR evaluates a No Action and TSM alternative. In addition, the EIS/EIR evaluates three build alternatives. The Wilshire route includes two design options while the Exposition route (both BRT and LRT) contain a subway design option in the USC Exposition Park area and "MOS" (minimum operating segment) options. The MOS options follow the same route as the full-length Exposition route but are shorter in distance. The alternatives are:

- No Action Alternative (Baseline)
- Transportation System Management (TSM) Alternative
- Alternative 1: Wilshire BRT (Baseline Median-Running)
- Alternative 1A: Wilshire BRT (Median Adjacent Design Option)
- Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)
- Alternative 2: Wilshire BRT and Exposition BRT (Full Length)
- Alternative 2A: Wilshire BRT and Exposition BRT (MOS)
- Alternative 3: Wilshire BRT and Exposition LRT (Full Length)
- Alternative 3A: Wilshire BRT and Exposition LRT (MOS)
- Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

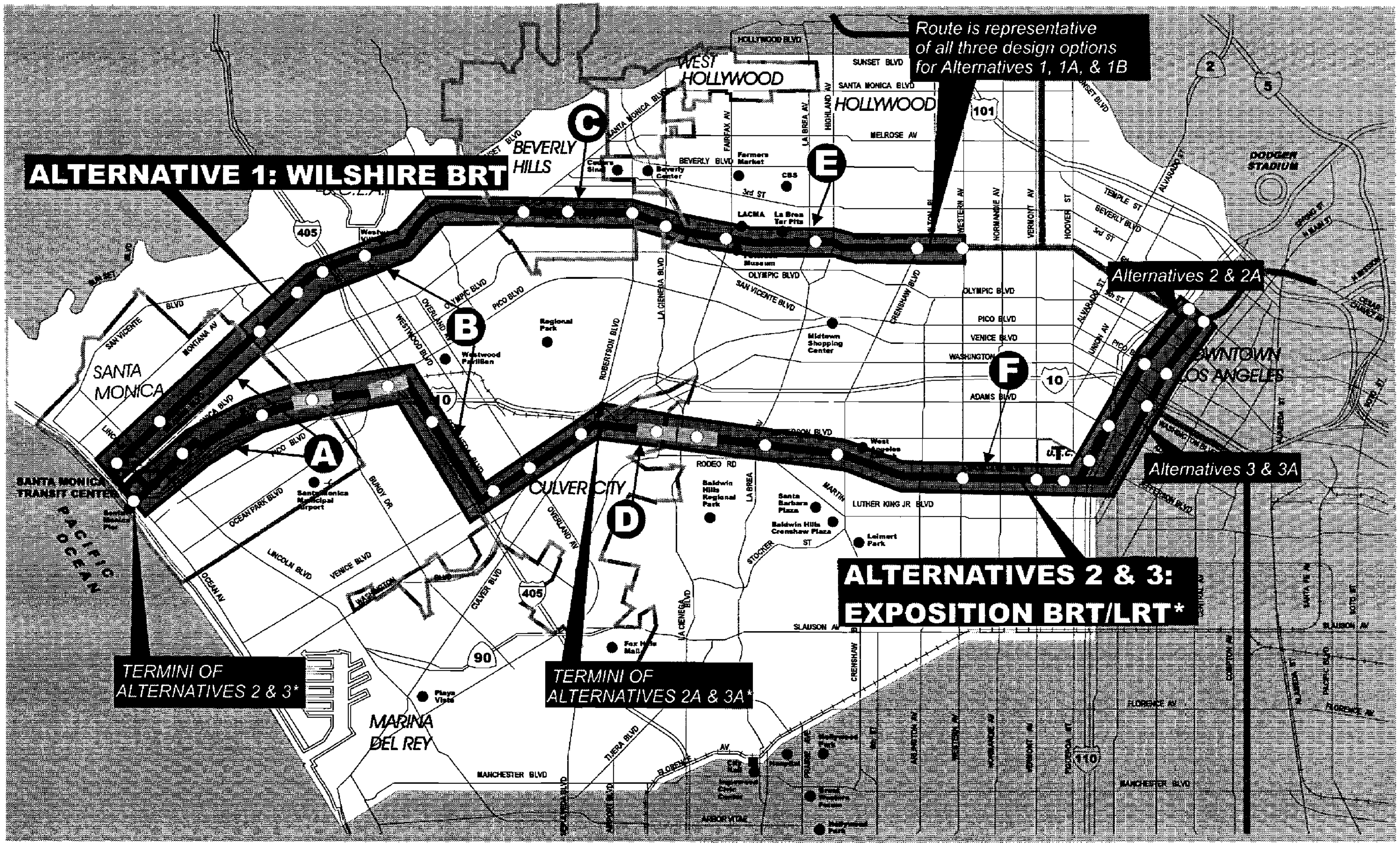
The characteristics of these alternatives and design options are presented in Table 2-1 and discussed in the following sections. Figure 2-1 shows the generalized location of the three build alternatives, as well as the jurisdictions through which the alternatives travel. As shown in this figure, the MOS alternatives (2A and 3A) terminate the Exposition routes near Venice Boulevard, while Alternatives 2 and 3 extend the full distance to Santa Monica. It should also be noted that Alternatives 2, 2A, 3, and 3A all include the full length of the Wilshire BRT. In addition, the Wilshire route shown in this figure is representative of Alternative 1 (median-running), Alternative 1A (median-adjacent), and Alternative 1B (curb adjacent design option). More detailed route maps appear later in this section.

Additional figures relating to the alternatives may be found in the Chapter 2 Attachments that follow the text of this chapter. These graphics are organized into four attachments: Attachment A contains those graphics relating to the alternatives in general or to more than one alternative; Attachment B contains those graphics pertaining mainly to Alternative 1; Attachment C contains those graphics pertaining mainly to Alternatives 2 and 2A; and Attachment D contains those graphics pertaining mainly to Alternatives 3 and 3A.

	Alternative	Length (miles)	Stations	Boardings/	Ridership*	Grade Separations	Park and Ride**	Service Frequency (peak, base minutes)
	No Action	NA	NA	NA		NA	NA	NA
	TSM	NA	NA	1,100		NA	NA	NA
1	Wilshire BRT (Baseline Median-Running)	13.2	14	**39,600**	12,200	None	None	5 am – 12 am/day, 3-min. peak, 6-7 min. base.
1A	Wilshire BRT (Median Adjacent Design Option)	13.2	14	**39,600**	12,200	None	None	Same as above for Wilshire.
1B	Wilshire BRT (Curb Adjacent Design Option)	13.2	14	**39,600**	12,200	None	None	Same as above for Wilshire.
2	Wilshire BRT & Expo BRT (Full Length) +	**29.9** (13.2 miles via Wilshire & 16.7 miles via Expo)	**34** (14 Wilshire & 20 Expo)	**65,300** 36,300 Wilshire, 29,000 Expo	19,500	3	6 lots with 2,800 spaces***	Same as above for Wilshire. Same frequency on Expo. Skip-stop frequency = every 10 min. in peak.
2A	Wilshire BRT & Expo BRT (MOS) +	**22** (13.2 miles via Wilshire & 8.8 miles via Expo)	**26** (14 Wilshire & 12 Expo)	**56,900** 36,400 Wilshire, 20,500 Expo	18,500	1	3 lots with 796 spaces***	Same as above, however, skip-stop eliminated.
3	Wilshire BRT & Expo LRT (Full Length) +	**30.5** (13.2 miles via Wilshire & 17.3 miles via Expo)	**31** (14 Wilshire & 17 Expo)	**83,900** 32,500 Wilshire, 51,400 Expo	27,200	3	8 lots with 3,600 spaces***	Same as above for Wilshire. LRT = 5 min. peak, 12 min. base; Combined segment with LB Blue Line = 2.5 min. peak, 6 min. base.
3A	Wilshire BRT & Expo LRT (MOS) +	**22.8** (13.2 miles via Wilshire & 9.6 miles via Expo)	**24** (14 Wilshire & 10 Expo)	**65,500** 38,300 Wilshire, 27,200 Expo	15,600	1	4 lots with 796 spaces***	Same as above for Wilshire and Expo LRT.

* Ridership is defined as New Daily Transit Trips (as opposed to boardings) over No Action (how many new daily trips are taken as a result of the alternative).
** Wilshire BRT does not include park and ride lots, however, this alternative does include provisions for replacement parking.
***Locations of park and ride lots are presented later in this section in the description of each alternative.
+ Each of these alternatives is also evaluated in terms of the subway design option.

Source: Korve and Manuel Padron Associates, 2000.



LEGEND: A Santa Monica B West Los Angeles C Beverly Hills D Culver City E Los Angeles F South Los Angeles/ Downtown

* Alternatives 2, 2A, 3, 3A, also include the Wilshire BRT route

SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-1

BUILD ALTERNATIVES

A BRT, or Bus Rapid Transit, system is an exclusive-lane busway that can support either typical 40-foot buses or longer articulated vehicles. A LRT, or Light Rail Transit, system consists of a rail vehicle on tracks that can run in the street or within a segregated ROW. The profile (or cross section) of each of these systems can vary in width and ROW requirements. Therefore, the specifics of each system are described below under the appropriate alternative.

The concept for the BRT system evolved from the evaluation and consideration of the rapid bus system found in Curitiba, Brazil. From the evaluations conducted on the system in Brazil, project elements were found to contribute to the success of this system in Curitiba. These elements include: simple route layout, frequent service, limited stops, level boarding, color-coded buses and stops, enhanced station stops, signal priority, exclusive lanes, high-capacity buses, multi-door entry and exit, fare prepayment, bus feeder network, coordinated land use, parking management, and streetscape enhancements. Many of these elements were used in the development of Metro Rapid Bus, now in operation along Wilshire Boulevard/Whittier Boulevard and Ventura Boulevard in the San Fernando Valley. Figure 2-2 provides descriptions of the Rapid Bus System and its project elements. Figure 2-3 shows the existing routes of the Metro Rapid system. As shown in this figure, the Wilshire portion of the Wilshire/Whittier route operates from downtown Los Angeles, along Wilshire Boulevard, traversing a portion of the Metro Red Line (from Alvarado to Western) to Santa Monica. This route mirrors the route proposed for the Wilshire BRT system.

2.2.1 No Action Alternative (Baseline)

Physical Characteristics

The No Action (Baseline) Alternative is comprised of the existing transit systems currently in use or expected to be in place in 2020. This includes the existing rail transit service with slightly improved frequencies on the Red, Blue and Green Lines, as well as the approved Pasadena Blue Line.[1] Expansion of regular bus service is assumed based on MTA's commitments to future bus expansion. Rapid bus services recently initiated on Wilshire Boulevard/Whittier Boulevard and Ventura Boulevard are assumed to continue. New High Occupancy Vehicle (HOV) projects are included that can be reasonably completed by 2020. These components are the foundation upon which all other alternatives are based.

Operating Characteristics

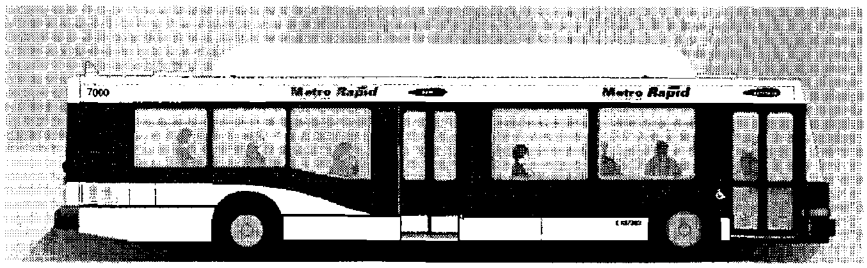
Table 2-2 provides a summary of the operating characteristics of the No Action Alternative.

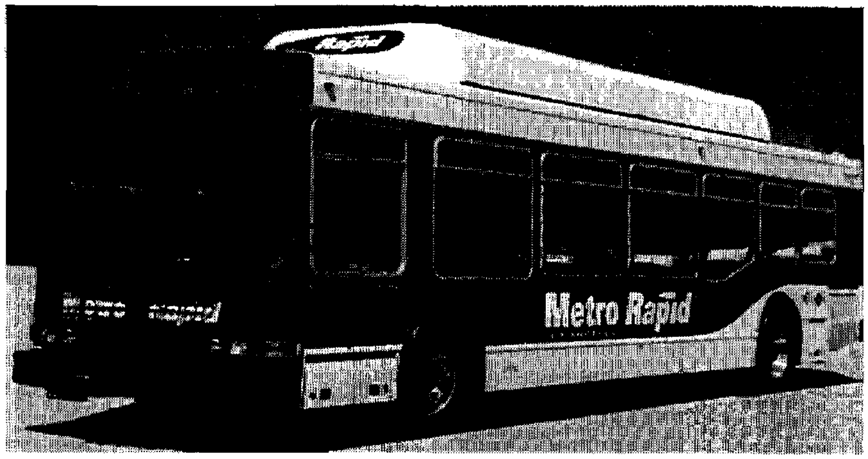
[1] The Pasadena Blue Line is being designed and constructed by the Los Angeles to Pasadena Blue Line Construction Authority but will be operated by MTA.

Metro Rapid is a new MTA bus service designed to provide faster regional travel for patrons. Service begins on June 24, 2000 on Wilshire/Whittier and Ventura Boulevards.

The key features of Metro Rapid that make it faster and easier to use are:

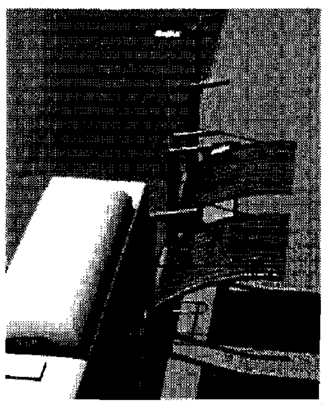
- Simple Route Layout
- Frequent Service
- Fewer Stops
- Level Boarding
- Color-coded Buses and Stops
- Bus Priority at Intersections

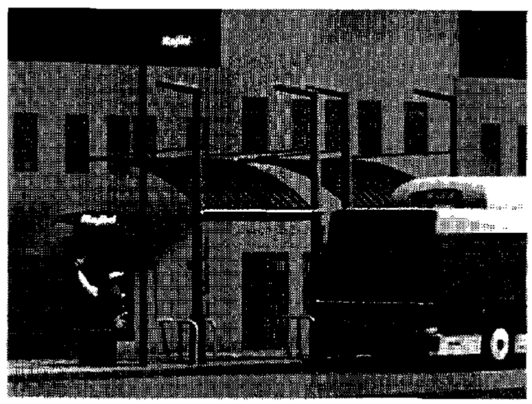


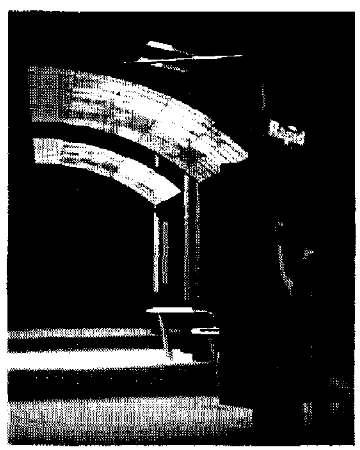


Metro Rapid stations stops feature the following amenities for transit users:

- an illuminated **flagpole** sign to make the stop easy to find
- a "**gate**" which marks the precise location of the bus entry door to expedite boarding
- a translucent **canopy** for protection from rain and sun
- nighttime **illumination** of the sidewalk for greater security
- electronic, changeable message sign with real-time bus **arrival** information
- illuminated route **maps**, schedules, neighborhood information, and artwork
- stainless steel **lean-bars**
- special sidewalk **paving**



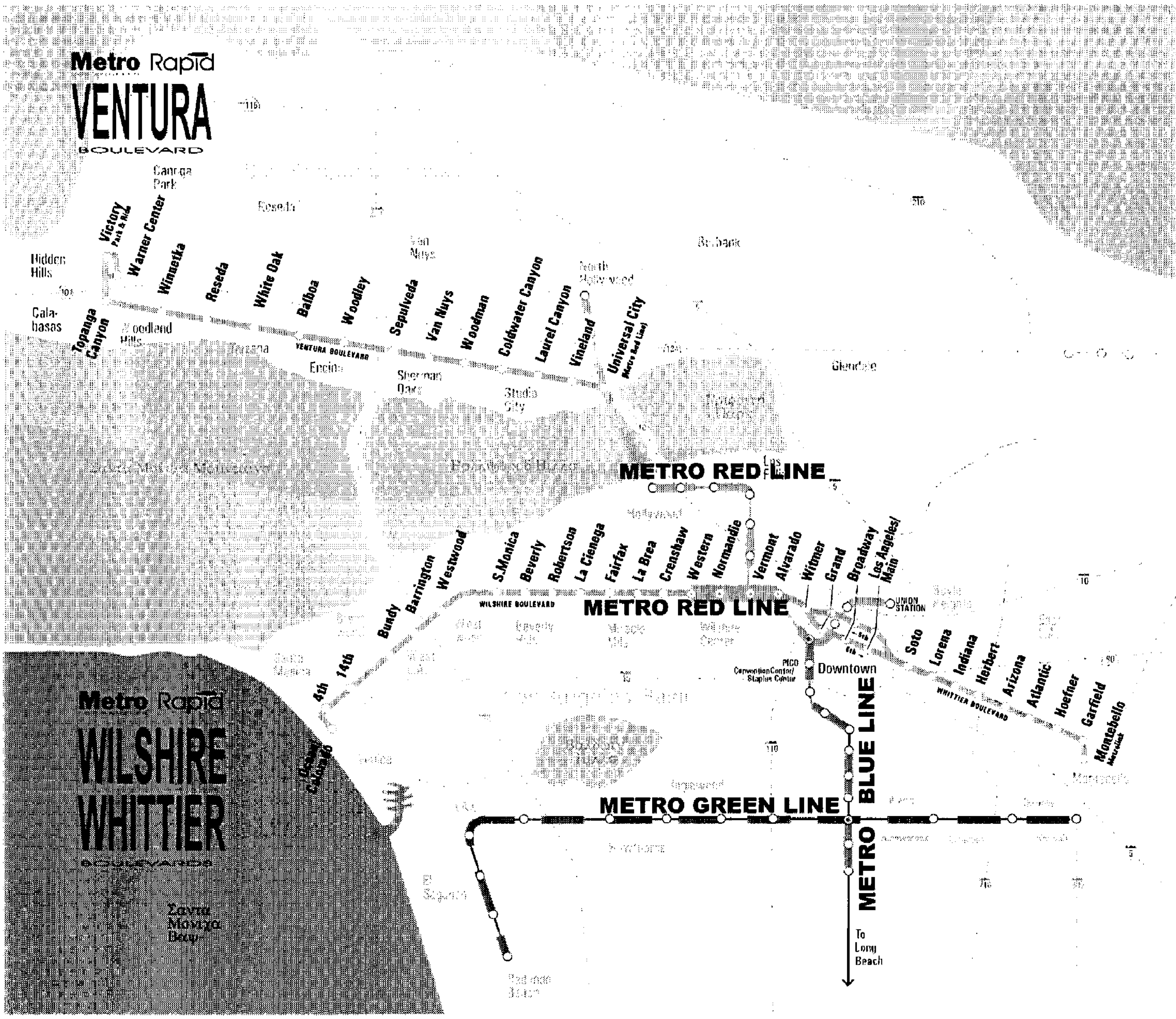




SOURCE: Suisman Urban Design, 2000

FIGURE 2-2

THE METRO RAPID PROGRAM



LEGEND:

- Metro Red Line
- Metro Blue Line
- Metro Green Line

SOURCE: Suisman Urban Design, June 2000

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-3

EXISTING METRO RAPID ROUTES

TABLE 2-2 NO ACTION (BASELINE) OPERATING CHARACTERISTICS	
Transit Service:	In general, existing and committed bus and rail service is maintained and completed. Pasadena-LA Blue Line completed. Rapid bus routes on Wilshire and Ventura Blvd maintained. Bus fleet size is increased over existing levels to match MTA's commitments to future bus expansion. Parallel bus routes are rerouted onto new freeway HOV's as applicable. Buses are rerouted to feed new rail stations as applicable. The existing fare structure is retained, with inflationary growth.
Operations:	Trains would run every 4 minutes in the peak period for the two branches of the Red Line from Union Station to Wilshire/Western and to North Hollywood. Peak period train frequency on Blue, Green and Pasadena lines set at 5 minutes. Off-peak service is set at 10 minutes for each of the two Red Line branches; and 12 minutes for the Blue, Green and Pasadena Lines. Bus service frequencies largely similar to existing schedules.
Max Speed:	N/A
Avg Speed:	Rapid bus assumes a 20% speed improvement over local/limited bus speeds (e.g., peak hour speeds of 16 mph rapid bus versus 13 mph local/limited bus in mid-Wilshire segment).
Signal Priority/ Preemption:	Some signal priority assumed for rapid bus.
Source: Manuel Padron Associates, 2000.	

2.2.2 Transportation System Management (TSM) Alternative

Physical Characteristics

This alternative is based on the No Action description, with some bus service changes identified in MTA's Westside Bus Service Improvement Study completed in June 1998. Changes include the use of bi-articulated buses, modifying service frequencies to more closely match demand on various routes; route extensions to connect to major destinations and/or transit hubs; route truncations to eliminate unproductive service segments or duplication; consolidation of service to simplify route structure and use; and replacement of unproductive routes. Slightly more frequent service is assumed for the portion of the Wilshire/Whittier rapid bus serving the Westside.[2]

Operating Characteristics

Table 2-3 provides a summary of the operating characteristics of the TSM Alternative.

[2] TSM measures such as regulatory measures (growth management, parking fees, etc.), non-motorized (bicycle and pedestrian improvements, or employer trip reduction programs (ridesharing, car pool matching, telecommuting, staggered hours, compressed work week, etc.) were not considered in this document because MTA does not have the regulatory authority to implement such measures. Authority rests with the South Coast Air Quality Monitoring District and these measures have largely been phased out of the Air Quality Management Plan.

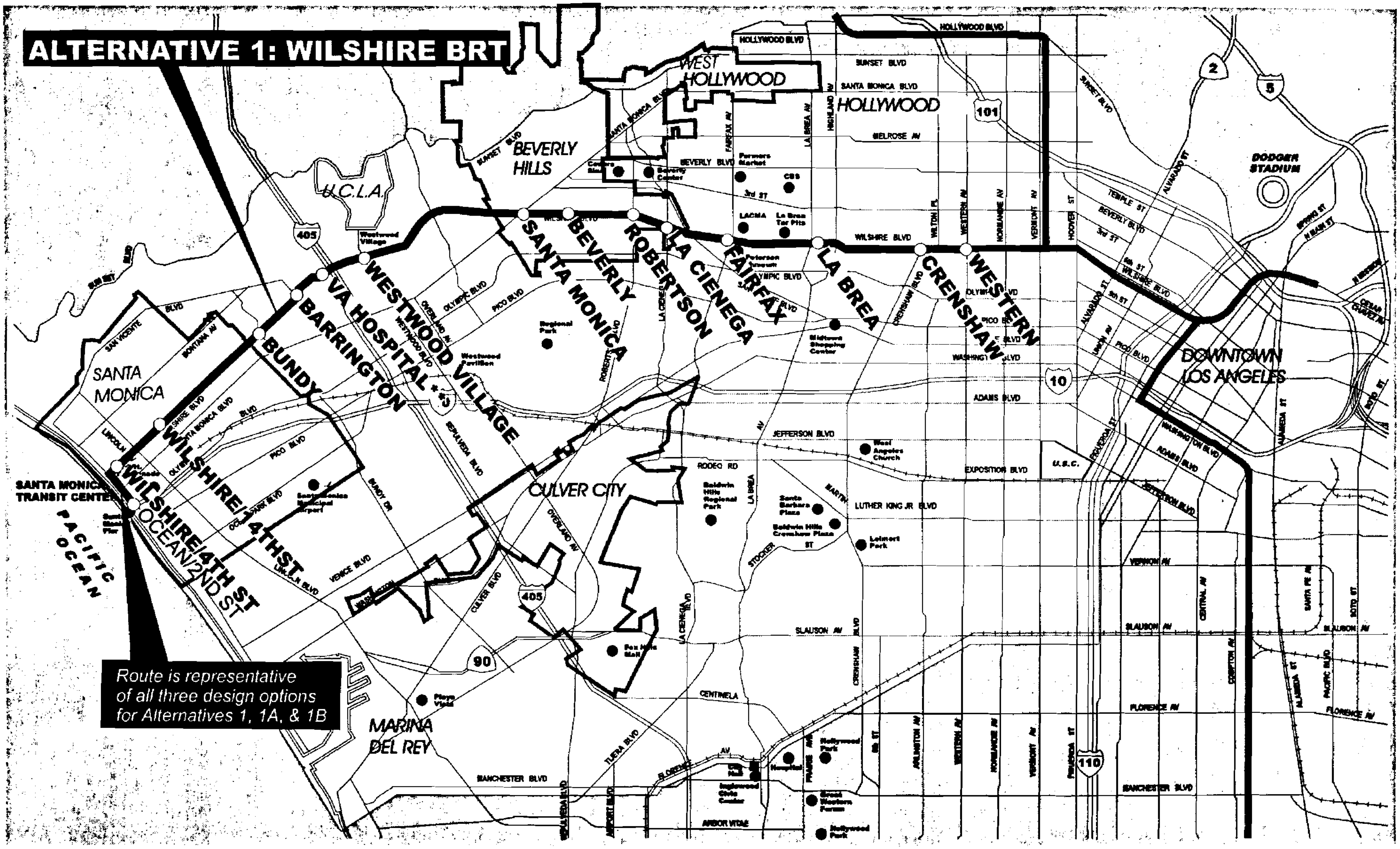
TABLE 2-3 TRANSPORTATION SYSTEM MANAGEMENT (TSM) OPERATING CHARACTERISTICS	
Transit Service:	Rapid bus on Wilshire slightly improved in peak and midday (3 minute peak service in both directions, 6.6 minute base). Selected bus route changes incorporated per Westside Bus Service Improvement Study to improve service on more productive routes, modify service on less productive routes, and modify routings as appropriate to connect to major destinations and/or transit hubs.
Operations:	Double-articulated buses (80 feet long) projected to be needed on the Wilshire/Whittier rapid bus line by 2020. Rail operations identical to No Action.
Max Speed:	N/A
Avg Speed:	Same as No Action.
Signal Priority/ Preemption:	Same as No Action.
Source: Manuel Padron Associates, 2000.	

2.2.3 Alternative 1: Wilshire BRT (Baseline Median-Running)

Overview

The Wilshire BRT Alternative is a bus rapid transit system operating in an exclusive lane in the median of Wilshire Boulevard, from Western Avenue to downtown Santa Monica (see Figure 2-4) for a distance of 13.2 miles. In response to community concerns, two design options have been developed which reduce impacts to the landscaped medians and left turn pockets. These design options alter the routing of the Wilshire BRT to median-adjacent and curb-adjacent, are presented below under "Route Configuration." The BRT system evolved from a demonstrated need for significant transit improvements in the Mid-City/Westside Corridor and recognition of the fiscal constraints that prohibited extension of the Metro Red Line subway in this corridor at this time. By building upon the documented successes of the Rapid Bus, currently operating in the Wilshire/Whittier corridor, the Wilshire BRT Alternative is intended to provide high capacity transit service to the Westside for a relatively low capital cost. The Wilshire BRT Alternative would improve upon the Rapid Bus through the use of an exclusive travel lane, signal priority treatment, and queue jumping. Signal modifications and queue jumping will provide the bus with "priority" at intersections. As the bus approaches an intersection, a preemptive device "triggers" the traffic signal to extend "green time" for the bus to pass through the intersection or shortens the north-south green time so the green light for the bus will be activated. Queue jumping allows the bus to start through the intersection prior to the vehicles in the other lanes. The use of these elements—exclusive lane, signal priority, queue jumping—would provide improved travel times and increased ridership over the Rapid Bus.

To implement this alternative, one travel lane would be dedicated for bus use in each direction along the entire length of Wilshire Boulevard. In addition, while left turns would be preserved at major intersections, many intermediate left turns at local streets would be removed. Curbside parking would be prohibited at all times. Curbside parking is presently prohibited during rush hours in the Cities of Los Angeles and Beverly Hills but allowed in Santa Monica. During off-peak periods curbside parking is presently allowed in most areas of Wilshire Boulevard. In addition, due to the narrowness of the street in some locations, Wilshire Boulevard sidewalks may need to be narrowed



LEGEND:

Existing Metro Rail Lines

Alternative 1: Wilshire BRT

Station Location (General

** Optional Station

SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-4

ALTERNATIVE 1: WILSHIRE BRT

by a few feet in order to accommodate certain stations. No property takes would be required as part of this widening, as the widening would be within the street ROW. Figures 2-7 and 2-8 *found later in this section* depict the locations of these widenings (see the legend on this figure for the locations of potential widenings).

Wilshire BRT Park and Ride Facilities

The MTA normally constructs park and ride lots as a part of new transit lines to encourage high ridership and provide a place for transit patrons to leave their cars when they board a bus or train. No parking lots have been provided for this purpose on the Wilshire BRT Alternative for two reasons: a) park and ride lots would generate a significant number of new automobile trips into the Wilshire Boulevard corridor exacerbating already serious traffic congestion, and b) the conversion of two mixed-purpose traffic lanes to dedicated bus lanes will reduce automobile carrying capacity of Wilshire Boulevard requiring the shifting of 300-500 cars per hour per direction to alternative parallel routes. The addition of park and ride lots on Wilshire Boulevard will add to the number of cars that would need to be diverted off of the boulevard and would be contrary to the project objective of reducing automobile travel in favor of higher capacity transit service.

Park and Ride Lots are not necessary to achieve high transit ridership on the route as Wilshire Boulevard is currently the heaviest used transit street in Southern California with upwards of 102,000 boardings per day along the route of the Wilshire-Whittier Rapid Bus. The high-rise commercial and institutional uses along Wilshire Boulevard represent destinations for most transit riders rather than origin points where they would normally wish to leave their cars.

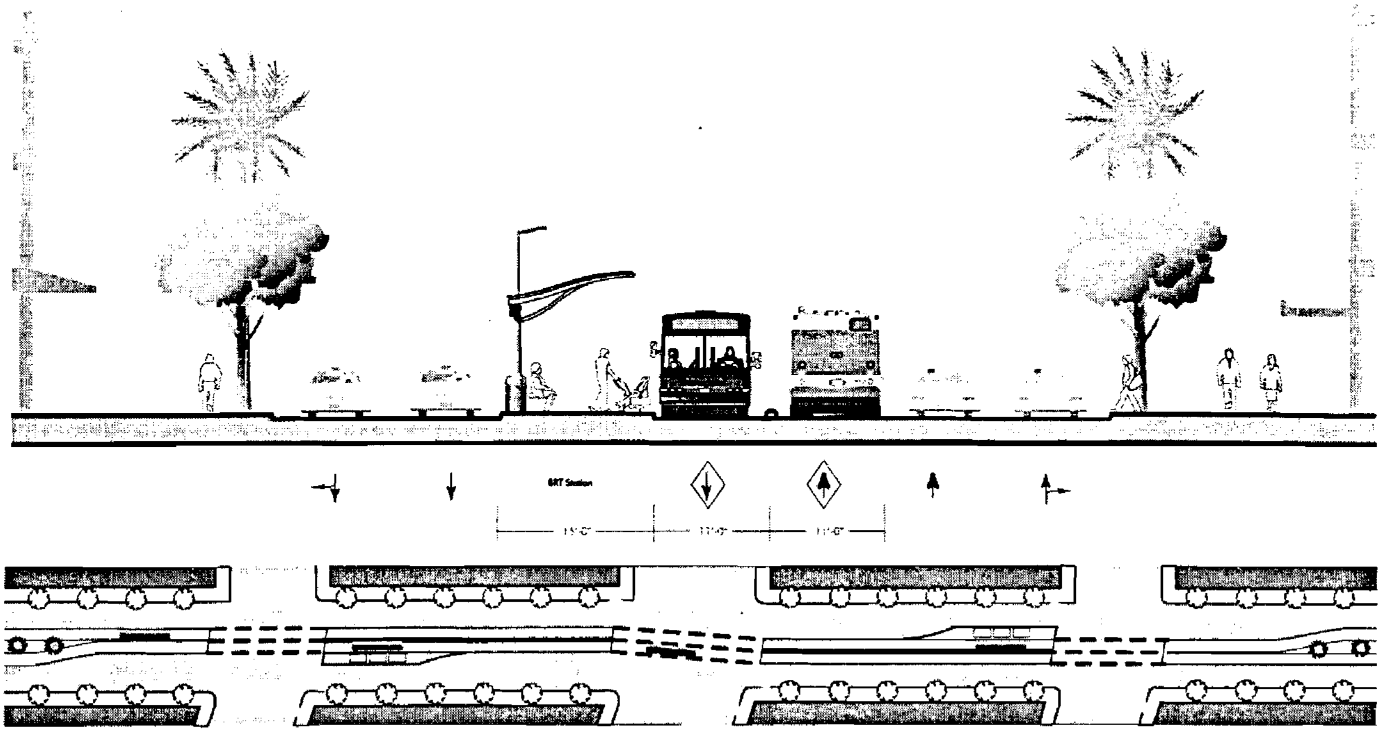
Two MTA-owned lots: one near the La Brea Avenue station (129 spaces) and one near the Crenshaw Boulevard station (158 parking spaces) may be used for replacement parking for those on-street spaces that are removed from Wilshire. The parking (Section 3.3) and land acquisition (Section 3.5) sections of this document further describe the strategy for additional replacement parking.

Baseline Route Configuration (Alternative 1)

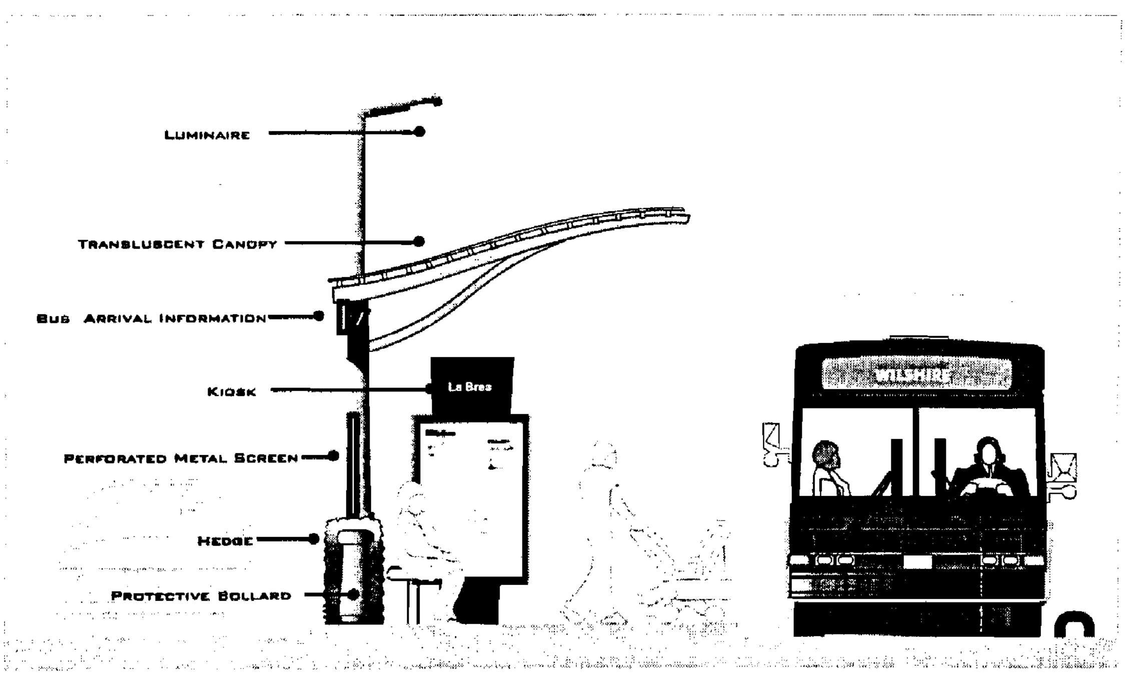
For one of the baseline alternatives, the BRT would operate exclusively in the present area of the median. Figure 2-5 shows a diagram of the Wilshire BRT in the median. Baseline alternatives 1A and 1B are design options that were redeveloped to reduce or eliminate impacts to the landscaped medians and left turns. These alternatives are described in Section 2.2.4 and 2.2.5. For the baseline route design, approximately 50 percent of the existing left-turn movements would be retained. At the retained turns, reconstruction of the existing median would be required to allow space for controlled or protected left-turn movements (functionally similar to that used in LRT systems for in-street right-of-way operation). New landscaping would be located in smaller medians located on the outside edges of the busway.

Since standard buses have right hand doors, the existing median would also need to be reconfigured at station locations. Patrons would use existing crosswalks to access a platform (approximately 11 feet wide), placed adjacent to the BRT lane and separated from the curb by two lanes of traffic, as shown in Figure 2-6.

In Baseline Alternative 1, in Miracle Mile, the present landscaping with mature trees would be replaced with a more irregular and narrower strip of landscaping with low shrubs in lieu of trees.

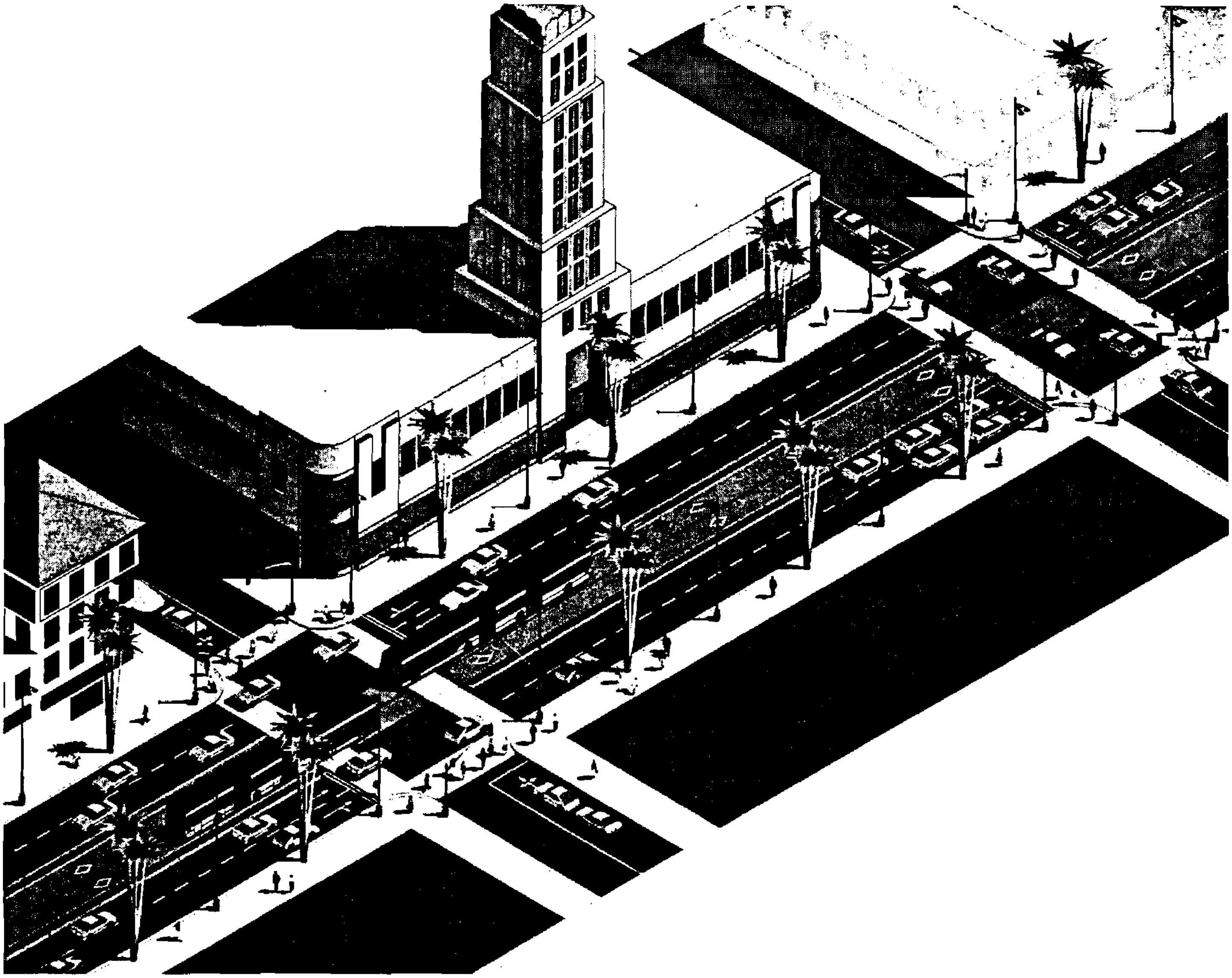


The typical BRT station on the Exposition or Wilshire corridor would be a protected median, approximately 100' long, located in the center of the roadway. The inbound and outbound stations would be located on either side of the intersection, and slightly offset from the center of the roadway. This allows left-turn lanes to be maintained. Amenities include a canopy lighting, paving, maps and schedules, electronic bus arrival messages, landscaping, and public art.



SOURCE: Suisman Urban Design, 2000

FIGURE 2-5
BRT TYPICAL STATION
EXPOSITION OR WILSHIRE



SOURCE: Suisman Urban Design, June 2000

FIGURE 2-6
ALTERNATIVE 1: WILSHIRE BRT
MEDIAN DIAGRAM

Additional figures found in Chapter 2 Attachment B show the typical cross-sections of the Wilshire BRT system within Wilshire Boulevard. Figure 2B-1 (in Attachment B) provides a guide as to where these typical cross-sections appear in Wilshire Boulevard. As shown in these figures, Wilshire varies in width from 70 feet to 104 feet. Detailed drawings of the route appear in Section 3.10 of this document.

As indicated above, there are also two design options for this route that alter the configuration to median-adjacent and curb-adjacent. These configurations are discussed below. In all Wilshire BRT options (Alternatives 1, 1A, and 1B), the curbside parking would be removed, the curb lane becoming a through travel-lane (BRT or regular traffic), with unrestricted right-turn movements. Typically, BRT stations would employ split platforms located on the far side of intersections.

Stations

All three of the Wilshire BRT (1, 1A, and 1B) alternatives would contain 14 stations at the following locations:

- Western
- Crenshaw
- La Brea
- Fairfax
- La Cienega
- Robertson
- Beverly
- Santa Monica
- Westwood Village
- Barrington
- Bundy
- Wilshire/14th Street
- Wilshire/4th Street
- Ocean/2nd Street

There would also be an optional station located at the VA Hospital.

For the median and median-adjacent alternatives, stations in general will be in the center median, with eastbound stations on one side of the intersection and westbound stations on the other side. This staggered positioning of the stations allows the left turns to be maintained at the major intersections. A platform will be provided that is at least 100 feet long and a minimum of 11 feet wide.

Figures 2-7 to 2-10 show the treatment of intersections (signalized intersections with left turns preserved, unsignalized and existing signalized intersections converted to signalized pedestrian crossings only, and new signal locations) along Wilshire with implementation of the median and median-adjacent alternatives. This figure also shows the locations of stations, landscaped medians, and roadway widenings (widenings are only proposed at a few locations where the street right-of-way is not wide enough to accommodate the station). Figure 2-6, shown earlier, presents diagrams of a typical BRT station.

Stations will be offset in the center median, with eastbound and westbound stations on either side of the intersection; in order to maintain left turns at major intersections. The location of the stations and the distance from the station to the major intersection appears in Table 2-4.

TABLE 2-4
WILSHIRE BRT STATIONS AND DISTANCE FROM MAJOR INTERSECTIONS

BRT Station Location	Distance* to Major Intersection	
	Westbound	Eastbound
Western	NA	NA
Crenshaw	89	313
La Brea	530	726
Fairfax	510	700
La Cienega	416	182
Robertson	651	193
Beverly	326	704
Santa Monica	364	578
Westwood Village	1,195	1,374
Barrington	196	405
Bundy	767	221
Wilshire/14th Street	127	75
Wilshire/4th Street	287	117
Ocean/2nd Street	NA	NA

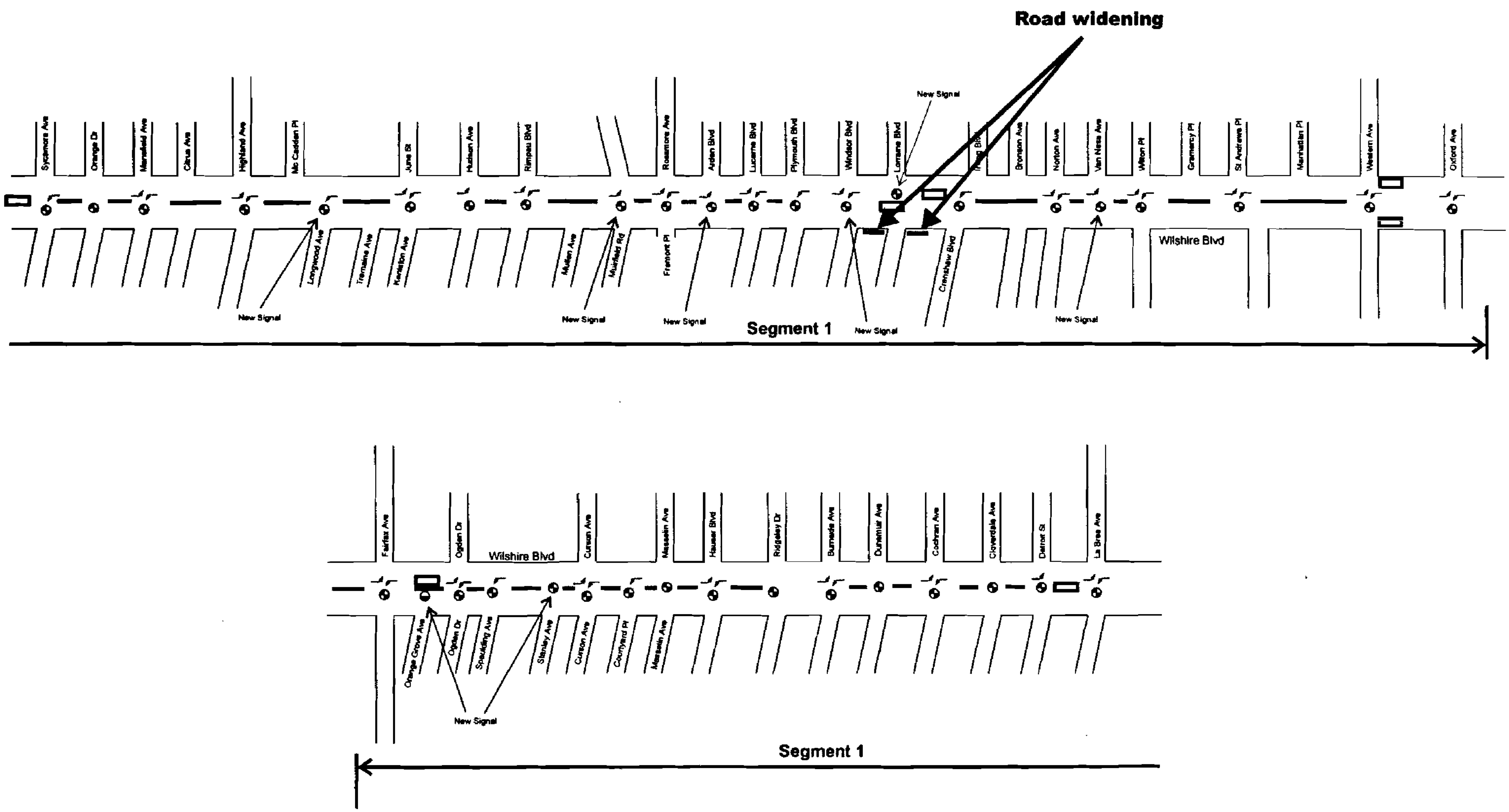
*Distance is measured from the middle point of BRT Station to the edge of curb of the major cross street.

A typical station is shown in Chapter 2 Attachment B and would consist of:

- A canopy, with lighting, to protect BRT passengers from sun and rain.
- Amenities include paving, maps, schedules, electronic bus arrival messages, landscaping, public art, and bicycle facilities (lockers and/or racks).

2.2.4 Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

In this alternative, the BRT would operate exclusively in the present lanes next to the median. Figure 2-11 shows the configuration of the BRT in the lane adjacent to the median. As shown in this figure, the landscaped median is retained. Most left-turn movements could be retained, but, in doing so, the vehicles intending to turn would be required to cross the path of the exclusive BRT lane. To discourage vehicles from beginning a turning movement too soon, 4-inch traffic dots would separate the BRT lane from the regular traffic lane except at the actual point of crossing. This and special signal timings would serve to minimize safety concerns.



LEGEND:

- SIGNALIZED INTERSECTIONS WITH LEFT TURNS PRESERVED AS INDICATED
- BUS STOPS / STATIONS
- UNSIGNALIZED INTERSECTIONS CONVERTED TO SIGNALIZED PED-XINGS ONLY
- EXISTING SIGNALIZED INTERSECTIONS CONVERTED TO PED-XINGS ONLY
- LANDSCAPED MEDIAN ISLANDS
- ROADWAY WIDENING

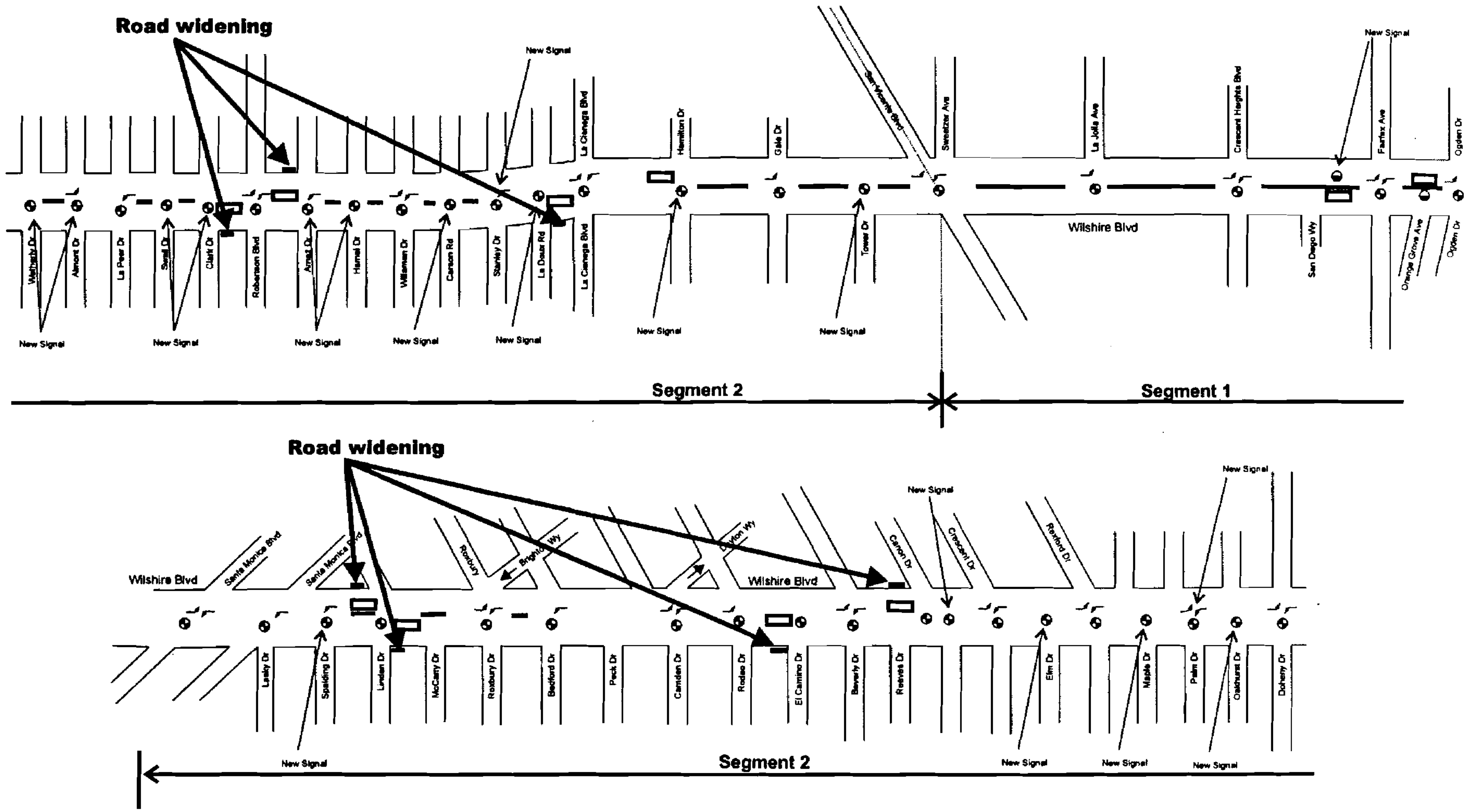
SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-7

WILSHIRE BRT MEDIAN ISLAND/
LEFT TURN LOCATIONS - MID-CITY, MIRACLE MILE



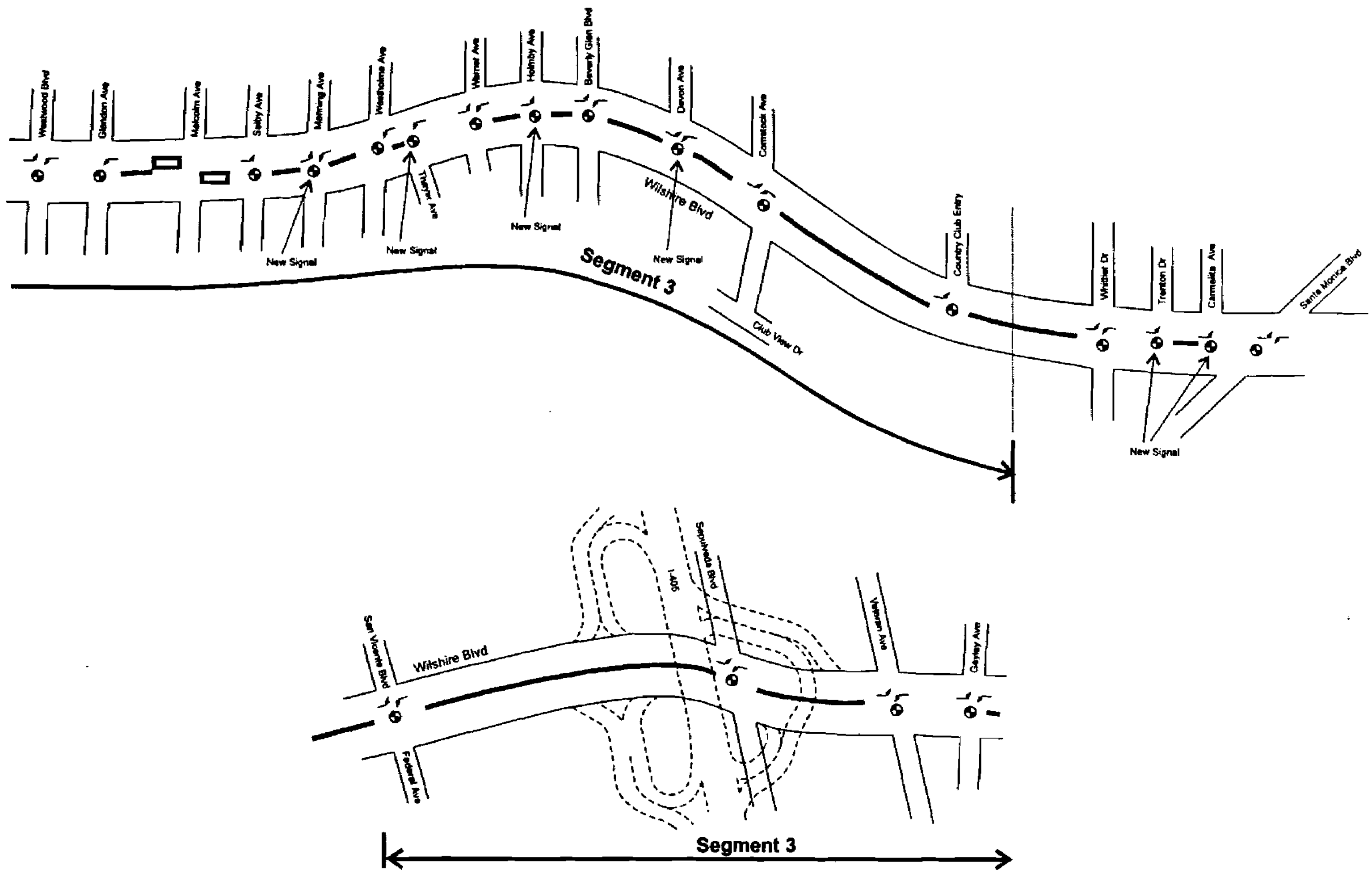
LEGEND:

- SIGNALIZED INTERSECTIONS WITH LEFT TURNS PRESERVED AS INDICATED
- BUS STOPS / STATIONS
- UNSIGNALIZED INTERSECTIONS CONVERTED TO SIGNALIZED PED-XINGS ONLY
- EXISTING SIGNALIZED INTERSECTIONS CONVERTED TO PED-XINGS ONLY
- LANDSCAPED MEDIAN ISLANDS
- ROADWAY WIDENING

SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-8
WILSHIRE BRT MEDIAN ISLAND/
LEFT TURN LOCATIONS - BEVERLY HILLS



LEGEND:

- EXISTING SIGNALIZED INTERSECTIONS WITH LEFT TURNS PRESERVED
- BUS STOPS / STATIONS
- UNSIGNALIZED INTERSECTIONS CONVERTED TO SIGNALIZED PED-XINGS ONLY
- EXISTING SIGNALIZED INTERSECTIONS CONVERTED TO PED-XINGS ONLY
- LANDSCAPED MEDIAN ISLANDS

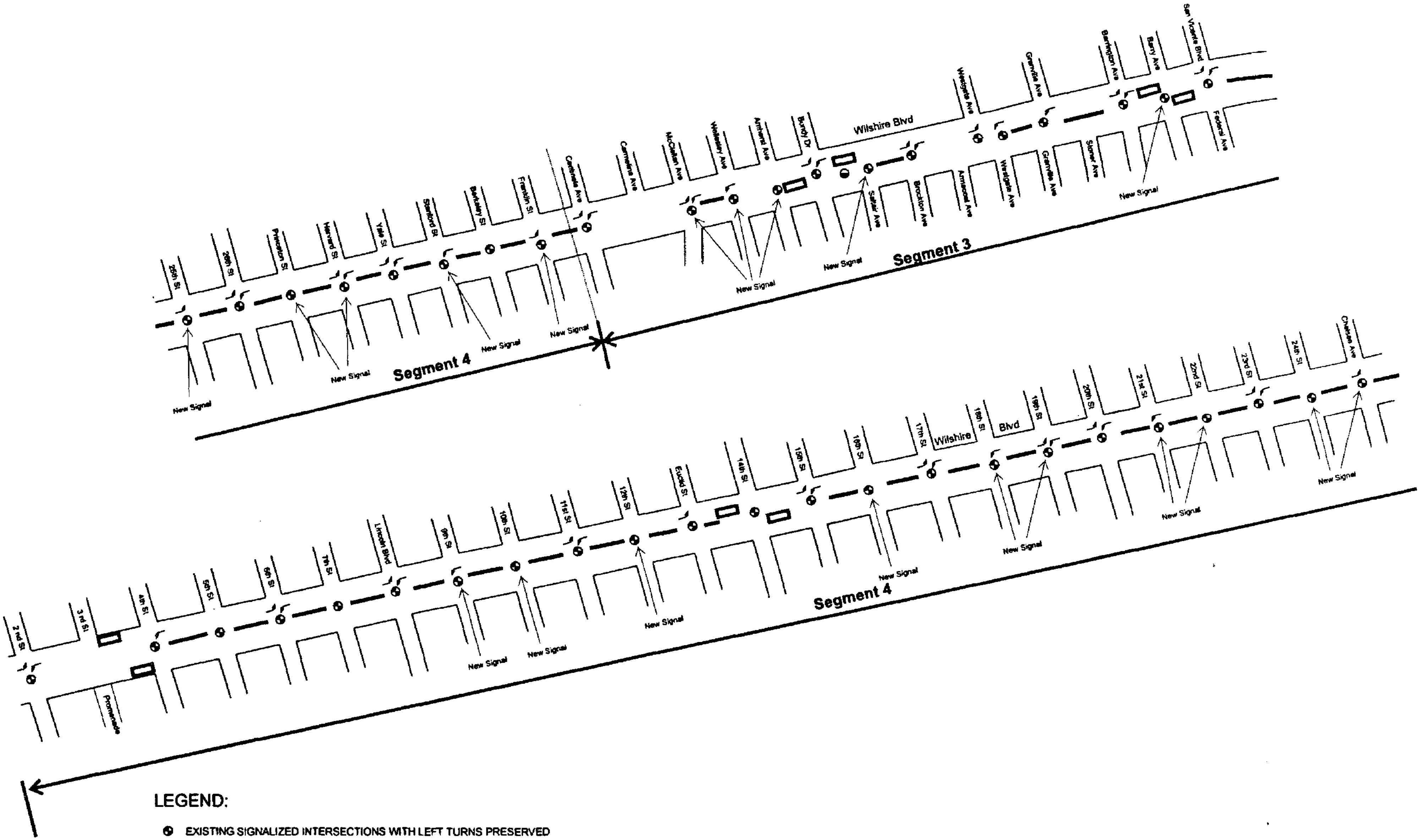
SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-9

WILSHIRE BRT MEDIAN ISLAND/
LEFT TURN LOCATIONS - WESTWOOD



LEGEND:

- EXISTING SIGNALIZED INTERSECTIONS WITH LEFT TURNS PRESERVED
- BUS STOPS / STATIONS
- UNSIGNALIZED INTERSECTIONS CONVERTED TO SIGNALIZED PED-XINGS ONLY
- EXISTING SIGNALIZED INTERSECTIONS CONVERTED TO PED-XINGS ONLY
- LANDSCAPED MEDIAN ISLANDS

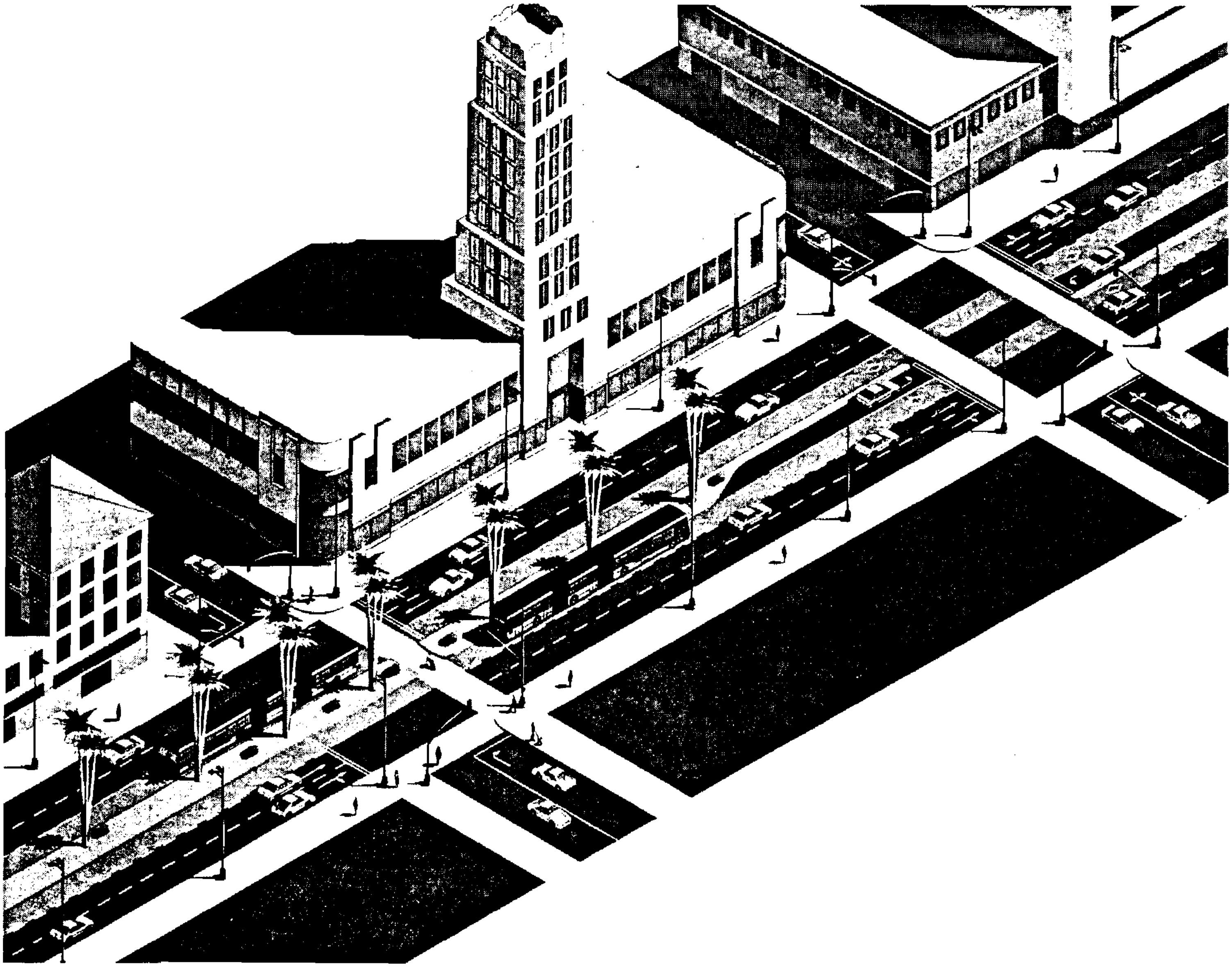
SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-10

WILSHIRE BRT MEDIAN ISLAND/
LEFT TURN LOCATIONS - WEST LOS ANGELES, SANTA MONICA



SOURCE: Suisman Urban Design, June 2000

FIGURE 2-11
ALTERNATIVE 1A: WILSHIRE BRT
MEDIAN-ADJACENT DIAGRAM

As above, the BRT vehicles would also have right-hand doors, but the existing median would only need to be reconfigured at station locations, where, as above, patrons would use existing crosswalks to access a platform. In Miracle Mile, the present landscaping with mature trees would be entirely preserved.

Stations

Stations associated with Alternative 1A (Median Adjacent Design Option) were previously described under Alternative 1 (Baseline Median-Running).

2.2.5 Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

In this alternative, the BRT would operate exclusively in the present lanes next to the curb. Figure 2-12 shows the configuration of this alternative adjacent to the curb. All existing left-turn movements would be retained with no conflicts with the BRT operation. Right-turn movements would also be retained, with vehicles turning into the BRT lane just before making their turn, similar to what now happens on Figueroa Street in downtown Los Angeles. To discourage vehicles from beginning a turning movement too soon, 4-inch traffic dots would separate the BRT lane from the regular traffic lane except at the actual area of shared use. This and special signal timings would serve to minimize safety concerns. Stations would have direct curb access.

In Miracle Mile, the present landscaping with mature trees would be entirely preserved. Some reconstruction of the street would occur at intersections to provide a smoother street profile that would give a more comfortable ride to patrons, and perhaps also to widen the curb lane for safer right-turn movements.

Stations

The stations for the curb adjacent alternative (Alternative 1B) would use the present curb. All stations would be split platforms and located on the far side of intersections at the same locations as the present Metro Rapid Bus stations.

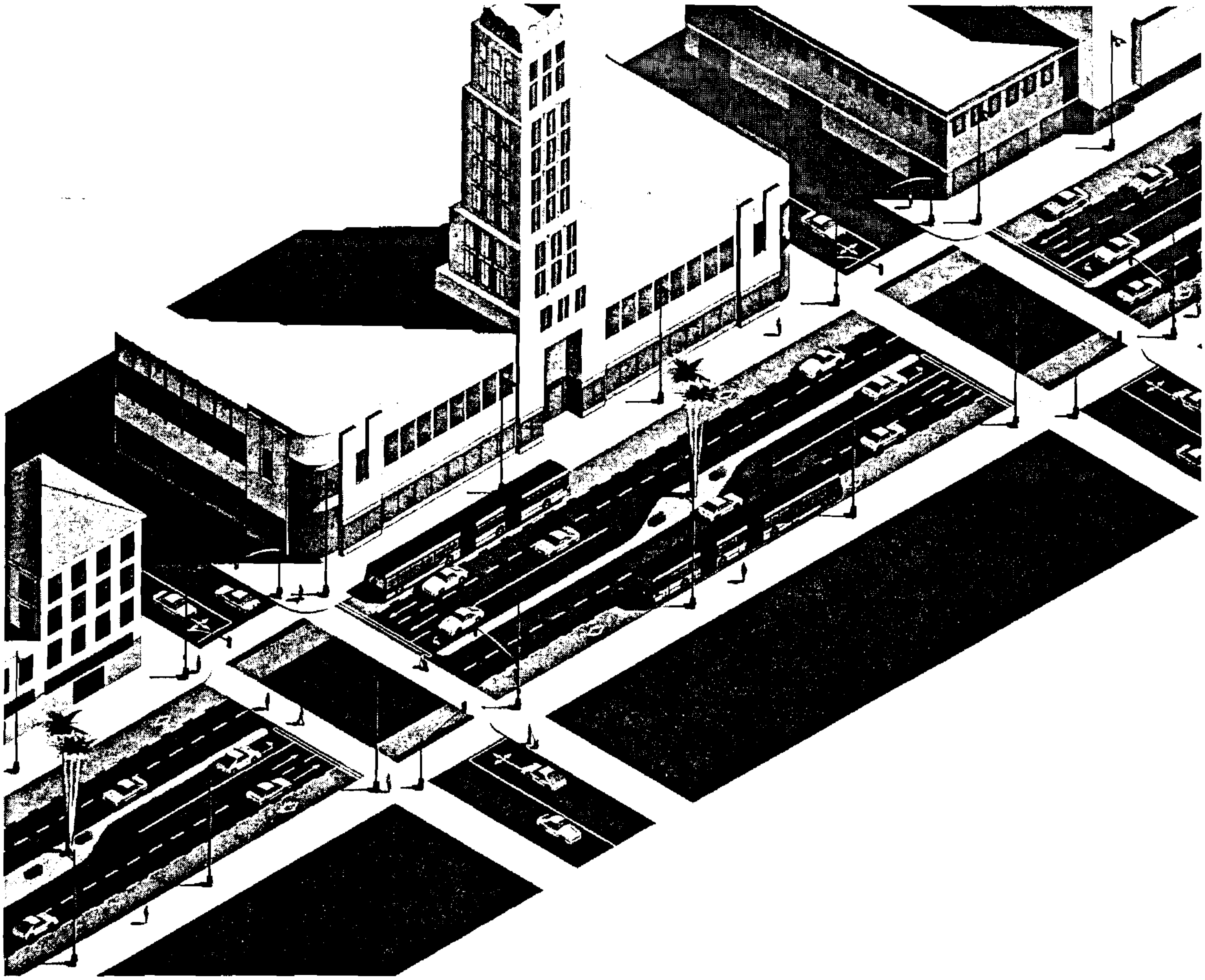
Parking would be the same as Alternative 1 (Baseline Median-Running).

2.2.6 Service Characteristics

The Wilshire BRT Alternative extends a distance of 13.2 miles from the Metro Red Line station at Western and Wilshire Boulevards to Ocean Avenue and Wilshire Boulevard in Santa Monica. The system would operate from approximately 5 am to 12 am every day, with 3-minute peak and 6-7 minute base headways (time between buses), stopping at 14 stations, with an optional station at the VA Hospital.

Ridership projections indicate that high capacity; double-articulated buses would be needed. These buses are assumed to be at least 80 feet long, 8.5 feet wide, and 10 feet in height. About 90 seats would be provided, with an overall capacity of about 135 passengers counting standees.

Single-articulated (60-70 foot) buses may be able to accommodate demand in the beginning years of service. These vehicles would provide an average seated capacity of 65 passengers, with space available



SOURCE: Suisman Urban Design, June 2000

FIGURE 2-12
ALTERNATIVE 1B: WILSHIRE BRT
CURB-ADJACENT DIAGRAM

available for another 13 to 30 standees. Figure 2-13 shows BRT vehicles, varying in length from 40 feet to 80 feet and a new hybrid rubber-tire vehicle.

Techniques to reduce dwell times at stops will be pursued where practical, such as proof of payment fare collection and allowing passenger boarding and alighting through both front and rear doors of the bus.

The Wilshire BRT service provides improved ridership over the existing Rapid Bus service. As in the TSM Alternative, 3-minute peak headways and an average of 6.6-minute base headways are assumed. These frequencies allow traffic signal priority to remain effective, since providing more frequent service in the peak period would not be able to be accommodated using current practice for traffic signal priority. Existing local bus service will continue to run on Wilshire Boulevard (MTA 20 series and SMMBL 2). The remaining bus network is the same as TSM, which assumes selected route recommendations from Westside Bus Service Improvement Study. A summary of operating characteristics for the Wilshire BRT Alternative is provided in Table 2-5.

TABLE 2-5
WILSHIRE BRT OPERATING CHARACTERISTICS

Transit Service:	Existing Wilshire/Whittier Rapid Bus routes use BRT lanes from downtown Santa Monica to Western Avenue. Assumes same service frequencies as TSM, which at 3 minutes peak and 6.6 minutes off-peak provides slight improvement over existing rapid bus service levels in Westside. Remaining bus network is same as TSM, which assumes route recommendations from Westside Bus Service Improvement Study.
Operations:	Double-articulated (80 foot long) buses are projected to be needed by the year 2020. Average dwell time of 30 seconds is assumed, which may require facilitated boarding/alighting methods such as proof of payment fare collection and boarding/alighting through both front and rear doors. Rail transit operations are identical to No Action.
Max. Speed:	35 mph
Avg. Speed:	20-23 mph along BRT segment, including stops and delays at intersections; 16-17 mph average from downtown Santa Monica to downtown Los Angeles.
Signal Preemption:	For transportation model purposes, partial signal preemption assumed at major intersections and full preemption assumed at minor intersections.
Transit Running Time:	58-61 minutes downtown LA (5th/Grand) to downtown Santa Monica.

Source: Manuel Padron Associates, 2000.

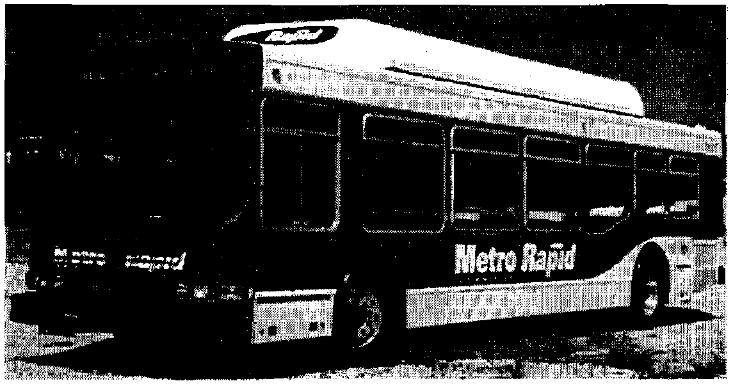
2.2.7 Ancillary Facilities

The BRT system will require a bus storage and maintenance facility. The facility would provide maintenance for the BRT and Rapid Bus systems and as such would need to be located in a location central to both systems (i.e., in the downtown Los Angeles area). Several candidate sites were investigated for their potential to contain a maintenance facility. These sites are shown in Figure 2-14, which is in the eastern and industrial portion of the downtown area, and include:

- Taylor Yard Parcel C – San Fernando Road & Elm
- Existing MTA Division 10 Expansion – Near Mission and I-5
- NW Corner Chavez and Mission
- Existing MTA Division 1 Expansion – Alameda & 6th

40' Vehicle

Low-floor compressed natural gas vehicles manufactured by NABI. Begins service on Wilshire/Whittier and Ventura Boulevards in June 2000

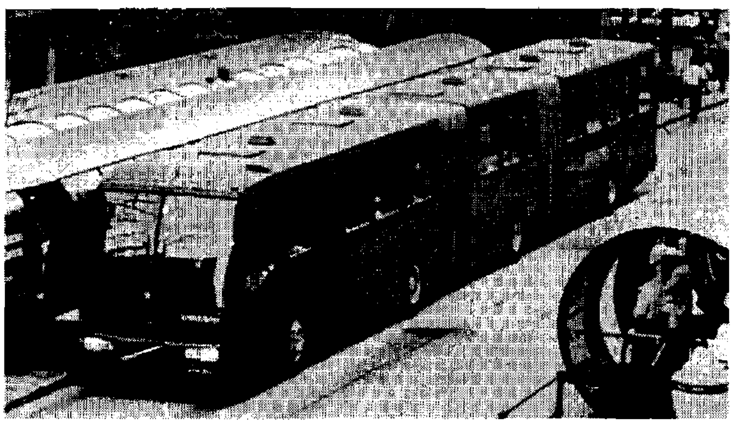


60' Vehicle

60' "articulated" (two section) low-floor rubber-tired vehicle. May begin service in 2002.

80' Vehicle

These 80' "bi-articulated" (three section) low-floor rubber-tired vehicles are in use in Curitiba, Brazil, and are manufactured by Volvo. They could be used on Wilshire, Expo, or other BRT lines.



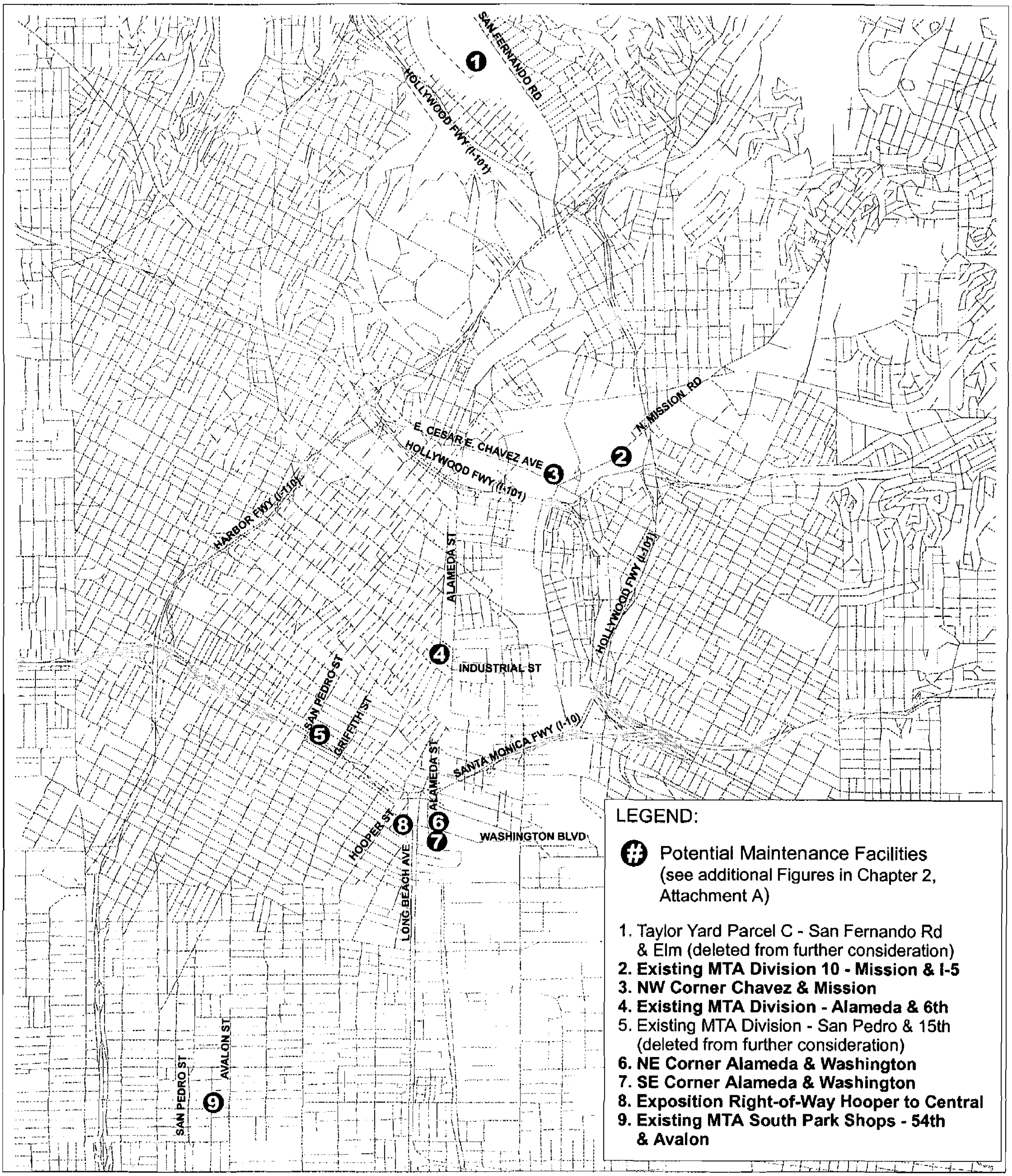
New Vehicles

New hybrid rubber-tire vehicles such as Bombardier's "Guided Light Transit" (left) and Matra/Renault's Civis (right) are being tested in several French cities, and could be considered for Los Angeles BRT.

SOURCE: Suisman Urban Design, 2000

FIGURE 2-13

BRT VEHICLES



SOURCE: Terry A. Hayes Associates, 2000

FIGURE 2-14
LOCATION OF ALL POTENTIAL MAINTENANCE FACILITIES

- Existing MTA Division 2 Expansion – San Pedro & 15th
- NE Corner Alameda & Washington
- SE Corner Alameda & Washington
- Exposition Right-of-Way Hooper to Central
- Existing MTA South Park Shops – 54th & Avalon

After review of these sites, several sites were eliminated from further consideration. Site 1, the Taylor Yard Parcel C, was eliminated because this area is being considered for future joint development. Site 5 was also eliminated from further consideration. This site is an existing MTA division. Discussions with MTA operations staff indicated that this site is full and that there is no additional capacity for more buses. Site 4, the existing MTA Division 1 site, is also at capacity. However, a parcel opposite this site on the corner of Industrial and Alameda is potentially usable as an expansion of the Division 1 site. As a result, Sites 2, 3, 4, 6, 7, 8, and 9 are considered in this EIS/EIR for potential maintenance facility sites for the proposed project and project alternatives.

The candidate sites of approximately 8 to 20 acres (Sites 2, 3, 4, 6, 7, 8, and 9) are desired for this purpose and are shown in Chapter 2 Attachment A. It should be noted that Site 8 is located along the Exposition right-of-way and is under consideration as both BRT and LRT maintenance facility sites. These sites are evaluated in Section 3.0, Environmental Analysis.

2.2.8 Alternative 2: Wilshire BRT and Exposition BRT Alternative (Full Length)

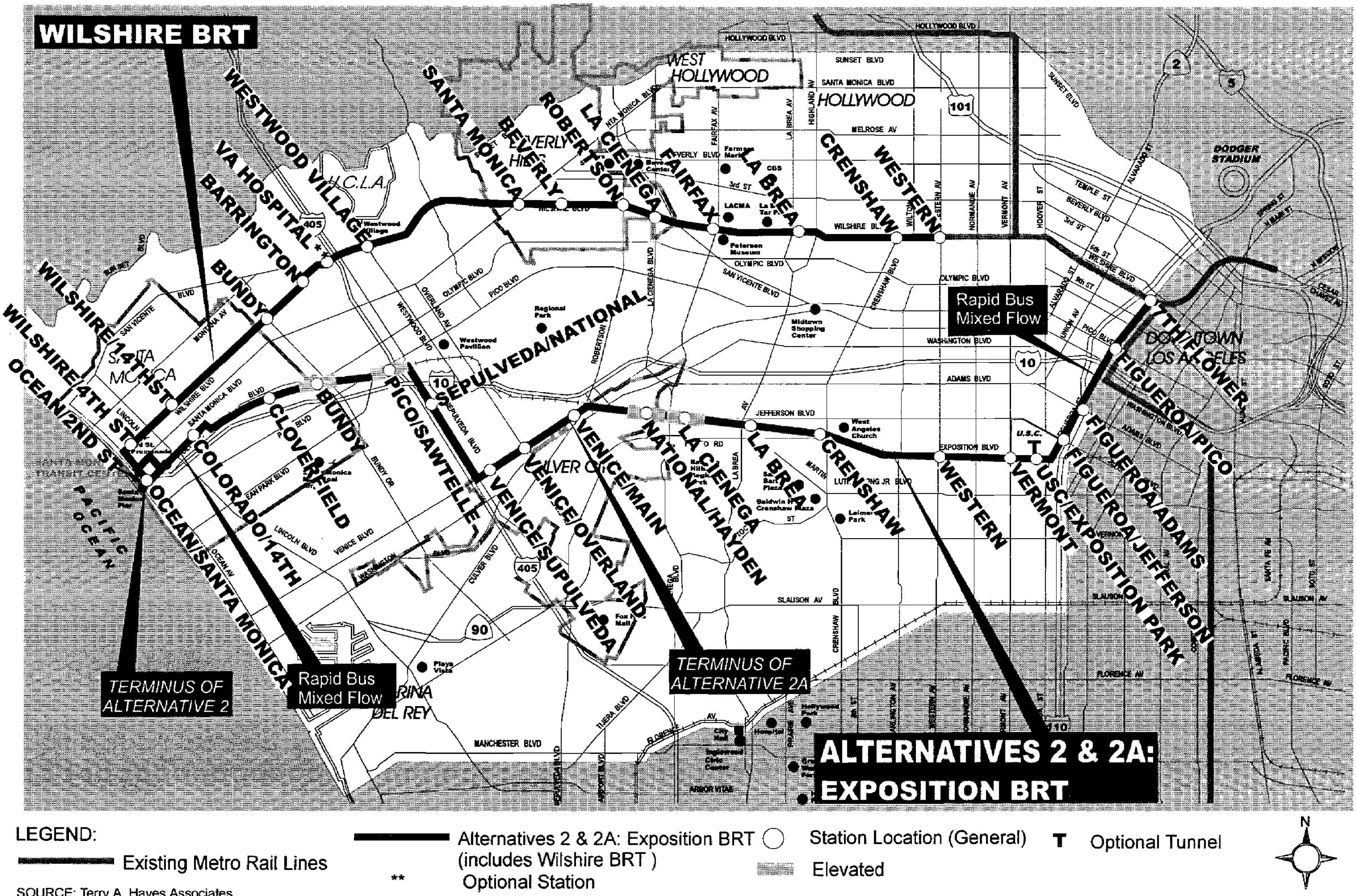
Overview

Alternative 2 is a combination of the Wilshire BRT Alternative (Baseline Median-Running) discussed above and the full length of the Exposition BRT Alternative discussed below.

In addition to the Wilshire BRT service, the Exposition BRT Alternative would add 16.7 route-miles. The BRT element would operate primarily at-grade (on ground level) within the MTA-owned (former railroad) ROW along Exposition Boulevard from downtown Los Angeles to downtown Santa Monica (see Figure 2-15). The BRT is intended to make use of an existing transportation corridor purchased by the MTA from the Southern Pacific Railroad Company in 1990 to provide high capacity transit service to the Westside. The core of the route uses the MTA ROW, with connections provided at either end via Rapid Bus operating in mixed flow traffic. One segment of the route, from Venice/Robertson Boulevards to Sepulveda/Exposition Boulevards would operate as BRT within the medians of Venice and Sepulveda Boulevards. In downtown Los Angeles, the Exposition BRT would operate in peak hour exclusive lanes on Figueroa and Flower Streets, and in mixed flow on Exposition Boulevard. In downtown Santa Monica, the route operates entirely in mixed flow except on the proposed transit mall on Santa Monica Boulevard and Broadway between 5th and Ocean.

This alternative would include grade separations at the following locations:

- 110 FWY (Existing underpass)
- La Cienega Blvd



SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-15

ALTERNATIVES 2 & 2A: EXPOSITION BRT

- Jefferson Blvd
- National Blvd (Westbound lanes)
- 405 FWY (Existing underpass)
- Sawtelle Blvd.
- Gateway Blvd
- Pico Blvd
- Bundy Drive
- 10th Street (Santa Monica)
- 10 FWY off-ramp (Santa Monica)
- Lincoln Blvd (Santa Monica)
- 4th Street (Santa Monica)
- 10 FWY (Santa Monica)

In addition, a subway design option (below grade route) is proposed from Flower Street to just west of Vermont Avenue based on MTA Board actions. This subway design option is discussed in more detail in Section 3.0 of this report, and a typical section is illustrated in Chapter 2 Attachment A (Figure 2A-5).

Automatic gates will be used at grade crossings where the BRT travels at speeds in excess of 35 mph along the Exposition corridor. At crossings where the BRT does not exceed 35 mph, priority will be given to the bus, as opposed to full preemption, and the grade crossing will be treated with traffic signals, not flashing lights and gates. The use of gates at BRT crossings has not been attempted to date, and may require special legislation. If a practicable solution for the detection of buses and the use of automatic gates at BRT grade crossings can not be developed, the maximum operating speed of the BRT through the grade crossing will be reduced to 35 mph. The 35 mph maximum operating speed through an un-gated intersection is based on the current California regulations governing highway-LRT at grade crossings.

Additional safety measures along the Exposition corridor include passive signs that warn pedestrians to look both ways, and active signs that warn motorists and pedestrians of an approaching bus. Also, fencing will be installed along the right-of-way where the bus travels at speeds in excess of 35 mph. At BRT crossings where automatic gates are not warranted, left turns across the tracks from the adjacent travel lanes will be controlled by a separate signal phase. In addition, an active "train coming" icon sign will illuminate when a train is approaching to warn motorists waiting to make a left turn at a signalized intersection.

In addition to standard automatic gates at grade crossings, various BRT grade crossings will be equipped with four quadrant gates. Four quadrant gates consist of two exit gates used in combination with standard entrance gates. The additional gate arms, combined with standard entrance gates, restrict access to the track crossing area and are designed to deter motorists from driving around the lowered gate arms.

The following at-grade crossings are proposed to be equipped with four-quadrant gates:

- Normandie
- Denker
- Arlington
- 7th Ave
- 11th Ave
- Crenshaw Blvd
- Buckingham
- Farmdale Ave
- La Brea
- National Blvd
- Washington Blvd
- Barrington Ave
- Centinela Ave
- Stewart St
- 26th St
- Cloverfield
- Main Street (possible)

Operation of the BRT would also require the removal of one lane of traffic in each direction on Exposition Boulevard and Venice Boulevard. A minimum of two lanes in each direction must be maintained on both streets. Taking a lane in each direction on Venice allows virtually no loss of parking, no loss of left turns, and provides a significant amount of landscaped median without reducing the sidewalk width.

On Sepulveda Boulevard, no lanes of traffic would be removed. However, sidewalks would be reduced to eight feet and significant parking and left turn movements eliminated, in order to maintain the two lanes of travel in each direction.

Route Configuration

Figures located in Chapter 2 Attachment C show the typical cross-sections of the Exposition BRT system within the MTA ROW, and within Venice and Sepulveda Boulevards, as well as 17th Street, Colorado Avenue, Broadway, 7th Street, Ocean Avenue, and Santa Monica Boulevard. Figure 2C-1 (in Attachment C) provides a guide as to where these typical cross-sections appear in the ROW. As shown in these figures, the configuration of Exposition varies throughout the route. A detailed set of drawings of the route appears in Section 3.10 of this document.

The Exposition BRT would incorporate a bikeway between Vermont Avenue and the City of Santa Monica. In general, the bikeway will be a bike path within an exclusive ROW (Class 1 Bikeway).

However, at station locations, park-and-ride facilities, and where the ROW is narrow, the bikeway will be either an on-street bike lane (Class 2 Bikeway) or a bike route (Class 3 Bikeway). The Exposition Bikeway Schematic typical sections for the bikeway appear in Figure 2-16.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

There is an option to locate the BRT route in a subway configuration at USC/Exposition Park between Figueroa and Vermont. At Exposition Boulevard, the alignment turns from Flower into the median of Exposition Boulevard and enters into a tunnel, the portal, or opening, of which is between Flower and Figueroa. The tunnel will be bi-directional. One portal, or opening, will be located between Flower and Figueroa; the other portal will be located just west of Vermont. Both portals are located in the median of Exposition Boulevard.

The bikeway in this option is the same as described above: a Class 3 bikeway from Figueroa to Vermont.

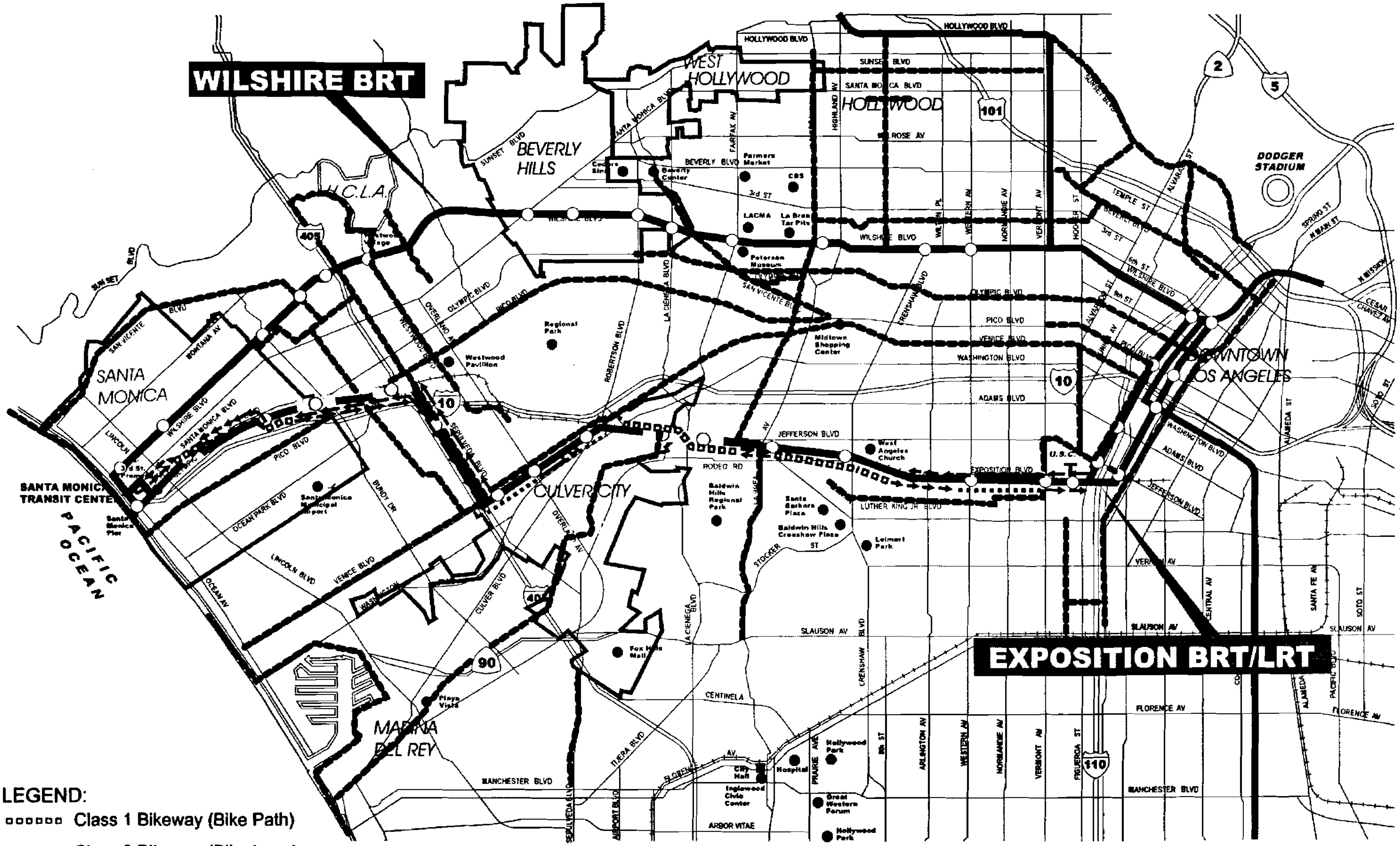
Stations

The Exposition BRT would have 20 stations. Figure 2-5 (*in the Wilshire BRT discussion above*) presents diagrams of a typical BRT station. The stations would consist of the following:

- A platform that will be at least 100 feet long and 11 feet wide
- A canopy, with lighting, to protect BRT passengers from sun and rain
- Amenities include paving, maps, schedules, electronic bus arrival messages, landscaping, public art, and bicycle facilities (lockers and/or racks).

The stations along the Exposition BRT system include the following:

- 7th/Flower
- Figueroa/Pico
- Figueroa/Adams
- Figueroa/Jefferson
- USC/Exposition Park
- Vermont
- Western
- Crenshaw (with park and ride lot - 400 spaces)
- La Brea (with park and ride lot – 41 spaces)
- La Cienega (with park and ride lot - 363 spaces)
- National/Hayden
- Venice/Main
- Venice/Overland
- Venice/Sepulveda



LEGEND:

Class 1 Bikeway (Bike Path)

Class 2 Bikeway (Bike Lane)

Class 3 Bikeway (Bike Route)

Existing Bikeway

SOURCE: Developed by Korve Engineering from City of Los Angeles Bikeway Plan

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-16

EXPOSITION BIKEWAY SCHEMATIC

- Sepulveda/National
- Pico/Sawtelle (with park and ride lot – 565 spaces)
- Bundy (with park and ride lot (372 spaces)
- Cloverfield (with park and ride lot (1,140 spaces)
- Colorado/14th
- Ocean/Santa Monica Boulevard

In addition, there will be one or more stations in the transit mall in downtown Santa Monica. A total of 2,881 parking spaces would be provided in the park and ride lots.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

All the stations are the same as above, with the exception of the Exposition/USC Station, which will be located below grade in the tunnel, with two access points to allow for greater access to USC: one at Watt Way and one at Vermont Avenue.

Service Characteristics

Service characteristics on the Wilshire BRT portion of Alternative 1 are identical to what is described in Section 2.2.3 (Service Characteristics) above. Therefore, this section focuses on describing service characteristics unique to the Exposition BRT system.

In addition, the Exposition BRT Alternative adds 16.7 route-miles of a BRT element from the Metro Center (7th and Flower Streets) in downtown Los Angeles to Ocean Avenue in Santa Monica. The system would operate approximately from 5 am to 12 am every day, with 3-minute peak and 6-7 minute base headways, stopping at 20 stations.

Two end-to-end bus routes serve the full length of the Exposition BRT route from downtown Los Angeles to downtown Santa Monica. As mentioned above, portions of the route at either end of the Exposition BRT are within the street, operating as Rapid Bus in downtown Los Angeles and downtown Santa Monica. One route stops at every station at about one-mile average station spacing; the other route (which provides peak hour service only) expedites longer-distance trips by skipping some stations to average about 1.5-mile station spacing. Other express routes feed into the Exposition BRT at interim points. BRT bus routes are highlighted in Table 2-6.

TABLE 2-6
SUMMARY OF WILSHIRE BRT AND EXPOSITION BRT BUS SERVICE

Route	BRT Entry Point	Service Frequency (peak, base minutes)
MTA 720 (Wilshire BRT)	Downtown Santa Monica	3, 6.6 (combined patterns)
B-1 BRT (all stop)	17th Street (Santa Monica)	5, 10
B-2 BRT (skip stop)	17th Street (Santa Monica)	10, 0
MTA 436 Venice (Venice Blvd)	Venice/Sepulveda	10, 20
LADOT 438 (Culver Blvd; reconfigured to Marina del Rey per restructuring study)	Venice/Washington	20, 0
MTA 439 Redondo Bch – LAX – LA	La Cienega	30, 60
MTA 342 Westchester – LAX	Crenshaw	30, 30
MTA 340 Inglewood – Hawthorne	Crenshaw	10, 30

Source: Manuel Padron Associates, 2000.

The remaining bus network is essentially the same as TSM, which assumes route recommendations from the Westside Bus Service Improvement Study. Minor modifications are made to connect applicable routes with busway stations. Two local routes (MTA 40 and 42) convert part of their service frequency to provide the new limited stop service using the busway (MTA 340 and 342).

Ridership estimates indicate that articulated (60-80 feet long) buses would be needed for the end-to-end Exposition BRT service (B-1 and B-2), and potentially on the Venice Boulevard route, which enters the busway at Sepulveda (MTA 436). Standard 40-foot buses can continue to manage the expected passenger loads for the other routes using the busway.

It is assumed that there will be further progress in reducing dwell times at stops by moving toward such techniques as proof of payment fare collection and allowing passenger boarding and alighting through both front and rear doors of the bus.

A summary of operating characteristics for this alternative is provided in Table 2-7.

TABLE 2-7
WILSHIRE BRT AND EXPOSITION BRT OPERATING CHARACTERISTICS

Transit Service:	Wilshire BRT has slightly upgraded service from existing rapid bus (3 minute peak, 6.6 minute base). Expo BRT provides an all-stop route modeled at 5-minute peak, 10-minute base headways, with skip-stop route providing 10-minute peak service only. Several express routes would be rerouted to feed onto Expo busway (MTA 436, 439; LADOT 431, 438). Two local routes would convert part of their frequency to provide limited stop service and use Expo busway (MTA 40 and 42). Combined headways range from 3.3-minute service on the west end of the project to 1.5 minutes on the east end of the project. Other routes would be modified to connect with busway stations. Remaining bus network is same as TSM.
Operations:	Selected routes would eventually require articulated (65-70 feet long) buses to accommodate projected 2020 demand. Average dwell time of 30 seconds is assumed, which may require facilitated boarding/alighting methods such as proof of payment fare collection and boarding/alighting through both front and rear doors. Rail transit operations identical to No Action.
Max Speed:*	55 mph
Avg Speed:*	21 mph full route (25 mph for skip stop route) 26 mph exclusive BRT facility (33 mph for skip stop route)
Signal Preemption:*	For transportation model purposes, signal priority or preemption assumed in busway (Exposition ROW); partial signal preemption assumed at major intersections and full preemption assumed at minor intersections for on-street BRT on Venice and Sepulveda; partial signal priority in street running sections outside the busway (in Santa Monica and downtown Los Angeles).
Transit Running Time:*	47 minutes downtown LA (7th/Flower) to downtown Santa Monica; 39 minutes for skip stop route
*Summary characteristics relate to Expo BRT unless specified otherwise. Characteristics of the Wilshire BRT component of this alternative are summarized in Table 2.17.	
Source: Manuel Padron Associates, 2000.	

Ancillary Facilities

As with the Wilshire BRT, the Exposition BRT system will require storage and maintenance facilities. The same candidate sites discussed for the Wilshire BRT are under consideration for this alternative. Refer to the discussion above.

2.2.9 Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Alternative 2A is a combination of the Wilshire BRT and a shorter version of the Exposition BRT. This shorter version is identified as the MOS, or minimum operating segment. The Exposition BRT MOS follows the same alignment as the Exposition.BRT described above. However, this alternative terminates at the Venice/Main Station, with a total length of 8.3 miles. In terms of service, the majority of the bus service plan for the full Exposition BRT is the same under the MOS scenario since the BRT entry point for several of these routes is at the Venice/Washington station or points east. However, the end-to-end routes (identified as B-1 and B-2 in Table 2-6 above) are modified to account for the Exposition BRT facility terminating at Venice/Washington. Bus service on the primary route (B-1) still continues all the way to downtown Santa Monica, but once west of the Venice/Washington station uses existing streets (such as Venice, Sepulveda, and Olympic) to travel in a rapid bus-like operation. Since the concept of skip-stop operations has little value once so much of the route is operating in a basic on-street environment with limited opportunity for traffic signal priority, the skip-stop route B-2 is eliminated completely, and a rapid bus-like operation with stations approximately every mile would be used.

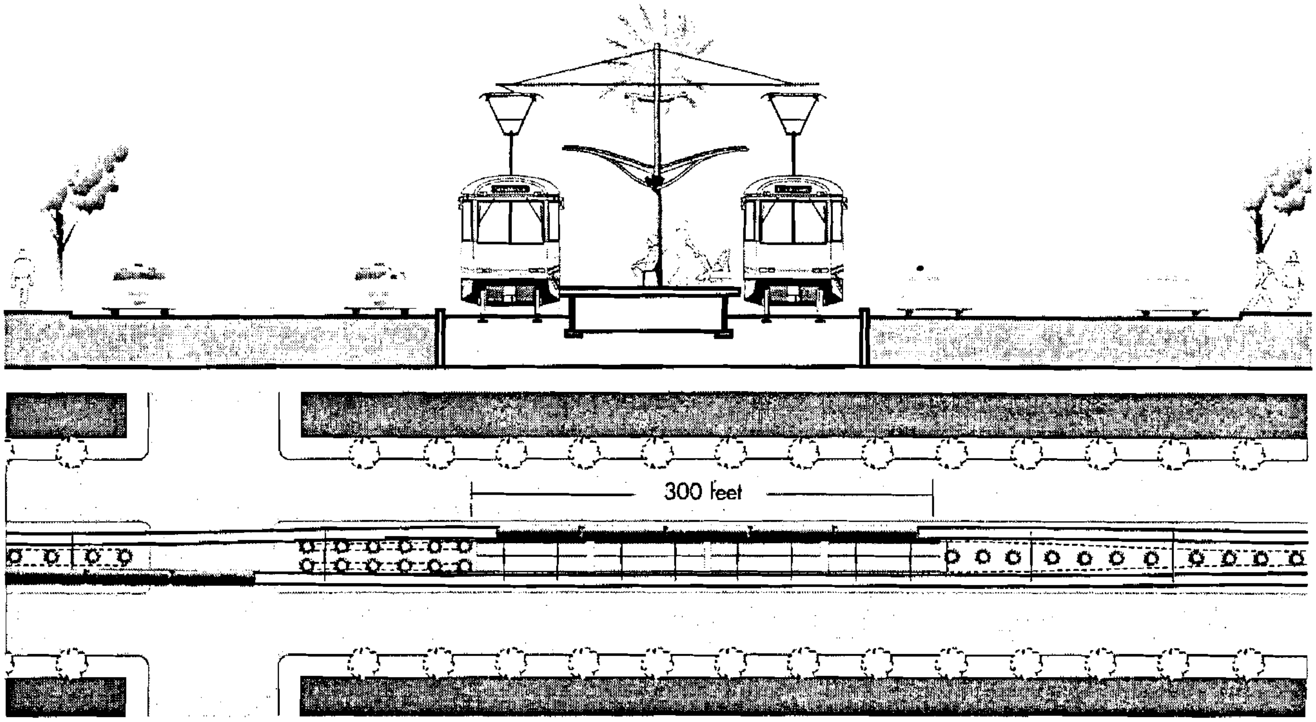
The overall average speed decreases slightly, from 21 mph under Alternative 2 to 20 mph for Alternative 2A. This translates to about two and a half more minutes of travel time between downtown Santa Monica and downtown Los Angeles.

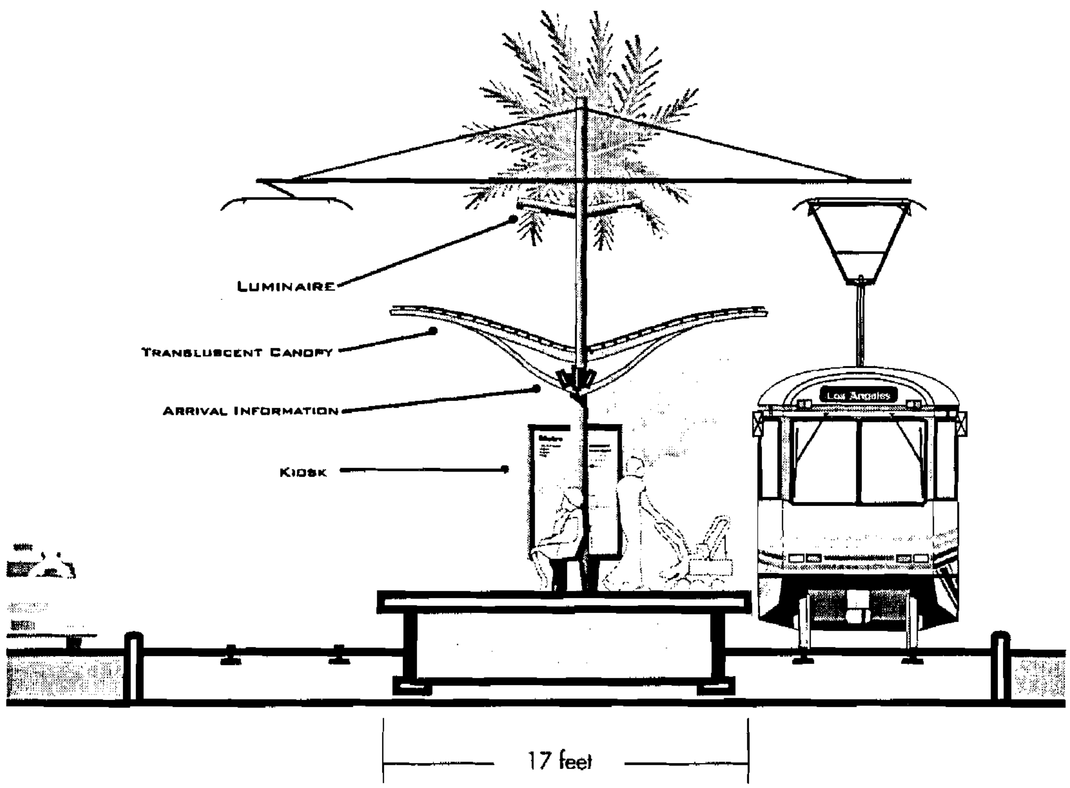
2.2.10 Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Overview

Alternative 3 is a combination of the Wilshire BRT Alternative discussed above in Section 2.2.3 and the full length of the Exposition LRT Alternative discussed below.

In addition to the Wilshire BRT service, the Exposition LRT Alternative would add 17.2 route-miles of a light rail transit system. The LRT system would operate primarily at-grade (on ground level) within the MTA-owned (former railroad) ROW Exposition Boulevard from downtown Los Angeles to downtown Santa Monica (see Figure 2-17). Chapter 2 Attachment A shows the cross section for the subway design option for this alternative at USC/Exposition Park (Figure 2A-6). Like the Exposition BRT described above, the Exposition LRT is intended to make use of an existing transportation corridor purchased by the MTA from the Southern Pacific Railroad Company in the early 1990's to provide high capacity transit service to the Westside. The core of the route uses the MTA ROW. In downtown Los Angeles, the Exposition LRT would use the Metro Blue Line (Long Beach) alignment from Metro Center (7^{th} and Flower Streets) to Washington Boulevard and Hill Street, transition to a new corridor within Hill Street to Exposition and into the median of the MTA ROW west of Figueroa Street. The LRT would also travel from Venice/Robertson to Sepulveda/Exposition within the medians of Venice and Sepulveda Boulevards. In Santa Monica, the LRT would operate in mixed traffic in Olympic Boulevard to 11^{th} Street, after which it would be in aerial structure, returning to grade just east of Main Street and terminating at Ocean Avenue with an at-grade station.





The typical LRT station on the Exposition corridor would be a raised platform, 300 feet long, located in the center of the roadway. Amenities include a canopy, lighting, paving, maps and schedules, kiosks, landscaping, and public art.

SOURCE: Suisman Urban Design, 2000

FIGURE 2-17
LRT TYPICAL STATION
EXPOSITION

This alternative would include grade separations at the following locations:

- 110 FWY (Existing underpass)
- La Cienega Blvd
- Jefferson Blvd
- National Blvd (Westbound lanes)
- 405 FWY (Existing underpass)
- Sawtelle Blvd.
- Gateway Blvd
- Pico Blvd
- Bundy Drive
- 10th Street (Santa Monica)
- 10 FWY off-ramp (Santa Monica)
- Lincoln Blvd (Santa Monica)
- 4th Street (Santa Monica)
- 10 FWY (Santa Monica)

In addition, a subway option (below grade route) is proposed from Flower Street to just west of Vermont Avenue base on MTA Board actions. This option is discussed in more detail in Section 3.0 of this report.

Automatic gates will be used at grade crossings where the LRT travels at speeds in excess of 35 mph along the Exposition corridor. At crossings where the LRT does not exceed 35 mph, priority will be given to the light rail vehicle, as opposed to full preemption, and the at-grade crossing will be treated with traffic signals, not flashing lights and gates. The 35 mph maximum operating speed through an un-gated intersection is based on the current California regulations governing highway-LRT at grade crossings.

Additional safety measures along the Exposition corridor include passive signs that warn pedestrians to look both ways, and active signs that warn motorists and pedestrians of an approaching train. Also, fencing will be installed along the right-of-way where the light rail vehicle travels at speeds in excess of 35 mph. At LRT crossings where automatic gates are not warranted, left turns across the tracks from the adjacent travel lanes will be controlled by a separate signal phase. In addition, an active "train coming" icon sign will illuminate when a train is approaching to warn motorists waiting to make a left turn at a signalized intersection.

In addition to standard automatic gates at grade crossings, various LRT grade crossings will be equipped with four quadrant gates. Four quadrant gates consist of two exit gates used in combination with standard entrance gates. The additional gate arms, combined with standard entrance gates, restrict access to the track crossing area and are designed to deter motorists from driving around the lowered gate arms.

The following at-grade crossings are proposed to be equipped with four-quadrant gates:

- Normandie
- Denker
- Arlington
- 7th Ave
- 11th Ave
- Crenshaw Blvd
- Buckingham
- Farmdale Ave
- La Brea
- National Blvd
- Washington Blvd
- Barrington Ave
- Centinela Ave
- Stewart St
- 26th St
- Cloverfield
- Main Street (possible)

As with the Exposition BRT, the grade separations would allow the LRT to operate without stopping at these major streets, thereby improving travel times through the corridor.

Operation of the LRT would require the removal of parking, traffic lanes, and turn movements. On Hill Street, the LRT would operate in mixed traffic with no impact to parking. There may, however, be restrictions for left turn movements during peak hours only. On Exposition Boulevard, the proposed layout allows for maintenance of all parking, a Class 2 bikeway, two lanes in each direction, left turns at major intersections, and provision of a significant area for median landscaping, including the preservation of some of the existing trees. On Venice Boulevard, the LRT will also require the removal of one lane of traffic in each direction. On Sepulveda Boulevard, the sidewalks will be reduced to eight feet and significant parking and left turn movements eliminated in order to maintain the two lanes in each direction.

Route Configuration

Figures located in Chapter 2 Attachment D show how the Exposition LRT system would be situated within the MTA and streets ROWs. Figure 2D-1 (in Attachment D) provides a guide as to where these typical cross-sections appear in the ROW. As shown in these figures, Exposition varies throughout the route.

The Exposition LRT could also incorporate a future bikeway between Vermont Avenue and the City of Santa Monica. However, funding for this bikeway is not included in this project. In general, the bikeway will be a bike path within an exclusive ROW (Class 1 Bikeway). However, at station locations, park-and-ride facilities, and where the ROW is narrow, the bikeway will be either a bike lane (Class 2 Bikeway) or a bike route (Class 3 Bikeway). The schematic for the bikeway appears in above in Figure 2-16 (in the discussion of the Exposition BRT Alternative).

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

There is an option to locate the LRT route in a subway configuration west of Figueroa. The subway design option follows the baseline route along Washington and Hill (see Figure 2-18). At Exposition Boulevard, the alignment turns west onto Exposition. The alignment travels into a subway configuration between Flower and Figueroa, daylighting or surfacing west of Vermont. Figures 2-19 through 2-22 compare views of the different options at USC/Exposition Park.

The bikeway in this option is the same as described above: a Class 3 bikeway from Figueroa to Vermont.

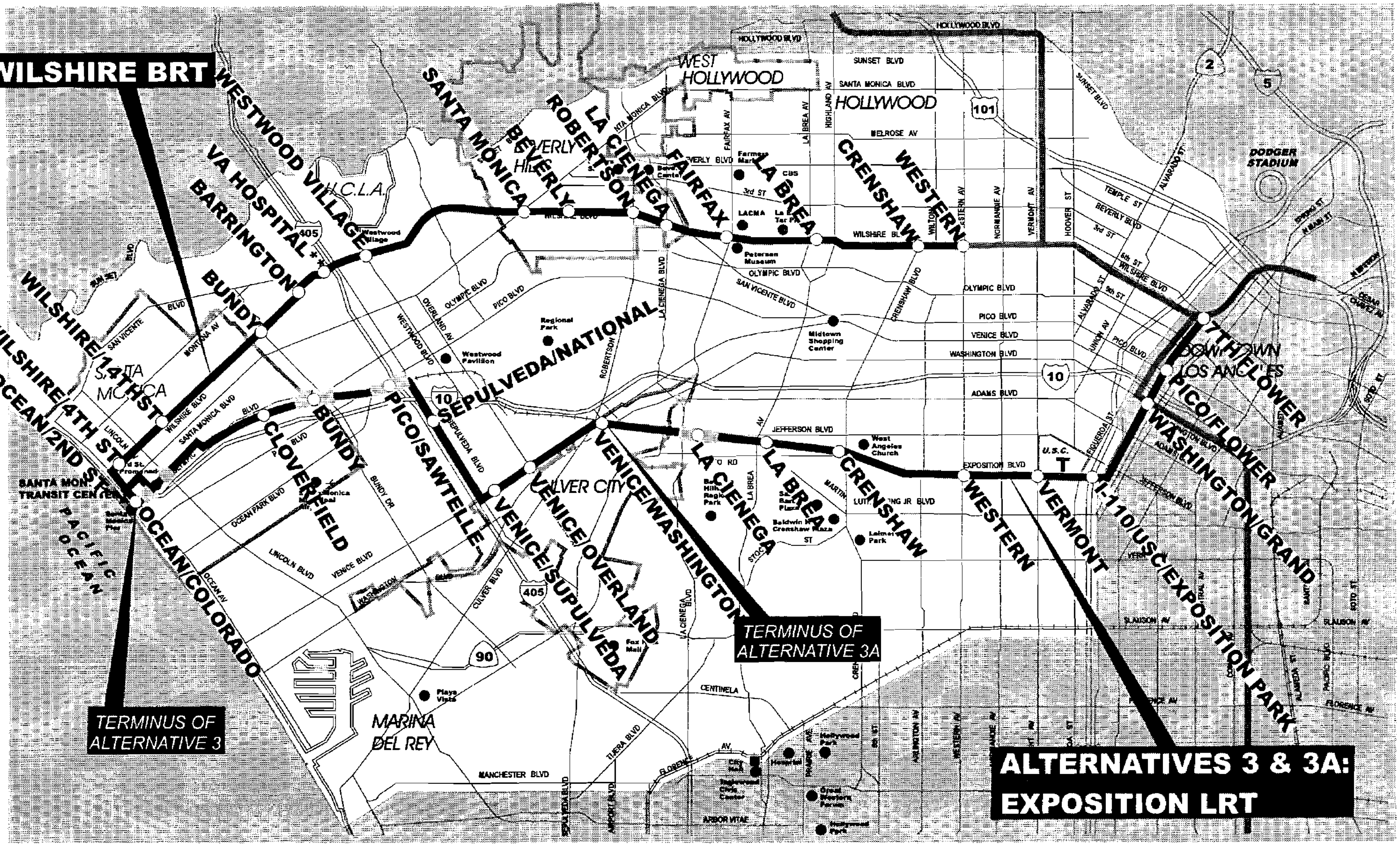
Stations

The Exposition LRT would have 17 stations. The stations would consist of the following:

- A platform that will be 300 feet long and 11 feet wide
- A canopy, with lighting, to protect LRT passengers from sun and rain
- Amenities include paving, maps, schedules, electronic bus arrival messages, landscaping, public art, and bicycle facilities (lockers and/or racks).

The stations along the Exposition LRT system include the following:

- 7th/Flower
- Pico/Flower
- Washington/Grand
- I-110/USC/Exposition Park
- Vermont
- Western
- Crenshaw (with park and ride lot – 400 spaces)
- La Brea (with park and ride lot – 41 spaces)
- La Cienega (with park and ride lot – 363 spaces)
- Venice/Washington (with park and ride lot – 612 spaces)
- Venice/Overland
- Venice/Sepulveda
- Sepulveda/National



LEGEND:

Existing Metro Rail Lines

Alternatives 3 & 3A: Exposition LRT (includes Wilshire BRT)

** Optional Station

Station Location (General)

Elevated

T Optional Tunnel

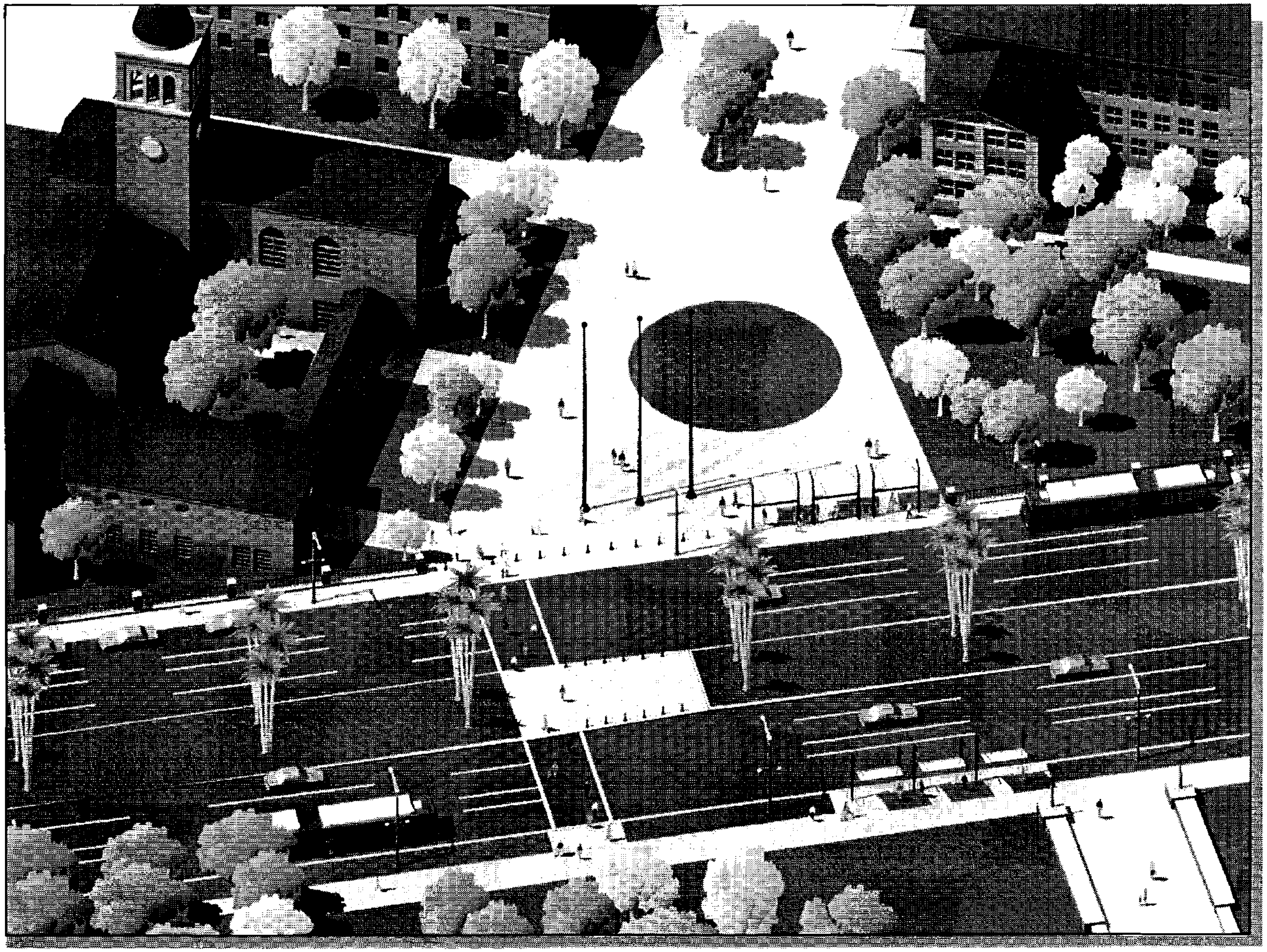
SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-18

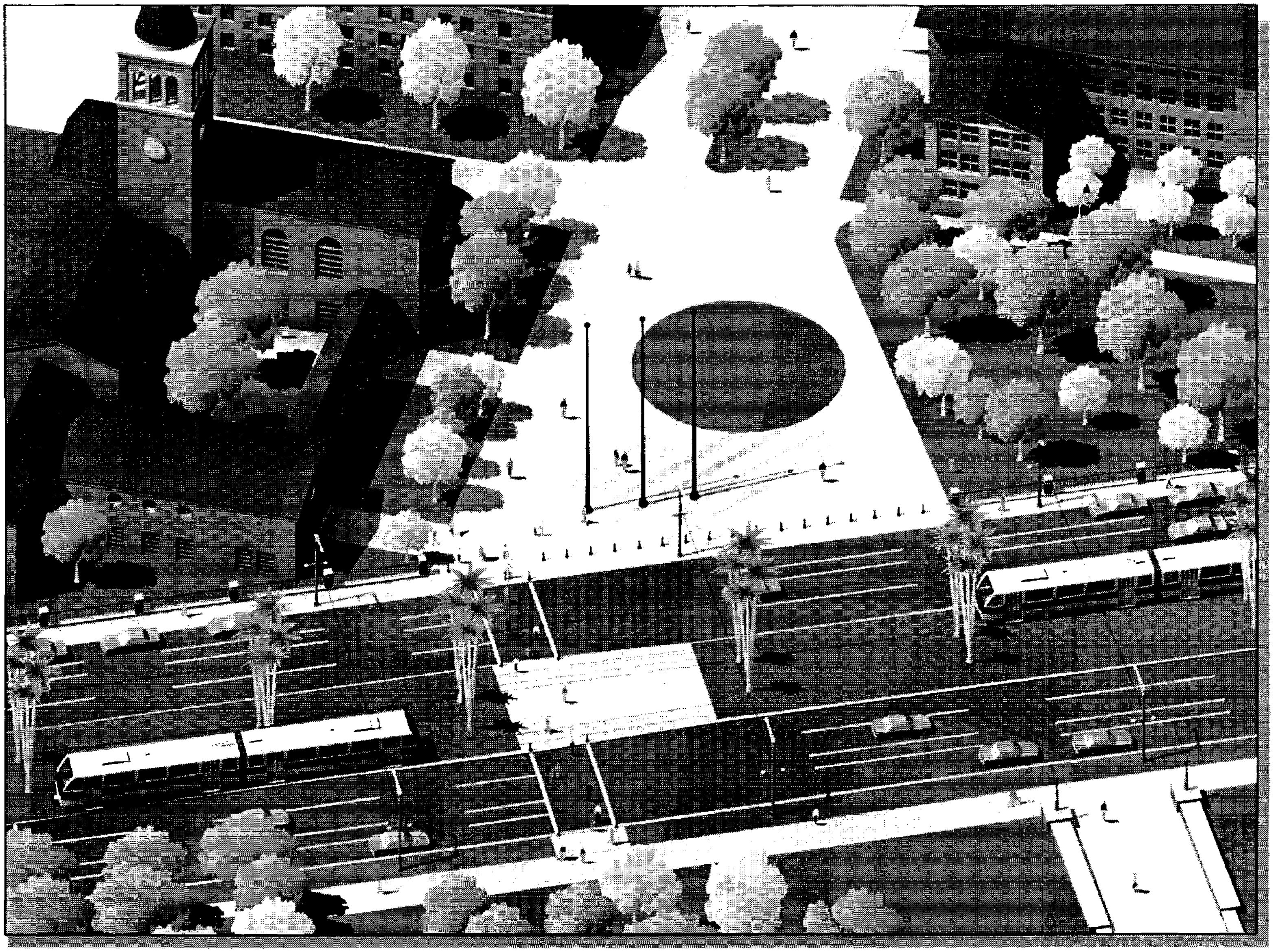
ALTERNATIVES 3 & 3A: EXPOSITION LRT



SOURCE: Suisman Urban Design, 2000

FIGURE 2-19

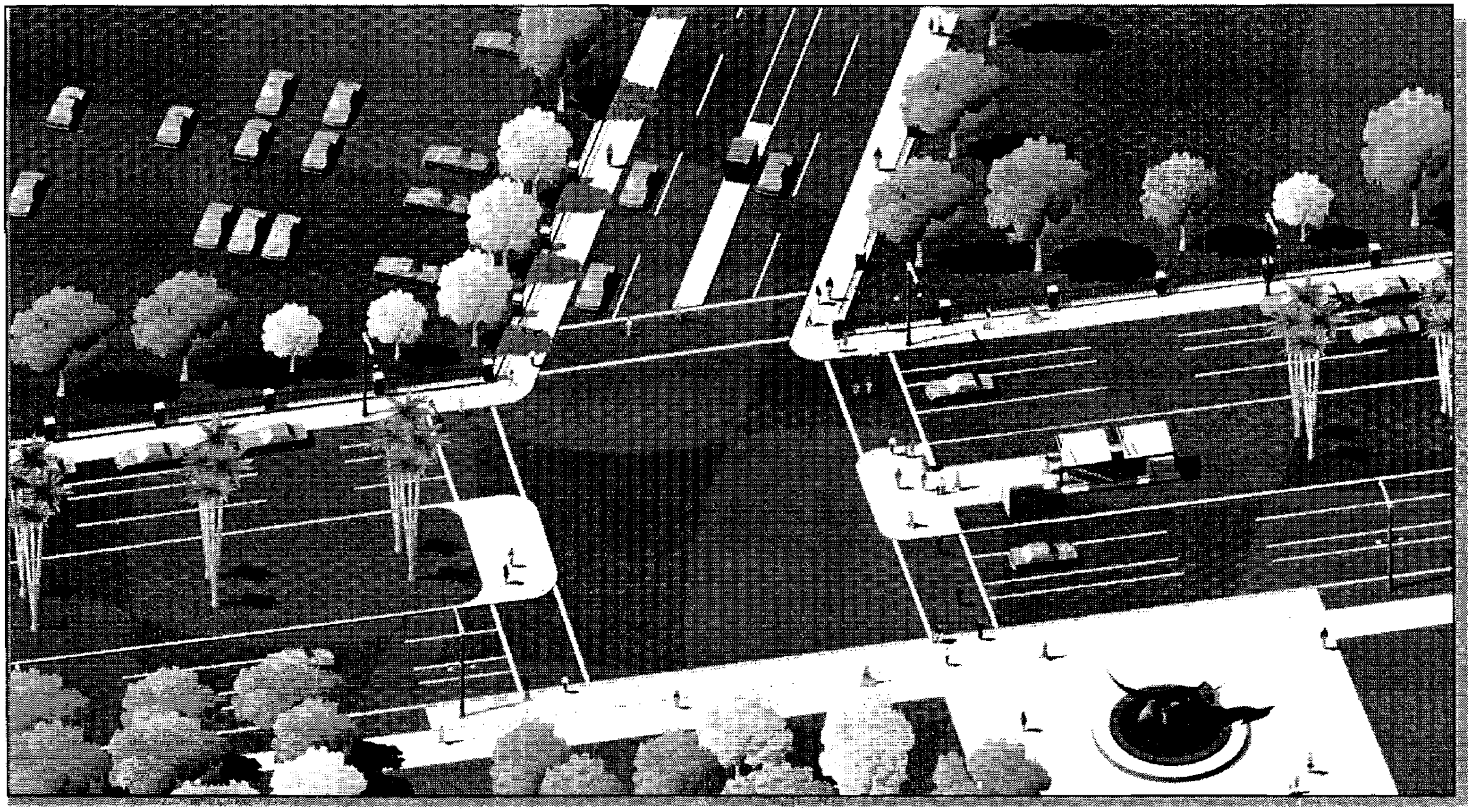
EXPOSITION AT USC: RAPID BUS OPTION



SOURCE: Suisman Urban Design, 2000

FIGURE 2-20

EXPOSITION AT USC: LIGHT RAIL OPTION



SOURCE: Suisman Urban Design, 2000

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-21

EXPOSITION AT USC: SUBWAY OPTION

SOURCE: Suisman Urban Design, 2000

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2-22

EXPOSITION AT USC: LIGHT RAIL OPTION-SIDEWALK VIEW

- Pico/Sawtelle (with park and ride lot – 565 spaces)
- Bundy (with park and ride lot – 372 spaces)
- Cloverfield (with park and ride lot – 1,140 spaces)
- Ocean/Colorado (with park and ride lot – 100 spaces)

A total of 3,593 parking will be provided in these lots.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

All the stations are the same as above, with the exception of the Exposition/USC Station, which will be located below grade in the tunnel, with two access points to allow for greater access to USC: one at Watt Way and one at Vermont Avenue.

Service Characteristics

Service characteristics on the Wilshire BRT portion of Alternative 3 are identical to what is described in Section 2.2.3 (Service Characteristics) above. Therefore, this section focuses on describing service characteristics unique to the Exposition LRT system.

The Exposition LRT system would use light rail vehicles identical to those used on the Metro Blue Line. Standard vehicle dimensions for an LRT vehicle are 90 feet long, 8.6 feet wide and 15 feet in height. The system would use an overhead caternary (overhead wires) as a source of power.

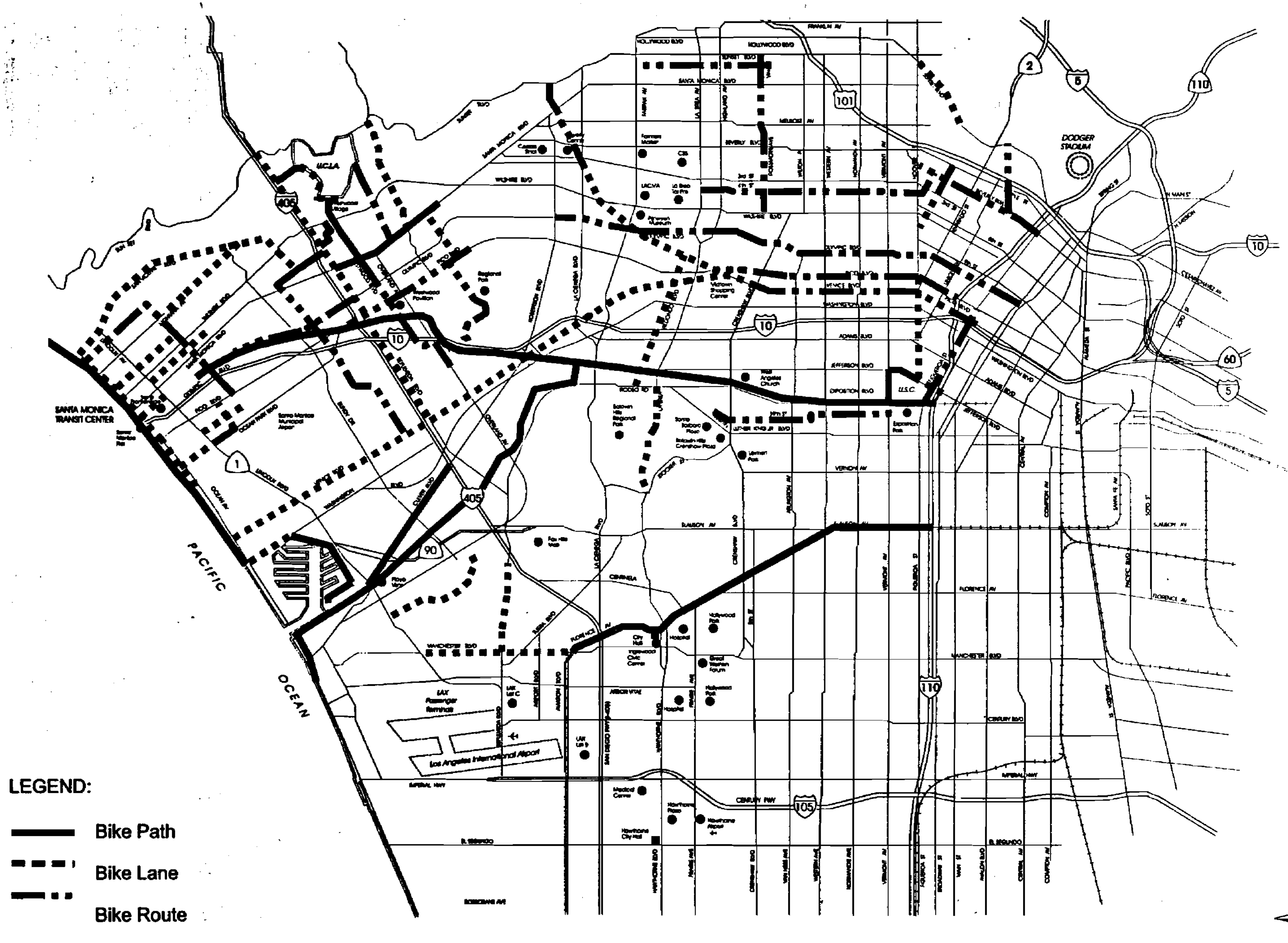
The Exposition LRT Alternative extends a distance of 17.2 miles from the Metro Center (7th and Flower Streets) in downtown Los Angeles to Ocean Avenue in Santa Monica. Light rail trains on the Exposition route would run every 5 minutes in the peak. Because this alternative connects to the existing 7th/Flower station in downtown Los Angeles and shares the same alignment with the Blue Line to Long Beach along Flower Street, the combined train frequency in the common track section with LB-LA Blue Line would be 2.5 minutes. In the off-peak, trains would run every 12 minutes with a combined train frequency of 6 minutes in the common track section with LB-LA Blue Line.

Selected bus routes are modified to connect or truncate at LRT stations. The remaining bus network is same as TSM, which assumes selected route recommendations from Westside Bus Service Improvement Study.

Operating characteristics are summarized in Table 2-8.

TABLE 2-8
WILSHIRE BRT AND EXPOSITION LRT OPERATING CHARACTERISTICS

Transit Service:	Wilshire BRT has slightly upgraded service from existing rapid bus (3 minute peak, 6.6 minute base). New LRT route from 7th/Flower to downtown Santa Monica added. Selected bus routes modified to connect or truncate at LRT stations. Remaining bus and rail network is same as TSM.
Operations:	Trains would run every 5 minutes in the peak period on Expo Line. Combined train frequency in common track section with LB-LA Blue Line (on Flower) would be 2.5 minutes. In the off-peak, trains would run every 12 minutes with a combined train frequency of 6 minutes in the common track section with LB-LA Blue Line.
Max Speed:*	55 mph
Avg Speed:*	24 mph, including stops, and delay in street-running sections.



SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-7

BICYCLE PATH BIKEWAY MAP

One of the major bicycle facility projects identified in the Bicycle Plan is the Exposition Bike Path. This bike path, whether as a rails-to-trail conversion or a rails-with-trails alignment, would offer direct bicycle access between the Exposition Park area and West Los Angeles. It has been identified as a critical link in the Bikeway System for an area of Los Angeles where few streets are viable for striping of bicycle lanes.

Another major bicycle facility planned in the Study Area is the West Los Angeles Veloway. The Bicycle Plan designates Class I and II facilities in the vicinity of UCLA and the Veterans Administration complex in Westwood as an endorsement of the West Los Angeles Veloway. The ultimate alignment of this facility may vary and is subject to the final approval of the responsible agencies. The elevated Class I portion of this bikeway would provide for direct bicycle access to and from Westwood Village/UCLA campus over Wilshire Boulevard, ultimately linking up with the Santa Monica Transit Parkway Bike lanes at Sepulveda Boulevard. In addition, bicycle paths run along Ballona Creek Channel and the entire length of the beach connecting the Westside to the South Bay area.

Bicycle integration with public transit is currently provided on both rail and bus transit. Bicycle lockers are provided at a majority of the Metro Red Line stations and are well utilized. By MTA policy, bikes on trains are allowed in non-peak hours only. A majority of MTA buses currently have bike racks located on the front to accommodate the transition from bicycle to bus and back again.

3.2.3 Impact Assessment

Thresholds of Significance

In order to determine the locations where the proposed project may cause significant transportation impacts, a threshold of significance is required. In addition to measuring the impacts of additional automobiles that will be attracted to transit stations, this analysis will address the impacts of bus and rail alternatives on intersection traffic signal operations (e.g., the effect of transit priority treatment, extended clearance intervals for safety). This method and type of analysis cannot easily be reflected in the Critical Movement Analysis (CMA) methodology typically utilized by the City of Los Angeles Department of Transportation (LADOT) and other agencies. The CMA method measures only the effect of the addition of project-generated traffic and changes in volume/capacity ratios, as the focus of the its analysis. CMA levels of service (LOS) are defined by ranges of the volume-to-capacity (V/C) ratio at an intersection.

The threshold of significance used in this environmental report utilizes the *Highway Capacity Manual* (HCM) operations analysis methodology to quantify existing conditions and future (2020) conditions at signalized intersections with and without the proposed transit projects. For this study the threshold of significance is based on the amount of change in average vehicular delay incurred by vehicles through the intersection (as opposed to the change in volume/capacity ratios). This provides a more accurate assessment of the impact of signal operational changes, such as signal timing and phasing, as well as changes in lane configurations. Accordingly, the definition of significant impact is as follows:

"An intersection is considered to be significantly affected if the project will cause a deterioration in LOS to E or worse, or results in an increase in the average vehicle delay of 5.0 seconds or more at an intersection projected to operate at LOS E or worse under No Project conditions."

The seconds of delay were derived from the relative change in the V/C ratio change from the CMA thresholds. That is, the 0.02 change in V/C at LOS E (which has range of V/Cs of 0.10) is 20 percent of the range for that LOS. This is equivalent to the 5.0 second change at LOS E (which has a 25 second range, from 55.0 to 80.0 seconds) using the 1997 HCM methodology as shown in Table 3.2-3 below.

TABLE 3.2-3
LEVEL OF SERVICE CRITERIA FOR EVALUATING SIGNALIZED INTERSECTIONS

Level Of Service	Control Delay Per Vehicle (Seconds)
A	≤ 10
B	>10 and ≤ 20
C	20 and ≤ 35
D	35 and ≤ 55
E	55 and ≤ 80
F	> 80

A similar threshold of significance was developed for changes in the V/C ratio on mid-block segments (links) of arterial streets. The capacity of the links was determined based on the number of through travel lanes and the roadway classification. The definition of a significant impact is as follows:

"A mid-block segment is considered to be significantly affected if the project will cause a change in the V/C ratio of the link by 0.02 or more and the resulting level of service on the link is forecast as LOS E or F."

Travel Demand Forecast and Evaluation Methodology

The measures of transportation supply and demand in the Study Area are based upon the results of the LACMTA travel demand forecasting model and its associated database. Travel forecasting models are mathematical models, which describe the relationships between land use and demographics, causes of personal travel, and the resultant amount and location of that travel. These models are statistically derived from observations of individual travel choices obtained through extensive surveys of the region's travel characteristics of travelers and their households.

The travel-forecasting model used in the Mid-City/Westside Transit Corridor Study was developed by the LACMTA, is based upon and receives its demographic inputs from Southern California Association of Governments (SCAG) Regional Travel Demand Model. The model predicts future travel demand based upon several input data items that include:

- SCAG forecasts of growth in population and employment;
- SCAG forecast changes in the socio-demographic characteristics of travelers; and
- Future characteristics of the roadway and transit systems including travel times, costs and system capacity reflective of the planned system (No-Build Alternative) and project alternatives.

Using data generated by the MTA travel demand model, detailed travel pattern information was collected and summarized for 1998 base and future 2020 conditions. For purposes of regional planning, the Los Angeles County area has been subdivided by MTA into areas called Community Statistical Areas (CSA). This study also utilized the CSA geographies within the Corridor Area in particular and Los Angles County in general, as well as whole Counties outside Los Angeles County to develop detailed origin/destination and travel pattern information. Integrated highway and transit forecasts were developed by the MTA Model for all project alternatives for 2020 conditions using specifically coded highway and transit networks corresponding to each bus or rail alignment combination. Model outputs were provided in raw and/or summary format and were used by the team for analysis.

For the Study Area's freeway system, Caltrans uses Level of Service (LOS) designations to assess the performance of the region's freeway system. Levels of service A and B indicate free flow travel, while LOS C identifies the slowing of traffic operations and the start of traffic congestion. Freeways operating at LOS D have traffic volumes that are beginning to approach capacity, but have not yet resulted in break down or unstable flow conditions. LOS E indicates traffic volumes that have reached capacity with unstable flow, and LOS F represents a break down in traffic flow caused by excessive demand, and is indicated by stop-and-go traffic operations resulting in significant delay. LOS F has been further broken down into four sub-categories (F-0, F-1, F-2, and F-3) designed to indicate the duration of the congestion.

Growth in Travel and Its Impacts

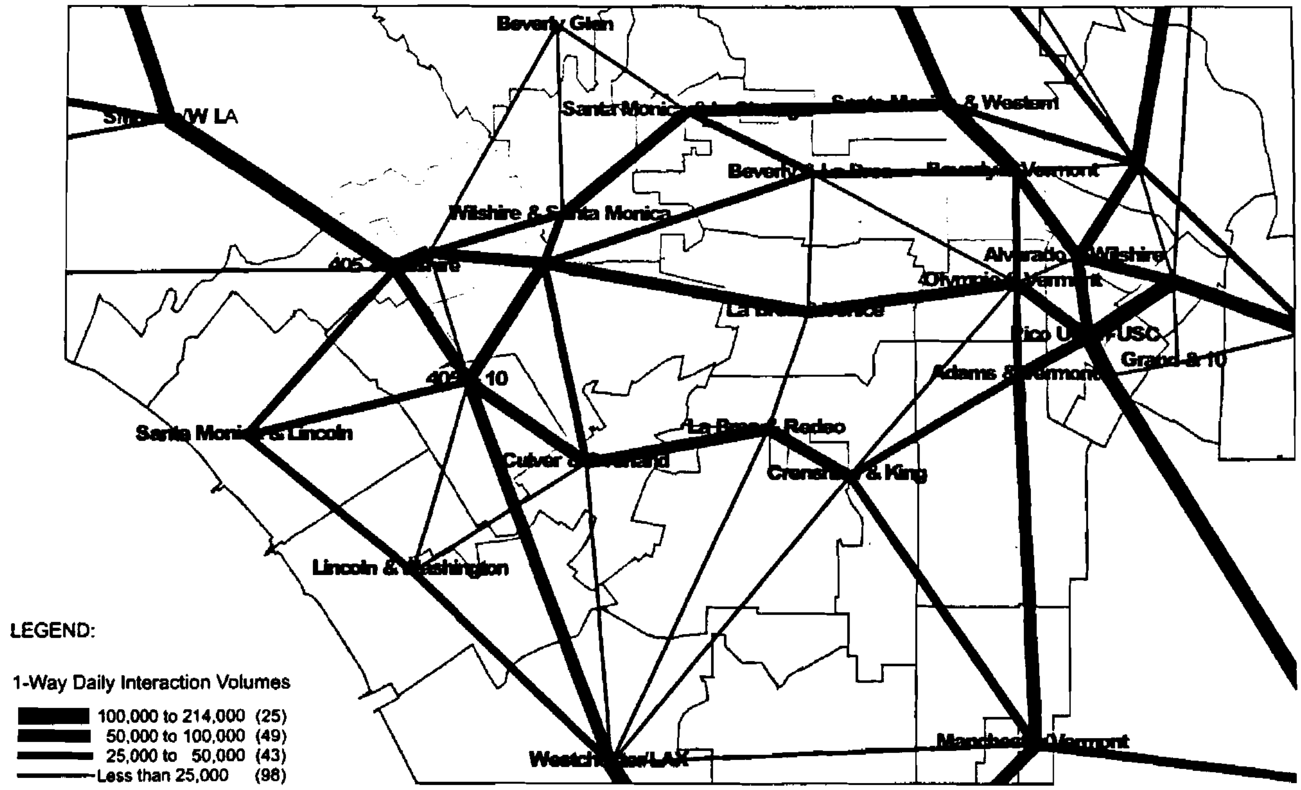
Person Trips

A comparison of work trip origins and destinations for 1998 and 2020 conditions is presented in Figure 3.2-8. This graphic reveals that work-travel demand along every study area corridor is expected to increase significantly in the future. This is the case for trips between communities within the Study Area, as well as travel to and from the San Fernando Valley and the east side. Several east-west corridors within the Study Area show travel demand well in excess of 200,000 daily two-way work-trips. The pattern of four distinctive east-west corridors within the study area is apparent for 2020 conditions, with all community to community movements showing significant increases in demand. The "spider shape" networks (typically illustrating origin-destination patterns) for 1998 and 2020 conditions both indicate that there is strong east-west travel demand within the study area along major east-west corridors including: Santa Monica Boulevard, Wilshire Boulevard, Santa Monica Freeway and Exposition/Venice Boulevards. None of these corridors are currently served by a high capacity transit system.

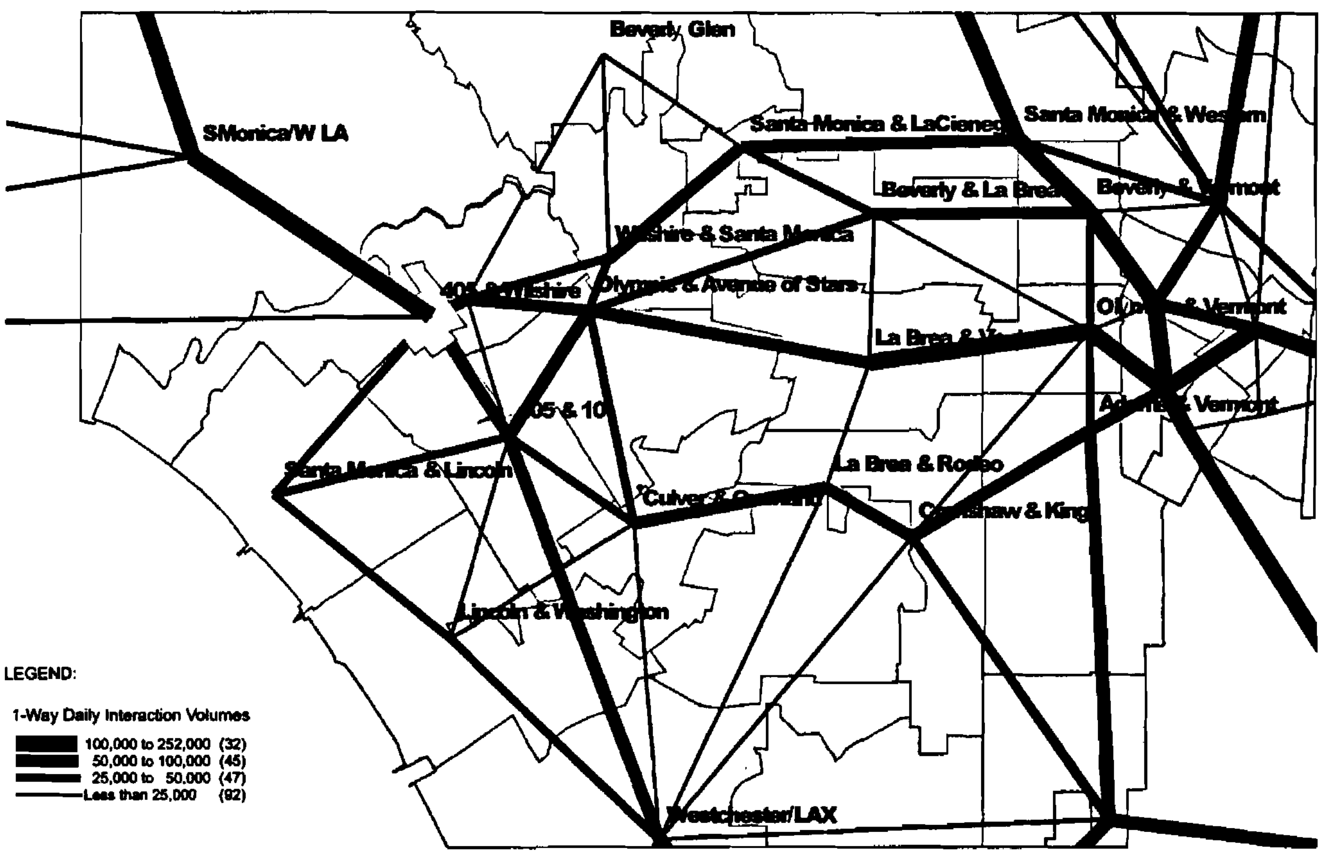
Travel growth characteristics for the Mid-City/Westside Study Area were obtained and summarized from the Los Angeles County MTA's travel demand model. Three of the most meaningful categories of travel characteristics are:

- **Total Daily Person Trips**- number of <u>one-way</u> trips made by all <u>persons</u> in a 24-hour period.
- **Daily Home-Work Person Trips** - the number of <u>one-way</u> trips made by all persons between <u>home</u> **and work** location within a 24-hour period.
- **Daily Transit Person Trips** - the number of <u>one-way</u> trips made by all persons on <u>transit</u> (bus and rail) within a 24-hour period.

A summary of these statistics compiled for 1998 and 2020 base conditions is presented in Table 3.2-4. Statistics related to the entire southern California region (SCAG five-county modeling region of



1997 DAILY WORK TRIP VOLUMES ON "SPIDER" NETWORK



2020 DAILY WORK TRIP VOLUMES ON "SPIDER" NETWORK

SOURCE: Myer, Mohaddes Associates

FIGURE 3.2-8
SPIDER NETWORK OF TRAVEL DEMAND

TABLE 3.2-4 SUMMARY OF PERSON TRAVEL CHARACTERISTICS						
Person Trips and Growth, 1998-2020	Region			Corridor		
	1998	2020	Growth	1998	2020	Growth
Total Daily Person Trips	50,920,260	65,855,097	29.3%	8,255,229	9,305,419	12.7%
Daily Home-Work Person Trips	10,404,238	13,046,580	25.4%	2,318,292	2,659,289	14.7%
Daily Transit Person Trips	1,599,917	2,109,868	31.9%	662,835	834,079	25.8%
Home-Work and Transit Trips as a Percentage of Total Trips	**Region**			**Corridor**		
	1998			**2020**		
Total Daily Person Trips	100.0%	100.0%		100.0%	100.0%	
Daily Home-Work Person Trips	20.4%	19.8%		28.1%	28.6%	
Daily Transit Person Trips	3.1%	3.2%		.8.0%	9.0%	
Corridor Trips as a Percentage of Regional Trips				**Corridor**		
				1998	**2020**	
Total Daily Person Trips				16.2%	14.1%	
Daily Home-Work Person Trips				22.3%	20.4%	
Daily Transit Person Trips				41.4%	39.5%	
Corridor Internal-Internal Trips and Growth				**Corridor**		
				1998	**2020**	**Growth**
Total Daily Person Trips				4,760,766	5,414,333	13.7%
Daily Home-Work Person Trips				782,875	895,223	14.4%
Daily Transit Person Trips				408,655	487,162	19.2%
Internal-Internal Home-Work and Transit Trips as a Percentage of Total Trips				**Corridor**		
				1998	**2020**	
Total Daily Person Trips				100.0%	100.0%	
Daily Home-Work Person Trips				16.4%	16.5%	
Daily Transit Person Trips				8.6%	9.0%	
Internal Trip Retention Percentage in the Corridor				**Corridor**		
				1998	**2020**	
Total Daily Person Trips				57.7%	58.2%	
Daily Home-Work Person Trips				33.8%	33.7%	
Daily Transit Person Trips				61.7%	58.4%	

Key: Region=Five-County Southern California MTA Modeling Area
Corridor=Mid-City/Westside Study Area

Source: Compiled by Meyer, Mohaddes Associates from LACMTA Travel Demand Model Trip Tables.

Ventura, Los Angeles, Orange counties and urbanized portions of San Bernardino and Riverside counties) are shown on the left side, whereas the information on the right pertains to the Study Area only.

The following paragraphs describe the projected magnitude and trends in travel demand for the study area and make relevant comparisons to the same trends for the southern California region.

All Trips

As seen in the first section of the table, in 1998 there were a total of approximately 50.9 million daily person trips made in the five-county region. As the second row of figures shows, 10.4 million, or 20 percent of these total daily trips are two-way home-to-work trips, and almost 1.6 million of the daily trips, or 3 percent are made on transit. As the table also illustrates, there are nearly 8.2 million daily person trips made in the Corridor area, of which 2.3 million, or 27 percent are home-to-work trips, and over 663,000 trips, or 8 percent are made on transit.

When compared to the region as a whole, it can be seen that the Corridor has a higher percentage of work trips (by 7 percentage points) of all daily trips. This is a reflection of relatively higher population density as well as abundance of employment opportunities in the Corridor. The more notable observation, is the significantly higher transit percentage for Corridor trips compared to the overall regional transit percentage. The Corridor's 8 percent transit mode split is 2.5 times higher than the regional 3 percent mode split. This is a clear indication of two characteristics related to the Corridor area: high transit dependency in certain Corridor communities and relatively high levels of transit services, which are provided in the Corridor.

The significance of the Corridor's travel characteristics compared to the region is shown on the third row of the table. This part of the table has some revealing facts. Whereas, the Corridor's total daily person trips account for 16 percent of the total trips in the region, more than one out of every five home-work trips in the region (22 percent), are related to the Corridor area. This again, points to the higher population and employment opportunities in the Corridor area. The Corridor's share of regional transit trips is extremely significant. The statistics show that 41 percent of daily transit trips made in the region have either an origin or a destination in the Corridor area.

Internal Trips

Travel statistics, which were presented above were related to all trips that either originate within or are destined to the Corridor area. The last three sections of the table provide information about the Corridor's internal trips. Internal trips are those which have both ends of the trip (origin and destination) entirely within the Corridor area. In 1998 there were a total of 4.7 million daily trips, which stayed entirely within the Corridor. Over 782,000 of these, or 14 percent, were work trips, and 408,000, or 9 percent of the total internal trips, were transit trips.

When comparing the internal trips to total trips generated by the Corridor, it can be seen that a relatively large portion of the total trips, more than half (58 percent) stay within the Corridor. This is an indication of availability of travel opportunities (both home and work) for all trips in the Corridor, which results in high trip retention. However, the percentage of retention for work trips is significantly lower at about one out of three (34 percent). This shows that many residents commute to work destinations outside and many internal jobs are taken by residents from other areas. When analyzing the internal capture of transit trips, the trends are even higher than all trips, showing that 62 percent of all transit trips generated by the Corridor stay entirely within the Corridor's boundaries.

Future Trends

Forecasts of travel statistics were also made available form the MTA model for 2020 as shown on Table 3.2-4 in conjunction with the corresponding 1998 information. Comparison of 1998 and 2020 data for each category, both for the region and the Corridor area, provides information about expected growth in magnitude of travel and the relative significance of this growth when compared to the expected regional growth.

The region's 50.9 million total daily trips are expected to grow by 29 percent to nearly 66 million by 2020. Home-to-work trips will grow similarly by 27 percent, from 10.4 million to 13 million. The expected growth in regional transit trips is also relatively consistent, at 26 percent, from 1.6 million to just over 2 million. There is, however, a notable difference between the Corridor and the region as it relates to growth in travel. Overall, all of the three travel indicators show lower growth for the Corridor, compared to the region as a whole. This is a reflection of relative maturity and built-out nature of the Corridor area. While the 1998 to 2020 growth of the regional statistics were between 26 and 30 percent, the Corridor's growth is in the 13 to 25 percent range. In the 22-year span, total daily trips in the Corridor are expected to grow only by 13 percent, from 8.2 million to 9.3 million.

The growth in home-to-work trips is slightly higher, at 14 percent, from 2.3 million to 2.7 million. However, the Corridor's transit trips are expected to increase at a much higher rate than total trips, by 26 percent, from the 1998 level of 662,000 to 834,000 by 2020. It should be noted that this is based on the No Action Alternative, with no major transit improvements in the east-west corridor. The share of daily home-to-work and transit trips as a percentage of the total trips are expected to remain very similar to 1998 trends, both for the region and the Corridor.

With the expected high regional growth levels, the share of Corridor trips - as a percentage of total regional trips - show declines in all categories in 2020 compared to 1998. All daily trips will be only 14 percent, home-to-work trips will drop to 20 percent, and transit trips will fall slightly to 40 percent. It should be pointed out however, that regardless of these declines the Corridor's share of regional travel will still be significant in all categories and is concentrated in a small geographic portion of the region (i.e., the density of trips is still very high). Total internal trips are expected to grow by 14 percent. Internal home-to-work trips are also projected to grow by 14 percent. Internal transit trips are expected to grow by 19 percent.

Several key points can be concluded from the above analysis, which point to the importance of future transit service.

- The Mid-City/Westside Corridor is a highly significant origin and/or destination point for trips in southern California, especially for transit trips, over 41 percent of which have one end in the Corridor
- The Corridor has a significantly higher transit mode split than the region as a whole, and the trend is expected to increase (from nearly 2.5 to 2.8 times the regional mode split)
- The Corridor currently has a very high internal trip retention (over half of all trips), and despite growth in regional trips, is expected to maintain these high internal trip retention percentages

Travel Growth Trends

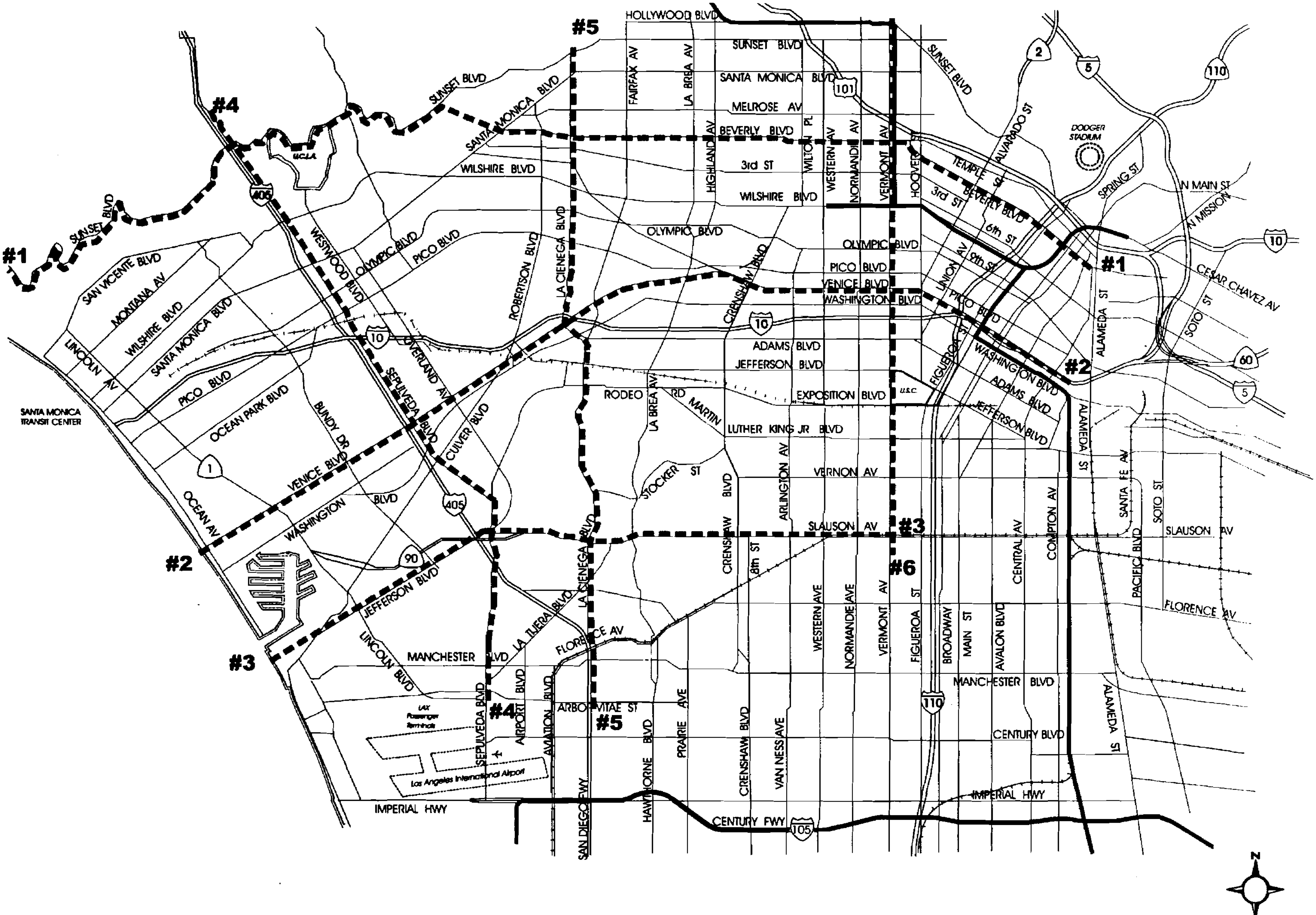
Figure 3.2-9 shows a map outlining locations of "screenlines" used for analyzing travel corridors in this study. Screenlines are imaginary lines that are used to summarize regional traffic volumes in the study area across selected major freeway and street facilities. The volume information that is derived from a screenline analysis indicates the general magnitude of flow at certain locations, and also helps determine the peak direction and characteristics of traffic at that location. Screenlines can also be used to observe traffic volume growth along a particular travel corridor by comparing existing to future year scenarios, or variations/differences in traffic volumes in various scenarios in the same year. For this study, the total two-way volumes across screenlines are reported, and the percent growth between scenarios and between the existing and no project scenarios are shown. For screenlines labeled "east-west", the traffic volumes reported are on the north-south streets that cross the screenline. For north-south screenlines, the volumes represent the traffic on major east-west streets.

The analysis screenlines are defined as follows:

- **Screenline 1** parallels the south side of Sunset Boulevard and then along the south side of Beverly Boulevard
- **Screenline 2** parallels the south side of Venice Boulevard
- **Screenline 3** parallels the north side of Jefferson Boulevard and then along the north side of Slauson Avenue
- **Screenline 4** parallels the east side of Sepulveda Boulevard
- **Screenline 5** parallels the east side of La Cienega Boulevard
- **Screenline 6** parallels the east side of Vermont Avenue

Table 3.2-5 shows the percent growth in total (freeway and arterial) two-way peak hour traffic volumes between 1998 and 2020 base conditions along the defined study area screenlines. Some general conclusions can be drawn from the numbers, as follows:

- Total traffic growth is expected to be greater in the north-south direction than in the east-west direction
- Growth in north-south travel is expected to be between 14 to 23 percent, while east-west travel will grow by 8 to 12 percent
- The volume growth percentage is greatest overall for north-south traffic crossing Screenline 3, near the southern edge of the study area



SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-9

SCREENLINE LOCATIONS

TABLE 3.2-5 PROJECTED GROWTH IN PEAK HOUR TRAFFIC COMBINED FREEWAYS AND ARTERIALS					
		Growth- 1998 to 2020 Base			
		AM Peak		PM Peak	
Screenline #	**Location**	**Volume**	**% Growth**	**Volume**	**% Growth**
1	S/O Beverly Blvd/Sunset Blvd	14,027	16.22%	12,925	16.50%
2	S/O Venice Blvd	9,989	14.21%	9,446	14.69%
3	N/O Jefferson Blvd/Slauson Ave	10,213	21.76%	10,021	23.02%
4	E/O Sepulveda Blvd	4,250	9.51%	3,612	8.70%
5	E/O La Cienega Blvd	4,860	9.92%	4,434	10.07%
6	E/O Vermont Ave	6,338	10.92%	6,376	11.79%

Table 3.2-6 depicts percent growth of volumes at selected freeway segments from 1998 to the base 2020 condition as projected by the MTA travel demand model. The following general observations can be made:

- The percent growth of traffic volumes on the Santa Monica Freeway (I-10), the only major east-west freeway in the study area, decreases from west to east. This is the opposite of the trend shown in Table 3.2-5. This may be due to the fact that this freeway already exceeds capacity and has little room for traffic growth without major capacity improvements
- Traffic growth on the Hollywood Freeway primarily indicates the expected heavy increase in travel demand from the San Fernando Valley into downtown Los Angeles
- The sections of the Harbor Freeway shown are in downtown Los Angeles, and that growth is primarily due to growth in the downtown region
- The high growth on the San Diego Freeway shows that the bulk of additional traffic into and out of the study area will come from the north and south. This is primarily due to increased capacity on this freeway due to the completion of high occupancy vehicle (HOV) lanes. This freeway will experience the highest volume growth of all the freeways in the study area

TABLE 3.2-6 PROJECTED GROWTH IN FREEWAY TRAFFIC VOLUMES			
		Percent Growth- 1998 to 2020 Base	
Freeway	**Segment**	**AM Peak**	**PM Peak**
Santa Monica Freeway I-10	E/O Sepulveda Blvd	8.59%	9.74%
	E/O La Cienega Blvd	3.87%	4.23%
	E/O Vermont Ave	-1.78%	-1.25%
Hollywood Freeway US 101	S/O Vermont Ave	12.96%	17.81%
Harbor Freeway I-110	N/O 3rd St	4.40%	4.91%
	S/O Venice Blvd	5.34%	5.45%
San Diego Freeway I-405	S/O Sunset Blvd	31.97%	29.73%
	S/O Venice Blvd	27.33%	30.67%
	N/O Jefferson Blvd	17.61%	20.42%

Table 3.2-7 below depicts the percentage growth of arterial volumes at selected screenline locations from 1998 to the base 2020 condition as forecasted by the MTA travel demand model.

TABLE 3.2-7
PROJECTED GROWTH IN ARTERIAL TRAFFIC VOLUMES

Screenline	Street	Percent Growth- 1998 to 2020 Base	
		AM Peak	PM Peak
# 1 (E/W)	S/O Beverly Blvd/Sunset Blvd	16.10%	16.61%
# 2 (E/W)	S/O Venice Blvd	13.91%	13.63%
# 3 (E/W)	N/O Jefferson Blvd/Slauson Ave	24.45%	25.56%
# 4 (N/S)	E/O Sepulveda Blvd	9.72%	8.41%
# 5 (N/S)	E/O La Cienega Blvd	11.97%	11.96%
# 6 (N/S)	E/O Vermont Ave	16.60%	15.90%

From this table, the following general observations can be made:

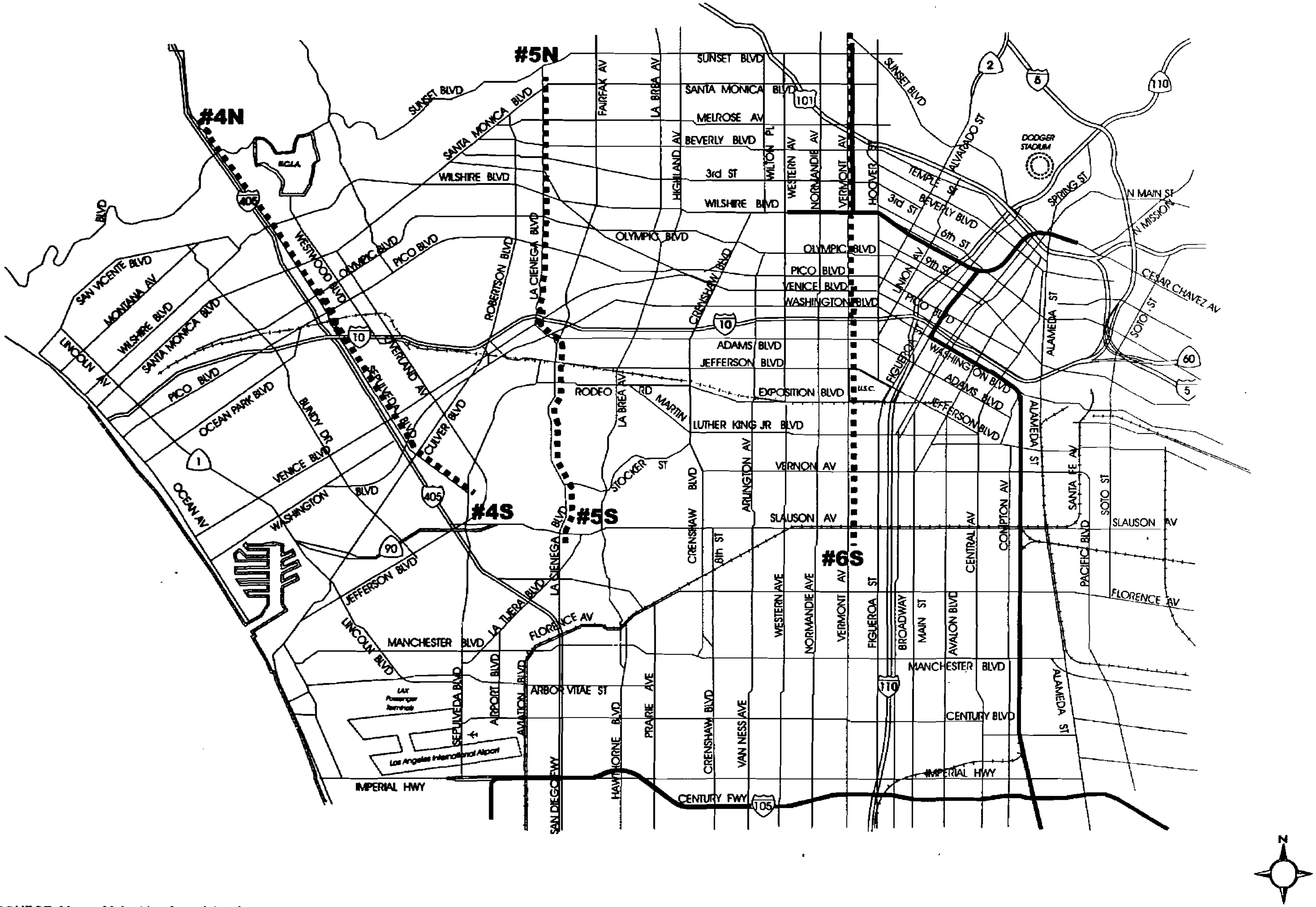
- All screenlines (north-south/east-west) show increase in travel demand compared to 1998 conditions.
- The most significant increase in travel demand for north-south travel is across the Jefferson Boulevard/Slauson Avenue screenline. This projected growth is primarily attributable to the available capacity on these north-south streets.
- The percent increase in volume for east-west travel (Screenlines 4-6) is greater toward the eastern edge of the study area. This is the same trend as shown in Table 3.2-5. The most significant increase in travel demand for east-west travel is across the Vermont Avenue screenline.
- The percent growth increase in east-west travel for arterial streets is greater than the percent growth increase for the Santa Monica Freeway at the screenline locations. This shows that since the freeways are already at capacity, the arterial streets have faster travel times than the freeway. So, east-west traffic is diverting onto the arterial streets.

Sub-Corridor System

To conduct a more direct and specific analysis of travel trends and growth impacts focused on each of the two major east-west corridors in the study area, namely the Wilshire and Exposition corridors, the three north/south screenlines (#4, #5, and #6) were divided into north and south segments. These are designated by letters N (north, Wilshire) and S (south, Exposition) following the number of the screenline.

The sub-corridor screenlines are shown in Figure 3.2-10, and are defined as follows:

- **Screenline 4N** east of Sepulveda Blvd. (Sunset Blvd. to the Santa Monica Freeway).
- **Screenline 4S** east of Sepulveda Blvd. (Olympic Blvd. to Jefferson Blvd.)
- **Screenline 5N** east of La Cienega Blvd. (Santa Monica Blvd. to Venice Blvd.)
- **Screenline 5S** east of La Cienega Blvd. (Santa Monica Fwy. to Slauson Ave).
- **Screenline 6S** east of Vermont Ave. (Sunset Blvd. to Santa Monica Freeway).
- **Screenline 6S** east of Vermont Ave. (Venice Blvd. to Slauson Ave).



SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

METRO LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-10

FOCUSED CORRIDOR SCREENLINES

Table 3.2-8 depicts the percent growth of traffic volumes at sub-screenlines between 1998 and base 2020 conditions. The following observations can be made:

- At the west end of the study area, the majority of the growth in traffic is in the Exposition Corridor. The Wilshire Corridor's streets are already at capacity, and as a result, can grow very little without major road widening.
- In the center of the study area, the percent growth increases in the Wilshire Corridor due to increase capacity and lower volumes compared to the west end. The Exposition Corridor is projected to have major growth.
- At the east end of the study area, the Wilshire Corridor has a significant increase in volume. This is due to the available capacity of the arterial streets. The Exposition Corridor shows little growth.

TABLE 3.2-8
CORRIDOR SPECIFIC SCREENLINE SUMMARY

Screenline #s	Location	Percent Growth- 1998 to 2020 Base	
		AM Peak	PM Peak
# 4N (N/S)	E/O Sepulveda Blvd	1.36%	-2.56%
	From Sunset Blvd to Interstate 10		
# 4S (N/S)	E/O Sepulveda Blvd	10.64%	11.76%
	From Olympic Blvd to Jefferson Blvd		
# 5N (N/S)	E/O La Cienega Blvd	6.42%	5.41%
	From Santa Monica Blvd to Venice Blvd		
# 5S (N/S)	E/O La Cienega Blvd	10.64%	18.81%
	From Interstate 10 to Slauson Ave		
# 6N (N/S)	E/O Vermont Ave	10.52%	11.56%
	From Sunset Blvd to Interstate 10		
# 6S (N/S)	E/O Vermont Ave	4.37%	5.31%
	From Venice Blvd to Slauson Ave		

Transportation Performance Measures

Table 3.2-9 presents a comparison of several key transportation performance measures, including transit and vehicular travel characteristics, for existing and 2020 base condition for Los Angeles County and the study area. This table shows transit boardings and trips as well as the countywide transit mode share. It also shows vehicle miles of travel (VMT), vehicle hours of travel (VHT) and average highway travel speed statistics for the study area and the County.

The following general observations can be made from Table 3.2-9:

- Both daily person trips and transit trips are expected to increase 19 percent from 1998 to 2020. This is also reflected in the similarity between the transit share percentages for both years.
- Countywide VMT is expected to increase at almost three times the rate of increase of person trips. This indicates that average commutes may be longer in the future.

TABLE 3.2-9
COMPARISON OF TRANSPORTATION PERFORMANCE MEASURES

Countywide Statistics	1998 Exist	2020 Base
Daily Person Trips	29,113,086	34,676,805
(% change)		(19.11%)
Daily Transit Trips	1,023,867	1,219,802
(% change)		(19.14%)
Daily Transit Boardings	1,524,407	1,856,190
(% change)		(21.76%)
Daily Bus Boardings	1,379,825	1,605,059
(% change)		(16.32%)
Total Transit Mode Share	3.52%	3.52%
Daily Vehicle Trips	21,316,978	25,342,446
(% change)		(18.88%)
Daily Auto VMT	290,295,124	419,584,000
(% change)		(44.54%)
Daily Auto VHT	8,052,048	16,318,845
(% change)		(102.67%)
Average Vehicle Speed	36.05	25.71
(% change)		(-28.68%)
Study Area Statistics		
Daily Auto VMT	17,918,614	20,060,137
(% change)		(11.95%)
Daily Auto VHT	552,378	806,372
(% change)		(45.98%)
Average Vehicle Speed	32.44	24.88
(% change)		(-23.31%)
AM Peak Auto VMT	4,120,591	4,607,016
(% change)		(11.80%)
AM Peak Auto VHT	179,116	220,785
(% change)		(23.26%)
AM Peak Average Speed	23.01	20.87
(% change)		(-9.30%)
PM Peak Auto VMT	5,834,194	6,537,504
(% change)		(12.05%)
PM Peak Auto VHT	251,154	312,337
(% change)		(24.36%)
PM Peak Average Speed	23.23	20.93
(% change)		(-9.90%)

- Countywide VHT more than doubles between 1998 and 2020.
- VMT and VHT do not increase as much in the study area as in the county. This reflects the fact that the study area is nearly built out and that the highways are near capacity.
- In the future, the daily average speed in the study area will not vary significantly from the AM and PM peak hour average speeds, whereas today the off-peak speeds are much higher than peak hour speeds. This indicates that in 2020, congested conditions will exist for the majority of an average day beyond the traditional peak periods.
- In the study area, VHT increases by four times as much as VMT, indicating increased delays on a much more congested roadway network.

Transportation Impacts of Project Alternatives

This section describes the impacts resulting from a number of future transportation scenarios analyzed in this EIR, including a No Action, Transportation Systems Management (TSM), and five transit project scenarios. Travel demand forecasts were developed for seven future scenarios using the MTA Travel Demand Model for the 2020 horizon year, as listed below.

- **No Action Alternative (Baseline).** The No Action scenario assumes only the funded improvements to the transportation network expected to be in place in 2020 and no transit improvements along the Wilshire and/or the Exposition corridors.
- **Transportation System Management (TSM) Alternative.** The TSM scenario assumes a series of moderate transit improvements (mostly frequency improvements on existing lines and some streamlining of unproductive bus services) that are designed to improve transit service and travel times within the corridor, and attract additional transit riders.

The following scenarios, which were modeled for this Mid City/Westside transit corridor study area, included major transit improvements on the Wilshire and/or the Exposition corridors:

- **Alternative 1: Wilshire BRT (Baseline Median-Running).** Includes a Bus Rapid Transit facility along the median of Wilshire Boulevard from Fourth Street in Santa Monica to Western Avenue in Los Angeles. This will require the removal of one general-purpose traffic lane in each direction, the removal of several left turn pockets and elimination of on-street parking throughout the corridor.
- **Alternative 2: Wilshire BRT and Exposition BRT (Full Length).** This alternative includes the full Wilshire BRT plus a Bus Rapid Transit line from Ocean Avenue in Santa Monica to Seventh Street/Metro Center station in downtown Los Angeles. Most of the route will be constructed in the Exposition Rail right of way owned by MTA. The BRT line follows the same alignment as the LRT, except it will use Figueroa Street north of Exposition Boulevard as a rapid bus line. The westbound BRT will use Flower Street between 7th Street and Olympic Boulevard. In Santa Monica, the BRT also uses City Streets west of 20th Street.
- **Alternative 2A: Wilshire BRT and Exposition BRT (MOS).** This alternative has the full Wilshire BRT plus a Minimum Operable Segment (MOS) of Exposition BRT from Venice Boulevard/Robertson Boulevard in Culver City to Seventh Street/Metro Center station in downtown Los Angeles.
- **Alternative 3: Wilshire BRT and Exposition LRT (Full Length).** This alternative includes the full Wilshire BRT plus a light rail line from Ocean Avenue in Santa Monica to Seventh Street/Metro Center station in downtown Los Angeles. The LRT will mostly follow the Exposition Rail right of way owned by MTA, except a segment in the center median of Venice Boulevard and Sepulveda Boulevard in Culver City and part of Los Angeles, instead of the rail right of way. In the City of Santa Monica, the LRT will operate in traffic on Olympic Boulevard in the median and a westbound travel lane from 20th Street to Lincoln Boulevard. The LRT line will also travel down the center of Hill Street between 35th Street and Washington Boulevard to connect to the existing Metro Blue Line. Both the Hill Street and Venice Boulevard alignments will require the removal of a through lane in each direction. Left turns will either be partially or

completely removed on all streets on which the LRT line travels. Parking is also removed in much of the on-street running segments.

- **Alternative 3A: Wilshire BRT and Exposition LRT (MOS).** This alternative combines the full Wilshire BRT project with an MOS of Exposition LRT from Venice/ Washington station in Culver City to Seventh Street/Metro Center station in downtown Los Angeles.

Impacts on the Transit System

To analyze the effects of the various alternative project scenarios on the transit system as a whole, the following transit performance measures were derived from the MTA travel demand model and summarized for each scenario:

- Daily Segment Boardings
- Daily Transit Trips
- Daily Transit Boardings
- Daily Bus Boardings
- Total Transit Mode Share

Table 3.2-10 provides a summary of Countywide transit performance measures for all scenarios. The statistics for each scenario are compared to the 2020 No Action Alternative. The following general observations can be made from this table:

- All of the project alternatives result in increased Total Transit Mode Share over the 2020 No Action and TSM Alternatives.
- Daily Segment Boardings are the greatest for Alternative 3 (Wilshire BRT and Exposition LRT)
- Daily Transit Trips and Total Transit Mode Share are the greatest for Alternative 2A (Wilshire BRT and Exposition BRT MOS)
- Daily Transit Boardings and Daily Bus Boardings are the greatest for TSM

It should be noted that increased boardings are not necessarily an indicator of efficient transit service. The best indicator is "new transit riders," as measured by "linked" (end-to-end) trips. This measure is presented and analyzed in Chapter 5.0 (Financial Analysis and Comparison of Alternatives). It should also be noted that there are differences in transit operations amongst the three BRT options on Wilshire Boulevard. Alternative 1 will afford opportunities for the best transit operations because the Rapid Buses will operate in a dedicated lane that will not be shared with any other vehicles. Alternative 1 affords the best Rapid Bus travel speeds. Alternatives 1A and 1B will have reduced efficiencies for transit operations because other vehicles will at times share the bus lane or merge across it. With Alternative 1A, vehicles destined for the left turn lane in the center of Wilshire Boulevard, will have to merge into the BRT lane and cross it to reach the left turn lane. At some locations, the number of left-turning vehicles may cause the left turn queue to exceed the storage capacity of the left turn lane, thereby blocking the BRT lane and slowing the progress of buses. Similarly, for Alternative 1B, drivers who desire to turn right off of Wilshire Boulevard onto side streets will have to merge into the BRT lane and turn right from the BRT lane. At cross streets with high levels of pedestrian activity in the crosswalk, the right turning vehicles may have to wait, thereby blocking the buses. Also, the local buses will remain in the curb lane, so Rapid Buses may be delayed by local buses stopping at stops between the BRT stations under Alternative 1B.

Impacts on Highway Performance Measures

This section provides a summary of analysis on transportation performance measures using data from MTA's travel demand model. Performance measures for all future scenarios are compared to the results of 2020 No Action Alternative for Los Angeles County in general and the Mid-City/Westside study area in particular. Analyzed transportation performance measures include: total daily person trips, daily vehicle trips; vehicle miles traveled (VMT); vehicle hours traveled (VHT) and average vehicular travel speed. Table 3.2-11 provides a summary of Countywide and study area performance measures for all modeled scenarios. The following general observations can be made from this table for each alternative.

Transportation System Management (TSM) Alternative

- This is the only scenario that shows a countywide reduction in VMT compared to No Action, by about 0.01 percent.
- However, the trend is reversed when looking at the study area. The TSM is the only alternative, which results in an increase in VMT.

Alternative 1: Wilshire BRT (Baseline Median-Running)

- Countywide, total vehicle trips decrease by about 8,500, but VMT and VHT increase, indicating that some trips are shifted towards the Wilshire BRT.
- In the focused study area, VMT decreases. This is also due to the decrease in 8,500 vehicle trips that shift to the Wilshire BRT.
- Study area VHT increases in all time periods. This also correlates with traffic diversion and longer travel routes, probably associated with the diversion of traffic due to the loss of lanes on Wilshire Boulevard. Refer to the discussion provided on page 3.2-45 regarding the impacts associated with the loss of a lane on Wilshire Boulevard.

This alternative has the lowest average speeds in the study area among all alternatives, although the change in speed is very small.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

- Countywide, average speed increases due to the decrease of VHT.
- There is a decrease of approximately 13,500 vehicle trips. Since person trips increases slightly, these lost vehicle trips are new transit trips that use either BRT.
- In the study area, VMT decreases, VHT increases, and average speed decreases for all time frames.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

- Overall performance measures countywide and in the study area are worse compared to Alternative 2, but this difference is marginal.

TABLE 3.2-10
COMPARISON OF TRANSIT PERFORMANCE MEASURES

	2020 No Action	**TSM**	**Alternative 1 Wilshire BRT**	**Alternative 2 Wilshire BRT + Expo BRT**	**Alternative 2A Wilshire BRT + Expo BRT MOS**	**Alternative 3 Wilshire BRT + Expo LRT**	**Alternative 3A Wilshire BRT + Expo LRT MOS**
Countywide Statistics							
Daily Segment Boardings	NA	NA	39,597	65,319	56,685	83,987	65,477
Daily Transit Trips	1,219,802	1,220,899	1,232,121	1,239,306	1,238,315	1,247,042	1,235,404
Compared to No Action		0.09%	1.01%	1.60%	1.52%	2.23%	1.28%
Daily Transit Boardings	1,856,190	1,863,491	1,845,564	1,828,978	1,824,767	1,834,632	1,831,514
Compared to No Action		0.39%	-0.57%	-1.47%	-1.69%	-1.16%	-1.33%
Daily Bus Boardings	1,605,059	1,612,463	1,589,314	1,569,451	1,567,444	1,542,995	1,558,574
Compared to No Action		0.46%	-0.98%	-2.22%	-2.34%	-3.87%	-2.90%
Total Transit Mode Share	**3.52%**	**3.52%**	**3.55%**	**3.57%**	**3.57%**	**3.60%**	**3.56%**

TABLE 3.2-11
PERFORMANCE MEASURES FOR PROJECT ALTERNATIVES COMPARED TO 2020 NO ACTION ALTERNATIVE

	2020 No Action	TSM	Alternative 1 Wilshire BRT	Alternative 2 Wilshire BRT + Expo BRT	Alternative 2a Wilshire BRT + Expo BRT MOS	Alternative 3 Wilshire BRT + Expo LRT	Alternative 3a Wilshire BRT + Expo LRT MOS
Countywide Statistics							
Daily Vehicle Trips	25,342,446	25,341,747	25,333,963	25,328,469	25,329,281	25,322,035	25,331,096
(% change)		0.00%	-0.03%	-0.06%	-0.05%	-0.08%	-0.04%
Daily Auto VMT	419,584,000	419,533,328	419,739,776	419,605,376	419,681,224	419,688,776	419,794,696
(% change)		-0.01%	0.04%	0.01%	0.02%	0.02%	0.05%
Daily Auto VHT	16,318,845	16,312,658	16,330,072	16,312,413	16,324,314	16,315,186	16,322,961
(% change)		-0.04%	0.07%	-0.04%	0.03%	-0.02%	0.03%
Average Vehicle Speed	25.71	25.72	25.70	25.72	25.71	25.72	25.72
(% change)		0.03%	-0.03%	0.04%	-0.01%	0.05%	0.02%
Study Area Statistics							
Daily Auto VMT	20,060,137	20,070,594	20,032,829	20,018,003	20,019,999	20,002,863	20,003,976
(% change)		0.05%	-0.14%	-0.21%	-0.20%	-0.29%	-0.28%
Daily Auto VHT	806,372	806,769	812,769	807,207	811,723	805,178	805,690
(% change)		0.05%	0.79%	0.10%	0.66%	-0.15%	-0.08%
Average Vehicle Speed	24.88	24.88	24.65	24.80	24.66	24.84	24.83
(% change)		0.00%	-0.92%	-0.31%	-0.86%	-0.14%	-0.20%
AM Peak Auto VMT	4,607,016	4,606,487	4,598,521	4,593,391	4,594,806	4,578,322	4,592,753
(% change)		-0.01%	-0.18%	-0.30%	-0.27%	-0.62%	-0.31%
AM Peak Auto VHT	220,785	220,564	222,225	221,747	221,882	220,318	221,649
(% change)		-0.10%	0.65%	0.44%	0.50%	-0.21%	0.39%
AM Peak Average Speed	20.87	20.89	20.69	20.71	20.71	20.78	20.72
(% change)		0.09%	-0.83%	-0.73%	-0.76%	-0.41%	-0.70%
PM Peak Auto VMT	6,537,504	6,543,843	6,530,828	6,523,831	6,527,416	6,507,821	6,520,567
(% change)		0.10%	-0.10%	-0.21%	-0.15%	-0.45%	-0.26%
PM Peak Auto VHT	312,337	312,843	315,467	314,847	315,064	313,404	314,558
(% change)		0.16%	1.00%	0.80%	0.87%	0.34%	0.71%
PM Peak Average Speed	20.93	20.92	20.70	20.72	20.72	20.76	20.73
(% change)		-0.06%	-1.09%	-1.00%	-1.02%	-0.79%	-0.96%

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

- This scenario has the fewest countywide vehicle trips, removing nearly 20,500 vehicles daily from the highway network.
- Average speed in the study area shows the smallest decrease of the project alternatives, although this difference is marginal.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

- Overall performance measures countywide and in the study area are worse compared to Alternative 3, but this difference is marginal.

All changes in summary information for the county and study area are statistically small. Looking at the data could lead to a potential for overestimating the impacts. Alternative 3 may show the best overall transportation performance both Countywide and throughout the study area, and Alternative 1 may show the worst overall performance among all modeled scenarios. However, the differences between the two are small, and could be negligible. This indicates that if there are any significant impacts, they should be focused around the transit corridors themselves, and not in the whole region.

Impacts on Highway Corridors

The proposed transit improvements along Wilshire and Exposition corridors will have an effect on highway traffic volumes on surface streets and freeways within the Mid-City/Westside Corridor study area. These effects include reductions, increases and/or redistribution of volumes and the resulting positive or negative operational impacts. This section presents the results of this impact analysis using screenline data from the MTA regional model. The analysis is conducted separately for freeways, arterials, the combined highway system, as well as more specific sub-area corridors discussed earlier. Each of the project alternatives will be compared with the 2020 No Action scenario.

Freeway Impacts

Table 3.2-12 presents percent change in freeway volumes at selected locations from the 2020 No Action scenario to the other six scenarios as forecasted by the MTA travel demand model. It is important to note that the differences in volume and percentage are small for the freeways. This is because most of the study are freeways are expected to exceed their capacity in the future for all scenarios. From this table, general observations can be made for each scenario, as follows:

Transportation System Management (TSM) Alternative

- Most freeways experience a slight drop in traffic volume in the AM peak hour, and a slight increase in traffic volume in the PM peak hour compared to No Action.
- The east end of the study area experiences the higher traffic volume changes in the PM Peak compared to the western areas.

TABLE 3.2-12
IMPACT ON FREEWAY TRAFFIC VOLUMES

AM Peak Hour		Percent Change from 2020 No Action					
Freeway	**Location**	**TSM**	**Alt 1**	**Alt 2**	**Alt 2a**	**Alt 3**	**Alt 3a**
Santa Monica Freeway I-10	E/O Sepulveda Blvd	0.15%	1.25%	1.14%	1.29%	0.52%	1.55%
	E/O La Cienega Blvd	-0.18%	0.76%	0.53%	0.56%	0.02%	0.50%
	E/O Vermont Ave	-0.10%	-0.18%	-0.12%	-0.10%	-0.24%	-0.38%
Hollywood Freeway US 101	E/O Vermont Ave	-0.53%	-0.27%	-0.18%	-0.43%	-0.70%	-0.49%
Harbor Freeway I-110	N/O 3rd St	0.03%	-0.09%	0.04%	0.20%	0.20%	-0.02%
	S/O Venice Blvd	-0.07%	0.00%	-0.09%	0.12%	0.16%	-0.17%
San Diego Freeway I-405	S/O Sunset Blvd	-0.20%	-1.47%	-1.23%	-1.35%	-1.40%	-1.37%
	S/O Venice Blvd	0.05%	-0.22%	-0.29%	-0.28%	-0.51%	-0.18%
	N/O Jefferson Blvd	-0.12%	-0.67%	-0.80%	-0.68%	-0.55%	0.02%
PM Peak Hour		**Percent Change from 2020 No Action**					
Freeway	**Location**	**TSM**	**Alt 1**	**Alt 2**	**Alt 2a**	**Alt 3**	**Alt 3a**
Santa Monica Freeway I-10	E/O Sepulveda Blvd	0.12%	0.64%	0.50%	0.76%	-0.06%	0.49%
	E/O La Cienega Blvd	0.08%	0.20%	0.18%	0.29%	-0.32%	-0.01%
	E/O Vermont Ave	0.82%	0.48%	0.57%	0.59%	0.40%	0.30%
Hollywood Freeway US 101	E/O Vermont Ave	0.28%	0.26%	-0.15%	-0.24%	0.29%	0.31%
Harbor Freeway I-110	N/O 3rd St	0.19%	-0.17%	-0.26%	-0.15%	-0.20%	-0.16%
	S/O Venice Blvd	0.02%	0.01%	-0.09%	0.06%	0.02%	0.05%
San Diego Freeway I-405	S/O Sunset Blvd	0.08%	-0.63%	-0.56%	-0.42%	-0.27%	-0.51%
	S/O Venice Blvd	-0.02%	-0.06%	-0.03%	0.07%	-0.24%	-0.17%
	N/O Jefferson Blvd	0.02%	-0.42%	-0.27%	-0.18%	-0.55%	-0.37%

<u>Alternative 1: Wilshire BRT (Baseline Median-Running)</u>

- Most freeways experience a slight drop in freeway traffic volumes in both peak hours except for the Santa Monica Freeway. The Santa Monica Freeway would experience as much as a 1.25% increase in traffic in the AM peak hour, which would be considered a significant impact.
- Traffic volumes drop on the San Diego Freeway, and increase on the Santa Monica Freeway. This is probably attributable to the reduced peak hour lane on Wilshire Boulevard. Traffic crossing the study area that would normally take the San Diego Freeway to Wilshire Boulevard may be using the Santa Monica Freeway instead.
- The sharp decrease in the San Diego Freeway south of Sunset Boulevard may indicate traffic from the north exiting at Sunset Boulevard instead of Wilshire Boulevard.

<u>Alternative 2: Wilshire BRT and Exposition BRT (Full Length)</u>

- Most freeways experience a slight drop in freeway traffic volumes in both peak hours except for the Santa Monica Freeway. The Santa Monica Freeway would experience as much as a 1.14% increase in traffic in the AM peak hour, which would be considered a significant impact.
- This alternative shows similar impacts to Alternative 1, however, the effects are not as large.

<u>Alternative 2A: Wilshire BRT and Exposition BRT (MOS)</u>

- This alternative shows similar results to Alternative 1 east of La Cienega Boulevard.
- The MOS portion may cause an increase in dive trips west of the end of the Exposition BRT. This may be caused by the increased capacity on the southern end of the study area east of La Cienega Boulevard.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

- Most freeways experience a slight decrease in freeway traffic volumes in both peak hours. This alternative has the greatest relative affect on reducing traffic volumes on the Santa Monica Freeway, and is the only alternative, which reduces traffic on that freeway west of La Cienega Boulevard. This drop is mostly attributable to auto trips removed from the freeway as drivers switch to the LRT.
- The Exposition LRT appears to be able to handle the diverted traffic from the Wilshire BRT onto the Santa Monica Freeway.
- Overall impacts on the San Diego Freeway indicates that the Wilshire BRT affects this freeway at Sunset Boulevard.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

- Most freeways experience slight decreases in traffic in both peak hours except for the Santa Monica Freeway.
- The same trend in traffic decrease on the San Diego Freeway, and a corresponding increase traffic growth on the Santa Monica Freeway in the PM Peak hour is evident in this alternative.

The freeway impacts appear to be much greater statistically than the regional impacts. The Wilshire BRT appears to cause some traffic diversion onto the Santa Monica Freeway. This diversion may be drivers who are trying to cross the study area that may take Wilshire Boulevard, but with the reduced capacity may find it faster to take the Santa Monica Freeway instead. Since the Exposition LRT attracts about 12,000 new transit trips from auto trips, it may have the effect of canceling the traffic shift due to the Wilshire BRT.

Arterial System Impacts

Table 3.2-13 depicts percent change of arterial traffic volumes at selected screenline locations from the 2020 No Action scenario to the other six scenarios as forecast by the MTA travel demand model. The following general observations can be made for each scenario.

Transportation System Management (TSM) Alternative

- Most arterial streets experience a slight increase in traffic volumes. The AM Peak shows higher increases in the east-west direction, and the PM Peak higher in the north/south direction.
- The western parts of the study area experience the highest traffic volume increases in AM Peak.

Alternative 1: Wilshire BRT (Baseline Median-Running)

- The east-west travel across screenlines 4 and 5 show a drop in traffic. This is due to the significant decrease in corridor capacity due to the reduced peak hour lane on Wilshire Boulevard. Some of this reduction in traffic volume shifts to the Santa Monica Freeway as shown in the previous section. Screenline 6 shows this same trend during the PM peak hour despite the fact that Wilshire Boulevard will not be affected directly by the BRT at Vermont Avenue.

TABLE 3.2-13 IMPACT ON ARTERIALS							
AM Peak Hour Screenline #s	**Street**	**Percent Growth from 2020 Base**					
		TSM	**West 1**	**West 2**	**West 2a**	**West 3**	**West 3a**
# 1 (E/W)	S/O Beverly Blvd/Sunset Blvd	0.05%	0.32%	0.35%	0.27%	0.33%	0.41%
# 2 (E/W)	S/O Venice Blvd	-0.06%	0.44%	0.35%	0.35%	-0.27%	0.15%
# 3 (E/W)	N/O Jefferson Blvd/Slauson Ave	0.01%	-0.04%	-0.12%	0.01%	-0.28%	-0.11%
# 4 (N/S)	E/O Sepulveda Blvd	1.05%	-1.43%	-1.15%	-1.08%	-2.03%	-1.19%
# 5 (N/S)	E/O La Cienega Blvd	-0.08%	-1.53%	-1.99%	-1.68%	-2.42%	-1.91%
# 6 (N/S)	E/O Vermont Ave	0.26%	0.02%	-0.81%	-0.50%	-0.27%	-0.40%
PM Peak Hour Screenline #s	**Street**	**Percent Growth from 2020 Base**					
		TSM	**West 1**	**West 2**	**West 2a**	**West 3**	**West 3a**
# 1 (E/W)	S/O Beverly Blvd/Sunset Blvd	0.08%	0.18%	0.40%	0.37%	0.10%	0.21%
# 2 (E/W)	S/O Venice Blvd	0.27%	0.55%	0.38%	0.40%	-0.13%	0.10%
# 3 (E/W)	N/O Jefferson Blvd/Slauson Ave	0.15%	0.21%	-0.13%	-0.11%	-0.18%	0.03%
# 4 (N/S)	E/O Sepulveda Blvd	0.06%	-1.13%	-1.24%	-1.16%	-1.94%	-1.37%
# 5 (N/S)	E/O La Cienega Blvd	0.15%	-1.39%	-1.51%	-1.41%	-1.85%	-1.66%
# 6 (N/S)	E/O Vermont Ave	0.04%	-0.42%	-0.71%	-0.59%	-1.10%	-0.94%

- Most north-south travel experiences an increase in traffic volumes in both peak hours. The overall increase in north-south traffic is due to vehicles shifting to parallel streets to Wilshire Boulevard or to the Santa Monica Freeway.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

- All north-south screenline volumes show similar increases compared to Alternative 1.
- The drop in traffic is greater in Alternative 2 compared to Alternative 1. This is due to auto trips that switch to transit trips.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

- The east-west travel across screenline 4 shows no change in traffic. This is due to the MOS segment ending just west of La Cienega Boulevard. The MOS segment should not be expected to reduce traffic in the Westside beyond the effect that the Wilshire BRT will have.
- The overall increase in north-south traffic is due to vehicles shifting to parallel streets to Wilshire Boulevard or to the Santa Monica Freeway. This impact is more noticeable with the Exposition BRT than with the Exposition LRT.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

- Almost all screenline volumes show significant decreases in traffic volume compared to No Action. The overall drop in both peak hours is greatest for this alternative.
- This is the only alternative that reduces arterial traffic for all east-west and north-south traffic around the Exposition Corridor.
- This drop in traffic can be entirely attributable to trips diverted to the LRT, since the freeway traffic also showed decreases overall as well.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

- The east-west travel across screenline 4 shows no change in traffic. This is due to the MOS segment ending just west of La Cienega Boulevard. The MOS segment should not be expected to reduce traffic in the Westside beyond what the Wilshire BRT will take away.
- The overall increase in north-south traffic is due to vehicles shifting to parallel streets to Wilshire Boulevard or to the Santa Monica Freeway.

Overall Highway System Impacts

Table 3.2-14 presents percent change in total highway volumes (freeways and arterials combined) at selected screenline locations from the 2020 No Action Alternative to the other six scenarios. The following general observations can be made for each scenario:

Transportation System Management (TSM) Alternative

- Most facilities experience a slight increase in traffic volume compared to No Action. The AM Peak shows higher increases in the east-west direction, and the PM Peak shows higher increases in the north-south direction.
- The west end of the study area experiences the highest traffic volume growth in the AM Peak.

Alternative 1: Wilshire BRT (Baseline Median-Running)

- The east-west traffic across screenlines 4 and 5 show highest decreases in traffic. This is mostly due to the significant decrease in east-west capacity due to the elimination of one peak hour lane on Wilshire Boulevard. Most of the other east-west roads in the study area already exceed capacity before the lane is dropped on Wilshire Boulevard, so the diversion of traffic is spread out throughout the study area.

TABLE 3.2-14
IMPACTS ON OVERALL HIGHWAY TRAFFIC

AM Peak Hour Screenline #s	Location	Percent Change from 2020 Base					
		TSM	West 1	West 2	West 2a	West 3	West 3a
# 1 (E/W)	S/O Beverly Blvd/Sunset Blvd	0.00%	-0.06%	0.02%	-0.02%	0.01%	0.02%
# 2 (E/W)	S/O Venice Blvd	-0.04%	0.23%	0.15%	0.19%	-0.23%	0.03%
# 3 (E/W)	N/O Jefferson Blvd/Slauson Ave	-0.08%	-0.07%	-0.20%	-0.09%	-0.27%	-0.01%
# 4 (N/S)	E/O Sepulveda Blvd	0.79%	-0.84%	-0.65%	-0.58%	-1.42%	-0.58%
# 5 (N/S)	E/O La Cienega Blvd	-0.10%	-0.98%	-1.39%	-1.15%	-1.84%	-1.33%
# 6 (N/S)	E/O Vermont Ave	0.02%	-0.09%	-0.52%	-0.39%	-0.34%	-0.41%
		Percent Change from 2020 Base					
PM Peak Hour	Location	TSM	West 1	West 2	West 2a	West 3	West 3a
# 1 (E/W)	S/O Beverly Blvd/Sunset Blvd	0.10%	-0.03%	0.12%	0.14%	-0.02%	0.02%
# 2 (E/W)	S/O Venice Blvd	0.17%	0.33%	0.21%	0.28%	-0.12%	0.04%
# 3 (E/W)	N/O Jefferson Blvd/Slauson Ave	0.09%	0.16%	-0.07%	-0.02%	-0.17%	0.07%
# 4 (N/S)	E/O Sepulveda Blvd	0.05%	-0.71%	-0.82%	-0.72%	-1.46%	-0.94%
# 5 (N/S)	E/O La Cienega Blvd	0.14%	-1.02%	-1.12%	-1.01%	-1.49%	-1.27%
# 6 (N/S)	E/O Vermont Ave	0.27%	-0.08%	-0.31%	-0.25%	-0.48%	-0.41%

Screenline 6 shows little change because Wilshire Boulevard will not be affected directly by the BRT at Vermont Avenue.

- Most north-south facilities experience an increase in traffic volumes in both peak hours due to vehicles shifting to parallel streets to Wilshire Boulevard or to the Santa Monica Freeway.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

- All east-west screenlines show decreases in traffic volume. The increased magnitude compared to Alternative 1 is due to auto trips diverting to the Exposition BRT.
- Most north-south facilities experience an increase in traffic volumes in both peak hours due to vehicles shifting to parallel streets to Wilshire Boulevard or to the Santa Monica Freeway.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

- Impacts are very similar to those of the alternative 1 for Screenlines 1-4.
- Screenline 5 and 6 show similar decreases as Alternative 2. This is due to auto trips diverting to the Exposition BRT.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

- All screenlines show decreases in traffic volume except for Screenline 1 in the AM peak hour. The overall drop in both peak hours is greatest for this alternative.
- This is the only alternative to reduce traffic for all north-south and all east-west traffic.
- The increased magnitude of the east-west traffic volume drop compared to Alternative 1 is due to auto trips diverting to the Exposition LRT.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

- The east-west travel across screenlines 4, 5, and 6 show a drop in traffic. This is due to the significant decrease in capacity due to the lane drop on Wilshire Boulevard. Some of this drop in traffic volume shifts to the Santa Monica Freeway or to parallel arterial streets.
- The overall increase in north-south traffic is due to vehicles shifting to parallel streets to Wilshire Boulevard or to the Santa Monica Freeway.
- The drop in traffic across screenline 4 is less than the drop in Alternative 1. Yet the decrease in traffic is significantly greater across Screenlines 5 and 6. The additional decrease in volume across screenlines 5 and 6 is entirely attributable to the Exposition LRT. Also, the lower decrease in volumes across Screenline 4 suggests that a significant number of motorists west of La Cienega Boulevard are driving to the LRT stations at Venice/Washington or La Cienega/Jefferson and using the park and ride facilities there.

Impacts on Focused Corridors

In order to get a more focused view of the highway traffic impacts of the alternatives within the more focused Wilshire and Exposition corridors, traffic crossing the sub-corridor screenlines, as described earlier, was analyzed. Table 3.2-15 depicts the percent change in traffic volumes at east-est travel screenlines generally within the Wilshire and Exposition corridors for each alternative

TABLE 3.2-15 HIGHWAY IMPACTS ON SUBAREA CORRIDORS							
AM Peak Hour	**Location**	**Percent Change from 2020 Base**					
		TSM	**West 1**	**West 2**	**West 2a**	**West 3**	**West 3a**
Screenline 4N (N/S)	E/O Sepulveda Blvd From Sunset Blvd to Pico Blvd	1.51%	-2.26%	-1.49%	-1.54%	-2.15%	-2.11%
Screenline 4S (N/S)	E/O Sepulveda Blvd From Olympic Blvd to Jefferson Blvd	0.50%	2.17%	1.93%	1.90%	0.99%	2.42%
Screenline 5N (N/S)	E/O La Cienega Blvd From Santa Monica Blvd to Interstate 10	-0.10%	-1.84%	-2.06%	-1.93%	-2.45%	-2.10%
Screenline 5S (N/S)	E/O La Cienega Blvd From Venice Blvd to Slauson Ave	-0.01%	0.91%	0.29%	0.57%	0.00%	-0.02%
Screenline 6N (N/S)	E/O Vermont Ave From Sunset Blvd to Interstate 10	-0.13%	-0.19%	-0.62%	-0.58%	-0.47%	-0.74%
Screenline 6S (N/S)	E/O Vermont Ave From Venice Blvd to Slauson Ave	0.08%	-0.01%	-0.35%	-0.07%	-0.21%	-0.10%
PM Peak Hour	**Location**	**Percent Change from 2020 Base**					
		TSM	**West 1**	**West 2**	**West 2a**	**West 3**	**West 3a**
Screenline 4N (N/S)	E/O Sepulveda Blvd From Sunset Blvd to Pico Blvd	0.11%	-3.57%	-3.43%	-3.58%	-4.13%	-3.65%
Screenline 4S (N/S)	E/O Sepulveda Blvd From Olympic Blvd to Jefferson Blvd	0.05%	1.70%	1.59%	1.58%	0.51%	1.59%
Screenline 5N (N/S)	E/O La Cienega Blvd From Santa Monica Blvd to Interstate 10	0.14%	-2.01%	-2.13%	-2.00%	-2.54%	-2.31%
Screenline 5S (N/S)	E/O La Cienega Blvd From Venice Blvd to Slauson Ave	0.16%	0.32%	0.04%	0.52%	-0.37%	0.01%
Screenline 6N (N/S)	E/O Vermont Ave From Sunset Blvd to Interstate 10	0.27%	-0.11%	-0.24%	-0.20%	-0.41%	-0.46%
Screenline 6S (N/S)	E/O Vermont Ave From Venice Blvd to Slauson Ave	0.50%	0.23%	-0.08%	0.11%	-0.31%	-0.04%

from the 2020 No Action Alternative. General conclusions can be made regarding travel patterns in the respective corridors as follows:

Transportation System Management (TSM) Alternative

- The majority of the increase across Screenline 4 is in the Wilshire Corridor, although the Exposition Corridor experiences increases as will.
- The majority of the traffic volume increase across Screenline 6 is in the Exposition Corridor.

Alternative 1: Wilshire BRT (Baseline Median-Running)

- As a general trend, the Wilshire Corridor shows a significant decrease in traffic due to the reduction of one travel lane in each direction on Wilshire Boulevard. The drop shows two distinct phenomena- some vehicle trips are converted to transit trips, and some of the vehicle trips are diverted to other east-west streets and freeways across the entire length of the corridor.

- The increase in the Exposition Corridor is entirely due to traffic diversion from the Wilshire Corridor. The fact that this increase is always less that the decrease in the Wilshire Corridor helps to confirm that some of the decrease in the Wilshire Corridor is due to auto-trips switching to transit trips.
- Traffic volumes show more than a 2 percent diversion of trips out of the Wilshire Corridor and into the Exposition Corridor.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

- All Wilshire Corridor screenlines show similar changes as in Alternative 1.
- The Exposition Corridor shows a greater decrease in volumes compared to Alternative 1.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

- Impacts are similar to Alternative 2 but with a smaller magnitude.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

- The Exposition LRT attracts some traffic from the Wilshire Corridor.
- Westside traffic appears to have the least impact with the Exposition LRT. The lost lane on Venice Boulevard does not seem to heavily impact the entire Exposition Corridor area.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

- Impacts are similar to the Wilshire BRT Alternative.

The drop in traffic across screenline 4 is less than the drop in Wilshire BRT Alternative for the AM Peak. Yet the decrease in traffic is significantly greater across Screenlines 5 and 6. The additional decrease in volume across screenlines 5 and 6 is entirely attributable to the Exposition LRT. Also, the lower decrease in volume across Screenline 4 indicates that a significant number of people west of La Cienega Boulevard are driving to the LRT stations at Venice/Washington or La Cienega/Jefferson and using the park and ride facilities there. This is shown in the drop in traffic volume from Screenline 4 to 5 in the Exposition Corridor.

Impacts Associated with Loss of a Lane on Wilshire Boulevard

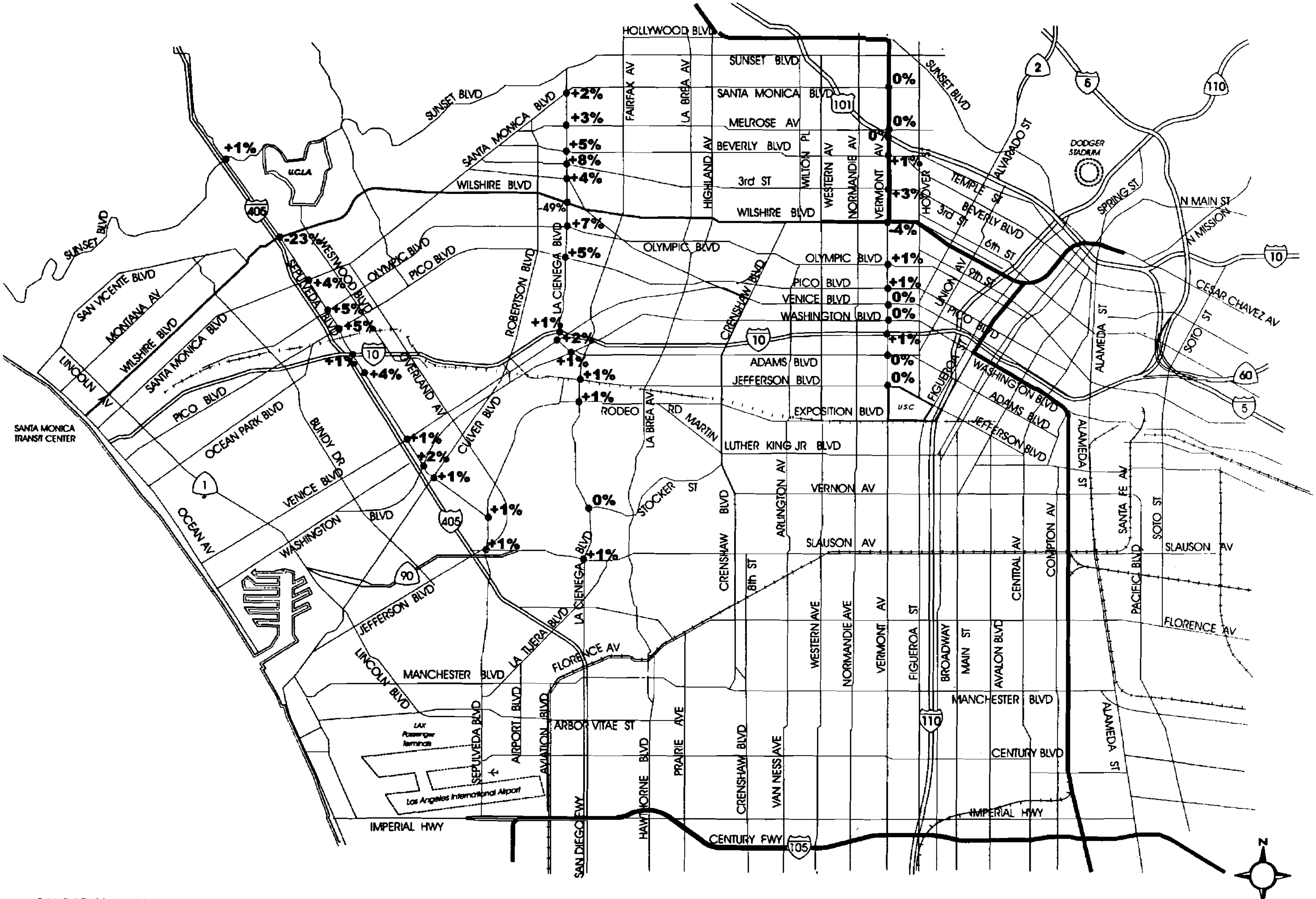
The corridor analyses indicates that the loss of one lane in each direction on Wilshire Boulevard, as a result of the proposed Wilshire BRT (Alternatives 1, 1A and 1B), is expected to have a significant effect on diverting traffic from Wilshire Boulevard to the broader east-west corridor area. This traffic diversion affects most major streets between Sunset Boulevard and the Santa Monica Freeway. Peak hour traffic volumes on Wilshire Boulevard itself are expected to decrease by as much as 25 to 50 percent compared to the No Action Alternative due to the loss of the traffic lane. This decrease in volumes, which is in the range of 300 to 500 vehicles per hour per peak direction, will be spread relatively evenly across most of the east-west facilities (freeway and arterials) throughout the entire corridor. The predicted shifting of the traffic volumes will help keep traffic congestion on Wilshire Boulevard from reaching extreme levels with the proposed lane drop and the operation of the BRT. At the same time, the relatively even distribution of diverted traffic across the study area's arterial grid system with many east-west arterials, from Sunset Boulevard to Slauson Avenue, will also diffuse the extent of the negative traffic impacts on any particular east-west facility.

This does not mean that there are no impacts with the loss of a mixed-flow lane on Wilshire Boulevard. The diversion of traffic is spread out over a large area because many east-west streets north of Washington Boulevard are at capacity before the lane on Wilshire Boulevard is dropped. The diversion of traffic does not just affect the streets immediately around Wilshire Boulevard. This lane drop decreases the overall east-west traffic capacity in the corridor, and the effects of this decrease are felt across the entire study area.

Figure 3.2-11 illustrates the corridor-wide effects of the lane-drop on Wilshire Boulevard, west of Western Avenue, under Alternatives 1, 1A and 1B. As can be seen, PM peak hour volumes on Wilshire Boulevard, at La Cienega Boulevard, will be reduced by 49 percent. The diverted traffic will not be concentrated on one particular parallel facility. The majority of the east-west arterials in the corridor from Sunset Boulevard to Slauson Avenue will experience increase in volume up to 8 percent. Some of the higher increases being on Third Street (8 percent), and Olympic Boulevard (7 percent). Similarly, further west, near Sepulveda Boulevard, volumes on Wilshire Boulevard will decrease by about 23 percent. The drop in volume here is less than the mid-corridor area since Wilshire Boulevard has four lanes in each direction in this section, which will be reduced to three, while near La Cienega Boulevard the lane drop is from three to two lanes representing a larger percentage of capacity reduction. Again, as seen on the figure, the diverted traffic will be distributed relatively evenly across the corridor, with the highest increases on Pico Boulevard (5 percent), Olympic Boulevard (5 percent), and Santa Monica Boulevard (4 percent). Finally, the reduction of trips from Wilshire Boulevard east of the study area (east of Western Avenue) will be relatively minimal. As seen on the figure, the reduction will be less than 5 percent with the diversion effects confined mostly to the immediate parallel streets from Beverly Boulevard to Pico Boulevard.

In order to assess where the shifting of traffic volumes, due to the Wilshire BRT may be significant, the threshold of significance of a 0.02 change in V/C ratio on arterial links operating at LOS E or F was employed. Figure 3.2-12 illustrates the links forecast to be operating at LOS E or F in the AM period under the No Action Alternative in 2020. Figure 3.2-13 illustrates the congested links in the PM Peak hour in 2020 for the No Action Alternative. These two figures illustrate the widespread nature of the projected congestion problems in the study area by 2020, especially when compared to those shown previously in Figures 3.2-4 and 3.2-5, for existing conditions. As can be seen, while in the existing conditions, congestion was more pronounced north of the I-405 Freeway, by 2020 most of the arterials north and south of the I-405 will exhibit heavy congestion patterns. Again, there is not a major difference between links that will be congested in the AM and PM peak hours. However, north-south arterials appear to be still relatively more congested throughout the study area, than the east-west arterials. This is true especially in the following sub-areas:

- From Olympic Boulevard to Jefferson Boulevard in area generally between Fairfax Avenue and Alvarado Street
- From Beverly Boulevard to Third Street in area generally between Highland Avenue and Alvarado Street
- West of I-405 from San Vicente Boulevard to Venice Boulevard



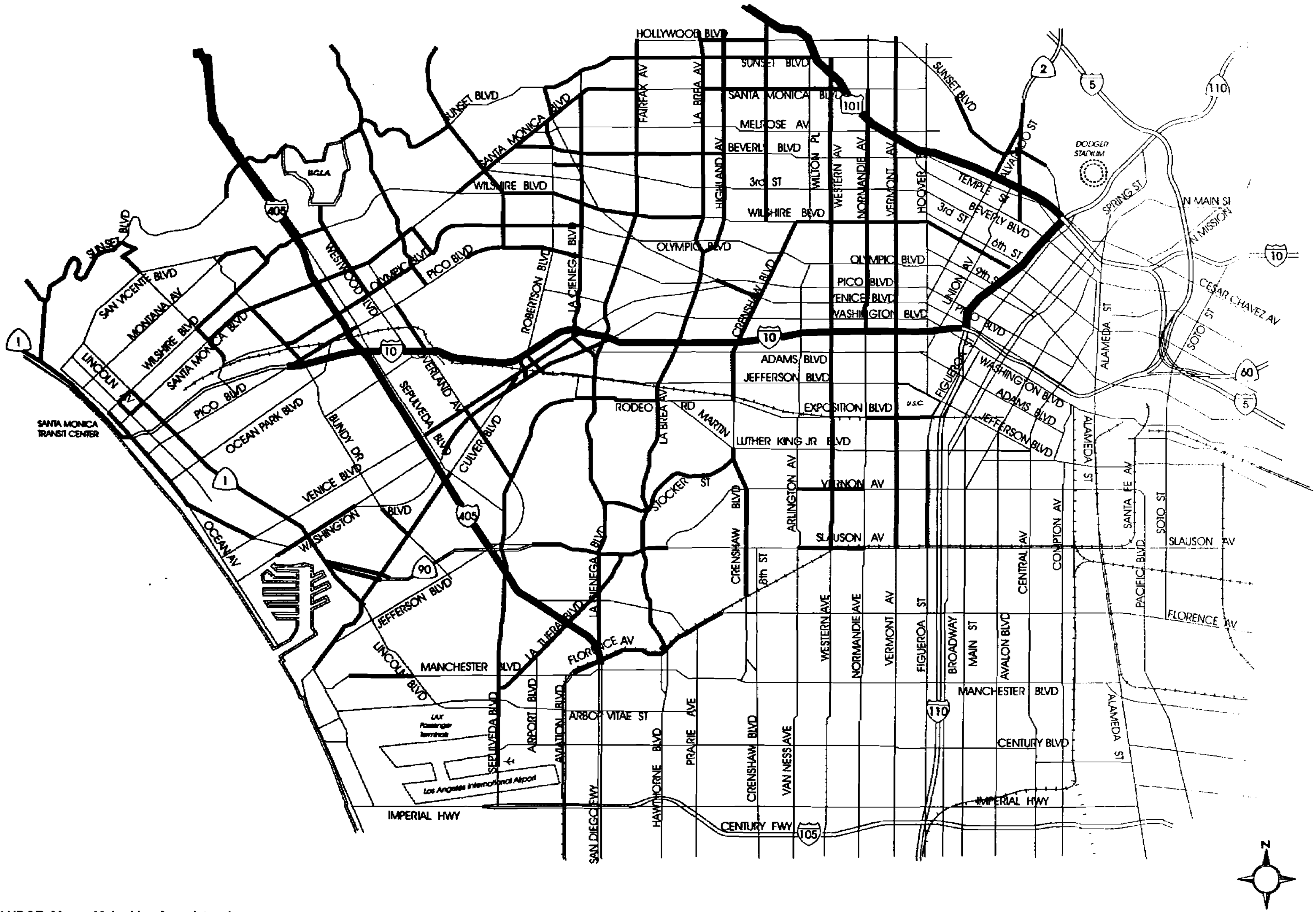
SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-11

WILSHIRE BRT ALTERNATIVE- CHANGES IN TWO-WAY PM PEAK HOUR VOLUMES ON EAST-WEST STREETS COMPARED TO 2020 NO ACTION



SOURCE: Meyer, Mohaddes Associates, Inc.

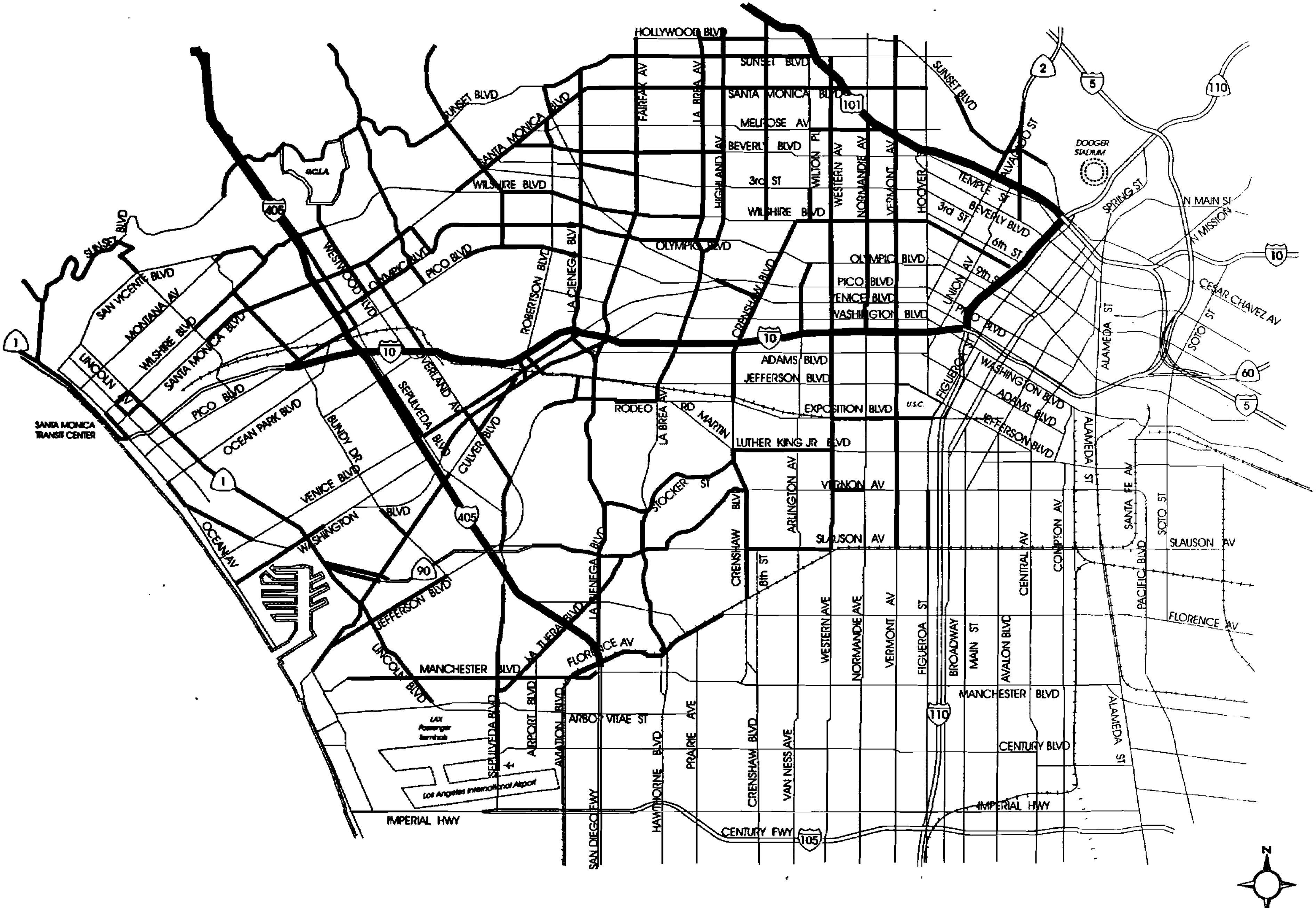
Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-12

2020 NO ACTION AM PEAK HOUR

ARTERIAL SEGMENTS WITH LOS E OR F



SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

METRO

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-13

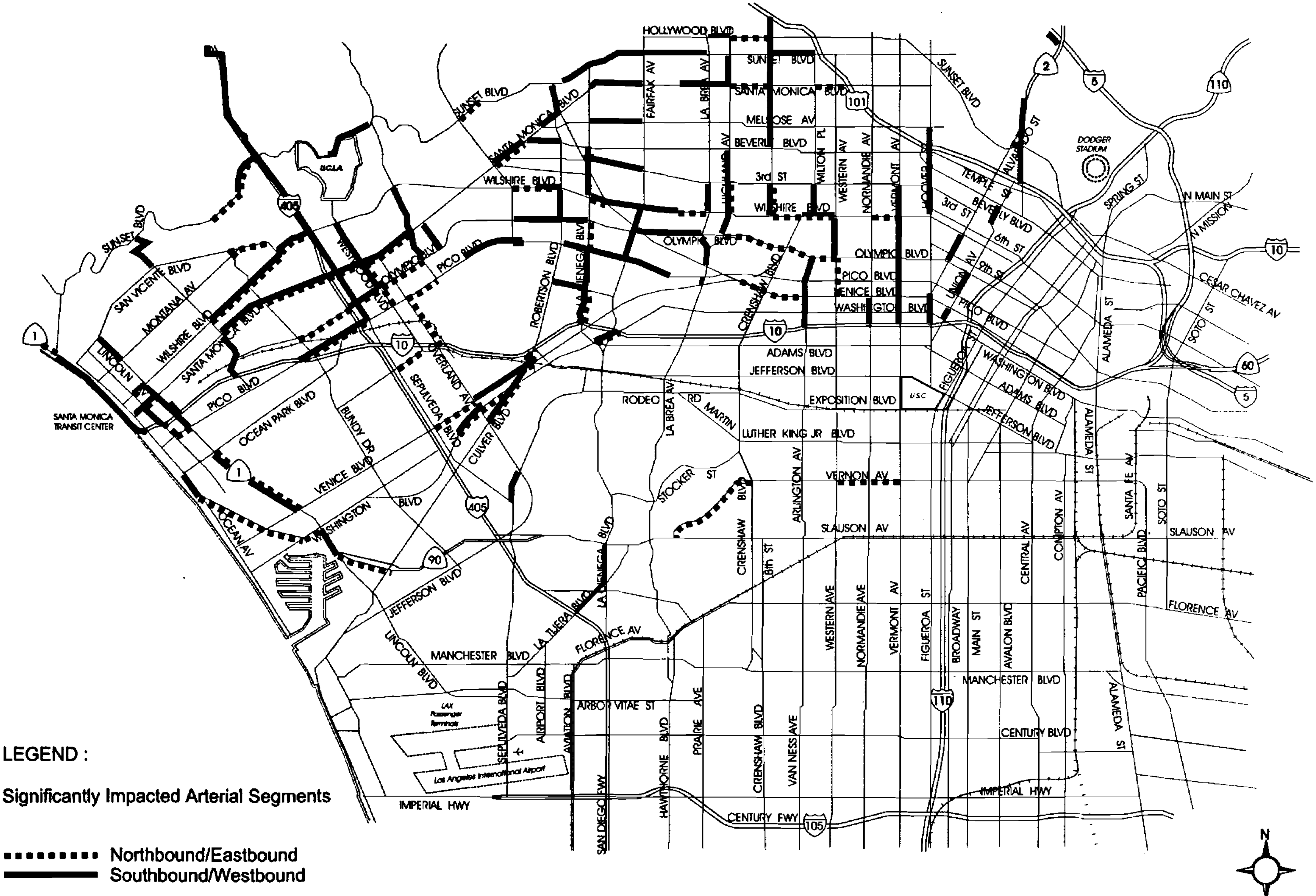
2020 NO ACTION PM PEAK HOUR ARTERIAL SEGMENTS WITH LOS E OR F

Figures 3.2-14 and 3.2-15 illustrate the links which are significantly affected by the loss of a mixed flow lane on Wilshire Boulevard. These are the links where the V/C ratio is changed by 0.02 or more and the resulting LOS is E or F. The mid-block segments which are affected by the loss of a mixed-flow lane on Wilshire Boulevard are spread throughout the study area and include not only parallel east-west arterials, but also north-south segments of arterials. This is due to the fact that traffic patterns shift as drivers seek alternate routes. It should also be noted that the links which are forecast to be affected by the loss of a lane on Wilshire are not all affected directly by traffic diverting to those links from Wilshire Boulevard. Rather, it is a ripple effect, where some of the traffic which would otherwise be on Wilshire shifts to a nearby parallel route (e.g., Olympic Boulevard), which in turn causes that route to become more congested and some of the traffic which would have been on that arterial shifts to another parallel arterial (e.g. Pico Boulevard). It is interesting to note that the effects of the diversion of traffic from Wilshire Boulevard do not have significant affects on any one parallel arterial for the entire length of the study area. This is partially due to the discontinuous nature of the parallel arterials and the fact that not all segments of the parallel arterials will be operating at LOS E or F.

Person-Carrying Capacity of Wilshire Boulevard

While the capacity of Wilshire Boulevard to carry non-transit vehicles may be reduced due to the conversion of a mixed-flow lane to a bus lane, with the Wilshire BRT, the person-carrying capacity of Wilshire Boulevard increases. The estimated per-lane capacity on Wilshire Boulevard is 750 vehicles per hour. On the segment with the highest forecast decrease in traffic volume, Wilshire Boulevard is projected to lose 500 vehicles per hour in the peak direction. The MTA model forecasts an average auto occupancy of 1.32 persons per car in the Mid-City/Westside area. Applying that vehicle occupancy to Wilshire Boulevard, the person-carrying capacity lost by the conversion of a mixed flow lane is 990 persons in each direction. With an average 3 minute headway between buses, and assuming full buses with a capacity of 135 people, the BRT lane has a person-carrying capacity of 2,700 people, almost three times the capacity of the mixed-flow lane. The Wilshire BRT will have the capacity to carry up to 1,700 people per hour more per direction than the mixed-flow lane it will displace.

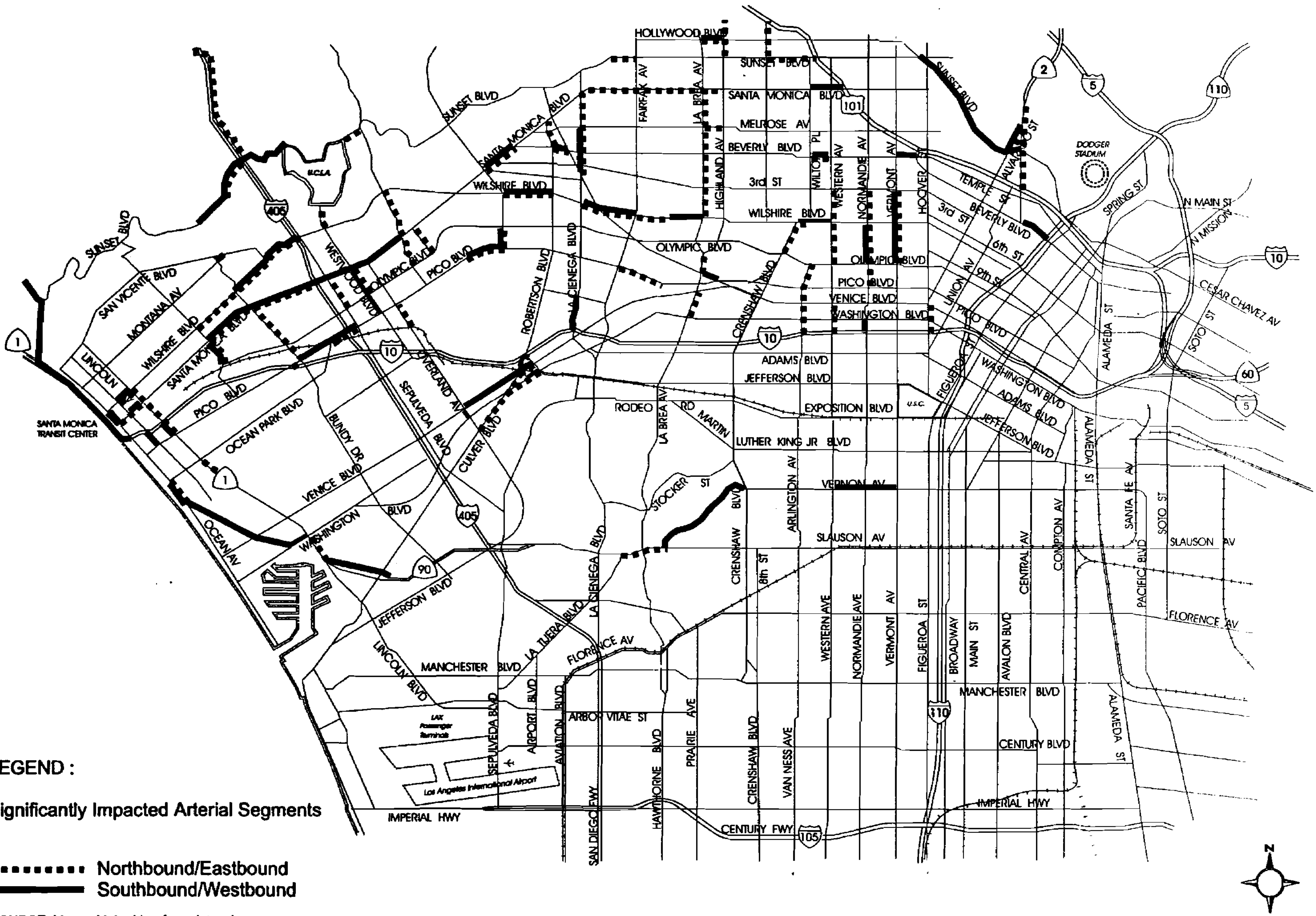
In terms of daily person-carrying capacity, Figure 3.2-16 illustrates how the conversion of a lane from mixed-flow operations to a dedicated BRT lane, increases the overall capacity of the corridor by 41 percent. In a prototypical segment with three lanes in each direction, Wilshire Boulevard has a daily auto capacity of 50,000 vehicles per day, which carry about 66,000 persons per day at a 1.32 persons per car daily average. The current mix of buses, at 5-minute headways with 90-persons per bus capacity, can carry about 39,000 persons per day. Under the No Action Alternative, the daily person-carrying capacity of Wilshire Boulevard (in six-lane segments) is therefore, about 105,000 persons per day. With the dedicated BRT lane, the auto carrying capacity decreases by one third to 33,300 with about 44,000 persons in those automobiles. The BRT Alternative, with 135-passenger buses operating at 3-minute headways for 8 hours and 5 minute headways for 12 hours, combined with local buses at 10-minute headways in the curb lane, provides the capacity for 104,000 persons per day to be transported by buses along the Wilshire Corridor. This is a 166% increase in the transit capacity and results in a total person-carrying capacity of 148,000 persons per day, a 41% increase over the No Action Alternative.



SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor
METRO
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-14
AM PEAK HOUR IMPACTED ARTERIAL SEGMENTS ALTERNATIVE 1



LEGEND :

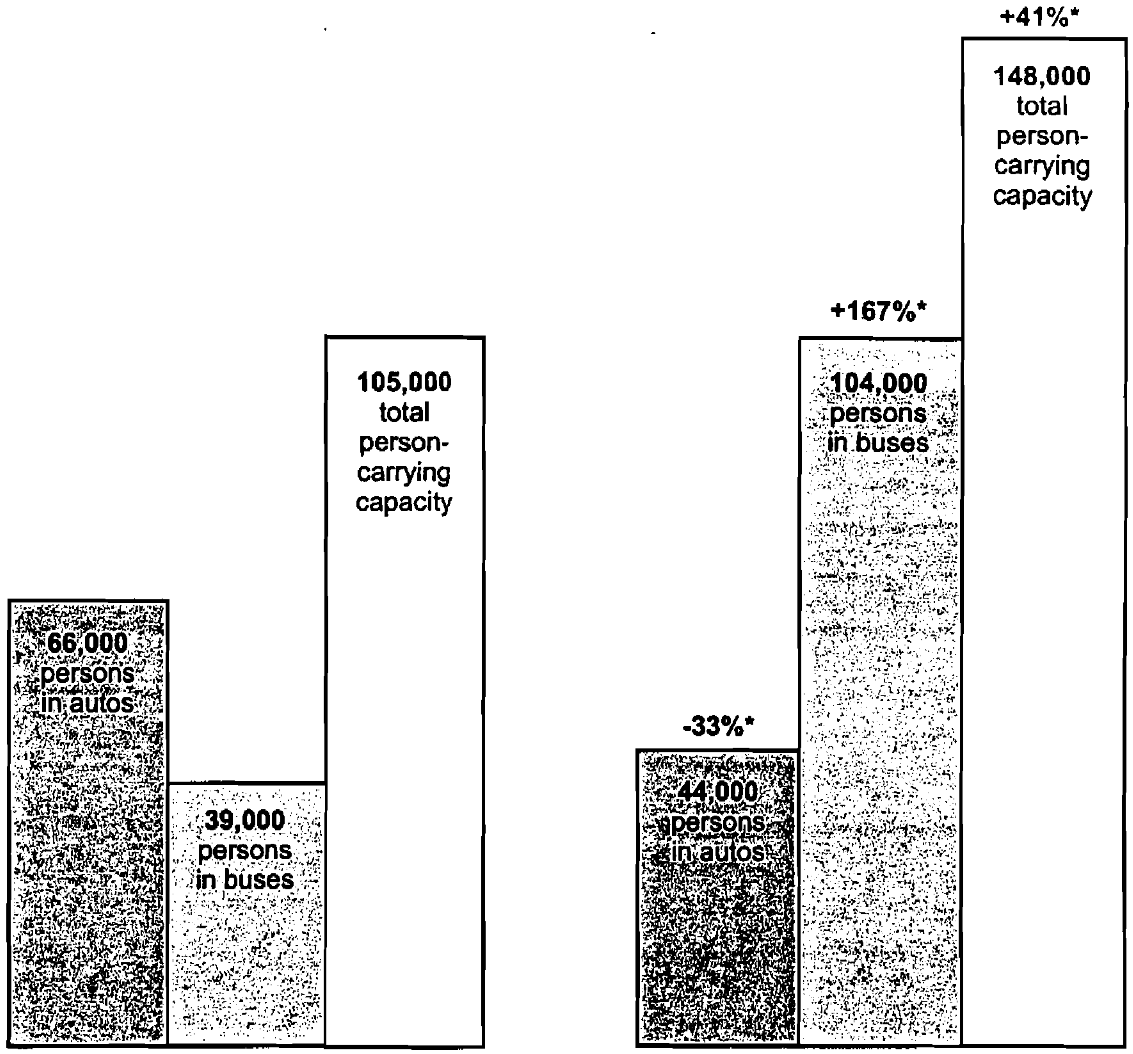
Significantly Impacted Arterial Segments

Northbound/Eastbound
Southbound/Westbound

SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-15
PM PEAK HOUR IMPACTED ARTERIAL SEGMENTS ALTERNATIVE 1



No Action Alternative
(3 Lane Segment)

Wilshire BRT Alternative
(3 Lane Segment)

* % Increase/decrease compared to No Action Alternative

SOURCE: Myer, Mohaddes Associates

Mid-City/Westside Transit Corridor
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-16
DAILY PERSON-CARRYING CAPACITY
OF WILSHIRE BOULEVARD

General Traffic and Circulation Effects of the Alternatives

This section describes the general effects that the project alternatives will have on traffic circulation. It describes in qualitative terms the changes in circulation and traffic patterns that will occur due to the physical changes to the streets, traffic diversion impacts due to potential loss of capacity and/or congestion along the corridor, and safety issues associated with each of the alternatives.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Circulation Patterns

The design of this Wilshire BRT Alternative includes dedicated lanes for buses in the center of the street. In order to provide a dedicated lane in each direction, either a through travel lane or the parking lane must be removed to provide room for the bus lane. The impacts of the loss of the through lane capacity and the loss of on-street parking were quantified and addressed in the previous section and will be analyzed in the next section using intersection delay methodology. The inclusion of dedicated lanes along the center of the street has several other impacts on overall traffic circulation. The most fundamental impact is the control placed on left turn movements across the busway. In order to reduce the potential for vehicles to turn across the path of a bus, particularly one that may be approaching from the rear on the automobile driver's left, turns across the busway will only be permitted with protected left turn signal phases.

This will have the effect of eliminating left turns at all driveways along the Wilshire Corridor. The number of intersections where left turns will be permitted is also reduced by this alternative, which will affect local travel patterns. Some drivers will adjust their travel patterns by making u-turns at subsequent intersections and doubling back to their destination. Others may turn right onto an adjacent street and go around the block to reach the street onto which they would otherwise have turned left. It is difficult to quantify the exact cumulative effect of all of changes in travel patterns. The impact of left turn diversions to/from the major signalized intersections is accounted for and quantified in the level of service analysis presented in the next section of this report, but this document does not assess the impacts at every minor intersection. At some minor intersections, the number of left turn movements may be increased, potentially increasing delays. At other minor intersections, left turns may be prohibited, causing drivers to shift to alternate routes. However, this document does not assess traffic operations at every minor intersection location in the study area.

Traffic Diversion Through Neighborhoods

The operation of the Wilshire BRT may result in the redistribution of traffic along Wilshire Boulevard into adjacent neighborhoods and onto adjacent parallel streets/arterials, primarily due to the reduction in capacity along Wilshire Boulevard and the loss of left turn lanes at 105 locations. Additionally, redistribution of traffic may occur onto local residential streets from added right turn movements necessitated by a significant number of left-turn restrictions proposed along Wilshire Boulevard.

As discussed in the previous section, it is anticipated that the BRT will cause some traffic to divert to parallel arterials over a wide area. Some trips may divert onto local streets, such as 6th and 8th Streets along most of the Mid-City area of Los Angeles, Charleville and Clayton in Beverly Hills, and Arizona and California Avenues in Santa Monica. The proposal for the Wilshire BRT Baseline

Alternative envisions the removal of left turns at alternating blocks throughout the entire corridor. Under such a proposal, 185 of the 297, or 62 percent of the left-turn lanes at intersections crossing Wilshire Boulevard (between Western Blvd. in Los Angeles and Ocean Avenue in Santa Monica), would be removed in order to provide a more efficient BRT operation. It will also effectively reduce potential conflicts and safety hazards between buses and cars. The remaining 112 intersections, or 38 percent of the total intersections remaining operational, are expected to carry most of the total demand for left-turns along the Wilshire corridor. In addition to potentially exceeding the capacity to make left turns from the remaining available left-turn lanes, the BRT proposal will also affect right-turn movements. It is expected that a great number of drivers, who are unable to make left-turns, will opt to making a series of right turns around the block to ultimately accomplish the desired left turn. This could add traffic to local residential streets adjacent to the major streets where left turns are no longer permitted.

The volume of traffic on residential streets parallel to and adjacent to Wilshire Boulevard should be monitored by the local jurisdictions to determine if the BRT Baseline Alternative has caused any diversion of traffic to residential streets. Each City has a threshold of significance for impacts on residential streets based on the total volume and amount of traffic added to the street. If those thresholds are exceeded within six months of the opening of the Wilshire BRT, the project would be considered to have significantly impacted the street. There are up to 450 blocks along the Wilshire corridor (side streets and the adjacent parallel street) that could be monitored to assess the potential for neighborhood traffic impacts.

Order-of-magnitude cost estimates have been developed for Neighborhood Transportation Mitigation Program (NTMP) measures along the affected residential neighborhoods. These neighborhoods are located in: Park Mile, Miracle Mile, Beverly Hills, Westwood, West Los Angeles, and Santa Monica along the Wilshire BRT Corridor. Cost estimates were developed for the following three categories:

- Traffic monitoring program for 12 months including staff time-- $208,000
- Traffic count program for monitoring traffic impacts-- $450,000
- Implementation of various potential devices and measures including speed humps, chokers, turn restrictions/signs-- $2,632,000

Based on the above, the total cost of NTMP measures is estimated at approximately $3.3 million.

<u>Safety Issues Resulting From Multimodal Operation of Roadway</u>

A number of safety issues will have to be considered in the planning and operation of the Mid-City/ Westside Transit Corridor. Increasing safety for pedestrians and motorists is of paramount importance to LACMTA. A number of lessons have been learned about safety issues over the last decade from the Los Angeles, and other regions, dealing with mixing transit operations - within both exclusive and shared ROW - with general vehicular traffic and pedestrians along the facility, the stations and at intersections/crosswalks.

The Wilshire BRT Baseline Alternative alignment is proposed as a dedicated bus lane running in the median along Wilshire Boulevard. Bus stations would consist of a platform and a canopy, and would be located at the far side of a major intersection. Transit patrons and pedestrians in general would use crosswalks at the intersections to access the bus station in the median.

Motorist safety relative to BRT operations focuses on the topic of introducing and operating a new multimodal system within a shared ROW, especially to a driving public that is not used to such a phenomenon. The two major issues deal with motorists turning left in front of a rapidly moving bus that is approaching from behind, and secondly, motorists driving in the exclusive bus lane. For the former, exclusive left turn lanes would be provided to protect against the event of a motorist turning left in front of a bus approaching from behind. At all locations where left-turns by motorist would be allowed across the busway, these left turns would be controlled by a protected left-turn arrow at all times.

Relative to the BRT operation, pedestrian safety would focus on the ability of a pedestrian to determine that a bus was approaching and proceed to a safe location when the bus has passed. Pedestrian 'WALK/DON'T WALK' signals would be installed (if they are not already) at all signalized pedestrian crosswalks that cross the busway. The crosswalk could be equipped with an active 'BUS COMING' icon to warn pedestrians of the presence of an approaching bus. Non-signalized or mid-block crosswalks leading to bus stops that do not coincide with intersections, would also be equipped with an active 'DON'T WALK' sign to warn of approaching buses. The stations would also be designed to allow for a pedestrian refuge area between exclusive busway and general roadway. In a mid-block station, the station platform will be equipped with a pedestrian actuator button for transit passengers attempting to cross after alighting the BRT. This mechanism would provide security for pedestrians so that they do not become impatient attempt to illegally cross a busy arterial.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Circulation Patterns and Traffic Diversion Impacts

Traffic diversion impacts associated with this alternative will be less than Alternative 1, since left turn lanes will only be eliminated at station locations and mostly at minor streets. Therefore there will be little or no need for circuitous movements around blocks to make left turns at alternative locations. The possible circulation and traffic diversion impacts of this alternative will be only as a result of potential increase in congestion levels on Wilshire Boulevard due to the reduction in capacity with the loss of a through travel lane for general traffic, as was discussed with Alternative 1.

Safety Issues Resulting From Multimodal Operation of Roadway

In this alternative, the buses will be operating in the first lane adjacent to the median. The stations will also be located adjacent to the median and will likely take the space previously occupied by left-turn lanes, which will be eliminated at the station locations. Since regular right-door buses will be used, the buses would have to laterally transition approximately 10 feet to the left prior to the station in order to make the station stop on the left side of the platform. Since a majority of the stations are located immediately after intersections, this lateral shift will mostly take place within the intersection area. The design of this transition will comply with geometric design standards, which are based on maximum travel speeds for safety and will probably use guide markers in the pavement for directing the traffic. The buses will generally be traveling at slower speeds before and after the station stops compared to the mid-block locations. Therefore it is not anticipated that this transition will create any safety or traffic impacts to vehicular traffic on Wilshire Boulevard or the cross streets, or to pedestrians at the station locations. The pedestrians will be controlled by walk/don't walk signals and would have to wait at a station in the middle of the street with buses on one side and through traffic on the other side of the island. This is similar to the stations for Alternative 1.

In this alternative autos will be maneuvering across the bus lane to make left turns at the intersections, therefore, due to the higher degree of interaction between automobiles and buses in this alternative (compared to Alternative 1), there may be some potential for increased conflicts and additional congestion in the left most vehicular through lane. Auto drivers will have to pay more attention to ensure that they can safely move across the bus lane and that there is adequate room to enter the left turn pocket and safely wait to make the left turn. It will be possible to minimize bus/vehicle conflicts through the use of advance detectors, which can expedite a green left turn phase for vehicle queues at the intersections to clear the waiting autos in case of approaching buses.

It will be difficult to sign and stripe the BRT lane with an opening directly adjacent to the left turn lane through which autos could transition from the mixed flow lane, across the BRT lane, into the left turn pocket. In order to improve the safety of this maneuver, the BRT lane would likely have to be signed for "Buses and Left Turns Only" so that left-turning vehicles could enter the BRT lane at the beginning of the block to have time to merge over to the left turn lane. This would reduce the effectiveness of the bus lane, since it would now be shared with some mixed flow traffic. There is also a concern that left turn queues at some locations could exceed the capacity of the left turn lane and block the bus lane. This is addressed in more detail later in the section on intersection level of service. The potential queues of left turning vehicles would not likely present a significant safety concern. Bus drivers would be forced to slow and wait for the left-turn phase to clear the queue. This would slow the bus operations however.

This alternative is suitable for all-day bus operation, but it would be problematic if implemented as a peak-hour-only operation, which is proposed as a potential mitigation measure for parking impacts. Under the peak hour only concept, regular vehicular traffic using the bus lane during the off-peak periods would encounter the lane transitions and would have to maneuver around the stations, momentarily separating from the other two traffic lanes. This is an unusual traffic movement, which could potentially have negative impacts to the traffic flow and vehicular safety. Should the peak-hour-only option be required to mitigate parking impacts, it should only be implemented with either Alternative 1 or 1B.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

<u>Circulation Patterns and Traffic Diversion Impacts</u>

This alternative will have the least amount of potential circulation and traffic diversion impacts compared to Alternatives 1 and 1A. With curbside operation and station sites, no left turn pockets will be lost throughout the corridor. Again, most of the traffic diversion and circulation impacts will be associated with potential increased traffic congestion along Wilshire Boulevard with the loss of a travel lane, similar to Alternatives 1 and 1A.

<u>Safety Issues Resulting From Multimodal Operation of Roadway</u>

Due to its more traditional curbside transit operation and station locations, this alternative will have little or no negative effects on pedestrians, who will be accessing the stations located in the sidewalk area. There may be some potential for vehicular conflict with buses and right turning vehicles, which will be allowed into the bus lane to make right-turns. However, this also is a relatively conventional operation, which should not result in significant effects, other than slower bus operations.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

<u>Circulation Patterns</u>

Effects along the Wilshire Corridor will be similar to Alternative 1. Along the Exposition Corridor, the BRT Alternative will not create any major changes in overall circulation patterns along its entire length, since for most of the corridor it will be located in the existing railroad right-of-way and vehicular traffic will cross the right-of-way at existing crossings. Where it runs in dedicated lanes in the center of the street along Venice and Sepulveda Boulevards, it will result in some of the same impacts as the Wilshire BRT. Left turns across the BRT tracks will only be allowed at signalized crossings. This will have the largest effect on driveway access along Sepulveda Boulevard, where left turns could only be made at signalized intersections.

<u>Traffic Diversion Through Neighborhoods</u>

Effects along the Wilshire Corridor will be similar to Alternative 1. Along the Exposition Corridor, it is not anticipated that the operation of the BRT Alternative will result in the redistribution of traffic into adjacent neighborhoods or onto nearby parallel streets/arterials, other than parallel to Sepulveda Boulevard. The street parallel to Sepulveda which may be affected by traffic diversion is Sawtelle Boulevard. The streets parallel to Venice Boulevard that may be affected by traffic diversions are Washington Boulevard and Culver Boulevard.

As traffic congestion increases along the corridor, a percentage of project trips could attempt to find convenient detours around the congested areas to reach stations (especially ones with park-and-ride lots) using side streets through residential neighborhoods. Some may be detouring to reach nearby destinations, while others may be attempting to reach parallel arterials such as Adams, Jefferson and Martin Luther King Boulevards, in order to travel longer distances. However, traffic diversion is not expected to significantly impact residential streets.

<u>Safety Issues Resulting From Multimodal Operation of Roadway</u>

A number of safety issues will have to be considered in the planning and operation of the Mid-City/Westside Transit Corridor. Increasing safety for pedestrians and motorists is of paramount importance to LACMTA. A number of lessons have been learned about safety issues over the last decade from the Los Angeles, and other regions, dealing with mixing transit operations (within both exclusive and shared ROW) with general vehicular traffic and pedestrians along the facility, the stations and at intersections/crosswalks.

The Wilshire BRT Alternative alignment is proposed as a dedicated bus lane running in the median along Wilshire Boulevard. The Exposition BRT alignment is described above. Bus stations would consist of a platform and a canopy, and would be located at the far side of major intersections. For the Wilshire BRT, transit patrons and pedestrians in general would use crosswalks at the intersections to access the bus station in the median.

Motorist safety relative to BRT operations focuses on the topic of introducing and operating a new multimodal system within a shared ROW, especially to a driving public that is not used to such a phenomenon. The two major issues deal with motorists turning left in front of a rapidly moving bus that is approaching from behind, and secondly, motorists driving in the exclusive bus lane. For the former, exclusive left turn lanes would be provided to protect against the event of a motorist turning left in front of a bus approaching from behind. At all locations where left-turns by motorist would be allowed across the busway, these left turns would be controlled by a protected left-turn arrow at all times. There will be enough lateral clearance in the median for the Venice/Sepulveda section of the Exposition BRT that the curb at the median should keep auto traffic out of the bus lanes.

Relative to the BRT operation, pedestrian safety would focus on the ability of a pedestrian to determine that a bus was approaching and proceed to a safe location when the bus has passed. Pedestrian 'WALK / DON'T WALK' signals would be installed (if they are not already) at all signalized pedestrian crosswalks that cross the busway. The crosswalk could be equipped with an active 'BUS COMING' icon to warn pedestrians of the presence of an approaching bus. Non-signalized or mid-block crosswalks leading to bus stops that do not coincide with intersections, would also be equipped with an active 'DON'T WALK' sign to warn of approaching buses. The stations would also be designed to allow for a pedestrian refuge area between exclusive busway and general roadway. In mid-block station, the platform will be equipped with a pedestrian actuator button for transit passengers attempting to cross after alighting the BRT. This mechanism would provide security for pedestrian so that they do not become impatient and attempt to illegally cross a busy arterial.

In the Exposition BRT, some rail crossing gates may still exist. The use of gates at BRT crossings has not been attempted in the U.S. and would require special legislation in order to install such devices at locations where gates do not exist. In addition, because of the relatively short headways between buses, the use of gates may not be an appropriate solution. Current rail standards require a minimum of 20 seconds between the time flashing lights/ gates is activated, and the time the train reaches the crossing. With short headways as the rapid bus approach downtown Los Angeles, the gate down time may cause high levels of delay for cross street traffic.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Impacts of this alternative in all categories will be similar to Alternative 2. The impacts on the Venice/Sepulveda segment will not be a factor because the exclusive bus lanes will exist east of this section only.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

<u>Circulation Patterns</u>

Effects along the Wilshire Corridor will be similar to Alternative 1. Along the Exposition Corridor, the LRT Alternative will not create any major changes in overall circulation patterns along its entire length, since for most of the corridor it will be located in the existing railroad right-of-way and vehicular traffic will cross the right-of-way at existing crossings. Where it runs in dedicated lanes in the center of the street along Venice and Sepulveda Boulevards, it will result in some of the same impacts as the Wilshire BRT. Left turns across the LRT tracks will only be allowed at signalized crossings. This will have the largest effect on driveway access along Sepulveda Boulevard. When the LRT alignment travels along Olympic Boulevard in Santa Monica, it will travel in mixed flow, sharing the lane with vehicular traffic. This may cause some diversion from this lane to the adjacent one, if drivers feel uncomfortable driving on the railroad tracks, but this should not cause any significant diversion to alternate routes.

Traffic Diversion through Neighborhoods

Effects along the Wilshire Corridor will be similar to Alternative 1. Along the Exposition Corridor, it is not anticipated that the operation of the LRT Alternative will result in the redistribution of traffic into adjacent neighborhoods or onto nearby parallel streets/arterials, other than parallel to Sepulveda Boulevard. The street parallel to Sepulveda which may be affected by traffic diversion is Sawtelle Boulevard. In addition, the streets parallel to Venice Boulevard including Washington Boulevard and Culver Boulevard, may be affected by traffic diversion.

As traffic conditions increase along the corridor, a percentage of project trips could attempt to find convenient detours around the congested areas to reach stations (especially ones with park-and-ride lots) using side streets through residential neighborhoods. Some may be detouring to reach nearby destinations, while others may be attempting to reach parallel arterials such as Adams, Jefferson and Martin Luther King Boulevards, in order to travel longer distances.

Safety Issues Resulting From Multimodal Operation of Roadway

The propensity for collisions at LRT grade crossings is based primarily on two factors; 1) the LRT alignment type, and 2) exposure (LRV volume & motorist/pedestrian volume). The existing LA Metro Blue Line does not have many similar characteristics to the proposed Exposition LRT alignment, but some comparisons can be made along selected alignments. For instance, the Washington Street alignment of the Metro Blue line shares the same right-of-way type as the proposed Venice and Sepulveda sections of the Exposition LRT alignment. Accident history from LACMTA ten year history of operating the Metro Blue Line (1990-2000) indicates that along the Washington Street alignment, 155 LRV involved collisions have occurred within the 10 year time frame. Nine (9) of these 155 collisions have involved pedestrians, while the other 146 involved motorists. Three (3) fatalities resulting from LRV involved collisions have occurred on the Washington Street alignment in the 10 year period. Two (2) of the fatalities were pedestrians, while one was a motorist. One-hundred three (103) of the 146 LRV-motorist collisions (71%) resulted from motorists turning left in front of, or into, an LRV. This high percentage emphasizes the need to provide adequate safety treatments for left turning motorists.

The Metro-prepared report released on May 19, 2000, called the Summary of Metro Blue Line Train/Vehicle and Train/ Pedestrian Accidents (7/90 to 3/00), indicates the following major factors contributing to accidents with trains:

- Left turn by vehicle in front of train
- Right turn by vehicle in front of train
- U-turn by vehicle in front of train
- Vehicle running through a red traffic light or stop sign
- Encroachment of vehicle into the trackway, other than the above mentioned factors

- Vehicle driving around closed automatic crossing gate
- Pedestrian inattention or ignoring an approaching or departing train
- Pedestrian trespassing on the railroad right-of-way

Light rail vehicles on the Exposition LRT alignment would travel at speeds up to 55 mph. It is expected though that this speed would only be achievable in the stretches of the alignment between Van Ness Avenue and Venice Boulevard where the dedicated railroad ROW with minimum cross street conflicts would permit such speeds. Other sections of the alignment where the LRT is located in the median of such streets as Venice, Sepulveda, and Olympic, the posted speeds from these adjacent streets is 35 mph, therefore, the use of full signal priority would be necessary. As part of the Exposition LRT proposal, the LRVs would preempt the traffic signal ahead at least 20 seconds prior to the train reaching the intersection - this would allow vehicles on the cross street to clear out of the trackway.

As part of its Grade Crossing Safety Program initiated by LACMTA in 1992, several innovative features and demonstration projects have been introduced by the Authority to address some of these safety concerns and evaluate the effectiveness of methods designed to discourage illegal encroachment by both motorists and pedestrians alike. They include pedestrian swing gates, 'second train coming' signage, pedestrian automatic gates, automated photo enforcement and four quadrant gates.

Crossings where trains travel faster than 35 mph would be equipped with gates/ flashing lights along the Exposition LRT. To deter motorists from going around lowered gates, raised medians may be installed at intersections, unless in areas where the geometry of the crossing does not allow this then four-quadrant gates would be installed. At crossings where the LRV would operate in the street at reduced speeds, gates would not be provided. To reduce the likelihood of motorists turning left in front of approaching trains from behind, at all locations where left-turns by motorist would be allowed across the LRT line, these left turns would be controlled by a protected left-turn arrow at all times. Additionally, an active 'TRAIN COMING' sign would also be mounted in the median to alert motorists of the approaching train. Photo enforcement with heavy fines may also be used along the LRT alignment to deter motorists from driving around lowered gates.

Pedestrian safety at Exposition LRT crossings would be addressed in the following manner:

- Signs that warn pedestrians to 'LOOK BOTH WAYS' while displaying a train icon would be placed at each crossing.
- The use of pavement delineation and barriers would direct pedestrians to designated crossing location, and control pedestrian movement.
- ADA approved tactile warning strips that provide visual warning of the dynamic envelope of the train would be used at stations to warn pedestrians of the edge of the platform and would be installed at all designated pedestrian crossings marking the limits of pedestrian occupancy.
- Swing gates that are gravity-operated would be installed at pedestrian crossings that warrant their use. They require a positive action by the pedestrian entering the crossing, thereby forcing awareness of the trackway and the possible presence of an approaching train.

- Pedestrian gates that operate in the same manner as a vehicular gate would be installed at pedestrian crossings wherever their use is warranted– they block pedestrian approach in the presence of a train, specially in location with high train volume and limited sight distance.
- 'SECOND TRAIN APPROACHING' signs may be installed at crossings where two or more light rail transit tracks are present, and the LRV headways are short – they warn pedestrians to look both ways.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Impacts of this alternative in all categories will be similar to Alternative 3. The impacts on the Venice/Sepulveda segment will not be a factor because the LRT will exist east of this section only.

This Alternative will have limited effect on overall traffic circulation patterns, since it will be located in the existing railroad right-of-way and crossings will occur at existing crossings and will have no foreseeable impacts on local residential streets along the Exposition Corridor.

Impacts of Special Events Street Closures on Exposition BRT and LRT Operations

Several special events occur in and near the University of Southern California (USC) campus and the Exposition Park area every year. Some of these events currently entail the closure of streets and/or restriction of traffic in the surrounding area for event traffic control, marching band procession, and/or pedestrian crossing safety. According to the Los Angeles Department of Transportation (LADOT), 108 special events have occurred in the USC/Exposition Park area in the past year. For 62 for those events, traffic officers were deployed to help manage traffic flow. Thirteen of those events resulted in a full closure of Exposition Boulevard between Vermont Avenue and Figueroa Street. Two of these closures were by special events permits or by Los Angeles City Council order. The other eleven closures were initiated or planned by LADOT for traffic management or safety purposes. The following events have required the closure of Exposition Boulevard between Figueroa Street and Vermont Avenue during the last year:

- Los Angeles Marathon
- Revlon Run & Walk
- USC Football Games (6 times)
- World Cup and Other Soccer Events at the Coliseum (4 times)
- MotorCross Event

Additional events in the future may result in the closing of Exposition Boulevard as well. Generally, Exposition Boulevard is closed for USC football games and other major events in the Coliseum attracting 50,000 or more attendees. The rationale for closing the street during major events of greater than 50,000 attendees is to maintain pedestrian safety of those crossing the street and to distribute post-event traffic loads to multiple freeway ramps to ease traffic congestion. This traffic distribution strategy improves parking lot clearance times for both Exposition Park and USC. Exposition Boulevard was closed for multiple days as a result of the LA Ford Street Races two years ago; however, according to LADOT that event has since been discontinued and is not expected to return to the Exposition Park area any time soon.

At this point, no significant changes are expected in regards to the number of times Exposition Boulevard would be closed for special events in the future. LADOT estimates that Exposition Boulevard will be closed 10 - 15 times a year due to special events, primarily on weekends or late in the evening. Exposition Boulevard has not been closed as a result of a special event during any weekday peak-period for more than two years.

Generally, Exposition Boulevard is closed before and after special events. This is to allow people to cross Exposition Boulevard from the parking structures at USC to reach Exposition Park. During USC football games, the street is closed when the band marches from the campus to the stadium and immediately after the game, when pedestrians are crossing the street to return to on-campus parking and residential facilities.

When Exposition Boulevard is closed to traffic during events, the operation of a BRT/LRT line might be impacted if it were using an at-grade alignment. Below grade BRT/LRT lines would not be impacted by any street closures at Exposition Park. There are other measures however, that could be taken to allow for at-grade operations of BRT/LRT during special events.

During major events, an at-grade LRT would cause impacts to overall event and traffic operations. Some measures have been recommended to allow the LRT to run while Exposition Boulevard is closed. One possible strategy is to create a "Bus Bridge" which would connect the two sides of the operating LRT with express buses. These buses would pick up passengers at one terminus and shuttle them to the other terminus avoiding the street closures. Another recommended measure would allow for the LRT to operate if Exposition Boulevard is closed. Traffic control personnel from the Department of Transportation would need to be present to stop vehicular or pedestrian traffic. This would allow columns of pedestrians to cross the streets at periodic intervals between LRT trains. Fences would have to be built along the median of Exposition Boulevard on both sides of the LRT line to prevent people from crossing the LRT tracks mid block. During the LA Marathon, the race could be restricted to the north side of Exposition Boulevard allowing for trains to run during the event potentially at slower speeds. Similar events such as the Revlon Run/Walk could also be restricted to one side of the street to allow simultaneous LRT operations. This would allow the race to run without crossing the path of the LRT.

At-grade BRT buses will also be impacted in a street closure scenario. The flexibility of the buses will allow for them to travel on alternate streets to bypass the closed streets during a special event. They could run in mixed flow traffic until re-joining the corridor, or they could also have special lanes marked by LADOT to allow the buses to move quickly before and after special events so that these buses will not be severely delayed by traffic.

Maintenance Yard

The additional vehicles that would have to be added to the MTA bus or light rail fleet to serve the corridor alternatives will require maintenance and overnight storage. There are six potential sites at which the maintenance of buses could be accommodated, one of which could also serve as a light rail vehicle maintenance yard. This section discusses the transportation impacts associated with implementation of a maintenance yard at each of these alternative sites. The site plans for the yard at each potential location have not been developed, so the access points and internal circulation are not known at this time. The transportation impact analysis focuses on the accessibility of each site and its proximity to the corridor alternatives, as well as the types of adjacent streets which might be used by buses. It is anticipated that the number of employees, which would work out of each maintenance yard, will be about 160 employees. Most of these employees arrive and depart the yard in the off-peak hours. Many arrive prior to the morning commute period so that buses can be readied for their commute runs. Others work in the late evenings, when the buses return from their daily runs. The movement of buses and light rail vehicles to/from the maintenance yards also will occur outside the peak commute periods, since the transit vehicles must be in service during those peak time periods.

Site 3: Northwest Corner Chavez & Mission

This site is located at the intersection of two Major Highways in the City of Los Angeles. Buses which would deadhead to/from this site to the start or finish of runs in Santa Monica would likely use the Santa Monica Freeway and could circulate around downtown Los Angeles via either the I-110 or US 101 to reach the Mission Road interchange on the 101 freeway. This interchange is only one block from the yard site, so the buses would have minimal impact on arterial streets. Buses traveling between the yard and the eastern ends of the corridors would travel on arterial streets through downtown, similar to existing buses bound to/from the adjacent bus yard at Vignes/Cesar Chavez. They would not be expected to cause any significant impacts on the downtown streets.

Site 4: Existing MTA Division 1 at Alameda & 6^{th}

The new maintenance yard would be an expansion of the existing Division 1 yard to a site across Industrial Street. Buses traveling to/from this site would follow the patterns of existing Division 1 buses and would not affect any new streets in this predominantly warehouse/industrial/produce neighborhood. Industrial Street could be affected by the bus traffic if an access point is provided on Industrial or if vehicles are shuttled across Industrial from the existing yard to the new yard, but Industrial Street is a minor street that only extends for five blocks. It does not serve as a primary circulation route in this part of the Central City East. There is a high percentage of trucks in the traffic volumes around this site. It is located in close proximity to the Wilshire-Whittier corridor, so buses would have limited down time circulating to/from service. Buses which would deadhead to/from this site to the start or finish of runs in Santa Monica would likely use the Santa Monica Freeway and would use the Alameda street interchange on the freeway. This interchange is less than one mile from the yard site, so the buses would have limited impact on arterial streets.

Site 6: Northeast Corner Alameda & Washington

This site is located at the intersection of two Major Highways in very close proximity to the I-10 freeway, with the Alameda Street ramps only one-half block away. Buses which would deadhead to/from this site to the start or finish of runs in Santa Monica would likely use the Santa Monica Freeway and would use the Alameda street interchange on the freeway. These buses would have minimal impact on arterial streets. Buses traveling to/from the corridors via downtown city streets would likely utilize Alameda Street to connect with the Wilshire-Whittier corridor or Washington Boulevard to connect with the Figueroa –Exposition corridor. There are high percentages of trucks in the traffic volumes around this site.

Site 7: Southeast Corner Alameda & Washington

This site would have the same general impacts as Site 7, directly across the street.

Site 8: Exposition ROW, Hooper to Central

Site 8 is the one location that could be developed as either a BRT yard or and LRT yard, since it is located on the Exposition ROW owned by the MTA.

BRT Yard. This site is located about three quarters of a mile south of the Santa Monica Freeway and could be accessed via the interchange at Central Avenue a Secondary Highway. It is surrounded by local streets, with some nearby residential areas. In order to avoid impacting the residential streets, employees and buses would likely be routed via Central Avenue to/from the north. This site is a little more removed from the starting point for service on the Wilshire Corridor than some of the other sites.

LRT Yard. Use of this site for the LRT yard would have similar traffic impacts as its use as a BRT yard, in terms of employee travel to/from the site. Employees would be encouraged to utilize Central Avenue rather than any of the adjacent residential streets. The circulation of LRT vehicles would be along the former railroad right-of-way to/from the West. This would result in the re-activation of nine at-grade crossings of streets to the west of the LRT yard. These crossings would be upgraded to include warnings lights and gates, and the light rail vehicles would move through them at slow speeds, since they would be out of service, so this would not be expected to cause any significant traffic impacts or safety concerns. The out-of-service vehicles would not need any priority treatment at these grade crossings and could wait, if necessary, to cross when they would not negatively impact north-south traffic flow.

Site 9: South Park Shops at 54th & Avalon

This yard site is located at an existing MTA maintenance facility, so it would not create new intrusion of buses into this predominantly residential area. It would increase the number of daily bus and employee trips in this area. In order to avoid neighborhood traffic impacts, the employees and buses would be routed via Avalon Boulevard, on the eastern perimeter of the site, to/from Slauson Avenue for access to the I-110 Freeway. This would increase the number of vehicle trips passing the Jefferson Middle School site, on the east side of Avalon Boulevard, but should not significantly affect pedestrian safety because of the availability of a signalized pedestrian crosswalk at Avalon/Slauson. This site is the most removed from the Wilshire and Exposition corridors, so it would involve the most dead head travel by out-of-service buses.

Intersection Traffic Impacts

General Issues Related to Intersection Impacts

Signal modifications will be implemented for BRT and LRT operation. LADOT currently has the necessary hardware/software to implement a transit priority treatment at signalized intersection to address transit signal priority. The use of loop detectors embedded in the pavement in advance of traffic signals, or newly emerging visual recognition technologies placed above intersections on signal mastheads, will now allow traffic signal controllers to detect a bus as a distinct object separate from a car or truck. This in turn will provide the signal processor with sufficient warning to adjust the signal phases on cross streets so the bus may receive a green indication when it reaches the cross street. In certain cases this will occur by lengthening the green phase for the transitway (extend green) and the parallel streets along Exposition Boulevard, and other cases it may occur by shortening the green phase on the north/south streets (early green).

The proper placement of advance detection devices will avoid abrupt changes in a signal cycle, (e.g., the green phase not truncated prior to a minimum specified time). Locating the detectors far enough in advance of the cross street will allow a bus traveling at a planned speed to arrive at the cross street coincident with a green signal indication. However, it may not be feasible in every instance to provide the same level of priority treatment for buses traveling in both directions, especially if bus headways become too short. If such a condition prevails, then the peak direction of passenger demand would be assigned a higher level of priority treatment.

In those portions of the corridor along Exposition Boulevard where the transitway is adjacent to and runs parallel to an arterial street, buses will receive a green signal indication simultaneously with the parallel street. 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 transitway and the adjacent streets' traffic signals. A brief clearance interval may be required in the north/south signal phase to ensure that no vehicles are stopped on the transitway crossing, or between transit crossing and the adjacent east/west streets. Turn movements from the adjacent east/west street will also require separate signal phases with red arrows when the transit vehicles are present or crossing to avoid incidents from the conflicting north/south movement. It will be necessary to prevent the left or right turns across the transitway when a transit vehicle is moving in conjunction with the through traffic on the parallel arterial.

Numerous traffic signals will need to be modified, typically to add a signal phase for transit vehicles crossing the roadway or the intersection. Some of these modifications also entail relocating the stop bars and providing clearance intervals for vehicles crossing the transitway. In addition, signal modifications will upgrade signal controllers/ software to accommodate the transit priority treatment. New signals will need to be installed where the transit signal is off-set from the nearest traffic signal by more than 150 feet. This would constitute a separate signal that would be interconnected to the adjacent traffic signal. It is expected that all BRT and LRT at-grade crossings will be signalized.

A decrease in levels of service at signalized intersections may be experienced in the Wilshire Boulevard corridor. The increase in traffic volume by 2020 is expected to exceed the design capacity of Wilshire Boulevard at many intersections. This will result in the worsening of levels of service (LOS) of the arterial as a whole as well as exceeding the volume/capacity (V/C) at the majority of the intersections. It is expected that of the 78 signalized intersections that were analyzed along the Wilshire BRT corridor, approximately 21 percent will operate at LOS E or F.

The effects of preferential bus signal on cross traffic movement/existing traffic signal system have been considered. Priority treatment of buses at intersections holds the potential to reduce a significant source of delay in bus operations. This is accomplished through preferential bus signal treatment, which in effect keeps buses from being stalled in general traffic, while helping to maintain the bus schedule. However, such an operational mechanism may adversely affect cross traffic movement. Also, today's traffic signal control systems are tightly inter-connected in order to provide progression of general traffic through the urban grid system. Thus, bus signal priority treatments would have to be constrained to achieve modest variations within the context of maintaining a viable synchronization program.

For the alternatives that include an Exposition BRT, the BRT proposal calls for signal priority for the busway (Exposition ROW) and signal priority - but no preemption- in the street running section outside the busway (in Santa Monica and downtown Los Angeles). The partial signal prioritization that is proposed for the transit corridor may possibly increase delay for motorists crossing the corridor on the cross streets. Such impacts and delays can be minimized using the latest signal timing/synchronization technologies and vehicle detection capabilities. Nonetheless, it will still result in increased delays from vehicles unable to clear an intersection due to the shorter signal phase for cross traffic movement. This will especially be the case for locations where new traffic signals will be installed, and places where increased left and right turns across the BRT corridor from parallel streets to reach the stations and their respective park-and-ride facilities. The coordination of signals at closely spaced intervals between a parallel street and the transit corridor will also take on additional complexities that will need to be addressed.

Traffic Forecast Methodology

Traffic conditions for the horizon year of 2020 were forecast and evaluated for the No Action Alternative and for each of the alternatives. The No Action Alternative represents the projected horizon year traffic volumes in the study area in the absence of any improvements along the Mid-City/Westside Corridor project.

To estimate the more localized traffic impacts associated with each project alternative, intersection traffic volume projections for each scenario were developed using the following process:

- Development of future base traffic volumes reflecting 2000-2020 <u>background traffic growth</u>, and changes due to auto trip reduction and other shifts in traffic (elimination of left turns at intersections and at driveways) as a direct result of proposed Corridor transit service alternatives.
- Development of <u>additional peak hour auto access trips</u> to stations related to park-and-ride and kiss-and-ride (drop-off) trips.
- Development of <u>additional BRT and LRT vehicle volumes</u> at intersections along the corridor using the assumed transit headways for each project alternative.

The above process was employed because the projected 2020 vehicle trips produced directly by the highway assignment module of the MTA Model do not explicitly include the transit vehicles themselves nor the auto portion of transit-access (park-and-ride or kiss-and-ride) trips. Use of this methodology, allowed for a "true" impact analysis, which reflects both macro-level reductions and/or shifts in background traffic due to the transit service, as well as the micro-level additional local impacts created by station-access traffic and transit vehicle delays.

<u>Background Traffic Growth Factors</u>

To develop the "base" traffic volumes for the first step, a growth-factoring process was used. Traffic growth factors were calculated for the study area arterials by comparing traffic volume results from the MTA model for the base 2020 run and each of the project alternatives. These results included AM and PM peak link volumes at key intersections along the east-west corridor for the base year 1998 and forecast year 2020.

Due to a noticeable difference in traffic growth patterns in various sub-areas within the corridor, the traffic volumes for intersections were grouped in seven sub-areas, as follows:

- Subarea 1-- Santa Monica and the Los Angeles community of Sawtelle, including all streets west of Federal Avenue
- Subarea 2-- Century City, West Los Angeles, and Westwood along the Wilshire Corridor, including all streets between Federal Avenue and the Beverly Hills City Limits
- Subarea 3-- Beverly Hills on the Wilshire Corridor, including all streets from the western city limits to La Cienega Boulevard
- Subarea 4-- Mid-City area of Los Angeles along the Wilshire Corridor, including all streets east of La Cienega Boulevard up to Western Avenue
- Subarea 5-- Sepulveda Boulevard south of Olympic Boulevard, and Venice Boulevard west of Overland Avenue along the Exposition Corridor
- Subarea 6-- most of Culver City in the Exposition Corridor along Venice east of Overland Avenue, also includes the Exposition right of way west of Jefferson Boulevard
- Subarea 7-- Exposition Corridor east of the National Boulevard/Jefferson Boulevard intersection

For the Wilshire BRT alternative, Subareas 1-4 were further subdivided with Wilshire Boulevard itself as a separate subarea from the rest of the streets. This was done to properly capture the sharp decline in traffic volumes along Wilshire Boulevard due to the removed lane and the increase in volumes on parallel streets as a result of diversion from Wilshire Boulevard.

A summary of these growth factors, which are shown in Table 3.2-16. These factors were then applied to the existing 2000 intersection traffic counts to develop future background (base) volumes at each of the study intersections for each alternative. Detailed results of the growth factors for all regions can be found in the Traffic Analysis Report.

Along the Wilshire Corridor, the greatest general growth in traffic occurs in West Los Angeles and Beverly Hills. Both of these areas are high-density employment and commercial centers. The effects of traffic diversion due to the Wilshire BRT are noticeable throughout the study area, especially along the west side of the study area. The greatest general growth along the Exposition Corridor occurs in West Los Angeles. The arterial streets here are affected by their proximity to both the San Diego Freeway and the Santa Monica Freeway.

In the second step of the forecasting process, the projected base intersection volumes for each of the scenarios, except for the TSM Alternative, were adjusted by adding the station access auto traffic. This includes park-and-ride auto traffic, kiss-and-ride auto traffic, and bus and shuttle traffic consisting of feeder and line haul buses. The estimated vehicle trip generation for each of the project alternatives will be described in more detail in the subsequent sections, which discuss the impacts of each alternative. The estimated trip distributions were developed based on the location of the transportation system and the most likely routes to the stations and were reviewed and adjusted for local conditions through observations of traffic patterns and volumes.

TABLE 3.2-16
GROWTH FACTORS FOR STUDY AREA 2000-2020

	2020 No Action		TSM		Alternative 1, 1a,1b		Alternative 2		Alternative 2a		Alternative 3		Alternative 3a	
Location	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**	**AM**	**PM**
Santa Monica/	4.66%	4.54%	4.29%	4.71%	11.35%	9.24%	3.83%	3.93%	4.55%	4.48%	3.83%	3.93%	4.55%	4.48%
Sawtelle					(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)
West Los Angeles	9.82%	9.83%	9.89%	9.74%	13.66%	13.47%	9.15%	9.16%	9.71%	9.26%	9.15%	9.16%	9.71%	9.26%
					(-16.98%)	(-15.95%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)
Beverly Hills	9.80%	10.48%	9.80%	10.52%	9.30%	9.86%	9.55%	10.41%	9.70%	10.52%	9.55%	10.41%	9.70%	10.52%
					(-6.57%)	(-2.64%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)	(-3.12%)	(-2.04%)
Mid City Wilshire	5.66%	7.13%	5.79%	7.09%	7.68%	8.82%	5.39%	6.86%	5.64%	6.92%	5.39%	6.86%	5.64%	6.92%
					(-20.08%)	(-18.95%)	(-20.08%)	(-18.95%)	(-20.08%)	(-18.95%)	(-20.08%)	(-18.95%)	(-20.08%)	(-18.95%)
Sepulveda/Venice	24.60%	22.98%	24.60%	23.51%	27.13%	25.15%	22.62%	22.44%	24.41%	22.98%	22.62%	22.44%	24.41%	22.98%
Culver City	14.35%	15.18%	14.06%	15.49%	14.83%	16.00%	12.57%	14.21%	13.65%	14.56%	12.57%	14.21%	13.65%	14.56%
Exposition ROW	13.39%	13.90%	13.60%	14.08%	13.34%	14.02%	12.69%	13.36%	12.92%	16.17%	12.69%	13.36%	12.92%	16.17%

Source: MMA 2000

The multi-step methodology described above is used to evaluate the impacts of project-related traffic, as well as the effects of transit operations on signalized intersections. Mitigation of impacts to levels of insignificance based on these guidelines (e.g. reduction of delay by 5.0 seconds or more) would likely require traffic signal modifications and/or physical improvements, such as additional through or turn lanes at intersections, new traffic signals and possible road widenings.

Impacts of Alternatives on Intersection Level of Service

Intersection capacity analyses were performed for the 158 critical intersections within the Mid-City/ Westside Corridor study area for No Action conditions and for each of the project alternatives. The threshold of significance, adopted by the MTA in consultation with LADOT to determine when a project impact is significant, was discussed at the beginning of Section 3.2.3. This methodology is used to evaluate the impacts of project-related traffic, as well as the effects of transit operations on signalized intersections. Detailed level of service calculations and average delay for each alternative and peak hour can be found in the Traffic Analysis Report. The traffic impacts for each of the alternatives are discussed in the following pages.

a. No Action Alternative

The No Action Alternative presents projected operating conditions of study intersections in 2020 without the development of a transit project along the Corridor. The study assumed traffic signal operating specifications (cycle lengths, phases, etc.) to be generally the same as those of today. Current signal timing plans were obtained from all jurisdictions so that all potential pre-emptions at intersections would be entered into this analysis. The growth factors projected for various study area locations from 2000 to 2020 conditions, as shown in Table 3.2-16, were applied to existing peak hour turning movements at the study area intersections to develop estimated 2020 No Action traffic volumes for AM and PM peak hours.

Table 3.2-17 summarizes the results of these analyses. Review of this table shows that 40 intersections are expected to operate at level of service (LOS) E or F during one or more peak hours. This compares to 28 intersections currently (2000 conditions) operating at LOS E or worse, as discussed previously.

b. Transportation System Management (TSM) Alternative

The TSM Alternative assumes an improved bus transit system throughout the study area, mostly through increases in service frequency on existing bus lines. In contrast to the BRT/LRT Alternatives, this alternative does not have transit stations to which automobile trips are attracted in large numbers. Passengers using this improved bus service are assumed to access the buses through conventional bus stops and existing or unofficial park-and-ride facilities. Therefore, this alternative does not have the impacts of the additional station access vehicle trips. However, it accounts for the reduction of vehicle trips from the highway system as a result of any potential auto trips diverted to the improved bus services and redistribution of auto trips as a result of changes in transit services. To develop traffic volume forecasts for this alternative, growth factors in Table 3.2-16 corresponding to the TSM Alternative were used. No other adjustments were made to any part of the network for this alternative.

TABLE 3.2-17
LOS E/F INTERSECTIONS IN 2020
NO ACTION ALTERNATIVE

	LOS E		LOS F	
Intersection	**AM**	**PM**	**AM**	**PM**
Lincoln Blvd /Olympic Blvd	X	X		
20th Street /Colorado Ave				X
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X
Sawtelle Blvd /Olympic Blvd		X	X	
Sawtelle Blvd/I-405 Southbound			X	X
Sawtelle Blvd /Pico Blvd		X		
Sawtelle Blvd /National Blvd	X			X
Sawtelle Blvd /Palms Blvd	X			X
Sawtelle Blvd /Venice Blvd			X	X
Sepulveda Blvd /Wilshire Blvd	X			X
Sepulveda Blvd /Pico Blvd	X			X
Sepulveda Blvd /National Blvd			X	X
Sepulveda Blvd /Palms Blvd	X			X
Sepulveda Blvd /Venice Blvd			X	X
Sepulveda Blvd /Washington Pl		X		
Veteran Ave /Wilshire Blvd			X	X
Westwood Blvd/Santa Monica Blvd			X	X
Glendon Ave /Wilshire Blvd			X	X
Ave of the Stars /Santa Monica Blvd		X		
Santa Monica Blvd/Wilshire Blvd			X	X
S Santa Monica Blvd/Wilshire Blvd			X	X
Beverly Dr /Wilshire Blvd		X	X	
Doheny Dr /Olympic Blvd		X		
Hauser Blvd /6th Street		X		
Highland Ave /6th Street	X			
Highland Ave /Wilshire Blvd	X			
Highland Ave /Olympic Blvd			X	X
Rossmore Ave /Wilshire Blvd		X	X	
Washington Blvd /Washington Pl			X	X
Motor Ave /Venice Blvd	X	X		
Culver Blvd/Main St/Washington Blvd			X	X
Culver Blvd /Venice Blvd	X			X
Robertson Blvd /Venice Blvd			X	X
National Blvd /Venice Blvd			X	X
La Cienega Blvd /Jefferson Blvd	X			X
La Brea Ave /Exposition Blvd	X	X		
Arlington Ave /Exposition Blvd		X	X	
Western Ave /Exposition Blvd			X	
Vermont Ave /Exposition Blvd			X	
Figueroa Street /Adams Blvd		X		

Source: MMA 2000

Table 3.2-18 shows 46 intersections projected to operate at LOS E or worse during the peak hours, of which most are expected to operate slightly worse than the No Action Alternative according to the defined significance thresholds. The TSM alternative was in part based on the Westside Transit Restructuring Study, which assumed removal, streamlining, and modifications to several less productive bus lines. Many of these less productive bus lines are centered around Sawtelle Boulevard and Venice Boulevard, where most of the impacted intersections are located. Overall, most of the 158 intersections experience a slight improvement of operations.

TABLE 3.2-18
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
TSM ALTERNATIVE

Intersection	LOS E		LOS F		Impact
	AM	PM	AM	PM	
Lincoln Blvd /Olympic Blvd	X			X	Y
20th Street /Colorado Ave				X	Y
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X	Y
Sawtelle Blvd /Olympic Blvd		X	X		Y
Sawtelle Blvd /I-405 Southbound			X	X	Y
Sawtelle Blvd /Pico Blvd		X			Y
Sawtelle Blvd /National Blvd	X			X	Y
Sawtelle Blvd /Palms Blvd	X			X	Y
Sawtelle Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Wilshire Blvd	X			X	Y
Sepulveda Blvd /Pico Blvd	X			X	Y
Sepulveda Blvd /National Blvd			X	X	Y
Sepulveda Blvd /Palms Blvd	X			X	Y
Sepulveda Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Washington Pl		X			Y
Veteran Ave /Wilshire Blvd			X	X	Y
Westwood Blvd /Wilshire Blvd	X				Y
Westwood Blvd/Santa Monica Blvd				X	Y
Glendon Ave /Wilshire Blvd			X	X	Y
Ave of Stars /Santa Monica Blvd		X			Y
Whittier Dr /Wilshire Blvd		X			Y
Santa Monica Blvd /Wilshire Blvd			X	X	Y
S Santa Monica Blvd/Wilshire Blvd			X	X	Y
Spalding Dr /Olympic Blvd		X			Y
Beverly Dr /Wilshire Blvd	X	X			Y
Doheny Dr /Olympic Blvd		X			Y
Fairfax Ave /3rd Street		X			Y
Hauser Blvd /6th Street				X	Y
Highland Ave /6th Street	X				N
Highland Ave /Wilshire Blvd	X				N
Highland Ave /Olympic Blvd			X	X	Y
Rossmore Ave /Wilshire Blvd		X	X		Y
Washington Blvd /Washington Pl			X	X	Y
Motor Ave /Venice Blvd	X	X			Y

TABLE 3.2-18 LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS TSM ALTERNATIVE					
	LOS E		LOS F		
Intersection	**AM**	**PM**	**AM**	**PM**	**Impact**
Culver Blvd/Main St/Washington Blvd			X	X	Y
Culver Blvd /Venice Blvd	X			X	Y
Robertson Blvd /Venice Blvd			X	X	Y
National Blvd /Venice Blvd			X	X	Y
National Blvd /Washington Blvd		X			Y
La Cienega Blvd /Jefferson Blvd	X			X	Y
La Brea Ave /Exposition Blvd			X	X	Y
Arlington Ave /Exposition Blvd		X	X		Y
Western Ave /Exposition Blvd			X		Y
Vermont Ave /Exposition Blvd			X		Y
Figueroa Street /Adams Blvd				X	Y
Figueroa Street /Exposition Blvd		X			Y
Source: MMA 2000					

c. Wilshire BRT Alternative 1- Bus Lanes in Median

As described in detail in the project description, this alternative assumes operation of buses within exclusive bus lanes in the median along Wilshire Boulevard between Ocean Avenue in Santa Monica to Western Avenue in Mid City Los Angeles. On Ocean Avenue, the buses would operate on street to the Santa Monica Transit Center.

Auto access trips for each BRT station were developed from mode of access data derived from the MTA model. Daily ridership and auto trips were calculated for each station and assigned to the roadway network. Wilshire BRT has no park-and-ride lots, so all auto trips are kiss-and-ride, which are counted twice in the intersection analysis. Daily trip generation for each station is summarized in Table 3.2-19.

TABLE 3.2-19 AUTO TRIP GENERATION WILSHIRE BRT ALTERNATIVE			
Wilshire BRT Station	**Total**	**Mode Choice**	
		Walk/Bus	**Auto**
Wilshire/4th	1,202	1,134	68
Wilshire/14th	3,011	2,825	186
Bundy	2,481	2,357	124
Barrington	1,599	1,449	150
Westwood Village	6,316	5,625	691
Santa Monica	2,317	2,174	143
Beverly	1,599	1,497	102
Robertson	2,062	1,947	115
La Cienega	2,525	2,349	176
Fairfax	2,550	2,378	172

TABLE 3.2-19
AUTO TRIP GENERATION
WILSHIRE BRT ALTERNATIVE

Wilshire BRT Station	Total	Mode Choice	
		Walk/Bus	Auto
La Brea	3,052	2,899	153
Crenshaw	1,373	1,306	67
Western	9,510	9,469	41
Totals	**39,597**	**37,409**	**2,188**

Source: MMA 2000

Station access traffic was distributed to the roadway system for each station area based on travel demand model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic volume turning movements at study area intersections were added to the 2020 background traffic volumes specifically developed for the Wilshire BRT Alternative using the arterial growth factors discussed earlier.

Detailed discussions were held with the Cities of Beverly Hills, Santa Monica, and Los Angeles Department of Transportation staff to identify the likely traffic signal operational characteristics and scenarios for the implementation of the BRT system. Issues such as signal priority, cycle and phasing modifications, additional protective phasing for turns, loss time and other operational details were discussed. Based on these discussions, and directions from these cities, specific signal timing as well as geometric modifications were assumed at study intersections which are along and/or immediately adjacent to the BRT alignment.

Some of the items addressed in the intersection analysis include:

- Additional clearance time for north south streets to clear traffic across the BRT alignment.
- Additional left turn phases to stop the left turning vehicles from turning across the BRT alignment.
- Other modifications to adjacent signals to account for BRT signal priority treatments.

The above operational and physical modifications were made and assumed to be part of the project for the Wilshire BRT scenario and are reflected in intersection levels of service calculations for this alternative. In addition, existing dual left turn lanes were modified at the following locations due to the limited right-of-way:

- Veteran Avenue at Wilshire Boulevard, one left-turn lane in each direction
- Gayley Avenue at Wilshire Boulevard, one left-turn lane eastbound only
- Westwood Boulevard at Wilshire Boulevard, one left-turn lane in each direction
- Glendon Avenue at Wilshire Boulevard, both left-turn lanes eastbound only
- Santa Monica Boulevard at Wilshire Boulevard, one left-turn lane eastbound only

Intersection capacity analyses were performed for the resultant total volumes for this alternative. Table 3.2-20 summarizes the results of the intersection capacity analyses of study intersections, using Level of Service E as the threshold for intersections with unacceptable levels of service. As discussed earlier, the loss of some left turn lanes resulted in the diversion of existing left turns to alternate locations. In the level of service analysis this was manually reflected by assuming that 50 percent of the left turns would shift to the next available left turn location and 50 percent would shift to right turns and circle the next block. The diversion of some of these left turns to minor streets between the study intersections could cause impacts at some of those locations, which will be further evaluated during the design of the left turn lanes at each signalized intersection during preliminary engineering. The increased left turn demands at some of the minor streets would not negatively impact BRT operations, but it could have the potential impact of left turn queues exceeding left turn lane capacity and causing blockage of a through lane on Wilshire Boulevard.

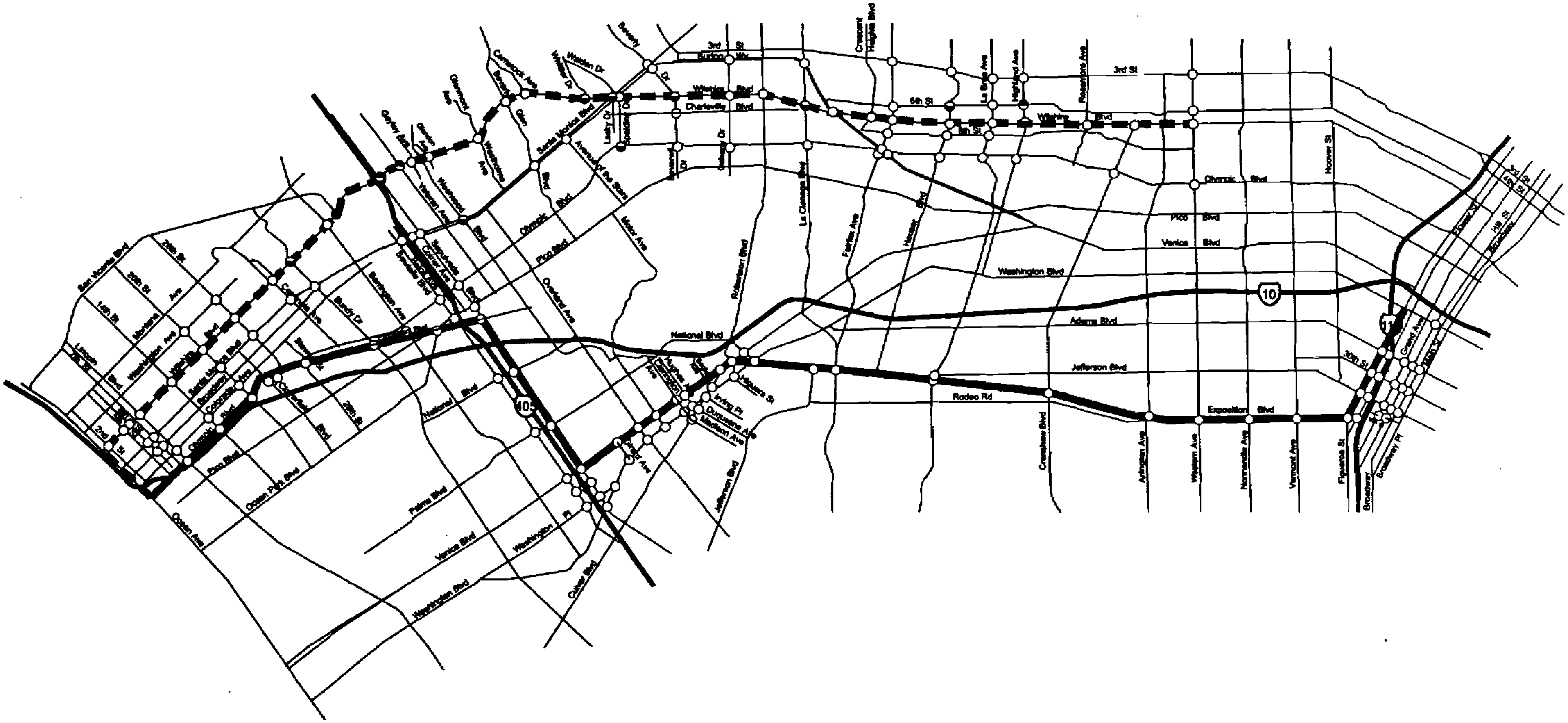
TABLE 3.2-20
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
WILSHIRE BRT ALTERNATIVE 1

Intersection	LOS E		LOS F		Impact
	AM	PM	AM	PM	
Bundy Dr /Wilshire Blvd		X			Y
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X	Y
Sepulveda Blvd /Wilshire Blvd	X			X	Y
Veteran Ave /Wilshire Blvd			X	X	Y
Westwood Blvd /Wilshire Blvd			X	X	Y
Westwood Blvd/Santa Monica Blvd				X	Y
Ave of the Stars /Santa Monica Blvd		X			N
Whittier Dr /Wilshire Blvd		X			Y
Santa Monica Blvd /Wilshire Blvd			X	X	Y
S Santa Monica Blvd/Wilshire Blvd		X	X		N
Spalding Dr /Olympic Blvd		X			Y
Beverly Dr /Wilshire Blvd				X	Y
Doheny Dr /Olympic Blvd		X			N
La Cienega Blvd /Wilshire Blvd		X			Y
Fairfax Ave /3rd Street		X			N
Hauser Blvd /6th Street				X	Y
Highland Ave /6th Street	X				Y
Highland Ave /Wilshire Blvd		X			Y
Highland Ave /Olympic Blvd			X	X	N
Rossmore Ave /Wilshire Blvd			X		N

Source: MMA 2000

For the Wilshire BRT Alternative, 20 intersections are projected to operate at LOS E or worse during the peak hours in the Wilshire Boulevard Corridor area. Based on a comparison to No-Build conditions, using the significant impact criteria, it can be seen that the Wilshire BRT Alternative can be expected to significantly affect 14 intersections. Mitigation efforts for these intersections will be discussed in Section 3.2.4. Table 3.2-20 indicates the intersections projected to operate at LOS E or

F and which are significantly impacted by the BRT Alternative. Figure 3.2-17 illustrates the intersections impacted by Alternative 1.



LEGEND:

- ○ No Impact
- ◓ Impacted AM Peak Hour
- ◒ Impacted PM Peak Hour
- ● Impacted Both Peak Hours
- ▬▬ Exposition BRT And LRT
- ▬ ▬ ▬ Wilshire Blvd BRT

SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-17

INTERSECTION ANALYSIS RESULT FOR THE WILSHIRE BRT ALTERNATIVE 1

As seen in Table 3.2-20, most of the impacted intersections are concentrated along Wilshire Boulevard. The bulk of the impacts occur in the Westwood area and in Beverly Hills.

d. Wilshire BRT Alternative 1A- Bus Lanes Adjacent to Median

As described in detail in the project description, this alternative assumes operation of buses within exclusive bus lanes in the existing travel lane next to the median along Wilshire Boulevard between Ocean Avenue in Santa Monica to Western Avenue in Mid City Los Angeles. On Ocean Avenue, the buses would operate on street to the Santa Monica Transit Center.

Auto access trips for each BRT station were developed from mode of access data derived from the MTA model. Daily ridership and auto trips were calculated for each station and assigned to the roadway network. Wilshire BRT has no park-and-ride lots, so all auto trips are kiss-and-ride, which are counted twice in the intersection analysis. Daily trip generation for each station is summarized earlier in Table 3.2-19. It is assumed that the ridership numbers will not change as a result of the variation of the Wilshire BRT alternative.

Station access traffic was distributed to the roadway system for each station area based on travel demand model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic volume turning movements at study area intersections were added to the 2020 background traffic volumes specifically developed for the Wilshire BRT Alternative using the arterial growth factors discussed earlier. The growth factors are assumed to be similar in all Wilshire BRT alternatives because these alternatives are operational changes that should not affect traffic across the study area.Detailed discussions were held with the Cities of Beverly Hills, Santa Monica, and Los Angeles Department of Transportation staff to identify the likely traffic signal operational characteristics and scenarios for the implementation of the BRT system. Issues such as signal priority, cycle and phasing modifications, additional protective phasing for turns, loss time and other operational details were discussed. Based on these discussions, and directions from these cities, specific signal timing as well as geometric modifications were assumed at study intersections which are along and/or immediately adjacent to the BRT alignment.

Some of the items addressed in the intersection analysis include:

- Additional clearance time for north south streets to clear traffic across the BRT alignment.
- Additional left turn phases to stop the left turning vehicles from turning across the BRT alignment.
- Other modifications to adjacent signals to account for BRT signal priority treatments.

The above operational and physical modifications were made and assumed to be part of the project for the Wilshire BRT scenario and are reflected in intersection levels of service calculations for this alternative.

Intersection capacity analyses were performed for the resultant total volumes for this alternative. Table 3.2-21 summarizes the results of the intersection capacity analyses of study intersections, using Level of Service E as the threshold for intersections with unacceptable levels of service.

TABLE 3.2-21
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
WILSHIRE BRT ALTERNATIVE 1A

Intersection	LOS E		LOS F		Impact
	AM	PM	AM	PM	
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X	Y
Sepulveda Blvd /Wilshire Blvd			X	X	Y
Veteran Ave /Wilshire Blvd			X	X	Y
Gayley Ave /Wilshire Blvd				X	Y
Westwood Blvd /Wilshire Blvd		X	X		Y
Westwood Blvd/Santa Monica Blvd				X	Y
Glendon Ave /Wilshire Blvd				X	N
Ave of the Stars /Santa Monica Blvd	X				N
Whittier Dr /Wilshire Blvd	X			X	Y
Santa Monica Blvd /Wilshire Blvd			X	X	N
S Santa Monica Blvd/Wilshire Blvd			X	X	Y
Spalding Dr /Olympic Blvd				X	Y
Beverly Dr /Wilshire Blvd		X			N
Doheny Dr /Olympic Blvd		X			N
La Cienega Blvd /Wilshire Blvd		X			Y
Fairfax Ave /3rd Street		X			N
Hauser Blvd /6th Street				X	Y
Highland Ave /6th Street	X				Y
Highland Ave /Wilshire Blvd	X				Y
Highland Ave /Olympic Blvd			X	X	N
Rossmore Ave /Wilshire Blvd	X				N

Source: MMA 2000

For the Wilshire BRT Alternative 1A, 21 intersections are projected to operate at LOS E or worse during the peak hours in the Wilshire Boulevard Corridor area. Based on a comparison to No-Build conditions, using the significant impact criteria, it can be seen that the Wilshire BRT Alternative can be expected to significantly affect 13 intersections. Mitigation efforts for these intersections will be discussed in Section 3.2.4. Table 3.2-21 indicates the intersections projected to operate at LOS E or F and which are significantly impacted by the BRT Alternative.

As seen in Table 3.2-21, most of the impacted intersections are concentrated along Wilshire Boulevard. The bulk of the impacts occur in the Westwood area and in Beverly Hills, similar to Alternative 1.

In addition to the overall level of service at each study intersection, an analysis of the left-turn queues along Wilshire Boulevard was also conducted. The potential for left-turn queues to block the BRT lane is a concern that could make this alternative unattractive in terms of bus operations improvement. Table 3.2-22 illustrates the forecast left-turn queues along Wilshire Boulevard for both Alternatives 1 and 1a.

TABLE 3.2-22 DESIGN QUEUE FOR LEFT TURN APPROACHES FOR WILSHIRE BOULEVARD								
	AM Peak				PM Peak			
	Alt 1		Alt 1A		Alt 1		Alt 1a	
Intersection	EB	WB	EB	WB	EB	WB	EB	WB
2nd Street/Wilshire Blvd	*	5	0	2	*	6	0	3
5th Street/Wilshire Blvd	*	*	0	0	*	*	0	3
6th Street/Wilshire Blvd	1	1	0	1	3	6	1	3
Lincoln Blvd/Wilshire Blvd	1	8	0	4	1	9	0	4
14th Street/Wilshire Blvd	*	*	0	0	*	*	1	1
20th Street/Wilshire Blvd	2	6	1	3	3	4	1	2
26th Street/Wilshire Blvd	3	4	1	2	5	4	2	2
Centinela Ave/Wilshire Blvd	0	3	0	1	1	3	0	1
Bundy Dr/Wilshire Blvd	3	5	2	3	4	4	2	2
San Vicente Blvd/Federal Ave/Wilshire Blvd	2	3	3	4	2	3	3	4
Sepulveda Blvd /Wilshire Blvd	4	10	4	10	12	23	12	24
Veteran Ave /Wilshire Blvd	34	8	34	8	26	9	26	9
Gayley Ave /Wilshire Blvd	26	5	27	2	24	4	24	2
Westwood Blvd /Wilshire Blvd	50	12	47	12	21	14	20	14
Glendon Ave /Wilshire Blvd	*	8	21	2	*	5	11	3
Westholme Ave /Wilshire Blvd	*	2	3	2	*	4	2	4
Beverly Glen Blvd /Wilshire Blvd	6	3	6	3	10	5	10	5
Comstock Ave /Wilshire Blvd	3	1	0	1	2	2	1	1
Whittier Dr /Wilshire Blvd	8	2	8	2	11	3	11	3
Santa Monica Blvd /Wilshire Blvd	37	11	37	11	44	9	36	9
South Santa Monica Blvd/Wilshire Blvd	*	8	0	8	*	9	7	9
Beverly Dr /Wilshire Blvd	4	7	4	7	7	11	7	11
Doheny Dr/Wilshire Blvd	6	5	6	5	7	5	7	5
Robertson Blvd/Wilshire Blvd	6	4	6	4	7	8	7	8
La Cienega Blvd /Wilshire Blvd	4	6	4	6	10	12	10	12
San Vicente Blvd/Wilshire Blvd	3	1	2	0	4	2	2	1
Crescent Heights Blvd/Wilshire Blvd	3	4	2	2	3	3	2	2
Fairfax Ave/Wilshire Blvd	3	3	2	2	2	3	1	2
Hauser Blvd/Wilshire Blvd	2	3	1	1	3	2	1	1
La Brea Ave/Wilshire Blvd	3	4	2	3	3	4	2	3
Highland Ave /Wilshire Blvd	5	4	3	2	4	4	2	2
Rossmore Ave /Wilshire Blvd	7	1	3	1	7	1	3	0
Crenshaw Blvd /Wilshire Blvd	N/A	8	N/A	8	N/A	9	N/A	9
Western Ave /Wilshire Blvd	5	4	5	4	7	6	7	6
* - Indicates left turn movement removed for Alternative 1								
Source: MMA 2000								

e. Wilshire BRT Alternative 1B- Bus Lanes in Curb Lane

As described in detail in the project description, this alternative assumes operation of buses within exclusive bus lanes in the curb lane along Wilshire Boulevard between Ocean Avenue in Santa Monica to Western Avenue in Mid City Los Angeles. On Ocean Avenue, the buses would operate on street to the Santa Monica Transit Center.

Auto access trips for each BRT station were developed from mode of access data derived from the MTA model. Daily ridership and auto trips were calculated for each station and assigned to the roadway network. Wilshire BRT has no park-and-ride lots, so all auto trips are kiss-and-ride, which are counted twice in the intersection analysis. Daily trip generation for each station is summarized earlier in Table 3.2-19. It is assumed that the ridership numbers will not change as a result of the variation of the Wilshire BRT alternative.

Station access traffic was distributed to the roadway system for each station area based on travel demand model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic volume turning movements at study area intersections were added to the 2020 background traffic volumes specifically developed for the Wilshire BRT Alternative using the arterial growth factors discussed earlier. The growth factors are assumed to be similar in all Wilshire BRT alternatives because these alternatives are operational changes that should not affect traffic across the study area.

Detailed discussions were held with the Cities of Beverly Hills, Santa Monica, and Los Angeles Department of Transportation staff to identify the likely traffic signal operational characteristics and scenarios for the implementation of the BRT system. Issues such as signal priority, cycle and phasing modifications, additional protective phasing for turns, loss time and other operational details were discussed. Based on these discussions, and directions from these cities, specific signal timing as well as geometric modifications were assumed at study intersections which are along and/or immediately adjacent to the BRT alignment.

Some of the items addressed in the intersection analysis include:

- Additional clearance time for north south streets to clear traffic across the BRT alignment.
- Additional left turn phases to stop the left turning vehicles from turning across the BRT alignment.
- Other modifications to adjacent signals to account for BRT signal priority treatments.

The above operational and physical modifications were made and assumed to be part of the project for the Wilshire BRT scenario and are reflected in intersection levels of service calculations for this alternative.

Intersection capacity analyses were performed for the resultant total volumes for this alternative. Table 3.2-23 summarizes the results of the intersection capacity analyses of study intersections, using Level of Service E as the threshold for intersections with unacceptable levels of service.

For the Wilshire BRT Alternative 1B, 18 intersections are projected to operate at LOS E or worse during the peak hours in the Wilshire Boulevard Corridor area. Based on a comparison to No-Build conditions, using the significant impact criteria, it can be seen that the Wilshire BRT Alternative can be expected to significantly affect 11 intersections. Mitigation efforts for these intersections will be discussed in Section 3.2.4. Table 3.2-23 indicates the intersections projected to operate at LOS E or F and which are significantly impacted by the BRT Alternative.

TABLE 3.2-23 LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS WILSHIRE BRT ALTERNATIVE 1B					
	LOS E		LOS F		
Intersection	AM	PM	AM	PM	Impact
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X	Y
Sepulveda Blvd /Wilshire Blvd	X			X	Y
Veteran Ave /Wilshire Blvd			X	X	N
Gayley Ave /Wilshire Blvd				X	Y
Westwood Blvd /Wilshire Blvd	X				Y
Westwood Blvd/Santa Monica Blvd				X	Y
Glendon Ave /Wilshire Blvd			X	X	Y
Ave of the Stars /Santa Monica Blvd		X			N
Whittier Dr /Wilshire Blvd		X			Y
Santa Monica Blvd /Wilshire Blvd			X	X	N
S Santa Monica Blvd/Wilshire Blvd			X	X	Y
Spalding Dr /Olympic Blvd		X			Y
Beverly Dr /Wilshire Blvd		X			N
Doheny Dr /Olympic Blvd		X			N
La Cienega Blvd /Wilshire Blvd		X			Y
Fairfax Ave /3rd Street		X			N
Hauser Blvd /6th Street				X	Y
Highland Ave /Olympic Blvd			X	X	N
Source: MMA 2000					

As seen in Table 3.2-23, most of the impacted intersections are concentrated along Wilshire Boulevard. The bulk of the impacts occur in the Westwood area and in Beverly Hills.

f. Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

As described in detail in the project description, this alternative assumes operation of buses within exclusive bus lanes along Wilshire Boulevard between Ocean Avenue in Santa Monica to Western Avenue in Mid City Los Angeles. The Wilshire BRT Baseline (lanes in the median) was used for this analysis. On Ocean Avenue, the buses would operate on street to the Santa Monica Transit Center. Additionally, this alternative assumes operation of buses within the exclusive Exposition ROW between Santa Monica and Sepulveda Boulevard in the west, and Venice Boulevard and Figueroa Street/Flower Street in the east. In Santa Monica, west of 14th Street, the BRT will operate as a Rapid Bus to the Santa Monica Transit Center. The BRT will run in the median of Venice Boulevard and Sepulveda Boulevard between the two ROW portions. The BRT will also run as a Rapid Bus north on Figueroa Street and south on Flower Street to 7th Street/Flower Street.

Auto access trips for each BRT station were developed from mode of access data derived from the MTA model. Daily ridership park-and-ride and kiss-and-ride trips were calculated for each station and assigned to the roadway network. Daily trip generation for each station on the Wilshire BRT route is summarized in Table 3.2-24 and daily trip generation for each station on the Exposition BRT route is summarized in Table 3.2-25.

TABLE 3.2-24
AUTO TRIP GENERATION
ALTERNATIVE 2 WILSHIRE BRT STATIONS

Wilshire BRT Station	Total	Mode Choice	
		Walk/Bus	Auto
Wilshire/4th	1,244	1,160	84
Wilshire/14th	2,299	2,184	115
Bundy	2,296	2,181	115
Barrington	1,430	1,345	85
Westwood Village	5,798	5,108	690
Santa Monica	2,075	1,945	130
Beverly	1,730	1,644	86
Robertson	1,912	1,816	96
La Cienega	2,154	2,046	108
Fairfax	2,645	2,508	137
La Brea	2,671	2,537	134
Crenshaw	1,223	973	250
Western	8,881	8,437	444
Totals	**36,358**	**33,884**	**2,474**

Source: MMA 2000

TABLE 3.2-25
AUTO TRIP GENERATION
ALTERNATIVE 2 EXPOSITION BRT STATIONS

Exposition BRT Station	Totals	Mode of Access		Auto Access	
		Walk/Transit	Auto	PNR	KNR
Seventh/Flower	2,033	1,931	102		102
Figueroa/Pico	759	721	38		38
Figueroa/Adams	969	921	48		48
Figueroa/Jefferson	4,531	4,304	227		227
Vermont	1,880	1,786	94		94
Western	1,680	1,596	84		84
Crenshaw	4,023	3,516	507	306	201
La Brea	960	871	89	41	48
La Cienega	1,711	1,262	449	363	86
National/Hayden	405	385	20		20
Venice/Main	655	622	33		33
Venice/Overland	673	639	34		34
Venice/Sepulveda	2,706	2,571	135		135
Sepulveda/National	584	555	29		29
Pico/Sawtelle	1,383	1,127	256	187	69
Bundy	1,266	1,167	99	36	63
Cloverfield	1,650	1,515	135	53	82
Colorado/14th	375	356	19		19
Ocean/Santa Monica Boulevard	718	682	36		36
Totals	**28,961**	**26,527**	**2,434**	**986**	**1,448**

Source: MMA 2000

Station access traffic was distributed to the roadway system for each station area based on travel demand model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic volume turning movements at study area intersections were added to the 2020 background traffic volumes specifically developed for Alternative 2 using the arterial growth factors discussed in previous sections.

Detailed discussions were held with Beverly Hills, Culver City, Santa Monica, and Los Angeles Department of Transportation staff to identify the likely traffic signal operational characteristics and scenarios for the implementation of the Wilshire BRT and Exposition BRT systems. Issues such as signal priority, cycle and phasing modifications, additional protective phasing for turns, loss time and other operational details were discussed. Based on these discussions, and directions from these cities, specific signal timing as well as geometric modifications were assumed at study intersections which are along and/or immediately adjacent to the BRT alignments. These include items such as:

- Additional clearance time for streets to clear traffic across the BRT alignments.
- Additional left and right turn phases to stop the turning vehicles from turning across the BRT alignments.
- Other modifications to adjacent signals to account for BRT signal priority treatments.

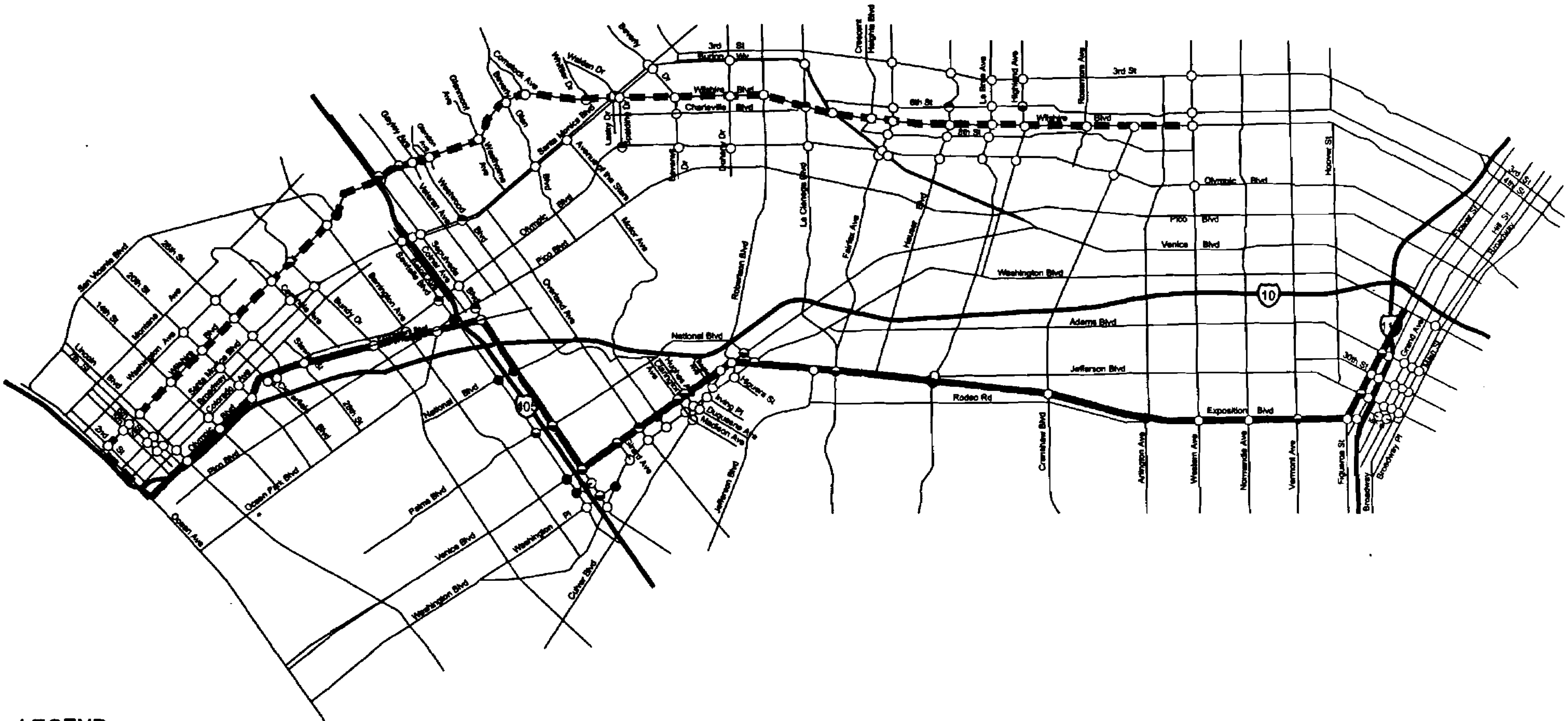
The above operational and physical modifications were made and assumed to be part of the project for Alternative 2 and are reflected in intersection levels of service calculations for this alternative. In addition to the locations with dual left-turn lanes that were affected by Alternative 1, one westbound left-turn lane will be eliminated at the intersection of Culver Boulevard and Venice Boulevard.

For Alternative 2, a review of Table 3.2-26 on the next page shows 49 intersections are projected to operate at LOS E or worse during the peak hours along both corridors. Based on a comparison to No-Build conditions, using the significant impact criteria, it can be seen that Alternative 2 can be expected to significantly affect 36 intersections. Table 3.2-26 indicates the intersections projected to operate at LOS E or F and which are significantly impacted by Alternative 2. These locations are illustrated on Figure 3.2-18.

Based on Table 3.2-26, most of the significantly impacted intersections are concentrated in Culver City and along Interstate 405 and on Wilshire Boulevard in the Westwood area. Also, most intersections immediately adjacent to stations experience significant impacts. This can be attributed to the large number of projected auto access trips to the two BRT alignments. Additionally, it could be partially attributed to the large number of intersections that are already at LOS E or F with the No Action Alternative.

g. Wilshire BRT and Exposition BRT (MOS) Alternative 2A

As described in detail in the project description, this alternative assumes operation of buses within exclusive bus lanes along Wilshire Boulevard between Ocean Avenue in Santa Monica to Western Avenue in Mid City Los Angeles. The Wilshire BRT Baseline (lanes in the median) was used for this analysis. On Ocean Avenue, the buses would operate on street to the Santa Monica Transit Center. Additionally, this alternative assumes operation of buses within the exclusive Exposition ROW between Venice Boulevard in Culver City and Figueroa Street/Flower Street in Downtown Los Angeles. West of Venice Boulevard/Robertson Boulevard in Culver City, the BRT will operate as a Rapid Bus to the Santa Monica Transit Center following the path of the full length Exposition BRT. The BRT will also run as a Rapid Bus north of Exposition Boulevard running to 7th Street/Flower Street northbound on Figueroa Street and southbound on Flower Street.



LEGEND:

- ○ No Impact
- ◓ Impacted AM Peak Hour
- ◒ Impacted PM Peak Hour
- ● Impacted Both Peak Hours
- ▬▬ Exposition BRT And LRT
- ▬ ▬ ▬ Wilshire Blvd BRT

SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-18

WILSHIRE BRT AND EXPOSITION BRT IMPACTED INTERSECTIONS

TABLE 3.2-26
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
WILSHIRE BRT/EXPOSITION BRT ALTERNATIVE

Intersection	LOS E AM	LOS E PM	LOS F AM	LOS F PM	Impact
Lincoln Blvd /Olympic Blvd	X	X			N
20th Street /Colorado Ave				X	N
Bundy Dr /Wilshire Blvd	X				Y
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X	Y
Sawtelle Blvd /Olympic Blvd		X	X		Y
Sawtelle Blvd /I-405 Southbound			X	X	Y
Sawtelle Blvd /Pico Blvd	X			X	Y
Sawtelle Blvd /National Blvd			X	X	Y
Sawtelle Blvd /Palms Blvd	X			X	Y
Sawtelle Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Wilshire Blvd	X			X	Y
Sepulveda Blvd /Pico Blvd	X			X	Y
Sepulveda Blvd /National Blvd			X	X	Y
Sepulveda Blvd /Palms Blvd	X			X	Y
Sepulveda Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Washington Pl		X			Y
Veteran Ave /Wilshire Blvd			X	X	Y
Westwood Blvd /Wilshire Blvd		X	X		Y
Westwood Blvd/Santa Monica Blvd				X	Y
Ave of Stars /Santa Monica Blvd				X	N
Whittier Dr /Wilshire Blvd		X			Y
Santa Monica Blvd /Wilshire Blvd			X	X	N
S Santa Monica Blvd/Wilshire Blvd			X		N
Spalding Dr /Olympic Blvd		X			Y
Beverly Dr /Wilshire Blvd		X			N
Doheny Dr /Olympic Blvd		X			N
La Cienega Blvd /Wilshire Blvd		X			Y
Fairfax Ave /3rd Street		X			N
Hauser Blvd /6th Street				X	Y
Highland Ave /6th Street	X				Y
Highland Ave /Olympic Blvd			X	X	N
Rossmore Ave /Wilshire Blvd					N
Washington Blvd /Washington Pl			X	X	Y
Girard Ave /Venice Blvd				X	Y
Overland Ave /Venice Blvd		X			Y
Motor Ave /Venice Blvd			X	X	Y
Clarington Ave /Venice Blvd		X			Y
Hughes Ave /Venice Blvd		X			Y
Culver Blvd/Main St/Washington Blvd			X	X	N
Robertson Blvd /Venice Blvd			X	X	N
National Blvd /Venice Blvd			X	X	Y

TABLE 3.2-26
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
WILSHIRE BRT/EXPOSITION BRT ALTERNATIVE

Intersection	LOS E		LOS F		Impact
	AM	PM	AM	PM	
National Blvd /Washington Blvd		X			Y
La Cienega Blvd /Jefferson Blvd				X	Y
La Brea Ave /Exposition Blvd			X	X	Y
Arlington Ave /Exposition Blvd			X	X	Y
Western Ave /Exposition Blvd	X				N
Vermont Ave /Exposition Blvd		X	X		Y
Figueroa Street /Adams Blvd				X	Y
Figueroa Street/Jefferson Blvd		X			Y

Source: MMA 2000

Auto access trips for each BRT station were developed from mode of access data derived from the MTA model. Daily ridership park-and-ride and kiss-and-ride trips were calculated for each station and assigned to the roadway network. Daily trip generation for each station on the Wilshire BRT route is summarized in Table 3.2-27 and daily trip generation for each station on the Exposition BRT route is summarized in Table 3.2-28.

TABLE 3.2-27
AUTO TRIP GENERATION
ALTERNATIVE 2A WILSHIRE BRT STATIONS

Wilshire BRT Station	Total	Mode Choice	
		Walk/Bus	Auto
Wilshire/4th	1,228	1,153	75
Wilshire/14th	2,679	2,498	181
Bundy	2,070	1,948	122
Barrington	1,453	1,299	154
Westwood Village	6,206	5,522	684
Santa Monica	1,662	1,523	139
Beverly	1,465	1,371	94
Robertson	1,816	1,709	107
La Cienega	2,298	2,146	152
Fairfax	2,650	2,500	150
La Brea	2,664	2,520	144
Crenshaw	1,219	969	250
Western	8,980	8,856	124
Totals	**36,390**	**34,014**	**2,376**

Source: MMA 2000

TABLE 2-8 WILSHIRE BRT AND EXPOSITION LRT OPERATING CHARACTERISTICS	
Signal Priority/Preemption:*	For transportation model purposes, signal preemption assumed for LRT in Exposition ROW; partial preemption assumed on Venice and Sepulveda Blvds; some signal priority in street running sections outside the ROW (in Santa Monica and downtown Los Angeles).
Transit Running Time:*	42 minutes downtown Los Angeles (7th/Flower) to downtown Santa Monica
Summary characteristics relate to Expo LRT unless specified otherwise. Characteristics of the Wilshire BRT component of this alternative are summarized in Table 2-5.	
Source: Manuel Padron Associates, 2000.	

Ancillary Facilities

Alternative 3 and 3A need storage and maintenance facilities. The facility would provide maintenance for the LRT vehicles. A candidate site is under investigation for its potential to contain a maintenance facility (Figure 2-14 and Figures 2A-1 through 2A-4 in Chapter 2 Attachment A show the locations of the maintenance facility site options). The anticipated yard site is to be located between Hooper and Central along the Exposition ROW. The yard site is approximately three acres. A non-revenue access to the yard would extend along the eastern segment of the Exposition ROW from Hill Street, or trains could connect from Hill Street to Washington Boulevard, along the existing Long Beach Metro Blue Line to connect to the yard from Long Beach Boulevard. Alternative alignments and impacts for the non-revenue connector track would be evaluated as a part of the Final EIS/EIR if the light rail (Alternative 3) is carried forward in the study.

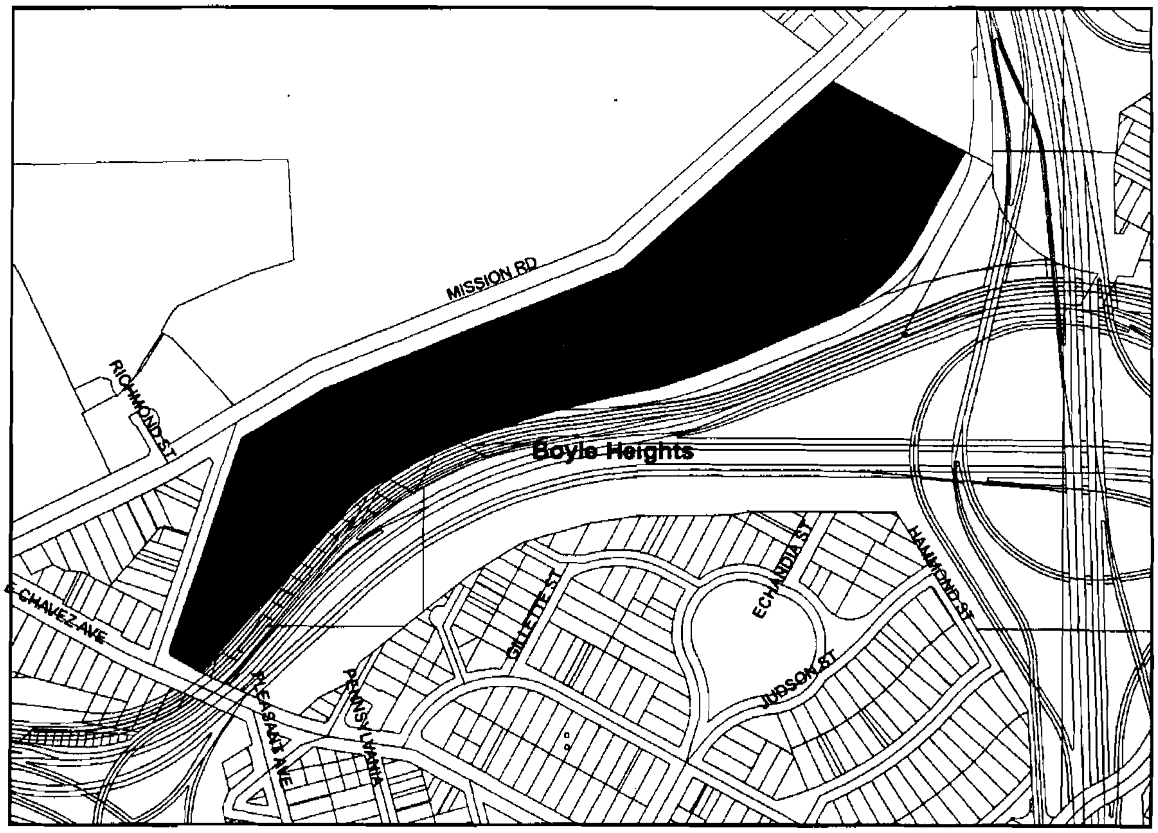
2.2.11 Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Alternative 3A is a combination of the Wilshire BRT and a shorter version of the Exposition LRT. This shorter version is identified as the MOS, or minimum operating segment. The Exposition LRT MOS follows the same alignment as the Exposition LRT described above. However, this alternative terminates at the Venice/Washington Station, with a total length of 9.6 miles.

Exposition LRT service levels are identical to the full-length alternative at 5 minutes in the peak and 12 minutes in the off-peak.

Section 2.0
Attachment A
Bus Maintenance Facility
Candidate Sites

2. Existing MTA Division 10 = Mission & I-5



LEGEND:

Existing MTA Bus Maintenance & Storage Facility

SOURCE: Terry A. Hayes Associates, 2000

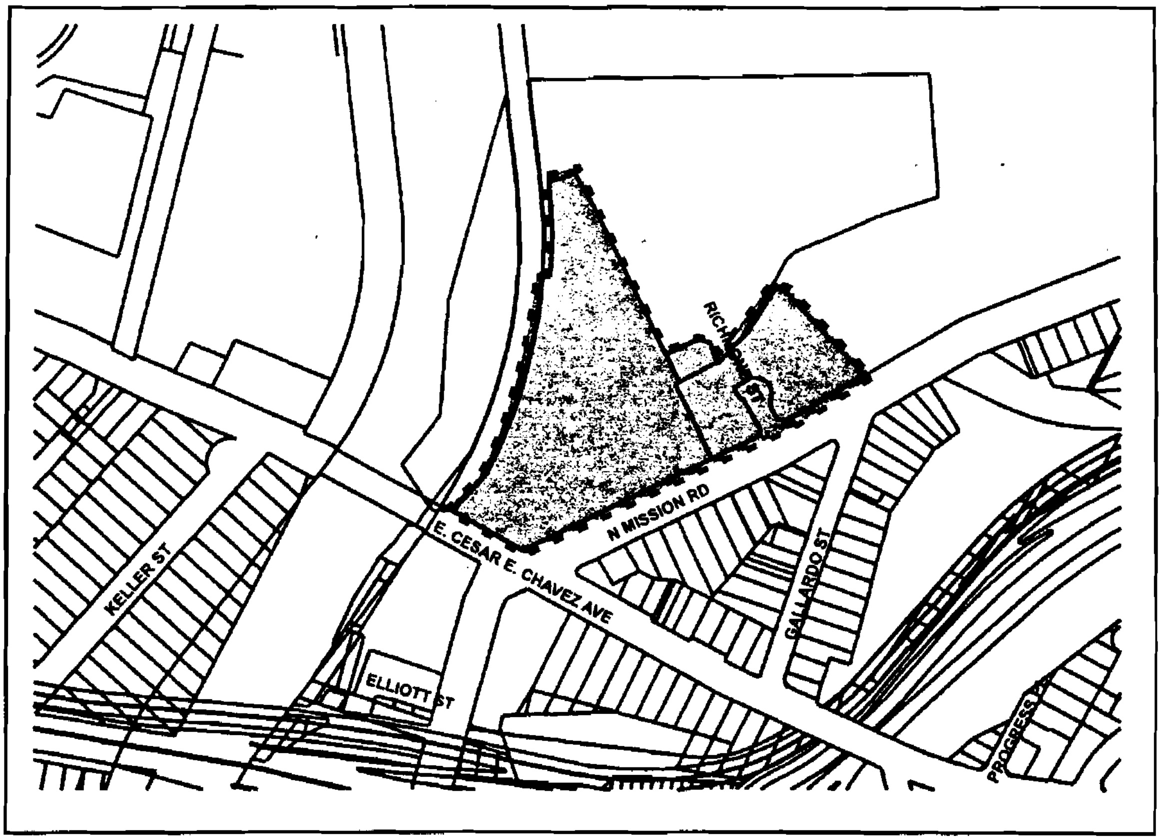
Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

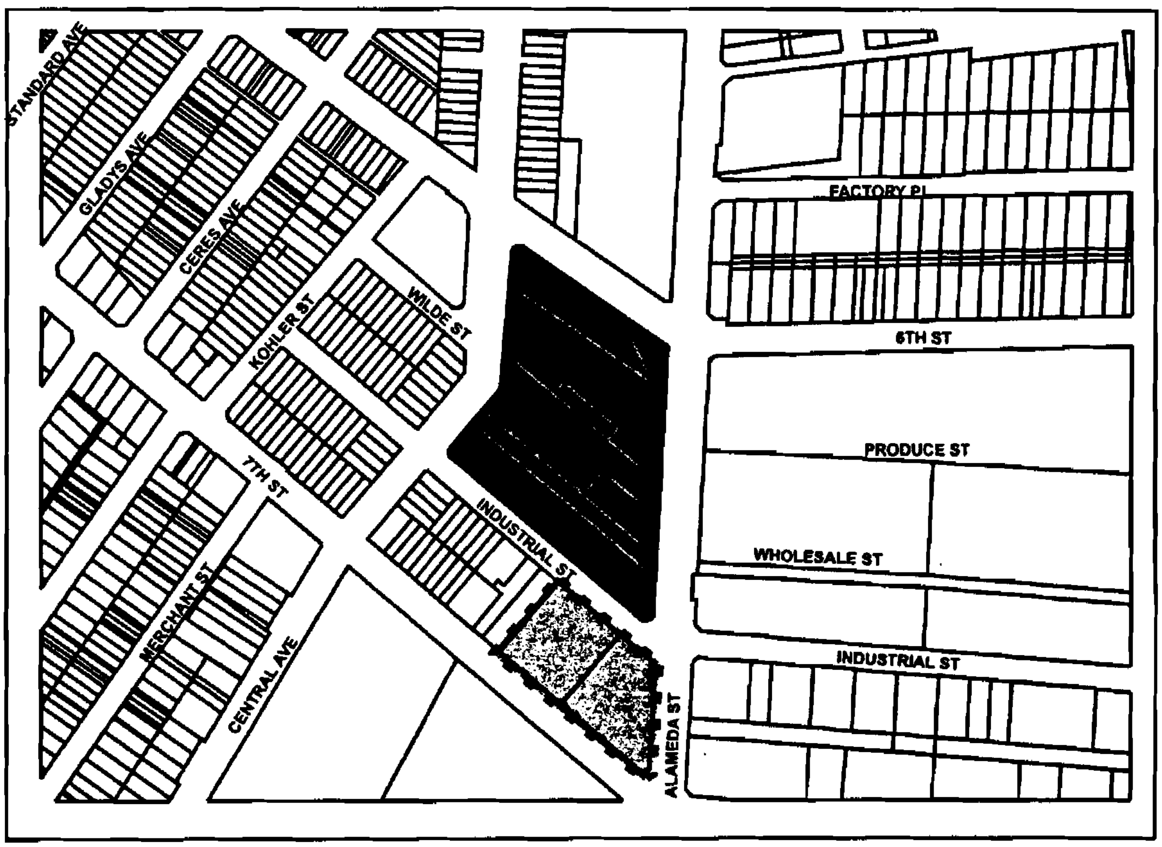
FIGURE 2A-1

EXISTING AND POTENTIAL BUS MAINTENANCE FACILITY 2

3. NW Corner Chavez and Mission = NW Corner Chavez & Mission



4. Existing MTA Division 1 = Alameda & 6th



LEGEND:

Existing MTA Bus Maintenance & Storage Facility

Potential Bus Storage & Maintenance Facility

SOURCE: Terry A. Hayes Associates, 2000

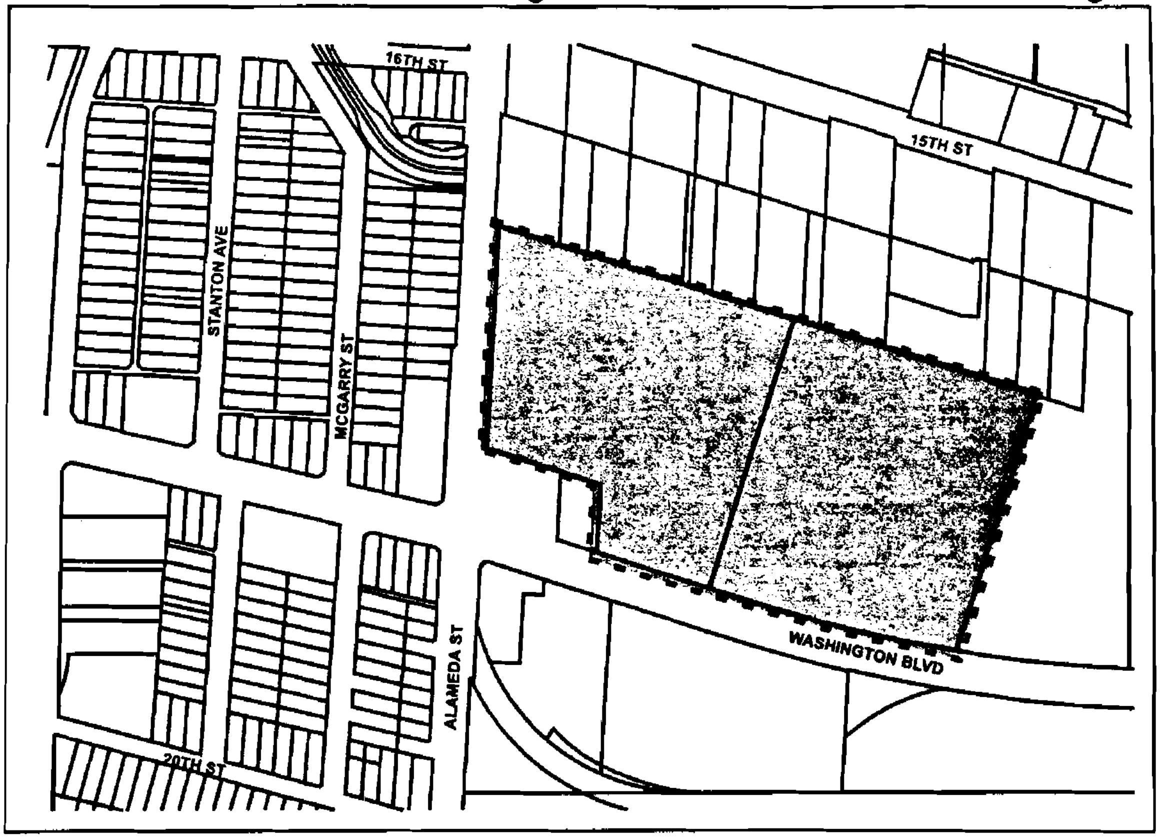
N

Mid-City/Westside Transit Corridor

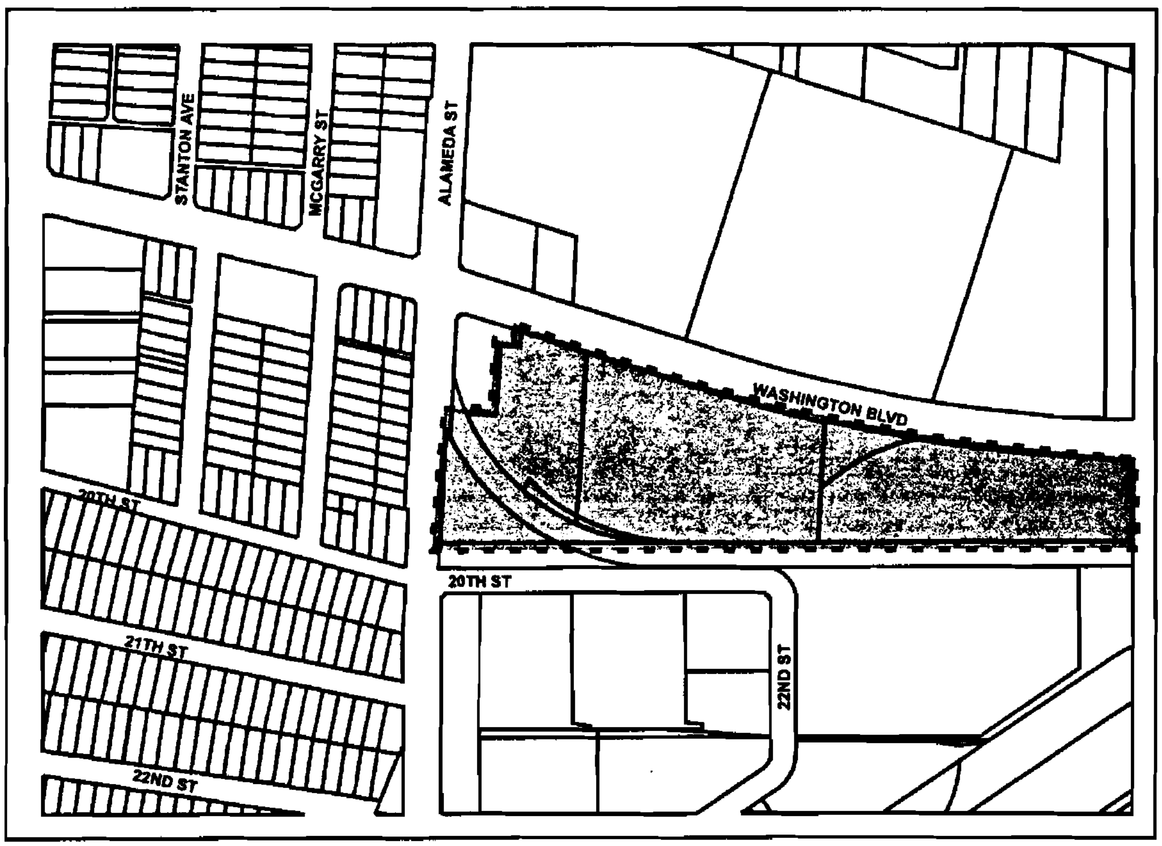
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2A-2
EXISTING AND POTENTIAL
MAINTENANCE FACILITIES 3 & 4

6. NE Corner Alameda & Washington = NE Corner Alameda & Washington



7. SE Corner Alameda & Washington = SE Corner Alameda & Washington



LEGEND:

Existing MTA Bus Maintenance & Storage Facility

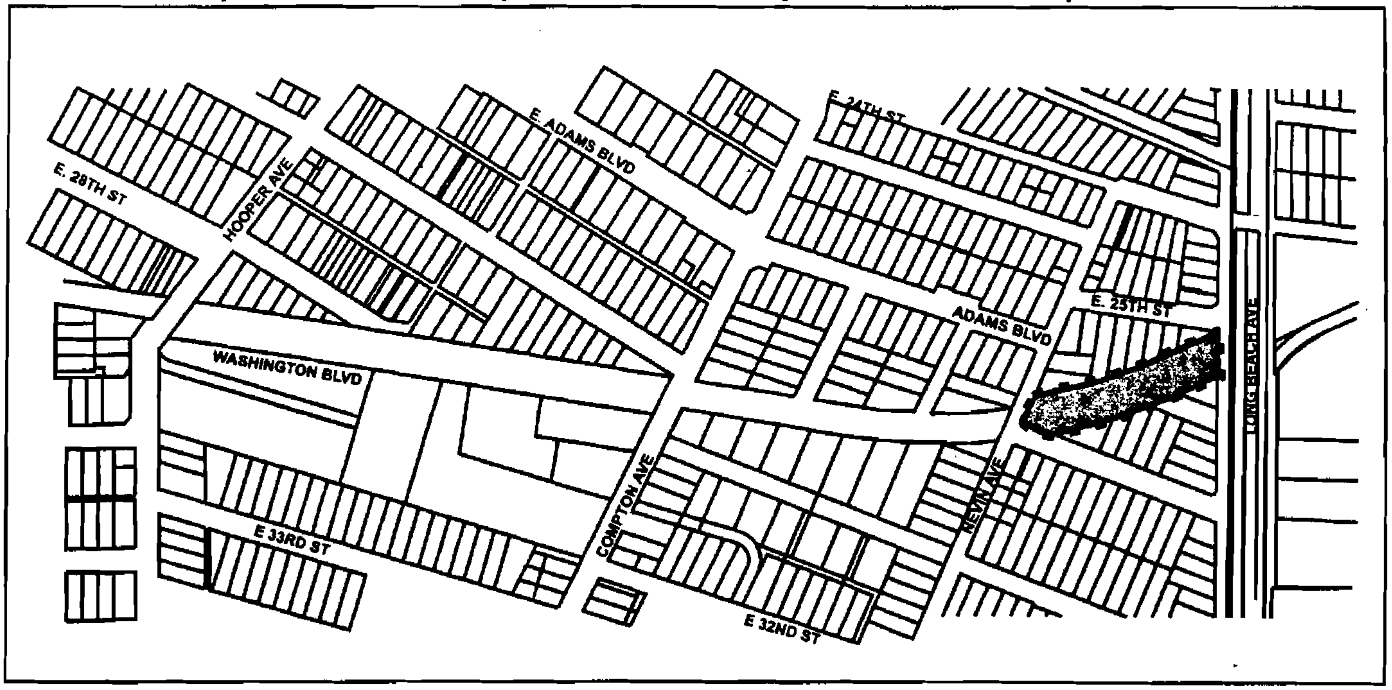
Potential Bus Storage & Maintenance Facility

N

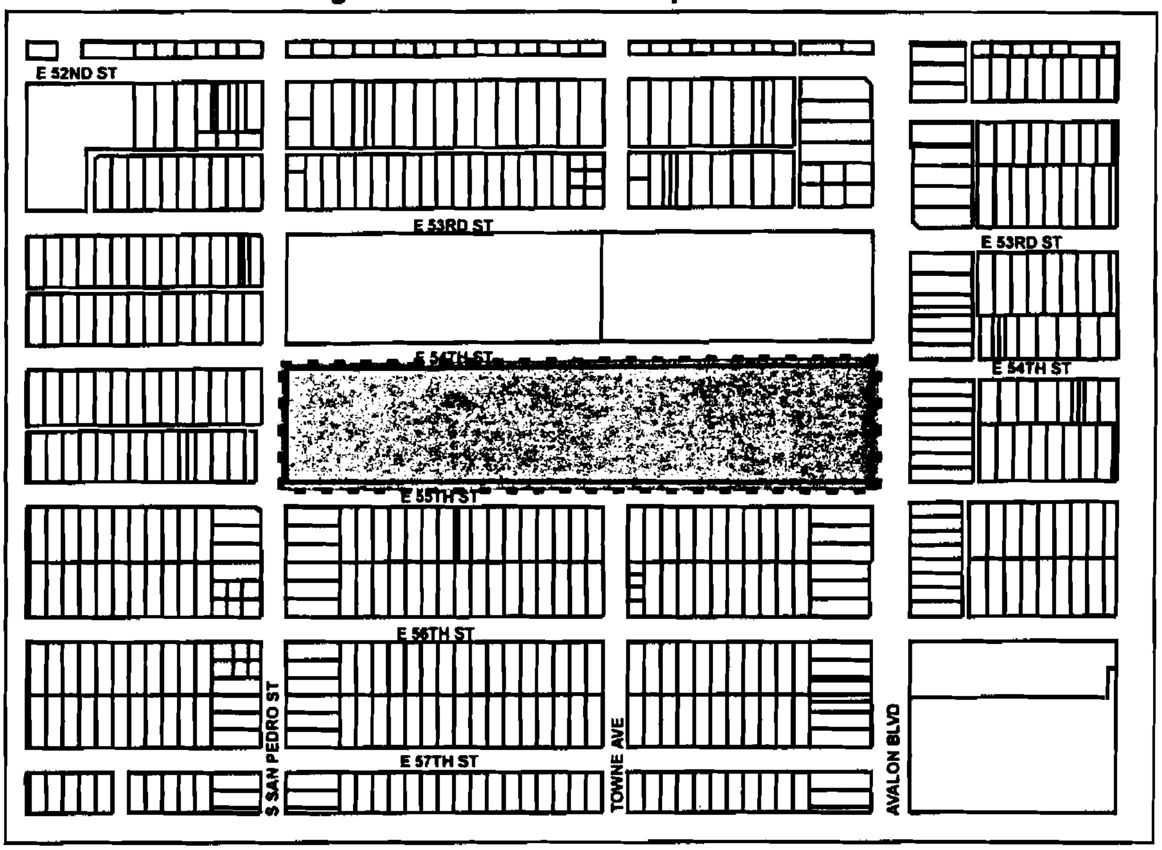
SOURCE: Terry A. Hayes Associates, 2000

FIGURE 2A-3
EXISTING AND POTENTIAL BUS MAINTENANCE FACILITIES 6 & 7

8. Exposition ROW Hooper to Central = Exposition ROW Hooper to Central



9. Existing MTA South Park Shops = 54th & Avalon



LEGEND:

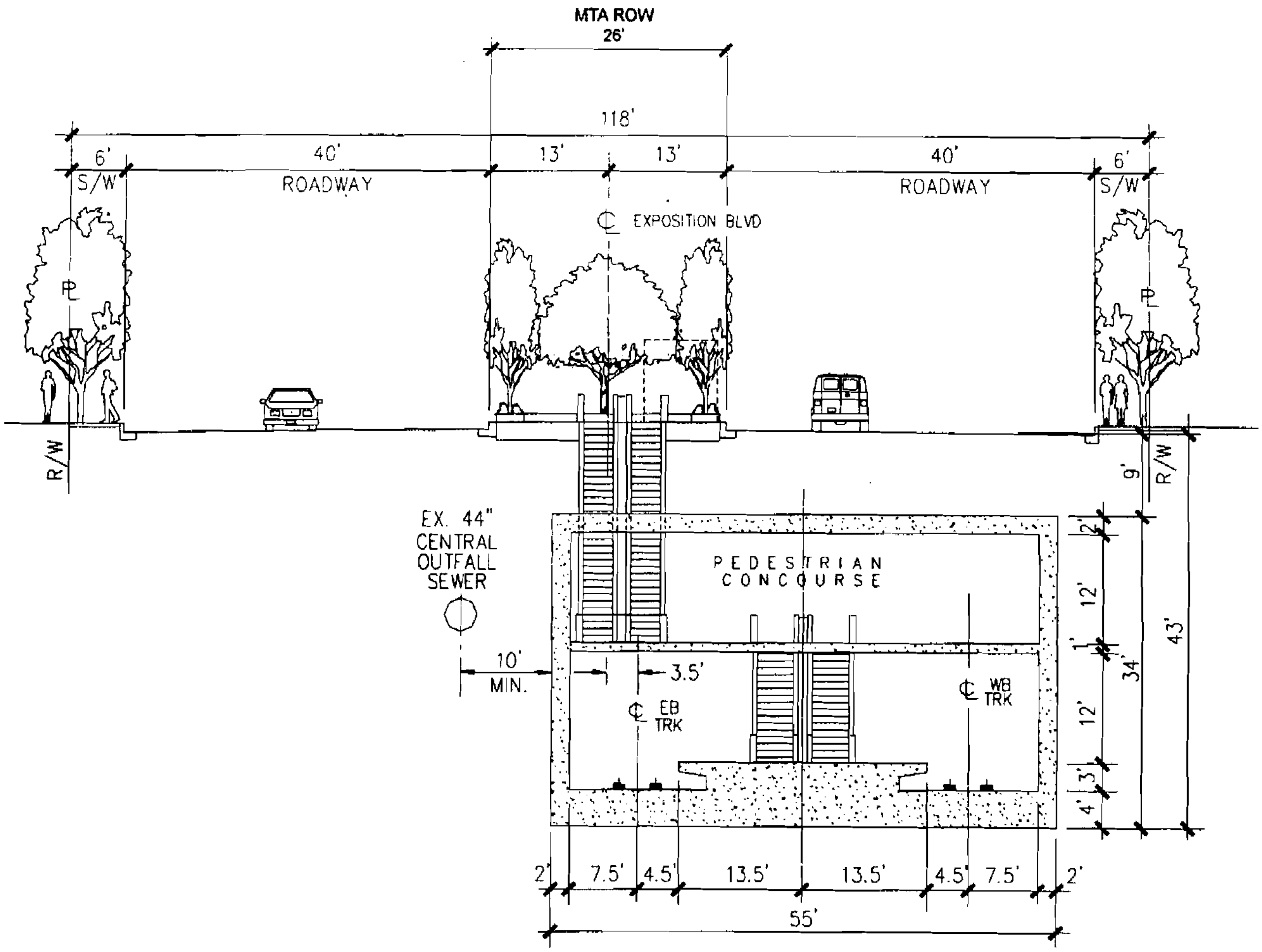
Existing MTA Bus Maintenance & Storage Facility

Potential Bus Storage & Maintenance Facility

SOURCE: Terry A. Hayes Associates, 2000

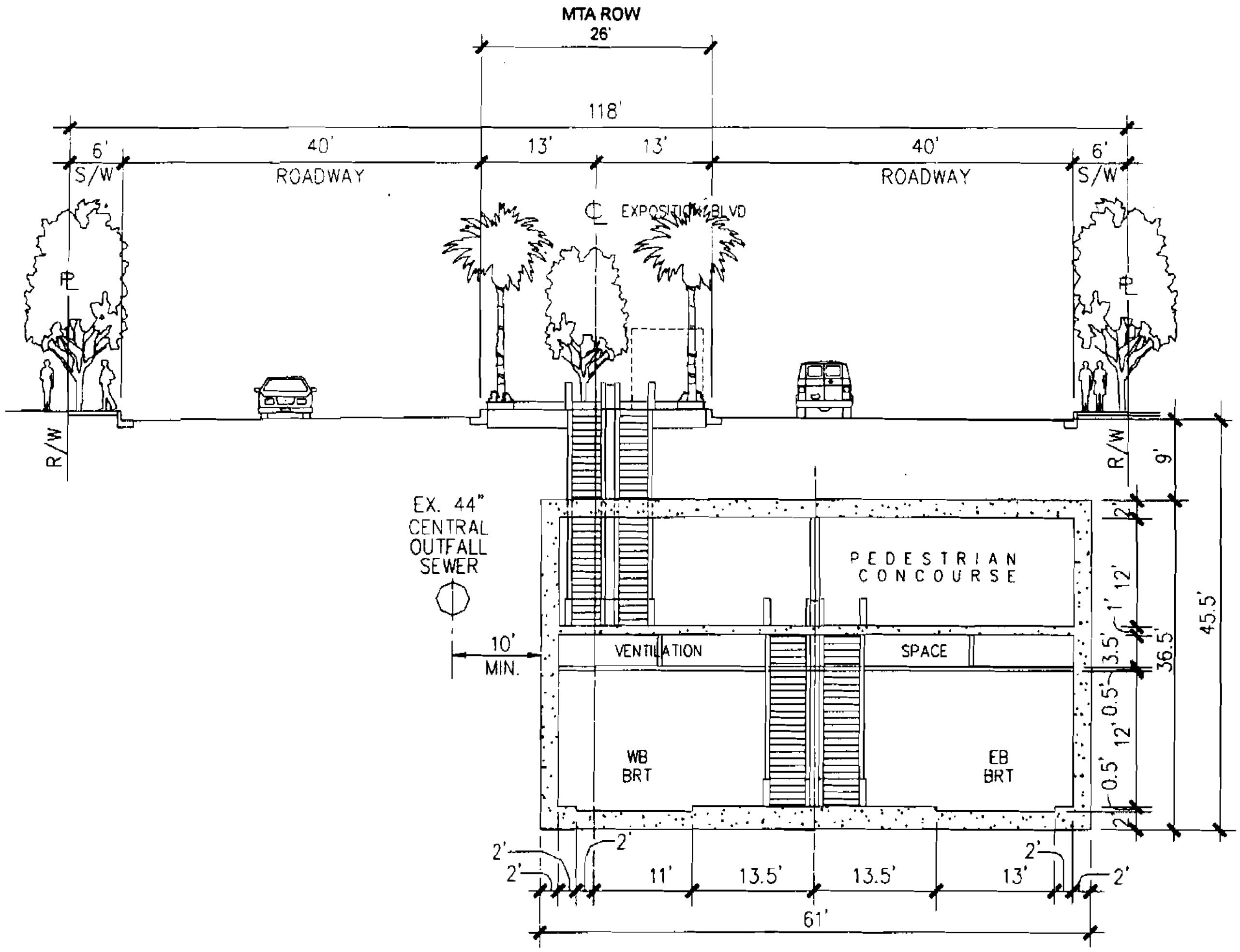
N

FIGURE 2A-4
EXISTING AND POTENTIAL BUS MAINTENANCE FACILITIES 8 & 9



SOURCE: Korve Engineering, 2000

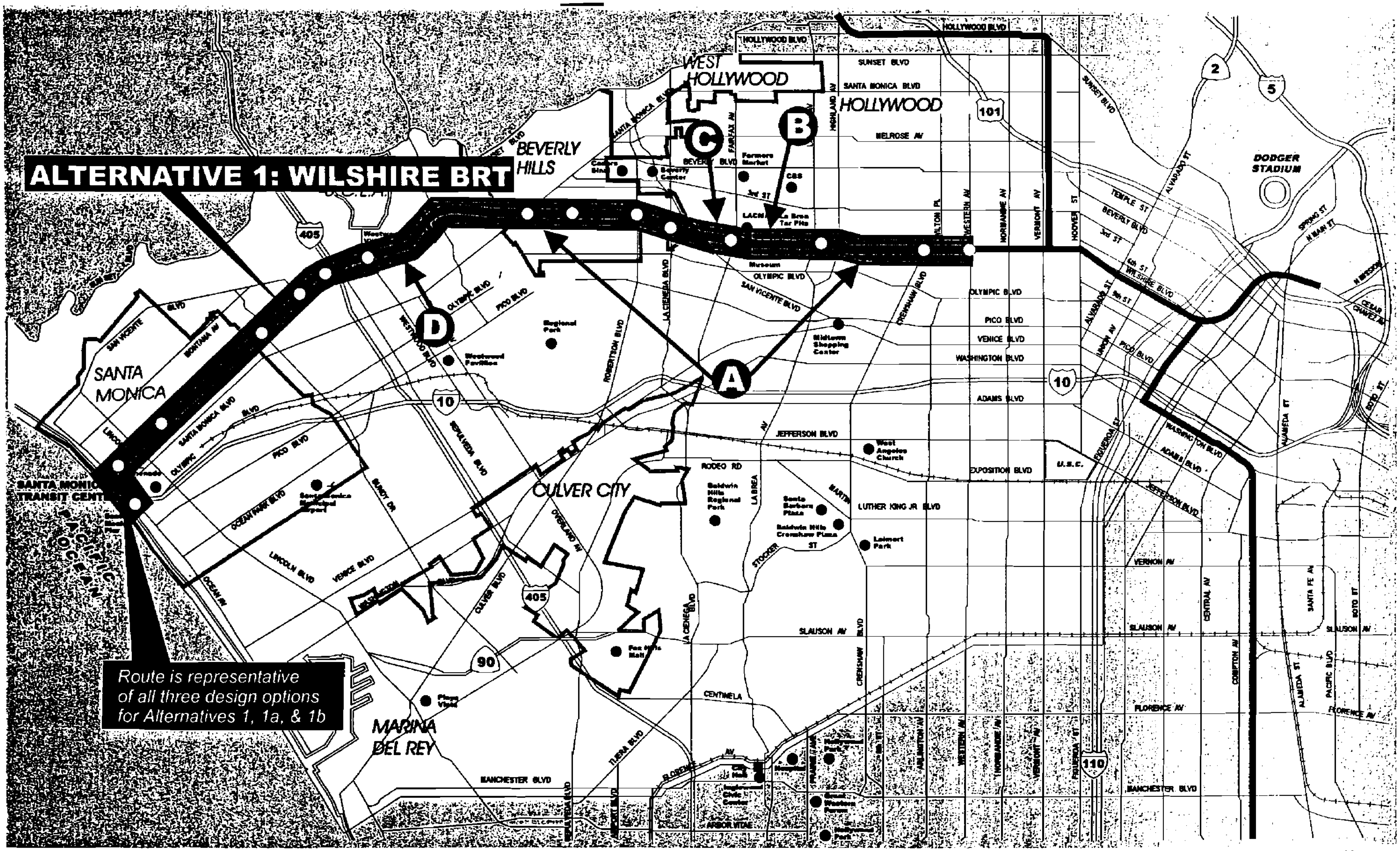
FIGURE 2A-5
TYPICAL LRT SUBWAY STATION DESIGN OPTION AT USC/EXPOSITION PARK



SOURCE: Korve Engineering, 2000

FIGURE 2A-6
TYPICAL BRT SUBWAY STATION OPTION AT USC/EXPOSITION PARK

Section 2.0
Attachment B
Cross-Sections for Wilshire BRT



LEGEND: Alternative 1: Wilshire BRT

○ Station Location (General)

Ⓐ 70-Foot Curb Width

Ⓑ 75-Foot Curb Width

Ⓒ 80-Foot Curb Width

Ⓓ 90- to 104-Foot Curb Width

N

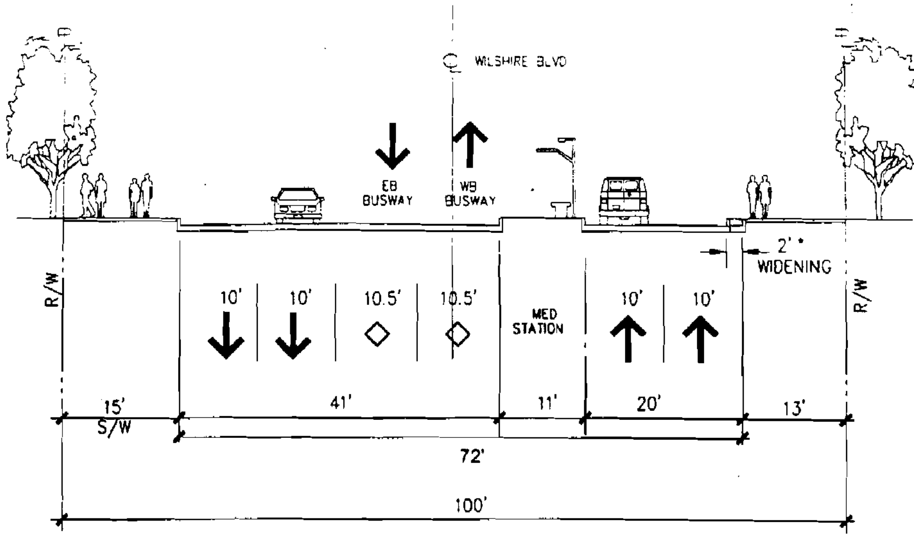
SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

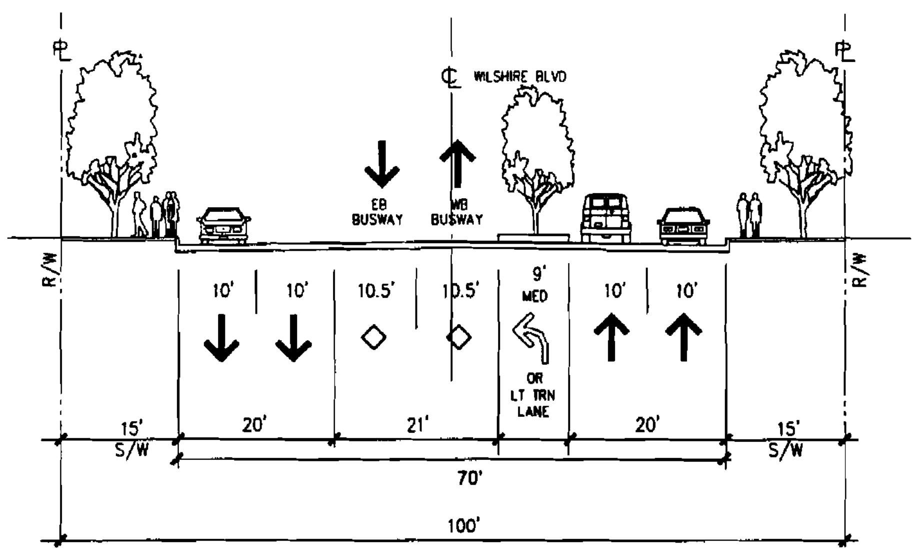
METRO LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2B-1

INDEX TO TYPICAL CROSS-SECTIONS FOR WILSHIRE BRT



A. Western Avenue to La Brea Avenue
San VicenteBoulevard to Comstock Avenue



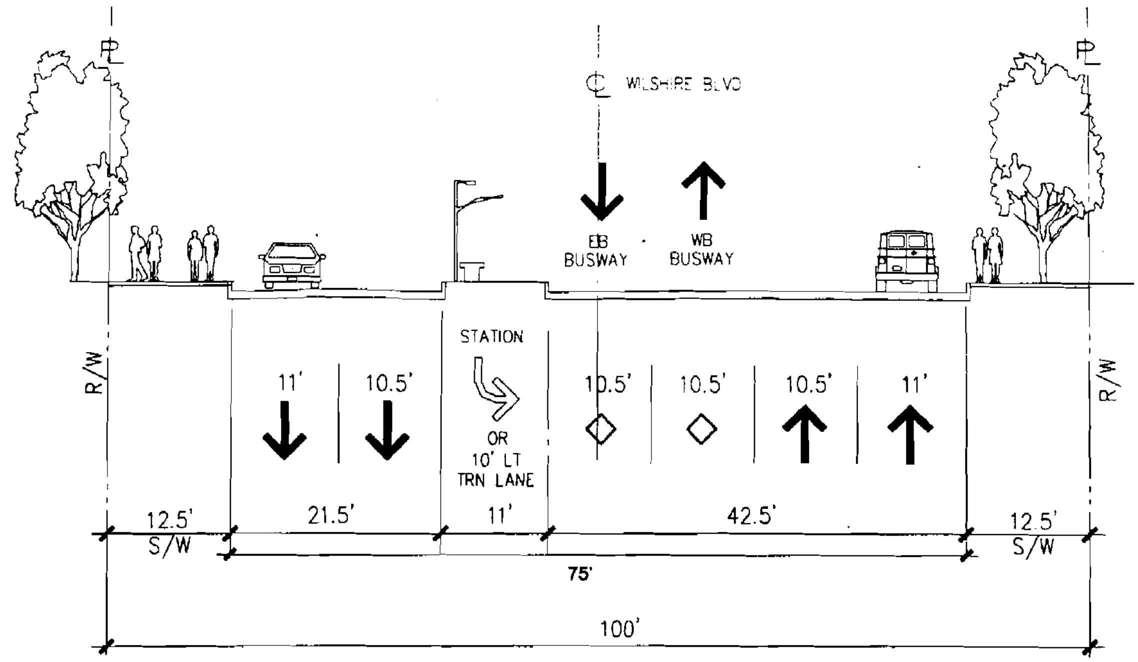
A. Western Avenue to La Brea Avenue
San Vicente Boulevard to Comstock Avenue

LEGEND:

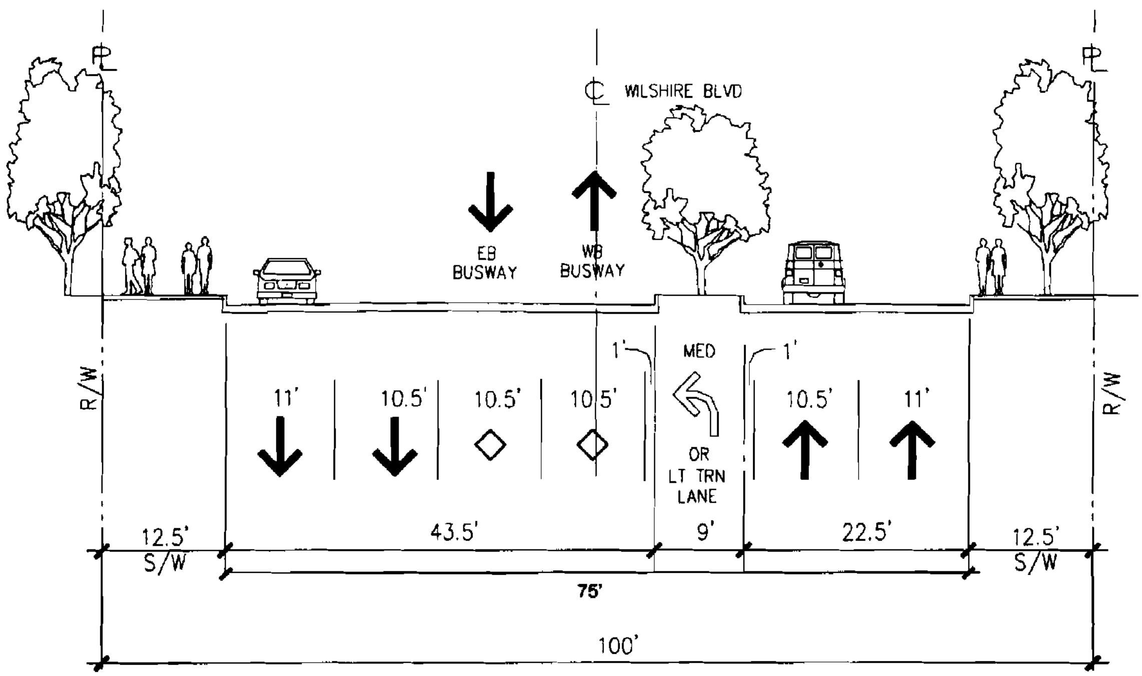
* = 2' Widening occurs in limited areas where additional width is needed for stations. Figure 2-4 shows these locations.

SOURCE: Korve Engineering, 2000

FIGURE 2B-2
TYPICAL WILSHIRE BRT
CROSS-SECTIONS 70' CURB WIDTH



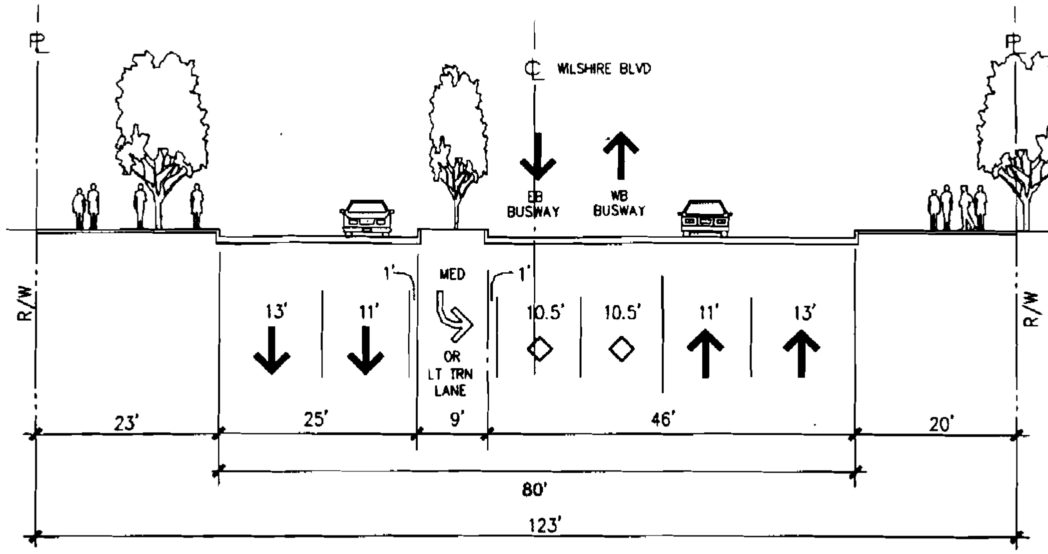
B. La Brea Avenue to Fairfax Avenue



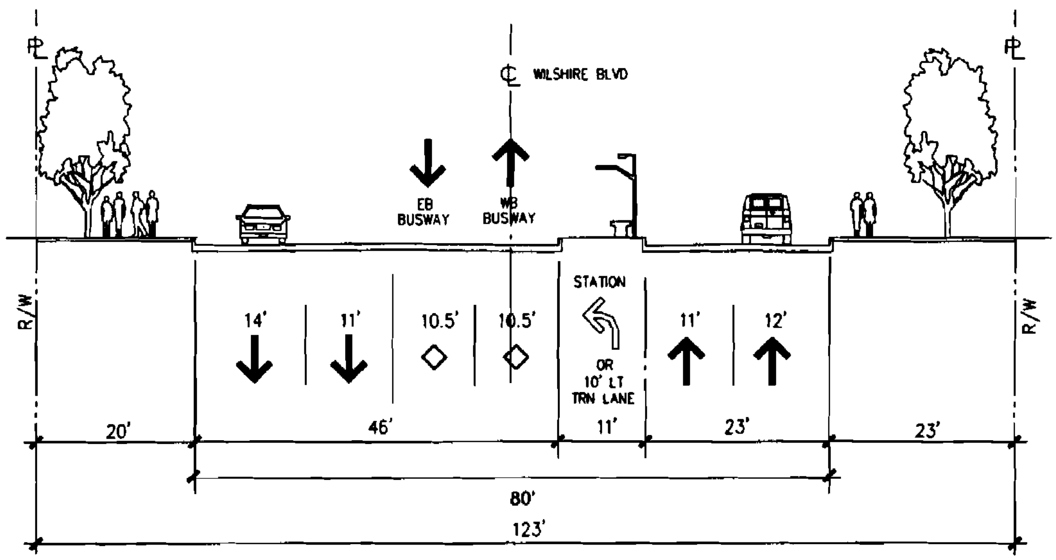
B. La Brea Avenue to Fairfax Avenue

SOURCE: Korve Engineering, 2000

FIGURE 2B-3
TYPICAL WILSHIRE BRT CROSS-SECTIONS 75' CURB WIDTH



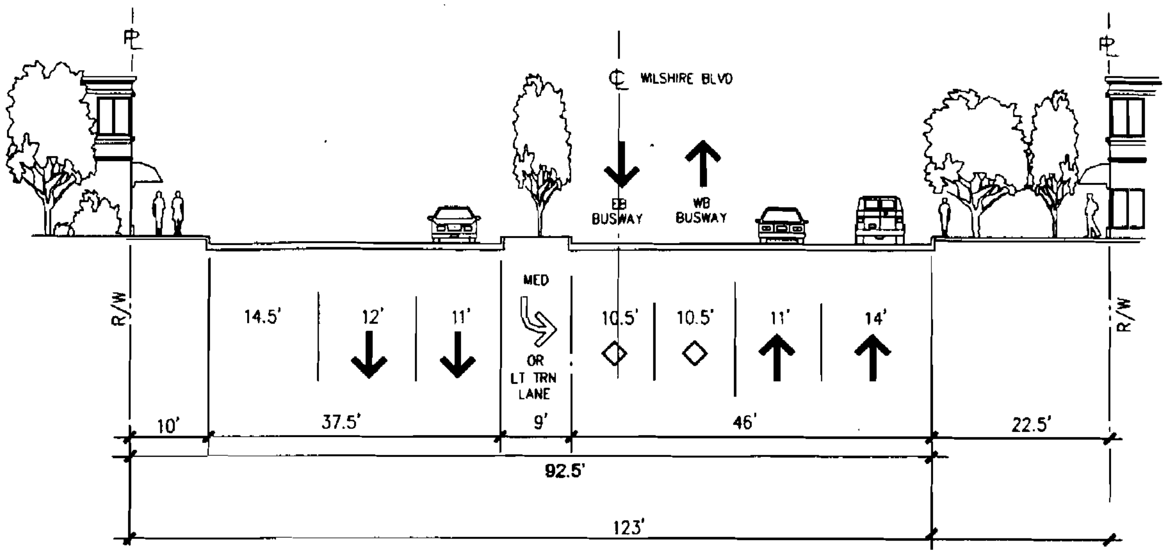
C. Fairfax Avenue to San Vicente Boulevard



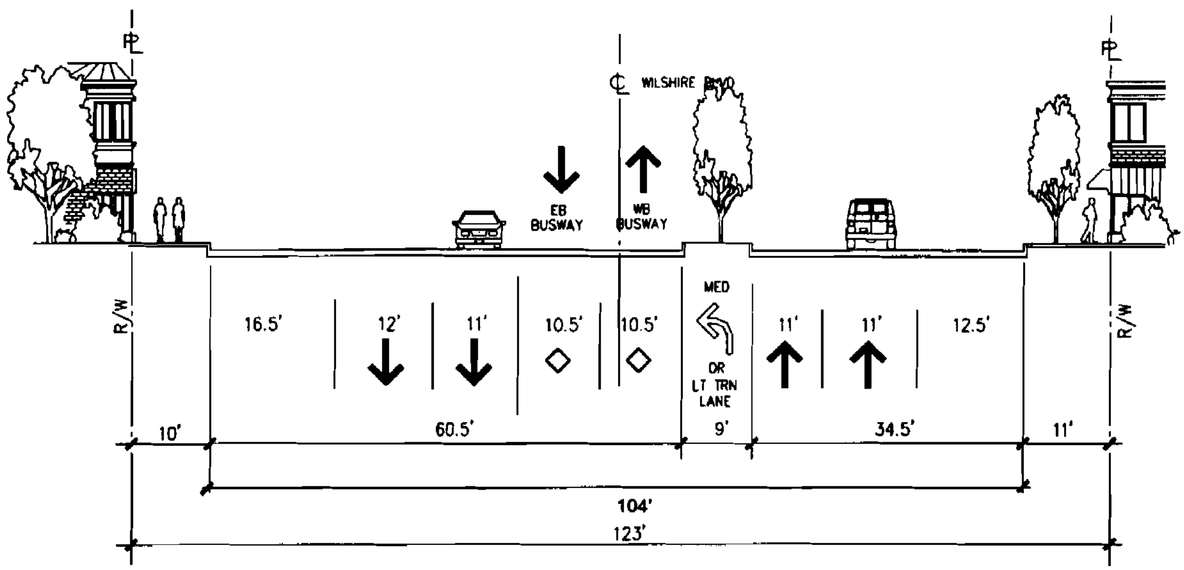
C. Fairfax Avenue to San Vicente Boulevard

SOURCE: Korve Engineering, 2000

FIGURE 2B-4
TYPICAL WILSHIRE BRT
CROSS-SECTIONS 80' CURB WIDTH



D. Manning Avenue to Selby Avenue

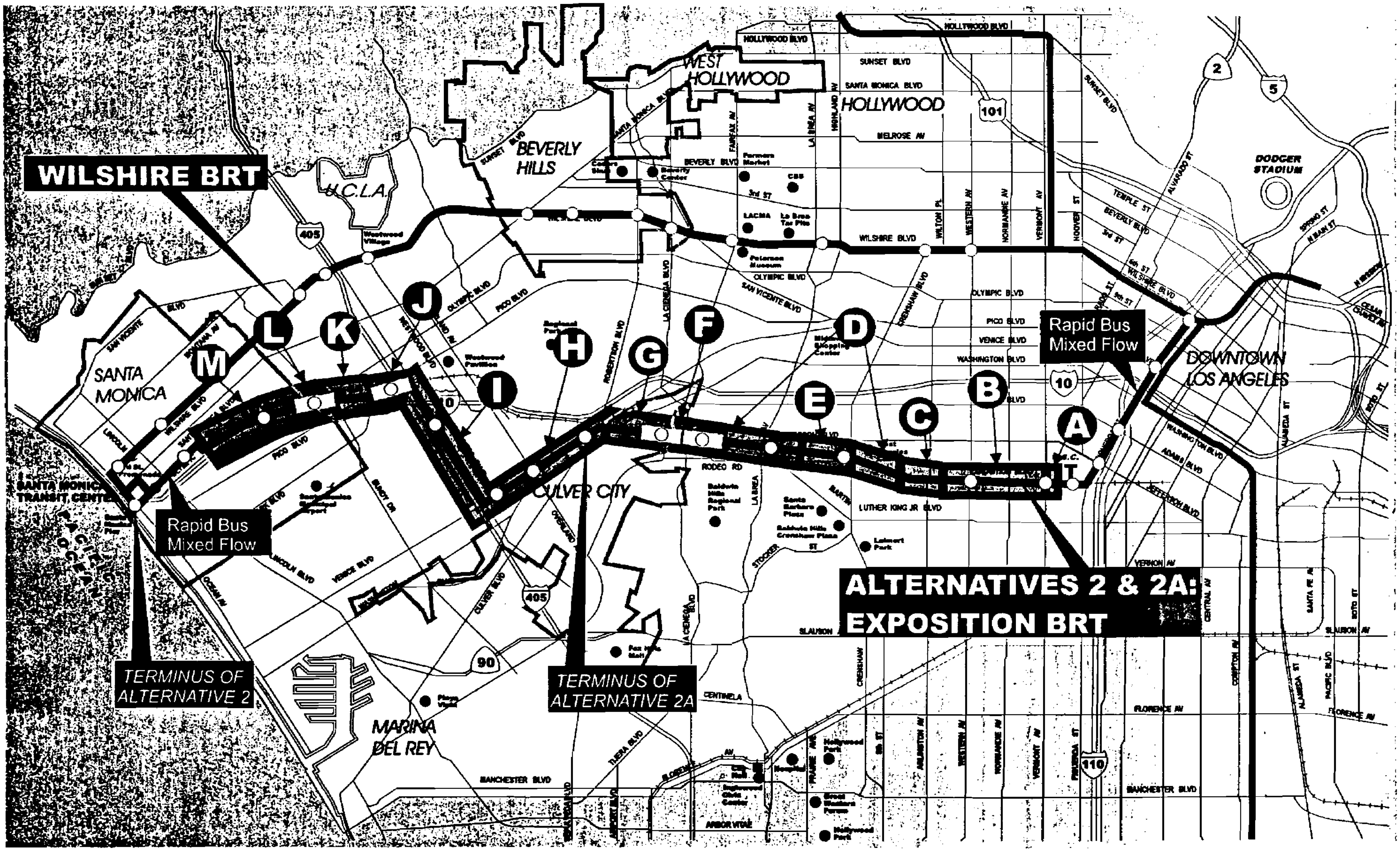


D. Manning Avenue to Selby Avenue

SOURCE: Korve Engineering, 2000

FIGURE 2B-5
TYPICAL WILSHIRE BRT CROSS-SECTIONS 90'-104' CURB WIDTH

Section 2.0
Attachment C
Cross-Sections for Exposition BRT



LEGEND:

Ⓐ Location of this Typical Cross-Section

SOURCE: Terry A. Hayes Associates

Alternatives 2 & 2A: Exposition BRT (includes Wilshire BRT)

Existing Metro Rail Lines

○ Station Location (General)

Elevated

T Optional Tunnel

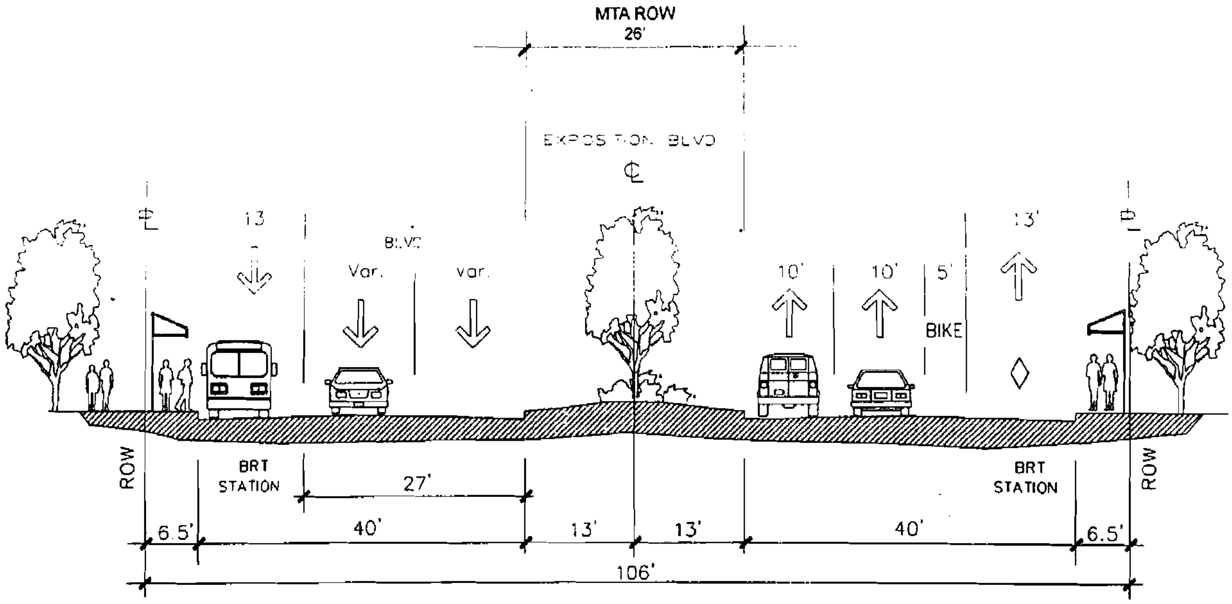
N

Mid-City/Westside Transit Corridor

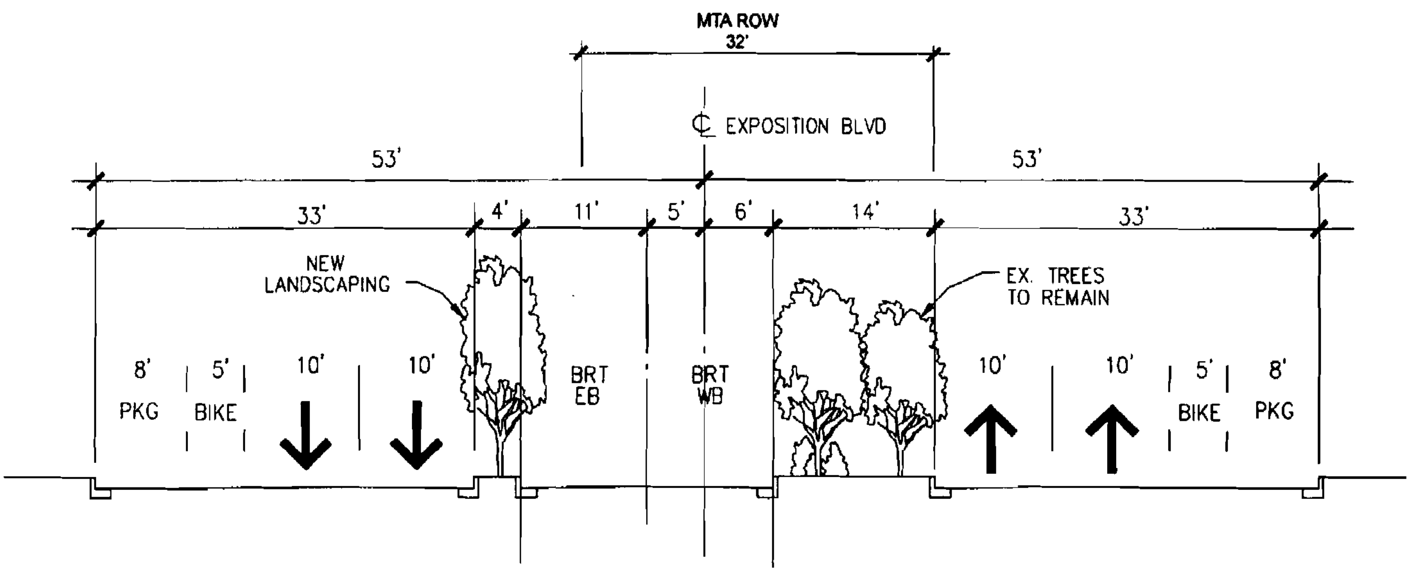
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2C-1

INDEX TO TYPICAL CROSS-SECTIONS FOR EXPOSITION BRT

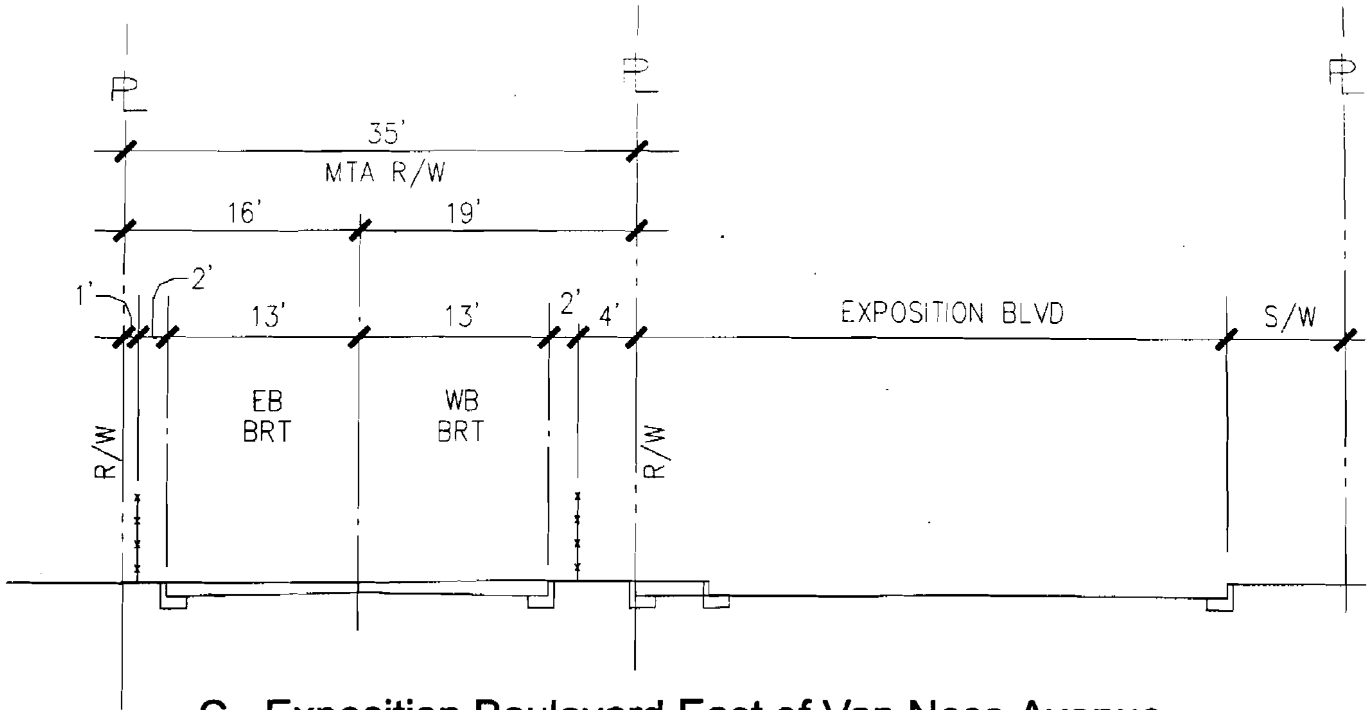


A. Exposition Boulevard at Vermont Avenue Facing West

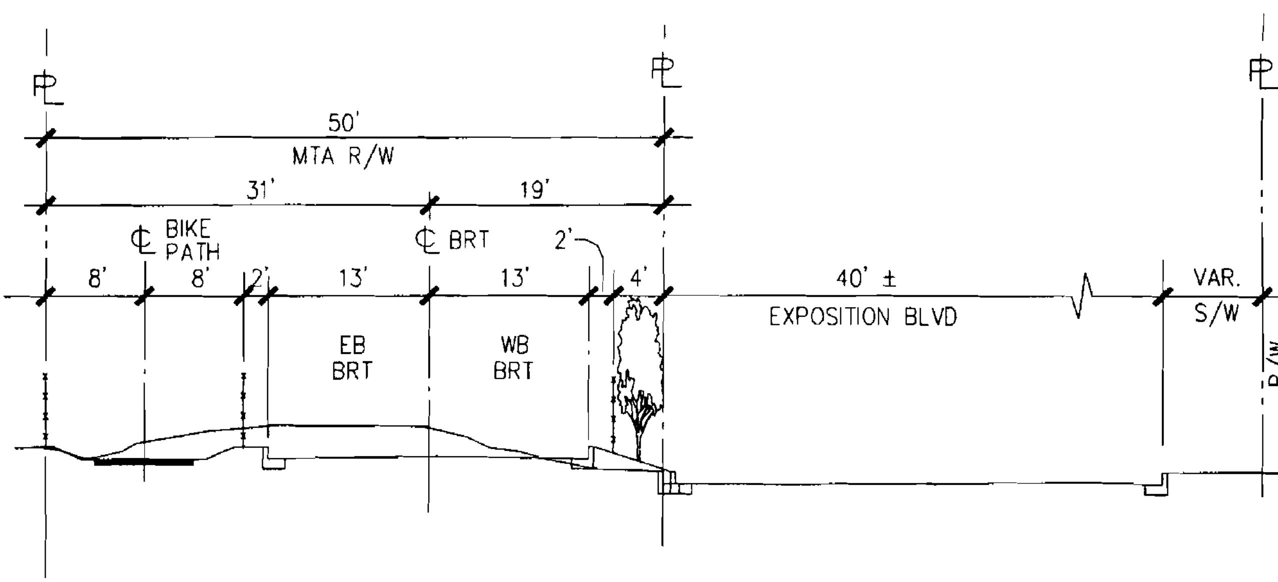


B. Exposition Boulevard West of Vermont Avenue

SOURCE: Korve Engineering, 2000



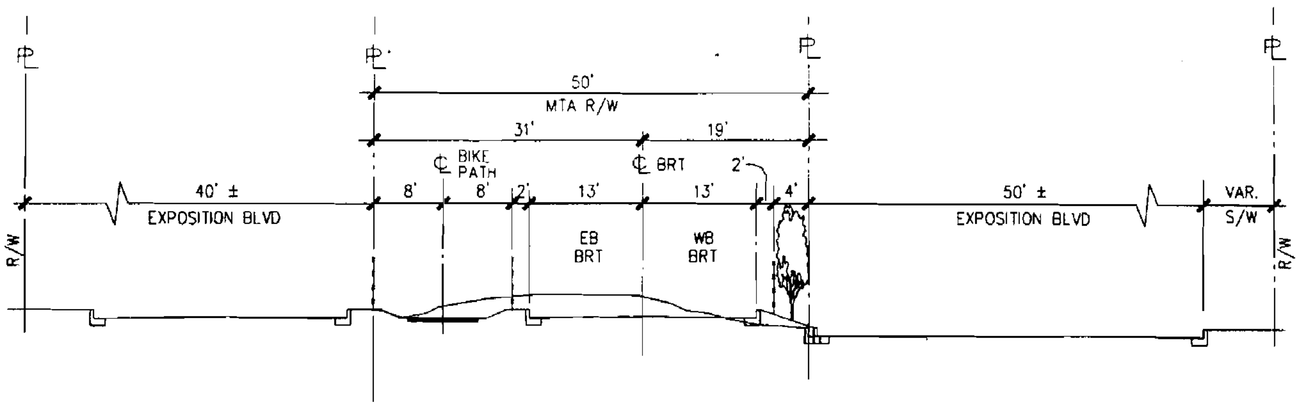
C. Exposition Boulevard East of Van Ness Avenue



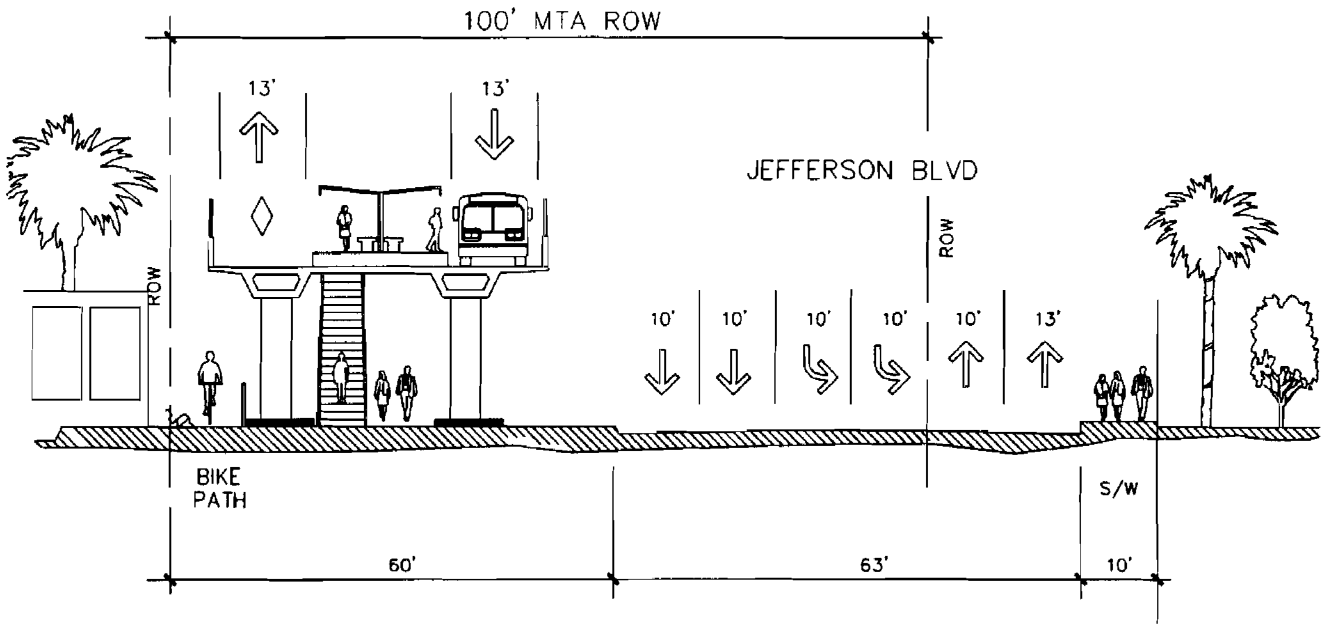
D. Exposition Boulevard East of Ninth Avenue

SOURCE: Korve Engineering, 2000

FIGURE 2C-3
EXPOSITION BRT CROSS-SECTIONS C & D



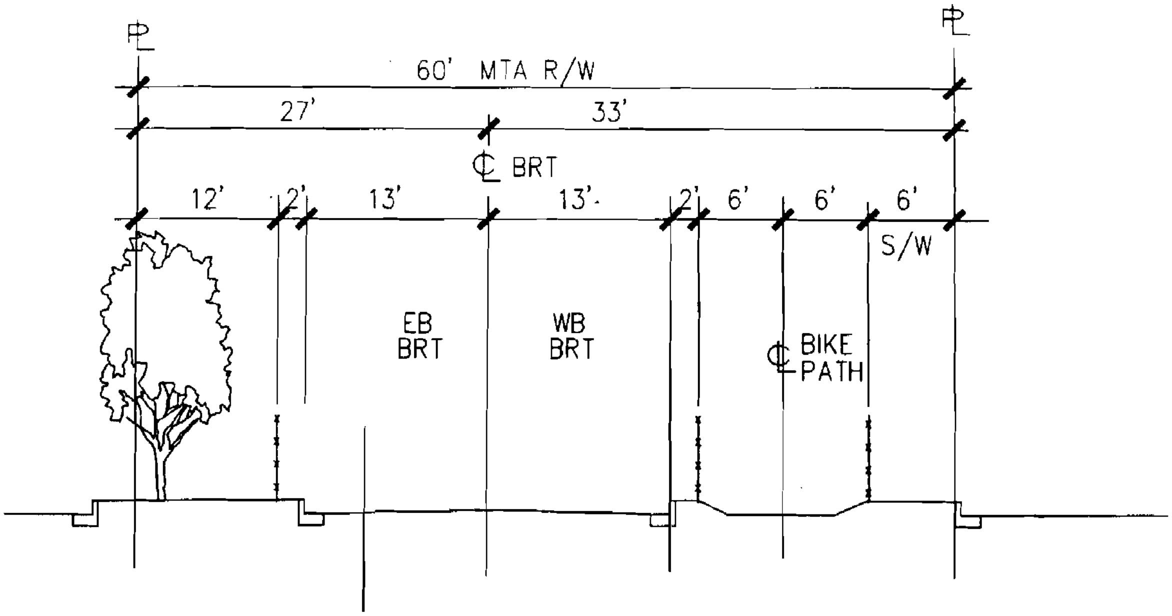
E. Exposition Boulevard West of Wellington Road



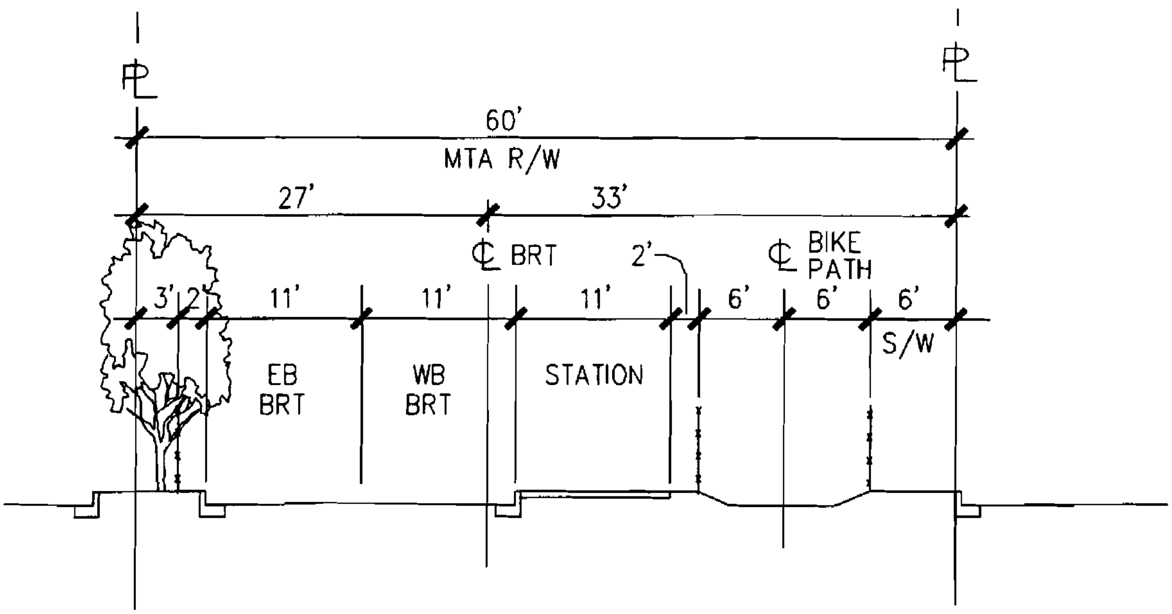
F. La Cienega Boulevard Station and Park & Ride - Facing West

SOURCE: Korve Engineering, 2000

FIGURE 2C-4
EXPOSITION BRT
CROSS-SECTIONS E & F

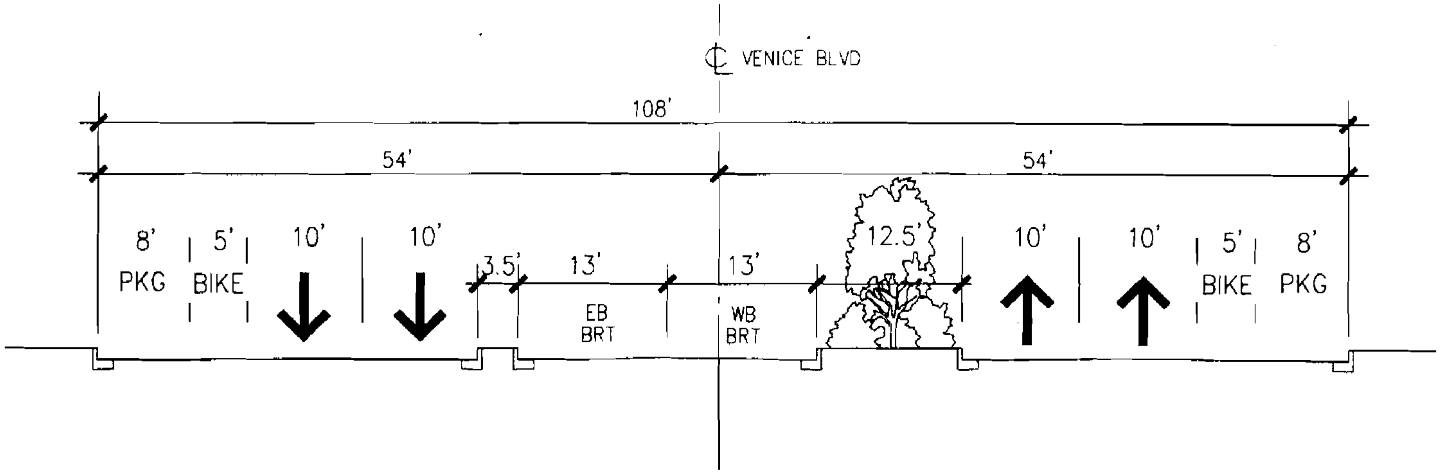


G. National Boulevard/Hayden Avenue

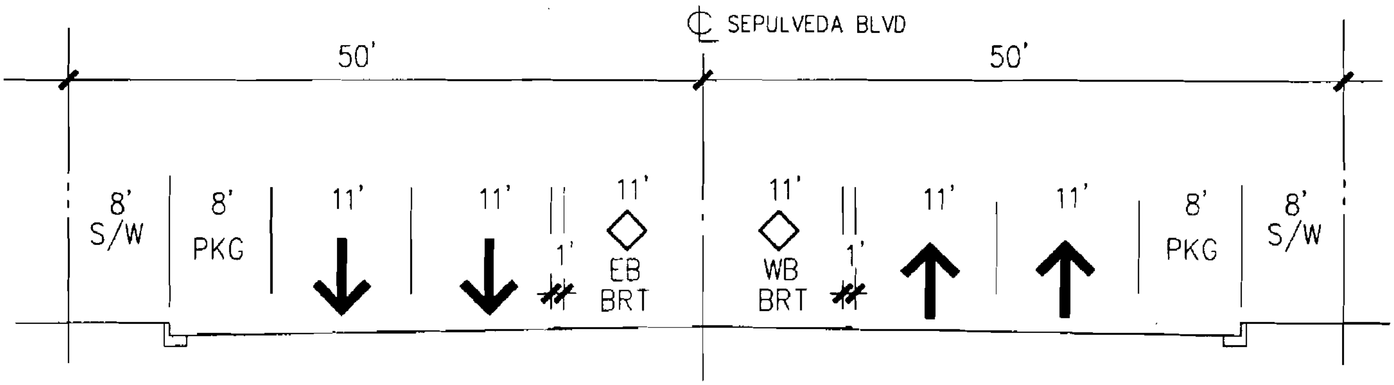


G. National Boulevard/Hayden Avenue with station cross-section

SOURCE: Korve Engineering, 2000



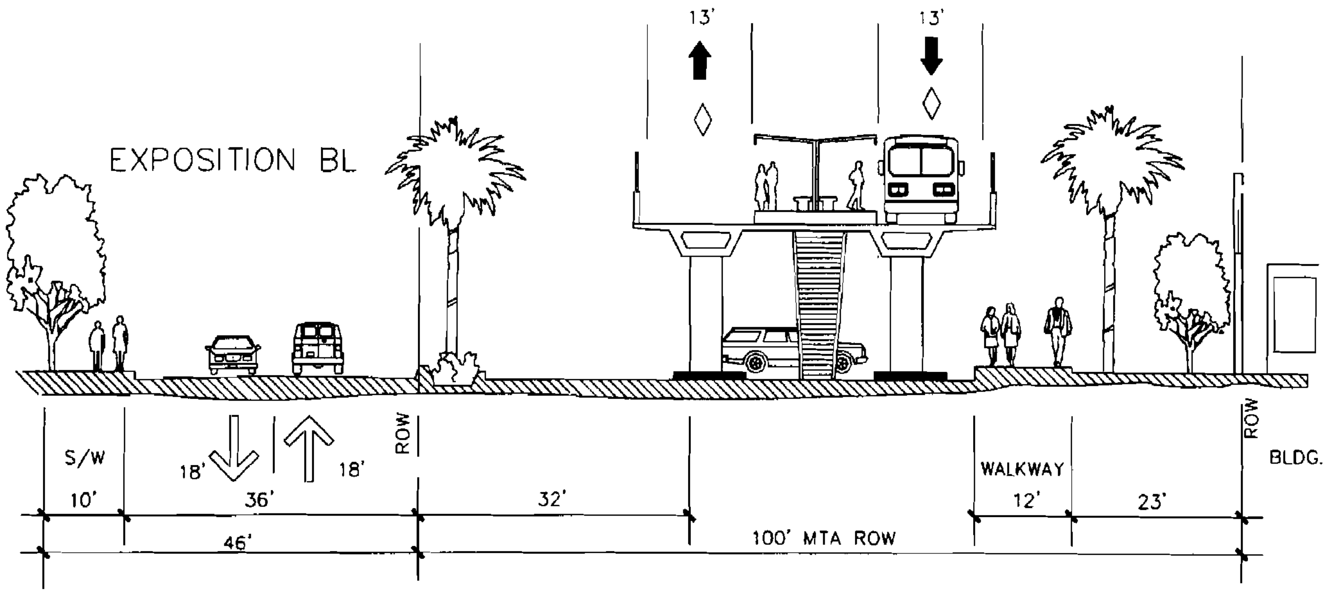
H. Venice Boulevard West of Watseka Avenue



I. Sepulveda Boulevard North of Regent Street

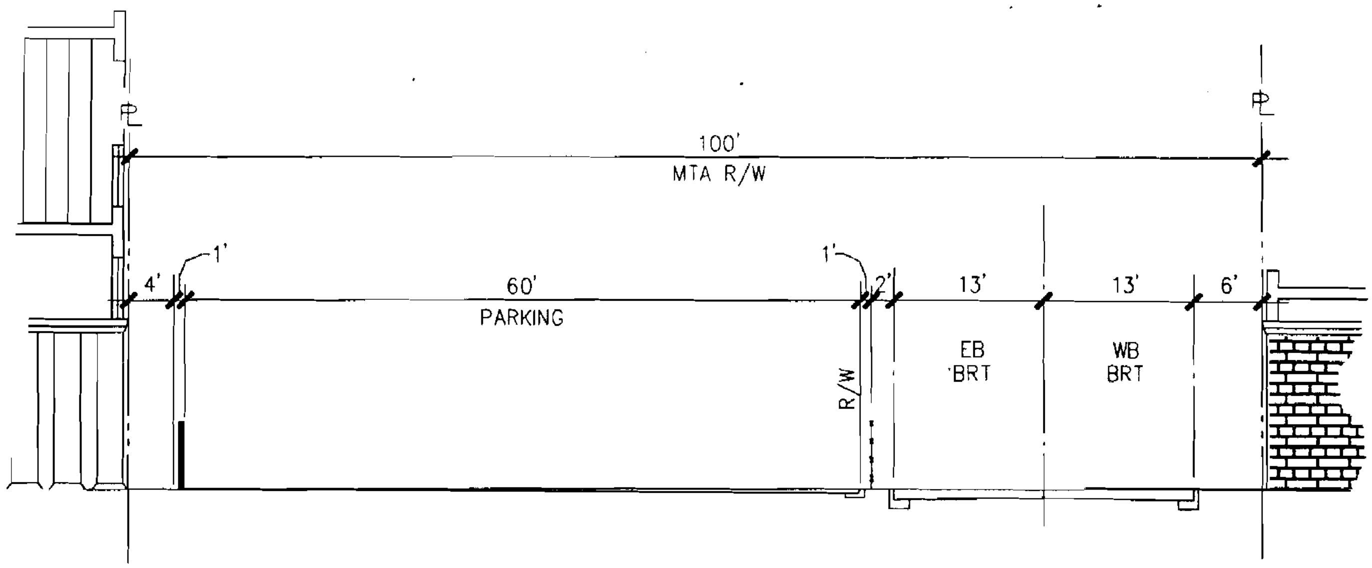
SOURCE: Korve Engineering, 2000

FIGURE 2C-6
EXPOSITION BRT
CROSS-SECTIONS H & I

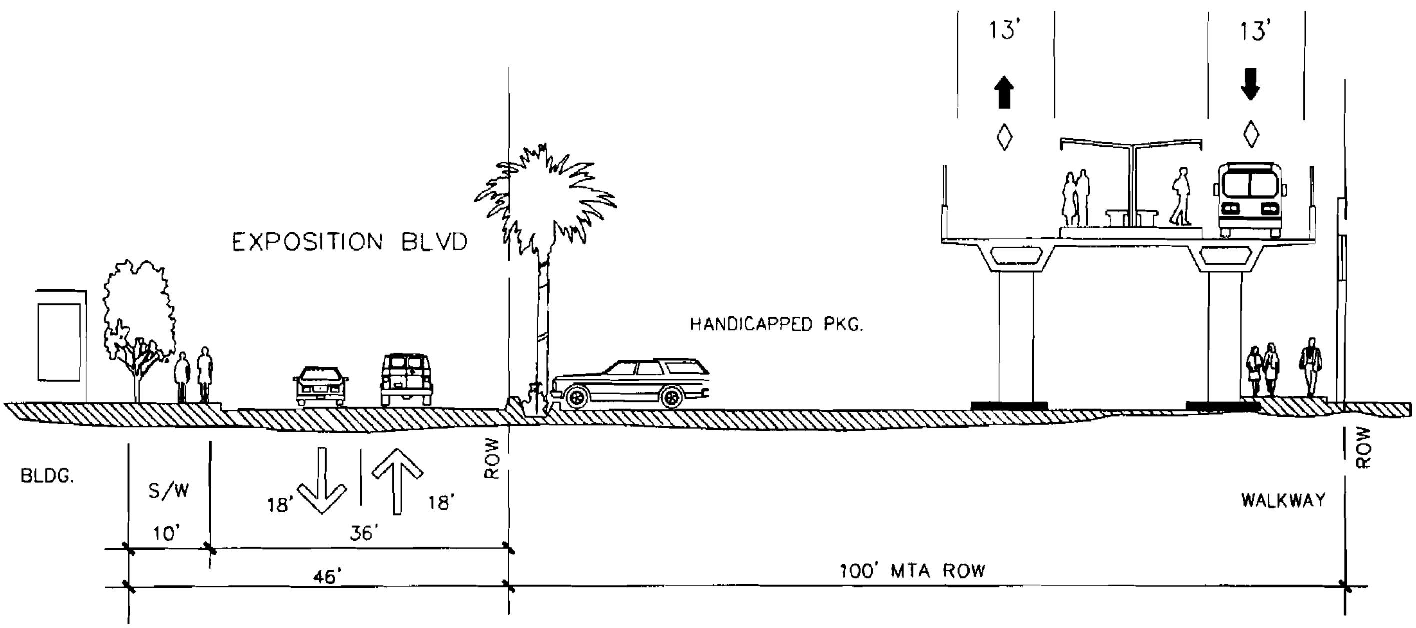


J. Pico/Sawtelle Station & Park & Ride on Exposition Boulevard Facing West

SOURCE: Korve Engineering, 2000

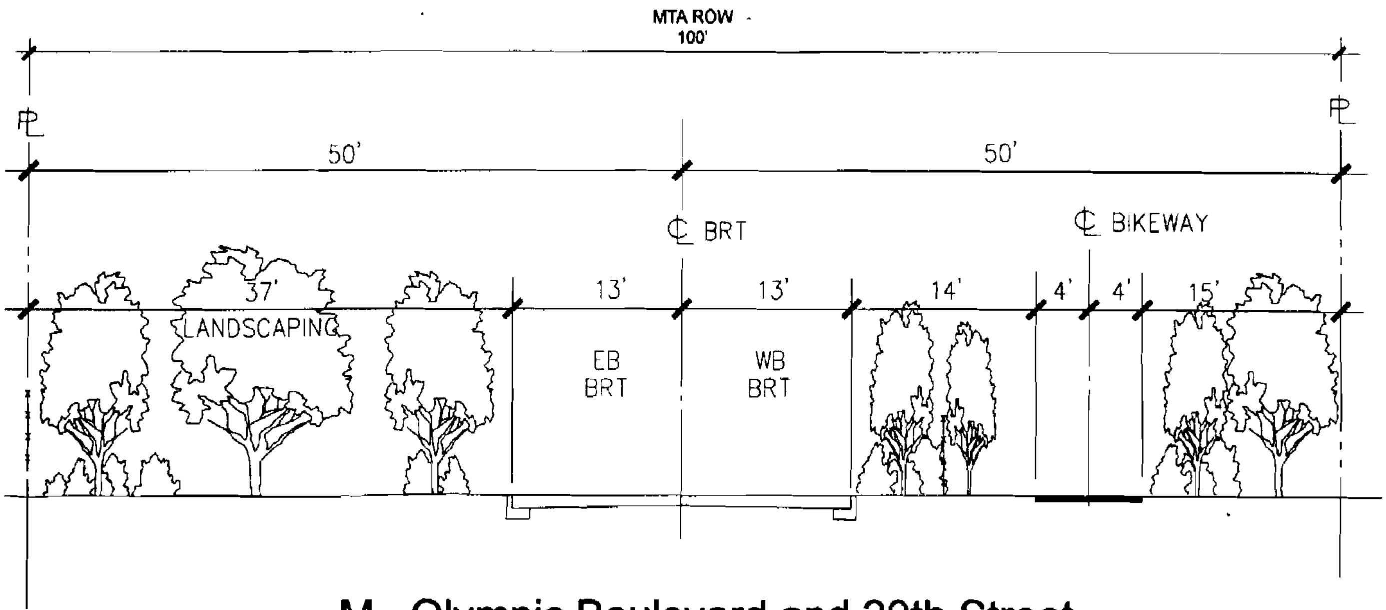


K. Exposition Boulevard West of Centinela Avenue



L. Bundy Station and Park & Ride - Facing West

SOURCE: Korve Engineering, 2000

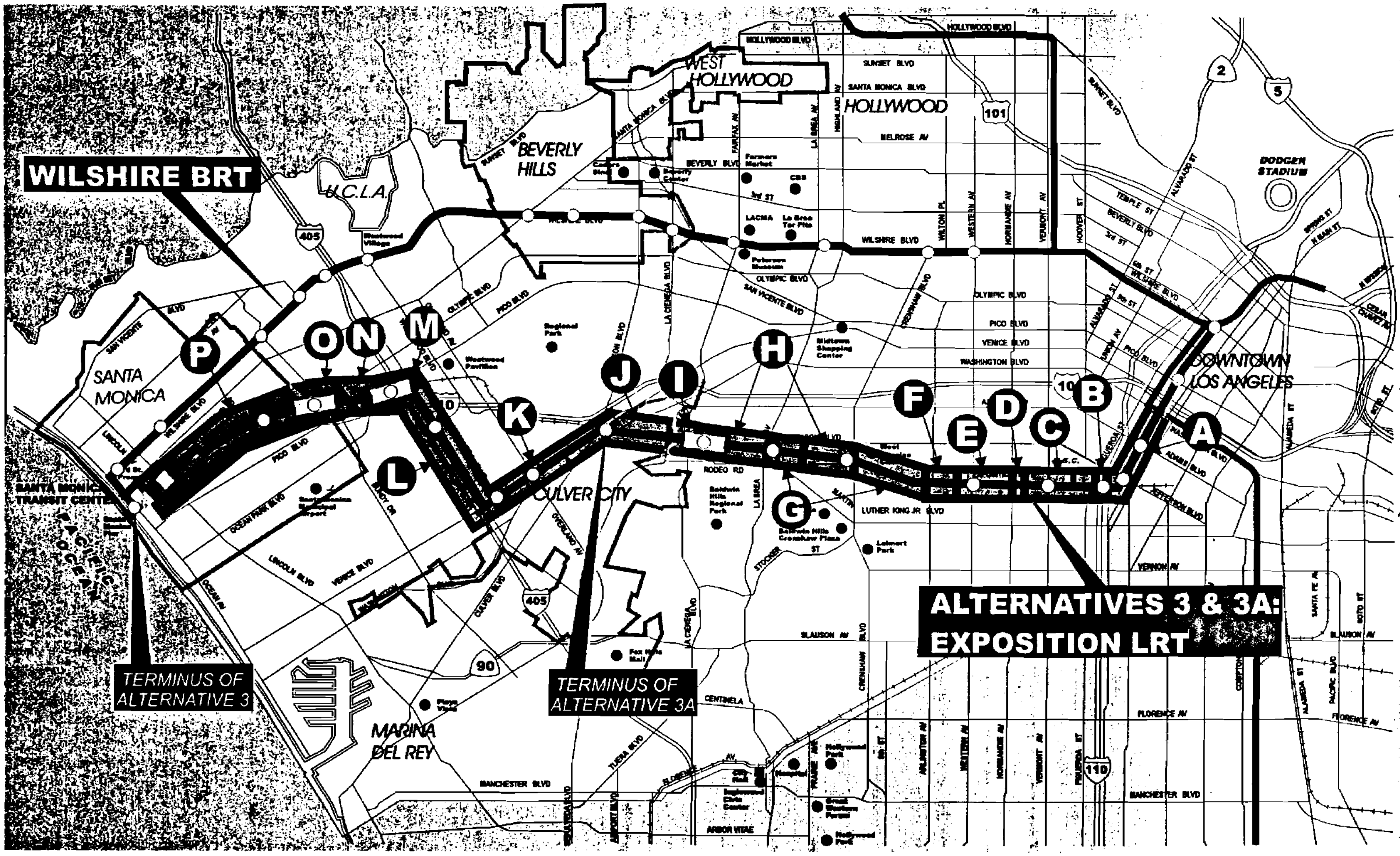


M. Olympic Boulevard and 20th Street

SOURCE: Korve Engineering, 2000

FIGURE 2C-9
EXPOSITION BRT
CROSS-SECTION M

Section 2.0
Attachment D
Cross-Sections for Exposition LRT



LEGEND:

A Location of this Typical Cross-Section

Alternatives 3 & 3a: Exposition LRT (includes Wilshire BRT)

Station Location (General)

Elevated

T Optional Tunnel

N

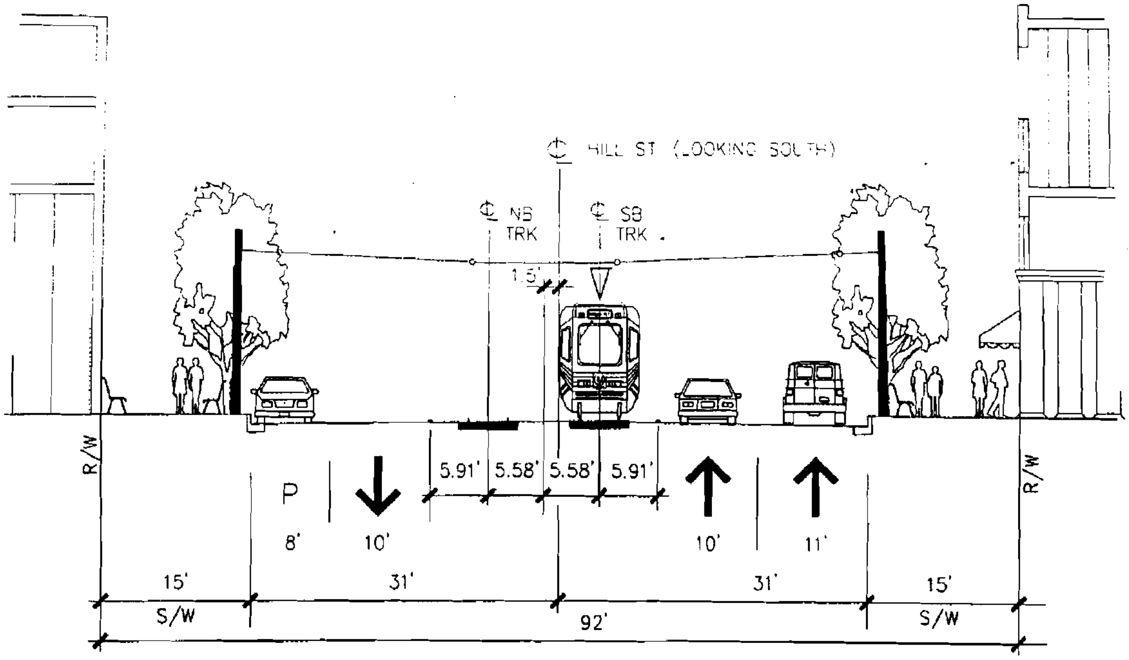
SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

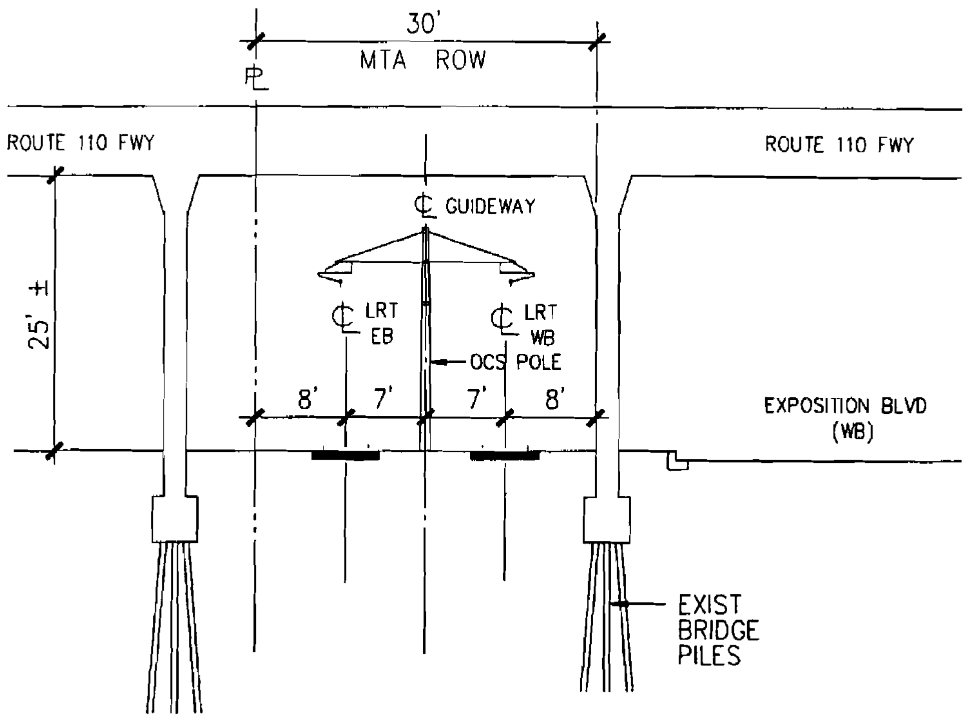
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 2D-1

INDEX TO TYPICAL CROSS-SECTIONS FOR EXPOSITION LRT

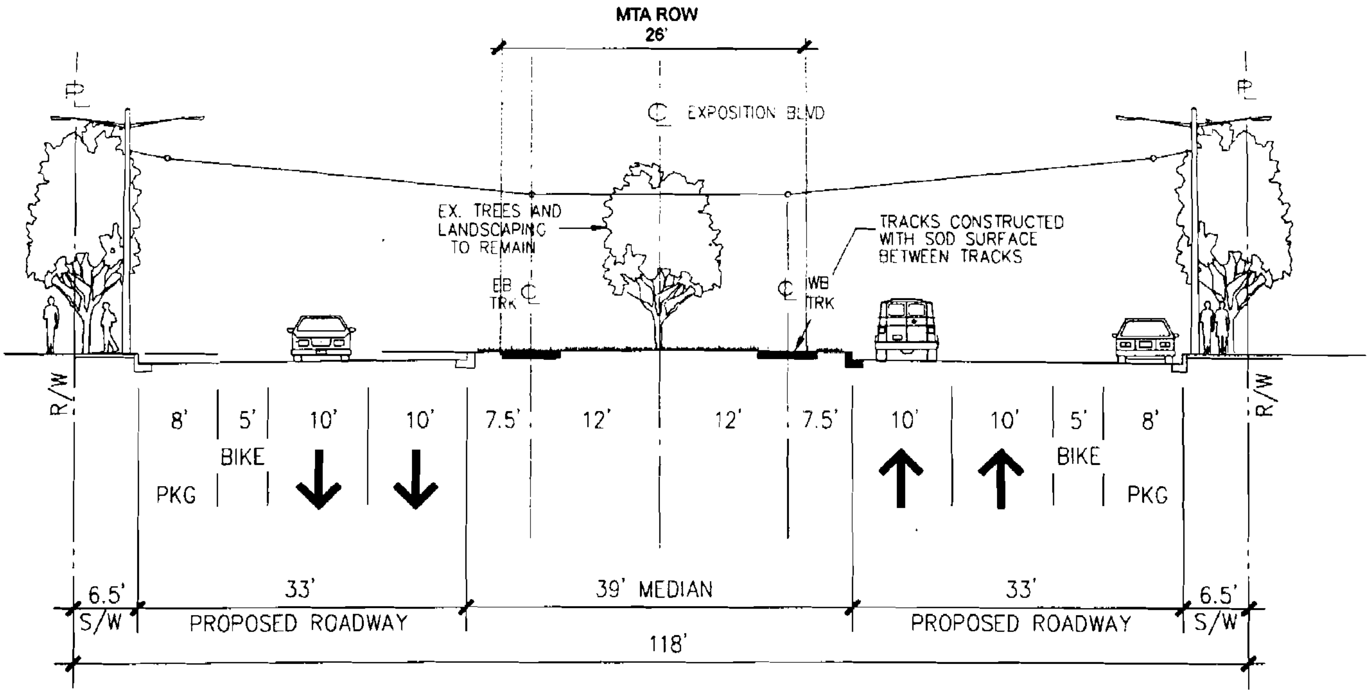


A. Hill Street South of Washington Boulevard

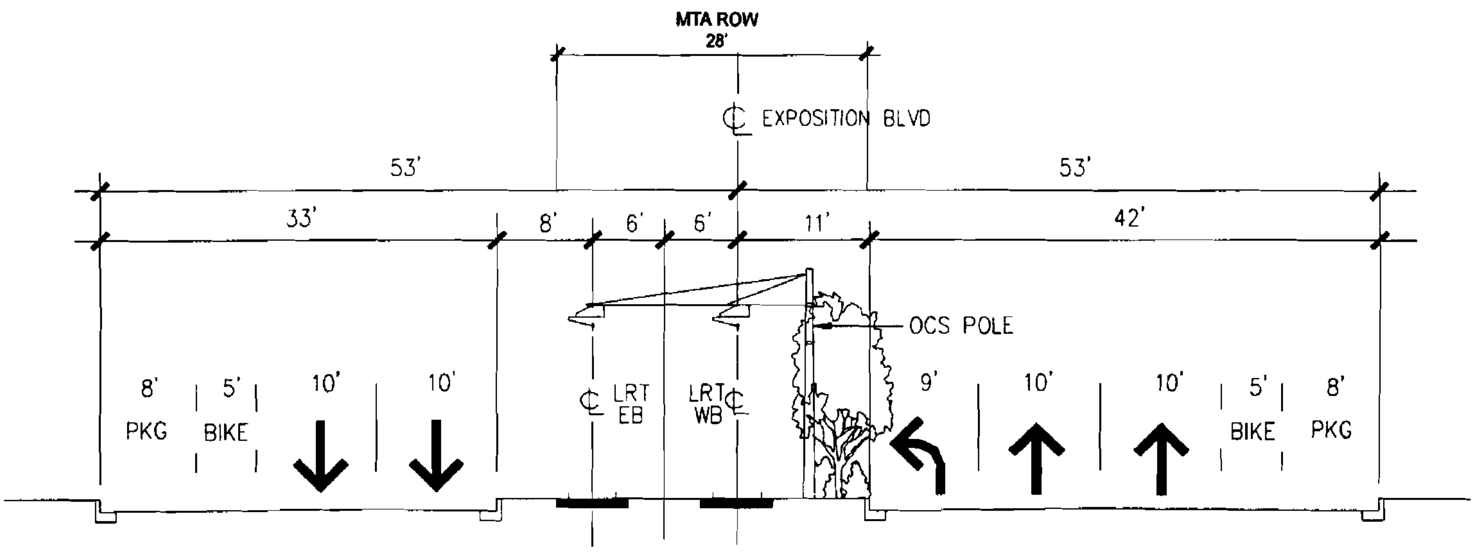


B. Exposition Boulevard Below 110 Freeway

SOURCE: Korve Engineering, 2000

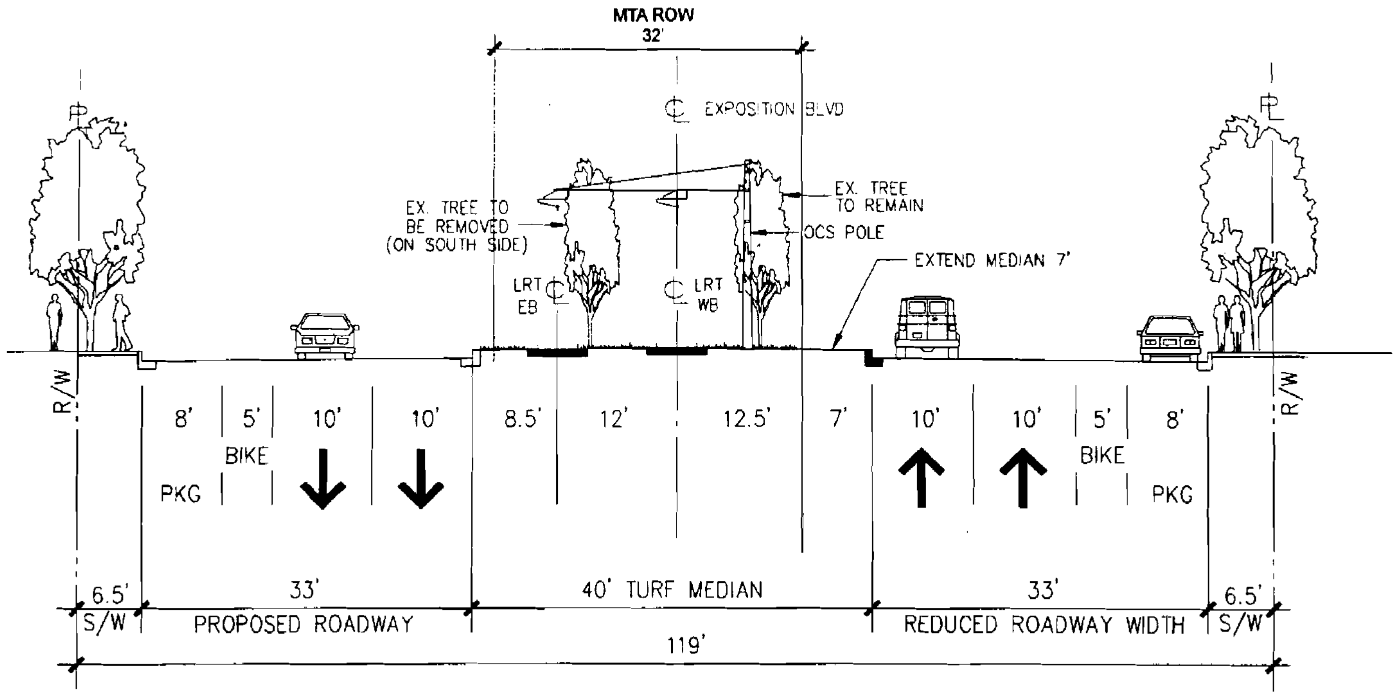


C. Exposition Boulevard West of Kinsey Drive

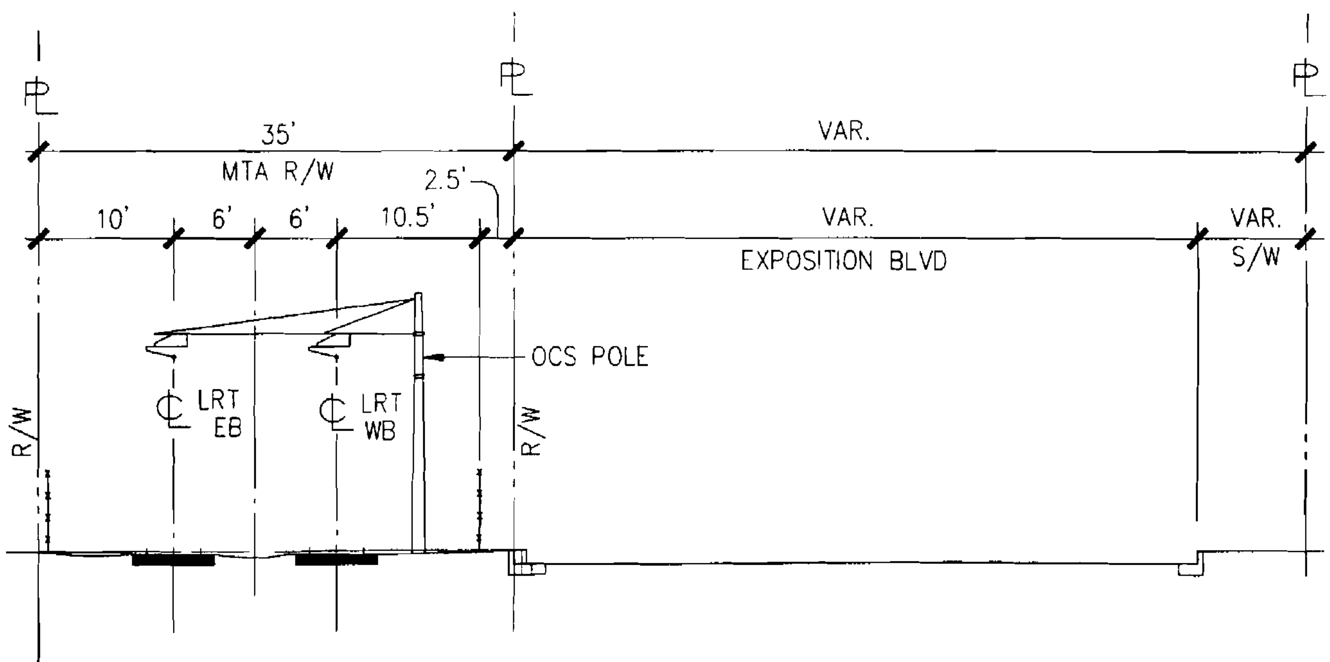


D. Exposition Boulevard East of Normandie Avenue with left-turn lane

SOURCE: Korve Engineering, 2000

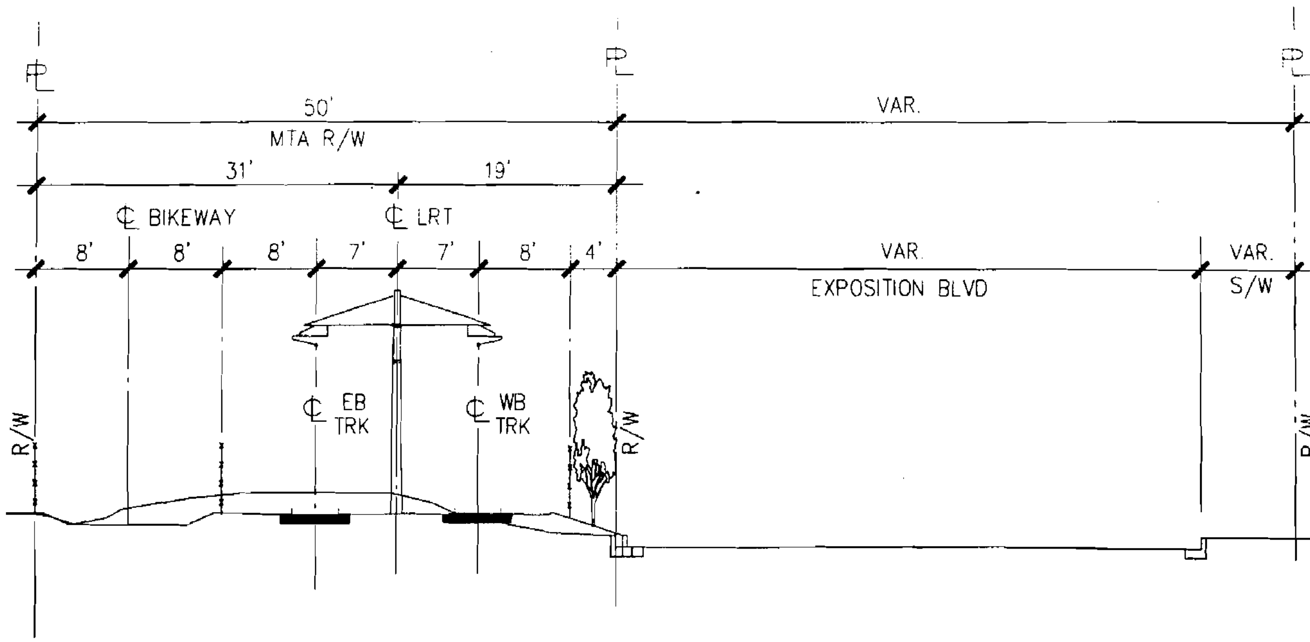


E. Exposition Boulevard East of Normandie Avenue without left-turn lane

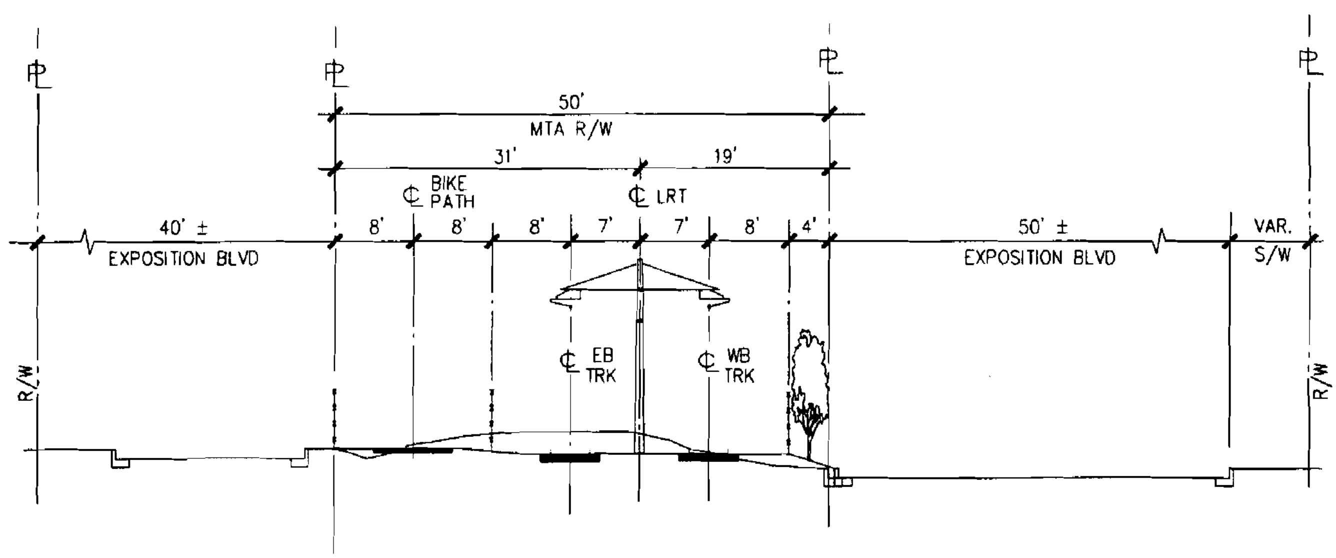


F. Exposition Boulevard Near Van Ness Avenue

SOURCE: Korve Engineering, 2000



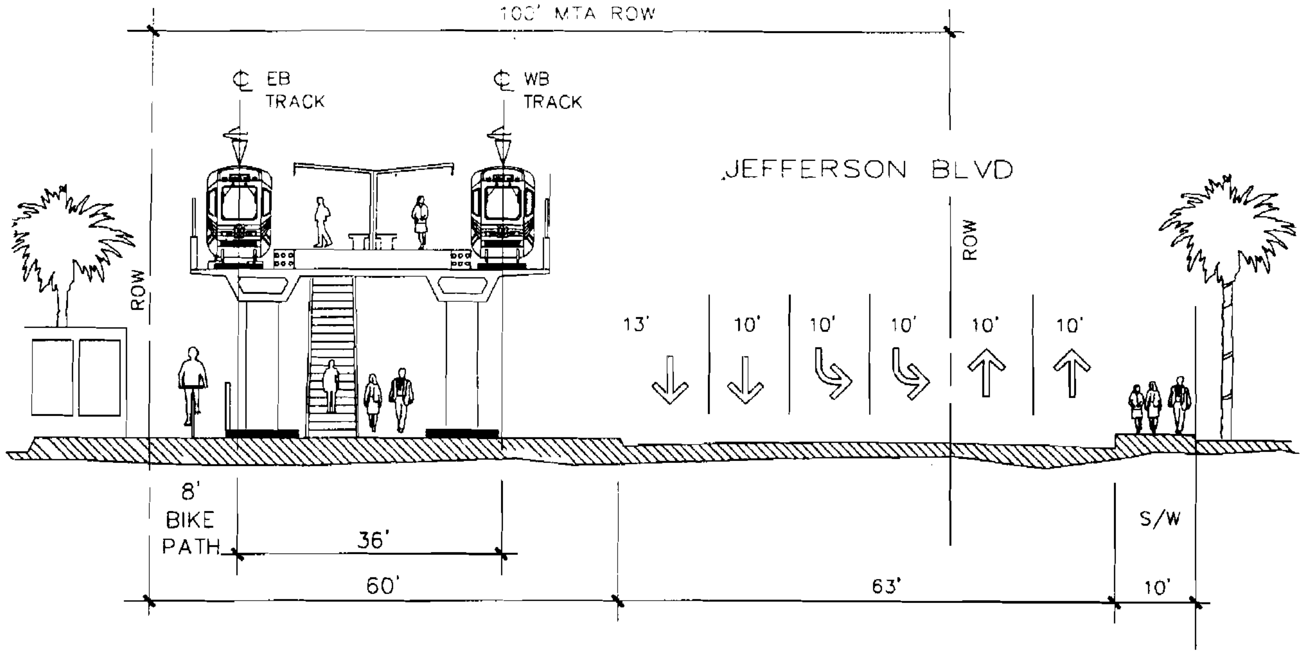
G. Exposition Boulevard East of Ninth Avenue



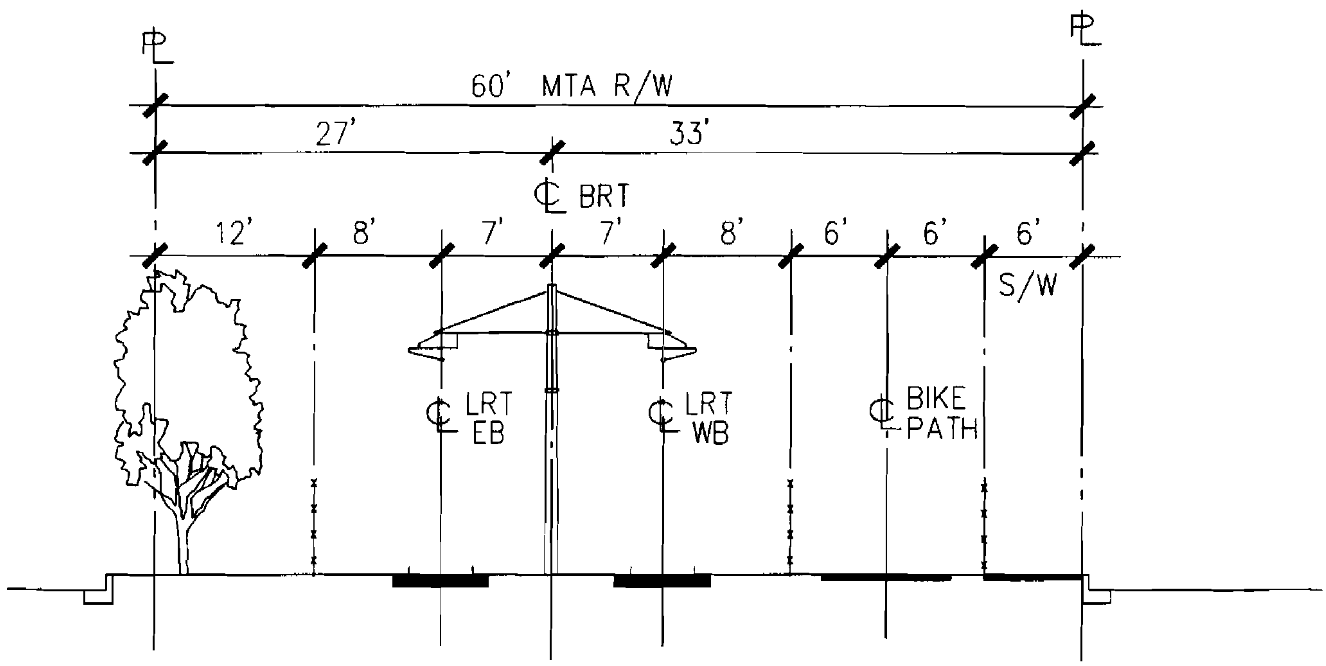
H. Exposition Boulevard East of Somerset Drive

SOURCE: Korve Engineering, 2000

FIGURE 2D-5
EXPOSITION LRT CROSS-SECTIONS G & H

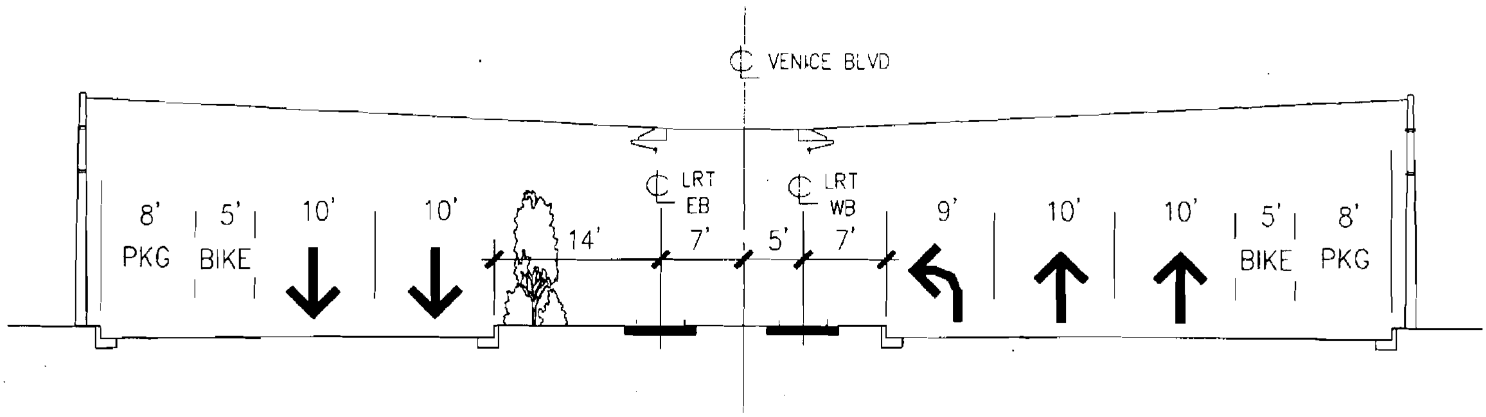


I. La Cienega Boulevard Station & Park & Ride Facing West

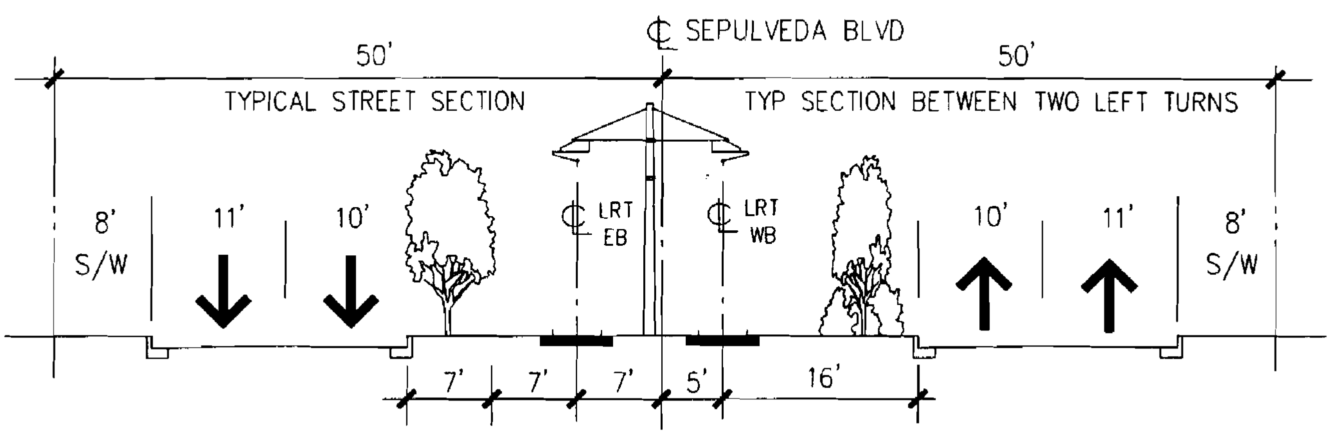


J. National Boulevard East of Helms Avenue

SOURCE: Korve Engineering, 2000



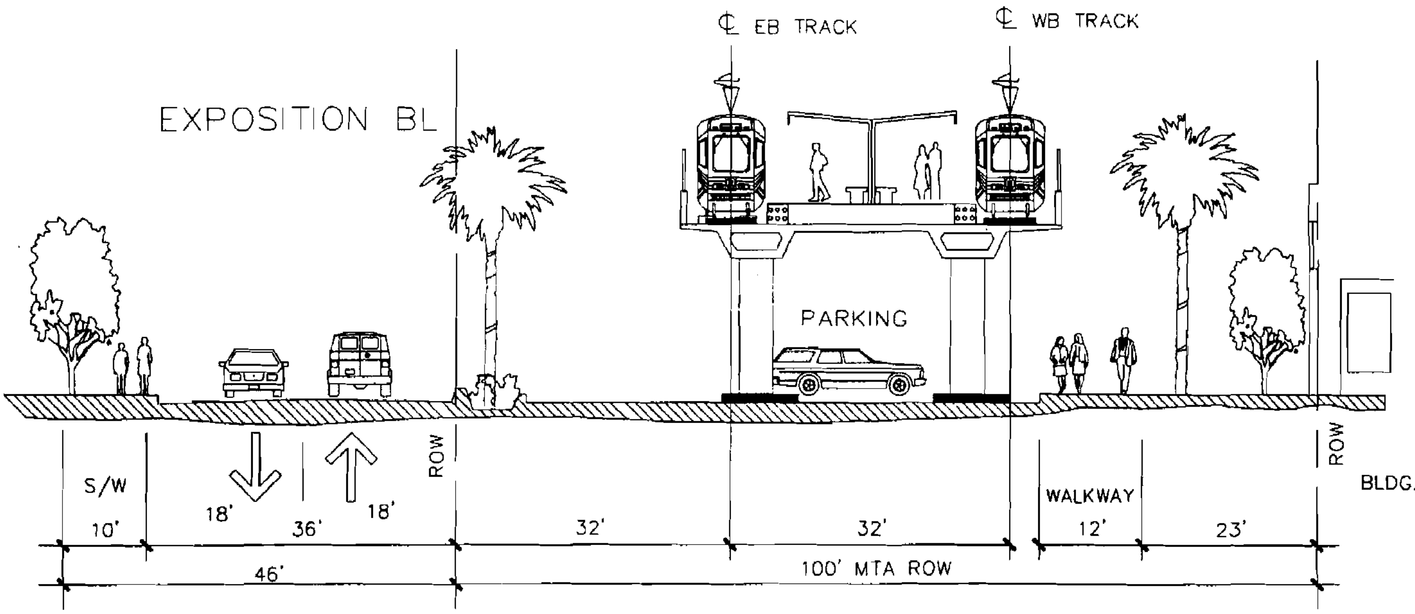
K. Venice Boulevard East of Watseka Avenue



L. Sepulveda Boulevard North of Rose Avenue

SOURCE: Korve Engineering, 2000

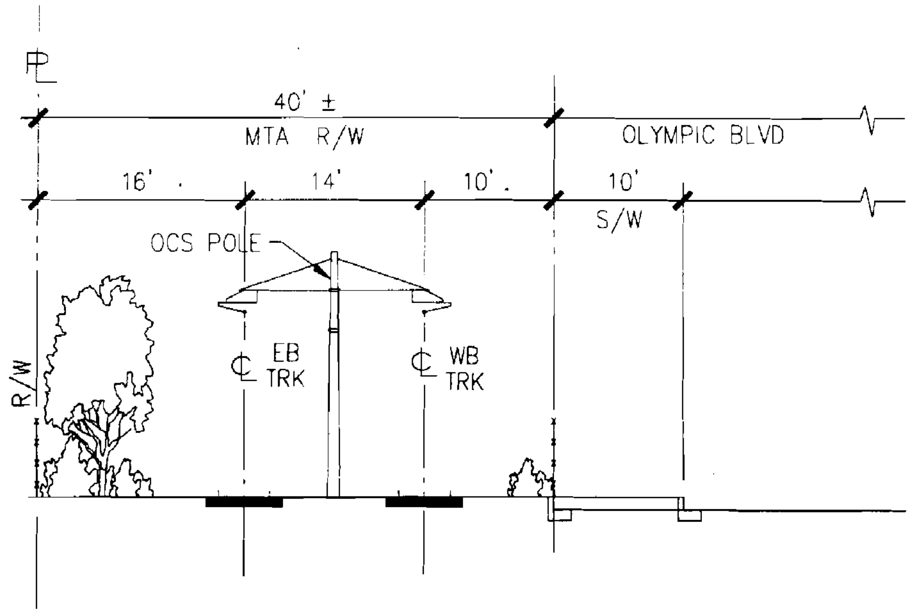
FIGURE 2D-7
EXPOSITION LRT
CROSS-SECTIONS K & L



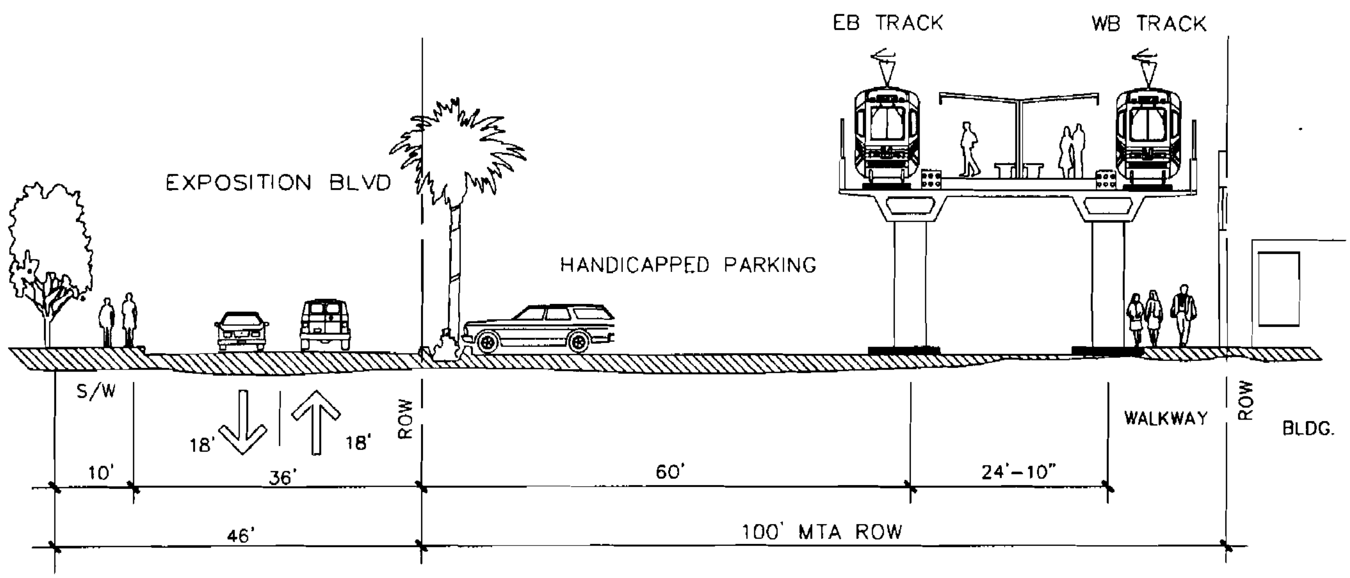
M. Pico/Sawtelle Station & Park & Ride
Facing West

SOURCE: Korve Engineering, 2000

FIGURE 2D-8
EXPOSITION LRT
CROSS-SECTION M



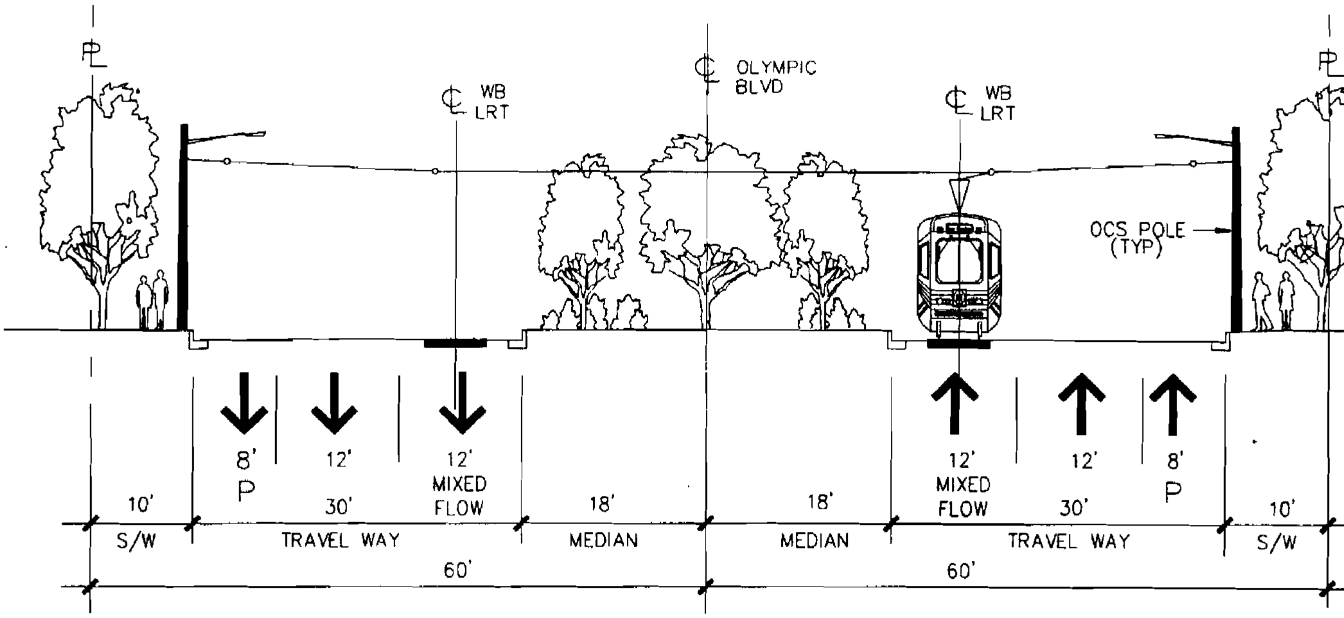
N. Olympic Boulevard



O. Bundy Station & Park & Ride
Facing West

SOURCE: Korve Engineering, 2000

FIGURE 2D-9
EXPOSITION LRT
CROSS-SECTIONS N & O



P. Olympic Boulevard West of 20th Street

SOURCE: Korve Engineering, 2000

FIGURE 2D-10
EXPOSITION LRT
CROSS-SECTION P

3.1 Introduction to the Environmental Analysis

3.1.1 Introduction

Section 3.0 of this document examines the environmental consequences associated with the proposed project and its alternatives, as described in Section 2.0.

3.1.2 Contents of Environmental Analysis

Section 3.0 includes an analysis of the 17 environmental issue areas listed below:

3.2 Traffic and Circulation
3.3 Parking
3.4 Land Use and Development/Communities and Neighborhoods
3.5 Land Acquisition/Displacement and Relocation
3.6 Socioeconomics
3.7 Visual Quality
3.8 Air Quality
3.9 Noise and Vibration
3.10 Geology, Soils, and Seismicity
3.11 Water Resources
3.12 Biological Resources
3.13 Energy Resources
3.14 Safety and Security
3.15 Community Facilities and Utilities
3.16 Hazards
3.17 Cultural Resources
3.18 Construction Impacts

Within each issue area, the Proposed Project and alternatives are discussed in the following order:

3.x.1 Introduction
3.x.2 Affected Environment
3.x.3 Impact Assessment and Mitigation Measures

3.1.3 Assessment Methodology

Affected Environment

In Section 3.0, the analysis within each issue area begins with an examination of the existing physical environment or baseline setting wherein the Proposed Project would be placed. The regulatory setting, which includes government rules, regulations, plans, and policies applicable to the Proposed Project, are provided in summary format and analyzed for project compliance in Section 3.4 (Land Use and Development/Communities and Neighborhoods). For the purpose of this document, and pursuant to NEPA and CEQA Guidelines, the affected environment used for this impact analysis reflects the actual conditions at the time or preparation of this document.

Impact Assessment and Mitigation Measures

Impact assessment methodology for each issue area includes a number of quantitative and qualitative methods currently used in similar environmental assessment documents, and specifically unique to evaluation of each specific issue. In developing an approach to the analysis of impacts and mitigation measures the following were taken into consideration:

- NEPA and CEQA regulatory requirements;
- Other similar MTA and FTA documents for transit projects;
- Federal Executive Orders;
- Federal and State air quality regulations; and
- Regional and local standards and policies.

Thresholds of significance were developed for each issue area using the above to determine the level of severity of project-related impacts. Impacts found to be significant and unavoidable, or mitigable to a less than significant level were identified. The same methodology was then applied systematically to each project alternative. A comparative analysis of the Proposed Project and the alternatives is provided in Section 5.0 of this document.

Each issue area evaluated the alternatives listed below in the following order:

- No Action Alternative (Baseline)
- Transportation System Management (TSM) Alternative
- Alternative 1: Wilshire BRT (Baseline Median-Running)
- Alternative 1A: Wilshire BRT (Median Adjacent Design Option)
- Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)
- Alternative 2: Wilshire BRT and Exposition BRT (Full Length)
- Alternative 2A: Wilshire BRT and Exposition BRT (MOS)
- Alternative 3: Wilshire BRT and Exposition LRT (Full Length)
- Alternative 3A: Wilshire BRT and Exposition LRT (MOS)
- Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

Once an impact was identified, feasible mitigation measures were developed that would reduce impacts to less than significant levels. There are impacts that cannot be fully mitigated to less than significant levels. These impacts are referred to as significant and unavoidable impacts in each issue area. The cumulative impacts assessment is presented in Section 4.2 (Long-Term Implications).

3.1.4 Significance Categories

While the criteria for determining significant impacts are unique to each issue area, the classification of the impacts was uniformly applied in accordance with the following definitions:

Less Than Significant Impact (LS): Results in no substantial adverse change to existing environmental conditions;

Significant, Mitigable Impact (S): Constitutes a substantial adverse change to existing environmental conditions that can be mitigated to less than significant levels by implementation of feasible mitigation measures or by the selection of a project alternative;

Significant Unavoidable Impact (SU): Constitutes a substantial adverse change to existing environmental conditions that cannot be fully mitigated by implementation of all feasible mitigation measures or by the selection of project alternative; and

Beneficial Impact (B): Results in a positive change to environmental conditions. This classification is not strictly required by CEQA; however, it provides a useful addition to the range of information being disclosed to the public in this environmental document.

3.1.5 Cumulative Context

"Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects, whereas the cumulative impact is the change in the environment from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time.

The discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. Further, the discussion is intended to be guided by the standards of practicality and reasonableness.

The cumulative context for this analysis is based on the Southern California Association of Government's (SCAG) 1998 Regional Transportation Plan (RTP), entitled "Community Link 21". This document is a regional planning document that establishes the goals, objectives, and policies for the region's transportation system and establishes an implementation plan for transportation investments through the year 2020. The Mid-city/Westside Study Area extends through two of the 13 Subregions in SCAG's planning area, including the City of Los Angeles and the Westside Cities Subregion. The RTP reflects transportation, population, employment, and land use data for the five-county SCAG area through the year 2020, and is, thus, an appropriate basis for the analysis of cumulative impacts. Therefore, the cumulative condition is not limited to a list of related projects but is, instead, based upon a summary of projections contained in an adopted planning document (i.e., the SCAG Regional Transportation Plan).

Cumulative impacts are evaluated in each of the technical issue sections (in Sections 3.2 through 3.18 of this document). The cumulative analysis considers the impacts that could occur as a result of implementation of a proposed alternative together with other projects causing related impacts.

3.2 Traffic and Circulation

3.2.1 Introduction

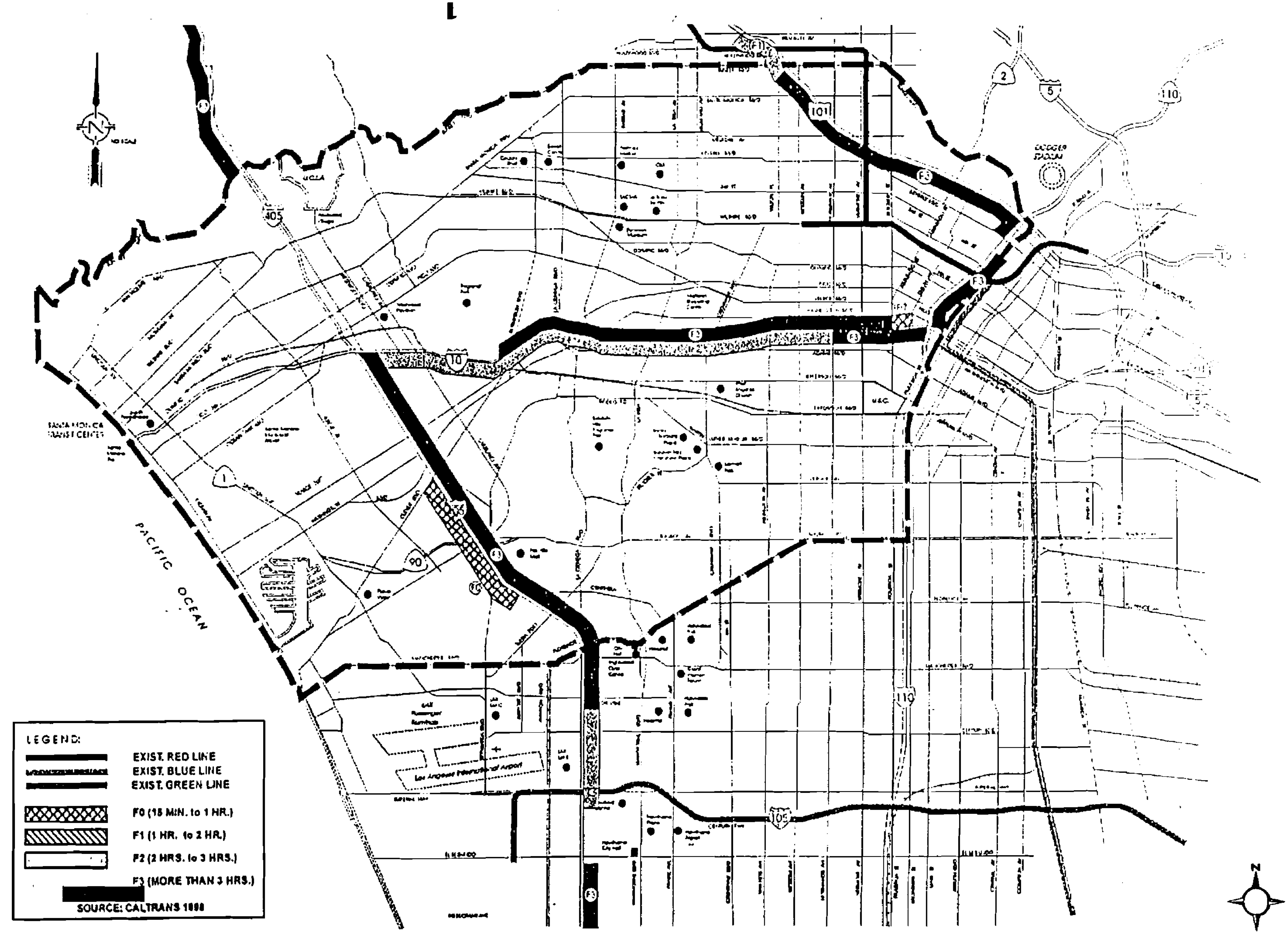
This section describes the Mid-City/Westside Study Area's transportation environment both in terms of the base year of 2000, as well as the forecast year of 2020. It presents data and discussion on existing travel conditions in this corridor, types and patterns of trips, and modes of travel on roadways, including freeways and arterial highways, as well as on transit. It also discusses expected effects of projected growth in travel demand, as well as impacts of the east-west corridor project alternatives on the future transportation system and traffic conditions. General, as well as local impacts upon the transportation system are presented as part of the analysis. General impacts include effects of the project on system-wide transportation performance indicators, while local impacts deal with specific traffic circulation, intersection analysis, general access, neighborhood diversion and parking impacts at the proposed stations. The analysis provides information relative to the affects of each of the five alternatives on the transportation systems within the Study Area in terms of transportation supply and demand.

3.2.2 Affected Environment

The following discussion presents an overview of the transportation system within the Mid-City/Westside Study Area that would be affected by the proposed project alternatives considered under this EIS/SEIR. Transportation improvements in this Corridor Area are being studied in part, for the following reasons:

- Major concentration of activity centers and destinations;
- High employment and population densities;
- Substantial transit-dependent population;
- High levels of existing and projected future travel demand;
- Existing traffic congestion;
- Projected worsening of congestion in the future; and
- Constrained transportation facilities.

The highway transportation system in the Study Area is comprised of a well-defined grid of arterials and freeways generally following a north-south/east-west orientation as shown in Figure 3.2-1. The freeway network in the Mid-City/Westside Study Area includes the San Diego Freeway (I-405), Santa Monica Freeway (I-10), Marina Del Rey Freeway (SR-90), the Harbor Freeway (I-110) and the Hollywood Freeway (US 101). The study area's freeways and streets carry some of the highest traffic volumes in southern California. A total of 1.9 million vehicle-miles are traveled during the evening peak hour on the streets and freeways within the Corridor.

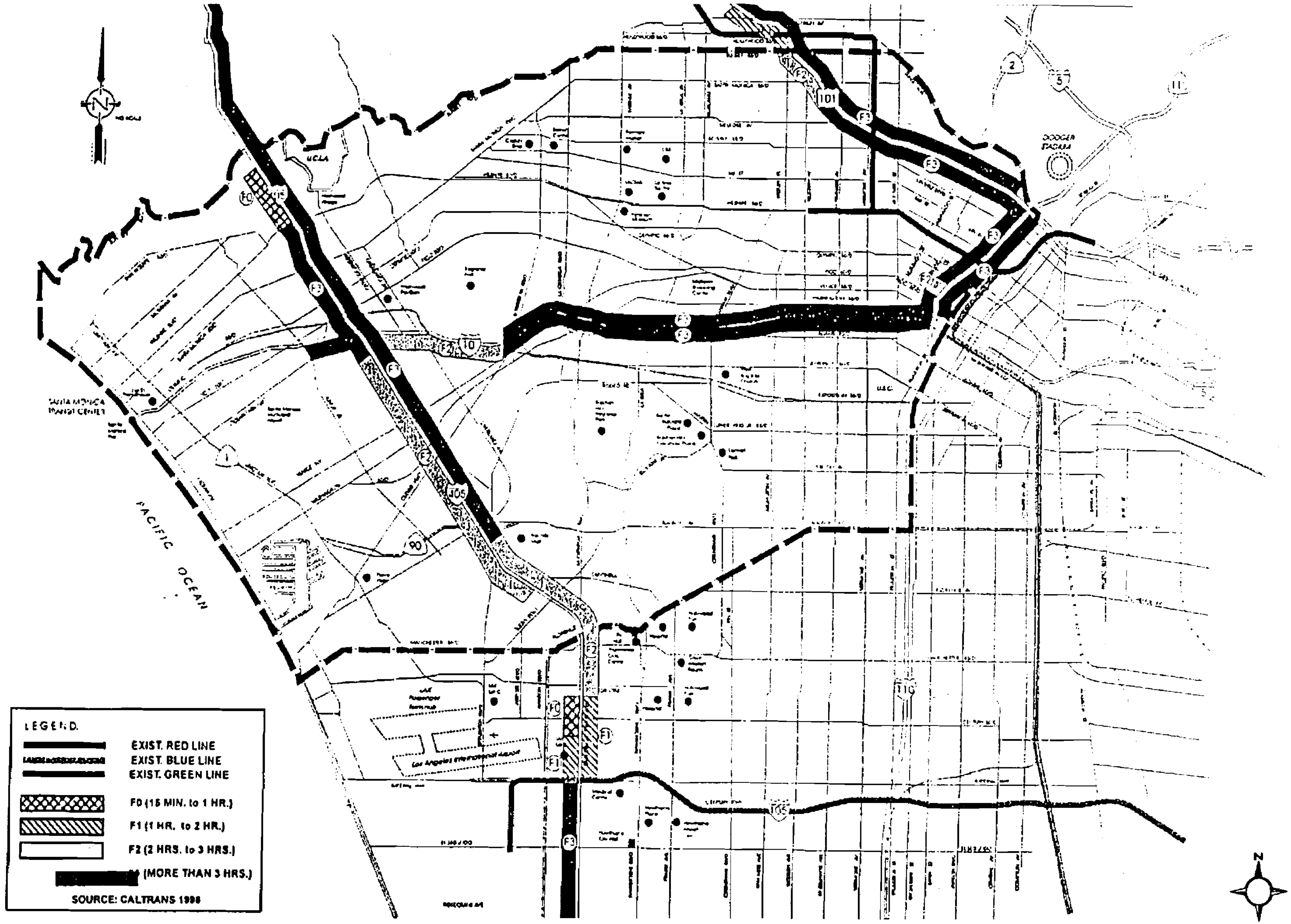


Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-2A

FREEWAY LEVEL OF SERVICE (AM PEAK PERIOD 1998)



Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-2B

FREEWAY LEVEL OF SERVICE (PM PEAK PERIOD 1998)

Freeway Network

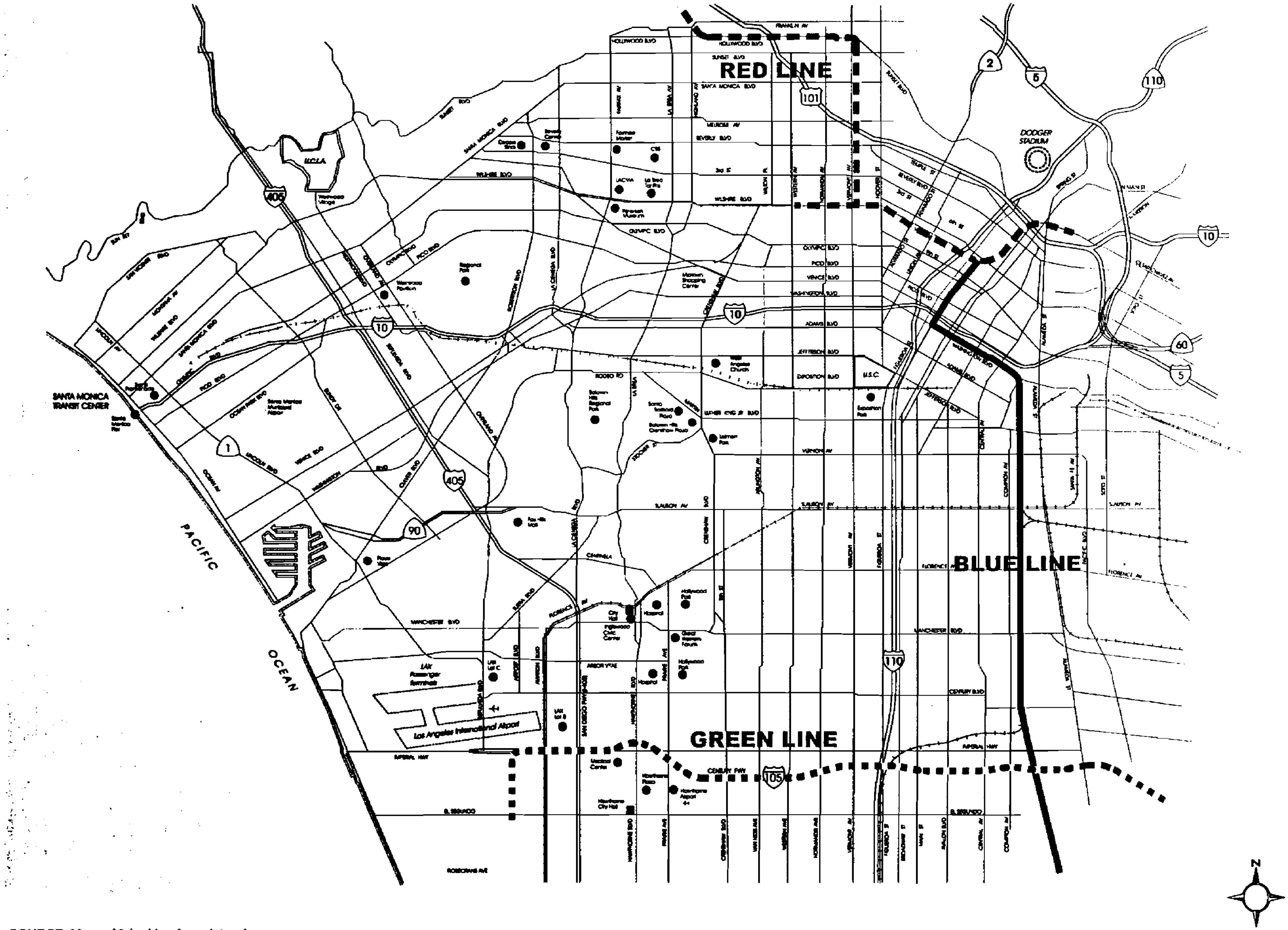
The following is a description of the freeway network within the study area.

- **Santa Monica Freeway (I-10)** – a major east-west freeway that traverses the entire length of the study area from the Pacific Ocean to Downtown Los Angeles, connecting a majority of the Study Area's communities. This freeway is one of the busiest in the nation and carries some of the highest daily traffic volumes in the country. The I-10 Freeway varies between three and five general lanes in each direction, with several sections of parallel auxiliary lanes and collector-distributor roads. Within the Study Area, the daily traffic volume varies between 149,000 vehicles at the western edge (Pacific Coast Highway) and 325,000 adjacent to the Vermont Avenue/I-10 interchange at the mid-point.
- **Hollywood Freeway (US-101)** – a generally east-west oriented freeway that provides the principal direct connection between Downtown Los Angeles and the San Fernando Valley through Hollywood. This freeway generally has four lanes in each direction. Daily volumes vary from 124,000 vehicles in Downtown (Fourth Street interchange) to 276,000 (Glendale Boulevard interchange) at the mid-point of the Study Area.
- **Harbor Freeway (I-110)** – a north-south freeway that connects the Port of Los Angeles to Pasadena via Downtown Los Angeles. The freeway varies between four to five lanes in each direction. South of Downtown Los Angeles, the I-110 Freeway has a two-lane transitway for buses and carpools in the median, which includes some elevated sections. Daily traffic varies between 158,000 vehicles (Sunset Boulevard/I-110 interchange) north of US-101 and 317,000 (Downtown interchanges) in the Study Area.
- **San Diego Freeway (I-405)** – major a north-south freeway that connects the San Fernando Valley and points north to the West Side of Los Angeles, and south to Long Beach and Orange County. The freeway varies between four to five lanes in each direction and has a carpool lane outside the Corridor study area south of the I-105 Freeway. Daily traffic on the I-405 Freeway varies between 265,000 vehicles (Sunset Boulevard interchange) and 333,000 (Olympic Boulevard interchange) in the Study Area.
- **Marina Freeway (SR-90)** – an east-west freeway that provides access to the Marina del Rey area from the Inglewood area to the east, and the north-south I-405 Freeway corridor. This approximately four-mile long freeway has four lanes in each direction. Daily traffic volumes range from 32,000 vehicles at the eastern terminus to 77,000 at the I-405 interchange in the western section of the Study Area.

Figures 3.2-2A and 3.2-2B illustrate the portions of the existing freeway network within the study area during the AM and PM peak hour of service, respectively, along with their respective peak hour levels of service (LOS) on freeway segments, which range from LOS A, (free flow conditions) to LOS F (jammed conditions). Given the extensive peak period congestion on many of the area freeways, Caltrans has expanded the LOS F designation to include LOS F-1, LOS F-2, LOS F-3, etc., indicating the number of hours of congested conditions (from one to three) during the peak period.

Arterial Network

The Study Area has an extensive network of arterials that follow two predominant grid patterns or systems, as illustrated earlier in Figure 3.2-1. Arterials generally to the east of La Cienega Boulevard



SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

METRO LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-1

STUDY AREA

have a north-south/east-west orientation, while the arterials to the west of La Cienega Boulevard follow a grid system that is generally parallel and perpendicular to the coast line. Approximately 60 percent of the total daily travel (in vehicle miles) in the Study Area occur on surface streets. During the evening peak hour, a total of approximately 76,000 vehicle hours of travel occur on the corridor's streets and freeways, with approximately 52,000 vehicle hours, or almost 70 percent of evening peak hour travel taking place on surface streets. The following points highlight some of the key features of the Corridor's major arterials (all volumes are two-way volumes):

<u>Major East/ West Arterials (Listed from North to South)</u>

- **Santa Monica Boulevard** – varies between two to three lanes in each direction. Existing evening peak-hour volumes vary from 1,800 vehicles (east of Vermont Ave) to 4,300 (east of Sepulveda Blvd).
- **Beverly Boulevard** – has two lanes in each direction. Current evening peak-hour volumes vary from 2,100 vehicles (east of Vermont Ave.) to 3,300 (east of La Cienega Blvd).
- **3rd Street** – has two lanes in each direction. Current evening peak-hour volumes vary from 2,400 vehicles (east of Vermont Ave.) to 2,600 (east of La Cienega Blvd).
- **Wilshire Boulevard** – varies between two and three lanes in each direction. Wilshire Blvd. carries the highest east-west traffic volumes in the Corridor, with evening peak hour volumes ranging from 2,500 to 7,600 trips, with the volumes peaking near Sepulveda Blvd. in the western portion of the Corridor.
- **Olympic Boulevard** – varies between two and three lanes in each direction. Existing evening peak-hour volumes vary from 3,300 vehicles (east of Vermont Ave.) to 4,500 (east of Sepulveda Blvd.).
- **Pico Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range from 1,600 vehicles (east of Vermont Ave.) to 3,200 (east of Sepulveda Blvd).
- **Venice Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range from 1,600 vehicles (east of Vermont Ave) to 3,700 (east of Sepulveda Blvd).
- **Washington Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range from 1,800 vehicles (east of Sepulveda Blvd) to 2,300 (east of La Cienega Blvd).
- **Jefferson Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range from 1,000 vehicles (east of Vermont Ave.) to 2,400 (east of Sepulveda Blvd).
- **Exposition Boulevard** – varies between two to three lanes in each direction. Existing evening peak hour volumes were identified as 2,200 vehicles east of Vermont Avenue.
- **Adams Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes were identified as 1,800 vehicles east of Vermont Ave.

<u>Major North-South Arterials (Listed from West to East)</u>

- **Lincoln Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range between 900 vehicles (north of Wilshire Blvd.) and 3,800 (south of Venice Blvd).
- **Bundy Drive/Centinela Avenue** – varies between two to three lanes in each direction. Existing evening peak-hour volumes range from 2,000 vehicles (north of Wilshire Blvd) and 2,900 (north of Venice Blvd).
- **Sawtelle Boulevard** – has two lanes in each direction. Existing evening peak-hour volumes were identified as 2,100 vehicles south of Venice Blvd.
- **Sepulveda Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range between 2,400 vehicles (south of Sunset Blvd) and 3,600 (north of Jefferson Blvd).
- **Overland Avenue** – varies between two to three lanes in each direction. Existing evening peak-hour volumes are 2,100 (north of Venice Blvd).
- **Culver/ Robertson Boulevards** – varies between two to three lanes in each direction. Evening peak- hour volumes range from 1,400 vehicles (south of Beverly Blvd) to 2,100 (south of Venice Blvd).
- **La Cienega Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range between 3,300 vehicles (south of Beverly Blvd) and 7,200 (north of Slauson Ave).
- **Fairfax Avenue** – varies between two to three lanes in each direction. Current evening peak-hour volumes range between 2,400 vehicles (south of Beverly Blvd) and 3,100 (north-east of La Cienega Blvd).
- **La Brea Avenue** – varies between two to three lanes in each direction. Existing evening peak-hour volumes range from 3,700 vehicles (south of Beverly Blvd) and 5,300 (south of Jefferson Blvd).
- **Highland Avenue** – varies between two to three lanes in each direction. Existing evening peak-hour volumes were identified as 3,200 vehicles south of Beverly Blvd.
- **Crenshaw Boulevard** – varies between two to three lanes in each direction. Current evening peak-hour volumes range between 2,700 vehicles (north of Slauson Ave) and 3,200 (south of Venice Blvd).
- **Wilton Place/Arlington Avenue** – has two lanes in each direction. Current evening peak-hour volumes range between 1,200 vehicles (north of Slauson Ave) and 2,800 (south of Venice Blvd).
- **Western Avenue** – varies between two to three lanes in each direction. Current evening peak-hour volumes range between 2,100 vehicles (south of Venice Blvd) and 2,400 (south of Beverly Blvd).
- **Normandie Avenue** – varies between two to three lanes in each direction. Current evening peak-hour volumes range between 1,900 vehicles (south of Beverly Blvd) and 2,500 (north of Slauson Ave).

- **Vermont Avenue** – varies between two to three lanes in each direction. Existing evening peak-hour volumes range from 1,700 vehicles (north of Slauson Ave) to 2,800 (south of Beverly Blvd).
- **Hoover St/Alvarado St** – varies between two to three lanes in each direction. Existing evening peak-hour volumes range from 1,500 vehicles (south of Venice Blvd) to 2,700 (south of Beverly Blvd).
- **Figueroa Street** – varies between two to three lanes in each direction. Current evening peak-hour volumes range from 2,200 vehicles (south of Venice Blvd) to 2,800 (north of Slauson Ave).

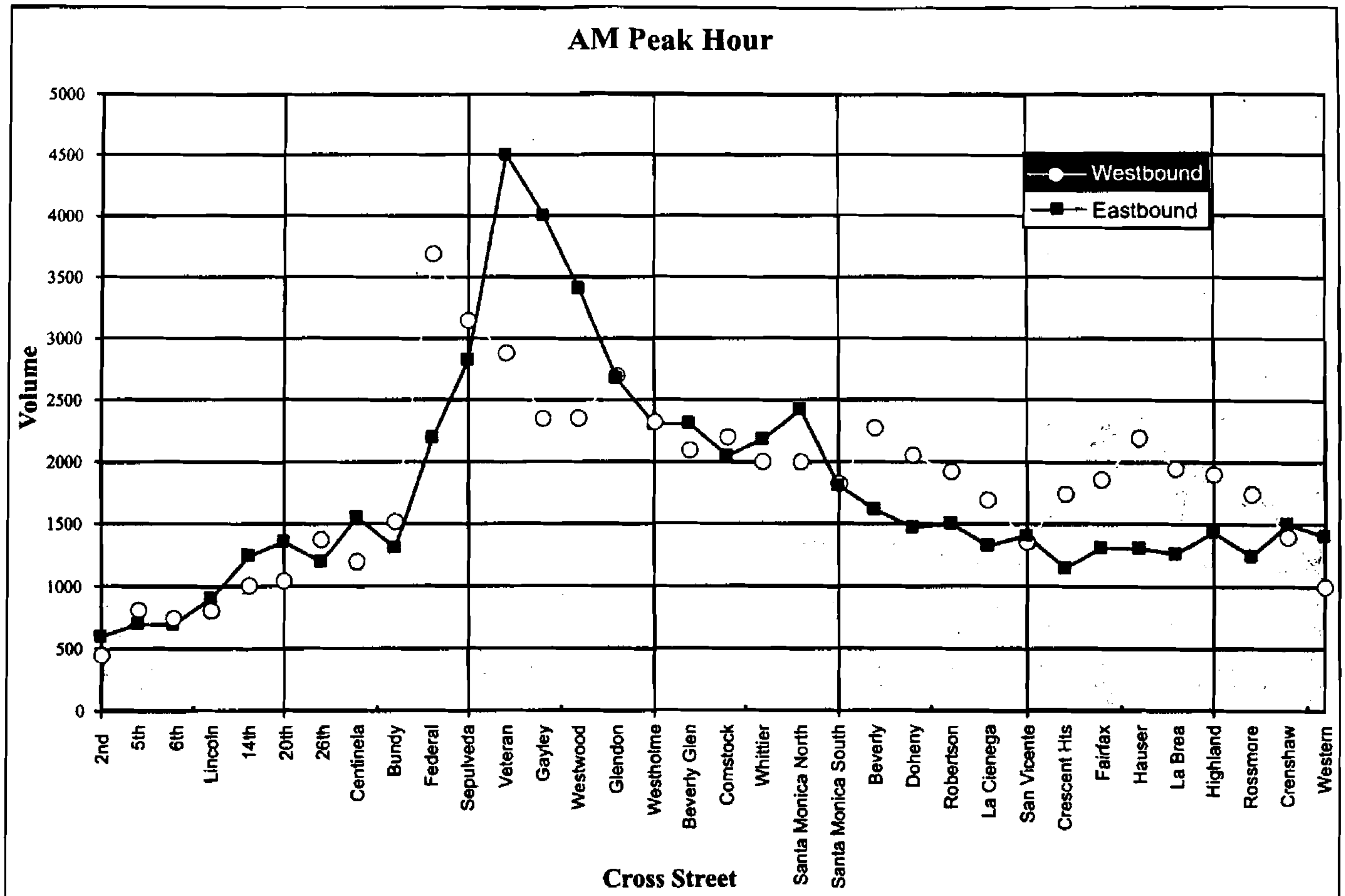
Recent detailed traffic counts were collected as part of this study at 33 intersections along Wilshire Boulevard. Figure 3.2-3 illustrates the variation of AM and PM peak hour approach volumes, by direction, at the various intersections along Wilshire Boulevard throughout the Corridor. The figures show that the highest AM peak volume is about 4,500, eastbound, which is recorded at Veteran, while the highest PM peak hour volume is about 3,500 westbound, observed at Sepulveda. The graphs clearly show that in both peaks, the traffic volumes start from about 1,500 vehicles per hour in Downtown Los Angeles, gradually increase from east to west and peak sharply to 3,000 to 4,500 vehicles per hour levels in Westwood. Then the volumes drop off significantly west of the I-405 Freeway, as a large volume of traffic gets on or off the freeway. West of the I-405, the volumes gradually decrease to about 500-1,000 vehicles per hour at the western end of Santa Monica.

While the controlling factor, in terms of network capacity, in an arterial street system is generally the level of congestion at signalized intersections, mid-block segments can also reach capacity if there are not enough through lanes to carry the traffic demand. Figures 3.2-4 and 3.2-5, illustrate the locations where the existing roadways are at capacity in the AM and PM peak periods, respectively. The mid-block segments (links) shown in bold-face in the two figures are those which currently operate at levels of service E or F during the two peaks. The existing arterial segment congestion is relatively spread-out over most of the study area's major arterials, with no major differences between links that are congested in AM or PM peaks. Congestion patterns are more pronounced on arterials north of the I-10 Freeway and east of the I-405 Freeway. East of Fairfax Avenue, north-south arterials appear to be relatively more congested than the east-west arterials. South of the I-10 Freeway, the congested arterial segments are less continuous and are mostly concentrated between Crenshaw Boulevard and Culver Boulevard.

Intersection Levels of Service

A total of 158 intersections within the immediate vicinity of the transit corridors were selected for detailed level of service analysis in this study. These intersections were chosen in consultation with the City of Los Angeles Department of Transportation (LADOT) and other local jurisdiction agencies. They represent key intersections that are directly along the Wilshire and Exposition corridor alignments, would potentially be affected by a nearby transit crossing, or are on a major access route to a planned park-and-ride station. The selection of intersections was made based on proximity to the transit alignment, potential travel pattern orientation, access routes and expected levels of auto access activity at each station. These intersections are illustrated in Figure 3.2-6.

Detailed AM and PM peak period turning movement ground counts were compiled for all existing study intersections, from existing recent data available through the LADOT computerized data files and at other Cities (Beverly Hills, Culver City and Santa Monica), and new data collected during



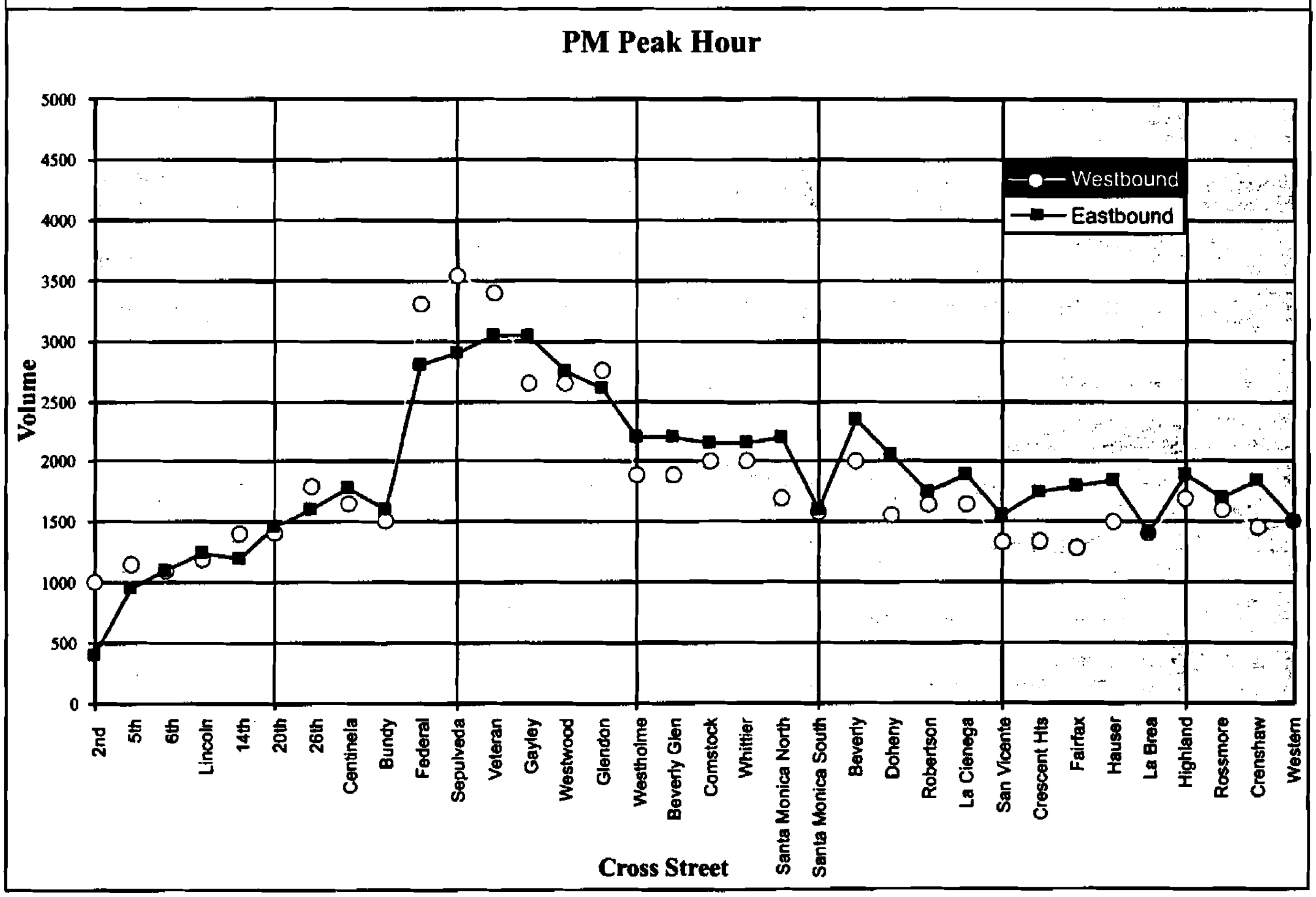
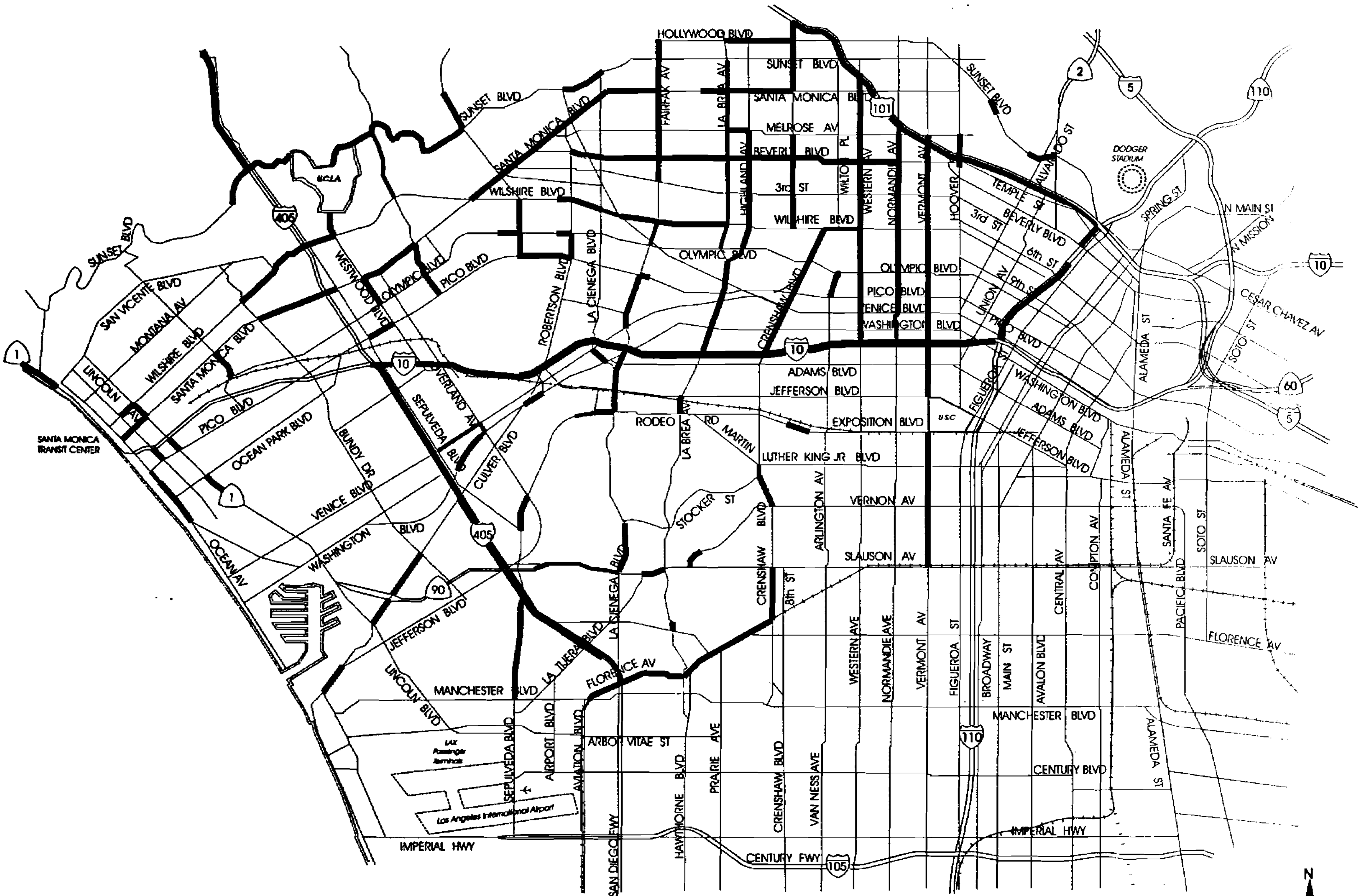


FIGURE 3.2-3
EXISTING VOLUMES ON WILSHIRE BOULEVARD AT STUDY INTERSECTIONS



SOURCE: Meyer, Mohaddes Associates, Inc.

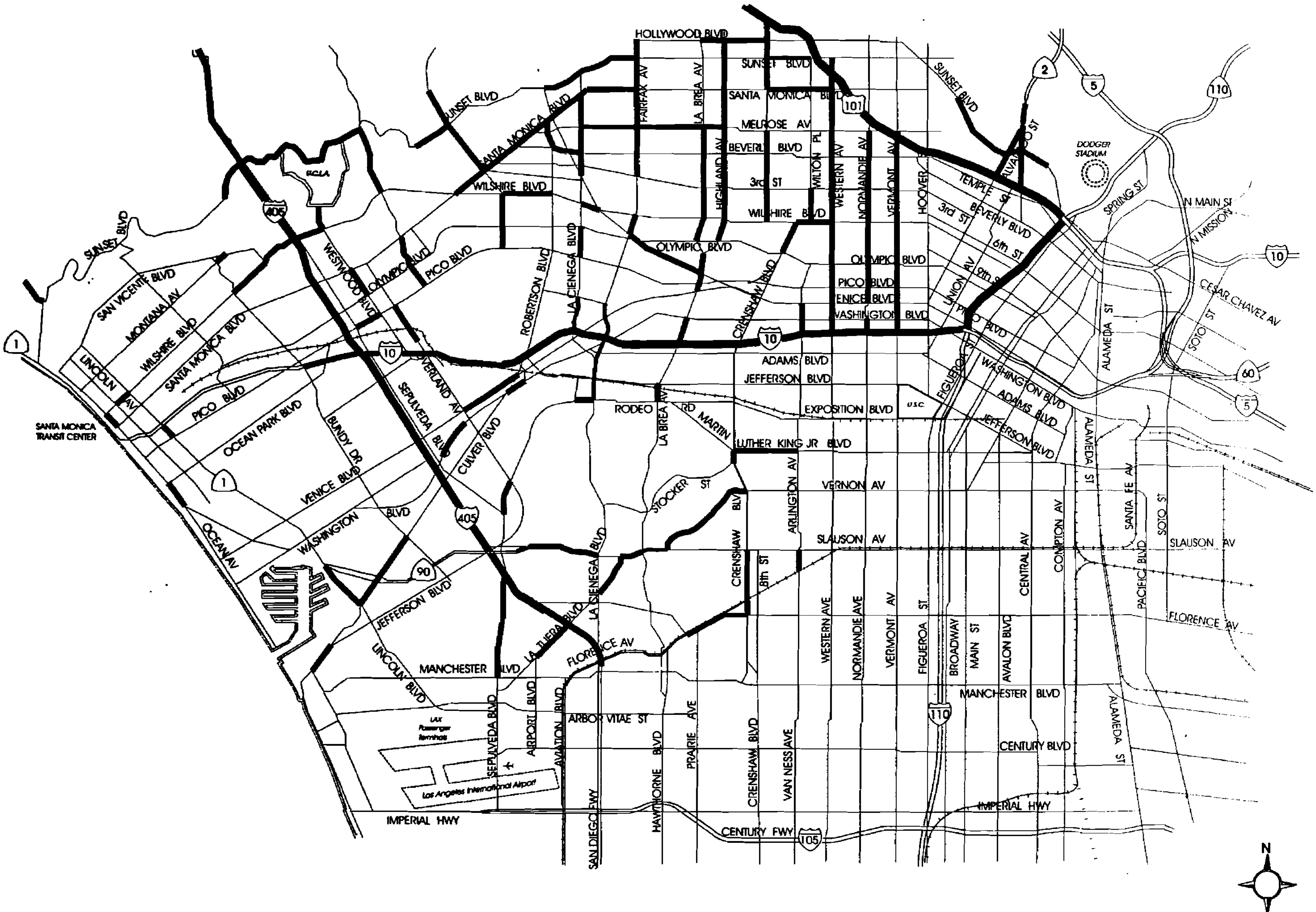
Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-4

1998 EXISTING AM PEAK HOUR

ARTERIAL SEGMENTS WITH LOS E OR F



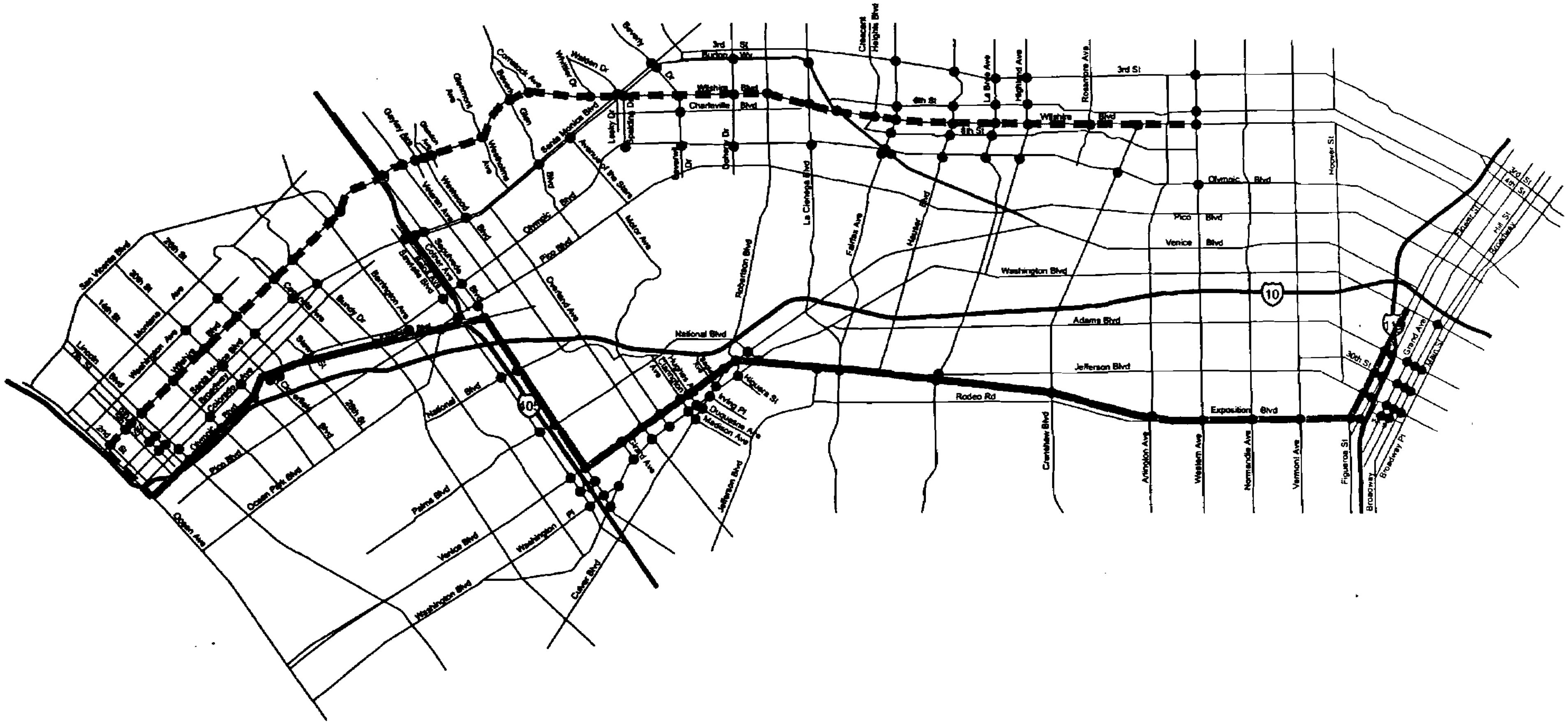
SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-5

1998 EXISTING PM PEAK HOUR ARTERIAL SEGMENTS WITH LOS E OR F



LEGEND:

● Study Intersection

▬▬ Exposition BRT and LRT

▬ ▬ ▬ Wilshire Blvd BRT

SOURCE: Meyer, Mohaddes Associates, Inc.

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.2-6

ARTERIAL STUDY INTERSECTIONS

July/August of 2000 at locations where current data was not available. All traffic count data was summarized per the LADOT specified traffic count format. The summertime counts were increased by an average of three percent to reflect typical fall conditions. Current conditions at each study intersection were analyzed using the Operational Analysis Methodology of the 1997 Highway Capacity Manual (HCM). The Operations Analysis Methodology results in a rating of conditions at an intersection based on the average number of seconds of delay experienced by motorists traveling through the intersection. Level of service ranges from Level A, free flow conditions, to Level F (jammed conditions), with top of Level E representing theoretical capacity. Detailed signal timing and phasing information was obtained from LADOT and other agencies and was used as inputs to the intersection analysis. Weekday AM and PM peak hours were selected by agencies for analysis because they represent the most critical periods of traffic congestion along the Wilshire and Expositions corridors compared to other time periods such as weekday or weekend mid-day.

The results of the intersection operating conditions analysis, with levels of service and average delay for each peak period, are included in the Traffic Analysis Report. Among the 158 existing study intersections, 130 are presently operating at acceptable LOS D or better conditions. Only 28 intersections are currently operating at LOS E or F during the morning and/or evening peak periods, as listed in Table 3.2-1.

TABLE 3.2-1
EXISTING 2000 CONDITIONS
STUDY AREA INTERSECTIONS OPERATING AT LOS E/F

	LOS E		LOS F	
Intersection	**AM**	**PM**	**AM**	**PM**
Lincoln Blvd /Olympic Blvd	X	X		
20th Street /Colorado Ave		X		
Bundy Dr / Exposition Blvd			X	
Barrington Ave /Exposition Blvd			X	X
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X
Sawtelle Blvd /Olympic Blvd	X			
Sawtelle Blvd /I-405 Southbound			X	X
Sawtelle Blvd /Venice Blvd		X	X	
Sepulveda Blvd /Wilshire Blvd		X		
Sepulveda Blvd /National Blvd	X			X
Sepulveda Blvd /Palms Blvd				X
Sepulveda Blvd /Venice Blvd		X	X	
Veteran Ave /Wilshire Blvd			X	X
Westwood Blvd/Santa Monica Blvd		X		
Glendon Ave/Wilshire Blvd			X	X
Santa Monica Blvd/Wilshire Blvd			X	X
S Santa Monica Blvd/Wilshire Blvd			X	X
Doheny Dr /Olympic Blvd		X		
Highland Ave /Olympic Blvd		X	X	
Rossmore Ave /Wilshire Blvd	X	X		
Washington Blvd /Washington Pl		X		
Motor Ave/Venice Blvd		X		
Culver Blvd/Main St/Washington Blvd			X	X
Robertson Blvd /Venice Blvd			X	X

TABLE 3.2-1 EXISTING 2000 CONDITIONS STUDY AREA INTERSECTIONS OPERATING AT LOS E/F				
	LOS E		LOS F	
Intersection	**AM**	**PM**	**AM**	**PM**
National Blvd /Venice Blvd			X	X
La Brea Ave /Exposition Blvd			X	X
Western Ave /Exposition Blvd			X	
Vermont Ave /Exposition Blvd			X	
Source: MMA 2000.				

Transit Services

The public transit system serving the study area is comprised of an integrated system of rail and bus transit services. An overview of the existing Mid-City/Westside Study Area bus service operators and routes by Corridor service area is presented in Table 3.2-2. This table includes stops in the study area, total stops, and number of daily transit boardings in the study area.

Within the Study Area, rail transit service is provided by the 22-mile Metro Red Line system operated by the Los Angeles County Metropolitan Transportation Authority (LACMTA or MTA). This heavy rail subway service connects Downtown Los Angeles westerly to the Mid-Wilshire area, with a current terminus at Wilshire Boulevard/Western Avenue, and northwesterly to Hollywood, and then northerly into the San Fernando Valley. In Downtown Los Angeles, the Metro Red Line provides connections to the Metro Blue Line (at Seventh/Metro Station) operating south through southeast Los Angeles to Long Beach, and to the Metrolink commuter rail system, to multiple regional directions, at Union Station. Connections to the Metro Green Line, operating from Norwalk past LAX to the beach communities, can be made via the Metro Blue Line. Future Metro Rail extensions may provide connections to East Los Angeles, as well as to Pasadena and the San Gabriel Valley.

Regional fixed route bus transit service is primarily provided by the MTA along with several municipal operators including Santa Monica and Culver City municipal bus lines. The Los Angeles Department of Transportation (LADOT) and Santa Monica Bus Lines provide commuter express service within the Study Area and to Downtown Los Angeles. Express service typically runs along the Santa Monica Freeway (I-10) from the Westside to Downtown Los Angeles, or along Olympic Boulevard connecting Downtown to Century City. As of June 2000, MTA initiated operations of a regional bus service, the Metro Rapid Bus System, along Wilshire and Whittier boulevards from East Los Angeles to Santa Monica. Foothill Transit operates three routes connecting San Gabriel Valley travelers to the Wilshire Boulevard corridor. Culver City Bus Lines (City Bus) and Santa Monica Municipal Bus Lines (Big Blue Bus) provide local bus service. The fixed route bus system is complemented by community connectors, including LADOT DASH routes, smart shuttle and paratransit services (for transit dependent seniors and handicapped individuals).

The Wilshire Boulevard Transit Corridor is currently served by the Metro Red Line with riders then transferring to MTA Metro Bus Rapid (Route 720) which provides limited stop service to complete their trips to west side destinations. Route 720 provides limited stop service along the entire Wilshire Boulevard segment within the Study Area. MTA Routes 20, 21 and 22 provide local service along Wilshire Boulevard from Downtown Los Angeles to Santa Monica. Foothill Transit operates

Route 481, which provides service along Wilshire Boulevard to a terminus at Wilshire/Western for San Gabriel Valley commuters. Foothill Transit Routes 492 and 494 provide service along Wilshire Boulevard to Wilshire/Union.

No bus lines currently serve the proposed Exposition Boulevard Transit Corridor in its entirety. Between Downtown Santa Monica and the San Diego Freeway, MTA Route 434 and Santa Monica Bus Lines Route 7 are the primary routes. MTA Routes 14/37, 38, and 102 are the primary routes between La Cienega Boulevard and the University of Southern California.

Based on the census data, 41 percent of all work transit trips in Los Angeles County originate in the study area. The remaining 59 percent originate at various points in the County and may potentially run through the study area. West LA (as defined by this report) contains 18 percent of Los Angeles County's population, implying that the transit needs of West LA are higher than the service presently provided.

In addition to the high transit mode split of 14 percent, the Study Area has a significantly higher use of transit than the rest of Los Angeles County. This demand warrants a much higher percentage of transit investment than it has received in the last fifteen years.

As seen in Table 3.2-2, there are currently over 119,000 daily boardings on the bus lines generally along the Wilshire Boulevard Corridor and nearly 76,000 daily boardings on the bus lines generally along the Martin Luther King Boulevard Corridor.

TABLE 3.2-2
BOARDINGS ALONG MID-CITY/WESTSIDE TRANSIT CORRIDORS

Route Number	Study Area # Stops	Total # Stops	Study Area Boardings
Wilshire Corridor			
14/37	6	8	16,309
16	5	7	17,869
20/212/22/320/322	14	14	37,851
27/28/328	6	7	28,977
316	8	10	870
S5	27	27	2,581
S7	34	34	15,030
TOTALS			**119,487**
Exposition/Martin Luther King Corridor			
14/37	6	8	16,309
33	5	7	15,711
38	4	6	6,008
102	4	6	627
105	6	8	12,093
434	6	11	1,269
436	9	11	261
439	4	13	649
S7	6	6	15,030
S8	6	6	6,076
S10	4	7	1,290
LX430	7	9	60

TABLE 3.2-2 BOARDINGS ALONG MID-CITY/WESTSIDE TRANSIT CORRIDORS			
Route Number	**Study Area # Stops**	**Total # Stops**	**Study Area Boardings**
LX431	6	8	133
LX437	6	8	97
LX438	6	9	215
TOTALS			**75,828**
Source: West Los Angeles Transit Corridor Technical Report, SCAG, August 1998.			

Since the implementation of the Metro Rapid Bus (Metro Rapid-Line #720 replacement of Routes 320/322) on Wilshire Boulevard, ridership along the Wilshire Corridor has increased substantially. Boardings on Line 720, which includes the Mid-City/Westside area as well as the eastern half of the route on Whittier Boulevard in East Los Angeles have increased by more than 25 percent, since the initiation of the Metro Rapid Bus service.

Goods Movement

Goods movement in the Mid-City/Westside Study Area is primarily highway-related and occurs on the area's freeway and arterial system. With the exception of designated truck routes and private warehousing/terminal operations, there are no major freight facilities located within the Corridor. The Los Angeles International Airport (LAX) provides extensive freight shipment via regularly scheduled airline and cargo operations. LAX currently handles 78 percent of the air cargo in the five-county southern California region, with more than 50 percent of the air cargo destined for international airports.

Study Area freeways currently carry high volumes of truck traffic, with truck activity concentrated in the eastern and southern portions of the Corridor related to Downtown Los Angeles industrial and warehouse areas and LAX. Within the City of Los Angeles, truck activity is allowed on all streets unless otherwise posted such as on the residential portions of Highland Avenue.

Regional rail freight activity is concentrated east of the Study Area along the Alameda Corridor, which connects the Los Angeles and Long Beach ports area with Downtown Los Angeles distribution facilities, and then to points to the north along the West Coast and east to the Mid-West. Study Area railroad rights-of-way, including the former Southern Pacific rail right-of-way located in the median of Exposition Boulevard, are now owned by LACMTA and have been preserved for future passenger transportation improvements. The Exposition Corridor has previously been studied by the MTA as a potential light rail line. The former Santa Fe rail right-of-way located along Slauson Avenue (running west from Downtown Los Angeles, through Inglewood and then south along Aviation Boulevard at the eastern edge of LAX), has also been purchased by LACMTA. Utilization of a portion of this rail right-of-way was studied for transit use through the *Crenshaw Corridor Route Refinement Study*.

Transportation Centers and Hubs

Though the Study Area is well served by an extensive network of bus and rail transit services, there are few supporting transportation system facilities, such as transit centers and park-and-ride lots. The only transit center located within the Corridor is located near the intersection of Pico and San Vicente Boulevards in the City of Los Angeles. The Rimpau Transit Center at Pico Boulevard and

Rimpau Boulevard provides bus boarding, transfer and layover space for MTA, Santa Monica and Culver City buses. Bus service interface is provided at all of the Metro Red Line stations along Wilshire Boulevard, but only the Wilshire/Western station has off-street space for bus and shuttle interface and layover needs. Santa Monica is currently implementing an improved transit hub in its downtown area on Broadway and Santa Monica Boulevard. The only public park-and-ride lot provided within the Study Area is located at the Federal Office Building in Westwood adjacent to the I-405 Freeway. This facility is more locally based and primarily provides parking for people who then use shuttle service to circulate to Westwood destinations. Two churches provide weekday park-and-ride facilities along Manchester Avenue in the vicinity of LAX. Immediately adjacent to the Study Area, transit centers and park-and-ride lots have been developed associated with the Metro Green Line and the I-110 Freeway/ Transitway projects.

Other Access

The purpose of the City of Los Angeles General Plan Bicycle Plan (part of Transportation Element) is to provide a guide for the development of a citywide bicycle transportation system. The adopted Plan seeks to reduce the barriers to the greater utilization of bicycles for both personal transportation and recreation, with a particular emphasis placed on bicycling as a commute option. The City Plan identifies three classes of bikeways: 1) Class I - bike paths; 2) Class II - bike lanes; and 3) Commuter Bikeways. Route locations shown on the Bicycle Plan Bikeways Map on Figure 3.2-7, are specific to designated public streets and rights-of-way. Within the Study Area the following streets are designated as Class I bike paths:

- Exposition Boulevard
- Slauson Avenue
- Culver Boulevard
- Pacific Avenue
- Pacific Coast Highway/Vista del Mar
- Sepulveda Boulevard
- Manchester Avenue
- Florence Avenue
- Santa Monica Boulevard

The following streets are designated as Class II bike paths:

- Venice Boulevard
- La Brea Avenue
- Washington Boulevard
- Centinela Avenue
- San Vicente Boulevard
- Montana Avenue
- Sepulveda Boulevard

TABLE 3.2-28
AUTO TRIP GENERATION
ALTERNATIVE 2A EXPOSITION BRT MOS STATIONS

Exposition BRT Station	Totals	Mode of Access		Auto Access	
		Walk/Transit	Auto	PNR	KNR
Seventh/Flower	2,158	2,050	108		108
Figueroa/Pico	768	730	38		38
Figueroa/Adams	988	939	49		49
Figueroa/Jefferson	3,332	3,153	179		179
Vermont	2,299	2,184	115		115
Western	2,075	1,971	104		104
Crenshaw	3,422	3,086	336	165	171
La Brea	1,206	1,105	101	41	60
La Cienega	2,070	1,603	467	363	104
National/Hayden	593	563	30		30
Totals	**18,911**	**17,384**	**1,527**	**569**	**958**

Source: MMA 2000

Station access traffic was distributed to the roadway system for each station area based on travel demand model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic volume turning movements at study area intersections were added to the 2020 background traffic volumes specifically developed for Alternative 2A using the arterial growth factors discussed in previous sections.

Detailed discussions were held with Beverly Hills, Culver City, Santa Monica, and Los Angeles Department of Transportation staff to identify the likely traffic signal operational characteristics and scenarios for the implementation of the Wilshire BRT and Exposition BRT MOS systems. Issues such as signal priority, cycle and phasing modifications, additional protective phasing for turns, loss time and other operational details were discussed. Based on these discussions, and directions from these cities, specific signal timing as well as geometric modifications were assumed at study intersections which are along and/or immediately adjacent to the BRT alignments. These include items such as:

- Additional clearance time for streets to clear traffic across the BRT alignments.
- Additional left and right turn phases to stop the turning vehicles from turning across the BRT alignments.
- Other modifications to adjacent signals to account for BRT signal priority treatments.

The above operational and physical modifications were made and assumed to be part of the project for Alternative 2A and are reflected in intersection levels of service calculations for this alternative. All locations where dual left-turn lanes were affected in Alternative 1 were also affected under Alternative 2A.

For Alternative 2A, a review of Table 3.2-29 on the next page shows 47 intersections are projected to operate at LOS E or worse during the peak hours along both corridors. Based on a comparison to No-Build conditions, using the significant impact criteria, it can be seen that Alternative 2 can be expected to significantly affect 33 intersections. Table 3.2-29 indicates the intersections projected to operate at LOS E or F and which are significantly impacted by Alternative 2A.

Based on Table 3.2-29, most of the significantly impacted intersections are concentrated in Culver City and along Interstate 405 and along Wilshire Boulevard in the Westwood area. Also, most intersections immediately adjacent to stations experience significant impacts. This can be attributed to the large number of projected auto access trips to the two BRT alignments. Additionally, it could be partially attributed to the large number of intersections that are already at LOS E or F with the No Action Alternative.

TABLE 3.2-29
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
WILSHIRE BRT/EXPOSITION BRT MOS ALTERNATIVE

	LOS E		LOS F		
Intersection	**AM**	**PM**	**AM**	**PM**	**Impact**
Lincoln Blvd /Olympic Blvd	X			X	Y
20th Street /Colorado Ave				X	Y
Bundy Dr /Wilshire Blvd	X				Y
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X	Y
Sawtelle Blvd /Olympic Blvd		X	X		Y
Sawtelle Blvd /I-405 Southbound			X	X	Y
Sawtelle Blvd /Pico Blvd		X			N
Sawtelle Blvd /National Blvd			X	X	Y
Sawtelle Blvd /Palms Blvd	X			X	Y
Sawtelle Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Wilshire Blvd	X			X	Y
Sepulveda Blvd /Santa Monica Blvd	X	X			Y
Sepulveda Blvd /Olympic Blvd		X			Y
Sepulveda Blvd /Pico Blvd	X			X	Y
Sepulveda Blvd /National Blvd			X	X	Y
Sepulveda Blvd /Palms Blvd	X			X	Y
Sepulveda Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Washington Pl		X			Y
Veteran Ave /Wilshire Blvd			X	X	Y
Westwood Blvd /Wilshire Blvd		X	X		Y
Westwood Blvd/Santa Monica Blvd				X	Y
Ave of Stars /Santa Monica Blvd				X	N
Whittier Dr /Wilshire Blvd		X			Y
Santa Monica Blvd /Wilshire Blvd			X	X	N
S Santa Monica Blvd/Wilshire Blvd			X		N
Spalding Dr /Olympic Blvd		X			Y
Beverly Dr /Wilshire Blvd		X			N
Doheny Dr /Olympic Blvd		X			N
La Cienega Blvd /Wilshire Blvd		X			Y
Fairfax Ave /3rd Street		X			N
Hauser Blvd /6th Street				X	Y
Highland Ave /6th Street	X				Y

TABLE 3.2-29 LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS WILSHIRE BRT/EXPOSITION BRT MOS ALTERNATIVE					
	LOS E		LOS F		
Intersection	**AM**	**PM**	**AM**	**PM**	**Impact**
Highland Ave /Olympic Blvd			X	X	N
Rossmore Ave /Wilshire Blvd					N
Washington Blvd /Washington Pl			X	X	Y
Motor Ave /Venice Blvd	X	X			N
Culver Blvd/Main St/Washington Blvd			X	X	Y
Culver Blvd /Venice Blvd	X			X	Y
Robertson Blvd /Venice Blvd			X	X	Y
National Blvd /Venice Blvd			X	X	Y
National Blvd /Washington Blvd		X			N
La Cienega Blvd /Jefferson Blvd				X	Y
La Brea Ave /Exposition Blvd			X	X	Y
Arlington Ave /Exposition Blvd		X	X		Y
Western Ave /Exposition Blvd	X				N
Vermont Ave /Exposition Blvd			X		N
Figueroa Street /Adams Blvd		X			N
Source: MMA 2000					

h. Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

As described in detail in the project description, this alternative assumes the operation of buses within exclusive bus lanes in the median along Wilshire Boulevard between Ocean Avenue in Santa Monica to Western Avenue in Mid City Los Angeles. On Ocean Avenue, the buses would operate on street to the Santa Monica Transit Center. Additionally, this alternative assumes a light rail line in operation within the exclusive Exposition ROW between Ocean Avenue in Santa Monica and Sepulveda Boulevard in the west, and Venice Boulevard and Hill Street in the east. The LRT will run in the median of Venice Boulevard and Sepulveda Boulevard between the two ROW portions. The LRT will also run down the center of Hill Street to Washington Boulevard, where it will connect with the Long Beach Blue Line to the 7th Street/Metro Center station. Additionally, the light rail will run in the median and in mixed flow traffic along Olympic Boulevard in Santa Monica between Lincoln Boulevard and 20th Street.Auto access trips for each BRT and LRT station were developed from mode of access data derived from the MTA model. Daily ridership park-and-ride and kiss-and-ride trips were calculated for each station and assigned to the roadway network. Daily trip generation for each station is summarized in Table 3.2-30 for the Wilshire BRT stations and in Table 3.2-31 for the Exposition LRT stations.

TABLE 3.2-30 AUTO TRIP GENERATION ALTERNATIVE 3 WILSHIRE BRT			
Wilshire BRT Station		**Mode Choice**	
	Total	**Walk/Bus**	**Auto**
Wilshire/4th	1,462	1,367	95
Wilshire/14th	2,072	1,968	104
Bundy	2,424	2,303	121

TABLE 3.2-30 AUTO TRIP GENERATION ALTERNATIVE 3 WILSHIRE BRT			
Wilshire BRT Station	**Total**	**Mode Choice**	
		Walk/Bus	**Auto**
Barrington	1,226	1,091	135
Westwood Village	5,222	4,598	624
Santa Monica	1,824	1,681	143
Beverly	1,642	1,560	82
Robertson	1,842		92
La Cienega	2,100	1,995	105
Fairfax	2,555	2,413	142
La Brea	2,863	2,720	143
Crenshaw	1,583	1,125	458
Western	5,733	5,446	287
Totals	**32,548**	**28,267**	**2,531**
Source: MMA 2000			

TABLE 3.2-31 AUTO TRIP GENERATION ALTERNATIVE 3 EXPOSITION LRT					
Exposition LRT Station	**Totals**	**Mode of Access**		**Auto Access**	
		Walk/Transit	**Auto**	**PNR**	**KNR**
Seventh/Flower	8,146	7,739	407		407
Pico/Flower	3,608	3,428	180		180
Washington/Grand	2,000	1,900	100		100
I-110/USC/Exposition Park	1,542	1,465	77		77
Vermont	2,093	1,988	105		105
Western	2,226	2,105	121		121
Crenshaw	3,327	2,761	566	400	166
La Brea	2,623	2,451	172	41	131
La Cienega	1,370	925	445	363	82
Venice/Washington	2,197	1,201	996	586	410
Venice/Overland	1,332	1,160	172		172
Venice/Sepulveda	3,393	3,223	170		170
Sepulveda/National	2,165	2,025	140		140
Pico/Sawtelle	4,776	3,975	801	562	239
Bundy	2,781	2,408	373	233	140
Cloverfield	4,214	3,381	833	622	211
Ocean/Colorado	3,646	3,362	284	100	184
Totals	**51,439**	**45,497**	**5,942**	**2,907**	**3,035**
Source: MMA 2000					

Station access traffic was distributed to the roadway system for each station area based on travel demand model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic volume turning movements at study area intersections were added to the 2020 background traffic volumes specifically developed for Alternative 3 using the arterial growth factors discussed in previous sections.

Detailed discussions were held with Beverly Hills, Culver City, Santa Monica, and Los Angeles Department of Transportation staff to identify the likely traffic signal operational characteristics and scenarios for the implementation of the Wilshire BRT and Exposition LRT systems. Issues such as signal priority, cycle and phasing modifications, additional protective phasing for turns, loss time and other operational details were discussed. Based on these discussions, and directions from these cities, specific signal timing as well as geometric modifications were assumed at study intersections which are along and/or immediately adjacent to the BRT and LRT alignments. These include items such as:

- Additional clearance time for streets to clear traffic across the BRT/LRT alignments.
- Additional turn phases to stop the turning vehicles from turning across the BRT/LRT alignments.
- Other modifications to adjacent signals to account for BRT/LRT signal priority treatments.

The above operational and physical modifications were made and assumed to be part of the project for Alternative 3 and are reflected in intersection levels of service calculations for this alternative. In addition to the locations where dual left-turn lanes were affected by Alternative 1, the following locations had changes to existing dual left-turn lanes as a result of Alternative 3:

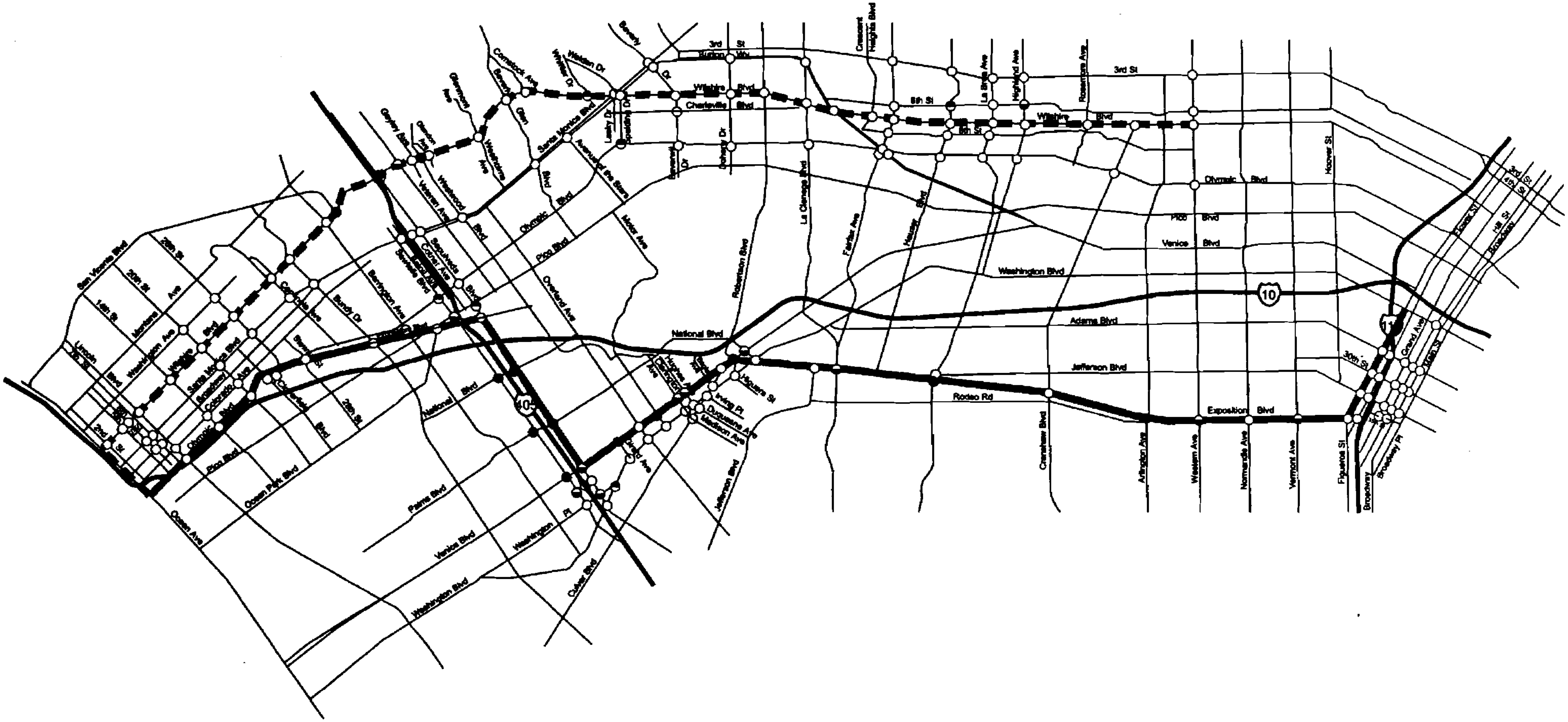
- Culver Boulevard at Venice Boulevard, one left-turn lane westbound
- Figueroa Boulevard at Exposition Boulevard, one left-turn lane eastbound

For Alternative 3, a review of Table 3.2-32 shows 36 intersections are projected to operate at LOS E or worse during the peak hours along both corridors. Based on a comparison to No-Build conditions, using the significant impact criteria, it can be seen that Alternative 3 can be expected to significantly affect 31 intersections. Table 3.2-32 indicates the intersections projected to operate at LOS E or F and which are significantly impacted by Alternative 3. These locations are illustrated in Figure 3.2-19.

Based on Table 3.2-32, most of the significantly impacted intersections are concentrated in Culver City and along Interstate 405. Also, most intersections immediately adjacent to intersections experience significant impacts. This can be attributed to the large number of projected auto access trips to the BRT and LRT stations. Additionally, it could be partially attributed to the large number of intersections that are already at LOS E or F with the No Action Alternative.

i. Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

As described in detail in the project description, this alternative assumes the operation of buses within exclusive bus lanes in the median along Wilshire Boulevard between Ocean Avenue in Santa Monica to Western Avenue in Mid City Los Angeles. On Ocean Avenue, the buses would operate on street to the Santa Monica Transit Center. Additionally, this alternative assumes a light rail line in operation within the exclusive Exposition ROW between Venice Boulevard in Culver City and Hill Street in Los Angeles. The LRT will also run down the center of Hill Street to Washington Boulevard, where it will connect with the Long Beach Blue Line to the 7th Street/Metro Center station.



LEGEND:

- No Impact
- Impacted AM Peak Hour
- Impacted PM Peak Hour
- Impacted Both Peak Hours
- Exposition BRT And LRT
- Wilshire Blvd BRT

SOURCE: Meyer, Mohaddes Associates, Inc.

FIGURE 3.2-19

WILSHIRE BRT AND EXPOSITION LRT IMPACTED INTERSECTIONS

TABLE 3.2-32
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
WILSHIRE BRT/EXPOSITION LRT ALTERNATIVE

Intersection	LOS E		LOS F		Impact
	AM	PM	AM	PM	
Lincoln Blvd /Olympic Blvd	X	X			N
San Vicente Blvd/Federal Ave/Wilshire Blvd			X	X	Y
20th Street /Colorado Ave				X	N
Sawtelle Blvd /Olympic Blvd		X	X		Y
Sawtelle Blvd /I-405 Southbound			X	X	Y
Sawtelle Blvd /Pico Blvd				X	Y
Sawtelle Blvd /National Blvd			X	X	Y
Sawtelle Blvd /Palms Blvd			X	X	Y
Sawtelle Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Wilshire Blvd	X			X	Y
Sepulveda Blvd /Pico Blvd			X	X	Y
Sepulveda Blvd /National Blvd			X	X	Y
Sepulveda Blvd /Palms Blvd	X			X	Y
Sepulveda Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Washington Pl		X			Y
Veteran Ave /Wilshire Blvd			X	X	Y
Westwood Blvd /Wilshire Blvd		X	X		Y
Whittier Dr /Wilshire Blvd		X			Y
Spalding Dr /Olympic Blvd		X			Y
Hauser Blvd /6th Street				X	Y
Highland Ave /6th Street	X				Y
Washington Blvd /Washington Pl			X	X	Y
Girard Ave /Venice Blvd	X			X	Y
Motor Ave /Venice Blvd			X	X	Y
Clarington Ave /Venice Blvd		X			Y
Hughes Ave /Venice Blvd		X			Y
Culver Blvd /Main St, Washington			X	X	N
Culver Blvd /Venice Blvd	X	X			N
Robertson Blvd /Venice Blvd			X	X	Y
National Blvd /Venice Blvd			X	X	Y
La Cienega Blvd /Jefferson Blvd				X	Y
La Brea Ave /Exposition Blvd			X	X	Y
Arlington Ave /Exposition Blvd		X	X		Y
Western Ave /Exposition Blvd	X	X			Y
Vermont Ave /Exposition Blvd		X	X		Y
Figueroa Street /Adams Blvd		X			N

Source: MMA 2000

Auto access trips for each BRT and LRT station were developed from mode of access data derived from the MTA model. Daily ridership park-and-ride and kiss-and-ride trips were calculated for each station and assigned to the roadway network. Daily trip generation for each station is summarized in Table 3.2-33 for the Wilshire BRT stations and in Table 3.2-34 for the Exposition LRT stations.

TABLE 3.2-33
AUTO TRIP GENERATION
ALTERNATIVE 3A WILSHIRE BRT

Wilshire BRT Station	Total	Mode Choice	
		Walk/Bus	Auto
Wilshire/4th	1,501	1,433	68
Wilshire/14th	2,778	2,711	67
Bundy	2,385	2,254	131
Barrington	1,558	1,394	164
Westwood Village	6,272	5,574	698
Santa Monica	2,043	1,943	100
Beverly	1,640	1,545	95
Robertson	1,980		102
La Cienega	2,320	2,209	111
Fairfax	2,565	2,423	142
La Brea	2,831	2,712	119
Crenshaw	1,555	1,308	247
Western	8,872	8,762	110
Totals	**38,300**	**34,268**	**2,154**

Source: MMA 2000

TABLE 3.2-34
AUTO TRIP GENERATION
ALTERNATIVE 3A EXPOSITION LRT MOS

Exposition LRT Station	Totals	Mode of Access		Auto Access	
		Walk/Transit	Auto	PNR	KNR
Seventh/Flower	6,424	6,103	321		321
Pico/Flower	2,932	2,785	147		147
Washington/Grand	1,769	1,681	88		88
I-110/USC/Exposition Park	1,382	1,313	69		69
Vermont	1,928	1,832	96		96
Western	2,023	1,917	106		106
Crenshaw	3,098	2,543	555	400	155
La Brea	2,533	2,346	187	41	146
La Cienega	1,288	853	435	363	72
Venice/Washington	3,802	2,700	1,102	612	490
Totals	**27,179**	**24,073**	**3,106**	**1,416**	**1,690**

Source: MMA 2000

Station access traffic was distributed to the roadway system for each station area based on travel demand model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic volume turning movements at study area intersections were added to the 2020 background traffic volumes specifically developed for Alternative 3A using the arterial growth factors discussed in previous sections.

Detailed discussions were held with Beverly Hills, Culver City, Santa Monica, and Los Angeles Department of Transportation staff to identify the likely traffic signal operational characteristics and scenarios for the implementation of the Wilshire BRT and Exposition LRT systems. Issues such as signal priority, cycle and phasing modifications, additional protective phasing for turns, loss time and other operational details were discussed. Based on these discussions, and directions from these cities, specific signal timing as well as geometric modifications were assumed at study intersections which are along and/or immediately adjacent to the BRT and LRT alignments. These include items such as:

- Additional clearance time for streets to clear traffic across the BRT/LRT alignments.
- Additional turn phases to stop the turning vehicles from turning across the BRT/LRT alignments.
- Other modifications to adjacent signals to account for BRT/LRT signal priority treatments.

The above operational and physical modifications were made and assumed to be part of the project for Alternative 3A and are reflected in intersection levels of service calculations for this alternative. In addition to the locations with dual left-turn lanes that were affected by Alternative 1, one eastbound left-turn lane will be eliminated at the intersection of Figueroa Boulevard and Exposition Boulevard.

For Alternative 3A, a review of Table 3.2-35 shows 41 intersections are projected to operate at LOS E or worse during the peak hours along both corridors. Based on a comparison to No-Build conditions, using the significant impact criteria, it can be seen that Alternative 3 can be expected to significantly affect 30 intersections. Table 3.2-35 indicates the intersections projected to operate at LOS E or F and which are significantly impacted by Alternative 3A.

Based on Table 3.2-35, most of the significantly impacted intersections are concentrated in Culver City and along Interstate 405. Also, most intersections immediately adjacent to intersections experience significant impacts. This can be attributed to the large number of projected auto access trips to the BRT and LRT stations. Additionally, it could be partially attributed to the large number of intersections that are already at LOS E or F with the No Action Alternative.

TABLE 3.2-35
LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS
WILSHIRE BRT/EXPOSITION LRT MOS ALTERNATIVE

Intersection	LOS E		LOS F		Impact
	AM	PM	AM	PM	
Lincoln Blvd /Olympic Blvd	X	X			N
20th Street /Colorado Ave				X	N
Sawtelle Blvd /Olympic Blvd		X	X		Y
Sawtelle Blvd /I-405 Southbound			X	X	Y
Sawtelle Blvd /Pico Blvd				X	Y
Sawtelle Blvd /National Blvd			X	X	Y
Sawtelle Blvd /Palms Blvd			X	X	Y
Sawtelle Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Pico Blvd			X	X	Y
Sepulveda Blvd /National Blvd			X	X	Y
Sepulveda Blvd /Palms Blvd	X			X	Y

TABLE 3.2-35 LOS E/F AND SIGNIFICANTLY IMPACTED INTERSECTIONS WILSHIRE BRT/EXPOSITION LRT MOS ALTERNATIVE					
	LOS E		LOS F		
Sepulveda Blvd /Venice Blvd			X	X	Y
Sepulveda Blvd /Washington Pl		X			Y
Washington Blvd /Washington Pl			X	X	Y
Girard Ave /Venice Blvd	X			X	Y
Motor Ave /Venice Blvd			X	X	Y
Clarington Ave /Venice Blvd		X			Y
Hughes Ave /Venice Blvd		X			Y
Culver Blvd/Main St/Washington Blvd			X	X	N
Culver Blvd /Venice Blvd	X	X			N
Robertson Blvd /Venice Blvd			X	X	Y
National Blvd /Venice Blvd			X	X	Y
La Cienega Blvd /Jefferson Blvd				X	Y
La Brea Ave /Exposition Blvd			X	X	Y
Arlington Ave /Exposition Blvd		X	X		Y
Western Ave /Exposition Blvd	X	X			Y
Vermont Ave /Exposition Blvd		X	X		Y
Figueroa Street /Adams Blvd		X			N
Source: MMA 2000					

Comparison of Overall Intersection Delay

To compare intersection performance in various scenarios, a weighted average delay was calculated for each alternative in each corridor by multiplying the delays by the entering vehicles for each intersection during each peak hour. The overall average delay was calculated by adding the total weighted delay for all study intersections and dividing by the grand total of entering traffic volumes at all intersection for each peak hour. This statistic is a reasonable indicator of the amount of average vehicular delay that will be experienced by motorists going through all of the study intersections, under each scenario.

Table 3.2-36 presents a summary of total weighted average delay expected at all study intersections for the Wilshire BRT scenarios. Only those intersections that were analyzed as part of the Wilshire Corridor were included in this table.

TABLE 3.2-36 COMPARISON OF OVERALL INTERSECTION DELAY (SECONDS/VEHICLE) WILSHIRE BRT ALTERNATIVE						
	No Action	**Alt 1, 1a, 1b**	**Alt 2**	**Alt 2a**	**Alt 3**	**Alt 3a**
AM Peak Average Delay	45.55	45.73	45.77	48.38	45.61	48.46
PM Peak Average Delay	46.98	46.89	47.10	48.40	46.70	47.97
Source: MMA 2000						

As can be seen in this table, the overall average delays range from approximately 46 to 48 seconds per vehicle for the AM peak, and from approximately 47 to 48 seconds per vehicle for the PM peak. The small difference combined with the large delay indicates that these intersections are equally congested in both peak hours. Conditions are projected to change slightly from the No Action Alternative. Compared with Alternative 1, the full Exposition LRT Alternative 3 improves performance on the Wilshire Corridor by decreasing delay, but the Exposition BRT and LRT MOS alternatives 2A and 3A, respectively, cause the Wilshire Corridor to operate worse. However, these changes in delay are not considered significant. The intersection delay difference between alternatives indicates that diverted traffic will spread out throughout the study area intersections causing only a marginal increase in network-wide vehicle delay due to the lane reduction along Wilshire Boulevard.

Table 3.2-37 presents a summary of total weighted average delay expected at all study intersections for the Exposition LRT and BRT scenarios. Only those intersections that were analyzed as part of the Exposition Corridor were included in this table.

TABLE 3.2-37
COMPARISON OF OVERALL INTERSECTION DELAY (SECONDS/VEHICLE)
EXPOSITION CORRIDOR ALTERNATIVES

	No Action	Alt 2	Alt 2a	Alt 3	Alt 3a
AM Peak Average Delay	65.05	71.99	72.60	66.11	73.23
PM Peak Average Delay	71.53	77.67	78.18	73.56	78.53

Source: MMA 2000

As can be seen in this table, the overall average delays are approximately 65 and 72 seconds per vehicle for AM and PM peak, respectively in the No Action alternative. The large delay indicates that these intersections are heavily congested in both peak hours. The average delay on the Exposition Corridor is worse than the Wilshire Corridor due to the heavy congestion projected in Culver City and along the San Diego Freeway where the bulk of the study intersections are located. Most of these intersections on the street running portion on Venice Boulevard and Sepulveda Boulevard will experience high delays without the Exposition alternatives. Conditions are projected to significantly worsen with the Exposition alternatives, except for Alternative 3. This can be attributed to the larger number of auto trips projected to use the Exposition alignments and the lane reduction on Venice Boulevard.

The LRT and BRT alternatives will introduce additional delays due to several reasons:

- Reductions in available green time to cross streets at the existing signals
- Delays to turning movements
- Delays at new mid-block BRT crossings where traffic previously did not stop
- Increased congestion due to additional auto trips attracted to park and ride stations

This additional average delay compared to the No Build, ranges from about 1.5 seconds for BRT in the AM peak to just over 11 seconds for the LRT Alternative in the PM peak. It should be noted that the overall average intersection delay increases by more than the 5.0 second threshold of significance for all alternatives except Exposition Alternative 3. However, since most of the intersections were projected to operate better than LOS E, the number of intersections identified as impacted will be relatively low.

3.2.4 Mitigation Measures

General Mitigation Measures and Strategies for Refinement in Preliminary Engineering

Several of the traffic signals along the two alignments have been incorporated into the City of Los Angeles Automated Traffic Surveillance and Control (ATSAC) system. The Cities of Beverly Hills, Culver City, and Santa Monica also have citywide traffic signal systems. As part of the Preliminary Engineering and Design Build phases of the project, modifications to the signal timing and phasing plans will be refined with each local jurisdiction and implemented so that the signal systems can give priority to the BRT buses or LRT trains, while minimizing impacts on arterial street traffic. Some of the considerations that will go into the detailed signal design effort include:

- Evaluation of impacts on cross traffic when considering signal preferential/priority treatment for BRT buses/LRT trains (utilizing detection system to lengthen, or shorten on the cross street, a signal phase to allow arriving bus/train to proceed through the intersection unimpeded).
- Coordination of signal phasing and timing to coincide with arriving buses/trains and stops at adjacent station platforms – e.g., red phase occurs during the time needed for passenger boarding and fare collection.
- Consideration of signal priority that can give buses a head start over the rest of the traffic (a queue jump) in areas of mixed-flow traffic. This can be accomplished by adding a signal phase that advances to a green light for the BRT bus lane prior to the other traffic lane.

BRT Impact Due to Loss of Mixed Flow Lanes on Wilshire Boulevard

Proposed Mitigation Measures:

The following mitigation measure is proposed to reduce the impacts of the traffic diversion caused by the loss of one mixed flow lane in each direction on Wilshire Boulevard:

- Assist the City of Los Angeles City Department of Transportation to implement the Advanced Traffic Control System (ATCS) in the Mid-City/Westside study area. A total of 433 signalized intersections in the following ATSAC project areas will be upgraded to the ATCS system: Mid-Wilshire, Wilshire-West, Westwood, West Los Angeles, and Santa Monica Freeway-Smart Corridor. Funding in the amount of $15,000 per intersection (total of $6,495,000) will be added to the project budget to finance the ATCS system in this area.
- The MTA will work with the Cities of Beverly Hills and Santa Monica to identify traffic operations improvements, similar to the ATCS system in Los Angeles, to mitigate the impacts of any diversion of traffic from Wilshire Boulevard to alternate arterial streets. In Beverly Hills, Olympic Boulevard is part of the Smart Corridor discussed earlier under the City of Los Angeles mitigation measure. Other parallel streets which could be candidates for signal system upgrade include North and South Santa Monica Boulevards and Burton Way, with about 23 traffic signals. In Santa Monica, the signal system could be upgraded on Santa Monica Boulevard and Colorado Avenue, affecting about 21 traffic signals. The cost of this mitigation measure would be $660,000.

BRT Impacts due to Turn Prohibitions and/or Restrictions at Intersections

Proposed Mitigation Measures:

Mitigation measures to reduce the impacts of turn prohibitions at Study Area intersections shall include the following; to the extent determined feasible during preliminary engineering:

- Increase, to the extent feasible, the length of remaining left-turn pockets to accommodate additional traffic due to the loss of numerous left-turn lanes. During preliminary engineering, conduct additional traffic counts and assess the left turn demand at minor intersections between those studied in detail in this EIR/EIS to fine tune left turn lane requirements.
- Increase the signal phase length for remaining left-turn movement locations, to the extent feasible, without negatively impacting BRT operating speeds.

Traffic Re-distribution Impacts into Residential Neighborhood Mitigations

Neighborhood traffic control may be typically achieved by three means:

- General devices for neighborhood traffic control and protection that convey specific controls to drivers and pedestrians alike, including stops signs, speed limit signs and speed zones, turn prohibition signs, one-way street designation, and other regulatory devices such as flashing signals, yield signs, access regulation signs, truck restrictions and parking controls.
- Geometric features of the road that physically restrict and prevent vehicle movement including chokers, traffic circles, median barriers, semi-diverters, forced-turn channelization, and cul-de-sacs at intersections or mid block. Other measures will be considered to reduce vehicle speed such as pavement undulations and dips or raised intersections.
- Complete street closures to divert traffic to alternate routes and accomplish a desired goal.

LADOT and City staffs in the Cities of Beverly Hills, Culver City, and Santa Monica shall monitor traffic conditions on residential streets adjacent to the Wilshire BRT and the Exposition LRT or BRT to determine if the project results in adverse impacts on residential streets. They shall prepare traffic mitigation programs for each impacted neighborhood in coordination with the affected residents. MTA shall include in the project budget funds to reimburse the local jurisdictions for the cost of such monitoring, outreach, and implementation for neighborhood traffic management programs. The total cost of these mitigation measures, as discussed in Section 3.2.3 is estimated at approximately $3.3 million.

Specific Intersection Improvements

As stated previously, an intersection is considered to be significantly affected if the project causes a deterioration in level of service to E or worse, and/or results in an increase in the average vehicle delay of 5.0 seconds or more at an intersection projected to operate at LOS E or worse under No-Action conditions. Using these criteria, the results indicate that mitigation measures would need to be implemented at a total ranging from 13 to 25 intersections, depending on the alternative considered.

The approach used to develop mitigation measures at affected intersections was to first consider traffic signal operational improvements such as signal timing and phasing changes before considering physical improvements. The signal cycle lengths for the study intersections were adjusted and the green times for each approach fine-tuned to satisfy the forecast traffic demands, including BRT buses/LRT trains. If that approach did not mitigate the impacts, physical improvements to the intersection were then developed. Typical recommendations considered signalization, additional turn lanes, road widening, and additional through lanes.

The following conceptual operational and/or physical intersection improvements were developed to help mitigate the residual significant traffic impacts along the two corridors for each alternative.

a. Transportation Systems Management (TSM) Alternative

All intersections determined to be significantly impacted during the initial model runs will not need physical improvements to them. Re-calibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted.

b. Wilshire BRT Alternative 1

The following operational and/or geometric improvements are recommended to reduce the impacts of Alternative 1:

Bundy Drive/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-calibrate signal timing (reduced green time on Wilshire Blvd. may affect BRT operations)

Veteran Avenue/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-stripe southbound through lane to a shared through-right turn lane
- Re-calibrate signal timing.

Beverly Drive/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-calibrate signal timing.

Hauser Boulevard/6th Street

- Re-stripe northbound approach to a left turn lane and a shared through-right turn lane.
- Re-calibrate signal timing.

The following intersections were also determined to be significantly impacted during the initial model runs. Re-calibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted. The recommended mitigation measure is to retime the following signals:

- Wilshire Boulevard/Federal Avenue/San Vicente Boulevard
- Sepulveda Boulevard/Wilshire Boulevard

- Westwood Boulevard/Santa Monica Boulevard
- Whittier Drive/Wilshire Boulevard
- Santa Monica Boulevard/Wilshire Boulevard
- Spalding Drive/Olympic Boulevard
- Highland Avenue/6th Street
- Highland Avenue/Wilshire Boulevard (reduced green time for Wilshire Blvd. through movements may affect BRT operations)

The following intersections have significantly unavoidable impacts since feasible operational measures considered at these intersections would not mitigate all identified impacts.

- Westwood Boulevard/Wilshire Boulevard
- La Cienega Boulevard/Wilshire Boulevard

c. Wilshire BRT Alternative 1A

The following operational and/or geometric improvements shall be implemented to reduce the impacts of Alternative 1A:

Veteran Avenue/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-stripe southbound through lane to a shared through-right turn lane
- Re-calibrate signal timing.

Hauser Boulevard/6th Street

- Re-stripe northbound approach to a left turn lane and a shared through-right turn lane.
- Re-calibrate signal timing.

The following intersections were also determined to be significantly impacted during the initial model runs. Re-calibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted. The recommended mitigation measure is to retime the following signals:

- Wilshire Boulevard/Federal Avenue/San Vicente Boulevard
- Sepulveda Boulevard/Wilshire Boulevard
- Gayley Avenue/Wilshire Boulevard
- Westwood Boulevard/Santa Monica Boulevard
- Whittier Drive/Wilshire Boulevard
- South Santa Monica Boulevard/Wilshire Boulevard
- Spalding Drive/Olympic Boulevard
- Highland Avenue/6th Street

- Highland Avenue/Wilshire Boulevard

The following intersections have significantly unavoidable impacts since feasible operational measures considered at these intersections would not mitigate all identified impacts.

- Westwood Boulevard/Wilshire Boulevard
- La Cienega Boulevard/Wilshire Boulevard

d. Wilshire BRT Alternative 1B

The following operational and/or geometric improvements shall be implemented to reduce the impacts of Alternative 1B:

<u>Hauser Boulevard/6th Street</u>

- Re-stripe northbound approach to a left turn lane and a shared through-right turn lane.
- Re-calibrate signal timing.

The following intersections were also determined to be significantly impacted during the initial model runs. Re-calibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted. The recommended mitigation measure is to retime the following signals:

- Wilshire Boulevard/Federal Avenue/San Vicente Boulevard
- Sepulveda Boulevard/Wilshire Boulevard
- Gayley Avenue/Wilshire Boulevard
- Westwood Boulevard/Santa Monica Boulevard
- Glendon Avenue/Wilshire Boulevard
- Whittier Drive/Wilshire Boulevard
- South Santa Monica Boulevard/Wilshire Boulevard
- Spalding Drive/Olympic Boulevard

The following intersections have significantly unavoidable impacts since feasible operational measures considered at these intersections would not mitigate all identified impacts.

- Westwood Boulevard/Wilshire Boulevard
- La Cienega Boulevard/Wilshire Boulevard

e. Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

The following operational and/or geometric improvements shall be implemented to reduce the impacts of Alternative 2:

<u>Bundy Drive/Wilshire Boulevard</u>

- Add southbound protected left turn phase.

- Re-calibrate signal timing.

<u>**Veteran Avenue/Wilshire Boulevard**</u>

- Add southbound protected left turn phase.
- Re-stripe southbound through lane to a shared through-right turn lane
- Re-calibrate signal timing.

<u>**Hauser Boulevard/6th Street**</u>

- Re-stripe northbound approach to a left turn lane and a shared through-right turn lane.
- Re-calibrate signal timing.

<u>**National Boulevard/Sawtelle Boulevard**</u>

- Add an extra left turn lane southbound.
- Add an exclusive right turn lane eastbound and westbound.

<u>**Sawtelle Boulevard/Palms Boulevard**</u>

- Add southbound protected left turn phase.
- Re-calibrate signal timing.

<u>**Sawtelle Boulevard/Venice Boulevard**</u>

- Add northbound exclusive left turn lane.
- Re-calibrate signal timing.

<u>**Washington Boulevard/Washington Place**</u>

- Add protected left turn phase to westbound Washington Boulevard
- Re-calibrate signal timing.

<u>**Venice Boulevard/Motor Avenue**</u>

- Add southbound protected left turn phase.
- Re-calibrate signal timing.

<u>**Venice Boulevard/Clarington Avenue**</u>

- Add lane in northbound and southbound directions. Re-stripe approaches to have a shared through/left turn lane and a shared through/right turn lane.

<u>**Venice Boulevard/Hughes Avenue**</u>

- Add lane in northbound and southbound directions. Re-stripe approaches to have a shared through/left turn lane and a shared through/right turn lane.

Venice Boulevard/National Boulevard

- Add northbound and westbound protected left turn phases.
- Re-calibrate signal timing.

National Boulevard/Washington Boulevard

- Add northbound and southbound protected left turn phases.
- Re-calibrate signal timing.

La Cienega Boulevard/Jefferson Boulevard

- Add northbound and eastbound right turn lanes.
- Re-calibrate signal timing.

Figueroa Street/Adams Boulevard

- Add northbound protected left turn phase.
- Re-calibrate signal timing.

The following intersections were also determined to be significantly impacted during the initial model runs. Recalibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted. The recommended mitigation measure is to retime the following signals:

- Wilshire Boulevard/Federal Avenue/San Vicente Boulevard
- Sepulveda Boulevard/Wilshire Boulevard
- Westwood Boulevard/Santa Monica Boulevard
- Whittier Drive/Wilshire Boulevard
- Spalding Drive/Olympic Boulevard
- Highland Avenue/6th Street
- Sawtelle Boulevard/Olympic Boulevard
- Sawtelle Boulevard/I-405 Southbound Ramps
- Sepulveda Boulevard/Pico Boulevard
- Sepulveda Boulevard/Washington Place
- Venice Boulevard/Girard Avenue
- Exposition Boulevard/La Brea Avenue
- Exposition Boulevard/Arlington Avenue
- Exposition Boulevard/Vermont Avenue
- Figueroa Street/Jefferson Boulevard

The following intersections have significantly unavoidable impacts since feasible operational measures considered at these intersections would not mitigate all identified impacts.

- **Pico Boulevard/Sawtelle Boulevard** (Can be mitigated in AM Peak with re-calibrated signal timing)
- **Sepulveda Boulevard/National Boulevard** (Can be mitigated in AM Peak with exclusive right turn lanes eastbound and westbound and re-calibrated signal timing)
- **Sepulveda Boulevard/Palms Boulevard**
- **Venice Boulevard/Sepulveda Boulevard**
- **Venice Boulevard/Overland Avenue**
- **Westwood Boulevard/Wilshire Boulevard**
- **La Cienega Boulevard/Wilshire Boulevard**

f. Wilshire BRT and Exposition BRT MOS Alternative 2A

The following operational and/or geometric improvements shall be implemented to reduce the impacts of Alternative 2A:

Bundy Drive/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-calibrate signal timing.

Veteran Avenue/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-stripe southbound through lane to a shared through-right turn lane
- Re-calibrate signal timing.

Hauser Boulevard/6th Street

- Re-stripe northbound approach to a left turn lane and a shared through-right turn lane.
- Re-calibrate signal timing.

National Boulevard/Sawtelle Boulevard

- Add an extra left turn lane southbound.
- Add an exclusive right turn lane eastbound and westbound.

Sawtelle Boulevard/Palms Boulevard

- Add southbound protected left turn phase.
- Re-calibrate signal timing.

Sawtelle Boulevard/Venice Boulevard

- Add northbound exclusive left turn lane.
- Re-calibrate signal timing.

Washington Boulevard/Washington Place

- Add protected left turn phase to westbound Washington Boulevard
- Re-calibrate signal timing.

Venice Boulevard/National Boulevard

- Add northbound and westbound protected left turn phases.
- Re-calibrate signal timing.

La Cienega Boulevard/Jefferson Boulevard

- Add northbound and eastbound right turn lanes.
- Re-calibrate signal timing.

The following intersections were also determined to be significantly impacted during the initial model runs. Recalibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted. The recommended mitigation measure is to retime the following signals:

- Lincoln Boulevard/Olympic Boulevard
- 20th Street/Colorado Avenue
- Wilshire Boulevard/Federal Avenue/San Vicente Boulevard
- Sepulveda Boulevard/Wilshire Boulevard
- Sepulveda Boulevard/Santa Monica Boulevard
- Sepulveda Boulevard/Olympic Boulevard
- Westwood Boulevard/Santa Monica Boulevard
- Whittier Drive/Wilshire Boulevard
- Spalding Drive/Olympic Boulevard
- Highland Avenue/6th Street
- Sawtelle Boulevard/Olympic Boulevard
- Sawtelle Boulevard/I-405 Southbound Ramps
- Sepulveda Boulevard/Pico Boulevard
- Sepulveda Boulevard/Washington Place
- Venice Boulevard/Robertson Boulevard
- Culver Boulevard/Main St/Washington Boulevard

- Culver Boulevard/Venice Boulevard
- Exposition Boulevard/La Brea Avenue
- Exposition Boulevard/Arlington Avenue

The following intersections have significantly unavoidable impacts since feasible operational measures considered at these intersections would not mitigate all identified impacts.

- **Sepulveda Boulevard/National Boulevard** (Can be mitigated in AM Peak with exclusive right turn lanes eastbound and westbound and re-calibrated signal timing)
- **Sepulveda Boulevard/Palms Boulevard**
- **Venice Boulevard/Sepulveda Boulevard**
- **Westwood Boulevard/Wilshire Boulevard**
- **La Cienega Boulevard/Wilshire Boulevard**

g. Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

The following operational and/or geometric improvements shall be implemented to reduce the impacts of Alternative 3:

Veteran Avenue/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-stripe southbound through lane to a shared through-right turn lane
- Re-calibrate signal timing.

Hauser Boulevard/6th Street

- Re-stripe northbound approach to a left turn lane and a shared through-right turn lane.
- Re-calibrate signal timing.

Pico Boulevard/Sawtelle Boulevard

- Add northbound, southbound, and westbound protected left turn phases.
- Re-calibrate signal timing.

Olympic Boulevard/Sawtelle Boulevard

- Add northbound protected left turn phase.
- Re-calibrate signal timing.

National Boulevard/Sawtelle Boulevard

- Add an extra left turn lane southbound.

Sawtelle Boulevard/Palms Boulevard

- Add southbound protected left turn phase.

- Add westbound right turn lane.
- Re-calibrate signal timing.

Venice Boulevard/Sepulveda Boulevard

- Add northbound exclusive left turn lane.
- Add northbound and southbound protected left turn phases.
- Re-calibrate signal timing.

Venice Boulevard/Motor Avenue

- Re-stripe northbound right turn lane to a shared through/right turn lane.
- Add southbound protected left turn phase.
- Add southbound right turn overlapping phase.
- Re-calibrate signal timing.

Venice Boulevard/Clarington Avenue

- Add northbound right turn lane with overlapping phase.
- Re-calibrate signal timing.

Venice Boulevard/Hughes Avenue

- Add lane in northbound and southbound directions. Re-stripe approaches to have a shared through/left turn lane and a shared through/right turn lane.

Venice Boulevard/National Boulevard

- Add northbound and westbound protected left turn phases.
- Re-calibrate signal timing.

La Cienega Boulevard/Jefferson Boulevard

- Re-stripe southbound right turn lane to a shared through/right turn lane.
- Add northbound and eastbound right turn lanes with overlapping phases.
- Re-calibrate signal timing.

The following intersections were also determined to be significantly impacted during the initial model runs. Recalibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted. The recommended mitigation measure is to retime the following signals:

- Wilshire Boulevard/Federal Avenue/San Vicente Boulevard
- Sepulveda Boulevard/Wilshire Boulevard
- Whittier Drive/Wilshire Boulevard
- Spalding Drive/Olympic Boulevard

- Highland Avenue/6th Street
- Sawtelle Boulevard/I-405 Southbound Ramps
- Venice Boulevard/Sawtelle Boulevard
- Sepulveda Boulevard/Washington Place
- Washington Boulevard/Washington Place
- Venice Boulevard/Girard Avenue
- Venice Boulevard/Robertson Boulevard
- Exposition Boulevard/La Brea Avenue
- Exposition Boulevard/Arlington Avenue
- Exposition Boulevard/Western Avenue
- Exposition Boulevard/Vermont Avenue

The following intersections have significantly unavoidable impacts since feasible operational measures considered at these intersections would not mitigate all identified impacts.

- Westwood Boulevard/Wilshire Boulevard
- Pico Boulevard/Sepulveda Boulevard
- Sepulveda Boulevard/National Boulevard
- Sepulveda Boulevard/Palms Boulevard

h. Wilshire BRT and Exposition LRT MOS Alternative 3A

The following operational and/or geometric improvements shall be implemented to reduce the impacts of Alternative 3A:

Veteran Avenue/Wilshire Boulevard

- Add southbound protected left turn phase.
- Re-stripe southbound through lane to a shared through-right turn lane
- Re-calibrate signal timing.

Hauser Boulevard/6th Street

- Re-stripe northbound approach to a left turn lane and a shared through-right turn lane.
- Re-calibrate signal timing.

Olympic Boulevard/Sawtelle Boulevard

- Add northbound protected left turn phase.
- Re-calibrate signal timing.

Sawtelle Boulevard/Palms Boulevard

- Add southbound protected left turn phase.
- Add westbound right turn lane.
- Re-calibrate signal timing.

Venice Boulevard/Sepulveda Boulevard

- Add northbound exclusive left turn lane.
- Add northbound and southbound protected left turn phases.
- Re-calibrate signal timing.

Venice Boulevard/Motor Avenue

- Re-stripe northbound right turn lane to a shared through/right turn lane.
- Add southbound protected left turn phase.
- Add southbound right turn overlapping phase.
- Re-calibrate signal timing.

Venice Boulevard/National Boulevard

- Add northbound and westbound protected left turn phases.
- Re-calibrate signal timing.

La Cienega Boulevard/Jefferson Boulevard

- Re-stripe southbound right turn lane to a shared through/right turn lane.
- Add northbound and eastbound right turn lanes with overlapping phases.
- Re-calibrate signal timing.

The following intersections were also determined to be significantly impacted during the initial model runs. Recalibration of the signal timing enabled significant reduction in delay to the point where the intersections were no longer impacted. The recommended mitigation measure is to retime the following signals:

- Lincoln Boulevard/Olympic Boulevard
- Wilshire Boulevard/Federal Avenue/San Vicente Boulevard
- Sepulveda Boulevard/Wilshire Boulevard
- Sepulveda Boulevard/Santa Monica Boulevard
- Whittier Drive/Wilshire Boulevard
- Spalding Drive/Olympic Boulevard
- Highland Avenue/6th Street
- Sawtelle Boulevard/I-405 Southbound Ramps

- Venice Boulevard/Sawtelle Boulevard
- Sepulveda Boulevard/Washington Place
- Washington Boulevard/Washington Place
- Culver Boulevard/Venice Boulevard
- Venice Boulevard/Robertson Boulevard
- La Brea Avenue/Jefferson Boulevard
- Exposition Boulevard/La Brea Avenue
- Exposition Boulevard/Arlington Avenue
- Exposition Boulevard/Normandie Avenue
- Exposition Boulevard/Vermont Avenue

The following intersections have significantly unavoidable impacts since feasible operational measures considered at these intersections would not mitigate all identified impacts.

- Westwood Boulevard/Wilshire Boulevard
- Pico Boulevard/Sepulveda Boulevard
- Sepulveda Boulevard/National Boulevard
- Sepulveda Boulevard/Palms Boulevard

3.2.5 Cumulative Impacts

Traffic impact analyses conducted for this project, as documented throughout this report, including countywide, study area, corridor-level, screenline, or detailed intersection forecasts, are based on traffic projections developed by the LACMTA Regional Travel Demand Model. These future traffic forecasts, which represent a horizon year of 2020, are developed with consideration for population, employment and land use growth for the entire southern California area, as projected by the designated Regional Metropolitan Planning Organization (MPO), Southern California Association of Governments (SCAG). Therefore, all traffic forecasts and the corresponding impact analyses account for impacts of not only the project alternatives and the overall projected cumulative growth in the study area and the region in general.

3.3 Parking

3.3.1 Introduction

This section provides information relative to parking issues affected by the proposed Wilshire BRT and Exposition BRT/ LRT alternatives. A threshold of significance is defined in this section along with the methodology for evaluating parking-related impacts. It assesses on-street parking inventories relative to proposals for the elimination of such parking in order to accommodate the BRT/ LRT alternatives on both corridors. Additionally, it provides discussions on the need for parking facilities (park-and-ride lots) to adequately serve transit patrons attracted to the proposed high-capacity transit services. Finally, this section discusses parking management measures and parking replacement strategies designed to mitigate the impact of removing on-street parking.

3.3.2 Affected Environment

Parking Inventory

<u>On-street parking</u>

The number of on-street parking spaces along the Wilshire Boulevard BRT Corridor from Western Avenue in Los Angeles to Ocean Avenue in Santa Monica was quantified, as is presented by Table 3.3-1. Along the Exposition Corridor, on-street parking was inventoried on Venice and Sepulveda Boulevards, where the LRT or BRT alternatives would run in the street and potentially affect parking. At least five categories of on-street parking were surveyed including: metered spaces; unmetered spaces; commercial loading zones; taxi/ valet passenger loading; handicapped/ senior citizen zone; and school bus zone. The following table provides a summary of the parking spaces by the various categories that were surveyed.

TABLE 3.3-1
WILSHIRE BOULEVARD BRT CORRIDOR
REPLACEMENT PARKING BY CITY AND SEGMENT

Segment	Endpoints	Metered Spaces	Unmetered Spaces	Commercial/ Loading Zones	Taxi/Valet Passenger Loading Zones	Disabled/ Seniors	Total Spaces
Segment I - Los Angeles							
1	Western to Gramercy	45	-	-	3	-	48
2	Wilton to Norton	26	1	-	1	-	28
3	Highland to La Brea	4	20	-	-	-	24
4	Detroit to Cochran	19	14	-	-	-	33
5	Dunsmuir to Ridgeley	11	23	2	-	-	36
6	Hauser to Curson	42	-	-	-	-	42
7	Stanley to Orange Grove	56	-	-	5	-	61
8	Fairfax to San Diego	38	-	4	9	-	51
9	Crescent Heights to San Vicente	38	-	12	7	-	57
Subtotal		279	58	18	25	0	380
Segment II - Beverly Hills							
1	San Vicente to Hamilton	19	5	-	-	-	24
2	La Cienega to Willman	36	-	-	1	-	37
3	Robertson to Doheny	54	-	-	5	-	59

TABLE 3.3-1 WILSHIRE BOULEVARD BRT CORRIDOR REPLACEMENT PARKING BY CITY AND SEGMENT							
Segment	**Endpoints**	**Metered Spaces**	**Unmetered Spaces**	**Commercial/ Loading Zones**	**Taxi/Valet Passenger Loading Zones**	**Disabled/ Seniors**	**Total Spaces**
4	Oakhurst to Rexford	27	-	-	1	-	28
5	Elm to El Camino	-	-	2	5	-	7
Subtotal		136	5	2	12	0	155
Segment III - Westwood							
1	Comstock to Devon	-	29	3	1	-	33
2	Beverly Glen to Malcolm	-	57	2	18	-	77
Subtotal		0	86	5	19	0	110
Segment IV - West Los Angeles							
1	Federal to Brockton	60	-	3	1	-	64
2	Saltair to Bundy	55	-	-	6	-	61
3	Amherst to Carmelina	39	-	-	3	-	42
Subtotal		154	0	3	10	0	167
Segment IV - Santa Monica							
1	Centinelia to Berkley	45	-	-	-	-	45
2	Stanford to Princeton	66	-	-	-	-	66
3	26th to 24th	66	-	-	-	-	66
4	23rd to 21st	41	-	-	-	-	41
5	20th to 18th	49	-	-	-	-	49
6	17th to 15th	45	-	-	-	-	45
7	14th to 12th	52	-	-	1	-	53
8	11th to 9th	38	-	-	-	-	38
9	Lincoln to 6th	47	-	-	-	1	48
10	5th to 2nd	55	-	-	3	-	58
Subtotal		504	0	0	4	1	509
Grand Total		**1,073**	**149**	**28**	**70**	**1**	**1,321**

The majority of spaces on Wilshire Boulevard are metered and have time limits on length of stay. Along much of Wilshire Boulevard parking is also prohibited during peak hours. Peak hour parking prohibitions are in place along Wilshire Boulevard in the Cities of Los Angeles and Beverly Hills, but not in Santa Monica. Table 3.3.2 illustrates that most of the parking along Venice and Sepulveda Boulevards is unmetered.

TABLE 3.3-2 EXPOSITION BOULEVARD BRT / LRT CORRIDOR INVENTORY OF EXISTING ON-STREET PARKING SPACES						
Street (both directions)	**Metered Spaces**	**Unmetered Spaces**	**Commercial Loading Zones**	**Taxi/Valet Passenger Loading**	**Disabled/ Seniors**	**Total Spaces**
Venice Boulevard	114	214	1	72	1	402
Sepulveda Boulevard	-	511	2	13*		526
Total Parking	**114**	**725**	**3**	**85**	**1**	**928**
* loading zone for 13 school buses.						

Off-street parking

A variety of land uses exists along the entire length of both the Wilshire and Exposition corridors, including commercial, industrial, residential, recreational, and institutional. As mandated by zoning codes relative to parking requirements, these uses provide off-street parking accommodations separate from on-street parking inventories using private parking lots/structures. There were no inventory surveys conducted as part of this study relative to off-street parking facilities (both public and private). The project alternatives will not affect the quality of existing off-street parking facilities. However, the demand for off-street parking could increase in areas where the on-street parking is removed or is insufficient to accommodate new transit users who drive to their boarding stations.

3.3.3 Impact Assessment

Standards of Significance

It is difficult to develop a threshold of significance relative to parking along a given corridor that can be used to assess parking impacts from a quantitative standpoint. Such an approach is easier to discuss when evaluating the adequacy of parking for an individual building or development, rather than trying to take into account a 15-mile corridor. Local jurisdictions have the ability to regulate the use of on-street parking and to prohibit it. The loss of on-street parking may or may not affect the nearby businesses or residents, depending upon the utilization rate of the spaces being removed and the availability of alternative off-street parking or on-street parking on nearby streets. The loss of on-street parking however, is often perceived as an impact on businesses, particularly retail businesses, by the proprietors of those businesses.

Adequacy of parking can be evaluated in terms of meeting established zoning code requirements relative to parking. However, it is more difficult to assess such impacts along the two transit corridors since it is not known if all the land uses adequately provide for or meet current off-street parking requirements.

On-street parking removal along the Wilshire and Exposition Boulevard BRT/LRT Corridors will have varying degrees of impact on different sectors or groups of users of the two corridors. In some cases, the availability of off-street parking and the enhanced transit accessibility associated with the project alternatives will offset the impact of loss of on-street parking, but it can be stated that the loss of convenient on-street parking will have some impact on virtually all land uses. It is difficult to establish a quantitative threshold of significance to determine when this impact is significant. Some of the impacts manifest themselves in other areas that can only be qualitatively discussed. These areas deal with qualitative issues such as personal inconvenience, access impacts to businesses, supply of goods by delivery trucks, access issues for taxicabs/ valet services and physically challenged persons, safety concerns resulting from the removal of the parking buffer zone between the sidewalk and through traffic and the elimination of a refuge area for emergency parking, accidents and breakdowns.

Methodology for Impact Evaluation

The methodology for evaluating the impacts of removing on-street parking to accommodate the transit alternatives will consider a number of factors. The evaluation will address such issues as convenience, access, safety, business disruption, and the need for parking replacement. The evaluation will also reflect the fact that the on-street parking along Wilshire, Venice and Sepulveda Boulevards lost to the BRT or LRT operation, will be replaced with off-street parking to the extent feasible. It also reflects the fact that no new park-and-ride lots are being proposed for the Wilshire

Boulevard corridor to accommodate and attract new transit patrons. Access to the stations on the Wilshire corridor will be via transit usage (transfers) and walking. The two parking lots that may be provided along Wilshire Boulevard on property owned by the MTA would be used as replacement parking.

Parking Impacts

No Action Alternative (Baseline)

The No Action Alternative would not affect parking along either the Wilshire or Exposition Corridors. As noted earlier, the local jurisdictions have the authority to impose limitations on the use of on-street parking, so the No Action Alternative could include changes to on-street parking conditions implemented by the local jurisdictions, but such actions would be independent of the transit operations on these corridors.

Transportation System Management (TSM) Alternative

The TSM Alternative would not affect parking along either the Wilshire or Exposition Corridors. As noted earlier, the local jurisdictions have the authority to impose limitations on the use of on-street parking, so the TSM Alternative could also include changes to on-street parking conditions implemented by the local jurisdictions, but such actions would be independent of the transit operations on these corridors.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Access and Convenience. The removal of on-street parking along Wilshire Boulevard will eliminate the ability of drivers to stop, park, load/unload passengers or goods directly in front of businesses and residences. Such activities will have to occur off-street in parking/loading facilities, where available, or on side streets. As mentioned earlier, a total of 1,211 parking spaces may be removed as a result of the Wilshire BRT project. Along Wilshire Boulevard alone, the proposed project will eliminate the option of short-term parking at 1,073 metered and 149 unmetered parking spaces that currently service primarily businesses along this high activity and high-density residential corridor. The loss of 28 on-street commercial loading zones, in addition to the general parking spaces, will reduce the ability of businesses to conveniently load/unload goods at the curb. This will be problematic for businesses that do not have off-street loading facilities and could cause traffic congestion if the delivery vehicles stop at the curb and block a travel lane. The loss of 70 spaces currently designated for taxis, shuttles and other valet services will further inconvenience hotel guests and restaurant patrons along this route. It will also create additional hardship on handicapped persons who depend on such convenient handicapped designated parking spots to access their destinations.

It should be noted that along much of the Wilshire Corridor parking is already prohibited during the peak hours. The impact of on-street parking removal will be felt only during the off-peak hours (i.e., mid-days, evenings and weekends). In Santa Monica, where on-street parking is allowed during peak hours, the impact will be realized during all hours.

The Wilshire BRT project will provide off-street replacement parking, and the project budget includes funding commensurate with the one-for-one replacement of parking. To address the loss of parking for business or residential districts along Wilshire Boulevard, the MTA, as part of the project, would adopt a Replacement Parking Strategy. This strategy would seek to replace parking in locations convenient and accessible to existing businesses, employers and residences.

The strategy to identify the sites for such replacement parking is outlined below. These strategies can also be followed to provide additional parking at the stations where spillover parking is forecast. The approach to be employed by the MTA to reduce parking impacts is the following:

- Use existing MTA property if properly zoned and accessible to adjacent businesses. Along Wilshire this would entail the use of two properties owned by the MTA at Crenshaw and Wilshire (southwest corner) and at La Brea and Wilshire (northwest corner).
- The MTA shall coordinate with and inventory other public agencies for available surplus property, again as long as the zoning is appropriate for a parking use.
- The MTA shall acquire vacant sites, (located in areas zoned for commercial and parking use). These sites would have to be a minimum of 5,000 square feet and accommodate a minimum of 12 passenger cars.
- The MTA shall enter into agreements to make modifications to existing surface parking lots to restripe or reconfigure the layout to expand capacity.
- The MTA shall enter into agreements to participate in the construction and/or expansion of existing or planned public parking structures.
- The MTA shall enter into long-term agreements to make off-street parking structures available (if currently underutilized). This strategy would focus on office buildings or industrial properties with surplus spaces.
- The MTA shall acquire land and construct parking structures, if the sites are properly zoned and height limits allow a parking structure use.

As shown in Table 3.3-3, the need to replace lost curb parking is not equally distributed along the Wilshire route. The largest and most concentrated area of curb parking loss is in the Santa Monica segment. In this 2.6-mile section, approximately 4.6 acres of replacement parking space would be needed. The land requirements for surface parking average about 2 acres in other segments of the Wilshire route. This is based on an average land area requirement of 400 square feet per parking space.

TABLE 3.3-3
OFF STREET REPLACEMENT PARKING*

Segment	Affected Area	Parking Spaces to be Replaced and surface parking land requirement	Land Area Needed for Replacement as Surface Parking (Worst Case)	Potential Worst Case Theoretical Displacement Based on Existing Land Use Patterns
Los Angeles - Mid-City	Western to Bronson, and Citrus to San Vicente	242	2.2 acres	80,000 S.F. commercial and 20 dwelling units
Beverly Hills	San Vicente to Hamilton, and La Cienega to Maple	249	2.3 acres	80,000 S.F. commercial and 10 dwelling units
West Los Angeles	Comstock to Malcolm and Barry to Centinela	240	2.2 acres	50,000 S.F. commercial and 10 dwelling units

TABLE 3.3-3 OFF STREET REPLACEMENT PARKING*				
Segment	**Affected Area**	**Parking Spaces to be Replaced and surface parking land requirement**	**Land Area Needed for Replacement as Surface Parking (Worst Case)**	**Potential Worst Case Theoretical Displacement Based on Existing Land Use Patterns**
Santa Monica	Centinela to Second	505	4.6 acres	50,000 S.F. commercial and 50 dwelling units
*Assumes one for one replacement of lost spaces.				
Source: Korve Engineering and Terry A. Hayes Associates 2000.				

Outlined below is a segment-by-segment characterization of the issues affecting the acquisition of property, which is provided to assess the likelihood that replacement parking can be provided in each segment of the corridor:

- *Western to Bronson.* MTA owns no sites. There are several surface parking lots that may be candidates for modification or decking. The need to acquire improved property is moderate.
- *Bronson to Citrus.* There are no displaced parking spaces along this segment. MTA owns one lot in this segment on the south side of Wilshire between Crenshaw and Lorraine. However, since there are no displaced spaces in this segment, this lot is beyond the reasonable distance for a replacement lot for those segments where parking is lost. The parking lot at this location, if implemented, would serve as a park-and-ride lot.
- *Citrus to San Vicente.* MTA owns one site at La Brea. Surface parking lots and rear surface parking suggest opportunities to minimize acquisition of new parking sites through either reconfiguration or construction of small parking structures on existing lots.
- *San Vicente to Hamilton.* MTA owns no sites. There are no vacant sites. Acquisition of improved property would be required to provide replacement parking in this segment.
- *La Cienega to Maple.* MTA owns no sites. Two to three vacant sites may provide opportunities for relocated parking. Less intensive use of office buildings may also offer opportunities to share space.
- *Comstock to Malcom.* MTA owns no sites. There are no vacant sites. There are no surface parking lots. Acquisition would likely affect low scale older residential properties fronting on Wilshire Boulevard. Replacement parking would likely require acquisition of property; however, acquiring residential property for this purpose may not be feasible given the unavailability of property.
- *Barry to Centinela.* MTA owns no sites. There are no vacant sites and no surface parking lots. One opportunity for replacement involves the use of underutilized existing structured parking in office buildings (if any). The probability is high that private property would have to be acquired for replacement parking.
- *Centinela to Second.* MTA owns no sites. There are no Wilshire frontage vacant sites. There are scattered small surface parking lots, 2-3 may be of sufficient size for redevelopment as parking structures. Acquisition would likely focus on the small-scale one-story commercial buildings at corners to avoid driveways on Wilshire Boulevard. The acquisition potential is high, however, the probability of acquiring these desirable locations from a willing seller is low.

The analysis of the different segments along Wilshire Boulevard indicates that it may not be feasible to provide a parking lot/structure in every block it is needed. As a result, the replacement parking that is eventually provided would be convenient for customers patronizing businesses on blocks where replacement parking is not proposed. Even if the 1,211 parking spaces are fully replaced, they will be in consolidated facilities, which will be less convenient than on-street parking directly in front of a business or residence.

In summary, the Wilshire BRT Alternative will have a significant unavoidable impact on access and convenience to fronting properties along Wilshire Boulevard during the off-peak hours due to the loss of on-street parking. This impact will be partially reduced by the development of off-street replacement parking as part of the BRT project, but it is not likely to be fully mitigated.

Safety. The loss of parking along Wilshire Boulevard will remove the buffer area created by parked cars between pedestrians on the sidewalk and moving travel lanes. Converting the parking lane to a travel lane in order to maintain a continuous-running median BRT will mean a narrower width for the through lane adjacent to the curb. This lane also functions as a right-turn lane. It also means that in the event of any emergencies (vehicular/ bus breakdown, accidents, and writing of traffic citations) vehicles will have to either block a travel lane or move to a side street that could potentially impact residential streets. The same is true for emergency vehicles such as fire, police and ambulatory care.

The removal of parking, however, will have a beneficial aspect in that it will eliminate side-conflicts between moving traffic and vehicles entering or leaving parking spaces. These may also be a reduction in the incidence of sideswipe accidents. In addition, the removal of on-street parking would have beneficial impacts on pedestrian safety in that potential conflicts between moving traffic and people entering and exiting their cars on the street side would be reduced.

Station Area Parking Spillover Impacts. The primary modes of access to the Wilshire BRT stations will be walking and transit, with some kiss-and-ride (drop off) activity. The lack of park-and-ride lots will reduce the likelihood that transit patrons will drive and park at Wilshire BRT stations. Some BRT patrons may attempt to park on residential streets within walking distance of Wilshire Boulevard, but it is unlikely that they will be able to do so. Most of the residential streets near Wilshire Boulevard already have time limited parking or residential permit parking. These restrictions make it unattractive for customers or employees of developments on Wilshire Boulevard to try and park on the side streets.

It is not anticipated that the Wilshire BRT Alternative will result in any significant parking impacts on the streets surrounding the BRT stations since BRT stations would be at the same locations as the existing Rapid Bus Stations. Station area parking spillover impacts would be less than significant.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Access and Convenience. The Median Adjacent Design Option will have the same impacts on parking as the Median Reconstruction Design Option. It will result in the removal of all on-street parking along the project length on Wilshire Boulevard. The Replacement Parking Strategy will seek to reduce this impact through the provision of off-street replacement parking, but it unlikely that this impact can be fully mitigated. Impacts to access and convenience would be significant and unavoidable.

Safety. The Median Adjacent Design Option will have the same impacts on safety associated with parking as the Median Reconstruction Design Option. It will result in the removal of the buffer between moving traffic and pedestrians on the sidewalk, but it will also reduce vehicular conflicts associated with parking activity. Impacts on pedestrian safety would be beneficial.

Station Area Parking Spillover Impacts. It is not anticipated that Alternative 1A will result in any significant parking impacts on the streets surrounding the BRT stations. Station area spillover parking impacts would be less than significant.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Access and Convenience. The Curb Adjacent Design Option, if implemented on a 24-hour basis, will have the same impacts on parking as the Median Reconstruction Design Option. It will result in the removal of all on-street parking along the project length on Wilshire Boulevard. The Replacement Parking Strategy will seek to reduce this impact through the provision of off-street replacement parking, but it unlikely that this impact can be fully mitigated. Impacts to access and convenience would be significant and unavoidable.

Safety. The Curb Adjacent Design Option, if implemented on a 24-hour basis, will have the same impacts on safety associated with parking as the Median Reconstruction Design Option. It will result in the removal of the buffer between moving traffic and pedestrians on the sidewalk, but it will also reduce vehicular conflicts associated with parking activity. Safety impacts would be beneficial.

Station Area Parking Spillover Impacts. It is not anticipated that Alternative 1B will result in any significant parking impacts on the streets surrounding the BRT stations. Station area spillover parking impacts would be less than significant.

Alternative 2: Wilshire BRT and Exposition BRT

Access and Convenience. Alternative 2 will have the same parking impacts along the Wilshire Corridor as Alternative 1. The additional impacts associated with the BRT along the Exposition Corridor are discussed in this section. Impacts to access and convenience would be significant and unavoidable.

In the eastern-most portions of the Exposition Corridor, the BRT will run in mixed flow on city streets similar to the existing Rapid Bus operation and will not effect on-street parking. West of Vermont Avenue (to Venice Boulevard), the BRT will be located off-street within the MTA right-of-way, and the project will not effect on-street parking. Further to the west, BRT operations will return to the city streets and there will be no removal of on-street parking along Venice Boulevard. The transit facility will require the elimination of one travel lane in each direction, but will leave all parking along the curb.

On Sepulveda Boulevard, parking will be retained wherever feasible. The roadway will be widened and sidewalks narrowed to eight feet so that parking can be retained along most blocks. However, parking will not be provided on the approaches to intersections where left turn lanes are present or adjacent to the station at National Boulevard. This results in the removal of 157 on-street parking spaces along Sepulveda Boulevard. This loss of on-street parking will have similar effects on access and convenience, as described earlier for the BRT on Wilshire Boulevard. However, the elimination of 157 spaces out of a total of 526 spaces on Sepulveda Boulevard, is a loss of only 30 percent of the on-street parking supply and will not create an impact as significant as on the Wilshire BRT corridor where 100 percent of the parking is removed. The Replacement Parking Strategy will seek to purchase property for off-street replacement parking along Sepulveda Boulevard.

Further to the west, the BRT will be located in the MTA right-of-way and will not require removal of any on-street parking. Once the BRT reaches 17th Street in Santa Monica, it will return to operations in mixed flow on the streets to downtown Santa Monica. It will not effect on-street parking in this segment.

In summary, Alternative 2 will have a significant unavoidable impact on access and convenience to some fronting properties along Sepulveda Boulevard due to the loss of on-street parking.

Safety. The elimination of parking on the approaches to intersections on Sepulveda Boulevard to accommodate left turn lanes reduces the buffer between pedestrians and moving traffic. This is common on many arterials in the Los Angeles area and would not be expected to result in any significant impacts. The preservation of on-street parking results in a somewhat curvilinear alignment of the travel lanes as they transition around the parking and left turn lanes. This is also common on many arterials in the Los Angeles area and would not be expected to result in any significant impacts. Safety impacts would be less than significant.

Park-and-Ride Facilities and Station Area Parking Spillover Impacts. Park-and-ride facilities are proposed at six (6) locations along the Exposition Boulevard BRT and eight (8) locations for the Exposition LRT corridor alternative. The Exposition BRT Alternative will have a total planned parking supply of 2,881 spaces and the Exposition LRT Alternative will have 3,593 spaces. Table 3.3.4 provides a breakdown of parking spaces by station. The largest proposed parking facility is a 1,140 space lot at the Cloverfield station. In addition to the vehicular parking spaces listed in Table 3.3.4, each station will include bicycle parking facilities.

TABLE 3.3-4
EXPOSITION BRT/ LRT PROJECT – PARKING DEMAND AND CAPACITY

	BRT				LRT			
Station	**Station Type**	**P/R Capacity**	**Parking Demand**		**Station Type**	**P/R Capacity**	**Parking Demand**	
			Alt. 3	**Alt. 5 MOS**			**Alt. 2**	**Alt.4 MOS**
7th/Flower	**	-			Existing	-		
Pico/Flower	**	-			Existing	-		
Grand/Wash.	**	-			Existing ***	-		
Exposition/USC	**	-			At-Grade			
Vermont	**	-			At-Grade	-		
Western	At-Grade	-			At-Grade	-		
Crenshaw	At-Grade	400	136	148	At-Grade	400	392	408
La Brea	At-Grade	41	92	40	At-Grade	41	326	400
La Cienega	Aerial	363	126	187	Aerial	363	276	245
Hayden	At-Grade	-			-	-		
Wash./Venice	-	-	356	366	At-Grade	612	399	615

TABLE 3.3-4 EXPOSITION BRT/ LRT PROJECT – PARKING DEMAND AND CAPACITY								
	BRT				LRT			
Station	**Station Type**	**P/R Capacity**	**Parking Demand**		**Station Type**	**P/R Capacity**	**Parking Demand**	
			Alt. 3	**Alt. 5 MOS**			**Alt. 2**	**Alt.4 MOS**
Main/Venice	At-Grade	-			-	-		
Overland/Venice	At-Grade				At-Grade	-		
Sepulveda/Venice	At-Grade				At-Grade	-		
Sepulveda/National	At-Grade				At-Grade	-		
Pico/Sawtelle	Aerial	585	187		Aerial	565	562	
Bundy	Aerial	372	36		Aerial	372	233	
Cloverfield	At-Grade	1140	40		At-Grade	1140	381	
14th/Colorado	**		13		-	-		
Ocean	**				At-Grade	100	341	
TOTAL		**2,881**	**986**	**741**		**3,593**	**2,907**	**1,668**

* With the Subway Design Option there would be no station at Vermont but an at-grade station under the I-110 Freeway (serving the I-110 Busway) and an underground station serving both Expo/USC and Vermont, located midway between Watt Way and Vermont Avenue.

** BRT to operate as Rapid Bus between 7th/Flower and Vermont/Exposition ROW and between 17th/Colorado and Broadway/Ocean.

*** With Flower St. Option there would be at-grade stations at 23rd/Flower and Jefferson/Flower instead of Expo/USC.

The Exposition BRT Alternative has six park-and-ride lots and exhibits less overall park-and-ride demand than the LRT Alternative. A total demand of 986 spaces is forecast and one of the six lots is forecast to have a demand exceeding its supply. The MTA travel demand forecasting model did forecast park-and-ride demand at two locations where parking lots are not planned as part of the project. Those two stations are:

- Venice/Washington
- 14th/Colorado Station

A demand for over 350 parking spaces was forecast at the Venice/Washington Station and about 15 at the 14th/Colorado Station in Santa Monica. The Venice/Washington station was replaced by the Venice/Main and National/Hayden stations. It can be anticipated that on-street parking will be impacted in the vicinity of each of these stations. If there are unrestricted, free on-street parking spaces within walking distance of these stations (about one quarter mile), BRT patrons will likely attempt to park on those streets to walk to the BRT station. It is difficult to quantify the precise number of on-street parking spaces that may be used by BRT patrons, and to establish a quantitative threshold of significance criteria applicable to all such streets, since the impact of on-street parking is subjective. Some residents are more sensitive to parking on their street than others, but the areas around Venice/Main and National/Hayden Stations are the ones most likely to be affected by spillover parking from the BRT Alternative.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Access and Convenience. The Exposition BRT MOS Alternative would be implemented in conjunction with the Wilshire BRT, so it would include the impacts of parking removal on Wilshire Boulevard associated with the Wilshire BRT. The MOS does not extend west to Sepulveda Boulevard, so this alternative will not result in the removal of on-street parking along the Exposition Corridor. It will have less than significant impacts on on-street parking.

Safety. The Exposition BRT MOS Alternative would be implemented in conjunction with the Wilshire BRT, so it would include the impacts of parking removal on Wilshire Boulevard associated with the Wilshire BRT. The MOS does not extend west to Sepulveda Boulevard, so this alternative will not result in the removal of on-street parking along the Exposition Corridor and would therefore not effect safety considerations due to changes in parking quantities. This alternative will have less than significant impacts on on-street parking.

Park-and-Ride Facilities and Station Area Parking Spillover Impacts. The BRT MOS Alternative has parking at three stations; Crenshaw, La Brea and La Cienega. The demand is not forecast to exceed the supply at any of these stations. The MTA travel demand forecasting model predicts a significant park-and-ride demand at the Venice/Washington station where no parking is proposed.

The demand for 366 park-and-ride spaces at this location was forecast, indicating that on-street parking in the vicinity of the Venice/Hayden Station can be expected. This could result in a significant parking impact on streets within walking distance of this station.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Access and Convenience. Alternative 3 will have the same parking impacts along the Wilshire Corridor as Alternatives 1 and 2. The additional impacts associated with the LRT along the Exposition Corridor are discussed in this section.

In the eastern-most portions of the Exposition Corridor, the LRT will run in the center of Hill Street. Two lanes of traffic will be provided in the southbound direction, with no parking along the west side of Hill Street. One travel lane will be retained in the northbound direction, with parking along the east side of the street. The on-street parking supply along the blocks of Hill Street between Washington Boulevard and Jefferson Boulevard will be reduced by 50 percent (a loss of 10-12 parking spaces). This will negatively affect the convenience of parking access to properties along the west side of Hill Street. It should not have as significant of an affect on loading access, however, since with two travel lanes on Hill Street, delivery vehicles are likely to stop at the west curb, blocking a travel lane, while loading.

West of Hill Street, to Venice Boulevard, the LRT will be located off-street within the MTA right-of-way, and the project will not affect on-street parking. Further to the west, LRT operations will return to city streets and there will be no removal of on-street parking along Venice Boulevard. The transit facility will require the elimination of one travel lane in each direction, but will leave all parking along the curb.

On Sepulveda Boulevard, parking will be retained wherever feasible. The roadway will be widened and sidewalks narrowed to eight feet so that parking can be retained along most blocks. However, parking will not be provided on the approaches to intersections where left turn lanes are present or adjacent to the station at National Boulevard. This results in the removal of 157 on-street parking spaces along Sepulveda Boulevard. This loss of on-street parking will have similar affects on access and convenience, as described earlier for the BRT on Wilshire Boulevard. However, the elimination of 157 spaces out of a total of 526 spaces on Sepulveda Boulevard, is a loss of only 30 percent of the on-street parking supply and will not create an impact as significant as on the Wilshire BRT corridor where 100 percent of the parking is removed. The Replacement Parking Strategy will seek to purchase property for off-street replacement parking along Sepulveda Boulevard.

Further to the west, the LRT will be located in the MTA right-of-way and will not require removal of any on-street parking. Once the LRT reaches Olympic Boulevard in Santa Monica, it will transition to an in-street running operation sharing the roadway with mixed flow traffic until it becomes grade separated and crosses the Santa Monica Freeway. It will not affect on-street parking in this segment.

In summary, Alternative 3 will have a significant unavoidable impact on access and convenience to some fronting properties along Hill Street and Sepulveda Boulevard due to the loss of on-street parking.

Safety. The elimination of parking along the west side of Hill Street will eliminate the buffer between pedestrians and moving traffic. However, there is limited pedestrian activity along this industrialized segment of Hill Street.

The elimination of parking on the approaches to intersections on Sepulveda Boulevard to accommodate left turn lanes reduces the buffer between pedestrians and moving traffic. This is common on many arterials in the Los Angeles area and would not be expected to result in any significant impacts. The preservation of on-street parking results in a somewhat curvilinear alignment of the travel lanes as they transition around the parking and left turn lanes. This is also common on many arterials in the Los Angeles area and would not be expected to result in any significant impacts.

Park-and-Ride Facilities and Station Area Parking Spillover Impacts. Park-and-ride facilities are proposed at eight (8) locations for the Exposition LRT alternative. The Exposition LRT Alternative will have 3,593 spaces. Table 3.3.4 above provided a breakdown of parking spaces and park-and-ride demand by station. The largest proposed parking facility is a 1,140 space lot at the Cloverfield station. All of the stations will also include bicycle parking facilities.

Although the overall parking demand may not exceed the total supply at stations on the Exposition Corridor, instances may occur at individual stations, or during certain times where the balance of demand exceeds the supply of parking at the planned park-and-ride lots. In such instances, adjacent neighborhoods may be impacted by non-local/non-residential traffic attempting to find either short-term or long-term parking for the day.

The Exposition LRT Alternative exhibits a strong demand for park-and-ride spaces. A total daily park-and-ride demand of 2,907 spaces is forecast. This alternative has five stations where parking demand is forecast to exceed the planned capacity of the station parking lots. Those two locations are:

- La Brea Station
- Ocean Avenue Station

It can be anticipated that on-street parking activity will increase in the vicinity of each of these stations. If there are unrestricted, free on-street parking spaces within walking distance of these stations (about one quarter mile), LRT patrons will likely attempt to park on those streets to ride the train. It is difficult to quantify the precise number of on-street parking spaces that may be used by LRT patrons, and to establish a quantitative threshold of significance criteria applicable to all such streets, since the impact of on-street parking is subjective. Some residents are more sensitive to parking on their street than others, but the areas around these two stations are the ones most likely to be affected by spillover parking from the LRT Alternative.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Access and Convenience. The Exposition LRT MOS Alternative would be implemented in conjunction with the Wilshire BRT, so it would include the impacts of parking removal on Wilshire Boulevard associated with the Wilshire BRT. It will affect on-street parking along Hill Street, similar to Alternative 3. However, since the MOS does not extend west to Sepulveda Boulevard, this alternative will not result in the removal of on-street parking along Sepulveda Boulevard. This alternative will have less than significant impacts on on-street parking.

Safety. The Exposition LRT MOS Alternative would be implemented in conjunction with the Wilshire BRT, so it would include the impacts of parking removal on Wilshire Boulevard associated with the Wilshire BRT. It will affect on-street parking along Hill Street, similar to Alternative 3, but the MOS does not extend west to Sepulveda Boulevard, so this alternative will not result in the removal of on-street parking along Sepulveda Boulevard. It will have less than significant impacts on on-street parking.

Park-and-Ride Facilities and Station Area Parking Spillover Impacts. The LRT MOS Alternative has parking at four stations; Crenshaw, La Brea, La Cienega, and the Venice/Washington terminus station. The park-and-ride lots at the four stations will have a total supply of 1,416 spaces. The forecast demand is 1,668 spaces, with virtually all of the excess demand forecast at the La Brea Station.

The demand at the La Brea Station is more than 350 cars higher than the proposed supply of parking. It can be anticipated that on-street parking will be impacted in the vicinity of the La Brea Station. The park-and-ride lots planned for the Crenshaw and Venice/Washington Stations were also estimated to be at capacity. However, since latent parking demand is projected to be minimal for these park-and-ride lots, the spillover of parking into the local neighborhoods would be minimal.

Maintenance Yard

The site selected for the maintenance yard for buses or light rail vehicles will be designed to accommodate all of the transit vehicle and employee parking on-site. If the site is small, a parking structure may be included in the site plan to provide adequate employee parking. The maintenance yard will not affect on-street parking on adjacent streets and will not cause any parking impacts. There would be no impacts to parking as a result of maintenance yards.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

The subway design option will not affect on-street parking and, therefore, will not have a significant impact on parking.

3.3.4 Mitigation Measures

Parking Replacement Mitigation (Applies to Alternatives 1, 1A, 1B, 2, 2A, 3, 3A)

The MTA shall implement the proposed Parking Replacement Strategy to identify how and where to provide 1,335 additional parking spaces distributed along the Wilshire Corridor and 157 spaces along Sepulveda Boulevard. Every attempt shall be made to provide the replacement parking spaces in close proximity to where they will be eliminated.

Peak Hour Only BRT Operations (Applies to Alternatives 1, 1A, 1B, 2, 2A, 3, 3A)

Should the Replacement Parking Strategy prove to be infeasible, the MTA could consider implementing the Wilshire BRT only during peak periods. This will eliminate the parking impact during off-peak periods, leaving a peak period parking impact only in those segments of the corridor where peak hour parking is not already prohibited (i.e., in Santa Monica). Should the replacement parking strategy prove to be infeasible in the City of Santa Monica, the MTA could consider implementation of the Wilshire BRT project as a continuation of Rapid Bus service in that city (TSM Alternative) with no dedicated transit lane. This would eliminate the parking impact.

Rapid Bus Operations on Sepulveda Boulevard (Applies to Alternative 2)

Should the Replacement Parking Strategy prove to be infeasible, the MTA shall implement the Exposition BRT segment on Sepulveda Boulevard as a Rapid Bus operation, similar to the segments at the eastern and western ends of the corridor, where the buses will run in mixed flow traffic lanes. This will eliminate the need to prohibit parking on the Sepulveda Boulevard segment of Alternative 2.

Residential Neighborhood Protection/Parking Control Mitigations (Applies to Alternatives 1, 1A, 1B, 2, 2A, 3, 3A)

Parking provisions and controls can directly affect the volume of traffic on residential streets, particularly where these streets are used for parking by commuters, shoppers, and other non-related traffic attracted by nearby non-residential destinations. Parking controls may be the only effective traffic management strategy for a neighborhood experiencing an increase in traffic volumes and parking utilization on local streets by users of the transit service from outside of the local area.

The following mitigation measures shall be considered in the areas adjacent to the park-and-ride lots where demand was forecast to exceed supply and adjacent to stations with no parking, if LADOT determines that spillover parking is causing a significant impact. Four basic control approaches exist to deal with outsider parking in neighborhoods:

- Prohibit on-street parking;
- Time-limited parking;
- Resident permit parking; and
- Non-resident permits for registered car-poolers who work in the zone.

Additionally, the following approaches may be considered in situations where parking supply is low or non-existent and/or parking demand is high.

- Negotiate with local property owners to allow leasing of all day parking spaces.
- Consider parking controls in neighborhoods where parking spillover from park-and-ride facilities have become problematic.
- Institute parking controls in communities affected by general spillover of parking at stations without parking facilities

3.3.5 Cumulative Impacts

The reduction of the amount of on-street parking or the use of on-street parking by transit users in station areas will have the cumulative impact of making it increasingly more difficult to find an available on-street parking location. This will result in a significant adverse affect in areas where the supply of off-street parking is not adequate to fully meet the needs of the land uses generating the parking demand. This is a cumulative effect of developments being built with inadequate parking. Over the years, many of the local jurisdictions along these potential transit corridors did not require adequate off-street parking and in some instances did not require any off-street parking. This has caused many of the land uses in older buildings along these corridors to depend on the use of on-street parking to meet their employee and customer parking needs. The local jurisdictions all have parking programs designed to address this cumulative parking impact either through the provision of off-street public parking or the regulation of the use of on-street parking.

3.4 Socioeconomics

3.4.1 Introduction

Information contained in this section of the EIS/EIR was obtained from the 1990 US Census; the Southern California Association of Government (SCAG); the City of Los Angeles 2000 Economic and Demographic Information Report; the Mid-City/Westside Transit Corridor Study MIS (incorporated by reference); and site surveys performed by EIP Associates in 1999 and 2000. The purpose of this section is to provide baseline data on the existing socioeconomic characteristics of the study area and to identify potentially significant impacts to the socioeconomic environment resulting from implementation of the alternatives considered. Section 4.7 of this document provides an evaluation of potential project impacts on minority and low-income populations in accordance with Executive Order 12898 on Environmental Justice.

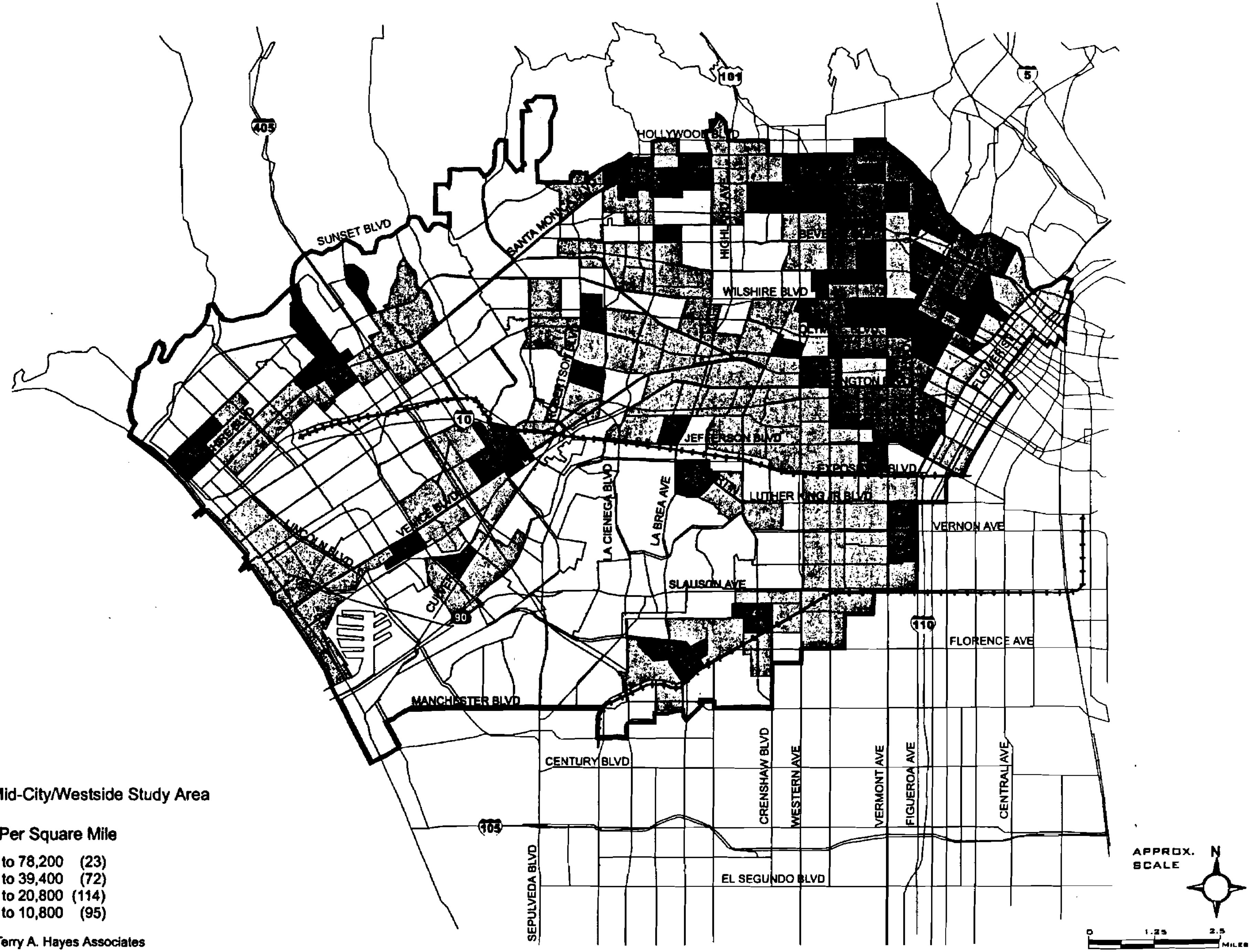
3.4.2 Affected Environment

The study area is located in western Los Angeles County and encompasses approximately 112 square miles. Approximately 16 percent of the population and 24 percent of the jobs in Los Angeles County are concentrated in the study area. According to a market trend analysis conducted by Grubb & Ellis, 27 percent of the Los Angeles County's 161 million square feet of new office space is on the Westside, which makes it the largest office market in Los Angeles.

Los Angeles County is the most populous county in California. Currently, County population is 9,524,890 residents. By the year 2020, the population is projected to be 12,249,104 residents, accounting for approximately 60 percent of the metropolitan region's population. The County's 20-year population growth rates are estimated at 31 percent between 1980 and 2000 and forecasted at 25 percent between 2000 and 2020.

Population and employment densities in the Mid-City/Westside study area are the highest within the Los Angeles metropolitan region, averaging approximately 13,883 persons per square mile and 9,167 employees per square mile. Population and employment densities are shown in Figure 3.4-1, Existing Population Density and Figure 3.4-2, Existing Employment Density. These figures show that the more densely populated areas are concentrated in the east and northwestern portion of the study area, while the greatest employment densities are in the western and northwestern portion of the study area.

According to the *West Los Angeles Transit Corridor Technical Report* prepared by the Southern California Association of Governments (SCAG, 1998): "the population density in the SCAG study area [which is roughly equivalent to that of the Mid-City/Westside study area] in 1990 was about 9,600 persons per square mile, which was more than four times the County." Population density for the MTA study area in 1997 was approximately 13,883 persons per square mile; over six times that of the LA County 2,300 persons per square mile. According to SCAG's forecasts, the population density will increase to over 17,000 persons per square mile by the year 2020, compared with 3,017 persons per square mile in the County.



LEGEND:

Mid-City/Westside Study Area

Persons Per Square Mile

- 39,400 to 78,200 (23)
- 20,800 to 39,400 (72)
- 10,800 to 20,800 (114)
- 200 to 10,800 (95)

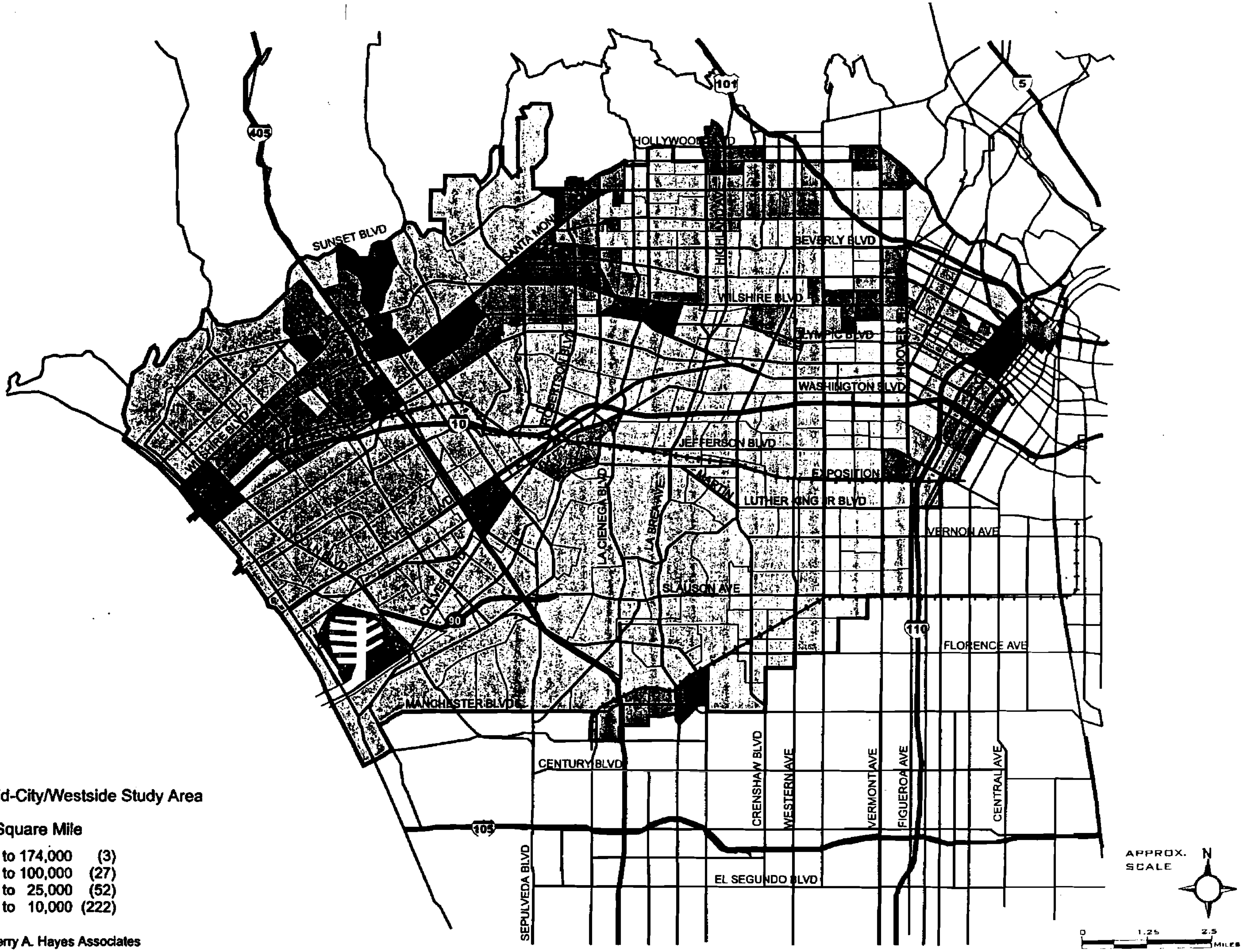
SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.4-1

EXISTING POPULATION DENSITY



LEGEND:

Mid-City/Westside Study Area

Jobs per Square Mile

- 100,000 to 174,000 (3)
- 25,000 to 100,000 (27)
- 10,000 to 25,000 (52)
- 0 to 10,000 (222)

SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.4-2

EXISTING EMPLOYMENT DENSITY

Employment densities are also higher in the Mid-City/Westside study area than in the County as a whole. In 1997, the study area employees per square mile were 9,167 compared with a County employment density of 1,070 employees per square mile. These densities will increase by the year 2020 to 10,829 employees per square mile in the study area versus 1,433 employees per square mile in the County.

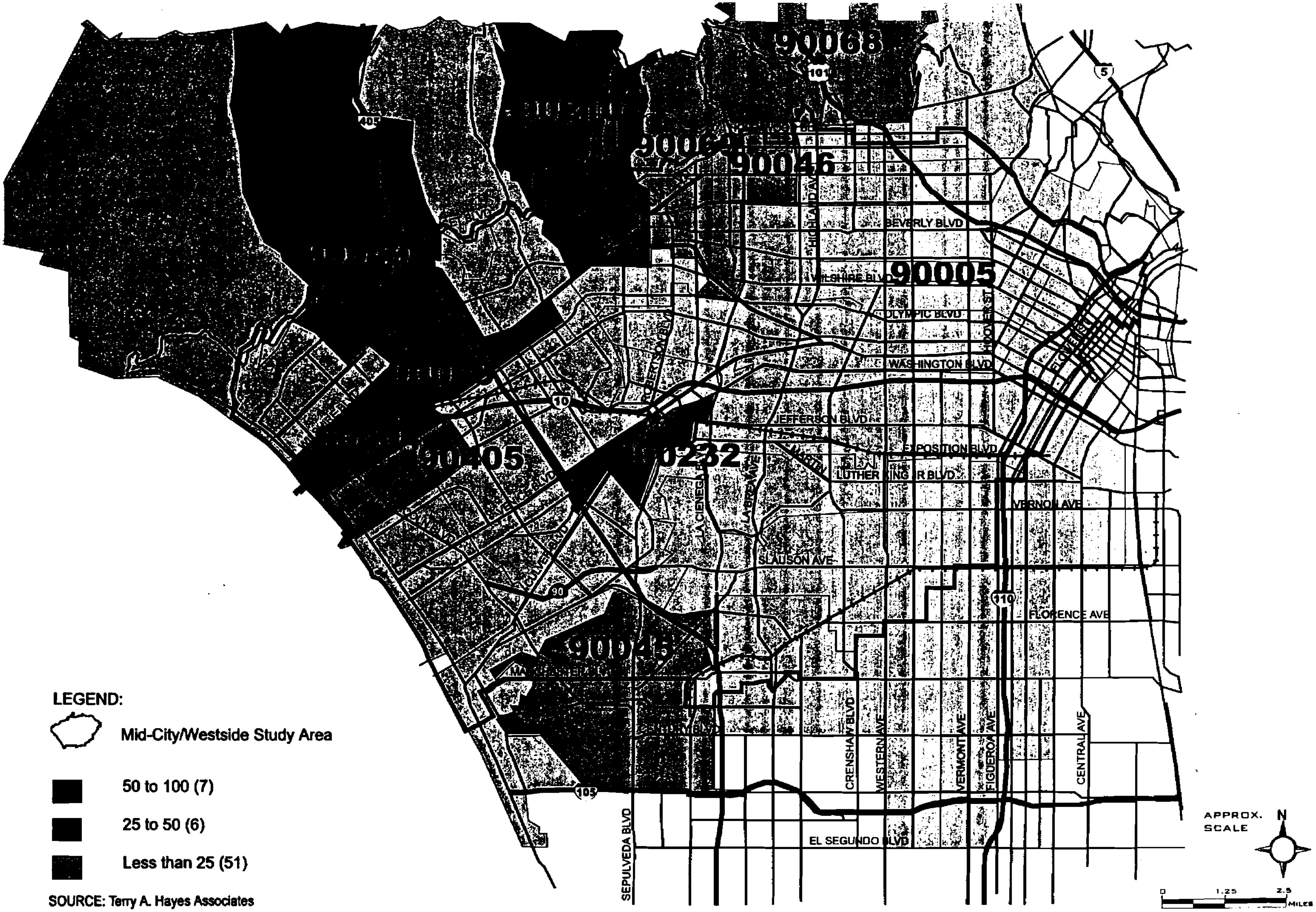
Population and employment forecasts to the year 2020 adopted by SCAG as part of Regional Transportation Plan suggest that the study area will capture a disproportionate share of growth over the next 20 years. The study area Wilshire Corridor has a population of 1,555,005 and an employment base of 1,026,685. According to SCAG's most recent adopted forecast (April 1998), the study area is expected to grow by 356,265 (18.85 percent increase) persons and 186,200 (15.35 percent increase) employees between 1997 and 2020.

Employment densities in the study area are the highest within the metropolitan region, averaging approximately 9,167 employees per square mile. The employment density of the County is 1,070 employees per square mile. These densities will increase by the year 2020 to 10,829 employees per square mile in the study area and 1,433 employees per square mile in the County.

The study area currently has an employment base of 1,026,685 employees. According to SCAG's most recent adopted forecast (April 1998), employment is expected to grow by 186,200 (15.35 percent increase) employees by the year 2020.

The primary engine for growth in the study area will be business services and entertainment related businesses. As further indicated in the Grubb &Ellis report, other sectors in the Westside economy contribute to regional, as well as statewide economic growth: "in the 1980s and 1990s five sectors emerged to propel California economic base forward: foreign trade, high tech manufacturing, professional services, tourism, and entertainment. The West Los Angeles market is home to most of these industries which have been a principal catalyst to economic growth, and a driving force for the office market." Over the past decade there has been an ever-increasing number of these businesses located in West Los Angeles/Century, Santa Monica, and Culver City. Although the specific "Dreamworks Studio Campus" at Playa Vista has been put on hold, it is anticipated that there will be a significant increase in production and postproduction type businesses on the Westside. Many of the current office and warehouse space vacancies are featuring references to the availability of "creative space" rented in 10,000+ square feet increments.

Growth in the study area will continue to be fueled by the fact that entertainment and media related businesses are concentrating in the western part of the corridor. U.S. Census County Business Patterns data indicate that these new service businesses are locating in West Hollywood, Beverly Hills, West Los Angeles, Culver City, and Santa Monica (see Figure 3.4-3). Real estate analysts expect that the demand for production and creative spaces will continue to be robust. The industries and businesses that are attracted to the study area are those that are expected to be the foundation of the local and regional economy for many years into the future. In addition, the Mid-City/Westside area is the center of approximately one-third of all new office construction under way in LA County.



Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.4-3
SERVICE BUSINESS GROWTH (1994 TO 1996)
STUDY AREA ZIP CODES

Wilshire Boulevard

The Wilshire Right-of-Way (ROW) is illustrated in Figure 2-1 (Section 2.0, Alternatives Considered). Table 3.4-1 provides the current demographic setting of the Corridor and displays relevant 1990 United States Census data from the Census Block Groups, which border the corridor approximately 0.5 mile each direction.

TABLE 3.4-1
WILSHIRE RIGHT-OF-WAY
DEMOGRAPHIC DATA

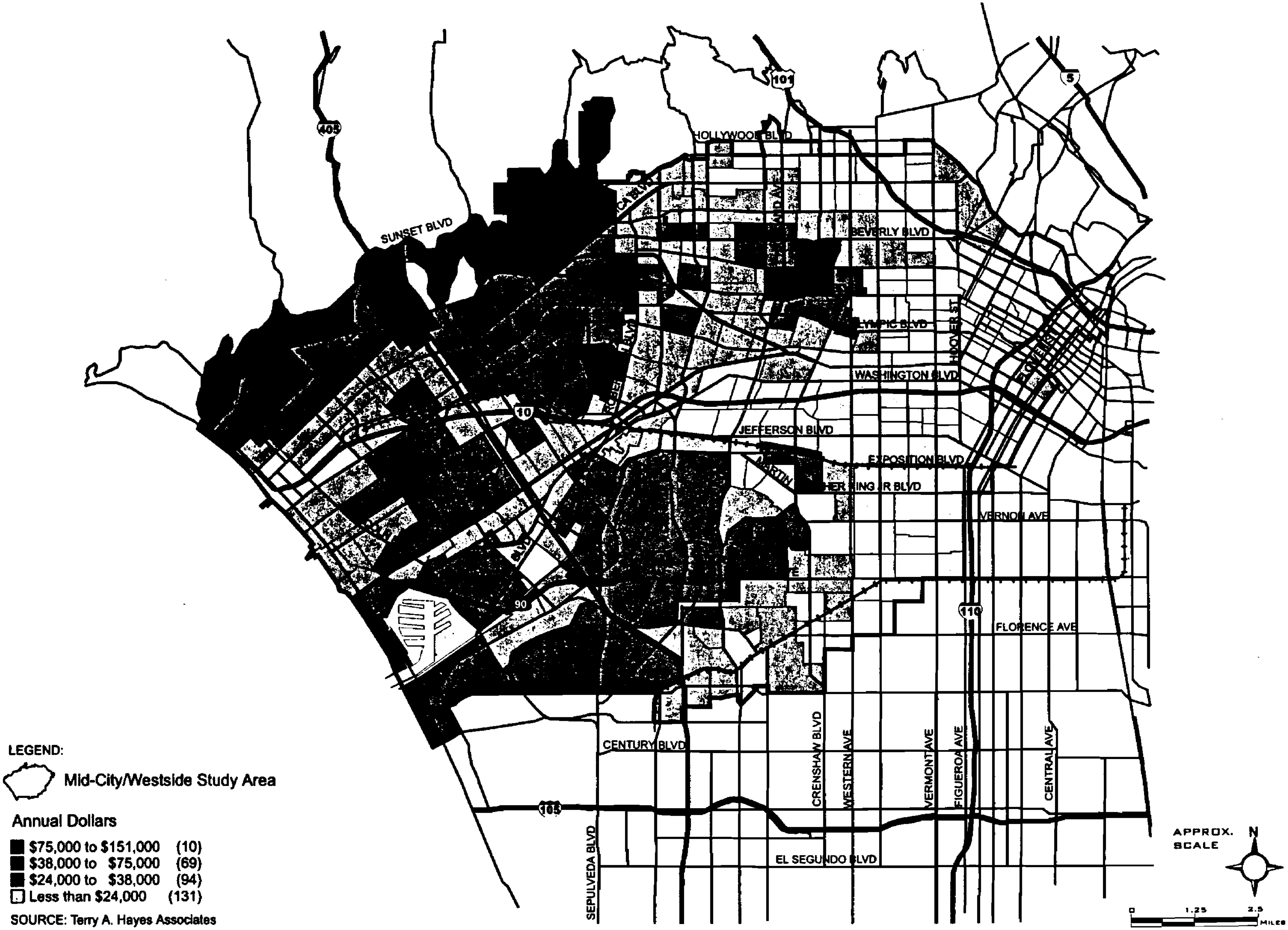
Persons	178,866
Households	86,367
Housing Units	93,932
Own	21,072
Rent	64,495
Employed	98,812
Work in City	95,015
Transit Mode	
Drive Alone	66,229
Carpool	8,420
Public Transportation	6,267
Automobile Count	
No Vehicle	11,971
1 Car	42,085
2 Car	24,798
Occupation by Industry	
Manufacturing	8,146
Utility	4,642
Trade/Construction	18,903
Finance, Insurance, Real Estate	11,511
Service	17,463
Professional Service	32,868
Public	1,815
Executive/Management	45,353
Sales	35,469
Median Income	48,758

The Wilshire Bus Rapid Transit (BRT) Alternative contains 14 station terminals in Mid-City Los Angeles, Beverly Hills, West Los Angeles, and Santa Monica. Table 3.4-2 contains demographic data for a 0.5-mile radius around each of the station locations. Included within this table is number of persons, number of households, housing unit ownership, number employed, commute information, occupation by industry type, and median income all within a 0.5 mile radius around each station location. Figure 3.4-4 displays the median income densities within the Mid-City/Westside study area, and Figure 3.5-1 (Section 3.5, Land Use/Neighborhoods) shows the locations of the stations and a 0.5-mile radius around them. Both of these figures follow Table 3.4-2.

TABLE 3.4-2
WILSHIRE BRT STATIONS DEMOGRAPHIC DATA

	Station Location													
	Western	**Crenshaw**	**La Brea**	**Fairfax**	**La Cienega**	**Robertson**	**Beverly**	**Santa Monica**	**Westwood Village**	**Barrington**	**Bundy**	**Wilshire/14th**	**Wilshire/4th**	**Ocean**
Persons	2,550	566	826	1,288	1,017	216	557	1,066	2,651	1,169	1,815	1,155	712	821
Households	1,218	204	281	890	619	1,159	284	571	1,450	28	977	448	453	636
Housing Units	1,317	261	291	1,012	628	1,279	322	649	1,656	32	1,029	482	599	701
Own	13	79	207	11	89	246	106	139	198	14	118	94	13	61
Rent	1,205	125	74	879	530	913	178	432	1,252	14	859	354	530	640
Employed	1,179	306	456	829	707	1,218	387	609	1,543	54	1,091	570	309	529
Work in City	1,170	294	416	829	660	1,190	387	600	1,478	54	1,030	558	279	374
Transit Mode														
Drive Alone	614	188	293	567	480	931	196	457	967	20	692	418	130	201
Carpool	121	44	65	107	44	72	27	16	57	0	98	20	47	28
Public Transportation	294	32	10	51	64	69	0	48	65	34	132	78	55	47
Automobile Count														
No Vehicle	548	26	18	126	103	139	20	71	155	0	74	60	267	211
1 Car	452	74	57	542	366	596	103	56	795	5	590	247	218	317
2 Car	139	61	128	201	131	338	96	178	392	29	265	112	19	83
Occupation by Industry														
Manufacturing	60	26	47	62	71	92	50	49	90	0	43	59	25	33
Utility	84	19	19	61	43	111	8	23	23	0	45	33	45	52
Trade/Construction	271	62	49	149	166	199	87	129	396	25	241	75	55	68
Finance, Insurance, Real Estate	180	38	54	61	55	161	27	120	157	8	190	17	11	24
Service	296	62	97	195	154	290	117	53	308	0	148	115	96	111
Professional Service	223	78	147	266	202	299	101	235	505	21	346	243	53	65
Public	24	15	27	35	12	32	0	0	32	0	32	10	0	8
Executive/Management	292	122	246	391	326	550	244	334	727	34	439	301	55	62
Sales	366	103	120	319	282	525	109	224	659	20	453	137	139	106
Median Income	$16,987	$57,393	$74,574	$27,941	$32,010	$48,386	$82,961	$39,904	$32,545	$93,370	$32,633	$28,981	$15,132	$31,223

Source: 1990 US Census



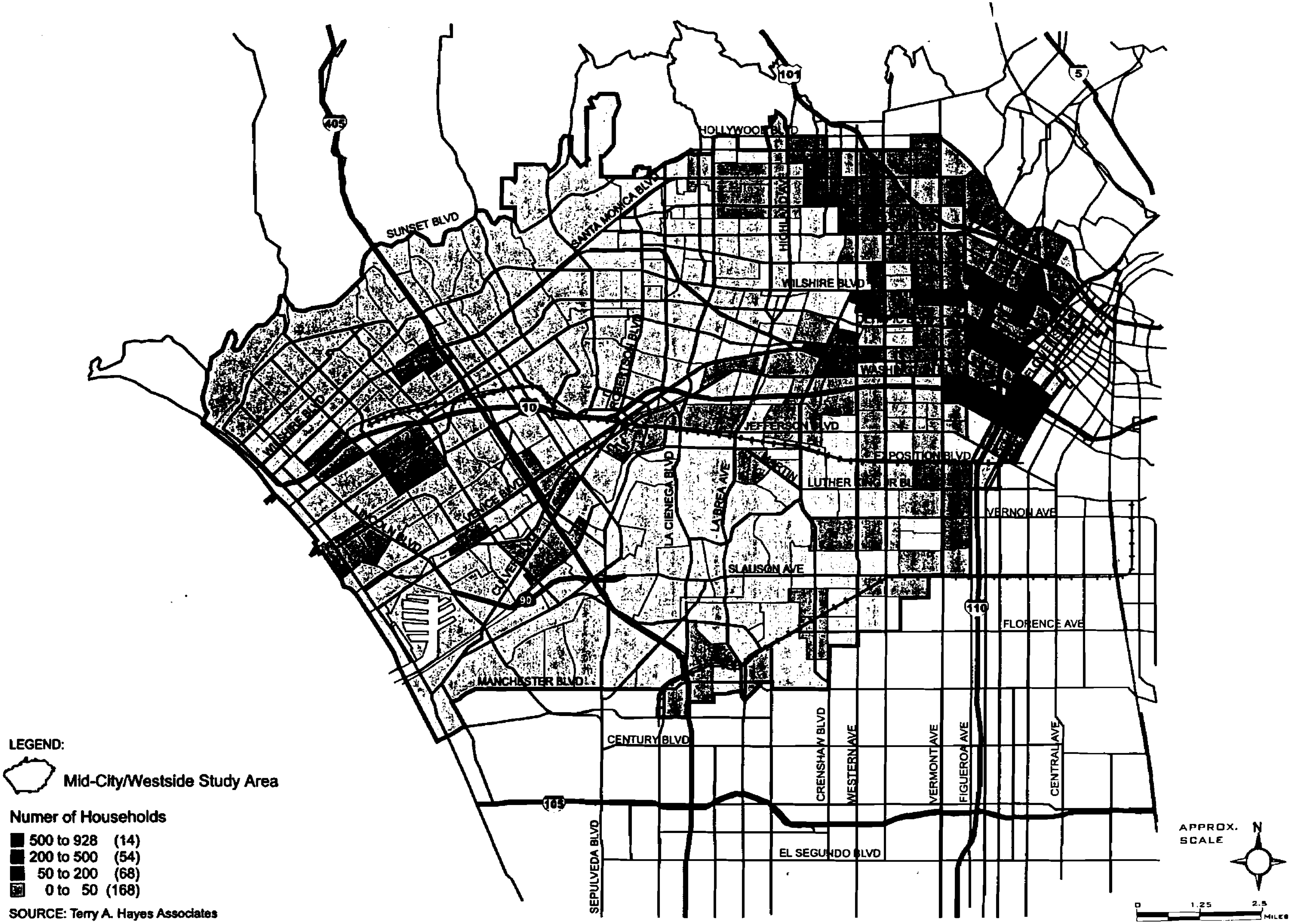
METRO

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.4-4

MEDIAN HOUSEHOLD INCOME



Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.4-5

HOUSEHOLDS WITH NO AUTOMOBILE AVAILABLE

Exposition Right-of-Way

The Exposition Right-of-Way (ROW) is illustrated in Figure 2-1. Census data was collected for an area bordering both sides of the corridor by 0.5 miles. Table 3.4-3 provides the current demographic setting and displays 1990 US Census data from the Census Block Groups for the Exposition corridor.

TABLE 3.4-3
EXPOSITION RIGHT-OF-WAY
DEMOGRAPHIC DATA

Persons	148,399
Households	55,192
Housing Units	59,514
Own	18,284
Rent	36,908
Employed	70,864
Work in City	67,721
Transit Mode	
Drive Alone	44,968
Carpool	9,436
Public Transportation	7,384
Automobile Count	
No Vehicle	8,700
1 Car	24,444
2 Car	16,041
Occupation by Industry	
Manufacturing	10,486
Utility	4,768
Trade/Construction	13,680
Finance, Insurance, Real Estate	5,115
Service	11,072
Professional Service	19,321
Public	1,992
Executive/Management	19,555
Sales	23,583
Median Income	$31,321

The Exposition LRT Alternative contains 17 station terminals in Los Angeles, Culver City, West Los Angeles, and Santa Monica. Tables 3.4-4 and 3.4-5 contain demographic data for a 0.5-mile radius around each station location. The Exposition BRT Alternative contains 20 station terminals in Los Angeles, Culver City, West Los Angeles, and Santa Monica, while the LRT Alternative contains17 station terminals within the same area. Included within these tables is number of persons, number of households, housing unit ownership, number employed, commute information, occupation by industry type, and median income all within a 0.5 mile radius around each station location. Figure 3.4-4 displays the median income densities within the Mid-City/Westside study area. Figure 3.4-1 (Section 3.4, Land Use/Neighborhoods and Communities) shows the locations of the stations and a 0.5-mile radius around them.

TABLE 3.4-4
EXPOSITION LRT STATIONS DEMOGRAPHIC DATA

	Station Location																
	7th/Flower	Pico/Flower	Washington/Grand	I-110/USC/Exposition Park	Vermont	Western	Crenshaw	La Brea	La Cienega	Venice/Washington	Venice/Overland	Venice Sepulveda	Sepulveda/National	Pico/Sawtelle	Bundy	Cloverfield	Ocean/Colorado
Persons	667	454	3,061	1,491	2,104	1,363	718	785	826	1,326	3,333	872	890	597	720	1,888	327
Households	205	96	621	374	557	470	318	329	307	370	1,752	362	435	274	304	800	174
Housing Units	290	98	632	411	618	519	323	338	318	389	1,859	382	500	298	313	836	227
Own	2	3	95	14	64	161	211	144	223	149	71	141	97	49	122	28	23
Rent	203	93	526	360	493	309	107	185	84	221	1,681	221	338	225	182	772	151
Employed	199	229	1,117	657	666	486	358	331	357	594	2,144	510	579	393	420	1,113	171
Work in City	199	229	1,086	605	638	494	347	318	334	563	2,060	477	544	377	411	1,097	171
Transit Mode																	
Drive Alone	61	107	317	174	291	278	304	258	246	425	1,482	407	372	267	293	658	65
Carpool	17	23	269	192	204	102	26	42	50	73	300	47	37	48	81	132	47
Public Transportation	78	70	365	141	118	77	6	31	9	39	159	26	67	34	37	149	22
Automobile Count																	
No Vehicle	91	13	267	69	135	181	4	65	10	28	122	39	93	31	22	108	22
1 Car	96	63	251	217	264	148	116	124	83	156	958	113	195	130	147	476	126
2 Car	10	15	57	71	98	122	152	66	147	123	577	134	118	86	85	186	46
Occupation by Industry																	
Manufacturing	123	81	482	304	242	73	32	51	79	117	223	95	30	36	34	216	34
Utility	14	0	68	18	9	52	20	52	85	25	126	17	64	18	40	49	6
Trade/Construction	32	42	230	129	46	83	46	13	62	117	282	105	138	81	73	291	43
Finance, Insurance, Real Estate	0	0	17	9	46	34	35	39	21	41	241	17	9	44	25	107	25
Service	8	40	174	63	123	112	33	24	7	82	251	59	106	96	74	104	26
Professional Service	11	16	70	95	131	90	124	116	80	153	844	205	162	58	124	252	18
Public	0	8	22	6	0	8	56	17	5	11	59	8	7	0	8	66	0
Executive/Management	10	18	18	48	55	48	104	134	35	102	871	258	198	135	100	292	46
Sales	14	36	208	137	129	175	134	81	179	159	765	126	171	116	145	355	68
Median Income	$9,234	$19,375	$18,750	$21,382	$11,563	$16,955	$42,218	$17,159	$33,636	$37,206	$30,965	$33,462	$31,875	$31,250	$33,482	$26,639	$19,722

Source: 1990 US Census

TABLE 3.4-5
EXPOSITION BRT STATIONS DEMOGRAPHIC DATA

	Station Location																			
	7th/Flower	**Figueroa/Pico**	**Figueroa/Adams**	**Exposition/USC**	**Figueroa/Jefferson**	**Vermont**	**Western**	**Crenshaw**	**La Brea**	**La Cienega**	**National/Hayden**	**Venice/Main**	**Venice/Overland**	**Venice/Sepulveda**	**Sepulveda/National**	**Pico/Sawtelle**	**Bundy**	**Cloverfield**	**Colorado/14th**	**Ocean/Santa Monica**
Persons	667	454	3,061	1,491	984	2,104	1,363	718	785	826	748	3,883	3,333	872	890	597	720	1,888	1056	327
Households	205	96	621	374	241	557	470	318	329	307	437	2,144	1,752	362	435	274	304	800	481	174
Housing Units	290	98	632	411	298	618	519	323	338	318	517	2,993	1,859	382	500	298	313	836	502	227
Own	2	3	95	14	10	64	161	211	144	223	34	65	71	141	97	49	122	28	43	23
Rent	203	93	526	360	192	493	309	107	185	84	403	2,079	1,681	221	338	225	182	772	43	151
Employed	199	229	1,117	657	693	666	486	358	331	357	577	2,719	2,144	510	579	393	420	1,113	456	171
Work in City	199	229	1,086	605	684	638	494	347	318	334	554	2,578	2,060	477	544	377	411	1,097	450	171
Transit Mode																				
Drive Alone	61	107	317	174	143	291	278	304	258	246	426	2,003	1,482	407	372	267	293	658	269	65
Carpool	17	23	269	192	84	204	102	26	42	50	64	286	300	47	37	48	81	132	60	47
Public Transportation	78	70	365	141	138	118	77	6	31	9	33	209	159	26	67	34	37	149	22	22
Automobile Count																				
No Vehicle	91	13	267	69	102	135	181	4	65	10	20	232	122	39	93	31	22	108	162	22
1 Car	96	63	251	217	184	264	148	116	124	83	241	1,162	958	113	195	130	147	476	139	126
2 Car	10	15	57	71	38	98	122	152	66	147	158	673	577	134	118	86	85	186	114	46
Occupation by Industry																				
Manufacturing	123	81	482	304	201	242	73	32	51	79	50	383	223	95	30	36	34	216	12	34
Utility	14	0	68	18	10	9	52	20	52	85	38	112	126	17	64	18	40	49	15	6
Trade/ Construction	32	42	230	129	95	46	83	46	13	62	113	585	282	105	138	81	73	291	153	43
Finance, Insurance, Real Estate	0	0	17	9	2	46	34	35	39	21	23	271	241	17	9	44	25	107	37	25
Service	8	40	174	63	92	123	112	33	24	7	88	413	251	59	106	96	74	104	97	26
Professional Service	11	16	70	95	71	131	90	124	116	80	248	796	844	205	162	58	124	252	86	18
Public	0	8	22	6	0	0	8	56	17	5	0	65	59	8	7	0	8	66	33	0
Executive/ Management	10	18	18	48	10	55	48	104	134	35	290	1,097	871	258	198	135	100	292	110	46
Sales	14	36	208	137	212	129	175	134	81	179	225	1,017	765	126	171	116	145	355	159	68
Median Income	$9,234	$19,375	$18,750	$21,382	$17,840	$11,563	$16,955	$42,218	$17,159	$33,636	$31,415	$31,160	$30,965	$33,462	$31,875	$31,250	$33,482	$26,639	$25,261	$19,722

Source: 1990 US Census

3.4.3 Impact Assessment and Mitigation Measures

Standards of Significance

An adverse impact to socioeconomic resources would result if any of the following conditions are met:

- The alternatives considered would have a substantial adverse effect on businesses along each corridor;
- The alternatives considered would have a substantial adverse impact to population.

Methodology for Impact Evaluation

The evaluation method for impacts to socioeconomic resources entails a review of 1990 US Census Demographic Data to determine whether there are businesses or individuals within the project corridor that could be impacted by either construction or operational-related impacts.

The proximity to transit supportive land use can also be measured in terms of the population and employment served by the various alternatives. The number of persons and employees within 0.5 mile of a proposed transit station indicates the convenience of the transit service and the potential ridership, since 0.5 mile is considered the maximum distance people will walk to access transit. Furthermore, concentrations of population are indicative of concentrations of businesses and services located nearby.

Impacts

According to a search of the General Plans of affected cities, there are no plans or policies relating to socioeconomic factors that would be affected by the proposed alternatives.

<u>**No Action Alternative (Baseline)**</u>

Effects on Local Businesses. As discussed in Section 2.0 of this report, the No Action Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size. This increase in fleet size would not result in any physical changes within the current bus routes, but merely increase the numbers of buses along the routes. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. Therefore, no disruption would occur to either access or visibility of businesses located along the existing routes and station intersections. Since service along the routes would not change, no impacts to workers who use public transportation for commuting purposes or businesses relying on employees using public transportation would occur. Impacts would be less than significant.

Effects on Population. As discussed in Section 2.0 of this report, the No Action Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. Any operational changes inside the corridor resulting from an increase in fleet size would likely not effect the current population trends inside the corridor. Impacts would be less than significant.

Transportation System Management (TSM) Alternative

Effects on Local Businesses. Similar to the No Action Alternative, this option would focus on enhancements and restructuring of transit service within the corridor area. MTA local service buses, as well as MTA Rapid Bus service, would continue to operate along city streets and highways and there would be no effects outside of these ROWs. It is assumed that any increase in fleet size would not result in any physical changes within the current bus routes, but merely increase the numbers of buses along the routes. Increased service along existing routes would not impact access or visibility of businesses located along the existing corridors and station intersections. Impacts would be less than significant.

Effects on Population. Similar to the No Action Alternative, this option would focus on enhancements and restructuring of transit service within the corridor area. MTA local service buses, as well as MTA Rapid Bus service, would continue to operate along city streets and highways and there would be no effects outside of these ROWs. The only changes inside the corridor resulting from the TSM Alternative would likely not effect the current population trends inside the corridor. Impacts would be less than significant.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Effects on Local Businesses. Loss of on-street parking immediately adjacent to a business would be considered an access impediment because patrons would most likely be dissuaded from visiting a business if parking is not readily available. The inclusion of an isolated transit lane will result in the loss of on-street parking. This type of access impediment would likely be most problematic within areas where businesses are highly dependent on on-street metered parking along Wilshire Boulevard. For example, much of the parking serving the retail stores and office buildings of the commercial districts in the Cities of Beverly Hills (e.g., Golden Triangle, Rodeo Drive, etc.) and Santa Monica (e.g., 3rd Street Promenade) is currently on-street parking. Loss of this current available on-street parking would result in the loss of access to businesses, thereby possibly leading to a loss in business patrons and their revenue. This alternative represents a direct change in existing on-street parking that could result in a socioeconomic impact along the route. Because the loss of parking would be the catalyst for any socioeconomic impact, the assessment of this particular impact is addressed in Section 3.3 (Parking) of this document, where the direct and indirect effects on any loss in parking associated with the alternatives is addressed.

Effects on Population. The Wilshire BRT, as discussed in Section 2.0, follows existing public ROWs and is largely contained within existing limits of the Wilshire Boulevard ROW. As shown in Tables 3.4-1 and 3.4-2, and Figures 3.4-1 through 3.4-4, the population within the Wilshire ROW is significant, with 8 of the proposed stations containing a 1990 population greater than 1,000 persons within 0.5 miles of the station intersection. The Wilshire BRT would result in an improvement to the public transportation system serving the area. This improvement could result in an increase in population to the area, making the area more desirable. However, this increase is expected to be within the normal growth expected for the corridor and Los Angeles as a whole. Furthermore, population growth within the vicinity of the route is limited to existing housing availability and market factors that are not directly related to the proposed transit improvements. No significant direct impact to population growth is expected to occur as a result of the proposed alternative. Impacts would be less than significant.

Increased Mobility for Transit-Dependent. The concentration of activity centers in the study area has a corresponding impact on corridor travel characteristics. In 1998, the Mid-City/Westside Corridor Study Area had nearly 8.5 million daily person trips, of which 2.3 million, or 27.5 percent were home to work trips, and over 675,000, or 8 percent, are made on transit. When compared to the region as a whole, the study area has a higher percentage of work trips (by 7 percentage points) of all daily trips. This is a reflection of relatively higher population density, as well as an abundance of employment opportunities in the Corridor study area. The more notable observation is the significantly higher transit percentage for the study area trips compared to the overall regional transit percentage. The study area's percent transit mode split is 2.5 times higher than the regional 3.2 mode split. This is a clear indication of two characteristics related to the study area: high transit dependency in certain study area communities and relatively high levels of transit services that are provided in the study area.

Part of the underlying reason for high transit usage in the study area is that a significant number of households are autoless and have low incomes. These two factors are considered to be indicative of transit dependency. According to Tables 3.4-2, 3.4-4, and 3.4-5, a large percentage of the households in the Study Area did not have a vehicle compared to Los Angeles County as a whole. Figure 3.4-5 shows the households within the study area with no automobile available.

Figure 1-3, which is provided in Section 1 of this document, displays transit friendly land uses (including activity centers) within the study area. The existing activity centers in the study area are a central part of a large concentration of land uses that are considered transit-supportive. Transit supporting land uses encompass approximately 30 of the 112 square-mile study area. Existing transit usage within the study area is proportionally higher than any other area in Los Angeles County. Because there is a large base of existing transit service and transit patrons, increasing the transit mode share through increased service would represent a natural extension of exiting patterns and trends.

Because the study area represents a significant concentration of educational, cultural/entertainment, and office centers, and because the area is the most densely populated area within the region (over 13,883 persons per square mile), there has traditionally been a substantial amount of transit service and transit use. According to the SCAG *Transit Corridor Technical Report*, "the proportion of workers who took the bus [in the study area] was double that of the County [13.64 percent for the study area versus 6.8 percent for the County]. The Census Transportation Planning Package (CTPP), transportation data collected as part of the 1990 Census, further substantiates this. This data indicates, "41 percent of all work transit trips in Los Angeles County originate in the study area."

The significance of the study area's travel characteristics compared to the region is revealed in the following (MIS, 2000):

- The Corridor study area's total daily person trips account for 16.7 percent of the total trips in the region; and
- More than one out of every five home-work trips in the region (22.7 percent) are related to the study area.

This again points to the higher population and employment opportunities in the study area. These areas constitute high numbers of activity centers and businesses located within the corridors. The proximity to transit supportive land use can also be measured in terms of the population and employment served by the alternative. The number of persons and employees within 0.5 mile of a proposed transit station indicates the convenience of the transit service and the potential ridership, since 0.5 mile is considered the maximum distance people will walk to access transit.

The Wilshire Boulevard Corridor traverses densely populated regions of the Mid-City/Westside Study Area. As a requirement of satisfying FTA guidelines associated with New Starts Criteria, the number of households located within a 0.5-mile radius of proposed stations are identified in Table 3.4-2. Recent demographic data from SCAG found approximately 80,000 households located within this radius of Wilshire Boulevard in 1997.

Population increases around the Wilshire Boulevard Corridor transit stops are projected to parallel the population growth of 19 percent forecast for the Corridor study area as a whole. In contrast, employment growth around the transit stops is expected to be similar to the employment growth in the study area for all alternatives. Current SCAG demographic projections predict that growth around the Wilshire Boulevard Corridors would be slightly greater than the 15 percent anticipated for the entire Mid-City/Westside Corridor Study Area. This population density was compared to the overall county average to recognize the sizable differences that occur. It should be noted that many of the jurisdictions along the ROW, other than the MTA, are currently providing transit services (i.e., Los Angeles DOT, Santa Monica Blue Bus, Culver City Bus) to meet the needs of transit users. The Wilshire BRT Alternative would result in increased transit service, thereby increasing the mobility and convenience to the transit dependent population. Therefore, impacts to transit dependant populations would be beneficial as a result of Wilshire BRT implementation.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Effects on Local Businesses. Impacts associated with this alternative on business accessibility and visibility would be similar to those described above for Alternative 1 (Median Reconstruction Design Option). This alternative would result in a loss of current available on-street parking, therefore resulting in a possible loss of access to businesses along the route. Because the loss of parking would be the catalyst for any socioeconomic impact, the assessment of this particular impact is addressed in Section 3.3 (Parking) of this document, where the direct and indirect effects on any loss in parking associated with the alternatives is addressed.

Effects on Population. Impacts associated with this alternative on population would be similar to those described above for Alternative 1 (Median Reconstruction Design Option). Because this alternative would result in the same benefits to the public transportation system along Wilshire Boulevard, the effects on population would be the same. Impacts would be less than significant.

Increased Mobility for Transit-Dependent. Impacts associated with this alternative on increased mobility for transit-dependent populations would be similar to those described above for Alternative 1 (Median Reconstruction Design Option). Because this alternative would result in the same benefits to the public transportation system along Wilshire Boulevard, the resulting increase in transit services would be the same. Impacts would be beneficial.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Effects on Local Businesses. Impacts associated with this alternative on business accessibility and visibility would be similar to those described above for Alternative 1 (Median Reconstruction Design

Option). This alternative would result in a loss of current available on-street parking, therefore resulting in a possible loss of access to businesses along the route. Because the loss of parking would be the catalyst for any socioeconomic impact, the assessment of this particular impact is addressed in Section 3.3 (Parking) of this document, where the direct and indirect effects on any loss in parking associated with the alternatives is addressed.

Effects on Population. Impacts associated with this alternative on population would be similar to those described above for Alternative 1 (Median Reconstruction Design Option). Because this alternative would result in the same benefits to the public transportation system along Wilshire Boulevard, the effects on population would be the same. Impacts would be less than significant.

Increased Mobility for Transit-Dependent. Impacts associated with this alternative on increased mobility for transit-dependent populations would be similar to those described above for Alternative 1 (Median Reconstruction Design Option). Because this alternative would result in the same benefits to the public transportation system along Wilshire Boulevard, the resulting increase in transit services would be the same. Impacts would be beneficial.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Effects on Local Businesses. The Exposition BRT Alternatives will have similar effects on the supply of on-street parking as the Wilshire BRT Alternative. Impacts associated with this alternative on business accessibility and visibility along both the Wilshire and Exposition routes would be similar to those described above for Alternative 1 (Median Reconstruction Design Option). This alternative would result in a loss of current available on-street parking, therefore resulting in a possible loss of access to businesses along the routes. Because the loss of parking would be the catalyst for any socioeconomic impact, the assessment of this particular impact is addressed in Section 3.3 (Parking) of this document, where the direct and indirect effects on any loss in parking associated with the alternatives is addressed.

Effects on Population. The Exposition BRT, as discussed in Section 2.0, also follow existing public ROWs, and are largely contained within existing limits of city streets or a former railroad ROW now owned by the MTA. As shown in Tables 3.4-3 and 3.4-5, the population within the Exposition ROW is significant, with 7 of the 20 stations containing a 1990 population greater than 1,000 persons within 0.5 of the station intersection. The Exposition BRT would result in an improvement to the public transportation system serving the area. This improvement, making the area more desirable, could result in an increase in population to the area. However, this increase is expected to be within the normal growth within the corridor and Los Angeles as a whole. Population growth within the vicinity of the route is limited to existing housing availability and market factors that are not directly related to the proposed transit improvements. No significant direct impact to population growth is expected to occur as a result of the proposed alternative. Impacts would be less than significant.

Increased Mobility for Transit-Dependent. As described under the evaluation of Wilshire BRT impacts on increased mobility for transit-dependant users, the concentration of activity centers in the study area has a corresponding impact on corridor travel characteristics.

According to SCAG growth forecasts, population increases around the Exposition Corridor transit stops are expected to increase by about 26 percent, while the Wilshire BRT Corridor is expected to parallel the population growth of 19 percent forecast for the Corridor study area as a whole. In contrast, employment growth around the transit stops is expected to be similar to the employment growth in the study area for all alternatives.

Similar to the Wilshire Boulevard Corridor, the Exposition Corridor traverses densely populated regions of the Mid-City/Westside study area. As a requirement of satisfying FTA guidelines associated with New Starts Criteria, the number of households located within a 0.5-mile radius of proposed stations were identified in Table 3.4-5. Recent demographic data from SCAG found approximately 75,000 households were located within this radius for the Exposition Corridor in 1997. This figure is projected to rise to 97,000 by 2020. As shown previously in Figure 3.4-1, the respective population density for these same time periods along each corridor when compared to the overall county average recognizes a sizable difference.

It should be noted that many of the jurisdictions along the ROW, other than the MTA, are currently providing transit services (i.e., Los Angeles DOT, Santa Monica Blue Bus, Culver City Bus) to meet the needs of transit users. The Wilshire BRT and Exposition BRT Alternative would result in increased transit service, thereby increasing the mobility and convenience to the transit dependent population. Therefore, impacts to transit dependant populations would be beneficial as a result of implementation of Alternative 2.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Alternative 2 would be a combination of the Wilshire BRT, and the full length of the Exposition BRT described in Section 2.0 (Alternatives Considered). There are 20 stations proposed for the Exposition BRT (see Table 3.4-1). The Exposition BRT MOS component of Alternative 2 would terminate at the Venice/Washington Station. Given that Wilshire BRT impacts have been disclosed above, and that the MOS option of the Exposition BRT is only a shorter route of the full length alternative, the impact evaluation for Alternative 2 provides an evaluation of impacts for the full length of Exposition BRT. To avoid repetition, the impacts associated with Alternative 2A would be similar to those of Alternative 2. It should be noted that with the Exposition BRT MOS, any impacts to neighborhoods west of the Venice/Washington Station would not occur. While the scale of impacts would be decreased due to the shorter route, potential impacts to local businesses as a result of loss of on-street parking are still expected on the businesses located within the MOS route. These potential impacts are discussed in Section 3.3 (Parking) of this document. Furthermore, less than significant impacts are expected on population and beneficial effects would occur for the transit dependent population contained within.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Effects on Local Businesses. Businesses could be impacted by the loss of parking along some portions of the Exposition Corridor, as well as narrowing sidewalks to accommodate a busway. As shown in Tables 3.4-3 and 3.4-4, the population and employment within the Exposition ROW was significant in 1990, totaling 148,399 persons with 70,864 employed. As shown in Table 3.4-1 (Land Use), the majority of the Exposition ROW is adjacent to various types of business activities that encompass industrial, light industrial and manufacturing, and commercial land uses, such as offices and retail stores. The highest concentration of these businesses is located along the western portion of the Exposition Corridor in Santa Monica. The remainder of the corridor has high mix of different land use types including businesses. This type of access impediment would likely be most problematic within areas where businesses are highly dependent on on-street parking along the Venice to Sepulveda Boulevards segment of the Corridor. This alternative would result in a loss of current available on-street parking, therefore resulting in a possible loss of access to businesses along the routes. Because the loss of parking would be the catalyst for any socioeconomic impact, the assessment of this particular impact is addressed in Section 3.3 (Parking) of this document, where the direct and indirect effects on any loss in parking associated with the alternatives is addressed.

Effects on Population. As discussed in Section 2.0, this alternative also follows existing public ROWs and is largely contained within existing limits of city streets or a former railroad ROW now owned by the MTA. As shown in Tables 3.4-3 and 3.4-4, the population within the Exposition ROW was significant in 1990 totaling 148,399 persons. This alternative would result in an improvement to the public transportation system serving the area. This improvement could result in an increase in population to the area as a result of the improvements making the area more desirable. However, this increase is expected to be within the normal growth within the corridor and Los Angeles as a whole. Population growth within the vicinity of the route is limited to existing housing availability and market factors that are not directly related to the proposed transit improvements. No significant direct impact to population growth would occur as a result of the proposed alternative. Impacts would be less than significant.

Increased Mobility for Transit-Dependent. Given that Wilshire BRT impacts have been disclosed above, and that the MOS option of the Exposition BRT is a shorter route of the full length alternative, the beneficial impacts associated with the evaluation conducted for the Exposition LRT are identical to those impacts for the full length of Exposition LRT. To avoid repetition, the reader is referred to the analysis presented above for Alternative 2.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Alternative 3 would be a combination of the Wilshire BRT, and the full length of the Exposition LRT described in Section 2.0 (Alternatives Considered). The light rail transit system along the Exposition corridor would consist of 16 stations (see Table 3.4-1). The Exposition LRT MOS component of Alternative 2 would terminate at the Venice/Washington Station. Given that Wilshire BRT impacts have been disclosed above, and that the MOS option of the Exposition LRT is only a shorter route of the full length alternative, the impact evaluation for Alternative 3 provides an evaluation of impacts for the full length of Exposition LRT. To avoid repetition, the impacts associated with Alternative 3A would be similar to those of Alternative 3. It should be noted that with the Exposition LRT MOS, any impacts to neighborhoods west of the Venice/Washington Station would not occur. While the scale of impacts would be decreased due to the shorter route, potential impacts to local businesses as a result of loss of on-street parking are still expected on the businesses located within the MOS route. These potential impacts are discussed in Section 3.3 (Parking) of this document. Furthermore, less than significant impacts are expected on population and beneficial effects would occur for the transit dependent population contained within.

Maintenance Yard

A facility will be required for infrastructure and bus maintenance within the vicinity of both routes. Several locations are proposed for possible maintenance yards:

- NW Corner of Chavez/Mission;

- Existing MTA Division I area;
- NE Corner Alameda/Washington;
- SE Corner Alameda/Washington;
- Exposition ROW Hooper to Central; and
- Existing MTA South Park Shops.

Figures 2-17 - 2-19 (Section 2.0, Alternatives Considered) show the locations and physical layout of the proposed maintenance facilities. These locations are all contained within lands currently owned and operated by the MTA. Development of any maintenance facilities within these locations would not cause any increase in current population, nor would it result in the displacement of any residential units. There are no businesses, which would be impacted by either construction or operations of transit maintenance facilities within these lands. Transit operations would not be impacted by any activities associated with the construction or operation of the proposed maintenance facilities. Therefore, because the proposed maintenance facilities are within lands currently owned by the MTA, socioeconomic impacts associated with the construction and operation of any proposed maintenance facilities would be less than significant.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

The subway design option would provide a subterranean travel corridor within the right-of-way for either bus or light-rail transit options. Socioeconomic impacts associated with a subterranean travel route are minimal due to the negligible disruption to at-grade businesses and parking. Short-term impacts to local businesses could be anticipated during construction phases, however, business accessibility and visibility would likely not occur. Impacts to population and transit dependent populations would be identical to those discussed above for Alternatives 2, 2A, 3, and 3A.

3.4.4 Cumulative Impacts

The 1998 RTP Draft Master EIR (SCAG, 1997), which is hereby incorporated by reference, provides the cumulative context for analysis of the Mid-City/Westside Transit Corridor Project. The 1998 RTP Draft Master EIR provides a programmatic analysis of socioeconomic impacts resulting from implementation of all projects contemplated in the RTP (SCAG, 1998), including the Mid-City/Westside Transit Corridor project, and provides the basis for this cumulative impact analysis.

Cumulative socioeconomic impacts could result from an increase in population beyond SCAG projections. Projects included in the RTP are intended to increase the overall accessibility and mobility of persons within the SCAG region. These improvements could result in an increase in population to the area, making the area more desirable. However, this increase is expected to be within the normal growth projected by SCAG within the RTP. Furthermore, population growth within the region is limited to existing housing availability and market factors that are not directly related to the proposed improvements included within the RTP. No cumulative population growth is expected beyond that projected by SCAG as a result of the proposed projects included within the RTP. Impacts would be less than significant.

Cumulative socioeconomic impacts could also result from construction activities associated with proposed RTP projects that could impede local business vitality. Projects contemplated in the RTP that do not require the construction of new facilities (e.g., optimization of the existing transportation system) would not have a direct physical effect on business visibility or accessibility. The indirect effects of reducing traffic congestion would be beneficial to local businesses in the region, because reductions in traffic would increase the level of accessibility and parking for patrons. Those projects that require construction of new or expanded facilities (e.g., additional parking facilities) would potentially have the greatest adverse impacts, because construction activities associated with the infrastructure could damage local business visibility and accessibility during the short-term. This type of access impediment is most problematic within SCAG urban areas where businesses are highly dependent on on-street metered parking. When evaluated on a cumulative level, the projects contained within the RTP could result in a loss of current available on-street parking, therefore resulting in a possible loss of access to businesses along the routes. Because the loss of parking would be the catalyst for any socioeconomic impact, the assessment of this particular impact is addressed in Section 3.3 (Parking) of this document, where the direct and indirect effects on any loss in parking associated with the alternatives is addressed.

3.5 Land Use/Neighborhoods

3.5.1 Introduction

The purpose of this section is to provide baseline data on the existing land use characteristics of the study area; to assess whether the proposed project is consistent with applicable land use plans and policies; and to identify any potentially significant land use changes resulting from implementation of the proposed project. Section 4.7 provides an evaluation of minority and low-income populations that may potentially be affected by implementation of transit services in the Mid-City/Westside Corridor. This evaluation is in accordance with Executive Order 12898 on Environmental Justice. Section 6.0 provides a description of the public involvement program for the proposed project.

3.5.2 Affected Environment

This section provides a discussion of existing land uses along the proposed Wilshire and Exposition project routes and highlights the pertinent land use regulations currently in place. Sensitive land uses (e.g., schools, recreational areas, religious buildings) within or adjacent to the study corridors are also identified. The discussion of existing land uses is based on an evaluation of Thomas Guide street maps, Metropolitan Los Angeles Central and Western Area street map, aerial photographs, and field reconnaissance conducted by EIP Associates in the fall of 2000.

Existing Land Use

The Mid-City/Westside Transit Corridor Project study area is located on the Westside of Los Angeles County and encompasses approximately 112 square miles. The study area is roughly bounded by the Pacific Ocean on the west; Sunset Boulevard and the Hollywood Freeway (US 101) on the north; Hope Street and Figueroa Street on the east; and Slauson/Manchester Boulevards on the south. The study area includes portions of the City of Los Angeles, unincorporated areas of Los Angeles County (Baldwin Hills, Sawtelle), and the Cities of Beverly Hills and Santa Monica. Several key factors of the study area development include:

- Population and employment densities in the Mid-City/Westside study area are the highest within the Los Angeles Metropolitan region.
- The study area contains the largest concentration of major activity centers within the Los Angeles Metropolitan region.
- Opportunities for residing and working within the corridor have generated transit mode splits 2.5 times higher than the regional mode split (8.0 percent for the corridor versus 3.2 percent for the region).

Land uses throughout the study area vary substantially, including a broad mix of residential, commercial, office, and retail uses, with several vacant/undeveloped lots interspersed among these uses. While certain portions of each of the proposed corridors could be described as having their own specific character, overall land use patterns are generally similar to those found throughout the west Los Angeles area. The two corridors have different characters, with Wilshire Boulevard having higher density uses in comparison to Exposition as illustrated by the following text and graphic depictions:

- Figure 3.5-1 presents the existing land uses and land use patterns of the Mid-City Westside Corridor Study area. In addition, proposed station locations for all of the alternatives considered are provided with a graphic depiction of the 0.5-mile radius around each station location;

- Table 3.5-1 provides a list of existing land uses and land use types, neighborhoods, schools, and destination and activity centers in close proximity to the Corridor study area; and

- Figure 3.5-2 provides the location and types of proposed stations for the alternatives considered along with existing activity centers in the Mid-City/Westside Corridor Study area.

As discussed in Section 3.5 (Socioeconomics) and the Mid-City/Westside Corridor Study Area Major Investment Study (incorporated by reference into this EIS/EIR), population and employment densities in the Mid-City/Westside study area are the highest within the Los Angeles metropolitan region, averaging approximately 13,883 persons per square mile and 9,167 employees per square mile. The more densely populated areas are concentrated in the east and northwestern portion of the study area, while the greatest employment densities are in the western and northwestern portion of the study area.

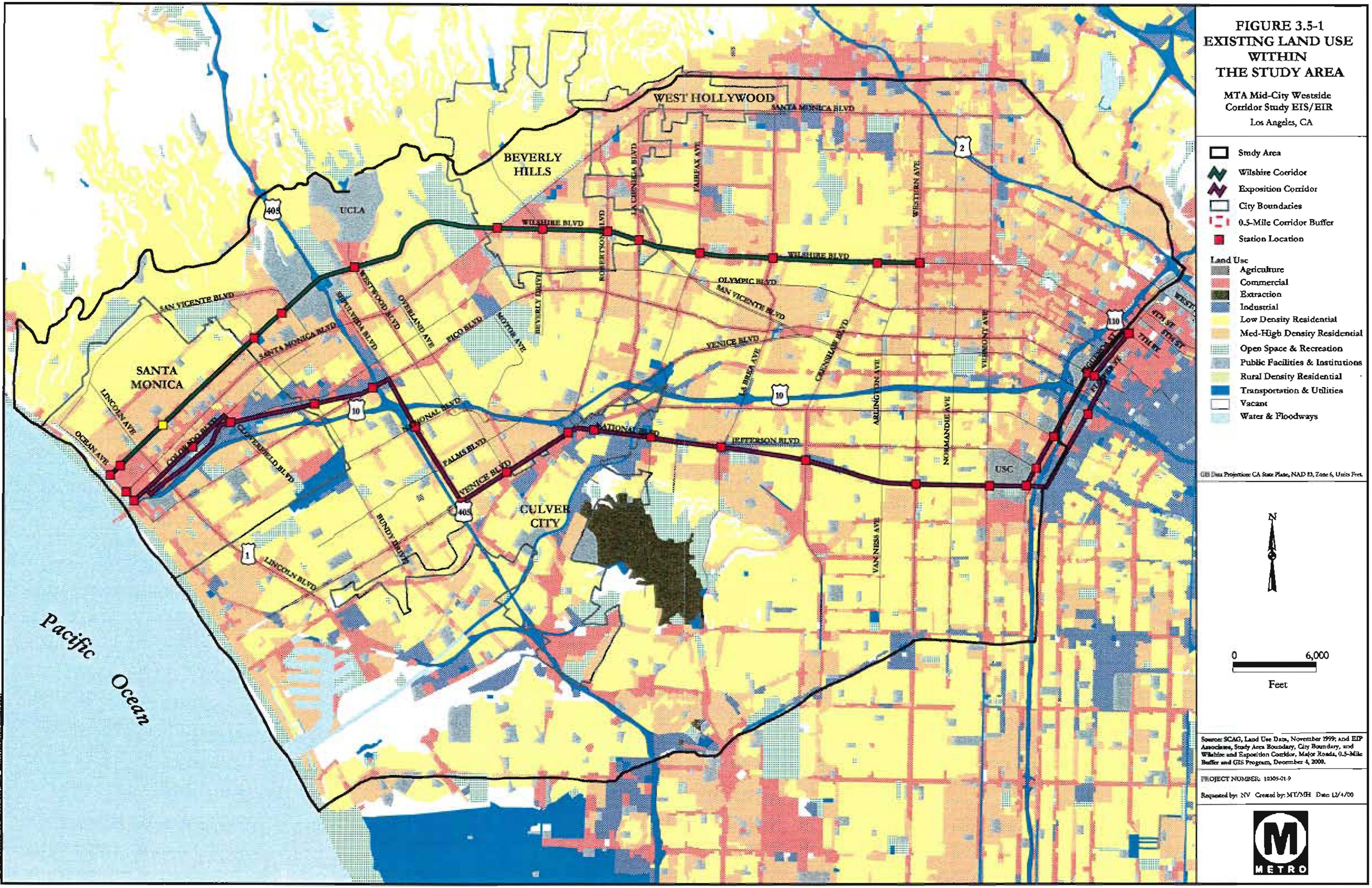
In addition, the Mid-City/Westside Corridor study area contains the largest concentration of major activity centers and destinations (i.e., high trip generators) within the Los Angeles metropolitan region (see Figure 3.5-2). Many of these activity centers are located within the most congested portion of the study area north of the Santa Monica Freeway (I-10) and east of the San Diego Freeway (I-405). Of all the areas within the Los Angeles metropolitan area, the Mid-City/Westside study area best exemplifies the "Centers Concept." The Centers Concept is a land use-planning concept from the City of Los Angeles General Plan that views the urban area not as a central downtown but rather a collection of urban centers. This concept is discussed in more detail below under Applicable Plans and Policies. The major destinations in the Mid-City/Westside study area correspond with the location and number of activity centers planned for in the Centers Concept.

Not only does the study area encompasses the western portion of the traditional/historical downtown area, but it also encompasses the most well-known employment, entertainment, educational, and cultural activity centers in the Los Angeles region. The study area contains 64 major centers and key attractions described in Table 3.5-1 and depicted graphically in Figure 3.5-2.

Currently, the portion of the Metrorail Red Line subway system built or under construction to date only interconnects a small portion of the centers in the eastern portion of the study area, such as downtown to Hollywood to Universal City and to Mid-Wilshire. The remaining centers are served by two major freeways (Interstate 10 – Santa Monica Freeway, and Interstate 405 – San Diego Freeway), as well as by less than a dozen major east-west and north-south arterials.

FIGURE 3.5-1
EXISTING LAND USE
WITHIN
THE STUDY AREA

MTA Mid-City Westside
Corridor Study EIS/EIR
Los Angeles, CA



Source: SCAG, Land Use Data, November 1999; and EIP Associates, Study Area Boundary, City Boundary, and Wilshire and Exposition Corridor, Major Roads, 0.5-Mile Buffer and GIS Program, December 4, 2000.

PROJECT NUMBER: 10305-01-9

Requested by: NV Created by: MT/MH Date: 12/4/00

METRO

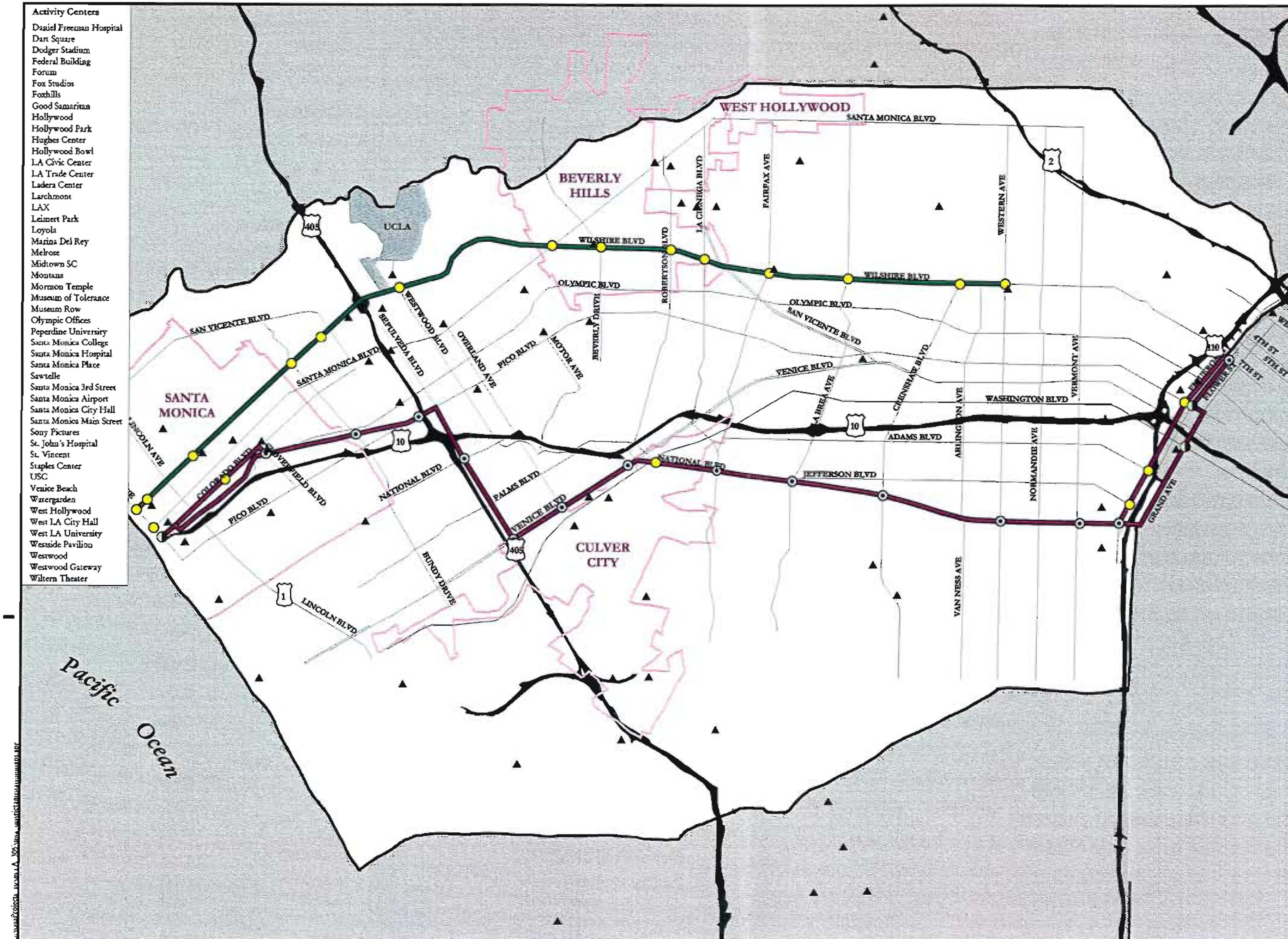


FIGURE 3.5-2
PROPOSED STATION LOCATIONS AND EXISTING ACTIVITY CENTERS

MTA Mid-City Westside Corridor Study EIS/EIR

Los Angeles, CA

- Study Area
- City Boundaries
- Wilshire Corridor
- Exposition Corridor
- Activity Center

Proposed Station Locations
- Bus Only
- Light Rail Only
- Light Rail and Bus

GIS Data Projection: CA State Plane, NAD 83, Zone 6, Units Feet.

N

0 6,000

Feet

Source: SCAG, Activity Centers, November 1999; and EIP Associates, Study Area Boundary, City Boundary, and Wilshire and Exposition Corridor, Major Roads, Station Locations and GIS Program, December 4, 2000.

PROJECT NUMBER: 10506-01-9

Requested by: NV Created by: MT/MH Date: 12/4/00

METRO

The concentration of activity centers in the study area has a corresponding impact on corridor travel characteristics. In 1998, the study area had nearly 8.5 million daily person trips, of which 2.3 million, or 27.5 percent are home to work trips, and over 675,000, or 8 percent, are made on transit. This compares to the five county Southern California MTA Modeling Area trips of 10.3 million two-way home to work trips, or 20.3 percent, and almost 1.6 million, or 3.2 percent, of the daily trips that are made on transit.

TABLE 3.5-1
STUDY CORRIDOR LAND USES

Existing Conditions						Proposed Conditions	
Corridor Segment	**Jurisdiction**	**Land Uses Along Corridor**	**Destination and Activity Centers**	**Affected Neighborhoods**	**Schools Within 0.5 Mile of Corridor**	**Station Locations**	**Park-and-Ride Facilities/ Replacement Parking Facilities**
Wilshire Corridor							
Western Ave. to Wilton Pl.	City of Los Angeles	Office, Retail	Metro Red Line Western Station, Koreatown	Koreatown, Wilshire Center	Hobart Blvd. Elementary School, Silvan Special Education Center, Berendo Middle School, Leo Politi Elementary School, Hoover Elementary, Wilton Place Elementary	Western Ave.	None
Wilton Pl. to Highland Ave.	City of Los Angeles	Office, Multi-Family Residential	Several churches, a temple, Hancock Park, Los Angeles High School, Burroughs Middle School, two libraries, several parks	Mid-Wilshire, Country Club Park (to the south), Hancock Park	3rd Street Elementary, Alta Loma Elementary, Arlington Heights Elementary, Burroughs Middle School, Los Angeles Senior High, Mt. Vernon Middle School, Pico Elementary, Queen Anne Elementary	Crenshaw Blvd.	Crenshaw Blvd., 158 spaces
Highland Ave. to Hauser Blvd.	City of Los Angeles	Office, Retail		Mid-Wilshire, Hancock Park, Miracle Mile	Wilshire Crest Elementary	La Brea Ave.	La Brea Ave., 129 spaces
Hauser Blvd. to Fairfax Ave.	City of Los Angeles	Museum District, Office, Retail	Museum Row, Hancock Park, the Los Angeles County Museum of Art, George Page Museum, Petersen Automotive Museum, Kaye Museum of Miniatures, and the Rancho La Brea Tar Pits, CBS Television Center, the Los Angeles Farmer's Market, Pan Pacific Park	Miracle Mile, Park La Brea	Saturn Street Elementary, Hancock Park Elementary, Fairfax High School	Fairfax Ave.	None

TABLE 3.5-1
STUDY CORRIDOR LAND USES

Existing Conditions						Proposed Conditions	
Corridor Segment	**Jurisdiction**	**Land Uses Along Corridor**	**Destination and Activity Centers**	**Affected Neighborhoods**	**Schools Within 0.5 Mile of Corridor**	**Station Locations**	**Park-and-Ride Facilities/ Replacement Parking Facilities**
Fairfax Ave to Santa Monica Blvd.	City of Los Angeles, City of Beverly Hills	Retail, Office, Institutional, Recreation	Beverly Center, La Cienega Park, the Center for Motion Picture Study, Beverly Hills City Hall, police and fire departments, Beverly Hills Library, the Beverly Center; Cedars-Sinai Hospital and Medical Center, Melrose Avenue, the Pacific Design Center, Museum of Tolerance	Miracle Mile, Carthay Circle, Carthay Square South, Beverly Roxbury, Beverly Hills	Canfield Elementary, Carthay Center Elementary, Crescent Heights Boulevard Elementary, Beverly Hills High School, Horas Man Elementary School	La Cienega Blvd., Robertson Blvd., Beverly Dr., Santa Monica Blvd.	None
Santa Monica Blvd. to Comstock Ave.	City of Los Angeles, City of Beverly Hills	Low- to Mid-Rise	Los Angeles Country Club, Rodeo Drove, Beverly Hills	Beverly Hills, Century City	Warner Elementary, Hawthorne Elementary School	None	None
Comstock Ave. to Veteran Ave.	City of Los Angeles	Open Space, Office, Residential	Westwood Village, UCLA and UCLA Medical Center, the Armand Hammer Museum	Westwood, Boulevard Heights	Emerson Middle School, Fairburn Elementary	Westwood Village	None
Veteran Ave. to Federal Ave.	City of Los Angeles	Institutional, Retail, Office	Veterans Administration and Hospital, Wadsworth Theater and Brentwood Village	West Los Angeles		None	None
Federal Ave. to Ocean Ave.	City of Los Angeles, City of Santa Monica	Retail, Office	St. John's Hospital and Medical Center, Third Street Promenade, Santa Monica Pier, Pacific Ocean	West Los Angeles, Brentwood Village, Santa Monica	Brockton Elementary, University High School, Roosevelt Elementary School, Franklin School, Lincoln Middle School, Santa Monica College	Barrington Ave., Bundy Dr., 14th St., 4th St.	None

TABLE 3.5-1
STUDY CORRIDOR LAND USES

Existing Conditions						Proposed Conditions	
Corridor Segment	**Jurisdiction**	**Land Uses Along Corridor**	**Destination and Activity Centers**	**Affected Neighborhoods**	**Schools Within 0.5 Mile of Corridor**	**Station Locations**	**Park-and-Ride Facilities/ Replacement Parking Facilities**
Exposition Corridor							
Flower St. from Washington Blvd. to Exposition Blvd.	City of Los Angeles	Industrial, Office	Los Angeles Civic Center, Downtown Los Angeles, Staples Center, Los Angeles Convention Center, Shrine Auditorium, Mt. St. Mary's College, Hebrew Union College	Jefferson Park, West Adams District, Exposition Park	10th Street Elementary, Adams Middle School, Norwood Elementary, Trinity Street Elementary, 28th Street Elementary, Trinity Street Children's Center, Friedman Adult High School	Figueroa St./Adams Blvd. (BRT), Figueroa St./ Jefferson Blvd. (BRT), USC Exposition Park (LRT)	
Figueroa St. to Vermont Ave.	City of Los Angeles	Institutional, Commercial, Retail, Mixed single- and multi-family residential, Recreational	University of Southern California, Exposition Park, The Mosque, Los Angeles Sports Arena, Los Angeles, Science Center, IMAX Theater, Natural History Museum of Los Angels County, Aerospace Museum, Museum of Science and Industry	Exposition Park	Menlo Avenue Elementary	Vermont Ave.	
Vermont Ave. to Arlington Ave.	City of Los Angeles	Commercial, Retail, Single- and Multi-Family Residential	West Adams District	Exposition Park, Jefferson Park, West Adams	Weemes Elementary, King Jr. Elementary, Manual Art High School, Salvin Special Education Center, Mid City High School, Widney High School, James A. Foshay Junior High School	Normandie Ave. (LRT), Western Ave.	
Arlington Ave. to Farmdale Ave.	City of Los Angeles	Single- and Multi-Family Residential, Commercial, Light Industrial, Recreational	Baldwin Hills Crenshaw Plaza Mall, Santa Barbara Plaza, Liemert Park, Magic Johnson Theaters	Jefferson Park, Crenshaw, Leimert Park, Baldwin Hills	Virginia Road Elementary, Dorsey High School, Coliseum Street School, Tom Bradley School, Audobon Middle School	Crenshaw Blvd.	Crenshaw Blvd. (BRT/LRT) 400 spaces

TABLE 3.5-1
STUDY CORRIDOR LAND USES

Existing Conditions						Proposed Conditions	
Corridor Segment	**Jurisdiction**	**Land Uses Along Corridor**	**Destination and Activity Centers**	**Affected Neighborhoods**	**Schools Within 0.5 Mile of Corridor**	**Station Locations**	**Park-and-Ride Facilities/ Replacement Parking Facilities**
Farmdale Ave. to Robertson Blvd.	City of Los Angeles, City of Culver City	Industrial, Light Industrial, Retail, Commercial, Office, Institutional, Single- and Multi-Family Residential, Recreational	Dorsey High School, Rancho Cienega Sports Center, Baldwin Hills Recreation Center, Kenneth Hahn State Recreational Area	Crenshaw, Culver City, Mid-City, South of Robertson, Pico Neighborhood, Hayden Tract, Baldwin Hills	Cienega Elementary, Castle Heights Elementary, Crescent Heights Boulevard Elementary, Hamilton Senior High School-Complex, Marvin Avenue Elementary, Shenandoah Elementary, Echo Horizon School,	La Brea Blvd., La Cienega Blvd., National/Hayden (BRT), Venice Blvd./Washington Blvd. (LRT)	La Brea Blvd. (BRT/LRT) 41 spaces La Cienega (BRT/LRT) 363 spaces
Venice Blvd. from Washington Blvd. to Motor Ave.	City of Los Angeles, City of Culver City	Retail, Industrial, Commercial, Institutional, Single- and Multi-Family Residential	Downtown Culver City, Culver City Hall, police and fire departments, Brotman Medical Center, Culver Studios, Sony Studios, Culver Center , West Los Angeles College	Culver City, Palms, Cheviot Hills, Rancho Park	Palms Elementary	Venice Blvd./Main (BRT)	Venice Blvd./Washington Blvd. (LRT) 612 spaces
Motor Ave. to Sepulveda Blvd.	City of Los Angeles	Commercial, Retail, Multi-Family Residential	Westside Pavilion, Cheviot Hills Park and Recreation Center, 20th Century Fox Studios, Notre Dame Academy	Cheviot Hills, Rancho Park, West Los Angeles	Palms Middle School, Charnock Road School,	Venice Blvd./Overland Ave., Venice Blvd./Sepulveda Blvd.	
Sepulveda Blvd. to Olympic Blvd.	City of Los Angeles	Industrial, Office, Retail, Multi-Family Residential		Sawtelle District, West Los Angeles, Mar Vista	Charnock Road School, Clover Avenue Elementary, Mar Vista Elementary, Overland Avenue Elementary, Warner Elementary, Webster Middle School, Westwood Elementary, Richland Avenue School	Sepulveda Blvd./National Blvd./ Pico Blvd./Sawtelle Blvd.	Pico Blvd./Sawtelle Blvd (BRT/LRT) 565 spaces
Olympic Blvd. to 20th Street	City of Santa Monica	Industrial, Office, Institutional	Santa Monica Studios, Bergamot Station, Water Garden Tower, MGM Plaza, MTV, St. John's Hospital and Medical Center, Santa Monica Municipal Airport	West Los Angeles, Santa Monica	Sterry Elementary, Warner Elementary, Grant Elementary School, Richland avenue School	Bundy Dr., Cloverfield Blvd.,	Bundy Dr. (BRT/LRT) 372 spaces Cloverfield Blvd. (BRT/LRT) 1,140 spaces

TABLE 3.5-1
STUDY CORRIDOR LAND USES

Existing Conditions						Proposed Conditions	
Corridor Segment	**Jurisdiction**	**Land Uses Along Corridor**	**Destination and Activity Centers**	**Affected Neighborhoods**	**Schools Within 0.5 Mile of Corridor**	**Station Locations**	**Park-and-Ride Facilities/ Replacement Parking Facilities**
20th Street to Ocean Ave.	City of Santa Monica	Industrial, Retail, Office	Santa Monica College, Woodlawn Cemetery, 3rd Street Promenade, Santa Monica Place, Santa Monica High School, Ocean Avenue, the California Incline, Palisades Park, Pacific Coast Highway, Santa Monica Pier, Santa Monica Beaches, Santa Monica Civic Center, Santa Monica Civic Auditorium, Los Angeles County Superior Court	Santa Monica, Ocean Park, Light Manufacturing Studio District (LMSD)	Crossroads School, Santa Monica High School, Santa Monica College, Will Rogers Elementary	Colorado Ave./14th St. (BRT), Ocean	Ocean Ave./Colorado Ave. (LRT) 100 spaces

When compared to the region as a whole, the study area has a higher percentage of work trips (by 7 percentage points) of all daily trips. This is a reflection of relatively higher population density, as well as an abundance of employment opportunities in the study area. The more notable observation is the significantly higher transit percentage for the study area trips compared to the overall regional transit percentage. The study area's percent transit mode split is 2.5 times higher than the regional 3.2 mode split. This is a clear indication of two characteristics related to the study area: high transit dependency in certain study area communities and relatively high levels of transit services, which are provided in the study area.

Wilshire Corridor

Wilshire Boulevard is a densely developed corridor, with commercial development fronting both sides of the Corridor and the intersecting north/south streets, and single- and multi-family residential surrounding the commercial uses. Traveling west from the Western Metro Red Line Station, the Wilshire Boulevard frontage contains numerous high-rise (20 stories) and mid-rise (8-10 stories) office buildings. Mixed in with the office buildings are numerous low-rise (2-5 stories) commercial office and retail structures. A relatively small proportion of the land uses along the corridor are dedicated to surface parking lots; most parking along Wilshire Boulevard is structured or street parking. Wilshire Boulevard west of Santa Monica Boulevard contains a high concentration of high-rise condominiums. The Westwood area of the corridor also contains high concentrations of high-rise office buildings. West of the Westwood area, the Corridor contains some high-rise office buildings through the Bundy Station area, but predominantly 2-4-story commercial retail buildings for the remainder of the Corridor. The station areas all intersect major north-south streets; almost all of which also contain high concentrations of commercial and retail land uses fronting onto both sides of the streets. Educational and institutional uses (universities, schools, and hospitals) are found throughout the study area. Figure 3.5-1 and Table 3.5-1 provide detailed descriptions of land uses along this study corridor.

Exposition Corridor

The Exposition study corridor contains single-family residential uses, with some low-rise, multi-family dwelling units lining the ROW. Along the eastern portion of the corridor the areas surrounding the ROW to the north and south also consist of some multi-family units interspersed among single-family uses. Neighborhood commercial uses in "strip malls" are present at most main intersections. The eastern and western portions of the corridor can be considered pedestrian-friendly, given the ease of access to the institutional uses and destinations via existing, extra-wide sidewalks and signalized crosswalks. The central portion of the corridor contains primarily industrial uses and is considered auto-oriented. This portion of the corridor contains narrower sidewalks, present on one side only, making this segment less pedestrian-friendly. Table 3.5-1 provides a detailed description of land uses along this study corridor.

Applicable Plans and Policies

Development of an extension of the regional transit system into the Westside has been discussed for years. In anticipation of its eventual implementation and in recognition of the potential shifts in land use and transportation patterns, long-range planning documents developed by jurisdictions on the Westside during this decade have attempted to account for a transit system. Those plans include policies to accommodate and support fixed-guideway and more intensive bus transit. Jurisdictions affected by the Wilshire Boulevard ROW include the Cities of Los Angeles, Beverly Hills, and Santa Monica. Jurisdictions affected by the Exposition ROW include the Cities of Los Angeles, Culver City, and Santa Monica. The transit-supporting policies of these potentially affected jurisdictions are summarized below, and are followed by a brief discussion of consistency of a transit system on the Westside with those policies.

State and Regional Framework

Land use patterns have a direct impact on the efficiency and desirability of transit in an urban environment. Worsening congestion within the Mid-City/Westside Study Area led the MTA to consider adding Westside transit corridors to the emerging fixed-guideway transit system. As a result, long-range planning policy documents from Westside cities have addressed the importance of linking land use development patterns, densities, and urban form surrounding the potential alignments and station locations to city policies that support and encourage the use of transit.

State of California. State Assembly Bill 670 (1999) provides certain transportation districts in the Bay Area of Northern California with the ability to acquire property for transit-oriented joint developments. These developments include commercial, residential, or mixed-use development projects in connection with existing, planned, or proposed transit facilities within one-quarter mile of transit facilities, subject to local land use and zoning regulations. This legislation recognizes the importance of supporting transit with more intensive transit-oriented land uses and the need for changes in existing land use to accommodate and support transit facilities. Therefore, development of a transit system within the Study Corridor would be consistent with this legislation.

SCAG. The primary transportation planning document affecting the Westside region is the Southern California Association of Government's (SCAG) Regional Transportation Plan (RTP), adopted on April 26, 1998. Earlier iterations of the RTP included a more extensive railway network, including an extension into the Westside from the east and an extension of the Green Line from the south. Because of funding constraints that required prioritization of lines within the region, these extensions are not included in the RTP. The RTP, along with MTA's State Congestion Management Programs (CMPs) and Caltran's Regional Transportation Improvement Program (RTIP), provide the overall framework for transportation improvements on the Westside.

Based on SCAG's review of this project during the scoping process for this EIS/EIR, the proposed project is consistent with the following:

- Growth Management Chapter (applicable sections: 3.01, 3.03] of the Regional Comprehensive Plan and Guide policies, and Regional Growth Forecasts that reflect 1998 RTP Population, Household, and Employment SCAG forecasts for Westside cities and City of Los Angeles subregions.

- Regional Transportation Plan (applicable sections: 4.01, 4.02, 4.03, 4.04, 4.06, 4.11, 4.15. 4.16) links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographical and commercial limitations.

- GMC Policies (applicable sections: 3.04, 3.05, 3.08, 3.09, 3.10) related to the RCPG goal to improve the regional standard of living; Growth management goals to develop urban forms that enable individuals to spend less income on housing cost that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy..

- GMC Policies (applicable sections: 3.11-3.23) related to the RCPG goal to improve the regional quality of life; Growth management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life.

- GMC Policies (applicable section: 3.27) related to the RCPG goal to provide social, political, and cultural equity. Growth Management goals to develop urban forms that avoid economic and social polarization promotes the regional strategic goal of minimizing social and geographic disparities and of reaching equity among all segments of society.

City of Los Angeles General Plan Framework

Policies adopted by the City of Los Angeles direct future population and employment growth in proximity to rail and bus transportation corridors. The *Citywide General Plan Framework*, an Element of the *City of Los Angeles General Plan*, adopted in 1996, allocates the majority of growth within one-quarter mile of transit stations and corridors. Approximately two thirds of the overall City's growth for 2010 is targeted as intensification and reuse of areas within and adjacent to the City's existing primary transportation corridors, while preserving lower density residential neighborhoods and neighborhood commercial districts in areas surrounding these corridors. The intensification and mix of uses are intended to enhance walkability of neighborhoods and districts and enhance access to public transportation.

More specifically, the applicable community plans address policies for communities along the transit corridors. These goals support public transit and use of the transit corridors to improve levels of service between Downtown Los Angeles and Santa Monica. Applicable Community plans include West Los Angles, Palms-Mar Vista, Brentwood-Pacific Palisades, and Wilshire. The transit-supporting goals of these Community Plans are summarized below:

- Develop a public transit system that improves mobility with convenient alternative to auto travel;
  - Coordinate with MTA and LADOT to improve express and local bus services to and within the community
  - Develop an intermodal mass transportation plan to implement linkages to future mass transit service

- Encourage alternative modes of Transportation over the use of single occupant vehicles to reduce vehicular trips;

- Provide a system of efficient and attractive bicycle and pedestrian routes;

- Encourage the safe utilization of easement and or right-of-way along flood control channels, public utilities, railroad rights-of-way, and streets wherever feasible for the use of bicycles and or pedestrians.

Transit corridors and stations are planned for high density and mixed-use development that function as destinations for transit users (e.g., jobs, entertainment, and culture) and contain a high number of residents that can conveniently use transit. The following are summary themes of the General Plan Framework:

- High-density uses abutting transit are planned to be developed to enhance pedestrian activity along the street frontages through architectural design, streetscape amenities, and restriction on non-pedestrian friendly uses.

- The development of transit stations can be used to enhance the pedestrian vitality and character of their environs through architecture, the creation of public places, streetscape, and activity.

- The development of transit stations can create distinct places that distinguish the location from the homogeneous pattern of surrounding land uses.

- Concentrations of high density, multi-family housing along transportation corridors are likely to contain a higher percentage of individuals who do not own automobiles, due to income or lifestyle choices.

- Traffic congestion can be reduced in the vicinity of high activity destinations by the provision of transit.

The intensification and mix of uses in the City of Los Angeles are intended to enhance walkability of neighborhoods and districts and enhance access to public transportation. The *City of Los Angeles General Plan Framework and Community Plans* correlate growth and transportation from two perspectives:

- Promoting the intensification of density and enhanced mix of uses in proximity to existing and planned transportation corridors and stations; and

- Establishing new transportation corridors in response to existing and planned high density, activity centers. Within this context, the Framework defines future growth areas as "Community Centers," "Regional Centers," "Downtown Center," and "Mixed Use Boulevards." In each, higher density commercial, office, and residential uses are permitted and standards specified to attain a high level of pedestrian activity. The Framework further advances the correlation of density with transportation through the designation of "Pedestrian Priority" and "Transit Priority" Highways.

The General Plan Framework recognizes Wilshire Boulevard as the primary east-west transportation corridor crossing the basin south of the Santa Monica Mountains. It is designated as a "Transit Priority Highway" and is flanked by some of the highest density designations in the City. The corridor passes through Regional Centers extending from Downtown to Wilton Place and from Highland Avenue to the City of Beverly Hills boundary (at San Vicente Boulevard). It is the Framework's objective that the enhancement of transit along this corridor would serve the existing high-residential density and activity centers (such as the museums), as well as provide an opportunity to enhance accessibility and revitalize the moribund commercial uses in the mid-Wilshire area. This corridor contains multiple existing and planned destinations that warrant multiple points of transit access. Therefore, development of transit within the Wilshire Boulevard ROW is **consistent** with the City of Los Angeles' General Plan and Community Plans.

Recognized as a future transit corridor, but not yet designated as a "Transit Priority Highway", is the Exposition Corridor. Because funding is being allocated to the Red Line and the Pasadena Blue Line, the Exposition Corridor, in the General Plan Framework, did not receive the attention that was given the Wilshire Boulevard ROW and the potential for the Red Line extension. It should also be noted that the Exposition Corridor has been historically a rail-served industrial corridor, but this service has not been active in the recent past. As such, it is not surprising that there are a number of residential areas that abut the railroad ROW, and there is an absence of major activity centers along its length. An exception is the University of Southern California/Exposition Park node located at its eastern edge. Therefore, although development of a transit system along the Exposition ROW is generally consistent with the City's policies, it is not viewed as favorable.

Beverly Hills General Plan

According to the City of Beverly Hills, initial preparation is underway to update the City's General Plan. A completed document is not expected until 2001. The existing General Plan Circulation Element was adopted in 1977 and includes discussion about the role of mass transit, which may be suitable as alternatives to the automobile. The General Plan assumes that any transit in the area would be grade-separated so as to not interfere with automobile traffic, and would be functionally and environmentally integrated into the existing community. The center of a system within the City would be in the vicinity of the Business Triangle along Wilshire Boulevard (Wilshire Alignment). The General Plan also contains numerous land use and transportation policies that are representative of strategies to attract and focus development in the Corridor and station areas demonstrating that, in general, high-density, mixed-use land uses are planned for within the station areas. These planned development policies reinforce the concept of infill development and concentrated or focused growth. Therefore, development of a transit system along the Wilshire Boulevard ROW generally would be consistent with the goals and policies of the City.

Santa Monica General Plan

The Santa Monica General Plan Land Use Element contains a variety of policies that encourage a concentration of land uses and activities that create activity during daytime and evening hours in the Downtown Area. These policies would be achieved by making the Downtown a primary location for commercial uses as a tourist destination, through the development of major entertainment or cultural uses, and by the creation of residential uses above ground level.

As an implementation program of its adopted transit policies, the City of Santa Monica operates the Big Blue Bus, a bus system serving an area from the Los Angeles World Airport to the south and the Getty Center, UCLA and Century City to the north.

Commercial corridors, such as Wilshire Boulevard and Olympic and Pico Boulevards (adjacent to and near the Exposition ROW), are designated to have intense garden office development (Olympic Boulevard east of 20th Street) in a Special Office District and development on Pico Boulevard to include high-density residential and service commercial. As an implementation measure, the Olympic Boulevard Corridor is designated to support future light rail through the joint development of commercial land uses at station locations. The area immediately adjacent to the Exposition Alignment is designated for preservation as linear public open space.

The Circulation Element encourages an improved public transit system capable of accommodating ten percent or more of the total trips generated by the City by 2000. This includes continued coordination with regional agencies, endorsement of rail transit, endorse the use of Wilshire Boulevard as a major bus transit corridor, the development of distinctive shuttles, bus shelters and the improvement of inter-modal coordination.

In addition, the City is currently in the process of updating its Zoning Ordinance to designate the MTA Transportation Corridor along Olympic Boulevard and Colorado Avenue a Transportation Preservation District to facilitate the development of transit along the Exposition ROW. A transit system along the Exposition ROW would ultimately connect to the proposed downtown Civic Center area. Therefore, development of transit along the Wilshire Boulevard and Exposition ROWs is consistent with the goals and policies of the City; however, transit along the Exposition ROW is more favored.

Culver City General Plan Update

The Culver City General Plan Update was adopted in 1996 and includes specific discussion about the Exposition Right-of-Way being developed as a fixed-guideway transit corridor. The Circulation Element directs that the City support expanded public transit service and ridership, but that support for the fixed-guideway is balanced against protection of existing established neighborhoods. Applicable goals, objectives, and measures outlined in the Circulation Element of the General Plan include the following:

- *Goal:* Integrate local and regional transportation systems that serve residential and business needs.

  Objective:

  (1a) Improve Traffic Flow and Reduce traffic congestion throughout the City;

  (2) Expand public transit service ridership;

  (3) Provide bikeway system that is safe and has enjoyable support facilities;

  (4) Provide convenient and pleasant pedestrian access;

  (6) Optimize parking availability;

  (7) Increase traffic safety and minimize traffic hazards and accidents;

- *Goal:* Protect residential neighborhoods that offer residents the qualities of a peaceful small-town environment;

  Objective:

  (8) Provide for the safe and efficient movement of people and goods while preserving, enhancing, or reclaiming the neighborhoods quality of life

- *Measure 3.* Continue Transportation Demand Management (TDM) that promotes the demand for alternative transportation by creating incentives to reduce overall auto trips.

- *Measure 4.* Adopt new Transit System Developments and Standards that reflect City policy and establish criteria for the development of transit facilities within the city.

- *Measure 5.* Adopt a Citywide Bikeway Plan that develops and identifies potential bikeways and sets standards for construction and support facilities.

In addition to adopted transit policies, the City of Culver City operates the Culver City Bus, a bus system of six routes serving an area from the Los Angeles World Airport to the south and UCLA and Century City to the north.

In anticipation of the development of the Exposition ROW, the City adopted policies prohibiting at-grade crossings and elevated guideway alignments near residential neighborhoods. Culver City policies include specific discussion about the Exposition ROW being developed as a fixed-guideway transit corridor, but that support for the fixed-guideway is balanced against protection of existing established neighborhoods. In order to facilitate and support transit, the City strives to encourage high trip-generating uses near transportation corridors, specifically encouraging and providing incentives for increased residential and commercial density for areas accessible to transportation facilities, and allows reduced parking requirements for land uses that share parking facilities. Therefore, development of the Exposition ROW with a transit system that is sensitive to preserving the neighborhood quality of life would be consistent with the goals and policies of Culver City.

3.5.3 Impact Assessment and Mitigation Measures

Standards of Significance

Land use impacts would be considered significant if the alternatives considered have the potential to cause:

- Incompatibility with adjacent and surrounding land uses caused by degradation or disturbances that diminish the quality of a particular land use;
- Physical division of an established community; or
- Inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

Methodology for Impact Evaluation

Land use analyses in environmental assessment documents, such as this EIS/EIR, have two main components:

- Determination of potential short- and long-term conflicts with surrounding land uses resulting from project implementation; and
- Identification of potential inconsistencies with applicable land use plans, policies, and regulations.

The potential impacts of the alternatives considered will be evaluated using the standards of significance described above. These standards have been developed based on the requirements of NEPA and CEQA, and similar analyses conducted for transit projects.

Land Use Conflicts

The assessment of impacts on land use and neighborhoods focuses on the potential for land use incompatibility, degradation, or disturbance. Land use incompatibilities usually occur when the activities characteristic of a certain type of land use are considered undesirable and in conflict with activities associated with another type of land use. Incompatibilities tend to occur between disparate adjacent land uses. Various categories of land uses are considered disruptive or undesirable because they generate nuisances, while others are categorized as receptors because they are sensitive to nuisances generated by neighboring uses. In general, "nuisance" uses include those that generate substantial noise, odor, smoke, dust, air pollutants, nighttime illumination, or traffic. Typical categories of "sensitive" land uses include residences, hospitals, parks, schools, and convalescent homes. A basic tenet of land use planning is the separation or "buffering" of sensitive land uses (e.g., residences) from nuisance land uses (e.g., industrial uses).

Land use incompatibilities or degradation could also occur as a result of land use intensification. In other words, increasing the density or altering the character of a particular area could result in a change in land use patterns, thereby by affecting the quality of life of nearby neighborhoods. As a result, efforts to provide citizens with a heightened quality of life while providing public services, such as a transit system, make it important to reconcile the needs of both citizens and development to co-exist within a community. Development of transit alternatives represents an instance where it becomes especially important to reconcile these two needs, because although a transit project could result in land use incompatibilities, its basic intent is to serve the public through which it traverses. As such, the discussion of neighborhood effects attempts to discern impacts with respect to factors that are perceived to determine one's quality of life on a daily basis, including:

- The ability to access one's neighborhood easily;
- The general safety of the neighborhood with respect to traffic;
- The presence and ability to use neighborhood sidewalks;
- The width of streets and length of blocks;
- Landscaping;
- Vertical and horizontal alignments of streets;
- Average neighborhood vehicle speeds and the resident's perception of those speeds;
- Average volume of vehicles traveling through neighborhood streets and the resident's perception of those volumes;
- Level of noise generated by vehicles traveling through the neighborhood; and
- The types of vehicles, which traverse the streets.

Policy Consistency

Evaluation of policy consistency focuses on determining whether, or not, the development of a transit system within the Westside Study Corridor is consistent with the planning goals and policies of the jurisdictions that would be affected by, or would use, the transit system. In other words, in a policy consistency evaluation there are no differing levels in the degree of consistency with planning policies. Rather, a transit system either is, or is not, consistent with the general intent of a jurisdiction's planning document. Therefore, in contrast to the discussion of physical land use impacts, and the discussion of impacts provided in other technical subsections of Section 3.0 (Environmental Analysis), the evaluation of policy consistency is contained within a separate subsection (following physical land use impacts) and is presented in a different format – the evaluation of policy consistency focuses on the four jurisdictions through which the Wilshire Boulevard and Exposition ROWs traverse, versus by each of the alternatives considered.

Impacts

No Action Alternative (Baseline)

The No Action Alternative is comprised of the existing transit systems currently in use or expected to be in place in 2020 within the Westside Study Corridor. As described in Section 2.0 (Alternatives Considered), this includes improved frequencies on the Red, Blue, and Green rail lines and the expansion of MTA's bus service. Given that the MTA's transit services are consistent with existing and planned programs that have been evaluated in other environmental assessment documents, land use impacts are expected to be less than significant.

Construction Impacts. Since the No Action Alternative is consistent with existing and planned programs, construction impacts would be less than significant.

Transportation System Management (TSM) Alternative

The TSM Alternative is comprised of the No Action Alternative components with some bus service changes, including service frequencies, route extensions and truncations, simplification of route structures, and replacement of unproductive routes. Implementation of the TSM is intended to make the existing transit system on the Westside more efficient. As such, similar to the No Action Alternative, the TSM Alternative would have less than significant land use impacts.

Construction Impacts. The implementation of the TSM Alternative is consistent with existing and planned programs, and construction impacts are expected to be less than significant.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Alternative 1 consists of a bus rapid transit system operating in the median of Wilshire Boulevard, from Western Avenue to downtown Santa Monica. Generally, the 14 stations proposed for this alternative would also be in the center median, the locations of which are described in Table 3.5-1, and Figures 3.5-1 and 3.5-2.

Land Use Compatibility

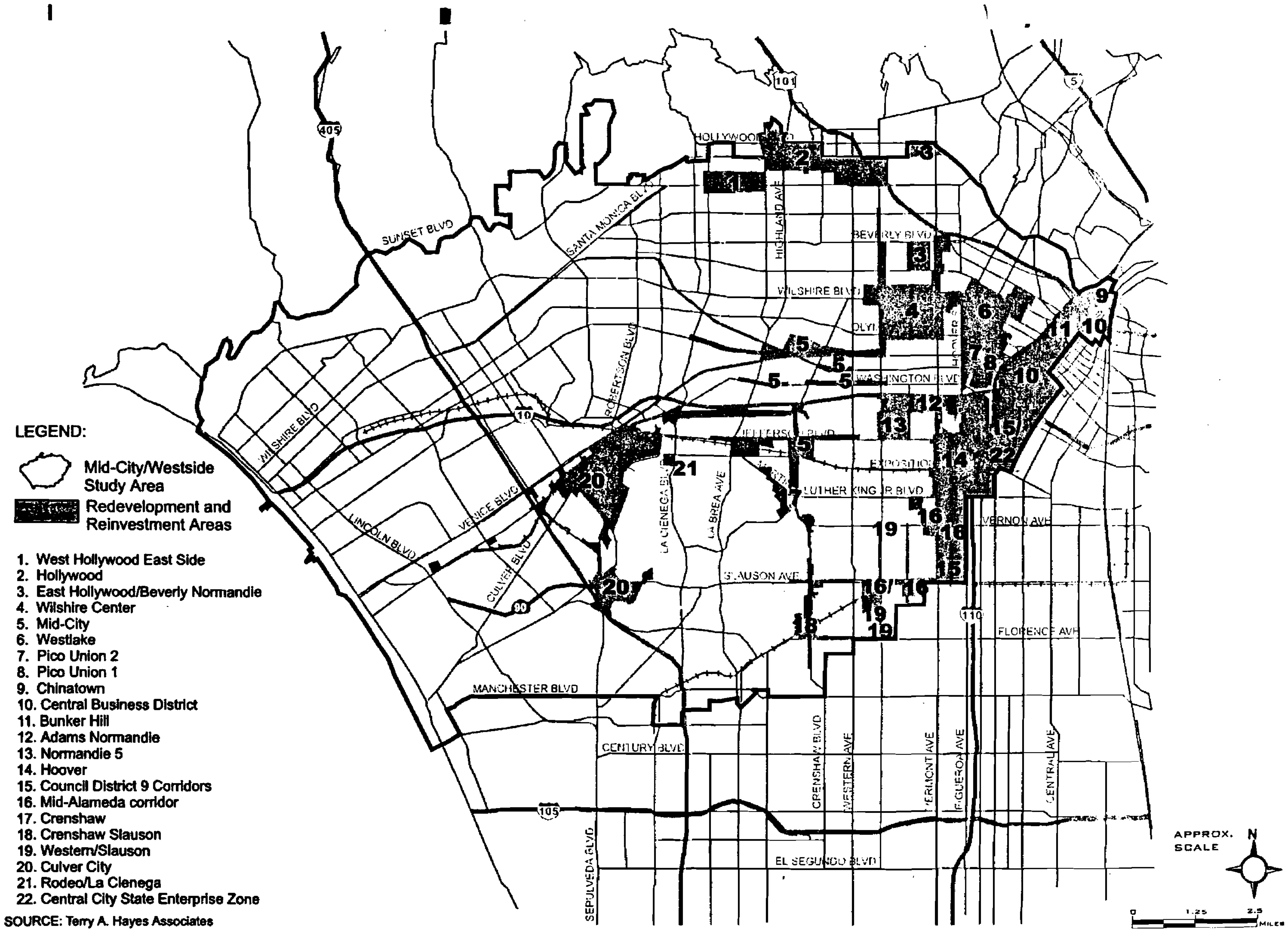
- Compatibility of Transit Operations and Stations. Sensitive receptors, such as residences and schools (described in Table 3.5-1) adjacent to Wilshire Boulevard and the proposed Wilshire BRT stations, would experience increased noise, air pollution, and traffic as a result of transit operations. However, in most cases, these uses are not located immediately adjacent to the Boulevard, but rather in the neighborhoods to the north and south of the Wilshire Boulevard Corridor. As part of the project design efforts, the BRT stations have been placed within the Wilshire Boulevard ROW away from sensitive receptors to help minimize disruptions to these land uses. In addition, as illustrated by Figure 3.5-3, many of the stations have been proposed near redevelopment areas in an effort to provide increased access to these areas. The ultimate success of redevelopment and revitalization of these areas largely rest on transportation accessibility and links to transit. Some improvements and strategies being employed – such as Santa Monica Boulevard improvements in West Hollywood and in Santa Monica – focus on increasing pedestrian amenities, and reducing or eliminating vehicular traffic, which places increasing demand on increased transit access and level of transit service to help support existing and future land use development objectives. Given that Wilshire Boulevard is currently a heavily traveled route in a highly urbanized area, transit operation and station impacts on land uses of the Wilshire Boulevard corridor would help the revitalization of redevelopment areas by providing transit, and would not considerably exacerbate existing land use conditions. In addition, consistent with applicable plans and policies, the development of a transit system along the dense Wilshire Corridor, is a compatible land use. Therefore, transit operations, such as the buses themselves, and stations for the Wilshire BRT Alternative are not expected to be incompatible with surrounding land uses. Transit operation and station compatibility impacts would be less than significant.

Nuisance impacts on sensitive receptors resulting from bus operations and stations are discussed in other applicable sections of the EIS/EIR (i.e., Sections 3.2-Traffic and Circulation, 3.3-Parking, 3.7-Visual Quality, 3.8-Air Quality, and 3.9-Noise and Vibration).

Compatibility of Park-and-Ride Facilities. As described in Table 3.5-1, park-and-ride lots are proposed at various locations along the Exposition Corridor. Impacts of these facilities would be similar to impacts of transit stations described above. No park-and-ride lots are proposed along the Wilshire Corridor; however, replacement parking will be provided in a manner consistent with the replacement parking strategy outlined in Section 3.3 (Parking) of this document. Overall, park-and-ride facility compatibility impacts would be considered less than significant.

Neighborhood Impacts

Accessibility to Key Community Facilities (Activity Centers)/Community Cohesion. The Wilshire Boulevard Corridor conveniently links a number of activity centers and much of the corridor is bounded by transit supportive uses as described in Table 3.5-1 and Figure 3.5-2. Table 3.5-2 indicates that nearly 4,500 acres of land within 0.5 mile of Wilshire Boulevard would be supportive of transit. This represents over 40 percent of the total land area adjacent to Wilshire Boulevard.



Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.5-3

REDEVELOPMENT AND REINVESTMENT AREAS

TABLE 3.5-2
PERCENTAGE OF TRANSIT SUPPORTIVE LAND USE WITHIN 0.5 MILE OF WILSHIRE BLVD.

Land Use	Total Acres of Transit Supportive Land Uses	Acreage of Other Land Uses	% of Total Transit Supportive Land Uses
Commercial	705	1,339	34%
Institutional	610	--	100%
Higher Density Residential	2,760	622	81%
Regional Recreational	410	--	100%
Other Non-Supporting Uses	--	4,362	0%
TOTAL	**4,485**	**10,858**	**41%**

Source: SCAG 1994 and EIP Associates 1999

Although the Wilshire BRT alternative has the potential to alter the appearance of Wilshire Boulevard with the development of a dedicated bus lane and associated stations, it is not expected to disrupt a cohesive social unit, or divide an established neighborhood (i.e., those described in Table 3.5-1 and Figure 3.5-2), because the transit service would utilize an existing and historically heavily-traveled route between downtown Los Angeles and Santa Monica. Therefore, community cohesion impacts are expected to be less than significant.

Development of a transit system along the Wilshire Boulevard Corridor would help the land uses along this heavily used east-west route (between downtown Los Angeles and Santa Monica) become better linked. Uses considered to be supportive of transit include higher-density residential areas, intensive commercial and industrial developments that represent significant job centers, colleges and universities, institutional facilities (such as medical centers and civic centers), and regional recreational facilities. As shown by Table 3.5-1, the types of uses along Wilshire Boulevard are characteristically transit supportive. As such, it is desirable to serve these destinations with transit to enhance their accessibility from within and outside the Westside Corridor study area. Additionally, because of their intensity of development and/or level of activity (in terms of people coming and going), they are natural sources for transit riders. Therefore, development of the Wilshire BRT Alternative would be beneficial because it would provide new and increased accessibility to key Westside community facilities and activity centers.

<u>Neighborhood Character and Quality of Life</u>. The primary neighborhood concern regarding bus rapid transit on Wilshire Boulevard is the elimination of two lanes of travel (one in each direction) and the potential for a resultant overflow of traffic onto neighborhood streets. Businesses could be impacted by the loss of parking on Wilshire Boulevard. In addition, because the medians have recently been enhanced by landscaping along a segment of Wilshire Boulevard, further impacts resulting from the potential removal of this landscaping and the associated visual impacts are possible (see Section 3.7, Visual Quality).

As described above, the plans and policies of these jurisdictions outline specific goals, objectives, or policies to direct and/or enhance the transit-oriented use of the corridor:

- The plans identify the need to focus and concentrate new development in existing commercial areas.

- The plans promote mixed-use projects in commercial areas.
- The plans support transit-oriented development, in particular focusing on development that is pedestrian-oriented.
- The plans promote the development of a public transit system that improves mobility with convenient alternatives to automobile travel.
- The plans promote development of alternatives to the automobile, such as transportation demand strategies.

As a Bus Rapid Transit project, this alternative provides the opportunity to support both transit and land use in a dense, urban, highly traveled corridor. The Cities of Los Angeles, Beverly Hills, and Santa Monica, in general, all plan for high-density mixed-uses within station areas to allow for maximum use of the transit system. Therefore, implementation of the Wilshire BRT Alternative would result in less than significant impacts on neighborhood character and quality of life for adjacent neighborhoods.

In the case of the Wilshire BRT, elimination of two-lanes of traffic on this major Boulevard, which abuts several neighborhoods, would likely result in the redirection of traffic onto adjacent streets. The resultant increase in traffic flow on neighborhood streets would also result in increased traffic–induced noise and air pollution. For detailed description of traffic, noise, and air quality impacts on sensitive receptors within affected neighborhoods resulting from the project alternatives, refer to Sections 3.2 (Traffic and Circulation), 3.3 (Parking), 3.8 (Air Quality), and 3.9 (Noise and Vibration) of this document.

Construction Impacts. Construction of Alternative 1 and associated facilities may cause temporary interference with access to land uses along the Wilshire Boulevard Corridor. However, given the short-term and temporary nature of these disturbances (no more than 6 months), impacts would be less than significant. For detailed description of traffic, noise, and air quality construction impacts resulting from the project alternatives, refer to Sections 3.2 (Traffic and Circulation), 3.3 (Parking), 3.8 (Air Quality), and 3.9 (Noise and Vibration) of this document.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

With this design option, all components of the Wilshire BRT would be the same, except the BRT would operate exclusively in the existing lanes adjacent to the medians. Land use impacts resulting from this design option would be identical to Alternative 1. Therefore, implementation of Alternative 1A would have less than significant land use impacts.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

With this design option, all components of the Wilshire BRT would be the same, except the BRT would operate exclusively in the existing lanes adjacent to the curb. Land use impacts resulting from this design option would be identical to Alternative 1. Therefore, implementation of Alternative 1A would have less than significant land use impacts.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Alternative 2 would consist of the Wilshire BRT and the full length of the Exposition BRT described in Section 2.0 (Alternatives Considered). Given that Wilshire BRT impacts have been disclosed above, the following discussion focuses on any potential land use impacts that may occur along the Exposition Corridor. There are 20 stations proposed for the Exposition BRT (see Table 3.5-1, and Figures 3.5-1 and 3.5-2).

Land Use Compatibility

Compatibility of Transit Operations and Stations. Sensitive receptors, such as residences and schools (described in Table 3.5-1 and Figure 3.5-1) adjacent to the Exposition Corridor and the proposed Exposition BRT stations, would experience increased noise, air pollution, and traffic as a result of transit operations. However, in most cases, these uses are not located immediately adjacent to the Boulevard, but rather in the neighborhoods to the north and south of the Exposition Corridor. Segments of the Exposition Corridor that contain sensitive uses (i.e., residences) immediately adjacent to the ROW are located between Vermont Avenue and La Brea Avenue (see Table 3.5-1 and Figure 3.5-1). The Exposition Corridor consists of a high concentration of residential neighborhoods and schools, particularly east of Sepulveda Boulevard, with most of these uses being east of Robertson Boulevard. Similar to the Wilshire BRT, the Exposition BRT stations proposed at Vermont Avenue, Crenshaw Boulevard, and La Brea Avenue have been placed away from sensitive land uses in areas with predominantly industrial or commercial uses to help minimize disruptions to these land uses. In addition, as illustrated by Figure 3.5-3, many of the stations have been proposed near redevelopment areas in an effort to provide increased access to these areas. In addition, consistent with applicable plans and policies, the development of a transit system along the Exposition Corridor, is a compatible and desired land use. Therefore, transit operations, such as the buses themselves, and stations for Alternative 2 are not expected to be incompatible with surrounding land uses. Transit operation and station compatibility impacts would be less than significant in commercial areas and significant in residential neighborhoods. Impacts resulting from transit operations and stations leading to potential land use incompatibilities and diminished quality of life in residential neighborhoods can be reduced to less than significant levels by implementation of Mitigation Measure 3.5-1:

- *Mitigation Measure 3.5-1:* In residential areas, station area plans shall be developed in coordination with local jurisdictions, adjacent residents, and businesses.

Nuisance impacts on sensitive receptors resulting from bus operations and stations are discussed in other applicable sections of the EIS/EIR (i.e., Sections 3.2-Traffic and Circulation, 3.3-Parking, 3.7-Visual Quality, 3.8-Air Quality, and 3.9-Noise and Vibration).

Compatibility of Park-and-Ride Facilities. The locations of proposed park-and-ride facilities along the Exposition Corridor are described in Table 3.5-1. Similar to the siting of stations, park-and-ride lots are proposed at locations away from sensitive land uses in areas with predominantly industrial or commercial uses to help minimize disruptions to these land uses. In the majority of cases, park-and-ride lots are located at, or immediately adjacent to, the stations. As such, impacts of these facilities would be similar to impacts of transit stations described above, with potentially significant impacts for replacement-parking sites located adjacent to residential uses along the Wilshire BRT route. Impacts for the Exposition Route would not be significant. Implementation of Mitigation Measure

3.5-1 (as described above under Compatibility of Transit Operations and Stations) and Mitigation Measure 3.5-2 would reduce impacts associated with Park-and-Ride Facilities along the Wilshire BRT route to a less than significant level.

- *Mitigation Measure 3.5-2:* Off street parking adjacent to residences shall be screened and laidout to minimize nuisances and disruption.

Neighborhood Impacts

Accessibility to Key Community Facilities (Activity Centers)/Community Cohesion. Similar to the Wilshire Boulevard Corridor, the Exposition Corridor conveniently links a number of activity centers and much of the corridor is bounded by transit supportive uses as described in Table 3.5-1. Table 3.5-3 indicates that the Exposition Corridor is lined with more than 2,800 acres of transit supportive land uses, or about 30 percent of the total land area in this corridor. There is a higher proportion of transit-supportive land uses in the Wilshire BRT and Exposition BRT corridors than in the overall Mid-City/Westside Corridor study area, which contains about 26 percent of transit supportive uses.

TABLE 3.5-3
PERCENTAGE OF TRANSIT SUPPORTIVE LAND USE WITHIN 0.5 MILE OF EXPOSITION

Land Use	Total Acres of Transit Supportive Land Uses	Acreage of Other Land Uses	% of Total Transit Supportive Land Uses
Commercial	650	874	43%
Institutional	605	--	100%
Higher Density Residential	1,325	531	71%
Regional Recreational	260	--	100%
Other Non-Supporting Uses	--	5,247	0%
TOTAL	**2,840**	**9,492**	**30%**

Source: SCAG 1994 and EIP Associates 1999

Given that the Exposition BRT Alternative proposes buses to traverse the Corridor, partially in the mixed flow of traffic (at its easternmost and westernmost segments), it is not expected to disrupt a cohesive social unit, or divide any established neighborhoods (i.e., those described in Table 3.5-1), because the transit service would utilize an existing railroad ROW and historically heavily-traveled roadways between downtown Los Angeles and Santa Monica. Therefore, community cohesion impacts are expected to be less than significant.

Development of a transit system along the Exposition Corridor would help the land uses along this heavily used east-west route (between downtown Los Angeles and Santa Monica) become better linked. Uses considered to be supportive of transit include higher density residential areas, intensive commercial and industrial developments that represent significant job centers, colleges and universities, institutional facilities (such as medical centers and civic centers), and regional recreational facilities. As shown by Table 3.5-1, the types of uses along the Exposition Corridor are characteristically transit supportive. As such, it is desirable to serve these destinations with transit to enhance their accessibility from within and outside the Westside Corridor study area. Additionally, because of their intensity of development and/or level of activity (in terms of people coming and going), they are natural sources for transit riders. Therefore, development of the Wilshire BRT

Alternative would be beneficial because it would provide new and increased accessibility to key Westside community facilities and activity centers.

Neighborhood Character and Quality of Life. As previously discussed in Table 3.5-1 and Compatibility with Transit Operations and Stations (above), portions of the Exposition Corridor are located adjacent to single-family residential neighborhoods, with a high number of schools. However, as previously discussed, the plans and policies of the affected jurisdictions outline specific goals, objectives, or policies to direct and/or enhance the transit-oriented use of the corridor:

- The plans identify the need to focus and concentrate new development in existing commercial areas.
- The plans promote mixed-use projects in commercial areas.
- The plans support transit-oriented development, in particular focusing on development that is pedestrian-oriented.
- The plans promote the development of a public transit system that improves mobility with convenient alternatives to automobile travel.
- The plans promote development of alternatives to the automobile, such as transportation demand strategies.

As a Bus Rapid Transit project, this alternative provides the opportunity to support both transit and land use in a dense, urban, highly traveled corridor. The Cities of Los Angeles, Culver City, and Santa Monica, in general, all plan for high-density mixed-uses within station areas to allow for maximum use of the transit system. Neighborhood Character/Quality of Life impacts would be less than significant along the Wilshire BRT route and potentially significant on Exposition. Implementation of Alternative 2 and impacts resulting from transit operations and stations leading to potential land use incompatibilities and diminished quality of life in residential neighborhoods along the Exposition ROW can be reduced to less than significant levels by implementation of Mitigation Measure 3.5-1 (as described above under Compatibility of Transit Operations and Stations).

In some neighborhoods along the Exposition Corridor, residences are located within 30 feet of the Corridor. For detailed description of traffic, noise, visual, air quality, and safety impacts on these neighborhoods resulting from the Proposed Project, see Sections 3.2 (Traffic and Circulation), 3.3 (Parking), 3.7 (Visual Quality), 3.8 (Air Quality), 3.9 (Noise and Vibration), and 3.14 (Safety and Security).

Construction Impacts. Construction impacts for the Wilshire BRT portion of Alternative 2 would be the same as those described for Alternative 1. Implementation of BRT within the Exposition Corridor also would result in similar impacts to the Wilshire BRT. Given the short-term and temporary nature of construction (no more than 6 months), impacts would be less than significant. For detailed description of traffic, noise, and air quality construction impacts resulting from the project alternatives, refer to Sections 3.2 (Traffic and Circulation), 3.3 (Parking), 3.8 (Air Quality), and 3.9 (Noise and Vibration) of this document.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

The Exposition BRT MOS component of Alternative 2 would terminate at the Venice/Washington Station. Given that the Wilshire BRT impacts have been disclosed above, and that the MOS option of the Exposition BRT is only a shorter route of the full-length alternative, the land use impacts of Alternative 2A would be similar to Alternative 2. Any impacts to land uses and neighborhoods west of the Venice/Washington Station would not occur, and no increased land use impacts would occur at the westernmost MOS station location. Impacts would be less than significant.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Alternative 3 would consist of the Wilshire BRT and the full length of the Exposition LRT described in Section 2.0 (Alternatives Considered). The light rail transit system along the Exposition corridor would consist of 16 stations (see Table 3.5-1, and Figures 3.5-1 and 3.5-2).

Land Use Compatibility

Compatibility of Transit Operations and Stations. Similar to Alternative 2, transit operation and station compatibility impacts on land use along the Exposition LRT Corridor would be less than significant in commercial areas and significant in residential areas. Impacts resulting from transit operations and stations leading to potential land use incompatibilities and diminished quality of life in residential neighborhoods can be reduced to less than significant levels by implementation of Mitigation Measure 3.5-3:

- *Mitigation Measure 3.5-3:* In residential areas, station area plans shall be developed in coordination with local jurisdictions, adjacent residents, and businesses.

Compatibility of Park-and-Ride Facilities. Park-and-ride facility compatibility impacts on land uses along the Exposition Corridor would be similar to Alternative 2. The siting of stations and park-and-ride lots are proposed at locations away from sensitive land uses in areas with predominantly industrial or commercial uses to help minimize disruptions to these land uses. In the majority of cases, park-and-ride lots are located at, or immediately adjacent to, the stations. As such, impacts of these facilities would be similar to impacts of transit stations described above, with potentially significant impacts for replacement-parking sites located adjacent to residential uses along the Wilshire BRT route. Impacts for the Exposition Route would not be significant. Implementation of Mitigation Measure 3.5-3 (as described above under Compatibility of Transit Operations and Stations) and Mitigation Measure 3.5-4 would reduce impacts associated with Park-and-Ride Facilities along the Wilshire BRT route to a less than significant level.

- *Mitigation Measure 3.5-4:* Off street parking adjacent to residences shall be screened and laidout to minimize nuisances and disruption.

Neighborhood Impacts

Accessibility to Key Community Facilities (Activity Centers)/Community Cohesion. Impacts resulting from implementation of this Alternative (Wilshire BRT and Exposition LRT) would be beneficial, similar to those described under Alternative 2 (Wilshire BRT and Exposition BRT).

Neighborhood Character and Quality of Life. Similar to the impacts of Alternative 2 described above, implementation of Alternative 3 (Wilshire BRT and Exposition LRT) would result in less than significant impacts on neighborhood character and quality of life for adjacent neighborhoods along the Wilshire ROW and potentially significant impacts on the Exposition ROW. Implementation of Mitigation Measure 3.5-3 (as described above under Compatibility of Transit Operations and Stations) can reduce impacts resulting from transit operations and stations leading to potential land use incompatibilities and diminished quality of life in residential neighborhoods along the Exposition ROW to a less than significant level.

Construction Impacts. Similar to Alternative 2, construction-related impacts of Alternative 3 would be less than significant.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

The Exposition LRT MOS component of Alternative 3 would terminate at the Venice/Washington Station. Given that Wilshire BRT impacts have been disclosed above, and that the MOS option of the Exposition LRT is only a shorter route of the full length LRT alternative, the land use impacts of Alternative 3A would be similar to Alternative 3. It should be noted that with the Exposition LRT MOS, any impacts to land uses and neighborhoods west of the Venice/Washington Station would not occur, and no increased land use impacts would occur at he westernmost MOS station location. Impacts would be less than significant.

Maintenance Yard

Alternatives 1 through 3 (including the design options and the MOS) would require storage and maintenance facilities. A new maintenance yard(s) would provide maintenance for both the BRT/Rapid Bus systems and the LRT system and, as such, would need to be located centrally to both systems (i.e., in the downtown Los Angeles area). Section 2.0 (Alternatives Considered) provides a description of potentially feasible maintenance yards. Six potential maintenance yard sites are currently being considered by the MTA:

- NW Corner of Chavez/Mission;
- Existing MTA Division I area;
- NE Corner Alameda/Washington;
- SE Corner Alameda/Washington;
- Exposition ROW Hooper to Central; and
- Existing MTA South Park Shops.

Figure 2-17 - 2-19 in Section 2.0 (Alternatives Considered) shows the locations and physical layout of the proposed maintenance facilities. These locations are all contained within lands currently owned and operated by the MTA, and are predominantly located within industrial areas with the exception of the South Parks Shops Site, which is located in the vicinity of a residential area and school. Generally, development of any maintenance facilities within the majority of the proposed locations would be compatible with the surrounding industrial character of the area and would not result in any significant land use disruptions or incompatibilities. If a maintenance yard were to be built at the existing MTA South Park Shops, the increased volume of buses traveling through surrounding neighborhoods, and maintenance activities at the bus yard could have potentially significant impacts on sensitive receptors in the surrounding residential neighborhoods. However, land use impacts associated with the construction and operation of the remaining proposed maintenance facilities are expected to be less than significant.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

The subway design option would provide a subterranean travel corridor for either the bus or light-rail transit alternatives of the Exposition Corridor in the USC/Exposition Park area. Impacts associated with a subterranean travel route are minimal due to the negligible disruption to at-grade land uses. Similar to Alternatives 2, 2A, 3, and 3A, impacts of the subway design option on land uses would be less than significant.

Mitigation Measures

Impacts resulting from transit operations and stations leading to potential land use incompatibilities and diminished quality of life in residential neighborhoods can be reduced to less than significant levels by:

- In residential areas, station area plans shall be developed in coordination with local jurisdictions, adjacent residents, and businesses.

3.5.4 Cumulative Impacts

The 1998 RTP Draft Master EIR (SCAG, 1997), which is hereby incorporated by reference, provides the cumulative context for analysis of the Mid-City/Westside Transit Corridor Project. The 1998 RTP Draft Master EIR provides a programmatic analysis of land use impacts resulting from implementation of all projects contemplated in the RTP (SCAG, 1998), including the Mid-City/Westside Transit Corridor project, and provides the basis for this cumulative impact analysis.

Projects contained within the RTP will contribute to the overall intensity of development within the SCAG region. The RTP contains growth management goals to attain mobility and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. Based on SCAG's review of this project during the scoping process for this EIS/EIR, the proposed project is consistent with the SCAG RTP. Therefore, given that a transit system within the Mid-City/Westside Corridor Study area is a planned and desired land use, it would not be incompatible with the study area's general land use character and would serve to link activity centers within the area. As such, implementation of the planned projects of the RTP along with a transit system in the Mid-City/Westside Corridor Study area is not expected to result in cumulatively considerable land use impacts. Cumulative land use impacts would be less than significant.

3.6 Land Acquisition/Displacement and Relocation

3.6.1 Introduction

Although the Mid-City/Westside Transit Corridor alternatives under consideration are intended to maximize use of publicly-owned rights-of-way (e.g., Wilshire Boulevard and the MTA-owned Exposition railroad right-of-way [ROW]);, however there are design, alignment and mitigation features of these alternatives that may require that a business or residence be removed from the existing right of way. Specific actions that would cause displacement, include:

- Acquisition of private property for guideway alignment, station facility, parking, maintenance yard and/or impact mitigation purposes;
- Off-street replacement parking sites along Wilshire Boulevard; or
- Termination or non-renewal of existing LACMTA leases within the railroad ROW.

3.6.2 Affected Environment

For purposes of the discussion of potential land acquisition impacts, the affected environment is limited to the areas included within and directly adjacent to the proposed Wilshire BRT and Exposition BRT/LRT routes, as defined below:

Wilshire

The Wilshire Boulevard route is a heavily urbanized and dense environment. Growth that will take place along the route over the next 20-year period will be in-fill development on vacant or underutilized sites, as well as replacement of structures that have exhausted their useful economic life. Wilshire Boulevard component of the area is generally characterized by commercial uses fronting Wilshire Boulevard in 100-150 foot depth parcels. Beyond these commercial parcels in many cases are an east-west service alley, surface or structured parking and then residential uses. Both multi-family units and single-family homes are located adjacent to commercial uses or the service alley along much of the Wilshire route. The one exception is the high-density residential area west of Santa Monica Boulevard and east of Westwood.

Exposition

Because of the former use of the Exposition ROW for rail service, industrial uses are found adjacent to the right-of-way in a number of locations. Specifically, industrial/commercial development that is located directly adjacent to the former right-of-way is concentrated in the following segments along the route:

- Long Beach Avenue to Hill Street
- 9th Avenue to Crenshaw Boulevard
- Farmdale to Venice

- San Diego Freeway (I-405) to 17th Street

In 1991, the MTA acquired the railroad rights-of-way throughout the Los Angeles area from Southern Pacific Transportation Company. As part of this process, MTA inherited lease agreements entered into by the railroad. Since its ownership MTA has entered into land leases and has granted certain temporary and permanent easements. A number of commercial and industrial businesses along the Exposition ROW entered into lease agreements to expand their sites for parking, storage, and/or building improvements. Most MTA leases of the Exposition ROW are on a month-to-month basis, however, there are several in the western portion of the Exposition railroad ROW that have long term renewal options extending to the year 2019 (the leases expire in 2004, and have three five-year options extending to 2019).

As shown in Table 3.6-1, almost 90 percent of MTA's leases within the Exposition ROW are on a month-to-month basis. About 30 percent of leases involve business purposes such as patron and employee parking, access, storage and lay-down areas, temporary buildings and site beautification. In addition to leases, the LACMTA under the provisions of its ROW Protection Guidelines has also granted licenses for largely beautification and landscaping improvements.

TABLE 3.6-1
EXPOSITION ROW LEASE SUMMARY

Segment	Total	Type of ROW Use				Lease Terms	
		Utilities	Business Purposes*	Signs and Billboards	Misc. Easements	Month-to-Month	Longer Term or Special Circumstances
Rail Link to LRT Maintenance Yard	27	8	12	7	0	25	2
South LA	51	15	6	22	8	50	1
Culver City	37	14	12	2	9	32	5
West LA	42	16	16	5	5	37	5
Santa Monica	40	17	13	4	6	32	8
TOTAL	**197**	**70**	**59**	**40**	**28**	**176**	**21**
PERCENT	**100.0%**	**35.5%**	**29.9%**	**20.3%**	**14.2%**	**89.3%**	**10.7%**

* Includes, parking, storage, lay-down, buildings, and beautification

Source: LACMTA Real Estate Department and Terry A. Hayes Associates 2000.

3.6.3 Impact Assessment and Mitigation Measures

Standards of Significance

For purposes of this environmental evaluation, a significant land acquisition and displacement impact may occur when:

- Real property is acquired and business or residential owners or tenants are required to relocate;

- Long-term leases are terminated prior to their normal expiration date for the purpose of constructing a transit service improvement and supporting infrastructure. (The expiration of month-to-month leases or leases where relocation waivers have been executed would not be considered significant);

- A business operation is disrupted due the loss of needed parking, access or storage areas.

Methodology for Impact Evaluation

To assess the potential for the acquisition of private property, plan and profile drawings identifying the detailed location of the guideway alignment, stations and maintenance yards were reviewed to identify non-publicly owned areas that would be needed for the proposed project or project alternatives. To address off-street replacement parking impacts, areas along Wilshire Boulevard where parking would be displaced were reviewed to determine whether there were candidate replacement sites that satisfied the Replacement Parking Strategy described in Section 3.2 (Traffic). To estimate the effect of non-renewal of LACMTA leases within the Exposition railroad ROW, the lease database available from the LACMTA Real Estate Division was reviewed.

Impacts

No Action Alternative (Baseline)

As discussed in Section 2, the No Action Alternative involves primarily increases to the bus operations fleet and minor transit service restructuring. It would not involve the acquisition of real property. No impacts would occur.

Transportation System Management (TSM) Alternative

As described in Section 2 of this report, the TSM Alternative would involve largely operational and route restructuring improvements along with extensions of the MTA Rapid Bus service and corridors. No land acquisition or displacement is involved from these activities, and no impacts would occur.

Alternative 1: Wilshire BRT (Baseline Median-Running)

The Wilshire BRT Alternative would provide exclusive travel lanes within the median of Wilshire Boulevard. As such, the alternative would not directly require the acquisition of property. Station locations would either be in the street median or on the adjacent public sidewalk and also would not require the acquisition of private property.

The primary property acquisition required for the Wilshire BRT Alternatives would result from the use of sites for the replacement of curb parking spaces that would be lost along the route. According to a parking survey conducted along Wilshire Boulevard, approximately 1,335 curb parking spaces would need to be replaced. At approximately 400 square feet per space, replacement parking would require approximately 12 acres of land.

To address the loss of parking for business districts along Wilshire Boulevard, the MTA, as part of the project, would adopt a Replacement Parking Strategy as described in Section 3.2 (Traffic). This strategy would seek to replace parking in locations convenient and accessible to existing businesses and employers. The strategy would use the acquisition of private property as a last resort and focus first on the following types of replacement parking options: (1) use of MTA-owned parking sites, (2) other public agency owned sites, (3) agreements with existing surface parking lot operators to reconfigure or deck existing parking areas, (4) fair share contributions to other parking structures being planned or (5) entering into agreements with commercial properties that have underutilized surface or structured parking.

As shown in Table 3.6-2, the need to replace lost curb parking is not equally distributed along the Wilshire route. The largest and most concentrated area of curb parking loss is in the Santa Monica segment. In this 2.6-mile section, approximately 4.6 acres of replacement parking space would be needed. The land requirements for surface parking in other segments of the Wilshire route is approximately 2 acres.

TABLE 3.6-2
OFF STREET REPLACEMENT PARKING*

Segment	Affected Area	Parking Spaces to be Replaced and surface parking land requirement	Land Area Needed for Replacement as Surface Parking (Worst Case)	Potential Worst Case Theoretical Displacement Based on Existing Land Use Patterns
Los Angeles - Mid-City	Western to Bronson, and Citrus to San Vicente	261	2.4 acres	80,000 S.F. commercial and 20 dwelling units
Beverly Hills	San Vicente to Hamilton, and La Cienega to Maple	269	2.5 acres	80,000 S.F. commercial and 10 dwelling units
West Los Angeles	Comstock to Malcolm and Barry to Centinela	259	2.4 acres	50,000 S.F. commercial and 10 dwelling units
Santa Monica	Centinela to Second	546	5.0 acres	50,000 S.F. commercial and 50 dwelling units

*Assumes one for one replacement of lost spaces.
Source: Korve Engineering and Terry A. Hayes Associates 2000.

Outlined below is a segment-by-segment characterization of the issues affecting the acquisition of property. MTA's goal will be to acquire property through negotiations on a willing seller basis. However, if acquisition through negotiations is not successful, MTA could use its right to acquire property through eminent domain proceedings.

- *Western to Bronson.* MTA owns no sites. There are several surface parking lots that may be candidates for modification or decking. The need to acquire improved property is moderate.

- *Bronson to Citrus.* There are no displaced parking spaces along this segment. MTA owns one lot in this segment on the south side of Wilshire between Crenshaw and Lorraine. However, since there are no displaced spaces in this segment, this lot is beyond the reasonable distance for a replacement lot for those segments where parking is lost. There are several surface parking lots that may be candidates for modification or decking. The need to acquire improved property is moderate.

- *Citrus to San Vicente.* MTA owns one site at La Brea. Surface parking lots and rear surface parking suggest opportunities to minimize acquisition of new parking sites through either reconfiguration or construction of small parking structures. Acquisition potential of improved property is low to moderate.

- *San Vicente to Hamilton.* MTA owns no sites. There are no vacant sites. Acquisition potential of improved property is high.

- *La Cienega to Maple.* MTA owns no sites. Two to three vacant sites may provide opportunities for relocated parking. Less intensive use of office buildings may also offer opportunities to share parking space. Acquisition potential of improved property is moderate to highly likely.

- *Comstock to Malcom.* MTA owns no sites. There are no vacant sites. There are no surface parking lots. Acquisition would likely affect low scale older residential properties fronting Wilshire Boulevard. The probability of acquisition is high; however, acquiring residential property for this purpose may not be feasible given the resulting displacement of residential occupants.

- *Barry to Centinela.* MTA owns no sites. There are no vacant sites and no surface parking lots. The only opportunity for replacement involves the use of underutilized existing structured parking in office buildings (if any). The probability of acquisition is high.

- *Centinela to Second.* MTA owns no sites. There are no Wilshire frontage vacant sites. There are scattered small surface parking lots, 2-3 may be of sufficient size for redevelopment as parking structures. Acquisition would likely focus on the small-scale one-story commercial buildings at corners to avoid driveways on Wilshire Boulevard. The acquisition potential is high, however, the probabilities of acquiring these desirable locations on a willing seller basis are low.

The analysis of the different segments along Wilshire Boulevard indicates that it may not be feasible to provide a parking lot/structure in every block, so the replacement parking that is provided is likely to be less convenient for customers of some businesses. Even if the 1,335 parking spaces are fully replaced, they will be in consolidated facilities, which will be less convenient than on-street parking directly in front of the business or residence.

In summary, the Wilshire BRT Alternative will have a significant unavoidable impact on access and convenience to fronting properties along Wilshire Boulevard due to the loss of on-street parking. This impact will be partially reduced by the development of off-street replacement parking as part of the BRT project, but it is not likely to be fully mitigated.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

This option would also require the implementation of a replacement parking program that would likely result in acquisition of private property similar to the baseline Alternative 1.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

This option would also require the implementation of a replacement parking program that would likely result in acquisition of private property similar to the baseline Alternative 1.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Acquisition and displacement impacts for the Wilshire BRT component of this alternative would be the same as the Wilshire BRT alternative discussed above. The incremental land acquisition and displacement affects associated with the Exposition BRT portion of this alternative are discussed below.

ROW Leases. The primary impact of this component of the alternative would be the non-renewal and/or termination of leases held by the MTA. Approximately 170 leases would be affected (see Table 3.6-3). One hundred and fifty-one (151) are month-to-month leases and 19 are longer term. Business-related impacts, which could result in displacement, involve 57 leases for parking, storage areas and access. Of the 62 utility leases, it is expected that the majority will require the relocation or reconfiguration of the utility. The remaining 28 leases that represent miscellaneous easements would be terminated.

TABLE 3.6-3
EXPOSITION BRT LEASE SUMMARY

		Type of ROW Use				Lease Terms	
Segment	**Total**	**Utilities**	**Business Purposes***	**Signs and Billboards**	**Misc. Easements**	**Month-to-Month**	**Longer Term or Special Circumstances**
Rail Link to LRT Maintenance Yard	na	na	na	na	na	na	na
South LA	51	15	6	22	8	50	1
Culver City	37	14	12	2	9	32	5
West LA	42	16	16	5	5	37	5
Santa Monica	40	17	13	4	6	32	8
TOTAL	**170**	**62**	**47**	**33**	**28**	**151**	**19**

* Includes, parking, storage, lay-down, buildings, and beautification

Source: LACMTA Real Estate Department and Terry A. Hayes Associates 2000.

ROW Licenses. As noted above, the LACMTA has granted licenses in scattered areas along the Exposition ROW to allow landscaping and beautification under the provisions of the LACMTA ROW protection guidelines. It is expected that these licenses would be terminated under the terms of the license. The termination of these right-of-way licenses is expected to result in a less than significant impact.

Acquisition of Property. The Exposition BRT alignment would result in the acquisition of property outside of the existing ROW in two areas. First, the creation of a park and ride facility for 1,140 parking spaces between 26th Street and Stewart Street in Santa Monica would displace the Bergamot Station Art Center. Bergamot Station is home to the Santa Monica Museum of Art owned by the City of Santa Monica. This displacement would affect approximately 60 galleries and arts-related businesses and activities, as well as the Santa Monica Museum of Art. Bergamot Station should be evaluated for potential shared use of the site with the transit facility. Evaluation should be conducted as a part of the preliminary design phase of the project. If joint use plans can be developed, impacts resulting from displacement of Bergamot Station can be reduced to a less than significant level.

In addition, the BRT maintenance yard options would also require land displacements similar to those described for the Wilshire BRT Alternative.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Acquisition and displacement impacts for the Wilshire BRT component of this alternative would be the same as the Wilshire BRT alternative discussed above. The incremental land acquisition and displacement affects associated with the Exposition BRT MOS portion of this alternative are discussed below.

ROW Leases. The primary impact of this component of the alternative would be the non-renewal and/or termination of leases held by the MTA. Approximately 88 leases would be affected (See Table 3.6-4). Eighty-two (82) are month-to-month leases and 6 are longer term. Business-related impacts, which could result in displacement, involve 59 leases for parking, storage areas and access. Of the 29 affected utility leases, it is expected that the majority will require the relocation or reconfiguration of the utility. The remaining 17 leases for beautification, as well as 24 leases for billboards and signs, would be terminated.

TABLE 3.6-4
EXPOSITION BRT MOS LEASE SUMMARY

Segment	Total	Type of ROW Use				Lease Terms	
		Utilities	Business Purposes*	Signs and Billboards	Misc. Easements	Month-to-Month	Longer Term or Special Circumstances
Rail Link to LRT Maintenance Yard	na	na	Na	na	na	na	na
South LA	51	15	6	22	8	50	1
Culver City	37	14	12	2	9	32	5
West LA	na	na	Na	na	na	na	na
Santa Monica	na	na	Na	na	na	na	na
TOTAL	**88**	**29**	**18**	**24**	**17**	**82**	**6**

* Includes, parking, storage, lay-down, buildings, and beautification

Source: LACMTA Real Estate Department and Terry A. Hayes Associates 2000.

ROW Licenses. MTA has granted licenses in within the Exposition ROW to allow landscaping and beautification under the provisions of the MTA ROW protection guidelines. It is expected that these licenses would be terminated under the terms of the license; however, the termination of those right-of-way licenses is expected to result in a less than significant impact.

Acquisition of Property. The Exposition BRT MOS would not require land acquisition with the exception of a proposed BRT maintenance yard site near downtown Los Angeles. The yard displacement affects would be similar to those described for the Wilshire BRT Alternative.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Acquisition and displacement impacts for the Wilshire BRT component of this alternative would be the same as the Wilshire BRT alternative discussed above. The incremental land acquisition and displacement affects associated with the Exposition LRT portion of this alternative are as follows.

ROW Leases. The primary impact of this component of the alternative would be the non-renewal and/or termination of leases held by the MTA. Approximately 197 leases would be affected (See Table 3.6-5). The number of leases affected is greater than the Exposition BRT component because of the use of MTA railroad ROW to reach the proposed maintenance yard east of Hill Street.

TABLE 3.6-5
EXPOSITION LRT ROW LEASE SUMMARY

Segment	Total	Type of ROW Use				Lease Terms	
		Utilities	Business Purposes*	Signs and Billboards	Misc. Easements	Month-to-Month	Longer Term or Special Circumstances
Rail Link to LRT Maintenance Yard	27	8	12	7	0	25	2
South LA	51	15	6	22	8	50	1
Culver City	37	14	12	2	9	32	5
West LA	42	16	16	5	5	37	5
Santa Monica	40	17	13	4	6	32	8
TOTAL	**197**	**70**	**59**	**40**	**28**	**176**	**21**

* Includes, parking, storage, lay-down, buildings, and beautification

Source: LACMTA Real Estate Department and Terry A. Hayes Associates 2000.

Specifically, 176 are month-to-month leases and 21 are longer term. Business-related impacts, which could result in displacement, involve 18 leases for parking, storage areas and access. Of the 70 affected utility leases, it is expected that the majority will require the relocation or reconfiguration of the utility. The remaining 28 leases for beautification, as well as 40 leases for billboards and signs, would be eliminated. This would result in a potentially significant impact.

ROW Licenses. Impacts on licenses for beautification would be similar to the Exposition BRT Alternative. No significant impacts are anticipated.

Acquisition of Private Property. The Exposition LRT alignment would result in the acquisition of property outside of the existing ROW in two areas. First, the turn of the route at Sepulveda and Venice would displace a convenience store on the northeast corner of this intersection. Second, the creation of a park and ride facility for 1,140 parking spaces between 26th Street and Stewart Street in Santa Monica would displace the Bergamot Station Art Center. Bergamot Station is home to the Santa Monica Museum of Art owned by the City of Santa Monica. This displacement would affect approximately 60 galleries and arts-related businesses and activities, as well as the Santa Monica Museum of Art leading to a potentially significant impact. Bergamot Station should be evaluated for potential shared use of the site with the transit facility. Evaluation should be conducted as a part of the preliminary design phase of the project. If joint use plans can be developed, impacts resulting from displacement of Bergamot Station can be reduced to a less than significant level.

Because the proposed LRT maintenance yard (see Figure 3.6-2) is to be located within the existing Exposition ROW, no additional land acquisition is anticipated. Impacts to leases in this area are discussed above.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Acquisition and displacement impacts for the Wilshire BRT component of this alternative would be the same as the Wilshire BRT alternative discussed above. The incremental land acquisition and displacement affects associated with the Exposition LRT MOS portion of this alternative are discussed below:

ROW Leases. The primary impact of this component of the alternative would be the non-renewal and/or termination of leases held by the MTA. Approximately 115 leases would be affected (Table

3.6-6). One hundred and seven (107) are month-to-month leases and 8 are longer term. Business related impacts, which could result in displacement, involve 30 leases for parking, storage areas and access leading to a potentially significant impact.

TABLE 3.6-6
EXPOSITION LRT MOS LEASE SUMMARY

Segment	Total	Type of ROW Use				Lease Terms	
		Utilities	Business Purposes*	Signs and Billboards	Misc. Easements	Month-to-Month	Longer Term or Special Circumstances
Rail Link to LRT Maintenance Yard	27	8	12	7	0	25	2
South LA	51	15	6	22	8	50	1
Culver City	37	14	12	2	9	32	5
West LA	na	na	na	na	na	na	na
Santa Monica	na	na	na	na	na	na	na
TOTAL	**115**	**37**	**30**	**31**	**17**	**107**	**8**

* Includes, parking, storage, lay-down, buildings, and beautification
Source: LACMTA Real Estate Department and Terry A. Hayes Associates 2000.

ROW Licenses. Impacts on Licenses for beautification would be similar to the Exposition BRT Alternative. Less than significant impacts are anticipated.

Acquisition of Property. The Exposition LRT MOS would not require land acquisition.

Mitigation Measures

The potential effects of property acquisition and the displacement of persons and business will be substantially alleviated through compliance with applicable federal and state laws governing relocation assistance and property acquisition procedures. The *Uniform Relocation Assistance and Real Property Acquisition Polices Act of* 1970, as amended (Uniform Act), mandates that certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced as a direct result of programs or projects undertaken by a federal agency or with federal financial assistance. The Uniform Act provides for uniform and equitable treatment of persons displaced from their homes or business and establishes uniform and equitable land acquisition policies. The provisions of the *California Relocation* Act (California Act), applies in the absence of federal funds and/or involvement if a public entity undertakes a project and consequently must provide relocation assistance and benefits. The California Act, which is consistent with the intent and guidelines of the Uniform Act seeks to (1) ensure the consistent and fair treatment of owners of real property (2) encourage and expedite acquisition by agreement to avoid litigation and relive congestion in the courts and (3) promote confidence in the public land acquisitions.

The entities displaced by any of the proposed alternatives may be entitled to relocation assistance under the Uniform Act or California Act due to the termination of their lease agreements with MTA. However, the qualification for assistance is dependent upon the specific lease agreement. In many instances, the lease agreement with the MTA contains a provision wherein the tenant acknowledged that they are not entitled to relocation benefits if the lease is terminated for a public transit project.

Licenses for beautification of the Exposition ROW will be revoked under terms of the license granted by the MTA. As appropriate, replacement landscaping would be provided consistent with the transit project design and engineering requirements.

Bergamot Station. During Preliminary Engineering and preparation of the Final EIS/EIR, alternative designs shall be developed for a joint use of the Bergamot Station property. In addition to the transit center and attendant parking, facilities for the Santa Monica Museum of Art and related art facilities shall be included in this design process and appropriate shared uses of the site shall be included in the Final EIS/EIR as mitigation measures for the project.

Maintenance Yard

MTA Operations has indicated that none of the existing bus divisions in the Central City or Westside areas have the capacity for the expanded maintenance and storage required by the articulated buses needed for the Wilshire BRT Alternative. To address this need, MTA is considering candidate sites for a maintenance yard in the downtown areas of Los Angeles. The sites under consideration are as follows (see Figures 2-17 through 2-19):

- MTA-owned Division 1 (Alameda/6th) – a 6.7-acre site with existing MTA facilities. There is also a three-acre adjacent site that is under consideration for the BRT yard.
- South Park Shops (54th/Avalon) – a 9-acre site with existing MTA facilities.
- NE Washington/Alameda – a 10.3-acre site containing a truck warehouse, a medical office building, and a gas station.
- SE Washington/Alameda – a 10.3-acre site containing a vacated private bus yard, truck sales, and metal fabrication shop.
- Chavez/Mission Road – a 7-acre site containing a salvage yard, soil storage, and two auto-related businesses.

Two of the sites under consideration are existing MTA facilities (i.e., the Division 1 site near 6th Street and Alameda and the South Park shops near 54th Street and Avalon). The use of these sites would not displace private property, but would require that either regular bus maintenance services be consolidated at another MTA site or relocated to a new facility. Impacts would be less than significant.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

This option would not require the permanent acquisition of private property nor would it require the removal any property on the campus of the University of Southern California or Exposition Park. No impacts would occur. A short-term lease or temporary construction easements, may be needed, for spoil or stock piling during the period of excavation.

3.6.4 Cumulative Impacts

Wilshire BRT. As discussed in Section 3.4.3, with the exception of the implementation of the Replacement Parking Strategy, there would be no direct land acquisition associated with the Wilshire

BRT. Even the replacement parking strategy is focused on a series of options that place the acquisition of real property as the last resort alternative. An adverse cumulative land acquisition effect would only occur where this last resort option is exercised by the MTA and where another public agency may exercise its authority to acquire or assemble property of public purposes, such as a redevelopment agency, school district or public works department in the same general geographic vicinity. Along the Wilshire route, redevelopment projects are only in place in the City of Los Angeles. There are no redevelopment agencies or redevelopment projects in the City of Santa Monica or Beverly Hills. The Community Redevelopment Agency of the City of Los Angeles' Koreatown Wilshire Center project area is the only area to affect Wilshire Boulevard. However, there are no known or anticipated major redevelopment actions where business and residential displacement is expected. Thus, adverse cumulative impacts are not expected. In addition, the most recent plans of the Los Angeles Unified School District also do not indicate plans to acquire real property along Wilshire Boulevard west of Western Avenue. Impacts are expected to be less than significant.

Exposition BRT or LRT. The development of transit improvements along this alignment will entail the termination or non-renewal of current leases along the ROW. These changes may have a direct adverse affect on some businesses that are entirely located within the ROW or those that rely substantially on land in the ROW for their operations. The Exposition route passes through redevelopment areas in Los Angeles (Council District 9, Hoover, Mid-City, and Crenshaw). It also passes through the Culver City Redevelopment area. In these areas, the potential exists for a combined displacement effect should the redevelopment agencies find opportunities to achieve their revitalization objectives. At this time, there are no known redevelopment intervention actions that are expected to result in displacement of businesses or residences that would create a combined adverse effect with the elimination of business leases within the Exposition ROW. It should be noted that the proposed redevelopment of the Santa Barbara Plaza area (south of the Exposition route near Crenshaw) would displace local businesses. However, in this same vicinity, there are few if any business leases to be terminated within the Exposition ROW and thus, no cumulative adverse effects are anticipated. In other westerly portions of the Exposition ROW (Culver City, West Los Angeles, and Santa Monica) where leases would also terminate, no other collateral actions by public agencies to acquire land are expected or anticipated that would intensify business dislocation and increase competition for relocation space and resources. Impacts would be less than significant.

3.7 Visual Quality

3.7.1 Introduction

The purpose of this section is to evaluate and describe the impacts of the proposed Mid-City/Westside Transit Corridor Project. The focus of this analysis is to describe the existing visual character of the two corridors (Wilshire Boulevard and the Exposition right-of-way), describe the potential changes in visual character that would result from implementation of the alternatives, and determine whether those changes would result in significant adverse impacts to the visual environment.

3.7.2 Affected Environment

This section describes existing aesthetic and visual resources of the project area. In particular, descriptions of existing visual characteristics, both onsite and in the vicinity of the project site, are presented. This information relies upon, and summarizes, information presented in the Land Use and Urban Design study for the Mid-City/Westside Transit Corridor Project, which is incorporated by reference herein for the purposes of NEPA and CEQA. The Land Use and Urban Design Study was prepared at the same time as the Mid-City/Westside MIS to help facilitate design options and screening alternatives.

Wilshire Corridor

Wilshire Boulevard stretches from downtown Los Angeles to Santa Monica, and passes through or near many of the major activity centers and destinations in the metropolitan Los Angeles area. The Boulevard varies from low to high density commercial development, as well as both low and high density multi-family neighborhoods. The Corridor contains a variety of architecture styles that were in vogue at the time of construction, from the 1920's to 1990's, with structure façades that reflect these eras.

Most of Wilshire Boulevard provides six travel lanes separated either by a continuous left turn lane or by a median. Along most of the Boulevard, parking is allowed in the curb lanes during non-peak times. The portion of Wilshire Boulevard between La Brea and Fairfax Avenues (the "Miracle Mile") has a landscaped median that enhances the visual character of the Boulevard. Figures 3.7-1 through 3.7-3 provide street-level views of the Wilshire Corridor.

The corridor is generally pedestrian-friendly, with extra-wide sidewalks, street trees, planters, and landscaping, and pedestrian-serving uses at the ground-floor level of most commercial structures. Distinctive neighborhoods located adjacent to the corridor are the Hancock Park neighborhood, the Miracle Mile District, and the "Golden Triangle" of Beverly Hills.

Major destination centers located within a mile of the corridor that contribute to the demand for public transit include: the Los Angeles County Museum of Art, the Rancho La Brea Tar Pits, CBS Television Center, the Los Angeles Farmer's Market, Beverly Center, Cedars-Sinai Medical Center,

Wilshire Boulevard

Photo ① *Wilshire Boulevard (Park Mile) looking east.*

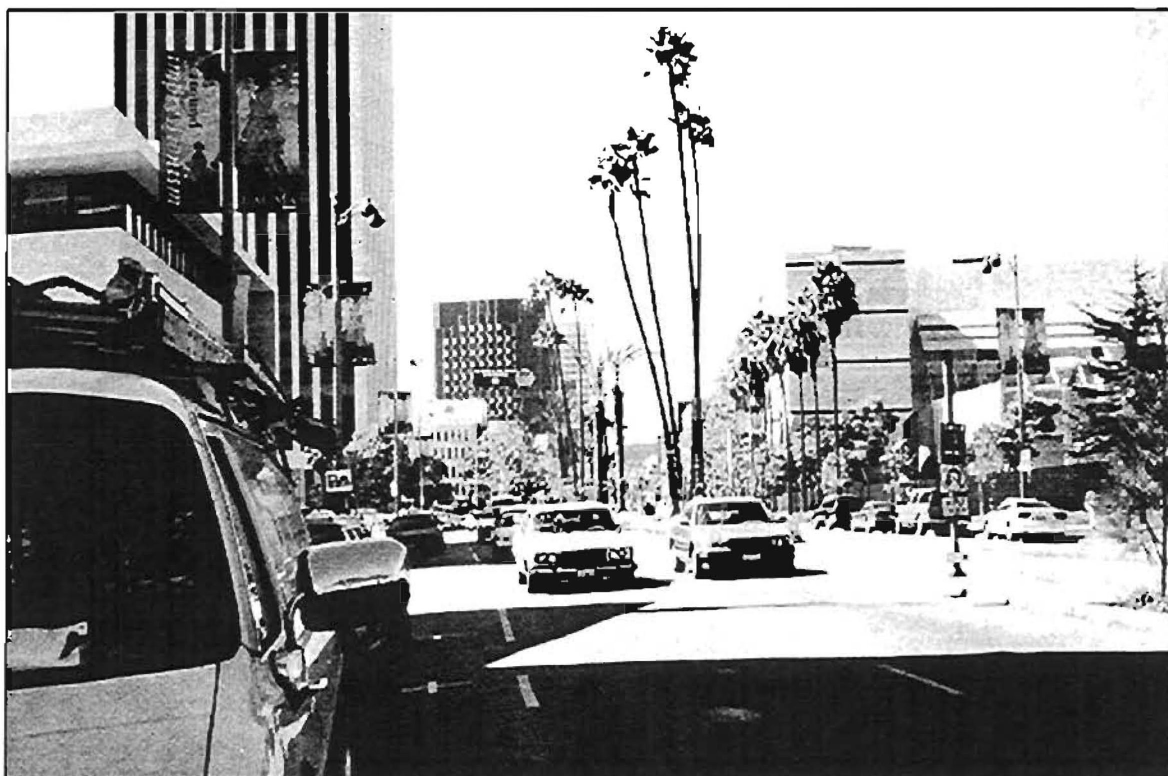


Photo ② *Wilshire Boulevard (Hancock Park) looking west.*

SOURCE: EIP Associates

FIGURE 3.7-1
STREET LEVEL VIEWS OF THE WILSHIRE CORRIDOR (PARK MILE & HANCOCK PARK)

Wilshire Boulevard

Photo (3) *Wilshire Boulevard (Beverly Hills) looking east.*

Photo (4) *Wilshire Boulevard (Los Angeles Country Club/Westwood) looking west.*

SOURCE: EIP Associates

FIGURE 3.7-2
STREET LEVEL VIEWS OF THE WILSHIRE CORRIDOR (BEVERLY HILLS & WESTWOOD)

Wilshire Boulevard

Photo (5) *Wilshire Boulevard (at Berkeley) looking east.*

Photo (6) *Wilshire Boulevard (at 4th Street) looking east.*

SOURCE: EIP Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.7-3

STREET LEVEL VIEWS OF THE WILSHIRE CORRIDOR (SANTA MONICA)

Melrose Avenue, Pacific Design Center, Rodeo Drive, Westwood Village, UCLA and UCLA Medical Center, Third Street Promenade, and Santa Monica Pier and the ocean-front parks and beaches.

Land uses immediately fronting Wilshire Boulevard generally include, from east to west: commercial and retail uses (near Western Avenue); multi-family residences and offices (between Hauser Boulevard and Highland Avenue); retail, commercial, and offices (between Highland Avenue and Santa Monica Boulevard); multi-family residential, commercial, and offices (Comstock Avenue to Sepulveda Boulevard); and retail, commercial, and offices (Federal Avenue to Ocean Avenue). The corridor is primarily characterized by mostly low- to medium-rise office and retail uses, with high-rise offices and residences at some locations, such as Beverly Hills and Westwood. The setback of development along the Boulevard varies, as does the presence of street trees and landscaped building frontages.

Land uses along the following three segments of Wilshire Boulevard have particularly distinct visual characteristics:

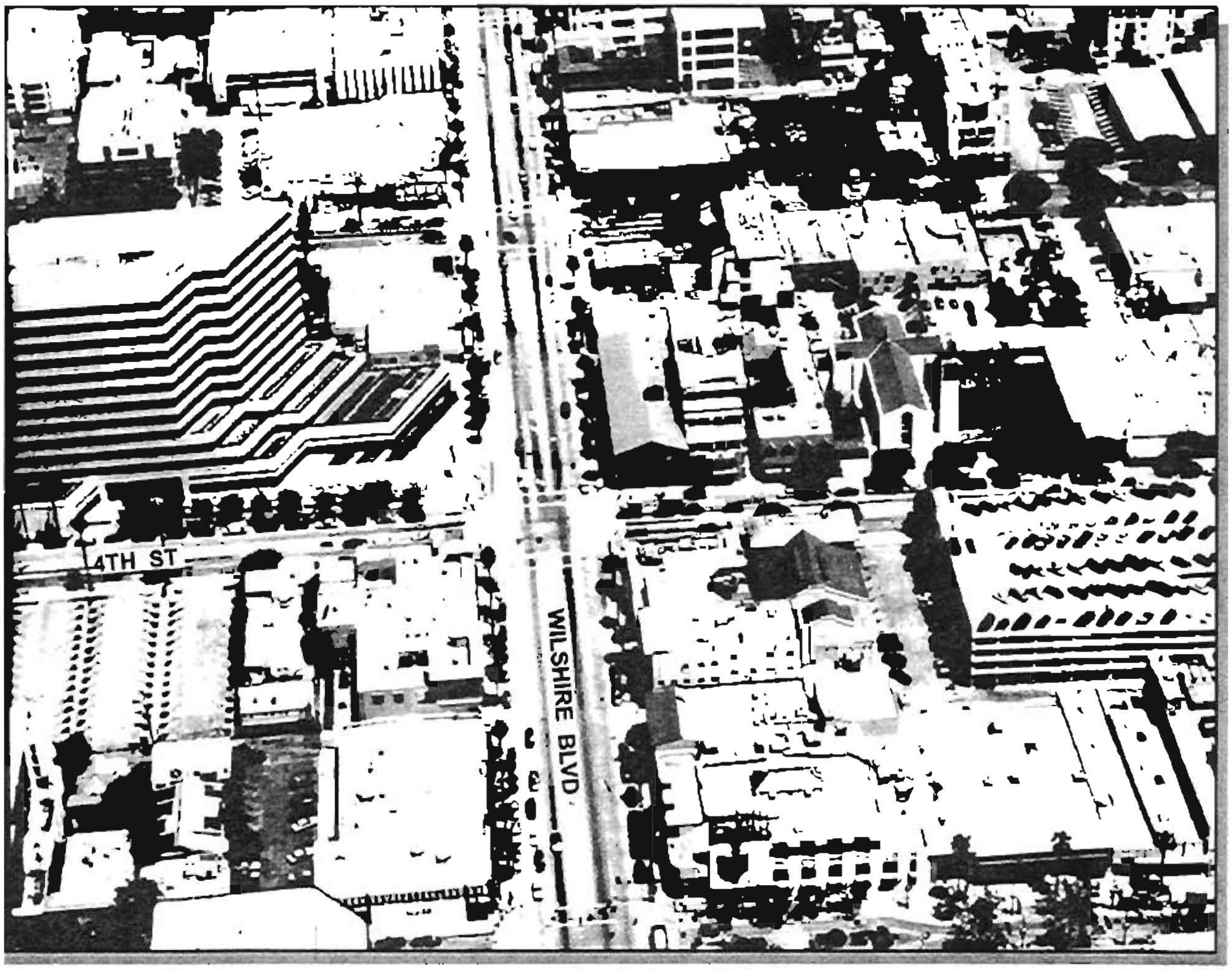
- The Park Mile neighborhood (from Wilton Place to Highland Avenue), with generally low-rise multi-family residences and offices that have landscaped building frontages and street trees, and well-landscaped single-family residences along the streets to the north and south;
- The portion of the Boulevard that bisects the Los Angeles Country Club (between the Beverly Hills city limits and Comstock Avenue), where both sides of the roadway are lined with shrubs and trees; and
- The portion between Veteran Avenue and Federal Avenue/San Vicente Boulevard, which includes the West Los Angeles Federal Building, the Los Angeles National Cemetery, and the Veterans Affairs grounds, with extensive landscaped setbacks that provide viewing opportunities of the surrounding areas. In addition, the portion of the Boulevard within the City of Los Angeles (east of Malcolm Avenue) has been designated a Scenic Highway, and the portion within the City of Santa Monica has been designated a Scenic Corridor.

The visual characteristics of the Wilshire Corridor, including the width of the roadway, presence of a landscaped median, predominant land uses along the corridor, the scale of buildings along the corridor, the major scenic views of the route and from the corridor, and substantive visual elements, including open space resources, are noted in Table 3.7-1, which follows the discussion of the Exposition Corridor. In addition, Figures 3.7-4 through 3.7-8 provide oblique aerial photographs of representative locations along the Wilshire Boulevard Corridor.

Exposition Corridor

The Exposition Corridor is a former rail line running along Exposition Boulevard, from Figueroa Street to the City of Santa Monica. Some portions of the right-of-way (ROW) [particularly the eastern segment] are lined with single family residential uses, while other portions are lined with industrial structures, primarily in the segment between La Brea Avenue and Venice Boulevard and between Sawtelle Boulevard and Olympic Boulevard.

Wilshire Corridor

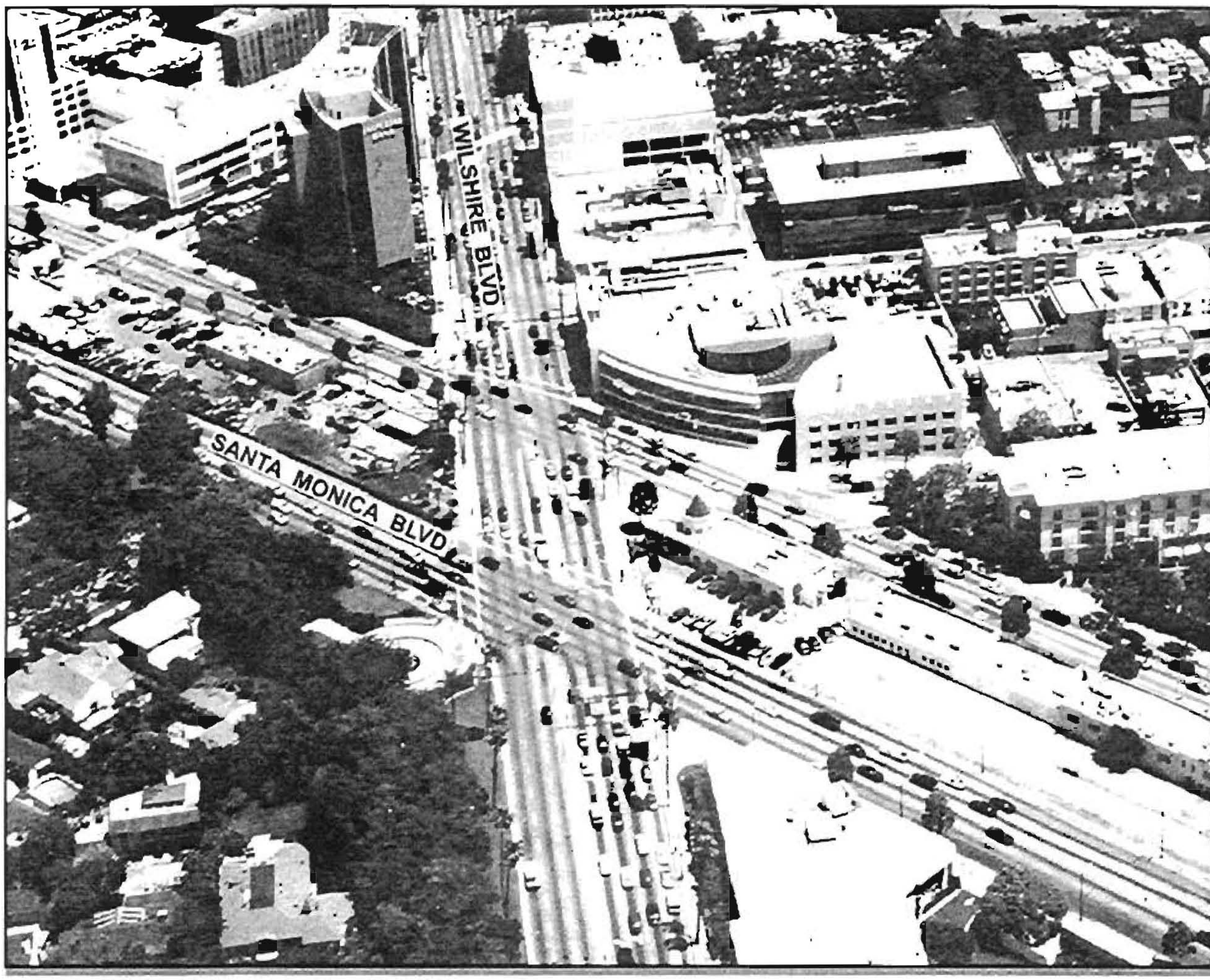


Looking East Along Wilshire Boulevard near 4th Street in Santa Monica

SOURCE: EIP Associates

FIGURE 3.7-4
OBLIQUE AERIAL PHOTOGRAPH
OF WILSHIRE CORRIDOR
(SANTA MONICA)

Wilshire Corridor



Intersection of Wilshire Boulevard and Santa Monica Boulevard

SOURCE: EIP Associates

FIGURE 3.7-5
OBLIQUE AERIAL PHOTOGRAPH
OF WILSHIRE CORRIDOR
(BEVERLY HILLS)

Looking East Along Wilshire Boulevard from Beverly Hills

SOURCE: EIP Associates

FIGURE 3.7-6
OBLIQUE AERIAL PHOTOGRAPH
OF WILSHIRE CORRIDOR
(BEVERLY HILLS)

Wilshire Corridor

Looking East Along Wilshire Boulevard near Fairfax Avenue

SOURCE: EIP Associates

FIGURE 3.7-7
OBLIQUE AERIAL PHOTOGRAPH
OF WILSHIRE CORRIDOR
(LOS ANGELES)

Wilshire Corridor

Looking East Along Wilshire Boulevard from Miracle Mile

SOURCE: EIP Associates

FIGURE 3.7-8
OBLIQUE AERIAL PHOTOGRAPH
OF WILSHIRE CORRIDOR
(MIRACLE MILE)

Large portions of the ROW are vacant, due to heavy rail use over the past decades, with mature trees located along some segments, and others without any landscaping or vegetation of note. Along the eastern segment, the typical house type is a single-story bungalow treated in a variety of architectural styles. In the central and western segments of the alignment, many adjacent properties contain nondescript industrial structures. Figures 3.7-9 through 3.7-12 provide street-level views of the Exposition Corridor.

The ROW between Figueroa Street and Gramercy Place is located in the median of Exposition Boulevard, which is a six-lane street. Between Figueroa Street and Vermont Avenue, the University of Southern California and Exposition Park are located on either side of Exposition Boulevard. West of Vermont Avenue, the Corridor is predominantly residential, with sidewalks, street trees, and some trees in the right-of-way. At Gramercy Place, Exposition Boulevard splits into two segments, with the southern roadway becoming Rodeo Road. West of the split, the ROW is located on the southern side of Exposition Boulevard. In this area, residential and industrial uses are located immediately south of the ROW. At La Brea Avenue the ROW continues along the southern edge of Jefferson Boulevard. The primary land uses in this segment are industrial and commercial.

At Venice Boulevard, the route begins to travel west. Venice Boulevard provides six lanes of traffic, separated by a median that is landscaped in some locations. Primary uses along Venice Boulevard are commercial and retail, with some multi-family residential structures. The route then turns north on Sepulveda Boulevard, which is lined with multi-family residential structures, with commercial uses at major intersections. As the route returns to Exposition Boulevard (just south of Pico Boulevard), the primary land uses are industrial and commercial, and these uses continue into Santa Monica, with the exception of single-family residential structures located to the south of the right-of-way between Bundy Drive and Centinela Avenues. The route then turns onto Olympic Boulevard, which is fronted primarily by commercial and industrial uses until the (light rail transit) route reaches Ocean Avenue. For bus rapid transit, the route would travel north on 17th Street, then west on Colorado Avenue. Along this segment, the adjacent land uses are primarily commercial and industrial.

With the exception of the segment between Figueroa Street and Vermont Avenue, most land uses along the Exposition Corridor are low-rise in nature. The University of Southern California and the Coliseum contain low- to mid-rise structures, separated by substantial landscaping and pockets of open space. The residential uses between Vermont and La Brea Avenues provide landscaped frontages, with street trees in many areas. The industrial and commercial uses along the western portions of Exposition Boulevard provide little or no setback, and little or no landscaping. As a result, the visual character of the route along this portion of Exposition Boulevard varies greatly.

Because of the predominant industrial land uses along Jefferson Boulevard, and the lack of landscaping along the ROW, the visual character of this segment is stark, and in some stretches, lacks any aesthetically pleasing features. The presence of landscaped setbacks, landscaping along

Exposition Boulevard

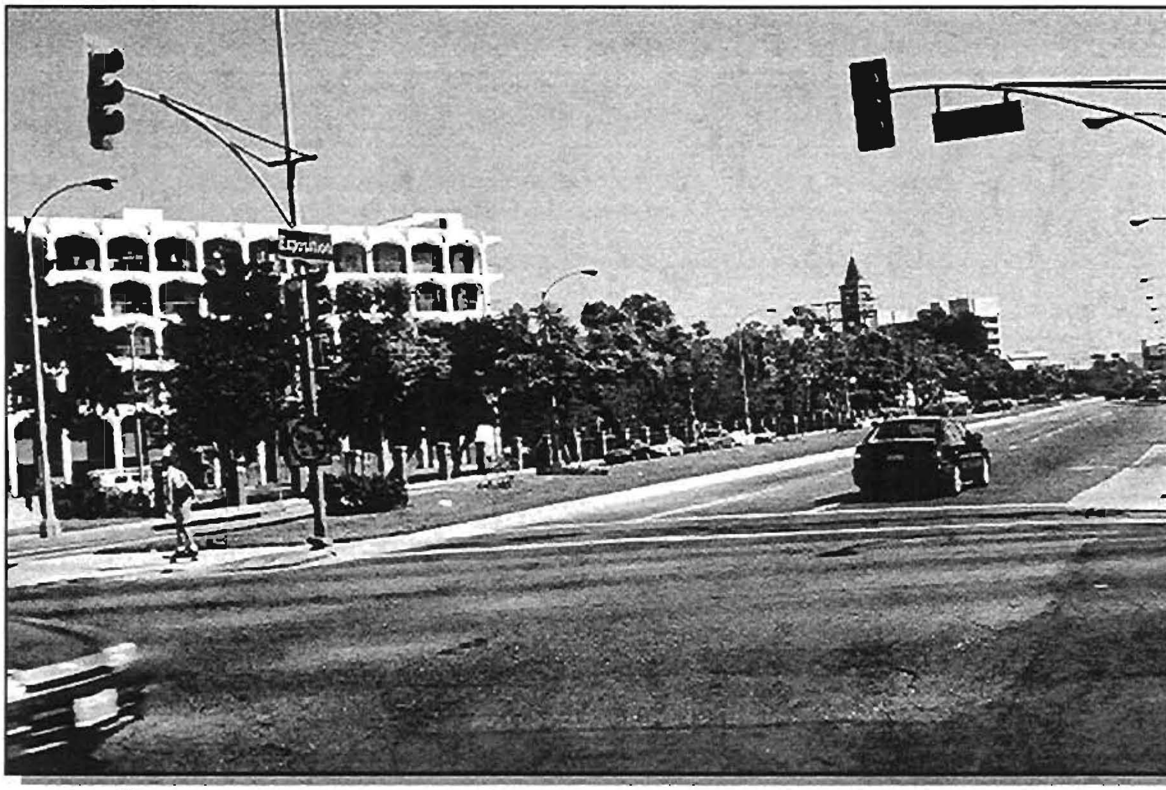


Photo ⑦ *Exposition Boulevard at USC.*

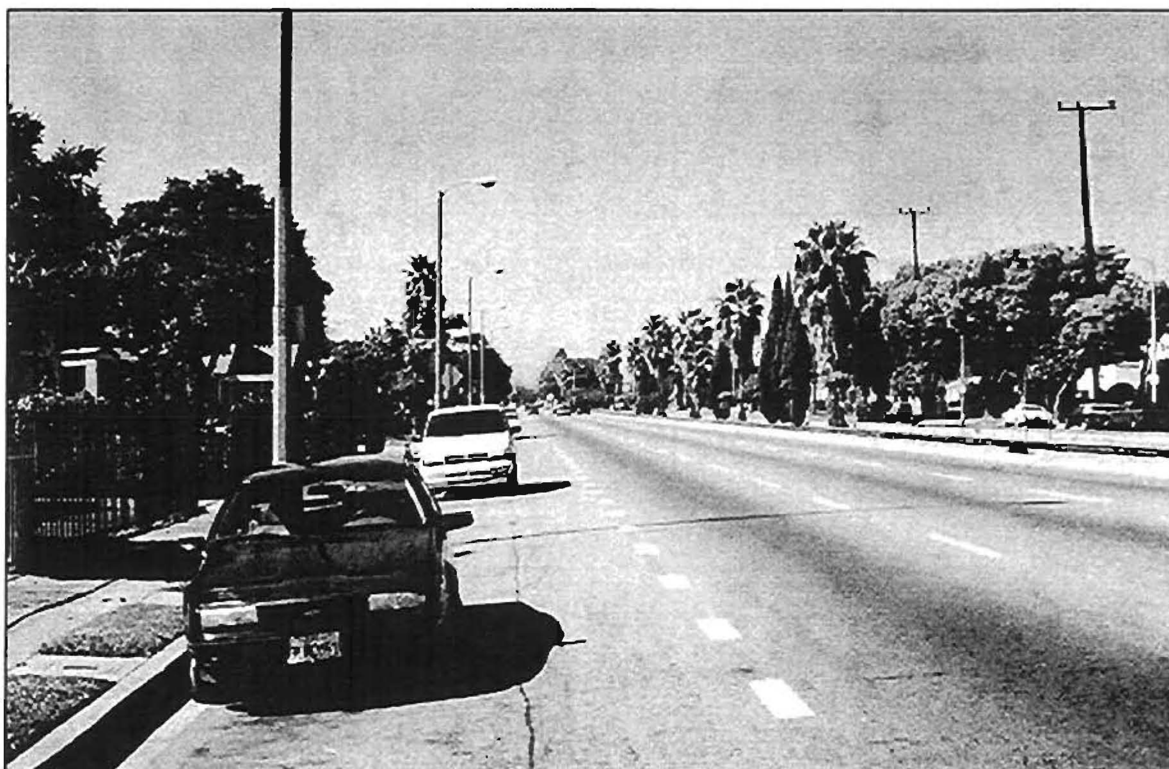


Photo ⑧ *Exposition Boulevard (west of Vermont) looking east.*

SOURCE: EIP Associates

FIGURE 3.7-9
STREET LEVEL VIEWS OF THE EXPOSITION CORRIDOR (USC AREA)

Exposition Boulevard

Photo ⑨ *La Cienega Boulevard (at Jefferson Boulevard) looking north.*

Photo ⑩ *Venice Boulevard (at Robertson Boulevard) looking east.*

SOURCE: EIP Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.7-10
STREET LEVEL VIEWS OF THE EXPOSITION CORRIDOR (LA CIENEGA & VENICE BOULEVARDS)

Exposition Boulevard

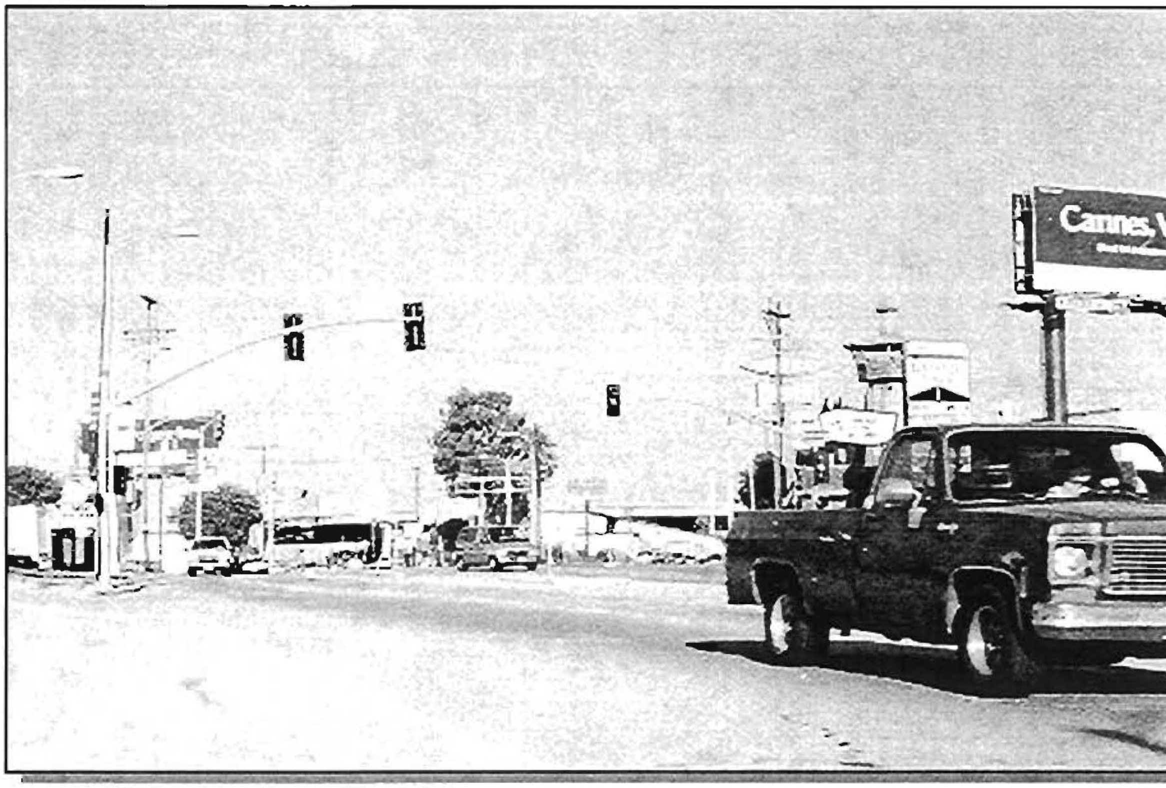


Photo (11) *Exposition Boulevard (at Pico Boulevard) looking east.*

Photo (12) *Olympic Boulevard (at Cloverfield) looking east.*

SOURCE: EIP Associates

FIGURE 3.7-11
STREET LEVEL VIEW OF
THE EXPOSITION CORRIDOR
(PICO & OLYMPIC BOULEVARDS)

Exposition Boulevard

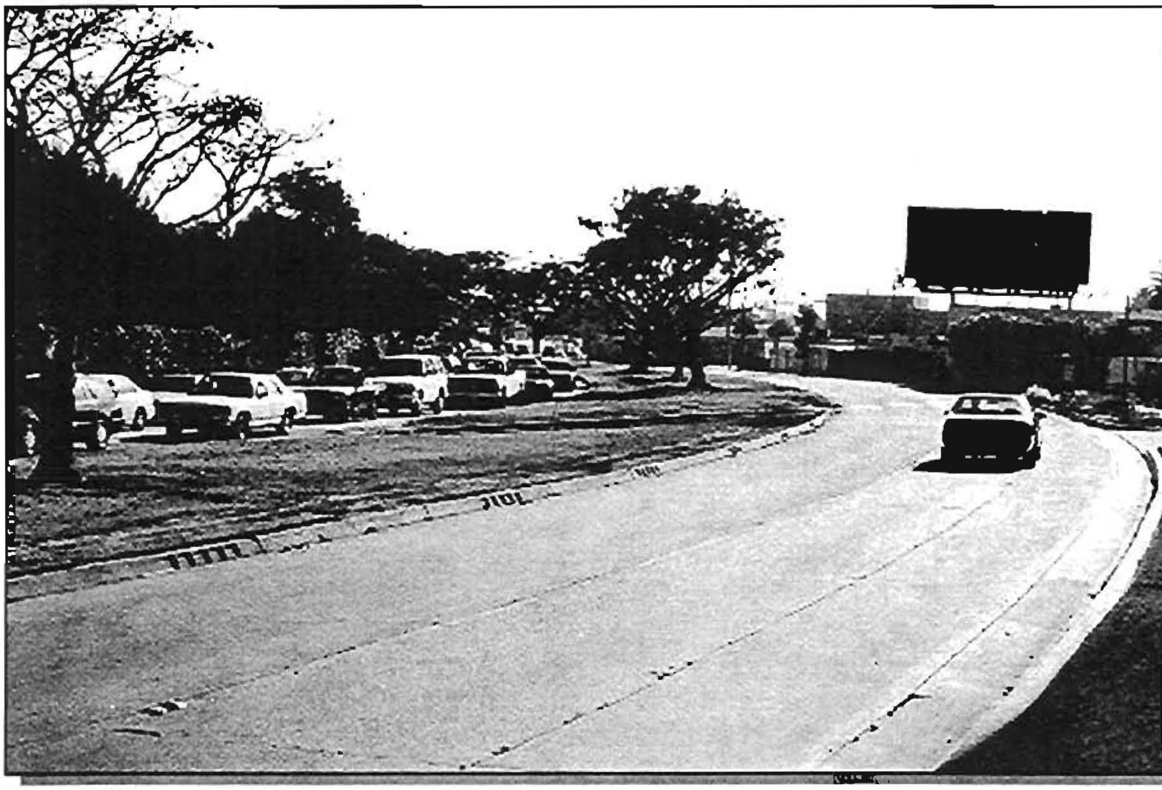


Photo ⑬ *Olympic Boulevard (at Cloverfield) looking west.*

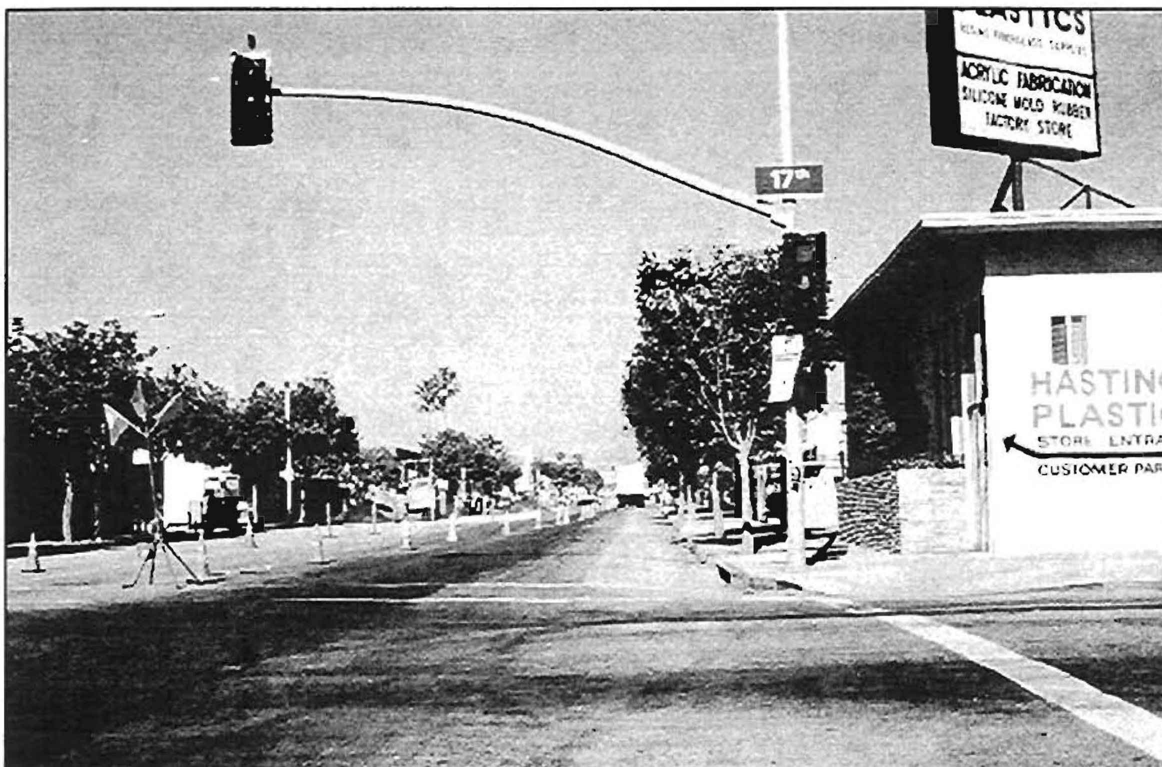


Photo ⑭ *Colorado Avenue (at 17th Street) looking east.*

SOURCE: EIP Associates

FIGURE 3.7-12
STREET LEVEL VIEWS OF THE EXPOSITION CORRIDOR (OLYMPIC BOULEVARD & 17TH STREET)

portions of the median, and the width of Venice Boulevard, makes this segment noticeably spacious. The Sepulveda Boulevard segment is lined primarily with low-rise residential structures and some landscaping, but there is little variation in visual character. The ROW along Exposition Boulevard between Sawtelle Boulevard and Bundy Drive is industrial in character, with major portions of the ROW existing as unvegetated land between fences, with trash and graffiti being the most noticeable features. As the route reaches Olympic Boulevard, the visual character improves substantively, because of the landscaped median with specimen-sized Coral trees and other street trees. The segment along 17th Street and Colorado Avenue contains primarily nondescript industrial uses; however, the presence of street trees and landscaping in some building frontages provides some visual relief.

The visual characteristics of the Exposition Corridor, including the width of the roadway (or ROW), presence of a landscaped median, predominant land uses along the Corridor, the scale of buildings along the corridor, the major scenic views of and from the corridor, and substantive visual elements, including open space resources, are noted in Table 3.7-1. In addition, Figures 3.7-13 through 3.7-17 provide oblique aerial photographs of representative locations along the Exposition Corridor.

TABLE 3.7-1
CORRIDOR VISUAL CHARACTERISTICS

Segment	Width of Roadway or Right-of-Way (Median)	Land Uses Along Corridor	Scale of Adjacent Buildings	Scenic Views/ Visual Elements
Wilshire Corridor				
Wilshire Boulevard Western to Wilton	70 feet No median	Office, Retail	Mid-to Hi-Rise	**Views:** Hollywood Hills **Visual Elements:** street trees
Wilton to Highland	70 feet No median	Office, Multi-Family Residential	Low-to Mid-Rise	**Views:** Wilshire Corridor, adjacent residential streets **Visual Elements:** landscaped residences, landscaping in building frontages, John Burroughs Middle School
Highland to La Brea	70 feet No median	Office, Retail	Mid-to Hi-Rise	**Views:** Adjacent residential streets **Visual Elements:** landscaped median, landscaping in building frontages
La Brea to Fairfax	75 feet 14 foot landscaped median	Museum District, Office, Retail	Mid-to Hi-Rise	**Views:** Hollywood Hills, Hancock Park, Santa Monica Mountains **Visual Elements:** landscaped median, landscaping in building frontages, Art Deco commercial buildings, La Brea Tar Pits, County Museum buildings
Fairfax to San Vicente	75 feet No median	Retail, Office	Mid-to Hi-Rise	**Views:** Hollywood Hills **Visual Elements:** street trees
San Vicente to Santa Monica	70 feet No median (some planters)	Retail, Office	Mid-to Hi-Rise	**Views:** Wilshire Corridor, Santa Monica Mountains, adjacent residential streets **Visual Elements:** street trees, landscaped median (discontinuous)
Santa Monica to Comstock	75 feet No median	Retail, Residential, Open Space	Low-to Mid-Rise	**Views:** Downtown Los Angeles **Visual Elements:** street trees, landscaping in building frontages, Beverly Gardens Park, El Rodeo School, Los Angeles Country Club
Comstock to Westholme	80 feet No median	Residential	Low-to Hi-Rise	**Views:** Wilshire Corridor **Visual Elements:** landscaping in building frontages
Westholme to Veteran	104 feet No median	Residential, Office	Low-to Hi-Rise	**Views:** Wilshire Corridor, Westwood Village **Visual Elements:** landscaping in building frontages
Veteran to Federal	80 feet No median	Institutional	Low- to Mid-Rise	**Views:** Santa Monica Mountains, Westwood Village **Visual Elements:** Veterans Affairs grounds, Wadsworth Hospital, Wadsworth Theater, Federal Building grounds
Federal to Centinela	75 feet No median	Retail, Office	Mid-to Hi-Rise	**Views.** Wilshire Corridor **Visual Elements:** intermittent street trees
Centinela to Lincoln	85 feet No median	Retail, Office	Low-to Mid-Rise	**Views:** Santa Monica Mountains, Pacific Ocean **Visual Elements:** Douglas Park, street trees (palms)

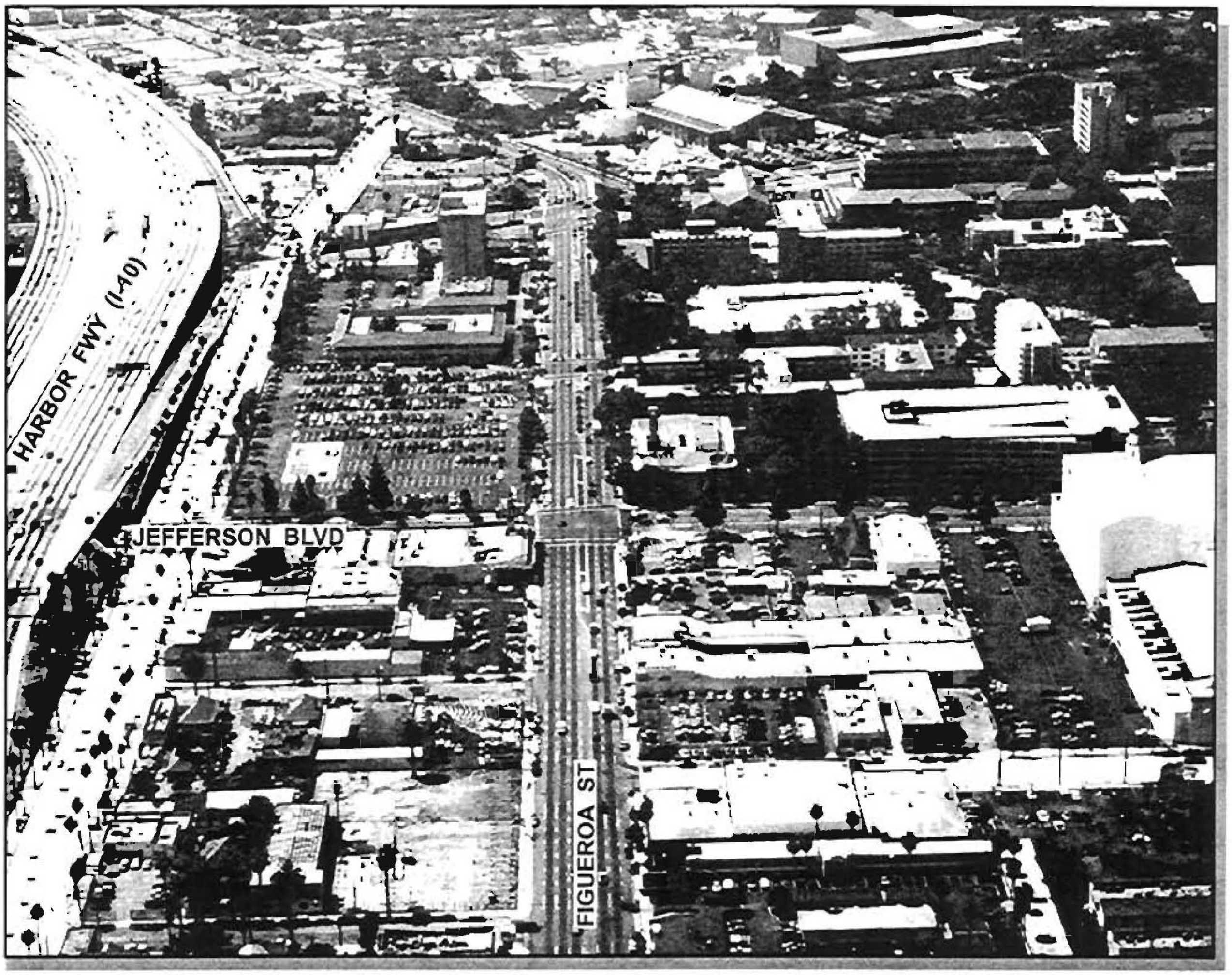
TABLE 3.7-1
CORRIDOR VISUAL CHARACTERISTICS

Segment	Width of Roadway or Right-of-Way (Median)	Land Uses Along Corridor	Scale of Adjacent Buildings	Scenic Views/ Visual Elements
Lincoln to Ocean	85 feet No median	Retail, Office	Mid-Rise	**Views**: Santa Monica Mountains, Pacific Ocean, Wilshire Corridor **Visual Elements:** Christine Emerson Reed Park, street trees (palms)
		Exposition Corridor		
Flower Street from Washington to Exposition	90 feet No Median	Industrial, Office	Low- to Mid-Rise	**Views**: Downtown Los Angeles, San Gabriel Mountains, Convention Center **Visual Elements:** street trees
Exposition from Figueroa to Vermont	107 feet 23 foot landscaped median	Institutional	Low-to Mid-Rise	**Views:** University of Southern California, Exposition Park complex **Visual Elements:** landscaped median, street trees
Vermont to Arlington	107 feet 25 foot Landscaped median	Single- and Multi-Family Residential	Low-Rise	**Views:** Hollywood Hills, Baldwin Hills **Visual Elements:** West Adams residences and landscaping, Foshay Middle School
Arlington to La Brea	50 feet No median	Single- and Multi-Family Residential, Industrial	Low-Rise	**Views:** Hollywood Hills, Santa Monica Mountains **Visual Elements:** Dorsey High School, Rancho Cienega Sports Center
La Brea to Ballona Creak	50 feet No median	Industrial, Single- and Multi-Family Residential	Low-Rise	**Views:** Baldwin Hills, Hollywood Hills, Baldwin Hills **Visual Elements:** Landscaped residences, Baldwin Hills Recreation Center
Ballona Creek to Robertson	50 feet No median	Industrial, Single- and Multi-Family Residential	Low-Rise	**Views:** Baldwin Hills **Visual Elements:** Landscaping in building frontages
Venice from Washington to Motor	108 feet 14 foot landscaped median	Retail, Industrial, Single- and Multi-Family Residential	Low- to Mid-Rise	**Views:** San Gabriel Mountains, Baldwin Hills **Visual Elements:** landscaped median, street trees, landscaped building frontages, Media Park
Motor to Sepulveda	108 feet 14 foot landscaped median	Retail, Multi-Family Residential	Low-Rise	**Views:** Santa Monica Mountains, Westchester area **Visual Elements:** landscaping in building frontages, street trees
Sepulveda from Venice to Olympic	60 to 70 feet No median	Industrial, Office, Retail, Multi-Family Residential	Low-Rise	**Views:** Santa Monica Mountains **Visual Elements:** Charnock Road School, street trees, landscaping in building frontages.
Exposition From Sepulveda to Centinela	100 feet No median	Industrial, Single-Family Residential	Low-Rise	**Views**: Santa Monica Mountains **Visual Elements:** landscaping in building frontages
Centinela to Cloverfield	110 feet Landscaped (west of Centinela)	Industrial, Office	Low- to Mid-Rise	**Views:** Santa Monica Mountains **Visual Elements:** landscaped median, street trees

TABLE 3.7-1
CORRIDOR VISUAL CHARACTERISTICS

Segment	Width of Roadway or Right-of-Way (Median)	Land Uses Along Corridor	Scale of Adjacent Buildings	Scenic Views/ Visual Elements
Olympic Cloverfield to Ocean Avenue	110 feet Landscaped (until 10th Street)	Industrial, Retail, Office	Low-Rise	**Views:** Santa Monica Mountains, **Visual Elements:** landscaped median, street trees, Memorial Park
Colorado 17th Street to Ocean	70 feet No median	Industrial, Retail, Office	Low-Rise	**Views:** Santa Monica Mountains **Visual Elements:** landscaping in building frontages

Exposition Corridor



Looking South Along Figueroa Street towards Jefferson Boulevard

SOURCE: EIP Associates

FIGURE 3.7-13
OBLIQUE AERIAL PHOTOGRAPH
OF EXPOSITION CORRIDOR
(USC/EXPOSITION PARK)

Looking West Along Exposition Boulevard at Crenshaw Boulevard

SOURCE: EIP Associates

FIGURE 3.7-14
OBLIQUE AERIAL PHOTOGRAPH
OF EXPOSITION CORRIDOR
(CRENSHAW BOULEVARD)

Exposition Corridor

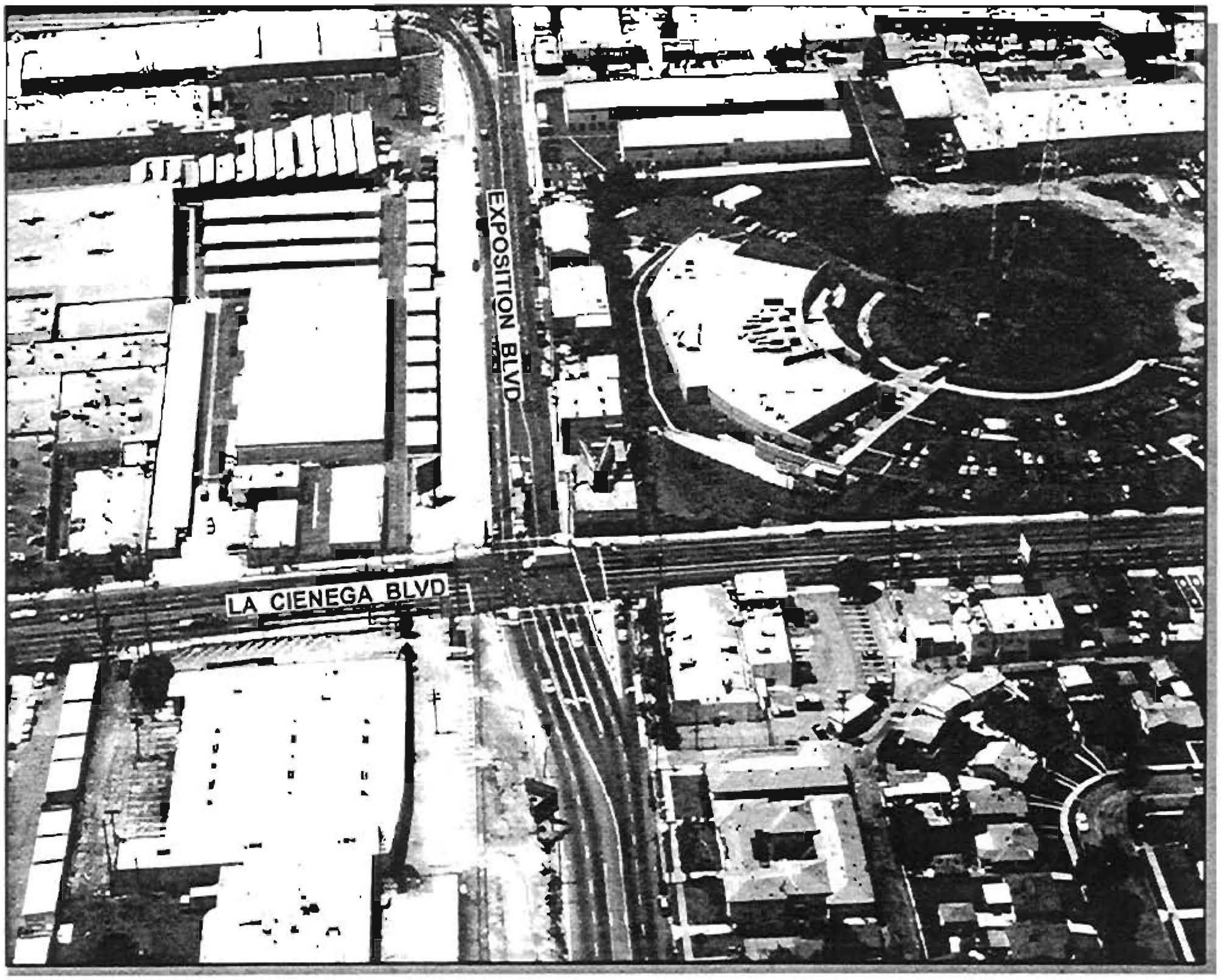
Looking West Along Jefferson Boulevard near La Brea Avenue

SOURCE: EIP Associates

Mid-City/Westside Transit Corridor
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.7-15
OBLIQUE AERIAL PHOTOGRAPH
OF EXPOSITION CORRIDOR
(LA BREA AVENUE)

Exposition Corridor



Looking West Along Expositon Boulevard near La Cienega Boulevard

SOURCE: EIP Associates

FIGURE 3.7-16
OBLIQUE AERIAL PHOTOGRAPH
OF EXPOSITION CORRIDOR
(LA CIENEGA BOULEVARD)

Exposition Corridor

Looking West Along Olympic Boulevard at Bundy Drive

SOURCE: EIP Associates

FIGURE 3.7-17
OBLIQUE AERIAL PHOTOGRAPH
OF EXPOSITION CORRIDOR
(SANTA MONICA BOULEVARD)

3.7.3 Impact Assessment and Mitigation Measures

Standards of Significance

Based upon a review of relevant documents, including previous environmental documents related to transit improvements on the Westside, the Scenic Highway element of the City of Los Angeles, and the Community Plans and Specific Plans that cover the areas along both the Wilshire Boulevard and Exposition Corridors, the following Standards of Significance have been developed.

A significant adverse visual impact would occur if the alternatives considered would:

- Obstruct or adversely changed the object of sensitive views;
- Result in the loss of a substantial number specimen trees;
- Result in the removal of a landscaped median, or would reduce the median to less than 8 feet in width, along the segment of Wilshire Boulevard that is a designated scenic highway;
- Make available views that result in a loss of privacy to residences;
- Create major new sources of light that would intrude on neighboring residential areas; or
- Create excessive glare that pose major hazards or annoyances to nearby residents.

Methodology for Impact Evaluation

Analysis of impacts to visual character is subjective by nature, since the qualities that create an aesthetically pleasing setting or that result in the perception of a visual element as aesthetically positive or negative will vary from person to person.

For the purposes of this analysis, both transit corridors (Wilshire Boulevard and the Exposition ROW) were surveyed to identify the presence or absence of a landscaped median, the predominant land uses along the corridor, the scale of adjacent buildings along the corridor, the major scenic views that are available along segments of the corridor, and substantive visual elements along the corridor, including open space resources, street trees, and landscaping in building frontages.

The potential effects of the proposed alternatives were characterized, including installation of the bus rapid transit or light rail facilities, including physical structures such as revised medians, tracks, stations (including ramps, platforms, fare vending equipment, and canopies to protect riders), overhead contact and power lines, parking lots, and in some locations, elevated guideways and station platforms. The potential for these physical features to result in the removal of existing features, including roadway medians (and landscaping), street trees, and other existing visual elements was noted. In addition, the potential for these new features to eliminate, obstruct, or otherwise degrade existing scenic views was also noted. The potential for new landscaping, street furniture, and other amenities was also considered, which could, in some locations, reduce the negative or adverse impacts that could result from installation of the project's physical features. Conceptual illustrations of the physical elements of the BRT and LRT systems are provided by

Figures 2-2A, 2-2B, 2-5, 2-11, 2-12, 2-10, and 2-35, which are provided in Section 2.0 (Alternatives Considered) of this document.

For the purposes of this analysis, sensitive views are those which are depicted in the City of Los Angeles General Plan as being "scenic" or are considered "unique" in the area, or they are considered to be of special significance to the community for social or cultural reasons. Street trees refers to trees that are located in the parkway or in the sidewalk (trees located within the Exposition right-of-way in the middle of Exposition Boulevard are discussed in the context of median landscaping). Specimen-size trees refer to trees that are larger than eight inches in diameter at four feet above the ground.

Impacts

No Action Alternative (Baseline)

Removal and/or addition of median landscaping. The No Action Alternative would not result in the installation of any physical structures, and no roadway medians would be removed, including those segments that are landscaped. Therefore, the visual effects related to removal and/or addition of median landscaping would not occur.

Removal and/or addition of street trees. The No Action Alternative would not result in the installation of any physical structures, such as stations in the median, which would require widening of the roadway, and the resultant narrowing of sidewalks. Therefore, no removal of street trees would occur.

Installation of physical structures on sensitive views. The No Action Alternative would not result in the installation of any physical structures; therefore, no sensitive views would be obstructed or adversely impacted.

Introduction of new sources of light and glare on adjacent residences, vehicle occupants, or pedestrians. The No Action Alternative would not result in the installation of any new sources of light and glare; therefore, no impacts would occur.

Installation of physical structures could result in a loss of privacy to adjacent uses. The No Action Alternative would not result in the installation of any physical structures which would reduce privacy to adjacent uses, such as residences; therefore, no loss of privacy would occur.

Transportation System Management (TSM) Alternative

Removal and/or addition of median landscaping. The TSM Alternative would not result in the installation of any physical structures and no roadway medians would be removed, including those segments that are landscaped. Therefore, visual effects related to removal and/or additional of median landscaping would not occur.

Removal and/or addition of street trees. The TSM Alternative would not result in the installation of any physical structures, such as stations in the median, which would require widening of the roadway, and the resultant narrowing of sidewalks. Therefore, no removal of street trees would occur.

Installation of physical structures on sensitive views. The TSM Alternative would not result in the installation of any physical structures; therefore, no sensitive views would be obstructed or adversely impacted.

Introduction of new sources of light and glare on adjacent residences, vehicle occupants or pedestrians. The TSM Alternative would not result in the installation of any new sources of light and glare; therefore, no impacts would occur.

Installation of physical structures could result in a loss of privacy to adjacent uses. The TSM Alternative would not result in the installation of any physical structures, which would reduce privacy to adjacent uses, such as residences; therefore, no loss of privacy would occur.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Removal and reconstruction of median landscaping. In order to preserve at least two traffic lanes in each direction, installation of dedicated bus lanes in the center of Wilshire Boulevard would require removal of the existing median and reconstruction of a new median (including any street lighting that was removed) on either side of the bus lanes. As a result, most portions of the existing median would be removed, including those segments that are currently landscaped east of Fairfax Avenue (estimated to be 14 feet in width) and in Beverly Hills. In some locations, the existing medians contain trees of notable height. New medians would be installed along the entire length of the corridor, including new landscaped islands (up to ten feet in width and with varying lengths); however, these islands would be discontinuous, and would not occur at station locations or where left turn lanes are provided. Although the net amount of landscaping in the median along the length of Wilshire Boulevard would increase, because the existing median east of Fairfax Avenue (which is 14 feet in width) would generally be removed, and since Wilshire Boulevard is designated as a scenic highway by the City of Los Angeles, the removal and reconstruction of the landscaped median would result in an adverse visual impact.

Since removal of the existing landscaped median and reconstruction (to less than eight feet in width) is considered a significant impact, Mitigation Measure 3.7-1 is required to reduce the adverse significant visual impact that would result from implementation of the Wilshire BRT:

- *Mitigation Measure 3.7-1:* To the extent feasible, relocate specimen trees in the existing median to new locations, either as street trees (along the parkway or within the sidewalks) or within the new or reconstructed median.

Although this mitigation measure would reduce adverse visual impacts, because the existing landscaped median would be removed along the segment of Wilshire Boulevard that is designated a scenic highway, the impact of the Wilshire BRT would be a significant, unavoidable impact. However, both Alternative 1A, the Median Adjacent Design Option, and Alternative 1B, the Curb Adjacent Design Option, would avoid removal and reconstruction of the existing median, thereby avoiding the significant, unavoidable impacts caused by implementation of Alternative 1 (refer to the following section for a discussion of impacts resulting from construction and implementation of Alternatives 1A and 1B).

Removal and/or addition of street trees. At most station locations on Wilshire Boulevard, installation of the station platform (approximately 11' in width by 100' in length) in the median would require widening the street up to two feet for the entire length of the platform. This could result in the removal of street trees at those locations; however, these impacts would be limited to the 14 locations where stations would be installed. Further, this alternative would include installation of new landscaping at each station, and it is assumed this would include replacement of any street trees removed as a result of the street widening.

Replacement parking is proposed for the Wilshire BRT, but it is not known at this time exactly where the replacement parking will be located or how many parking spaces must be provided. Nonetheless, as further discussed in Section 3.3, a replacement parking strategy has been developed to reduce impacts related to the loss of on-street parking to the maximum extent practicable. Installation of the replacement parking lots are not anticipated to require removal of any street trees. However, to the extent that installation of access driveways do result in the removal of street trees, it is assumed that new landscaping would be provided, and this landscaping would generally replace any street trees that are removed. Therefore, the impact of Wilshire BRT on street trees is considered less than significant.

Installation of physical structures on sensitive views. Installation of the dedicated bus rapid transit lanes in the middle of Wilshire Boulevard would require removal and reconstruction of the existing median and installation of platforms (including ramps, platforms, fare vending equipment, and canopies to protect riders) at major intersections. The location of the proposed stations (for Alternative 1, as well as Alternatives 2 and 3) is shown on Table 3.7-2. The proposed canopy structures would be approximately 10 to 12 feet in height (with poles and luminaries that are up to 17 feet in height at the canopy locations) and approximately 13 feet in length. The structures are modular, and where more than one is provided, there will be limited space in between. Therefore, for standard 40-foot buses, two canopies would be 30-feet long. For articulated buses, the canopies would be 45-feet long for three doors and 60-feet long for four doors (depending on bus design). Although the canopy could obstruct the view of ground floor structures and uses located on the opposite side of the street, these impacts would be limited to the 14 station locations (at major intersections) where existing structures already limit views to some extent. The station locations would be illuminated, with light standards that could reach 17 feet in height at canopy locations and up to 20 feet in height for the standard pedestrian lights. Because of the limited height of the canopy structures and the number of locations, sensitive views would not be adversely impacted by the Wilshire BRT, and a less than significant impact would result.

As further discussed in Section 3.3, a replacement parking strategy has been developed for the Wilshire BRT to reduce impacts related to the loss of on-street parking to the maximum extent practicable; however, it is not known at this time exactly where the replacement parking will be located or how many parking spaces will be provided. Nonetheless, the replacement parking location(s) are not anticipated to contain any large vertical elements that would obstruct or degrade sensitive views. Less than significant impacts related to the construction and operation of the replacement parking lot(s) would occur.

TABLE 3.7-2
MTA MID-CITY/WESTSIDE CORRIDOR
PROPOSED STATION LOCATIONS

	Alternatives 1, 2 & 3 Wilshire BRT	Alternative 2 Exposition BRT	Alternative 3 Exposition LRT
7th/Flower		■	■
Figueroa/Pico		■	
Pico/Flower			■
Figueroa/Adams		■	
Washington/Grand			■
Figueroa/Jefferson		■	
I-110/USC/Exposition Park		■	■
Vermont		■	■
Western	■	■	■
Crenshaw	■	■	■
La Brea	■	■	■
Fairfax	■		
La Cienega (Aerial for Alt 2 and 3)	■	■	■
National/Hayden		■	
Robertson	■		
Venice/Main		■	
Venice/Washington			■
Beverly	■		
Venice/Overland		■	■
Santa Monica	■		
Venice/Sepulveda		■	■
Westwood Village	■		
Sepulveda/National		■	■
Barrington	■		
Pico/Sawtelle (Aerial for Alt 2 and 3)		■	■
Bundy (Aerial for Alt 2 and 3)	■	■	■
Cloverfield			■
Ocean/Colorado			■
Wilshire/14th.	■		
Cloverfield (Aerial)		■	■
Wilshire/4th	■		
Colorado /14th		■	
Ocean	■		■

Introduction of new sources of light and glare on adjacent residences, vehicle occupants or pedestrians. Installation of station platforms in the median would occur at major intersections (as shown on Table 3.7-2). Each platform would be illuminated to enhance security and ensure visibility of patrons to both bus drivers and passing motorists. However, as the platforms would be located at major intersections, it is not anticipated that the installation of lighted platforms would substantially increase ambient light levels at those locations. Some glare impacts could occur due to the headlights of the buses, which generally would not be screened by landscaping in the median (as the new median landscaping will be discontinuous). However, given existing traffic volumes on Wilshire Boulevard, the addition of the BRT with regard to light and glare would result in less than significant impacts.

Replacement parking would be illuminated for security purposes, and the presence of security lighting and the glare from vehicle headlights could result in significant light and glare impacts on the adjacent residences. To reduce the potential impacts caused by replacement parking, Mitigation Measure 3.7-2 will be implemented:

- *Mitigation Measure 3.7-2:* All lighting in replacement parking lots shall utilize Best Available Technology to reduce spillover to adjacent land uses. In addition, all lighting in replacement parking lots shall be directed away from adjacent residences and landscaping, fences, or other measures shall be provided to shield adjacent residences from light and glare produced by light standards and vehicle headlights.

With implementation of this mitigation measure, the impact of Wilshire BRT on light and glare would be less than significant.

Installation of physical structures could result in a loss of privacy to adjacent uses. Installation of platforms in the median (including ramps and platforms) would slightly elevate patrons above the existing street level; however, as the BRT system is designed to accommodate low-floor buses, the elevation of the platforms would only be a few inches above the existing pavement. Further, the platform surface may not be higher than the existing median. Therefore, patrons standing on the platforms would not have access to any views (of adjacent uses) that would result in a loss of privacy.

The installation of the replacement parking could be located adjacent to existing residential uses, which could provide opportunities for patrons of the parking lots to have views into residences, and this loss of privacy is considered a significant impact. This would be a significant, mitigable impact that could be reduced to less-than-significant levels with the implementation of Mitigation Measure 3.7-3.

- *Mitigation Measure 3.7-3:* Provide landscaping, fences, or other measures that would reduce or eliminate direct views from replacement parking lots into adjacent residences.

With implementation of this mitigation measure, the impact of Wilshire BRT on loss of privacy would be less than significant.

<u>Alternative 1A: Wilshire BRT (Median Adjacent Design Option)</u>

With this design option, all components of the Wilshire BRT would be the same, except the BRT would operate exclusively in the existing lanes adjacent to the median and the existing median landscaping would be retained in place. Therefore, the significant and unavoidable impact related to the removal and reconstruction of median landscaping would be avoided and no impacts would occur. In addition, all of the other impacts resulting from construction and implementation of Alternative 1A would be identical to Alternative 1, and less than significant or significant, mitigable impacts would occur.

<u>Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)</u>

With this design option, all components of the Wilshire BRT would be the same, except the BRT would operate exclusively in the existing lanes adjacent to the curb and the existing median landscaping would be retained in place. Therefore, the significant and unavoidable impact related to the removal and reconstruction of median landscaping would be avoided and no impacts would occur. In addition, all of the other impacts resulting from construction and implementation of

Alternative 1B would be identical to Alternative 1, and less than significant or significant, mitigable impacts would occur.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Alternative 2 would consist of the Wilshire BRT and the full length of the Exposition BRT described in Section 2.0 (Alternatives Considered).

Removal and reconstruction of median landscaping. Installation of the Wilshire BRT would require removal and reconstruction of the median on Wilshire Boulevard, which is landscaped between La Brea and Fairfax Avenues and at some locations in the City of Beverly Hills. This would result in a significant adverse visual impact. Although this impact could be reduced with implementation of Mitigation Measure 3.7-1, this impact would remain a significant unavoidable impact for Wilshire Boulevard without the implementation of the design options proposed by Alternatives 1A and 1B.

Installation of the dedicated BRT lanes in the middle of Exposition Boulevard would require removal of the median and reconstruction of landscaping in the segment west of Vermont Avenue, which has a substantial number of trees planted in the right-of-way, including some specimen trees of notable height. At certain locations, the existing landscaped median will remain, as well as some specimen trees located west of Vermont Avenue. However, some of the landscaping and trees would be removed in these segments. The removal of these trees would result in a significant, mitigable visual impact. Therefore, Mitigation Measure 3.7-4 is required to reduce the adverse significant visual impact that would result from implementation of the Exposition BRT:

- *Mitigation Measure 3.7-4:* To the extent feasible, relocate specimen trees in the existing median to new locations, either as street trees (along the parkway or within the sidewalks) or within the new or reconstructed median.

This mitigation measure would reduce the adverse visual impacts the impact of Exposition BRT to a less-than-significant level.

Removal and/or addition of street trees. Installation of the station locations for Wilshire BRT would require widening the street approximately two feet, which could result in the removal of some street trees; however, installation of new landscaping would replace any street trees removed. Furthermore, installation of replacement parking is not anticipated to require removal of any street trees. Therefore, the impact of Wilshire BRT on street trees would be a less than significant impact.

Installation of the Exposition BRT would not require widening of the roadway to install station platforms; therefore, street trees would not be removed. Installation of park-and-ride lots (at Crenshaw Boulevard, La Brea Boulevard, La Cienega Boulevard, Venice Boulevard/Washington Boulevard, Pico Boulevard/Sawtelle Boulevard, Bundy Drive, Cloverfield Boulevard, and Ocean Avenue/Colorado Avenue) could require removal of street trees at access driveway locations; however, installation of landscaping would be included at the park-and-ride lots, and it is assumed that any street trees removed by access driveways would be replaced as part of the landscaping plan for the lot. Therefore, the impact of Exposition BRT on street trees would be less than significant.

Installation of physical structures on sensitive views. Installation of the Wilshire BRT lanes and station platforms and provision of replacement parking would not obstruct or substantially degrade any scenic views, and would result in less than significant impacts to sensitive views.

Installation of the Exposition BRT would require removal and/or reconstruction of the existing median, and installation of platforms (including ramps, platforms, fare vending equipment, and canopies to protect riders) at major intersections. The location of the proposed stations is shown on Table 3.7-2. The proposed canopy structures would be approximately 10 to 12 feet in height (with poles and luminaries that are up to 17 feet in height at the canopy locations) and approximately 13 feet in length. The structures are modular, and where more than one is provided, there will be limited space in between. Therefore, for standard 40-foot buses, two canopies would be 30-feet long. For articulated buses, the canopies would be 45-feet long for three doors and 60-feet long for four doors (depending on bus design). Although the canopy could obstruct the view of ground floor structures and uses located on the opposite side of the street, these impacts would be limited to the 20 station locations at major intersections where existing structures already limit views to some extent. The station locations would be illuminated, with light standards that could reach 17 feet in height at the canopy locations and up to 20 feet in height for the standard pedestrian lights. Therefore, because of the limited height of the canopy structures and the number of locations, sensitive views would not be adversely impacted by the at-grade elements of the Exposition BRT. This would be a less than significant impact.

Some segments of the Exposition BRT would be elevated (at La Cienega Boulevard, Pico/Sawtelle Boulevard, and at Bundy Drive), and those elevated segments (except over Ballona Creek) would include stations. The elevated segments would vary in length, but would generally be approximately 22 feet in height, with a parapet wall and canopy at station locations. Elevated structures of that height have the potential to obstruct or adversely change the object of sensitive views at the locations where the elevated structures are installed. As described in Table 3.7-1, views of the Hollywood Hills and Baldwin Hills are currently available in the vicinity of Jefferson and La Cienega Boulevards, and views of the Baldwin Hills are available along Jefferson Boulevard near Ballona Creek. Views of the Santa Monica Mountains are available from the areas around Sawtelle and Pico Boulevards, Exposition and Bundy Drive, and at Cloverfield Avenue. Installation of the elevated segments at these locations would obstruct or adversely change these north-south views, and would result in significant adverse visual impacts. Mitigation of this impact could include the conversion of the project to an "at-grade" design or conversion of the project to a "below-grade" design. However, neither of these potential mitigation measures are considered feasible. The conversion of the project to an "at-grade" design would result in additional significant traffic impacts, and the conversion of the project to a "below-grade" design would be cost prohibitive (e.g., $50 to $100 million per below ground separation). However, Mitigation Measure 3.7-5 will be implemented to reduce impacts on sensitive views at Pico/Sawtelle and Bundy to a less-than-significant level. There are no sensitive views in the vicinity of the elevated segment of the Exposition LRT at La Cienega.

- *Mitigation Measure 3.7-5:* Structure design, screening, and landscaping shall be included as part of the station area planning process conducted with local communities.

Introduction of new sources of light and glare on adjacent residences, vehicle occupants or pedestrians. Installation of replacement parking for the Wilshire BRT (at Crenshaw Boulevard and at La Brea Avenue) could result in significant light and glare impacts to residences near the Crenshaw lot. However, these impacts are significant, mitigable impacts that can be mitigated to a less-than-significant levels with implementation of Mitigation Measure 3.7-2.

Installation of station platforms for Exposition BRT (at the locations shown on Table 3.7-2) would include provision of appropriate lighting to illuminate the platform and ensure visibility of patrons to both the bus drivers and passing motorists. This could result in light and glare impacts to adjacent residential uses. Park-and-ride lots would be installed at several locations along the route, including Exposition and Sepulveda Boulevard, Exposition and Barrington Avenue, Exposition and Bundy Drive, and Olympic Boulevard and 26th Street. These lots would be provided with lighting for security purposes, and headlights from vehicles (and passing buses) could result in light and glare impacts to adjacent residences.

Because of the proximity of residential uses to the ROW, the park-and-ride lots, and the elevated stations, the Exposition BRT could result in significant light and glare impacts to adjacent residential uses. To reduce these impacts, Mitigation Measure 3.7-6 will be implemented:

- *Mitigation Measure 3.7-6:* All lighting at the park-and-ride lots and station locations shall utilize Best Available Technology to reduce spillover to adjacent land uses. In addition, all lighting at park-and-ride lots and station locations shall be directed away from adjacent residences and landscaping, fences, or other measures to shield adjacent residences from light and glare produced by light standards and vehicle headlights.

This mitigation measure would reduce impacts at some at-grade segments to a less than significant level; however, impacts along segments where the right-of-way is only 50 feet in width, and at those locations where the stations would be elevated, would remain significant and unavoidable.

Installation of physical structures could result in a loss of privacy to adjacent uses. The replacement parking proposed for the Wilshire BRT could be located adjacent to some existing residential uses, which could provide opportunities for patrons of the parking lots to have views into residences. This would be a significant, mitigable impact that could be mitigated to a less-than-significant level with implementation of Mitigation Measure 3-7.3.

Installation of stations for the Exposition BRT (including ramps and platforms) would elevate patrons above the existing street level; however, since the system is designed to accommodate low-floor buses, the elevation of the platforms would only be a few inches above the existing pavement. Therefore, bus patrons would not have access to views of adjacent residences (along the at-grade segments). At those locations where the route would be located on aerial structures, bus riders would have access to views into residences, or the yards of residences at those locations. Similarly, bus patrons waiting at elevated stations could have views that would result in a loss of privacy for residential uses located near stations. Mitigation of this impact could include : (1) the provision of solid parapet walls along all elevated segments; (2) conversion of the project to an "at-grade" design; or (3) conversion of the project to a "below-grade" design. However, none of these potential mitigation measures are considered feasible. The provision of solid parapet walls along all elevated segments would exacerbate impacts related to the obstruction or degradation of scenic views. The conversion of the project to an "at-grade" design would result in additional significant traffic impacts, and the conversion of the project to a "below-grade" design would be cost prohibitive (e.g., $50 to $100 million per below ground separation). However, Mitigation Measure 3.7-7 will be implemented to reduce impacts associated with the loss of privacy:

- *Mitigation Measure 3.7-7*: Provide landscaping, fences, or other measures that will reduce or eliminate direct views from elevated station platforms into adjacent residences. The specific design features will be determined through a planning process with the communities affected by the aerial structures.

Loss of privacy impacts resulting from the elevated segments of the Exposition BRT in adjacent residences near Pico/Sawtelle and Bundy would be less than significant with implementation of Mitigation Measure 3.7-7. There are no adjacent residences in the vicinity of the elevated segment of the Exposition BRT at La Cienega that would be affected by a loss of privacy.

Mitigation of this impact could involve provision of solid parapet walls along all elevated segments; however, this would increase the visual mass of the elevated structures, which would exacerbate impacts related to obstruction or degradation of scenic views, and is, therefore, considered infeasible. The impacts of the elevated segments of Exposition BRT on loss of privacy would be significant and unavoidable.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

The Exposition BRT MOS component of Alternative 2 would terminate at he Venice/Washington Station. Given that the Wilshire BRT impacts have been disclosed above, and the MOS option of the Exposition BRT is only a shorter route of the full-length alternative, the visual quality impacts resulting from construction and operation of Alternative 2A would be similar to Alternative 2. Any visual quality impacts west of the Venice/Washington Station would not occur, and no increased visual quality impacts would occur at the westernmost MOS station location. Impacts would be less than significant.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Removal and reconstruction of median landscaping. Installation of the BRT on Wilshire Boulevard would require removal and reconstruction of the median, which is landscaped east of Fairfax Avenue and at some locations in the City of Beverly Hills, which would result in a significant adverse visual impact. Although this impact could be reduced with implementation of Mitigation Measure 3.7-1, the visual impact of Wilshire BRT related to removal of landscaped medians would remain significant and unavoidable; however, this would not be true if design options 1A or 1B were selected.

Installation of the LRT tracks in the middle of the Exposition Boulevard would require removal of the median and reconstruction of landscaping in the segment west of Vermont Avenue, which has a substantial number of trees planted in the right-of way, including some specimen trees of notable height. At certain locations, the existing landscaped median (between Figueroa Street and Vermont Avenue) will remain, as well as some specimen trees located west of Vermont Avenue. However, some of the landscaping and specimen trees would be removed in these segments. The removal of these trees would result in a significant, mitigable visual impact.

LRT would also require the removal of a maximum of three coral trees from the Olympic Boulevard median west of Cloverfield. Other coral trees in the Olympic Boulevard median would likely require substantial trimming to avoid conflicts with overhead catenary wiring.

Since removal of the existing landscaping along Exposition (west of Vermont Avenue) would result in an adverse visual impacts, Mitigation Measure 3.7-8 is required to reduce the adverse significant visual impact that would result from implementation of the Exposition LRT to a less-than-significant level:

- *Mitigation Measure 3.7-8:* Relocate specimen trees in the existing median to new locations, either as street trees (along the parkway or within the sidewalks) or within the new or reconstructed median. Prepare a landscaping plan that includes a grass trackbed for LRT in the segment in Exposition Park.

This mitigation measure would reduce the adverse visual impacts the impact of Exposition BRT to a less-than-significant level.

Removal and/or addition of street trees. Installation of the station locations for Wilshire BRT would require widening the street approximately two feet, which could result in the removal of some street trees; however, installation of new landscaping would replace any street trees removed. Furthermore, installation of replacement parking is not anticipated to require removal of any street trees. Therefore, the impact of Wilshire BRT on street trees would be less than significant.

Installation of the Exposition LRT would not require widening of the roadway (or ROW) to install station platforms; therefore, street trees would not be removed. Installation of park-and-ride lots (at Exposition and Sepulveda Boulevard, Exposition and Barrington Avenue, Exposition and Bundy Drive, and Olympic Boulevard and 26th Street) could require removal of street trees at access driveway locations; however, installation of landscaping would be included at the park-and-ride lots, and it is assumed that any street trees removed by access driveways would be replaced as part of the landscaping plan for the lot. Therefore, the impact of Exposition LRT on street trees would be less than significant.

Installation of physical structures on sensitive views. Installation of the Wilshire BRT lanes, station platforms, and provision of replacement parking would not obstruct or substantially degrade any scenic views, and would result in less than significant impacts to sensitive views.

Installation of the Exposition LRT would require removal and reconstruction of the existing median and installation of platforms (including ramps, platforms, fare vending equipment, and canopies to protect riders) at major intersections. The location of the proposed stations is shown on Table 3.7-2. The proposed canopy structures would be approximately 10 to 12 feet in height (with poles and luminaries that are up to 17 feet in height at the canopy locations) and approximately 13 feet in length. The structures are modular and where more than one is provided, there will be limited space in between. Therefore, for standard 40-foot buses, two canopies would be 30-feet long. For articulated buses, the canopies would be 45-feet long for three doors and 60-feet long for four doors (depending on bus design). Although the canopy could obstruct view of ground floor structures and uses located on the opposite side of the street, these impacts would be limited to the 17 station locations at major intersections, where existing structures already limit views to some extent. In addition, a catenary system of overhead wires and support structures would be installed along the entire length of the route. Because of the small size of the wires and the distance between support poles, the catenary system would not create a single visual mass and, therefore, would not obstruct scenic views. Therefore, sensitive views would not be adversely impacted by the at-grade segments of the Exposition LRT. Impacts would be less than significant.

Some segments of the Exposition LRT would be elevated (at La Cienega Boulevard, at Pico/Sawtelle Boulevard, and at Bundy Drive), and those elevated segments (except over Ballona Creek) would include stations. The elevated segments would vary in length, but would generally be approximately 22 feet in height, including the parapet wall, canopy, and catenary structures In addition, the station locations would be illuminated, with light standards that could reach 20 feet in height. Elevated structures of that height have the potential to obstruct or adversely change the object of sensitive views at the locations where the elevated structures are installed. As shown in Table 3.7-1, views of the Hollywood Hills and Baldwin Hills are currently available in the vicinity of Jefferson Boulevard and La Cienega Boulevards, views of the Baldwin Hills are available along Jefferson Boulevard near Ballona Creek. Views of the Santa Monica Mountains are available from the areas around Sawtelle and Pico Boulevards, Exposition and Bundy Drive, and at Cloverfield Avenue. Installation of the elevated LRT segments at these locations would obstruct or adversely change these views, and, therefore, would result in significant adverse visual impacts at these specific locations.

Mitigation of this impact could include the conversion of the project to an "at-grade" design or conversion of the project to a "below-grade" design. However, neither of these potential mitigation measures are considered feasible. The conversion of the project to an "at-grade" design would result in additional significant traffic impacts, and the conversion of the project to a "below-grade" design would be cost prohibitive (e.g., $50 to $100 million per below ground separation). However, Mitigation Measure 3.7-5 will be implemented to reduce impacts on sensitive views at Pico/Sawtelle and Bundy to a less-than-significant level. There are no sensitive views in the vicinity of the elevated segment of the Exposition LRT at La Cienega. However the impact of the elevated segments of the Exposition LRT on sensitive views at Pico/Sawtelle and Bundy would be less than significant with the implementation of Mitigation Measure 3.7-5. There are no sensitive views in the vicinity of the elevated segment at La Cienega.

Introduction of new sources of light and glare on adjacent residences, vehicle occupants or pedestrians. Installation of replacement parking for the Wilshire BRT could result in significant light and glare impacts to nearby residences. However, these impacts can be mitigated to a less-than-significant level with implementation of Mitigation Measure 3-7.2.

Installation of station platforms for Exposition LRT (at the locations shown on Table 3.7-2) would include provision of appropriate lighting to illuminate the platform and ensure visibility of patrons to both the bus drivers and passing motorists. This could result in light and glare impacts to adjacent residential uses. Park-and-ride lots would be installed at several locations along the route, including Exposition and Sepulveda Boulevard, Exposition and Barrington Avenue, Exposition and Bundy Drive, and Olympic Boulevard and 26th Street. These lots would be provided with lighting for security purposes, and headlights from vehicles (and passing buses) could result in light and glare impacts to adjacent residences.

Some segments of the Exposition LRT would be elevated (at Jefferson and La Cienega Boulevard, over Ballona Creek, at Sawtelle and Pico Boulevards, at Bundy Drive, and at Cloverfield Avenue), and those elevated segments (except over Ballona Creek) would include stations. The station locations would be illuminated, with light standards that could reach 17 feet in height at the canopy locations and up to 20 feet in height for the standard pedestrian lights.

Because of the proximity of residential uses to the ROW, the park-and-ride lots, and the elevated stations, Exposition LRT could result in significant light and glare impacts to adjacent residential uses. To reduce these impacts, Mitigation Measure 3.7-9 will be implemented.

- *Mitigation Measure 3.7-9:* All lighting at the park-and-ride lots and station locations shall utilize Best Available Technology to reduce spillover to adjacent land uses. In addition, all lighting at park-and-ride lots and station locations shall be directed away from adjacent residences and landscaping, fences, or other measures to shield adjacent residences from light and glare produced by light standards and vehicle headlights.

This mitigation measure would reduce impacts at some at-grade segments to a less than significant level, however, impacts along segments where the right-of-way is only 50 feet in width, and at those locations where the stations would be elevated, would remain significant and unavoidable.

Installation of physical structures could result in a loss of privacy to adjacent uses. The replacement parking proposed for the Wilshire BRT could be located adjacent to some existing residential uses, which could provide opportunities for patrons of the parking lots to have views into residences, and this loss of privacy is considered a significant impact. However, this would be a significant, mitigable impact that could be mitigated to a less-than-significant level with implementation of Mitigation Measures 3.7-3.

Installation of at grade stations for Exposition LRT (including ramps and platforms) would elevate patrons above the existing street level; however the elevation of the platforms would only be a couple of feet above the existing pavement. Therefore, LRT patrons would not have substantial access to views of adjacent residences (along the at-grade segments). At those locations where the route would be located on aerial structures, riders would have access to views into residences, or the yards of residences at those locations. Similarly, patrons waiting at elevated stations could have views that would result in a loss of privacy for residential uses located near stations. Mitigation of this impact could include : (1) the provision of solid parapet walls along all elevated segments; (2) conversion of the project to an "at-grade" design; or (3) conversion of the project to a "below-grade" design. However, none of these potential mitigation measures are considered feasible. The provision of solid parapet walls along all elevated segments would exacerbate impacts related to the obstruction or degradation of scenic views. The conversion of the project to an "at-grade" design would result in additional significant traffic impacts, and the conversion of the project to a "below-grade" design would be cost prohibitive (e.g., $50 to $100 million per below ground separation). However, Mitigation Measure 3.7-7 will be implemented to reduce impacts associated with the loss of privacy at Pico/Sawtelle and Bundy to a less-than-significant level. There are no adjacent residences in the vicinity of the elevated segment of the Exposition LRT at La Cienega that would be affected by a loss of privacy.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

The Exposition LRT MOS component of Alternative 3 would terminate at the Venice/Washington Station. Given that the Wilshire LRT impacts have been disclosed above, and the MOS option of the Exposition LRT is only a shorter route of the full-length alternative, the visual quality impacts resulting from construction and operation of Alternative 3A would be similar to Alternative 3. Any visual quality impacts west of the Venice/Washington Station would not occur, and no increased visual quality impacts would occur at the westernmost MOS station location. Impacts would be less than significant.

Maintenance Yard

Alternatives 1 through 3 (including the design options and the MOS options) would require storage and maintenance facilities. A new maintenance yard(s) would provide maintenance for both the BRT/Rapid Bus Systems and/or LRT system and, as such, must be centrally located to both systems (i.e., the downtown Los Angeles area). Section 2.0 (Alternatives Considered) provides a detailed description of the location of maintenance yard sites, including the screening process that was used to identify the six potentially feasible sites. In summary, six potential maintenance yard sites that are currently being considered by the MTA include:

- NW Corner of Chavez/Mission;
- Existing MTA Division I Area;
- NE Corner Alameda/Washington;
- SE Corner Alameda/Washington;
- Exposition ROW Hooper to Central; and
- Existing MTA South Park Shops.

Figures 2-16 through 2-19 in Section 2.0 (Alternatives Considered) shows the locations and physical layout of the proposed maintenance facilities. These locations are all contained within lands currently owned and operated by the MTA, and are predominately located within industrial areas with the exception of the South Park Shops site which is located in the vicinity of a residential area and school. Development of any maintenance facilities within these locations would be generally compatible with the existing industrial character of the area (e.g., height, scale, mass, lighting) and would not result in any significant visual quality impacts. However, if a maintenance yard were to be built at the existing MTA South Park Shops, the maintenance activities at the bus yard could have potential significant impacts on sensitive receptors in the surrounding residential neighborhoods. However, visual quality impacts associated with the construction and operation of the remaining proposed maintenance facilities are expected to be less than significant.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

The subway design option would provide a subterranean travel corridor for either the bus or light rail alternatives of the Exposition Corridor in the USC/Exposition Park area. Construction of the subterranean travel route would require the removal and reconstruction of the existing median. Therefore, the impacts associated with this design option would be similar to the impacts that would occur under Alternative 1 with respect to the removal and reconstruction of the existing median. After construction, the subterranean segment would be covered and landscaping would be replaced in a manner similar to what exists in that segment today.

3.7.4 Cumulative Impacts

The 1998 RTP Draft Master EIR (SCAG, 1997), which is hereby incorporated by reference, provides the cumulative context for analysis of the Mid-City/Westside Transit Corridor Project. The 1998 RTP Draft Master EIR provides a programmatic analysis of visual quality impacts resulting from implementation of all projects contemplated in the RTP (SCAG, 1998), including the Mid-City/Westside Transit Corridor project, and provides the basis for this cumulative impact analysis.

Cumulative visual quality impacts could result from implementation of highway, roadway and transit projects. Projects contemplated in the RTP that do not require the construction of new facilities (e.g., optimization of the existing transportation system) could have some direct physical effects on visual quality, such as an increase in service frequency, which could increase the number of buses or rail vehicles on existing routes. Projects that require construction of new or expanded facilities (e.g., new freeways or expanded roadways or additional parking facilities) would have the greatest potential to result in adverse visual quality impacts. Projects envisioned in the RTP that would be built within existing rights-of-way would modify the existing visual character along the route, through the removal of existing physical structures, landscaping and street trees, introduction of new physical elements (including station stops, access points, lighting and rail stations or bus stops), obstruction or modification of scenic views, and loss of privacy where the new transportation projects provide views into residential structures or properties. To the extent that new highways, roads, rail service or transit projects occur in areas that are not currently urbanized, then this would result in the greatest potential for adverse visual quality impacts.

In some locations, effective mitigation of visual quality impacts would either require retention of existing visual features (e.g., landscaped medians along designated scenic highways) or modification of transit projects (e.g., elimination of elevated route segments) which would either result in secondary environmental effects or may be considered infeasible. Thus, to the extent to that adverse impacts of the projects contemplated in the RTP cannot be mitigated, the cumulative visual quality impacts would remain significant and unavoidable.

3.8A Air Quality Construction

3.8A.1 Introduction

This section discusses the air quality impacts that would result during the construction phase of the Mid-City/Westside Transit proposed project or project alternatives.

3.8A.2 Impact Assessment

Standards of Significance

The proposed project or project alternatives would have a significant impact if daily construction emissions were to exceed significance thresholds for carbon monoxide (CO), reactive organic gas (ROG), nitrogen oxides (NO_X), sulfur oxides (SO_X), or particulates (PM_{10}) as established by the SCAQMD. Significance thresholds appear in Table 3.8A-1.

TABLE 3.8A-1
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT DAILY EMISSIONS THRESHOLDS (POUNDS PER DAY)

Criteria Pollutant	Construction
Carbon Monoxide	550
Reactive Organic Gas	75
Nitrogen Oxides	100
Sulfur Oxides	150
Particulates	150

Source: South Coast Air Quality Management District, 2000.

The proposed project or project alternatives do not contain lead, hydrogen sulfide, or sulfate emission sources. Therefore, emissions and concentrations related to these pollutants will not be analyzed in this report.

Methodology for Impact Evaluation

Daily emissions were derived using applicable emission factors and formulas found in the South Coast Air Quality Management District (SCAQMD) California Environmental Quality Act (CEQA) Handbook, Appendix 9 (1993 edition).

Impacts

<u>No Action Alternative (Baseline)</u>

Under the No Action Alternative, the proposed project or project alternatives would not be implemented. Thus, no construction would occur, and no impacts are anticipated.

Transportation System Management (TSM) Alternative

Under the TSM Alternative, the proposed project or project alternatives would not be implemented. Thus, no construction would occur, and no impacts are anticipated.

Alternative 1: Wilshire BRT (Baseline Median-Running)

The Wilshire BRT would generate pollutant emissions from the following construction activities: (1) the demolition of existing structures, (2) mobile emissions related to construction worker travel to and from project sites, (3) mobile emissions related to the delivery and hauling of construction supplies and debris to and from project sites, and (4) stationary emissions related to fuel consumption by on-site construction equipment. As detailed in the Construction Methods Technical Report prepared for the proposed project, construction would occur in several phases, lasting for a total of approximately 48 to 54 months. Construction would begin simultaneously at several locations along the route to accommodate areas requiring lengthy construction times. Construction for the Wilshire BRT consists of site preparation (which includes demolition and excavation of roadway) and the construction of the BRT travel lanes and stations. Table 3.8A-2 shows the estimated worst-case daily emissions for the construction of the Wilshire BRT. Daily emissions were derived using the applicable emission factors and formulas found in the *SCAQMD CEQA Handbook*, Appendix to Chapter 9.

TABLE 3.8A-2
DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY)
WILSHIRE BRT

Construction Phase	CO	ROG	NO_X	SO_X	PM_{10}
Site Preparation	90.4	11.6	35.0	1.2	184.1
Construction of Travel Lanes and Stations	93.3	9.0	13.5	0.6	1.1
Maximum	93.3	11.6	35.0	1.2	184.1
SCAQMD Threshold	550	75	100	150	150
Potential Threshold Violation?	No	No	No	No	Yes

Source: Terry A. Hayes Associates, 2000.

As shown above, four of the five criteria pollutants are not expected to exceed the SCAQMD significance thresholds. The four criteria pollutants are: CO, ROG, NO_X, and SO_X. Overlapping of construction phases would not increase these four criteria pollutants to a significant level. However, PM_{10} is expected to exceed the SCAQMD significance threshold. Increasing on-site soil moisture content to 10 percent (see Mitigation Measure 3.8A-6) would reduce PM_{10} emissions to 33.7 ppd during site preparation.[1] Thus, a less than significant impact is anticipated.

[1] A three percent soil moisture content was used to calculate PM_{10} concentrations without implementation of mitigation measures. Implementation of Mitigation Measure 3.8A-6 would increase the soil moisture content to approximately 10 percent. Based on the formulas provided in Table 9-9 of the SCAQMD CEQA Air Quality Handbook, Appendix 9 (1993 edition), a soil moisture content of approximately 10 percent would reduce PM_{10} concentrations to approximately 33.7 ppd.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Currently, medians lie within several areas of Wilshire Boulevard. However, there are several areas along the street where no medians currently exist. Under the Median Adjacent Design Option, the existing medians would remain along Wilshire Boulevard, and minimal construction would be required within this area. In areas along the Corridor where no medians exist, medians would be constructed. Whereas the Median Reconstruction Design Option would require construction along the entire corridor, most of the construction for the Median Adjacent Design Option would occur along the Corridor where no medians exist. Thus, criteria pollutant emissions for this option would be less than the Median Reconstruction Design Option. As discussed in the section, above, the Median Reconstruction Design Option is not anticipated to exceed the SCAQMD significance thresholds. Since construction for the Median Adjacent Design Option would emit less criteria pollutants, this alternative is also not expected to exceed the SCAQMD significance thresholds. Thus, a less than significant impact is anticipated.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Whereas buses would travel along the median of the road under the Median Reconstruction Design Option and the Median Adjacent Design Option, buses under the Curb Adjacent Design Option would travel along the side of the streets. Construction emissions for this option would be similar to that of the Median Reconstruction Design Option. This option would require demolition, excavation, and construction of roadway along the entire corridor, similar to that of the Median Reconstruction Design Option. Additionally, construction for this option would require the same amount of time, as well as similar types of construction activities, as the Median Reconstruction Design Option (48 to 54 months). As discussed in the section on Median Reconstruction Design Option, construction emissions would not exceed the SCAQMD significance thresholds. A less than significant impact is anticipated for this option.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Construction impacts for this alternative would include those for the Wilshire BRT and the Exposition BRT. The Wilshire BRT impacts are discussed above. The Exposition BRT portion of this alternative would generate pollutant emissions from the following construction activities: (1) the demolition of existing structures, (2) mobile emissions related to construction worker travel to and from project sites, (3) mobile emissions related to the delivery and hauling of construction supplies and debris to and from project sites, and (4) stationary emissions related to fuel consumption by on-site construction equipment. As detailed in the Construction Methods Technical Report prepared for the proposed project, construction would occur in several phases, lasting for a total of approximately 48 to 54 months. Construction would begin simultaneously at several locations along the routes to accommodate areas requiring lengthy construction times. Construction for the Wilshire Exposition BRT could be summarized into two categories: site preparation (which includes demolition and excavation of roadway) and the construction of the route (for travel lanes, stations, aerial structures, and park-and-ride facilities). Table 3.8A-3 shows the estimated worst-case daily construction emissions for this alternative. Daily emissions were derived using the applicable emission factors and formulas found in the *SCAQMD CEQA Handbook*, Appendix to Chapter 9.

TABLE 3.8A-3 DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY) WILSHIRE BRT AND EXPOSITION BRT /A/					
Construction Phase	**CO**	**ROG**	**NO_X**	**SO_X**	**PM_{10}**
Site Preparation	313.8	41.2.	127.2	4.3	649.6
Construction of Alignments	353.3	37.8	78.8	3.1	8.3
Maximum	353.3	41.2	127.2	4.3	649.6
SCAQMD Threshold	550	75	100	150	150
Potential Threshold Violation?	No	No	Yes	No	Yes
/a/ Calculations assumes that construction for the Wilshire BRT and the Exposition BRT would occur simultaneously.					
Source: Terry A. Hayes Associates, 2000.					

As shown above, CO, ROG, and SO_X are not anticipated to exceed the SCAQMD significance thresholds. Additionally, overlapping of construction phases would not increase these three criteria pollutants to a significant level. However, NO_X and PM_{10} emissions would exceed the SCAQMD significance threshold of 100 and 150 ppd, respectively, which would result in a short-term significant impact. Increasing on-site soil moisture from three percent to 10 percent (see Mitigation Measure 3.8A-6) would reduce PM_{10} emissions to approximately 133.3 ppd. PM_{10} emissions would be reduced to a less than significant level.[2] However, significant levels of NO_X would remain.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Construction for the Wilshire BRT and Exposition BRT MOS Alternative would occur along the Wilshire BRT, as well as the Exposition BRT MOS. This alternative would generate pollutant emissions from the following construction activities: (1) the demolition of existing structures, (2) mobile emissions related to construction worker travel to and from project sites, (3) mobile emissions related to the delivery and hauling of construction supplies and debris to and from project sites, and (5) stationary emissions related to fuel consumption by on-site construction equipment. Construction for the Wilshire BRT and Exposition BRT MOS would occur in several steps, lasting for a total of approximately 48 to 54 months. Construction would begin simultaneously at several locations along the route to accommodate areas requiring lengthy construction times. Construction for the Wilshire BRT and Exposition BRT MOS could be summarized into three categories: site preparation (which includes demolition of structures and excavation of roadway) and construction of routes (roadways, stations, aerial structures, tract installation, and park-and-ride facilities). Table 3.8A-4 shows the estimated worst-case daily construction emissions for this alternative. Daily emissions were derived using the applicable emission factors and formulas found in the *SCAQMD CEQA Handbook*, Appendix to Chapter 9.

[2] A three percent soil moisture content was used to calculate PM_{10} concentrations without implementation of mitigation measures. Implementation of Mitigation Measure 3.8A-6 would increase the soil moisture content to approximately 10 percent. Based on the formulas provided in Table 9-9 of the SCAQMD CEQA Air Quality Handbook, Appendix 9 (1993 edition), a soil moisture content of approximately 10 percent would reduce PM_{10} concentrations to approximately 133.3 ppd.

TABLE 3.8A-4 DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY) EXPOSITION BRT MOS/A/					
Construction Phase	**CO**	**ROG**	**NO_X**	**SO_X**	**PM_{10}**
Site Preparation	252.6	33.3	103.5	3.5	525.0
Construction of Alignments	218.0	22.8	44.8	1.8	4.6
Maximum	252.6	33.3	103.5	3.5	525.0
SCAQMD Threshold	550	75	100	150	150
Potential Threshold Violation?	No	No	Yes	No	Yes
/a/ Calculations assumes that construction for the Wilshire BRT and the Exposition BRT MOS would occur simultaneously.					
Source: Terry A. Hayes Associates, 2000.					

As shown above, CO, ROG and SO_X are not anticipated to exceed the SCAQMD significance thresholds. Additionally, overlapping of construction phases would not increase these three criteria pollutants to a significant level. However, NO_X and PM_{10} emissions would exceed the SCAQMD significance threshold of 100 and 150 ppd, respectively, which would result in a short-term significant impact. Increasing on-site soil moisture content to 10 percent (see Mitigation Measure 3.8A-6) would reduce PM_{10} emissions to 107.8 ppd during site preparation.[3] Thus, PM_{10} emissions would be reduced to a less than significant level. However, NO_X emissions would remain significant.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Construction impacts for this alternative would include those for the Wilshire BRT and the Exposition LRT. The Wilshire BRT impacts are discussed above. The Exposition LRT portion of this alternative would generate pollutant emissions from the following construction activities: (1) the demolition of existing structures, (2) mobile emissions related to construction worker travel to and from project sites, (3) mobile emissions related to the delivery and hauling of construction supplies and debris to and from project sites, and (4) stationary emissions related to fuel consumption by on-site construction equipment. As detailed in the Construction Methods Technical Report prepared for the proposed project, construction would occur in several steps, lasting for a total of approximately 48 to 54 months. Construction would begin simultaneously at several locations along the route to accommodate areas requiring lengthy construction times. Construction for the Exposition LRT could be summarized into three categories: site preparation (which includes demolition and excavation of roadway) and construction of routes (installation of tracks, stations, aerial structures, and park-and-ride facilities). Table 3.8A-5 shows the estimated worst-case daily construction emissions for this alternative. Daily emissions were derived using the applicable emission factors and formulas found in the *SCAQMD CEQA Handbook*, Appendix to Chapter 9.

[3] A three percent soil moisture content was used to calculate PM_{10} concentrations without implementation of mitigation measures. Implementation of Mitigation Measure 3.8A-6 would increase the soil moisture content to approximately 10 percent. Based on the formulas provided in Table 9-9 of the SCAQMD CEQA Air Quality Handbook, Appendix 9 (1993 edition), a soil moisture content of approximately 10 percent would reduce PM_{10} concentrations to approximately 107.8 ppd.

TABLE 3.8A-5 DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY) EXPOSITION LRT /A/					
Construction Phase	**CO**	**ROG**	**NO_X**	**SO_X**	**PM_{10}**
Site Preparation	313.8	41.2	127.2	4.3	649.6
Construction of Alignments	164.0	15.9	23.7	1.1	2.0
Maximum	313.8	41.2	127.2	4.3	649.6
SCAQMD Threshold	550	75	100	150	150
Potential Threshold Violation?	No	No	Yes	No	Yes
/a/ Calculations assumes that construction for the Wilshire BRT and the Exposition LRT would occur simultaneously.					
Source: Terry A. Hayes Associates, 2000.					

As shown above, CO, ROG, and SO_X are not anticipated to exceed the SCAQMD significance thresholds. Additionally, overlapping of construction phases would not increase these three criteria pollutants to a significant level. However, NO_X and PM_{10} emissions would exceed the SCAQMD significance threshold of 100 and 150 ppd, respectively, which would result in a short-term significant impact. A soil moisture content of approximately 10 percent (see Mitigation Measure 3.8A-6) would reduce PM_{10} emissions to 133.3 ppd.[4] Thus, a less than significant level is anticipated. However, significant levels of NO_X would remain.

<u>**Alternative 3A: Wilshire BRT and Exposition LRT (MOS)**</u>

Construction for the Wilshire BRT and Exposition LRT MOS Alternative would occur along the Wilshire BRT, as well as the Exposition LRT MOS. This alternative would generate pollutant emissions from the following construction activities: (1) the demolition of existing structures, (2) mobile emissions related to construction worker travel to and from project sites, (3) mobile emissions related to the delivery and hauling of construction supplies and debris to and from project sites, and (5) stationary emissions related to fuel consumption by on-site construction equipment. Construction for the Wilshire BRT and Exposition LRT MOS would occur in several steps, lasting for a total of approximately 48 to 54 months. Construction would begin simultaneously at several locations along the route to accommodate areas requiring lengthy construction times. Construction for the Wilshire BRT and Exposition LRT MOS could be summarized into three categories: site preparation (which includes demolition of structures and excavation of roadway) and construction of routes (roadways, stations, aerial structures, tract installation, and park-and-ride facilities). Table 3.8A-6 shows the estimated worst-case daily construction emissions for this alternative. Daily emissions were derived using the applicable emission factors and formulas found in the *SCAQMD CEQA Handbook*, Appendix to Chapter 9.

[4] A three percent soil moisture content was used to calculate PM_{10} concentrations without implementation of mitigation measures. Implementation of Mitigation Measure 3.8A-6 would increase the soil moisture content to approximately 10 percent. Based on the formulas provided in Table 9-9 of the SCAQMD CEQA Air Quality Handbook, Appendix 9 (1993 edition), a soil moisture content of approximately 10 percent would reduce PM_{10} concentrations to approximately 133.3 ppd.

TABLE 3.8A-6 DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY) EXPOSITION LRT MOS/A/					
Construction Phase	**CO**	**ROG**	**NO_X**	**SO_X**	**PM_{10}**
Site Preparation	252.6	33.3	103.5	3.5	525.0
Construction of Alignments	164.0	15.9	23.7	1.1	1.97
Maximum	252.6	33.3	103.5	3.5	525.0
SCAQMD Threshold	550	75	100	150	150
Potential Threshold Violation?	No	No	Yes	No	Yes
/a/ Calculations assumes that construction for the Wilshire BRT and the Exposition BRT MOS would occur simultaneously.					
Source: Terry A. Hayes Associates, 2000.					

As shown above, CO, ROG, and SO_X are not anticipated to exceed the SCAQMD significance thresholds. Additionally, overlapping of construction phases would not increase these three criteria pollutants to a significant level. However, NO_X and PM_{10} emissions would exceed the SCAQMD significance threshold of100 and 150 ppd, respectively, which would result in a short-term significant impact. A soil moisture content of approximately 10 percent (see Mitigation Measure 3.8A-6) would reduce PM_{10} emissions to 107.8 ppd during site preparation.[5] Thus, PM_{10} emissions would be reduced to a less than significant level. However, NO_X emissions would remain significant.

Maintenance Yard

Construction for the proposed candidate maintenance yards would generate pollutant emissions from all or a combination of the following construction activities: (1) demolition, (2) grading and excavation, (3) construction worker travel to and from project sites, (4) delivery and hauling of construction supplies and debris to and from project sites, and (5) fuel combustion by on-site construction equipment.

Air quality impacts from demolition, grading/excavation, and foundation would occur all candidate sites, with the exception of Alameda and 6th Street. A MTA bus maintenance facility currently exists at Alameda and 6th Street. Additionally, an approximately 2-acre site adjoins the south of the existing facility. Because this site is vacant and the buildings that currently exist in the bus maintenance facility would remain relatively unchanged, no demolition is required for this site. Table XX summarizes the estimated daily emissions associated with each construction phase for each candidate site. Daily emissions were derived using the applicable emission factors and formulas found in the SCAQMD CEQA Handbook, Appendix to Chapter 9.

[5] A three percent soil moisture content was used to calculate PM_{10} concentrations without implementation of mitigation measures. Implementation of Mitigation Measure 3.8A-6 would increase the soil moisture content to approximately 10 percent. Based on the formulas provided in Table 9-9 of the SCAQMD CEQA Air Quality Handbook, Appendix 9 (1993 edition), a soil moisture content of approximately 10 percent would reduce PM_{10} concentrations to approximately 107.8 ppd.

As shown in Table 3.8A-7, construction at each candidate facility is not anticipated to exceed the SCAQMD significance thresholds for the five criteria pollutants. Thus, a less than significant impact is anticipated.

TABLE 3.8A-7
DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY)
MAINTENANCE YARD

Construction Phase	CO	ROG	NO_X	SO_2	PM_{10}
Chavez and Mission					
Demolition	27	5	45	3	77
Grading/Excavation	34	6	58	5	21
Foundation	65	10	80	6	49
Maximum	*65*	*10*	*80*	*6*	*77*
Alameda and 6th Street					
Grading/Excavation	44	8	74	6	22
Foundation	21	3	24	2	15
Maximum	*44*	*8*	*74*	*6*	*22*
Washington and Alameda Northeast Corner					
Demolition	27	5	42	3	70
Grading/Excavation	28	5	49	4	20
Foundation	39	6	47	4	29
Maximum	*39*	*6*	*49*	*4*	*70*
Washington and Alameda Southeast Corner					
Demolition	26	5	43	3	71
Grading/Excavation	28	5	49	4	20
Foundation	38	6	46	3	28
Maximum	*38*	*6*	*49*	*4*	*71*
Exposition Right-of-Way (Hooper to Central)					
Demolition	25	5	40	3	57
Grading/Excavation	18	3	31	3	18
Foundation	19	3	23	2	14
Maximum	*25*	*5*	*40*	*3*	*57*
South Park Shops (54th and Avalon)					
Demolition	37	7	50	3	104
Grading/Excavation	26	5	45	4	19
Foundation	34	5	41	3	25
Maximum	*37*	*7*	*50*	*4*	*104*
SCAQMD Threshold	**550**	**75**	**100**	**150**	**150**

SOURCE: Terry A. Hayes Associates, 2000.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

Construction for the Exposition LRT includes an optional subway segment, which would be located between Figueroa Street and Vermont Avenue. Table 3.8A-8 shows the estimated daily emissions if the subway segment is constructed.

TABLE 3.8A-8 DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY) FOR OPTIONAL SUBWAY DESIGN					
Construction Phase	**CO**	**ROG**	**NO_X**	**SO_X**	**PM_{10}**
Subway	42.9	6.8	69.0	5.2	4.9
SCAQMD Threshold	550	75	100	150	150
Potential Threshold Violation?	No	No	No	No	No
Source: Terry A. Hayes Associates, 2000.					

As shown above, construction for the subway segment would not violate SCAQMD significance thresholds for each of the criteria pollutants. Overlapping of construction phases is not likely to increase criteria pollutants to a significant level. Implementation of mitigation measures would ensure that that air quality impacts would remain less than significant.

3.8A.3 Mitigation Measures

Mitigation Measures 3.8A-1 to 3.8A-4 are recommended to reduce NO_X and PM_{10}, as well as CO, ROG, and SO_X, emissions associated with construction of the proposed project or project alternatives. Mitigation Measures 3.8A-5 to 3.8A-10 primarily pertain to PM_{10} emissions. When possible, emission reduction rates for each mitigation measure are provided.[6]

- *Mitigation Measure 3.8A-1:* Minimize use of on-site diesel construction equipment, particularly unnecessary idling. Construction equipment will be shut off to reduce idling when not in direct use. For each hour an equipment is turned off, CO, ROG, NO_X, SO_X, and PM_{10} emissions would be reduced by approximately 0.68, 0.15, 1.7, 0.143, and 0.14 grams, respectively.

- *Mitigation Measure 3.8A-2:* Where feasible, replace diesel equipment with electrically powered machinery. A diesel equipment emits approximately 5.6 grams of CO daily and approximately 13.9 grams of ROG, SO_X, NO_X, and PM_{10} daily. For each diesel equipment replaced, approximately 5.6 grams of CO and 13.9 grams of ROG, SO_X, NO_X and PM_{10} would be reduced daily.

- *Mitigation Measure 3.8A-3:* Diesel engines, motors, or equipment shall be located as far away as possible from existing residential areas.

- *Mitigation Measure 3.8A-4:* Construction contracts should explicitly stipulate that all diesel power equipment should be properly tuned and maintained.

- *Mitigation Measure 3.8A-5:* Haul trucks shall be staged in non-residential areas away from school buildings and playgrounds. To the extent feasible, haul truck routes shall be planned to avoid residential areas.

[6] Emission reduction rates for the mitigation measures are based on the emission reduction efficiences in Chapter 11 and the Appendix to Chapter 9 of the South Coast Air Quality Management District CEQA Air Quality Handbook (1993 edition).

- *Mitigation Measure 3.8A-6:* Site wetting shall occur often enough to maintain a ten percent surface soil moisture content throughout any site grading or excavation activity. All unpaved parking or staging areas shall be watered at least four times daily, and all on-site stockpiles of debris, dirt, or rusty material shall be covered or watered at least twice daily. The emission reduction rate for this measure range from approximately 30 to 79 percent for PM_{10}. Reduction levels for each of the project alternatives were discussed in Section 3.8A.2, above.

- *Mitigation Measure 3.8A-7:* Require all trucks hauling dirt, sand, soil, or other loose substances and building materials to be covered, or to maintain a minimum freeboard of two feet between the top of the load and the top of the truck bed sides. The emission reduction efficiency rate for this mitigation measure is approximately 7 percent for PM_{10}.

- *Mitigation Measure 3.8A-8:* Utilize street sweeping equipment at site access points and all adjacent streets used by haul trucks or vehicles that have been onsite within thirty minutes of visible dirt deposition (track-out debris). The emission reduction rate for this mitigation measure is approximately 25 percent for PM_{10}.

- *Mitigation Measure 3.8A-9:* Maintain a fugitive dust control program consistent with the provisions of SCAQMD Rule 403 for any grading or earthwork activity that may be required.

- *Mitigation Measure 3.8A-10:* Suspend grading operations during first and second stage smog alerts, and during high winds, i.e., greater than 25 miles per hour.

3.8A.4 Cumulative Impacts

Similar to the impacts of the alternatives considered, construction air quality impacts are not expected to be cumulatively considerable for PM_{10}. However, significant levels of NO_X are anticipated under Alternatives 2, 2A, 3, and 3A. Thus, these alternatives would contribute to cumulative emissions of NO_X. These cumulative impacts for NO_X would be short-term due to the temporary nature of construction.

3.8B Air Quality Operations

3.8B.1 Introduction

This section discusses air quality impacts that would occur during the operational phase of the proposed project or project alternatives.

3.8B.2 Affected Environment

Regulatory Setting

Air quality in the United States is governed by the Federal Clean Air Act (CAA) and is administered by the United States Environmental Protection Agency (USEPA). In addition to being subject to the requirements of the CAA, air quality in California is also governed by the more stringent regulations under the California Clean Air Act (CCAA).

The CCAA of 1988 requires all air districts in the State to endeavor to achieve and maintain State Ambient Air Quality Standards. The CCAA is administered statewide by the California Air Resources Board (CARB). The State of California has also established ambient air quality standards, known as the California Ambient Air Quality Standard (CAAQS). These standards are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. California has established CARB to regulate mobile air pollution sources (such as motor vehicles). CARB also oversees the functions of local air pollution control districts and air quality management districts, which in turn administers air quality activities at the regional and county level. The CCAA is administered by CARB at the state level and by the Air Quality Management Districts at the regional level.

U.S. Environmental Protection Agency

USEPA is responsible for establishing the National Ambient Air Quality Standards (NAAQS) and enforcing the Clean Air Act. It also regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The USEPA has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

California Air Resources Board

CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act, meeting state requirements of the federal Clean Air Act, and establishing state ambient air quality standards. It is also responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also established passenger vehicle fuel specifications, which became effective in March 1996.

Non-Attainment and State Implementation Plans

CARB designates an area as non-attainment for a pollutant if air quality data show that a State standard for a pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a State standard, and are not used as a basis for designating areas as non-attainment.

On the basis of regional monitoring data, the Los Angeles County portion of the South Coast Air Basin has been designated as a non-attainment area for ozone, carbon monoxide, and total suspended particulates (PM_{10}). The air basin is designated as an attainment area for nitrogen oxide, sulfur dioxide, sulfates, and lead (see Figure 3.8B-1).[1]

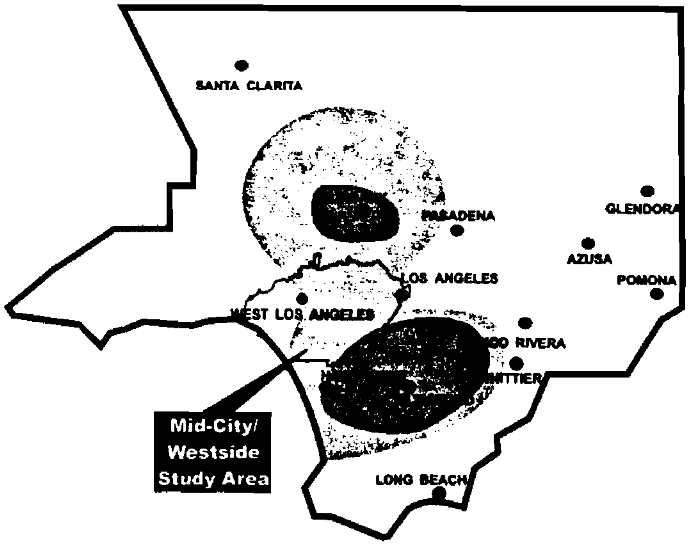
Federal clean air laws require areas with unhealthy levels of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and inhaleable particulate matter to develop plans, known as State Implementation Plans (SIPs), describing how they would attain national ambient air quality standards (NAAQS). The 1992 amendments to the federal Clean Air Act set new deadlines for attainment based on the severity of the pollution problem and launched a comprehensive planning process for attaining the NAAQS.

SIPs are not single documents; rather, they are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. Many of California's SIPs rely on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies, such as the Bureau of Automotive Repair, prepare SIP elements and submit them to CARB for review and approval. CARB forwards SIP revisions to USEPA for approval and publication in the Federal Register. The Code of Federal Regulations (CFR) Title 40, Chapter 1, Part 52, Subpart F, Section 52.220 lists all of the items that are included in the California SIP. Many additional California submittals are pending USEPA approval.

South Coast Air Quality Management District

In order to coordinate air quality planning efforts throughout southern California, the South Coast Air Quality Management District (SCAQMD) was created by the 1977 Lewis Air Quality Management Act, which merged four county air pollution control agencies into one regional district to better address the issue of improving air quality in Southern California. Under the act, renamed the Lewis-Presley Air Quality Management Act in 1988, the SCAQMD is the agency principally responsible for comprehensive air pollution control in the Basin. Specifically, the SCAQMD is responsible for monitoring air quality and planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs developed include air quality rules and regulations that regulate stationary source emissions, including area sources and point sources and certain mobile source emissions. The SCAQMD is also responsible for establishing permitting requirements for stationary sources and ensuring that new, modified, or relocated stationary sources do not create net emissions increases and, therefore, is

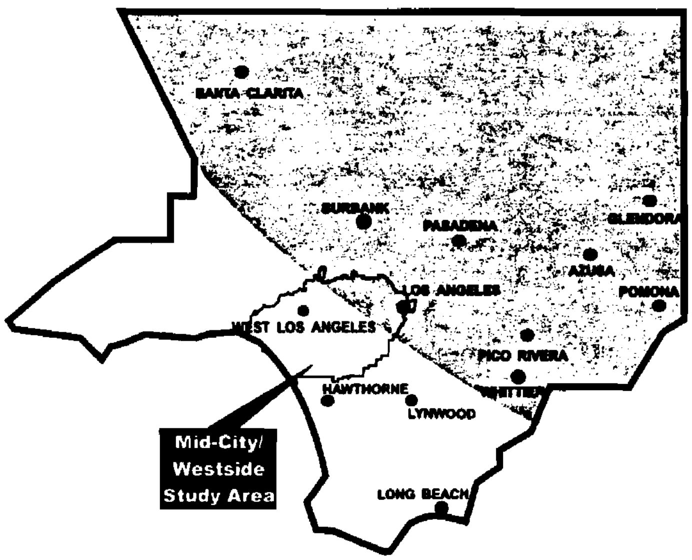
1 California Air Resources Board: Proposed Amendments to the Designation Criteria and Amendments to the Area Designations for State Ambient Air Quality Standards and Proposed Maps of the Area Designations for the State and National Ambient Air Quality Standards, September 2000.



CARBON MONOXIDE

of Days Federal Standard was Exceeded

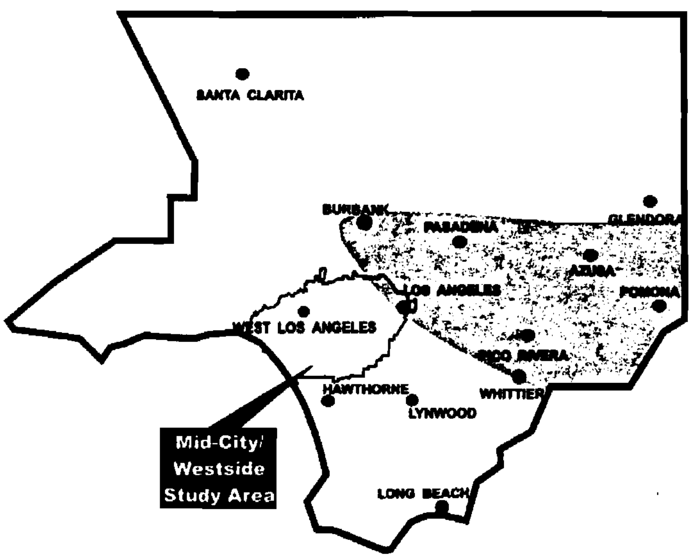
- <5
- 5 TO 19
- >20
- Not Exceeded



OZONE

of Days Federal Standard was Exceeded

- Not Exceeded
- 1 to 40
- 41 to 80



PARTICULATE MATTER

Annual Average Concentration (micrograms/cubic meter)

- < 40
- > 40

N

SOURCE: For Carbon Monoxide and Particulate Matter: South Coast Air Quality Management District Website, 1996; for Ozone: South Coast Air Quality Management District Website, 1997

FIGURE 3.8B-1
CARBON MONOXIDE, OZONE, AND PARTICULATE MATTER LEVELS

consistent with the region's air quality goals. The SCAQMD enforces air quality rules and regulations through a variety of means, including inspections, educational or training programs, or fines, when necessary.

The SCAQMD has jurisdiction over a 10,743 square mile area, commonly referred to as the South Coast Air Basin (SCAB). This area includes all of Orange County, Los Angeles County, except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The SCAB is bounded by the Pacific Ocean to the west; by the San Gabriel, San Bernardino, and San Jacinto mountains to the north and the east; and by the San Diego County line to the south (see Figure 3.8B-2).

Air Quality Management Plan

Within the project area, the SCAQMD and the Southern California Association of Governments (SCAG) have responsibility for preparing the Air Quality Management Plan (AQMP), which address federal and state Clean Air Act requirements. The AQMP details goals, policies, and programs for improving air quality and establishes thresholds for daily operation emissions. Environmental review of individual projects within the region must demonstrate that daily construction and operational emissions thresholds, as established by the SCAQMD, would not be exceeded, nor would the number or severity of existing air quality violations.

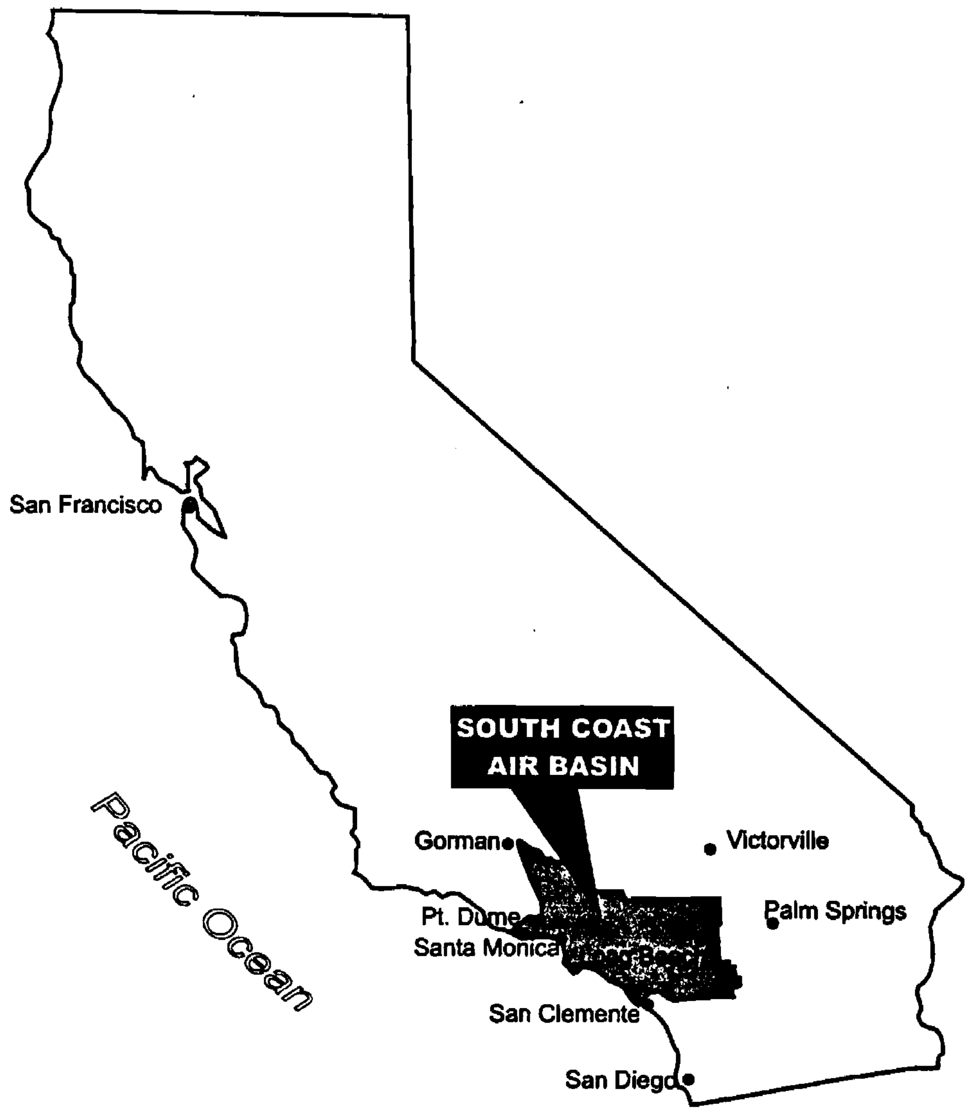
In August of 1996, the SCAQMD submitted its AQMP to CARB for inclusion in the SIP. As mentioned earlier, the AQMP also meets CCAA requirements. The AQMP addressed CCAA requirements, which are intended to bring the SCAQMD into compliance with federal and state air quality standards. The AQMP focused on ozone and carbon monoxide emissions, which would be reduced through public education, vehicle and fuel management, transportation controls, indirect source controls, and stationary source controls programs.

The 1997 Draft AQMP has been prepared to reflect the requirements of the 1990 Clean Air Act Amendments and is consistent with the approaches taken in the 1994 AQMP. The Plan is expected to replace, in part or in whole, many of the proposed measures set forth in the SIP and anticipates the attainment of all pollutants by 2010.

The overall control strategy of the 1997 AQMP was to meet applicable state and federal requirements and to demonstrate attainment with ambient air quality standards. The 1997 AQMP is the first plan required by the federal law to demonstrate attainment of the federal PM_{10} ambient air quality standards, and therefore, places a greater focus on PM_{10}.

National and State Ambient Air Quality Standards

As required by the Clean Air Act, National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: carbon monoxide, nitrogen oxides, ozone, particulate matter smaller than 10 microns (PM_{10}), sulfur oxides, and lead. The State of California has also established ambient air quality standards-known as the California Ambient Air Quality Standards (CAAQS), which are generally more stringent than the federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. Because the CAAQS are more stringent than the NAAQS, they are used as the comparative standard in the analysis contained in this report.



LEGEND:

South Coast Air Basin

State of California

APPROX. SCALE

0 40 80 120 MILES

N

SOURCE: California Air Resources Board, State and Local Air Monitoring Network Plan, October 1998

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.8B-2

SOUTH COAST AIR BASIN

Both State and Federal standards are summarized in Table 3.8B-1. The "primary" standards have been established to protect the public health. The "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation and other aspects of the general welfare.

TABLE 3.8B-1
FEDERAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Period	California Standard[1] Concentration[3]	Federal Standards[2] Primary[3, 4]	Federal Standards[2] Secondary[3, 5]
Ozone (O_3)	1 hour	0.09 ppm (180 μg/m³)	0.12 ppm (235 μg/m³)[6]	Same as Primary Standard
	8 hour	--	0.08 ppm (157 μg/m³)	
Respirable Particulate Matter (PM_{10})	Annual Geometric Mean	30 μg/m³	--	Same as Primary Standard
	24 hour	50 μg/m³	150 μg/m³	
	Annual Arithmetic Mean	--	50 μg/m³	
Fine Particulate Matter ($PM_{2.5}$)	24 hour	No Separate Standard	65 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean		15 μg/m³	
Carbon Monoxide (CO)	8 hour	9.0 (10 mg/m3)	9.0 (10 mg/m3)	None
	1 hour	20 ppm (23 mg/m3)	35 ppm (40 mg/m3)	
	8 hour (Lake Tahoe)	6 ppm (7 mg/m3)	--	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	--	0.053 ppm (100 μg/m³)	Same as Primary Standard
	1 hour	0.25 ppm (470 μg/m³)	--	
Sulfur dioxide (SO_2)	Annual Arithmetic Mean	--	0.030 ppm (80 μg/m³)	--
	24 hour	0.04 ppm (105 μg/m³)	0.14 ppm (365 μg/m³)	--
	3 hour	--	--	0.5 ppm (1300 μg/m³)
	1 hour	0.25 ppm (655 μg/m³)	--	--
Lead	30 days average	1.5 μg/m³	--	--
	Calendar Quarter	--	1.5 μg/m³	Same as Primary Standard
Visibility Reducing Particulates	8 hour (10 am to 6 pm, PST)	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer—visibility of ten miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70 percent.	No Federal Standards	
Sulfates	24 hour	25 μg/m³		
Hydrogen Sulfide	1 hour	0.03 ppm (42 μg/m³)		

TABLE 3.8B-1 FEDERAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS				
	Averaging	California Standard[1]	Federal Standards[2]	
Pollutant	Period	Concentration[3]	Primary[3,4]	Secondary[3,5]

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), Nitrogen dioxide suspended particulate matter—PM_{10}, and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 2°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. New federal one-hour ozone and fine particulate matter standards were promulgated by U.S. EPA on July 18,1997. The federal one-hour ozone standard continues to apply in areas that violated the standard.

Source: California Air Resources Board, Federal and State Air Quality Standards 1999 (1/25/99)

Pollutants and Effects

Air quality studies focus on the following five criteria pollutants: ozone (O3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and respirable particulate matter (PM_{10}).

Ozone. Ozone (O_3) is a colorless gas and is the chief component of urban smog. Ozone impacts lung function by irritating and damaging the respiratory system. In addition, ozone causes damage to vegetation, buildings, rubber, and some plastics (California Air Resources Board Almanac, 1999). Ozone is one of a number of substances called photochemical oxidants that are formed when reactive organic compounds (ROC) and nitrogen oxides (precursor emissions), both byproducts of the internal combustion engine, react in the presence of ultraviolet sunlight. Ozone is present in relatively high concentrations within the Basin, and the damaging effects of photochemical smog are generally related to the concentrations of ozone. (SCAQMD, 1993). Meteorology and terrain play major roles in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and cloudless skies provide for the optimum conditions.

Carbon Monoxide. Carbon monoxide (CO) is a gas that, in the human body, interferes with the transfer of oxygen to the blood. It can cause dizziness and fatigue, and can impair central nervous system functions. CO is a product of incomplete combustion emitted, along with carbon dioxide, by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, CO is emitted primarily by automobiles, trucks, and motorcycles. CO is a nonreactive air pollutant that dissipates relatively quickly, so ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. When surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February, CO from motor vehicle exhaust can become locally concentrated. The highest CO concentrations measured in SCAB are typically recorded during the winter.

Nitrogen Dioxide. Nitrogen dioxide (NO_2) is a byproduct of fuel combustion. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts quickly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. Nitrogen dioxide acts as an acute irritant and, in equal concentrations is more injurious than NO at atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two to three years old) has also been observed at concentrations below 0.3 parts per million (ppm). Nitrogen dioxide absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation of PM_{10} (SCAQMD, 1993).

Sulfur Oxides. Sulfur oxides, primarily sulfur dioxide (SO_2), are a product of combustion of high-sulfur fuels, such as many grades of coal and oil. In recent years, restrictions on the use of high-sulfur fuels and other air pollution control measures have substantially reduced ambient concentrations of SO_2 throughout the U.S. SO_2 is a human respiratory irritant. It also combines with moisture in the atmosphere to form sulfuric acid, which, in turn, damages vegetation and slowly erodes the exterior facades of buildings and other structures in urban areas. SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. The SO_2 concentrations have been reduced to levels well below state and national standards, but further reductions in emissions are needed to attain compliance with standards for sulfates and PM_{10}, of which SO_2 is a contributor.

Suspended Particulate Matter. Suspended, or respirable, particulate matter (PM_{10}) consists of suspended particles less than 10 microns in diameter. Particulates in this size category can be inhaled, irritating the human respiratory tract and aggravating pre-existing respiratory disease. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly, can be absorbed into the blood stream and cause damage elsewhere in the body, and can transport absorbed gases, such as chlorides or ammonium, into the lungs and cause injury. Particulates also damage and discolor surfaces on which they settle, and reduce regional visibility.

Particulates in the atmosphere result from natural sources, such as wind erosion and ocean spray, and from human activities. Man-made sources include many types of dust- and fume-producing industrial and agricultural operations; fuel combustion and vehicle travel; grading, excavating, demolition, and blasting from construction; and atmospheric chemical and photochemical reactions. Motor vehicle traffic is the major source of PM_{10}. In urban areas, PM_{10} concentrations generally are higher in winter when more fuel is burned and meteorological conditions favor the concentration of primary air pollutants.

Regional Setting

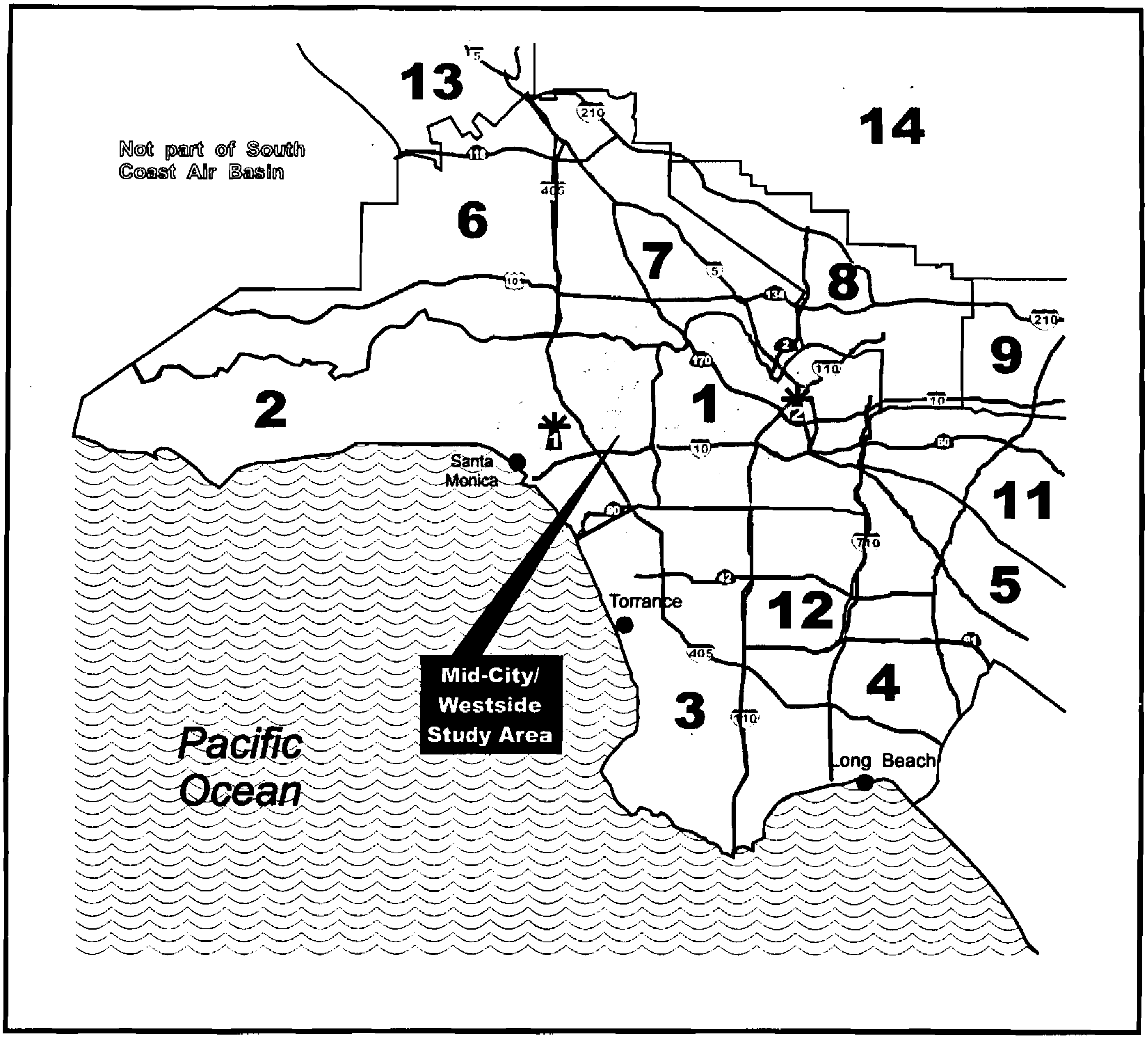
The proposed project or project alternatives are located within the Los Angeles County portion of the SCAB. Ambient pollution concentrations recorded in the Los Angeles County are among the highest in the four counties comprising the Basin. The SCAB is an area of high air pollution potential due to its climate and topography. The Basin experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. In addition, the mountains and hills within the area contribute to the variation of rainfall, temperature, and winds throughout the region. The region experiences frequent temperature inversions-temperature typically decreases with height; however, under inversion conditions, temperature increases as altitude increases and prevents air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and lower layer of the atmosphere, which creates a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward.

In addition, hydrocarbons and nitrogen dioxide react under strong sunlight, creating pollution, commonly referred to as "smog." Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland, toward the mountains.

During the fall and winter, air quality problems are created due to carbon monoxide and nitrogen dioxide emissions. High nitrogen dioxide (NO_2) levels usually occur during autumn or winter, on days with summer-like conditions. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the SCAB are associated with heavy traffic.

Local Setting

The SCAQMD monitors air quality conditions at 37 locations throughout the SCAB. The Mid-City/Westside Transit Corridor is within the Northwest and Central Los Angeles Source Receptor Areas (see Figure 3.8B-3). The West Los Angeles-VA Hospital monitoring station serves the Northwest Los Angeles Source Receptor Area, and the Los Angeles-North Main Street monitoring station serves the Central Los Angeles Source Receptor Area. Data from the West Los Angeles-VA Hospital and Los Angeles-North Main Street monitoring stations were used to characterize existing conditions in the vicinity of the proposed project, and establish a baseline for estimating future conditions both with and without the proposed project. The pollutants SO_2 and PM_{10} are not monitored at the West Los Angeles monitoring station. The Los Angeles monitoring station will be used to characterize these two pollutants. A summary of the data recorded at these stations is presented in Table 3.8B-2.



LEGEND: Mid-City/Westside Study Area

Air Monitoring Areas in Los Angeles County:

West Los Angeles Monitoring Station

Los Angeles Monitoring Station

1. Central Los Angeles
2. Northwest Coastal
3. Southwest Coastal
4. South Coastal
5. Southeast Los Angeles County
6. West San Fernando Valley
7. East San Fernando Valley
8. West San Gabriel Valley
9. East San Gabriel Valley
10. Pomona/Walnut Valley
11. South San Gabriel Valley
12. South Central Los Angeles
13. Santa Clarita Valley
14. Antelope Valley
15. San Gabriel Mountains

APPROX. SCALE

SOURCE: South Coast Air Quality Management District Air Monitoring Areas Map, 1989

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.8B-3

AIR MONITORING AREAS

TABLE 3.8B-2 AIR QUALITY SUMMARY FOR STUDY AREA MONITORING STATIONS, 1997-1999							
		West Los Angeles-VA Hospital			Los Angeles-North Main Street		
Air Pollutant	**Standard Exceedance**	**1997**	**1998**	**1999**	**1997**	**1998**	**1999**
Carbon Monoxide (CO)	Maximum 8-hr concentration (ppm)	4.24	4.46	3.59	7.80	6.18	6.37
	Days > 9.5 ppm (federal 8-hr. standard)	0	0	0	0	0	0
	Days > 9 ppm (state 8-hr standard)	0	0	0	0	0	0
Ozone (O_3)	Maximum 1-hr Concentration (ppm)	0.111	0.127	0.117	0.120	0.148	0.128
	Maximum 8-hr Concentration (ppm)	0.084	0.079	0.074	0.092	0.111	0.108
	Days > 0.12 ppm (federal 1-hr standard)	0	1	0	0	5	1
	Days > 0.08 ppm (federal 8-hr standard)	0	0	0	3	9	2
	Days > 0.09 ppm (state 1-hr standard)	6	7	4	6	17	13
Nitrogen Dioxide (NO_2)	Maximum 1-hr Concentration (ppm)	0.138	0.130	0.133	0.198	0.170	0.212
	Days > 0.09 ppm (state 1-hr standard)	0	0	0	0	0	0
Sulfur Dioxide (SO_2)	Maximum 24-hr Concentration (ppm)	N/A	N/A	N/A	0.011	0.006	0.010
	Days > 0.14 ppm (federal 24-hr standard)				0	0	0
	Days > 0.05 ppm (state 24-hr standard)				0	0	0
Suspended Particulates (PM_{10})	Maximum 24-hr concentration (μg/m^3)	N/A	N/A	N/A	102	80	88
	Calculated > 150 μg/m^3 (federal 24-hr standard)				90	66	0
	Calculated > 50 μg/m^3 (state 24-hr standard)				0	0	114
N/A = pollutant not monitored. ppm = parts per million μg/m^3 = micrograms per cubic meter.							
Source: California Air Quality Data Summaries 1997-1999, California Air Resources Board.							

With the exception of O_3, no pollutants monitored at the West Los Angeles-VA Hospital monitoring station exceed the Federal and State Standards. At the Los Angeles-North Main Street monitoring station, O_3 and PM_{10} exceeded the Federal and State Standards at least once between 1997 and 1999. However, CO, NO_2, and SO_2 did not exceed the Federal or State Standards.

Background Carbon Monoxide Concentrations

Carbon monoxide concentrations are typically used as the sole indicator of conformity with the CAAS because 1) CO levels are directly related to vehicular traffic volumes, the main source of air pollutants, and 2) localized CO concentrations and characteristics can be modeled using USEPA and SCAQMD methods. In other words, the operational air quality impacts associated with a project are generally best reflected through the estimated changes in related CO concentrations. The background, or ambient, CO level is typically defined as the average of the second-highest readings over the last three year period.[2]

A review of the data from the West Los Angeles-VA Hospital monitoring station during the 1997 through 1999 period indicates that the average eight-hour background CO concentration was 3.9 parts per million (ppm). An ambient eight-hour CO concentration based on the data recorded from the Los Angeles-North Main Street monitoring station is 5.7 ppm. Assuming a typical persistence

2 Caltrans: Air Quality Technical Analysis Notes, June 1988.

factor[3] of 0.7, the estimated one-hour background concentration would be 5.6 ppm at the West Los Angeles-VA Hospital monitoring station and 8.1 ppm at the Los Angeles-Main Street monitoring station. The ambient CO concentrations at each station do not exceed the State and Federal standards.

Carbon Monoxide Concentrations at Sensitive Receptor Locations

Some land uses are considered more sensitive to changes in air quality than others, depending on the types of population groups and the activities involved. The CARB has identified the following people as the most likely to be affected by air pollution: children under 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include hospitals, daycare facilities, elder care facilities, elementary schools, and parks. These land uses are located within the corridor area.

There is a direct relationship between traffic/circulation congestion and CO impacts, since exhaust fumes from vehicular traffic is the primary source of CO. Carbon monoxide is a localized gas that dissipates very quickly under normal meteorological conditions. Therefore, CO concentrations decrease substantially as distance from the source (intersection) increases. The highest CO concentrations are typically found along sidewalk locations directly adjacent to congested roadway intersections.

To provide a worst-case simulation of CO concentrations within the area that may be affected by the proposed project or project alternatives, CO concentrations at sidewalks adjacent to the most congested 31 of the 158 study intersections were modeled. The 31 intersections were selected to represent worst-case conditions because these intersections were designated by the project traffic consultant as being significantly impacted by traffic and would have a level of service (LOS) of F in at least one of the project alternatives. At each intersection, traffic related CO contributions were added to the background conditions discussed above. Traffic contributions were estimated using the CAL3QHC dispersion model, which utilizes traffic volume inputs and EMFAC7F emissions factors. Table 3.8B-3 shows existing CO concentrations at the 31 study intersections evaluated.

TABLE 3.8B-3
EXISTING CARBON MONOXIDE (CO) CONCENTRATIONS (PARTS PER MILLION)

Intersection	1-Hour CO Concentration	Exceed State 1-Hour Standard (20 ppm)	8-Hour CO Concentration	Exceed State 8-Hour Standard (9 ppm)
Lincoln/Olympic	18.3	No	12.8	Yes
20th/Colorado	18.2	No	12.7	Yes
San Vicente/Wilshire	20.0	No	14.0	Yes
Sawtelle/405	19.8	No	13.9	Yes
Sawtelle/Pico	19.9	No	13.9	Yes
Sawtelle/National	14.9	No	10.4	Yes
Sawtelle/Palms	15.3	No	10.7	Yes

3 Persistence factor is the ratio between the one-hour and one-hour second annual maximum CO concentrations measured at a continuous air monitoring station. A persistence factor of 0.7 is typically used in urban areas.

TABLE 3.8B-3
EXISTING CARBON MONOXIDE (CO) CONCENTRATIONS (PARTS PER MILLION)

Intersection	1-Hour CO Concentration	Exceed State 1-Hour Standard (20 ppm)	8-Hour CO Concentration	Exceed State 8-Hour Standard (9 ppm)
Sawtelle/Venice	20.7	Yes	14.5	Yes
Sepulveda/Wilshire	20.0	No	14.0	Yes
Sepulveda/Pico	18.3	No	12.8	Yes
Sepulveda/National	20.2	Yes	14.1	Yes
Sepulveda/Palms	16.9	No	11.8	Yes
Sepulveda/Venice	21.4	Yes	15.0	Yes
Veteran/Wilshire	21.3	Yes	14.9	Yes
Westwood/Santa Monica	14.9	No	10.4	Yes
Glendon/Wilshire	25.2	Yes	17.6	Yes
Ave of Stars/Santa Monica	21.2	Yes	14.8	Yes
Santa Monica/Wilshire	23.5	Yes	16.5	Yes
S Santa Monica/Wilshire	15.3	No	10.7	Yes
Beverly/Wilshire	17.5	No	12.3	Yes
Highland/Olympic	15.1	No	10.6	Yes
Washington/Washington	15.1	No	10.6	Yes
Motor/Venice	19.3	No	13.5	Yes
Culver/Main	13.3	No	9.3	Yes
Culver/Venice	21.2	Yes	14.8	Yes
Robertson/Venice	18.4	No	12.9	Yes
National/Venice	19.3	No	13.5	Yes
La Cienega/Jefferson	18	No	12.6	Yes
La Brea/Exposition	13.7	No	9.6	Yes
Arlington/Exposition	16.7	No	11.7	Yes
Figueroa/Adams	15.3	No	10.7	Yes
Girard/Venice	13.7	No	9.6	Yes

Source: Terry A. Hayes Associates, CAL3QHC output, 2000.

As shown in Table 3.8B-3, 8 of the 31 study intersections exceed the State one-hour CO concentration standard of 20 ppm; however, all 31 study intersections currently exceed the State eight-hour CO concentration standard of 9 ppm.

Future Baseline Air Quality

CARB, as part of their planning process to meet the requirements of the National and State Clean Air Acts, estimates future mobile emissions for each air basin within the State. Table 3.8B-4 illustrates the South Coast Air Basin mobile emissions estimate for the years 2000 and 2020. As can be seen, SO_X and PM_{10} emissions are expected to increase by 16 and 22 percent, respectively, as a result of an increase in vehicle miles traveled (VMT), which results in mostly brake and tire-wear. Although vehicle miles traveled within the County is expected to increase by approximately 33 percent, CO, NO_X, and ROG emissions are expected to decrease by 47 to 80 percent due to cleaner vehicle fleet. The cleaner fleet is a result of reduced emissions from new vehicles and removal of older higher emission vehicles over the 20-year period.

TABLE 3.8B-4 CRITERIA POLLUTANT EMISSIONS REDUCTION /A/					
	Year 2000		Year 2020		Percent
Pollutant	**Tons/day**	**Tons/year /b/**	**Tons/day**	**Tons/year /b/**	**Change**
Reactive Organic Gases (ROG)	349.2	109,998	69.8	21,987	-80%
CO	3,162.1	996,061.5	1,296.2	408,303	-59%
NO_X	331.3	104,359.5	174.9	55,093.5	-47%
PM_{10}	8.2	2,583	10.0	3,150	22%
SO_X	2.9	913.5	3.5	1,102.5	21%
Daily VMT (millions)	280.3	88,309.9	373.8	117,740.1	33%

/a/ Emissions are calculated for light duty automobiles and light duty trucks.
/b/ Tons/year is calculated based on a trip factor of 315 days.
/c/ VMT = vehicle miles traveled.
Source: California Air Resources Board, Burden 7G output – South Coast Air Basin, 2000.

As shown in Table 3.8B-4, carbon monoxide accounts for the vast majority of mobile. emissions. The anticipated reduction in CO emissions would have a corresponding effect on ambient air quality levels in the SCAB. Because the CARB mobile emissions estimates take into account both the growth in vehicle miles traveled as well as improved emission rates, the CO reductions can be directly applied to ambient background CO concentrations, consistent with the USEPA guidance, to provide a future year estimate of background CO levels.

As previously indicated, the average one- and eight-hour background CO concentrations were 8.1 and 5.7 ppm, respectively, at the Los Angeles-North Main Street monitoring station.[4] Year 2020 one-hour and eight-hour ambient CO concentrations would be reduced to 3.7 ppm and 2.6 ppm, respectively. This anticipated downward trend in CO concentrations is consistent with a continuing decline in historical CO measurements registered at the Los Angeles-North Main Street monitoring stations (See Table 3.8B-2).

3.8B.3 Impact Assessment and Mitigation Measures

Standards of Significance

The Code of Federal Regulations (CFR) 40 Part 51 establishes conformity measures for the Federal or State Implementation Plan. Under CFR 40 Part 51, should criteria pollutants emitted by the proposed project or project alternatives exceed the amounts listed in Table 3.8B-5 when compared to future no action conditions, a conformity analysis would be required. The conformity criteria only pertains to the operation phase of the proposed project. No conformity criteria are associated with the construction phase.

[4] As discussed earlier, ambient CO concentration at the Los Angeles-North Main Street monitoring station is higher than the ambient CO concentrations at the West Los Angeles-VA Hospital monitoring station. Therefore, the ambient CO concentration for the Los Angeles- North Main Street monitoring station was utilized to calculate year 2020 ambient CO concentrations.

TABLE 3.8B-5 CFR 40 PART 51 – CONFORMITY CRITERIA	
Pollutants	**Tons per Year (increase over no project conditions)**
CO	100
NO_X	10
ROG	10
PM_{10}	70
Source: United States Environmental Protection Agency, CFR 40 Part 51, 2000.	

The proposed project would have a significant impact if criteria pollutant concentrations exceed the amounts listed in Table 3.8B-5 when compared to the No Action Alternative. The proposed project or project alternatives would also result in a significant impact if the proposed project or project alternatives would cause any criteria pollutant concentration to exceed the CAAQS at any sensitive receptor location.

The proposed project or project alternatives do not contain lead, hydrogen sulfide, or sulfate emission sources. Therefore, emissions and concentrations related to these pollutants will not be analyzed in this report.

Methodology for Impact Evaluation

The following calculation methods and estimation models were utilized in ascertaining air quality impacts: the CARB Motor Vehicle Emission Inventory 7G (MVEI7G) emissions model, the Caltrans EMFAC emissions factor model, the USEPA CAL3QHC dispersion model software, and the USEPA Industrial Source Complex-Short Term Model (ISCST3) air dispersion model. In addition, the FTA Office of Planning Section 5309 New Starts Criteria was used to calculate criteria pollutant/precursor emissions for each alternative being considered. This air quality analysis is consistent with procedures described in the SCAQMD CEQA Handbook (1993 edition).

Impacts

No Action Alternative (Baseline)

Regional Emissions. There is a direct relationship between vehicle miles traveled (VMT) and air pollution. In urbanized regions, such as the Los Angeles Metropolitan area, mobile emissions are the primary source of air pollution. Transportation projects that significantly increase or decrease regional VMT will also significantly degrade or improve regional air quality.

Criteria pollutant emissions for the No Action Alternative are shown in Table 3.8B-6. The pollutant emissions for the No Action Alternative will be compared to the TSM Alternative and build alternatives in subsequent sections. The regional VMT was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 3.8B-6 CRITERIA POLLUTANT EMISSIONS FOR NO PROJECT ALTERNATIVE					
Vehicular Class	**Annual VMT (millions)**	**Criteria Pollutant Emissions (tons per year)**			
		CO	**NO_X**	**ROG**	**PM_{10}**
Passenger Vehicle (Light duty Auto/Light duty trucks)	141,667.0	491,907	70,272	26,547	3,123
Bus/CNG	235.5	319	1,545	431	5
Commuter Rail/Diesel	4.9	40	121	1,090	27
Total	141,907.4	492,266	71,938	28,068	3,155
VMT = vehicle miles traveled.					
Source: Terry A. Hayes Associates, 2000.					

CO Hotspot Analysis. Carbon monoxide concentrations at 31 study intersections were calculated using the USEPA CAL3QHC micro scale dispersion model. CO concentrations at each study intersection include future ambient one-hour and eight-hour CO concentration of 3.7 and 2.6 ppm, respectively.

Table 3.8B-7 identifies the one- and eight-hour CO concentrations at the 21 study intersections under the No Action Alternative. As indicated in Table 3.8B-7, future No Action CO concentrations would range from 5.7 to 9.9 ppm for one-hour concentrations and from 4.0 to 6.9 for eight-hour concentrations. CO emitted at the 31 study intersections would not exceed the State one- and eight-hour CO standard of 20 ppm and 9 ppm, respectively. No impacts would occur.

TABLE 3.8B-7 2020 NO PROJECT CARBON MONOXIDE (CO) CONCENTRATIONS (PARTS PER MILLION)				
Intersection	**1-Hour CO Concentration**	**Exceed State 1-Hour Standard (20 ppm)?**	**8-Hour CO Concentration**	**Exceed State 8-Hour Standard (9 ppm)?**
Lincoln/Olympic	7.3	No	5.1	No
20th/Colorado	7.4	No	5.2	No
San Vicente/Wilshire	8.1	No	5.7	No
Sawtelle/405	8.4	No	5.9	No
Sawtelle/Pico	7.9	No	5.5	No
Sawtelle/National	6.6	No	4.6	No
Sawtelle/Palms	6.7	No	4.7	No
Sawtelle/Venice	8.7	No	6.1	No
Sepulveda/Wilshire	8.3	No	5.8	No
Sepulveda/Pico	7.4	No	5.2	No
Sepulveda/National	8.3	No	5.8	No
Sepulveda/Palms	8.0	No	5.6	No
Sepulveda/Venice	8.8	No	6.2	No
Veteran/Wilshire	8.7	No	6.1	No
Westwood/Santa Monica	6.2	No	4.3	No
Glendon/Wilshire	9.9	No	6.9	No
Ave of Stars/Santa Monica	8.6	No	6.0	No
Santa Monica/Wilshire	9.3	No	6.5	No
S Santa Monica/Wilshire	6.7	No	4.7	No
Beverly/Wilshire	8.0	No	5.6	No
Highland/Olympic	6.2	No	4.3	No

TABLE 3.8B-7 2020 NO PROJECT CARBON MONOXIDE (CO) CONCENTRATIONS (PARTS PER MILLION)				
Intersection	**1-Hour CO Concentration**	**Exceed State 1-Hour Standard (20 ppm)?**	**8-Hour CO Concentration**	**Exceed State 8-Hour Standard (9 ppm)?**
Washington/Washington	7.2	No	5.0	No
Motor/Venice	7.8	No	5.5	No
Culver/Main	5.7	No	4.0	No
Culver/Venice	8.9	No	6.2	No
Robertson/Venice	7.9	No	5.5	No
National/Venice	7.7	No	5.4	No
La Cienega/Jefferson	8.4	No	5.9	No
La Brea/Exposition	6.7	No	4.7	No
Arlington/Exposition	6.7	No	4.7	No
Figueroa/Adams	6.8	No	4.8	No
Girard/Venice	6.0	No	4.2	No
Source: Terry A. Hayes Associates, CAL3QHC output, 2000.				

Transportation System Management (TSM) Alternative

Regional Emissions. Criteria pollutant emissions for the TSM Alternative are shown in Table 3.8B-8. The regional VMT for the TSM Alternative was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 3.8B-8 ESTIMATED CHANGE IN CRITERIA POLLUTANT EMISSIONS FOR TSM ALTERNATIVE					
	Annual VMT	**Criteria Pollutant Emissions (tons per year)**			
Vehicular Class	**(millions)**	**CO**	**NO_X**	**ROG**	**PM_{10}**
Passenger Vehicle (Light duty Auto/Light duty trucks)	141,664.5	491,899	70,271	26,547	3,123
Bus/CNG	235.6	320	1,546	431	5
Commuter Rail/Diesel	4.9	41	122	1,095	28
TSM Total	141,905.0	492,260	71,939	28,073	3,156
TSM vs. No Action	-2.8 (-0.002% change)	-6 (-0.001% change)	1 (0.001% change)	5 (0.02% change)	1 (0.03% change)
VMT = vehicle miles traveled.					
Source: Terry A. Hayes Associates, 2000.					

As indicated in Table 3.8B-8, annual VMT is expected to decrease by approximately 2.8 million miles, or 0.002 percent, annually when compared to the No Action Alternative. In addition, CO concentrations are anticipated to decrease by approximately 0.001 percent, when compared to the No Action Alternative. NO_X, ROG and PM_{10} emissions are anticipated to increase by approximately 0.001, 0.02 and 0.03 percent annually. Changes in criteria pollutant emissions are considered less than significant.

CO Hotspot Analysis. Carbon monoxide concentrations at 31 study intersections were calculated using the USEPA CAL3QHC micro scale dispersion model. CO concentrations at each study intersection include future ambient one-hour and eight-hour CO concentration of 3.7 and 2.6 ppm, respectively.

As indicated in Table 3.8B-9, the TSM Alternative would result in CO concentrations ranging between 5.8 to 9.9 ppm for one-hour concentrations and from 4.1 to 6.9 ppm for eight-hour concentrations. CO emitted at the 31 study intersections would not exceed the State one- and eight-hour CO standard of 20 ppm and 9 ppm, respectively. No impacts would occur.

TABLE 3.8B-9
TSM ALTERNATIVE CARBON MONOXIDE (CO) CONCENTRATIONS (PARTS PER MILLION)

Intersection	1-Hour CO Concentration	Exceed State 1-Hour Standard (20 ppm)?	8-Hour CO Concentration	Exceed State 8-Hour Standard (9 ppm)?
Lincoln/Olympic	7.3	No	5.1	No
20th/Colorado	7.4	No	5.2	No
San Vicente/Wilshire	8.0	No	5.6	No
Sawtelle/405	8.4	No	5.9	No
Sawtelle/Pico	8.0	No	5.6	No
Sawtelle/National	6.7	No	4.7	No
Sawtelle/Palms	6.7	No	4.7	No
Sawtelle/Venice	8.8	No	6.2	No
Sepulveda/Wilshire	8.5	No	5.9	No
Sepulveda/Pico	8.7	No	6.1	No
Sepulveda/National	8.3	No	5.8	No
Sepulveda/Palms	8.0	No	5.6	No
Sepulveda/Venice	8.8	No	6.2	No
Veteran/Wilshire	8.7	No	6.1	No
Westwood/Santa Monica	6.3	No	4.4	No
Glendon/Wilshire	9.9	No	6.9	No
Ave of Stars/Santa Monica	8.6	No	6.0	No
Santa Monica/Wilshire	9.2	No	6.4	No
S Santa Monica/Wilshire	6.5	No	4.5	No
Beverly/Wilshire	7.3	No	5.1	No
Highland/Olympic	6.2	No	4.3	No
Washington/Washington	7.4	No	5.2	No
Motor/Venice	7.8	No	5.5	No
Culver/Main	5.8	No	4.1	No
Culver/Venice	8.9	No	6.2	No
Robertson/Venice	8.1	No	5.7	No
National/Venice	7.7	No	5.4	No
La Cienega/Jefferson	8.4	No	5.9	No
La Brea/Exposition	6.7	No	4.7	No
Arlington/Exposition	6.7	No	4.7	No
Figueroa/Adams	6.8	No	4.8	No
Girard/Venice	6.0	No	4.2	No

Source: Terry A. Hayes Associates, CAL3QHC output, 2000.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Regional Emissions. Criteria pollutant emissions for the Wilshire BRT Alternative are shown in Table 3.8B-10. The regional VMT for the Full BRT Alignment was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 3.8B-10 ESTIMATED CHANGE IN CRITERIA POLLUTANT EMISSIONS FOR WILSHIRE BRT					
	Annual VMT	**Criteria Pollutant Emissions (tons per year)**			
Vehicular Class	**(millions)**	**CO**	**NO_X**	**ROG**	**PM_{10}**
Passenger Vehicle (Light duty Auto/Light duty trucks)	141,639.6	491,812	70,259	26,542	3,123
Bus/CNG	237.3	322	1,556	434	5
Commuter Rail/Diesel	4.9	41	122	1,098	28
BRT Total	141,881.8	492,175	71,937	28,074	3,156
BRT vs. No Project	-25.6 (-0.02% change)	-92 (-0.02% change)	-1 (-0.001% change)	7 (0.02% change)	0
BRT vs. TSM	-22.8 (-0.02% change)	-84 (-0.02% change)	-1 (-0.001% change)	2 (0.01% change)	0
VMT = vehicle miles traveled.					
Source: Terry A. Hayes Associates, 2000.					

Annual regional VMT is anticipated to decrease by approximately 0.02 percent annually when compared to the No Action and TSM Alternatives, respectively. Changes in PM_{10} emissions are negligible. CO and No_X emissions are projected to decrease by approximately 0.02 and 0.001 percent, respectively, when compared to both the No Action and TSM Alternatives. However, ROG emissions are projected to increase by approximately 0.02 percent when compared to the No Action Alternative and approximately 0.01 percent when compared to the TSM Alternative. ROG emissions would not increase by over 50 tons per year over No Action conditions. Thus, this alternative complies with CFR 40 Part 51, and a conformity analysis would not be required. Consequently, a beneficial impact is anticipated.

CO Hotspot Analysis. Carbon monoxide concentrations at 31 study intersections were calculated using the USEPA CAL3QHC micro scale dispersion model. CO concentrations at each study intersection include future ambient one-hour and eight-hour CO concentration of 3.7 and 2.6 ppm, respectively.

As indicated in Table 3.8B-11, one-hour CO concentrations at each study intersection would range from 5.7 to 9.4 ppm, and eight-hour CO concentrations would range from4.0 to 6.6 ppm. CO emitted at the 31 study intersections would not exceed the State one- and eight-hour CO standard of 20 ppm and 9 ppm, respectively. Thus, a less than significant impact is anticipated.

TABLE 3.8B-11 WILSHIRE BRT CARBON MONOXIDE (CO) CONCENTRATIONS (PARTS PER MILLION)				
Intersection	**1-Hour CO Concentration**	**Exceed State 1-Hour Standard (20 ppm)?**	**8-Hour CO Concentration**	**Exceed State 8-Hour Standard (9 ppm)?**
Lincoln/Olympic	7.5	No	5.2	No
20th/Colorado	7.4	No	5.2	No
San Vicente/Wilshire	7.9	No	5.5	No
Sawtelle/405	8.4	No	5.9	No
Sawtelle/Pico	8.1	No	5.7	No
Sawtelle/National	6.7	No	4.7	No

TABLE 3.8B-11
WILSHIRE BRT CARBON MONOXIDE (CO) CONCENTRATIONS
(PARTS PER MILLION)

Intersection	1-Hour CO Concentration	Exceed State 1-Hour Standard (20 ppm)?	8-Hour CO Concentration	Exceed State 8-Hour Standard (9 ppm)?
Sawtelle/Palms	6.8	No	4.8	No
Sawtelle/Venice	8.7	No	6.1	No
Sepulveda/Wilshire	7.4	No	5.2	No
Sepulveda/Pico	8.7	No	6.1	No
Sepulveda/National	8.3	No	5.8	No
Sepulveda/Palms	8.0	No	5.6	No
Sepulveda/Venice	8.9	No	6.2	No
Veteran/Wilshire	9.4	No	6.6	No
Westwood/Santa Monica	6.4	No	4.5	No
Glendon/Wilshire	7.0	No	4.9	No
Ave of Stars/Santa Monica	8.6	No	6.0	No
Santa Monica/Wilshire	9.2	No	6.4	No
S Santa Monica/Wilshire	7.0	No	4.9	No
Beverly/Wilshire	6.7	No	4.7	No
Highland/Olympic	6.2	No	4.3	No
Washington/Washington	7.3	No	5.1	No
Motor/Venice	7.8	No	5.5	No
Culver/Main	5.7	No	4.0	No
Culver/Venice	9.1	No	6.4	No
Robertson/Venice	7.9	No	5.5	No
National/Venice	7.6	No	5.3	No
La Cienega/Jefferson	8.4	No	5.9	No
La Brea/Exposition	7.3	No	5.1	No
Arlington/Exposition	6.7	No	4.7	No
Figueroa/Adams	6.8	No	4.8	No
Girard/Venice	6.1	No	4.3	No

Source: Terry A. Hayes Associates, CAL3QHC output, 2000.

CO Emissions from Park-and-Ride Facilities. No park-and-ride facilities will be constructed for the Wilshire BRT since existing facilities would be used. No additional air quality impacts are anticipated.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Regional VMT and carbon monoxide concentrations at study intersections for this option would be similar to that of the Median Reconstruction Design Option since there are no changes to the bus route, or the number of buses traveling along the route, under this option. Thus, a less than significant impact is expected.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Regional VMT and carbon monoxide concentrations at study intersections for this option would be similar to that of the Median Reconstruction Design Option since there are no changes to the bus route, or the number of buses traveling along the route, under this option. Thus, a less than significant impact is expected.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Regional Emissions. Criteria pollutant emissions for the Wilshire BRT and Exposition BRT are shown in Table 3.8B-12. The regional VMT for this alternative was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 3.8B-12
ESTIMATED CHANGE IN CRITERIA POLLUTANT EMISSIONS FOR WILSHIRE BRT AND EXPOSITION BRT

Vehicular Class	Annual VMT (millions)	Criteria Pollutant Emissions (tons per year)			
		CO	NO_X	ROG	PM_{10}
Passenger Vehicle (Light duty Auto/Light duty trucks)	141,623.2	491,756	70,251	26,539	3,122
Bus/CNG	238.3	323	1,563	436	5
Commuter Rail/Diesel	4.9	41	122	1,098	28
BRT Total	141,866.4	492,120	71,936	28,073	3,155
BRT vs. No Action	-41 (0.03% change)	-148 (-0.03% change)	-3 (-0.004% change)	5 (0.02% change)	-1 (-0.03% change)
BRT vs. TSM	-38.2 (0.03% change)	-140 (-0.02% change)	-3 (-0.04% change)	0	-1 (-0.03% change)

VMT = vehicle miles traveled.
Source: Terry A. Hayes Associates, 2000.

Annual regional VMT is anticipated to decrease by approximately 0.03 percent when compared to the No Action and TSM Alternatives. All criteria pollutant emissions, with the exception of ROG, are projected to decrease under the Wilshire BRT and Exposition BRT. Increase in ROG emissions over the TSM Alternative is negligible. ROG emissions are anticipated to increase by approximately 0.02 percent over the No Action Alternative. Under this alternative, ROG emissions would not increase by over 50 tons per year over No Action conditions, and would comply with CFR 40 Part 51. Thus, a conformity analysis would not be required, and a less than significant impact with respect to ROG is anticipated. A beneficial impact would occur with respect to CO, No_x, and PM_{10} regional emissions.

CO Hotspot Analysis. To provide a worst-case scenario, the traffic consultant conducted traffic analysis for each of the three individual routes (Wilshire BRT, Exposition LRT, and Exposition BRT) rather than the combined routes (Wilshire BRT and Exposition LRT, and Wilshire BRT and Exposition BRT). The traffic analysis for the Wilshire BRT and Exposition BRT were used to calculate CO concentrations at the 31 study intersections. The highest CO concentration at each study intersection from either the Wilshire BRT or Exposition BRT was selected to represent CO concentrations for this alternative (see Table 3.8B-13). Because this alternative consists of both the Wilshire BRT and Exposition LRT, CO concentrations is anticipated to be lower at the study intersections.

As indicated previously, carbon monoxide concentrations at 31 study intersections were calculated using the USEPA CAL3QHC micro scale dispersion model. CO concentrations at each study intersection include future ambient one-hour and eight-hour CO concentration of 3.7 and 2.6 ppm, respectively.

TABLE 3.8B-13
WORST CASE CARBON MONOXIDE (CO) CONCENTRATIONS FOR WILSHIRE BRT AND EXPOSITION BRT (PARTS PER MILLION)

Intersection	1-Hour CO Concentration	Exceed State 1-Hour Standard (20 ppm)?	8-Hour CO Concentration	Exceed State 8-Hour Standard (9 ppm)?
Lincoln/Olympic*	7.5	No	5.2	No
20th/Colorado*	7.4	No	5.2	No
San Vicente/Wilshire	8.0	No	5.6	No
Sawtelle/405	8.4	No	5.9	No
Sawtelle/Pico	7.9	No	5.5	No
Sawtelle/National	6.7	No	4.7	No
Sawtelle/Palms	10.0	No	7.0	No
Sawtelle/Venice	8.8	No	6.2	No
Sepulveda/Wilshire	8.5	No	5.9	No
Sepulveda/Pico	8.7	No	6.1	No
Sepulveda/National*	8.3	No	5.8	No
Sepulveda/Palms*	8.0	No	5.6	No
Sepulveda/Venice	8.9	No	6.2	No
Veteran/Wilshire*	9.4	No	6.6	No
Westwood/Santa Monica*	6.4	No	4.5	No
Glendon/Wilshire	9.9	No	6.9	No
Ave of Stars/Santa Monica	8.6	No	6.0	No
Santa Monica/Wilshire	9.2	No	6.4	No
S Santa Monica/Wilshire*	7.0	No	4.9	No
Beverly/Wilshire	6.8	No	4.8	No
Highland/Olympic	6.2	No	4.3	No
Washington/Washington	7.3	No	5.1	No
Motor/Venice	8.1	No	5.7	No
Culver/Main*	5.7	No	4.0	No
Culver/Venice	10.3	No	7.2	No
Robertson/Venice	11.0	No	7.7	No
National/Venice	7.6	No	5.3	No
La Cienega/Jefferson	8.5	No	5.9	No
La Brea/Exposition*	7.3	No	5.1	No
Arlington/Exposition	6.7	No	4.7	No
Figueroa/Adams	6.9	No	4.8	No
Girard/Venice	6.7	No	4.7	No

* Represents CO concentrations for the Wilshire BRT. All others represent CO concentrations for the Exposition BRT.

Source: Terry A. Hayes Associates, CAL3QHC output, 2000.

As indicated in Table 3.8B-13, the Wilshire BRT and Exposition LRT would result in one-hour CO concentrations to range from 5.7 to 11.0 ppm and eight-hour CO concentrations to range from 4.0 to 7.7 ppm. CO emitted at the 31 study intersections would not exceed the State one- and eight-hour CO standard of 20 ppm and 9 ppm, respectively. A less than significant impact is anticipated.

CO Emissions from Park-and-Ride Facilities. Six new park-and-ride facilities would be constructed for the Exposition BRT and Exposition LRT. The USEPA Industrial Source Complex-Short Term Model (ISCST3) air dispersion model was used to estimate CO emissions at each park-and-ride facility. CO concentrations from each facility were calculated based on lot capacity of each park-and-ride facility. The results were added to year 2020 ambient one-hour and eight-hour ambient CO concentration of 3.7 and 2.6 ppm, respectively (see Table 3.8B-14).

TABLE 3.8B-14 CO EMISSIONS FROM PARK-AND-RIDE FACILITIES –EXPOSITION BRT AND EXPOSITION LRT					
		1-Hour CO Concentration		**8-Hour CO Concentration**	
Park-and-Ride Facility	**Capacity**	**CO Concentration (ppm)[1]**	**Exceed State 1-Hour Standard (20 ppm)**	**CO Concentration (ppm)[2]**	**Exceed State 1-Hour Standard (20 ppm)**
Crenshaw/Exposition	400	4.0	No	2.8	No
La Brea/Exposition	41	3.7	No	2.6	No
La Cienega/Jefferson	363	4.0	No	2.8	No
Pico/Sawtelle	585	4.1	No	2.9	No
Bundy/Olympic	372	3.9	No	2.8	No
Cloverfield/Olympic	1,140	4.3	No	3.0	No

[1] CO concentration at each park-and-ride facility is added to the future one-hour ambient CO concentration of 3.7 ppm.
[2] CO concentration at each park-and-ride facility is added to the future one-hour ambient CO concentration of 2.6 ppm.
ppm = parts per million.
Source: Terry A. Hayes Associates, 2000.

As shown in Table 3.8B-14, CO emitted from the park-and-ride facilities is not anticipated to exceed State one- and eight-hour standards. The Cloverfield/Olympic park-and-ride facility would emit the highest one- and eight-hour CO concentrations. The maximum one- and eight-hour CO concentrations at the Cloverfield/Olympic park-and-ride facility are approximately 4.3 and 3.0 ppm, respectively. Because CO is a gas that disperses quickly, concentrations at sensitive receptor locations are expected to be much lower than at the park-and-ride facilities, modeled in this analysis. Thus, no significant increase in carbon monoxide concentrations at sensitive receptor locations is expected, and no significant impacts are anticipated.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Regional Emissions. Criteria pollutant emissions for the Wilshire BRT and Exposition BRT MOS are shown in Table 3.8B-15. The regional VMT for the MOS was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 3.8B-15 ESTIMATED CHANGE IN CRITERIA POLLUTANT EMISSIONS FOR WILSHIRE BRT AND EXPOSITION BRT MOS					
	Annual VMT	**Criteria Pollutant Emissions (tons per year)**			
Vehicular Class	**(millions)**	**CO**	**NO_X**	**ROG**	**PM_{10}**
Passenger Vehicle (Light duty Auto/Light duty trucks)	141,625.6	491,764	70,252	26,540	3,122
Bus/CNG	238.3	323	1,563	436	5
Commuter Rail/Diesel	4.9	41	122	1,095	28
BRT Total	141,868.8	492,128	71,937	28,071	3,155
BRT vs. No Action	-38.6 (-0.03 change)	-139 (-0.03% change)	-1 (-0.001% change)	8 (0.03% change)	-1 (-0.03% change)

TABLE 3.8B-15 ESTIMATED CHANGE IN CRITERIA POLLUTANT EMISSIONS FOR WILSHIRE BRT AND EXPOSITION BRT MOS					
Vehicular Class	**Annual VMT (millions)**	**Criteria Pollutant Emissions (tons per year)**			
		CO	**NO_X**	**ROG**	**PM_{10}**
BRT vs. TSM	-36.2 (-0.03% change)	-131 (-0.03% change)	-1 (-0.001% change)	3 (0.01% change)	-1 (-0.03% change)
VMT = vehicle miles traveled.					
Source: Terry A. Hayes Associates, 2000.					

Annual regional VMT is anticipated to decrease by approximately 0.03 percent annually when compared to the No Action and TSM Alternatives, respectively. CO, PM_{10} and NO_X emissions are projected to decrease by approximately 0.03, 0.001, and 0.03 percent, respectively, when compared to both the No Action and TSM Alternatives. However, ROG emissions are projected to increase by approximately 0.03 percent when compared to the No Action Alternative and approximately 0.01 percent when compared to the TSM Alternative. ROG emissions would not increase by over 50 tons per year when compared to No Action conditions. Thus, this alternative complies with CFR 40 Part 51, and a conformity analysis would not be required. Consequently, a less than significant impact is anticipated.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Regional Emissions. Criteria pollutant emissions for the Wilshire BRT and Exposition LRT are shown in Table 3.8B-16. The regional VMT for this alternative was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 3.8B-16 ESTIMATED CHANGE IN CRITERIA POLLUTANT EMISSIONS FOR WILSHIRE BRT AND EXPOSITION LRT					
Vehicular Class	**Annual VMT (millions)**	**Criteria Pollutant Emissions (tons per year)**			
		CO	**NO_X**	**ROG**	**PM_{10}**
Passenger Vehicle (Light duty Auto/Light duty trucks)	141,606.0	491,696	70,242	26,536	3,122
Bus/CNG	234.8	318	1,540	430	5
Commuter Rail/Diesel	4.9	40	121	1,089	27
BRT Total	141,845.7	492,054	71,903	28,055	3,154
BRT vs. No Action	-61.7 (0.04% change)	-212 (-0.04% change)	-35 (-051% change)	-13 (-0.04% change)	-1 (-0.03% change)
BRT vs. TSM	-58.9 (0.04% change)	-204 (-0.04% change)	-36 (-0.05% change)	-18 (-0.06% change)	-1 (-0.03% change)
VMT = vehicle miles traveled.					
Source: Terry A. Hayes Associates, 2000.					

Annual regional VMT is anticipated to decrease by approximately 0.04 percent when compared to the No Action and TSM Alternative. All pollutant emissions are projected to decrease under the Wilshire BRT and Exposition LRT, thus this alternative would have a beneficial affect on air quality in the region. Additionally, this alternative would comply with CFR 40 Part 51 since criteria pollutant emissions are not anticipated to increase. Thus, a conformity analysis would not be required, and a beneficial impact is anticipated.

CO Hotspot Analysis. To provide a worst-case scenario, the traffic consultant conducted traffic analysis for each of the individual routes (Wilshire BRT, Exposition LRT, and Exposition BRT), rather than the combined routes (Wilshire BRT and Exposition LRT, and Wilshire BRT and Exposition BRT). The traffic analysis for the Wilshire BRT and Exposition LRT, were used to calculate CO concentrations at the 31 study intersections. The highest CO concentration at each study intersection from the Wilshire BRT or Exposition BRT was selected to represent CO concentrations for this alternative (see Table 3.8B-17). Because this alternative consists of both the Wilshire BRT and Exposition LRT, CO concentrations would be lower at the study intersections.

As indicated previously, carbon monoxide concentrations at 31 study intersections were calculated using the USEPA CAL3QHC micro scale dispersion model. CO concentrations at each study intersection include future ambient one-hour and eight-hour CO concentration of 3.7 and 2.6 ppm, respectively.

TABLE 3.8B-17
WORST CASE CARBON MONOXIDE (CO) CONCENTRATIONS FOR WILSHIRE BRT AND EXPOSITION LRT (PARTS PER MILLION)

Intersection	1-Hour CO Concentration	Exceed State 1-Hour Standard (20 ppm)?	8-Hour CO Concentration	Exceed State 8-Hour Standard (9 ppm)?
Lincoln/Olympic*	7.5	No	5.2	No
20th/Colorado*	7.4	No	5.2	No
San Vicente/Wilshire	8.0	No	5.6	No
Sawtelle/405	10.4	No	7.3	No
Sawtelle/Pico*	8.1	No	5.7	No
Sawtelle/National	6.7	No	4.7	No
Sawtelle/Palms*	6.8	No	4.8	No
Sawtelle/Venice	8.8	No	6.2	No
Sepulveda/Wilshire	8.4	No	5.9	No
Sepulveda/Pico	8.7	No	6.1	No
Sepulveda/National	8.3	No	5.8	No
Sepulveda/Palms*	8.0	No	5.6	No
Sepulveda/Venice*	8.9	No	6.2	No
Veteran/Wilshire*	9.4	No	6.6	No
Westwood/Santa Monica*	6.4	No	4.5	No
Glendon/Wilshire	9.9	No	6.9	No
Ave of Stars/Santa Monica	8.6	No	6.0	No
Santa Monica/Wilshire	9.2	No	6.4	No
S Santa Monica/Wilshire*	7.0	No	4.9	No
Beverly/Wilshire	6.8	No	4.8	No
Highland/Olympic	6.2	No	4.3	No
Washington/Washington*	7.3	No	5.1	No
Motor/Venice	8.1	No	5.7	No
Culver/Main	5.7	No	4.0	No
Culver/Venice*	9.1	No	6.4	No
Robertson/Venice	11.1	No	7.8	No
National/Venice	7.6	No	5.3	No
La Cienega/Jefferson	8.4	No	5.9	No
La Brea/Exposition*	7.3	No	5.1	No

TABLE 3.8B-17 WORST CASE CARBON MONOXIDE (CO) CONCENTRATIONS FOR WILSHIRE BRT AND EXPOSITION LRT (PARTS PER MILLION)				
Intersection	**1-Hour CO Concentration**	**Exceed State 1-Hour Standard (20 ppm)?**	**8-Hour CO Concentration**	**Exceed State 8-Hour Standard (9 ppm)?**
Arlington/Exposition	6.7	No	4.7	No
Figueroa/Adams	6.9	No	4.8	No
Girard/Venice	6.7	No	4.7	No
* Represents CO concentrations for the Wilshire BRT. All others represent CO concentrations for the Exposition LRT.				
Source: Terry A. Hayes Associates, CAL3QHC output, 2000.				

As indicated in Table 3.8B-17, the Wilshire BRT and Exposition LRT would result in one-hour CO concentrations to range from 5.7 to 11.1 ppm and eight-hour CO concentrations to range from 4.0 to 7.8 ppm. CO emitted at the 31 study intersections would not exceed the State one- and eight-hour CO standard of 20 ppm and 9 ppm, respectively. A less than significant impact is anticipated.

CO Emissions from Park-and-Ride Facilities. Eight new park-and-ride facilities would be constructed for the Exposition BRT and Exposition LRT. As indicated above, the USEPA Industrial Source Complex-Short Term Model (ISCST3) air dispersion model was used to estimate CO emissions at each park-and-ride facility. CO concentrations from each facility were calculated based on lot capacity of each park-and-ride facility. The results were added to year 2020 ambient one-hour and eight-hour ambient CO concentration of 3.7 and 2.6 ppm, respectively (see Table 3.8B-18).

TABLE 3.8B-18 CO EMISSIONS FROM PARK-AND-RIDE FACILITIES –EXPOSITION BRT AND EXPOSITION LRT					
		1-Hour CO Concentration		**8-Hour CO Concentration**	
Park-and-Ride Facility	**Capacity**	**CO Concentration (ppm)[1]**	**Exceed State 1-Hour Standard (20 ppm)**	**CO Concentration (ppm)[2]**	**Exceed State 1-Hour Standard (20 ppm)**
Crenshaw/Exposition	400	4.0	No	2.8	No
La Brea/Exposition	41	3.7	No	2.6	No
La Cienega/Jefferson	363	4.0	No	2.8	No
Venice/Washington	612	4.1	No	2.8	No
Pico/Sawtelle	565	4.1	No	2.9	No
Bundy/Olympic	372	3.9	No	2.8	No
Cloverfield/Olympic	1,140	4.3	No	3.0	No
Ocean/Broadway	100	3.8	No	2.7	No
[1] CO concentration at each park-and-ride facility is added to the future one-hour ambient CO concentration of 3.7 ppm. [2] CO concentration at each park-and-ride facility is added to the future one-hour ambient CO concentration of 2.6 ppm. ppm = parts per million.					
Source: Terry A. Hayes Associates, 2000.					

As shown in Table 3.8B-18, CO emitted from the park-and-ride facilities is not anticipated to exceed State one- and eight-hour standards. The Cloverfield/Olympic park-and-ride facility would emit the highest one- and eight-hour CO concentrations. The maximum one- and eight-hour CO concentrations at the Cloverfield/Olympic park-and-ride facility are anticipated to be approximately

4.3 and 3.0 ppm, respectively. Because CO is a gas that disperses quickly, concentrations at sensitive receptor locations are expected to be much lower than at the park-and-ride facilities, modeled in this analysis. Thus, no significant increase in carbon monoxide concentrations at sensitive receptor locations is expected and no significant impacts are anticipated.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Regional Emissions. Criteria pollutant emissions for the Wilshire BRT and Exposition LRT MOS are shown in Table 3.8B-19. The regional VMT for the MOS was estimated using the Los Angeles County Metropolitan Transit Authority (LACMTA) transportation model.

TABLE 3.8B-19
ESTIMATED CHANGE IN CRITERIA POLLUTANT EMISSIONS FOR WILSHIRE BRT AND EXPOSITION LRT MOS

Vehicular Class	Annual VMT (millions)	Criteria Pollutant Emissions (tons per year)			
		CO	NO_X	ROG	PM_{10}
Passenger Vehicle (Light duty Auto/Light duty trucks)	141,632.1	491,786	70,255	26,541	3,122
Bus/CNG	234.8	320	1,548	432	5
Commuter Rail/Diesel	4.9	41	122	1,097	28
BRT Total	141,871.8	492,128	71,937	28,071	3,155
BRT vs. No Action	-35.6 (-0.03 change)	-120 (-0.02% change)	-14 (-0.02% change)	1 (0.004% change)	-1 (-0.03% change)
BRT vs. TSM	-33.2 (-0.02% change)	-112 (-0.02% change)	-14 (-0.02% change)	-3 (-0.01% change)	-1 (-0.03% change)

VMT = vehicle miles traveled.

Source: Terry A. Hayes Associates, 2000.

Annual regional VMT is anticipated to decrease by approximately 0.03 percent annually over the No Action Alternative and 0.02 percent over the TSM Alternative. CO and PM_{10} emissions are each projected to decrease by approximately 0.02 percent annually over No Action and TSM Alternatives. Additionally, NO_X emission is projected to decrease by approximately 0.03 percent over No Action and TSM Alternatives. ROG is expected to decrease by approximately 0.01 percent when compared to the TSM Alternative. However, ROG emissions are projected to increase by approximately 0.004 percent over the No Action Alternative. ROG emissions would not increase by over 50 tons per year when compared to No Action conditions. Thus, this alternative complies with CFR 40 Part 51, and a conformity analysis would not be required. Consequently, a less than significant impact is anticipated.

Maintenance Yard

The proposed candidate maintenance yards will be a source of air pollutants, largely due to morning warm-up of a large number of vehicles. The warm-up of approximately 70 to 80 double articulate vehicles is expected to generate emissions of carbon monoxide, nitrogen oxides, reactive organic gas, and particulate matter (PM_{10}).

As discussed below, air quality impacts for the six candidate sites will differ depending on the circumstances at each of the yard sites:

Chavez and Mission. It is anticipated that there would be a negligible increase in emissions from this site due to the existing amount of truck activity associated with the salvage yard and auto uses, as well as because of the extensive number of trucks hauling and dumping spoil and soil on the site. It is possible that the conversion of the site to a bus maintenance facility would represent a net decrease in emissions from the site. In addition, no sensitive receptors are located adjacent to the site. No significant impacts are anticipated.

Alameda and 6th Street. Because this site is an existing MTA bus maintenance facility, the overall net change in emissions would be negligible. The 80 CNG-powered buses would likely represent fewer emissions than the current fleet of diesel and CNG buses maintained at the site. There are no sensitive facilities or residential neighborhoods adjacent to the site, however there are several single room occupant residential hotels several blocks away. The incremental impact on these residences is not expected to be significant.

Washington and Alameda Northeast Corner. This site is currently used as a truck trailer transfer area. Diesel trucks bring trailers to the site on a regular basis. The introduction of a bus maintenance facility at this site would also result in either a negligible amount or represent a reduction in emissions from the site. There are no adjacent sensitive receptors, and no significant impacts are anticipated.

Washington and Alameda Southeast Corner. Because the largest portion of this site is vacant it is expected that there would be a net increase in emissions from the site. There are, however, no adjacent sensitive receptors. The nearest residential areas are located south almost a quarter of a mile south of the site. Given that prevailing wind patterns blow from south to north, it is not expected that pollutants from the site would be transported toward the residential area. No significant impacts are anticipated.

Exposition Right-of-Way (Hooper to Central). This candidate site is largely vacant and the introduction of a bus maintenance facility would add new emission sources to the area. Although surrounding land uses are industrial in nature, sensitive residential uses are located within 1/4 mile of the site. High population density, and the proximity of residences, as well as several parks and recreation centers would suggest that air quality of this yard site would have relatively greater significance than the yard sites situated in industrial areas.

South Park Shops (54th and Avalon). Although an MTA facility is currently located on the site, bus storage capacity and activity on this facility is relatively low. The introduction of a maintenance yard for 80 vehicles would likely represent a substantial change from current conditions. Most importantly, the site is located in a South Central Los Angeles residential neighborhood that is extremely dense. Additionally, an elementary school is located less than 500 feet to the west of the site. Although air pollutant emissions would represent an incremental increase above existing conditions, the proximity of numerous sensitive land uses strongly suggests that the increased emissions would be significant.

Mitigation

Given that air quality operation impacts are less than significant, no mitigation is proposed.

3.8B.4 Cumulative Impacts

The proposed project or project alternatives would contribute to an increase in transit ridership, which would reduce criteria pollutant emissions from passenger vehicles. The proposed project or project alternatives would reduce daily regional emissions, thereby decreasing regional negative air quality impacts overall. Thus, each of the build alternatives would contribute to a beneficial cumulative effect on regional air quality.

The three build alternatives would not violate the State CO standards nor would the three build alternatives cause or exacerbate an existing violation of the State CO concentration. However, CO concentrations at several study intersections for each of the three build alternatives were found to be slightly higher than the No Action Alternative. Although the three build alternatives would add to the quantity of CO being produced in the SCAB on a cumulative basis, this increase would not be significant because each of the three build alternatives would not result in additional violations of the State CO standards.

Conformity Analysis

The Regional Transportation Plan (RTP) is a 20-year transportation plan for six counties within the Southern California region (Ventura, Los Angeles, Orange, San Bernardino, Riverside, and Imperial counties). The RTP provides long-term solutions to the region's transportation needs under a framework that meets mobility, air quality regulations, and other regional goals. It is aimed at significantly reducing emissions and pollution, as well as improving air quality in the region. The RTP is revised every three years by the Southern California Association of Governments (SCAG). The last updated plan was adopted by SCAG in April 1998, and reflects changes in regional demographics, environmental factors, land-use forecasts, technology, and subregional planning. Increased public transportation and reduced vehicle trips are an integral part of the RTP. The proposed project or project alternatives are included in the RTP.

The federal conformity only pertains to operational emissions of criteria pollutants. It is not applicable to construction emissions. As discussed above, the incremental increase of ROG concentrations under each of the build alternatives when compared to the No Action Alternative would not exceed the levels listed in Table 3.8B-5. CO, NO_X, and PM_{10} emissions are anticipated to decrease. The three build alternatives would comply with CFR 40 Part 51. Thus, a conformity analysis would not be required. Additionally, the three build alternatives would not result in criteria pollutant concentrations that would exceed the CAAQS. The three build alternatives conform to the RTP.

3.9 Noise and Vibration

3.9.1 Introduction

This section summarizes the analysis of potential airborne noise and ground-borne vibration impacts from the Mid City/Westside Transit Corridor Project.

The potential sources of noise or vibration impact from this project include:

- *Airborne noise from Bus Rapid Transit (BRT) operations.* The major noise sources on a typical fossil-fueled bus include tire-roadway interaction, which increases with speed, and the engine exhaust, which typically has a high source height for buses used in Los Angeles. Additional bus noise sources include ancillary systems such as engine cooling fans, generally located on the roadway side of the vehicle, and air conditioning systems, typically located near the top or rear of the vehicle.

- *Airborne noise from Light Rail Transit (LRT) train operations.* This is the typical noise from electric-powered transit trains passing through communities. Train operations do not cause airborne noise when operating in subway, except for localized areas near vent shafts and tunnel portals. The primary source of airborne noise is steel wheels rolling on steel rails. This rolling noise increases in direct proportion to increases in train speed, and also increases substantially when impacts occur as train wheels traverse the rail gaps and joints of special trackwork for crossovers and turnouts. In addition, noise from transit vehicle auxiliary equipment, such as the air conditioning and traction motor ventilation systems, will sometimes be significant.

- *Audible warning signal noise.* For light rail systems, the standard procedure at grade crossings is for the bells to ring while the gates are lowered, and for the train operator to sound a warning signal as the train approaches the crossing. For this project, it is assumed that bells at grade crossings will ring for a total of 10 seconds for each train, and that the train operator will sound a chime so that use of the substantially louder train horn will not be required except in emergency situations. As such, the noise effects of audible warning signals near grade crossings will be limited, to homes within about 50 feet of grade crossings in quiet areas. For bus operations, no audible warning systems are anticipated for street crossings, and the bus horn would only be used in emergency situations. Audible warning signal noise will be analyzed during preliminary engineering when more detailed design information is available.

- *Appurtenant facility noise.* Appurtenant facility noise can include noise from electric substations, subway ventilation fans and shafts, vehicle maintenance facilities and park and ride lots. Impacts from these sources are limited to localized areas around specific equipment or activities. Noise impacts from appurtenant facilities have not been evaluated as part of this study since the system design is still at a conceptual stage and specific locations for such facilities are not well defined. Appurtenant facility noise will be analyzed during preliminary engineering.

- *Ground-borne vibration and noise from train operations.* The interaction of steel wheels rolling on rails creates vibration that propagates through the track support system and the intervening ground to nearby buildings. The resulting building vibration is referred to as ground-borne or *structure-borne vibration*. The ground-borne vibration may be perceived by building occupants as the vibration of the floors or the rattling of windows, items on shelves or items hanging on the walls. The vibration may also result in ground-borne noise inside buildings, a low-frequency "rumble" radiated by vibrating room surfaces. .

- Construction noise and vibration. Construction noise and vibration are temporary impacts that do not have any long-term effects on communities. The potential noise and vibration impacts from construction activities are discussed in Section 3.9.5.

3.9.2 Affected Environment

General descriptions of the land use and existing noise sources along the Wilshire and Exposition project routes are given below:

Wilshire Route. Although the land use along Wilshire Boulevard is predominantly commercial, there are a number of noise-sensitive receptors including residences, hotels, schools, places of worship, parks, and museums and theaters. The greatest concentration of residences is in the Westwood area near Beverly Glen Boulevard, where there are numerous high-rise residential buildings; smaller pockets of single-family or multi-family residences are located in West Los Angeles, Beverly Hills and Hancock Park. Overall, the existing noise levels along Wilshire Boulevard are relatively high, due to the heavy volume of traffic on this major arterial road.

Exposition Route. Summary descriptions of the land use and noise environment along the route, from east to west, are as follows:

- The eastern-most segment, running along Figueroa Street for the BRT alternative and along either Hill Street or Flower Street for the LRT alternative, traverses a primarily commercial and industrial area. Noise-sensitive land use is limited to a hospital, a school and a few buildings that include residential units. The noise environment in this area is dominated by local street traffic, Harbor Freeway traffic and commercial activities.

- The route turns west at Exposition Boulevard, passing The University of Southern California (USC) and Exposition Park. West of Vermont Avenue, the route continues along Exposition Boulevard to La Brea Avenue through a predominantly single-family residential area with schools and parks. Between Vermont Avenue and Arlington Avenue, the noise environment is dominated by high volumes of traffic on the lanes of Exposition Boulevard located both north and south of the alignment. West of Arlington Avenue, Exposition Boulevard runs along the north side of the route, and thus noise levels are higher on the north side than on the south side of the route.

- From La Brea Avenue to Venice Boulevard, the route runs along the south side of first Jefferson Boulevard and then National Boulevard, continuing through a predominantly single-family residential area. Traffic on these streets is the dominant noise source in the area, with higher noise levels on the north side of the route.

- Continuing west, the route follows Venice Boulevard from National Boulevard to Sepulveda Boulevard. The land use along this segment is primarily commercial, with some single-family and multi-family residential buildings as well as one church. Existing noise levels are fairly high in this area due to traffic on Venice Boulevard.

- At Sepulveda Boulevard, the route turns north and follows Sepulveda Boulevard to Exposition Boulevard through a mixed commercial and residential area with one school. The residential land use primarily includes large, multi-family buildings, with some single-family units near the north end of this segment where the route passes under the Santa Monica Freeway. Existing noise levels are fairly high in this area due to traffic on Sepulveda Boulevard.

- At Exposition Boulevard, the route turns west again, crossing under the San Diego Freeway and following Exposition Boulevard along the north side of a single-family residential neighborhood of West Los Angeles. Because this section of Exposition Boulevard is lightly traveled, the existing noise levels are relatively low.

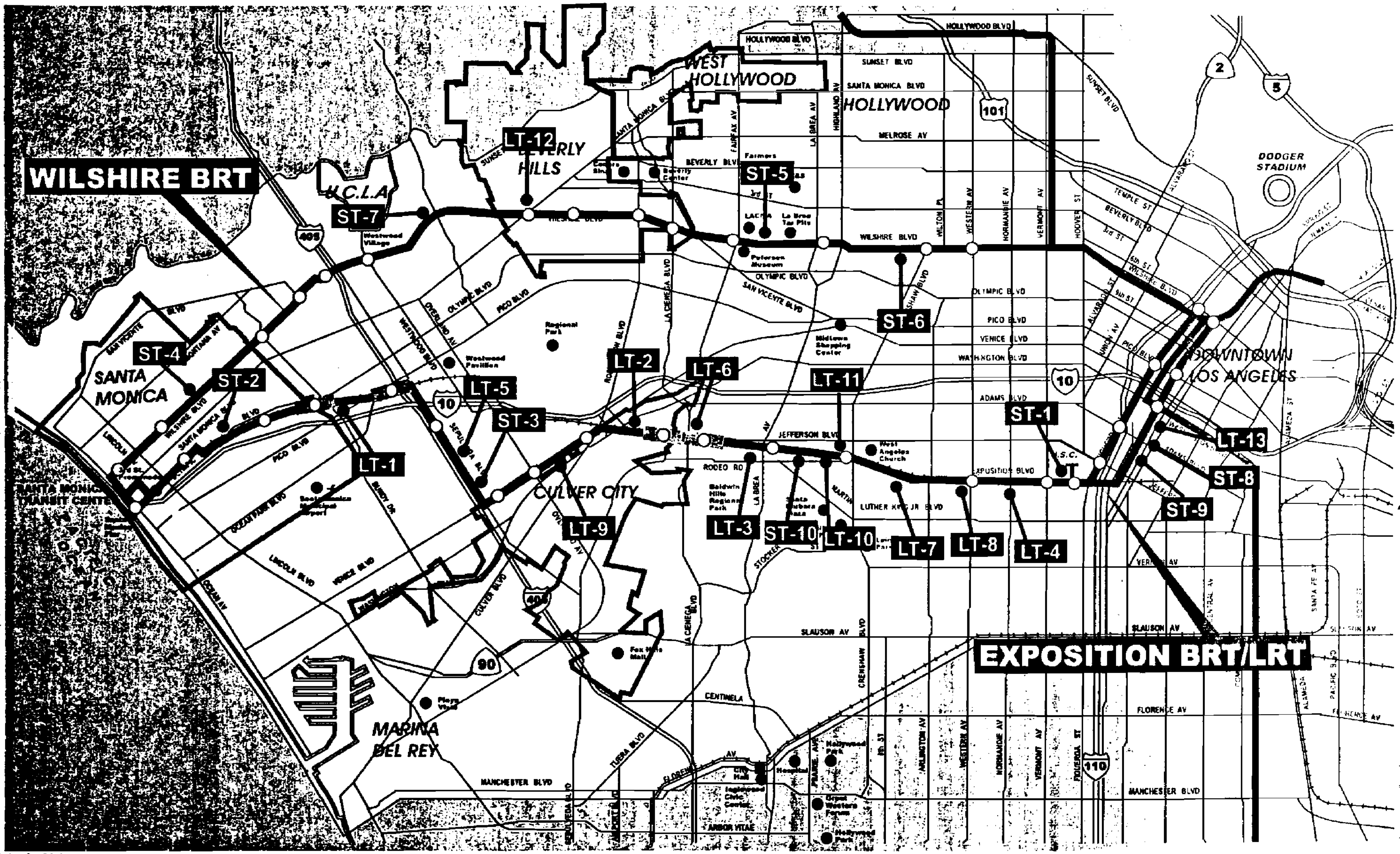
- Crossing into Santa Monica, the route transitions to the western-most segment along and parallel to Olympic Boulevard. Land use in this area is primarily commercial, and noise-sensitive receptors are limited to one park and one school. The existing noise environment in this area is dominated by traffic on Olympic Boulevard.

A noise-monitoring program was performed in July and August 2000 to determine existing levels of noise exposure at noise-sensitive receptors along the routes. Estimating existing noise exposure is an important step in the noise impact assessment since, as discussed below in Section 3.9.3, the thresholds for noise impact are based on the existing levels of noise exposure. Most of the noise monitoring was performed using unattended monitors that were left in place for 24 hours at representative sites to document the variation of noise exposure over a complete day. The 24-hour monitoring was supplemented with short-term noise measurements using a sound level meter. Most of the short-term measurements were made along busy arterial streets, and traffic counts were made at the same time to provide a means of correlating traffic volumes with ambient noise levels.

All of the measurement sites were located in noise-sensitive areas, and were selected to represent the range of existing noise conditions along the routes. Figure 3.9-1 shows the general locations of the monitoring sites.

The noise monitors sample the A-weighted sound level one or more times per second and can be programmed to provide a wide variety of statistics. For this study, the monitors were programmed to collect hourly and daily noise statistics along with information about particularly loud noise events. The daily results are summarized in Table 3.9-1 in terms of the Day-Night Sound Level and the Equivalent Sound Level over the daytime and nighttime hours. The short-term noise survey results are summarized in Table 3.9-2 in terms of 30 to 60-minute equivalent sound levels. These terms are defined below:

- *A-Weighted Sound Level:* To approximate the way the humans respond to sound, a filter circuit with frequency characteristics similar to the human hearing system is built into sound measurement equipment. Measurements with this filter enabled are referred to as *A-weighted sound levels*, expressed in decibels (dBA). Community noise is almost always characterized in terms of A-weighted levels. In relative terms, a noise increase of 3 decibels would be only barely perceptible outside the laboratory, whereas a noise increase of 10 decibels would generally be perceived as an approximate "doubling" of loudness.



LEGEND:

ST = Short Term Site (30 to 60 minutes)

LT = Long Term Site (24 hours)

SOURCE: Hanson, Miller, Miller, Hanson, 2000

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.9-1

NOISE MONITORING SITES

TABLE 3.9-1
LONG-TERM (24-HR) NOISE SURVEY RESULTS

Site No.+	Location (East to West)++	Start		Ldn (dBA)	Leq (dBA)	
		Date	Time		Day*	Night**
WILSHIRE ROUTE						
LT-12	602 Trenton Drive, Beverly Hills			65	61	58
EXPOSITION ROUTE						
LT-13	2400 S. Flower St (Orthopedic Hospital)	08/03/00	15:00	70	66	62
LT-4	1250 Exposition Blvd	07/10/00	16:00	69	67	61
LT-8	1647 Exposition Blvd	07/11/00	18:00	67	67	58
LT-7	2531 Exposition Place***	07/11/00	17:00	58	57	49
LT-11	3719 Exposition Blvd	07/12/00	19:00	65	64	57
LT-10	3500 Muirfield Road	07/12/00	18:00	60	58	52
LT-3	3420 Sycamore Ave	07/10/00	14:00	59	55	53
LT-6	5539 Jefferson Blvd	07/11/00	16:00	68	66	60
LT-2	3437 Caroline Ave, Culver City	07/10/00	13:00	62	60	54
LT-9	10316 Venice Blvd	07/12/00	17:00	73	71	66
LT-5	3251/3261 Sepulveda Blvd	07/11/00	15:00	67	66	58
LT-1	11808 Exposition Blvd, W. Los Angeles	07/10/00	12:00	58	57	49

* Day: 7 am to 10 pm
** Night: 10 pm to 7 am
*** Ldn and Leq values estimated from L33 to exclude non-representative intermittent noise.
\+ Sites are shown on Figure 3.9-1.
\++ Land uses of these survey locations are shown in the impact tables in Section 3.9.3.
Source: Harris Miller Miller & Hanson Inc., 2000

TABLE 3.9-2
SHORT-TERM (30-60 MIN) NOISE SURVEY RESULTS

Site No.+	Location (East to West)++	Start		Leq dBA)
		Date	Time	
WILSHIRE ROUTE				
ST-6	Wilshire United Methodist Church – Wilshire & Plymouth Blvd	07/12/00	12:30	72
ST-5	Rancho La Brea Tar Pits – Page Museum, Wilshire Blvd	07/12/00	11:20	63
ST-7	Westwood United Methodist Church – Wilshire & Warner Ave	07/13/00	10:45	71
ST-4	Douglas Park – Wilshire Blvd & Chelsea Ave, Santa Monica	07/12/00	09:25	70
EXPOSITION CORRIDOR				
ST-8	2400 S. Flower St (Orthopedic Hospital)	07/13/00	15:15	68
ST-9	John Adams Junior High School – Hill Street, 28th – 30th St	07/13/00	16:25	66
ST-1	USC, Marshall School of Business – 701 Exposition Blvd	07/10/00	17:20	63
ST-10	Dorsey High School – South of Exposition Blvd	07/13/00	17:45	56
ST-3	Charnock Road School – Sepulveda Blvd & Charnock Rd	07/11/00	10:55	68
ST-2	Memorial Park – Olympic Blvd & 14th St, Santa Monica	07/11/00	09:45	62

\+ Sites are shown in Figure 3.9-1.
\++ Land uses of these survey locations are shown in the impact tables in Section 3.9.3.
Source: Harris Miller Miller & Hanson Inc., 2000

- *Equivalent Sound Level (Leq)*: Leq is a measure of sound energy over a period of time. It is referred to as the *equivalent sound level* because it is equivalent to the level of a steady sound, which, over a referenced duration and location, has the same A-weighted sound energy as the fluctuating sound. Leq's for periods of one hour, the daytime or nighttime hours, and 24 hours are commonly used in environmental assessments. Because Leq is a measure of the total sound energy, any new community noise source will cause Leq to increase. To estimate how transit operations in the Mid-City/Westside Corridor will increase Leq, it is necessary to know the existing Leq and to add in the sound energy that would be generated by all of the transit operations. The more transit operations and the louder the vehicles, the more sound energy is added to the existing Leq.

- *Day-Night Sound Level (Ldn):* Ldn, also abbreviated DNL, is a 24-hour Leq, but with a 10-decibel penalty added to noise events occurring at night. Nighttime is defined as 10 pm to 7 am. The effect of this penalty is that, in the calculation of Ldn, an event during nighttime hours is equivalent to an event during the daytime hours that is 10 decibels louder, or to 10 events at the same sound level during the daytime hours. This strongly weights Ldn toward nighttime noise, since most people are more easily annoyed by noise during the nighttime hours when both background noise is lower and most people are sleeping. Ldn is often used to characterize community noise when assessing community noise impacts. Almost all urban and suburban neighborhoods are in the range of Ldn 50 to 70. An Ldn of 70 dBA represents a relatively noisy area, which might be found near a freeway or a busy surface street. Residential neighborhoods that are not near major sound sources are usually in the range of Ldn 50 to 60 dBA. If there is a freeway or moderately busy arterial nearby, or any substantial nighttime noise, Ldn is usually in the range of 60 to 65 dBA.

The 24-hour noise monitoring results were generalized to estimate the existing Ldn at all residences and noise-sensitive receptors where people normally sleep, and the short-term measurement results were used to estimate the existing Leq at specific institutional land uses with primarily daytime use. The results serve as a basis for the noise impact assessment described below in Section 3.9.3.

With regard to vibration, the primary existing sources along the routes are trucks and buses. Except for sensitive receptors located very close to rough roads, ground-borne vibration from these sources is generally below the threshold of human perception. As described below in Section 3.9.4, the vibration impact assessment is based on absolute criteria, and does not depend on existing levels of ground-borne vibration.

3.9.3 Noise Impact Assessment and Mitigation Measures

Standards of Significance

Noise impact for this project is based on the criteria as defined in the U. S. Federal Transit Administration (FTA) guidance manual *Transit Noise and Vibration Impact Assessment* (FTA Report DOT-T-95-16, April 1995). The FTA noise impact criteria are founded on well-documented research on community reaction to noise and are based on change in noise exposure using a sliding scale. Although more transit noise is allowed in neighborhoods with high levels of existing noise, smaller increases in total noise exposure are allowed with increasing levels of existing noise.

The FTA Noise Impact Criteria group noise sensitive land uses into the following three categories:

- Category 1: Buildings or parks where quiet is an essential element of their purpose.
- Category 2: Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
- Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches.

Ldn is used to characterize noise exposure for residential areas (Category 2). For other noise sensitive land uses such as parks and school buildings (Categories 1 and 3), the maximum 1-hour Leq during the facility's operating period is used.

There are two levels of impact included in the FTA criteria. The interpretation of these two levels of impact are summarized below:

- Severe: Severe noise impacts are considered "significant" as this term is used in the National Environmental Policy Act (NEPA) and implementing regulations. Noise mitigation will normally be specified for severe impact areas unless there is no practical method of mitigating the noise.
- Impact: Sometimes referred to as moderate impact, in this range of noise impact, other project-specific factors must be considered to determine the magnitude of the impact and the need for mitigation. These other factors can include the predicted increase over existing noise levels, the types and number of noise-sensitive land uses affected, existing outdoor-indoor sound insulation, and the cost effectiveness of mitigating noise to more acceptable levels.

The noise impact criteria are summarized in Table 3.9-3. The first column shows the existing noise exposure and the remaining columns show the additional noise exposure from the transit project that would cause either moderate or severe impact. The future noise exposure would be the combination of the existing noise exposure and the additional noise exposure caused by the transit project.

TABLE 3.9-3
FTA NOISE IMPACT CRITERIA

Existing Noise Exposure Leq or Ldn	Noise Exposure Impact Thresholds, Ldn or Leq, (1) dBA			
	Category 1 or 2 Sites		Category 3 Sites	
	Impact	Severe Impact	Impact	Severe Impact
<43	Amb.+10	Amb.+15	Amb.+15	Amb.+20
43	52	58	57	63
44	52	59	57	64
45	52	59	57	64
46	52	59	57	64
47	52	59	57	64
48	53	59	58	64
49	53	59	58	64
50	53	60	58	65

TABLE 3.9-3
FTA NOISE IMPACT CRITERIA

Existing Noise Exposure Leq or Ldn	Noise Exposure Impact Thresholds, Ldn or Leq, (1) dBA			
	Category 1 or 2 Sites		Category 3 Sites	
	Impact	Severe Impact	Impact	Severe Impact
51	54	60	59	65
52	54	60	59	65
53	54	60	59	65
54	55	61	60	66
55	55	61	60	66
56	56	62	61	67
57	56	62	61	67
58	57	62	62	67
59	57	63	62	68
60	58	63	63	68
61	58	64	63	69
62	59	64	64	69
63	60	65	65	70
64	60	66	65	71
65	61	66	66	71
66	61	67	66	72
67	62	67	67	72
68	63	68	68	73
69	64	69	69	74
70	64	69	69	74
71	65	70	70	75
72	65	71	70	76
73	65	72	70	77
74	65	72	70	77
75	65	73	70	78
76	65	74	70	79
77	65	75	70	80
>77	65	75	70	80

(1) Ldn is used for land uses where nighttime sensitivity is a factor; maximum 1-hour Leq is used for land use involving only daytime activities.

Category Definitions:

Cat 1: Buildings or parks where quiet is an essential element of their purpose.

Cat 2: Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.

Cat 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches.

Source: FTA, 1995.

Methodology for Impact Evaluation

Approach

The approach used to assess the noise impact consists of combining the available data on the project design and planned operational characteristics with models of bus and train noise to project future noise levels. Then, for sensitive receptors, the projections are compared with estimates of existing noise exposure. The steps in the assessment are:

- Determine Study Area Characteristics
- Determine Existing Noise Environment
- Develop Noise Projection Models
- Perform Noise Impact Assessment
- Inventory Impact and Assess Mitigation Options

The final product of the noise assessment is a tabulation of impacts and a list of mitigation measures required to minimize the impacts.

Prediction Model for Bus Noise

The prediction of bus noise is a "worst case" analysis based on source noise measurements of MTA Compressed Natural Gas (CNG) buses on the Ventura Boulevard (Line 750) Metro Rapid bus route, performed in August 2000. The results of the measurements indicated that these buses are louder than the average bus represented by the FHWA Traffic Noise Model (TNM), particularly on the left (exhaust) side of the buses. Actual buses used at the time that the Wilshire or Exposition BRT project is opened for service would most probably generate less noise.

Based on the measurement results, an average reference Sound Exposure Level (SEL) of 81.5 dBA at 50 feet and 24 mph was determined. The SEL is a measure of the sound energy at reference conditions, and is the basis for the prediction of Leq and Ldn. For the purpose of the noise projections, the reference SEL was adjusted for speed, the number of buses per day and the distribution of buses between daytime and nighttime hours. Ldn was calculated based on the bus schedule information summarized in Table 3.9-4. In the calculation of Ldn, buses during the nighttime hours are considered equivalent to ten daytime buses. This reflects the enhanced human sensitivity to noise during the nighttime hours when the noise may disturb sleep or relaxation.

TABLE 3.9-4
BUS SCHEDULES USED FOR NOISE PROJECTIONS

Route	Alternative	Route Segment	Number of Buses	
			Daytime	Nighttime
Wilshire	No Project	Wilshire Boulevard	276	90
	TSM		384	130
	BRT		384	130
Exposition	BRT	7th St/Flower St – Crenshaw Bl	704	220
		Crenshaw Bl – La Cienega Bl	544	164
		La Cienega Bl–Venice/Washington Bl	520	160
		Venice/Washington Bl–Venice/Sepulveda Bl	432	138
		Venice/Sepulveda Bl–Ocean Ave	312	96

Daytime is defined as 7 am to 10 pm; Nighttime is defined as 10 pm to 7 am

Source: Manual Padron & Associates, 2000.

Prediction Model for Train Noise

The train noise prediction model is based on formulas given in the FTA guidance manual, and on measurements of Siemens P2000 light rail vehicles performed by MTA in June 1999 (Los Angeles P2000 Light Rail Vehicle Noise and Vibration Measurement Results," Wilson, Ihrig & Associates, July 1999). The noise projections assume that a two-car consist of 95-ft long light rail vehicles, operating at 40 mph on tangent ballast and tie track, generates a maximum sound level of 75 dBA at 50 feet from the track centerline (over soft ground).

The other components of the noise projections are the schedule (number of trains per day during daytime and nighttime hours), train speed, distance and track configuration. In the calculation of Ldn, trains during the nighttime hours (10 pm to 7 am) are considered equivalent to ten daytime trains. This reflects most people's increased sensitivity to noise at night when it may disturb their sleep or relaxation. The projections assume a total of 224 two-car trains during the daytime and 74 two-car trains during the nighttime. As discussed in Section 3.9.1, noise effects from audible warning signals near grade crossings will be limited, and have not been specifically evaluated for this study.

Comparing the projections for the LRT alternative with the projections for the BRT under similar conditions, it is clear that greater noise exposure is projected for the BRT alternative than for the LRT alternative. This occurs because (1) the buses are noisier than the trains on an individual basis, particularly at lower speeds, and (2) more buses than trains are required for comparable passenger capacity. Significant reductions in bus noise could be incorporated into the project if newly emerging hybrid electric vehicles were to be utilized.

Impacts and Mitigation

No Action Alternative (Baseline)

Under the No Action Alternative, which reflects conditions anticipated for the year 2020 with no major transit improvements, changes in traffic would be limited to normal growth on the existing transit network. As such, noise increases are likely to be less than significant and thus noise impact is not anticipated for the No Action Alternative.

Transportation System Management (TSM) Alternative

Under the TSM Alternative, which includes enhancement of the existing bus system, increased bus traffic and noise are likely to be insignificant relative to the existing traffic conditions on major arterial routes. Thus, noise impact is not anticipated for the TSM Alternative.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Because the land use along Wilshire Boulevard is predominantly commercial, noise impact for the Wilshire BRT alternative was evaluated based on site-specific assessments at the representative noise-sensitive receptors where measurements of existing noise levels were performed. The model of bus noise described above was used to project future bus noise levels, and the FTA criteria were applied to assess the degree of noise impact at these sites.

The results of the noise impact assessment are summarized in Table 3.9-5 for representative noise-sensitive sites with FTA Category 2 and Category 3 land use. These results indicate that no noise impact is projected at these representative locations. Due to the high existing traffic volumes on Wilshire Boulevard, the effect of the added buses is expected to be minimal, with overall noise exposure increases of one decibel or less. Therefore, less than significant noise impacts are anticipated for the Wilshire BRT, and mitigation is not required.

TABLE 3.9-5
SUMMARY OF SITE-SPECIFIC NOISE IMPACT ASSESSMENT FOR THE WILSHIRE BRT

Representative FTA Category 2 Land Use Site								
Site Description	**Dist. (ft)**	**Bus Speed (mph)**	**Exist. Ldn (dBA)**	**Project Ldn (dBA)**			**Future Ldn (dBA)**	**Impact**
				Impact Threshold		**Bus Noise**		
				Impact	**Severe**			
LT-12: S. F. Residence – 602 Trenton Drive, Beverly Hills	140	35	65	61	66	57	66	None
Representative FTA Category 3 Land Use Sites								
Site Description	**Dist. (ft)**	**Bus Speed (mph)**	**Exist. Leq (h) (dBA)**	**Project Leq (h) (dBA)**			**Future Leq (h) (dBA)**	**Impact**
				Impact Threshold		**Bus Noise**		
				Impact	**Severe**			
ST-4: Douglas Park, - Wilshire Blvd & Chelsea Ave, Santa Monica	65	35	70	70	74	60	70	None
ST-5: Rancho La Brea Tar Pits – Page Museum, Wilshire Blvd	110	35	63	65	70	58	64	None
ST-6: Wilshire United Methodist Church – Wilshire & Plymouth Blvd	75	35	72	71	76	59	72	None
ST-7: Westwood United Methodist Church – Wilshire & Warner Ave	120	35	71	71	75	57	71	None
Source: Harris Miller Miller & Hanson Inc., 2000								

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

The median adjacent design option would not result in a substantial change from noise levels estimated for Alternative 1 shown in Table 3.9-5. As a result, no significant impacts are anticipated. Specifically, the Alternative 1 sound level estimate is based on the two-way BRT operations within a center median guideway on Wilshire Boulevard. The bus noise values in Table 3.9-5 would increase by 1 to 2 dB for Alternative 1A, but they would still be well below the impact threshold.

In the case of a 100-foot Wilshire Boulevard cross section with a receiver located 69 feet from the edge of the curb the equivalent lane distance for the BRT guideway is approximately 99 feet. For Alternative 1A where the medians on Wilshire are retained and bus lanes in either direction are constructed outside the median, the equivalent lane distance for the same receiver as Alternative 1 would increase to approximately 104 feet (a 5-foot increase distance). This increase of 5 feet in the equivalent lane distance would result in a less than one decibel decrease in sound level compared to Alternative 1.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

This option would place BRT operations in the curb lane on either side of Wilshire Boulevard. Compared to Alternative 1, one BRT lane of travel would be moved substantially closer to the noise receiver, and the other substantially further away. The equivalent lane distance of the curb lane operation would represent a 5-foot decrease compared to Alternative 1. This decrease would represent less than a one-decibel increase, and would also not represent a substantial change from the noise levels shown in Table 3.9-5. Thus, similar to Alternative 1, no significant impacts are anticipated.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Alternative 2 includes the impacts associated with the Wilshire BRT and the Exposition BRT. The impacts associated with the Wilshire BRT are described above. For the Exposition BRT alternative, the bus noise model and FTA criteria described above were applied to identify noise-sensitive receptors where alternative noise could cause either moderate or severe noise impact. The results of the noise impact assessment are summarized in Table 3.9-6 in terms of the number of moderate and severe noise impacts for single-family and multi-family residential land uses. The results are broken down by area, including representative distances, bus speeds, impact thresholds and bus noise projections.

The results in Table 3.9-6 indicate that without mitigation, 681 residential noise impacts are anticipated for the Exposition BRT, including 597 with moderate impact and 84 with severe impact. Of the moderate impacts, 459 are at single-family residences and 138 are at multi-family buildings; of the severe impacts, 81 are at single-family residences and only 3 are at multi-family buildings. Most of the severe impacts are anticipated to occur along the south side of the Exposition Boulevard between Arlington Avenue and Crenshaw Boulevard, where the backyards of residences directly abut the route.

TABLE 3.9-6
SUMMARY OF RESIDENTIAL NOISE IMPACT ASSESSMENT FOR THE EXPOSITION BRT (ALTERNATIVES 2 AND 2A)

BRT Alignment Segment	Rep. Distance (ft)	Bus Speed (mph)	Exist Ldn (dBA)	Project Ldn (dBA)			Future Ldn (dBA)	Number of Impacts			
				Impact Threshold		Bus Noise		Impact		Severe	
				Impact	Severe			SF	MF	SF	MF
Exposition Blvd, Vermont Ave to Western Ave	58	40	69	64	69	66	71	102	20	0	0
Exposition Blvd, Western Ave to 2nd Ave	74	30	67	62	68	63	69	81	7	0	0
North side of Exposition Blvd, 2nd Ave to 10th Ave	74	50	67	62	68	65	69	3	2	0	0

TABLE 3.9-6
SUMMARY OF RESIDENTIAL NOISE IMPACT ASSESSMENT FOR THE EXPOSITION BRT (ALTERNATIVES 2 AND 2A)

BRT Alignment Segment	Rep. Distance (ft)	Bus Speed (mph)	Exist Ldn (dBA)	Project Ldn (dBA)			Future Ldn (dBA)	Number of Impacts			
				Impact Threshold		Bus Noise		Impact		Severe	
				Impact	Severe			SF	MF	SF	MF
South side of Exposition Blvd, 2nd Ave to 10th Ave	68	50	58	57	62	66	67	21	0	54	0
North side of Exposition Blvd, Crenshaw Blvd to Field Ave	94	50	65	61	66	62	67	49	6	0	0
South side of Exposition Blvd, Crenshaw Blvd to Farmdale Ave	68	50	60	58	63	65	66	24	1	14	1
South side of Jefferson Blvd, La Brea Ave to Cloverdale Ave	78	50	59	57	63	64	65	12	1	5	0
North side of Jefferson Blvd, La Brea Ave to La Cienega Blvd	162	50	68	63	68	59	68	0	0	0	0
South side of Jefferson Blvd, Cloverdale Ave to Carmona Ave	36	50	63	60	65	70	70	5	1	1	2
North side of National Blvd, Fay Ave to Helms Ave	50	30	62	59	64	65	67	11	0	7	0
Subtotal of impacts (for Alternative 2A only):								**308**	**38**	**81**	**3**
Venice Blvd, Canfield Ave to Sepulveda Blvd	76	50	73	65	72	66	74	17	21	0	0
Sepulveda Blvd, Venice Blvd to Exposition Blvd	78	50	67	62	67	64	69	90	61	0	0
South side of Exposition Blvd, I-405 to Wellesley Ave	126	50	58	57	62	58	61	44	18	0	0
Total of impact (for Alternative 2 only):								**459**	**138**	**81**	**3**

SF = single-family residence, MF = multi-family residential building.
Source: Harris Miller Miller & Hanson Inc., 2000

For non-residential, noise-sensitive sites that fall under FTA Land Use Category 3, site-specific noise impact assessments were performed. The results of this analysis are summarized in Table 3.9-7 for each of the short-term measurement sites along the Exposition route. The results indicate impact at only one site, namely Dorsey High School, located south of the route between Crenshaw Boulevard and La Brea Avenue. However, it should be noted that this impact is limited to the classroom buildings that are closest to the route at the rear of the school grounds.

TABLE 3.9-7
SUMMARY OF NON-RESIDENTIAL NOISE IMPACT ASSESSMENT FOR THE EXPOSITION BRT (ALTERNATIVES 2 AND 2A)

Site Description	Distance (ft)	Bus Speed (mph)	Exist Leq (h) (dBA)	Project Leq (h) (dBA)			Future Leq (h)(dBA)	Impact
				Impact Threshold		Bus Noise		
				Impact	Severe			
ST-8: 2400 S. Flower St. (Orthopedic Hospital)	44	30	68	68	73	64	69	None
ST-9: John Adams Junior High School – Hill Street, 28th-30th St	50	30	66	68	72	63	68	None
ST-1: USC, Marshall School of Business – 701 Exposition Blvd	100	30	63	65	70	57	64	None
ST-10: Dorsey High School – South of Exposition Blvd	62	50	56	61	67	61	62	Impact
The four sites above apply to both Alternatives 2 and 2A.								
ST-3: Charnock Road School - Sepulveda Blvd & Charnock Rd	66	50	68	68	73	61	69	None
ST-2: Memorial Park – Olympic Blvd & 14th St, Santa Monica	38	35	62	64	69	61	65	None
The two sites above apply only to Alternative 2.								
Source: Harris Miller Miller & Hanson Inc., 2000								

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Alternative 2A includes the impacts associated with the Wilshire BRT and the Exposition BRT MOS. The impacts associated with the Wilshire BRT are described above. For the Exposition BRT MOS, the impacts are similar, but not as extensive, as those described above for the Exposition BRT alternative. The results in Table 3.9-6 indicate that without mitigation, 430 residential noise impacts are anticipated for the Exposition BRT MOS, including 346 with moderate impact and 84 with severe impact. Of the moderate impacts, 308 are at single-family residences and 38 are at multi-family buildings; of the severe impacts, 81 are at single-family residences and only 3 are at multi-family buildings. Most of the severe impacts are anticipated to occur along the south side of the Exposition Boulevard between Arlington Avenue and Crenshaw Boulevard, where the backyards of residences directly abut the route.

For non-residential, noise-sensitive sites that fall under FTA Land Use Category 3, site-specific noise impact assessments were performed. The results of this analysis are summarized in Table 3.9-7 for each of the short-term measurement sites along the Exposition route. The results indicate impact at only one site, namely Dorsey High School, located south of the route between Crenshaw Boulevard and La Brea Avenue. However, it should be noted that this impact is limited to the classroom buildings that are closest to the route at the rear of the school grounds.

Mitigation

Potentially significant impact could be mitigated with application of the following mitigation options:

- *Mitigation Measure 3.9-1.* Potential noise mitigation approaches for the Exposition BRT (Alternatives 2 and 2A) include the following source, path and receiver options:

    - Quieter Vehicles: Whenever practical, noise control at the source is the most desirable approach. In this case, it would be possible to include noise limits in the vehicle specifications that would require the bus supplier to minimize vehicle noise emissions. The present noise assessment was based on measurements of existing MTA Metro Rapid CNG buses, which were found to generate about 3 dBA more sound energy than the national average for buses. Thus, it would be reasonable to specify noise limits that are at least 3 dBA lower than for these existing buses; greater reductions will likely be feasible in the future when new technology buses become available. Although such limits could add to the vehicle cost, this approach would provide system-wide noise benefit and reduce the need for the path and receiver mitigation measures described below.

    - Sound Barriers: In many cases, noise impacts can be reduced or eliminated by blocking the sound path between the source and receiver by using sound walls and/or berms located along the sides of the alignment. Such barriers are most effective when located close to either the source (bus) or the noise-sensitive receiver. To be effective, sound barriers must also break the direct line of sight from the source to the receiver, have a minimum surface density of 4 lb/sq. ft, and have no holes, drainage gaps or access openings that act as "sound leaks." Barriers can be walls composed of masonry blocks, pre-cast concrete, wood, or metal, depending on aesthetic and cost factors. Where space permits, a barrier may also consist of a wall on top of an earth berm to reduce the amount of wall required. However, due to the height of some of the major bus noise sources (e.g. the exhaust and air-conditioning), the total sound barrier height would need to be on the order of 12 feet to provide a significant noise reduction (in the range of 5 to 10 dBA). The actual noise reduction will depend on the specific site geometry.

    - Sound Insulation: Although noise control at the receiver is typically the least desirable approach, improving the exterior-to-interior sound insulation of buildings is an option that may be applied in areas where other alternatives for noise mitigation are either impractical or not cost effective. This usually requires replacing or improving windows, weather stripping doors, and installing central air-conditioning systems. Central air-conditioning is needed because opening windows or using wall units for ventilation short-circuits the sound insulation improvements.

The results of the noise impact assessment indicate that a noise reduction of 11-12 dBA would be required to eliminate all severe significant noise impacts from the Exposition BRT (Alternatives 2 and 2A). This amount of noise reduction could be achieved with a combination of the above source and path mitigation options, assuming that (1) noise limits are included in the vehicle specification requiring the buses to be 3 dBA quieter than the current MTA Metro Rapid buses and (2) sound barriers are constructed at the locations specified in Table 3.9-8. As shown in this table, a total of 21,750 lineal feet (4.1 miles) of 12-ft high sound wall would be required, at an estimated cost of $5.2 million. Table 3.9-8 shows that this mitigation approach will also eliminate most of the moderate impacts, with residual impacts limited to 22 single-family residences and one multi-family building. To eliminate all noise impacts, building sound insulation would be required at these locations. During preliminary engineering, pre-construction surveys will be carried out to identify site-specific sound insulation measures for properties with residual severe noise impacts that cannot be mitigated by vehicle noise control or construction of sound barriers.

TABLE 3.9-8
SUMMARY OF MITIGATION REQUIRED TO ELIMINATE ALL SEVERE IMPACTS FOR THE EXPOSITION BRT (ALTERNATIVES 2 AND 2A)

Location	Sound Barrier Wall Description			Approx.	Residual Impacts	
	Side	Civil Stations	Length (ft)	Cost	Impact	Severe
Catalina St to Budlong Ave	S	216+50 to 219+50	300	$72,000	0	0
Budlong Ave to Normandie Ave	S	221+00 to 233+00	1200	$288,000	0	0
Normandie Ave to Denker Ave	S	234+ 00 to 246+50	1250	$300,000	0	0
Denker Ave to La Salle Ave	S	247+50 to 250+00	250	$60,000	0	0
Cimmaron St. to Arlington Ave	N	280+00 to 287+00	700	$168,000	0	0
Arlington Ave to 2nd Ave	N	287+50 to 290+50	300	$72,000	0	0
2nd Ave to 3rd Ave	N	291+50 to 294+50	300	$72,000	0	0
2nd Ave to 3rd Ave	S	291+50 to 294+50	300	$72,000	1 SF	0
3rd Ave to 4th Ave	N	295+00 to 298+00	300	$72,000	0	0
3rd Ave to 4th Ave	S	295+00 to 298+01	300	$72,000	4 SF	0
4th Ave to 5th Ave	N	299+00 to 302+50	350	$84,000	0	0
4th Ave to 7th Ave	S	299+00 to 309+00	1000	$240,000	9 SF	0
6th Ave to 7th Ave	N	305+00 to 309+00	400	$96,000	0	0
7th Ave to 9th Ave	S	309+50 to 316+00	650	$156,000	7 SF	0
9th Ave to 10th Ave	N	316+00 to 321+00	500	$120,000	0	0
Crenshaw Blvd to Muirfield Rd	S	342+00 to 363+00	2100	$504,000	0	0
West Blvd	N	360+00 to 363+50	350	$84,000	0	0
Muirfield Rd to Vineyard Ave	S	364+00 to 382+50	1850	$444,000	0	0
Chesapeake Ave to Farmdale Ave	N	372+00 to 375+00	350	$84,000	0	0
Farmdale Ave to Field Ave	N	375+50 to 379+50	400	$96,000	0	0
La Brea Ave to Jefferson Blvd	S	403+50 to 428+00	2450	$588,000	0	0
Hauser Blvd	S	432+00 to 436+50	450	$108,000	1 SF, 1 MF	0
Fay Ave to Helms Ave	N	474+00 to 490+50	1650	$396,000	0	0
Subtotal for Alternative 2A only:			**17700**	**$4,248,000**	**22 SF, 1MF**	**0**
Charnock Rd	S	621+50 to 625+00	350	$84,000	0	0
Palms Blvd	N	340+00 to 347+00	700	$168,000	0	0

TABLE 3.9-8
SUMMARY OF MITIGATION REQUIRED TO ELIMINATE ALL SEVERE IMPACTS FOR THE EXPOSITION BRT (ALTERNATIVES 2 AND 2A)

Location	Sound Barrier Wall Description			Approx.	Residual Impacts	
	Side	Civil Stations	Length (ft)	Cost	Impact	Severe
National Blvd	S	675+00 to 684+00	900	$216,000	0	0
National Blvd	N	681+50 to 684+00	250	$60,000	0	0
I-10 to Richland Ave	N	687+00 to 693+50	650	$156,000	0	0
Richland Ave	N	694+00 to 697+00	300	$720,00	0	0
Sepulveda/Exposition	N	701+00 to 704+00	300	$720,00	0	0
Federal Ave to Barry Ave	S	733+50 to 739+50	600	$144,000	0	0
Total for Alternative 2 only:			**21750**	**$5,220,000**	**22 SF, 1 MF**	**0**

1. Mitigation includes a 3-dBA vehicle noise reduction, plus 12-ft high sound barriers at $20/sq. ft at the locations indicated.
2 SF = single-family residence, MF = multi-family residential building.

Source: Harris Miller Miller & Hanson Inc., 2000

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Alternative 3 includes the impacts associated with the Wilshire BRT and the Exposition LRT. The impacts associated with the Wilshire BRT are described above. For the Exposition LRT, the FTA train noise model and criteria described above were applied to identify noise-sensitive receptors where project noise could cause either moderate or severe noise impact. The results of the noise impact assessment are summarized in Table 3.9-9 in terms of the number of moderate and severe noise impacts at single-family and multi-family residences. The results are broken down by area, including representative distances, train speeds, impact thresholds and train noise projections.

The results in Table 3.9-9 indicate that without mitigation, 135 residential noise impacts are anticipated for the Exposition LRT, including 108 with moderate impact and 27 with severe impact. Of the moderate impacts, 97 are at single-family residences and 11 are at multi-family buildings; of the severe impacts, 25 are at single-family residences and only 2 are at multi-family buildings. Most of the severe impacts are projected to occur along the south side of the Exposition Boulevard between Arlington Avenue and Crenshaw Boulevard, where the backyards of residences directly abut the alignment.

TABLE 3.9-9
SUMMARY OF NOISE IMPACT ASSESSMENT FOR THE EXPOSITION LRT (ALTERNATIVES 3 AND 3A)

LRT Alignment Segment	Rep. Distance (ft)	Train Speed (mph)	Exist Ldn (dBA)	Project Ldn (dBA)			Future Ldn (dBA)	Number Impacts			
				Impact Threshold		Train Noise		Impact		Severe	
				Impact	Severe			SF	MF	SF	MF
Flower St, Washington Blvd To Exposition Blvd	20	35	70	64	69	65	71	0	2	0	0
Hill St, Washington Blvd To Exposition Blvd	50	35	70	64	69	60	70	0	0	0	0
Exposition Blvd, Vermont Ave to Western Ave	158	35	69	64	69	47	69	0	0	0	0

TABLE 3.9-9
SUMMARY OF NOISE IMPACT ASSESSMENT FOR THE EXPOSITION LRT (ALTERNATIVES 3 AND 3A)

LRT Alignment Segment	Rep. Distance (ft)	Train Speed (mph)	Exist Ldn (dBA)	Project Ldn (dBA)			Future Ldn (dBA)	Number Impacts			
				Impact Threshold		Train Noise		Impact		Severe	
				Impact	Severe			SF	MF	SF	MF
Exposition Blvd, Western Ave to 2nd Ave	100	55	67	62	68	59	68	0	0	0	0
North side of Exposition Blvd, 2nd Ave to 10th Ave	68	55	67	62	68	61	68	0	0	0	0
South side of Exposition Blvd, 2nd Ave to 10th Ave	32	55	58	57	62	66	67	40	0	23	0
North side of Exposition Blvd, Crenshaw Blvd to Field Ave	68	55	65	61	66	61	67	0	2	0	0
South side of Exposition Blvd, Crenshaw Blvd to Farmdale Ave	62	55	60	58	63	62	64	20	2	0	0
South side of Jefferson Blvd, La Brea Ave to Cloverdale Ave	76	55	59	57	63	61	63	5	0	0	0
North side of Jefferson Blvd, La Brea Ave to La Cienega	188	30	68	63	68	54	68	0	0	0	0
South side of Jefferson Blvd, Cloverdale Ave to Carmona Ave	26	55	63	60	65	67	69	5	0	1	2
North side of National Blvd, Fay Ave to Helms Ave	36	55	62	59	64	66	67	15	0	1	0
Subtotal of impacts (for Alternative 3A only):								**85**	**6**	**25**	**2**
Venice Blvd, Canfield Ave to Sepulveda Blvd	66	35	73	65	72	59	73	0	0	0	0
Sepulveda Blvd, Venice Blvd to Exposition Blvd	64	35	67	62	67	59	68	0	0	0	0
South side of Exposition Blvd, I-405 to Wellesley Ave	150	55	58	57	62	60	62	12	7	0	0
Total of impact (for Alternative 3 only):								**97**	**11**	**25**	**2**

SF = single-family residence, MF = multi-family residential building.

Source: Harris Miller Miller & Hanson Inc., 2000

For non-residential, noise-sensitive sites that fall under FTA Land Use Category 3, site-specific noise impact assessments were performed. The results of this analysis are summarized in Table 3.9-10 for each of the short-term measurement sites along the Exposition Corridor. The results indicate that no noise impacts from LRT operations are projected at any of these non-residential sites.

TABLE 3.9-10
SUMMARY OF NON-RESIDENTIAL NOISE IMPACT FOR THE EXPOSITION LRT (ALTERNATIVES 3 AND 3A)

Site Description	Distance (ft)	Train Speed (mph)	Exist Leq(h) (dBA)	Project Leq(h) (dBA)			Future Leq(h) (dBA)	Impact
				Impact Threshold		Train		
				Impact	Severe	Noise		
ST-8: 2400 S. Flower St. (Orthopedic Hospital)	44	35	68	68	73	60	68	None
ST-9: John Adams Junior High School - Hill Street, 28th-30th St	50	35	66	68	72	59	66	None
ST-1: USC, Marshall School of Business – 701 Exposition Blvd	100	30	63	65	70	49	63	None
ST-10: Dorsey High School - South of Exposition Blvd	62	50	56	61	67	58	59	None
The four sites above apply to both Alternatives 3 and 3A.								
ST-3: Charnock Road School - Sepulveda Blvd & Charnock Rd	66	55	68	68	73	59	68	None
ST-2: Memorial Park – Olympic Blvd & 14th St, Santa Monica	38	35	62	64	69	58	63	None
The two sites above apply to Alternative 3 only.								
Source: Hanson Miller Miller Hanson Inc., 2000								

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Alternative 3A includes the impacts associated with the Wilshire BRT and the Exposition LRT MOS. The impacts associated with the Wilshire BRT are described above. For the Exposition LRT MOS, the results in Table 3.9-9 indicate that without mitigation, 118 residential noise impacts are anticipated for the Exposition LRT MOS, including 91 with moderate impact and 27 with severe impact. Of the moderate impacts, 85 are at single-family residences and 6 are at multi-family buildings; of the severe impacts, 25 are at single-family residences and only 2 are at multi-family buildings. Most of the severe impacts are anticipated to occur along the south side of the Exposition Boulevard between Arlington Avenue and Crenshaw Boulevard, where the backyards of residences directly abut the route.

For non-residential, noise-sensitive sites that fall under FTA Land Use Category 3, site-specific noise impact assessments were performed. The results of this analysis are summarized in Table 3.9-10 for each of the short-term measurement sites along the Exposition route. The results indicate that no noise impacts from LRT operations are projected at any of these non-residential sites.

Mitigation

- *Mitigation Measure 3.9-2.* Potential noise mitigation approaches for the Exposition LRT (Alternatives 3 and 3A) include the following source, path and receiver options:

  - Improved Wheel and Rail Maintenance: The noise projections assume ongoing programs of wheel and rail maintenance that will keep wheel and rail surfaces in good condition. Although it is possible that modified maintenance procedures could further reduce noise emissions, the effectiveness of any proposed maintenance procedure would need to be demonstrated before it could be considered as a mitigation option.

  - Sound Barriers: In many cases, noise impacts can be reduced or eliminated by blocking the sound path between the source and receiver by using sound walls adjacent to at-grade track sections or located along the outer edges of aerial structures. To be effective, sound barriers must also break the direct line of sight from the source to the receiver, have a minimum surface density of 4 lb/sq. ft, and have no holes, drainage gaps or access openings that act as "sound leaks." Barriers can be walls composed of masonry blocks, pre-cast concrete, wood, or metal, depending on structural, aesthetic and cost factors. Where space permits, a barrier may also consist of a wall on top of an earth berm to reduce the amount of wall required. To provide a significant noise reduction (in the range of 5 to 10 dBA), barriers usually must be about 4 feet high on aerial structure and 8 feet high for at-grade track; the actual noise reduction will depend on the specific site geometry.

  - Sound Insulation: Although noise control at the receiver is typically the least desirable approach, improving the exterior-to-interior sound insulation of buildings is an option that may be applied in areas where other alternatives for noise mitigation are either impractical or not cost effective. This usually requires replacing or improving windows, weather stripping doors, and installing central air-conditioning systems. Central air-conditioning is needed because opening windows or using wall units for ventilation short-circuits the sound insulation improvements.

The results of the noise impact assessment indicate that a noise reduction of 6 dBA would be required to eliminate all severe impacts from the Exposition LRT (Alternatives 3 and 3A). This amount of noise reduction could be easily achieved by constructing 4-ft to 8-ft high sound barrier walls at the locations specified in Table 3.9-11. As shown in this table, a total of 12,750 lineal feet (2.4 miles) of 4-ft to 8-ft high sound wall would be required, at an estimated cost of $2.0 million. Table 3.9-11 shows that this mitigation approach will also eliminate most of the moderate impacts, with residual impacts at only 15 single-family residences. To eliminate all noise impacts, building sound insulation or higher sound walls would be required at these locations. During preliminary engineering, pre-construction surveys will be carried out to identify site-specific sound insulation measures for properties with residual severe noise impacts that cannot be mitigated by vehicle noise control or construction of sound barriers.

TABLE 3.9-11
SUMMARY OF MITIGATION REQUIRED TO ELIMINATE SEVERE IMPACTS FOR THE EXPOSITION LRT (ALTERNATIVES 3 AND 3A)

Location	Sound Barrier Wall Description				Residual Impacts	
	Side	Civil Stations	Length (feet)	Approx. Cost	Impact	Severe
Flower St, 29th St. to 30th St	N	101+00 to 104+50	350	$56,000	0	0
2nd Ave to 3rd Ave	S	291+50 to 294+50	300	$48,000	1 SF	0
3rd Ave to 4thAve	S	295+00 to 298+01	300	$48,000	4 SF	0
4th Ave to 7th Ave	S	299+00 to 309+00	1000	$160,000	8 SF	0
7th Ave to 9th Ave	S	309+50 to 316+00	650	$104,000	1 SF	0
Crenshaw Blvd to Muirfield Rd	S	342+00 to 363+00	2100	$336,000	0	0
Muirfield Rd to Farmdale Ave	S	364+00 to 375+00	1850	$296,000	0	0
Farmdale Ave to Field Ave	N	375+50 to 379+50	400	$64,000	0	0
Alsace Ave to Dunsmuir Ave	S	411+00 to 428+00	1700	$272,000	0	0
Hauser Blvd to Carmona Ave	S	432+00 to 436+00	400	$64,000	1 SF	0
Fay Ave to Helms Ave	N	474+00 to 490+50	1650	$264,000	0	0
Subtotal for Alternative 3A only:			**10700**	**$1,712,000**	**15 SF**	**0**
Sawtelle Blvd	S	714+00 to 718+00	Aerial: 400	$32,000	0	0
Purdue Ave to Gateway Blvd	S	722+00 to 726+00	Aerial: 400	$32,000	0	0
Federal Ave to Barry Ave	S	733+50 to 739+50	600	$96,000	0	0
Granville Ave to Bundy Dr	S	749+00 to 759+00	1000	$160,000	0	0
Total for Alternative 3 only:			**12750**	**$1,976,000**	**15 SF**	**0**

1. Mitigation includes 8-ft high sound barriers at grade and 4 ft. high sound barriers on aerial structures, at a cost of $20/sq. ft at the locations indicated.
2. SF = single-family residence, MF = multi-family residential building.

Source: Harris Miller Miller & Hanson Inc., 2000

Maintenance Yards

As discussed in Section 2, the maintenance yards needed for the BRT operations would accommodate approximately 80 vehicles. Using the FTA General Transit Noise Assessment Methodology (DTIUM60-92-C-41008), the greatest hour of activity (presumably in the early morning hours when buses are leaving the yard to be deployed prior to the rush hour) would result in an Leq of approximately 69 decibels within 50 feet of the facility, and at 300 feet from the yard the Leq would fall off to approximately to 50 decibels.

For candidate yards located in industrial and/or commercial areas (Chavez and Mission, Alameda and 6th, Washington and Alameda Northeast, and Washington and Alameda Southeast the expected noise levels would not affect sensitive land uses and no significant impacts would be anticipated. However, noise levels from the two yard sites near residential areas (Exposition Right-of-Way and South Park Shops) would exceed FTA criteria, particularly in the early morning hours when the ambient noise in these residential areas is typically 50 to 55 decibels. At both yard locations, residential land uses are within 100 feet of the yard site, and significant impact would therefore be anticipated. Measures to mitigate such impact will be developed during preliminary engineering if either of the latter sites is selected.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

With the exception of the use of heavy excavating equipment during the period of construction, no long-term noise impacts affecting either the University of Southern California or Exposition Park/Museums are anticipated from BRT or LRT operations within a subway tunnel between Figueroa and Vermont.

3.9.4 Vibration Impact Assessment and Mitigation Measures

Standards of Significance

Although there has been relatively little research into human response to building vibration, there is considerable experience with ground-borne vibration from rail systems and other common vibration sources. Some conclusions are:

- Ground-borne vibration from transit trains should be characterized in terms of the RMS vibration velocity amplitude, with a one-second time constant. This is in contrast to vibration from blasting and other construction activities that have the potential to cause building damage. For building damage criteria, ground-borne vibration is almost always expressed in terms of the peak particle velocity (PPV).
- The threshold of vibration perception for most humans is around 65 VdB, levels in the 70 to 75 VdB range are often noticeable but acceptable, and levels in excess of 80 VdB are often considered unacceptable.
- For urban transit systems with 10-20 trains per hour over a day, limits for acceptable levels of residential ground-borne vibration are usually between 70 and 75 VdB.
- For human annoyance, there is some relationship between the number of events and the degree of annoyance caused by the vibration. It is intuitive to expect that more frequent vibration events, or events that last longer, will be more annoying to building occupants. Because of the limited amount of information available, there is no clear basis for defining this tradeoff. To account for most commuter rail systems having many fewer daily operations than the typical urban transit line, the criteria in the FTA Guidance Manual include an 8 VdB higher impact threshold if there are fewer than 70 trains per day.
- It is very rare that ground-borne vibration from any type of train operations will be high enough to cause any sort of building damage, even minor cosmetic damage. The only real concern is that the vibration will be intrusive to building occupants or interfere with vibration sensitive equipment.

Tables 3.9-12 and 3.9-13 summarize the FTA impact criteria for ground-borne vibration. These criteria are based on previous standards, criteria, and design goals including ANSI S3.29 (*American National Standard: Guide to the Evaluation of Human Exposure to Vibration in Buildings*, ANSI S3.29-

1983), and the vibration guidelines of the American Public Transit Association (*Guidelines for Design of Rail Transit Facilities*, APTA, 1981).

There are some buildings, such as concert halls, TV and recording studios, and theaters that can be very sensitive to vibration but do not fit into any of the three categories listed in Table 3.9-12. Because of the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a transit project. Table 3.9-13 gives criteria for acceptable levels of ground-borne vibration for various types of special buildings.

TABLE 3.9-12
GROUND-BORNE VIBRATION IMPACT CRITERIA

Land Use Category	Ground-Borne Vibration Impact (VdB re 1 micro inch/sec)	
	Frequent Events[1]	Infrequent Events[2]
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[3]	65 VdB[3]
Category 2: Residences and buildings where people normally sleep.	72 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	83 VdB

1. "Frequent Events" is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.
2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
3. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

Source: FTA, 1995

TABLE 3.9-13
GROUND-BORNE VIBRATION IMPACT CRITERIA FOR SPECIAL BUILDINGS

Type of Building or Room	Ground-Borne Vibration Impact Levels (VdB re 1 micro-inch/sec)	
	Frequent Events[1]	Infrequent Events[2]
Concert Halls	65 VdB	65 VdB
TV Studios	65 VdB	65 VdB
Recording Studios	65 VdB	65 VdB
Auditoriums	72 VdB	80 VdB
Theaters	72 VdB	80 VdB

1. "Frequent Events" is defined as more than 70 vibration events per day. Most transit projects fall into this category.
2. "Infrequent Events" is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.
3. If the building will rarely be occupied when the trains are operating, there is no need to consider impact. As an example consider locating a commuter rail line next to a concert hall. If no commuter trains will operate after 7 pm, it should be rare that the trains interfere with the use of the hall.

Source: FTA, 1995

It should also be noted that there are separate FTA criteria for ground-borne noise, the "rumble" that can be radiated from the motion of room surfaces in buildings due to ground-borne vibration from train operations. However, because the effects of airborne noise and ground-borne vibration tend to predominate for above ground (at-grade or elevated) rail systems, ground-borne noise criteria are not applied to this project.

Methodology for Impact Evaluation

Approach

The approach used to assess vibration impact consists of combining the available data on the project design and planned operational characteristics with models of train vibration to project future vibration levels. Then, for sensitive receptors, the projections are compared with applicable vibration criteria. The steps in the assessment are:

- Determine Study Area Characteristics
- Determine Vibration Propagation Characteristics of the Ground
- Develop Vibration Projection Models
- Perform Vibration Impact Assessment
- Inventory Impact and Assess Mitigation Options

The final product of the noise assessment is a tabulation of impacts and a list of mitigation measures required to minimize the impacts.

Prediction Model for Train Vibration

The projection of ground-borne vibration from LRT operations on the Exposition route was based on vibration source data for the proposed Siemens Transportation Systems P2000 light rail vehicle, obtained from tests carried out in April 2000. These data, representing the vibration forces generated by the interaction of the steel wheels rolling on the steel rails, were combined with the vibration propagation characteristics of the ground to provide estimates of ground-borne vibration at sensitive receptor locations. The ground vibration propagation characteristics are based on tests carried out in July 2000 at the following five representative sites:

- *Site V-1:* Site V-1 was located Exposition Place and Fourth Avenue south of the Exposition alignment and west of Arlington Avenue.
- *Site V-2:* Site V-2 was located at Sycamore Avenue and Exposition south of the existing railroad tracks. Sycamore Avenue is located one block west of La Brea.
- *Site V-3:* Site V-3 was located in a small park north of National Boulevard and west of the Ballona Creek culvert.

- *Site V-4:* Site V-4 was located at Corinth and Exposition just west of I-405. The accelerometer line was run south from Exposition along the sidewalk of Corinth.

- *Site V-5:* Site V-5 was the furthest west vibration test site. It was located at Westgate and Exposition in the residential area east of Bundy Drive.

The results at the above sites were used to divide the corridor into three regions with similar ground-borne vibration propagation characteristics as follows:

- *Region A:* Region A includes all areas along the Exposition route to the east of Crenshaw Boulevard.

- *Region B:* Region B includes all areas along the Exposition route between Crenshaw Boulevard and the San Diego Freeway (I-405).

- *Region C:* Region C includes all areas along the Exposition route to the west of the San Diego Freeway (I-405).

The locations of the vibration propagation test sites and regions are shown in Figure 3.9-2.

Impacts

No Action Alternative (Baseline)

Under the No Action Alternative, which reflects conditions anticipated for the year 2020 with no major transit improvements, changes would be limited to normal traffic growth on the existing transit network. As such, vibration impact is not anticipated for the No Action Alternative.

Transportation System Management (TSM) Alternative

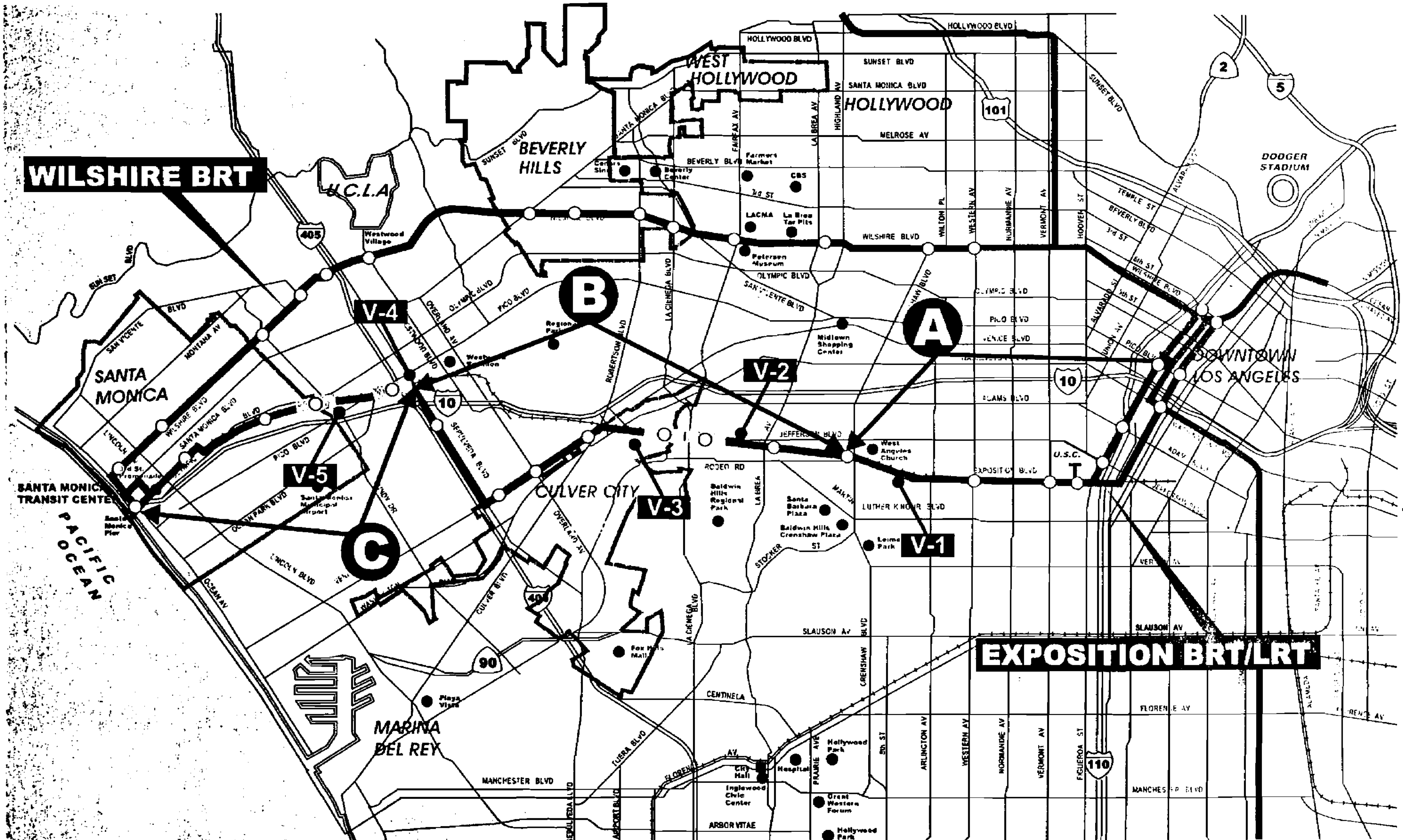
The TSM Alternative includes enhancement of the existing bus system. As such, vibration impact is not anticipated for this alternative.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Because this alternative is limited to rubber-tire bus operations, no significant vibration impact is anticipated for the Wilshire BRT. Buses operating on surface streets rarely cause perceptible vibration unless there are potholes or other irregularities in the street surface. Low frequency noise may rattle windows or shake rooms and is sometimes mistaken for vibration. However, this is an airborne noise effect and not a ground-borne vibration effect.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Similar to Alternative 1, because this alternative is limited to rubber-tire bus operations, no significant vibration impact is anticipated for the Wilshire BRT.



LEGEND:

V-1 = Test Sites

A = Test Region

SOURCE: Hanson, Miller, Miller, Hanson, 2000

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.9-2

VIBRATION PROPAGATION TEST SITES AND REGIONS

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Similar to Alternative 1, because this alternative is limited to rubber-tire bus operations, no significant vibration impact is anticipated for the Wilshire BRT.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

This alternative includes the impacts associated with the Wilshire BRT Alternative and the Exposition BRT. The Wilshire BRT is discussed above. In addition, because this alternative is limited to rubber-tire bus operations, no significant vibration impact is anticipated for the Exposition BRT.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

This alternative includes the impacts associated with the Wilshire BRT Alternative and the Exposition BRT MOS. The Wilshire BRT is discussed above. In addition, because this alternative is limited to rubber-tire bus operations, no significant vibration impact is anticipated for the Exposition BRT MOS.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

This alternative includes the impacts associated with the Wilshire BRT Alternative and the Exposition LRT. The Wilshire BRT is discussed above. In addition, for the Exposition LRT, the train vibration model and FTA criteria described above were applied to identify sensitive receptors where vibration impact is projected. The results of the vibration impact assessment is summarized in Table 3.9-14 in terms of the number of projected impacts at single-family residences, multi-family buildings and other sensitive receptors. The results are broken down by corridor area, including representative train speeds, distances and train vibration projections.

The results in Table 3.9-14 indicate that without mitigation, vibration impacts are projected at 138 single-family residences, 22 multi-family buildings, one hospital and one school. For the alignment variation that includes Flower Street, the total number of projected impacts is the same except that the hospital and school, located on Hill Street, would not be affected. As shown in the table, approximately 85 percent of the vibration impacts are projected to occur at residences along Exposition Boulevard between Vermont Avenue and Crenshaw Boulevard. Within this area, the greatest concentration of impacts are projected to occur at single-family residences on the south side of the corridor between Arlington Avenue and Crenshaw Boulevard, where residential properties directly abut the route. Impacts to sensitive receptors would be potentially significant.

As discussed above, the test site used to characterize vibration propagation in this area may not be representative of the area. More detailed testing and analysis would be likely to demonstrate that the actual impacts would be lower than the projections in Table 3.9-14.

TABLE 3.9-14
SUMMARY OF GROUND-BORNE VIBRATION IMPACT ASSESSMENT

Track Segment	Train Speed (mph)	Dist. from Near Track Centerline (feet)	Proj. Levels (VdB)	No. of Vibration Impacts		
				SF	MF	Other
Hill St, from Washington Blvd to Exposition Blvd	35	50	93	0	2	1 Hosp. 1 Sch
Flower St, from Washington Blvd to Exposition Blvd	35	20	77	0	2	0
Exposition Blvd, from Vermont Ave to Western Ave	35	48	75	44	17	0
Exposition Blvd, from Western Ave to Arlington Ave	55	62	74	25	0	0
Exposition Blvd, from Arlington Ave to Crenshaw Blvd	55	24	79	59	0	0
Exposition Blvd, from Crenshaw Blvd to La Brea Ave	55	68	58	0	0	0
Jefferson Blvd, from La Brea Ave to La Cienega Blvd	50	20	84	5	3	0
National Blvd, from La Cienega Blvd to Venice Blvd	55	36	75	7	0	0
Subtotal for Alternative 3A only:				**140**	**24**	**2**
Venice Blvd, from National Blvd to Sepulveda Blvd	35	36	75	0	3	0
Sepulveda Blvd, from Venice Blvd to Exposition Blvd	35	50	57	0	0	0
Exposition Blvd, from Sepulveda Blvd to Centinela	55	96	73	4	0	0
Total for Alternative 3 only (Hill Street Option):				**138**	**22**	**1 Hosp.1 Sch**
Total for Alternative 3 only (Flower Street Option):				**138**	**22**	**0**

SF = single-family residence, MF = multi-family residential building.

Source: Harris Miller Miller & Hanson Inc., 2000

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

This alternative includes the impacts associated with the Wilshire BRT Alternative and the Exposition LRT MOS. The Wilshire BRT is discussed above. The results in Table 3.9-14 indicate that without mitigation, vibration impacts are projected at 140 single-family residences, 24 multi-family buildings, one hospital and one school. For the alignment variation that includes Flower Street, the total number of projected impacts is the same except that the hospital and school, located on Hill Street, would not be affected. As shown in the table, approximately 85 percent of the vibration impacts are projected to occur at residences along Exposition Boulevard between Vermont Avenue and Crenshaw Boulevard. Within this area, the greatest concentration of impacts are projected to occur at single-family residences on the south side of the corridor between Arlington Avenue and Crenshaw Boulevard, where residential properties directly abut the route. Impacts to sensitive receptors would be potentially significant.

Mitigation

As discussed above, the test site used to characterize vibration propagation in this area may not be representative of the area. More detailed testing and analysis would be likely to demonstrate that the actual impacts would be lower than the projections in Table 3.9-14.

- *Mitigation Measure 3.9-3.* The vibration impact assessment assumes that the LRT vehicle wheels and track are maintained in good condition with regular wheel truing and rail grinding. Beyond this, there are several potential mitigation approaches for the Exposition LRT Alternative as follows:

    - LRT Speed Reductions in Sensitive Areas: Speed reductions will always lower ground-borne vibration levels, but they are not always a feasible vibration control measure because of the negative impact on the LRT operating schedule.

    - Ballast Mats: A ballast mat consists of a pad made of rubber or rubber-like material placed on an asphalt or concrete base with the normal ballast, ties and rail on top. The reduction in ground-borne vibration provided by a ballast mat is strongly dependent on the frequency content of the vibration and on the design and support of the mat. However, the field tests and analysis suggest that ballast mats would provide a vibration reduction of 3 to 6 VdB along the Exposition Corridor.

    - Floating Slabs: Floating slabs consist of thick concrete slabs supported by resilient pads on a concrete foundation; the tracks are mounted on top of the floating slab. Most successful floating slab installations are in subways, and their use for at-grade track is rare. Although floating slabs are designed to provide vibration reduction at lower frequencies than ballast mats, they are extremely expensive and are not likely to be a viable mitigation option.

    - Relocation of Turnouts: Because the impacts of LRT wheels over rail gaps at turnout locations can increase LRT ground vibration by as much as 10 VdB, turnouts are a major source of vibration impact when they are located in sensitive areas. Thus, relocating such turnouts away from residential areas to the extent possible can be an effective vibration mitigation measure.

    - Spring-Rail Frogs: Another approach for mitigating vibration impact at turnouts is to use spring-rail frogs in place of standard rigid frogs. These devices close the flangeway gap in the main traffic direction, eliminating the wheel impacts that cause higher vibration levels. Spring-rail frogs can be a cost-effective mitigation measure when traffic is moving in the main direction most of the time.

    - Alignment Modifications: Shifting the alignment further away from sensitive areas can potentially reduce vibration impacts. However, the right-of-way limits typically do not allow shifts that are sufficient to significantly reduce vibration levels. This approach is also limited where sensitive receptors are located on both sides of the alignment. Thus, this approach is not likely to be an effective vibration mitigation measure.

- Property Acquisitions or Easements: Additional options for avoiding vibration impacts are for the transportation agency to purchase residential property likely to be impacted by train operations, or to acquire easements for such properties by paying the homeowners to accept the future train vibration conditions. These approaches are usually taken only in isolated cases where other mitigation options are either impractical or too costly.

Of the above measures, the use of ballast mats is likely to be the most feasible. The recommended locations for ballast mats and the vibration impacts that would remain after the mats are installed are indicated in Table 3.9-15. As shown in the table, with ballast mats installed near vibration-sensitive receptors along 15,700 feet (3.0 miles) of the corridor, there would be residual impacts at 31 single family residences and 3 multi-family buildings for the Hill Street option. For the Flower Street option, there would be residual impacts at 31 single-family residences and 5 multi-family buildings with ballast mats installed near vibration-sensitive receptors along 14,900 feet (2.8 miles) of the corridor. For both options, the estimated cost for vibration mitigation using ballast mats is approximately $5 million. The feasibility of applying additional measures to mitigate the potentially significant residual impacts would need to be investigated during the design phase of the project.

TABLE 3.9-15
SUMMARY OF VIBRATION MITIGATION USING BALLAST MATS

Track Segment	Ballast Mat Description			Residual Impacts		
	Civil Stations	Length (feet)	Approx. Cost	SF	MF	Other
Hill St, from Washington Blvd to Exposition Blvd	129+00 to 143+00	1400	$462,000	0	0	0
Flower St, from Washington Blvd to Exposition Blvd	98+00 to 104+00	600	$198,000	0	2	0
Exposition Blvd, from Vermont Ave to Western Ave	207+00 to 250+00 256+00 to 261+00	4300 500	$1,419,000 $165,000	0	0	0
Exposition Blvd, from Western Ave to Arlington Ave	268+00 to 284+00	1600	$528,000	0	0	0
Exposition Blvd, from Arlington Ave to Crenshaw Blvd	286+00 to 321+00	3500	$1,155,000	23	0	0
Exposition Blvd, from Crenshaw Blvd to La Brea Ave	--	--	--	0	0	0
Jefferson Blvd, from La Brea Ave to La Cienega Blvd	402+50 to 418+00 431+00 to 436+50	1550 550	$511,500 $181,500	5	3	0
National Blvd, from La Cienega Blvd to Venice Blvd	480+50 to 490+00	950	$313,500	1	0	0
Venice Blvd, from National Blvd to Sepulveda Blvd	607+00 to 612+00	500	$165,000	0	0	0
Sepulveda Blvd, from Venice Blvd to Exposition Blvd				0	0	0
Exposition Blvd, from Sepulveda Blvd to Centinela Ave	734+00 to 742+50	850	$280,500	2	0	0
Total (Hill Street Option):		**15700**	**$5,181,000**	**31**	**3**	**0**
Total (Flower Street Option):		**14900**	**$4,917,000**	**31**	**5**	**0**

1. Cost estimate assumes 11-ft wide ballast mats under both tracks at $15/sq. ft at the locations indicated.
2. SF = single-family residence, MF = multi-family residential building.

Source: Harris Miller Miller & Hanson Inc., 2000

These projections of the vibration mitigation requirements should be considered a worst case since the projections have built in safety factors to ensure that no potential vibration impacts are over looked. Should LRT be the preferred alternative, more detailed testing and analysis will be performed during preliminary engineering to more precisely define the mitigation requirements. The additional analysis and testing would include:

- Review of the buildings where impact is projected to make sure they are vibration sensitive and not garages or other non-residential buildings;
- Consideration of the properties that would be acquired as part of the project;
- Making projections for specific buildings including information about the building construction and type of foundation; and
- Vibration propagation tests at specific buildings.

Although not always the case, more detailed vibration projections at later stages of a project usually result in fewer vibration impacts and reducing the amount of vibration mitigation that is required.

Maintenance Yards

Vehicle cleaning and maintenance activities would not result in significant vibration. No vibration impacts are anticipated at the candidate yard locations.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

Neither rubber-tire or light rail vehicle operations within the tunnel would result in vibration impacts on adjacent land uses within the Exposition Park area.

3.9.5 Construction Noise and Vibration

Construction noise and vibration are temporary impacts that do not have any long-term effects on the environment. However, since transit system construction usually extends over several years and will sometimes require nighttime activity, without special control measures, the resulting noise and vibration can be a significant intrusion on nearby communities. It is standard practice to leave specific decisions about construction procedures and equipment to the contractor's discretion, allowing the contractors to develop their most cost effective approach. This means that only a general evaluation of construction noise and vibration can be made during the environmental assessment phase.

Construction Noise Impacts and Mitigation

Impacts from construction noise are likely when ever a construction site would be located within about 300 feet of residences, schools, or places of worship. The impact distances increase substantially for any construction that must be performed during nighttime hours. Based on the preliminary construction plans, there is the potential for short-term impact from construction noise, particularly for the Wilshire BRT alternatives where nighttime construction must be carried out near residential areas.

Construction of the Mid-City/Westside Transit Project will need to be in compliance with the requirements Sections 112.03 and 41.40 of the City of Los Angeles Municipal Code and any variances to the Code issued by the City. The City regulations basically prohibit construction between 9 pm and 7 am without a variance. Although the regulations do not include specific daytime noise limits, they do state that construction or repair work shall not be performed "... in such a manner that the noise created thereby is loud, unnecessary and unusual and substantially exceeds the noise customarily and necessarily attendant to the reasonable and efficient performance of such work."

As discussed above, nighttime construction will require that the City of Los Angeles issue a variance for the proposed nighttime construction on Wilshire Boulevard. As an example, the City of Los Angeles previously issued a noise variance for Metro Red Line construction along Wilshire Boulevard that allowed construction between 9 pm and 7 am as long as: (1) construction noise did not exceed ambient noise level plus 5 decibels, and (2) construction noise did not result in substantial community complaints being registered with the City.

During preliminary engineering, a detailed analysis of construction noise impact will be carried out, and mitigation measures will be developed for inclusion in the construction contract documents. Typical methods to control construction noise include requiring the contractor to construct sound walls, placing restrictions on construction during nighttime hours, limiting the use of particularly noisy activities such as impact pile driving and jack- hammering, and requiring construction to be performed in compliance with specific equipment and property line noise limits. Approaches to ensure that construction is performed in compliance with specified requirements include:

1. *Noise monitoring by the construction management firm.* Regular noise monitoring should be performed in areas where it is expected that the contractor will have difficulty meeting the property line noise limits. This type of monitoring is sometimes the contractor's responsibility, although communities may put more credence in monitoring performed by, or under the direction of, the construction management firm. The monitoring can be weekly spot checks supplemented by monitoring to respond to complaints. Continuous monitoring using automated, unattended monitors is sometimes justified in particularly sensitive areas.

2. *Requiring contractors to retain acoustical engineers to prepare noise control plans.* The goal of the noise control plan is to ensure that contractors consider community noise when designing construction sites, selecting construction procedures and equipment, and determining work schedules.

3. *Limiting the noisy construction activities, particularly during nighttime hours.* Sample restrictions are: requiring pre-drilled piles, limiting pile driving to daytime hours, restricting the use of jackhammers and other pneumatic and impact devices, and limiting muck removal in residential areas to daytime hours.

4. *Requiring contractors to have temporary barriers stockpiled.* Such barriers can be used at the Resident Engineer's discretion to immediately address any noise complaints or noise limit violations.

In addition to the above measures, general procedures that contractors should be required to employ to minimize noise impacts are:

1. *Perform all construction in a manner to minimize noise.* The contractor should be required to select construction processes and techniques that create the lowest noise levels. Examples are using predrilled piles in place of pile driving, mixing concrete off site instead on onsite, and using hydraulic tools instead of pneumatic tools.

2. *Use equipment with effective mufflers.* Diesel engines are often the major source of noise on construction sites. All equipment should be required to have the most effective commercially available mufflers installed.

3. *Minimize the use of backup alarms.* Because of the intrusive nature of backup alarms, they are often the primary source of complaints about construction noise even though they are not the loudest noise. Approaches to reducing annoyance caused by backup alarms are: lay out construction sites to minimize the need for backup alarms; use strobe lights in place of backup alarms at night; use flagmen to keep the area behind maneuvering vehicles clear; and use self-adjusting backup alarms that adjust the alarm loudness up and down depending on ambient noise. The safety implications of any procedure for reducing backup alarm noise will need to be carefully reviewed before the procedure is implemented.

4. *Select haul routes and schedules that minimize intrusion to residential areas.*

5. *Layout construction sites such that the noisiest activities are as far as possible from noise sensitive receptors.* Sometimes it is even possible to gain acoustical benefits by locating temporary construction offices or other barriers between construction activities and residential areas. There are even examples of locating muck storage piles so they act as sound barriers.

Construction Vibration Impacts and Mitigation

The potential for impact from construction vibration is much more limited than for noise, and it is expected that ground-borne vibration from construction activities would cause only intermittent, localized intrusion along the corridor. The construction activities most likely to cause vibration impacts are:

1. *Heavy construction equipment.* Although all heavy, mobile construction equipment has the potential of causing at least some perceptible vibration when operating close to buildings, the vibration is usually short term and is not of sufficient magnitude to cause building damage. It is not expected that heavy equipment such as bulldozers, front end loaders or cranes would operate close enough to any residences to cause vibration impact.

2. *Jackhammers and vibratory compaction equipment.* This type of equipment would be used for relatively short periods of time during the demolition phase, preparation of the subgrade, and during final site restoration. If residents complain about intrusive vibration, the contractor will be required to modify the procedure or arrange to complete the task in a manner that will cause the minimum amount of hardship for the affected residents.

3. *Impact pile driving.* Impact pile driving should be avoided at distances less than 250 feet from any residence. If no other approach is acceptable, the contractor will be required to monitor vibration levels at the residence and modify the procedures if the vibration exceeds a safe threshold.

4. *Tunnel boring machines.* Measurements of Red Line tunneling under Wilshire Boulevard taken in 1993 showed that: (1) all vibration related to tunneling was well below any damage criterion, and (2) tunnel boring machine created low-frequency vibration that would probably be perceived inside some buildings, but did not exceed typical acceptability criteria. Since tunnel boring machines constantly move forward, the vibration is rarely perceptible for more than one or two days.

5. *Muck trains.* The trains used to haul muck (excavated material) from the tunnel face to portals cause ground-borne vibration or ground-borne noise in buildings above the tunnel that residents will sometimes find intrusive, particularly when the muck trains operate at night. Although it is feasible to reduce levels of muck train vibration through use of elastomeric supports or rubber mats under the track, a more common mitigation measure is to limit the hours that muck trains can operate.

6. *Blasting.* Of all construction activities, blasting is the one most often associated with potential building damage. It is not anticipated that blasting would be required for construction of any of the Mid-City/Westside Project alternatives.

7. *Trucks.* Trucks hauling excavated material from construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes can almost always eliminate the problem.

During preliminary engineering, a detailed analysis of construction noise impact will be carried out and pre-construction surveys will be conducted at properties where the potential for significant vibration impact has been identified. In addition, measures to mitigate any anticipated vibration impacts will be developed for inclusion in the construction contract documents. Typical methods to control construction vibration include: (1) specifying vibration limits, (2) placing restrictions on where and when high vibration activities such as pile driving can take place, and (3) requiring vibration monitoring for any construction process that is could cause intrusive or damaging vibration.

3.9.6 Cumulative Impacts

The noise impact analysis presented above has taken into account ambient noise levels as well as noise levels expected from future traffic growth. No additional cumulative impacts are anticipated. In addition, it is not expected that other land development or public works projects within the vicinity of the alternatives being considered would result any combined or cumulative vibration impact on adjacent land uses.

3.10 Geology, Soils, and Seismicity

3.10.1 Introduction

Geology, soils and seismicity are factors that often present constraints to the development of transit improvements, particularly when subsurface or aerial stations or structures are involved. The discussion below presents the relative geotechnical implications of the alternatives under consideration.

3.10.2 Affected Environment

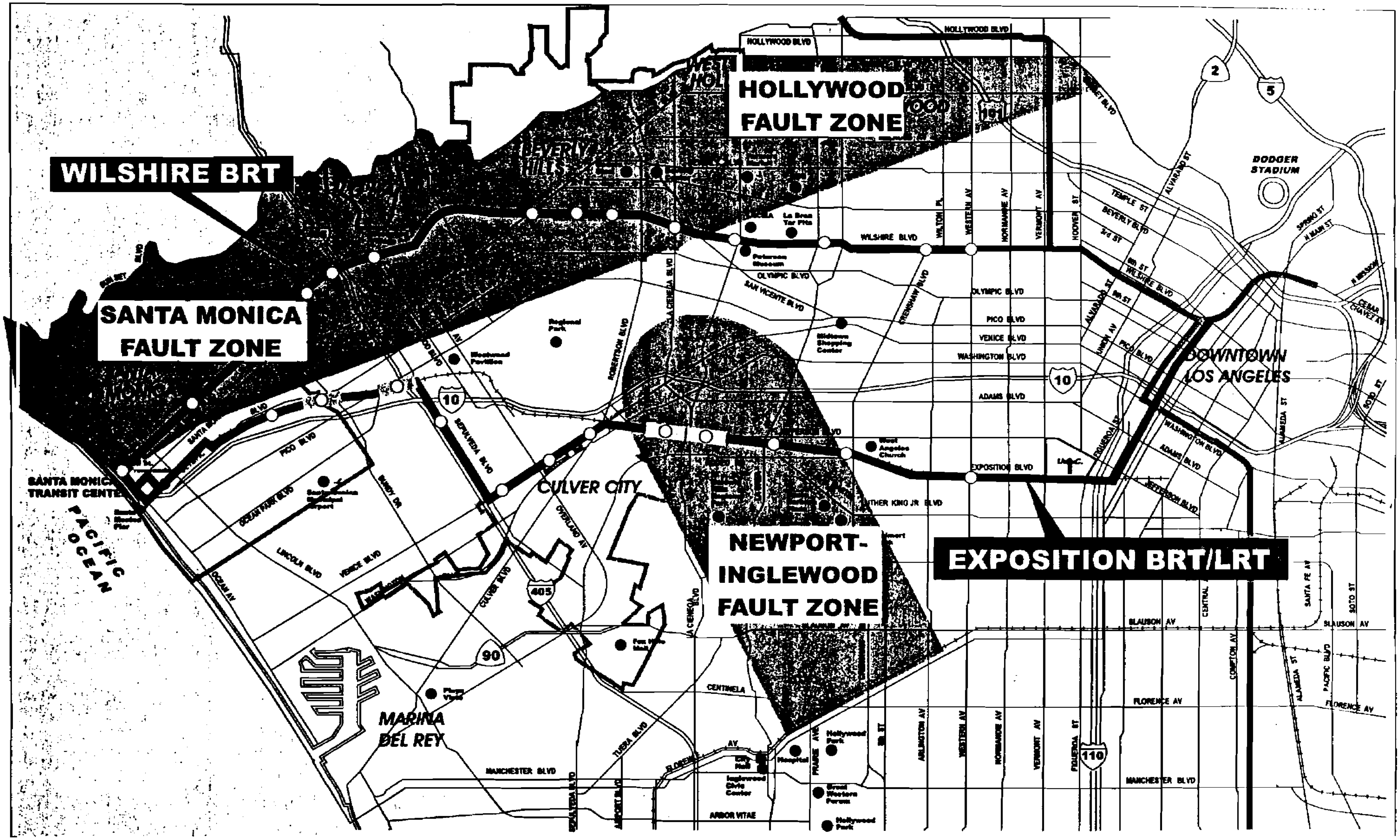
Active and Potentially Active Faults

The Mid-City/Westside Corridor Area (corridor area) is located within a geological area called the Los Angeles Basin. The basin is surrounded by the Santa Monica Mountains, the Simi Hills, and the Santa Susana Mountains on the west, the San Gabriel Mountains on the north, and the Santa Ana Mountains, San Joaquin and Puente Hills to the east. The Pacific Ocean and the Palos Verdes Hills make up the southern border of the basin. Within the basin there are a range of landforms. There are high mountains, for example, the San Gabriel Mountains. There are broad valleys, low hills and coastal plains.

The Los Angeles Basin is an area known to be seismically active and there are a number of active and potentially active faults within the corridor area. Active faults are those that are believed to have moved within the last 11,000 years, while potentially active faults are believed to have moved between 11,000 and 2 million years ago. The faults of particular concern are the Hollywood-Santa Monica fault and the Newport-Inglewood fault. Figure 3.10-1 illustrates the generalized fault zones within the corridor area. Characteristics of these faults are described below:

- Hollywood-Santa Monica Fault. This fault is oriented in an east-west direction. Approximately 24 kilometers in length, it is a left-reverse north-dipping fault. Its slip rate may be greatest at its western end. The slip rate is estimated to be between 0.27 and 0.39 millimeters per year. The probable magnitude of a seismic event on this fault is projected to range from 6.0 to 7.0 on the Richter Scale.

- Newport-Inglewood Fault Zone. The surface trace of this 75-kilometer fault is discontinuous in the Los Angeles Basin, but the fault zone can easily be noted there by the existence of a chain of low hills extending from Culver City to Signal Hill. The fault complex is oriented in a northwest to southeast diagonal direction. South of Signal Hill, it roughly parallels the coastline until just south of Newport Bay, where it heads offshore and becomes the Newport-Inglewood -Rose Canyon fault zone. The fault is characterized as a right lateral, local reverse slip associated with fault steps. The slip rate of the fault is 0.6mm per year. The probable magnitude of a seismic event would range from 6.7 to 7.4 on the Richter Scale.



LEGEND:

Within 2km of known seismic sources

SOURCE: California Department of Conservation, Division of Mines & Geology

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.10-1

ACTIVE FAULT ZONES

Alquist-priolo Fault Hazard Zones

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. This state law was a direct result of the 1971

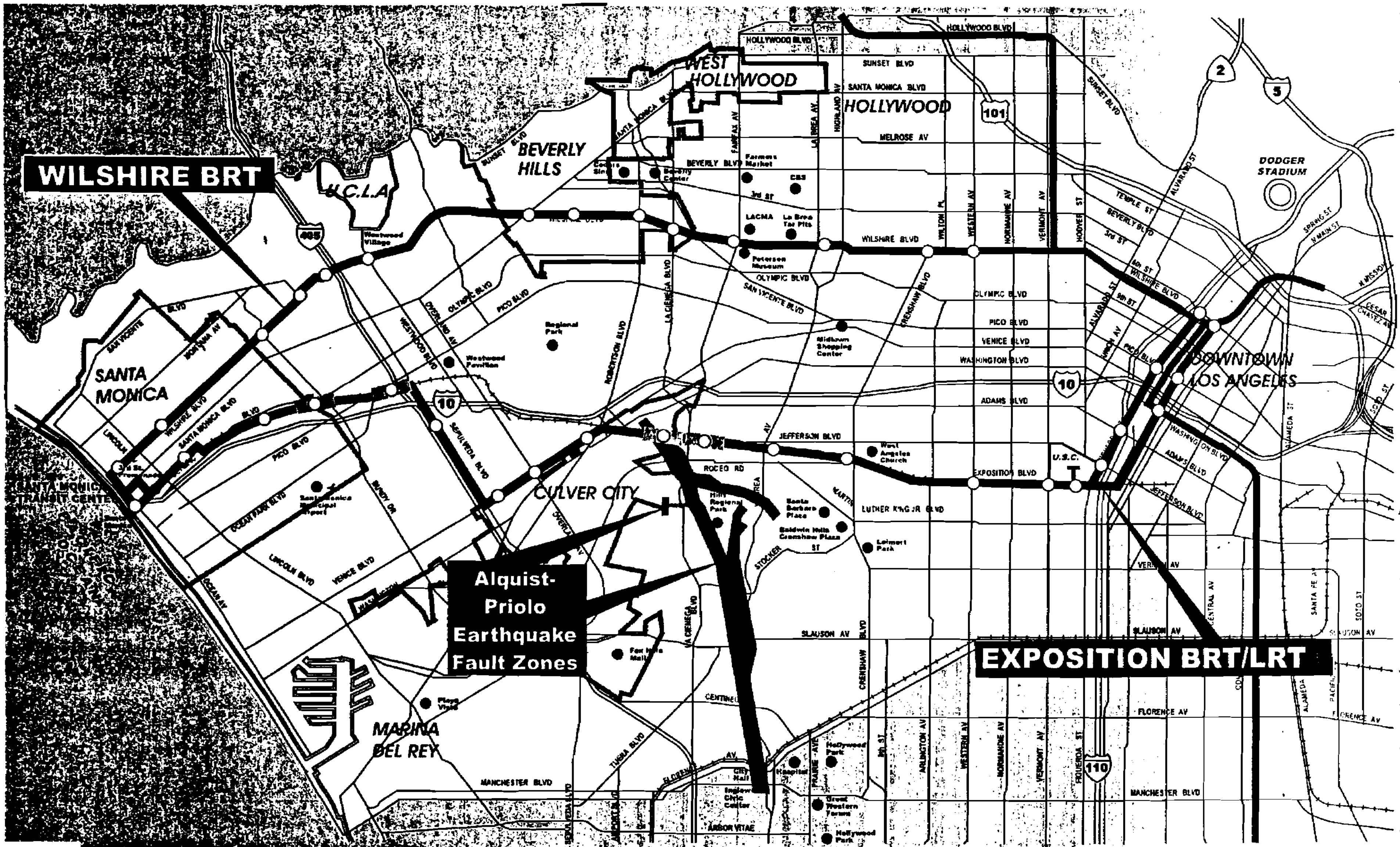
San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. A review of Alquist-Priolo Fault Hazard maps from the California Department of Conservation (Division of Mines and Geology) indicates that there are several fault hazard zones designated within the corridor as shown in Figure 3.10-2. These zones are located primarily southeast of the La Cienega Boulevard and Washington Boulevard intersection. One of the designated zones crosses the Exposition Railroad right-of-way at National Boulevard and Fay Street in Culver City.

Liquefaction Potential and Other Soil Considerations

In addition to faults, the corridor area is also characterized by soils that are subject to liquefaction. Liquefaction takes places during a seismic event when soils combined with a high water table are unable to support the load bearing weight from structures or foundations. Figure 3.10-3 illustrates that about two-thirds of the corridor area is located within areas of potential liquefaction. Soils classified by the U.S. Soil Conservation Service are generally designated as alluvial deposits from the Los Angeles River (which in the past ran in a northeast to southwest direction through the southern part of the corridor area. Major soil associations found in the corridor area include: Chino Silt Loam, Hanford Clay Loam, Hanford Fine Sandy Loam, Montezuma Clay Adobe, Ramona Clay Loam, Ramona Loam, Ramona Sandy Loam, Yolo Clay Loam, and Yolo Loam.

Other Subsurface Conditions

As disclosed in previous environmental studies of the corridor area, there are hazardous subsurface gas conditions in portions of the corridor north of Interstate 10 and east of Fairfax Avenue. The City of Los Angeles has designated a Methane Hazard Zone as shown in Figure 3.10-4. Exposure to Methane should not exceed the lower explosive limit of 5% volume per volume in air. Previous MTA Metro Red Line environmental studies have also disclosed that that there are high (sometimes) lethal levels of Hydrogen Sulfide captured within the San Pedro geologic formation about 40 feet below the surface. The Occupational Safety and Health Association (OSHA) has established a Hydrogen Sulfide exposure limit for workers to not exceed an exposure of 10ppm personal exposure and the State threshold for public exposure is not to exceed 0.03 ppm. The primary area of the hydrogen sulfide appears to be centered near the Pico Boulevard and San Vicente Boulevard intersection. Borings conducted by the City of Los Angeles Bureau of Engineering as part of the North Outfall Interceptor Sewer Project further suggest that there are few, if any, subsurface gas concerns (methane or hydrogen sulfide) in the southern portions of the corridor centering along Exposition Boulevard (from the Exposition Park Area to Culver City).



LEGEND:

Alquist-Priolo Earthquake Fault Zones

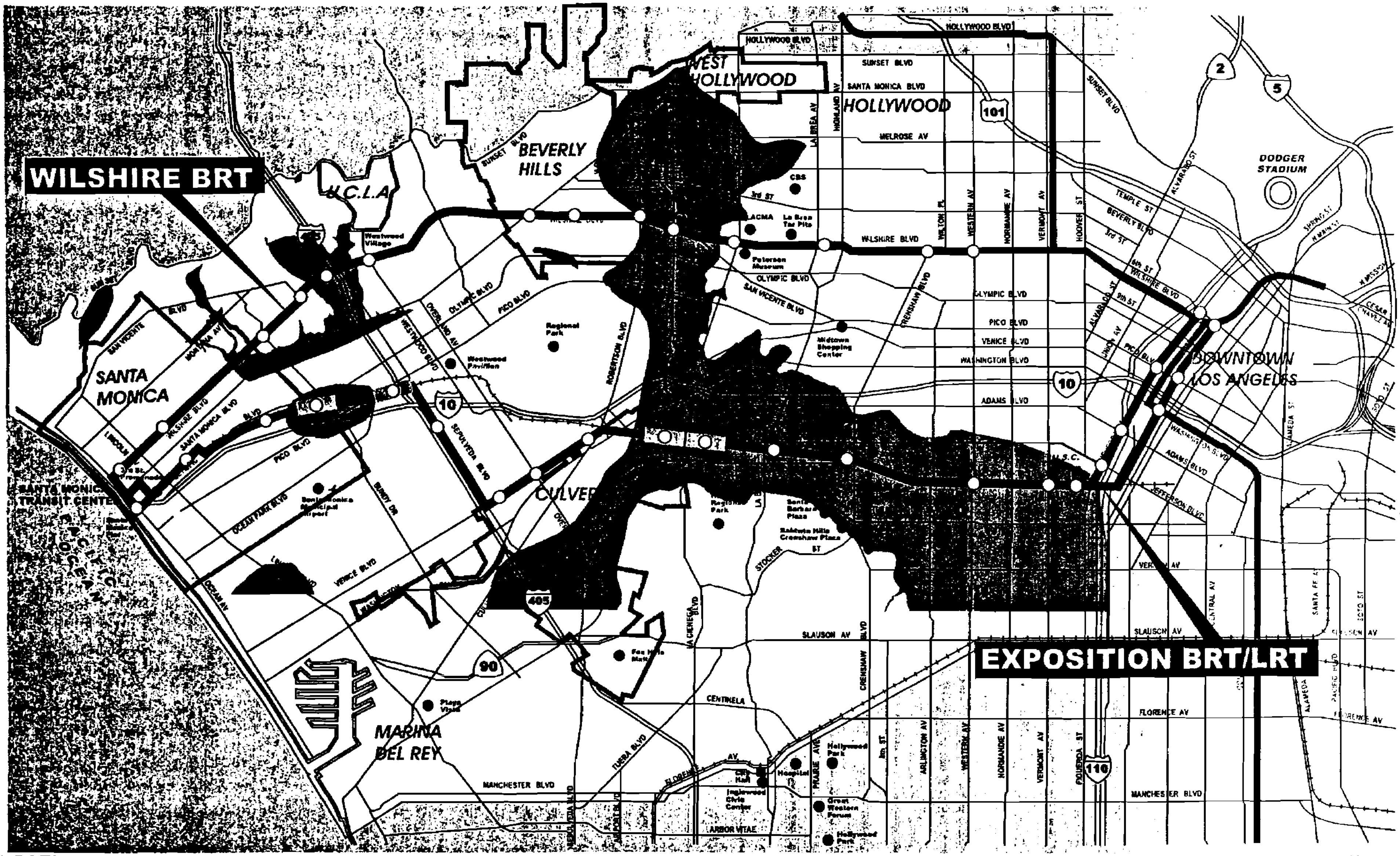
SOURCE: City of Los Angeles

Mid-City/Westside Transit Corridor

METRO LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.10-2

ALQUIST-PRIOLO EARTHQUAKE FAULT ZONES



LEGEND:

Potential Liquefaction Areas

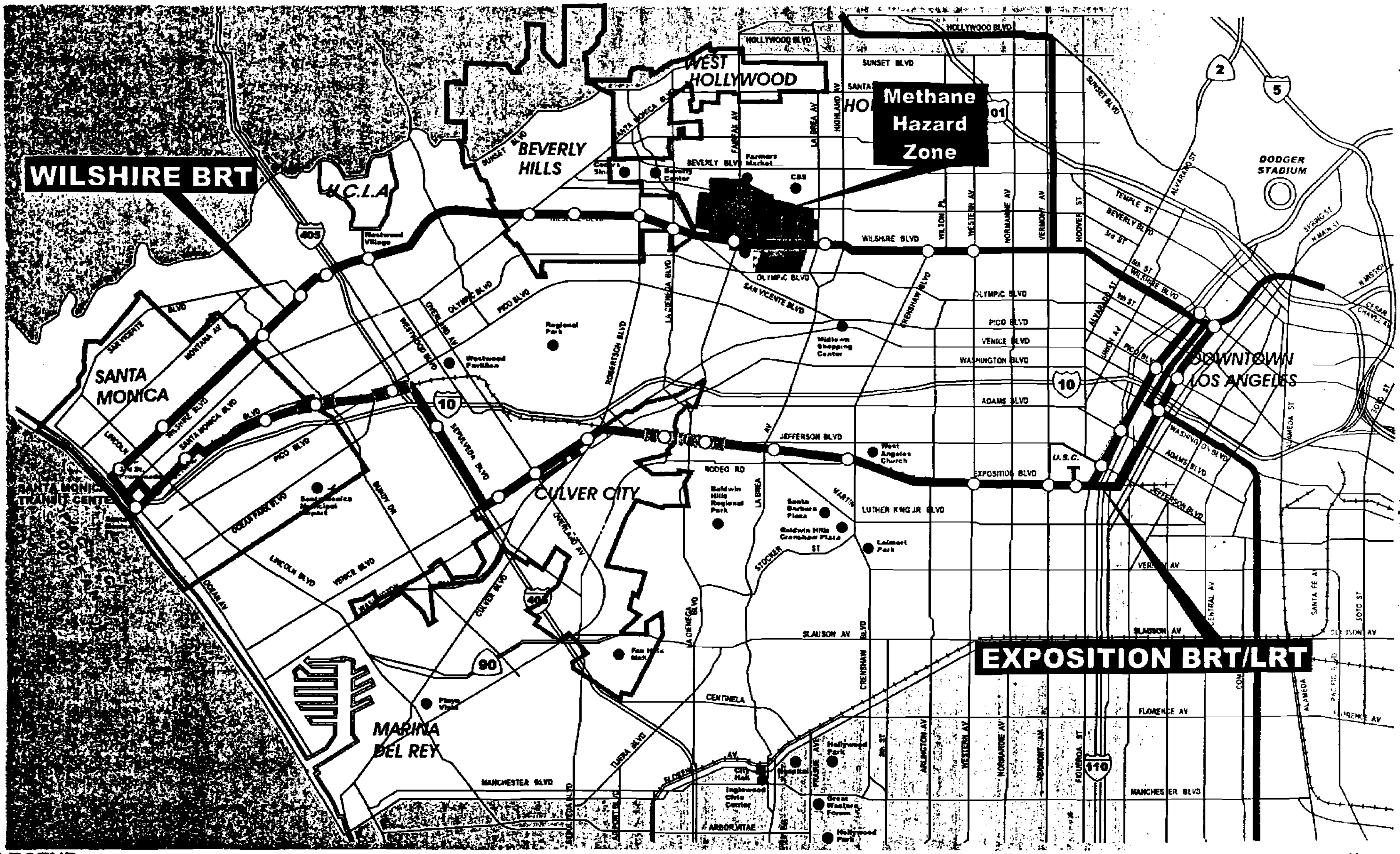
SOURCE: City of Los Angeles

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.10-3

POTENTIAL LIQUEFACTION AREAS



LEGEND:

Methane Hazard Zone

SOURCE: City of Los Angeles

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.10-4

METHANE HAZARD ZONE

3.10.3 Impact Assessment and Mitigation Measures

Standards of Significance

The proposed project and project alternatives would have a significant adverse effect if one or more of the following conditions are met:

- The proposed project or project alternatives would expose people or structures to adverse effects, including the risk of loss, injury or death involving rupture of known earthquake faults, strong seismic ground shaking, landslides or liquefaction; and/or

- The proposed project or project alternatives would expose people to adverse effects of subsurface toxic or explosive gases.

Methodology for Impact Evaluation

The method for assessing the potential for a significant impact involves overlaying the proposed project or project alternatives with known geologic hazards within the corridor. If stations or structures are located within or directly adjacent to a geologic hazard area there would be a potential for a significant impact that would require additional geotechnical studies and enhanced design to eliminate or reduce the potential impact to a level of insignificance.

Impacts

No Action Alternative (Baseline)

The No Action Alternative would not involve the construction of subsurface or aerial transit structures and no exposure to known geologic hazards would be expected. No impacts would occur.

Transportation System Management (TSM) Alternative

The TSM Alternative would be similar to the No Action Alternative. No construction of subsurface or aerial structures is anticipated and no significant geotechnical-related impacts are anticipated.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Although this alternative would traverse areas identified as hazardous, including methane gas and liquefaction, this option would not require the construction of major subsurface or aerial structures and no impacts are anticipated.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Impacts would be similar to Alternative 1, which is discussed above.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Impacts would be similar to Alternative 1, which is discussed above.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

As discussed above, no geotechnical impacts are associated with the Wilshire Boulevard portion of this alternative. Along the Exposition portion, the alignment would create exposure to the following geotechnical hazards:

- The route alignment would traverse the Newport-Inglewood Fault Zone. The aerial structure proposed for La Cienega Boulevard would be located within this zone. Without structure design mitigation, significant impacts would be anticipated.

- The route alignment would traverse an Alquist-priolo Fault Hazard Zone near the intersection of Fay Avenue and National Boulevard in Culver City. However, no subsurface or aerial structures are proposed in this location.

- Approximately 50 percent of the route would traverse areas with high liquefaction potential. Aerial structures at La Cienega, Ballona Creek, Sawtelle and Bundy would be located in these areas. Station platform areas would be located at La Cienega, Sawtelle and Bundy. Without structure design mitigation, significant impacts would be anticipated.

Mitigation Measure 3.10-1 is recommended to reduce geological impacts to a less-than-significant level:

- *Mitigation Measure 3.10-1:* Because the Exposition BRT/MOS proposes structures and aerial stations to be constructed in areas that traverse or adjacent to active or potentially active faults, as well as areas subject to liquefaction during a seismic event, a geotechnical study (prepared by a Registered Geologist) for each affected transit structure shall be required. This technical study shall further assess the potential for seismically related structural failures and identify design requirements for structures and foundations, which will maintain structural integrity under design earthquake conditions.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

As discussed above, no geotechnical impacts are associated with the Wilshire Boulevard portion of this alternative. Along the Exposition portion, the alignment would have create exposure to the following geotechnical hazards:

- The route alignment would traverse the Newport-Inglewood Fault Zone. The aerial structure proposed for La Cienega Boulevard would be located within this zone. Without structure design mitigation, significant impacts would be anticipated.

- The route alignment would traverse an Alquist-priolo Fault Hazard Zone near the intersection of Fay Avenue and National Boulevard in Culver City. However, no subsurface or aerial structures are proposed in this location.

- Approximately 70 percent of the route would traverse areas with high liquefaction potential. Aerial structures at La Cienega and Ballona Creek would be located in these areas. The proposed aerial station at La Cienega Boulevard would be located in an area designated with liquefaction potential and would require specific design measures to avoid significant impacts.

Mitigation Measure 3.10-1 would reduce these impacts to a less than significant level.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

The geotechnical impacts associated with this alternative would be essentially the same as the Wilshire BRT and Exposition BRT (Alternative 2) discussed above because the same generally route alignment would be followed. The exception would be the eastern portion of the LRT route that would be located on Hill Street between Washington Boulevard and the Exposition railroad right-of-way, and the western portion of the route that would follow Olympic Boulevard west of Cloverfield and then pass over Interstate 10 and 4th Street near the Santa Monica Civic Center. Neither segment is considered to be geotechnically sensitive. The route alignments do not traverse liquefaction areas, Alquist-priolo Fault zones or active or potentially active faults. Thus no additional significant impacts are anticipated.

Mitigation Measure 3.10-2 is recommended to reduce geological impacts to a less-than-significant level:

- *Mitigation Measure 3.10-2:* Because the Exposition LRT/MOS proposes structures and aerial stations to be constructed in areas that traverse or adjacent to active or potentially active faults, as well as areas subject to liquefaction during a seismic event, a geotechnical study (prepared by a Registered Geologist) for each affected transit structure shall be required. This technical study shall further assess the potential for seismically related structural failures and identify design requirements for structures and foundations, which will maintain structural integrity under design earthquake conditions.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Geological and seismic impacts associated with this MOS would be similar to the Wilshire BRT and Exposition BRT MOS (Alternative 2A). Significant impacts would be expected at the aerial structure at La Cienega as well as the portion of the route that traverses the Alquist-priolo Fault Hazard Zone at National Boulevard and Fay Avenue in Culver City.

Mitigation Measure 3.10-2 would reduce these impacts to a less-than-significant level.

Maintenance Yard

As discussed in Section 2 of this report, the MTA is considering candidate maintenance yard site locations for BRT operations. Six candidate sites are under consideration. Geotechnical concerns associated with each of these sites are discussed below.

Northwest Corner of Chavez and Mission. The site is located in an area subject to liquefaction. The site is not located in a Fault Hazard Zone. Without structure design mitigation, impacts would be considered significant for this site.

Existing MTA Division 1 (Alameda and 6th). The yard is not located in an area subject to liquefaction nor is it located in a Fault Hazard Zone. No significant impacts are anticipated.

Northeast Corner of Alameda and Washington. The yard is not located in an area subject to liquefaction nor is it located in a Fault Hazard Zone. No significant impacts are anticipated.

Southeast Corner of Alameda and Washington. The yard is not located in an area subject to liquefaction nor is it located in a Fault Hazard Zone. No significant impacts are anticipated.

Exposition ROW (Hooper to Central). The yard is not located in an area subject to liquefaction nor is it located in a Fault Hazard Zone. No significant impacts are anticipated.

Existing MTA South Park Shops (54th and Avalon). The site is located in an area subject to liquefaction. The site is not located in a Fault Hazard Zone. Without structure design mitigation, impacts would be considered significant for this site.

Mitigation Measure 3.10-3 is recommended to reduce geological impacts to a less-than-significant level:

- *Mitigation Measure 3.10-3:* Prior to the final selection of a maintenance yard site, a geotechnical study shall be prepared by a Registered Geologist indicating the design requirements for yards sites that may be located in areas of liquefaction. Identified requirements shall be incorporated into the specifications for the maintenance yard project.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

As discussed in Section 2, a design option is being considered in the Exposition Park area, where a tunnel would be constructed for either BRT or LRT in the area between Figueroa Street and Vermont Avenue. The tunnel would be constructed at a depth of approximately 40 feet. According to maps available from the California Department of Mines and Geology, the tunnel location is in an area that may be subject to liquefaction, particularly the western most part of the tunnel near Vermont. The tunnel is not located within or adjacent to any other known geologic or seismic hazard.

3.10.4 Cumulative Impacts

Geotechnical and seismic constraint impacts are site specific. The transit alternatives under consideration would affect construction and excavation in limited areas and would not likely combine with other commercial or non-commercial building construction to create a combined impact that would adversely affect the geological integrity or slope stability of adjacent areas.

3.11 Water Resources

3.11.1 Introduction

This section provides a discussion of the existing local surface water bodies, local drainage patterns, and water quality conditions within the Study Area.

3.11.2 Affected Environment

Municipal Water Supply

The Los Angeles Department of Power and Water (LADWP) supplies water for the City of Los Angeles. LADWP is entitled to draw from three main water sources for its supply: the San Fernando Groundwater Basin, the Los Angeles aqueduct, and the Metropolitan Water District (MWD). Other water supply agencies in the Study Area include the City of Santa Monica and the West Basin MWD. The MWD is a wholesale distributor of water from the Colorado River and the State Water Project, and also provides the entire water supply of the City of Beverly Hills, and 80 to 85% of the City of Santa Monica's water supply. The remainder of Santa Monica's water supply is drawn from groundwater. The majority of Culver City's water is supplied by the Southern California Water Company, with a small area on the west side of the City supplied by LADWP.

Flooding

Los Angeles County is subject to a wide range of flood hazards, including those caused by earthquakes, intense storms, and failure of man-made structures. Two damaging regional tsunamis caused by the 1812 Santa Barbara and the 1927 Point Arguello earthquakes indicate that faults off the coast of Southern California are capable of producing large local tsunamis. The tsunami concern is heightened because the short historical record does not adequately characterize the long-term tsunami risk.

The Federal Emergency Management Agency (FEMA) has prepared flood maps identifying areas in Los Angeles County that would be subject to flooding during 100-year and 500-year storms events. These maps indicate that a portion of the project routes are located within these flood zones, although the risk for flood is not any greater than that for most areas in the Central Los Angeles Basin. Portions of the existing Exposition railroad right-of-way (ROW) is below grade and some flooding is possible during storm events.

Local Surface Water Bodies

The project routes stretch ten miles to the east of Santa Monica Bay and the Pacific Ocean, the ultimate receiving water body in the region. No other surface water bodies are located near the Study Area. Santa Monica Bay is considered by both Federal and State governments to be a natural resource of national significance that must be preserved and protected under the Natural Estuary Program. Santa Monica Bay is a United States Federal navigable water body, and is listed as an impaired water body in the Federal listing established under the Clean Water Act, Sections 131.1, 303, 304, and 319.

The project routes are located within the Los Angeles-San Gabriel Hydrologic Unit and more specifically fall within the Ballona Creek Watershed Management Area. Beneficial uses of Ballona Creek include: contact and non-contact water recreation; warm freshwater habitat; wildlife habitat; rare and endangered species preservation, marine habitat; ocean, commercial, and sport fishing; and saline water habitat.

Groundwater

Along the Wilshire route, the regional groundwater table exists at depths in excess of 60 feet. However, areas of shallow and perched water do occur relatively close to the surface in alluvial sediments and channel deposits of Ballona Creek and its tributaries. Perched water tables have been rising since the late 1970s; preliminary engineering studies have confirmed the presence of groundwater close to the surface in areas between Wilshire and Olympic Boulevards. Groundwater along the Exposition route is estimated to be between 60 and 90 feet below the surface. Groundwater may contain high levels of hydrogen sulfide.

Local Drainage Patterns

The surface of the Study Area is substantially impervious (paved), thus the infiltration of surface water into groundwater is currently negligible. Major storm drains in the vicinity of the project routes include two major storm drains in the Mid-City area that collect and convey runoff from the Mid-City area to Ballona Creek. The Los Angeles County Department of Public Works, Hydrologic and Water Conservation Division, maintains the northernmost storm drain. The City of Los Angeles Department of Public Works, Bureau of Engineering, maintains the southernmost storm drain. The portion of the County storm drain located in the Mid-City area is currently estimated to provide about a one-year level of flood protection, well below the 10-year capacity considered by the County to provide a basic level of flood protection. The City storm drain located in the Mid-City area is estimated to provide at least a 10-year level of flood protection. Other storm drain facilities include drains along portions of Windsor Boulevard and Bronson Avenue. In addition, there is an existing 18 by 13.6-foot storm drain along Venice Boulevard.

Within the Study Area, Ballona Creek (East Segment) and the Sepulveda Flood Channel (Central segment) are major sources of drainage. The easterly terminus of Ballona Creek is located about 1.5 miles west of Crenshaw Boulevard, near the intersection of Pickford Street and South Cochran Avenue. Ballona Creek is a concrete flood control channel designed to pass local runoff and floodwaters into the Santa Monica Bay. Flows from Ballona Creek originate from many sources, including point-source discharges from industrial sources and storm water. In addition, irrigation runoff, residential car washing, fire fighting, waterline flushing, swimming pool draining, groundwater denaturing at construction sites, and miscellaneous materials from illegal dumping are discharged into the Creek.

Along the Exposition route, surface drainage flows easterly from Flower Street to the Los Angeles River. Surface drainage north of Exposition Boulevard flows in a northeasterly pattern towards Ballona Creek. South of Exposition Boulevard, drainage flows in a western and southern pattern towards Dominguez Channel.

The rate of surface flow is heavily influenced by the impervious character of the underlying land in which there is little opportunity for percolation down to groundwater tables. Paved streets and buildings cover most of the Study Area. However, the Exposition Boulevard route has a greater percentage of pervious surfaces due to the presence of Exposition Park.

Water Quality

The *Water Quality Control Plan, Los Angeles Region (Basin Plan)*, prepared by the California Regional Water Quality Control Board, Los Angles Region (RWQCB), notes that the major contributors to impaired water in Ballona Creek are pollutants from industrial and municipal effluent, and urban non-point runoff. In addition, untreated sewage overflows discharged into Ballona Creek during the rainy season historically have caused beach closures along Santa Monica Bay. Specific pollutants include high levels of dissolved solids (e.g. chlorides, sulfates, heavy metals), bacteria, nutrients from fertilizers and other sources, petroleum hydrocarbons, sediment, solid waste and debris. Rainfall results in these contaminants entering municipal storm drains, which subsequently convey the contaminants to surface waters. In addition, high concentrations of DDT in sediments at the mouth of Ballona Creek and in Marina del Rey provide evidence of past discharges that have resulted in long-term water quality issues.

Point sources of discharges to surface waters, such as those from industrial facilities, contain a broad range of potential contaminants. Locally, these discharges are regulated by the RWQCB under National Pollutant Discharge Elimination System (NPDES) permit regulations, which have been in effect since the 1970s. The quality of base flow waters in Ballona Creek is defined by these discharges.

The quality of water in Ballona Creek is monitored monthly by the Los Angeles County Department of Public Works, Flood Control Division. Water sampling stations near the Study Area are located along Ballona Creek at Fairfax Avenue and Sawtelle Boulevard. The Fairfax Avenue station collects dry weather flow samples only, while the Sawtelle Boulevard station collects both dry weather and storm flow samples. Presently, storm water in Ballona Creek is not treated prior to discharge into the Santa Monica Bay. A solid waste flap gate in Ballona Creek detains debris contained in dry weather flows.

The water quality data for storm flows from the Sawtelle Boulevard station do not indicate a clear trend in mineral concentrations over the past few years. However, there has been a general increase in concentrations of some bacteria. The variability of the data can be attributed to the intensity of a given storm, the timing of the grab sample, and the unpredictable constituents that may be present in storm water runoff at any particular time. The water quality data for the two station's dry weather lows do not indicate a clear trend based on geographical location.

Regulatory Framework

Federal

Clean Water Act. The primary federal law governing water quality is the Federal Water Pollution Control Act of 1972, amended as the Clean Water Act in 1977. This landmark legislation established the NPDES permit process to regulate point source discharges to surface waters. The 1987 amendment to the Clean Water Act added Section 402(p) which requires the United States Environmental Protection Agency (USEPA) to develop regulations for the control of non-point source discharges, such as urban storm water runoff.

Regulation of Industrial Waste Discharges (Point Source Control). All point source waste dischargers to waters in the Los Angeles region, including Ballona Creek, must be permitted in accordance with the NPDES permitting system administered by the RWQCB. Discharge limits include, if required, effluent and receiving water limits. These limits are set to meet the *Basin Plan* water quality objectives (the *Basin Plan* is described in the Regional Regulation Framework). Each discharger must monitor its discharges, and in some cases receiving waters, and submit monitoring reports to the RWQCB according to a prescribed schedule.

Storm Water Regulations. Federal storm water regulations require municipalities to obtain NPDES permits for storm water discharges from municipal storm drains to surface waters. In 1990, the EPA published final regulations for storm water discharges to implement Section 402(p) of the Clean Water Act. These regulations addressed storm water discharges from industrial storm water collection systems. In November 1991, California issued the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities (General Industrial Permit), which requires industrial facilities to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring program to control and evaluate the quality of storm runoff discharging off-site, and to eliminate non-storm water discharges to the storm drain system. On April 17, 1997, the State Water Resources Control Board adopted a revised General Industrial Storm Water Permit under Water Quality Order No. 97-03-DWQ. The general permit replaces the previously issued industrial storm water permits, and is mandated under the Federal Clean Water Act Section 402(p).33 U.S.C. Section 1251 et seq.

In addition to the General Industrial Permit, the State Water Resources Control Board (SWRCB) issued a General Construction Activities Storm Water Permit (Construction Permit) in September 1992, which requires applicable construction projects to file a Notice of Intent (NOI) to comply with the requirements of the Permit. The Construction Permit requires construction-site operators to implement a SWPPP to control sediment and other construction-related pollutants from entering the storm drain system.

These two storm water permitting programs – the General Industrial Permit and the General Construction Permit - are a major attempt to control non-point source pollutants in urban runoff that discharge to the local storm drain system and into receiving waters, such as Ballona Creek.

State

Porter-Cologne Act. The Porter-Cologne Water Quality Act of 1969 established the principal California program for water quality control. This Act authorizes the SWRCB to implement the provisions of the Federal Clean Water Act, and divides the State of California into nine RWQCB areas. Each RWQCB implements and enforces provisions of the Clean Water Act, subject to policy guidance and review by the SWRCB. The Study Area is located in RWQCB Region 4.

In addition, the SWRCB has adopted a General Construction permit, requiring that discharges of storm water from construction activities (e.g., clearing, grading, or excavation of land) on five acres or more must be regulated as an industrial activity and must be covered by a NPDES permit. The General Construction permit is implemented and enforced by the nine California Regional Water Quality Control Boards.

The General Construction permit requires dischargers to eliminate/reduce non-storm water discharges to storm water systems, develop and implement a storm water pollution prevention plan (SWPPP), and inspect storm water control structures and pollution prevention measures. According to permit requirements, the SWPPP shall be implemented with the start of construction activities and be kept on-site for projects commencing on and after October 1, 1992. A Best Management Plan (BMP) shall also be prepared for review and approval by the City. The Best Management Plan, also known as a Water Quality Management Plan (WQMP), identifies all appropriate routine and minimum structural and non-structural controls found in the County's Drainage Area Management Plan (DAMP) Appendix G.

Management of water quality typically includes many BMPs to achieve the best possible water quality. BMPs are required by local authorities, and with proper implementation, protect receiving waters from degradation and can correct for existing problems associated with water quality.

Common BMPs include structural controls and non-structural controls. Structural controls used in storm water management describe engineering solutions to water quality problems, such as detention basins, oil/grit separators, grassed swales, filter strips, and porous pavement. The catch basins included with the project are examples of structural controls. Non-structural controls emphasize controlling the source of pollutants, generally by policy or by public education programs.

In order to obtain coverage under the General Construction Permit, the Applicant is required to submit a NOI prior to construction. The NPDES and SWPPP processes are intended to reduce potential water quality impacts to less than significant levels.

<u>Section 402(p) of the Clean Water Act: National Pollutant Discharge Elimination System Program</u>

Control of Construction-Related Erosion and Sedimentation. In order to control and monitor the water quality of waters of the United States, Congress enacted Section 402(p) of the Clean Water Act. Section 402(p) of the Clean Water Act, also termed the NPDES program, requires a storm water discharge permit to control both point and non-point sources of pollutants. Because of the nature of the alternatives considered, urban runoff (a non-point source of pollutants) is of primary concern. Specifically, two types of non-point source discharges are controlled by the NPDES Program – non-point source discharges caused by general construction activities, and the quality of storm water in municipally separate storm sewer systems.

To minimize the potential effects of construction runoff on receiving water quality, the State requires that any construction activity affecting five acres or more must obtain a General Construction Activity Storm Water Permit. Permit applicants are required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and implement BMPs to reduce construction effects on receiving water quality. In 1997, the USEPA proposed revisions to the 1992 General Permit to clarify that all construction activities, even small construction sites that are part of a larger common plan, must be covered under the revised permit. The SWRCB has not yet developed a revised State permit that reflects the new USEPA requirements. Because development of the transit system would collectively disturb more than five acres, any construction would be subject to existing permit requirements and may be subject to the revised permit requirements if, or when, they are adopted by the SWRCB.

Examples of typical BMPs included in SWPPPs are the use of temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment in a manner that reduces the potential for spills or leaks to enter the storm drain system or surface water system; developing and implementing a spill prevention and cleanup plan; installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that could enter drains or surface waters.

Groundwater Resources. The State of California is not authorized by the California State Water Code to manage groundwater use; instead, case law from various court decisions regulates groundwater use. California landowners have a correlative right to extract as much groundwater as they can put to beneficial use. In some basins, a court has defined that correlative right. In other basins, the correlative right has not yet been defined. Groundwater management programs have usually been developed on an *ad hoc* basis through local agencies, adjudication, and groundwater management districts formed by special legislation. Two additional methods have recently become available: (1) Assembly Bill 3030 (Water Code Section 1750 et seq) allows certain existing local agencies to manage groundwater (i.e., groundwater management districts); and (2) city and county ordinances. The Study Area is neither regulated by a groundwater management district or by city or county ordinance; furthermore, none of the local water districts have been granted statutory authority to regulate groundwater extraction or groundwater recharge.

Maintenance of the Water Quality of Municipally Separate Storm Drainage Systems. Municipal storm water runoff is regulated by municipal permits for a city, county, or groups of cities and counties. The County of Los Angeles received an "early" permit in 1990, prior to the promulgation of the USEPA storm water regulations. The Los Angeles County Municipal Storm Water Permit covers drainage basins associated with the Santa Clara River, Upper and Lower Los Angeles River, Santa Monica Bay, and Upper and Lower San Gabriel River. In summary, the purpose of the municipal storm water runoff permit is to provide a mechanism for monitoring the discharge of pollutants to "waters of the United States" and for establishing appropriate controls for municipally separate storm sewer systems located in municipalities with populations of 100,000 or more.

The City currently operates under the Los Angeles NPDES Municipal Storm Water Permit; as such, the City must ensure that discharges to the storm drain system comply with certain minimum water quality requirements. In order to accomplish this, the City must compile existing data regarding the storm drain system, identify and implement BMPs, and implement a monitoring program for non-point source pollutants.

<u>Waste Discharge Requirements (WDRs)</u>

WDRs for the Discharge of Non-Hazardous Contaminated Soils and Other Wastes in Los Angeles River and Santa Clara River Basins (Order No. 91-93). The afore-referenced WDR allows the disposal of up to 100,000 cubic yards of non-hazardous contaminated soils and other wastes for a maximum period of 90 days. This WDR is not expected to apply to the development of a transit system because there are no known contaminated soils on-site, and any stockpiling of construction-related soils would not occur in a manner that would affect the quality of any waters of the United States.

WDRs for Land Treatment of Petroleum Hydrocarbon Contaminated Soil in Los Angeles and Santa Clara River Basins (Order No. 90-148). The afore-referenced WDR allows the disposal of up to 100,000 cubic yards of petroleum hydrocarbon contaminated soil for a maximum period of 365 days. This WDR is not expected to apply to the proposed project because there is no known contaminated soil on-site, and any stockpiling of construction-related soils would not occur in a manner that would affect the quality of any waters of the United States.

WDRs for Specified Discharges to Groundwater in Santa Clara River and Los Angeles River Basins (Order No. 93-010). The afore-referenced WDR allows the discharge of water resulting from the following activities: hydrostatic testing of tanks, pipes, and storage vessels; construction dewatering; dust control application; water irrigation storage systems; subterranean storage systems; subterranean seepage dewatering; well development and test pumping; aquifer testing, and monitoring well construction. This WDR is expected to apply to the proposed project due to the potential for construction dewatering activities.

Regional

Basin Plan. Under the Clean Water Act, the State was originally required to develop comprehensive basin plans as a prerequisite to receiving federal funding for the construction of municipal waste water treatment plants. The Los Angeles RWQCB developed the *Basin Plan* for Region 4 in 1975, and this plan was most recently updated in 1994. The Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan (1) designates beneficial uses for surface and groundwater; (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the State's anti-degradation policy; and (3) describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional plans and policies, as well as other pertinent water quality policies and regulations.

SCAG Regional Comprehensive Plan and Guide

The Southern California Association of Governments (SCAG) adopted a Water Quality Chapter in January 1995 for its *Regional Comprehensive Plan and Guide* (SCAG 1995). The Water Quality Chapter provides a regional perspective on current water quality issues, and has no direct application to the proposed transit alternatives.

3.11.3 Impact Assessment and Mitigation Measures

Standards of Significance

The alternatives considered would result in a significant hydrology and water quality impact if they would:

- Conflict with applicable legal requirements related to hydrology or water quality, including a violation of state water quality standards or waste discharge requirements;
- Substantially degrade groundwater quality or interfere with groundwater recharge, or deplete groundwater resources in a manner that would cause water-related hazards, such as subsidence;
- Alter the existing drainage pattern of the site or area in a manner that would cause substantial flooding, erosion, or siltation;

- Create or contribute to runoff that would exceed the drainage and flood control capacity of existing or planned storm water drainage systems; or
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows, or otherwise expose people and/or property to water-related hazards, such as flooding.

Methodology for Impact Evaluation

The methodology for the evaluation of impacts to hydrology and/or water quality involves an analysis of existing data related to flooding, drainage, and water quality, and an assessment of whether the proposed action would substantially degrade surface or ground water quality; alter drainage patterns in a manner that would cause flooding, erosion, or siltation; result in exposure of people and/or property to water-related hazards; or otherwise conflict with applicable laws related to hydrology and water quality. This analysis does not rely upon a detailed drainage study or a hydrologic flow analysis.

Impacts

No Action Alternative (Baseline)

Impacts related to storm water runoff, flooding, and groundwater resources. As discussed in Section 2.0 of this report, the No Action Alternative would not entail physical changes to the project routes. Instead, the No Action Alternative would focus on operational bus improvements, such as an increase in fleet size, and buses would continue to operate along city streets. This alternative would not result in any impacts to storm water runoff (e.g., direction, rate, or flow), flood hazards, or groundwater resources (e.g., direction, rate, flow, or quality). However, an increase in the bus fleet could result in a negligible impact on surface water quality; this impact would be considered less than significant.

Transportation System Management (TSM) Alternative

Impacts related to storm water runoff, flooding, and groundwater resources. Similar to the No Action Alternative, this alternative would focus on enhancements to and/or restructuring of transit service within the Study Area. MTA local service buses, as well as MTA Rapid Bus service, would continue to operate along city streets. This alternative would not result in any impacts to storm water runoff (e.g., direction, rate, or flow), flood hazards, or groundwater resources (e.g., direction, rate, flow, or quality). However, an increase in the bus fleet could result in a negligible impact on surface water quality; this impact would be considered less than significant.

Alternative 1: Wilshire BRT(Baseline Median-Running)

Impacts related to storm water runoff. The Wilshire BRT Alternative would be limited to the provision of BRT service within the existing Wilshire Boulevard ROW. This alternative would not require any grading, and all surface water would continue to drain to the existing storm drain systems at the existing volumes and velocities. No significant impacts to the direction, rate, or flow of surface water is anticipated with implementation of Alternative 1. However, an increase in the bus fleet, as well as the provision of additional parking areas (i.e., park-and-ride lots), could result in a negligible impact on surface water quality; however, this impact would be considered less than significant.

Impacts related to flooding. As illustrated by Figure 3.11-1, a portion of the Wilshire BRT would be subject to flooding during 100-year and 500-year storm events. During these storm events, portions of Wilshire Boulevard are, and will continue to be, subject to limited flooding of short duration. Implementation of this alternative would neither create nor contribute to runoff that would exceed the drainage and flood control capacity of the storm drain system, nor would it impede or redirect flood flows. Furthermore, because the transit stops are located outside of the street systems, where a majority, if not all, of the drainage occurs, implementation of this alternative would also not expose people and/or property to water-related hazards. Impacts resulting from flood hazards with implementation of Alternative 1 are considered to be less than significant.

Impacts related to groundwater resources. Because this alternative would not require any grading, and the entire Wilshire Boulevard route is currently paved, implementation of this alternative would also not result in an increase in the amount of impervious surfaces; therefore, there would be no impact to groundwater resources (direction, rate, flow, or quality). Further, this alternative will not draw from any groundwater aquifer. Impacts to groundwater resources would be less than significant.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

With this design option, all components of the Wilshire BRT would be the same, except the BRT would operate exclusively in the existing lanes adjacent to the median. Therefore, the hydrology and water quality impacts resulting from construction and implementation of Alternative 1A would be identical to Alternative 1, and less than significant impacts would occur.

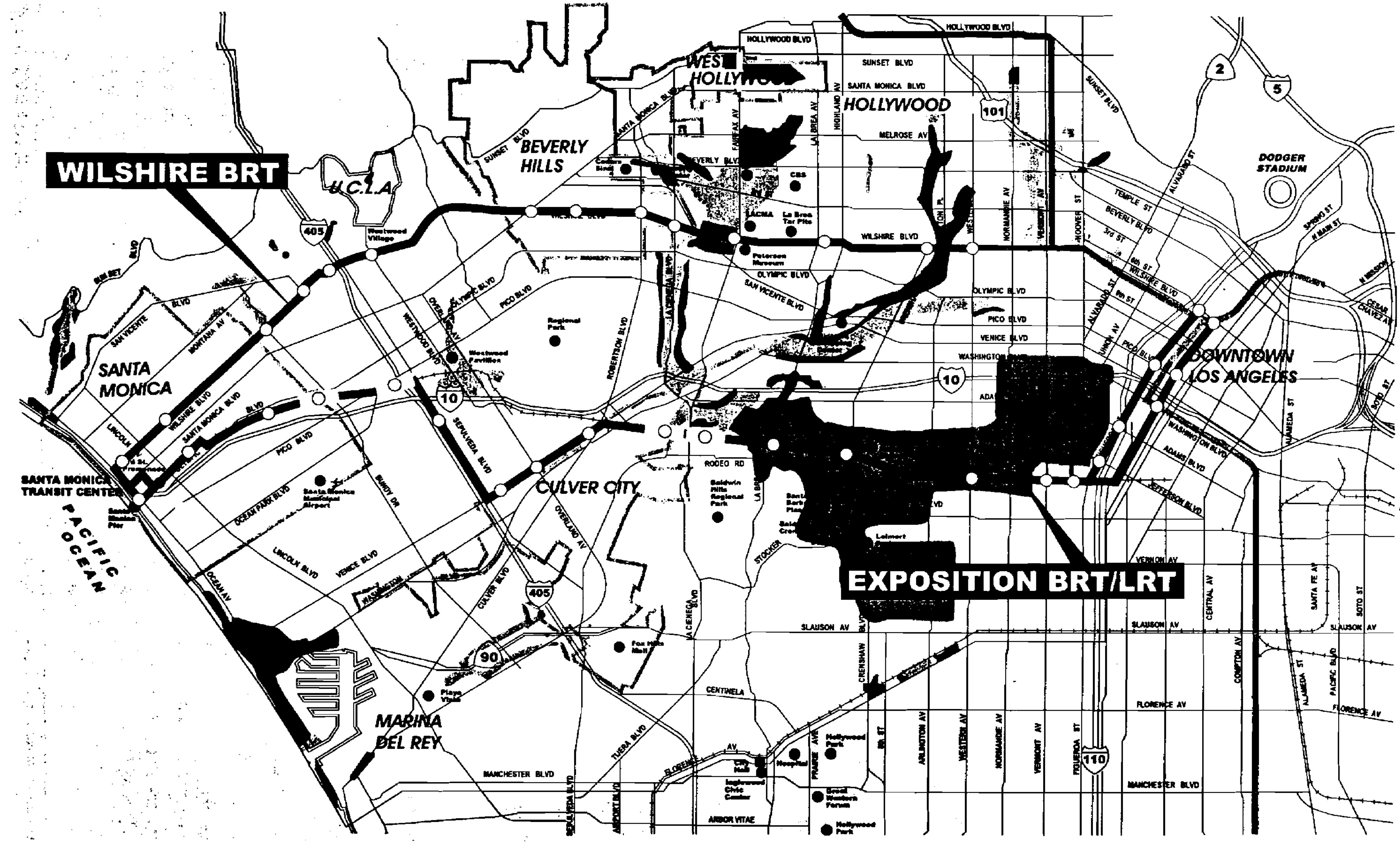
Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

With this design option, all components of the Wilshire BRT would be the same, except the BRT would operate exclusively in the existing lanes adjacent to the curb. Therefore, the long-term hydrology and water quality impacts resulting from construction and implementation of Alternative 1B would be identical to Alternative 1, and less than significant impacts would occur. However, in order to provide an improved curb-lane running surface for buses, some of the existing storm drains must be reconstructed as part of the resurfacing process. Al reconstruction activities will occur with the review and approval of the Engineering Bureau of each City through which the alignment traverses; as such, less-than-significant impacts are anticipated.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Impacts related to storm water runoff. As previously discussed, the Wilshire BRT would be limited to the ROW of Wilshire Boulevard. The Exposition BRT also follows existing public ROWs and is largely contained within the limits of city streets or a former railroad ROW now owned by the MTA. Implementation of this alternative would result in limited grading (to replace the dirt railroad ROW with asphalt to accommodate buses) and a slight increase in impermeable surface area. Therefore, runoff volumes, flows, and velocities would be slightly altered; however, surface runoff would be directed into a constructed drainage system, and impacts would be considered less than significant.

Impacts related to flooding. As illustrated by Figure 3.11-1, a portion of the Wilshire Boulevard route and Exposition Boulevard route would be subject to flooding during the 100-year and 500-year storm events. During these storm events, portions of both routes are, and will continue to be, subject to limited flooding of short duration. Implementation of this alternative would neither



LEGEND: 100-Year Floodplain
500-Year Floodplain

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.11-1

100-YEAR AND 500-YEAR FLOODPLAINS

create nor contribute to runoff that would exceed the drainage and flood control capacity of the storm drain system, nor would it impede or redirect flood flows. Furthermore, because the transit stops are located outside of the street systems, where a majority, if not all, of the drainage occurs, implementation of this alternative would also not expose people and/or property to water-related hazards. Impacts as a result of flood hazards with implementation of Alternative 2 are considered to be less than significant.

Impacts related to groundwater resources. An increase in impervious surfaces would also result in a limited reduction in local groundwater recharge opportunities due to the decreased percolation of rainwater through the soil. Precipitation in the Study Area, however, is characterized by infrequent storms during a brief rainy season, and surface water infiltration is minimal, particularly along the narrow railroad ROW. The majority of recharge to the groundwater supply in Los Angeles County comes from large, natural stream systems or constructed groundwater recharge basins. Therefore, the reduced recharge potential associated with additional impermeable surfaces proposed for the Exposition BRT would be considered less than significant.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

The Exposition BRT MOS component of Alternative 2 would terminate at the Venice/Washington Station. Given that the Wilshire BRT impacts have been disclosed above, and the MOS option of the Exposition BRT is only a shorter route of the full-length alternative, the hydrology and water quality impacts resulting from construction and operation of Alternative 2A would be similar to Alternative 2. No hydrology and water quality impacts would occur west of the Venice/Washington Station, and no increased hydrology and water quality impacts would occur at the westernmost MOS station location. Impacts would be less than significant.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Impacts related to storm water runoff, flooding, and groundwater resources. As previously discussed, the Wilshire BRT would be limited to the ROW of Wilshire Boulevard. The Exposition LRT also follows existing public ROWs and is largely contained within the limits of city streets or a former railroad ROW now owned by the MTA. Implementation of this alternative would result in limited grading (to replace the dirt railroad ROW with light rail tracks) and a slight increase in impermeable surface area. Therefore, the potential impacts to hydrology and water quality that would result from implementation of Alternative 3 would be substantially similar to the hydrology and water quality impacts that are anticipated to result from implementation of Alternative 2. No significant impacts to local or regional surface water quality, storm water runoff and flood hazards, or groundwater resources are anticipated to occur. Impacts as a result of implementation of Alternative 3 are considered to be less than significant.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

The Exposition LRT MOS component of Alternative 2 would terminate at the Venice/Washington Station. Given that the Wilshire LRT impacts have been disclosed above, and the MOS option of the Exposition LRT is only a shorter route of the full-length alternative, the hydrology and water quality impacts resulting from construction and operation of Alternative 3A would be similar to Alternative 3. No hydrology and water quality impacts would occur west of the Venice/Washington

Station, and no increased hydrology and water quality impacts would occur at the westernmost MOS station location. Impacts would be less than significant.

Maintenance Yard

Alternatives 1 through 3 (including the design options and the MOS options) would require storage and maintenance facilities. A new maintenance yard(s) would provide maintenance for both the BRT/Rapid Bus Systems and/or LRT system and, as such, must be centrally located to both systems (i.e., the downtown Los Angeles area). Section 2.0 (Alternatives Considered) provides a detailed description of the location of maintenance yard sites, including the screening process that was used to identify the six potentially feasible sites. In summary, the six maintenance yard sites that are currently being considered by the MTA include:

- NW Corner of Chavez/Mission;
- Existing MTA Division I Area;
- NE Corner Alameda/Washington;
- SE Corner Alameda/Washington;
- Exposition ROW Hooper to Central; and
- Existing MTA South Park Shops.

Figures 2-16 through 2-19 in Section 2.0 (Alternatives Considered) shows the locations and physical layout of the proposed maintenance facilities. These locations are all contained within lands currently owned and operated by the MTA, and are predominately located within industrial areas. The provision of maintenance facilities could result in water quality impacts. A source of contaminated water will be runoff from the maintenance yard where buses will be washed. Chemicals used for vehicle cleaning include solvents, detergents, and surfactants. The wash area will be constructed to drain into a designated collection area, where all effluents will be contained for treatment before discharge. The Industrial Waste Section of the Los Angeles County Sanitation Districts has evaluated Metro Rail's proposed rail carwashing system, which uses water recycling and water treatment through clarification. The Industrial Waste Section staff has concluded that the proposed system is appropriate and will meet existing and proposed water quality standards. Therefore, impacts related to storm water runoff and water quality (caused by operation of the maintenance facilities) would be considered less than significant. Furthermore, because the candidate maintenance facility sites are located within urbanized areas, no grading will be necessary. Therefore, there will be no increase in impervious surfaces, and no impacts related to flooding or groundwater resources are anticipated.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3, and 3A)

The subway design option would provide a subterranean travel corridor for either the bus or light rail alternatives of the Exposition Corridor in the USC/Exposition Park area. In order to implement this design option, MTA must apply for an NPDES permit prior to the start of construction. The NPDES permit would require the preparation and implementation of a SWPPP to control sediment and other construction-related pollutants from entering the storm drain system. This permit would list water quality standards and effluent limits set forth by the RWQCB to protect the beneficial uses of any receiving waters. In addition, this design option would also include a water treatment system during construction of the subway segment to collect surface, ground, and construction cleaning water prior to discharge in storm drains that empty into Ballona Creek. The treated water (effluent) would be regulated by the RWQCB under MTA's NDPES permit for the project, as well as all applicable Waste Discharge Regulations, and would be designed to remove contaminants to a level that meets the NPDES Permit requirements.

Construction activities associated with construction of the subway design option would also generate substantial levels of sediment, dust, and other construction-related pollutants, such as building materials and debris.. Since construction surface water would be treated prior to release to sensitive receiving waters (such as Ballona Creek), no impacts to beneficial uses are anticipated. Furthermore, preparation of an SWPPP, as well as compliance with all requirements of the NPDES Program, including monitoring activities to assess the effectiveness of the Best Management Practices (BMPs), would ensure that a less than significant impact occurs with respect to water quality.

3.11.4 Cumulative Impacts

The 1998 RTP Draft Master EIR (SCAG, 1997), which is hereby incorporated by reference, provides the cumulative context for analysis of the Mid-City/Westside Transit Corridor Project. The 1998 RTP Draft Master EIR provides a programmatic analysis of hydrologic and water quality impacts resulting from implementation of all projects contemplated in the RTP (SCAG, 1998), including the Mid-City/Westside Transit Corridor project, and provides the basis for this cumulative impact analysis.

Cumulative hydrologic and water quality impacts could result from a degradation of water quality by roadway pollutants. Projects contemplated in the RTP that do not require the construction of new facilities (e.g., optimization of the existing transportation system) would not have a direct physical effect on water resources. The indirect effects of reducing traffic congestion would be beneficial to water quality in the region, because reductions in air emissions and accident-related roadway surface pollutants would reduce the level of water-borne pollutants that could migrate to surface and groundwater. Those projects that require construction of new or expanded facilities (e.g., new freeways or expanded roadways or additional parking facilities) would potentially have the greatest adverse impacts, because increased traffic-carrying capacity and increases in surface parking areas could cause increases in surface water pollutants related to tire wear, oil and grease, accident-related spills, and vehicle exhaust. In addition to pollutants that would result from normal roadway/freeway operations, trash, pesticides, and accidental spills of transported materials could contaminate adjacent water bodies. The effects of additional pollutant loadings of surface water could also produce localized impacts on water resources.

Construction-related erosion and sedimentation impacts could also result during clearing and grading operations, and from cut-and-fill slopes that are exposed prior to the establishment of landscaping. The alteration of drainage patterns at stream crossings could also change erosional processes, depending on the design of bridge supports or the use of culverts.

Lastly, to the extent that projects envisioned in the RTP would be built within the urbanized portions of the SCAG region, or within existing rights-of-way, such projects would cause minimal increases in impermeable surface area, and less-than-significant impacts related to flooding would occur.

Compliance with all applicable federal, state, and local laws and regulations pertaining to hydrology and water quality, including, but not limited, to Section 401 of the Clean Water Act (Water Quality Certification), Section 402 of the Clean Water Act (the National Pollutant Discharge Elimination System Program), Section 404 of the Clean Water Act (Department of the Army Permits), Section 1600 *et seq* of the Fish and Game Code of California, the Coastal Zone Management Act, as well as the Best Management Practices specified in SCAG's Areawide Waste Treatment Management Plan (208 Plan) would minimize the discharge of pollutants, reduce construction-related erosion and sedimentation, and would ensure that projects do not expose people or structures to flood-related hazards. Cumulative hydrology and water quality impacts associated with all of the project alternatives (i.e., No Action Alternative, TSM Alternative, and Alternatives 1, 2, and 3) would be less than significant.

3.12 Biological Resources

3.12.1 Introduction

Because of the urbanized and developed character of the Study Corridor, biological resources are not expected to be substantially or significantly affected by the proposed project alternatives. The discussion below outlines the primary biological resource impacts considerations in the corridor.

3.12.2 Affected Environment

The Study Area encompasses approximately 112 square miles. This area, however, is one of the most densely developed and urbanized areas in the southern California region. As a result, open space is largely limited to man-made parks and golf courses. With the exception of the Baldwin Hills, there are no natural open space areas within the Study Area. The only surface water body within the corridor area is Ballona Creek. The creek is maintained by the Los Angeles County Flood Control District as a flood channel and flows from east to west. The surface flow (consisting largely of urban runoff) is contained within a lined channel with the exception of the estuary area in Marina del Rey.

3.12.3 Impact Assessment and Mitigation Measures

Standards of Significance

It is expected that an adverse impact to biological resources would result if development of a transit system would:

- Result in a substantial adverse effect on any federally, state, or locally designated sensitive species, including threatened, endangered, or candidate species as identified by the United States Fish and Wildlife and Service and/or the California Department of Fish and Game;
- Result in a substantial adverse effect on riparian habitat or other sensitive natural communities;
- Remove or have an adverse affect on any federally protected wetlands;
- Interfere with the movement of any native or migratory fish or wildlife species;
- Conflict with local policies or ordinances protecting biological resources; or
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP).

Methodology for Impact Evaluation

The evaluation method for impacts to biological resources entails a review of the California Natural Diversity Data Base to determine whether there are threatened or endangered plant or animal species within the study area, and a comparison of the proposed alignment/route of the transit improvements to determine whether these improvements traverse sensitive ecological areas, including rivers and streams, wetlands, wildlife migratory corridors and/or habitat conservation areas. If an alignment is located within or adjacent to one of these areas, there is a potential for an adverse impact.

Impacts

According to a search of the California Natural Diversity Database (NDDB), there are no sensitive species within the areas affected by the proposed alternatives. The alternatives would not traverse any known wildlife migration corridors or any riparian habitats or wetlands. There are no HCP's that would be affected by the proposed alternatives.

No Action Alternative (Baseline)

As discussed in Section 2.0 (Alternatives Considered) of this report, the No Action Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size. Buses would continue to operate along city streets and there would be no effects outside of these rights-of-way (ROWs). The No Action Alternative would result in less than significant impacts.

Transportation System Management (TSM) Alternative

Similar to the No Action Alternative, this option would focus on enhancements and restructuring of transit service within the corridor area. MTA local service buses as well as MTA Rapid Bus service would continue to operate along city streets and highways and there would be no effects outside of these ROWs. Impacts would be less than significant.

Alternative 1: Wilshire BRT (Baseline Median-Running)

The Wilshire BRT route would be limited to the ROW of Wilshire Boulevard. The transit improvement would require the removal of existing median trees in some segments. These trees are considered to have aesthetic rather than ecological value because of their isolated location within a narrow median of a heavily traveled street. In limited circumstances, the removal of median trees could adversely affect nesting birds. However, no species within the corridor are listed as threatened or endangered. Peregrine Falcons (listed by the California Department of Fish and Game) are known to forage within the West Los Angeles/Westwood area. These species typically nest at high elevations (including office towers) and it is extremely unlikely that the removal of median trees on Wilshire Boulevard would adversely affect this species. Refer to the visual impact analysis for a further discussion of the loss and replacement of median and street trees. Implementation of the mitigation measures identified in Section 3.7 (Visual Quality), such as those requiring additional landscaping, would result in less than significant impacts to street trees along the Wilshire BRT route.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Similar to Alternative 1, impacts are expected to be less than significant.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Similar to Alternative 1, impacts are expected to be less than significant.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Similar to the Wilshire BRT (discussed above), the Exposition BRT option also follows existing public ROWs and is largely contained within existing limits of city streets or a former railroad ROW now owned by the MTA. Within the segment extending from Figueroa Street in the east to Farmdale Avenue on the west, a distance of approximately four miles, the route would require the removal of existing landscaping. Similar to the Wilshire route, this landscaping has more aesthetic than natural habitat value because of its isolated location within a street median or former railroad ROW. The Exposition BRT component would entail a crossing of Ballona Creek in east Culver City. This crossing would be accomplished on a new aerial structure at a point along Ballona Creek where the creek is in a concrete-lined flood control channel. Thus, it is not expected that the placement of columns or piers for the aerial structure in this location would affect the ecological value of the creek in any way. Impacts would be less than significant.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Similar to Alternative 2, impacts would be less than significant.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

This alternative would have similar effects to the Wilshire BRT and Wilshire BRT/Exposition BRT alternative discussed above. The primary exception related to this option would be the removal of coral trees from the median of Olympic Boulevard in Santa Monica. The area affected would extend from approximately Cloverfield Boulevard to 10th Street. Over two dozen trees would be affected by the LRT alignment within a new median in Olympic Boulevard. The removal of these trees would likely affect micro-habitats for urban birds and other species. No nests of listed or endangered species would be affected. Similar to other areas, the loss of trees would have a greater visual and aesthetic impact than an effect on biological resources. See Section 3.7 for a further discussion of visual impacts.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Similar to Alternative 3, impacts would be less than significant.

Maintenance Yard

As discussed in Section 2 of this report, the MTA is considering candidate maintenance yard site locations for BRT operations. Six candidate sites are under consideration. Each of the sites is located in a developed and urbanized area near downtown Los Angeles. No impacts to biological resources would be expected from the construction and operation of maintenance yards at the candidate sites under consideration.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

As discussed in Section 2, a design option is being considered in the Exposition Park area, where a tunnel would be constructed for either BRT or LRT in the area between Figueroa Street and Vermont Avenue. Although the tunnel would be constructed within campus and park type area. The area is highly urbanized and no threatened or endangered species are known to be located in the area. Thus, no significant biological resource impacts are expected from the tunnel design option.

Mitigation

None required.

3.12.4 Cumulative Impacts

Because there are no biological resources within the project area, no cumulative impacts are anticipated.

3.13 Energy Resources

3.13.1 Introduction

Generally, vehicles associated with transit development and improvements (i.e., buses and rail) consume energy. The discussion below illustrates the amount of energy expected to be consumed by the development of a transit system.

3.13.2 Affected Environment

The existing bus, urban rail, commuter rail, and automobiles consume a total of approximately 620,250 billion British thermal units (BTU)[1] annually. Automobiles currently consume the most oil (approximately 105,243,547 barrels) and urban rail consumes the least amount of oil (approximately 53,485 barrels). Table 3.13-1 shows the existing amount of energy used annually for each vehicle class.

TABLE 3.13-1
ANNUAL ENERGY USAGE

Vehicle Class	Total BTU Consumption (Billions)	Total Barrels of Oil
Bus	9,158	1,578,968
Urban Rail	310	53,485
Commuter Rail	369	63,682
Automobiles	610,413	105,243,547
Annual Total	620,250	106,939,683

Source: Terry A. Hayes Associates, Manuel Padron & Associates.

3.13.3 Impact Assessment and Mitigation Measures

Standards of Significance

Direct energy consumption involves energy used by the operation of vehicles (automobile, truck, bus, or train) within the corridor. In assessing the direct energy impact, consideration was given to the following factors:

- Annual vehicle miles traveled (VMT) for automobiles, trucks, buses, and heavy rail vehicles;
- Variation of fuel consumption rates by vehicle type.

Methodology for Impact Evaluation

The direct energy analysis for each alternative was based on projected year 2020 corridor traffic volumes and the total VMT. The 2020 daily traffic volumes for the study corridor were provided by the MTA model and annualized based on transit statistics. The VMT fuel consumption method

1 One British thermal unit (BTU) is the quantity of energy necessary to raise one pound of water one degree Fahrenheit.

utilized for this project is outlined in the *Technical Guidance on Section 5309 New Starts Criteria* (Federal Transit Administration [FTA], 1999). Energy consumption factors for the various modes identified in Table 3.13-2 were developed by Oak Ridge Laboratory and published in the 1996 *Transportation Energy Book: Edition 16.*

TABLE 3.13-2 ENERGY CONSUMPTION FACTORS	
Mode	**Factor**
Passenger Vehicles (automobiles, vans, light trucks)	6,233 BTU/Vehicle Mile
Transit Bus (all vehicle types) /a/	41,655 BTU/Vehicle Mile
Rail (light or heavy)	77,739 BTU/Vehicle Mile
/a/ FTA recommends utilizing a transit bus energy consumption factor of 41.655 BTUs/VMT for all bus types (including alternative fueled buses). Sufficient data has not been available to develop consumption factors for alternative fuels such as CNG (compressed natural gas), LNG (liquefied natural gas), and others.	
BTU = British thermal unit.	
Source: Oak Ridge Laboratory, 1996.	

Direct energy, measured in BTU, was converted to the equivalent barrels of crude oil for comparison of alternatives. The change in annual BTUs was calculated for all alternatives.

Impacts

Change in regional energy consumption based on changes in VMT for each alternative is summarized in Table 3.13-3. Total annual VMT are anticipated to decrease under all alternatives when compared to the No Action Alternative. However, total VMT for the Wilshire BRT and Exposition LRT Alternative would decrease the most.

TABLE 3.13-3 CHANGE IN REGIONAL ENERGY CONSUMPTION – YEAR 2020					
	Passenger Vehicle	**CNG Bus**	**Light/Heavy Rail**	**Commuter Rail**	**Total Change**
TSM vs. No Action					
Change in VMT/Year	-2,468,399	189,937	-6,674	21,971	-2,263,215
Percent Change	-0.002%	0.08%	-0.07%	0.45%	-0.002%
Wilshire BRT vs. No Action					
Change in VMT/Year	-27,354,710	1,800,837	90,422	37,479	-25,425,972
Percent Change	-0.02%	0.77%	0.91%	0.74%	-0.02%
Wilshire BRT and Exposition BRT vs. No Action					
Change in VMT/Year	-43,702,396	2,750,881	191,765	34,575	-40,725,175
Percent Change	-0.03%	1.17%	1.92%	0.71%	-0.03%
Wilshire BRT and Exposition LRT vs. No Action					
Change in VMT/Year	-60,902,128	-735,645	1,669,839	-2,581	-59,970,515
Percent Change	-0.04%	-0.31%	16.72%	-0.05%	-0.04%

TABLE 3.13-3
CHANGE IN REGIONAL ENERGY CONSUMPTION – YEAR 2020

	Passenger Vehicle	CNG Bus	Light/Heavy Rail	Commuter Rail	Total Change
Wilshire BRT vs. TSM					
Change in VMT/Year	-27,354,710	1,800,837	90,422	37,479	-23,162,757
Percent Change	-0.02%	0.68%	0.97%	0.32%	-0.02%
Wilshire BRT and Exposition BRT vs. TSM					
Change in VMT/Year	-41,233,947	2,560,944	198,439	12,604	-38,461,960
Percent Change	-0.03%	1.09%	1.99%	0.26%	-0.03%
Wilshire BRT and Exposition LRT vs. TSM					
Change in VMT/Year	-58,433,679	-925,582	1,676,513	-24,552	-57,707,300
Percent Change	-0.04%	-0.39%	16.80%	-0.50%	-0.04%

VMT = vehicle miles traveled.
Source: Terry A. Hayes Associates, see FTA New Start Worksheets.

Table 3.13-4 summarizes the amount of fuel each alternative consumes annually. Among all the alternatives being considered, the No Action Alternative is expected to consume the most oil, and the Wilshire BRT and Exposition BRT is anticipated to consume the least oil.

TABLE 3.13-4
ANNUAL FUEL CONSUMPTION

			Change in Barrels of Oil Consumed vs. No Action		Changes in Barrels of Oil Consumed vs. TSM	
Alternative	**Total BTU Consumed (billions) /a/**	**Barrels of Oil**	**Barrels of Oil**	**Percent Change**	**Barrels of Oil**	**Percent Change**
No Action	894,086	154,152,740	N/A	N/A	N/A	N/A
TSM	894,080	154,151,741	-999	<-0.01%	N/A	N/A
Wilshire BRT	894,001	154,138,138	-14,602	-0.01%	-13,603	-0.01%
Wilshire BRT and Exposition BRT	893,946	154,128,698	-24,042	0.02%	-23,043	-0.01%
Wilshire BRT and Exposition LRT	893,805	154,104,345	-48,395	-0.03%	-47,396	-0.03%

/a/ BTU = British thermal unit.
Source: Terry A. Hayes Associates, see FTA New Start Worksheets.

No Action Alternative (Baseline)

Under the No Action Alternative, the annual VMT for automobiles and trucks within the region is forecasted to be approximately 141.7 billion miles in the year 2020. The annual VMT is anticipated to be approximately 235.5 million for CNG buses, 10 billion for light or heavy rail, and 4.9 million for commuter rail.

For the No Action Alternative, a total of approximately 154,152,740 barrels of oil, or approximately 894,086 billion BTU) is expected to be consumed within the region annually. The No Action

Alternative would consume the most oil among all the alternatives being considered. Impacts would be less than significant.

Transportation System Management (TSM) Alternative

The TSM Alternative would decrease annual passenger vehicle and light/heavy rail VMT by approximately 0.002 and 0.07 percent, respectively, when compared to the No Action Alternative. However, annual CNG bus and commuter rail VMT is anticipated to increase by approximately 0.08 and 0.45 percent, respectively. Overall, the TSM Alternative would reduce total annual VMT by approximately 2,263,215 miles, or 0.002 percent, when compared to the No Action Alternative. Among all the alternatives being considered, the TSM Alternative will conserve the least amount of energy when compared to the No Action Alternative.

A total of approximately 154,151,741 barrels of oil is expected to be consumed under the TSM Alternative annually. Generally, oil consumed under the TSM Alternative is anticipated to decrease by less than 0.01 percent per year when compared to the No Action Alternative. Similar to the No Action Alternative, impacts would be less than significant.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Annual passenger vehicle VMT for the Wilshire BRT is anticipated to decrease by approximately 0.02 percent when compared to the No Action Alternative and the TSM Alternative. However, annual VMT for CNG buses, light/heavy rail, and commuter rail is expected to increase by approximately 0.77, 0.91, and 0.74 percent, respectively, when compared to the No Action Alternative. When compared to the TSM Alternative, annual VMT for CNG buses, light/heavy rail, and commuter rail is anticipated to increase by approximately 0.68, 0.97, and 0.32 percent, respectively. Overall, total VMT is expected to decrease by approximately 0.02 percent per year when compared to both the No Action Alternative and the TSM Alternative.

Vehicles operating within the region are anticipated to consume a total of approximately 154,138,138 barrels of oil, or approximately 894,001 billion BTU, per year. Fuel consumption under this alternative is approximately 0.01 percent less than both the No Action Alternative and the TSM Alternative. Impacts would be beneficial.

Alternative 1A: Wilshire BRT (Median Adjacent)

Impacts would be similar to Alternative 1 discussed above. Beneficial impacts would occur.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Impacts would be similar to Alternative 1 discussed above. Beneficial impacts would occur.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Annual passenger vehicle VMT for the Wilshire BRT and Exposition BRT is anticipated to decrease by approximately 0.03 percent when compared to the No Action Alternative and the TSM Alternative. However, annual VMT for CNG buses, light/heavy rail, and commuter rail is expected to increase by approximately 1.17, 1.92, and 0.71 percent, respectively, when compared to the No Action Alternative. When compared to the TSM Alternative, annual VMT for CNG buses, light/heavy rail, and commuter rail is anticipated to increase by approximately 1.09, 1.99, and 0.26 percent, respectively. Overall, total VMT is expected to decrease by approximately 0.03 percent per year when compared to both the No Action Alternative and the TSM Alternative.

Under the Wilshire BRT and Exposition BRT, vehicles operating within the region are anticipated to consume a total of approximately 154,128,698 barrels of oil, or approximately 893,946 billion BTU, per year. Fuel consumption under this alternative is approximately 0.02 percent less than the No Action Alternative, and approximately 0.01 percent less than the TSM Alternative. Among all the alternatives being considered, the Wilshire BRT and Exposition BRT would consume the least amount of oil. Impacts would be beneficial.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Impacts would be similar to alternative 2. Beneficial impacts would occur.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Of the three build alternatives, the Wilshire BRT and Exposition LRT will have the highest increase in light/heavy rail VMT (16.72 percent annual increase over the No Action Alternative and 16.80 percent annual increase over the TSM Alternative). With the exception of light/heavy rail VMT, annual VMT for passenger vehicle, CNG bus, and commuter rail are anticipated to decrease. Among all the alternatives being considered, the Wilshire BRT and Exposition LRT would have the smallest annual VMT (0.04 percent less than both the No Action Alternative and the TSM Alternative).

Under the Wilshire BRT and Exposition LRT Alternative, vehicles operating within the region are anticipated to consume a total of approximately 154,104,345 barrels of oil, or approximately 893,805 billion BTU, per year. Fuel consumed under this alternative is approximately 0.03 percent less than the No Action Alternative, and approximately 0.03 percent less than the TSM Alternative. Impacts would be beneficial.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Impacts would be similar to alternative 2. Beneficial impacts would occur.

Maintenance Yard

As discussed in Section 2 of this report, the MTA is considering candidate maintenance yard site locations for BRT operations. With the exception of the South Park Shops, the remaining five candidate sites would be located in proximity to the Wilshire BRT route and would have minimal service miles to the maintenance yard. The service miles to the South Park Shops would be about 2 times greater than the average service miles from the other candidate yard site locations.

In terms of construction-related energy consumption, the existing MTA owned sites (Alameda and 6th, South Park Shops) would likely require the least amount of site work and energy consumption. Of the four remaining sites that would require demolition and new construction, the Chavez and Mission site would have the greatest energy consumption due to extensive amount of site work needed to level the site. The remaining sites such as Washington and Alameda Northeast, Washington and Alameda Southeast, Exposition ROW, would require minimal energy for site clearance and construction. Impacts would be less than significant.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

The option to construct a tunnel approximately 40 feet deep and ½ mile long would require more energy resources than the primary option of constructing the BRT or LRT facilities at grade. The primary source of additional energy consumption would result from the use of earthmoving equipment for construction subway design option, as well as the extensive amount of haul trucks and haul truck travel to spoil sites to remove the excavated earthwork. The additional energy consumption required for this option would not result in a significant impact.

Mitigation

3.13-1 - The LACMTA through its vehicle procurement policy shall specify energy efficiency specifications for the double-articulated bus to be purchased and operated on the BRT routes.

3.13-2 - The LACMTA through plans and specifications shall ensure that stations and other elements of the BRT or LRT infrastructure use the most energy efficient designs and equipment.

3.13-3 – The LACMTA shall select a maintenance yard location that minimizes bus travel and minimizes the amount of site work necessary to construct the maintenance facility.

3.13.4 Cumulative Impacts

The energy consumption statistics and comparisons presented in this section represent the net effect on regional travel from the various alternatives, and represent cumulative incremental changes in the region. Although there are currently regional power supply disruptions in the marketplace due to deregulation of electricity providers in California, the majority of the project study area is served by the Los Angeles Department of Water and Power which has not experienced shortages. Significant cumulative impacts are not anticipated.

3.14 Safety and Security

3.14.1 Introduction

The purpose of this section is to characterize existing and future safety and security issues for passengers, pedestrians, motorists, and the surrounding community. This section will identify any potentially significant safety and security impacts that could occur due to the introduction of transit improvements into the Mid-City/Westside Transit Corridor. Various schools and parks are located within a ¼ of a mile of both the Wilshire and Exposition corridors (See discussion in Chapter 3.15 dealing with Community Facilities). Of concern is the potential for pedestrian/motorist conflict. Safety issues include station accidents, boarding and disembarking accidents, and right-of-way accidents. The impact on pedestrian and motorist safety in relation to those environments are considered below. Another aspect of the safety question is security, particularly whether transit station and/or parking design, location, layout would compromise the safety of transit patrons or surrounding communities making them more susceptible to criminal activity.

3.14.2 Affected Environment

Wilshire Boulevard is classified as a major arterial. As discussed in the Land Use portion of this report, Wilshire Boulevard is located within the most densely developed corridor in the Los Angeles region. For the project under consideration, Wilshire extends from Western Avenue in Los Angeles to downtown Santa Monica for a distance of 13.2 miles. The corridor is located in a dense urban environment with high volumes of pedestrian and motorist activity. Pedestrian activity is particularly high in the Wilshire Center area, Miracle Mile, downtown Beverly Hills, Westwood, West Los Angeles and in Santa Monica.

Between Western Avenue and 2nd Street in downtown Santa Monica, 90 signalized intersections are present. In addition, 40 legal pedestrian crossings that are not equipped with traffic signals exist along this corridor. A majority of the unsignalized crosswalks are unmarked. Pedestrians can legally cross a street at any signalized or unsignalized crosswalk, or at an unmarked crosswalk at an intersection. In this regard, available comparative accident statistics shows that the intersections along Wilshire Boulevard (within the project area) is not among the 50 highest accident intersection locations within the City of Los Angeles.

The Exposition corridor is comprised of approximately 17 miles. Proposed operations would occur largely within the MTA-owned (former railroad) right-of-way along Exposition Boulevard from downtown Los Angeles to downtown Santa Monica. Other portions of the corridor include use of such streets as Figueroa or Hill Street at the eastern and Venice Boulevard, Sepulveda, Olympic and Colorado Boulevard in the western portion of the corridor. These streets are also major arteries but they do not carry the level of traffic volume as Wilshire Boulevard nor do they have the same high level of pedestrian sidewalk activity.

The existing transportation right-of-way was purchased by the MTA from the Southern Pacific Railroad Company in the early 1990's to provide high capacity transit service to the Westside. The alignment is primarily surrounded by residential land use along the core of the alignment, with retail and commercial development at both ends. Along the full Exposition alignment there are 38 existing signalized intersections. There are also a large number of unsignalized local street crossings.

Existing Procedures

The MTA oversees the operation of bus and light rail transit services throughout Los Angeles County. The MTA is also responsible for implementing it own *System Safety Program Plan* to maintain and improve the safety of commuter operations, reduce the costs associated with accidents and comply with state regulations. These safety measures were established to provide worker and passenger safety, crime prevention, adequate emergency response, and emergency procedures following natural disasters. Furthermore, the MTA currently provides police surveillance, non-uniformed police inspectors on transit and at major transit nodes, closed circuit television, and an emergency radio system to provide quick response to emergencies.

Over the last 10 years the MTA has established several projects to enhance the safety of the passengers, employees and the community. These projects include:

- Photo equipment has been installed on buses, permitting live video to be observed, to increase the safety of the passengers and employees.
- Direct communication services on the buses with the Los Angeles Police Department or the Los Angeles Sheriffs Department Transit Dispatch/Emergency Response Center.
- The Transit Safety Awareness Program communicates safety information to motorists and pedestrians in an attempt to change unsafe behaviors. Safety information is communicated through transit user aids such as timetables and bus stop information signs and via the internet.
- MTA personnel are offered Community Emergency Response training (CERT) in collaboration with the Los Angeles City Fire Department. Employees are trained in earthquake awareness, disaster medical procedures, and rescue operations.
- Four quadrant gates have been installed at highway-LRT grade crossings to deter motorists from driving around the lowered gates.
- Pedestrian swing gates and pedestrian automatic gates have been installed at pedestrian crossings of the LRT trackway, to control pedestrian movement.
- Photo enforcement of grade crossing violations has been installed at various crossings along the Blue Line to discourage motorists from driving around the lowered gate arms.

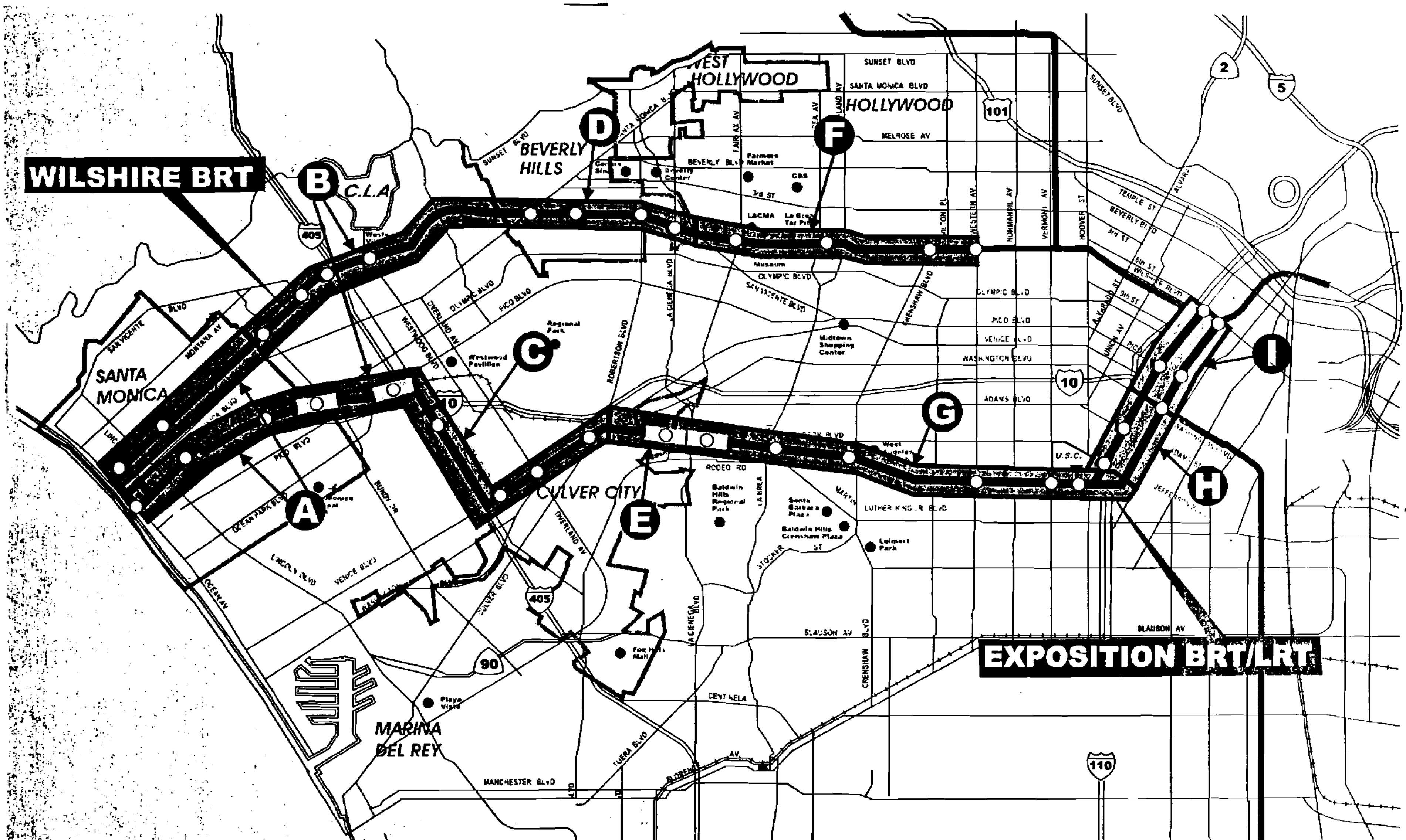
The design of existing bus and rail facilities (including vehicles, stations, parking lots, etc.) provides a safe, secure, and comfortable transit system. Transit patrons along the Wilshire and Exposition alignments would be provided with station and platform amenities such as covered waiting platforms and secure lighting. In addition, the MTA is including amenities specifically designed for the project. Some of these include Advanced Traveler Information Systems (ATIS), bike lockers, map cases and weather-resistant ticket vending machines. Security related design features include emergency telephones, public announcement (PA) systems, and closed circuit monitoring systems. Landscaping and public art would also be incorporated into the project design.

The primary concern regarding security is the environment into which the transit improvements will be introduced. The addition of increased pedestrian levels and activity at transit stations raises the potential for security related problems that must be handled by either MTA security personnel or affect local police departments. In this context, the Mid-City/Westside Transit Corridor is served by police departments in the City of Los Angeles, Culver City, Beverly Hills and Santa Monica (refer to Figure 3.14-1). Key characteristics of these departments are as follows. The transit system is served in large part by MTA Security. The MTA maintains a security force with a staff of 94 security officers and 10 administrative staff. The MTA security is authorized to carry weapons. MTA security jurisdiction includes MTA properties and/or events. Primary duties include revenue pickup and MTA light rail station patrol (Blue and Green Line). Local law enforcement (local police departments and L.A. County Sheriffs) provides all other security related functions.[1]

- The Los Angeles Police Department is divided into four bureaus, which are then broken down into divisions. The proposed project area extends through six LAPD Divisions (Pacific, West Los Angeles, Wilshire, Newton, Rampart and Southwest).
- The Southwest Community Police Station covers approximately 9.8 square miles and serves a population of 165,000. Located in the South Bureau this division employs 355 sworn officers and 27 civilian personnel. The Exposition corridor falls within this division.
- Rampart Division in the Central Bureau serves the Wilshire corridor. This division encompasses 8.0 square mile area and serves a population of 375,000 people. This station employs 368 sworn officers and 33 civilians.
- Newton Community Police Station serves 9.0 square miles and a population of approximately 150,000 people. This station employs 294 sworn officers and 26 civilians.
- The Wilshire Community Police Station is comprised 14.5 square miles and has a population of nearly 233,000 residents and is under the jurisdiction of the West Bureau. This station employs 400 sworn officers and 28 civilian staff members.
- The West Los Angeles Division, which is located in the West Bureau, encompasses 65 square miles and serves over 215,000 residents. The Wilshire Corridor falls within the West Los Angeles Division Jurisdiction. This station employs 276 sworn officers and 25 civilians.
- The Pacific Division, which is located in the West Bureau and encompasses 24.1 square miles and serves over 200,000 residents. The Exposition corridor falls within the Pacific Division Jurisdiction. The Pacific Division employs 296 sworn officers and 31 civilians.
- Culver City Department serves the Exposition Corridor. This Police Department employs 124 sworn officers and 200 civilian staff members. The Culver City Police Department serves a population of approximately 38,793.
- Beverly Hills Police Department serves the Wilshire Corridor has 134 sworn officers and 62 civilian personnel. Beverly Hills has a population of approximately 33,700.

---

1 10/21/2000 conversation with MTA Systems Security Manager, Pamela Murano.



LEGEND: **A** Santa Monica Police Dept.
B LAPD West LA Community Division
C LAPD Pacific Community Division
D Beverly Hills Police Dept.
E Culver City Police Dept.
F LAPD Wilshire Community Division
G LAPD Southwest Community Division
H LAPD Newton Community Division
I LAPD Central Community Division

N

SOURCE: Terry A. Hayes Associates

METRO Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.14-1

POLICE SERVICE AREAS

- The Wilshire and Exposition Corridors are served by the Santa Monica Police Department. With 196 sworn officers and 238 civilian employees this police department serves a population of approximately 96,528.

Table 3.14-1 illustrates the relative Part I crime rates and response times within the corridor. Part I Crimes include homicide, rape, aggravated assault, robbery, burglary, larceny, and vehicle theft. The data broadly suggest that the crime rate may be slightly higher in the southern portion of the transit corridor.

TABLE 3.14-1
PART I CRIME RATE AND RESPONSE TIME (YEAR 1999)

	Part I Offenses	Crime Rate (Part I offenses Per 1000 Population)	Average Response Time (minutes)
Santa Monica Police Department	4884	50.6	4.92
Culver City Police Department	1,446	37.2	3
Beverly Hills Police Department	1549	46.0	3.5
Los Angeles Police Department			
Pacific	10996	72.1	9.5
West Los Angeles	6731	22.4	10.4
Wilshire	12453	40.6	9.3
Newton	8257	60.6	9.1
Rampart	9677	52.0	9.4
Southwest	11255	56.6	9.5

In addition to crimes reported for the general population by the local police, statistics are also maintained for the MTA operations. Specifically, the Blue Line and Green Line are under the jurisdiction of the Los Angeles County Sheriff's Department. According to the Transit Services Bureau operated by the Los Angeles County Sheriff's Department4,403 incidents were reported for the 1999 year (1,281 for Metrolink and 2,913 for MTA). Of the total reported 391 of the crimes (8%) were Part I Crimes. Statistics as reported by the Los Angeles Police Department for transit crimes 2,208 offenses were reported for 1999.

3.14.3 Impact Assessment and Mitigation Measures

Standards of Significance

Appendix G of the State CEQA Guidelines draws particular attention to those projects which would "create a potential public health hazard," or "interfere with emergency response plans or emergency evacuation plans." Project effects on safety and security would normally be considered significant under CEQA if they:

- Cause or create the potential for substantial adverse safety conditions, including: station accidents, boarding and disembarking accidents, right-of-way accidents, collisions, and fires, and major structural failures; or substantially limit the delivery of community safety services, such as police, fir, or emergency services;
- Cause or create the potential for substantial adverse security conditions, including: incidents, offenses, and crimes; or
- Substantially interfere with the implementation of an emergency evacuation plan.

Methodology for Impact Evaluation

Pedestrian and motorist safety along the alternatives considered in this document are evaluated on a qualitative level based on the experience of LRT systems throughout North America with similar alignment types. In addition, pedestrian safety along the BRT alignments were evaluated based on the experience gained from LRT alignments in North America due to the similarities in alignment type and operation. Research conducted on pedestrian and motorist safety referenced in this section include *Transit Cooperative Research Program (TCRP) Report 17 – Integration of Light Rail Transit into City Streets, TCRP Project A-13 – Light Rail Service: Vehicular and Pedestrian Safety*, and *National Urban Transit Institute, At-Grade Busway Planning Guide.*

Safety Impacts

No Action Alternative (Baseline)

With the no project alternative, it is assumed that improvements will not be made to any of the pedestrian crossings. Based on existing trends, the number of pedestrian collisions at crosswalks may increase with the increase in vehicular volume on the Wilshire and Exposition corridors. This increase is a result of increased exposure between pedestrians and vehicles at intersections and pedestrian only crossings. Along the Wilshire corridor, under the No Project Alternative, the existing 90 signalized intersections will remain as well as the 40 legal pedestrian crossings, many of which are unmarked. Pedestrians can legally cross a street at any signalized or unsignalized crosswalk, or at an intersection with an unmarked crosswalk.

Under the No Project Alternative, student safety along the Wilshire and Exposition alignments would remain similar to current conditions. There may be an increase in student- involved collisions along the two corridors due to the increase in exposure caused by increased traffic volumes.

Under the No Project Alternative, safety at crossings near parks along the Wilshire and Exposition alignments would remain similar to current conditions. There may be an increase in pedestrian involved collisions along the two corridors due to the increase in exposure caused by increased traffic volumes. Impacts would be less than significant.

Transportation System Management (TSM) Alternative

With a TSM alternative the number of collisions involving pedestrians may increase with the increase in vehicular volume on the Wilshire and Exposition corridors. Similar to the No Action Alternative, the TSM alternative does not provide improvements to the existing pedestrian crossings in the study area. Along the Wilshire corridor, under the TSM Alternative, the existing 90 signalized intersections will remain as well as the 40 legal pedestrian crossings, many of which are unmarked.

Under the Transportation System Management Alternative, student safety along the Wilshire and Exposition alignments would remain similar to current conditions. There may be an increase in student-involved collisions along the two corridors due to the increase in exposure caused by increased traffic volumes.

Under the Transportation System Management Alternative, safety at crossings near parks along the Wilshire and Exposition alignments would remain similar to current conditions. There may be an increase in pedestrian involved collisions along the two corridors due to the increase in exposure caused by increased traffic volumes. Impacts would be less than significant.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Pedestrian safety at existing intersections would be affected by the addition of a new BRT right-of-way. Pedestrian safety is improved by encouraging the use of well marked crosswalks at signalized locations. Pedestrian crossings of the busway along the Wilshire BRT alignment will be controlled by pedestrian signals. Existing unsignalized pedestrian crossings of Wilshire Boulevard in Santa Monica will be signalized to provide an improved level of safety for pedestrians. Along the Wilshire corridor with the Wilshire BRT Alternative, 50 new traffic signals will be installed to provide a total of 139 signalized intersections and 4 pedestrian only signalized crossings.

Pedestrian safety at highway-BRT at grade crossings focuses on the ability of a pedestrian to determine that a bus is approaching, and proceed to a safe location when the bus passes. Pedestrian "Walk/Don't Walk" signals will be installed at all of the pedestrian crosswalks that cross the busway. The crosswalks could also be equipped with an active "Bus Coming Icon" to warn pedestrians of the presence of an approaching bus. The stations will be designed to allow for a pedestrian refuge area between the exclusive busway and general roadway. If pedestrian signals are actuated, the pedestrian refuge will be equipped with a pedestrian push button to allow pedestrians to clear off the platform.

The installation of pedestrian signals at crosswalks that are not currently signalized will increase the level of safety at the crosswalks. Pedestrians can legally cross a street at any signalized or unsignalized crosswalk, or at an intersection with an unmarked crosswalk. Along the Wilshire corridor with the Wilshire BRT alternative, the number of legal crosswalks will not be reduced. Also, due to the installation of 50 new traffic signals, the level of pedestrian safety along the Wilshire corridor will be greater with the Wilshire BRT Alternative than in the No Build Alternative.

Along the Wilshire BRT alignment 18 schools exist within ½ mile of the corridor. Thirty-six (36) new traffic signals will be installed within ½ mile of a school along the Wilshire BRT alignment. All of the traffic signals will be equipped with pedestrian signals. The additional signalized pedestrian crossings of Wilshire Boulevard will increase pedestrian safety along the alignment.

Along the Wilshire BRT alignment 12 parks exist within ½ mile of the corridor. Twenty-eight (28) new traffic signals will be installed within ½ mile of a park along the Wilshire BRT alignment. All of the traffic signals will be equipped with pedestrian signals. The additional signalized pedestrian crossings of Wilshire Boulevard will increase pedestrian safety along the alignment.

Impacts would be significant at unsignalized crosswalks and in any locations where the station median platforms are too small to accommodate pedestrian queues. Safety impacts would be less than significant for motorists.

Mitigation Measures 3.14-1 through 3.14-4 would ensure that less-than-significant impacts, and even beneficial impacts, occur with respect to Alternative 1:

- *Mitigation Measure 3.14-1:* All pedestrian crossings along the Wilshire BRT route shall be signalized. Appropriate signage will be installed clearly indicating correct methods to cross.

- *Mitigation Measure 3.14-2:* All station areas shall be lighted to provide a safe environment and visibility of the station platform and parking areas from adjacent land uses.
- *Mitigation Measure 3.14-3:* For all schools and parks within one-half mile of the transit alignment, the LACMTA shall sponsor a pedestrian safety education program, explaining acceptable methods to cross the guideway lanes.
- *Mitigation Measure 3.14-4:* In all mixed flow sections of the route, where transit vehicles will operate in street traffic, appropriate warning signs shall be installed making drivers aware of the condition, particularly in those segments where LRT vehicles will operate in mixed traffic.

Implementation of Mitigation Measures 3.14-1 through 3.14-4 will ensure a less than significant impact (with respect to motorists) or beneficial impact (with respect to pedestrians) would occur.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Many of the same safety concerns for motorists described for the Wilshire BRT Median Reconstruction Baseline (Alternative 1) are also applicable for the Wilshire BRT Median Adjacent Design Option. The main difference from the standpoint of motorist safety is the location of the interface between the motorist and the BRT. In this alternative, a motorist intending to make a left turn must first merge into the BRT lane and then merge into the exclusive left turn lane, all in one movement. This alignment moves the conflict point between the motorist and the BRT from the signalized intersection, to the approach lanes, where the movement is not controlled. Although conducting a lane change is generally not considered a high risk movement, the motorist must cross the BRT lane into the exclusive left turn lane at a speed that may be slower than the speed of the BRT (approaching from behind). This difference in speed may cause the motorist to misjudge the speed of the BRT approaching from behind and create a potentially hazardous situation and a potentially significant safety impact. However, implementation of Mitigation Measures 3.14-1 through 3.14-4 will ensure that a less-than-significant impact (with respect to motorists) or a beneficial impact (with respect to pedestrians) would occur.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Many of the same safety concerns for motorists described for the Wilshire BRT Median Reconstruction Baseline (Alternative 1) are also applicable for the Wilshire BRT Curb Adjacent Design Option. The main difference from the standpoint of motorist safety is the location of the interface between the motorist and the BRT. This alternative eliminates the possibility of a left turning motorist becoming involved in a collision with a bus approaching from behind. However, in this alternative, a motorist making a right turn has an additional conflict to consider prior to conducting the right turn. The motorist must turn into and drive in the exclusive BRT lane in order to turn right. This movement is generally not considered a high risk movement, as the motorist should have adequate visibility of a bus approaching on the right. However, the bus will be required to yield the right of way to a motorist making a right turn in the exclusive bus lane. Impacts would be less than significant (with respect to motorists) and beneficial (with respect to pedestrians).

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

In addition to the safety impact for the Wilshire BRT alternative, discussed previously, the introduction of BRT along the Exposition corridor will have various safety impacts. The alignment type and operational characteristics of the BRT in a semi-exclusive right of way creates a situation similar to light rail transit. The Exposition BRT line utilizes a similar alignment to that of the Exposition LRT and has similar operating parameters. As such, many of the safety treatments utilized for the Exposition LRT alignment can also be utilized for the Exposition BRT alignment. However, some differences do exist. The use of automatic gates at BRT crossings has not been attempted in the United States, and may require special legislation in order to install the devices.

Also, in order to detect the bus to allow for full preemption of the traffic signal and to lower the automatic gates, BRT detection must be used. Trains have this detection feature built into the tracks, but buses do not have that option. Inductive loops may be the favorable solution, but they must have a built in redundant system to provide a fail-safe grade crossing. As such, if the loops malfunction, the gates lower, not allowing motorist or pedestrians to enter the crossing. A fail-safe design is necessary when using gates, because the BRT operator is not expecting to stop at the crossing.

Another factor that must be addressed with the use of gates at grade crossings is the frequency at which the bus arrives at the crossing. It can take from 40-60 seconds for a bus to clear a grade crossing, including the time required to call and lower the gates, pass through the crossing, and raise the gates after the bus has passed. As such, if the headway for the BRT is too small, the cross street traffic could be adversely affected, resulting in a potentially significant impacts. A possible solution for this is to platoon the buses through the grade crossings that are gate controlled, so that the total delay for the cross street is minimized.

In addition to the impact on student safety of the Wilshire BRT alignment, the Exposition BRT alignment will also have a positive impact on student safety. Twenty-two (22) schools exist within ½ mile of the Exposition BRT alignment, 13 of which are in the Exposition BRT MOS. Along the Exposition BRT alignment, 13 new traffic signals will be installed within ½ mile of the existing schools. Along the Exposition BRT MOS, 4 new traffic signals will be installed within ½ mile of an existing school. All of the traffic signals will be equipped with pedestrian signals. The additional signalized pedestrian crossings of Wilshire Boulevard and the Exposition right-of-way will increase pedestrian safety along the alignment.

Another factor to be considered with the introduction of the Exposition BRT is trespassing along the BRT right-of-way. Because the BRT will be traveling at speeds up to 55 mph, trespassing along the right-of-way is a primary concern. Fencing will be provided on the outside of the busway at all locations where the BRT exceeds 35 mph. In addition, at designated pedestrian crossings along the side-running alignment of the BRT located within a school zone, pedestrian automatic gates may be utilized to increase student safety. A pedestrian automatic gate is configured and operates much in the same manner as a vehicular gate, blocking the pedestrian approach in the presence of a bus.

In addition to the impact on pedestrian safety near parks along the Wilshire BRT alignment, the Exposition BRT alignment will also have a positive impact on pedestrian safety. Thirteen (13) parks exist within ½ mile of the Exposition BRT alignment, 8 of which are in the Exposition BRT MOS. Along the Exposition BRT alignment, 10 new traffic signals will be installed within ½ mile of the existing parks. Along the Exposition BRT MOS, 3 new traffic signals will be installed within ½ mile of an existing park. All of the traffic signals will be equipped with pedestrian signals. The additional signalized pedestrian crossings of Wilshire Boulevard and the Exposition right-of-way will increase pedestrian safety along the alignment.

Implementation of Mitigation Measures 3.14-5 through 3.14-9 will ensure that less than significant impacts occur:

- *Mitigation Measure 3.14-5:* In the vicinity of all schools along the Exposition alignment, pedestrian crossing gates shall be installed.
- *Mitigation Measure 3.14-6:* All station areas shall be lighted to provide a safe environment and visibility of the station platform and parking areas from adjacent land uses.
- *Mitigation Measure 3.14-7:* For all schools and parks within one-half mile of the transit alignment, the LACMTA shall sponsor a pedestrian safety education program, explaining acceptable methods to cross the guideway lanes.
- *Mitigation Measure 3.14-8:* In all mixed flow sections of the route, where transit vehicles will operate in street traffic, appropriate warning signs shall be installed making drivers aware of the condition.
- *Mitigation Measure 3.14-9:* All stations will be equipped with monitoring equipment and/or be monitored by LACMTA security personnel on a regular periodic basis.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Impacts would be similar to the Alternative 2. The MOS would include the portion of the corridor that contains the greatest concentration of schools and parks that would generate safety concerns.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

In addition to the safety impact for the Wilshire BRT alternative, discussed previously, the introduction of LRT along the Exposition corridor will have various safety impacts. A review of data from prior research, safety oversight authorities and direct surveys of LRT system staff in the western United States conducted in recent years reveals that LRV-pedestrian collisions are divided into two general location types. The first location type, at station platforms, represents the largest percentage of LRV-pedestrian collisions. This high percentage may be attributed to the inherent purpose of a station, where large numbers of people converge near light rail vehicles, and cross the trackway. Many collisions at stations are also easily preventable, through safe design, appropriate signage and public education to encourage safe behavior. The second location type is along the LRT right-of-way, away from the stations. This location type includes paths to stations, such as crossings at intersections where pedestrians cross over the light rail tracks, and right of way intrusion (trespassing).

Although the low number and unique circumstances of historic pedestrian collisions do not allow a valid quantitative projection for the Exposition LRT alignment, some trends are present in the background data of collision causes. For example, pedestrians standing too close to the edge of the platform as a light rail vehicle approaches, represent a large number of LRV-pedestrian collisions at stations. In addition, intoxicated pedestrians represent a large percentage of the collisions. Furthermore, LRV-pedestrian collisions at crossings are typically the result of pedestrians proceeding without waiting for a green signal to walk.

Achieving a low number of pedestrian involved collisions with LRV is a result of several conditions including safety orientated design, light rail operator training, train speeds, and public education that warns pedestrians of potential hazards involved with light rail transit.

Pedestrian safety at LRT grade crossings is a potentially significant impact that can be addressed through safety treatments. Signs that warn pedestrians to "Look Both Ways" and display a train icon can be placed at the grade crossing. In addition, pedestrian channelization can direct pedestrians to designated crossing locations. Pedestrian channelization controls pedestrian movement through the use of paving, delineation, and barriers. Another pedestrian treatment that will be utilized along the Exposition alignment is the use of tactile warning strips. Traditionally used at stations to warn pedestrians of the edge of the platform, tactile warning strips will be installed at all designated pedestrian crossings of the trackway where the LRT alignment is not in the median of the roadway. Tactile warning strips assist the visually impaired and also provide a visual warning of the dynamic envelope of the train.

Along the Exposition alignment there are 38 existing traffic signals. The introduction of LRT will provide 14 additional signalized intersections. In addition, nine legal pedestrian crossings that were unsignalized prior to the introduction of LRT will be closed, as the intersection will only allow for right turns into or out of the cross street. The reduced number of legal crosswalks will require pedestrians to walk longer distances to cross streets, but will allow for a greater degree of protection for pedestrians at designated crosswalks due to the installation of traffic signals.

The alignment type and operational characteristics of the LRT in a semi-exclusive right of-way creates a situation similar to the Exposition BRT alternative described above. In addition to the impact on student safety of the Wilshire BRT alignment, the Exposition LRT alignment will also have a positive impact on student safety. Twenty-two (22) schools exist within ½ mile of the Exposition LRT alignment, 13 of which are in the Exposition LRT MOS. Along the Exposition LRT alignment, 13 new traffic signals will be installed within ½ mile of the existing schools. Along the Exposition LRT MOS, 4 new traffic signals will be installed within ½ mile of an existing school. All of the traffic signals will be equipped with pedestrian signals. The additional signalized pedestrian crossings of Wilshire Boulevard and the Exposition right-of-way will increase pedestrian safety along the alignment.

Another factor to be considered with the introduction of the Exposition LRT is trespassing along the LRT right-of-way. Because the LRT will be traveling at speeds up to 55 mph, trespassing along the right-of-way is a primary concern. Fencing will be provided on the outside of the trackway at all locations where the LRT exceeds 35 mph. In addition, at designated pedestrian crossings along the side-running alignment of the LRT located within a school zone, pedestrian automatic gates may be utilized to increase student safety. A pedestrian automatic gate is configured and operates much in the same manner as a vehicular gate, blocking the pedestrian approach in the presence of a train.

The alignment type and operational characteristics of the LRT in a semi-exclusive right of way creates a situation similar to the Exposition BRT alternative described above. In addition to the impact on pedestrian safety near parks along the Wilshire BRT alignment, the Exposition LRT alignment will also have a positive impact on pedestrian safety. Thirteen (13) parks exist within ½ mile of the Exposition BRT alignment, 8 of which are in the Exposition LRT MOS. Along the Exposition LRT alignment, 10 new traffic signals will be installed within ½ mile of the existing parks. Along the Exposition LRT MOS, 3 new traffic signals will be installed within ½ mile of an existing park. All of the traffic signals will be equipped with pedestrian signals. The additional signalized pedestrian crossings of Wilshire Boulevard and the Exposition right-of-way will increase pedestrian safety along the alignment.

Implementation of Mitigation Measures 3.14-10 through 3.10-14 will ensure that less-than-significant impacts occur:

- *Mitigation Measure 3.14-10:* In the vicinity of all schools along the Exposition alignment, pedestrian crossing gates shall be installed.
- *Mitigation Measure 3.14-11:* All station areas shall be lighted to provide a safe environment and visibility of the station platform and parking areas from adjacent land uses.
- *Mitigation Measure 3.14-12:* For all schools and parks within one-half mile of the transit alignment, the LACMTA shall sponsor a pedestrian safety education program, explaining acceptable methods to cross the guideway lanes.
- *Mitigation Measure 3.14-13:* In all mixed flow sections of the route, where transit vehicles will operate in street traffic, appropriate warning signs shall be installed making drivers aware of the condition, particularly in those segments where LRT vehicles will operate in mixed traffic.
- *Mitigation Measure 3.14-14:* All stations will be equipped with monitoring equipment and/or be monitored by LACMTA security personnel on a regular periodic basis.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Impacts would be similar to Alternative 3. The MOS would include the portion of the corridor that contains the greatest concentration of schools and parks that would generate safety concerns. Along the Exposition alignment MOS there are 20 existing traffic signals. The introduction of LRT will provide one additional signalized intersection. In addition, nine legal pedestrian crossings that were unsignalized prior to the introduction of LRT will be closed, as the intersection will only allow for right turns into or out of the cross street.

Maintenance Yard

Northwest Corner of Chavez and Mission. This facility is located in an industrial area with minimal pedestrian activity and is not adjacent to any commercial facilities or residential properties. Therefore, there are no safety issues associated with the construction of this facility. No impacts would occur.

Existing MTA Division 1 (Alameda and 6th). This facility is located in an industrial area and has discussed above there is also minimal pedestrian activity near this site. There are no not adjacent commercial facilities or residential properties. Therefore, there are no safety issues associated with the construction of this facility. No impacts would occur.

Northeast Corner Alameda and Washington. This facility is located in an industrial area. There are no safety issues associated with the construction of this facility. No impacts would occur.

Southeast Corner of Alameda and Washington. This facility is located in an industrial area. There are no safety issues associated with the construction of this facility. No impacts would occur.

Exposition Right-Of-Way Hooper to Central. The immediate vicinity of this site is industrial, however, residential neighbors are located adjacent to this area. The introduction of heavy bus activity at this location could result in potentially significant safety related impacts on pedestrians; particularly those pedestrians with walk routes that cross access points to the facility.

Existing MTA South Park Shops (54th and Avalon). This facility is located in a residential neighborhood. Further, two schools and a park have been identified within a ½ mile. The introduction of heavy bus activity at this location could result in safety related impacts on pedestrians, particularly those pedestrians with walk routes that cross access points to the facility.

Implementation of Mitigation Measure 3.14-15 will ensure that less-than-significant impacts occur with respect to operation of the maintenance yard(s).

- *Mitigation Measure 3.14-15:* Bus travel routes will be designed to avoid residential streets.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

USC Vermont Station is proposed as an underground station, between Waite Way and Menlo Avenue. An underground stations raises an issue of reduced visibility creating an "isolated environment." This type of station results in increased patron susceptibility to crime, resulting in a potentially significant impact.

Implementation of Mitigation Measures 3.14-16 through 3.14-18 will ensure that less than significant safety and security impacts occur with respect to the subway design option:

- *Mitigation Measure 3.14-16:* The station will maintain security lighting, particularly at entry points and stairwells to encourage increased security.
- *Mitigation Measure 3.14-17:* Onsite MTA security shall be maintained at subway locations.
- *Mitigation Measure 3.14-18:* All entry points to the subway station shall remain unobstructed to increase visibility.

Security Impacts

No Action Alternative (Baseline)

This option entails an increase in the operating bus fleet and minor transit service restructuring. Because there are no significant changes to bus service or operating characteristics no impacts on security are anticipated other than crime increases due to increased ridership.

Transportation System Management (TSM) Alternative

The TSM Alternative would also not result in major physical changes to bus service within the corridor. More extensive transit route restructuring and introduction of new Rapid Bus corridors would also not likely change the overall security environment within the corridor. No impacts would occur.

Alternative 1: Wilshire BRT (Baseline Median-Running)

The proposed Wilshire BRT route would use a highly developed urbanized corridor that exhibits an unusually high level of pedestrian activity. It is unlikely that stations located in the median of Wilshire Boulevard or on adjacent sidewalks would induce or create an unsecure environment, and no significant impacts are anticipated. It should be noted, however, that the Replacement Parking Strategy to be implemented in concert with the Wilshire BRT Alternative may involve the acquisition of property for off-street parking that is located behind commercial buildings. The creation of these lots may raise security concerns, particularly in terms of safe passage and pathways to the lots. Without mitigation, the security of these potential rear parking lots may be considered significant.

However, implementation of Mitigation Measure 3.14-19 will ensure that less-than-significant impacts occur:

- *Mitigation Measure 3.14-19:* Additional platform lighting and some supplementary pedestrian lighting shall be required for the medians of Wilshire Boulevard in order to assure patron safety.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

There is no significant change in condition from that discussed in Alternative 1 that would result in a potential increase in crime. This route would be located in a highly developed urbanized corridor. Station location visibility is provided on both sides of the median. The provision of off-street parking located behind commercial buildings would also be potentially significant without the implementation of Mitigation Measure 3.14-19.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Station visibility for this alternative would not be as obvious as with Alternative 1 and 1A. However, as stated above, Wilshire Boulevard exhibits an unusually high level of pedestrian activity and therefore, the potential for increased crime levels or a reduction in patron security is not at issue. No impacts would occur.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

The Exposition corridor environment is entirely different from Wilshire. The route passes largely through lower density residential areas as well as industrial and commercial areas. Because it is a former railroad right-of-way in many segments, adjacent land uses are somewhat removed from the right-of-way creating an "isolated environment. These conditions combined with the fact that traffic and pedestrian volumes in adjacent areas are relatively low and the ambient crime rate is somewhat higher than the northern part of the corridor, raise the importance of security concern for both station areas and for proposed park and ride lots. Without mitigation, security concerns along the alignment would be considered significant.

However, implementation of Mitigation Measures 3.14-20 through 3.14-23 will ensure that less-than-significant impacts would occur:

- *Mitigation Measure 3.14-20:* The MTA will implement a security plan for the routes. The plan will include both in-car and station surveillance by MTA security or other local jurisdiction security personnel.
- *Mitigation Measure 3.14-21:* All stations shall be lit to standards that avoid shadows and all pedestrian pathways leading to/from sidewalks and parking areas will be well illuminated.

- *Mitigation Measure 3.14-22:* Stations will be equipped with security cameras to assist in monitoring as part of a security plan.
- *Mitigation Measure 3.14-23:* The station design should not include design elements that obstruct visibility or observation.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

The MOS segment does not materially alter the conclusions above regarding the full route for Alternative 2. The right-of-way environment, because of the land use isolation, requires additional security measures to avoid significant impacts.

Alternative 3: Wilshire BRT and Exposition LRT

Security concerns along the Exposition portion would be similar to those described for the Alternative 2 and would require the implementation of Mitigation Measures 3.14-20 through 3.14-23 to ensure that less than significant impacts would occur.

Alternative 3A: Wilshire BRT and Exposition LRT MOS

The MOS segment does not materially alter the conclusions discussed above regarding the full route for Alternative 3.

Maintenance Yard

Northwest Corner of Chavez and Mission. This facility would be located in a commercial/industrial area. The facility will be a secure facility closed to public access. It is not anticipated that this facility would have an effect on security. No impacts would occur.

Existing MTA Division 1 (Alameda and 6th). This facility would be located in a commercial/industrial area near the boundary of downtown Los Angeles. As discussed above there are no security issues related to the construction of a maintenance yard at this location. No impacts would occur.

Northeast Corner Alameda and Washington. This facility is located in an industrial area. There are no security issues related to the construction of a maintenance yard at this location. No impacts would occur.

Southeast Corner of Alameda and Washington. This facility is located in an industrial area south of the proposed facility above. There are no security issues related to the construction of a maintenance yard at this location. No impacts would occur.

Exposition Right-Of-Way Hooper to Central. The location of this facility is surrounded by industrial and warehouse type uses. There are no security issues related to the construction of a maintenance yard at this location. No impacts would occur.

Existing MTA South Park Shops (54th and Avalon). This site is located in a predominately residential neighborhood. It is not anticipated that the nature of the surrounding area would lead to an increase in crime. As stated above this facility would be gated, secure and closed to public access. No impacts would occur.

Implementation of Mitigation Measures 3.14-15 will ensure that less-than-significant impacts would occur.

<u>Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)</u>

USC Vermont Station is proposed as an underground station, Between Waite Way and Menlo Avenue. There are no concerns as to design or location that would result in security related impacts.

3.14.4 Cumulative Impacts

The safety and security impacts of the alternatives considered are not expected to be cumulatively considerable. Impacts would be less than significant.

3.15.1 Introduction

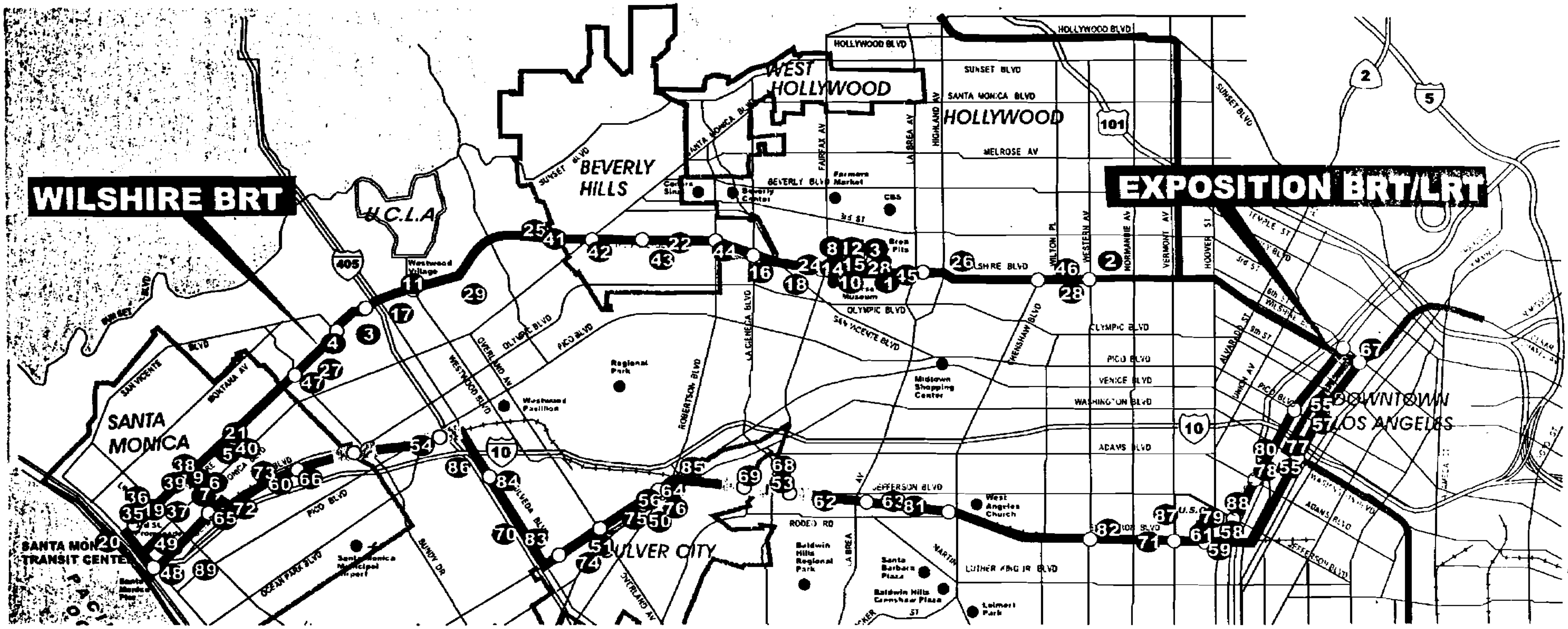
The Mid-City/Westside Transit Corridor contains one of the greatest concentrations of activity centers in the Los Angeles region. On the broad scale, transit improvements often enhance accessibility to these centers and other community facilities, particularly for the transit dependent. The specific alignment and physical features of fixed guideway improvements can also have adverse affects on some of these same facilities through the taking of physical property or through the disruption of vehicular or pedestrian access to these facilities. The discussion below addresses these issues in detail.

3.15.2 Affected Environment

Figure 3.15-1 identifies community facilities within approximately one-quarter mile of the Wilshire Boulevard and Exposition right-of-ways, respectively.

As shown in Table 3.15-1, there are the following community facilities within one-quarter mile of Wilshire Boulevard:

- Parks (nine)
- Public Elementary Schools (seven)
- Public Middle Schools (two)
- Public High Schools (two)
- Colleges, Universities and Trade Schools (none)
- Private Schools (six)
- Hospitals and Health Centers (three)
- Museums (five)
- Fire Stations (eight within one-mile)
- Cemeteries (two)
- Libraries (one)



LEGEND:

1 Miracle Mile Chamber of Commerce
2 LA Pain Control Clinic
3 Vet Affairs Med Center West LA
4 Brentwood Medical & Surgery
5 Saint Johns Hospital & Health Care
6 Arizona Convalescent Hospital
7 Oceanview Convalescent Hospital
8 Guardian Rehabilitation Hospital Inc
9 Santa Monica-UCLA Medical Center
10 Kaye Museum of Miniatures
11 Armand Hammer Museum
12 Los Angeles County Museum of Art
13 Page Museum
14 Peterson Automotive Museum
15 Hancock Park
16 La Cienega Park
17 Westwood Park
18 Carthay Center Elementary School
19 Lincoln Park
20 Palisades Park
21 Douglas Park
22 Oakhurst Park
23 La Brea Tar Pits
24 Carthay Circle Park
25 Los Angeles Country Club
26 Burroughs Middle School
27 University High School
28 Wilton Place Elementary School
29 Fairburn Elementary School
30 Brockton Elementary School
31 Burroughs Middle School
32 University High School
33 Wilton Place Elementary School
34 Fairburn Elementary School
35 Saint Monica High School (Private)
36 Saint Monica Elementary School (Private)
37 Olympic Continuation High School
38 Lincoln Middle School
39 High School (Private)
40 McKinley Elementary School
41 El Rodeo Elementary School
42 Elementary School (Private)
43 Beverly Vista School
44 Horance Mann School
45 Cathedral Chapel School (Private)
46 Elementary School (Private)
47 Brockton Elementary School
48 Santa Monica City Hall
49 Santa Monica Chamber of Commerce
50 Culver City City Hall
51 Culver City Chamber of Commerce
52 Donald P. Locker Cancer Center
53 La Cienega Medical & Industrial Hospital
54 Citizens Medical Group
55 Orthopaedic Hospital
56 Brotman Medical Center
57 California Hospital Medical Center
58 Aerospace Museum
59 Museum of Science and Industry
60 Bergamont Station Arts Center
61 Natural History Museum of Los Angeles County
62 Baldwin Hills Recreation Center
63 Rancho Cienega Sports Center Park
64 Media Park
65 Memorial Park
66 Stewart Street Park
67 Central Library Park
68 Westside Park
69 SYD Kronenthal Park
70 Mar Vista Recreation Center
71 38th & Normandie Park
72 Garfield Continuation High School
73 Crossroads Elementary & High School (Private)
74 La Ballona Elementary School
75 St. Augustine Elementary School (Private)
76 Culver City Middle School
77 Los Angeles Trade Tech College
78 Elementary School (Private)
79 University of Southern California
80 Mount Saint Marys College
81 Dorsey High School
82 Foshay Middle School
83 Charnock Elementary School
84 Clover Elementary School
85 Hamilton High School
86 Webster Middle School
87 Weemes Elementary School
88 32nd St/USC Performing Art Mag
89 Santa Monica High School

N

SOURCE: Terry A. Hayes Associates

Mid-City/Westside Transit Corridor

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

FIGURE 3.15-1

COMMUNITY FACILITIES

TABLE 3.15-1 WILSHIRE BRT COMMUNITY FACILITIES			
Corridor Segment	**Type**	**Facility Name**	**Location/Address**
1 - LA - Mid-City	Fire Station	Los Angeles Station	5821 W. 3rd St.
1 - LA - Mid-City	Fire Station	Los Angeles Station	4029 W. Wilshire Blvd.
2 - LA - Mid-City	Museum	L A Craft & Folk Art	5814 Wilshire Blvd.
1 - LA - Mid-City	Museum	Page Museum	2900 Exposition Blvd.
1 - LA - Mid-City	Museum	L A County Museum of Art	5905 Wilshire Blvd.
1 - LA - Mid-City	Museum	Peterson Automotive	6060 Wilshire Blvd.
1 - LA - Mid-City	Park	Carthay Circle Park	Wilshire Blvd. & Crescent Heights
1 - LA - Mid-City	Park	La Brea Tar Pits	Wilshire Blvd. & Curson
1 - LA - Mid-City	Park	La Cienega Park	8400 Gregory Way
1 - LA - Mid-City	School	Burroughs Middle School	600 S. McCadden Pl.
1 - LA - Mid-City	School	Cathedral Chapel School	8th St., Dunsmuir Ave. & Cochran
1 - LA - Mid-City	School	Private School	6th St., Van Ness
1 - LA - Mid-City	School	Wilton Place Elementary	745 S. Wilton Place
2 - Beverly Hills	Fire Station	Beverly Hills Station	445 N. Rexford Dr.
2 - Beverly Hills	Fire Station	Beverly Hills Station	1100 Coldwater Canyon Dr.
2 - Beverly Hills	Fire Station	Beverly Hills Station	180 S. Doheny Dr.
2 - Beverly Hills	Park	Oakhurst Park	Oakhurst Dr. south of Wilshire
2 - Beverly Hills	Park	Park	Reeves Dr south of Wilshire
2 - Beverly Hills	School	Berkeley Hall School	Burton Wy. & Clark Dr.
2 - Beverly Hills	School	Beverly Vista School	Elm Dr. & Charleville Blvd.
2 - Beverly Hills	School	El Rodeo Elementary	605 N. Whittier Dr.
2 - Beverly Hills	School	Good Shepard School	Linden Dr., McCarthy Dr.
2 - Beverly Hills	School	Horace Mann School	8701 Charleville Blvd.
3 - West Los	Cemetery	Los Angeles National	950 S. Sepulveda Blvd.
3 - West Los	Cemetery	Westwood Memorial Park	1218 Glendon Ave.
3 - West Los	Fire Station	Los Angeles Station	107 S. Beverly Glen Blvd.
3 - West Los	Fire Station	Los Angeles Station	1090 Veteran Ave.
3 - West Los	Hospital	Vet Affairs Med Center	11000 Wilshire Blvd.
3 - West Los	Museum	Armand Hammer	10889 Wilshire Blvd.
3 - West Los	Park	Westwood Park	1350 S. Sepulveda Blvd.
3 - West Los	School	Brockton Elementary	1309 Armacost Ave.
3 - West Los	School	Fairburn Elementary	1403 Fairburn Ave.
3 - West Los	School	University High School	11800 Texas Ave.
4 - Santa Monica	Fire Station	Santa Monica Station	1302 19th St.
4 - Santa Monica	Hospital	Saint Johns Hospital	1328 22nd St.
4 - Santa Monica	Hospital	Santa Monica – UCLA	1250 16th St.
4 - Santa Monica	Library	Santa Monica Main	1343 6th St.
4 - Santa Monica	Park	Douglas Park	1151 Chelsea Ave.
4 - Santa Monica	Park	Palisades Park	Ocean Ave.
4 - Santa Monica	School	High School (Private)	14th Street & California Ave.
4 - Santa Monica	School	Lincoln Middle School	1501 California Ave.
4 - Santa Monica	School	McKinley Elementary	2401 Santa Monica Blvd.
4 - Santa Monica	School	Olympic Continuation	1081 Arizona Ave.

TABLE 3.15-1 WILSHIRE BRT COMMUNITY FACILITIES			
Corridor Segment	**Type**	**Facility Name**	**Location/Address**
4 - Santa Monica	School	Saint Monica High School	1030 Lincoln Blvd.
4 - Santa Monica	School	Santa Monica Elementary	1039 7th Street

Within one-quarter mile of the Exposition BRT and LRT rights-of-ways there are the following facilities (see Table 3.15-2 for specific details):

- Parks (eleven)
- Public Elementary Schools (four)
- Public Middle Schools (three)
- Public High Schools (five)
- Colleges, Universities and Trade Schools (three)
- Private Schools (three)
- Hospitals and Health Centers (three)
- Museums (four)
- Fire Stations (twelve within one-mile)
- Cemeteries (none)
- Libraries (one)

TABLE 3.15-2 EXPOSITION BRT COMMUNITY FACILITIES			
Corridor Segment	**Type**	**Facility Name**	**Location /Address**
1 - LA South	Fire Station	Los Angeles Station	1335 S. Olive St.
1 - LA South	Fire Station	Los Angeles Station	915 W. Jefferson Blvd.
1 - LA South	Fire Station	Los Angeles Station	3661 7th Ave.
1 - LA South	Fire Station	Los Angeles Station	4470 Coliseum St.
1 - LA South	Hospital	California Hospital Medical Center	1414 Grand Ave.
1 - LA South	Hospital	Orothopedic Hospital	2400 S. Flower St.
1 - LA South	Library	Exposition Park Regional Library	3665 S. Vermont
1 - LA South	Museum	Aerospace Museum	Exposition Blvd. & Kinsey Dr.
1 - LA South	Museum	Natural History Museum	Exposition Blvd. & Kinsey Dr.
1 - LA South	Museum	Museum of Science and Industry	Museum Dr. & State Dr.
1 - LA South	Museum	Afro-American Museum	600 State Dr.
1 - LA South	Park	Exposition Park	Exposition Blvd. & Figueroa
1 - LA South	Park	38th & Normandie Park	Rolland Curtis Pl. & Normandie
1 - LA South	Park	Rancho Cienega Sports Park	5001 Rodeo Rd.
1 - LA South	Park	Baldwin Hills Recreation Center	5401 Highlight Pl.
1 - LA South	Park	Westside Park	3085 S. Fairfax
1 - LA South	School	Los Angeles Trade Tech College	400 E. Washington Blvd.
1 - LA South	School	Mount Saint Mary's College	10 Chester Place
1 - LA South	School	Elementary School (Private)	Adams Blvd. & Figueroa St.
1 - LA South	School	32nd St./ USC Performing Art Mag	822W. 32nd St.
1 - LA South	School	Adams Middle School	151 W.30th Street
1 - LA South	School	University of Southern California	Exposition Blvd. & Vermont

TABLE 3.15-2
EXPOSITION BRT COMMUNITY FACILITIES

Corridor Segment	Type	Facility Name	Location /Address
1 - LA South	School	Weemes Elementary School	1260 W. 36th Place
1 - LA South	School	Foshay Middle School	3751 S. Harvard Blvd.
1 - LA South	School	Dorsey High School	3537 Farmdale Avenue
1 - LA South	School	Hamilton High School	2955 Robertson Blvd.
2 - Culver City	Civic Center	Culver City, City Hall	Culver Blvd. & Dusquesne
2 - Culver City	Fire Station	Culver City Station	9600 Culver Blvd.
2 - Culver City	Fire Station	Culver City Station	11252 Washington Blvd.
2 - Culver City	Fire Station	Culver City Station	11304 Segrell Way
2 - Culver City	Hospital	Brotman Medical Center	3828 Delmas Terr.
2 - Culver City	Park	Syd Kronenthal Park	3459 McManus
2 - Culver City	School	Culver City Middle School	Irving Pl., Lindblade St.
2 - Culver City	School	La Ballona Elementary School	Matterson Ave., Girard Ave.
3 - West Los	Fire Station	Los Angeles Station	10234 National Blvd.
3 - West Los	Fire Station	Los Angeles Station	11505 Olympic Blvd.
3 - West Los	Park	Media Park	Venice Blvd. & Culver Blvd.
3 - West Los	Park	Mar Vista Recreation Center	11430 Woodbine St.
3 - West Los	School	Charnock Elementary School	11133 Charnock Road
3 - West Los	School	Clover Elementary School	11020 Clover Avenue
3 - West Los	School	Webster Middle School	1130 W. Graham Place
3 - West Los	School	Edison Elementary School	2425 Kansas Ave.
4 - Santa Monica	Civic Center	Santa Monica City Hall	1685 Main St.
4 - Santa Monica	Fire Station	Santa Monica Station	1444 7th St.
4 - Santa Monica	Fire Station	Santa Monica Station (under const)	222 Hollister Ave.
4 - Santa Monica	Fire Station	Santa Monica Station	2450 Ashland Ave.
4 - Santa Monica	Museum	Bergamot Station	2525 Michigan Ave.
4 - Santa Monica	Park	Stewart Street Park	3459 McManus Ave
4 - Santa Monica	Park	Memorial Park	Olympic Blvd. & 14th St.
4 - Santa Monica	Park	Palisades Park	Ocean Ave.
4 - Santa Monica	School	Garfield Continuation High School	Olympic Blvd. & 16th Street
4 - Santa Monica	School	Santa Monica High School	1039 7th Street
4 - Santa Monica	School	Crossroads Elementary	1714 21st Street

3.15.3 Impact Assessment and Mitigation Measures

Standards of Significance

From the standpoint of transit accessibility, it is expected that there would be a beneficial impact if a community facility were located within one-quarter mile of a transit station. With respect to adverse impacts, the taking of the facility and/or the creation of barriers or substantial disruption to pedestrian and vehicular access to a facility would constitute a significant adverse impact.

Methodology for Impact Evaluation

Potential impacts to community facilities are determined by overlaying the proposed guideway alignments, station areas, and roadway modifications to the location of community facilities. For these areas, a community facility will either be directly affected (a physical taking as described in the Land Acquisition/Displacement section of this report) or indirectly affected by the proposed transit improvements and facilities because of proposed changes to pedestrian or vehicular access. For discussion related to pedestrian safety see Section 3.14 Safety and Security of this report.

Impacts

No Action (Baseline)

Because this option involves minor changes to the bus fleet and some restructuring of transit routes, no impacts on the community facilities is expected.

Transportation Systems Management (TSM) Alternative

While the TSM Alternative anticipates greater changes to the bus fleet, more extensive route restructuring and introduction of additional rapid bus corridors, it is not expected there would be adverse impacts on community facilities.

Alternative 1: Wilshire BRT Alternative (Baseline Median-Running)

Beneficial Impacts. As shown in Table 3.15-3, 3 of the 45 community facilities along the Wilshire BRT route would be located within one-quarter mile of proposed station locations and would benefit from this improved transit access.

Adverse Impacts. Although no community facilities would be displaced by the Wilshire BRT Alternative, it is anticipated that there would be some adverse proximity impacts, particularly the loss of street parking that is partially used by patrons of such facilities as the Folk Art Museum, Page Museum, La Brea Tar Pits, and Los Angeles County Art Museum. In addition, the reduction in the number of left turn opportunities from Wilshire Boulevard could affect vehicle access and disrupt circulation patterns at approximately eight community facilities. Adverse proximity impacts (including noise and air quality) may also occur at other community facilities identified in Table 3.15-3, although none of these uses would be physically altered in a significantly adverse way. Proximity impacts related to air quality, noise, safety, and other related issues are discussed separately in the applicable sections of this report. It is not expected that the Wilshire BRT guideway would create a barrier to pedestrian access to any community facility along the BRT route. Pedestrian safety issues are discussed in Section 3.14 of this report. Significant adverse impacts would not occur.

TABLE 3.15-3
WILSHIRE BRT IMPACT TO COMMUNITY FACILITIES

Corridor Segment	Type	Facility Name	Location/Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
1 - LA - Mid-City	Fire Station	Los Angeles Station	5821 W. 3rd St.	No	No	No	No	No
1 - LA - Mid-City	Fire Station	Los Angeles Station	4029 W. Wilshire Blvd.	No	No	No	Yes	No
2 - LA - Mid-City	Museum	LA Craft & Folk Art	5814 Wilshire Blvd	Yes	No	Yes	Yes	No
1 - LA - Mid-City	Museum	Page Museum	2900 Exposition Blvd.	No	No	Yes	Yes	No
1 - LA - Mid-City	Museum	L A County Museum of Art	5905 Wilshire Blvd.	Yes	No	Yes	Yes	No
1 - LA - Mid-City	Museum	Peterson Automotive Museum	6060 Wilshire Blvd.	Yes	No	No	Yes	No
1 - LA - Mid-City	Park	Carthay Circle Park	Wilshire Blvd. & Crescent Heights Blvd.	No	No	No	No	No
1 - LA - Mid-City	Park	La Brea Tar Pits	Wilshire Blvd. & Curson	No	No	No	Yes	No
1 - LA - Mid-City	Park	La Cienega Park	8400 Gregory Way	Yes	No	No	No	No
1 - LA - Mid-City	School	Burroughs Middle School	600 S. McCadden Pl.	No	No	No	Yes	No

TABLE 3.15-3
WILSHIRE BRT IMPACT TO COMMUNITY FACILITIES

Corridor Segment	Type	Facility Name	Location/Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
1 - LA - Mid-City	School	Cathedral Chapel School	8th St., Dunsmuir Ave. & Cochran Ave.	Yes	No	No	No	No
1 - LA - Mid-City	School	Private School	6th St., Van Ness	Yes	No	No	No	No
1 - LA - Mid-City	School	Wilton Place Elementary School	745 S. Wilton Place	No	No	No	No	No
2 - Beverly Hills	Fire Station	Beverly Hills Station	445 N. Rexford Dr.	No	No	No	No	No
2 - Beverly Hills	Fire Station	Beverly Hills Station	1100 Coldwater Canyon Dr.	No	No	No	No	No
2 - Beverly Hills	Fire Station	Beverly Hills Station	180 S. Doheny Dr.	No	No	No	No	No
2 - Beverly Hills	Park	Oakhurst Park	Oakhurst Dr. south of Wilshire	No	No	No	No	No
2 - Beverly Hills	Park	Park	Reeves Dr south of Wilshire	No	No	No	No	No
2 - Beverly Hills	School	Berkeley Hall School	Burton Wy. & Clark Dr.	No	No	No	No	No
2 - Beverly Hills	School	Beverly Vista School	Elm Dr. & Charleville Blvd.	No	No	No	No	No
2 - Beverly Hills	School	El Rodeo Elementary School	605 N. Whittier Dr.	No	No	No	No	No
2 - Beverly Hills	School	Good Shepard School	Linden Dr., McCarthy Dr., & Charleville Blvd.	Yes	No	No	No	No
2 - Beverly Hills	School	Horace Mann School	8701 Charleville Blvd.	Yes	No	No	No	No
3 - West Los Angeles	Cemetery	Los Angeles National Cemetery	950 S. Sepulveda Blvd.	No	No	No	No	No
3 - West Los Angeles	Cemetery	Westwood Memorial Park	1218 Glendon Ave.	No	No	No	No	No
3 - West Los Angeles	Fire Station	Los Angeles Station	107 S. Beverly Glen Blvd.	No	No	No	No	No
3 - West Los Angeles	Fire Station	Los Angeles Station	1090 Veteran Ave.	No	No	No	No	No
3 - West Los Angeles	Hospital	Vet Affairs Med Center West Los Angeles	11000 Wilshire Blvd.	No	No	No	No	No
3 - West Los Angeles	Museum	Armand Hammer Museum	10889 Wilshire Blvd.	Yes	No	No	Yes	No
3 - West Los Angeles	Park	Westwood Park	1350 S. Sepulveda Blvd.	No	No	No	No	No
3 - West Los Angeles	School	Brockton Elementary School	1309 Armacost Ave.	No	No	No	No	No
3 - West Los Angeles	School	Fairburn Elementary School	1403 Fairburn Ave.	No	No	No	No	No
3 - West Los Angeles	School	University High School	11800 Texas Ave.	No	No	No	No	No
4 - Santa Monica	Fire Station	Santa Monica Station	1302 19th St.	No	No	No	No	No
4 - Santa Monica	Hospital	Saint Johns Hospital & Health Center	1328 22nd St.	No	No	No	No	No
4 - Santa Monica	Hospital	Santa Monica – UCLA Medical Center	1250 16th St.	Yes	No	No	No	No
4 - Santa Monica	Library	Santa Monica Main Library	1343 6th St.	No	No	No	No	No
4 - Santa Monica	Park	Douglas Park	1151 Chelsea Ave.	No	No	No	No	No
4 - Santa Monica	Park	Palisades Park	Ocean Ave.	Yes	No	No	No	No
4 - Santa Monica	School	High School (Private)	14th Street & California Ave.	Yes	No	No	No	No
4 - Santa Monica	School	Lincoln Middle	1501 California Ave.	Yes	No	No	No	No

TABLE 3.15-3 WILSHIRE BRT IMPACT TO COMMUNITY FACILITIES								
Corridor Segment	**Type**	**Facility Name**	**Location/Address**	**Within 1/4 Mile of Station**	**Land Acquisition**	**Loss of Support Street Parking**	**Affect Vehicle Access**	**Barrier to Ped Access**
		School						
4 - Santa Monica	School	McKinley Elementary School	2401 Santa Monica Blvd.	No	No	No	No	No
4 - Santa Monica	School	Olympic Continuation School	1081 Arizona Ave.	No	No	No	No	No
4 - Santa Monica	School	Saint Monica High School	1030 Lincoln Blvd.	No	No	No	No	No
4 - Santa Monica	School	Santa Monica Elementary School	1039 7th Street	No	No	No	No	No
TOTAL "Yes"				13	0	3	8	0
Source: Terry A. Hayes Associates, 2000.								

Alternative 1A: Wilshire BRT (Median Adjacent)

This option would have effects similar to Alternative 1. It is expected that there would continue to be adverse effects on local circulation in the vicinity of community facilities because of the restricted left turn access. No facilities would be displaced as a result of this option. No impacts would occur.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

In comparison to the center median baseline alternative and the median adjacent design option, this option which place the BRT operations in the curb lane, and would be less disruptive to localized circulation near community facilities because this option would not restrict left turn access along the route. Access to facilities would occur as it does now.

It should be noted that the presence of buses traveling at somewhat higher speeds than the normal traffic flow could, however, effect pedestrians perception of safe conditions along the sidewalk and would likely require a public education program, particularly for school children.

Similar to the other components of the Wilshire BRT Alternative, this design option would also not displace any existing community facilities. No impacts would occur.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Beneficial Impacts. In addition to the 13 facilities along the Wilshire BRT route, 21 of the 53 community facilities along the Exposition BRT route would be located within one-quarter mile of proposed station locations and would benefit from this improved transit access (Table 3.15-4). This combined option would mean that approximately 34 percent of the community facilities along both BRT routes would have convenient transit access.

Adverse Impacts. The proposed park and ride a lot near Cloverfield and Olympic would displace the Bergamot Art Center and the associated museum and art galleries in Santa Monica. The impact to this publicly owned facility would be considered significant. The displacement of the Bergamot Art Center (discussed further in Section 3.6) would be mitigated through implementation of Mitigation Measure 3.5-1, which is presented at the end of this discussion and provides for relocation assistance in compliance with the *Uniform Relocation Assistance and Real Property Acquisition Polices Act of* 1970, as amended (Uniform Act). The Uniform Act is further detailed in Section 3.6. There would also be a loss of street parking surrounding seven community facilities. Most of these impacts are concentrated in the Exposition Park area and include the University of Southern California, Exposition Park and the museums located within the park. In total, seven community facilities would be affected in this manner; however, implementation of Mitigation Measures 3.15-2 and 3.15-3 will ensure that less-than-significant impacts occur:

- *Mitigation Measure 3.15-1:* The LACMTA shall coordinate with the City of Santa Monica to find a suitable relocation site or facility, or examine other shared use opportunities for the Bergamot Station Art Center.
- *Mitigation Measure 3.15-2:* For those community facilities that rely in part on street parking, the LACMTA shall provide conveniently located off-street parking in accordance with its Replacement Parking Strategy. It is expected that loss spaces would be replaced on a one-for-one basis.
- *Mitigation Measure 3.15-3:* For all community facilities where circulation patterns have been altered because of the construction of a fixed guideway and the possible removal of left turns, the LACMTA shall coordinate with each facility to ensure that convenient vehicular access to driveways and off-street parking areas will be maintained.

It is not expected that the exclusive guideway portions of the BRT route along the Exposition right-of-way, Venice or Sepulveda would constitute a barrier to pedestrian access to nearby community facilities. Pedestrian safety concerns are discussed in Section 3.14.

<u>Alternative 2A: Wilshire BRT and Exposition BRT (MOS)</u>

Beneficial Impacts. In addition to the 13 facilities along the Wilshire BRT route, 14 of the 53 community facilities along the Exposition BRT route would be located within one-quarter mile of proposed station locations in the MOS and would benefit from this improved transit access (see Table 3.15-4).

Adverse Impacts. No community facility would be displaced as a result of the MOS. There would also be a loss of street parking surrounding six community facilities. Most of these impacts are concentrated in the Exposition Park area and include the University of Southern California, Exposition Park and the museums located within the park. Significant impacts would not occur.

TABLE 3.15-4
EXPOSITION BRT IMPACT TO COMMUNITY FACILITIES

Corridor Segment	Facility Name	Type	Location /Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
1 - LA South	Los Angeles Station	Fire Station	1335 S. Olive St.	No	No	No	No	No
1 - LA South	Los Angeles Station	Fire Station	915 W. Jefferson Blvd.	No	No	No	No	No
1 - LA South	Los Angeles Station	Fire Station	3661 7th Ave.	No	No	No	No	No
1 - LA South	Los Angeles Station	Fire Station	4470 Coliseum St.	No	No	No	No	No

TABLE 3.15-4
EXPOSITION BRT IMPACT TO COMMUNITY FACILITIES

Corridor Segment	Facility Name	Type	Location /Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
1 - LA South	California Hospital Medical Center	Hospitals	1414 Grand Ave.	Yes	No	No	No	No
1 - LA South	Orothopedic Hospital	Hospitals	2400 S. Flower St.	Yes	No	No	No	No
1 - LA South	Exposition Park Regional Library	Library	3665 S. Vermont	No	No	No	No	No
1 - LA South	Aerospace Museum	Museum	Exposition Blvd. & Kinsey Dr.	Yes	No	Yes	No	No
1 - LA South	Natural History Museum of Los Angeles County	Museum	Exposition Blvd. & Kinsey Dr.	Yes	No	Yes	No	No
1 - LA South	Museum of Science and Industry	Museum	Museum Dr. & State Dr.	No	No	Yes	No	No
1 - LA South	Afro-America Museum	Museum	600 State Dr.	No	No	Yes	No	No
1 - LA South	Exposition Park	Park	Exposition Blvd. & Figueroa St.	No	No	Yes	No	No
1 - LA South	38th & Normandie Park	Park	Rolland Curtis Pl. & Normandie Ave.	No	No	No	No	No
1 - LA South	Rancho Cienega Sports Park	Park	5001 Rodeo Rd.	No	No	No	Yes	No
1 - LA South	Baldwin Hills Recreation Center	Park	5401 Highlight Pl.	No	No	No	No	No
1 - LA South	Westside Park	Park	3085 S. Fairfax	Yes	No	No	No	No
1 - LA South	Los Angeles Trade Tech College	School	400 E. Washington Blvd.	Yes	No	No	No	No
1 - LA South	Mount Saint Mary's College	School	10 Chester Place	Yes	No	No	No	No
1 - LA South	Elementary School (Private)	School	Adams Blvd. & Figueroa St.	Yes	No	No	No	No
1 - LA South	32nd St./ USC Performing Art Mag School of Choice	School	822W. 32nd St.	Yes	No	No	No	No
1 - LA South	Adams Middle School	School	151 W.30th Street	No	No	No	No	No
1 - LA South	University of Southern California	School	Exposition Blvd. & Vermont Ave.	No	No	Yes	Yes	No
1 - LA South	Weemes Elementary School	School	1260 W. 36th Place	No	No	No	No	No

TABLE 3.15-4 EXPOSITION BRT IMPACT TO COMMUNITY FACILITIES								
Corridor Segment	**Facility Name**	**Type**	**Location /Address**	**Within 1/4 Mile of Station**	**Land Acquisition**	**Loss of Support Street Parking**	**Affect Vehicle Access**	**Barrier to Ped Access**
1 - LA South	Foshay Middle School	School	3751 S. Harvard Blvd.	Yes	No	No	No	No
1 - LA South	Dorsey High School	School	3537 Farmdale Avenue	No	No	No	No	No
1 - LA South	Hamilton High School	School	2955 Robertson Blvd.	Yes	No	No	No	No
2 - Culver City	Culver City, City Hall	Civic Ctr	Culver Blvd. & Dusquesne Ave.	No	No	No	No	No
2 - Culver City	Culver City Station	Fire Station	9600 Culver Blvd.	No	No	No	No	No
2 - Culver City	Culver City Station	Fire Station	11252 Washington Blvd.	No	No	No	No	No
2 - Culver City	Culver City Station	Fire Station	11304 Segrell Way	No	No	No	No	No
2 - Culver City	Brotman Medical Center	Hospitals	3828 Delmas Terr.	Yes	No	No	No	No
2 - Culver City	Syd Kronenthal Park	Park	3459 McManus	Yes	No	No	No	No
2 - Culver City	Culver City Middle School	School	Irving Pl., Lindblade St.	Yes	No	No	No	No
2 - Culver City	La Ballona Elementary School	School	Matterson Ave., Girard Ave. & Washington Ave.	No	No	No	No	No
3 - West Los Angeles	Los Angeles Station	Fire Station	10234 National Blvd.	No	No	No	No	No
3 - West Los Angeles	Los Angeles Station	Fire Station	11505 Olympic Blvd.	No	No	No	No	No
3 - West Los Angeles	Media Park	Park	Venice Blvd. & Culver Blvd.	Yes	No	No	No	No
3 - West Los Angeles	Mar Vista Recreation Center	Park	11430 Woodbine St.	No	No	No	No	No
3 - West Los Angeles	Charnock Elementary School	School	11133 Charnock Road	No	No	No	Yes	No
3 - West Los Angeles	Clover Elementary School	School	11020 Clover Avenue	Yes	No	No	No	No
3 - West Los Angeles	Webster Middle School	School	1130 W. Graham Place	No	No	No	No	No
3 - West Los Angeles	Edison Elementary School	School	2425 Kansas Ave.	No	No	No	No	No
4 - Santa Monica	Santa Monica City Hall	Civic Ctr	1685 Main St.	Yes	No	No	No	No
4 - Santa Monica	Santa Monica Station	Fire Station	1444 7th St.	No	No	No	No	No
4 - Santa Monica	Santa Monica Station (under construction)	Fire Station	222 Hollister Ave.	No	No	No	No	No
4 - Santa Monica	Santa Monica Station	Fire Station	2450 Ashland Ave.	No	No	No	No	No

TABLE 3.15-4 EXPOSITION BRT IMPACT TO COMMUNITY FACILITIES								
Corridor Segment	**Facility Name**	**Type**	**Location /Address**	**Within 1/4 Mile of Station**	**Land Acquisition**	**Loss of Support Street Parking**	**Affect Vehicle Access**	**Barrier to Ped Access**
4 - Santa Monica	Bergamot Station	Museum	2525 Michigan Ave.	Yes	Yes	na	na	na
4 - Santa Monica	Stewart Street Park	Park	3459 McManus Ave	No	No	No	No	No
4 - Santa Monica	Memorial Park	Park	Olympic Blvd. & 14th St.	Yes	No	Yes	No	No
4 - Santa Monica	Palisades Park	Park	Ocean Ave.	No	No	No	No	No
4 - Santa Monica	Garfield Continuation High School	School	Olympic Blvd. & 16th Street	Yes	No	No	No	No
4 - Santa Monica	Santa Monica High School	School	1039 7th Street	No	No	No	Yes	No
4 - Santa Monica	Crossroads Elementary & High School	School	1714 21st Street	Yes	No	No	Yes	No
TOTAL "Yes"				**21**	**1**	**7**	**5**	**0**
Source: Terry A. Hayes Associates, 2000.								

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Beneficial Impacts. In addition to the 13 facilities along the Wilshire BRT route, 23 of the 53 community facilities along the Exposition LRT route would be located within one-quarter mile of proposed station locations and would benefit from this improved transit access (Table 3.15-5). This combined option would mean that approximately 36 percent of the community facilities along both BRT routes would have convenient transit access.

Adverse Impacts. Similar to the Exposition BRT, the proposed park and ride a lot near Cloverfield and Olympic would displace the Bergamot Art Center and the associated museum and art galleries in Santa Monica. The impact to this publicly owned facility would be considered significant, without implementation of Mitigation Measure 3.15-1. The displacement of the Bergamot Art Center (discussed further in Section 3.6) would be mitigated through relocation assistance in compliance with the *Uniform Relocation Assistance and Real Property Acquisition Polices Act of* 1970, as amended (Uniform Act). The Uniform Act is detailed in Section 3.6. There would also be a similar loss of street parking surrounding community facilities largely in the Exposition Park area; however, these impacts would be reduced to less-than-significant levels with the implementation of Mitigation Measures 3.15-2 and 3.15-3.

It is not expected that the exclusive guideway portions of the LRT route along the Exposition right-of-way, Venice or Sepulveda would constitute a barrier to pedestrian access to nearby community facilities. Pedestrian safety concerns are discussed in Section 3.14.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Beneficial Impacts. In addition to the 13 facilities along the Wilshire BRT route, 16 of the 53 community facilities along the Exposition LRT route would be located within one-quarter mile of proposed station locations in the MOS and would benefit from this improved transit access.

Adverse Impacts. No community facility would be displaced as a result of the MOS. There would also be a loss of street parking surrounding six community facilities. Most of these impacts are concentrated in the Exposition Park area and include the University of Southern California, Exposition Park and the museums located within the park.

TABLE 3.15-5
EXPOSITION LRT IMPACT TO COMMUNITY FACILITIES

Corridor Segment	Type	Facility Name	Location /Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
1 - LA South	Fire Station	Los Angeles Station	1335 S. Olive St.	No	No	No	No	No
1 - LA South	Fire Station	Los Angeles Station	915 W. Jefferson Blvd.	No	No	No	No	No
1 - LA South	Fire Station	Los Angeles Station	3661 7th Ave.	No	No	No	No	No
1 - LA South	Fire Station	Los Angeles Station	4470 Coliseum St.	No	No	No	No	No
1 - LA South	Hospitals	California Hospital Medical Center	1414 Grand Ave.	Yes	No	No	No	No
1 - LA South	Hospitals	Orothopedic Hospital	2400 S. Flower St.	Yes	No	No	No	No
1 - LA South	Library	Exposition Park Regional Library	3665 S. Vermont	No	No	No	No	No
1 - LA South	Museum	Aerospace Museum	Exposition Blvd. & Kinsey Dr.	Yes	No	Yes	No	No
1 - LA South	Museum	Natural History Museum of Los Angeles County	Exposition Blvd. & Kinsey Dr.	Yes	No	Yes	No	No
1 - LA South	Museum	Museum of Science and Industry	Museum Dr. & State Dr.	Yes	No	Yes	No	No
1 - LA South	Museum	Afro-American Museum	600 State Dr.	Yes	No	Yes	No	No
1 - LA South	Park	Exposition Park	Exposition Blvd. & Figueroa St.	No	No	Yes	No	No
1 - LA South	Park	38th & Normandie Park	Rolland Curtis Pl. & Normandie Ave.	No	No	No	No	No
1 - LA South	Park	Rancho Cienega Sports Park	5001 Rodeo Rd.	No	No	No	Yes	No
1 - LA South	Park	Baldwin Hills Recreation Center	5401 Highlight Pl.	No	No	No	No	No
1 - LA South	Park	Westside Park	3085 S. Fairfax	Yes	No	No	No	No
1 - LA South	School	Los Angeles Trade Tech College	400 E. Washington Blvd.	No	No	No	No	No
1 - LA South	School	Mount Saint Mary's College	10 Chester Place	Yes	No	No	No	No

TABLE 3.15-5
EXPOSITION LRT IMPACT TO COMMUNITY FACILITIES

Corridor Segment	Type	Facility Name	Location /Address	Within 1/4 Mile of Station	Land Acquisition	Loss of Support Street Parking	Affect Vehicle Access	Barrier to Ped Access
1 - LA South	School	Elementary School (Private)	Adams Blvd. & Figueroa St.	Yes	No	No	No	No
1 - LA South	School	USC Performing Art Mag School	822W. 32nd St.	Yes	No	No	No	No
1 - LA South	School	Adams Middle School	151 W.30th Street	No	No	No	No	No
1 - LA South	School	University of Southern California	Exposition Blvd. & Vermont Ave.	Yes	No	Yes	Yes	Yes
1 - LA South	School	Weemes Elementary School	1260 W. 36th Place	No	No	No	No	No
1 - LA South	School	Foshay Middle School	3751 S. Harvard Blvd.	Yes	No	No	No	Yes
1 - LA South	School	Dorsey High School	3537 Farmdale Avenue	No	No	No	No	Yes
1 - LA South	School	Hamilton High School	2955 Robertson Blvd.	Yes	No	No	No	No
2 - Culver City	Civic Ctr	Culver City, City Hall	Culver Blvd. & Dusquesne Ave.	No	No	No	No	No
2 - Culver City	Fire Station	Culver City Station	9600 Culver Blvd.	No	No	No	No	No
2 - Culver City	Fire Station	Culver City Station	11252 Washington Blvd.	No	No	No	No	No
2 - Culver City	Fire Station	Culver City Station	11304 Segrell Way	No	No	No	No	No
2 - Culver City	Hospitals	Brotman Medical Center	3828 Delmas Terr.	Yes	No	No	No	No
2 - Culver City	Park	Syd Kronenthal Park	3459 McManus	Yes	No	No	No	No
2 - Culver City	School	Culver City Middle School	Irving Pl., Lindblade St.	Yes	No	No	No	No
2 - Culver City	School	La Ballona Elementary School	Girard Ave. & Washington Ave.	No	No	No	No	No
3 - West Los Angeles	Fire Station	Los Angeles Station	10234 National Blvd.	No	No	No	No	No
3 - West Los Angeles	Fire Station	Los Angeles Station	11505 Olympic Blvd.	No	No	No	No	No
3 - West Los Angeles	Park	Media Park	Venice Blvd. & Culver Blvd.	Yes	No	No	No	No
3 - West Los Angeles	Park	Mar Vista Recreation Center	11430 Woodbine St.	No	No	No	No	No
3 - West Los Angeles	School	Charnock Elementary School	11133 Charnock Road	No	No	No	Yes	Yes

TABLE 3.15-5 EXPOSITION LRT IMPACT TO COMMUNITY FACILITIES								
Corridor Segment	**Type**	**Facility Name**	**Location /Address**	**Within 1/4 Mile of Station**	**Land Acquisition**	**Loss of Support Street Parking**	**Affect Vehicle Access**	**Barrier to Ped Access**
3 - West Los Angeles	School	Clover Elementary School	11020 Clover Avenue	Yes	No	No	No	No
3 - West Los Angeles	School	Webster Middle School	1130 W. Graham Place	No	No	No	No	No
3 - West Los Angeles	School	Edison Elementary School	2425 Kansas Ave.	No	No	No	No	No
4 - Santa Monica	Civic Ctr	Santa Monica City Hall	1685 Main St.	Yes	No	No	No	No
4 - Santa Monica	Fire Station	Santa Monica Station	1444 7th St.	No	No	No	No	No
4 - Santa Monica	Fire Station	Santa Monica Station (under const)	222 Hollister Ave.	No	No	No	No	No
4 - Santa Monica	Fire Station	Santa Monica Station	2450 Ashland Ave.	No	No	No	No	No
4 - Santa Monica	Museum	Bergamot Station	2525 Michigan Ave.	Yes	Yes	Yes	Yes	No
4 - Santa Monica	Park	Stewart Street Park	3459 McManus Ave	No	No	No	No	No
4 - Santa Monica	Park	Memorial Park	Olympic Blvd. & 14th St.	Yes	No	Yes	No	Yes
4 - Santa Monica	Park	Palisades Park	Ocean Ave.	No	No	No	No	No
4 - Santa Monica	School	Garfield Continuation High School	Olympic Blvd. & 16th Street	Yes	No	No	No	No
4 - Santa Monica	School	Santa Monica High School	1039 7th Street	No	No	No	Yes	Yes
4 - Santa Monica	School	Crossroads Elem & High School	1714 21st Street	Yes	No	No	Yes	No
TOTAL "Yes"				**23**	**1**	**8**	**6**	**6**
Source: Terry A. Hayes Associates, 2000.								

Maintenance Yard

As discussed in Section 2 of this report, the MTA is considering candidate maintenance yard site locations for BRT operations. Six candidate sites are under consideration. The effects of these sites on community facilities is discussed below:

Northwest Corner of Chavez and Mission. Site is located within an industrial/commercial area. There are three public schools within ½ mile of the site. These facilities, however, are located south of the SR101 and I-10 freeways in Boyle Heights would not likely be affected by the operation of bus maintenance facility on the north side of the freeway. No Impacts would occur.

Existing MTA Division 1 (Alameda and 6th). This site is located in a commercial and industrial area along the perimeter of downtown Los Angeles. Community facilities within ½ mile of the site include a small pocket park at 6th Street and Gladys Avenue, a public school at Wilson and Decatur Place; and a public school near 9th Street and Olympic. None of these facilities are directly adjacent to the site and accessibility to these facilities would not be affected by the expanded operations on the existing maintenance yard site. No impacts would occur.

Northeast Corner of Alameda and Washington. The site is located in an industrial area. There are no community facilities within ½ mile of the site and no impacts are anticipated.

Southeast Corner of Alameda and Washington. The site is located in an industrial area. There are no community facilities within ½ mile of the site and no impacts are anticipated.

Exposition ROW (Hooper to Central). The immediate vicinity of this site is surrounded by industrial and warehouse type uses. However, beyond these directly adjacent buildings there are residential neighborhoods that contain a variety of community facilities, including two recreation centers, one high school and two elementary schools. Use of the Exposition ROW site for bus maintenance would require that buses travel a minor arterials and local streets. Increased bus activity at this site would likely be disruptive to local circulation patterns particularly walk routes to schools and the park. The residential character of the surrounding area strongly suggests that pedestrian access to nearby facilities would be impaired by the presence of increase buses from the maintenance yard. Impacts from this maintenance yard would be potentially significant.

Existing MTA South Park Shops (54th and Avalon). Although this is an existing MTA facility, only small numbers of buses are currently maintained at this site. The site is located within a residential neighborhood and it is within ½ mile of two schools and South Park. Increased bus activity at this site would likely be disruptive to local circulation patterns particularly walk routes to schools and the park. The residential character of the surrounding area strongly suggests that pedestrian access to nearby facilities would be impaired by the presence of increase buses from the maintenance yard. Impacts from this maintenance yard would be potentially significant.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

The excavation of a tunnel for BRT or LRT would pass through an area between the University of Southern California on the north side of Exposition Boulevard and the museums and facilities in Exposition Park on the south side. During the period of construction, the work would likely require the removal of on-street parking in this area. This temporary loss would disrupt access to the facilities on either side of Exposition. In addition, access routes across the excavation would be limited to the areas where there are currently crosswalks or pedestrians may be forced to cross the area at either end along Figueroa or Vermont. While access would be maintenance it would likely be an inconvenience to pedestrians. Over the long term, the operation of BRT or LRT in a tunnel would not affect access to the university, museums, or park in any way.

3.15.4 Cumulative Impacts

Wilshire BRT. Community facilities located along the Wilshire BRT route (where turn access will be restricted), these facilities will be vulnerable to cumulative impacts from other public works or development projects in nearby areas that would restrict traffic flow or divert traffic flow. Driver confusion and unnecessary vehicular circulation in these areas would further disrupt access to community facilities.

Exposition BRT or LRT. It is unlikely that community facilities adjacent to or near the Exposition route would be adversely affected by any combined affects of public works or development projects. Local circulation around community facilities is expected to be maintained at current levels. No cumulative adverse changes are anticipated.

3.16 Hazards

3.16.1 Introduction

This section identifies current locations within both the Wilshire and Exposition Boulevard routes that have the potential for contamination from hazardous materials. This section also includes sites with potential contamination due to the possibility of migration of contaminants from nearby hazardous waste sites.

3.16.2 Affected Environment

Certain chemical and physical properties of a substance may cause it to be considered hazardous. As defined by the California Code of Regulations (CCR), Title 22, Section 66084, a "hazardous material" is a "substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed."

According to the California Health and Safety Code, Section 25124, a "hazardous waste" is any hazardous material that is abandoned, discarded or in storage prior to recycling. For example, excavated soil containing hazardous materials would be a hazardous waste if the concentration of contaminants exceeded specific CCR Title 22 criteria.

Project Setting

The proposed project and project alternatives travel the Wilshire Boulevard and Exposition Boulevard right-of-ways through areas containing both commercial and single/multi-family residential properties. The Exposition corridor follows the former railroad right-of-way, which includes portions of Exposition Boulevard, Jefferson Boulevard, National Boulevard, and Olympic Boulevard. Bus alternatives would not require the removal of soil or ground excavation; however, the rail alternatives would require construction activities, which could be affected by potential contamination. Underground storage tanks are of concern because of the possibility of leaks that lead to contamination of surrounding soil and groundwater.

Regulatory Agency List Review

A review of federal and state regulatory agency lists was conducted to determine if locations within the routes contain suspected hazardous waste sites.

- *CORTESE:* The California Environmental Protection Agency Office of Environmental Information has compiled a Hazardous Waste and Substances Sites List (Cortese list) which includes sites designated by the State Water Resources Control Board, the Integrated Waste Management Board, and the Department of Toxic Substances Control. The Cortese list was reviewed for any sites located within the routes. Hazardous material locations within the Wilshire and Exposition corridors found on the April 1998 Cortese list are displayed in Table 3.16-1.

TABLE 3.16-1 SITES ON CORTESE LIST WITHIN WILSHIRE AND EXPOSITION ROUTES		
Site	**Location**	**Type of Contamination**
WILSHIRE ROUTE		
804 Wilshire Boulevard	Fujita Corporation, Santa Monica	Leaking Underground Storage Tank
1111 Wilshire Boulevard	Roywood Corporation/Nakano-Kia, Los Angles	Leaking Underground Storage Tank
2730 Wilshire Boulevard	Kennedy- Wilson International, Santa Monica	Leaking Underground Storage Tank
3675 Wilshire Boulevard	Arco #5355, Los Angeles	Leaking Underground Storage Tank
3855 Wilshire Boulevard	Texaco #Alex Haagen, Los Angeles	Leaking Underground Storage Tank
4180 Wilshire Boulevard	Alright Parking Lot, Los Angeles	Leaking Underground Storage Tank
8567 Wilshire Boulevard	Mobil #11-GWX, Beverly Hills	Leaking Underground Storage Tank
8833 Wilshire Boulevard	BMW of Beverly Hills, Beverly Hills	Leaking Underground Storage Tank
9777 Wilshire Boulevard	Wilshire Triangle Center, Beverly Hills	Leaking Underground Storage Tank
10950 Wilshire Boulevard	Hertz – West LA, Los Angeles	Leaking Underground Storage Tank
11800 Wilshire Boulevard	Chevron #9-7748, Los Angeles	Leaking Underground Storage Tank
12054 Wilshire Boulevard	Mobil #11-LDM, Los Angeles	Leaking Underground Storage Tank
EXPOSITION ROUTE		
445 Figueroa Street	Library Square Construction, Los Angeles	Leaking Underground Storage Tank
610 Figueroa Street	MWD Headquarters Garage, Los Angeles	Leaking Underground Storage Tank
1201 Figueroa Street	Convention Center, Los Angeles	Leaking Underground Storage Tank
2600 Figueroa Street	Shell Station, Los Angeles	Leaking Underground Storage Tank
2601 Figueroa Street	Chevron #9-3707, Los Angeles	Leaking Underground Storage Tank
2943 Exposition	GTE Plant Yard, Santa Monica	Leaking Underground Storage Tank
8520 National Boulevard	Fredrick Smith, Culver City	Leaking Underground Storage Tank
8536 National Boulevard	Hercules Incorporated Plant #3, Culver City	Leaking Underground Storage Tank

In addition to the sites identified in the Cortese List, numerous hazardous materials studies were reviewed to determine the potential for encountering hazardous materials during construction of the proposed project or project alternatives. These hazardous studies were initially conducted as part of the purchase process by the MTA of the former Exposition railroad right-of-way. These studies included the following: Asbestos Site Assessment Facility Inspections SPTCO Properties (Santa Ana, Santa Monica, and Midway Yard Facilities) (1991); Soil Chemical Testing Study National Boulevard and Hayden Street Culver City, California, (1991); Additional Site Characterization: Santa Monica Line Sites: Cabinet 2000, Main/Jefferson, Bundy Cleaners, and Santa Monica Building Materials, (1992); and Environmental Due Diligence Survey, Santa Monica Line, California, (1990). These documents were reviewed to determine the potential for encountering hazardous materials. The findings from these documents are presented in Table 3.16-2.

TABLE 3.16-2 SUMMARY OF HAZARDOUS MATERIALS DOCUMENTS FOR EXPOSITION ROUTE			
Document	**Buildings**	**Findings**	**Applicability to this Study**
Asbestos Site Assessment Facility Inspections SPTCo Properties (Santa Ana, Santa Monica, and Midway Yard Facilities)	- Direct Mail Advertising 2133 Bundy Dr. - Psychic Boutique Corinth Ave./Pico Ave.	No materials surveyed displayed significant ACBM damage or potential for friable material release. Trace asbestos concentrations (.1% Crysotile) were identified within vinyl floor tiles and associated mastic.	Buildings outside of Exposition right-of-way. No effect anticipated.

TABLE 3.16-2
SUMMARY OF HAZARDOUS MATERIALS DOCUMENTS FOR EXPOSITION ROUTE

Document	Buildings	Findings	Applicability to this Study
Soil Chemical Testing Study National Boulevard and Hayden Street Culver City, California	Site located at corner of National and Hayden in Culver City. Southeast corner of National & Hayden, brick warehouse with old RR spur.	Soil samples were found to contain high concentrations of TPH, toluene, and xylene. Recommend that soil be removed, manifested, and transported to a disposal facility. Some additional testing may be required for admittance into respective facilities.	Site is adjacent to where reconstruction of National Boulevard would occur and as such this reconstruction may encounter some of the contaminated soils. Study recommend that soil from this site be removed, manifested, and transported to a disposal facility and that some additional testing may be required for admittance into respective facilities.
Additional Site Characterization Santa Monica Line Sites: Cabinet 2000, Main/Jefferson, Bundy Cleaners, and Santa Monica Building Materials	Cabinet 2000 - Washington & Exposition	Based on limited extent and low levels of contamination found at site, levels of aromatic compounds discovered in single surface sample are of minor concern in regards to possible groundwater contamination. Do not recommend further investigation or remediation at this site.	Site is outside of Exposition right-of-way and not anticipated to be used for the proposed project alternatives. In addition, study concluded that further investigation or remediation was not needed at this site.
	Himco Security Products Main & Jefferson (downtown). Northeast corner of Main & Jefferson	PCE was detected. Recommend further investigations be performed at site to determine lateral and vertical extent of soil contamination. Additional borings should be drilled to a minimum depth of 20 feet and soil samples should be collected and analyzed at surface. Remediation methods or costs cannot be recommended until after additional investigations. Do not suspect groundwater contamination.	Outside of study area. No effect anticipated.
	Bundy Cleaners	No groundwater contamination at this site revealed in groundwater samples.	Site is outside of the Exposition right-of-way, therefore, no effect anticipated.

TABLE 3.16-2
SUMMARY OF HAZARDOUS MATERIALS DOCUMENTS FOR EXPOSITION ROUTE

Document	Buildings	Findings	Applicability to this Study
	SM Building Materials, Exposition & Bundy	After illegally discharging oil onto property, City of SM directed SM Building materials to remediate contaminated soil. City has stated, as of 8/3/91 that further remediation is not required. No further investigation or remediation necessary.	Some portion of tested soil may be encountered during construction of the Exposition (Full Length) Alternatives, however, since the City of Santa Monica has stated that further remediation is not required, no effects are anticipated.
	Bergamot	Two sites where groundwater contamination is considered to be present beneath the ROW and one non-operating property where groundwater contamination has been detected.	Even though this site is proposed as a park-and-ride lot, it is not anticipated that groundwater would be encountered during construction. Therefore, no effects are anticipated.
	Numerous soil stockpiles	Numerous soil stockpiles and some drums are present in ROW. Many of the drums are located in fenced areas, which are most likely leased properties. Stockpiles and drums need to be managed as hazardous wastes unless they are tested or their source is known.	These stockpiled sites are within the right-of-way. Therefore, as recommended by this study, many of the drums are located in fenced areas, which are most likely leased properties. Therefore, these stockpiles and drums need to be managed as hazardous wastes and should be tested unless their source is known.
	Numerous sites with oil from cars/trucks	Numerous sites where it appears that oil from cars or trucks has been spilled into ROW. The vertical extent of these stained areas is anticipated to be small. The larger stained areas may be from other sources. Of concern in these larger stained areas is the potential presence of other chemicals. PCBs which have been encountered in waste oils could be present in some of the stained areas.	Further investigation of these numerous stained sites is recommended to determine if these soils are contaminated prior to construction of the proposed Exposition alternatives.

TABLE 3.16-2 SUMMARY OF HAZARDOUS MATERIALS DOCUMENTS FOR EXPOSITION ROUTE			
Document	**Buildings**	**Findings**	**Applicability to this Study**
	Other sites where fluids have leaked or are continuing to leak into corridor.	If hazardous materials are present in fluids or have leaked from the tanks or clarifiers they would be present in subsurface beneath ROW. Number of areas where it is suggested that additional data be obtained (Tables 5A & 5B)	Further investigation of these sites is recommended to determine if these soils are contaminated prior to construction of the proposed Exposition alternatives.
		Two sites where unpermitted storage tanks are on adjacent properties, two sites identified from air photos where disposal pits were present and three sites where stains were noted.	Further investigation of these numerous stained sites is recommended to determine if these soils are contaminated prior to construction of the proposed Exposition alternatives.
Source: Compiled from various hazardous materials documents at MTA, 2000.			

3.16.3 Impact Assessment and Mitigation Measures

Standards of Significance

A significant impact would occur if hazardous materials are encountered during excavation of sites during the construction phase of the proposed project or project alternatives.

Methodology for Impact Evaluation

The methodology used to identify the potential impact was to identify the location of hazardous sites and compare their locations with the routes of the proposed project and project alternatives to determine if, during construction, the materials would be exposed.

Impacts

No Action Alternative (Baseline)

As discussed in Section 2 of this EIS/EIR, the No Action Alternative involves primarily increases to the bus operations fleet and minor transit service restructuring. It would not involve the construction of a project and therefore exposure to hazardous materials would not result. No impact would occur.

Transportation System Management (TSM) Alternative

As described in Section 2 of this report, the TSM Alternative would largely involve operational and route restructuring improvements along with extensions of the MTA Rapid Bus service and corridors. No construction is anticipated for this alternative and therefore the alternative would not be exposed to hazardous materials. No impact would occur.

Alternative 1: Wilshire BRT (Baseline Median-Running)

From Table 3.16-1, several sites containing leaking underground storage tanks were identified along the Wilshire route. However, these sites are all outside of the existing Wilshire Boulevard street right-of-way. Implementation of the Wilshire BRT Alternative would occur within the existing street right-of-way and would not require substantial excavation during the construction of this alternative (raised medians would be demolished and the roadway crown would be regarded). As a result, it is not anticipated that hazardous materials would be encountered during construction of this alternative and no significant impacts are anticipated.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Because improvements would be made within the existing Wilshire Boulevard right-of-way, no impacts anticipated. The only potential for impacts would result from the MTA's acquisition of an industrial or commercial property for off street parking that may have contamination. Generally, impacts would be less than significant.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Impacts would be similar to Alternatives 1 and 1A.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

This alternative includes the potential impacts associated with the Wilshire BRT Alternative and Exposition BRT Alternative. The potential impacts for the Wilshire BRT Alternative are discussed above and it was determined that no significant impacts are anticipated for this route.

The primary hazardous materials concerns for this component of the alternative are conditions within the former railroad right-of-way where the exclusive busway would be constructed. Environmental reviews of the right-of-way indicate there are instances of stained and contaminated soil, storage spills and structures containing asbestos. Prior to construction, these hazardous conditions would be corrected following appropriate state and federal procedures, as required by Mitigation Measure 3.16-1:

- *Mitigation Measure 3.16-1:* Prior to construction, the LACMTA shall conduct a comprehensive review of current conditions in the Exposition railroad right-of-way and specifically define remedies for hazardous conditions prior to the construction of the guideway alignment or associated station areas.

It should also be noted that the replacement parking strategy to be implemented in conjunction with the Wilshire BRT alternative may require the acquisition of developed properties. If these properties are industrial in nature, specific consideration will need to be given to contamination and spills on the affected sites that could cause potentially significant impacts. If structures acquired have been built using asbestos, then further consideration will need to be given to removal of the asbestos following appropriate procedures and regulations, as required by Mitigation Measure 3.16-2:

- *Mitigation Measure 3.16-2:* For structures to be acquired, an evaluation of asbestos hazards shall be conducted. There are five types of response actions recognized for the control of an asbestos-related hazard. They are removal, enclosure, encapsulation, encasement, and operations and maintenance. In the event of demolition or renovation operations involving asbestos containing floor tiles, precautions should be implemented to minimize activities, which may cause fiber release. During demolition operations, materials may be uncovered that are different from those accessible during initial assessments. Additional sampling to identify asbestos-containing materials may be needed during such activities. Personnel in charge of demolition shall be trained in the proper identification of potential asbestos-containing materials and other potentially hazardous materials, which may be uncovered during demolition activities. Additional sampling and laboratory analysis should be performed to determine the composition of these materials.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

This alternative includes the potential impacts associated with the Wilshire BRT Alternative and Exposition BRT MOS Alternative. The potential impacts for the Wilshire BRT Alternative are discussed above and it was determined that no significant impacts are anticipated for this route.

For the Exposition BRT MOS portion of this alternative there are former railroad right-of-way significant hazardous materials impacts that primarily pertain to soil contamination, spills and asbestos in older structures. Mitigation of these potential hazardous conditions prior to construction is necessary to be consistent with local and state regulations.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

This alternative includes the potential impacts associated with the Wilshire BRT Alternative and Exposition LRT Alternative. The potential impacts for the Wilshire BRT Alternative are discussed above and it was determined that no significant impacts are anticipated for this route.

The Exposition LRT portion of this alternative would have similar concerns to the Exposition BRT portion discussed above. Mitigation will be required for soil, storage and asbestos conditions in the former railroad right-of-way.

In addition to hazardous materials concerns, the introduction of the LRT mode will also introduce new electromagnetic field (EMF) sources associated with the overhead electrical power system used to propel the vehicles.

Electromagnetic fields (EMFs) are generated from electrical power facilities and appliances. An EMF is an invisible, low frequency radiation that is emitted from electrical sources. Common sources include power lines, hair dryers, microwave ovens, video terminals, electric blankets, and other appliances. High voltages generate the electrical fields, while the movement of these voltages in wires generates the magnetic fields. An EMF weakens as the field extends from the source.

The overhead catenary system and traction power substations are the sources of EMFs from the LRT alternatives. The LRT uses 600 volts of direct current (dc) (0.6kV). For comparison, overhead power lines use a much higher voltage (400 kV). Based on this information that the EMFs produced by LRT systems are relatively weak, it is not anticipated that EMFs would create an adverse impact or an increased risk to human health; however, implementation of Mitigation Measure 3.16-3 will ensure that impacts remain less than significant:

- *Mitigation Measure 3.16-3:* Residences, schools, hospitals, day care facilities, convalescent homes, and other similar sensitive receptors that are located within 100 feet of the catenary centerline shall be specifically evaluated for potential EMF levels based on the power requirements of the LRT system. Projected levels shall be compared with International Radiation Protection Association (IRPA) guidelines. In the unlikely event that these guidelines would be exceeded, mitigation shall be implemented to ground or block fields or alter the LRT power requirements.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

This alternative includes the potential impacts associated with the Wilshire BRT Alternative and Exposition LRT MOS Alternative. The potential impacts for the Wilshire BRT Alternative are discussed above and it was determined that no significant impacts are anticipated for this route. Because portions of the former railroad right-of-way would be used in the MOS segment mitigation of contaminated conditions and spills would be required.

Maintenance Yard

As discussed in Section 2 of this report, the MTA is considering candidate maintenance yard site locations for BRT operations. Six candidate sites are under consideration. Hazards associated with each of these sites are discussed below:

Northwest Corner of Chavez and Mission. The site is not listed as a Superfund Site. Auto salvage and auto repair activities as well as heavy truck use of site strongly suggests that soil contamination may be an issue. There is a potential for a significant impact at this location.

Existing MTA Division 1 (Alameda and 6th). Vehicle maintenance activities have occurred on this site for many years. In addition there are underground tanks. The potential for soil contamination on this site is relatively high. There is a potential for a significant impact at this location.

Northeast Corner of Alameda and Washington. The site is currently being used as a truck terminal and the storage of truck trailers. It is expected that the continued presence of trucks on this site over a period of time would be a source of soil contamination. The potential for soil contamination on this site is relatively high. There is a potential for a significant impact at this location.

Southeast Corner of Alameda and Washington. This site was used for the maintenance and storage of buses by a private company. It is anticipated that there will contamination related issues associated with the repair facilities as well as the parking areas. Another portion of the site is used for truck rentals. Again there is a likelihood of contamination associated with this storage use. The adjacent area to the south includes portion of a railroad right-of-way as well as a metal salvage/fabrication shop. The extensive use of metals on this site strong suggests soil contamination will be an issue, and there is a strong likelihood that site remediation would be required. There is a potential for a significant impact at this location.

Exposition ROW (Hooper to Central). A review of the assessments prepared at the time the MTA acquired the right-of-way from Southern Pacific there were no specific indications that the proposed site posed soil contamination concerns. No significant impacts are anticipated.

Existing MTA South Park Shops (54^{th} and Avalon). As an existing MTA facility that it is involved with the service and repair of buses there is a likelihood of contamination associated with site. In addition, underground tanks on the site may also pose a hazardous materials risk. There is a potential for a significant impact at this location.

Subway Design Option at USC/Exposition Park (for Alternatives 2, 2A, 3 and 3A)

The excavation of a tunnel for BRT or LRT would pass through an area that has been evaluated as part of the City of Los Angeles North Outfall Sewer project. Borings taken in the vicinity of the proposed tunnel do not indicate the presence of hazardous materials or gases. No significant impacts are anticipated.

3.16.4 Cumulative Impacts

Wilshire BRT. Because hazardous materials effects are highly site specific it is not anticipated that there would be a potential combined adverse impacts from the proposed project and other public works or construction activities along Wilshire Boulevard.

Exposition BRT or LRT. It is not expected that soil contamination or the removal of asbestos from structures in the right-of-way would have a combined impact with other future land development or public work projects taking place in the vicinity. In addition, the legal requirement for remediation would eliminate the potential for a combined effect with other projects in the area.

3.17 Cultural Resources

3.17.1 Introduction

This section describes the potential impacts to cultural resources that could result from implementation of the alternatives under consideration for the Mid-City/Westside Transit Corridor Project. This analysis incorporates technical reports prepared for this EIS/EIR for paleontological, archaeological, and historic resources. Additionally, the Native American Heritage Commission (NAHC) was consulted, and the Native American individuals and organizations were contacted per the NAHC's request. Letters were sent to these individuals and organizations on November 6, 2000, and at the time of preparation of this report, no responses have been received.

3.17.2 Affected Environment

Definition of the Area of Potential Effects

The Area of Potential Effects (APE) definition used for the project is consistent with that used in previous surveys for the Metro Rail Project. For historic and architectural resources, it includes all parcels located above off-street tunnel configurations, and all structures within the first tier of structures adjacent to the project alignment, stations, subway or open cut construction areas, or areas proposed for acquisition. Whenever reasonable, property lines or street rights-of-way (ROWs) were used to establish the APE boundary. For archaeological resources, it is the area which would be disturbed during construction of the undertaking.

Paleontological Resources

Implementation of Alternatives 1, 1A, or 1B would not cause ground disturbance of sufficient depth to affect paleontological resources. Alternatives 2, 2A, 3, and 3A, however, include a proposed subway design option for portions of the Exposition Alignment adjacent to the University of Southern California (USC). Implementation of these measures would result in substantial excavation, which could affect paleontological resources.

As mapped by Dibblee (1992), the USC campus and vicinity are underlain by Holocene alluvium (unit Qa), which is composed of clay, sand, and gravel. Presumably, the alluvium includes strata of late Pleistocene age at depth. However, at or near the surface, the younger alluvium is probably too young to contain remains old enough to be considered fossilized and, therefore, there is probably only a low potential for any fossil remains or previously unrecorded fossil site being encountered by shallow earth-moving activities in areas underlain by this rock unit.

However, the fossil occurrences from the younger alluvium, such as those in the vicinity of USC, are of high scientific importance because they have allowed determinations of the ages of their respective fossil-bearing rock units, reconstructions of the depositional paleoenvironments represented by the sediments comprising these rock units, and documentation of the paleoclimates of the region during deposition of the sediments. Moreover, some of these occurrences are also important because they represent time and/or geographic range extensions (including first reported fossil occurrences) for their respective animal and plant species.

Fossil occurrences in similar geological units, as well as at nearby areas, such as downtown Los Angeles, Union Station, Vernon, El Sereno, and Universal City/North Hollywood, suggest that there is a moderate to high potential for additional, similar fossil remains being encountered in the younger alluvium present in the APE.

Historical and Potentially Historical Properties Identified In The APE

A review of archival records and background literature, and a preliminary field survey have identified two types of cultural resources (King 1998:221-222) in the APE. These types include:

- Historic Properties, which are places included in or eligible for the National Register of Historic Places (NRHP) by virtue of their historical, archaeological, architectural, engineering, or cultural significance; and
- Community cultural norms, values, and beliefs, and their expressions in the ways people work, play, relate to one another, organize to met needs, and generally participate in society. This kind of resource, which may or may not involve historic properties or some other kind of resource, or use of the natural environment, is subject to The National Environmental Policy Act (NEPA).

In summary, 164 resources have been identified in or within ¼ mile of the APE for the various alternatives. Tables 1.0 and 1.2 of the Cultural Resources Technical Report list the properties, addresses, APNs, dates of construction (where appropriate), and NRHP status (where applicable). Table 3.17-1 provides a breakdown of these resources:

TABLE 3.17-1
SUMMARY OF CULTURAL RESOURCES SITE TYPES

	Site Type		
Alignment/No. of Sites	**Known Archaeological Sites**	**Potentially Eligible Buildings**	**Potentially Ineligible Buildings**
Wilshire Alignment			
Mid City LA	1	48	4
Beverly Hills	0	18	1
West LA	2	15	0
Santa Monica	0	10	5
Subtotal	*3*	*91*	*10*
Exposition Alignment			
Los Angeles	8	34	3
Culver City	1	7	0
West LA	0	1	0
Santa Monica	0	2	4
Subotal	*9*	*44*	*7*
TOTAL	**12**	**135**	**17**
Source: Greenwood & Associates, 2000			

In addition to the structures and archaeological sites listed above, many of the electroliers and other fixtures (such as streetlamps) along Wilshire Boulevard may have been installed prior to 1950, and may, therefore, be considered potentially historic. Additionally, the Southern Pacific Railroad/ Pacific Electric Railway lines and ROWs in the Exposition Alignment have been identified by the California State Historic Preservation Officer as eligible for the NRHP.

Historical Context of the APE

Prehistoric settlement in the Los Angeles basin appears to have been patterned in relation to environmental attributes, which favored subsistence practices, and may represent either villages or temporary/seasonal camps of special functions. Native American sites dependent on harvesting marine foods formed a band along the Los Angeles Basin coast north from the Ballona wetlands. Inland sites were often distributed near springs or seeps, or in proximity to oak groves. Other sites, many undocumented, were located to take advantage of desirable faunal, mineral, wild plant, and seed resources.

With the arrival of the Spaniards and formation of the missions, the area was soon depopulated. The Spanish plan for empire expansion was to convert local populations to a Hispanicized way of life rather than to populate a territory with immigrants. Once the Spaniards established their hegemony in the area, their interactions with local populations led to an end of hunter-gatherer lifeways. A great deal of indigenous knowledge persisted in Native American groups until well into the twentieth century, but their lives had been substantially altered.

Los Angeles was established near the Los Angeles River in 1769. The settlement was close to a ford and a place to ascend the bluffs on the east side of the river, the direction of Mission San Gabriel. The core of the settlement was on the lower river terraces, with the lowest terraces and floodplain serving as fields. Water was delivered by gravity flow from the river through a series of ditches to the settlement and fields. As time passed, settlement spread upslope and westward away from the periodic flooding.

The passing of California from Spanish to Mexican rule in 1847 did not alter the basic social fabric at first, but secularization of the missions in 1833-1834 and the increasing numbers of private ranchos had changed the economic relations among classes. Neophytes released from the missions and newcomers from Mexico became wage-earners of lower status, while the landholding rancheros and military officers constituted an elite. Despite social distinctions, material culture differences between the groups were relatively modest.

In 1848, gold was discovered in the Sierra Nevada, which prompted a population influx from the United States, Europe, Central America, and Asia in 1849 and soon led to statehood in 1850. San Francisco was the boom town that supplied the gold fields, but the Los Angeles economy benefited, too, through sales of local cattle to miners and increasing settlement and trade. As the Gold Rush waned, Los Angeles grew with the arrival of former miners.

The new settlers arriving during and after the Gold Rush were a multicultural mélange including German Jews, French, and other western Europeans. After completion of their work on the railroads, Chinese joined the large numbers of settlers from other states and the remaining Californios and Native Americans. All tended to settle in proximity to groups sharing national, ethnic, linguistic, and social affinities.

When the Southern Pacific railroad came to Los Angeles in 1876, its tracks were laid on the flats near the river. A whole complex of warehouses for storing and loading merchandise grew up on adjacent streets. Commercial enterprises such as barbershops, saloons, restaurants, boardinghouses, and brothels in the same area served the workers and railroad men.

By the 1880s, suburban development began on the bluffs above the river. New housing tracts were served by street railways, and business establishments followed along transportation corridors. Cemeteries were founded on what was vacant land. Residents of the area worked in the growing industrial zone between the heights and downtown. This area was peripheral to the town center, and housing continued to spread to the east as land was platted and subdivided. At first, houses were separated by open tracts, but with later construction, vacant lots were filled in and settlement continued to expand to the east.

After the advent of the automobile, despite the continued service of streetcars, many homeowners began to buy automobiles and house them in garages on their property.

While evidence of early land use and cultural patterns has become part of the architectural and archaeological record, many land use and cultural patterns established by the 1880s have persisted. An example of such a pattern is commercial development along east-west arteries serving adjacent residential neighborhoods.

As noted above, the city grew outwards from the original core settlement, as shown by period maps. Most growth after 1849 was planned, in the sense that the street grid was surveyed and lots marked, channeling growth along established corridors. The first official map of the city was created in 1849 (Ord and Hutton 1849) and centered on the plaza area, the core of settlement at that time. Tracts surrounding the core, available for sale but not yet subdivided, were bounded by major cross streets. In 1857, Henry Hancock surveyed the city lands beyond Ord's map, all the way to Indiana Street, the city boundary. He divided the land into 35-acre lots in groups of eight, separated by streets in a grid (Hancock 1858 in Harlow 1976:77). A re-survey in 1867 showed that most of the land west of the river was owned, but not improved.

Los Angeles and Independence Railroad

The Southern Pacific Railroad (SPRR) entered the Los Angeles area in 1873 and gained a monopoly of port facilities at Wilmington, which it was able to retain for two decades (Robinson 1985:90). Since SP was the only rail line at the time, and Wilmington/San Pedro was the only significant harbor in operation at the time, SPRR had a virtual monopoly on transportation of harbor freight to Los Angeles and charged high freight rates which local merchants were obliged to accept. In an effort to cash in on land development and to break the transportation monopoly, several investors in the early 1870s bought portions of the Rancho La Ballona, Rancho San Vicente y Santa Monica, and Boca de Santa Monica and platted the town of Santa Monica.

Senator John P. Jones is universally regarded as the founder of Santa Monica (McGroarty 1921:886). Jones and others platted the town and organized the Los Angeles & Independence Railroad (LA&IRR) in 1875. The new company immediately began construction of a pier, 1,700 feet in length. Senator Jones' intent was to carry his rail line from Los Angeles to Independence, where he owned the Panamint mines, but this never occurred (Storrs 1974:6). It was also proclaimed that Jones and Baker (his partner) would build a railroad toward the east that would break the SPRR monopoly in southern California (Santa Monica 1974:7).

Harris Newmark, merchant, was the first to bid for a lot in Santa Monica at $300 (Robinson 1959:10). In 1875, Santa Monica had 1,000 people, 160 houses and half as many tents. Tracks for the Los Angeles & Independent Railroad had been laid from the ocean to Los Angeles and a wharf was in operation (Basten 1974:5). The line was constructed as a single-track standard-gauge steam railroad (Pacific Electric Engineering Department 1914:341). The distance from Los Angeles to the Ocean Park depot was 19.2 miles (*Interurbans* 1975:52). The LA&IRR had a depot at Fourth and San Pedro in Los Angeles (Post 1989:35).

In addition to the LA&IRR, there were numerous trolley and street car lines developing in Los Angeles. One of these, the San Pedro Street line, unlike any of the other three pioneers, ran on standard gauge track, and in effect constituted an extension of the Los Angeles & Independence through town (Post 1989:35). On March 1st, work was commenced on the San Pedro Street Railway, which in time was extended from the Santa Monica station to the Plaza, via San Pedro, Los Angeles, Arcadia and Sanchez Streets. The gauge was that of the Los Angeles & Independence Railway, thus permitting freight cars to be hauled to the center of the city; businessmen looked upon the new road as a boon (Newmark 1930:488).

By 1877, however, the LA&IRR proved to be an unprofitable venture for Jones and his partners due to constant freight rate wars with the SPRR. In July, it was sold to the Central Pacific/Southern Pacific organization which immediately increased freight rates between Santa Monica and Los Angeles thus making the Wilmington seaport more favorable to shippers than Santa Monica (Santa Monica 1974:8).

Southern Pacific Railroad

In 1878, SPRR condemned and partially dismantled the wharf of the LA&IRR. In addition, the depot was removed from the wharf and relocated close to the present location of the city hall (Storrs 1974:11). The last steamer to dock at Santa Monica was, ironically enough, the *Senator*, which arrived in September 1878 (Marquez 1975:24). As a consequence the population of Santa Monica dwindled to 350 people (Basten 1974:12). When the LA&IRR tracks were connected to those of the SPRR, the depot downtown at 4th and San Pedro was superfluous and SPRR sold the station (Marquez 1975:24).

Down through the 1880s, SPRR had shipped through San Pedro. It had also eliminated all competition by acquiring the San Pedro Railway, securing the Wilmington tidelands, purchasing the LA&IRR, and closing its wharf at Santa Monica. The Los Angeles Terminal Railway - an eastern syndicate presumably fronting for the Union Pacific - built a line from Los Angeles to San Pedro and bought nearby Terminal Island. By 1891, it competed directly with the SPRR (Fogelson 1993:110).

The competition of the Los Angeles Terminal Railway at San Pedro prompted SPRR to look for another port where it could dominate freight traffic and at the same time eliminate San Pedro, its new competition, as the de facto port of Los Angeles. To this end, SPRR bought the Santa Monica ocean front right-of-way, again from John Jones, and proceeded to build "a massive wharf stretching far out into the sea from its rail line at Santa Monica" (Deverell 1996:100). This "long wharf", as it came to be called, was a 4,500 foot engineering triumph (Deverell 1996:100). The wharf was serviced by an expanded rail line extending to the ocean from the old terminus of the LA&IR.

A protracted battle was fought over which port was to become the "Port of Los Angeles" and in 1897, San Pedro was declared the official port. In the interim, streetcar service started to supplant the steam trains which had made four round trips daily between Santa Monica and Los Angeles. By the early 1900s, service to Santa Monica was provided by both Pacific Electric and the Los Angeles Pacific (Storrs 1974:20). Southern Pacific, after losing its monopoly for a new port, slowly abandoned its "Long Wharf" in Santa Monica and decreased service along its Santa Monica branch.

Pacific Electric, The Santa Monica Air Line

At one time it had been generally assumed that Henry E. Huntington was destined to succeed his uncle as head of the Southern Pacific, but after Collis P. Huntington's death in 1900, a controlling faction of the SPRR leadership blocked Henry's ambition. Prior to this time, Henry had developed a majority interest in the Pacific Electric (PE) streetcars, which controlled a significant portion of the Los Angeles light rail franchise. Huntington went on to take a commanding lead in this realm, and by the end of 1902 had the construction of several lines well under way (Post 1989:141).

While keeping a seat on the SPRR board, Henry Huntington set PE on a course directly contrary to the interest of the railroad. E. H. Harriman, the new Southern Pacific president, knew that the electric interurban offered conveniences that no steam road could match and took steps to protect his company (Post 1989:143). Harriman bought a sizable interest in PE and also bought a competitive line to Huntington's which eventually forced the latter to agree to come to terms with SPRR. An agreement was eventually reached in 1903, which allowed Huntington to continue, but on a much reduced scale. In 1908, Huntington gave up active management of the Pacific Electric, and two years later he relinquished his share to the SPRR in return for full ownership of the Los Angeles Railway (Post 1989:145-147).

A period of expansion of beach towns began at the turn of the century in southern California, aided by the extension of electric railroads (Pennington and Baxter 1976:23).

Promotional efforts brought about renewed interest in Santa Monica as a residential and resort community rather than as a commercial center. The Santa Monica branch, now part of the PE Line, permitted residents to live in Santa Monica and work in Los Angeles. The electric lines contributed substantially to the continued growth of Santa Monica, Culver City, and other beach cities by offering low fares and reliable service (Pennington and Baxter 1976:23).

Southern Pacific merged all the numerous southern California interurban electric railway holdings into one consolidation and in 1911, it created the Pacific Electric Railway Company. The old LA&IRR line became the Santa Monica Air Line route (Marquez 1975:113; Storrs 1974:20). Topographic maps of 1921 and 1926 of Santa Monica depict the PE line along the same alignment as the LA&IRR. The electric railway's fortunes markedly improved during southern California's subsequent boom. Between 1919 and 1923, patronage advanced rapidly and operating revenue rose substantially on both the LA&IRR and the Pacific Electric (Fogelson 1993:171). In addition to passengers, the line had a thriving freight business.

Pacific Electric was instrumental in the development of crossing signaling devices and developed the "wig-wags." Wig-wags mounted on telephone poles at major intersections would clang a warning of approaching PE cars.

Although the SPRR supported the PE through the 1930s, it was clear by now that the interurban system had failed as a transit enterprise. For the electric railways here and elsewhere in the United

States, the Great Depression was catastrophic (Fogelson 1993:183). During the 1930s, SPRR used the line to display new locomotives at Exposition Park (Cranston, personal communication 1999).

In the late forties, PE requested permission to raise its fares to cover rising costs. The California Public Utilities Commission, however, ordered the railway to upgrade its equipment before instituting fee increases. The PE management, after much thought, eventually decided to eliminate its passenger rail service altogether. After abandonment of passenger service in 1953, trolley wire was removed and diesel locomotives took over all freight movements (*Interurbans* 1975:52-53). Ultimately, the PE sold its passenger service in 1953 to the Metropolitan Coach Lines, a company that mainly operated buses in southern California. That corporation ran the PE at a loss for five years before selling out to the state-owned Metropolitan Transit Authority, which formally ended all rail service in 1961 (Bottles 1987:238-239). Southern Pacific formally abandoned the line sometime in 1993 when it was sold to the Los Angeles County Metropolitan Transit Authority.

Significance of the Cultural Resources in the APE

The potential significance of the cultural resources in the project area is connected primarily to the urban and suburban growth of Los Angeles. The city's urban growth has been influenced by broad historic trends in urban economy over the past two centuries, which interacted with specific characteristics of the local natural, social, and built environments. Since the founding of the pueblo, the multicultural composition of the population, changing with patterns of migration and immigration, has left an impression on the city and its surroundings. The evidence is visible, in the form of structures and wall art, and is also obscured, in the subsurface archaeological remains.

Intensity of use has affected the character of the areas crossed by the Project Corridor. The environmental issues for cultural resources include consideration of both the built environment and the archaeological record, both prehistoric and historic. Prehistoric archaeological remains in the Study Area are almost completely unknown because of the dense early Euroamerican settlement that would have obscured the surface indications. At this date only subsurface testing will reveal their presence or absence; a testing plan can be developed to take into account favorable environmental factors such as elevation and distance to water, and the historical maps and documents.

One of archaeology's strongest contributions to understanding the historical past is describing the cultures of people who left scant written records. Typically, such people are the working classes and social groups marginal to mainstream society, who did not leave abundant written records of their own. Material culture, the remains people left in the archaeological record, can clarify our understanding of how people lived, what they ate, how they prepared foods, how much disposable income they had, how acculturated they were to the Euroamerican lifestyle, relations with other groups, and other questions not easily answered in any other way. The Mid-City/Westside Corridor is an important laboratory for inquiries such as these; an example of previous work of this type was the excavation and publication of material on the first Los Angeles Chinatown (Greenwood 1996).

The built environment amplifies historical and archaeological research to address different questions. Architectural style reflects not only social and economic choices by individual builders; it can reveal a great deal about what people thought about proper behavior and the loci for activities of different types (Deetz 1977). This is true of dwellings, commercial or retail buildings, and community facilities such as churches and fraternal halls.

The Study Area illustrates the strong American pattern of single-family detached dwellings prevalent through the middle of the twentieth century, nearly always of wood frame construction. These residences reflect trends in style, seen in the Queen Anne style of the 1890s, the Craftsman bungalows of the early twentieth century, the pre-World War II Mission Revival and other revival styles, and the Frank Lloyd Wright-influenced ranch style of the post-war period. Commercial architecture shows differences from dwellings; historic enterprises in the Study Area were frequently constructed of brick, often two stories in height. Unlike dwellings, which were set back from the street behind a fence demarcating the property, commercial structures were built to meet the property lines, with the entry on the main street. This maximized floorspace inside and made access easy for pedestrians and shoppers. Commercial architecture can demonstrate the material correlates of marketing and consumer behavior.

The scope of this report does not include archaeological testing and standing structures were only spot-checked without in-depth documentary research. When the final transportation route through the Mid-City/Westside Corridor has been selected, formal determinations of eligibility will be needed to identify significant resources where impacts may warrant mitigation.

3.17.3 Impact Assessment and Mitigation Measures

The identification process seeks first to locate and define what cultural resources are within the area of potential effects. The second step is to evaluate the significance of the identified cultural resources (Section 3.17.2). If MTA finds that there are historic properties which may be affected by the undertaking, the agency applies the criteria of adverse effect.

Criteria Of Adverse Effect (or Standards of Significance)

An adverse effect is found when an undertaking may alter, directly or indirectly, those characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Adverse effects on historic properties include, but are not limited to:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

- The agency official may propose a finding of no adverse effect if the undertaking is modified or conditions are imposed to avoid adverse effects (36 CFR 800.5 (b)). If avoidance is not possible, then the agency official shall consult further to resolve the adverse effect pursuant to 36 CFR 800.6. This consultation would occur with the California State Historic Preservation Office (SHPO).

Under CEQA, demolition, destruction, relocation or alteration of a resource or its immediate surroundings, such that the significance of the historical resource would be materially impaired, would result in a substantial adverse change, and would result in a significant impact. As stated above, adverse effects to architectural resources can be resolved under the National Historic Preservation Act (NHPA), and would therefore be considered significant but mitigable under CEQA for the purposes of this analysis. Potential impacts to paleontological resources and archaeological sites can also be mitigated to a less than significant level through monitoring and scientific data recovery. These mitigation measures are described below, as appropriate.

Impacts

No Action Alternative (Baseline)

Direct Effects on Paleontological Resources. As discussed in Section 2.0 of this report, the No Action Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. This alternative would have no impact on paleontological resources.

Direct Effects on Archaeological Resources. As discussed in Section 2.0 of this report, the No Action Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. This alternative would have no impact on archaeological resources.

Direct and Indirect Effects on Historical Resources. As discussed in Section 2.0 of this report, the No Action Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. This alternative would have no impact on historical resources.

Transportation System Management (TSM) Alternative

Direct Effects on Paleontological Resources. Similar to the No Action Alternative, the TSM Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size and reconfiguration of routes. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. This alternative would have no impact on paleontological resources.

Direct Effects on Archaeological Resources. Similar to the No Action Alternative, the TSM Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size and reconfiguration of routes. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. This alternative would have no impact on archaeological resources.

Direct and Indirect Effects on Historical Resources. Similar to the No Action Alternative, the TSM Alternative would not entail physical changes to the corridor area, and would focus on operational bus improvements, such as an increase in fleet size and reconfiguration of routes. Buses would continue to operate along city streets and there would be no effects outside of these ROWs. This alternative would have no impact on cultural resources.

Alternative 1: Wilshire BRT (Baseline Median-Running)

Direct Effect on Paleontological Resources. Grade preparations for the Wilshire BRT alternative would involve excavation into native soil that could reach depths of 18 to 24 inches below the ground surface. Additionally, excavations for caissons for aerial structure supports could reach depths of several feet in native soils. Such excavation may result in alteration, removal, and destruction of paleontological resources that could be present in the Quaternary alluvium (Qa) that underlies Wilshire, as well as USC and the Exposition Park area. This would represent a significant, mitigable impact: implementation of Mitigation Measure 3.17-1 would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-1 Monitoring and Scientific Recovery of Paleontological Resources:* Prior to any earth moving at the project site, a qualified vertebrate paleontologist approved by the Los Angeles County Museum of Natural History – Vertebrate Paleontology Section (LACMVP) will be retained by the MTA or its designated contractor to supervise the mitigation program, which shall consist of the following:

    1. The paleontologist will develop a storage agreement with the LACMVP to allow for the permanent storage and maintenance of any fossil remains recovered at the project site as a result of the mitigation program, and for the archiving of associated specimen data (taxon, element) and corresponding geologic (rock unit, stratigraphic level, lithology) and geographic site data (location, elevation) recorded as a part of the program.

    2. The paleontologist will develop a mitigation plan and a discovery clause/treatment plan to be implemented during earth-moving activities at the project site. The clause/plan will allow for the recovery and subsequent treatment of any fossil remains uncovered by these activities, and for the archiving of associated specimen and site data.

    3. The paleontologist and a paleontological resources construction monitor will attend a pre-construction meeting to explain the mitigation program to contractor staff and to develop procedures and lines of communication to be implemented if fossil remains are uncovered by earth-moving activities, particularly when a monitor is not on site.

    4. Monitoring of earth-moving activities (including grading, auguring, trenching, etc.) will be conducted by the paleontological resources monitor on a full-time basis once these activities have reached previously undisturbed sedimentary strata underlying any artificial fill and a depth 5 feet below current grade. Monitoring will consist of

inspecting strata freshly exposed by these activities and the debris piles generated by these activities. Monitoring will be conducted to allow for the recovery of larger fossil remains.

5. If fossil remains are found by the monitor, any earth-moving activity will be diverted temporarily around the fossil site until the remains have been removed and the activity has been allowed to proceed through the site by the monitor.

6. If fossil remains are encountered by any earth-moving activity when the monitor is not on site, the activity will be diverted around the fossil site and the monitor called to the site immediately to remove the remains.

7. Sediment samples not to exceed a total weight of 6,000 pounds will be recovered by the monitor or a field technician and fully processed to allow for the recovery of smaller vertebrate fossil remains.

8. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then will be curated (assigned and labeled with LACMVP specimen and corresponding site numbers, as appropriate; placed in specimen trays and, if necessary, vials with completed specimen data cards) and catalogued, and associated specimen data and corresponding geologic and geographic site data will be archived (specimen and site numbers and corresponding data entered into appropriate LACMVP computerized data bases) at the LACMVP by a laboratory technician. The remains then will be accessioned into the LACMVP fossil collection, where they will be permanently stored, maintained, and made available for future study by qualified investigators.

9. If appropriate, a microfossil sample containing pollen or other microfossils will be submitted for paleoenvironmental analysis.

10. A final report of findings with an inventory of recovered fossil specimens will be prepared by the paleontologist for submission to the MTA and the LACMVP following accessioning of the specimens into the LACMP fossil collection.

Direct Effect on Archaeological Resources. As with the paleontological resources described above, excavation for the Wilshire BRT alternative may result in alteration, removal, and destruction of archaeological resources beneath Wilshire Boulevard. It is possible that archaeological remains associated with unidentified sites may be located within the project area and could be subject to direct effect. This would result in a significant, mitigable impact: implementation of Mitigation Measure 3.17-2 would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-2 Monitoring and Scientific Recovery of Archaeological Resources:* In the event that archaeological and buried historic sites are encountered, evaluation of the site is often accomplished through test level excavation designed to determine the horizontal and vertical extent of the site, and to characterize the content of the site. If the site is determined to be potentially eligible for listing on the National Register, and project plans cannot be altered to avoid impacting the site, then an adverse effect would result pursuant to 36 CFR 800.5(d)(2). To resolve an adverse effect it would be necessary to implement a Memorandum of

Agreement (MOA) per 36 CFR 800.6(c) to resolve the adverse effect. Under CEQA, impacts to archaeological sites can be mitigated to a less than significant level through the preparation and implementation of a data recovery plan.

Direct and Indirect Effects on Historical Resources. The Wilshire BRT alternative would be expected to have a less than significant impact on historical resources, since it would operate in existing ROWs and would not involve substantial new construction that could affect historic property settings.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Implementation of this option would result in cultural resources impacts that are identical to those anticipated to result from Alternative 1.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Direct Effects on Paleontological Resources. Implementation of this option would result in paleontological resource impacts that are identical to those anticipated to result from Alternative 1.

Direct Effects on Archaeological Resources. Implementation of this option would result in paleontological resource impacts that are identical to those anticipated to result from Alternative 1.

Direct Effects on Historical Resources. The Wilshire BRT Alternative (Curb Adjacent Design Option) will result in the widening of Wilshire Boulevard at the locations shown in Figure 2-9. This widening could require the removal or relocation of potentially historic electroliers and other fixtures, such as streetlights, along Wilshire Boulevard. This would result in a significant, mitigable impact. Under Section 106 of the National Historic Preservation Act, significant impacts to an historic resource can be resolved, or reduced to a less than significant level under CEQA, through redesign of the proposed project to avoid demolition/destruction of the historic resource, or by execution of an MOA with SHPO and other interested parties. Therefore, Mitigation Measures 3.17-3 and 3.17-4 would reduce the impact of the Wilshire BRT/Exposition LRT Alternative on the Pacific Electric Railway to a less than significant level.

- *Mitigation Measure 3.17-3 Historic American Engineering Record Documentation:* Historic American Engineering Record (HAER) documentation shall be prepared for representative historical electroliers, streetlights, and other fixtures. This report shall document the significance of the resource and its physical conditions, both historic and current, through site plans, historic maps, photographs, written data, and text. A report documenting the design and historic significance of the fixtures, including their contextual history, shall be prepared as part of the HAER documentation required by this measure.

- *Mitigation Measure 3.17-4 Memorandum of Agreement.* The impact created by the demolition of a significant historic resource is an adverse effect, which can be resolved by an MOA between the MTA and SHPO, as well as other interested parties, as described above. The actual measures agreed upon in the MOA may vary in substance and degree, but the MOA shall include a process to resolve any adverse effects upon resources discovered during the implementation (36 CFR 800.13(a)). The MOA shall include a provision for monitoring and a mechanism for reporting its implementation (36 CFR 800.6(c)(4)).

  Other elements of the MOA shall provide that:

1. Areas subject to physical disturbance by the undertaking are subjected to intensive archaeological study in accordance with a study plan developed in consultation with the SHPO, and submitted in draft to the SHPO for at least 30 days of review and comment.

2. If the study indicates the existence of archaeological resources, the MTA will review the potential significance of such resources with the SHPO to determine whether they are significant. MTA may elect to design the project to preserve resources in place, or to conduct archaeological data recovery to recover significant data from such resources.

Prior to the initiation of each construction contract, a pre-construction meeting should be held with all resident engineers, inspectors, contractor representatives and foremen to review the procedures to be followed regarding the presence of archaeological and/or paleontological monitors, collecting of artifacts, reporting discoveries, and communications.

As far as management or treatment plans can be formulated at this stage, at the very least, monitoring should be provided full time at each location subject to ground disturbance, from the time when any demolition approaches the present surface to below that horizon which may reasonably be expected to yield cultural remains.

When any potentially significant archaeological evidence is observed, work will be halted in that immediate vicinity, and the procedures set forth in the MOA and a Treatment Plan will be followed. Briefly, these procedures shall stipulate that the resource be recorded, identified, and assessed for its significance. If the remains are deemed to be significant, specific recommendations for the mitigation of impacts will be developed and implemented on a case-by-case basis.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

The following impact discussion addresses impacts anticipated to result from implementation of the Exposition BRT component of this alternative. The Wilshire BRT component of this alternative would result in impacts identical to those identified for Alternatives 1, 1A, or 1B, depending upon the specific implementation of Wilshire BRT.

Direct Effect on Paleontological Resources. Grade preparations for the Exposition BRT alternative would involve excavation into native soil that could reach depths of 18 to 24 inches below the ground surface. Additionally, excavations for caissons for aerial structure supports could reach depths of several feet in native soils. Such excavation may result in alteration, removal, and destruction of paleontological resources that could be present in the Quaternary alluvium (Qa) that underlies the Exposition ROW. This would represent a significant, mitigable impact: implementation of Mitigation Measure 3.17-5 would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-5 Monitoring and Scientific Recovery of Paleontological Resources:* Prior to any earth moving at the project site, a qualified vertebrate paleontologist approved by the Los Angeles County Museum of Natural History – Vertebrate Paleontology Section (LACMVP) will be retained by the MTA or its designated contractor to supervise the mitigation program, which shall consist of the following:

1. The paleontologist will develop a storage agreement with the LACMVP to allow for the permanent storage and maintenance of any fossil remains recovered at the project site as a result of the mitigation program, and for the archiving of associated specimen data (taxon, element) and corresponding geologic (rock unit, stratigraphic level, lithology) and geographic site data (location, elevation) recorded as a part of the program.

2. The paleontologist will develop a mitigation plan and a discovery clause/treatment plan to be implemented during earth-moving activities at the project site. The clause/plan will allow for the recovery and subsequent treatment of any fossil remains uncovered by these activities, and for the archiving of associated specimen and site data.

3. The paleontologist and a paleontological resources construction monitor will attend a pre-construction meeting to explain the mitigation program to contractor staff and to develop procedures and lines of communication to be implemented if fossil remains are uncovered by earth-moving activities, particularly when a monitor is not on site.

4. Monitoring of earth-moving activities (including grading, auguring, trenching, etc.) will be conducted by the paleontological resources monitor on a full-time basis once these activities have reached previously undisturbed sedimentary strata underlying any artificial fill and a depth 5 feet below current grade. Monitoring will consist of inspecting strata freshly exposed by these activities and the debris piles generated by these activities. Monitoring will be conducted to allow for the recovery of larger fossil remains.

5. If fossil remains are found by the monitor, any earth-moving activity will be diverted temporarily around the fossil site until the remains have been removed and the activity has been allowed to proceed through the site by the monitor.

6. If fossil remains are encountered by any earth-moving activity when the monitor is not on site, the activity will be diverted around the fossil site and the monitor called to the site immediately to remove the remains.

7. Sediment samples not to exceed a total weight of 6,000 pounds will be recovered by the monitor or a field technician and fully processed to allow for the recovery of smaller vertebrate fossil remains.

8. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then will be curated (assigned and labeled with LACMVP specimen and corresponding site numbers, as appropriate; placed in specimen trays and, if necessary, vials with completed specimen data cards) and catalogued, and associated specimen data and corresponding geologic and geographic site data will be archived (specimen and site numbers and corresponding data entered into appropriate LACMVP computerized data bases) at the LACMVP by a laboratory technician. The remains then will be accessioned into the LACMVP fossil collection, where they will

be permanently stored, maintained, and made available for future study by qualified investigators.

9. If appropriate, a microfossil sample containing pollen or other microfossils will be submitted for paleoenvironmental analysis.

10. A final report of findings with an inventory of recovered fossil specimens will be prepared by the paleontologist for submission to the MTA and the LACMVP following accessioning of the specimens into the LACMP fossil collection.

Direct Effect on Archaeological Resources. As with the paleontological resources described above, excavation for the Exposition BRT alternative may result in alteration, removal, and destruction of archaeological resources beneath the Exposition ROW, including CA-LAN-74, and possibly two other archaeological sites within 200 to 300 feet of the project area (CA-LAN-69 and CA-LAN-70). Additionally, archaeological remains associated with unidentified sites may be located within the project area and could be subject to direct effect. This would result in a significant, mitigable impact: implementation of Mitigation Measure 3.17-6 would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-6 Monitoring and Scientific Recovery of Archaeological Resources:* In the event that archaeological and buried historic sites are encountered, evaluation of the site is often accomplished through test level excavation designed to determine the horizontal and vertical extent of the site, and to characterize the content of the site. If the site is determined to be potentially eligible for listing on the National Register, and project plans cannot be altered to avoid impacting the site, then an adverse effect would result pursuant to 36 CFR 800.5(d)(2). To resolve an adverse effect it would be necessary to implement a Memorandum of Agreement (MOA) per 36 CFR 800.6(c) to resolve the adverse effect. Under CEQA, impacts to archaeological sites can be mitigated to a less than significant level through the preparation and implementation of a data recovery plan.

Direct Effects on Historical Resources. The Exposition BRT alternative will result in the removal and demolition of the Southern Pacific Railroad/Pacific Electric Railway, which the State Historic Preservation Officer has determined to be eligible to the National Register of Historic Places under Criterion A as defined in 36 CFR 60.4. This would result in a significant impact. Under Section 106 of the National Historic Preservation Act, significant impacts to an historic resource can be resolved, or mitigated to a less than significant level under CEQA, through redesign of the proposed project, or through execution of an MOA with SHPO and other interested parties. Therefore, Mitigation Measures 3.17-7 and 3.17-8 would reduce the impact of the Wilshire BRT/Exposition LRT Alternative on the Pacific Electric Railway to a less than significant level.

- *Mitigation Measure 3.17-7 Historic American Engineering Record Documentation:* Historic American Engineering Record (HAER) documentation shall be prepared for the Pacific Electric Railway. This report shall document the significance of the resource and its physical conditions, both historic and current, through site plans, historic maps, photographs, written data, and text. A report documenting the design and historic significance of the Pacific Electric Railway, including contextual history of the Pacific Electric and its significant role in American history, as well as its history in southern California, shall be prepared as part of the HAER documentation required above.

- *Mitigation Measure 3.17-8 Memorandum of Agreement.* The impact created by the demolition of a significant structure is an adverse effect, which can be resolved by an MOA between the MTA and SHPO, as well as other interested parties, as described above. The actual measures agreed upon in the MOA may vary in substance and degree, but the MOA shall include a process to resolve any adverse effects upon resources discovered during the implementation (36 CFR 800.13(a)). The MOA shall include a provision for monitoring and a mechanism for reporting its implementation (36 CFR 800.6(c)(4)).

  Other elements of the MOA shall provide that:

  3. Areas subject to physical disturbance by the undertaking are subjected to intensive archaeological study in accordance with a study plan developed in consultation with the SHPO, and submitted in draft to the SHPO for at least 30 days of review and comment.

  4. If the study indicates the existence of archaeological resources, the MTA will review the potential significance of such resources with the SHPO to determine whether they are significant. MTA may elect to design the project to preserve resources in place, or to conduct archaeological data recovery to recover significant data from such resources.

  Prior to the initiation of each construction contract, a pre-construction meeting should be held with all resident engineers, inspectors, contractor representatives and foremen to review the procedures to be followed regarding the presence of archaeological and/or paleontological monitors, collecting of artifacts, reporting discoveries, and communications.

  As far as management or treatment plans can be formulated at this stage, at the very least, monitoring should be provided full time at each location subject to ground disturbance, from the time when any demolition approaches the present surface to below that horizon which may reasonably be expected to yield cultural remains.

  When any potentially significant archaeological evidence is observed, work will be halted in that immediate vicinity, and the procedures set forth in the MOA and a Treatment Plan will be followed. Briefly, these procedures shall stipulate that the resource be recorded, identified, and assessed for its significance. If the remains are deemed to be significant, specific recommendations for the mitigation of impacts will be developed and implemented on a case-by-case basis.

Indirect Effect on Historic Resources. The segment of the Exposition BRT alternative that is aligned along USC and Exposition Park will have a less than significant impact on the historical visual setting of historical resources in this segment, including the Southern Pacific Railroad/Pacific Electric Railway. The corridor alignment has already been altered, tracks have been removed, areas have been covered in landscaping, and has therefore been altered to a degree that the proposed stations would not represent a substantial visual intrusion upon the historical setting.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Implementation of this alternative would result in cultural resources impacts identical in significance to those anticipated to result from implementation of Alternative 2.

Alternative 3: Wilshire BRT and Exposition LRT

The following impact discussion addresses impacts anticipated to result from implementation of the Exposition LRT component of this alternative. The Wilshire BRT component of this alternative would result in impacts identical to those identified for Alternatives 1, 1A, or 1B, depending upon the specific implementation of Wilshire BRT.

Direct Effect on Paleontological Resources. Excavation for construction of caissons for aerial structure supports for the LRT alternative may result in alteration, removal, and destruction of paleontological resources that could be present in the soils that underlie the Exposition ROW. This would represent a significant, mitigable impact: implementation of Mitigation Measure 3.17-9 would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-9 Monitoring and Scientific Recovery of Paleontological Resources:* Prior to any earth moving at the project site, a qualified vertebrate paleontologist approved by the Los Angeles County Museum of Natural History – Vertebrate Paleontology Section (LACMVP) will be retained by the MTA or its designated contractor to supervise the mitigation program, which shall consist of the following:

    1. The paleontologist will develop a storage agreement with the LACMVP to allow for the permanent storage and maintenance of any fossil remains recovered at the project site as a result of the mitigation program, and for the archiving of associated specimen data (taxon, element) and corresponding geologic (rock unit, stratigraphic level, lithology) and geographic site data (location, elevation) recorded as a part of the program.

    2. The paleontologist will develop a mitigation plan and a discovery clause/treatment plan to be implemented during earth-moving activities at the project site. The clause/plan will allow for the recovery and subsequent treatment of any fossil remains uncovered by these activities, and for the archiving of associated specimen and site data.

    3. The paleontologist and a paleontological resources construction monitor will attend a pre-construction meeting to explain the mitigation program to contractor staff and to develop procedures and lines of communication to be implemented if fossil remains are uncovered by earth-moving activities, particularly when a monitor is not on site.

    4. Monitoring of earth-moving activities (including grading, auguring, trenching, etc.) will be conducted by the paleontological resources monitor on a full-time basis once these activities have reached previously undisturbed sedimentary strata underlying any artificial fill and a depth 5 feet below current grade. Monitoring will consist of inspecting strata freshly exposed by these activities and the debris piles generated by

these activities. Monitoring will be conducted to allow for the recovery of larger fossil remains.

5. If fossil remains are found by the monitor, any earth-moving activity will be diverted temporarily around the fossil site until the remains have been removed and the activity has been allowed to proceed through the site by the monitor.

6. If fossil remains are encountered by any earth-moving activity when the monitor is not on site, the activity will be diverted around the fossil site and the monitor called to the site immediately to remove the remains.

7. Sediment samples not to exceed a total weight of 6,000 pounds will be recovered by the monitor or a field technician and fully processed to allow for the recovery of smaller vertebrate fossil remains.

8. Any recovered fossil remains will be prepared to the point of identification and identified to the lowest taxonomic level possible by knowledgeable paleontologists. The remains then will be curated (assigned and labeled with LACMVP specimen and corresponding site numbers, as appropriate; placed in specimen trays and, if necessary, vials with completed specimen data cards) and catalogued, and associated specimen data and corresponding geologic and geographic site data will be archived (specimen and site numbers and corresponding data entered into appropriate LACMVP computerized data bases) at the LACMVP by a laboratory technician. The remains then will be accessioned into the LACMVP fossil collection, where they will be permanently stored, maintained, and made available for future study by qualified investigators.

9. If appropriate, a microfossil sample containing pollen or other microfossils will be submitted for paleoenvironmental analysis.

10. A final report of findings with an inventory of recovered fossil specimens will be prepared by the paleontologist for submission to the MTA and the LACMVP following accessioning of the specimens into the LACMP fossil collection.

Direct Effect on Archaeological Resources. Excavation for construction of caissons for aerial structure supports for the LRT alternative may result in alteration, removal, and destruction of CA-LAN-74, an archaeological site. There are two other archaeological sites that lie 200 to 300 feet from the corridor (CA-LAN-69 and CA-LAN-70), but these have not been identified by subsequent investigations. However, it is possible that archaeological remains associated with these sites may extend into the project area and be subject to direct effect. This would result in a significant, mitigable impact: implementation of Mitigation Measure 3.17-10 would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-10 Monitoring and Scientific Recovery of Archaeological Resources:* In the event that archaeological and buried historic sites are encountered, evaluation of the site is often accomplished through test level excavation designed to determine the horizontal and vertical extent of the site, and to characterize the content of the site. If the site is determined to be potentially eligible for listing on the National Register, and project plans cannot be altered to avoid impacting the site, then an adverse effect would result pursuant to 36 CFR

800.5(d)(2). To resolve an adverse effect it would be necessary to implement a Memorandum of Agreement per 36 CFR 800.6(c) to resolve the adverse effect. Under CEQA, impacts to archaeological sites can be mitigated to a less than significant level through the preparation and implementation of a data recovery plan.

Direct Effects on Historic Resources. The Exposition LRT alternative will result in the removal and demolition of the Southern Pacific Railroad/Pacific Electric Railway, which the State Historic Preservation Officer has determined to be eligible to the National Register of Historic Places under Criterion A as defined in 36 CFR 60.4. This would result in a significant impact. Under Section 106 of the National Historic Preservation Act, significant impacts to an historic resource can be reduced to a level of insignificance through redesign of the proposed project to avoid demolition/destruction of the historic resource, or through execution of an MOA. Therefore, Mitigation Measures 3.17-7 (preparation of HAER documentation) and 3.17-8 (an MOA), would reduce the impact of the Wilshire BRT/Exposition LRT Alternative on the Pacific Electric Railway to a less than significant level.

Indirect Effect on Historic Resources. The LRT alternative would have an indirect effect on historic resources because it would alter the visual setting of the USC/Exposition Park historic resources, including the Hancock Memorial Museum, USC Widney Hall, USC Faculty Center, USC Town and Gown Center, Ormerod Harris Hall, the State Armory Building, Natural History Museum, Los Angeles Memorial Coliseum, and the Exposition Park Rose Garden.

There are numerous historic structures in addition to those mentioned above, but in each case the historical setting has already been significantly altered and as a result there will be no effect to these additional properties. The effect of this alternative on the USC/Exposition Park historic resources will be the construction of a modern catenary system, which will alter the historic setting of the above resources. This would represent a significant, mitigable impact: Implementation of Mitigation Measure 3.17-11, an alternative design of the overhead catenary system, would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-11 Alternative Design of Overhead Catenary System:* The placement of the catenary system on the along Exposition Boulevard in the vicinity of Exposition Park and USC would not result in a visual impact if the catenary supports were designed to mimic the historic ones that were part of the Pacific Electric Line. This measure would reduce the visual impacts on the structures to a less than significant degree.

<u>Alternative 3A: Wilshire BRT and Exposition LRT (MOS)</u>

Implementation of this alternative would result in cultural resources impacts identical in significance to those anticipated to result from implementation of Alternative 3.

<u>Maintenance Yard</u>

The following impacts would potentially apply to all of the proposed maintenance yard sites:

Direct Effects on Paleontological Resources. Maintenance yards, irrespective of whether they would be used to service BRT or LRT vehicles, would require excavation for underground fuel storage tanks, building foundations, utilities, and other structures. This ground disturbance has the potential to damage or destroy paleontological resources. This would be a significant, mitigable impact.

Implementation of Mitigation Measure 3.17-9 would reduce this potential impact to a less than significant level.

Direct Effects on Archaeological Resources. Maintenance yards, irrespective of whether they would be used to service BRT or LRT vehicles, would require excavation for underground fuel storage tanks, building foundations, utilities, and other structures. This ground disturbance has the potential to damage or destroy intact archaeological resources. This would be a significant, mitigable impact. Implementation of Mitigation Measure 3.17-10 would reduce this potential impact to a less than significant level.

The following discussion focuses upon the site-specific potential for cultural resources impacts.

- Northwest corner of Cesar Chavez Boulevard and Mission Avenue

Direct Effects on Historical Resources. The site does not contain historical or potentially historical structures. Therefore, the construction of maintenance yards would result in no impact from direct effects on historical resources.

Indirect Effects on Historical Resources. This proposed site is adjacent to a historic bridge, and may have the potential to alter the historical setting of this bridge. Because a maintenance facility represents an intrusion into a setting that did not include structures, no mitigation for this intrusion through design of the structures or facilities could reduce this impact, which would be significant and unavoidable.

- Alameda Street and 7th Street (expansion of existing facility)

Direct Effects on Historical Resources. The site does not contain historical or potentially historical structures. Therefore, the construction of maintenance yards would result in no impact from direct effects on historical resources.

Indirect Effects on Historical Resources. This proposed site is adjacent to the SRO Hotel, a historic brick structure. However, the proposed site is currently vacant, and is adjacent to an existing MTA bus maintenance facility. Because the site was previously developed and represents an expansion of an existing facility, the historical context of this structure has already been substantially altered, and the intrusion of the facility would be considered less than significant.

- Northeast corner of Alameda Street and Washington Street

Direct Effects on Historical Resources. The site does not contain historical or potentially historical structures. Therefore, the construction of maintenance yards would result in no impact from direct effects on historical resources.

Indirect Effects on Historical Resources. No historical structures with intact settings lie adjacent to this proposed site. Therefore, the construction of the proposed maintenance yard site would have no impact resulting from indirect effects on historical resources.

- Southeast corner of Alameda Street and Washington Street

Direct Effects on Historical Resources. The site does not contain historical or potentially historical structures. Therefore, the construction of maintenance yards would result in no impact from direct effects on historical resources.

Indirect Effects on Historical Resources. Historical or potentially historical structures with potentially intact settings lie in the vicinity of this proposed site, and the construction of a maintenance facility on this site could represent an intrusion that may adversely affect this historical setting, which would be a significant, mitigable impact. The maintenance facility could be designed in such a way as to blend more readily with the surrounding structures, in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* and *Guidelines for the Treatment of Cultural Landscapes*, thereby reducing the intrusion. Implementation of Mitigation Measure 3.17-12 would reduce this impact to a less than significant level.

- *Mitigation Measure 3.17-12 Alternative Design of Maintenance Facility:* The maintenance facility shall be designed in such a way as to blend architecturally with the surrounding structures, in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* and *Guidelines for the Treatment of Cultural Landscapes*, thereby reducing the intrusion. If an alternative design cannot achieve this effect, appropriate methods for screening the maintenance facility, per the aforementioned guidelines, shall be implemented.

- Exposition ROW: Hooper to Central

Direct Effects on Historic Resources. Construction of a maintenance facility at this site will result in the removal and demolition of a portion of the Southern Pacific Railroad/Pacific Electric Railway, which the State Historic Preservation Officer has determined to be eligible to the National Register of Historic Places under Criterion A as defined in 36 CFR 60.4. This would result in a significant impact. Under Section 106 of the National Historic Preservation Act, significant impacts to an historic resource can be reduced to a less than significant level through redesign of the proposed project to avoid demolition/destruction of the historic resource, or through execution of an MOA. Therefore, Mitigation Measures 3.17-7 (HAER documentation) and 3.17-8 (an MOA with the MTA, SHPO, and other interested parties) would reduce the impact of this proposed maintenance facility on the Southern Pacific Railroad/Pacific Electric Railway to a less than significant level.

Indirect Effects on Historical Resources. No historical structures with intact settings lie adjacent to this proposed site: the integrity of the setting for proximate historical or potentially historical structures has been severely disrupted. Therefore, the construction of the proposed maintenance yard site would have no impact resulting from indirect effects on historical resources.

- Existing MTA South Park Shops

Direct and Indirect Effects on Historic Resources. Construction of a maintenance facility at this site will result in the removal and demolition of a portion of the Southern Pacific Railroad/Pacific Electric Railway, which the State Historic Preservation Officer has determined to be eligible to the National Register of Historic Places under Criterion A as defined in 36 CFR 60.4. This would result in a significant impact. Under Section 106 of the National Historic Preservation Act, significant impacts to an historic resource can only be reduced to a level of insignificance through redesign of the proposed project to avoid demolition/destruction of the historic resource. Therefore, although Mitigation Measures 3.17-7 (HAER documentation) and 3.17-8 (and MOA with the MTA, SHPO, and other interested parties) would reduce the impact of this proposed maintenance facility on the Southern Pacific Railroad/Pacific Electric Railway to a less than significant level.

Subway Design Option at USC/Exposition Park (Alternatives 2, 2A, 3, and 3A)

Direct Effects on Paleontological Resources: Implementation of the subway design option would result in substantially greater ground disturbance than either the Exposition BRT or Exposition LRT alternative by themselves. Any significant disturbance of the ground surface has the potential to impact paleontological resources, whether this disturbance results from permanent change, such as excavation for a station or tunnel entrance, or only temporary use for parking, storage or lay-down yards. This potential for disturbance would be increased by the implementation of this mitigation measure, and would result in a significant, mitigable impact: Implementation of Mitigation Measure 3.17-9 would reduce this potential impact to a less than significant level.

Direct Effects on Archaeological Resources: Implementation of the subway design option could result in substantially greater ground disturbance than either the Exposition BRT or LRT alternative by themselves. As with the alternative, any disturbance of the ground surface has the potential to adversely affect archaeological resources, and this potential for disturbance would be increased by the implementation of this mitigation measure, and could result in a significant, mitigable impact: Implementation of Mitigation Measure 3.17-10 would reduce this potential impact to a less than significant level.

3.17.4 Cumulative Impacts

The 1998 RTP Draft Master EIR (SCAG, 1997), which is hereby incorporated by reference, provides the cumulative context for analysis of the Mid-City/Westside Transit Corridor Project. Part 2, Chapter 9 of the 1998 RTP Draft Master EIR provides a programmatic analysis of impacts to paleontological, archaeological, and historical resulting from implementation of all projects contemplated in the RTP (SCAG, 1998), including the Mid-City/Westside Transit Corridor project, and provides the basis for this cumulative impact analysis.

Direct cumulative impacts to cultural resources generally result from destruction or substantial modification of resources or their contexts, such that the significance of the resources is materially diminished. Indirect cumulative impacts generally result from the destruction or modification of the context of a resource. Projects contemplated in the RTP that would not result in substantial ground-disturbance or excavation (e.g., improvements to existing surface transit systems, or construction of new surface transit systems) are unlikely cause direct cumulative impacts to paleontological or archaeological resources. Such projects may also not require demolition of historic structures, and are unlikely to cause significant direct cumulative impacts to historical resources.

However, some of the transit corridor projects shown in Table 3 of the 1998 RTP could be implemented within existing rights-of-way that include historical structures, including the rail lines themselves, as with the Exposition right-of-way. As with two of the alternatives analyzed here, these projects may involve removal of these historic rail lines and attendant structures, in order to implement the specialized infrastructure required for transit modes such as HRT, LRT, and BRT (the RTP does not always specify a transit mode: local operators are left to select how the transit goals are met).

Also, as with portions of the Exposition right-of-way, projects may traverse historical or potentially historical neighborhoods or districts, and structures necessitated by some transit modes, such as stations, platforms, or catenary systems, may disrupt the historic context of these districts. This would represent significant cumulative indirect impacts that may or may not be mitigable, depending upon the nature of the district and the proposed structures.

No Action Alternative (Baseline)

The No Action Alternative, as stated above, is anticipated to have no impact on cultural resources. Therefore, it would not contribute to a cumulative impact on any of these resources, and no cumulative impact would occur.

Transportation System Management (TSM) Alternative

The TSM Alternative, as stated above, is anticipated to have no impact on cultural resources, since no physical changes to any cultural resources would occur. Therefore, this alternative would not contribute to a cumulative impact on any of these resources, and no cumulative impact would occur.

Alternative 1: Wilshire BRT (Baseline Median-Running)

As stated above, implementation of the Wilshire BRT Alternative would not result in any substantial excavation, and would therefore not result in any impacts to paleontological or archaeological resources. Therefore, this alternative would not contribute to cumulative effects on these resources. Additionally, the indirect impact of this alternative on historic contexts is less than significant, since the context of the historic portions of the Wilshire route have already been substantially disrupted, and their contextual value compromised. Therefore, this alternative would have a less than significant cumulative impact on cultural resources.

Alternative 1A: Wilshire BRT (Median Adjacent Design Option)

Cumulative impacts to cultural resources associated with this alternative would be identical to the cumulative impacts identified for Alternative 1.

Alternative 1B: Wilshire BRT (Curb Adjacent Design Option)

Cumulative impacts to cultural resources associated with this alternative would be identical to the cumulative impacts identified for Alternative 1.

Alternative 2: Wilshire BRT and Exposition BRT (Full Length)

Secondary impacts to paleontological and archaeological could result from the subway mitigation measures proposed for this alternative; however, implementation of Mitigation Measures 3.17-9 and 3.17-10 would reduce these impacts to a less than significant level, and the cumulative impact to these resources would also be less than significant.

However, as stated above, implementation of the Exposition BRT portion of this alternative would result in the removal of portions of the historic Pacific Electric Railway (an NRHP-eligible resource), which would result in a significant impact. Because this resource has been determined by SHPO to be significant to the Southern California region, this impact would be considered cumulatively considerable, and would be a significant cumulative impact.

Alternative 2A: Wilshire BRT and Exposition BRT (MOS)

Cumulative impacts to cultural resources that would result from implementation of this alternative are identical in significance to those identified for Alternative 2.

Alternative 3: Wilshire BRT and Exposition LRT (Full Length)

Secondary impacts to paleontological and archaeological could result from the subway design option proposed for this alternative; however, implementation of Mitigation Measures 3.17-9 and 3.17-10 would reduce these impacts to a less than significant level, and the cumulative impact to these resources would also be less than significant.

Installation of the catenary system required for operation of the LRT would result in a potentially significant, indirect impact to the historic context of the USC/Exposition Park historic district; however, implementation of Mitigation Measure 3.17-11 would reduce this to a less than significant level, and because this impact occurs in a limited area, the cumulative impact resulting from this impact would also be less than significant.

However, as stated above, implementation of the Exposition LRT portion of this alternative would result in the removal of portions of the historic Pacific Electric Railway (an NRHP-eligible resource), which would result in a significant impact. Because this resource has been determined by SHPO to be significant to the Southern California region, this impact would be considered cumulatively considerable, and would be a significant cumulative impact.

Alternative 3A: Wilshire BRT and Exposition LRT (MOS)

Cumulative impacts to cultural resources that would result from implementation of this alternative are identical in significance to those identified for Alternative 3.

Subway Design Option at US/Exposition Park

Direct Effects on Paleontological Resources From Proposed Subway Design Option: Implementation of the subway design option could result in substantially greater ground disturbance than Alternatives 2, 2A, 3, and 3A. As with these alternatives, any disturbance of the ground surface has the potential to impact paleontological resources, whether this results from permanent change such as excavation for a station or tunnel entrance, or only temporary use for parking, storage or lay-down yards. However, the potential for disturbance would be substantially increased by the implementation of this option, and would result in a significant, mitigable impact: Implementation of Mitigation Measure 3.17-9 would reduce this potential impact to a less than significant level.

Direct Effects on Archaeological Resources From Proposed Subway Design Option: Implementation of this design option would result in substantially greater ground disturbance than Alternatives 2, 2A, 3, and 3A. Any disturbance of the ground surface has the potential to adversely affect archaeological resources. However, the potential for disturbance would be substantially increased by the implementation of this option, and could result in a significant, mitigable impact: Implementation of Mitigation Measure 3.17-10 would reduce this potential impact to a less than significant level.

3.18.1 Construction Methods

The development on the Mid-City/Westside Transit Corridor will employ conventional construction methods, techniques, and equipment. All work for development of a transit system will conform to accepted industry specifications and standards. Major elements of the project include the construction of roadways for the Wilshire Boulevard and Exposition BRT routes, guideway and trackwork for the Exposition LRT, at-grade station platforms, aerial grade separations and possible subway segments. The BRT and LRT alternatives would both require the installation of additional infrastructure for elements such as communications and signaling. In addition, the LRT would require the installation of a traction power system.

The types of equipment that would be used in construction of the BRT and LRT alternatives include: graders, bull-dozers, cranes, cement mixers, flat bed trucks, dump trucks to haul dirt and spoil materials, and possible tunnel boring machines and rail mounted muck cars. These construction vehicles would be used along the Wilshire Boulevard (not including those types of equipment related to subway or aerial construction) and Exposition corridors, and would possibly impede traffic mobility in areas of construction. In order to minimize any disruptions to traffic, mitigation of potential traffic impacts, and traffic management and traffic control measures will be implemented with the coordination and involvement of the cities along the project route. Mitigation measures may involve partial- or full-street closures, sidewalk closures, and detours.

The work activities for each of the three alternatives would include the following facility and system items:

Wilshire BRT

- Relocation of existing utilities at stations;
- Relocation of existing utilities that conflict with in-street or MTA right-of-way (ROW) guideway construction;
- Construction of at-grade BRT station platforms at street locations using typical "cast-in-place" construction methods;
- Construction of surface drainage and sub-drainage systems;
- Construction of replacement parking facilities at various locations along the alignment..
- Placement of 12" thick Portland Cement Concrete exclusive busway over 16" Crushed Aggregate Base over compacted sub-grade.
- Construction of station finishes, such as canopies, fare vending equipment, station furniture, ramps, elevators, escalators, landscaping, and all other amenities necessary for a functional station;

- Where daytime construction is possible, the contractor could close up to three travel lanes at one time. One travel lane in one direction would be used for equipment staging while two lanes in the opposite could be devoted for actual station or lane construction. The window for this construction would be limited to off-peak hours only along with temporary curb parking restrictions (Tow-away No Parking Anytime). A traffic management plan to identify construction staging, detour routes and mitigation measures to the adjacent neighborhood would be developed and approved by the community and local jurisdictions during preliminary engineering.

- Where daytime construction is impossible due to heavy existing traffic volumes or opposed by the community, the contractor would to be restricted to nighttime operation. Temporary closures of entire roadways or up to four travel lanes may be required. Also, a traffic management plan to identify construction staging, detour routes and mitigation measures to the adjacent neighborhood would be developed and approved by the community and local jurisdictions during preliminary engineering.

- Conducting subsystem and system testing;

- Conducting simulated revenue operation test runs and final commissioning of the system.

- Most of the physical construction of the busway on Wilshire could be accomplished in a 2-year to 2-year 8-month time frame

Exposition BRT

- Construction of aerial guideway and aerial stations which will include foundations, support columns, girders, and deck slabs. This construction will be either "cast in place," partially precast, steel or a combination of these depending on the final design and the preferred approach of the construction contractor;

- Construction of retaining walls for approaches to aerial guideway or shallow trenches;

- Relocation of existing utilities at stations;

- Relocation of existing utilities that conflict with in-street or MTA right-of-way (ROW) guideway construction;

- Construction of at-grade BRT station platforms at MTA ROW or street locations using typical "cast-in-place" construction methods;

- Construction of underground duct banks for signaling/communications;

- Construction of surface drainage and sub-drainage systems;

- Construction of parking facilities at the Crenshaw Boulevard, La Brea Avenue, La Cienega Boulevard, Pico/Sawtelle Boulevards, Bundy Drive, and Cloverfield Boulevard stations.

- Placement of 12" thick Portland Cement Concrete exclusive busway over 16" Crushed Aggregate Base over compacted sub-grade.

- Construction of noise walls approximately 12 feet high in sensitive areas along the ROW.
- Construction of station finishes, such as canopies, fare vending equipment, station furniture, ramps, elevators, escalators, landscaping, and all other amenities necessary for a functional station;
- Conducting subsystem and system testing;
- Conducting simulated revenue operation test runs and final commissioning of the system.
- Most of the physical construction of the Exposition BRT could be accomplished in a 3-year to 3-year 6-month time frame.

Expositon LRT

- Construction of aerial guideway and aerial stations which will include foundations, support columns, girders, and deck slabs. This construction will be either "cast in place," partially precast, steel or a combination of these depending on the final design and the preferred approach of the construction contractor;
- Construction of retaining walls for approaches to aerial guideway, portal structures (Optional) and shallow trenches;
- Optional construction of a 0.7-mile subway facility serving both Vermont Avenue bus patrons and USC/Exposition Park;
- Relocation of existing utilities at stations and portals (Optional);
- Relocation of existing utilities that conflict with in-street or MTA right-of-way (ROW) guideway construction;
- Construction of at-grade high-platform stations in MTA ROW or at street locations using typical "cast-in-place" construction methods;
- Construction of underground duct banks for electrical power feeds and for signaling/communications
- Construction of surface drainage and sub-drainage systems;
- Construction of traction power substations with electrical power feeds;
- Construction of an overhead catenary system including pole foundations, overhead wires, support brackets, feeder cables and other components or alternative power distribution support system;
- Construction of parking facilities at the Crenshaw Boulevard, La Brea Avenue, La Cienega Boulevard, Venice/Washington Boulevards, Pico/Sawtelle Boulevards, Bundy Drive, and Cloverfield Boulevard. (Parking at the Ocean Avenue Station will be undertaken by the City of Santa Monica under a separate contract);

- Installation of trackwork, including preparation of track bed and slab, rail, fasteners, and infill concrete for street sections in Hill Street in downtown Los Angeles and in Olympic Boulevard in Santa Monica;

- Construction of open track in ballasted track bed (with optional sodded turf even with top of rail), and with direct fixation fasteners on aerial guideways and subway facility (Optional);

- Construction of noise walls generally 4 feet high (but up to 8 feet high at locations where wall is some distance from the track) in sensitive areas along the ROW.

- Construction of station finishes, such as canopies, fare vending equipment, station furniture, ramps, elevators, escalators, landscaping, and all other amenities necessary for a functional station;

- Conducting subsystem and system testing;

- Conducting simulated revenue operation test runs and final commissioning of the system.

- Most of the physical construction of the Exposition LRT could be accomplished in a 3-year to 3-year 6-month time frame. If the subway option is chosen the construction would take approximately 6 to 12 months longer, or a total construction period of up to four to four and half years.

In order to achieve the construction timeframe described for each of the three alternatives, work would begin simultaneously at several locations along the particular alternative to accommodate areas requiring lengthy construction times. The objective of this approach is to bring the various segments to completion at approximately the same time.

Many contractors specializing in various methods of construction would be working on the project selected for the overall length of the construction period. The physical construction would involve the method that is most suitable for each segment of the project. A typical sequence of construction is shown in Table 3.18-1.

Construction of the project would follow all applicable local, state and federal laws for building and safety. Equipment used on the project would be fitted with mufflers and spark arresters. Standard construction methods would be used for traffic, noise, vibration, and dust control, consistent with all applicable laws.

TABLE 3.18-1
TYPICAL SEQUENCE OF CONSTRUCTION ACTIVITIES

Activity	Tasks	Average Time Required (months)
1. Survey	Locate utilities, establish ROW and project control points and centerlines, and relocate survey monuments.	4 - 6
2. Site Preparation	Relocate utilities and clear and grub ROW (demolition), establish detours and haul routes, erect safety devices and mobilize special construction equipment, prepare construction equipment yards and stockpile materials.	8-18

TABLE 3.18-1 TYPICAL SEQUENCE OF CONSTRUCTION ACTIVITIES		
Activity	**Tasks**	**Average Time Required (months)**
3. Heavy Construction	Construction of concrete roadway (BRT only), aerial structures (BRT and LRT), trackway in streets, on open right-of-way and on aerial structures (LRT only), optional underground station, retaining walls for fill or cut segments, piers and columns and disposal of excess material. Refinish roadways and sidewalks.	24 – 36
4. Medium Construction	Install lighting, signage and striping for concrete roadways, lay track, construct surface stations, drainage, backfill and pave streets.	12 – 18
5. Light Construction	Finish work, install all system elements (electrical, signals, and communication) landscaping, signing and striping close detours, clean up and test system.	6 – 12
6. Open Project		

Haul routes to disposal sites would be predetermined by agreement with local authorities before construction. They would follow streets and highways forming the safest or shortest route with the least adverse effect on traffic, residences, and businesses. Table 3.18-2, Potential Disposal Sites, shows disposal sites for various classifications of excess materials. Potential sources of contaminated soil and ground water are discussed in the Hazardous Materials Technical Report.

TABLE 3.18-2 POTENTIAL DISPOSAL SITES		
Material	**Class of Site**	**Location**
Hazardous Material	Class I	BKK site in West Covina
Unusable Material (Organic Mixed)	Class II	Monterey Park Puente Hills
Asphalt, Concrete	Recycle	Irwindale
Usable Backfill	Class III	Nearby landfill sites or ongoing construction projects

Above-Ground Facilities

<u>**Utility Relocation and Street Closures**</u>

Prior to beginning construction it would be necessary to relocate, modify, or protect in place all utilities and underground structures which would conflict or interfere with excavations for street level concrete pavement or trackwork, subway facilities, aerial guideways, and station structures. Utilities that would interfere with construction would be relocated or offset away from the proposed facilities. During relocation of utilities it may be necessary to occupy additional traffic lanes at one time, or that block-long sections of streets would be closed temporarily. Pedestrian access (sidewalks) would remain open whenever possible and special facilities such as handrails, fences, and walkways would be provided for safety.

During utility relocation some minor streets and alleyways may be temporarily closed. Major cross streets along the route may require partial closure, half of the street at a time, for utility relocation, station construction, or the construction of roadway foundation or light rail trackbed. Full blocks may have to be closed during excavation, preparation of subgrade, and track foundations placement.

Equipment used for utility relocation work includes diamond saws, pavement breakers, jackhammers, excavators, compressors, dump trucks, and welding machines.

At-Grade Guideway

The Wilshire BRT and the Exposition ROW guideway would consist of twelve-inch thick Portland Cement Concrete pavement over compacted base material. On Wilshire Boulevard, the existing asphalt pavement and base material would be removed, the sub-base graded and compacted, and replaced with a new concrete roadway. The completed lanes would be exclusively for buses, and would be separated from adjacent traffic lanes by a six-inch concrete curb or four-inch Bots Dots. For the Exposition ROW, existing track and portions of interfering roadway would be removed and replaced by an excavated trench and roadway, similar that described for Wilshire Boulevard, or an embedded track, or an open track with ties and ballast.

Clearing and utility relocation would occur first, proceeding well ahead of guideway construction. Typically roadway construction would be constructed in two- or three-block segments for a period of three to four weeks each. For the embedded track the trackbed would be excavated and track slab put in place for supporting the rails. It is estimated that preparation for and construction of the trackbed could be accomplished at the rate of 100-200 feet per day, depending on working hours and whether full or partial street closures are implemented. Local storage areas will be necessary for short-term storage and to facilitate placement of rails or roadway materials. In general, open track sections would not require utility relocation since the alignment closely follows the in-place abandoned track. Equipment used for construction of the tracks or concrete roadway would be similar to what is required for relocation of the utilities with the addition of track-laying equipment, paving machines, concrete mixers and concrete finishers.

Parking Facilities

There would be no park and ride facilities for the Wilshire BRT. Two existing parcels on Wilshire Boulevard (located at Crenshaw Boulevard and La Brea Avenue) would be used to provide replacement parking as a mitigation measure for the large-scale removal of parking along the entire length of Wilshire Boulevard. The Exposition BRT would provide six park and ride lots located at the Crenshaw Boulevard, La Brea Avenue, La Cienega Boulevard, Pico/Sawtelle Boulevards, Bundy Drive, and Cloverfield Boulevard stations for an approximate total of 2,881 spaces. Park and ride lots for the Exposition LRT Alternative would include the same lots for the Exposition BRT, with additional lots at Venice/Washington Boulevards, and at Ocean/Colorado Avenues for an approximate total of 3,493 parking spaces. Except for the Crenshaw Boulevard lot, all parking would be on property owned by either the MTA or the City of Santa Monica. Currently, a significant number of these parcels contain structures, but nearly all leases expire by the year 2011, and the land would presumably be available to begin construction between 2012 and 2015. Any existing structures would be demolished, and debris removed from the area. If hazardous materials were found to be present, the removal and remediation of affected areas would be undertaken.

Construction of the parking lot would involve sub-grade preparation, paving and striping of the parking area; reconstruction of concrete curbs, driveways, and sidewalks as necessary; and planting of appropriate landscaping.

Equipment used for construction of the parking facility would include diamond saws, pavement breakers, jackhammers, compressors, concrete pumping equipment, paving machines, dump trucks, and front-end loaders.

Aerial Guideway/Bridges

Sites for aerial structures required for the Exposition BRT/LRT project would be areas of major construction, and would consist of cast-in-place or pre-cast girders with support columns spaced approximately 80 feet apart, although actual distances may vary. A 1,000-foot segment of aerial guideway could require as much as 18 months to complete. Typical construction methods for the aerial structure would involve several phases of work: foundation construction, installation of columns, and setting in place of concrete girders or steel trusses.

Construction of the column foundations could begin at the same time that the utilities are relocated, providing the utilities do not directly impact the foundation locations. Depending upon the subsurface geology at a particular site, decisions would be made to use either drilled, cast-in-place caissons or driven piles to support the column foundations. The minimum working area required for installation of the caissons would be at least 12 feet, equivalent to one traffic lane width, with an addition of about 24 feet required for ingress and egress during working hours. Much of the aerial guideway consisting of precast or prefabricated members would be located off-street and would not interrupt normal traffic flow. However, on and off ramps and frontage roads for the freeway may experience temporary detours and closures. Where soil conditions are poor (too much groundwater or unstable materials), piles that are impact driven or drilled into place may be necessary. As an alternative, drilled cassions using slurry displacement methods could be used.

Once the foundations are in place, the columns would be constructed. The columns would be built as cast-in-place reinforced concrete. Cast-in-place columns would be erected by using steel reinforcement tied into the foundations and framing wood or steel forms into which the concrete could be placed. When the columns are set, "T" heads would be attached atop each one, and two concrete girders would be placed linking the individual columns. The concrete box girders would be transported to the site by truck and placed by cranes. Similarly, steel truss bridges are pre-fabricated to minimize assembly time at the site. It may be possible to conduct most of the column construction and girder placement during late night hours to minimize disruptions on local streets.

Equipment used for construction of the aerial guideway would include drill rigs/augers, cranes, pile drivers, jackhammers, compressors, concrete pumping equipment, dump trucks, front-end loaders, paving machines, and large tractor-trailer rigs to carry girders and miscellaneous tools.

Retained Fill and Retaining Cut Construction

Retained fill construction would generally be required for approaches to aerial guideways and use of precast retaining wall systems may also be considered. The sidewalls would be constructed in segments beginning at one end of the trench and continuing to the other. Once the walls are completed, backfill would be placed on the retained side and compacted. The imported material for retained fill could come from the existing ROW where the present railroad grade would be considerably lowered at many locations in order to more closely match the ground surfaces of adjacent roadways and private properties, or from an off-site source.

The excavation or embankment work would be accomplished using bulldozers, earthmovers, and front-end loaders, and tractor-trailer rigs. Any unsuitable material would be transported to approved disposal sites. Equipment used for construction of the retaining walls would include shoring, cranes, jackhammers, compressors, concrete pumping equipment, dump trucks, front-end loaders, paving machines, and large tractor-trailer rigs to carry precast elements and miscellaneous tools.

At Grade Stations

All stations could be constructed simultaneously with the various segments of the system. At-grade stations on the Wilshire BRT or on the Exposition BRT/LRT would be constructed approximately one mile apart from each other. These stations would be constructed from standard building materials, such as brick, concrete, steel and heavy plastic, which are durable and resistant to vandalism. The stations for the BRT would be approximately 100 feet long by 11 feet wide and would be constructed as side platforms to allow the use of right-door buses. The LRT stations would be similar to the existing Long Beach Blue Line stations and proposed Pasadena Blue Line stations.

Underground Facilities

Stations and Portals

Underground station construction methods will be similar to those used for the existing Metro Red Line stations, although the overall length of the optional BRT/LRT station will be much shorter than the length of Metro Red Line stations, or about 270 feet. The optional cut and cover subway would be accessed through portals located just east of Figueroa Street and just west of Vermont Avenue. The station as well as the portals and main subway section would be constructed by cut-and-cover and open cut methods. The depth of the subway structure would be approximately 44 feet for the BRT and 41 feet for the LRT, the BRT requiring an additional 3 feet of space above the subway ceiling for exhaust ventilation equipment. A depth of this magnitude is required to avoid several large gravity sanitary sewer and storm drain lines up to 48-inches in diameter. There is also a 61-inch water main (in a 72-inch casing) that would be extremely expensive to relocate. Both the BRT and LRT stations would use side platforms to avoid having the main subway section interfere with manhole shafts of the proposed East Central Interceptor Sewer (ECIS) that will run parallel to the north side of the subway and a 54-inch sanitary sewer along the south side.

A possible optional in tunnel construction would be to utilize the Segmental Excavation Method (ESM) where a potion of the tunnel segment would be bored with a tunneling machine. This method would allow some surface areas to remain intact during construction, particularly at Figueroa Street and Vermont Avenue, which could greatly minimize adverse construction impacts. The cost effectiveness of this approach may, in fact, be on a par with conventional cut and cover methods for a tunnel segment of this length.

Final Design

During final design, the precise design elements of the optional BRT or LRT underground portion would be developed, reflecting, among other information, the final geotechnical investigations, as well as the final location of entrances and shafts at street level. These conditions will influence construction methods selected for tunnels and stations. Final design would, in turn, lead to determinations of contract packaging and construction sequencing. Different contracts could be let to construct different portions of the subway. For example, separate contracts may be let to construct the cut and cover tunnels and finished station work. Utility and demolition work at the various stations could also come under separate contracts. Alternatively, a single contract is also an option. Consistent with industry trends, alternative project delivery methods such as Design/Build would be investigated.

Pre-Construction Activities

Pre-construction activities would include building assessments (pre-construction evaluation of existing structures along the alignment) and traffic sequencing. Public affairs and construction staff from the MTA would contact and interview individual businesses, allowing for knowledge and understanding of how these businesses carry out their work. This survey identifies business usage, delivery, and shipping patterns and critical times of the day or year for business activities. This information will be used by the MTA to develop Worksite Traffic Control plans, identify alternative access routes and make efforts during construction to maintain critical business activities.

During preliminary and final design of the project, subsurface (geotechnical) investigations would be undertaken to evaluate soil, groundwater, seismic, and environmental conditions along the alignment.

Vehicular and Pedestrian Traffic

Construction of the BRT or LRT would temporarily interfere with the normal flow of traffic, causing some lanes and streets to be closed to vehicles for various durations. During final design, site and street specific Worksite Traffic Control Plans would be developed in cooperation with the City of Los Angeles Department of Transportation (LADOT), City of Beverly Hills, City of Santa Monica, and Los Angeles County to accommodate required pedestrian and traffic movements. To the extent practical, traffic lanes will be maintained in both directions, particularly during peak traffic hours. Access to homes and businesses will be maintained throughout the construction period.

Safety and Security

Safety and security during construction would consist of providing for the safe passage of vehicles and pedestrians through the construction area and protecting construction sites and equipment/material storage areas from vandalism and theft.

All standard construction procedures would be implemented to ensure the safety of the public. Detours and existing roadways through and around construction zones would be well lighted and signed. Barriers (e.g., K-rails) would be used to separate the public from work areas where necessary. Pedestrian pathways would be cordoned off and protected from traffic and potential flying objects. Standard traffic control procedures would be used, including flaggers, cones, and flashing lights. Construction staging areas would be fenced and lighted wherever appropriate. Material and equipment storage sites would require perimeter patrols and night security personnel.

3.18.2 Construction Schedule

An example schedule for constructing the Wilshire BRT and Exposition BRT is shown in Tables 3.18-3A and 3.18-3B, respectively. The exclusive BRT lanes would be constructed in three to four block segments with one side of the street (and one BRT lane) placed first, followed by the other side. The duration of this scenario would be approximately 6 weeks.

TABLE 3.18-3A
EXAMPLE CONSTRUCTION SCHEDULE FOR THE WILSHIRE BRT

Task	Approx. Duration (Mos.)	Year 1	Year 2	Year 3	Year 4	Year 5
Traffic Mitigation Measures	12-18					
Stations	12-16					
Exclusive BRT Lane	18-24					
Replacement Parking	12-18					
Systems Installation	6 - 12					
Systems Testing & Integration	10-12					
Pre-Revenue Operations	3-5					

An example schedule for constructing the Exposition BRT is shown in Table 3.18-3B.

TABLE 3.18-3B
EXAMPLE CONSTRUCTION SCHEDULE FOT THE EXPOSITION BRT

Task	Approx. Duration (Mos.)	Year 1	Year 2	Year 3	Year 4	Year 5
At-Grade Stations and Guideway Installation	18-24					
Aerial Structures	12-18					
Systems Installation	6-16					
Systems Testing & Integration	10-18					
Pre-Revenue Operations	3-5					

An example schedule for constructing the Exposition LRT is shown in Table 3.18-3C. If the optional subway were chosen, the schedule would require an additional 12-18 months. Twenty-four hour operation is assumed for construction of underground segments

TABLE 3.18-3C
EXAMPLE CONSTRUCTION SCHEDULE FOR THE EXPOSITION LRT

Task	Approx. Duration (Mos.)	Year 1	Year 2	Year 3	Year 4	Year 5
At-Grade Stations and Guideway Installation	18-24					

TABLE 3.18-3C
EXAMPLE CONSTRUCTION SCHEDULE FOR THE EXPOSITION LRT

Task	Approx. Duration (Mos.)	Year 1	Year 2	Year 3	Year 4	Year 5
Electrical Power System	12-18					
Aerial Structures	12-18					
Systems Installation	6-12					
Systems Testing & Integration	10-18					
Pre-Revenue Operations	3-5					

3.18.3 Construction Impacts

Construction-related impacts are discussed in each of the technical sections of this EIS/EIR (refer to Sections 3.2 through 3.17). The primary construction-related impacts result from the following activities:

- Construction of the subway design option near USC/Exposition Park;
- Construction of the elevated segments of the Exposition BRT or LRT (at La Cienega Boulevard, Pico Boulevard, and Bundy Drive); and
- General construction activities associated with construction of stations/bus canopies and installation of the rail lines.

The primary construction-related impacts include:

- Air quality (Section 3.8A: fugitive dust emissions);
- Noise and vibration (Section 3.9: construction-related noise and vibration);
- Traffic and circulation (Section 3.2: street/lane closures, detours, and construction-related trips);
- Socioeconomics and Land Acquisition/Displacement and Relocation (Sections 3.4 and 3.6: effects on businesses);
- Geology and soils (Section 3.10: soil disposal and worker exposure to contaminated sites);
- Hydrology/water quality (Section 3.11: grading, erosion, and short-term water quality impacts); and
- Cultural resources (Section 3.17: disturbance to archaeological and paleontological resources).

For a detailed discussion of these impacts, please refer to the appropriate sections of this EIS/EIR.

4.0 OTHER FEDERAL ENVIRONMENTAL REQUIREMENTS AND CEQA CONSIDERATIONS

4.1 INTRODUCTION

This section provides an overview of pertinent Federal and State requirements, associated with implementation of the Mid-City/Westside Transit Project. Federal requirements include: 1) Executive Orders pertaining to Floodplains, Wetlands, Endangered Species, and Environmental Justice; 2) the National Historic Preservation Act; and 3) Section 4(f) requirements associated with Federal parklands. CEQA requirements pertain to the long-term implications of implementing a transit system project, including: 1) Significant Unavoidable Adverse Impacts; 2) Cumulative Impacts; 3) Growth-Inducing; and 4) Significant Irreversible Environmental Changes.

4.2 LONG-TERM IMPLICATIONS

4.2.1 Significant Environmental Effects Which Cannot Be Avoided if the Proposed Project is Implemented

According to the Section 15126.2(b) of the CEQA Guidelines:

> Significant Environmental Effects Which Cannot Be Avoided if the Proposed Project is Implemented. Describe any significant impacts, including those, which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described.

Environmental impacts associated with implementation of a project may not always be mitigated to a level that is considered less than significant (either through the imposition of project-specific mitigation measures or through the imposition of an alternative project design). In such cases, a Statement of Overriding Considerations must be prepared prior to approval of the project, in accordance with CEQA Guidelines Sections 15091 and 15093. Because implementation of the proposed project would create several significant, unavoidable impacts, a Statement of Overriding Considerations is required to describe the specific reasons for approving the project, based on information contained within the Final EIR/EIS, as well as any other information in the public record. The significant unavoidable impacts (either project-specific or cumulative) that would result from project implementation are summarized in the Executive Summary. A detailed discussion of each of these impacts can be found in Chapter 3.0 (Environmental Analysis).

4.2.2 Summary of Significant Cumulative Impacts

Although most temporary short-term construction impacts and most long-term operational impacts associated with the proposed alternatives could be mitigated to acceptable levels, construction of the proposed project in conjunction with future development surrounding the corridors could result in adverse cumulative impacts which could not be completely avoided or mitigated. Potential cumulative environmental impacts associated with the proposed alternatives include:

- Additional traffic on local arterial and collector streets near proposed stations;

- An increase in ground-borne noise and vibration; and
- Increased impacts to air quality.

Future traffic projections have been based on traffic growth rates provided by the Los Angeles Department of Transportation (LADOT) and Southern California Association of Government (SCAG). Construction and operation of the alternatives will involve localized traffic congestion in the station areas, although overall traffic volumes would be expected to decrease in the Study Area due to the expected increase in public transit patrons. Localized parking impacts would likely occur, however, overall parking supply in the Study Area is expected to increase since an increase in transit service and ridership should serve to support a reduction in overall traffic volumes and result in a correlated increase in available parking. Therefore, no cumulative long-term impacts to traffic or parking are expected as a result of the proposed alternatives.

Ambient measurements were taken for the noise and vibration analysis presented in the EIS/EIR. The cumulative impacts of noise and vibration within the corridor area will be the total noise and vibration resulting from all sources in future years. The overall impact of the alternatives on the surrounding area noise levels is negligible when compared to overall existing ambient noise levels. Because it requires a 100 percent increase in traffic volume to make a noticeable increase in noise, the anticipated increase in noise levels from this growth would be negligible.

Projected future emission rates from the California Air Resources Board and future traffic levels based on LADOT and SCAG growth rates were used in the air quality analysis. The regional air quality analysis demonstrates a net cumulative benefit to the region's ambient air quality resulting from increased public transit use. The anticipated reduction in automobile use due to the increase in transit use is considered beneficial to ambient air quality. Therefore, the project contributes to the expeditious implementation of the adopted Air Quality Management Plan.

4.2.3 Growth-Inducing Impacts

This section discusses the ways in which the proposed project could foster economic or population growth, either directly or indirectly, including, but not limited to, the removal of obstacles to population growth or the construction of additional housing. Generally, growth-inducing projects are located in isolated, undeveloped, or underdeveloped areas, necessitating the extension of major infrastructure (e.g., sewer and water facilities, roadways, etc.) or are those that could encourage "premature" or unplanned growth (i.e., "leap-frog" development). Although development of the project supports urban growth, it is important to note that the proposed transit alternatives will not remove an obstacle to population growth since the corridors travel areas that are entirely urbanized. Rather, the project will accommodate and serve residents and visitors to the City and will provide an increased level of public transit service that is consistent with local and regional growth projections. Although supporting new and existing residents, the project will not foster new growth beyond that projected for the area and will not exceed the capacities of existing and proposed infrastructure and governmental services.

Development of any "build" alternative would generate relatively short-term, construction-related employment opportunities. However, the construction phases of any project would require a limited labor force due to the relatively short-term nature of construction employment. Given the ample supply of construction workers in the regional work force, which is the area from which construction workers would be drawn, the proposed project would not be considered growth-inducing from a short-term employment perspective.

The long-term employment opportunities created by the proposed project would also be limited, since both corridors are currently served by public transportation and an increased level of service will only provide a slight increase in employment. Furthermore, opportunities are generally low-paying, and not considered growth-inducing from an employment perspective. Rather, a majority of the positions generated would be filled by the local labor force. Management positions, if any, may involve recruitment procedures with a target area that is larger than the local region. This could induce a limited number of newcomers to the area. However, this number is expected to be low, and not result in any adverse growth inducing impacts.

4.2.4 Irreversible and Irretrievable Commitment of Resources

Section 15126.2(c) of the State CEQA Guidelines requires a discussion of any significant irreversible environmental changes which would be caused by the proposed project should it be implemented. Specifically, the State CEQA Guidelines state that:

> Use of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts, and particularly, secondary impacts generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with project construction and operation.

The construction and implementation of the proposed project would entail the irreversible and irretrievable commitment of energy and human resources; however, this commitment of energy, personnel, and building materials would be commensurate with that of other projects of similar magnitude. Labor would also be committed for the planning, design, construction, and operation phases of the project.

Construction of the proposed project would require the commitment of a variety of non-renewable or slowly renewable natural resources. Energy (in the form of fossil fuels) and construction materials (such as lumber, sand and gravel, metals, and water) would be irretrievably committed for construction of the proposed project. However, there could be some offset of the loss of energy resources. Demolition debris could be recycled for other uses; for example inert construction debris (e.g., concrete and asphalt) may be crushed and used for road base or for reinforcing levees.

On-going maintenance of the project will entail a further commitment of energy resources in the form of petroleum products (diesel fuel and gasoline), natural gas, and electricity. This commitment of energy resources would be a long-term obligation because, practically speaking, it is impossible to return the land to its original condition once it has been developed. However, as established in Section 3.13, the impacts of increased energy usage are not considered significant adverse environmental impacts.

In summary, implementation of the proposed project would involve the following irreversible environmental changes to existing natural resources:

- Commitment of natural resources during project construction, including the consumption of fossil fuels and the use of materials in construction (such as steel, concrete, asphalt, and plastics).
- Commitment of energy and water resources as a result of the operation and maintenance of the proposed transit corridors.

4.3 IMPACTS FOUND NOT TO BE SIGNIFICANT

The impacts associated with the proposed project that are less than significant or can be reduced to a level of insignificance through mitigation are discussed in detail in the appropriate issue area sections of Chapter 3.0 (Environmental Analysis) of this EIR/EIS, and are summarized in the Executive Summary.

4.4 EXECUTIVE ORDER PERTAINING TO FLOODPLAINS

Executive Order 11988 (Floodplain Management) links the need to protect lives and property with the need to restore and preserve natural and beneficial floodplain values. Specifically, Federal agencies are directed to avoid conducting, allowing, or supporting actions on the base floodplain unless the agency finds that the base floodplain is the only practicable alternative location. Similarly, Department of Transportation (DOT) Order 5650.2, which implements Executive Order 11988 (Floodplain Management) and was issued pursuant to the National Environmental Policy Act of 1969, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973, prescribes policies and procedures for ensuring that proper consideration is give to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests.

Impacts

Each of the project alternatives traverse limited portions of flood hazard areas, which are defined as the 100-year or 500-year floodplain. However, none of the alternatives travel though naturally-occurring floodplains, such as rivers, streams, or alluvial floodplains; instead, the alternatives would be implemented within the limits of existing roadway rights-of-way (e.g., Wilshire Boulevard, Exposition Boulevard, Jefferson Boulevard, Venice Boulevard, Sepulveda Boulevard, and Olympic Boulevard) or existing railroad rights-of-way (i.e., the Exposition right-of-way, which is currently owned by the MTA). Flooding within the study area as the result of a 100-year or 500-year flood is currently caused by an overflow of existing undersized storm drain systems. This flooding exists within the study area, and would continue to exist whether, or not, any of the alternatives were implemented; furthermore, none of the alternatives would worsen existing flooding conditions or expose people or property to increased flood hazards.

Because flooding (as the result of a 100-year or 500-year flood event) occurs throughout the study area, along each of the primary east-west travel corridors that connect downtown Los Angeles to Santa Monica, there is no practicable alternative that would both achieve the project objectives (i.e., to provide improved transit services to the Westside of Los Angeles) while avoiding any impacts to the base floodplain. Therefore, there is no practicable alternative to any of the project alternatives, and compliance with Executive Order 11988 and DOT Order 5650.2 can be achieved.

4.5 EXECUTIVE ORDER PERTAINING TO WETLANDS

This order issued in 1977 directs all Federal agencies to avoid, if possible, adverse impacts to wetlands and to preserve and enhance the natural and beneficial values of wetlands. Each agency shall avoid undertaking or assisting in wetland construction projects unless the head of the agency determines that there is no practicable alternative to such construction and that the proposed action includes measures to minimize harm.

Impacts

The proposed project alternatives in the Mid-City/Westside Corridor would not cross, intersect with, or remove areas designated as wetlands. The only crossing of a surface water body is the Exposition right-of-way crossing of Ballona Creek in Culver City. The creek is a concrete lined flood control channel at this crossing and there are no associated wetlands or riparian areas. Thus the proposed project transit alternatives would not invoke the provisions of Executive Order 11990.

4.6 EXECUTIVE ORDER PERTAINING TO ENDANGERED SPECIES

Adopted in 1973, this act requires Federal agencies, in consultation with and with the assistance of the Secretary of the Interior or of Commerce, as appropriate, to insure that actions they authorize, fund or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species.

Impacts

As discussed in Section 3 of this report, there are no threatened or endangered species known to exist in the Mid-City/Westside Transit Corridor that would be affected by the proposed bus or light rail transit alternatives under consideration. Similarly, there are no natural habitat areas that would be affected by the transit alternatives under consideration. Thus, the proposed project alternatives would not invoke the requirements of the Endangered Species Act.

4.7 EXECUTIVE ORDER PERTAINING TO ENVIRONMENTAL JUSTICE

On February 11, 1994, President Clinton issued an "Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Order is designed to focus Federal attention on environmental and human health conditions in minority communities and low-income communities. The Order is further intended to promote non-discrimination in Federal Programs substantially affecting human health and the environment and to provide for information access and public participation relating to such matters.

The approach in this EIS/EIR is to achieve compliance with the letter and spirit of the President's Executive Order by addressing the question of whether, and how, the impacts of the project and its alternatives may disproportionately affect minority and low-income populations.

This section analyzes the distributional patterns of minority populations and low-income populations on a regional basis and characterizes the distribution of such populations adjacent to the project alternatives. The analysis then focuses on the existing environmental conditions and impacts relative to these populations and analyzes how project impacts affect these populations, focusing on possible disproportionate effects and potential exacerbation of existing conditions.

The unit of analysis in this EIS/EIR for impacts on minority populations and low income populations is the Census Block Group. Baseline data provided in this section is from the 1990 United States (US) Census. For each of the Census Block Groups the following information is included:

- Total population;
- Black/African American population;
- Asian/Pacific Islander Population;
- American Indian Population;
- Hispanic Population; and
- Households at Poverty Level.

Low Income households defined as "Poverty Level" are households whose incomes met the 1990 Los Angeles County threshold for poverty at less than $8,104 dollars.

Wilshire Corridor

Tables 4-1 and 4-2 show the ethnic breakdown and number of poverty level households for a 0.5 mile distance on either side of the corridor and a 0.5 mile radius of the Wilshire BRT station locations.

TABLE 4-1
ETHNIC BREAKDOWN WITHIN 0.5 MILE OF THE WILSHIRE CORRIDOR

Category	Numbers of Individuals	Percentage (in %)
Persons	*178,866*	*100*
Black	11,589	6
Asian	23,792	13
Hispanic	18,382	10
American Indian	566	0.3
Households	*86,367*	*100*
Poverty	21,581	12

Source: 1990 US Census

TABLE 4-2
ETHNIC BREAKDOWN WITHIN 0.5 MILE OF THE WILSHIRE BOULEVARD STATIONS

Station	Persons	Black	Asian	Hispanic	American Indian	Households	Poverty
Western	2,550	293	922	696	30	1,218	419
Crenshaw	566	19	175	138	1	204	72
La Brea	826	16	195	52	0	281	96
Fairfax	1,288	128	142	98	2	890	228
La Cienega	1,027	11	24	39	2	619	85
Robertson	2,106	44	75	105	6	1,159	123
Beverly	557	5	34	26	0	284	0
Santa Monica	1,066	7	58	63	4	571	48

TABLE 4-2 ETHNIC BREAKDOWN WITHIN 0.5 MILE OF THE WILSHIRE BOULEVARD STATIONS							
Station	**Persons**	**Black**	**Asian**	**Hispanic**	**American Indian**	**Households**	**Poverty**
Westwood Village	2,651	58	548	154	5	1,450	690
Barrington	1,169	382	12	99	11	928	62
Bundy	1,815	54	172	175	12	977	145
14th	1,155	39	60	85	3	448	125
4th	712	30	18	58	4	543	173
Ocean	821	19	7	42	0	636	221
Source: 1990 US Census							

Exposition Corridor

Tables 4-3, 4-4, and 4-5 show the ethnic breakdown and number of poverty level households for a 0.5 mile distance on either side of the Exposition corridor and a 0.5 mile radius of the Exposition BRT and LRT Alternatives station locations.

TABLE 4-3 ETHNIC BREAKDOWN WITHIN 0.5 MILE OF THE EXPOSITION CORRIDOR		
Category	**Numbers of Individuals**	**Percentage (in %)**
Persons	*148,399*	*100*
Black	47,211	32
Asian	13,725	9
Hispanic	47,769	32
American Indian	666	0.4
Households	*55,192*	*100*
Poverty	28,316	19
Source: 1990 US Census		

TABLE 4-4 ETHNIC BREAKDOWN WITHIN 0.5 MILE OF THE EXPOSITION BRT STATIONS							
Station	**Persons**	**Black**	**Asian**	**Hispanic**	**American Indian**	**Households**	**Poverty**
7th/Flower	667	102	5	357	5	205	137
Figueroa/Pico	454	46	1	390	8	96	84
Figueroa/Adams	686	41	32	541	4	168	136
Figueroa/Jefferson	984	96	61	767	7	241	197
USC Park/ Exposition	1,491	158	40	1,251	2	407	374
Vermont	2,104	760	52	1,147	24	1,133	557
Western	1,363	948	33	209	14	470	350
Crenshaw	718	424	146	25	4	318	20
La Brea	785	591	57	109	0	329	217
La Cienega	826	532	88	188	4	307	70

TABLE 4-4 ETHNIC BREAKDOWN WITHIN 0.5 MILE OF THE EXPOSITION BRT STATIONS							
Station	**Persons**	**Black**	**Asian**	**Hispanic**	**American Indian**	**Households**	**Poverty**
National/Hayden	748	147	143	98	3	437	42
Venice/Main	3,883	536	506	733	37	2,144	348
Venice/Overland	3,333	419	507	657	23	1,752	526
Venice/Sepulveda	872	47	159	195	7	362	66
Sepulveda/National	890	52	182	188	2	435	131
Pico/Sawtelle	597	15	86	220	7	274	93
Bundy	720	31	154	244	9	304	119
Cloverfield	1,888	248	185	842	14	800	432
Colorado/14th	1,056	143	28	411	6	481	216
Ocean	327	42	18	48	6	174	17
Source: 1990 US Census							

TABLE 4-5 ETHNIC BREAKDOWN WITHIN 0.5 MILE OF THE EXPOSITION LRT STATIONS							
Station	**Persons**	**Black**	**Asian**	**Hispanic**	**American Indian**	**Households**	**Poverty**
7th/Flower	667	102	5	357	5	205	137
Pico/Flower	454	46	1	390	8	96	84
Washington/Grand	3,061	267	37	2,459	16	1,189	621
I-110/USC/ Exposition	1,491	158	40	1,251	2	407	374
Vermont	2,104	760	52	1,147	24	1,133	557
Western	1,363	948	33	209	14	470	350
Crenshaw	718	424	146	25	4	318	20
La Brea	785	591	57	109	0	329	217
La Cienega	826	532	88	188	4	307	70
Venice/Washington	1,326	111	221	661	2	370	191
Venice/Overland	3,333	419	507	657	23	1,752	526
Venice/Sepulveda	872	47	159	195	7	362	66
Sepulveda/National	890	52	182	188	2	435	131
Pico/Sawtelle	597	15	86	220	7	274	93
Bundy	720	31	154	244	9	304	119
Cloverfield	1,888	248	185	842	14	800	432
Ocean/Colorado	327	42	18	48	6	174	17
Source: 1990 US Census							

Impacts

The impact analysis is based on the consideration of the locations of minority populations and low-income populations throughout the Study Area and specifically within one-mile of the alternative route corridors, as defined by the Census Block Group classification and distribution. Key elements of the analysis throughout the following section include consideration of:

- Disproportionate project impacts on high minority populations and low income populations along the routes;

- Disproportionate project impacts when considering existing conditions or locational patterns for existing impact sources and burdens; and
- Factors that influence or increase the disproportionalities noted.

For purposes of this analysis, an area that contains one-third or more (of the total population) of high minority or low-income population is considered a "high concentration." While the Census data used is from the 1990 US Census, it is assumed that similar demographic trends have occurred within the Census Block Groups that were examined in this analysis.

Wilshire Corridor. The Wilshire Corridor as a whole contains 30.3% minority population and 24.9% low income population. The breakdown of minority and low income population at each individual BRT station is as follows:

TABLE 4-6
PERCENTAGE OF MINORITY AND LOW-INCOME POPULATIONS
WILSHIRE CORRIDOR

Station	Minority	Low Income
Western	65%	34%
Crenshaw	59%	35%
La Brea	31%	34%
Fairfax	28%	25%
La Cienega	7%	13%
Robertson	11%	1%
Beverly	11%	0%
Santa Monica	12%	8%
Westwood	28%	47%
Barrington	43%	6%
Bundy	22%	14%
14th	16%	27%
4th	15%	32%
Ocean	8%	34%
Straightline Average	**25%**	**22 %**

Source: 1990 US Census.

As shown in Table 4-6, several station locations contain a mixture of high minority and low-income households. The Western Avenue, Crenshaw Boulevard, and La Brea Avenue station areas contain the highest concentrations of minority and low-income households. The high percentage of low-income households near the Westwood Village station area can be attributed to the large numbers of UCLA students housed in the area. While several station locations contain high concentrations of minority and low-income populations, the Corridor as a whole contains less than 33% minority and low-income households. Because the percentage of minority and low-income populations is below the threshold of 33% (with a minority population of 30% and a low-income population of 25%), infrastructure and environmental impacts associated from the proposed Wilshire BRT Alternative would not disproportionately affect low-income or minority populations in close proximity to the project area. Therefore, the impacts are not considered significant to low-income and minority households.

Exposition Corridor. The Exposition Corridor as a whole contains 73.7% minority population and 83.5% low income population (refer to Table 4-7). The breakdown of minority and low income population at each individual BRT and LRT Alternative station is as follows:

TABLE 4-7.
PERCENTAGE OF MINORITY AND LOW-INCOME POPULATIONS
EXPOSITION CORRIDOR

Exposition BRT Alternative			Exposition LRT Alternative		
Station	Minority	Low Income	Station	Minority	Low Income
7th/Flower	70%	66%	7th/Flower	70%	66%
Figueroa/Pico	98%	87%	Pico/Flower	98%	87%
Figueroa/Adams	N/A	N/A	--	--	--
Figueroa/Jefferson	90%	52%	Washington/Grand	90%	52%
Exposition/USC	97%	91%	USC/Exposition	97%	91%
Vermont	94%	49%	Vermont	94%	49%
Western	88%	74%	Western	88%	74%
Crenshaw	83%	6%	Crenshaw	83%	6%
La Brea	96%	65%	La Brea	96%	65%
La Cienega	98%	22%	La Cienega	98%	22%
National/Hayden	52%	10%	Venice/Washington	75%	51%
Venice/Main	46%	16%	Venice/Overland	48%	30%
Venice/Overland	48%	30%	Venice/Sepulveda	46%	18%
Venice/Sepulveda	46%	18%	Sepulveda/National	47%	30%
Sepulveda/National	47%	30%	Pico/Sawtelle	54%	33%
Pico/Sawtelle	54%	33%	Bundy	60%	39%
Bundy	60%	39%	Cloverfield	68%	54%
Cloverfield	68%	54%	Ocean/Colorado	54%	10%
Colorado/14th	55%	45%	--	--	--
Ocean	54%	10%	--	--	--

Source: 1990 US Census

The study area displays distinct patterns of correlation and possible disproportionality with regard to minority populations and low-income populations and their socioeconomic conditions. The majority of the Census Block Groups identified as high minority and low income overlap within the Exposition Corridor. As a whole, the Exposition Corridor contains a large low-income and minority population, specifically concentrated near the stations located between 7th/Flower Street and La Cienega Boulevard.

Because the Exposition Corridor contains a disproportionately high concentration of both low-income and minority households, the physical and environmental impacts associated with the proposed alternatives using the Exposition Corridor would disproportionately effect those households. Evaluation of the possible MTA transit routes was based largely on lands owned by the MTA. The right-of-way (ROW) proposed for use with the Exposition alternatives is currently owned and operated by the MTA and allows the alternatives to be fiscally feasible. Public transportation projects are beneficial to low-income households because of the reliance those individuals have on public transit for mobility. While the environmental impacts associated with this alternative would be disproportionately distributed to both low-income and minority households, the result of an improved transit system for those individuals is considered beneficial. The environmental consequences of the proposed project primarily consist of an increase to the air quality, noise, and traffic levels currently existing in the area. These impacts do not outway the benefits of installing an improved public transportation system to an area of target users. Therefore, the impacts are not considered significant to either low-income or minority households.

4.8 NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the National Historic Preservation Act of 1966, as amended through 1992 (16 U.S.C. Section 470), and 36 CFR Part 800: Protection of Historic Properties, are two of several federal regulations protecting historic resources. Section 106 requires that federal agencies take into account the effect of carrying out federally funded, assisted, or licensed projects on resources identified as included in, or determined eligible for, the National Register. This law is set up so that, in the planning stages, the widest range of feasible alternatives can be investigated. 36 CFR Part 800 specifies the "Criteria of Effect," which is the method applied to determine whether or not a project would adversely affect those characteristics qualifying a resource for inclusion on the National Register. Federal agencies follow these steps in the Section 106 review process:

- Determine that the Section 106 provisions apply to the undertaking or proposed action;
- Define the APE ;
- Identify historic, archaeological and cultural resources, and evaluate their significance to determine eligibility for listing in the National Register;
- Apply the criteria of effect and adverse effect to determine impacts on identified resources;
- Consult with the State Historic Preservation Officer (SHPO) and other interested persons, agencies, and tribes to agree on appropriate mitigation measures;
- Execute a Memorandum of Agreement (MOA) with the SHPO that specifies
- the mitigation and identifies those responsible for carrying out the specific measures;
- Obtain the comments and concurrence of the Advisory Council for Historic Preservation.

This document summarizes the results of the completion of the first four steps. The final three steps will be completed prior to the conclusion of the environmental process and the issuance of the Record of Decision. Formal consultation with the SHPO and others to define impacts on historic properties and determine how to resolve them should be undertaken after the DEIS is completed. The views of the public on any draft document should be addressed in the consultation.

The cultural resource investigation was a phased effort. 36 CFR 800.4 (b) (2) provides the following: "Where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the Agency Official may use a phased process to conduct identification and evaluation efforts." As specific aspects or locations of an alternative are refined or access is gained, the Agency Official shall proceed with the identification and evaluation of historic properties in accordance with 800.4(b)(1) and (c). In this particular study, the use of light rail and buses is under consideration. The choice of one or the other will have a differential effect on cultural resources, e.g., vibration from light rail usage as opposed to considerably less for buses. Until this alternative is refined, it is considered prudent to limit the cultural resource investigation to a limited identification.

4.9 Section 4(F)

Public recreational lands and facilities (including local parks), significant cultural resources, natural wildlife refuges, and schools (to the extent that school facilities are open and available to the general public for recreational purposes) are afforded special protection by Section 4(f) of the U.S. Department of Transportation Act of 1966. The following land use types include potential Section 4(f) lands:

- Beach Parks;
- Local Park and Recreation Lands (Undeveloped);
- Local Park and Recreation Lands (Developed);
- Regional Park and Recreation Lands (Undeveloped);
- Regional Park and Recreation Lands (Developed);
- Colleges and Universities;
- Elementary Schools;
- Junior or Intermediate High Schools;
- Pre-Schools Day Care Centers;
- Senior High Schools; and
- Trade Schools; and
- Lands of historic significance

The courts have found that any National Register property, and any property determined eligible for the National Register, is an "historic site" for purposes of Section 4(f).

Section 4(f) lands within or adjacent to the Wilshire and Exposition Corridors are presented in Table 4-8:

TABLE 4-8 PARKLAND AND RECREATIONAL SITES	
WILSHIRE CORRIDOR	
Macarthur Park	Wilshire Boulevard /Alvarado Boulevard
LaFayette Park	Wilshire Boulevard /Hoover Street
LaBrea Tar Pits	Wilshire Boulevard /Curson Avenue
Carthay Circle Park	Wilshire Boulevard /Crescent Heights Boulevard
Douglas Park	Wilshire Boulevard /Chelsea Avenue
Lincoln Park	Wilshire Boulevard /7th Street
Junior High School	Wilshire Boulevard/Highland Avenue
EXPOSITION CORRIDOR	
Rancho Cienega Sports Center Park	Exposition Boulevard /LaBrea Avenue
Baldwin Hills Recreation Center	Exposition Boulevard/Dunsmuir Avenue
Syd Kronenthal Park	National Boulevard /McManus Avenue
Palms Park	National Boulevard /Clarkson Road
Stewart Street Park	Exposition ROW/Cloverfield
Memorial Park	Olympic Boulevard /14th Street

TABLE 4-8 PARKLAND AND RECREATIONAL SITES	
University of Southern California	Exposition Boulevard /Vermont Avenue
Middle School	Exposition Boulevard/Western Avenue
Continental High School	Exposition Boulevard/16th Street
Dorsey High School	Exposition Boulevard /Farmdale Avenue
Source: Thomas Brother's Guide/EIP Associates, 2000	

Direct use (i.e. encroachment) of Section 4(f) lands by Federally-funded transportation projects is prohibited unless it can be demonstrated that there are no prudent alternatives. If no prudent alternatives exist, design and mitigation measures must be implemented to reduce potentially-significant or significant effects. Indirect effects to Section 4(f) lands may involve impeding or altering access, introducing significant noise or vibration, casting shadows, or other substantive changes to the visual setting.

Impacts to Parklands

Since the various project alternatives would operate within public ROWs, the potential for direct use of parklands is unlikely. There may be indirect effects, however, to significant cultural resources, which are also covered by Section 4(f), as described previously under "Cultural Resources."

Indirect or Direct impacts on Section 4(f) Lands. The proposed transit alternatives would involve construction and operation within public road ROWs or ROWs owned by the MTA, and would not result in any direct or indirect physical disruption of public lands, including Section 4(f) lands.

Impacts to Cultural Resources

As described above, Section 4(f) of the Department of Transportation Act of 1966 states that federal funds cannot be used for any "program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance as determined by such officials unless (1) there is no feasible and prudent alternative to the use of such lands, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use." The word "use" refers to either a direct or a constructive use of the property. A direct use occurs when land is permanently incorporated into a transportation facility of a partial or full acquisition or easement of the property is required. Constructive use occurs when the project's proximity impacts are so severe that the activities, features, or attributes that qualify a resource for protection under 4(f) are substantially impaired. Typically, a constructive use of a resource would involve permanent and severe noise, vibration, visual, or access impacts. As outlined in Subsection 23 CFR 771.135 (p)(4), a constructive use of a protected resource occurs under any of the following situations:

- Predicted noise level increase, attributable to the proposed project, substantially interferes with the use and enjoyment of a noise-sensitive facility of a resource.

- Proximity of the proposed project substantially impairs the aesthetic features or attributes of a resource, where such features or attributes are considered important contributing elements to the value of the resource.

- Restricted access, which substantially diminishes the utility of a publicly owned park, recreation area, or historic site.
- Vibration associated with the proposed project impairs the use of a resource.
- Ecological intrusion of the proposed project diminishes the value of wildlife habitat in a wildlife or waterfowl refuge adjacent to the project.
- Substantial interference with the access to a wildlife or waterfowl refuge when such access is necessary or established wildlife migration or critical life cycle processes.

The following sections evaluate park, archaeological and historic as they relate to Section 4(f). After reviewing the 4(f) evaluation, FTA may determine that: 1) there is no prudent or feasible alternative to using 4(f) properties in this section; and 2) the project includes all possible planning to minimize harm to parks, recreation areas, wildlife and waterfowl refuges and historic site resulting from the use. With this determination, Section 4(f) permits the Secretary of Transportation to approve a project for federal funding participation or other federal undertaking that requires the use of publicly owned land from a park; recreation area; wildlife and waterfowl refuge of national, State, or local significance; or any land from a historic site of national, State, or local significance. The U.S. Department of the Interior and the State Historic Preservation Officer (SHPO) will be consulted regarding Section 4(f) properties after circulation of the Draft EIS/EIR.

Section 4(f) Properties

This section describes the Section 4(f) properties that would be affected by the project alternatives. No such properties would be affected by the No Action or TSM Alternatives. Historic, archaeological, and paleontological resources that would be affected by the Wilshire BRT and Exposition BRT and LRT Alternatives are identified below. For these properties, a description and the significance of the affected property and the application of Section 4(f) criteria for use are presented. Alternatives that would avoid use, measures to minimize harm, and coordination with the appropriate agencies are also described.

Electoroliers and Other Fixtures, Such as Streetlights, Along Wilshire Boulevard

Description and Significance of Affected Property

The electroliers and other fixtures along much of Wilshire Boulevard were installed prior to 1950, and contribute to the historical setting of the Boulevard itself. Additionally, a trend towards the nomination of "National Register Utilities Districts" has emerged, and is practiced by agencies such as Caltrans. Although they have not yet been studied in detail, the fixtures along Wilshire Boulevard may be potentially eligible for the National Register in just such a context, as a potential historic district.

Application of Section 4(f) Criteria for Use

If, upon further study, the fixtures on Wilshire Boulevard are determined to be eligible or potentially eligible to the National Register either individually or as a district, the Wilshire BRT Alternatives would alter the physical properties of a potential historic resource and would materially alter its historical integrity. This would constitute an adverse effect under Section 106 of the NHPA, as described in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures).

Alternatives that Would Avoid Use

The No Action and TSM Alternatives, which have been analyzed in this Draft EIS/EIR, would not involve substantial physical change to Wilshire Boulevard, and would therefore result in no effect upon the electric fixtures along Wilshire Boulevard. While a BRT system could be implemented on other east-west streets, Wilshire is a designated transit corridor, and no substantial transit improvement would then be provided within an area of established need.

Measures to Minimize Harm

Mitigation Measures 3.17-1 and 3.17-2, as described in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures), would require evaluation and HAER recordation, if appropriate, of the electric fixtures along Wilshire Boulevard, and the development of an MOA between MTA, SHPO, and other interested parties.

Coordination with Other Agencies

As required by Mitigation Measure 3.17-2, MTA would work with FTA and SHPO to determine agreed-upon mitigation measures that will minimize the impacts on the electric fixtures on Wilshire Boulevard. The measures will be developed after consideration of all public input that is received during the circulation period of the Draft SEIS/SEIR.

Southern Pacific Railroad/Pacific Electric Railway Lines and Right-of-Way

Description and Significance of Affected Property

A description of the Southern Pacific Railroad/Pacific Electric Railway (SPRR/PE) Lines and Right-of-Way (ROW) and their historical significance are described in detail in Sections 2.1 and 3.2.3 of the Cultural Resources Technical Report of this Draft EIS/EIR, and are summarized in Section 3.17.2 (Cultural Resources: Affected Environment).

Application of Section 4(f) Criteria for Use

The SPRR/PE Lines and ROW have been determined by SHPO to be eligible for listing in the National Register of Historic Places (NRHP). It is also, therefore, a resource that is protected under Section 4(f). Construction of the proposed Exposition BRT or LRT Alternatives would involve the destruction of remaining rail lines and alteration of the ROW. Removal of the lines and alteration of the ROW would alter the physical properties of the resource and would materially alter its historical integrity. This would constitute an adverse effect under Section 106 of the NHPA, as described in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures).

Alternatives that Would Avoid Use

The No Action and TSM Alternatives, which have been analyzed in this Draft EIS/EIR, would not involve any physical change to the Exposition ROW, and would therefore result in no effect upon the SPRR/PE Lines and ROW. Additionally, Alternative 1 (Wilshire BRT), which has also been analyzed in this Draft EIS/EIR, would avoid the SPRR/PE Lines and ROW by confining all construction to Wilshire Boulevard, and would result in no effect upon this historical resource.

Measures to Minimize Harm

Mitigation Measures 3.17-3 and 3.17-4, as described in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures), would require HAER recordation of the PE Lines and ROW, and the development of an MOA between MTA, SHPO, and other interested parties.

Coordination with Other Agencies

As required by Mitigation Measure 3.17-4, MTA would work with FTA and SHPO to determine agreed-upon mitigation measures that will minimize the impacts on the SPRR/PE Lines and ROW. The measures will be developed after consideration of all public input that is received during the circulation period of the Draft SEIS/SEIR.

Visual Setting of the USC/Exposition Park Historic Resources

Description and Significance of Affected Property

The historic resources of USC and Exposition Park include the Hancock Memorial Museum, USC Widney Hall, USC Faculty Center, USC Town and Gown Center, Ormerod Harris Hall, the State Armory Building, that Natural History Museum, the Los Angeles Memorial Coliseum, and the Exposition Park Rose Garden. These are structures that comprise a potential National Register Historic District. Although other structures in the vicinity are individually historical, the shared context of these other structures has not remained intact, and therefore, have no shared significance as a district, as described in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures). A description of the historic resources and their historical significance are described in detail in Sections 2.1 and 3.2.3 of the Cultural Resources Technical Report, and are summarized in Section 3.17.2 (Cultural Resources: Affected Environment).

Application of Section 4(f) Criteria for Use

The USC/Exposition Park historic resources listed above have been determined by SHPO to be potentially eligible for listing in the NRHP as elements of an historic district. They are also, therefore, a collective resource that is protected under Section 4(f). Construction of the proposed Exposition LRT Alternatives (3 or 3A) would necessitate construction of an overhead catenary system (OCS) to provide electrical power to the LRT system. Installation of an OCS would alter the aesthetic properties of the potential district and would, as an intrusive modern element, indirectly alter the historic setting of potential district. This would constitute an adverse effect under Section 106 of the NHPA, as described in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures).

Alternatives that Would Avoid Use

The No Action and TSM Alternatives, which have been analyzed in this Draft EIS/EIR, would not involve any physical change to the Exposition ROW, and would therefore result in no effect upon the SPRR/PE Lines and ROW. Alternative 1 (Wilshire BRT), which has also been analyzed in this Draft EIS/EIR, would avoid the SPRR/PE Lines and ROW by confining all construction to

Wilshire Boulevard, and would result in no effect upon this historical resource. Additionally, Alternatives 2 and 2A, which would both involve a BRT system in the Exposition ROW, would not result in a significant indirect impact to the historical setting of the USC/Exposition historical resources.

Measures to Minimize Harm

Mitigation Measure 3.17-7, as described in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures), would require an alternative design of the OCS that would mimic the historic OCS system of the PE Railway system. This would be developed in consultation SHPO, and would reduce the impact to the historical setting of the USC/Exposition Park historical resources to a less-than-significant level.

Coordination with Other Agencies

MTA would work with FTA and SHPO to determine an OCS design that will minimize the impacts on the USC/Exposition Park historical resources. The measures will be developed after consideration of all public input that is received during the circulation period of the Draft SEIS/SEIR.

Archaeological Resources

In accordance with Section 4(f), Sections 106 and 110 of the National Historic Preservation Act, Executive Order 11593 and the guidelines promulgated by the Advisory Council on Historic Preservation (ACHP), MTA has undertaken an extensive search for archaeological resources that could be affected by the Exposition LRT Alternatives (3 and 3A) and potential maintenance yards. MTA has determined that three known archaeological sites exist within ¼ mile of the Wilshire BRT APE; however, these sites do lie within the APE and would not be adversely affected by construction activities. MTA has also determined that three additional archaeological sites that are potentially eligible to the NRHP (CA-LAN-69, -70 and –74), as well as potential areas of archaeological sensitivity, exist within or near the APE of the Exposition LRT and the potential maintenance yard sites (see Section 3.17.2, Cultural Resources: Affected Environment/Archaeological Resources). All of the identified sites and areas of high archaeological sensitivity may have "Use" under Section 4(f) guidelines.

Description and Significance of Affected Properties

CA-LAN-74, the site known within the APE, lies in the vicinity of the intersection of La Cienega Boulevard and Boden Avenue. The two other archaeological sites, CA-LAN-69 and -70, lie near the Exposition ROW at Cochran and at Sentous. CA-LAN-69 and –70 have not been relocated since they were recorded: they are presumed either buried or destroyed, but their precise status has not yet been determined, as subsurface investigations have not been conducted for this study. However, they lie within approximately 200 feet from the Exposition ROW, and it is possible that subsurface remains of these sites, as well as elements of CA-LAN-74, can lie within the Exposition ROW, and could be affected by grading, excavation, or other construction activities required to implement any of the Exposition LRT Alternatives (3 and 3A), and the potential subway design option for the Exposition LRT and BRT Alternatives (2 and 2A).

Application of Section 4(f) Use Criteria

All three known archaeological sites within or near the Exposition ROW have been determined potentially eligible for listing on the NRHP. LRT and BRT subway design option construction activities, such as earthmoving and excavation, as well as maintenance facility construction, such as excavation for underground tanks or foundations, could also encounter unrecorded archaeological remains.

Alternatives that Would Avoid Use

Alternative LRT alignments that would shift construction activities from the streets where archaeological sites have been recorded or where buried remains may be found would traverse private property. However, the archaeological sensitivity of portions of the alignment is high, particularly in the vicinity of Downtown Los Angeles and within or near USC/Exposition Park, as discussed in Section 3.17.3 (Cultural Resources: Impact Assessment and Mitigation Measures). Therefore, archaeological features could also likely be found on any of the other streets. Additionally, if the rail alignment were to be placed outside of the street rights-of-way to avoid the historic rail routes, this would require acquisition of many private properties. Demolishing many historic properties to accommodate the any of the Exposition LRT Alternatives and Exposition BRT Alternative subway design option, as well as the neighborhood disruption it would cause, would be an adverse impact. In addition, avoiding the Exposition ROW would obviate a primary project goal in providing service to the Exposition corridor.

Finally, other alternatives have been analyzed in this Draft EIS/EIR that would not involve construction within the Exposition ROW: the No Action and TSM Alternatives, as well as the Wilshire BRT Alternative (Alternative 1).

Measures that Would Minimize Harm

In the event that archaeological and buried historic sites are encountered, evaluation of the site is often accomplished through test level excavation designed to determine the horizontal and vertical extent of the site, and to characterize the content of the site. In recognition of this possibility for the Exposition BRT and LRT Alternatives, Mitigation Measure 3.17-6 requires monitoring and scientific recovery of archaeological resources. Additionally, the measure requires an MOA with SHPO and other interested parties. MTA could follow terms similar to those stipulated in the previously adopted *Identification Study and Treatment Plan* for the suspended Metro Red Line East Side Extension FEIS/FEIR (1994) and in the Memorandum of Agreement (MOA) authorized by the Department of the Interior (September 12, 1994) in consultation with the ACHP and SHPO.

A MOA is the preferred mechanism for implementing Section 106 where alternatives under consideration consist of corridors, or where access to properties is restricted. A phased approach may be used to conduct identification and evaluation of historic properties if it is specifically provided for in a MOA. The MOA may use standard treatments established by the Advisory Council on Historic Preservation under 36 CFR 800.14(d). The process would establish the likely presence of historic properties within the area of potential effects for each alternative though background research, consultation, and an appropriate level of field investigation, taking into account the number of alternatives under consideration, the magnitude of the undertaking and its likely effects, and the views of SHPO. As specific aspects or location of an alternative are refined or access is gained, the identification and evaluation of historic properties proceeds in accordance with Sections 36 CFR 800.13(a)). The MOA shall include a provision for monitoring and a mechanism for reporting its implementation (36 CFR 800.6(c)(4)).

Other elements of the MOA shall provide that:

- Areas subject to physical disturbance by the undertaking are subjected to intensive archaeological study in accordance with a study plan developed in consultation with the SHPO, and submitted in draft to the SHPO for at least 30 days of review and comment; and
- If the study indicates the existence of archaeological resources, MTA will review the potential impact on such resources with SHPO. MTA has a wide variety of choices for mitigation measures and will determine them in consultation with the SHPO.

Prior to the initiation of each construction contract, a pre-construction meeting would be held with all resident engineers, inspectors, contractors' representatives and foremen to review the procedures to be followed regarding the presence of archaeological and/or paleontological monitors, collecting of artifacts, reporting discoveries, and communications. When archaeological evidence is observed, work will be halted in the immediate vicinity and the procedures set forth in the MOA and Treatment Plan will be followed.

<u>Coordination with Other Agencies</u>

MTA will work with FTA and SHPO to determine agreed-upon mitigation measures that will be identified in a Memorandum of Agreement to minimize the impacts on archaeological sites. The measures will be developed after consideration of all public input that is received during the circulation period of the Draft SEIS/SEIR.

Paleontological Resources

As described in Section 3.17.2 (Cultural Resources: Existing Environment), implementation of the Exposition LRT Alternative or the Exposition BRT or LRT subway design options could result in impacts to paleontological resources in the Quaternary Alluvium soil units that underlie the Downtown Los Angeles and USC/Exposition Park area.

<u>Description and Significance of Affected Properties</u>

As described in Section 3.17.2 (Cultural Resources: Existing Setting/Paleontological Resources), the USC campus and surrounding area are underlain by Holocene Alluvium (unit Qa), which is composed of clay, sand, and gravel. Fossil occurrences of the younger alluvium, such as those near USC, have high scientific importance because they have allowed the determinations of ages of their respective fossil-bearing rock units, reconstructions of depositional paleoenvironments represented by the component sediments, and documentation of paleoclimates of the region during these depositional events. Some of these occurrences are also important because they represent time and/or geographic range extensions (including first reported occurrences) for their respective plant and animal species. Fossil occurrences in nearby units, such as Downtown Los Angeles, indicate a moderate to high potential for similar fossil remains within the Exposition ROW APE.

Application of Section 4(f) Use Criteria

Paleontological resources are considered a form of historical resource under Section 106 of the NHPA, and would therefore have "Use" under Section 4(f). The proposed Exposition LRT Alternative will likely not require excavation of sufficient depth to encounter paleontological resources, though impacts are possible. The proposed subway design options for the Exposition BRT and LRT Alternatives, however, would excavate to depths that are likely to contain paleontological resources.

Alternatives that Would Avoid Use

Alternative LRT alignments that would shift construction activities from the streets where paleontological resources are known or suspected may not be possible because, as described above, the geological units that contain such resources are so widespread in the vicinity of the APE. In addition, avoiding the Exposition ROW would obviate a primary project goal in providing service to the Exposition corridor.

Finally, other alternatives have been analyzed in this Draft EIS/EIR that would not involve construction within the Exposition ROW: the No Action and TSM Alternatives, as well as the Wilshire BRT Alternative (Alternative 1) would either require no construction, or would limit construction to the Wilshire ROW. Also, non-subway design option of the Exposition BRT Alternatives (2 and 2A) would avoid these impacts, and non-subway design options for the Exposition LRT Alternatives (3 and 3A) would substantially reduce the likelihood of encountering paleontological resources.

Measures that Would Minimize Harm

MTA could provide mitigation that would reduce impacts to paleontological resources to less-than-significant levels. Mitigation Measure 3.17.5 requires monitoring and scientific recovery of paleontological resources in the event that they are encountered, as well as development of a mitigation plan in consultation with the Los Angeles County Museum of Natural History Vertebrate Paleontology Section.

Coordination with Other Agencies

MTA will coordinate with the Los Angeles County Museum of Natural History Vertebrate Paleontology Section to develop an agreed-upon mitigation plan that will minimize the impacts on potential paleontological resources. The measures will be developed after consideration of all public input that is received during the circulation period of the Draft SEIS/SEIR.

5.0 FINANCIAL ANALYSIS AND COMPARISON OF ALTERNATIVES

5.1 FINANCIAL ANALYSIS

The cost of a transportation investment falls into two categories: capital costs, and operating and maintenance (O&M) costs. Capital costs are the start-up costs for the project, including the costs of guideway construction, vehicles, and any system facilities necessary before the project can begin operation. Operating and maintenance costs are the costs associated with the regular running of a new transportation facility. Costs such as labor, vehicle maintenance, and overall facility maintenance all fall into this category.

This section discusses both types of costs, and then analyzes the Metropolitan Transportation Authority (MTA's) ability to afford the alternatives.

5.1.1 Capital Costs

Capital costs are the expenses associated with design and construction and include acquisition of right-of-way, guideway and station construction, environmental mitigation and urban design, park and ride lots, vehicles, and system equipment and maintenance facilities. Capital cost estimates for the TSM and the four Exposition LRT alternatives were based on MTA historical costs with some input from actual costs of other transit projects throughout the country. Costs for the Wilshire BRT and the four Exposition BRT Alternatives were developed from historical MTA costs, where applicable, from existing projects nationwide, and from in-house engineering judgement.

A key factor in this cost estimation process has been to compare historic MTA costs to costs based on the national and local experiences of the consultant groups involved in the MIS / EIS process for the Eastside, San Fernando Valley, and Mid-City/Westside Transit Corridor Studies. Unit costs form the combined experiences of Parsons Transportation Group, Parsons Brinkerhoff Quade and Douglas, Korve Engineering, and Gruen Associates were evaluated. While in some cases these values varied slightly from those of the MTA, they did serve to verify and validate the overall cost approach used by the MTA.

The costs developed herein for each alternative were calculated using the MTA values. While these values were in some cases higher than those experienced by other consulting groups for other similar projects nationwide, they were universally applied in this report to provide continuity to previous MTA estimates.

For each of the Alternative Segments shown in Table 5-1A, the total construction cost is based on unit costs for individual line items such as Guideways, Stations, Systems, Parking Spaces, Urban Design, Maintenance Facilities, and other components of a project. Certain percentages, commonly called "soft costs" were applied to the unit costs to develop the final, total cost for an alternative. These percentages provide a way to account for costs such as Design Services, Insurance, Artwork, and Contingencies.

Table 5-1B provides the composite capital cost packaged into the project alternatives. The composite cost adds vehicles (bus and light rail) as appropriate. The amount of bus vehicles are determined by analyzing fleet size as generated by the MTA's transportation simulation model. Peak hour loads are also examined to determine the size of bus (standard, single-articulated or double-articulated) needed.

Resulting fleet sizes are compared to No Build, and unit costs (including soft costs) for standard, single-articulated or double-articulated buses are applied. Light rail vehicles for Alternatives 3 and 3A are determined by the proposed service plan and expected peak loads; once again, light rail vehicle costs include associated soft costs.

TABLE 5-1A
CONSTRUCTION COST SUMMARY (WITHOUT VEHICLES)

Alternative Segments		Description	Total Construction Cost (in 1999 Millions of Dollars)
	TSM	Wilshire/Oxford to Santa Monica	46.5
A	Wilshire BRT *(Median - running or median adjacent)*	Wilshire/Oxford to Ocean/Broadway	304.6
B	Wilshire BRT *(Curb adjacent)*	Wilshire/Oxford to Ocean/Broadway	313.7
C	Exposition BRT (FULL LENGTH)	7th/Flower to Ocean/Colorado	290.9
D	Exposition BRT (FULL LENGTH) *(Subway design option)*	7th/Flower to Ocean/Colorado (¾ Mile Tunnel at USC)	439.2
E	Exposition BRT (MOS)	7th/Flower to Venice/Robertson	128.9
F	Exposition BRT (MOS) *(Subway design option)*	7th/Flower to Venice/Robertson (¾ Mile Tunnel at USC)	277.2
G	Exposition LRT (FULL LENGTH)	7th/Flower to Ocean/Broadway	554.9
H	Exposition LRT (FULL LENGTH) *(Subway design option)*	7th/Flower to Ocean/Broadway (¾ Mile Tunnel at USC)	674.4
I	Exposition LRT (MOS)	7th/Flower to Venice/Robertson	252.8
J	Exposition LRT (MOS) *(Subway design option)*	7th/Flower to Venice/Robertson (¾ Mile Tunnel at USC)	372.3

TABLE 5-1B
CAPITAL COST COMPOSITE FOR PROJECT ALTERNATIVES

Alternative		Total Capital Cost*	Bus Vehicle Cost**	LRT Vehicle Cost	Total Project Cost (in 1999 Millions of Dollars)
	TSM	46.5	52.3	-	98.8
1	Wilshire BRT *(Baseline median - running)*	304.6	49.4	-	354.0
1a	Wilshire BRT *(Median adjacent)*	304.6	49.4	-	354.0
1b	Wilshire BRT *(Curb adjacent)*	313.7	49.4	-	363.1
2	Wilshire BRT and Exposition BRT (FULLLENGTH)	304.6 290.9	58.4	-	653.9
2	Wilshire BRT and Exposition BRT *Subway design option at USC/ Exposition Park (For Alternatives 2 , 2A, 3, and 3A)*	304.6 439.2	58.4	-	802.2
2a	Wilshire BRT and Exposition BRT (MOS)	304.6 128.9	47.4	-	480.9
2a	Wilshire BRT and Exposition BRT (MOS) *Subway design option at USC/ Exposition Park (For Alternatives 2, 2A, 3, and 3A)*	304.6 277.2	47.4	-	629.2
3	Wilshire BRT and Exposition LRT	304.6 554.9	26.6	117.8	1,003.9

TABLE 5-1B CAPITAL COST COMPOSITE FOR PROJECT ALTERNATIVES					
	Alternative	**Total Capital Cost***	**Bus Vehicle Cost****	**LRT Vehicle Cost**	**Total Project Cost (in 1999 Millions of Dollars)**
3	Wilshire BRT and Exposition LRT *Subway design option at USC/ Exposition Park* *(For Alternatives 2, 2A, 3, and 3A)*	304.6 674.4	26.6	117.8	1,123.4
3a	Wilshire BRT and Exposition LRT (MOS)	304.6 252.8	35.6	55.8	648.8
3a	Wilshire BRT and Exposition LRT (MOS) *Subway design option at USC/ Exposition Park* *(For Alternatives 2, 2A, 3, and 3A)*	304.6 372.3	35.6	55.8	768.3

* Alternatives 2, 2A, 3 and 3A use Baseline (median reconstruction) configuration for Wilshire BRT.
** Bus vehicle costs represent net change in bus fleet per transportation model runs.

Tables 5-1C, 5-1D, 5-1E and 5-1F provide a further breakdown of capital cost elements into the categories of street reconstruction/guideways and structures, stations, replacement parking, park and ride, vehicles, and storage/maintenance facilities.

TABLE 5-1C TSM ALTERNATIVE SUMMARY OF COSTS (COSTS IN MILLIONS – 1999 DOLLARS)	
Cost Category	**Cost**
Street Reconstruction (N/A)	0.00
Stations + Systemwide Equipment (N/A)	0.00
Vehicles (70 double-articulated buses offset by a reduction of 85 standard buses)	52.30
Storage/Maintenance Facility	27.50
Sub-Total	**79.80**
Replacement Parking (N/A)	0.00
Park and Ride (N/A)	0.00
Sub-Total	**0.00**
Soft Costs – Professional Services	13.34
Soft Costs – Pre-Revenue Operations/Insurance	2.89
Soft Costs – Contingency	2.75
Sub-Total	**18.98**
Total	**98.78**

TABLE 5-1D WILSHIRE BRT SUMMARY OF COSTS (COSTS IN MILLIONS – 1999 DOLLARS)			
Cost Category	**Median**	**Median Adjacent**	**Curb Adjacent**
Street Reconstruction	44.79	44.79	50.18
Stations (14) + Systemwide Equipment	33.59	33.59	33.59
Vehicles (70 double-articulated buses offset by a reduction of 71 standard buses)	49.40	49.40	49.40
Storage/Maintenance Facility	55.00	55.00	55.00
Sub-Total	**182.78**	**182.78**	**188.17**
Replacement Parking (1263 Stalls, Incl. ROW)	62.25	62.25	62.25
Park and Ride (None Required)	0.00	0.00	0.00
Sub-Total	**62.25**	**62.25**	**62.25**
Soft Costs – Professional Services	66.22	66.22	68.84
Soft Costs – Pre-Revenue Operations/Insurance	14.34	14.34	14.90
Soft Costs – Contingency	28.43	28.43	28.97
Sub-Total	**108.98**	**108.98**	**112.70**
Total	**354.02**	**354.02**	**363.13**

TABLE 5-1E WILSHIRE BRT PLUS EXPOSITION BRT SUMMARY OF COSTS (COST IN MILLIONS – 1999 DOLLARS)*	
Cost Category	**Costs**
Wilshire BRT Capital Costs*	
Street Reconstruction	44.79
Stations (14)+ Systemwide Equipment	33.59
Replacement Parking (1263 Stalls, Incl. ROW)	62.25
Park and Ride	-
Sub-Total	**140.63**
Exposition BRT Capital Costs	
Guideways and Structures	103.53
Stations (20)+ Systemwide Equipment	57.57
Park and Ride (2881 Stalls, Incl. ROW)	12.40
Sub-Total	**173.50**
Operational Capital Costs (Combined Projects)	
Vehicles (70 double-articulated buses and 49 single-articulated buses offset by a reduction of 144 standard buses)	58.40
Storage/Maintenance Facility	55.00
Sub-Total	**113.40**
Soft Costs (Combined Projects)	
Professional Services	147.84
Pre-Revenue Operations/Insurance	32.01
Contingency	46.56
Sub-Total	**226.41**
Total	**653.94**
* Costs for Median Option or Median-Adjacent Option	

TABLE 5-1F WILSHIRE BRT PLUS EXPOSITION LRT SUMMARY OF COSTS (COST IN MILLIONS – 1999 DOLLARS)*	
Cost Category	**Costs**
Wilshire BRT Capital Costs*	
Street Reconstruction	44.79
Stations (14)+ Systemwide Equipment	33.59
Replacement Parking (1263 Stalls, Incl. ROW)	62.25
Park and Ride	-
Sub-Total	**140.63**
Exposition LRT Capital Costs	
Guideways and Structures	124.06
Stations (14)+ Systemwide Equipment	181.96
Park and Ride (3493 Stalls, Incl. ROW)	16.93
Sub-Total	**322.95**
Operational Capital Costs (Combined Projects)	
Vehicles (70 double-articulated buses offset by a reduction of 119 standard buses plus 38 light rail vehicles)	144.40
Storage/Maintenance Facilities	62.50
Sub-Total	**206.90**
Soft Costs (Combined Projects)	
Professional Services	222.52
Pre-Revenue Operations/Insurance	48.18
Contingency	62.71
Sub-Total	**333.41**
Total	**1,003.89**
* Costs for Median Option or Median-Adjacent Option	

5.1.2 Operating and Maintenance Costs

Operating and Maintenance (O&M) costs were determined using the MTA's O&M cost model. This cost model was developed to estimate O&M costs for MTA's bus, Blue Line, Green Line, and Red Line operating modes, as well as support department costs related to operations. Even though MTA operating costs have been used for purposes of analysis in this section, no determination has been made about who would operate any such new service. Either MTA or other municipal operators could provide all or parts of this new service.

The MTA O&M cost model estimates staffing requirements, labor costs, and non-labor expenses by transit mode (i.e., Motor Bus, Blue Line, Green Line, Red Line) and department within each mode. The model is calibrated to MTA's fiscal year (FY) 1998-99 Adopted Budget[1]. Overhead costs are allocated to the transit modes based on the allocations made for MTA's Adopted Budget. The model uses operating characteristics (e.g., peak vehicles, number of stations, passengers) to determine future costs. As future operating plans change (e.g., new rail lines are constructed), costs change accordingly.

1 Los Angeles County Metropolitan Transportation Authority. Fiscal 1998-1999 Adopted Budget. June 1998.

The model meets Federal Transit Administration (FTA) guidelines[2] for estimating operating costs. These guidelines specify that:

- Costs are computed by estimating labor and materials needed to provide a given level of service, and then unit costs are applied to the estimated future labor and material cost items;
- Costs are calculated based on operating characteristics for each mode (e.g., Red Line train hours), rather than for all modes combined (e.g., systemwide passengers);
- Each reported labor and non-labor expense is calculated separately, which ensures that equations are mutually exclusive and cover all operating costs; and
- Most cost items are variable, meaning that cost estimates will change with projected changes in service.

The model calculates costs separately for each labor and non-labor item in MTA's FY 1999 budget. The driving variables used in the O&M cost model are presented in Table 5-2 below.

TABLE 5-2
O&M COST MODEL VARIABLES

Input Statistic	MTA Bus	Rail Modes
Annual Boardings (Unlinked Passengers)	X	X
Peak Vehicles	X	X
Active Fleet Vehicles	X	X
Operating Divisions	X	X
Annual Revenue Bus/Car Miles	X	X
Annual Revenue Bus/Train Hours	X	X
Contract/BDOF Service Hours	X	
Route Miles		X
Elevated Stations	X	X
At-Grade Stations	X	X
Subway Stations	X	X
Total Stations		X
Automated Operation (Green Line)		X

For each alternative, O&M costs were calculated for the entire MTA system of bus, Red Line, Green Line and Blue Line service.

If service provided by another municipal operator is affected, incremental service statistics such as annual revenue vehicle miles, annual revenue vehicle hours, and fleet size are reported based on output from the MTA transportation simulation model. Three other operators besides MTA are affected by proposed modifications to transit service for this study corridor: Los Angeles Department of Transportation (LADOT), Santa Monica Municipal Bus Lines, and Culver City Municipal Bus Lines. Service statistics for these operators are provided in Technical Report, Volume 1. For purposes of accounting for these changes in the overall O&M cost, incremental annual revenue vehicle hours are multiplied by the municipal operator's operating expense per revenue vehicle hour as reported in the 1998 National Transit Database. To adjust these hourly costs to 1999 dollars, a 3 percent inflation factor is used.

2 Federal Transit Administration. Procedures and Technical Methods for Transit Project Planning (Supplement). U.S. Department of Transportation, February 1993.

The total annual O&M cost for MTA service is $842 million for the 2020 No Build[3] condition. Table 5-3 reports incremental costs over No Build, as well as incremental costs over Transportation System Management (TSM), for MTA and other municipal operator services.

The incremental operating cost of about $5 million is needed to establish the improved service defined in the TSM Alternative. Another $2 million or so is needed for services directly related to the Wilshire BRT (Alternatives 1, 1A or 1B). Adding the Exposition BRT leads to another $11 million in annual operating costs. The highest incremental operating costs occur if Exposition LRT is added, leading to about $20 million in additional annual operating costs over Wilshire BRT.

For the other municipal operators, the assumed service plans at most add under $2 million in annual operating costs for LADOT or Culver City. Santa Monica Municipal Bus Lines potentially can enjoy operating savings especially when full Exposition routes are introduced, since it allows the opportunity to cut back or eliminate its express service to downtown Los Angeles. Details of assumed route modifications and service levels are provided in Technical Report, Volume 1. Of course, the actual implementation of these assumed route modifications is at the discretion of each individual operator.

TABLE 5-3
INCREMENTAL ANNUAL OPERATING AND MAINTENANCE COSTS OF PRELIMINARY ALTERNATIVES (IN 1999 $ MILLIONS)

Alternative	Cost over No Build	Cost over TSM
Transportation System Management (TSM)	**$4.9**	**N/A**
MTA	$6.8	
LADOT	$0.8	
Santa Monica Municipal Bus Lines	-$3.7	
Culver City Municipal Bus Lines	$1.0	
1, 1a, 1b. Wilshire BRT	**$6.9**	**$2.0**
MTA	$8.8	$2.0
LADOT	$0.8	$0.0
Santa Monica Municipal Bus Lines	-$3.7	$0.0
Culver City Municipal Bus Lines	1.0	$0.0
2. Wilshire BRT + Exposition BRT	**$17.4**	**$12.5**
MTA	$21.5	$14.7
LADOT	$0.7	-$0.1
Santa Monica Municipal Bus Lines	-$6.6	-$2.8
Culver City Municipal Bus Lines	$1.8	$0.8
2a. Wilshire BRT + Exposition BRT Minimum Operating Segment (MOS)	**$14.7**	**$9.8**
MTA	$15.9	$9.1
LADOT	$0.7	-$0.1
Santa Monica Municipal Bus Lines	-$3.7	$0.0
Culver City Municipal Bus Lines	$1.8	$0.8
3. Wilshire BRT + Exposition LRT	**$27.5**	**$22.6**
MTA	$31.1	$24.2
LADOT	$1.2	$0.4
Santa Monica Municipal Bus Lines	-$6.6	-$2.8

[3] Mid-City/Westside Transit Draft and EIS/EIR refers to "No Build" as the No Action Alternative. For the purposes of this section No Build and No Action Alternative will be used interchangeably.

TABLE 5-3 INCREMENTAL ANNUAL OPERATING AND MAINTENANCE COSTS OF PRELIMINARY ALTERNATIVES (IN 1999 $ MILLIONS)		
Alternative	**Cost over No Build**	**Cost over TSM**
Culver City Municipal Bus Lines	. $1.8	$0.8
3a. Wilshire BRT + Exposition LRT Minimum Operating Segment (MOS)	**$24.0**	**$19.0**
MTA	$24.7	$17.9
LADOT	$1.2	$0.4
Santa Monica Municipal Bus Lines	-$3.7	$0.0
Culver City Municipal Bus Lines	$1.8	$0.8

5.1.3 Financial Capability to Build and Operate

MTA has used its financial forecasting model for Los Angeles County to assess the financial feasibility of the Mid-City/Westside corridor alternatives. This financial model is the tool used to project all capital and operating costs and revenues for all transportation modes in Los Angeles County from FY 2000 through FY 2025.

In a document submitted to the FTA (Section 5309 submittal, July 2000), the MTA provided detailed analysis from the financial forecasting model to establish the ability to fund projects in the Mid-City/Westside, San Fernando Valley, and Eastside corridors of Los Angeles County. The No Build scenario was modeled to provide a baseline for the build alternatives. Initial No Build scenario financial results indicated significant but manageable operating shortfalls could occur in FY 06 through FY 09 if no further actions are taken by the MTA. A $438 million operating deficit, or 3.3% of the total MTA operating budget of $13.2 billion, was projected for the period FY 2000-2010. This deficit is expected to be largely addressed through a number of cost reduction strategies, which is projected to essentially balance the No Build scenario to within 0.5% of the overall operating budget. This balanced plan provides a basis for analyzing the financial impacts of introducing the three corridor projects.

The model includes revenues from the State Traffic Congestion Relief Plan (AB 2928) and FTA 5309 New Starts funds, which are expected to provide 80% of the capital funding, needed for the capital costs of the corridors. The balance of the capital funding plan for these projects will come from committed flexible federal funds (CMAQ and RSTP) and local half-cent sales tax funds. The funding plan for the projects is stable and reliable given the commitments of funding recently realized. The financial analysis indicates that funding is available to complete the Wilshire BRT alternative for the Mid-City/Westside so that operations can begin as soon as FY 2005.

The combined impacts of the San Fernando Valley, Mid-City/Westside and Eastside projects lead to a projected operating deficit of $151.2 million for the FY 2004-FY 2010 period, if no further actions are taken to balance the operating plan. The most challenging shortfalls are projected to occur in FY 2007, FY 2008, and FY 2009.

MTA has established a Cost Reduction Team whose goal is to reduce bus and rail hourly operating costs. The strategies developed by the team will be phased-in beginning in FY 2005 to reduce hourly operating costs by one dollar per year for six years, for a total of six dollars per hour in 2010. This cost reduction plan will achieve the $151.2 million system wide savings needed to ensure a balanced operating plan with the three corridor projects.

The twenty-year cash flows indicate that MTA has the financial capacity to build and operate the Wilshire BRT project while continuing the operation and maintenance of the entire regional transit system. Table 5-3A lists the anticipated source of capital funds and the expected amount for the Mid-City/Westside project as adopted by the MTA. Under this plan, the majority of funds (76%) come from State sources, with 23% expected from FTA Section 5309 New Starts funding. The remainder is provided by local funding (1%).

TABLE 5-3A
PROPOSED FUNDING PLAN FOR MID-CITY/WESTSIDE TRANSIT PROJECT

Funding Source	Amount (millions)	Total (millions)
FTA Section 5309 New Starts	$78.6	
Subtotal Federal Sources		$78.6 (23%)
Traffic Congestion Relief Program	$256.0	
State Regional Improvement Funds (AB 1012)	$2.5	
Subtotal State Sources		$258.5 (76%)
Proposition C 40%	$3.2	
Subtotal Local Sources		$3.2 (1%)
TOTAL (ALL FUNDING SOURCES)	**$340.3**	**$340.3 (100%)**

Note: Project costs as submitted in Section 5309 report; represented Westside project is Wilshire BRT Alternative 1/1a.

Since the submittal of the Section 5309 report, refinements have been made to the capital cost of the baseline Wilshire BRT alternative. In addition, other variations to the baseline Wilshire BRT alternative potentially increase the project costs reflected in the Section 5309 submittal (e.g., a curbside BRT lane rather than a median BRT lane). These modifications would affect the Section 5309 analysis by up to $23 million. The MTA anticipates an annual allocation ranging between $60-$75 million for the Section 5309 New Starts Program. A bridge loan or other financial instrument may become necessary in the event that the annual appropriations fall short of expected expenditures. Within the preliminary 5309 report submitted in July 2000, such financial adjustments were discussed and shown, including preliminary construction cash flows for the three corridors, and specifically the Wilshire BRT project. Such proposals would certainly be considered affordable well within the year 2020 planning horizon and funding capacities.

Beyond the Wilshire BRT project in the Mid-City/Westside Corridor, further financial capacity exists to fund another project such as one of the Exposition alternatives. Such a project is anticipated to be partially funded with federal New Starts funds. The MTA's Section 5309 submittal establishes that an Exposition BRT or LRT project with a capital cost of $300 million can be built from FY 2009 through FY 2013, and an additional operating cost of nearly $18 million annually can be supported. These incremental capital and operating costs are adequate for the Exposition BRT (full length or MOS) alternative, and the Exposition LRT MOS alternative.

The MTA has estimated that over $12 billion in unallocated funding is available over the life of its Long Range Financial Plan between the years 2010 and 2025. This amount is certainly adequate to fund any of the alternatives examined in this document. Selection of any alternative, which requires funding beyond the financial analysis outlined in the Section 5309 submittal, would need to be integrated into the MTA's Long Range Plan, since it would commit funds that could otherwise be considered for other projects.

5.2 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section provides a variety of measures to evaluate and compare the alternatives under study. These measures are consistent with the FTA guidelines for assessing major investments.[4] Enactment of the Transportation Equity Act for the 21st Century (TEA-21) in 1998 requires that FTA evaluate and rate candidate New Starts projects as the basis for approving projects for federal funding. Table 5-4 summarizes the indices included in this section.

TABLE 5-4
COMPARATIVE ANALYSIS OF ALTERNATIVES

Analysis Category	Measures
Effectiveness in Improving Mobility	Ridership
	Travel Time Comparison
	Travel Time Savings
Cost-Effectiveness	Annualized Cost per New Daily Transit Trip
Operating Efficiencies	Operating Cost per Passenger Mile
Equity	Discussion of Demographic Factors

Other analysis for FTA measures related to air quality and transit supportive land use can be found in Section 3.8 (Air Quality) and Section 3.4 (Land Use/Neighborhoods and Communities). This chapter ends with a synthesis of trade-offs between the alternatives.

5.2.1 Effectiveness in Improving Mobility

Various elements serve as indicators of improved mobility. Ridership describes the amount of people using the project alternative, as estimated through a transportation demand model. A travel time comparison of average speeds and overall travel times provide an understanding of how the transit alternatives perform during an average trip between two points. Travel time-savings assesses the annual hours of time saved from both transit and automobile users as a result of the project.

Ridership

For all project alternatives, ridership is a function of travel time and cost. All else being equal, the faster technologies attract more riders. Longer segments have higher ridership because they serve a larger area, incorporate more stations, and potentially reduce transfers. Alignment choice also affects ridership, as does the amount of delay at intersections, which is affected by the amount of signal priority that can be assumed for an alternative.

Ridership has been estimated for each alternative through the MTA's travel simulation model, based on the forecast year 2020. Individual model runs were performed for the following scenarios:

- No Action (Baseline)
- TSM
- Wilshire Bus Rapid Transit (Baseline Medium-Running)

[4] *Technical Guidance on Section 5309 New Criteria*, Federal Transit Administration Office of Planning, July 1999.

- Wilshire BRT + Exposition Bus Rapid Transit (Full Length)
- Wilshire BRT + Exposition BRT (MOS)
- Wilshire BRT + Exposition Light Rail Transit (Full Length)
- Wilshire BRT + Exposition LRT (MOS)
- Exposition BRT
- Exposition LRT

The final two ridership runs for Exposition BRT and Exposition LRT independently (without Wilshire BRT) do not correspond with alternatives provided in this document since all alternatives being studied include the Wilshire BRT. However, these model runs were performed to provide a worst-case condition for evaluating environmental impacts along the Exposition route.

The projected ridership for each alternative is shown on Table 5-5 below. The "boardings" column represents the number of passengers expected to use the system *within* the study area, that is, board and disembark at stations constructed as part of the Mid City- Westside Transit Corridor Project. While boardings give an indication of transit activity, these numbers should not be used in trying to assess how many more riders are attracted to transit since a single rider may need to transfer one or more times, accounting for more than one boarding to complete a single trip. The "new transit riders" column is the appropriate measure for determining the number of additional riders, since this measure deals with "linked" (end-to-end) trips. New transit riders are reported for each alternative as increments over the No Action and TSM alternatives, per FTA guidelines.

TABLE 5-5
RIDERSHIP IN FORECAST YEAR 2020

Alternative	Daily Fixed Guideway Boardings*	Incremental Linked Trips (Daily)	
		To No Action	To TSM
TSM	N/A	1,100	N/A
1, 1a, 1b. Wilshire BRT	39,600	12,200	11,100
2. Wilshire BRT and Exposition BRT	36,300 Wilshire BRT 29,000 Exposition BRT	19,500	18,400
2a. Wilshire BRT and Exposition BRT (MOS)	36,400 Wilshire BRT 20,500 Exposition BRT	18,500	17,400
3. Wilshire BRT and Exposition LRT	32,500 Wilshire BRT 51,400 Exposition LRT	27,200	26,100
3a. Wilshire BRT and Exposition LRT (MOS)	38,300 Wilshire BRT 27,200 Exposition LRT	15,600	14,500

*BRT boardings on BRT facility only (does not include "tails" of feeder routes).
Note: A peak-hour only BRT, discussed as a mitigation of impacts associated with replacement parking (see Section 3.2), would capture roughly 50% of the estimated new transit riders of an all-day service BRT.

There is a very modest increase in ridership for the TSM alternative. The TSM alternative contained some assumptions to improve efficiency in the Westside by cutting back less productive routes and supplementing more productive routes. Only a modest amount of service was added on the Wilshire rapid bus; its frequency of service was limited by the time spacing needed to retain the ability to grant transit priority at intersections.

This frequency of service is maintained for the Wilshire BRT model run (representing Alternatives 1, 1a and 1b), so the increase in ridership over TSM is due to the improved transit facility and travel time.

While the differences in configuration for the Wilshire BRT lane may lead to variations in travel time (and therefore ridership) between Alternatives 1, 1A, and 1B, for purposes of this study a single model run was performed to represent any version of the Wilshire BRT.

Since the Wilshire BRT is incorporated in all build alternatives, any alternative which adds service on the Exposition route will lead to higher ridership than Wilshire BRT alone. Therefore, Alternatives 2, 2A, 3 and 3A all lead to more incremental linked trips than the Wilshire BRT alone. Alternative 3 (Wilshire BRT and Exposition LRT) has the greatest potential to attract new riders, with 27,200 daily added trips. This is substantially higher than the Wilshire BRT alternative alone or with the Exposition BRT alternatives.

In comparing Exposition MOS alternatives, the BRT MOS provides greater new ridership than the LRT MOS. This is because the service plan on the Exposition BRT MOS is largely intact, since many of the routes feeding the Exposition BRT are unaffected by the segmentation. In contrast, the Exposition LRT MOS by definition must terminate its rail service at Venice Boulevard/Washington Boulevard and depend on transit transfers (or drive access) for the remaining portion of the route.

It should be noted that the ridership figures for alternatives with a project on the Exposition route (i.e., Alternatives 2, 2A, 3 and 3A) incorporate the benefits of Wilshire BRT plus the Exposition alternative. Ridership for an Exposition alternative alone cannot be derived by merely subtracting out Wilshire BRT ridership as reported under Alternative 1. To understand the independent impacts of an Exposition project without Wilshire BRT, separate model runs were performed for the full Exposition BRT and full Exposition LRT. These showed 11,600 and 17,200 incremental daily linked trips respectively.

Travel Time Comparison

Table 5-6 compares the runtimes, average speed, and headways for the project build alternatives. This table provides a direct comparison of these selected service characteristics as described in Chapter 2.

TABLE 5-6
COMPARISON OF TRAVEL TIME CHARACTERISTICS

Alternative	Total Runtime Downtown SM-LA	Average Speed	Peak period, Base Headways (minutes)
1, 1a, 1b. Wilshire BRT (downtown Santa Monica to 5th/Grand)	58-60 minutes	20-23 mph on busway segment	3, 6.6
2. Wilshire BRT and Exposition BRT (downtown Santa Monica to 7th/Flower)	47 minutes (all-stop) 39 minutes (skip-stop)	21 mph (all-stop) 26 mph (skip-stop)	5, 10 (all-stop) 10, 0 (skip-stop)
3. Wilshire BRT and Exposition LRT (downtown Santa Monica to 7th/Flower)	42 minutes	24 mph	5, 12

Alternatives 2 and 3 list service characteristics for Exposition alternatives only; Wilshire BRT service characteristics in these alternatives are identical to the description for Alternative 1: Wilshire BRT. Alternative 2 describes characteristics of end-to-end routes; the service plan also involves rerouting portions of other MTA and LADOT routes onto the busway.

The quickest end-to-end trips between Santa Monica and downtown Los Angeles are provided by the Exposition LRT service and the Exposition BRT "skip-stop" route which serves selected stations only. The Wilshire BRT alternatives' travel times are hampered east of Western Avenue, since there is no exclusive bus lane and buses proceed similarly to how rapid buses currently travel on mixed-flow lanes. (The Wilshire BRT alternatives also have a different endpoint in downtown Los Angeles than the Exposition routes.) The ranges expressed for Alternatives 1, 1A and 1B reflect potential travel time variations since Alternatives 1A and 1B may be slower due to potential conflicts with left-turning and right-turning vehicles, respectively.

Travel Time Savings

This measure is defined as the total travel time savings that are expected to result from the Build Alternative in the forecast year (2020), compared to both the No Action and TSM alternatives. This aggregate value includes travel time savings for people making trips on transit (both new and existing transit riders) as well as savings that accrue to people using competitive modes (automobile users). This measure is calculated using reported values from the MTA's transportation simulation model, summarized in Table 5-7.

TABLE 5-7
VALUE OF TRAVEL TIME SAVINGS

Build Alternative	Total Annual Change (Millions of Hours)	
	Annual Savings to No Build	Annual Savings to TSM
1, 1A, 1B: Wilshire BRT (All 3 Alternatives)	1.2	0.9
2: Wilshire BRT and Exposition BRT (Full Length)	1.8	1.5
2A: Wilshire BRT and Exposition BRT (MOS)	1.8	1.5
3: Wilshire BRT and Exposition LRT (Full Length)	2.2	2.0
3A: Wilshire BRT and Exposition LRT (MOS)	1.5	1.2

Once again, since Alternatives 2 and 3 incorporate the Wilshire BRT project, travel time savings are greater than what is achieved by the Wilshire BRT project alone. Alternative 3, Wilshire BRT and Exposition LRT, provides the greatest potential for travel time savings.

5.2.2 Cost-Effectiveness

Cost-effectiveness is a measure used to evaluate how the costs of a transit project (for both construction and operation) compare to the expected benefits (increased transit ridership).

The FTA's cost effectiveness criterion is measured by the incremental cost per incremental passenger in the forecast year. This measure is based on the annualized total capital investment and annual operating costs, divided by the change in annual transit system ridership, expressed as the following equation:

$$\text{Cost Effectiveness Index} = \frac{\Delta\text{Capital Cost} + \Delta\text{O\&M Cost}}{\Delta\text{Linked Transit Trips}}$$

The smaller the index, the more cost-effective the project alternative. Consistent with FTA requirements, cost-effectiveness for each alternative is measured against the No Action and TSM alternatives.

To calculate the change in capital cost, project costs discussed in Section 5-1.1 were aggregated according to their assumed useful life and annualized accordingly, using FTA annualization factors shown in Table 5-8:

TABLE 5-8 LIFE CYCLE ASSUMPTIONS		
Project Element	**Useful Life**	**Annualization Factor**
Right-of-way	100 years	0.070
Structures, trackwork, signals, electrification	30 years	0.081
Rail vehicles	25 years	0.086
Buses	12 years	0.126
Source: Technical Guidance on Section 5309 New Starts Criteria, FTA, July 1999.		

Annual operating and maintenance costs were calculated using the approach described in Section 5-1.2. The change in linked transit trips for the forecast year 2020 was determined using the MTA travel forecasting model.

Table 5-9 and Table 5-10 summarize the data used in the calculation of the cost-effectiveness index, and the resulting incremental cost per incremental passenger is shown in Table 5-11.

TABLE 5-9 COST-EFFECTIVENESS CALCULATION: INCREMENTAL VALUES OVER NO BUILD			
Alternative	**Annualized Capital Cost (millions)**	**Annual O&M Cost (millions)**	**Annual Linked Trips (millions)**
Transportation System Management (TSM)	$10.35	$4.89	0.35
1. Wilshire BRT (Baseline Median-Running)	$31.14	$6.89	3.85
1A. Wilshire BRT (Median-Adjacent)	$31.14	$6.89	3.85
1B. Wilshire BRT (Curb Adjacent)	$31.92	$6.89	3.85
2. Wilshire BRT and Exposition BRT(Full Length)	$56.99	$19.42	6.16
2A. Wilshire BRT and Exposition BRT (MOS)	$41.60	$14.67	5.24
3. Wilshire BRT and Exposition LRT(Full Length)	$84.04	$29.50	8.58
3A. Wilshire BRT and Exposition LRT (MOS)	$54.76	$23.99	4.92

TABLE 5-10 COST-EFFECTIVENESS CALCULATION: INCREMENTAL VALUES OVER TSM			
Alternative	**Annualized Capital Cost (millions)**	**Annual O&M Cost (millions)**	**Annual Linked Trips (millions)**
1. Wilshire BRT (Baseline Median-Running)	$20.79	$2.00	3.51
1A. Wilshire BRT (Median-Adjacent)	$20.79	$2.00	3.51
1B. Wilshire BRT (Curb Adjacent)	$21.57	$2.00	3.51
2. Wilshire BRT and Exposition BRT (Full Length)	$46.64	$14.53	5.81
2A. Wilshire BRT and Exposition BRT (MOS)	$31.25	$9.78	5.48
3. Wilshire BRT and Exposition LRT (Full Length)	$73.69	$24.61	8.23
3A. Wilshire BRT and Exposition (LRT MOS)	$44.41	$19.10	4.57

TABLE 5-11
COST-EFFECTIVENESS OF BASELINE ALTERNATIVES: ANNUALIZED COST PER NEW DAILY TRANSIT TRIP

Alternative	Over No Build	Over TSM
Transportation System Management (TSM) Alternative	$43.80	N/A
1. Wilshire BRT (Baseline Median-Running)	$9.90	$6.50
1A. Wilshire BRT (Median-Adjacent)	$9.90	$6.50
1B. Wilshire BRT (Curb Adjacent)	$10.10	$6.70
2. Wilshire BRT and Exposition BRT	$12.40	$10.50
2A. Wilshire BRT and Exposition BRT MOS	$9.70	$7.50
3. Wilshire BRT and Exposition LRT	$13.20	$11.90
3A. Wilshire BRT and Exposition LRT MOS	$16.00	$13.90

The most cost-effective alternatives are those which yield a high number of new riders at a low incremental cost. Compared to No Action, the Wilshire BRT alternatives (1, 1A and 1B) and Alternative 2A (Wilshire BRT and Exposition BRT MOS) all have very efficient cost-effectiveness measures at under or around $10 per added rider. Alternative 2 (Wilshire BRT and Exposition BRT) and Alternative 3 (Wilshire BRT and Exposition LRT) also have well-performing cost-effectiveness measures at about $12 and $13 per added new rider, respectively. Finally, Alternative 3A (Wilshire BRT and Exposition LRT MOS) follows closely behind at $16 per added rider.

The TSM Alternative shows a very high cost per added rider over No Action, because capital cost improvements under this alternative (converting the Wilshire rapid bus fleet to double-articulated vehicles and providing corresponding room in a maintenance facility) do not increase ridership as much as give more riders a seat. (Under No Action, there are unacceptable passenger loads for Wilshire rapid bus service.) While this is a significant improvement in the quality of transit service, it does not get reflected in this measure.

The cost-effectiveness of alternatives compared to TSM generally follow the same relationship as No Action, with lower costs per added rider by $2 to $3.50. The Wilshire BRT alternatives (1, 1A and 1B) remain the most effective at under $7 per added rider, followed by Alternative 2A (Wilshire BRT and Exposition BRT MOS) at $7.50 per added rider.

Cost-effectiveness calculations were also completed for the subway design options for the alternatives involving the Exposition right-of-way. The subway sections for the Exposition BRT and LRT options tend to add about $2.00 to the cost per added rider. Results are summarized in Table 5-12 below:

TABLE 5-12
COST-EFFECTIVENESS OF ALTERNATIVES WITH SUBWAY DESIGN OPTIONS: ANNUALIZED COST PER NEW DAILY TRANSIT TRIP

Alternative	Over No Build	Over TSM
2. Wilshire BRT and Exposition BRT with subway section	$14.40	$12.60
2A. Wilshire BRT and Exposition BRT MOS with subway section	$11.70	$9.70
3. Wilshire BRT and Exposition LRT with subway section	$14.40	$13.10
3A. Wilshire BRT and Exposition LRT MOS with subway section	$18.00	$16.00
Note: Wilshire BRT uses Alternative 1 (baseline) definition.		

5.2.3 Operating Efficiency

The FTA uses a single measure for the Operating Efficiencies criterion, which is change in operating cost per passenger mile for the entire regional transit system. The basic calculation involves dividing the system annual operating cost for transit service by the system annual passenger-miles projected for the year 2020. Calculation of the total transit operating costs is discussed under Section 5-1.2, (Operations and Maintenance Costs). System annual passenger-miles are produced from the MTA transportation model.

It should be noted that operating costs were based on adjusting model output statistics so that modeled statistics for 1998 are similar to existing MTA operations in 1998. Passenger-miles (which are not needed for the O&M model) remain unadjusted so it is likely that the cost per passenger-mile should be higher for all alternatives. Regardless, the relative standing of all alternatives should be the same. Table 5-13 presents the operating cost per passenger mile.

TABLE 5-13
OPERATING COST PER PASSENGER MILE

Alternative	Operating Cost per Passenger Mile
No Action	$0.31
TSM	$0.32
1, 1A, 1B. Wilshire BRT	$0.31
2. Wilshire BRT and Exposition BRT(Full Length)	$0.32
2A. Wilshire BRT and Exposition BRT(MOS)	$0.32
3. Wilshire BRT and Exposition LRT (Full length)	$0.32
3A. Wilshire BRT and Exposition LRT(MOS)	$0.32

This measure leads to small distinctions between alternatives, since operations associated with these projects are dwarfed when incorporated in operations of the countywide transit system.

5.2.4 Equity

For purposes of this analysis, and consistent with the Reference Manual, National Transit Institute Training Program for Major Investment Studies (National Training Institute and Parsons Brinckerhoff Quade & Douglas, 1995), equity refers to the relative relationship of costs and benefits for a project alternative. Equity considerations generally fall into three interrelated classes: (1) the extent to which the transportation investments improve transportation service to various population segments (i.e., the extent to which transit improvements benefit the transit dependent); (2) the distribution of project costs across the population through the funding mechanisms used for the local contribution for construction and operation; and (3) the incidence of significant environmental impacts.

All of the analysis conducted for the Mid-City/Westside Transit Corridor Project, including the Re-Evaluation/Major Investment Study Report (MTA, 2000), as well as the Purpose and Need, Environmental Justice, and Socioeconomics section of this document, indicate that the study area warrants a significant investment for transit investments, as supported by the following facts:

- **The Need for Transit Improvements has been Established in Previous Studies.** Providing high-capacity transit service improvement has been long recognized in the Mid-City/Westside Area. Since the 1970's, the LACMTA and its predecessors (SCRTD, LACTC) have conducted numerous transportation planning and environmental impact studies that established the need and feasible locations for either bus, light rail and/or heavy rail east-west service in various parts of the study area.

- **Study Area Contains A Major Concentration of Activity Centers and Destinations.** The area contains the largest concentration of major activity centers and destinations within the Los Angeles metropolitan region. Many of these centers are located within the most congested portion of the study area north of the Santa Monica Freeway (I-10) and east of the San Diego Freeway (I-405).
- **The "Centers Concept" Land Use Policy is Transit Based.** Land use policies in the Los Angeles metropolitan region have traditionally been founded upon the framework that access to major activity centers would be facilitated through a network of transit connections. The recently completed Los Angeles General Plan Framework reinforced this concept as a continuing policy framework for the City of Los Angeles. New growth is planned and encouraged to occur only in areas that are served by transit.
- **There is an Existing Concentration of Transit Supporting Land Uses.** The existing activity centers in the study area are a central part of a large concentration of land uses that are considered to be transit supporting (high-density housing, commercial and retail). In fact, roughly 30 percent of the land area within the study area falls into this category. Patterns of transit supporting land uses are concentrated along the Santa Monica Boulevard/Wilshire Boulevard corridors. A lesser concentration is evident along a southern oriented Venice Boulevard corridor.
- **High Study Area Population and Employment Densities Support Transit.** Population and employment densities in the study area are the highest within the metropolitan region, averaging approximately 13,883 persons per square mile and 9,167 employees per square mile.
- **There is a History of Transit Usage in the Study Area.** Existing transit usage within the study area is proportionally higher than any other area in Los Angeles County (13.64 percent for the study area versus 6.8 percent for the County). Because there is a large base of existing transit service and transit patrons, increasing the transit mode share through increased service would represent a natural extension of existing patterns and trends.
- **There is a Significant Transit Dependent Population in the Study Area.** Part of the underlying reason for high transit usage in the study area is that a significant number of households do not own an automobile and have low incomes. According to the 1990 Census, approximately 18.33 percent of households did not have a vehicle compared to 10.90 percent for the County. The majority of these households are concentrated in the eastern and northeastern portion of the study area. In addition, in 1990, 20.91 percent of the population of the study area was below poverty status compared to 14.76 percent in the County.
- **The Study Area Is Expected to Continue to Capture a Large Share of Regional Population and Employment Growth.** Population and employment forecasts to the year 2020 adopted by the Southern California Association of Governments clearly suggest that the study area will capture a large share of growth over the next 20 years. This growth will place further demands on transit service and well as result in increasing congestion on local roadways and regional highways serving the study area.
- **Continued Growth in the Business Services Sector (Entertainment and Media Related) Underlies the Future Development Potential in the Study Area.** Growth in the study area will continue to be fueled by the fact that entertainment and media-related businesses are concentrating in the western part of the corridor. Currently, the study area is the center of approximately 1/3 of

all new office construction underway in LA County, which makes it the largest office market in Los Angeles. Real estate analysts expect that the demand for production and creative spaces will continue to be robust. The industries and businesses that are attracted to the study area are those that are expected to be the foundation of the local and regional economy for many years into the future.

- **There are Substantial East-West Travel Patterns that are Not Currently Served by a High Capacity Transit System.** Travel patterns currently indicate that the study area is a primary attraction for work trips with origins in the West and East San Fernando Valleys. A simplified "spider network" of travel patterns derived from origin-destination data in the LACMTA Travel Model suggests north-south travel patterns from the San Fernando Valley convert to east-west demand within the study area. The spider network for 1997 and 2020 conditions both indicate there is strong east-west travel demand along major east-west corridors: Santa Monica Boulevard, Wilshire Boulevard, Santa Monica Freeway and Exposition/Venice Boulevards. None of these corridors are currently served by a high capacity transit system.
- **Peak Hour Congestion on Study Area Roadways Underlies Need for Transit Improvements.** There is substantial peak hour congestion in the northern portion of the study area. Vehicular travel to the East and West San Fernando Valleys must ultimately pass through the Sepulveda or Cahuenga passes. Access patterns to these routes are congested during the peak travel hours as motorists attempt to pass northward at either the western or eastern ends of the study area.
- **Local Policies are Oriented Toward Demand Management and Transit Solutions rather than on Physical Roadway Improvements.** Because of the level of buildout and density within the study area, local jurisdictions have generally determined through their local policies that congestion relief improvements should focus on travel demand management rather than on physical improvements such as widening and new roadways. In a number of cases, local communities desire to eliminate cut through and neighborhood traffic or to support more livable downtown or commercial areas, are supporting initiatives to limit roadway capacity or further slow traffic flow; thus leaving transit improvements as one of the only viable remaining alternatives to reduce traffic volumes and congestion-related delays.

With respect to cost-effectiveness, which is a measure used to evaluate how the costs of a transit project (for both construction and operation) compare to the expected benefits (increased transit ridership), the financial analysis indicates that the Wilshire BRT and Wilshire BRT and Exposition BRT MOS have a very efficient cost-effectiveness measure of approximately $9 per added rider (as compared to the No Action Alternative). Wilshire BRT and Exposition BRT and Wilshire BRT and Exposition LRT also have a well-performing cost-effectiveness measure of about $12, and $13 per added new rider, respectively. Finally, Wilshire BRT and Exposition LRT MOS follows closely behind at a little over $15 per added rider. Only the TSM Alternative shows a very high cost per added rider over the No Build Alternative, primarily due to the capital costs (converting the Wilshire Rapid Bus fleet to double-articulated vehicles and providing corresponding room in a maintenance facility) do not increase ridership as much as give more riders a seat. While this is a significant improvement in the quality of transit service, it does not reflect well in the cost-effectiveness measure. In summary, all of the alternatives that were evaluated in either the EIS/EIR or as part of the transportation modeling and financial analysis perform well with respect to cost-effectiveness. With respect to environmental impacts, particularly as they could disproportionately affect high minority and low income populations, the Wilshire route has several station locations that contain high concentrations of minority and low-income populations; however, the Corridor as a whole contains less than 33% minority and low-income households. Because the percentage of minority and low-income populations is below 33% (with a minority population of 30% and a low-income population of 25%), infrastructure and environmental impacts associated from the proposed Wilshire BRT Alternative is not anticipated to disproportionately affect low-income or minority populations in close proximity to the project area. Therefore, the impacts are not considered significant to low-income and minority households.

The majority of the Census Block Groups identified as high minority and low income overlap within the Exposition route, indicating distinct patterns of correlation and possible disproportionality with regard to minority populations and low-income populations and their socioeconomic conditions. As a whole, the Exposition Corridor contains a large low-income and minority population, specifically concentrated near the stations located between 7th/Flower Street and La Cienega Boulevard.

Because the Exposition Corridor contains a disproportionately high concentration of both low-income and minority households, the physical and environmental impacts associated with the proposed alternatives using the Exposition Corridor would disproportionately effect those households. Evaluation of the possible MTA transit routes was based largely on lands owned by the MTA. The right-of-way (ROW) proposed for use with the Exposition alternatives is currently owned and operated by the MTA and allows the alternatives to be fiscally feasible. Public transportation projects are beneficial to low-income households because of the reliance those individuals have on public transit for mobility. While the environmental impacts associated with this alternative would be disproportionately distributed to both low-income and minority households, the result of an improved transit system for those individuals is considered beneficial. The environmental consequences of the proposed project primarily consist of an increase to the air quality, noise, and traffic levels currently existing in the area. These impacts do not outway the benefits of installing an improved public transportation system to an area of target users. Therefore, the impacts are not considered significant to either low-income or minority households.

In summary, there is equity among the extent to which transportation investments benefit the transit dependent, the cost-effectiveness of the alternatives, and the incidence of significant environmental impacts.

5.2.5 Tradeoffs Among Alternatives

The Wilshire BRT Alternative offers substantial and cost-efficient benefits to existing and future transit patrons, as well as substantially enhancing the "people-carrying" capacity of Wilshire Boulevard. As demonstrated previously in the Chapter, there is more than sufficient financial capability to implement the Wilshire BRT Alternative.

An outstanding issue for the Wilshire BRT pertains to achieving a workable consensus to move forward with this alternative. Implementing a "peak-hour" only option as a mitigation measure for parking impacts may enhance the feasibility of this alternative and would remove the need for replacement parking along with a cost reduction of more than $60 million. It should be noted that this option would capture one-half of the new transit riders, compared to the baseline alternative; thus, cost per new rider would increase substantially.

In the near-term, the Wilshire BRT plus Exposition BRT MOS provides the most cost-effective approach. However, in the longer-term (2025), the Wilshire BRT plus Exposition LRT Alternative offers some advantages over a similar, full-length Exposition BRT alternative as there is potential connectivity with the Pasadena and Eastside LRT.

6.0 COMMUNITY PARTICIPATION

6.1 INTRODUCTION

6.1.1 Background

This section documents the Mid-City/Westside Transit Corridor Study Public Involvement Program process over the course of Phase I, the Major Investment Study (MIS) completed in March 2000, and through the current phase, Phase II, which includes the scoping process and the release of this Draft Environmental Impact Statement/Draft Environmental Impact Report (EIS/EIR). This section is not intended to address each and every concern raised, rather it documents the community participation activities, and environmental review process.

6.1.2 Objectives

The goals of the public involvement program have been to:

- Create a public involvement process that allows all those with a relevant stake in the MIS/EIS/EIR an opportunity to participate in its development;
- Identify, catalog, and respond to issues of concern to the public with regard to the MIS/EIS/EIR and identify potential mitigations where appropriate; and
- Manage the public involvement program in a manner that maximizes public participation in the planning and environmental processes for the project.

6.2 PUBLIC INVOLVEMENT AND ENVIRONMENTAL REVIEW PROCESS

6.2.1 Notice of Intent/Notice of Preparation (NOI/NOP)

The federal Notice of Intent (NOI), in accordance with NEPA, was issued on May 19, 2000, and was printed in the Federal Register on May 19, 2000 (Vol. 65 No. 98). The NOI announced the MTA and FTA's intent to prepare a joint EIS/EIR document in accordance with Federal and State environmental guidelines. It included information on the project background, the alternatives, the MIS process, FTA procedures, scoping meetings held, and contacts and sources of further information. The NOI and NOP commenced the 30-day public scoping period for the EIS/EIR to help determine the scope and content of the environmental analysis. The scoping comment period closed on June 23, 2000.

In accordance with CEQA, Notice of Preparation (NOP) announcing the MTA and FTA's intent to prepare an EIS/EIR was also mailed on May 8, 2000. Like the NOI, the NOP described the proposed project and requested input from agencies, organizations and individuals. The alternatives and the anticipated effects were briefly described. The scoping comment period for the NOP also closed on June 23, 2000. The State Clearinghouse designated this as project No. 2000051058.

The NOI and NOP are included as Attachment A to this section.

6.2.2 Activities

Stakeholder Identification

Throughout the public involvement process, individuals, community organizations, businesses, homeowners associations, business groups, and public agencies that may be affected by, or have an interest in, the Mid-City/Westside Transit Corridor study were identified. Key objectives were to identify and contact key community stakeholders, to inform stakeholders and their communities about plans to improve transit on the Westside, and to gather public comment. The stakeholders that have been identified to date and contacted are listed below.

Chambers of Commerce Business Groups

- Beverly Hills Chamber of Commerce
- Los Angeles Area Chamber of Commerce
- Mid-City Chamber of Commerce
- Wilshire Chamber of Commerce
- Los Angeles Area Chamber of Commerce
- Korean American Chamber of Commerce
- Crenshaw Chamber of Commerce
- Santa Monica Chamber of Commerce
- West Los Angeles Chamber of Commerce
- Los Angeles Business Council
- Miracle Mile Chamber of Commerce
- Greater Los Angeles African American Chamber of Commerce
- Venice Area Chamber of Commerce
- Brentwood Village Chamber of Commerce
- Brentwood Chamber of Commerce

Homeowner Associations

- Baldwin Neighborhood Homeowners Association
- Beverly Angeles Homeowners Association
- Beverly Roxbury Homeowners Association
- Beverlywood Homeowners Association
- Brentwood Glenn Homeowners Association
- Brentwood Hills Homeowners Association
- Brentwood Homeowners Association
- California Country Club Homes Association

- Carthay Circle Homeowners Association
- Castle Heights Neighborhood Association
- Century Westwood Watch
- Cheviot Hills Homeowners Association
- Cheviot Hills Homeowners Association
- Country Club Park Homeowners Association
- East Culver City Neighborhood Alliance
- Friends of Sunset Park
- Friends of Westwood, Inc.
- Hancock Park Association
- Hancock Park Homeowners Association
- Hayden Tract Business Group
- La Brea/ Hancock Homeowners Association
- Lafayette Neighborhood Association
- Larchmont Village Neighborhood Association
- Longwood Area Neighborhood Association
- Melrose Action Committee
- Melrose Neighborhood Association
- Miracle Mile Homeowners Association
- Miracle Mile Residential Association
- Rancho Higuera Association
- South Carthay Neighborhood Association
- South of Robertson Neighborhood Association
- South West Association of Neighbors
- Tract No. 7260 Neighborhood Watch
- Victoria Park Association
- Village Green Homeowners Association
- West Adams Heritage Association
- West of Westwood Homeowners Association
- Westside Civic Federation
- Westside Resident's Association
- Westwood Gardens Civic Association

- Westwood Homeowners Association
- Westwood South of Santa Monica
- Wilshire Homeowners Association
- Wilshire Park Association
- Wilshire/Montana Neighborhood Coalition
- Windsor Square Neighborhood Association
- Windsor Village Community Association
- Windsor Village Homeowners Association

Schools

Several schools within a ½-mile of the transit routes have been identified based on field reconnaissance. A comprehensive list of elementary, junior, and senior high schools in the Study Area was prepared and used to conduct outreach activities. Table 6-1 provides a list of these schools and their locations.

TABLE 6-1
SCHOOLS WITHIN 0.5 MILE OF THE WILSHIRE BOULEVARD AND EXPOSITION CORRIDORS

SCHOOL	ADDRESS	CITY
10th Street Elementary	1000 Grattan Street	Los Angeles
3rd Street Elementary	201 S. June Street	Los Angeles
6th Avenue Elementary	3109 Sixth Avenue	Los Angeles
Adams Middle School	151 W. 30th Street	Los Angeles
Alta Loma Elementary	1745 Vineyard Avenue	Los Angeles
Arlington Heights Elementary	1717 Seventh Avenue	Los Angeles
Audubon Middle School	4120 11th Avenue	Los Angeles
Belmont Adult School	1575 W. Second Street	Los Angeles
Belmont Senior High School	1575 W 2nd Street	Los Angeles
Brockton Elementary	1309 Armacost Avenue	Los Angeles
Burroughs Middle School	600 S. McCadden Place	Los Angeles
Canfield Elementary	9233 Airdrome Street	Los Angeles
Carthay Center Elementary	6351 W. Olympic Blvd.	Los Angeles
Castle Heights Elementary	9755 Cattaraugus Avenue	Los Angeles
Cienega Elementary	2611 S. Orange Drive	Los Angeles
Clover Avenue Elementary	11020 Clover Avenue	Los Angeles
Crescent Heights Blvd. Elementary	1661 Crescent Heights Blvd.	Los Angeles
Emerson Middle School	1650 Selby Avenue	Los Angeles
Fairburn Elementary	1403 Fairburn Avenue	Los Angeles
Hamilton Senior High School-Complex	2955 Robertson Blvd.	Los Angeles
Hancock Park Elementary	408 S. Fairfax Avenue	Los Angeles
Hobart Blvd. Elementary School	980 S. Hobart Blvd.	Los Angeles
King Jr. Elementary	3989 S. Hobart Blvd.	Los Angeles
Los Angeles Senior High	4650 W. Olympic Blvd.	Los Angeles
Manual Arts High School	4131 S. Vermont Avenue	Los Angeles

TABLE 6-1
SCHOOLS WITHIN 0.5 MILE OF THE WILSHIRE BOULEVARD AND EXPOSITION CORRIDORS

SCHOOL	ADDRESS	CITY
Mar Vista Elementary	3330 Granville Avenue	Los Angeles
Marvin Avenue Elementary	2411 Marvin Avenue	Los Angeles
Menlo Avenue Elementary	4156 Menlo Avenue	Los Angeles
Mt. Vernon Middle School	4066 W. 17th Street	Los Angeles
Norwood Elementary	2020 Oak Street	Los Angeles
Overland Avenue Elementary	10650 Ashby Avenue	Los Angeles
Palms Elementary	3520 Motor Avenue	Los Angeles
Palms Middle School	10680 Woodbine Street	Los Angeles
Pio Pico Elementary	1512 Arlington Avenue	Los Angeles
Queen Anne Elementary	1212 Queen Anne Place	Los Angeles
Salvin Spec. Ed. Ctr.	1925 Budlong Avenue	Los Angeles
Saturn Street Elementary	5360 Saturn street	Los Angeles
Shenandoah Elementary	2450 Shenandoah Street	Los Angeles
Sterry Elementary	1730 Corinth Avenue	Los Angeles
University High School	11800 Texas Avenue	Los Angeles
Virginia Road Elementary	2925 Virginia Road	Los Angeles
Warner Elementary	615 Holmby Avenue	Los Angeles
Webster Middle School	11330 W. Graham Place	Los Angeles
Weemes Elementary	1260 W 36th Place	Los Angeles
Westwood Elementary	2050 Selby Avenue	Los Angeles
Wilshire Crest Elementary	5241 W. Olympic Blvd.	Los Angeles
Wilton Place Elementary	745 S. Wilton Place	Los Angeles
Echo Horizon School	3430 McManus Avenue	Culver City
Crossroads School	1715 Olympic Blvd.	Santa Monica
Roosevelt Elementary School	801 Montana Avenue	Santa Monica
Franklin School	2400 Montana Avenue	Santa Monica
Lincoln Middle School	1501 California Avenue	Santa Monica
Santa Monica College		Santa Monica
Santa Monica High School	601 Pico Blvd	Santa Monica
Will Rogers Elementary School	2401 14th Street	Santa Monica
Grant Elementary School	2368 Pearl Street	Santa Monica
Richland Avenue School	11562 Richland Avenue	Santa Monica
Charnoch Road School	11133 Charnock Road	Los Angeles
Beverly Hills High School	241 South Moreno Drive	Beverly Hills
Horas Man Elementary School	8701 Charleville Blvd	Los Angeles
Fairfax High School	7850 Melrose Avenue	Los Angeles
Baldwin Hills School	5421 Rodeo Drive	Los Angeles
Dorsey High School	3537 Farmdale Avenue	Los Angeles
Mid City High School	3100 West Adams Blvd	Los Angeles
Widney High School	2302 Gramercy Place	Los Angeles
Coliseum Street School	4400 Coliseum Street	Los Angeles
Tom Bradley School	3875 Dublin Avenue	Los Angeles
James A. Foshay Junior High School	3751 Harvard Boulevard	Los Angeles
Trinity Street Elementary School	3736 Trinity Street	Los Angeles

TABLE 6-1
SCHOOLS WITHIN 0.5 MILE OF THE WILSHIRE BOULEVARD AND EXPOSITION CORRIDORS

SCHOOL	ADDRESS	CITY
28th Street Elementary School	2807 Stanford Avenue	Los Angeles
Trinity Street Children's Center	3816 Trinity Street	Los Angeles
Friedman Adult High School	Unknown on Hill Street	Los Angeles
Berendo Middle School	1157 Berendo Street	Los Angeles
Leo Politi Elementary School	2481 11th Street	Los Angeles
Hoover Elementary School	2726 Francis Avenue	Los Angeles
Union Avenue School	150 South Burlington Ave	Los Angeles
Betty Plasencia School	1321 Cortez Street	Los Angeles
Virgil Middle School	152 Vermont Avenue	Los Angeles
Hawthorne Elementary School	624 Rexford Blvd	Beverly Hills

Stakeholder Outreach

Project Fact Sheet

A project fact sheet was prepared that provided an update of the current planning process for the study. The fact sheet, plus illustrative maps, discussed the new transit improvements under evaluation in the Mid-City/Westside Corridor Study Area, the importance of the Corridor, other studies that are being conducted, current transportation needs, the study area, alternatives and a schedule. The team distributed the project fact sheet to all interested stakeholders via mail, fax, meetings and community open houses.

Update Mailing

Various means were used to invite public comment on the project. At the initiation of the study period, the team mailed a letter to over 12,000 addresses, including but not limited to homeowners associations and business interests, throughout the Mid-City/Westside Transit Corridor. The mailing resulted in the distribution of public information about the study in homeowners' newsletters and at homeowners association meetings. The letter updated stakeholders about important milestones and the status of the study process, and contained information on important decisions made by the MTA Board regarding the study. The public information materials also included the names and contact information of who to send comments to, and information on how to access the project hotline number. The mailing encouraged everyone's participation and feedback.

The public outreach team coordinated 12,464 individual pieces of mail to the organizations listed in Table 6-2.

TABLE 6-2
LIST OF ORGANIZATIONS CONTACTED

Pieces	Organization
150	Victoria Park Association
20	Rancho Higuera
500	East Culver City Neighborhood Alliance
650	Village Green
300	Windsor Village Homeowners Association
380	West Adams Heritage
114	MTA Rentals/Lease
100	Rose & Kindel
900	Homeowners Associations
1000	HOPE Community Resource Center (Crenshaw Area)
950	Tract 7260
2000	West of Westwood
650	Westwood Gardens
1500	Westside Resident's Association
100	Office of Councilmember Ruth Galanter
300	Office of Councilmember of Mark Ridley-Thomas
1000	Santa Monica Chamber of Commerce
1000	Westside Homeowners Association
350	Santa Monica Planning Dept.
500	Scoping Meetings (*See Section 6.3 below*)

In addition, letters and flyers were sent to the stakeholders throughout the Study Corridor, and follow-up phone calls were made, when necessary.

A number of homeowners associations, neighborhood associations and interest groups submitted comments at each community open house as well as mailed, faxed and e-mailed their comments. Most of the submitted comments came from individuals interested in the project but unable to attend one of the community open houses, or from individuals that desired to have a formal role in the process.

Website/Media Outreach & Coordination

Following is a description of outreach conducted through the web and local media:

- Advertisement in the South of Robertson (SORO) website and newsletter.
- Advertisement in the St. Andrews Homeowners Association website and newsletter.
- Placed community calendar articles in the *Larchmont Chronicle*, the *Los Angeles Times*, the *Sentinel*, the *Westside Weekly*, independent publications (i.e., *Wilshire*, *Westsider*, etc.).
- Contacted the following newspapers:

  – The Wave,

  – Brentwood Media Group (Monthly),

  – Downtown News,

  – Jewish Journal,

– Korea Times, and

– Santa Monica Mirror.

- Placed advertisements in the following newspapers during the week of May 17th, 2000:
  - LA Times (Our Times Editions)
  - LA Times (Southern California Living)
  - The Sentinel
  - L.A. Independent
  - Wilshire Independent
  - Culver City Chronicle
  - Westsider

The advertisements are included as Figure 6-1.

Hotline

A hotline was set up to provide the public with immediate access to accurate, up-to-date information about the project. The hotline briefly describes the planning process and the opportunities for public involvement. Callers had the option of leaving a detailed message, or simply leaving their contact information so that they could receive additional information.

6.3 SUMMARY OF THE EIS/EIR SCOPING PROCESS

The public scoping comment period for the EIS/EIR commenced on May 23, 2000 and ended on June 23, 2000. Homeowner associations, chambers of commerce, community organizations and the general public were contacted by phone, as a supplement to the mailings, to encourage their members' participation in the environmental review process and in determining the scope and content of the EIS/EIR.

6.3.1 Public Scoping Meetings

After completion of the MIS and during the scoping period (May 23-June 23, 2000) for the EIS/EIR, the public had the opportunity to attend five scoping meetings. The locations and dates of these scoping meetings are provided in Table 6-3.

Please join us for Community Open Houses

regarding

The Mid-City/Westside Transit Corridor Study

The Los Angeles County Metropolitan Transportation Authority (MTA) is evaluating several new transit alternatives along Wilshire and Exposition Boulevards that can provide improved transit mobility for this area. Learn about the proposed ***Wilshire Boulevard Bus Rapid Transit***, the ***Exposition Right-of-Way Bus Rapid Transit*** and ***Exposition Right-of-Way Light Rail Transit*** possibilities

Interested individuals, organizations and public agencies are invited to attend to hear and comment on the alternatives at any of the community open houses listed below, between 5:00 and 8:00 pm

- **TUES, MAY 23, 2000, 5:00–8:00 PM**
  Peterson Automotive Museum
  6060 Wilshire Boulevard, Los Angeles
- **WED, MAY 31, 2000, 5:00–8:00 PM**
  Veteran's Administration Hospital of Los Angeles
  11301 Wilshire Boulevard, Los Angeles
- **TUES, JUNE 6, 2000, 5:00–8:00 PM**
  Ken Edwards Center
  1527 Fourth Street, Santa Monica
- **WED, JUNE 7, 2000, 5:00–8:00 PM**
  California African American Museum
  600 State Street – Exposition Park, Los Angeles
- **THURS, JUNE 8, 2000, 5:00–8:00 PM**
  Veteran's Memorial Complex
  4117 Overland Avenue, Culver City

For further information, to be placed on the project mailing list, or to leave verbal comments, please call.

- **Project Hotline: 310.366.6443**

Please send written comments to:
(Due by June 23, 2000)

- **David Mieger,** Project Manager
  Los Angeles County MTA
  One Gateway Plaza
  Mail Stop 99-22-5
  Los Angeles, CA 90012
  Fax: 213.922.3060
  E-mail: miegerd@mta.net

Advertisement in the **South of Robertson (SORO)newsletter.**
Advertisement in the **St. Andrews Homeowners Association newsletter.**

Placed community calendar articles in the ***Larchmont Chronicle*****,** **the *Los Angeles Times*, the *Sentinel*, the *Westside Weekly***, independent publications (i.e., *Wilshire*, *Westsider*, etc.).

Contacted the following newspapers:
The Wave, Brentwood Media Group (Monthly), Downtown News, Jewish Journal, Korea Times, and ***Santa Monica Mirror.***

Placed advertisements in the following newspapers during the week of May 17th, 2000:

Los Angeles Times (Our Times Editions)
Los Angeles Times (Southern California Living)
The Sentinel
L.A. Independent
Wilshire Independent
Culver City Chronicle
Westsider

SOURCE: Terry A. Hayes Associates, 2000

FIGURE 6-1
COMMUNITY MEETING ADVERTISEMENTS

TABLE 6-3 MID-CITY/WESTSIDE CORRIDOR EIS/EIR SCOPING MEETINGS	
Location	**Date**
Mid-Wilshire/Beverly Hills/West Los Angeles	
Peterson Automotive Museum	May 23, 2000, Wednesday
Veterans Administration Hospital of West Los Angeles	May 31, 2000, Wednesday
Santa Monica	
Ken Edwards Center	June 6, 2000, Tuesday
Exposition Park/Crenshaw District	
California African-American Museum	June 7, 2000, Wednesday
Culver City	
Veterans Memorial Complex	June 8, 2000, Thursday

A total of 380 people attended the five community open houses:

- 81 at the Petersen Museum on Miracle Mile;
- 88 at the Veterans Administration Hospital in West Los Angeles;
- 93 at the Ken Edwards Center in the City of Santa Monica;
- 39 at the California African American Museum in Exposition Park; and
- 79 at the Veterans Memorial Auditorium in the City of Culver City.

6.3.2 Outreach Meetings

A total of 36 outreach meetings/briefings have been conducted, since the end of the scoping period, with various interested stakeholders to inform them of the study, elicit their feedback, and identify the issues of concern. Table 6-4 provides a summary list of all meetings held since the end of the scoping period.

TABLE 6-4 OUTREACH MEETINGS SUBSEQUENT TO SCOPING	
Date	**Meeting Participant**
June 22, 2000	LAUSD Principals at Dorsey High School
June 26, 2000	Staff of Congressman Henry Waxman
June 27, 2000	Baldwin Hills Homeowners Association
June 30, 2000	L.A. Department of Transportation
July 12, 2000	Wilshire Advocates Coalition/Miracle Mile Chamber of Commerce
July 24, 2000	Staff of Councilwoman Rita Walters
July 27, 2000	East Culver City Alliance
August 10, 2000	Southern California Association of Governments
August 16, 2000	Wilshire Advocates Coalition/Miracle Mile Chamber of Commerce
August 21, 2000	L.A. Community Redevelopment Agency
August 29, 2000	Wilshire Advocates Coalition/Miracle Mile Chamber of Commerce
September 11, 2000	Staff of Councilwoman Rita Walters
September 25, 2000	L.A. Department of Transportation
September 26, 2000	U.C.L.A. Transportation Services
October 5, 2000	Beverly Hills City Council - Traffic & Parking Committee
October 26, 2000	Friends for Exposition
November 2, 2000	Staff of the City of Santa Monica

TABLE 6-4 OUTREACH MEETINGS SUBSEQUENT TO SCOPING	
Date	**Meeting Participant**
November 8, 2000	Crenshaw Community Forum
November 14, 2000	L.A. Department of Transportation
November 16, 2000	California Department of Transportation
December 13, 2000	Federal Transit Administration
December 15, 2000	Elected Official Staff Briefing
January 10, 2001	LADOT
January 11, 2001	Staff of Culver City
January 23, 2001	Staff of Assemblyman Herb Wesson
February 7, 2001	LADOT
February 8, 2001	Neighbors for an Improved Community, Environmental Defense, Esperanza Community Housing Corporation, Strategic Action for a Just Economy
February 12, 2001	University of Southern California
February 20, 2001	Staff of State Senator Polanco
March 5, 2001	Westwood Homeowner's Association
March 7, 2001	Staff of Senator Sheila Kuehl
March 9, 2001	Exposition Park Manage, Staff of Councilman Mark Ridley Thomas
March 15, 2001	Neighbors for an Improved Community, Environmental Dense, Esperanza Community Housing Corporation, Strategic Action for a Just Economy
March 27, 2001	East Culver City Neighborhood Alliance
March 29, 2001	Central City Association Figueroa Corridor Committee
Pending	Staff of the City of Culver City

6.3.3 Summary of Comments

A total of 324 comment letters on the scope and content of the EIS/EIR were received during the scoping period. A summary of the scoping comments and commentors is included as Attachment B to this section, while the following provides a brief summary of the primary issues raised by commentors during scoping.

- *Public Safety:* Members of the public expressed concern about the safety aspect of rapid transit, especially in residential areas, adjacent schools and at intersections, and indicated pedestrian safety at intersections and near schools as their most significant concern.
- *Environmental Issues (Noise and Vibration):* Participants commented on the potential for noise and vibration impacts both during construction and later during actual operation of the line.
- *Traffic and Parking:* Many commentors indicated a general concern, regarding how traffic flow patterns might change due to the line, both during construction and once operations began. There were specific questions about whether traffic around stations would increase, and whether parking would spill over into neighborhoods around stations.
- *Improvements to ROW:* Various stakeholders along the corridor would like to see the ROW improved and landscaped.

- *Wilshire BRT.* Commentors indicated a desire to see detailed plans for mitigation related to the safety concerns raised at the community open houses. Noise and vibration mitigation suggestions include landscaping, "living sound walls," traditional sound walls, "child-safe" grade crossing and mitigation efforts similar to those used in Calgary, Alberta, Canada. Some commentors recommended grade-separations at all major streets or a combination of at-grade and grade-separated crossings. Also, an extension of the Red Line subway was frequently brought up, both in the community open houses and in the general comments.
- *Exposition BRT or LRT.* Commentors suggested that the MTA follow the route through Cheviot Hills along the existing MTA ROW. Among the many suggestions for enhancing a LRT line on the Exposition ROW were the inclusions of park-and-ride lots, satellite parking and feeder buses. Use of sound barriers, greenbelts and landscaping was also suggested.
- Loss of on-street parking.
- Traffic diversion onto adjacent streets.
- Pedestrian safety.
- Impact on pedestrian friendly planning.
- Concerns regarding traffic modeling and traffic impact methodology.
- Signalization of cross-streets.
- Loss of left-turn lanes.
- Safety at grade-separations.
- Location of park & ride facilities.
- Noise impact on areas adjacent to both routes.

The scoping comments were distributed to the EIS/EIR technical consultants to ensure that the public's concerns were addressed, to the greatest extent feasible, and incorporated into the EIS/EIR discussion of impacts.

6.4 AGENCY COORDINATION

A number of government agencies and organizations with a vested interest in the development of a transit system have also commented on the project. A summary of their issues and concerns is provided in Attachment B.

Scoping comment letters were received from the following agencies and organizations:

- City of Santa Monica, Office of the City Manager
- City of Culver City, Transportation Department
- City of Beverly Hills
- Los Angeles Memorial Coliseum Commission
- State of California, Governor's Office of Planning and Research, State Clearinghouse
- Native American Heritage Commission

- South Coast Air Quality Management District
- City of Los Angeles, Department of Recreation and Parks
- County of Los Angeles, Department of Recreation and Parks
- Southern California Association of Governments
- Southern California Gas Company
- Gabrieleno/Tongva Tribal Council
- Community Redevelopment Agency
- Los Angeles Unified School District

6.5 PUBLIC REVIEW OF THE ENVIRONMENTAL DOCUMENT

In compliance with NEPA and CEQA, the public review period will commence upon release of the Draft EIS/EIR. During the public review period, the Draft EIS/EIR will be placed in document repository sites to provide ongoing information about the project. Public hearings will also be held to receive oral and written testimony on the Draft EIS/EIR from the public. In compliance with NEPA and CEQA, notice of the meetings will be provided to the public well in advance of their occurrence. Consideration of the Draft EIS/EIR by the MTA Board of Directors is scheduled to occur following the close of the public comment period.

Section 6.0
Attachment A
NOI and NOP

completed an EIR and "Subsequent EIR" for the study corridor. These studies and environmental documents led to the identification of a preferred rail alignment along the existing Southern Pacific Burbank/Chandler Branch, following Chandler Boulevard, Oxnard Street, Victory Boulevard, and Topham Street, which the MTA subsequently purchased in 1990. Environmental documents meeting California standards were certified in 1990 and 1992, addressing alternatives along both the SP Burbank/Chandler Branch and the Ventura Freeway median alignments. In 1994 the MTA Board of Directors endorsed the SP Burbank/Chandler Branch alignment.

An alternatives screening report and major investment study was prepared in 1995/96. The report evaluated the relative cost-effectiveness of a broad range of project alternatives, including all the previously studied rail transit options. In 1997 a Draft EIS was in preparation when the MTA began a financial and organizational restructuring which put several rail projects, including rail planning for the San Fernando Valley, on hold.

As part of the restructuring, the MTA and other regional agencies studied the feasibility of building non-rail (bus) transit enhancements in previous rail corridors. In addition, the MTA board directed staff to proceed with a Bus Rapid Transit demonstration project. One of the demonstration lines is on Ventura Boulevard in the San Fernando Valley.

Description of the Study Area: The study corridor extends from the North Hollywood Red Line station (currently under construction), located at Lankershim Boulevard and Chandler Boulevard, west across the entire San Fernando Valley to the vicinity of the Warner Center Transit Hub. The length of the corridor is approximately 14 miles.

Alternatives: A range of alternatives is being considered as part of the EIS/EIR. These include the following:

No Build: This alternative would include the transit system primarily as it exists today, augmented by those additional projects for which a funding commitment has been made or which are reasonably expected to be in place by 2020. The Red Line would terminate at the North Hollywood station. Highway and HOV projects would be provided on a number of freeways. Existing bus headways would be maintained and the Rapid Bus Demonstration project on Ventura Boulevard would be implemented.

Transportation Systems Management/ Best Bus: This alternative would not require major investment for capital cost items, but would rather focus its efforts on maximizing the efficiency of existing facilities and expanding and improving the existing bus system. Headways on routes covered by the TSM would be significantly reduced. TSM improvements would include various projects to enhance the performance of bus transit on major arterials where bus service frequencies would be increased.

Bus Rapid Transit Alternatives: Buses would run along an exclusive roadway built within the SP Burbank/Chandler ROW between the North Hollywood Metro Red Line Station on the east and the Transit Hub in Warner Center. Stations would be placed approximately every mile along the 14-mile route, at major cross streets and trip destinations. Buses would be given priority at signals. Headways within the busway would vary between five and two and one-half minutes during peak periods, and the existing Valley bus network would be integrated with the busway. In addition to the busway, enough space is available for a parallel bikeway along the corridor.

The corridor is being considered in two phases. If funding is limited, a segment of the full project busway between Woodman Avenue and Balboa Boulevard would be constructed as an initial phase, or Minimum Operable Segment. This first phase would include five stations. Buses would run on-street along Oxnard Street and Victory Boulevard to complete their runs from North Hollywood to Warner Center, and provide cross-Valley service.

Probable Effects: The FTA and MTA will evaluate all significant environmental, social and economic impacts of the alternatives analyzed in the draft EIS/EIR. Potential impact categories which will be evaluated include: Land Use and Development; Economic and Fiscal Impacts; Displacement and Relocation; Traffic Circulation and Parking; Community and Neighborhood Impacts; Environmental Justice; Visual and Aesthetic Impacts; Air Quality; Noise and Vibration; Geotechnical Considerations; Water Resources; Natural Resources; Energy; Safety and Security; Cultural Resources; Community Facilities and Parklands; and Construction Impacts. The impacts will be evaluated both for the construction period and the long-term period of operation. Measures to mitigate adverse impacts will also be addressed.

FTA Procedures: The EIS process will be performed in accordance with Federal Transit Laws and FTA's regulations and guidelines for preparing an Environmental Impact Statement. The impacts of the project will be assessed, and, if necessary, the scope of the project will be revised or refined to minimize and mitigate any adverse impacts. After its publication, the draft EIS will be available for public review and comment. At least one public hearing will be held. On the basis of the draft EIS and comments received, the project will be revised or further refined as necessary and the final EIS prepared.

Date Issued: May 15, 2000.

Leslie Rogers,

Regional Administrator.

[FR Doc. 00–12639 Filed 5–18–00; 8:45 am]

BILLING CODE 4910–57–P

DEPARTMENT OF TRANSPORTATION

Federal Transit Administration

Environmental Impact Statement on the Mid-City/Westside Transit Corridor in Los Angeles, CA

AGENCY: Federal Transit Administration, DOT.

ACTION: Notice of intent to prepare an Environmental Impact Statement.

SUMMARY: The Federal Transit Administration (FTA), as the Federal lead agency, and the Los Angeles County Metropolitan Transportation Authority (MTA), as the local lead agency, are issuing this notice to advise interested agencies and the public that a joint Environmental Impact Statement (EIS)/Environmental Impact Report (EIR), referred to as an EIS/EIR, is being prepared for transit improvements in the Mid-City/Westside Transit Corridor in Los Angeles, California in accordance with the National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA). The EIS/EIR replaces the previous NEPA reviews by FTA and MTA of transit improvements in the Mid-City corridor, the most recent being "Los Angeles Rail Rapid Transit Project—Metro Rail Final Supplemental EIS/EIR for the Mid-City Segment from Wilshire/Western to Pico/ San Vicente," August, 1992. The Mid-City extension of Metro Rail was suspended by the MTA Board of Directors in January 1998. The present EIS/EIR will study alternatives and extensions to the suspended subway in the Mid-City corridor and beyond to Santa Monica. In the course of this study, FTA expects the MTA and the Southern California Association of Governments, which is responsible for transportation planning in metropolitan Los Angeles, to establish priorities for the proposed transit improvements in

the Mid-City corridor and the myriad of other competing projects and transit needs in the region. This prioritization of proposed projects and other transit needs will involve, among other considerations, the development of a financial plan that identifies for each capital need the non-Federal funds to be used along with the proposed Federal funding.

FTA and MTA seek comments by interested parties and agencies on the scope of the Mid-City/Westside EIS/EIR. The date and location of public scoping meetings are provided below. The closing date for receiving comments on the scope of the EIS/EIR, and the address to which written comments should be sent, are also provided herein.

DATES: *Comment Due Date:* Written comments on the scope of the study should be sent, by June 23, 2000, to Mr. David Mieger of the Los Angeles County Metropolitan Transportation Authority at the address given below in **ADDRESSES.**

Scoping Meeting Dates: Please refer to **ADDRESSES** below for the dates, times, and locations of the public scoping meetings.

ADDRESSES: *For Written Comments:* Written comments on the scope of the EIS/EIR should be sent by June 23, 2000, to Mr. David Mieger, Los Angeles County Metropolitan Transportation Authority, One Gateway Plaza, Mail Stop 99–22–5, Los Angeles, California 90012. Written comments may also be turned in at the scoping meetings.

For Scoping Meetings: Public scoping meetings for the EIS/EIR will be held at the following locations at the dates and times indicated:

• Tuesday, May 23, 2000, Peterson Automotive Museum, 6060 Wilshire Boulevard, Los Angeles, CA 90036 (5 p.m.–8 p.m.)

• Wednesday, May 31, 2000, Veteran's Administration Hospital of West Los Angeles, 11301 Wilshire Boulevard, Los Angeles, CA 90038 (5 p.m.–8 p.m.)

• Tuesday, June 6, 2000, Ken Edwards Center, 1527 4th Street, Santa Monica, CA (5 p.m.–8 p.m.)

• Wednesday, June 7, 2000, California African-American Museum, 600 State Drive, Exposition Park, Los Angeles, CA 90037 (5 p.m.–8 p.m.)

• Thursday, June 8, 2000, Veteran's Memorial Complex, 4117 Overland Avenue, Culver City, CA 90232 (5 p.m.–8 p.m.)

The scoping meetings will be held in an "open house" format with MTA representatives available to discuss the project alternatives throughout the time periods given. Informational displays and written material will also be available. Comments may be submitted in writing at the public scoping meetings. All locations are accessible to persons with disabilities. Spanish-speaking MTA staff will be present. If hearing-impaired services will be needed, please notify Mr. David Mieger at the MTA address above, or call TTY (800) 252–9040. Other questions about the scoping workshops may be directed by voice telephone to Mr. Mieger at (213) 922–3040 or e-mail at miegerd@mta.net.

For MIS Review: A Major Investment Study (MIS) of the transportation needs in the Mid-City/Westside Corridor, dated February, 2000, and related environmental studies are available for review at the MTA Library at One Gateway Plaza, 15th Floor; Los Angeles, CA 90012 during normal business hours.

FOR FURTHER INFORMATION CONTACT: Ervin Poka or Ray Tellis, Federal Transit Administration/Federal Highway Administration Los Angeles Metropolitan Office. Phone: (213) 202–3950.

SUPPLEMENTARY INFORMATION: The EIS/EIR will present a comparative analysis of the environmental impacts, transportation benefits, and costs of reasonable transit alternatives in the Mid-City/Westside Corridor and will determine the appropriate mitigation measures for adverse impacts.

Scoping: The initial set of alternatives for the Mid-City/Westside Corridor were defined through a Major Investment Study (MIS) completed in February 2000 by the MTA, in accordance with USDOT regulations. Additional alternatives that may emerge from the scoping process will be considered.

FTA and MTA invite interested individuals, organizations, and public agencies to attend the scoping meetings and participate in identifying the scope and content of the EIS/EIR, including any significant environmental, social, or economic issues associated with the alternatives. The public is invited to comment specifically on the alternatives to be addressed, the transit modes and technologies to be evaluated, the alignments and termination points to be considered, the environmental, social, and economic impacts to be analyzed, and the evaluation approach to be used to select a preferred alternative. During scoping, comments should focus on identifying specific social, economic, or environmental impacts to be evaluated and suggesting alternatives that are less costly or less environmentally damaging, while meeting the identified transportation and other needs in the Mid-City/Westside Corridor. Scoping is not the appropriate time to indicate a preference for a particular alternative. Comments on preferences should be communicated after the Draft EIS/EIR has been issued for public review.

An information packet describing the purpose of the project, the location, the proposed alternatives, and the impact areas to be evaluated is being mailed to affected Federal, State, and local agencies. Others may request these scoping materials by contacting Mr. David Mieger at (213) 922–3040 or by writing to him at his address above. If you wish to be placed on the project mailing list, please call the Project Hotline at 310–366–6443.

Description of Study Area and Project Need: The Mid-City/Westside Corridor is approximately bounded on the north by Sunset Boulevard, on the east by Hill Street, on the south by Manchester Boulevard, and on the west by the Pacific Ocean. The projected trip-making increase and resulting congestion would occur because of expected population growth, from 1.5 million persons in 1994 to 1.9 million in 2020, and of expected employment growth, from one million jobs in 1994 to 1.2 million jobs in 2020. The purposes of the project are to improve east-west travel options in the Mid-City/Westside areas of Los Angeles and to provide a connection to the previously completed Metro Rail Red Line and other portions of the regional rail and bus network.

Alternatives: In order to address current and long-range traffic congestion in the Mid-City and Westside areas of the Los Angeles Basin, the MTA has examined a wide range of east-west transit alternatives, including Bus Rapid Transit, Light Rail Transit such as the Blue Line to Long Beach, and Heavy Rail Transit such as the Red Line to Hollywood. In accordance with the intent of the MIS process, the MIS, in conjunction with the guidance provided by the MTA Board of Directors, resulted in a set of refined alternatives to be evaluated in detail in the EIS/EIR. These alternatives are: (1) No Build; (2) Transportation System Management; (3) Wilshire Bus Rapid Transit (BRT); (4) Exposition BRT; (5) Exposition Light Rail Transit (LRT); (6) Phased length combinations of Wilshire BRT and Exposition BRT or LRT; (7) Any additional alternatives that may result from the scoping process. Alignments for BRT extend from the Metro Red Line in downtown Los Angeles to downtown Santa Monica and include Wilshire Boulevard and the former Exposition railroad right-of-way. An alignment for LRT extends from downtown Los

Angeles to downtown Santa Monica along the Exposition railroad right-of-way. The TSM Alternative is not specific to an alignment but would rather improve service levels of existing bus service in the general Westside Corridor. Additionally, a No Build Alternative will evaluate the impacts of doing nothing to improve transit service during the twenty year planning timeframe of the project, beyond those improvements already scheduled and funded.

Probable Effects: The FTA and MTA will evaluate all significant environmental, social and economic impacts of the alternatives in the Draft EIS/EIR. Potential impact categories which will be evaluated include: Land Use and Development; Economic Impacts; Displacement and Relocation; Traffic Circulation and Parking; Community and Neighborhood Impacts; Environmental Justice; Visual and Aesthetic Impacts; Air Quality; Noise and Vibration; Geotechnical Considerations; Water Resources; Natural Resources; Energy; Safety and Security; Cultural Resources; Community Facilities and Parklands; and Construction Impacts. The impacts will be evaluated both for the construction period and the long-term period of operation. Measures to mitigate adverse impacts will also be addressed.

FTA Procedures: After the scope of the EIS/EIR evaluation has been determined, FTA and MTA will conduct the analyses and interagency coordination necessary to prepare a Draft EIS/EIR. The Draft EIS/EIR will be made available for public and agency review and comment, and a public hearing will be held. On the basis of the Draft EIS/EIR and comments received, MTA will select a Locally Preferred Alternative. If FTA approves of advancing the Locally Preferred Alternative into Preliminary Engineering (PE), the Final EIS/EIR responding to comments received and incorporating the results of PE, would then be prepared and released.

Issued on: May 15, 2000.

Leslie T. Rogers,

Regional Administrator.

[FR Doc. 00–12638 Filed 5–18–00; 8:45 am]

BILLING CODE 4910–57–P

DEPARTMENT OF TRANSPORTATION

Surface Transportation Board

[STB Finance Docket No. 33870]

Eastern Alabama Railroad, Inc.—Acquisition Exemption—CSX Transportation, Inc.

Eastern Alabama Railroad, Inc. (EARY), a Class III rail carrier, has filed a verified notice of exemption under 49 CFR 1150.41 to acquire and operate a rail line owned by CSX Transportation, Inc.[1] The rail line extends from milepost LAM 453.58, at Gannt's Junction, to milepost LAM 479.94, at Talladega, a distance of 26.36 miles in Talladega County, AL.

The transaction is expected to be consummated on or after May 17, 2000.

If the notice contains false or misleading information, the exemption is void *ab initio*. Petitions to revoke the exemption under 49 U.S.C. 10502(d) may be filed at any time. The filing of a petition to revoke does not automatically stay the transaction.

An original and 10 copies of all pleadings, referring to STB Finance Docket No. 33870, must be filed with the Surface Transportation Board, Office of the Secretary, Case Control Unit, 1925 K Street, NW, Washington, DC 20423–0001. In addition, a copy of each pleading must be served on Fritz R. Kahn, Esq., 1920 N Street, NW, Eighth Floor, Washington, DC 20036–1601.

Board decisions and notices are available on our website at "WWW.STB.DOT.GOV."

Decided: May 12, 2000.

By the Board, David M. Konschnik, Director, Office of Proceedings.

Vernon A. Williams,

Secretary.

[FR Doc. 00–12566 Filed 5–18–00; 8:45 am]

BILLING CODE 4915–00–P

[1] EARY represents that it has operated the rail line, as the assignee of a lease with option to purchase, since 1992 following its acquisition of the Natchez Trace Railroad's properties. *See Eastern Alabama Railway, Inc.—Acquisition and Operation Exemption—Natchez Trace Railroad*, Finance Docket No. 32044 (ICC served Apr. 16, 1992).

DEPARTMENT OF THE TREASURY

Submission for OMB Review; Comment Request

May 8, 2000.

The Department of Treasury has submitted the following public information collection requirement(s) to OMB for review and clearance under the Paperwork Reduction Act of 1995, Public Law 104–13. Copies of the submission(s) may be obtained by calling the Treasury Bureau Clearance Officer listed. Comments regarding this information collection should be addressed to the OMB reviewer listed and to the Treasury Department Clearance Officer, Department of the Treasury, Room 2110, 1425 New York Avenue, NW., Washington, DC 20220.

DATES: Written comments should be received on or before June 19, 2000 to be assured of consideration.

Internal Revenue Service (IRS)

OMB Number: 1545–1251.
Regulation Project Number: PS–5–91 Final.
Type of Review: Extension.
Title: Limitations on Percentage Depletion in the Case of Oil and Gas Wells.
Description: Section 1.613A–3(e)(6)(I) of the regulations requires each partner to separately keep records of the partner's share of the adjusted basis of partnership oil and gas property.
Respondents: Business or other for-profit.
Estimated Number of Recordkeepers: 1,500,000.
Estimated Burden Hours Per Recordkeeper: 2 minutes.
Estimated Total Recordkeeping Burden: 49,950 hours.

OMB Number: 1545–1545.
Regulation Project Number: REG–107644–97 Final.
Type of Review: Extension.
Title: Permitted Elimination of Preretirement Optional Forms of Benefits.
Description: The regulation permits an amendment to a qualified plan that eliminates certain Preretirement optional forms of benefit.
Respondents: Business or other for-profit.
Estimated Number of Recordkeepers: 135,000.
Estimated Burden Hours Per Recordkeeper: 22 minutes.
Estimated Total Recordkeeping Burden: 48,800 hours.

OMB Number: 1545–1685.
Regulation Project Number: REG–103735–00 NPRM and Temporary.
Type of Review: Extension.
Title: Tax Shelter Disclosure Statements.
Description: The regulations provide guidance on the filing requirement under section 6011 for certain corporate taxpayers engaged in transactions producing tax savings in excess of certain dollar thresholds.
Respondents: Business or other for-profit.
Estimated Number of Respondents/Recordkeepers: 50.

CALIFORNIA THE GOLDEN STATE

CEQAnet Database

Governor's Office of Planning and Research

Mid-City/Westside Transit Corridor

SCH Number: 2000051058

Type: NOP

Project Description

The SEIS/SEIR will present a comparative analysis of the environmental impacts of proposed transit alternatives in the Mid-City/Westside Corridor, and will identify mitigation measures for potentially significant impacts. The purposes of the project are to improve east-west travel options in the Mid-City/Westside areas of Los Angeles and to provide a connection to the previously completed Metro Red Line and other portions of the regional rail and bus network. The options being considered include Bus Rapid Transit (BRT), Light Rail Transit (LRT) and Transportation Systems Management (TSM). Alignments for BRT extend from the Metro Red Line in downtown Los Angeles to downtown Santa Monica and incude Wilshire Boulevard and the former Exposition railroad right-of-way.

Project Lead Agency

Los Angeles County Metropolitan Transportation Authority

Contact Information

Primary Contact:
David Mieger
Los Angeles County Metropolitan Transportation Authority
213 922-3040
One Gateway Plaza
MS 99-22-5
Los Angeles
CA, 90012-2952

Project Location

County: Los Angeles
City: Los Angeles
Region:
Cross Streets: Sunset Boulevard/Hill Street/Manchester Boulevard
Parcel No:
Township:
Range:
Section:
Base:

Proximity To

Highways:
Airports:
Railways:
Waterways:
Schools:

Land Use:

Development Type

Local Action

Project Issues

Reviewing Agencies:
Agencies in **Bold Type** have commented.

California Coastal Commission ; California Highway Patrol ; Department of Housing and Community Development ; **Native American Heritage Commission** ; Department of Parks and Recreation ; Resources Agency ; State Lands Commission ; **Caltrans, District 7** ; Caltrans, Division of Aeronautics ; Department of Fish and Game, Region 5 ; Air Resources Board, Transportation Projects

---

Date Received: 5/15/00 **Start of Review:** 5/15/00 **End of Review:** 6/13/00

HOME | NEW SEARCH

LOS ANGELES COUNTY
METROPOLITAN TRANSPORTATION AUTHORITY

Notice of Preparation (NOP)
to Prepare a Draft
Supplemental Environmental Impact Report
and
Notice of Public Scoping Meetings/Request for Comments
on the Preparation of a
Supplemental Environmental Impact Report

for the Mid-City/Westside Corridor Transit Study
SCH# 2000051058

TO:

All Interested Parties.

SUBJECT:

The Federal Transit Administration (FTA), as the Federal lead agency, and the Los Angeles County Metropolitan Transportation Authority (MTA), as the local lead agency, are issuing this notice to advise interested agencies and the public that a joint Supplemental Environmental Impact Statement (SEIS)/Supplemental Environmental Impact Report (SEIR), referred to as an SEIS/SEIR, is being prepared for transit improvements in the MTA's Mid-City/Westside Transit Corridor in Los Angeles, California in accordance with the National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA).

SUMMARY OF THE PROPOSED PROJECT:

The Mid-City/Westside Corridor comprises approximately 112 square miles, and is approximately bounded on the north by Sunset Boulevard, on the east by Hill Street, on the south by Manchester Boulevard, and on the west by the Pacific Ocean. The projected trip-making increase and resulting congestion would occur because of expected population growth, from 1.5 million persons in 1994 to 1.9 million in 2020, and of expected employment growth, from one million jobs in 1994 to 1.2 million jobs in 2020.

In order to address current and long-range traffic congestion in the Mid-City and Westside areas of the Los Angeles Basin, the MTA has examined a wide range of east-west transit alternatives, including Bus Rapid Transit, Light Rail Transit, and Heavy Rail Transit.

In recognition of the significant historical and current need for additional public transit in the corridor, MTA began a series of studies to examine possible alternative routes and modes that could best alleviate the anticipated demand. The Major Investment Study (MIS) prepared by the MTA analyzed the following six alternatives, which were deemed the most feasible of the alternatives studied to date by the MTA:

1. Wilshire Boulevard Bus Rapid Transit (at-grade)
2. Exposition Right of Way Bus Rapid Transit (at-grade)
3. Exposition Right of Way Light Rail Transit (Blue Line Extension)
4. Wilshire Heavy Rail to Pico/San Vicente (former LPA, Red Line Extension subway)
5. Wilshire Heavy Rail (Red Line Extension subway)
6. Wilshire Boulevard Aerial (Elevated Red Line Extension)

In accordance with the intent of the MIS process, the MIS, in conjunction with the guidance provided by MTA's Board of Directors, resulted in a set of refined alternatives to be evaluated in detail in the SEIS/SEIR. These alternatives are listed below.

HISTORY:

Providing high-capacity transit service improvements has been long recognized in the Mid-City/West Area. Since the 1970's, the MTA and its predecessors (SCRTD, LACTC) have conducted numerous transportation planning and environmental impact studies that established the need and feasible locations for improved east-west oriented transit service in various parts of the Study Area. The northeastern portion of the Study Area is currently served by the Metro Red Line Subway. The westward extensions of transit service have been the focus of a number of studies.

In November 1989, the Final Supplemental Environmental Impact Statement/ Supplemental Environmental Impact Report (SEIS/SEIR) was certified for an 18-mile subway project between Union Station and North Hollywood. Several additional planning and environmental studies prepared in the late 1980's and early 1990's identified the potential for expansion of the Metro Red Line system in the Eastside and Mid-City/Westside Transit Study. These efforts led to the adoption (in 1994) of Locally Preferred Alternatives (LPA) for the Metro Red Line Segment 3 Eastside and Mid-City Study Areas. Full Funding Grant Agreements were executed with the Federal Transit Administration (FTA) and the projects were transitioned into the construction phase.

In January 1998, however, the MTA suspended work on extensions of the Metro Red Line heavy rail subway project. Specifically, the suspended segments included the Eastside Extension from Union Station to 1st/Lorena (4 stations - 3.7 miles) and the Mid-City Extension from Wilshire/Western to Pico/San Vicente (2 stations - 2.3 miles).

The following summarizes the most significant recent actions that have driven the need for project suspension and redefinition:

MTA Restructuring Plan. Reasons for suspension of work on the Mid-City and Eastside extensions are documented in the MTA 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, adopted by the MTA Board of Directors on May 13, 1998 and subsequently approved by the FTA on July 2, 1998. The

Restructuring Plan documented that the MTA did not have sufficient local matching funds to finance heavy rail subway projects in the Eastside and Mid-City Study Areas as anticipated in the original Full Funding Grant Agreements for those projects. At the same time, the Restructuring Plan called for the MTA to study "viable and effective options" for all parts of Los Angeles County, with an emphasis on the Study Areas in which the rail lines had been suspended.

Within the Eastside and Mid-City Study Areas, this necessitated the examination of alternative fixed guideway options to heavy rail subway. It also committed the MTA to a re-evaluation of the financial capacities of the agency to undertake new start, fixed guideway projects. To that end, the Board authorized the Regional Transit Alternatives (RTAA Study) that commenced in July 1998 and was completed in November 1998.

Regional Transit Alternatives Analysis (RTAA Study). The RTAA Study accomplished several important objectives for the MTA. The study identified the amount of funding available for new projects between FY1999 and FY2004; it suggested possible funding allocations; it identified immediate bus transit improvements in Los Angeles County and established a framework for further fixed guideway project development in the Eastside, Mid-City, and San Fernando Valley Study Areas.

The study included a preliminary evaluation of fixed guideway alternatives in the Eastside, Mid-City, and San Fernando Valley Study Areas. The study did not make recommendations with regard to preferred fixed guideway transit modes or configurations, however, it recommended that a Major Investment Study level of analysis be conducted to provide more information regarding these choices.

Results of the RTAA Study were presented to the MTA Board on November 9, 1998. At that meeting, the Board approved the concept of a recommended rapid bus plan, under which the MTA will develop a demonstration project for three rapid bus lines serving the Eastside, Mid-City, and San Fernando Valley. The Board also reaffirmed its commitment to fund fixed guideway transit improvements beyond rapid bus in the suspended rail corridors. A priority funding commitment of $220 million through FY2004 was made to the Eastside and Mid-City areas from remaining uncommitted funds.

TEA-21 Redefinition of Metro Red Line. Segment 3 - As a necessary parallel step in obtaining greater flexibility in project definition for the Eastside and Mid-City Study Areas, the MTA sought to expand the definition of Segment 3 of the Metro Red Line, which was defined in both Intermodal Surface Transportation & Efficiency Act (ISTEA) and the Segment 3 Full Funding Grant Agreement as "heavy rail subway." With the cooperation and assistance of the Los Angeles congressional delegation, the MTA obtained revised definitional language in the Transportation Equity Act for the 21st Century, which was signed into law by the President on June 9, 1998. This action was taken with the specific intent of being able to utilize the Segment 3 funding balance in the future for any type of fixed guideway project in the Eastside and Mid-City Study Areas. The TEA- 21 legislation expanded the definition of the Segment 3 project to include "any fixed guideway project" (not just heavy rail subway) in the transportation corridors to be served by the three extensions of Segment 3. It also authorized the start of final design and construction for the

Segment 3 project during the FY1998-2003 funding cycle under section 5309 (new starts funding).

Proposition A Ballot Initiative (Subway Funding Prohibition). A new County law, referred to as the Metropolitan Transportation Authority Reform and Accountability A of 1998, was a ballot initiative, which was approved by the voters (and became effective) on November 3, 1998. The key substantive provisions of this initiative prohibit the use of Proposition A County sales tax revenues and Proposition "C" County sales tax revenues to pay the cost of planning, design, construction or operation of any new subway. The term "new subway" is defined to mean any subway (a rail line which is in a tunnel below grade) other than the Metro Red Line Segments 1, 2 or 3 (North Hollywood). As a result, the initiative prohibits the use of these sales tax revenues to build a subway in the Eastside or Mid-City Study Areas.

The initiative does not prohibit the use of sales tax revenues to design and construct light rail, at-grade rail, elevated rail systems or busways in the Eastside, Mid-City or other areas of Los Angeles County. Nor does this initiative prevent the MTA from using State or Federal revenues or local revenues other than sales tax, to design and construct a new subway in the Eastside or Mid-City areas.

PROJECT ALTERNATIVES:

The SEIS/SEIR will present the analysis of the environmental impacts of the proposed transit improvements in the Mid-City/Westside Corridor, compare environmental effects of the alternatives, and identify mitigation measures for potentially significant impacts. The alternatives that will be evaluated in the joint SEIS/SEIR include:

- **No-Build Alternative** – Existing, planned/programmed, and approved transit services and transportation facilities would serve the corridor.

- **Transportation System Management (TSM)** – This alternative makes modifications to transit service intended to enhance the performance and increase efficiency of the transportation system. Other changes from the No Build Alternative are based on the MTA's Westside Bus Service Improvement Study, which include modifying some service frequencies to more closely match demand; route extensions to connect to major destinations and/or transit hubs; route truncations to eliminate unproductive service segments or duplication; consolidation of service to simplify route structure and use; replacement of unproductive routes; and creation of new routes.

- **Wilshire Boulevard Bus Rapid Transit (BRT) "Full Length"** – Buses would run in a dedicated lane adjacent to or within the center median of Wilshire Boulevard between the current Metro Red Line station at Wilshire/Vermont and downtown Santa Monica. Stations would be placed approximately every mile along the 14-mile route, at major cross streets and trip destinations. Buses would be given priority at signals. Headways within the busway would be approximately every 3 minutes during peak periods, and the existing Mid-City/Westside bus network would be integrated with the busway. Existing local bus service along Wilshire Boulevard would be maintained with its existing stops.

- **Exposition Right-of-Way Bus Rapid Transit "Full Length"** – This alternative would connect downtown Los Angeles to downtown Santa Monica using a 16.8-mile BRT system along the Exposition Right of Way (ROW), currently owned by MTA. The BRT would operate on city streets, between downtown Los Angeles and Figueroa Street/Exposition Boulevard, following Flower Street (southbound) and Figueroa Street (northbound). The alignment would then turn west on Exposition Boulevard and proceed on the Exposition ROW to Robertson Boulevard where it would then go west on Venice Boulevard to Sepulveda Boulevard, at which point it would proceed north to return to the right-of-way. From Sepulveda Boulevard to Olympic Boulevard, the BRT would operate within the existing Exposition right-of-way. West of this point, the BRT alignment would operate on city streets. The route would terminate near the new transit mall in Santa Monica on both Broadway and Santa Monica Boulevards.

- **Exposition Right-of-Way Light Rail Transit "Full Length"** – This 16.3-mile alternative would connect downtown Los Angeles to downtown Santa Monica using the same route as the BRT along the Exposition ROW, currently owned by MTA. In downtown Los Angeles, the LRT would operate along the existing Metro Blue Line with existing stations at 7th/Flower and Pico/Staples Center. At Washington Boulevard, the Expo LRT would branch off of the Long Beach Blue Line and proceed south on either Hill Street or Flower Street to Exposition Boulevard, where it would enter the Exposition ROW. The line would then follow the same alignment as the BRT alternative to Olympic Boulevard in Santa Monica. Within Santa Monica, the alignment would follow either Olympic Boulevard or Colorado Boulevard to a terminal station near Ocean Avenue.

AVAILABLE INFORMATION:

The scope of the Mid-City/Westside Corridor transit alternatives was defined through the Major Investment Study (MIS) process, completed in January 2000 by the MTA, in accordance with USDOT regulations. An information packet describing the purpose of the project, the location, the proposed alternatives, and the impact areas to be evaluated is being mailed to affected Federal, State, and local agencies. Others may request the Scoping Meeting materials by contacting Mr. David Mieger, Los Angeles County Metropolitan Transportation Authority, One Gateway Plaza, Mail Stop 99-22-5, Los Angeles, California 90012, (213-922-3040).

Because of the changes made to the project and its potential significant impacts on the environment, an initial study was not prepared. The MIS and previous environmental documentation were used to determine the need for the joint SEIS/SEIR. The MIS is available for review at the following location:

MTA Library
One Gateway Plaza, 15th Floor
Los Angeles, CA 90012
Librarian; Dorothy Gray (213-922-4859)

For further information contact: Ervin Poka or Ray Tellis, Federal Transit Administration/Federal Highway Administration Los Angeles Metropolitan Office. Phone: (213) 202-3950.

THE SEIS/SEIR PROCESS:

The Draft SEIS/SEIR will be prepared to evaluate bus and rail mode and alignment options. The Draft SEIS/SEIR will assess the social, economic, and environmental impacts of the proposed alternatives at a project level, while refining their design to minimize and mitigate any adverse impacts. After its publication, the Draft SEIS/SEIR will be available for public and agency review and comment, and a public hearing will be held. On the basis of the Draft SEIS/SEIR and comments received, MTA will select a Locally Preferred Alternative to carry forward into the Preliminary Engineering Final SEIS/SEIR. The Final SEIS/SEIR will be based on information resulting from Preliminary Engineering.

PROPOSED SCOPE OF THE SEIS/SEIR:

The SEIS/SEIR will present the comparative analysis of the environmental, social, and economic impacts of the proposed transit improvements in the Mid-City/Westside Corridor, and will identify mitigation measures for potentially significant impacts. Issues and impacts to be considered during the study include potential changes to: 1) the physical environment (air quality, noise, water quality, aesthetics); 2) the social environment (land use, neighborhoods, parkland, historic resources, transportation); and 3) economic impacts resulting from project implementation. Among the primary transit issues to be evaluated are the expected increase in transit ridership, the expected increase in mobility for the corridor's transit dependent population (and transit-dependent populations in adjacent areas), the support of the region's air quality goals, the capital outlays needed to construct the project, the cost of operating and maintaining the facilities created by the project, and the financial impacts on the funding agencies. The SEIS/SEIR will address issue areas for which potentially significant impacts are anticipated including:

- Air Quality. Busway or light rail-related construction emissions in residential areas or adjacent to sensitive land uses. Operation emissions of criteria pollutants (carbon monoxide, nitrogen oxides, reactive organic gas, sulfur oxides and PM10) in or adjacent to proposed station areas or park and ride locations. Carbon monoxide "hot spots" in station areas or at intersections affected by transit vehicle signal preemptions. Operation emissions of Greenhouse gases such as carbon dioxide.

- Cultural Resources. Construction effects on prehistoric sites, structures, regional districts or other physical evidence associated with human activity; impacts on the fossil evidence of inorganic plant and animal remains over 1000 years old (La Brea Tar Pits); construction equipment and encroachment in historic or archaeologically sensitive areas; and impacts on Native American resources.

- Geology and Soils. Effects of liquefaction and fault rupture on above ground structures and other elements of project design.

- Hydrology. Flood-related impacts due to construction, and alteration of existing drainage patterns.

- Land Use and Public Recreation. Changes in land use patterns; pre-emption of land use development plans or projects; disruption of established neighborhoods; construction effects on adjacent land uses; disruptions to public services and access roads in residential areas; and potential for long-term safety risks to existing or planned uses in project vicinity.

- Noise. Day and nighttime transit operational effects in residential areas or adjacent to sensitive locations.

- Public Services. Effects on service area boundaries, potential disruptions to the accessibility of community services and facilities.

- Public Utilities and Energy. Effects of project construction on utility relocation requirements.

- Population, Housing, and Employment. Construction disruption to residential and commercial sites; construction and operational effects on employment and population growth potential; and land acquisition, displacement, and relocation impacts.

- Transportation. Construction effects on project study area's transportation system. Long-term circulation impacts around station areas, loss of capacity and parking along affected roadways, and impacts on traffic congestion and delays on north-south roadways that may intersect the various corridor alignments.

- Visual Resources. Construction and operational effects on visual resources and the urban design character of local areas resulting from presence of equipment, materials, workers, transit modes, and above-ground facilities.

- Cumulative and Growth Inducing Impacts.

PROJECT SCOPING PROCESS:

Written comments on the project scope should be sent, by June 23, 2000, to Mr. David Mieger, Los Angeles County Metropolitan Transportation Authority, One Gateway Plaza, Mail Stop 99-22-5, Los Angeles, California 90012. Written comments may also be made at the scoping meetings.

Public Scoping meetings for the SEIS/SEIR will be held on the following dates and locations at the times indicated:

- Tuesday, May 23, 2000, Peterson Automotive Museum, 6060 Wilshire Boulevard, Los Angeles, CA 90036 (5:00-8:00 pm)
- Wednesday, May 24, 2000, Public Agency Scoping Meeting, MTA Headquarters, One Gateway Plaza, 3rd Floor, Los Angeles, CA 90012 (10:00 am to 12:00 pm)
- Wednesday, May 31, 2000, Veteran's Administration Hospital of West Los Angeles, 11301 Wilshire Boulevard, Los Angeles, CA 90038 (5:00-8:00 pm)
- Tuesday, June 6, 2000, Ken Edwards Center, 1527 4th Street, Santa Monica, CA (5:00-8:00 pm)
- Wednesday, June 7, 2000, California African-American Museum, 600 State Drive, Exposition Park, Los Angeles, CA 90037 (5:00-8:00 pm)
- Thursday, June 8, 2000, Veteran's Memorial Complex, 4117 Overland Avenue, Culver City, CA 90232 (5:00-8:00 pm)

The scoping meetings will be held in an "open house" format and representatives will be available to discuss the project throughout the time periods given. Informational displays and written material will also be available.

FTA and MTA invite interested individuals, organizations, and public agencies to attend the scoping meeting and participate in identifying the scope and content of the SEIS/SEIR, including any significant environmental, social, or economic issues associated with the alternatives. The public is invited to specifically comment on the alternatives to be addressed, the modes and technologies to be evaluated, the alignments and termination points to be considered, the environmental, social, and economic impacts to be analyzed, and the evaluation approach to be used to select a Locally Preferred Alternative. The scoping meeting locations are wheelchair accessible. Comments may be given verbally or made in writing at the public scoping meeting. See dates above for meeting locations and times.

To ensure that a full range of issues is addressed and all significant issues are identified, comments and suggestions are invited from all interested parties. During scoping, comments should focus on identifying specific social, economic, or environmental impacts to be evaluated and suggesting alternatives that are less costly or less environmentally damaging, while meeting the identified transportation and other needs in the Mid-City/Westside Corridor.

Scoping is not the appropriate time to indicate a preference for a particular alternative. Comments on preferences should be communicated after the Draft SEIS/SEIR has been issued for public review. If you wish to be placed on the project mailing list, please call the Project Hotline at 310-366-6443. To receive further information as the project develops contact: Mr. David Mieger, Los Angeles County Metropolitan Transportation Authority, One Gateway Plaza, Los Angeles, California 90012 (213-922-3040).

AGENCY COMMENTS:

This NOP has been sent to State responsible and trustee agencies, cooperating Federal agencies, the State Clearinghouse, and a Notice of Intent (NOI) has been sent to the Federal Register. We need to know the views of your agency as to the scope and content of the environmental information, which reflects your agency's statutory responsibilities in connection with the proposed project. Once again, responses should identify the issues to be considered in the Draft SEIS/SEIR, including significant environmental issues, alternatives, mitigation measures, and whether the responding agency will be a responsible State or Federal agency or a state trustee agency. Due to the time limits mandated by State and Federal laws, your response must be sent at the earliest possible date, but no later than 30 days after receipt of this notice. Please send your responses to:

Mr. David Mieger
Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza, Los Angeles, California 90012

This NOP of an SEIS/SEIR is issued by the MTA and FTA. For further information write to:

Mr. Raymond Sukys, Program Development
FTA Region IX
201 Mission St., Suite 2210, San Francisco, CA 94105-1831

or

Mr. David Mieger
Los Angeles County Metropolitan Transportation Authority
One Gateway Plaza, Los Angeles, California 90012

Section 6.0
Attachment B
Summary of Scoping Comments

General & Association Scoping Comments Summary			
Commentor Name	***Affiliation***	***Comment***	***Technical Issue Area***
Jackie McCain	Culver City resident	In support of natural gas buses	Air Quality Impacts
Charles Edelsohn	Ca.Registered Professional Engineer	Impacts from reduction of lanes creates potential for congestion which can impact residential streets	Community & Neighborhood Impacts
Dino Nanni	Manager, Shangri-La Hotel	Hotel employees must ride bus & metro to get to work totaling average of 5 hour round trip commutes	Community & Neighborhood Impacts
Sandra Franco & David D. Franco Jr. & Rodalfe B. & Fernando L. Romero & Mr. & Mrs. Robert L. Dennis & Mr. Carlo & Connelita Magnolia	W. LA residents	LRT on Sepulveda and removal of lane will impact businesses while being constructed	Community & Neighborhood Impacts
Virgie M Simon	Block Captain of area	Impacts of LRT are disruption from construction, dust, noise,barricades, children safety, & aesthetics	Construction Impacts
No Name	Economic Development Council, 8th District Empowerment Congress	BRT will have more negative impacts (safety, traffic delays, noise) than a LRT	Cumulative impacts
Richard D Agay	President, Westwood Homeowners Association	Negative impact on flow of auto traffic on Wilshire from reduction of lanes	Cumulative Impacts
Van Ajemian J.D.	Consensus Planning Group	Rideship will increase as population density and traffic become worse	Growth Inducing Impacts
Dino Nanni	Manager, Shangri-La Hotel	Metro rail system more efficient in carrying capacity, movement per mile	Growth Inducing Impacts
Cathy Larson	Santa Monica resident	With Staple Center built without a transit plan and population growth in LA, traffic has increased	Growth Inducing Impacts
Linus Tauro		Population on eastside is projected to grow 25% over 20 years	Growth Inducing Impacts
Linus Tauro		Eastside line goes through high-density center of Boyle Heights	Growth Inducing Impacts
Linus Tauro		Santa Monica Freeway carries 400,000 people per day with traffic in both directions	Growth Inducing Impacts
Linus Tauro		Expo line serve high-density neighborhoods in downtown,Baldwin Hills,Palms,W.LA, & Santa Monica	Growth Inducing Impacts
Edwin K. Marzec	Partner, Arter & Hadden	Catalina Pacific west LA branch's location adjacent to Expo ROW could prevent plant operations	Land Acquisition/ Displacement/Relocation
Edwin K. Marzec	Partner, Arter & Hadden	Branch supplies concrete for major construction landmarks	Land Acquisition/ Displacement/Relocation
Shelby Jordon	Executive Director/ President, Community Resource Talent Department	Transit improvements must be in compliance with new development efforts underway in the area	Land Use & Development
Sandra Franco & David D. Franco Jr. & Rodalfe B. & Fernando L. Romero & Mr. & Mrs. Robert L. Dennis & Mr. Carlo & Connelita Magnolia	W. LA residents	Concerned with noise impacts to those living within one block of the Expo light rail	Noise & Vibration
& George Rodriguez		Oppose to LRT on EXPO due to noise for residents	Noise & Vibration
Royce E. Steward		Suggestions to eliminate noise around Cheviot Hills through state of the art construction	Noise & Vibration

Commentor Name	Affiliation	Comment	Technical Issue Area
Sandra Franco & David D. Franco Jr. & Rodalfe B. & Fernando L. Romero & Mr. & Mrs. Robert L. Dennis & Mr. Carlo & Connelita Magnolia	W. LA residents	Negative visual and noise impacts to residents living next to ROW	Noise & Vibration, Visual & Aesthetics
J.S. Normun		LRT impacts to dirt in home, vibrations and noise, visual blight on homes accident safety along Victory.	Noise & Vibration.
Royce E. Steward		There is a serious flaw with the detour around Cheviot Hills/ Rancho Park	Opinion
Van Ajemian J.D.	Consensus Planning Group	People love the idea of a train	Opinion
Van Ajemian J.D.	Consensus Planning Group	Volunteers can assist to conceive, research, and implement this project	Opinion
Andrea Hernak	Culver City resident	Oppose MTA coming through Culver City	Opinion
Andrea Hernak	Culver City resident	Supports project on Venice Blvd, but nowhere else	Opinion
Brian Allen	Culver City resident	Design,build,operate arrangements that are environmentally sound to avoid future environ. problems	Opinion
No Name	Economic Development Council, 8th District Empowerment Congress	LRT along the Expo corridor will spur future economic and community opportunities	Opinion
Shelby Jordon	Executive Director/ President, Community Resource Talent Department	Support continued study of Expo for BRT and LRT	Opinion
Tom Wetzel	LA Transportation Newsgroup	Opinion on .3 mile section of ROW being re-routed.	Opinion
Tom Wetzel	LA Transportation Newsgroup	Consider grade separation for Overland intersection.	Opinion
Tom Wetzel	LA Transportation Newsgroup	Suggests using single-island platform with Sepulveda.	Opinion
Ross Glazier	Los Angeles resident, voter, and architect	High capacity mass transit is vital to Los Angeles	Opinion
Ray Bianco	Marina Del Rey resident	Since westside had made dynamic changes in growth, it needs strong transportation system like LRT	Opinion
Ray Bianco	Marina Del Rey resident	Light rail along Expo will provide a local transit plan for the westside	Opinion
Ray Bianco	Marina Del Rey resident	Oppose BRT as viable solution to the westside	Opinion
Hal Bishop	Quadrille	Consider trees down Wilshire Blvd	Opinion
Hal Bishop	Quadrille	Have you all lost you minds?	Opinion
Marty Zajac	Vice President, Westside Assoc.	Benefits felt at the end of the right of way and downtown while people in middle experience the impacts	Opinion
Sandra Franco & David D. Franco Jr. & Rodalfe B. & Fernando L. Romero & Mr. & Mrs. Robert L. Dennis & Mr. Carlo & Connelita Magnolia	W. LA residents	Rideship is questionable when other areas contain the most transit dependent people	Opinion
Barbara Kelliam		Promote upper class rideship which would actually happen on LRT	Opinion
Barbara Kelliam		Announce public scoping comments on National Public Radio	Opinion
Carol Salva		I support of LRT on Expo since you can relax on rail while reading the newspaper,do work, etc.	Opinion
Joseph J. Markham		Would like transportation going south and north so to get to doctor appointments?	Opinion
Linus Tauro		Eastside population density is ideally suited for LRT	Opinion
Linus Tauro		Curitiba style bus won't work in LA due to factors of speed,capacity,overcrowding,public support for LRT	Opinion

General Assoc. - Commentor Name, Affiliation, Comment, and Technical Issue Area

Commentor Name	Affiliation	Comment	Technical Issue Area
Lynn Seliva		Santa Monica Big Blue Bus is quick, clean, reliable, and well thought out system	Opinion
Mrs.D Prymas		Oppose to Busway at Wilshire Center since it requires tearing out trees	Opinion
No Name		Opposed to Cheviot Hills refusal to build in area when major impacts can be salvaged	Opinion
Robert A.Gaylord		Idealistic vision of what LA could be	Opinion
Ruth Needle		Big Blue Bus is good enough for Santa Monica	Opinion
Ruth Needle		Rail lines will divide community with school becoming impacted	Opinion
Tami L Darrel		Riding a bus that long is inconvenient	Opinion
Tami L Darrel		Rail to Santa Monica is the best solution	Opinion
Two concerned LA citizens		This is a ridiculous, stupid, illogical, idea ever proposed, We loudly protest this idiotic ideas	Opinion
Two concerned LA citizens		Impact of proposed project would create havoc, congestion, and unsolvable traffic situation on Wilshire	Opinion
Kate Bickert	California State Director, Rails to Trails Conservancy	Suggestions for safety, convenience, bike routes, signs, studies, landmarks, and aesthetics	Safety & Security
No Name	Economic Development Council, 8th District Empowerment Congress	Concerns over passenger safety, sufficient sidewalk space, and automobile speeds and behavior	Safety & Security
Sharon Steck	Santa Monica resident	Consider safety for transfers at night to places like museums,performing arts venues & other activities	Safety & Security
Sharon Steck	Santa Monica resident	Provide shuttles at prime commuter times that go from specific satellite parking lots to the trains	Safety & Security
Sandra Franco & David D. Franco Jr. & Rodalfe B. & Fernando L. Romero & Mr. & Mrs. Robert L. Dennis & Mr. Carlo & Connelita Magnolia	W. LA residents	Safety issues around school children and traffic related fatalities	Safety & Security
J.S. Normun			Safety & Security
Robert Scott		Pedestrian safety when crossing traffic to catch a bus at center of street	Safety & Security
Sherelese Wenby		Oppose to transit on Expo due to children safety in the community	Safety & Security
Gary Russel	Architect, Executive Director, Wilshire Advocates Coalition (WAC)	Oppose Wilshire BRT (Alternative 1)	Traffic Circulation & Parking
Gary Russel	Architect, Executive Director, Wilshire Advocates Coalition (WAC)	In favor of proposing monorail as an alternate	Traffic Circulation & Parking
Charles Edelsohn	Ca.Registered Professional Engineer	Suggestion for computer simulation studies, widening of Wilshire, study east/west transit improvements	Traffic Circulation & Parking
Charles Edelsohn	Ca.Registered Professional Engineer	Suggested alternatives: adaptive control of signal lights, use of underutilized ROW such as Expo	Traffic Circulation & Parking

Commentor Name	Affiliation	Comment	Technical Issue Area
Kate Bickert	California State Director, Rails to Trails Conservancy	Consider building bike trail along Expo LRT	Traffic Circulation & Parking
Kate Bickert	California State Director, Rails to Trails Conservancy	Consider Rails w/trails,sharing corridors for transp.& recreation- bicyclists can share corridor with bus	Traffic Circulation & Parking
Jane Siegal	Coldwell Banker	Suggestions to expansion routes	Traffic Circulation & Parking
Jane Siegal	Coldwell Banker	In support of adding bikeway along light rail	Traffic Circulation & Parking
Gerald M Sallus	Culver City Democratic Club	Oppose BRT system along Wilshire	Traffic Circulation & Parking
Jackie McCain	Culver City resident	In support of Expo LRT	Traffic Circulation & Parking
Pete Nicholson	Culver City resident	Opposed to more buses and busway extension west to Pico/San Vicente form Wilshire/ Western	Traffic Circulation & Parking
Pete Nicholson	Culver City resident	Prefers subway as the best alternate and LRT	Traffic Circulation & Parking
No Name	Economic Development Council, 8th District Empowerment Congress	Suggested alternate routes	Traffic Circulation & Parking
No Name	Economic Development Council, 8th District Empowerment Congress	Projected rideship along Expo would be higher for LRT than BRT	Traffic Circulation & Parking
No Name	Economic Development Council, 8th District Empowerment Congress	Oppose BRT for Wilshire	Traffic Circulation & Parking
Lynne Collmann	General Manager, Park Wilshire Homeowners Assoc.	Impacts of removal of median, loss of left turn movements, and dedicated two traffic lanes	Traffic Circulation & Parking
Greg Laemmle	Laemmle Theaters	In favor of LRT on Expo	Traffic Circulation & Parking
No Name	Los Angeles Business Council	Impacts to buildings without proper on-site loading facilities	Traffic Circulation & Parking
No Name	Los Angeles Business Council	Impacts to buildings that experience parking restrictions during rush hours	Traffic Circulation & Parking
Ron Milam	Los Angeles County Bicycle Coalition	Incorporate Bikeway facilities into Expo corridor	Traffic Circulation & Parking
Ron Milam	Los Angeles County Bicycle Coalition	Bike route will bring benefits to transit system	Traffic Circulation & Parking
Ron Milam	Los Angeles County Bicycle Coalition	Bicycles can increase transit use by riding bike from home to bus or rail stations	Traffic Circulation & Parking
Ron Milam	Los Angeles County Bicycle Coalition	Bikes can extend range of transit users at both ends by making the system flexible and cost effective	Traffic Circulation & Parking
Ron Milam	Los Angeles County Bicycle Coalition	Design and plan recommendations for bicycle facilities in Expo corridor under bikeway element	Traffic Circulation & Parking
Ross Glazier	Los Angeles resident, voter, and architect	Support red line in the valley and blue line in Pasadena	Traffic Circulation & Parking
Ross Glazier	Los Angeles resident, voter, and architect	In support of LRT between LAX, Santa Monica, Century City, and Downtown along Wilshire	Traffic Circulation & Parking
Dino Nanni	Manager, Shangri-La Hotel	Proposes underground subway as alternative	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Impressed with BRT but support LRT solutions along Expo	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	consider subway station at: La Brea/ Melrose	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Fairfax/ Beverly	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Bev. Center/ West Hollywood (Cedars Sinai)	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Bev. Center/ Century City (Century City Hospital)l	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	UCLA/ Federal/ Getty (Veterans Hospital/ UCLA Medical Center)	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	WLA/Santa Monica Blvd/ Centinela (St. John's Medical Center/WLA Civic)	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	The Subway artery should be extended via LRT from WLA/Santa Monica Blvd/Centinela to:	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Olympic/ 26th	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Santa Monica College/ Ocean Park	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Lincoln/ Venice	Traffic Circulation & Parking

General Assoc. - Commentor Name, Affiliation, Comment, and Technical Issue Area

Commentor Name	Affiliation	Comment	Technical Issue Area
Ray Bianco	Marina Del Rey resident	Marina del Rey/ Playa Vista (Daniel Freeman Hospital)	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Loyola/ Westchester	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	LAX (Directly into the new Western Terminal Complex)	Traffic Circulation & Parking
Ray Bianco	Marina Del Rey resident	Opposition of BRT on Wilshire and Expo since it is only a short term solution	Traffic Circulation & Parking
Linda Scheid	Miracle Mile Apartment & Commercial Owners	Oppose BRT on Wilshire	Traffic Circulation & Parking
Linda Scheid	Miracle Mile Apartment & Commercial Owners	Impacts of BRT on traffic and congestion	Traffic Circulation & Parking
Linda Scheid	Miracle Mile Apartment & Commercial Owners	Locally preferred alternative is subway system	Traffic Circulation & Parking
Gabrielle Weeks & Zowie William	North Hollywood resident	Passenger of Red line, in favor of LRT	Traffic Circulation & Parking
Gabrielle Weeks & Zowie William	North Hollywood resident	Traffic congestion and parking are significant on Wilshire, more light rail in necessary	Traffic Circulation & Parking
Annie Szilagyi	OTC Management	In support of dedicated lane on Wilshire and Expo with preference with mode that pollutes the least	Traffic Circulation & Parking
Edwin K. Marzec	Partner, Arter & Hadden	Consider alternate route	Traffic Circulation & Parking
Susan Bursk	President, South Robertson Neighborhoods Council	In support of continued study of the Expo right of way	Traffic Circulation & Parking
Richard D Agay	President, Westwood Homeowners Association	Negative impact on residential and business streets adjacent to Wilshire due to lane reduction	Traffic Circulation & Parking
Hal Bishop	Quadrille	Oppose BRT on Wilshire	Traffic Circulation & Parking
Cathy Larson	Santa Monica resident	In support of LRT as an efficient mode of transportation	Traffic Circulation & Parking
Sharon Steck	Santa Monica resident	Support for high speed light rail	Traffic Circulation & Parking
Sharon Steck	Santa Monica resident	Will no longer consider going downtown/Music Center due to traffic and congestion problems	Traffic Circulation & Parking
Sharon Steck	Santa Monica resident	Consider providing commuter parking lots or buildings located at train-boarding spots	Traffic Circulation & Parking
Sharon Steck	Santa Monica resident	Suggested alternate routes on Expo from Overland to Sepulveda	Traffic Circulation & Parking
Marc Woersching	Valley Village resident	In favor of LRT on Expo since it will have greater rideship	Traffic Circulation & Parking
Marc Woersching	Valley Village resident	Opposes BRT on Wilshire	Traffic Circulation & Parking
Marc Woersching	Valley Village resident	Impacts from the removal of lanes and median landscaping will result in traffic congestion	Traffic Circulation & Parking
Marty Zajac	Vice President, Westside Assoc.	Oppose Expo Right of way, recommends Venice Blvd or Wilshire as alternates	Traffic Circulation & Parking
Sandra Franco & David D. Franco Jr. & Rodalfe B. & Fernando L. Romero & Mr. & Mrs. Robert L. Dennis & Mr. Carlo & Connelita Magnolia	W. LA residents	Additional signals giving right-of-way to BRT will have significant impact on already congested intersection	Traffic Circulation & Parking
Patsy Nagle-Rosenthal	Westwood resident 90024	Opposes BRT proposed on Wilshire	Traffic Circulation & Parking
A.Victoria Rodriguez		Prefers busway than rail since it can be more flexible	Traffic Circulation & Parking
Alice S. Cassidy		Oppose dedicated lane on Wilshire	Traffic Circulation & Parking
Barbara Kelliam		In favor of LRT, opposes bus route on Wilshire	Traffic Circulation & Parking
Carrie Weil		Consider light rail so commuting will be a more environmentally friendly on mass transit such as LRT	Traffic Circulation & Parking
Charles Powell		Oppose dedicated lane on Wilshire, prefers subway alignment on Wilshire or Metro Rapid Bus program	Traffic Circulation & Parking

Commentor Name	Affiliation	Comment	Technical Issue Area
Charles Powell		In support of dedicated lane for public transit on Expo	Traffic Circulation & Parking
Charles Powell		Preference for LRT on Expo	Traffic Circulation & Parking
Christopher M Paley		Strong support for Expo LRT & for dedicated lane on Wilshire as placeholder for red line in Westwood	Traffic Circulation & Parking
Hank Fung		Support dedicated lane on Wilshire and Expo which can serve beaches, museums, and UCLA area	Traffic Circulation & Parking
Hank Fung		Prefers LRT due to greater capacity	Traffic Circulation & Parking
Jaime Alcoba		I support of dedicated lane on Wilshire as well as Expo	Traffic Circulation & Parking
Jaime Alcoba		Preference for LRT	Traffic Circulation & Parking
Jean Bushnell		Oppose to BRT on Wilshire, in favor of Metro Rapid bus	Traffic Circulation & Parking
John Fisanotti		Consider using Expo LRT if incorporated	Traffic Circulation & Parking
John Fisanotti		Currently bus #90 to downtown is available but ride car since it is much more convenient	Traffic Circulation & Parking
Juanita Dellomes		In favor of LRT on Expo to serve riders in that area	Traffic Circulation & Parking
Juanita Dellomes		In support of dedicated lane on Wilshire	Traffic Circulation & Parking
Juanita Dellomes		Prefers LRT on Expo as the mode of transportation	Traffic Circulation & Parking
Kris Alan Sharp		In support of LRT on Expo, this is best plan for westside regional transit development	Traffic Circulation & Parking
Kymberleigh Richards		Prefer LRT on Expo without Venice deviation	Traffic Circulation & Parking
Kymberleigh Richards		LRT would have best capacity and potential trip speed between the westside and downtown	Traffic Circulation & Parking
Linus Tauro		Afternoon commute from Santa Monica to downtown has doubled from 39 mins.to hour and 18 mins.	Traffic Circulation & Parking
Linus Tauro		Expo corridor is less densely populated than the Eastside	Traffic Circulation & Parking
Lynn Seliva		In support of LRT on Expo since can be fast and reliable public transportation	Traffic Circulation & Parking
Lynn Seliva		LRT is needed on Expo, impact from auto can be avoided if LRT is implemented in our system	Traffic Circulation & Parking
Martin Schlageter		In support of LRT on Expo	Traffic Circulation & Parking
Martin Schlageter		With LRT, commutes to the westside can be clean, fast, and convenient	Traffic Circulation & Parking
Mary Luth		Opposes dedicated lane on Wilshire and supports it on Expo	Traffic Circulation & Parking
Mary Luth		Prefers LRT OVERALL on Expo	Traffic Circulation & Parking
Melinda Michlu		In support of dedicated lane on Wilshire as well as Expo	Traffic Circulation & Parking
Melinda Michlu		Prefers LRT overall	Traffic Circulation & Parking
Mrs.D Prymas		Prefer monorail as safer, faster, pleasant, and futuristic mode of transportation	Traffic Circulation & Parking
Mrs.D Prymas		Oppose BRT on Wilshire	Traffic Circulation & Parking
Nate Zablen		support of LRT on Expo,such rail can connect w/ Long Beach blue line,red line,and future eastside LR	Traffic Circulation & Parking
Nate Zablen		This gives transit dependent options w/easy access to employment, recreation, and entertainment	Traffic Circulation & Parking
No Name		Oppose busway or railroad on Expo, supports Wilshire	Traffic Circulation & Parking
Robert A.Gaylord		In favor of using Expo right of way	Traffic Circulation & Parking
Robert A.Gaylord		Impacts of going around Cheviot Hills and onto Venice/ Sepulveda	Traffic Circulation & Parking
Robert A.Gaylord		Suggestions to extensions from Expo LRT once it is installed are:	Traffic Circulation & Parking

General Assoc. - Commentor Name, Affiliation, Comment, and Technical Issue Area

Commentor Name	Affiliation	Comment	Technical Issue Area
Robert A.Gaylord		Line from La Cienega from Santa Monica with own E-W line south to Slauson	Traffic Circulation & Parking
Robert A.Gaylord		Line south on La Brea from Santa Monica to San Vicente,east to Venice,to Crenshaw,onto south Bay	Traffic Circulation & Parking
Robert A.Gaylord		N-S line along Vermont or Western	Traffic Circulation & Parking
Robert Scott		Support metro bus with BRT as unnecessary	Traffic Circulation & Parking
Robert Scott		In support of Expo/ Venice alternative	Traffic Circulation & Parking
Robert Scott		Oppose Wilshire dedicated bus lane	Traffic Circulation & Parking
Robert Scott		Negative environmental impacts to local auto and pedestrian traffic	Traffic Circulation & Parking
Royce E. Steward		Impacts to detour route by deviating from the Expo ROW	Traffic Circulation & Parking
Royce E. Steward		Reconsider Expo through Cheviot Hills provides minimal disruption to adjacent areas during peak hour	Traffic Circulation & Parking
Russ Jones		In favor of dedicated lane on Wilshire and Expo with Wilshire a priority	Traffic Circulation & Parking
Russ Jones		Prefers LRT on Expo	Traffic Circulation & Parking
Ruth Needle		Oppose dedicated lane on Wilshire	Traffic Circulation & Parking
Sherelese Wenby		In favor of dedicated lane on Wilshire since it could minimize travel times	Traffic Circulation & Parking
Sherelese Wenby		Preference for Busway	Traffic Circulation & Parking
Steve Lacap		In favor of dedicated lane on Wilshire and Expo	Traffic Circulation & Parking
Steve Lacap		Prefers grade light rail	Traffic Circulation & Parking
Tami L Darrel		Live in Pasadena and work in W LA/Santa Monica area	Traffic Circulation & Parking
Tami L Darrel		Hope to take blue line and transfer to LRT on Expo to get to work	Traffic Circulation & Parking
Two concerned LA citizens		Oppose dedicated BRT on Wilshire	Traffic Circulation & Parking
Virgie M Simon		Oppose LRT on Expo	Traffic Circulation & Parking
Virgie M Simon		In favor of dedicated bus lane	Traffic Circulation & Parking
Gerald M Sallus	Culver City Democratic Club	Negative impacts are faster traffic, more noise, no accessible parking,	Traffic Circulation & Parking, noise & Vibration
J.S. Normun		Concerns over rail along expo corridor	Visual & Aesthetic Impact
Hal Bishop	Quadrille	Building a bus lane down Wilshire will make it unaesthetically pleasing	Visual & Aesthetic Impacts
Lynne Collmann	General Manager, Park Wilshire Homeowners Assoc.	Proposal will negatively impact the community re-vitalization and beautification efforts	Visual & Aesthetics Impacts
Ray Bianco	Marina Del Rey resident	Red, blue, green lines have not granted access to regions vital active, business and tourism hubs	
Sandra Franco (etc.)	W. LA residents		
Constance Wustman			
Daniel Walker			

7.0 REFERENCES

7.1 GENERAL REFERENCES

CEQA Air Quality Handbook, South Coast Air Quality Management District (SCAQMD), April 1993.

Collection of reports and correspondence associated with Methane Gas seepage in Fairfax/Wilshire area, City of Los Angeles Archives, 1985 - 1991.

Conceptual Aerial Structure Study, Metro Rail Transit Consultants, December 1986.

CORE Study Artist Renditions of Aerial Concepts (17 images).

CORE Study/ Milestone 3 Draft Summary Report/Public Consultation on Second-Level Evaluation of Candidate Alignment and Stations, Southern California Rapid Transit District, April 1986.

CORE Study Subsurface Conditions Report/ An Evaluation of Methane Gas Potential Along Candidate Alignments of the Los Angeles Metro Rail Project, Engineering-Science, May 1986.

Distribution of Hydrogen Sulfide at 20'-50' Below Ground Surface (1 page drawing), Enviro-Rail.

Distribution of Hydrogen Sulfide at 50'-80' Below Ground Surface (1 page drawing), Enviro-Rail.

Districting Map (Zoning Districts, Overlay Districts), Santa Monica, City of, January 6 1998d.

Draft EIR and Technical Appendices - 1998 Regional Transportation Plan, SCAG, Adopted 4-16-98.

Draft EIR for the North Outfall Sewer - East Central Interceptor Sewer, Cultural Resources Section, Myra Frank & Associates for the City of L.A. DPW, 6-98.

Draft EIS and Draft EIR - Los Angeles Rail Rapid Transit Project Metro Rail, United States Department of Transportation, Urban Mass Transportation Administration, Southern California Rapid Transit District, June 1983.

Draft - Rail Transit Design Criteria and Standards - Volume II - Rail Planning Guidebook, MTA, Jun 1994.

Draft - Transitway Feasibility Study, Regional Transportation Planning & Development, Transportation Development and Implementation, City of Los Angeles Department of Transportation, August 1998.

Draft - Vermont Avenue Aerial Structures Review of Conceptual Design / Southern California Rapid Transit District Metro Rail, Tudor Engineering Company, April 1987.

Engineering Feasibility Study / Mid-City Extension Metro Red Line Segment 3 Wilton/Arlington Alignments, Engineering Management Consultants, August 1996.

Executive Summary Exposition Right-of-way Alternatives Refinement / Environmental Impact Report Study/ Phase 1 Exposition Right-of-way Alternatives Refinement / Environmental Impact Report Study - Final Draft , BRW, Inc., December 1994.

EXPORAIL: The Westside Blue Line, The Exposition Rail Coalition, Aug 1999.

Exposition Corridor Alignment (one page drawing).

The Exposition Corridor, The Exposition Rail Coalition (Citizen Activist Group), April 1999.

Exposition Park Branch Line Final EIR, LA County Transportation Commission, Oct 1992.

The Exposition Park Branch Line Rail Transit Project (drawings EP1 - EP3), LA County Transportation Commission, March 1992.

Exposition Right-of-way Alternatives Refinement Study Report / Phase 1 Exposition Right-of-way Alternatives Refinement / Environmental Impact Report Study / Capital Cost Estimate Breakdown (Appendix F) Final Draft, BRW, Inc., December 1994.

Exposition Right-of-way Alternatives Refinement - Traffic Analysis Technical Appendices, Katz, Okitsu & Associates, November 1993.

Exposition Right-of-way Preliminary Planning Study - Executive Summary, BRW & Associates, David Evans & Associates, Katz, Okitsu & Associates, Rose & Kindel, May 1992.

Exposition Right-of-way Preliminary Planning Study - Final Report, BRW & Associates, David Evans & Associates, Katz, Okitsu & Associates, Rose & Kindel, May 1992.

Exposition Right-of-way Preliminary Planning Study (Plan and Profile Drawings pg 1-15), BRW, Inc., May 1992.

Fact sheets, California High-Speed Rail Authority, June 1999.

Fault Map of California, California Department of Conservation, Division of Mines and Geology, 1988.

Federal Transit Administration's New Start Program/ FTA Workshops on New Starts, Federal Transit Administration, June 1999.

Final Draft - Phase 1 Summary Report, BRW, Inc., December 1994.

Final Report: A Recommended HOV System for Los Angeles County, Parsons Brinckerhoff, October 1996.

Final Report for the Development of Milestone 10: Fixed Facilities, Southern California Rapid Transit District, 1983.

Final Report - Southern California Rapid Transit District, Kaiser Engineers/Daniel, Mann, Johnson, & Mendenhall, May 1968.

Final Supplemental EIR & Subsequent EIR - Los Angeles Rail Rapid Transit Project Metro Rail, United States Department of Transportation, Urban Mass Transportation Administration, Southern California Rapid Transit District, July 1989.

Final Supplemental Environmental Impact Statement / Report on the Los Angeles Rapid Transit Project-Metro Rail for The Mid-City Segment From Wilshire/Western to Pico/San Vicente in the City of Los Angeles with Stations at Olympic/Crenshaw and Pico/San Vicente, United States Department of Transportation, Federal Transit Administration, Los Angeles County Transportation Commission, August 1992.

Fiscal 1998-1999 Adopted Budget, Los Angeles County Metropolitan Transportation Authority, June 1998.

Full set of planning drawings - Crenshaw/Prairie Corridor, July 1999.

Full set of plan/profile drawings, Crenshaw/Prairie Corridor, MTA, May 1999.

Geotechnical Design Summary Report For Construction Contract C0401, Crenshaw/Olympic Station, Engineering Management Consultant, Law/Crandall, Inc., January 1994.

Geotechnical Design Summary Report For Construction Contract C0411, Mid-City Segment Tunnel, Engineering Management Consultant, Law/Crandall, Inc., January 1994.

Geotechnical Design Summary Report For Construction Contract C0421, Pico/San Vicente Station, Engineering Management Consultant, Law/Crandall, Inc., January 1994.

Historic Resource Evaluation Report - Exposition ROW Regional Bikeway Project, Greenwood & Associates for City of Los Angeles BoE, 7-99.

In Our Lifetime, Videotape of Curitiba busway system produced by Martha Welborne.

Los Angeles Metro Orange Line Extension Transitional Analysis, Bechtel Civil Co., July 1990.

Los Angeles Metro Orange Line Extension Transitional Analysis Study - Patronage Analysis Technical Report, Southern California Rapid Transit Planning Department, May 1990.

Los Angeles Metro Orange Line Extension Transitional Analysis/Task 4: Engineering Report, Bechtel Civil Co., February 1990.

Los Angeles Metro Orange Line Extension Transitional Analysis/Task 4: Station Site Plans, Manuel Padron & Associates, June 1990.

Los Angeles Metro Orange Line Extension Transitional Analysis/Task 4B: Capital Cost Estimate, Manuel Padron & Associates, July 1990.

Los Angeles Metro Orange Line Extension Transitional Analysis/Task 6: Environmental Analysis, Michael Brandman Associates., April 1990.

Los Angeles Metro Rapid Bus/Demonstration Program/Implementation Plan, Transportation Management & Design, Inc., Suisman Urban Design., March 1999.

Los Angeles Metro Rapid Bus/ Demonstration Program - Request for Participation,, LACMTA and LADOT, February 1999.

Metro Orange Line Alternatives Analysis - Draft EIS/Draft EIR - Service and Patronage Method Report, LACTC, Urban Mass Transportation Administration, September 1992.

Metro Rail Red Line MOS-2 Corridor Land Use Analysis and Joint Development Potential/ Background Data Technical Document (Appendices A through C), Southern California Rapid Transit, District Planning Department, undated.

Metro Rail Transitional Analysis - Conceptual Engineering Drawings, Bechtel Civil Co., March 1990.

Metro Red Line Extension System Planning Study, Southern California Associations of Governments, August 1989.

Metro Red Line Mid-City Segment: Olympic/Crenshaw Station Aerial Alternative Urban Design and Development Concept - Techincal Memorandum, Marc A. Futterman & Associates, Korve Engineering, Meza & Madrid Development, Melendrez Assoc., March 1996.

Metro Red Line Mid-City Segment/Supplemental Environmental Impact Statement Subsequent Environmental Impact Report- Draft, United States Department of Transportation, Federal Transit Administration, LACMTA, September 1997.

Metro Red Line Segment 3/Mid-City Extension Reassessment Study/An Interim Report on Construction Options- Final, Engineering Management Consultant, July 1994.

Mid-City Alternative Alignment Gas Exploration Study, Enviro-Rail, March, 1996.

Mid-City Bus Transit Restructuring Study / Deliverable 15 Final Transit Restructuring Plan, IBI Group, March 1999.

MTA/SPTC Track Maps for Exposition Right-of-Way, (31 plan sheets).

National Transit Database, Federal Transit Administration, 1998. Part II/ Department of Transportation / Federal Transit Administration/ Major Capital Investment Projects; Proposed Rule., Federal Register, April 1999.

No El on Wilshire, NEOW, (2-page letter) May 1986.

1993 Assessor's Maps for the Exposition Right-of-Way (former SPTC Santa Monica Branch Line) from Long Beach Avenue (Los Angeles) to 17th Street (Santa Monica), MTA Real Estate Department, received Oct 1999.

1998 RTP Transit Restructuring For Use in the MTA Re-evaluation Study. Transit Corridor Technical Report, Southern California Association of Governments, August 1998.

Part II/ Department of Transportation / Federal Transit Administration/ Major Capital Investment Projects; Proposed Rule., Federal Register, April 1999.

Phase 1: Station Concept Report / Appendix E, BRW, Inc., January 1995.

Procedures and Technical Methods for Transit Project Planning (Supplement), Federal Transit Administration, February 1993.

Proposed Transportation Element of the General Plan, City of Los Angeles, Department of City Planning, Jun 1998.

Rail Transit Design Criteria & Standards, Volume IX - Fire/Life Safety Criteria, LACMTA, March 1994.

Rail Transit Implementation Strategy - Stage 1, LACTC, Transit Development Division, May 1983.

Reference Manual: National Transit Institute Training Program for Major Investment Studies, FTA - FHA, National Transit Institute and Parsons Brinckerhoff Quade & Douglas, Inc., January 1995.

Regional Transit Alternatives Analysis - Study Results, Booz-Allen & Hamilton Inc., November 9, 1998.

Regional Transit Alternatives Analysis - Study Results –Appendix, Booz-Allen & Hamilton Inc., November 17, 1998.

Report/Technical Drawings, Base Alignment and Options, Engineering Management Consultant, Aug 1994.

Restructuring Plan: Analysis and Documentation of the MTAs Financial and Managerial Ability to Complete North Hollywood Rail Construction and Meet the Terms of the Bus Consent Decree, LACMTA, May 1986.

Route Concept Report - Route 10, Caltrans, March 1991.

San Fernando Valley East-West Rail Transit Project - SP Burbank Branch Alignment Extended Metro Rail Solution Pre-Preliminary Engineering Study - Volume II - Final

San Fernando Valley East-West Rail Transit Project - SP Burbank Branch Alignment Pre-Preliminary Engineering Study - Volume I - Final Report, Engineering Management Consultant, Sept 1994.

Santa Monica Boulevard (SR-2) Corridor Study, Korve Engineering, April 1994.

Santa Monica College Municipal Pool Replacement Project Final EIR/EA, November 1998b.

Santa Monica Civic Center Specific Plan, City of Santa Monica, 1993.

Seaview Court Condominiums Final Initial Study/Mitigated Negative Declaration, EIP Associates, July 24, 1998.

Subsurface Gas Investigation, Metro Rail Red Line Mid-City Segment, Engineering-Science, Inc., August 1992.

State of California Hazardous Waste and Substances List (CORTESE List), California Environmental Protection Agency, Department of Toxic Substances Control, April 1998.

Task Force Report II on the Methane Gas Incursion, Fairfax Area, City of Los Angeles/Council File 88-1826, Los Angeles City Council, Jan 1990.

Technical Appendix - 1998 Regional Transportation Plan, SCAG, Adopted 4-16-98.

Technical Appendices - Transitway Feasibility Study (MTA, LADOT, 8-98).

Technical Guidance on Section 5309 New Starts Criteria, Federal Transit Administration, July 1999.

Technical Input and Comments on RTAA Red Line Subway Extension Alternatives, MTA Tunnel Advisory Panel, October 1998.

3000 Olympic Boulevard New Production Facility for Lantana West Initial Study/Mitigated Negative Declaration, May 1999a.

Transit Noise and Vibration Impact Assessment DOT-T-95-16, Federal Transit Administration Final Report, (FTA), April 1995.

Transit Signal Priority (TSP) - Project Definition Document, LADOT, May 1998.

20th Street and Arizona Avenue 4 Story Hotel Final Initial Study/Mitigated Negative Declaration, EIP Associates, March 1, 1999.

Underground Gas and Geology in the Study Corridor, Set of 30 sheets, Enviro-Rail, undated.

United States Code Congressional and Administrative News, 99th Congress - First Session 1985 - Sections 320 - 321, 1985.

Water System Improvements Study, Brown and Caldwell, February 1986.

Westside Bus Improvement Study - Draft Recommendations, Transportation Management & Design, March 1998.

Westside Bus Service Improvement Study - Final Report, Transportation Management & Design, June 1998.

Wilshire Boulevard: Western to La Cienega then back to Vermont, Videotape shot by Brent, September 1999.

Wilton/Arlington Alignment Engineering Feasibility Study Subsurface Gas Investigation, Enviro-Rail, August 1996.

Zoning Ordinance, revised in March with amendments current to August 1998c.

7.2 CULTURAL RESOURCE REFERENCES

Basten, Fred E.

1974 Santa Monica Bay: The First 100 Years. Douglas-West Publishers, Los Angeles.

Bottles, Scott

1987 Los Angeles and the Automobile, the Making of the Modern City. University of California Press, Berkeley.

Brock, J. T.

1986 Archaeological Assessment Report for the Proposed Dunn-Edwards Culver City Store, Located Partially within the City of Los Angeles, California. Archaeological Advisory Group, 1-3-86. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-1495)

Brooks, S., et al.

1990 The Haverty Human Skeletons: Morphological, Depositional, and Geochronological Characteristics. Journal of California and Great Basin Anthropology 12(1):60-83. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-2967)

Bucknam, B.

1974 The Los Angeles Basin and Vicinity: A Gazetteer and Compilation of Archaeological Site Information. 5-74. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3583)

City of Los Angeles, (Anon.)

1977 Historic Property Survey, Overland Avenue Between National Place and Washington Boulevard. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3746)

City of Los Angeles, (REL)

1977 Historic Property Survey, National Boulevard Between Palms Boulevard and Rose Avenue, W.O. 91336. 9-29-77. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3748)

City of Los Angeles, (DRB)

1977 Historic Property Survey, Bundy Drive - North of Wilshire Boulevard to South of La Grange Avenue. 4-77. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3729)

Clewlow, C. W.

n.d. Evaluation of the Archaeological Resources and Potential Impact of the Development of Baldwin Hills County Regional Park. [An Environmental Impact Report]. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-98)

Clewlow, C. W., and D. S. Whitley

1976 An Assessment of the Impact of the University High School Construction Project on Archaeological Site CA-LAn-382, Los Angeles, Los Angeles County, California. 11-5-76. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-704)

Deverell, William

1994 Railroad Crossing, Californians and the Railroad 1850-1910. University of California Press. Los Angeles.

Deetz, James

1977 In Small Things Forgotten: The Archaeology of Early American Life. Anchor/Doubleday, Garden City, New York.

Demcak, C.

1992 Cultural Resources Assessment of the 67-Acre Vista Pacifica Project Area, Cities of Culver City and Los Angeles (Beverly Hills Quad), Los Angeles County, California. Environmental Science Associates, Inc., 7-92. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-2632)

Dibblee, T.W., Jr.

1991. Geologic map of the Beverly Hills and Van Nuys (south ½) Quadrangles, Los Angeles County, California. Dibblee Geological Foundation map DF_31.

Dillon, B. D.

1990 Archaeological Record Search and Impact Evaluation for the Los Angeles Wastewater Program Management (NOS-NCOS) Project, Los Angeles, California. 7-15-90. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3501)

1981 An Archaeological Resource Survey and Impact Assessment of Tentative Tract #41395, Lots 13 & 11 of Block 56 of the Artesian Tract at 1441-1445 Barry Avenue, Los Angeles, California. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-947)

1981 An Archaeological Resource Survey and Impact Assessment of Tentative Tract #28355 in the City of Los Angeles, California. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-1121)

Dillon, B. D., and R. A. Salls

1989 Archaeological and Paleontological Reconnaissance and Impact Evaluation of the Central City West Study Area, Los Angeles, California. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-1741)

Duke, C.

1999 Cultural Resource Assessment for Pacific Bell Mobile Services Facility LA 450-02, in the County of Los Angeles, California. Letter report, 5-7-99. LSA Associates. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-4554)

Duke, C.

1999 Cultural Resource Assessment for Pacific Bell Mobile Services Facility LA 420-01, in the County of Los Angeles, California. Letter report, 5-7-99. LSA Associates. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-4549)

ENVICOM Corporation and Richard Starzak & Associates

1989 Historical Property Survey Report, West Los Angeles Veloway Project. 5-2-89. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-4239)

Farmer, M. F.

1936 Baldwin Hills Campsites, Ballona Creek Area, L.A. County. 1-17-36. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-839)

Fogelson, Robert M.

1993 The Fragmented Metropolis, Los Angeles, 1850-1930. University of California Press, Berkeley.

Frank, Myra L., and Associates

1987 Historic Property Survey Report, North Outfall Relief Sewer (NORS). 9-10-87. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3673)

Greenwood, Roberta S.

1996 Down By the Station, Los Angeles Chinatown, 1880-1933. Monumenta Archaeologica 18. Institute of Archaeology, UCLA, Los Angeles.

Harlow, Neal

1975 Maps and Surveys of the Pueblo Lands of Los Angeles. Dawson's Book Shop, Los Angeles.

Howard, V., and L. M. Raab

1988 Archaeological Monitoring of the Landmark II Project, Los Angeles, CA. NCPA, 1988. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-191)

Interurbans Special

1975 Lines of the Pacific Electric, Southern and Western District. Interurbans, Special 60.

King, Chester

1993 Prehistoric Native American Cultural Sites in the Santa Monica Mountains. 7-18-94. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3587)

Leach, M.

1980 Cultural Resources Survey of Tentative Tract No. 40264 Located at 11531-11539 Rochester Ave., West Los Angeles, California. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-767)

McGroarty, John S.

1921 Los Angeles, From the Mountains to the Sea. The American Historical Society, Chicago. Pg. 886. Vol. III.

Marquez, Ernest

1975 Port of Los Angeles, A Phenomenon of the Railroad Era. Golden West Books, San Marino.

McLean, D.

1998 Archaeological Assessment for Pacific Bell Mobile Services Telecommunications Facility LA 023-05, 5542 West Washington Boulevard, City and County of Los Angeles, California. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3952)

1998 Archaeological Assessment for Pacific Bell Mobile Services Telecommunications Facility LA 024-04, 8951 National Boulevard, City and County of Los Angeles. Letter Report, 4-10-98. LSA Associates. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3966)

Metropolitan Transportation Authority

1997 Westside Transit Corridor Study, Background Environmental Data. In Metro Red Line Mid-City Segment Administrative Draft SEIS/SEIR. On file, MTA.

MITECH

1989 Historic Properties Overview for Routine Operations and Maintenance, Los Angeles County Drainage Area (LACDA). 1-89. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-2649)

Metropolitan Transportation Authority

1997 Westside Transit Corridor Study, Background Environmental Data. In Metro Red Line Mid-City Segment Administrative Draft SEIS/SEIR. On file, MTA.

Ord, Lt. E. O. C., and William R. Hutton

1849 Plan de la Ciudad de Los Angeles.

Pennington, Lucinda W., and William K. Baxter

1976 A Past to Remember, The History of Culver City. City of Culver City.

Post, Robert C.

1988 Street Railways and the Growth of Los Angeles. Golden West Books, San Marino, California.

Rechtman, R.

1982 An Archaeological Resource Survey and Impact Assessment of "Lot 1, Tract 14500," Los Angeles, California. UCAS, 5-15-82. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-1179)

Romani, J. F.

1977 Assessment of the Archaeological Impact by the Development of the Waste Water Facilities Plan W.O. 31389. NARC. 3-10-77. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3511)

Rozaire, C.

1950 Malcolm Farmer's Work in the Area. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-58)

1950 La Ballona Creek Area, Oscar Shulene's Activities in the Area. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-68)

Rozaire, C. E., and R. E. Belous

1950 Preliminary Report on the Archaeology of the La Ballona Creek Area, Los Angeles County, California. 6-12-50. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-751)

Robinson, John W.

1985 Southern California's First Railroad, The Los Angeles & San Pedro Railroad, 1869-1873. Omni Publications, Hawthorne.

Robinson, W.W.

1959 Santa Monica, A Calendar of Events in the Making of a City. Title Insurance and Trust Company. Los Angeles

Storrs, Les

1974 Santa Monica, Portrait of a City, Yesterday and Today. Santa Monica Bank.

Singer, C. A.

1984 Archaeological Monitoring at 1234 Granville, W.L.A. Letter report to Mulokas & Associates, 3-12-84. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-1371)

1980 Cultural Resource Survey and Impact Assessment for Tentative Tract No. 39619, at the Corner of Goshen and Westgate Avenues, in West Los Angeles, California. 3-29-80. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-711)

1980 Cultural Resource Survey and Impact Assessment for Tentative Tract No. 39621 in the City and County of Los Angeles, California. 3-26-80. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-676)

Singer, C. A., and J. E. Atwood

1990 Cultural Resources Survey and Impact Assessment for the Palisades Street Maintenance Yard in West Los Angeles, Los Angeles County, California. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-2038)

Slawson, D., and J. Foster

1999 Historic Resource Evaluation Report, Exposition Boulevard Right-of-Way Regional Bikeway Project, Los Angeles County, California. Greenwood and Associates, 7-99. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-4667)

Starzak, R.

1990 Final Draft, Historic Studies Section, Community Plan Revision Program, List of Previously Documented Historic Resources for the Southwest Los Angeles Sub-Regional Area. January 22. Myra L. Frank & Associates. On file, City of Los Angeles Department of Planning.

1990 Draft, Historic Studies Section, Community Plan Revision Program, Historic Resources Final Report for the West Adams - Baldwin Hills - Leimert District Plan Area. October 15. Myra L. Frank & Associates. On file, City of Los Angeles Department of Planning.

1990 Historic Context Statement, The Southwest Los Angeles Subregional Planning Area. October 1. Myra L. Frank & Associates. On file, City of Los Angeles Department of Planning.

1990 Revised Draft, Historic Studies Section, Community Plan Revision Program, List of Potentially Significant Historic Resources for the West Adams - Baldwin Hills - Leimert District Plan Area. October 11. Myra L. Frank & Associates. On file, City of Los Angeles Department of Planning.

1993 Final Draft, Historic Studies Section, Community Plan Revision Program, List of Previously Documented Historic Resources for the South Central Los Angeles District Plan Area. May 5. Myra L. Frank & Associates. On file, City of Los Angeles Department of Planning.

1996 Historic Resources Report, South Central Los Angeles District. June 21. Myra L. Frank & Associates. On file, City of Los Angeles Department of Planning.

1996 Draft, Historic Studies Section, Community Plan Revision Program, List of Potentially Significant Historic Resources for the South Central Los Angeles District Plan Area. June 21. Myra L. Frank & Associates. On file, City of Los Angeles Department of Planning.

Sweet, R. K.

1963 Letter report, re: Road VII-LA-163-LA, CIC route adoption. UCAS. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3506)

Turner, R., and M. Selvertson

1996 Monitoring of Median Improvements, Wilshire Boulevard from Fairfax Avenue to La Brea Avenue. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3471)

Van Horn, D.

1990 Phase I Cultural Resource Study: Lot 1, Tract 2196 (The "Artesian Block") in the City of Los Angeles. 1-19-90. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-2377)

1989 Archaeological Test Excavations at 1327 Westgate Avenue, Los Angeles, CA. 3-24-89. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-1721)

Whitley, D. S.

1979 Cultural Resources Assessment of the Proposed Culver City Park. 7-13-79. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-537)

Wlodarski, R. J.

1996 Addendum Report: Results of a Phase I Archaeological Study of the Proposed Construction of Proposed Shaft Site P, East Central Interceptor Sewer Project, East-West Alignment, Los

Angeles County, California. For Myra L. Frank & Associates, 7-1996. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3357)

1994 Addendum Report: Results of a Phase I Archaeological Study, New Construction Shaft Sites for the Proposed East Central Interceptor Sewer (ECIS) Project, East-West Alignment, Los Angeles County, California. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3090)

1994 Results of a Phase I Archaeological Study for the East Central Interceptor Sewer [ECIS] Project, East. West Alignment, Los Angeles County, California. For Myra L. Frank & Associates, 1-94. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-3019)

1993 Results of a Phase I Archaeological Study for the Proposed East Central Interceptor Sewer [ECIS] Project, East-West Alignment, Los Angeles County, California. For Myra L. Frank & Associates, 6-93. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-2838)

1987 Archaeological Reconnaissance Report for Areas Relating to the North Outfall Replacement Sewer Project, Los Angeles County, California. For Myra L. Frank & Associates, 6-5-87. On file, South Central Coastal Archaeological Information Center, CSU Fullerton. (L-309)

Historical Maps

Wilshire Corridor: USGS 15' Sawtelle Quadrangle, 1934

USGS 15' Sawtelle Quadrangle, 1925

USGS 15' Topanga Canyon Quadrangle, 1928 (1932)

USGS 15' Hollywood Quadrangle, 1926

Address ranges on Wilshire:

Los Angeles (3780 at Western to 6067 at Fairfax)

Beverly Hills, (8423 at San Vicente to 9634 at about Roxbury)

Santa Monica (101 at Ocean to 1215 at about Euclid)

(Missing segments: 6067/Fairfax to 8423/ San Vicente; 9634/Roxbury to about 13000/Centinela

and SM 3300/Centinela to 1215 at about Euclid)

Exposition Corridor: USGS 15' Sawtelle Quadrangle, 1934

USGS 15' Sawtelle Quadrangle, 1925

USGS 15' Topanga Canyon Quadrangle, 1928 (1932)

USGS 15' Hollywood Quadrangle, 1926

7.3 SUPPORTING TECHNICAL DOCUMENTS

Transit Network Assumptions. Korve Engineering, and Manuel Padron & Associates, Inc.

Cultural Resources Technical Report. Greenwood and Associates, October 9, 2000.

Construction Methods Technical Report. Korve Engineering, October 1, 2000.

Air Quality Construction and Operation Data Sheets. Terry A. Hayes & Associates.

Traffic Technical Report. Meyer, Mohades Associates, Inc.

Scoping Materials and Comments. The Robert Group, and Consensus Planning Group.

8.0 LIST OF PREPARERS

EIP Associates (EIP) and Terry A. Hayes Associates (TAHA) prepared the environmental analysis contained in this document under contract to Korve Engineering (prime consultant) and the Los Angeles County Metropolitan Transportation Authority (MTA). The effort was supported by a federal grant administered by the Federal Transit Administration (FTA).

The following persons listed in Table 8-1 were directly involved in the preparation of this document. It is recognized that no one individual can be an expert in all of the environmental analysis presented in this EIR. Consequently, an interdisciplinary team, consisting of technicians and experts in various issue areas, was required to prepare and complete this study. Table 8-1 provides a list of EIR preparers.

TABLE 8-1
LIST OF DOCUMENT PREPARERS

Name	Project Role
FTA – Federal Lead Agency	
Leslie Rogers	Regional Administrator
Ray Sukys	Regional Office
Timothy Pennington	Regional Office
Ervin Poka	Los Angeles Metro Office
Ray Telles	Los Angeles Metro Office
Joseph Ossi	Office of Planning
MTA – Local Lead Agency	
Julian Burke	Chief Executive Officer
James de la Loza	Executive Officer, Countywide Planning & Development
Carol Inge	Project Director
David Mieger	Project Manager
Ray Sosa	Deputy Project Manager
Timothy Papandreou	Project Planner
Mariana Salazar	Project Planner
Hitesh Patel	Engineering Project Manager
Rick Wilson	Project Controls & Schedules
Chaushie Chu	Director, Systems Analysis & Research
Brian Boudreau	Director, Capital Planning/Grant Funding
Ron Smith	Financial Programming
Frances Impert	Real Estate Officer
Korve Engineering – Engineering and Design	
John Stutsman	Consultant Project Manager
Pete Zimmerman	Project Engineer
Tony Wang	Traffic Engineer
Matt Simons	Project Planner
Joaquin Siques	Safety
Narasimha Murthy	Traffic Simulation
Sunil Rajpal	Traffic Simulation
Salvador Cortez	Graphics

TABLE 8-1
LIST OF DOCUMENT PREPARERS

Name	Project Role
EIP Associates – Environmental Consultant	
Terri Vitar	Project Manager, Natural Resources Issues
Rod Jeung	Project Manager, Planning and Environmental Issues
Susan ZagRodny	Deputy Project Manager, Land Use and Development
Mark Horne	Visual Resources
Elwood Tescher	Urban Design, Land Use
Rhett Beavers	Urban Design, Land Use, Environmental Justice
Steve Gerhardt	Land Use, Policy Consistency
Neill Brower	Cultural Resources
Robert Chihade	Urban Design, Land Use
Conni Pallini	Land Use
Scott Debauche	Socio-Economics, Environmental Justice
Martin Ruane	Environmental Analyst
Banafsheh Khorram	Environmental Analyst
Jessica Crete	Document Production
Brian Elhardt	Word Processing
Pedro Vitar	Production
Terry A. Hayes & Associates – Environmental Consultant	
Terry A. Hayes	Project Manager, Air Quality, Energy, Land Acquisition
Elizabeth Atwell	Alternatives Considered
Manuel Padron & Associates, Inc. – Traffic Modeling	
Manuel Padron	Transit Running Times
Susan Rosales	Performance Measures, Transit Network Plans
Bruce Emory	Transit Operating Statistics
Dennis Markham	Operating and Maintenance Costs
Meyer, Mohaddes Associates, Inc. – Traffic and Parking	
Michael Meyer	Traffic and Parking
Viggen Davidian	Traffic and Parking
David Kennedy	Traffic and Parking
Harris Miller Miller & Hanson, Inc. – Noise and Vibration	
Hugh J. Saurenman	Project Manager, Noise and Vibration
David A. Towers	Deputy Project Manager, Noise and Vibration
Kyle W. Donnelly	Noise Impact Analyst
Katherine S. Baus	Vibration Impact Analyst
The Robert Group – Community Involvement	
Christine M. Robert	
Christina M. Cobb-Cisneros	
Consensus Planning Group – Community Involvement	
Julie Gertler	
Anthony Crump	
Suisman Urban Design – Urban Design	
Doug Suisman, F.A.I.A.	Urban design

9.0 DISTRIBUTION LIST

Notification of release of the Draft Environmental Impact Statements/Draft Environmental Impact Report was distributed to the public in the following manner:

- Draft Environmental Impact Statements/Environmental Impact Reports were sent to the more than 250 agencies and organizations listed below.
- Executive Summaries of the DEIS/EIR were mailed to more than 2,000 individuals on the project mailing list.
- Notifications of Availability were distributed to approximately 8,000 people.
- Advertising was placed in 8 newspapers.
- MTA website (www.mta.net) offered free download of the Executive Summary.
- Take-One brochures (25,000) were distributed on the MTA Metro Rapid Bus, at bus stops along Wilshire Boulevard and at Metro Red Line stations at Wilshire/Western and Wilshire/Vermont.
- Printed copies were provided to the libraries listed in the following Section 9.13.

9.1 Federal Agencies

- Federal Highway Administration
- U.S. Environmental Protection Agency
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Department of the Interior, Office of Environmental Affairs
- Federal Emergency Management Agency
- Department of Health and Human Services
- Department of Housing and Urban Development
- Department of Energy
- Federal Railroad Administration
- U.S. Department of Transportation, Environmental Division
- Advisory Council on Historic Preservation

9.2 State Agencies

- Department of Conservation
- Department of Fish and Game
- Regional Water Quality Control Board
- California Department of Transportation
- Los Angeles Unified School District

- California Department of Housing and Community Development
- State Clearinghouse, Office of Planning and Research
- Office of Historic Preservation, California Park and Recreation Department
- California Air Resources Board
- Division of Mining and Geology
- California Department of Parks and Recreation
- California Public Utilities Commission
- California Department of Health Services
- Native American Heritage Commission
- State Lands Commission
- California Energy Resources Commission
- California Department of Education
- California Department of General Services
- California Department of Water Resources
- California Joint Legislative Audit Committee
- California Office of Public Assistance, State Clearinghouse
- California Resource Agency
- California Department of Transportation (Caltrans)
- State Library, Government Publications Section
- California Transportation Commission
- Los Angeles Community College District

9.3 Regional Agencies

- Southern California Association of Government
- South Coast Air Quality Management District
- Metropolitan Water District of Southern California
- Southern California Gas Company

9.4 Los Angeles County

<u>Elected Officials</u>

- Yvonne Braithwaite Burke, Supervisor, 2nd District
- Zev Yaroslavsky, Supervisor, 3rd District

County Departments

- Department Health Services
- Department of Public Works
- Los Angeles County Flood Control District
- Department of Regional Planning
- District Attorney
- Chief Administrative Officer
- Superintendent of Schools
- County Clerk

- Department of Community and Senior Citizens Services
- Assessor
- Sheriff
- Library Department
- Parks and Recreation Department
- Public Social Services Department
- Regional Planning Commission
- Sanitation District

9.5 City of Beverly Hills

Elected Officials

- Vicki Reynolds, Mayor
- Mark Egerman, Vice Mayor
- Les Bronte, Council Member
- MeraLee Goldman, Council Member
- Thomas S. Levyn, Council Member

City Staff

- Maria Rysliki, Transportation Department
- Aaron Kunz, Transportation Department

9.6 City of Culver City

Elected Officials

- David Hauptman, Mayor of the City of Culver City
- Edward Wolkowitz, Vice Mayor of the City of Culver City
- Alan Corlin, Council Member
- Carol Gross, Council Member
- Steven Rose, Council Member

City Staff

- Stephen Cunningham, Deputy Transportation Director
- Michael Bush, Transportation Division
- John Rivera, Planning Division
- Sherry Jordan, Planning Division
- Max Paetzold, Engineering Division
- Mark Wardlaw, Community Development

9.7 City of Santa Monica

Elected Officials

- Michael Feinstein, Mayor of the City of Santa Monica
- Richard Bloom, Mayor Pro Tempore
- Ken Genser, Council Member
- Robert Holbrook, Council Member
- Herb Katz, Council Member
- Kevin McKeown, Council Member
- Pamela O'Connor, Council Member

City Staff

- Susan McCarthy, City Manager' Office
- Kate Vernez, City Manager's Office
- Suzanne Frick, Planning & Community Development
- Ellen Gelbard, Planning & Community Development
- Stephanie Negriff, Transportation Development
- David Feinberg, Big Blue Bus
- Paul Casey, Big Blue Bus
- Andy Agle
- Lucy Dike

9.8 City of Los Angeles

Elected Officials

- Richard Riordan, Mayor of the City of Los Angeles
- City of Los Angeles City Attorney
- Mike Hernandez, Council Member, 1st District
- John Ferraro, Council Member, 4th District
- Mike Feuer, Council Member, 5th District
- Ruth Galanter, Council Member, 7th District
- Mark Ridley-Thomas, Council Member, 8th District
- Rita Walters, Council Member, 9th District
- Nate Holden, Council Member, 10th District
- Hal Bernson, Council Member, 12th District
- Rudy Jr. Svorinich, Council Member, 15th District

City Staff

- Francis Bannerjie, Department of Transportation
- James Okazaki, Department of Transportation
- Allyn Rifkin, Department of Transportation
- Haripal Vir, Department of Transportation
- Susan Bok, Department of Transportation
- Sean Skehan, Department of Transportation
- Sean Haeri, Department of Transportation

- Jay Kim, Department of Transportation
- Allan Kawaguchi, Bureau of Engineering
- Dr. Ara Kasparian, Bureau of Engineering

City Departments

- Bureau of Engineering
- Bureau of Sanitation, Wastewater Treatment Management
- Community Redevelopment Agency
- Department of Recreation and Parks
- Department of Transportation
- Los Angeles Public Library
- Department of Water and Power
- Fire Department
- Planning Department
- Police Department
- Social Services Department
- Housing Authority
- Environmental Affairs Commission
- Department of Airports
- Cultural Heritage Commission
- Cultural Affairs Department
- Community Development Department
- Building and Safety Department
- City Clerk
- Office of the Chief Legislative Analyst

9.9 California State Assembly

- Herb Wesson, Assembly Member, 47th District
- Paul Koretz, Assembly Member, 42nd District
- Rod Wright, Assembly Member, 48th District
- Fran Pavley, Assembly Member, 41st District

9.10 California State Senate

- Sheila Kuehl, Senator, 23rd District
- Betty Karnette, Senator, 27th District
- Kevin Murray, Senator, 26th District

9.11 U.S. House of Representatives

- Henry Waxman, Congressman, 29th District
- Xavier Becerra, Congressman, 30th District
- Julian Dixon's Office, Congressman, 32nd District

- Lucille Roybal-Allard, Congresswoman, 33rd District

9.12 U.S. Senate

- Barbara Boxer, Senator
- Diane Feinstein, Senator

9.13 Public Libraries

Beverly Hills Library
444 N. Rexford Dr.
Beverly Hills
90210

Brentwood Library
11820 San Vicente Blvd.
Brentwood
90049

Central Library
630 W. 5th St.
Los Angeles
90071

Crenshaw-Imperial Library
11141 Crenshaw Blvd.
Inglewood
90303

Culver City Library
4975 Overland Ave.
Culver City
90230

Exposition Park Regional Library
3665 S. Vermont Ave.
Los Angeles
90007

Fairfax Library
161 S. Gardner St.
Los Angeles
90036

Fairview Library
2101 Ocean Park Blvd.
Santa Monica
90405

Jefferson Library
2211 W. Jefferson Blvd.
Los Angeles
90018

Los Angeles County Law Library
301 W. 1st St.
Los Angeles
90012

Mar Vista Library
12006 Venice Blvd.
Los Angeles
90066

Masao W. Satow Library
14433 Crenshaw Blvd.
Los Angeles
90249

Memorial Library
4625 West Olympic Blvd.
Los Angeles
90019

Ocean Park Library
2601 Main St.
Santa Monica
90405

Palms-Rancho Park Library
2920 Overland Ave.
Los Angeles
90064

Pio Pico Koreatown Library
695 S. Serrano Ave.
Los Angeles
90005

Robertson Branch Library
1719 S. Robertson Blvd.
Los Angeles
90035

Santa Monica Main Library
1343 6th St.
Santa Monica
90401

View Park Library
3854 W. 54th St.
Los Angeles
90043

Washington Irving Library
1803 S. Arlington Ave.
Los Angeles
90019

West Los Angeles Regional Library
11360 Santa Monica Blvd.
West Los Angeles
90025

Wilshire Library
149 N. Saint Andrews Place
Los Angeles
90004

9.14 Community & Civic Organizations

- Arlington Heights Block Club
- Baldwin Neighborhood HOA
- Baldwin Neighborhood Homeowners Association
- Baldwin Vista Homeowners Association
- Beverly Angeles Homeowners Association
- Beverly Hills Chamber of Commerce
- Beverly Hills Southside Neighborhood Association
- Beverly Roxbury Homeowner Association
- Beverlywood Homeowners Association
- BH Southwest HOA
- Boulevard Heights Homeowners Association
- Brentwood Beautiful
- Brentwood Chamber of Commerce
- Brentwood Circle Homeowners Association
- Brentwood Glenn Homeowners Association
- Brentwood Hills Homeowners Association
- Brentwood Homeowners Association
- Brentwood Park Property Owners Assoc.
- Brentwood Terrace Homeowners Association
- Brentwood Village Chamber of Commerce
- Brookside
- California Country Club Homes Association
- Carthay Circle Homeowners Association

- Castle Heights Neighborhood Association
- Century Westwood HOA
- Cheviot Hills HOA
- Cheviot Hills Homeowner's Association
- Country Club Park Neighborhood Association
- Crenshaw Chamber of Commerce
- Crenshaw Neighbors
- Crestview (1800) Neighborhood Association
- East Culver City Neighborhood Alliance
- East West Transit Coalition
- Echo Horizon School
- Exposition Park & Figueroa Corridor Circulation and Parking Task Force
- Friends 4 Expo
- Friends of Sunset Park
- Friends of Westwood, Inc.
- Greater Los Angeles African American Chamber of Commerce
- Hancock Park Association
- Hancock Park Homeowners Association
- Hayden Tract
- Highland -La Brea
- Korean American Chamber of Commerce
- Lafayette Neighborhood Association
- Longwood Area Neighborhood Association
- Los Angeles Area Chamber of Commerce
- Los Angeles Business Council
- Los Angeles County Bicycle Coalition
- Mid-City Chamber of Commerce
- Miracle Mile Apartment Owners
- Miracle Mile Chamber of Commerce
- Miracle Mile Civic Coalition
- Miracle Mile Homeowners Association
- Miracle Mile Residential Association
- Neighbors for an Improved Community
- Oxford Square Homeowners Association
- Park Wilshire Homeowners Association
- Rails to Trails
- Ridgewood-Wilton
- Santa Monica Chamber of Commerce
- South Carthay Neighborhood Association
- South of Robertson Neighborhood Association
- South West Association of Neighbors
- SW Beverly Hills Homeowners Assoc.
- Venice Area Chamber of Commerce
- Victoria Park
- Victoria Park Association
- Village Green Homeowners Association

- West Los Angeles Chamber of Commerce
- West of Westwood Homeowners Association
- Westside Civic Federation
- Westside Resident's Association
- Westside Village Civic Association
- Westwood Gardens Civic Association
- Westwood Hills Property Owners Association
- Westwood Homeowner's Association
- Westwood South of Santa Monica
- Wilshire Blvd. Property Owner's Coalition
- Wilshire Advocates Coalition
- Wilshire Chamber of Commerce
- Wilshire Homeowners Association
- Wilshire Park Association
- Windsor Boulevard Neighborhood Association
- Windsor Square Neighborhood Association
- Windsor Square-Hancock Park Historic
- Windsor Village Community Association
- Windsor Village HOA

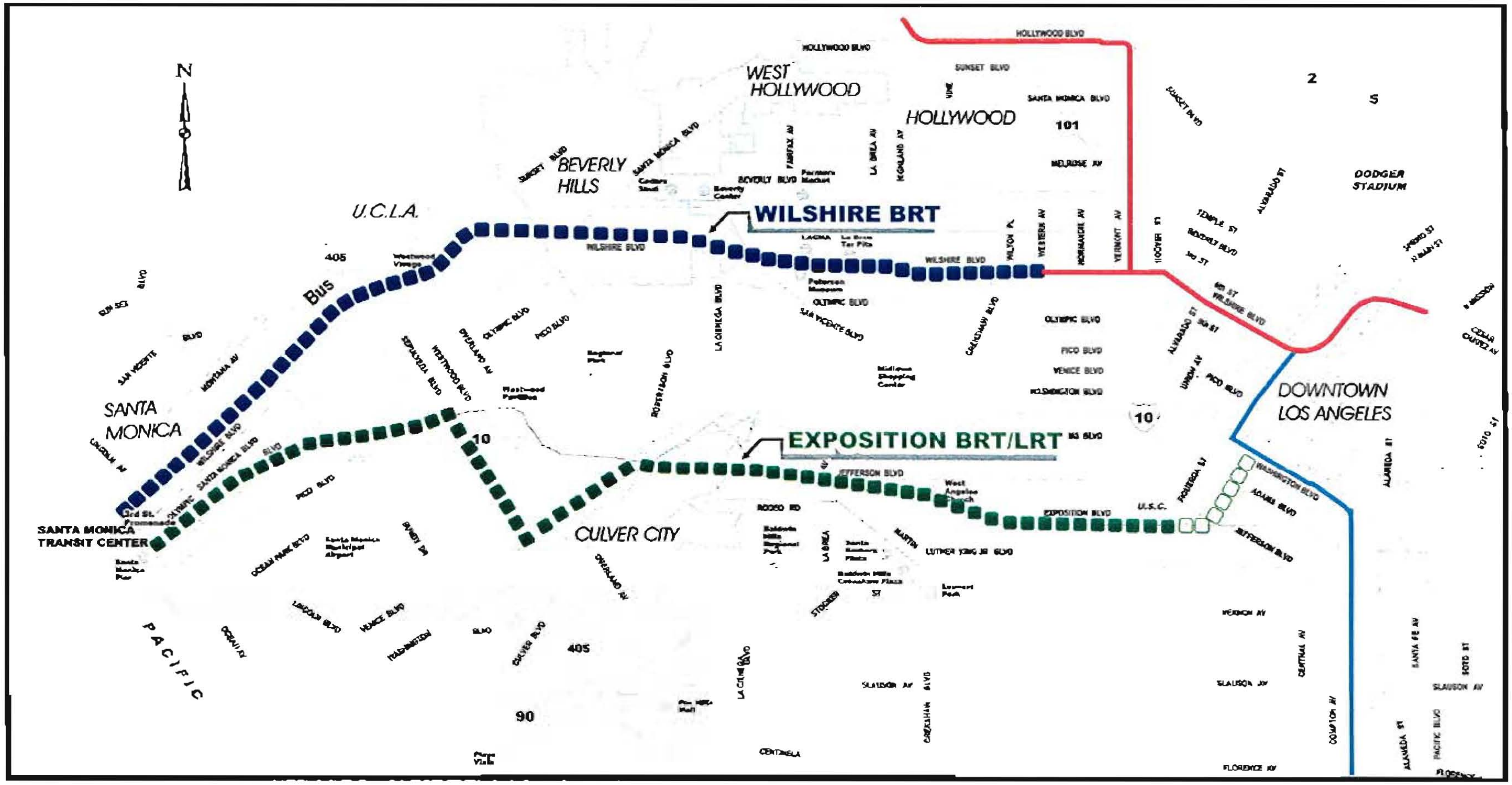
10.0 CONCEPTUAL ENGINEERING DRAWINGS

The conceptual engineering drawings for all of the alternatives under consideration are provided in this section, following this page.

ENGINEERING DRAWINGS

MID-CITY/WESTSIDE TRANSIT CORRIDOR

WILSHIRE BRT •• EXPOSITION BRT •• EXPOSITION LRT



Submitted by:

Korve Engineering, Inc.
with
Suisman Urban Design

Submitted to:

Los Angeles County Metropolitan Transportation Authority

December 11, 2000

PLEASE NOTE THAT THESE DRAWINGS
ARE ONE-HALF ORIGINAL SIZE

GENERAL CORRIDOR DRAWINGS

SHEET No.	DWG No.	DESCRIPTION
1	G-1	TITLE SHEET - CORRIDOR MAP
2	G-2	INDEX OF DRAWINGS
3	G-3	EXPOSITION BIKEWAY SCHEMATIC
4	G-4	EXPOSITION BIKEWAY TYPICAL SECTIONS

WILSHIRE BRT PROJECT

SHEET No.	DWG No.	DESCRIPTION
5	WB-0	KEY MAP - WILSHIRE BRT PROJECT
6	WB-1	ALIGNMENT PLAN - STA 0+00 TO STA 44+00
7	WB-2	ALIGNMENT PLAN - STA 44+00 TO STA 91+00
8	WB-3	ALIGNMENT PLAN - STA 91+00 TO STA 141+00
9	WB-4	ALIGNMENT PLAN - STA 141+00 TO STA 186+00
10	WB-5	ALIGNMENT PLAN - STA 186+00 TO STA 236+00
11	WB-6	ALIGNMENT PLAN - STA 236+00 TO STA 283+00
12	WB-7	ALIGNMENT PLAN - STA283+00 TO STA 332+00
13	WB-8	ALIGNMENT PLAN - STA332+00 TO STA 379+00
14	WB-9	ALIGNMENT PLAN - STA 379+00 TO STA 412+00
15	WB-10	ALIGNMENT PLAN - STA 413+00 TO STA 463+00
16	WB-11	ALIGNMENT PLAN - STA 463+00 TO STA 497+00
17	WB-12	ALIGNMENT PLAN - STA 497+00 TO STA 548+00
18	WB-13	ALIGNMENT PLAN - STA 548+00 TO STA 597+00
19	WB-14	ALIGNMENT PLAN - STA 597+00 TO STA 645+00
20	WB-15	ALIGNMENT PLAN - STA 645+00 TO STA 692+00
21	WB-31	TYPICAL X-SECTIONS - 70' CURB WIDTH STA 0+00 TO 110+00, 184+00 TO 348+00
22	WB-32	TYPICAL X-SECTIONS - 78' CURB WIDTH STA 110+00 TO 159+00, 455+00 TO 692+00
23	WB-33	TYPICAL X-SECTIONS - 87' CURB WIDTH STA 159+00 TO 184+00
24	WB-34	TYPICAL X-SECTIONS - 80' AND 104' CURB WIDTHS STA 405+00 TO 407+00, 418+00 TO 433+00
25	WB-41	STREET DETAILS - MIRACLE MILE SEGMENT
26	WB-42	STREET DETAILS W/ 12' STATION WIDTH - MIRACLE MILE SEGMENT
27	WB-43	STREET DETAILS - BEVERLY HILLS SEGMENT
28	WB-44	STREET DETAILS - WESTWOOD SEGMENT
29	WB-45	STREET DETAILS - SANTA MONICA SEGMENT
30	WB-61	TYPICAL WILSHIRE MEDIAN STATION
31	WB-71	REPLACEMENT PARKING - CRENSHAW AND LA BREA LOTS

EXPOSITION BRT PROJECT

SHEET No.	DWG No.	DESCRIPTION
32	EB-1	KEY MAP - EXPOSITION BRT PROJECT
33	EB-13	RAPID BUS IN LOS ANGELES
34	EB-14	PLAN AND PROFILE (BASELINE) - STA 192+84 TO STA 215+00 AND RAPID BUS IN LOS ANGELES
35	EB-15	PLAN AND PROFILE (BASELINE) - STA 215+00 TO STA 243+00
36	EB-16	PLAN AND PROFILE (BASELINE) - STA 243+00 TO STA 271+00
37	EB-17	PLAN AND PROFILE (BASELINE) - STA 271+00 TO STA 299+00
38	EB-18	PLAN AND PROFILE (BASELINE) - STA 299+00 TO STA 327+00
39	EB-19	PLAN AND PROFILE (BASELINE) - STA 327+00 TO STA 355+00
40	EB-20	PLAN AND PROFILE (BASELINE) - STA 355+00 TO STA 383+00
41	EB-21	PLAN AND PROFILE (BASELINE) - STA 383+00 TO STA 411+00
42	EB-22	PLAN AND PROFILE (BASELINE) - STA 411+00 TO STA 439+00
43	EB-23	PLAN AND PROFILE (BASELINE) - STA 439+00 TO STA 467+00
44	EB-24	PLAN AND PROFILE (BASELINE) - STA 467+00 TO STA 495+00
45	EB-25	PLAN AND PROFILE (BASELINE) - STA 495+00 TO STA 515+00
46	EB-26	PLAN AND PROFILE (BASELINE) - STA 515+00 TO STA 543+00
47	EB-27	PLAN AND PROFILE (BASELINE) - STA 543+00 TO STA 571+00
48	EB-28	PLAN AND PROFILE (BASELINE) - STA 571+00 TO STA 599+00
49	EB-29	PLAN AND PROFILE (BASELINE) - STA 599+00 TO STA 627+00
50	EB-30	PLAN AND PROFILE (BASELINE) - STA 627+00 TO STA 655+00
51	EB-31	PLAN AND PROFILE (BASELINE) - STA 655+00 TO STA 683+00
52	EB-32	PLAN AND PROFILE (BASELINE) - STA 683+00 TO STA 707+00
53	EB-33	PLAN AND PROFILE (BASELINE) - STA 707+00 TO STA 735+00
54	EB-34	PLAN AND PROFILE (BASELINE) - STA 735+00 TO STA 763+00
55	EB-35	PLAN AND PROFILE (BASELINE) - STA 763+00 TO STA 791+00
56	EB-36	PLAN AND PROFILE (BASELINE) - STA 791+00 TO STA 815+00
57	EB-37	PLAN AND PROFILE (BASELINE) - STA 815+00 TO STA 839+00
58	EB-38	PLAN AND PROFILE (BASELINE) - STA 839+00 TO STA 847+00 AND RAPID BUS IN SANTA MONICA
59	EB-39	PLAN (BASELINE) - RAPID BUS IN SANTA MONICA
60	EB-40	PLAN (BASELINE) - RAPID BUS IN SANTA MONICA
61	EB-41	PLAN AND PROFILE (CUT & COVER OPTION) - STA 159+00 TO STA 187+00
62	EB-42	PLAN AND PROFILE (CUT & COVER OPTION) - STA 187+00 TO STA 215+00
63	EB-52	EXPOSITION BOULEVARD AT VERMONT
64	EB-53	WESTERN STATION
65	EB-54	CRENSHAW STATION
66	EB-55	LA BREA STATION AND PARK & RIDE
67	EB-56	LA CIENEGA STATION AND PARK & RIDE SHEET 1 OF 2
68	EB-57	LA CIENEGA STATION AND PARK & RIDE SHEET 2 OF 2
69	EB-58	NATIONAL / HAYDEN STATION
70	EB-59	VENICE BOULEVARD STREET LAYOUT PLAN - STA 509+00 TO STA 535+00
71	EB-60	VENICE BOULEVARD STREET LAYOUT PLAN - STA 535+00 TO STA 567+00
72	EB-61	VENICE BOULEVARD STREET LAYOUT PLAN - STA 567+00 TO STA 599+00
73	EB-62	VENICE BOULEVARD STREET LAYOUT PLAN - STA 599+00 TO STA 609+00
74	EB-63	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 609+00 TO STA 634+00
75	EB-64	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 634+00 TO STA 662+00
76	EB-65	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 662+00 TO STA 679+00
77	EB-66	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 679+00 TO STA 703+00
	EB-67	DRAWING NOT USED
78	EB-68	PICO / SAWTELLE STATION AND PARK & RIDE (SHEET 1 OF 2)
79	EB-69	PICO / SAWTELLE STATION AND PARK & RIDE (SHEET 2 OF 2)
80	EB-70	BUNDY STATION AND PARK & RIDE (SHEET 1 OF 2)
81	EB-71	BUNDY STATION AND PARK & RIDE (SHEET 2 OF 2)
82	EB-72	CLOVERFIELD STATION AND PARK & RIDE (SHEET 1 OF 3)
83	EB-73	CLOVERFIELD STATION AND PARK & RIDE (SHEET 2 OF 3)
84	EB-74	CLOVERFIELD STATION AND PARK & RIDE (SHEET 3 OF 3)
85	EB-75	EAST PARTAL AREA - (CUT & COVER OPTION)
86	EB-76	VERMONT / USC / EXPOSITION PARK STATION - CUT & COVER OPTION
87	EB-81	TYPICAL SECTIONS - S1 THROUGH S4
88	EB-82	TYPICAL SECTIONS - S5 THROUGH S8
89	EB-83	TYPICAL SECTIONS - S9 THROUGH S12
90	EB-84	TYPICAL SECTIONS - S13 THROUGH S16
91	EB-85	TYPICAL SECTIONS - S17 THROUGH S20

EXPOSITION LRT PROJECT

SHEET No.	DWG No.	DESCRIPTION
92	EL-1	KEY MAP - LRT PLAN AND PROFILE
93	EL-11	PLAN AND PROFILE (BASELINE) - STA 102+00 TO STA 131+00
94	EL-12	PLAN AND PROFILE (BASELINE) - STA 131+00 TO STA 159+00
95	EL-13	PLAN AND PROFILE (BASELINE) - STA 159+00 TO STA 187+00
96	EL-14	PLAN AND PROFILE (BASELINE) - STA 187+00 TO STA 215+00
97	EL-15	PLAN AND PROFILE (BASELINE) - STA 215+00 TO STA 243+00
98	EL-16	PLAN AND PROFILE (BASELINE) - STA 243+00 TO STA 271+00
99	EL-17	PLAN AND PROFILE (BASELINE) - STA 271+00 TO STA 299+00
100	EL-18	PLAN AND PROFILE (BASELINE) - STA 299+00 TO STA 327+00
101	EL-19	PLAN AND PROFILE (BASELINE) - STA 327+00 TO STA 355+00
102	EL-20	PLAN AND PROFILE (BASELINE) - STA 355+00 TO STA 383+00
103	EL-21	PLAN AND PROFILE (BASELINE) - STA 383+00 TO STA 411+00
104	EL-22	PLAN AND PROFILE (BASELINE) - STA 411+00 TO STA 439+00
105	EL-23	PLAN AND PROFILE (BASELINE) - STA 439+00 TO STA 467+00
106	EL-24	PLAN AND PROFILE (BASELINE) - STA 467+00 TO STA 495+00
107	EL-25	PLAN AND PROFILE (BASELINE) - STA 495+00 TO STA 515+00
108	EL-26	PLAN AND PROFILE (BASELINE) - STA 515+00 TO STA 543+00
109	EL-27	PLAN AND PROFILE (BASELINE) - STA 543+00 TO STA 571+00
110	EL-28	PLAN AND PROFILE (BASELINE) - STA 571+00 TO STA 599+00
111	EL-29	PLAN AND PROFILE (BASELINE) - STA 599+00 TO STA 627+00
112	EL-30	PLAN AND PROFILE (BASELINE) - STA 627+00 TO STA 655+00
113	EL-31	PLAN AND PROFILE (BASELINE) - STA 655+00 TO STA 683+00
114	EL-32	PLAN AND PROFILE (BASELINE) - STA 683+00 TO STA 707+00
115	EL-33	PLAN AND PROFILE (BASELINE) - STA 707+00 TO STA 735+00
116	EL-34	PLAN AND PROFILE (BASELINE) - STA 735+00 TO STA 763+00
117	EL-35	PLAN AND PROFILE (BASELINE) - STA 763+00 TO STA 791+00
118	EL-36	PLAN AND PROFILE (BASELINE) - STA 791+00 TO STA 815+00
119	EL-37	PLAN AND PROFILE (BASELINE) - STA 815+00 TO STA 839+00
120	EL-38	PLAN AND PROFILE (BASELINE) - STA 839+00 TO STA 865+00
121	EL-39	PLAN AND PROFILE (BASELINE) - STA 865+00 TO STA 890+00
122	EL-40	PLAN AND PROFILE (BASELINE) - STA 890+00 TO STA 912+66.30
123	EL-41	PLAN AND PROFILE (BASELINE) - CUT & COVER OPTION - STA 159+00 TO STA 190+00
124	EL-42	PLAN AND PROFILE (BASELINE) - CUT & COVER OPTION - STA 190+00 TO STA 217+00
125	EL-60	I-110 / USC / EXPOSITION PARK STATION
126	EL-61	VERMONT STATION AND EXPOSITION BOULEVARD TO FIGUEROA
127	EL-62	WESTERN STATION
128	EL-63	CRENSHAW STATION
129	EL-64	LA BREA STATION AND PARK & RIDE
130	EL-65	LA CIENEGA STATION AND PARK & RIDE - SHEET 1 OF 2
131	EL-66	LA CIENEGA STATION AND PARK & RIDE - SHEET 2 OF 2
132	EL-67	VENICE / WASHINGTON STATION AND PARK & RIDE
133	EL-68	VENICE BOULEVARD STREET LAYOUT PLAN - STA 509+00 TO STA 535+00
134	EL-69	VENICE BOULEVARD STREET LAYOUT PLAN - STA 535+00 TO STA 563+00
135	EL-70	VENICE BOULEVARD STREET LAYOUT PLAN - STA 563+00 TO STA 591+00
136	EL-71	VENICE BOULEVARD STREET LAYOUT PLAN - STA 591+00 TO STA 609+00
137	EL-72	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 609+00 TO STA 634+00
138	EL-73	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 634+00 TO STA 662+00
139	EL-74	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 662+00 TO STA 679+00
140	EL-75	SEPULVEDA BOULEVARD STREET LAYOUT PLAN - STA 679+00 TO STA 703+00
	EL-76	DRAWING NOT USED
141	EL-77	PICO / SAWTELLE STATION AND PARK & RIDE - SHEET 1 OF 2
142	EL-78	PICO / SAWTELLE STATION AND PARK & RIDE - SHEET 2 OF 2
143	EL-79	BUNDY STATION AND PARK & RIDE - SHEET 1 OF 2
144	EL-80	BUNDY STATION AND PARK & RIDE - SHEET 2 OF 2
145	EL-81	CLOVERFIELD STATION AND PARK & RIDE - SHEET 1 OF 3
146	EL-82	CLOVERFIELD STATION AND PARK & RIDE - SHEET 2 OF 3
147	EL-83	CLOVERFIELD STATION AND PARK & RIDE - SHEET 3 OF 3
148	EL-86	I-110 / EXPOSITION PARK STATION - CUT & COVER OPTION
149	EL-87	VERMONT / USC / EXPOSITION PARK STATION - CUT & COVER OPTION
150	EL-91	NON-REVENUE TRACK BETWEEN HILL ST AND HOOPER AV (SHEET 1 OF 3)
151	EL-92	NON-REVENUE TRACK BETWEEN HILL ST AND HOOPER AV (SHEET 2 OF 3)
152	EL-93	NON-REVENUE TRACK BETWEEN HILL ST AND HOOPER AV (SHEET 3 OF 3)
153	EL-94	HOOPER AVE YARD AND SHOP LAYOUT
154	EL-101	TYPICAL SECTIONS - L1 THROUGH L4
155	EL-102	TYPICAL SECTIONS - L5 THROUGH L8
156	EL-103	TYPICAL SECTIONS - L9 THROUGH L12
157	EL-104	TYPICAL SECTIONS - L13 THROUGH L16
158	EL-105	TYPICAL SECTIONS - L17 THROUGH L20
159	EL-106	TYPICAL SECTIONS - L21 THROUGH L24
160	EL-107	TYPICAL SECTIONS - L25 THROUGH L28
161	EL-108	TYPICAL SECTIONS - L29 THROUGH L32
162	EL-109	TYPICAL SECTIONS - L33 THROUGH L36

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

* DRAWING NOT INCLUDED IN THIS SUBMITTAL

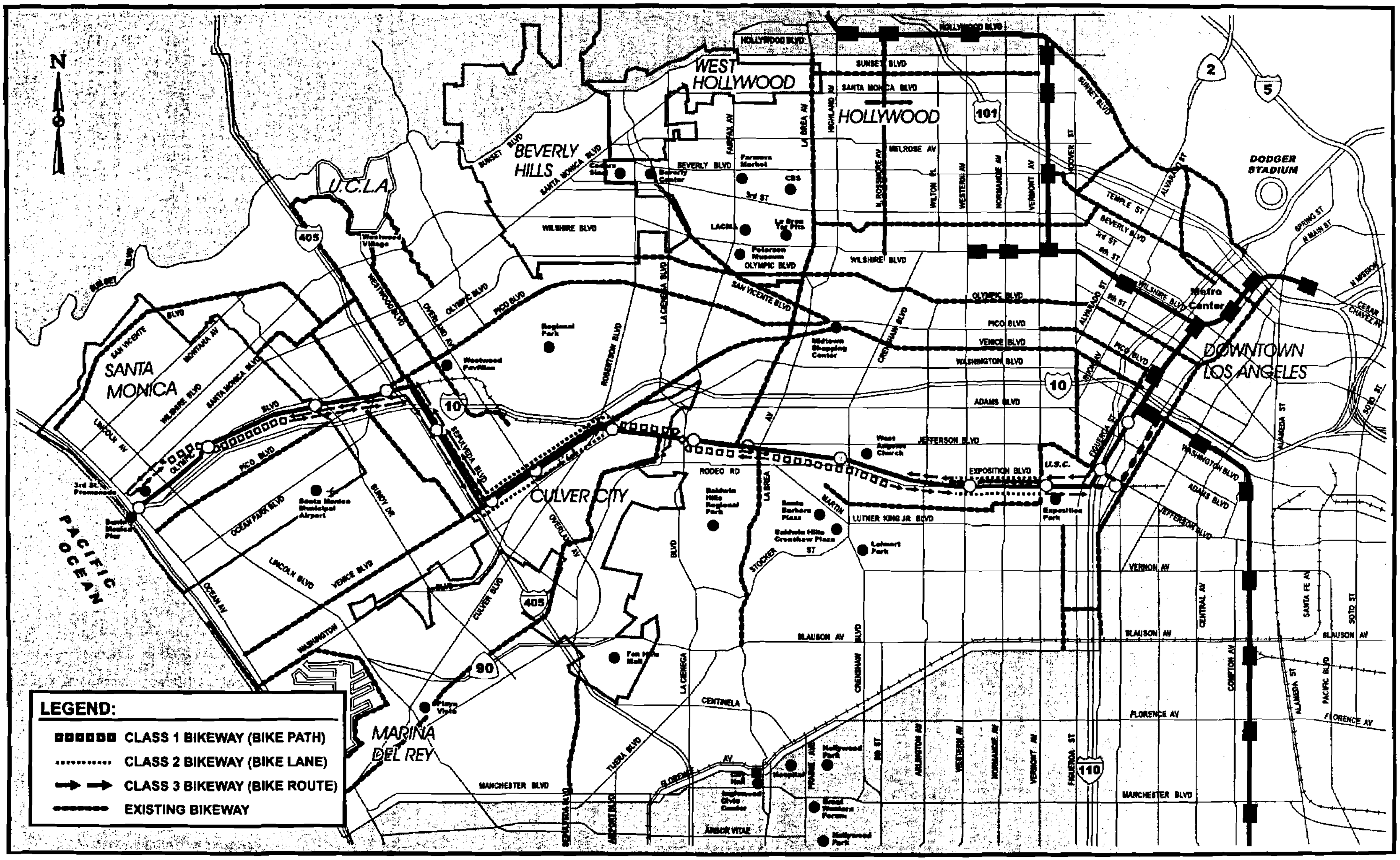
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
STUDY PHASE 2
INDEX OF DRAWINGS

CONTRACT NO
DRAWING NO G-2
REV
SCALE NO SCALE
SHEET NO 2



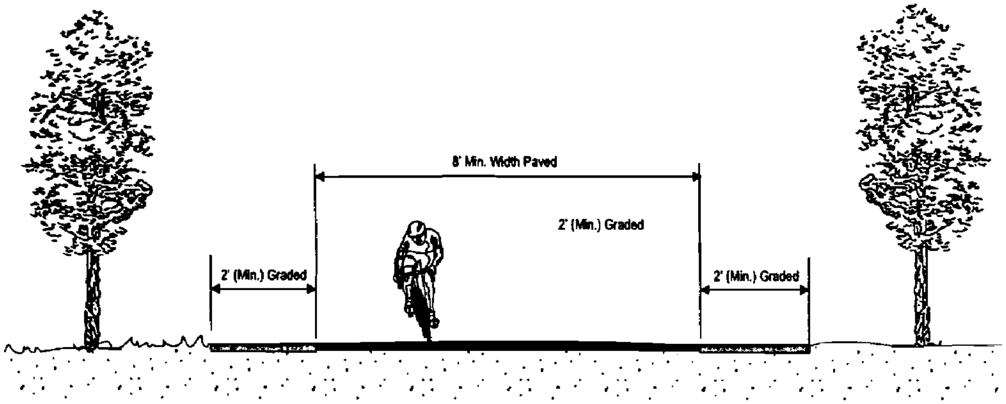
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

Designed by	P.Z.
Drawn by	S.C.
Checked by	J.S.
In charge	J.S
Date	8 Dec 00

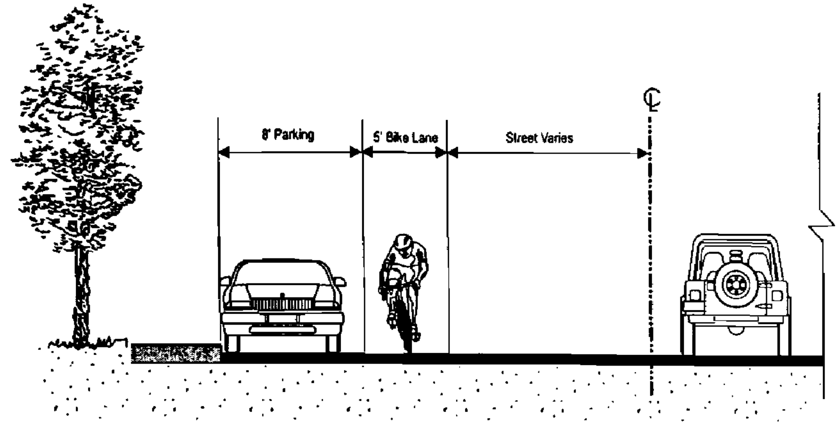
Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BIKEWAY SCHEMATIC

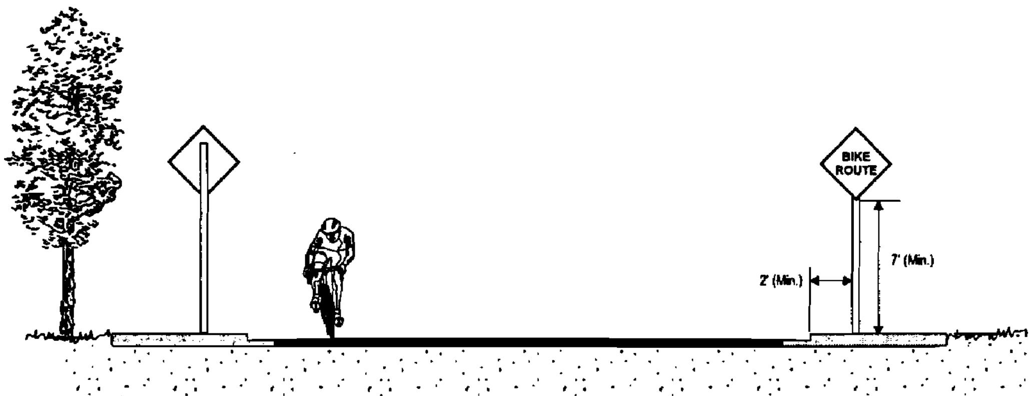
Drawing No. G-3
Scale NO SCALE
Sheet No. 3



CLASS 1 BIKEWAY (BIKE PATH)



CLASS 2 BIKEWAY (BIKE LANE)



CLASS 3 BIKEWAY (BIKE ROUTE)

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	P.Z.
DRAWN BY	S.C.
CHECKED BY	J.S.
IN CHARGE	J.S
DATE	8 Dec 00

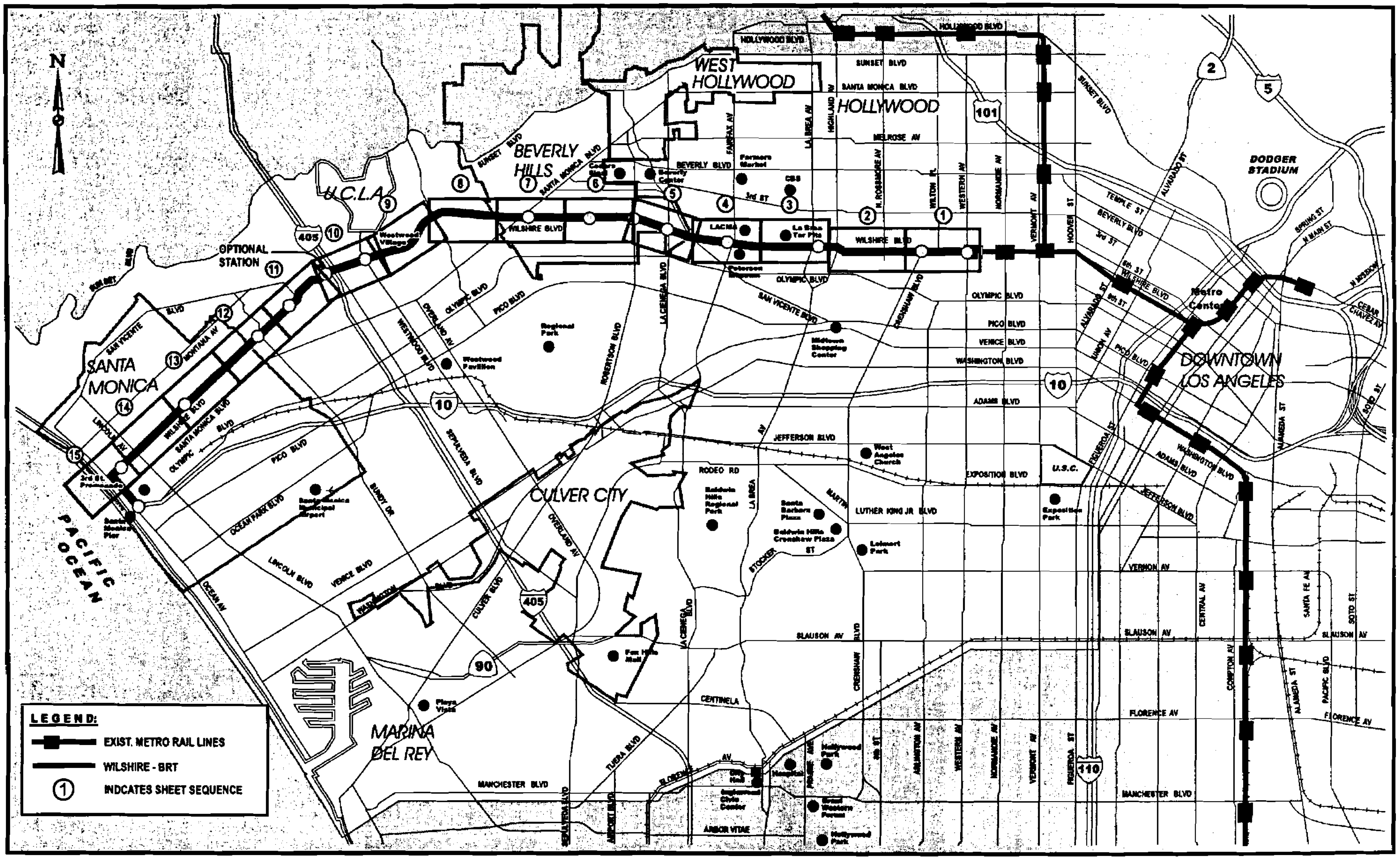
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BIKEWAY

TYPICAL SECTION

DRAWING NO. G-4
SCALE NO SCALE
SHEET NO. 4



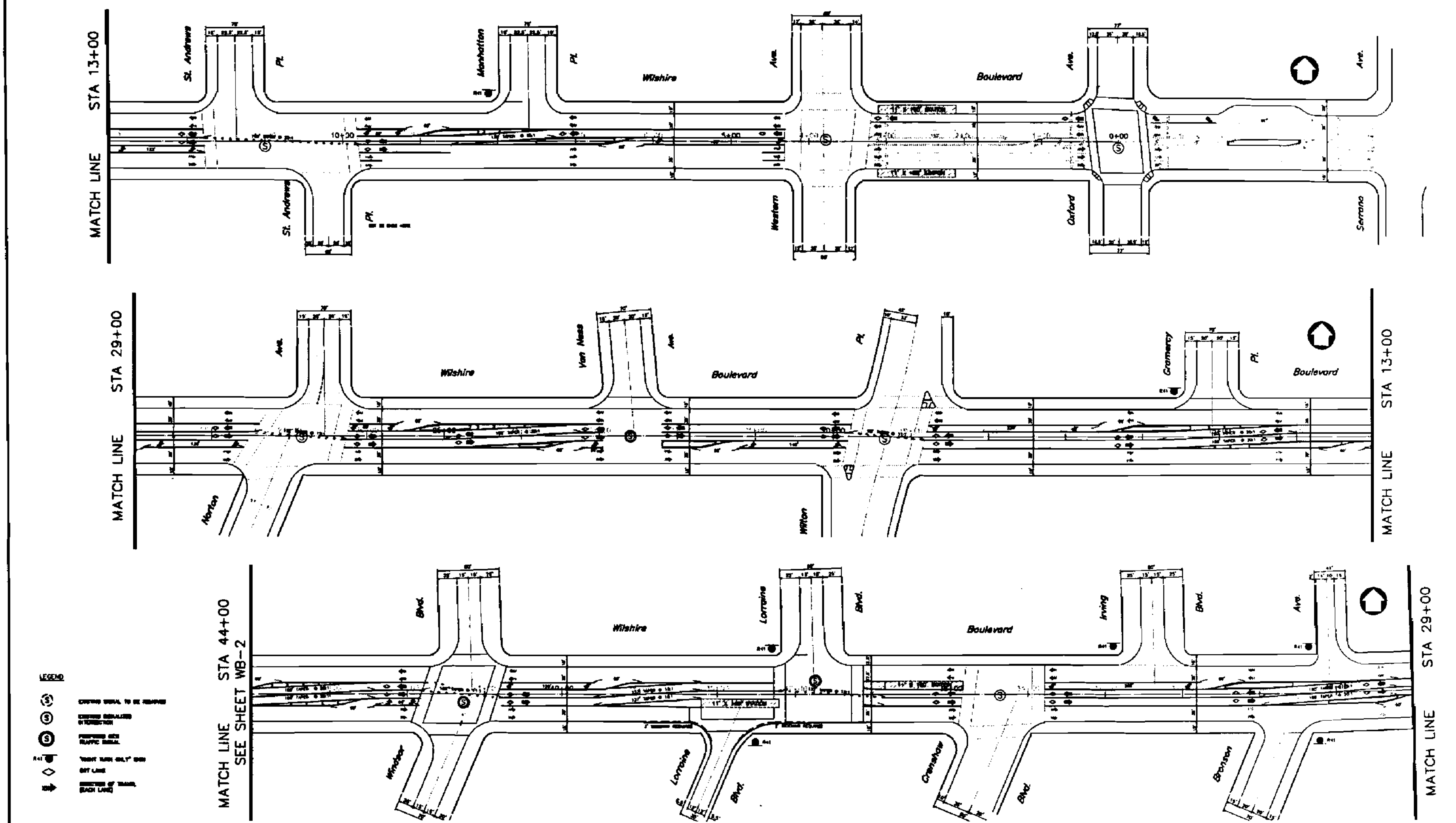
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

P.Z.
S.C.
J.S.
J.S
8 Dec 00

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
KEY MAP

WB-0
NO SCALE
5



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

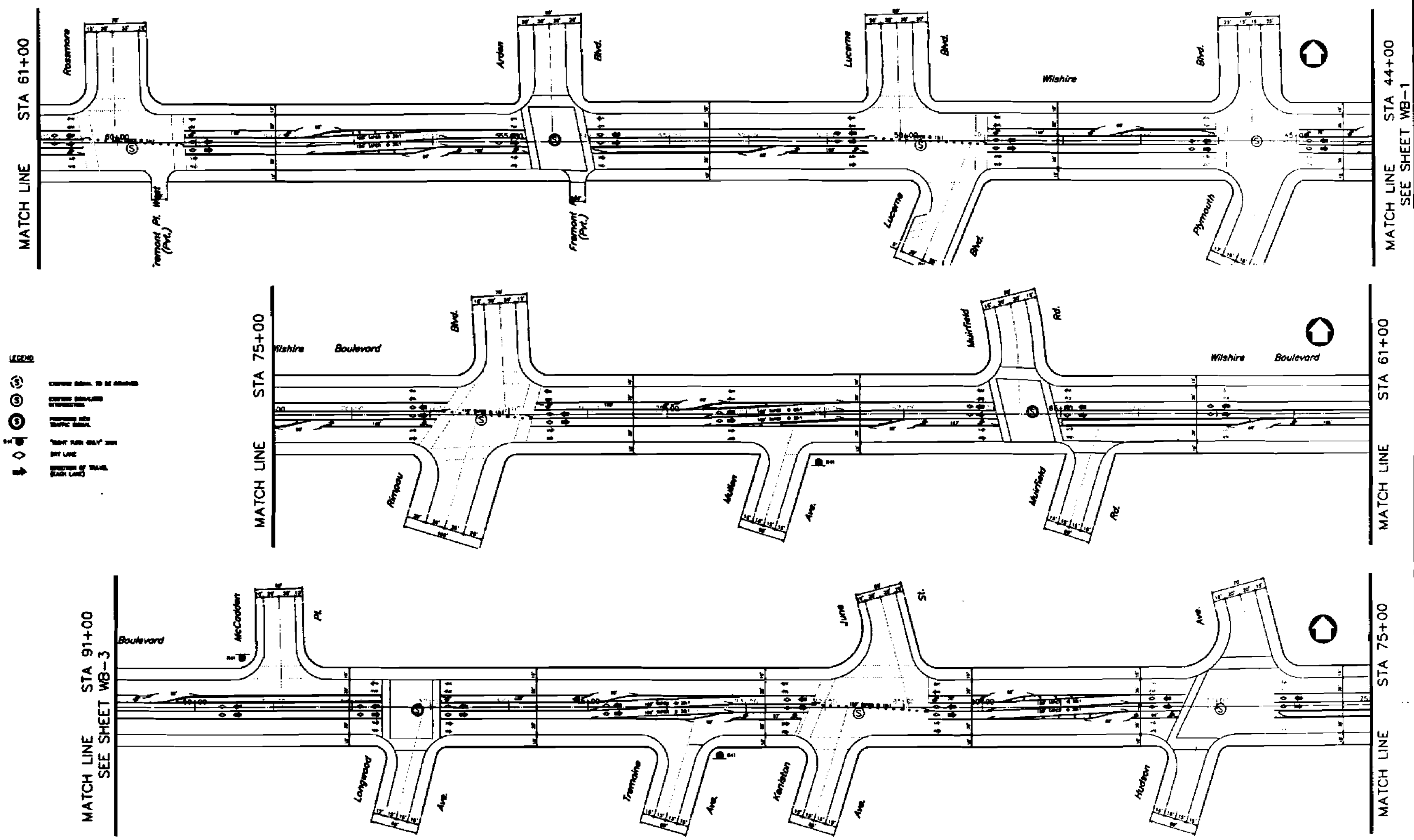
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 0+00 TO STA 44+00

CONTRACT NO.
DRAWING NO. WB-1
REV
SCALE 1" = 120'
SHEET NO. 6



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

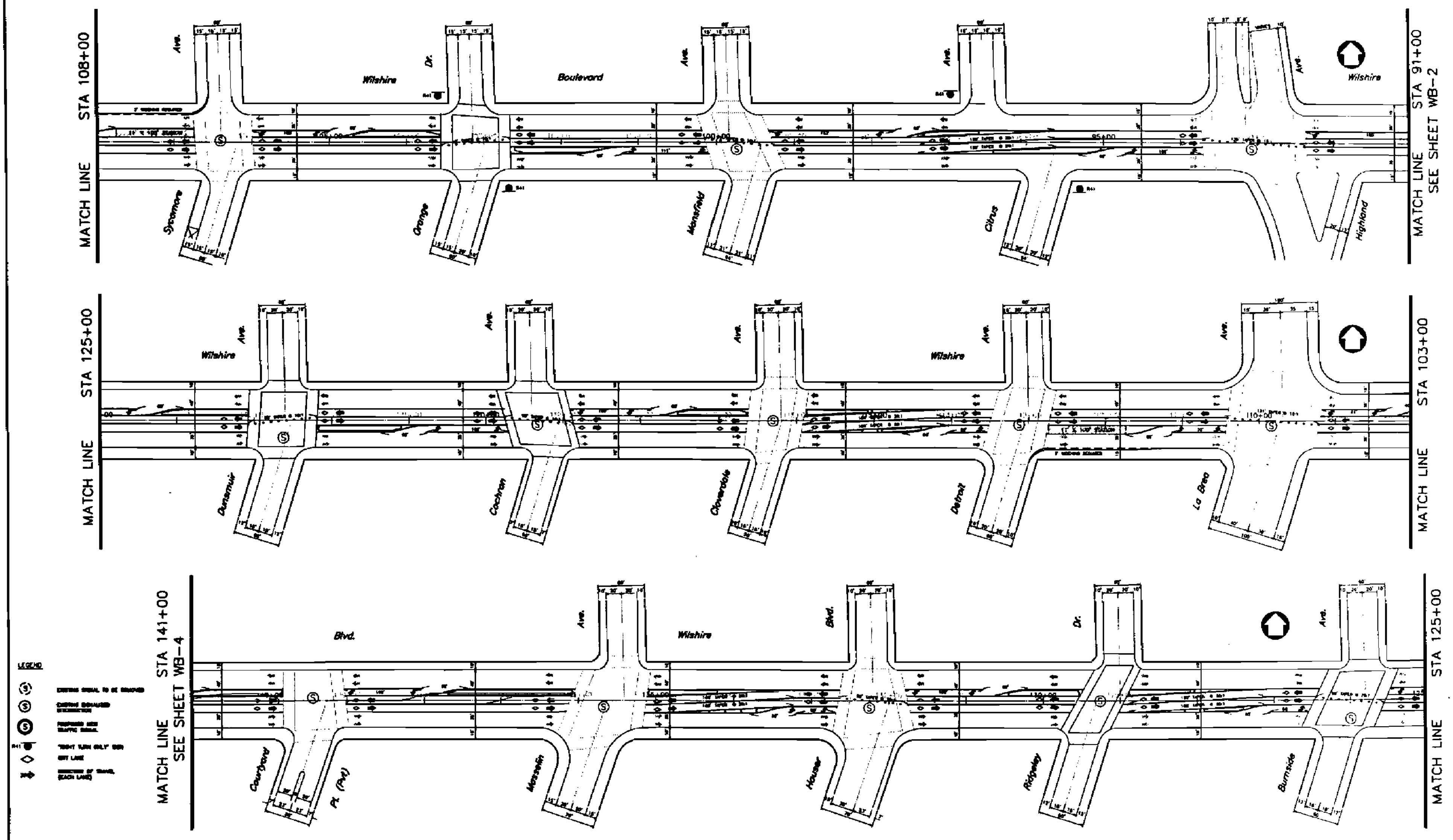
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 44+00 TO STA 91+00

CONTRACT NO.
DRAWING NO. WB-2
REV
SCALE 1" = 120'
SHEET NO. 7



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

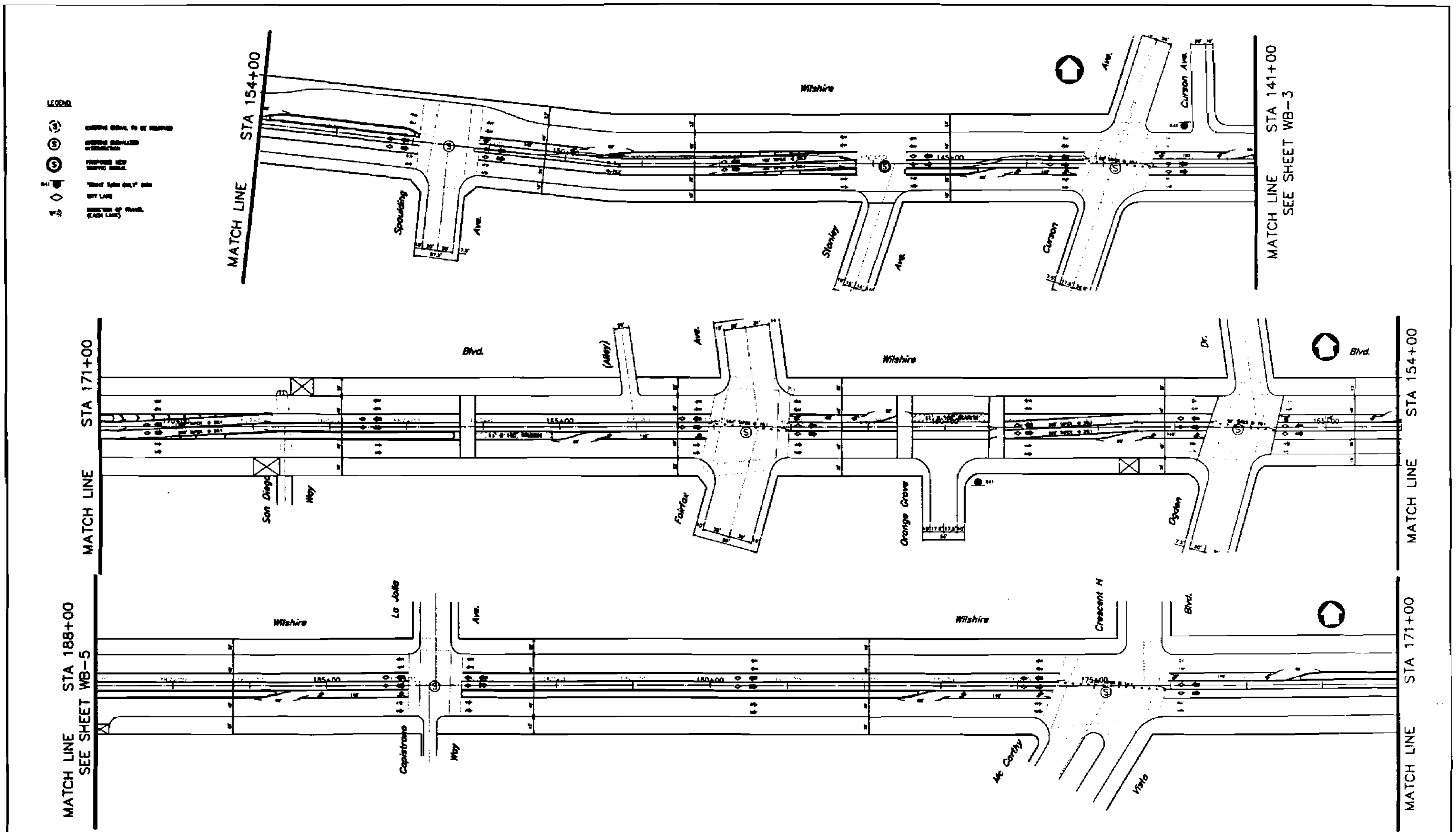
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED ____________
APPROVED ____________

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 91+00 TO STA 141+00

CONTRACT NO
DRAWING NO WB-3
REV
SCALE 1" = 120'
SHEET NO 8



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	VL
DRAWN BY	VL
CHECKED BY	TW
IN CHARGE	TW
DATE	OCT

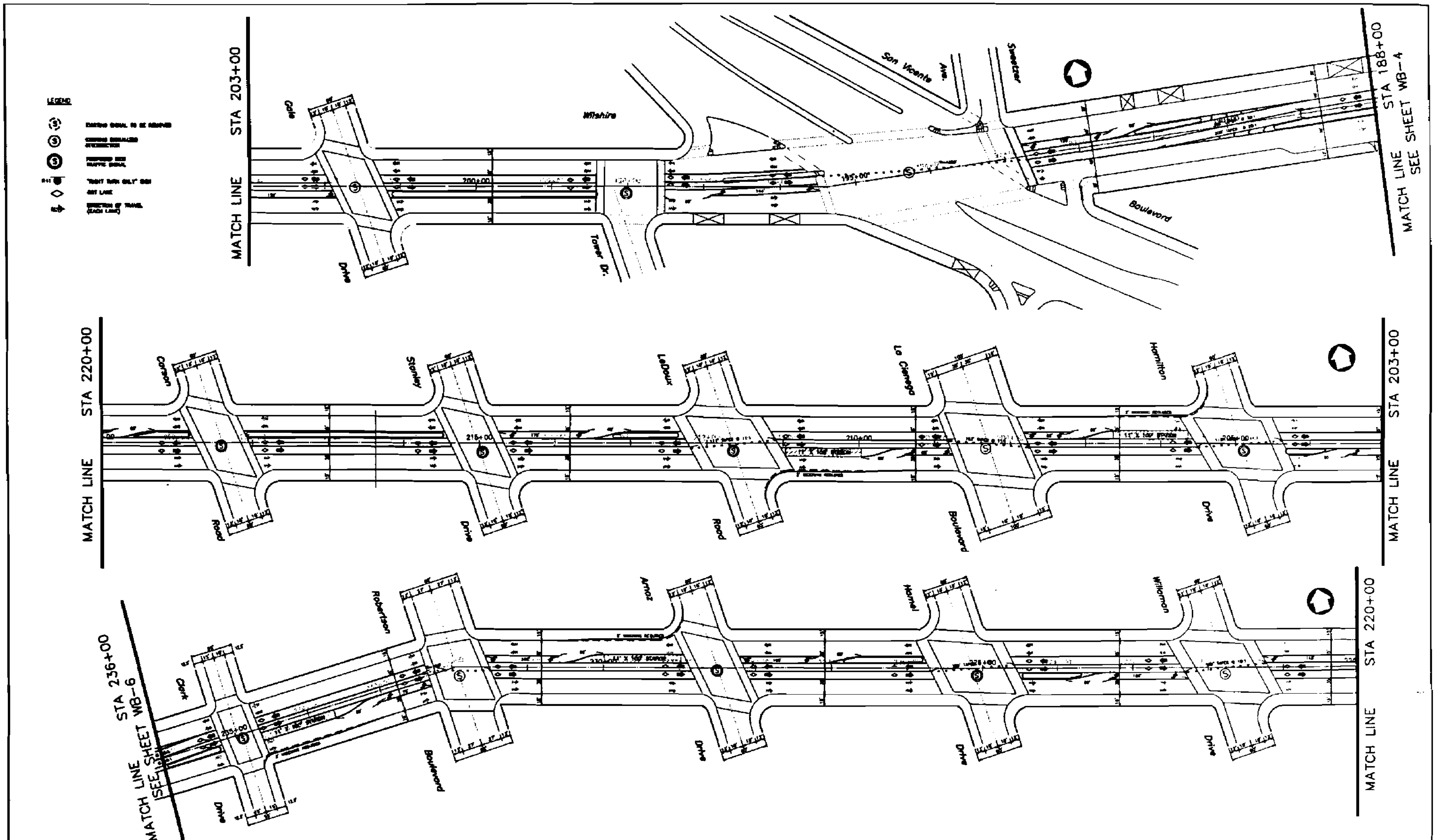
REV | SUB | APP | DESCRIPTION | SUB | APP | DESCRIPTION

Korve Engineering

SUBMITTED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 141+00 TO STA 188+00

CONTRACT NO	
DRAWING NO	WB-4
REV	
SCALE	1" = 120'
SHEET NO	9



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

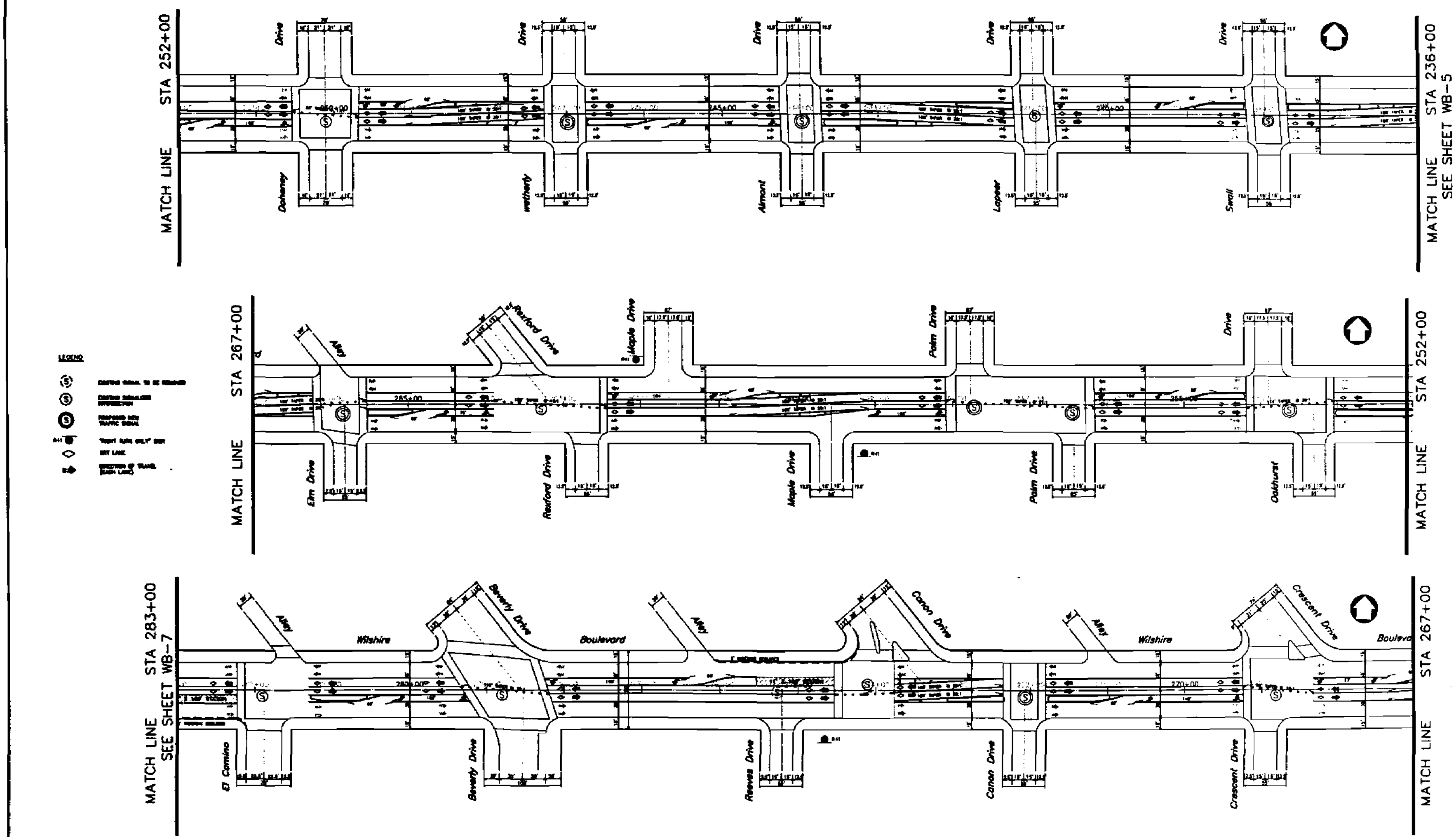
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 188+00 TO STA 236+00

CONTRACT NO
DRAWING NO WB-5
REV
SCALE 1" = 120'
SHEET NO 10



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

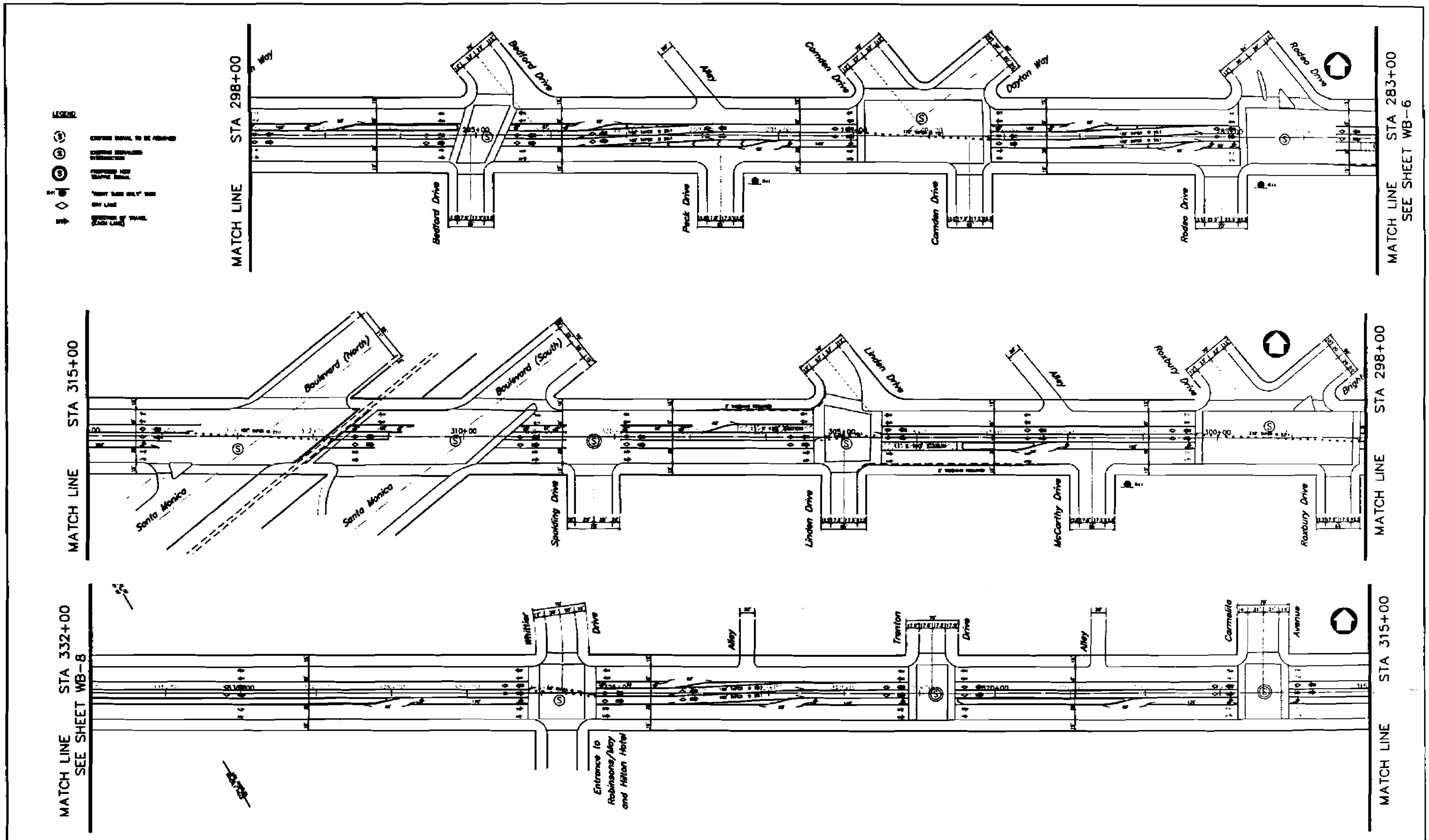
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 236+00 TO STA 283+00

CONTRACT NO
DRAWING NO WB-6
SCALE 1" = 120'
SHEET NO 11



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

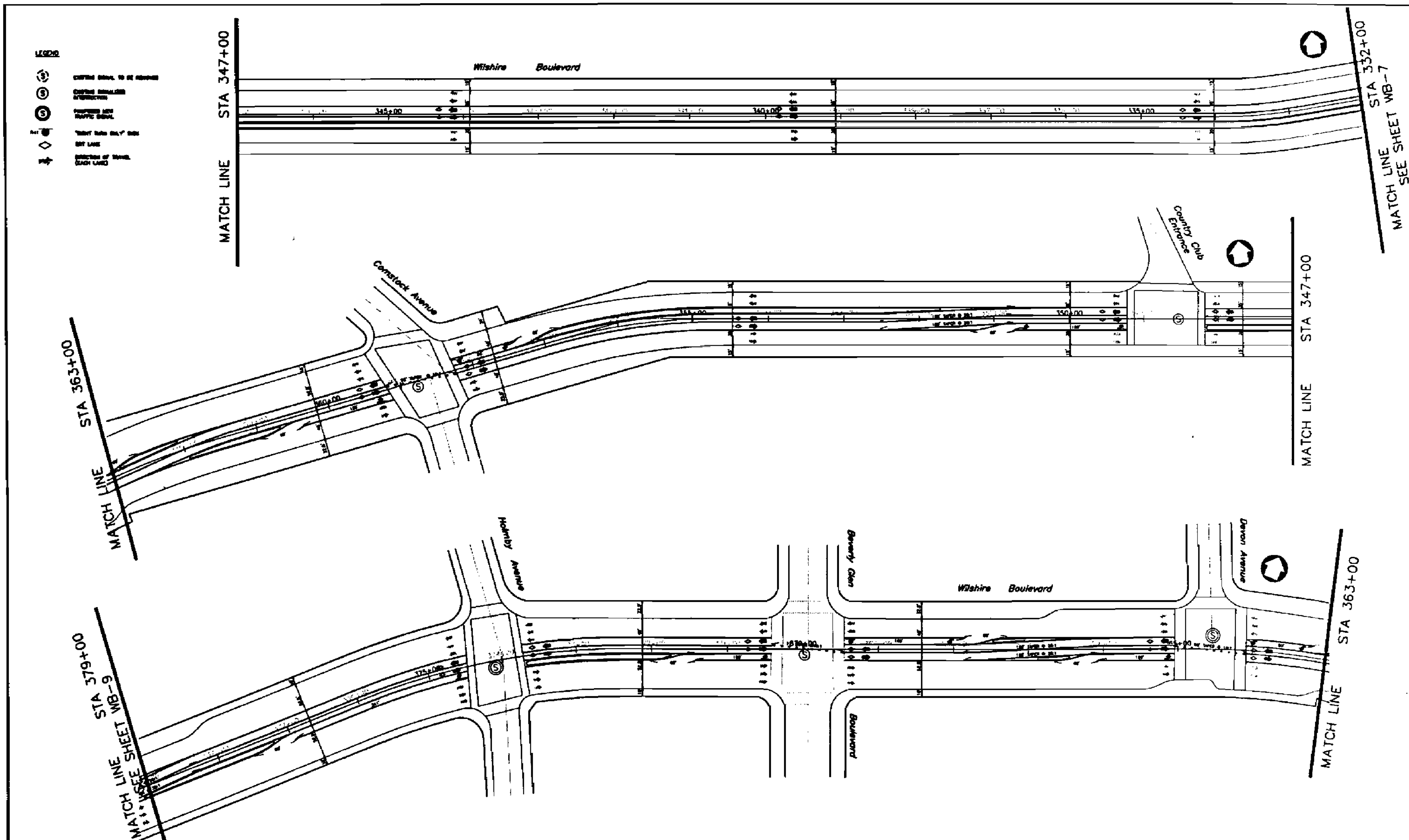
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 283+00 TO STA 332+00

CONTRACT NO
DRAWING NO WB-7
REV
SCALE 1" = 120'
SHEET NO 12



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	VL
DRAWN BY	VL
CHECKED BY	TW
IN CHARGE	TW
DATE	OCT

REV | DATE | BY | SUB | APP | DESCRIPTION | REV | DATE | BY | SUB | APP | DESCRIPTION

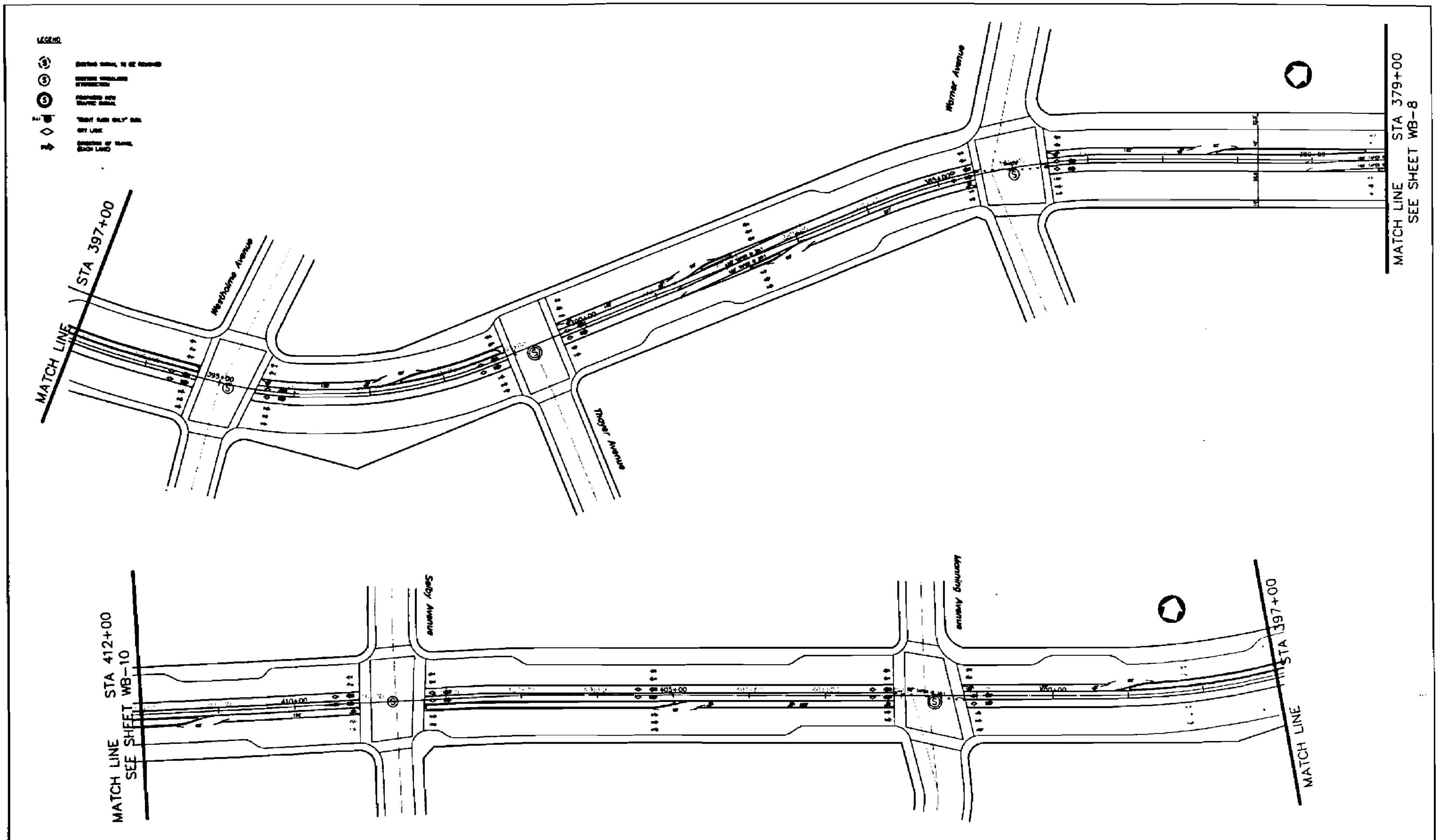
Korve Engineering

SUBMITTED

APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 332+00 TO STA 379+00

CONTRACT NO.	
DRAWING NO	WB-8
REV	
SCALE	1" = 120'
SHEET NO	13



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

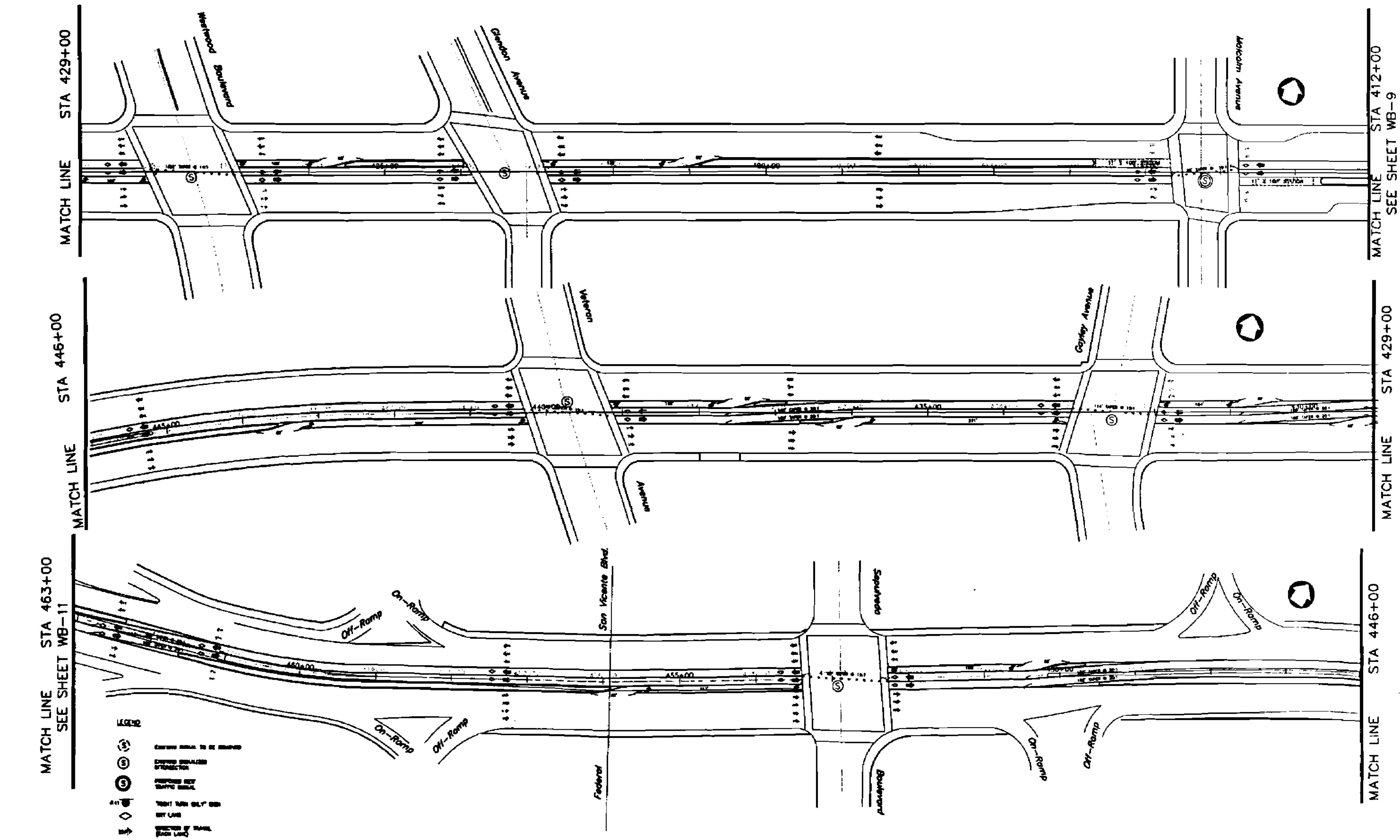
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 379+00 TO STA 412+00

CONTRACT NO
DRAWING NO. WB-9
REV
SCALE 1" = 120'
SHEET NO 14



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	SUB	APP	DESCRIPTION	REV	DATE	SUB	APP	DESCRIPTION

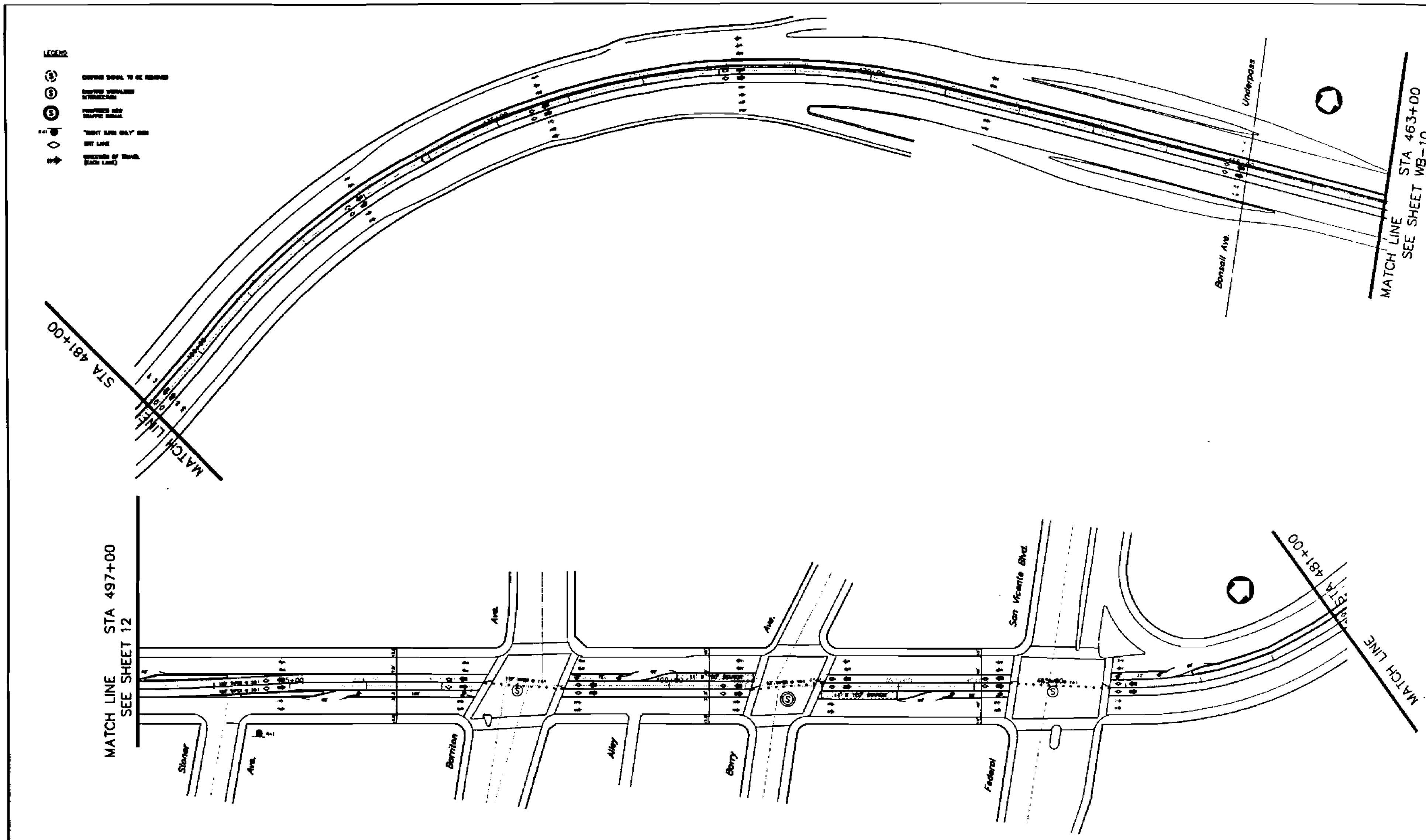
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT [illegible]

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 412+00 TO STA 463+00

CONTRACT NO
DRAWING NO WB-10
REV
SCALE 1" = 120'
SHEET 15



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

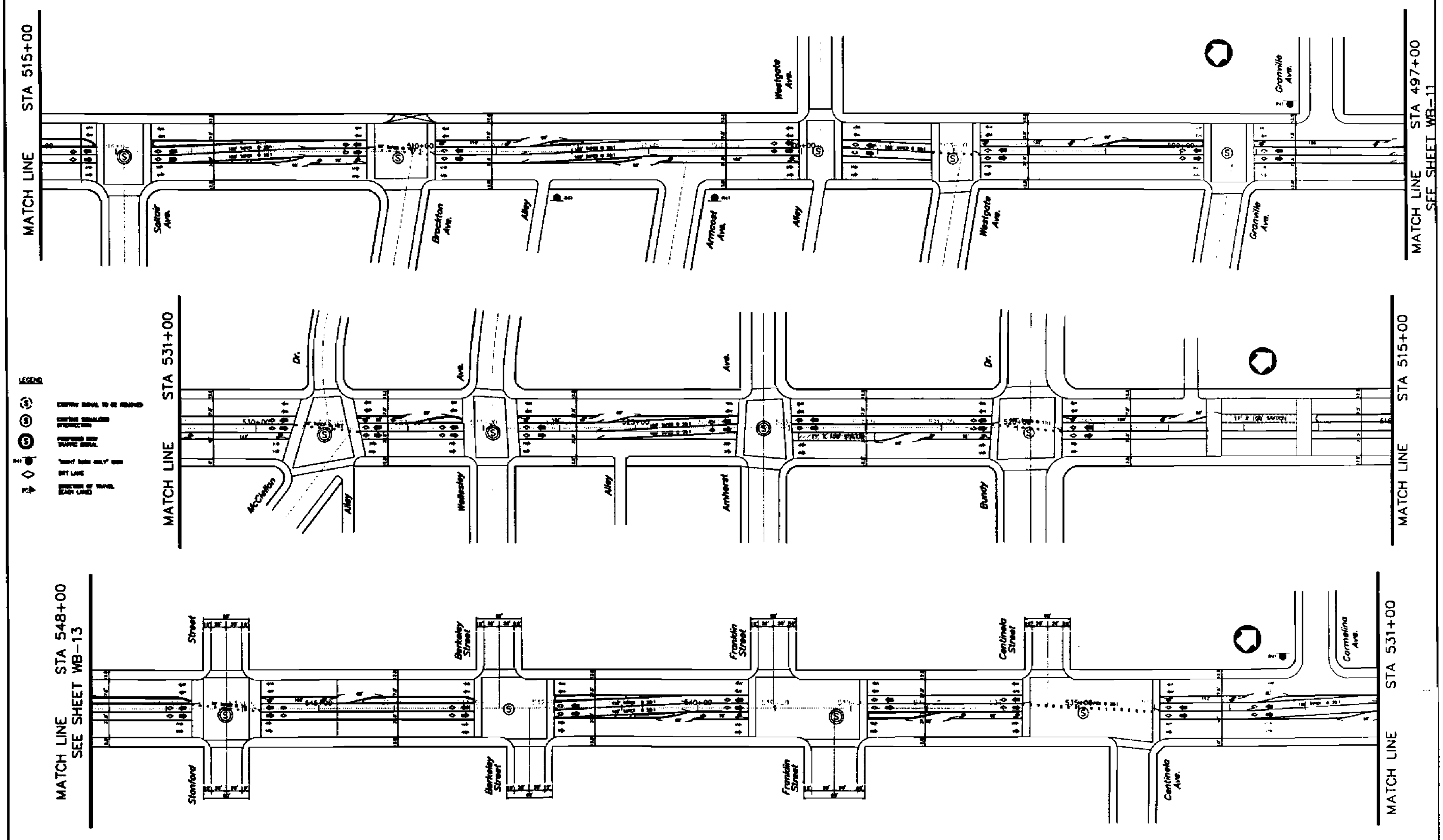
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 463+00 TO STA 497+00

CONTRACT NO.
DRAWING NO. WB-11
REV
SCALE 1" = 120'
SHEET NO. 16



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

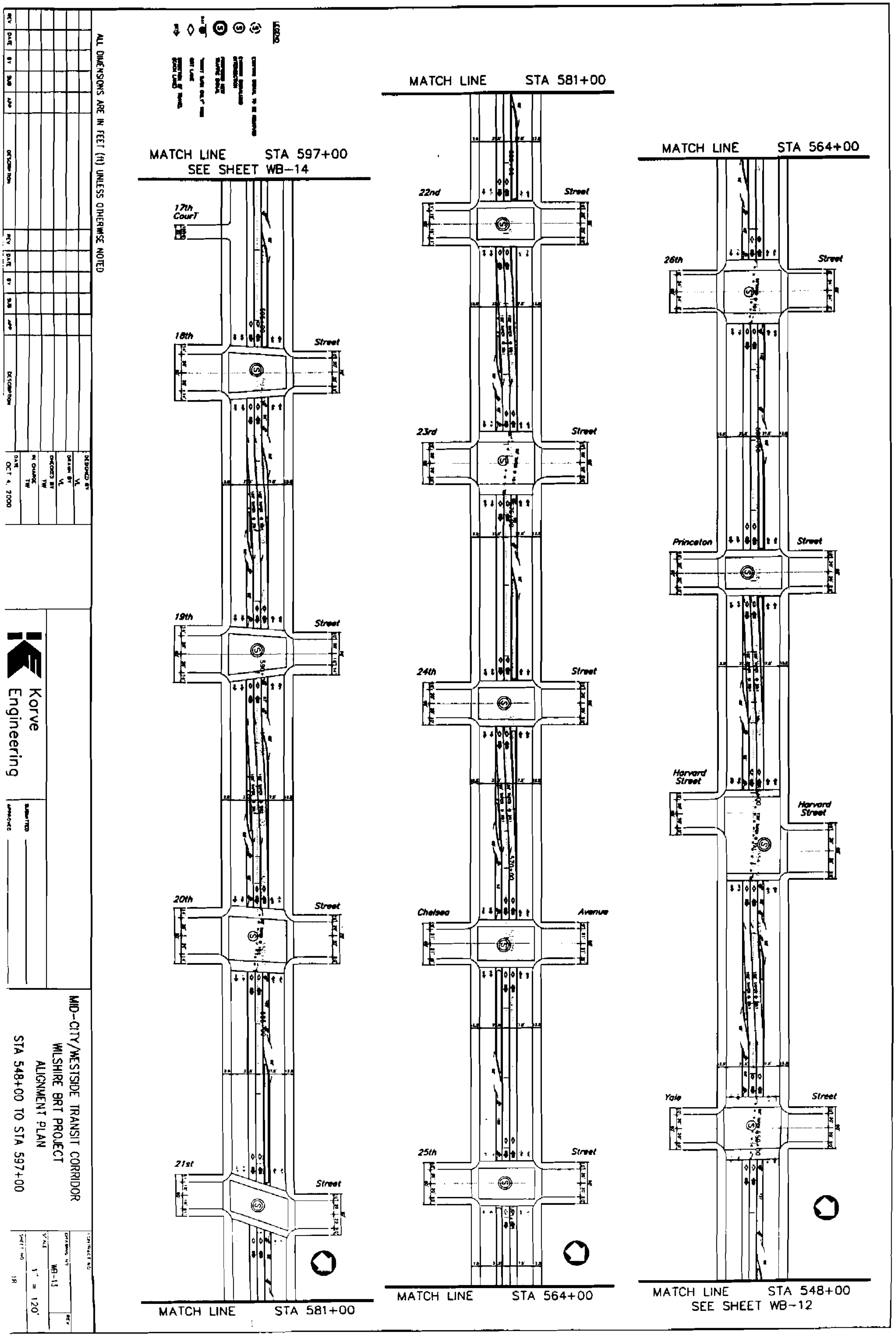
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

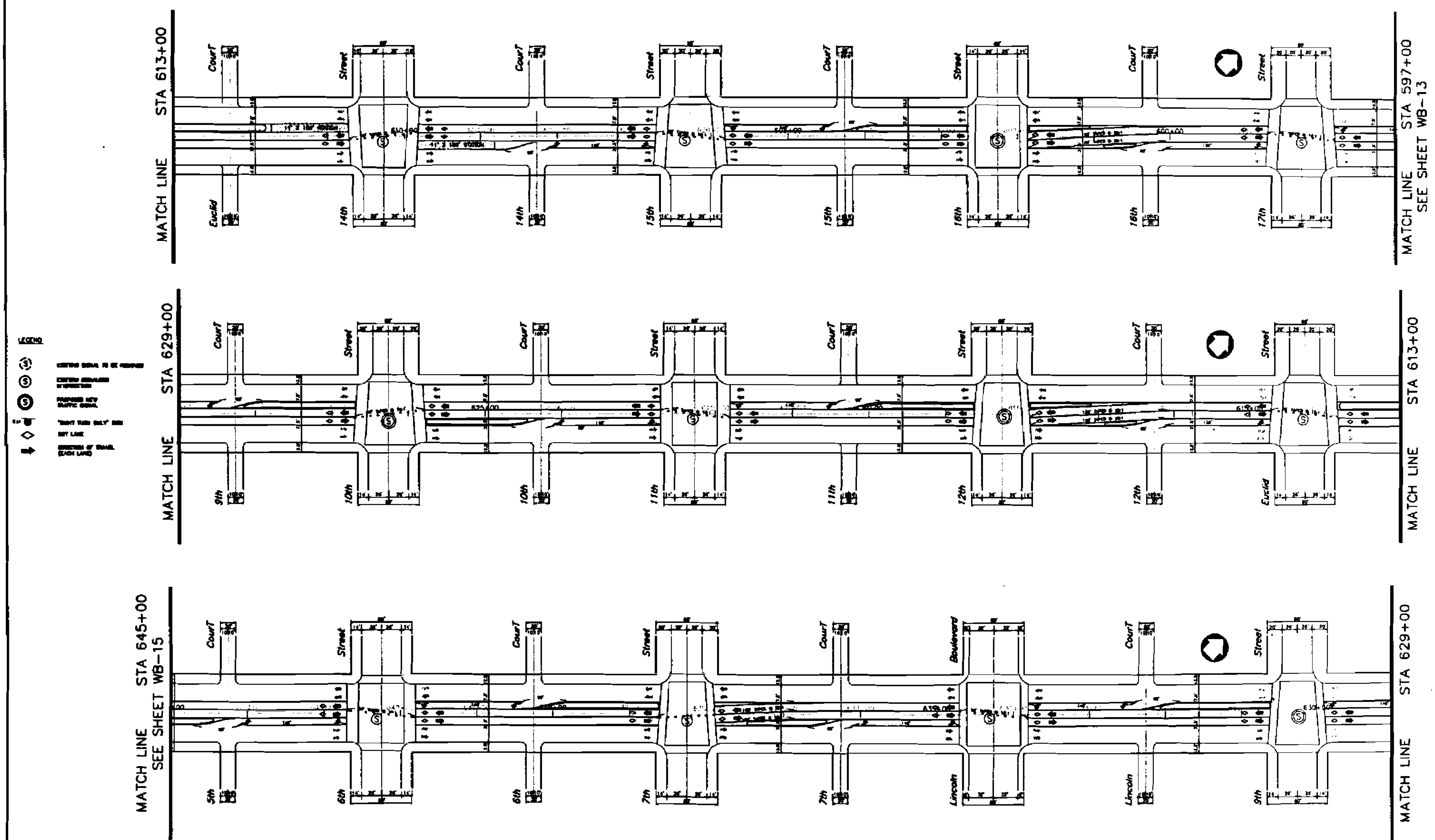
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 497+00 TO STA 548+00

CONTRACT NO
DRAWING NO WB-12
REV
SCALE 1" = 120'
SHEET NO 17



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED
MATCH LINE STA 597+00
SEE SHEET WB-14
17th Court
18th Street
19th Street
20th Street
21st Street
MATCH LINE STA 581+00
22nd Street
23rd Street
24th Street
Chelsea Avenue
25th Street
MATCH LINE STA 564+00
26th Street
Princeton Street
Harvard Street
Yale Street
MATCH LINE STA 548+00
SEE SHEET WB-12
Korve Engineering
MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 548+00 TO STA 597+00
WB-13
1" = 120'
OCT 4, 2000



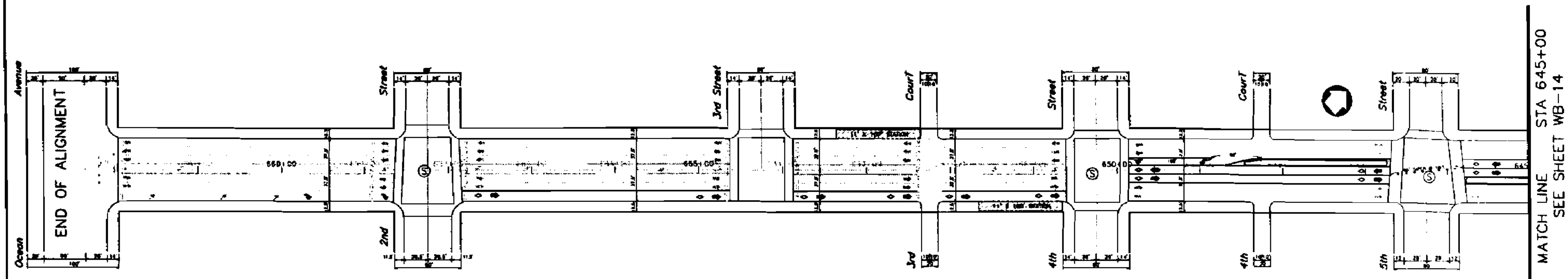
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT

Korve Engineering

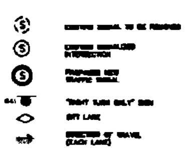
MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 597+00 TO STA 645+00

CONTRACT NO	
DRAWING NO	WB-14
SCALE	1" = 120'
SHEET NO	19



RAPID BUS SOUTH ON 2ND,
EAST ON BROADWAY AND OCEAN

LEGEND



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

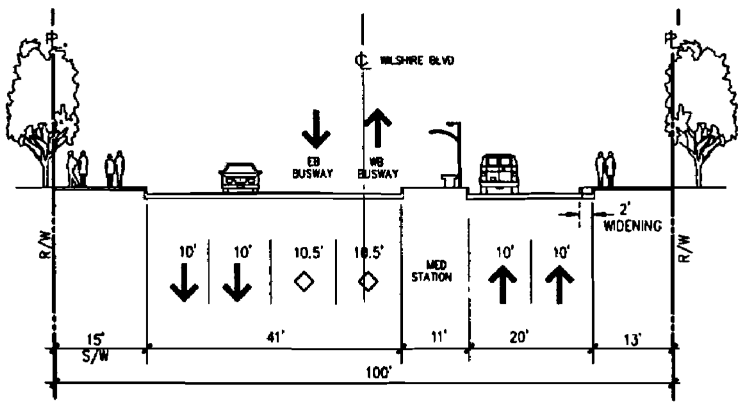
DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

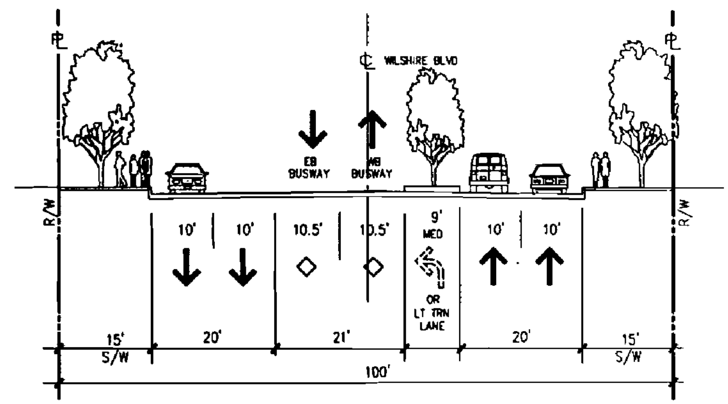
MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
ALIGNMENT PLAN
STA 645+00 TO STA 662+00

CONTRACT NO
DRAWING NO WB-15
REV
SCALE 1" = 120'
SHEET NO 20



TYPICAL STATION X-SECTION

(FACING WEST)
0+00 TO 110+00
194+00 TO 348+00



TYPICAL STREET X-SECTION

(FACING WEST)
0+00 TO 110+00
194+00 TO 348+00

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

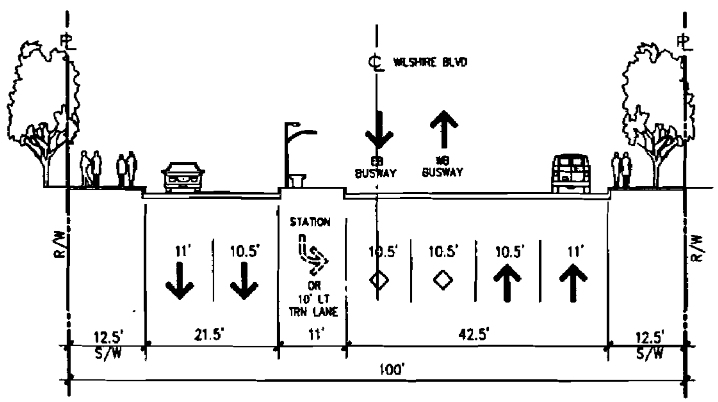
DESIGNED BY JP
DRAWN BY JP
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
TYPICAL X-SECTIONS
70' CURB WIDTH
STA 0+00 to 110+00 194+00 to 348+00

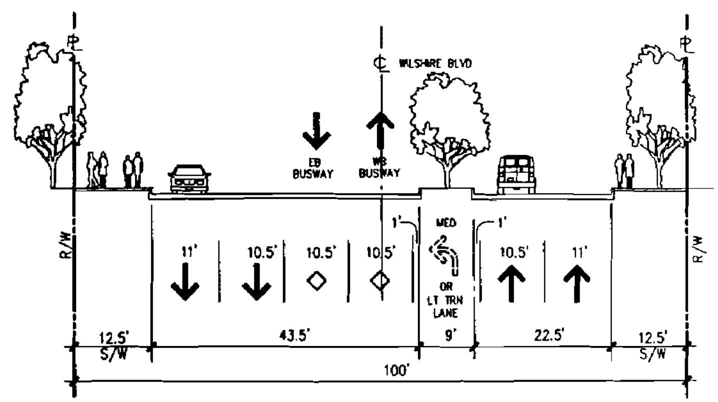
CONTRACT NO.
DRAWING NO. WB-31
REV
SCALE 1" = 20'
SHEET NO. 21



TYPICAL STATION X-SECTION

(FACING WEST)

110+00 TO 156+00
485+00 TO 662+00



TYPICAL STREET X-SECTION

(FACING WEST)

110+00 TO 156+00
485+00 TO 662+00

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

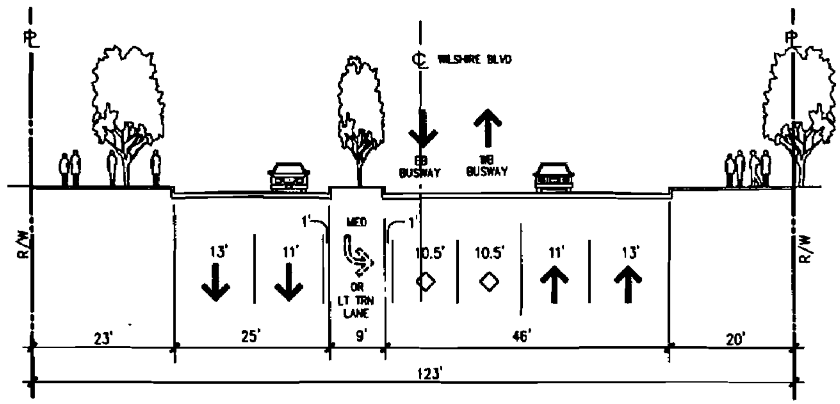
DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	TW
IN CHARGE	TW
DATE	OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

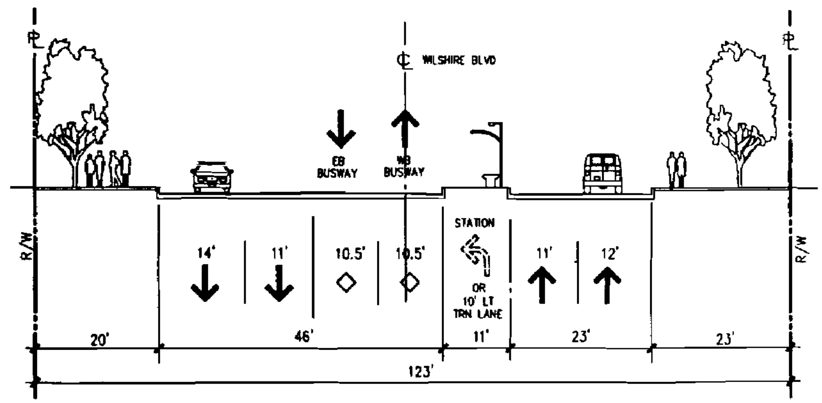
MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
TYPICAL X-SECTIONS
75' CURB WIDTH
STA 110+00 to 156+00, 485+00 to 662+00

CONTRACT NO	
DRAWING NO	WB-32
SCALE	1" = 20'
SHEET NO	22



TYPICAL STREET X-SECTION

(FACING WEST)
156+00 TO 194+00



TYPICAL STATION X-SECTION

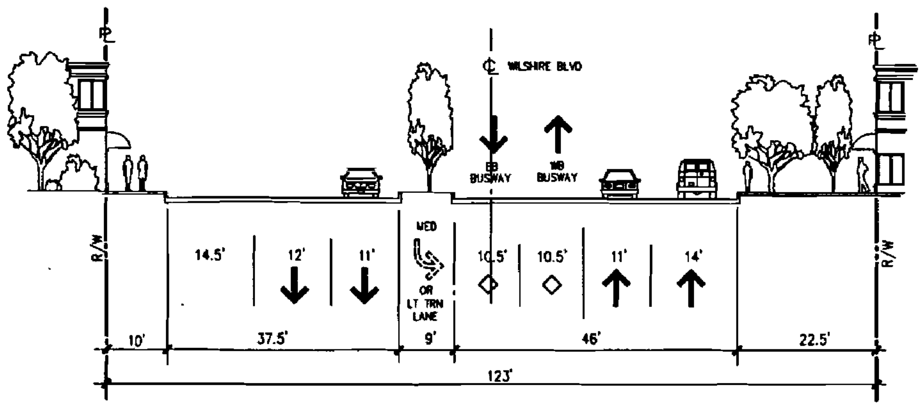
(FACING WEST)
156+00 TO 194+00

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

Korve Engineering

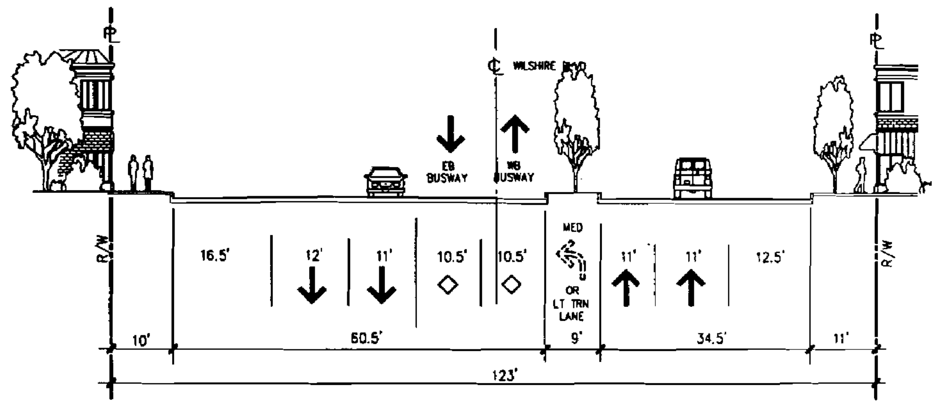
MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
TYPICAL X-SECTIONS
80' CURB WIDTH
STA 156+00 to 194+00

DRAWING NO	WB-33
SCALE	1" = 20'
SHEET NO	23



TYPICAL STREET X-SECTION

(FACING WEST)
403+50 TO 407+00



TYPICAL STREET X-SECTION

(FACING WEST)
418+00 TO 433+00

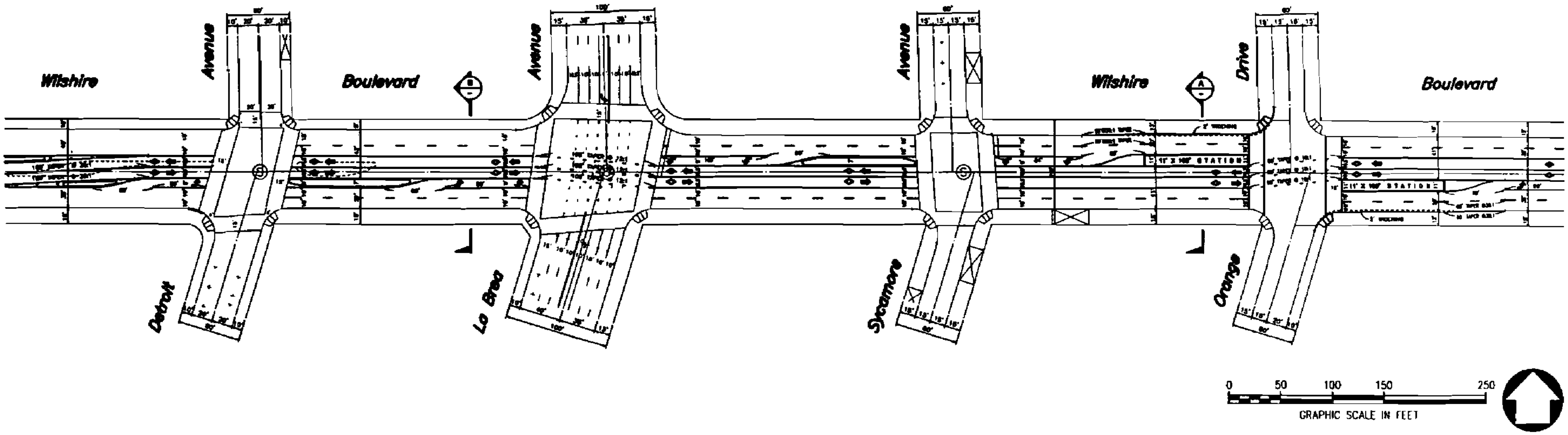
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

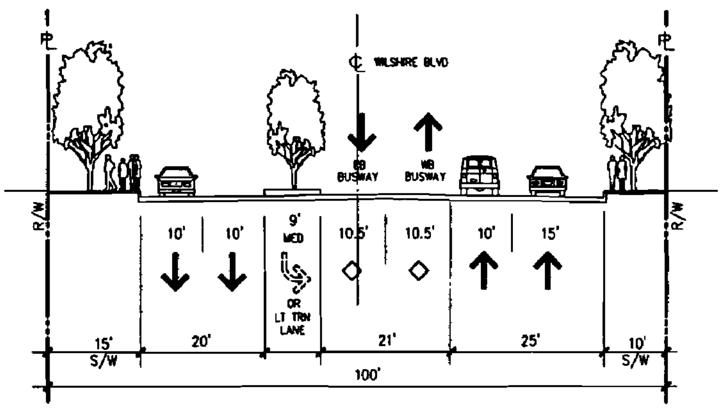
DESIGNED BY JP
DRAWN BY JP
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
TYPICAL X-SECTIONS
90' AND 104' CURB WIDTH
STA 403+50 to 407+00, 418+00 to 433+00

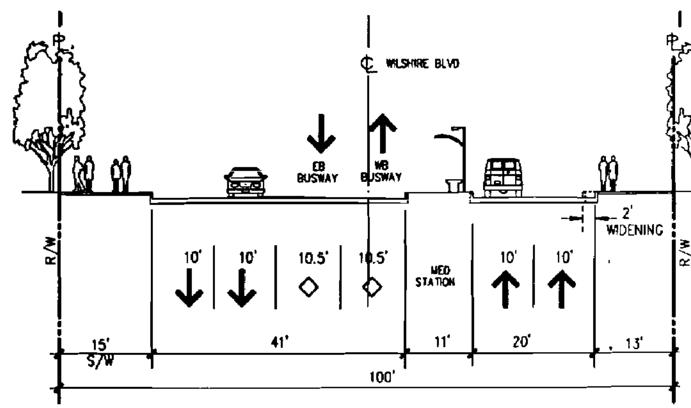
DRAWING NO. WB-34
SCALE 1" = 20'
SHEET NO. 24





TYPICAL STREET SECTION

(FACING WEST)
NO SCALE



BUSWAY STATION

(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

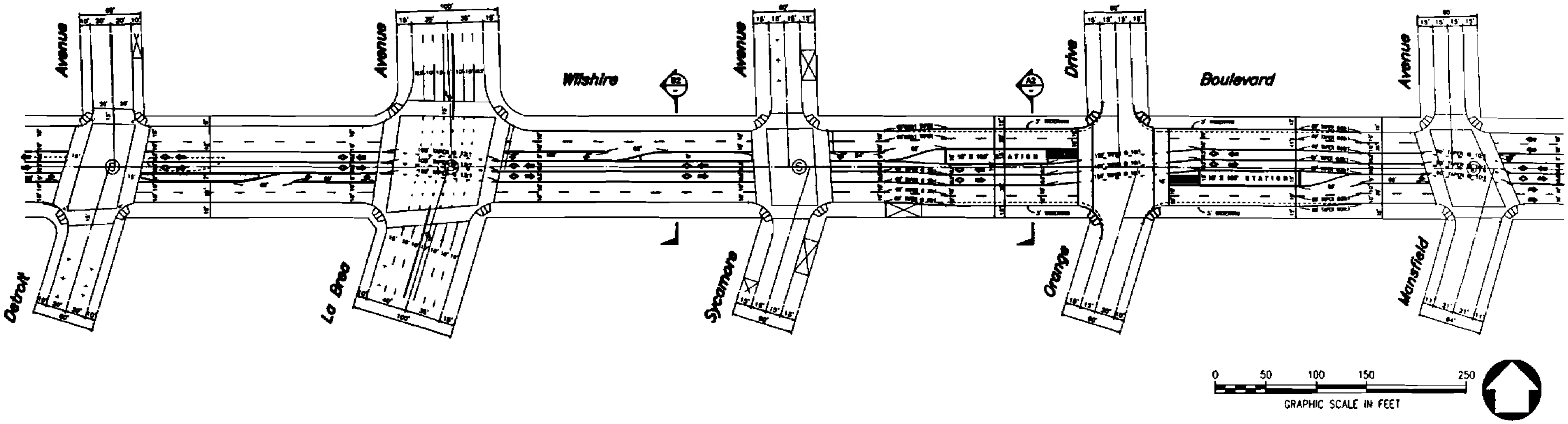
DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

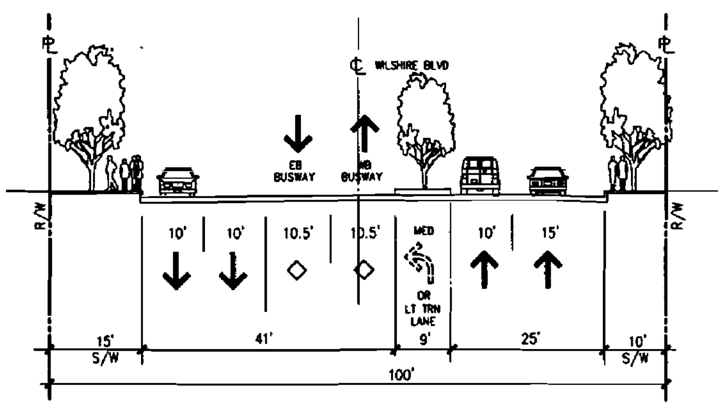
Korve Engineering

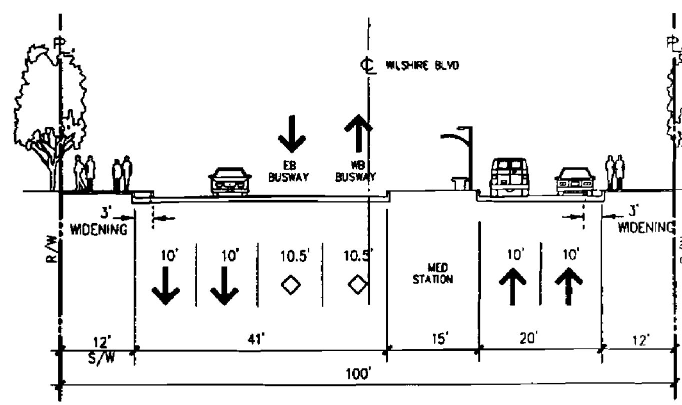
MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT

STREET DETAILS
MIRACLE MILE SEGMENT

DRAWING NO	WB-41
SCALE	AS NOTED
SHEET NO	25







B2 — TYPICAL STREET SECTION
(FACING WEST)
NO SCALE

A2 — BUSWAY STATION
(FACING WEST)
NO SCALE

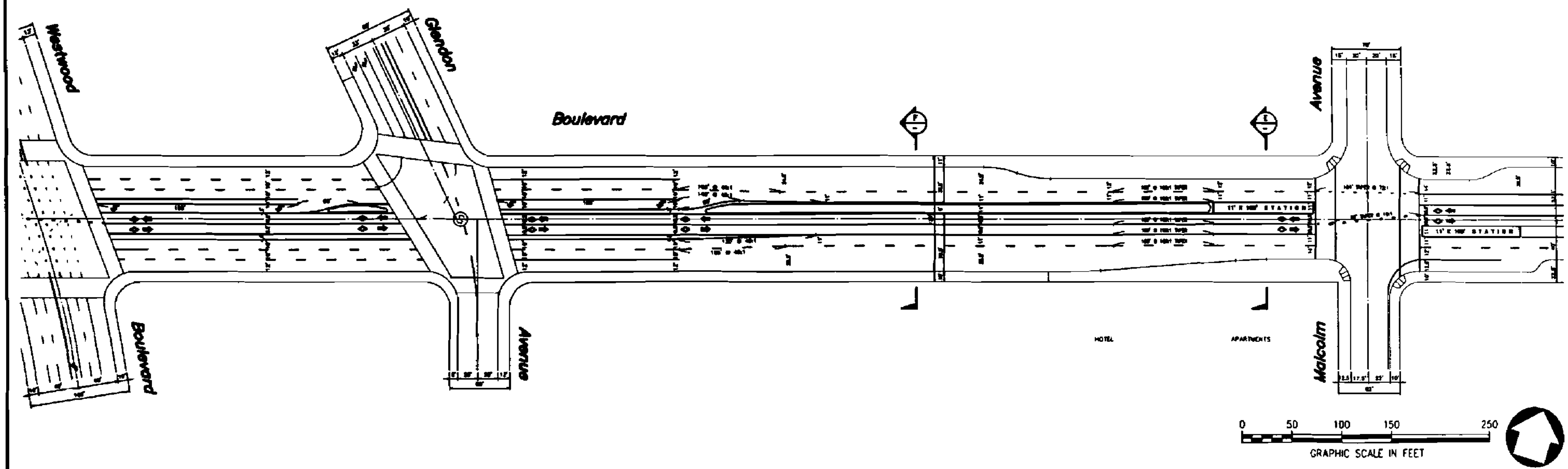
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

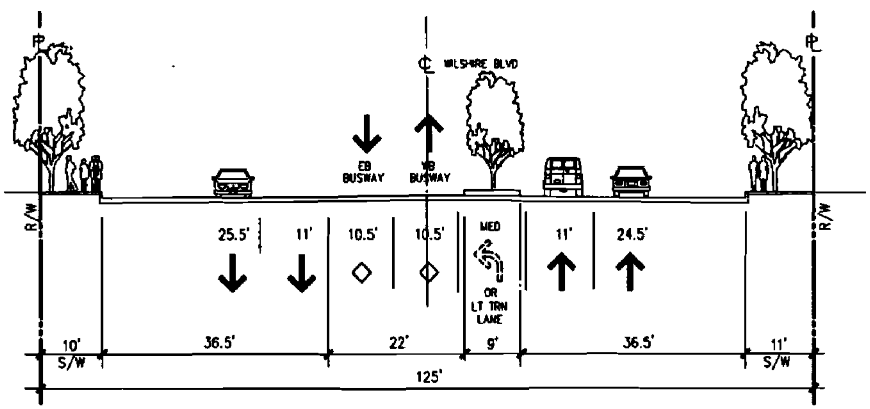
DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
STREET DETAILS W/ 15' STATION WIDTH
MIRACLE MILE SEGMENT

DRAWING NO	WB-42
SCALE	AS NOTED
SHEET NO	26

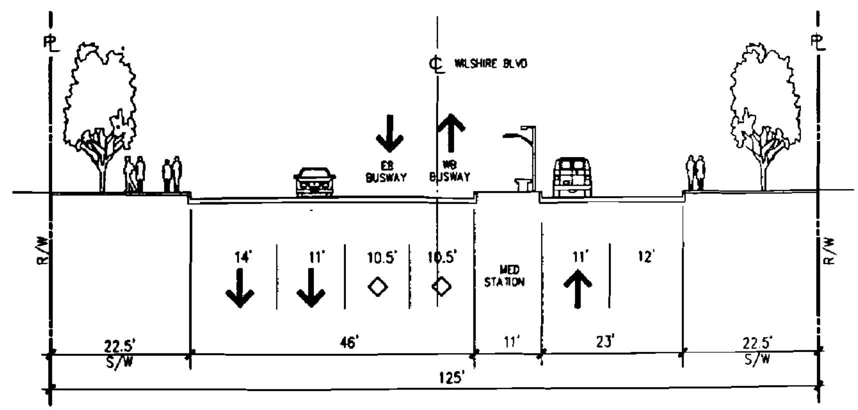




F

TYPICAL STREET SECTION

(FACING WEST)
NO SCALE



E

BUSWAY STATION

(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

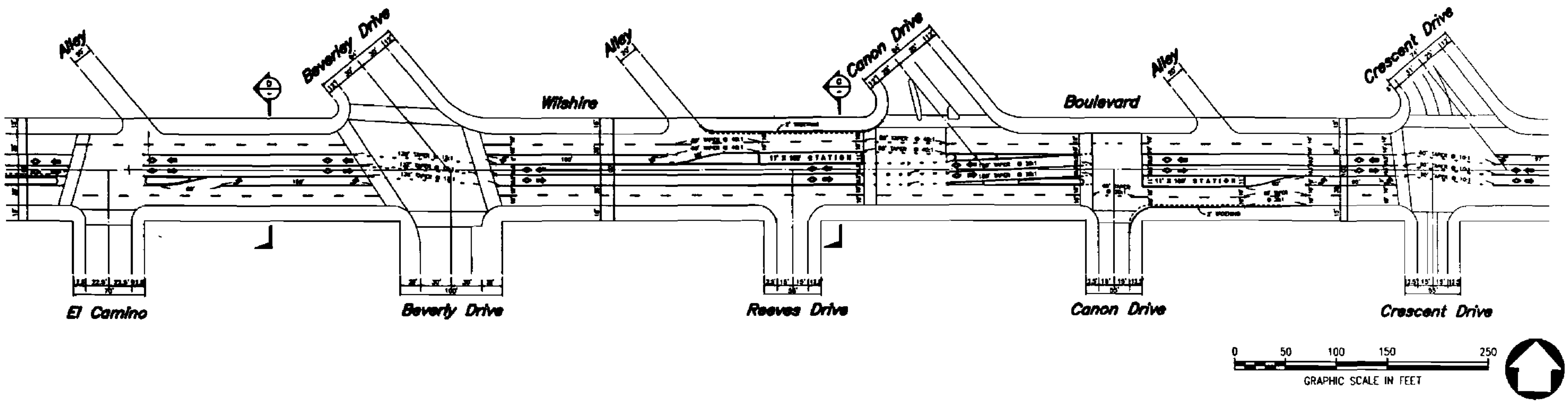
SUBMITTED

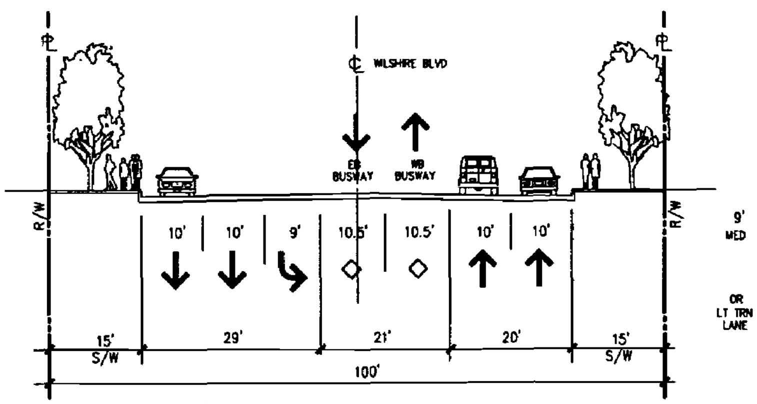
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT

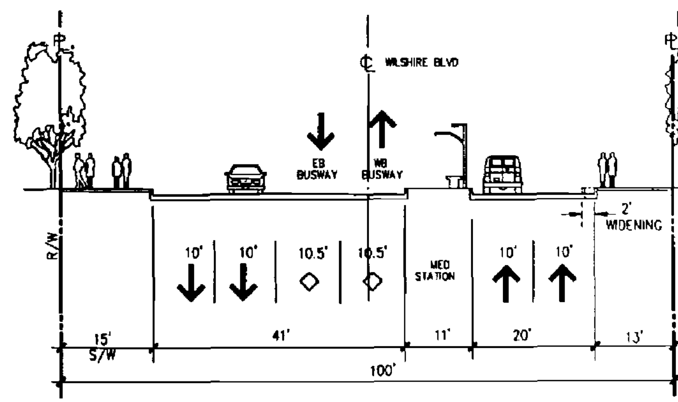
STREET DETAILS
WESTWOOD SEGMENT

CONTRACT NO	
DRAWING NO	WB-43
REV	
SCALE	AS NOTED
SHEET NO	27





D
TYPICAL STREET SECTION
(FACING WEST)
NO SCALE



C
BUSWAY STATION
(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 6, 2000

Korve Engineering

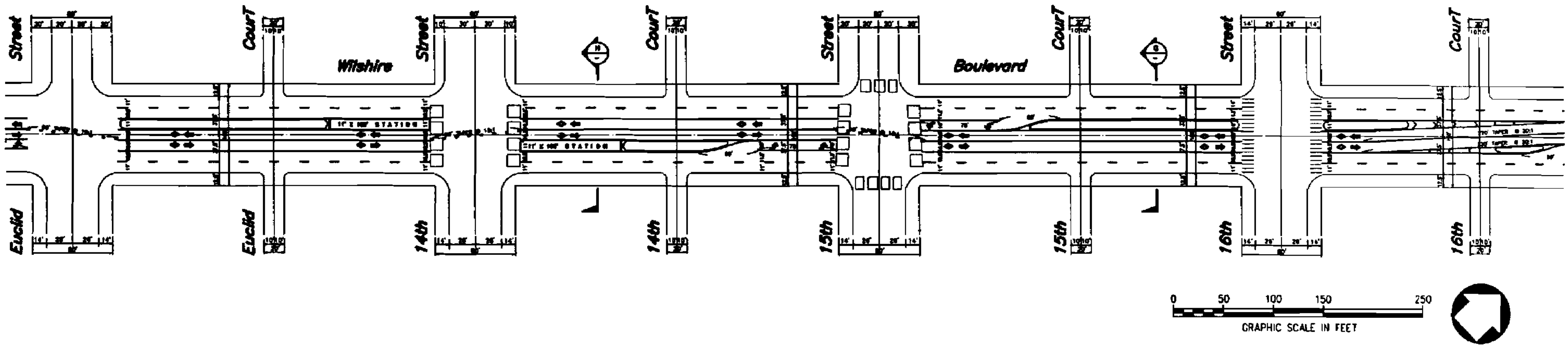
SUBMITTED

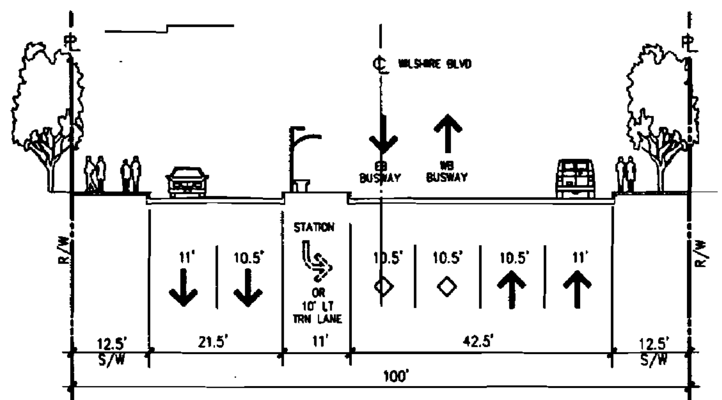
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT

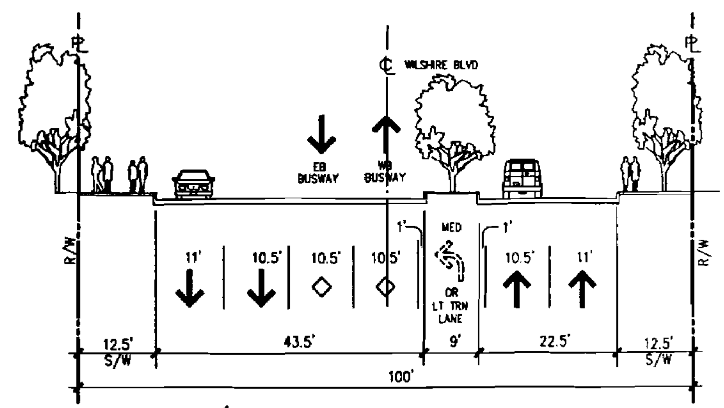
STREET DETAILS
BEVERLY HILLS SEGMENT

CONTRACT NO	
DRAWING NO	WB-44
SCALE	AS NOTED
SHEET NO	28





H
STATION SECTION
(FACING WEST)
NO SCALE



G
TYPICAL STREET SECTION
(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OC... 2000

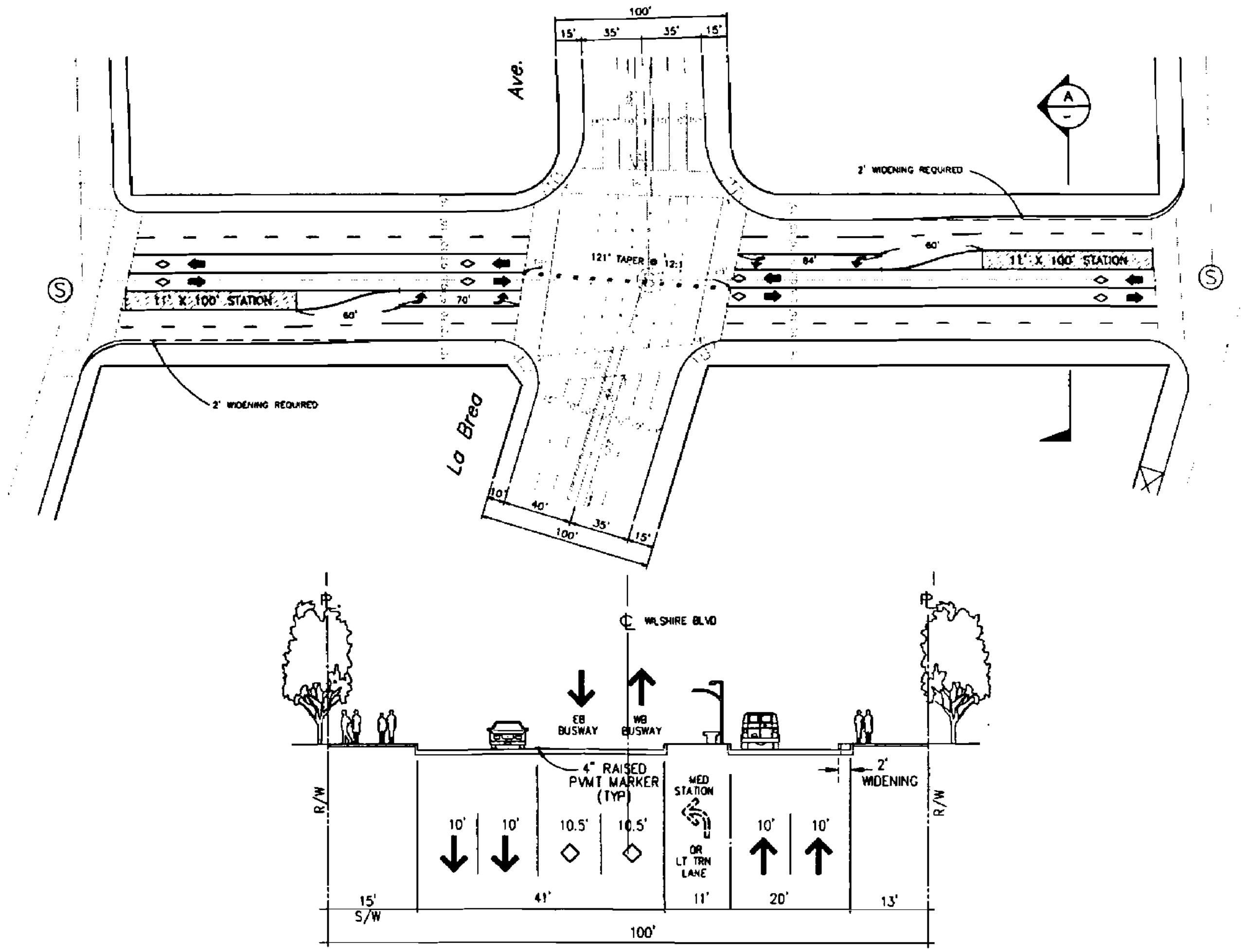
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT

STREET DETAILS
SANTA MONICA SEGMENT

CONTRACT NO
DRAWING NO WB-45
SCALE AS NOTED
SHEET NO 29



TYPICAL STATION X-SECTION

(FACING WEST) 1"=20'

LEGEND

Ⓢ EXISTING SIGNALIZED INTERSECTION

◇ BRT LANE

➡ DIRECTION OF TRAVEL (EACH LANE)

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY VL
DRAWN BY VL
CHECKED BY TW
IN CHARGE TW
DATE OCT 4, 2000

Korve Engineering

SUBMITTED

APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
TYPICAL WILSHIRE MEDIAN STATION

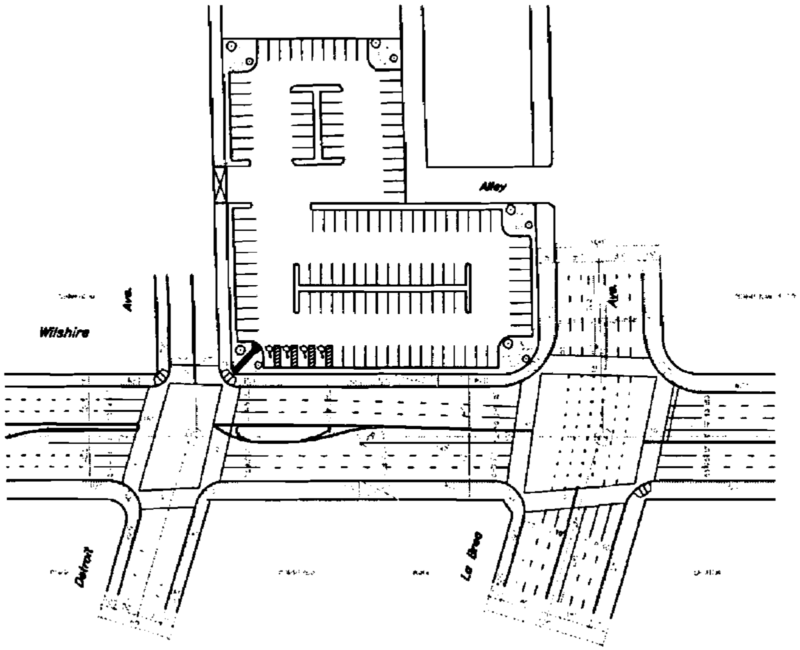
CONTRACT NO

DRAWING NO WB-61

REV

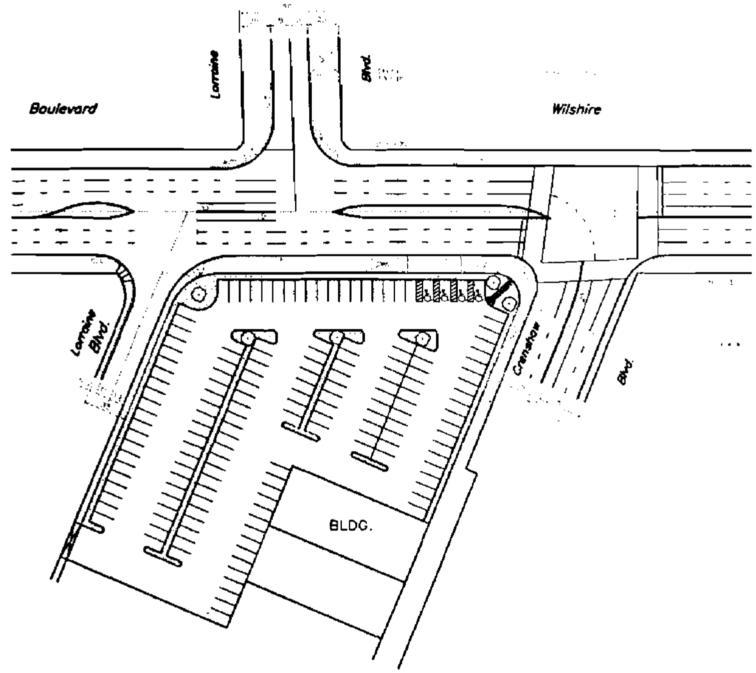
SCALE 1" = 70'

SHEET NO 30



LA BREA REPLACEMENT PARKING

(129 SPACES)



CRENSHAW REPLACEMENT PARKING

(158 SPACES)

	LC
	LC
	PZ
	PZ
	OCT 4, 2000

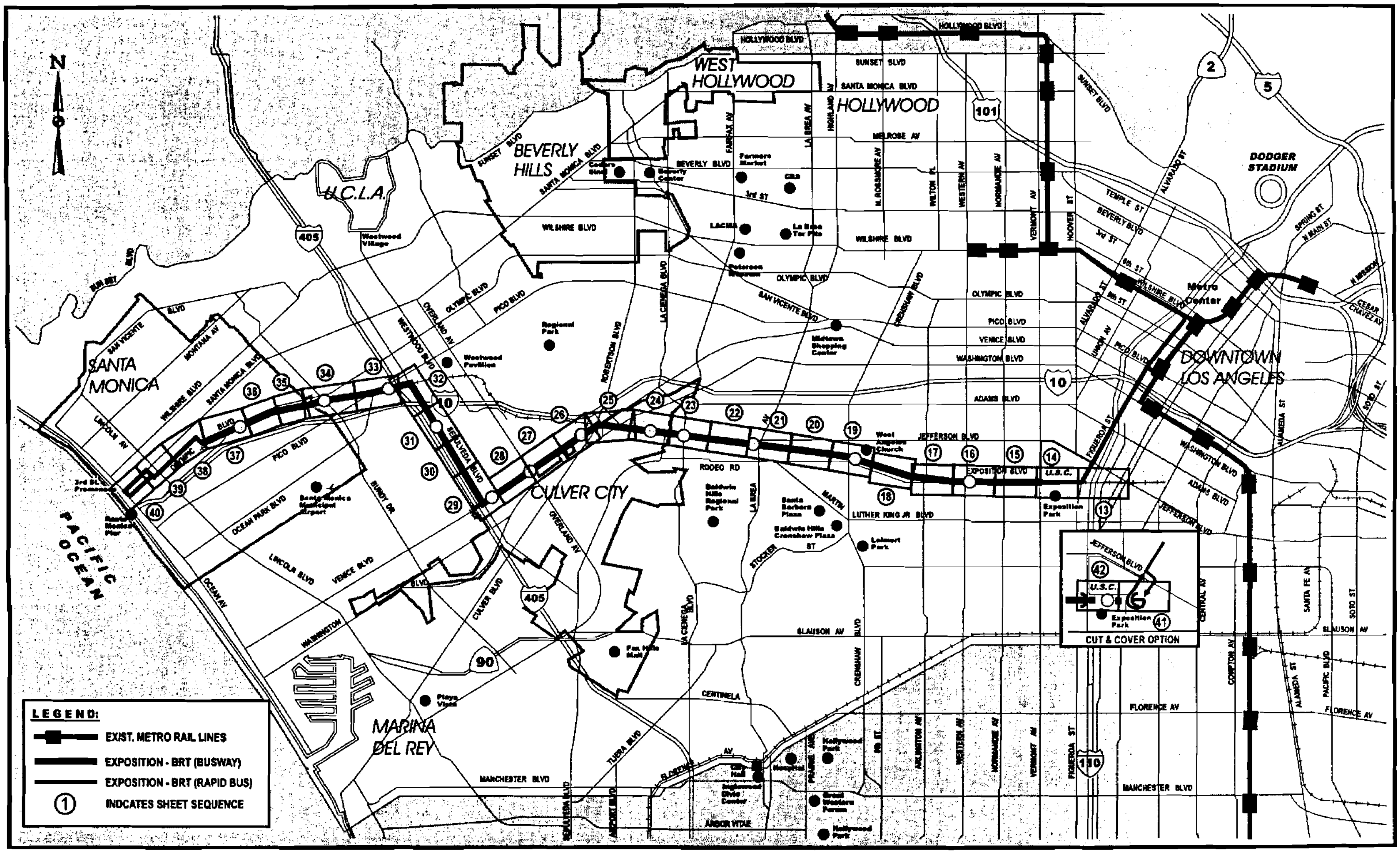
Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
WILSHIRE BRT PROJECT
REPLACEMENT PARKING
CRENSHAW & LA BREA LOTS

WB-71

1"=100'

31



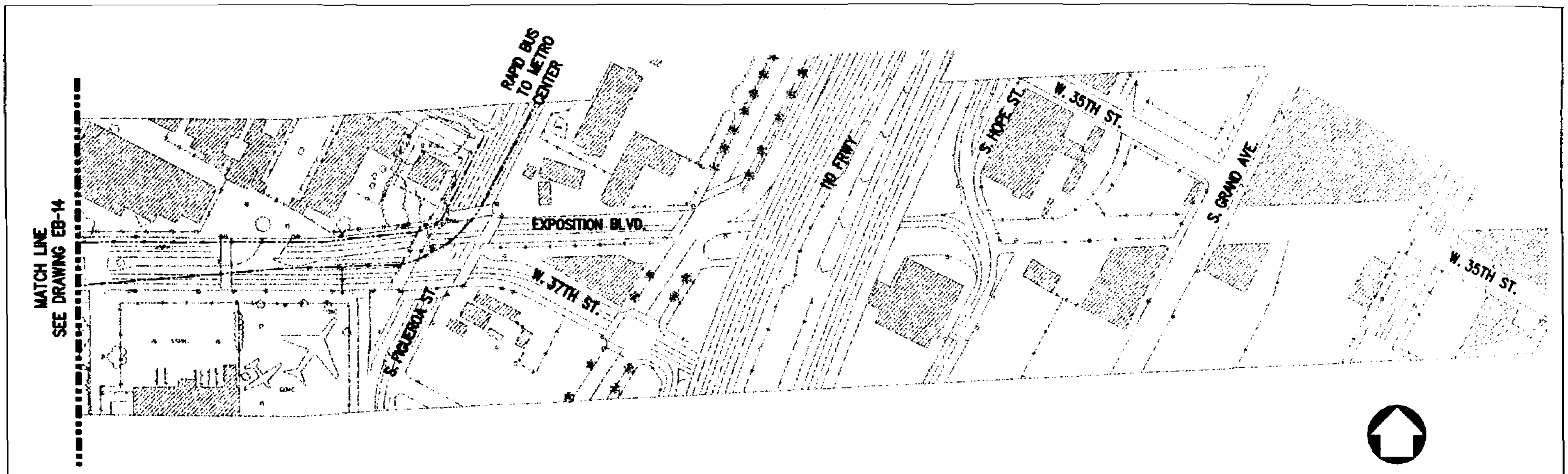
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	P.Z.
DRAWN BY	S.C.
CHECKED BY	J.S.
IN CHARGE	J.S
DATE	8 Dec 00

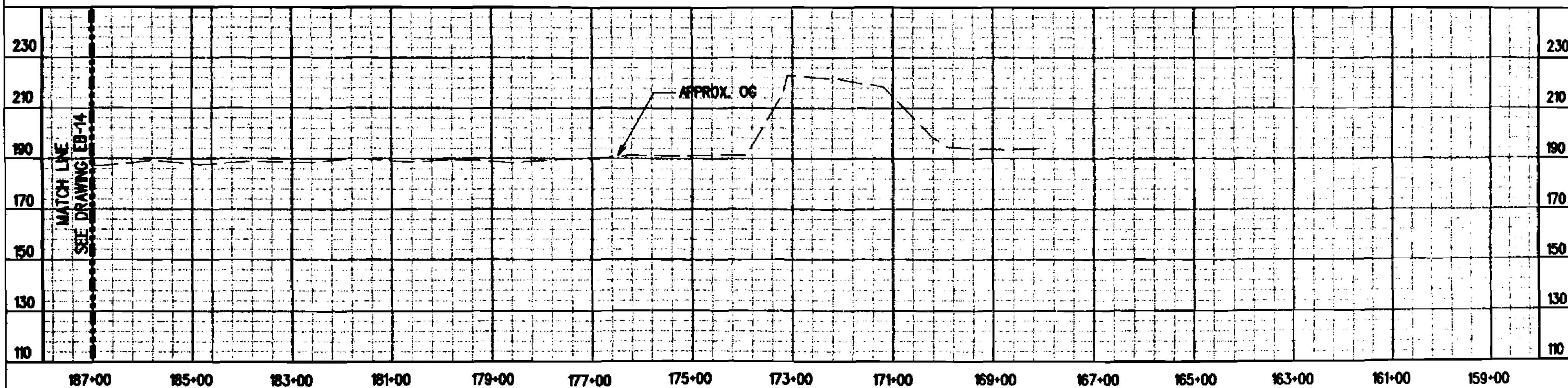
Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
KEY MAP

DRAWING NO	EB-0
SCALE	NO SCALE
SHEET NO	32



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4. 2000

Korve Engineering

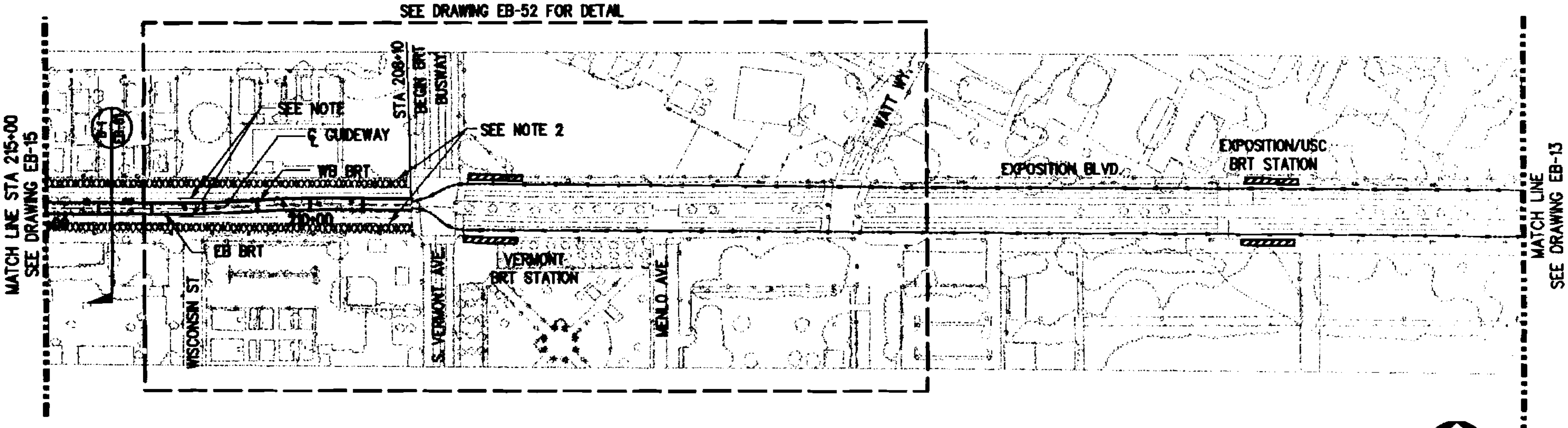
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

RAPID BUS IN LOS ANGELES

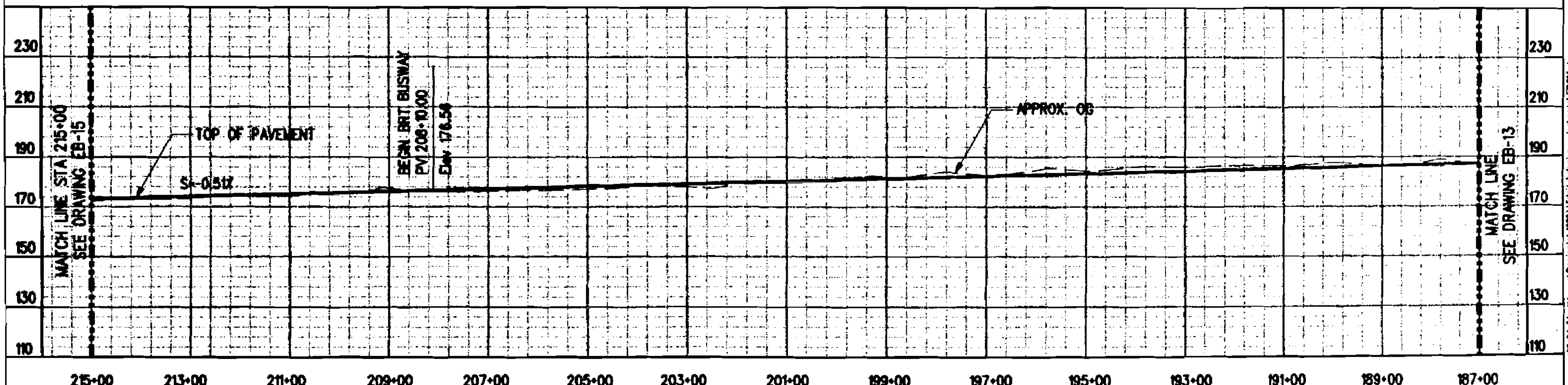
CONTRACT NO.
DRAWING NO. EB-13
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 33

12/27/00 09:23:01 AM



NOTES:
1. EXISTING STREET CROSSING TO BE CLOSED
2. BIKE LANES (CLASS 2 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

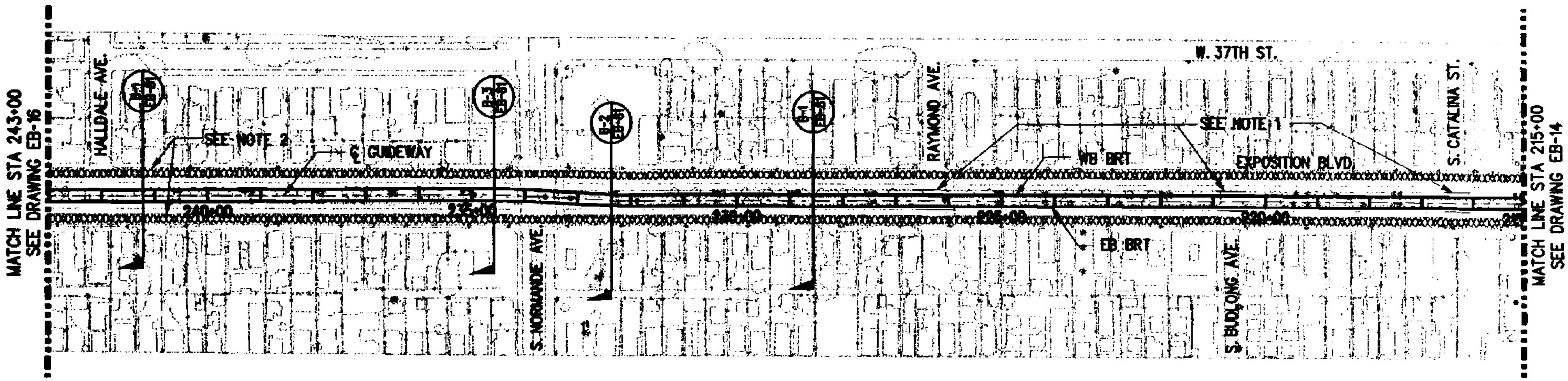
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

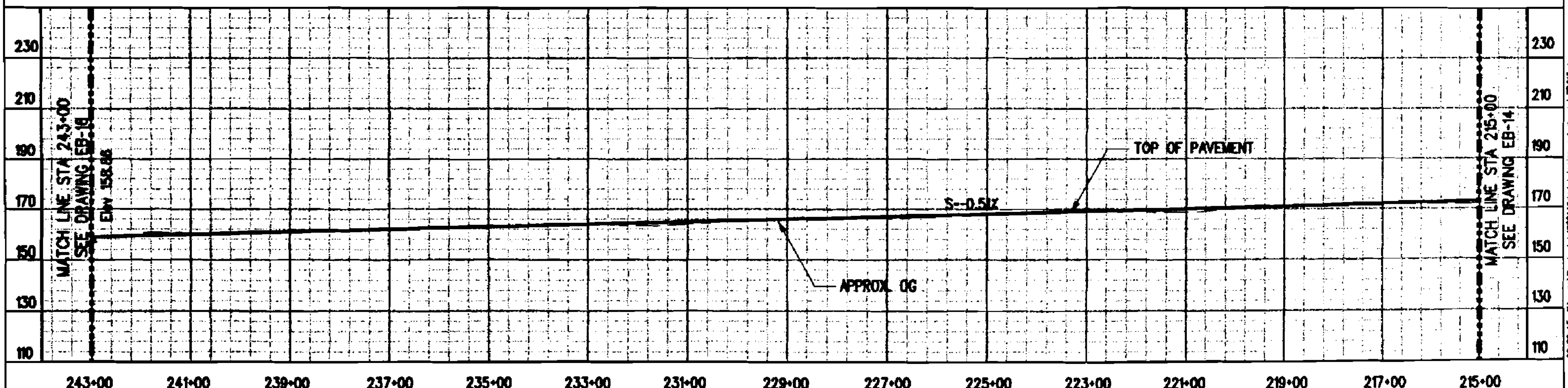
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
PLAN & PROFILE (BASELINE)
STA 192+84 TO STA 215+00
AND RAPID BUS IN LOS ANGELES

CONTRACT NO.
DRAWING NO. EB-14
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 34



NOTES:
1. EXISTING STREET CROSSING TO BE CLOSED
2. BIKE LANES (CLASS 2 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

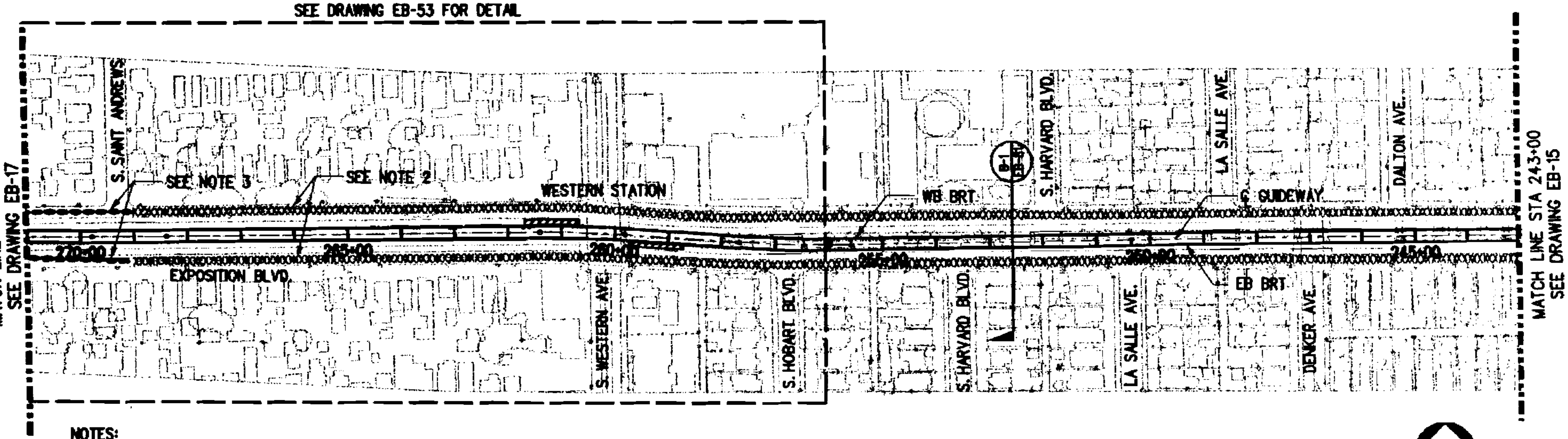
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 215+00 TO STA 243+00

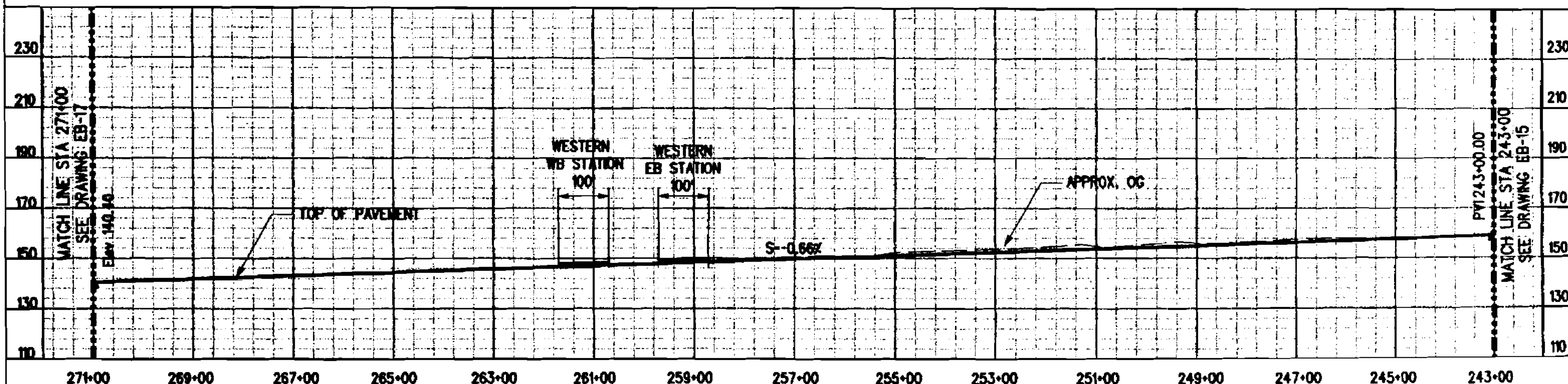
CONTRACT NO.
DRAWING NO. EB-15
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 35



NOTES:

1. EXISTING STREET CROSSING TO BE CLOSED
2. BIKE LANES (CLASS 2 BIKEWAY)
3. BIKE ROUTE (CLASS 3 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

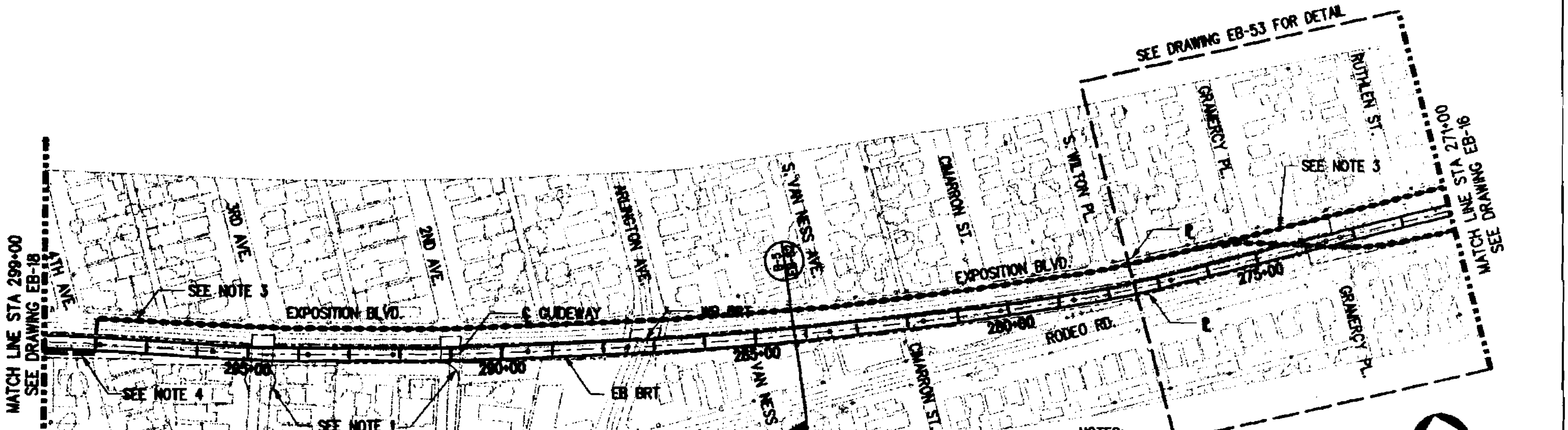
Korve Engineering

SUBMITTED
APPROVED

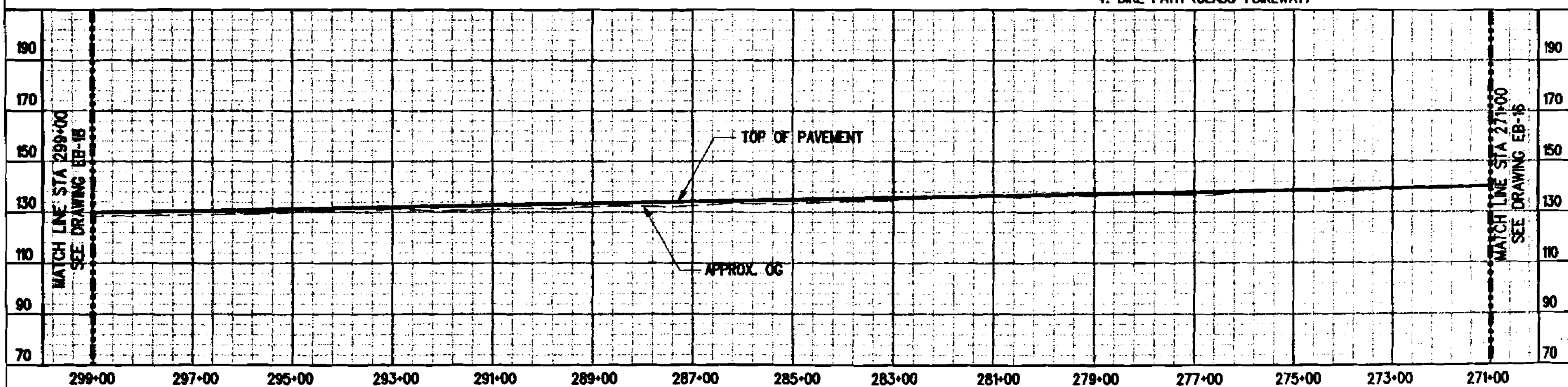
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 243+00 TO STA 271+00

CONTRACT NO.
DRAWING NO. EB-16
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 36



NOTES:
1. EXISTING STREET CROSSING TO BE CLOSED
2. BIKE LANES (CLASS 2 BIKEWAY)
3. BIKE ROUTE (CLASS 3 BIKEWAY)
4. BIKE PATH (CLASS 1 BIKEWAY)



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

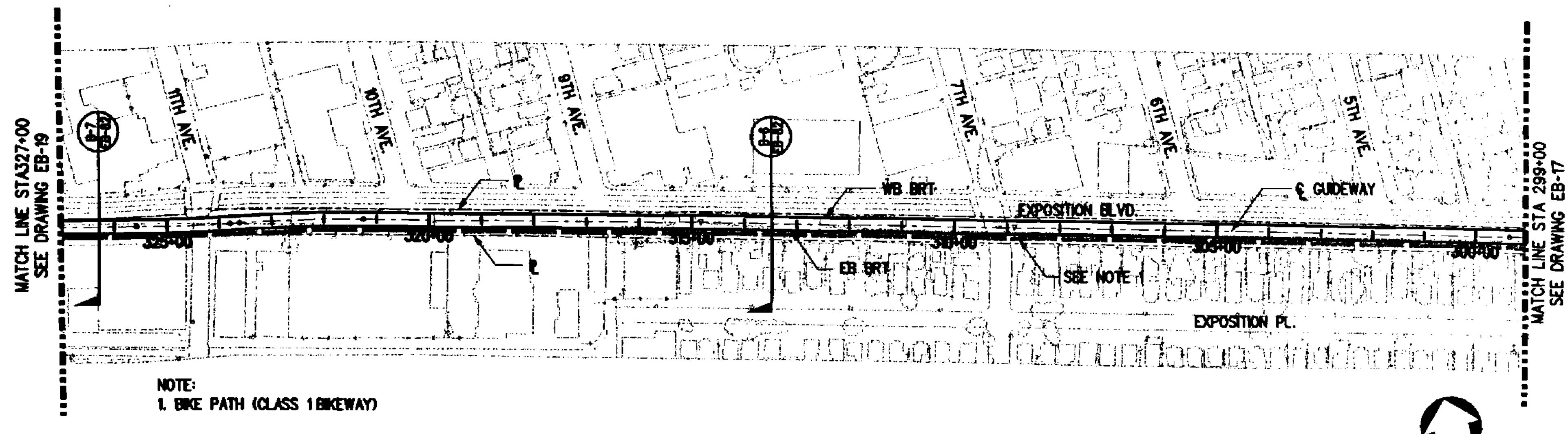
Korve Engineering

SUBMITTED
APPROVED

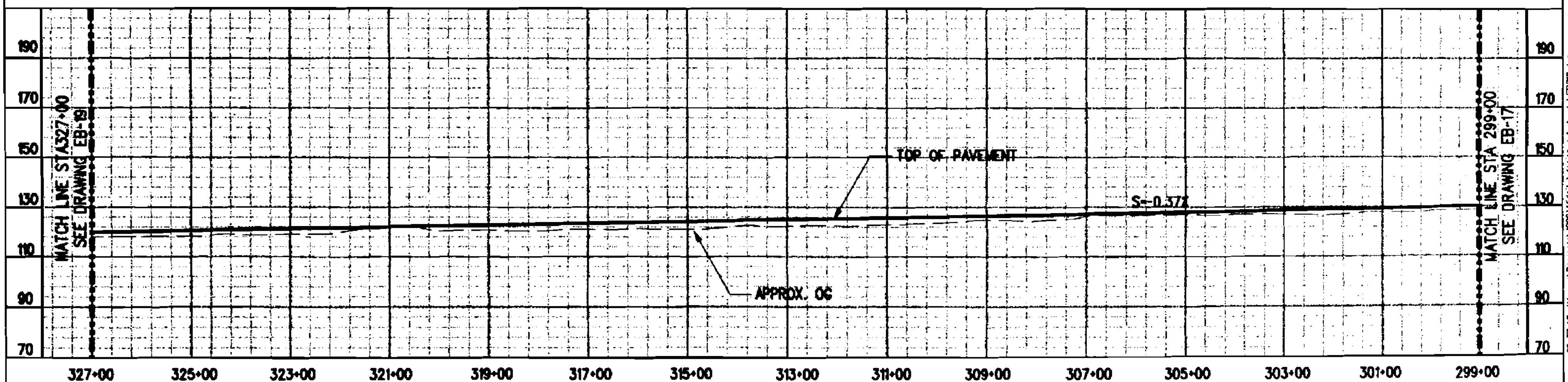
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 271+00 TO STA 299+00

CONTRACT NO.
DRAWING NO. EB-17
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 37



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

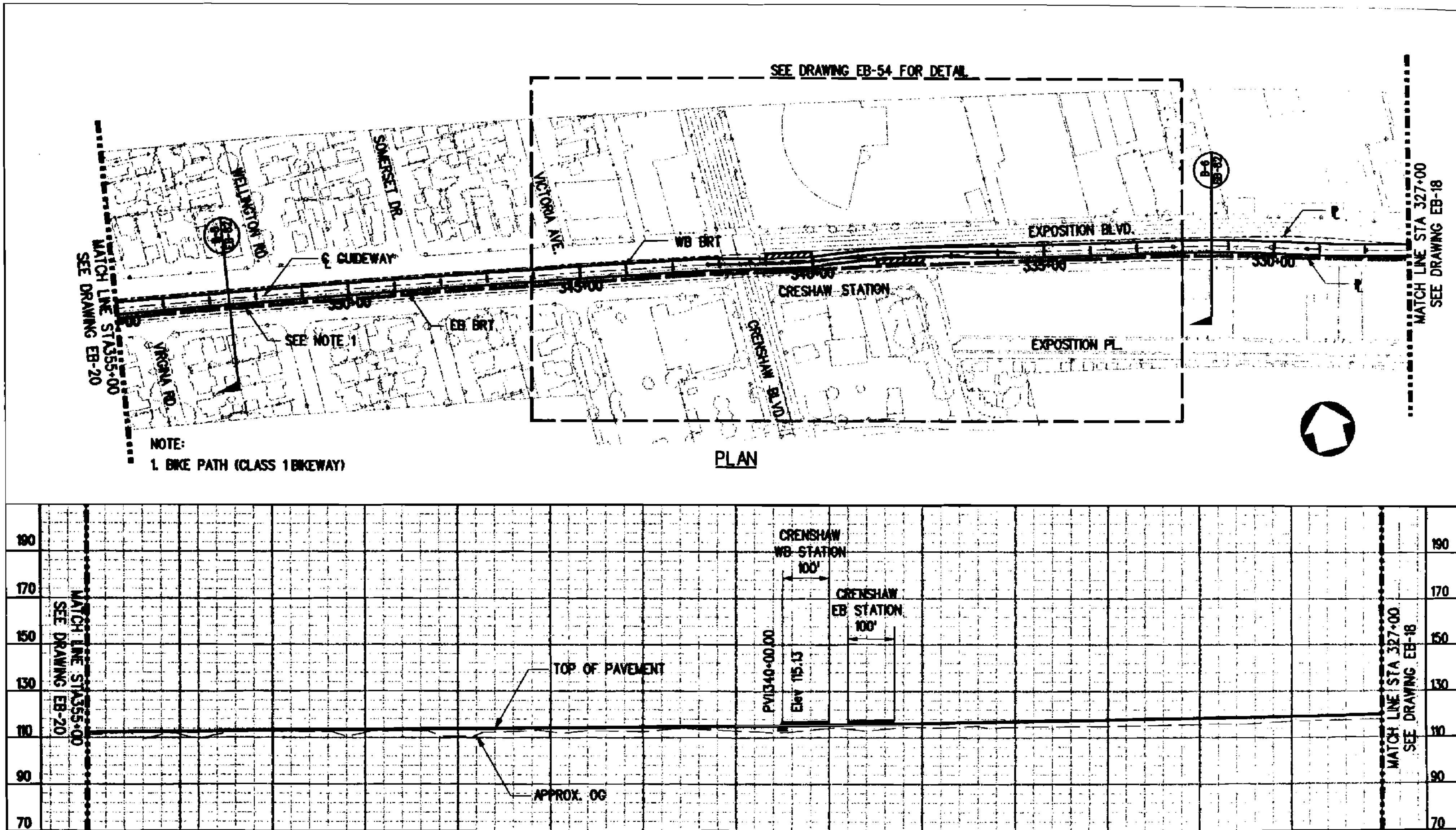
SUBMITTED

APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 299+00 TO STA 327+00

CONTRACT NO.
DRAWING NO. EB-18
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 38



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JR
DRAWN BY	JR
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

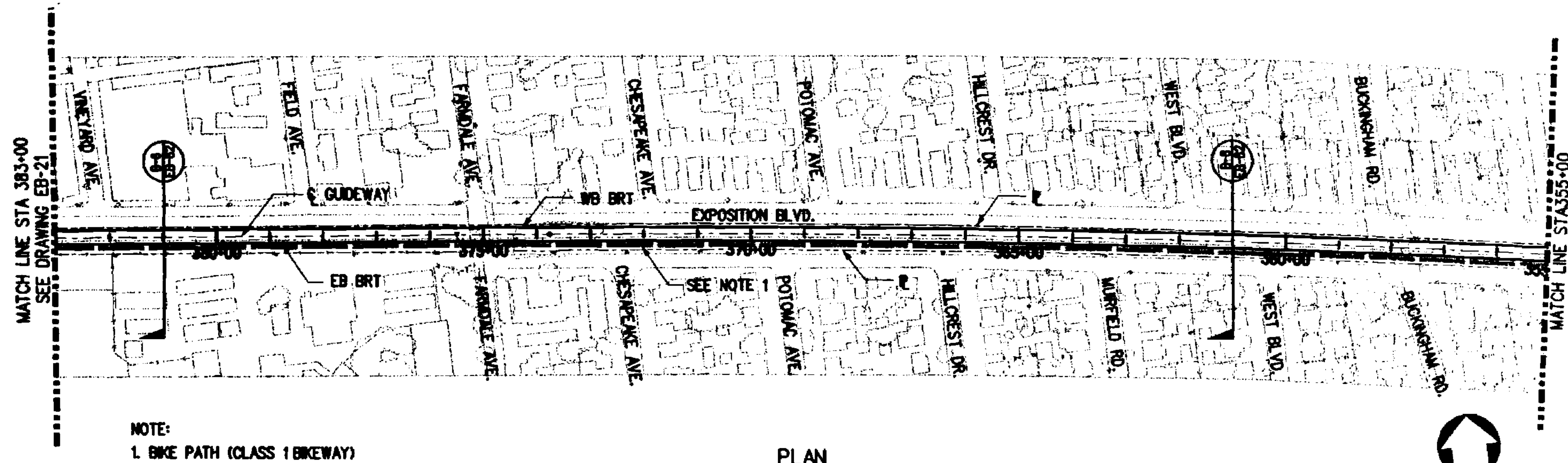
Korve Engineering

SUBMITTED
APPROVED

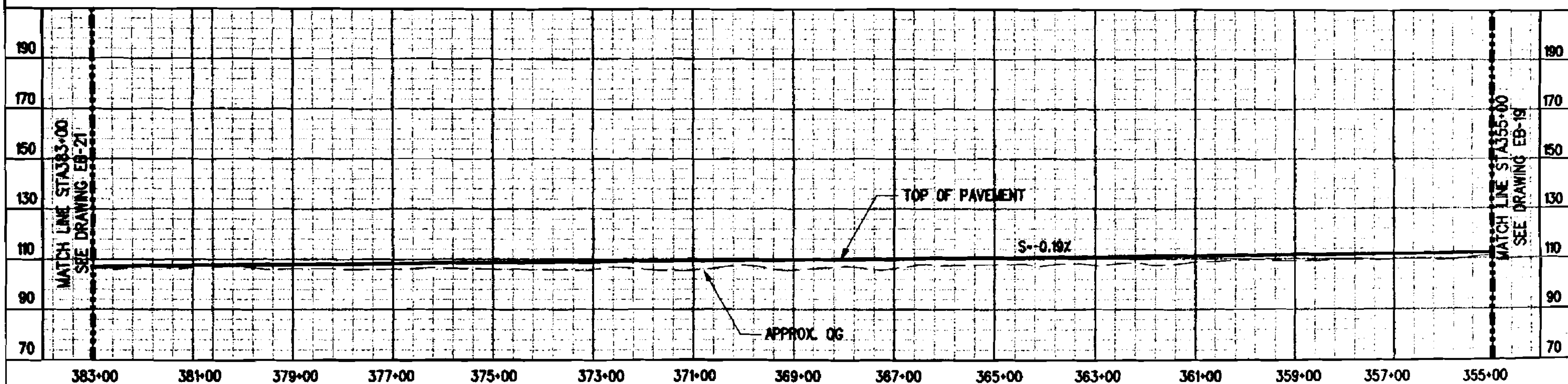
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 327+00 TO STA 355+00

CONTRACT NO.	
DRAWING NO.	EB-19
REV	0
SCALE	HORIZ 1"=200' VERT 1"=40'
SHEET NO.	39



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

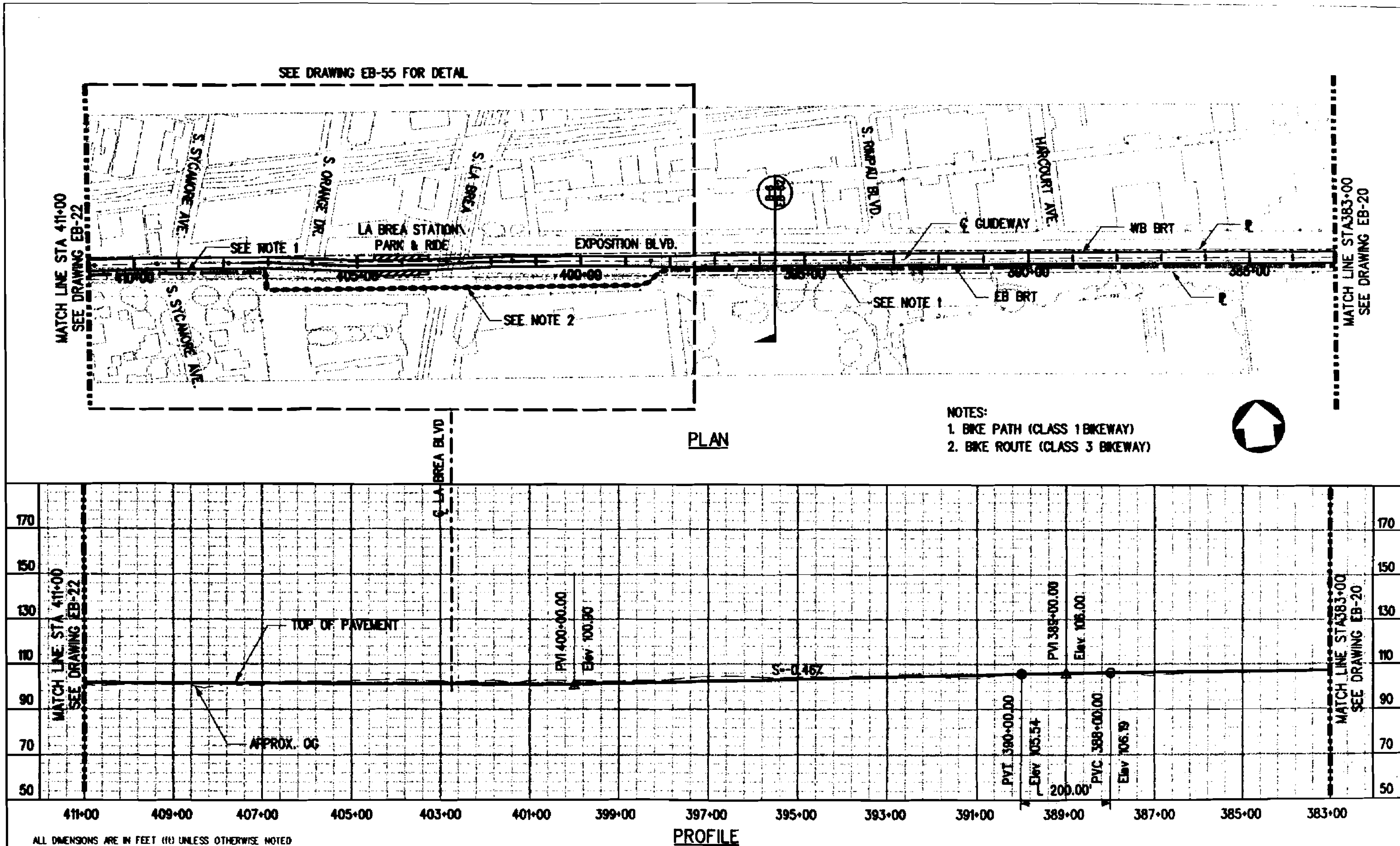
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 355+00 TO STA 383+00

CONTRACT NO.
DRAWING NO. EB-20
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 40



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

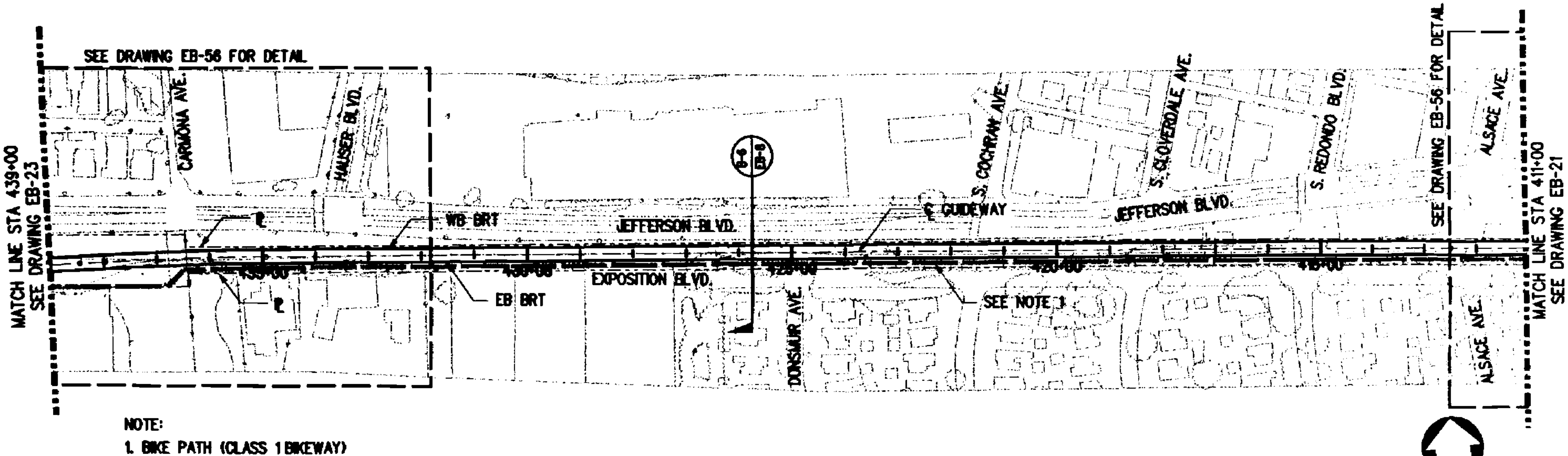
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 383+00 TO STA 411+00

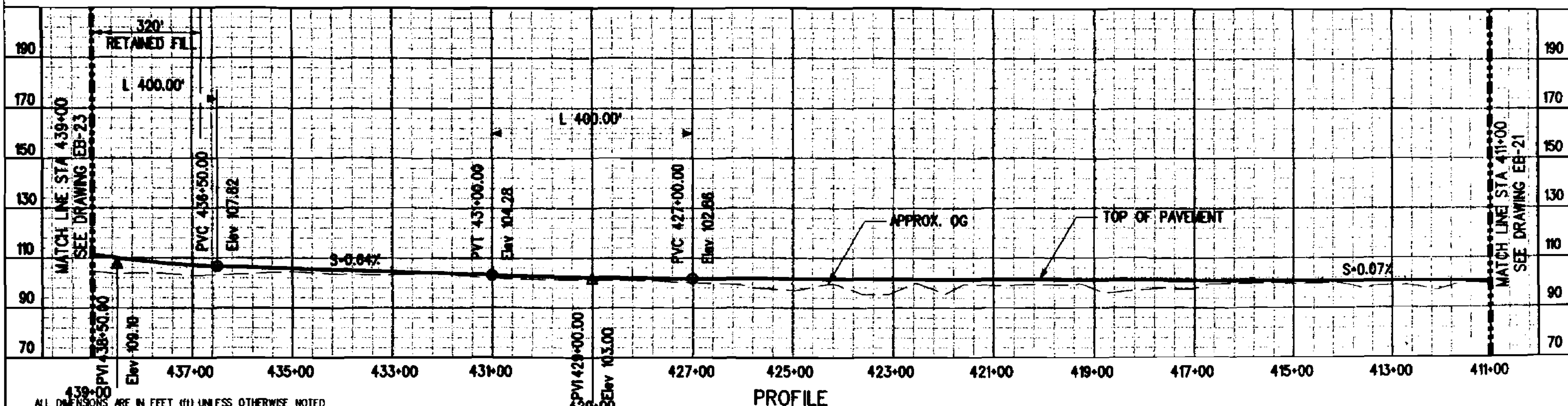
CONTRACT NO.
DRAWING NO. EB-21
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 41



NOTE:

1. BIKE PATH (CLASS 1 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

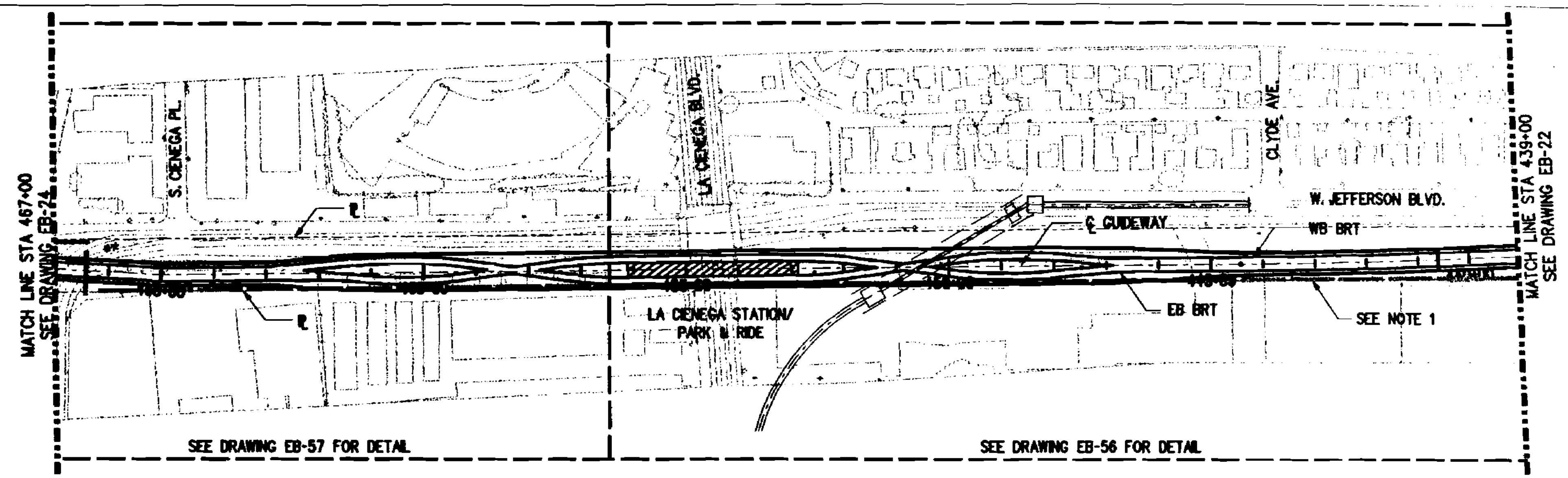
SUBMITTED

APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

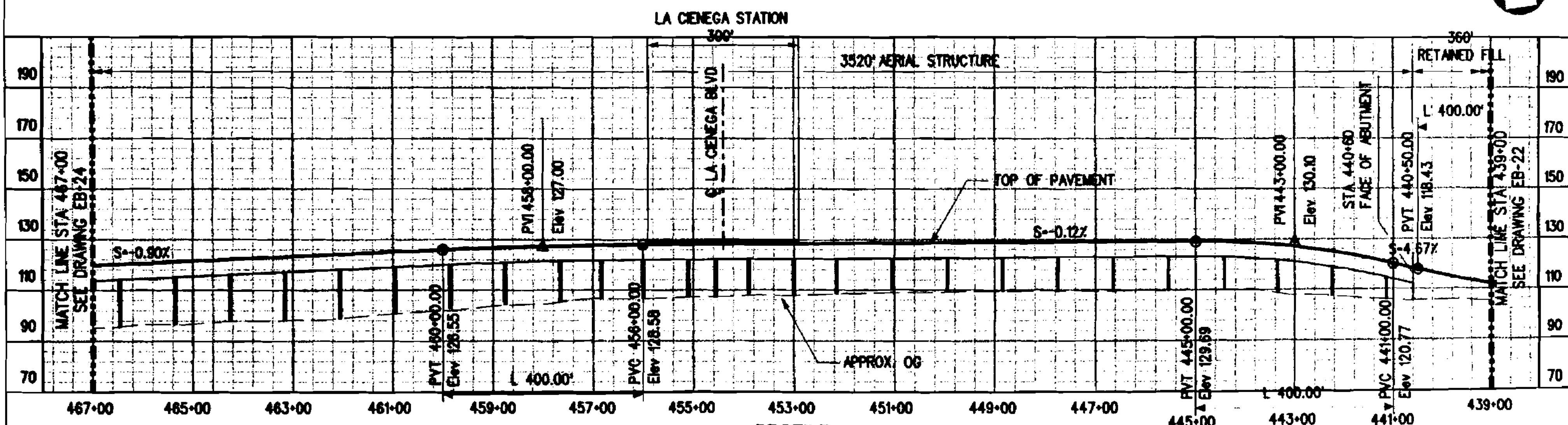
PLAN & PROFILE (BASELINE)
STA STA 411+00 TO STA 439+00

CONTRACT NO.
DRAWING NO. EB-22
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 42



NOTE:
1. BIKE PATH (CLASS 1 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

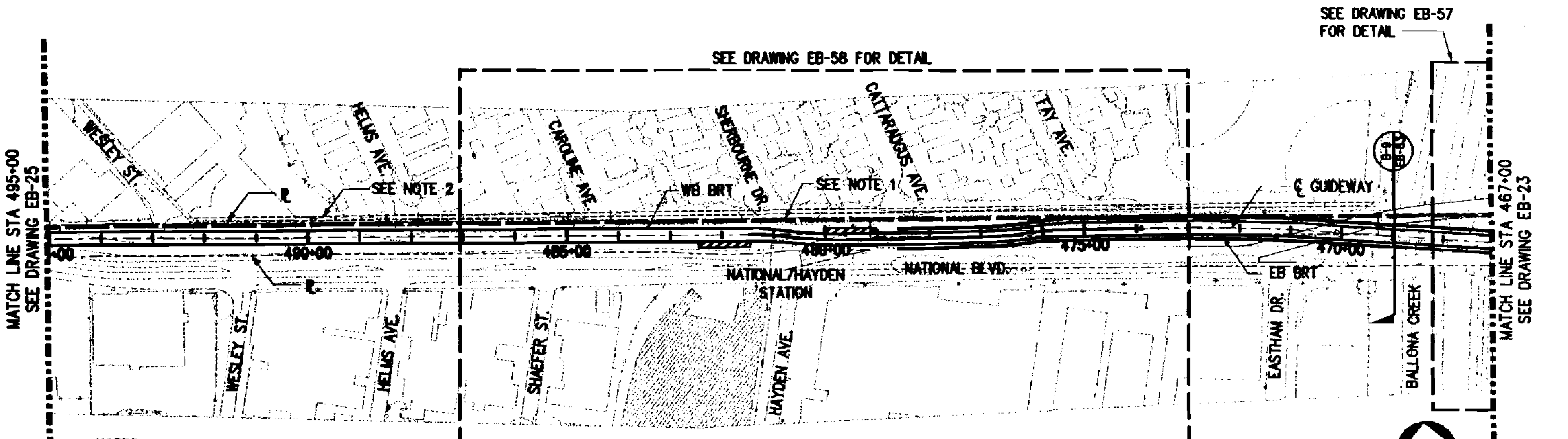
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

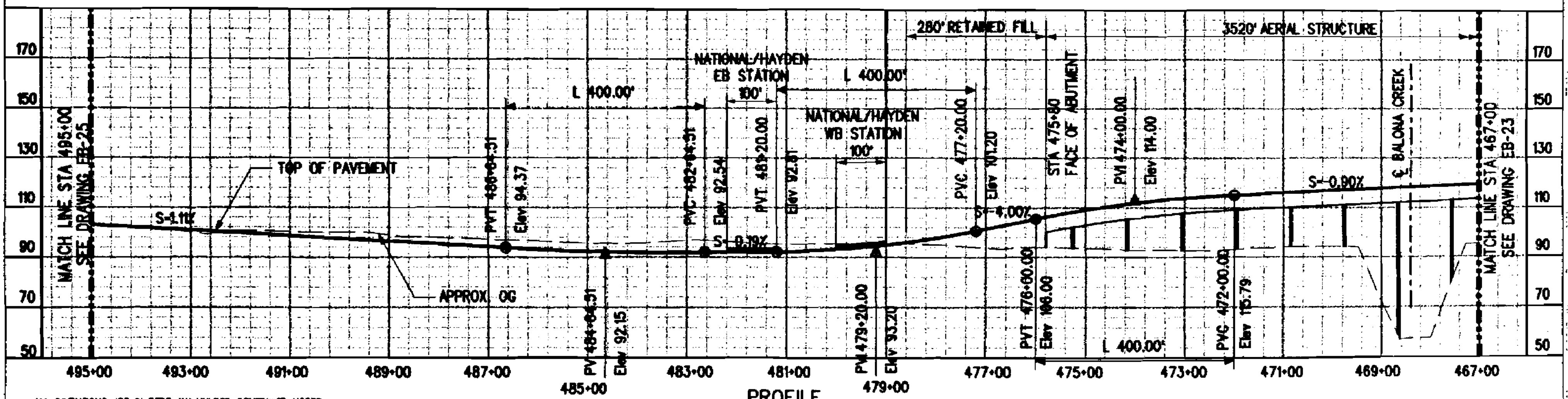
PLAN & PROFILE (BASELINE)
STA STA 439+00 TO STA 467+00

CONTRACT NO.
DRAWING NO. EB-23 REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 43



NOTES:
1. BIKE PATH (CLASS 1 BIKEWAY)
2. WALKWAY

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

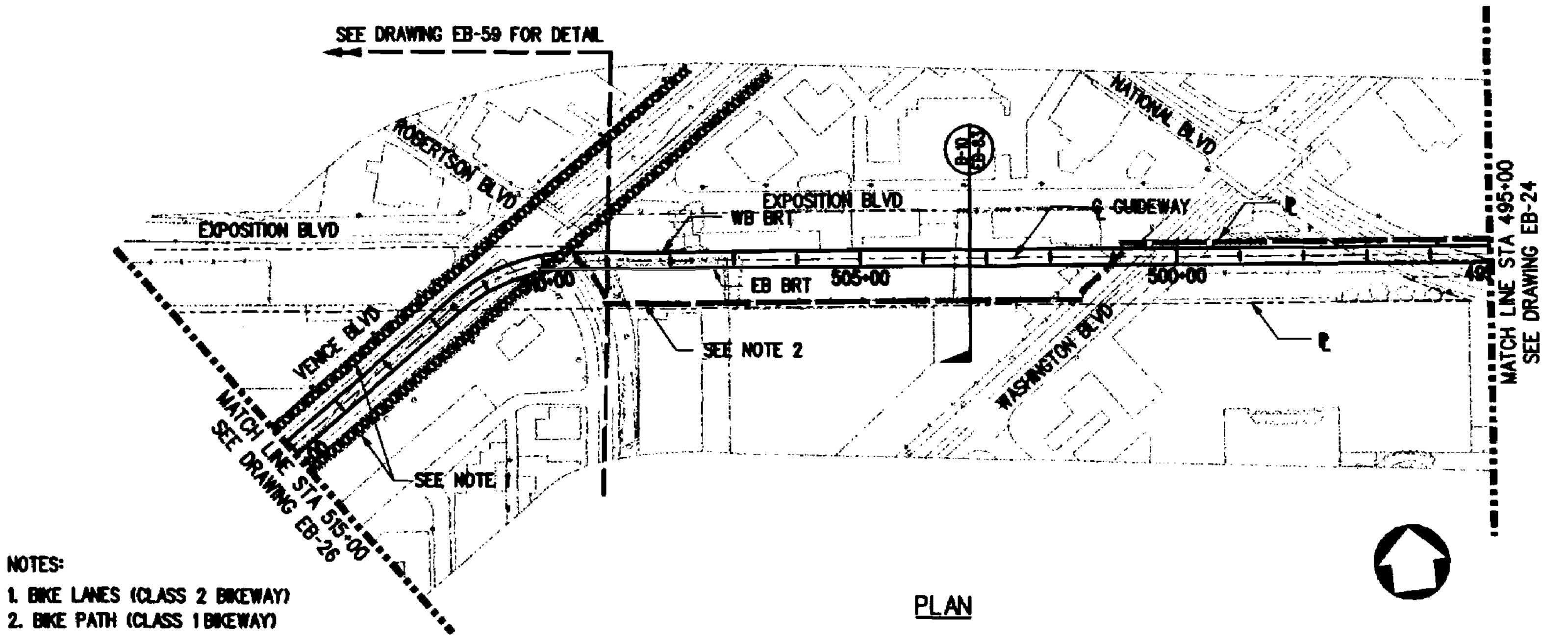
Korve Engineering

SUBMITTED
APPROVED

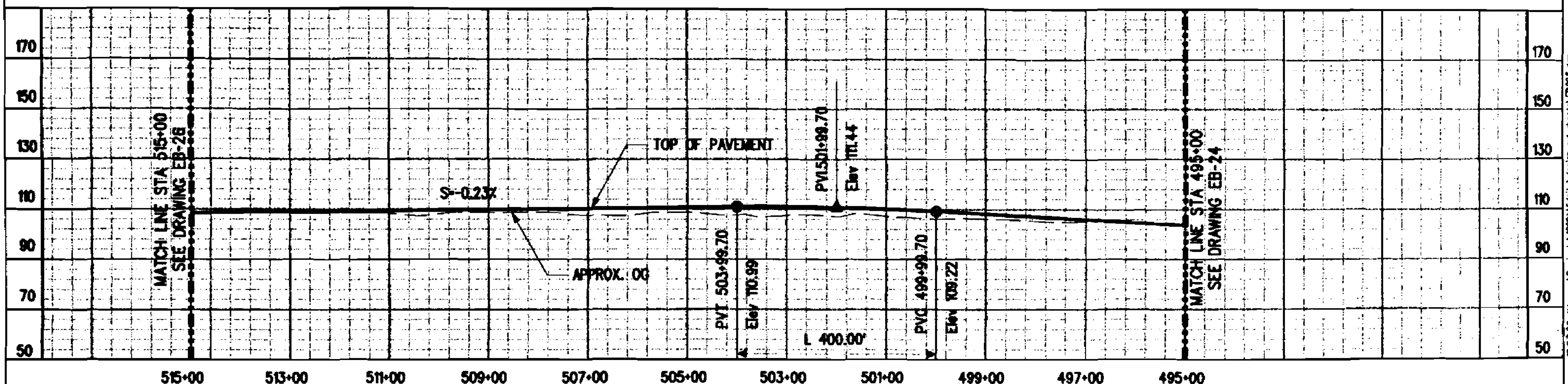
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 467+00 TO STA 495+00

CONTRACT NO.
DRAWING NO. EB-24
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 44



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

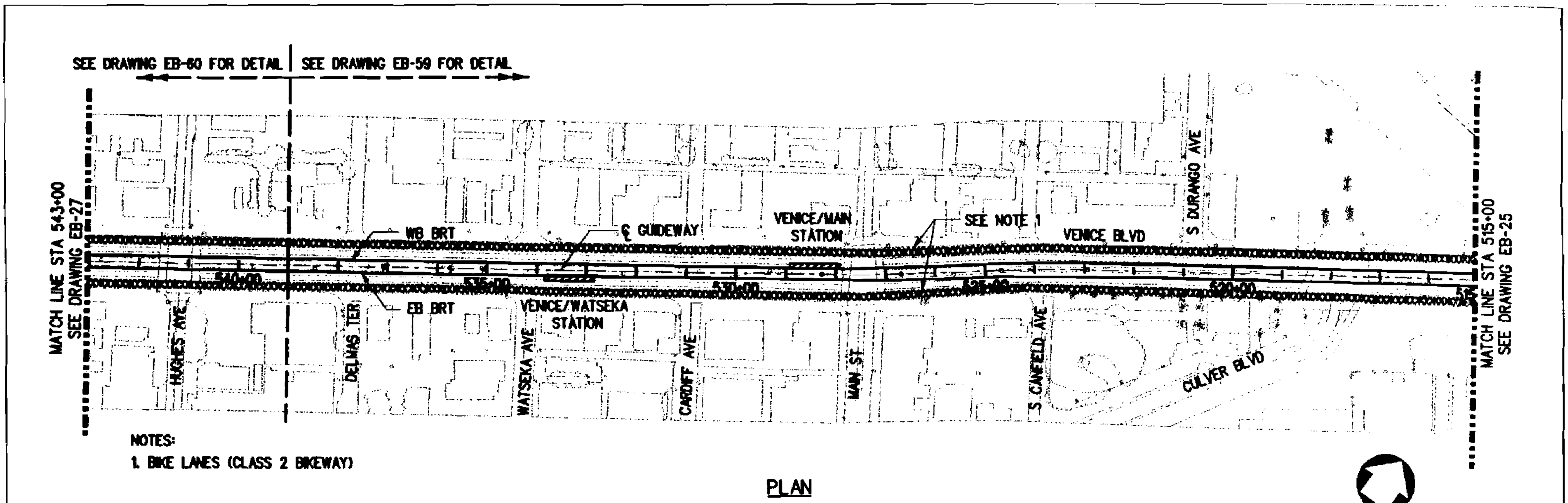
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

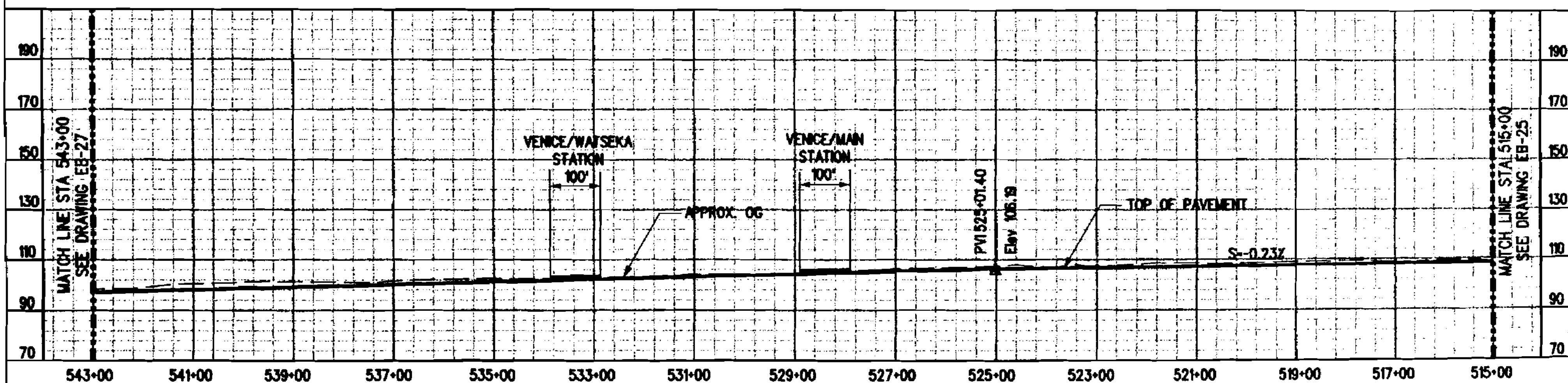
PLAN & PROFILE (BASELINE)
STA STA 495+00 TO STA 515+00

CONTRACT NO.
DRAWING NO. EB-25
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 45

p:\Projects\1999\Wdcity\design cvd sheets\EB025.dgn 10:07:29 AM 12/27/00 USER



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

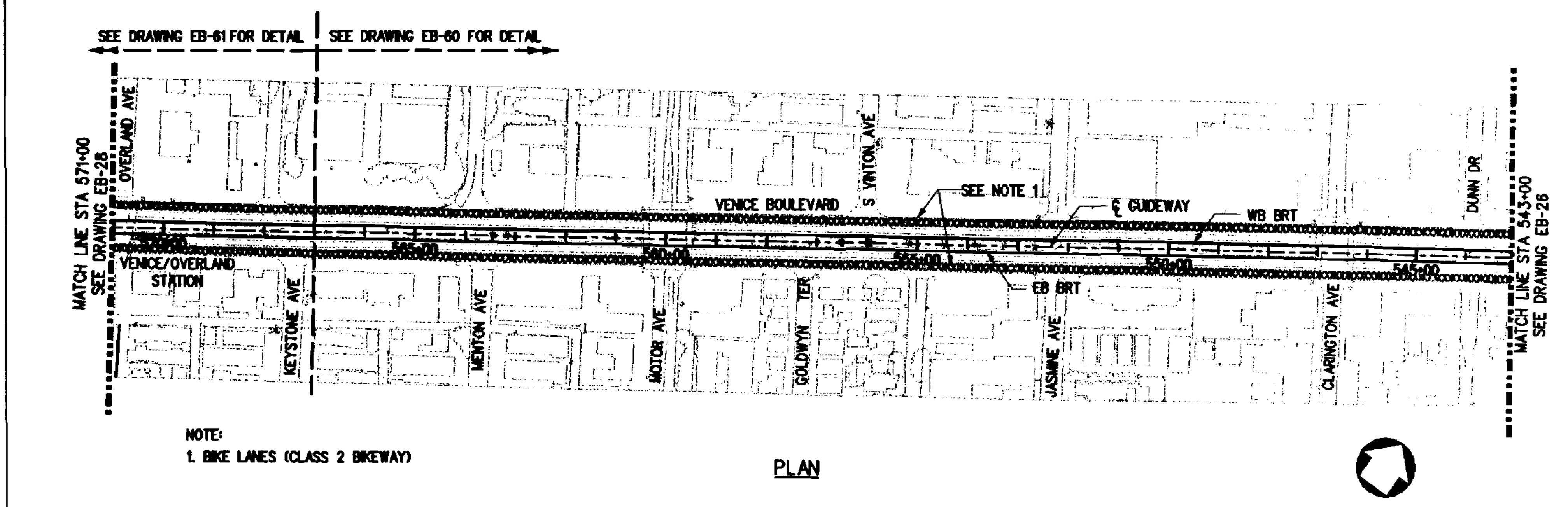
Korve Engineering

SUBMITTED ______
APPROVED ______

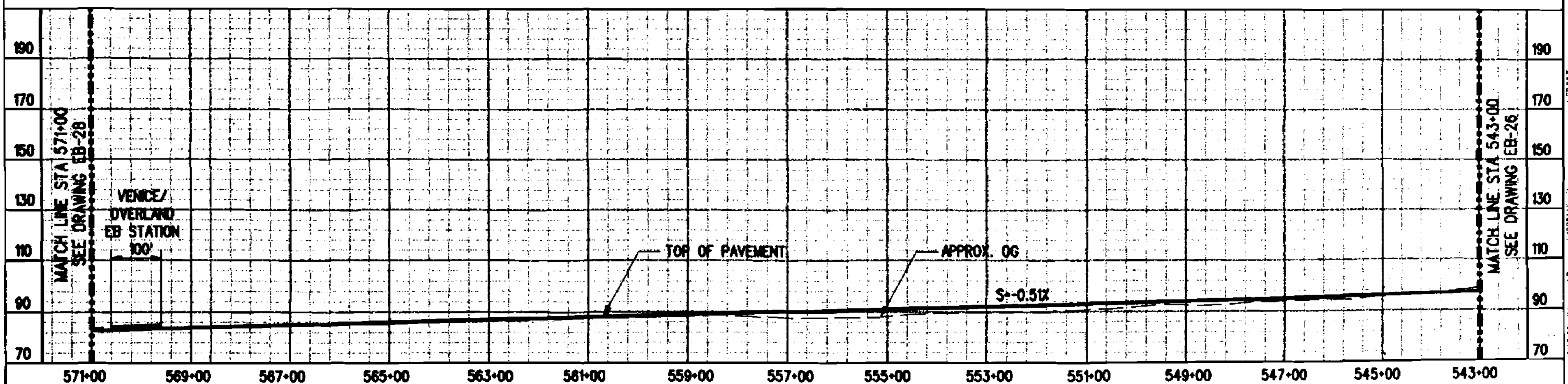
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 515+00 TO STA 543+00

CONTRACT NO.
DRAWING NO. EB-26
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 46



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

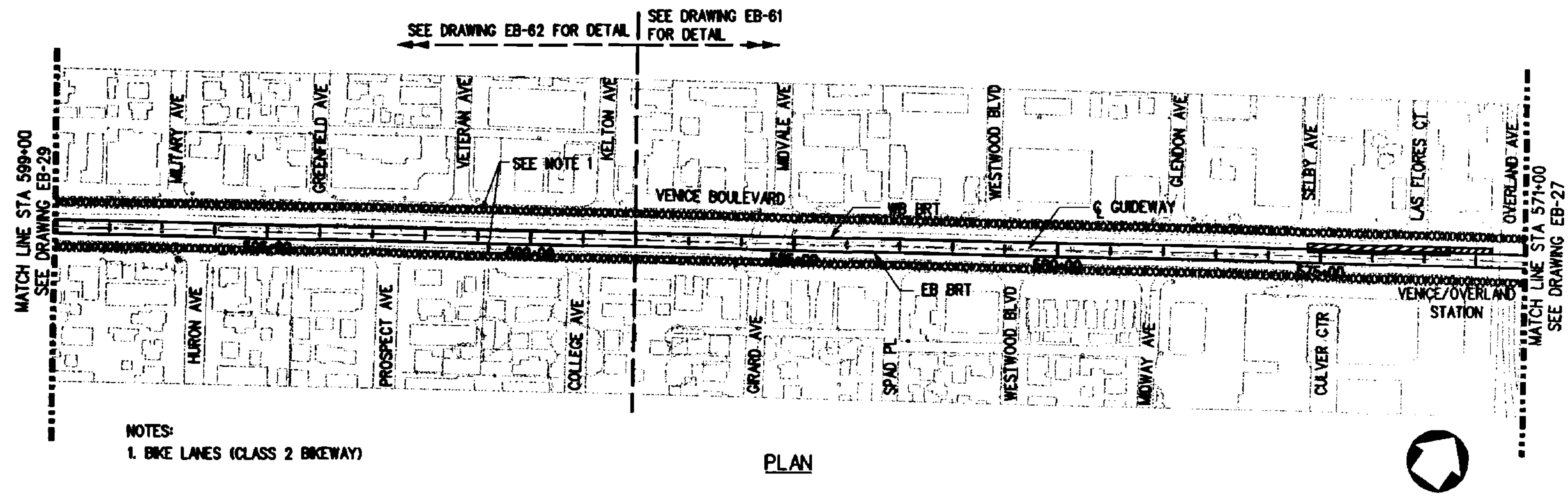
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

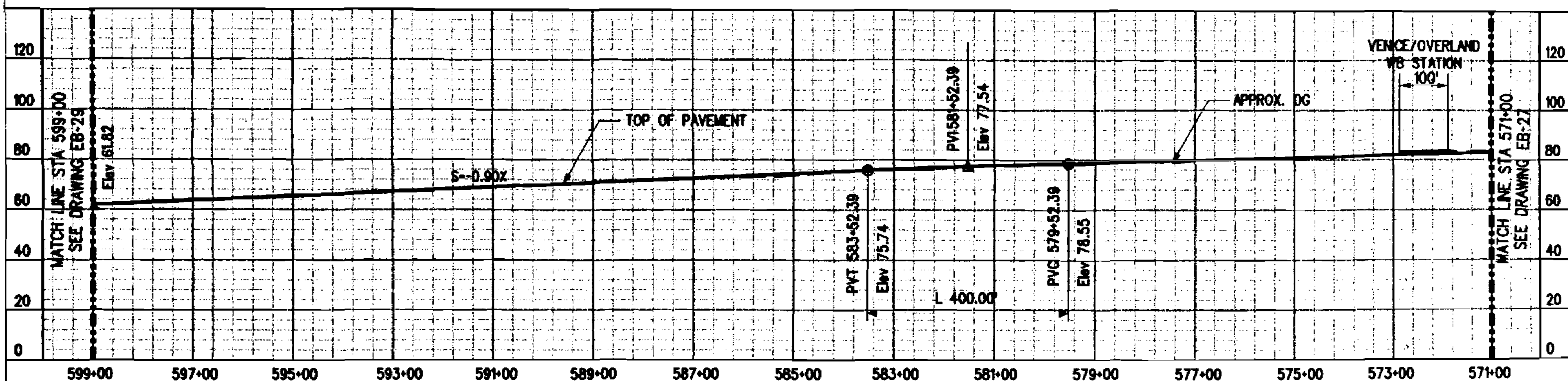
PLAN & PROFILE (BASELINE)
STA 543+00 TO STA 571+00

CONTRACT NO.
DRAWING NO. EB-27
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 47



NOTES:
1. BIKE LANES (CLASS 2 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JR
DRAWN BY	JR
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

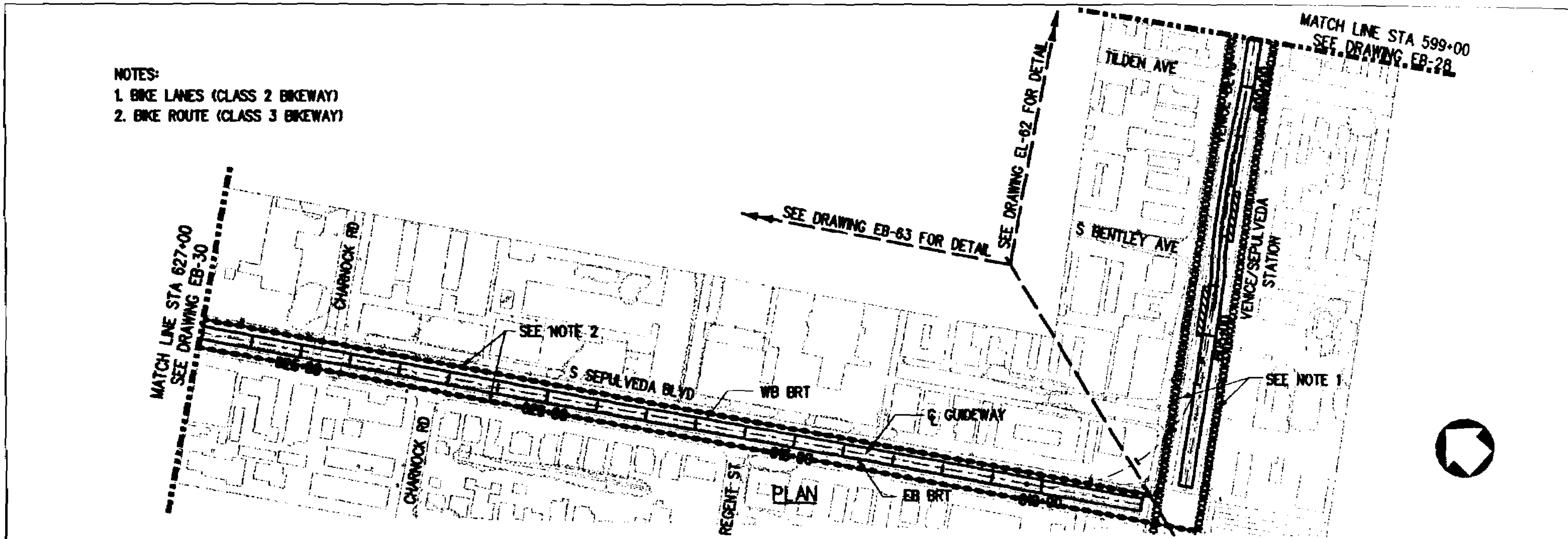
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

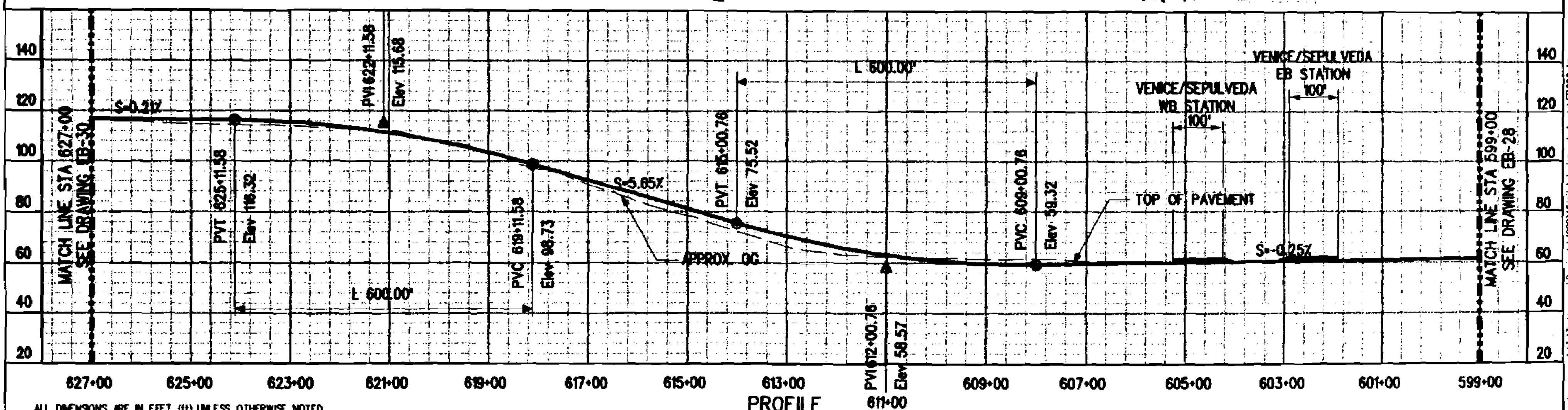
PLAN & PROFILE (BASELINE)
STA 571+00 TO STA 599+00

CONTRACT NO.	
DRAWING NO.	EB-28
REV	0
SCALE	HORIZ 1"=200' VERT 1"=40'
SHEET NO.	48

12/27/00

NOTES:
1. BIKE LANES (CLASS 2 BIKEWAY)
2. BIKE ROUTE (CLASS 3 BIKEWAY)





ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY: JR
DRAWN BY: JR
CHECKED BY: PZ
IN CHARGE: PZ
DATE: OCT 4, 2000

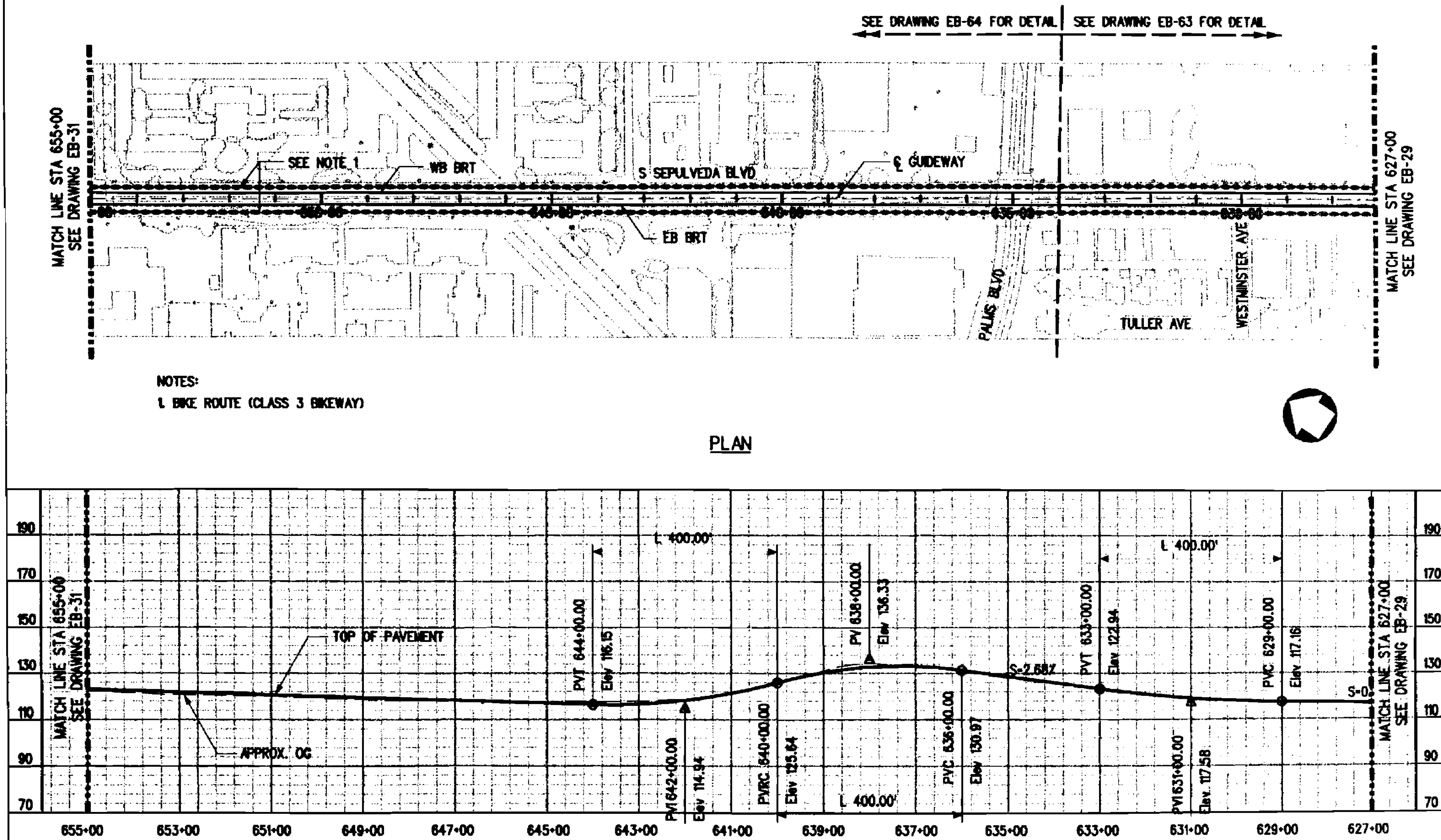
Korve Engineering

SUBMITTED:
APPROVED:

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 599+00 TO STA 627+00

CONTRACT NO.
DRAWING NO. EB-29
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 49



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

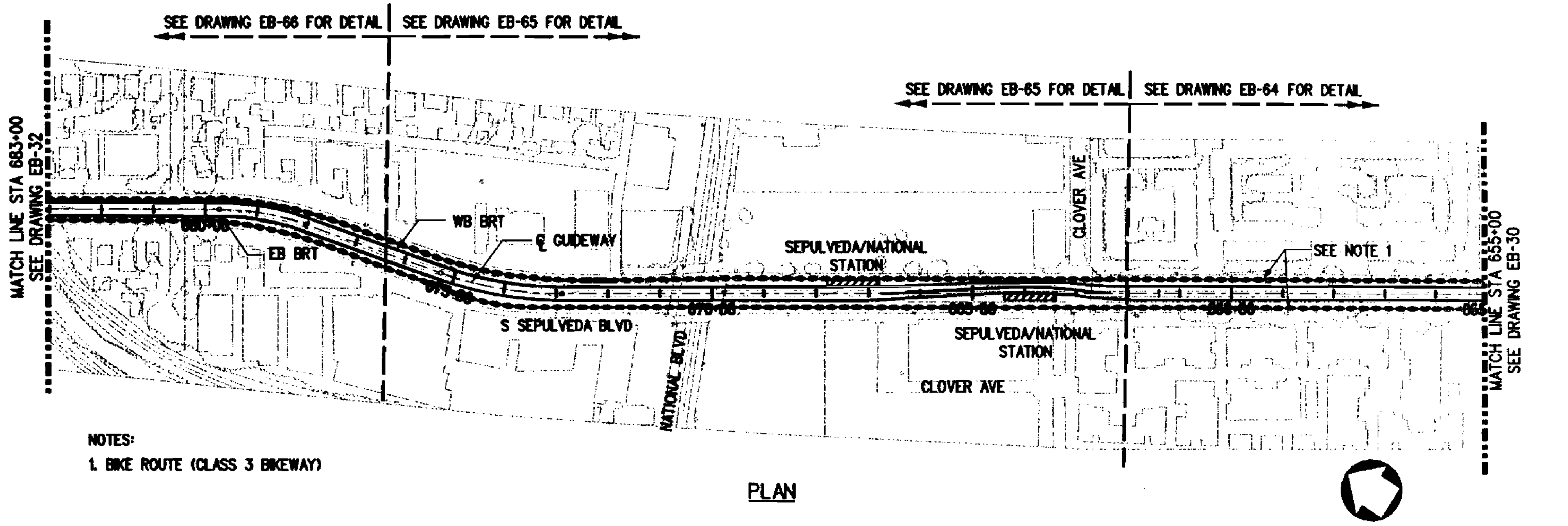
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 627+00 TO STA 655+00

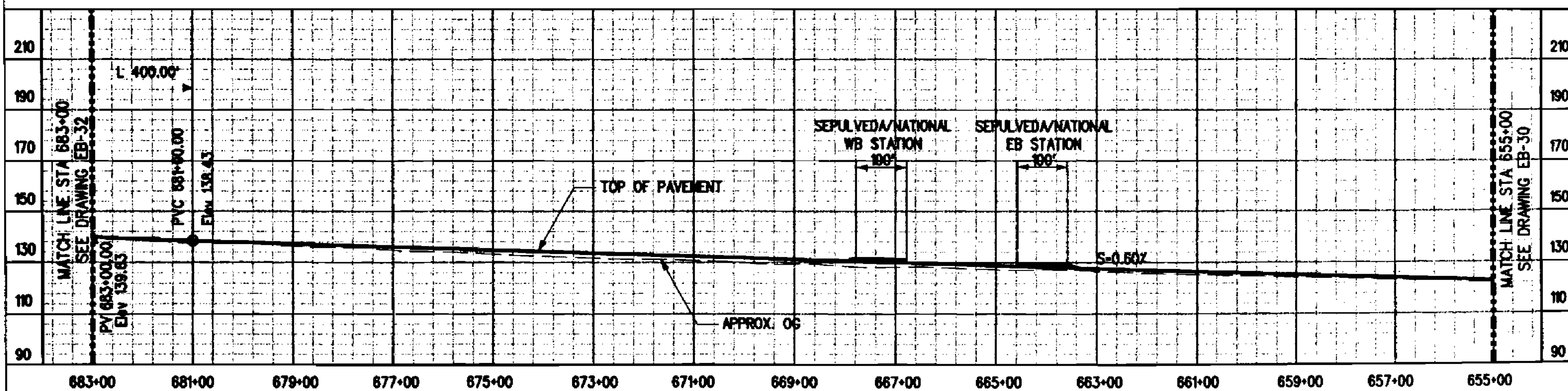
CONTRACT NO.
DRAWING NO. EB-30
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 50



NOTES:

1. BIKE ROUTE (CLASS 3 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

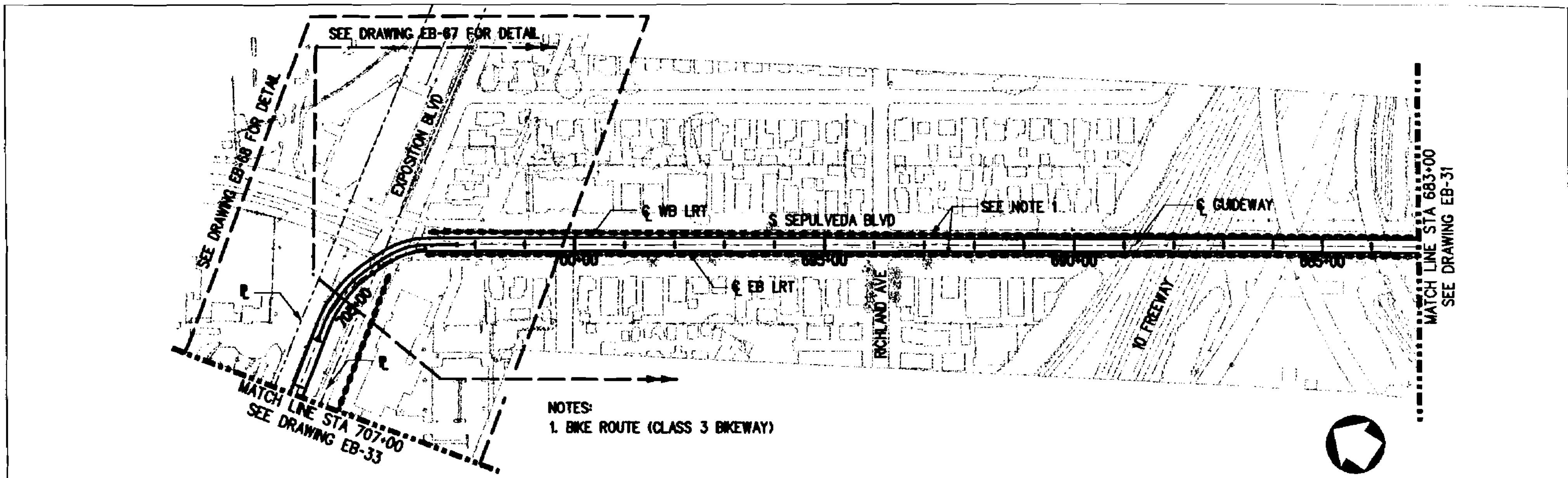
Korve Engineering

SUBMITTED
APPROVED

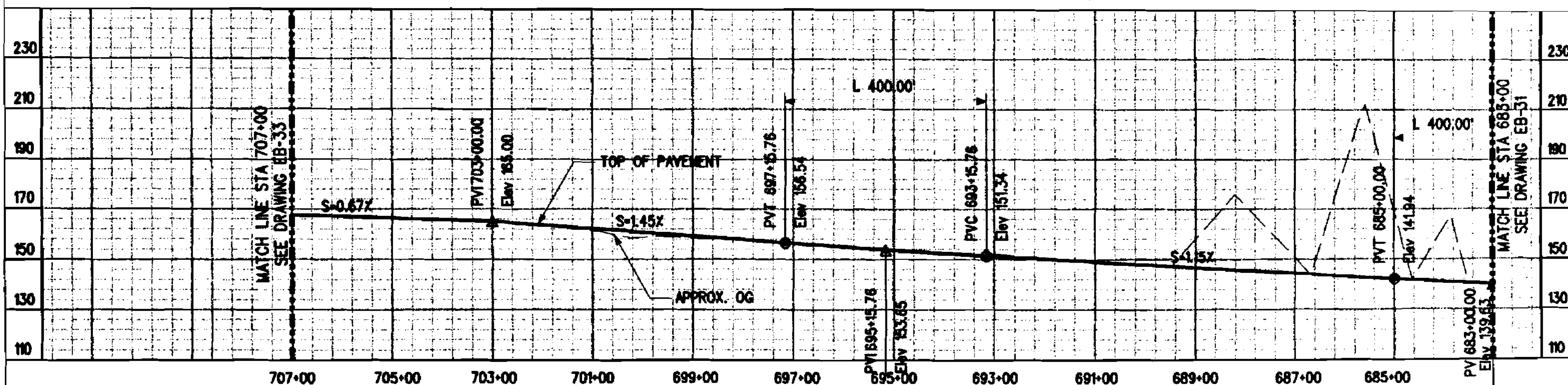
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 655+00 TO STA 683+00

CONTRACT NO.
DRAWING NO EB-31
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 51



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

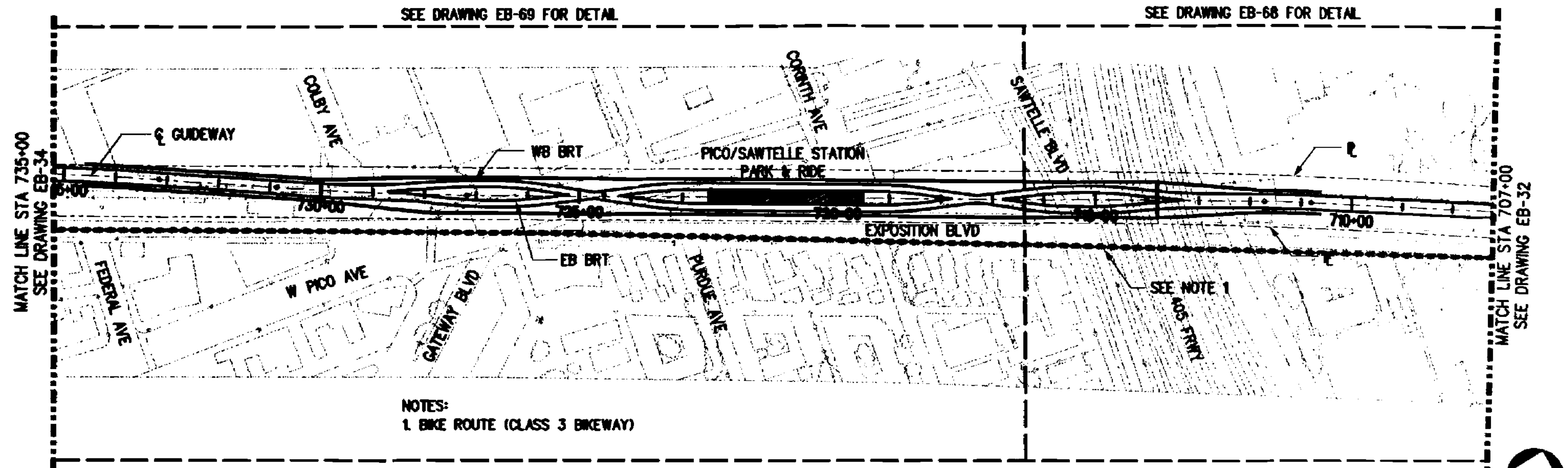
Korve Engineering

SUBMITTED ______
APPROVED ______

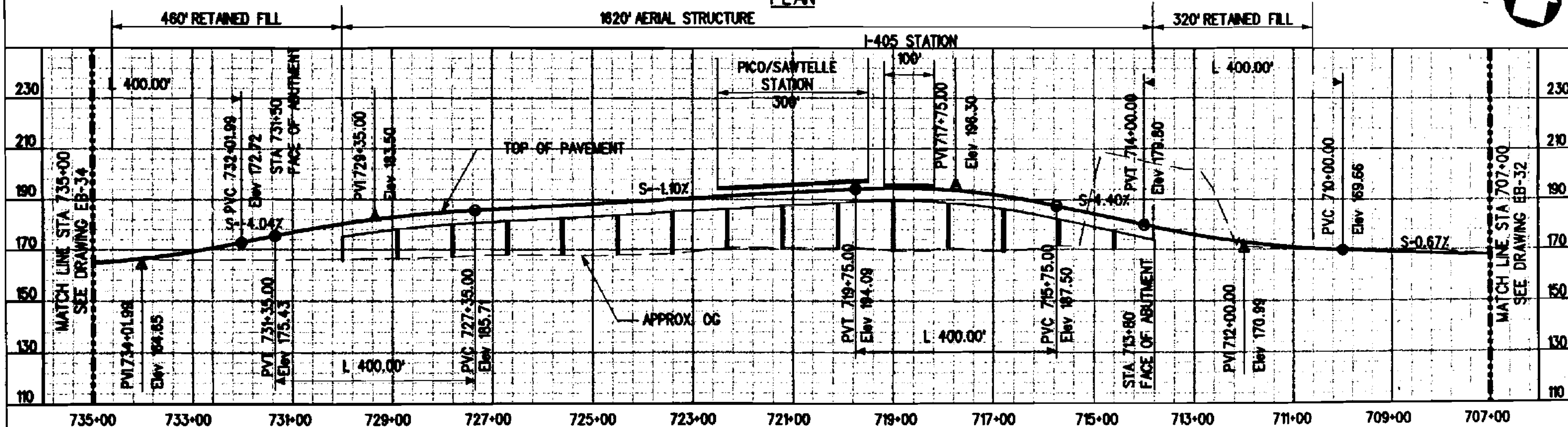
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 683+00 TO STA 707+00

CONTRACT NO.
DRAWING NO. EB-32
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 52



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

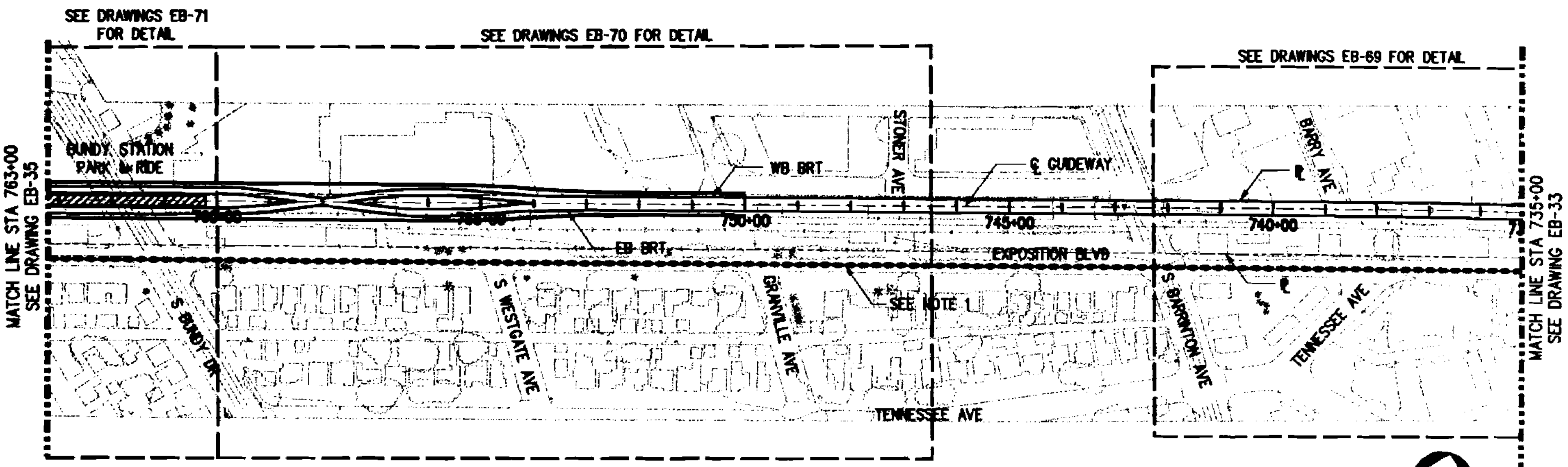
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

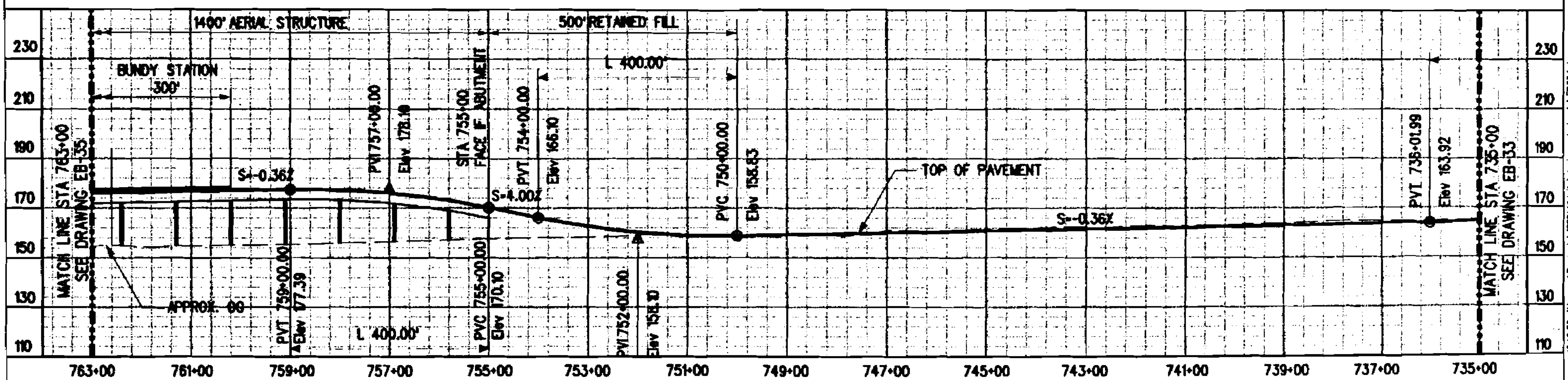
PLAN & PROFILE (BASELINE)
STA 707+00 TO STA 735+00

CONTRACT NO.
DRAWING NO. EB-33
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 53



NOTES:
1. BIKE ROUTE (CLASS 3 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

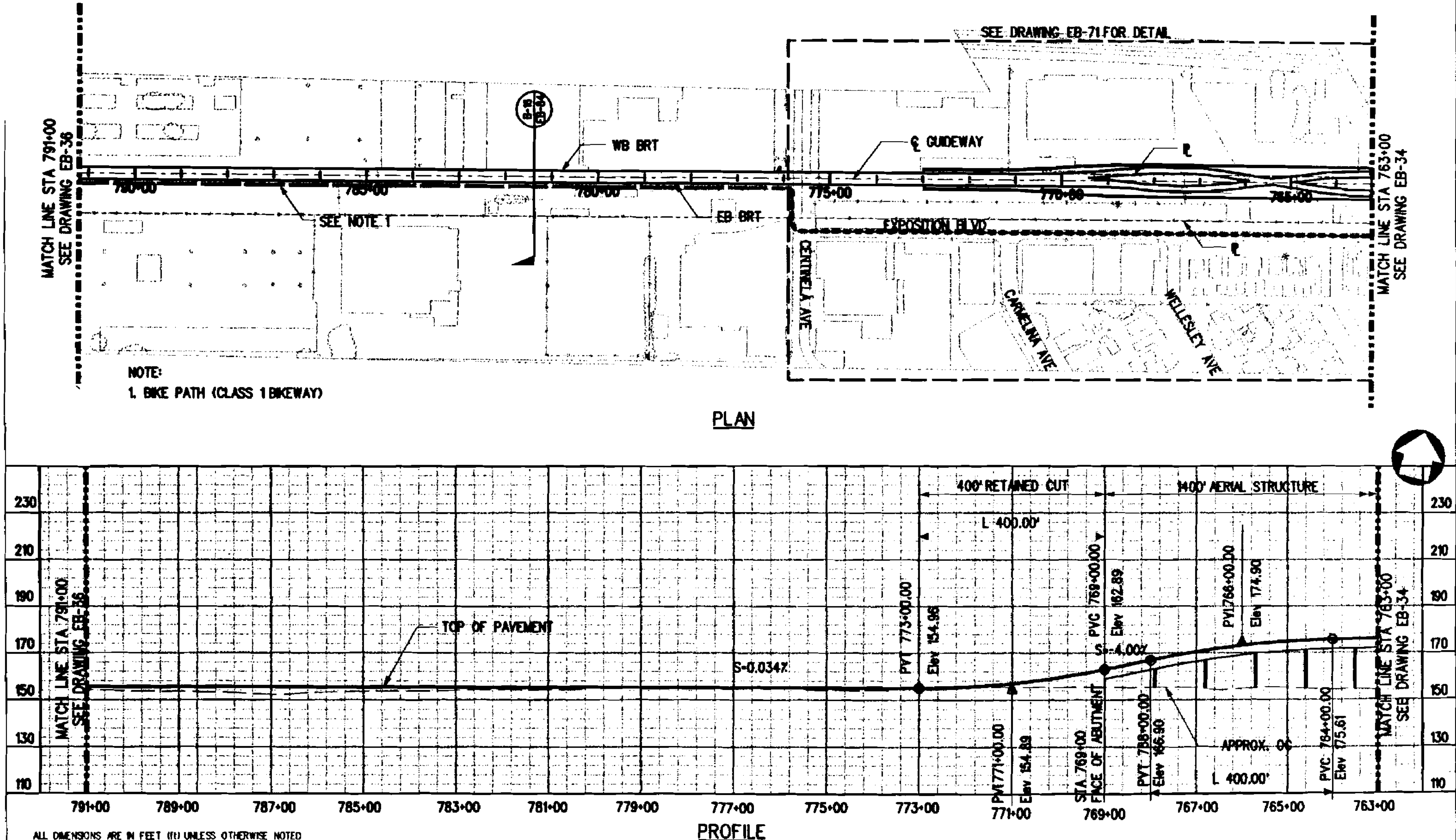
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 735+00 TO STA 763+00

CONTRACT NO.
DRAWING NO. EB-34
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 54



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

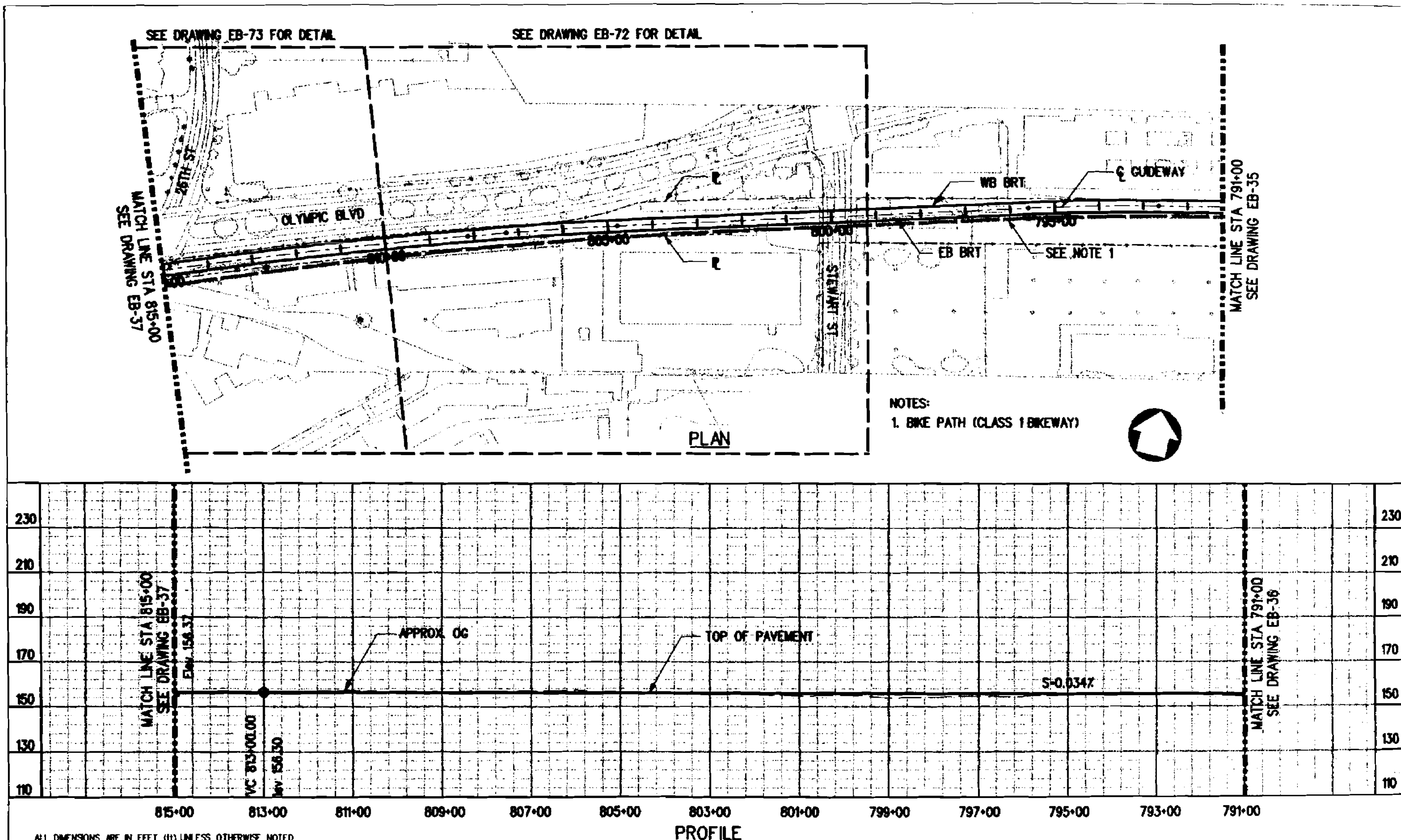
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 763+00 TO STA 791+00

CONTRACT NO.
DRAWING NO. EB-35
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 55



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY: JR
DRAWN BY: JR
CHECKED BY: PZ
IN CHARGE: PZ
DATE: OCT 4, 2000

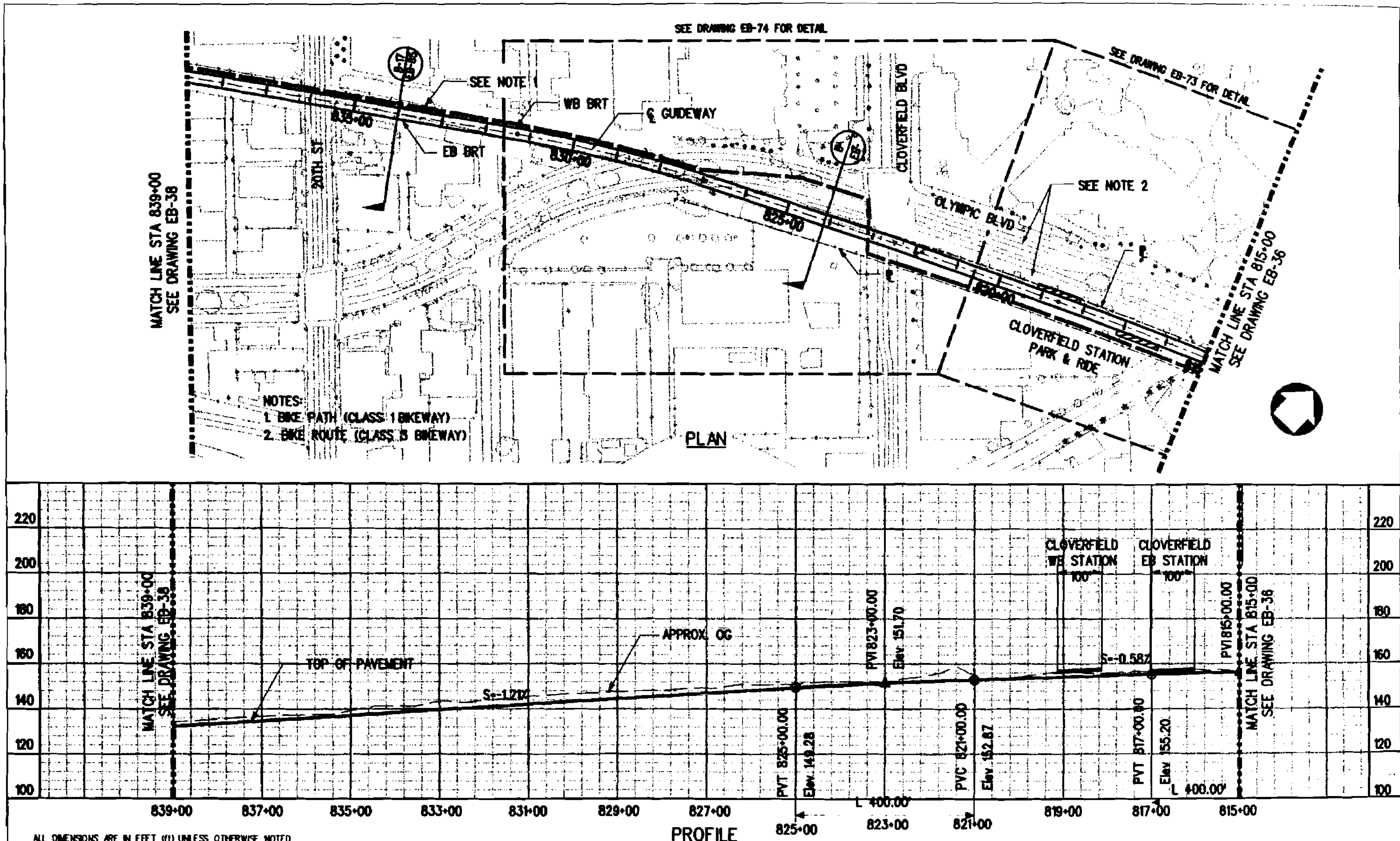
Korve Engineering

SUBMITTED:
APPROVED:

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (PROFILE)
STA 791+00 TO STA 815+00

CONTRACT NO.
DRAWING NO. EB-36
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 56



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

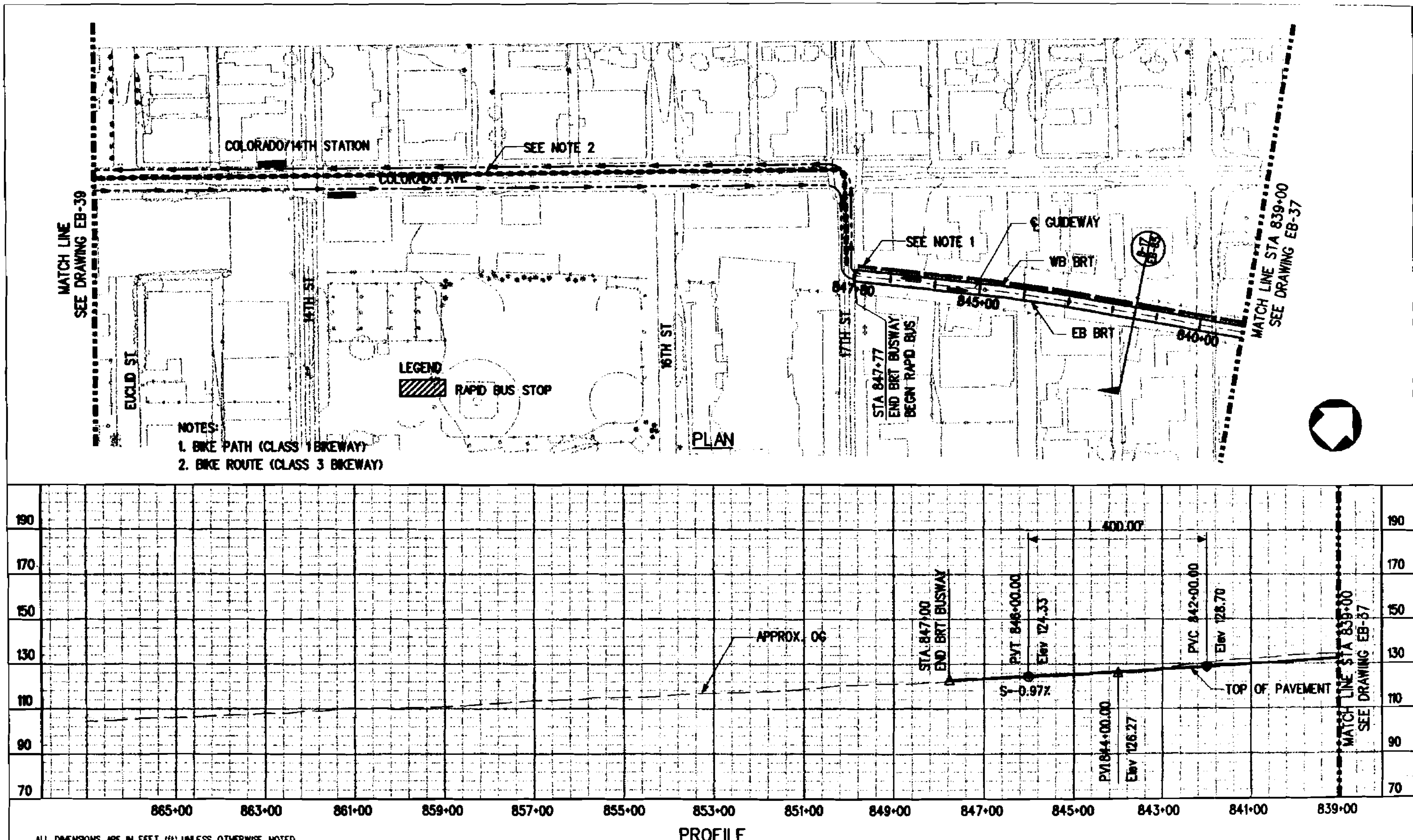
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN & PROFILE (BASELINE)
STA 815+00 TO STA 839+00

CONTRACT NO.
DRAWING NO. EB-37
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 57



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

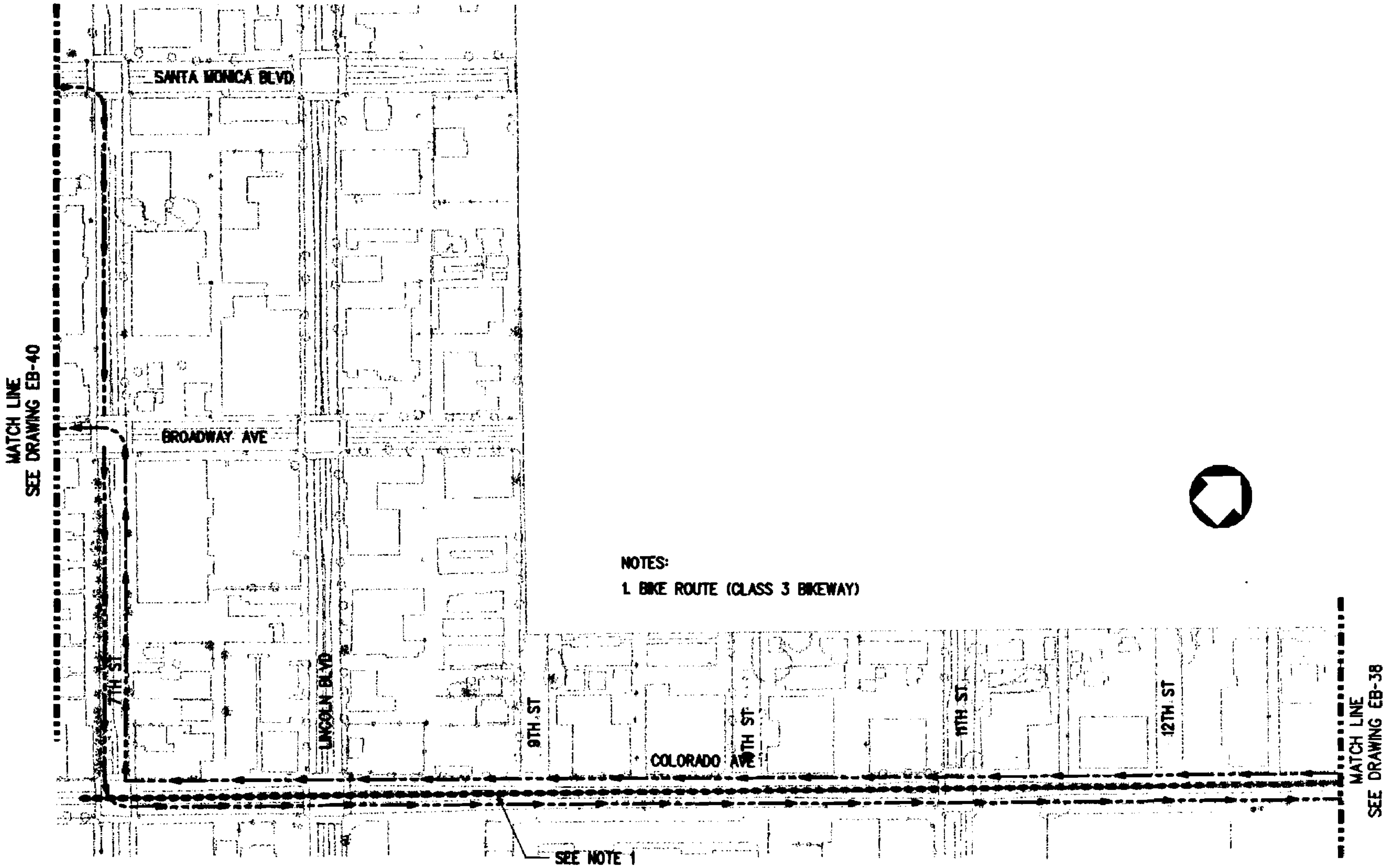
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
PLAN & PROFILE (BASELINE)
STA 839+00 TO STA 847+00
AND RAPID BUS IN SANTA MONICA

CONTRACT NO.
DRAWING NO. EB-38
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 58



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

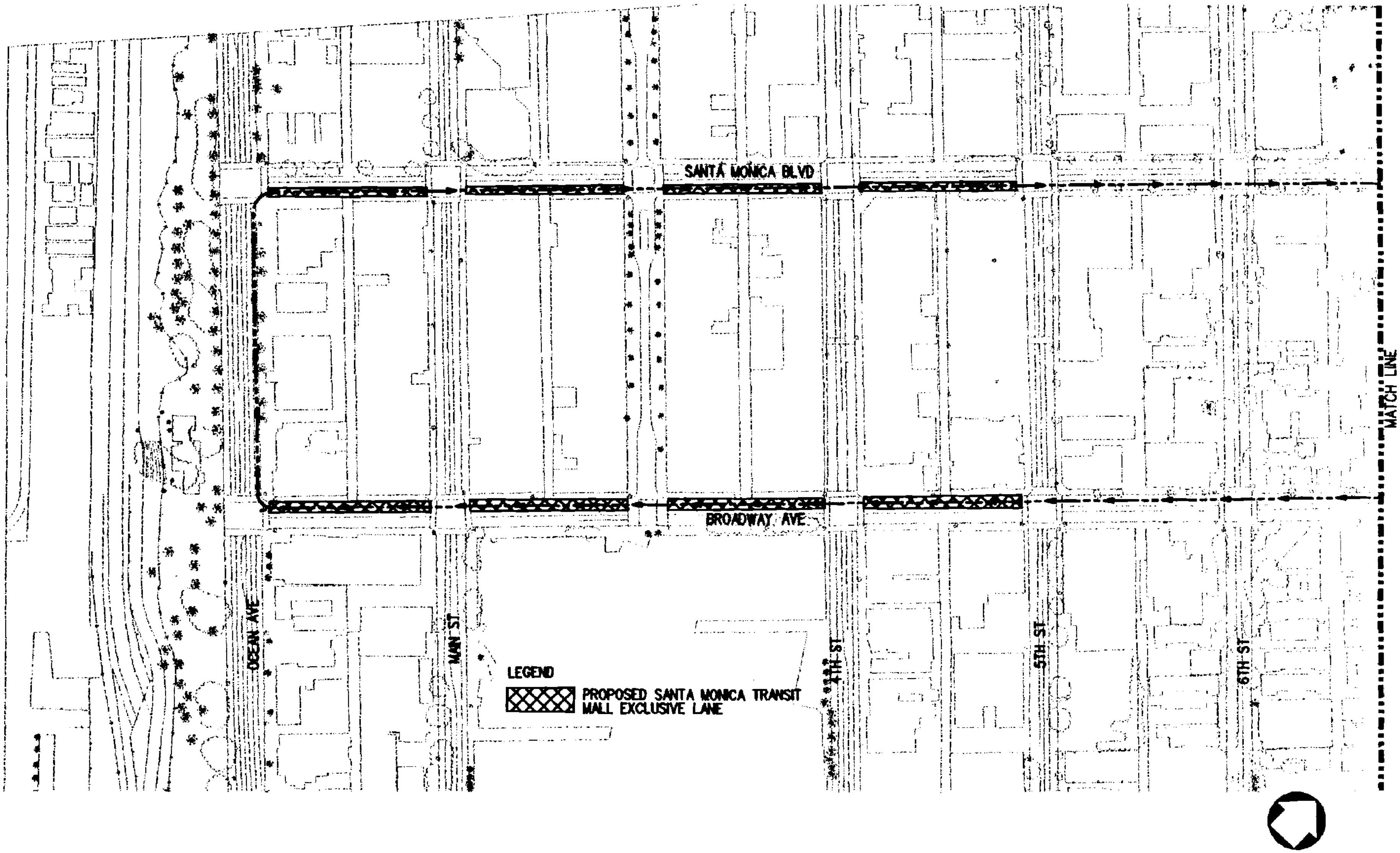
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN (BASELINE)
RAPID BUS IN SANTA MONICA

CONTRACT NO.
DRAWING NO. EB-39
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 59



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY: JR
DRAWN BY: JR
CHECKED BY: PZ
IN CHARGE: PZ
DATE: OCT 4, 2000

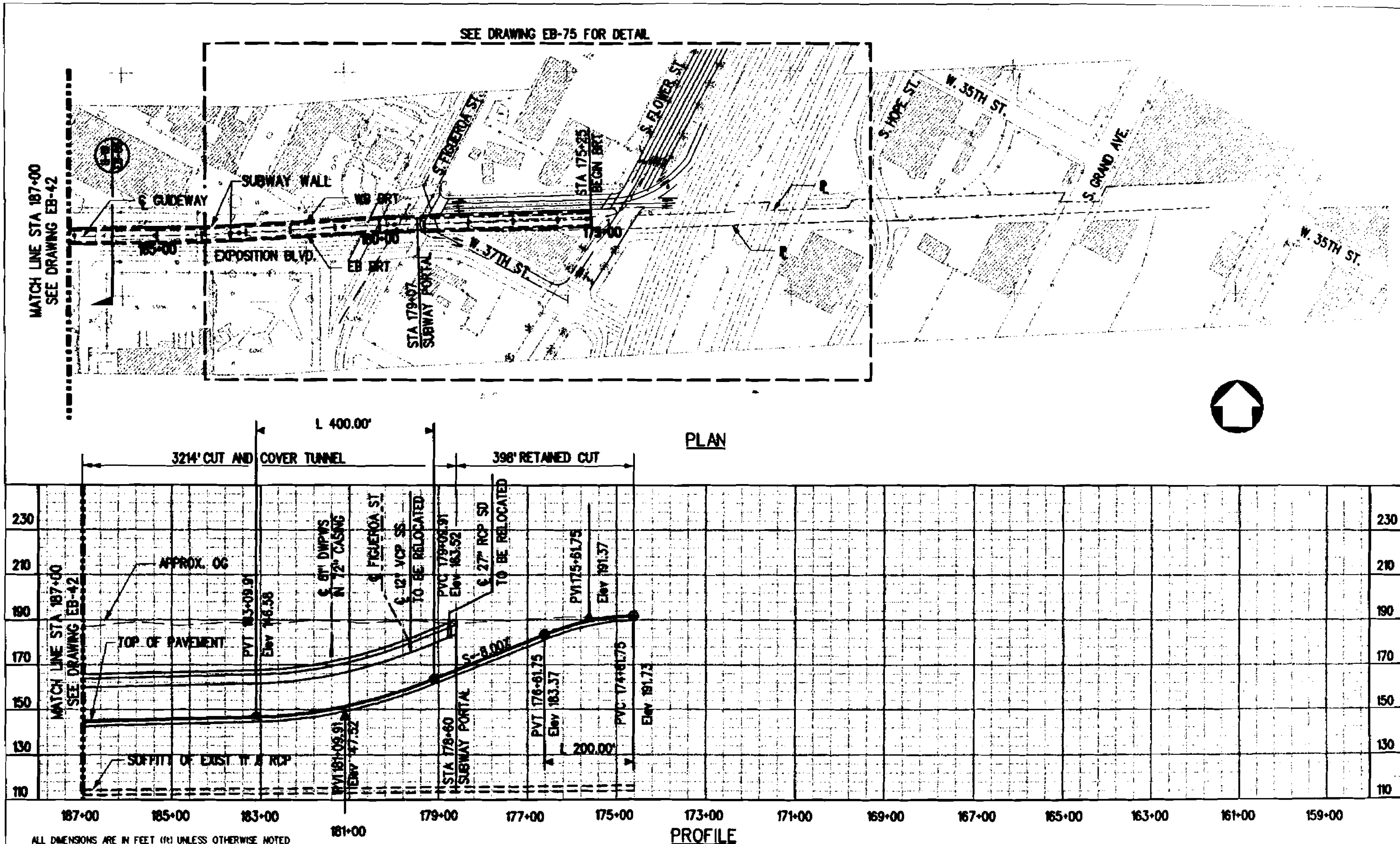
Korve Engineering

SUBMITTED: ______
APPROVED: ______

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

PLAN (BASELINE)
RAPID BUS IN SANTA MONICA

CONTRACT NO.
DRAWING NO. EB-40
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 60



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

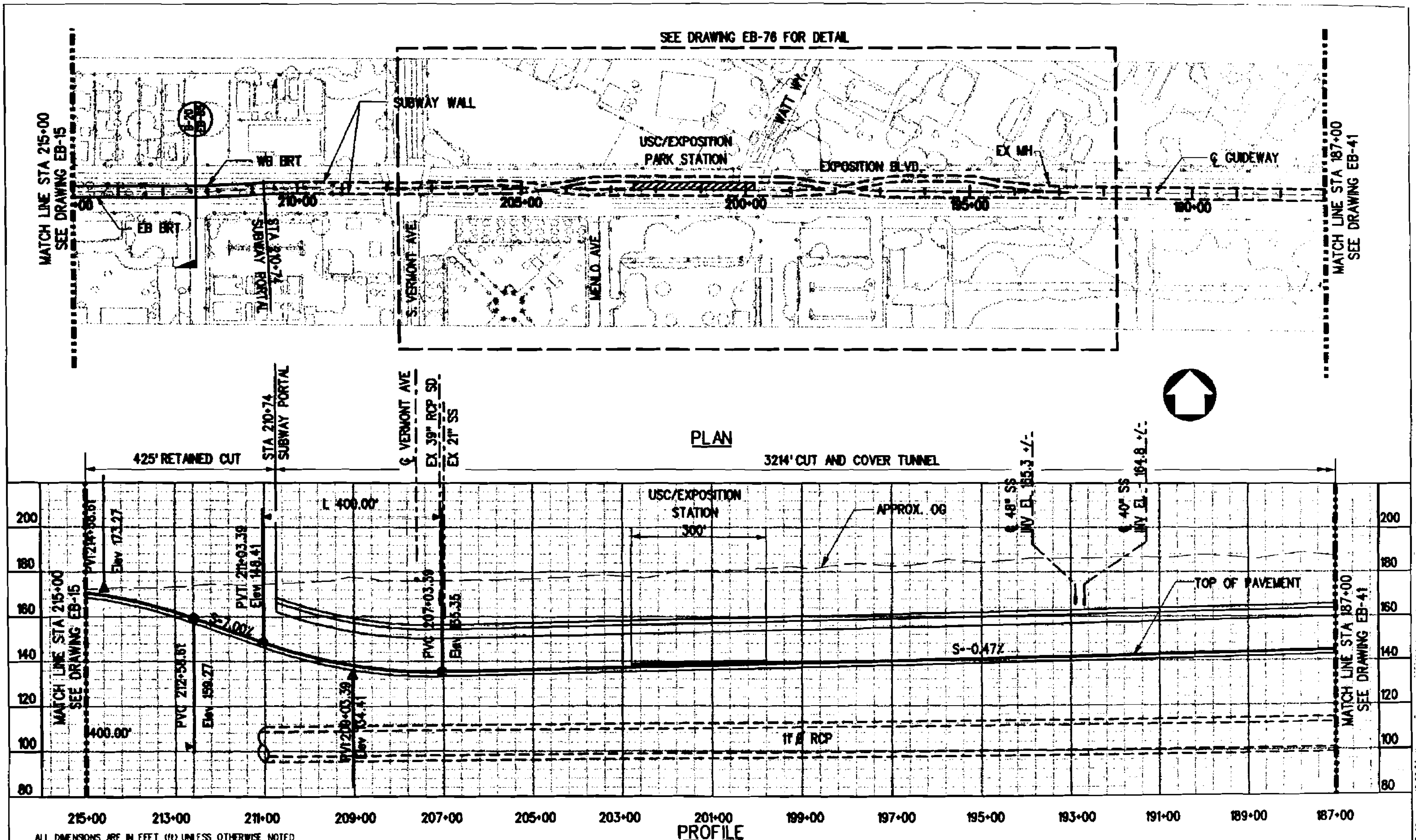
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
CUT & COVER OPTION
PLAN & PROFILE
STA 159+00 TO STA 187+00

CONTRACT NO.
DRAWING NO. EB-41
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 61



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

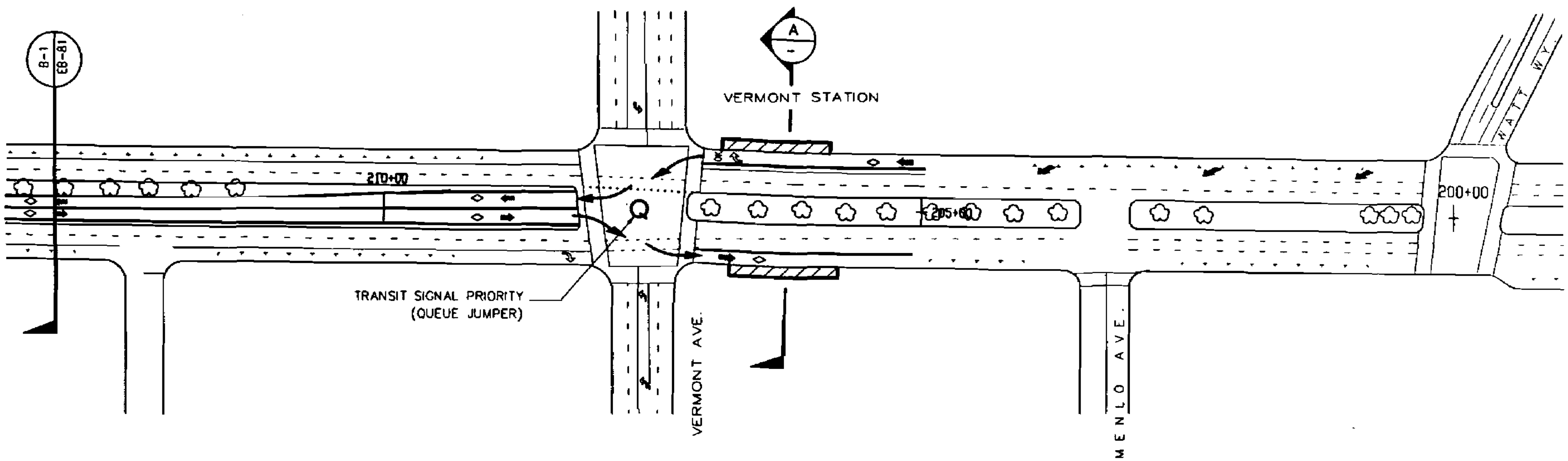
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

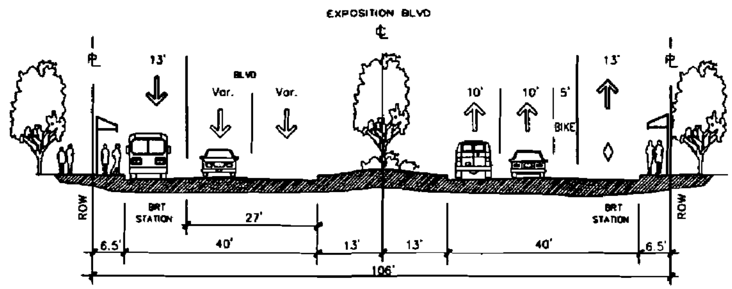
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
CUT & COVER OPTION
PLAN & PROFILE
STA 187+00 TO STA 215+00

CONTRACT NO.
DRAWING NO. EB-42
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 42





BUSWAY STATION

(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY LC
DRAWN BY LC
CHECKED BY PZ
IN CHARGE PZ

Korve Engineering

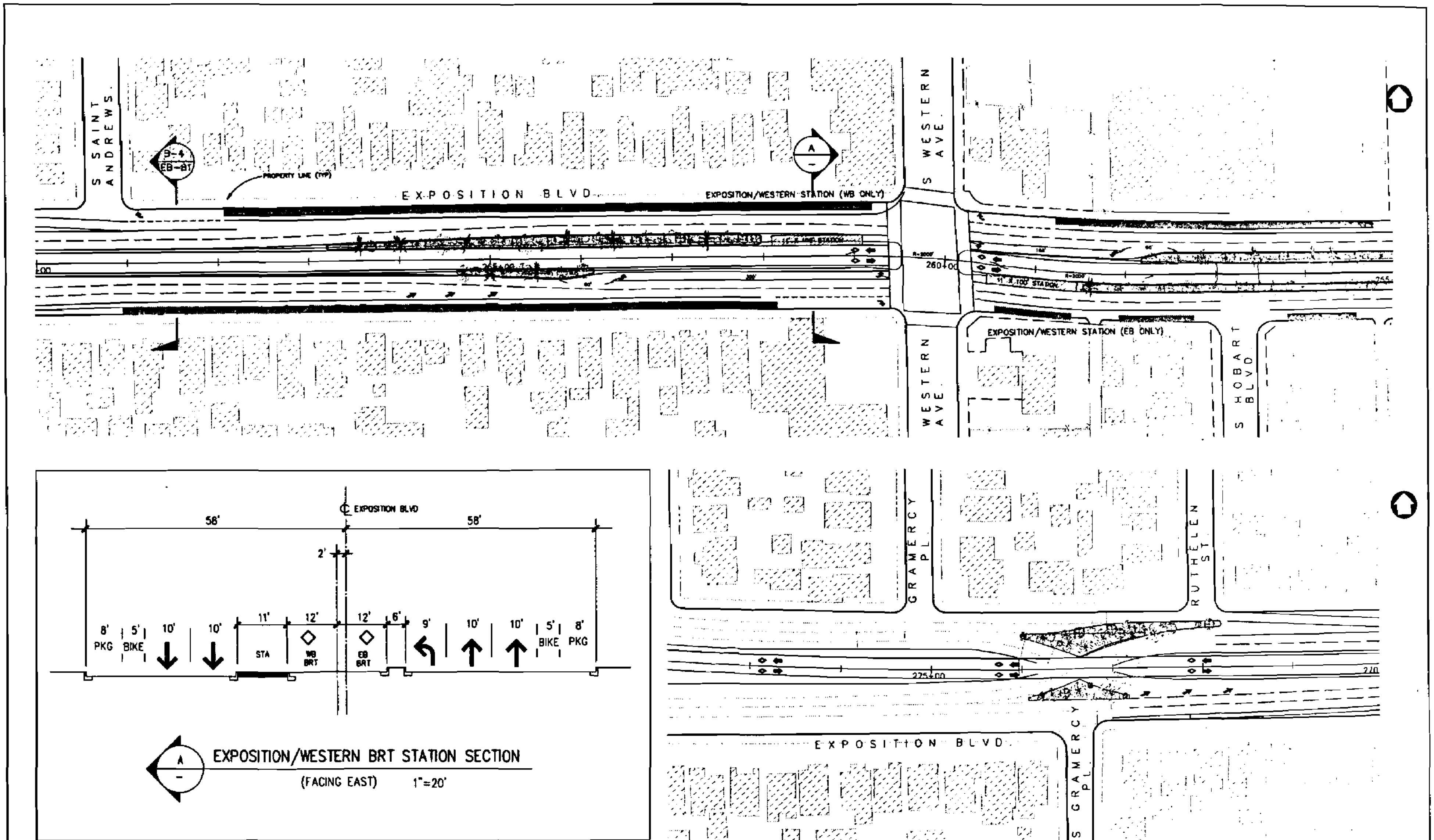
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR

EXPOSITION BRT PROJECT

EXPOSITION BLVD AT VERMONT

DRAWING NO. EB-52
SCALE 1"=100'
SHEET NO. 63



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

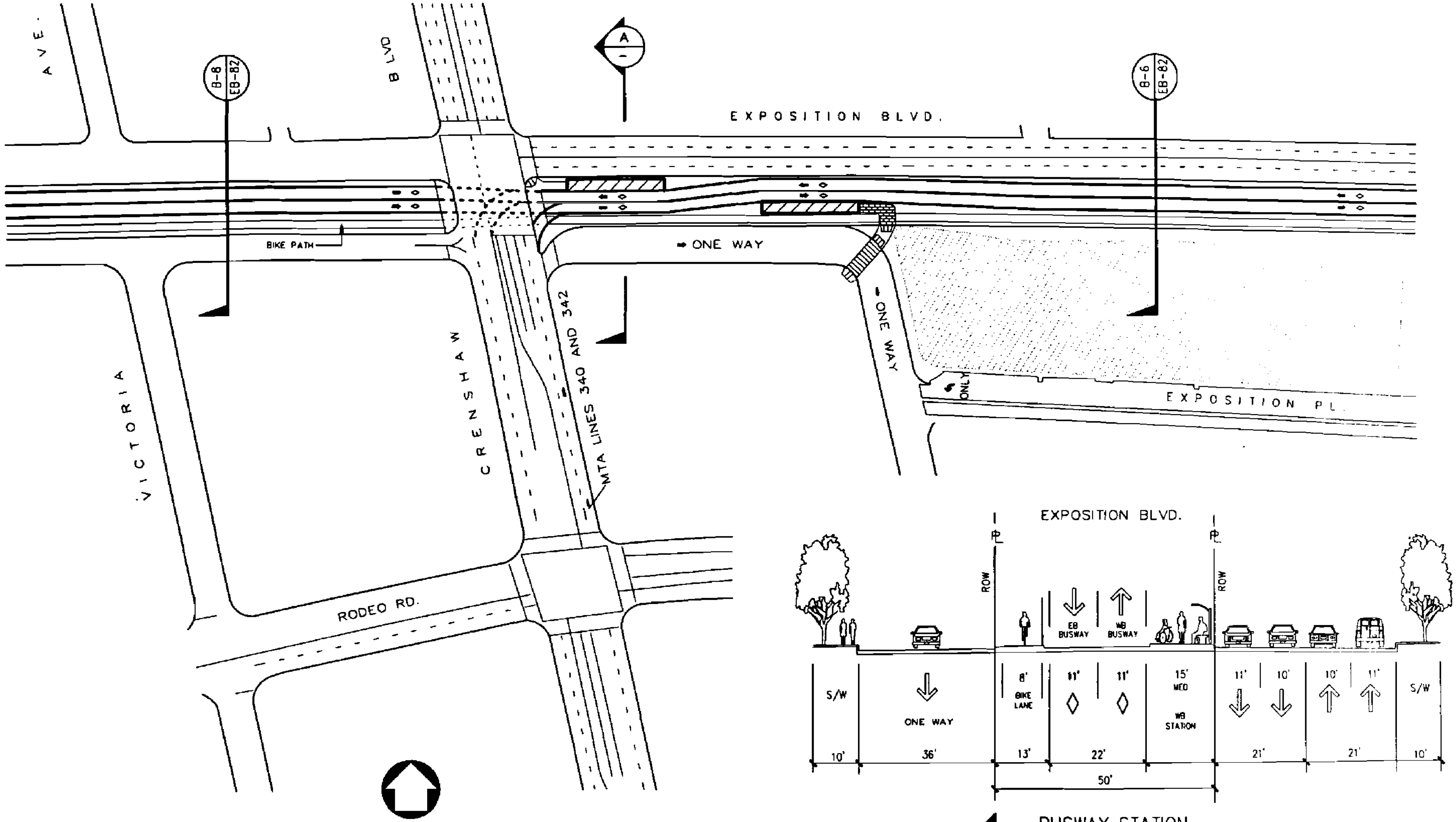
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
WESTERN STATION

CONTRACT NO.
DRAWING NO. EB-53
REV
SCALE 1" = 100'
SHEET NO. 64



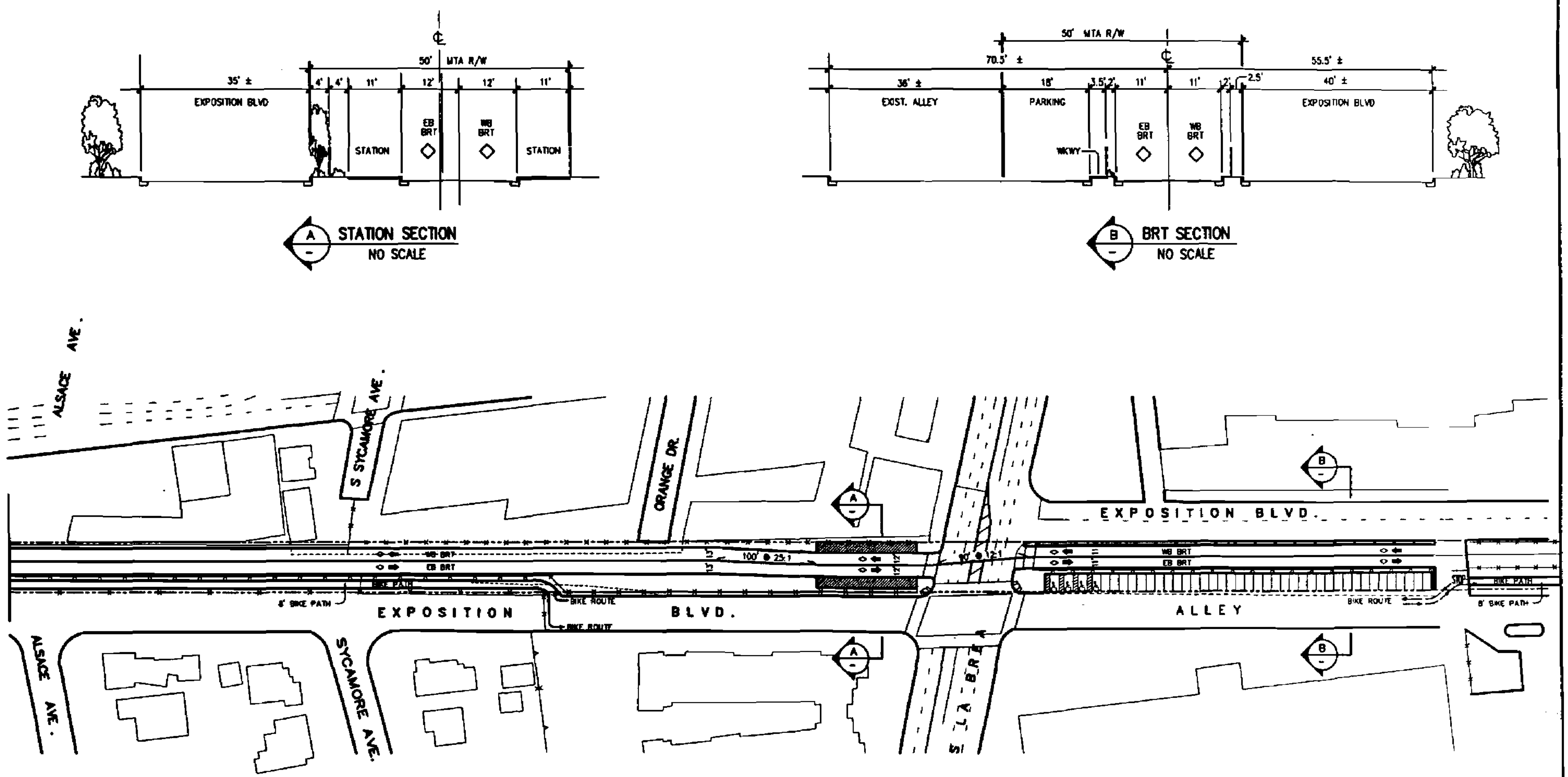
BUSWAY STATION
(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
CRENSHAW STATION

EB-54
1"=100'
65



PARKING:

STANDARD STALLS:	37
HANDICAPPED STALLS:	4
TOTAL STALLS:	41

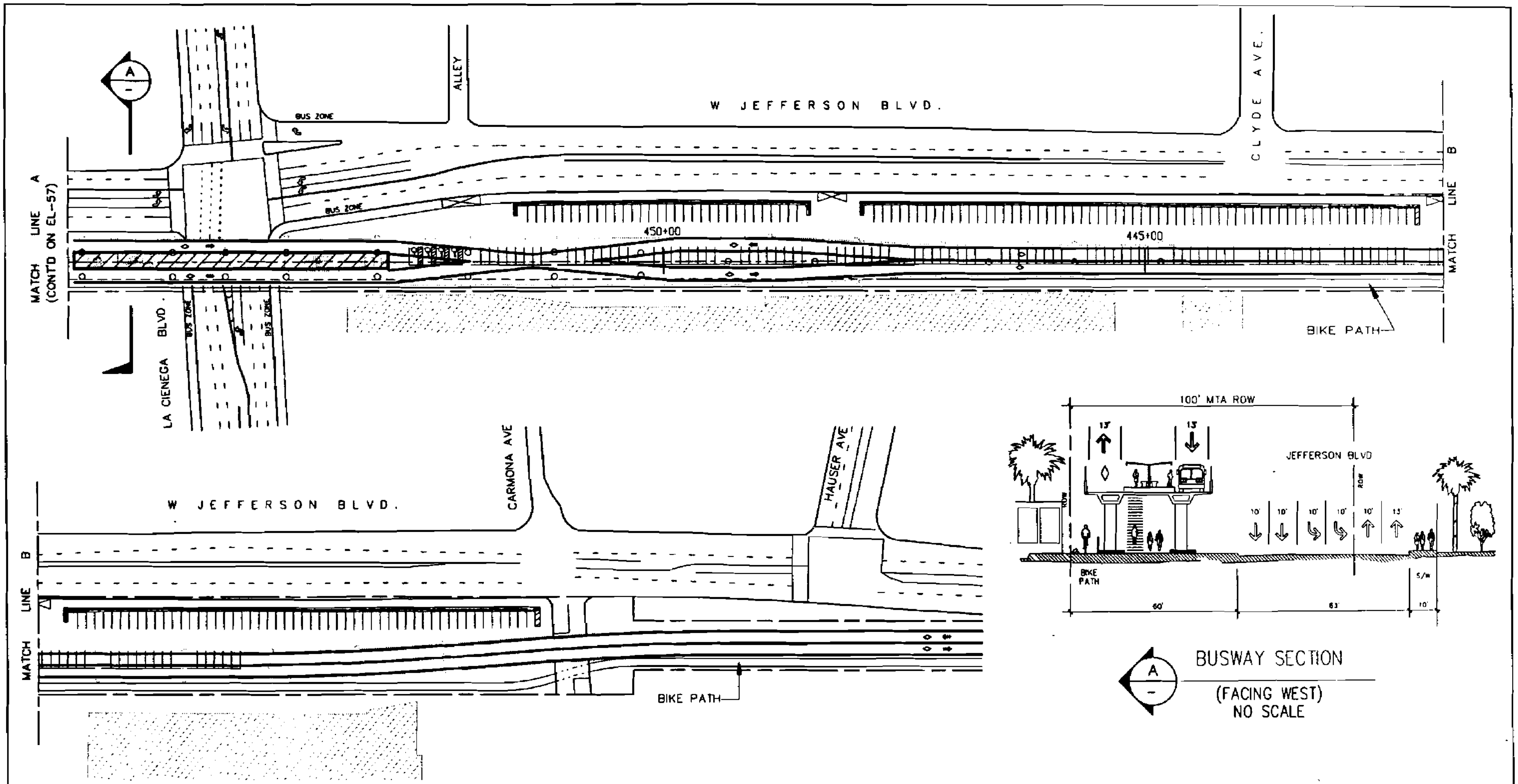
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
LA BREA STATION AND PARK AND RIDE

DRAWING NO. EB-55
SCALE NO SCALE
SHEET NO. 66



BUSWAY SECTION
(FACING WEST)
NO SCALE

PARKING:

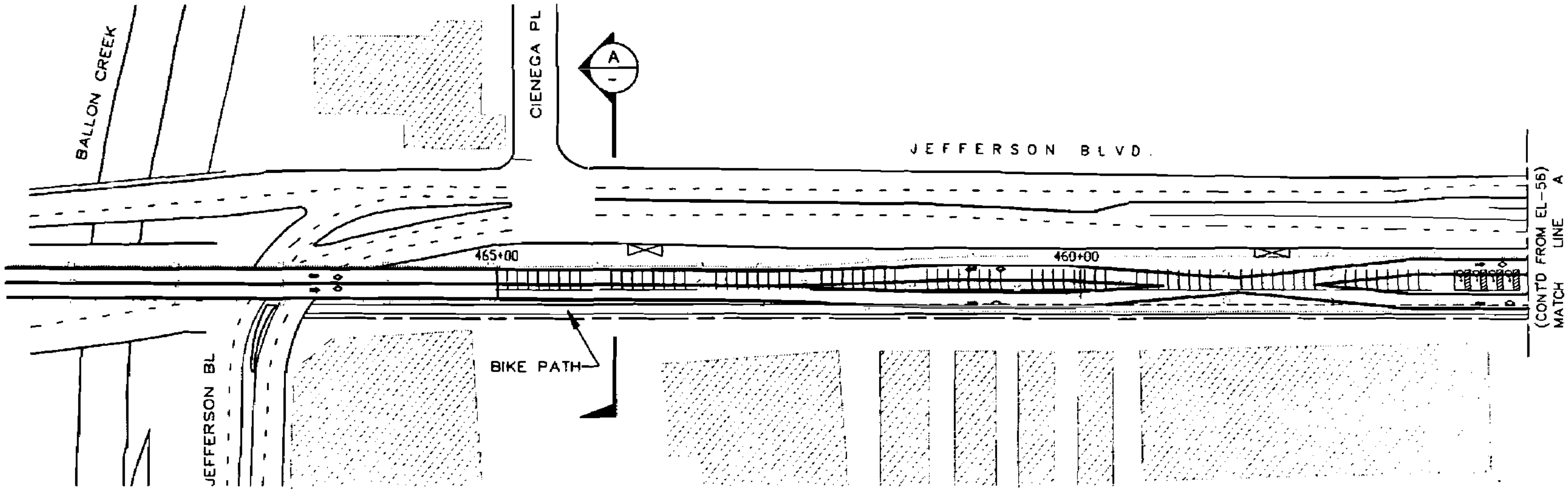
STANDARD STALLS:	355
HANDICAPPED STALLS:	8
TOTAL STALLS:	363

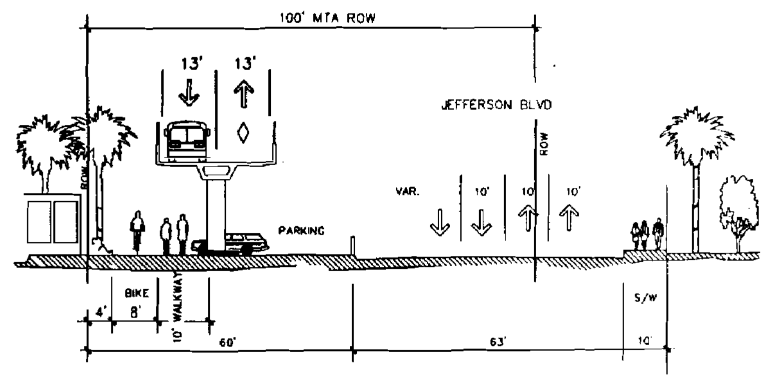
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
LA CIENEGA STATION AND PARK & RIDE
SHEET 1 OF 2

EB-56
1"=100'
67





A

BRT STATION

(FACING WEST)
NO SCALE

PARKING:

STANDARD STALLS: 355
HANDICAPPED STALLS: 8
TOTAL STALLS: 363

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

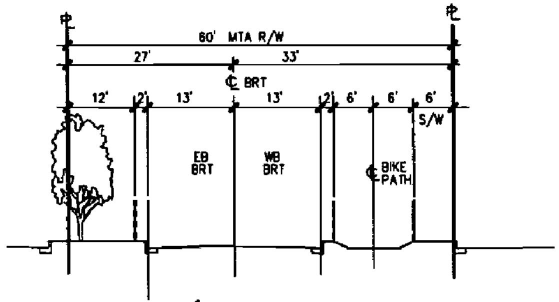
DESIGNED BY LC
DRAWN BY LC
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

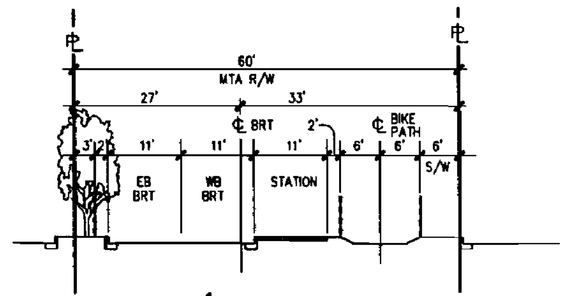
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
LA CIENEGA STATION AND PARK & RIDE
SHEET 2 OF 2

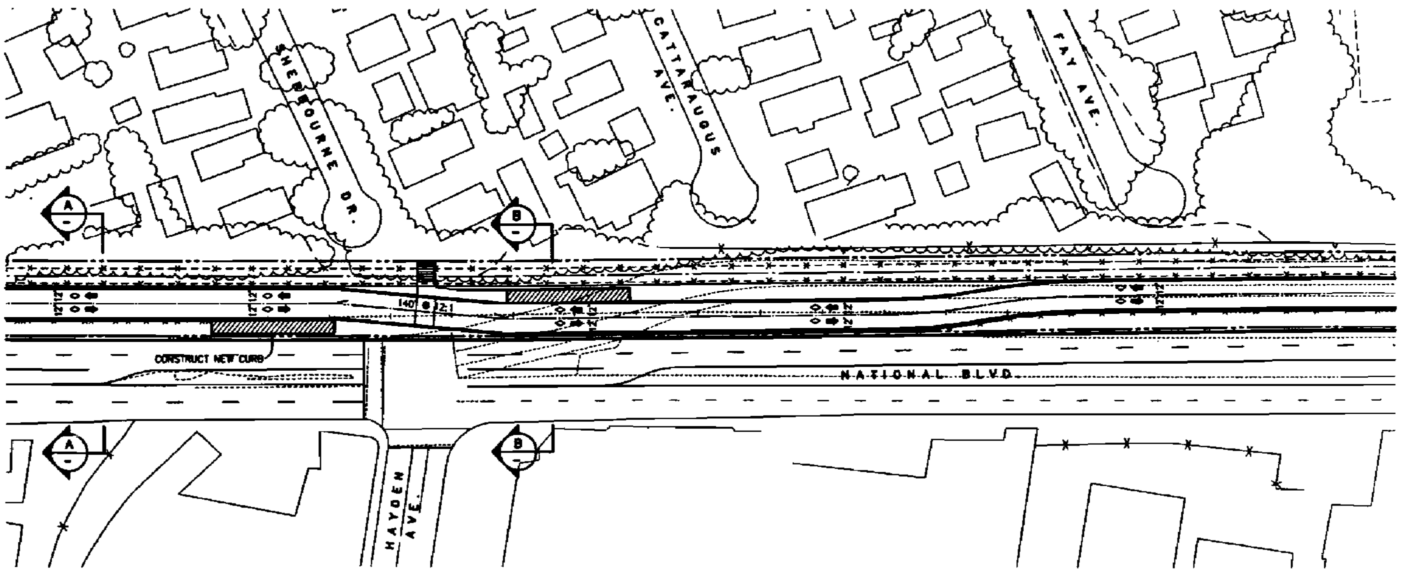
CONTRACT NO.
DRAWING NO. EB-57
SCALE 1"=100'
SHEET NO. 68



A — BRT SECTION
NO SCALE



B — BRT STATION SECTION
NO SCALE



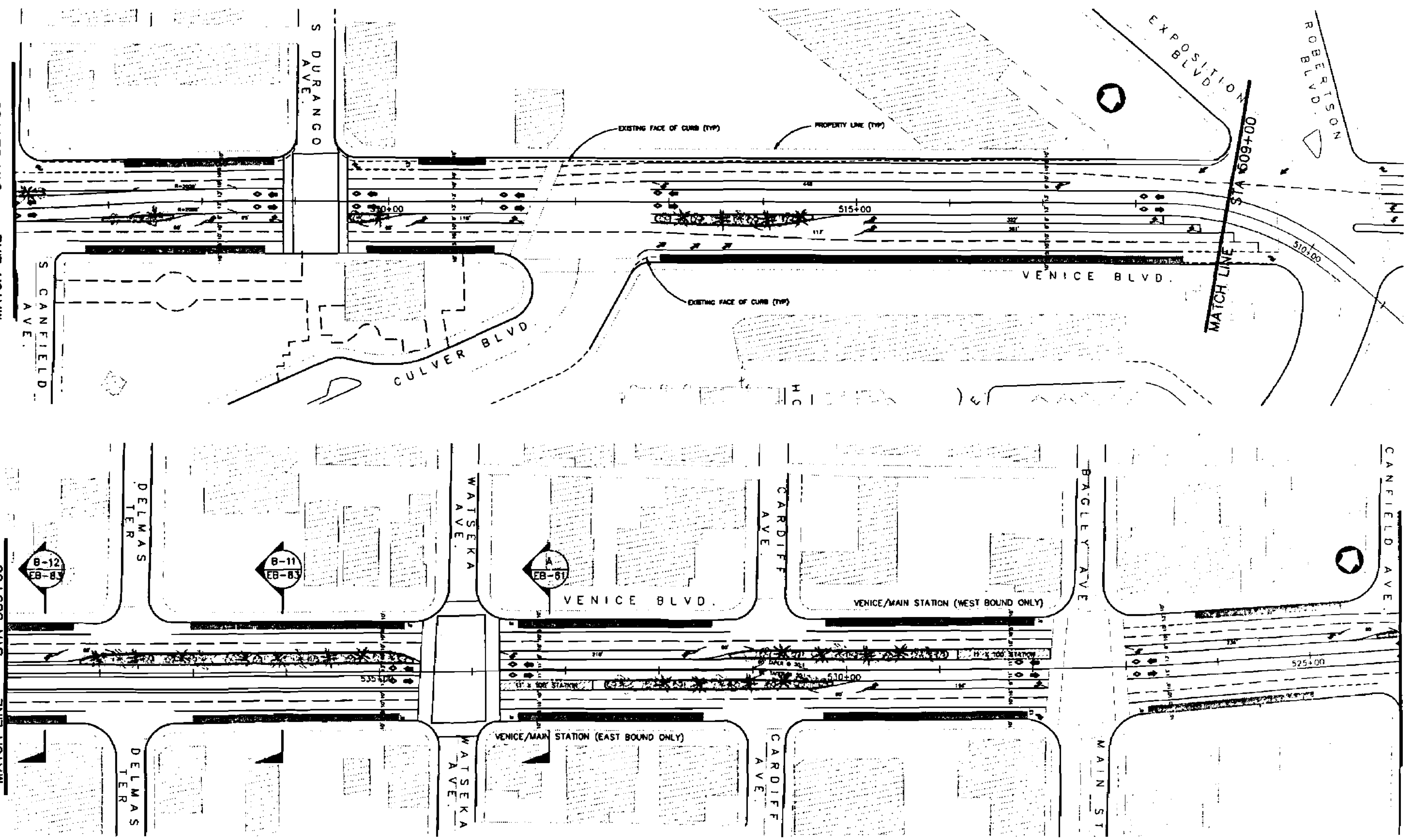
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4 2000

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
NATIONAL/HAYDEN STATION

CONTRACT NO	
DRAWING NO	EB-58
SCALE	NO SCALE.
SHEET NO	69



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

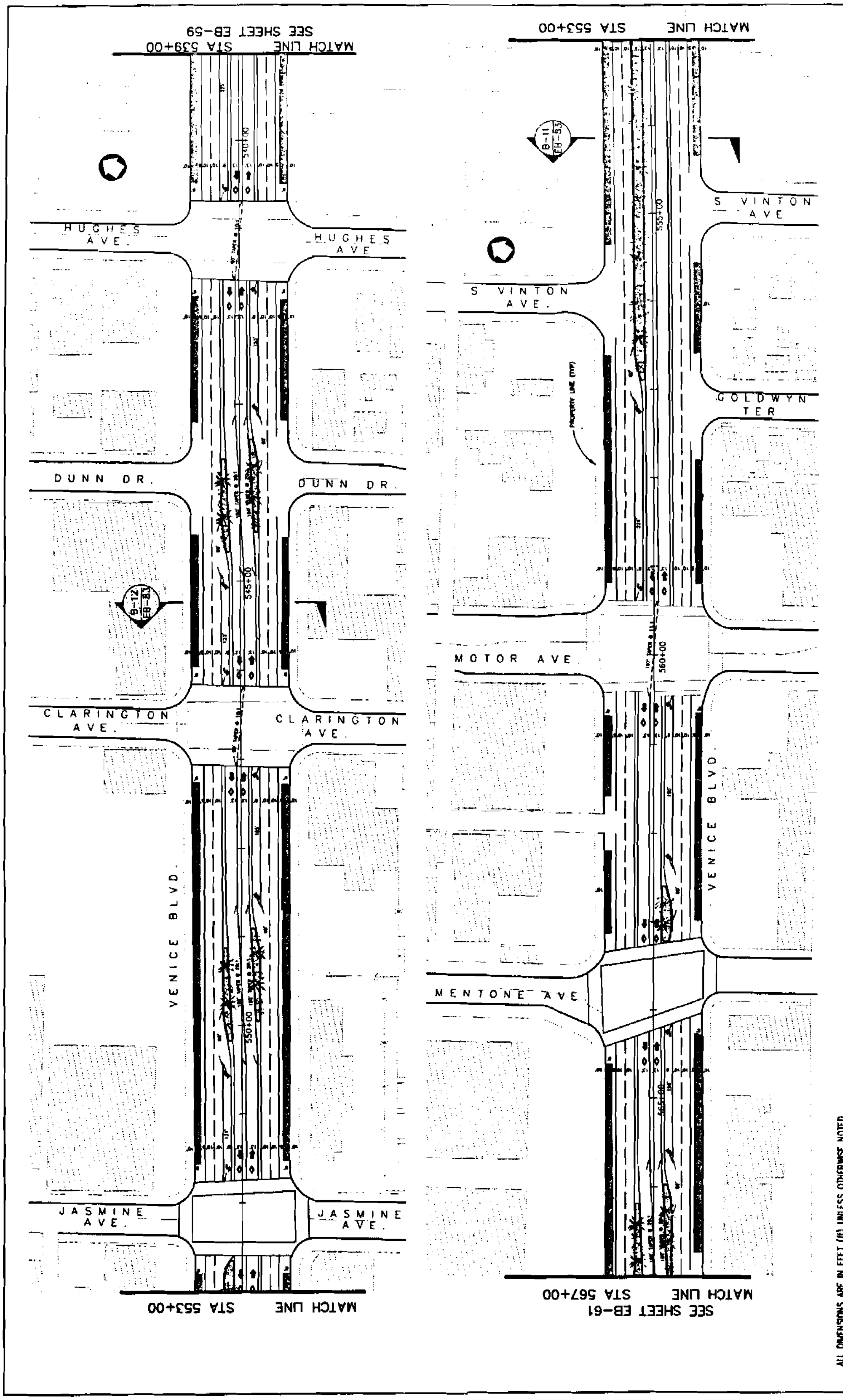
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 509+00 TO STA 539+00

CONTRACT NO.
DRAWING NO. EB-59
REV
SCALE 1" = 100'
SHEET NO. 70



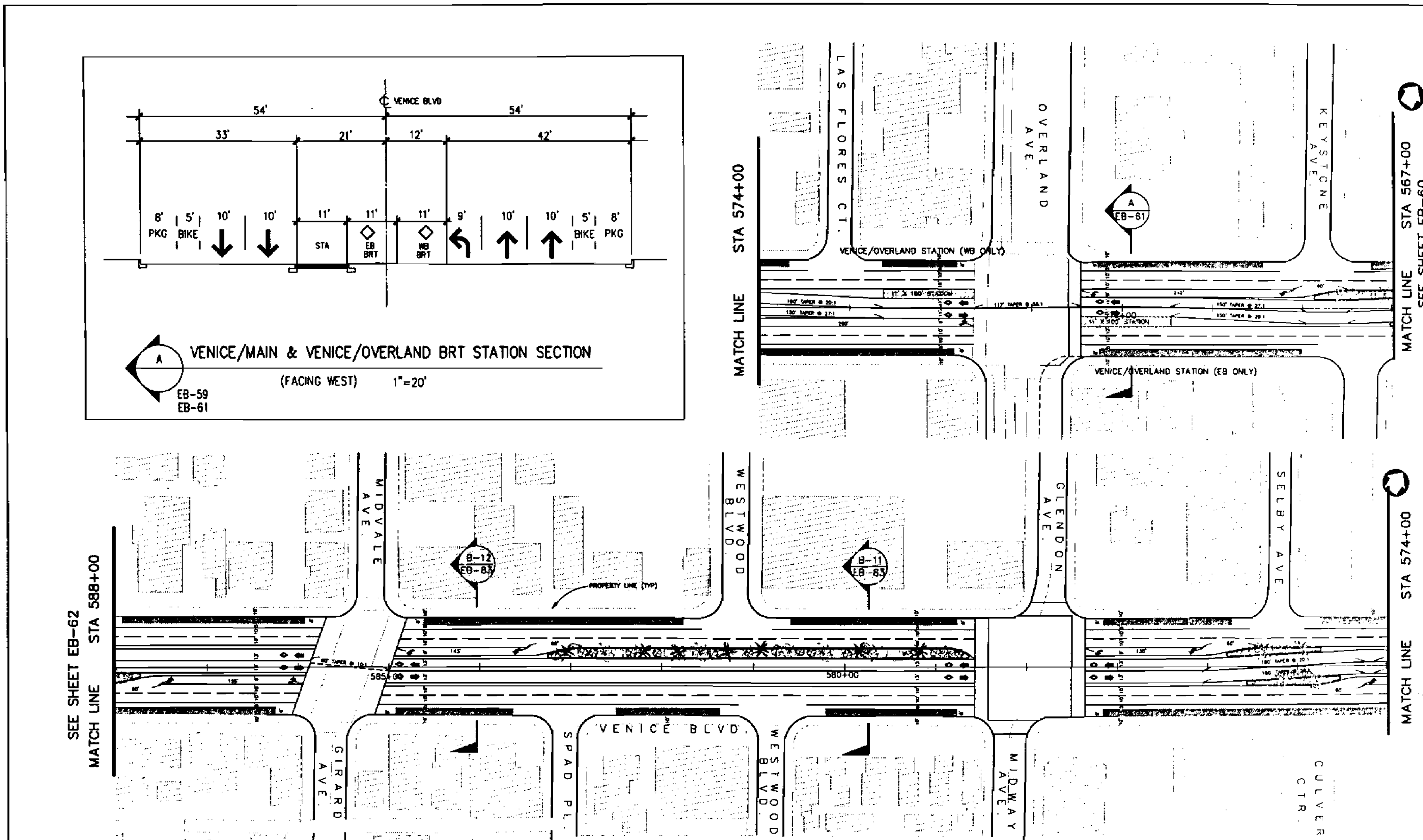
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 539+00 TO STA 567+00

EB-60

1" = 100'



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

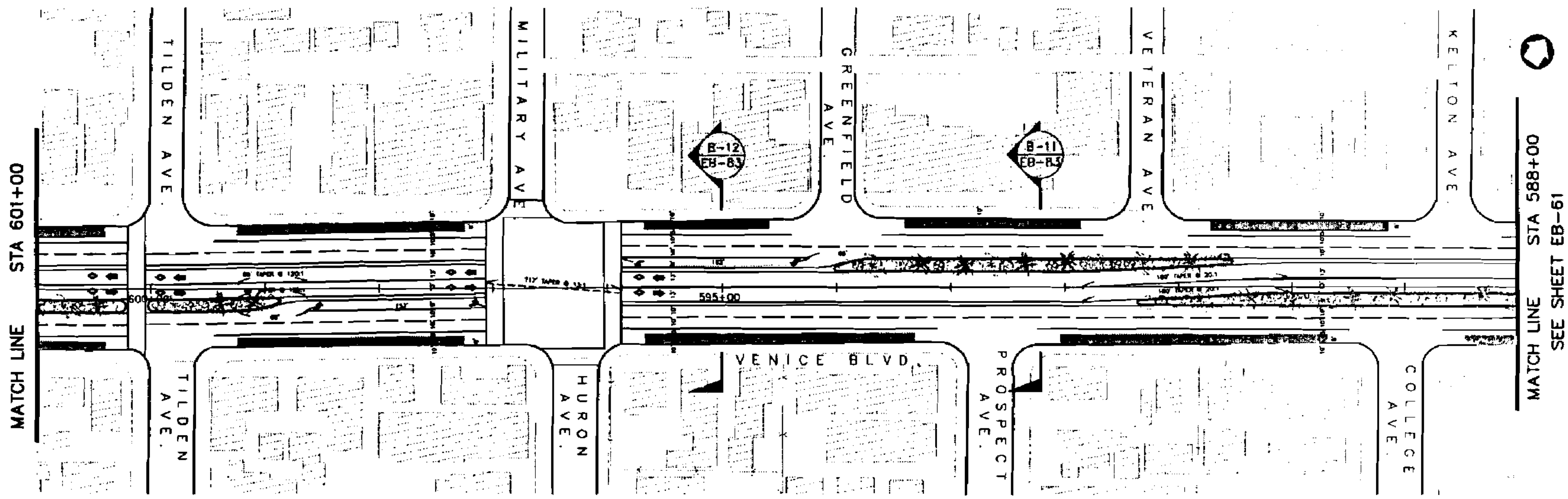
DESIGNED BY: VL
DRAWN BY: VL
CHECKED BY: PZ
IN CHARGE: PZ
DATE: OCT 4, 2000

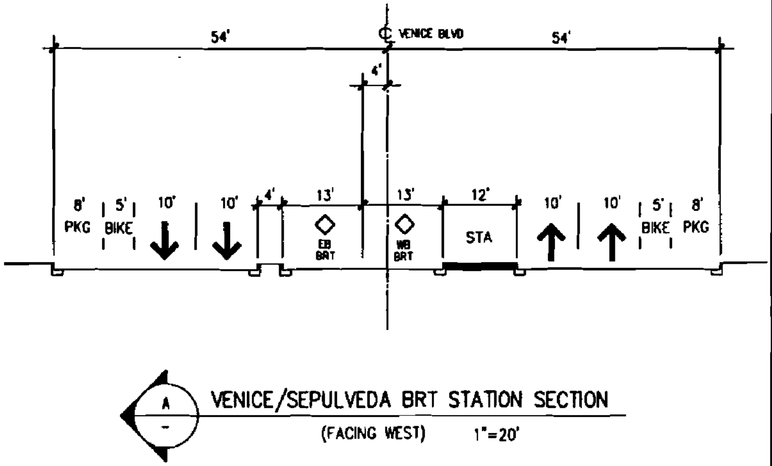
Korve Engineering

SUBMITTED:
APPROVED:

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 567+00 TO STA 588+00

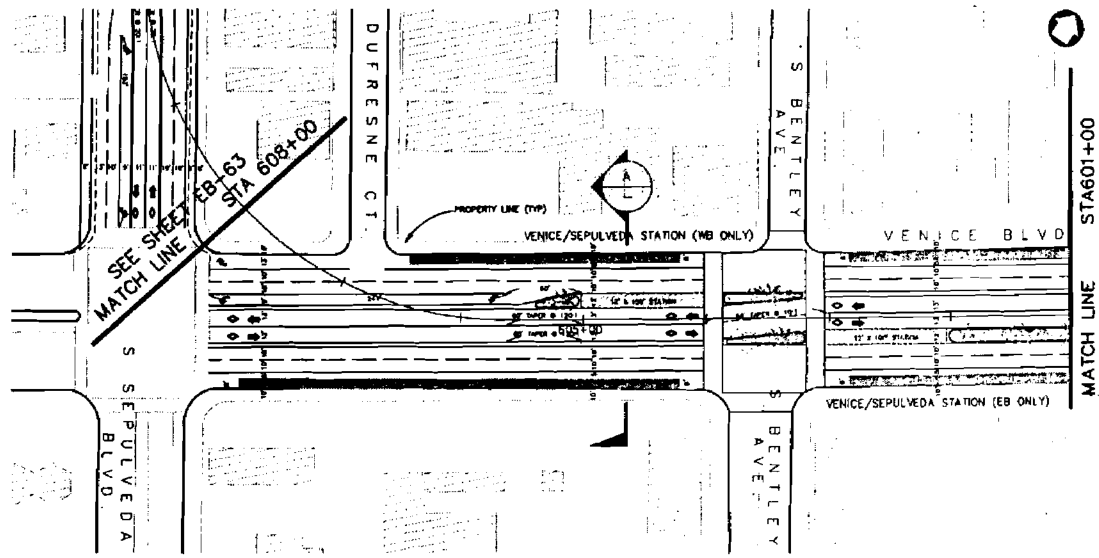
CONTRACT NO:
DRAWING NO.: EB-61
REV:
SCALE: 1" = 100'
SHEET NO: 72





VENICE/SEPULVEDA BRT STATION SECTION

(FACING WEST) 1"=20'



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

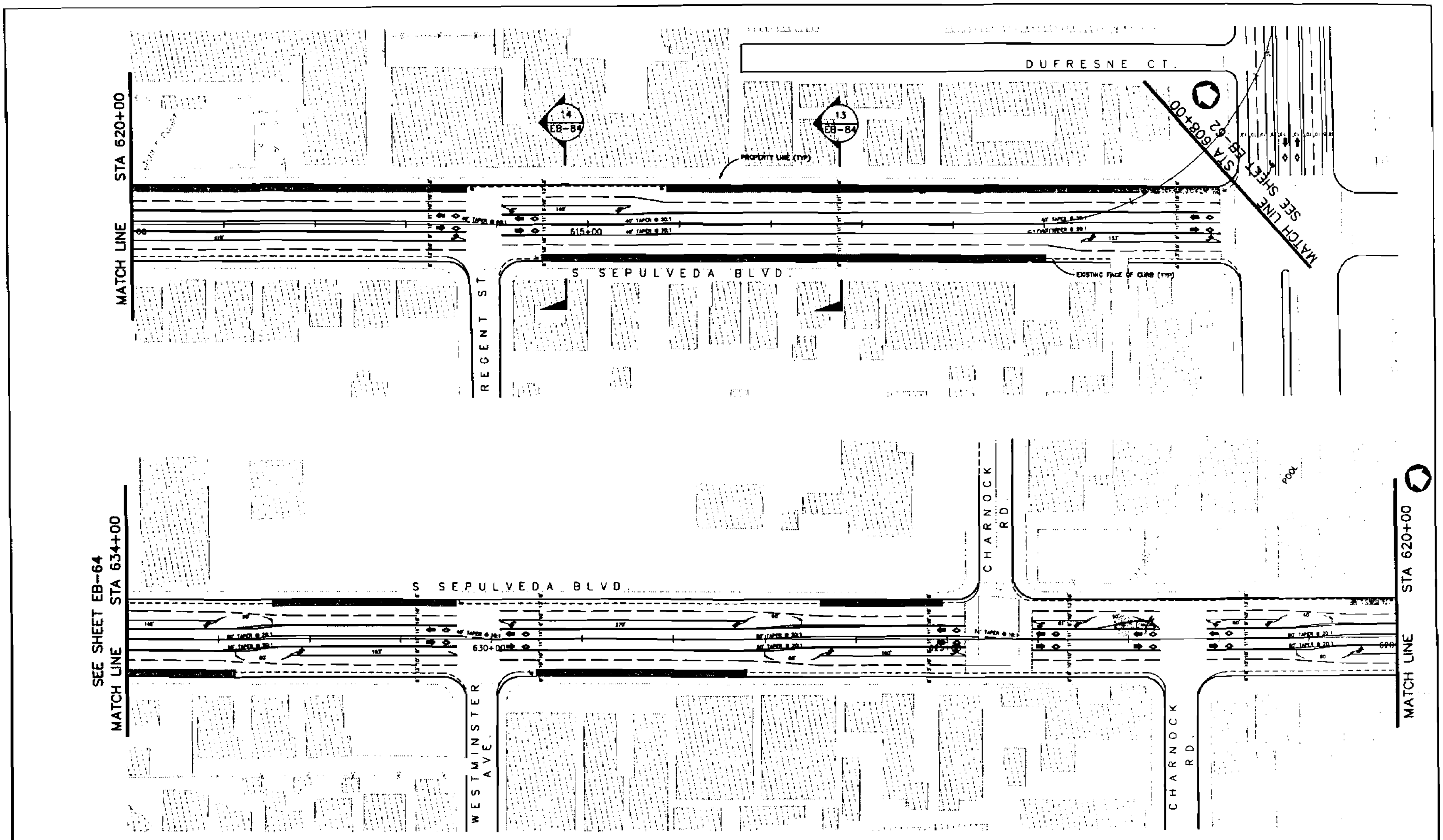
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 588+00 TO STA 608+00

CONTRACT NO.
DRAWING NO. EB-62
REV
SCALE 1" = 100'
SHEET NO. 73



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

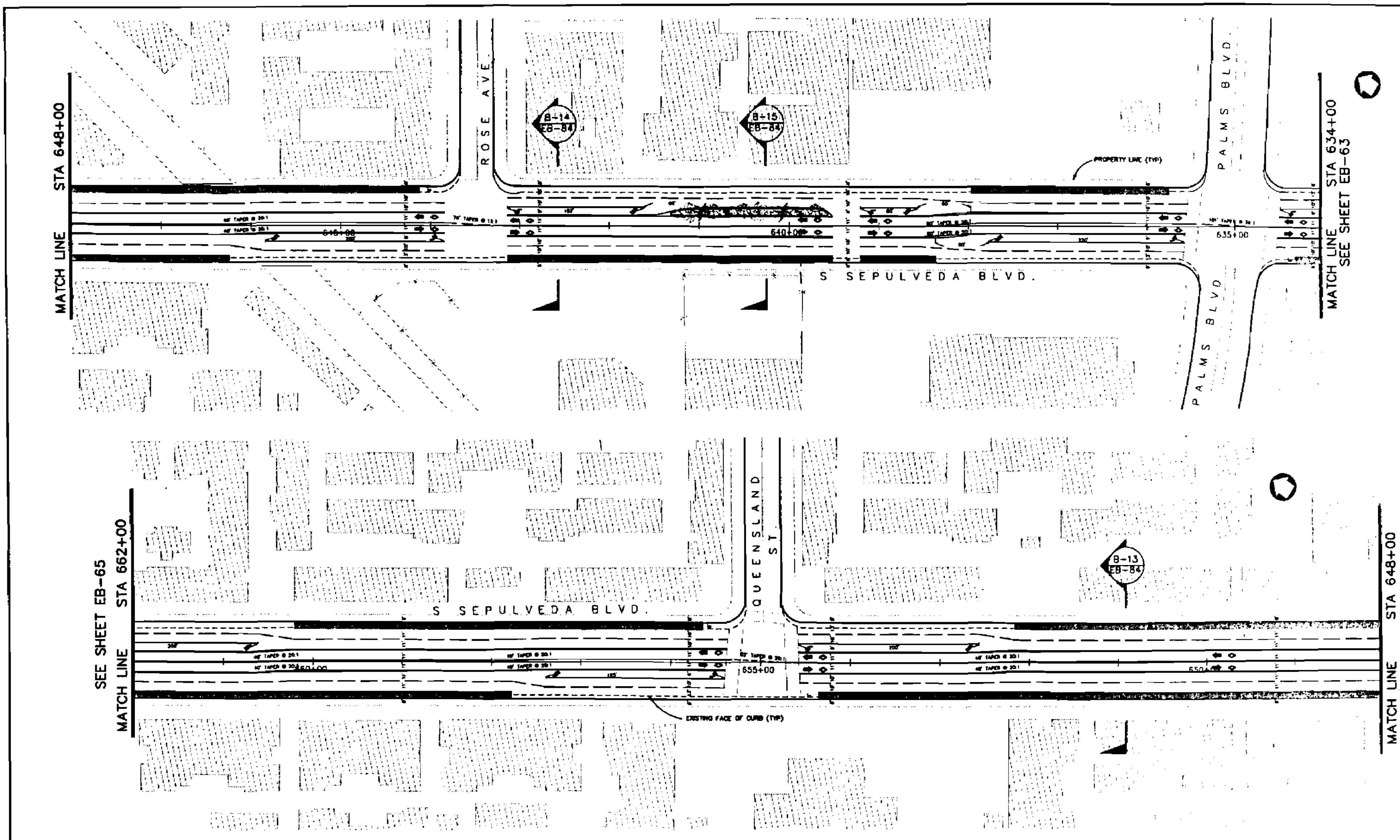
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 608+00 TO STA 634+00

CONTRACT NO.
DRAWING NO. EB-63
REV
SCALE 1" = 100'
SHEET NO. 74



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

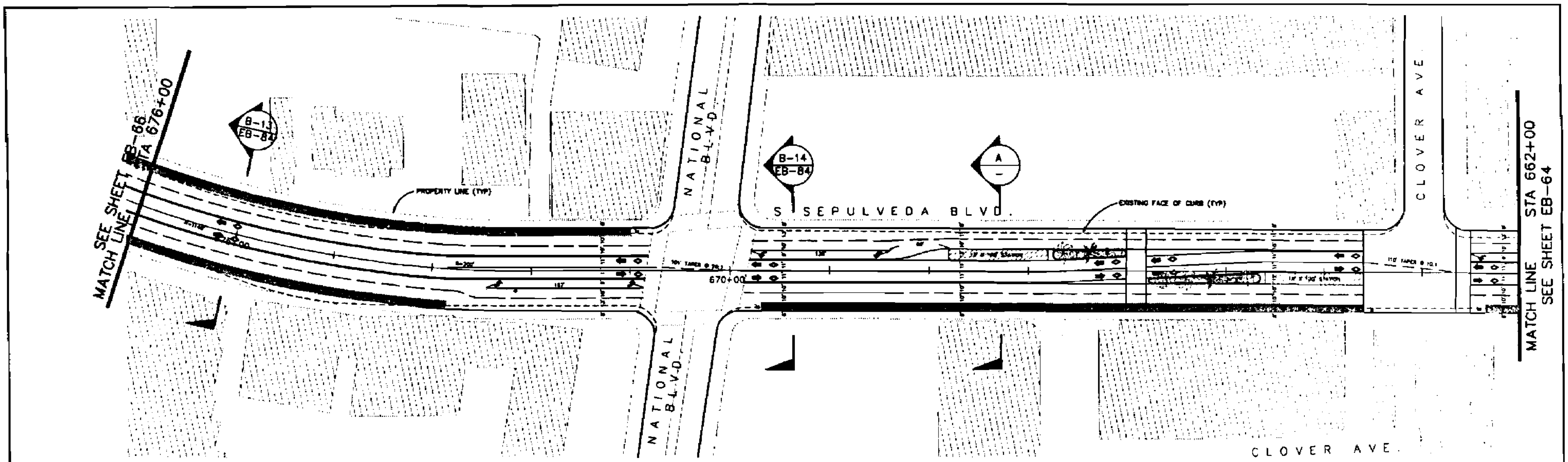
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OC...

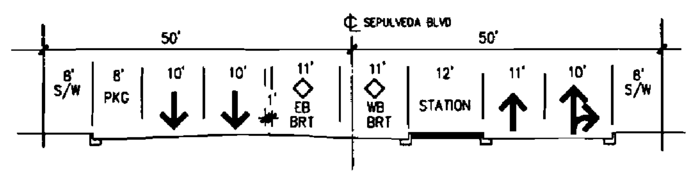
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 634+00 TO STA 662+00

CONTRACT NO
DRAWING NO EB-64
REV
SCALE 1" = 100'
SHEET NO 75





A

SEPULVEDA/NATIONAL BRT STATION SECTION

(FACING WEST) 1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

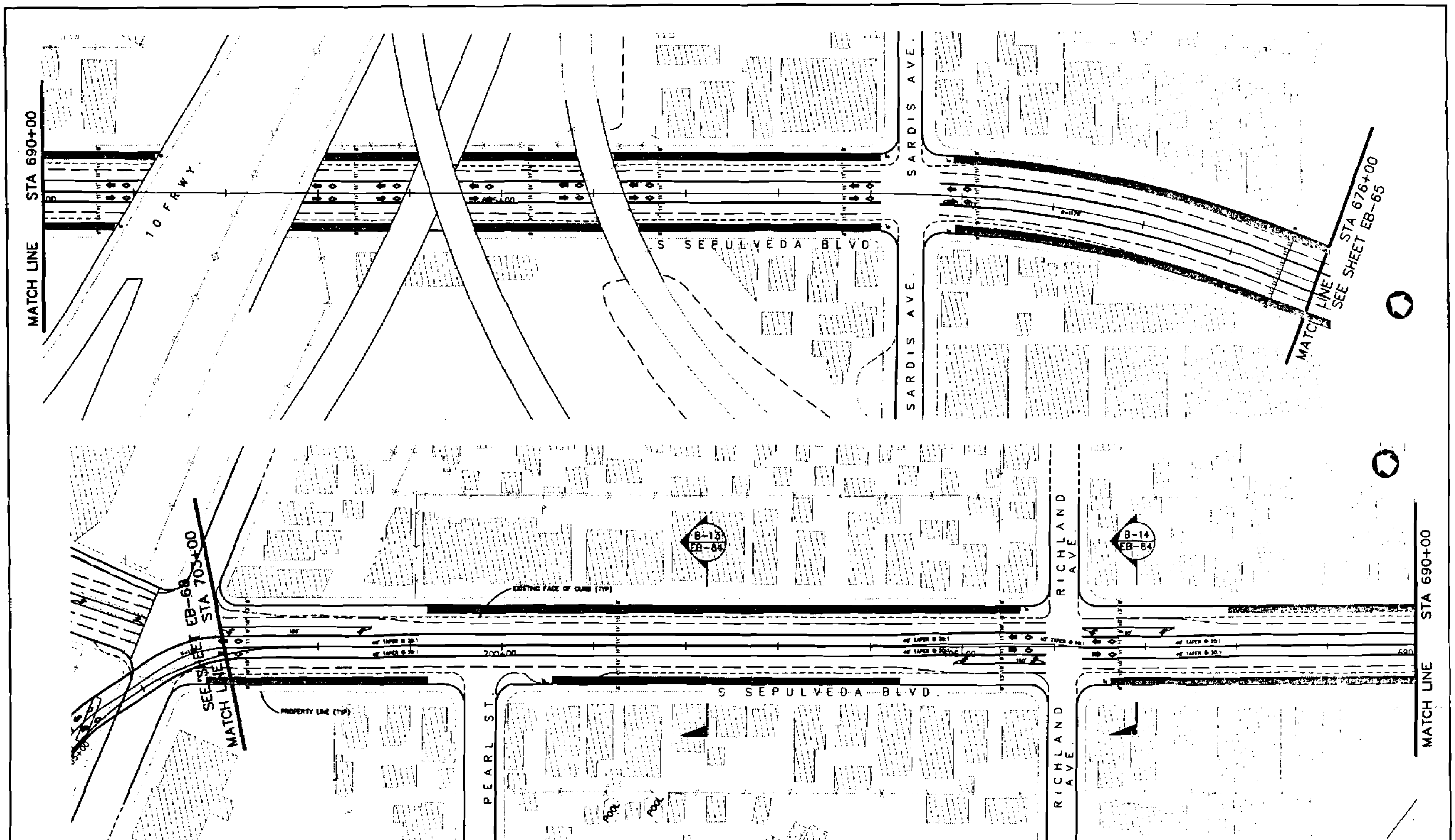
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 662+00 TO STA 676+00

CONTRACT NO.
DRAWING NO. EB-65
REV
SCALE 1" = 100'
SHEET NO. 76



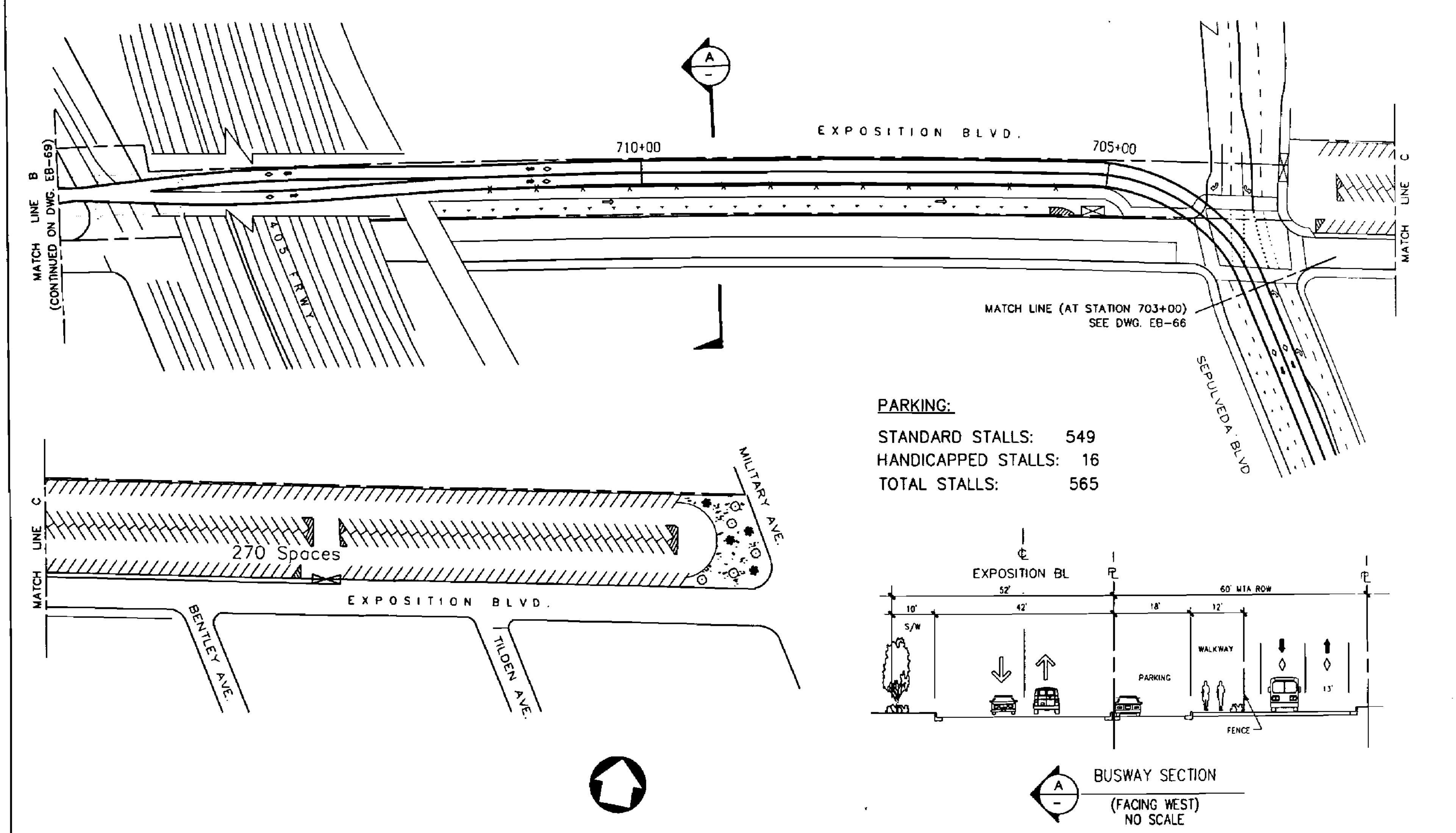
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
ALIGNMENT PLAN
STA 676+00 TO STA 703+00

DRAWING NO EB-66
SCALE 1" = 100'
SHEET NO 77



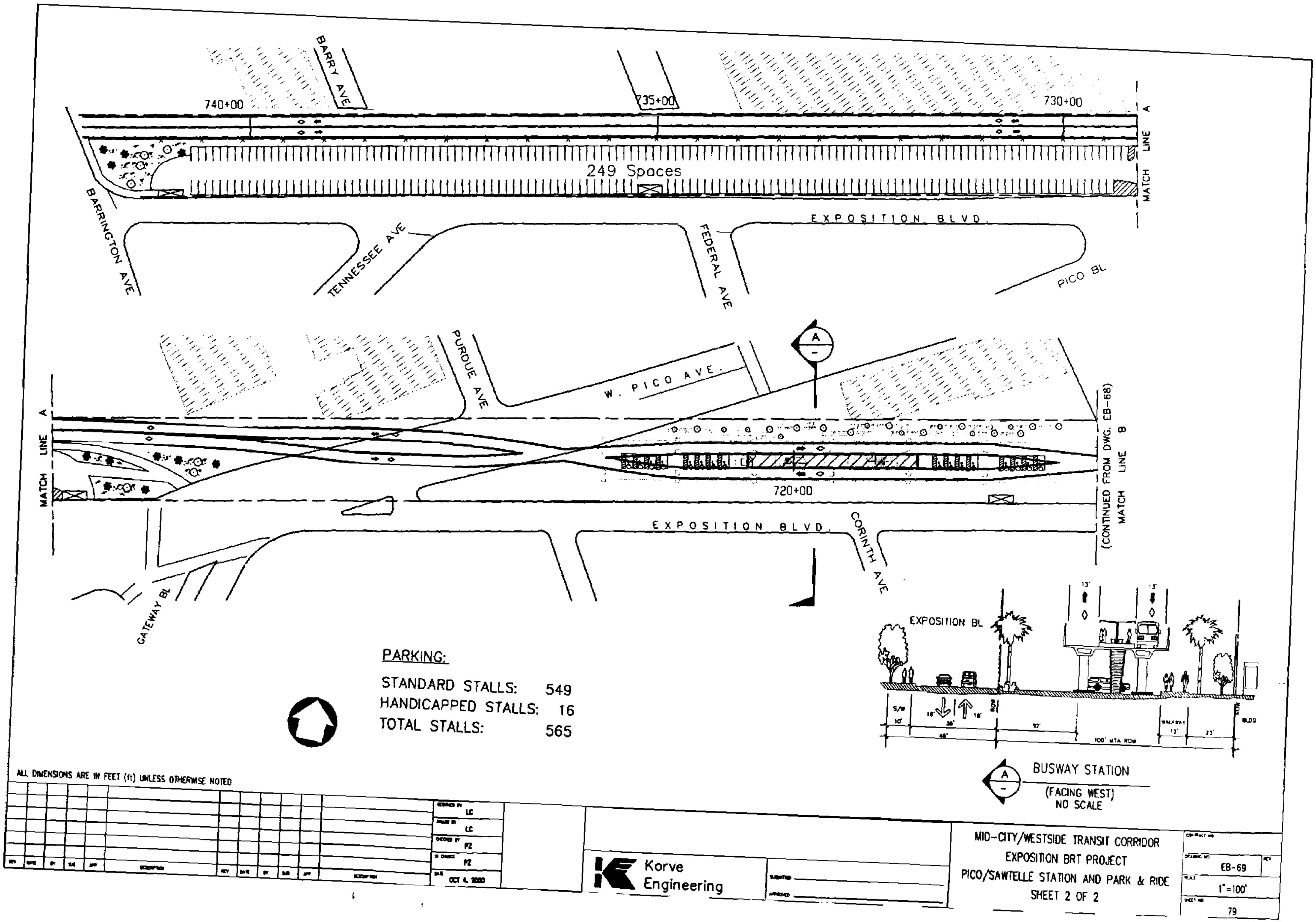
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

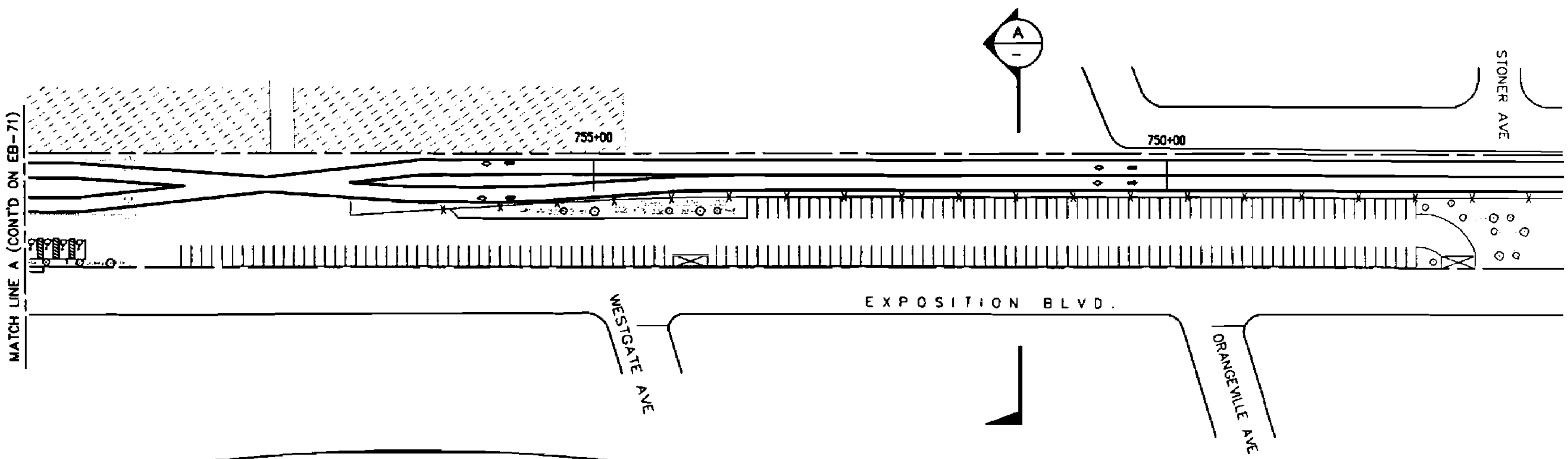
Korve Engineering

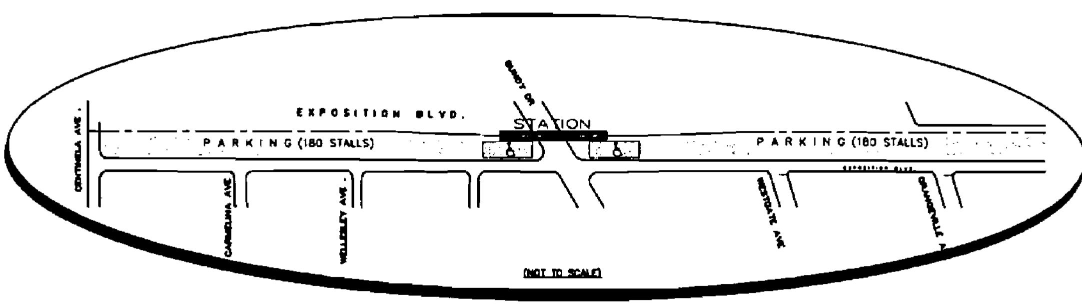
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
PICO/SAWTELLE STATION ANS PARK & RIDE
SHEET 1 OF 2

DRAWING NO	EB-68
SCALE	1"=100'
SHEET NO	78



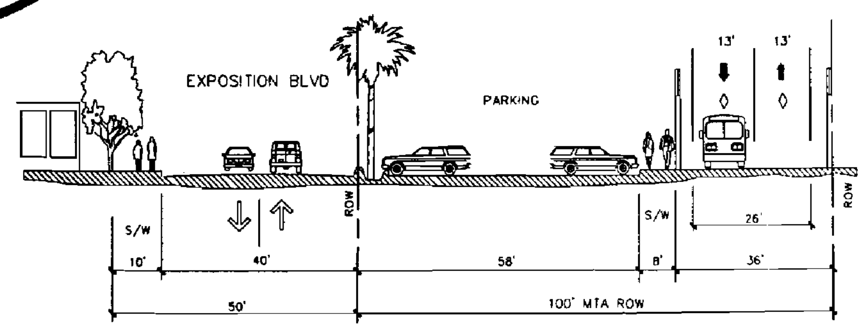
BARRY AVE
740+00
735+00
730+00
249 Spaces
MATCH LINE A
BARRINGTON AVE
TENNESSEE AVE
FEDERAL AVE
EXPOSITION BLVD.
PICO BL
PURDUE AVE
W. PICO AVE.
A
MATCH LINE A
720+00
EXPOSITION BLVD.
CORINTH AVE
(CONTINUED FROM DWG. EB-68) MATCH LINE B
GATEWAY BL
PARKING:
STANDARD STALLS: 549
HANDICAPPED STALLS: 16
TOTAL STALLS: 565
EXPOSITION BL
BUSWAY STATION
(FACING WEST)
NO SCALE
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED
LC
LC
PZ
PZ
OCT 4, 2000
Korve Engineering
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
PICO/SAWTELLE STATION AND PARK & RIDE
SHEET 2 OF 2
EB-69
1"=100'
79





PARKING:

STANDARD STALLS:	360
HANDICAPPED STALLS:	12
TOTAL STALLS:	372



BUSWAY SECTION
(FACING WEST)
NO SCALE

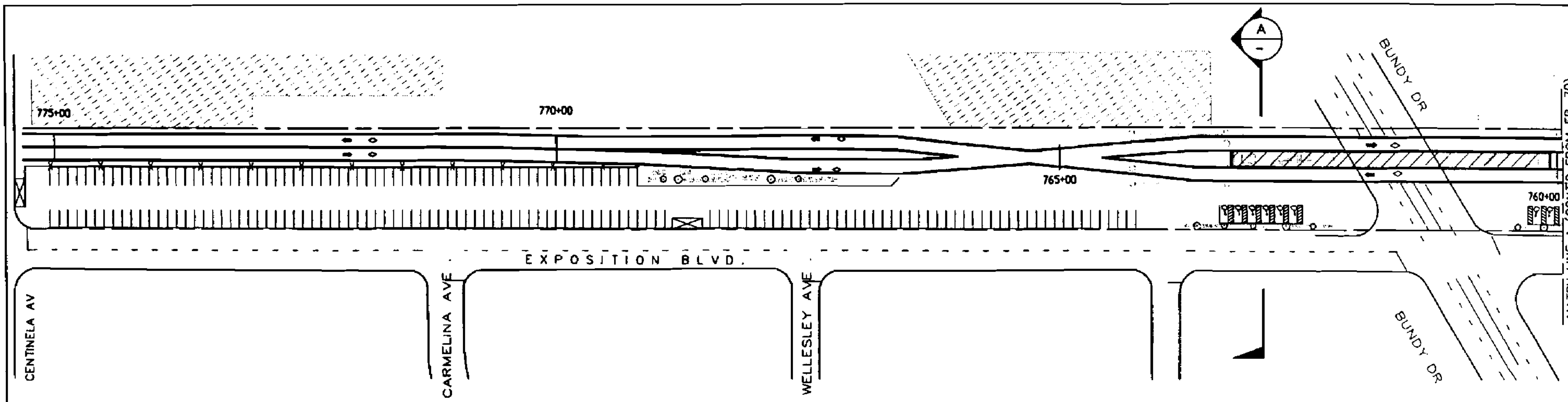
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

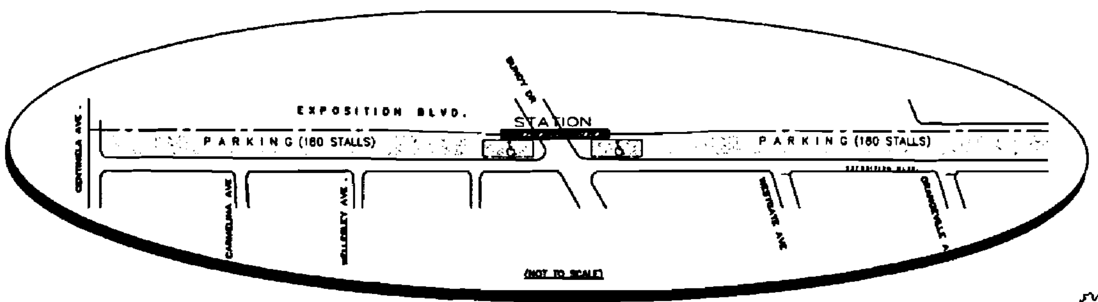
DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

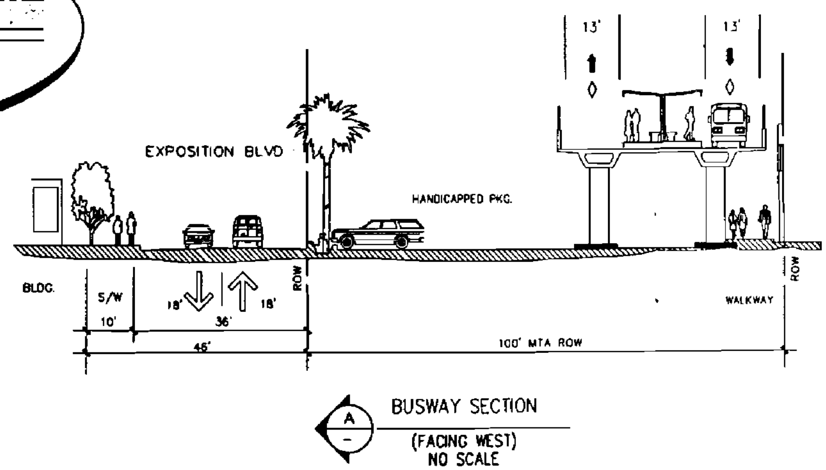
Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
BUNDY STATION AND PARK & RIDE
SHEET 1 OF 2

DRAWING NO	EB-70
SCALE	1"=100'
SHEET NO	80







PARKING:

STANDARD STALLS:	360
HANDICAPPED STALLS:	12
TOTAL STALLS:	372

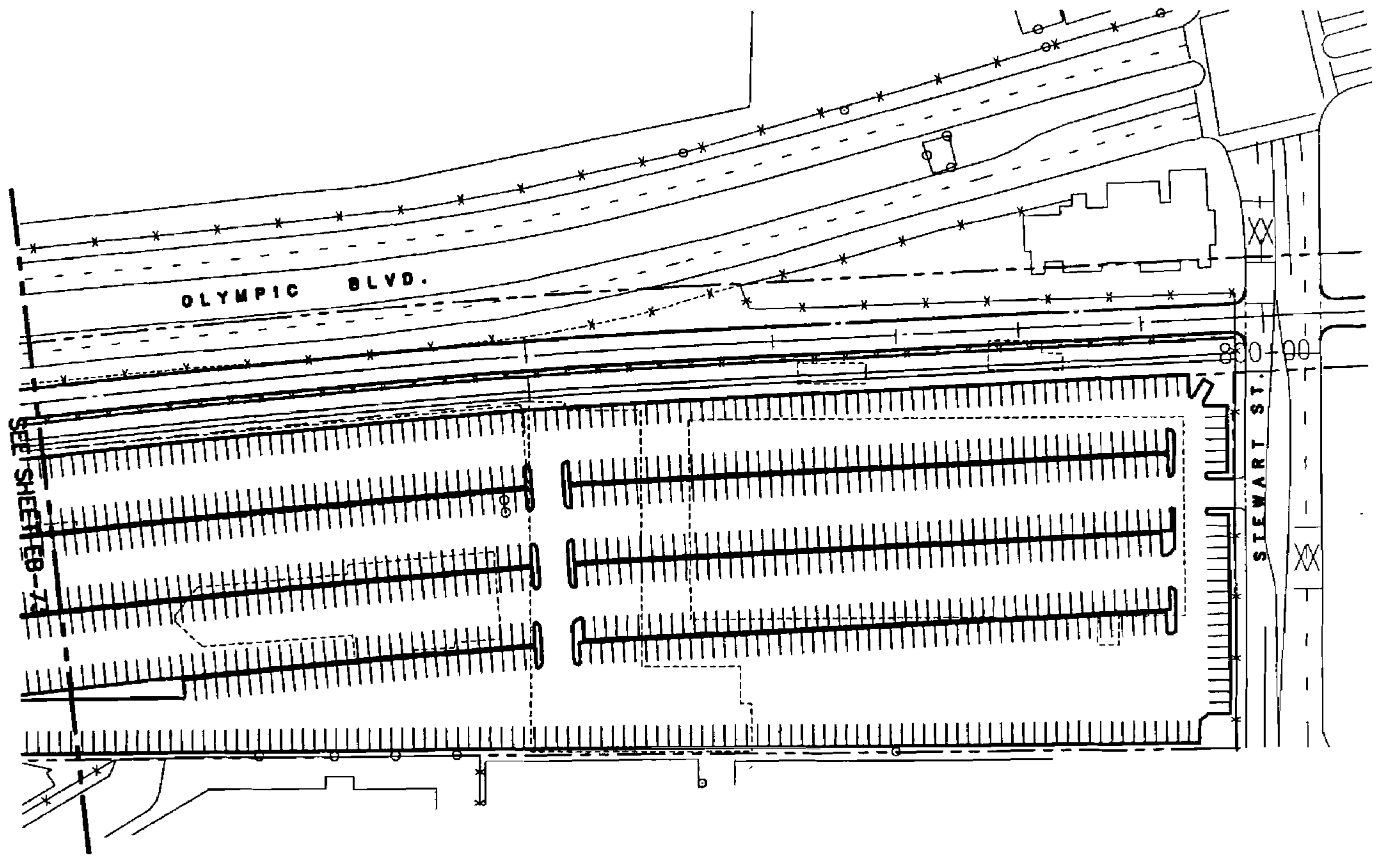
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

LC
LC
PZ
PZ
OCT 4, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
BUNDY STATION AND PARK & RIDE
SHEET 2 OF 2

EB-71
1"=100'
R1



PARKING:

STANDARD STALLS:	1135
HANDICAPPED STALLS:	5
TOTAL STALLS:	1140

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

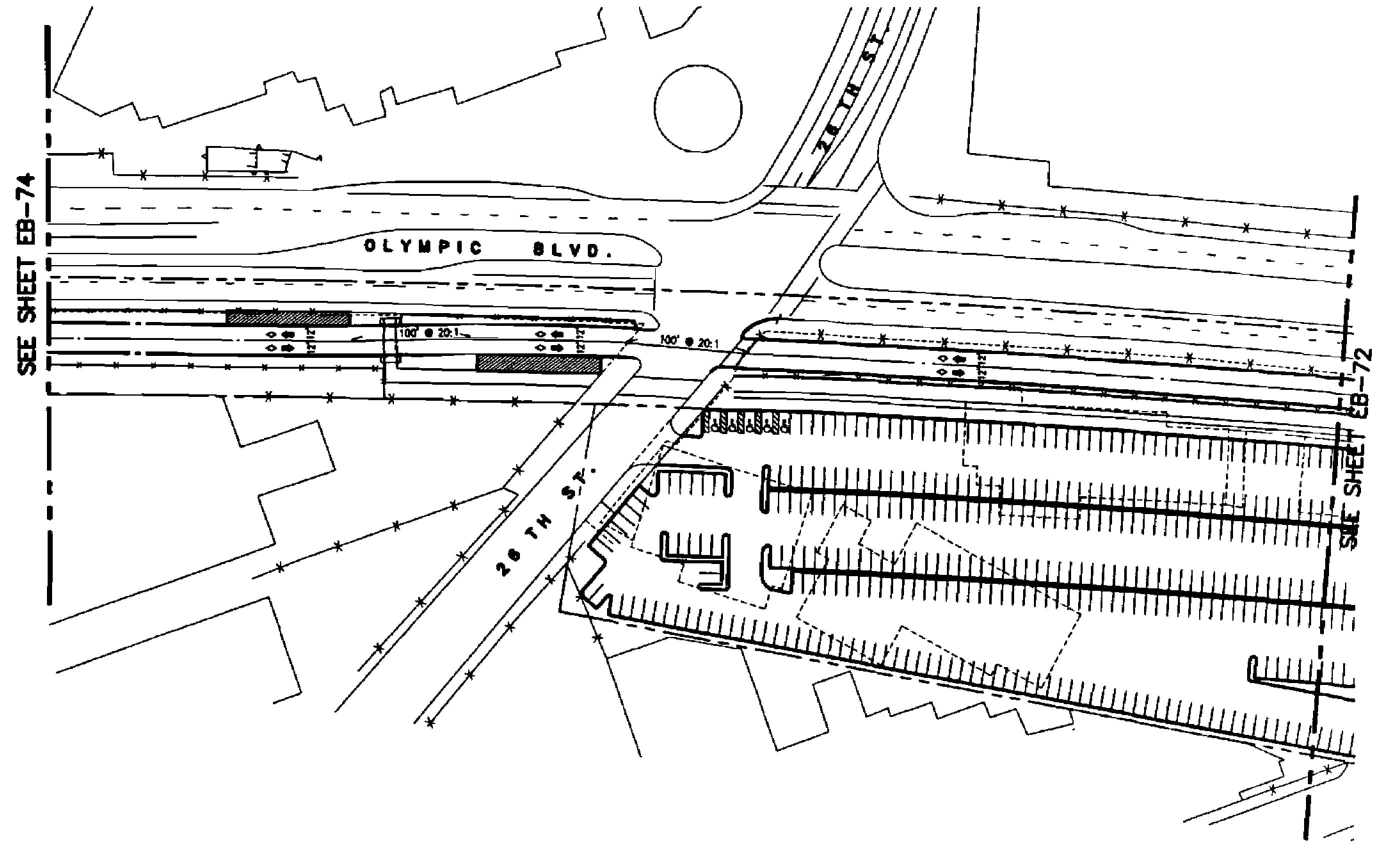
SUBMITTED ______

APPROVED ______

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

CLOVERFIELD STATION AND PARK AND RIDE
SHEET 1 OF 3

DRAWING NO	EB-72
SCALE	NO SCALE
SHEET NO	82



PARKING:

STANDARD STALLS:	1135
HANDICAPPED STALLS:	5
TOTAL STALLS:	1140

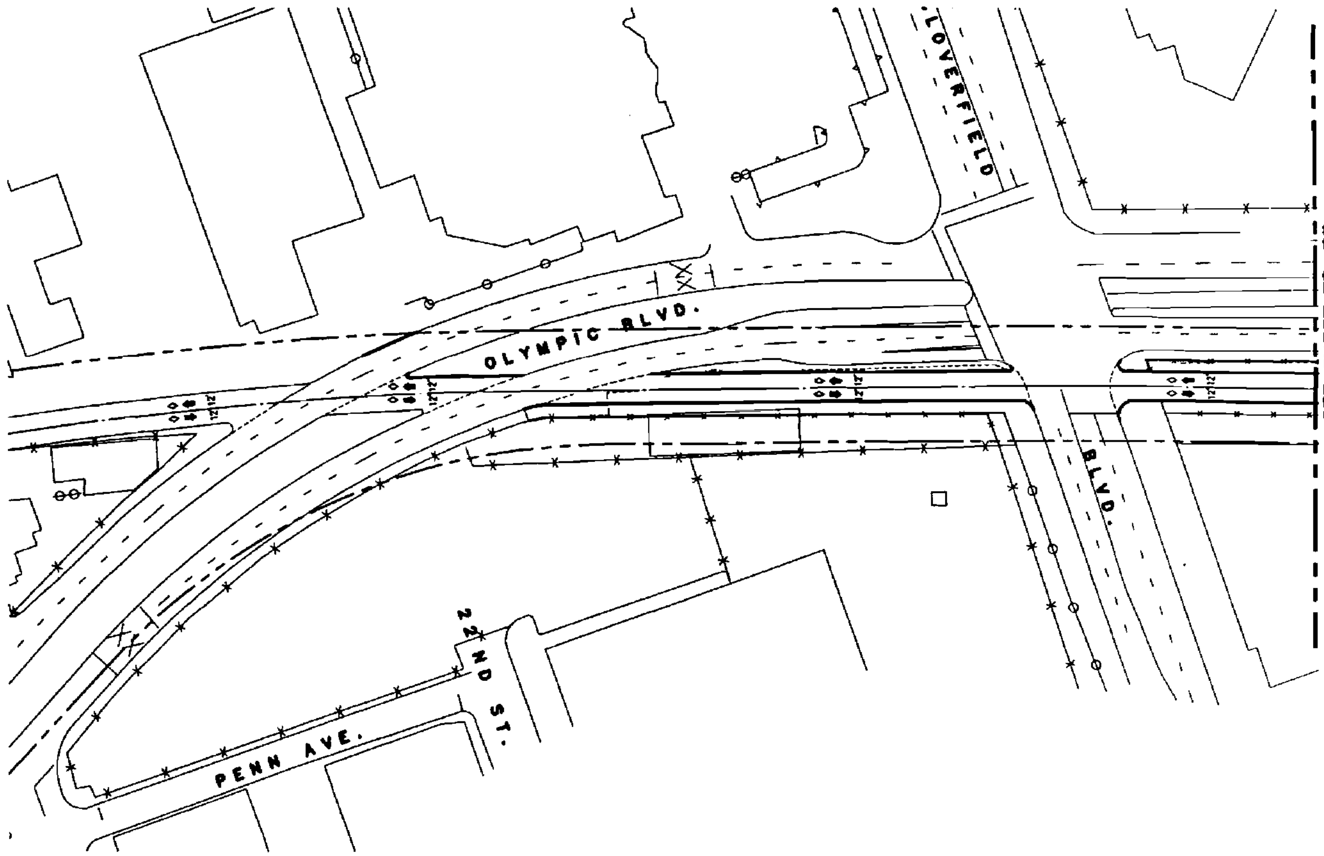
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4 2000

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

CLOVERFIELD STATION AND PARK AND RIDE
SHEET 2 OF 3

DRAWING NO. EB-73
SCALE NO SCALE
SHEET NO. 81



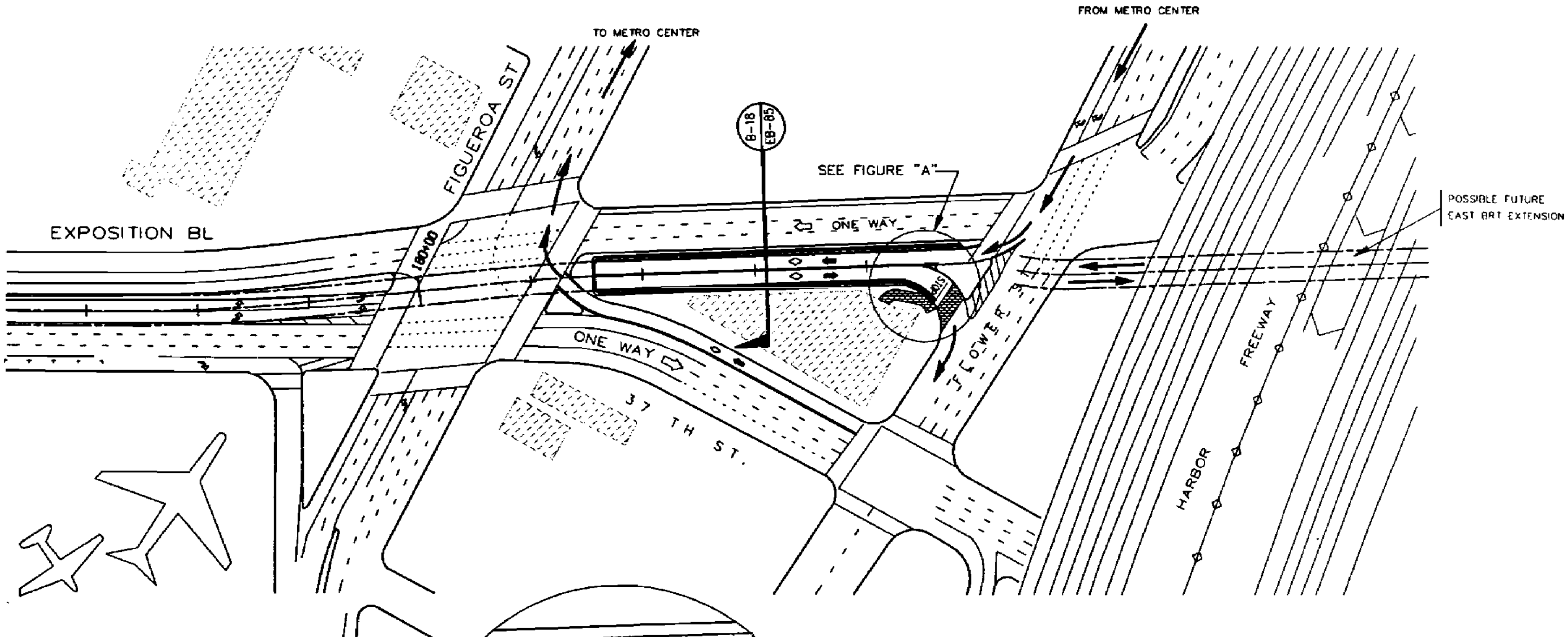
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

CLOVERFIELD STATION AND PARK & RIDE
SHEET 3 OF 3

DRAWING NO.	EB-74
SCALE	NO SCALE
SHEET NO.	84



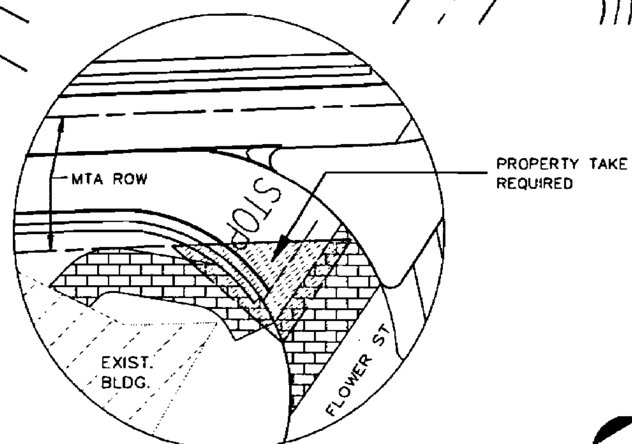


FIGURE "A"
(NO SCALE)

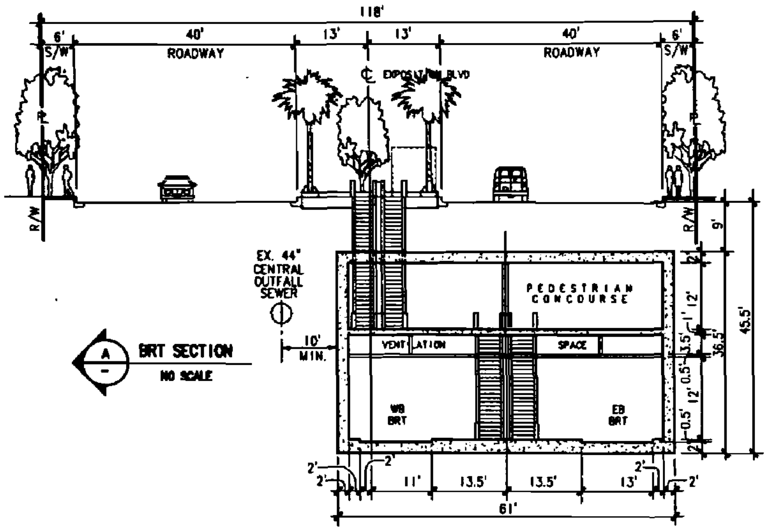
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

Korve Engineering

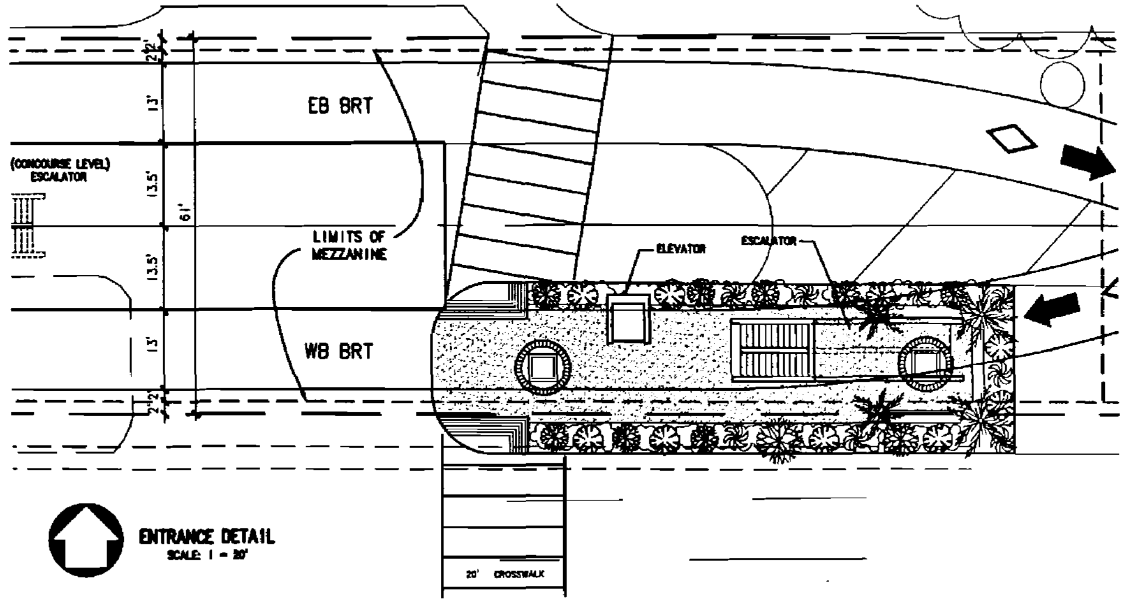
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
EAST PORTAL AREA
CUT & COVER OPTION

DRAWING NO	EB-75
SCALE	1"=100'
SHEET NO	85
DATE	OCT 4, 2000

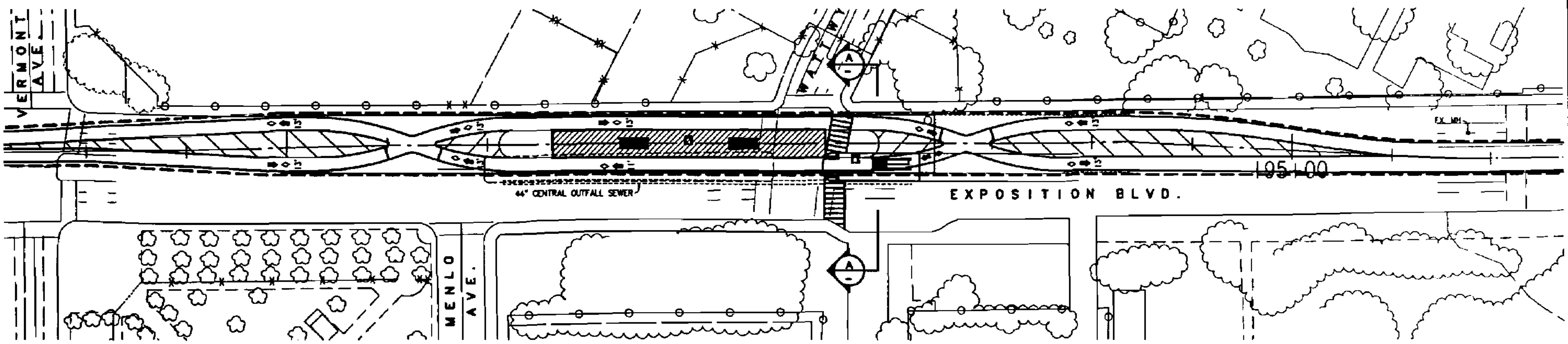
PLEASE NOTE THAT THESE DRAWINGS
ARE ONE-HALF ORIGINAL SIZE



BRT SECTION
NO SCALE



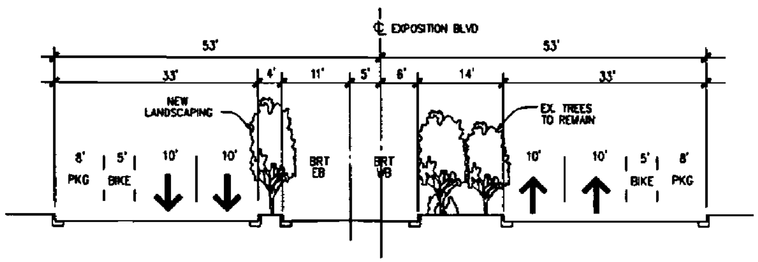
ENTRANCE DETAIL
SCALE: 1 = 20'



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

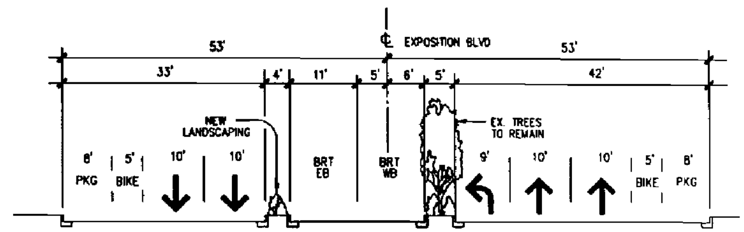
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT
VERMONT/USC/EXPOSITION PARK STATION
CUT AND COVER OPTION

DATE	02/23/01
DRAWING NO.	EB-78
SCALE	NO SCALE
SHEET NO.	86

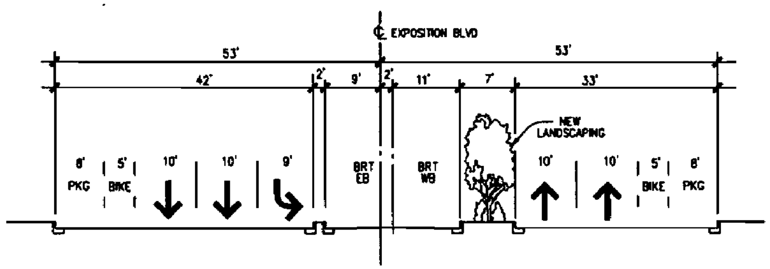


B-1 EB-014 **BRT SECTION** 1"=20'

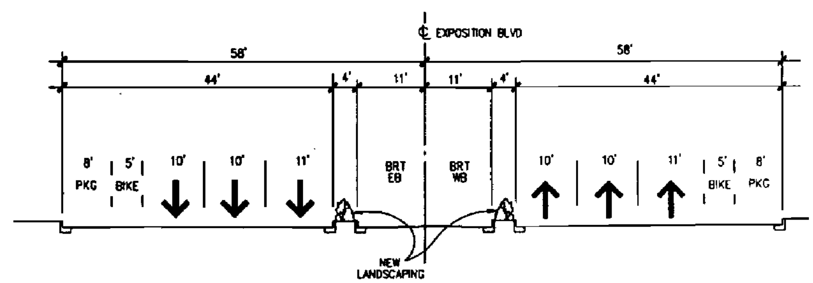
EB-015
EB-016



B-2 EB-015 **BRT SECTION** 1"=20'



B-3 EB-015 **BRT SECTION** 1"=20'



B-4 EB-053 **BRT SECTION** 1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

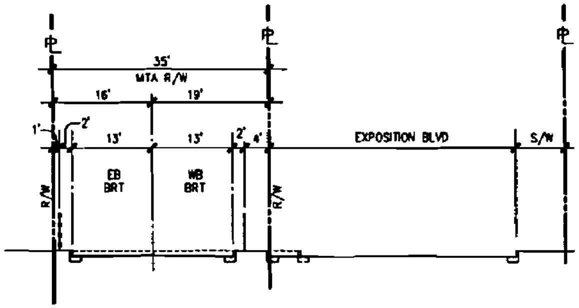
Korve Engineering

SUBMITTED
APPROVED

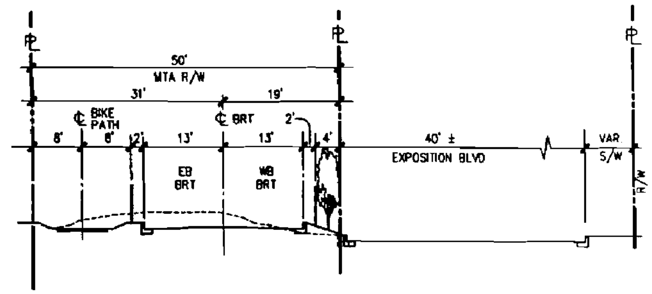
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

TYPICAL SECTIONS
B-1 THROUGH B-4

CONTRACT NO.	
DRAWING NO.	EB-81
SCALE	1" = 20'
SHEET NO.	87

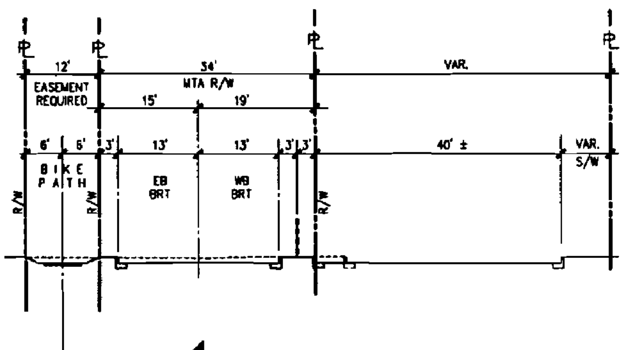


B-5 EB-017 BRT SECTION
1"=20'

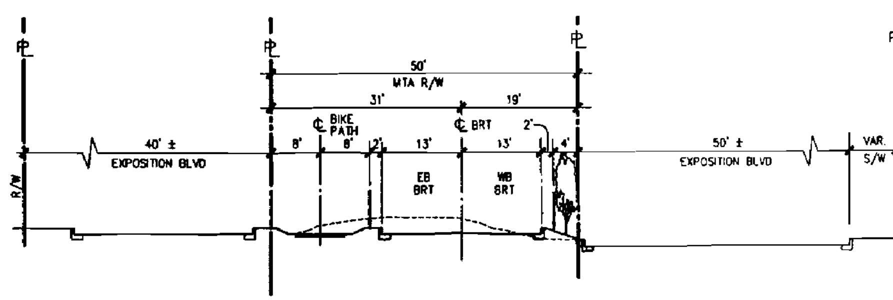


B-6 EB-018 BRT SECTION
1"=20'

EB-018
EB-019
EB-020
EB-021
EB-022
EB-054



B-7 EB-018 BRT SECTION
1"=20'



B-8 EB-019 BRT SECTION
1"=20'

EB-020
EB-054

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

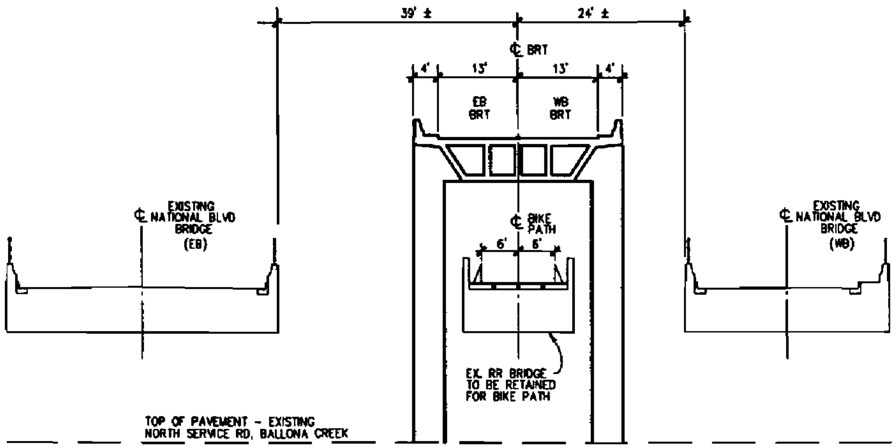
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

TYPICAL SECTIONS
B-5 THROUGH B-8

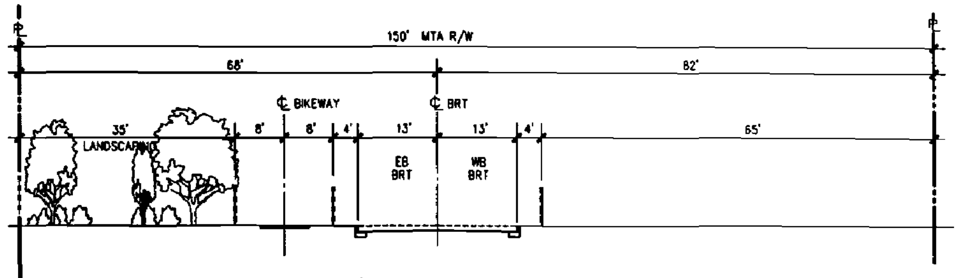
CONTRACT NO	
DRAWING NO.	EB-82
SCALE	1" = 20'
SHEET NO.	88



B-9 / EB-024

BALLONA CREEK SECTION

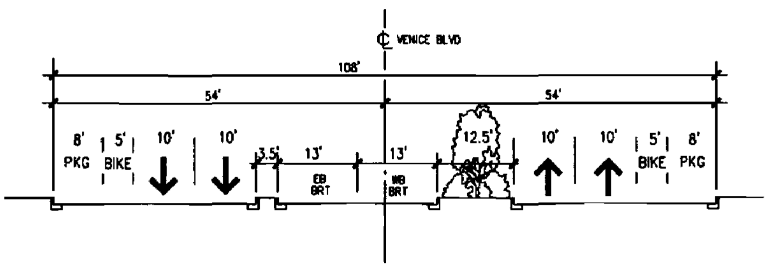
1"=20'



B-10 / EB-024

BRT SECTION

1"=20'

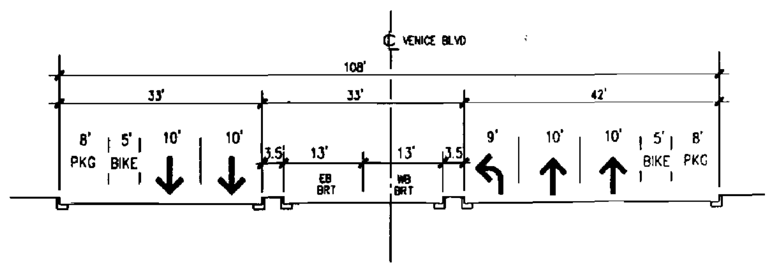


B-11 / EB-59

BRT SECTION

1"=20'

EB-60
EB-61
EB-62



B-12 / EB-60

BRT SECTION

1"=20'

EB-61
EB-62

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

SUBMITTED ______

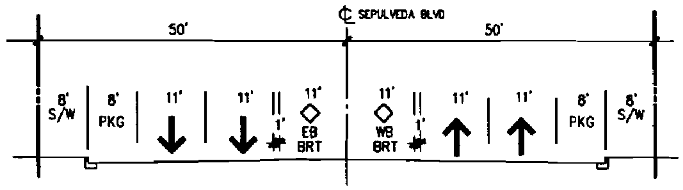
APPROVED ______

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

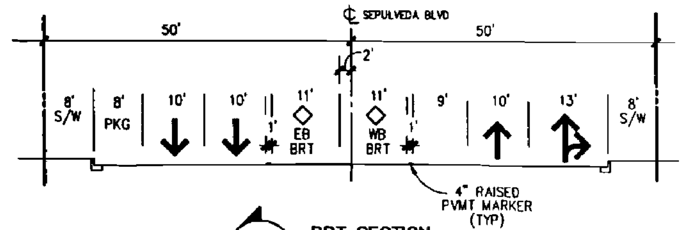
TYPICAL SECTIONS
B-9 THROUGH B-12

CONTRACT NO	
DRAWING NO	EB-83
SCALE	1" = 20'
SHEET NO	89

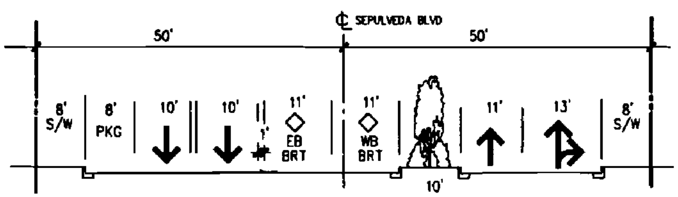
1



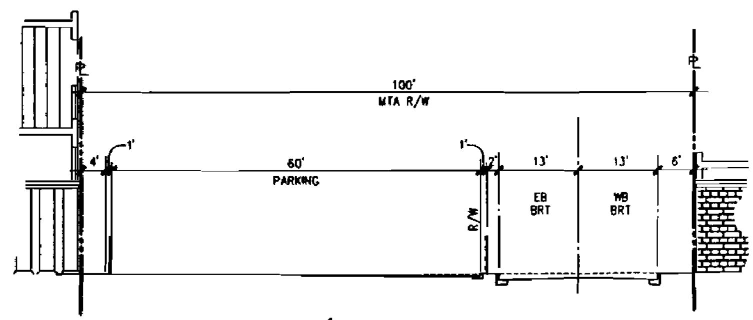
B-13 / EB-63 BRT SECTION
1"=20'
EB-64
EB-65
EB-66



B-14 / EB-63 BRT SECTION
1"=20'
EB-64
EB-65
EB-66



B-15 / EB-84 BRT SECTION
1"=20'



B-16 / EB-035 BRT SECTION
1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

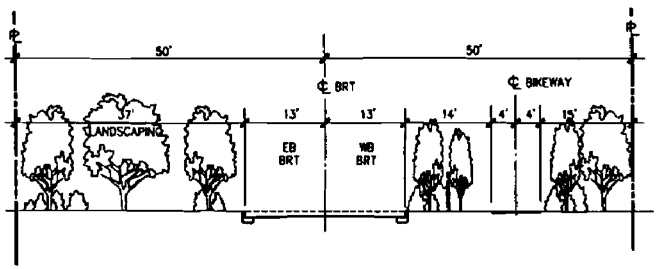
DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

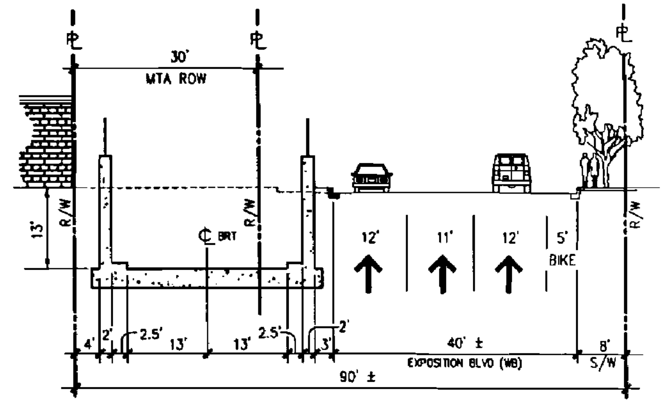
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

TYPICAL SECTIONS
B-13 THROUGH B-16

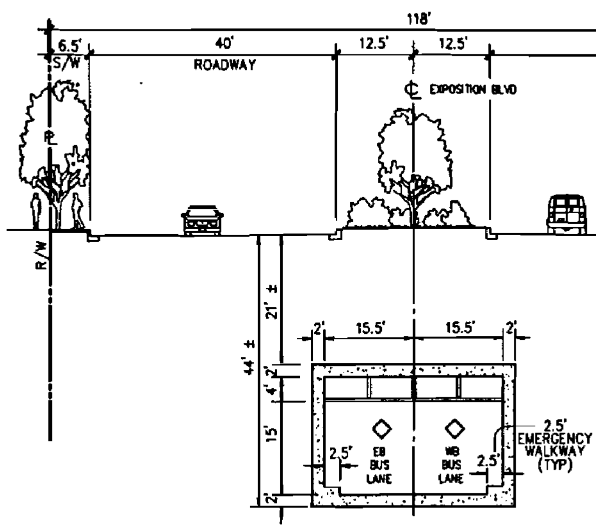
DRAWING NO. EB-84
SCALE 1" = 20'
SHEET NO. 90



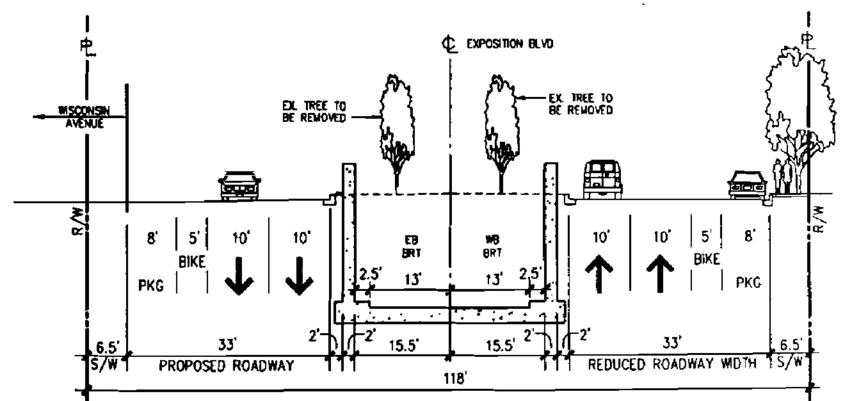
B-17 / EB-037 **BRT SECTION**
1"=20'
EB-038



B-18 / EB-75 **BRT SECTION**
1"=20'



B-19 / EB-41 **BRT SECTION**
1"=20'



B-20 / EB-42 **LRT SECTION**
1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

REV | DATE | BY | SUB | APP | DESCRIPTION | REV | DATE | BY | SUB | APP | DESCRIPTION

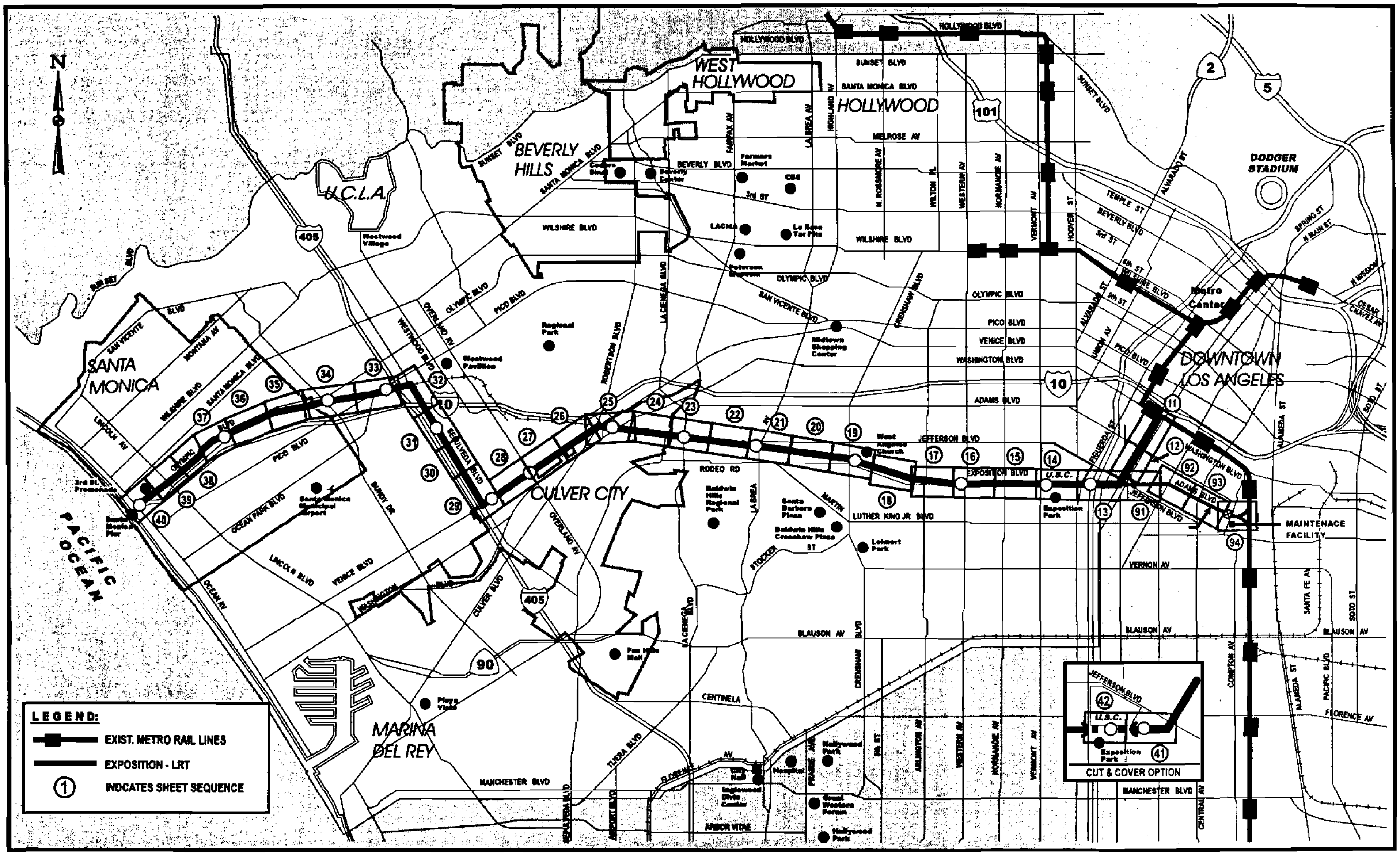
Korve Engineering

SUBMITTED ____
APPROVED ____

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT PROJECT

TYPICAL SECTIONS
B-17 THROUGH B-20

CONTRACT NO	
DRAWING NO	EB-85
SCALE	1" = 20'
SHEET NO	91



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	P.Z.
DRAWN BY	S.C.
CHECKED BY	J.S.
IN CHARGE	J.S
DATE	8 Dec 00

Korve Engineering

SUBMITTED

APPROVED

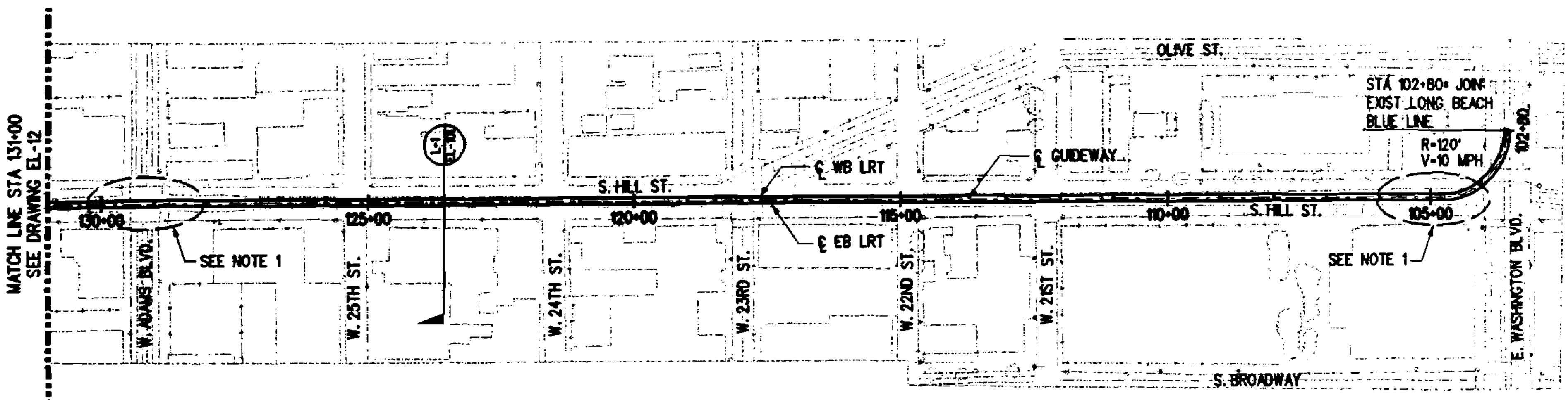
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

KEY MAP

DRAWING NO. EL-0

SCALE NO SCALE

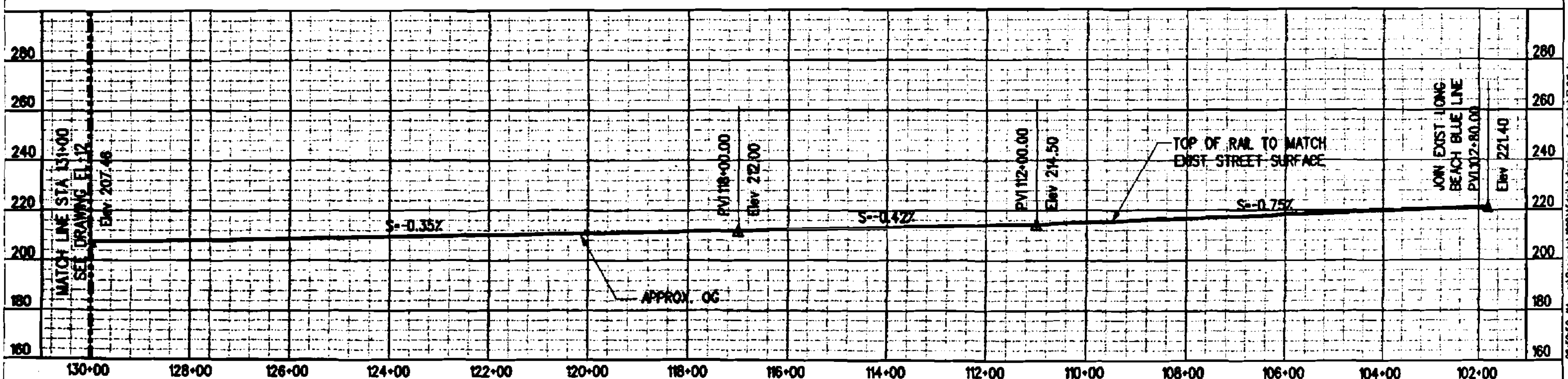
SHEET NO. 92



NOTES:
1. LEFT HAND TURN POCKETS ELIMINATED.
2. LEFT HAND TURNS PROHIBITED DURING PEAK HOURS.

* STA 0+00 = ℄ 7TH/FLOWER STATION

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

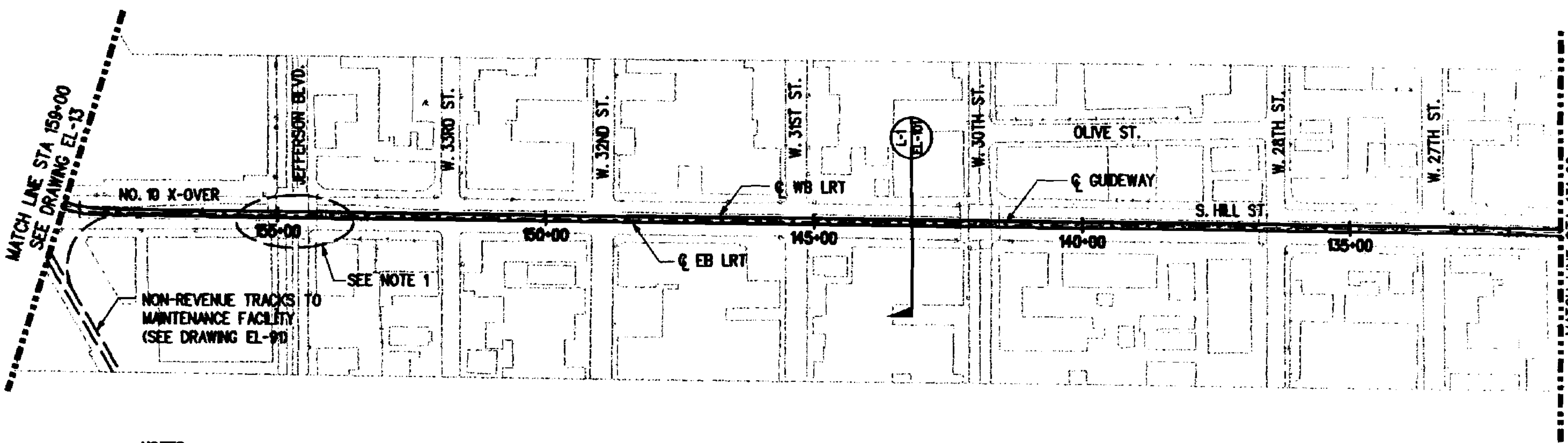
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

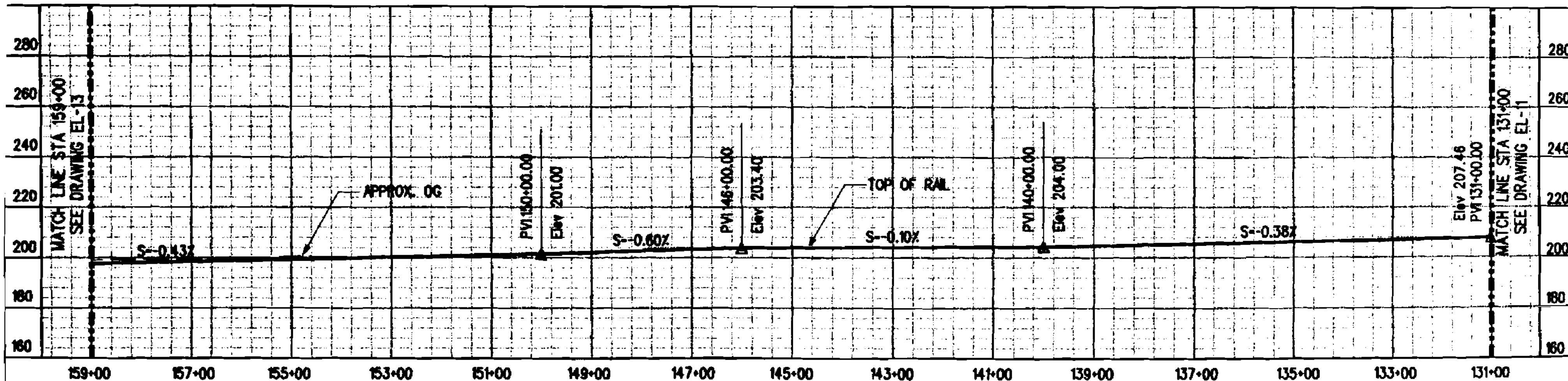
PLAN & PROFILE (BASELINE)
STA STA 102+80 TO STA 131+00

CONTRACT NO.
DRAWING NO. EL-11
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 93



NOTES:
1. LEFT HAND TURN POCKETS ELIMINATED.
2. LEFT HAND TURNS PROHIBITED DURING PEAK HOURS.

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

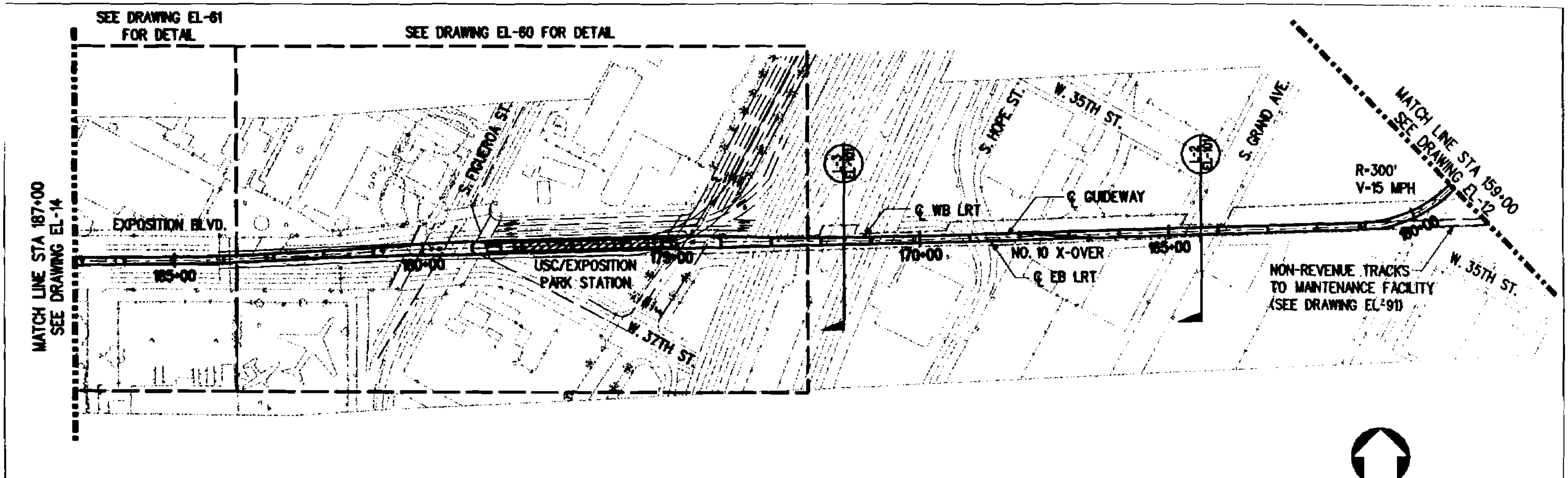
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

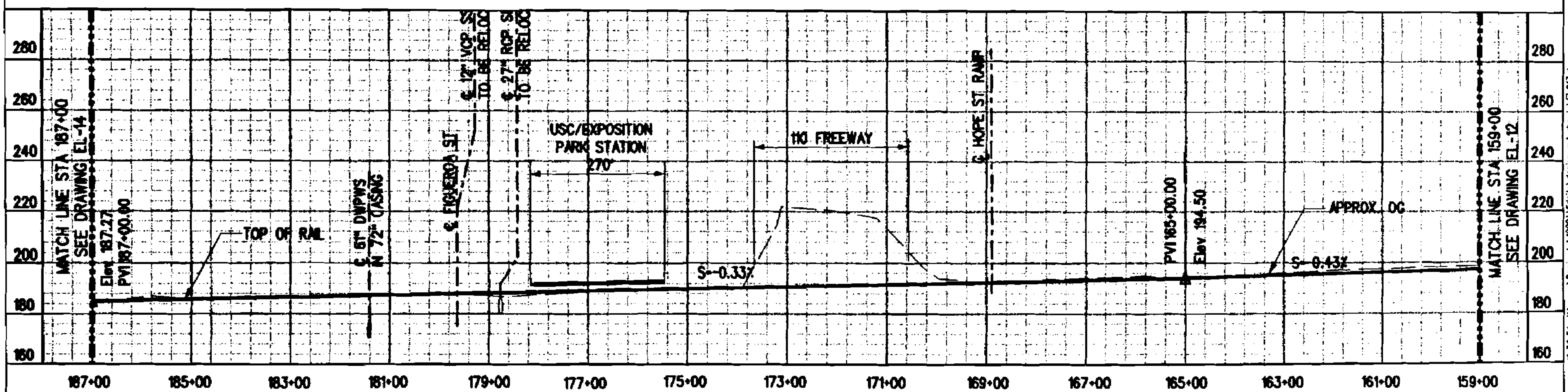
PLAN & PROFILE (BASELINE)
STA 131+00 TO STA 159+00

CONTRACT NO.
DRAWING NO. EL-12
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 94

12/27/00 10:38:58 AM



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

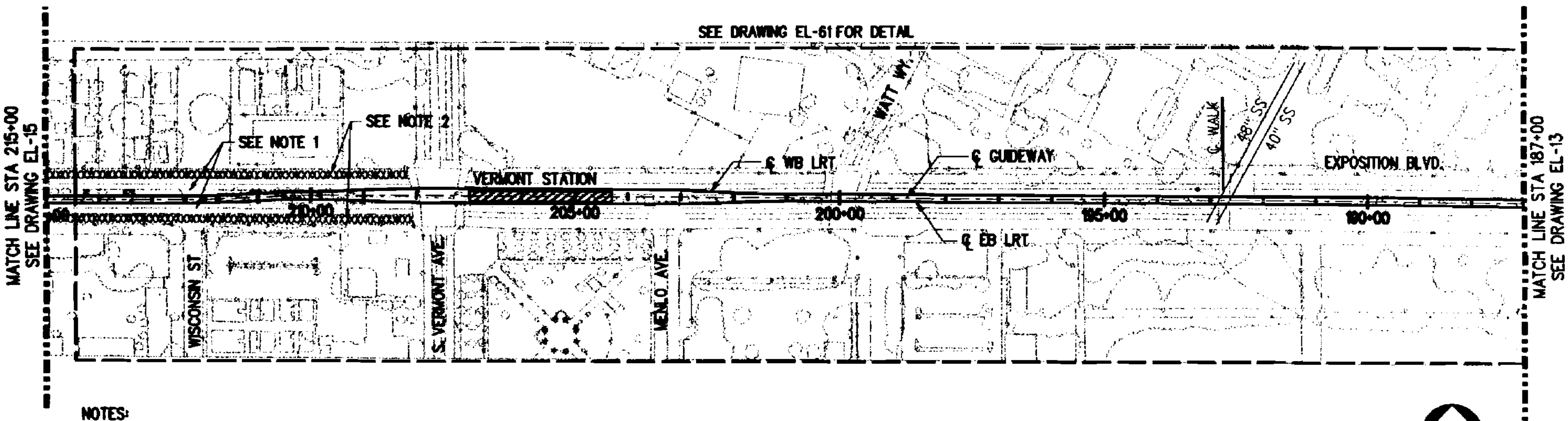
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

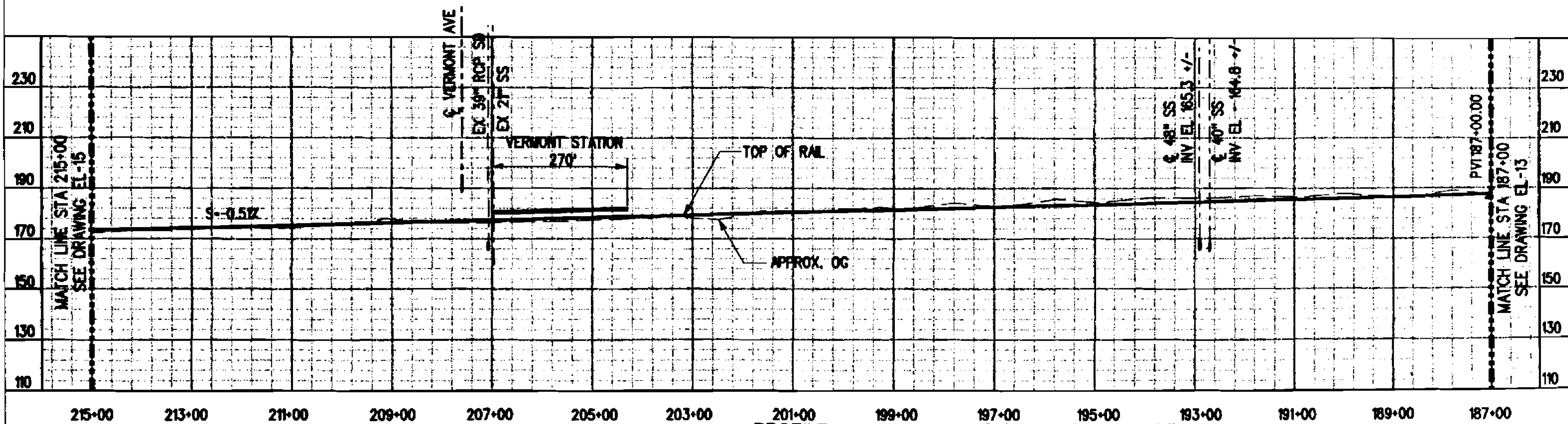
PLAN & PROFILE (BASELINE)
STA 159+00 TO STA 187+00

CONTRACT NO.
DRAWING NO. EL-13
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 95



NOTES:
1. EXISTING STREET CROSSING TO BE CLOSED
2. BIKE LANES (CLASS 2 BIKEWAY)

PLAN



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

PROFILE

PROGRESS PRINT

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

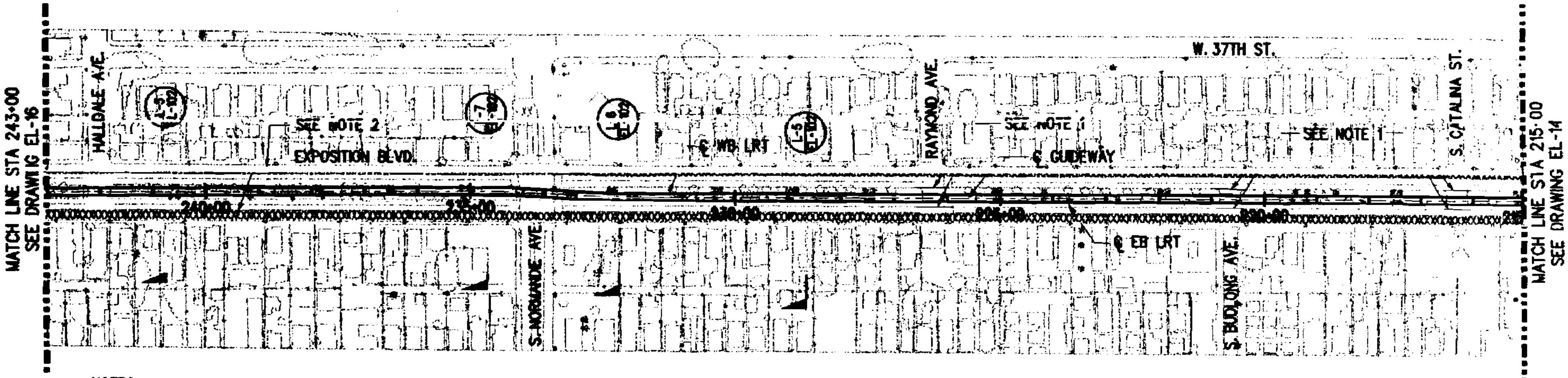
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 187+00 TO STA 215+00

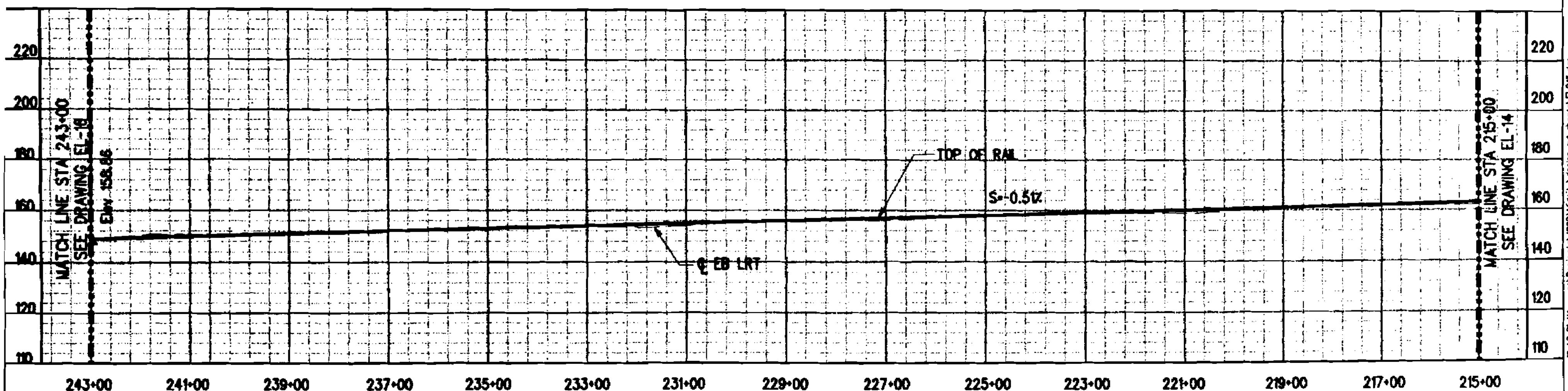
CONTRACT NO.
DRAWING NO. EL-14
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 96

12/27/00 10:40:47 AM



NOTES:
1. EXISTING STREET CROSSING TO BE CLOSED
2. BIKE LANES (CLASS 2 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

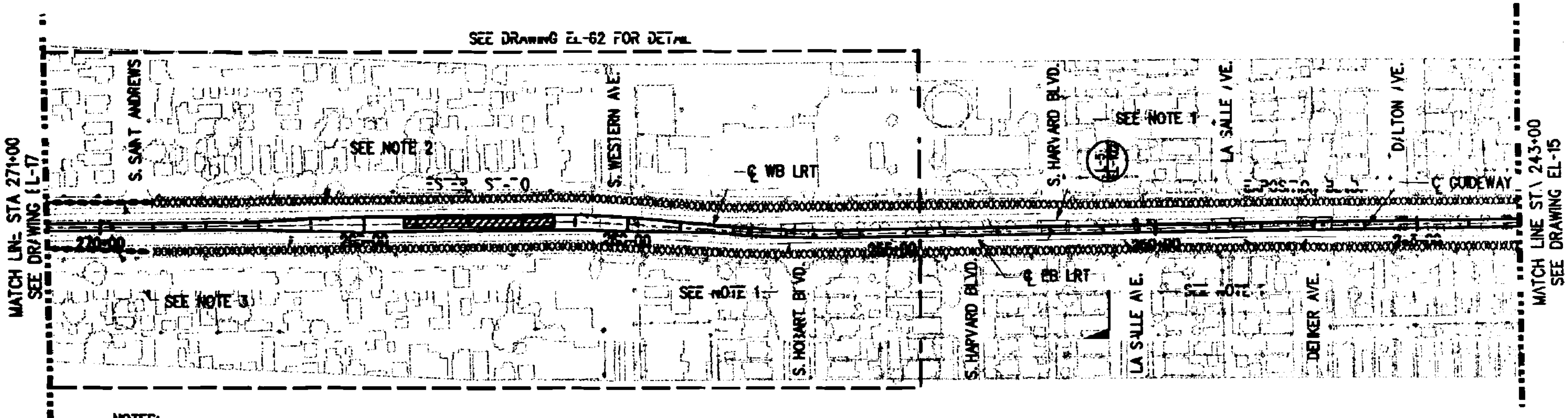
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

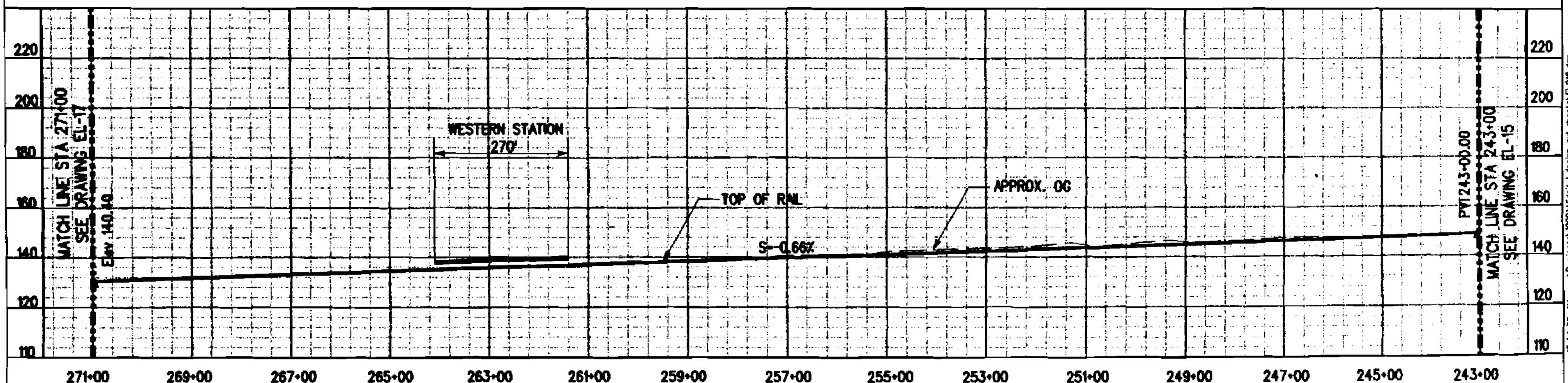
PLAN & PROFILE (BASELINE)
STA 215+00 TO STA 243+00

CONTRACT NO
DRAWING NO. EL-15
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 97



NOTES:
1. EXISTING STREET CROSSING TO BE CLOSED
2. BIKE LANES (CLASS 2 BIKEWAY)
3. BIKE ROUTE (CLASS 3 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JR
DRAWN BY	JR
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

SUBMITTED ______
APPROVED ______

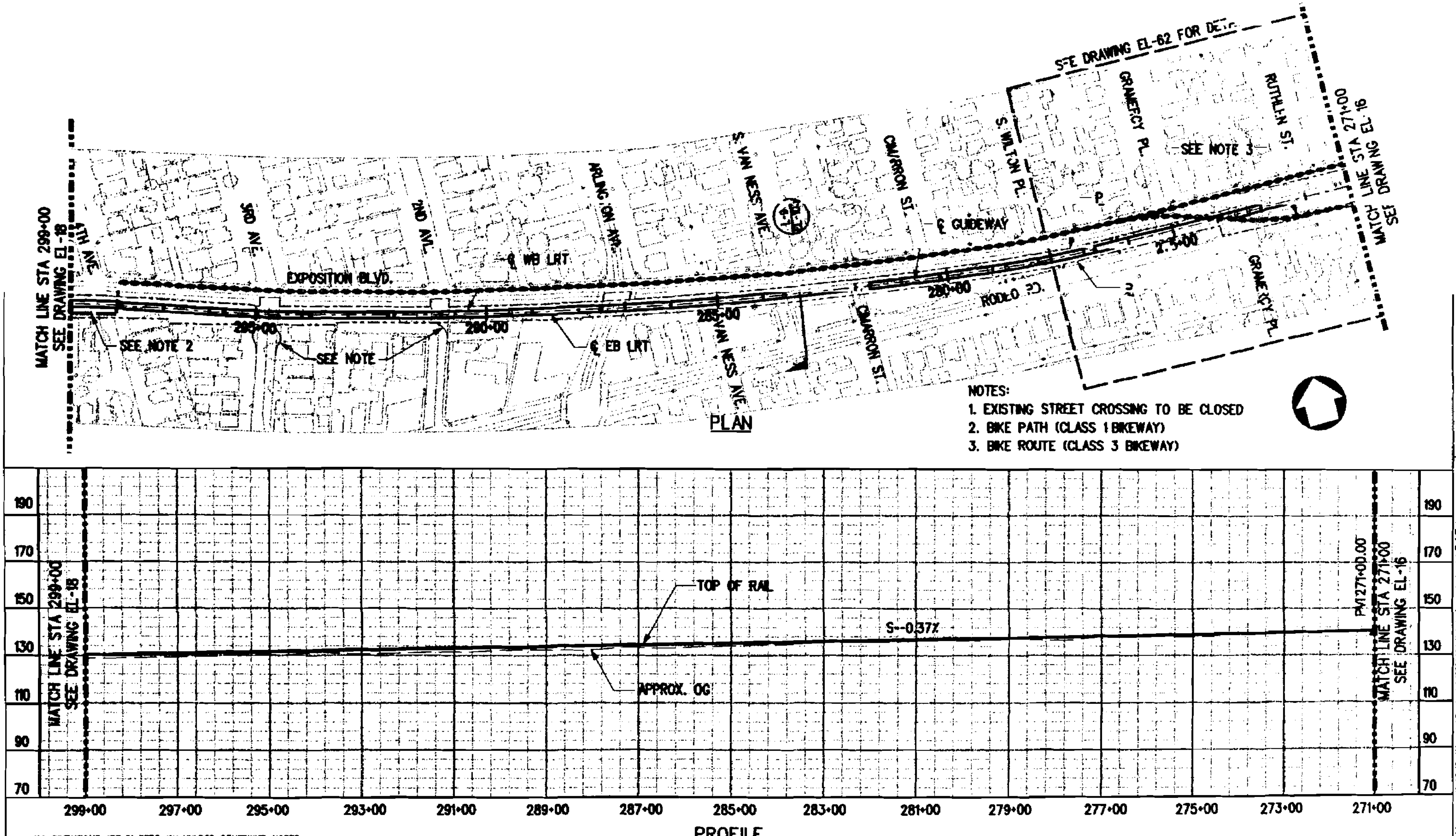
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 243+00 TO STA 271+00

CONTRACT NO.	
DRAWING NO.	EL-16
REV	0
SCALE	HORIZ 1"=200' VERT 1"=40'
SHEET NO.	98

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

12/27/00 10:44:00 AM USER=



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

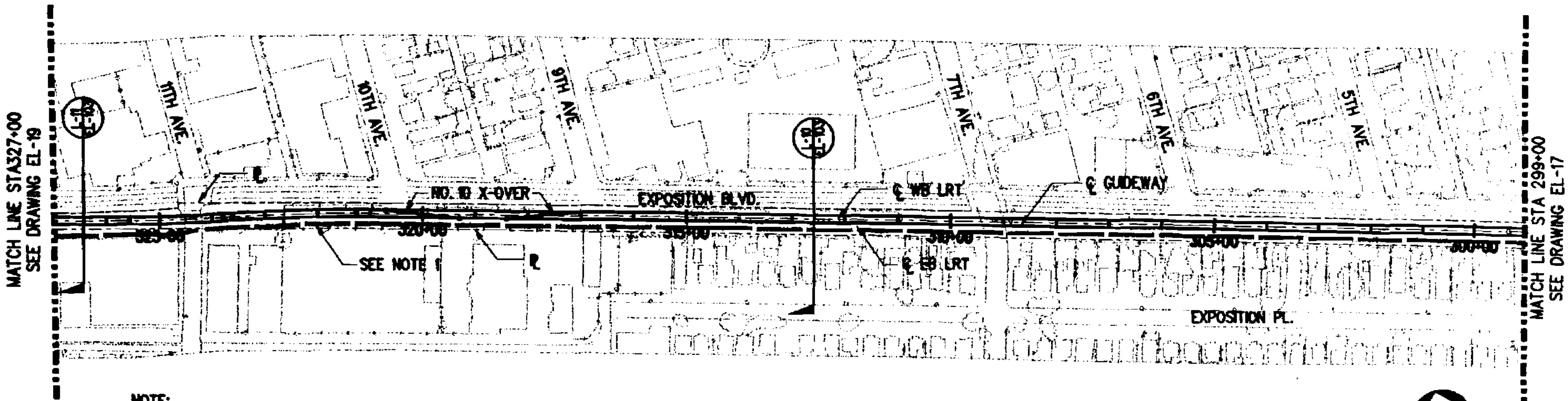
Korve Engineering

SUBMITTED
APPROVED

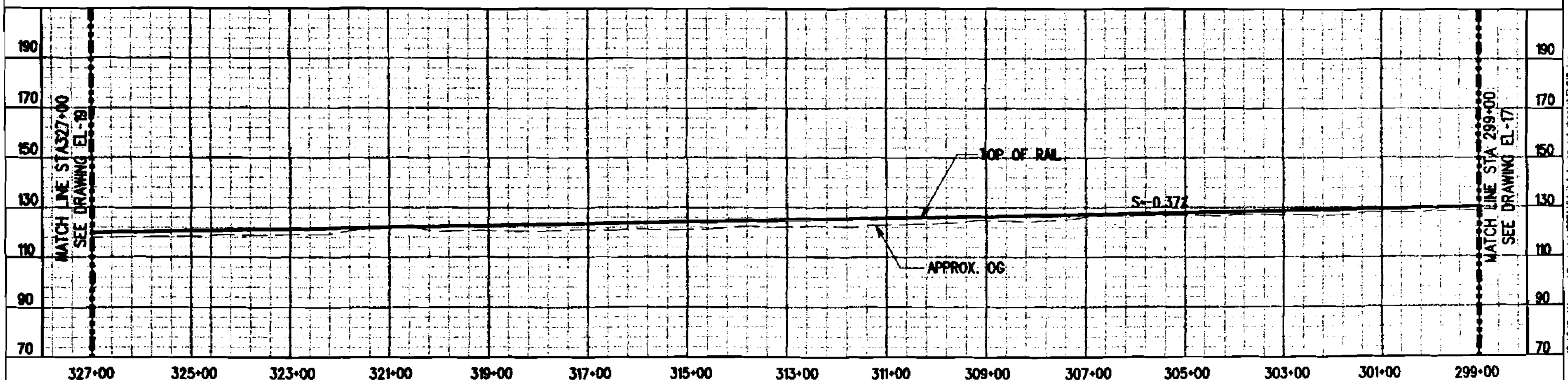
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 271+00 TO STA 299+00

CONTRACT NO.
DRAWING NO. EL-17
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 99



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

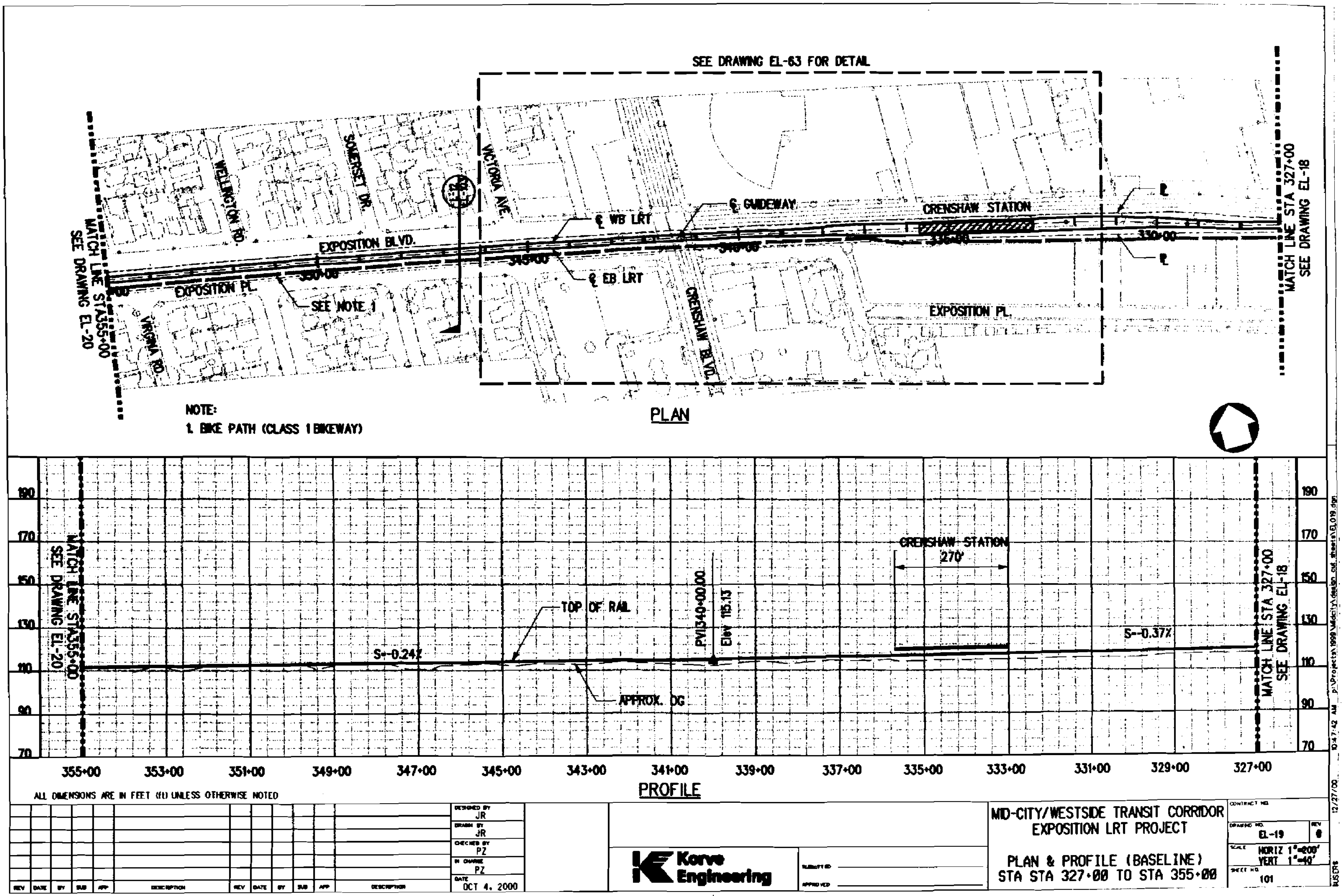
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

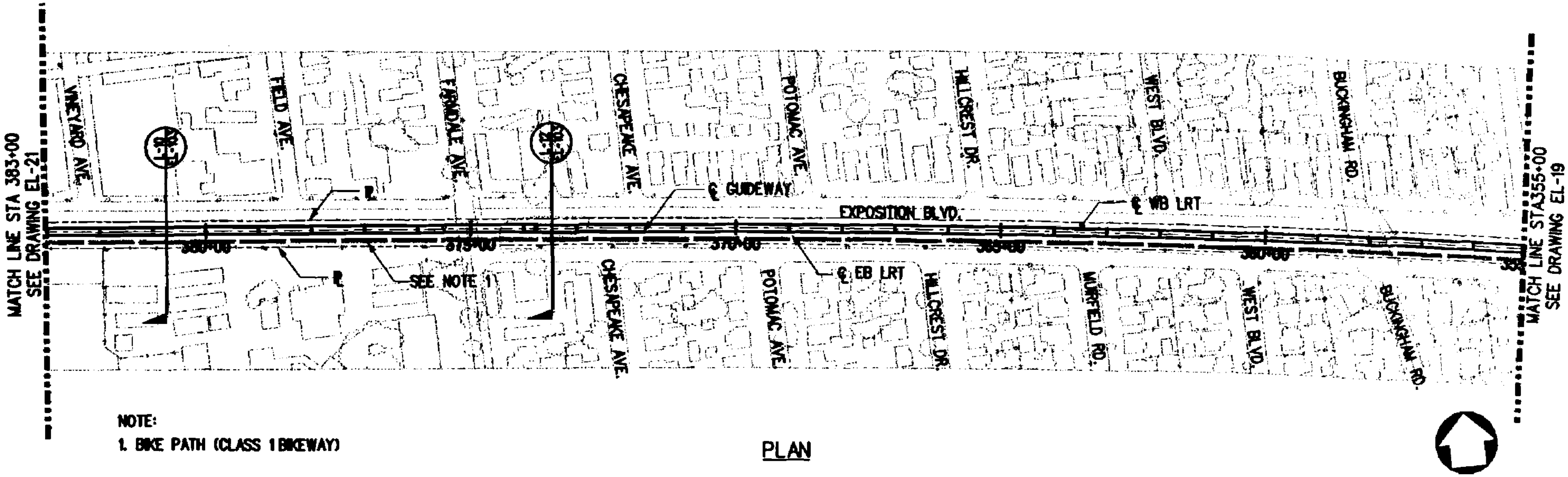
Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 299+00 TO STA 327+00

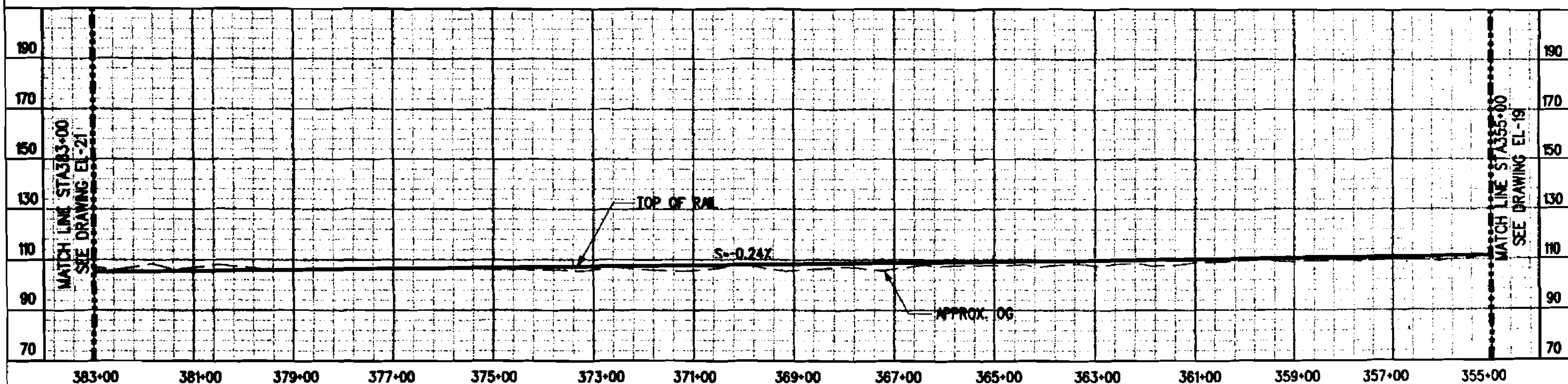
DRAWING NO. EL-18
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 100


SEE DRAWING EL-63 FOR DETAIL
WELLINGTON RD.
SOMERSET DR.
VICTORIA AVE.
EXPOSITION BLVD.
EXPOSITION PL.
VIRGINIA RD.
CRENSHAW BLVD.
CRENSHAW STATION
℄ GUIDEWAY
℄ WB LRT
℄ EB LRT
SEE NOTE 1
350+00
345+00
340+00
335+00
330+00
MATCH LINE STA355+00 SEE DRAWING EL-20
MATCH LINE STA 327+00 SEE DRAWING EL-18
PLAN
NOTE:
1. BIKE PATH (CLASS 1 BIKEWAY)
CRENSHAW STATION
270'
TOP OF RAIL
PVI340+00.00
Elev 115.13
S=-0.24%
S=-0.37%
APPROX. OG
190
170
150
130
110
90
70
355+00
353+00
351+00
349+00
347+00
345+00
343+00
341+00
339+00
337+00
335+00
333+00
331+00
329+00
327+00
PROFILE
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED
REV
DATE
BY
SUB
APP
DESCRIPTION
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000
Korve Engineering
SUBMITTED
APPROVED
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
PLAN & PROFILE (BASELINE)
STA STA 327+00 TO STA 355+00
CONTRACT NO.
DRAWING NO. EL-19
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 101
12/27/00 10:47:42 AM p:\Projects\1999\Midcity\design_cut_sheets\EL019.dgn
USERS



NOTE:
1. BIKE PATH (CLASS 1 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

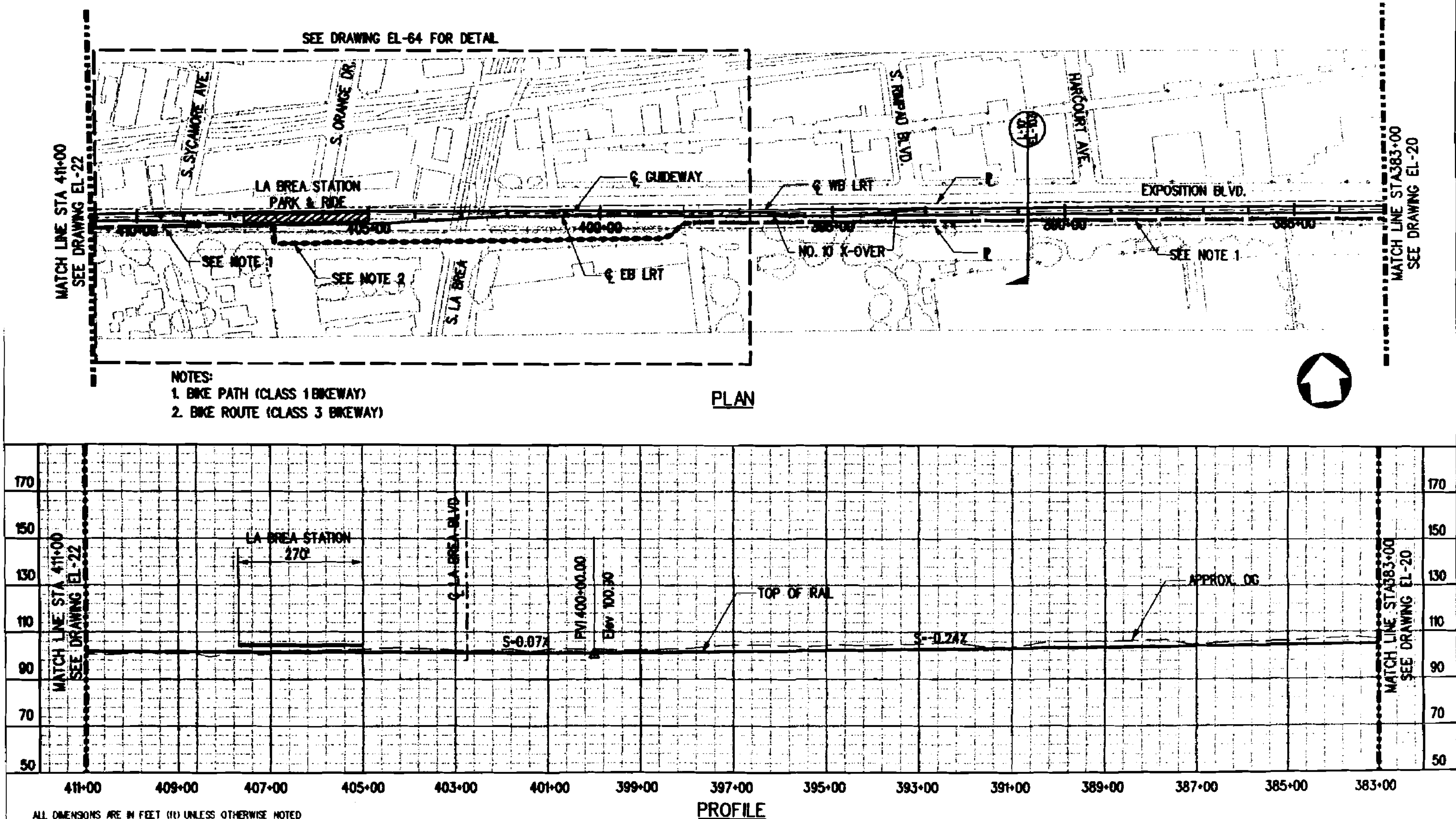
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 355+00 TO STA 383+00

CONTRACT NO.
DRAWING NO. EL-20
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 102



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY: JR
DRAWN BY: JR
CHECKED BY: PZ
IN CHARGE: PZ
DATE: OCT 4, 2000

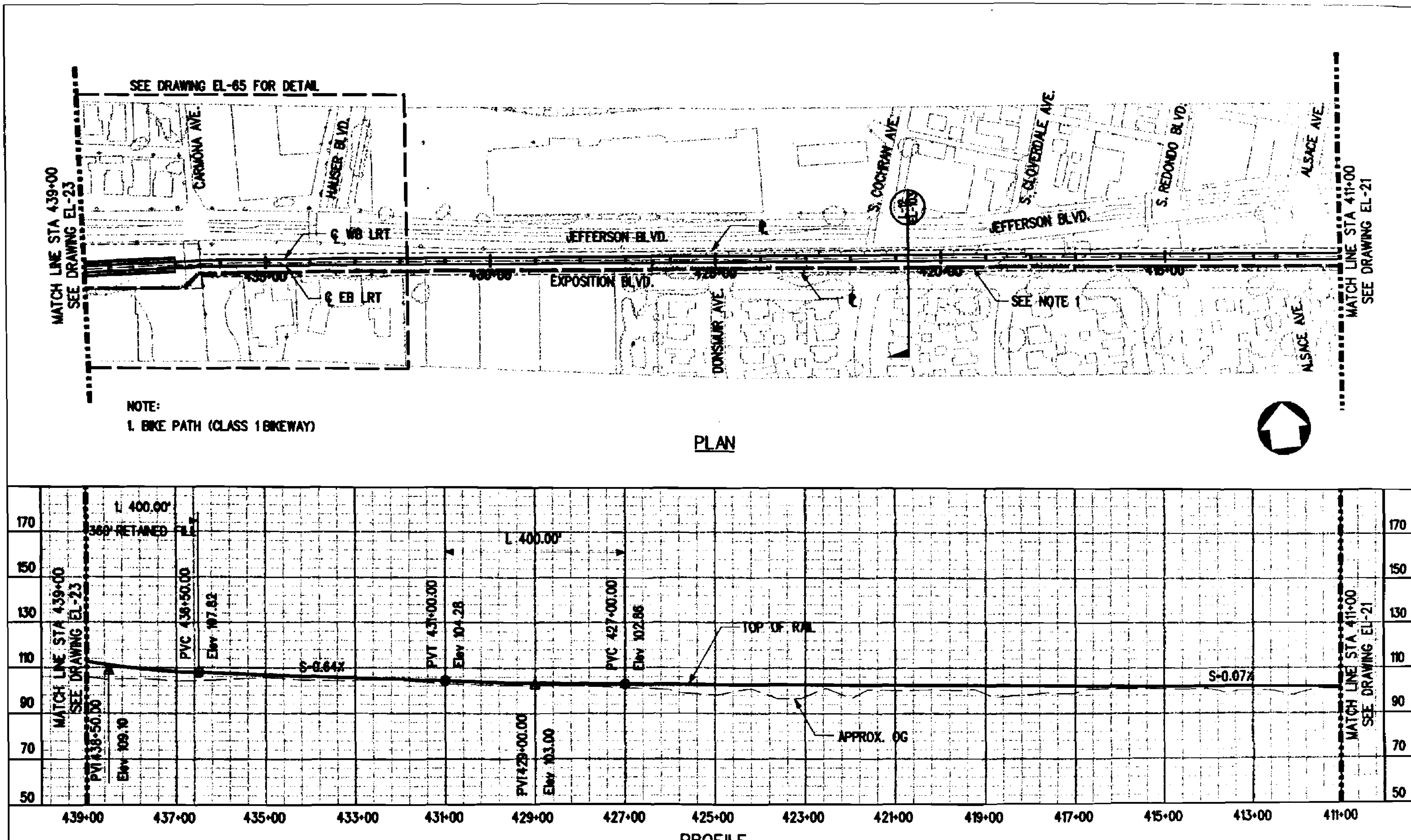
Korve Engineering

SUBMITTED:
APPROVED:

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 383+00 TO STA 411+00

CONTRACT NO.
DRAWING NO. EL-21
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 103



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED

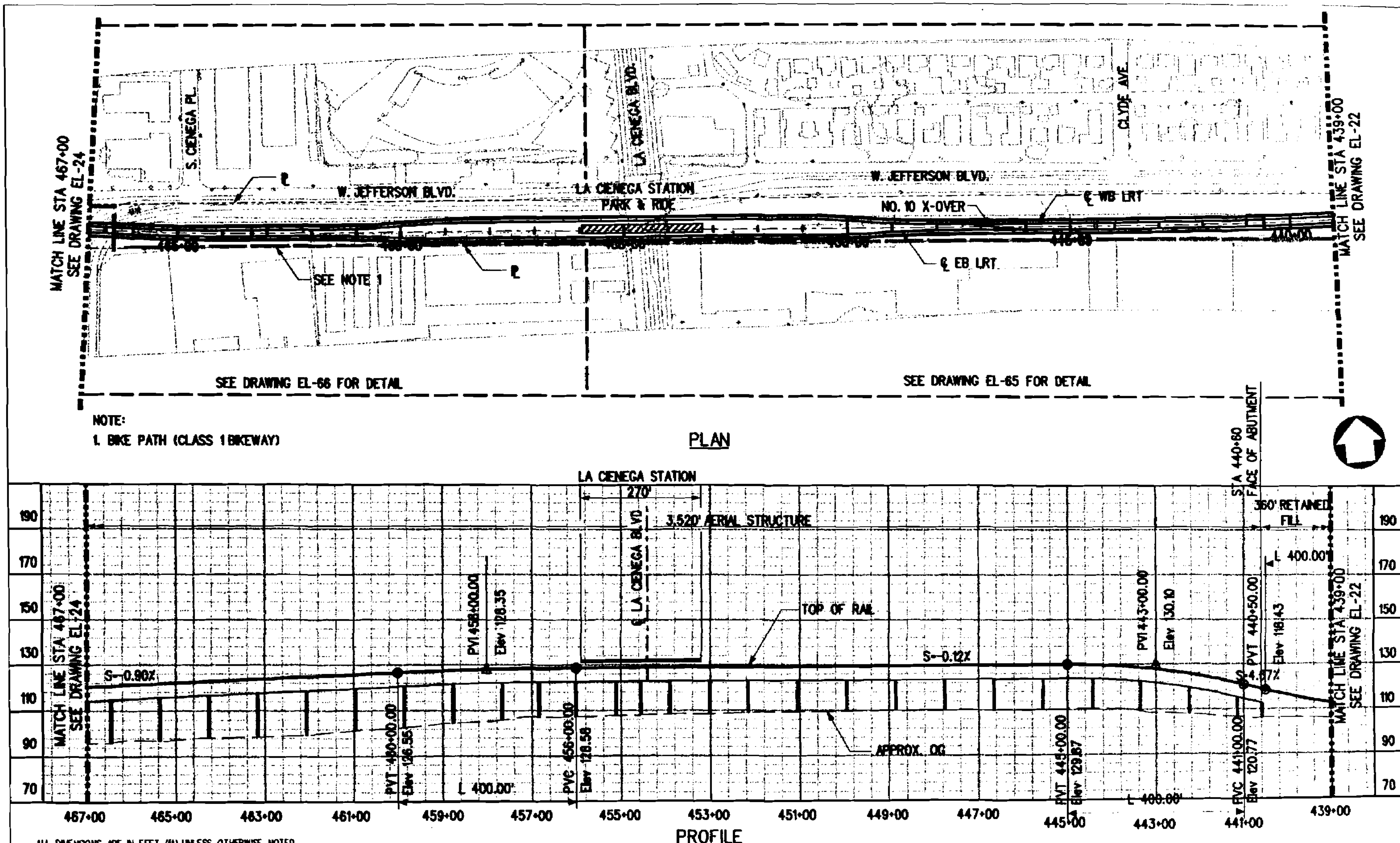
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 411+00 TO STA 439+00

CONTRACT NO.
DRAWING NO. EL-22
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 104

10:53:27 AM 12/27/00 p:\Projects\1999\Midcity\design_cul_sheets\EL022.dgn
USER8



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

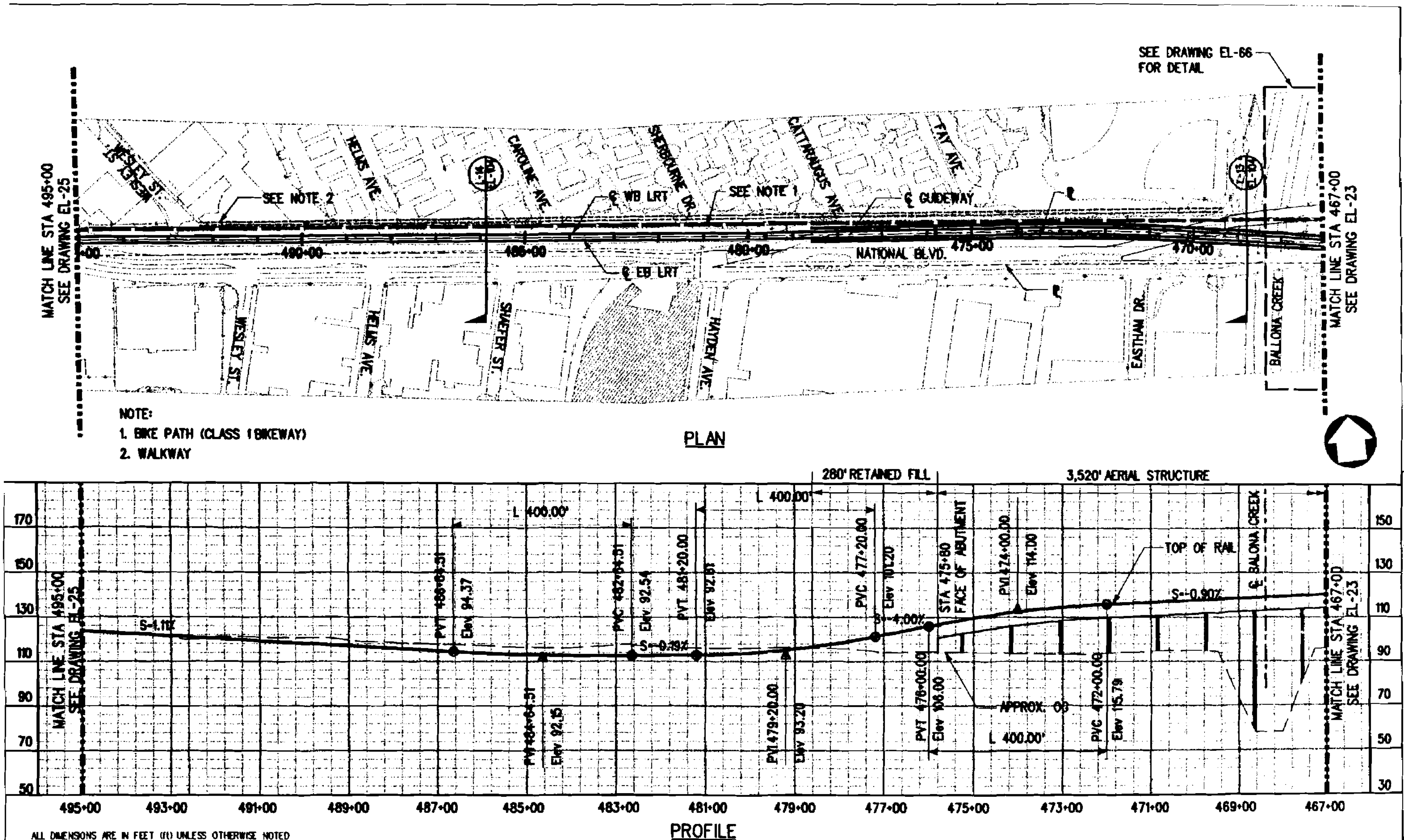
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 439+00 TO STA 467+00

CONTRACT NO.
DRAWING NO. EL-23
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 105



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

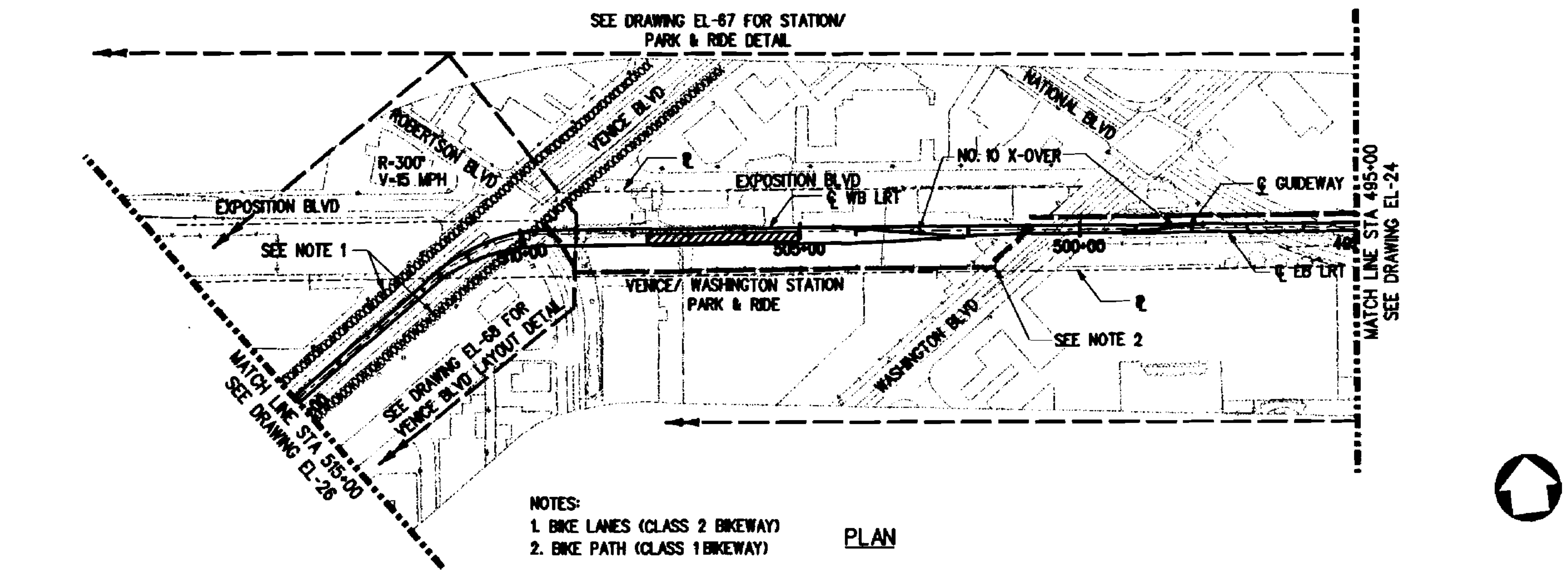
Korve Engineering

SUBMITTED
APPROVED

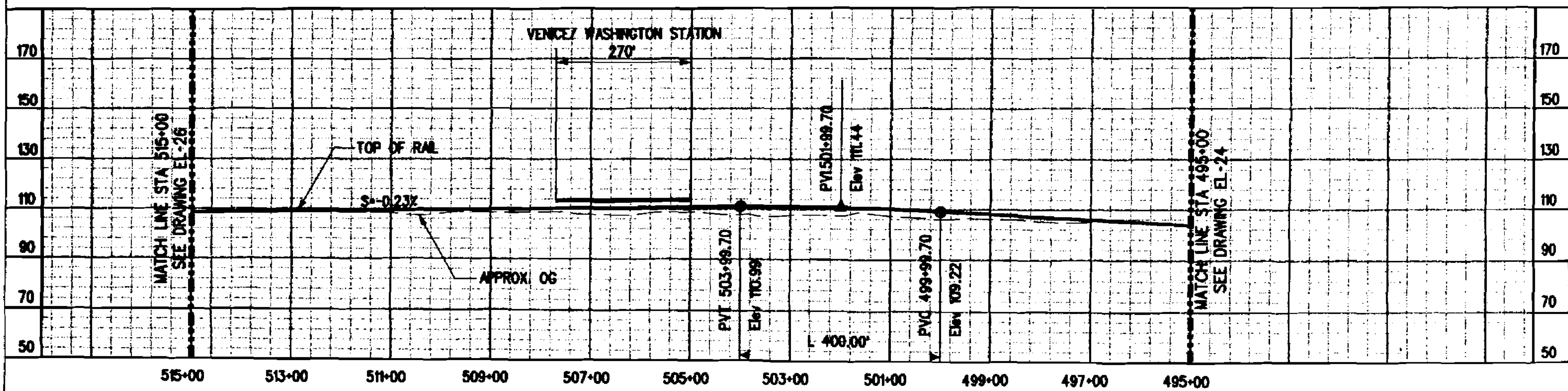
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA STA 467+00 TO STA 495+00

CONTRACT NO.
DRAWING NO. EL-24
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 106



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

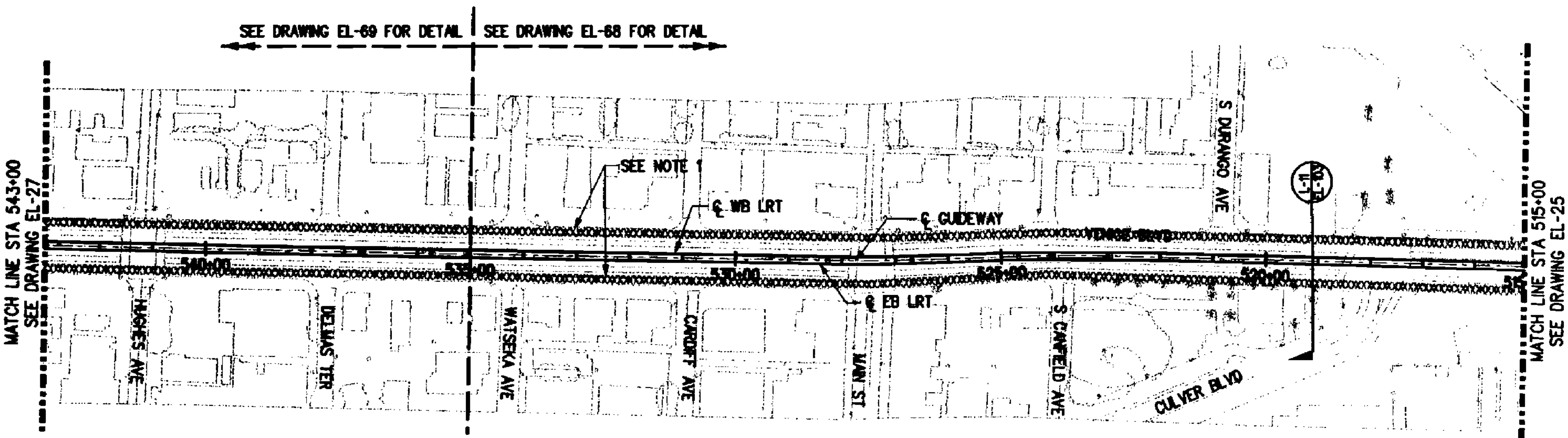
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

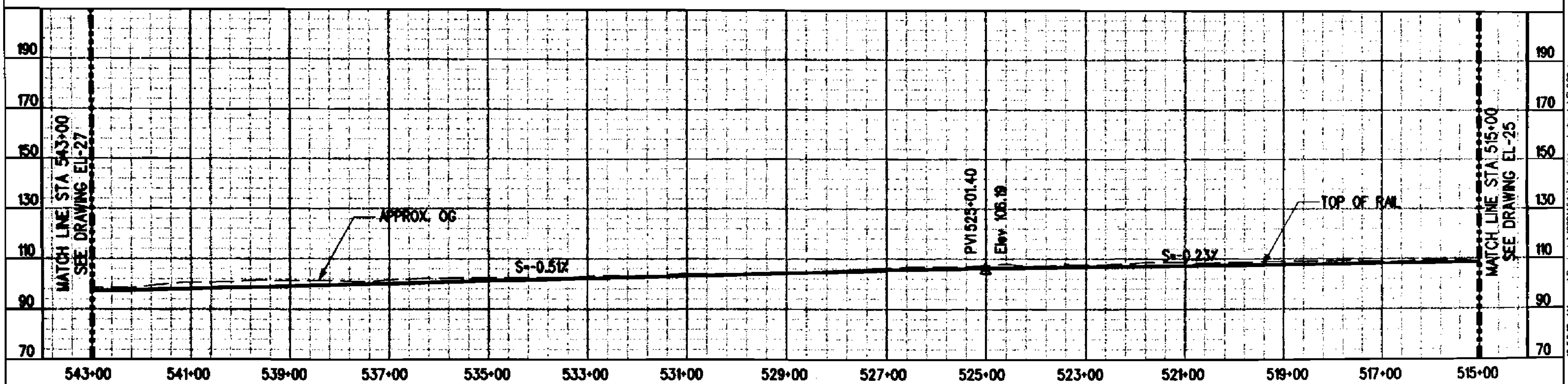
PLAN & PROFILE (BASELINE)
STA STA 495+00 TO STA 515+00

CONTRACT NO.
DRAWING NO. EL-25
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 107



NOTES:
1. BIKE LANES (CLASS 2 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

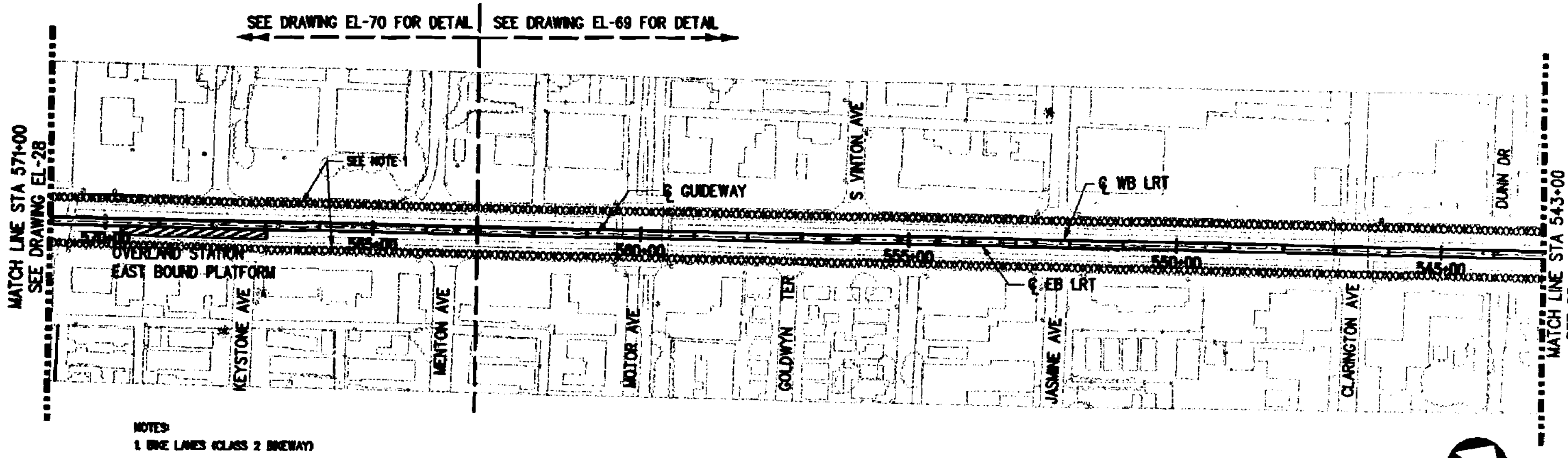
Korve Engineering

SUBMITTED
APPROVED

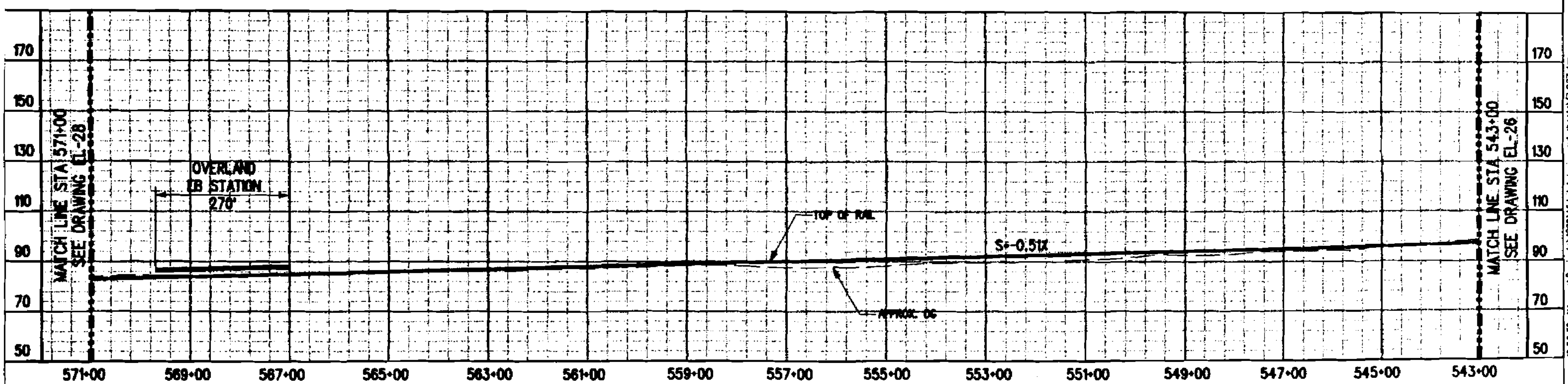
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 515+00 TO STA 543+00

CONTRACT NO
DRAWING NO. EL-26
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 100



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

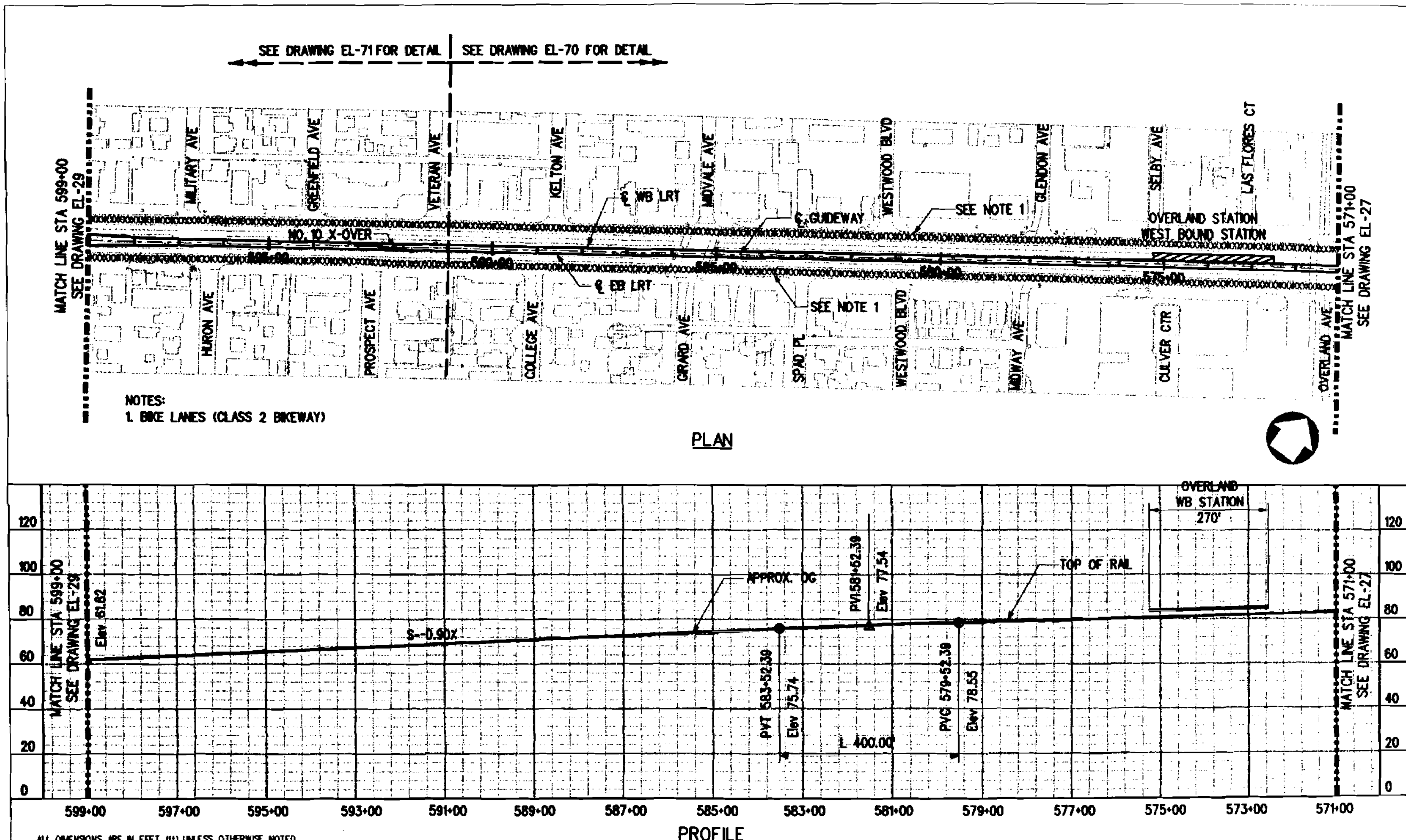
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 543+00 TO STA 571+00

CONTRACT NO.
DRAWING NO. EL-27
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 109



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

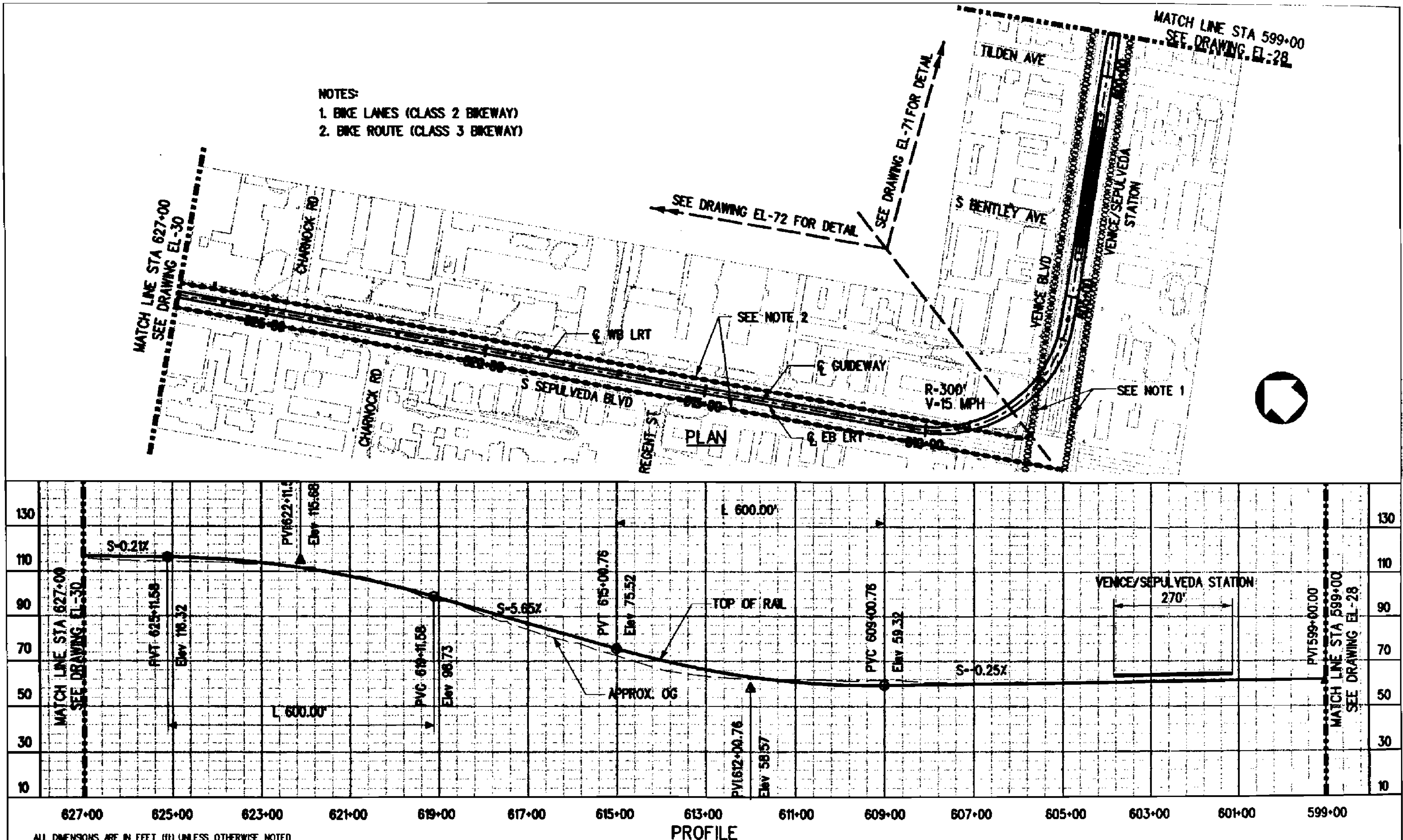
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 571+00 TO STA 599+00

CONTRACT NO.
DRAWING NO. EL-28
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 110

12/27/00



REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

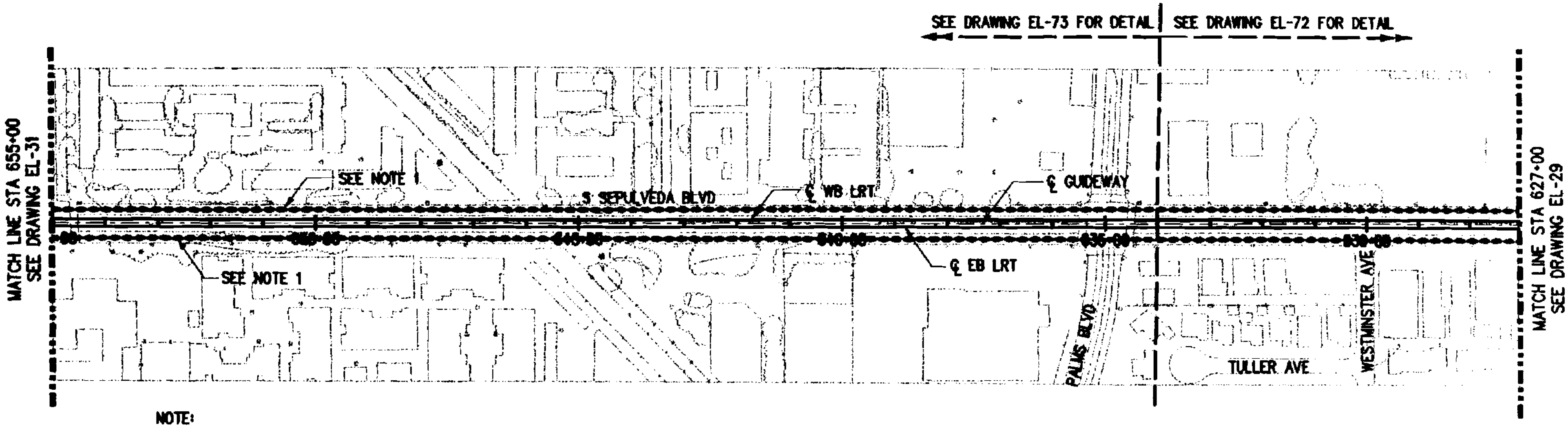
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

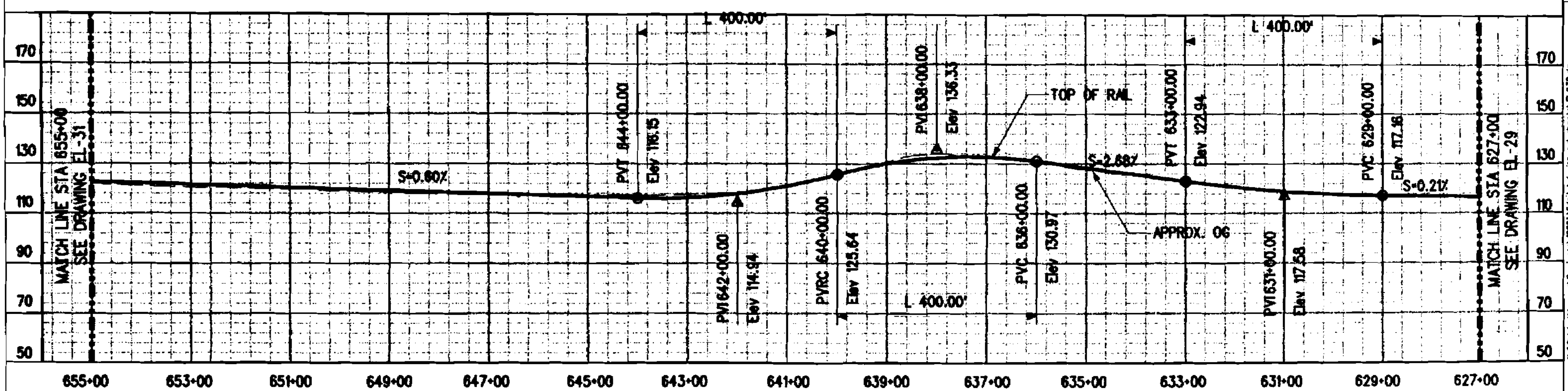
PLAN & PROFILE (BASELINE)
STA 599+00 TO STA 627+00

CONTRACT NO.
DRAWING NO. EL-29
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 111



NOTE:
1. BIKE ROUTE (CLASS 3 BIKEWAY)

PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

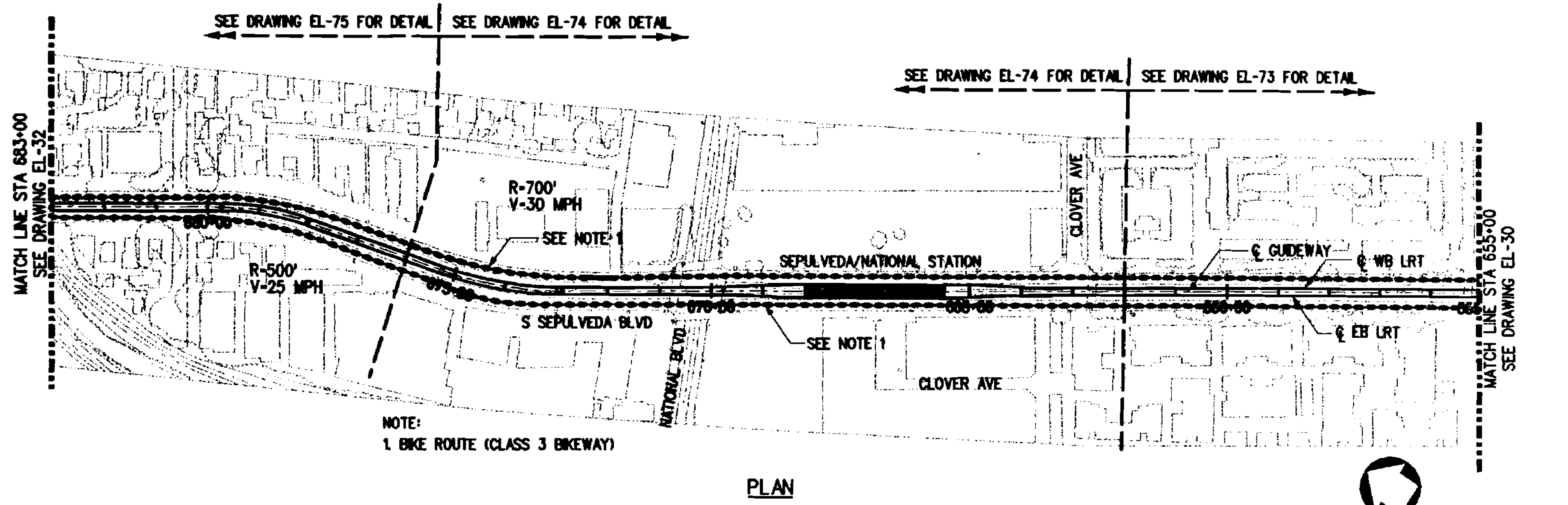
Korve Engineering

SUBMITTED
APPROVED

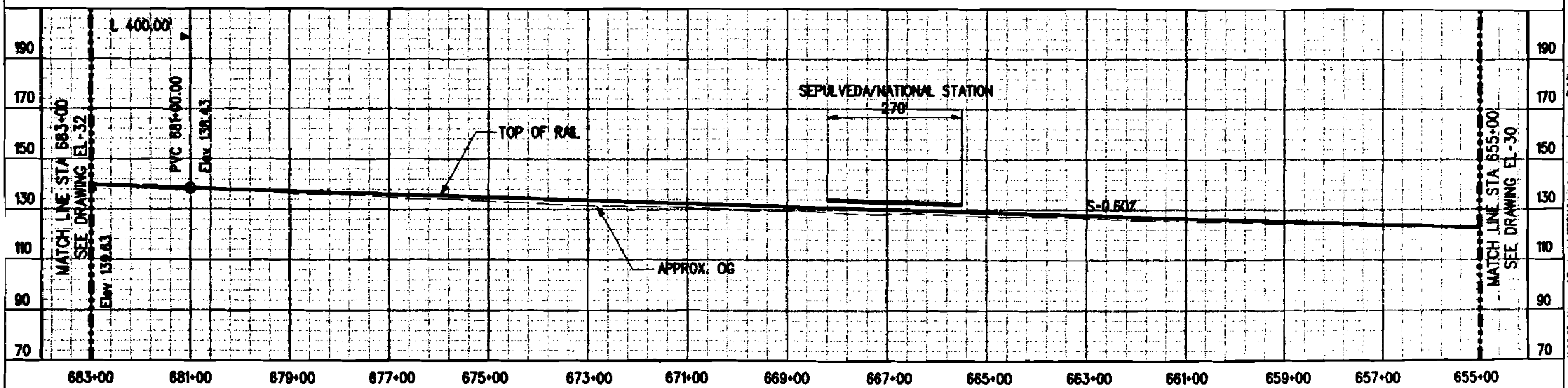
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE BASELINE
STA 627+00 TO STA 655+00

CONTRACT NO.
DRAWING NO. EL-30
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 112



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

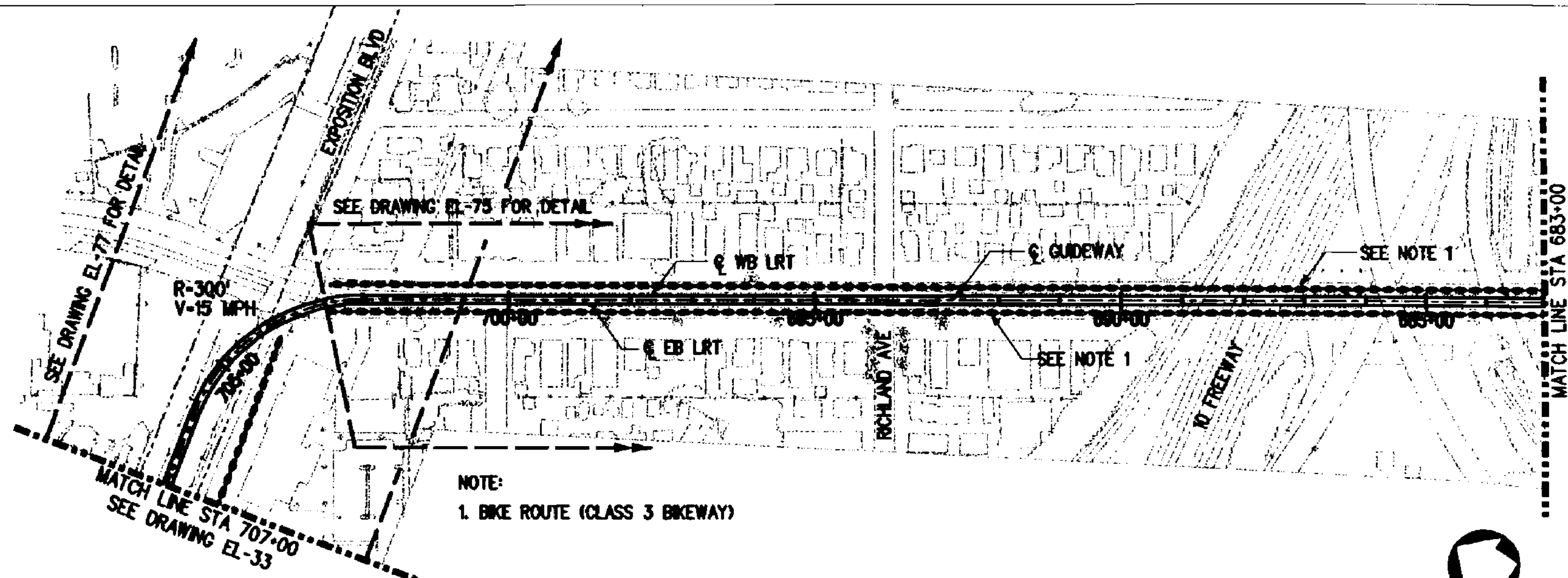
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

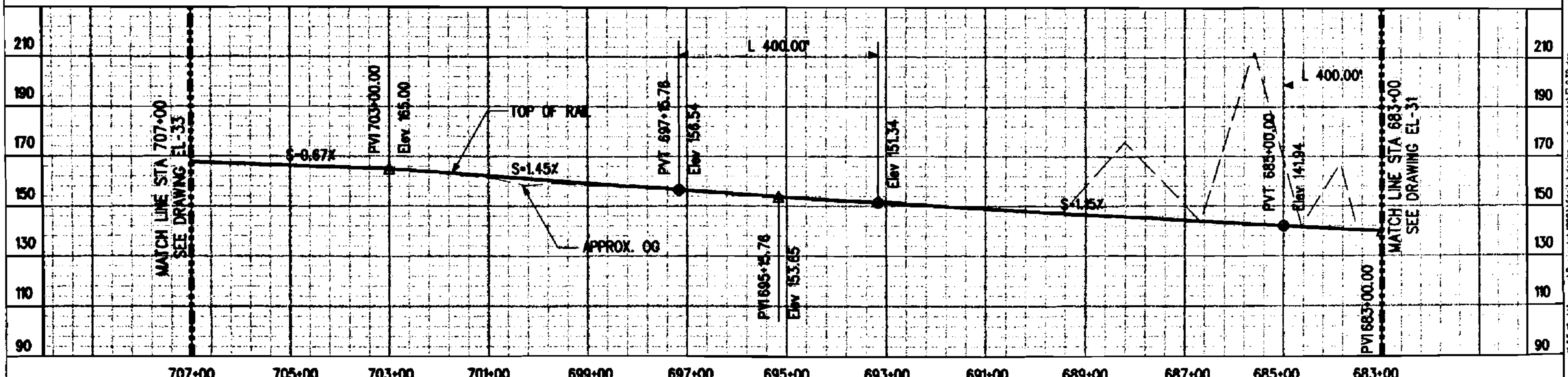
PLAN & PROFILE (BASELINE)
STA 655+00 TO STA 683+00

CONTRACT NO.
DRAWING NO. EL-31
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 113

12/27/00 11:03:55 AM p:\Projects\1999\midcity\design_cd_sheets\EL031.dgn



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

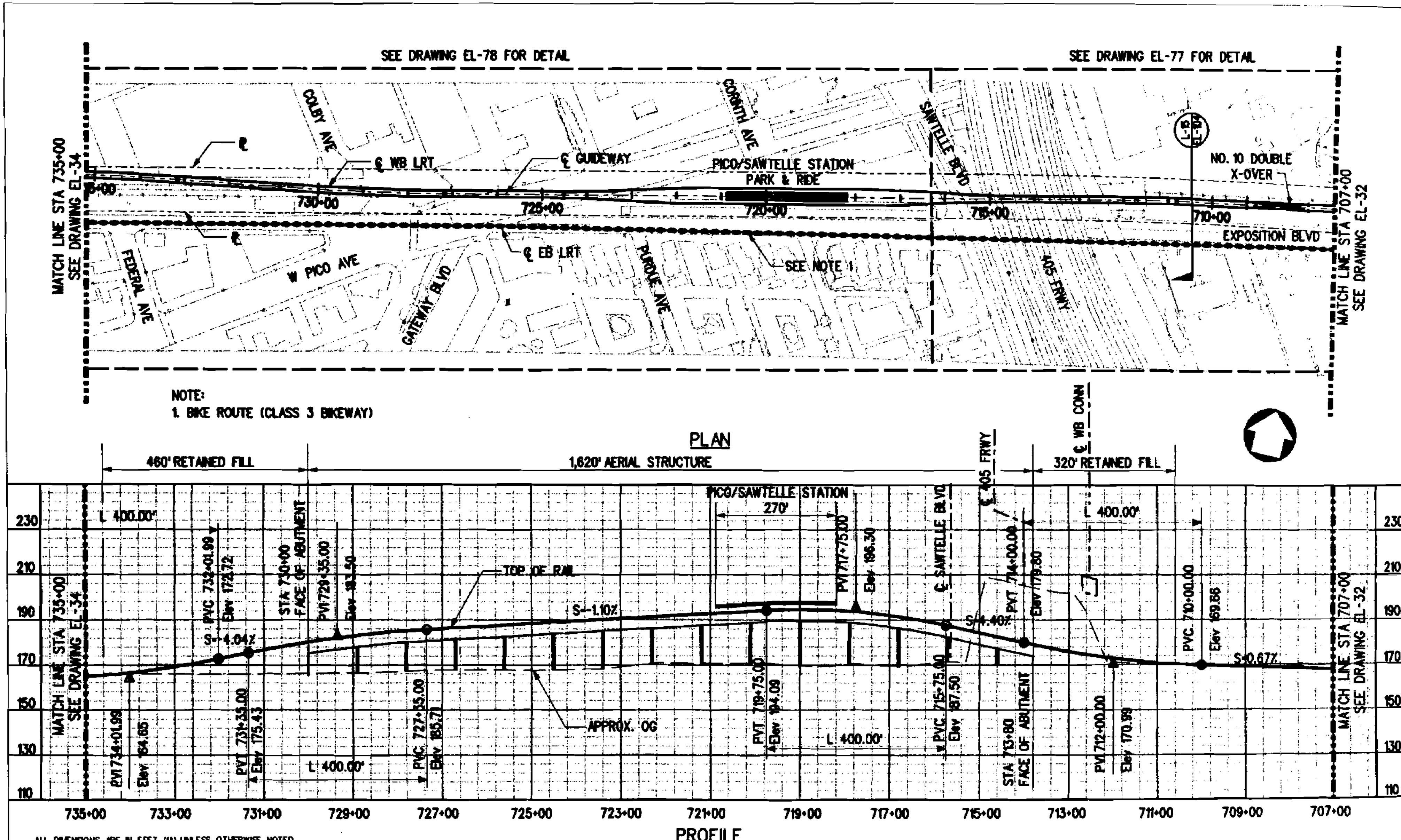
SUBMITTED ______
APPROVED ______

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 683+00 TO STA 707+00

CONTRACT NO.
DRAWING NO. EL-32
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 114

p:\Projects\1999\Modcity\design cut sheets\EL032.dgn 11:05:16 AM 12/27/00 USER



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

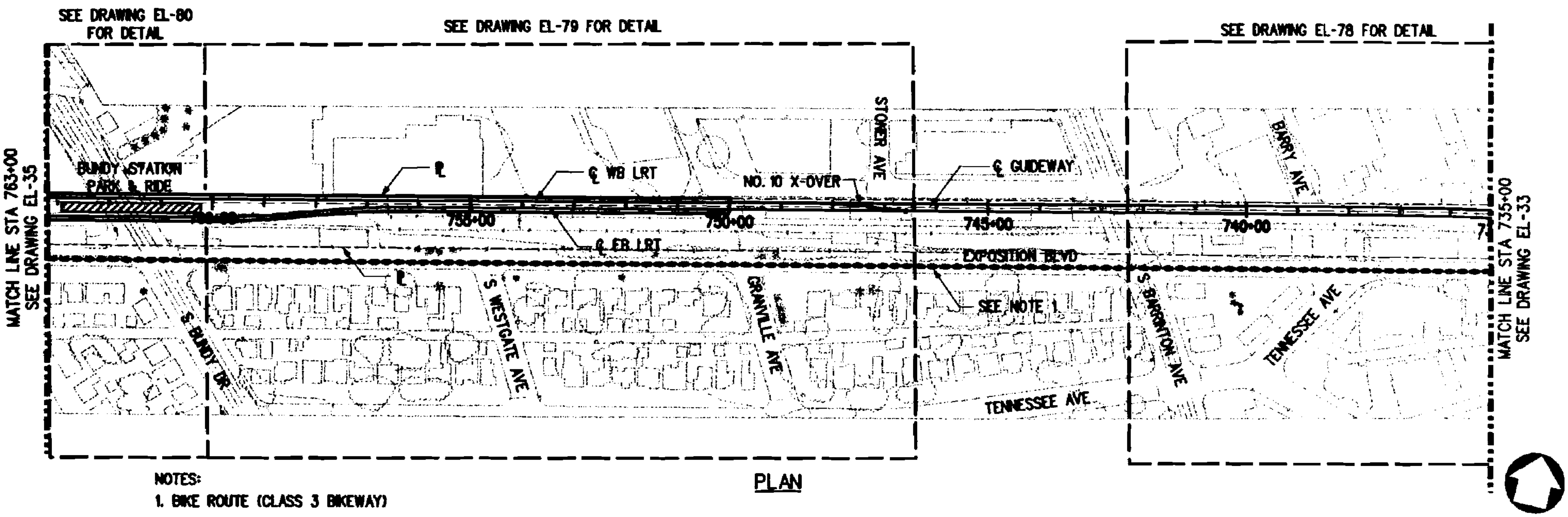
Korve Engineering

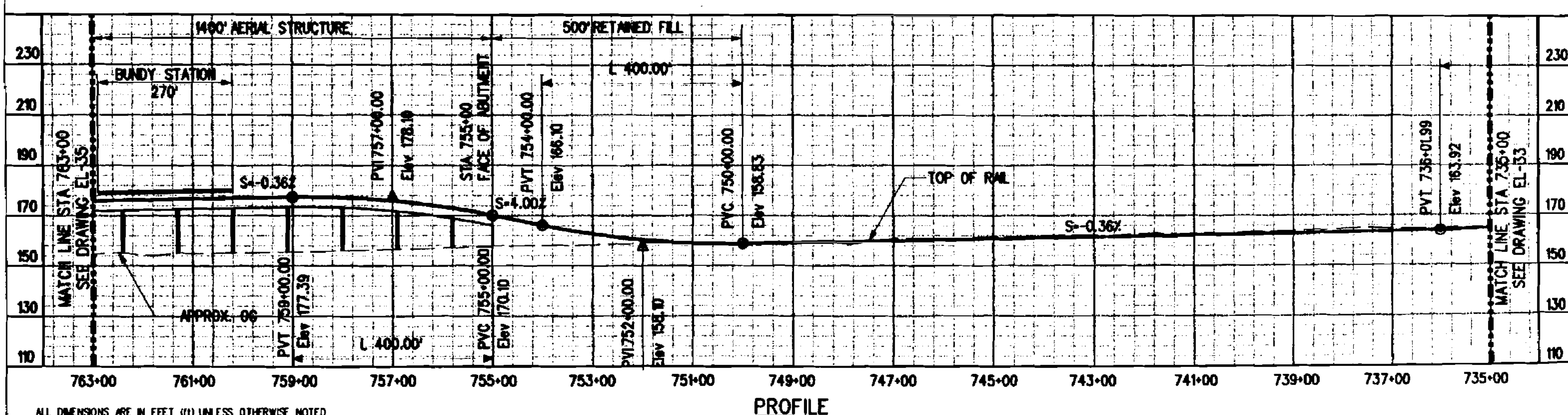
SUBMITTED ______
APPROVED ______

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 707+00 TO STA 735+00

CONTRACT NO.
DRAWING NO EL-33
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 115





ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JR
DRAWN BY	JR
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

SUBMITTED

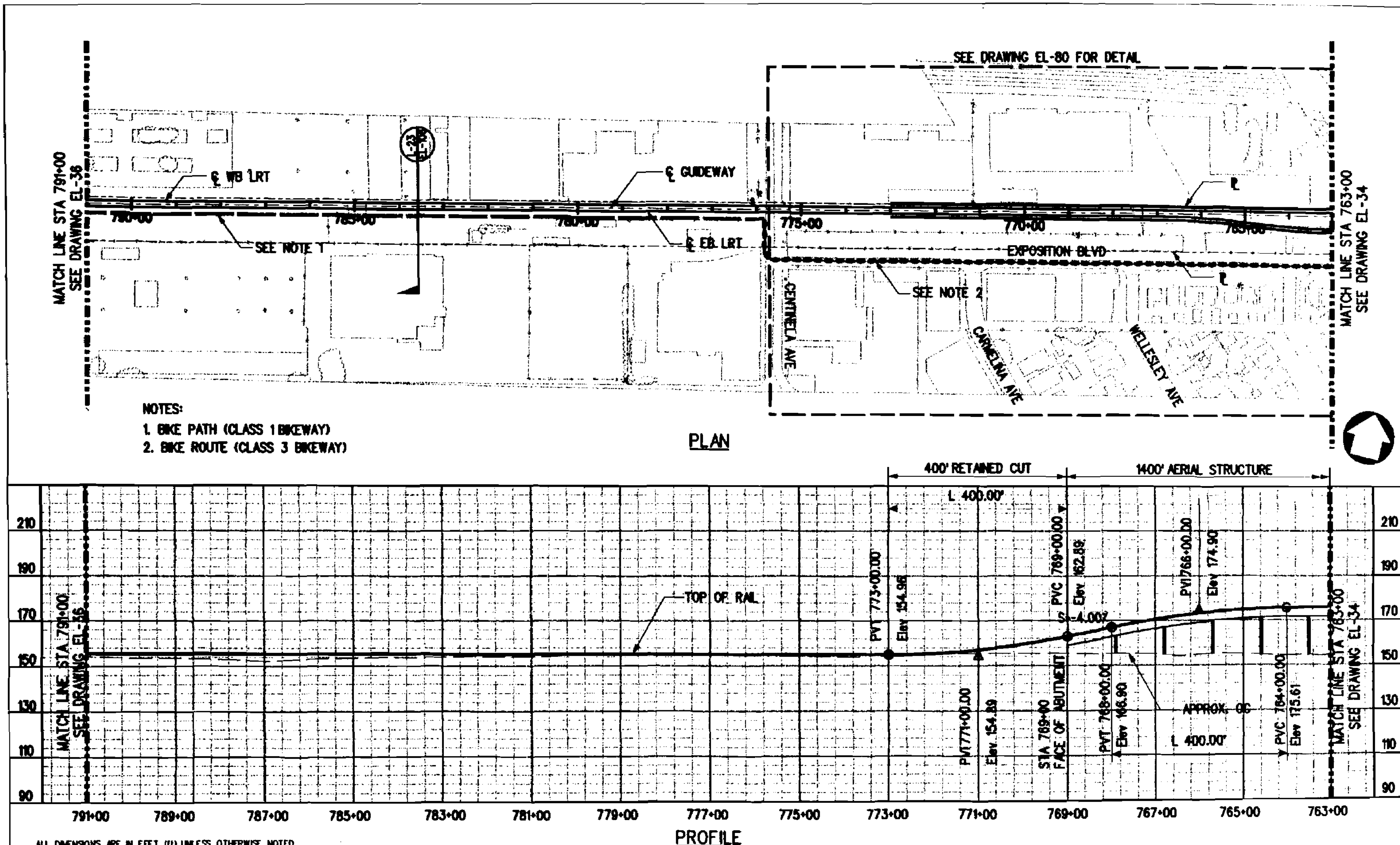
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 735+00 TO STA 763+00

CONTRACT NO.	
DRAWING NO	EL-34
REV	0
SCALE	HORIZ 1"=200' VERT 1"=40'
SHEET NO.	116

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

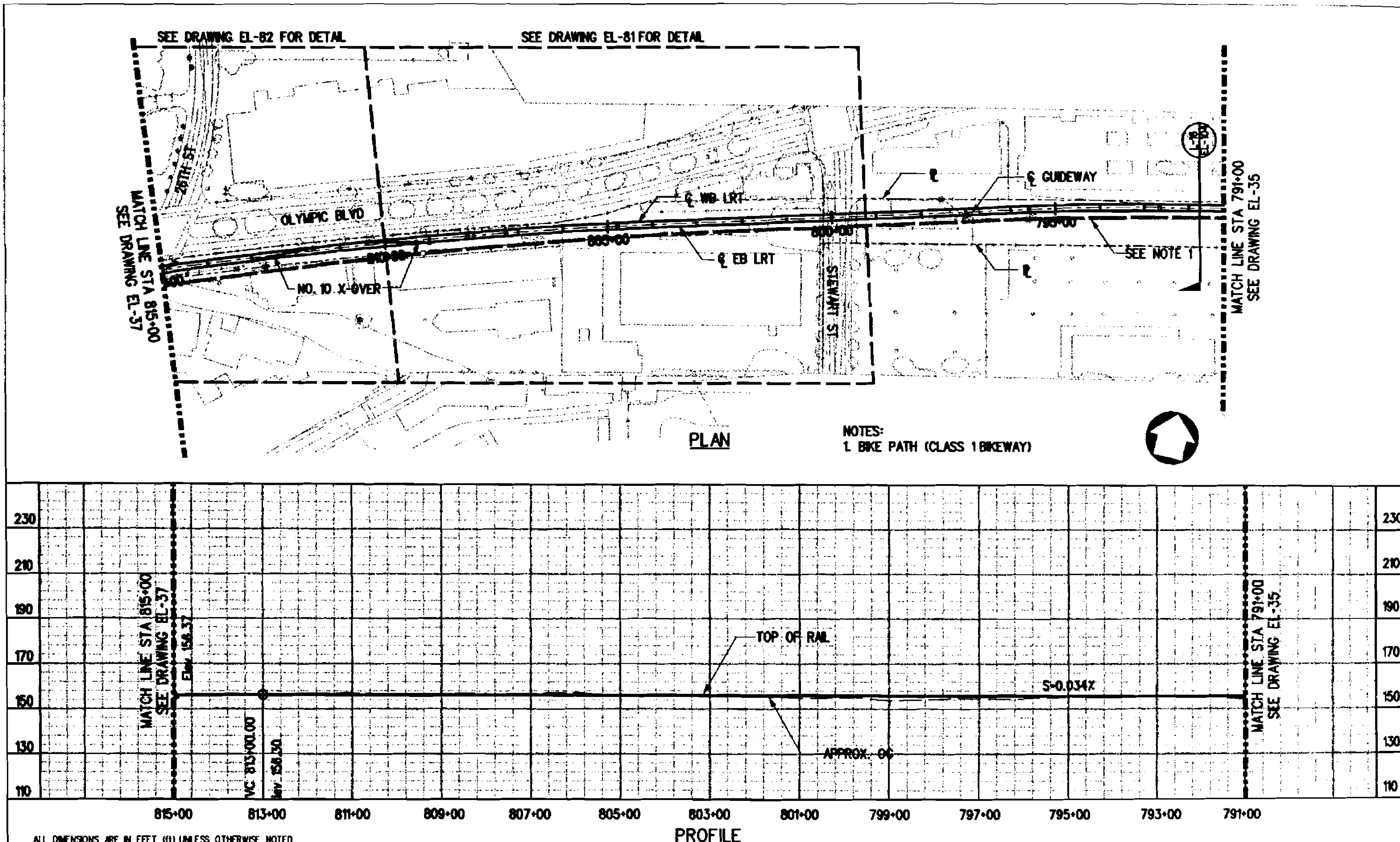
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 763+00 TO STA 791+00

CONTRACT NO.
DRAWING NO. EL-35
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 117



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

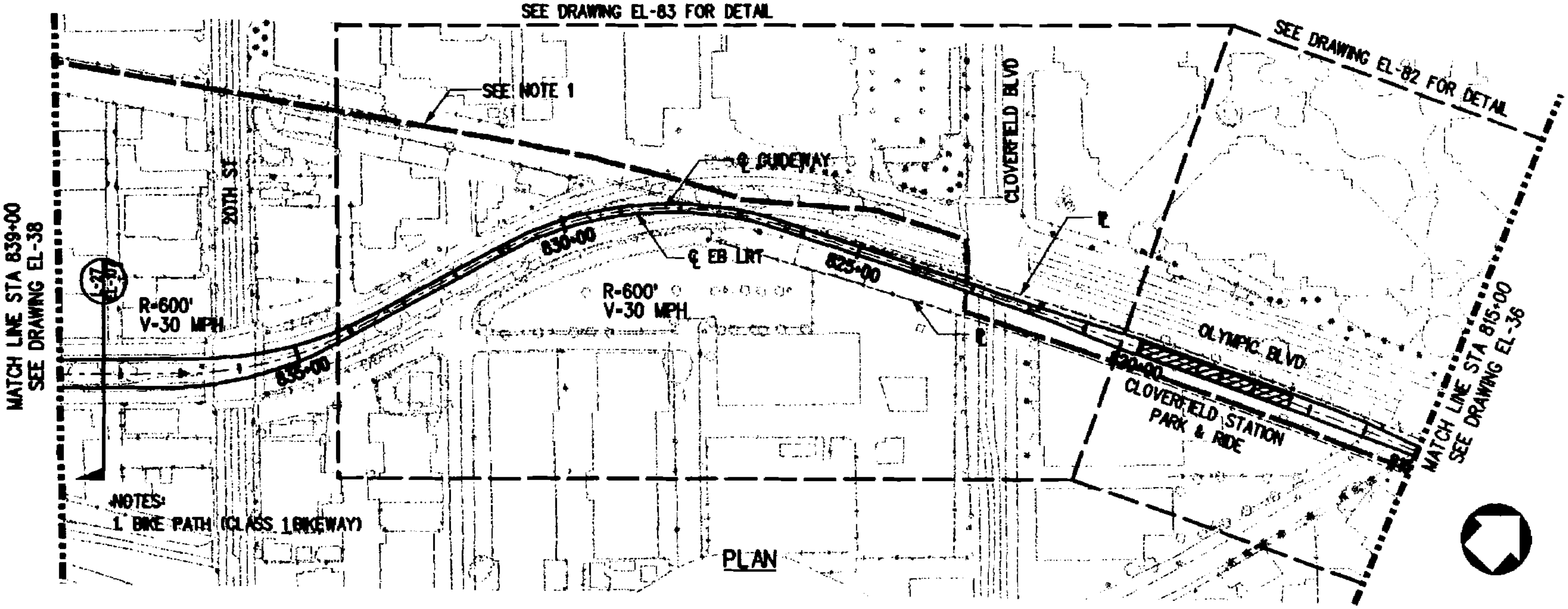
SUBMITTED
APPROVED

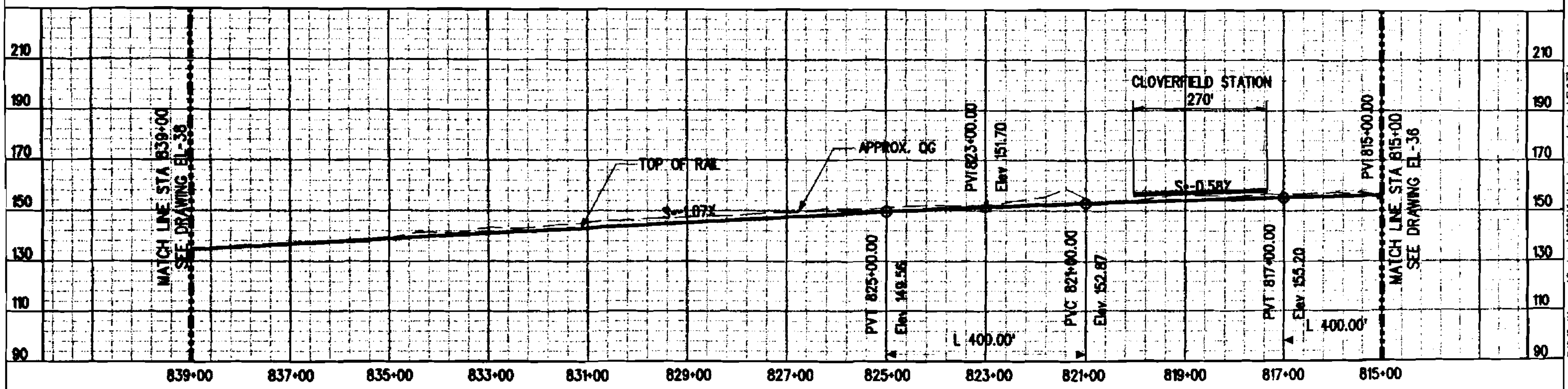
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 791+00 TO STA 815+00

CONTRACT NO
DRAWING NO. EL-36
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO 118

11:09:37 AM p:\Projects\1999\Midcity\design cut sheets\EL036.dgn 12/27/00 USER





ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

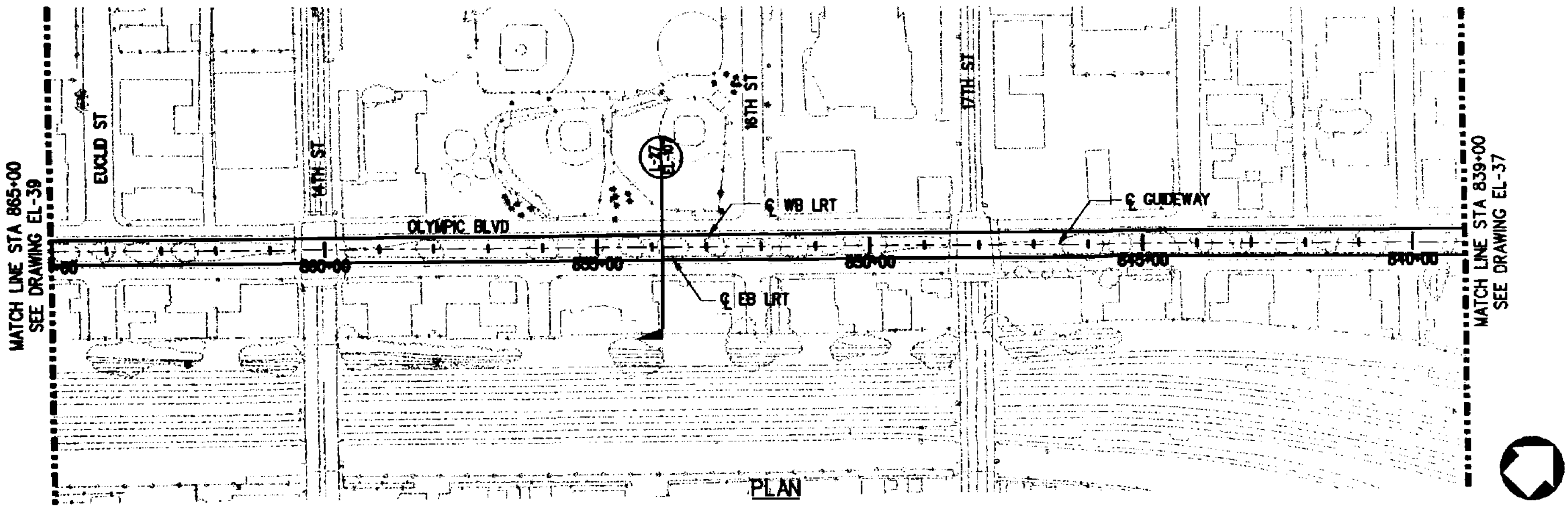
Korve Engineering

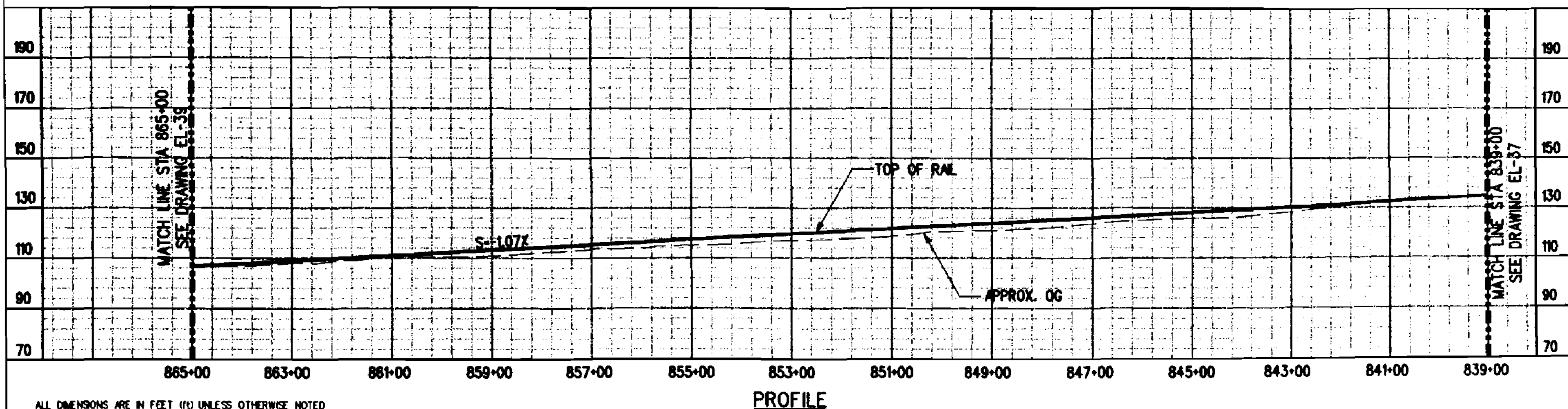
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

PLAN & PROFILE (BASELINE)
STA 815+00 TO STA 839+00

CONTRACT NO
DRAWING NO. EL-37
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 119





ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY: JR
DRAWN BY: JR
CHECKED BY: PZ
IN CHARGE: PZ
DATE: OCT 4, 2000

Korve Engineering

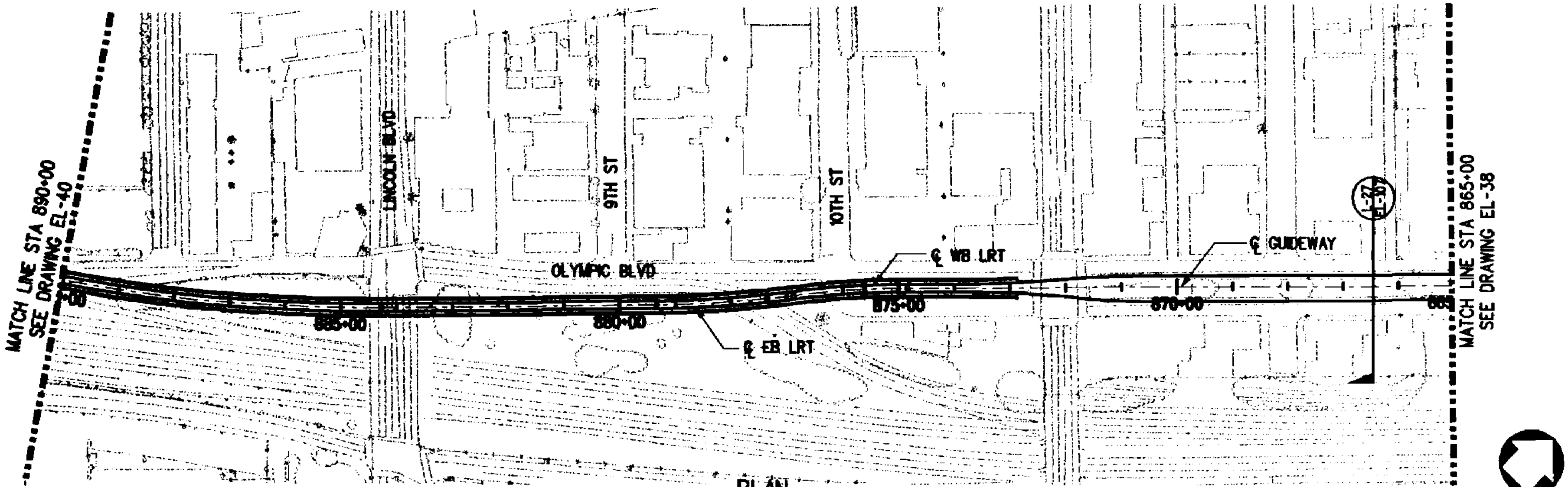
SUBMITTED:
APPROVED:

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

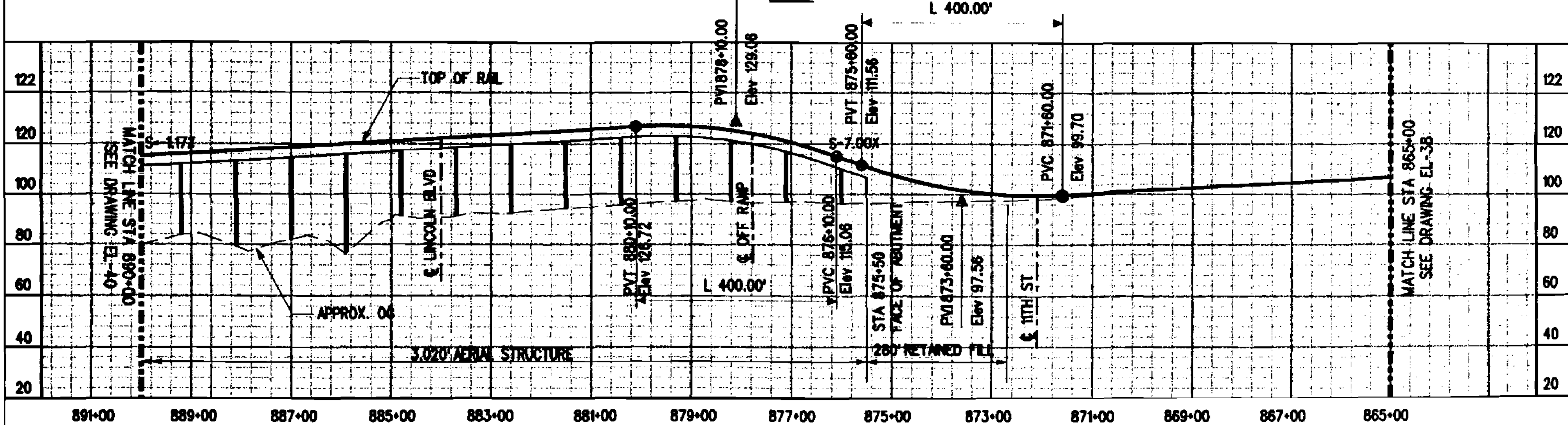
PLAN & PROFILE (BASELINE)
STA 839+00 TO STA 865+00

CONTRACT NO.
DRAWING NO. EL-38
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 120

12/27/00



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

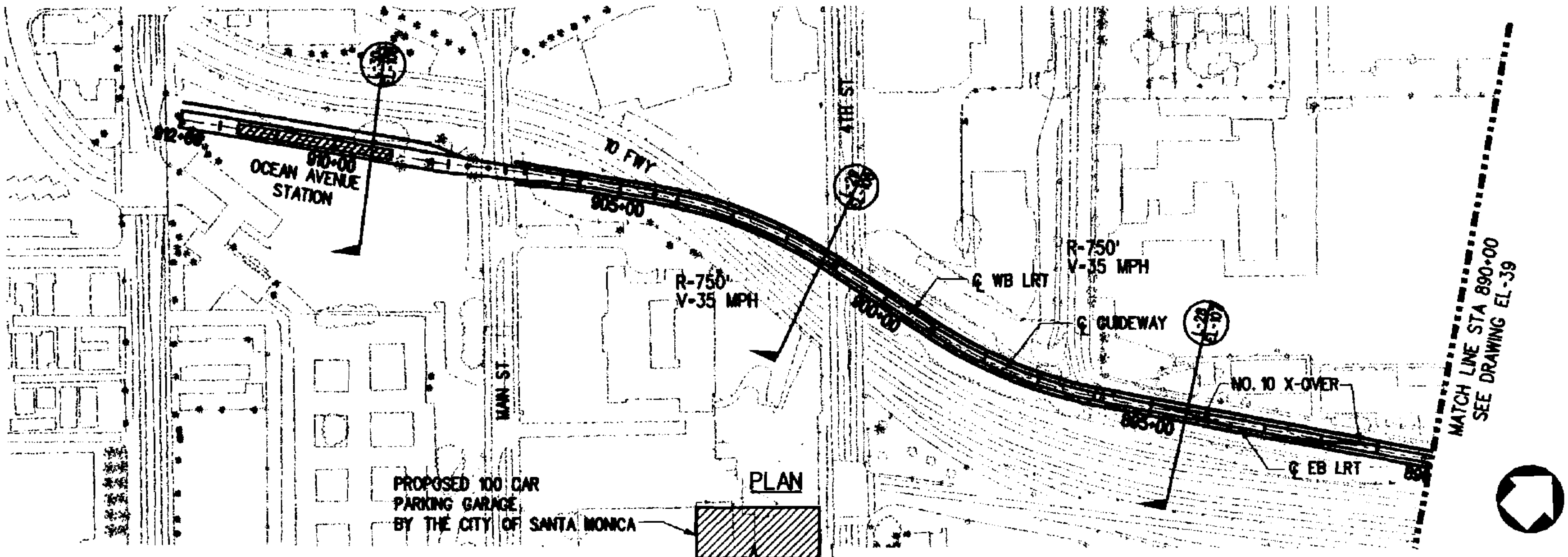
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

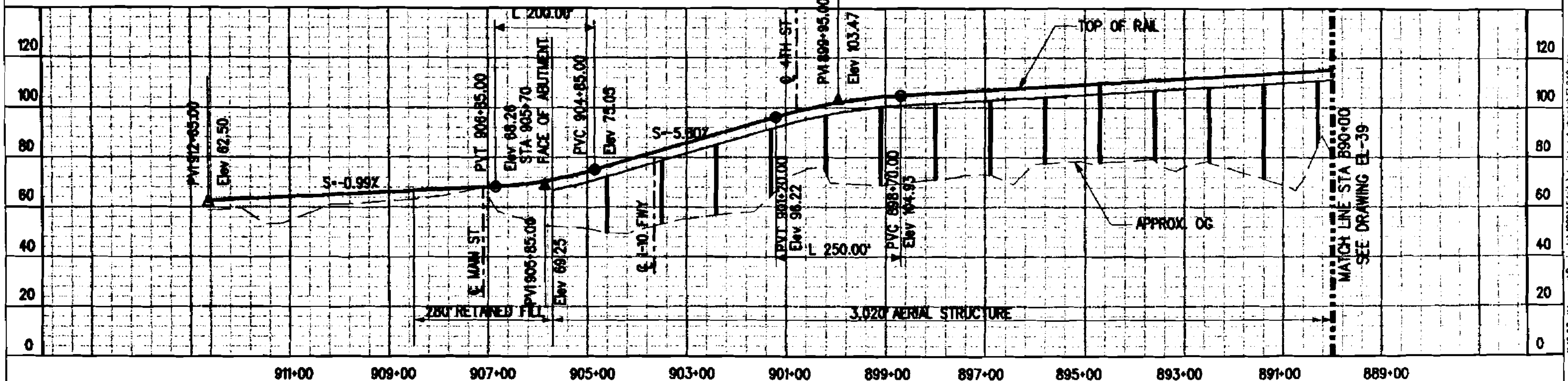
PLAN & PROFILE (BASELINE)
STA 865+00 TO STA 890+00

CONTRACT NO.
DRAWING NO. EL-39
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 121

12/27/00



PLAN



PROFILE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY	JR
DRAWN BY	JR
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

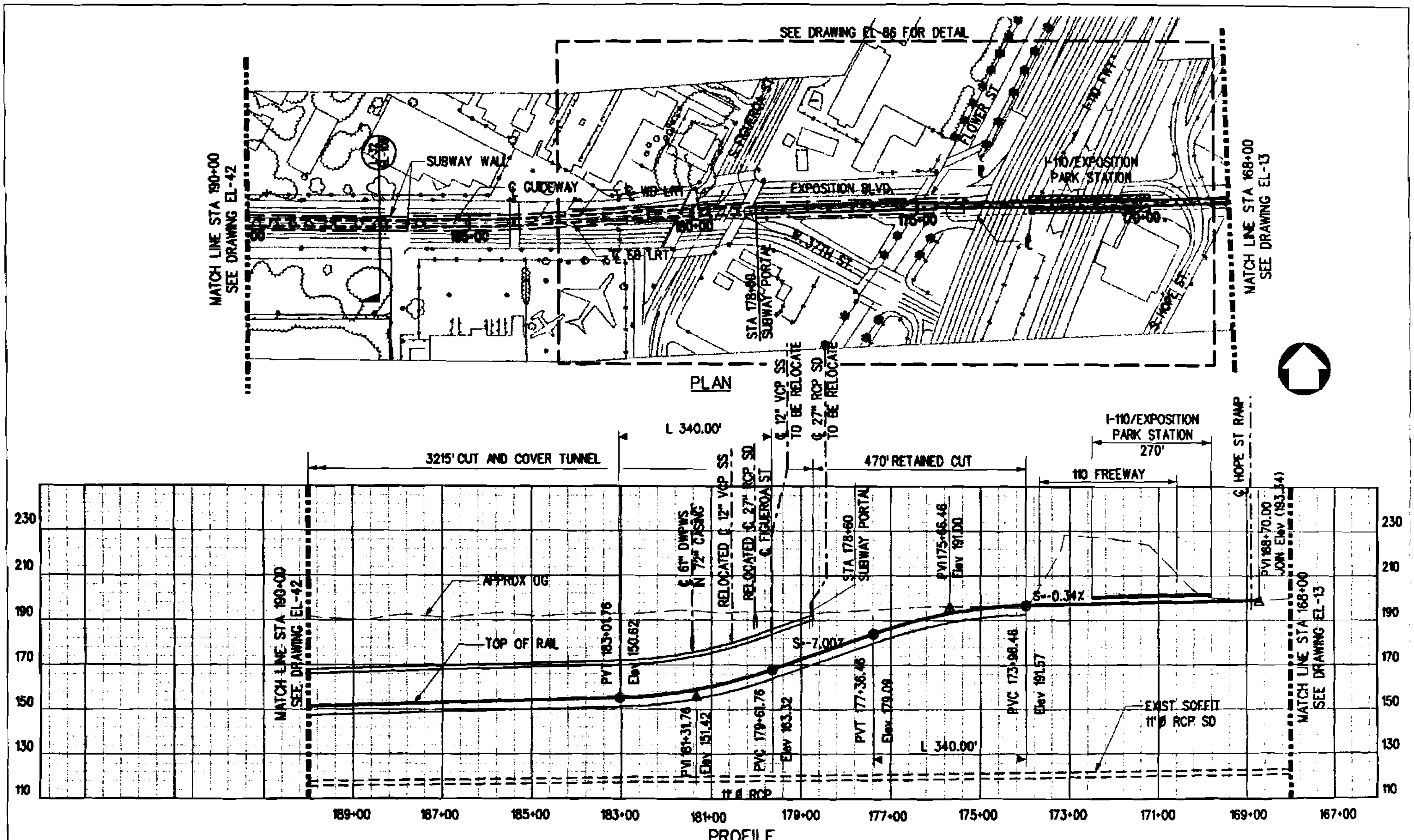
SUBMITTED:

APPROVED:

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
PLAN & PROFILE (BASELINE)
STA 890+00 TO STA 912+65.30
OCEAN AVE STATION/PARK & RIDE

CONTRACT NO.	
DRAWING NO.	EL-40
REV	0
SCALE	HORIZ 1"=200' VERT 1"=40'
SHEET NO.	122

PLEASE NOTE THAT THESE DRAWINGS ARE ONE-HALF ORIGINAL SIZE



REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

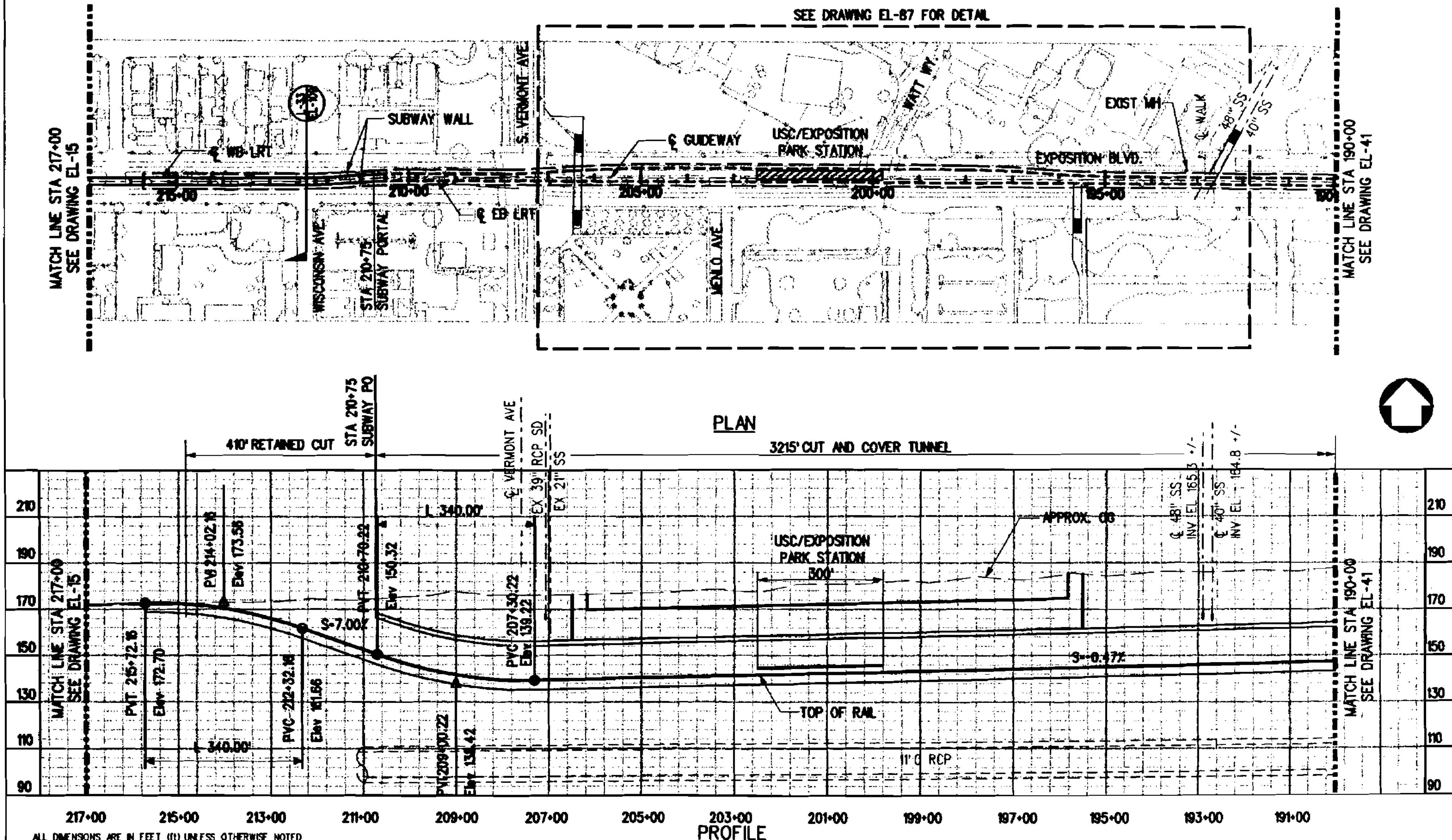
DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE FEB 12, 2001

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
(BASELINE) - CUT & COVER OPTION
PLAN & PROFILE
STA 168+00 TO STA 190+00

CONTRACT NO.
DRAWING NO. EL-41
REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 123



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JR
DRAWN BY JR
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

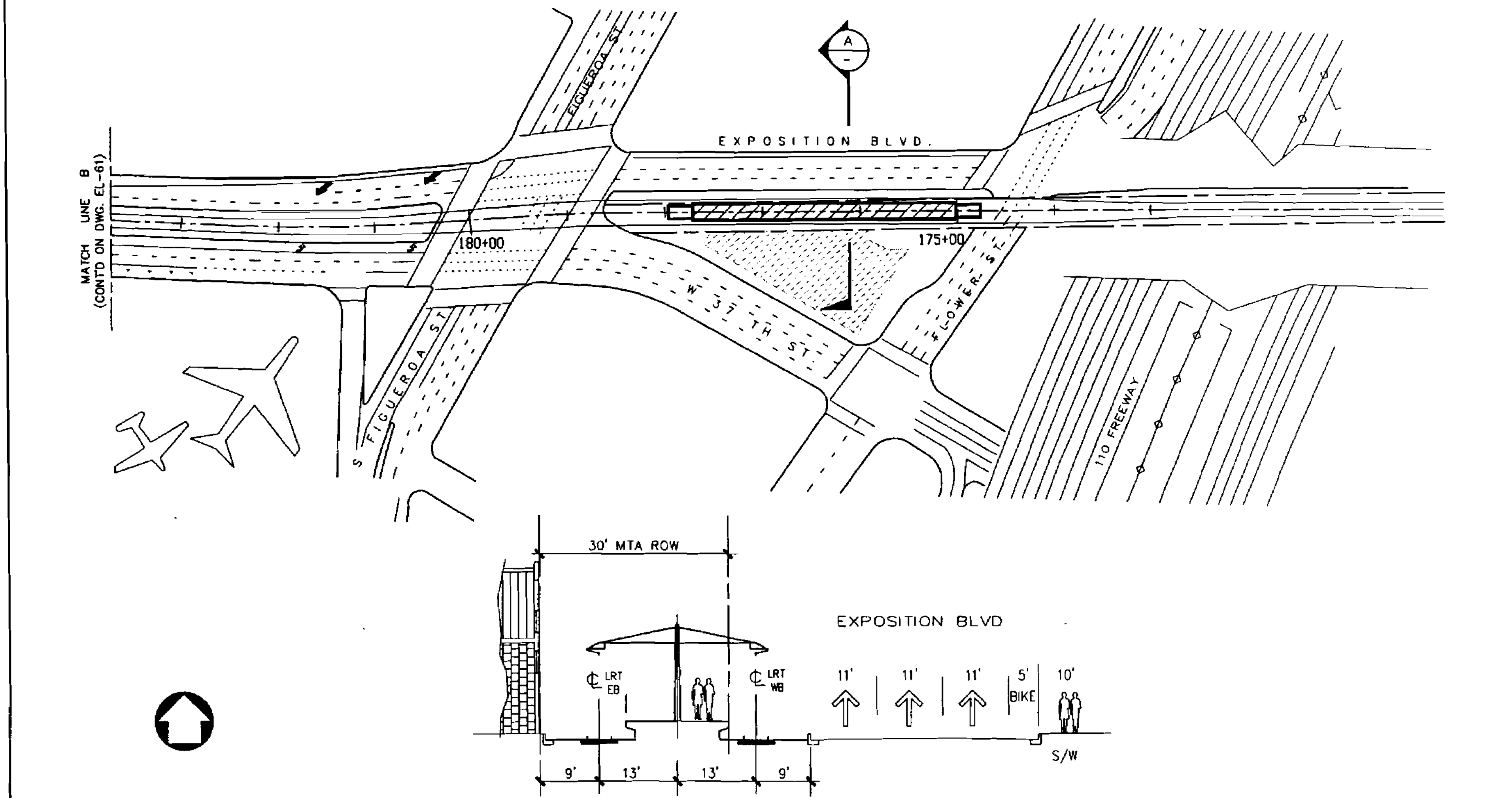
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
(BASELINE) - CUT & COVER OPTION
PLAN & PROFILE
STA 190+00 TO STA 217+00

CONTRACT NO.
DRAWING NO. EL-042 REV 0
SCALE HORIZ 1"=200' VERT 1"=40'
SHEET NO. 124

12/27/00



LRT STATION

(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

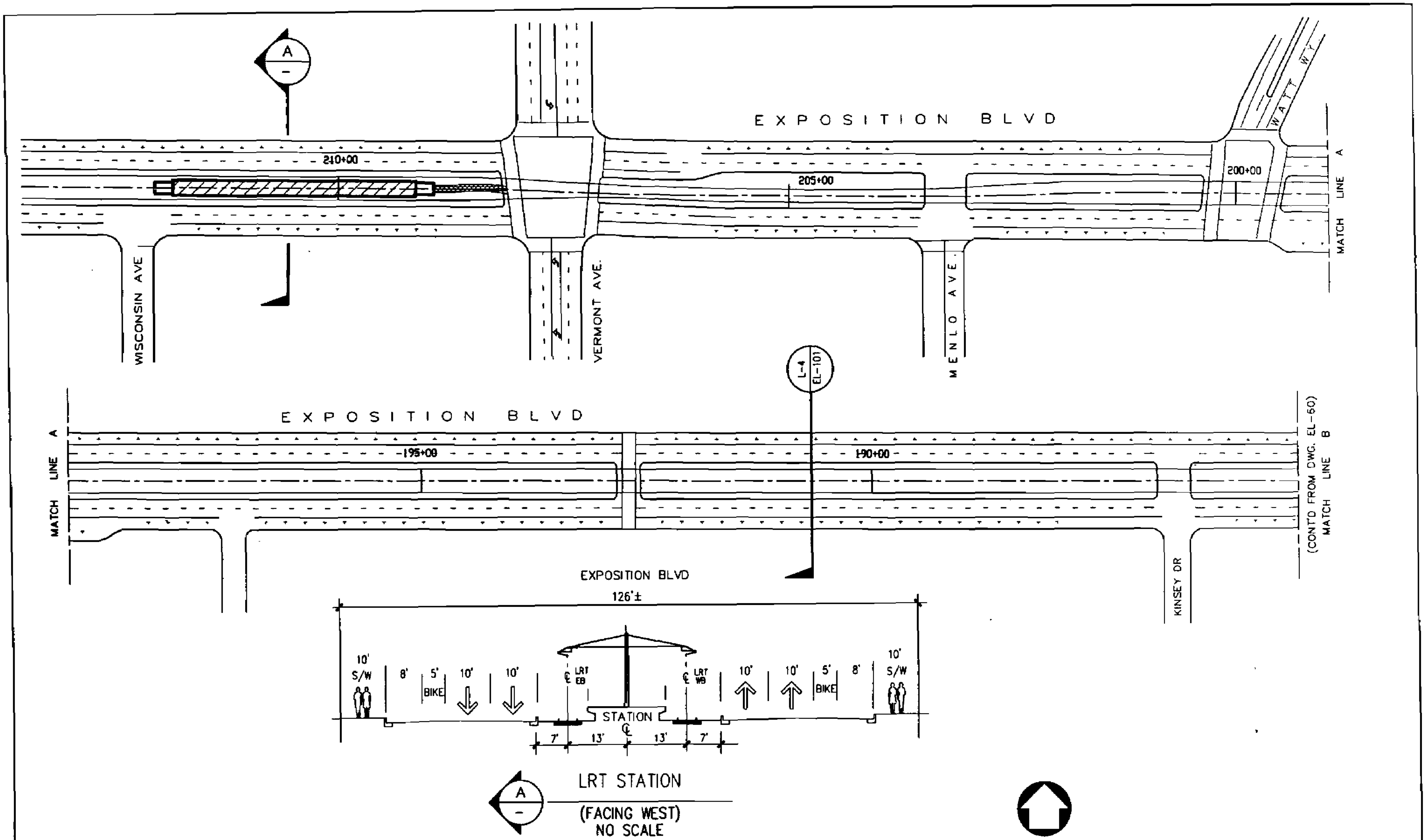
DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

SUBMITTED ____
APPROVED ____

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
I-110 / USC / EXPOSITION PARK STATION

DRAWING NO	EL-60
SCALE	1"=100'
SHEET NO	125



LRT STATION

(FACING WEST)
NO SCALE

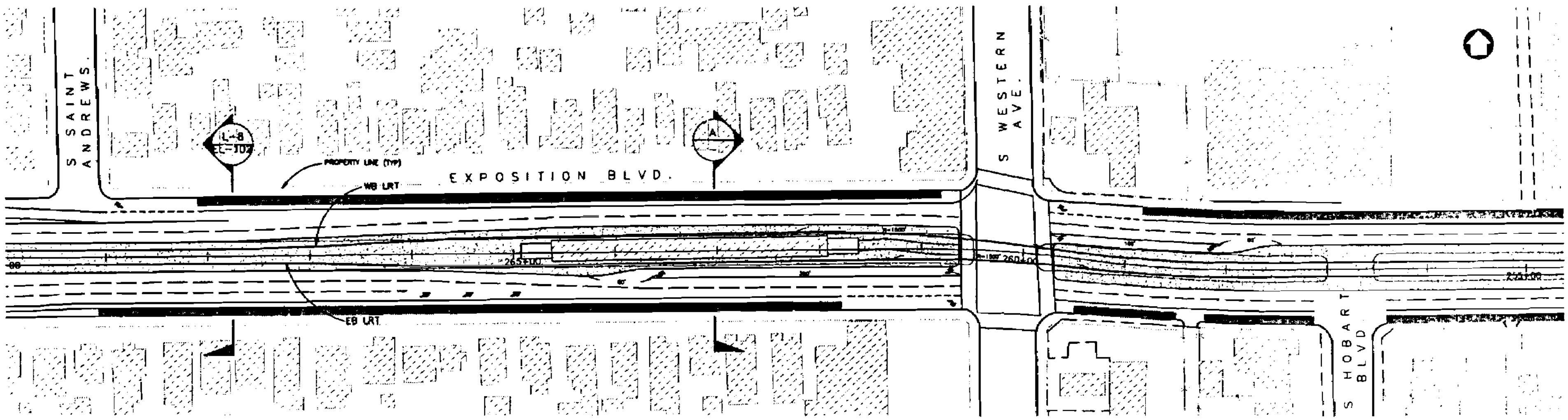
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

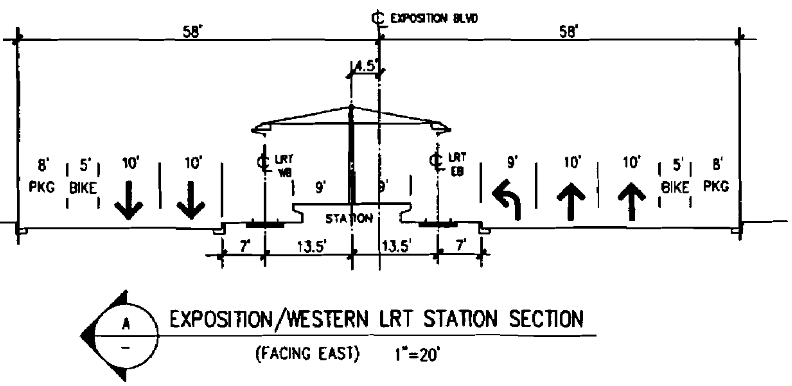
DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
VERMONT STATION AND
EXPOSITION BLVD TO FIGUEROA ST

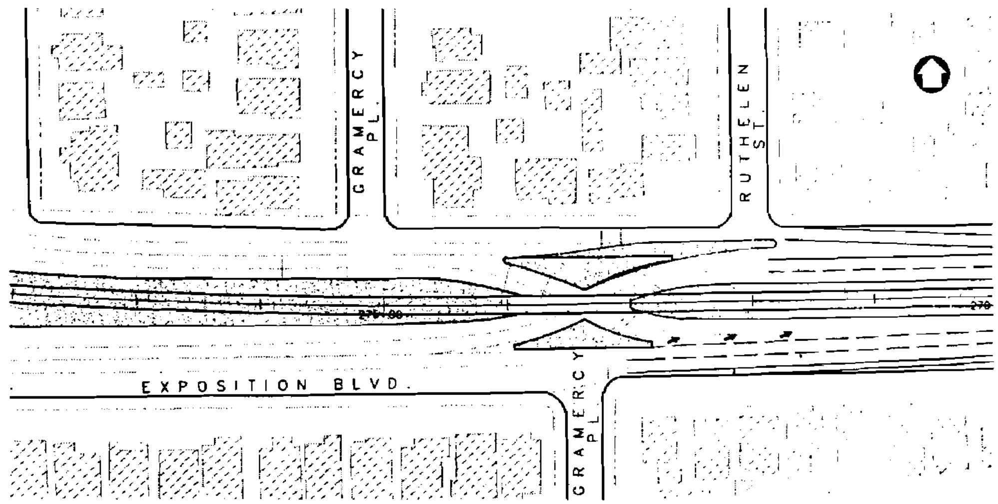
DRAWING NO. EL-61
SCALE 1"=100'





EXPOSITION/WESTERN LRT STATION SECTION

(FACING EAST) 1"=20'



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

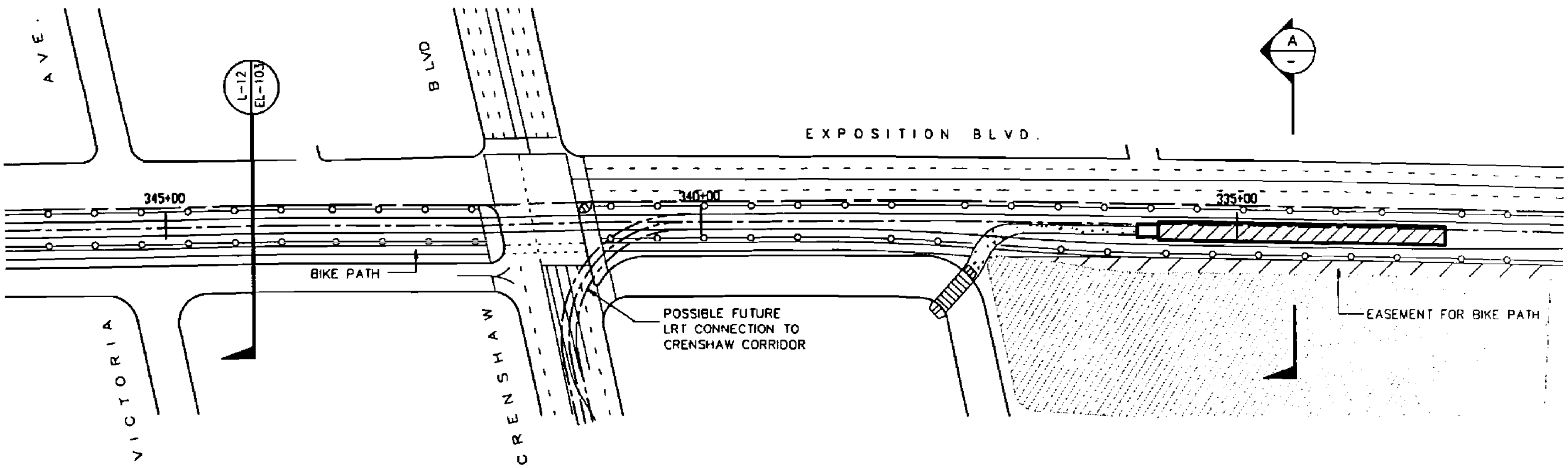
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

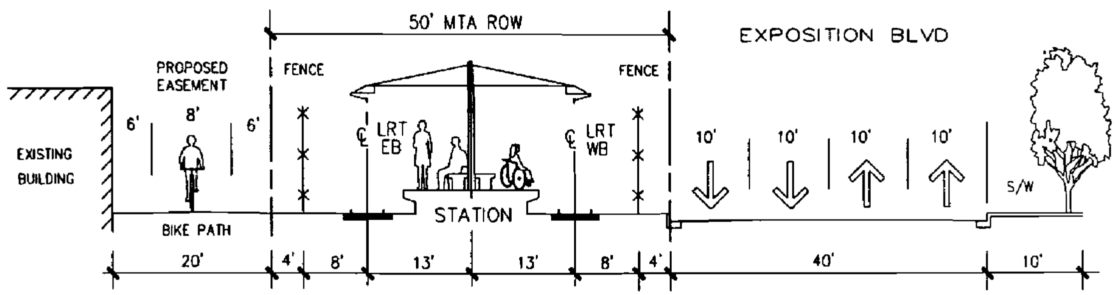
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
WESTERN STATION

CONTRACT NO.
DRAWING NO. EL-62
REV
SCALE 1" = 100'
SHEET NO. 127





A

LRT STATION

(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

SUBMITTED

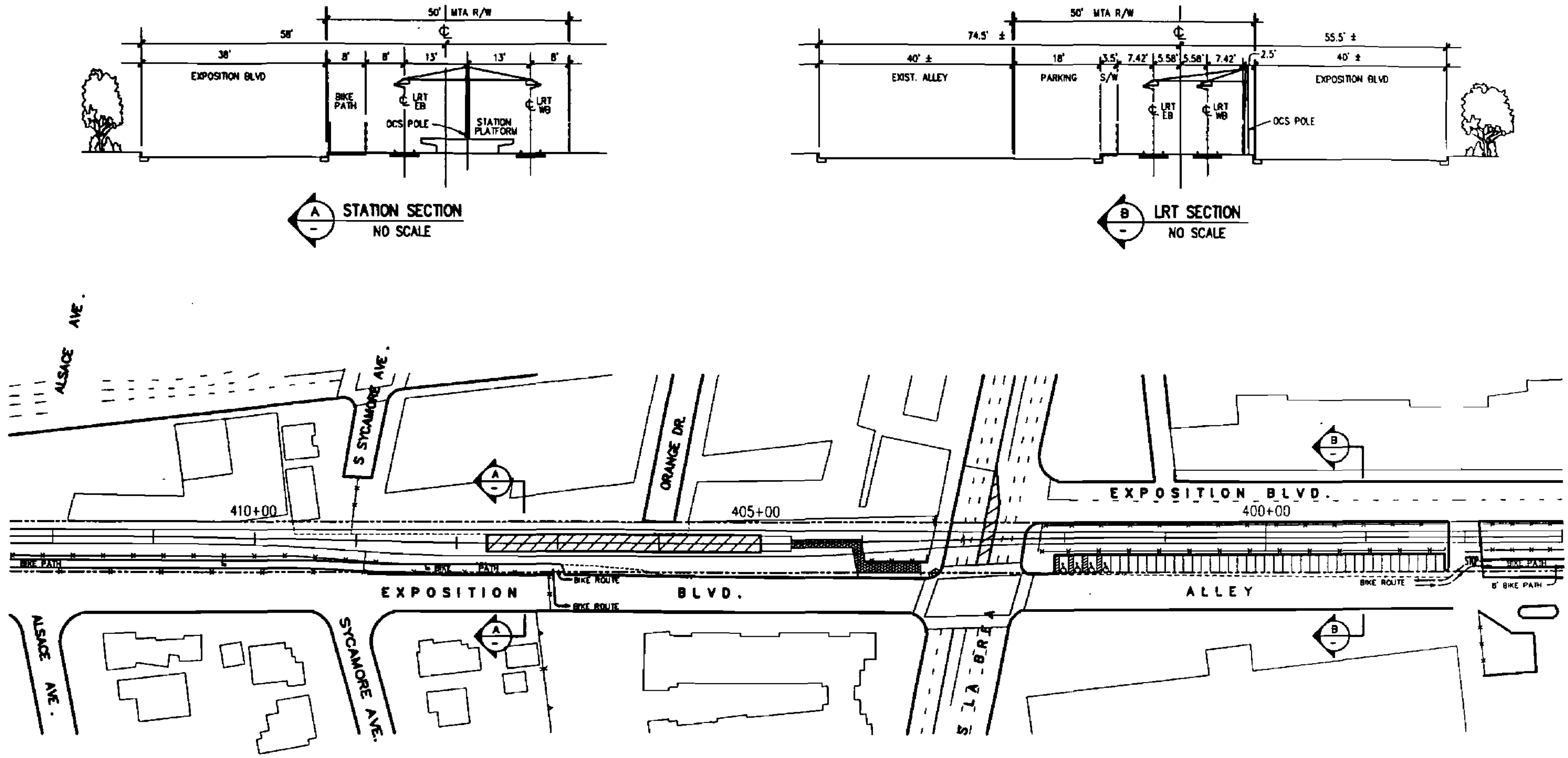
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR

EXPOSITION LRT PROJECT

CRENSHAW STATION

DRAWING NO.	EL-63
SCALE	1"=100'
SHEET NO.	128



PARKING:

STANDARD STALLS:	37
HANDICAPPED STALLS:	4
TOTAL STALLS:	41

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

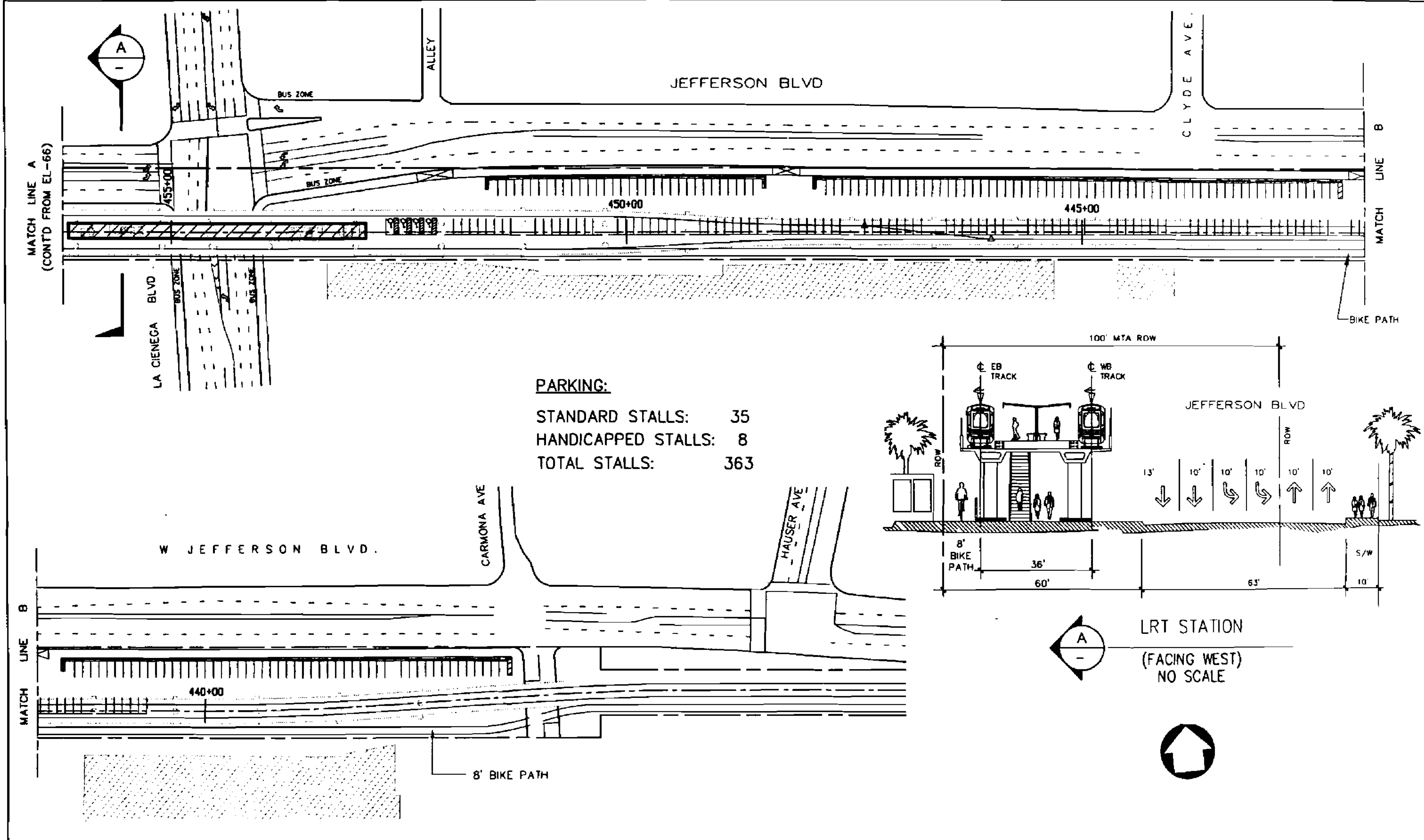
DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
LA BREA STATION AND PARK AND RIDE

DRAWING NO. EL-64
SCALE NO SCALE
SHEET NO. 129



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

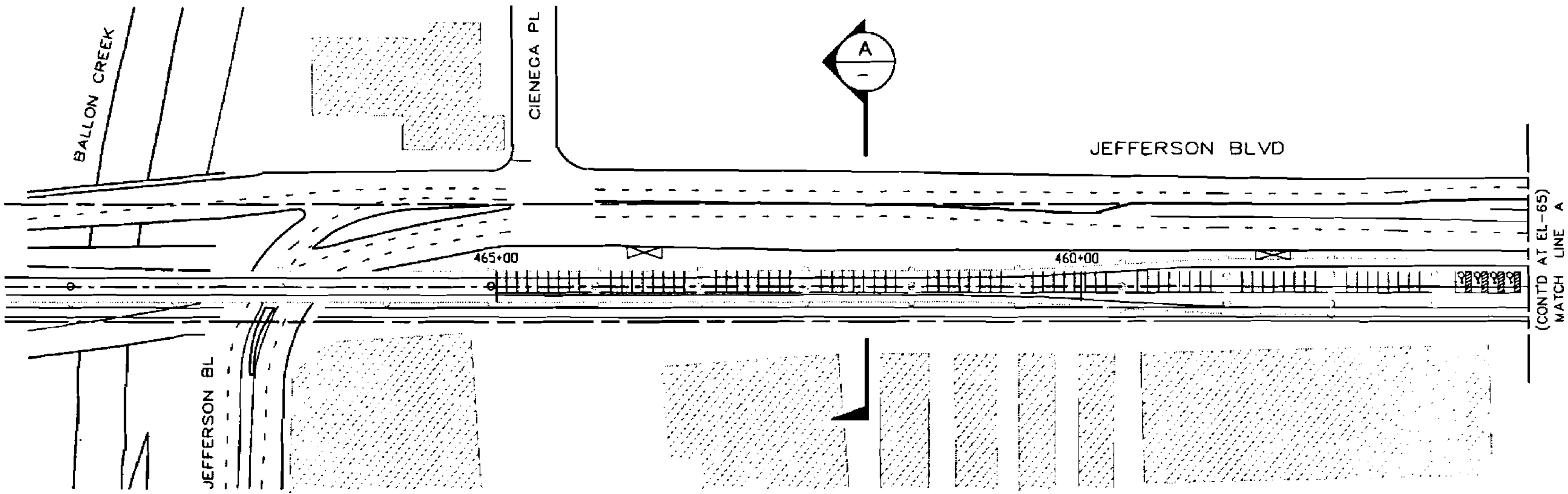
DESIGNED BY LC
DRAWN BY LC
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

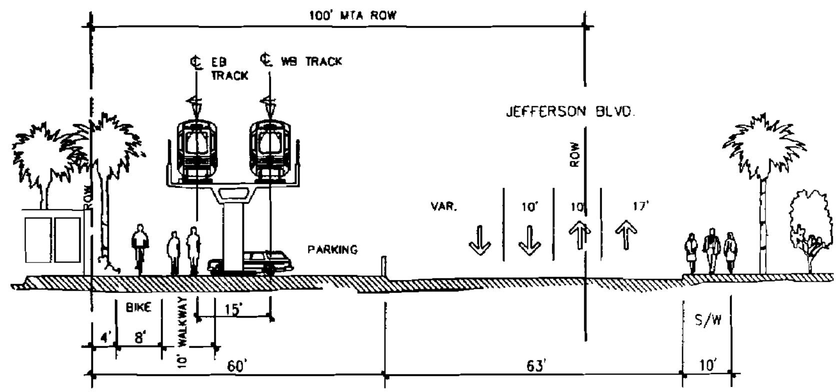
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
LA CIENEGA STATION AND PARK & RIDE
SHEET 1 OF 2

CONTRACT NO.
DRAWING NO. EL-65
REV
SCALE 1"=100'
SHEET NO. 130



PARKING:

STANDARD STALLS: 385
HANDICAPPED STALLS: 8
TOTAL STALLS: 393



LRT SECTION
(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

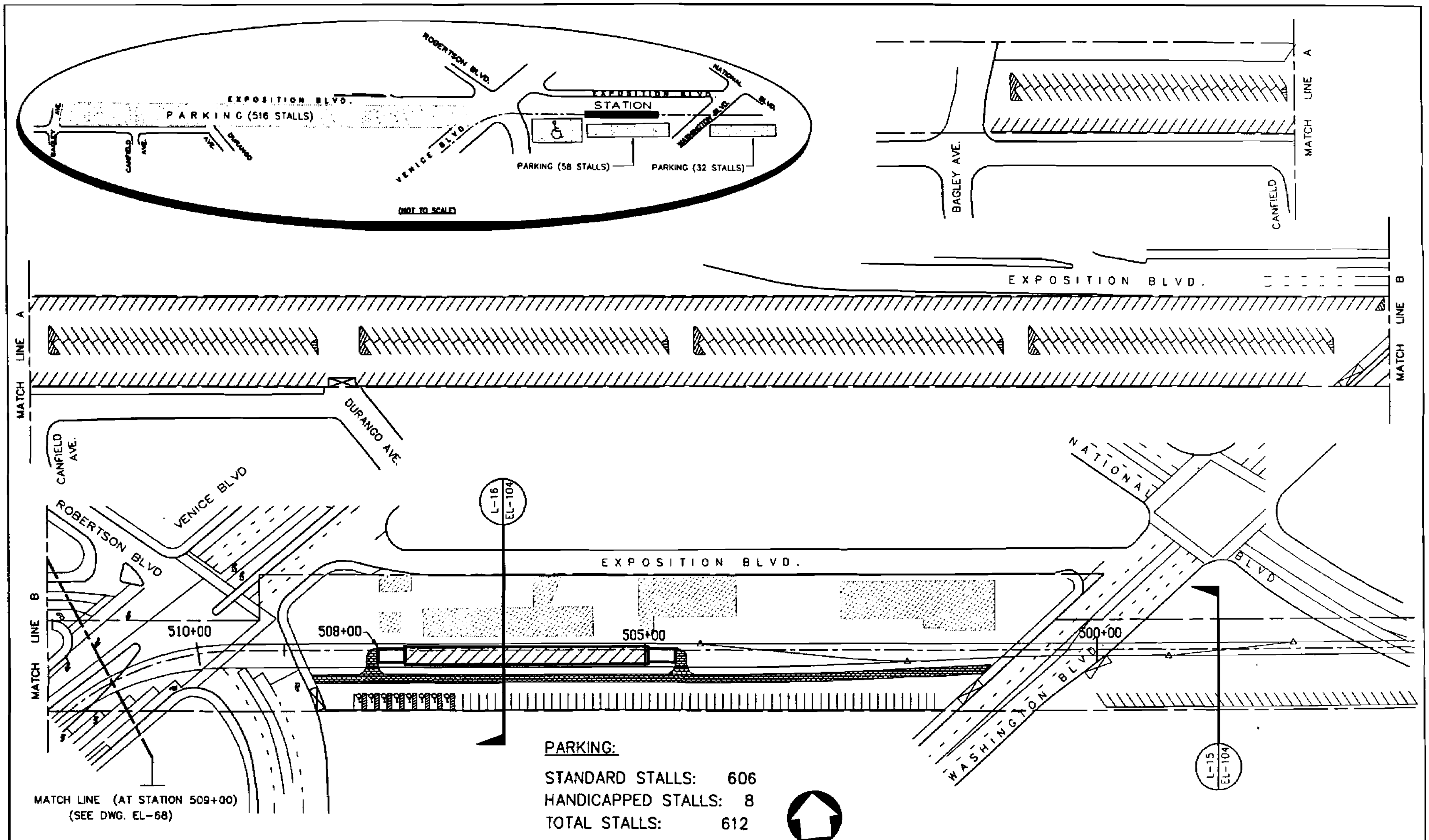
DESIGNED BY LC
DRAWN BY LC
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
LA CIENEGA STATION AND PARK & RIDE
SHEET 2 OF 2

DRAWING NO. EL-66
SCALE 1"=100'
SHEET NO. 131



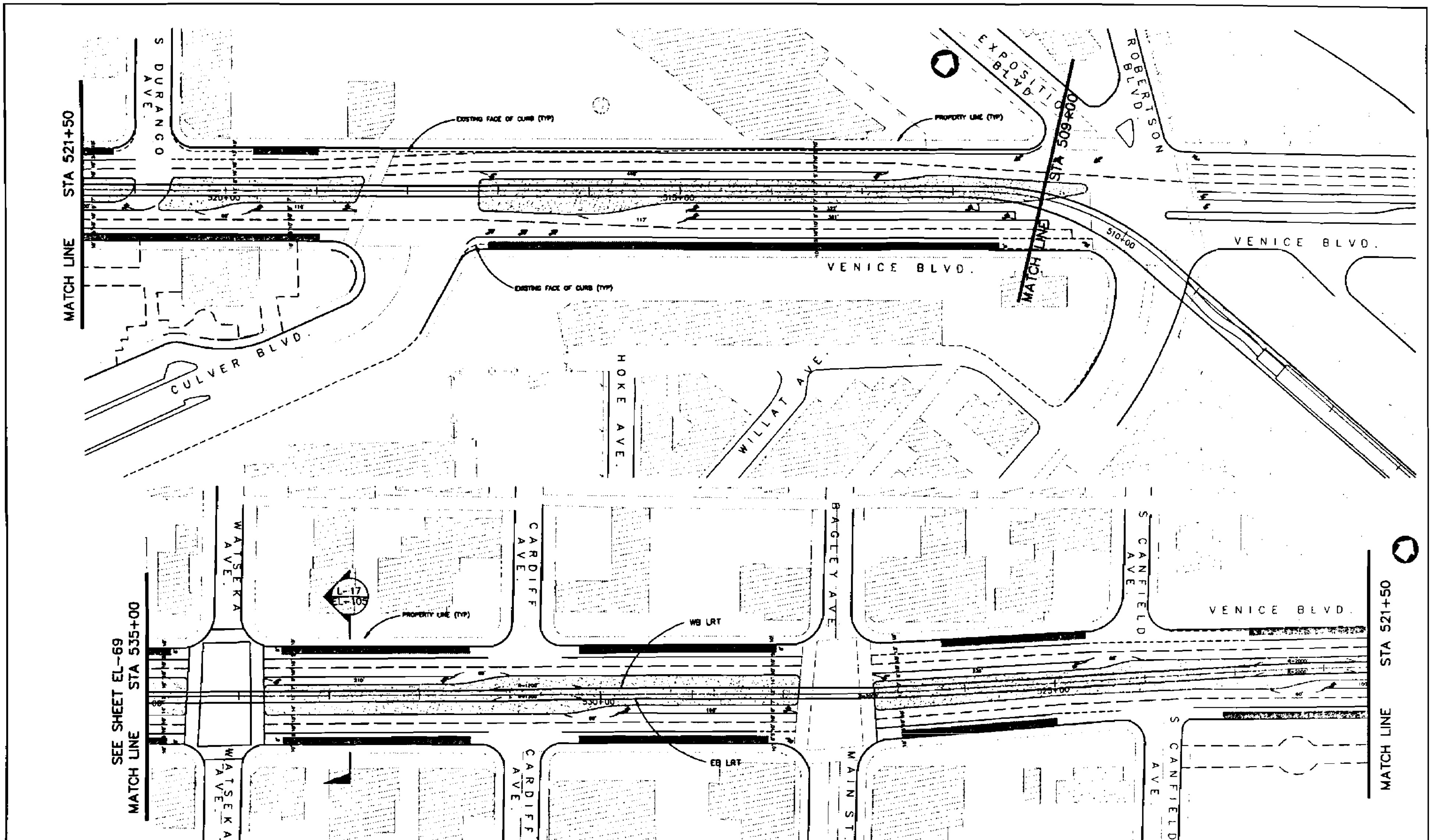
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
VENICE/WASHINGTON STATION
AND PARK & RIDE

DRAWING NO	EL-67
SCALE	1"=100'
SHEET NO	132



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

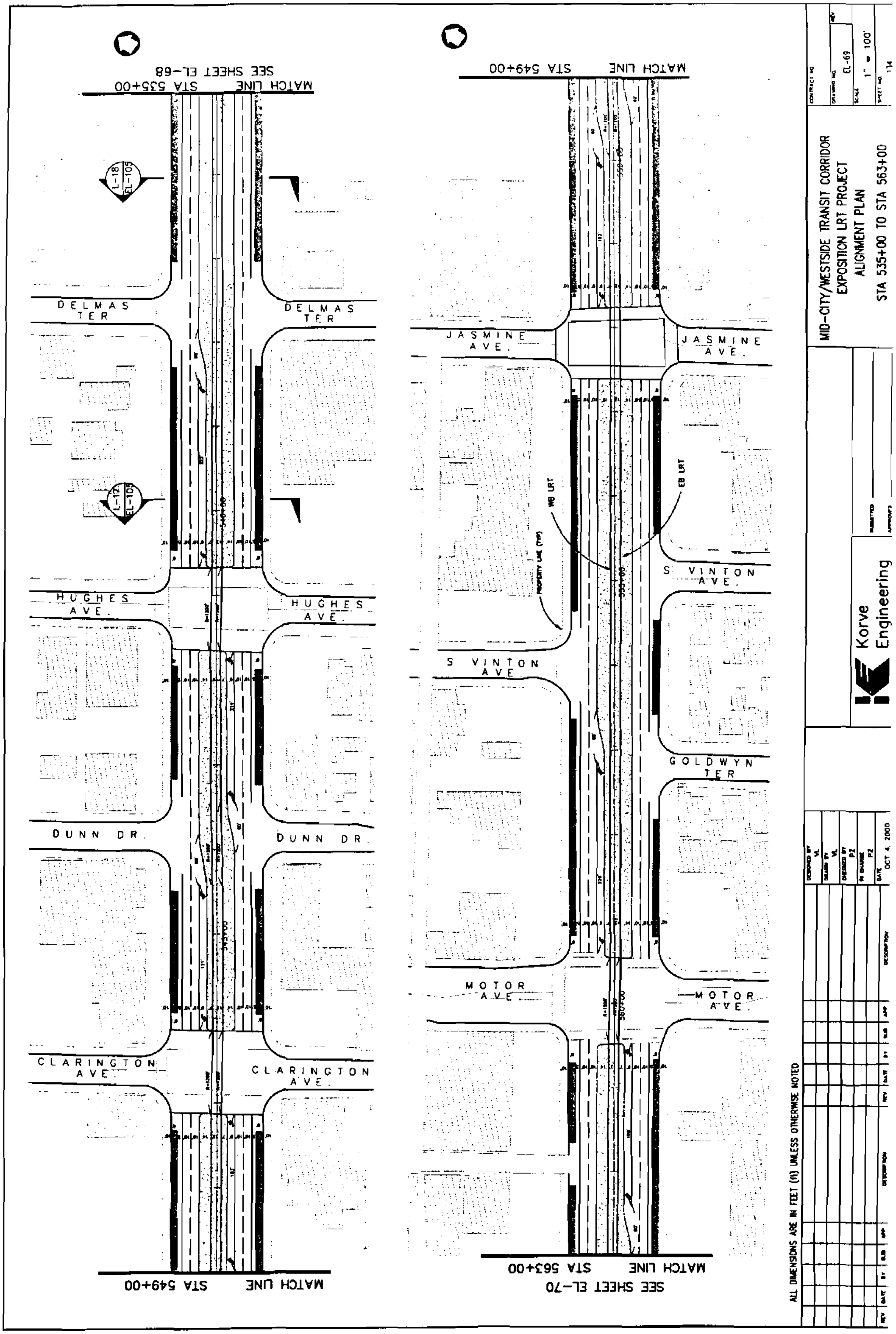
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

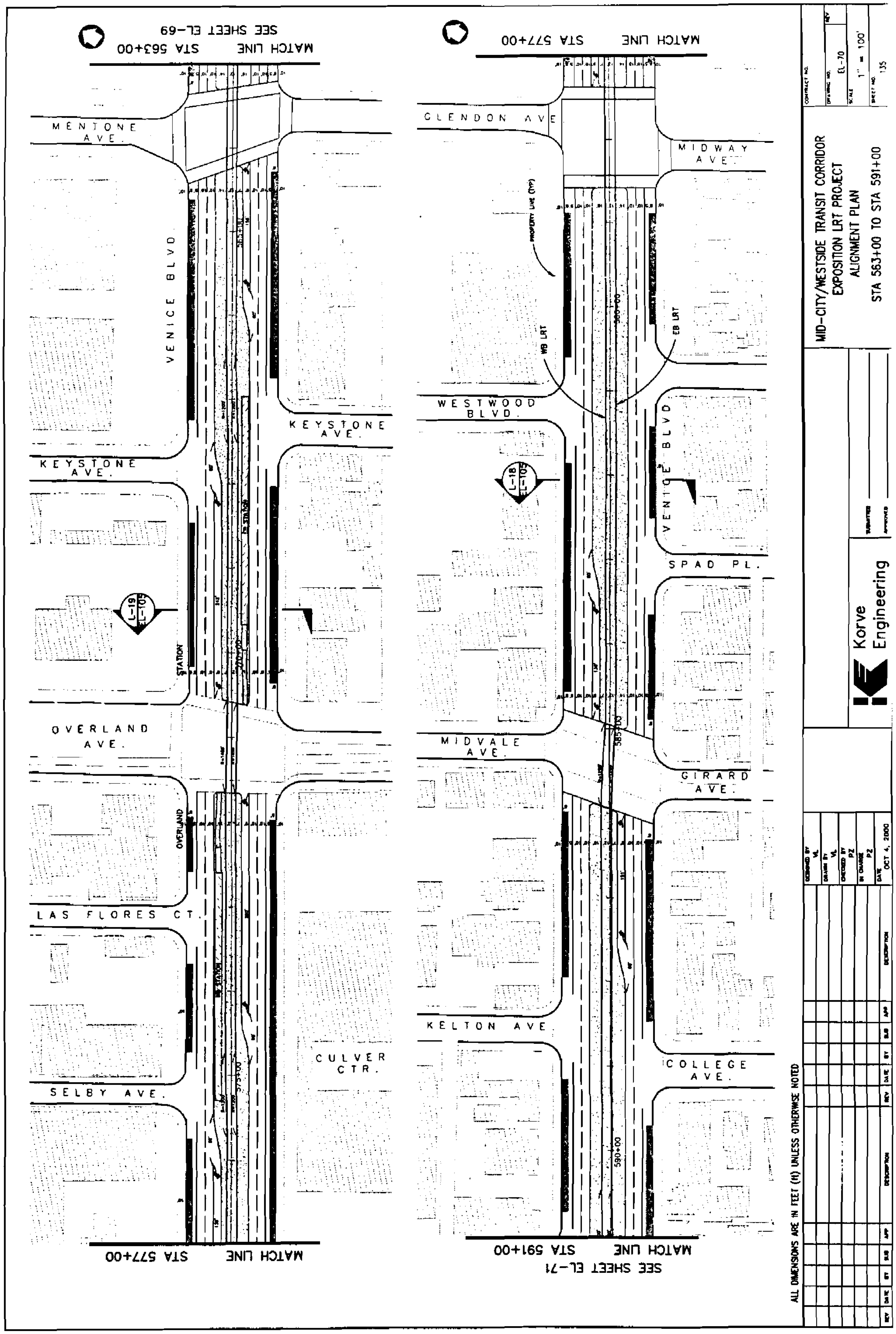
SUBMITTED
APPROVED

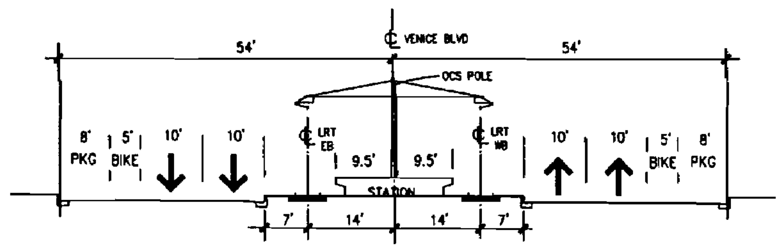
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 509+00 TO STA 535+00

CONTRACT NO.
DRAWING NO. EL-68
REV
SCALE 1" = 100'
SHEET NO. 131



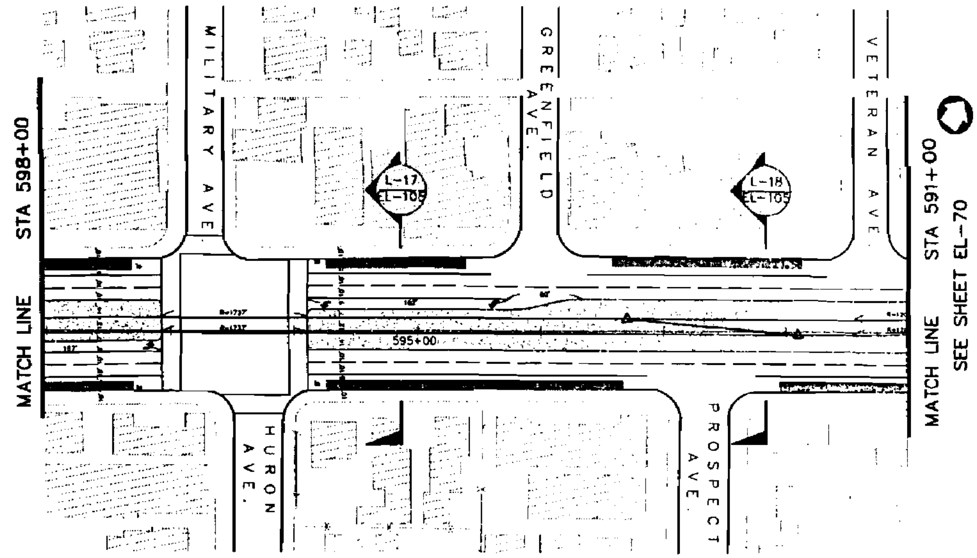
MATCH LINE STA 535+00
SEE SHEET EL-68
MATCH LINE STA 549+00
MATCH LINE STA 549+00
MATCH LINE STA 563+00
SEE SHEET EL-70
L-18 EL-105
L-12 EL-105
DELMAS TER
HUGHES AVE.
DUNN DR.
CLARINGTON AVE.
JASMINE AVE.
S VINTON AVE.
GOLDWYN TER
MOTOR AVE.
WB LRT
EB LRT
PROPERTY LINE (TYP)
540+00
555+00
560+00
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 535+00 TO STA 563+00
CL-69
1" = 100'
Korve Engineering
OCT 4, 2000
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

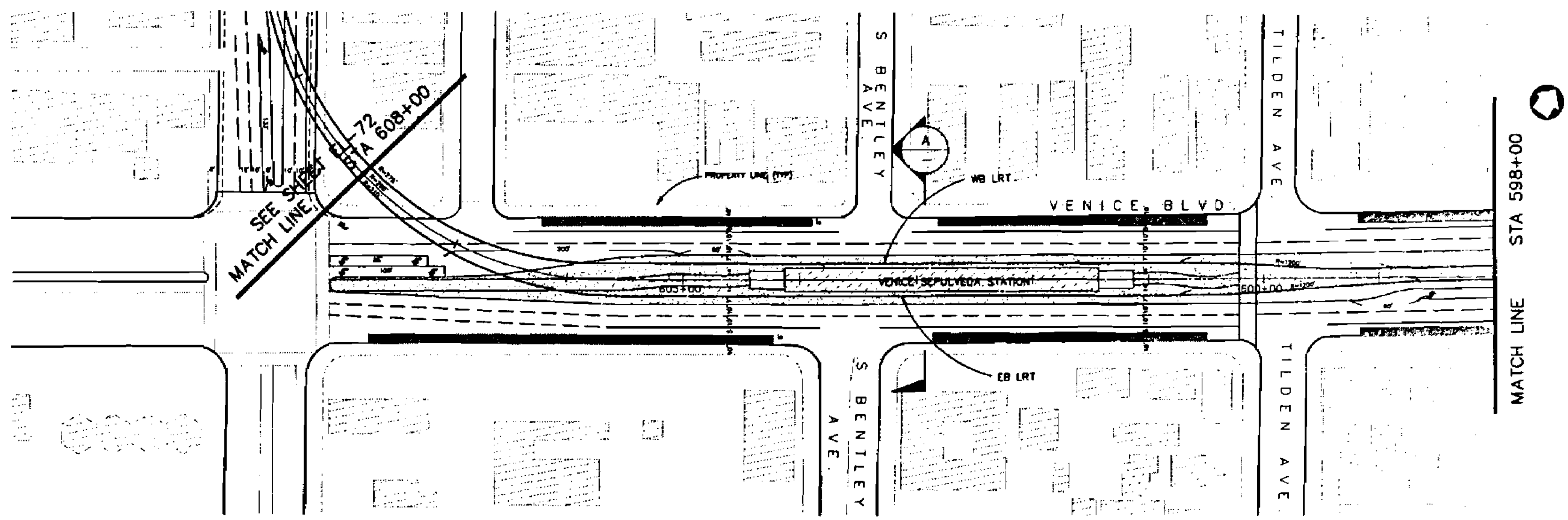

SEE SHEET EL-69
MATCH LINE STA 563+00
MATCH LINE STA 577+00
MENTONE AVE.
VENICE BLVD
KEYSTONE AVE.
KEYSTONE AVE.
STATION
OVERLAND AVE.
OVERLAND
LAS FLORES CT.
SELBY AVE.
CULVER CTR.
MATCH LINE STA 577+00
GLENDON AVE
MIDWAY AVE
PROPERTY LINE (TYP)
WB LRT
EB LRT
WESTWOOD BLVD.
VENICE BLVD
L-18 EL-105
L-19 EL-105
SPAD PL.
MIDVALE AVE.
GIRARD AVE.
KELTON AVE.
COLLEGE AVE.
MATCH LINE STA 591+00
SEE SHEET EL-71
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 563+00 TO STA 591+00
Korve Engineering
EL-70
1" = 100'
OCT 4, 2000



VENICE/ SEPULVEDA LRT STATION SECTION

(FACING WEST) 1"=20'





ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

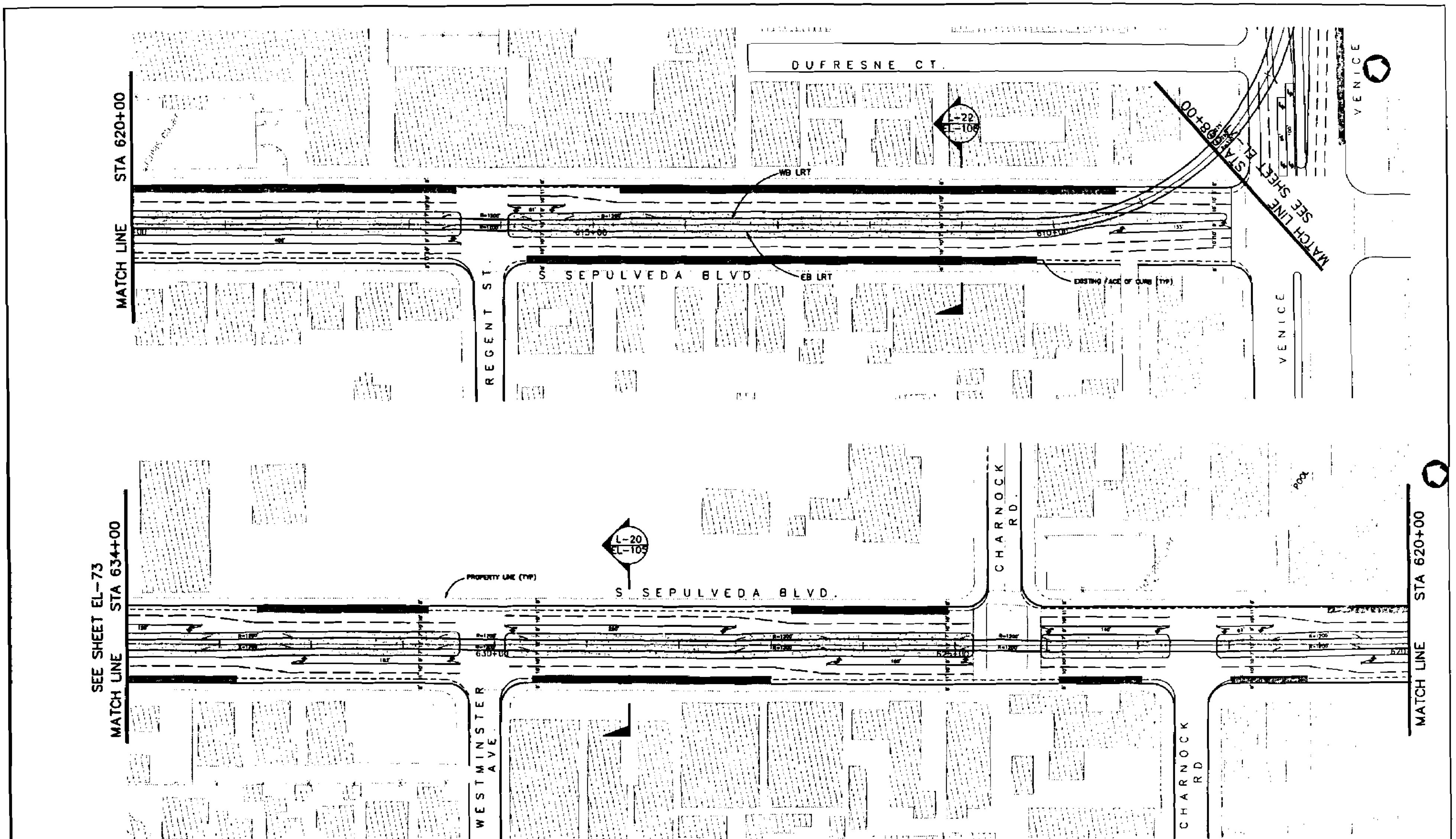
Korve Engineering

SUBMITTED

APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 591+00 TO STA 608+00

CONTRACT NO.
DRAWING NO. EL-71
REV
SCALE 1" = 100'
SHEET NO. 136



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

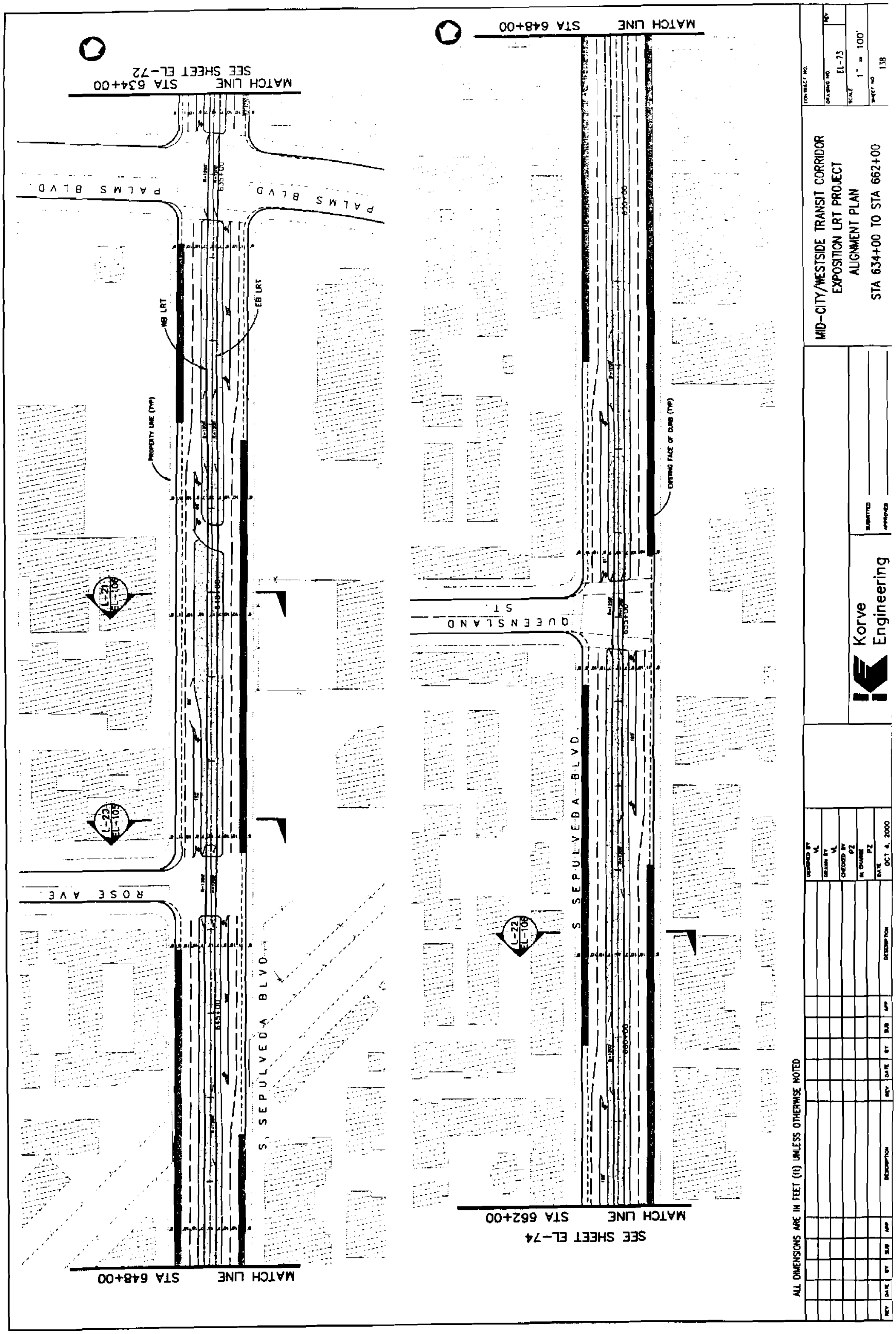
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

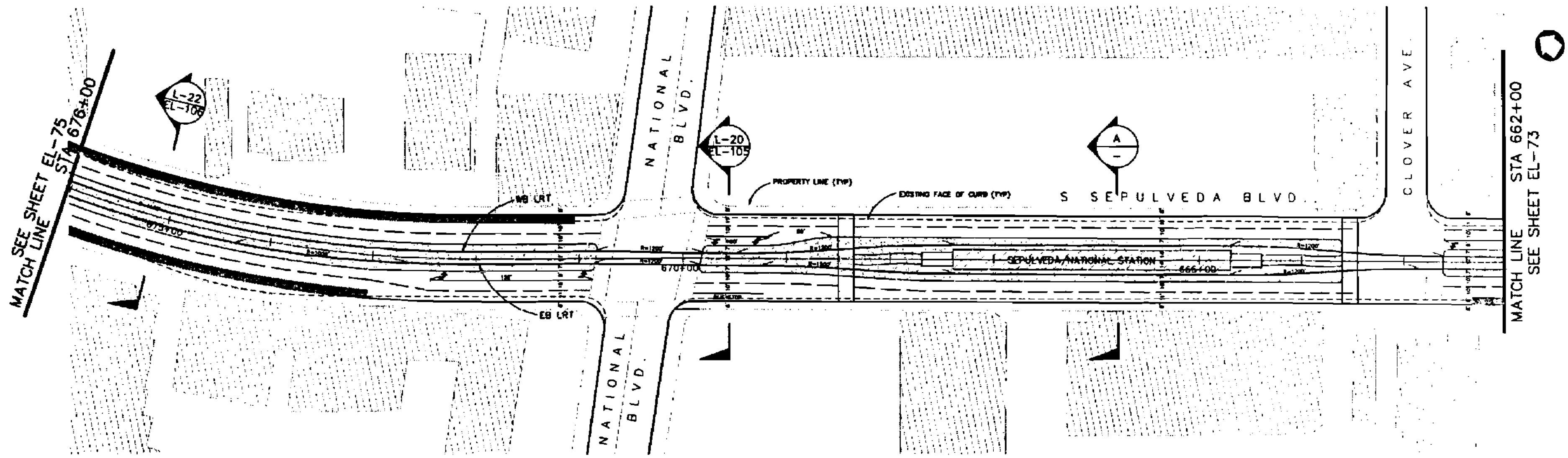
Korve Engineering

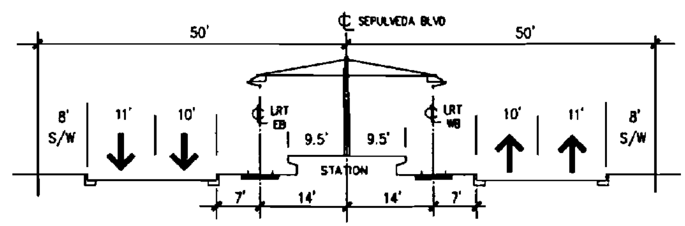
SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 608+00 TO STA 634+00

CONTRACT NO.
DRAWING NO. EL-72
REV
SCALE 1" = 100'
SHEET NO. 137


MATCH LINE STA 634+00
SEE SHEET EL-72
PALMS BLVD
WB LRT
EB LRT
PROPERTY LINE (TYP)
ROSE AVE
S. SEPULVEDA BLVD
MATCH LINE STA 648+00
QUEENSLAND ST.
EXISTING FACE OF CURB (TYP)
MATCH LINE STA 662+00
SEE SHEET EL-74
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 634+00 TO STA 662+00
Korve Engineering
EL-73
1" = 100'
138
VL
VL
PZ
PZ
OCT 4, 2000





A

SEPULVEDA/NATIONAL LRT STATION SECTION

(FACING WEST) 1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

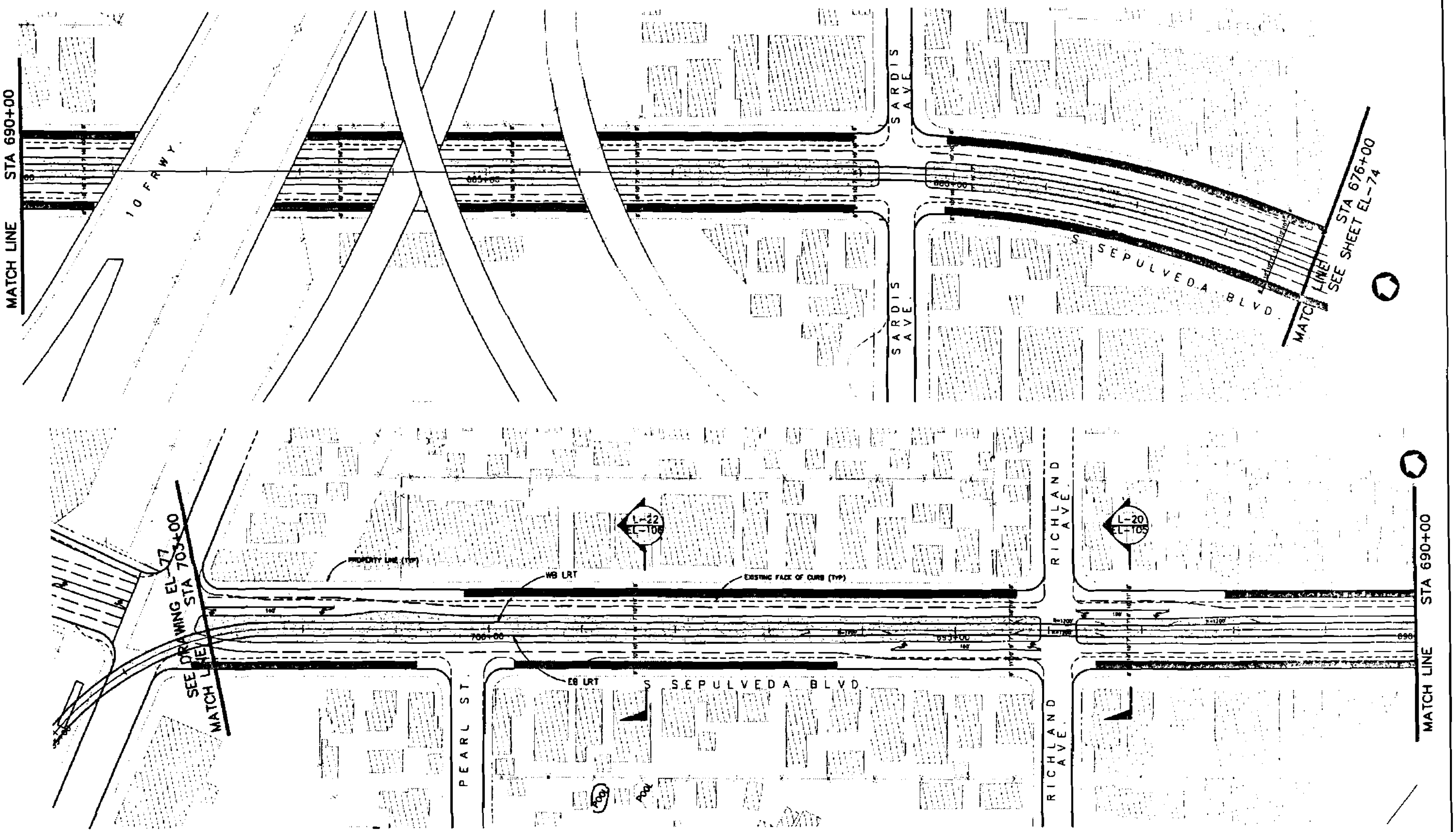
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 662+00 TO STA 676+00

CONTRACT NO.
DRAWING NO. EL-74
REV
SCALE 1" = 100'
SHEET NO 139



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

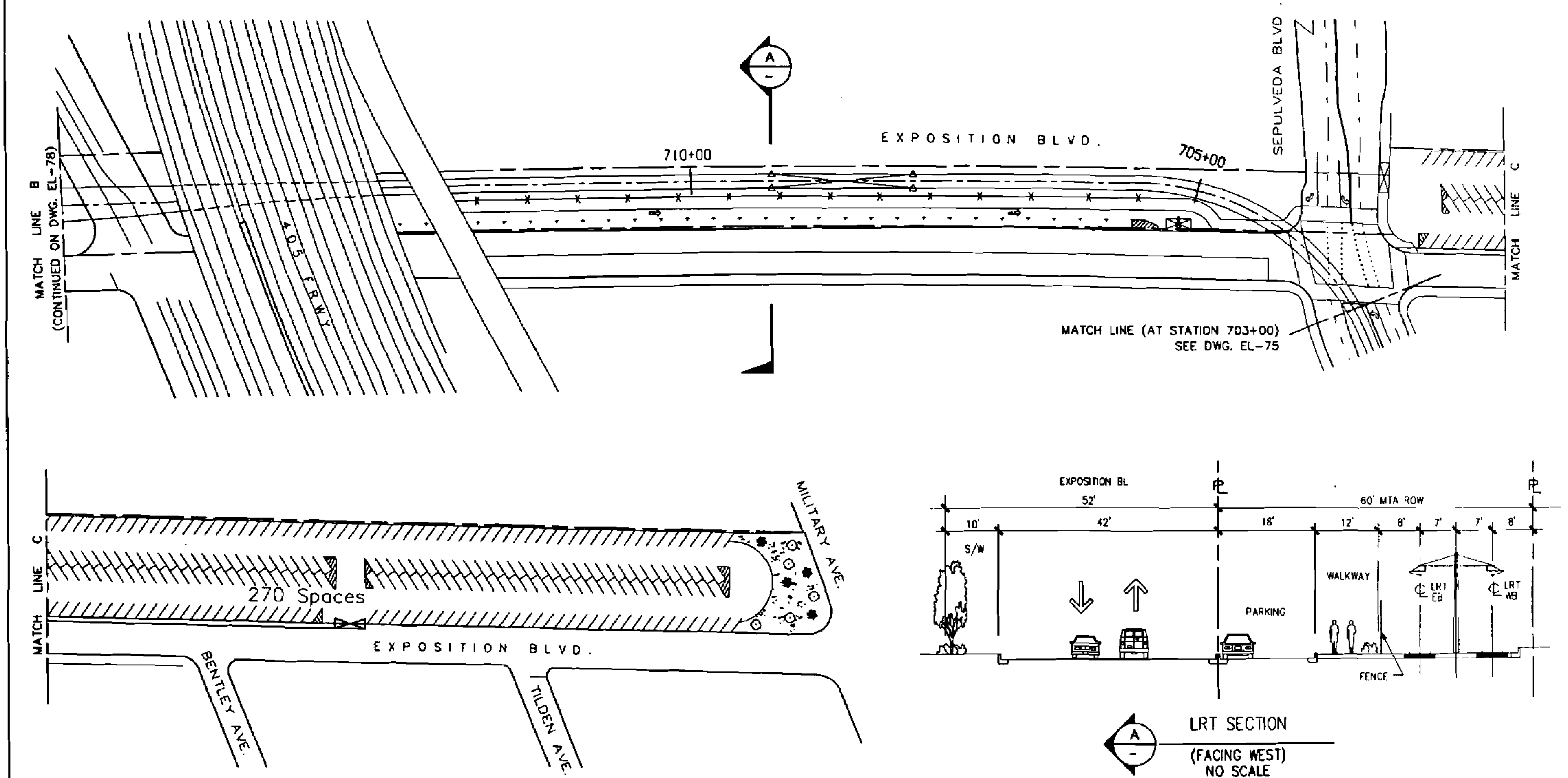
DESIGNED BY VL
DRAWN BY VL
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
ALIGNMENT PLAN
STA 676+00 TO STA 703+00

CONTRACT NO.
DRAWING NO. EL-75
REV
SCALE 1" = 100'
SHEET NO. 140



PARKING:

STANDARD STALLS: 549
HANDICAPPED STALLS: 16
TOTAL STALLS: 565

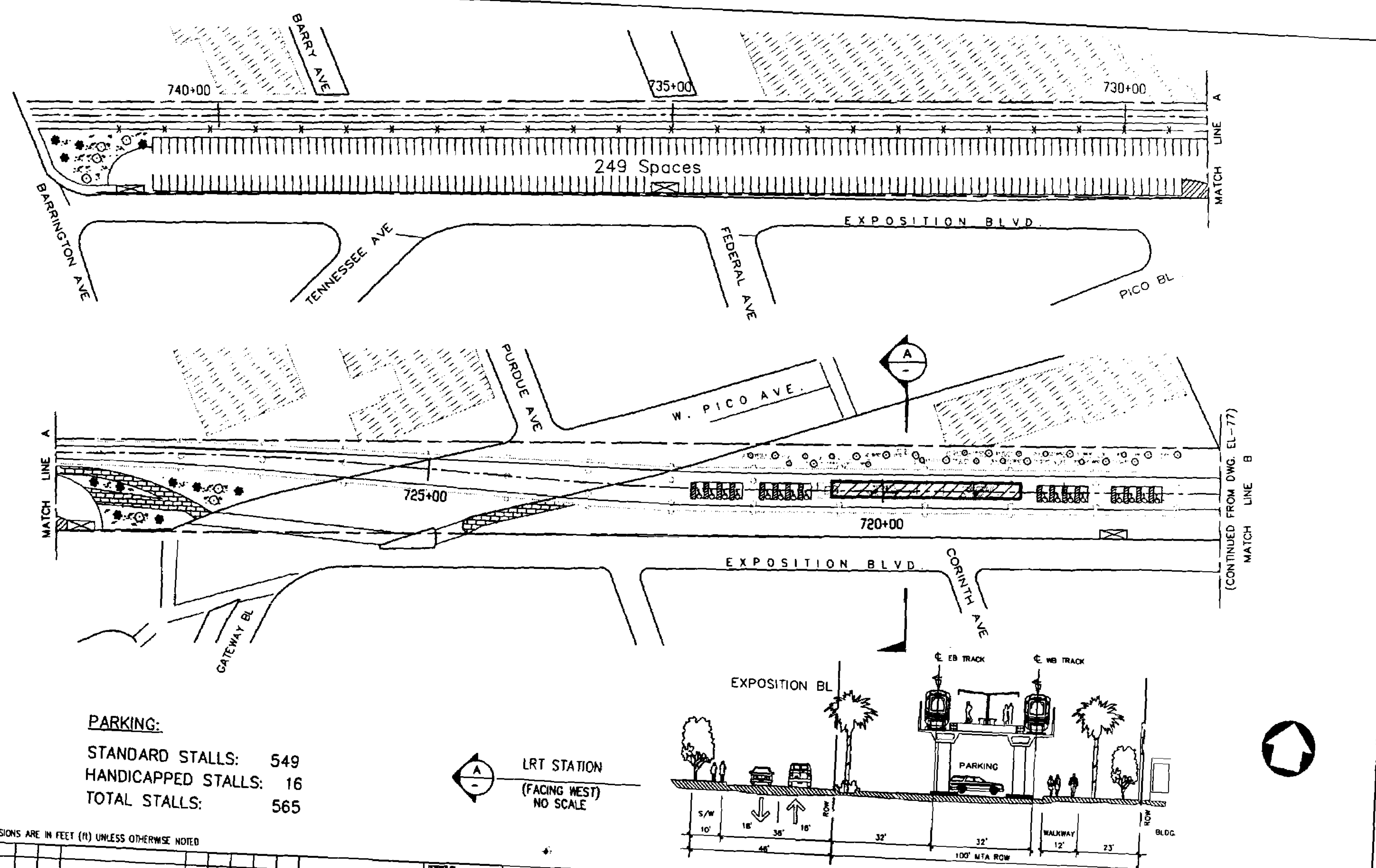
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 6, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
PICO/SAWTELLE STATION, AND PARK & RIDE
SHEET 1 OF 2

DRAWING NO	EL-77
SCALE	1"=100'
SHEET NO	141



PARKING:

STANDARD STALLS:	549
HANDICAPPED STALLS:	16
TOTAL STALLS:	565

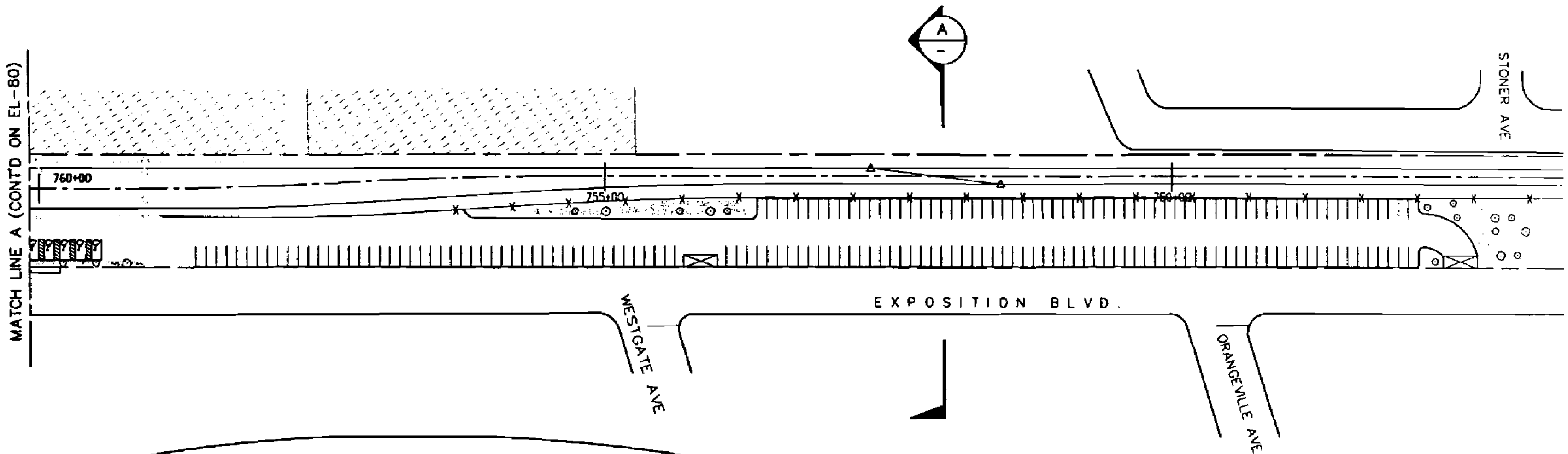
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

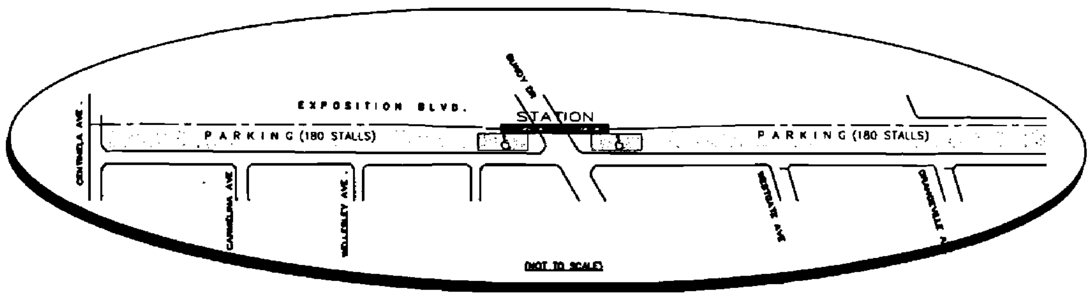
DESIGNED BY	LC
DRAWN BY	LC
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
PICO/SAWTELLE STATION, AND PARK & RIDE
SHEET 2 OF 2

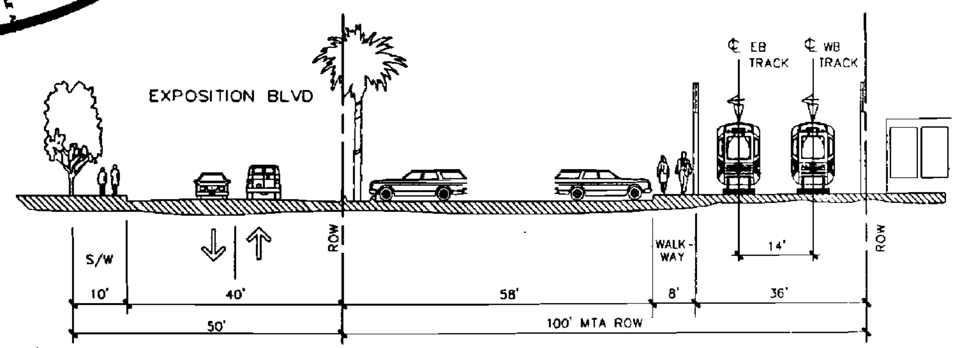
CONTRACT NO	
DRAWING NO.	EL-78
SCALE	1"=100'
SHEET NO.	142





PARKING:

STANDARD STALLS:	360
HANDICAPPED STALLS:	12
TOTAL STALLS:	372



LRT SECTION
(FACING WEST)
NO SCALE

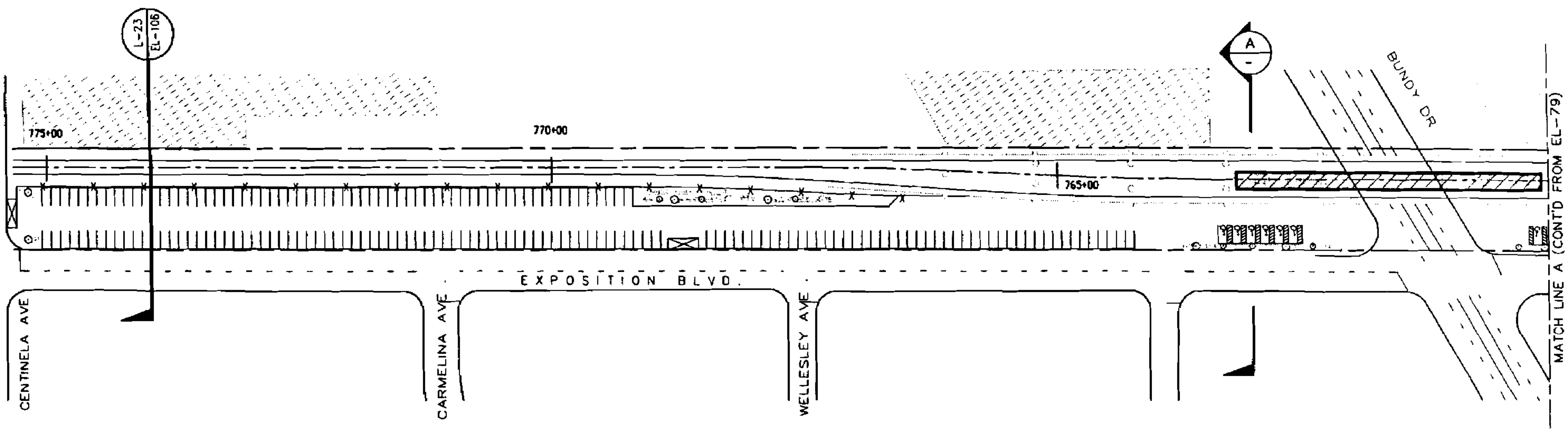
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

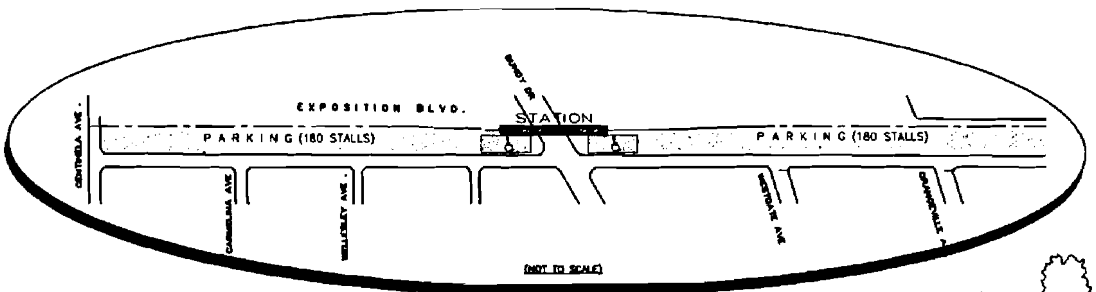
LC
LC
PZ
PZ

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
BUNDY STATION AND PARK & RIDE
SHEET 1 OF 2

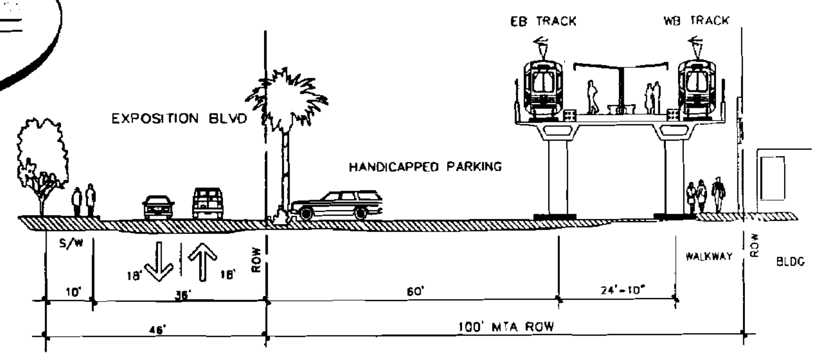
EL-79
1"=100'





PARKING:

STANDARD STALLS:	360
HANDICAPPED STALLS:	12
TOTAL STALLS:	372



A
LRT STATION
(FACING WEST)
NO SCALE

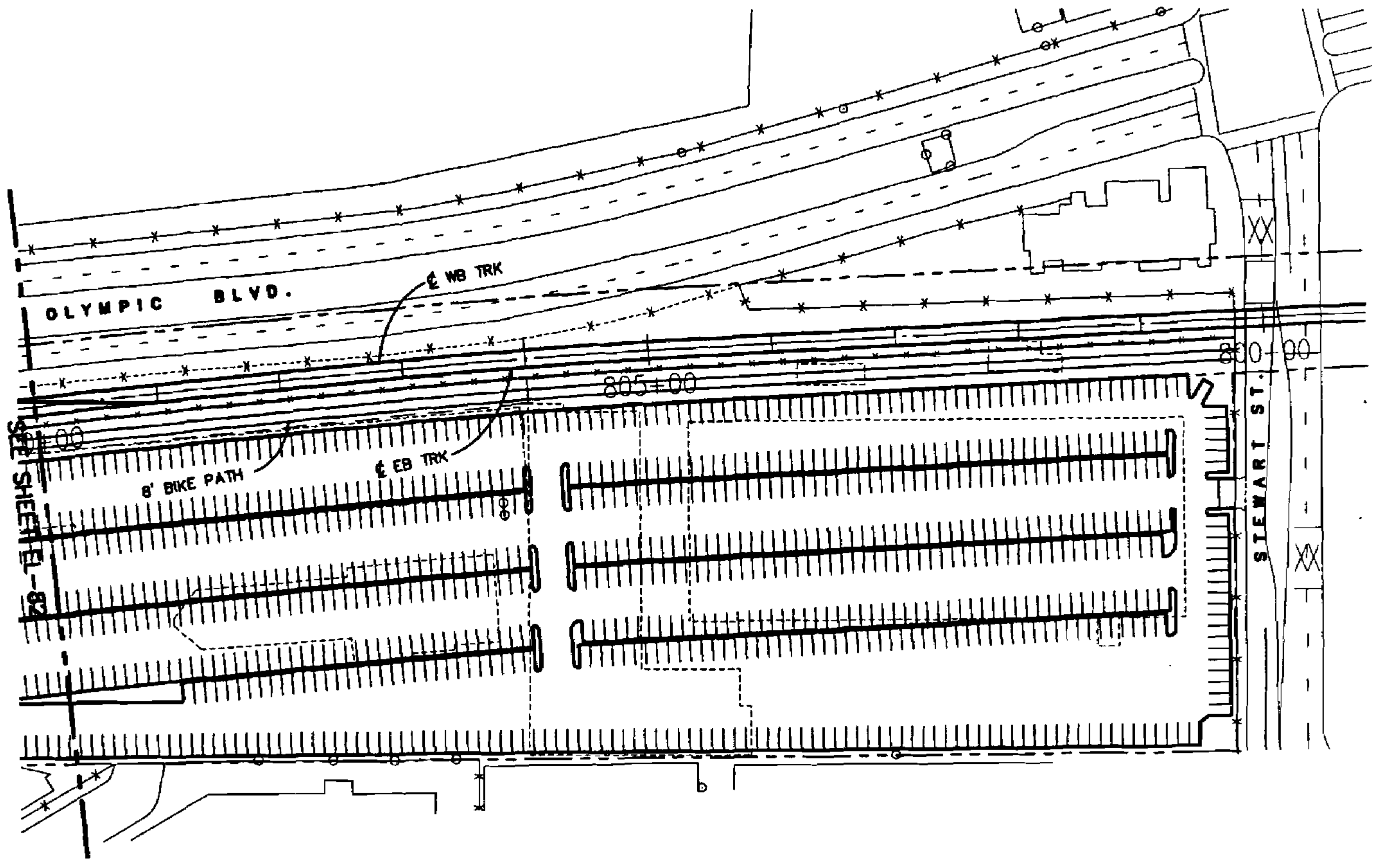
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

LC
LC
PZ
PZ
OCT 4, 2000

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
BUNDY STATION AND PARK & RIDE
SHEET 2 OF 2

EL-80
1"=100'
144



PARKING:

STANDARD STALLS:	1135
HANDICAPPED STALLS:	5
TOTAL STALLS:	1140

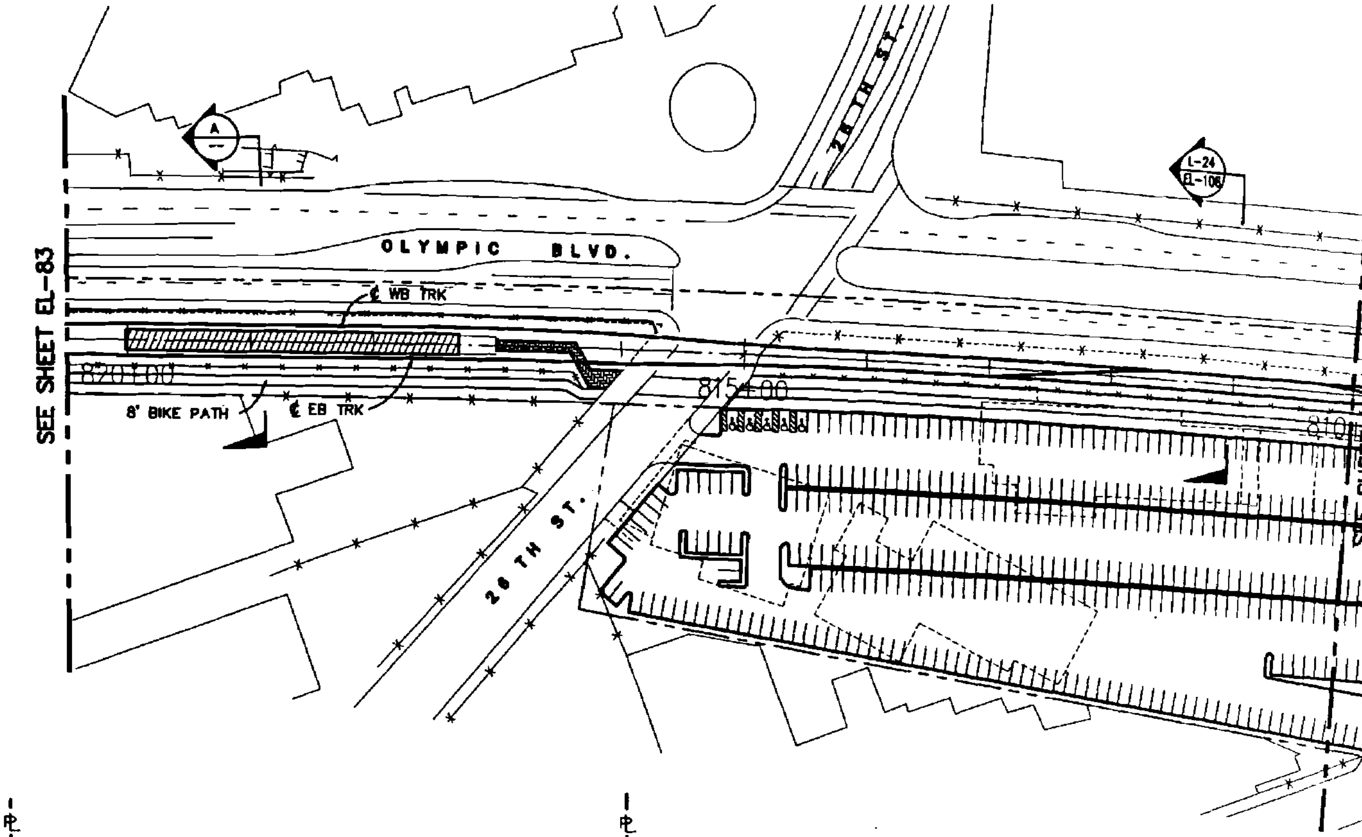
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

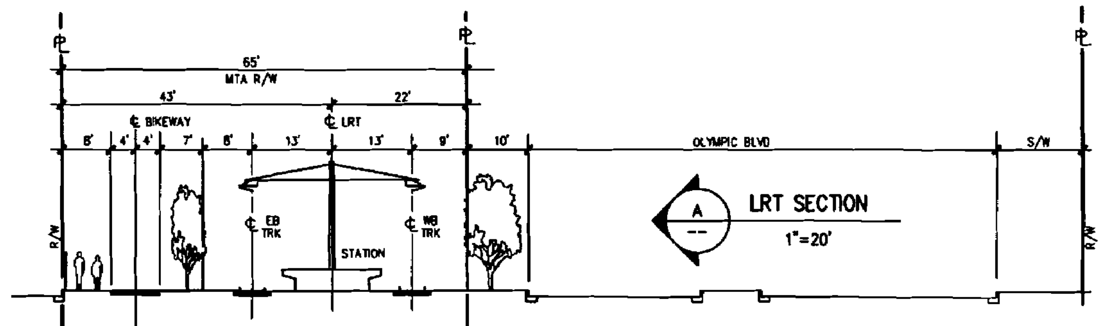
DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

CLOVERFIELD STATION AND PARK AND RIDE
SHEET 1 OF 3

DRAWING NO.	EL-81
SCALE	NO SCALE
SHEET NO.	145





PARKING:

STANDARD STALLS:	1135
HANDICAPPED STALLS:	5
TOTAL STALLS:	1140

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	CHK	APP	DESCRIPTION	REV	DATE	BY	CHK	APP	DESCRIPTION

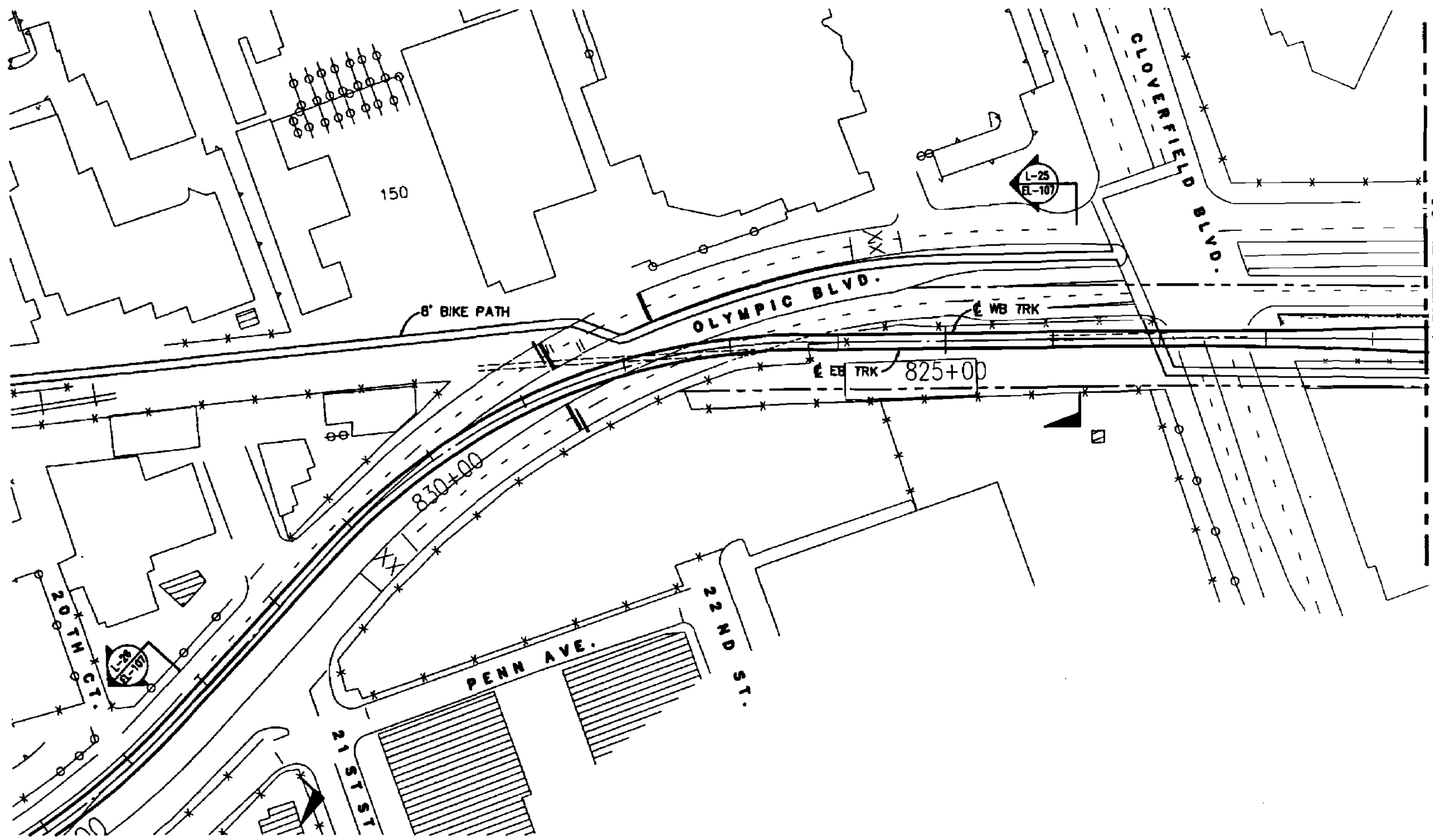
DESIGNED BY: JP
DRAWN BY: JP
CHECKED BY: PZ
IN CHARGE: PZ
DATE: OCT 4, 2000

SUBMITTED: ______
APPROVED: ______

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

CLOVERFIELD STATION AND PARK AND RIDE
SHEET 2 OF 3

CONTRACT NO.
DRAWING NO. EL-82
REV
SCALE NO SCALE
SHEET NO. 146



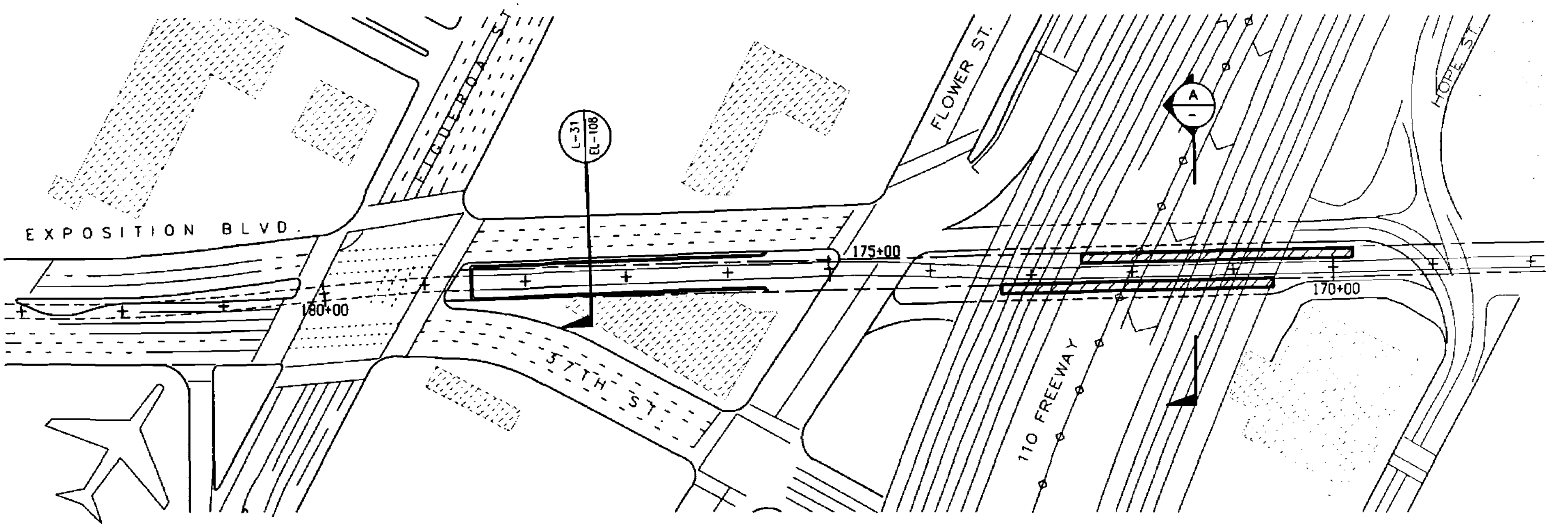
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

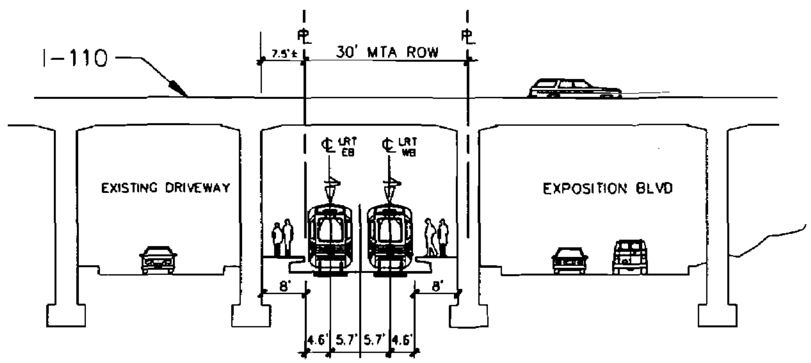
DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

CLOVERFIELD STATION AND PARK AND RIDE
SHEET 3 OF 3

DRAWING NO	EL-83
SCALE	NO SCALE
SHEET NO	147





LRT SECTION
(FACING WEST)
NO SCALE

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY LC
DRAWN BY LC
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

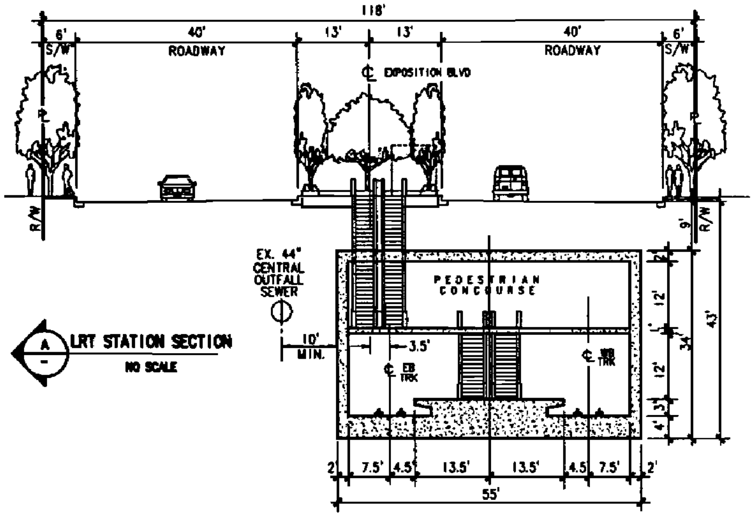
Korve Engineering

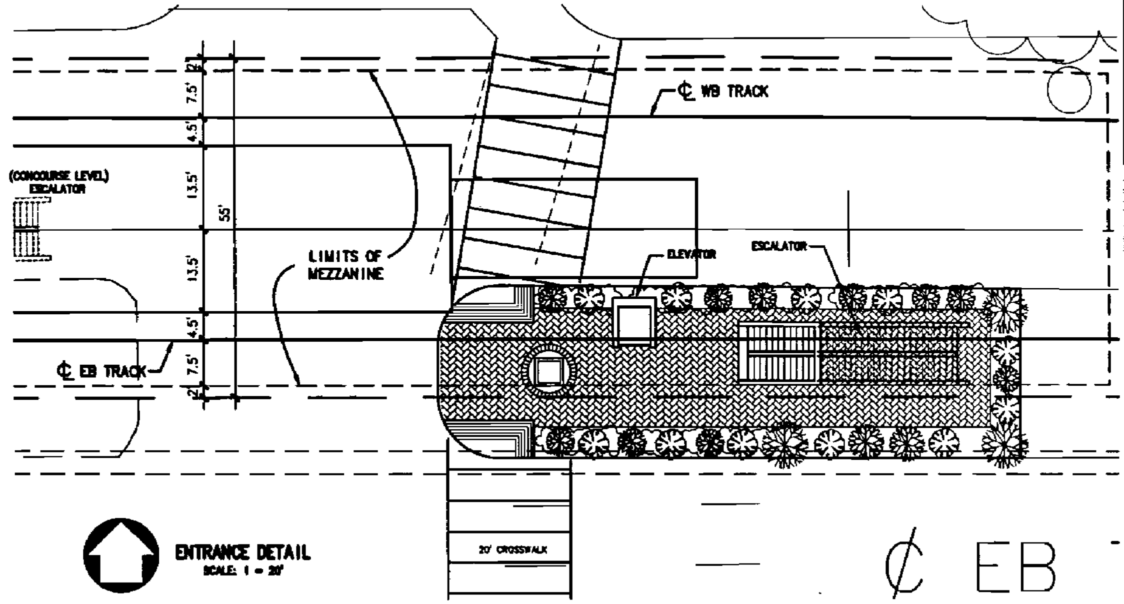
SUBMITTED
APPROVED

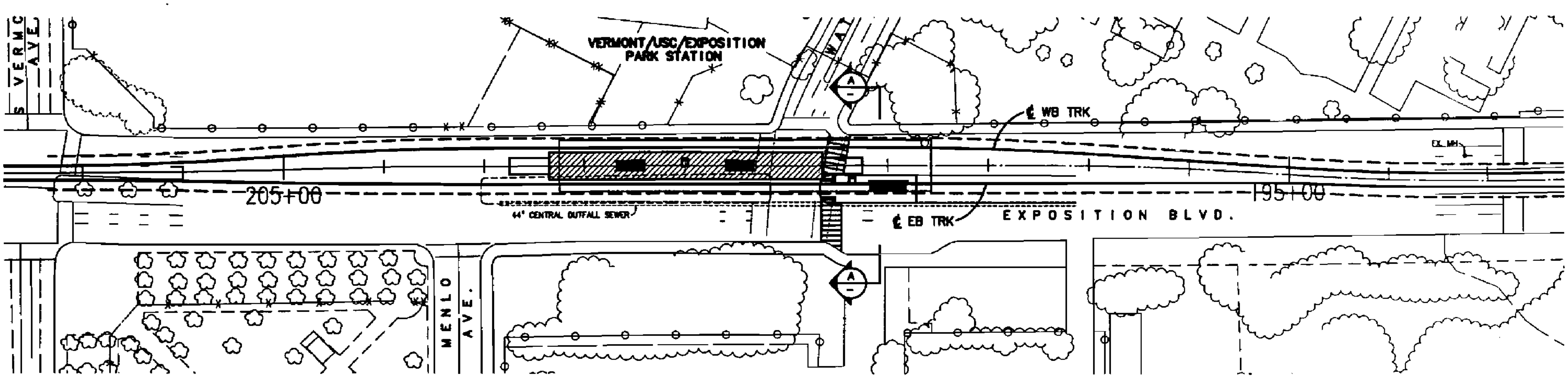
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
I-110 / EXPOSITION PARK STATION
CUT & COVER OPTION

CONTRACT NO
DRAWING NO. EL-86
REV
SCALE 1"=100'
SHEET NO 148

PLEASE NOTE THAT THESE DRAWINGS
ARE ONE-HALF ORIGINAL SIZE







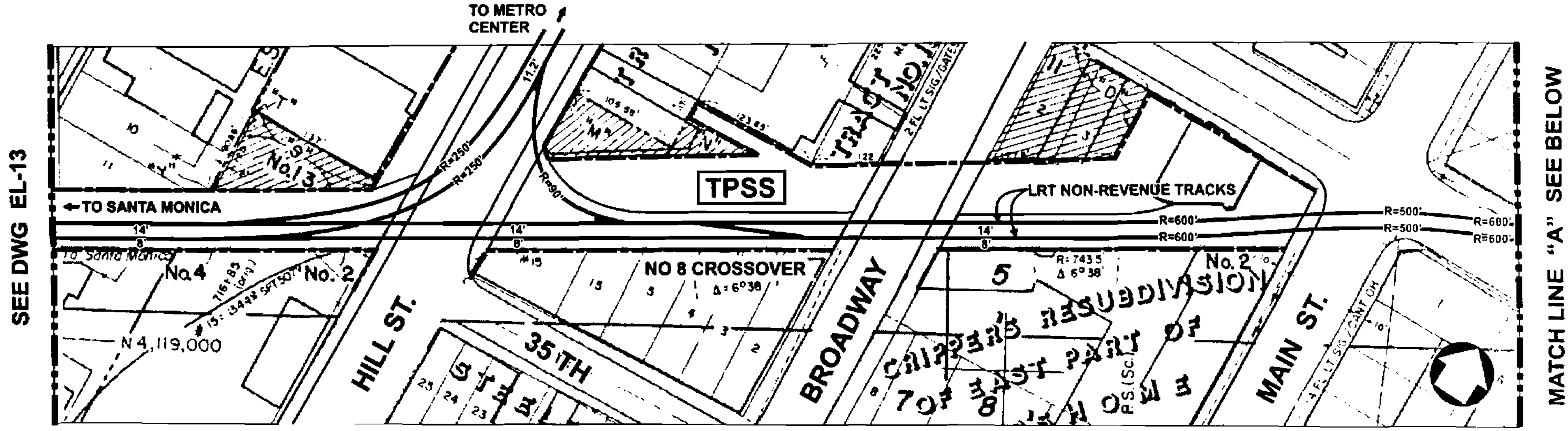
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

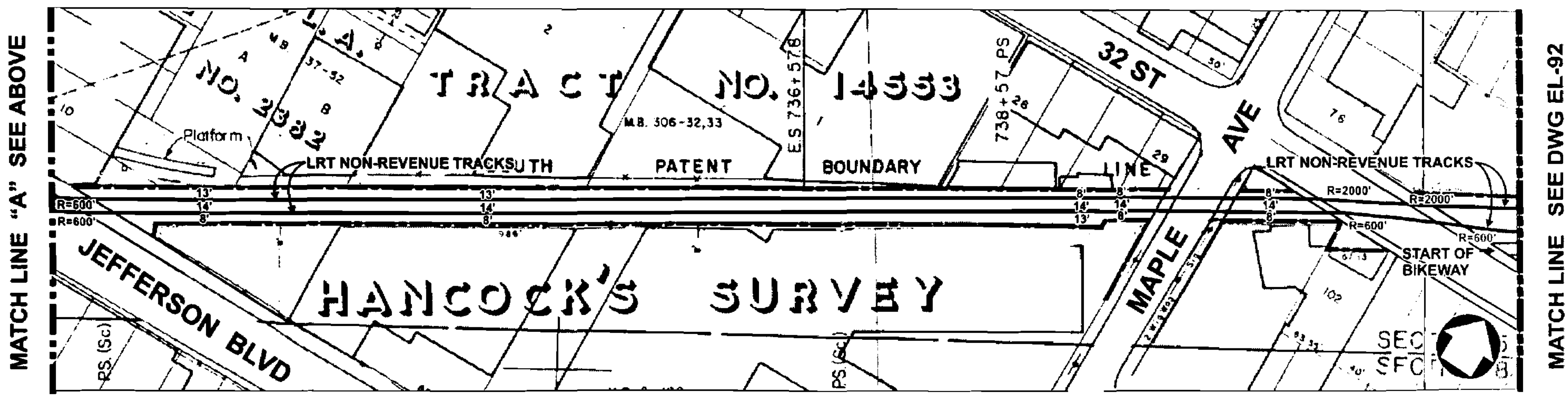
DATE 02/23/01

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

VERMONT/USC/EXPOSITION PARK STATION
CUT AND COVER OPTION

DRAWING NO.	EL-87
SCALE	NO SCALE
SHEET NO.	149





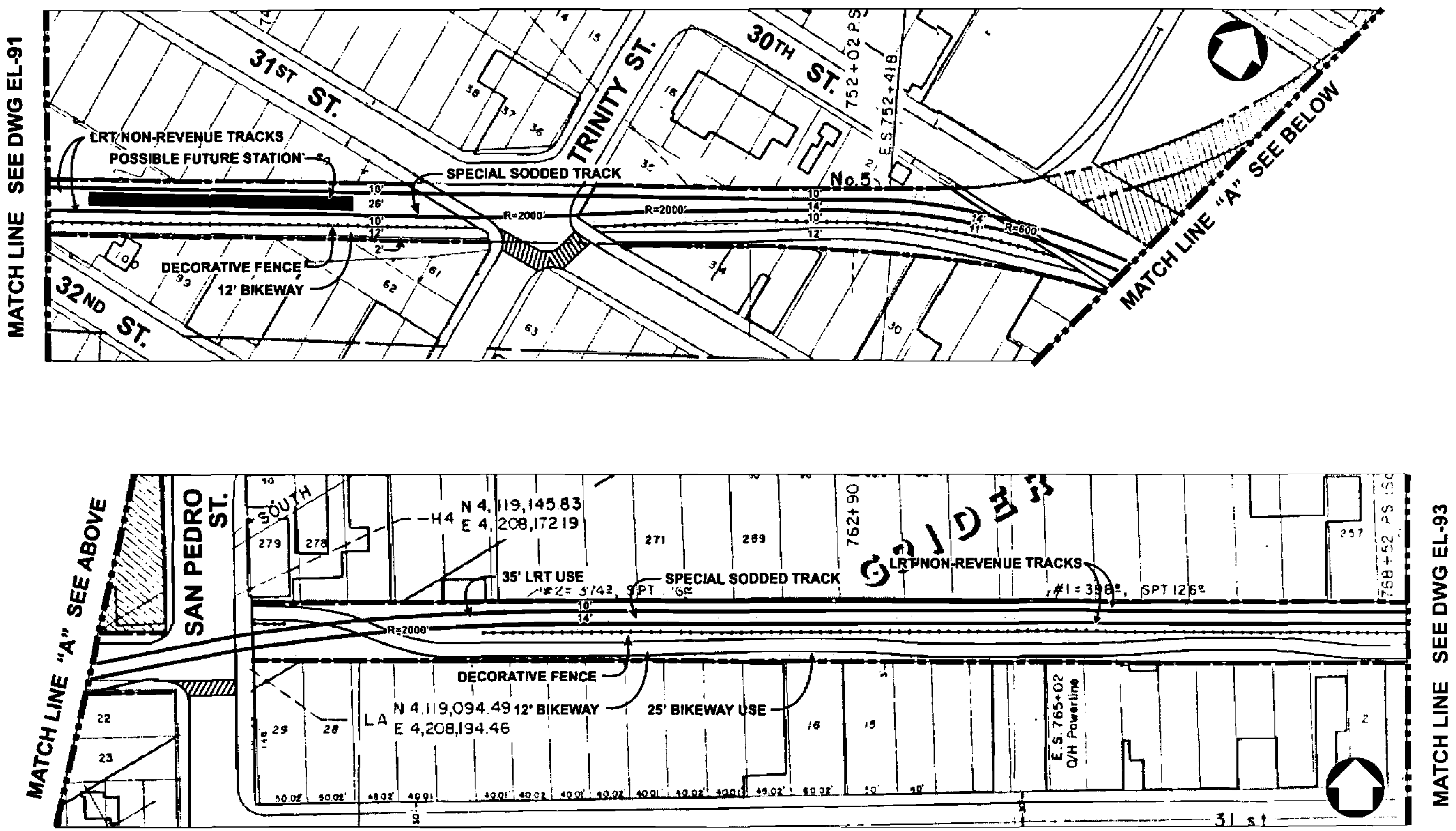
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	P.Z.
DRAWN BY	S.C.
CHECKED BY	J.S.
IN CHARGE	J.S
DATE	8 Dec 00

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
NON-REVENUE TRACK
BETWEEN HILL ST AND HOOVER AVE
SHEET 1 OF 3

DRAWING NO	EL - 91
SCALE	AS NOTED
SHEET NO	150



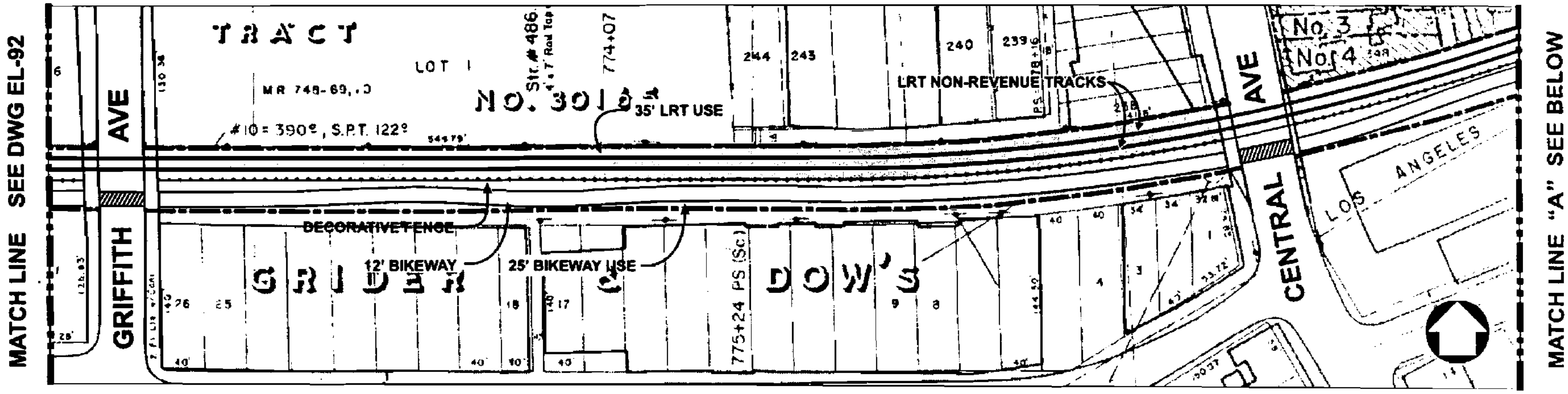
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

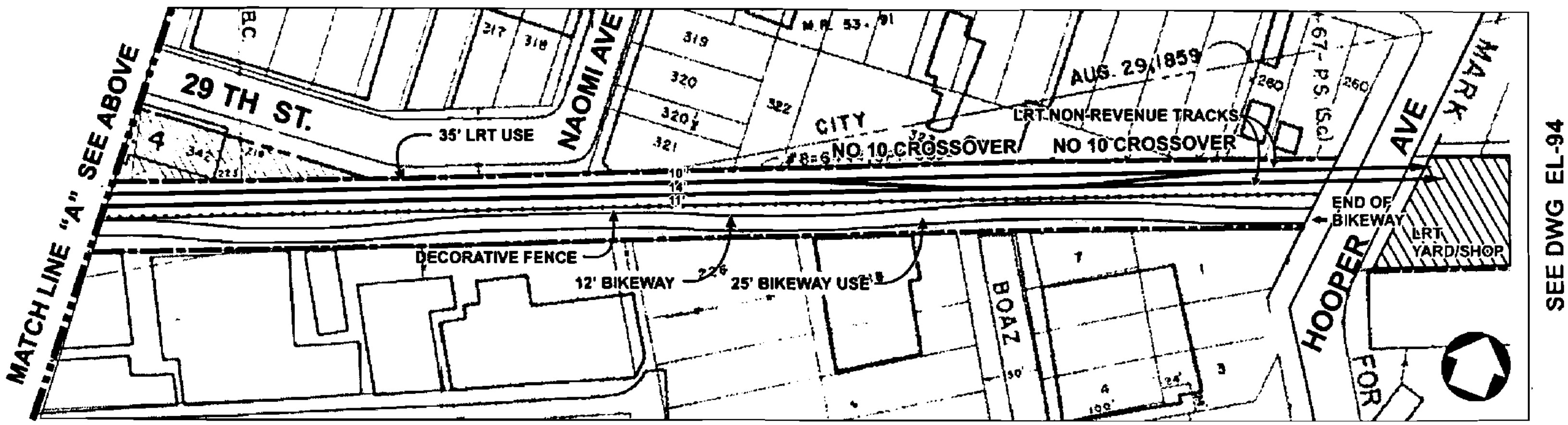
Designed by	P.Z.
Drawn by	S.C.
Checked by	J.S.
Approved	J.S
Date	8 Dec 00

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
NON-REVENUE TRACK
BETWEEN HILL ST AND HOOVER AVE
SHEET 2 OF 3

Drawing no. EL - 92
Scale AS NOTED
Sheet no. 151





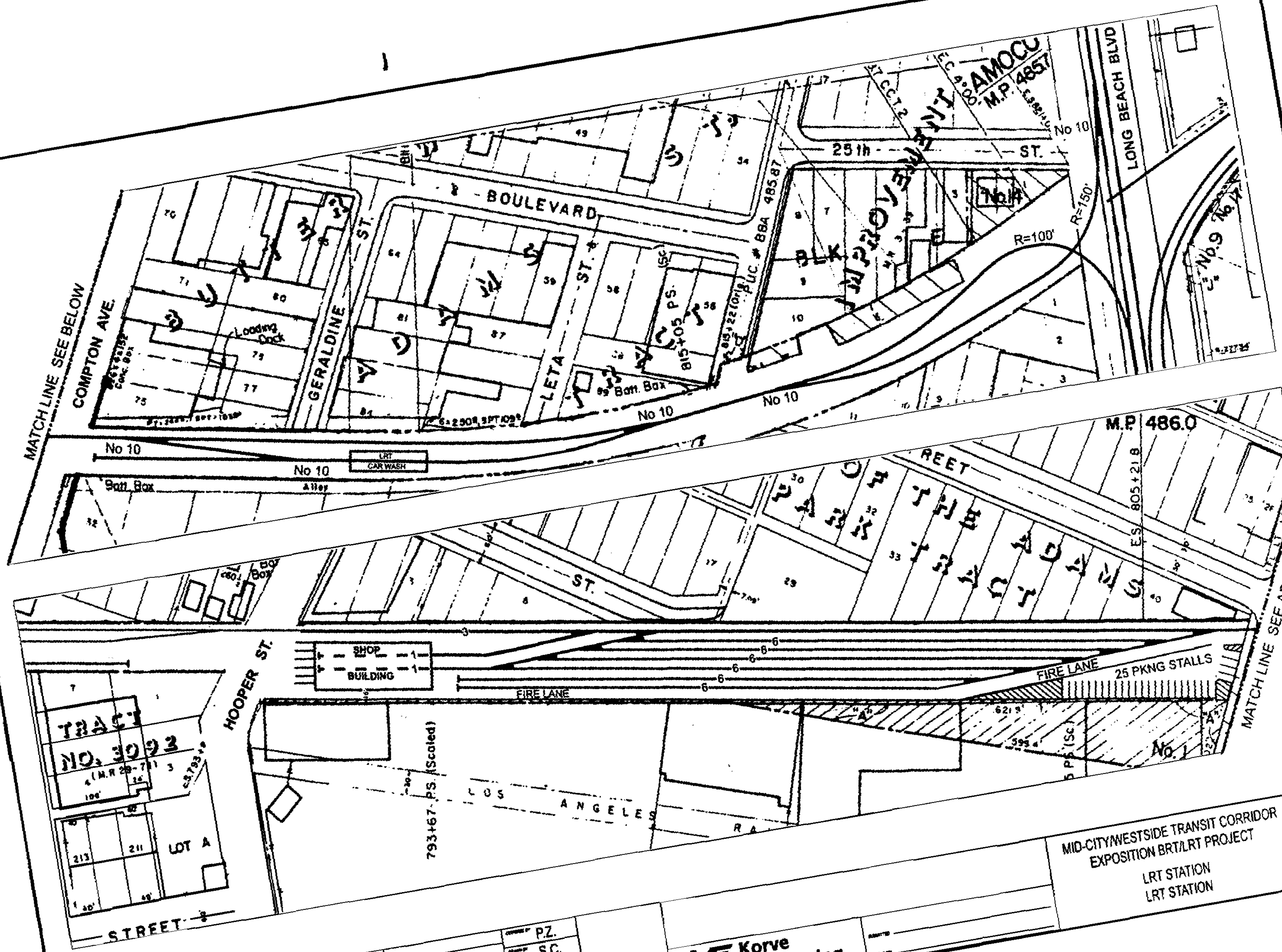
ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	P.Z.
DRAWN BY	S.C.
CHECKED BY	J.S.
IN CHARGE	J.S.
DATE	8 Dec 00

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT
NON-REVENUE TRACK
BETWEEN HILL ST AND HOOVER AVE
SHEET 3 OF 3

DRAWING NO	EL - 93
SCALE	AS NOTED
SHEET NO	152



ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

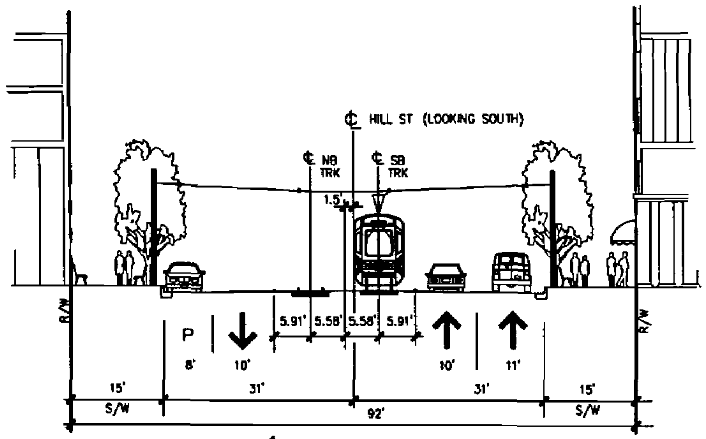
P.Z.
S.C.
J.S.
J.S
8 Dec 00

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION BRT/LRT PROJECT

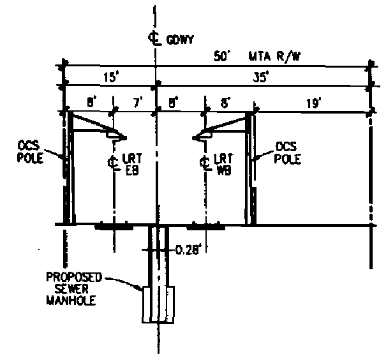
LRT STATION
LRT STATION

WB-94
NO SCALE
153



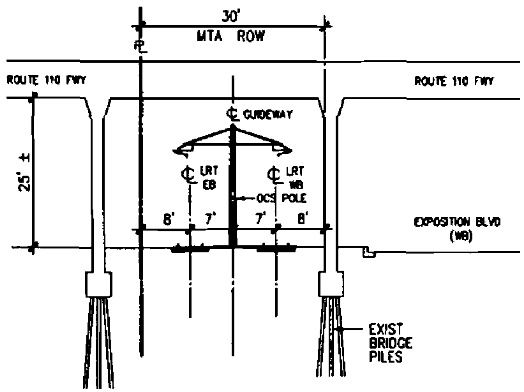
L-1 / EL-011 / EL-012 LRT SECTION

1"=20'



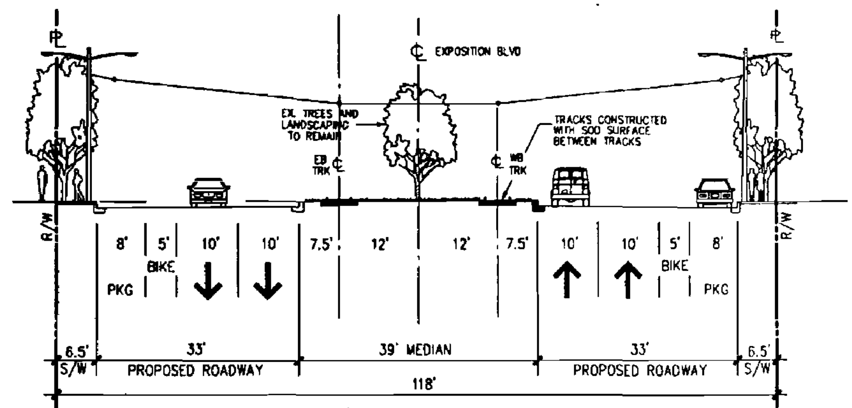
L-2 / EL-013 LRT SECTION

1"=20'



L-3 / EL-013 LRT SECTION

1"=20'



L-4 / EL-61 LRT SECTION

1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-1 THROUGH L-4

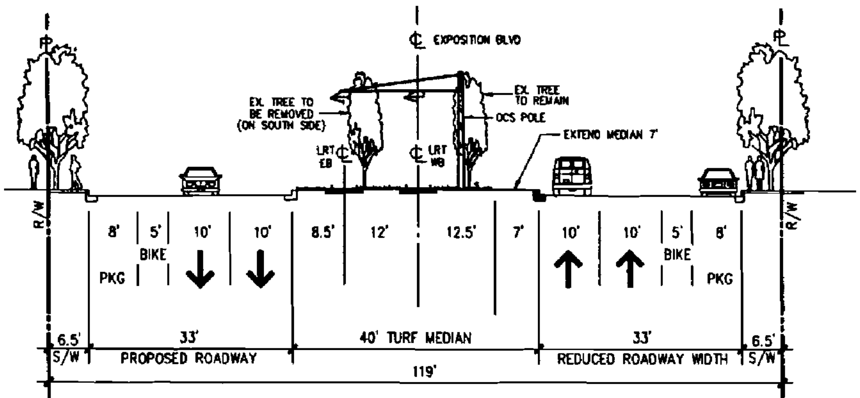
CONTRACT NO

DRAWING NO. EL-101

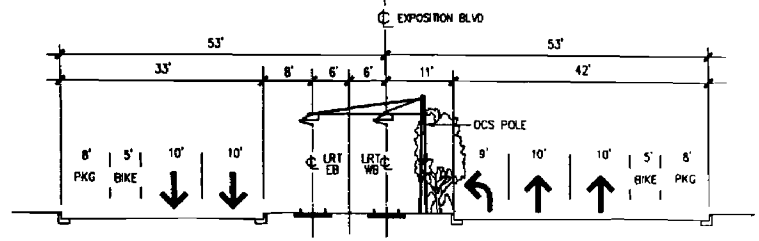
REV

SCALE 1" = 20'

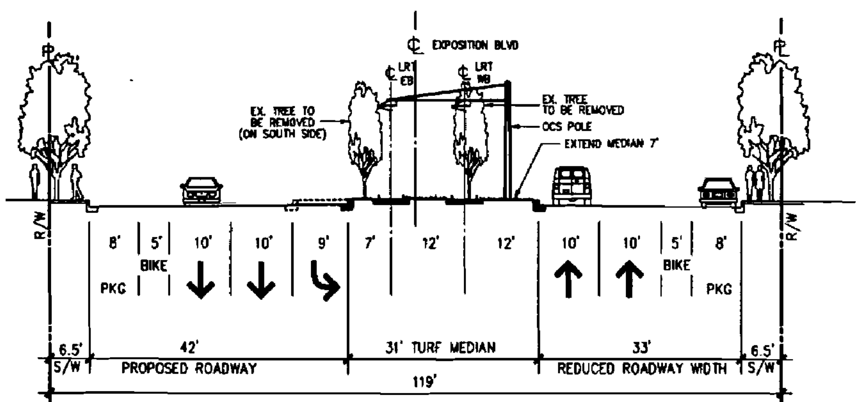
SHEET NO. 154



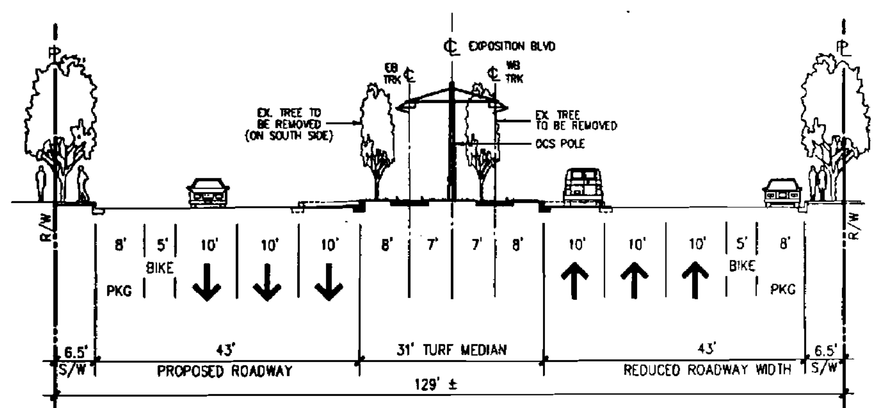
L-5 / EL-015 LRT SECTION
1"=20'
EL-016



L-6 / EL-015 LRT SECTION
1"=20'



L-7 / EL-015 LRT SECTION
1"=20'



L-8 / EL-062 LRT SECTION
1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	CHK	APP	DESCRIPTION	REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

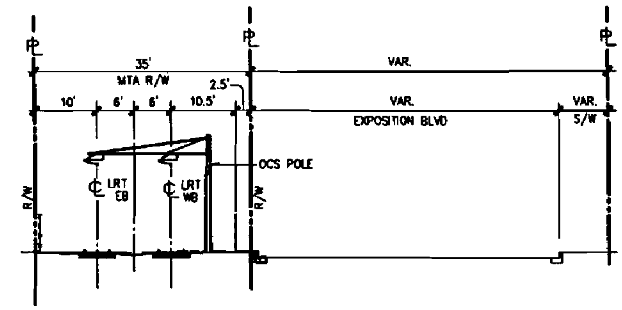
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

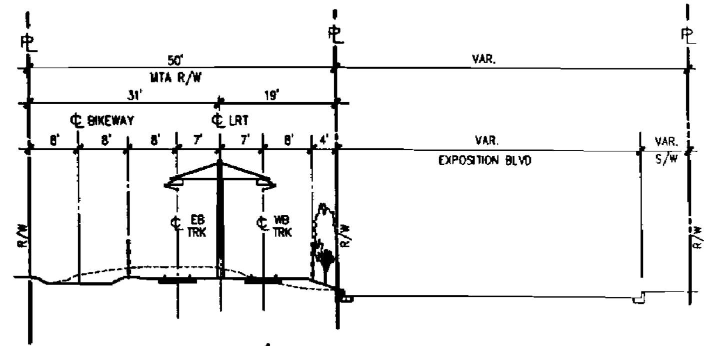
TYPICAL SECTIONS
L-5 THROUGH L-8

CONTRACT NO.
DRAWING NO. EL-102
REV
SCALE 1" = 20'
SHEET NO. 155



L-9 / EL-017 LRT SECTION

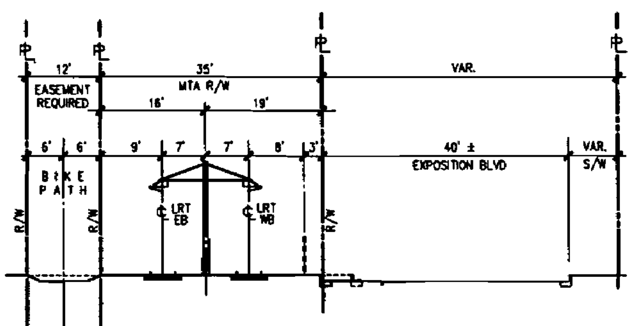
1"=20'



L-10 / EL-018 LRT SECTION

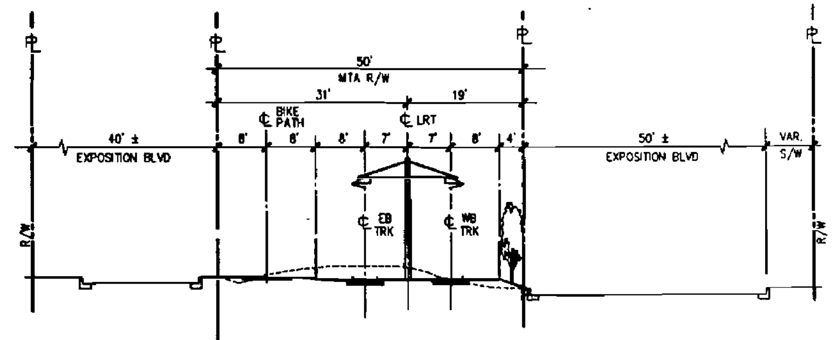
1"=20'

EL-020
EL-021
EL-022



L-11 / EL-018 LRT SECTION

1"=20'



L-12 / EL-019 LRT SECTION

1"=20'

EL-020
EL-022

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

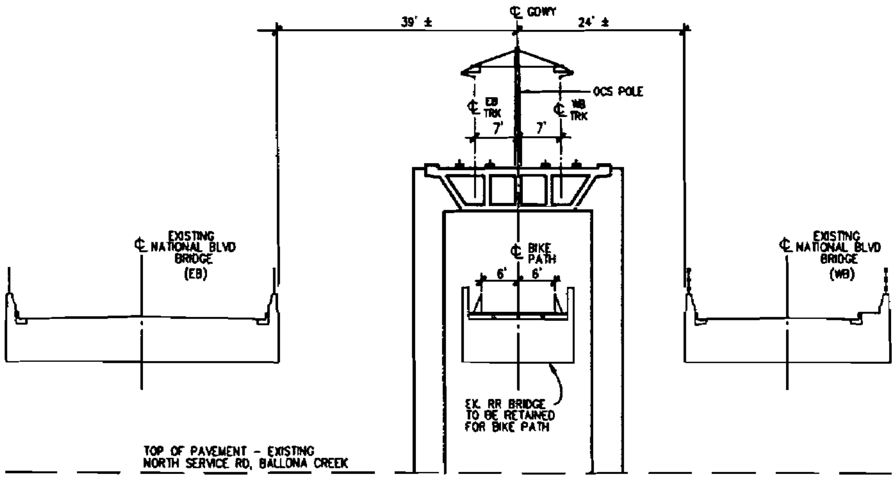
DESIGNED BY JP
DRAWN BY JP
CHECKED BY PZ
IN CHARGE PZ
DATE OCT 4, 2000

Korve Engineering

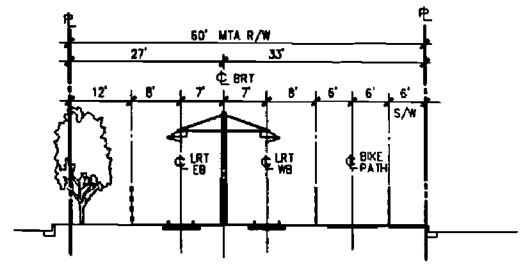
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-9 THROUGH L-12

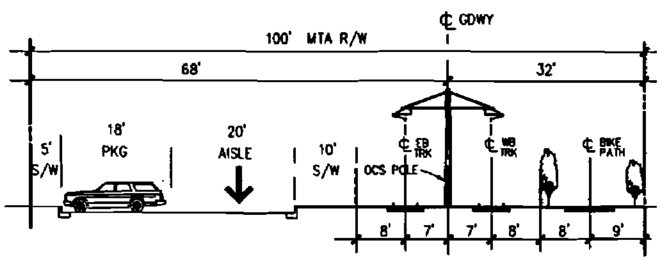
DRAWING NO. EL-103
SCALE 1" = 20'
SHEET NO. 156



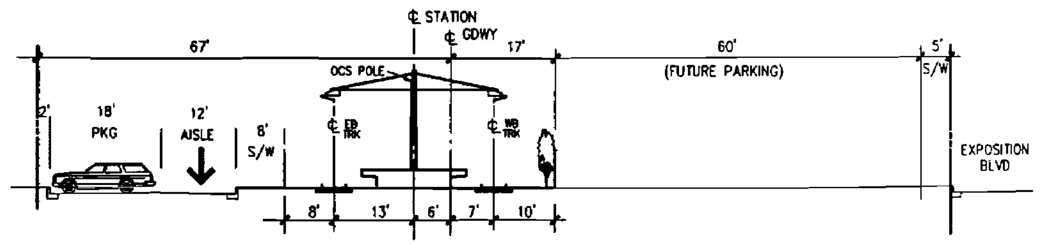
L-13 / EL-024 **BALLONA CREEK SECTION**
1"=20'



L-14 / EL-024 **LRT SECTION**
1"=20'



L-15 / EL-67 **LRT SECTION**
1"=20'



L-16 / EL-67 **VENICE/WASHINGTON STATION SECTION**
1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

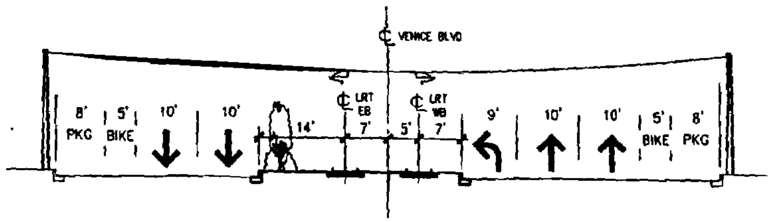
SUBMITTED

APPROVED

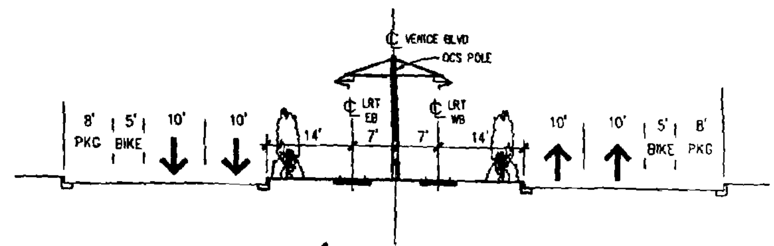
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-13 THROUGH L-16

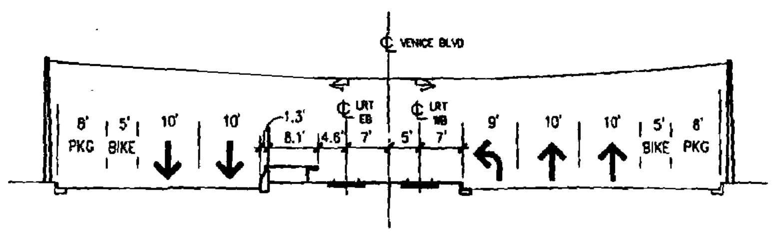
CONTRACT NO	
DRAWING NO	EL-104
SCALE	1" = 20'
SHEET NO	157



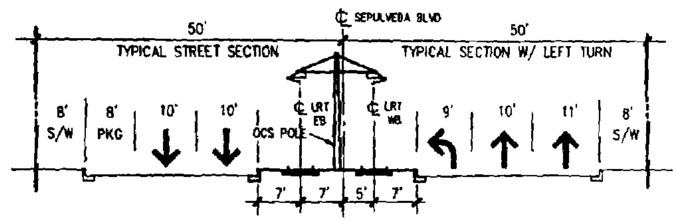
L-17 / EL-68 LRT SECTION
1"=20'
EL-69



L-18 / EL-69 LRT SECTION
1"=20'
EL-70
EL-71



L-19 / EL-70 LRT SECTION
1"=20'
EL-69



L-20 / EL-72 LRT SECTION
1"=20'
EL-73
EL-74
EL-75

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

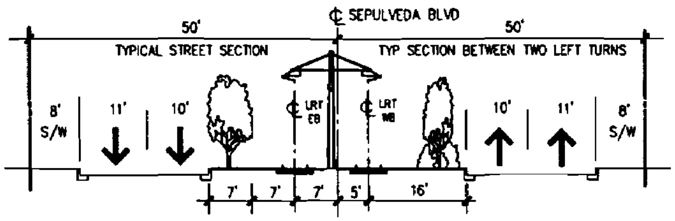
DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

Korve Engineering

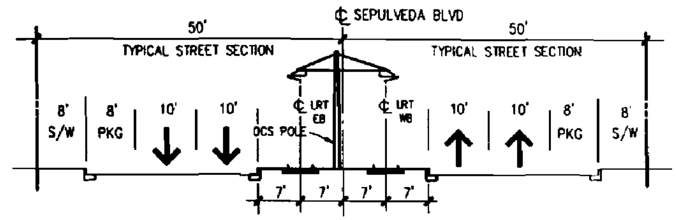
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-17 THROUGH L-20

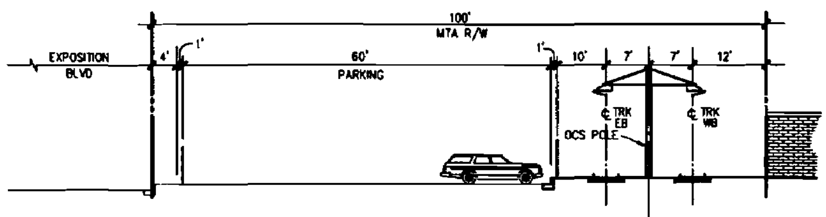
DRAWING NO.	EL-105
SCALE	1" = 20'
SHEET NO.	158



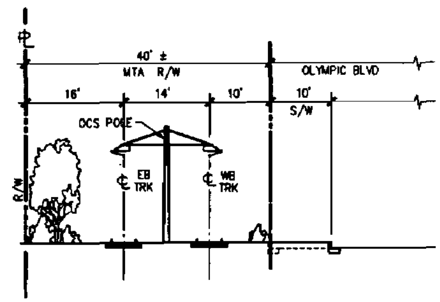
L-21 / EL-73 **LRT SECTION**
1"=20'



L-22 / EL-73 **LRT SECTION**
1"=20'
EL-74
EL-75



L-23 / EL-035 **LRT SECTION**
1"=20'
EL-80



L-24 / EL-82 **LRT SECTION**
1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

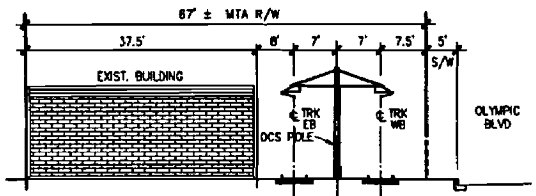
DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 6, 2000

Korve Engineering

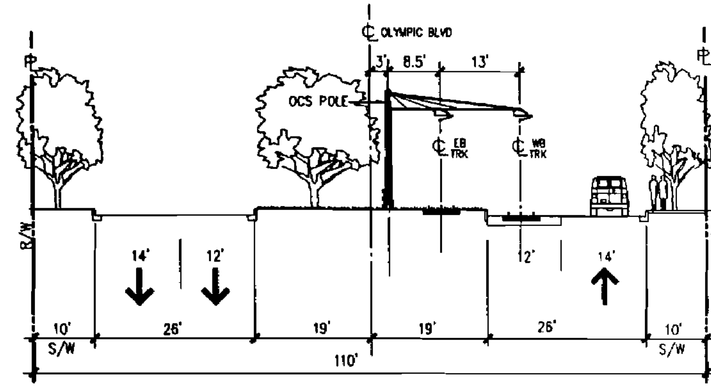
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-21 THROUGH L-24

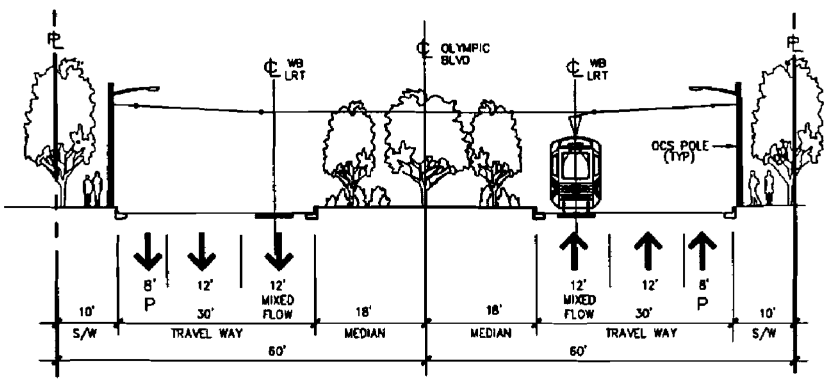
DRAWING NO	EL-106
SCALE	1" = 20'
SHEET NO	159



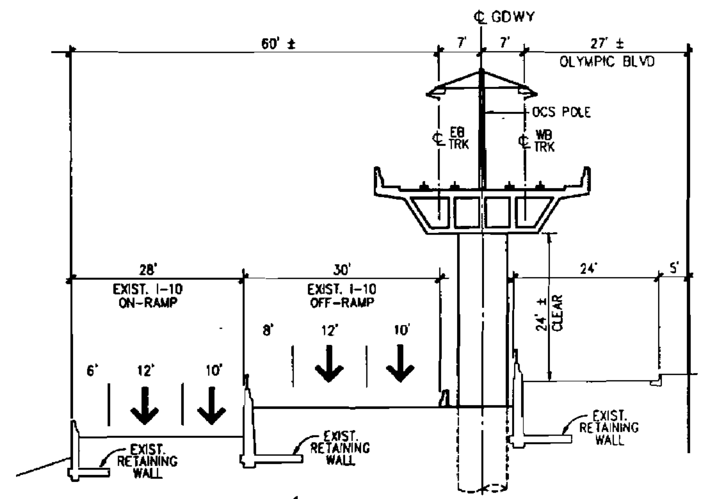
L-25 / EL-83 LRT SECTION 1"=20'



L-26 / EL- LRT SECTION 1"=20'



L-27 / EL-037 LRT SECTION 1"=20'
EL-038
EL-039



L-28 / EL-040 I-10 FWY OFF-RAMP SECTION 1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION	
												DESIGNED BY JP
												DRAWN BY JP
												CHECKED BY PZ
												IN CHARGE PZ
												DATE OCT 4, 2000

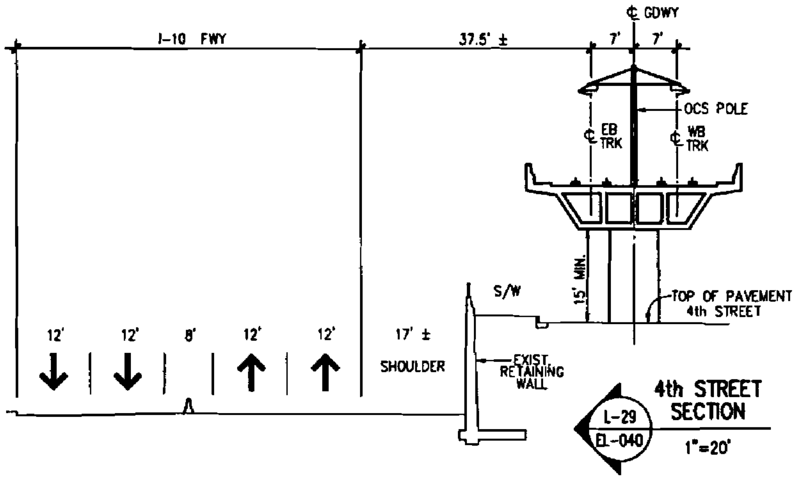
Korve Engineering

SUBMITTED
APPROVED

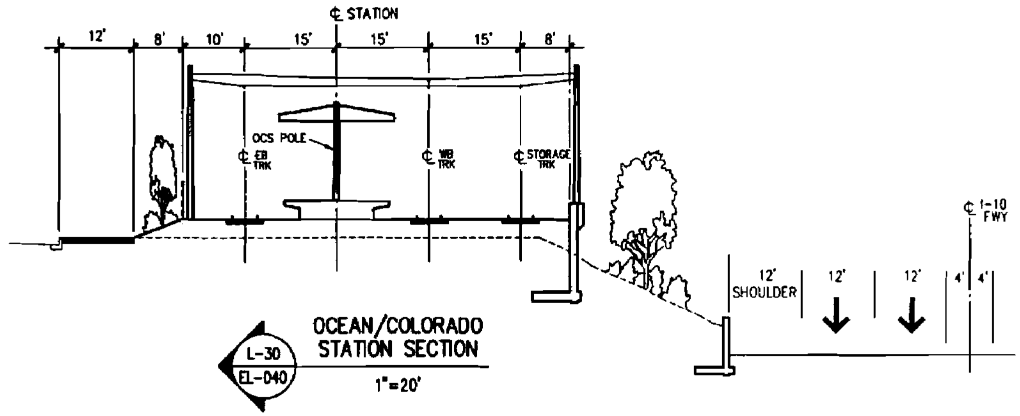
MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-25 THROUGH L-28

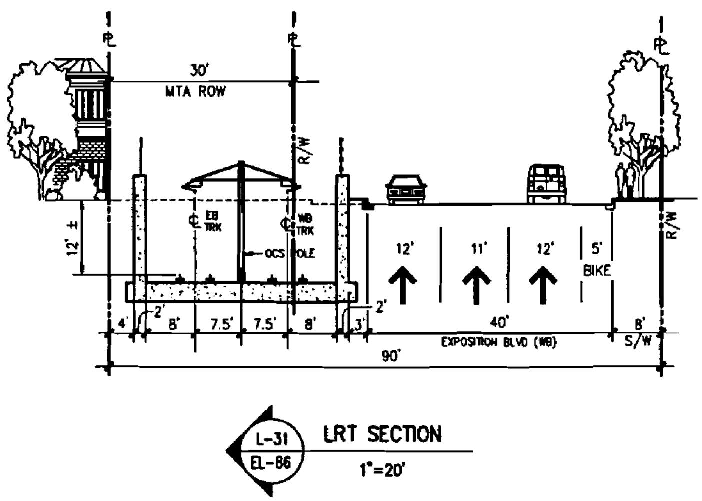
CONTRACT NO.
DRAWING NO. EL-107
REV
SCALE 1" = 20'
SHEET NO. 160



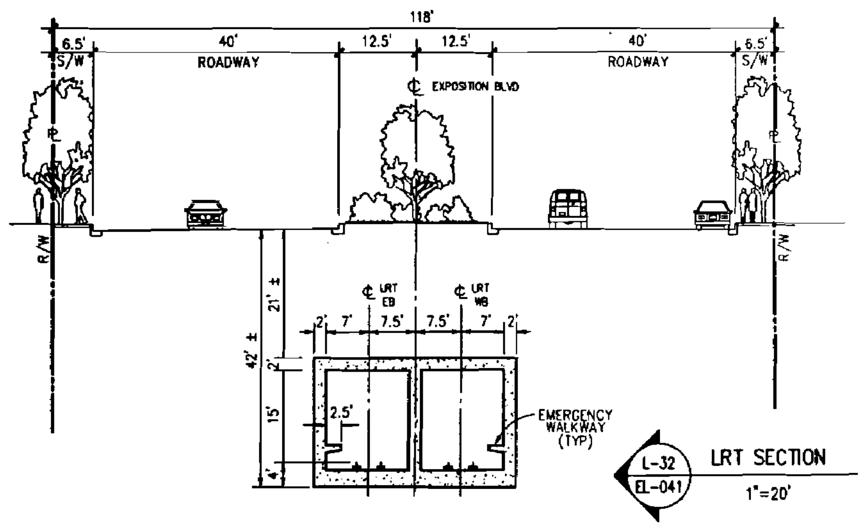
4th STREET SECTION
1"=20'



OCEAN/COLORADO STATION SECTION
1"=20'



LRT SECTION
1"=20'



LRT SECTION
1"=20'

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

DESIGNED BY	JP
DRAWN BY	JP
CHECKED BY	PZ
IN CHARGE	PZ
DATE	OCT 4, 2000

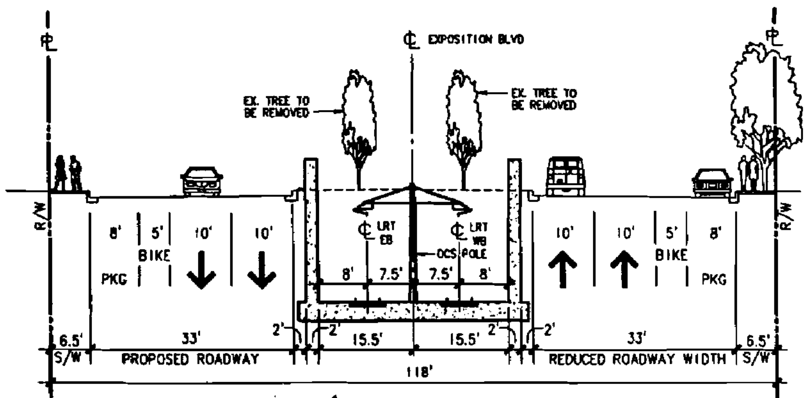
Korve Engineering

SUBMITTED
APPROVED

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-29 THROUGH L-32

CONTRACT NO.	
DRAWING NO.	EL-108
SCALE	1" = 20'
SHEET NO.	161



L-33
EL-042

LRT SECTION

1"=20'

L-34 NOT USED

L-35 NOT USED

L-36 NOT USED

ALL DIMENSIONS ARE IN FEET (ft) UNLESS OTHERWISE NOTED

02/23/01

Korve Engineering

MID-CITY/WESTSIDE TRANSIT CORRIDOR
EXPOSITION LRT PROJECT

TYPICAL SECTIONS
L-33 THROUGH L-36

EL-109

1" = 20'

182