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.

TABLE 2-1
CHARACTERISTICS OF MID-CITY/WESTSIDE ALTERNATIVES

	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.

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.

Figure 2-2: The Metro Rapid Program

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

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.

Figure 2-5: BRT Typical Station Exposition or Wilshire

Figure 2-6: 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.

Figure 2-7: Wilshire Median Island/Left Turn Locations – Mid-City, Miracle Mile

Figure 2-8: Wilshire BRT Median Island/Left Turn Locations – Beverly Hills

Figure 2-9: Wilshire BRT Median Island/Left Turn Locations – Westwood

Figure 2-10: Wilshire BRT Median Island/Left Turn Locations – West Los Angeles, Santa Monica

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

Figure 2-12: Alternative 1B: Wilshire BRT Curb-Adjacent Diagram 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

Figure 2-13:BRT Vehicles

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

- 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

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.

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

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

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

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).

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

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:

- 7^{th}/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

Figure 2-18: Alternatives 3 & 3A: Exposition LRT

Figure 2-19: Exposition at USC: Rapid Bus Option

Figure 2-20: Exposition at USC: Light Rail Option

Figure 2-21: Exposition at USC Subway Option

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

TABLE 2-8 WILSHIRE BRT AND EXPOSITION LRT OPERATING CHARACTERISTICS	
Avg Speed:*	24 mph, including stops, and delay in street-running sections.
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.