DOWNTOWN LOS ANGELES

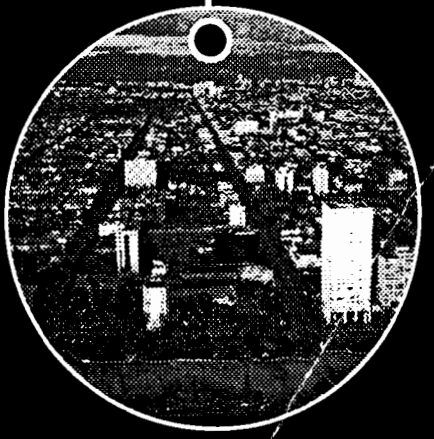
EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

FINAL DRAFT

Phase I Summary Report

December 1994



DOWNTOWN SANTA MONICA

MTA

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

BRW

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Myra Frank and Associates
Katz, Okitsu and Associates
ICF/Kaiser Engineers

FINAL DRAFT

EXPOSITION RIGHT-OF-WAY ALTERNATIVES REFINEMENT STUDY REPORT

PHASE I OF THE EXPOSITION CORRIDOR ALTERNATIVES REFINEMENT/ ENVIRONMENTAL IMPACT REPORT STUDY

Prepared for:

Los Angeles County
Metropolitan Transportation Authority
818 West 7th Street
Los Angeles, CA 90017

Prepared by:

BRW, Inc.
620 C Street, Suite 300
San Diego, CA 92101

December 1994

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S.0 Executive Summary

S.1 INTRODUCTION

The Exposition Right-of-Way Alternatives Refinement/Environmental Impact Report (AR/EIR) Study is being undertaken by the Los Angeles County Metropolitan Transportation Authority (MTA)[1] to continue the transportation planning process for the corridor. The chief objective is to identify transit improvements to address mobility needs and demands in the Exposition Right-of-Way Corridor. Public input and more detailed engineering refinement and initial environmental evaluation have been used in this study to address questions related to project description and feasibility of project alternatives.

As shown in Figure S-1, the Exposition Corridor stretches for 12 miles through sections of the busy Westside of Los Angeles, Los Angeles County, Culver City and Santa Monica. It contains I-10/Santa Monica Freeway, the busiest freeway in the county. The study area is a diverse subarea composed of numerous neighborhoods and communities criss-crossed by several major transportation facilities.

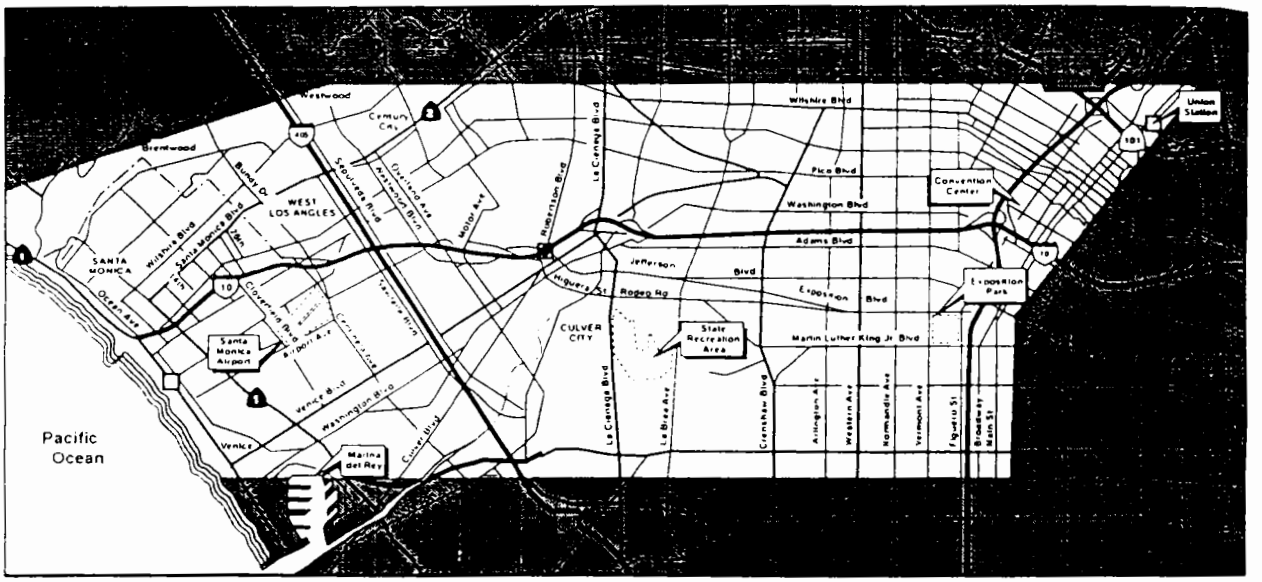
Background

In November 1990, the MTA acquired a group of Southern Pacific Railroad properties in the Los Angeles Basin area with the intent of developing immediate transit improvements on some of those alignments (e.g. Metrolink Commuter Rail Lines) and preserving others for transportation use in the future. The Exposition Right-of-Way (ROW), which was a part of this purchase, consists of trackage between the Metro Blue Line at Long Beach Boulevard and the eastern edge of Santa Monica at 16th Street.

Because of the substantial congestion in the corridor, a transit improvement in the Exposition ROW would serve several purposes:

- Reduce east/west congestion
- Improve access to the Santa Monica, Culver City and LA downtown areas and other major activity centers such as the Crenshaw District and USC/Exposition Park
- Offer increased connections for transit users transferring from the numerous bus lines in the Corridor

[1] The MTA was formed early in 1993 as a merger of the former Los Angeles County Transportation Commission (LACTC) and the Southern California Rapid Transit (SCRTD). To avoid confusion, studies and actions that took place prior to April 1993 are attributed to the MTA although the actions were in fact taken by the former LACTC.



Exposition Right-of-Way Study Area

S-1

BRW

Source: MTA February 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY Alternatives Refinement/ Environmental Impact Report Study

Preliminary Planning Study

During 1991-92, the MTA conducted a preliminary planning study as the first step in examining a significant transit capacity improvement in the Exposition ROW. This technical analysis and other previous planning efforts refined the general parameters of the Exposition route and modal alternatives by screening a longer list of potential improvement scenarios. **The Exposition Right-of-Way Preliminary Planning Study Final Report (May 1992)** documents the results of this screening process. The conclusions of that study identified seven route and modal alternatives for further study. Alternatives identified included light rail transit (LRT), bus on transitway, and an interim or adjunct bikeway alternative. The alternatives would use the Exposition ROW exclusively and/or in combination with placement along corridor streets/arterials or in shared use of I-10 and I-405 right-of-ways.

Current Study

The current study is the second step in the project development process called Alternatives Refinement/Environmental Impact Report Study (AR/EIR). The AR/EIR stage is necessary to more clearly define the alternatives under consideration and then submit those alternatives to a rigorous environmental evaluation. Once this stage is complete, the MTA would then be in a position to select a preferred alternative for implementation.

Phase I of this current study, Alternatives Refinement, was started in mid-March of 1993 to achieve two purposes:

1. ***Refine the Alternatives from the 1992 Preliminary Planning Study.*** In order to conduct an in-depth feasibility evaluation, more detailed design of the alternatives was necessary. The Phase I work used a process to refine the alternatives which included substantial public and agency input coupled with engineering design and transportation planning.

2. ***Evaluate the Refined Alternatives.*** Prior to beginning the environmental studies, it is important to reduce the number of alternatives to the most feasible and desirable. This Phase I work completed that screening process.

A summary of the evaluation of the seven alternatives and the recommendation of alternatives for further study in the EIR is contained in this Executive Summary. The MTA Board will review the list of alternatives and decide if further study and development of the EIR is warranted prior to starting Phase II of the Study process. Phase II consists of preparation of the Draft and Final EIR. Preparation of the EIR will begin contingent upon Board action.

S.2 DESCRIPTION OF ALTERNATIVES

The seven modal/alignment alternatives (plus the No-Build Alternative) defined as a result of the Preliminary Planning Study for consideration in the AR/EIR are listed below and depicted in Figure S-2.

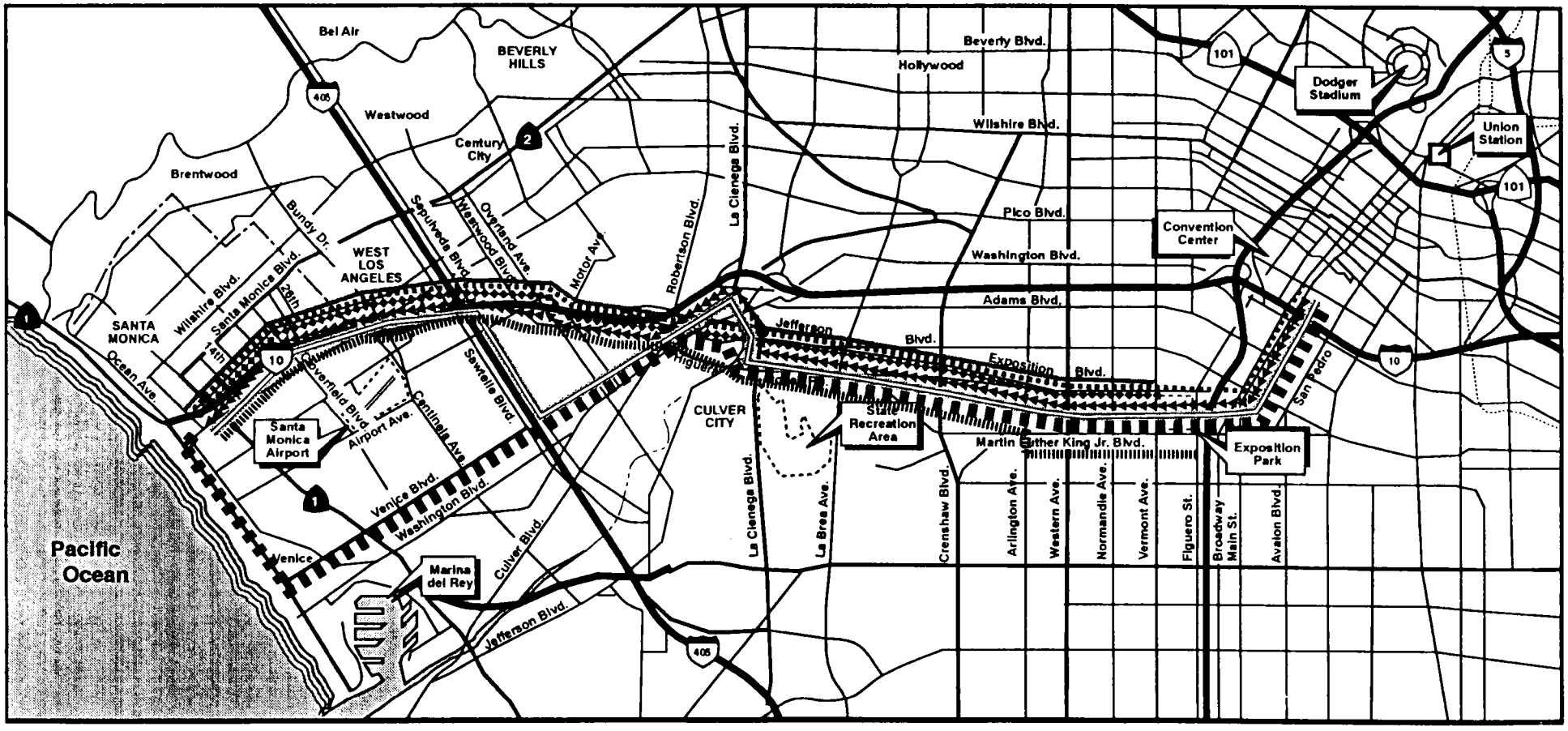
- **No-Build -** No transportation improvement on the Exposition ROW west of Vermont Avenue. The No-Build Alternative can be used as a background condition against which all other alternatives can be assessed.

- **Alternative A -** Light Rail Transit (LRT) from the Blue Line Exposition Park Branch at Vermont, west along the Exposition ROW to Main and Colorado in downtown Santa Monica.

- **Alternative B -** LRT from the Blue Line Exposition Park Branch at Vermont, west along the Exposition ROW. Just west of Motor Avenue the alternative deviates from the ROW to follow the south side of I-10 and the east side of I-405 before returning to the ROW to terminate at Main and Colorado in downtown Santa Monica.

- **Alternative C -** Bus from Downtown Los Angeles south on Broadway to turn west using exclusive lanes on the Exposition ROW to 4th and Colorado in downtown Santa Monica.

Exposition Corridor Study Alternatives



LRT Alternative A - Expo ROW

LRT Alternative B - I-10 Alignment

Bus Alternative C - Expo ROW

Bus Alternative D - La Cienega Detour

Bus Alternative E - Venice - Sepulveda Detour

Bus Alternative F - Venice - Ocean Park

Bikeway Alternative G - Expo ROW

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. S-2

BRW

Source: B R W, Inc., 21 September 1994

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

- **Alternative D** - Bus following the Alternative C alignment out of downtown LA to the Exposition ROW; at La Cienega the Alternative departs from the ROW, turning north on La Cienega in mixed-flow, continuing southwest in mixed traffic flow along Venice Boulevard to return to the ROW and continue west to downtown Santa Monica.

- **Alternative E** - Bus from downtown Los Angeles, following the Alternative C alignment; the Alternative departs the ROW west of Robertson to turn southwest along Venice, turning north to follow Sepulveda Boulevard in mixed-flow to re-join the Exposition ROW to the terminus point in downtown Santa Monica.

- **Alternative F** - Bus following the same alignment as Alternative E, but continuing in the median of Venice past Sepulveda Boulevard to Lincoln Boulevard; continuing west along Venice in mixed flow traffic operations; connect with Pacific Avenue/Neilson Way northbound (Main Street southbound) to downtown Santa Monica.

- **Alternative G** - Bikeway from the USC/Coliseum area to Santa Monica, as an interim use or permanent use alongside the LRT or Busway, using the Exposition ROW; combination bikeway, bike route and bike path.

Discussion of Modal Alternatives

The modal alternatives considered consisted of both rail and non-rail technologies, consistent with the multi-modal nature of the MTA long range plan. The specific modal alternatives include Light Rail Transit (LRT), Bus, and a bikeway.

Light Rail Transit (LRT) - Light Rail Transit service involves the construction of a modern fixed guideway system with electrically powered vehicles. Since the late 1970s, several California cities have implemented Light Rail Transit, including Los Angeles (Metro Blue Line), San Diego (San Diego Trolley), Sacramento (RT Metro), and Santa Clara County, as well as other cities around the U.S. and in Canada. The Pacific Electric System, which once contained an extensive network of electric passenger rail lines throughout the Los Angeles Basin, is an example of the predecessor to LRT. The development of recent LRT systems brought streetcar and interurban technology to modern day standards.

The Exposition LRT Alternative would operate as a segment of the Blue Line, extending, ultimately from Burbank to Santa Monica. It would travel through downtown Los Angeles via the planned LRT Blue Line connector from Union Station to 7th and Flower Street, the Exposition Park Branch of the Blue Line from Vermont Avenue and the Exposition ROW from Vermont Avenue to downtown Santa Monica. Analyses and comparisons considered the LRT as an extension of the Exposition Park Branch which would end at Vermont Avenue.

Bus - Bus technology on a transitway was selected as a lower capital cost alternative for the corridor. Any type of bus technology could be used in the corridor. Bus technologies could include zero or low emission vehicles using propulsion systems such as natural gas or fuel cell. A transitway would be constructed within the ROW to provide a lane in each direction along with break-down/shoulder lanes.

The Preliminary Planning Study evaluated Electric Trolley Bus (ETB) for Alternatives C, D, E, and F. However, the MTA Board has subsequently acted to indefinitely cancel the County's ETB program. There are no plans to convert any MTA bus lines to ETB technology and there are no plans to implement new ETB services. Consequently, this Alternatives Refinement Report focuses on use of buses rather than ETB for use in the Exposition Corridor. This is to insure a bus system that is integrated in terms of technology with common maintenance and operational requirements.

Bikeway - A bikeway facility is intended primarily for one type of user, the non-motorized bicyclist. Many cities in California feature extensive bicycle facilities which are used by commuters, students, and recreational riders. Some agencies and jurisdictions publish regional and local bicycle trail maps to inform the cycling community of route options and available facilities. Bikeways generally are configured in two ways:

- Class I Bikepath: A completely separated, protected, and paved linear path which follows a linear corridor such as a river channel, abandoned rail or road bed, or other public property line, with periodic access interface with other paths or ordinary roads. The Ballona Creek bike path is an example of this application.

- Class II Bike Lanes or Class III Bike Route: A striped or signed lane on a street, offering some traffic operations control and safety enhancement to bicycle users. This type of bikeway requires no separate property or construction, but sometimes leads to traffic confrontations or unsafe conditions for bicycle users. Venice Boulevard, as an example, contains bicycle route signs at curbside and some special lane designations and/or striping along the route.

Bikeways may contain one or two lanes and could have auxiliary facilities, such as pullouts or shelters, if funding permits.

Operating Frequency and Capacity

Assumptions were made concerning the capacity of the alternatives in terms of service frequency and vehicle capacity. Service frequency for both LRT and bus was assumed to be similar to the MTA Long Beach Blue Line with six-minute headways in the peak periods and ten-minute off-peak period headways. The morning and evening peak periods were assumed as follows:

- Morning Peak Period - 6:00 to 9:00 a.m.
- Evening Peak Period - 4:00 to 6:00 p.m.

For purposes of estimating capacities and operating costs, this analysis assumes that the corridor transit service would run from 5:00 a.m. to 1:00 a.m. for a 20-hour day on Monday through Saturday, with a reduced service frequency on Sundays and holidays.

Vehicle capacities were assumed consistent with MTA standards. Each Light Rail Vehicle has a capacity of 150 persons seated and standing. Maximum train lengths of the two vehicles were assumed. Trains of two vehicles would be operated throughout the day. The busway vehicles were assumed to be larger than standard buses, articulated vehicles, capable of carrying 90 persons seated and standing.

Table S.1 summarizes the capacity that would result from either of the two modal alternatives.

TABLE S.1
SUMMARY OF MODAL ALTERNATIVE CAPACITY

PARAMETER	ALTERNATIVE	
	LRT	BUSWAY
Vehicle Capacity	150	90
Train Capacity	300	N/A
Peak Period Capacity [1]		
• A.M. Peak	18,000	5,400
• P.M. Peak	12,000	3,600
Off Peak Capacity [1]	41,400	16,200
Daily Capacity [1]	71,400	25,200

[1] Two-way person capacity with 6-minute peak and 10-minute off-peak headways.

SOURCE: BRW, Inc.; October 1993.

Public Input to the Refinement of Alternatives

The process to conduct community meetings and obtain public comment was established in the Preliminary Planning Study and was continued in the Alternatives Refinement/EIR Study. Specifically community input was used to:

- Identify and provide detail on issues and concerns that can be addressed with design of alternatives and can assist the MTA in the comparison of alternatives;
- Suggest ideas about how to incorporate the transportation improvement into the area (i.e., pedestrian and auto linkages, separation treatments, etc.); and,
- Identify issues and concerns to be addressed in the environmental studies.

A series of public meetings for the Alternatives Refinement Phase was held in Spring 1993. During this time, eight workshops were held and over 1,000 comments obtained. Immediately following these workshops, all of the comments were sorted into one or more of seven categories. This was done to enable the consultant team to refer to and use the public input effectively in the refinement and evaluation process.

The comments were further reviewed to determine how they might be incorporated into the alternatives design and/or evaluation. In general, comments were incorporated in one of the following ways:

- Comment Noted
- Incorporated in Design of Alternative
- Recommended to be incorporated into EIR Analysis
- Considered in Evaluation
- Considered in Station Location Analysis
- Part of System-wide Assessment (This refers to future work by the MTA to evaluate system priorities and alternative extensions over the next several years)
- Considered in the Planning Process (This refers to the general process of project planning for the MTA system in general rather than specifically the Exposition Corridor)

The public input was used in Phase I to refine the location of the guideway and stops/stations. Input was used to develop conceptual designs for the horizontal and vertical alignments of the alternatives. Issues were addressed and the rationale described in the Phase I Report. In addition, a full listing of all comments received is contained in the Phase I Report appendix.

The primary conclusion that can be drawn from the comments made at the community meetings is that there is a lack of consensus in the community as to the appropriate use of the right-of-way. Some citizens requested that an LRT be constructed as soon as possible along the corridor to serve transportation needs and to stimulate economic development around certain station sites. Other citizens strongly expressed that LRT and bus along the ROW would be totally incompatible where adjacent to residential land uses, especially single family, and should not be constructed at all.

Traffic Control Refinement

An extensive traffic analysis was conducted to define the type of crossing that should be used at each major intersection. The study focused on direct impacts created by transit operations along the Exposition ROW and along Venice Boulevard. These impacts may be due to disruptions to traffic by LRT or buses on the transitway at gated crossings, or by the addition of special signal phases provided for transit vehicles. Other impacts may include loss of lanes, changes to existing traffic signal phasing, or turn prohibitions to provide for transit vehicle operations.

Three alternatives at each intersection were analyzed for the morning and evening peak hours in the year 2010:

1. No-Build (for comparison purposes)
2. Gated Preemption (for LRT only)
3. Signal Control (with progression strategies for both LRT and Transitway Bus)

The Gated Preemption Alternative assumed that the LRT would preempt traffic operations at the crossing when the train was present. Railroad gates would stop traffic, and LRT would encounter minimal delay. The traffic analysis assumed the same intersection configurations as the No-Build: no lanes were assumed to be lost due to installation of LRT. One exception was at 20th Street/Olympic Boulevard in Santa Monica, where a through lane of traffic in the eastbound and westbound directions were assumed to be lost. This assumption was based on input from City of Santa Monica staff indicating that use of a travel lane for LRT could be possible, and would be preferable to removing mature trees in the Olympic Boulevard median.

The Signal Control Alternative assumed LRT or bus would be controlled at crossings by a traffic signal. Without a signal progression strategy used in operating the transit line, the LRT or bus must wait for its signal phase before proceeding, like any other motor vehicle. Also, signal controlled intersections would limit the maximum speed of the LRT to 35 or 45 miles per hour depending on whether the ROW is in the street median or is semi-exclusive, fenced ROW. The traffic analysis assumed the same intersection configurations as the No-Build at all crossings, except at 20th Street, where one eastbound and one westbound lane of traffic was lost. At many crossings, it was assumed that illuminated "No Left Turn" and "No Right Turn" signs would prohibit automobiles from turning across the transit crossing while the bus or LRT vehicle had a green light.

At selected locations, mitigation measures were studied which added lanes of traffic at the intersection. Additional lanes were added in the analysis until the impact reached a level of insignificance. This was done to assess the reasonableness of mitigating the impacts of the transit crossing by increasing the capacity of the intersection versus recommending a more costly grade separation at that location.

Analysis Results

Initial Corridor-long simulations were run assuming existing signal timings, future volumes and the transit frequencies identified above. Although not nearly as sophisticated as the traffic and transit (train) simulation and control system in use along Washington Boulevard on the Blue Line, the simulation analysis showed a number of results with application to the Exposition Corridor:

- Traffic signal priority progression schemes would probably work acceptably without degrading operations at most intersections in the Corridor. The concern is that safety of transit vehicles, especially Light Rail Vehicles, crossing busy

intersections and the corresponding drop in transit speeds would result in adverse impacts to transportation operations.

- Use of gated pre-emption in the corridor would adversely affect traffic operations at most major four-legged intersections. Gated preemption could be used without adversely affecting traffic mid-block crossings on lower volume streets such as Westwood Boulevard and Bagley Avenue or three-legged intersections such as at Jefferson Boulevard/National Boulevard.

- From a traffic operations perspective, grade separations for both LRT and Transitway Bus are necessary at several locations if traffic operations are to be maintained at the existing level of service. The locations for grade separations are:

  - Washington Avenue/National Boulevard
  - Venice Boulevard/Robertson Boulevard
  - Overland Avenue
  - Sawtelle Boulevard
  - Pico Boulevard/Gateway Boulevard
  - Bundy Drive

- The following additional grade separations would be necessary for the LRT alternatives in order to achieve priority at all street crossings without adversely affecting traffic impacts:

  - La Brea Avenue
  - La Cienega Boulevard
  - Jefferson Boulevard
  - Sepulveda Boulevard
  - 26th Street
  - Cloverfield Boulevard
  - Olympic Boulevard

  At Crenshaw Boulevard and Arlington Avenue, it would be possible to cross at-grade with gated pre-emption if additional right-of-way is purchased to provide additional turn lanes. The City of Santa Monica has reviewed the concept plans and has found that at-grade operations within the City would be acceptable with roadway and signal improvements to limit overall delays.

  At Vermont, Normandie and Western, the LRT would travel at-grade with traffic on Exposition Boulevard. At these speeds (35 mph) using the median alignment, signal progression would be used to control LRT and traffic movements.

  For the busway alternatives, if absolute priority (full preemption) is desired at all major grade crossings, the same additional grade separations would be required as for LRT. However, absolute priority for the bus at all major grade crossings may not be appropriate or necessary given the lower peak hour ridership capacity of the busway versus the LRT.

- Signal control of the transit line crossing was shown to be feasible, from a traffic perspective, at several locations. Some locations would require minor geometric roadway improvements which can be incorporated into the design refinement. This signal control could allow for coordination of the transit vehicles through each intersection. Signal progression strategies could be used to coordinate the arrival of the transit vehicle at an intersection at the time the green indication is given for that movement. Although not as reliable as preemption, the transit vehicle could be expected to stop 25 to 35 percent of the time. As discussed previously, signal control with priority would be more appropriate for busway alternatives.

- Much more work would be needed to develop a corridor-wide progression scheme and signal coordination program. Especially with the rapid changes in technology, smart corridors are expected to be implemented much more widely in the future. Incorporation of a transit line such as the Exposition route is a logical addition to an overall corridor management scheme. Through the use of such technology, substantial savings in costly grade separations could be avoided with minor impacts to traffic and transit operations.

Refined Alternative

Community comments were carefully evaluated and generally incorporated into the design of the refined alignment along the Exposition ROW when there was a demonstrated need from a traffic operations perspective or when the suggestions enhanced an alternative without significantly lowering its cost effectiveness. Figure S-3 schematically depicts the plan and profile of the refined alignment for LRT guideway design within the ROW. The LRT Alignment represents a conservative approach to providing a guideway transit line in the Corridor from a traffic perspective because it is designed to avoid all impacts to major cross-street traffic.

The Busway Alternative on the ROW would operate with more at-grade crossings because the buses are vehicles typically found in current traffic flows. The Refined Alternative for the Busway is shown in Figure S-4 from Vermont to downtown Santa Monica.

It is expected that the refined project alternatives will be further modified during the preparation of the draft EIR as impacts in specific areas such as noise, traffic at stations, safety, aesthetics, and other areas are measured and identified. The draft EIR will analyze and recommend mitigation measures for significant adverse impacts in these areas.

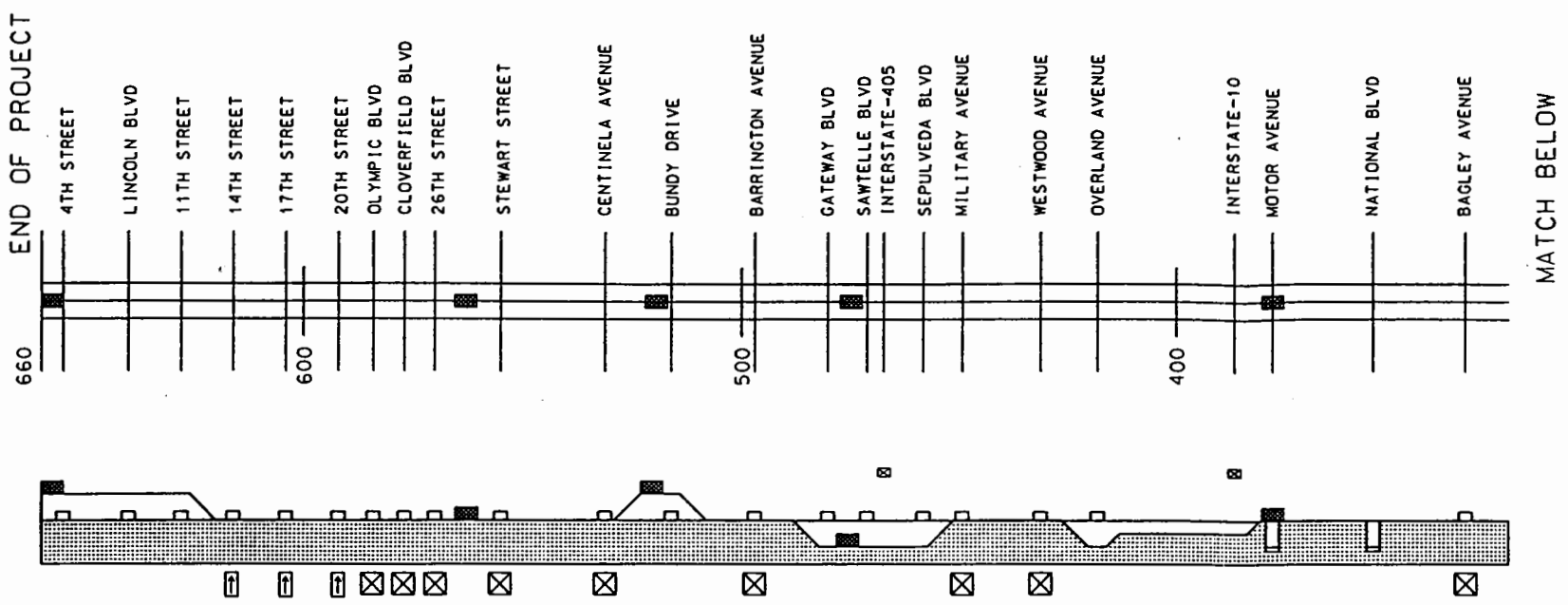
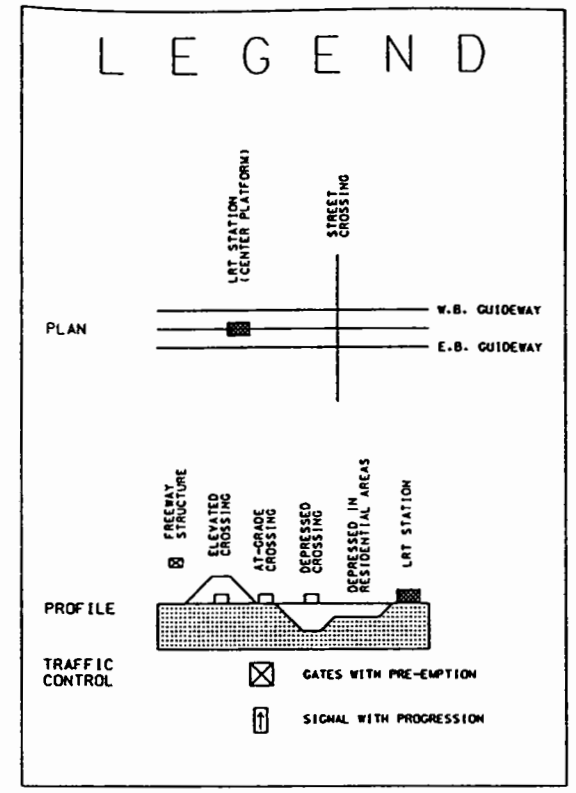


FIGURE A –
4TH/COLORADO
TO VENICE BLVD.



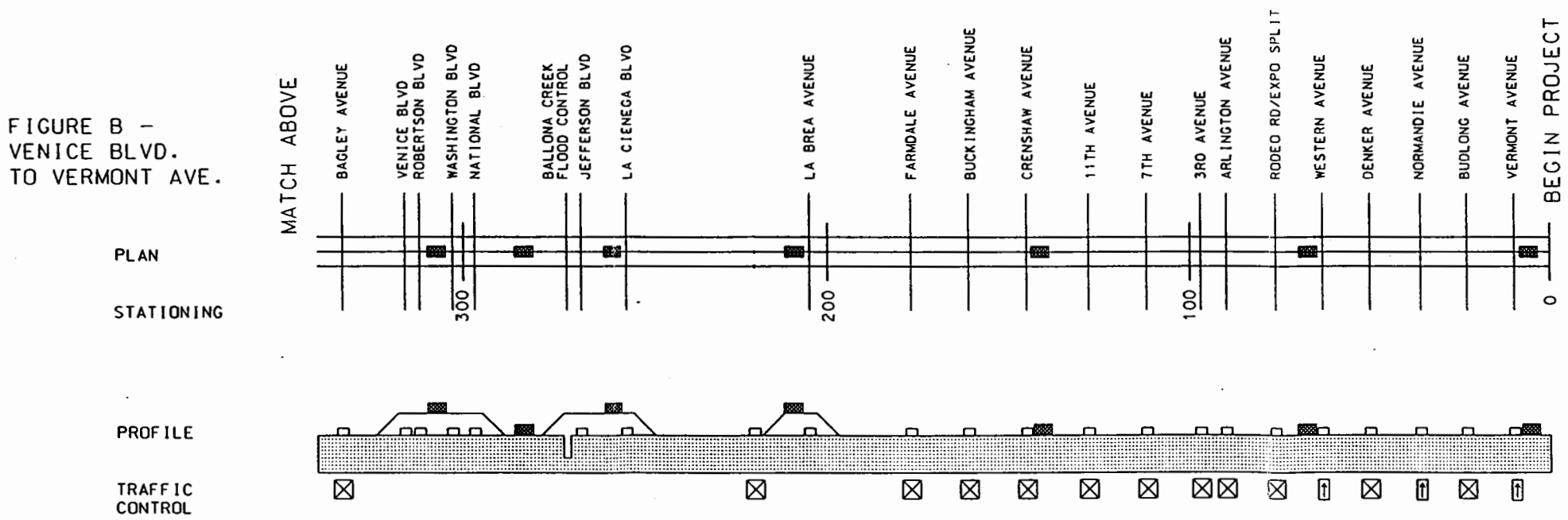


FIGURE B –
VENICE BLVD.
TO VERMONT AVE.

NOTES:
1. GEOMETRIC IMPROVEMENTS NECESSARY FOR AT-GRADE SIGNAL CONTROL.
2. THE TRANSIT PROFILE CANNOT BE DEPRESSED AT BAGLEY BECAUSE OF THE RISING GROUND-LINE TO THE WEST, AND THE ADJACENT I-10 EMBANKMENT.
3. COSTS INCLUDE CONSTRUCTION, RIGHT-OF-WAY, ADD-ONS, VEHICLES AND CONTINGENCIES.

BRW

MTA

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/
Environmental Impact Report Study

Source: BRW Inc. December 1994

Refined Alignment - LRT in Exposition Right-of-way

0 2000' 4000'
SCALE IN FEET

FIG. S-3

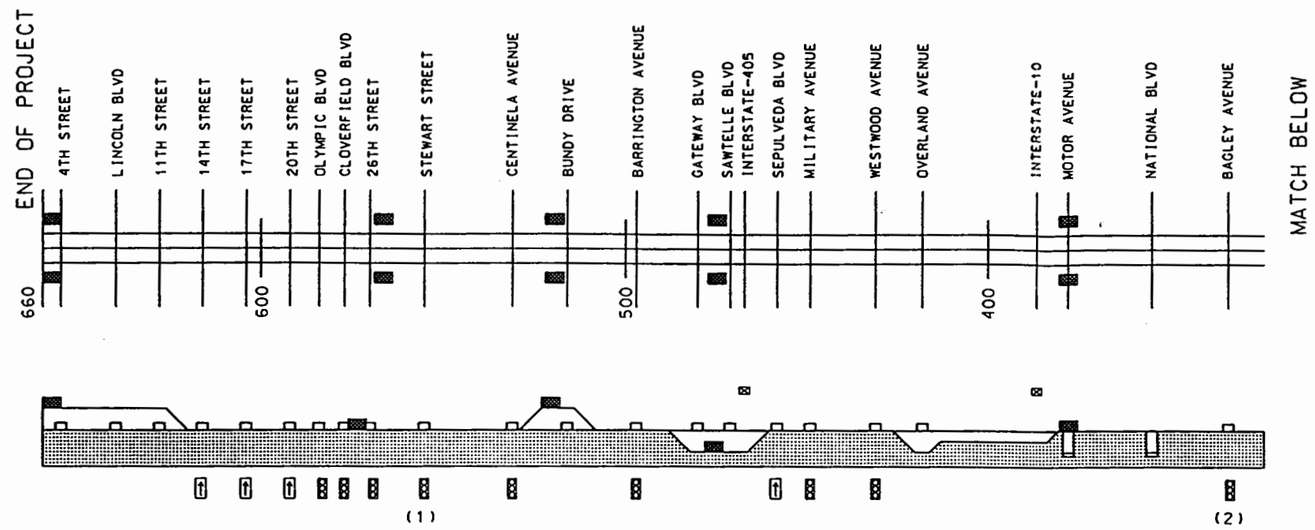


FIGURE A –
4TH/COLORADO
TO VENICE BLVD.

PLAN

STATIONING

PROFILE

TRAFFIC
CONTROL

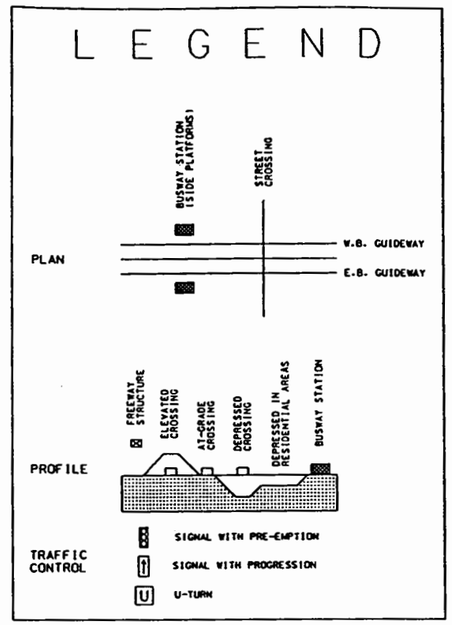
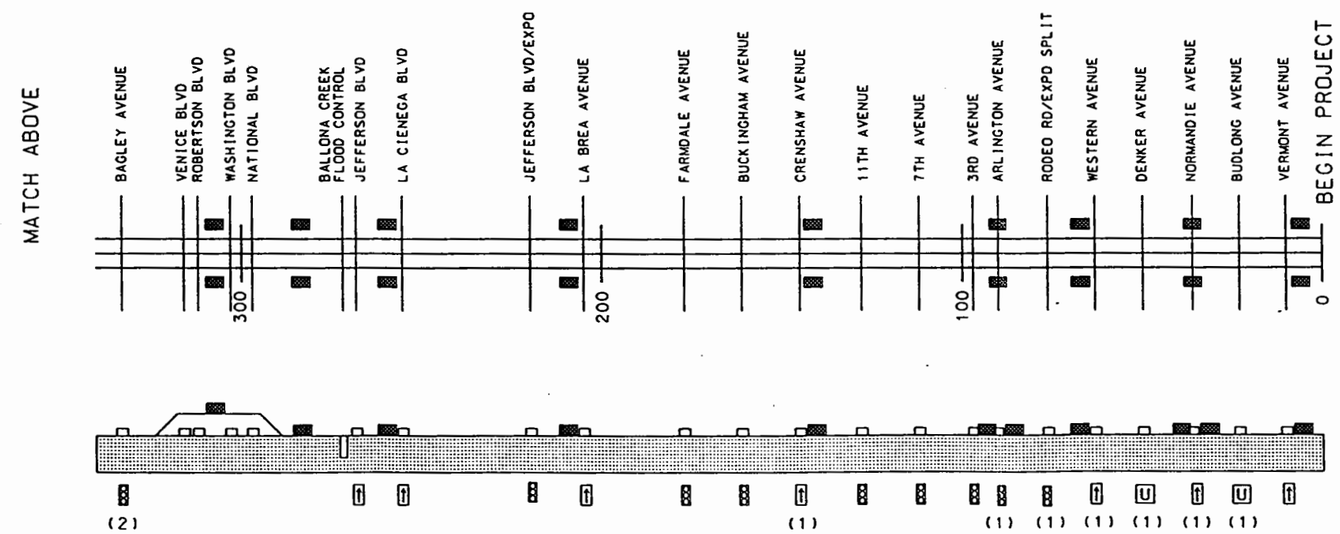


FIGURE B –
VENICE BLVD.
TO VERMONT AVE.



PLAN

STATIONING

PROFILE

TRAFFIC
CONTROL

NOTES:
1. GEOMETRIC IMPROVEMENTS NECESSARY FOR AT-GRADE SIGNAL CONTROL.
2. THE TRANSIT PROFILE CANNOT BE DEPRESSED AT BAGLEY BECAUSE OF THE RISING GROUND-LINE TO THE WEST. AND THE ADJACENT I-10 EMBANKMENT.
3. COSTS INCLUDE CONSTRUCTION. RIGHT-OF-WAY. ADD-ONS. VEHICLES AND CONTINGENCIES.

BRW

MTA

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/
Environmental Impact Report Study

Source: BRW Inc. December 1994

Refined Alignment - BUSWAY
in Exposition Right-of-way

0 2000' 4000'
SCALE IN FEET

FIG. S-4

S.3 EVALUATION

The design of the evaluation framework should enable a clear identification of the differences among the candidate alternatives. The purpose of the evaluation process in Phase I: Alternatives Refinement was to concentrate on key areas of difference and to identify implications and trade-offs in a manner to facilitate decision making and the selection of the alternatives to be considered in Phase II: EIR.

Each alternative was measured and compared based on the following four general categories of criteria:

- **Mobility** - The degree to which each alternative improves transit travel times and congestion problems in the Corridor.

- **Environmental/Community** - The degree to which each alternative meets local, regional and community objectives such as minimization of adverse impacts, enhanced regional air quality and economic development opportunities.

- **Cost Effectiveness** - The degree to which performance and transportation benefits of each alternative compare with the total project costs.

A number of evaluation measures related to each of these general criteria were identified and used in the screening. The evaluation measures were applied to each of the alternatives, and a summary of the evaluation results was prepared. Because not as much detail is known at this point of the initial screening as will be known at the end of the DEIR phase, selected evaluation criteria and measures were deferred until the final evaluation. Table S.2 presents the summary results of the Phase I evaluation.

TABLE S.2
COMPARISON OF COSTS AND COST-EFFECTIVENESS OF REFINED ALTERNATIVES

PARAMETER	ALT. A LRT	ALT. B LRT	DIFF. TO ALT. A	ALT. C BUS	DIFF. TO ALT.A	ALT. D BUS	DIFF. TO ALT. A	ALT. E BUS	DIFF. TO ALT. A	ALT. F BUS	DIFF. TO ALT. A	ALT. G BIKEWAY	DIFF. TO ALT. A
Total Line Riders Daily	40,220	40,220	-	28,290	(11,930)	25,150	(15,070)	26,910	(13,310)	20,980	(19,240)	N.A.	-
Total Capital Costs ($Million)	$907.71	$903.83	(3.88)	$301.15	(606.56)	$257.50	(650.21)	$164.91	(724.80)	$122.14	(785.57)	$30.42	N.A.
Total Capital Cost Per Mile ($Million)	$74.04	$73.24	(0.80)	$24.36	(49.68)	$18.57	(55.47)	$12.24	(61.80)	$8.62	(65.42)	$2.48	N.A
Annualized Capital Costs ($Million)	$76.69	$76.16		$25.44		$21.76	-	$13.93	-	$10.32		$2.57	N.A.
Annual Operating & Maintenance Costs ($Million)	$24.58	$24.86	+0.28	$11.22	-	$12.08	-	$12.95	-	$13.63	-	$0.50	N.A.
Total Annual Costs (Annualized Capital + O&M - $Million)	$101.27	$101.02	(0.25)	$36.66	(64.61)	$33.84	(67.43)	$26.88	(74.39)	$23.95	(77.32)	$3.07	N.A.
Cost Effectiveness • Total Annual Costs Per Rider	$7.87	$7.85	(0.02)	$4.05	(3.82)	$4.20	(3.67)	$3.12	(4.75)	$3.57	(4.30)	N.A.	-
• Total Annual Costs Per Annual Place-Mile of Capacity	$0.31	$0.30	(0.01)	$0.25	(0.06)	$0.21	(0.10)	$0.17	(0.14)	$0.14	($0.17)	-	-

SOURCE: BRW, Inc.; October 1994.

Note: 1993 Dollars Expressed.

S.4 CONCLUSIONS AND RECOMMENDATIONS

Considering the results of the evaluations and comparisons among the alternatives, a number of conclusions may be drawn concerning performance. Using these conclusions, recommendations on the alternatives to carry into Phase II: EIR of the project were made and are described below.

Conclusions

Conclusions are presented in this section and are organized in the four evaluation categories used previously.

Mobility

- The benefit to travel in the east/west direction of the corridor is high with the Exposition Corridor transit improvement. From 21,000 to 28,000 additional line riders daily would occur as a result of the Busway alternatives while over 40,000 additional boardings would result from the LRT alternatives. These trips would be riders diverted from other modes combined with existing transit patrons who would be able to reduce travel times by transferring to the new service.

- The alternatives which follow the Exposition ROW for their length have the highest ridership. These more direct routes have faster travel times and offer higher reliability than those options that operate in mixed-flow traffic.

- Each of the transit improvement alternatives would substantially increase the available person-trip capacity in this congested corridor. Transit place-miles (seated-plus-standee places moving one mile) is an effective measure of added person-trip capacity. The LRT alternatives would add over 1.0 million place-miles to the transit lines in the corridor while the Bus alternatives would add in the range of 0.5 million place-miles. This addition of capacity provides an attractive substitute to the private automobile; as trips are diverted to transit to use the available capacity automobile vehicle miles of travel are reduced.

- The Corridor from Vermont Avenue to 4th/Colorado is divided into two primary segments at Venice/Robertson. Daily boardings for most of the alternatives are slightly higher east of that point with the exception of Alternative E - Bus with a Venice/Sepulveda detour. Alternative F exhibits much lower ridership overall (48% below LRT and 26% below Bus Alternative C - Exposition ROW), but the segment west of Venice/Robertson is substantially lower than the alternatives which follow the ROW to downtown Santa Monica. In this segment, the boardings are 62% under the LRT and 41% under Bus Alternative C. This is because this alternative has a longer travel time and serves a different travel shed and different travel demand patterns.

- Alternative G - Bikeway can be included as either an interim or an adjunct use. The analyses of the alternatives were not to the level of detail to determine the contribution of the bikeway to mobility improvements. In comparison to the other alternatives, the mobility enhancement is assumed to be insignificant. However, a need exists for a continuous bikeway to connect destinations on the westside such that the facility along the Exposition ROW would assist in improving mobility for this travel mode.

Environmental/Community

- Very preliminary analysis of likely potential impacts have been made at this time looking at land uses and total numbers of sensitive receptors within 750 feet on either side of the proposed routes. The preliminary analysis does not demonstrate very significant variation among the alternatives in most of the categories. Much more detailed assessment of environmental and land use impacts would have to be made as part of an EIR document.

- The alternatives which are exposed to the greatest number of sensitive receptors are those that depart from the ROW. Alternative F - Bus on Venice to the Coast has the highest number of units exposed followed by Alternatives E and D. Because each is predominately within the ROW, Alternatives A,B and C are essentially the same. Alternatives along the ROW exhibit less exposure because they are shorter.

- In considering the exposure to potentially historic properties, the same results as those found for sensitive receptors apply. Alternative F has the highest exposure followed by Alternatives E and D.

- The alternatives which remain along the ROW provide a better level of access to populations of transit dependents on the west end of the corridor. Alternatives E and F which follow Venice/Sepulveda and Venice to the Coast respectively are the poorest at providing this access.

Operating Efficiency

- The more direct routes which use the ROW demonstrate better transit performance than the alternatives which depart from the ROW. The LRT alternatives and Bus Alternative C show significantly higher productivity in riders per vehicle-mile and riders per vehicle-hour.

- The LRT alternatives and Bus Alternative C which follows the ROW all exhibit high productivity in terms of riders per vehicle-hour. LRT would attract over 220 boardings per vehicle-hour while the Bus Alternative C would attract 95 boardings per vehicle-hour. By comparison, the most productive east/west westside MTA line is the Route 66 - West Eighth Street with 87 boardings per vehicle-hour.

Costs and Cost-Effectiveness

- Capital costs for the LRT alternatives are very high at $73 million to $74 million per mile. The Bus alternatives are also costly at about $24 million per mile within the Exposition ROW compared to non-guideway applications for bus.

- Even though costs for the Busway are high, Alternative C is over three times less expensive than the LRT options within the ROW.

- A cost savings exists for each of the Bus options which departs from the ROW and runs in mixed-flow on city streets. The obvious trade-off is that ridership drops and travel times increase along with the decrease in reliability for operations in non-exclusive rights-of-way.

- In terms of cost-effectiveness, the LRT alternatives have the highest ratios of Total Annual Costs per Annual New Regional Rider at $7.87/boarding for Alternative A. The Bus alternatives are all within a much closer range of between $3.12/boarding for Alternative E and $4.05/boarding for Alternative C. The ratio for Alternative C shows this option to be about twice as cost-effective as the LRT alternatives.

- Of the alternatives entirely within the ROW, Bus Alternative C exhibits the best cost-effectiveness ratio and would provide the most cost-effective capacity contribution. This can be important in serving latent demand, especially in a corridor such as the I-10/Santa Monica Freeway/Exposition Corridor. The Total Annual Cost per Place-Mile of Capacity for Bus Alternative C is $0.24 while the ratio for LRT Alternative A is higher at $0.31 per place-mile.

Enhancement Options

- Four different enhancement options were analyzed for the alternatives that are located entirely within the ROW. The enhancement options are more fully described in the next section. In each case, the enhancement options would add cost to the alternatives in order to address issues and concerns following review of traffic impacts, transit operating conditions and public comment. Further environmental studies are needed to specifically identify the mitigation treatments that may be necessary to the refined alternative in the corridor.

Bikeway Facility

- The bikeway can serve as either an interim or adjunct facility within the Exposition ROW. In the interests of continuity, the route would use a combination of all three classes of bikeway treatments, with a focus on smooth transitions between types and an emphasis on limiting travel times for longer distance bicycle travel. Certain segments of the bikeway would need to use the city streets as a Class II Bike Lane rather than as a Class I Bike Path, but a significant portion of the route could benefit from the reserved right-of-way.

Recommendations

This section presents recommendations on the alternatives to carry forward into Phase II: Environmental Impact Report based on the results of the Phase I Alternatives Refinement.

1. Defer Alternative F - Bus on Venice to the Coast from further consideration.

   The evaluation results clearly indicate this alternative serves a different travel shed and set of demand patterns from those options which remain along the ROW. The performance of the route in attracting riders per unit of service (vehicle-hour or vehicle-mile) is the lowest of those analyzed, especially for the segment from the Venice/Robertson area west to the coast and downtown Santa Monica. Although this alternative has a lower capital cost, the investment does not provide as high a level of benefit as the other alternatives when cost-effectiveness is considered.

   Finally, this alternative could be undertaken easily as part of a staged implementation plan that would bring the guideway within the ROW to Venice/Robertson as an interim terminus. From that point, feeder bus lines, including those on Venice could provide service connections to areas west to the coast.

2. Defer Alternative D - Bus using the La Cienega Detour from further consideration or combine with Alternative E to avoid impacts to residential areas.

   This alternative adds mileage and travel time to the express line in the Corridor, reducing the utility and attractiveness to riders. The performance of the alternative in terms of boardings per vehicle-hour are lower than those which remain on the ROW (Alternatives A, B and C) or serve other activity areas such as Alternative E. Finally, the mixed-flow operation on Venice and La Cienega Boulevards reduces the schedule reliability and could cause further difficulties with performance of the express line.

   A possible option would be to combine Alternative D with Alternative E - Bus with Venice/Sepulveda Detour. This option would depart from the ROW at La Cienega, travel north to Venice, west on Venice to Sepulveda, then north to return to the ROW. The advantage of this alignment would be to avoid potential impacts to residential areas in East Culver City and Rancho Park/Cheviot Hills. The disadvantage is the substantial out-of-direction travel for through patrons on longer trips destined for Santa Monica or downtown Los Angeles.

3. Retain Alternatives A and B - LRT on the ROW, and LRT on the ROW/I-10.

   These alternatives provide the greatest capacity increase for a corridor that has historically been one of the most heavily traveled and congested in the country. Although these options are the most costly by a wide margin, they exhibit the highest ridership and the most productive operating efficiency per hour of service. The analysis shows that if the speed advantage built into the design and cost of the LRT alternatives is provided in this corridor, the ridership demand will exceed the amount that can be carried efficiently with a lower capacity improvement such as Busway. Light rail would also provide the most continuous route from Downtown Los Angeles by extending directly, without transfer, from the planned Exposition Park Branch of the Metro Blue Line. For these reasons, these two alternatives should be retained and evaluated further in Phase II of this study.

4. Retain Alternative C - Bus on the ROW

   This alternative attracts a reasonable amount of ridership at a lower cost alternative than LRT. Compared to LRT, this alternative is over three times less costly but attracts only 30% less riders. The primary limitation of the alternative is the lack of ability to increase capacity as readily as the LRT mode. Headways are already assumed to be six minutes in each direction during the peak; busways such as this one are capable of much higher frequencies in exclusive right-of-way. Because the refined alignment is a combination of both at-grade and grade separated guideway, additional trips would be difficult to implement without impacts to at-grade intersections or added capital cost for grade separations.

5. Retain Alternative E - Bus with the Venice/Sepulveda Detour

   This alternative performs the best of the diversion options because the route accesses high density and activity areas as a tradeoff for the longer travel time. Regardless of the added access, the alternative does not perform as well as the alternatives on the ROW in terms of ridership or operating efficiency. Similar to the other options which use mixed-flow operations for a portion of the route, reliability for transit vehicles is a major concern. To address this issue, additional work could be undertaken during Phase II to examine on-street operational improvements for the Venice Boulevard and Sepulveda Boulevard segments of the route.

6. Retain Alternative G - Bikeway in the ROW

   This alternative would serve as either an interim use or as an adjunct facility to the transit line. The bikeway can be incorporated in the design such that initial construction can also be used in the future as the transit guideway is implemented. The alternative should be retained for further consideration in Phase II.

Design Enhancements to the Refined Alignment in the ROW

Based on the community meetings, there are additional operating and design features that could make the refined alternatives outlined in this section more acceptable to community groups and individuals. Two features, transit guideway depressed below ground level and additional grade separated crossings and underpasses at intersections, are discussed in Section 3.7.

The discussions of additional features are intended to be examples of how the refined project alternatives could be further modified for evaluation of impacts in the draft EIR. The additional enhancement features discussed below are not part of the recommended refined alternatives in this Report. Rather, it may be appropriate for these design features to be determined as mitigation treatments for adverse impacts of the project alternatives that are measured in the draft EIR. For discussion purposes, cost estimates for these design treatments are included along with the descriptions of the design variations of the refined alternative.

Because of the differences in operating conditions, the LRT and Busway have different levels of enhancements.

LRT Enhancement Options

To examine the potential effects of such enhancements on capital costs and on transit service in terms of travel time, four enhancement options for LRT were developed:

- Option 1: Grade Separate at All Major Arterial Street Crossings - This option includes additional grade separations, usually as an overpass, at major arterials where the traffic analysis in Section 3.3 showed operations were very close to capacity. This option adds grade separations to 14 locations:
  - Vermont Avenue
  - Budlong Avenue
  - Normandie Avenue
  - Denker Avenue
  - Western Avenue
  - Rodeo Road/Gramercy Place
  - Arlington Avenue
  - 3rd Avenue
  - Crenshaw Boulevard
  - Barrington Place
  - Stewart Street

- 26th Street
- Cloverfield Boulevard
- Olympic Boulevard (eastbound only)

- Option 2: Depressed Profile Through Residential Areas - This option attempts to run the profile grade of the LRT guideway below ground-level through residential areas. In this manner, noise and visual affects of the guideway could be limited. This option was generated in a conceptual manner prior to conducting definitive environmental studies.

- Option 3: Grade Separations at All Major Crossings Plus Depressed Profile Through Residential Areas - This option combines Options 1 and 2. In some cases, underpasses are required rather than overpasses to conform to the objective of remaining below grade in residential areas.

- Option 4 for LRT: Priority/Progression Signal Control - This option would use the concept of the interactive "smart" corridor type of signal control to achieve priority at major arterials and minor streets as described in Section 3.4.5. This concept would reduce the need for, and cost of, grade separations and would minimize the use of gated crossings. However, as previously discussed, for the LRT, this option would slightly increase travel times, reduce patronage, and reduce the amount of physical separation between cars and trains at intersections which could lead to safety concerns.

Table S.3 summarizes the costs of the guideway and systems portions of the options compared with the Refined Alignment for the LRT alternative.

TABLE S.3
SUMMARY OF GUIDEWAY CAPITAL COSTS FOR ENHANCED OPTIONS
(Costs in Millions of 1993 Dollars)

Enhancement Options		LRT Cost[1]	LRT Chg to Refined Alt
Refined Alternatives			
	• Vermont to Venice	405.3	-
	• Venice to 4th/Colorado	502.4	-
	• Total	907.7	-
Option 1:	Separations at All Major Arterial Crossings		
	• Vermont to Venice	504.1	+29%
	• Venice to 4th/Colorado	555.2	+11%
	• Total	1,059.3	+12%
Option 2:	Depress Profile Through Residential Areas		
	• Vermont to Venice	633.4	+56%
	• Venice to 4th/Colorado	587.9	+17%
	• Total	1,221.3	+35%
Option 3:	Grade Separations at All Major Arterial Crossings Plus Depressed Profile Through Residential Areas		
	• Vermont to Venice	672.7	+66%
	• Venice to 4th/Colorado	625.9	+25%
	• Total	1,298.6	+43%
Option 4:	Priority/Progression At-Grade with Signal Control		
	• Vermont to Venice	350.9	-13%
	• Venice to 4th/Colorado	478.8	-5%
	• Total	829.7	-9%

SOURCE: BRW, Inc., July 18, 1994.

(1) Costs include construction, right-of-way, add-ons, vehicles and contingencies.

Busway Enhancement Options

The Busway Alternative reflects a lower cost approach to providing the capacity available from guideway transit service. More at-grade crossings are used in the Recommended Alternative. Potential enhancements build on this concept with additional grade separations to improve travel speeds and reliability.

Four enhancement options were developed:

- Option 1: Grade Separate at High Volume Street Crossings - This option includes additional grade separations, usually as an overpass, at major arterials where the traffic analysis in Section 3.3 showed operations were very close to capacity. This option adds grade separations to 11 locations:

    - Arlington Avenue
    - 3rd Avenue
    - Crenshaw Boulevard
    - La Brea Boulevard
    - La Cienega Boulevard
    - Jefferson/National Intersection
    - Sepulveda Boulevard
    - Stewart Street
    - 26th Street
    - Cloverfield Boulevard
    - Olympic Boulevard (eastbound only)

- Option 2: Depressed Profile Through Residential Areas - This option attempts to run the profile grade of the Bus or LRT guideway below ground-level through residential areas. In this manner, potential adverse affects of the guideway could be limited. This option was generated in a conceptual manner prior to conducting definitive environmental studies.

- Option 3: Grade Separation at All Major Arterial Street Crossings - This option builds upon Option 1 by adding seven more grade separations at the following locations:

    - Vermont Avenue
    - Budlong Avenue
    - Normandie Avenue
    - Denker Avenue
    - Western Avenue
    - Rodeo Road/Gramercy Place
    - Barrington Avenue

- Option 4: Grade Separations at All Major Crossings Plus Depressed Profile Through Residential Areas - This option combines Options 2 and 3. In some cases, underpasses are required rather than overpasses to conform to the objective of remaining below grade in residential areas.

Table S.4 summarizes the costs of the guideway and systems portions of the options compared with the Refined Alignment. Vehicle costs, all add-ons and contingencies are contained in the cost totals.

TABLE S.4
SUMMARY OF GUIDEWAY CAPITAL COSTS FOR ENHANCED OPTIONS
(Costs in Millions of 1993 Dollars)

Enhancement Options		BUSWAY	
		Cost[1]	Chg to Refined Alt
Refined Alternatives			
	• Vermont to Venice	100.8	-
	• Venice to 4th/Colorado	200.3	-
	• Total	301.1	-
Option 1:	Grade Separate High Volume Arterials		
	• Vermont to Venice	195.0	+66%
	• Venice to 4th/Colorado	261.9	+30%
	• Total	456.9	+45%
Option 2:	Depress Profile Through Residential Areas		
	• Vermont to Venice	368.8	+187%
	• Venice to 4th/Colorado	309.4	+54%
	• Total	678.2	+109%
Option 3:	Grade Separate All Major Streets		
	• Vermont to Venice	254.0	+107%
	• Venice to 4th/Colorado	276.7	+38%
	• Total	530.7	+66%
Option 4:	Grade Separate All Major Streets and Depress Profile Through Residential Areas		
	• Vermont to Venice	450.1	+244%
	• Venice to 4th/Colorado	347.4	+72%
	• Total	797.5	+143%

SOURCE: BRW, Inc.; July 18, 1994.

[1] Costs include construction, right-of-way, add-ons, vehicles and contingencies.

1.0 Introduction

FOREWORD

The Exposition Right-of-Way Alternatives Refinement/Environmental Impact Report (AR/EIR) Study is being undertaken by the Los Angeles County Metropolitan Transportation Authority (MTA)[1] to continue the transportation planning process for the corridor. The chief objective is to identify transit improvements to address mobility needs and demands in the Exposition Right-of-Way (ROW) Corridor. Public input and more detailed engineering refinement and initial environmental evaluation have been used in this study to address questions related to project description and feasibility of project alternatives.

The Exposition Corridor stretches for 12 miles through sections of the busy Westside of Los Angeles, Los Angeles County, Culver City and Santa Monica. It contains Interstate 10 the Santa Monica Freeway, the busiest freeway in the county. The study area is a diverse subarea composed of numerous neighborhoods and communities criss-crossed by several major transportation facilities.

Preliminary Planning Study

During 1991-92, the MTA conducted a preliminary planning study as the first step in examining a significant transit capacity improvement in the Exposition ROW. This technical analysis and other previous planning efforts refined the general parameters of the Exposition route and modal alternatives by screening a longer list of potential improvement scenarios. **The Exposition Right-of-Way Preliminary Planning Study Final Report (May 1992)** documents the results of this screening process. The conclusions of that study identified seven route and modal alternatives for further study. Alternatives identified included light rail transit (LRT), Bus on Transitway, and an interim or adjunct bikeway alternative. The alternatives would use the Exposition ROW exclusively and/or in combination with placement along corridor streets/arterials or in shared use of I-10 and I-405 right-of-ways.

MTA has been assisted in this current study effort by a team of consultants headed by BRW, Inc. and including Myra Frank and Associates; Katz, Okitsu and Associates; ICF/Kaiser Engineers; Harris, Miller, Miller and Hanson; and, Rose and Kindel.

[1] The MTA was formed early in 1993 as a merger of the former Los Angeles County Transportation Commission (LACTC) and the Southern California Rapid Transit (SCRTD). To avoid confusion, studies and actions that took place prior to April 1993 are attributed to the MTA although the actions were in fact taken by the former LACTC.

Phase I of this current study, Alternatives Refinement, was started in mid-March of 1993. A summary of the evaluation of the seven alternatives and the recommendation of alternatives for further study in the EIR is contained in this report. The MTA Board will review the list of alternatives and decide if further study and development of the EIR is warranted prior to starting Phase II of the Study process. Phase II consists of preparation of the Draft and Final EIR. Preparation of the EIR will begin contingent upon Board action.

1.1 PROJECT OVERVIEW

1.1.1 History and Purpose of Project

In November 1990, the MTA acquired a group of Southern Pacific Railroad properties in the Los Angeles Basin area with the intent of developing immediate transit improvements on some of those alignments (e.g. Metrolink Commuter Rail Lines) and preserving others for transportation use in the future. The Exposition Right-of-Way (ROW), was a part of this purchase, consisting of trackage between the Metro Blue Line at Long Beach Boulevard and the eastern edge of Santa Monica at 16th Street.

Because of the substantial congestion in the corridor, a transit improvement in the Exposition ROW would serve several purposes:

- Reduce east/west congestion
- Improve access to the Santa Monica, Culver City and LA downtown areas and other major activity centers such as the Crenshaw District and USC/Exposition Park
- Offer increased connections for transit users transferring from the numerous bus lines in the Corridor

Process

To study the feasibility of using the Exposition ROW for transit purposes, the MTA initiated the project development process with the preparation of the Preliminary Planning Study. The project development process is depicted in Figure 1-1. The current study is the second step in the project development process called Alternatives Refinement/Environmental Impact Report Study (AR/EIR).

As indicated in the flow chart, the AR/EIR stage is necessary to more clearly define the alternatives under consideration and then submit those alternatives to a rigorous environmental evaluation. Once this stage is complete, the MTA would then be in a position to select a preferred alternative for implementation.

Phases of Project Development

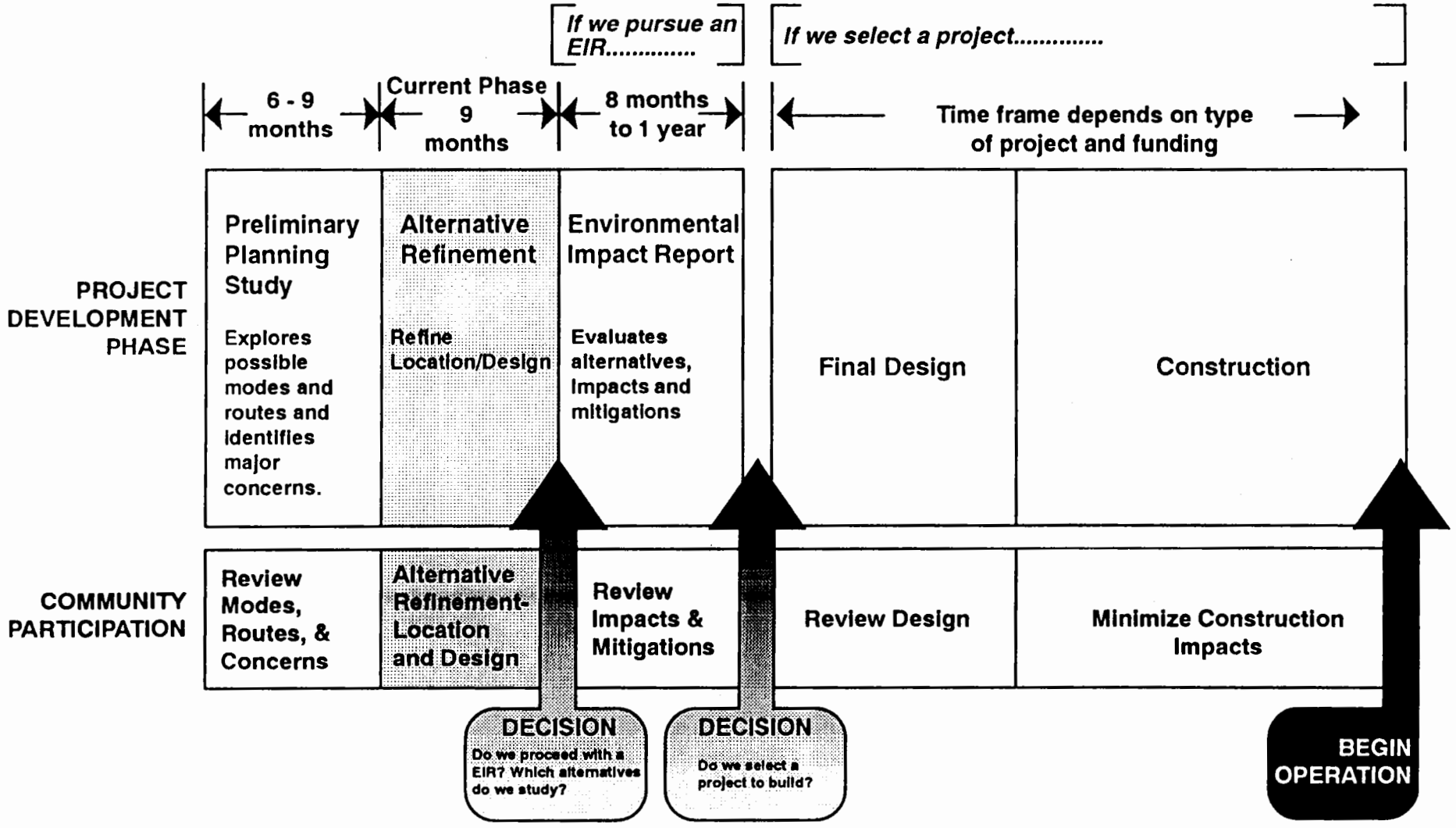


Figure No. 1-1

BRW

Source: B R W, Inc., 15 December 1993

1.1.2 Corridor and Study Area

The Exposition Corridor is located in the western portion of the Los Angeles metropolitan region, as shown in Figure 1-2. The Corridor is approximately 12 miles in length and travels west from Vermont Avenue, in the vicinity of Exposition Park and the University of Southern California, through sections of Los Angeles County, the busy west side of the City of Los Angeles and portions of the cities of Culver City and Santa Monica, and ending in downtown Santa Monica. The Corridor parallels the former Exposition railroad right-of-way and the I-10 freeway. The Corridor is contained in a larger study area generally defined by Main Street in downtown Los Angeles on the east, Slauson Avenue on the south, the Pacific Ocean (Ocean Avenue and Pacific Coast Highway in downtown Santa Monica) on the west, and Wilshire Boulevard on the north. Figure 1-3 depicts the study area, the I-10 freeway, and the Exposition ROW.

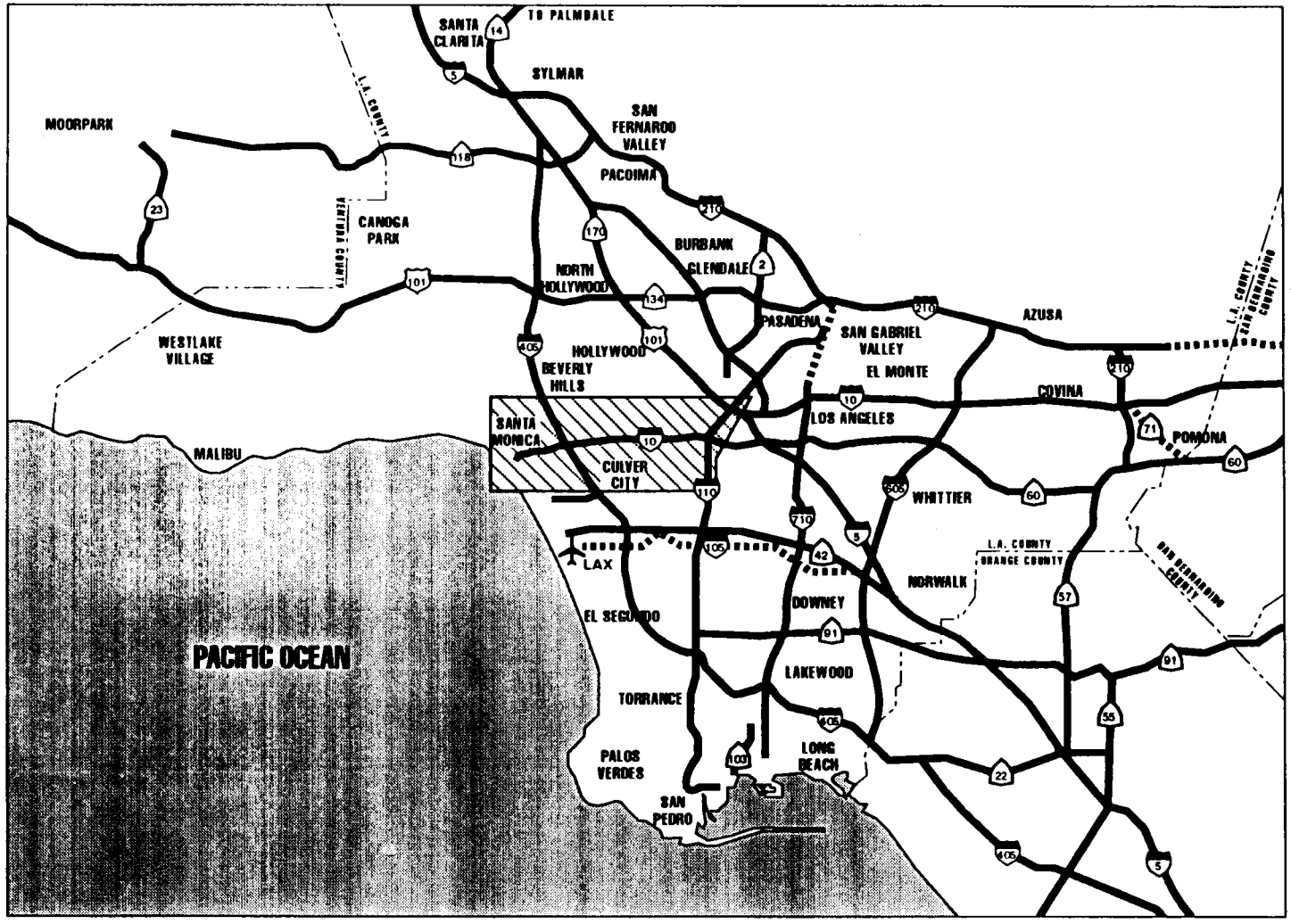
This report focuses on the Exposition Corridor. However, the larger geographic coverage by the study area reflects the area from which potential users of an improvement in the Exposition Corridor may be drawn and includes the linkage into downtown Los Angeles.

The Corridor contains a diversity of neighborhoods and communities as well as major transportation facilities such as the Santa Monica Freeway (I-10) and San Diego Freeway (I-405); major east/west thoroughfares such as Venice, Pico and Wilshire Boulevards; and major north/south arterials such as Lincoln Boulevard, Robertson Boulevard and Washington Boulevard, La Cienega Boulevard, La Brea Boulevard, Crenshaw Boulevard, Jefferson Boulevard, and Sepulveda Boulevard.

Public transit service is provided to the Corridor by the MTA, the Culver City Municipal Bus Lines (CCMBL) and Santa Monica Metropolitan Bus Lines (SMMBL), and the Los Angeles Department of Transportation (LADOT). Points of major transfer activity with existing, potential, or future major transit lines include the Vermont Avenue/USC area, Crenshaw Boulevard, Robertson and Washington Boulevards near Culver City, the I-405 and I-10 interchange area, and the Santa Monica terminus.

The Corridor contains a number of major activity centers including USC, several regional parks/recreation areas, museums, the civic/municipal complexes for both Culver City and Santa Monica, several regional shopping malls and the beaches of Santa Monica.

Regional Location



Study Area

NORTH

Figure No. 1-2

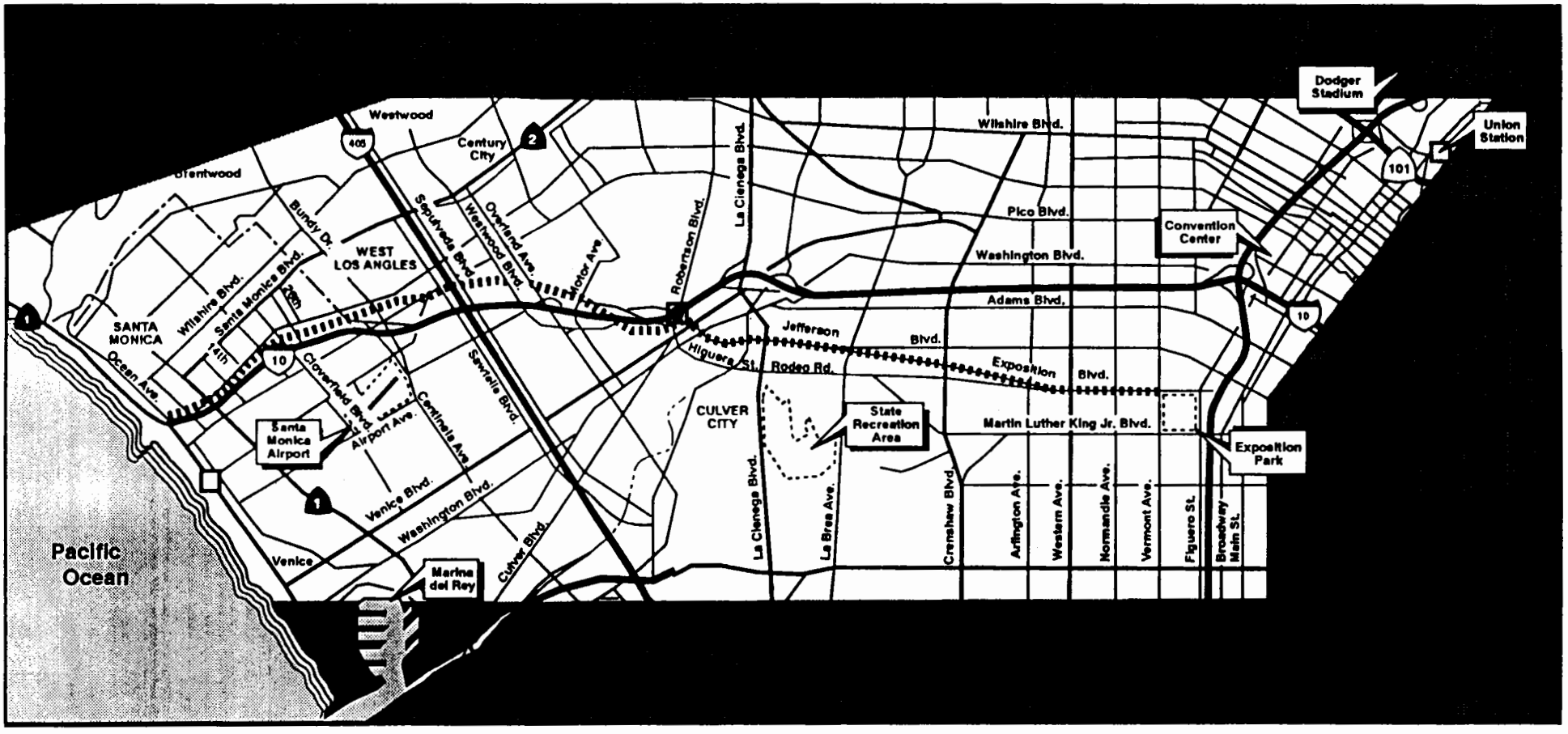
Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Exposition Right-of-Way Study Area



Exposition ROW

NORTH

Figure No. 1-3

BRW

Source: MTA, February 1993

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

1.2 REPORT PURPOSES

This report has two purposes:

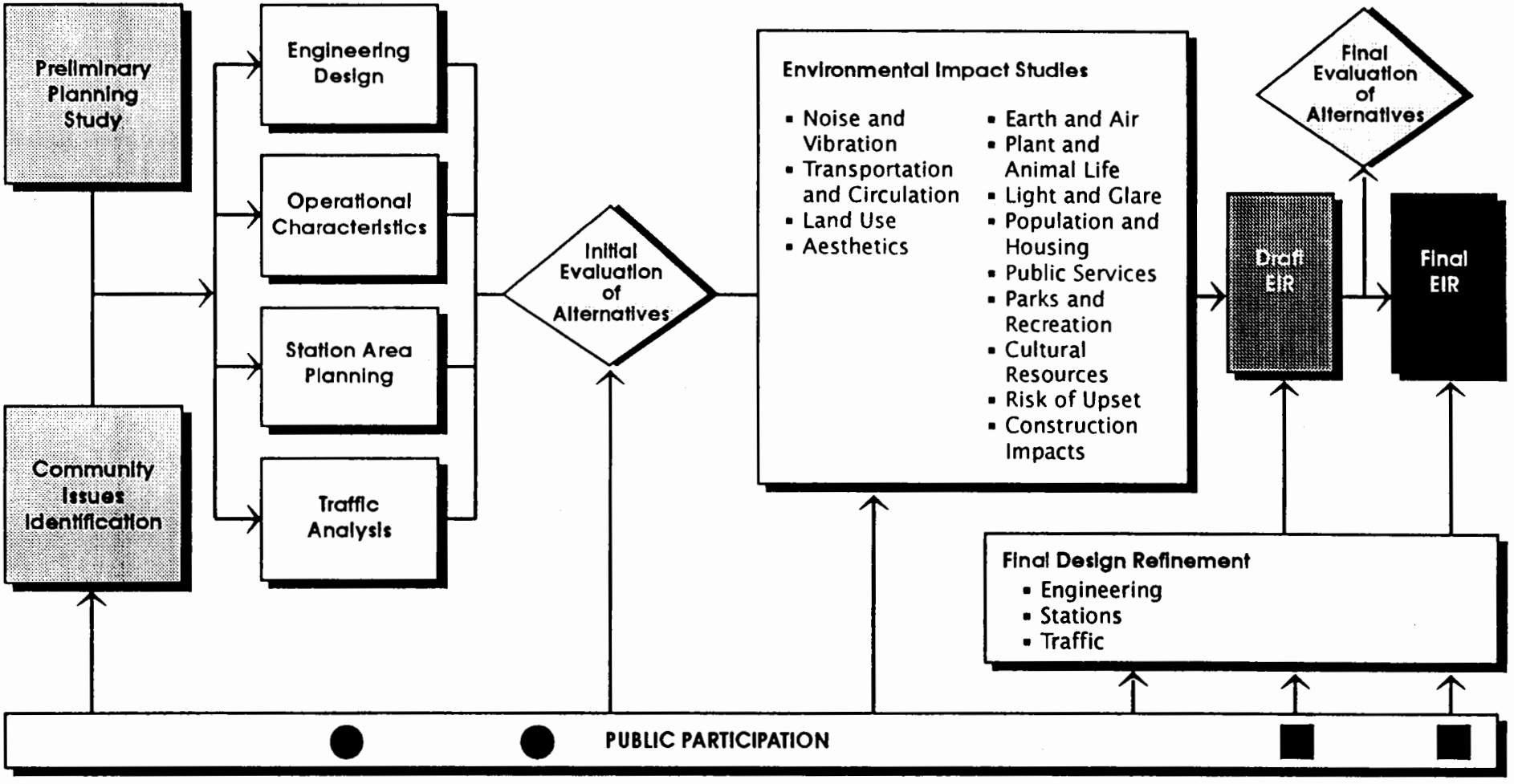
1. ***Refine the Alternatives from the 1992 Preliminary Planning Study.*** In order to conduct an in-depth feasibility evaluation, more detailed design of the alternatives was necessary. This report describes the process used to refine the alternatives which included substantial public and agency input coupled with engineering design and transportation planning.
2. ***Evaluate the Refined Alternatives.*** Prior to beginning the environmental studies, it is important to reduce the number of alternatives to the most feasible and desirable. This report documents that screening process.

A two-phase evaluation process is being followed during the AR/EIR Study. Phase I: Alternatives Refinement provides the MTA with an evaluation of the refined options prior to conducting the environmental studies. This is helpful to:

- Focus environmental studies on the truly promising alternatives; and,
- Reduce complexity and potential confusion by the public and agencies involved.

A second or final evaluation screening will be conducted at the conclusion of the EIR to select the Preferred Alternative. Figure 1-4 schematically depicts this process.

The alternatives evaluation process focuses on the identification of trade-offs. Trade-offs are descriptions of the relationships among impacts, among affected interests and among the alternatives. The trade-off analyses shows the effect of making selected changes to the alternatives by displaying how an action designed to achieve an effect in one impact area would have implications for other areas as well. The use of trade-offs is particularly valuable where alternatives exhibit strengths and weaknesses in different areas and in differing degrees. A series of sensitivity analyses will be performed with the results assisting in the definition of the Preferred Alternative at the conclusion of Phase II.



Source: B R W, Inc., 20 December 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Figure No. 1-4

BRW

2.0 Project Need and Description

This chapter defines the need for transportation improvements in the Exposition Corridor. Specific transportation problems and issues which the transit improvements in the Exposition Corridor would help to resolve are discussed in this section. Finally, the alternatives resulting from the Preliminary Planning Study are summarized.

2.1 PURPOSE AND NEED

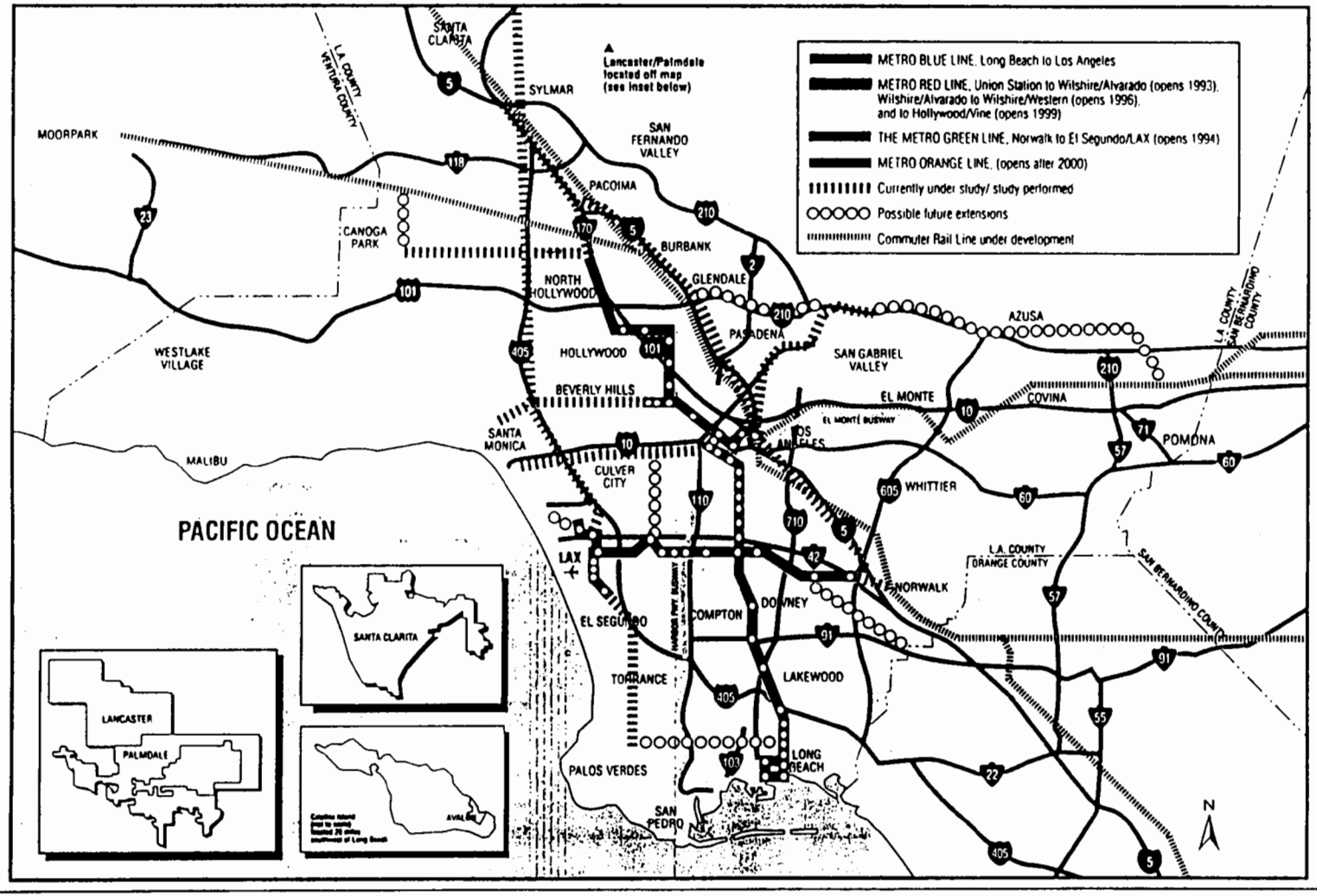
The Exposition Corridor was recommended for a high capacity transit improvement corridor in the August 1990 MTA long range transportation plan. Proposed MTA projects, including the Exposition ROW are currently being reevaluated as part of the MTA's revision of its long range plan. The long range plan serves as a framework to guide MTA investments in bus, rail and highway programs to meet the mobility needs of Los Angeles County residents.

The current travel demand in Los Angeles County far exceeds the capacity available on the existing freeway and arterial system. In order to meet demand forecast in year 2010, Los Angeles County would need more than 95 freeway lanes (in one direction). Adding that much freeway capacity is not financially, physically, or environmentally possible. Thus, Los Angeles County cannot build its way out of the chronic congestion with new freeway facilities serving the single occupant vehicle. Other modes of transportation must be pursued to meet the mobility and access needs.

The 1990 long range plan identified the need and utility of an integrated system of rail service. Under an expanded funding scenario, the plan included over 160 miles of urban rail or other corridor transit improvements and 140 miles of commuter rail as shown on Figure 2-1. Recent projections of future revenues is expected to limit this rail network to fewer lines in the MTA's revised long range plan.

The MTA 1990 long range plan states that future transportation demands are proposed to be met through the implementation of a variety of modes which include rail, expanded bus and HOV network improvements and bikeways, and that Transportation Demand Management (TDM) and Transportation Control Measure (TCM) strategies are integral parts of the plan as well.

MTA 1990 Long Range Plan*
Unconstrained Rail Capital and Candidate Corridor Program



* MTA is currently revising its long range plan.

SCALE IN FEET
2,500 10,000
0 5,000
NORTH

Figure No. 2-1

BRW

Source: B R W, Inc., 21 September 1994

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

2.1.1 Existing Highway Operations

The most recent update of the MTA Congested Corridor Progress Report (January, 1994) identifies the I-10 Santa Monica Freeway Corridor and the I-405 San Diego Freeway corridor among the 11 most congested corridors in Los Angeles County. To earn this distinction these corridors have the following operating characteristics:

- Average speeds of 30 miles per hour or less for a minimum of five hours a day;
- Arterial intersections experiencing at least one hour of congestion during daily peak periods at Level of Service (LOS) E or F; and
- Bus transit routes with boardings of 20,000 or more passengers a day.

Currently, the regional freeway and arterial system serving the Corridor is operating over design capacity due to current travel demands. The Santa Monica Freeway (I-10) has the highest volume of traffic in Los Angeles County. Average Daily Traffic Volumes (ADT) on I-10 range from 341,000 at Vermont Avenue to 143,000 in the City of Santa Monica. Eighty-nine percent of the freeway segments currently operate over capacity at LOS F during the peak hours. Freeway levels of service are traditionally measured on a scale of A to F with F being the worst condition as shown on Table 2.1.

TABLE 2.1
MEASUREMENT STANDARDS FOR FREEWAY LEVEL OF SERVICE (LOS)

LEVEL OF SERVICE	FLOW CONDITIONS	OPERATING SPEED (Miles/Hour)	VOLUME/CAPACITY RATIO
A,B	Free flow operation; stable traffic flow	55	0.00-0.62
C	Speed and lane changing slightly constrained by the vehicles on the roadway.	44+55	0.63-0.79
D	Lower speeds; susceptible to changing operating conditions; traffic operation approaches instability.	40-45	0.80-0.92
E	Unstable flow; volumes approaching roadway capacity; slow speeds.	35-40	0.93-1.00
F	Forced flow conditions; stop-and-go operating conditions.	35	1.01+

SOURCE: Caltrans

Despite high corridor transit ridership, more than 70 percent of Westside commuters drive alone. While attempting to avoid the congestion on the freeways, commuters divert from freeways to use the surface streets in the corridor. Due to the lack of capacity on the arterial streets to handle this overflow of traffic, over 175 intersections on the Westside were operating at LOS E or F during peak hours, according to a 1990 survey, with high volumes of traffic in all four directions at most intersections. LOS E or F indicates that intersections are operating at or near capacity.

2.1.2 Existing Transit Operations

The following transit providers serve the Exposition Corridor with local, limited and express bus services:

- *Los Angeles County Metropolitan Transportation Authority (MTA)* - The MTA is the largest of seventeen transit operators in Los Angeles County and provides service to most of the region. Within the Corridor, the MTA operates approximately twelve local and limited stop routes, as well as three express routes. Most routes operate in an east-west direction. MTA facilities on the Westside include the 1.2 acre West Los Angeles Transit Center north of the Exposition Corridor near Venice and Fairfax; the LAX Transit Center and the Division 6 bus maintenance yard on Main Street in the northern coastal portion of the Venice community.

- *Santa Monica Municipal Bus Lines (SMMBL)* - The Santa Monica Municipal Bus Lines have a 36-square mile service area with 12 routes and a fleet of 125 buses. The system provides regional connections at several Transit Centers, such as Pico-Rimpau (located several miles north of the Exposition right-of-way), LAX Transit Center, and Westwood/UCLA. Express Route 10 operates between downtown Los Angeles and Santa Monica during both peak and off-peak weekday hours.

- *Culver City Municipal Bus Lines (CCMBL)* - Culver City's system includes six routes covering a 25-square mile service area. Culver City Transit maintains a fleet of 28 buses running on six routes. Culver City Transit connects with other carriers at regional transit centers such as West Los Angeles, Westwood, and LAX Transit Center.

- *City of Los Angeles Department of Transportation (LADOT)* - The LADOT currently operates two commuter express routes directly serving portions of the Exposition Corridor. The routes operate during peak hours Monday through Friday and utilize the I-10 Freeway. The LADOT also operates two local community shuttles in the eastern end of the Exposition Corridor.

Table 2.2 summarizes the major bus lines serving the corridor and the average weekday boardings per hour. A number of the bus routes serving the corridor are heavily utilized in the MTA system. As shown on this table, the MTA bus lines serving the corridor experience average boardings per hour in excess of 73 persons per hour, 30% more than the system average of 56.3 boardings per hour. The Santa Monica Bus Municipal Lines experience almost 70 boardings per hour, which also exceeds the MTA system average. The Culver City Municipal Bus Lines have boardings more in line with the MTA system average. The LADOT service reflects a much lower boardings per hour because of the nature of the two express runs on I-10. The Midtown Shuttle is closer to the MTA system average at 58.6 boardings/hour.

TABLE 2.2
MAJOR WESTSIDE BUS LINES IN EXPOSITION CORRIDOR
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (MTA)

Line #	Line Name	Direction	Avg Wkday Brdgs	Vehicle Srvc Hrs	Avg Wkday Brdgs/Hr
20	Wilshire Blvd	E/W	54,047	888.9	60.8
28	West Olympic Blvd	E/W	38,156	609.5	62.6
30	West Pico Blvd	E/W	34,927	412.4	84.7
33	Venice Blvd	E/W	22,535	400.9	56.2
38	West Jefferson Blvd	E/W	11,422	179.6	63.6
66	West Eighth St	E/W	25,388	291.1	87.2
68	West Washington Blvd	E/W	18,030	257.2	70.1
105	Vernon Ave	E/W	18,148	241.7	75.1
	MTA E/W Sub-total		222,653	3,281.3	67.9
204	Vermont Ave	N/S	48,849	477.0	102.4
206	Normandie Ave	N/S	15,527	206.5	75.2
207	Western Ave	N/S	32,294	346.1	93.3
210	Crenshaw Blvd - Vine St	N/S	20,457	282.9	72.3
212	La Brea Ave	N/S	13,983	239.0	58.5
	MTA N/S Sub-total		131,110	1,551.5	84.5
	MTA E/W & N/S TOTAL		353,763	4,832.8	73.2
	MTA SYSTEM AVERAGE				56.3

SOURCE: MTA Line Performance Trends Report; March 28, 1994.

TABLE 2.2, continued
MAJOR WESTSIDE BUS LINES IN EXPOSITION CORRIDOR
SANTA MONICA MUNICIPAL BUS LINES

Line #	Line Name	Direction	Avg Wkday Brdgs	Vehicle Srvc Hrs	Avg Wkday Brdgs/Hr
1	Santa Monica Blvd - UCLA	E/W	11,272	142.7	79.0
2	Wilshire Blvd - UCLA	E/W	6,840	119.6	57.2
5	Olympic Blvd - Pico Blvd	E/W	3,097	54.5	56.8
7	Pico Blvd	E/W	16,553	184.9	89.5
8	Ocean Park Blvd - UCLA	E/W	6,765	112.2	60.3
10	St Monica Blvd - FWY Express	E/W	2,352	55.3	42.5
13	Airdrome - Cheviot Hills	E/W	491	15.3	32.1
		SMMBL E/W Sub-total	47,370	684.5	69.2
3	Lincoln Blvd -Montana Ave	N/S	7,530	112.2	67.1
9	Pacific Palsds - Oly Blvd	N/S	1,291	28.1	45.9
11	14th - 20th St Crosstwn	N/S	516	10.6	48.9
12	Robertson Blvd - Palms	N/S	5,077	57.3	88.6
14	Bundy Ave - Centinela Ave	N/S	2,581	28.4	90.9
		SMMBL N/S Sub-total	16,995	236.6	71.8
		SMMBL E/W & N/S TOTAL	64,635	921.1	69.9
		SMMBL SYSTEM AVERAGE			69.9

SOURCE: FY 1994-97 SMMBL SRTP.

TABLE 2.2, continued
MAJOR WESTSIDE BUS LINES IN EXPOSITION CORRIDOR
CULVER CITY MUNICIPAL BUS LINES

Line #	Line Name	Direction	Avg Wkday Brdgs	Vehicle Srvc Hrs	Avg Wkday Brdgs/Hr
1	Washington Blvd	E/W	5,079	90.5	56.1
2	Venice H.S. - Fox Hills	E/W	313	12.2	25.7
5	Braddock Drive	E/W	452	11.7	38.6
	CCMBL E/W Sub-total		5,844	114.4	51.1
3	Overland Ave - Motor	N/S	2,421	61.4	39.4
4	Jefferson Blvd	N/S	311	11.7	26.6
6	Sepulveda Blvd	N/S	4,098	103.9	39.4
	CCMBL N/S Sub-total		6,830	177.0	38.6
	CCMBL E/W & N/S TOTAL		12,674	291.4	54.8
	CCMBL SYSTEM AVERAGE				43.5

SOURCE: FY 1994-97 CCMBL SRTP.

LOS ANGELES DEPARTMENT OF TRANSPORTATION BUS LINES

Line #	Line Name	Direction	Avg Wkday Brdgs	Vehicle Srvc Hrs	Avg Wkday Brdgs/Hr*
	Crenshaw Shuttle	N/S	435	18	24.2
	Midtown Shuttle	N/S	703	12	58.6
437	I-10 - Express	E/W	192	9	21.3
438	I-10 - Express	E/W	357	15	23.8
	LADOT SYSTEM AVERAGE				27.7

* Sub-totals and totals are weighted.

SOURCE: LADOT; 1993.

2.1.3 Bicycle Operations

The MTA is working with local jurisdictions to upgrade and expand the county's system of bike paths and bike lanes to provide an interconnected network of regional bicycle facilities. The Exposition Corridor contains the only east-west continuous right-of-way on which a Class I facility could be built to connect the cities of Culver City, Santa Monica, and the neighboring Los Angeles communities with each other and to major regional destinations including the Exposition Park area and the beaches.

If constructed, the Exposition Bikeway would provide a major regional link to existing bicycle facilities including:

- Beach Bike Path
- Ballona Creek Trail
- Venice Boulevard bicycle lanes

The Bikeway would make additional linkages available to other planned bicycle facility projects in the Westside area including:

- **West Los Angeles Veloway** - The Veloway is planned as a combined system of at- and above-grade bicycle paths which would serve the West Los Angeles, Westwood Village, and UCLA Campus areas.

- **Culver Boulevard Median Bikepath** - The Culver Boulevard Median Bikepath will consist of a bike path in the undeveloped median island of Culver Boulevard between Elenda Street and McConnell Avenue in the West Los Angeles and Culver City area of Los Angeles County.

2.2 CORRIDOR SETTING

There is considerable variation in land uses within the Corridor: neighborhoods range from single family homes to higher density multi-family dwellings. Commercial uses range from small scale neighborhood services to large scale commercial and employment-related centers that serve the regional market. Commercial establishments are primarily concentrated along arterials, with residential as the primary land use on the interior streets. Industrial uses are generally located in well defined areas, and separated from residential neighborhoods by arterials or local streets. Open space, public institutional, and special uses are interspersed throughout the Exposition Corridor study area.

Population within one-quarter mile of the Exposition right-of-way in 1990 was over 305,000. By Year 2010, this population is expected to increase by 14 percent to over 348,370. Population density in the corridor has been estimated as 12,800 residents per square mile.

Also by 2010, the portion of the corridor within a quarter mile of the right-of-way is estimated to provide employment to 215,830 people. Several major development projects with significant employment are planned for the Corridor and include:

- Phase II Colorado Place; Water Garden (Santa Monica)
- Development in the area of Olympic Boulevard between Bundy and I-405
- Expansion of LA Convention Center
- South Park development

2.3 CORRIDOR TRIP GENERATORS

An Exposition Corridor transit improvement project would serve a number of major trip generating centers from downtown Los Angeles to downtown Santa Monica, including major office, retail, educational, and recreational centers. The Corridor serves key activity centers including Downtown Los Angeles, the University of Southern California (USC, 30,000 students), the Coliseum (92,000 seats), the Sports Arena, Exposition Park, Downtown Culver City, Downtown Santa Monica and Santa Monica Beach (300,000 visitors a day in summer). In addition, the corridor is close enough to UCLA to provide access with feeder bus services near Sepulveda Boulevard or Westwood Avenue.

The following sections briefly describe each of the major trip generating centers that would provide substantial ridership opportunities for the Exposition Corridor project. Rough indications of expected growth in population and employment for each of the major activity center areas are based on the 1990 Census and the 2010 Travel Demand Model inputs developed by the Southern California Associated Governments (SCAG). These figures are defined based on Transportation Analysis Zones (TAZs) which roughly correspond to the activity center area boundaries.

2.3.1 Los Angeles Central Business District (CBD)

Using direct connections with the Metro Blue Line Exposition Park Branch LRT Line extension, the Exposition Corridor transit line could gain substantial ridership from office workers in downtown Los Angeles or from passengers making transfers at Union Station. Key traffic generators in the Los Angeles CBD include: Union Station, LA Civic Center, the financial district, and the LA Convention Center. Further, the majority of the bus and rail lines serving regional transit needs originate from downtown Los Angeles. The 1990 Census estimated Los Angeles CBD population at 10,250 and employment at 111,540. By the Year 2010, population is expected to increase to 16,350 (60 percent), and employment is expected to increase to 113,770 (2 percent).

2.3.2 Santa Monica Central Business District (CBD) and Beach

At the other end of the Exposition Corridor, downtown Santa Monica would also provide substantial ridership potential. The Santa Monica CBD includes the Santa Monica Civic Center, the Santa Monica Pier (a major recreational destination), Santa

Monica Place/Third Street Promenade Shopping Center and the beach. The majority of the Santa Monica Municipal Bus Line (SMMBL) routes and several local and express MTA bus routes terminate at the Santa Monica Place shopping center; thus many transfer options are available for Exposition Corridor passengers to link trips with other transit services. The 1990 Census estimated Santa Monica CBD population at 2,470 and employment at 19,250. By the Year 2010, population is expected to increase to 2,860 (16 percent), and employment is expected to increase to 19,770 (3 percent).

The city estimates that over 300,000 people access the Santa Monica Beach and downtown area on a typical warm-weather weekend day. Access to the beach maintains high levels of activity in the downtown area throughout the week.

2.3.3 Culver City Central Business District (CBD)

Located at approximately the midpoint of the Exposition Corridor, downtown Culver City would also provide substantial ridership potential. The Culver City CBD includes several movie and television studios, the Civic/Municipal Center, and the Culver Center Shopping Center. The majority of the Culver City Municipal Bus Lines (CCMBL) routes serve downtown Culver City, thus many transfer options are available for Exposition Corridor passengers to link trips with other transit services. The 1990 Census estimated Culver City CBD population at 5,130 and employment at 13,570. By the Year 2010, population is expected to increase to 5,370 (5 percent), while employment is not expected to increase significantly.

2.3.4 Crenshaw Center

The Baldwin Hills Crenshaw Plaza represents another ridership opportunity for the Exposition Corridor Line. This regional shopping center, located south of Martin Luther King, Jr. Boulevard and west of Crenshaw Boulevard, includes over 90 stores. Shoppers and employees could either walk the three short blocks from the Exposition Corridor to the plaza, or transfer to MTA Route 102 to make the trip. The 1990 Census estimated population near the Baldwin Hills Crenshaw Plaza to be 9,570 and employment at 3,510. By the Year 2010, population is expected to increase to 12,130 (27 percent), and employment to increase to 3,950 (12 percent).

2.3.5 Exposition Park Area/University of Southern California (USC)

The USC area, located south of I-10 and east of Normandie Avenue, offers major educational, employment and recreational activities. Currently, USC has an annual enrollment of approximately 30,000 students. Other major activity centers include the University Village Shopping Center, the Exposition Park and the Shrine Auditorium. The 1990 Census estimated population near USC to be 16,460 and employment at 21,490. By the Year 2010, population is expected to increase to 17,940 (9 percent), and employment to increase to 22,590 (5 percent).

Professional sporting events at the Coliseum (92,000 seats) and the Sports Arena coupled with other special activities bring people into the area after the work day and on weekends as do the numerous museums (Science and Industry, Natural History, Afro-American Heritage, etc.).

2.3.6 University of California Los Angeles (UCLA)

The University of California at Los Angeles, located approximately four miles to the north of the Exposition Corridor in the Westwood community of Los Angeles, has the potential to provide the Corridor with trip linking opportunities, especially from the proposed Exposition/I-405 Transit Center. UCLA has a current enrollment of approximately 33,000 students, and the nearby Veteran's Administration Administrative buildings and hospitals will present transfer opportunities.

2.4 RESULTS OF PRELIMINARY PLANNING STUDY

The May 1992 Preliminary Planning Study for the Exposition Right-of-Way recommended that seven alternatives be considered in more detail. This section summarizes the results of the Preliminary Planning Study and describes the alternatives.

2.4.1 Guiding Principles to Define and Evaluate Alternatives

The MTA's mission statement contains specific goals to help improve transportation throughout the County. These goals were reviewed in the Preliminary Planning Study to formulate a set of principles to guide the definition and evaluation of alternatives for the Exposition Right-of-Way Corridor Project.

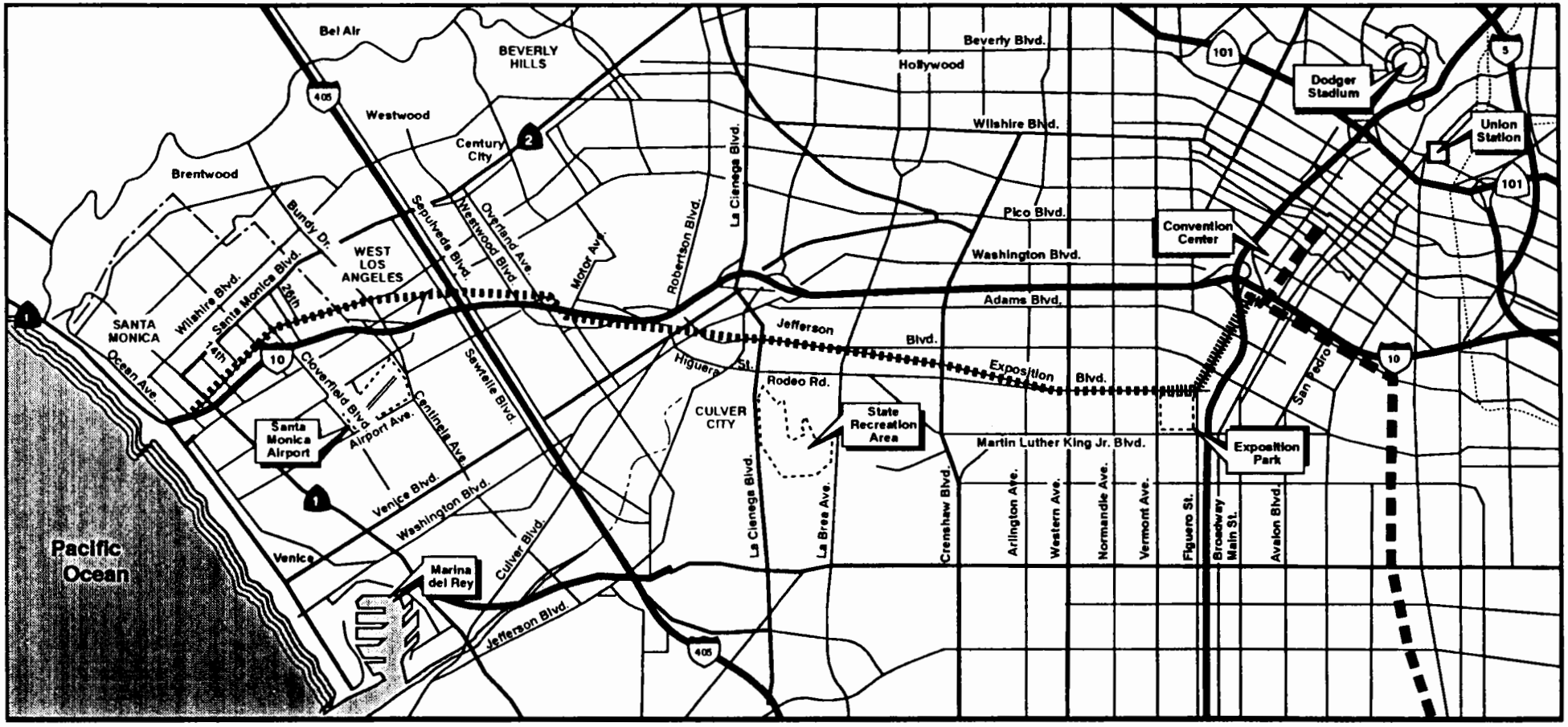
The set of five principles are listed below:

- Transportation improvements should result in a net increase in corridor capacity.
- Transportation improvements should be consistent with local objectives and plans.
- Transportation improvements should link successfully with the regional system and help relieve regional congestion.
- Transportation improvements should provide additional service options for existing transit riders.
- Transportation should be compatible with and, if possible, enhance adjacent land uses.

2.4.2 Summary Listing of Alternatives

The seven modal/alignment alternatives (plus the No-Build Alternative) defined as a result of the Preliminary Planning Study for consideration in the AR/EIR are listed below and depicted in Figures 2-2 through 2-8.

Exposition ROW - Alternative A



LRT Alternative A

Metro Blue Line LRT

Planned Exposition Park Extension of Blue Line

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 2-2

BRW

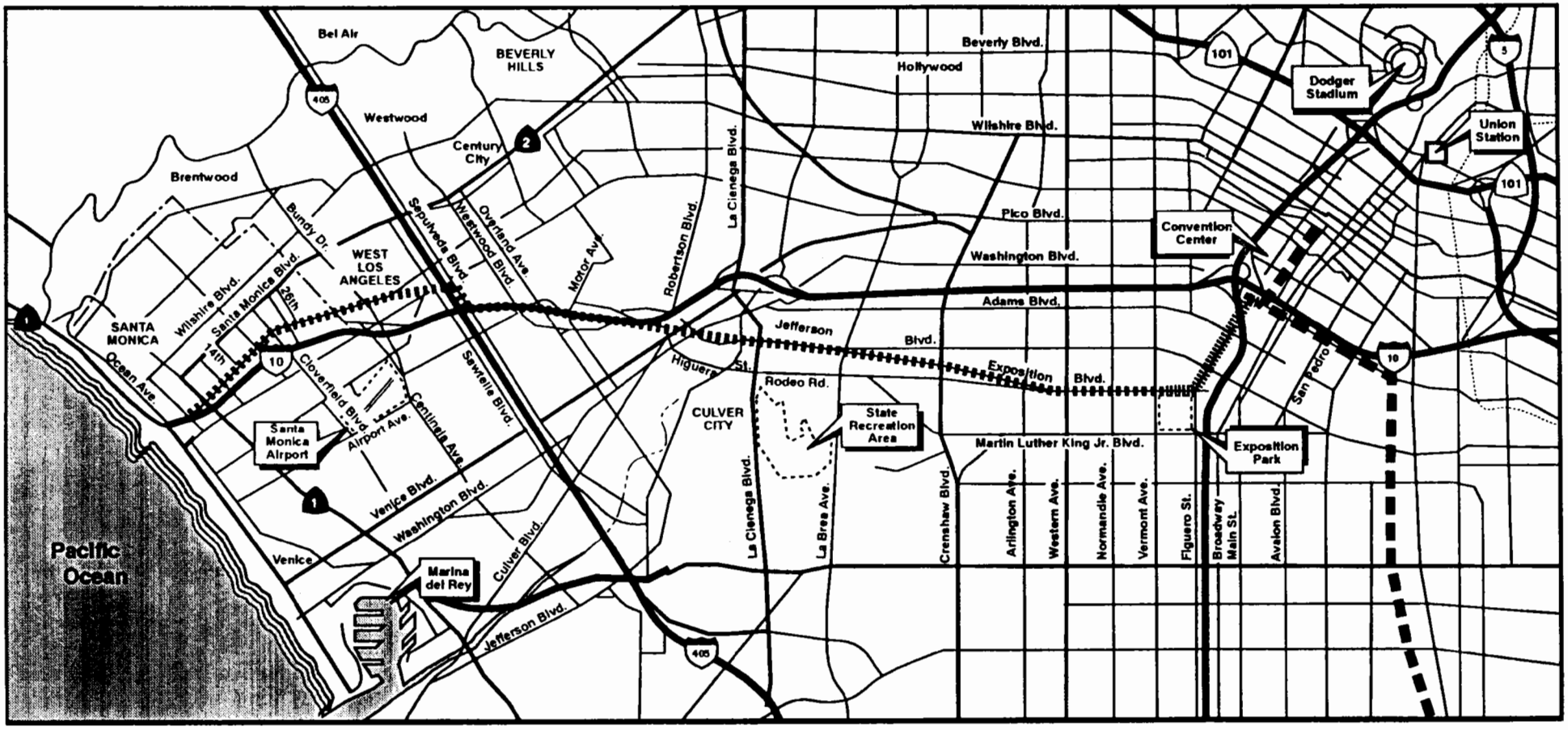
Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

I-10 Alignment - Alternative B



LRT Alternative B

Metro Blue Line LRT

Planned Exposition Park Extension of Blue Line

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 2-3

BRW

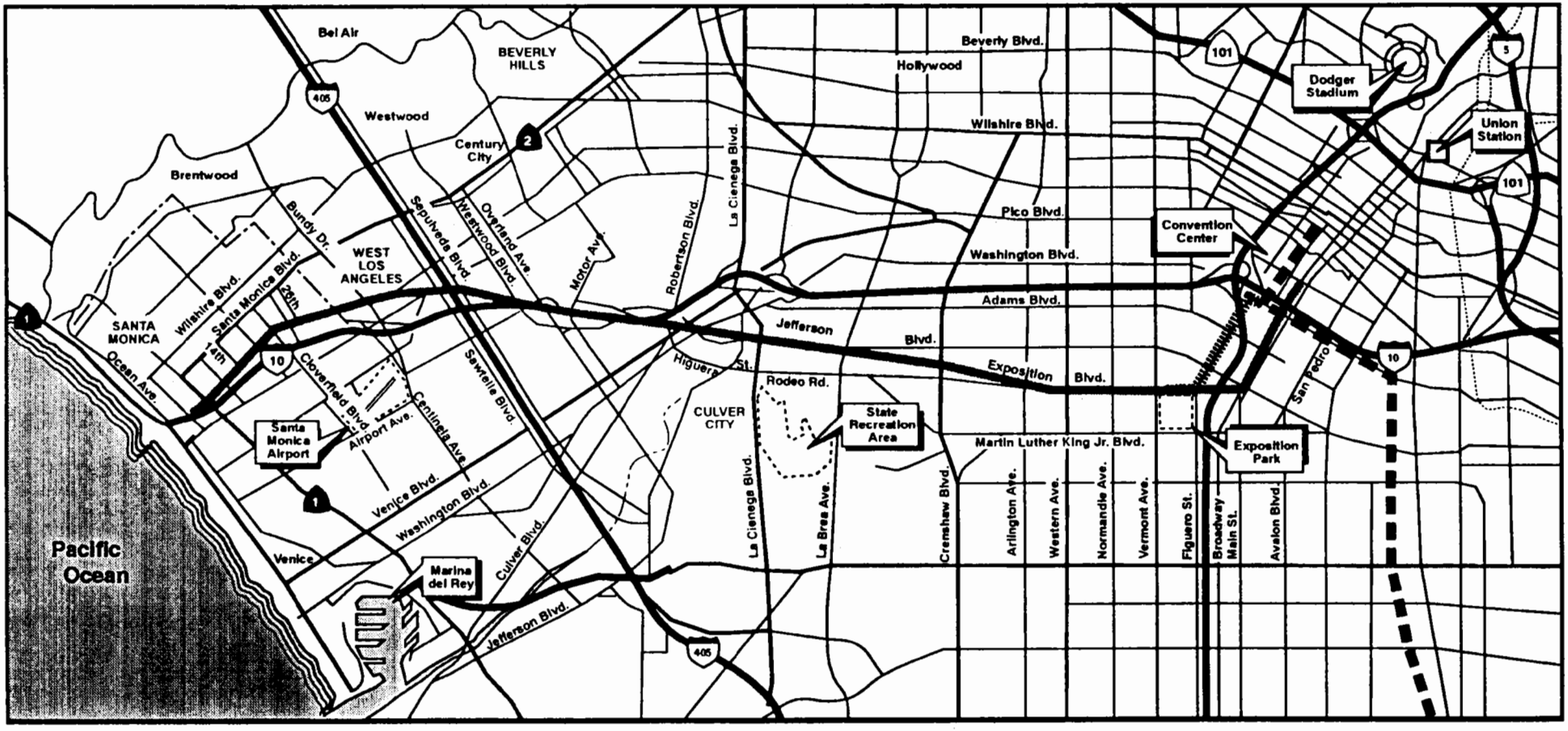
Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Exposition ROW - Alternative C



Bus Alternative C

Metro Blue Line LRT

Planned Exposition Park Extension of Blue Line

SCALE IN FEET	NORTH	Figure No.
2,500 10,000 0 5,000		2-4 BRW

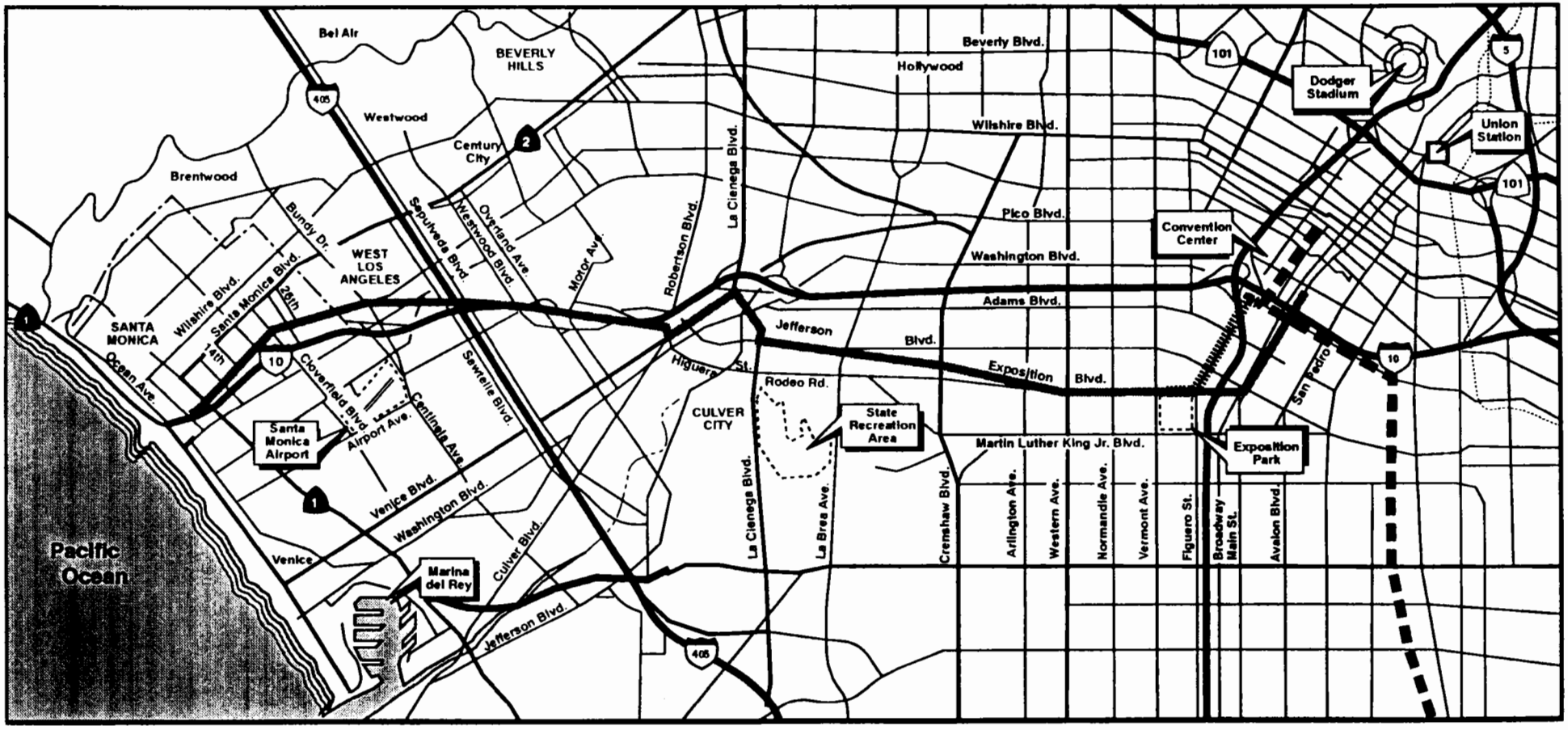
Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

La Cienega Detour - Alternative D



Bus Alternative D

Metro Blue Line LRT

Planned Exposition Park Extension of Blue Line

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 2-5

BRW

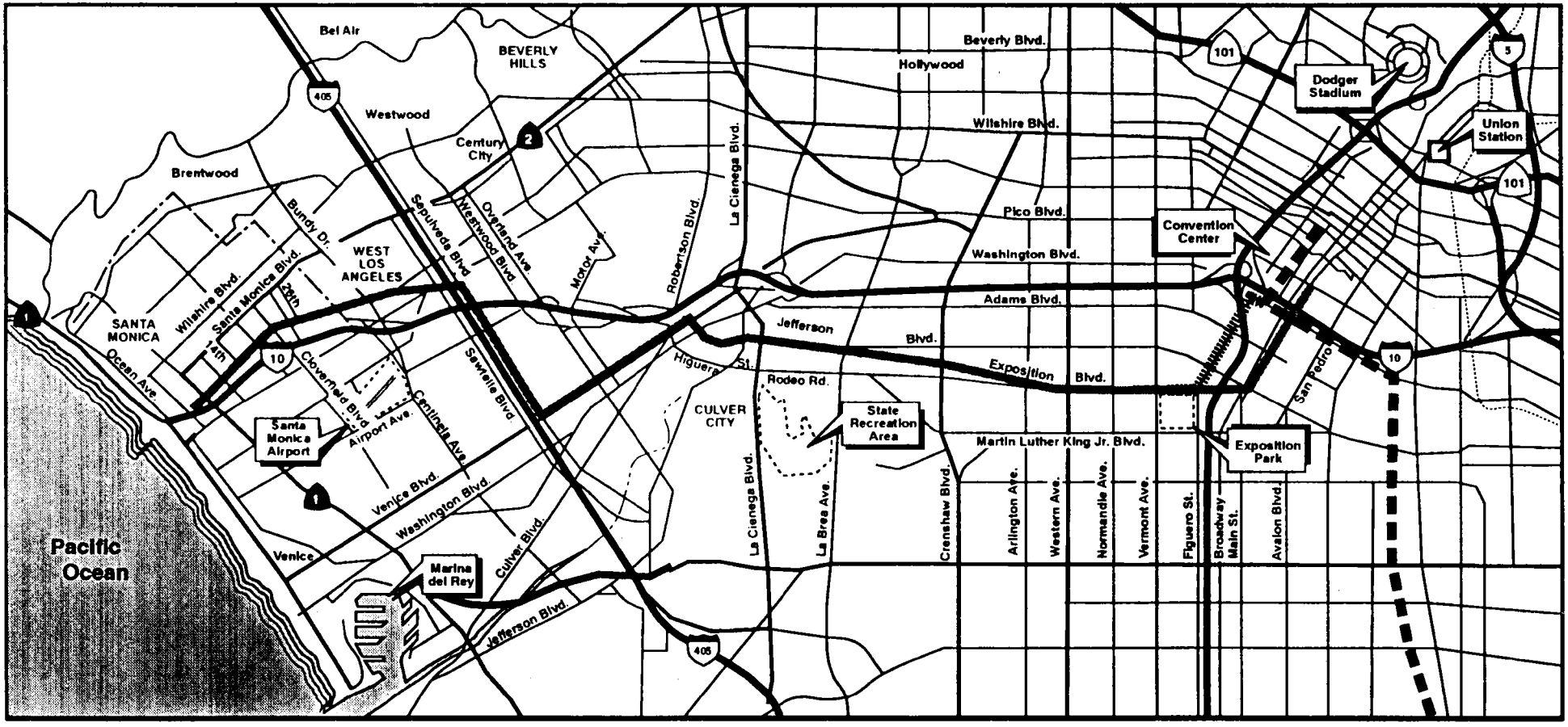
Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Venice-Sepulveda Detour - Alternative E



Bus Alternative E

Metro Blue Line LRT

Planned Exposition Park Extension of Blue Line

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 2-6

BRW

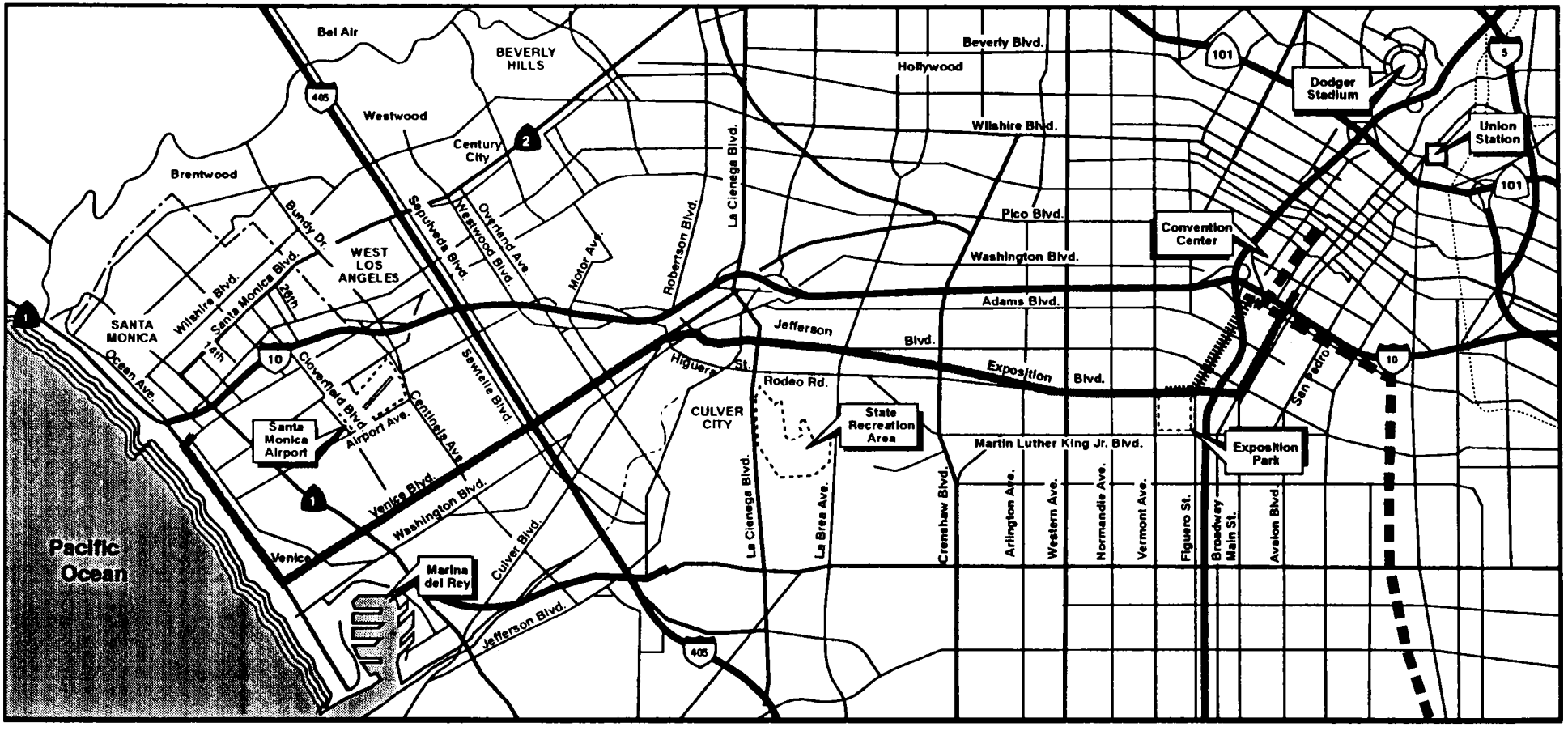
Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Venice-Ocean Park - Alternative F



Bus Alternative F - Venice-Ocean Park

Metro Blue Line LRT

Planned Exposition Park Extension of Blue Line

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 2-7

BRW

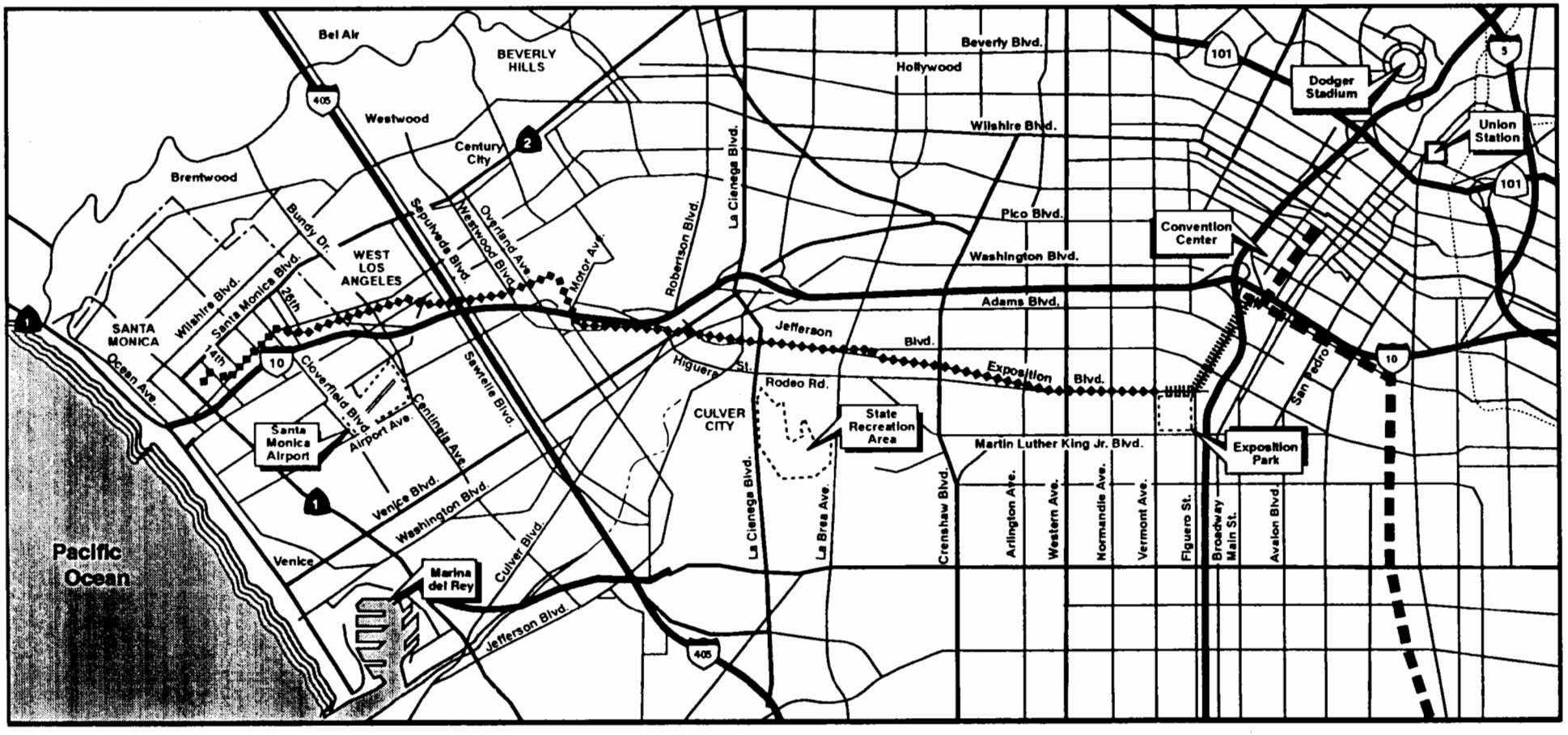
Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Exposition ROW - Alternative G



Bikeway Alternative G

Metro Blue Line LRT

Planned Exposition Park Extension of Blue Line

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 2-8

BRW

Source: B R W, Inc., 4 November 1994

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

- **No-Build** - No transportation improvement on the Exposition ROW west of Vermont Avenue. The No-Build Alternative can be used as a background condition against which all of the other alternatives can be assessed.

- **Alternative A** - Light Rail Transit (LRT) from the Blue Line Exposition Park Branch at Vermont, west along the Exposition ROW to Main and Colorado in downtown Santa Monica.

- **Alternative B** - LRT from the Blue Line Exposition Park Branch at Vermont, west along the Exposition ROW. Just west of Motor Avenue the alternative deviates from the ROW to follow the south side of I-10 and the east side of I-405 before returning to the ROW to terminate at Main and Colorado in downtown Santa Monica.

- **Alternative C** - Bus from Downtown Los Angeles south on Broadway to turn west using exclusive bus lanes on the Exposition ROW to 4th and Colorado in downtown Santa Monica.

- **Alternative D** - Bus following the Alternative C alignment out of downtown LA to the Exposition ROW, at La Cienega, the Alternative departs from the ROW, turning north on La Cienega in mixed-flow, continuing southwest in mixed traffic flow along Venice Boulevard to return to the ROW and continue west to downtown Santa Monica.

- **Alternative E** - Bus from downtown Los Angeles, following the Alternative C alignment; the Alternative departs the ROW west of Robertson to turn southwest along Venice, turning north to follow Sepulveda Boulevard in mixed-flow to re-join the Exposition ROW to the terminus point in downtown Santa Monica.

- **Alternative F** - Bus following the same alignment as Alternative E, but continuing in the median of Venice past Sepulveda Boulevard to Lincoln Boulevard; continuing west along Venice in mixed flow traffic operations; connect with Pacific Avenue/Neilson Way northbound (Main Street southbound) to downtown Santa Monica.

- **Alternative G** - Bikeway from the USC/Coliseum area to Santa Monica, as an interim use or permanent use alongside the LRT or Busway, using the Exposition ROW; combination bikeway, bike route and bike path.

The Preliminary Planning Study evaluated Electric Trolley Bus (ETB) for Alternatives C, D, E, and F. However, the MTA Board has subsequently acted to indefinitely cancel the County's ETB program. There are no plans to convert any MTA bus lines to ETB technology and there are no plans to implement new ETB services. Consequently, this Alternatives Refinement Report focuses on use of buses rather than ETB for use in the

Exposition Corridor. This is to insure a bus system that is integrated in terms of technology with common maintenance and operational requirements.

2.4.3 Description

The purpose of this section is to describe, in a conceptual manner, the alternative modes, operations and alignments proposed for the Exposition Corridor. The overview contains discussions on the following topics:

- Overview of Modal Alternatives
- Overview of Patron Access
- Staged Implementation

Discussion of Modal Alternatives

The modal alternatives considered consisted of both rail and non-rail technologies, consistent with the multi-modal nature of the MTA long range plan. The specific modal alternatives include Light Rail Transit (LRT), Bus on a Transitway, and a bikeway. The following section presents conceptual descriptions of the Exposition Corridor Study modes.

Light Rail Transit (LRT) - Light Rail Transit service involves the construction of a modern fixed guideway system with electrically powered vehicles. Since the late 1970s, several California cities have implemented Light Rail Transit, including Los Angeles (Metro Blue Line), San Diego (San Diego Trolley), Sacramento (RT Metro), and Santa Clara County, as well as other cities around the U.S. and in Canada. The Pacific Electric System, which once contained an extensive network of electric passenger rail lines throughout the Los Angeles Basin, is an example of the predecessor to LRT. The development of recent LRT systems brought streetcar and interurban technology to modern day standards.

The Exposition LRT Alternative would operate as a segment of the Blue Line, extending from Burbank to Santa Monica. It would travel through downtown Los Angeles via the planned LRT Blue Line connector from Union Station to 7th and Flower Street, the Exposition Park Branch of the Blue Line to Vermont Avenue and the Exposition ROW from Vermont Avenue to downtown Santa Monica.

Physically, LRT requires a minimum right-of-way of approximately 26 feet wide with 35 feet typically desired, including catenary poles, wayside signal and support housings, and protective fencing. Overhead clearance can be as little as 14 feet under bridges, but desirable clearance is approximately 20 feet with no obstructions. Vehicles are typically 80-90 feet long (about twice the length of a standard bus or trolley-coach) and carry approximately 70 seated and 80 standing passengers for a comfortable load of 150 passengers total. LRT can operate in exclusive right-of-way (including grade separations) or along streets, either within the median or at the side of street, although

speed restrictions may apply when in or near mixed traffic due to regulations imposed by the California Public Utilities Commission as discussed in Section 3.5.3.

Along the Exposition ROW, LRT would be physically consistent with the line's previous use as a freight and passenger line. Modern standards would provide for frequent service not characteristic of local freight service, the last use of the rail line. Overhead catenary support, signal and grade crossing control systems, and protective fencing would be installed to provide a rail line environment capable of providing safe, high-speed service at frequent intervals. Stations could be located in the center or outside the alignment, or both, depending on station site constraints. Figure 2-9 shows a typical cross section of LRT operation in exclusive Exposition ROW.

Bus - Bus technology was selected as a lower capital cost alternative for the corridor. Several types of bus technology could be used in the corridor. Bus technologies could include zero or low emission vehicles using propulsion systems such as natural gas or fuel cell.

The MTA is in the process of converting its existing fleet of buses to clean fuel buses such as Methanol, Compressed Natural Gas (CNG), or Liquified Natural Gas (LNG). Within the next five years, approximately three quarters of the MTA's bus fleet is expected to be clean fuel. Thus, in the short term, this report assumes that approximately 75 percent of the buses that would run on an Exposition ROW busway facility would be clean fueled and 100 percent in the long term. In addition, research and development of a quiet, clean, fuel cell technology is continuing and fuel cell buses are expected to be available roughly in ten years.

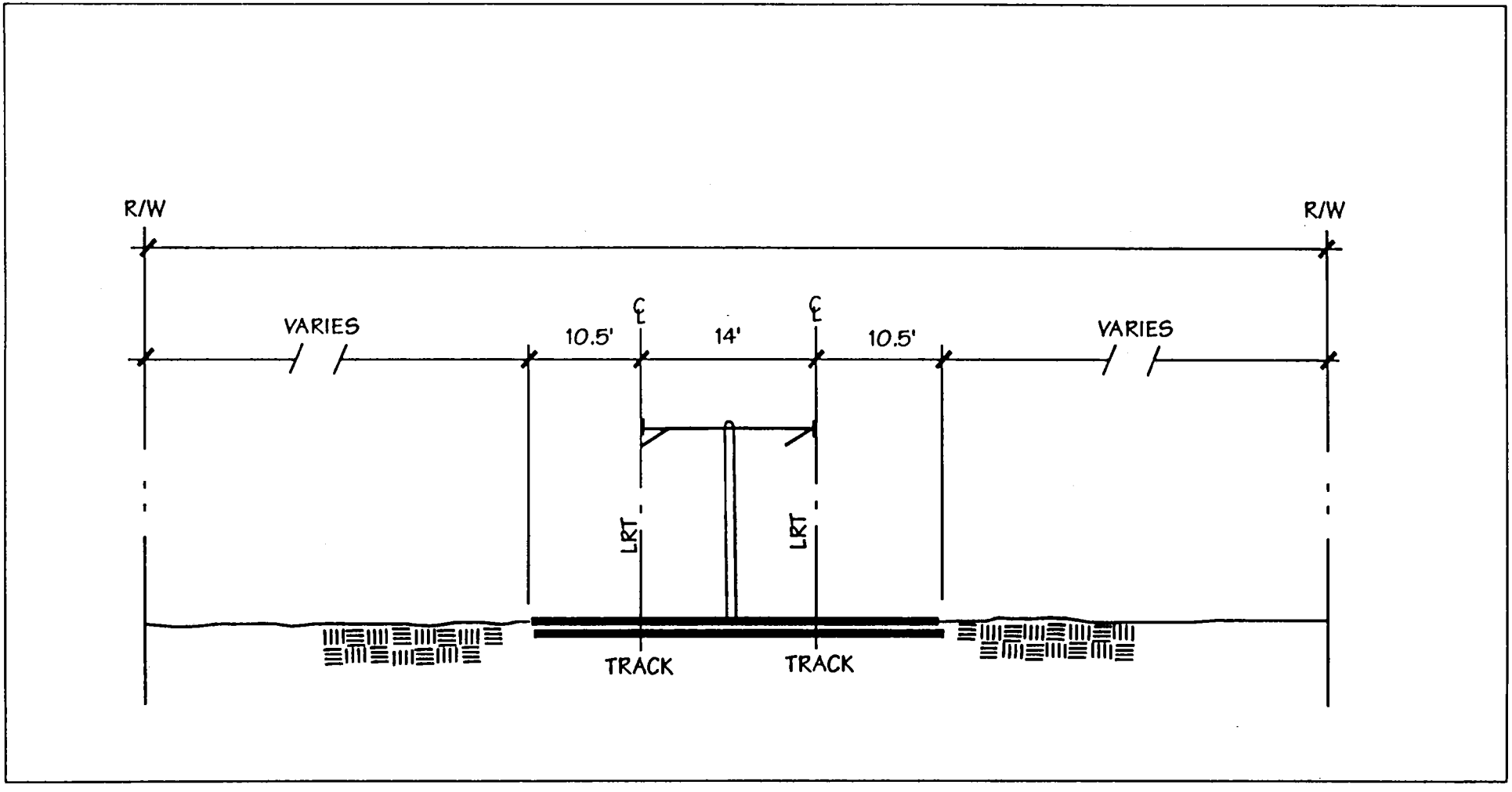
Physically, clean fuel buses require the same space as standard diesel buses, which would allow for the use of normal traffic lanes or a similarly sized right-of-way.

Buses on arterials require one lane in each direction and curb space to load and unload passengers, similar to a bus. This amount of space could be provided in less than 30 feet, assuming one lane in each direction. Shared lanes with traffic are also possible, but would result in no priority given to the transit vehicle.

The total right-of-way width required for bus operation on an exclusive right-of-way is between 40 and 50 feet. The 40 to 50 feet width is needed for a transit lane in each direction with a breakdown lane on the shoulder in each direction. This section could be reduced by 10 feet if a center breakdown lane was used.

Operations on an exclusive busway would be consistent with bus practices, with curbside stops on streets and right-hand side stops on a transitway. Figure 2-10 shows a typical cross section of bus operations within the median of an arterial roadway in the Exposition Corridor.

LRT Exclusive Right-of-Way



Not to Scale

Figure No. 2-9

BRW

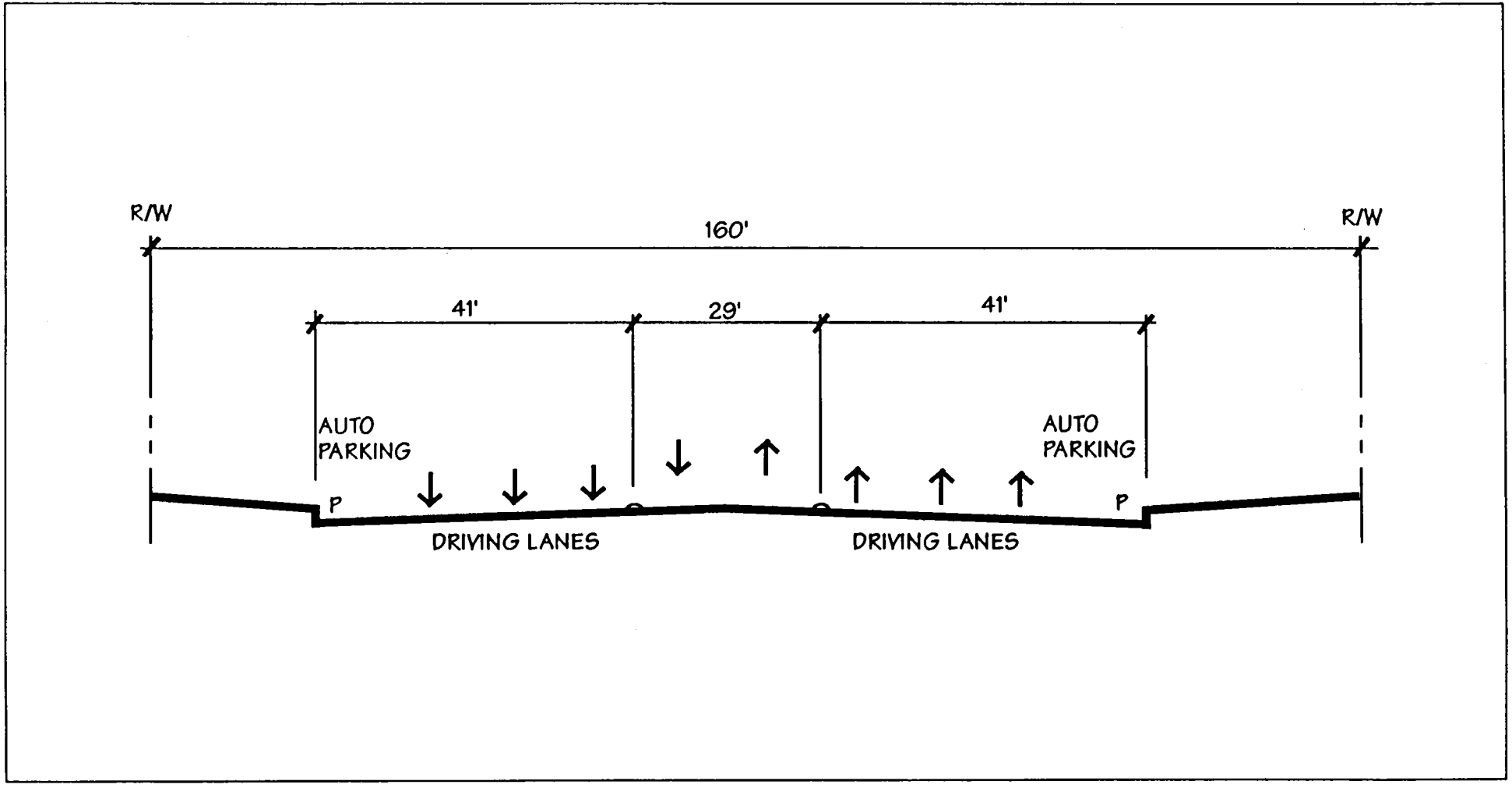
Source: BRW, Inc., 21 June 1993

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Bus within Median of Venice Boulevard



Not to Scale

Figure No. 2-10

BRW

Source: BRW, Inc., 21 June 1993

MTA Los Angeles County Metropolitan Transit Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Bikeway - A bikeway facility is intended primarily for one type of user, the non-motorized bicyclist. Many cities in California feature extensive bicycle facilities which are used by commuters, students, and recreational riders. Some agencies and jurisdictions publish regional and local bicycle trail maps to inform the cycling community of route options and available facilities. Bikeways generally are configured in two ways:

- Class I Bikepath: A completely separated, protected, and paved linear path which follows a linear corridor such as a river channel, abandoned rail or road bed, or other public property line, with periodic access interface with other paths or ordinary roads. The Ballona Creek bike path is an example of this application.
- Class II Bike Lanes or Class III Bike Route: A striped or signed lane on a street, offering some traffic operations control and safety enhancement to bicycle users. This type of bikeway requires no separate property or construction, but sometimes leads to traffic confrontations or unsafe conditions for bicycle users. Venice Boulevard, as an example, contains bicycle route signs at curbside and some special lane designations and/or striping along the route.

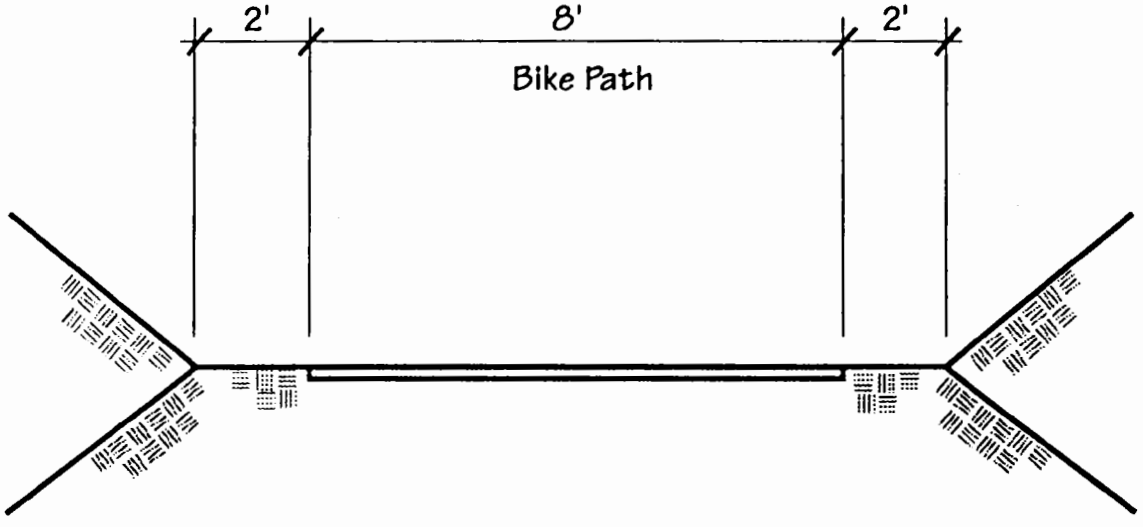
Bikeways may contain one or two lanes and could have auxiliary facilities, such as pullouts or shelters, if funding permits.

The width of a typical bikeway can range from three feet to perhaps 15 feet, with overhead clearance of no more than 10 feet necessary. The Caltrans standard width for a two-way Class I bikeway is a minimum of eight feet of pavement with a two-foot graded area on either side. For Class II facilities, a five-foot width is standard when adjacent to curb parking. Crossings of arterial streets require attention to safety, since bicycles currently enjoy no legal priority at grade crossings and are required to comply with motor vehicle movement laws on the street. Figure 2-11 shows a typical cross section of an exclusive bike path, while Figure 2-12 shows a typical cross section of a bikeway operating as a bike lane on an arterial street.

Overview of Patron Access

Patron access for the LRT stations or Bus stops along the Exposition Corridor could range from Transit Centers, to center or split platforms, to simple curb access for mixed-flow Bus operation. LRT requires raised platforms approximately three feet high, 300 feet long, and a minimum of eight to eleven feet wide depending upon the type of platform (center or split). Bus does not require a raised platform and can be served by specially designed boarding areas or simple curbside bus stops. The types and function of each station would depend on the expected ridership of the proposed transit service, site constraints, and traffic conditions. This section provides brief descriptions of each type of station and stop under consideration. Patron access to the bikeway will be provided by simple ramps and curb cuts along the facility.

Class 1 Bike Path



NORTH

Figure No. 2-11

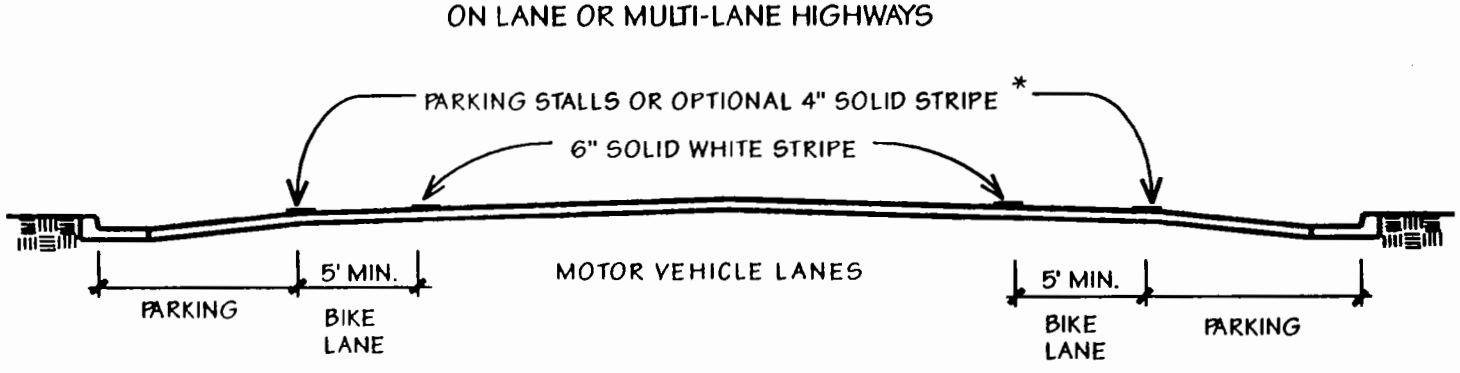
BRW

Source: BRW, Inc., 15 December 1993

MTA

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study



(A) STRIPED PARKING

Not to Scale

Figure No. 2-12

BRW

Source: BRW, Inc., 21 June 1993

LRT/Busway/Bus transit interface stations can be designed as off-street terminals or served by on-street bus stops. The purpose of Transit Centers (off-street terminals) is to make the rail-to-bus and bus-to-bus interchange more convenient and desirable for the patron. Transit Center facilities are, therefore, more appropriate where there is heavy bus access from several feeder bus lines to the LRT or Busway station, otherwise the LRT/Busway stations can be served by on-street bus stops.

On-street facilities (bus stops) would be located on public streets as close to the station entrance as possible. Separate bus turnouts may be constructed if idling buses would cause through traffic delays.

Appropriate bikeway interface facilities should be incorporated into the final design of the Exposition Corridor alternatives. These facilities include secure bike racks or lockers at stations where bicycle traffic is expected, appropriate directional signage indicating intercepting bicycle routes, and appropriate ramps and curb cuts to maintain the utility of the facility as a bikeway.

Transit Centers - Figure 2-13 illustrates a typical Transit Center, such as the intersection of Sepulveda Boulevard and the Exposition Corridor near the I-405 overcrossing. The Transit Center contains the guideway alignment with platform or boarding area, eight bus bays (the number of bus bays can vary depending upon site constraints, bus bay design, operations), and street access for bus ingress and egress. Parking would be located nearby, and pedestrians and bicycles would access the site from adjacent streets.

Center Platforms - Figure 2-14 illustrates a typical LRT station in a median (or on a grade separation) with a center platform or center bus boarding arrangement. The center platform enables all LRT station facilities to be installed on one platform, and is typical of Metro Blue Line stations both at-grade and on aerial structures. The adjacent roadway would not be present on a grade separated structure, and the intersecting roadway would cross under or over the alignment with steps and elevators leading to and from the grade separated alignment.

Split Far-Side Platforms - Figure 2-15 illustrates a typical LRT station or Busway transit boarding area in the median of an arterial street with split far-side platforms/boarding areas. The westbound transit vehicles stop at a boarding area on the west side ("far side") of the intersection. The eastbound transit vehicles stop on the east side of the intersection at a separate platform or boarding area. This arrangement allows room for a separate left turn lane usually within the existing right-of-way of the main roadway, and permits trains or buses to pass through the cross street intersection prior to dwelling at the station or boarding area then proceeding on.

Curb Access - The simplest type of patron access would be provided for certain segments of the Bus Alternatives operating in mixed traffic flow. At these locations, the bus would use existing bus stop locations to load and unload passengers. This type of curb access would have no special station facilities or parking.

Typical Transit Center for Exposition R.O.W.

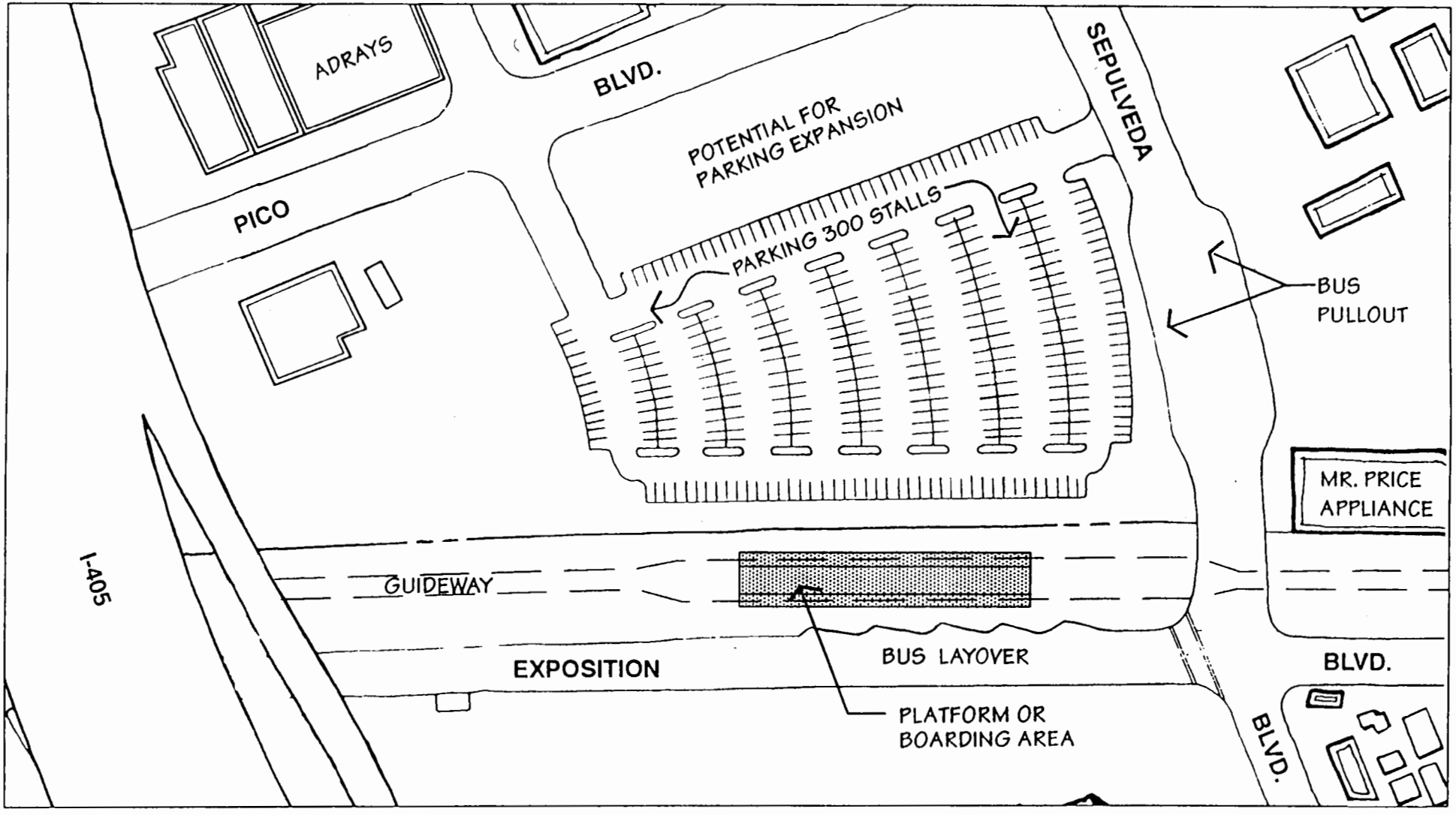


Figure No. 2-13

BRW

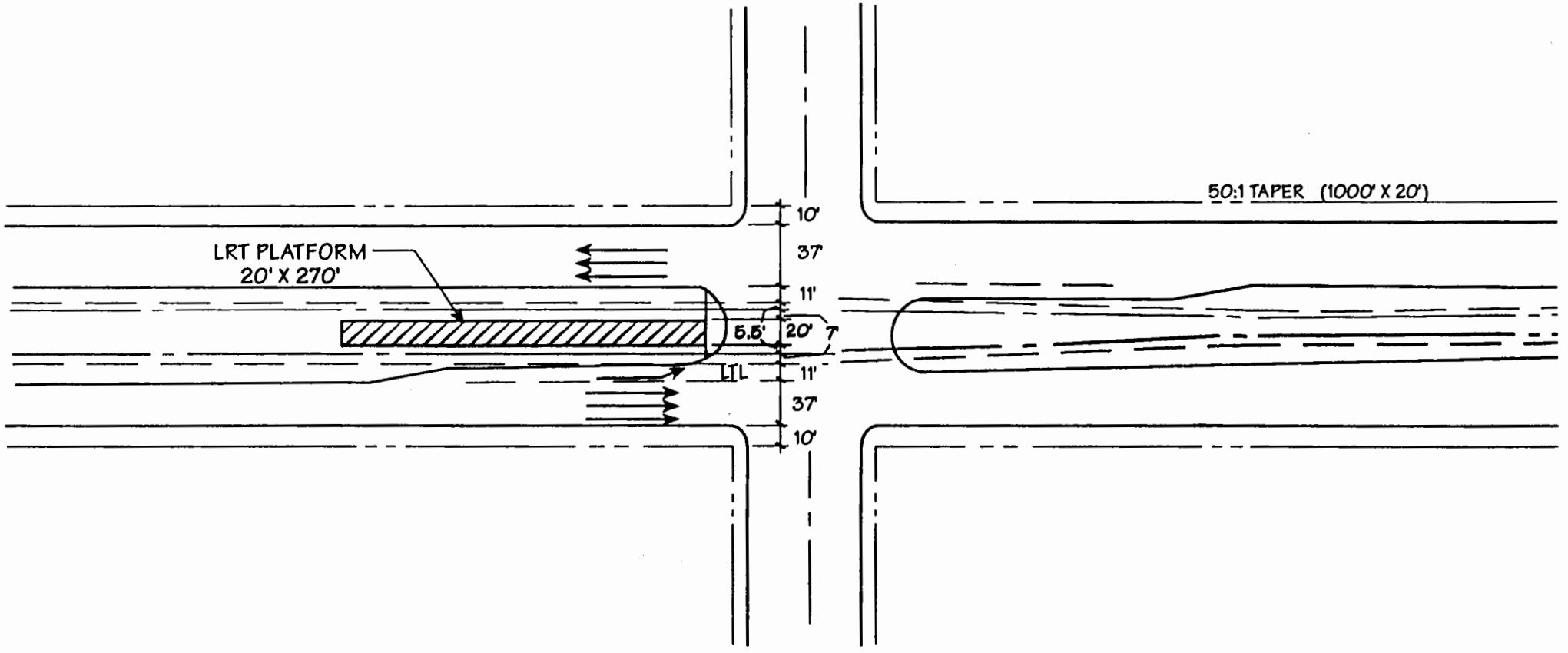
Source: BRW, Inc., 15 December 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/
Environmental Impact Report Study

Typical Center Platform Station Layout



SCALE IN FEET
0 25' 50' 100'

NORTH

Figure No. 2-14

BRW

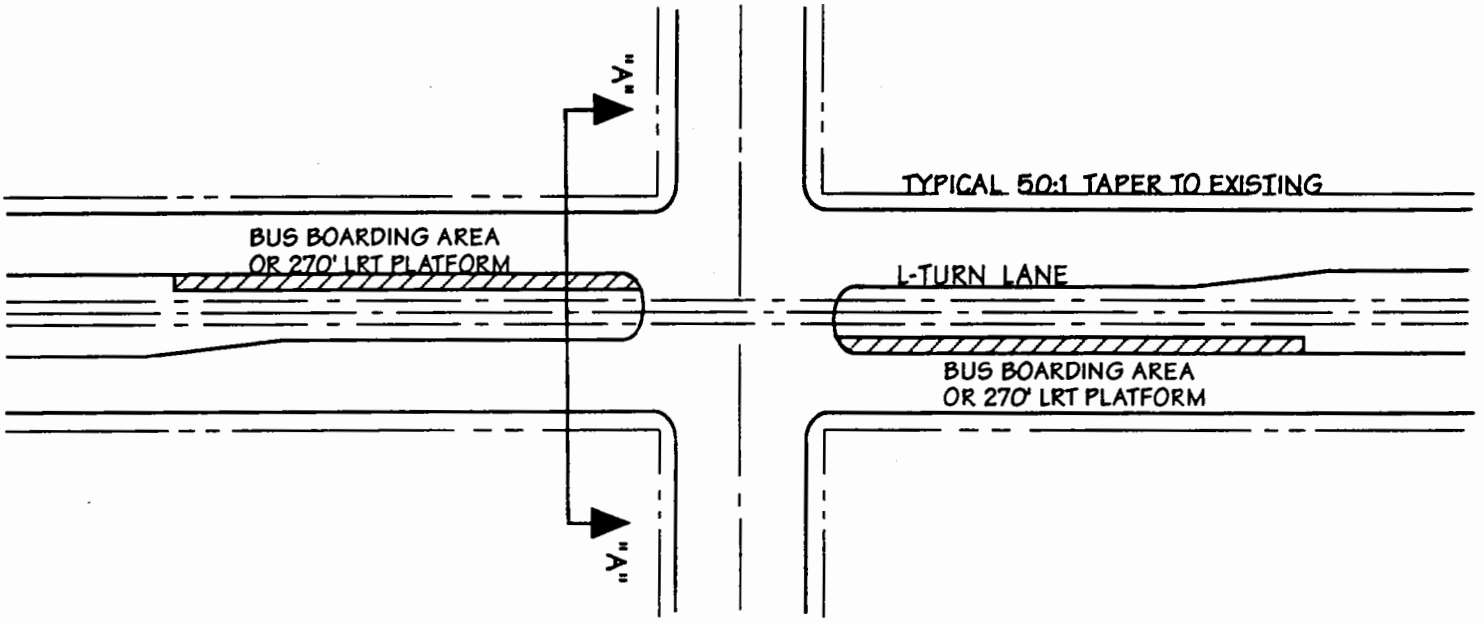
Source: B R W, Inc., October 1991

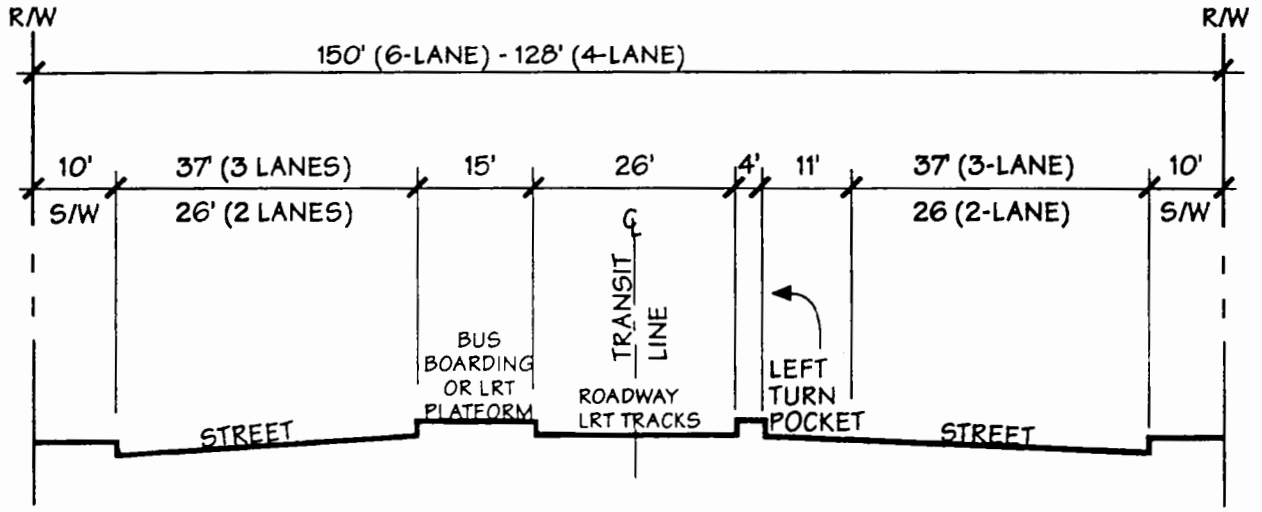
MTA

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Typical Split Far-Side Station/Stop Layout





SECTION "A-A"
N.T.S.

SCALE IN FEET
0 25' 50' 100'
NORTH

Figure No. 2-15

BRW

Source: B R W, Inc., 4 November 1994

MTA

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Staged Implementation

An important aspect in the implementation of a transit improvement in the Exposition Corridor is the staging of the improvement. Staging is important since the transit improvement may be constructed in useable segments depending on such requirements as availability of funds and acquisition of approvals and right-of-way. Staging considerations will help ensure that each increment of construction is useable and can assist in maximizing the number of riders for each segment.

A number of planning considerations were identified to assist in outlining staging concepts for the Exposition Corridor as follows:

- Initiate construction from the east end of the Corridor and build west. LRT Alternatives would serve as an extension to the Exposition Park Line at Vermont. Bus alternatives would connect to Union Station or the 7th/Flower Station in downtown Los Angeles via the Exposition ROW and Broadway or Flower depending on the HOV/bus circulation system defined for downtown.

- Incremental segments should end at reasonable stopping points. These points should be close to major sources of origins/destinations and have good connections to intersecting bus routes (i.e., Vermont, Crenshaw, La Cienega, etc.)

- Terminal points should be at locations where transfers among modes can be made easily, requiring space for auto drop-offs, park-and-ride, and coordinated bus transfer.

- Each incremental segment will require a different number of vehicles to support the service. Consideration would be given to the point at which additional vehicle maintenance facilities must be provided.

Staged implementation would be considered during Phase II of this study in the EIR. At that time, selection of the preferred alternative would include the analysis of environmental impacts and mobility benefits of staged implementation over time.

3.0 Refinement

3.1 INTRODUCTION

This section summarizes the detailed technical studies and public input process used to refine the alternatives developed during the Preliminary Planning Study. The operating and physical characteristics of the refined project alternatives are described. The refinement generated more specifics regarding the location and configuration of the alternatives. The resulting information was used to evaluate the group and to select and define the most promising alternatives recommended for consideration in the EIR.

Community comments were carefully evaluated and generally incorporated into the refined alternatives when there was a demonstrated need from a traffic operations perspective or when the suggestions enhanced an alternative without significantly lowering its cost effectiveness.

It is expected that the refined project alternatives will be further modified during the preparation of the draft EIR as impacts in specific areas such as noise, traffic at stations, safety, aesthetics, and other areas are measured and identified. The draft EIR will analyze and recommend mitigation measures for significant adverse impacts in these areas.

Based on the community meetings, there are additional operating and design features that could make the refined alternatives outlined in this section more acceptable to community groups and individuals. Two features, transit guideway depressed below ground level, and additional grade separated crossings and underpasses at intersections are discussed in Section 3.7.

The discussions of additional features are intended to be examples of how the refined project alternatives could be further modified for evaluation of impacts in the draft EIR. It would be appropriate for these design features to be determined as the adverse impacts of the project alternatives are measured in the draft EIR. For discussion purposes, cost estimates for these design treatments are included along with the descriptions of the design variations of the refined alternative.

The section is organized as follows:

- Public Input to the Refinement of Alternatives
- Station Locations
- Selection of Traffic Control Type
- Operating Plans
- Description of Refined Bikeway Alternative
- Physical Description of Refined LRT and Bus Alternatives
- Design Variations of the Refined Guideway Alignment

3.2 PUBLIC INPUT TO THE REFINEMENT OF ALTERNATIVES

The process to conduct community meetings and obtain public comment was established in the Preliminary Planning Study and has been continued in the Alternatives Refinement/EIR Study. Specifically community input has been used to:

- Identify and provide detail on issues and concerns that can be addressed with design of alternatives and can assist the MTA in the comparison of alternatives;
- Suggest ideas about how to incorporate the transportation improvement into the area (i.e., pedestrian and auto linkages, separation treatments, etc.); and,
- Identify issues and concerns to be addressed in the environmental studies.

A series of public meetings for the Alternatives Refinement Phase was held in Spring 1993. During this time, eight workshops were held and over 1,000 comments obtained.

The primary conclusion that can be drawn from the comments made at the community meetings is that there is a lack of consensus in the community as to the appropriate use of the right-of-way. Some citizens requested that an LRT be constructed as soon as possible along the corridor to serve transportation needs and to stimulate economic development around certain station sites. Other citizens strongly expressed that LRT and bus along the ROW would be totally incompatible where adjacent to residential land uses, especially single family, and should not be constructed at all.

Major community concerns about implementing a transit project along the ROW centered around the following:

- Adverse noise impacts from rail or bus vehicles and horns at gated LRT crossings.
- Excess traffic generated at stations/stops.
- Public safety especially for children where the transit project would cross intersections or operate near schools.
- Inappropriate encouragement of growth around certain transit stations/stops.
- Adverse impacts on property values.

Residential neighborhoods expressing the highest levels of concern or opposition to the project included the area between Ballona Creek and Washington Boulevard, and between Motor Avenue and Sepulveda Boulevards.

Immediately following these workshops, all of the comments were sorted into one or more of the categories shown in Table 3.1. This was done to enable the consultant team to refer to and use the public input effectively in the refinement and evaluation process.

The comments were further reviewed to determine how this might be incorporated into the alternatives design and/or evaluation. In general, comments were incorporated in one of the following ways:

- Comment Noted
- Incorporated in Design of Alternative
- Recommended to be incorporated into EIR Analysis
- Considered in Evaluation
- Considered in Station Location Analysis
- Part of System-wide Assessment (This refers to future work by the MTA to evaluate system priorities and alternative extensions over the next several years)
- Considered in the Planning Process (This refers to the general process of project planning for the MTA system in general rather than specifically the Exposition Corridor)

A full listing of all comments received is included in Appendix C of this Phase I Report.

TABLE 3.1
SEGMENT DESIGN CRITERIA FROM COMMUNITY INPUT COMMENTS

COMMENT TYPE DESIGNATION	SEGMENT DESIGN CRITERIA
A-1	Station Location - Different sizes and sites - Access routes
A-2	Station Characteristics - Number of bus routes/berths - Number of parking spaces - Number of kiss-and-ride spaces - Design integration
A-3	Alignment Horizontal Location
A-4	Alignment Vertical/Profile
A-5	Cross-Section Elements - Guideway - Bikeway - Mitigations
A-6	Traffic Operations - Station and parking access - Alignment crossings - Pedestrian crossing
COMMENT TYPE DESIGNATION	**ADJACENT COMMUNITY CONCERNS**
A-7	- Other
A-8	- Noise
A-9	- Visual
A-10	- Safety
A-11	- Vibration
A-12	- EMF
A-13	- Security/crime in neighborhood
A-14	- Growth Inducement
A-15	- Cumulative Traffic
COMMENT TYPE DESIGNATION	**ALTERNATIVES EVALUATION**
B-1	- Operations
B-2	- Ridership
B-3	- Potential for Environmental Sensitivity
B-4	- Project Costs
COMMENT TYPE DESIGNATION	**SYSTEM CONSIDERATIONS**
C-1	- Alternatives to Project
C-2	- Systemwide issues

SOURCE: BRW, Inc.; May 1993.

3.3 LRT AND BUSWAY STATION LOCATIONS

Patron access to the LRT or bus transit improvement in the Corridor would be provided via stations located approximately one mile apart. One of the primary considerations used in locating stations is presence of a crossing bus route and the ability to offer transfers. Most station sites have this attribute.

Another consideration in selection of station sites was the ability to provide off-street parking. In most cases, sites with sufficient space for parking lots or structures were sought. In some cases, major stations with significant parking areas would be incompatible with adjacent land uses and neighborhoods and were therefore intentionally designed for walk-in, bus transfers and auto-drop off only. Park and ride spaces were included more often at LRT stations than at the busway stops. This is due to the fact that the LRT is designed as the higher capacity, higher cost system. The busway alternatives are slightly slower, attract (and can carry) fewer riders, and thus have been designed conceptually with fewer park and ride areas. A listing of station/stop locations by alternative is presented in Table 3.2.

Appendix A of this report contains a more detailed profile of station sites by alternative including number of proposed park-and-ride spaces and expected feeder bus access. Station Site Conceptual layouts were also developed. Since this task required considerable effort and produced a large amount of information, the results are documented in a separate appendix to this report entitled, "Appendix E Station Concept Design, Exposition Right-of-Way Alternatives Refinement;" BRW, Inc.; November, 1993.

TABLE 3.2
SUMMARY OF STATION/STOP LOCATIONS

Location	ALTERNATIVE					
	A-LRT on ROW	B-LRT ROW/I-10	C-Bus on ROW	D-Bus ROW/ La Cienega	E-Bus ROW/ Sepulveda	F-Bus ROW/ Venice
Vermont	NP	NP	NP	NP	NP	NP
Normandie	-	-	NP	NP	NP	NP
Western	NP	NP	NP	NP	NP	NP
Arlington	-	-	NP	NP	NP	NP
Crenshaw	P	P	P	P	P	P
La Brea	P	P	NP	NP	NP	NP
La Cienega	P	P	NP	NP	NP	NP
Hayden	NP	NP	NP	-	NP	NP
Venice/ Robertson	P	P	P	P	P	P
Motor	NP	NP	NP	NP	-	-
I-405/ Exposition	P	P	P	P	P	-
Bundy	P	P	NP	NP	NP	-
Cloverfield	P	P	P	P	P	-
Main/ Colorado	NP	NP	NP	NP	NP	NP
Venice/ Overland	-	-	-	-	NP	NP
I-405/ Sepulveda	-	-	-	-	NP	NP
Palms/ Sepulveda	-	-	-	-	NP	NP
National/ Sepulveda	-	-	-	-	NP	NP
Centinela/ Venice	-	-	-	-	-	NP
Lincoln/ Venice	-	-	-	-	-	NP
Venice/ Pacific	-	-	-	-	-	NP
Ocean Park	-	-	-	-	-	NP

SOURCE: BRW, Inc.; October 1993.

Note: NP - No Parking
P - Parking

3.4 SELECTION OF TRAFFIC CONTROL TYPE

3.4.1 Introduction to Traffic Analysis

This section presents the traffic analysis used in the Exposition ROW Project to define the type of crossing that should be used at each major intersection. This study focuses on direct impacts created by transit operations along the Exposition ROW and along Venice Boulevard. These impacts may be due to disruptions to traffic by LRT or bus at gated crossings, or by the addition of special signal phases provided for LRT or bus. Other impacts may include loss of lanes, changes to existing traffic signal phasing, or turn prohibitions to provide for LRT or Bus operations. Traffic impacts created by automobile trips to transit stations will be analyzed during the Environmental Impact Report phase of the project.

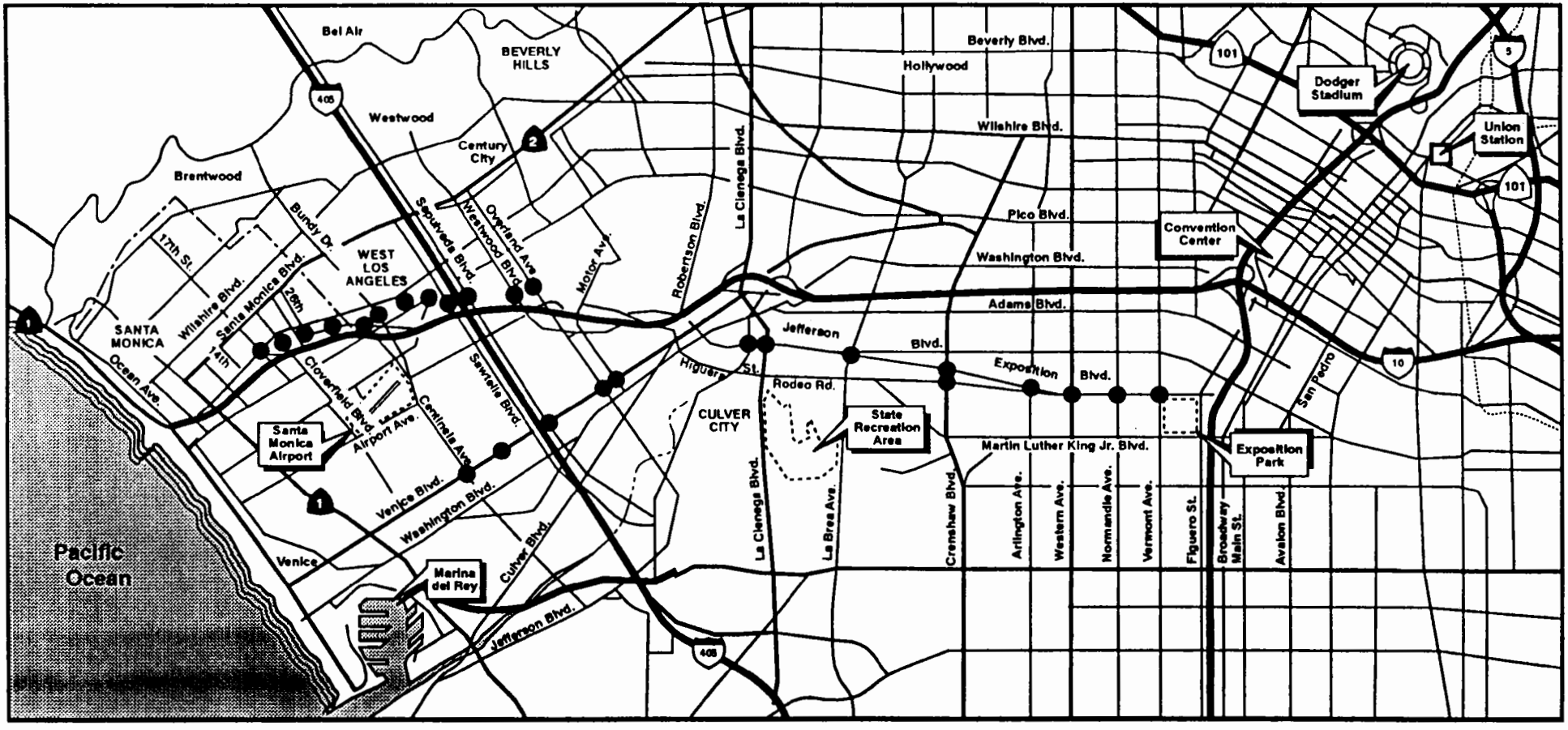
This traffic study analyzes only grade crossings with the busiest traffic along the Exposition right-of-way and along Venice Boulevard between Robertson Boulevard and Lincoln Boulevard. Figure 3-1 depicts the location of these intersections. Other route alternatives are being considered, but these consist of bus in mixed flow operation. Segments with bus mixed flow operation include Venice Boulevard west of Lincoln Boulevard, the Main Street or Pacific Avenue routes through Venice and Santa Monica, Sepulveda Boulevard between Venice Boulevard and Exposition Boulevard, and the La Cienega Boulevard-Venice Boulevard route alternative. Since mixed flow operation would use far side stops which is not significantly different from normal existing bus operations, no traffic analysis was conducted for these segments.

A bikeway has been proposed in conjunction with either LRT or bus operations within the Exposition ROW. The impacts of the bikeway upon traffic are not considered in this analysis. It is assumed that if a bikeway is provided, it would be provided in such a way as to create no additional impact to traffic as described in the following section.

3.4.2 Methodology

The methodology was developed by Katz, Okitsu and Associates in conjunction with BRW, Inc. and the MTA. Morning and evening turning movement manual traffic counts were conducted in the summer of 1993 at many of the study intersections. Additional traffic count data was provided from the City of Culver City and from the City of Santa Monica traffic model used for the City's 1992 Master Environmental Assessment Study. Field surveys and data collection (existing striping plans, traffic signal phasing, etc.) were also conducted.

Study Intersection Considered in Traffic Impact Analysis



● Intersection Analyzed

SCALE IN FEET	NORTH	Figure No.
2,500 10,000 0 5,000		3-1 BRW

Source: BRW, Inc. 21 September 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

The study year is 2010. Existing traffic volumes were increased to 2010 levels using growth rates as follows:

Los Angeles and Culver City, east of Robertson Blvd.	1% per year
Los Angeles and Culver City, west of Robertson Blvd.	2% per year
Santa Monica	Per city model to 2002, 1% per year, after 2002

These traffic growth rates were assumed based on discussions with staff of the three cities. In the case of Santa Monica, the Year 2010 volumes were projected by applying a one-percent annual growth rate to their 2002 model. For Culver City and Los Angeles, the growth rates were applied to existing volumes. Trip generation from specific projects was not added individually since the ambient growth rates were in part based on and considered sufficiently large to account for various specific projects such as Playa Vista, Fox Studios, and Sony Studios.

The Critical Movement Analysis (CMA) methodology was used to calculate volume-to-capacity (V/C) ratios and corresponding levels of service (LOS) at study intersections. These measures were used to analyze the traffic impacts of the No Build and Project Alternatives. This methodology is described in **Interim Materials on Highway Capacity, Transportation Research Circular 212 (Transportation Research Board, January 1980.)** Intersections that are currently unsignalized but would be equipped with a signal were analyzed as if they were controlled by a two-phase traffic signal with each direction receiving a portion of the green time relative to the volume on the approaches.

An adverse impact was identified when there was an increase in V/C of 0.02 at an intersection with a final V/C of 0.900 or more (LOS E or worse) as follows:

$$V/C_{project} > 0.90 \quad \text{and} \quad V/C_{project} > V/C_{no\ build} + 0.020$$

This information was used to refine how the project alternatives would cross intersections in order to avoid adverse impacts.

3.4.3 Intersection Crossing Options

Three alternatives at each intersection were analyzed for the morning and evening peak hours in the year 2010:

1. No-Build (for comparison purposes)
2. Gated Preemption (for LRT only)
3. Signal Control (with progression strategies for bus)

The size and configuration of intersections along the project routes for the No-Build condition was assumed to be the same as what exists today, except at two locations: at

the Venice Boulevard and Motor Avenue intersection, additional northbound lanes were assumed for 2010 on Motor Avenue as a result of the Sony Studio project; also the Venice Boulevard and Sepulveda Boulevard intersection, dual left turn lanes were assumed for 2010 for the eastbound and westbound directions, also as a result of the Sony Studio project. No other intersection improvements at the Exposition Study crossings were assumed to be implemented by projects such as Sony, Fox, Playa Vista, or Vista Pacifica by the year 2010 because none are currently proposed.

The Gated Preemption Alternative assumed that the LRT would preempt traffic operations at the crossing when the train was present. Railroad gates would stop traffic, and LRT would encounter minimal delay. The traffic analysis assumed the same intersection configurations as the No-Build: no lanes were assumed to be lost due to installation of LRT. One exception was at 20th Street/Olympic Boulevard in Santa Monica, where a through lane of traffic in the eastbound and westbound directions were assumed to be lost. This assumption was based on input from City of Santa Monica staff indicating that use of a travel lane for LRT could be possible, and would be preferable to removing mature trees in the Olympic Boulevard median.

CMA traffic volume-to-capacity calculations were performed by adjusting the maximum rate of vehicles through intersections for traffic movements across the LRT crossing. It was assumed that LRT headways would be six minutes during peak periods, and that the preemption sequence would last about 45 seconds.

The Signal Control Alternative assumed LRT or bus would be controlled at crossings by a traffic signal. Without a signal progression strategy used in operating the transit line, the LRT or bus must wait for its signal phase before proceeding, like any other motor vehicle. Also, signal controlled intersections would limit the maximum speed of the LRT to 35 or 45 miles per hour depending on whether the ROW is in the street median or is semi-exclusive, fenced ROW. The traffic analysis assumed the same intersection configurations as the No-Build at all crossings, except at 20th Street, where one eastbound and one westbound lane of traffic was lost. At many crossings, it was assumed that illuminated "No Left Turn" and "No Right Turn" signs would prohibit automobiles from turning across the transit crossing while the bus or LRT vehicle had a green light.

At selected locations, mitigation measures were studied which added lanes of traffic at the intersection. Additional lanes were added in the analysis until the impact reached a level of insignificance. This was done to assess the reasonableness of mitigating the impacts of the transit crossing by increasing the capacity of the intersection versus recommending a more costly grade separation at that location.

3.4.4 Results of Analysis

Table 3.3 shows the calculated volume-to-capacity ratios for the crossings in the year 2010 with gated pre-emption and with signal control.

Table 3.4 presents the traffic impacts findings for the major crossings along the Exposition ROW and along Venice Boulevard. The following observations are made concerning these findings:

- Use of gated pre-emption in the corridor would adversely affect traffic operations at most major four-legged intersections. Gated preemption could be used without adversely affecting traffic mid-block crossings on lower volume streets such as Westwood Boulevard and Bagley Avenue or three-legged intersections such as at Jefferson Boulevard/National Boulevard.
- From a traffic operations perspective, grade separations for both LRT and Bus are necessary at several locations if traffic operations are to be maintained at the existing level of service. The locations for grade separations are:
  - Washington Avenue/National Boulevard
  - Venice Boulevard/Robertson Boulevard
  - Overland Avenue
  - Sawtelle Boulevard
  - Pico Boulevard/Gateway Boulevard
  - Bundy Drive
- The following additional grade separations would be necessary for the LRT alternatives in order to achieve priority at all street crossings without adversely affecting traffic impacts:
  - La Brea Avenue
  - La Cienega Boulevard
  - Jefferson Boulevard
  - Sepulveda Boulevard
  - 26th Street
  - Cloverfield Boulevard
  - Olympic Boulevard

  At Crenshaw Boulevard and Arlington Avenue, it would be possible to cross at-grade with gated pre-emption if additional right-of-way is purchased to provide additional turn lanes. The City of Santa Monica has reviewed the Concept Plans and found that at-grade operations within the City would be acceptable with roadway and signal improvements to limit overall delays.

  At Vermont, Normandie and Western, the LRT would travel at-grade with traffic on Exposition. At these speeds (35 mph) using a median alignment, signal progression would be used to control LRT and traffic movements.

  For the busway alternatives, if absolute priority (full preemption) is desired at all major grade crossings, the same additional grade separations would be required as for LRT. However, absolute priority for the bus at all major grade crossings may not be appropriate or necessary given the lower peak hour ridership capacity of the busway versus the LRT.

TABLE 3.3

SUMMARY OF TRAFFIC INTERSECTION OPERATION ANALYSES
(2010 With and Without Project)

Location	Xing #	AM V/C Ratios					PM V/C Ratios				
		No Build	Preempt (LRT only) Base	Preempt (LRT only) Mitig.	Signal (LRT or Bus) Base	Signal (LRT or Bus) Mitig.	No Build	LRT Preempt (LRT only) Base	LRT Preempt (LRT only) Mitig.	Signal (LRT or Bus) Base	Signal (LRT or Bus) Mitig.
Vermont/Exposition	1	0.793	0.942 *		0.793		0.828	1.008 *		0.828	
Normandie/Exposition	2	0.958	1.162 *		0.958		0.951	1.152 *		0.951	
Western/Exposition	3	0.801	0.986 *		0.801		0.795	0.990 *		0.795	
Arlington/Exposition	4	0.876	1.033 *	0.894	1.192 *	0.883	0.841	1.001 *	0.851	1.084 *	0.747
Crenshaw/Exposition	5	0.831	1.024 *	0.859	0.993 *	0.724	0.840	1.064 *	0.899	1.011 *	0.748
La Brea/Exposition	6	0.690	0.905 *		0.768		0.751	0.973 *		0.785	
La Brea/Jefferson	6	1.101	1.226 *		1.101		1.095	1.381 *		1.095	
La Cienega/Jefferson	7	1.366	1.670 *		1.366		1.337	1.734 *		1.337	
Jefferson/National	8	0.446	0.583		0.532		0.670	0.874		0.761	
National/Washington	23	0.901	1.011 *		assume*		0.969	1.212 *		assume*	
Venice/Robertson	9	1.396	1.786 *		assume*		1.558	2.077 *		assume*	
Overland/Northvale	10	0.726	0.964 *		0.852		0.826	1.101 *		0.957 *	
Westwood/Exposition S.	11	0.492	0.656		0.711		0.648	0.854		0.854	
Sepulveda/Exposition	12	0.738	0.961 *		0.802		0.809	1.027 *		0.839	
Sawtelle/Exposition	13	0.624	0.817		0.705		0.877	1.140 *		0.934 *	
Sawtelle/Pico	13	1.111	1.236 *		1.111		1.370	1.670 *		1.370	
Pico/Gateway	14	0.787	0.893		assume ok		1.009	1.273 *		assume*	
Barrington/Exposition S.	15	0.617	0.822		0.712		0.767	0.993 *		0.796	
Bundy/Olympic	16	1.134	1.188 *		1.134		1.429	1.632 *		1.429	
Bundy/Exposition	16	0.859	1.146 *		0.958 *		0.986	1.306 *		1.067 *	
Centinela/Olympic	17	1.160	1.369 *		1.160		1.089	1.302 *		1.089	
Centinela/Exposition N.	17	0.710	0.947 *		0.820		0.608	0.811		0.660	
Stewart/Olympic	24	0.946	1.021 *	0.927	0.946		1.082	1.341 *	1.066	1.082	
26th/Olympic	25	0.837	0.930 *		0.837		0.900	0.971 *		0.900	
Cloverfield/Olympic	26	1.252	1.580 *		1.252		1.338	1.722 *		1.338	
20th/Olympic	27	1.176	1.790 *		1.560 *		1.149	1.823 *		1.640 *	
Venice/Motor	18	1.395	assume*		1.469 *	1.395	1.344	assume*		1.415 *	1.344
Venice/Overland	19	1.374	assume*		1.446 *	1.374	1.535	assume*		1.616 *	1.535
Venice/Sepulveda	20	1.158	assume*		1.158		1.184	assume*		1.184	
Venice/McLaughlin	21	1.009	assume*		1.062 *	1.009	1.237	assume*		1.302 *	1.237
Venice/Centinela	22	1.094	assume*		1.152 *	1.094	1.471	assume*		1.548 *	1.471

Source: Katz, Okitsu and Associates, September 12, 1993.

Bold/Shaded = Does not account for diversions due to median closures; V/C should be higher than shown.
* = Impacted according to criterion (Final V/C > 0.90 and Final V/C > Base V/C + 0.02)
"assume *" = assumed impacted due to high No Build V/C ratio.

TABLE 3.4
TRAFFIC IMPACT FINDINGS OF THE INTERSECTION CROSSING ANALYSIS

Crossing location	Gated preemption	Signal control
1. Vermont Ave.	Adversely Affected.	Feasible, if no lanes are removed, and mid-block U-turn signal is installed possibly near Budlong Ave., and some curbside parking is removed.
2. Normandie Ave.	Adversely Affected.	Feasible, if no lanes are removed, and mid-block U-turn signals are installed possibly near Denker Ave., and some curbside parking is removed.
3. Western Ave.	Adversely Affected.	Feasible, if no lanes are removed, and mid-block U-turn signals are installed possibly near Gramercy Pl., and some curbside parking is removed.
4. Arlington Ave.	Adversely Affected. Feasible if ROW is purchased to provide Exposition Blvd. eastbound and westbound left turn lane and eastbound right turn lane.	Adversely Affected. Feasible if ROW is purchased to provide Exposition Blvd. eastbound and westbound left turn lane and eastbound right turn lane.
5. Crenshaw Blvd.	Adversely Affected. Feasible if Exposition Blvd. north roadway is widened to provide an eastbound and westbound left turn lane and eastbound right turn lane.	Adversely Affected. Feasible if Exposition Blvd. north roadway is widened to provide an eastbound and westbound left turn lane and eastbound right turn lane.
6. La Brea Ave.	Adversely Affected.	Feasible.
7. La Cienega Bl.	Adversely Affected.	Feasible if transit in median.
8. Jefferson/National	Feasible.	Feasible.
23. Washington/National	Adversely Affected.	Adversely Affected.
9. Venice/Robertson	Adversely Affected.	Adversely Affected.
10. Overland Ave.	Adversely Affected.	Adversely Affected.
11. Westwood Bl.	Feasible.	Feasible.
12. Sepulveda Bl.	Adversely Affected.	Feasible.
13. Sawtelle Bl.	Adversely Affected.	Adversely Affected.
14. Pico/Gateway	Adversely Affected.	Adversely Affected.
15. Barrington Ave.	Adversely Affected.	Feasible.
16. Bundy Dr.	Adversely Affected.	Adversely Affected.

TABLE 3.4, continued
TRAFFIC IMPACT FINDINGS OF THE INTERSECTION CROSSING ANALYSIS

Crossing location	Gated preemption	Signal control
17. Centinela Ave.	Adversely Affected.	Feasible.
24. Stewart Ave.	Adversely Affected. Feasible if re-striping and widening provides Olympic Blvd. with a westbound and eastbound right turn lane, and Stewart Street with a second southbound through lane.	Feasible.
25. 26th St.	Adversely Affected.	Feasible with transit either in median or on south side.
26. Cloverfield Bl.	Adversely Affected.	Feasible if transit is built in median.
27. 20th St./Olympic	Adversely Affected.	Adversely Affected.
18. Venice/Motor	Adversely Affected.	Adversely Affected if Busway in median. Feasible, if Busway in mixed flow or in an additional exclusive curb lane.
19. Venice/Overland	Adversely Affected.	Adversely Affected if Busway in median. Feasible, if Busway in mixed flow or in an additional exclusive curb lane.
20. Venice/Sepulveda	Adversely Affected.	Feasible, if Busway in median and no lanes lost. Feasible, if Busway in mixed flow or in an additional exclusive curb lane.
21. Venice/McLaughlin	Adversely Affected.	Adversely Affected if Busway in median. Feasible, if Busway in mixed flow or in an additional exclusive curb lane.
22. Venice/Centinela	Adversely Affected.	Adversely Affected if Busway in median. Feasible, if Busway in mixed flow or in an additional exclusive curb lane.

SOURCE: BRW, Inc., September 10, 1993

Although 20th Street meets the criteria for grade separation, discussions with City of Santa Monica staff indicated a split median alignment at-grade along Olympic Boulevard is preferred in the segment west of Cloverfield Boulevard. This alignment would split the westbound and eastbound guideway to run within the existing inside travel lanes of the street. In this manner, the mature coral trees in the median can be maintained along with a lane of traffic in each direction and parking lanes. Because the vehicular capacity will be significantly reduced by this design, the City indicated a lower level of service would be acceptable such that an at-grade crossing of 20th Street would be the preferred design.

- Signal control of the transit line crossing was shown to be feasible, from a traffic perspective, at several locations. Some locations would require minor geometric roadway improvements which can be incorporated into the design refinement. This signal control could allow for coordination of the transit vehicles through each intersection. Signal progression strategies could be used to coordinate the arrival of the transit vehicle at an intersection at the time the green indication is given for that movement. Although not as reliable as preemption, the transit vehicle could be expected to stop 25 to 35 percent of the time. As discussed previously, signal control with priority would be more appropriate for busway alternatives.

3.4.5 Interactive Signal Progression for Transitway Operations

An alternative traffic control strategy was evaluated to allow signal priority for the transit line using a progression control scheme for LRT and buses through major intersections along the ROW without grade separations in order to lower the costs. A progression control strategy would need to be developed which coordinates transit operations with signals throughout the corridor. Such a strategy would be similar to the Smart Corridor Project which is being implemented north of I-10 in the Study area. This project has coordinated major intersections in the area with one another in a traffic-responsive network. As demands build on certain links, additional signal time or capacity can be allocated to those links within certain limits. Such a system could be implemented south of I-10 to include the Exposition Corridor and to accommodate transit operations in the ROW as well.

Initial Corridor-long simulations were run assuming existing signal timings, future volumes and the transit frequencies identified above. Although not nearly as sophisticated as the traffic and transit (train) simulation and control system in use along Washington Boulevard on the Blue Line, the simulation analysis showed a number of results with application to the Exposition Corridor:

- Traffic volumes are generally so heavy on most streets in the Corridor that absolute preemption is not possible without degrading levels of service. These findings are further discussed in Section 3.4.4 on an individual basis.

- Priority progression schemes would probably work acceptably without degrading operations at most intersections in the Corridor.

- Additional dwell times at stations or transit-hold times may be necessary to maintain progression. Separation of the Corridor into four segments appears to be needed with a slightly different progression scheme in each based on the types of intersections and at-grade crossings and the three different cities within which segment is located. The four segments are:

  - Vermont Avenue to Gramercy Place
  - Gramercy Place to National/Washington/Venice/Robertson
  - Venice/Robertson to Pico/Gateway
  - Pico/Gateway to downtown Santa Monica

- The breaks between each segment represent adjustment points where the transit vehicle will need to be held with a longer station dwell time or a grade separation installed to remove the added delay for transit. These actions assume added delays to street traffic would not be an acceptable trade-off.

- The additional dwell times at stations or transit-hold times, combined with the PUC limits on maximum train speeds at non-gated crossings would slightly increase the overall travel time. This would likely have a corresponding decrease in patronage.

- Trains traveling through intersections at 45 miles per hour with green lights but without gate protection would raise safety concerns. It should be noted, however, that Blue Line trains currently travel at 35 miles per hour through non-gated street crossings.

- Much more work would be needed to develop a corridor-wide progression scheme and signal coordination program. Especially with the rapid changes in technology, smart corridors are expected to be implemented much more widely in the future. Incorporation of a transit line such as the Exposition route could be a logical addition to an overall corridor management scheme. Through the use of such technology, substantial savings in costly grade separations could be avoided with minor impacts to traffic and transit operations.

3.5 OPERATING PLANS

The development of operating plans forms an important part of the description of alternatives. Operating assumptions regarding transferring bus routes, operating frequency, speeds and travel times are needed to produce ridership forecasts.

3.5.1 Feeder Bus Service

The bus network would continue to be an important part of any transit improvement in the corridor. Where guideway transit improvements are made in the corridor, approximately 50 to 60 percent of the ridership transfers or accesses the improvement via the bus network.

Depending on the alternative, the number of existing crossing bus routes which would provide access to the Exposition fixed-guideway transit line include the following:

- MTA - 10 to 13 local routes; 9 express routes
- SMMBL - 5 local routes
- CCMBL - 3 local routes
- LA DOT - 1 dash route

A detailed listing of existing bus lines that would directly serve the Exposition project alternatives is contained in Appendix A, Tables A.1 through A.6. Other bus lines that run close to the Exposition Corridor could be rerouted slightly to provide the additional connections to the LRT or busway stations. A detailed feeder bus plan would be developed prior to operation of the LRT or busway project. For purposes of this study, it has also been assumed the four existing express bus lines (MTA line #439 and #436, LADOT line #438, and SMMBL line #10) would terminate at appropriate stations along the Exposition LRT line rather than continue into Downtown Los Angeles in order to avoid service duplication.

3.5.2 Operating Frequency and Capacity

Assumptions were made concerning the capacity of the alternatives in terms of service frequency and vehicle capacity. Service frequency for both LRT and bus was assumed to be similar to the MTA Long Beach Blue Line with six-minute headways in the peak periods and ten-minute off-peak period headways. The morning and evening peak periods were assumed as follows:

- Morning Peak Period - 6:00 to 9:00 a.m.
- Evening Peak Period - 4:00 to 6:00 p.m.

For purposes of estimating capacities and operating costs, this analysis assumes that the corridor transit service would run from 5:00 a.m. to 1:00 a.m. for a 20-hour day on Monday through Saturday, with a reduced service frequency on Sundays and holidays.

Vehicle capacities were assumed consistent with MTA standards. Each Light Rail Vehicle has a capacity of 150 persons seated and standing. Maximum train lengths of the two vehicles were assumed. Trains of two vehicles would be operated throughout the day. (If future ridership warrants, three-car trains could be used with a corresponding increase in capacity and operating costs.) The busway vehicles were

assumed to be larger than standard buses, articulated vehicles, capable of carrying 90 persons seated and standing.

Table 3.5 summarizes the capacity that would result from either of the two modal alternatives.

TABLE 3.5
SUMMARY OF MODAL ALTERNATIVE CAPACITY

PARAMETER	ALTERNATIVE	
	LRT	BUS [2]
Vehicle Capacity	150	90
Train Capacity	300	N/A
Peak Period Capacity [1]		
• A.M. Peak	18,000	5,400
• P.M. Peak	12,000	3,600
Off Peak Capacity [1]	41,400	16,200
Daily Capacity [1]	71,400	25,200

(1) Two-way person capacity with 6-minute peak and 10-minute off-peak headways.
(2) Bus is an articulated coach.

SOURCE: BRW, Inc.; October 1993.

3.5.3 Operating Speeds and Travel Times

Assumptions concerning operating speeds and resulting travel times are important parts of the operating plans. This information is also needed as input to the patronage forecasting models.

Train operations of LRT within street medians, side alignment, semi-exclusive and exclusive right-of-way are subject to rules and regulations put forward by the Public Utilities Commission (PUC). The PUC has published General Order 143-A which has set the following speed limits:

	Alignment Type		Crossing Control		Maximum Permitted Speed
Semi-Exclusive Right-of-Way					
1.	Fenced Right-of-Way	▸	Flashing Light/Gates	▸	55 MPH
		▸	Traffic Signals	▸	45 MPH
2.	Street Median or Side Alignment with 6" Curb and Fence	▸	Between Crossings	▸	Parallel Street Speed plus 10 MPH
3.	Street Median or Side Alignment with 6" Curb only	▸	Traffic Signals	▸	Parallel Street speed but not more than 35 MPH

SOURCE: Excerpted from General Order 143-A; California PUC.

The assumed maximum operating speeds for the LRT alternatives are as follows:

- Median Operation (Vermont Avenue to between Western Avenue and Rodeo Road; Olympic Boulevard from 26th to 14th Streets; 4th and Colorado in downtown Santa Monica) - 35 mph;
- Semi-exclusive/side alignment (Western Avenue to Venice/Robertson) - 45mph;
- Exclusive right-of-way (Venice/Robertson to Cloverfield/Olympic Boulevard) - 55mph

The average speeds and travel times for the LRT (as well as bus) are determined by a combination of the maximum speed, the assumed priority at intersections, the deceleration/acceleration required at intersections and stations, and the stop or dwell time at each station.

Since the LRT alternatives represent a mode which can substantially increase the person-trip capacity in the Corridor, a high service level was assumed in the travel time model and demand forecast inputs. The high service level was represented by a high average travel speed through the Corridor with minimal delays. In order to achieve this service level, a combination of gated preemption and grade separations would be needed through the Corridor to give priority to the LRT trains.

The bus vehicles can also operate in a range of right-of-way types. Operations within the street medians, mixed flow, side alignment, semi-exclusive and exclusive right-of-

way are subject to speed limits as posted by the municipality, and potential signal control at intersections. The assumed maximum operating speeds of the bus alternatives were 35 mph in median operations and 45 mph when the ROW is along the side of the street or is semi-exclusive. An average speed of 15 mph was assumed in the segments where the bus is traveling on the street in mixed flow traffic.

Since bus represents a less costly alternative with less capacity than LRT, travel times and demand forecast model assumptions assumed some delays would be acceptable at major arterial crossings which will require fewer grade separations than the LRT alternatives.

Buses operating in the median would travel through intersections with signal control for provision of the necessary level of transit service and as safety considerations warrant. Signal priority at minor crossings, as well as potential grade separations, were included in the range of operational characteristics that affect the interface between the mode and the existing traffic network.

3.5.4 Travel Demand Model Inputs

Table 3.6 summarizes the operating speed and travel time assumptions for each of the study alternatives that were used in the preparation of travel demand forecasts of Corridor ridership. The run times include the travel times between Union Station in downtown Los Angeles to downtown Santa Monica. Detailed summaries of station-to-station run times by alternative are incorporated in Appendix B.

TABLE 3.6
SUMMARY OF OPERATING PARAMETERS

ALTERNATIVE SEGMENT	DISTANCE		MAX SPEED[1] (MPH)	TRAVEL TIME (MINS.)	
	LINK MILES	CUMULATIVE MILES		LINK	CUMULATIVE
A - LRT on ROW					
• Union Station to Vermont	4.95	4.95	35	14.01	14.01
• Vermont to Western	1.02	5.97	35	2.41	16.42
• Western to Venice/Robertson	4.84	10.81	45	10.02	26.44
• Venice/Robertson to Cloverfield	5.00	15.81	55	8.35	34.79
• Cloverfield to 4th/Colorado	1.48	17.29	35	3.11	37.90
Total Travel Time from Vermont to 4th/Colorado					23.89
Total Travel Time from Union Station to 4th/Colorado					37.80
B - LRT on ROW with Freeway Segment					
• Union Station to Vermont	4.95	4.95	35	14.01	14.01
• Vermont to Western	1.02	5.97	35	2.41	16.42
• Western to Venice/Robertson	4.84	10.81	45	10.02	26.44
• Venice/Robertson to Cloverfield	5.25	16.06	55	8.62	35.06
• Cloverfield to 4th/Colorado	1.48	17.54	35	3.11	38.17
Total Travel Time from Vermont to 4th/Colorado					24.16
Total Travel Time from Union Station to 4th/Colorado					38.17
C - Bus on ROW					
• Union Station to Vermont	5.17	5.17	15	22.66	22.66
• Vermont to Arlington	1.54	6.71	35	5.63	28.29
• Arlington to Venice/Robertson	4.32	11.03	45	12.76	41.05
• Venice/Robertson to Cloverfield	5.00	16.03	45	13.39	54.45
• Cloverfield to 4th/Colorado	1.48	17.51	15	6.25	60.70
Total Travel Time from Vermont to 4th/Colorado					38.04
Total Travel Time from Union Station to 4th/Colorado					60.70

In mixed flow segments, bus speed is assumed to be an average of 15 mph with stops at traffic lights, acceleration and deceleration included in this average speed.

TABLE 3.5, continued
SUMMARY OF OPERATING PARAMETERS

ALTERNATIVE SEGMENT	DISTANCE		MAX SPEED[1] (MPH)	TRAVEL TIME (MINS.)	
	LINK MILES	CUMULATIVE MILES		LINK	CUMULATIVE
D - Bus on ROW to La Cienega to ROW					
• Union Station to Vermont	5.17	5.17	15	22.66	22.66
• Vermont to Arlington	1.54	6.71	35	5.63	28.30
• Arlington to La Cienega	3.24	9.95	45	8.52	36.82
• La Cienega to Venice/Robertson	2.60	12.55	15	10.41	47.23
• Venice/Robertson to Cloverfield	5.00	17.55	45	13.39	60.61
• Cloverfield to 4th/Colorado	1.48	19.03	15	6.25	66.86
Total Travel Time from Vermont to 4th/Colorado					44.20
Total Travel Time from Union Station to 4th/Colorado					66.86
E - Bus on ROW to Venice/Sepulveda					
• Union Station to Vermont	5.17	5.17	15	22.66	22.66
• Vermont to Arlington	1.54	6.71	35	5.63	28.29
• Arlington to Venice/Robertson	4.32	11.03	45	12.76	41.05
• Venice/Robertson to Sepulveda/Venice	2.00	13.03	15	8.66	49.71
• Sepulveda/Venice to Sepulveda/Exposition	2.03	15.06	15	9.11	58.82
• Sepulveda/Exposition to Cloverfield	2.10	17.16	45	6.88	65.70
• Cloverfield to 4th/Colorado	1.48	18.64	15	6.25	71.95
Total Travel Time from Vermont to 4th/Colorado					49.29
Total Travel Time from Union Station to 4th/Colorado					71.95

[1] In mixed flow segments, bus speed is assumed to be an average of 15 mph with stops at traffic lights, acceleration and deceleration included in this average speed.

TABLE 3.5, continued
SUMMARY OF OPERATING PARAMETERS

ALTERNATIVE SEGMENT	DISTANCE		MAX SPEED[1] (MPH)	TRAVEL TIME (MINS.)	
	LINK MILES	CUMULATIVE MILES		LINK	CUMULATIVE
F - Bus on ROW to Venice to Coast					
• Union Station to Vermont	5.17	5.17	15	22.66	22.66
• Vermont to Arlington	1.54	6.71	35	5.63	28.29
• Arlington to Venice/Robertson	4.32	11.03	45	12.76	41.05
• Venice/Robertson to Venice/Lincoln	5.63	16.66	35	20.10	61.15
• Venice/Lincoln to Venice/Pacific			15		
• Venice/Pacific to 4th/Colorado	2.67	19.33	15	11.34	72.49
Total Travel Time from Vermont to 4th/Colorado					49.83
Total Travel Time from Union Station to 4th/Colorado					72.49

SOURCE: BRW, Inc.; October 1993.

In mixed flow segments, bus speed is assumed to be an average of 15 mph with stops at traffic lights, acceleration and deceleration included in this average speed.

3.5.5 Vehicle Fleet and Maintenance Facility Requirements

Using the parameters assumed in the previous sections, the vehicle fleet requirements were calculated. Table 3.7 contains the vehicle fleet requirements with a 20% spare ratio.

A light maintenance facility and storage yard will most likely be needed for LRT in this corridor. The facility could be located on land owned by the City of Santa Monica between Stewart Street and 26th Street (referred to as the Beramot Site). A layout for this facility is provided in the Plan and Profile drawings, which is included in a separate volume of this report.

For the bus alternatives, a new maintenance facility and storage yard for the 23 to 28 buses needed for this project would not be needed in the corridor. The existing MTA Divisions 1 and 2 located in downtown Los Angeles are the nearest facilities equipped for clean fuel and could accommodate buses for this project.

TABLE 3.7
VEHICLE FLEET REQUIREMENTS AND OPERATING STATISTICS

	NUMBER OF VEHICLES			OPERATING STATISTICS	
ALTERNATIVE	OPERATION	SPARES	TOTAL	DAILY VEHICLE HOURS	DAILY VEHICLE MILES
A - LRT on ROW	32	6	38	394	9,970
B - LRT on ROW/I-10	32	6	38	397	10,050
C - Bus on ROW	23	4	27	297	5,140
D - Bus on ROW, La Cienega	25	5	30	320	5,470
E - Bus on ROW, Sepulveda	27	5	32	343	5,330
F - Bus on ROW, Venice to Coast	28	6	34	361	5,820

SOURCE: BRW, Inc.; October 1993.

3.6 DESCRIPTION OF BIKEWAY ALTERNATIVE G - EXPOSITION RIGHT-OF-WAY FROM EXPOSITION PARK TO DOWNTOWN SANTA MONICA

This section provides a detailed description of the possible alignment and design choices for the Bikeway Alternative proposed for the Exposition Corridor. The Bikeway Alternative could serve as an interim use until such time as the ROW is used for a transit guideway improvement. The bikeway would therefore be required to function as a separate facility in the near-term. Upon subsequent implementation of a transit improvement in the ROW, the bikeway and its route alignment may have to be modified in order to serve as an adjacent facility in the longer range future.

3.6.1 Physical Characteristics

The conceptual definitions of the bikeway's horizontal and vertical alignment are described in this section. The design concept is composed of combinations of Class I Bikeway, Class II Bike Lanes, and Class III Bike Route facilities. The design concept utilized input from the community as well as design criteria from the Caltrans guidelines for bicycle facility design. Where possible, the design layout was coordinated with the Los Angeles County Bike Map produced by the MTA. A combination of all three classes of bicycle facilities would be needed through the corridor as shown in Figure 3-2.

3.6.2 Proposed Alignment

The alignment for the bikeway would begin at Exposition Park near the University of Southern California and proceed west. The alignment is discussed in segments and includes alternative designs considered and a recommended design for each segment.

A. Vermont to Arlington

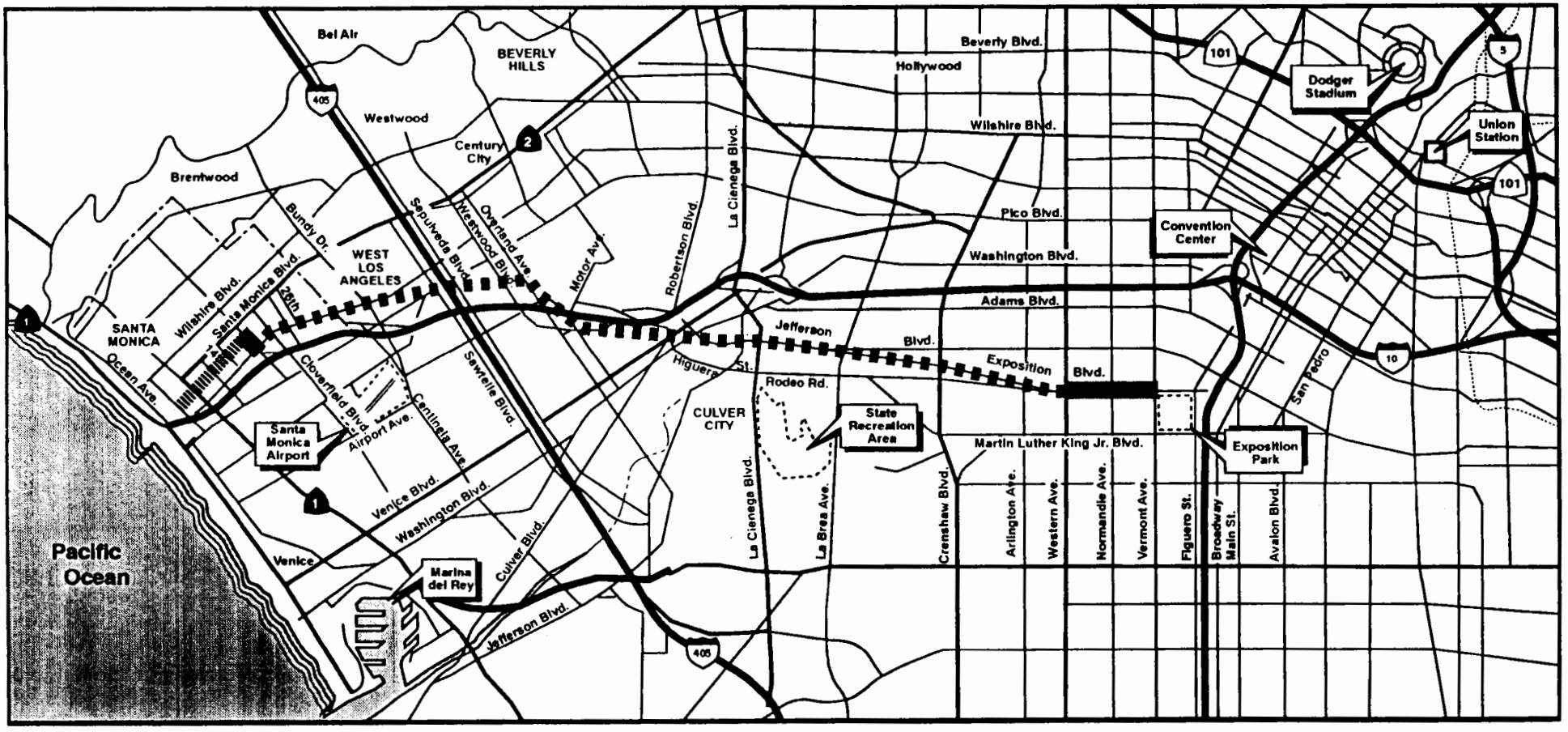
Options to place a bikeway in the median of Exposition Boulevard or bike lanes on Exposition Boulevard were evaluated for this segment.

1. **Permanent Use.**

   a. Class I Median Bikeway.

      Not enough median width currently exists in the median right-of-way to accommodate a permanent bikeway adjacent to a future transit improvement. To provide enough right-of-way in the median to accommodate both a transit improvement and a bikeway would require widening the median 14 feet into the roadway.

Bikeway Alternative G



Class I Bike Way

Class II Bike Lane

Class III Bike Route

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 3-2

BRW

Source: B R W, Inc., 21 September 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

The roadway cannot be narrowed further to accommodate widening of the median because existing roadway and lane width is necessary for existing travel lanes and parking. Removal of traffic lanes and/or parking is not recommended because they are necessary to meet current traffic demand.

Similarly, the sidewalks cannot be narrowed to accommodate moving the existing roadway out to enable widening of the median. The City of Los Angeles current standard for sidewalks is 10 feet, and existing sidewalks are already substandard in many locations between Vermont and Arlington. An exception to this limitation exists between Western Avenue and Ruthelin, where 15 feet available right-of-way exists on the north side of the street between the existing curb and the property line. However, this is not sufficient length to warrant Class I construction between Western and Ruthelin.

For these reasons, a permanent Class I median bikeway is not recommended for this project segment.

b. Class II on Exposition Boulevard.

To add sufficient width in the curb-lane on Exposition Boulevard to accommodate on-street bike lanes, Exposition Boulevard would have to be widened by a minimum of six feet because existing roadway and lane width is necessary for existing travel lanes and parking. Removal of traffic lanes and/or parking is not recommended because they are necessary to meet current traffic demand. The roadway cannot be widened into the sidewalks or the median to accommodate additional curb-lane width for reasons noted above.

For these reasons, Class II lanes on Exposition Boulevard in the project segment are not recommended.

c. Class III Bike Route on Exposition Boulevard.

Class III Bike Route signage is proposed along Exposition Boulevard. The alignment for the bike route would begin at Exposition Park near the University of Southern California and proceed west. Although additional curb lane width is not necessary to accommodate Class III lanes, some spot improvements, including spot widening, may be possible to make this route more attractive to and safe for cyclists. The segment between Western Avenue and Ruthelin offers the greatest potential for spot improvements, due to additional right-of-way available outside the existing curb.

The expected cost of the Class III option with selected spot widening for this project segment is $20,000.

2. **Interim Use**

a. Class I Median Bikeway.

As an interim use, a Class I bikeway could be constructed in the existing median right-of-way. Subsequent implementation of a transit improvement, however, would require removal of the bikeway for reasons noted above. Removal of an interim bikeway facility may prove difficult if the public learns to rely on the interim bikeway for transportation and/or recreational uses during the interim period.

The design of an interim Class I bikeway in the median right-of-way would require special signal design, including an exclusive bicycle phase, for 5 intersections between Vermont and Arlington, inclusive. Additional study at individual intersections is necessary to determine whether bikeway signal phasing is feasible. Even with complicated signal treatments, however, traffic signal operations at intersections would potentially reduce vehicular capacity of intersections which are already at LOS E (or are already at capacity).

For those reasons, an interim Class I median bikeway is not recommended for this project segment.

b. Class II on Exposition Boulevard

Striping Class II Bike lanes on Exposition Boulevard as an interim facility is not recommended because the roadway is not wide enough to accommodate the bike lanes, as discussed previously. The only way to create bike lanes would be to widen Exposition Boulevard into the MTA's median Right-of-Way. This is not recommended because this would preclude the Right-of-Way from being used for a transit improvement in the future.

c. Class III Bike Route on Exposition Boulevard.

The most appropriate interim facility for this segment would be a Class III Bike Route on Exposition Boulevard.

B. Arlington to La Brea

At Arlington the ROW is along the south side of the street with limited crossing by north/south streets. Both a Class I Bike Path and Class II Bike Lanes were analyzed for this segment of the ROW.

1. **Permanent or Interim Use**

a. Class I Bikeway.

Sufficient ROW width exists in this segment to provide a permanent Class I bikeway adjacent to a transit improvement. In order to provide a Class I Bike Path in the exclusive right-of-way, a special design would be needed for the north/south street crossings. The design would require unique signalization, including an exclusive bicycle phase, for six intersections between Arlington and La Brea, inclusive. Potential bicycle/pedestrian conflict in crosswalks could be minimized by removing pedestrian crosswalks, except at Crenshaw, where a special side-by-side bicycle and pedestrian crossing could be designed. Figure 3-3 depicts an at-grade crossing of the bike path at an intersection.

Additional study at individual intersections is necessary to determine whether bikeway signal phasing is feasible. Even with complicated signal treatments, however, traffic signal operations at intersections would potentially reduce vehicular capacity of intersections which are already at LOS E (or are already at capacity).

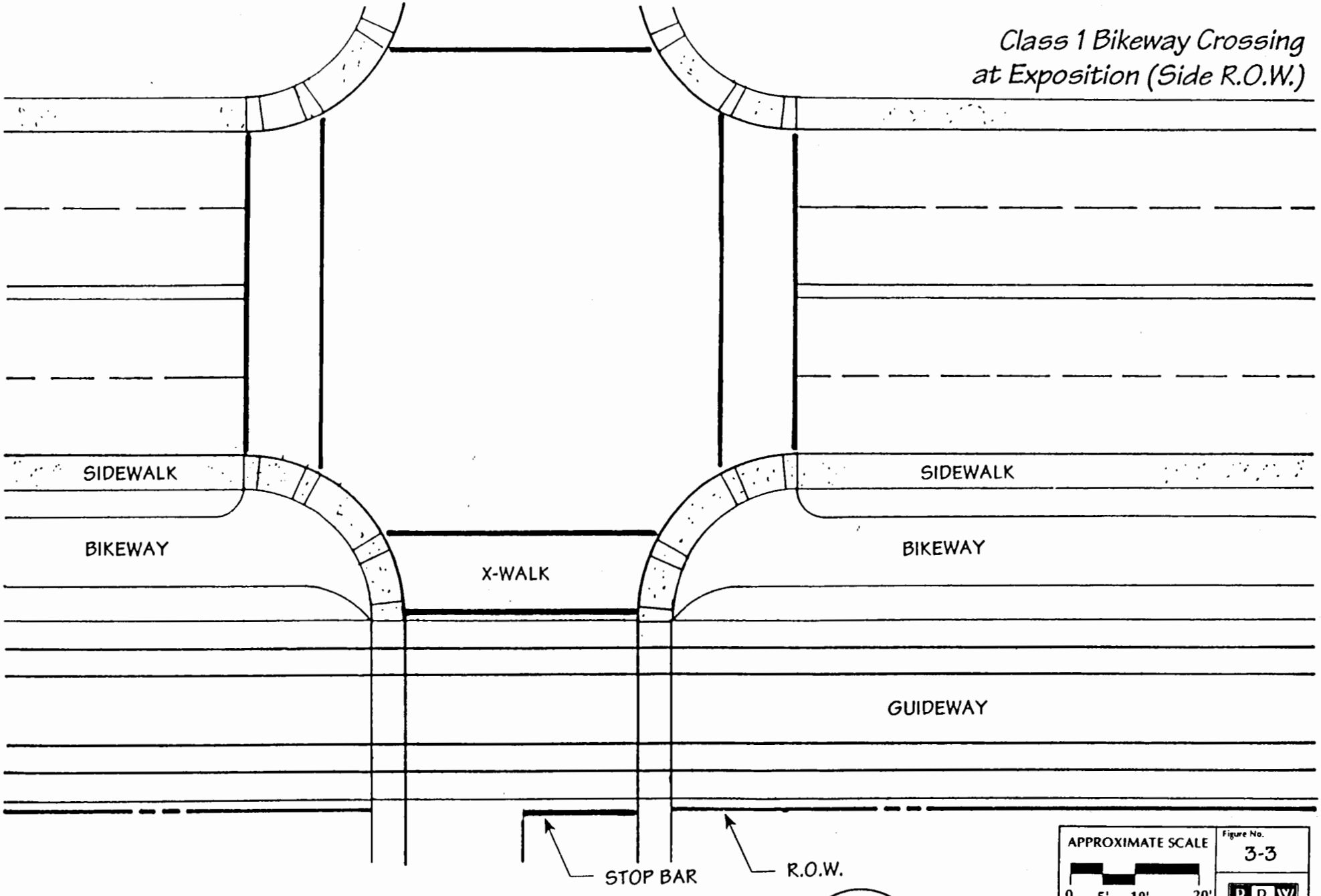
The expected construction cost for Class I in this segment is $750,000. Total costs with add-ons and contingency is estimated to be $1,200,000.

b. Class II Bike Lanes.

If additional study indicates that intersection complications render a Class I Bike Path infeasible, Class II Bike Lanes can be provided on Exposition Boulevard by widening the street south into the ROW by four to ten feet. Because the MTA's right-of-way is 50 feet wide in this segment, there would still be adequate right-of-way remaining after the street widening to accommodate a transit use. Widening is necessary at major intersections regardless to allow at-grade crossings by the transit vehicles. The widening of the street would allow the entire south curb line to be reconstructed. At intersections, bicyclists would rejoin traffic lanes to execute turns or through movements. This option assumes parking and stopping would be prohibited at all times and sidewalk will be provided, as it is under current conditions.

The expected construction cost for Class II in this segment is $750,000 with total costs including add-ons estimated at $1.2 million.

Class 1 Bikeway Crossing at Exposition (Side R.O.W.)



APPROXIMATE SCALE
0 5' 10' 20'

Figure No. 3-3

BRW

Source: BRW Inc., 10 September 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

C. La Brea to Ballona Creek

1. **Permanent Use.**

a. At-Grade Crossing at La Brea.

Continuing west, to cross La Brea at-grade, a Class I Bike Path would require a new actuated signal for bicycle users. The signal would be tied to the signal at La Brea/Jefferson just 250 feet north. The short separation distance between the two intersections would require a sophisticated controller plan. This plan would be further complicated by the fact that the La Brea/Rodeo intersection is only 1,000 feet south of Exposition. Lastly, the signal plan might result in degradation of existing intersection capacity of vehicular throughput. Because of the complications noted, at-grade crossing at La Brea is not recommended.

b. Grade Separation at La Brea.

A grade separation across La Brea is recommended to be constructed as a permanent solution, in conjunction with the grade separation of the transit facility. This option would provide a direct route for cyclists.

c. Class III Around La Brea.

Another permanent option is to divert cyclists from Exposition Boulevard further east onto a Class III Bike Route on Harcourt Avenue, which is currently signalized, and join the existing Class III Bike Route on Jefferson west to Ballona Creek, where the eastbound and westbound directions would be brought together in the ROW.

Proceeding from Jefferson Boulevard, westbound cyclists would simply diverge from Jefferson Boulevard to join a Class I Bike Path on the ROW, west of Ballona Creek. Eastbound cyclists would depart from the Bike Path in the ROW west of Ballona Creek, follow the existing ramp down onto the creek path, double back to cross under National Boulevard at the existing bridge and use a new ramp to return to the ground level and join the eastbound traffic lanes as a Bike Route at the Jefferson/National signal.

The permanent costs for this segment would total $3.0 million including add-ons.

2. **Interim Use.**

For the interim, a separate grade separation structure to cross La Brea without the transit facility would cost approximately $2.0 million ($2.7 million total with add-ons). To reduce the cost of the interim bikeway, to $0.6 million in this segment, the above Class III option is recommended for the interim bikeway facility.

D. Ballona Creek to Venice Boulevard

1. **Permanent or Interim Use.**

a. Class I with Grade Separation.

From Ballona Creek to Hayden Avenue, National Boulevard would be reconstructed to bring the eastbound and westbound traffic lanes together, eliminating the parking that is now in the median. The Class I design type will be retained by placing the bike path along the north side of the street in an exclusive ROW.

For either an interim or long-term facility, a grade separation for bikes is recommended to span National/Washington/Venice Robertson. This is because of the heavy traffic volumes in the area coupled with the significant discontinuity of a through route for cyclists. Between National and Venice, the alignment would rise up in a grade separation structure to cross over all four of these major arterials. This bridge is needed to avoid the significant discontinuity that would result in the travel path for the bikeway and the associated safety problems that would result if the facility were to transition to a Class II or Class III design type in this segment.

Due to the significant cost of a grade-separation, on- and off-ramps are not recommended at the individual intersections. Instead, cyclists with destinations in the National, Washington, Venice, and Robertson area would leave the bike path alignment before the grade separation and follow surface streets to their destinations.

The expected cost of Class I in this segment is $4.5 million and $7.3 million with add-ons and contingencies.

b. Class I without Grade Separation.

For an interim bikeway use, in the event funding cannot be identified to construct the grade separation span, the bike path can follow the existing ROW alignment at grade. This alignment would require cyclists to dismount at the major intersections, walking their bikes around the pedestrian crossings. This option is not recommended, as it would result in significant delays and discontinuity for the cyclists.

E. Venice Boulevard to Sepulveda

1. **Permanent or Interim Use.**

a. Class I.

West of Venice, the grade separation would ramp down to grade, and the Class I alignment would cross Bagley Avenue at-grade with a stop sign control for the bikeway traffic.

The bike path would then utilize the existing bridge at National Boulevard, refurbished and outfitted with solid decking. Access to and from National Boulevard will have to be provided. According to LADOT staff, the existing bridge is narrow and will have to be widened at least ten feet to accommodate both the transit project and an adjunct bikeway. The widening would be on the south side of the bridge because of the proximity of the I-10 freeway on the north side of the right-of-way. For an interim bikeway, the bridge could be refurbished without widening.

The bike path would then utilize the existing bridge at Motor Avenue, refurbished and outfitted with solid decking. Access to and from Motor Avenue will have to be provided. The existing bridge is narrow and will have to be widened by at least ten feet on the north side (there is a steep embankment along the south side of the right-of-way next to the track, along with commercial developments and a retaining wall) in order to accommodate both the transit project and an adjunct bikeway. For an interim bikeway, the bridge could be refurbished without widening.

Because the path at National Boulevard would be on the north side of the ROW, and is proposed to be on the south side at Motor Avenue, the path must cross the track to make this transition possible. This would have to be accomplished by grade separation or other means.

The bike path would then use the existing underpass of the I-10 freeway, west of Motor, which would also be refurbished. Because of the lack of visibility in the area, security would be an important issue. Responsibility for operations, maintenance, and liability would all need to be addressed prior to construction.

North of the freeway, the alignment would cross Overland Avenue at-grade with an actuated signal. The signal would have to be installed because of the high volume of traffic and high speed of vehicles. However, there is an existing traffic signal control at Ashby Avenue only 221 feet from the proposed path. The signal at Overland would therefore have to be tied to the signal at Ashby Avenue. A signal at the intersection

of the bike path and Overland Avenue would make platooning difficult and would also create a clearance problem. In addition, Coventry Street, the closest signalized intersection west of the path, is only 601 feet away. Thus, the three signalized intersections would exist within a distance of approximately 850 feet. Traffic impact analysis will be required to determine whether this proposed design can be installed without degrading existing traffic conditions.

The Class I bikeway would continue west to cross Westwood Boulevard. This would also allow cyclists to make a connection to the existing bike route on Westwood Blvd. According to LADOT staff, a new traffic signal control would be required at Westwood in order for bicyclists to cross, due to the high speed and high traffic volume. However, unlike Overland Avenue, signal clustering is not a problem because the closest signalized intersections on both sides of the proposed path are each approximately 1,075 feet away.

The distance from curb to curb on Exposition Boulevard, including the median, is approximately 217 feet. Thus, sufficient time must be allowed in the yellow phase of the signal to permit cross-traffic motorists to clear the intersections, or a problem with vehicles obstructing the bicycle path would occur. Traffic impact analysis will be required to determine whether this proposed design can be installed without degrading existing traffic conditions.

The bike path would continue west to cross Military Avenue at-grade, with stop sign control for bikeway traffic.

The expected cost of the Class I bike path in this project segment is $8.4 million and $13.4 million with add-ons. An interim facility, without the bridge widenings, would cost approximately $500,000 and $800,000 with add on costs.

b. Class III.

As an alternative, a Class III bike route could be signed from Motor, following National Boulevard to Overland or Westwood Avenues before turning north to the ROW. However, because of the directness of the bikeway on the ROW, the Class I Bike Path is preferred in this project segment.

F. Sepulveda to 17th Street

1. **Permanent Use.**

The permanent bikeway facility could be a Class I facility adjacent to the transit guideway which would be grade separated at Sepulveda, Sawtelle, and Pico/Gateway.

The geometry of the Pico/Gateway intersection is such that a signal phase for bikes would need to be provided in the existing signal at this location or a grade separation constructed. Alternatives such as transitioning to a lower class bicycle facility would result in significant discontinuities and safety concerns. Because of the complicated safety concerns in this area, a grade separation was assumed as the preferred concept for the long-range design.

West of Pico/Gateway the alignment would cross Barrington Avenue, Bundy Drive, Centinela Avenue and Stewart Street at actuated signals that would be tied to the corresponding signals on Olympic Boulevard. Again, these intersections would have to be carefully designed to ensure coordination with nearby signals is accomplished without degrading existing traffic conditions.

Continuing west, the Class I bike path continues and the bicyclist would need to use the cross-walks to cross 26th Street and Cloverfield Boulevard because the ROW is immediately adjacent to the street at these locations. To eliminate this bicycle/pedestrian conflict, pedestrian crossings could be removed.

In order to cross Olympic Boulevard, an actuated signal would be installed. The bike path would continue west in the ROW to cross 20th Street with stop sign control for the bikeway.

The Class I Bikeway would end at 17th Street to tie to the existing Class III Bike Route north to Broadway, which is designated for upgrade to Class II at a later date. A new bike route could be signed along Broadway west to join the existing bike lanes which begin at Lincoln Boulevard, or the bike lanes could be extended from Lincoln to 17th in the interest of continuity of the bikeway link.

The expected cost of a Class I facility in this segment is $3.5 million and $5.5 million with add-ons.

2. **Interim Use.**

For an interim facility, the bikeway would leave the ROW west of Military to form Class II Bike Lanes on Exposition Boulevard. Additional pavement width on Exposition Boulevard would be necessary and removal or restriction of parking on the north side of Exposition Boulevard may be desirable to

accommodate Class II Bike Lanes. These lanes would run west past Pico Boulevard where the bikeway could rejoin the ROW as a Class I bike path similar to the design proposed for the permanent bikeway.

Traffic signals with call buttons or bicycle-sensitive loop detectors would likely be needed at Sepulveda and Sawtelle. These signalized crossings could pose a problem, especially at Sawtelle Avenue, because existing signals in close proximity could result in coordination problems.

3.6.3 Bikeway Summary

The total capital costs, including add-ons for the bicycle facility is summarized on Table 3.8 for both permanent and interim facilities.

TABLE 3.8
EXPOSITION CORRIDOR
BICYCLE FACILITY COST ESTIMATE SUMMARY

LOCATION	TOTAL CAPITAL COST * PERMANENT	INTERIM
Vermont to Arlington	$ 20,000	$ 20,000
Arlington to La Brea	1,200,000	1,200,000
La Brea to Ballona Creek	3,000,000	600,000
Ballona Creek to Venice	7,300,000	7,300,000
Venice to Sepulveda	13,400,000	800,000
Sepulveda to 17th Street	5,500,000	3,200,000
TOTAL CAPITAL COST	$30,420,000	$13,120,000

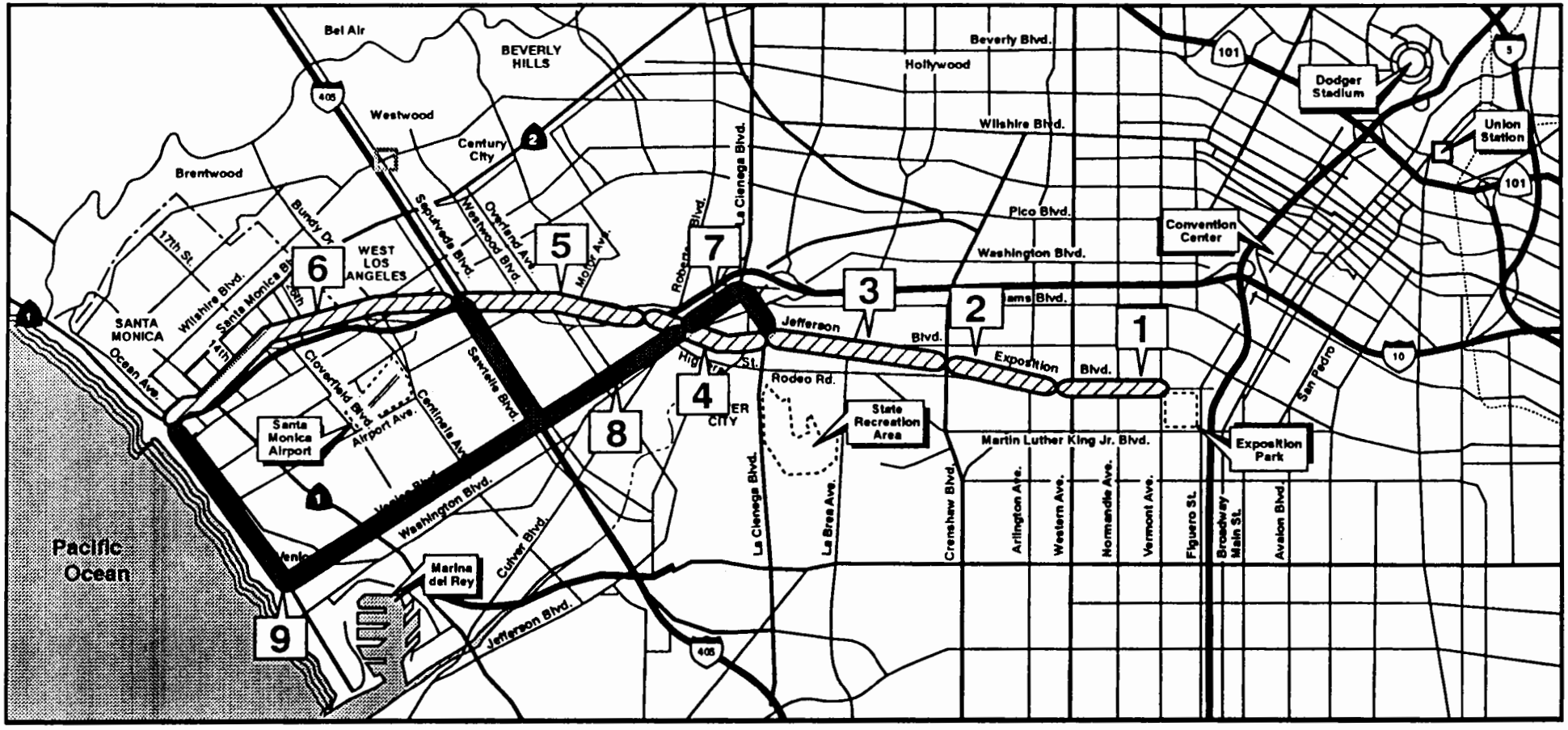
* Cost including construction, right-of-way, contingencies and add-ons.

3.7 DESIGN OF REFINED ALTERNATIVES

3.7.1 Segment Design Refinements

The corridor segments comprising the project alternatives are shown in Figure 3-4 for the study area. Design conclusions for each of the nine corridor segments are summarized in the following section. Plan and profile drawings and station concept designs are contained in separate volumes.

Corridor Study Segments



SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. 3-4

BRW

Source: BRW, Inc. 22 September 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

Segment 1: Exposition Right-of-Way from Vermont to Gramercy

As discussed previously, LRT would be an extension of the planned Blue Line Exposition Park Branch at Vermont Avenue providing a continuous LRT line into downtown Los Angeles. For the bus alternatives, patrons could either transfer to the Blue Line at Vermont or continue on the bus in mixed flow traffic into downtown Los Angeles. This segment is common to all LRT and bus project alternatives.

For both LRT and bus, the guideway alignment would be located in the median of Exposition Boulevard throughout this segment. The ROW is approximately 30 feet wide in this segment. For both LRT and bus, the guideway would be constructed in the middle of the ROW having approximately two feet on either side for buffer edge treatments. Major issues and concerns important to the community or identified by the consultant related to project design within this segment are addressed as follows:

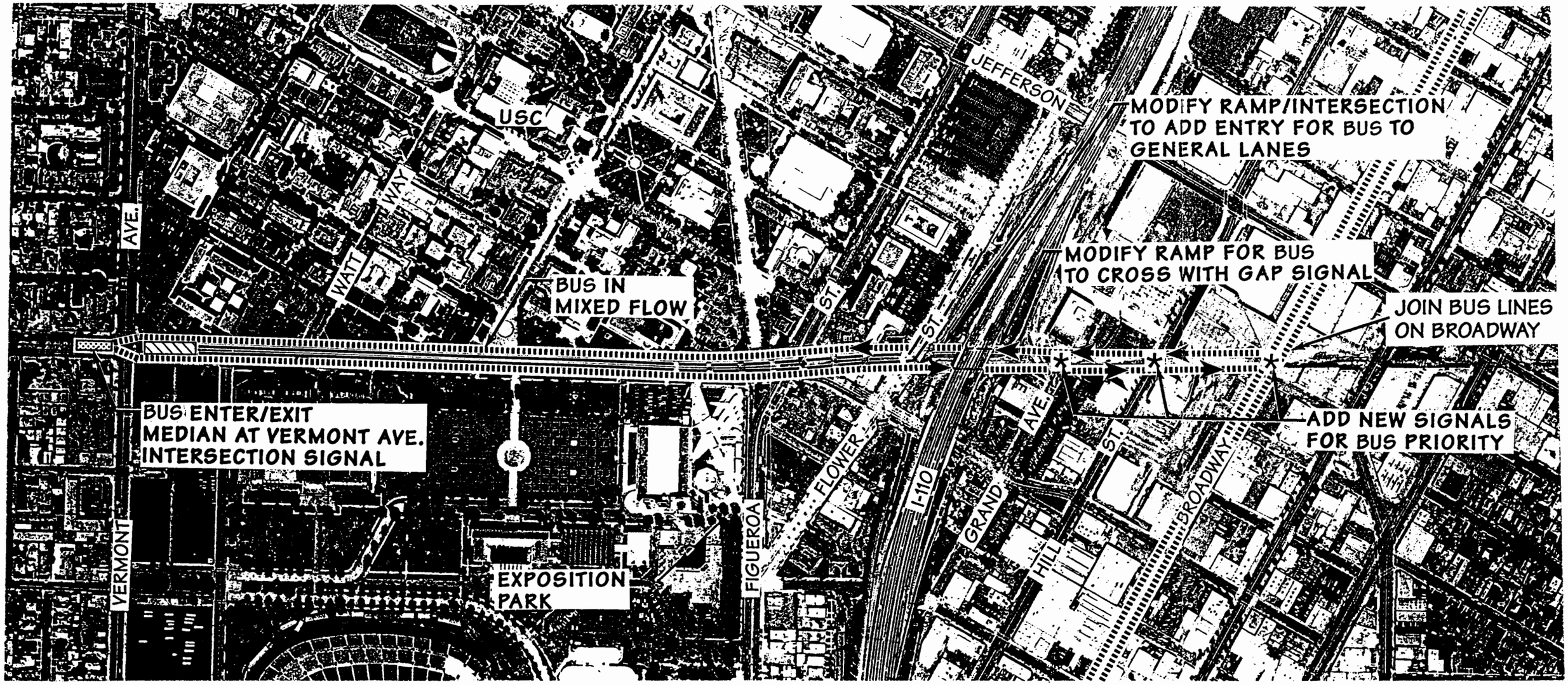
- Issue: Connection of Busway to Broadway

  The bus alternative presented at the community meetings was an Electric Trolley Bus (ETB) technology. It was assumed that the ETB would connect to other ETB network lines planned to run on Broadway Street up to Union Station. As previously discussed, the MTA has discontinued the implementation of ETB in Los Angeles county. Hence, the bus alternatives do not necessarily have to use Broadway as the north/south access into downtown Los Angeles. Buses using the ROW could use a variety of routes into downtown Los Angeles. Some lines could use Flower and Figueroa Streets with preferential treatment if possible. Service could start/stop at the 7th and Flower Metro Red Line station or continue on to Union Station.

  From Broadway, the ROW would be improved west to the intersection of Flower Street and Exposition with special lanes to cross the I-110 northbound access ramps. West of Flower Street, the bus would need to join with mixed traffic since the proposed Blue Line Extension to Exposition Park will be located in the median between Figueroa and Vermont. This layout is shown schematically in Figure 3-5.

  With the proposed Exposition Park Branch LRT station platform located just east of Vermont intersection, buses could take advantage of the traffic signal to enter the median on the west intersection leg. A stop platform for bus passengers transferring to or from the LRT line would be provided.

Connection of Bus Alternatives to Broadway Bus Line and Exposition Park Branch LRT Line



EXPO PARK BRANCH LRT LINE

EXPO PARK BRANCH LRT LINE (ELEVATED)

BUS STOP

BUS IN MIXED FLOW

USC/EXPO PARK LRT STATION (AT GRADE)

NORTH

Figure No. 3-5

B R W

Source: B R W, Inc., 15 December 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

- Issue: Station at USC/Exposition Park

  The guideway improvement (either LRT or bus) in the Exposition Corridor should use the planned Blue Line-Exposition Park Branch station just east of the Vermont Avenue intersection with Exposition Boulevard. A traffic signal exists at this location which would allow the bus to enter the median. A separate stop for the bus route would be provided on the west leg of the intersection; patrons would have to cross to the east side of the intersection to access the LRT station. The LRT station at Vermont and the Exposition Park Branch have already obtained environmental clearance in the **Exposition Park Branch Line Final Environmental Impact Statement** approved by the MTA in 1993.

- Issue: Interface with Traffic Operations

  The transit service improvement, either the LRT or the bus vehicles, would be required to operate within the street cross-section under signal control. This means the guideway transit vehicles would travel through intersections at-grade utilizing traffic signals the same as any other vehicle on the street. This is the way the existing Long Beach Blue Line operates along Washington and Flower Street. Since the guideway vehicle would travel through with the green signal indication and signal progression, gates and bells would not be needed at the major cross streets such as Vermont, Normandie or Western nor would the vehicle be required to sound the horn. Gates and bells would be used at Denker and Budlong since these streets are not equipped with traffic signals.

- Issue: Limiting Access from Selected Minor Streets Crossing the ROW

  Because the transit line would operate under traffic signal control, two minor streets which now cross the ROW would need to be limited to right-turns in and right-turns out only.

  This is necessary because the transit guideway must operate in an exclusive right-of-way to reduce side conflicts with other vehicles and maintain consistent operating speeds. Left turns or other crossings of the right-of-way must take place at signalized locations.

  Additional signals would need to be added at four locations as well, three of which would be to provide for U-turns at mid-block locations to maintain connections between the north and south sides of the ROW.

  The streets that would need to be limited to right-in/right-out are:

  - Raymond Avenue
  - Brighton Avenue

Additional signals would be required at:

- Harvard Boulevard; all movements would be accommodated at this T-intersection to allow traffic from the north leg to enter Exposition and to provide all pedestrian north/south crossings with added safety for the school crossing to Foshay Junior High School. The station in this segment would be located between Western Avenue and Harvard to facilitate transit operations between the two signals.
- Budlong Avenue; new signal to allow U-turn movements
- Denker Avenue from the south; new signal to allow U-turn movements
- Gramercy Place from the south; new signal to allow U-turn movements

- Issue: Maintain Existing Exposition Boulevard Cross-Section

  The existing street cross-section of three lanes in each direction with a parking lane on both sides would be maintained from Vermont to Western. Similarly, the existing two lanes in each direction with no-parking cross-section from Western to Gramercy would also be maintained. Some parking spaces would need to be removed from the street near the major intersections and the station stops to accommodate the width of the stop platform. Minor realignment of the through lanes would be needed in these locations.

  As discussed in Section 3.6, the bikeway in this segment would be located along the existing 39th Street Class III Bike Route two blocks to the south of Exposition Boulevard.

- Issue: Fence the Guideway

  In the refined alternative for both LRT and bus, the guideway would be fenced on both sides to prevent crossing of the transit path at locations other than traffic signals. The fencing is not specifically required by regulation but is desired by residents in the interests of safety. A decorative fence at an aesthetically acceptable height could be incorporated. Plantings of vines could be incorporated as well at the base of the fence to fill in and provide a visual screening of the guideway. Near intersections, fencing would have to be at a low height in order not to obstruct visibility.

Segment 2: **Gramercy to Crenshaw**

This segment is common to all LRT and bus project alternatives.

For both LRT and bus, the guideway through this segment would be located within the ROW which runs along the south side of Exposition Boulevard. The ROW is approximately 50 feet wide in this segment. For both LRT and Bus, the guideway would be constructed along the north edge of the ROW, adjacent to Exposition Boulevard, leaving 10 to 20 feet along the south side for buffer edge treatments. The bikeway in this segment would be Class I Bike Path along the ROW.

Major issues and concerns important to the community or identified by the consultant related to the projects design within this segment are addressed as follows.

- Issue: Maintain Access to Industrial Uses

  Several industrial and commercial uses are found along the ROW from 9th Avenue to Crenshaw Boulevard. Several parcels currently have temporary access to Exposition Boulevard across the ROW. This access would be cut because of the need to provide safe transit operations through the segment. However, as part of the Exposition ROW project, it is recommended that in the refined alternative, access to the parcels would be reoriented to Exposition Place to the south.

- Issue: Interface with Traffic Operations

  Transit vehicles on the guideway through this segment would use gated crossings and signal pre-emption. Intersection improvements to lengthen the south approach and stop bar at minor crossings such as 7th and 9th Avenues would be needed. This is necessary to hold traffic south of the transit guideway in the ROW to prevent vehicles blocking transit operations. Right-turns on red would also be restricted because of this requirement.

  At Arlington Avenue, turn lanes would need to be added to operate acceptably with priority given to the guideway vehicles as follows:

  - Add left-turn lanes on Exposition to the east and west legs
  - Add a right-turn lane on Exposition to the west approach

  Space for these improvements would be taken from the ROW at the intersection.

- Issue: Fence the ROW

  In the refined alternative for both LRT and bus, a security fence would be placed along the guideway in this segment between signalized intersections. For LRT, such fencing is required by the PUC for semi-exclusive operation, and the fence would need to be six feet high. Landscaping could be incorporated along the fence-line to provide a visual screen as well except near intersections where visibility of the transit system would have to be maintained.

- Issue: Cross Crenshaw Boulevard At-Grade

  The results of the traffic study indicate that for the LRT to maintain the desired travel time, the LRT should cross Crenshaw at-grade with gated pre-emption. For the busway, an at-grade crossing using signal control is recommended as a lower cost option. Buses would be held at the station until a green signal indication would be given for westbound vehicles. Eastbound vehicles would be coordinated in a progression scheme to receive a green light as the vehicles slow to access the station. For both LRT and busway, additional lanes need to be added within the existing right-of-way to the Exposition North roadway intersection with Crenshaw to result in acceptable operations as follows. Space for the lanes would be taken from the existing street or Exposition ROW.

  - Add left-turn lanes to the east and west legs of the Exposition North roadway
  - Add a right-turn lane to the west leg of the Exposition North roadway

  Alternative but higher cost methods of crossing this intersection would be to grade separate. Both an overpass or an underpass are feasible at this location depending on expected impacts and might be recommended after environmental assessments are completed.

Segment 3: **Crenshaw to La Cienega/Jefferson**

The guideway alignment in this segment continues to follow the ROW. This segment in common to all LRT and bus alternatives.

The ROW expands to about 100 feet wide in this segment. It is bordered on the north side by Exposition Boulevard and Jefferson Avenue for most of the segment and portions of Exposition Boulevard, Dorsey High School, Ranch Cienega Sports Center, residential and commercial uses on the south. The guideway would be placed as close to Exposition/Jefferson Boulevard on the north as possible, leaving about 50 to 60 feet for buffer edge treatments. The bikeway in this segment would be a Class I bikeway

alongside the transit project or Class II Bike Lanes on Exposition and Jefferson Boulevards.

Major issues related to the design of the alignment and station/stop locations that were identified by the community or by the consultant are discussed below.

- Issue: Interface with Traffic Operations

  For both the LRT and bus refined alternatives, the alignment would cross through intersections in this segment at-grade with gated pre-emption. Minor street crossings at Buckingham Road and Farmdale Avenue would also be controlled by gated pre-emption as well with special emphasis on pedestrian crossing facilities because of proximity to Dorsey High School.

  The Busway crossing of La Brea Boulevard can be handled at-grade with a signal that would need to be coordinated with the signals to the north at Jefferson Avenue and to the south at Martin Luther King, Jr. Boulevard. The LRT crossing of La Brea will require an elevated grade-separation since preemption of a new signal would introduce traffic delays.

- Issue: Maintain Access to Commercial Parcels and Rancho Cienega Sports Center

  Access from Jefferson Boulevard to the commercial/industrial uses south of the ROW between Hauser Street and La Cienega Boulevard would be maintained. This will require the installation of four gated crossings at the existing driveway locations. Similarly, access to the Rancho Cienega Sports Center would be maintained from Exposition Boulevard at a gated crossing. Access is also possible from La Brea Boulevard along the north side of Shopper's World. A parking strip currently occupies this parcel which is part of the Exposition Boulevard City Street ROW. The parking would need to be relocated by Shopper's World.

- Issue: Provide Wall and Fencing to Separate the ROW

  Residents in this segment requested fencing along the ROW to provide for increased security for the guideway. In selected, high visibility locations, a decorative wall treatment was requested. These areas consist of:

  - Along Exposition Boulevard in the Baldwin Vista neighborhood.
  - Along the Dorsey High School site.

In the refined alternative for both LRT and bus, a security fence would be placed along the guideway in this segment between signalized intersections. For LRT, such fencing is required by the PUC for semi-exclusive operation, and the fence would need to be six feet high. Landscaping could be incorporated along the fence-line to provide a visual screen as well except near intersections where visibility of the transit system would have to be maintained.

- Issue: Two Design Options at La Cienega

  The results of the Traffic Analyses showed that for both LRT and bus operations, a guideway alignment at-grade along the south side of Jefferson Avenue immediately west of La Cienega would not work acceptably. This is because a separate signal phase would be needed for the transit vehicles, significantly reducing available capacity for other traffic. Two alternate design treatments were evaluated to mitigate the potential traffic impacts. These alternate treatments consist of:

  - Median Alignment Option - At-grade using signal progression in the median of Jefferson through the La Cienega Boulevard intersection to Ballona Creek; this alignment would allow the transit vehicles to move with the east/west through traffic with no effect on capacity.
  - Elevated Alignment - Elevated through the La Cienega Boulevard intersection to join the north side of Jefferson west of La Cienega; this would remove the transit vehicles from the street with no effect on capacity.

Median Alignment Option

The median alignment that was investigated would maintain all existing lanes at the La Cienega/Jefferson intersection with minor improvements to add a right-turn lane on the west approach. The transit line was assumed to operate under signal control at this location. The alignment would need to enter the median at a signal-controlled intersection. The first such opportunity east of La Cienega would be at the Cochran Avenue intersection. The alignment would leave the ROW on the south side of Jefferson Boulevard at Cochran Avenue on a diagonal through the intersection to join the median. Only eastbound traffic would need to be stopped during train crossings.

West of La Cienega Boulevard, the alignment would need to transition out of the median to rejoin the ROW on the north side of Jefferson Boulevard. The alignment would leave the median under signal control to cross Ballona Creek along the north side of the roadway at the point where Jefferson turns from north/south at National Boulevard to east/west. Widening of Jefferson Boulevard to provide space for the guideway would be taken from the existing ROW on the south side. The driveways to the commercial parcels on the north side of Jefferson Boulevard between La Cienega Boulevard and La

Cienega Place would remain intact but would be restricted to right turns in and right turns out only with the establishment of the guideway in the median.

The LRT or bus station/stop for the median alignment would need to be placed in the median east of Clyde Avenue. The eastside location was selected because of the lower traffic volumes on this approach and therefore the lower levels of pedestrian/automobile conflicts. The bikeway would remain in Class II Bike Lanes along Jefferson Boulevard to Ballona Creek where a Class I Bike Path would begin along the north side.

Elevated Alignment

The elevated alignment would stay along the ROW on the south side of Jefferson and begin to rise from ground-level west of Clyde Avenue. Once fully elevated, the guideway would continue west to a station over La Cienega with access from both the east and west sides of the street. From the end of the station, the alignment would curve north to cross the travel lanes of Jefferson and return to grade on the north side just west of Ballona Creek. The driveways to the commercial properties along the north side of the street would remain unaffected except for possible left-turn restrictions as the guideway returns to grade. The guideway would cross to the north side of Jefferson and begin to return to ground level just west of La Cienega Place, reaching grade at the west edge of the Ballona Creek channel.

The south side of Jefferson Boulevard would need to be reconstructed in this option within the existing ROW. The bikeway would continue along the south side of the street in the ROW.

Selected Alignment

The elevated alignment is recommended for LRT in this segment to be incorporated in the Refined Alternative. The elevated alignment is necessary to provide absolute preemption for LRT at this location. The traffic analyses indicated vehicular levels of service would not be maintained if a preemption was used for the median alignment.

The median alignment is recommended for the Busway alternative. As a lower cost alternative, signal control and possibly progression strategies would be used. Some additional delay would be experienced by Busway vehicles as they move through the intersection without preemption. The traffic analyses indicated vehicular levels of service could be maintained with no degradation with use of traffic control/progression for the median alignment but with a slower speed through this segment than the LRT alternatives.

Segment 4: La Cienega/Jefferson to Venice/Robertson

This segment is common to all LRT and bus project alternatives except Alternative D which detours on La Cienega and Venice Boulevards. The alignment in this segment would follow the ROW with a possible change to the adjacent roadway configuration

to better meet community interests. The width of the ROW is generally 100 feet in this segment. Part of this width is currently used for traffic lanes on National Boulevard, leaving 60 to 65 feet for the transit guideway. The LRT or bus guideway would be located adjacent to the street in this segment, leaving about 30 feet for a Class I Bike Path along the north side and a buffer landscape edge. Issues and concerns important to the community related to the design are addressed as follows.

A number of design options were considered in this segment because of three primary inputs:

- The Traffic Impact Analyses findings in Section 3.4.4 indicate a grade-separation is necessary at the Washington/National crossing as well as the Venice/Robertson crossing.

- The community requested that below grade options be considered.

- The community expressed interest in a station at an intermediate point between La Cienega and Venice, perhaps near Hayden Avenue.

- Issue: Guideway Along the North Side of National Avenue

  The guideway would be constructed along the north side of National Boulevard in this segment to allow reconstruction of the roadway and eliminate the ROW crossing at Hayden Street. Currently the roadway divides in this segment with a long portion of the median leased for parking for the employment uses on the south side of the street. Between the Jefferson and Washington intersections, National would be reconfigured to place both the eastbound and the westbound lanes together with a median of sufficient width to allow left-turns at intersections.

- Issue: Three Design Options in this Segment

  Based on community input and the design options for the connecting segment to the east, three design options were evaluated for this segment:

  A. At-grade in the median of Jefferson to north side of ROW to run at-grade west before using a grade separation to cross over National/Washington;
  B. Elevated over La Cienega to cross over Jefferson and return to grade along the north side of the street just west of Ballona Creek to run at-grade west before using a grade separation to cross over National/Washington; and,
  C. Connecting to either A. or B. above along the north side of National Boulevard within the ROW but in a shallow trench to reduce potential noise and aesthetic impacts.

Figure 3-6 depicts Option A of the list above.

West of Jefferson, the options all have the same horizontal location north of National Boulevard. A buffer strip would contain the bikeway and a landscape strip separating the guideway from homes and the park.

Each of these three options would include reconstruction of National Boulevard to remove the parking strip in the median west of Ballona Creek and bring the eastbound and westbound travel lanes together.

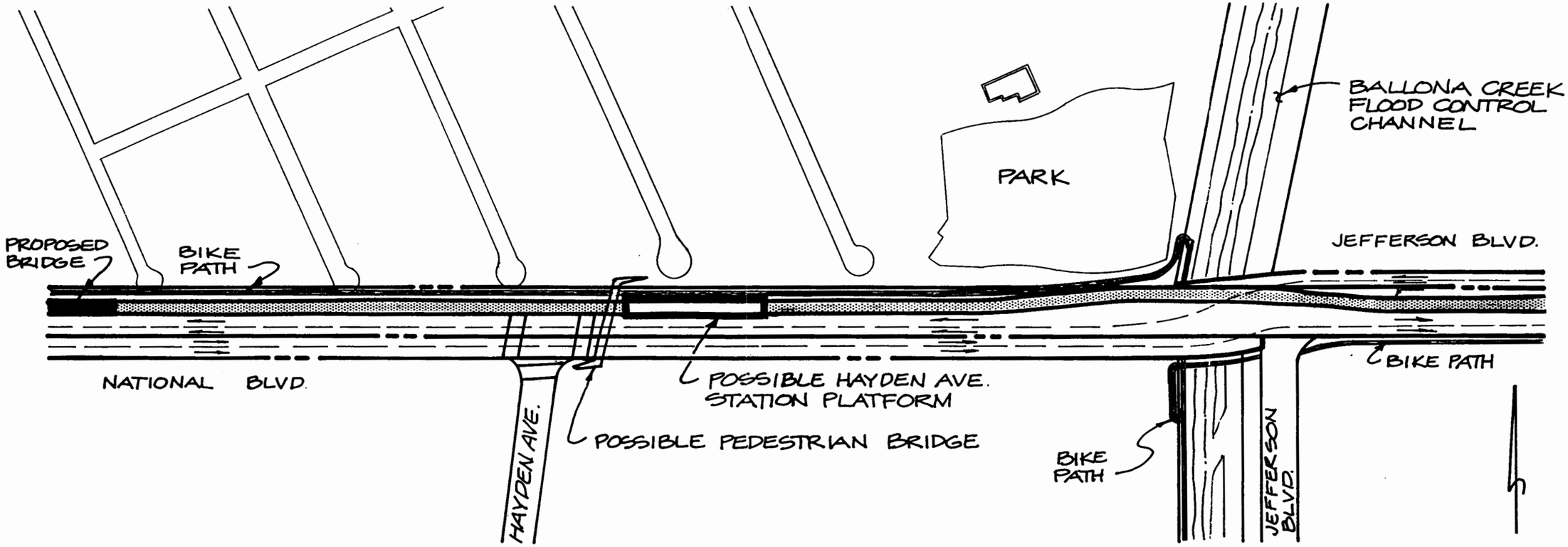
Option B is recommended in this segment for LRT while Option A is recommended for the Busway. A shallow trench as described in Option C would be one of several potential mitigation measures which could be used if significant noise or other impacts were found in the environmental studies during Phase II of this Corridor Study. Therefore, the at-grade option was recommended as the refined alternative in this segment for both LRT and Busway. The shallow trench option and associated costs are discussed in Section 3.8, which follows.

- Issue: Interface with traffic operations

  As discussed in Section 3.4.4, the traffic impacts in this segment would be significant and would adversely affect operations if at-grade crossings were used at National, Washington, Venice, and Robertson Boulevards. Because a grade separation would require about 800 feet to make the elevation change, the structure would need to begin to rise approximately 800 feet east of National Boulevard, within the ROW and end west of Venice Boulevard, also within the ROW. Because of the much lower cost of an elevated structure and the expected high groundwater table due to proximity to Ballona Creek, a bridge was assumed as part of the refined alternative in this segment rather than an underpass as suggested at the community meeting.

- Issue: Bikeway along the North Side of the ROW

  The community requested that the bikeway be placed along the north side of the ROW in this segment to provide access to the Ballona Creek bicycle trail and Syd Kronenthal Park. The bikeway would also provide additional buffer separation between the guideway and the neighborhood border. The bikeway would join the Ballona Creek facility and use the National bridge to cross under the roadway to the south side. The bikeway would continue east along the south side of Jefferson in the ROW.



Option A:
Fixed-Guideway Alignment Location:
Busway Alternative C At-Grade Jefferson to National

HORIZONTAL SCALE 0 50' 100' 200'
VERTICAL SCALE 0 50' 100' 200'

Figure No. 3-6

BRW

Source: B R W, Inc., 27 December 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

- Issue: Landscaped Buffer Strip along North Side of the ROW

  Although the former railroad ROW was 100 feet wide in this segment, 50 feet is used by National Boulevard as part of the roadway and by the cul-de-sacs from the north, leaving about 50 feet under MTA ownership for the guideway and associated landscaping and the bikeway. The guideway, for both LRT and bus refined alternatives, would be along the southern edge of the ROW with the bikeway immediately north of the transit guideway adjacent to the residential uses. Reconfiguration of National Boulevard maintains the current number of traffic lanes, while providing 65 feet for the guideway, bikeway and landscaping. In general, there would be roughly 25 feet between the guideway and the adjacent homes which would accommodate a 10 foot wide bikeway and up to 15 feet of landscaped area before reaching the property line. An example of the possible cross-section is shown in Figure 3-7. At its narrowest point, just east of Sherbourne Drive, there would be about 12 feet between the guideway and the adjacent end of the cul-de-sac.

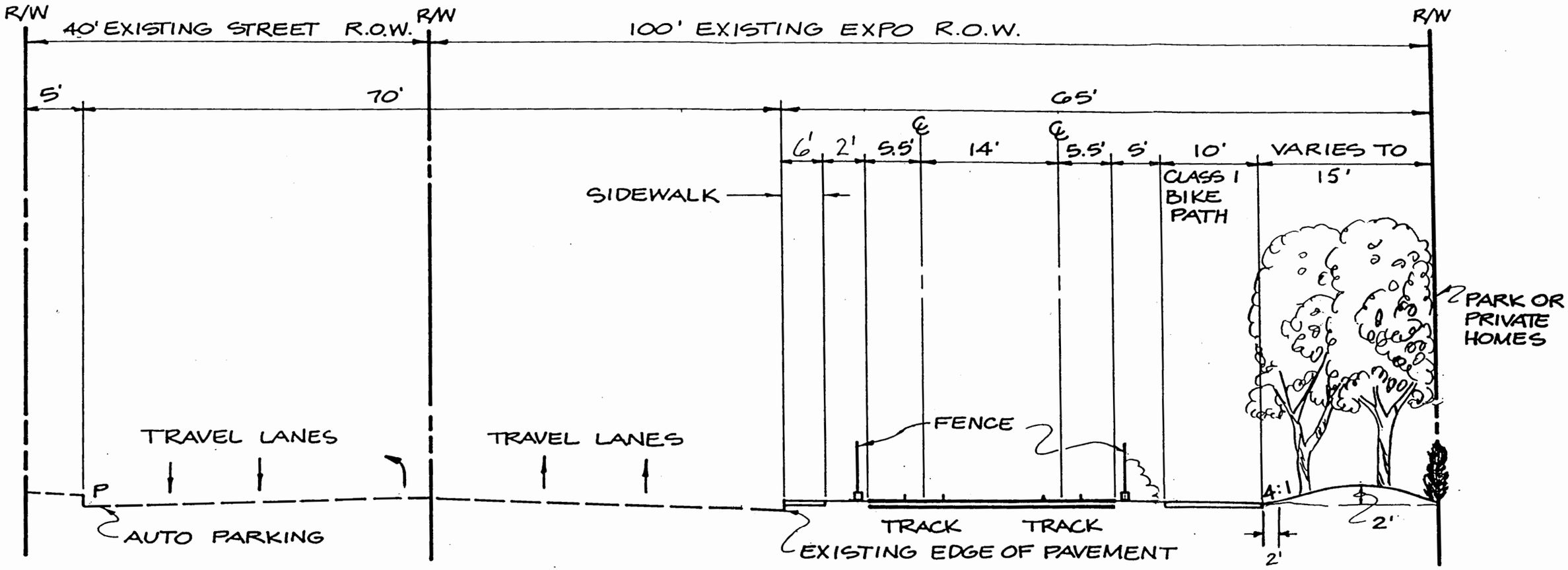
- Issue: Hayden Station

  The Hayden station was evaluated considering transit operations and ridership impacts.

  - The station would add convenience for immediately adjacent and nearby residential and industrial areas by providing a boarding area within easy walking distance (less than a quarter-mile in some cases) from homes and jobs.

  - The station adds approximately one and a half to two minutes of run time to each train or bus, requiring time to slow-down/start-up and to load/discharge patrons. The added travel time results in less efficient operations and added operating costs. The additional trip time also tends to lower ridership. A general rule of thumb for LRT operations is that a one percent increase in travel time results in a one-half percent decrease in total ridership on the line. The impact on bus ridership would probably be less since the added delay would be a smaller percentage of the longer total bus travel time.

  - The station exhibits boardings in the lower quarter percentage of the stations on the line. The ridership projections suggest that many of the boardings at this station would arrive by bus or be dropped off ("kiss-and-ride"). Because of these modes of access and the proximity of the proposed Venice/Robertson station and to some extent the La Cienega station, it is possible that a number of these boardings would still utilize the transit line even without a Hayden station by accessing one of the two adjacent stations. Thus the net increase in ridership from incorporating a Hayden Station may be small, particularly considering the potential decrease in boardings elsewhere along the line due to the increased travel time.



Conceptual Cross-Section of Exposition R.O.W. with LRT at National/Hayden

HORIZONTAL SCALE 0 2.5' 5' 10'
VERTICAL SCALE 0 2.5' 5' 10'

Figure No. 3-7

BRW

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

- Currently there are no bus lines directly serving the proposed station site. Nearby bus routes would have to be modified in order to serve as feeder buses to the station. Shifting of boarding patrons to a Venice/Robertson or to a La Cienega station would be more efficient and would provide better bus connections.

- The proposed station site is immediately adjacent to residential uses to the north. Increased traffic activity and noise from feeder buses and cars dropping off riders could adversely impact adjacent homes.

- As suggested by the community, nearby residents could access a Venice/Robertson or La Cienega station by way of a local community shuttle. A potential route could be a one-way loop linking the Culver City CBD with the Venice/Robertson and La Cienega stations via Washington and National Boulevards.

Although the recommended refined LRT and bus project alternatives include a Hayden station for purposes of environmental clearance, careful consideration should be given to the tradeoffs of ridership, cost and community convenience prior to including this station in a final selection of the preferred project, especially if LRT is selected.

Segment 5: **Exposition ROW from Venice to Sepulveda and I-10 Right-of-Way Alternative from Motor to Sepulveda**

This segment applies to Project Alternatives A, B (LRT), C and D (Bus). Alternatives E and F detour around this segment of the ROW.

This segment contains two route alternatives. One alignment location runs along the ROW from Venice to Sepulveda. The other alignment, which was considered for LRT only, departs from the ROW at Motor to run along the south side of the I-10 right-of-way to the east side of I-405 before turning north to rejoin the ROW. The alignment for both route alternatives is the same from Venice to Motor. The alignment would return to grade from the structure over Venice Boulevard within the ROW west of Venice and south of the I-10 exit ramp to Robertson Boulevard. The alignment would cross Bagley Avenue at-grade with a gated signal for LRT crossing or a signalized bus crossing. The alignment would continue west at the existing grade of the ROW to cross National Boulevard and Motor Avenue above grade on bridges.

Through this segment, the ROW is 100 feet wide and 200 feet wide in some segments, including the unused street right-of-way. This width presents an opportunity to provide a park-like improvement along the ROW west of Motor Avenue as the alignment transitions into an underpass under Overland Avenue. The LRT or bus improvement would run along the middle of the ROW. The bikeway in this segment would run along the south side of the ROW and would be included in the grade separation at Overland.

There would be 40 to 50 feet of buffer area, counting the ROW and street right-of-way, between the guideway and the adjacent residential to the north and south.

Major issues and concerns important to the community or identified by the consultant related to the design of the project in this segment are addressed as follows.

- Issue: Motor Station for Neighborhood Access

  According to the results of the patronage forecasts, the Motor Avenue station would have a substantial number of daily boardings, placing the station in the upper half of all stops on the line in terms of patron volume. The station would be well served by bus routes on Motor and National and would be designed for walk-in access as well. Auto drop-off at curbside would be provided. There is no provision for automobile parking; parking would be provided at either the I-405 station or at Venice for this segment. Patrons who drive could conveniently access parking at these locations.

- Issue: Rebuild Tunnel Under I-10

  The existing tunnel under I-10 is only 20 feet in width which is not sufficient for the guideway cross-section for either LRT or bus. The undercrossing would need to be widened as part of the alternative on the ROW.

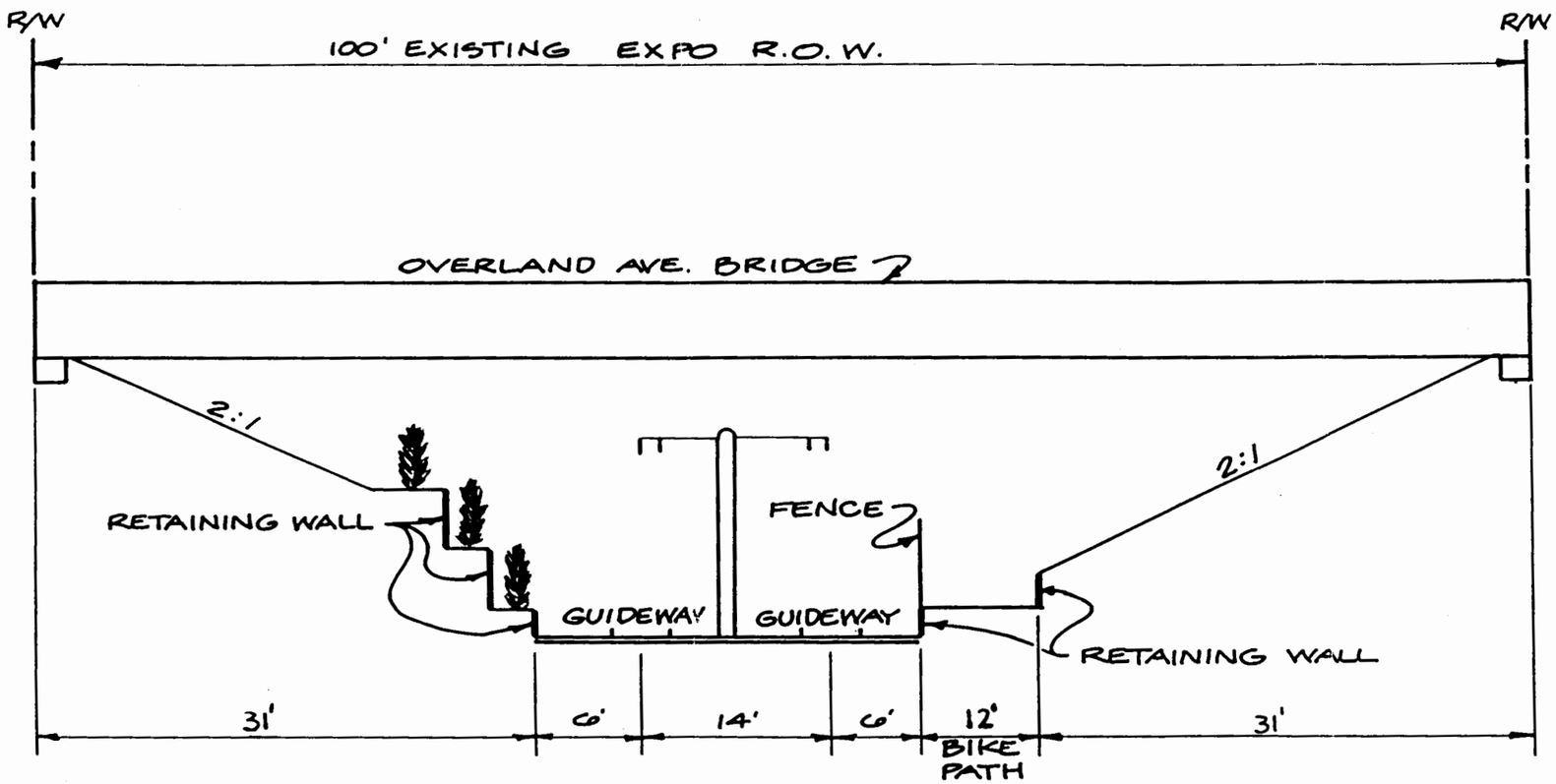
- Interface with Traffic Operations

  A combination of depressed and at-grade sections would be designed for the guideway alignment along the ROW. The results of the traffic analyses indicate that a grade-separation at Overland Avenue as illustrated in Figure 3-8 is needed because of several reasons:

  - Substantial volumes on Overland, especially in the peak hours currently result in back-ups from the freeway ramps, sometimes as far as the ROW. Unless a grade separation is provided, traffic could block the guideway.

  - Signal control interconnect with the signal at Ashby Avenue would also result in significant delays to traffic or the transit vehicles because of the high volumes.

  - Residents are concerned about the high number of school children who must cross the ROW to access Overland Elementary School at Ashby. A grade separation would allow for a crossing of the guideway without safety concerns.



LRT or BUS Fixed Guideway Transit Underpass of Exposition R.O.W. at Overland Ave.

HORIZONTAL SCALE 0 2.5' 5' 10'
VERTICAL SCALE 0 2.5' 5' 10'

Figure No. 3-8

BRW

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

An underpass of Overland Avenue was selected because of the elevation of the existing ROW between I-10 and Overland Avenue where the alignment is currently below grade. The profile could continue west below grade to cross under Overland. A below grade alignment would also limit potential intrusion into activities at the Overland School.

Continuing to the west, the alignment would rise back to ground level to cross Westwood Boulevard and Military Avenue at-grade. These two streets have considerably lower volumes than Overland since they do not access I-10. For the LRT alternatives, a gated crossing would be needed at each location. For the Bus alternative, signals with preemption would be provided at each street.

At Sepulveda Boulevard, the LRT alignment would cross the street below-grade to avoid interference with the I-405 structure near Sawtelle. The station could be located in the triangle created by Sepulveda, Pico and Exposition Boulevards or west of I-405. Parking could be located in the ROW west of Sepulveda.

For the Busway Alternative at Sepulveda Boulevard, an at-grade crossing using signal control would be possible. A below-grade crossing would still be needed at Sawtelle. An at-grade station could also be used rather than a below-grade station at Sawtelle to save costs.

LRT Alternative B: Grade-Separated Alignment Along I-10

The alternative alignment along the south side of the I-10 freeway right-of-way would be designed to accommodate the LRT guideway. The alignment would need to rise up along the southern edge of the freeway ROW in a long bridge to cross above Overland Avenue, National Boulevard and Westwood Boulevard, returning to the grade of the freeway to cross over Coventry Place and Military Avenue on bridges. Because of the constrained right-of-way available from the freeway, placement of the guideway would require acquisition of the first row of homes (encompassing about 32 dwelling units) which adjoin the freeway.

The alignment would return to grade to cross Sepulveda Boulevard at-grade with a gated crossing and punch under the north-to-east ramp from I-405 to I-10. The gated crossing would only need to interrupt north/south arterial traffic briefly to allow transit vehicles to pass. The alignment would continue through the Caltrans maintenance yard along the south and west edges to turn north and cross under the I-10 mainline and join the east embankment edge of the I-405 mainline under the west-to-north ramp bridge. The alignment would then continue north to cross under Exposition Boulevard and turn west.

The bikeway in this alternative would remain along the Exposition ROW and cross each street at intersections. The bridge under I-10 would be refurbished and equipped with lighting but would not require widening for the bikeway.

Segment 6: **Exposition ROW from Sepulveda to Downtown Santa Monica**

The segment is common to all Project Alternatives except Alternative F (Venice Boulevard to the coast). The ROW is typically 100 feet wide in this segment with the guideway along the north side to permit the bikeway and buffer strip to be located along the south side. The buffer strip would be 30 to 40 feet wide.

The alignment in this section remains within the ROW until reaching the area surrounding downtown Santa Monica. The ROW ends at 17th Street which requires the transit improvement to follow other publicly held right-to-way to downtown.

Major issues and concerns important to the community or identified by the consultant related to the design of the project in this segment are addressed as follows.

- Issue: Grade-Separation at Sawtelle and Pico/Gateway

  The traffic impact analyses shows that the guideway for either Busway or LRT would need to be grade-separated at Sawtelle Boulevard and at the Pico Boulevard/Gateway Boulevard intersection. Because of the presence of the elevated freeway I-405, the alignment would need to cross under Sawtelle and Pico/Gateway. This design option requires underground construction and utility relocation costs. Figure 3-9 shows the extent of this depressed alignment and below grade station between Sawtelle and Pico/Gateway.

  The station in this location would vary depending on the alternative. The alternatives with the alignment on the ROW would be able to access a station at either Sepulveda or in the Sawtelle/Pico/Exposition triangle west of I-405. The station at Sepulveda would be just west of the street. Adjacent parcels could be acquired to provide parking. A station could also be located between Sawtelle and Pico within the triangle formed with Exposition Boulevard. This station could have an open-trench with access to parking back to the east under the I-405 structure or on the parcel between Sepulveda and Sawtelle.

  The LRT alternative along the I-10/I-405 freeways would stay in a shallow trench to cross under Exposition Boulevard and turn west to cross under Sawtelle Boulevard and under the Pico/Gateway intersection before returning to grade. The grade separations at Sawtelle and Pico/Gateway were identified as part of the traffic analysis.

  The station would be below grade in the triangle formed by Pico/Sawtelle/Exposition. With the station located at this site, parking would be placed under the I-405 mainline and along the ROW to the east of Sawtelle.

- Issue: Landscaped Buffer Strip along North Side of the ROW

  Although the former railroad ROW was 100 feet wide in this segment, 50 feet is used by National Boulevard as part of the roadway and by the cul-de-sacs from the north, leaving about 50 feet under MTA ownership for the guideway and associated landscaping and the bikeway. The guideway, for both LRT and bus refined alternatives, would be along the southern edge of the ROW with the bikeway immediately north of the transit guideway adjacent to the residential uses. Reconfiguration of National Boulevard maintains the current number of traffic lanes, while providing 65 feet for the guideway, bikeway and landscaping. In general, there would be roughly 25 feet between the guideway and the adjacent homes which would accommodate a 10 foot wide bikeway and up to 15 feet of landscaped area before reaching the property line. An example of the possible cross-section is shown in Figure 3-7. At its narrowest point, just east of Sherbourne Drive, there would be about 12 feet between the guideway and the adjacent end of the cul-de-sac.

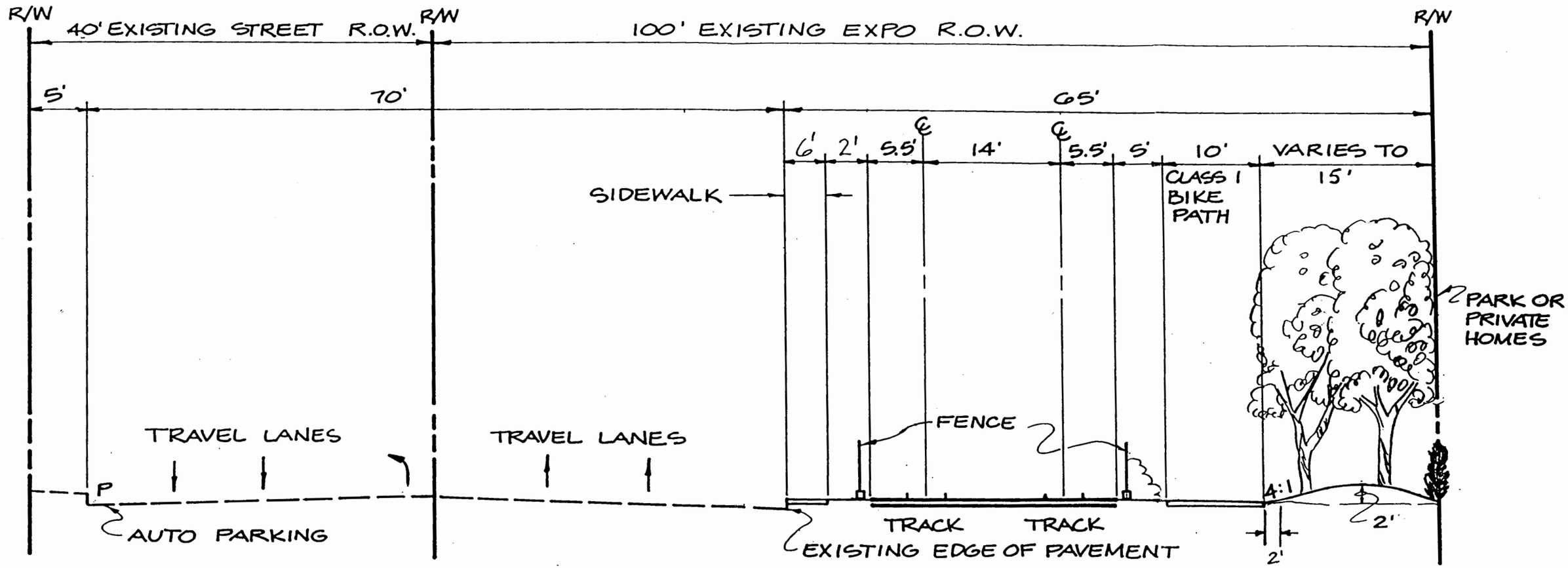
- Issue: Hayden Station

  The Hayden station was evaluated considering transit operations and ridership impacts.

  - The station would add convenience for immediately adjacent and nearby residential and industrial areas by providing a boarding area within easy walking distance (less than a quarter-mile in some cases) from homes and jobs.

  - The station adds approximately one and a half to two minutes of run time to each train or bus, requiring time to slow-down/start-up and to load/discharge patrons. The added travel time results in less efficient operations and added operating costs. The additional trip time also tends to lower ridership. A general rule of thumb for LRT operations is that a one percent increase in travel time results in a one-half percent decrease in total ridership on the line. The impact on bus ridership would probably be less since the added delay would be a smaller percentage of the longer total bus travel time.

  - The station exhibits boardings in the lower quarter percentage of the stations on the line. The ridership projections suggest that many of the boardings at this station would arrive by bus or be dropped off ("kiss-and-ride"). Because of these modes of access and the proximity of the proposed Venice/Robertson station and to some extent the La Cienega station, it is possible that a number of these boardings would still utilize the transit line even without a Hayden station by accessing one of the two adjacent stations. Thus the net increase in ridership from incorporating a Hayden Station may be small, particularly considering the potential decrease in boardings elsewhere along the line due to the increased travel time.



Conceptual Cross-Section of Exposition R.O.W. with LRT at National/Hayden

HORIZONTAL SCALE 0 2.5' 5' 10'
VERTICAL SCALE 0 2.5' 5' 10'

Figure No. 3-7

BRW

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

- Currently there are no bus lines directly serving the proposed station site. Nearby bus routes would have to be modified in order to serve as feeder buses to the station. Shifting of boarding patrons to a Venice/Robertson or to a La Cienega station would be more efficient and would provide better bus connections.

- The proposed station site is immediately adjacent to residential uses to the north. Increased traffic activity and noise from feeder buses and cars dropping off riders could adversely impact adjacent homes.

- As suggested by the community, nearby residents could access a Venice/Robertson or La Cienega station by way of a local community shuttle. A potential route could be a one-way loop linking the Culver City CBD with the Venice/Robertson and La Cienega stations via Washington and National Boulevards.

Although the recommended refined LRT and bus project alternatives include a Hayden station for purposes of environmental clearance, careful consideration should be given to the tradeoffs of ridership, cost and community convenience prior to including this station in a final selection of the preferred project, especially if LRT is selected.

Segment 5: **Exposition ROW from Venice to Sepulveda and I-10 Right-of-Way Alternative from Motor to Sepulveda**

This segment applies to Project Alternatives A, B (LRT), C and D (Bus). Alternatives E and F detour around this segment of the ROW.

This segment contains two route alternatives. One alignment location runs along the ROW from Venice to Sepulveda. The other alignment, which was considered for LRT only, departs from the ROW at Motor to run along the south side of the I-10 right-of-way to the east side of I-405 before turning north to rejoin the ROW. The alignment for both route alternatives is the same from Venice to Motor. The alignment would return to grade from the structure over Venice Boulevard within the ROW west of Venice and south of the I-10 exit ramp to Robertson Boulevard. The alignment would cross Bagley Avenue at-grade with a gated signal for LRT crossing or a signalized bus crossing. The alignment would continue west at the existing grade of the ROW to cross National Boulevard and Motor Avenue above grade on bridges.

Through this segment, the ROW is 100 feet wide and 200 feet wide in some segments, including the unused street right-of-way. This width presents an opportunity to provide a park-like improvement along the ROW west of Motor Avenue as the alignment transitions into an underpass under Overland Avenue. The LRT or bus improvement would run along the middle of the ROW. The bikeway in this segment would run along the south side of the ROW and would be included in the grade separation at Overland.

There would be 40 to 50 feet of buffer area, counting the ROW and street right-of-way, between the guideway and the adjacent residential to the north and south.

Major issues and concerns important to the community or identified by the consultant related to the design of the project in this segment are addressed as follows.

- Issue: Motor Station for Neighborhood Access

  According to the results of the patronage forecasts, the Motor Avenue station would have a substantial number of daily boardings, placing the station in the upper half of all stops on the line in terms of patron volume. The station would be well served by bus routes on Motor and National and would be designed for walk-in access as well. Auto drop-off at curbside would be provided. There is no provision for automobile parking; parking would be provided at either the I-405 station or at Venice for this segment. Patrons who drive could conveniently access parking at these locations.

- Issue: Rebuild Tunnel Under I-10

  The existing tunnel under I-10 is only 20 feet in width which is not sufficient for the guideway cross-section for either LRT or bus. The undercrossing would need to be widened as part of the alternative on the ROW.

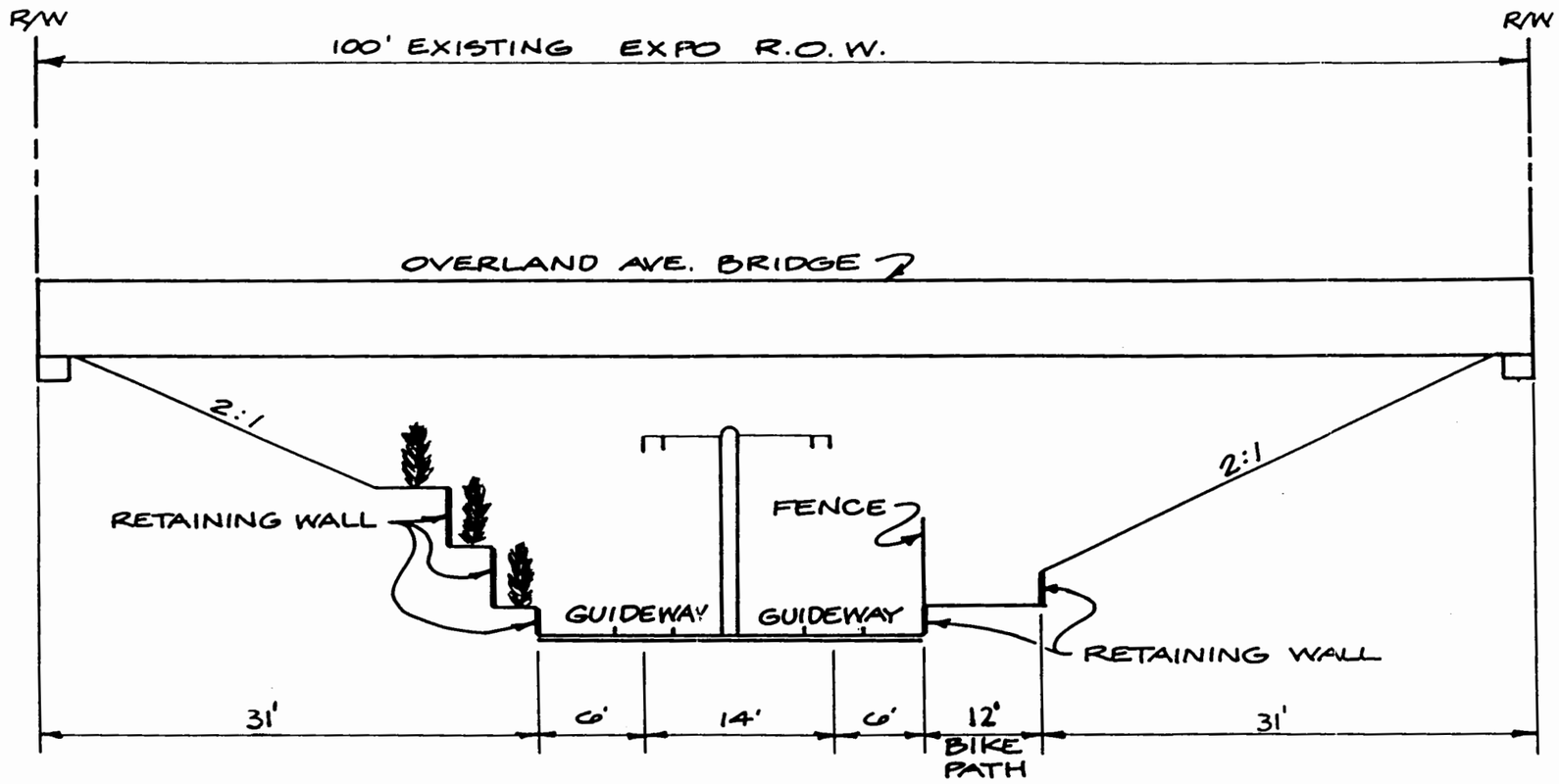
- Interface with Traffic Operations

  A combination of depressed and at-grade sections would be designed for the guideway alignment along the ROW. The results of the traffic analyses indicate that a grade-separation at Overland Avenue as illustrated in Figure 3-8 is needed because of several reasons:

  - Substantial volumes on Overland, especially in the peak hours currently result in back-ups from the freeway ramps, sometimes as far as the ROW. Unless a grade separation is provided, traffic could block the guideway.

  - Signal control interconnect with the signal at Ashby Avenue would also result in significant delays to traffic or the transit vehicles because of the high volumes.

  - Residents are concerned about the high number of school children who must cross the ROW to access Overland Elementary School at Ashby. A grade separation would allow for a crossing of the guideway without safety concerns.



LRT or BUS Fixed Guideway Transit: Underpass of Exposition R.O.W. at Overland Ave.

HORIZONTAL SCALE 0 2.5' 5' 10'
VERTICAL SCALE 0 2.5' 5' 10'

Figure No. 3-8

BRW

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

An underpass of Overland Avenue was selected because of the elevation of the existing ROW between I-10 and Overland Avenue where the alignment is currently below grade. The profile could continue west below grade to cross under Overland. A below grade alignment would also limit potential intrusion into activities at the Overland School.

Continuing to the west, the alignment would rise back to ground level to cross Westwood Boulevard and Military Avenue at-grade. These two streets have considerably lower volumes than Overland since they do not access I-10. For the LRT alternatives, a gated crossing would be needed at each location. For the Bus alternative, signals with preemption would be provided at each street.

At Sepulveda Boulevard, the LRT alignment would cross the street below-grade to avoid interference with the I-405 structure near Sawtelle. The station could be located in the triangle created by Sepulveda, Pico and Exposition Boulevards or west of I-405. Parking could be located in the ROW west of Sepulveda.

For the Busway Alternative at Sepulveda Boulevard, an at-grade crossing using signal control would be possible. A below-grade crossing would still be needed at Sawtelle. An at-grade station could also be used rather than a below-grade station at Sawtelle to save costs.

LRT Alternative B: Grade-Separated Alignment Along I-10

The alternative alignment along the south side of the I-10 freeway right-of-way would be designed to accommodate the LRT guideway. The alignment would need to rise up along the southern edge of the freeway ROW in a long bridge to cross above Overland Avenue, National Boulevard and Westwood Boulevard, returning to the grade of the freeway to cross over Coventry Place and Military Avenue on bridges. Because of the constrained right-of-way available from the freeway, placement of the guideway would require acquisition of the first row of homes (encompassing about 32 dwelling units) which adjoin the freeway.

The alignment would return to grade to cross Sepulveda Boulevard at-grade with a gated crossing and punch under the north-to-east ramp from I-405 to I-10. The gated crossing would only need to interrupt north/south arterial traffic briefly to allow transit vehicles to pass. The alignment would continue through the Caltrans maintenance yard along the south and west edges to turn north and cross under the I-10 mainline and join the east embankment edge of the I-405 mainline under the west-to-north ramp bridge. The alignment would then continue north to cross under Exposition Boulevard and turn west.

The bikeway in this alternative would remain along the Exposition ROW and cross each street at intersections. The bridge under I-10 would be refurbished and equipped with lighting but would not require widening for the bikeway.

Segment 6: **Exposition ROW from Sepulveda to Downtown Santa Monica**

The segment is common to all Project Alternatives except Alternative F (Venice Boulevard to the coast). The ROW is typically 100 feet wide in this segment with the guideway along the north side to permit the bikeway and buffer strip to be located along the south side. The buffer strip would be 30 to 40 feet wide.

The alignment in this section remains within the ROW until reaching the area surrounding downtown Santa Monica. The ROW ends at 17th Street which requires the transit improvement to follow other publicly held right-to-way to downtown.

Major issues and concerns important to the community or identified by the consultant related to the design of the project in this segment are addressed as follows.

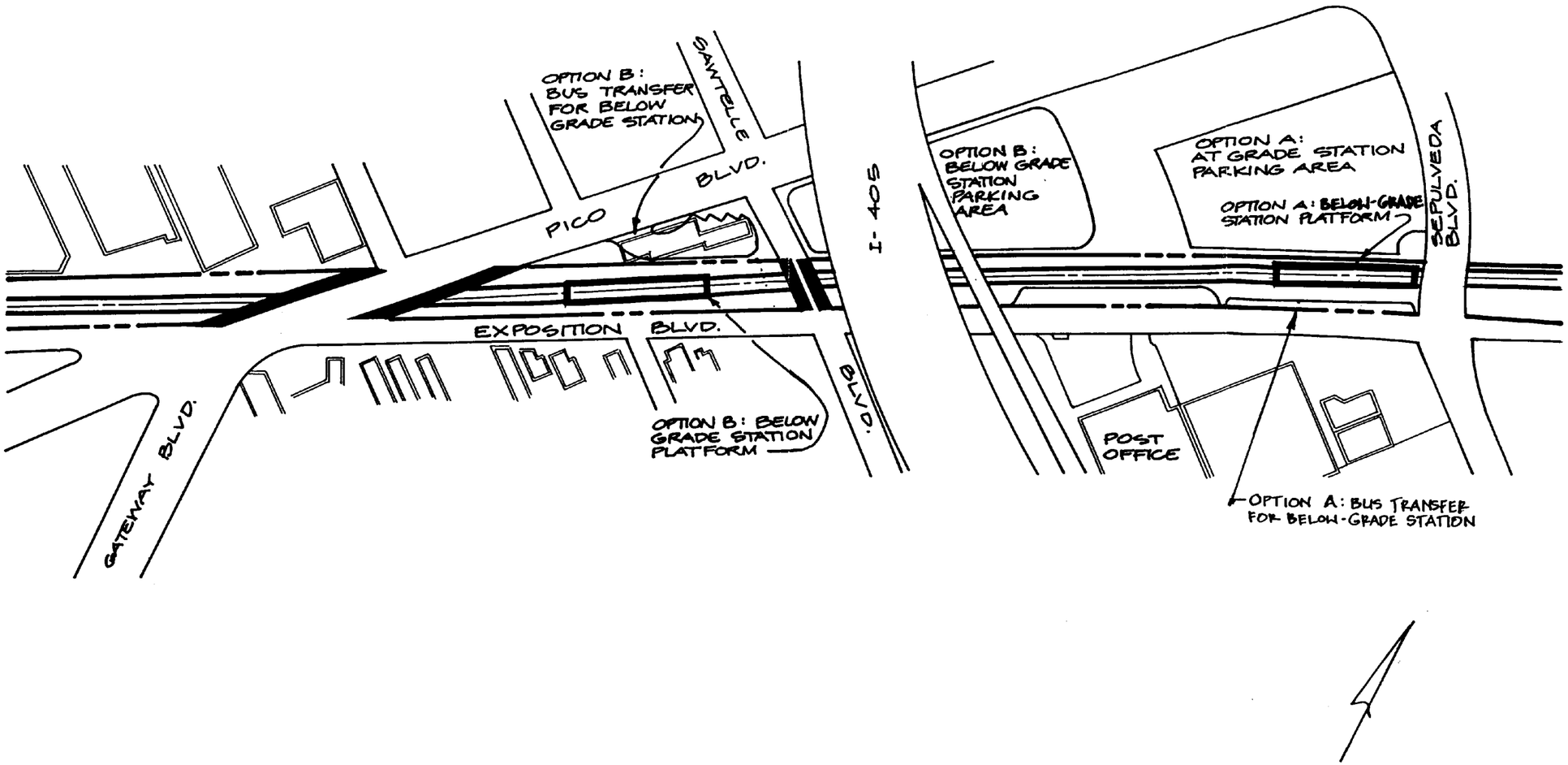
- Issue: Grade-Separation at Sawtelle and Pico/Gateway

  The traffic impact analyses shows that the guideway for either Busway or LRT would need to be grade-separated at Sawtelle Boulevard and at the Pico Boulevard/Gateway Boulevard intersection. Because of the presence of the elevated freeway I-405, the alignment would need to cross under Sawtelle and Pico/Gateway. This design option requires underground construction and utility relocation costs. Figure 3-9 shows the extent of this depressed alignment and below grade station between Sawtelle and Pico/Gateway.

  The station in this location would vary depending on the alternative. The alternatives with the alignment on the ROW would be able to access a station at either Sepulveda or in the Sawtelle/Pico/Exposition triangle west of I-405. The station at Sepulveda would be just west of the street. Adjacent parcels could be acquired to provide parking. A station could also be located between Sawtelle and Pico within the triangle formed with Exposition Boulevard. This station could have an open-trench with access to parking back to the east under the I-405 structure or on the parcel between Sepulveda and Sawtelle.

  The LRT alternative along the I-10/I-405 freeways would stay in a shallow trench to cross under Exposition Boulevard and turn west to cross under Sawtelle Boulevard and under the Pico/Gateway intersection before returning to grade. The grade separations at Sawtelle and Pico/Gateway were identified as part of the traffic analysis.

  The station would be below grade in the triangle formed by Pico/Sawtelle/Exposition. With the station located at this site, parking would be placed under the I-405 mainline and along the ROW to the east of Sawtelle.



Below Grade Fixed-Guideway Alignment From Sepulveda to Pico/Gateway

HORIZONTAL SCALE 0 50' 100' 200'
VERTICAL SCALE 0 50' 100' 200'

Figure No. 3-9

BRW

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

- Issue: Interface with Traffic Operations West to Santa Monica

  Barrington Avenue - For the Bus Alternatives, this crossing would be at-grade with signal control. The LRT Alternatives would cross at-grade with a gated crossing. Figure 3-10 illustrates the cross-section between Barrington Avenue and Bundy Drive.

  Bundy Drive - This crossing will require a grade-separation. A bridge over Bundy would require an elevated station which has been included in the refined alternative. In order to save money, an at-grade station could be located closer to Barrington with access oriented to Olympic Boulevard.

  Centinela Avenue - This crossing would be with signal control for the Busway Alternatives. The signal would need to be interconnected with the signal at the Olympic/Centinela intersection to limit potential back-ups across the guideway. The LRT Alternatives would use a gated crossing which would also be interconnected with the Olympic signals.

  Using the traffic analyses, meetings were held with the City of Santa Monica Traffic and Transportation staff. Based on the conclusions reached in these meetings, the remainder of the alignment refinements west to downtown Santa Monica are described:

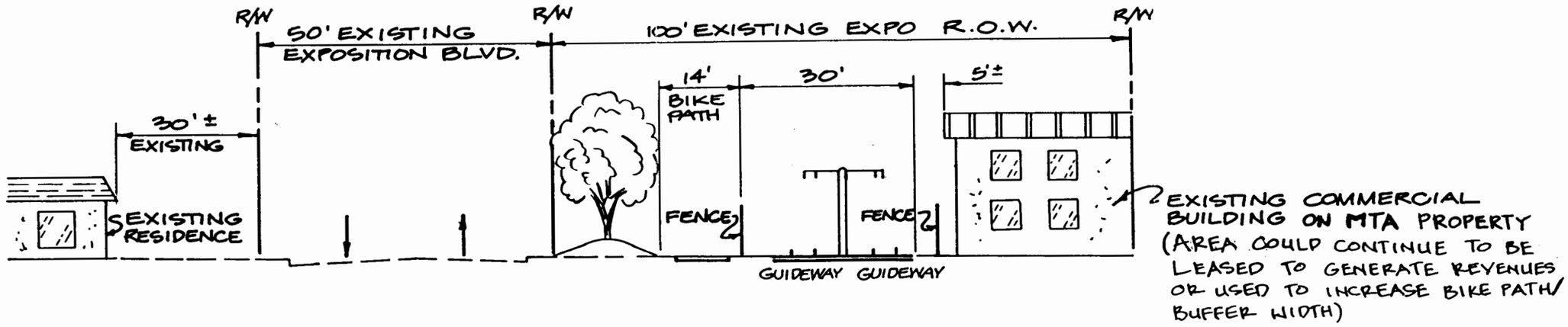
  Stewart Avenue - For LRT, a signal with gated pre-emption would be installed at this location. The crossing location would need to be improved with lane additions as follows:

  - Add a right turn lane to the east and west legs on Olympic
  - Add a second southbound through lane to Stewart

  For Bus, the crossing would be signal controlled with a progression scheme used.

  26th Street - For both LRT and Bus, this crossing would be with signal preemption control with the alignment in the ROW along the south side of Olympic Boulevard. The LRT Alternatives would also incorporate gated crossings.

  Cloverfield Boulevard - Although the traffic study indicates that Cloverfield would be impacted under either preemption or signal control, discussions with the City of Santa Monica have indicated that impacts to traffic operations may be acceptable in return for the significant added person-trip capacity from the transit improvement. Unmitigated impacts to Cloverfield and to Olympic may result as the transit vehicles leave the Cloverfield station and join the middle traffic lanes on Olympic. Gated pre-emption is recommended for both LRT and bus.



LRT or BUS Fixed Guideway Transit Alignment
Cross-Section West of Barrington Avenue

HORIZONTAL SCALE
0 50' 100' 200'
VERTICAL SCALE
0 50' 100' 200'

Figure No. 3-10

BRW

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/
Environmental Impact Report Study

- Issue: Olympic Boulevard Connection to Downtown

  Working with the City of Santa Monica, a trade-off analysis was conducted to determine the most appropriate location for the transit line within the Olympic Boulevard right-of-way. Since the best point at which to depart from the ROW is where the ROW crosses Olympic west of Cloverfield, design options were examined including:

  - Alignment in median, remove Coral trees
  - Split alignment with each direction occupying an existing lane of the roadway
  - Split alignment taking the parking lanes on each side but maintaining the travel lanes

  Following a working session with the City staff, it was concluded that the most appropriate option was to take a travel lane in each direction in order to preserve the parking and the landscaped median. Figure 3-11 shows the cross-section for this alignment at 15th Street while Figure 3-12 depicts the alignment location to downtown Santa Monica.

- Issue: Downtown Santa Monica LRT Station

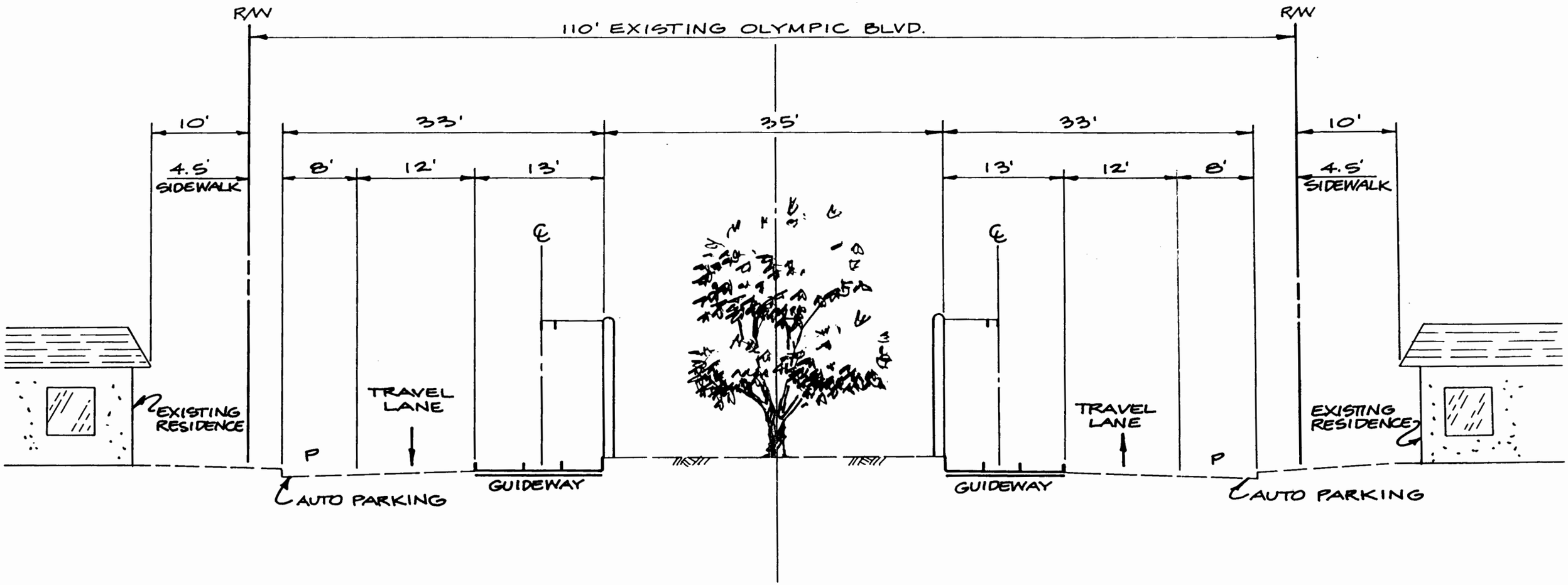
  The downtown Santa Monica Station will be important as the terminus point for the transit improvement in the Exposition Corridor. The station will need to fit within the surrounding development and be mutually supportive of the activities existing and planned for the area.

  The Station Planning Report prepared as a companion to this report presents the station concept in detail. Key points concerning the station that are currently contained in the refined alternative are:

  - No parking would be provided. The station is a destination in the downtown and originating trips should access the station only via bus or walking. This would limit the introduction of additional auto trips downtown.

  - A generalized site is defined in the Sears retail store property or south of I-10 in the Civic Center.

  - Linkages to surrounding areas are broadly defined. One of the key factors to successfully integrate the station with the surrounding area will be the ability to create linkages with existing and planned uses. Strong linkages to the Civic Center, Santa Monica Place, the 3rd Street Promenade and the Pier are needed to facilitate the movement of transit patrons to/from the station once they arrive at this destination.



LRT or Bus Alignment Cross-Section on Olympic Blvd. at 15th Street

HORIZONTAL SCALE 0 2.5' 5' 10'
VERTICAL SCALE 0 2.5' 5' 10'

Figure No. 3-11

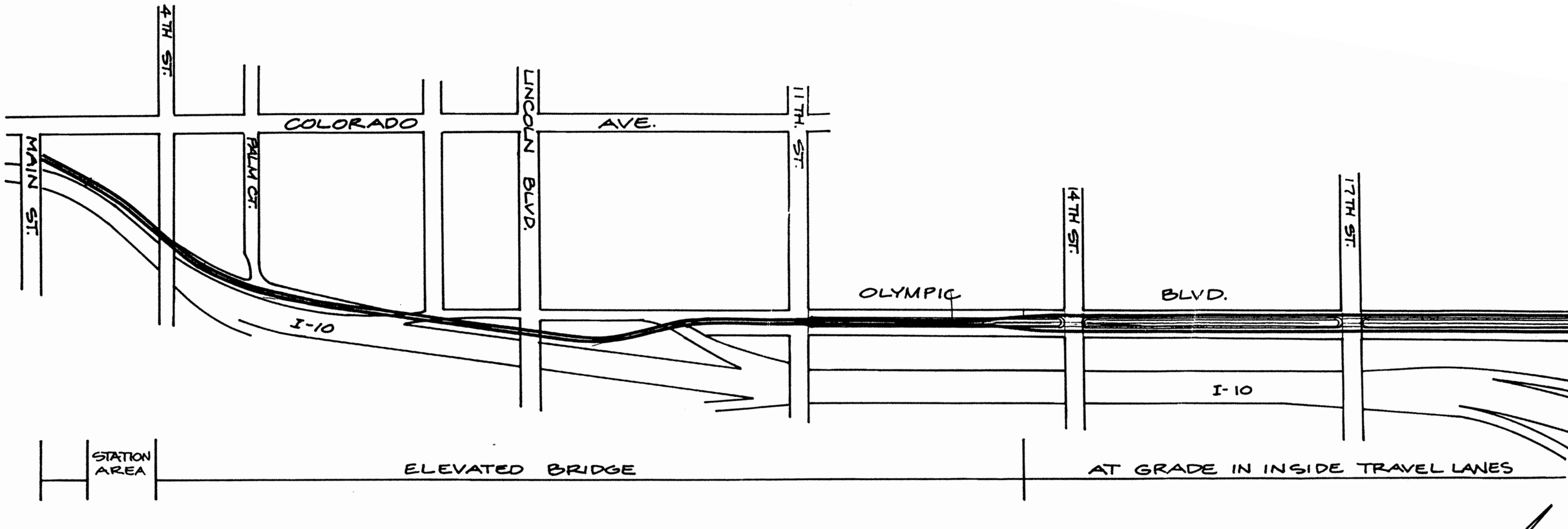
BRW

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study



LRT Alignment on Olympic Boulevard from 17th Street to 4th Street/Colorado Avenue

Source: BRW, Inc. October 1993

MTA Los Angeles County Metropolitan Tansportation Authority

HORIZONTAL SCALE
0 100' 200' 400'
VERTICAL SCALE

Figure No. 3-12

- Depending on future planning by the City, a loop around downtown could also be considered similar to the Blue Line in Long Beach. The loop is not assumed a part of the refined alternative in this Phase I Study.
- Storage tracks are needed. A tail track will be included in the design of the station to store a train for layovers and as the turn around for inbound trips. The tail track would be located past the station platform and of sufficient length (about 350 feet) to store a three-vehicle train. Since the refined alternative station is elevated, the tail track would be elevated as well.

The City just recently adopted a **Civic Center Specific Plan for Downtown Santa Monica**. The currently proposed station site may be refined further during preparation of the draft EIR if an alternative location would be more consistent with the goals of the Specific Plan.

- Issue: Bus Connection to Downtown Santa Monica

  The Bus alternatives enter downtown from either the east or the south depending on the option selected. Access to downtown from the east will be via Colorado Avenue. Access from the south would be via Main Street.

  The bus connection to downtown Santa Monica assumes a limited distribution loop around the existing streets. The bus must use a loop to terminate each run and return to the line for the eastbound trip. On-street stops with the typical amenities are proposed for the loop terminus.

  Two loop concepts are needed for the bus alternatives:

  - Loop for Alternatives C, D and E. The Bus would leave Olympic Boulevard at 11th Street and turn north to Colorado to turn west and enter downtown. The bus would continue west to 2nd Street, turn north to Broadway, east to 4th Street and return to Colorado for the outbound trip.
  - Loop for Alternative F. The bus would travel north on Ocean Avenue from Neilson Way to Colorado, turn east one block to Main Street before turning right to return south.

- Issue: Bikeway Connection to Downtown Santa Monica

  The bikeway was described in Section 4.0 with no further refinements identified. In summary, the bikeway would leave the ROW at 17th Street, join the existing Class III Bike Route north to Broadway before turning west to use an extension of the Class II Bike Lanes to continue west to the beach on Broadway.

Segment 7: **La Cienega/Jefferson to ROW at Venice/Robertson**

This segment is contained in Project Alternative D only.

This segment reflects the by-pass designed to limit potential impacts from a transit improvement on the ROW to East Culver City neighborhoods. This segment carries the bus mode in mixed-flow traffic within street right-of-way as an alternative.

Design issues identified by the consultant related to this segment include the following items.

- Issue: Depart ROW at Cochran Avenue

  Similar to the other guideway alternatives, the preferred location is to leave the ROW at Cochran Avenue, east of La Cienega. The bus would enter Jefferson Boulevard at this point to run in mixed-flow to La Cienega before turning north.

  The bus would travel north on La Cienega and turn west on Venice Boulevard.

- Issue: Rejoin the ROW West of Venice/Robertson

  The bus would leave mixed-flow operations on Venice and return to the ROW at the point where the ROW crosses Venice. The westbound movement would be a right turn to the guideway to continue west. The eastbound movement would be a left turn across the westbound bus lane about 250 feet west of Venice to join the I-10 exit ramp to Robertson. The bus would use the signal at the intersection of the ramp with Venice to continue northeast on Venice to La Cienega. Bus vehicles would wait on the ROW for an acceptable gap before entering the ramp roadway. A signal would not be needed.

  With the bus rejoining the ROW west of Venice, the Venice/Robertson stop would need to be placed on-street. Alternatively, a station with parking could be provided along the ROW west of Venice where Exposition Drive intersects Durango Avenue. Access to the site would be via the Durango/Venice intersection or Exposition Boulevard to the west.

Segment 8: **Venice to Sepulveda to ROW**

This segment serves only Project Alternative E.

This segment reflects a by-pass designed to limit potential impacts from a transit improvement on the ROW to Palms/Cheviot Hills/Rancho Park neighborhoods. This segment carries the bus mode in mixed-flow traffic. The Preliminary Planning Study recommended that this alternative create an exclusive bus lane in the median of Venice between Robertson and Sepulveda.

Upon further study in Phase I, traffic analyses indicated significant operational problems would occur if the median was dedicated to exclusive transit use. A number of left turns at unsignalized median breaks would be eliminated, concentrating additional volumes at already congested intersections and subsequently degrading levels of service.

The design of the transition to and from the median onto Sepulveda Boulevard was also a major concern. The westbound (southbound on Venice) buses would need to leave the median east of Sepulveda, possibly as far east as Westwood Avenue in order to weave over the three traffic lanes to turn north on Sepulveda. This movement would potentially disrupt traffic flows, especially during peak periods. For these reasons, the median alignment was not included in the refined alternative. See the discussion for Segment 9 for additional detail on this subject.

Design issues identified by the consultant related to this segment include the following.

- Issue: Depart from the ROW at the Venice/Robertson Station

  This alternative includes the Venice/Robertson stop to be located off-street between Venice and Washington in the triangle south of the short segment of Exposition Boulevard. This site would provide significant parking for patrons. The bus vehicles would leave the stop to the north via Washington and turn left at National Boulevard to connect to the signal at Venice before turning southwest on Venice. For the return trip, bus vehicles would turn right off of Venice into the station to access the guideway bus.

- Issue: Limited Stops On-Street

  Stops for the bus along the Venice and Sepulveda segments would be limited to attempt to maintain a competitive travel speed through the corridor. The stops would be spaced about every mile similar to the stop spacing for the fixed-guideway alternatives. On-street stops would be made in each direction at Overland, Sepulveda/Venice, Palms, National and the ROW.

- Issue: Return to the ROW at Sepulveda/Exposition

  The westbound bus would turn left at the Sepulveda/Exposition intersection and enter the ROW at an off-site stop in this area. Similarly, the eastbound bus would leave the ROW at this point to turn south at Sepulveda at the intersection. A signal would not be needed at the intersection.

Segment 9: **Venice to the Coast and Main/Pacific to Downtown Santa Monica**

This segment serves only Project Alternative F.

This segment reflects a by-pass designed to limit potential impacts to Palms/Cheviot Hills/Rancho Park neighborhood from a transit improvement on the ROW. This segment carries the bus mode in mixed flow.

- Issue: Use Mixed-Flow Operations to Travel Down Venice Boulevard

  The Preliminary Planning Study recommended that this alternative create an exclusive bus lane in the median of Venice Boulevard between Robertson and Lincoln.

  The analyses that were conducted on the conceptual alternative showed several significant problems associated with the design and operation of bus in the median of the street. Because of these problems and the lack of acceptable design options to overcome the problems, exclusive lanes in the median on Venice is not recommended.

  Specifically the following three findings were used to arrive at this conclusion:

  - The traffic analysis showed that preemption of the signals was not possible for any of the study intersections without substantial increases in congestion and delays. Even with partial priority for the bus at signals, only the Sepulveda/Venice intersection could be crossed with acceptable delays. All other intersections would experience significant increases in delay and associated congestion. The lack of any reasonable signal priority would negate much of the speed advantage created by the exclusive median lane.

  - The nature of traffic operations changes significantly along Venice Boulevard with different functions required. East of I-405 to Robertson Boulevard, eight intersections are signal controlled with several other median breaks for left turns into the commercial uses along the north and south sides of the street. A median bus alignment would need to restrict these left turns to signalized intersections. Displaced left turns would then be concentrated at the signals, further reducing available capacity.

  - West of I-405, the Venice Boulevard street section generally has parking and bicycle lanes on each side. The parking helps to serve residential uses on both sides. To accommodate a median guideway, widening would be needed, displacing either parking or the bicycle lanes, or both, especially at intersections. Accommodating a median busway without displacing parking

and/or bicycle lanes, would require acquisition of developed properties in some segments.

Displacement of parking could be a significant impact, since limited off-street parking is available. Removal of the bicycle lane would disrupt a major bicycle improvement on the Westside. This could be partially mitigated by relocating the bicycle lane to Palms Boulevard. However, since Palms Boulevard does not run the full length of Venice Boulevard either to the east or the west, many cyclists would have to detour off of Venice Boulevard onto Palms, a half mile away, and then back onto Venice to complete their trips.

In addition, if an exclusive lane in the median of Venice was constructed, there would be inadequate space within the existing street to provide a wide enough waiting area at the proposed median bus stops for patrons. At these bus stop locations, sidewalks would have to be narrowed, and the street reconfigured or, where that would not be possible, additional right-of-way purchased, in order to provide additional space in the median for patron loading area. Also, median construction along the length of Venice Boulevard would require the removal of significant amounts of landscaping, decreasing the visual attractiveness of the area.

Instead of exclusive bus lanes in the median of Venice Boulevard, bus only lanes were considered along the outside lane (curb lane) in both directions along Venice Boulevard. Provision of these lanes would require the removal of parking and/or the bicycle lane or additional property acquisitions along some portions of the alignment the same as discussed above for the median busway facility. (It may be possible along limited stretches of Venice Boulevard to widen the paved street area into the parkway area and still leave adequate sidewalk space in order to provide the exclusive bus lane without removing parking or the bike lane.) In either case, the exclusive lane for the bus would have to be shared with vehicles making right turns onto arterials, minor streets, and driveways; cars maneuvering to get in and out of parking spaces; and local buses making frequent stops. This would take away from the speed advantage of the exclusive lane.

The recommended refined alternative for this project route is to assume that the buses travel in mixed flow operations along Venice Boulevard west of Robertson Boulevard and utilize the Exposition ROW as an exclusive busway east of Robertson.

- Issue: Depart from ROW at Venice/Robertson Station

  Assuming mixed-flow operations on Venice, the bus would leave the guideway at the Venice/Robertson off-street stop similar to the discussion in Segment 7.

- Issue: Mixed-Flow on Neilson/Pacific and Main

  The bus would turn onto Venice Way west of Lincoln. The northbound buses would be routed to Pacific Avenue to turn north. Pacific is renamed Neilson Way and then Ocean Avenue as the road nears downtown Santa Monica. Northbound buses would operate in mixed-flow with a stop far-side at Windward Avenue in Venice, a stop at Ocean Park Boulevard and the downtown Santa Monica stop at Colorado Avenue.

  The southbound trip would originate at Colorado/Main and travel south along Main in mixed flow traffic with stops at the same cross-streets as the northbound leg. Southbound buses would turn off of Main Street onto Venice Way and then left onto Venice Boulevard to return to Downtown Los Angeles.

  Since the bus would be running in general traffic lanes, no special design features are needed. The transit vehicles would utilize curbside stops, typically in the parking lane along the route.

  Recent work by citizens of Santa Monica along Main Street have narrowed the cross-section to one lane in each direction with parking lanes. Although the buses would operate within the single lane with other traffic, delays to general traffic would be limited. This is because the bus stops would be widely spaced and transit vehicles would move out of the lane to the curb to stop, allowing other vehicles to pass.

3.7.2 Capital Costs of Refined Alternatives

Capital cost estimates were prepared for each of the alternatives using the refined descriptions and plan and profile drawings. This section summarizes the estimates which were computed in current 1993 dollars.

Capital Cost Assumptions

A methodology was developed to estimate capital costs using data from the Rail Construction Corporation (RCC) of the MTA and other local sources. A build-up estimate using the changes in cross-section multiplied by the length of the segment was employed. Key assumptions used in this work include:

- The LRT options begin at Vermont Avenue/Exposition Boulevard and terminate at Main Street/Colorado Avenue in Santa Monica.
- The bus options begin at Broadway/Exposition Boulevard and terminate at 4th Avenue/Colorado Avenue in Santa Monica.
- The estimates for the bikeway assume Vermont/39th Avenue and Ocean Avenue in Santa Monica as the project limits.
- No hazardous materials appear to be located within the route alternatives.

- The conceptual costs for each option and route location are divided into three categories.
  - Construction costs
  - Right-of-way costs
  - Support costs
- Vehicle costs were assumed as follows:
  - LRT Alternatives A and B - 38 vehicles each
  - Bus Alternative C - 27 vehicles
  - Bus Alternative D - 30 vehicles
  - Bus Alternative E - 32 vehicles
  - Bus Alternative F - 34 vehicles
- A light maintenance facility and storage yard for LRT is assumed for the parcel between 26th and Stewart for Alternatives A and B.
- The bus alternatives would use available MTA sites such as the yard and shops at Division 5 on 54th Street at Van Ness Avenue.
- Unit cost assumptions were reviewed by the RCC staff prior to preparation of this estimate.

Right-of-Way Costs

The estimated acquisition costs for station site areas and other minor site refinements were developed based on comparable land values in the adjacent areas obtained from James Wiley, MTA Manager of Real Estate, recent transactions recorded at the County Assessor's office and on professional judgment. Right-of-way costs include relocation of uses and clearing of the acquired parcels.

Support Costs

Support costs are allowances for contingencies, engineering design, construction management, project administration and start-up. Since the project design is conceptual, a contingency of 25% is applied to both construction and right-of-way costs for unforeseen expenses. The cost of administration, engineering and construction management is estimated at 25% of the base plus contingency. Start-up costs are estimated to be 2% of the base cost plus contingency. In addition to the items listed above, an allowance for testing and pre-ops, insurance and master agreements are estimated at 20% of the base cost, plus contingency.

Conceptual Cost Estimates

The capital cost summary for each alternative is presented in Table 3.9. Detailed estimates by design segment are available under separate cover as Appendix F.

TABLE 3.9
SUMMARY OF CAPITAL COSTS
(MILLIONS OF 1993 DOLLARS)
REFINED ALTERNATIVES

Cost Item	A LRT on Expo	B LRT to I-10	C Bus on Expo	D Bus to/ La Cienega	E Bus to Sepulveda	F Bus to Main/ Pacific	G Bikeway
Construction	299.796	300.506	102.700	89.333	47.378	28.765	18.920
Vehicles (number of Vehicles)	98.800 (38)	98.800 (38)	17.550 (27)	19.500 (30)	20.800 (32)	22.100 (34)	0
Right-of-Way, Add-Ons, Contingencies	509.118	504.52	180.900	148.662	96.727	71.274	11.500
Total Capital Cost	907.714	903.826	301.150	257.495	164.905	122.139	30.420
Length (miles)	12.26	12.34	12.36	12.88	13.17	13.39	12.28
Total Cost per mile	$74.039	$73.24	$24.358	$19.991	$12.517	$9.122	$2.48
Total Cost with Alternative plus Alternative G - Bikeway	938.134	934.246	331.570	287.915	195.325	152.559	

SOURCE: BRW, Inc.; October 5, 1994.

3.8 DESIGN VARIATIONS OF THE REFINED ALIGNMENT

The Refined Alignments described in the previous section reflects the culmination of a number of technical inputs and requirements with consideration of community concerns. At this stage of the evaluation process, the Refined Alignments represent the most cost-effective guideway design which would result in no further degradation to traffic operations and limit potential adverse affects to existing uses.

However, many additional enhancements have been suggested during reviews by the public and other agencies. The enhancements would build upon the Refined Alignment to help in meeting other objectives in the Corridor, such as inclusion of additional grade separations or additional design treatments to limit potential intrusion. Additional enhancements such as sound walls, berms, aesthetic treatments and other features could also be identified in the Environmental Impact Report (EIR) as required to mitigate significant adverse impacts. The enhancements discussed in this section are not currently recommended as part of the refined alternatives but would be recommended as appropriate during the EIR analysis to mitigate significant adverse impacts.

LRT Enhancement Options

To examine the potential effects of several enhancements on capital costs and on transit service in terms of travel time, four enhancement options for LRT were developed:

- Option 1: Grade Separate at All Major Arterial Street Crossings - This option includes additional grade separations, usually as an overpass, at major arterials where the traffic analysis in Section 3.3 showed operations were very close to capacity. This option would grade separate an additional 14 locations:
  - Vermont Avenue
  - Budlong Avenue
  - Normandie Avenue
  - Denker Avenue
  - Western Avenue
  - Rodeo Road/Gramercy Place
  - Arlington Avenue
  - 3rd Avenue
  - Crenshaw Boulevard
  - Barrington Place
  - Stewart Street
  - 26th Street
  - Cloverfield Boulevard
  - Olympic Boulevard (eastbound only)
- Option 2: Depressed Profile Through Residential Areas - This option attempts to run the profile grade of the LRT guideway below ground-level through residential areas. In this manner, noise and visual affects

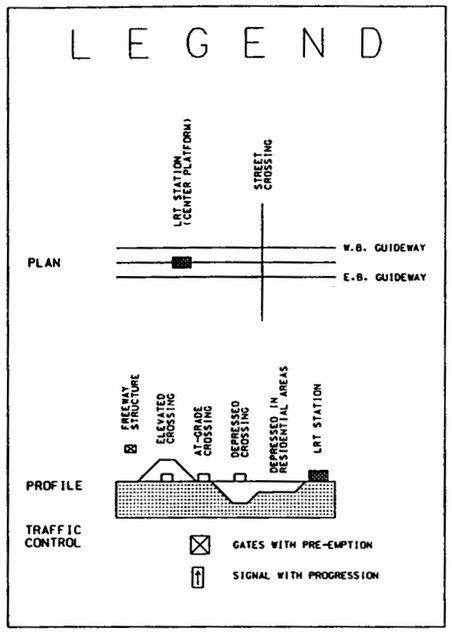
of the guideway could be limited. This option was generated in a conceptual manner prior to conducting definitive environmental studies.

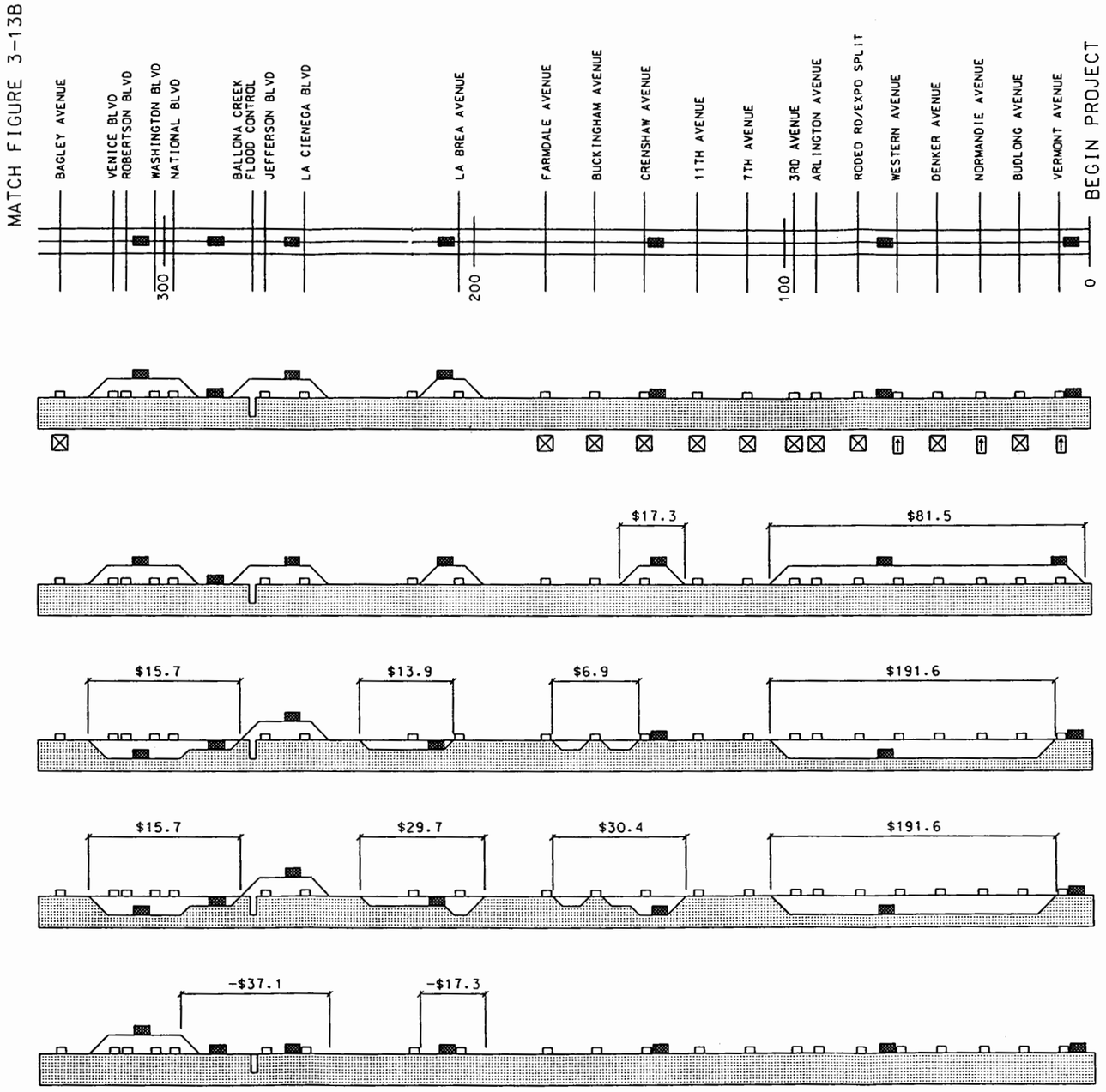
- Option 3: Grade Separations at All Major Crossings Plus Depressed Profile Through Residential Areas - This option combines Options 1 and 2. In some cases, underpasses are required rather than overpasses to conform to the objective of remaining below grade in residential areas.

- Option 4 for LRT: Priority/Progression At-Grade with Signal Control - This option would use the concept of the interactive "smart" corridor type of signal control to achieve priority at major arterials and minor streets as described in Section 3.4.5. This concept would reduce the need for, and cost of, grade separations and would minimize the use of gated crossings. However, as previously discussed, for the LRT, this option would slightly increase travel times, reduce patronage, and reduce the amount of physical separation between cars and trains at intersections.

Figures 3-13a and 3-13b represent schematic profiles of the LRT Refined Alignment and the four options within the ROW. Cost estimates are made of each variation within an option compared to the Refined Alignment. Table 3.10 summarizes the costs of the options compared with the Refined Alignment for LRT in the right-of-way.

LEGEND





	CAPITAL COSTS IN MILLIONS
OPTION 1: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS	$405.3
OPTION 2: DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS	$504.1
OPTION 3: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS PLUS DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS	$633.4
OPTION 4: PRIORITY/PROGRESSION SIGNAL CONTROL OF ARTERIAL CROSSINGS WITH SMART CORRIDOR TECHNOLOGY	$672.7
	$350.9

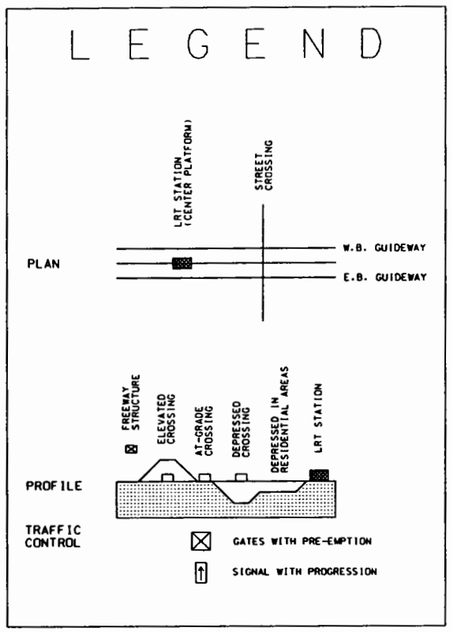
NOTES:
1. GEOMETRIC IMPROVEMENTS NECESSARY FOR AT-GRADE SIGNAL CONTROL.
2. THE TRANSIT PROFILE CANNOT BE DEPRESSED AT BAGLEY BECAUSE OF THE RISING GROUND-LINE TO THE WEST, AND THE ADJACENT I-10 EMBANKMENT.
3. COSTS INCLUDE CONSTRUCTION, RIGHT-OF-WAY, ADD-ONS, VEHICLES AND CONTINGENCIES.

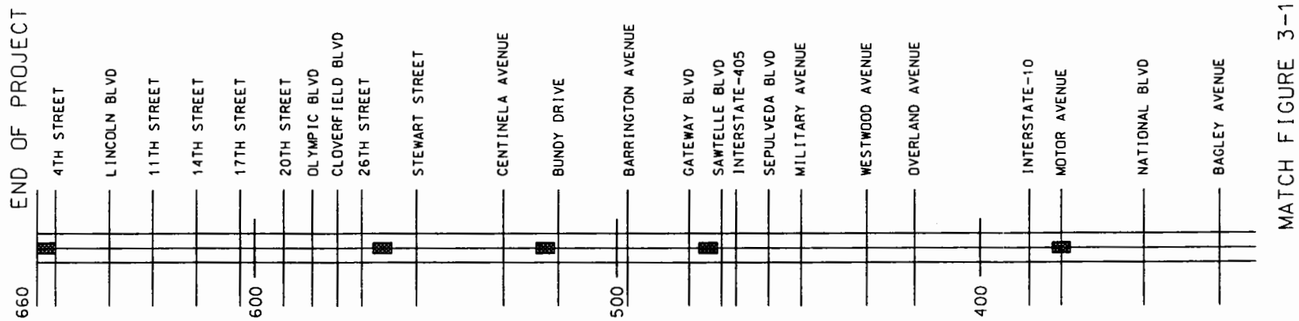
BRW
MTA
EXPOSITION RIGHT-OF-WAY
Alternatives Refinement/ Environmental Impact Report Study
Source: BRW Inc. December 1994

Alternative A - LRT in Exposition Right-of-way Design Options

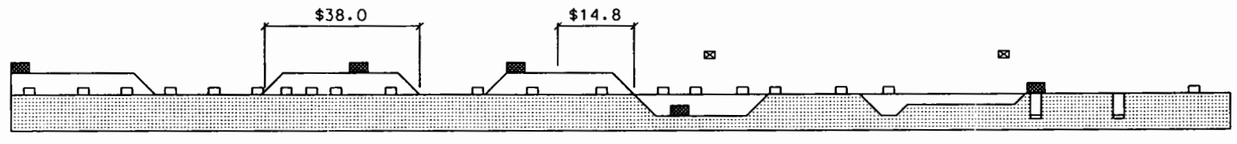
0 2000' 4000'
SCALE IN FEET

FIG. 3-13A

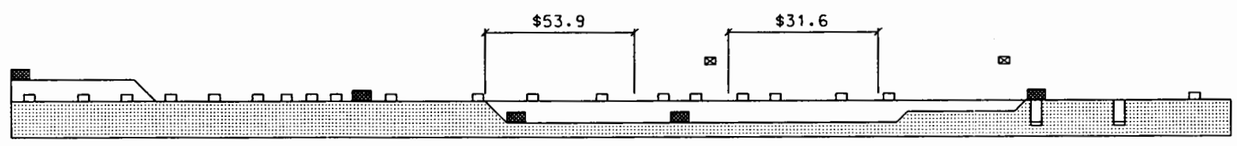




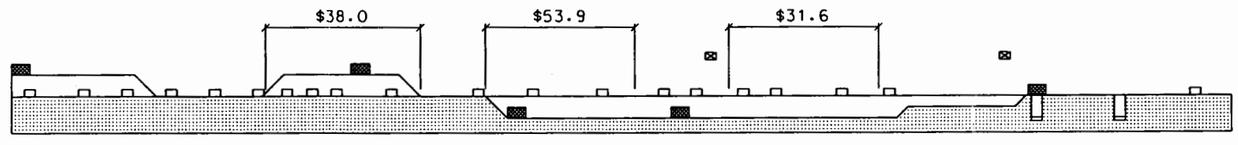
MATCH FIGURE 3-13A



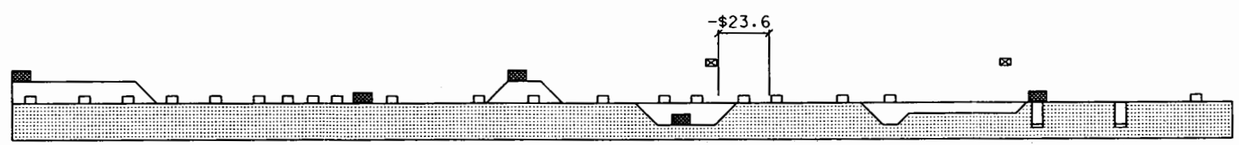
OPTION 1: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS



OPTION 2: DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS



OPTION 3: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS PLUS DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS



OPTION 4: PRIORITY/PROGRESSION SIGNAL CONTROL OF ARTERIAL CROSSINGS WITH SMART CORRIDOR TECHNOLOGY

CAPITAL COSTS IN MILLIONS
$502.4
$555.2
$587.9
$625.9
$478.8

NOTES:
1. GEOMETRIC IMPROVEMENTS NECESSARY FOR AT-GRADE SIGNAL CONTROL.
2. THE TRANSIT PROFILE CANNOT BE DEPRESSED AT BAGLEY BECAUSE OF THE RISING GROUND-LINE TO THE WEST, AND THE ADJACENT I-10 EMBANKMENT.
3. COSTS INCLUDE CONSTRUCTION, RIGHT-OF-WAY, ADD-ONS, VEHICLES AND CONTINGENCIES.

BRW
MTA
EXPOSITION RIGHT-OF-WAY
Alternatives Refinement/ Environmental Impact Report Study
Source: BRW Inc. December 1994

Alternative A - LRT in Exposition Right-of-way Design Options

0 2000' 4000'
SCALE IN FEET

FIG. 3-13B

TABLE 3.10
SUMMARY OF GUIDEWAY CAPITAL COSTS FOR ENHANCED OPTIONS
(Costs in Millions of 1993 Dollars)

Enhancement Options		LRT	
		Cost[1]	Chg to Refined Alt
Refined Alternatives			
	• Vermont to Venice	405.3	-
	• Venice to 4th/Colorado	502.4	-
	• Total	907.7	-
Option 1:	Separations at All Major Arterial Crossings		
	• Vermont to Venice	504.1	+29%
	• Venice to 4th/Colorado	555.2	+11%
	• Total	1,059.3	+12%
Option 2:	Depress Profile Through Residential Areas		
	• Vermont to Venice	633.4	+56%
	• Venice to 4th/Colorado	587.9	+17%
	• Total	1,221.3	+35%
Option 3:	Grade Separations at All Major Arterial Crossings Plus Depressed Profile Through Residential Areas		
	• Vermont to Venice	672.7	+66%
	• Venice to 4th/Colorado	625.9	+25%
	• Total	1,298.6	+43%
Option 4:	Priority/Progression At-Grade with Signal Control		
	• Vermont to Venice	350.9	-13%
	• Venice to 4th/Colorado	478.8	-5%
	• Total	829.7	-9%

SOURCE: BRW, Inc., July 18, 1994.

[1] Costs include construction, right-of-way, add-ons, vehicles and contingencies.

Busway Enhancement Options

The Busway Alternative reflects a lower cost approach to providing the capacity available from guideway transit service. More at-grade crossings are used in the Recommended Alternative. Potential enhancements build on this concept with additional grade separations to improve travel speeds and reliability.

Four enhancement options were developed:

- Option 1: Grade Separate at High Volume Street Crossings - This option includes additional grade separations, usually as an overpass, at major arterials where the traffic analysis in Section 3.3 showed operations were very close to capacity. This option adds grade separations to 11 locations:

  - Arlington Avenue
  - 3rd Avenue
  - Crenshaw Boulevard
  - La Brea Boulevard
  - La Cienega Boulevard
  - Jefferson/National Intersection
  - Sepulveda Boulevard
  - Stewart Street
  - 26th Street
  - Cloverfield Boulevard
  - Olympic Boulevard (eastbound only)

- Option 2: Depressed Profile Through Residential Areas - This option attempts to run the profile grade of the Bus or LRT guideway below ground-level through residential areas. In this manner, potential adverse affects of the guideway could be limited. This option was generated in a conceptual manner prior to conducting definitive environmental studies.

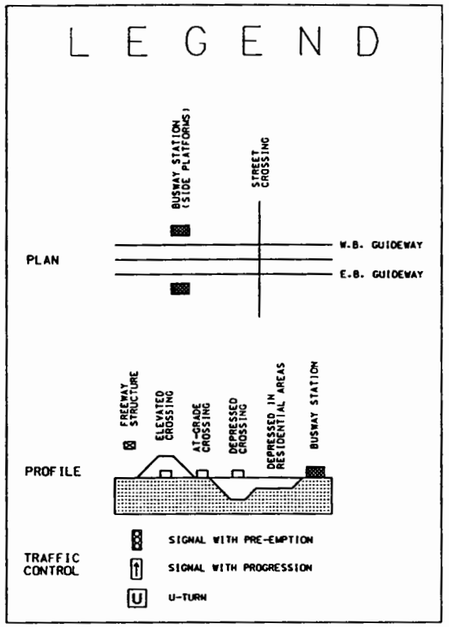
- Option 3: Grade Separation at All Major Arterial Street Crossings - This option builds upon Option 1 by adding seven more grade separations at the following locations:

  - Vermont Avenue
  - Budlong Avenue
  - Normandie Avenue
  - Denker Avenue
  - Western Avenue
  - Rodeo Road/Gramercy Place
  - Barrington Avenue

- Option 4: Grade Separations at All Major Crossings Plus Depressed Profile Through Residential Areas - This option combines Options 2 and 3. In some cases, underpasses are required rather than overpasses to conform to the objective of remaining below grade in residential areas.

Figures 3-14a and 3-14b represent schematic profiles of the Busway Refined Alignment and the four options within the ROW. Cost estimates are made of each variation within an option compared to the Refined Alignment.

Table 3.11 summarizes the costs of the guideway and systems portions of the options compared with the Refined Alignment. Vehicle costs, all add-ons and contingencies are contained in the cost totals.



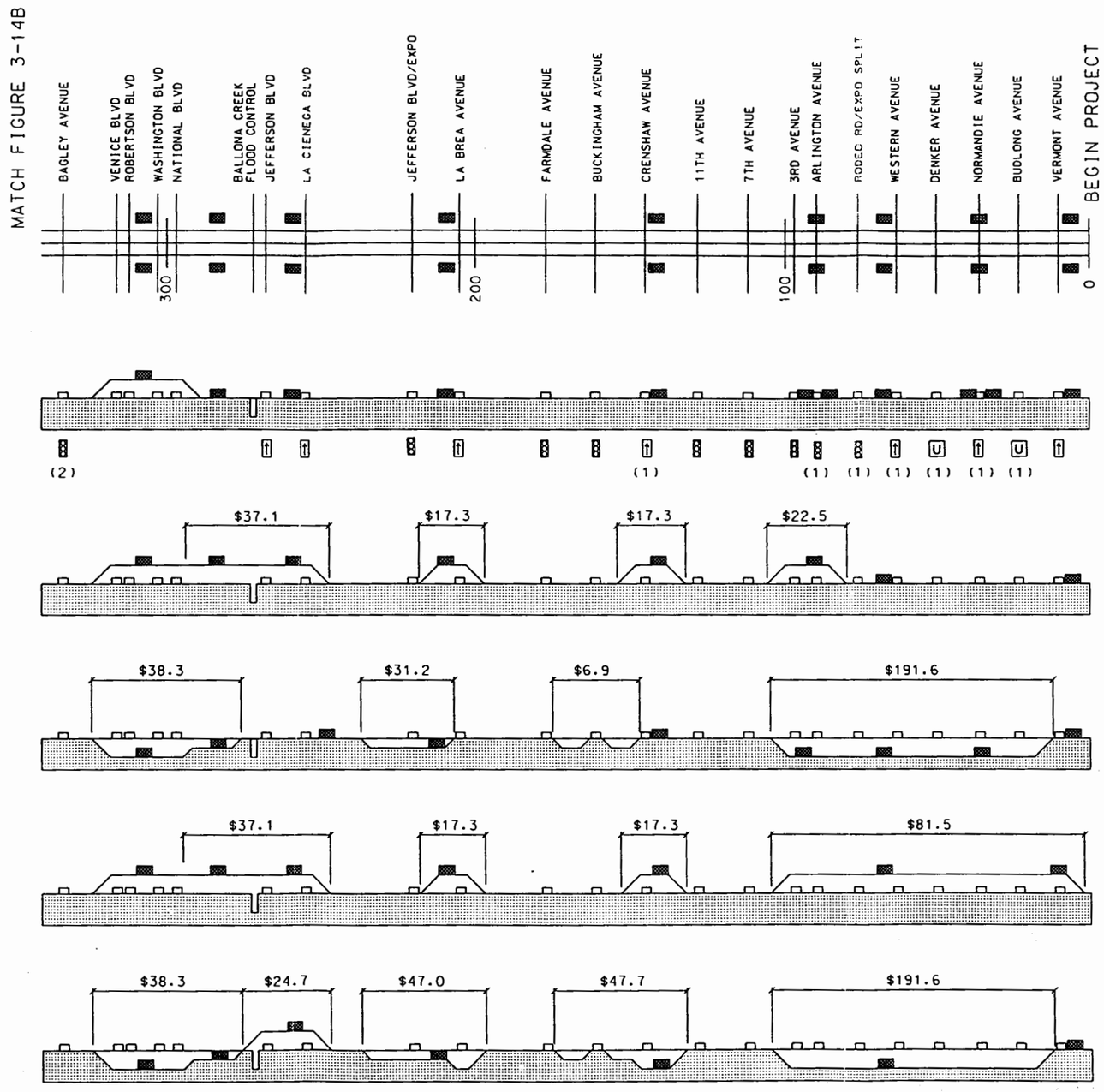
PLAN

STATIONING

REFINED OPTION

PROFILE

TRAFFIC CONTROL



	CAPITAL COSTS IN MILLIONS
OPTION 1: GRADE SEPARATE AT HIGH VOLUME STREET CROSSINGS	$100.8
OPTION 2: DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS	$195.0
OPTION 3: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS	$368.8
OPTION 4: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS PLUS DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS	$254.0
	$450.1

NOTES:
1. GEOMETRIC IMPROVEMENTS NECESSARY FOR AT-GRADE SIGNAL CONTROL.
2. THE TRANSIT PROFILE CANNOT BE DEPRESSED AT BAGLEY BECAUSE OF THE RISING GROUND-LINE TO THE WEST, AND THE ADJACENT I-10 EMBANKMENT.
3. COSTS INCLUDE CONSTRUCTION, RIGHT-OF-WAY, ADD-ONS, VEHICLES AND CONTINGENCIES.

BRW

MTA

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

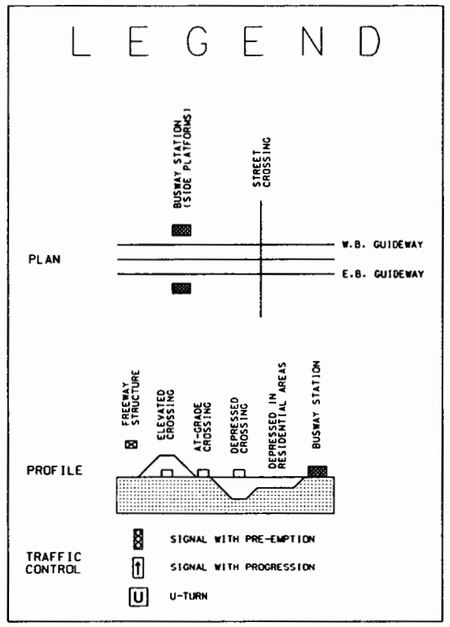
Source: BRW Inc. December 1994

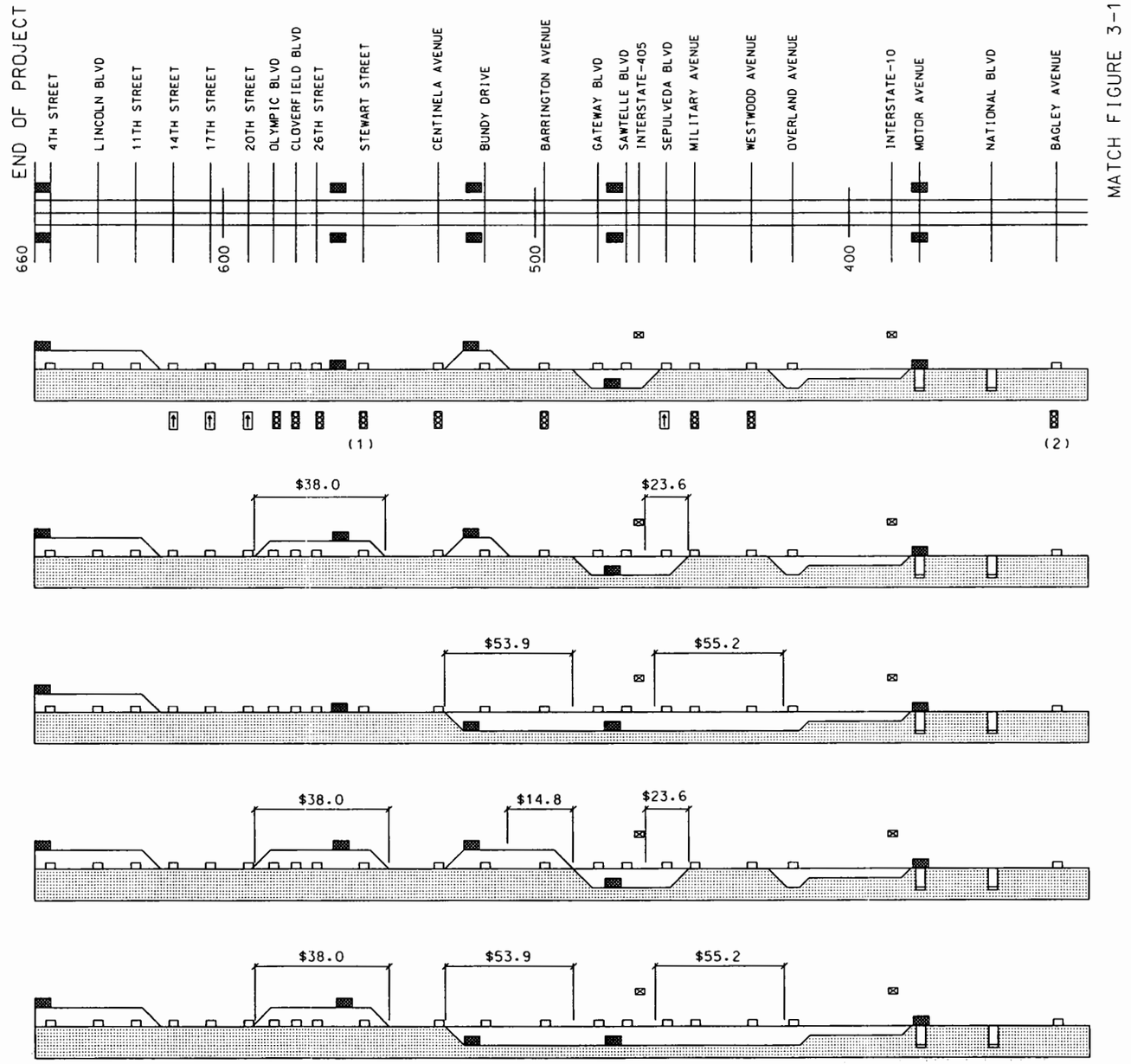
Alternative C - BUSWAY in Exposition Right-of-way Design Options

0 2000' 4000'

SCALE IN FEET

FIG. 3-14A





	CAPITAL COSTS IN MILLIONS
OPTION 1: GRADE SEPARATE AT HIGH VOLUME STREET CROSSINGS	$200.3
OPTION 2: DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS	$261.9
OPTION 3: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS	$309.4
OPTION 4: GRADE SEPARATIONS AT ALL MAJOR ARTERIAL CROSSINGS PLUS DEPRESSED PROFILE THROUGH RESIDENTIAL AREAS	$276.7
	$347.4

NOTES:
1. GEOMETRIC IMPROVEMENTS NECESSARY FOR AT-GRADE SIGNAL CONTROL.
2. THE TRANSIT PROFILE CANNOT BE DEPRESSED AT BAGLEY BECAUSE OF THE RISING GROUND-LINE TO THE WEST, AND THE ADJACENT I-10 EMBANKMENT.
3. COSTS INCLUDE CONSTRUCTION, RIGHT-OF-WAY, ADD-ONS, VEHICLES AND CONTINGENCIES.

BRW
MTA
Source: BRW Inc. December 1994

EXPOSITION RIGHT-OF-WAY
Alternatives Refinement/ Environmental Impact Report Study

Alternative C - BUSWAY in Exposition Right-of-way Design Options

0 2000' 4000'
SCALE IN FEET

FIG. 3-14B

TABLE 3.11
SUMMARY OF GUIDEWAY CAPITAL COSTS FOR ENHANCED OPTIONS
(Costs in Millions of 1993 Dollars)

Enhancement Options		BUSWAY	
		Cost[1]	Chg to Refined Alt
Refined Alternatives			
	• Vermont to Venice	100.8	-
	• Venice to 4th/Colorado	200.3	-
	• Total	301.1	-
Option 1:	Grade Separate High Volume Arterials		
	• Vermont to Venice	195.0	+66%
	• Venice to 4th/Colorado	261.9	+30%
	• Total	456.9	+45%
Option 2:	Depress Profile Through Residential Areas		
	• Vermont to Venice	368.8	+187%
	• Venice to 4th/Colorado	309.4	+54%
	• Total	678.2	+109%
Option 3:	Grade Separate All Major Streets		
	• Vermont to Venice	254.0	+107%
	• Venice to 4th/Colorado	276.7	+38%
	• Total	530.7	+66%
Option 4:	Grade Separate All Major Streets and Depress Profile Through Residential Areas		
	• Vermont to Venice	450.1	+244%
	• Venice to 4th/Colorado	347.4	+72%
	• Total	797.5	+143%

SOURCE: BRW, Inc.; July 18, 1994.

[1] Costs include construction, right-of-way, add-ons, vehicles and contingencies.

4.0 Evaluation

4.1 OVERVIEW

The design of the evaluation framework should enable a clear identification of the differences among the candidate alternatives. The purpose of the evaluation process in Phase I: Alternatives Refinement was to concentrate on key areas of difference and to identify implications and trade-offs in a manner to facilitate decision making and the selection of the alternatives to be considered in Phase II: EIR.

Each alternative was measured and compared based on the following four general categories of criteria:

- **Mobility -** The degree to which each alternative improves transit travel times and congestion problems in the Corridor.

- **Environmental/Community -** The degree to which each alternative meets local, regional and community objectives such as minimization of adverse impacts, enhanced regional air quality and economic development opportunities.

- **Cost Effectiveness -** The degree to which performance and transportation benefits of each alternative compare with the total project costs.

- **Operating-Efficiency -** The degree to which changes in transit network operations associated with each of the alternatives compare relative to saving or reducing operating costs.

A number of evaluation measures related to each of these general criteria were identified and used in the screening. The evaluation measures were applied to each of the alternatives, and a summary of the evaluation results was prepared. Because not as much detail is known at this point of the initial screening as will be known at the end of the DEIR phase, selected evaluation criteria and measures, particularly those related to specific environmental impacts, were deferred until the final evaluation. This section presents the results of the Phase I evaluation.

4.2 MOBILITY AND TRANSPORTATION EFFECTIVENESS

This section presents the results of the patronage analysis and the comparison of alternatives using these results.

4.2.1 Patronage Estimates Methodology

Patronage forecasts were obtained using the MTA's Red Line Travel Demand Model. This model was developed under MTA guidance to meet requirements for transit project planning in the Los Angeles metropolitan area. The model reflects typical weekday ridership using a regionally adopted set of assumptions.

Year 2010 forecasts of demographic and socioeconomic information for the model were provided by SCAG. This information includes forecasts of population, employment, housing, land use, income, auto ownership, parking costs, and gasoline costs, among other factors.

The patronage model is conservative to the extent that the forecasts do not assume any transportation demand management policies over the next 20 years that would encourage transit ridership such as increased parking pricing, gasoline taxes, or more stringent air quality regulations. Also, because it generates ridership based on residential dwelling units and employment, the model underestimates ridership from what is known as "special generators" such as the Santa Monica beaches and the Santa Monica Pier.

The network assumptions (future highways, HOV lanes, rail lines, buses) for the Year 2010 were based primarily on the fundable components of the MTA's adopted **30-Year Integrated Transportation Plan**. The Metro Red Line was assumed to be completed and operational to Westwood.

The LRT alternative in the Exposition Corridor was modeled as a segment of a longer, continuous line that extends from Burbank to Santa Monica. The route through Downtown Los Angeles follows the planned Downtown Blue Line Connector between Union Station and 7th and Flower Streets, the Exposition Park Branch of the Blue Line to Vermont Avenue, and west on the Exposition ROW to Santa Monica.

The bus alternatives were modeled as operating from Union Station to Santa Monica. The Downtown portion of the bus routes were modeled as traveling south on Broadway from Union Station through the LA CBD and then heading west on the Exposition ROW and route variations to Santa Monica.

The assumptions used in the model runs regarding station locations, park-and-ride, service frequency, travel times, and operating speeds for each alternative are outlined in detail in Sections 3.3 and 3.4 of this report, at the beginning of the alternatives refinement chapter.

4.2.2 Ridership and Mode of Access

In this section, patronage forecasts for each of the alternatives are summarized in terms of total ridership, total boardings by route segment and by mode of access.

Line Ridership

For purposes of this report, it was assumed that the MTA Board will have made an independent decision to construct a light rail connection from Vermont Avenue to downtown Los Angeles, (e.g., the planned Exposition Park Branch). Thus, ridership estimates for the light rail are only for the additional increment of extending west of Vermont Avenue to Santa Monica. The patronage forecasts indicate that 4,380 boardings on the Exposition Park Branch would be directly attributable to the extension west of Vermont Avenue. These boardings have therefore been attributed to the ridership of the LRT extension from Vermont Avenue to Santa Monica.

For the bus alternatives, this report assumes that buses would continue into downtown Los Angeles rather than force a transfer of all patrons to rail at Vermont Avenue. Thus, bus ridership figures included all boardings from downtown Los Angeles.

Changes in the line ridership are an important indication of the ability of each alternative to serve corridor travel demands. Table 4.1 shows line ridership forecasts on a daily basis.

TABLE 4.1
LINE RIDERSHIP FORECASTS
EXPOSITION ROW PROJECT ALTERNATIVES

ALTERNATIVE	TOTAL DAILY RIDERSHIP
A/B - LRT on ROW Vermont Ave. to 4th/Colorado*	40,220
C - Bus on ROW Union Station to 4th/Colorado	28,290
D - Bus on ROW with La Cienega Routing Union Station to 4th/Colorado	25,150
E - Bus on ROW with Venice/Sepulveda Routing Union Station to 4th/Colorado	26,910
F - Bus on ROW to Venice to Coast Union Station to 4th/Colorado	20,980

SOURCE: MTA; May, 1994.

* NOTE: LRT ridership is for Vermont Avenue to 4th/Colorado only. Includes 4,380 boardings from Exposition Park Branch segment that are directly attributable to LRT extension west of Vermont Avenue. Bus alternatives include all boardings from Union station to 4th/Colorado.

Station Boardings

Total daily station boardings along each of the Exposition ROW Corridor alternatives are summarized by route segment in Table 4.2. Appendix D contains Tables D-1a through D-5a providing a list of boardings at each station for each alternative.

TABLE 4.2
STATION BOARDINGS BY CORRIDOR ALTERNATIVE
(2010 DAILY LINKED TRIPS)

ALTERNATIVE	NUMBER OF DAILY BOARDINGS				
	4th/Colorado to Venice/Robertson	Venice/Robertson to Vermont	Subtotal: 4th/Colorado to Vermont	Vermont to Union Station	Total 4th/Colorado to Union Station
A/B - LRT	16,220	19,620	35,840	51,000*	86,840
C - Bus	10,480	12,170	22,650	5,650	28,300
D - Bus	9,060	10,610	19,670	5,480	25,150
E - Bus	10,770	10,600	21,370	5,540	26,910
F - Bus	6,190	9,290	15,480	5,500	20,980

SOURCE: MTA; December 10, 1993.

* Approximately 4,380 of the boardings made on the segment between Vermont and Union Station are attributable to the extension of the line to 4th/Colorado.

Station Mode of Access

The mode of access used by patrons to reach the Corridor transit improvement is important to measure the activity levels around stations. Available access mode types consist of walk, bus, auto-park and auto-drop off.

Because of the differences in available facilities and adjacent land uses, each station will exhibit different access demands. At the corridor-level, the information is useful to show the overall access demands and the number of riders transferring from other transit lines. Table 4.3 provides a summary of mode of access for the alternatives at the corridor-level.

At the site specific-level, mode of access is useful to assess activity levels and traffic impacts. Such site specific analyses would be conducted in the EIR phase. Tables D.1 to D.5 in Appendix D break down the total estimated boardings at each station between Vermont Avenue and 4th/Colorado by the mode of access to that station for each alternative.

TABLE 4.3
SUMMARY OF STATION MODE OF ACCESS
CORRIDOR - 2010 DAILY
(Vermont Avenue to 4th/Colorado)

	BOARDINGS (%)				
ALTERNATIVE	AUTO PARK	AUTO DROP-OFF	WALK	BUS	TOTAL
A - LRT on ROW	2,450 (6.8%)	2,000 (5.6%)	11,670 (32.6%)	19,720 (55.0%)	35,840
B - LRT on ROW, I-10	2,450 (6.8%)	2,000 (5.6%)	11,670 (32.6%)	19,720 (55.0%)	35,840
C - Bus on ROW	870 (3.8%)	2,170 (9.6%)	8,550 (37.8%)	11,060 (48.8%)	22,650
D - Bus on ROW to La Cienega	770 (3.9%)	1,910 (9.7%)	7,740 (39.4%)	9,250 (47.0%)	19,670
E - Bus on ROW to Sepulveda	670 (3.1%)	2,030 (9.5%)	10,290 (48.2%)	8,380 (39.2%)	21,370
F - Bus on ROW to Venice to Coast	210 (1.4%)	2,080 (13.4%)	7,090 (45.8%)	6,100 (39.4%)	15,480

SOURCE: MTA; December 10, 1993.

4.2.3 Mobility/Transportation Effectiveness

The following observations are made concerning the ridership estimates:

- The LRT alternatives result in the highest corridor boardings. The LRT alternatives are forecast to attract over 40 percent more boardings than the bus options.

- The highest corridor boardings of the Bus options are found in Alternative C on the ROW. The next highest Bus Corridor boardings are found in Alternative E which uses the Venice/Sepulveda diversion from the ROW. Alternative E is 1,380 daily boardings lower than Alternative C, or a drop of about 5%.

- The LRT alternatives have more boardings by 12,000 over the best Bus Alternative C. These numbers indicate that substantially more trips can be served by LRT in the Exposition Corridor than bus, thus more broadly serving travel desires.

- The more direct and shorter alternatives generate higher ridership. These are the options which remain on the Exposition ROW or close to the same alignment without substantial departure (Alternatives A, B and C). In the case of the bus

alternatives, Alternative C attracts a minimum of 5% more riders than Alternative E - Venice/Sepulveda, which is the next best bus option. The difference in ridership can be explained by the longer travel time required for the alternatives which depart from the ROW.

- The poorest performing bus option is Alternative F - Venice to the Coast. This alternative generates ridership of about 20,980 riders which is 48% less than the LRT alternatives and 26% less than Alternative C - Bus on the ROW. This is due to the longer travel time and to the fact this alternative serves a different travel shed. Boardings for the segment from 4th/Colorado to Venice/Robertson for Alternative F are much lower than bus on the ROW (41%) or LRT on the ROW (62%). On a boardings per mile of alignment basis, Alternative F attracts only 746 riders per mile while Alternative C attracts 1,617 riders per mile for the 4th/Colorado to Venice/Robertson segment.

4.3 CORRIDOR PROFILES

This section presents a focused initial overview of selected socio-economic, demographic and land use characteristics related to the project alternatives. These considerations were then used to make an initial evaluation of the alternatives. Corridor profiles were developed to provide a preliminary indication of sensitivities in the corridor, but should not be considered as a substitute for the EIR analysis which would be considerably more detailed.

4.3.1 Setting

The Corridor is located within the western portion of the Los Angeles metropolitan region. The area is bounded by Main Street in downtown Los Angeles to the east, Slauson Avenue to the south, the Pacific Ocean to the west and Wilshire Boulevard to the north. A closely focused survey of land use and socioeconomic characteristics was conducted for an area generally defined as city blocks within or intersected by a line 750 feet on each side of the alternative alignment. Corridor profiles were developed from this information. The width of the study area would be narrowed substantially during the EIR work.

Detailed land use data were obtained from Los Angeles County Tax Assessor information contained on DAMAR CD-ROM data disks. Detailed population data were obtained from the 1990 U.S. Census data. Census information is organized by census tracts which include roughly 5,000 people each. Table 4.4 summarizes the results of the land use and socioeconomic survey conducted within the study area for each alternative.

TABLE 4.4
CORRIDOR PROFILES OF PROJECT ALTERNATIVES [1]

Evaluation Area	Alternative A (LRT)		Alternative B (LRT)		Alternative C (Bus)		Alternative D (Bus)		Alternative E (Bus)		Alternative F (Bus)		Alternative G (Bikeway)	
LAND USE (Includes all parcels in blocks wholly or partially captured by a line extending 750 ft. on each side of the proposed alternatives)														
Composition/Breakdown:	BLDG. FT.²	LOT FT.²	BLDG. FT.²	LOT FT.²	BLDG. FT.²	LOT FT.²	BLDG. FT.²	LOT FT.²	BLDG. FT.²	LOT FT.²	BLDG. FT.²	LOT FT.²	BLDG. FT.²	LOT FT.²
% Residential	57%	53%	56%	52%	54%	48%	56%	58%	55%	47%	70%	58%	57%	53%
% Commercial	14%	9%	15%	9%	14%	8%	15%	8%	16%	10%	11%	8%	14%	9%
% Commercial - Retail/Wholesale	8%	5%	8%	5%	8%	5%	8%	6%	9%	7%	8%	6%	8%	5%
% Industrial	20%	17%	20%	18%	22%	17%	20%	7%	18%	15%	8%	7%	20%	17%
% Institutional	1%	14%	1%	14%	2%	20%	2%	19%	2%	19%	2%	19%	1%	14%
% Cemeteries	0%	<1%	0%	<1%	0%	<1%	0%	<1%	<1%	<1%	<1%	<1%	0%	<1%
% Vacant Lot	0%	2%	0%	2%	0%	2%	0%	2%	0%	2%	1%	2%	0%	2%
Sensitive Receptors Within Profile Area:														
Total # Residences	16,967		16,678		17,200		18,038		21,448		31,929		16,967	
Total # Schools	24		22		24		25		30		26		24	
Total # Hospitals	2		2		2		2		3		3		2	
Total # Churches	11		11		13		13		16		26		11	
Total # Parks	9		8		11		10		9		10		9	
Historic Properties/Buildings:														
Listed on the National Register	0		0		0		0		1		5		0	
Determined Eligible for National Register	0		0		1		1		1		1		0	
Appears Eligible for National Register	2		2		2		2		2		2		20 [2]	

NOTES:

[1] The Corridor Study Area was defined as 750 feet either side of the centerline of the alignment of each alternative.

[2] The Bikeway Alternative includes bike routes along streets with older properties which would likely not be affected.

SOURCES: DAMAR, Thomas Bros., 1990 Census, BRW, MFA; September 10, 1993

TABLE 4.4, continued
CORRIDOR PROFILES OF PROJECT ALTERNATIVES

Evaluation Area	Alternative A (LRT)	Alternative B (LRT)	Alternative C (Bus)	Alternative D (Bus)	Alternative E (Bus)	Alternative F (Bus)	Alternative G (Bikeway)
Potentially Eligible for National Register	1	1	2	2	2	3	1
Appears Eligible for California Register or Local Landmark Ordinance	190	190	197	200	199	214	190
Worthy of Note	36	36	44	29	29	33	36
Total # Historic Properties/Buildings	229	229	246	234	234	258	229
TRANSIT-DEPENDENT POPULATIONS (Includes all census tracts wholly or partially captured by a line extending 750 ft. on each side of the proposed alternatives)							
Total Population	120,612	121,439	125,442	131,917	153,984	176,436	120,612
% Age 5-17	16.5%	16.3%	16.2%	16.3%	15.8%	14.4%	16.5%
% Age 65+	11.6%	11.4%	11.2%	11.2%	10.8%	10.2%	11.6%
% Households w/out Private Transport	17.0%	16.9%	17.2%	16.9%	16.1%	15.0%	17.0%
% Families Below Poverty	16.3%	16.4%	16.4%	16.2%	16.1%	14.6%	16.3%

NOTES:

(1) The Corridor Study Area was defined as 750 feet either side of the centerline of the alignment of each alternative.

(2) The Bikeway Alternative includes bike routes along streets with older properties which would likely not be affected.

SOURCES: DAMAR, Thomas Bros., 1990 Census, BRW, MFA; September 10, 1993

4.3.2 Existing Land Use

The corridor study area is urban, with remaining open space generally limited to parks and scattered vacant lots. As an established metropolis, there is considerable variation in land uses. Residential development ranges from single-family neighborhoods to high density multi-family housing. Commercial uses, likewise, range from small commercial establishments to large scale commercial and employment centers that serve a regional market. Industrial uses are located close to thoroughfares. The following listing summarizes the dominant land uses in the vicinity of each alternative:

LRT Alternative A runs primarily along the Exposition ROW from Vermont to downtown Santa Monica, over a distance of 12 miles, with a mixture of land uses within the profile area. Of these lots, 53% are used as residential, 14% are commercial and commercial retail, 17% are industrial, 14% are institutional land uses, and the remaining 3% primarily vacant.

LRT Alternative B, which has a similar alignment to Alternative A except for a minor diversion from the Exposition ROW to the freeway ROWs at I-10/I-405, also runs over a distance of 12 miles and contains various land uses. The profile area along the freeways ROWs contains slightly fewer residential lots and slightly more industrial lots.

Bus Alternative C, which runs for a distance of 17.5 miles primarily along the Exposition ROW from downtown Los Angeles to downtown Santa Monica, also contains a mixture of land uses within the profile area. Approximately 48% of the existing lots are residential, which is slightly less than Alternatives A and B. Thirteen% of the lots are used as commercial or retail/wholesale commercial enterprises, while 17% of the total lots are used for industrial purposes. The remaining 23% are currently used for institutional purposes or are vacant.

Bus Alternative D, which includes the minor detour from the Exposition ROW at La Cienega to Venice, would run for a distance of 19 miles. Of the profile area lots, 50% are currently used as residential, which is more than Alternative C. Fourteen percent of the lots are used for some form of commercial enterprise and only seven percent are industrial. Approximately the same amount of institutional land use is located in the profile area for Alternative D alignment as was found under Alternative C (19%), and no change in vacant space was found when comparing Alternatives C and D.

Bus Alternative E, which would have the bus run on Venice Boulevard south to I-405 before turning north on Sepulveda, would run a distance of just under 19 miles. Of these lots, 47% are residential, which is the smallest proportion of residential usage under each alternative (in terms of lots), 17% are some form of commercial use, and 15% are industrial. The remaining 22% are either institutional, vacant, or cemeteries.

Bus Alternative F, which would remain on Venice to Pacific/Main in Venice Beach, would run a distance of just over 19 miles. Of the profile area lots, 58% are currently

used as residential, which is more than Alternative A, B, C or D. Thirteen percent of the lots are used for some form of commercial enterprise and only seven percent are industrial. Approximately the same amount of institutional land use is located in the profile area for Alternative F as was found under Alternatives C, D, and E (19%), and no change in vacant space between these alternatives was found.

Bikeway Alternative G, would run approximately 12 miles. Along the Bikeway alignment, approximately 53% of the lots are classified as residential, 14% are commercial, and 17% are industrial. The remaining 14% are institutional, and roughly 3% vacant or cemeteries.

4.3.3 Potentially Sensitive Receptors

The number of potentially sensitive land uses were identified for each profile area. The sensitive receptors include residences, schools, hospitals, churches, parks, and historically significant properties or buildings. This information was developed through the Tax Assessor information and the Thomas Brothers maps.

Table 4.5 lists schools located within the Exposition Corridor Study Area bounded by Martin Luther King Blvd./Washington Blvd. on the south, I-10/Santa Monica Blvd. on the north, I-110 Harbor Freeway on the east and the Pacific Ocean on the west. The number of these schools that are located within 750 feet of a proposed project route are identified in Table 4.4.

For Alternative A, the profile area includes almost 17 thousand residences, 24 schools, 11 churches and nine parks. A total of 229 historic properties and buildings were found in Alternative A profile areas.

For the LRT Alternative B, which includes a detour from the ROW, the profile area includes approximately 300 fewer residences, two fewer schools, and one less park, as compared to Alternative A. The same number of historic properties were found under Alternative B as Alternative A.

For the Bus Alternative C profile area, the land use data included over 17 thousand residences (233 more than Alternative A), and 50 other potentially sensitive receptor sites; which is four more than Alternative A, and seven more than Alternative B. A total of 246 historic sites were found in the profile area for Alternative C.

The land use data for the Bus Alternative D profile area, which would run bus service with the minor detour at La Cienega to Venice, identified approximately 18 thousand residences, which is slightly more than Alternatives A, B, or C. There are about the same number of other sensitive receptors. The number of historic places is likewise similar to Alternatives A, B and C.

The profile area for the Bus Alternative E included more than 21.5 thousand residences and 58 other sensitive receptor locations. A total of 234 historic sites were found along the Alternative E alignment.

TABLE 4.5
LISTING OF SCHOOLS WITHIN EXPOSITION CORRIDOR STUDY AREA [1]

Type	School Name	Address
Elem	Montessori Eagle Rock	1439 Colorado
Elem	Westminster Academy	1499 Colorado
Elem	Eagle Rock Montessori Sch	1439 Colorado
Elem	Alpha School	5252 W Adams
Elem	Al-Madineah School	3510 Exposition
Elem	Quardobah School	3406 W Jefferson
Elem	Nevin Avenue Elementary	1569 E 32nd St
Elem	Baldwin Hills Elementary	5421 Rodeo Road
Elem	Coliseum Street Elementary	4400 Coliseum
Elem	Norwood Street Elementary	2020 Oak
Elem	Virginia Road Elementary	2925 Virginia Road
Elem	Saint Vincent's School	2333 S Figueroa
High	Lanterman, Frank D High	2328 St James Pl
Jr	Foshay Jr. High School	3751 S. Harvard
Elem	West Angeles Christian Acad	3010 Crenshaw
Elem	Transfiguration School	4020 Roxton Ave
High	Dorsey High School	3537 Farmdale Ave
Elem	Word of God United Faith	3650 Western Ave
Spec	Word of God United Faith	3650 Western Ave
Elem	MLK Jr Elementary	3989 Hobart Blvd
Elem	Cienega Elementary School	2611 S Orange Dr
Elem	Vermont Avenue Elementary	1435 W 27th St
Elem	Dublin Avenue Elementary	3875 Dublin Ave
Spec	ERAS Center of Special Ed	10101 Jefferson
Elem	24th Street Elementary	2055 W 24th Street
Elem	32nd Street Elementary	822 W 32nd Street
Elem	Weemes Lenicia Elementary	1260 W 36th Place
Elem	36th Street Elementary	1771 W 36th
Elem	Hillcrest Drive Elementary	4041 Hillcrest Dr
Jr	Crossroads School	1714 21st Street
Elem	Montessori School SM	1909 Colorado
Elem	Mid City Alternative School	3100 Adams
Elem	New Life Academy	3200 W Adams
High	View Park High School	4701 Rodeo Road
Elem	Saint Paul's Presbyterian Church	5100 Coliseum
Elem	Saint Agnes Church	1428 Adams
Elem	Creative Learning Centers	1729 W MLK Jr Blvd
Elem	Westminster Avenue School	1010 Washington Blvd
Elem	King School	3989 S. Hobert Blvd

TABLE 4.5, continued
LISTING OF SCHOOLS WITHIN EXPOSITION CORRIDOR STUDY AREA [1]

Type	School Name	Address
High	Hamilton High School	2955 Robertson Blvd
Elem	Beethoven Street School	3711 Beethoven Street
Jr	Mark Twain Middle School	2224 Walgrove Avenue
High	Venice High School	13000 Venice Blvd
Elem	McBride School	3960 Centinela Ave
Elem	Grand View Blvd School	3951 Grand View Blvd
Jr	Webster Middle School	11330 W. Graham Pl
Elem	Clover Avenue School	11020 Clover Ave
Elem	Charnock Road School	11133 Charnock Rd
Elem	Overland Avenue School	10650 Ashby Ave
Elem	Palms School	3520 Motor Avenue
Elem	Echo Horizons School for Hearing Impaired	3430 McManus Ave
Training Center	Exceptional Children's Foundation	8740 Washington Blvd

[1] Within boundary of Martin Luther King Jr. Boulevard/Washington Boulevard, I-10/Santa Monica Boulevard, I-110, and Pacific Ocean.

SOURCE: BRW, Inc.; August 1993.

The Bus Alternative F profile area, which would run down Venice to Venice Beach, had almost 32,000 residences and 65 other sensitive receptors, more than was found under any other alternatives. A total of 258 historic places were also identified along the Alternative F alignment.

The land use data for the Bikeway Alternative G profile area found almost 17,000 residences and 46 other sensitive receptor sites. The same number of historic places were found along the Alternative G alignment as Alternative A and B.

4.3.4 Transit Dependent Populations

Using the 1990 U.S. Census tract data, information regarding the extent of transit dependency was developed for each alternative. In terms of total population, the profile areas around four alternatives (A, B, C, and G) have populations between 120,000 and 125,000. The Alternative D profile area has a slightly greater total population of almost 132,000, while the profile area around Alternatives E has about 154,000 and Alternative F has the greatest population at 176,500.

Transit dependency can be estimated based on age, persons either too young or too old to drive (ages 5-17 and 65+); households without access to private automobiles; and households with incomes below the adopted standard poverty level.

Using the criteria of transit dependency based on age, Census tracts in Alternatives A and G profile areas have the greatest percentage at 28.1% of the population. The profile areas around Alternative F has the least percentage at 24.6%, while the remaining alternatives are within areas with transit dependent populations of between 26.6 and 27.7% of the total population based on age.

Using the criteria of transit dependency based on vehicle availability, again Alternative F has the least transit dependency at 15.0%, while Alternative C has the most transit dependency at over 17% of households who are without private transport. Alternatives A, B, D, E, and G have between 16 and 17% of households which are transit dependent under this criteria.

An estimate of the amount of transit dependency can be made based on the percentage of families below the poverty level, assuming they cannot afford private transport. Based on this criteria, Alternatives B and C have the greatest potential to meet the needs of the transit dependent with 16.4% of the families with incomes below the poverty level. Alternatives A, D, G and E have slightly less percentages of poverty families, while Alternative F has the least percentage of poverty.

4.4 OPERATING COSTS AND EFFICIENCY COMPARISONS

This section presents the operating costs required to provide transit services in the Exposition Right-of-Way. Costs are estimated on a daily and annual basis. Efficiency comparisons are made of the performance of each alternative in terms of operating costs versus ridership carried.

4.4.1 Transit Network Operating Statistics and Costs

Operating and maintenance (O&M) costs were developed for each of the project alternatives. Estimation of O&M costs is important because the costs are an indicator of the consumption of the transit service resource. The amount of transit service that can be put on the street is limited by the amount of subsidy the MTA can afford to spend and by the ridership expected to be gained.

Operating and Maintenance Cost Assumptions

The O&M costs were calculated using the service frequency and operating speed assumptions developed for the refined project alternatives as described in Sections 3.4 and 3.5.

Minor changes were assumed to the background bus system among the alternatives. Bus service coverage is extensive throughout the corridor such that only minor adjustments were needed to feed the transit line. This means that differences among the bus networks were insignificant in terms of operating statistics (i.e. vehicle-miles, vehicle-hours, etc.). Therefore, costs were not estimated for the background bus networks.

Annual operating days for the transit line was assumed to be 320 days. This accounts for weekends and holidays and allows the weekday calculations to be extended to a yearly total.

In the absence of a multi-variable cost model, the best single operating statistic to calculate O&M costs is vehicle-hours. This statistic is preferred because labor and fuel costs are well represented by an hourly accounting base. The vehicle-hours statistic was used in this analysis.

Rates for the O&M costs were taken from current experience. Costs for the LRT and bus operations were taken from the Section 15 report of the MTA. An operating cost of $291 per LRT vehicle-hour was defined for this study. The use of vehicle-hours requires that the train size be taken into consideration as well. For this study, a constant train size of two vehicles was assumed for the peak and the off-peak conditions.

Rates for the bus include a percentage for articulated, clean-fuel vehicles. A cost of $118 per bus vehicle-hour was assumed. Costs of bus operations are less per hour because

the vehicles and guideway systems are less complex, but offer less capacity as well. It should also be noted that the LRT hourly costs based on current MTA operations include a high percentage of cost for security, more than for the hourly bus costs.

The O&M rates include all costs for the service, facilities operation and maintenance and other costs. In this manner, all costs are fully allocated to the alternative.

Operating and Maintenance Cost Estimates

Using the calculated operating statistics combined with the cost rates, O&M costs were developed for each alternative. Results of the O&M cost estimates are presented in Table 4.6.

The table shows that the O&M costs for the LRT alternatives are on the order of 1.8 to 2.2 times higher than the bus alternatives. This is primarily because of the higher capacity assumed and the higher hourly cost rate for LRT. The LRT alternatives assume two car trains with a capacity of 150 patrons which totals 300 places (seats plus standees) versus the articulated bus capacity of 90 persons per bus.

TABLE 4.6
SUMMARY OF OPERATING STATISTICS AND COSTS AMONG PROJECT ALTERNATIVES

ALTERNATIVE	VEHICLES		VEHICLE HOURS			COST/ HOUR	COST/ DAY	ANNUAL COST (Million)
	PEAK	OFF PEAK	PEAK	OFF PEAK	TOTAL			
A - LRT on Expo	16 Trains 32 Cars	9 Trains 18 Cars	107	157	264	$291	$76,820	$24.582
B - LRT with I-10	16 Trains 32 Cars	9 Trains 18 Cars	106	161	267	$291	$77,700	$24.864
C - Bus on Expo ROW	23	14	115	182	297	$118	$35,046	$11.215
D - Bus with La Cienega	25	15	125	195	320	$118	$37,760	$12.083
E - Bus with Venice/Sepulveda	27	16	135	208	343	$118	$40,474	$12.952
F - Bus with Venice to Coast	28	17	140	221	361	$118	$42,598	$13.631

SOURCE: MTA; BRW, Inc., May 1994.

NOTE: Assumes 6-minute peak-period headways; 10-minute off-peak headways.
Annualization assumes 320 days/year effective rate.

4.4.2 Operating Efficiency Comparisons

An important consideration with respect to the transit system is the potential improvement in transit operations as a result of the capital investment. Ratios of operating costs and statistics to ridership are used to measure the performance of routes in the network. These comparisons were used in this evaluation section as shown in Table 4.7.

Observations concerning the results of the table are listed below.

- The LRT alternatives have substantially higher O&M costs because of the use of two-car trains and the hourly costs associated with LRT operation of $291/car-hour versus bus costs of $118/vehicle-hour.
- Comparison of the ratios of daily O&M costs to daily boardings shows Bus Alternative C on the ROW to have the highest efficiency of $1.23/boarding. As the length of the bus alternatives increase, so does the O&M cost per boarding. Bus Alternative F which follows Venice to the coast has the highest ratio of all alternatives at $2.03/boarding. The LRT alternatives fall above most of the bus range at $1.91 to $1.97/boarding which is 60% higher than Alternative C.
- The LRT alternatives offer substantially more capacity in terms of place-miles than the bus options (place-mile is a seat- or standing-place on the transit vehicle traveling one mile). The LRT line would provide over 1.0 million place-miles on a daily basis versus between 462,600 and 523,800 place-miles for bus. This is a difference of from 116% to 98% more on LRT depending on the comparison.
- The O&M costs per place-mile are all under ten cents for the alternatives. The lowest cost per place-mile is shown for LRT Alternative A in the ROW followed closely by LRT Alternative B and the other bus options.
- Boardings per vehicle-mile are highest for the LRT alternatives at 5.82 to 5.70 for Alternatives A and B, respectively. The next best alternative is Bus Alternative C at 5.50 boardings per vehicle-mile which is just 5% less efficient than the best LRT option.
- The ratio of boardings to vehicle-hours for LRT as compared to current Westside MTA bus routes would put the service well above the upper end of all routes The highest east-west route currently is the Route 66 on West Eighth Street which has a productivity of 87.2 boardings per hour. By comparison, the LRT alternatives would have 152 boardings per vehicle-hour, which is 74% higher productivity than the Route 66. The bus options vary widely in productivity with values in the range of 58 to 95 boardings per vehicle-hour, placing these alternatives in the range of the Route 33 - Venice Boulevard at 56.2 boardings per hour to Route 207 - Western Avenue at 93.3 boardings per hour.

TABLE 4.7
COMPARISON OF OPERATING EFFICIENCY FOR REFINED ALTERNATIVES

PARAMETER	ALT. A LRT	ALT. B LRT	ALT. C BUS	ALT. D BUS	ALT. E BUS	ALT. F BUS
Daily Operating & Maintenance Costs	$76,820	$77,700	$35,046	$37,760	$40,474	$42,598
Operating & Maintenance Cost Per Daily Rider	$1.91	$1.93	$1.23	$1.50	$1.50	$2.03
Daily Place - Miles	1,036,500	1,057,500	462,600	492,300	479,700	523,800
Operating & Maintenance Cost Per Place - Miles	$0.074	$0.074	$0.076	$0.077	$0.084	$0.081
Daily Vehicle - Miles	6,910	7,050	5,140	5,470	5,330	5,820
Daily Riders/Vehicle - Mile	5.82	5.70	5.50	4.60	5.05	3.60
Daily Vehicle Hours	264	267	297	320	343	361
Daily Riders/Vehicle - Hour	152	151	95	79	78	58

SOURCE: MTA; BRW, Inc., June, 1994.

NOTE: Alternative G - Bikeway does not exhibit operating efficiency common to the others and is therefore not shown. The LRT Alternatives show substantially more vehicle-miles than bus because two-vehicle trains are used.

4.5 CAPITAL COSTS/COST EFFECTIVENESS

This section presents comparisons of the capital cost estimates for the alternatives. Cost-effectiveness is also addressed by comparing total costs for each alternative to the total number of riders. Ratios of costs/riders show which of the alternatives provide a higher return for the dollars invested.

4.5.1 Comparisons of Costs and Cost-Effectiveness

Costs of the alternatives are an important indication of the feasibility of the project and are the measure against which benefits can be assessed. Both total costs, as well as cost flows such as annual costs, are important to consider. Cost-effectiveness can then be expressed as ratios of the costs to benefits such as ridership.

Table 4.8 presents the results of these comparisons. Included in the table are calculations for Annualized Capital Costs, which uses a capital recovery factor. The capital recovery factor assumed a 7% rate of return and different useful lives of the cost items in accordance with FTA and standard engineering procedures.

Observations concerning these results are presented below:

- The most expensive of the alternatives are the LRT Alternatives A at $907.7 million and B at $903.8 million. These alternatives are about three times more costly than the next most expensive Alternative C - Bus on the ROW.

- The Bus alternatives that do not use the ROW for the full distance have a lower overall cost and a lower cost per mile. This is because major grade separations and other facilities are not necessary as the alternatives can operate in mixed-flow traffic. The obvious trade-off is the lack of a reserved right-of-way at the lower cost.

- Combining annual O&M costs with annualized capital costs results in a Total Annual Cost for the LRT alternatives of $101.3 million to $101.5 million. These Total Annual Costs are 2.8 times higher than Alternative C - Bus on the ROW at $36.6 million as the next most costly option.

- The alternative with the best ratio of Total Annual Cost Per Rider is Bus Alternative E - Venice/Sepulveda at $3.12/boarding. This alternative is followed by Alternatives F, D and C in order of increasing ratio. The spread in difference for the bus alternatives from highest to lowest is $1.00.

- The Bus Alternative D ratio of Total Annual Cost Per Rider is $4.20 per boarding. This is the highest of the bus alternatives but still lower than the LRT Alternatives A and B with ratios of $7.87 per boarding and $7.89 per boarding, respectively.

- The LRT alternatives represent a much higher level of investment than the Bus options because the capacity addition is so much greater for alternatives of equal length. Because of the higher capital costs, Total Annual Costs per Annual Place-Miles of capacity for LRT shows a higher ratio ($0.31/place-mile) than for Busway Alternative C ($0.25/place-mile). However, if additional capacity is needed in the corridor, the LRT alternatives can more easily add cars to each train at less incremental O&M cost than running additional buses.

TABLE 4.8
COMPARISON OF COSTS AND COST-EFFECTIVENESS OF REFINED ALTERNATIVES

PARAMETER	ALT. A LRT	ALT. B LRT	DIFF. TO ALT. A	ALT. C BUS	DIFF. TO ALT.A	ALT. D BUS	DIFF. TO ALT. A	ALT. E BUS	DIFF. TO ALT. A	ALT. F BUS	DIFF. TO ALT. A	ALT. G BIKEWAY	DIFF. TO ALT. A
Total Capital Costs ($ million)	$907.71	$903.83	(3.88)	$301.15	(606.56)	$257.50	(650.21)	$164.91	(724.80)	$122.14	(785.57)	$30.42	N.A.
Total Capital Cost Per Mile ($ million)	$74.04	$73.24	(0.80)	$24.36	($49.69)	$18.57	(55.47)	$12.24	(61.80)	$8.62	(65.42)	$2.48	N.A
Annualized Capital Costs ($ million)	$76.69	$76.16		$25.44		$21.76		$13.93		$10.32		$2.57	
Annual Operating & Maintenance Costs ($ million)	$24.58	$24.86	+0.28	$11.22		$12.08		$12.95		$13.63		$0.50	
Total Annual Costs (Annualized Capital + O&M - $Million)	$101.27	$101.02	(0.25)	$36.66	(64.61)	$33.84	(67.43)	$26.88	(74.39)	$23.95	(77.32)	$3.07	N.A.
Cost Effectiveness													
• Total Annual Costs Per Rider	$7.87	$7.85	(0.02)	$4.05	(3.82)	$4.20	(3.67)	$3.12	(4.75)	$3.57	(4.30)	N.A.	N.A.
• Total Annual Costs Per Annual Place-Mile of Capacity	$0.31	$0.30	(0.01)	$0.25	(0.06)	$0.21	(0.10)	$0.17	(0.14)	$0.14	($0.17)	N.A.	N.A.

SOURCE: BRW, Inc.; October 1994.

Note: 1993 Dollars Expressed.

4.6 CONCLUSIONS AND RECOMMENDATIONS

Considering the results of the evaluations and comparisons among the alternatives, a number of conclusions may be drawn concerning performance. Using these conclusions, recommendations on the alternatives to carry into Phase II: EIR of the project were made and are described below.

4.6.1 Conclusions

Conclusions are presented in this section and are organized in the four evaluation categories used previously.

Mobility

- The benefit to travel in the east/west direction of the I-10/Exposition Corridor is high. From 21,000 to 28,000 additional transit boardings would occur as a result of the Bus alternatives while 40,000 additional boardings would result from the LRT alternatives. These trips would be riders diverted from other modes combined with existing transit patrons who would be able to reduce travel times by transferring to the new service.

- The alternatives which follow the Exposition ROW for their length have the highest ridership. These more direct routes have faster travel times and offer higher reliability than those options that operate in mixed-flow traffic.

- Each of the transit improvement alternatives would substantially increase the available person-trip capacity in this congested corridor. Transit place-miles (seated-plus-standee places moving one mile) is an effective measure of added person-trip capacity. The LRT alternatives would add over 1.0 million place-miles to the transit lines in the corridor while the Bus alternatives would add in the range of 0.5 million place-miles. This addition of capacity provides an attractive substitute to the private automobile; as trips are diverted to transit to use the available capacity automobile vehicle miles of travel are reduced.

- The Corridor from Vermont Avenue to 4th/Colorado is divided into two primary segments at Venice/Robertson. Daily boardings for most of the alternatives are slightly higher east of that point with the exception of Alternative E - Bus with a Venice/Sepulveda detour. Alternative F exhibits much lower ridership overall (48% below LRT and 26 % below Bus Alternative C - Exposition ROW), but the segment west of Venice/Robertson is substantially lower than the alternatives which follow the ROW to downtown Santa Monica. In this segment, the boardings are 62% under the LRT and 41% under Bus Alternative C. This is because this alternative has a longer travel time and serves a different travel shed and different travel demand patterns.

- Alternative G - Bikeway can be included as either an interim or an adjunct use. The analyses of the alternatives were not to the level of detail to determine the contribution of the bikeway to mobility improvements. In comparison to the other alternatives, the mobility enhancement is assumed to be insignificant. However, a need exists for a continuous bikeway to connect destinations on the westside such that the facility along the Exposition ROW would assist in improving mobility for this travel mode.

Environmental/Land Use

- Very preliminary analysis of likely potential impacts have been made at this time looking at land uses and total numbers of sensitive receptors within 750 feet on either side of the proposed routes. The preliminary analysis does not demonstrate very significant variations among the alternatives in most of the categories. Much more detailed assessment of environmental and land use impacts would have to be made as part of an EIR document.

- The alternatives which are exposed to the greatest number of sensitive receptors are those that depart from the ROW. Alternative F - Bus on Venice to the Coast has the highest number of units exposed followed by Alternatives E and D. Because each is predominately within the ROW, Alternatives A, B and C are essentially the same. Alternatives along the ROW exhibit less exposure because they are shorter.

- In considering the exposure to potentially historic properties, the same results as those found for sensitive receptors apply. Alternative F has the highest exposure followed by Alternatives E and D.

- The alternatives which remain along the ROW provide a better level of access to populations of transit dependents on the west end of the corridor. Alternatives E and F which follow Venice/Sepulveda and Venice to the Coast respectively are the poorest at providing this access.

Operating Efficiency

- The more direct routes which use the ROW demonstrate better transit performance than the alternatives which depart from the ROW. The LRT alternatives and Bus Alternative C show significantly higher productivity in riders per vehicle-mile and riders per vehicle-hour.

- The LRT alternatives and Bus Alternative C which follows the ROW all exhibit high productivity in terms of riders per vehicle-hour. LRT would attract over 150 boardings per vehicle-hour while the Bus Alternative C would attract 95 boardings per vehicle-hour. By comparison, the most productive east/west westside MTA line is the Route 66 - West Eighth Street with 87 boardings per vehicle-hour.

Costs and Cost-Effectiveness

- Capital costs for the LRT alternatives are very high at $73 million to $74 million per mile. The Bus alternatives are also costly at about $24 million per mile within the Exposition ROW compared to non-guideway applications for bus.

- Even though costs for the Busway are high, Alternative C is over three times less expensive than the LRT options within the ROW.

- A cost savings exists for each of the Bus options which departs from the ROW and runs in mixed-flow on city streets. The obvious trade-off is that ridership drops and travel times increase along with the decrease in reliability for operations in non-exclusive rights-of-way.

- In terms of cost-effectiveness, the LRT alternatives have the highest ratios of Total Annual Costs per Annual New Regional Rider at $7.87/boarding for Alternative A. The Bus alternatives are all within a much closer range of between $3.12/boarding for Alternative E and $4.05/boarding for Alternative C. The ratio for Alternative C shows this option to be about twice as cost-effective as the LRT alternatives.

- Of the alternatives entirely within the ROW, Bus Alternative C exhibits the best cost-effectiveness ratio and would provide the most cost-effective capacity contribution. This can be important in serving latent demand, especially in a corridor such as the I-10/Santa Monica Freeway/Exposition Corridor. The Total Annual Cost per Place-Mile of Capacity for Bus Alternative C is $0.24 while the ratio for LRT Alternative A is higher at $0.31 per place-mile.

Enhancement Options

- Four different enhancement options were analyzed for the alternatives that are located entirely within the ROW. In each case, the enhancement options would add cost to the alternatives in order to address issues and concerns following review of traffic impacts, transit operating conditions and public comment. Further environmental studies are needed to specifically identify the mitigation treatments that may be necessary to the refined alternative in the corridor.

Bikeway Facility

- The bikeway can serve as either an interim or adjunct facility within the Exposition ROW. In the interests of continuity, the route would use a combination of all three classes of bikeway treatments, with a focus on smooth transitions between types and an emphasis on limiting travel times for longer distance bicycle travel. Certain segments of the bikeway would need to use the city streets as a Class II Bike Lane rather than as a Class I Bike Path, but a significant portion of the route could benefit from the reserved right-of-way.

4.6.2 Recommendations

This section presents recommendations on the alternatives to carry forward into Phase II: Environmental Impact Report based on the results of the Phase I Alternatives Refinement.

1. Defer Alternative F - Bus on Venice to the Coast from further consideration.

   The evaluation results clearly indicate this alternative serves a different travel shed and set of demand patterns from those options which remain along the ROW. The performance of the route in attracting riders per unit of service (vehicle-hour or vehicle-mile) is the lowest of those analyzed, especially for the segment from the Venice/Robertson area west to the coast and downtown Santa Monica. Although this alternative has a lower capital cost, the investment does not provide as high a level of benefit as the other alternatives when cost-effectiveness is considered.

   Finally, this alternative could be undertaken easily as part of a staged implementation plan that would bring the guideway within the ROW to Venice/Robertson as an interim terminus. From that point, feeder bus lines, including those on Venice could provide service connections to areas west to the coast.

2. Defer Alternative D - Bus using the La Cienega Detour from further consideration or combine with Alternative E.

   This alternative adds mileage and travel time to the express line in the Corridor, reducing the utility and attractiveness to riders. The performance of the alternative in terms of boardings per vehicle-hour are lower than those which remain on the ROW (Alternatives A, B and C) or serve other activity areas such as Alternative E. Finally, the mixed-flow operation on Venice and La Cienega Boulevards reduces the schedule reliability and could cause further difficulties with performance of the express line.

   A possible option would be to combine Alternative D with Alternative E - Bus with Venice/Sepulveda Detour. This option would depart from the ROW at La Cienega, travel north to Venice, west on Venice to Sepulveda, then north to return to the ROW. The advantage of this alignment would be to avoid potential impacts to residential areas in East Culver City and Rancho Park/Cheviot Hills. The disadvantage is the substantial out-of-direction travel for through patrons on longer trips destined for Santa Monica or downtown Los Angeles.

3. Retain Alternatives A and B - LRT on the ROW, and LRT on the ROW/I-10.

   These alternatives provide the greatest capacity increase for a corridor that has historically been one of the most heavily traveled and congested in the country. Although these options are the most costly by a wide margin, they exhibit the highest ridership and the most productive operating efficiency per hour of service. The analysis shows that if the speed advantage built into the design and cost of LRT alternatives is provided in this corridor, the ridership demand will exceed the amount that can be carried efficiently with a lower capacity improvement such as Busway. Light rail would also provide the most continuous route from Downtown Los Angeles by extending directly, without transfer, from the planned Exposition Park Branch of the Metro Blueline. For these reasons, these two alternatives should be retained and evaluated further in Phase II of this study.

4. Retain Alternative C - Bus on the ROW

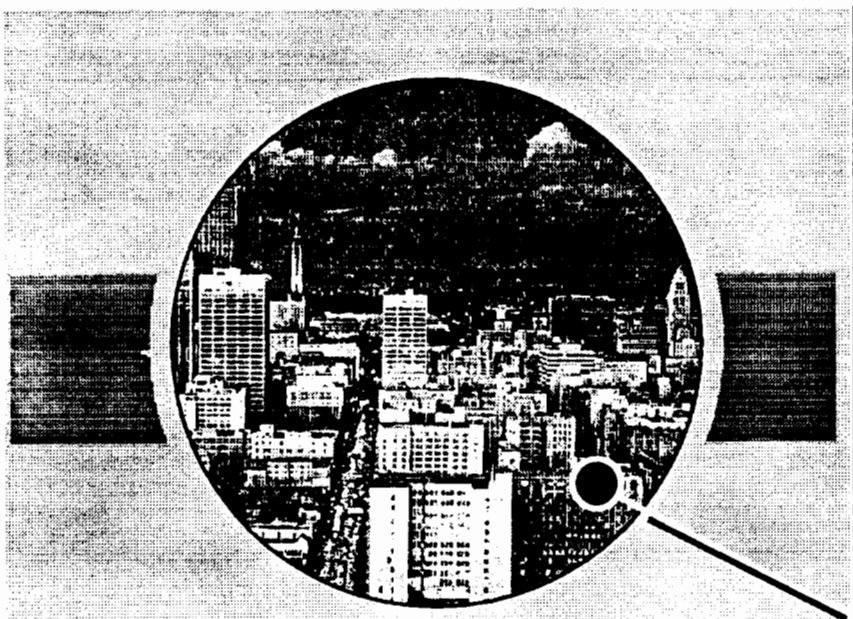
   This alternative attracts a reasonable amount of ridership as a lower cost alternative than LRT. Compared to LRT, this alternative is over three times less costly but attracts only 30% less riders. The primary limitation of the alternative is the lack of ability to increase capacity as readily as the LRT mode. Headways are already assumed to be six minutes in each direction during the peak; busways such as this one are capable of much higher frequencies in exclusive right-of-way. Because the refined alignment is a combination of both at-grade and grade separated guideway, additional trips would be difficult to implement without impacts to at-grade intersection or added capital costs for grade separations.

5. Retain Alternative E - Bus with the Venice/Sepulveda Detour

   This alternative performs the best of the diversion options because the route accesses high density and activity areas as a tradeoff for the longer travel time. Regardless of the added access, the alternative does not perform as well as the alternatives on the ROW in terms of ridership or operating efficiency. Similar to the other options which use mixed-flow operations for a portion of the route, reliability for transit vehicles is a major concern. To address this issue, additional work could be undertaken during Phase II to examine on-street operational improvements for the Venice Boulevard and Sepulveda Boulevard segments of the route.

6. Retain Alternative G - Bikeway in the ROW

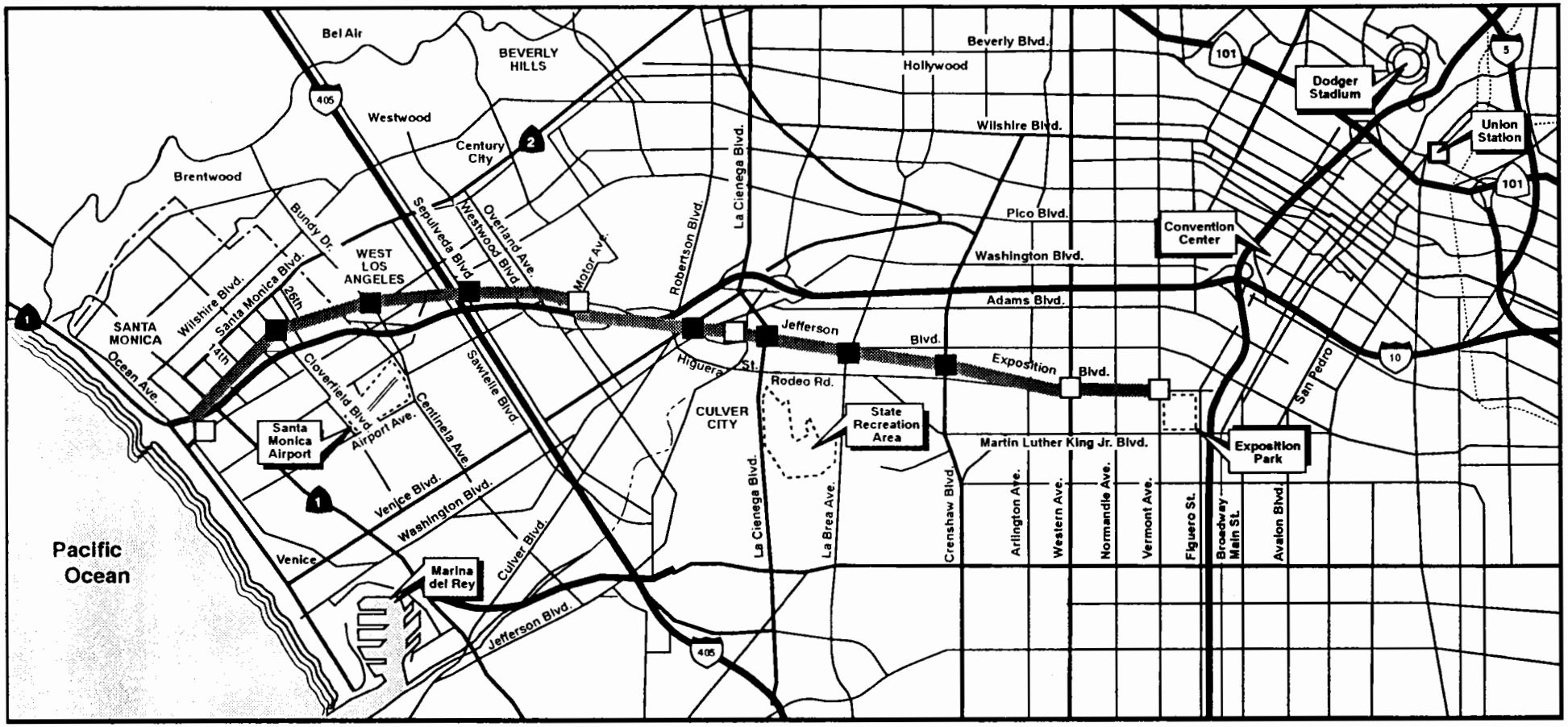
This alternative would serve as either an interim use or as an adjunct facility to the transit line. The bikeway can be incorporated in the design such that initial construction can also be used in the future as the transit guideway is implemented. The alternative should be retained for further consideration in Phase II.



APPENDIX

APPENDIX A
Station Locations

LRT Alternative A



Alignment

LRT Station with No Parking

LRT Station with Parking

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. A-1

BRW

Source: B R W, Inc., 21 September 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

TABLE A.1

EXPOSITION RIGHT-OF-WAY LRT ALTERNATIVE A STATION FEATURES

STATION	POSSIBLE TRANSIT CONNECTIONS WITH EXISTING LINES[1]	ADJACENT LAND USES	PLATFORM LAYOUT	PARKING
Vermont	MTA: 102, 204, 354 DASH C, LRT	USC, Expo Park, Residential	Center platform	No parking[3]
Western	MTA: 102, 207, 357, 576	Residential, Highway Retail	Center platform	No parking
Crenshaw[2]	MTA: 210	Commercial, Retail	Center platform	Park-and-ride
La Brea	MTA: 38, 102, 212	Industrial Residential	Center platform	Park-and-ride
La Cienega	MTA: 38, 105, 439	Industrial Commercial Residential	Center platform	Park-and-ride
Hayden/ National	No existing adjacent bus routes	Industrial Residential	Center platform	No parking
Venice/ Robertson	MTA: 33, 220, 333, 438, 436 SMMBL: 12 CCMBL: 1, 4	Industrial Commercial Residential	Center platform (aerial)	Park-and-ride (Transit Center)
Motor	MTA: 430, 431, 434, 437 CCMBL: 3	Commercial Residential	Center platform (aerial)	No parking
I-405/Expo	MTA: 560 CCMBL: 6 SMMBL: 7	Industrial Commercial	Center Platform	Park-and-ride (Transit Center)
Bundy	SMMBL: 9, 14, 10	Industrial Residential	Center platform	Park-and-ride
Cloverfield	SMMBL: 9	Industrial Commercial	Center platform	Park-and-ride
4th/Colorado	MTA: 434 SMMBL: 2, 3, 9	Commercial Office Retail	Center platform (aerial)	No parking

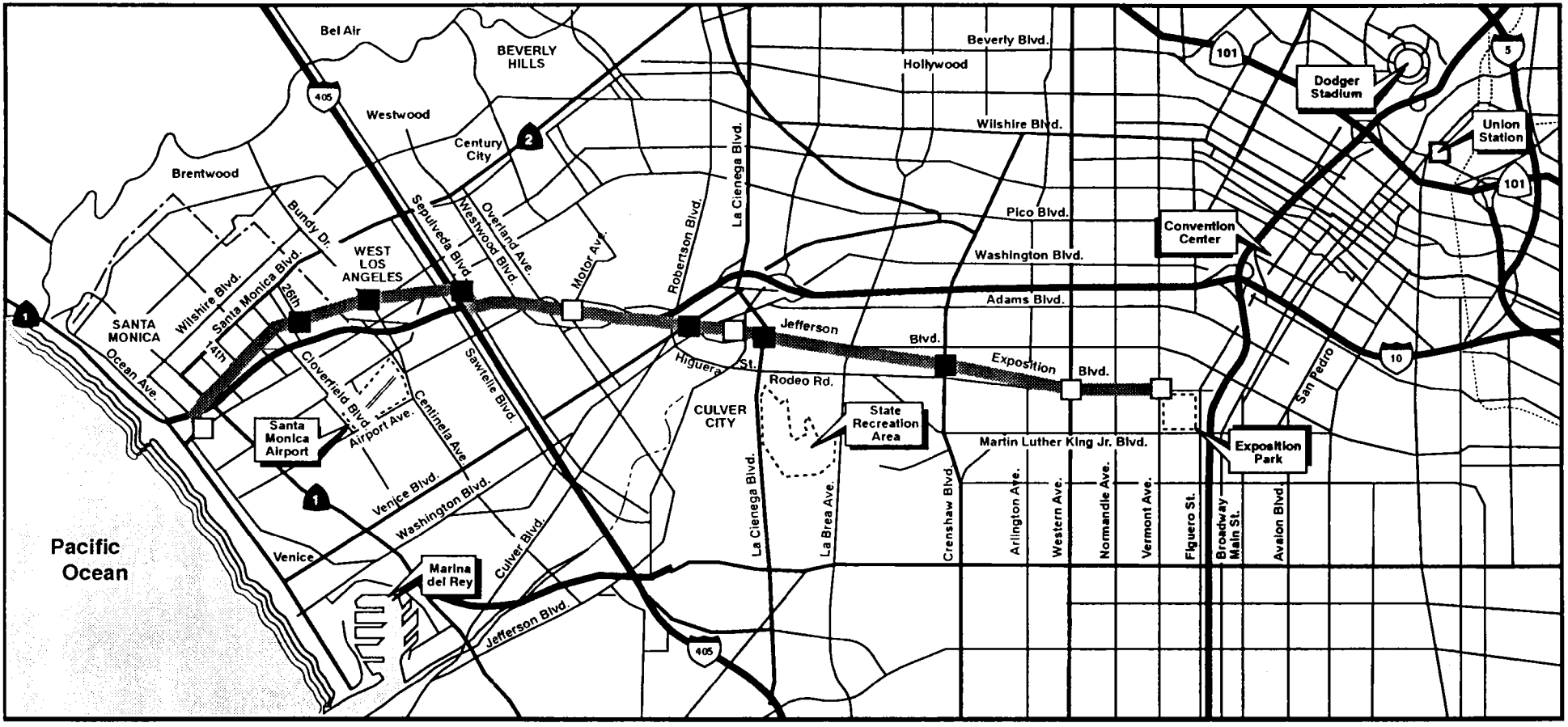
[1]Additional transit connections possible at some stations by minor rerouting of existing bus lines to feed into transit stations.

[2]Possible future northbound rail line connection.

[3]Potential for shared parking with USC/Coliseum.

SOURCE: BRW, Inc.; December 29, 1993.

LRT Alternative B



Alignment

LRT Station without Parking

LRT Station with Parking

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. A-2

BRW

Source: B R W, Inc., 15 December 1993

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

TABLE A.2

EXPOSITION RIGHT-OF-WAY
LRT ALTERNATIVE B STATION FEATURES

STATION	POSSIBLE TRANSIT CONNECTIONS WITH EXISTING LINES[1]	ADJACENT LAND USES	PLATFORM LAYOUT	PARKING
Vermont	MTA: 102, 204, 354 DASH C, LRT	USC, Expo Park, Residential	Center platform	No parking[3]
Western	MTA: 102, 207, 357, 576	Residential, Highway Retail	Center platform	No parking
Crenshaw	MTA: 210[2]	Commercial, Retail	Center platform	Park-and-ride
La Brea	MTA: 38, 102, 212	Industrial Residential	Center platform	Park-and-ride
La Cienega	MTA: 38, 105, 439	Industrial Commercial Residential	Center platform	Park-and-ride
Hayden/ National	No adjacent bus routes	Industrial Residential	Center platform	No parking
Venice/Robertson	MTA: 33, 220, 333, 438, 436 SMMBL: 12 CCMBL: 1, 4	Industrial Commercial Residential	Center Platform (aerial)	Park-and-ride (Transit Center)
Motor	MTA: 430, 431, 434, 437 CCMBL: 3	Commercial Residential	Center platform	No parking
I-405/Expo	MTA: 560 CCMBL: 6 SMMBL: 7	Industrial Commercial	Center platform	Park-and-ride (Transit Center)
Bundy	SMMBL: 9, 14, 10	Industrial Residential	Center platform	Park-and-ride
Cloverfield	SMMBL: 9	Industrial Commercial	Center platform	Park-and-ride
4th/Colorado	MTA: 434 SMMBL: 2,3,9	Commercial Office Retail	Center platform (aerial)	No parking

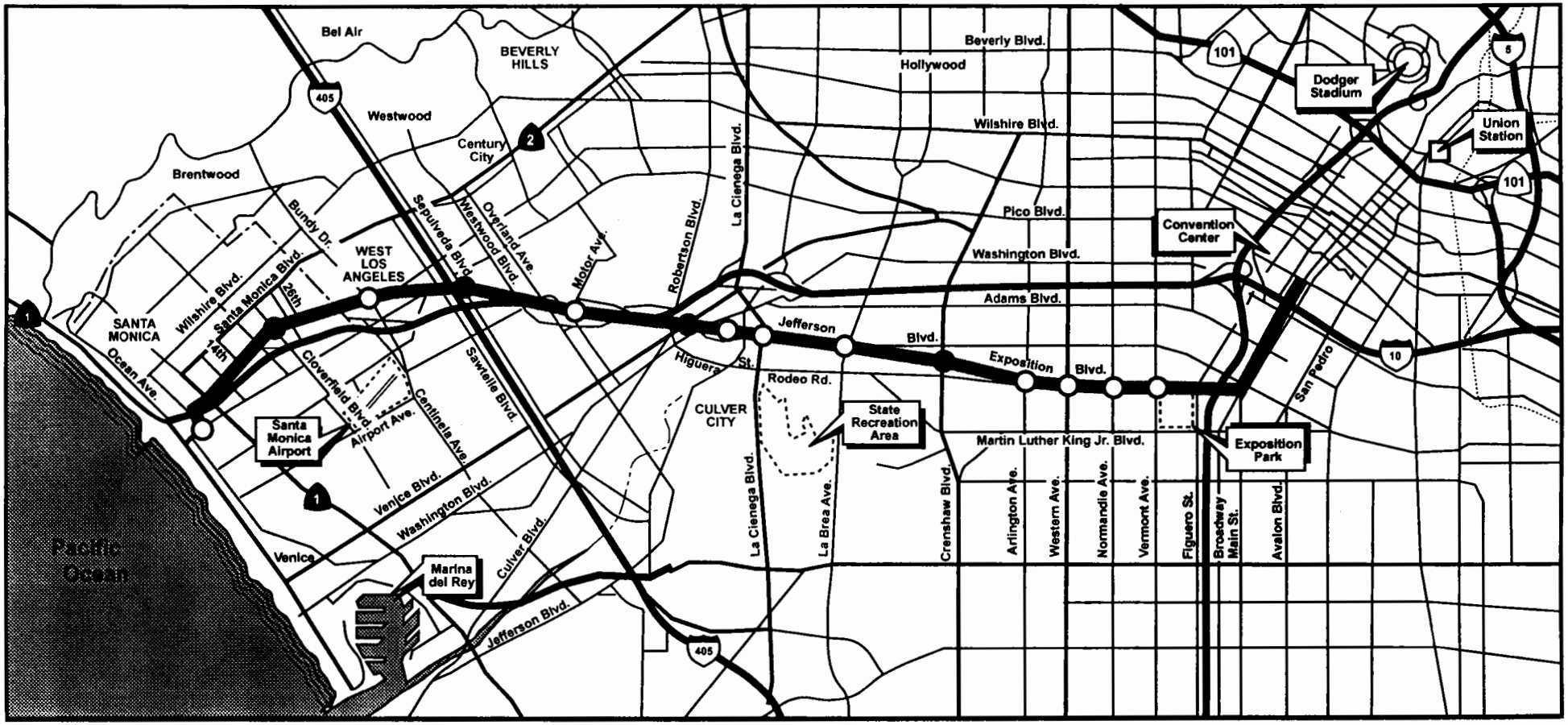
[1]Additional transit connections possible at some station by minor rerouting of existing bus lines to feed into transit stations.

[2]Possible future northbound rail line connection.

[3]Potential for shared parking with USC/Coliseum.

SOURCE: BRW, Inc.; December 29, 1993.

Busway Alternative C



Alignment

Busway Station/Stop without Parking

Busway Station/Stop with Parking

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. A-3

B R W

Source: B R W, Inc., 21 September 1994

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

TABLE A.3

EXPOSITION RIGHT-OF-WAY
BUS ALTERNATIVE C STOP FEATURES

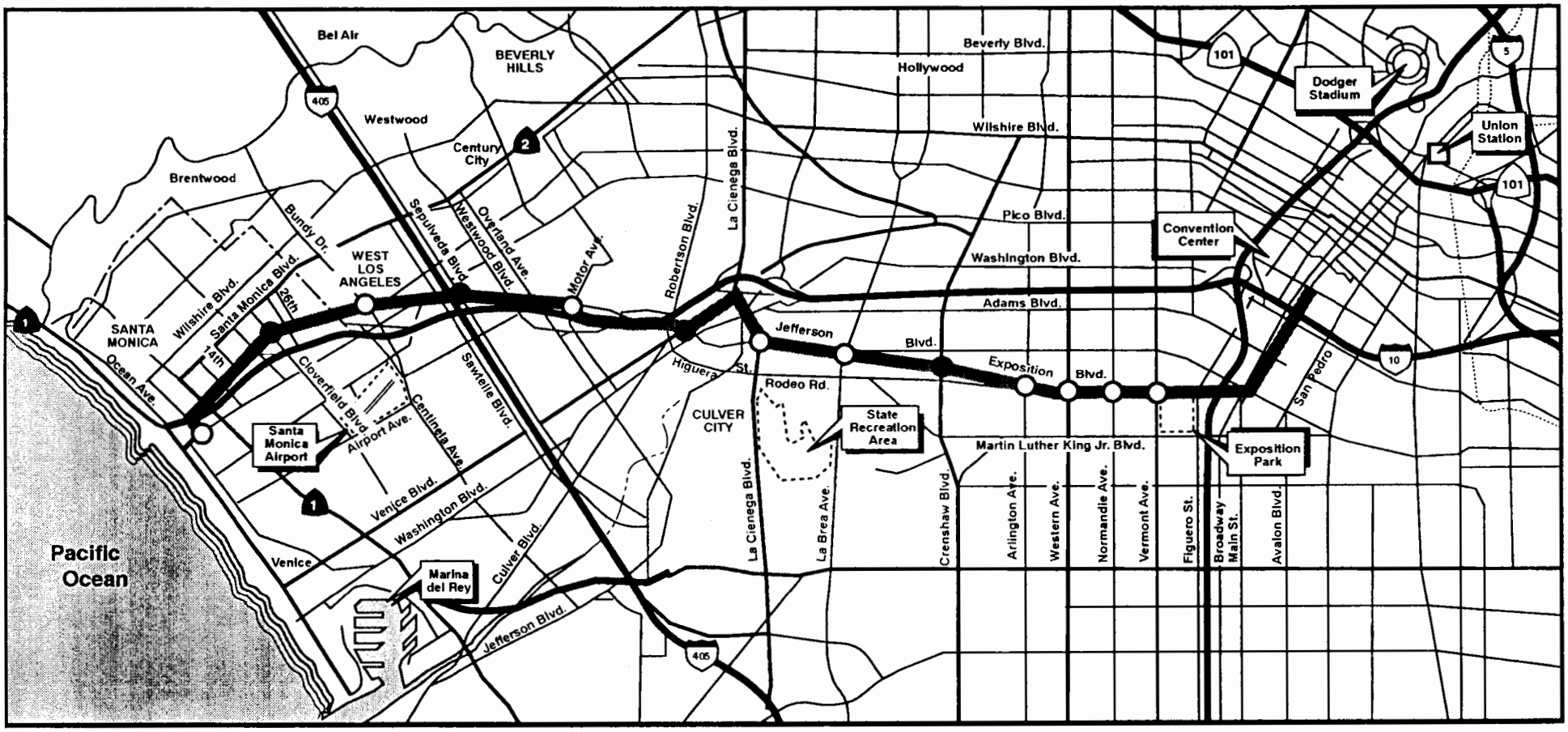
STATION	POSSIBLE TRANSIT CONNECTIONS WITH EXISTING LINES[1]	ADJACENT LAND USES	BOARDING AREA LAYOUT	PARKING
Vermont	MTA: 102, 204, 354 DASH C, LRT	USC, Expo Park, Residential	Near-side split	No parking
Normandie	MTA: 102, 206	Residential	Far-side split median lane	No parking
Western	MTA: 102, 207, 357, 576	Residential Highway Retail	Far-side split median lane	No parking
Arlington	MTA: 102, 209	Residential Industrial	Far-side split	No parking
Crenshaw[2]	MTA: 210	Commercial, Retail	Near-side split	Park-and-ride
La Brea	MTA: 38, 102, 212	Industrial Residential	Far-side split	No parking
La Cienega	MTA: 38, 105, 439	Industrial Commercial Residential	Far-side split	No parking
Hayden/ National	No adjacent bus routes	Industrial Residential	Side loading	No parking
Venice/ Robertson	MTA: 33, 220, 333, 438, 436 SMMBL: 12 CCMBL: 1, 4	Industrial Commercial Residential	Mid-block split	Park-and-ride (Transit Center)
Motor	MTA: 430, 431, 434, 437 CCMBL: 3	Commercial Residential	Far-side split	No parking
I-405/Expo	MTA: 560 CCMBL: 6 SMMBL: 7	Industrial Commercial	Mid-block split	Park-and-ride (Transit Center)
Bundy	SMMBL: 9, 14, 10	Industrial Residential	Far-side split	No parking
Cloverfield	SMMBL: 9	Industrial Commercial	Far-side split	Park-and-ride
4th/Colorado	MTA: 434 SMMBL: 2, 3, 9	Commercial Office Retail	Loop	No parking

[1]Additional transit connections possible at some station by minor rerouting of existing bus lines to feed into transit stations.

[2]Possible future northbound rail line connection.

SOURCE: BRW, Inc.; December 29, 1993.

Busway Alternative D



Alignment

Bus Station/Stop without Parking

Bus Station/Stop with Parking

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. A-4

BRW

Source: B R W, Inc., 21 September 1994

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

TABLE A.4

EXPOSITION RIGHT-OF-WAY
BUS ALTERNATIVE D STOP FEATURES

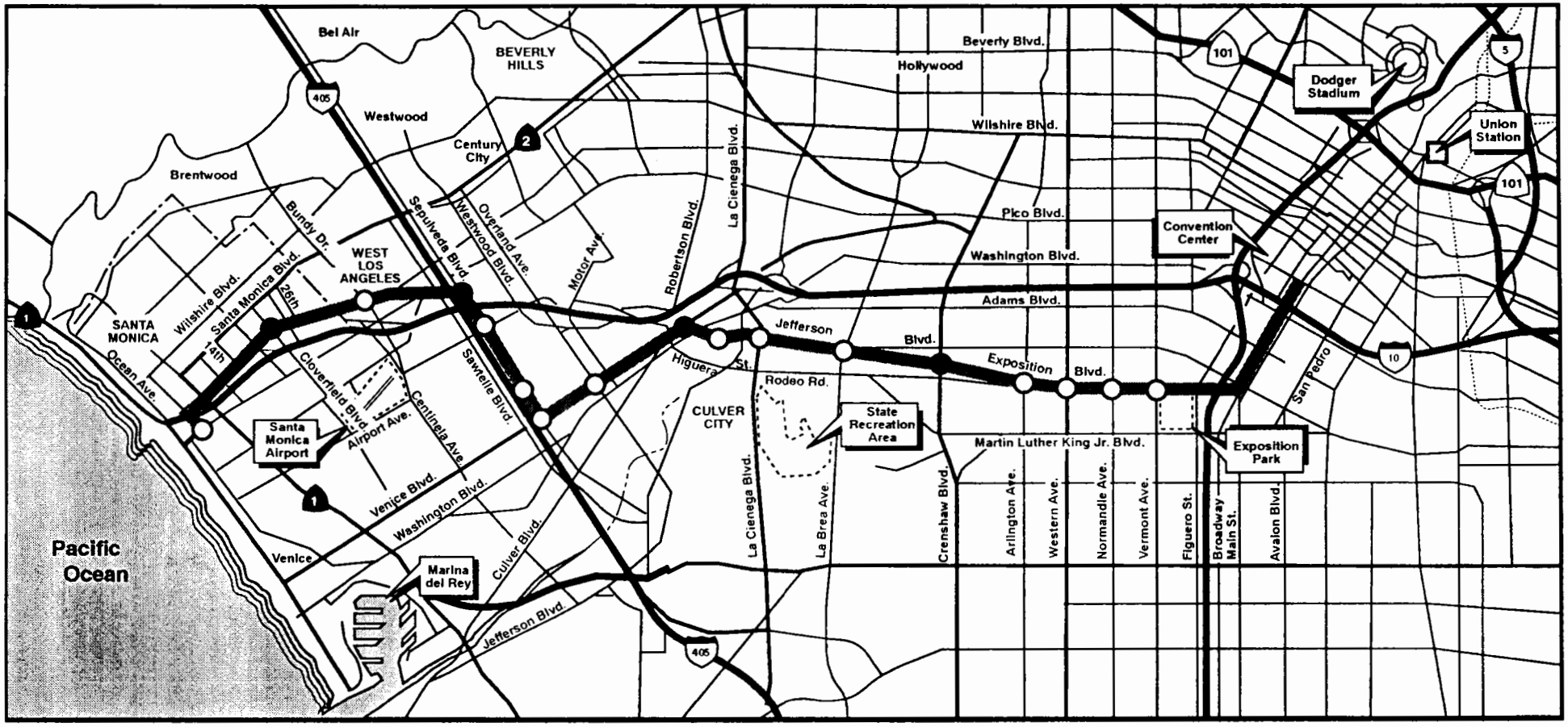
STATION	POSSIBLE TRANSIT CONNECTIONS WITH EXISTING LINES[1]	ADJACENT LAND USES	BOARDING AREA LAYOUT	PARKING
Vermont	MTA: 102, 204, 354 DASH C, LRT	USC, Expo Park, Residential	Far-side split; direct connections to Expo Park LRT Station	No parking
Normandie	MTA: 102, 206	Residential	Far-side split	No parking
Western	MTA: 102, 207, 357, 576	Residential Highway Retail	Far-side split	No parking
Arlington	MTA: 102, 209	Residential Industrial	Far-side split	No parking
Crenshaw[2]	MTA: 210	Commercial, Retail	Far-side split	Park-and-ride
La Brea	MTA: 38, 102, 212	Industrial Residential	Far-side split	No parking
La Cienega	MTA: 38, 105, 439	Industrial Commercial Residential	Far-side split	No parking
Venice/ Robertson	MTA: 33, 220, 333, 438, 436 SMMBL: 12 CCMBL: 1, 4	Industrial Commercial Residential	Mid-block split	Park-and-ride (Transit Center)
Motor	MTA: 430, 431, 434, 437	Residential Commercial Industrial	Center platform on aerial site	No parking
I-405/Expo	MTA: 560 CCMBL: 6 SMMBL: 7	Industrial Commercial	Mid-block split	Park-and-ride (Transit Center)
Bundy	SMMBL: 9, 14, 10	Industrial Residential	Far-side split	No parking
Cloverfield	SMMBL: 9	Industrial Commercial	Far-side split	Park-and-ride
4th/Colorado	MTA: 434 SMMBL: 2, 3, 9	Commercial Office Retail	Loop	No parking

[1]Additional transit connections possible at some station by minor rerouting of existing bus lines to feed into transit stations.

[2]Possible future northbound rail line connection.

SOURCE: BRW, Inc.; December 29, 1993.

Bus Alternative E



Alignment

Bus Station/Stop without Parking

Bus Station/Stop with Parking

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. A-5

BRW

Source: B R W, Inc., 21 September 1994

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

TABLE A.5

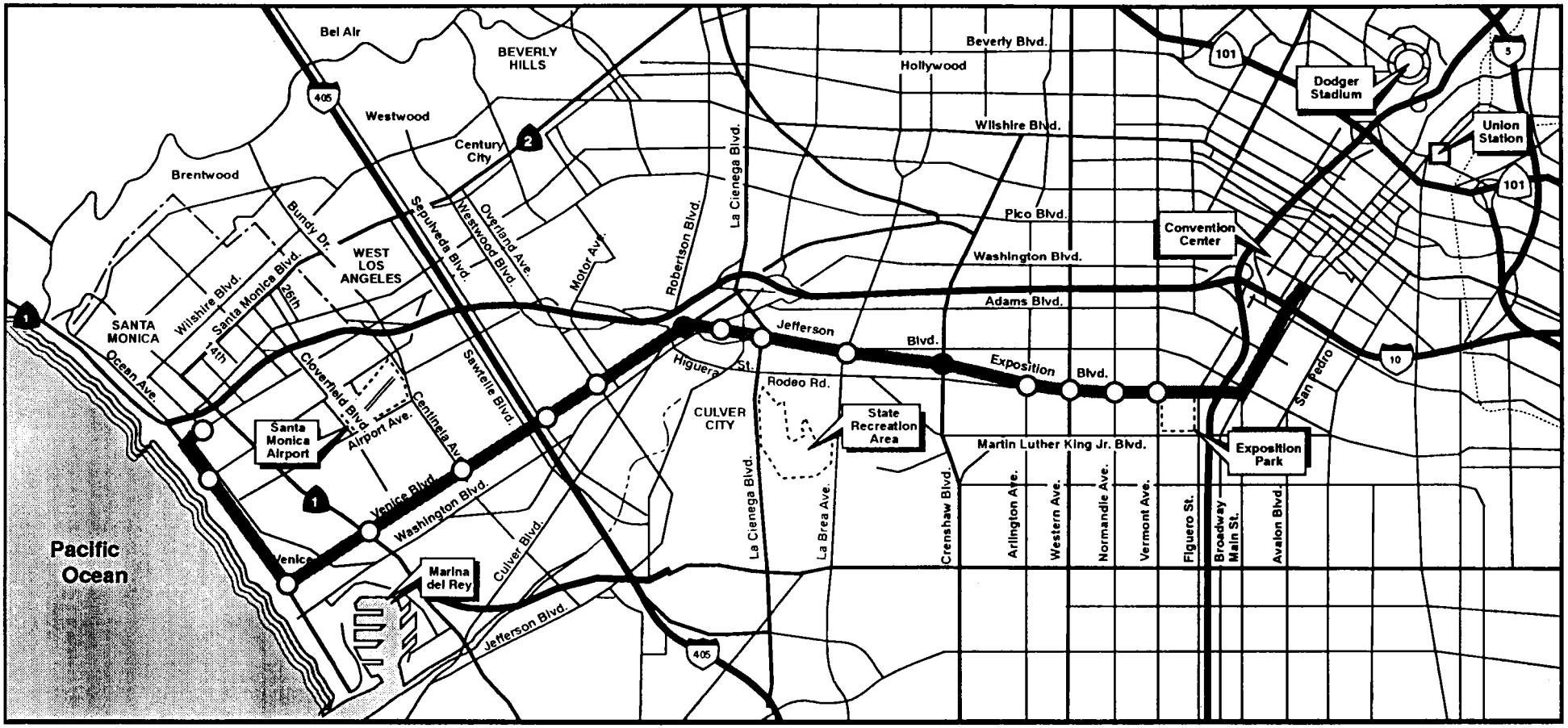
EXPOSITION RIGHT-OF-WAY
BUS ALTERNATIVE E STOP FEATURES

STATION	POSSIBLE TRANSIT CONNECTIONS WITH EXISTING LINES[1]	ADJACENT LAND USES	BOARDING AREA LAYOUT	PARKING
Vermont	MTA: 102, 204, 354 DASH C, LRT	USC, Expo Park, Residential	Far-side split; direct connection to Expo Park LRT Station	No parking
Normandie	MTA: 102, 206	Residential	Far-side split	No parking
Western	MTA: 102, 207, 357, 576	Residential Highway Retail	Far-side split	No parking
Arlington	MTA: 102, 209	Residential Industrial	Far-side split	No parking
Crenshaw[2]	MTA: 210	Commercial, Retail	Far-side split	Park-and-ride
La Brea	MTA: 38, 102, 212	Industrial Residential	Far-side split	No parking
La Cienega	MTA: 38, 105, 439	Industrial Commercial Residential	Far-side split	No parking
Hayden/ National	No adjacent bus routes	Industrial Residential	Side loading	No parking
Venice/ Robertson	MTA: 33, 220, 333, 438, 436 SMMBL: 1, 4 CCMBL: 12	Industrial Commercial Residential	Mid-block split	Park-and-ride (Transit Center)
Overland	MTA: 33, 333, 436 CCMBL: 3	Commercial Residential	Curb	No parking
Sepulveda/ I-405	MTA: 33, 333, 436 CCMBL: 6	Commercial Residential	Far-side split	No parking
Palms	SMMBL: 12 CCMBL: 6	Commercial Residential	Curb	No parking
National	SMMBL: 12 CCMBL: 6	Commercial Residential	Curb	No parking
Expo/I-405	MTA: 560 SMMBL: 7 CCMBL: 6	Industrial Commercial	Mid-block split	Park-and-ride (Transit Center)
Bundy	SMMBL: 9, 10, 14	Industrial Residential	Far-side split	No parking
Cloverfield	SMMBL: 9	Commercial Industrial	Far-side split	Park-and-ride
4th/Colorado	MTA: 434 SMMBL: 2, 3, 9	Commercial Office Retail	Loop	No parking

[1]Additional transit connections possible at some station by minor rerouting of existing bus lines to feed into transit stations.
[2]Possible future northbound rail line connection.

SOURCE: BRW, Inc.; December 29, 1993.

Busway Alternative F



Alignment

Busway Station/Stop without Parking

Busway Station/Stop with Parking

SCALE IN FEET
2,500 10,000
0 5,000

NORTH

Figure No. A-6

BRW

Source: B R W, Inc., 21 September 1994

MTA Los Angeles County Metropolitan Transportation Authority

EXPOSITION RIGHT-OF-WAY

Alternatives Refinement/ Environmental Impact Report Study

TABLE A.6

EXPOSITION RIGHT-OF-WAY
BUS ALTERNATIVE F STOP FEATURES

STATION	POSSIBLE TRANSIT CONNECTIONS WITH EXISTING LINES[1]	ADJACENT LAND USES	BOARDING AREA LAYOUT	PARKING
Vermont	MTA: 102, 204, 354 DASH C, LRT	USC, Expo Park, Residential	Far-side split; direct connection to Expo Park LRT Station	No parking
Normandie	MTA: 102, 206	Residential	Far-side split	No parking
Western	MTA: 102, 207, 357, 576	Residential Highway Retail	Far-side split	No parking
Arlington	MTA: 102, 209	Residential Industrial	Far-side split	No parking
Crenshaw[2]	MTA: 210	Commercial, Retail	Far-side split	Park-and-ride
La Brea	MTA: 38, 102, 212	Industrial Residential	Far-side split	No parking
La Cienega	MTA: 38, 105, 439	Industrial Commercial Residential	Far-side split	No parking
Hayden/ National	No adjacent bus routes	Industrial Residential	Side loading	No parking
Venice/ Robertson	MTA: 33, 220, 333, 438, 436 SMMBL: 12 CCMBL: 1, 4	Industrial Commercial Residential	Mid-block split	Park-and-ride (Transit Center)
Overland	MTA: 33, 333, 436 CCMBL: 3	Commercial Residential	Far-side split in median	No parking
Sepulveda/ I-405	MTA: 33, 333, 436 CCMBL: 6	Commercial Residential	Far-side split in median	No parking
Centinela	MTA: 33, 333, 436 SMMBL: 14	Residential	Far-side split in median	No parking
Lincoln	MTA: 33, 333, 436 SMMBL: 2 CCMBL: 2	Commercial Residential	Far-side split in median	No parking
Venice/Pacific	MTA: 33 SMMBL: 1, 2 CCMBL: 1	Commercial Residential	Far-side split near traffic circle	No parking
Ocean Park	MTA: 33 SMMBL: 1, 2	Commercial Residential	Far-side split	No parking
4th/Colorado	MTA: 434 SMMBL: 2, 3, 9	Commercial Office Retail	Loop	No parking

[1]Additional transit connections possible at some station by minor rerouting of existing bus lines to feed into transit stations.
[2]Possible future northbound rail line connection.

SOURCE: BRW, Inc.; December 29, 1993.

APPENDIX B
Operating Assumptions

TABLE B.1

LRT ALTERNATIVE A
OPERATING ASSUMPTIONS

RUN 5 – LRT ON EXPO ROW — BRW, INC JULY 9, 1993

STATION	PARKING	DISTANCE		MAXIMUM SPEED (MPH)	RUNNING TIME (MIN)	TRAVEL TIMES	
		LINK (MILES)	CUMMULATIVE (MILES)			STA–STA TIME INCLUD DWELL TIME (MIN)	ELAPSED RUN TIME (MIN)
7TH/FLOWER			0.00				0.00
		0.71		35.00	1.65	1.98	
PICO BLVD			0.71				1.98
		0.78		35.00	2.15	2.48	
23ND ST.			1.49				4.46
		0.69		35.00	2.05	2.38	
JEFFERSON/ FLOWER			2.18				6.84
		0.86		35.00	3.24	3.57	
VERMONT			3.04				10.41
		1.02		35.00	2.08	2.41	
WESTERN			4.06				12.82
		1.55		45.00	2.40	2.73	
CRENSHAW	X		5.61				15.55
		1.19		45.00	2.05	2.38	
LA BREA	X		6.80				17.92
		1.02		45.00	1.82	2.15	
LA CIENGA	X		7.82				20.07
		0.54		45.00	1.05	1.38	
HAYDEN			8.36				21.45
		0.54		45.00	1.05	1.38	
VENICE/ ROBERTSON	X		8.90				22.83
		1.25		55.00	1.82	2.15	
MOTOR			10.15				24.99
		1.65		55.00	2.26	2.59	
I–405	X		11.80				27.58
		0.91		55.00	1.32	1.65	
BUNDY	X		12.71				29.23
		1.19		55.00	1.63	1.96	
CLOVERFIELD	X		13.90				31.19
		1.48		35.00	2.78	3.11	
4TH/COLORADO			15.38				34.29

7TH/FLOWER TOO 4TH/COLORADO	15.38	34.29 MIN.
VERMONT TO 4TTH/COLORADO	12.34	23.88 MIN.

TABLE B.2

BUS ALTERNATIVE C
OPERATING ASSUMPTIONS

MODEL RUN 6 – ETB ON EXPO ROW — BRW INC. August 17, 1993

STATION	PARKING	DISTANCE		MAXIMUM SPEED (MPH)	MAJOR SIGNALIZED CROSSINGS	RUN TIME (MIN)	TRAVEL TIMES	
		LINK (MILES)	CUMMULATIVE (MILES)				STA–STA TIME INCLUD DWELL TIME (min)	ELAPSED RUN TIME (MIN)
UNION STAT			0.00					0.00
		0.99		15	n/a	3.96	4.29	
BRDWAY/1ST			0.99					4.29
		0.39		15	n/a	1.56	1.89	
BRDWAY/3RD			1.38					6.18
		0.41		15	n/a	1.64	1.97	
BRDWAY/7TH			1.79					8.15
		0.77		15	n/a	3.08	3.41	
BRDWAY/PICO			2.56					11.56
		1.50		15	n/a	6.00	6.33	
BRDWAY/ JEFFERSON			4.06					17.89
		1.11		15	n/a	4.44	4.77	
VERMONT			5.17					22.66
		0.51		35	1	1.40	1.73	
NORMANDIE			5.68					24.39
		0.51		35	2	1.61	1.84	
WESTERN			6.19					26.34
		0.52		35	2	1.63	1.96	
ARLINGTON			6.71					28.30
		1.03		45	3	2.52	2.85	
CRENSHAW	X		7.74					31.15
		1.19		45	2	2.82	3.15	
LA BREA			8.93					34.30
		1.02		45	1	2.19	2.52	
LA CIENGA			9.95					36.82
		0.54		45	2	1.95	2.28	
HAYDEN			10.49					39.10
		0.54		45	2	1.63	1.96	
VENICE/ ROBERTSON	X		11.03					41.06
		1.25		45	1	2.50	2.83	
MOTOR			12.28					43.89
		1.65		45	3	3.35	3.68	
I–405	X		13.93					47.57
		0.81		45	4	3.24	3.57	
BUNDY			14.84					51.14
		1.19		45	4	2.98	3.31	
CLOVERFIELD	X		16.03					54.45
		1.48		15	n/a	5.92	6.25	
4TH/COLORAD O			17.51					60.70

UNION STAT TO 4TH/COLORADO	17.51	17.31 mph	60.70 min
VERMONT TO 4TH/COLORADO	12.34	19.47 mph	38.04 min

NOTES:
1. DWELL TIME = 0.33 MINUTES
2. DELAYS AT MAJOR SIGNALIZED CROSSINGS BASED UPON EITHER 50% PROBABILITY (RANDOM ARRIVALS) OR 30% PROBABILITY (PROGRESSION) OF AVG. 22.5 SECOND DELAY.
3. 45 MPH MAXIMUM SPEED ASSUMED WITHIN RR ROW
4. 15 MPH MAXIMUM SPEED ASSUMED FOR MIX TRAFFIC OPERATIONS

TABLE B.3

BUS ALTERNATIVE D - LA CIENEGA DETOUR OPERATIONS ASSUMPTIONS

MODEL RUN 8 – ETB WITH LA CIENGA DETOUR — BRW INC. AUGUST 31, 1993

STATION	PARKING	DISTANCE		MAXIMUM SPEED (MPH)	MAJOR SIGNALIZED CROSSINGS	RUN TIME (MIN)	TRAVEL TIMES	
		LINK (MILES)	CUMMULATIVE (MILES)				STA–STA TIME INCLUD DWELL TIME (min)	ELAPSED RUN TIME (MIN)
UNION STAT			0.00					0.00
		0.99		15	n/a	3.96	4.29	
BROWAY/1ST			0.99					4.29
		0.39		15	n/a	1.56	1.89	
BROWAY/3RD			1.38					6.18
		0.41		15	n/a	1.64	1.97	
BROWAY/7TH			1.79					8.15
		0.77		15	n/a	3.08	3.41	
BROWAY/PICO			2.56					11.56
		1.50		15	n/a	6.00	6.33	
BROWAY/ JEFFERSON			4.06					17.89
		1.11		15	n/a	4.44	4.77	
VERMONT			5.17					22.66
		0.51		35	1	1.40	1.73	
NORMANDIE			5.68					24.39
		0.51		35	2	1.61	1.94	
WESTERN			6.19					26.34
		0.52		35	2	1.63	1.96	
ARLINGTON			6.71					28.30
		1.03		45	3	2.52	2.85	
CRENSHAW	X		7.74					31.15
		1.19		45	2	2.62	3.15	
LA BREA			8.93					34.30
		1.02		45	1	2.19	2.52	
LA CIENGA			9.95					36.82
on La Cienga to Venice		1.06		15	n/a	4.24		
on Venice to ROW		1.54		15	n/a	6.16	10.41	
VENICE/ ROBERTSON	X		12.55					47.22
		1.25		45	1	2.50	2.83	
MOTOR			13.80					50.05
		1.65		45	3	3.35	3.68	
I–405	X		15.45					53.73
		0.91		45	4	3.24	3.57	
BUNDY			16.36					57.30
		1.19		45	4	2.98	3.31	
CLOVERFIELD	X		17.55					60.61
		1.48		15	n/a	5.92	6.25	
4TH/COLORADO			19.03					66.86
UNION STAT TO 4TH/COLORADO			19.03			17.08 mph		66.86 min
VERMONT TO 4TH/COLORADO			13.86			18.82 mph		44.20 min

NOTES:
1. DWELL TIME = 0.33 MINUTES
2. DELAYS AT MAJOR SIGNALIZED CROSSINGS BASED UPON EITHER 50% PROBABILITY (RANDOM ARRIVALS) OR 30% PROBABILITY (PROGRESSION) OF AVG. 22.5 SECOND DELAY
3. 45 MPH MAXIMUM SPEED ASSUMED WITHIN RR ROW
4. 15 MPH MAXIMUM SPEED ASSUMED FOR MIX TRAFFIC OPERATIONS

TABLE B.4

BUS ALTERNATIVE E
OPERATIONS ASSUMPTIONS

MODEL RUN 7 – ETB WITH VENICE/SEPULVEDA DETOUR — BRW INC. AUGUST 17, 1993

STATION	PARKING	DISTANCE		MAXIMUM SPEED (MPH)	MAJOR SIGNALIZED CROSSINGS	RUN TIME (MIN)	TRAVEL TIMES	
		LINK (MILES)	CUMMULATIVE (MILES)				STA–STA TIME INCLUD DWELL TIME (min)	ELAPSED RUN TIME (MIN)
UNION STAT			0.00					0.00
		0.99		15	n/a	3.96	4.29	
BRDWAY/1ST			0.99					4.29
		0.39		15	n/a	1.56	1.89	
BRDWAY/3RD			1.38					6.18
		0.41		15	n/a	1.64	1.97	
BRDWAY/7TH			1.79					8.15
		0.77		15	n/a	3.08	3.41	
BRDWAY/PICO			2.56					11.56
		1.50		15	n/a	6.00	6.33	
BRDWAY/ JEFFERSON			4.06					17.89
		1.11		15	n/a	4.44	4.77	
VERMONT			5.17					22.66
		0.51		35	1	1.40	1.73	
NORMANDIE			5.68					24.39
		0.51		35	2	1.61	1.94	
WESTERN			6.19					26.34
		0.52		35	2	1.63	1.96	
ARLINGTON			6.71					28.30
		1.03		45	3	2.52	2.85	
CRENSHAW	X		7.74					31.15
		1.19		45	2	2.82	3.15	
LA BREA			8.93					34.30
		1.02		45	1	2.19	2.52	
LA CIENGA			9.95					36.82
		0.54		45	2	1.95	2.28	
HAYDEN			10.49					39.10
		0.54		45	2	1.63	1.96	
VENICE/ ROBERTSON	X		11.03					41.06
		1.23		15	n/a	4.92	5.25	
VENICE/OVERLAND			12.26					46.31
		0.77		15	n/a	3.08	3.41	
VENICE/ SEPULVEDA			13.03					49.72
		0.56		15	n/a	2.24	2.57	
SEPULVEDA/ PALMS			13.59					52.29
		0.69		15	n/a	2.76	3.09	
SEPULVEDA/ NATIONAL			14.28					55.36
		0.78		15	n/a	3.12	3.45	
I–405	X		15.06					58.83
		0.91		45	4	3.24	3.57	
BUNDY			15.97					62.40
		1.19		45	4	2.98	3.31	
CLOVERFIELD	X		17.16					65.71
		1.48		15	n/a	5.92	6.25	
4TH/COLORAD C			18.64					71.96

UNION STAT TO 4TH/COLORADO	18.64	15.54 mph	71.96 min
VERMONT TO 4TH/COLORADO	13.47	16.39 mph	49.30 min

NOTES:
1. DWELL TIME = 0.33 MINUTES
2. DELAYS AT MAJOR SIGNALIZED CROSSINGS BASED UPON EITHER 50% PROBABILITY (RANDOM ARRIVALS) OR 30% PROBABILITY (PROGRESSION) OF AVG. 22.5 SECOND DELAY
3. 45 MPH MAXIMUM SPEED ASSUMED WITHIN RR ROW
4. 15 MPH MAXIMUM SPEED ASSUMED FOR MIX TRAFFIC OPERATIONS

TABLE B.5

BUS ALTERNATIVE F
OPERATIONS ASSUMPTIONS

MODEL RUN #9 – ETB ON ROW TO VENICE, MAIN/PACIFIC TO ST. MONIC BRW, Inc. September 3, 1993

STATION	PARKING	DISTANCE		MAXIMUM SPEED (MPH)	MAJOR SIGNALIZED CROSSINGS	RUN TIME (MIN)	TRAVEL TIMES	
		LINK (MILES)	CUMMULATIVE (MILES)				STA–STA TIME INCLUD DWELL TIME (min)	ELAPSED RUN TIME (MIN)
UNION STAT			0.00					0.00
		0.99		15	n/a	3.96	4.29	
BRDWAY/1ST			0.99					4.29
		0.39		15	n/a	1.56	1.89	
BRDWAY/3RD			1.38					6.18
		0.41		15	n/a	1.64	1.97	
BRDWAY/7TH			1.79					8.15
		0.77		15	n/a	3.08	3.41	
BRDWAY/PICO			2.56					11.56
		1.50		15	n/a	6.00	6.33	
BRDWAY/ JEFFERSON			4.06					17.89
		1.11		15	n/a	4.44	4.77	
VERMONT			5.17					22.66
		0.51		35	1	1.40	1.73	
NORMANDIE			5.68					24.39
		0.51		35	2	1.61	1.94	
WESTERN			6.19					26.34
		0.52		35	2	1.69	2.02	
ARLINGTON			6.71					28.36
		1.03		45	3	2.52	2.85	
CRENSHAW	X		7.74					31.21
		1.19		45	2	2.72	3.05	
LA BREA			8.93					34.26
		1.02		45	1	2.14	2.47	
LA CIENGA			9.95					36.73
		0.54		45	2	1.85	2.18	
HAYDEN			10.49					38.91
		0.54		45	2	1.57	1.90	
VENICE/ ROBERTSON	X		11.03					40.81
		1.23		35	4	3.94	4.27	
VENICE/OVERLAND			12.26					45.08
		0.56		35	1	1.63	1.96	
VENICE/SEPULVED A			12.82					47.04
		1.20		35	4	3.78	4.11	
VENICE/CENTINELA			14.02					51.15
		1.39		35	4	4.10	4.43	
VENICE/LINCOLN			15.41					55.58
		1.25		15	n/a	5.00	5.33	
VENICE/PACIFIC			16.66					60.91
		1.49		15	n/a	5.96	6.29	
OCEAN PARK/MAIN			18.15					67.20
		1.18		15	n/a	4.72	5.05	
4TH/COLORADO			19.33					72.25

UNION STAT TO 4TH/COLORADO	19.33	16.05 mph	72.25 min
VERMONT TO 4TH/COLORADO	14.16	17.13 mph	49.59 min

NOTES:
1. DWELL TIME = 0.33 MINUTES
2. DELAYS AT MAJOR SIGNALIZED CROSSINGS BASED UPON EITHER 50% PROBABILITY (RANDOM ARRIVALS) OR 30% PROBABILITY (PROGRESSIO I OF AVG. 22.5 SECOND DELAY.
3. 45 MPH MAXIMUM SPEED ASSUMED WITHIN RR ROW
4. 15 MPH MAXIMUM SPEED ASSUMED FOR MIX TRAFFIC OPERATIONS

APPENDIX C
Public Comments and Segment Design Criteria

SEGMENT DESIGN CRITERIA FROM COMMUNITY INPUT COMMENTS

SEGMENT DESIGN CRITERIA	
A-1	Station Location - Different sizes and sites - Access routes
A-2	Station Characteristics - Number of bus routes/berths - Number of parking spaces - Number of kiss-and-ride spaces - Design integration
A-3	Alignment Horizontal Location
A-4	Alignment Vertical/Profile
A-5	Cross-Section Elements - Guideway - Bikeway - Mitigations
A-6	Traffic Operations - Station and parking access - Alignment crossings - Pedestrian crossing
ADJACENT COMMUNITY CONCERNS	
A-7	- Other
A-8	- Noise
A-9	- Visual
A-10	- Safety
A-11	- Vibration
A-12	- EMF
A-13	- Security/crime in neighborhood
A-14	- Growth Inducement
A-15	- Cumulative Traffic
ALTERNATIVES EVALUATION	
B-1	- Operations
B-2	- Ridership
B-3	- Potential for Environmental Sensitivity
B-4	- Project Costs
SYSTEM CONSIDERATIONS	
C-1	- Alternatives to Project
C-2	- Systemwide issues

SOURCE: BRW, Inc., May 1993.

Part 1

Community Input Comments
Community Workshop at Echo Horizon School
Culver City

April 14, 1993

COMMUNITY INPUT
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A	Is a station possible at Ballona?					X		
A-1	Put a station near Hayden Street and have the train stop there every other run (skip stop service).		X			X		
A-1	Is it possible to move the recycling center?							X
A-1	Lot of underutilized land east of La Cienega.					X		
A-1	Could there be a station at Von's market?					X		
A-1	A station will not be within walking distance of residents unless you have one between La Cienega and Robertson.		X			X		
A-1	It would be hard to fit a station in at Motor because of space constraints.					X		
A-1	Assess station sites impact on traffic because parking attracts cars.			X		X		
A-1	When locating a station, consider that National Boulevard/Motor Avenue is a confusing area - lots of freeway on/off ramps.		X			X		
A-1	If there are only two stations, why assume that we have to leave out the "Hayden" station?		X			X		
A-1, A-6	Consider heavy traffic at Jefferson and National Boulevards.			X	X			
A-1, B-1	Station between La Cienega and Robertson would put 3 stations close together and would slow things down.				X	X		

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Characteristics								
A-2	Improve quality of life issues around stations—open space, bike and pedestrian ways.					X		
A-2	Neighborhood-serving stations w/minimal or no parking/no park-and-ride.		X			X		
A-2	Put bike lockers at stations.						X	
A-2	Where would parking be? Beneath, aerial?		X			X		
A-2	A park-and-ride is needed at La Cienega Boulevard.		X			X		
A-2	Put major parking at Venice and Robertson Boulevards.		X			X		
A-2, A-6	Consider the effect of no parking at stations in surrounding neighborhoods (and the extra street parking it would draw).			X				
Alignment Horizontal Location								
A-3	Put the rails/roadway closest to National Boulevard.		X					
A-3	Heading west, have the trains go over La Cienega Boulevard and be on north side of National Boulevard to avoid an at-grade crossing at Hayden Street.		X					
A-3	Can LRT be realigned between Jefferson & Washington Boulevards and moved south to the south side of National Boulevard?		X					
A-3	East of La Cienega Boulevard put tracks/roadway closest to commercial and parking areas because there is room there for it.		X					

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Alignment Vertical/Profile								
A-4	Is the line already planned to be grade-separated at Bagley Avenue?				X			
A-4	Maybe the line should be underground with parking on top?				X			
A-4	Can we bury the system? What about the creek?							
A-4	Depress the rail - the deeper the better.				X			X
A-4	The line should be grade separated through Culver City to permit the ROW to be fully fenced.				X			X
A-4	Could there be a below-grade alignment from Washington to Jefferson Boulevards?				X			X
A-4	The line could be elevated just east of Motor Avenue.							X
A-4, A-6	If Venice Boulevard is grade-separated, why not continue grade separated across Washington.		X					
A-4, A-6	Put a grade separation at Venice and Washington Boulevards.		X					
A-4, A-8	Perhaps the route should be partially below grade with a wall and ivy.				X			
Cross Section Elements								
A-5	Greenspace/bikeway would be one type of mitigation.	X		X				
A-5	Consider landscaping along Route.	X		X				

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-5, A-8	Try a buffer that would mitigate noise from both National Boulevard and LRT (two for one).			X				
Traffic Operations								
A-6	La Cienega Boulevard is loaded with traffic.	X						
A-6	Preserve school integrity and functions	X		X				
A-6	How will suppliers serve industrial area after ROW is in use?		X					
A-6	How do pedestrians cross LRT tracks? Over-pass? Gated crossing?		X					
A-6	La Cienega & Jefferson have heavy traffic problems	X						
A-6	Have no at-grade crossings along National Boulevard.				X			X
A-6	Can't make a left turn at Jefferson and National Boulevards; left turn lane would improve operation, but residents don't want left turn at Jefferson.		X					
A-6	Put pedestrian overpasses if guideway is "bermed".	X						
A-6	Where are potential grade separations?				X			X
A-6	Won't ETB on Venice Boulevard create traffic impact?			X				
A-6, A-10	Children living south of the ROW cross it to go to the park.	X						
A-6, A-10	Put in a pedestrian/handicapped overcrossing for children to access Kronenthal Park.	X		X				
A-6, A-10	Consider that children cross National Boulevard at nearly every street.	X						

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-6, A-10	Children living north of the ROW cross it to go to the school.	X						
Adjacent Community Concerns								
A-7	There are rumors of hazardous material under Hayden Tract.			X				
A-7	Be aware we're in a riverbed—sinkage could occur.			X				
A-7	Consider the existence and location of the Newport/Inglewood earthquake fault through this area.			X				
A-7	There was a munitions/chemical factory west of the creek; however, hazardous materials may have has been cleaned out.			X				
A-7	Hazardous wastes are rumored in industrial area.			X				
A-7	Newport/Inglewood earthquake fault.			X				
Noise								
A-8	At-grade crossing with horn is problem.		X	X	X			
A-8	Do noise monitoring near school if EIR is conducted.			X				
A-8	Prefer berm over sound wall.	X						
A-8	Consider noise impacts generally in residential areas.			X				X
A-8	How effective are noise walls?			X				

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-8	The breeze south along National Boulevard carries noise into the neighborhoods; noise measurements should take this into account.			X				
A-8	Very concerned about noise.			X				
A-8	Mitigate noise beforehand.	X						
A-8	LRT - no proven way to make it quiet.	X						
A-8	Noise on curves—need to pay special attention to that.	X						
A-8	National is higher than cul-de-sacs; the roadway is at window-level and is very noisy; it levels out near Washington Boulevard.			X				
A-8	In Vancouver the train is very quiet.	X						
A-8	Consider the interference of trains with hearing apparatus units.	X						
A-8	Grade crossing at Hayden—horns are unacceptable.		X					
A-8	Noise of LRT at bedroom window.	X						
A-8	Ugly/bad graffiti—walls might be a problem.	X						
A-8	Need to plan assuming the worst in terms of noise.	X						
A-8	How will noise impacts be addressed?			X				
A-8	Consider noise of combined I-10 ramp and Higuera traffic diversion.			X				

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-8, A-11	Consider effect of vibration and noise sensitivity at Echo Horizon (a school for the hearing impaired).			X				
A-8, C	Use alternative technology, other than horn, for grade crossing, featuring voice speakers and strobes.	X						X
Safety								
A-10	What would be the effect of train accidents on traffic.			X				
A-10	Consider the derailment of LRT at curves.		X					X
A-10	Children's safety is #1 concern.	X						
A-10	Put crosswalks over National Boulevard.	X						
A-10	Consider safe Pedestrian Access.	X						
A-10, A-8	Will there be an at-grade crossing at National Boulevard and Hayden Street? This is a residential area.		X					
Vibration								
A-11	What is the vibration impact? Especially Horizon School.			X				
EMF								
A-12	Consider the effects of electro-magnetic fields on health.			X				
A-12	Will there be any interference of KLOS radio station from electricity in the line?			X				

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Security/Neighborhood Crime								
A-13	What will done about security?							X
A-13	Security: will transit officers just kick off trouble makers at next station? Consider the possible impact of crime on neighborhoods.			X				X
Growth Inducement								
A-14	Impact on densifications.			X				X
A-15	Consider Vista Pacifica Project along Jefferson Boulevard at base of hills in the planning process.							X
A-15	Traffic impact on National of Hayden and Jensen projects.			X				X
Alternative Evaluation								
B	What are drawbacks of not going on ROW.				X			X
Operations								
B-1	Have a bikeway connection at Ballona Creek.		X					
B-1	Bypass East Culver City on La Cienega and Venice Boulevards either LRT or ETB.				X			
B-1	There is much to commend ETB.	X						
B-1	There may be a possible shuttle bus along Motor in future.	X			X			

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
B-1	At Hayden track could there be a skip stop operation?	X						
B-1	Having a bikeway connection at Ballona Creek would be excellent.		X					
B-1	What are trip times of electric trolley bus (ETB) vs light rail transit (LRT).				X			
B-1, B-2	There is a trade-off between access vs speed.		X		X			
B-1, B-2, B-3	Go up La Cienega Boulevard - best way to mitigate impacts.				X			
Ridership								
B-2	Isn't ETB just as good as LRT?	X						
B-2	Is ridership sufficient on this line? Will there be a door-to-door survey on ridership?							X
B-2	Consider higher residential density east of Motor Avenue.	X						
B-2	Will this line remove a significant amount of traffic from Santa Monica Freeway?				X			X
B-2	Does line split as proposed, result in different ridership?				X			
Project Costs								
B-4	Underground is very expensive.	X						X
B-4	Will Culver City contribute Proposition C monies to cost of underground guideway?							X
B-4	Since depressing the train is so expensive - maybe City would help pay?							X

COMMUNITY INPUT (continued)
ECHO HORIZON SCHOOL - CULVER CITY
APRIL 14, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
System Wide Issues								
C	Plan over time to increase parking fees to encourage bus/rail and bus/bus travel.							X
C	For the ETB bypass, use Fairfax Avenue instead and go to Westside (RTD) transit center.							X
C	Why not ETB on Venice Boulevard median and mixed flow on Robertson Boulevard?							X
C	Put ETB down Venice Boulevard to Downtown Los Angeles.						X	X
C	Mitigate all problems beforehand with design guarantees.	X						X
C	Project on Santa Monica Boulevard corridor could resolve 10-freeway congestion.	X						
C	Consider trade-off of local circulation vs regional mobility.							X
C	What happens if the MTA abandons the ROW?							X
C	Why not put rail line on Santa Monica Freeway?	X					X	
C	The Public Utilities Commission needs to make innovations regarding train horns.							X

Part 2

Community Input Comments
Community Workshop at Westside YMCA
West Los Angeles

April 13, 1993

COMMUNITY WORKSHOP
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A-1	Nowhere - is the option to consider for a parking lot.	X						
A-1	Where would access be to a park & ride at I-405?					X		
A-1	A park & ride lot would not be good at I-405.					X		
A-1	Where are park & rides on this segment?					X		
A-1	If a station is located at certain places, there may not be room for a bike path.					X		
A-1	Why study park & ride locations before planning whether they would work?							X
A-1, A-6	Consider the effect of station location on traffic.			X	X	X		
Station Characteristics								
A-2	Will there be preferential parking? (For neighborhoods which may be impacted by on-street parking of transit riders.)			X				
A-2	How much parking would be at an I-405 Park & Ride lot? 500 spaces? 1,000 spaces?		X	X				
A-2	We are very concerned about the number of parking spaces at the I-405.	X						
A-2	Where will parking be?		X					
A-2	Provide bike lockers at stations.							X
A-2	Where would you put parking?		X					

COMMUNITY WORKSHOP (continued)
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-2	Provide secure bike parking.							X
Alignment Horizontal Location								
A-3	Is it conceivable to take a different route than on these maps and then come up into the Westwood area?						X	
A-3	Are you looking at putting tracks on Venice Blvd?				X			
A-3, A-4	Use the ROW to Cheviot Hills; in Cheviot Hills, turn North on Motor Avenue into Rancho Park, going underground to Westwood to UCLA. All Santa Monica bus lines connect into Westwood to connect to Santa Monica.				X			
A-3, C	Look at a link with the proposed LAX/Palmdale Line.	X					X	
Alignment Vertical/Profile								
A-4	What happens on Bundy Drive and Barrington Avenue with the crossings (are they at-grade, or grade-separated)?		X	X	X			
A-4	The transit line should be under Venice Boulevard to the beach.	X					X	
A-4	A subway route along Wilshire Boulevard has been stopped by Congressman Waxman. Why not put subway under Wilshire Boulevard?						X	
A-4	There must be a grade separation at the Pico - Gateway Boulevard intersection.		X					
A-4	(The transit project crossing at) Overland Avenue needs a grade separation.		X					

COMMUNITY WORKSHOP (continued)
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-4, A-6	Be aware that the North-South Streets are now jammed, and cross traffic from ETB or LRT would make them worse. Crossing at-grade would be a disaster.		X		X			
A-4, A-6	Have grade separation at Gateway, Pico and Exposition Boulevards.		X					
Cross Section Elements								
A-5	Who would maintain the greenery? How would it be watered?	X		X				
A-5	In Long Beach, the community asked for buffers and berms, but did not get them. What would be done here?			X				
A-5	For bus or light rail - put the tracks as far on one side of ROW as possible to allow for greenery.		X					
A-5	Route(s) need to have green spaces and berms.		X	X				
A-5	If a Venice Boulevard route is chosen, can you still do a bikeway on the ROW?		X		X			
A-5	Could there be parking spaces alongside the bike route?		X		X			
A-5, C	What guarantees are there that such mitigations would be budgeted, implemented?			X				X
Traffic Operations								
A-6	What is the current traffic level in intersections along the route? How can we know where parking can go without information about traffic levels?			X				
A-6	Be aware that Pico/Sepulveda Boulevard intersection is at Level F already.		X	X	X			

COMMUNITY WORKSHOP (continued)
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-6	Park & ride means more traffic in the areas in which they are located, would it not?			X				
A-6, A-8	What will be the mitigation for traffic and noise impact on homes south of ROW and at schools along the ROW? Sound walls?			X				
Adjacent Community Concerns								
A-7	Will hazardous materials precautions be taken while constructing the line? (Specifically, where the paint store and Sams U Drive encroachments are located.)			X				
A-7	Be aware of major gas lines beneath Exposition Boulevard and Bundy Drive.			X				
A-7	How will you handle the pipeline that currently runs through the ROW?			X				
Noise								
A-8	Which of the technology options is quieter? What about noise impact at Overland School?		X	X				
A-8	Other systems are quieter than the Blue line. What about ETB, or the system in San Diego?		X		X			
A-8	Concerned about Electric Trolley Bus (ETB) & Light Rail Transit (LRT) noise levels.			X				
A-8	The noise impact should be no more than 70 db outside, 50 db inside. This level is requested for school areas.			X				
A-8	There is a preference for sound walls to mitigate noise -- the negative visual impact is not as bad as noise.			X				
A-8, A-10	The MTA must study how the schools are impacted, as well as the parks.			X				

COMMUNITY WORKSHOP (continued)
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Safety								
A-10	How would you keep cars off of the ETB guideway?		X					
A-10	Safety is very important.	X	X	X			X	
A-10	Is it safe to have the bikeway next to the track?		X				X	
A-10, A-8	Be aware of private schools (Wildwood and Crossroads).	X						
Security/Neighborhood Crime								
A-13	Have you planned for security on the line; will people feel safe enough to ride it?							X
Growth Inducement								
A-14	The land use policy associated with constructing this line increases density.							X
A-14	The area near the Post Office (east of I-405) is conducive to additional development, as well as other uses.	X						
A-14	What is the trip end density?							X
Cumulative Traffic								
A-15	Where would the traffic using this line originate? In the Valley? From the surrounding neighborhood?				X			X

COMMUNITY WORKSHOP (continued)
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Alternative Evaluation								
B	The ROW would make a great linear park, bikeway.		X		X			
B	There is a difference of opinion between City officials and the community in Santa Monica on whether the ROW project is wanted.	X					X	
B	We understand you are also studying a Santa Monica Boulevard corridor project. Would that serve the same need of the Exposition ROW line?						X	X
Operations								
B-1	Is the bikeway for sure? There is general agreement that there should be a bikeway, especially as interim use.						X	
B-1	To facilitate local circulation, shuttles and bicycles should be considered.						X	
B-1	Provide means of taking bikes on trolley bus and trains.							X
B-1	On a bike route - how would bikes go through the tunnel at Palms Park? Also, Bundy is very difficult to cross on a bike.		X					
B-1	ETB and a bikeway could coexist.		X					
Ridership								
B-2	There is a General Plan, Floor to Area Ratio-increase meeting on April 14, 1993 that may relate to the transportation needs. (City of Los Angeles/MTA Joint Land Use Transportation Policy)	X						X

COMMUNITY WORKSHOP (continued)
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
B-2	What is the projected boarding in this segment?				X			
B-2	Will this (Exposition ROW) transit route serve the greatest demand?						X	
B-2	We understand that density in Santa Monica is a factor driving this route.	X						
B-2	Would like to explore possibility of new Pedestrian Oriented Development zoning.	X		X	X			
B-2, C	Would planned line result in trip reduction?							
Project Costs								
B-4	Bike route costs should be calculated.		X		X			
B-4	Is the land at I-405 owned by MTA?					X		
B-4	To accommodate parking at I-405, does MTA own land there? Or just tracks?					X		
B-4	MTA should apply for federal funding to start the bikeway.						X	X
B-4	Won't the Clinton Administration fund more for this project, since transportation is a priority of the President's?						X	
System Wide Issues								
C	A good site for a community park is west of Palms Park.	X						
C	Aesthetics of the line and the equipment are very important.			X				

COMMUNITY WORKSHOP (continued)
WESTSIDE YMCA, WEST LOS ANGELES
APRIL 13, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
C	Sierra Club is meeting Monday (4/19) to discuss deletion of HOV (high occupancy vehicle) lanes and support of a subway.	X						
C	Who would maintain a bikeway? Community groups could be organized to maintain it.	X						
C	Neighborhood associations support the use of the ROW as a park until transit can be done.	X						
C, B-1	Wants specific analysis of connection impacts.						X	

Part 3

Community Input Comments
Community Workshop at Ken Edwards Center
Santa Monica

April 19, 1993

COMMUNITY WORKSHOP
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A-1	Can the final stop be on south side of Freeway?					X		
A-1	Is there a station site east of the Sears site?					X		
A-1	Perhaps put major stop at the "Bergamont" site.					X		
A-1	Traffic and parking at 4th Street & Colorado Avenue will be a problem with the line, if parking is planned for there.		X		X	X		
A-1	Don't want "Sears" to be a multi-modal site.					X		
A-1	Have the multi-modal site at 26th Street.		X			X		
A-1	No new parking would be needed with the loop scenario just mentioned.					X		
A-1	How could Santa Monica College students access the line? The #11 bus stops service at 5:30 p.m.					X		
A-1	Have a major station at Cloverfield Boulevard.		X			X		
A-1	Plan stations so people can get to them.					X		
A-1	Is there not controversy about using the Sears site as a transit center?	X				X		
A-1	Why not simply make Venice Boulevard/Main Street intersection a transportation center?					X		
A-1	Stop is not necessarily inconsistent with Civic Center plans.					X		

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-1	Could there be a stop at 14th Street then at the Water Garden development?					X		
A-1, A-2	How will parking at 4th/Colorado work with the plans for the Pier?					X		
A-1, A-2	Sears site is just a last stop. Could you integrate it into a pedestrian area?					X		
A-1, A-3	Have a Pacific Palisades station. Extend the subway up the beach in the future.						X	
A-1, A-4, A-6	Concerned about what happens at 9th Street and what would happen to Sears.					X		
A-1, A-7	If there is a Cloverfield park & ride - Sunset Park residents may object.			X		X		
A-1, A-14	A major station at Cloverfield Boulevard will lead to new development at that site which would result in "Old" and "New" Downtowns.			X		X		
A-1, A-15	Put a park and ride at 20th Street for the new office center.					X		
A-1, A-15	Traffic would increase if there's parking at a Sears terminus.		X			X		
A-1, B-1	Put a station at Sears, then have a people mover/circulation to the Pier, Civic Center and park & ride lots.					X		
A-1, B-1	If the stops are every mile, that is very far apart to allow use within Santa Monica. From West LA to Santa Monica could there be request stops every 1/2 mile?					X		
A-1, B-1, A-7	The area around Henshey's Department Store is economically depressed. A loop would be an economic boost. Put parking at the Library.					X	X	

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Characteristics								
A-2	Plan for a pedestrian zone around station.					X		X
A-2	Provide bike lockers at stations.						X	
A-2	Make the line bike-friendly; provide secured bike storage and built-in bike locks.						X	
Alignment Horizontal Location								
A-3	ETB should extend from Motor Avenue to Venice Boulevard.		X		X			
A-3	Use the median of Venice Boulevard if the trolley alternative is used.		X		X			
A-3	Why not take LRT down to the ocean?				X			
A-3	Could there be a terminus at Olympic and Cloverfield Boulevards? Then there could be a smaller line to 4th Street.			X				
A-3	Why not be up on the I-10 freeway into Downtown Santa Monica?						X	
A-3	The line could take up a lane of traffic on Olympic. It would then eliminate some parking, but it would keep the trees.		X		X			
A-3	Who owns the Neilson Way ROW? The route would be ETB in mixed traffic.		X					
A-3	Question of terminus -- where would the line end on the east and west ends?		X			X		
A-3	A loop could work in Santa Monica to Wilshire Boulevard, on 6th Street (YMCA, Library) and go south into Ocean Park.				X			

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3	There should be ETB into downtown via Ocean Avenue or Main Street.		X		X			
A-3	Take two lanes of travel to widen the median and save trees (along Olympic Boulevard). Don't take Olympic Boulevard median trees.		X					
A-3	Maybe a line is not needed at all beyond Cloverfield?				X			X
A-3	The line could be on Olympic Boulevard, but would it be put in median greenspace?				X			
A-3	Stop LRT at Santa Monica Blvd. (6th Street).				X			
A-3	To implement a loop for the line, it could go up to Montana Avenue and then down 6th Street.				X			
A-3	When planning the transit system locations, consider land use.	X					X	X
A-3	Consider the ExpoRail Committee's suggested alignment under the Lincoln overpass, through the bus yard to Sears.				X			
A-3	Don't go down Neilson Way.				X			
A-3	Is there any ROW left along Pacific or Neilson Way?				X			
A-3	Consider an alternative along the I-10 freeway from the ROW to Pacific Palisades to Malibu.	X					X	X
A-3	Some people want to go all the way to Downtown Santa Monica, to beaches, 3rd Street Promenade, etc. If we're bringing people to Santa Monica - need to get them all the way to the beach.	X						

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3	Is it possible to use the shoulder of the I-10 freeway?		X		X			
A-3	There are a lot more benefits/destinations along ROW in Santa Monica versus along the Venice/Main/Pacific route alternative. For example, there are businesses, activity centers, etc.				X			
A-3	Note the major destinations along the line. The Exposition ROW serves many major destinations.	X						X
A-3, A-6	Look at using a combination of both the Venice Boulevard and Exposition ROW routes to minimize residential cross traffic.				X			
A-3, A-6	Could you use Ocean Avenue? But it is very congested.				X			
A-3, A-6	Get people to the beach. Let them come all the way to downtown Santa Monica on the line. Provide pedestrian linkages.		X					
A-3, A-7	Residents on Neilson Way are unhappy about buses.	X						
A-3, A-7	Project should be in commercial area - not in residential area.						X	
A-3, A-7	When considering Venice Boulevard to Main Street or Pacific Avenue, keep in mind that the community does not want wires on Main Street.				X			
A-3, A-7	There is lots of residential along Main Street/Pacific Avenue.	X			X			
A-3, B-1	Buses have already moved off of Main street onto Neilson Way.	X						X
A-3, B-1	Put a monorail over the I-10.						X	X

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3, B-1	Perhaps there could be a Monorail up Main Street?							X
A-3, B-2	May lose a lot of riders if you stop at Cloverfield Boulevard.			X				X
A-3, B-4	What is the extra cost of going beyond Cloverfield Boulevard to Downtown Santa Monica?		X				X	
Alignment Vertical/Profile								
A-4	Put a cover over Main Street. Make that area more pedestrian oriented. Or, make Main Street narrower with wider sidewalks.				X			
A-4	Why not put decking over the freeway at Main Street?				X			
A-4	An elevated line would provide good view of ocean.	X			X			X
A-4	Concerned about how the line would cross Olympic Boulevard.		X		X			
A-4	MTA could elevate the line from Cloverfield Boulevard to the Santa Monica Central Business District along Olympic Boulevard.				X			
A-4	Use the Exposition ROW and make it subway or trenched.				X			
A-4	Put a deck over the freeway.				X			
A-4, A-10	Grade crossing accidents are not as bad as freeway accidents.	X						
A-4, A-10, B-4	Over time, grade separations, such as bridges, could cost less than educating the public about safety. For example, Long Beach is retrofitting many intersections to make them grade separated.	X			X			

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-4, B-4	Elevating the line may not be cost efficient.		X		X			
Cross Section Elements								
A-5	The linear element of this project is an opportunity for landscaping.	X			X			
A-5	Provide a pedestrian path with bikeway so people can walk too. Like there is in Marina Del Rey. Also allow roller blades.		X					X
A-5, B-1	Santa Monica is very supportive of bicycles, rickshaws and solar powered scooters.	X						
A-5, B-1	The Exposition ROW bikeway is a natural. Make a Bikeway and pedestrian access a priority.		X		X			
Traffic Operations								
A-6	Widen Cloverfield Boulevard from I-10 to Broadway Street for traffic mitigation.			X				
A-6	Along Ocean Avenue, near 4th Street and Colorado Avenue, allow two lanes of traffic for buses only and make it pedestrian-oriented.			X				
A-6	Fourth Street and Colorado Avenue is congested normally.				X			
A-6	RTD is electrifying main bus lines.	X						
A-6	Institute a policy of no cars on Colorado Avenue - create a Pedestrian zone.	X						X
A-6	Make the sidewalks wider.	X						X
A-6	People could get to the beach by a pedestrian bridge.	X						X

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-6	Santa Monica city has said that parking is not appropriate at 4th Street and Colorado Avenue.		X		X			
A-6	Widen the sidewalk at the Colorado Avenue/2nd Street intersection.	X						
A-6	Second Street could be one-way or two-lane.	X						X
A-6	Make walking easier for pedestrians.						X	
A-6, A-2	With the expansion north of the Pier, will access be down the Pier or separate?	X						
A-6, B-2	You can eliminate parking (like in Paris) to force transit use.	X						X
A-6, A-3	There is light traffic on Olympic now. The impact would not be that bad if the line took up a lane.		X	X	X			
A-6, A-3	Long Beach has a one-way loop where the Blue Line comes into downtown there -- it works to diffuse traffic.	X						
A-6, A-4	Major intersections along both Exposition Boulevard and Venice Boulevard must be grade separated.		X		X			
A-6, A-4	The (Preliminary Planning) study has underestimated need for grade separations.	X		X	X			
A-6, A-5	Create a "pedestrian friendly" element in the plans for the line.	X						X

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Adjacent Community Concerns								
A-7	Property is selling better near stations and near lines. Nearby residents could be concerned about neighborhood stability.			X				
A-7	Consider visual impacts on CBD (Santa Monica).			X				
A-7, A-3	It would be better to go through commercial areas than residential areas, and this strategy could help businesses.				X			X
A-7, A-15	Keep access for traffic out of residential neighborhoods.		X					
Noise								
A-8	Consider the noise impact of the horns.			X				
Visual								
A-9	Electric buses are not pollution free - they affect the ozone.			X				
A-9	Using cars causes pollution and energy use.	X		X				
Safety								
A-10, A-13, A-7	Consider safety and security, as well as the impact on property values.			X				X
Security/Neighborhood Crime								
A-13	Crime is associated with transit systems.			X				X

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-13	The LRT in Sacramento, Portland, San Diego, etc. has not increased crime in those cities.	X			X			
A-13	What about crime? Which technology is least crime-prone?			X				X
Growth Inducement								
A-14	Grade crossings create a danger to cars because people are not staying aware.				X			
A-14, B-2	This area has a 12,800 person per square mile density. It is a very dense area for this line. It is second only to the Hollywood Red Line in density.						X	X
Cumulative Traffic								
A-15	Consider the traffic impacts on Downtown Santa Monica.			X	X			
A-15	Main Street/Pacific Avenue/Neilson Way are very narrow; thus, ETB would increase congestion.		X					
A-15	There is no solution to congestion along these streets (Main/Pacific/Neilson), so you shouldn't put anything there.	X						
A-15	It is reported that 38,000 car trips are planned for Civic Center build-out.			X				
A-15	Approval of 38,000 new car trips has been part of the Civic Center plan.			X				
Alternative Evaluation								
B	Consider the Main Street plan when looking at alternatives.		X					

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Operations								
B-1	Link the line with buses.					X		X
B-1	Santa Monica bus will cooperate with feeder lines.		X			X		X
B-1	Have a transit hub with bus, etc.					X		X
B-1	Relate the line to retail, so stations can serve businesses. Plan joint development or put where businesses already exist.							X
B-1	Can't we look at buses that don't have wires? e.g. Methanol, Methane.		X		X			X
B-1	Consider a train/circulator.						X	
B-1	Establish special shuttles from the new office center to Colorado Place, etc.					X	X	
B-1	The Santa Monica #10 bus to Downtown Los Angeles was cutback and is more crowded now.				X			
B-1	Eventually, ETB would eliminate parking on Main Street.				X			
B-1	What is the capacity of the train?							X
B-1	Accommodate bike route connections to transit.						X	
B-1	The capacity of beach-going buses is about 78 to 90 persons.	X						
B-1	In order to have a cleaner environment: LRT and/or bikeways are needed. Work with all bus lines.						X	

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
B-1	We don't want the LRT or ETB to be crowded.							X
B-1	MTA bus lines #33 and #333 lines go all the way to the beach.	X						
B-1	Shuttle people by bus from the office area at Cloverfield Boulevard to downtown Santa Monica.				X			
B-1	How would stops work if the line is in the middle of the street?		X		X			X
B-1	It is very important to study a bike path along the route with train or alone until something else such as Light Rail Transit (LRT) or Electric Trolley Bus (ETB) is built.		X					X
B-1	Put the ETB in normal vehicular traffic.				X			
B-1	Coordinate buses with station locations, and consider a multi-level system.					X	X	
B-1	How about Monorail?	X						
B-1	There is too much "kiss and ride" already from Pacific Palisades. Don't create more in Santa Monica.				X			
B-1	What is the voltage of ETB?	X						
B-1, A-6	Buses are being moved off of Main Street to Neilson Way in order to expand diagonal parking for merchants.				X			
B-1, A-6	Provide access to/from Santa Monica High School.		X			X		

COMMUNITY WORKSHOP (continued)
KEN EDWARDS CENTER, SANTA MONICA
APRIL 19, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Ridership								
B-2	What is employment level at 4th Street and Colorado Avenue?							X
B-2	Who would really be going all the way to Downtown Santa Monica? Where are they coming from?							X
B-2	People from Marina del Rey will want to come up to use this line.							X
B-2, A-15	What are the current trip patterns seven days a week?							X
Project Costs								
B-4	If there were a higher gas tax, it would provide more money for transportation.							X
B-4	Cost is a factor in non-at-grade crossings. (Grade separations.)		X					
System Wide Issues								
C	There should be coordination between all agencies and plans.	X						
C	Protect existing park space in any development.	X						
C	Coordinate with Main Street and the Civic Center Committee.							X
C	Consider aesthetics when planning ETB.	X						

Part 4

Community Input Comments
Community Workshop at Palms Middle School
Palms

April 21, 1993

COMMUNITY WORKSHOP
PALMS MIDDLE SCHOOL, PALMS
APRIL 21, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A-1	Where are the stops on Venice Boulevard? Why are there not stops between La Cienega Boulevard and Motor Avenue?					X		
A-1	Eliminate Motor Avenue station if LRT is built.					X		
A-1	Buses converge in Culver City; therefore, it would be a good place for a station.		X			X		
A-1	Eliminate Sepulveda station. Put station at Westwood for UCLA access.					X		
A-1	A station is needed for LRT on Exposition ROW at Westwood Boulevard.					X		
A-1, A-6	Sepulveda Boulevard is very congested due to freeway off-on ramps. If station is located at industrial area at Military Avenue/Pico Boulevard, it will add to congestion.		X			X		
Station Characteristics								
A-2	Make the parking large, adequate, and secure, no matter what is built (at junction of I-405).		X			X		
Alignment Horizontal Location								
A-3	Is Venice Boulevard/Main Street a terminus? Consider the revitalization of Main Street. It's a longer way around.				X	X		
A-3	Exposition route easier to police than other routes, according to the Los Angeles City Planning Department and the LAPD.				X			
A-3	Put ETB along the side of Venice Boulevard, not in the median.		X					

COMMUNITY WORKSHOP (continued)
PALMS MIDDLE SCHOOL, PALMS
APRIL 21, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3	Sepulveda Boulevard is too narrow and there is residential between Venice and Washington Boulevards.				X			
A-3	Why not use Sawtelle Boulevard to go north (instead of Sepulveda Boulevard)?	X						
A-3, A-6	Access is needed to UCLA up Sepulveda Boulevard for students. It is very congested.				X			
A-3, A-7	Homes are close to south side of the I-10. It would require property acquisition.		X					
A-3, B-1	Run ETB up La Brea Avenue to San Vicente Boulevard.	X						
Alignment Vertical/Profile								
A-4	Use underpasses as well as overpasses for the elevated guideway.				X			
A-4	Could there be an elevated LRT over the I-10?						X	
A-4	Put the line underground from Motor Avenue to Sepulveda Boulevard.				X			
A-4	Put LRT underground through Rancho Park.				X			
A-4, B-1	Build an elevated guideway for higher speed and fewer lawsuits.				X			
A-4, B-2	Grade separations are needed for LRT ridership.				X			X
Traffic Operations								
A-6	Parking is a big issue in the Westwood Boulevard/National Boulevard area.				X			
A-6	National and Sepulveda Boulevards have severe congestion now.			X				X

COMMUNITY WORKSHOP (continued)
PALMS MIDDLE SCHOOL, PALMS
APRIL 21, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-6	Will there be left turn lanes with the ETB along the median?		X					
A-6, A-10	How would pedestrians cross Venice Boulevard to get to bus stops, stores, etc., if the Electric Trolley Bus (ETB) goes down the middle of Venice Boulevard?		X					
A-6, A-7, A-1	Property value will go down with the project. Along Military Avenue, if the station is near traffic, it will impact traffic. MTA needs to mitigate traffic impact.			X				X
Adjacent Community Concerns								
A-7	Terminate the line where Exposition Boulevard and Venice Boulevard intersect.				X			
A-7	Mobil pipeline is under Sepulveda Boulevard.			X				
A-7, B	Venice Boulevard is already a business corridor.			X				
Cumulative Traffic								
A-15	Traffic between Santa Monica and the I-405 is light.			X				
A-15	There is a heavy demand on the I-405 freeway from the Valley.							X
A-15	Who is doing the traffic analysis? How are intersections/station sites evaluated?			X				
A-15	Using Venice Boulevard adds to congestion.			X				X

COMMUNITY WORKSHOP (continued)
PALMS MIDDLE SCHOOL, PALMS
APRIL 21, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Alternative Evaluation								
B	If the Venice Boulevard ETB route is chosen, what would the ROW be used for?				X			X
B	Venice Boulevard already has bus service.	X						
B	How does an EIR work? Who makes the determination on what is chosen?			X			X	X
B	Don't see need for using Exposition ROW Venice Boulevard in combination; use each for different purpose.				X			
Operations								
B-1	Will there be Dash-like buses to get to these routes?					X		
B-1	ROW could be LRT and a bike path.		X		X			
B-1	ETB in mixed traffic on Sepulveda Boulevard is "out of the question".				X			
B-1	What is the capacity of LRT versus ETB?				X			X
B-1, B	If Venice Boulevard is used for ETB, retain Exposition ROW for bikeway.				X			
B-1, C	There is no advantage to taking trains.							X
B-1, C	Why bother with a bus; it will take too long.							X

COMMUNITY WORKSHOP (continued)
PALMS MIDDLE SCHOOL, PALMS
APRIL 21, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Ridership								
B-2	Where are the people to ride the transit?							X
B-2	The Light Rail Transit (LRT) along the I-10 wouldn't serve people between Robertson and Palms/National Boulevards because it is all single-family homes.						X	X
B-2	Who are we trying to serve?						X	X
B-2	Venice Boulevard is higher density and would have more ridership.				X			
B-2	How are patronage forecasts done?							X
B-2, C	We need rapid transit from East to West to serve the working population (about 400,000) in Santa Monica.						X	
System Wide Issues								
C	If the line is on Venice Boulevard, it won't serve downtown Santa Monica because it takes too much time.				X			
C	Retain local service and don't duplicate service.							X
C	Hope the new systems won't knock out existing bus service.							X
C	A statement in favor of LRT on ROW all the way was made by several people in this group, including residents of Palms.	X			X			
C	Put LRT on the ROW -- loop around to Venice Boulevard and back in toward Los Angeles.				X		X	

COMMUNITY WORKSHOP (continued)
PALMS MIDDLE SCHOOL, PALMS
APRIL 21, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
C	Need some system to serve UCLA.				X			
C	Put ETB on Venice Boulevard and LRT on the ROW.				X			
C	Need more, safer, and cleaner buses...better bus system. Work to improve the bus system.							X
C	If ETB is put on Venice Boulevard, put a linear park/bikeway on Exposition ROW.				X			
C, A-6	Put a diamond lane (High Occupancy Vehicle lane) on the I-10.						X	

Part 5

Community Input Comments
Community Workshop at Westminster Senior Center
Venice

April 27, 1993

COMMUNITY WORKSHOP
WESTMINSTER SENIORS CENTER - VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A-1	Possible parking locations are at Lincoln Boulevard, Venice Beach, and Ocean Park Boulevard.					X		
A-1	Use Venice High School, Westminster School for parking.					X		
A-1	A park-and-ride could be located on state property in Marina Del Rey, adjacent to MTA property. An exclusive lane exists.						X	
A-1	Parking should be east of Lincoln Boulevard.					X		
A-1, B-1	Put park-and-ride at the Highway 90 median and establish a shuttle system into Venice. However, to get to downtown Santa Monica, it won't be useful.						X	
A-1, B-1, A-6	How does a park-and-ride fit in? Where would it be? With ETB, would it be running alongside the street?					X		
A-1, B-2, B-4	MTA could have a station in Marina Del Rey, and other technology could be used for local commuters. It would be the least money, greater ridership. For example, a better car pool lane is helping congestion on I-405.						X	
Alignment Horizontal Location								
A-3	MTA owns the Exposition ROW now. It does parallel I-10 now.	X						
A-3	Line is not appropriate on Pacific Avenue because all homes along Pacific Avenue have no setbacks.			X				

COMMUNITY WORKSHOP (continued)
WESTMINSTER SENIORS CENTER -VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3	The MTA purchased the Culver Boulevard ROW west of Lincoln.	X						
A-3	The line needs to parallel the I-10 freeway.		X					
A-3	Part of the Culver ROW is owned by City of Culver City.	X						
A-3	Put on the line on Pacific Avenue from Venice to Santa Monica.				X			
A-3	Use the Exposition ROW to Robertson, then go down the Culver Boulevard ROW. It goes all the way to Marina Del Rey.						X	
A-3	The Marina (90) freeway to Slauson is good route to downtown Los Angeles. Perhaps there is a corridor on Slauson.	X						
A-3	The Culver Boulevard ROW is not entirely available, Southern Pacific Railroad sold parts of it.	X						
A-3, A-1, B-1	Put the line on Exposition Boulevard, Culver Boulevard and Slauson Avenue; have a park-and-ride at the 90 freeway, and provide a shuttle to the beach, Playa Vista, and Marina Del Rey. Go up Lincoln for other connections.						X	
A-3, A-6	There is more traffic on the Venice Boulevard corridor.				X			
A-3, B	How can citizens express their choices officially? The Right-of-Way should be used.						X	
A-3, B-2	If there is a train on Venice Boulevard and up Pacific Avenue, it may serve the beach, but not people going other places.				X			

COMMUNITY WORKSHOP (continued)
WESTMINSTER SENIORS CENTER -VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3, C	The Venice Boulevard route is being proposed because Rancho Park has more money and political power.	X						
Alignment Vertical/Profile								
A-4	A subway under Wilshire Boulevard would be better. Venice community could get funds for shuttle buses.						X	
A-4, A-5	The line needs to be underground. A greenbelt is needed.				X			
A-4, B-1	If there are 20,000 crossings of traffic per day, that equals 2 billion per year.			X				
A-4, B-1	Put the line under Venice Boulevard, aerial on Lincoln Boulevard, and shuttle buses to the beach.						X	
A-4, B-2	MTA could do a subway under Venice and Wilshire Boulevards and accommodate 600,000 trips per day.						X	
A-4, B-4	Why is the City of Los Angeles traffic study not being used?			X				X
A-4, B-4	When considering the total costs of the project, the materials show that the Exposition ROW is the most expensive option with one additional grade crossing; and there will probably be eight or nine more grade crossings.				X			
Traffic Operations								
A-6	Be aware of the pedestrian light at Ashland Avenue. What would happen here?			X				
A-6	The bikeway on Venice Boulevard is not used because it is next to three lanes of traffic.		X					

COMMUNITY WORKSHOP (continued)
WESTMINSTER SENIORS CENTER -VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-6	Have two lanes on Pacific Avenue.		X					
A-6	Would there be removal of median improvements on Venice Boulevard?				X			
A-6, A-3	Pacific Avenue, Neilson Way, and Ocean Avenues are at absolute gridlock.				X			
A-6, A-3	Historically, Pacific Avenue was trolley line, but cars were not used to same extent then.	X						
A-6, B-1	With buses on Pacific Avenue, on summer afternoons, it is very congested. The Electric Trolley Bus (ETB) would not be able to move.		X					
A-6, B-1	At the Pacific Avenue - Venice Boulevard intersection, how would buses make the turn?				X			
A-6, B-1	Venice Boulevard West of Lincoln Boulevard - what will happen on this segment?		X					
A-6, B-1	Seasonally, such as in May through September, have a free lane on Venice Boulevard strictly for commuters (bus).				X			
A-6, B-1, A-3	The traffic on Pacific Avenue is bad, but since trolleys were in Venice historically, we should have trolley (light rail) on Pacific Avenue to Venice Boulevard to Robertson Boulevard in the median.		X					
Adjacent Community Concerns								
A-7	Property values actually go up near rail lines.	X						
A-7	Jobs should go to this community. Drivers, etc. can be hired from here.	X						

COMMUNITY WORKSHOP (continued)
WESTMINSTER SENIORS CENTER -VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-7, A-6	What is the impact on this neighborhood around Pacific Avenue, Nielson Way and Ocean Avenue? These streets already have traffic going 50 mph even though speed limit is 35 mph.			X				
Noise								
A-8, A-10	There are 15 to 20 schools, and 10,000 children along the ROW.			X				
Safety								
A-10	MTA needs to be concerned about safety.			X			X	
A-10, B-4	If one train has an accident, it could equal $6 million in personal injury lawsuits.	X						
Vibration								
A-11	The water level in this area is at six feet. ETB would shake everyone awake in the mornings with heavy buses.			X				
Operations								
B-1	Put in an aerial monorail to downtown Los Angeles and the beach. It could go on Venice Boulevard and up Main Street or Pacific Avenue.						X	
B-1	Establish shuttles into the community from Lincoln Boulevard or Abbott-Kinney Boulevard.	X						
B-1	We need new technology, such as personally automated transit.	X						

COMMUNITY WORKSHOP (continued)
WESTMINSTER SENIORS CENTER -VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
B-1	Subway - bike trail combination should be chosen. Quality of life and beauty would be maximized.	X					X	
B-1	East of Lincoln Boulevard over 1,000 spaces have been identified for park-and-ride already, but they are not used because shuttles are not in.	X			X			
B-1	Some kind of signage about accessing the beach needs to be posted on the I-405 freeway. A dedicated lane for a shuttle bus is needed to the beach.	X						
B-1	Describe the technology better - there is confusion about trolley bus.	X						
B-1, A-6, A-3	Gridlock starts on North Venice Boulevard at Abbott Kinney Road. Fire engines can't get through. No sense to have ETB there unless no cars are allowed.	X						
B-1, B-4	Is a cost and feasibility study being done to look at how the line interacts with bus riders?							X
B-1, B-4	Which system carries most people, most efficiently, and what is the cost?				X			X
Ridership								
B-2	If it is not a dedicated line, it will be too slow, no one will ride it.	X			X			
B-2	What are the travel times of the various alternatives?				X			
B-2	There is no hope of capturing the increase even with this line; all it does is accommodate more travel.							X
B-2	Over six million vehicles are registered in Los Angeles County. Traffic is getting worse. We must do something to get people out of cars.	X						

COMMUNITY WORKSHOP (continued)
WESTMINSTER SENIORS CENTER -VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
B-2	Is the Blue Line used more than expected? Riders need a comfortable commute to downtown.				X			
B-2	Will MTA estimate bikeway patronage?							X
B-2	Is the assumption that riders of this line will get out of their cars?	X			X			X
B-2, A-7	Beach should be kept low density.	X						
B-2, A-15	What's the projected increase in traffic?			X	X			
B-2, A-15	There are 300,000 trips on the I-10, of which, 10-15% will be captured. How long will it be until the freeway is maxed again? All improvements planned would only maintain current speed.						X	
B-2, B-1	How will the line be integrated with buses? Would it eliminate bus trips?		X			X		
Project Costs								
B-4, A-3	There is cost effectiveness associated with using the Exposition ROW.	X					X	X
B-4, A-4	The LRT main crossings could be grade separated for less cost than a subway.				X			
System Wide Issues								
C	MTA did not count children along the line in the Preliminary Planning Study.	X						
C	Develop definite plans and get community groups and elected officials' position on which plan they prefer.							X

COMMUNITY WORKSHOP (continued)
WESTMINSTER SENIORS CENTER -VENICE
APRIL 27, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
C	Most light rail lines in the western United States are on existing rights-of-way.	X						
C	MTA is taking huge amounts of time to analyze these routes, without looking at future systems and energy sources. By bringing people to downtown Los Angeles, it shows MTA is not looking at jobs - housing balance, regional plans, traffic congestion. The overall needs of the region have not been considered. The needs of the region need to be part of the analytical process.						X	X
C	What happened to the bike route to UCLA? (Veloway)	X						
C	Ms. Del Chumley is a local resident who does commuter system design.	X						
C	The library and roadway improvements are going to be built - what will happen to them?		X					
C	What kind of representation can the community have with the MTA?							X
C	Two main concerns: 1) Regional planning information needs to be incorporated into this study. 2) Specific issues to Venice -- Congestion from visitors in summer is severe, and there have been unimplemented shuttle bus plans in the past.							X
C, B-2	There is a problem with the process. In 1927, grade separations were laid out. In the mid 1970s, an analysis of subways and buses showed 250 miles of trains would capture six percent of riders.	X						
C, B-4	Take money out of concrete and put it into subway.	X						

Part 6

Community Input Comments
Community Workshop at Temple Isiah
Rancho Park

April 28, 1993

COMMUNITY WORKSHOP
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A-1	Buy the land at Sam's U-Haul - at Sepulveda and Exposition Boulevards. Does the MTA own it already?					X		
A-1	No parking lot at Motor Avenue. Would you still need parking if there is an alternative?		X			X		
A-1	At Overland Avenue School children will have more exposure to negative impacts if there is a station. There could be other problems with a station.					X		
A-1	Look at Culver Boulevard right-of-way at Culver/Lincoln Boulevard intersection for a park-and-ride.					X		
A-1	Provide an exit to a park-and-ride at I-405 and I-10.					X		
A-1	Where will locations of transit stations be?		X			X		
A-1	Put the station at Pico Boulevard, west of the I-405 freeway.					X		
A-1	What can homeowners do to not have stops between Robertson Boulevard and I-405?	X						
A-1	There is no room for a station or parking at Motor Avenue.					X		
A-1	How do you address access for UCLA population (75,000)?					X		X
A-1	There could be park-and-ride at the I-405 freeway.		X			X		
A-1	How do you serve Fox Studios and Century City from the Motor Avenue Station?					X		X
A-1	Where will stations be?		X			X		

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-1	The Caltrans facility on the southeast corner of I-405 and I-10 should be a park-and-ride facility with a ramp directly off of the two freeways.		X			X		
A-1	No park-and-ride east of I-405, should be further west.					X		
A-1, A-6	There will be congestion at a Pico/Sepulveda Boulevard park-and-ride.			X	X	X		
A-1, A-6	If there is development at stations it would result in more traffic.			X				X
A-1, A-6	A station will only make it (traffic at Motor Avenue) worse.			X	X	X		
A-1, A-6	What are the traffic impacts at the stations?			X				
A-1, A-6	Where is the land coming from for a park-and-ride at Motor Avenue? How will it affect Los Angeles and adjacent intersections?				X			
A-1, B-1	Limit the number of stations to beginning and end.						X	
A-1, B-1	Stations should be closer together with the electric Trolley Bus (ETB) option.		X					X
A-1, B-2	There is not a need for a Motor Avenue station because ridership doesn't warrant it.				X			
Station Characteristics								
A-2	Will accommodations be made at the park-and-ride lots for bikes? Will people be able to bring bikes on board?						X	
A-2	How many cars can park per station?		X					
A-2	Will there be parking at stations?		X					

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-2	How will parking be accommodated?		X	X		X		
Alignment Horizontal Location								
A-3	Use the Culver Boulevard ROW -- it could connect with 90 freeway and Lincoln Boulevard. 5,000 parking spaces could be built at the 90 freeway.						X	X
A-3	What about Wilshire Boulevard?	X					X	
A-3	Put the light rail on the south side of the I-10 freeway.		X		X			
A-3	The tracks are running close to schools on Overland Avenue.				X			
A-3	Use alternate route on the south side of I-10 freeway.		X					
A-3	Will the line fit on the south side of I-10 freeway?		X					
A-3	Private property comes to within feet of the ROW.		X		X			
A-3	Put ETB where existing buses go.				X			
A-3	Why not use Culver Boulevard to directly connect this part of city to LAX?	X					X	
A-3	Venice Boulevard should be the highest priority for light rail.				X			
A-3	There is limited access on the I-405. Why can't the project be built on the freeway?						X	
A-3	What about the Santa Monica Boulevard alignment?	X					X	
A-3	Address neighborhood routing.	X						

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3	How many homes, schools will the different alternative pass within 500 feet?			X	X			
A-3	Need rapid transit over the Santa Monica freeway. If it can be done on the Ventura freeway, do on the I-405 and link up and go downtown.						X	X
A-3	Venice Boulevard and Santa Monica Boulevard are better streets for a route than the ROW.				X			
A-3	Community does not want a project on the south side of the I-10 freeway either.				X			
A-3	Keep all transportation on Santa Monica freeway.				X			
A-3	It is 10 feet north of tracks to property line west of railroad tunnel.	X						
A-3	ROW is too small between Westwood and Sepulveda Boulevards.		X					
A-3	Avoid residential area. Use Venice Boulevard.				X			
A-3	Route the project through commercial, not residential areas.				X			X
A-3	Suggestion: Run Metrorail down Wilshire.	X					X	
A-3	There is concern about proximity to homes in some areas.			X	X			
A-3	Several people expressed surprise that the line wasn't on the freeway.	X						
A-3	What percentage of existing track would be used?		X		X			
A-3	Where on Motor Avenue would route be? Provide more detail; start at Motor Avenue and work west. How large would the route be on the north side through 1-10?		X					

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3	Put route along Venice Boulevard along commercial area.		X		X			
A-3	Go on Santa Monica Boulevard. There are tracks there. Or go up to Robertson Boulevard and to Venice Boulevard.		X		X			X
A-3, A-7	Concerned about property values next to ROW.	X						
A-3, A-15	No way to have the line on Pacific Avenue; traffic is too dense.		X		X			
A-3, B	What about putting the line on the freeway?						X	
A-3, B	Use the Culver Boulevard ROW. (See notes from small group discussions on this topic.)						X	
A-3, B-1	Put rapid transit along existing freeways.						X	X
A-3, B-1	Why is the Santa Monica Boulevard ROW not used? It is high density. A bike path is being considered.						X	X
Alignment Vertical/Profile								
A-4	Put the whole project underground.						X	
A-4	Cover the route depressed in the ROW.						X	
A-4	Existing tunnel under the I-405 at Motor Avenue is not wide enough.		X		X			
A-4	There would be a pejorative impact of constructing an elevated line.			X	X			
A-4	No subways - light rail only.				X			

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-4	Why not dig a trench - not subway - depressed?				X			
A-4	How high is project elevated at grade separation?		X					
A-4	What would an underground crossing at Overland Avenue look like?		X					
A-4	The line should be subway all the way from Motor Avenue to Sepulveda Boulevard.						X	
A-4	Can we cover "the ravine" from the tunnel to Overland Avenue? Build an underpass under Overland Avenue.						X	
A-4	Why not build a subway? Find areas which are not yet serviced (by a freeway) and build there.						X	X
A-4	Between Overland Avenue and Westwood Boulevard, the ROW should be a street first.	X						
A-4	Light Rail Transit (LRT) must be underground.						X	
A-4	Is there still a possibility of going underground from Motor Avenue to Sepulveda Boulevard?						X	
A-4	Questions were asked regarding a subway -- why could it not be subway?						X	
A-4	The tunnel on Exposition ROW way behind the north rail is too narrow.		X					
A-4	What will the elevation be?		X					
A-4	Cover the LRT through the neighborhood.						X	
A-4	Put all of the line underground.						X	

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-4	Continue the route below grade to the I-405 freeway from Overland Avenue.				X			
A-4	Make light rail below-grade from Motor Avenue and Overland Avenue to I-405.				X			
A-4, A-6	Depress the rail with pedestrian bridges above.				X			
A-4, A-6	What will happen with grade crossings?		X					
A-4, A-6	How will grade crossings at Westwood Boulevard and Military Avenue be handled?		X					
A-4, A-6	Have grade separation at major intersections.		X					
A-4, A-6	Make grade separation between Motor Avenue and Sepulveda Boulevard.		X					
A-4, A-8, B-1	The project should be below grade, have sound walls, rubber tires.			X	X			
A-4, A-9	There is a pejorative impact of high, tall project peering into neighborhoods (South side of I-10).			X				
Cross Section Elements								
A-5	Who takes responsibility for clean-up around track? It is a fire hazard at Westwood and Sepulveda Boulevards.							X
A-5	Clear the vegetation/brush on the Exposition ROW -- it is dangerous.	X						
A-5	Maintain the pedestrian walkway on Exposition ROW between Overland Avenue and Sepulveda Boulevard. We do not need bikeway.	X						

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A-5, A-8	Taking out vegetation on the south side of the ROW could be negative; it now provides a noise barrier.			X	X			
Traffic Operations								
A-6	Sepulveda/Pico Boulevard intersection is too crowded.		X	X				
A-6	Traffic along Motor Avenue is already terrible.				X			
A-6	Maintain a pedestrian walkway along Exposition Boulevard between Overland Avenue and I-405.	X						
A-6	Consider congestion on Motor Avenue and the I-10 freeway.				X			
A-6	Westwood Boulevard and Exposition ROW corner is already bad.				X			
A-6	Consider the traffic congestion at Pico and Sepulveda Boulevards.		X		X			
A-6	Through traffic on Overland Avenue would be affected.		X	X				
A-6	Build an off-ramp at Exposition Boulevard (off the I-405 freeway).						X	
A-6	Maintain pedestrian use between Sepulveda Boulevard and Overland Avenue.	X						
A-6	Create a system of one-way streets using arterial East-West routes.						X	
A-6	Keep existing pedestrian bridge east of Palms park. It provides access to park and library, otherwise it is too far to walk.		X					
A-6, A-10	Maintain pedestrian way between Sepulveda Boulevard and Overland Avenue.	X						

COMMUNITY WORKSHOP (continued)
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A-6, A-10	To ensure safety near school sites, grade separations, not crossing gates are needed.				X			X
A-6, A-10	Is it possible to close Military Avenue to through traffic? The closure would obviate the need for a crossing guard.	X		X				
A-6, A-4	Build above grade separations at all major intersections.				X			
A-6, A-5	Maintain a pedestrian walkway (gravel).	X						
Adjacent Community Concerns								
A-7	How will the travel of people going to the park-and-ride facilities impact the neighborhoods?			X				
A-7	What will be the air quality impact of transportation? Pollution?			X				
A-7	Consider the impact of each alternative on real estate values.	X						
A-7	Compare property impacts between the I-10 route versus Exposition ROW route. Count the number of homes.			X				
A-7	Has there been a survey done evaluating economic impact of Blue Line on community?	X						X
A-7	Will MTA compensate owners for property devaluation?							X
A-7	Concerned about property values declining. (Study Blue Line)	X						
A-7	Property values will be greatly decreased.	X						
A-7	What will be the pollution effects on residents next to the ROW.			X				

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A-7	Any level of intrusion is unacceptable.			X				
A-7	Consider impact on neighborhood's quality of life.			X				
A-7	How much will property value decrease along the ROW?	X						
A-7	Community is concerned about impact to property values (compensation).	X						X
A-7	There is infringement on easements.		X					
A-7	Consider dust impacts on adjacent structures/people.			X				
A-7	There is contamination on the track.			X				
A-7	Santa Monica is pushing this use because of their purposes -- to serve commercial development.	X						
A-7	How will MTA address the drop in property values? Residents have trouble selling now due to fear of line.	X						
A-7	The community of Venice opposes the project.	X						
A-7	The ROW is my backyard.	X						
A-7	Concerned about impacts on adjoining neighborhoods.			X				
A-7	Quality of life will be affected. Now it is quiet, people walk dogs, kids play. The project would be disruptive.			X				
A-7	Look at ground stability at Motor Avenue and at Fox Studios.			X				

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A-7	Brochure was submitted with the following route alternative: Remain on an embankment between Venice Boulevard and Motor Avenue, run in a trench west of Motor Avenue and in subway up to and underneath Pico Boulevard to serve the Westside Pavilion. At the I-405 return to the ROW.						X	
A-7	The project would devalue property by $100,000 and be difficult for schools. But there would be very little effect south of I-10.	X						
A-7	My property value has already dropped $100,000 as a result of discussion.	X						
A-7	Have earthquake faults been considered?			X	X			
A-7, A-8	The line should not be on the ROW. There is an elementary school. Also, it would go through all the homes along Exposition every 5 minutes from 5:00 a.m. to 1:00 a.m. with the horn blowing. MTA can't put the line in the neighborhood.			X	X			
A-7, A-8	What level of intrusion will occur (physical; noise; visual)?			X				
A-7, A-8, A-12	Provide alternative treatments to mitigate the project for portions of ROW not in use. Consider noise, EMF's, aesthetics.			X				

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Noise								
A-8	Remove through-access at Military Avenue, so no crossing gate is needed. It would mean less noise.	X						
A-8, A-10	Mitigate noise and provide traffic safety. See example.			X				
A-8	The ROW will be very noisy.			X				
A-8	Horns from 2:00 am - 5:00 am?			X	X			X
A-8	There will be noise from rails, horns, crossing gate at Overland Avenue.		X	X				
A-8	Consider the impact to adjacent residents (noise - horns, metal).			X				
A-8	There is a noise problem now with park-and-ride and the Westside Pavilion. Car alarms go off all night.			X				
A-8	85 dba is 20 dba higher than night noise.			X				
A-8	Noise will cause hearing problems, such as people losing hearing.			X				
A-8	Consider the health effects of high noise levels.			X				
A-8	What's the noise level of the ETB?			X				
A-8	Consider horns' impact.			X				
A-8	Airport and freeway noise will be added to noise from Exposition ROW.			X				

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A-8	Noise will result in sleep deprivation.			X				
A-8	How will noise above the line be mitigated?			X				
A-8	Noise will be a problem.			X				
A-8	The noise impact at Overland School should be reviewed.			X				
A-8	Consider curve noise.			X				
A-8	Noise is a big problem.			X				
A-8	Noise is an issue. Monitor the noise level.			X				
A-8	Noise problem cannot be not solved -- residents are within 75 feet of the ROW.			X				
A-8	The State-level experiment on noise was not properly conducted. MTA should use intermittent directional strobe methodology and directed noise down the street.	X						
A-8	Horns are an issue.			X				
A-8	Noise is big factor.			X				
A-8, A-10	Schools which will be impacted: Palms Park/Notre Dame/Overland/Vista Del Mar.			X	X			
A-8, A-10	Consider the impacts on Overland Avenue school (noise, safety).			X	X			
A-8, A-10	Palms Park is adjacent to tracks. Consider noise and safety issues.			X	X			

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A-8, A-11	Westwood Gardens (between Overland Avenue and Westwood Boulevard) is worried about noise and vibration.			X				
A-8, A-11	What are noise/vibration impacts?			X				
A-8, A-11	There would be noise and vibration caused by bringing people into stations.			X				
A-8, A-12	Noise, bells and electro-magnetic field impact the schools.			X	X			
A-8, A-12, A-10	Provide mitigation for noise, electro magnetic, and safety. Consider what is happening in Long Beach.			X				
A-8, A-5	Put noise walls along the route.			X				
A-8, B-1	Address noise and frequency of trains.			X				
A-8, C	If noise was not considered in Covina, how will it be considered here? (Reference to Los Angeles Times article stating noise from commuter rail in Covina is a problem.)	X						
A-8, C	Noise - after three years in Long Beach, it has not been addressed.	X						
A-8, C	Long Beach Blue Line noise levels exceeded EIR estimates due to noise impacts.	X						

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Visual								
A-9	Will diesel fumes be a problem?			X				
Safety								
A-10	Be concerned about the issue of traffic and children, including on weekends; need to get kids out of the inner city.			X			X	
A-10	Safety is an issue.			X				
A-10	Fast trains are scary.	X						
A-10	The line would cause safety problems with schools.			X	X			
A-10	Consider safety factor.			X				
A-10	The schools have to remain safe: Vista Del Mar (on Motor Avenue), Overland Avenue Elementary, Palms Junior High, Notre Dame			X	X			
A-10	Consider the safety of children playing near, or having accidents on the track.			X	X			X
A-10	What will MTA do about accidents on Overland Avenue when trains run?		X		X			
A-10, A-8	There is a safety concern for (20) schools along entire alignment - specifically, the impact on learning capacity of students.	X						
A-10, A-8	Consider the safety of children, especially at Overland Avenue School.			X		X		
A-10, B-1	Buses, include ETB, are safer at crossings than LRT, and cheaper to run.				X			

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Vibration								
A-11	If the project is below grade/enclosed, there will be vibrations.			X				
A-11	Consider vibrations at residences and schools.			X				
A-11	What about vibration impact?			X				
A-11	Vibration of homes will be a problem -- during construction also.			X				
A-11	Would there be vibration if the line was underground?	X						
EMF								
A-12	What are the electromagnetic radiation effects of overhead catenaries?			X				
A-12	There is concern about electromagnetic emissions.			X				
A-12	Study electromagnetic field for health hazards.			X				
Security/Neighborhood Crime								
A-13	There is a real concern with higher crime.			X				
A-13	Will this cause more graffiti (taggers)?						X	X

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Station Location								
A-13	Make provisions for security in neighborhoods.			X				
A-13	What is the relationship between LRT and crime?			X				X
A-13	There is a security issue caused by people coming into the area from the route.	X						
A-13	The project would cause an increase of gangs.	X						
A-13	The line will cause a crime increase. What will stop excessive riders?	X						
Growth Inducement								
A-14	The MTA's land use policy with the City of Los Angeles will cause unwanted growth at transit stations.			X			X	X
Cumulative Traffic								
A-15	How will the project interface with City of Los Angeles traffic signalization.			X	X			
A-15	Are we looking at Level of Service impacts at intersections?			X				
A-15	Introducing more traffic to the I-405 area should not be encouraged.			X	X			
A-15	Take traffic measurements at peak times.			X				
A-15	Consider congestion from Sony Studio expansion.			X				
A-15	Consider traffic backups and integration into Fox Studio expansion.			X				

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A-15	Consider increased traffic resulting from this and Fox, Sony projects.			X				X
A-15	Have you considered the traffic impact of the Fox Studio project?			X				X
A-15	Study the cumulative traffic impacts of stations and related development projects (Sony, Fox).			X				
A-15, B	What defines congestion? It is a fatal flaw.				X			
A-15	If the bulk of the traffic on I-10 comes from I-405, how will this project help congestion?				X			
A-15	Levels of service on surrounding streets are already at D and F. Won't the transit line worsen traffic?			X				
Alternative Evaluation								
B	Add Culver Boulevard ROW as an alternative.						X	
B	How many feet of ROW are required for light rail? For ETB?		X					
B	MTA owns the Culver Boulevard ROW from Culver City to Lincoln Boulevard.	X						
B	The corridor is already served by a transit system - the freeway.	X						
B	What would be a fatal flaw? Question was not answered in the Preliminary Planning Study.				X			X
B	Create a linear park along the Exposition ROW.	X						
B	Do not continue the study on the Exposition ROW. Keep all transportation off ROW.	X						

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B	Cost is $100 - 150 million to widen streets.	X						
B	Venice Boulevard is a better route. It has more commercial - greater residential density -- Cheviot Hills stops would require additional transportation to final destinations.				X			
B	Will the EIR look at using money instead to improve streets?						X	
B	Will any land be taken for Alternative B?		X	X	X			
B	Santa Monica route - same attributes as the Venice Boulevard route.	X						
B	Venice Boulevard is a stronger alternative.				X			
B	What constitutes a fatal flaw?				X			X
B	Can't we first decide whether we want the project before studying it?				X			
B	Exposition ROW should not even be discussed as an alternative.	X						
B	Consider the Culver Boulevard option. MTA can buy the rights to the ROW from Sony Studios.	X						
B	MTA should not begin purchasing property at a specific location if they are still studying seven alternatives.						X	X
B	Look at using one lane of the I-10 freeway for the alternative.						X	
B, A-3	If there will be a train on the Wilshire corridor, why is this project now needed with this corridor?						X	

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B, A-4	Consider elevating a line above the I-10 freeway as an alternative.						X	
B, B-1	For rush hour - have designated lanes on streets, freeway, etc...that can switch direction.						X	
B, B-1	Increase/enlarge bus system in lieu of Exposition project.						X	
B, B-1	Could there be a monorail on the I-10 freeway?						X	
B, B-1	How seriously is the ETB option down Venice Boulevard being considered?				X			
B, C	There is a feeling that the Exposition ROW option is being forced on them.	X						
B, C	What will happen to the ROW if it is not used?							X
B, C	We don't want on a line on Exposition ROW. Don't talk about mitigation.	X						
Operations								
B-1	Why not a phased ROW project, starting with conventional buses, escalating to other modes, according to demand.				X			X
B-1	Why can't we use Monorail?						X	
B-1	Will there be rubber tire vehicles?				X			
B-1	Consider radio controls for signals.				X		X	
B-1	There is opposition to using Venice Boulevard. A bikeway is not needed on the ROW.				X			
B-1	How will garbage/general maintenance be handled?			X				

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B-1	Why does the ETB alternative need more room than the LRT?		X					
B-1	Why not operate express service - one station at either end - no stops between?				X			X
B-1	Provide curb-to-curb feeder bus system.						X	
B-1	The ROW is not maintained now - it will get worse.	X						
B-1	Where would substation locations be?			X				
B-1	Bus would be better than rail.				X			
B-1	Consider advanced technologies (Maglev, Monorail, high speed rail).						X	
B-1	Improve existing buses with alternative fuels other than diesel.		X		X			
B-1	Hours and frequency of use (of LRT) are a concern.			X				X
B-1, A-3	How about putting a monorail in the center of I-10? Put LRT where there is already noise -- on the freeway.						X	
B-1, A-6	The ETB option would jam Sepulveda Boulevard.			X	X			
B-1, B-2	Have the line be an express between Robertson Boulevard and the City of Santa Monica. No one in this area will use it.				X			
B-1, B-4	Improve the bus system first. It would be lower cost, and be more energy efficient.						X	
B-1, C	Consolidate existing mass transit for efficiency.						X	

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Ridership								
B-2	There is not enough ridership to justify the project.				X		X	X
B-2	Check travel demand patterns on I-405 to I-10 from Santa Monica and the San Fernando Valley.						X	X
B-2	Ridership doesn't warrant a station at Motor Avenue.					X		X
B-2	There is no interest in using the transit, don't build it.							X
B-2	12,000 persons per square mile makes this area the second most dense population in the county.							X
B-2	How many would ride on the line? Only a few would ride, so would people be brought into the area to ride?				X		X	X
B-2	Estimates on public transportation have been three times actual ridership.	X						
B-2	Is Exposition ROW the right place for the projected ridership?				X		X	
B-2	People are not going to use LRT in this area, so it should not be here.						X	
B-2	What happened to the ridership study promised during the Preliminary Planning Study?		X					
B-2	What is the potential for car pooling on Santa Monica freeway?						X	X
B-2	Will a transfer from LRT to ETB cause drop in ridership?				X			
B-2	There is not enough ridership for a subway line, Exposition line and Wilshire line.						X	X

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B-2	How is ridership determined? Forecasts will exceed actual ridership.							X
Project Costs								
B-4	There was opposition to buying the ROW.				X			
B-4	Look at costs for going underground.				X			
B-4	How much money has Santa Monica paid? Santa Monica contributed property.	X						
B-4	Was a loan made to Santa Monica to buy their share of the ROW?	X						
B-4	What is the cost difference between ETB and LRT?				X			
B-4	Do cost comparisons of different alternatives.		X		X			
B-4	The financial impacts of lawsuits must be included in the final analysis.	X						
B-4, B	It is not time to spend money on transit when money is needed for crime, education, streets.	X						
B-4, B	The EIR should consider the alternative of using money for crime, education and streets.	X						
B-4, B-1	MTA does not maintain existing transportation routes...how will they have the money to maintain and operate a new line?			X			X	
B-4, B-2	Is the project economically feasible? Even with drop in ridership?						X	X
B-4, C	Southern Pacific blackmailed LACTC into buying the ROW.	X						

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System Wide Issues								
C	How many people are opposed to the study?				X			
C	Questions are not answered. Input is not taken seriously.	X			X			
C	MTA is in violation of the EIR for Long Beach; why should we believe MTA now?	X						
C	People have been lied to. The Preliminary Planning Study was biased.	X						
C	Have a form at next meeting to allow people to vote.	X						
C	The corridor from Downtown Los Angeles to LAX is the most-used in the city.	X						
C	What is the land use/transportation-policy of the MTA?						X	X
C	Has MTA purchased property along the ROW?				X			
C	Disseminate information resulting from workshops.	X						
C	At the northwest corner of Motor and Irene Avenues, there is a new parking lot. What is the new construction on the ROW? Who built it? If it was MTA, there is a credibility gap.	X						
C	MTA should purchase Culver City's ROW on Culver Blvd.	X						
C	Is this a massive public relations ploy? Will our concerns really be considered? Can we say no?	X						X
C	There is a long history of broken promises: distrust in most public (transit) agencies.	X						

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C	Construction dust will cause problems for children with asthma .			X				
C	Could there be homes built on the Exposition ROW?						X	
C	Study the positive effects of LRT in other cities (San Diego, Portland, San Jose.)	X						
C	What is the opinion voiced in Santa Monica?	X						
C	Sony Studios could be asked to sell the Culver Boulevard ROW in Culver City.	X						
C	Review system-wide land use planning document by MTA.						X	X
C	Westside Pavilion expansion, Fox project were opposed by the community, yet they go forward. How can we prevent that here?	X						
C	Santa Monica knew about the project before Rancho Park knew.	X						
C	What does this allegation (of blackmail) do to the credibility of MTA?	X						
C	No decision should be made on Exposition until the Wilshire Boulevard study is done.						X	
C	Use natural gas or propane buses.		X		X			
C	Extend a subway on Santa Monica Boulevard.	X					X	
C	How can I be assured that MTA members will receive my input from this meeting?	X						
C	Trains are too big.	X						

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C	These issues should be brought to the attention of the MTA and incorporated into the decisionmaking process				X		X	X
C	There is a credibility gap between MTA and the world.	X						
C	Will we need this line if there is also a subway on Wilshire Boulevard?						X	X
C, B	Venice community doesn't want the line on Venice Blvd.				X			
C, B-4	Are we subsidizing the Blue Line?	X					X	
Alignment Horizontal Location								
A-3, A-4	Pico Alignment 3: To avoid grade crossings and horns in this area, it has been suggested that a subway be built between Overland and Sepulveda.						X	
A-3, A-4	Pico Alignment 2: I-10 Tunnel to Overland. In this section, the right-of-way generally runs through a trench about 20–30 feet deep, surfacing at Overland Avenue.		X					
A-3, A-4	Pico Alignment 3: Suggestions: Avoid using the right-of-way between Overland and Sepulveda for any transit line. Instead, run a subway via Overland and Pico.				X		X	
A-3, A-4	Pico Alignment 1: Venice to I-10 Tunnel. From a proposed overpass spanning Venice and Robertson, the right-of-way generally passes alongside the I-10 Freeway, eventually passing under it. Overpasses are currently in place at Palms Blvd. and Motor Avenues.				X			
A-3, A-4, A-6, A-8	Pico Alignment 1: Suggestions - The route should remain on an embankment all the way between Venice and Motor. To do so will eliminate the grade crossing, and its noise, at Bagley.				X			

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-3, A-7	Pico Alignment 3: Overland to Sepulveda. Here, the right-of-way passes through the "West-of-Westwood" area, the source of most of the community protests about the rail line.				X			
Alignment Vertical/Profile								
A-4, A-8	Pico Alignment 2: Suggestions - Also, the fact that the route passes in a trench will also reduce sound levels at street-level.			X				
A-4, B-4	Pico Alignment 3: But if an expensive subway is absolutely necessary, why not put it where it might be more useful?						X	
A-4, B-4, A-8	Pico Alignment 3: Suggestions: Although subway construction, because of its considerable expense, is generally to be discouraged, a subway is suggested in this case because of the problems with noise mitigation between Overland and Sepulveda.			X				
A-5, A-8	Pico Alignment 2: Suggestions - Soundwalls should be provided at strategic areas to help reduce noise further.			X				
A-5, A-8	Pico Alignment 1: Suggestions - A well-build soundwall should be provided along the south side of the right-of-way in order to shield local residents from transit (and freeway) noise.			X				

COMMUNITY WORKSHOP (continued)
TEMPLE ISAIAH, RANCHO PARK
APRIL 28, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Noise								
A-8	Pico Alignment 1: Suggestions - Soundwalls are very instrumental in reducing vehicle noise. A six-inch concrete block wall can reduce noise by as much as 30 decibels. That is enough to reduce an 80-decibel noise source to 50 decibels (the sound level of a residential neighborhood). Absorptive materials should be applied to soundwalls to prevent echoes and reverberation.			X				
A-8, B-1	Pico Alignment 1: Suggestions - Of course, the transit vehicles can themselves be made quieter by several methods (wheel covers, quieter wheels, resilient rail mountings, etc.)			X				
Operations								
B-1, A-8	Pico Alignment 2: Suggestions - Because of the curvature of the route at this point, speeds will have to be kept lower than 35 mph. The low speed used would help keep noise levels low.			X				

Part 7

Community Input Comments
Community Workshop at Dorsey High School
Los Angeles

May 4, 1993

COMMUNITY WORKSHOP
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A-1	Where will station locations be?		X			X		
A-1	What types of developments will be at train stops?					X		X
A-1	Possible stations at La Brea Avenue (in the northwest quadrant with parking) and at Crenshaw Boulevard (in the Southeast quadrant with parking).					X		
A-1	Create a community-based Advisory Board for station development at La Brea Avenue and Crenshaw Boulevard.							X
A-1	Put a joint development (with neighborhood uses) at the southwest corner of Jefferson Boulevard/La Brea Avenue with the station below ground level. Go underneath La Brea Avenue.				X			X
A-1	Put a park-and-ride at Arlington Avenue where the liquor store was.					X		
A-1	Locate a park-and-ride on Exposition Boulevard, east of Crenshaw Boulevard.		X			X		
Station Characteristics								
A-2	Put art at stations using community artists.							X
A-2	Need bike facilities at every station						X	
A-2	Provide lock-ups for bikes at stations.						X	
A-2	Have bicycle lock-ups at the station.						X	

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-2	Make sure there is no on-street commuter parking.			X				
A-2	Equip stations with amenities integrated into the commercial and residential area such as ticket and transfer purchase; newsstands; restrooms; covered, patrolled waiting area with seats; and landscaping.						X	
A-2, A-6	Design parking that doesn't create more gridlock.			X		X		
Alignment Horizontal Location								
A-3	No transit line between Crenshaw and Degnan Boulevards.				X			
A-3	No transit line between 7th and Arlington Avenues.				X			
A-3	The community should support a Crenshaw line.	X						
A-3	Why are "detours" off of the ROW under consideration?				X			
A-3	Houses are closer to the tracks between La Brea Avenue and La Cienega Boulevard on the south side of the tracks.	X		X				
Alignment Vertical/Profile								
A-4	An elevated line would open up more streets.						X	
A-4	Will the line be street level or grade-separated?		X		X			
A-4	Do not put an aerial crossing at La Brea Avenue - do cut and cover.				X			
A-4	Put the line underground or not at all.				X			

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-4, A-6	How will grade crossings be handled; what determines at-grade versus overpass?		X		X			
A-4, A-6	Do grade separations at all major intersections.				X			
A-4, A-6	Use below-grade crossings at intersections.				X			
A-4	Separation should be underground at La Brea Avenue.				X			
A-4	Where 7th Avenue is connected to the fire station the street should stay open; 2nd & 3rd Avenues are closer to Arlington Avenue.		X		X			
A-4, A-8	Consider burying train or use berms for noise.			X				
Cross Section Elements								
A-5	Who will maintain the landscaping?			X				
A-5	The group has concerns about walls along the ROW, both pro and con.			X				
A-5	Put a 12-foot high brick wall with landscaping on south side of tracks west of La Brea Avenue, or two 12-foot wrought iron fences with concrete footing so people don't crawl under.			X				
A-5	Put a wall at Baldwin Vista with greenery for security.			X				
A-5	Walls can be beautified with vines.	X						
A-5	Landscaping is needed along ROW.	X		X				
A-5	Landscaping must be well maintained.	X						

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-5, A-7	Need privacy fencing on properties near LRT.			X				
A-5, A-8	What kind of fencing, walls, etc. will be designed to stop noise?			X				
A-5, A-8	Sound barriers should be earth berms or skirts.			X				
Traffic Operations								
A-6	There is two-way traffic on Exposition Boulevard on both sides of the median between Crenshaw Boulevard and La Brea Avenue.				X			
A-6	Don't close cross streets between Arlington Avenue and Crenshaw Boulevard.				X			
A-6	Don't close 2nd Avenue.				X			
Adjacent Community Concerns								
A-7	Questionable benefits - the line is just going through the neighborhood.	X						
A-7	Will any homes be taken?			X	X			
A-7	Walls destroy the sense of community.	X						X
A-7	There are major oil and gas reservoirs under this neighborhood.			X				
A-7	As an interim measure (10 years) the ROW should be turned into a community park -- a public/private partnership. A park would stop dumping on the ROW.	X						
A-7	What benefits will there be for neighborhoods along the ROW? (Sees benefit to spending public money west of USC).							X

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-7	What benefit will there be to the community that bears the burden of this system?							X
A-7	How will existing commercial frontage be handled? e.g., the Dairy.			X	X			
A-7	The line would have negative impacts on land values.	X						
A-7	Real estate agents may "red line" the area even more.	X						
A-7	Will the project result in reduced auto insurance premiums? There should be benefits to the local community to offset the impacts.	X		X				
A-7, A-8	Neighborhoods should design the sound walls in their communities.			X				
A-7, A-13	Do not build anything - it will cause property values to drop and crime to increase.				X			
Noise								
A-8	There will be noise impacts at crossings but need to make sure that train warns when approaching.			X				
A-8	Conduct acoustic noise measurements and estimate impact 50 feet from tracks (CNEL; ambient; and peak) west of La Brea avenue.			X				
A-8	Which is noisiest, ETB or LRT?			X				
A-8	What are the noise mitigation options?			X				
A-8	How will noise be mitigated? Will mitigation be attractive?			X				
A-8	No horns at La Brea Avenue.		X	X				

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-8	Noise is of great concern. How will you decrease the noise in our homes?			X				
A-8	West Angeles' New Church can't stand noise.			X				
A-8	No bells and whistles at Buckingham Road.			X				
Visual								
A-9	Visual impact of overhead wires is negative.			X				
Safety								
A-10	Pedestrian crossovers are needed.			X	X			
A-10	Student access will be a safety problem.			X			X	X
A-10	Provide safety for children at crossing areas, e.g., Buckingham Road.			X				
A-10	Children crossing the ROW is dangerous.		X					
A-10	36th Street Elementary & Foshay Jr. High school kids use the ROW to cross over, and it is dangerous.		X					
A-10	For safety reasons, MTA must stop access to tracks.			X				
A-10	What types of barriers will be implemented to insure safety?		X	X				
A-10	How will MTA separate bikes from trains to insure safety?		X	X				

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Vibration								
A-11	Concerns about vibrations.			X				
EMF								
A-12	Look at the effects of electrification on pacemakers, T.V., garage door openers, leukemia, etc..			X				
A-12	Electro-magnetic emissions have an impact on health.			X				
A-12	How much electrical noise in the frequency ranges is known to cause upset or malfunction in biological devices. Power vs. frequency.			X				
Security/Neighborhood Crime								
A-13	Bike paths will attract gangs and vagrants.	X		X				
A-13	Cordon off the parking lot at Danny's market.			X				
A-13	Make sure there is security on station platforms.	X						
Growth Inducement								
A-14	Will certain sections of the community around the ROW be robbed of development opportunities? Won't that discriminate against lower tax areas?	X						X
Cumulative Traffic								
A-15	There will be major traffic impacts at Crenshaw Boulevard			X				

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-15	What are the potential traffic impacts at Arlington Avenue?			X				
A-15	How can automobile traffic be accommodated in the narrow portions of Exposition Boulevard and Rodeo Road?			X				
A-15	There is the need for a signal light at Exposition Boulevard and La Brea Avenue.			X				
A-15	Which north-south streets could be closed? What are the impacts?		X	X	X			
A-15	There will be traffic impacts at La Brea Avenue.			X	X			
A-15	Closing Buckingham Road would adversely affect the neighborhood.			X				
A-15, A-10	High speed traffic is a real problem.				X			
Operations								
B-1	ETB's would be a blight for Los Angeles.				X			
B-1	ROW is a natural for a bikeway; it should incorporate landscaping, etc.		X		X			
B-1	Make the minimum number of stops in the neighborhood.					X		
B-1	Build light rail not trolley bus. Build it as soon as possible.	X			X			
B-1	Trolley bus should be built because it would be less of an impact.	X			X			
B-1	Development of a bikeway could be used to clean up the ROW.	X			X			
B-1	What about access to a bike path?	X						

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
B-1	Prefers bikeway only.				X			
B-1	Prefer Light Rail Transit (LRT) all along the Right-Of-Way (ROW).				X			
B-1	Bikeway is a useless waste of money.				X			
B-1	Electric Trolley Bus (ETB) sounds good - fast and smooth.				X			
B-1	Must have LRT all the way to Santa Monica.		X		X			
B-1	Put ETB on the freeway.						X	
B-1, A-5	Include a bike path on the Exposition ROW.				X			
B-1, A-5	Clean-up the ROW and make a landscaped bike-path, now.	X						
Ridership								
B-2	Consider the changing population densities.						X	
B-2	The community will not ride this system; people prefer cars.	X			X		X	X
B-2	Some residents would use the light rail.				X			X
B-2	Do not build rail because people won't use it.	X						
B-2, A-15	The project will relieve congestion and should be built now.	X		X				

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Project Costs								
B-4	Make General Motors and Goodyear pay for the project.	X						
B-4	What are the costs of and the politics of having the line at street level versus underground?				X			
System Wide Issues								
C	Plan for joint development.							X
C	Improvements in cleanliness, etc. are not noticeable with the Blue Line.						X	
C	How soon can the project be built?			X			X	
C	Easements for access need to be maintained for commercial properties.		X	X				
C	The group has concerns about current uses of ROW.	X						
C	Make sure neighborhood movement linkages are strengthened and not cut off from churches, markets, and other community gathering spaces.		X	X	X			
C	How will property taxes and auto insurance be affected?	X						
C	Will property be condemned to place stations and park-and-ride lots?			X	X	X		
C	What would be the effects of ETB on property values?	X						
C	Local firms should be used to build the project.	X						
C	What were the effects of the Blue Line on property values?							X

COMMUNITY WORKSHOP (continued)
DORSEY HIGH SCHOOL, LOS ANGELES
MAY 4, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
C	There is poor up-keep of the ROW currently; it needs cleaning.	X						
C, A-7	Cutting access to neighborhoods would isolate businesses/elderly.		X	X	X			

Part 8

Community Input Comments
Community Workshop at California Afro-American Museum, Exposition Park Los Angeles

May 6, 1993

COMMUNITY WORKSHOP
CALIFORNIA AFRO-AMERICAN MUSEUM, EXPOSITION PARK
MAY 6, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Station Location								
A-1	Where could a park and ride be? Will property be condemned for parking or for stations?		X		X	X		
A-1	Where a bus route crosses the Exposition right-of-way (ROW), MTA should have a Light Rail Transit (LRT) station, i.e. at Arlington, Normandie, and Overland Avenues.					X		
A-1	Put a park-and-ride at Venice Boulevard/Washington Boulevard in the industrial district.					X		
A-1, A-6	Drop-off points need to be integrated with the streets.					X		
Station Characteristics								
A-2	Include bicycle lockers at stations.						X	
Alignment Horizontal Location								
A-3	Frontages of homes along Exposition Boulevard are very narrow, sometimes less than 10 feet.		X					
A-3, A-15	The Gramercy Place intersection goes from two one-way streets to two,two-way streets; planning will have to be done carefully there.		X					
A-3, B-1	Bike routes should be connected to the schools.				X			

COMMUNITY WORKSHOP (continued)
CALIFORNIA AFRO-AMERICAN MUSEUM, EXPOSITION PARK
MAY 6, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
Alignment Vertical/Profile								
A-4	If the line is aerial, the bike path could go underneath.				X			
A-4	Relocate/redirect National Boulevard so that tracks remain on the south side of the freeway.		X					
A-4, A-10	The entire line through this area must be aerial for safety reasons.						X	
A-4, A-10,A-13	Height (aerial) is not a deterrent to safety or crime.			X				
A-4, A-6	At intersections, the system should go underground.				X			
A-4, A-6	MTA needs to grade separate at major cross streets, i.e., Crenshaw Boulevard, and Western and Vermont Avenues.				X			X
A-4, B-1	Speed is better with an aerial line.				X			
Cross Section Elements								
A-5	The greenery and plants alongside the line should be well maintained.			X				
A-5	Where there is extra ROW, MTA should include parking.					X		
A-5	Whatever is put in at Wilshire Boulevard should be treated the same at Exposition Boulevard - they should be comparable.						X	
A-5	Hide an aerial system behind trees and shrubs.			X				

COMMUNITY WORKSHOP (continued)
CALIFORNIA AFRO-AMERICAN MUSEUM, EXPOSITION PARK
MAY 6, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-5	The area underneath the aerial system must be cleaned and maintained, unlike the Blue line.			X				
Traffic Operations								
A-6	Look at removing street parking on Exposition Boulevard to put in a bike path.				X			
A-6, A-10	Much foot traffic crosses Exposition Boulevard from the University of Southern California. Need to be careful.				X			X
A-6, A-10	Put a pedestrian bridge crossing at Harvard Avenue for school.			X				
Noise								
A-8	Noise from horns is a big problem; an elevated line means no horns.			X	X			
A-8, A-4	Elevated lines are louder and usually less appealing.			X	X			
Safety								
A-10	Safety is a big concern.	X					X	
Security/Neighborhood Crime								
A-13	The pocket park along the ROW from Cimarron Street to Gramercy Place is used by drug users, homeless late at night. Clean up the park.	X						
Cumulative Traffic								
A-15	Exposition Park is being renovated - it could attract more traffic when complete.			X				

COMMUNITY WORKSHOP (continued)
CALIFORNIA AFRO-AMERICAN MUSEUM, EXPOSITION PARK
MAY 6, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
A-15	Traffic flow on the north side of the ROW must be uninterrupted.		X					
A-15	Vehicle traffic is heavy on Exposition Boulevard, Vermont Avenue, and Figueroa Street. Especially during events.				X			X
Operations								
B-1	Staging is needed for extra trains for Exposition Park events. The original Martin Luther King, Jr. Boulevard was so wide because it used to be three tracks to stage trains for events.	X						
B-1	The bike path should be separate or grade separated from the rail.		X		X			
Ridership								
B-2	MTA should look at making land uses more compatible west of Arlington. If encroachment use, convert to residential.							X
Project Costs								
B-4	Putting the line underground is too expensive.				X		X	
System Wide Issues								
C	Hire aesthetically aware engineers to design the aerial systems.			X	X			
C	The owner of a house facing onto the ROW wants LRT to be built as soon as possible.	X						
C	The California Public Utilities Commission must update the crossing systems.						X	

COMMUNITY WORKSHOP (continued)
CALIFORNIA AFRO-AMERICAN MUSEUM, EXPOSITION PARK
MAY 6, 1993

Category	Segment Design Criteria	Comment Status						
		Comment Noted	Incorporated in Alternative Design	Incorporated Into EIR Analysis	Considered in Evaluation	Considered in Station Location Analysis	Part of System-Wide Assessment	Considered in the Planning Process
C	Fencing should be evaluated for its effectiveness.			X				
C	Clean up the ROW regularly, now, until the transit system is built.	X						
C	Steel as an aerial system is more aesthetically beautiful.	X						

APPENDIX D
Station Boardings and Mode of Access

TABLE D.1

STATION MODE OF ACCESS
LRT Alternatives A/B
2010 Daily

STATION	BOARDINGS				
	AUTO PARK	AUTO DROP-OFF	WALK	BUS	TOTAL
4th/Colorado	0	90	660	3,490	4,240
Cloverfield	280	70	1,010	90	1,450
Bundy	500	130	1840	320	2,790
I-405/Expo	390	100	350	350	1,190
Motor	0	380	410	3,270	4,060
Venice/Robertson	260	60	700	3,960	4,980
Hayden/National	0	180	440	240	860
La Cienega	140	40	1,040	660	1,880
La Brea	460	120	1,800	1,720	4,100
Crenshaw	420	110	1,010	1,040	2,580
Western	0	700	2,050	3,600	6,350
Vermont (Westbound)	0	20	360	980	1,360
TOTAL (%)	2,450 (6.84)	2,000 (5.58)	11,670 (32.26)	19,720 (55.02)	35,840

SOURCE: BRW, Inc.; December 29, 1993.

TABLE D.1a
AVERAGE DAILY BOARDINGS
LIGHT RAIL ON EXPOSITION ROW
ALTERNATIVES A AND B

STATION	DAILY BOARDINGS
Union Station	8,270
1st Street	6,770
2nd/Grand	22,400
7th/Flower	11,020
Pico/Flower	3,110
Flower/23rd	6,970
Flower/Jefferson	2,910
Vermont	11,070
Western	6,350
Crenshaw	2,580
La Brea	4,100
La Cienega	1,880
Hayden	860
Venice/Robertson	4,980
Motor	4,060
I-405	1,190
Bundy	2,790
Cloverfield	1,450
4th/Colorado	4,240
TOTAL	86,840

TABLE D.2

STATION MODE OF ACCESS
Bus Alternative C
2010 Daily

STATION	BOARDINGS				
	AUTO PARK	AUTO DROP-OFF	WALK	BUS	TOTAL
4th/Colorado	0	50	330	2,010	2,390
Cloverfield	210	50	770	20	1,050
Bundy	0	280	1,520	170	1,970
I-405/Expo	450	110	240	250	1,050
Motor	0	150	360	2,110	2,620
Venice/Robertson	60	20	380	2,330	2,790
Hayden/National	0	100	550	170	820
La Cienega	0	160	650	140	950
La Brea	0	310	1,270	1,010	2,590
Crenshaw	150	40	600	470	1,260
Arlington	0	380	370	300	1,050
Western	0	60	710	1,200	1,970
Normandie	0	380	550	190	1,120
Vermont (Westbound)	0	80	250	690	1,020
TOTAL (%)	870 (3.84)	2,170 (9.58)	8,550 (37.75)	11,060 (48.83)	22,650

SOURCE: BRW, Inc.; December 29, 1993.

TABLE D.2a
AVERAGE DAILY BOARDINGS
BUSWAY ON EXPOSITION ROW
ALTERNATIVE C

STOP	DAILY BOARDINGS
Union Station	140
1st Street	180
3rd/Broadway	40
7th/Broadway	230
Pico/Broadway	200
Broadway/Jefferson	1,840
Vermont	4,040
Normandie	1,120
Western	1,970
Arlington	1,050
Crenshaw	1,260
La Brea	2,590
La Cienega	950
Hayden	820
Venice/Robertson	2,790
Motor	2,620
I-405	1,050
Bundy	1,970
Cloverfield	1,050
4th/Colorado	2,390
TOTAL	28,300

TABLE D.3

STATION MODE OF ACCESS
Bus Alternative D
2010 Daily

STATION	BOARDINGS				
	AUTO PARK	AUTO DROP-OFF	WALK	BUS	TOTAL
4th/Colorado	0	40	280	1,800	2,120
Cloverfield	190	50	700	10	950
Bundy	0	220	1,360	130	1,710
I-405/Expo	340	80	190	210	820
Motor	0	140	330	1,800	2,270
Venice/Robertson	80	20	290	1,980	2,370
La Cienega	0	200	980	180	1,360
La Brea	0	250	1,210	750	2,210
Crenshaw	160	40	590	380	1,170
Arlington	0	370	370	280	1,020
Western	0	60	710	1,080	1,850
Normandie	0	380	550	150	1,080
Vermont (Westbound)	0	60	180	500	740
TOTAL (%)	770 (3.91)	1,910 (9.71)	7,740 (39.35)	9,250 (47.03)	19,670

SOURCE: BRW, Inc.; December 29, 1993.

TABLE D.3a
AVERAGE DAILY BOARDINGS
BUSWAY ON EXPOSITION ROW
VIA LA CIENEGA AND VENICE
ALTERNATIVE D

STOP	DAILY BOARDINGS
Union Station	130
1st Street	150
3rd/Broadway	40
7th/Broadway	210
Pico/Broadway	160
Broadway/Jefferson	1,780
Vermont	3,750
Normandie	1,080
Western	1,850
Arlington	1,020
Crenshaw	1,170
La Brea	2,210
La Cienega	1,360
Venice/Robertson	2,370
Motor	2,270
I-405	820
Bundy	1,710
Cloverfield	950
4th/Colorado	2,120
TOTAL	25,150

TABLE D.4

STATION MODE OF ACCESS
Bus Alternative E
2010 Daily

STATION	BOARDINGS				
	AUTO PARK	AUTO DROP-OFF	WALK	BUS	TOTAL
4th/Colorado	0	50	280	1,770	2,100
Cloverfield	140	30	640	10	820
Bundy	0	160	1,230	120	1,510
I-405/Expo	260	70	170	140	640
Sepulveda/National	0	110	390	360	860
Sepulveda/Palms	0	50	1,380	360	1,790
Sepulveda/Venice	0	40	620	490	1,150
Venice/Overland	0	90	460	650	1,200
Venice/Robertson	120	30	340	910	1,400
Hayden	0	100	520	150	770
La Cienega	0	130	610	110	850
La Brea	0	260	1,240	850	2,350
Crenshaw	150	40	580	400	1,170
Arlington	0	360	370	280	1,010
Western	0	60	710	1,070	1,840
Normandie	0	380	550	160	1,090
Vermont (Westbound)	0	70	200	550	820
TOTAL (%)	**670 (3.14)**	**2,030 (9.50)**	**10,290 (48.15)**	**8,380 (39.21)**	**21,370**

SOURCE: BRW, Inc.; December 29, 1993.

TABLE D.4a
AVERAGE DAILY BOARDINGS
BUSWAY ON EXPOSITION ROW
VIA VENICE AND SEPULVEDA
ALTERNATIVE E

STOP	DAILY BOARDINGS
Union Station	130
1st Street	160
3rd/Broadway	30
7th/Broadway	220
Pico/Broadway	170
Broadway/Jefferson	1,820
Vermont	3,830
Normandie	1,090
Western	1,840
Arlington	1,010
Crenshaw	1,170
La Brea	2,350
La Cienega	850
Hayden	770
Venice/Robertson	1,400
Venice/Overland	1,200
Sepulveda/Venice	1,150
Sepulveda/Palms	1,790
Sepulveda/National	860
I-405	640
Bundy	1,510
Cloverfield	820
4th/Colorado	2,100
TOTAL	26,910

TABLE D.5

STATION MODE OF ACCESS
Bus Alternative F
2010 Daily

STATION	BOARDINGS				
	AUTO PARK	AUTO DROP-OFF	WALK	BUS	TOTAL
4th/Colorado	0	30	110	280	420
Ocean Park/Main	0	70	420	140	630
Venice/Pacific	0	80	140	20	240
Venice/Lincoln	0	80	360	270	710
Venice/Centinela	0	270	180	340	790
Venice/Sepulveda	0	60	490	450	1,000
Venice/Overland	0	80	410	660	1,150
Venice/Robertson	70	20	290	670	1,050
Hayden	0	90	500	130	720
La Cienega	0	150	610	90	850
La Brea	0	250	1,200	780	2,230
Crenshaw	140	40	580	370	1,130
Arlington	0	360	360	250	970
Western	0	60	710	1,010	1,780
Normandie	0	380	560	160	1,100
Vermont (Westbound)	0	60	170	480	710
TOTAL (%)	**210 (1.35)**	**2,080 (13.44)**	**7,090 (45.80)**	**6,100 (39.41)**	**15,480**

SOURCE: BRW, Inc.; December 29, 1993.

TABLE D.5a
AVERAGE DAILY BOARDINGS
BUSWAY ON EXPOSITION ROW
VIA VENICE TO THE COAST
ALTERNATIVE F

STOP	DAILY BOARDINGS
Union Station	130
1st Street	160
3rd/Broadway	30
7th/Broadway	210
Pico/Broadway	160
Broadway/Jefferson	1,790
Vermont	3,730
Normandie	1,100
Western	1,780
Arlington	970
Crenshaw	1,130
La Brea	2,230
La Cienega	850
Hayden	720
Venice/Robertson	1,050
Venice/Overland	1,150
Sepulveda/Venice	1,000
Venice/Centinela	790
Venice/Lincoln	710
Venice/Pacific	240
Ocean Park/Main	630
4th/Colorado	420
TOTAL	20,980