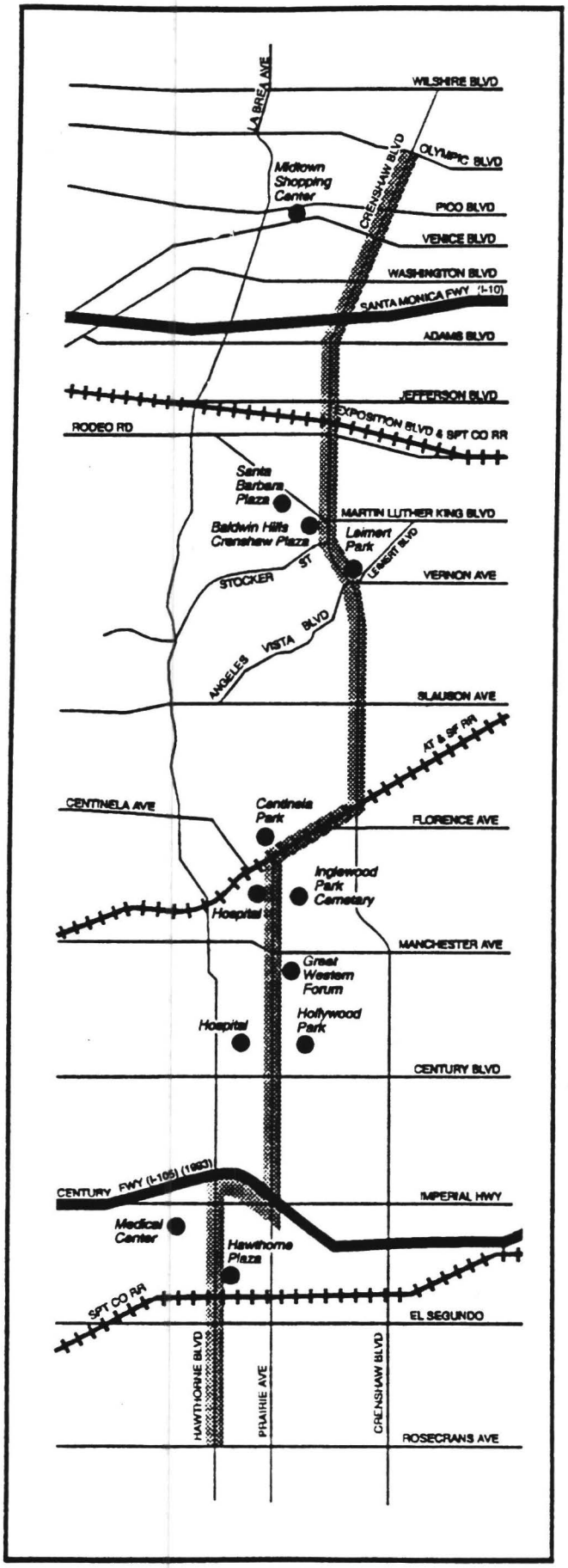

Crenshaw/Prairie Corridor

Preliminary Planning Study

DRAFT FINAL REPORT

December 28, 1993

Submitted to:

County of Los Angeles
Metropolitan Transportation Authority

Submitted by:

Korve Engineering, Inc./
Terry A. Hayes Associates

in association with:

R A W Architecture
Manuel Padron & Associates
Bragg & Maddox
The Planning Group

CRENSHAW/PRAIRIE

TRANSPORTATION CORRIDOR PRELIMINARY PLANNING STUDY
DRAFT FINAL REPORT

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1. Introduction and Context

1.0 Introduction and Context

1.1 Background and Study Purpose

In 1991 the Los Angeles County Metropolitan Transportation Authority (MTA) added the Crenshaw Corridor to the preliminary list of transportation corridors to be evaluated for inclusion in the 30-Year Transportation Plan. The approved Transportation Plan lists the Crenshaw Corridor as one of four corridors in the Expanded Plan, which means that funds have yet to be identified for its implementation. Recent events in several sections of South Central Los Angeles, however, have focused attention on the area and hastened the review of the Crenshaw Corridor.

In the aftermath of the civil unrest in April, 1992, the study of transit improvements for Crenshaw Boulevard and Prairie Avenue was expedited to focus on ways to revitalize the inner city, using transit investment as a catalyst for economic development. The MTA determined that this transportation corridor would be studied in a unique way, broadening the scope to address the added benefit of stimulating the economy and serving as a basis of future development efforts in land use, transportation, commerce and housing. MTA issued an RFP for a Preliminary Planning Study in the fall of 1992, and Crenshaw/Prairie is now being considered as one of ten candidate corridors as MTA revises its 30-Year Plan.

A major emphasis of the Crenshaw/Prairie Transportation Corridor Preliminary Planning Study is to improve the quality of life of people living in the area. While transportation is the focus, an equally significant role is that of a catalyst in the development process. As such, the definition of transportation alternatives was closely tied to development choices and goals made by the community.

Interagency Task Force

When the decision to accelerate the Crenshaw/Prairie Corridor study was made, an interagency task force was formed to assist MTA in defining the scope of the study, identifying resources that could be used to conduct the study, providing direct input to the study once it was underway, and jointly developing a strategy for implementing the transportation alternatives and development programs proposed for the area. The task force has met with the consultants on a regular basis during the course of the study to review progress and offer direction. The task force includes representatives from: the cities of Hawthorne, Inglewood, and Los Angeles (Departments of Planning and Transportation, Chief Legislative Analyst's Office, Community Redevelopment Agency, Councilwoman Ruth Galanter's Office, Councilman Mark Ridley-Thomas' Office, Councilman Nate Holden's Office, City Council, Office of the Mayor); Office of Supervisor Kenneth Hahn; Southern California Association of Governments (SCAG); Southern

California Rapid Transit District (since incorporated into MTA); Caltrans; and representatives from the community and private sector.

The Preliminary Planning Study

This Preliminary Planning Study serves as the first step in the evaluation of the Crenshaw/Prairie Transportation Corridor. Its purpose is to provide adequate information to decision makers at MTA and other agencies so that a specific project can be defined and studied further. The Preliminary Planning Study will not, therefore, recommend a specific alternative. Instead, it will provide a base of information upon which further studies can build. More detail on the Preliminary Planning Study process is provided in Section 2.0.

1.2 The MTA Regional Rail Plan

The Rail Program

MTA's 30-Year Comprehensive Transportation Plan identifies a wide range of transportation projects designed to meet Los Angeles County's transportation needs. While these projects include highway, bus transit, and transportation demand management improvements, the heart of the 30-Year Plan is the planned 400-mile regional rail transit network. Funded primarily by local sales tax revenues, this rail network will include a combination of heavy rail transit, light rail transit and commuter rail. MTA's rail program is illustrated in Figure 1.1.

The rail program is well underway, with many of the new rail services already in operation, others funded or in construction, and still others currently under study. These include:

- **Projects in Operation.** The Long Beach to Los Angeles Blue Line was the first component of the system to begin operation in 1991. This modern light rail transit (LRT) system currently carries about 40,000 passengers per day. Los Angeles' first heavy rail subway, the Red Line, opened in 1993 between Union Station and MacArthur Park. Four commuter rail lines also began service in 1992 and 1993, providing long-distance passenger rail service between downtown Los Angeles and Ventura County, Santa Clarita, San Bernardino and Riverside.

- **Projects Committed or Under Construction.** Several extensions of the Red Line are already under construction or programmed for future construction, including extensions to Hollywood, Universal City and the West San Fernando Valley, to East Los Angeles, and to the Mid-City area (Pico/San Vicente). Two additional light rail lines are scheduled to open before the turn of the century: the Green Line, providing service between Norwalk and El Segundo starting in late 1994; and the Pasadena to Los Angeles Blue Line, tentatively scheduled to open around 1998 or 1999.

- **Projects Under Study.** Rail projects under study include additional expansion of existing or planned lines, such as extension of the Red Line to Westwood, extension of the Green Line north to LAX, south to Torrance and east to the Norwalk Transportation Center, and extension of the Blue Line east to Azusa and southwest to Exposition Park. Additional rail projects under study include the Exposition corridor from Exposition Park to Santa Monica, the Los Angeles to Burbank/Glendale corridor, and the 10/60 Freeway corridor. The Crenshaw/Prairie Corridor is also one of these additional projects under study.

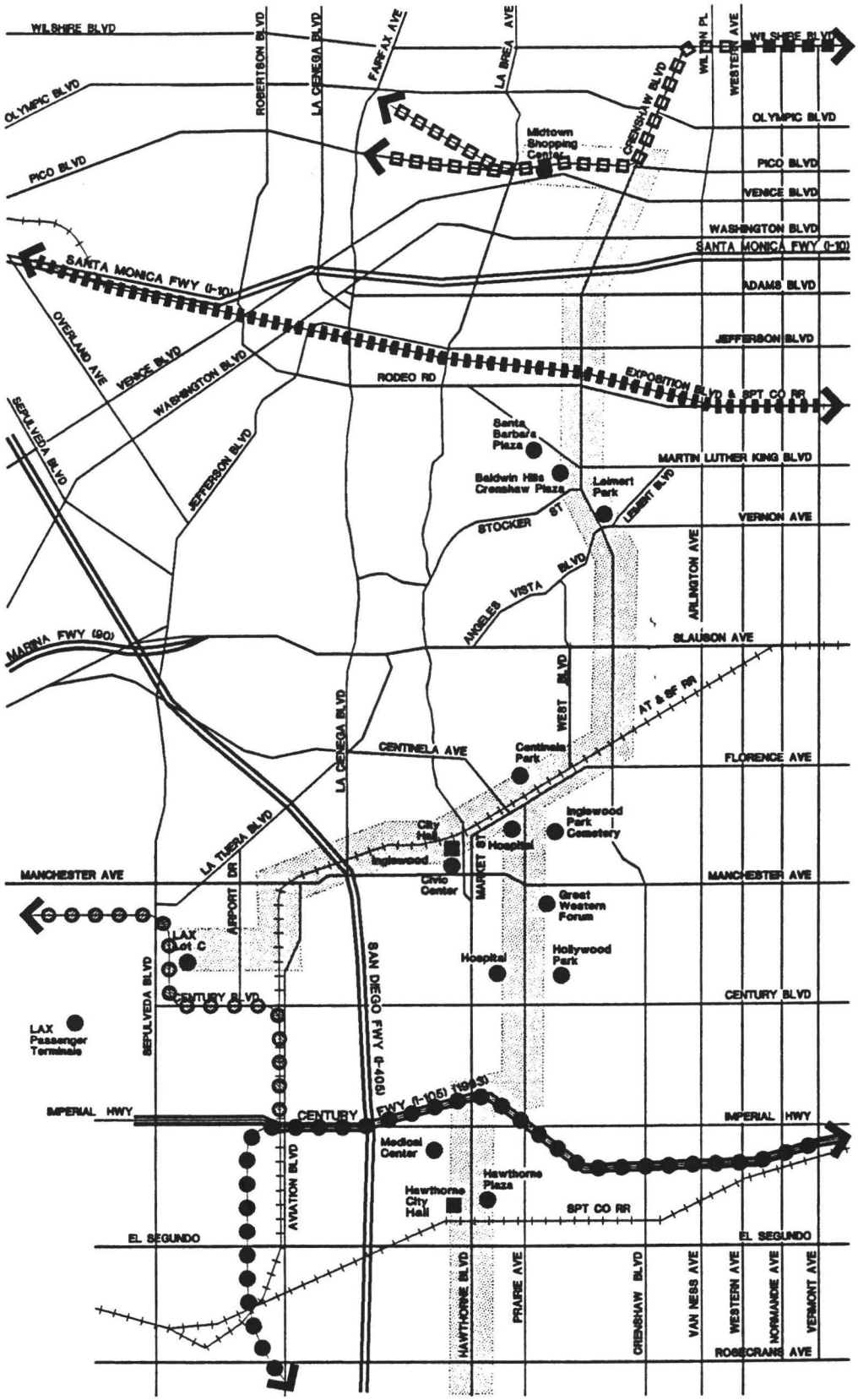
The Crenshaw/Prairie Corridor

The Crenshaw/Prairie Corridor has long been considered as a possible rail transit corridor in Los Angeles. It was included in the Southern California Rapid Transit District's first rail plan in 1967, and both City and County agencies have continued to study rail transit in parts of the corridor since then. The corridor currently under study would include portions of the following streets and rights-of-way:

- Crenshaw Boulevard from the Mid-City area to south of Slauson;
- Two short portions of former railroad right-of-way. The first is adjacent to Prairie Avenue between Crenshaw and La Brea, while the second would continue adjacent to Prairie and Aviation Avenue, leading to Lot C at Los Angeles International Airport (LAX);
- Portions of downtown Ingelewood streets, including La Brea, Market and Manchester;
- Prairie Avenue from Manchester to the I-105 Freeway;
- A short portion of the I-105 right-of-way;
- Hawthorne Boulevard from Imperial Highway to El Segundo Boulevard.

This corridor, illustrated in Figure 1.2, would traverse high-density urban areas in three cities, and could potentially connect three of the planned rail services in MTA's 30-Year Plan. With the potential use of available railroad rights-of-way, the corridor could also connect these inner-city areas with Los Angeles International Airport.

More importantly, though, this corridor travels through some of the areas hardest hit by the civil unrest of 1992 and areas which have been under-served by public investment in the past. New transit services within the corridor would represent not only a significant mobility improvement, but could serve to focus other public investment efforts in economic development. The corridor includes Leimert Park, an emerging focal point of the African-American community and home to a growing concentration of minority owned businesses, and the two regional shopping centers serving the South-Central area. The Crenshaw/Prairie corridors represents one of the best opportunities for combining mobility enhancements with economic development efforts in the central city.



CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
LOS ANGELES COUNTY
TRANSPORTATION COMMISSION

Figure No. 1.2
CRENSHAW/PRAIRIE CORRIDOR

2. The Preliminary Planning Study Methodology

2.0 The Preliminary Planning Study Methodology

2.1 The Study Process

As noted above, the Preliminary Planning Study is only the first step in implementing a rail transit project in the Crenshaw/Prairie corridor. The purpose of the study is not to select the preferred alternative from those under study, but to provide a resource of information from which a project can be defined and further studied. Input from the public outreach program, described in Section 2.3 below, was critical in determining the shape of the analysis and type of information that the study would produce.

Beyond a Preliminary Planning Study, further steps in the study process will be to narrow the alternatives to a specific project and subject this project to further environmental and engineering review in the Route Refinement/Environmental Impact Report process. As this additional review takes place, funding commitments for the project must also be obtained, either from local funding sources or from a combination of sources, potentially including state and federal funds as well. If funding can be secured, then the project can move forward with Preliminary Engineering studies, followed by Final Design and Construction. This entire planning and design process may take from 7 to 10 years, followed by another 2-4 years for construction. This process is illustrated in Figure 2.1.

2.2 The Study Team

The project study team consisted of six consulting firms from a wide variety of disciplines, including transportation and transit planning, civil engineering, urban design and planning, architecture, and public participation and community organization. In recognition of the dual emphasis of this study on transportation planning and economic development, the project utilized two lead consultants. The team was comprised of the following firms in each area.

Korve Engineering, Inc. was one of the two lead consultants and was responsible for overall project management and directing all transportation planning and engineering aspects of the work program. Manuel Padron & Associates led the work efforts on operations planning, patronage and operating costs.

Terry A. Hayes Associates was the other lead consultant, with responsibility for the environmental and land use planning, economic analysis, environmental review, and public/private outreach program. RAW Architecture is an architectural partnership and supported the land use planning and station analysis. Bragg & Maddox, a public affairs consulting agency, coordinated and managed the public outreach program. The Planning Group provided input to the planning/economic analysis, and assisted with facilitation of community meetings.

2.3 The Public Outreach Program

An essential component of the Crenshaw/Prairie Preliminary Planning Study was the Public Outreach Program, designed to inform officials and the public about the nature of the study, as well as to solicit guidance from the public as to the course the study should take. This public outreach program had three main elements.

- The Interagency Task Force (described in Section 1.1) met regularly with the study team to receive updates on the study's progress and to provide guidance on its direction. Meetings with the task force, which included agency officials and representatives of the general public, helped ensure that the concerns of the cities along the corridor, the agencies responsible for transportation and community development, and the general public all had a chance to help guide the course of the study.

- Three sets of community forums were planned over the course of the study to help inform the general public about the preliminary planning study, with the third set yet to come. Each set of forums was held in three locations--the north, central, and southern sections of the corridor--to provide the greatest opportunity for public participation. The meetings generally started with a presentation by the study team, followed by breakout sections in which members of the study team and the public discussed aspects of the study in detail, and finished with a summary of the issues discussed in the breakout sections. This format provided a highly interactive environment in which the public became actively involved in the study. The first set of meetings covered definition of the preliminary alternatives; the second covered details of the technical analysis of the three preferred alternatives; and the third round of meetings (currently scheduled for February 1994) will cover the comparative evaluation and conclusions of the study.

- A third element of the Public Outreach Program is a community newsletter summarizing study issues and conclusions. This newsletter is scheduled to be mailed to residents of the corridor and members of the Task Force shortly.

- Both radio and local television announcements were also utilized over the course of the study to announce community meetings and provide information on the course of the study.

3. Development of Preliminary Alternatives

3.0 Development of Preliminary Alternatives

The process of defining preliminary alternatives began with reviewing and understanding the existing and planned land use and transportation context in the corridor. A summary of transportation and land use conditions is presented below, including a general description of the corridor characteristics, existing and planned transit services, existing and planned land uses, and special planning areas, such as Redevelopment and Recovery areas.

3.1 Existing and Planned Conditions

Corridor Characteristics

The Crenshaw/Prairie Corridor is different from most of the other candidate corridors being studied by MTA, because while most of the candidate corridors utilize existing railroad rights-of-way exclusively, the Crenshaw/Prairie Corridor would be built almost entirely within or under existing arterial streets. This makes the width of those streets a critical concern, and increases the importance of compatibility with adjacent land uses. In both of these areas, the Crenshaw/Prairie Corridor presents some distinct opportunities and significant disadvantages for implementing new transit services, especially a fixed guideway such as a busway or light rail trackage. Another difference is that this corridor would potentially connect to three other rail corridors, providing a greater degree of regional connectivity than other candidate corridors. These corridor characteristics are reviewed below.

The corridor has both some very wide and very narrow street segments, which makes accommodating a transit system easy is some places and difficult in others. Starting from the north end of the corridor, Crenshaw Boulevard is a relatively narrow four-lane arterial, which could make accommodating a new transit service in this section somewhat difficult because of the narrow street width. South of the I-10 Freeway, the street widens to a six lane arterial during the peak periods. Between Rodeo Road and 60th Street, an important feature of the street itself is the extremely wide right-of-way, along with the use of frontage roads for parking on either side of the street. In these wider street segments, it would be much easier to physically accommodate a transit system. This street configuration is not consistent, however, with several segments of standard street widths in between the wider segments.

As the corridor approaches Florence Boulevard, a portion of the former Atchison, Topeka and Santa Fe Railroad right-of-way would be utilized paralleling Florence between Crenshaw Boulevard and La Brea Avenue. This right-of-way is generally about 50 feet wide and is protected from neighboring land uses by landscaping.

One corridor option would also utilize portions of streets in downtown Inglewood, including La Brea Avenue, Market Street and Manchester Boulevard, each of which is a four-lane arterial. A transit guideway could be accommodated on these streets with some modifications to lane us and/or parking. Another option would continue along the railroad right-of-way, passing through commercial and industrial uses on the way to a terminus at LAX, where numerous transit connections could be made.

The corridor continues southward along Prairie Avenue, passing by the Great Western Forum and Hollywood Park racetrack. South of these entertainment facilities, the width of Prairie Avenue could present some constraints for a transit system, since all of the current street width is utilized by necessary travel lanes. At the I-105 Freeway ramps to Prairie, the corridor would utilize the freeway right-of-way to connect with the Green Line and to reach Hawthorne Boulevard, where it will continue southward to a terminus near the Hawthorne Plaza. This Hawthorne Boulevard itself is very wide in this portion of the corridor, and could support a transit guideway within the existing street width.

The corridor offers a mix of residential, strip commercial and retail, institutional and some light industrial land uses. In the northern part of the corridor, north of the I-10 Freeway, residential uses predominate. South of the I-10 Freeway on Crenshaw Boulevard, a mixture of strip commercial and institutional uses are common. There are several important land uses along this portion of Crenshaw Boulevard, including the Baldwin Hills/Crenshaw Plaza Shopping Center and Santa Barbara Plaza at Martin Luther King Blvd., and the Leimert Park area. Baldwin Hills/Crenshaw Plaza is a major regional shopping center, and Leimert Park has in recent years become a focal point of the African-American community in Los Angeles. Along Crenshaw Boulevard in Leimert park are many restaurants, clubs, and galleries, lending a strong pedestrian focus to this part of the corridor.

The corridor would also pass by the Inglewood Civic Center and nearby commercial uses. Two major entertainment facilities, the Great Western Forum and Hollywood Park, are located along the corridor on Prairie Avenue south of Manchester Boulevard. South of these major recreational centers, the corridor along Prairie is bounded by a mix of residential and local retail uses. The southern end of the corridor along Hawthorne Boulevard passes through commercial and retail uses, including a second major regional shopping center, Hawthorne Plaza, at the end of the corridor.

Plates 3.1 through 3.8 illustrate many of these corridor characteristics, showing street conditions and important land uses at several points in the corridor.

Existing Transit Service

The study corridor is generally well served by existing transit services, and many of the transit routes in the corridor are heavily utilized. Four transit providers--the Los Angeles County Metropolitan Transportation Authority (MTA), Santa Monica Municipal Bus Lines (SMMBL), Culver CityBus and Torrance Transit--offer a combination of local, limited-stop and freeway-express service within the corridor and study area. These routes are

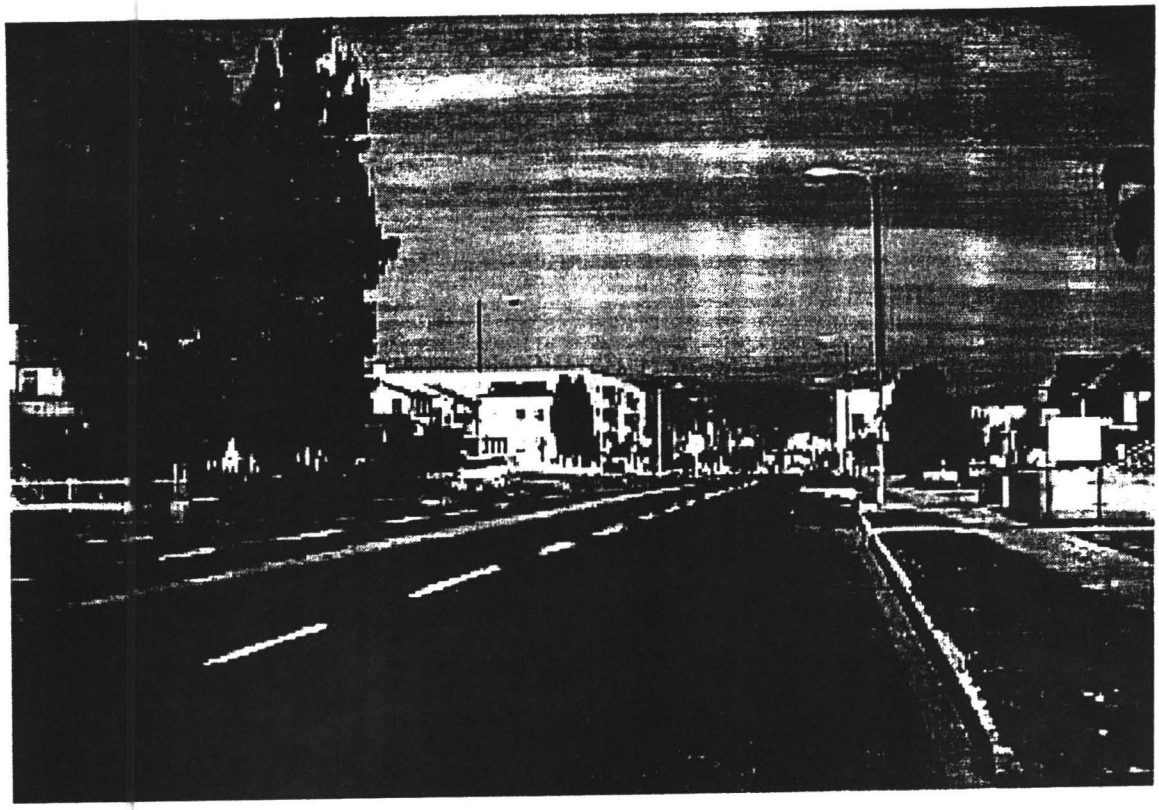


Plate 3.1 Crenshaw Boulevard north of Washington Boulevard, showing the narrow four-lane street and adjacent residential land uses.

Plate 3.2. The Baldwin Hills Crenshaw Plaza, one of two regional shopping centers along the corridor, is located on Crenshaw at Martin Luther King, Jr. Boulevard. Crenshaw is much wider at this location.

Plate 3.3. Crenshaw Boulevard through Leimert Park is a standard six-lane major arterial, bounded by commercial, restaurant and entertainment uses.

Plate 3.4 Crenshaw Boulevard north of Slauson is a very wide street, with frontage roads on either side of the traffic lanes used for parking to support adjacent commercial uses.

Plate 3.5. The former Atchison, Topeka and Santa Fe Railway right-of-way along Florence Boulevard.

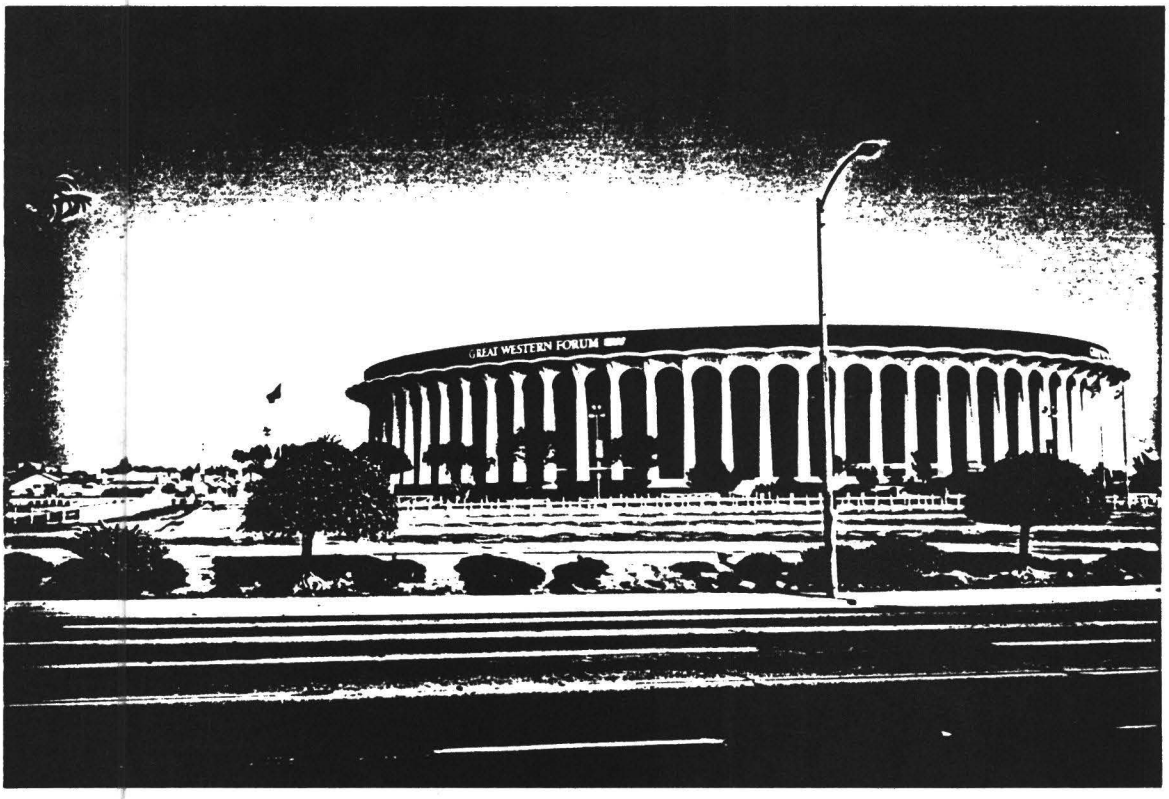


Plate 3.6 The Great Western Forum along Prairie Avenue at Manchester, one of two major entertainment complexes on Prairie. (Hollywood Park racetrack is immediately south of this point.)

Plate 3.7. The Green Line Hawthorne Station will be a transfer point between the Green Line and the Crenshaw Line, and could spur additional development to the south.

Plate 3.8. The Hawthorne Plaza shopping center on Hawthorne Boulevard, the second major shopping center in the corridor. Hawthorne Boulevard is also quite wide at this point.

illustrated in Figure 3.1. Virtually every major and secondary arterial in the study area is served by at least one bus route. Lines 40, 42, 210, 211 and 442 are the MTA bus routes that serve the alignment routes of the study corridor.

Lines 40 and 42 are local services connecting the South Bay and LAX with downtown, traveling mainly on Hawthorne Boulevard and Crenshaw Boulevard. Daily boardings on the two combined lines are about 36,000, with corridor related daily boardings of about 16,700 (46%). Line 210 is a north/south local transit service traveling along Crenshaw Boulevard, connecting the South Bay Galleria to the Hollywood area. Total daily boardings on the route are over 20,400, of which 13,300 (66%) occur within the corridor. Line 211 provides local service along Prairie Avenue; daily boardings are about 2,110, with boardings of about 970 (46%) occurring in the study corridor. Line 442 is freeway express service between Los Angeles and the South Bay Galleria. Daily boardings on the line are about 1,300, of which 650 (50%) occur in the corridor.

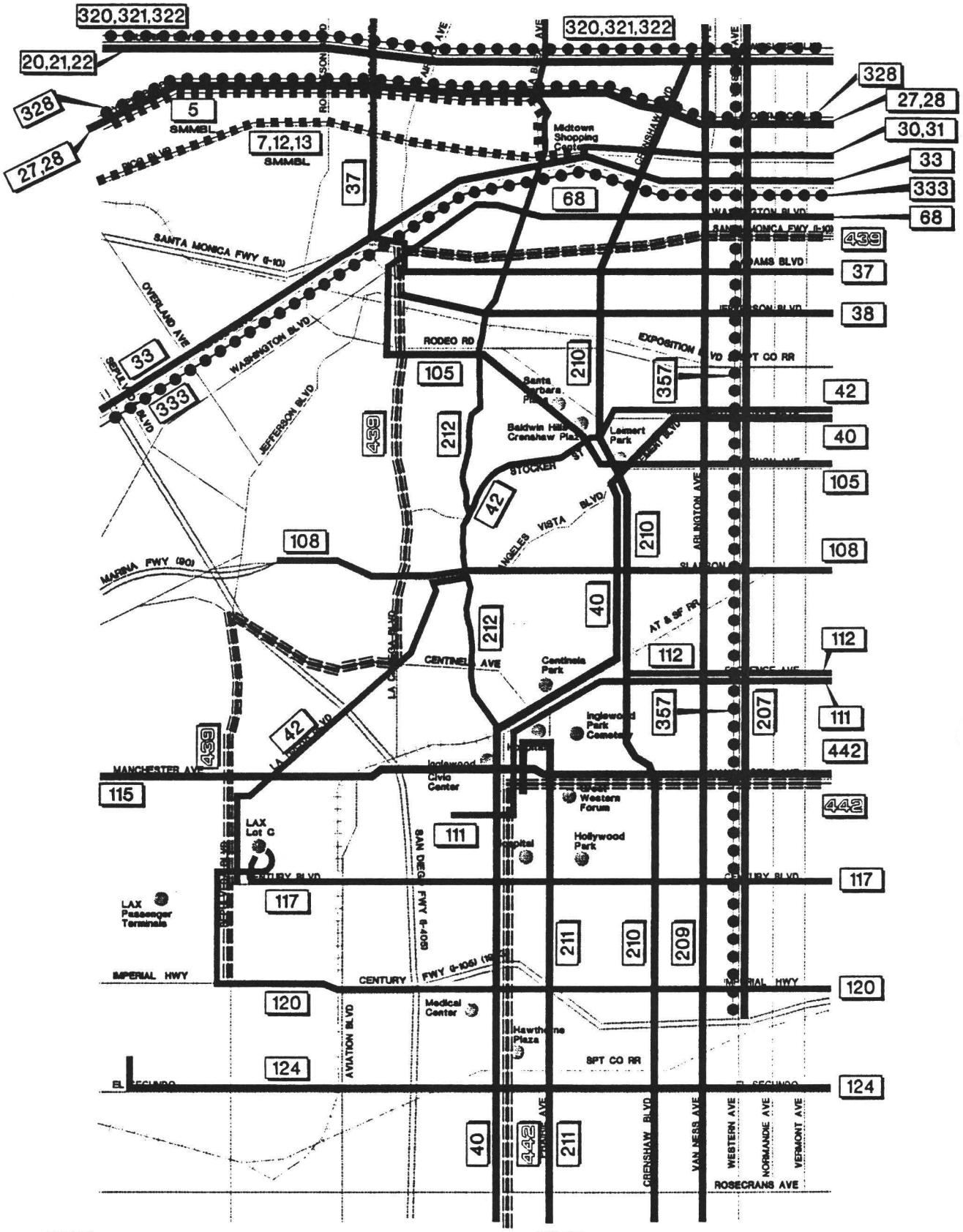
Planned and Proposed Transit Services in the Corridor

Several additional transit projects which would provide service to parts of the corridor are in the planning or construction stages. These include the Metro Red Line, Metro Green Line, Exposition Right-of-Way Line, and the Electric Trolley Bus Project. The three planned rail lines would each cross the Crenshaw/Prairie Corridor, offering transfer opportunities and regional connections. The Electric Trolley Bus project travels through the central portion of the study corridor, but would have different origin and destination points. These projects are described briefly below and illustrated in Figure 3.2.

Metro Red Line

The first phase of the Metro Red Line subway opened in January of 1993. This first phase (MOS-1) provides service from Union Station to MacArthur Park, with intermediate stations at the Civic Center, Pershing Square, and 7th Street/Metro Center. Phase 2 of the Red Line will extend service along Wilshire Boulevard with stations at Vermont, Normandie and Western. This segment is expected to open in 1996. At the same time, construction will extend the service into Hollywood, travelling along Vermont Avenue and Hollywood Boulevard. This segment is expected to open in 1998. The third phase will extend service from Hollywood/Vine into San Fernando Valley, terminating in North Hollywood. Phase 3 service is expected to open in the year 2001.

An additional future extension of the Red Line is planned from Wilshire/Western towards West Los Angeles, although the exact alignment has not yet been determined. The alignment will proceed westward along Wilshire Boulevard to Crenshaw, and then follow Crenshaw southward to Olympic (with a station at Olympic/Crenshaw), where it will veer to the west before reaching the next station at Pico/San Vicente. From there, the alignment will continue west along one of several routes, including San Vicente Boulevard, Olympic Boulevard and Wilshire Boulevard. A supplemental EIR has been completed for the extension to Pico/San Vicente, and this extension is expected to be operational sometime after the 2000.



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NO SCALE

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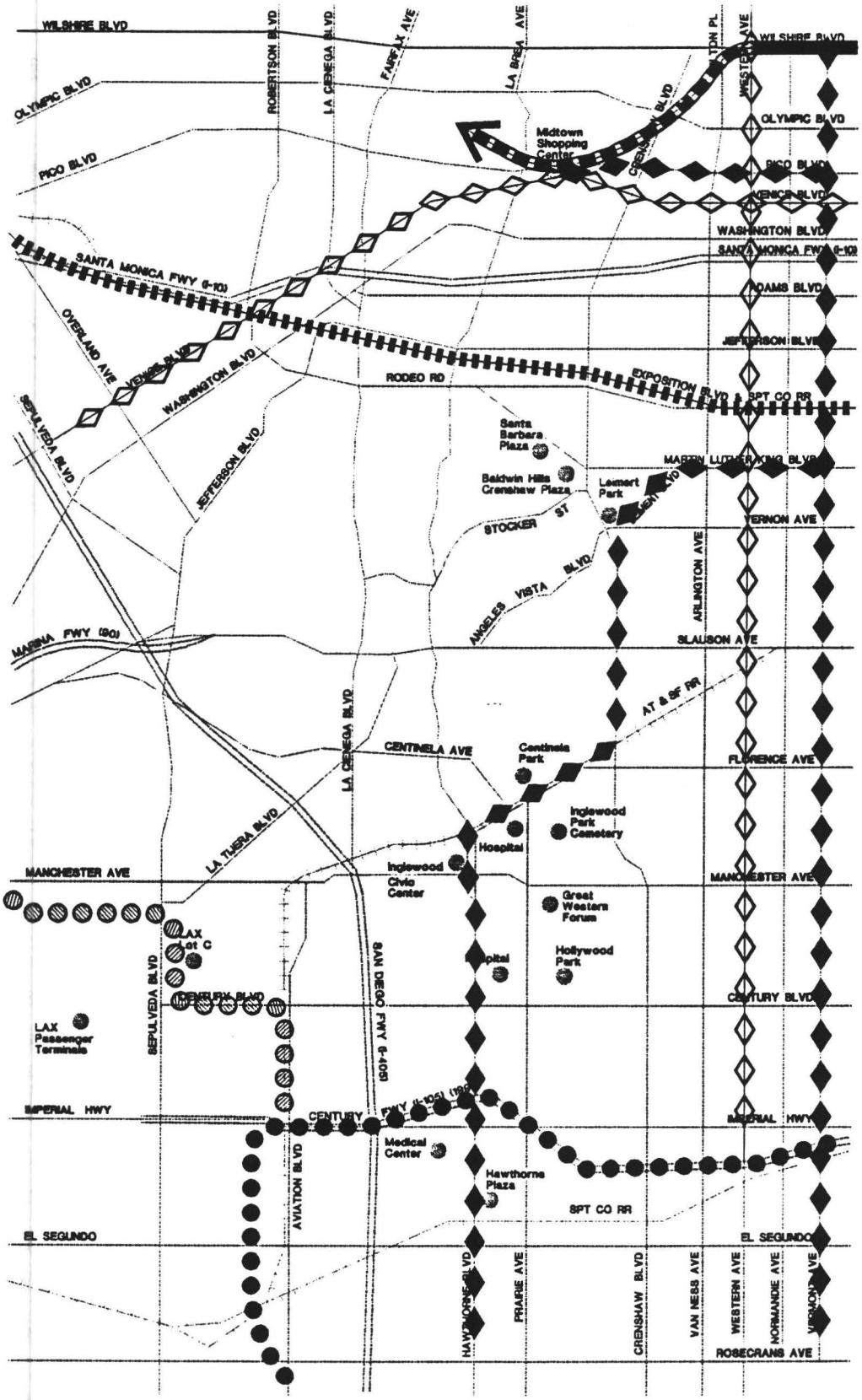
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING / TERRY A. HAYES ASSOCIATES

FIGURE No. 3.1
EXISTING BUS SERVICE



METRO RED LINE - MOS-2

METRO RED LINE - EXTENSION

EXPOSITION LINE LRT

METRO GREEN LINE

METRO GREEN LINE - EXTENSION

ETB - PHASE 1

ETB - PHASE 2

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FIGURE No. 3.2

PLANNED AND PROPOSED TRANSPORTATION SERVICES

Metro Green Line

The Metro Green Line is a light rail line currently under construction in the median of the Century Freeway (I-105, recently opened in October of 1993). Service is expected to begin towards the end of 1994, about a year after the freeway opening. The initial line will extend from the I-605 Freeway on the east to Freeman and Marine Avenues on the border of the cities of Hawthorne and Redondo Beach. Three extensions of the Green Line are included among MTA's candidate corridors, two of which have some bearing on transit service in the Crenshaw/Prairie Corridor. The northern extension, for which an EIR has been completed, would provide service from the Aviation/Imperial station through LAX to Westchester Parkway. The southern extension, for which an EIR will soon be prepared, would continue south towards the Torrance Municipal Airport, potentially along Hawthorne Boulevard.

Exposition ROW Light Rail

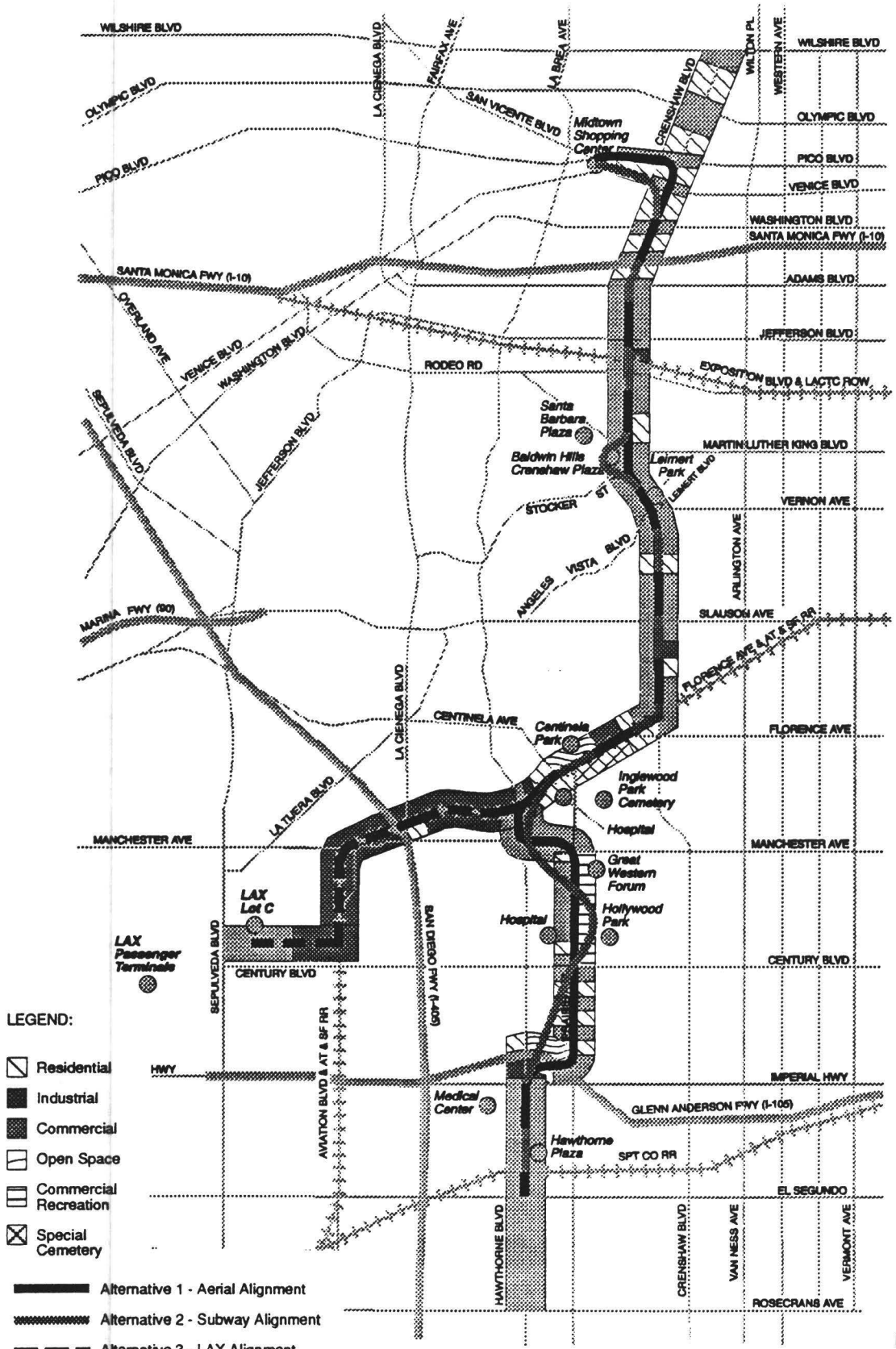
A Preliminary Planning Study has been completed for this corridor, which is also included in the list of candidate corridors. The Preliminary Planning Study considered an alignment that began at Vermont Avenue in the east and continued westward to the San Diego Freeway (I-405) along the Exposition ROW. From there, several options were considered which would continue the corridor to Santa Monica. An EIR will soon be prepared on this corridor. The Exposition ROW traverses the northern part of the Crenshaw/Prairie Corridor.

Electric Trolley Bus Program

The Electric Trolley Bus Program is a cooperative effort between MTA, Long Beach Public Transit and Montebello Bus Lines to convert 19 bus lines within Los Angeles County from diesel-fueled buses to zero-emission electric trolley buses (ETBs). Twelve of these lines have been identified in a recently completed EIR as recommended Phase 1 lines to be implemented by the early 21st century (probably before 2010). These Phase 1 lines include two routes which travel, in part, through the Crenshaw/Prairie Corridor: Route 40 (Hawthorne/Stocker/Crenshaw) and Routes 30/31 (Pico Boulevard from Pico/Rimpau to downtown Los Angeles). Phase 2 includes several other routes which border on or pass through the corridor, including Routes 33/333 (Venice Boulevard) and Route 207 (Western Avenue).

Existing Land Uses

A windshield survey of land uses adjacent to the Crenshaw/Prairie Corridor was conducted. This information was supplemented by a review of available aerial photographs and other information available from the cities of Los Angeles, Inglewood, Hawthorne and the County of Los Angeles. Figure 3.3 illustrates the generalized pattern of existing land uses along the corridor. The statistical distribution of existing land use is shown in Table 3.1. Table 3.1 divides the land uses among the two parts of the corridor:



SOURCE: City of Los Angeles, City of Inglewood, City of Hawthorne

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FIGURE 3.3

EXISTING LAND-USE

the primary north/south corridor between the Mid-City area and the City of Hawthorne; and the corridor extension to Los Angeles International Airport (LAX). The predominant land use is commercial (62 percent) for the north/south alignment and 47 percent for the LAX alignment, followed by residential land use for the north/south alignment (20 percent) and industrial land-use (27 percent) for the LAX alignment. It is important to note that the majority or residential land uses are either concentrated in portions of the corridor north of the Santa Monica Freeway or south of Century Boulevard.

The survey of existing land uses also revealed the following major activity centers along the corridor:

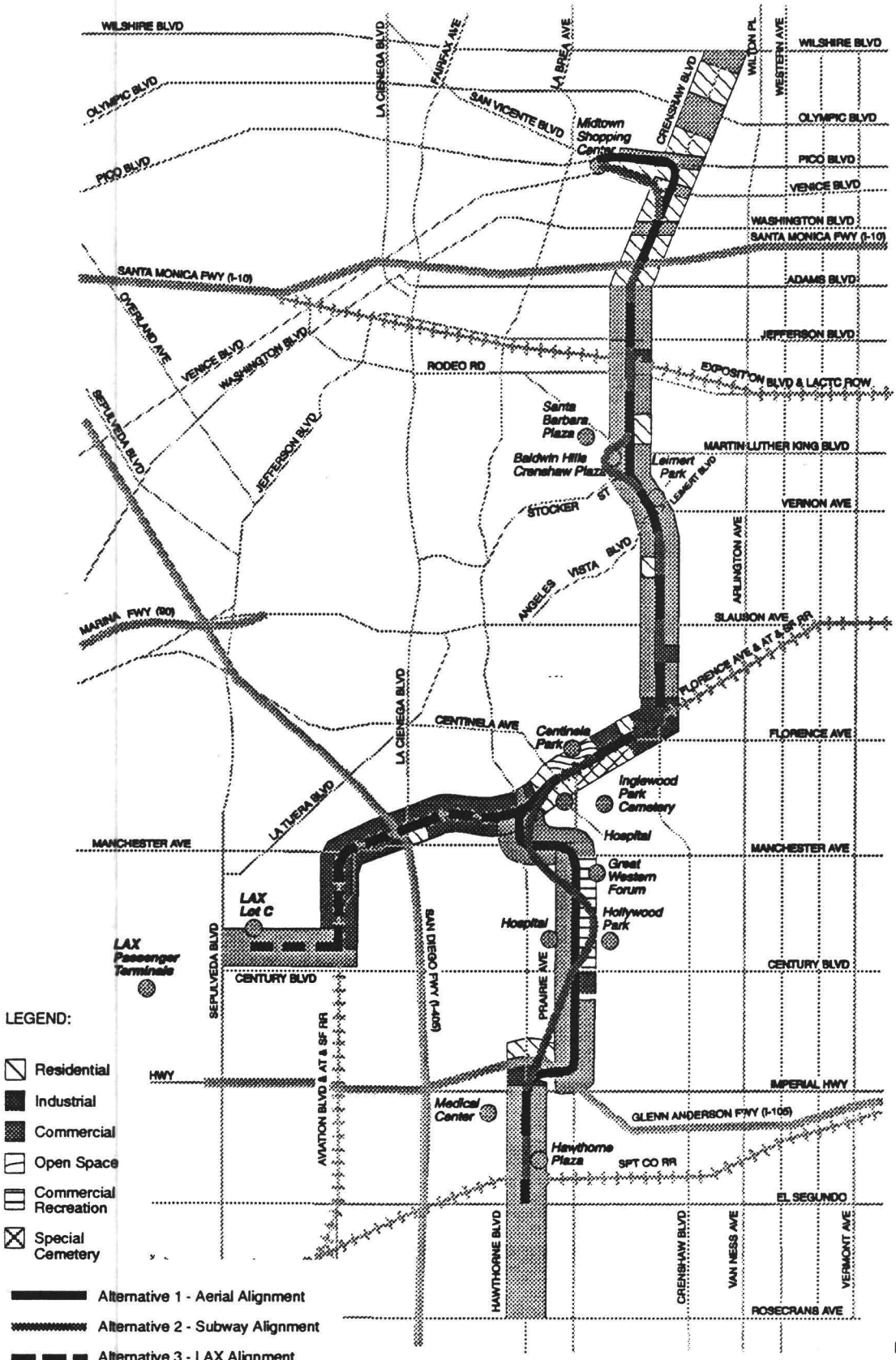
- Baldwin Hills Crenshaw Plaza
- Downtown Inglewood and the Inglewood Civic Center
- Great Western Forum
- Hollywood Park Race Track
- Hawthorne Plaza

Another important finding of the land use survey was the identification of major areas where there were vacant or underutilized land. This areas included:

- Pico/San Vicente Area and the Mid-Town Shopping Center
- Crenshaw Boulevard - Scattered sites between Adams and 39th Street
- Crenshaw Boulevard - Scattered sites between 60th and 63rd streets.
- Uses along the ATSF tracks between Crenshaw and West Boulevard
- Prairie Avenue between Century and Imperial
- Northeast quadrant of the Hawthorne Boulevard and Imperial intersection area.

Proposed and Planned Land Use

The general plans of all jurisdictions within the corridor were reviewed to determine the planned land use of the corridor. These planned land uses are shown in Figure 3.4. The distribution of planned land uses is shown in Table 3.1. Similar to existing conditions, the predominant land-use in the corridor is designed for commercial use.



SOURCE: City of Los Angeles, City of Inglewood, City of Hawthorne Community Redevelopment Agency of Los Angeles

Crenshaw-Prairie Corridor Preliminary Planning Study

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING / TERRY A. HAYES ASSOCIATES

FIGURE 3.4

PLANNED LAND-USE

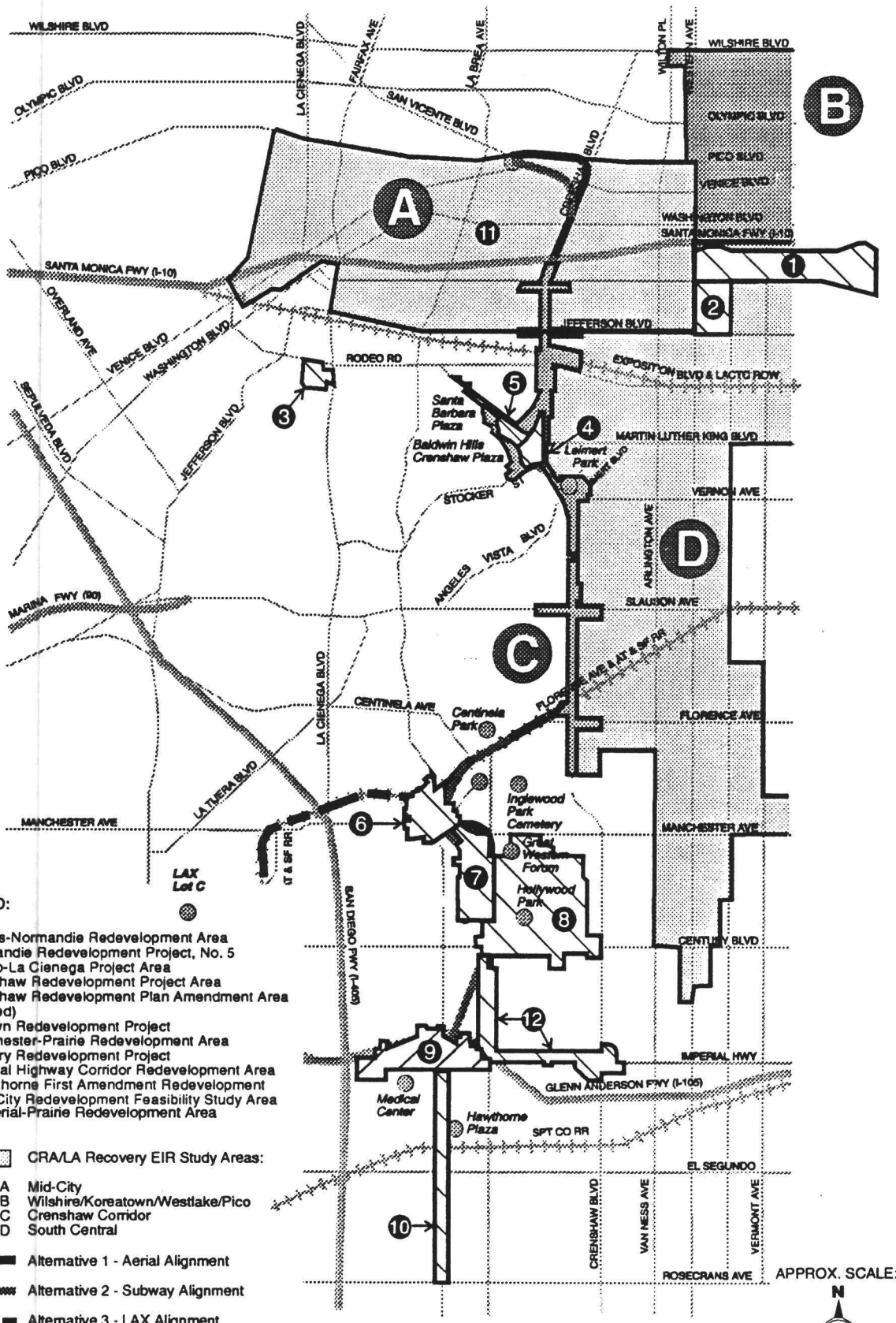
Table 3.1 Existing/Proposed Land Uses as a Percentage of the Crenshaw/Prairie Corridor

	EXISTING		PLANNED	
LAND USE	N/S Segment	LAX Segment	N/S Segment	LAX Segment
Residential	20%	17%	15%	16%
Industrial	8%	27%	9%	29%
Commercial	62%	47%	66%	46%
Open Space	4%	4%	4%	4%
Commercial Recreation	4%	0%	4%	0%
Special Cemetery	2%	5%	2%	5%

Source: Terry A. Hayes Associates

Redevelopment and Recovery Areas

One of the most important planning and economic development tools are the financing and land assembly powers allowed under the California Community Redevelopment Law. Redevelopment areas typically contain land use controls similar in detail to specific plans where not only are land uses designated but also guidelines are established for the design and development of all properties within the redevelopment area. This is an important mechanism that allows land uses in and around potential rail transit stations to be designated in detail to maximize joint development and transit adjacent development potentials. In addition, the tax increment financing components of redevelopment would provide investment source that could supplement the potential MTA investment in potential station areas. As shown in Figure 3.5, the vast majority of the Crenshaw/Prairie Corridor is located within either existing redevelopment areas or in redevelopment survey areas or recovery areas that are likely to be designated redevelopment areas. The major portions of the corridor not in these areas are the segments between West Boulevard and La Brea and areas west of the Inglewood industrial area.



SOURCE: Community Redevelopment Agency of Los Angeles, City of Los Angeles, City of Inglewood, City of Hawthorne

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING / TERRY A. HAYES ASSOCIATES

FIGURE 3.5
REDEVELOPMENT AND RECOVERY EIR STUDY AREAS

3.2 Identification of Alternatives

Description of Transit Types

Several types of transit services were considered in developing alternatives. Table 3.2 summarizes the comparison of transit types under consideration. The study team developed six preliminary alternatives using these transit types by applying them to different alignments within the study corridor and by applying them in different profiles (such as at-grade versus elevated operations). A description of the six preliminary alternatives developed using these transit types follows in Figures 3.6 through 3.11.

Table 3.2
Descriptions of Transit Types

Mode	Nature of Service	Vehicle Capacity	Minimum & Typical Headway	Maximum Per Hour Capacity	Max-imum Speed	Stations	Power	Right-of-Way Requirements
Electric Trolley-Bus	Low-Medium Capacity, Low-Medium Speed	60 seated 30 standing 90 total (single articulated vehicle)[1]	1 min. (minimum) 3-5 mins. (typical)	5,000	45 mph	Double platform. Minimum length 150 ft.	Electric overhead catenary	On-street shared lane - 12 to 14 feet Exclusive median lanes (40-46')
Light Rail Transit	Medium Capacity, Low/Medium Speed	76 seated 99 standing 175 total 2-Car Train 350 total 3-Car Train 525 total	3 mins. (minimum) 5-10 mins. (typical)	7,000 (2-car trains) 10,000 (3-car trains)	55 mph	Single or double platform. Minimum length 200-300 ft.	Electric overhead catenary	On-street (at-grade) or exclusive ROW (aerial or in railroad ROW) 26' minimum 40' at stations
Heavy Rail Transit	High Capacity, High Speed	59 seated 110 standing 169 total 6-Car Train 1,014 total	2 mins. (minimum) 5 mins. (typical)	30,000 (6-Car Trains)	70 mph	Double platform. Minimum length 450 ft.	Electric (third rail)	Exclusive ROW (grade separated subway)
Automated Guideway Transit	Medium Capacity, Medium Speed	59 seated 110 standing 169 total 2-Car Train 338 total	2 mins. (minimum) 3-5 mins. (typical)	10,000	55 mph	Single or double platform. Minimum length 150 ft.	Electric (third rail)	Exclusive ROW (grade-separated aerial)

1. Capacity of single non-articulated vehicle is 43 seated, 20 standing, 63 total.

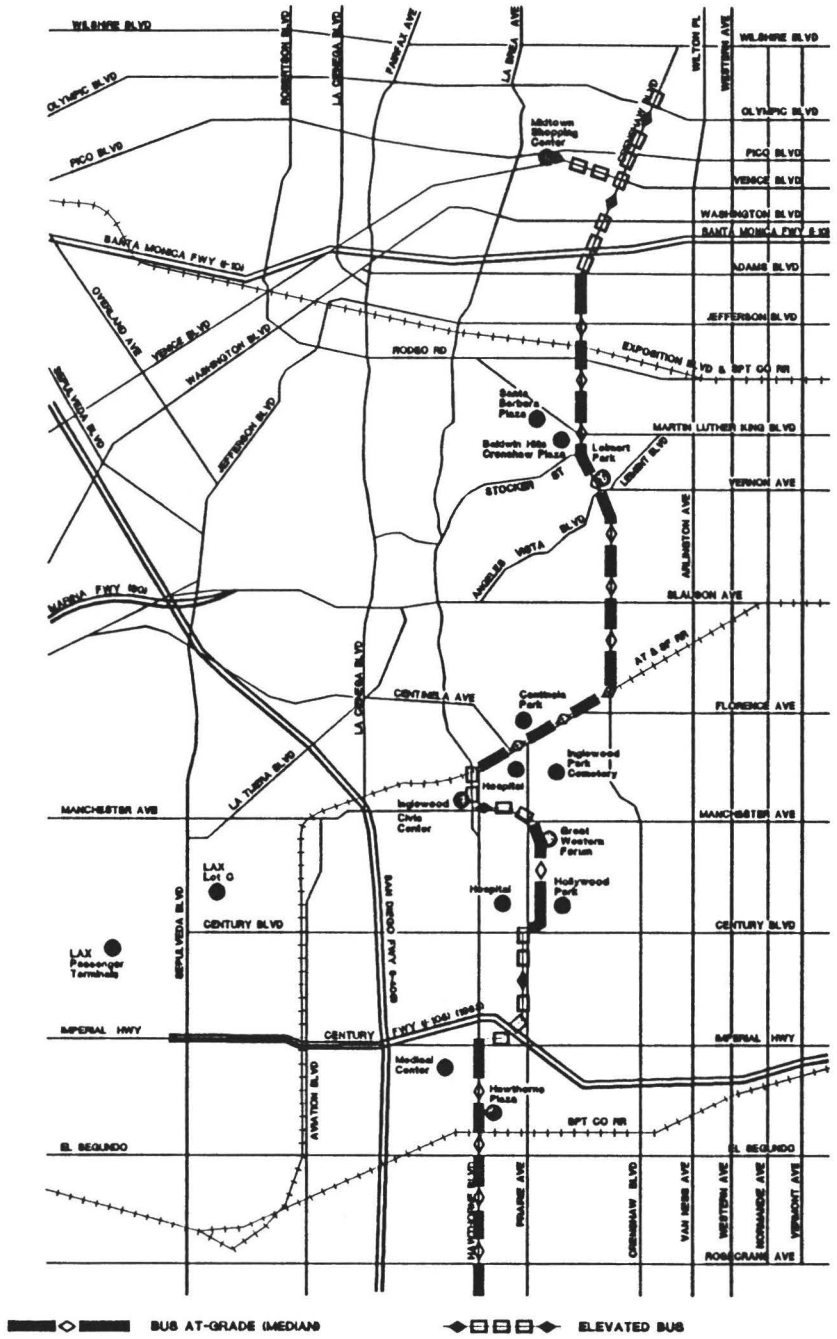


Figure 3.6
Alternative 1 - Median Busway (Electric Trolley Bus)

Provide a continuous, exclusive bus lane linking the Red Line with the Green Line. Aerial structure would be provided at geometrically constrained locations or high traffic locations to avoid impact to the existing roadways. Transfers would be provided to the Red, Blue, and Green Lines.

The north end of the alignment would be at the Red Line station at Pico/San Vicente. The route would follow Crenshaw Boulevard south to the ATSF ROW, and would then follow the railway to downtown Inglewood to increase potential patronage and avoid the constraint of Prairie alongside the Inglewood Park Cemetery. The alignment would pass by the Great Western Forum and Hollywood Park and would continue on-street down Prairie Avenue to the Glenn Anderson Freeway (I-105). The route would jog to the west in freeway ROW to Hawthorne Boulevard and a transfer with the Green Line. The alignment would enter Hawthorne Boulevard immediately south of the freeway and would continue south along Hawthorne to a terminus at Rosecrans Avenue.

***Electric Trolley Bus** (ETB) is a rubber wheeled bus powered by electric motors that receive power from overhead wires. Standard vehicles are similar to existing diesel powered vehicles. A 40-foot long single ETB typically carries up to 63 riders (43 seated and 20 standing). Alternatively, 60-foot articulated ETBs could be used, carrying 90 or more riders (60 seated and 30 or more standing). Peak-hour service frequencies can vary, depending on whether the buses travel in mixed-flow (about 5 minutes) or exclusive bus lanes (about 2 minutes). Buses could also be platooned in exclusive bus lanes, providing greater capacity. Overall running speeds vary from 15 to 25 miles per hour depending upon whether the ETB runs in mixed flow in a dedicated lane. Under certain conditions, traffic signal preemption can be provided, resulting in higher speeds.*

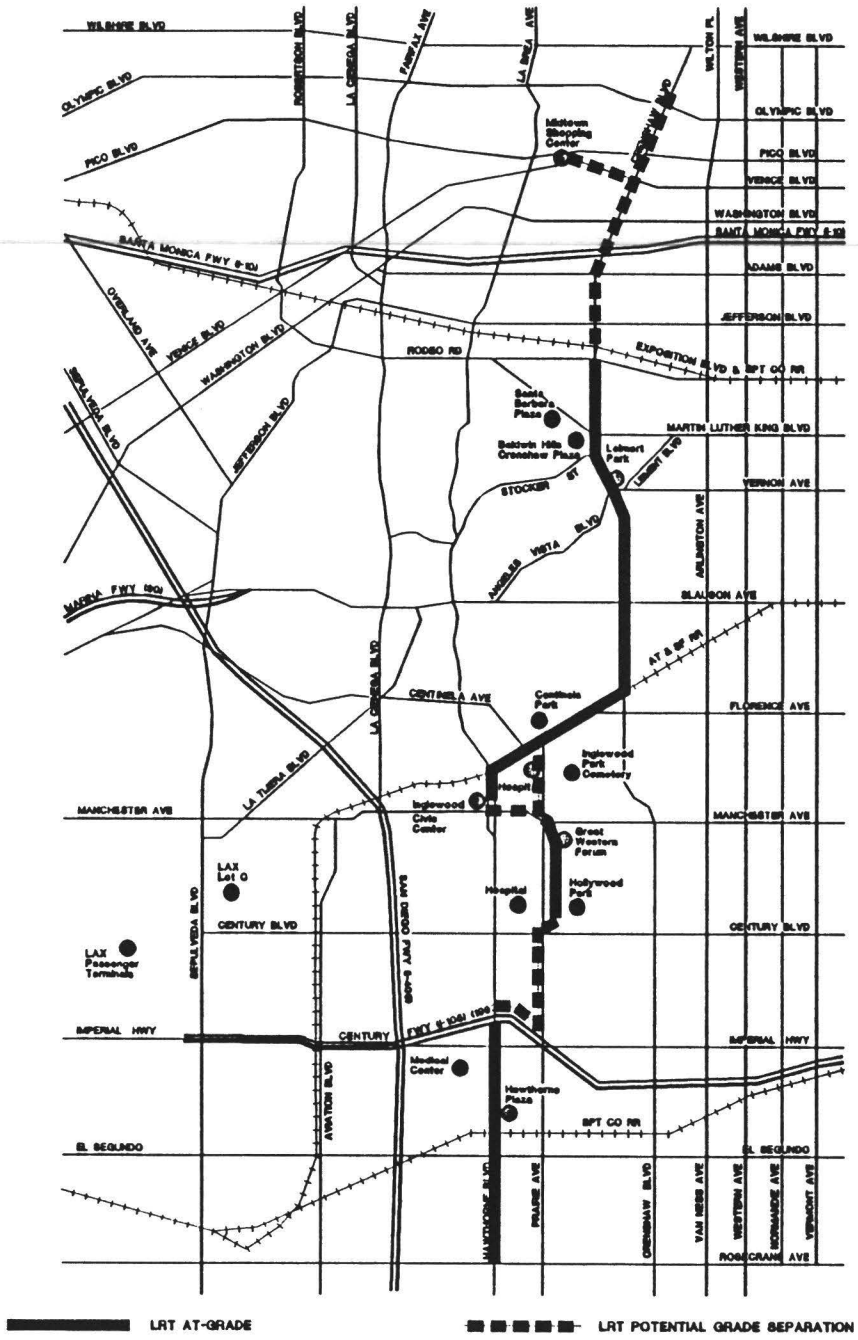


Figure 3.7
Alternative 2 - LRT At-Grade

Provide a Light Rail Transit (LRT) line, running at-grade in an exclusive on- and off-street right-of-way where physically possible, linking the Red Line with the Green Line. Where absolutely necessary due to physical constraints, grade separation would be provided. Transfers would be provided to the Red, Blue, and Green Lines.

The north end of the alignment would be at the Red Line station at Pico/San Vicente. The route would follow Crenshaw Boulevard south to the ATSF railway ROW, and would then follow the railway to Prairie Avenue (other options would serve downtown Inglewood and Manchester). The alignment would pass by the Great Western Forum and Hollywood Park at grade and would continue on-street down Prairie Avenue to the Glenn Anderson Freeway (I-105). The route would jog to the west in freeway ROW to Hawthorne Boulevard to a transfer with the Green Line. The alignment would enter Hawthorne Boulevard immediately south of the freeway and would continue south along Hawthorne to a terminus at Rosecrans Avenue.

***Light Rail Transit (LRT)** is a medium-capacity rail mode. LRT can operate in exclusive or shared right-of-way as well as on-street. Street crossings are typically at-grade, although grade separations are also common where traffic volumes are high. When running at-grade, preemption of cross-street traffic can be provided, resulting in higher operating speeds. Vehicles draw power from overhead electric lines and operate at up to 55 mph. Peak hour service headways may be as low as five minutes and often average ten to fifteen minutes. Service is usually provided at longer headways during off-peak hours. Vehicles are operated singly or in pairs (with a maximum of three vehicle consists). Light rail vehicles in use on the Long Beach Blue Line have 76 seats per car and carry up to 175 passengers with standees. Station spacing for light rail generally ranges from one to two miles between stations, and the stations have high platforms.*

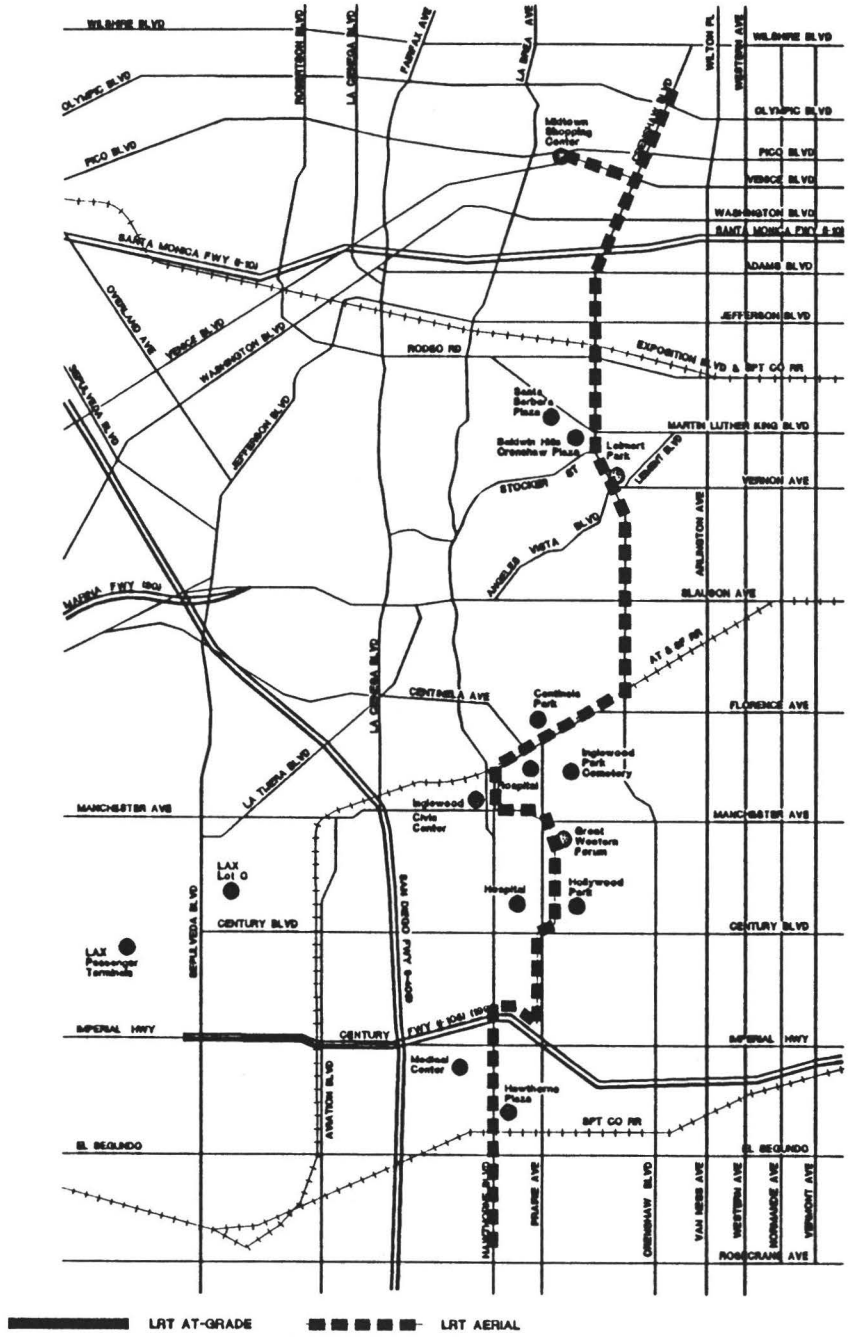


Figure 3.8
Alternative 3 - LRT Aerial

Provide a Light Rail Transit (LRT) line, running in a fully grade-separated aerial guideway, linking the Red Line with the Green Line. Transfers would be provided to the Red, Blue, and Green Lines.

The north end of the alignment would be at the Red Line station at Pico/San Vicente. The route would follow Crenshaw Boulevard south to the ATSF railway ROW, and would then follow the railway to downtown Inglewood. The line would continue back to Prairie Avenue along Manchester. The alignment would pass through the Great Western Forum and Hollywood Park over the parking lots and would continue down Prairie Avenue to the Glenn Anderson Freeway (I-105). The route would jog to the west in freeway ROW to Hawthorne Boulevard to a transfer with the Green Line. The alignment would enter Hawthorne Boulevard immediately south of the freeway and would continue south along Hawthorne to a terminus at Rosecrans Avenue.

Alternative 3 would share the same Light Rail Operating characteristics as Alternative 2, except that the line would be completely grade-separated. Speed restrictions would be due primarily to horizontal curves and spacing between stations, rather than to conflicts with street traffic.

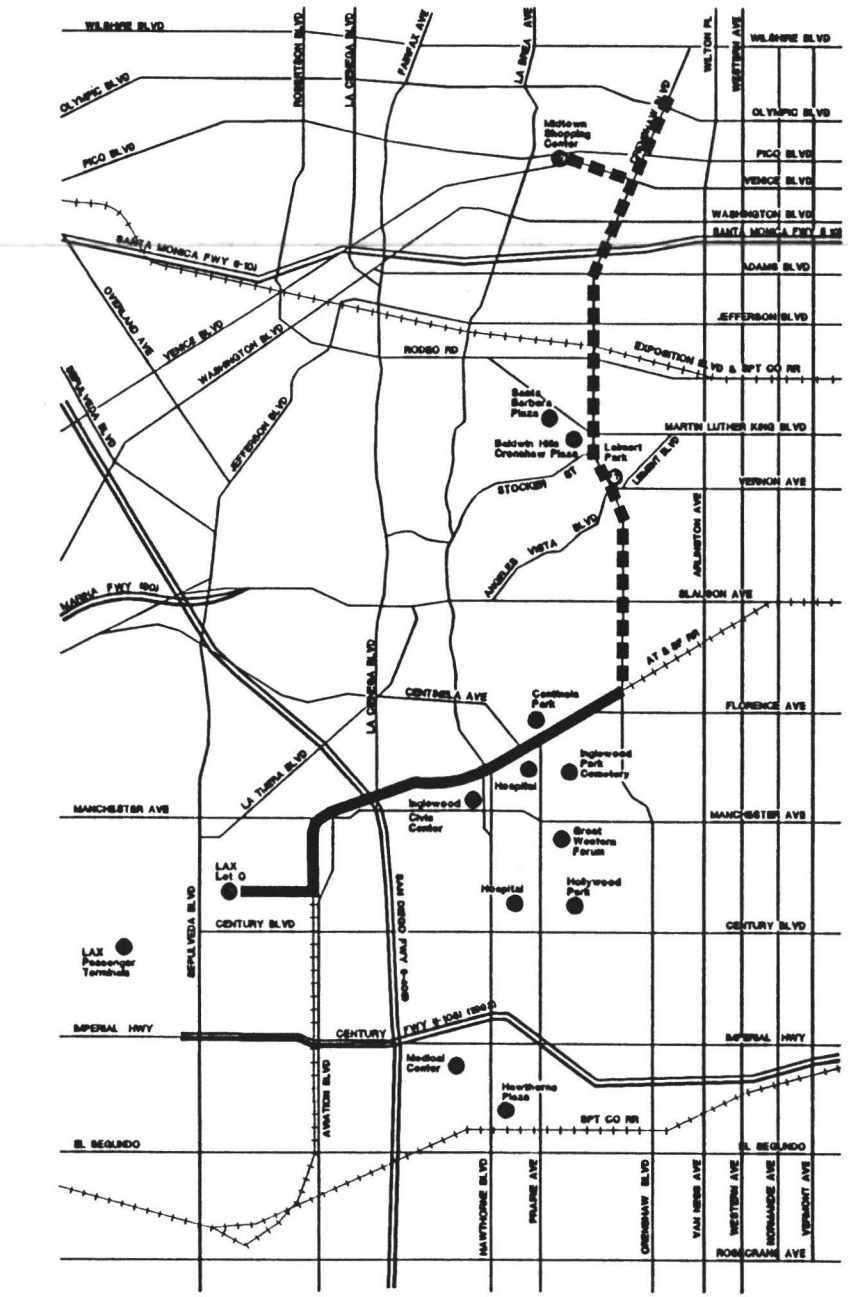
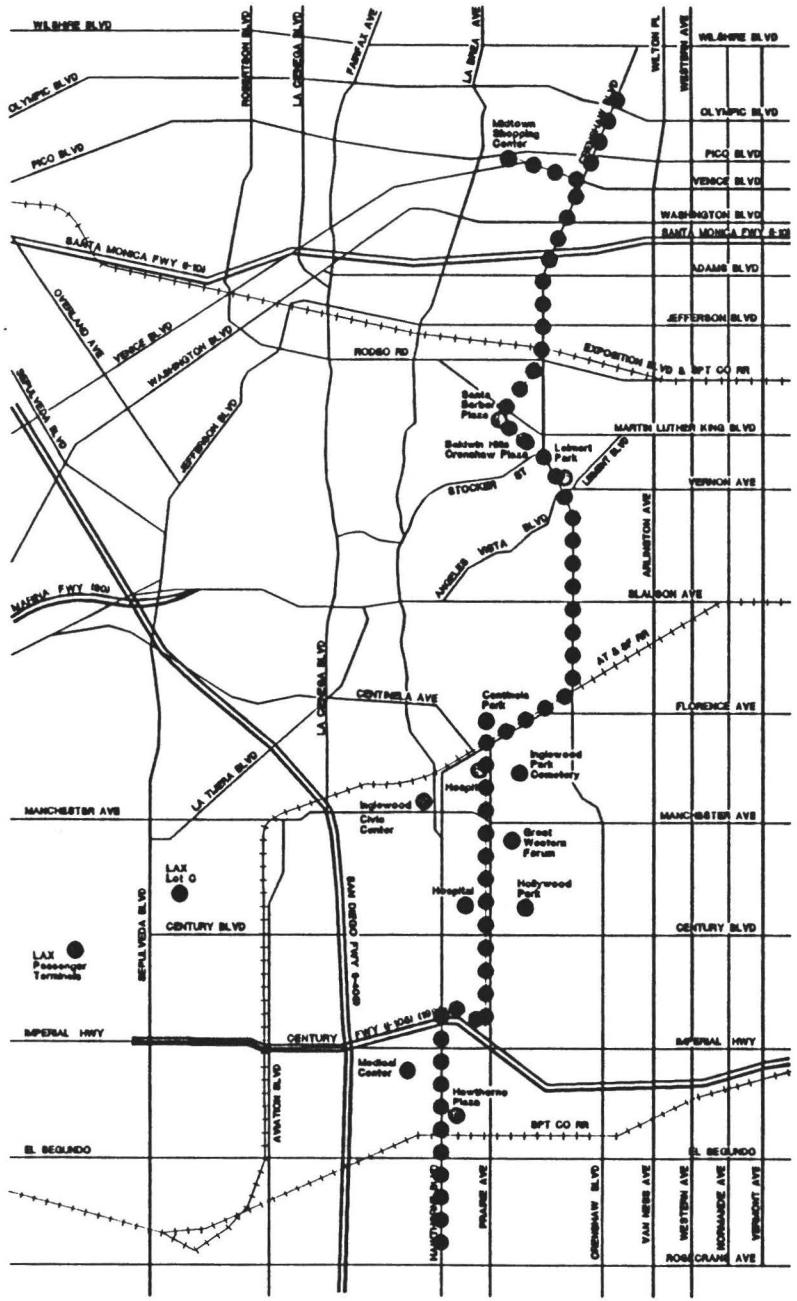


Figure 3.9
Alternative 4 - LRT to LAX

Provide a Light Rail Transit (LRT) line, running in an exclusive right-of-way, linking the Red Line with the Green Line at the Los Angeles International Airport (LAX) Remote Parking Lot C. Transfers would be provided to the Red, Blue, and Green Lines. The expectation is that, with a minimal upgrade of the existing ATSF RR trackage (potentially using single track with passing sidings), this alignment could provide a highly cost-effective means of both serving the needs of the Crenshaw corridor as well as providing a means of serving LAX from the north with rail transit. Bus connections would be provided to the Forum and Hollywood Park.

This alignment would provide a relatively low-cost means of providing rail transit access from the north to Los Angeles International Airport. The north end of the alignment would be at the Red Line station at Pico/San Vicente. The northern portion of the alignment would be on aerial structure, similar to Alternative 3. The route would follow Crenshaw Boulevard south to the ATSF railway ROW, where it would return to run at-grade in an exclusive ROW. The route would follow the railway ROW to the vicinity of 96th Street, where a turn would be made to LAX.

Operating characteristics of light rail in Alternative 4 would be a combination of operations under Alternatives 2 and 3, with both aerial and at-grade segments along the corridor.



SUBWAY

Figure 3.10
Alternative 5 - Subway

Provide a subway connection from Red Line to Green Line via Crenshaw/Prairie-Hawthorne route. Transfers would be provided to the Red, Blue, and Green Lines.

The north end of the alignment would be at the Red Line station at Pico/San Vicente. The route would follow Crenshaw Boulevard south along the same general alignment as Alternatives 2-4. The line would then head west going cross-country and/or in street rights-of-way to provide a station in the vicinity of Santa Barbara Plaza. The line would continue under Martin Luther King, Jr., Boulevard back to Crenshaw Boulevard. The line could then continue south under Crenshaw Boulevard to the ATSF railway ROW, and would follow the railway to Prairie Avenue. The line would turn down Prairie Avenue, passing by the Daniel Freeman Hospital, the Great Western Forum and Hollywood Park to the Glenn Anderson Freeway (I-105). The route would jog to the west in freeway ROW to Hawthorne Boulevard to a transfer with the Green Line. The alignment would enter Hawthorne Boulevard ROW immediately south of the freeway and would continue south along Hawthorne to a terminus at Rosecrans Avenue.

***Heavy Rail Transit** is a term used to describe the type of high-speed, high-capacity trains that typically operate in subways or on aerial structures in many cities in the United States. The Metro Red Line in Los Angeles is an example of heavy rail transit. The vehicles in such systems are somewhat larger and heavier than LRT vehicles. Vehicles on the Red Line are 75 feet in length, and are designed to carry peak loads of 169 passengers (59 seated and 110 standing). Heavy rail systems often operate at peak hour headways of 3 to 5 minutes, with longer headways of 10 to 15 minutes common during off-peak periods. The trains are powered by an electrified third rail (thus requiring complete grade separation throughout the system) and can travel at speeds up to 70 mph. Train lengths usually range from 4 cars in off-peak periods to as many as 10 cars in peak periods. Because the trains operate in longer consists, heavy rail systems can carry higher passenger loads than other systems.*

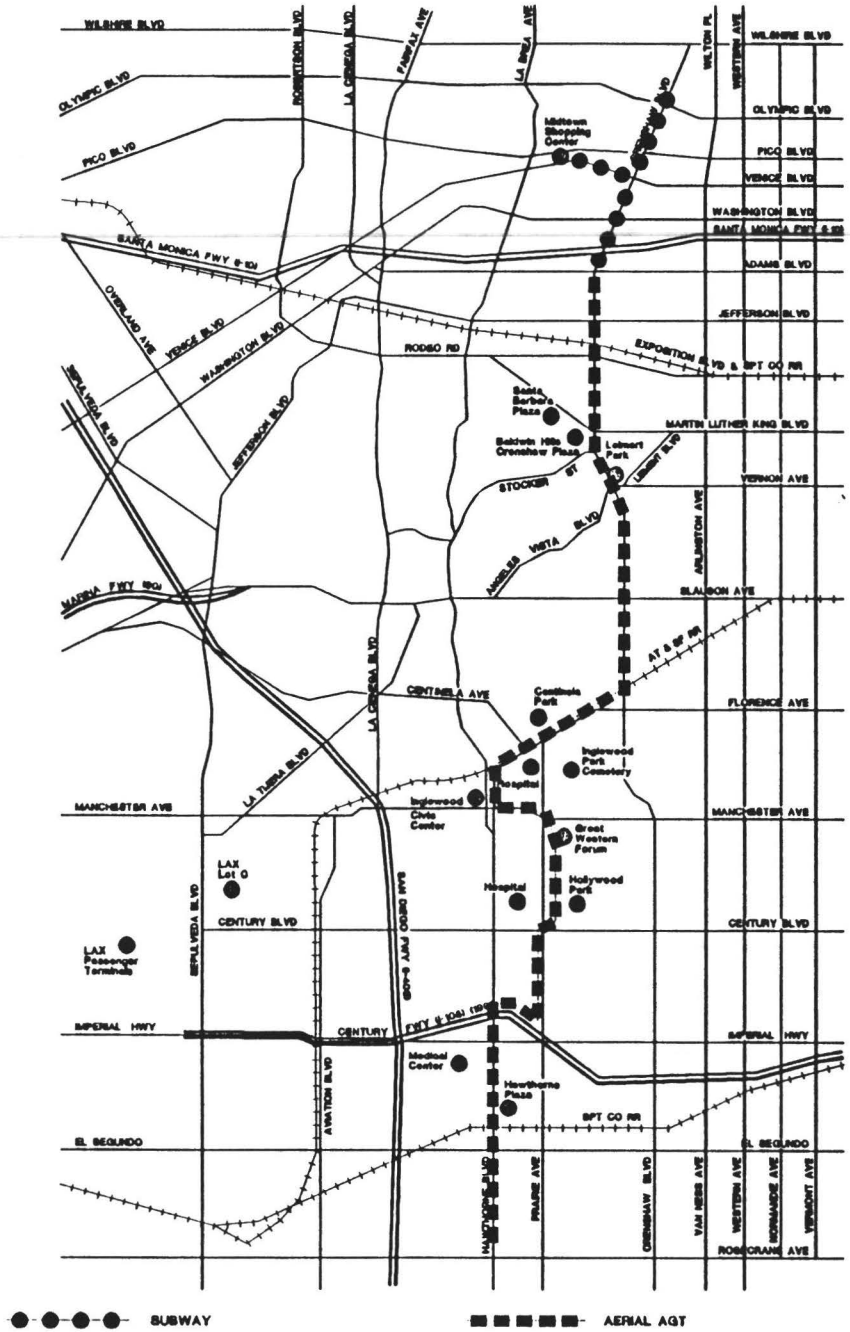


Figure 3.11
Alternative 6 - Aerial AGT

Provide fully grade-separated, high speed aerial alignment connecting between Red Line and Green Line via Crenshaw-Prairie-Hawthorne route. Use AGT technology to result in smaller stations and less visual intrusion than aerial LRT facility.

Alignment would be the same as the aerial LRT alternative. Use of AGT technology would result in short platforms (150 feet using vehicles with the Red Line specification), thereby reducing the cost and visual impact of stations. Use of third rail would eliminate need for overhead catenary, also resulting in less visual impact.

***Automated Guideway Transit (AGT)** is a medium-capacity rail mode that operates on exclusive guideway with totally automated vehicles (no drivers). An AGT system can therefore be operated with one of several types of vehicles or power supplies; e.g., Red Line vehicles with third rail power or modified Green Line vehicles with either overhead catenary or third rail power. For the purposes of the alternatives below, AGT is assumed to consist of Red Line vehicles operating in two-car trains on aerial structure, rather than in the four- to six-car subway trains in use on the Red Line. With typically lower peak speeds and shorter train sets than heavy rail, AGT gains capacity by running more frequent service than heavy rail operation. Driverless vehicles reduce the operating cost and impact typically associated with more frequent operations. The net result is a system with somewhat lower hourly capacity than heavy rail, but with reduced waiting times.*

3.3 Screening of Alternatives

The preliminary conceptual planning effort resulted in identification of six corridor-long alternatives which were presented to the Task Force and to the public and various agency staff members in a series of meetings held within the corridor.

In order to focus on-going planning efforts on the most promising solutions, the six corridor-long alternatives were evaluated to determine which should be carried forward for more detailed analysis. As a result of this screening process, it was recommended that three alternatives be dropped from continued consideration, resulting in three alternatives which were developed in more detail and analyzed in the balance of the study.

The screening process took into account the project objectives (listed below), input from community meetings, as well as issues of technical feasibility, resulting in a comprehensive consideration of issues affecting the alternatives.

A comprehensive community outreach effort was initiated during this early part of the study. This included three meetings in November/December 1992 to introduce the study process to the community, followed by extensive media coverage to inform the public about the study and the community outreach process. In mid-January, three further community meetings were held in the Corridor, in a workshop format. At these meetings, information on land use, economic, and transportation conditions was presented, along with the six preliminary alternatives and information about each alternative. A substantial amount of input was received from the community at these meetings on the alternatives.

Project Objectives

The guiding principles of the Crenshaw/Prairie Transportation Corridor are two-fold, namely, to identify solutions suitable for:

- increasing transit capacity and mobility within the corridor, and
- using such transit improvements as catalysts for economic development and revitalization within the corridor.

Based upon these guiding principles, the following project objectives have been established:

Transit Capacity/Mobility Improvement. Transit improvements should add capacity and improve mobility in the corridor, and enhance access to other parts of the Los Angeles region while reducing overall travel times.

Land Use Catalyst. Transit improvements should maximize the potential for economic development and revitalization opportunities. Any added transit service should encourage commercial development and job creation in targeted areas,

encourage increased residential density in targeted areas, and provide development opportunities at station locations

Community Acceptance. Transit improvements should maximize the potential for enhancing the local community environments. They should be acceptable to, and supported by, the local communities they will serve, and consistent with local objectives and plans.

Technical Feasibility. Transit improvements should be achievable and feasible from a technical and engineering perspective. This includes developing a feasible alignment and profile that fits within existing rights-of-way, or limits additional right-of-way requirements, and utilizes proven technology, consistent with the rest of the regional transit system.

Implementation Potential. There should be a high potential for early implementation of the transit improvements in order to spur catalyst economic development. The selected alternatives should therefore minimize costs and/or maximize funding sources, thereby increasing the potential for near-term implementation.

Summary of Initial Screening Recommendations

Table 3.3 summarizes the pros and cons of each of the six preliminary alternatives in terms of the technical feasibility aspect as well as the potential economic development aspect. It was recommended that the following three alternatives be carried forward for further consideration in more detail:

1. Alternative 3 - Aerial LRT (refined to include at-grade where feasible with minimal impact)

2. Alternative 4 - LRT to LAX

3. Alternative 5 - Subway

The consultant team and Task Force concurred that this set of alternatives represented a range of alternatives with the greatest potential to attain the two key goals to improve transportation mobility and support economic development in the corridor, taking into consideration potential impact and community concerns identified through technical studies and input from agency staffs and members of the public.

Except for the relatively short section along the ATSF right-of-way, much of the Crenshaw/Prairie Corridor is in street and not railroad right-of-way. While an at-grade solution may technically be feasible, there would also be significant potential impacts on traffic and local parking, and because of the low potential for signal pre-emption, an at-grade system would offer lower speed and lower capacity. Compared to the three alternatives recommended for further study, an at-grade system appears to offer less potential for patronage because of the lower speed and capacity. The lower potential

Table 3.3
Pros & Cons of Preliminary Alternatives

Alternatives	Pros	Cons
Alternative 1 Median Busway (Electric Trolley Bus)	° Near-term potential ° Links to county-wide ETB system ° Low cost for at-grade sections ° Many stops ° Least disruptive construction	° Slow speed ° Limited vehicle capacity ° Low/moderate patronage potential ° Low economic catalyst potential
Alternative 2 Light Rail At-Grade	° Near-term potential ° "Trolley" with local stops ° Minimal community impact after construction period ° Moderate cost	° Slow speed ° Limited system capacity ° Limited economic catalyst potential ° Traffic conflicts ° Significant construction impacts
Alternative 3 Aerial Light Rail	° High travel speed ° Moderate capacity system ° Good access to region via rail system ° Moderate economic catalyst potential at stations	° Visual and urban design impacts of aerial structure, especially stations ° Higher cost ° Increased technical complexity ° Fewer local stops

Table 3.3 Continued
Pros & Cons of Preliminary Alternatives

Alternatives	Pros	Cons
Alternative 4 Light Rail to LAX	° Connects to LAX and jobs at/around airport ° Uses available railroad right- of-way ° Lower cost ° Moderate capacity system ° Moderate economic catalyst potential	° Does not serve Prairie Corridor, including Forum and Hollywood Park ° Visual and urban impacts of aerial structure section
Alternative 5 Subway	° High travel speed ° High capacity system ° Low community impact after construction period ° High economic catalyst potential	° Very high cost ° Longer-term implementation ° Longer construction period
Alternative 6 Aerial Automated Guideway Transit	° Moderate/high travel speed ° Moderate patronage potential ° Lower cost than subway option ° Use automated Red Line trains ° Smaller aerial stations than Alternative 3 or 4.	° Community impact of aerial structure ° Uncertain economic catalyst potential ° Moderate system capacity

patronage would also mean limited effectiveness in linking the three east-west rail corridors (Metro Red, Exposition, and Green Lines), and limited potential for economic development.

In addition to the selection of the three most promising alternatives, one other recommendations emerged:

1. Due to the far greater potential for economic development, it was recommended that the northern terminus of the corridor be at the Red Line Pico/San Vicente station. At approximately 50 acres, the Mid-Town Shopping Center surrounding the Pico/San Vicente station represents one of the largest under-developed parcels in the City of Los Angeles. The area surrounding the Olympic/Crenshaw station, on the other hand, offers little opportunity for new development. The Pico/San Vicente station also provides greater regional connectivity to other transit services. In addition to providing a transfer to the Red Line, this station is a major hub of bus operations within the corridor.

The Task Force agreed to move ahead with further study of these three alternatives at its February, 1993 meeting. Subsequent to this, MTA staff recommended further minor modifications to the alignments, including making the southern terminus of the corridor at the Hawthorne Plaza shopping center just north of El Segundo Boulevard.

4. Description of Refined Alternatives

4.0 Description of Refined Alternatives

The three refined alternatives are illustrated and described in Figures 4.1, 4.2 and 4.3, including changes made to alignments as a result of the screening process and other minor alignment changes recommended by MTA staff. The figures include the Crenshaw/Prairie alignment, the location of stations along the alignment, and the alignment of other planned rail transit services. The accompanying text briefly describes the alignment and any unique features of each alternative. For purposes of clarity in presenting the refined alternatives, the aerial, subway and LAX alternatives are numbered Alternatives 1, 2 and 3, respectively.

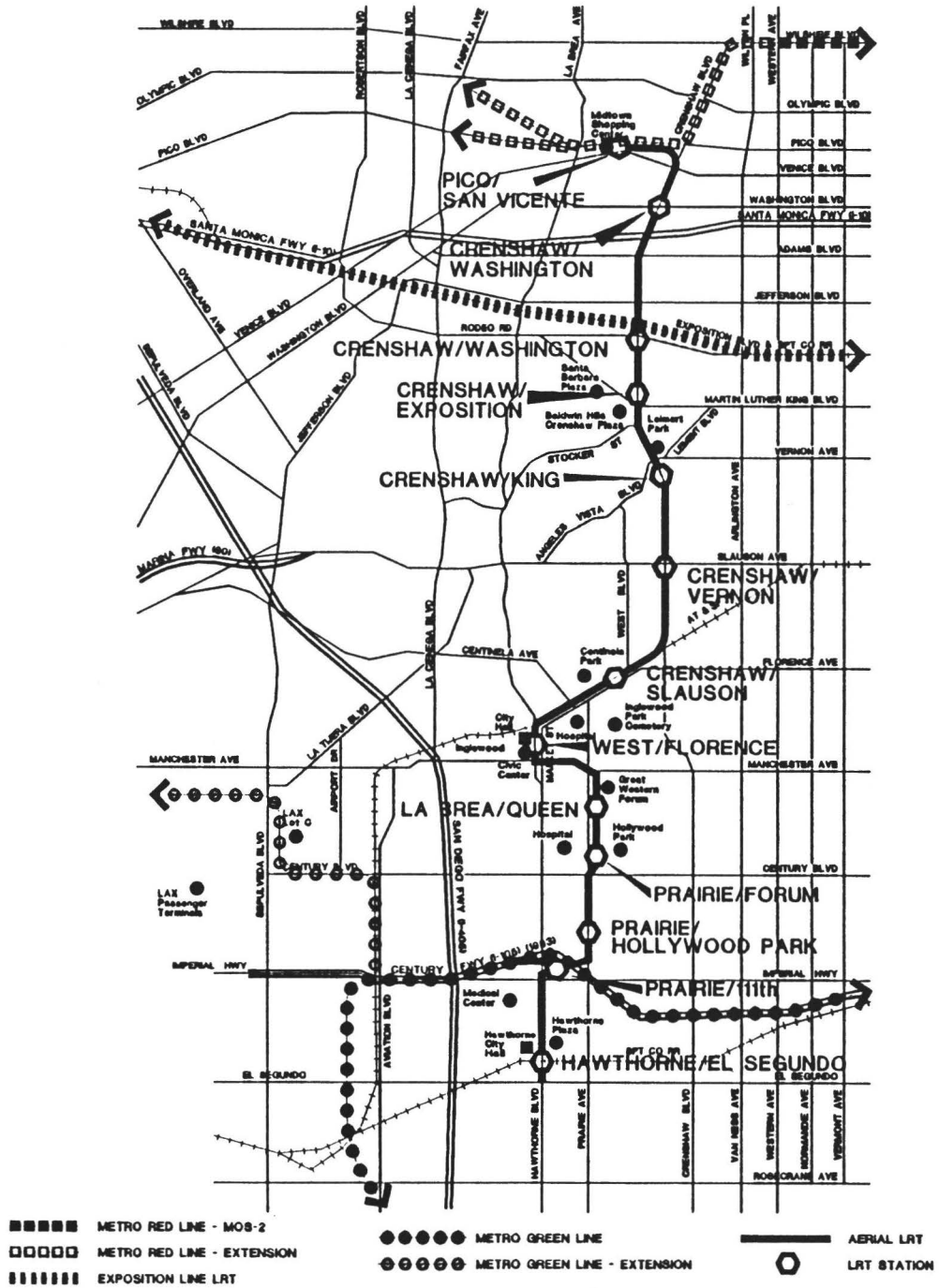


Figure 4.1
Alternative 1 - Aerial LRT

Commencing at the Red Line station site at Pico and San Vicente, the route would run east via Pico Boulevard, then south via Crenshaw Boulevard to the former ATSF ROW paralleling Florence Boulevard, then west along the ATSF ROW to La Brea Avenue in Inglewood. The alignment would then head south on La Brea to Manchester, then east along Manchester to Prairie, then south along Prairie to I-105, then west along I-105 to Hawthorne, and then south along Hawthorne to Hawthorne Plaza immediately north of El Segundo Boulevard. The route would be approximately 11.1 miles long and would include 13 stations.

The alignment would be generally aerial over a median in surface streets, with the following exceptions or clarifications:

- *Along certain stretches of Crenshaw where frontage roads are present, the alignment would be over the median separating the frontage roadway from the main roadway;*
- *In the vicinity of the Crenshaw Plaza/Baldwin Hills Shopping Center and Leimert Plaza, the alignment would be side-running behind the sidewalk;*
- *Additional side-running could be provided along La Brea in Inglewood in the event the roadway is reconstructed as a one-way street;*
- *The alignment would follow the ATSF Railway right-of-way between Crenshaw Boulevard and La Brea Street;*
- *At-grade operation would occur along the ATSF Railway right-of-way between Brynhurst Avenue and La Brea, with at-grade crossings at Brynhurst Avenue, West Boulevard and Redondo Boulevard and with a grade separation at Centinela;*
- *The alignment would run above parking lots in the vicinity of the Inglewood Forum and Hollywood Park;*
- *The alignment would follow I-105 between Prairie Avenue and Hawthorne Boulevard.*

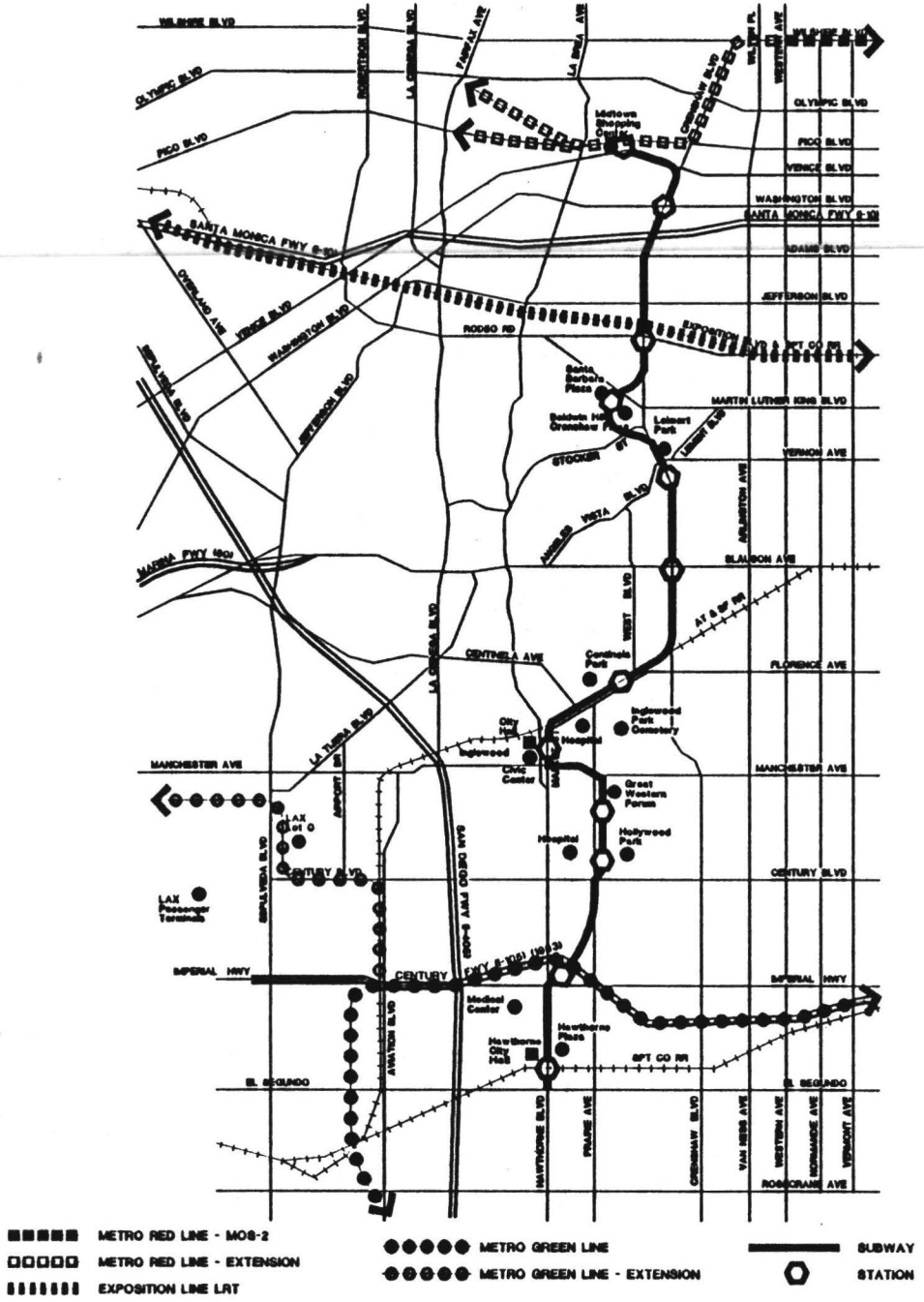


Figure 4.2
Alternative 2 -- Subway

The alignment for this Alternative would be mostly identical to Alternative 1, with the following minor exceptions. Commencing at the Red Line station site at Pico and San Vicente, the route would be east via Venice Boulevard, rather than via Pico Boulevard; the route would pass behind the Baldwin Hills/Crenshaw Plaza shopping center parallel to Marlton Avenue, so that Santa Barbara Plaza could also be served; and south of Century Boulevard, the route would head southwest directly to Hawthorne Boulevard at the Century Freeway (bypassing the southern portion of Prairie Avenue), ending at Hawthorne Plaza. The route would be approximately 10.4 miles long and would include 12 stations.

The alignment would be subway, generally under public roadways with the following exceptions, where the subway would deviate from roadway alignments:

- *"Cross country" (under existing structures) turning from Venice Boulevard to Crenshaw Boulevard;*
- *Under parking areas in Crenshaw Plaza/Baldwin Hills Shopping Center;*
- *"Cross country" between Stocker Street and Vernon Avenue;*
- *Along the ATSF Railway right-of-way between Crenshaw Boulevard and Leimert Plaza, the alignment would be underground east of West Boulevard and would run in open cut to Market Street;*
- *"Cross country" turns from Market Street to Nutwood Street and from Nutwood Street to the Forum parking area;*
- *Under parking areas at the Forum and Hollywood Park;*
- *"Cross country" from the Prairie/Century intersection to the Hawthorne/Imperial intersection.*

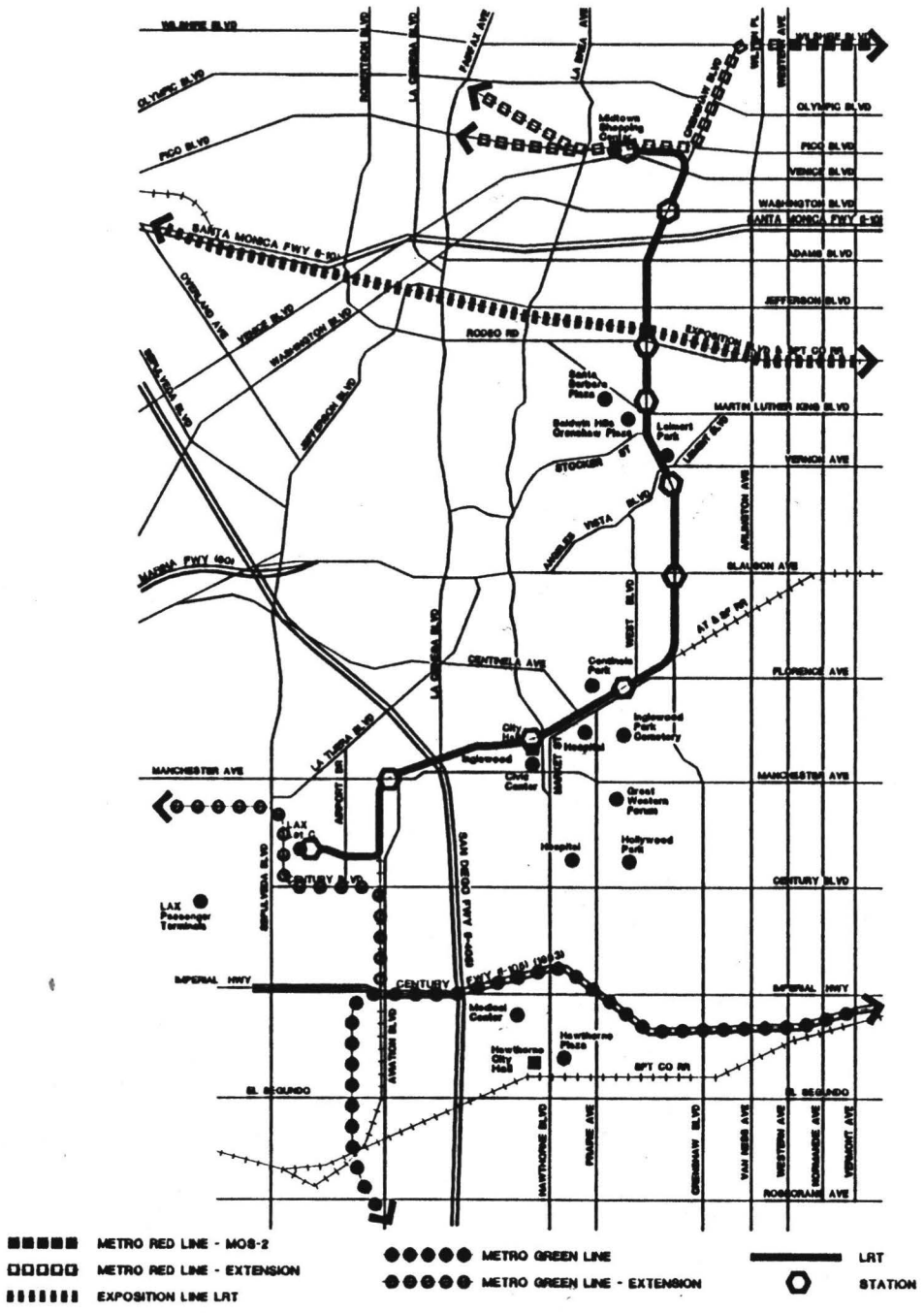


Figure 4.3
Alternative 3 - LRT to LAX

Between the northern terminus at Pico and San Vicente to Centinela Avenue along the ATSF Railway right-of-way in Inglewood, this alternative would be identical to Alternative 1. However, the alignment would continue west along the ATSF Railway right-of-way, with stations at La Brea and Manchester. The route would swing west from the railway right-of-way into 96th Street and would follow 96th Street into Lot C. The route would be approximately 9.9 miles long and would include 10 stations. The alignment would be generally aerial over the median of surface streets, with the following exceptions:

- *Along certain stretches of Crenshaw where frontage roads are present, the alignment would be over the median separating the frontage roadway from the main roadway;*
- *In the vicinity of the Crenshaw Plaza/Baldwin Hills Shopping Center and Leimert Plaza, the alignment would be side-running behind the sidewalk;*
- *Additional side-running may be provided along La Brea in Inglewood in the event the roadway is reconstructed as a one-way street;*
- *The alignment would follow the ATSF Railway right-of-way between Crenshaw Boulevard and 96th Street;*
- *At-grade operation would occur along the ATSF Railway right-of-way between Brynhurst Avenue and the San Diego Freeway, with at-grade crossings at Brynhurst Avenue, West Boulevard, Redondo Boulevard, Eucalyptus Avenue and Cedar Avenue and with grade separations at Centinela Avenue, La Brea Avenue and Ivy Avenue;*
- *An additional stretch of at-grade operation would occur between Manchester Avenue and 96th Street, with an at-grade crossing at Arbor Vitae Street;*
- *The alignment would run aerial across the Lot C parking lot at LAX, with a terminus at the proposed Green Line station.*

5. Analysis of Refined Alternatives

5.0 Analysis of Refined Alternatives

5.1 Engineering Feasibility

Overview

The construction of each of the analyzed alternatives is feasible using engineering practices already used in construction of the Blue and Red Lines, or practices to be used on lines under construction or in the planning stages. While each alternative may present some specific engineering problems, none of these problems represent "fatal flaws," or problems so severe that they would make the alternative infeasible. This section demonstrates the engineering feasibility of the proposed rail alternatives and provides a basis for assessment of the patronage, cost and potential impact of the proposed facilities.

The engineering description was developed through an extensive series of field trips to the corridor; review of current rail design standards; review of aerial photographs, roadway and railway plan sheets; review of planning studies underway for related facilities in the corridor; and meetings with technical staff at LACMTA and other involved jurisdictions.

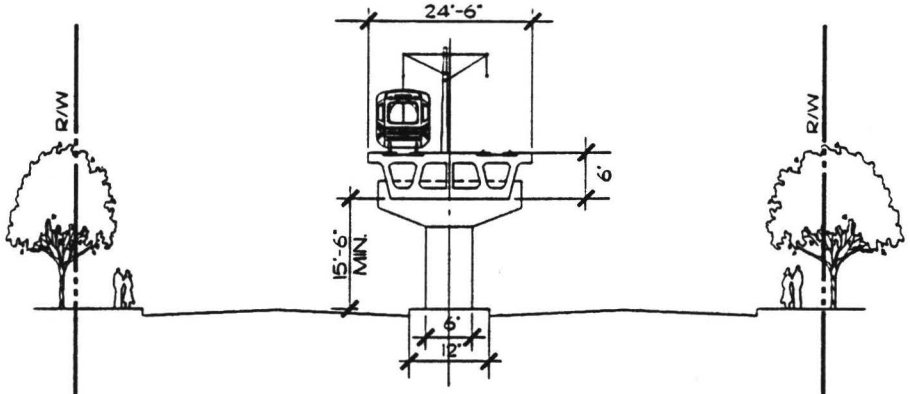
Alternatives 1 and 3 - Light Rail

Aerial Cross Sections

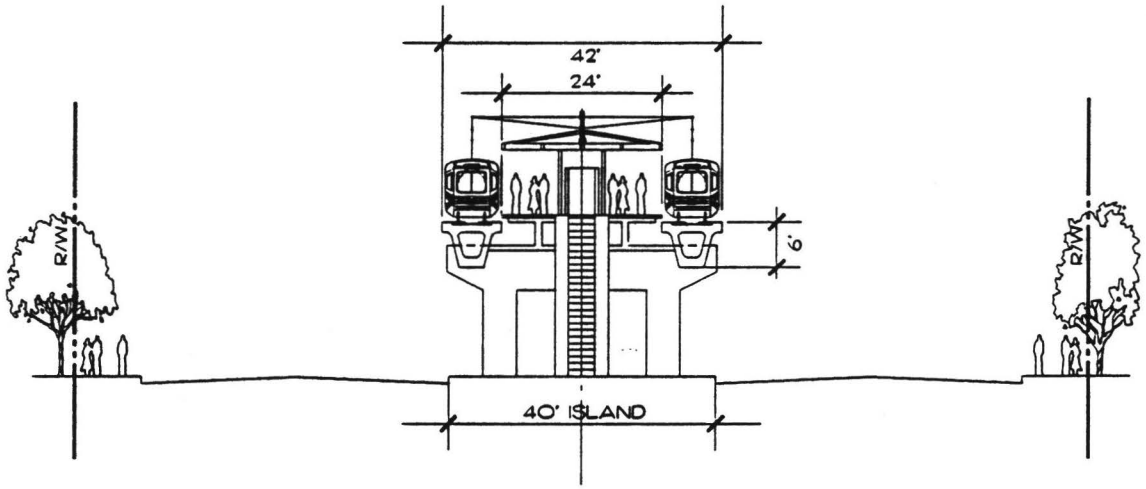
Figure 5.1 shows typical sections for aerial segments. The aerial structure would be supported on a single line of columns which would sit on islands in the roadway. For planning purposes, a 12' island with a 7' column has been considered, which is essentially equivalent to one roadway lane. This center-running alignment would be used, for example, on Crenshaw Boulevard from Pico to Exposition and from Stocker to Vernon; on Prairie Avenue from Century to 11th Street; and on Hawthorne Boulevard from Imperial Highway to El Segundo Boulevard. Section 5.8, Transportation Impact Analysis, describes in detail how this island could be accommodated on existing streets in the corridor.

Accommodating left-turn lanes at intersections would require additional ROW in many locations. Two standard lane configurations are possible. The first configuration would utilize a 32-foot median island with 11-foot left-turn lanes cut into the median at intersections. This configuration, preferred by LADOT, would require a curb-to-curb width of 102 feet to accommodate six through lanes and left-turn lanes. An alternative configuration would utilize a narrower median and allow left-turns from both directions to be made from the same side of the median. This alternative configuration would require curb-to-curb width of 93 feet.

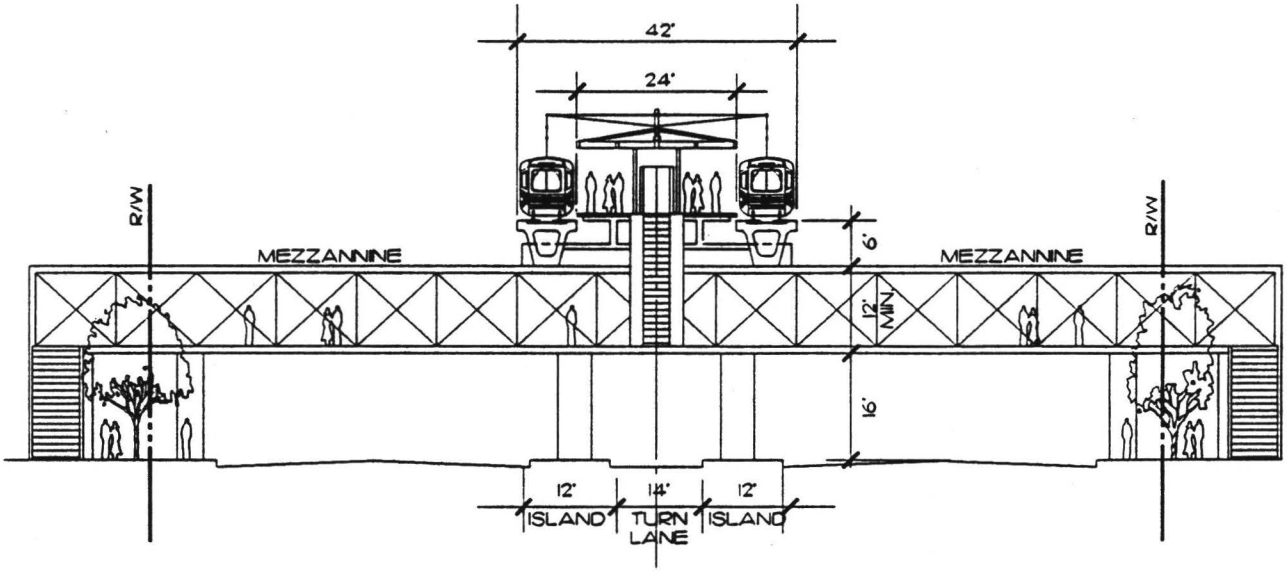
Figure 5.2 shows how the aerial guideway could be supported over the existing small medians separating the frontage roadways from the main travel lanes of Crenshaw



GUIDEWAY



STATION - CENTER PLATFORM
AT-GRADE ACCESS



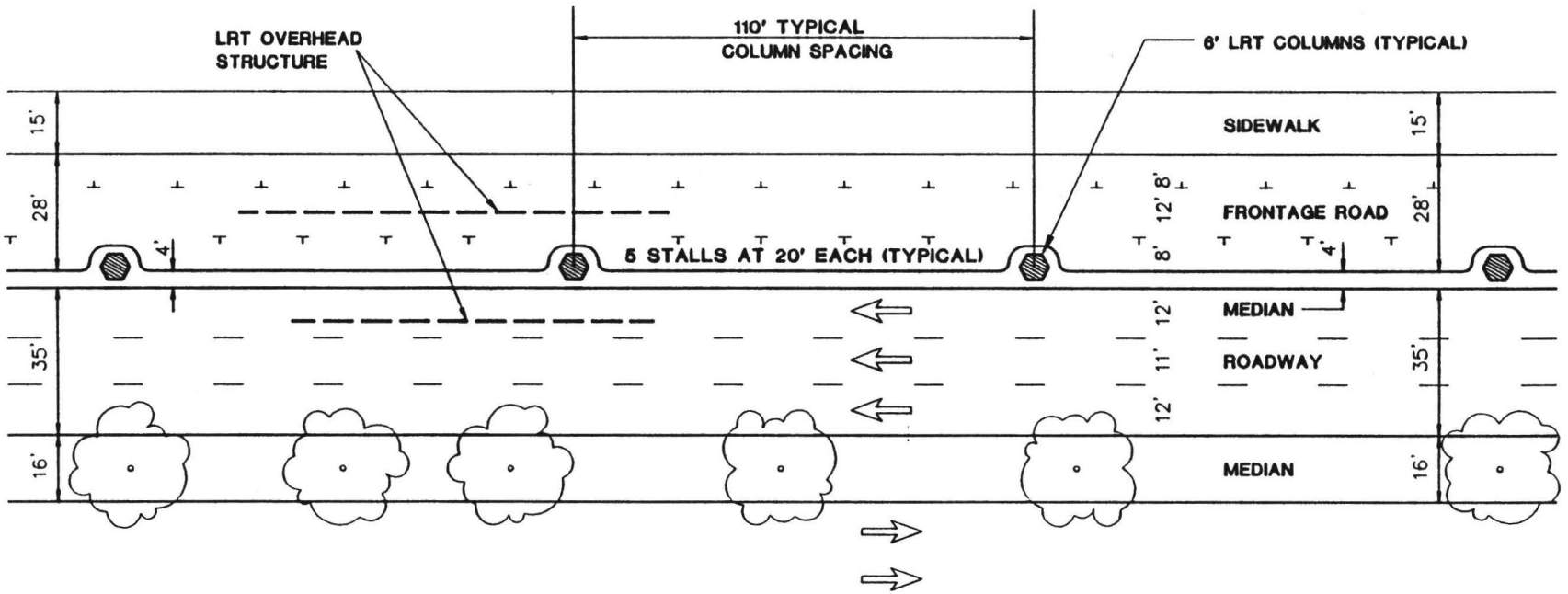
STATION - CENTER PLATFORM
MEZZANINE ACCESS

2086FG51.dwg 292086x0 12/22/93

NO SCALE

CRENSHAW - PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING / TERRY A. HAYES ASSOCIATES

TYPICAL SECTION
FIGURE No. 5.1
LIGHT RAIL AERIAL ALTERNATIVE



HALF SECTION OF CRENSHAW BOULEVARD WITH FRONTAGE ROADWAY

NO SCALE

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TYPICAL PLAN
Figure No. 5.2
AERIAL STRUCTURE OVER FRONTAGE ROAD BARRIER

Boulevard. The impact of this design would be loss of an occasional parking stall from the frontage roadway (one stall every 100' feet). This side-running alignment would be used on Crenshaw from Exposition to north of Martin Luther King, Jr. Boulevard, and from south of Leimert Park to south of Slauson.

In addition to typical conditions, special sections would be required at various locations. Plates 5.1 and 5.2 show two alternative ways for the aerial structure to cross over between the median and roadway side and how a connection could be made into the median of the Century Freeway.

Two prototypical station configurations are also shown in Figure 5.1. Both would have center platforms, which would provide the most efficient use of width and vertical circulation, and would include stairs, escalators and elevators for handicapped access. The first station configuration shows stairs and escalators coming directly down to underneath the station platform. This configuration could be used where the alignment is center-running and there is adequate median width for vertical circulation, or in side-running alignments where the guideway is behind the sidewalk or over a side-median (such as at the Pico/San Vicente or Slauson stations).

The second station configuration shows a mezzanine level that would provide direct passenger connections outside of the roadway right-of-way. This configuration could be used where roadway width is inadequate for direct vertical circulation (such as the Crenshaw/Washington station), or where it would be desirable to provide a direct connection between the station and adjoining land uses (for example, into the Baldwin Hills Crenshaw Plaza shopping center). Underneath the platform, a left-turn lane could be accommodated, which would allow the station to be located at an intersection.

At-Grade Cross Sections

Figure 5.3 shows typical sections for at-grade LRT segments, using Blue Line vehicle technology. It should be noted that the only at-grade operation would be along the ATSF Railway right-of-way paralleling Florence Boulevard (Alternatives 1 & 3) and Aviation (Alternative 3) which has been purchased by LACMTA. The track section is shown off-center in the 50' railway right-of-way to provide for a maintenance access roadway along one side of the LRT tracks. At-grade stations would use a center platform, with access provided from one or both ends of the platform.

Engineering Issues

While most of Alternatives 1 and 3 could be constructed according to the typical plans illustrated above, some sections of the alignment would require special treatments. In addition, there were some engineering difficulties that became apparent during the analysis that helped shaped the alignments themselves. Some of these issues pertaining to the LRT alternatives are reviewed below.

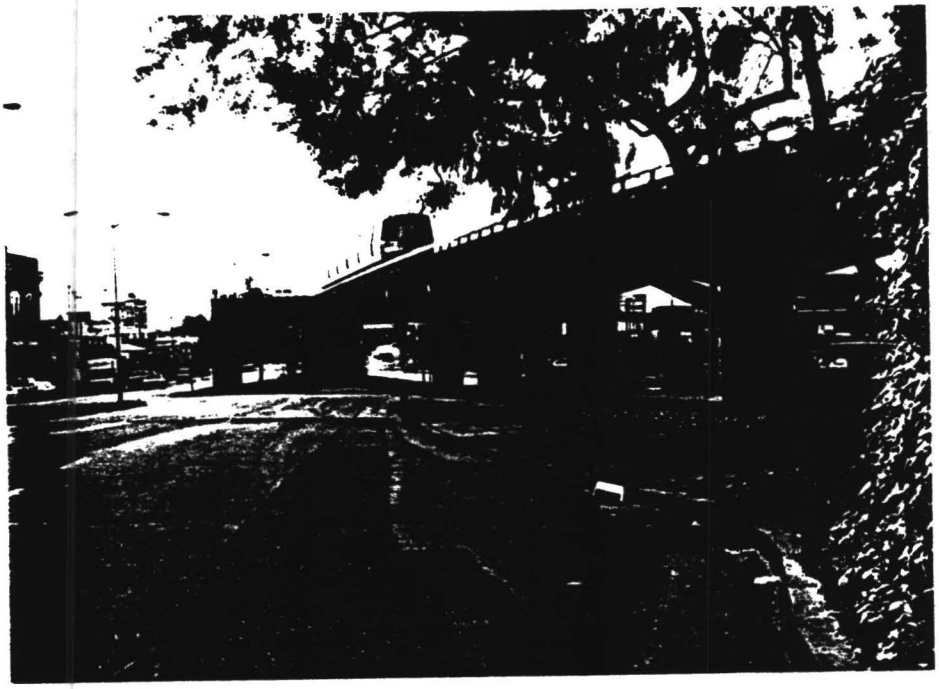


Plate 5.1 An example of the use of straddle bents to transition an aerial guideway from the side of the roadway into the median.

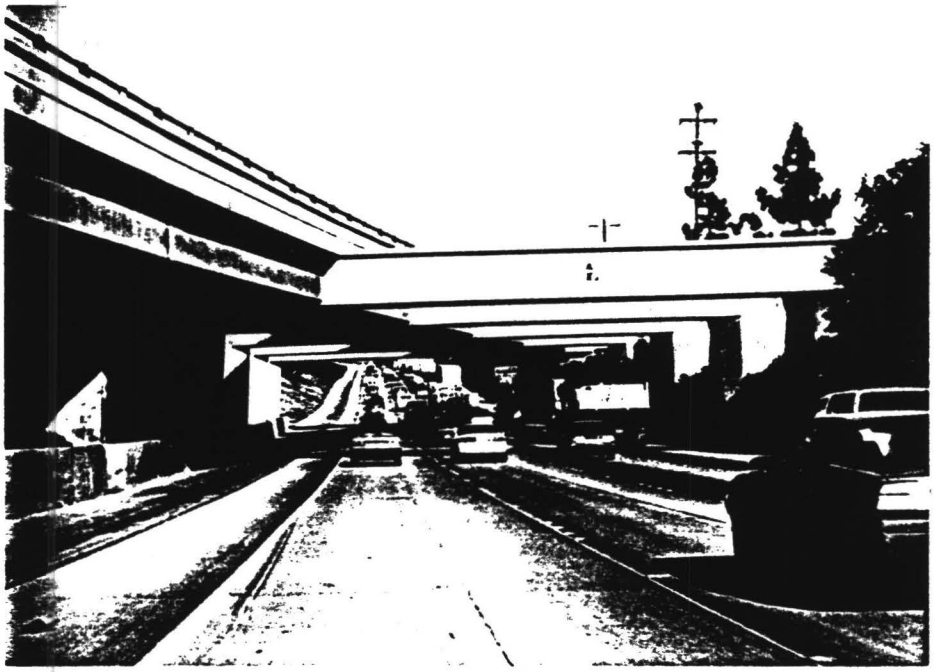
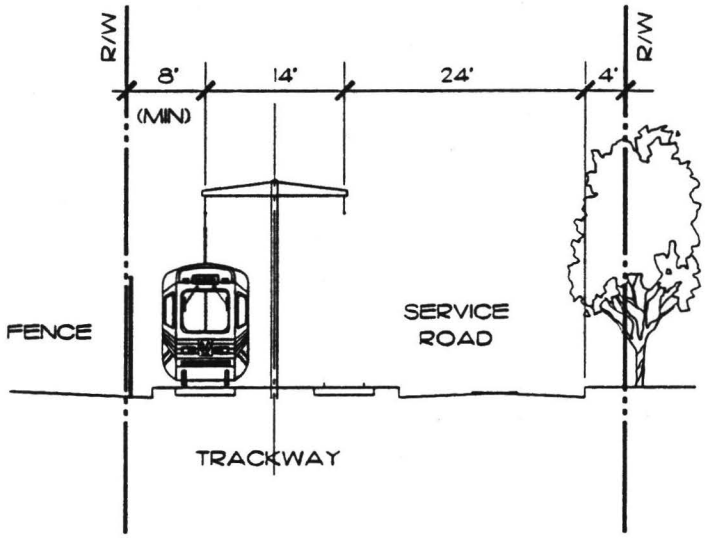
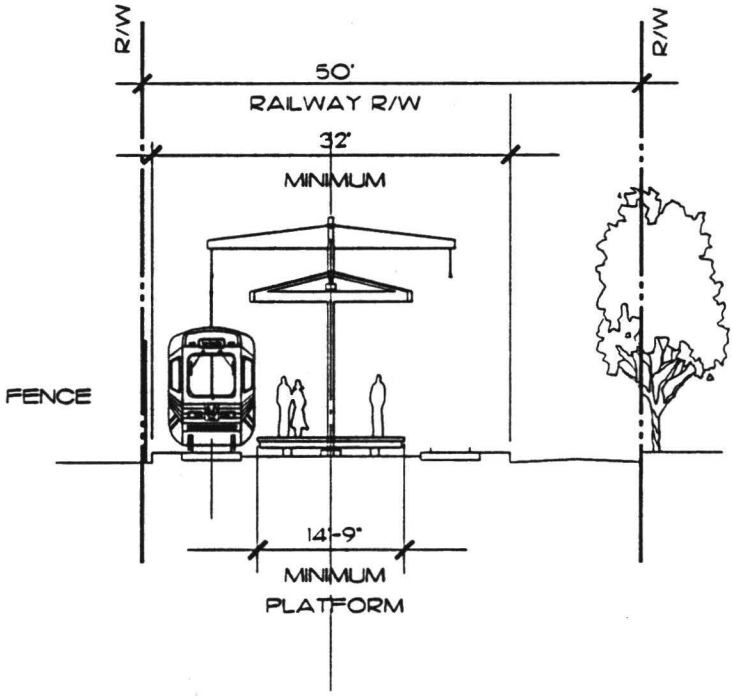


Plate 5.2 A similar use of straddle bents to transition an aerial guideway into the median of a freeway.



GUIDEWAY



STATION

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NO SCALE

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TYPICAL SECTION

FIGURE No. 5.3

LIGHT RAIL AT-GRADE ALTERNATIVE

- At the north end of the alignment, the existing West Boulevard bridge over Venice Boulevard presented an obstacle to an aerial alignment leaving the Pico/San Vicente station along Venice. A slightly longer alignment along Pico Boulevard was therefore adopted.

- The segment of Crenshaw Boulevard south of Venice is one of the most physically constrained sections of right-of-way in the corridor. While an aerial guideway can be constructed in this portion, doing so would force a choice of either eliminating on-street parking or widening the street.

  Other segments with greater ROW face similar problems, with the choice being to eliminate left-turn lanes and/or on-street parking, or widening the street.

- Crossing the I-10 Freeway will require a long-span special structure across the freeway adjacent to the existing Crenshaw Boulevard bridge.

- If both the Crenshaw Line and Exposition Line are constructed and both are elevated, it has been assumed that a same-level track crossing could be constructed.

- It was determined that it was not feasible to bring an aerial light rail alignment through the Baldwin Hills/Crenshaw Plaza Shopping Center without adverse property impacts. The aerial alignment, therefore, remained on Crenshaw past the shopping center.

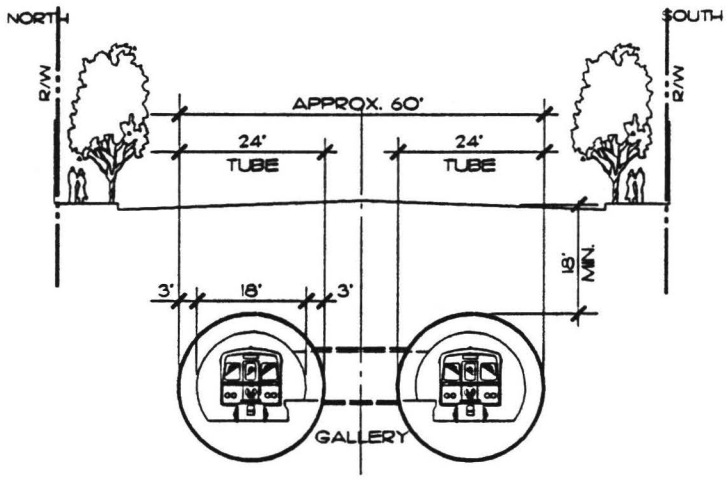
- On Prairie Avenue s/o Century Boulevard, street widening would probably be the only option for supporting the aerial guideway. The 78-foot ROW in this segment supports 7 traffic lanes (with the center lane being reversible), and all lanes are utilized during special events at the Forum or Hollywood Park. Eliminating a lane is not advisable, leaving street widening as the only solution for supporting the guideway.

Alternative 2 - Subway

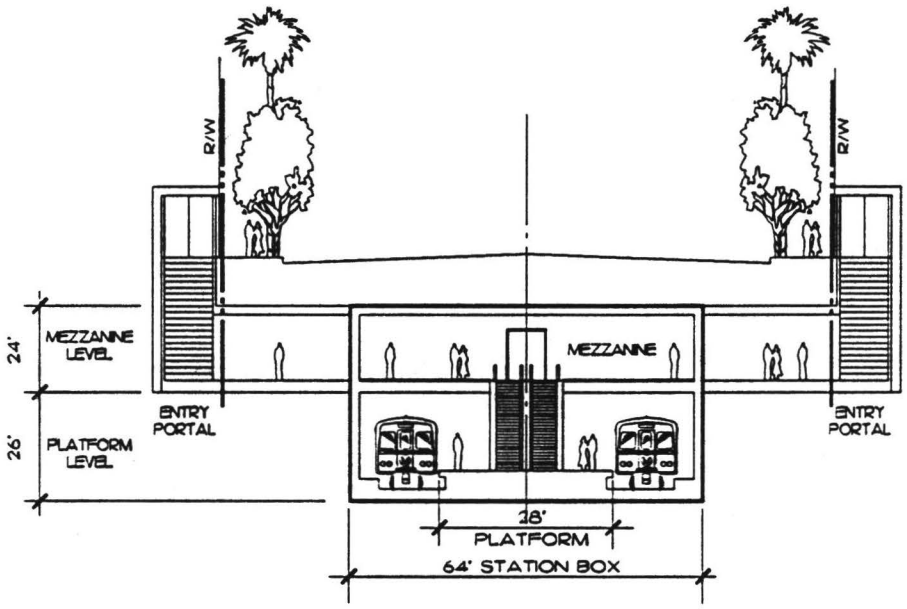
Figure 5.4 shows typical subway cross sections.

Trackway

Track cross sections are shown for "deep tunnel" conditions. Deep tunnel sections would be used in most locations because this type of construction is provided to minimize the impacts to the street during construction. The tunnel section would include galleries at periodic spacing connecting the emergency walkways in the subway tubes with vertical emergency accesses to the ground level. The minimum depth of the tunnel would vary in accordance with the underground geology: hard rock tunnels can be constructed with minimal cover, but earth tunnels need to be deeper. Cut and cover construction could potentially be used near station locations. Cut and cover construction is generally close to the surface, with a minimum depth provided to allow for utilities immediately under the roadway.



GUIDEWAY



CENTER PLATFORM WITH MEZZANINE

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TYPICAL SECTION
FIGURE No. 5.4
SUBWAY ALTERNATIVE

Stations

The station cross section shows a typical Red Line station which provides a two-level station box with island platform and mezzanines at either end. Figure 5.5 shows a plan of the station box, which shows the extent of the mezzanines, mechanical areas, and locations where connections can be made to entry "portals" providing access to adjoining land uses.

Plates 5.3 and 5.4 depict various subway entry portals. Two examples are shown: Plate 5.3 indicates how a portal can be combined with existing or proposed development, and Plate 5.4 shows a stand-alone portal on the sidewalk.

Preliminary Alignment Drawings

Preliminary plan and profile drawings at a scale of 1 inch = 200 feet were prepared for each of the three alignments. These drawings, illustrating the alignment on aerial photographs, are included in the appendix.

5.2 Operating Concepts and Transportation Linkages

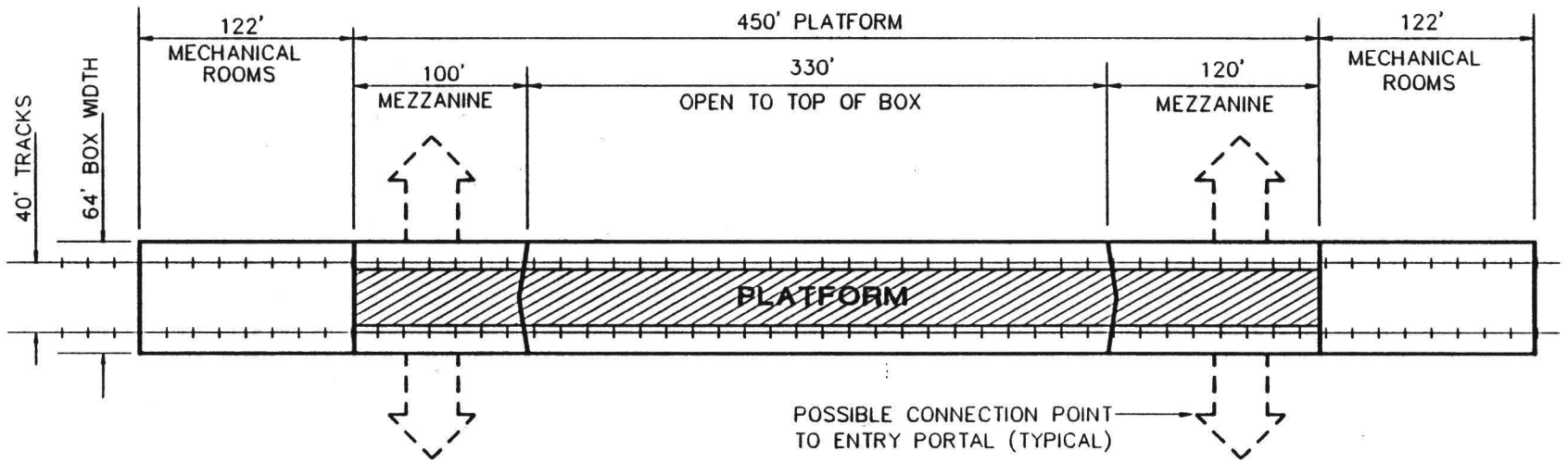
Operations Planning

Travel times and operating plans were developed for use by LACMTA in patronage forecasting. The operating plans were also used later in the estimation of operating costs, and in the calculation of fleet sizes and associated capital costs.

Travel Times

Train running times have been estimated for each of the Crenshaw alternatives. End-to-end travel times are summarized below.

Alternative 2 (subway), with an end-to-end travel time of 21 minutes, is 12.5% faster than Alternative 1 (light rail), with an end-to-end travel time of 24 minutes. While these two alternatives follow essentially the same route, the time difference is due primarily to the faster subway speed and one less station in the subway alternative. These travel times are significantly faster than the existing corridor travel times of about 30 minutes by automobile and 50 minutes by bus transit. Alternative 3 (light rail to LAX), which follows a different route, has an end-to-end travel time of 20 minutes.



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TYPICAL PLAN
Figure No. 5.5
SUBWAY STATION BOX

Plate 5.3 An example of how a subway portal can be made part of the adjacent building design. (This is the Metro Center/7th Street station in downtown Los Angeles.)

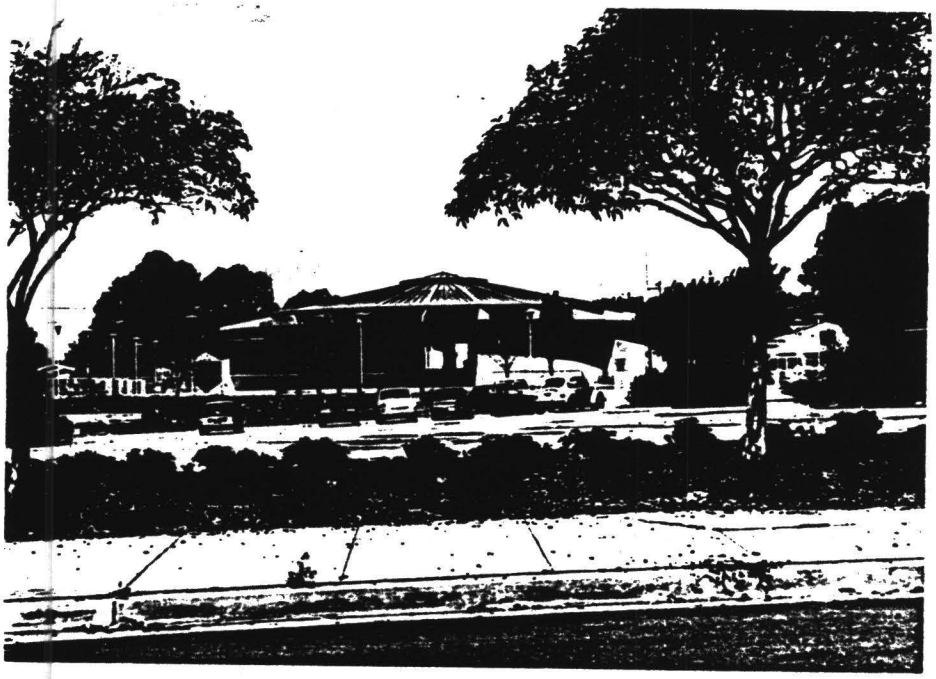

Plate 5.4 An example of a stand alone portal on the BART system in California's Bay Area.

Alternative	End-to-End Travel Time
Alternative 1 - Aerial LRT (Pico/San Vicente to Hawthorne Plaza)	24 minutes
Alternative 2 - Subway (Pico/San Vicente to Hawthorne Plaza)	21 minutes
Alternative 3 - LRT to LAX (Pico/San Vicente to LOT C)	20 minutes
Existing Auto (Pico/San Vicente to Hawthorne Plaza)	30 minutes
Exiting Bus (Pico/San Vicente to Hawthorne Plaza)	50 minutes

To compare travel times more evenly, Table 5.1 summarizes travel times from the middle of the Crenshaw corridor (Leimert Park) to several sample destinations. Times shown are to downtown Los Angeles, Hollywood and Vine, Century City, LAX, and El Segundo, and include necessary transfers. Table 5.1 also compares these travel times to current bus travel times. For each of the five sample destinations, the three rail alternatives show significant time savings over existing bus service. The savings range from 5 minutes 33 minutes, representing savings of about 17% to 64% over existing bus service.

To most of the destinations, however, there would be little time difference between the three rail alternatives. To downtown Los Angeles, Hollywood, or Century City, for example, the subway would be only 1-2 minutes faster than either light rail alternative. The primary travel time differences between alternatives occur where one alignment either requires an additional transfer or eliminates a transfer from a trip. For example, Alternative 3 would require one less transfer on the trip to LAX; this alternative is 11 to 13 minutes faster to LAX than Alternatives 1 and 2. Conversely, Alternative 3 would require one additional transfer to reach El Segundo, and it is 3-4 minutes slower to El Segundo than Alternatives 1 and 2.

Intermodal Connectivity

The study corridor would connect to numerous other transit opportunities, including three other planned rail lines (the Red Line, Green Line, and possibly the Blue Line), three major bus transfer centers (at Pico/San Vicente, downtown Inglewood, and LAX), and numerous other bus lines crossing the corridor. Each of these possible connections is reviewed below.

The Red Line will have two branches west of downtown, the Hollywood Branch and the Pico-Wilshire Branch. The Pico/San Vicente Station (subway) will be the northern terminus of all three Crenshaw alignments. The train operating pattern for the Red Line will have

Crenshaw/Prairie Corridor Preliminary Planning Study

Table 5.1

Travel Time Summary

		Existing Bus Service			Alternative 1 Aerial LRT		Alternative 2 Subway		Alternative 3 LRT – LAX		Rail Trips via Crenshaw
Origin	Destination	Time	# Trf's	Via	Time	# Trf's	Time	# Trf's	Time	# Trf's	Line and:
Leimert Park	Downtown L.A.	30	0	#40	21	1	21	1	21	1	Expo Line
	(7th Street)				25	1	23	1	25	1	Red Line*
Leimert Park	Hollywood/Vine	39	0	#210	33	2	31	2	33	2	Red Line
Leimert Park	Century City	53	1	#105, #28	21	1	20	1	21	1	Red Line
Leimert Park	LAX Terminals	38	1	#42; shuttle	34	2	32	2	21	1	Green Line *(except Alt. 2)* & LAX P–M
Leimert Park	El Segundo	50	1	#210, #124	24	1	23	1	27	2	Green Line
Average time / # of transfers:		*42.0*	*0.6*		*26.6*	*1.4*	*25.3*	*1.4*	*24.4*	*1.4*	

NOTES:

Travel times (in minutes) include transfer times, but not first wait or walk times.
Transfer times based on half of anticipated peak headways for year 2010 patronage.
* Averages exclude Red Line time to 7th/Flower (slower than via Expo).

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alternating trains on the two branches. Initial headways will probably be 10 minutes on each branch, and five minutes on the downtown trunk, but as the system expands and patronage grows, peak branch headways may get as short as five minutes, with 2.5 minute trunk headways.

At the Pico/San Vicente Station, passengers will be able to transfer from either an aerial LRT station or a Crenshaw subway station to the Red Line subway station. Passengers from the Crenshaw Line would be able to ride the Red Line eastbound toward downtown Los Angeles; an additional transfer could be made to the Hollywood Branch at the Wilshire/Vermont Station. In downtown, connections could be made to other modes at Union Station. Patrons could ride the proposed western extension of the Red Line to Beverly Hills, Century City, and Westwood.

The platforms for the Red Line and Crenshaw Line at Pico/San Vicente would be a short distance apart. The aerial LRT platform for Alternatives 1 and 3 would be along Pico Boulevard, while the Alternative 2 platform would be along Venice Boulevard. For this analysis, it is assumed that Alternative 2 (subway) would operate independently of the Red Line, with Crenshaw trains terminating at the Pico/San Vicente Station.

Blue Line: The Exposition Branch is proposed to be one of two Blue Line branches on the south and west side of downtown. The exact configuration of the downtown connection is still under study, as is the Exposition Line itself. The most likely plan is for the Exposition Branch to continue west to Santa Monica, with a mixture of at-grade and elevated light rail construction. A station would be located just east of Crenshaw, probably on aerial structure.

The operating plan for the Exposition Branch will depend on further studies. One option is for 6-minute peak trains, with 2 or 3 cars, to operate all the way to Santa Monica, with 10-minute off-peak service. If the proposed Exposition Branch of the Blue Line is built, the Crenshaw Line would cross it at Crenshaw and Exposition Blvd.

In Alternatives 1 and 3, a same-level track crossing of the Crenshaw and Exposition lines would be made with both lines elevated. Further study could result in one or the other line being shifted to a different elevation. Station platforms would be located just east of the crossing on the Exposition Branch, and just south of the crossing on the Crenshaw Line. Passengers would be able to transfer easily from one line to the other. In Alternative 2, the Crenshaw Line would have a subway station at Exposition. Passengers wanting to transfer to the Exposition Line would have to travel up two levels.

The Green Line will operate in the median of the Glenn Anderson (Century) Freeway from Norwalk to Aviation Boulevard, where it will split into northern and southern branches. The southern branch will serve the El Segundo employment area, and possibly continue to Torrance. The northern branch will serve the LAX and Westchester areas. A station at Lot C will connect to the proposed LAX people-mover, which will serve all of the airport terminals. Lot C is also the location of a major bus transit center, a proposed multi-modal

transportation center, and may be the southern terminus of the proposed LAX-Palmdale Line.

Green Line operations will be automated, with short trains at frequent headways. Depending on the extent of the system, headways could be five minutes on each branch, with 2.5 minute headways along the trunk portion east of Aviation.

Near the southern terminal, the Crenshaw Line crosses the Green Line at the Hawthorne Station. The Green Line Hawthorne Station is in the median of the freeway, which is one level below Hawthorne Blvd. In Alternatives 1 and 3, the Crenshaw Line aerial LRT station platform will be elevated above Hawthorne Blvd., just south of the freeway. Transfers could be made between the two platforms using the Green Line pedestrian bridge. In Alternative 2, the Crenshaw Line subway would pass under the Green Line (and freeway) at Hawthorne Blvd. Passengers would travel up to the surface, across the eastbound freeway on the pedestrian bridge, and back down to the Green Line platform in the median.

A track connection from the Crenshaw Line to the Green Line could be constructed west of Hawthorne Blvd. The connection would allow cars from the Crenshaw Line to travel to the Green Line yard and shop at Marine Blvd., or by reversing to travel east to the Blue Line, and then to the heavy repair facility at Del Amo. An alternative would be to use this track connection for revenue service. Crenshaw trains could merge with westbound Green Line trains, and then proceed either north to LAX or south to El Segundo and Torrance. Since the Green Line will be automated, this plan would probably require that the Crenshaw Line also be automated. This in turn would mean providing full grade-separation. For this analysis, it was assumed that Crenshaw trains would operate independently of Green Line trains.

Transit Transfer Centers. There are three major transit transfer centers along the corridor. At the north end of the corridor, the Pico/San Vicente Station (in all three alternatives) will also be a major bus interface. The Rimpau bus terminal, currently at the site, is a major transfer point among three Santa Monica bus routes and five MTA bus routes. Additional routes may be added when the Red Line extension opens.

Another major bus transfer center would be located at the La Brea/Queen Station in downtown Inglewood. Seven MTA routes currently pass within a block or two of the site, and they could be rerouted slightly to permit easier transfer connections. Only Alternatives 1 and 2 could make full connections to this transfer center.

The southern terminus of Alternative 3 is at the LAX/Lot C Station on the northern extension branch of the Green Line. This is also the proposed site of a Multimodal Transportation Center, which will include:

- A people-mover link to all of the LAX terminals.

- The existing MTA Bus Transfer Center, which serves ten MTA routes, along with routes from the Santa Monica and Culver City systems.

- Airport-related shuttle buses (rental cars & hotels).

- The proposed LAX-Palmdale Line.

Passengers would be able to transfer among all of these modes. Passengers getting off the aerial Crenshaw Line would descend to the ground level, then walk across to the bus area, or to the vertical circulation units leading to the aerial Green Line or People-Mover stations.

Along the alignment, there are one or more east-west bus routes crossing Crenshaw and Prairie at each of the station locations. These routes will act as feeder routes to the Crenshaw Line for nearby residential areas, as well as distributing passengers from the Crenshaw Line to destinations along streets such as Exposition, Vernon, and Slauson. Several minor bus routes, which currently cross Crenshaw between proposed station locations, will be rerouted to connect with a Crenshaw Line Station.

North-south bus service along major portions of the corridor is currently provided by routes #40, #210, and #211. The routes would continue operating, to provide direct access to stops between the rail stations, which are as far as one mile apart. However, the frequency of service on #40 and #210 would be reduced by eliminating some turnback trips, since many current passengers would ride the rail line.

Operating Plans

Operating plans which define train routing and headways were prepared for use in patronage forecasting. After patronage projections were completed, the operating plans were reviewed to determine the appropriate train length ("consist"), and whether headway adjustments were required to balance the capacity and projected peak loads.

Possible operating plan options are shown in Table 5.2. The load factor shown in the right-hand portion of Table 5.2 is the ratio of passengers to seats. For example, a load factor of 1.5 means that for every 100 seated passengers, there would be 50 standing passengers. The L.A. light rail cars have a seated capacity of 76 passengers. Each Red Line car has 59 seats, or 118 seats in a married-pair of two cars.

Alternative 1 would have a peak-hour, peak-direction line load of 1,610 passengers. With the initial assumption of 6-minute headway, this would mean a load factor over 2.1 with single-car trains, or just over 1.0 with 2-car trains. Since MTA's policy is to plan light rail service with a maximum peak load factor of 2.0, two new headway/consist options were developed. The primary option would be to run single-car trains at 5-minute headways; this would reduce the load factor to an acceptable level of 1.77. However, there may be a desire to operate 2-car trains to improve reliability; in this event, 10-minute headways would suffice, with the same load factor. This option would reduce operator

Crenshaw/Prairie Corridor Preliminary Planning Study

Table 5.2

Rail Operating Plans

From	To	Run Time (min.)	Distance (miles)	Headway Peak	Headway Base	Headway E/L	Consist Peak	Consist Base	Consist E/L	Vehicles Peak	Vehicles Total	Annual Statistics: Car-Mi. (million)	Annual Statistics: Tr-Hrs. (thous.)	Patronage & Loading: Pk.Hr. MLP	Load Factor	Max. Load Point Location
Alternative 1 – Aerial LRT																
Pico/San Vicente (Red Line)	Hawthorne Plaza															
	Single-car option:	24.3	11.1	*5*	10	10	1	1	1	12	14	1.18	53.0	1,610	1.77	NB @ Exposition
	Two-car option:	24.3	11.1	10	10	10	2	2	2	12	14	1.94	43.8	1,610	1.77	NB @ Exposition
Alternative 2 – Subway																
Pico/San Vicente (Red Line)	Hawthorne Plaza	20.8	10.4	6	10	10	2	2	2	18	22	2.07	42.6	1,840	1.56	NB @ Exposition
Alternative 3 – LRT to LAX																
Pico/San Vicente (Red Line)	LAX Lot C (Green Line)															
	Single-car option:	20.4	9.9	6	10	10	1	1	1	8	10	0.99	41.1	1,370	1.80	NB @ Exposition
	Two-car option:	20.4	9.9	10	10	10	2	2	2	10	12	1.74	36.5	1,370	1.50	NB @ Exposition

NOTES:

1. Distances from Korve Engineering, 5/13/93.
2. Run times estimated by MPA, assuming full grade-separation or signal priority for LRT.
3. 20% spare vehicles added.
4. Patronage estimates for each Alternative by LACMTA 11/93.
5. One-car LRT options used for estimating operating costs.

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requirements, but increase car-miles. It would also have an adverse effect on ridership, since the forecasts were based on 6-minute headways, and transit ridership is quite sensitive to waiting times.

Alternative 2 is estimated to have a peak line load of 1,840. Red Line cars must operate in increments of two cars (married-pairs). With 2-car trains on 6-minute headways, the load factor would be 1.56. The loading standard for heavy rail service is higher than for light rail, since cars have more standing capacity. Therefore the headway could be increased to 8-minutes, with an acceptable load factor of 2.08.

Alternative 3 would have a peak line load of 1,370. This can be handled with single cars on 6-minute headways, with a load factor of 1.8. If two-car operation is desired, 10-minute headways would result in a load factor of 1.5.

5.3 Planning and Economics

A major rail transit investment in an area such as the Crenshaw/Prairie Corridor, if coordinated with and supported by other local land use policies and redevelopment mechanisms, enhances the opportunities for both joint development and transit-adjacent developments in and around station areas. As noted previously, the majority of station areas in each of the alternatives under consideration are located within existing or planned redevelopment areas.

Socioeconomic and market factors in the corridor suggest substantial buying potential in excess of $3.3 billion annually. This translates into strong support for retail and services. This substantial expenditure potential is not being captured by the quantity and quality of retail services throughout the corridor, suggesting that the corridor is at a competitive disadvantage and that substantial economic "leakage" outside the local corridor occurs.

Demand for services occurs in a highly competitive environment with the result that major retail centers and services like the Baldwin Hills Crenshaw Plaza and Hawthorne Plaza are in direct competition with major centers such as the Beverly Center, Fox Hills, South Bay Galleria, all located outside of the immediate Crenshaw/Prairie corridor, but which attract much of the corridor's purchasing potential. The potential for added retail and services growth in the corridor is essentially an issue of re-capturing the purchasing potential within the corridor through enhanced marketing, improved appearance, better access/parking and the addition of specialty and neighborhood oriented services. In this context, the development of areas in and around rail transit stations offers a catalytic opportunity to tie existing and new stimulated retail/service businesses into new activity centers where rail transit ridership alone could add between 600,000 to 900,000 pedestrians to each station area annually.

Year 2010 socioeconomic forecasts prepared by the Southern California Association of Governments (SCAG) indicate that within the Crenshaw/Prairie Corridor there would be substantial overall growth. As shown in Table 5.3, the SCAG projections suggest a

growth of approximately 102,000 jobs and 45,000 housing units by the 2010. Using existing employment densities and ratios as a guide, the level of employment growth suggests the addition of approximately 30 to 40 million square feet to be distributed throughout the Crenshaw/Prairie Corridor--an 85 square mile area.

The bulk of the future economic growth in the Crenshaw/Prairie Corridor will likely entail the expansion and the development of new small businesses. Space requirements for most of these businesses will likely be less than 5,000 square feet, and for newly initiated enterprises or incubator type operations the demand may be for less than 500 square feet. Throughout the Crenshaw/Prairie Corridor vacant or underutilized strip commercial buildings would be available to meet a portion of this potential demand. Older industrial buildings --particularly in the Jefferson, Exposition, and Hyde Park areas of the corridor would also be important resources.

From a community development and economic development perspective, the challenge in coordinating public policy and public economic development interventions is to redirect as much of this anticipated growth as possible within one quarter to one half mile of the rail transit station locations. Currently it is estimated that the corridor captures approximately 8-10 percent of the retail spending potential with the market area and 3-5 percent of the demand for office and industrial space.

Table 5.3 Crenshaw/Prairie Corridor Area Year 2010 Growth Forecast

Category	1990	2010	Change
Population	878,137	1,028,580	150,433
Employment	432,061	533,623	101,542
Households	316,031	361,394	45,363

Source: Southern California Association of Governments and Terry A. Hayes Associates

It is important to note that the Transportation and Land Use Policy currently being formulated by the MTA and the City of Los Angeles Department of City Planning, as well as the West Adams Baldwin Hills Leimert Community Plan Revision and the redevelopment planning taking place in the Cities of Los Angeles, Inglewood and Hawthorne, taken together clearly can create the land use incentives, capacity and compatibility framework that will place the rail transit station areas in a competitive position of maintaining existing developments and business as well as attracting a share of the anticipated new corridor growth.

Although the corridor stations theoretically have the land use capacity to accommodate 40 percent of the projected commercial space and about 20 percent of the projected residential development, the practical capacity of the station areas is much less. The level of existing development, available sites and compatibility with adjacent development and

neighborhoods must be considered. There are undoubtedly station areas within the Crenshaw/Prairie Corridor that, given special land use circumstances such as size of area, available area, allowable zoning, and limited constraints, have a greater land use capacity than others. Listed in Table 5.4 is an initial characterization of the growth capacity of individual station areas. Areas are ranked high, moderate and low.

Within frontage areas directly adjacent to Crenshaw Boulevard and Prairie Avenue, the SCAG projections suggest that without public agency intervention these areas would attract about seven percent of the overall growth over the 1990 to 2010 period. This share of growth would be lower than the area's current share, which is about 10 percent of the overall corridor. The actual success at attracting or capturing this level of growth to the corridor station areas is, however, highly dependent on market capture factors, as well as on the coordination of public investment and land use interventions.

With public agency intervention, and based on the station are development potentials characterized in Table 5.4, areas directly adjacent to Crenshaw and Prairie could accommodate as much as ten to fifteen percent of the projected commercial growth and five to ten percent of projected housing growth. Since little development has occurred in the corridor in recent years, public intervention is necessary to maintain the historical share commercial and industrial areas have captured and possibly increase the potential in station areas along the corridor.

RELATIONSHIP OF ALTERNATIVES TO ECONOMIC DEVELOPMENT

The degree of economic change will also be influenced by the type of rail transit alternative that is ultimately selected in the Crenshaw/Prairie Corridor. As discussed in the preceding section of this report, two basic vertical alternatives are under consideration; e.g., an elevated alignment and a subway alignment. Two types of horizontal or geographic alignments are also being considered; e.g., alignments linking the Metro Red Line Station at Pico San Vicente to the Metro Green Line Station at Hawthorne and the Glen Anderson Freeway (I-105) via Crenshaw Boulevard and Prairie Boulevard, or an alignment that links the Metro Red Line Station at Pico San Vicente to Lot C terminal at Los Angeles International Airport (LAX) via Crenshaw Boulevard and the ATSF tracks.

When station areas are grouped by the alternative with which they are associated it is evident that there are no significant differences between the Aerial Guideway Alternative and the Subway Alternative (See Table 5.5) Both alternatives have 5 station areas that can be characterized as having a moderate to high land use development capacity. In comparison, not only does the LAX Alternative have fewer station ares due to its length, but also this alternative has only 3 station areas in moderate-high land use capacity category and has twice as many station areas as the other two alternatives in the low land use capacity category.

Table 5.4 Station Area Development Characteristics

Station Area	Practical Development Capacity	Joint Development Potential	Transit Adjacent Development Potential	Other Factors
Pico/ San Vicente	High	Yes	Yes	Transfer Point to Red Line Large Site LACRA Mid City Recovery Area
Crenshaw/Washington	Low	No	Maybe	Little available land but in LACRA Mid City Recovery Area
Crenshaw/Exposition	Moderate-High	Yes	Yes	Possible transfer point to Exposition Line. Adjacent to new West Angeles Church facilities In LACRA Crenshaw Corridor Recovery Area
Crenshaw/King	High	Maybe	Yes	LACRA Crenshaw Redevelopment Area Opportunity for Mall Expansion
King/Marlton	High	Yes	Yes	LACRA Crenshaw Corridor Recovery Area Opportunity for Mall and Santa Barbara Plaza revitalization (large site)

Table 5.4 Station Area Development Characteristics				
Station Area	Practical Development Capacity	Joint Development Potential	Transit Adjacent Development Potential	Other Factors
Crenshaw/Vernon	Low-Moderate	Maybe	Maybe	LACRA Crenshaw Corridor Recovery Area Development to be limited by village scale Land use conversion possible south of Vernon
Crenshaw/Slauson	Low-Moderate	No	Yes	LACRA Crenshaw Corridor Recovery Area Available site for housing or mixed use
Florence/West	Low	No	Maybe	Development limited by adjacent residential character
La Brea/Queen	Moderate	Yes	Yes	City of Inglewood Redevelopment Area
Market/Queen	Moderate	Yes	Yes	City of Inglewood Redevelopment Area
Prairie/Manchester	Low-Moderate	No	Maybe	City of Inglewood Redevelopment Area Development limited by character of surrounding uses

Table 5.4 Station Area Development Characteristics

Station Area	Practical Development Capacity	Joint Development Potential	Transit Adjacent Development Potential	Other Factors
Prairie/Century	Moderate-High	No	Yes	City of Inglewood Redevelopment Area
Prairie/111th	Low-Moderate	No	Yes	Inglewood Redevelopment area currently being adopted
Hawthorne/Imperial	High	Yes	Yes	Hawthorne Redevelopment area currently being adopted
Hawthorne/El Segundo	Moderate	Maybe	Maybe	City of Hawthorne Redevelopment Area Opportunity for mall expansion
Florence/La Brea	Moderate	Maybe	Maybe	City of Inglewood Redevelopment Area Site isolated from civic center and downtown
Florence/Manchester	Low	No	No	Warehousing and light industrial area
LAX LOT C	Low	No	No	Parking lot

Source: Terry A. Hayes Associates

Table 5.5 Practical Land Use Development Capacity Comparison

	Number of Station Areas				
	High	Moderate-High	Moderate	Low-Moderate	Low
Aerial Alternative	3	2	2	4	2
Subway Alternative	3	2	2	3	2
LAX Alternative	2	1	1	2	4

Source: Terry A. Hayes Associates

In addition, a comparison of the aerial and subway alternatives to the LAX alternative indicates:

- An alignment that extends along Crenshaw and Prairie in a north-south direction would link numerous existing activity centers or developable areas. Approximately 502,000 employees would work within 2 miles of this alignment by the year 2010. The overall employment density along the alignment would be approximately 6,400 employees per square mile.

- An alignment that would divert to the Los Angeles International Airport (LAX) in the southwest direction would link fewer existing activity centers or developable areas. Differences between the alignment options would be evident south of Florence. The LAX alignment would not provide a stimulus to downtown Inglewood revitalization nor would it serve major generators in Inglewood such as the Forum and Hollywood Park. The LAX alignment would also bypass Hawthorne redevelopment areas and the Hawthorne Plaza shopping center. Approximately 418,000 employees would be served by this alignment alternative. The employment density would be approximately 6,500 employees per square mile. Compared to the Crenshaw/La Brea/Prairie/I-105/Hawthorne alignment (which would serve 502,000 jobs in the year 2010), this option would serve approximately 84,000 fewer jobs.

With respect the relationship of rail technology (light rail versus heavy rail) historical evidence and experience in other cities presents a mixed picture. It appears the more major joint development opportunities have been created in relation to subway station areas. These areas have typically been in the east coast or a dense urban centers along the BART system in the Bay area. There is, however, growing experience that light rail stations contribute significantly to active pedestrian environments in local business districts, as has been the case in the northwestern United States and Canada. Much of the distinction between the heavy rail station development experience and light rail rests with key differences in the operating characteristics of the two systems. The heavy rail system

carries more passengers, has shorter travel times and requires more substantial station structures than light rail. In the case of the Crenshaw/Prairie Corridor, as discussed in this report, the patronage levels, operating characteristics and station structure requirements of the heavy rail subway alternative and the light rail elevated alternative are quite similar. There appear to be no significant differences that make one alternative more advantageous than the other from the standpoint of station development.

There are critical differences in economic effects, however, when the level of business disruption is considered that either results from the construction of the alternative or stems from its long-term operations. Specifically, the aerial guideway alternative placed within the right-of-way of commercial thoroughfares would have the following effects:

- Disrupt business during construction by reducing circulation, limiting access points, reducing visibility of businesses and eliminating parking.

- Disrupt business in the long term because the column placement would reduce left turn access and eliminate some parking and the overall visibility of businesses would be reduced.

- Create shaded and dark areas that could adversely affect the pedestrian and sidewalk environment that may be perceived by patrons as creating unsafe areas during both the day and at night.

- Aerial guideway columns would likely be the target of additional graffiti and other "tagging" that detracts from the appearance of commercial and business areas.

In comparison, the subway alternative --if constructed as a deep bore tunnel-- would only have construction related disruption impacts at station areas (where the cut and cover technique is typically used) and not along the entire alignment. It should be recognized that the subway alternative could have construction related business disruptions for a greater time period than similar construction for an aerial guideway if the cut and cover technique is used to construction the mainline rail transit alignment. Given current MTA practices the possibility of the cut and cover technique being used in dense urban corridor such as Crenshaw Boulevard, Market Street, Prairie or Hawthorne Boulevard is considered remote. Stations along a subway alignment--particularly entry portal locations--may also be more easily adapted to tie into existing development or used to create joint development opportunities than elevated stations that may require visually intrusive bridge structures spanning the streets to create the same land use effect.

Thus, although the operating characteristics of the aerial and subway options would be similar, there would be a distinct difference with respect to minimize impacts on the existing strip commercial businesses in the corridor that would favor the subway alternative. It should recognized,however, that substantial cost differential between the subway and the aerial guideway alternatives may influence the timing of potential revitalization of the Crenshaw/Prairie Corridor. As documented in the cost section of this report, a subway facility may cost more than two times the cost of an aerial guideway

facility. Should the Crenshaw/Prairie Corridor be selected by the MTA Board the availability of funding could influence the time frame for implementation. The selection of the more expensive subway alternative may have a extended implementation time frame compared to the elevated alternative, with a resulting impact on the timing of other transit-induced development potentials.

5.4 Station Locations and Planning

A key aspect of the Crenshaw/Prairie Preliminary Planning Study was the identification of rail transit station locations that would offer the greatest opportunity for economic development and enhanced mobility for corridor residents. To meet these objectives, 13 station locations were identified along the Aerial Alignment, 12 stations along the subway alignment and 10 stations along the LAX alignment alternative. Initial Station Development concepts and issues are presented in Figures 5.6 through 5.33. Figures 5.6 through 5.18 address stations along the Alternative 1, Aerial LRT. Figures 5.19 through 5.30 address stations along Alternative 2, the subway alignment, and Figures 5.31 through 5.33 address the three stations added along Alternative 3, the LAX alignment alternative. These concepts represent the first step in station area planning. Each station area diagram presents a generalized assessment of the development opportunities and planning issues in the station area.

As the Crenshaw/Prairie Corridor proceeds through subsequent approval phases the plans at individual stations will be refined as part of the Environmental Impact Report and through the MTA's Station Master Planning program.

Alternative 1 - Aerial Alignment. Along the aerial alignment, six station areas are within the City of Los Angeles, two station areas are shared between the City of Los Angeles and LA County and Los Angeles and the City of Inglewood, three station areas are within the City of Inglewood, one station area is shared between Inglewood and Lennox section of LA County and two station areas are within the City of Hawthorne.

- o Pico San Vicente (Midtown and Metro Red Line), City of Los Angeles
- o Crenshaw/Washington, City of Los Angeles
- o Crenshaw/Exposition, City of Los Angeles
- o Crenshaw/King (Baldwin Hills Crenshaw Plaza), City of Los Angeles
- o Crenshaw/Vernon (Leimert Park), City of Los Angeles, View Park section of LA County
- o Crenshaw/Slauson, City of Los Angles
- o West Boulevard/Florence, City of Inglewood, City of Los Angeles
- o La Brea/Queen, City of Inglewood
- o Prairie/Manchester (Great Western Forum), City of Inglewood
- o Prairie/Century, City of Inglewood
- o Prairie/111th, City of Inglewood, County of Los Angeles
- o Hawthorne/Imperial (Metro Green Line), City of Hawthorne
- o Hawthorne/El Segundo (Hawthorne Plaza), City of Hawthorne

Alternative 2 - Subway Alignment. Along the subway alignment, six station areas are within the City of Los Angeles, two station areas are shared between the City of Los Angeles and LA County and Los Angeles and the City of Inglewood, three station areas are within the City of Inglewood, and two station areas are within the City of Hawthorne.

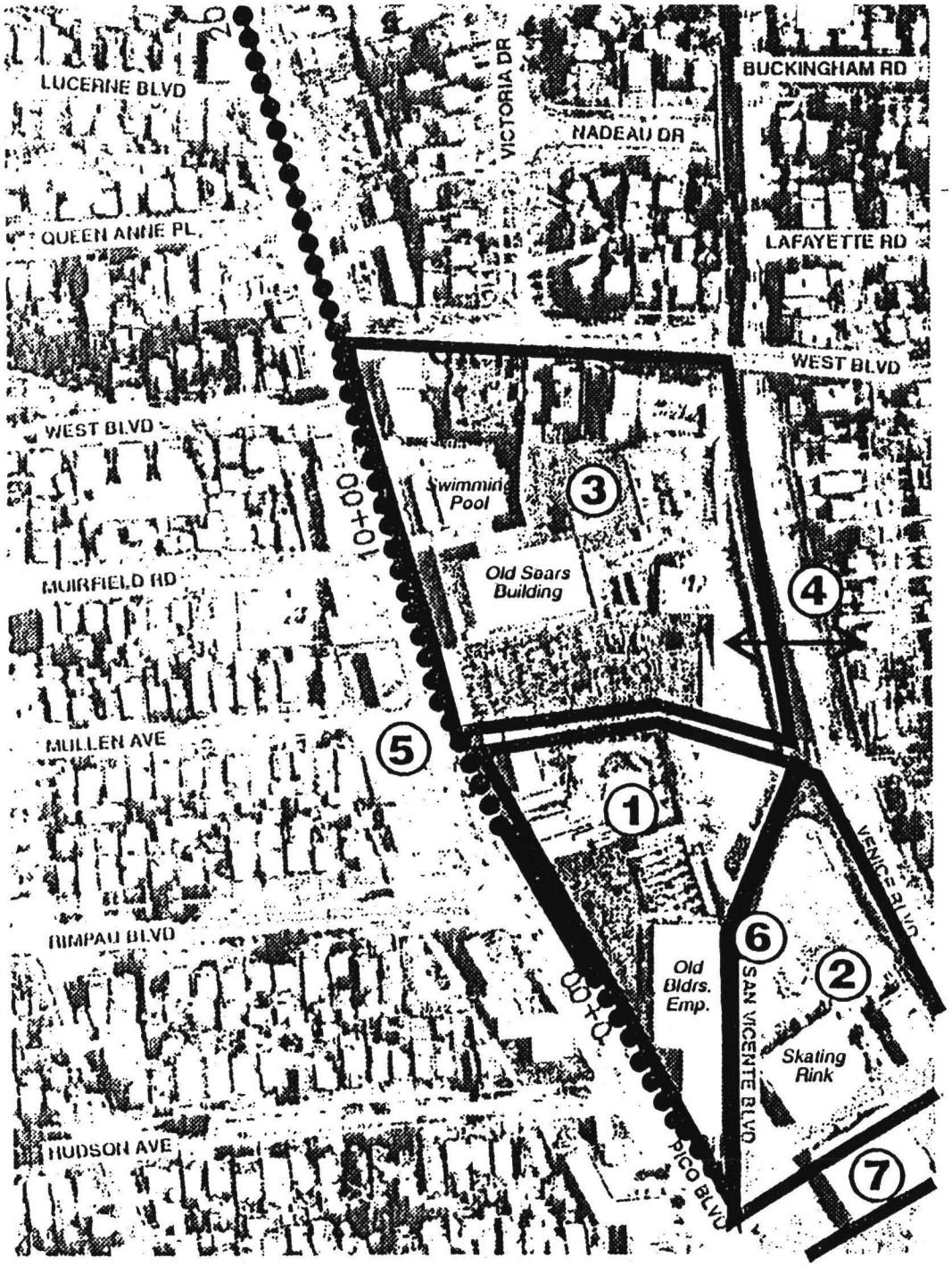
- o Pico San Vicente (Midtown and Metro Red Line), City of Los Angeles
- o Crenshaw/Washington, City of Los Angeles
- o Crenshaw/Exposition, City of Los Angeles
- o King/Marlton(Baldwin Hills Crenshaw Plaza and Santa Barbara Plaza), City of Los Angeles
- o Crenshaw/Vernon (Leimert Park), City of Los Angeles, View Park section of LA County
- o Crenshaw/Slauson, City of Los Angeles
- o West Boulevard/Florence, City of Los Angeles, City of Inglewood
- o Market/Queen, City of Inglewood
- o Prairie/Manchester (Great Western Forum), City of Inglewood
- o Prairie/Century, City of Inglewood
- o Hawthorne/Imperial (Metro Green Line), City of Hawthorne
- o Hawthorne/El Segundo (Hawthorne Plaza), City of Hawthorne

Alternative 3 - LAX Alignment. Along the alignment option that connects to LOT C near LAX, six station areas are within the City of Los Angeles, three station areas are shared between the City of Los Angeles and LA County or the City of Inglewood, and one station area is within the City of Inglewood. Under this option there would be no station area in the City of Hawthorne.

- o Pico San Vicente (Midtown and Metro Red Line), City of Los Angeles
- o Crenshaw/Washington, City of Los Angeles
- o Crenshaw/Exposition, City of Los Angeles
- o King/Marlton(Baldwin Hills Crenshaw Plaza and Santa Barbara Plaza), City of Los Angles
- o Crenshaw/Vernon (Leimert Park), City of Los Angeles, View Park section of LA County
- o Crenshaw/Slauson, City of Los Angeles
- o West Boulevard/Florence, City of Los Angeles, City of Inglewood
- o Florence/La Brea, City of Inglewood
- o Florence/Manchester/Aviation, City of Inglewood, City of Los Angeles
- o LAX LOT C, City of Los Angeles

FIGUI .6

PICO/SAN VICENTE STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AERIAL ALTERNATIVE



The overall site is approximately 35 acres. The site is the largest underdeveloped site within the Mid-City section of the City of Los Angeles. Given its size and location, the area has the potential to become a town-center with higher density development. The terminal station on the Crenshaw-Prairie rail line would be constructed on this site. There would be transfers between the Metro Red and the Crenshaw-Prairie Lines, either between subway station platforms if a subway option is adopted for the Crenshaw-Prairie rail line or between the Metro Red Line subway station and an elevated Crenshaw-Prairie Station. The proposed development concept for the station area would seek to: 1)Concentrate transit-related activities (station platforms, circulation areas, bus-loading platforms) in the central portion of the site; 2)Create new housing opportunities in the western portion of the site, including a buffer between transit activity and housing areas; 3)Construct deck above bus loading facilities and utilize deck as an open space area as well as second level connection to adjacent neighborhoods on the south side of Venice Boulevard; 4)Reconfigure alignment of San Vicente Blvd. through the site to improve access; 5)Create retail/service joint development opportunities to west of station platform areas, including reconfiguration & redevelopment of the affected portions of the Mid-Town shopping center site; 6)Western portions of site could be devoted to park & ride facilities as well as auto-related entrepreneurial enterprises; and 7)Provide shared parking opportunities for 1,000-1,500 cars.

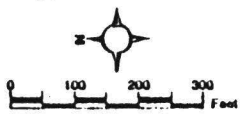
LEGEND:

1. Transit Platform Access and Bus Storage/Circulation Area.
2. Possible Joint Development Opportunity Area (Comm. Dev.).
3. Transit Adjacent Development (Housing and Services).
4. Elevated Pedestrian Connection to Neighborhood.
5. New Access Roadway.
6. Vacate Existing San Vicente Boulevard.
7. Location of New San Vicente Boulevard.

●●●●●● Aerial Alignment

▬▬▬ Elevated Platform

Approx. Scale:



SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY

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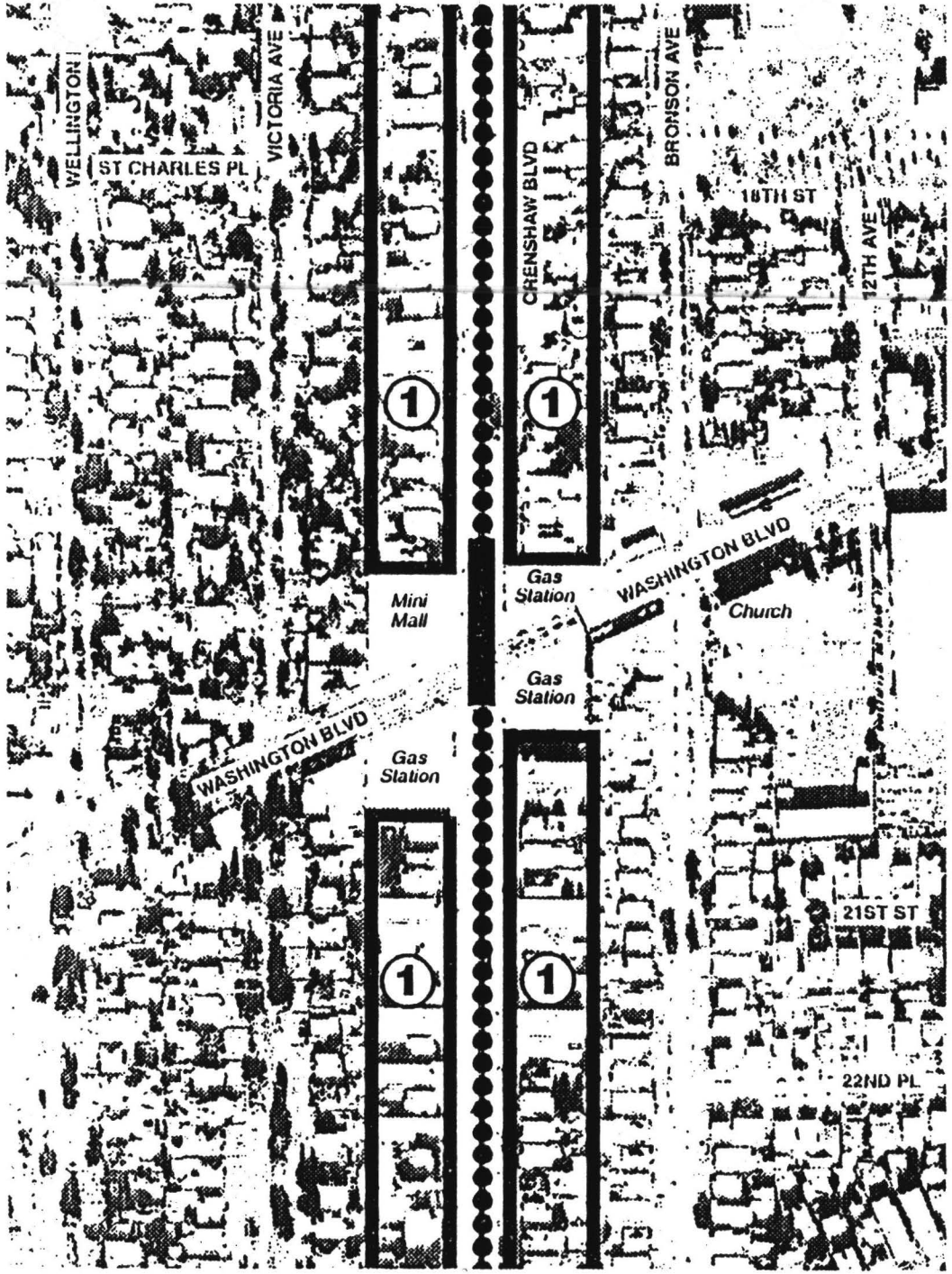
CRENSHAW/WASHINGTON STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AERIAL ALTERNATIVE



This area is primarily residential in nature with older strip commercial development along Washington Boulevard and along Crenshaw Boulevard. There are three gas stations and a mini-mall at the intersection of Crenshaw and Washington Boulevards. The development potential for this intersection is not considered to be significant. There are no major developable sites adjacent to the intersection. Land uses west, north, and south of the intersection are residential in character. There are scattered commercial land uses east of the intersection along Washington Boulevard. While it does not appear that there is joint development or transit-based development opportunities on adjacent sites, it should be recognized that there are not apparent land use constraints to development should the opportunity arise.

LEGEND:

1. Transit Would Reinforce Existing Trend of Converting Single-Family Homes to Multi-Family Apartment Buildings.

●●●●●●● Aerial Alignment

▬▬▬ Elevated Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

Crenshaw-Prairie Corridor Preliminary Planning Study

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KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

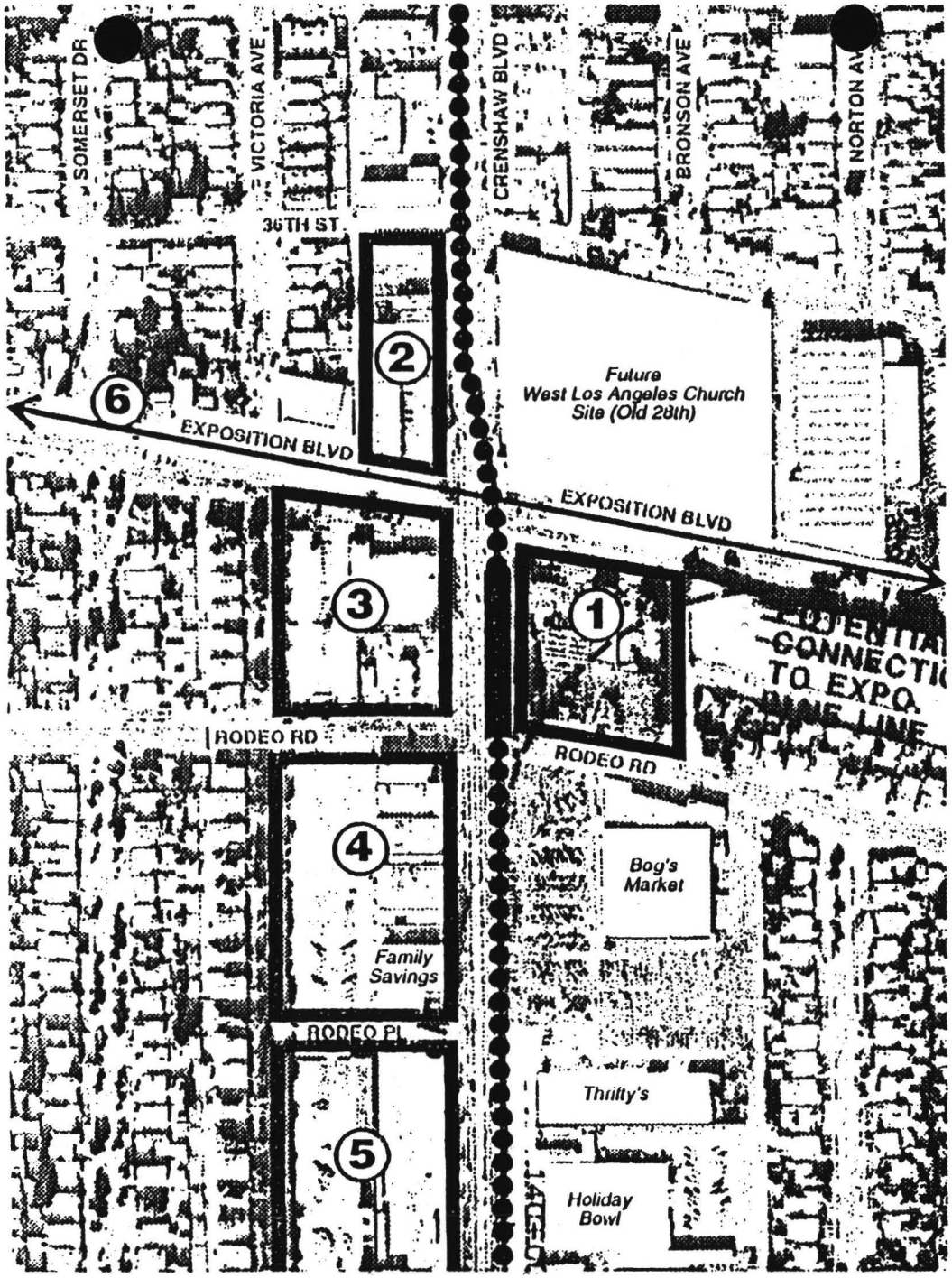


FIGURE 5.8

CRENSHAW/EXPOSITION STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AERIAL ALTERNATIVE

Location has potential for substantial amount of development due to 1) the proposed Exposition Corridor would cross the Crenshaw-Prairie Corridor at this location; (transit-patron and neighborhood-serving retail services in the immediate station area could be created to take advantage of transfers between the Exposition and the Crenshaw-Prairie Lines. These services would best be located along pedestrian paths between the two station platforms either at the ground level or mezzanine level); 2) the northeast quadrant of the intersection is proposed as the site for the new West Angeles Church and supporting facilities. The West Angeles Church --currently located near Jefferson and Crenshaw-- is a 8,000-10,000 member congregation and conducts activities daily; and 3) there appear to be developable sites --particularly the vacant O'Connor Lincoln Mercury Dealership-- south and west of the station area that may be suitable for mixed-use type developments. The existing multi-family character of the west side of Victoria Ave. provides an opportunity to provide similar density housing on the east side of Victoria Ave. In addition, commercial development opportunities exist along the eastern frontage of Crenshaw Blvd. extending from Expostion Blvd. to Rodeo Pl. These shopping and housing areas would be approximately 500-700 feet from the proposed rail transit station at Exposition.

Critically important at this location is coordination between for proposed Exposition and the Crenshaw Lines in conjunction with the proposed development of a new West Angeles Church complex. Pedestrian flow patterns, vehicle access and circulation as well as urban design and aesthetics must be addressed. The concept of providing a mixed-use project south of the station area must address local neighborhood concerns regarding density and design of development, as well as property owner participation and business displacement/relocation.

LEGEND:

1. Joint Development Opportunity.
2. Transit Adjacent Development Opportunity (Commercial).
3. Transit Adjacent Development Opportunity (Commercial/Office).
4. Transit Adjacent Mixed-Use Development Opportunity (Comm./Hsg).
5. Transit Adjacent Mixed-Use Development Opportunity.
6. Possible Exposition Blue Line Alignment and Crenshaw Station.

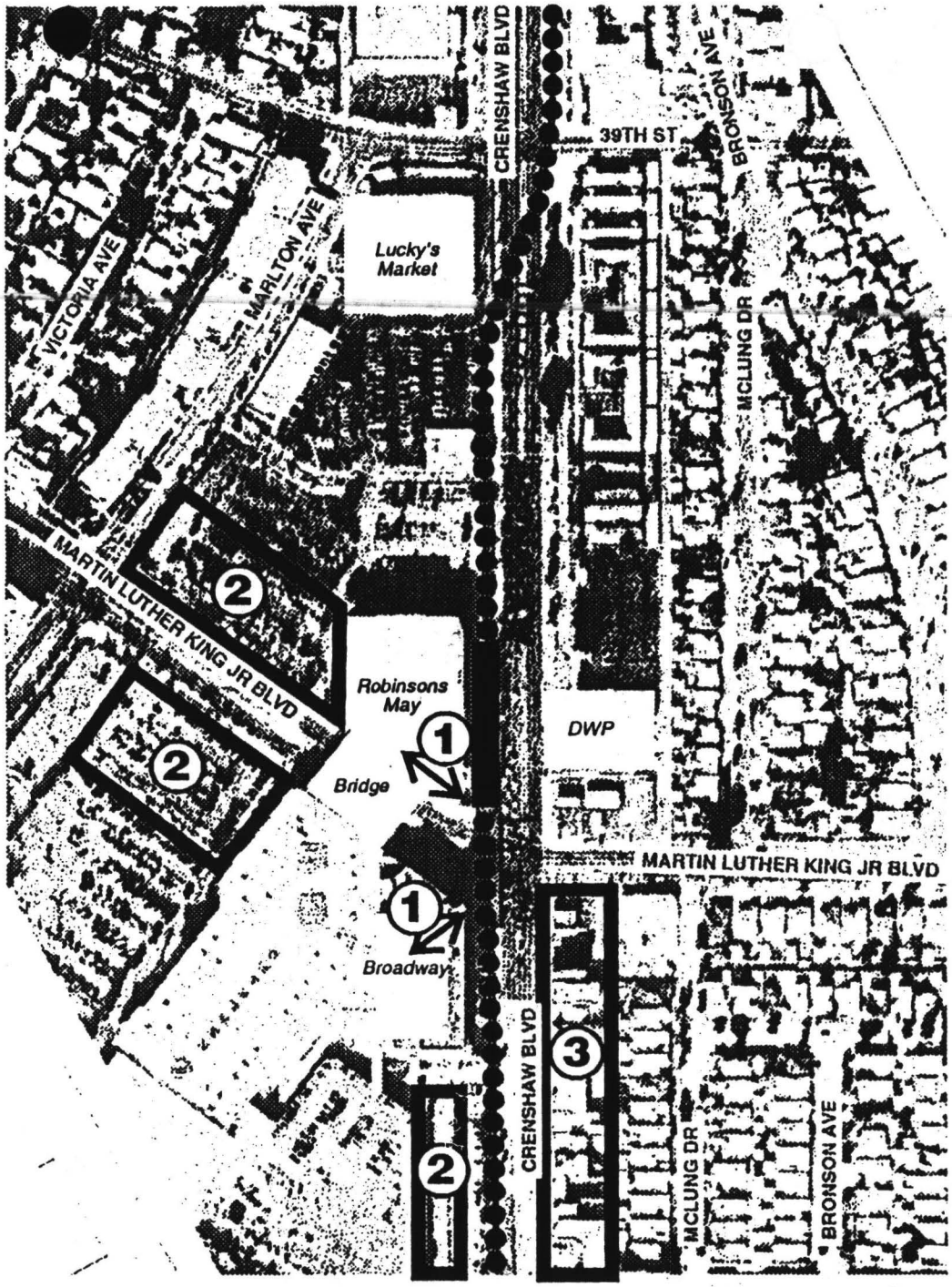
●●●●●●● Aerial Alignment

Elevated Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES



CRENSHAW/KING STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

Dominant physical and visual feature in area is the Baldwin Hills Plaza located on west side of Crenshaw between 39th (north) and Stocker (south). The 850,000-sf regional mall features Sears, Robinsons-May, & Broadway as major department store anchors. Mall also has 49 smaller shops and a community shopping center element that features a Lucky's Market. This is one of the major existing activity centers along Crenshaw-Prairie Corridor.

It is proposed that the elevated alignment be located on the west side of Crenshaw Blvd. This alignment creates an opportunity for an elevated station to be located directly adjacent to the Robinsons-May building. Here the opportunity exists to bring transit patrons directly to the entrance of the mall at the ground level, or more importantly, a bridge structure could be constructed to bring the transit vertical circulation element directly into the adjacent department store building. In this configuration, it is possible that a portion of the second floor of the building could be converted to retail activities and services oriented to transit patrons. The connection into the department store building would also tie transit patrons directly into the second level of the mall and create a new source of pedestrian activity in the facility.

Addtional activity could possibly support expansion of a new multi-level parking structure containing additional retail services west of mall. Increased pedestrian activity along Crenshaw Blvd. could provide the impetus to enhance and upgrade retail businesses on the east side of Crenshaw Blvd. Construction of an elevated rail station adjacent to the mall presents a number of planning and design issues to be resolved. Of critical importance will be the compatibility of station design with distinctive design qualities of the landmark Broadway and Robinsons-May buildings. Physical penetration of one of the buildings with a bridge structure will need to consider pedestrian flow and shopping patterns at the second level of the mall and whether an existing department store can devote circulation and merchandising space to accommodate these new patterns.

LEGEND:

1. Possible Second Level Direct Connection into Mall Buildings.
2. Transit Adjacent Commercial Expansion Potential for Mall.
3. Possible Retail Benefits from Transit-Related Pedestrian Traffic.

●●●●●● Aerial Alignment

Elevated Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR PRELIMINARY PLANNING STUDY

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

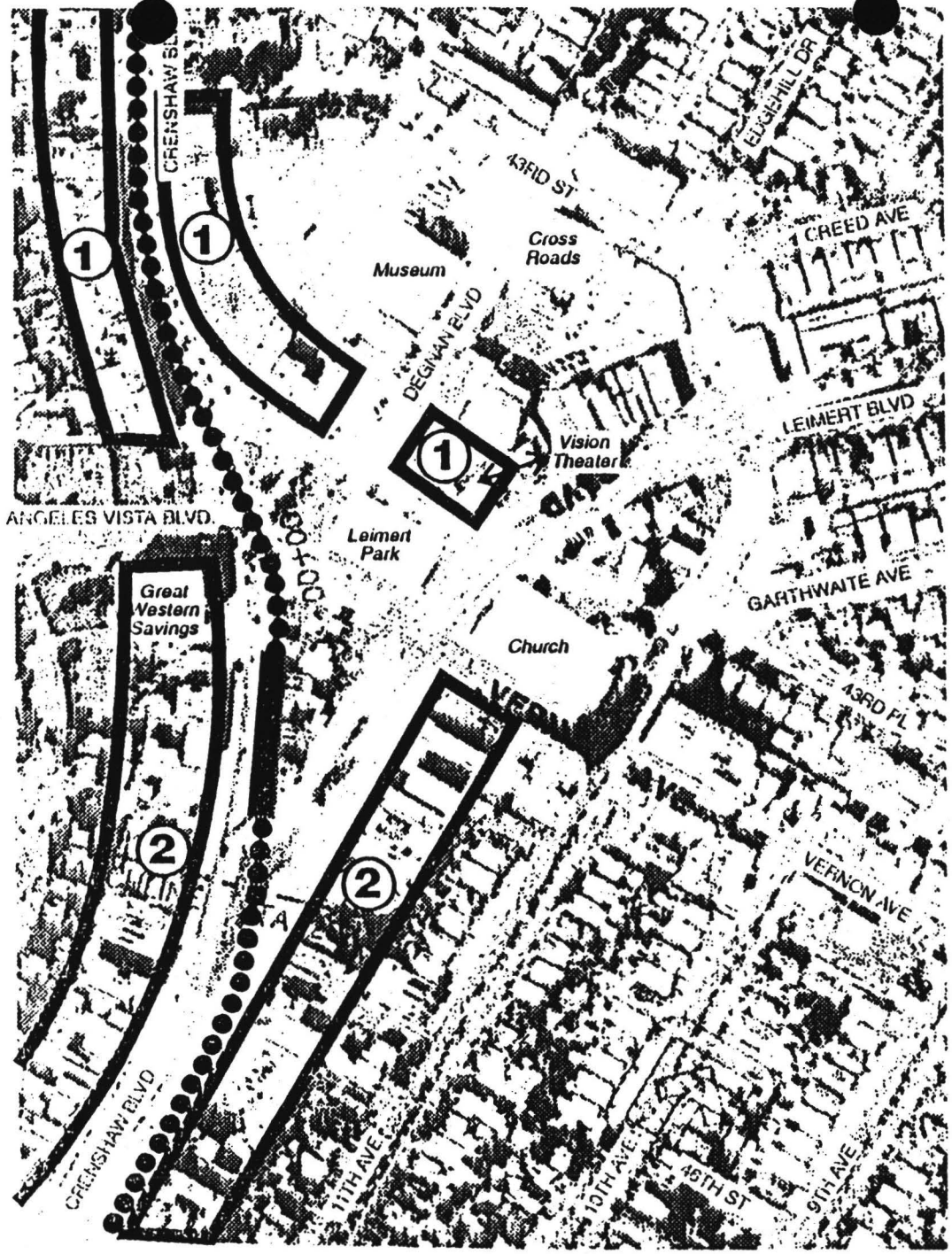


FIGURE 3.10

CRENSHAW/VERNON STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

An elevated station --for engineering reasons-- cannot be located within the Leimert Park business area. The station would be located to the south of Vernon Avenue in the triangular area formed by Crenshaw Boulevard and Leimert Boulevard. Given its location, this station would not have as direct impact on the Leimert Park shopping area as the subway station.

LEGEND:

1. Possible Retail Benefits from Transit-Related Pedestrian Traffic.
2. Possible Mixed-Use Redevelopment Potential.

Aerial Alignment

Elevated Platform

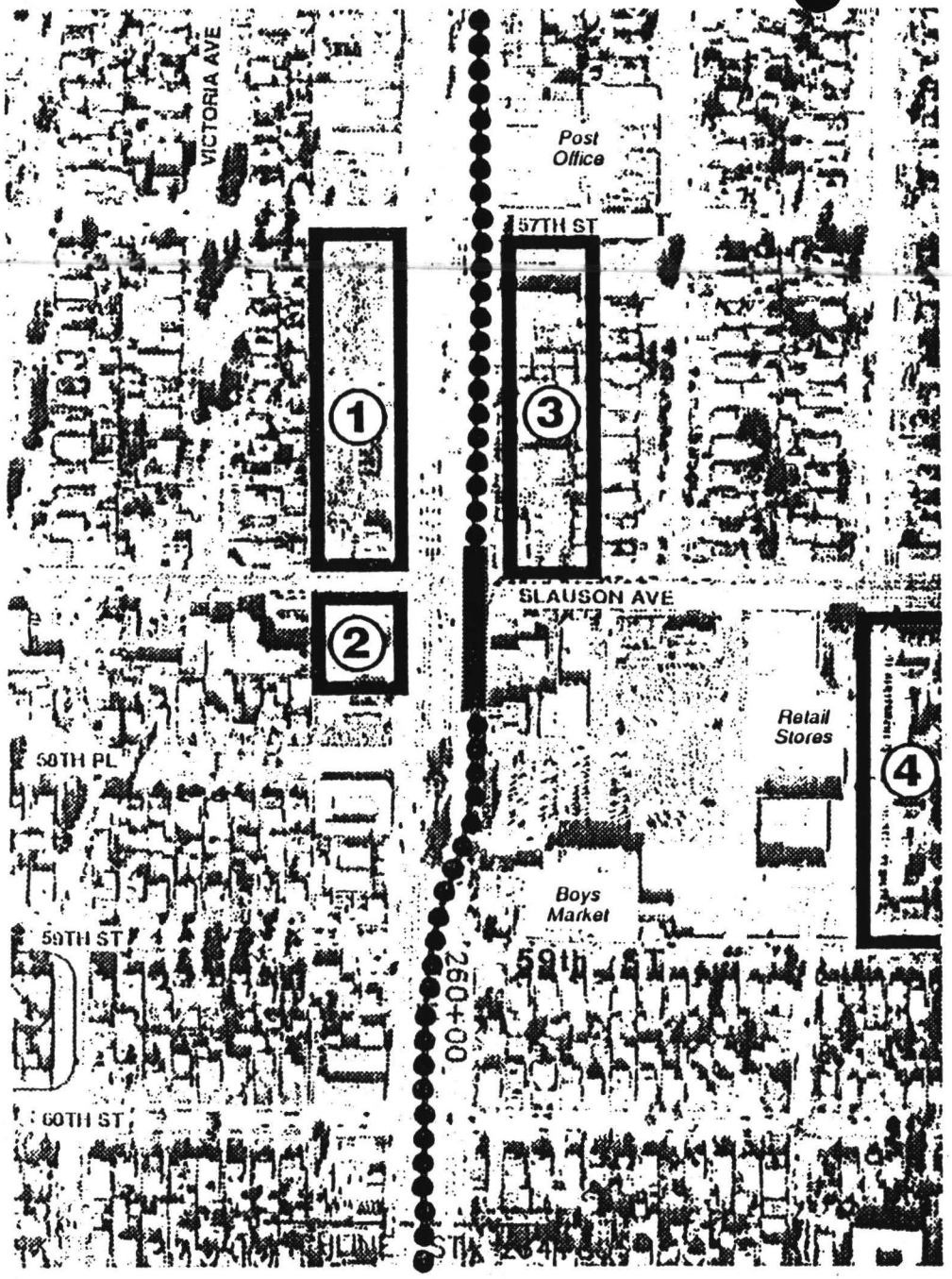
Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

FIGL 5.11

CRENSHAW/SLAUSON STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AERIAL ALTERNATIVE



The intersection of Crenshaw Blvd. and Slauson Ave. would be a major interface point between the rail line and east-west buses along Slauson. Within the intersection area, there is a community-scale shopping center (on the southeast corner) that is in the process of rebuilding after the civil unrest. Additionally, to the north of the intersection (beginning at 57th Street) is an older strip commercial center that services as the focus for neighborhood serves including a post office, bank, gym, retail, etc. Also within the area is a large developable site (former car dealership) on the west side of Crenshaw between Slauson and 57th Street. This site, however, includes only the frontage along Crenshaw Blvd., on the other half of the block are single-family homes facing Victoria Ave. The development concept for this station area would seek to:

Provide for convenient transfers from the rail line to east-west bus service.

Provide convenient access to both the shopping center on the southeast corner as well as to the neighborhood services area north of the intersection.

Reuse the vacant car dealership site (approx. 2 acres) for a housing development that may contain some additional retail services. Development of housing at this location will have to specifically consider buffering the development from adjacent single-family residences as well as from arterial traffic noise and rail transit noise (if an elevated alignment were selected).

LEGEND:

1. Transit Adjacent Mixed-Use Development Opportunity.
2. Transit Adjacent Parking and Retail Opportunity.
3. Long-Term Redevelopment Potential or Transit Adjacent Mixed-Use.
4. Long-Term Redevelopment Potential for Higher Housing Density.

●●●●●●● Aerial Alignment

▬▬▬▬ Elevated Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KOKVE ENGINEERING/TERRY A. HAYES ASSOCIATES

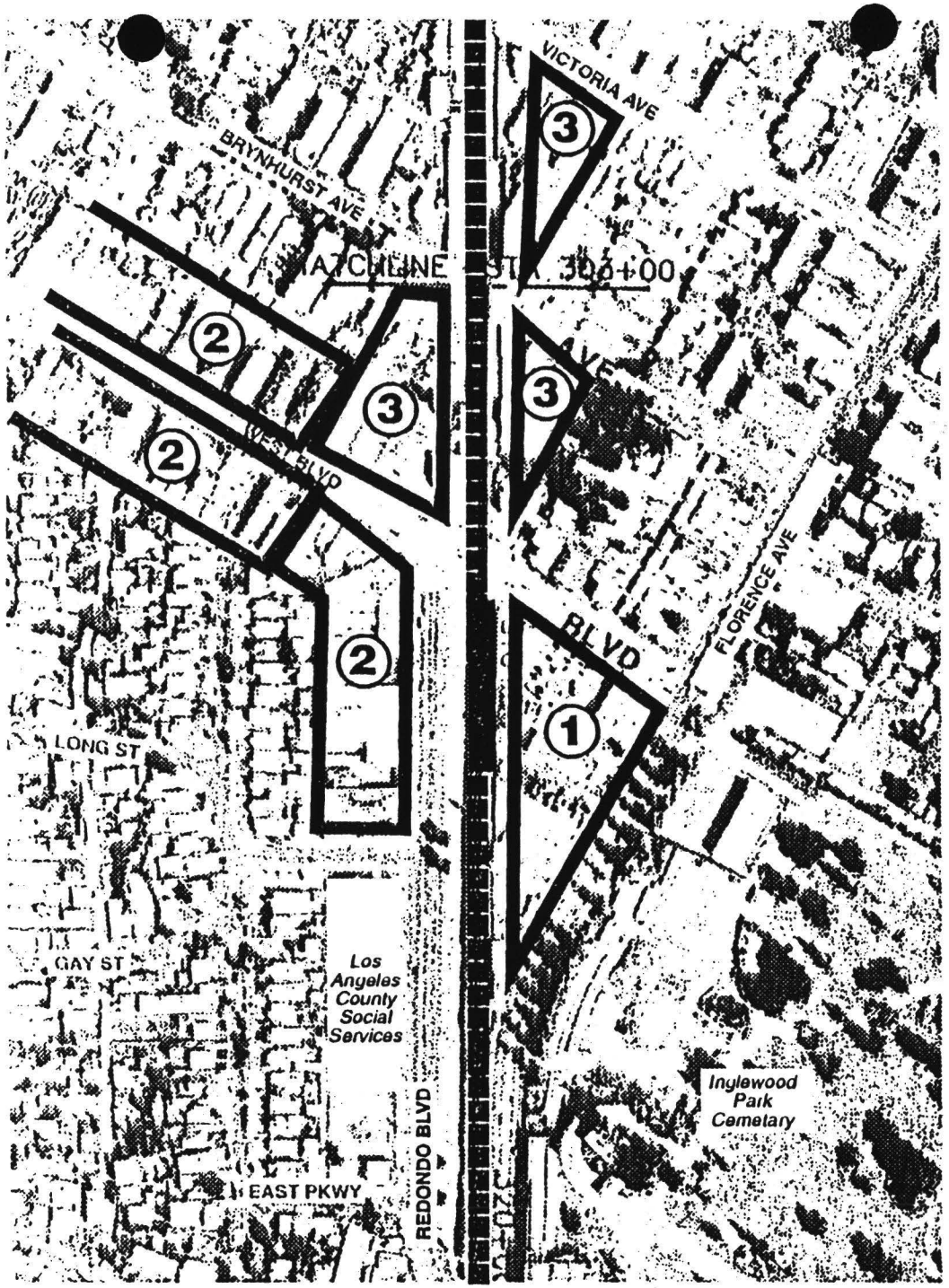


FIGURE 5.12

WEST/FLORENCE STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AT-GRADE ALTERNATIVE

This station area includes portions of the City of Los Angeles and the City of Inglewood. Currently, the area is a mixture of multi-family housing and light industrial type uses clustered along the ATSF tracks. The proposed rail transit station has been proposed for this area to provide improved access to the Los Angeles County Social Services office located on Redondo. The station would also have convenient access to activities along West Boulevard and to Centinela Park. It is possible that the station area could provide park and ride opportunities for 50 to 100 cars by acquiring the triangular area bounded by Redondo, Florence and West Boulevard. The location of a rail transit station in the area could become a stimulus for reinvestment in the adjacent blocks along West Boulevard. Currently, the City of Inglewood is conducting a study of potential development opportunities --some of which may have increased viability because of the presence of a rail transit station. Future planning for the West/Florence Station should be coordinated with the findings of the Inglewood study.

LEGEND:

1. Transit-Related Parking and Possible Retail Services or Vendor Areas.
2. Long-Term Redevelopment Potential for Increasing Housing Density.
3. Transit Adjacent Light Industrial Opportunity.

At-Grade Alignment

At-Grade Platform

Approx. Scale:

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

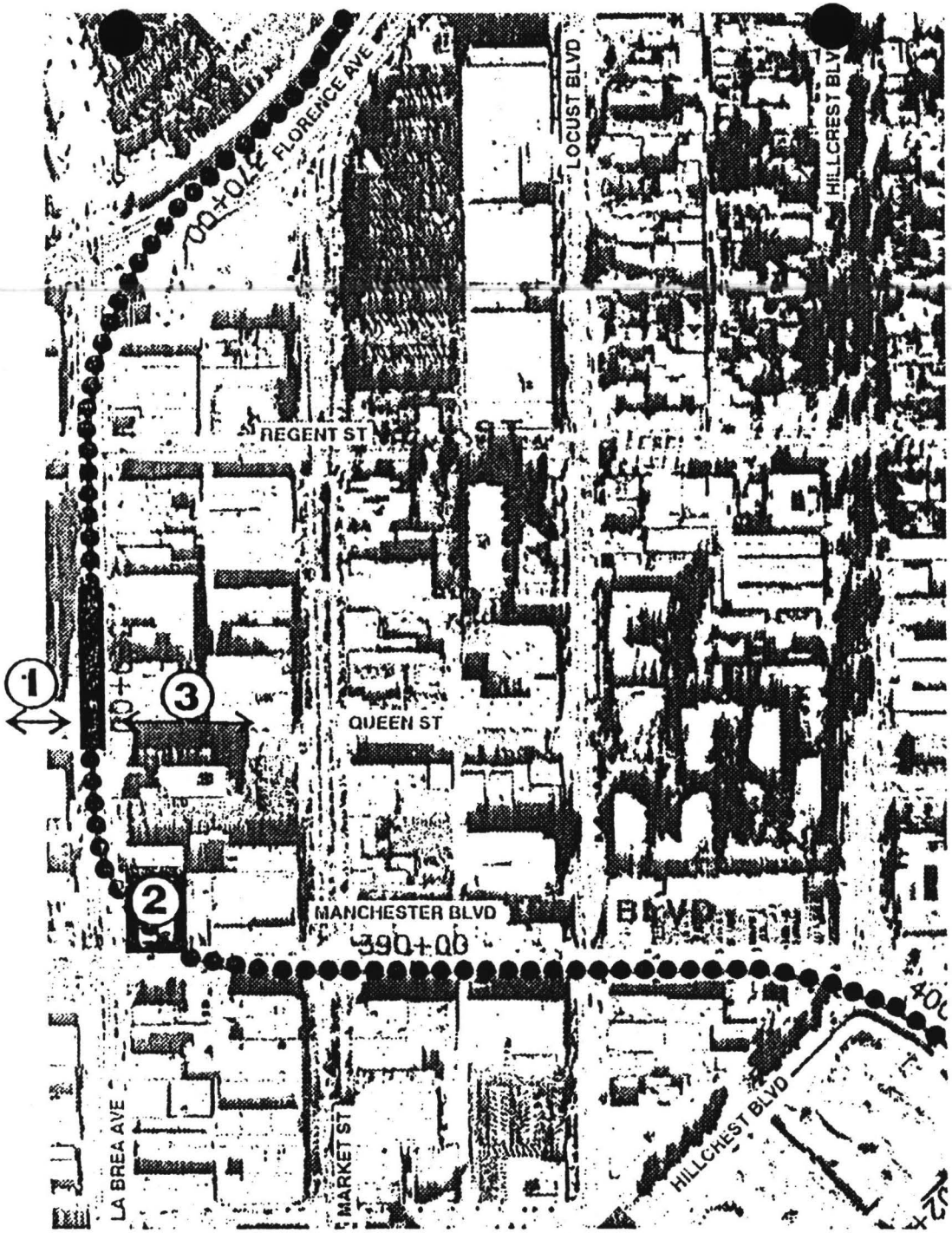


FIGURE 5.13

LA BREA/QUEEN STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

This station would be located directly across from the pedestrian ramp to the entrance of the Inglewood Civic Center complex located on the west side of La Brea Avenue. With the station access points oriented toward Queen Street to the east, pedestrian flows directly to the Market Street shopping areas in downtown Inglewood would be facilitated. The development concept for this station focuses on revitalization of the Queen Street retail frontage. In addition, underutilized properties east of Queen Street between Manchester and La Brea may be positively influenced toward redevelopment or rehabilitation to also take advantage of the increased pedestrian activity created by the rail transit station. In addition, a station located in this area could take advantage of City off-street parking structures to provide park and ride opportunities for rail transit patrons.

The City of Inglewood has recently initiated a planning re-evaluation of the downtown area. Placement of a pedestrian generator such as a rail transit station would have a critical effect on revitalization efforts.

LEGEND:

1. Elevated Pedestrian Connection to City Hall.
2. Possible Joint Development Opportunity Created by Row Acquisitions.
3. Queen Street. Possible Retail Benefits Due to Increased Foot Traffic.

●●●●●●● Aerial Alignment

▬▬▬ Elevated Platform

Approx. Scale:

N

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR PRELIMINARY PLANNING STUDY

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

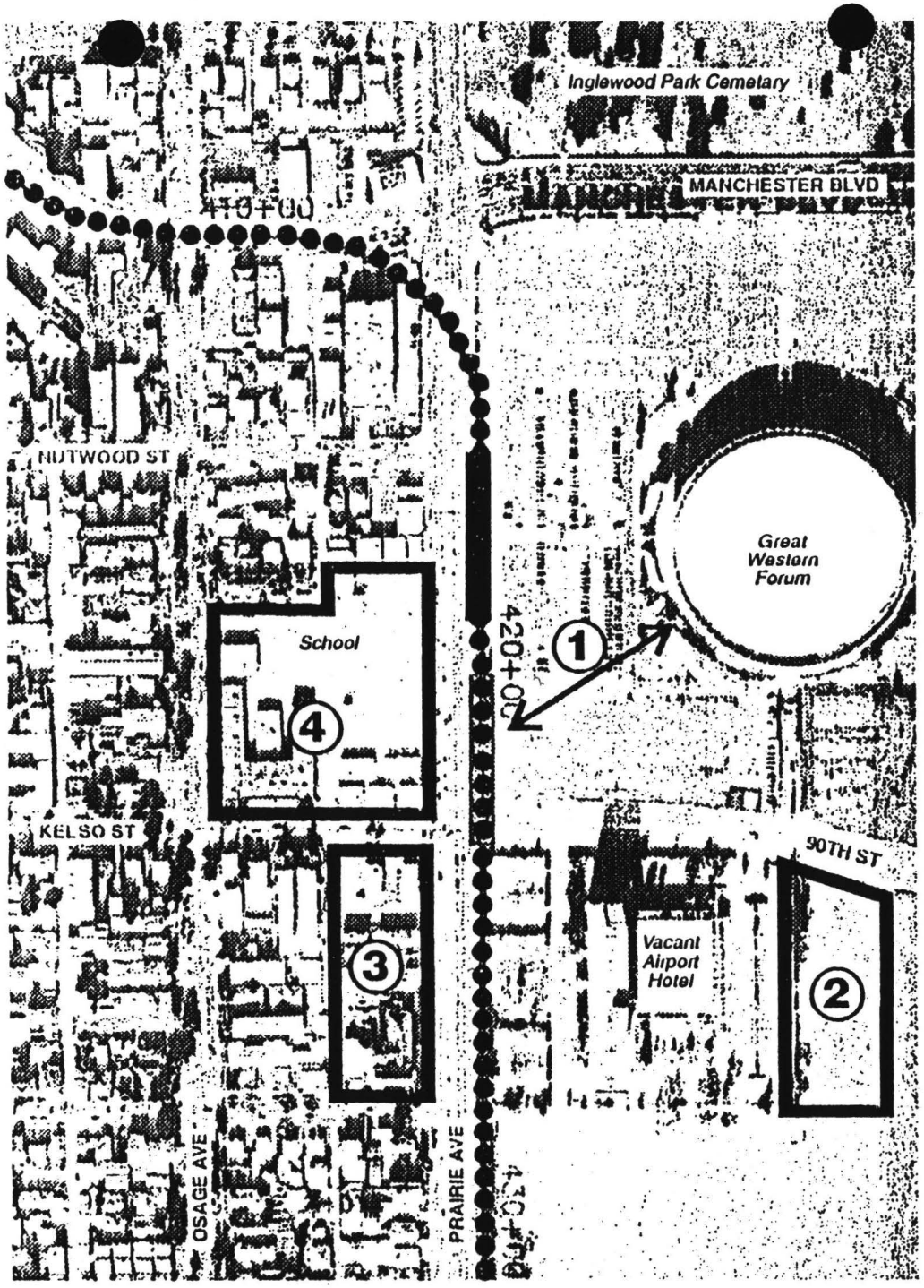


FIGURE 5.14

PRAIRIE/90TH/FORUM STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AERIAL ALTERNATIVE

Located in the southeast quadrant of the Manchester and Prairie intersection, this station would primarily provide transit access to patrons of the Great Western Forum. Depending on the overall coverage of rail transit in the metropolitan area, a transit station at the Forum could have a beneficial impact on reducing parking demand and local street congestion prior to and following major events at the facility. The location of a rail transit station within the existing parking area of the Forum will require extensive coordination with respect to pedestrian and vehicular circulation issues as well as bus loading and drop off. Careful consideration must be given to platform locations that contribute to a safe and efficient flow of large numbers of persons into the Forum. It should also be noted that the existing Forum parking lot could provide for daytime park and ride opportunities. Depending on specific arrangements that could be worked out with management, 500-1,000 parking spaces could be devoted to this purpose.

LEGEND:

1. Pedestrian Connection to Forum Entrance.
2. Transit Adjacent Development Site. Possible Recreation-Related Use.
3. Possible Long-Term Redevelopment.
4. Possible Long-Term Redevelopment of School Site for Commercial/Housing Mixed-Use Project.

●●●●●●● Aerial Alignment

Elevated Platform

Approx. Scale:

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

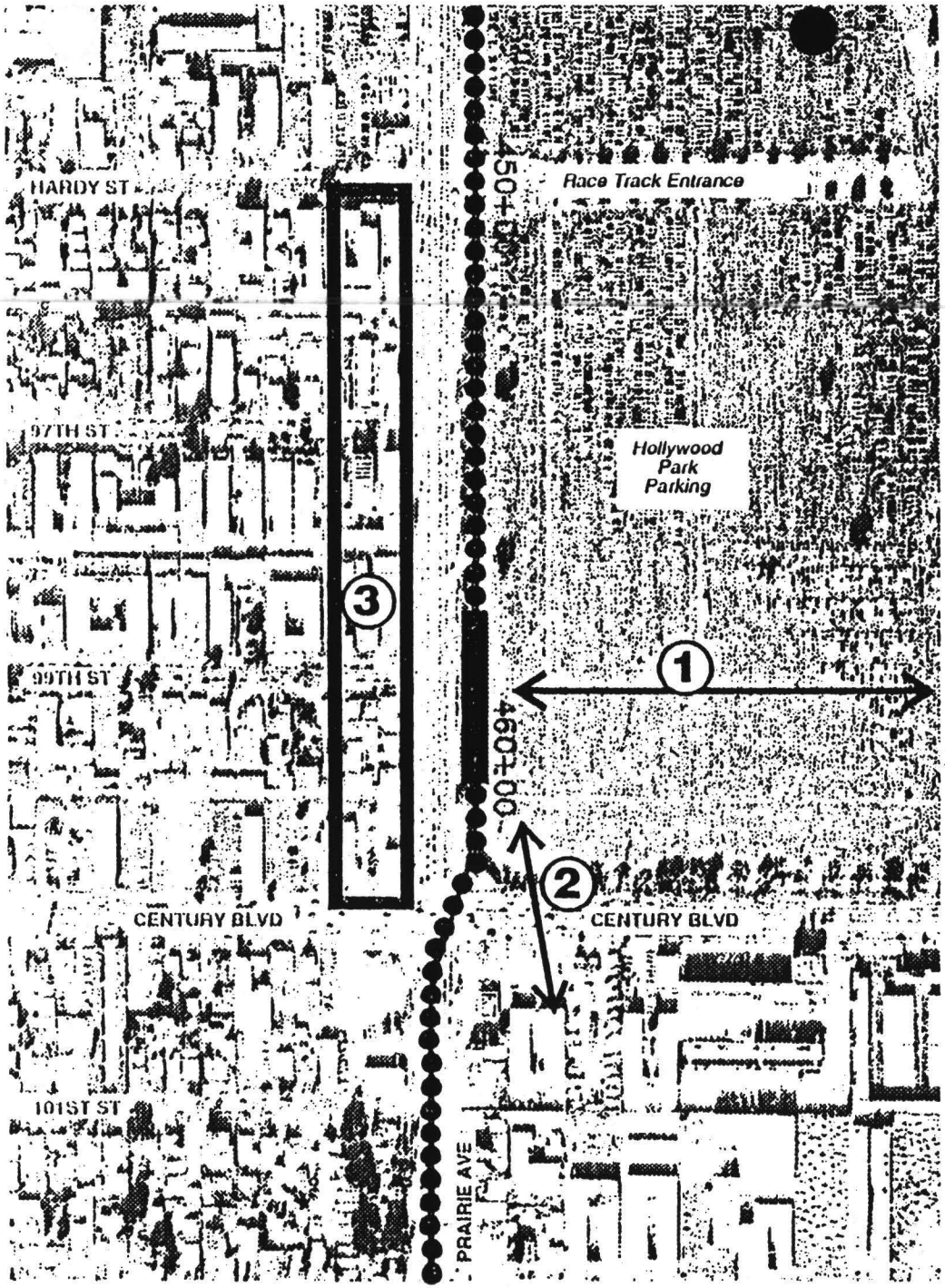


FIG 5.15

PRAIRIE/CENTURY/HOLLYWOOD PARK STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AERIAL ALTERNATIVE

Located in the northeast quadrant of the Century Boulevard and Prairie Avenue intersection, this station would primarily provide transit access to event patrons of the Hollywood Park race track and recreation facilities (Card Club, Amphitheater, etc.) as well as for employees in light industrial areas on the south side of Century Boulevard. The location of a rail transit station within the existing parking area of the race track will require extensive coordination with Hollywood Park management with respect to pedestrian and vehicular circulation issues as well as bus loading and drop off. Careful consideration must be given to platform locations that contribute to a safe and efficient flow of large number of persons into the parking area. With respect to work trips, planning in the Hollywood Park station area will need to consider maximizing the pedestrian or shuttle connections to existing and planned industrial areas south of Century Boulevard.

LEGEND:

1. Pedestrian Connection/Shuttle Needed for Hollywood Park Facilities.
2. Pedestrian Connection/Shuttle Needed for Adjacent Industrial Employment Area.
3. Possible Long-Term Mixed-Use Development Potential.

Aerial Alignment

Elevated Platform

Approx. Scale:

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

Crenshaw-Prairie Corridor
Preliminary Planning Study

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

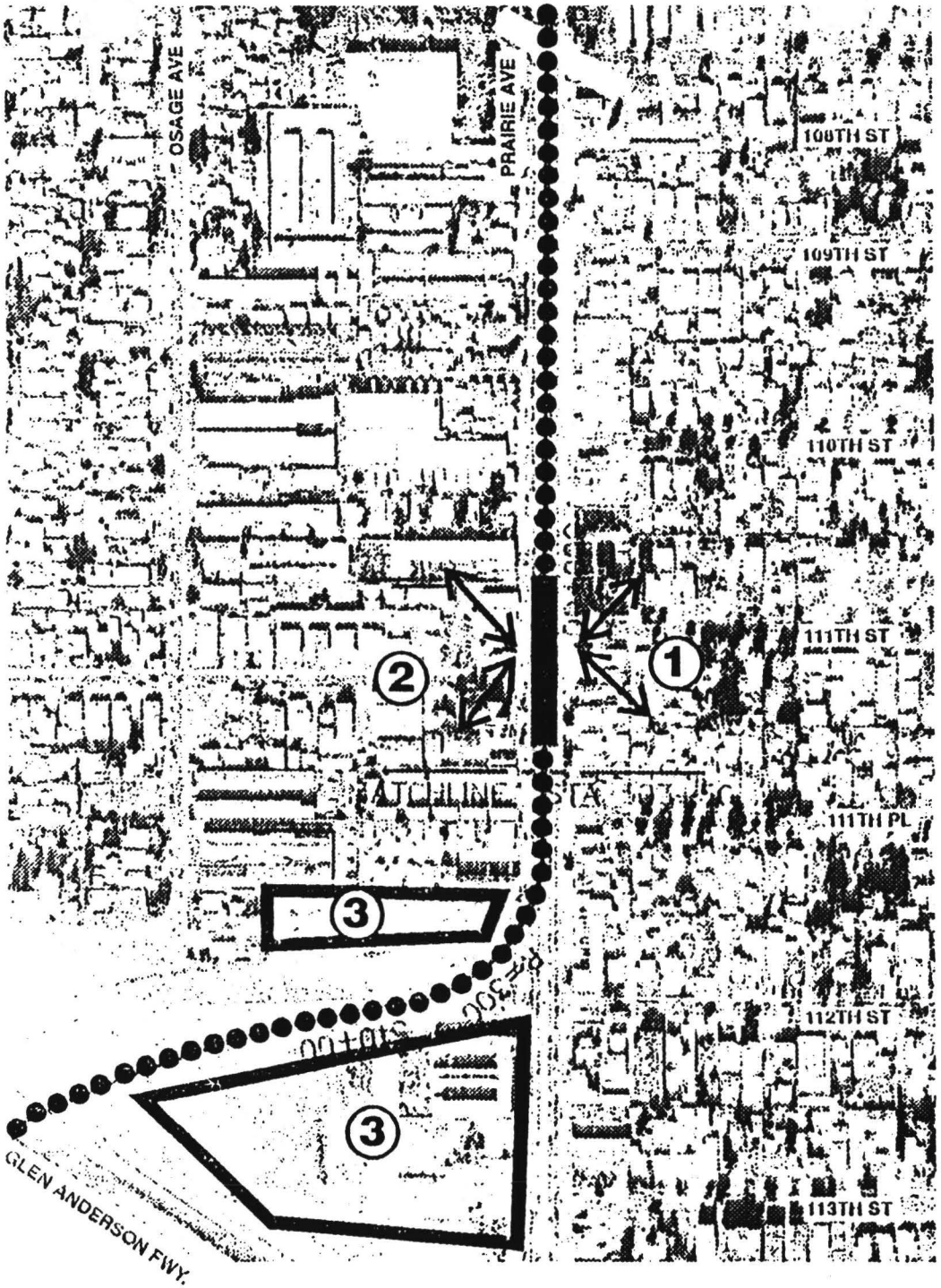


FIGURE 5.16

PRAIRIE/111TH STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

With the opening of the Glen Anderson Freeway (I-105), the City of Inglewood anticipates that land uses along both Imperial Highway and Century Boulevard will gradually change over time. Specifically, it is projected that Imperial Highway --which generally runs parallel to the I-105 Freeway-- will experience a decline in traffic volumes. As a result, the character of Imperial Highway may shift --aided by redevelopment intervention from the City-- from a strip commercial area to a multi-family residential area. Similarly, it is anticipated --due to the fact that a full four-way interchange will be located at Hawthorne Prairie Avenue and the I-105, the City of Inglewood anticipates that traffic volumes north-south along Prairie Avenue will increase and that with redevelopment tools Prairie Avenue would have a concentration of highway oriented and/or light industrial businesses. A rail transit station would serve the access needs of adjacent existing and emerging development. Joint development or transit-based developments are not anticipated.

LEGEND:

1. Pedestrian Connection to Evolving Light Industrial Frontage Area.
2. Pedestrian Connection to Neighborhood Retail Services and Housing.
3. Possible Long-Term Transit Adjacent Mixed-Use or Commercial Development Site.

Aerial Alignment

Elevated Platform

Approx. Scale:

0 100 200 300 Feet

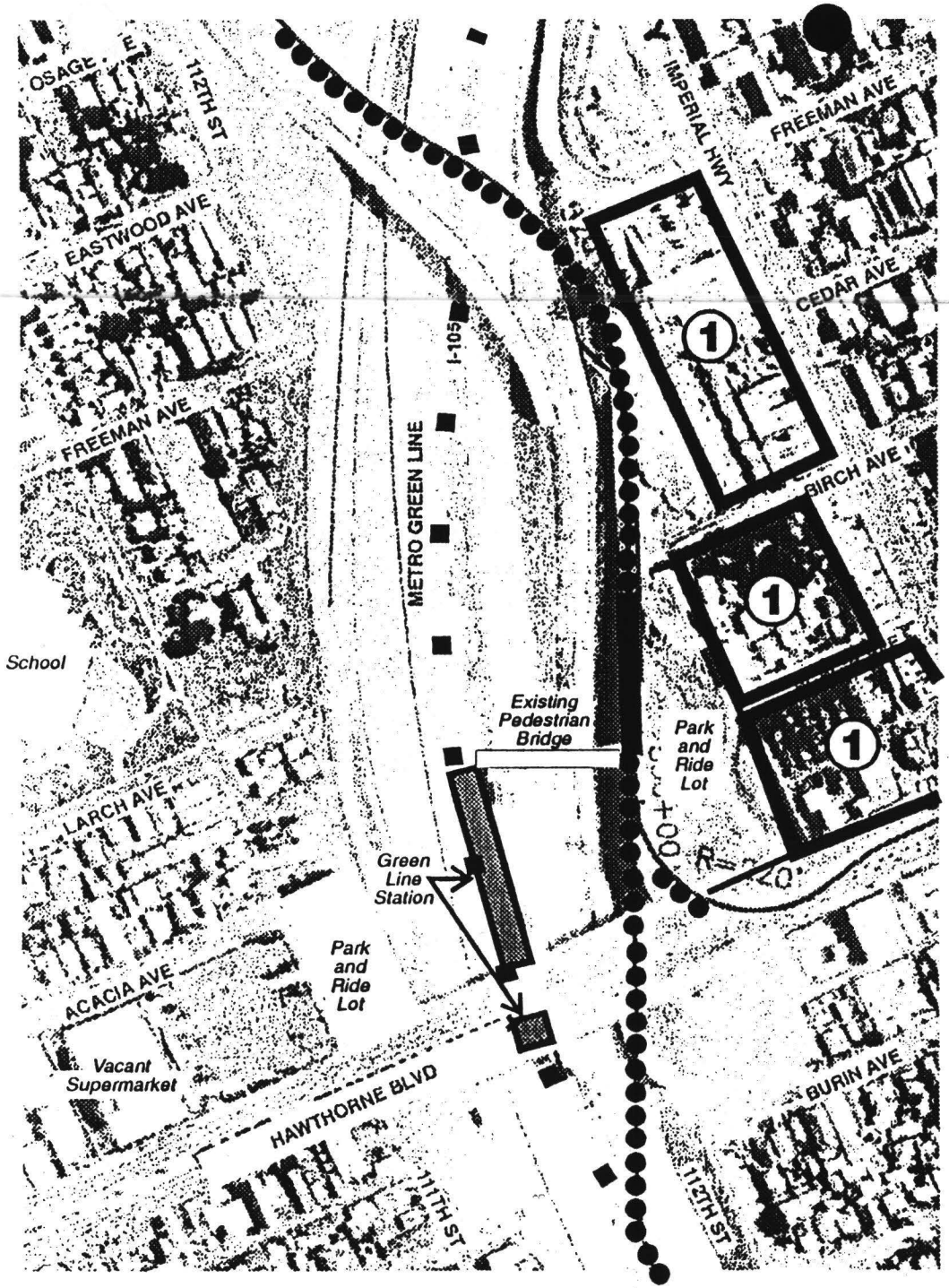
SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

FIGURE 5.17

HAWTHORNE/IMPERIAL STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

The station area is located within the City of Hawthorne's Redevelopment Area No. 2. The City of Hawthorne envisions that through a master plan process and redevelopment interventions, what is now largely a residential area with scattered small scale businesses will be transformed into a concentration of office, hotel and service oriented developments. The development concept for this station area would largely focus on creating commercial office joint development opportunities in the northeast quadrant of the Hawthorne and Imperial Highway intersection that would directly tie into the two Metro Green Line and Crenshaw-Prairie line rail stations and parking facilities. Location of the platforms for either Alternative 1 or Alternative 3 could create the impetus for joint development because of their location behind the Imperial Highway commercial frontage. It is possible that as demand warrants structure parking adjacent to the Metro Rail stations would be constructed to provide shared parking opportunities between the Metro stations and new development.



LEGEND:

1. Long-Term Transit Adjacent Redevelopment Potential (Mixed-Use).

●●●●●●● Aerial Alignment

▬▬▬ Elevated Platform

Approx. Scale:

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR PRELIMINARY PLANNING STUDY

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KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

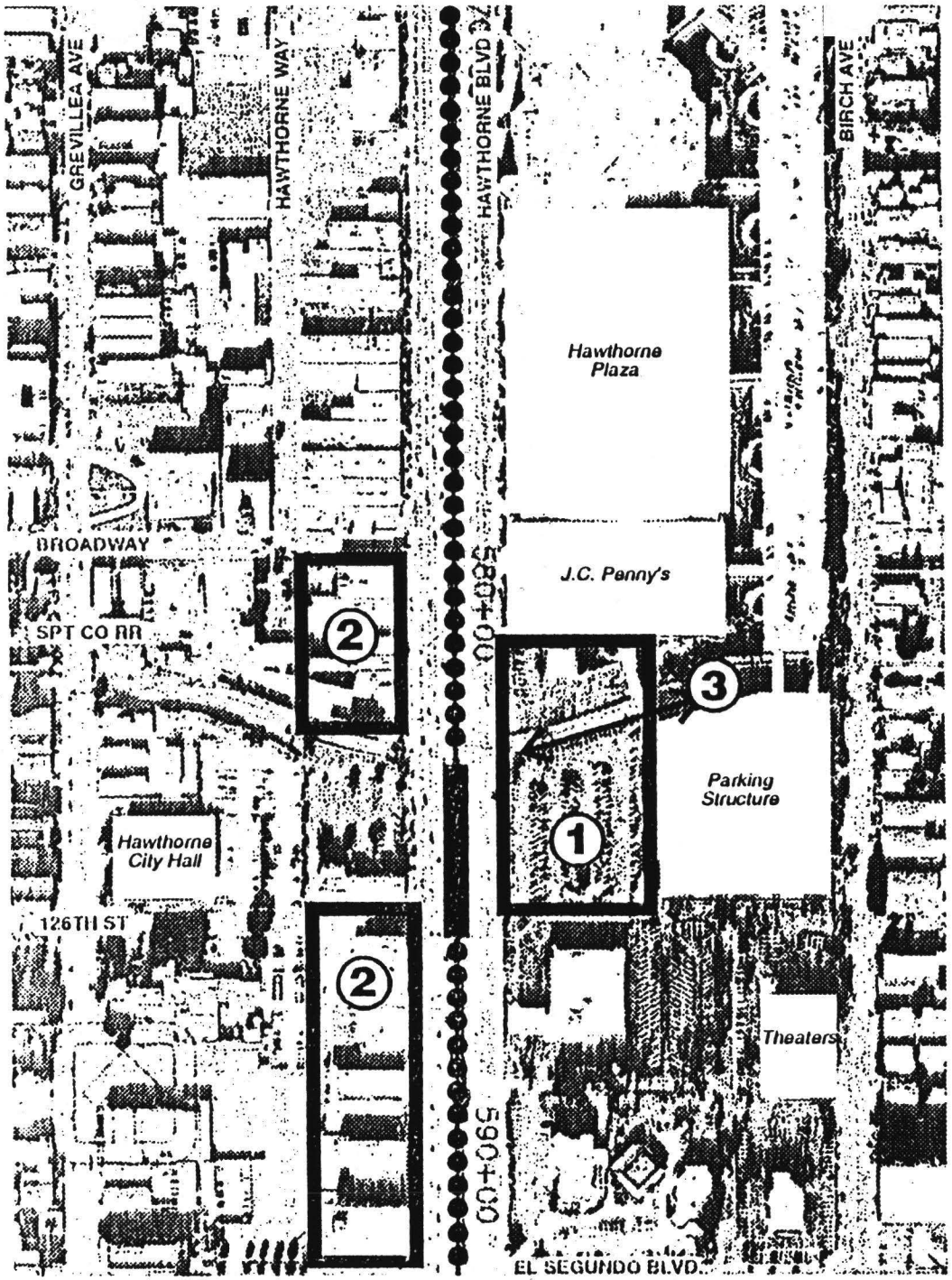


FIGURE 5.18

HAWTHORNE/EL SEGUNDO STATION AREA PRELIMINARY DEVELOPMENT CONCEPT AERIAL ALTERNATIVE

The Hawthorne Plaza is an existing activity center. The City of Hawthorne anticipates that more community oriented and cultural facilities may be added to the mall complex in future years. This change would further reinforce the area as a major activity center in the City. Hawthorne Plaza is an aproximately 350,000 square foot mall with anchor tenants such as Montgomery Ward and JC Penney. The Plaza encompass the east side of Hawthorne Boulevard between 120th Street and El Segundo Boulevard. Constructed in 1977, the Plaza is an enclosed mall with an inward focus that provides no commercial frontage with an orientation to Hawthorne Boulevard. The development concept for the rail station at the Hawthorne Plaza, would place the station platforms south of the mall near where the current railroad tracks cross Hawthorne Boulevard. This location would provide a tie in to the mall as well as create a connection to the Hawthorne civic center area on the west side of Hawthorne Boulevard at Broadway. The presence of the rail transit station in this location could provide the opportunity to extend the physical structure of the mall southward into an existing surface parking lot to provide a convenient pedestrian connection. The pedestrian traffic generated near the station could also provide the impetus to renovate the Hawthorne Boulevard facade of the mall to provide for small street oriented businesses that would not only serve transit patrons, but also complement the strip commercial businesses on the west side of Hawthorne Boulevard. There could be shared parking opportunities for 500 800 parking spaces.

LEGEND:

1. Possible Transit Adjacent Mall Expansion Site
2. Possible Retail Benefits from Transit-Related Pedestrian Activity. Possible Long-Term Redevelopment Potential to Higher Density.
3. Railroad Tracks.

Aerial Alignment

Elevated Platform

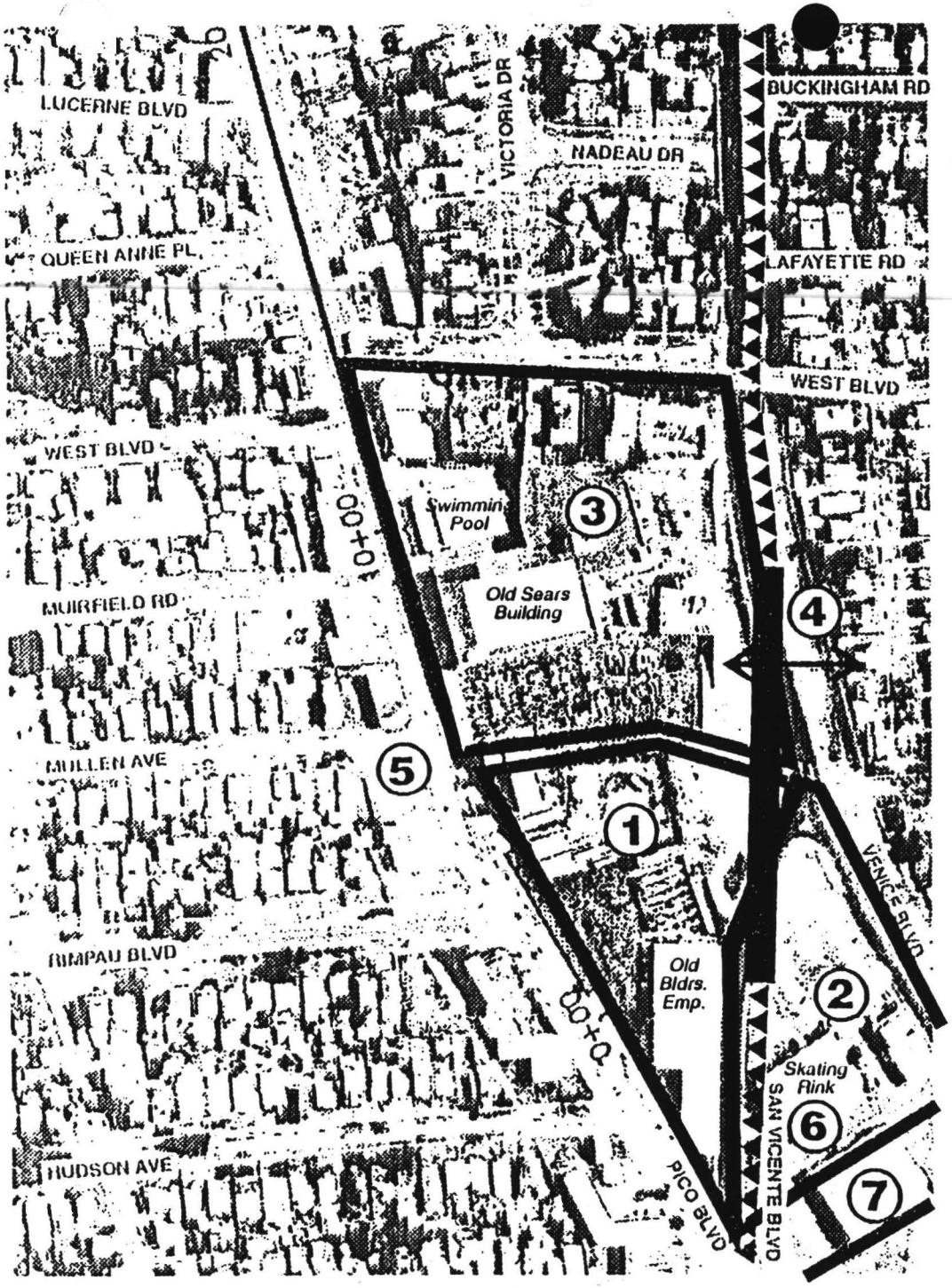
Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

FIGUR :19

PICO/SAN VICENTE STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE



The overall site is approximately 35 acres. The site is the largest underdeveloped site within the Mid-City section of the City of Los Angeles. Given its size and location, the area has the potential to become a town-center with higher density development. The terminal station on the Crenshaw-Prairie rail line would be constructed on this site. There would be transfers between the Metro Red and the Crenshaw-Prairie Lines, either between subway station platforms if a subway option is adopted for the Crenshaw-Prairie rail line or between the Metro Red Line subway station and an elevated Crenshaw-Prairie Station. The proposed development concept for the station area would seek to: 1)Concentrate transit-related activities (station platforms, circulation areas, bus-loading platforms) in the central portion of the site; 2)Create new housing opportunities in the western portion of the site, including a buffer between transit activity and housing areas; 3)Construct deck above bus loading facilities and utilize deck as an open space area as well as second level connection to adjacent neighborhoods on the south side of Venice Boulevard; 4)Reconfigure alignment of San Vicente Blvd. through the site to improve access; 5)Create retail/service joint development opportunities to west of station platform areas, including reconfiguration & redevelopment of the affected portions of the Mid-Town shopping center site; 6)Western portions of site could be devoted to park & ride facilities as well as auto-related entrepreneurial enterprises; and 7)Provide shared parking opportunities for 1,000-1,500 cars.

LEGEND:

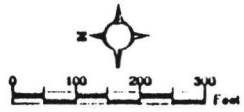
1. Transit Platform Access and Bus Storage/Circulation Area.
2. Possible Joint Development Opportunity Area (Comm. Dev.).
3. Transit Adjacent Development (Housing and Services).
4. Elevated Pedestrian Connection to Neighborhood.
5. New Access Roadway.
6. Vacate Existing San Vicente Boulevard.
7. Location of New San Vicente Boulevard.

▼▼▼▼▼▼ Subway Alignment

Subway Platform

SOURCE: Terry A. Hayes Associates.

Approx. Scale:



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KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

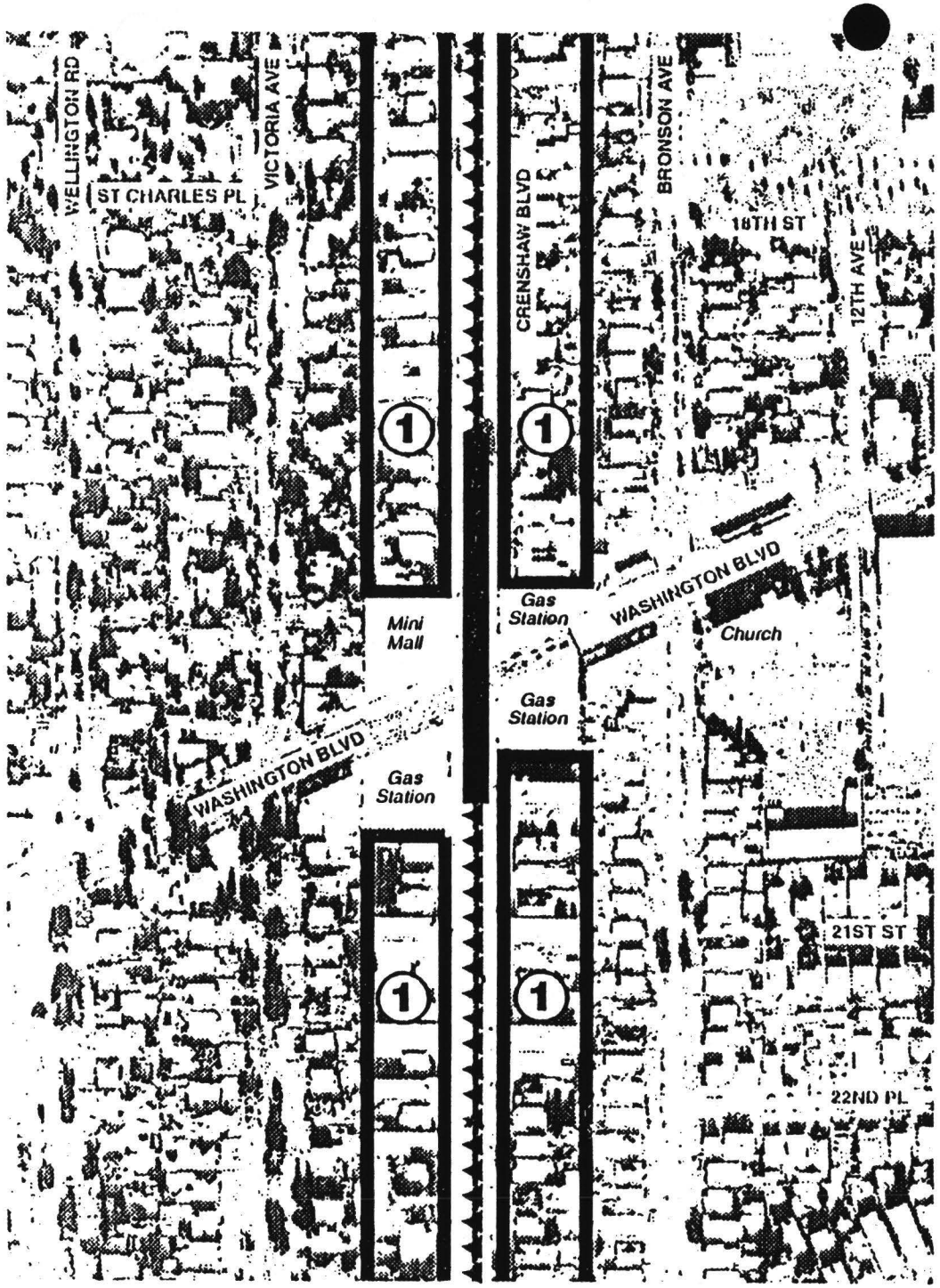


FIGURE 5.20

CRENSHAW/WASHINGTON STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE

This area is primarily residential in nature with older strip commercial development along Washington Boulevard and along Crenshaw Boulevard. There are three gas stations and a mini-mall at the intersection of Crenshaw and Washington Boulevards. The development potential for this intersection is not considered to be significant. There are no major developable sites adjacent to the intersection. Land uses west, north, and south of the intersection are residential in character. There are scattered commercial land uses east of the intersection along Washington Boulevard. While it does not appear that there is joint development or transit-based development opportunities on adjacent sites, it should be recognized that there are not apparent land use constraints to development should the opportunity arise.

LEGEND:

1. Transit Would Reinforce Existing Trend of Converting Single-Family Homes to Multi-Family Apartment Buildings

▼▼▼▼▼▼▼ Subway Alignment

Subway Platform

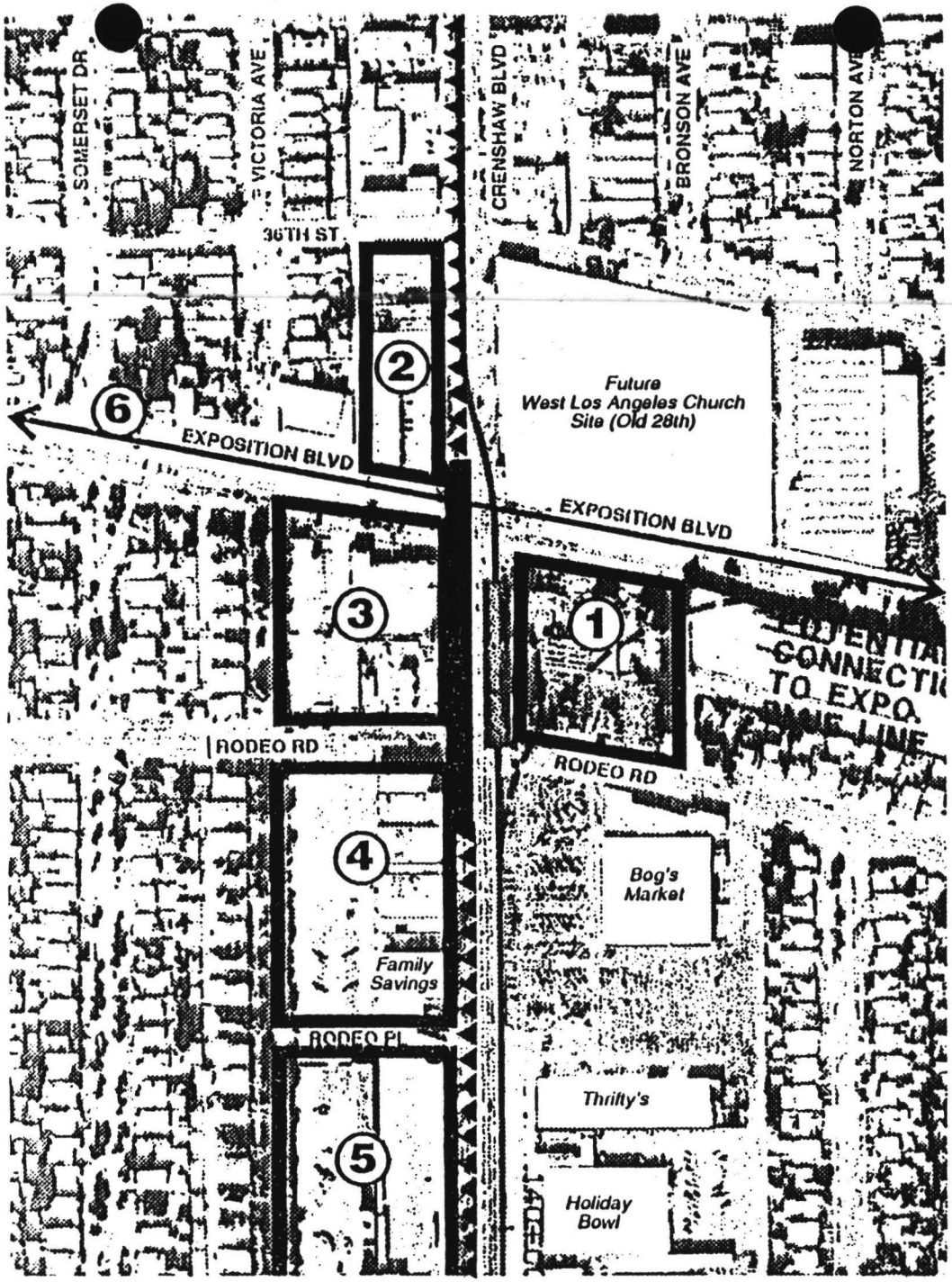
Approx. Scale:

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

Crenshaw-Prairie Corridor
Preliminary Planning Study

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES



FIGUR_ ..21

CRENSHAW/EXPOSITION STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE

- *Location has potential for substantial amount of development due to 1) the proposed Exposition Corridor would cross the Crenshaw-Prairie Corridor at this location; (transit-patron and neighborhood-serving retail services in the immediate station area could be created to take advantage of transfers between the Exposition and the Crenshaw-Prairie Lines. These services would best be located along pedestrian paths between the two station platforms either at the ground level or mezzanine level); 2) the northeast quadrant of the intersection is proposed as the site for the new West Angeles Church and supporting facilities. The West Angeles Church --currently located near Jefferson and Crenshaw-- is a 8,000-10,000 member congregation and conducts activities daily; and 3) there appear to be developable sites --particularly the vacant O'Connor Lincoln Mercury Dealership-- south and west of the station area that may be suitable for mixed-use type developments. The existing multi-family character of the west side of Victoria Ave. provides an opportunity to provide similar density housing on the east side of Victoria Ave. In addition, commercial development opportunities exist along the eastern frontage of Crenshaw Blvd. extending from Exposition Blvd. to Rodeo Pl. These shopping and housing areas would be approximately 500-700 feet from the proposed rail transit station at Exposition.*

Critically important at this location is coordination between for proposed Exposition and the Crenshaw Lines in conjunction with the proposed development of a new West Angeles Church complex. Pedestrian flow patterns, vehicle access and circulation as well as urban design and aesthetics must be addressed. The concept of providing a mixed-use project south of the station area must address local neighborhood concerns regarding density and design of development, as well as property owner participation and business displacement/relocation.

LEGEND:
1. Joint Development Opportunity.
2. Transit Adjacent Development Opportunity (Commercial).
3. Transit Adjacent Development Oppurtunity (Commercial/Office).
4. Transit Adjacent Mixed-Use Development Opportunity (Comm./Hsg).
5. Transit Adjacent Mixed-Use Development Opportunity.
6. Possible Exposition Blue Line Alignment and Crenshaw Station.

Subway Alignment

Subway Platform

Approx. Scale: N

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

Crenshaw-Prairie Corridor
Preliminary Planning Study

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

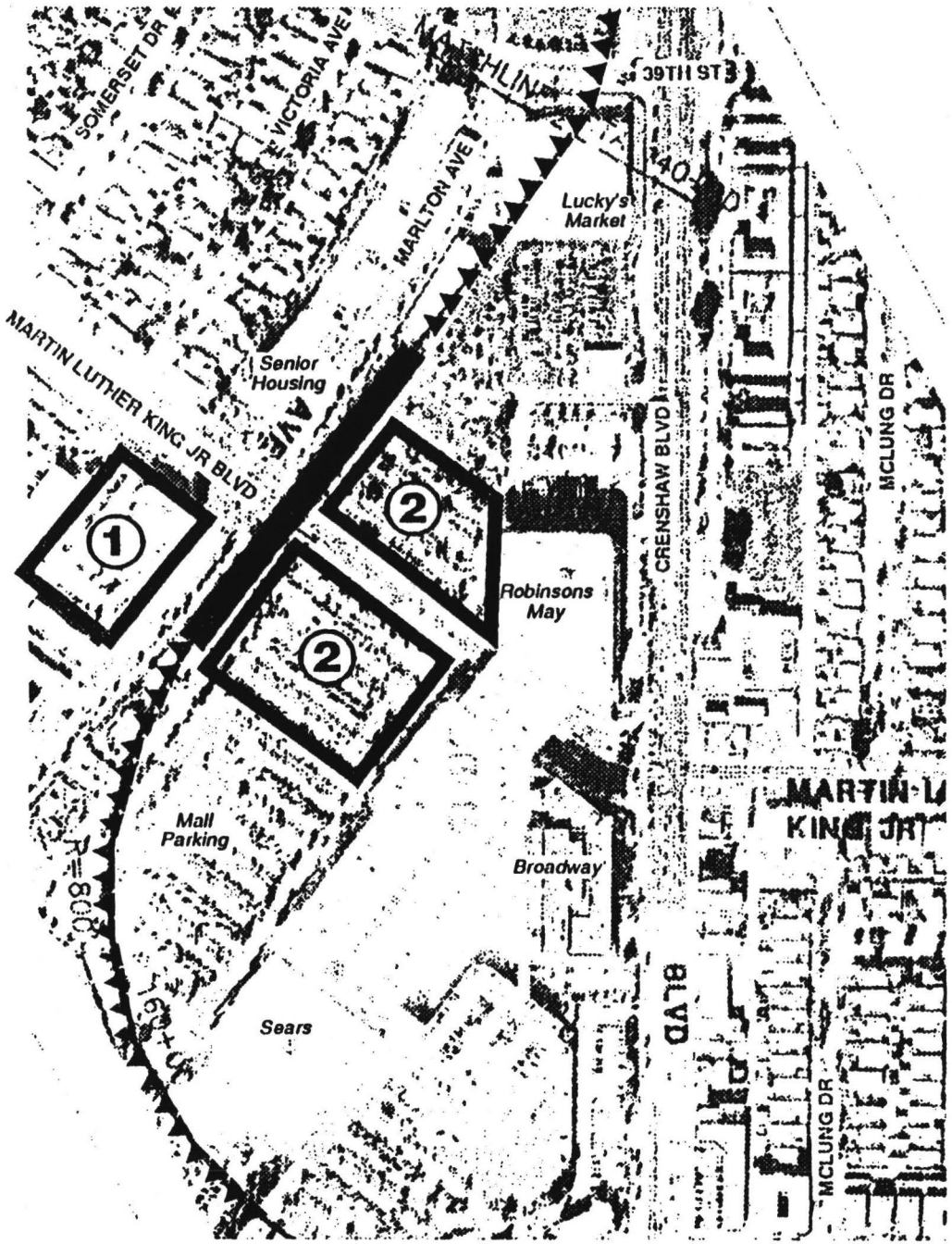


FIGURE 5.22

MARLTON/KING STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

This station would be located between the Baldwin Hills Crenshaw Plaza and the existing Santa Barbara Plaza. Santa Barbara Plaza is currently a community-oriented shopping center that is in need of major renovation. Santa Barbara Plaza currently supports over 100 businesses including professional services, convenience retail, boutiques, etc. The location of a subway station at Martin Luther King Jr. Boulevard and Marlton could be an important element to stimulate revitalization of the Santa Barbara Plaza area. The subway portal areas could become the nuclei for transit-based developments and could provide the basis to bring additional office and retail space to the area as well as other specialties such as a sports center. The future development concept for Santa Barbara Plaza should be complementary to the mall. In fact, any development concept for this area must also provide a convenient physical tie between the mall and the station portals. In this regard, an expansion of the mall toward the station area in a mixed retail-parking structure could accomplish this purpose.

LEGEND:

1. Possible Transit Adjacent Development Node in Santa Barbara Plaza.
2. Potential Mall-Related Joint Development In-Fill Opportunity.

▼▼▼▼▼▼▼ Subway Alignment

Subway Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
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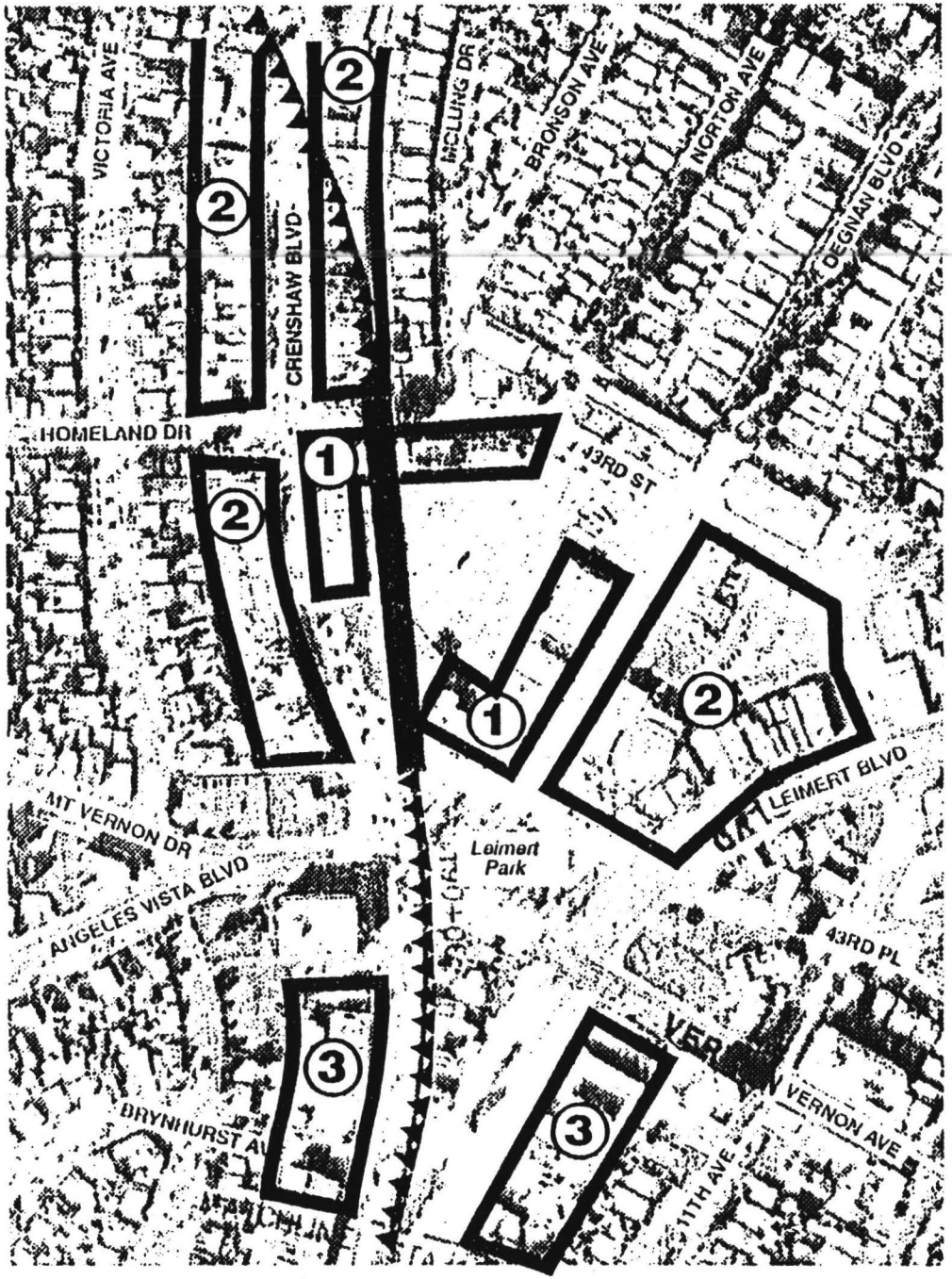
FIGURE 5.23

CRENSHAW/VERNON STATION AREA PRELIMINARY DEVELOPMENT CONCEPT



Leimert Park is a village-scale shopping area located north of the intersection of Vernon Avenue and Crenshaw Boulevard. Currently, Leimert Park enjoys an informal reputation as cultural center for the African American community because of the activities that take place in the park, a number of art galleries and arts-oriented shops, ethnic eating establishments and because of the Vision Theater where plays are produced on a periodic basis.

The proposed locations of the subway station entry-exit portals within the Leimert Park area could become a stimulus to convert portions of the internal City-owned surface parking lot (approximately 1.4 acres) to a central pedestrian plaza. This could also provide an opportunity to create a new orientation of business to face inward toward the pedestrian plaza and proposed bus loading area in the central part of Leimert Park. Additional pedestrian activity in the area could become the stimulus for additional business expansion as well as to bring new activities consistent with the cultural theme of the area. The planning charrette conducted for the Leimert Park area, the West Adams-Baldwin Hills-Leimert Community Plan Advisory Committee as well as workshops conducted by the Crenshaw Neighborhood Planning cluster have all consistently suggested that the scale and character of development within Leimert Park be maintained while upgrading the quality of the pedestrian environment and increasing the mix of local business establishments. Station planning in Leimert Park must directly address these concerns as well as those of a number of existing businesses that have concerns regarding displacement or rising rents and lease levels as the area is upgraded.

LEGEND:

1. Potential Joint Development Opportunity to Include Reconfiguration of Building Facades Toward a Transit Plaza and Bus/Shuttle Drop-Off Area.
2. Potential Retail Benefits from Transit-Induced Pedestrian Activity.
3. Long-Term Mixed-Use (Housing/Retail) Development Potential.

Subway Alignment

Subway Platform

Approx. Scale: 0 100 200 300 Feet

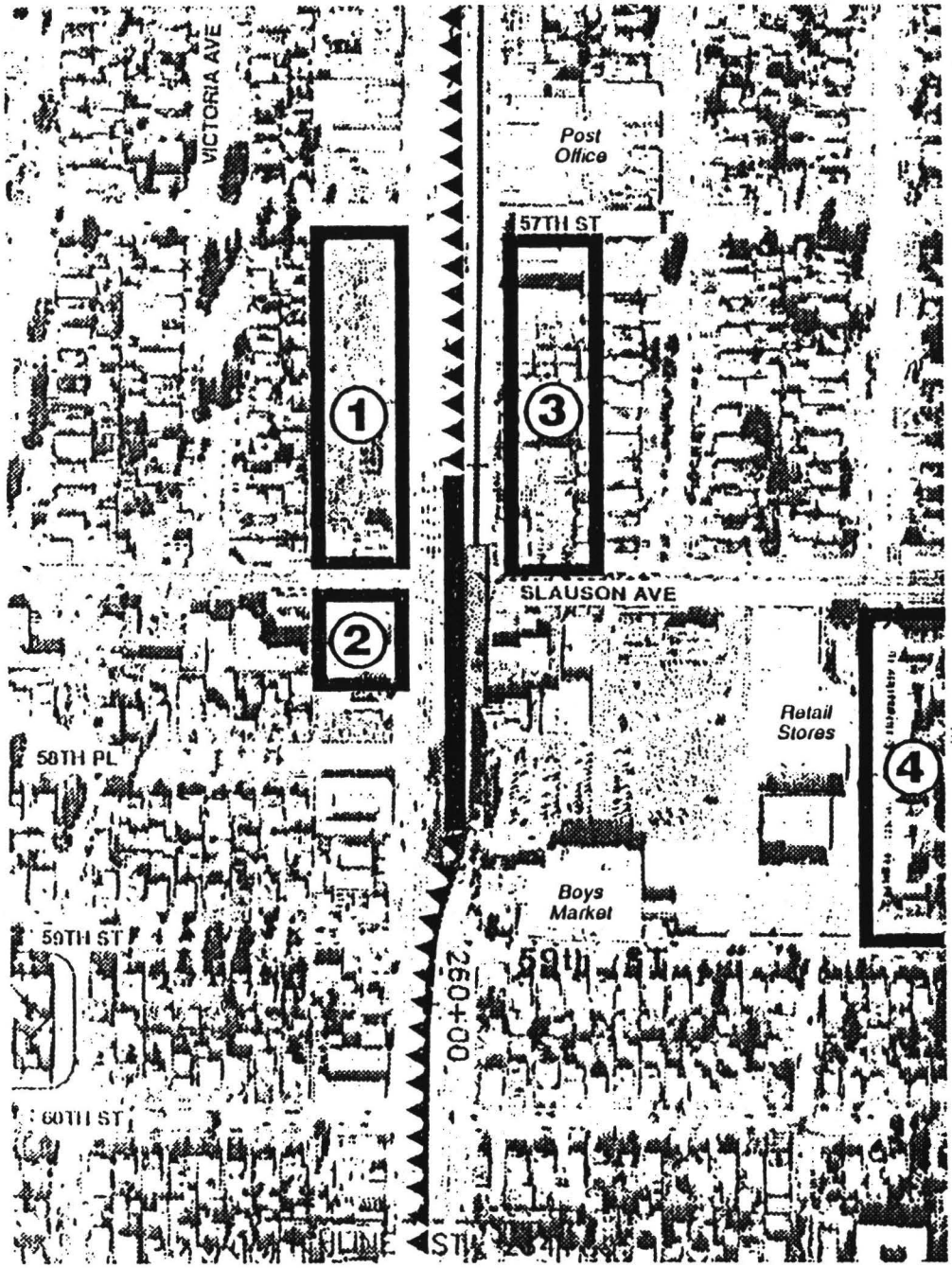
SOURCE: Terry A. Hayes Associates.

Crenshaw-Prairie Corridor Preliminary Planning Study

METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

FIGURE 5.24

CRENSHAW/SLAUSON STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE



The intersection of Crenshaw Blvd. and Slauson Ave. would be a major interface point between the rail line and east-west buses along Slauson. Within the intersection area, there is a community-scale shopping center (on the southeast corner) that is in the process of rebuilding after the civil unrest. Additionally, to the north of the intersection (beginning at 57th Street) is an older strip commercial center that services as the focus for neighborhood serves including a post office, bank, gym, retail, etc. Also within the area is a large developable site (former car dealership) on the west side of Crenshaw between Slauson and 57th Street. This site, however, includes only the frontage along Crenshaw Blvd., on the other half of the block are single-family homes facing Victoria Ave. The development concept for this station area would seek to:

Provide for convenient transfers from the rail line to east-west bus service.

Provide convenient access to both the shopping center on the southeast corner as well as to the neighborhood services area north of the intersection.

Reuse the vacant car dealership site (approx. 2 acres) for a housing development that may contain some additional retail services. Development of housing at this location will have to specifically consider buffering the development from adjacent single-family residences as well as from arterial traffic noise and rail transit noise (if an elevated alignment were selected).

LEGEND:

1. Transit Adjacent Mixed-Use Development Opportunity:
2. Transit Adjacent Parking and Retail Opportunity.
3. Long-Term Redevelopment Potential or Transit Adjacent Mixed-Use.
4. Long-Term Redevelopment Potential for Higher Housing Density.

Subway Alignment

Subway Platform

Approx Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

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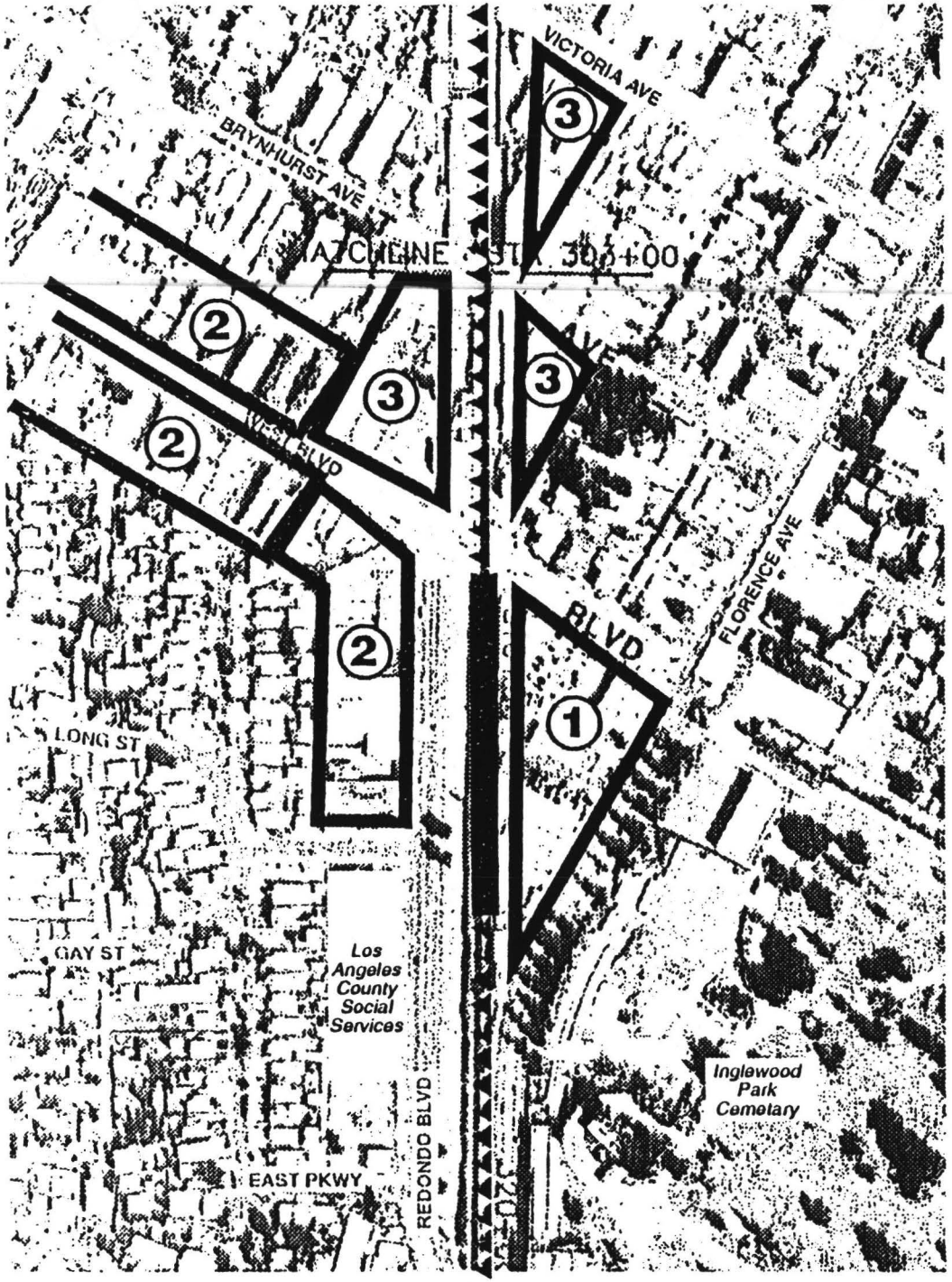


FIGUI .25

WEST/FLORENCE STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE

This station area includes portions of the City of Los Angeles and the City of Inglewood. Currently, the area is a mixture of multi-family housing and light industrial type uses clustered along the ATSF tracks. The proposed rail transit station has been proposed for this area to provide improved access to the Los Angeles County Social Services office located on Redondo. The station would also have convenient access to activities along West Boulevard and to Centinela Park. It is possible that the station area could provide park and ride opportunities for 50 to 100 cars by acquiring the triangular area bounded by Redondo, Florence and West Boulevard. The location of a rail transit station in the area could become a stimulus for reinvestment in the adjacent blocks along West Boulevard. Currently, the City of Inglewood is conducting a study of potential development opportunities --some of which may have increased viability because of the presence of a rail transit station. Future planning for the West/Florence Station should be coordinated with the findings of the Inglewood study.

LEGEND:

1. Transit-Related Parking and Possible Retail Services or Vendor Areas.
2. Long-Term Redevelopment Potential for Increasing Housing Density.
3. Transit Adjacent Light Industrial Opportunity.

▼▼▼▼▼▼▼ Subway Alignment

Subway Platform

Approx. Scale:

N

0 100 200 300 Feet

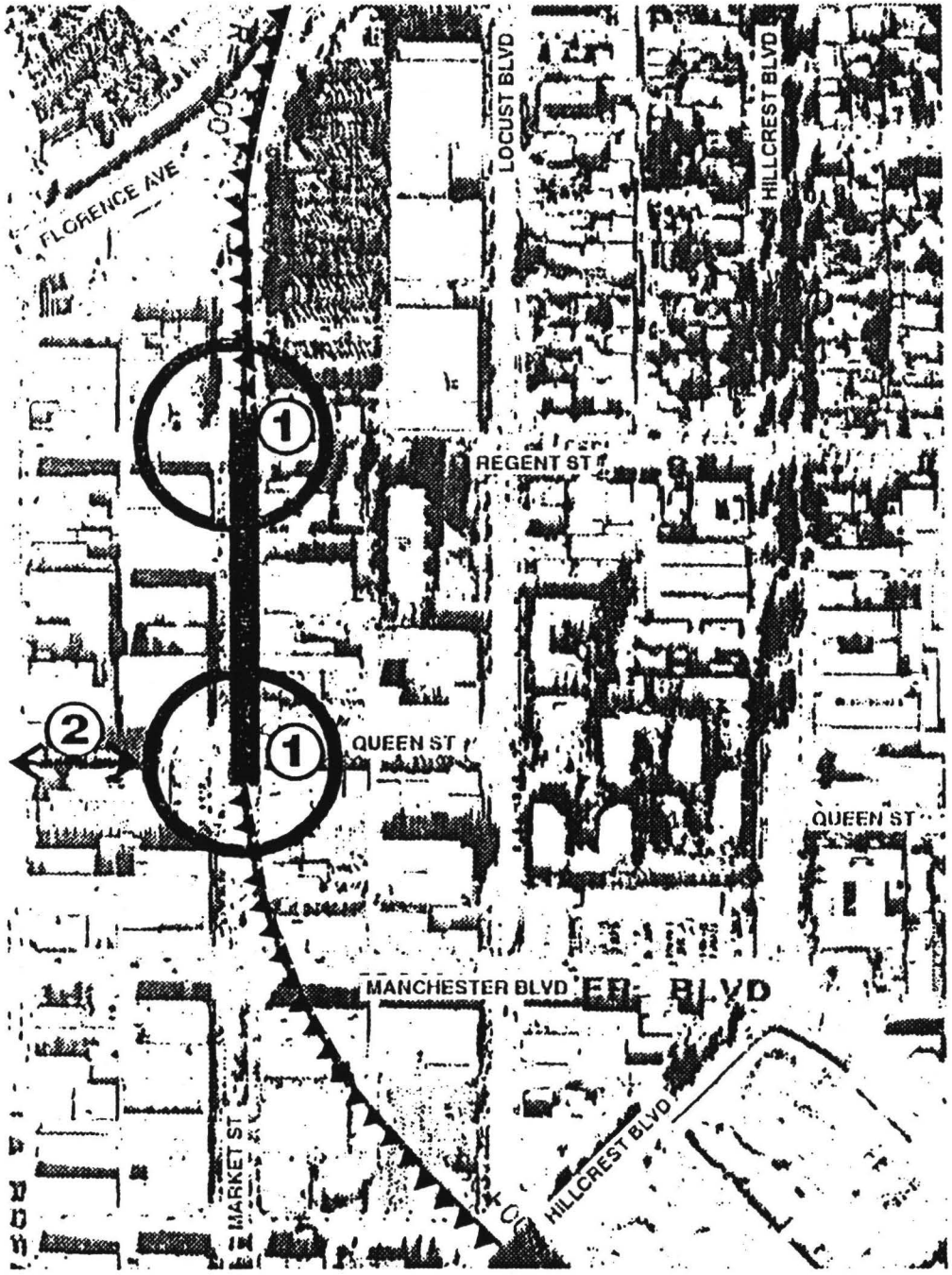
SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KOKVE ENGINEERING/TERRY A. HAYES ASSOCIATES

FIGURE 5.26

MARKET/QUEEN STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

Market Street is the central spine to the traditional shopping area in downtown Inglewood. While there are no major anchor department stores or chain retail stores there are quite a number of small shops that serve neighborhood needs. Substantial pedestrian activity along Market Street is quite evident. The introduction of a rail station at Market Street and Queen Street could provide the stimulus for reinvestment along Market Street. Additionally, the subway configuration could also provide a joint development opportunity where one of the existing buildings could be adaptively reused to provide transit patron-related services combined with other shopping opportunities In addition, a station located in this area could take advantage of underutilized City off-street parking structures to provide park and ride opportunities of rail transit patrons.



LEGEND:

1. Possible Joint Development Potential Due to Subway Station Construction on Market Street.
2. Transit-Induced Pedestrian Activity Along Queen Street between Station and City Hall.

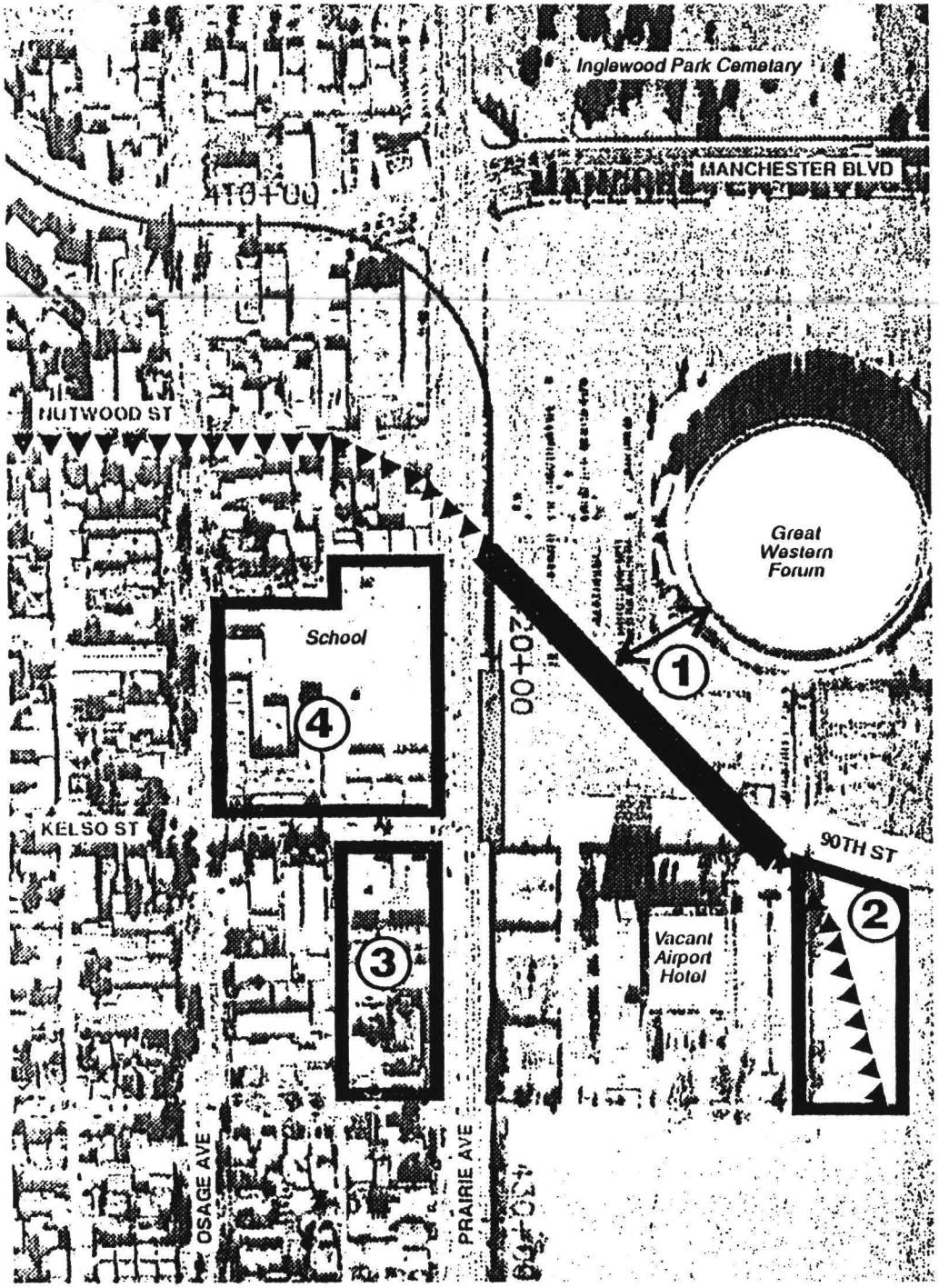
Subway Alignment

Subway Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES



FIGUI .27

PRAIRIE/90TH/FORUM STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE

Located in the southeast quadrant of the Manchester and Prairie intersection, this station would primarily provide transit access to patrons of the Great Western Forum. Depending on the overall coverage of rail transit in the metropolitan area, a transit station at the Forum could have a beneficial impact on reducing parking demand and local street congestion prior to and following major events at the facility. The location of a rail transit station within the existing parking area of the Forum will require extensive coordination with respect to pedestrian and vehicular circulation issues as well as bus loading and drop off. Careful consideration must be given to platform locations that contribute to a safe and efficient flow of large numbers of persons into the Forum. It should also be noted that the existing Forum parking lot could provide for daytime park and ride opportunities. Depending on specific arrangements that could be worked out with management, 500-1,000 parking spaces could be devoted to this purpose.

LEGEND:

1. Pedestrian Connection to Forum Entrance.
2. Transit Adjacent Development Site. Possible Recreation-Related Use.
3. Possible Long-Term Redevelopment.
4. Possible Long-Term Redevelopment of School Site for Commercial/Housing Mixed-Use Project.

Subway Alignment

Subway Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

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METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

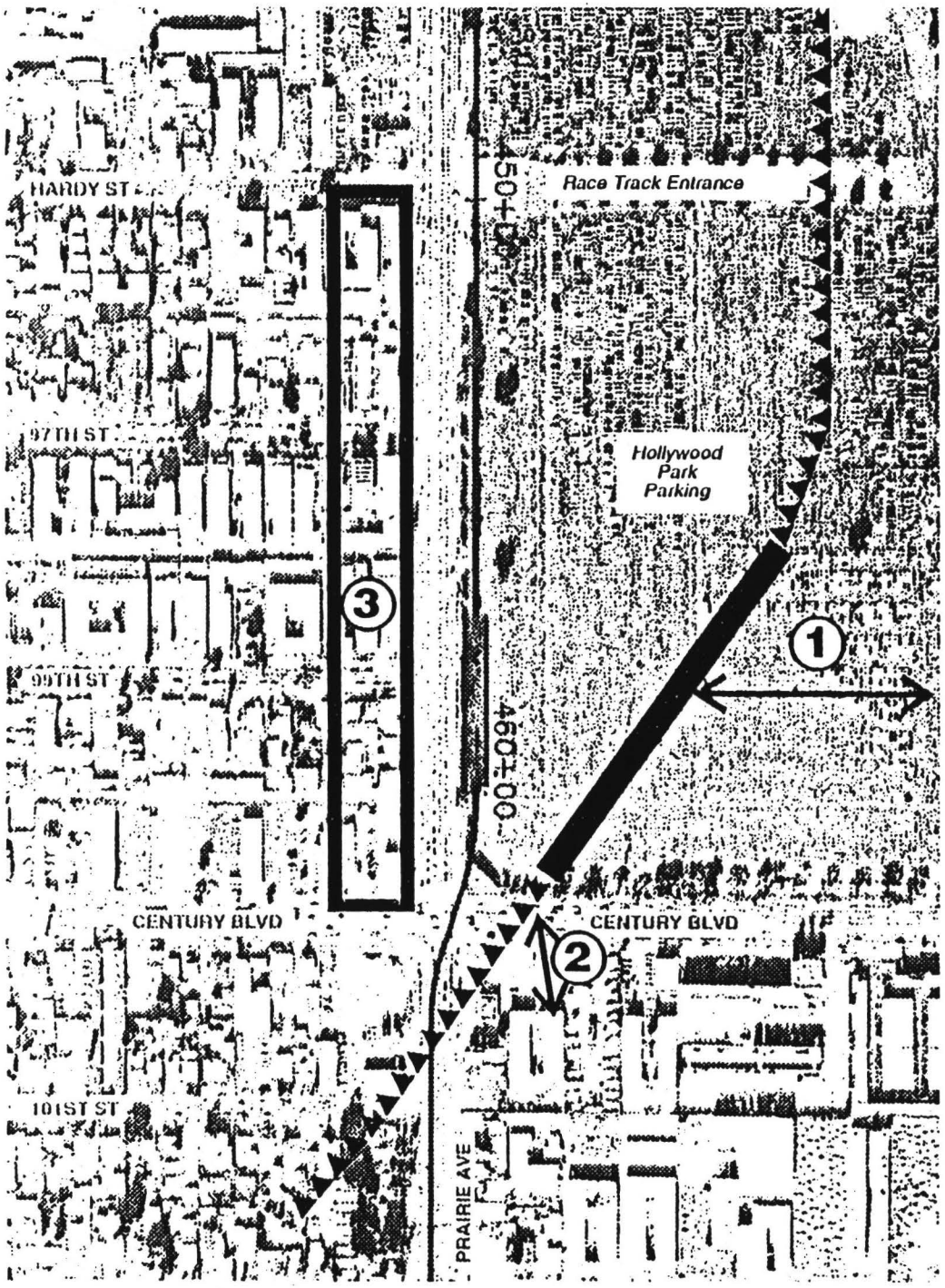

FIGURE 5.28
PRAIRIE/CENTURY/HOLLYWOOD PARK STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE

Located in the northeast quadrant of the Century Boulevard and Prairie Avenue intersection, this station would primarily provide transit access to event patrons of the Hollywood Park race track and recreation facilities (Card Club, Amphitheater, etc.) as well as for employees in light industrial areas on the south side of Century Boulevard. The location of a rail transit station within the existing parking area of the race track will require extensive coordination with Hollywood Park management with respect to pedestrian and vehicular circulation issues as well as bus loading and drop off. Careful consideration must be given to platform locations that contribute to a safe and efficient flow of large number of persons into the parking area. With respect to work trips, planning in the Hollywood Park station area will need to consider maximizing the pedestrian or shuttle connections to existing and planned industrial areas south of Century Boulevard.

LEGEND:

1. Pedestrian Connection/Shuttle Needed for Hollywood Park Facilities.
2. Pedestrian Connection/Shuttle Needed for Adjacent Industrial Employment Area.
3. Possible Long-Term Mixed-Use Development Potential.

▼▼▼▼▼▼▼ Subway Alignment

Subway Platform

Approx. Scale:

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

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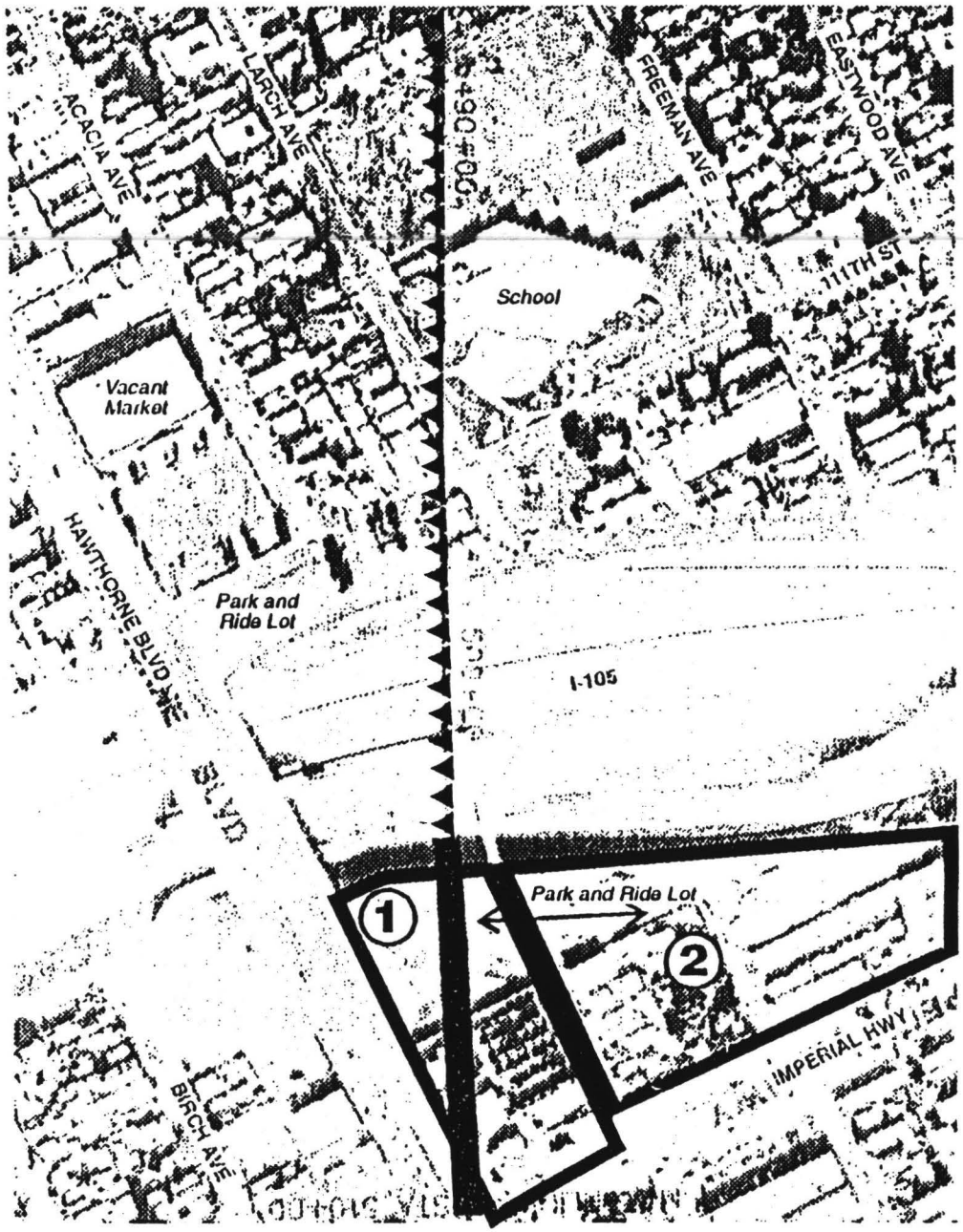
FIGURE 5.29

HAWTHORNE/IMPERIAL STATION AREA PRELIMINARY DEVELOPMENT CONCEPT



The station area is located within the City of Hawthorne's Redevelopment Area No. 2. The City of Hawthorne envisions that, through a master plan process and redevelopment interventions, what is now largely a residential area with scattered small scale businesses will be transformed into a concentration of office, hotel and service oriented developments. The development concept for this station area would largely focus on creating commercial office joint development opportunities in the northeast quadrant of the Hawthorne and Imperial Highway intersection that would directly tie into the two Metro Green Line and Crenshaw-Prairie line rail stations and parking facilities. Locations of the platforms for either Alternative 1 or Alternative 3 could create the impetus for joint development because of their locations behind the Imperial Highway commercial frontage. It is possible that as demand warrants structure parking adjacent to the Metro Rail stations would be constructed to provide shared parking opportunities between the Metro stations and new development.

LEGEND:

1. Possible Joint Development Opportunity.
2. Transit Adjacent Redevelopment Oportunity.

▼▼▼▼▼▼▼ Subway Alignment

Subway Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

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KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

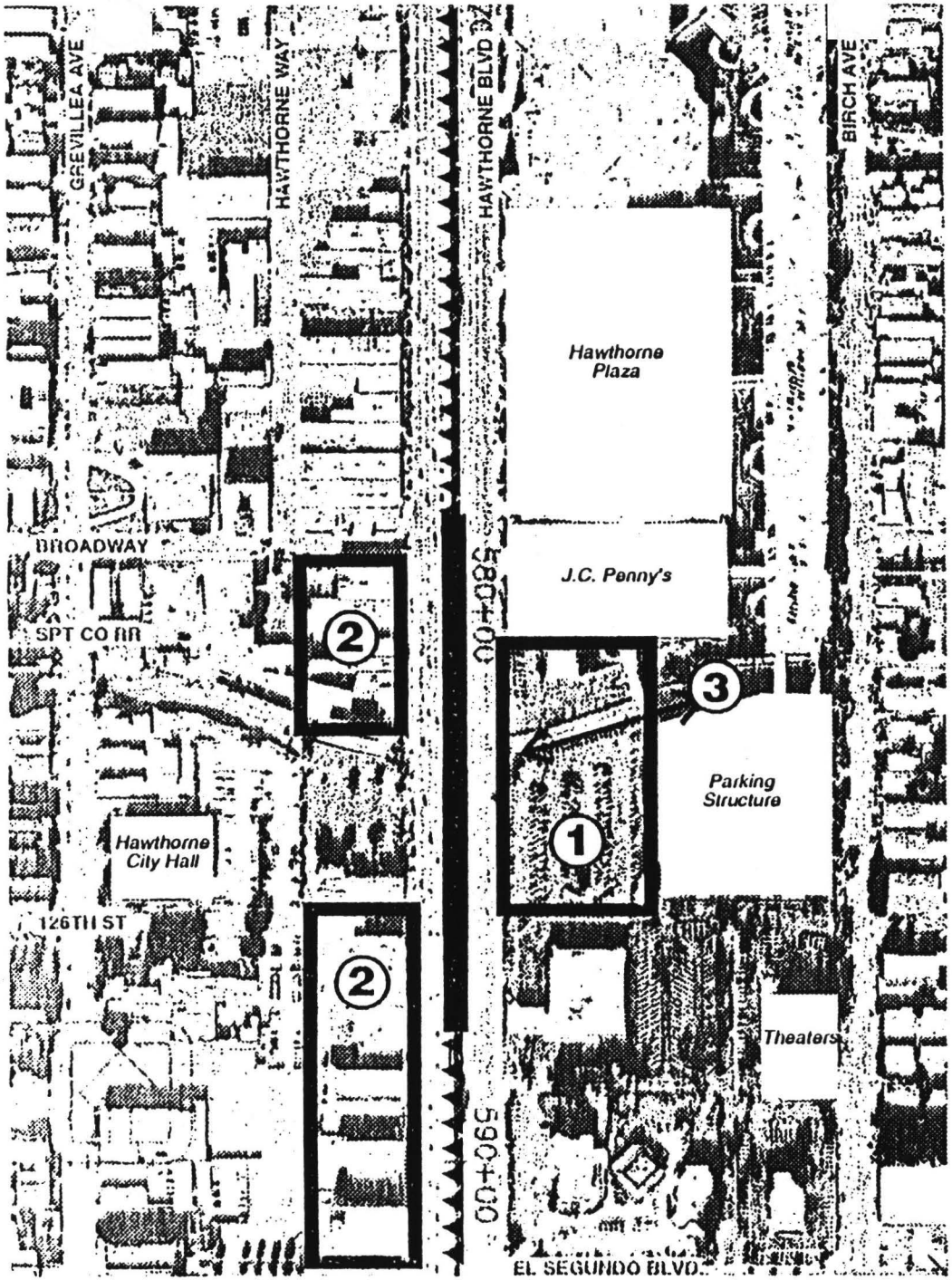


FIGURE 5.30

HAWTHORNE/EL SEGUNDO STATION AREA PRELIMINARY DEVELOPMENT CONCEPT SUBWAY ALTERNATIVE

The Hawthorne Plaza is an existing activity center. The City of Hawthorne anticipates that more community-oriented and cultural facilities may be added to the mall complex in future years. This change would further reinforce the area as a major activity center in the City. Hawthorne Plaza is an aproximately 350,000 square foot mall with anchor tenants such as Montgomery Ward and JC Penney. The Plaza encompass the east side of Hawthrone Boulevard between 120th Street and El Segundo Boulevard. Constructed in 1977, the Plaza is an enclosed mall with an inward focus that provides no commercial frontage with an orientation to Hawthorne Boulevard. The development concept for the rail station at the Hawthorne Plaza, would place the station platforms south of the mall near where the current railroad tracks cross Hawthorne Boulevard. This location would provide a tie in to the mall as well as create a connection to the Hawthorne civic center area on the west side of Hawthorne Boulevard at Broadway. The presence of the rail transit station in this location could provide the opportunity to extend the physical structure of the mall southward into an existing surface parking lot to provide a convenient pedestrian connection. The pedestrian traffic generated near the station could also provide the impetus to renovate the Hawthorne Boulevard facade of the mall to provide for small street oriented businesses that would not only serve transit patrons, but also complement the strip commercial businesses on the west side of Hawthorne Boulevard. There could be share parking opportunities for 500-800 parking spaces.

LEGEND:

1. Possible Transit Adjacent Mall Expansion Site
2. Possible Retail Benefits from Transit-Related Pedestrian Activity. Possible Long-Term Redevelopment Potential to Higher Density.
3. Railroad Tracks.

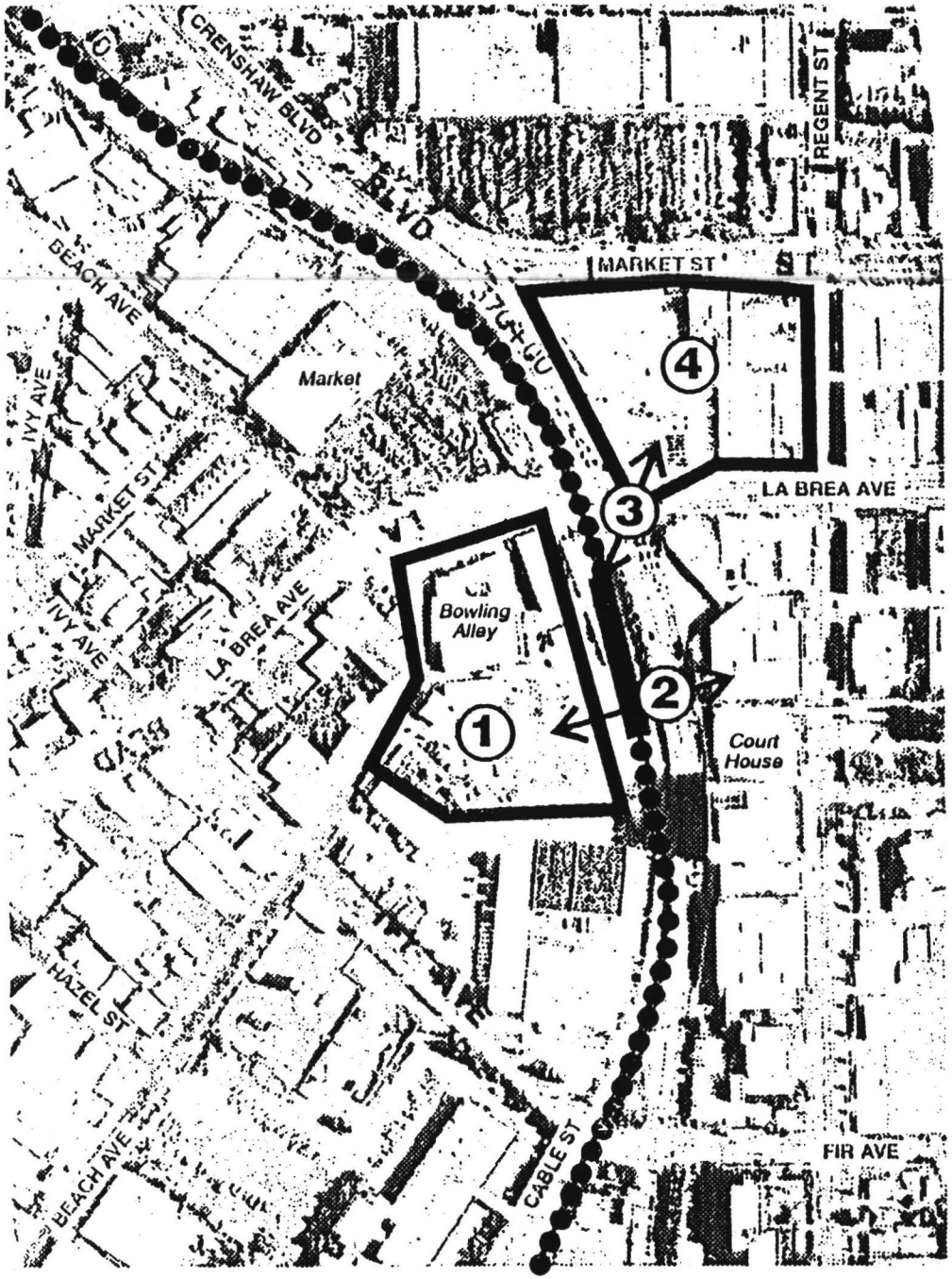
▼▼▼▼▼▼▼ Subway Alignment

Subway Platform

Approx. Scale: 0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KOAVL ENGINEERING/TERRY A. HAYES ASSOCIATES



FIGU 5.31

FLORENCE/LA BREA STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

The rail transit-based development concept for this area would primarily focus on devoting the area around the station platforms to park and ride facilities and bus loading and transfer areas. The pedestrian activity created at this location could support small scale retail services. Major commercial development in this area that would compete with downtown Inglewood businesses would not be encuraged along La Brea Avenue and/or Market Street. The area could be tied to the County Court House Thurgood Marshall Plaza via an elevated pedestrian bridge across Florence (similar in configuration to the bridge across Regent on the south side of the House). The increased pedestrian activity generated in the station area could also provide the impetus for redevelopment of currently vacant sites on the south side of Florence, however, it should be recognized that to maximize this effect, pedestrian crossings at the Florence and La Brea intersection would have to be greatly improved.

LEGEND:

1. Possible Joint Development Site.
2. Possible Pedestrian Connection to Court House and Civic Center.
3. Convenient Pedestrian Connection to Market Street.
4. Long-Term Transit Adjacent Redevelopment Site. (Possible Mixed-Use Housing/Office)

LAX Alignment

Elevated Platform

Approx. Scale:

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

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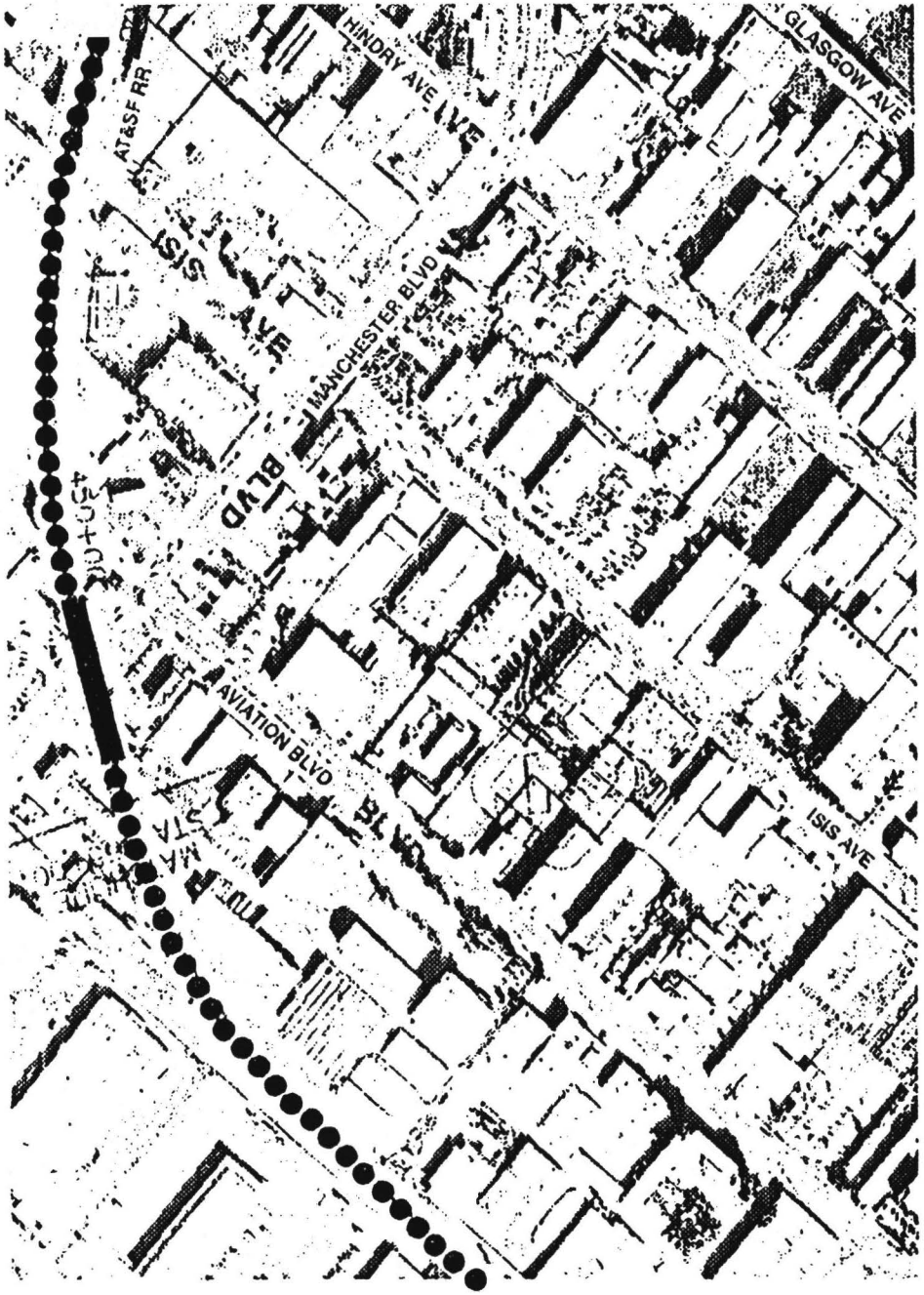
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES

FIGURE 5.32

MANCHESTER/FLORENCE/AVIATION STATION AREA PRELIMINARY DEVELOPMENT CONCEPT



The transit-based development potential for the intersection of Florence Avenue and Manchester Boulevard is not considered to be significant. There are no major developable sites adjacent to the intersection. Land uses in the station vicinity are primarily devoted to warehousing, light industrial uses or retail mini-malls.

LEGEND:

Transit Induced Pedestrian Activity Would Enhance Retail Potential of Existing Station Adjacent Businesses and Services. No Other Development Anticipated.

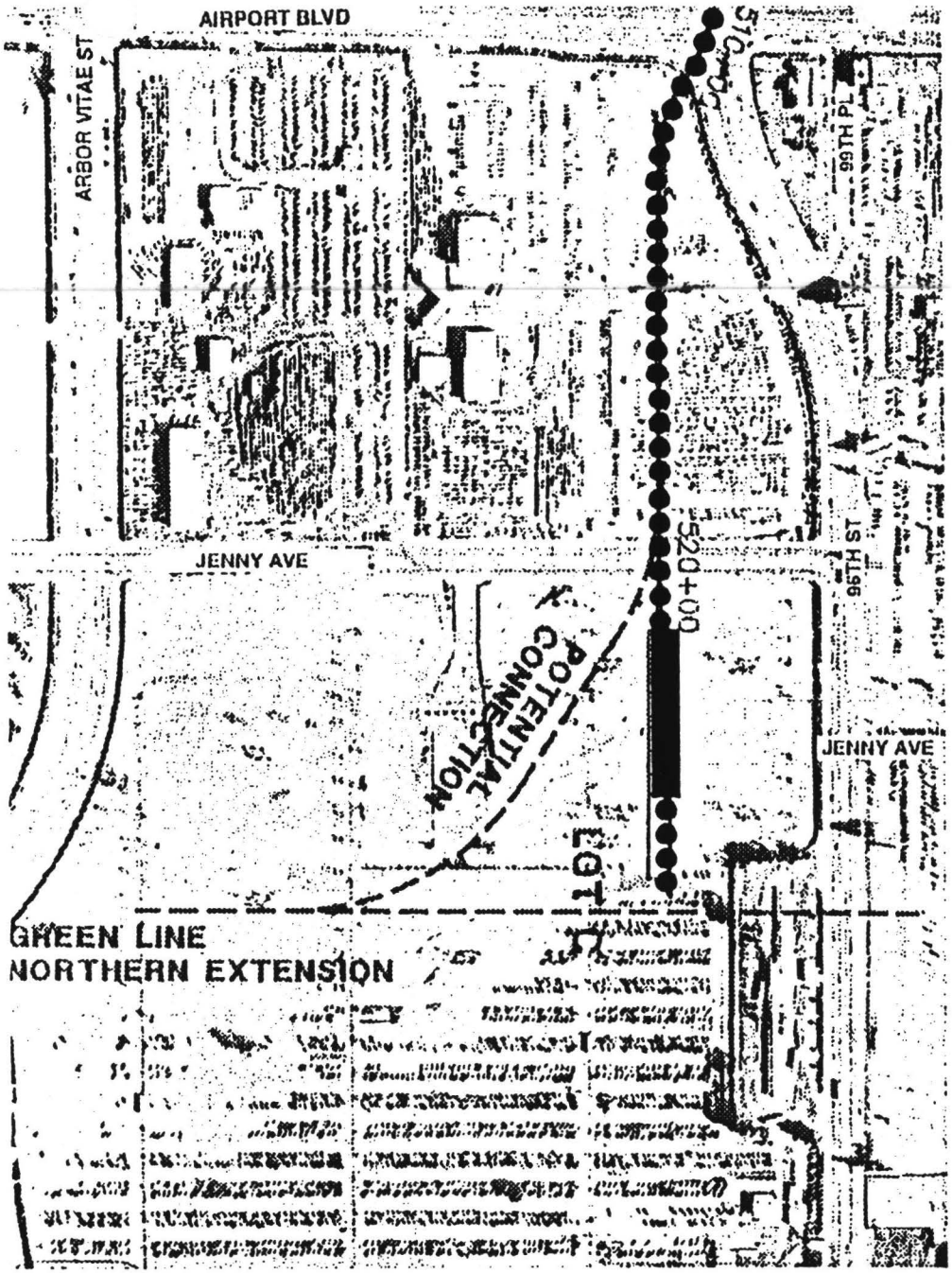
LAX Alignment

Elevated Platform

Approx. Scale: 0 100 200 300 feet

SOURCE: Terry A. Hayes Associates.

CRENSHAW-PRAIRIE CORRIDOR
PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KORVE ENGINEERING/TERRY A. HAYES ASSOCIATES



FIGU 5.33

PARKING LOT C (LAX) STATION AREA PRELIMINARY DEVELOPMENT CONCEPT

It is envisioned that the Crenshaw-Prairie rail line would terminate at the proposed transit center in Lot C between Sepulveda Boulevard and Airport. No additional development is being considered at the transit center. A rail transit terminal at Lot C would provide alternate access to LAX. While this route would be slightly more direct than extending the Crenshaw-Prairie line to the Green Line, it would by-pass major developments in Inglewood and Hawthorne and the directness of the connection must be viewed as a trade-off against economic development potentials of the other alignment alternatives.

LEGEND:

No Transit-Related Economic Development Anticipated at Lot C.

LAX Alignment

Elevated Platform

Approx. Scale:

N

0 100 200 300 Feet

SOURCE: Terry A. Hayes Associates.

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PRELIMINARY PLANNING STUDY
METROPOLITAN TRANSPORTATION AUTHORITY
KOKVE ENGINEERING/TERRY A. HAYES ASSOCIATES

5.5 Ridership Forecasts

Methodology — Forecasting Models

Patronage forecasts were made by LACMTA staff for each of the three Crenshaw alternatives using the forecasting models that were developed for MTA as part of the Eastside Corridor Alternatives Analysis. The model set is fully documented in the *Service and Patronage Methodology Report*, prepared in March 1993 for the Eastside Corridor AA/DEIS/DEIR. The consultant team assisted in defining the networks, and analyzed and summarized the results.

Because the forecasting process does not adequately reflect ridership to large special activity centers, an additional effort was made to estimate ridership from these "special generators." There are three major special generators of trips in the corridor:

- LAX would be served directly by Alternative 3, which terminates at the Lot C Transit Center, where an automated people-mover link to the terminal area will begin.
- Hollywood Park and the Forum would each be adjacent to a station in Alternatives 1 and 2. Alternative 3 bypasses these facilities, but special shuttle buses could be operated along a short route from the rail station at Florence and West.

Forecasting Model Results

Table 5.6 summarizes the patronage results. The daily boardings are derived from two sources: the MTA model runs described above and the analysis of special generators.

The assignment results show that Alternative 2 attracts the most trips to a Crenshaw corridor rail line: 38,100 weekday boardings, including average daily special generator trips. Alternative 1 would attract 34,400 trips, while Alternative 3 would attract 27,100 trips.

- Although Alternatives 1 and 2 follow the same general alignment, Alternative 2 has slightly faster travel time than Alternative 1. It also has one less station, but that station (111th Street) does not attract many trips in Alternative 1.
- Alternative 3 is a shorter line, with three fewer stations than Alternative 1. The boardings per station are approximately the same for Alternatives 1 and 3, about 2,700 boardings per station.

The point at which the Crenshaw Line carries the most passengers (the peak line load) occurs northbound at Exposition Station for all three alternatives. The highest line load occurs on Alternative 2, with 1,840 peak hour passengers. See the Operating Plan section above for discussion of adjustments to headways and train lengths.

LACMTA Crenshaw/Prairie Corridor Study

Table 5.6

Patronage Forecast Summary

	ALTERNATIVE 1 Aerial LRT	ALTERNATIVE 2 Subway	ALTERNATIVE 3 LRT to LAX
Daily Boardings			
Model results:	30,700	34,400	22,800
Average special generators:	3,700	3,700	4,300
Total:	34,400	38,100	27,100
Average Daily Boardings per Station	2,650	3,200	2,700
Annual Boardings (millions)	10.6	11.7	8.3
AM Peak Hour Line Load			
Northbound @ Exposition	1,610	1,840	1,370
Southbound to Green Line	960	1,090	550

All three lines also carry significant volumes in the southbound direction in the morning, since there are large concentrations of employment in the LAX and El Segundo areas. This balance means that the peak line load is a smaller proportion of total daily boardings than for other lines that are more downtown-oriented.

The addition of the Crenshaw Line would also increase the line loads on the Red Line, Green Line and Blue Line. The addition to the Red Line would be several hundred passengers per hour. Although this would result in slightly higher load factors, it is not considered a large enough change to require shorter headways or longer trains on the Red Line. The changes in Blue and Green Line volumes are smaller than for the Red Line.

The estimated boardings by station are summarized in Table 5.7 for all three alternatives. The individual station figures do not include the special generator trips, since they are not included in the forecasting model outputs, and since the occurrence of special events varies by day.

5.6 Capital and Operating Costs

Capital Costs

Capital costs estimates for each of the alternatives were prepared by the Rail Construction Corporation (RCC) based on input from Korve Engineering, Inc. Tables 5.8 through 5.10 summarize the capital cost estimates for each alternative. These cost estimates include all construction costs, professional services, necessary right-of-way acquisition, and contingencies. Inputs to the calculation of right-of-way costs are included in the appendix. The two light rail alternatives, Alternatives 1 and 3, have projected capital costs of about $977 million and $834 million. These estimates are less than half the projected capital cost of the subway alternative, Alternative 2, which ranges from $2.077 billion to $2.25 billion, depending on station platform length. The lower subway estimate is for 200 foot platforms and the higher estimate for 300 foot platforms. (Shorter platform lengths than the standard 450-foot Red Line platform were used to reflect the likely use of two- to three-car subway trains.)

The majority of the cost differential between the light rail alternatives and the subway alternative is due to the increased cost of guideway and station construction, which require tunneling or cut-and-cover procedures in the subway alternative. The subway alternative also requires a greater number of vehicles and more expensive system-wide features.

LACMTA Crenshaw/Prairie Corridor Study

Table 5.7

Summary of Station Boardings

STATION	TOTAL WEEKDAY BOARDINGS		
	ALTERNATIVE 1 Aerial LRT	ALTERNATIVE 2 Subway	ALTERNATIVE 3 LRT to LAX
Pico/San Vicente	7,100	8,900	6,300
Crenshaw/Washington	700	800	700
Crenshaw/Exposition	2,700	3,100	2,400
Crenshaw/King	1,200	1,300	1,100
Crenshaw/Vernon	1,700	1,800	1,600
Crenshaw/Slauson	1,700	1,800	1,500
West/Florence	1,600	1,700	1,500
Downtown Inglewood	1,800	2,000	2,900
Prairie/98th/Forum	3,000	3,300	NA
Prairie/Century/Hollywood Pk.	1,600	1,700	NA
Prairie/111th	900	NA	NA
Hawthorne/Imperial	4,300	5,200	NA
Hawthorne/El Segundo	2,300	2,800	NA
Manchester/Florence/Aviation	NA	NA	2,200
Lot C/LAX	NA	NA	2,600
Subtotal without Special Generators	30,700	34,400	22,800
Average for Special Generators	*3,700*	*3,700*	*4,300*
TOTAL LINE BOARDINGS	**34,400**	**38,100**	**27,100**

Note: Individual station figures do not include special generator trips; totals may not sum due to rounding.
Source: LACMTA Model Run 11/2/93, for year 2010.

LA\CRENSHAW\STA-BDGS.wk1
Manuel Padron & Associates

28-Dec-93

Table 5.8a
Alternative 1 Capital Cost Estimate

Item Description	1993 Dollars
Guideways and Structures	$287,750,000
Stations	$98,460,000
Maintenance Yard and Shop	$10,000,000
Systemwide Equipment	$111,242,200
Vehicles	$31,200,000
Subtotal (A)	$538,652,200
Pre Revenue Operation	$13,466,300
Owners Insurance	$43,092,200
Master Agreements	$13,466,300
Subtotal (B)	$70,024,800
Art for Transit (C)	$2,693,300
Right-Of-Way (D) (Per KORVE Engineering)	$22,000,000
Professional Services (E)	$215,345,900
Contingency (F)	
A) of Subtotal (A + B)	$100,431,700
B) of Subtotal (D)	$5,500,000
C) of Subtotal Item (E)	$21,534,588
Subtotal (F)	$127,466,300
Hazardous Waste Removal (Allowance)	$1,100,000
Grand Total 1993 Dollars	$977,282,500

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Table 5.8b
Alternative 1 Capital Costs - Detailed Worksheet

Description	Unit Price	Unit	Quantity	Total
Guideway Costs				
Guideway at Grade	$1,800	RF	3700	$6,660,000
Aerial Guideway-Regular	$4,500	RF	33300	$149,850,000
Aerial Guideway - (H-30 to 40)	$5,400	RF	18800	$101,520,000
Aerial Guideway - Bridge over I-105	$9,600	RF	1400	$13,440,000
Grade Separated Guideway (Underpass)	$6,750	RF	2000	$13,500,000
Track Removal Sta 300+00 to 380+00	$65	TF	12000	$780,000
Special Work at I-10 Freeway	$2,000,000	LS	1	$2,000,000
Subtotal (Guideway Costs)				$287,750,000
Station Cost				
At Grade LRT Station (2 Car Platform)	$1,850,000	EA	1	$1,850,000
Aerial LRT Station (2 Car Platform)	$5,200,000	EA	12	$62,400,000
Park & Ride (Structure)	$11,000	EA	2450	$26,950,000
Park & Ride (Surface)	$2,200	EA	3300	$7,260,000
Subtotal (Station Cost)				$98,460,000
Maintenance Facilities & Yard Costs				
Car Storage Facilities (Allowance)	$10,000,000	LS	1	$10,000,000
Subtotal (Maintenance Facilities)				$10,000,000
Vehicle Cost	$2,600,000	EA	12	$31,200,000
Subtotal (Vehicle Cost)				$31,200,000
System Wide Equipment Cost				
Trackwork (Incl Special Trackwork)	$421	RF	59200	$24,923,200
Train Control Station	$540,000	EA	13	$7,020,000
Train Control Guideway	$500	RF	59200	$29,600,000
Traction Power Station (LRT)	$1,100,000	EA	13	$14,300,000
Traction Power Guideway (LRT)	$270	RF	59200	$15,984,000
Communications	$200	RF	59200	$11,840,000
Fare Collection	$250,000	EA	13	$3,250,000
Signage & Graphics (At Grade)	$125,000	EA	1	$125,000
Signage & Graphics (Aerial)	$350,000	EA	12	$4,200,000
Subtotal (System Cost)				$111,242,200
Total Estimated Cost				$538,652,200

Table 5.9a
Alternative 2 Capital Cost Estimate

Item Description	1993 Dollars	
	Option A 300 Foot Platforms	Option B 200 Foot Platforms
Guideways and Structures	$472,094,500	$472,094,500
Stations	$498,960,000	$353,560,000
Maintenance Yard and Shop	$20,000,000	$20,000,000
Systemwide Equipment	$271,816,000	$271,816,000
Vehicles	$57,200,000	$57,200,000
Subtotal (A)	$1,318,070,500	$1,174,670,500
Pre Revenue Operation	$32,951,800	$29,366,800
Owners Insurance	$105,445,800	$93,973,600
Master Agreements	$32,951,800	$29,366,800
Subtotal (B)	$171,349,200	$152,707,200
Art for Transit (C)	$13,180,700	$11,746,700
Right-Of-Way (D) (Per KORVE Engineering)	$13,000,000	$13,000,000
Professional Services (E)	$515,304,100	$459,722,300
Contingency (F)		
A) of Subtotal (A + B)	$163,836,200	$146,011,600
B) of Subtotal (D)	$3,250,000	$3,250,000
C) of Subtotal Item (E)	$51,530,400	$45,972,200
Subtotal (F)	$218,616,600	$195,233,800
Hazardous Waste Removal (Allowance)	$650,000	$650,000
Grand Total 1993 Dollars	$2,250,171,100	$2,007,730,500

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Table 5.9b
Alternative 2A Capital Costs - Detailed Worksheet

Description	Unit/Price	Unit	Quantity	Total
Guideway Costs				
Retained Cut	$3,500	RF	2650	$9,275,000
Tunnel Construction (Regular)	$6,730	RF	29150	$196,179,500
Tunnel Construction (Wet)	$8,200	RF	24200	$198,440,000
Xover Constructed with Station	$11,050,000	EA	4	$44,200,000
Water Treatment (Dewatering)	$8,000,000	EA	3	$24,000,000
Subtotal (Guideway Cost)				$472,094,500
Station Cost				
Subway Station in C&C (300 Ft. Platforms)	$36,950,000	EA	12	$443,400,000
Dewatering	$3,500,000	EA	6	$21,000,000
Parking (Structure)	$11,000	EA	2300	$25,300,000
Parking (Surface)	$2,200	EA	3300	$7,260,000
Subtotal (Station Cost)				$496,960,000
Maintenance Facilities & Yard Cost				
Car Storage Facilities (Allowance)	$20,000,000	LS	1	$20,000,000
Subtotal (Maintenance Facilities)				$20,000,000
Vehicle Cost				
(Standard Revenue Vehicle)	$2,600,000	EA	22	$57,200,000
Subtotal (Vehicle Cost)				$57,200,000
System Wide Equipment Cost				
Trackwork	$545	RF	56000	$30,520,000
Train Control (Station)	$900,000	EA	12	$10,800,000
Train Control (Guideway)	$2,016	RF	56000	$112,896,000
Traction Power (XFMR)	$1,580,000	EA	12	$18,960,000
Traction Power (Third Rail)	$110	RF	56000	$6,160,000
Communications	$1,330	RF	56000	$74,480,000
Fare Collection (Subway Station)	$670,000	EA	12	$8,040,000
Fare Collection (At Grade Station)	$250,000	EA	12	$3,000,000
Signage & Graphics (Subway Station)	$580,000	EA	12	$6,960,000
Subtotal (System Cost)				$271,816,000
Total Estimated Cost				$1,318,070,500

Table 5.9c
Alternative 2B Capital Costs - Detailed Worksheet

Description	Unit/Price	Unit	Quantity	Total
Guideway Costs				
Retained Cut	$3,500	RF	2650	$9,275,000
Tunnel Construction (Regular)	$6,730	RF	29150	$196,179,500
Tunnel Construction (Wet)	$8,200	RF	24200	$198,440,000
Xover Constructed with Station	$11,050,000	EA	4	$44,200,000
Water Treatment (Dewatering)	$8,000,000	EA	3	$24,000,000
Subtotal (Guideway Cost)				$472,094,500
Station Cost				
Subway Station in C&C (200 Ft. Platforms)	$25,000,000	EA	12	$300,000,000
Dewatering	$3,500,000	EA	6	$21,000,000
Parking (Structure)	$11,000	EA	2300	$25,300,000
Parking (Surface)	$2,200	EA	3300	$7,260,000
Subtotal (Station Cost)				$353,560,000
Maintenance Facilities & Yard Cost				
Car Storage Facilities (Allowance)	$20,000,000	LS	1	$20,000,000
Subtotal (Maintenance Facilities)				$20,000,000
Vehicle Cost				
Standard Revenue Vehicle	$2,600,000	EA	22	$57,200,000
Subtotal (Vehicle Cost)				$57,200,000
System Wide Equipment				
Trackwork	$545	RF	56000	$30,520,000
Train Control (Station)	$900,000	EA	12	$10,800,000
Train Control (Guideway)	$2,016	RF	56000	$112,896,000
Traction Power (XFMR)	$1,580,000	EA	12	$18,960,000
Traction Power (Third Rail)	$110	RF	56000	$6,160,000
Communications	$1,330	RF	56000	$74,480,000
Fare Collection (Subway Station)	$670,000	EA	12	$8,040,000
Fare Collection (At Grade Station)	$250,000	EA	12	$3,000,000
Signage & Graphics (Subway Station)	$580,000	EA	12	$6,960,000
Subtotal (System Cost)				$271,816,000
Total Estimated Cost				$1,174,670,500

Table 5.10a
Alternative 3 Capital Cost Estimate

Item Description	1993 Dollars
Guideways and Structures	$249,670,000
Stations	$71,090,000
Maintenance Yard and Shop	$10,000,000
Systemwide Equipment	$96,176,200
Vehicles	$28,600,000
Subtotal (A)	$455,536,200
Pre Revenue Operation	$11,388,400
Owners Insurance	$36,442,900
Master Agreements	$11,388,400
Subtotal (B)	$59,219,700
Art for Transit	$2,277,700
Right-Of-Way (D) (Per KORVE Engineering)	$23,000,000
Professional Services (E)	$183,611,400
Contingency (F)	
A) of Subtotal (A + B)	$84,934,700
B) of Subtotal (D)	$5,750,000
C) of Subtotal Item (E)	$18,361,200
Subtotal (F)	$109,045,900
Hazardous Waste Removal (Allowance)	$1,150,000
Grand Total 1993 Dollars	$833,840,900

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Table 5.10b
Alternative 3 Capital Costs - Detailed Worksheet

Description	Unit/Price	Unit	Quantity	Total
Guideway Costs				
Guidway At Grade	$1,800	RF	5500	$9,900,000
Aerial Guideway-Regular	$4,500	RF	28700	$129,150,000
Aerial Guideway - (H-30 to 40)	$5,400	RF	16600	$89,640,000
Grade Separated Guideway (Underpass)	$6,750	RF	2400	$16,200,000
Track Removal Sta 300+00 to 380+00	$65	TF	12000	$780,000
Special Work at I-10 Freeway	$2,000,000	LS	2	$4,000,000
Subtotal (Guideway Cost)				$249,670,000
Station Cost				
At Grade Station (2 Car Platform)	$1,850,00	EA	1	$1,850,000
Aerial Station (2 Car Platform)	$5,200,000	EA	9	$46,800,000
Park & Ride (Structure)	$11,000	EA	1900	$20,900,000
Park & Ride (Surface)	$2,200	EA	700	$1,540,000
Subtotal (Station Cost)				$71,090,000
Maintenance Facilities & Yard Costs				
Car Storage Facilities (Allowance)	$10,000,000	LS	1	$10,000,000
Subtotal (Maintenance Facilities				$10,000,000
Vehicle Costs				
Revenue Vehicle	$2,600,000	EA	11	$28,600,000
Subtotal (Vehicle Cost)				$28,600,000
System Wide Equipment Cost				
Trackwork (Incl Special Trackwork)	$421	RF	53200	$22,397,200
Train Control Station	$540,000	EA	10	$5,400,000
Train Control Guideway	$500	RF	53200	$26,600,000
Traction Power Station (LRT)	$1,100,000	EA	10	$11,000,000
Traction Power Guideway (LRT)	$270	RF	53200	$14,364,000
Communications	$200	RF	53200	$10,640,000
Fare Collection	$250,000	EA	10	$2,500,000
Signage & Graphics (At Grade)	$125,000	EA	1	$125,000
Signage & Graphics (Aerial)	$350,000	EA	9	$3,150,000
Subtotal (System Cost)				$96,176,200
Total Estimated Cost				$455,536,200

Operating Costs

Manuel Padron & Associates (MPA) has developed Operating and Maintenance (O&M) cost models for MTA's light rail and heavy rail systems. The light rail model was initially developed for the Blue Line (Long Beach/Los Angeles), using costs from other similar West Coast light rail systems. The model has been subsequently revised to reflect the actual operating costs for the Blue Line. The Red Line (heavy rail) model was developed from budget forecasts for Segments 1 and 2. The initial development of the O&M cost models is discussed in an earlier MPA report.[1]

The models are detailed resource build-up models, which include every position classification, and all budget line items for non-labor costs. Each item is related to one or more operating statistics, so that changes in system characteristics and/or levels of service will be reflected in appropriate cost changes. For example, train operators are modelled as a function of train-hours; fare collection is modelled as a function of the number of stations. The operating statistics that were used as input to the operating cost model were shown earlier in this chapter in Table 5.2.

The resulting annual operating cost estimates are shown in Table 5.11. The cost estimates are for the level of service required to meet year 2010 demand, but are expressed in 1993 dollars.

Alternative 2 (heavy rail) is far more expensive to operate than the light rail alternatives. This is partially due to the need to run more cars and car-miles to provide the same frequency of service, since heavy rail uses married pairs of rail cars. It also reflects much larger stations, with associated costs for maintenance, utilities, and security. The heavy rail cost could be reduced somewhat if the stations were built with less than six-car platforms, but would still be significantly higher than for light rail.

The lower cost for Alternative 3 compared to Alternative 1 reflects the shorter length, fewer stations, and the slightly less frequent peak hour service in Alternative 3.

If two-car trains were used for Alternatives 1 and 3, operating costs would increase by $0.5 to $1 million annually. However, as noted above, patronage would likely decrease due to longer headways.

5.7 Environmental Assessment

The following discussion highlights the key environmental impact implications associated with each of the Crenshaw/Prairie Corridor alternatives under consideration.

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[1] Transit Operating and Maintenance Cost Methodology; Manuel Padron & Associates; August 1990

LACMTA Crenshaw/Prairie Corridor Study

Table 5.11

Rail Operations Summary

	ALTERNATIVE 1 Aerial LRT	ALTERNATIVE 2 Subway	ALTERNATIVE 3 LRT to LAX
Number of Stations	13	12	10
System Miles	11.1	10.4	9.9
Peak Headway	5	6	6
Midday Headway	10	10	10
Fleet Vehicles	14	22	10
Annual Veh–Mile (millions)	1.2	2.1	1.0
Annual Tr.–Hours (000)	53	43	41
Annual Oper. Cost (millions)	$15	$31	$12
Cost/Boarding	$1.37	$2.65	$1.39
Cost/Vehicle–Mile	$12.34	$15.00	$11.75

NOTE: Statistics for Alternatives 1 and 3 are based on single–car operations.

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Manuel Padron & Associates

28–Dec–93

ALTERNATIVE 1 AERIAL ALIGNMENT. Potentially significant environmental impacts are anticipated in the following areas:

- ***Liquefaction.*** The alignment passes through an area of potentially liquefiable soils between 54th Street and Jefferson Boulevard. The affected area is about 25 percent of the route.

- ***Fault Rupture Zone.*** The alignment passes through an area directly adjacent to the Newport-Inglewood Fault complex. The alignment crosses a designated Alquist-Priolo special studies area in the vicinity of Centinela Park.

- ***Air Quality.*** The alignment has the potential to create "hot spots" in the vicinity of station areas.

- ***Noise.*** Alignment would bring the rail transit noise in close proximity to sensitive land uses in the narrower sections of the corridor. The elevated aerial guideway would allow rail transit vehicle noise to be propagated over existing buildings along the route and would increase noise levels in adjacent residential areas.

- ***Light and Glare.*** The elevated guideway structure would likely require additional lighting beneath the structure for traffic and public safety purposes. This new light source may adversely affected adjacent residences in narrower sections of the corridor.

- ***Traffic Disruption.*** Construction of an aerial guide in Crenshaw Boulevard, La Brea Avenue, Manchester Boulevard and Prairie Avenue would reduce street capacity and access during the period of construction. Over the long-term the aerial guideway may also reduce the number of left turn opportunities along these north-south arterial routes.

- ***Parking.*** Spillover parking may occur at station locations where no shared parking opportunities may exist.

- ***Public Services.*** To the extent that joint development or induced-adjacent development takes place in proposed station areas, there would be increase demand for public services in these areas.

- ***Land Use Displacement.*** Approximately 18 buildings would be displaced by this alternative.

- ***Visual and Aesthetics.*** The aerial guideway would introduce a new visual element along Crenshaw Boulevard (designated as a Scenic Highway in the City of Los Angeles General Plan), La Brea Avenue, Manchester Boulevard and Prairie Avenue. The aerial guideway would disrupt vistas along these arterials. In addition in narrower sections of the corridor, the aerial guideway would cast shadows on

adjacent residences or on low scale commercial properties. In narrower sections of the corridor the aerial guideway would range from 60 feet from adjacent buildings north of the Santa Monica Freeway to 35 feet from adjacent buildings in the Leimert Park area.

Should the Exposition route (currently being considered by the MTA) be elevated at its crossing with the Crenshaw rail transit line, then a substantial aerial structure would be required at the Crenshaw and Exposition intersection to accommodate both rail transit lines. This structure would create shade and shadows that could adversely affect the proposed West Angeles Church site on the northeast corner.

- ***Historic Resources***. The Broadway and Robinsons-May buildings are listed on the National Register of Historic Places. Neither Alternative 1 or 3 would displace these structures. An aerial guideway structure would obstruct views of these structures from vantage points north and south of Martin Luther King Boulevard. The proposed station at King would be an additional element that would further obstruct views of the building facades. There may also be adverse visual effects on the Robinsons-May building historic facade should a bridge be constructed between the aerial station platform and the Robinsons-May building. There are also several other buildings located on Crenshaw where the view of the structure would be obscured by the elevated guideway structure.

ALTERNATIVE 2 SUBWAY ALIGNMENT. Potentially significant environmental impacts are anticipated in the following areas:

- ***Liquefaction***. The alignment passes through an area of potentially liquefiable soils between 54th Street and Jefferson Boulevard. The affected area is about 25 percent of the route.

- ***Earthwork***. Over 200,000 cubic yards of soil would be removed by this alternative.

- ***Fault Rupture Zone***. The alignment passes through an area directly adjacent to the Newport-Inglewood Fault complex. The alignment crosses a designated Alquist-Priolo special studies area in the vicinity of Centinela Park.

- ***Groundwater***. The subway alternative would pass through a substantial area where there is a high water table. Tunnel construction may affect groundwater flows as well as associated aquifers.

- ***Air Quality***. The alignment has the potential to create "hot spots" in the vicinity of station areas.

- ***Dust Generation***. The amount of soil removed by this alterative could be source of windblown dust.

- ***Traffic Disruption***. Construction of a subway using a cut-and-cover technique in Crenshaw Boulevard, La Brea Avenue, Manchester Boulevard and Prairie Avenue would reduce street capacity and access during the period of construction. A deep bore subway construction would avoid these effects.

- ***Parking***. Spillover parking may occur at station locations where no shared parking opportunities may exist.

- ***Public Services***. To the extent that joint development or induced-adjacent development takes place in proposed station areas, there would be increase demand for public services in these areas.

- ***Land Use Displacement***. Approximately 12 buildings would be displaced by this alternative.

ALTERNATIVE 3 LAX ALIGNMENT. Potentially significant environmental impacts are anticipated in the following areas:

- ***Liquefaction***. The alignment passes through an area of potentially liquefiable soils north between 54th Street and Jefferson Boulevard and between Centinela Avenue and La Cienega Boulevard. The affected area is about 45 percent of the route length.

- ***Fault Rupture Zone***. The alignment passes through an area directly adjacent to the Newport-Inglewood Fault complex. The alignment crosses a designated Alquist-Priolo special studies area in the vicinity of Centinela Park.

- ***Air Quality***. The alignment has the potential to create "hot spots" in the vicinity of station areas.

- ***Traffic Disruption***. Construction of an aerial guide in Crenshaw Boulevard, La Brea Avenue, Manchester Boulevard and Prairie Avenue would reduce street capacity and access during the period of construction. Over the long-term the aerial guideway may also reduce the number of left turn opportunities along these north-south arterial routes.

- ***Parking***. Spillover parking may occur at station locations where no shared parking opportunities may exist.

- ***Public Services***. To the extent that joint development or induced-adjacent development takes place in proposed station areas, there would be increase demand for public services in these areas.

- ***Land Use Displacement***. Approximately 21 buildings would be displaced by this alternative.

- ***Visual and Aesthetics.*** The aerial guideway would introduce a new visual element along Crenshaw Boulevard (designated as a Scenic Highway in the City of Los Angeles General Plan), La Brea Avenue, Manchester Boulevard and Prairie Avenue. The aerial guideway would disrupt vistas along these arterials. In addition in narrower sections of the corridor, the aerial guideway would cast shadows on adjacent residences or on low scale commercial properties. In narrower sections of the corridor the aerial guideway would range from 60 feet from adjacent buildings north of the Santa Monica Freeway to 35 feet from adjacent buildings in the Leimert Park area.

Should the Exposition route (currently being considered by the MTA) be elevated at its crossing with the Crenshaw rail transit line, then a substantial aerial structure would be required at the Crenshaw and Exposition intersection to accommodate both rail transit lines. This structure would create shade and shadows that could adversely affect the proposed West Angeles Church site on the northeast corner.

- ***Historic Resources.*** The Broadway and Robinsons-May buildings are listed on the National Register of Historic Places. Neither Alternative 1 or 3 would displace these structures. An aerial guideway structure would obstruct views of these structures from vantage points north and south of Martin Luther King Boulevard. The proposed station at King would be an additional element that would further obstruct views of the building facades. There may also be adverse visual effects on the Robinsons-May building historic facade should a bridge be constructed between the aerial station platform and the Robinsons-May building. There are also several other buildings located on Crenshaw where the view of the structure would be obscured by the elevated guideway structure.

5.8 Traffic Impact Assessment

Each of the alternatives has potential impacts in one or more of the following three areas: roadway configuration (through travel lanes/capacity, ROW needs, on-street parking, sidewalk widths, minor street access); intersection configuration (presence/absence of left-turn lanes, geometrics, ROW needs); and station area impacts. The potential impacts in each of these three areas is reviewed below for each alternative. The most significant traffic impacts will occur in Alternatives 1 and 3, where the light rail guideway supports will affect traffic lanes and cross street traffic. In Alternative 2, the subway alternative, there would be few, if any, traffic impacts, although there may be station area impacts.

Alternative 1 - Aerial LRT

Roadway Impacts. In the aerial light rail alternative, roadway configuration may be impacted by the LRT guideway columns and station footprints. This potential impact will generally be most significant where the alignment is center-running (in the middle of the street), and least significant where the alignment is side-running (along the side of the street). In all cases, it would be possible to retain the same number of through travel

lanes as exists today; however, depending on the option selected for accommodating the LRT guideway, impacts may still occur to on-street parking, cross-street and driveway access, sidewalk widths, and required right-of-way.

Center-Running Alignment. Those portions of the corridor where the alignment is center-running will have the greatest potential impact because of the need to create a 12-foot center median to support the guideway columns (approximately six feet in diameter) and provide necessary clearance. In street sections without an existing median, either loss of on-street parking, widening of the street, narrowing of sidewalks/parkways or some combination of the three would be necessary to create the median island. These segments (such as on Crenshaw from Pico to Washington) have the least ability to accommodate aerial LRT while maintaining the existing number of through traffic lanes, and are therefore likely to be most impacted.

In sections where there is an existing median (either a concrete median or continuous left-turn lane), the guideway support median would generally replace the existing median, leaving through traffic lanes untouched. Replacing the existing median would eliminate left-turn lanes, however, requiring either loss of on-street parking, narrowing of sidewalks/parkways or widening of the street to maintain left-lanes (see "Intersection Impacts" below). Examples of this situation include Crenshaw from the I-10 Freeway to Exposition and from Stocker to Vernon.

Finally, in wide street segments (such as Hawthorne Boulevard s/o Imperial), the center-running alignment could be accommodated with almost no roadway configuration impacts; the ROW will accommodate the 12-foot guideway support median and the existing lane configuration, including left-turn lanes. (Some changes would be necessary at stations; see "Intersection Impacts" below.)

In all center-running segments of the alignment, access across the LRT median would be limited to signalized intersections. In these segments, there may be minor streets that would lose access across the median, and all cross-median movements from driveways or from the curb would be eliminated. In most segments of center-running alignment, however, there are numerous existing signalized intersections where the "U-turns" could be made, somewhat easing the severity of this impact.

Side-Running Alignment. There will generally be few roadway impacts in side-running segments of the alignment, because the median supports and station footprints will be out of the street. Other impacts may occur, however, to both on- and off-street parking supplies, as well as circulation patterns in off-street parking lots in which guideway support columns would be placed.

In most street segments where the alignment is side-running, the guideway is located above one of the medians that separate the Crenshaw frontage roads from the main Crenshaw roadway. In these segments of Crenshaw (including from Exposition to 39th and from Vernon to Slauson), the primary roadway configuration impact would be the loss of one on-street parking space approximately every 100 to 140 feet to accommodate

guideway columns. This would be equivalent to approximately one in every five on-street parking spaces along the inside of the frontage lane. The guideway in these locations would not affect through traffic lanes, left-turn lanes, sidewalk widths, or necessary ROW.

Other side-running segments may have greater roadway configuration impacts because the guideway columns would be located either behind the curb (creating sidewalk impacts) or behind the sidewalk (creating property impacts and potential parking impacts).

Construction Impacts. The construction of light rail transit in this corridor would also result in temporary construction impacts to roadway configurations, as well as intersection and station area impacts. The most severe impacts would again occur where the alignment is center-running. Construction of the LRT guideway in the median of existing arterials would likely result in the temporary loss of one traffic lane on each side of the median. In side-running locations, the temporary loss of one traffic lane adjacent to the alignment may be required for construction and lay-down areas. Additional locations may be impacted by the need for temporary lay-down areas, and construction areas would also be impacted by the movements of heavy vehicles.

Intersection Impacts. Intersection impacts will occur primarily where the alignment is center-running, including:

Pico from Muirfield to Crenshaw
Crenshaw from Pico to Exposition
Crenshaw from Stocker to Vernon
Crenshaw from 60th to 67th
Manchester from La Brea to Prairie
Prairie from Century to 111th Street
Hawthorne from Imperial to El Segundo
La Brea from Florence to Manchester

Intersection impacts will generally be limited to potential loss of left-turn lanes and revised intersection geometry in some locations. In each of the segments listed above, with the exception of Hawthorne from Imperial to El Segundo, there is inadequate ROW to accommodate the 12-foot guideway support median and the existing through traffic lanes while still maintaining left-turn lanes at intersections and/or on-street parking. In most of these segments, the options are to eliminate left-turn lanes, or to widen the street enough to accommodate additional left-turn lanes at intersections. Widening the street would require additional ROW in most areas. (This could be done in conjunction with narrowing of lane and sidewalk widths, if appropriate, to minimize the additional ROW needed.) In the segments on La Brea and Manchester, removal of on-street parking may provide the needed 12 feet for the median, allowing left-turn lanes to be retained at intersections.

Where widening may be necessary to retain left turns at intersections, two intersection configurations are possible. The first option is to provide a 32 foot median island for the LRT guideway, with 11 foot left turn lanes cut into the island at intersections. This may require substantial street widening, but would retain the left-turn lanes in their normal

configuration, with one on each side of the island. An option which would require less right-of-way would be to utilize a minimum 23 foot median island and offset left-turn lanes so that both would be on one side of the island.

While street widening or elimination of parking may allow left-turn lanes at most intersections, additional ROW at center running stations would be needed to maintain left-turn lanes at these locations. At proposed stations such as Crenshaw/Washington, La Brea/Market, Prairie/111th and Hawthorne/El Segundo, up to an additional 30 feet of ROW could be required to maintain left-turn lanes. At these station locations, room for left-turn lanes would be made by having passengers board and alight via overhead bridges from the sidewalks, rather than from a plaza immediately underneath the station. Instead of the required 40 feet for a station footprint, therefore, only 24 feet would be required for the support columns, leaving 14-16 feet available for use as left-turn lanes. A cross-section of this type of station configuration was shown previously in Figure 5.1.

Station Area Impacts. Station area impacts could include reductions/increases in the parking supply (both on- and off-street), changes to bus stop locations or bus routes, street realignment, sidewalk impacts (due to column supports, sidewalks and elevators), property development, and ROW needs. Some potential station ROW impacts have been noted above in the Section on Intersection Impacts. Other specific station area impacts include additional ROW needed at the Crenshaw/Washington, Crenshaw/Slauson, and Prairie/111th Street stations, and potential realignment of traffic lanes on Crenshaw just north of Slauson.

Alternative 2 - Subway

Alternative 2 would have minimal traffic impacts because the alignment is completely grade-separated. The majority of the alignment is in subway, with a portion in a grade-separated open trench along the railroad right-of-way. Because the alignment never crosses or runs within existing roadways, Alternative 2 would have no permanent impacts on roadway or intersection configurations.

Alternative 2 would have some temporary impacts on intersections and traffic lanes, however, during construction. Temporary portals would be constructed to remove dirt during tunneling, and streets in the area of these portals could suffer temporary lane reductions, as well as heavy truck traffic. Construction impacts would also be felt around station areas, where cut-and-cover construction techniques would be used. Roadway surfaces would be replaced by planks covering the construction area while stations were being built.

The primary permanent impacts of Alternative 2 would occur at station areas, and would be caused by the subway portals. The location of portals could impact sidewalks (reducing the width of sidewalks where portals are placed) and adjacent properties.

Alternative 3 - LRT to LAX

The traffic impacts of Alternative 3 are identical to those of Alternative 1 from the Pico/San Vicente station to the intersection of La Brea and Florence. At this point, the alignment of Alternative 3 diverges from the Alternative 1 alignment, continuing along the ATSF ROW and eventually reaching LOT C at LAX. The only traffic impacts reviewed here, therefore, are those from the point where Alternative 3 diverges from Alternative 1.

Because the additional segment of Alternative 3 runs primarily in railroad ROW and in Parking Lot C of LAX, there are few additional roadway impacts in this alternative. Two streets, Cedar and Arbor Vitae, would be impacted by the increased frequency of at-grade LRT crossings. At other crossing locations, the alignment would be grade separated. This includes crossings of La Brea, Ivy, Eucalyptus, I-405 Freeway, La Cienega, Hindry, Isis and Manchester.

The alignment will leave the ATSF ROW at 96th Street, and run down the median of 96th on aerial structure into Lot C. The center-running alignment on 96th Street will prevent left-turns across 96th from Bellanca to Airport Blvd., requiring vehicles trying to reach parking areas north of 96th to use alternate routes. (Several alternate routes are available to these parking areas.) The intersection of Bellanca/96th Street may need to be reconfigured to ensure access to the properties north and south.

Column placements in Lot C will affect the parking supply there, as will the station footprint.

6. Summary and Conclusions

6.0 Summary and Conclusions

6.1 Summary Comparison of Alternatives

Sections 1 through 5 of this report have documented the identification, screening, refinement and evaluation of transit alternatives for the Crenshaw/Prairie Corridor. The matrix shown in Table 6.1 compares the key characteristics of the aerial, subway and LAX alternatives for the corridor. Key distinctions are as follows:

- **Patronage and Travel Time.** Alternative 2 (subway) would have the highest patronage of the alternatives considered (38,100 riders versus 34,400 riders for Alternative 1 (aerial LRT) and 27,100 riders for Alternative 3 (LRT to LAX). Alternative 2 also would have the highest ridership per mile and per station. Alternative 2 would also have in faster average travel times, although the differences in travel time between the alternatives are not considered to be significant.

- **Connection to Other Lines.** The aerial and subway alternatives would provide direct connections to the Red Line at Pico San Vicente; the Exposition Line; and the Green Line at Hawthorne and Imperial. The LAX alternative would provide direct connection to the Red Line and to the Exposition Line. This alternative--depending on the Green Line northern extension selected--may or may not have a direct connection to the Green Line in LAX Lot C.

- **Service to Activity Centers.** The aerial and subway alternatives would provide direct service to major activity centers in the corridor such as the Baldwin Hills Crenshaw Plaza, downtown Inglewood, the Forum, Hollywood Park Recreation Complex and the Hawthorne Plaza Mall. Through a connection to the Green Line, these alternatives would also provide access to Los Angeles International Airport. The LAX Alternative would provide direct service to the Baldwin Hills Crenshaw Plaza and to LAX. No direct service would be provided to downtown Inglewood, the Forum, Hollywood Park or to the Hawthorne Plaza.

- **Costs.** The capital costs for the two light rail alternatives would be about $977 million for Alternative 1 and $833 million for Alternative 2. The subway alternative (Alternative 3) would be more than twice as expensive to build as the other two alternatives, at $2.08 to $2.25 billion. Operating Cost differences would be similar. The two light rail alternatives, Alternatives 1 and 3, would have annual operating costs of about $15 million and $12 million, respectively. Alternative 2, the subway alternative, would have annual operating costs of about $31 million, more than twice that of the light rail alternatives.

Table 6.1
Evaluation Matrix

	Alternative 1 Aerial LRT Pico/San Vicente to Hawthorne Plaza	Alternative 2 Subway Pico/San Vicente to Hawthorne Plaza	Alternative 3 Aerial/Grade LRT Pico/San Vicente to LAX
CHARACTERISTICS			
System Type	Aerial-LRT	Subway-HRT	Aerial/Grade LRT
Vehicle Type	LA Car LRT	Red Line Car	LA Car LRT
Length (Miles)	11.1	10.4	9.9
Number of Stations	13	12	10
OPERATIONS			
Travel Time (minutes)	24.3	20.8	20.4
Transit Connecting	Red Line: Pico/San Vicente Blue Line: Exposition Green Line: Hawthorne/Imperial	Red Line: Pico/San Vicente Blue Line: Exposition Green Line: Hawthorne/Imperial	Red Line: Pico/San Vicente Blue Line: Exposition Green Line: LAX
Yards/Shops			
PATRONAGE			
Total Daily Boardings	34,400	38,100	27,100
Daily Boardings/Mile	3,100	3,675	2,725
Daily Boardings/Station	2,650	3,200	2,700
COSTS			
Capital (millions)	$977.3	$2,250.2	$833.8
Annual operating (millions)	$15.0	$31.0	$12.0
PLANNING AND ECONOMICS			
Opportunity for Joint Development	5 Station Areas	5 Station Areas	2 Station Areas
Opportunity for Transit-Adjacent Development	8 Station Areas	9 Station Areas	7 Station Areas
Within or Adjacent to Known Areas of Private Reinvestment	5 Station Areas	6 Station Areas	4 Station Areas
Location within or Adjacent to Existing Major Business/Activity Centers	5 Station Areas	7 Station Areas	2 Station Areas
Location within Existing or osed Redevelopment or very Areas	11 Station Areas	10 Station Areas	6 Station Areas

Table 6.1
Evaluation Matrix

	Alternative 1 Aerial LRT Pico/San Vicente to Hawthorne Plaza	Alternative 2 Subway Pico/San Vicente to Hawthorne Plaza	Alternative 3 Aerial/Grade LRT Pico/San Vicente to LAX
Potential for Adverse Business Disruption During Construction	High along Crenshaw, La Brea, and Manchester (4.8 miles)	Low if deep bore tunnel construction used. High along Crenshaw, La Brea, and Prairie, if cut and cover subway construction used.	High along Crenshaw (4 miles)
Potential for Long-Term Adverse Business Disruption during Operations	High in existing strip commercial areas on Crenshaw, and Manchester due to visual effect and circulation restrictions caused by elevated guideway structure column placement.	None	High in existing strip commercial areas on Crenshaw due to visual effect and circulation restrictions caused by elevated guideway structure column placement.
ENVIRONMENTAL CONSTRUCTION-RELATED	Shorter construction period, higher noise levels than Alt 2 likely. Blowing dust and soil disruption would be less. Traffic operations would be more impacted than with Alt 2.	Construction period would be longer, air quality more impacted than Alts 1 or 3. Dust impacts would be greater, as would soil disruption. Some subterranean utilities would be relocated.	Shorter construction period, higher noise levels than Alt 2 likely. Blowing dust and soil disruption would be less. Traffic operations would be more impacted than with Alt 2.
ENVIRONMENTAL OPERATIONS-RELATED			
· Geology	Liquefiable soils and a fault rupture zone lie along 25% of the alignment. Disruption potential is similar for all alternatives.	Liquefiable soils and a fault rupture zone lie along 25% of the alignment. Disruption potential is similar for all alternatives.	Liquefiable soils and a fault rupture zone lie along 45% of the alignment. Disruption potential is similar for all alternatives
· Air Quality	Traffic would be attracted to stations for each alternative equally.	Traffic would be attracted to stations for each alternative equally.	Traffic would be attracted to stations for each alternative equally.
· Noise	Noise would be greater than for Alt 2.	Noise would be less than for Alts 1 and 3.	Noise would be greater than for Alt 2.
· Transportation and Parking	Aerial guideway could reduce left turn lanes and eliminate some on-street parking. Spillover parking may occur at some locations where there would be no shared parking.	Traffic disruption would not occur. Spillover parking may occur at locations where there would be no shared parking.	Aerial guideway could reduce left turn lanes and eliminate some on-street parking. Spillover parking may occur at locations where there would be no shared parking.

Table 6.1
Evaluation Matrix

	Alternative 1 Aerial LRT Pico/San Vicente to Hawthorne Plaza	Alternative 2 Subway Pico/San Vicente to Hawthorne Plaza	Alternative 3 Aerial/Grade LRT Pico/San Vicente to LAX
· Public Services and Utilities	Induced-adjacent development would increase demand. The light rail technology would increase electricity usage.	Induced-adjacent development would increase demand. The heavy rail technology would increase electricity usage.	Induced-adjacent development would increase demand. The light rail technology would increase electricity usage.
· Land Use	Would displace approximately 16 buildings	Would displace approximately four buildings.	Would displace approximately 14 buildings.
· Visual	The aerial guideway and lighting would change the visual character of the entire area adjacent to the alignment.	Little visual impact would occur with the subway.	The aerial guideway and lighting would change the visual character of the area north of the ASTF right-of-way.
· Historic Resources	Views of historic Broadway and Robinsons-May buildings may be obstructed. King station may adversely affect the facade.	No impacts anticipated.	Views of historic Broadway and new Robinsons-May buildings may be obstructed. King station may adversely affect the facade.

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- **Station Area Joint Development and Adjacent Development Potential.** The economic development potential is greater for the aerial or subway alternatives than for the LAX option. Based on the similarity in patronage, travel time, connection to other lines, service to activity centers, and locations within redevelopment or recovery areas, there are no significant differences in station area economic development potential between the aerial and the subway alternatives (Alternatives 1 and 2). The aerial alternative would have five station areas that would have a moderate to high development capacity and capture potential, the subway alternative would also have five areas and the LAX alternative (Alternative 3) would have three areas.

- **Business Disruption.** There are significant differences between the alternatives in the potential to disrupt or adversely affect existing businesses along the corridor. The greatest disruption would likely result from both the construction and operation of the Alternative 1, aerial LRT. The aerial guideway structure would eliminate some left turns and on-street parking. It would also be a visual barrier that would block the visibility of local business and create a shaded or shadowed street environment that may appear to be unsafe and would be unappealing to shoppers. Alternative 3 (LAX) would have similar effects because the northern half of the aerial and LAX alternatives are identical. In contrast, the subway alternative would be disruptive in those locations where stations would be constructed using a cut and cover technique and where earthwork and boring equipment would be removed from the tunnel structures.

- **Environmental Consequences.** The aerial and LAX alternatives could result in effects on community quality. Specifically, the greatest amount of land use displacement would result from the aerial alternative, followed closely by the LAX alternative. The visual and noise impacts of the aerial and LAX alternatives are also anticipated to be substantial, particular in the narrower sections of the corridor north of the Santa Monica Freeway and through Leimert Park. In contrast, the subway alternative would largely affect parts of the physical environment that are related to increased engineering costs. Specifically, the subway would pass through substantial area with a high water table as well as an area of liquefaction. The Subway alternative would not have the adverse visual and noise impacts associated with Aerial and LAX alternatives.

In summary, Alternative 2 (subway) shows some ridership and travel time advantages, and has fewer negative environmental and business impacts. The cost of the subway alternative, however, is more than twice that of the other two alternatives. The two light rail alternatives (Alternatives 1 and 3), while significantly less expensive than the subway alternative, would have some significant negative environmental impacts. The development potential is greatest for Alternatives 1 and 2, which both travel the corridor between Pico/San Vicente and Hawthorne Plaza, and would differ little between these two alternatives. Development potential under Alternative 3 (to LAX), however, would be significantly less.

6.2 A Combined Alternative to Minimize Impacts and Costs

With operating characteristics and the economic development potentials of Alternatives 1 and 2 being similar, it appears that the most viable alternative for the Crenshaw/Prairie Corridor would be one that would minimize the adverse business disruption and visual impacts associated with the light rail aerial alternative, but that would not have the substantial capital and operating costs associated with the heavy rail subway alternative. This raises the possibility of defining a "hybrid" alternative that travels the Pico/San Vicente corridor but combines aspects of the light rail and heavy rail alternatives.

An alternative that would use light rail rather than heavy rail technology in a subway alignment for some portion of the corridor could both minimize adverse economic and environmental effects associated with aerial light rail, as well as avoid the high costs associated with the heavy rail subway. Costs could be reduced by using light rail technology and smaller stations. For example, light rail vehicles could be operated in a tunnel between Pico/San Vicente and Vernon -- to avoid adverse environmental and business impacts on the most sensitive areas in the corridor -- and then transition to an aerial guideway south of Vernon where there are fewer land use compatibility problems.

Such an alternative was presented to RCC for a preliminary cost estimate. The estimated capital costs for this hybrid alternative was $1.27 billion, which is $735 to $978 million from Alternative 2, or a 37% to 44% reduction in capital costs. This would still represent an increase of $295 million over Alternative 1 (30%), but would also mitigate most of the negative environmental impacts of the aerial light rail alternative at a fraction of the cost of the heavy rail subway alternative. It is important to note that this "hybrid" does not represent a new technology; Blue Line trains are already used in subway in downtown Los Angeles, as illustrated in Plates 6.1 and 6.2.

6.3 Next Steps - Making the Connection Between Transportation, Land Use and Community Development

Following completion of the Preliminary Planning Study, the standard MTA process would be to authorize the preparation of a Route Refinement Study and Environmental Impact Report (EIR) in order to provide all necessary MTA board clearances for local funding and the preparation of engineering plans for the adopted alternative. Since the Crenshaw/Prairie Corridor is one of the candidate corridors for which funding has not yet been secured, it is MTA policy to rank the Crenshaw/Prairie Corridor for funding priority along with the other candidate corridors. Then ranking will be conducted by the MTA Board and will be based on evaluation criteria adopted by the Board in 1993. Based on the criteria, each corridor will be ranked "high," "medium" or "low." In light of MTA's reduced fiscal resources, only one or two corridors may by ranked "high" for local funding the near term future.

Because there are significant mobility needs in the Crenshaw/Prairie Corridor and the need to provide a catalyst to economic development, there has been substantial interest in

pursuing additional funding options for this candidate corridor. One option would be to solicit funding from the Federal government through either existing programs or through a new initiative or demonstration program that would link transportation and economic development for inner city areas such as the Crenshaw/Prairie Corridor. Pursuing federal funding through the federal approval process would involve meeting the analysis and environmental documentation requirements of the Federal Transit Administration (FTA). The FTA is the federal agency responsible for approval and funding of federally sponsored transit systems throughout the U.S., such as the recently opened Metro Red Line segment in downtown Los Angeles. Preliminary indications are that the Crenshaw/Prairie Corridor Preliminary Planning Study--which was designed to satisfy local MTA requirements--may need to be slightly expanded to address federal requirements and criteria. In addition, the environmental documentation necessary for funding approval would have to address both the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

It is also possible that other federal agencies, such as the Departments of Housing and Urban Development, Commerce, Labor and the Environmental Protection Agency may be willing to contribute funding to strengthen and reinforce the transportation, economic and community development potential within the corridor. The remainder of this report, therefore, highlights the issues that would likely be key components of some sort of joint federal/local funding strategy for the Crenshaw/Prairie Corridor.

The Corridor and "South Los Angeles"

As discussed earlier in this report, while transportation planning has occurred for many years in the Crenshaw/Prairie Corridor, the civil unrest in 1992 brought the mobility and economic development needs of the corridor to the forefront. The corridor was added by the MTA board to the list candidate corridors that would be evaluated and ranked for funding. Unique among the candidate corridors established by the MTA, the Preliminary Planning Study for the Crenshaw Prairie Corridor was charged with combining improved mobility with economic development.

The Crenshaw/Prairie corridor has the greatest potential to sustain economic development of all the arterial corridors in what is geographically termed "South Los Angeles". No other north-south or east-west arterial corridor in South Los Angeles compares to the existing amount of development and employment base along the Crenshaw/Prairie Corridor. Such activity centers as the Baldwin Hills Crenshaw Plaza, Hawthorne Plaza, the Forum and Hollywood Park uniquely provide the Crenshaw/Prairie Corridor with a viable economic base which would be complemented and enhanced by rail transit improvements. Even more importantly, local jurisdictions along the route (Los Angeles, Inglewood and Hawthorne) have already or are currently putting into place redevelopment areas that can be used in conjunction with rail transit investments in station areas to assemble land, and provide the financing mechanisms to stimulate reinvestment and growth.

Potential Economic Development Benefits

A rail transit investment cannot in itself create market support. Rather a rail transit investment can be a key component in enhancing on-going development trends. Under conditions such as exist in the Crenshaw/Prairie Corridor where traditional market forces are marginal and where the attractiveness of local businesses and development potentials are uncertain, it will undoubtedly take a coordinated array of public interventions in the areas of land use planning incentives as well as financing incentives to initially create a base of support to local economic development. A rail transit investment would be a key public contribution to this base of support. This level of investment could have the following basic economic effects (See Figure 6.1):

- Direct and indirect employment generated from the construction of the transportation facility.

- Benefits of improved mobility and access that accrue to corridor residents as well as to businesses within the corridor.

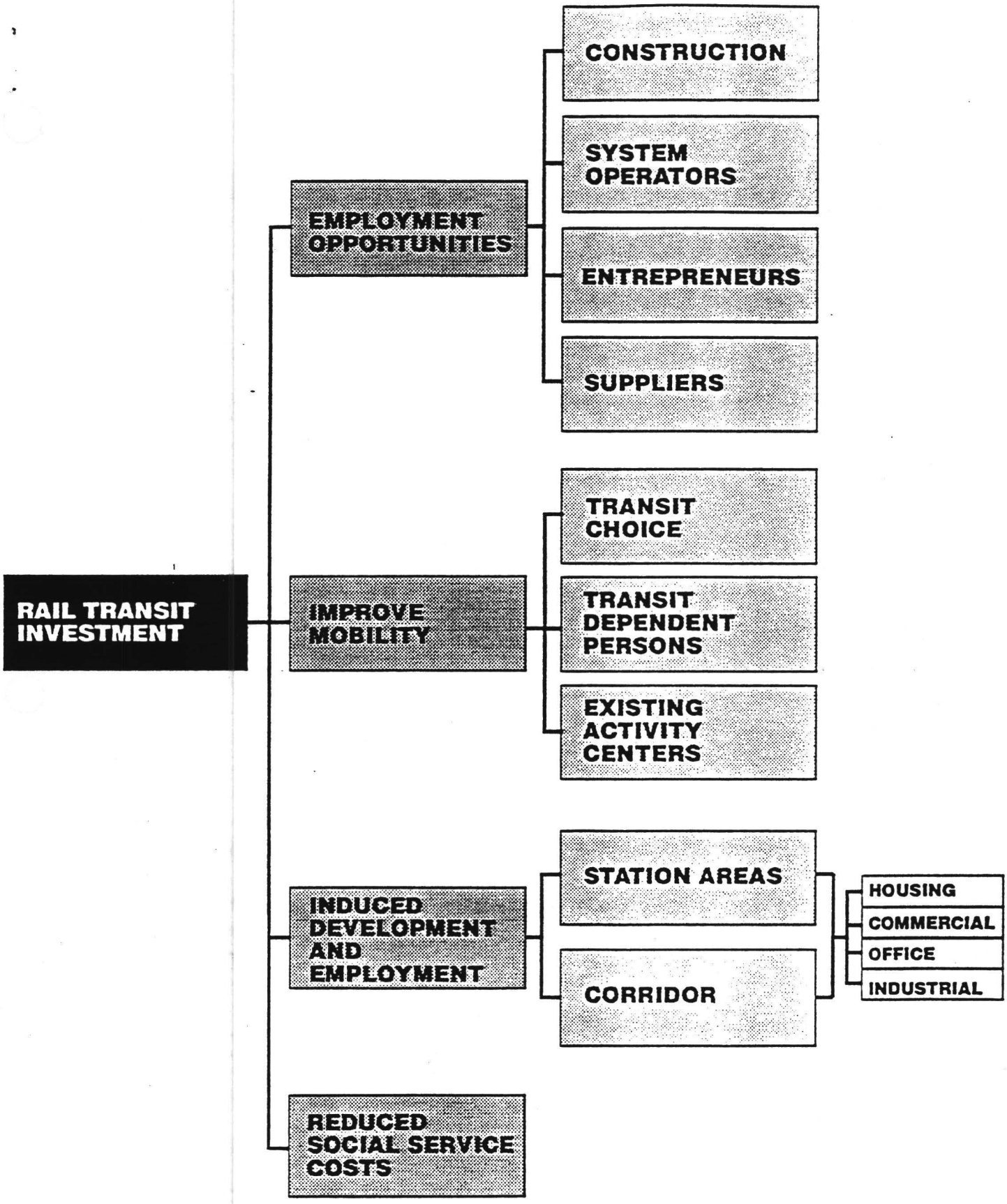
- Induced development that may take place in station areas or throughout the corridor, including housing, commercial services, office and industrial development.

- Reduced social service costs (unemployment benefits, crime, etc.)

Statistics available from the Federal Transit Authority (US FTA) indicate that for every $1 million of construction cost, 13.4 construction jobs are created. In the case of the Crenshaw/Prairie Corridor, costs ranging from $800 million to $2 billion dollars would result in approximately 10,720 to 26,800 on-site construction jobs. Indirect employment would also result from suppliers and fabricators of construction materials.

FTA statistics also indicate that 32.3 indirect jobs are created for every $1 million of construction costs. Thus, from to 25,840 to 64,600 additional jobs would also be created. The extent to which direct and indirect jobs are available to residents and workers within the corridor will be a matter of public policy and proactive intervention by the MTA. For example, should policy objectives seek to achieve a 30 percent local participation rate for contractors as well as fabricators and suppliers, approximately 11,000 to 27,000 local jobs over the period of construction would result depending on the ultimate construction value of the engineering alternative selected.

Poor mobility within the corridor may contribute to reduced incomes and unemployment. According to the 1990 Census there are approximately 51,000 households (approximately 16 percent of all households) within the Crenshaw/Prairie Corridor that have no automobile available. The Census also indicates that approximately 44,000 persons (17 percent of all workers 16 years of age and older) in the Crenshaw/Prairie Corridor use transit as their primary transportation to work. Most significantly, the census indicates that 14 percent of all households (45,000 households) in the corridor have income below the poverty level. This rate is slightly higher than the countywide rate of 12 percent. Increased mobility



SOURCE: Terry A. Hayes Associates

Crenshaw-Prairie Corridor
Preliminary Planning Study
METROPOLITAN TRANSPORTATION AUTHORITY
NORTH ENGINEERING / TERRY A. HAYES ASSOCIATES

FIGURE 6.1
ECONOMIC BENEFITS
FLOW CHART

afforded by a rail transit improvement could improve employment potentials by better linking the corridor to major employment centers throughout the metropolitan area. Specifically, the connection to the Metro Red Line would provide access to the Wilshire Corridor and to Downtown Los Angeles, while the connection to the Metro Green Line would provide access to the industrial and business complex in the South Bay area.

Any reduction in unemployment and under-employment would be a positive change. A north-south rail transit improvement in the Crenshaw/Prairie Corridor--connecting to east-west rail transit lines such as the Metro Red Line, Metro Green Line and potentially the Exposition Line--would greatly increase the access of these persons to employment and educational and training centers throughout the metropolitan area. It should also be noted that improved regional mobility could also provide opportunities for all local residents--not just those that are transit dependent--to gain access to higher paying jobs in other parts of the metropolitan area. Travel time to work data from the 1990 Census suggests that approximately 80 percent of the workers in the Crenshaw/Prairie Corridor work outside the corridor.

Rail transit will also improve access to existing business activities within the Crenshaw/Prairie Corridor. Existing journey-to-work census data suggests that approximately 20 percent of the 430,000 jobs within the corridor are likely held by persons residing in the corridor.[2] With convenient pedestrian connections, existing developments such as the Baldwin Hills Crenshaw Plaza, Santa Barbara Plaza, Leimert Park, Downtown Inglewood, and the Hawthorne Plaza Mall would likely benefit from increased patronage and sales volume from transit-dependent shoppers both within and outside the corridor.

Need for Public Intervention

The possibility for positive economic change beyond these direct employment changes would have implications at the community, corridor and station area levels. Under current and projected conditions within the corridor, converting the possibility for economic change to a reality will be dependent on the types of public interventions that will be packaged with the rail transit investment. The possible investment by the Metropolitan Transportation Authority (MTA) is a catalytic component, however, this investment cannot stand alone. It must be combined with actions and coordinated support from other public agencies and local jurisdictions. Support from other public agencies could involve funding, targeted program initiatives as well as the adoption of specific land use and development policies focused to support a rail transit investment by the MTA. With public commitments in place, the groundwork will be laid to involve local stakeholders, community-based development organizations and the private sector. As a starting point the following key public actions must be taken:

2. Based on the proportion of workers that have travel times of 14 minutes or less to work.

- **Reaffirm Commitment from the Metropolitan Transportation Authority.** This Preliminary Planning Study has been initiated by MTA with a specific focus on economic development potentials within the Crenshaw/Prairie Corridor. The MTA should continue this initiative as local and/or federal funding sources for the project are pursued.

- **Inter-Jurisdictional Coordination.** The MTA should devise and implement a strategy to assure that the policies being formulated by other public agencies support, rather than undermine, local economic development efforts being initiated by the MTA.

- **Ensure Opportunities for Stakeholder Equity Participation.** There are a substantial number of long-time major property owners (institutions and individuals) that will have a stake in the positive economic changes that may occur. These stakeholders must be aggressively brought into the development process.

- **Ensure Community-Based Participation.** The market analysis has indicated that there is substantial market support in the corridor for new and expanded retail services. Competitive disadvantages of the corridor (public perception, access, and more attractive areas elsewhere) have resulted in limited retail concentrations in the corridor. Changing this situation must be based on matching community needs and services. Community-based development corporations could provide the necessary link.

- **Utilize Redevelopment Tools.** The MTA's specific mandate is to improve mobility within Los Angeles County. Although the MTA has the capacity to participate in joint development opportunities, this capacity is limited. More powerful land assembly and financing tools are available through the provisions of the California Community Redevelopment Law and the designation of redevelopment areas. Currently approximately 17 percent of corridor-adjacent property is within redevelopment areas and an additional 56 percent coverage is being proposed by local redevelopment agencies (resulting in a total of 73 percent). To maximize the influence of the rail transit investment, redevelopment efforts should focus on station areas and on frontage or expanded frontage areas along the corridor.

- **Implement Land Use and Transportation Policies.** Section 5.3 of this report has indicated that SCAG has forecast a substantial amount of new growth for the overall 85-square mile corridor area. To maximize the influence of the rail transit investment, the majority of this growth should be captured within station areas or within 2-3 blocks of the rail transit alignment. Commercial frontages along the corridor are typically not deep (less than 150 feet). This suggest that the evolving MTA Land Use Transportation Policy should be refined to provide incentives for growth within and adjacent to station areas. The policy should also be refined to include a larger band of denser development adjacent to the corridor. General Plans, Community Plans, Specific Plans and Redevelopment Plans within the affected jurisdictions should be amended to achieve this purpose.

suggested by some that the corridor, and South Central Los Angeles in general, is a natural location for industries such as warehousing, distribution, assembly and manufacturing, given its location between downtown and the airport, and downtown and the ports of Los Angeles/Long Beach.

- **Transit Industry Technology Zone.** Small businesses are likely to be the vast majority businesses that expand or attracted to the Crenshaw/Prairie Corridor in the future. One of the major public investments throughout the region is in transit and transportation. The existing commercial and industrial plant stock in the corridor could be targeted for the location of businesses that supply the transit and transportation industry in the region, as well as nationally. This growth area also offers the opportunity to stimulate or incubate new business opportunities. The availability and price of space in the corridor could be used for this purpose as well as new construction tied directly facilities in station areas. Specifically, the Crenshaw/Prairie Corridor could be designated as a transit/transportation technology zone, with land use policies compatible with a rail transit corridor. For example, the corridor could support the smaller supply industries to the development of the Los Angeles rail transit car. These could initially start as incubator firms or industries, and develop into more mature concerns with the emergence of a transit industry in the Los Angeles Basin. This would be an ideal mix of LACMTA transportation and community objectives, in a geographic area of key economic need.

  This concept could also be extended to include electric vehicle technology. For example, state law requires that 2 percent of all vehicles sold by the year 2000 be zero emission vehicles. The UCLA Lewis Center for Regional Policy Studies recently proposed a development and technology concept for the Crenshaw Corridor based around electric vehicle technology. Under this broad concept transit stations would become transportation centers and intelligent plazas. They would include mixed use land use developments, as well as electric car recharging stations. The transit stations would become a neighborhood focus of electric vehicle technology, with electric vehicles in (either small cars or shuttle buses) providing feeder access from neighborhoods to the transit stations. These small electric vehicles may even be publicly owned, or rentable, rather than in private ownership.

- **Land Use and Transportation Incentives Demonstration.** The effectiveness of land use tools in stimulating economic development can be tested in the Crenshaw/Prairie Corridor. The City of Los Angeles and LACMTA have recently prepared a joint land use transportation policy providing guidelines for land uses around rail stations. The Crenshaw/Prairie Corridor could be an ideal corridor for a demonstration project of these policies. This could receive statewide and national attention if approached appropriately. This could embrace a joint land use/transportation coalition, or a transit/economic coalition, to provide an umbrella framework within the overall demonstration project for the encouragement and economic support of small rather than large projects within the corridor in a coordinated fashion. It will probably require some organization and/or structure at the corridor-wide level to realize significant progress on economic revitalization in the Crenshaw/Prairie Corridor.

- **The Transit Village Concept.** Under this concept, redevelopment would be clustered around station areas, in mixed use formats, including multistory residential, retail, and commercial uses. Public spaces could also be provided, including pedestrian walkways to tie the transit station through the transit village to the surrounding neighborhoods. In this way the additional density necessary at transit stations could be added without severely impacting adjacent low scale and low density. Integration of local community facilities, and local police stations, within the transit villages would also provide for neighborhood cultural centers and crime response.

- **The Training Center Concept.** It will be critically important that the economic revitalization strategy include short term measures as well as long term programs. In that it will be at least ten years before any rail infrastructure is built in the Crenshaw/Prairie Corridor, short term strategies during that time will be critically important. A cornerstone of such strategies should be job training programs and the development of training centers to pave the way for the establishment of the jobs and industries in the longer term economic program. This concept should tape into state and national programs and not just be locally oriented. For example, the OIC Program (Opportunities for Industrialization Centers/America) may be a ideal vehicle to start and/or maintain this strategy.

- **The Enhanced Mobility Concept.** Under this concept, the rail line would provide the catalyst for better linkages and mobility not only within the corridor, but connecting the corridor to other parts of the Los Angeles area. The rail project might provide the overall impetus to facilitate efforts like the Atlanta Project in Atlanta.

- **Affordable Ownership Housing.** The rail system provides an outstanding if not unique opportunity to provide affordable housing for ownership in the Crenshaw/Prairie Corridor. For example, the trandominium concept in Santa Clara County of providing condominiums at transit stations. In the San Francisco Bay Area, residential units are increasingly being constructed at rail stations on the BART system, the Caltrain Commuter Rail System, and the Santa Clara County Light Rail transit system. Residential densities at transit stations are typically in the 30-50 units per acre range. At a Caltrain station in San Mateo there are even plans for a ten story residential high--rise building. Residential projects have also been completed at the Pleasant Hill BART station, the Palo Alto Caltrain station, and the Santa Clara LRT Almaden station, and the Del Norte BART station in El Cerrito.