

*Mr. McDonald*

JUN 17 1980  
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# FINAL ENVIRONMENTAL IMPACT STATEMENT

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## LOS ANGELES DOWNTOWN PEOPLE MOVER PROJECT

CA-06-0012 and CA-03-0131 June 1980

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FINAL ENVIRONMENTAL IMPACT STATEMENT

AND 4 (f) STATEMENT

LOS ANGELES DOWNTOWN PEOPLE MOVER PROJECT

CA-06-0012 and CA-03-0131

This project is proposed for funding under an Urban Mass Transportation Administration capital grant.

This statement is submitted pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969; Sections 3(d) and 14 of the Urban Mass Transportation Act of 1964; Section 4(f) of the Department of Transportation Act of 1966; and Section 106 of the National Historic Preservation Act of 1966.

June 6, 1980  
Date

By: Peter Benjamin  
Peter Benjamin  
Acting Associate Administrator  
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PREFACE

This Environmental Impact Statement (EIS) was prepared by the Urban Mass Transportation Administration (UMTA) in cooperation with the City of Los Angeles to document the environmental impacts of a proposed Downtown People Mover project (DPM) in the central business district of the City of Los Angeles.

The Draft EIS was circulated to various Federal, state, and local agencies and to interested organizations and individuals in accordance with applicable guidelines and regulations. UMTA received comments on this draft for sixty (60) days after the official start of circulation on Friday, July 20, 1979. The City of Los Angeles held a public hearing on the EIS for the proposed project on Tuesday, August 28, 1979, in Los Angeles, California. UMTA and the City of Los Angeles have addressed all substantive comments received on social, economic, and environmental issues in this Final EIS. Changes from the Draft EIS are indicated by vertical margin lines in this final text.

Copies of the Final Statement may be obtained, as supplies permit, or inspected at:

Community Redevelopment Agency of the City of  
Los Angeles  
727 West 7th Street, Suite 300  
Los Angeles, California 90017

Southern California Association of Governments  
600 South Commonwealth Avenue, Suite 1000  
Los Angeles, California 90005

Urban Mass Transportation Administration  
Region IX  
2 Embarcadero Center, Suite 620  
San Francisco, California 94111

Copies of the Final Statement may be inspected at:

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University Park

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Kennedy Memorial Library  
5151 State College Drive

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18111 Nordhoff St.

This statement can be purchased from:

The Environmental Law Institute  
1346 Connecticut Avenue N.W.  
Washington, D.C. 20036



## SUMMARY

## FINAL ENVIRONMENTAL IMPACT STATEMENT

Department of Transportation

Urban Mass Transportation Administration

1. Name of Action: Administrative Action2. Description of Proposed Action:

- A. The City of Los Angeles proposes to construct with federal capital grant assistance a Downtown People Mover transit project in the central business district of the City of Los Angeles. The Downtown People Mover (DPM) would be a completely automated, grade-separated circulation/distribution system of approximately 3 miles in length, linking 13 stations in downtown Los Angeles, including car and bus transfer stations at Union Station and the Convention Center. It would follow an alignment from the Convention Center to Union Station via Figueroa Street, Fifth Street, 3rd Place, Hill Street, First Street, Los Angeles Street, and Arcadia Street, through the western and northern portions of the central business district. Total trip time from one end to the other is estimated at 15 minutes. At the Convention Center, a 1750-space parking garage is proposed to be constructed. At the Union Station end there is proposed a 2000-car parking garage and a three-level bus station to connect the people mover with the planned extension of the El Monte Busway and AMTRAK rail service. The City of Los Angeles projects approximately 72,400 trips per day for the DPM in 1990.

Implementation of the project would require the purchase of necessary rights-of-way, and the purchase

and installation of an automated transit system consisting of 1.9 miles of dual lane elevated guideway, 1.3 miles of single lane elevated guideway, and 0.4 miles of single lane guideway in tunnel through Bunker Hill; 60 transit vehicles together with necessary control, surveillance and maintenance systems; and a storage and amintenance facility to be constructed at Union Station.

- B. The project will require capital assistance under the Urban Mass Transportation Act of 1964, as amended. The estimated total project cost, escalated to the mid-point of construction (approximately mid-1982) is \$175 million. The expected funding for this project is:

UMTA Section 3	\$118.1
Federal Aid Interstate (FAI)	25.0
State Proposition 5	15.9
State Senate Bill 1879 (Funding for Multimodal centers)	2.3
Local Land Contributions	12.0
Local Cash Contributions	1.7
TOTAL	\$175.0*

\*Millions of inflated dollars

- C. UMTA Project No: CA-06-0012 and CA-03-0131

3. Summary of Effects:

A. Long-Term Beneficial Effects

1. The proposed Downtown People Mover project would increase transportation service in the CBD, resulting in a reduced need for automobile travel and bus service within the affected corridor, in-

creased transit ridership, reduced need for additional CBD automobile parking, reduced travel time for circulation/distribution trips, increased access to CBD activity centers, and improved connections to regional transportation services. The DPM will be in conformance with and will reinforce locally adopted transportation plans, including the Four Part Regional Transportation Development Program, redevelopment and citywide plans, and the local parking management plan.

2. The proposed project would result in a number of beneficial land use and economic changes within the CBD, as follows:
  - a. Reinforcement of adopted land use plans.
  - b. Accelerated development of planned projects within the CBD, involving increases in office space, hotel rooms, retail sales, and housing stock.
  - c. Significant tax base and revenue increases resulting from increased land and improvement values, increased payrolls, and increased per capita expenditures.
3. The proposed project would provide improved accessibility for the elderly and handicapped because of its barrier-free design and direct connection to a proposed elderly housing project.
4. Air quality, as measured in terms of daily emissions, would be slightly improved in the DPM corridor. The DPM is a tactic in the South Coast Air Quality Management Plan and is thus in conformance with that plan.

5. Traffic congestion would be partially relieved on certain streets in the DPM corridor.
6. New views of the downtown area would be made possible for users of the proposed project.
7. Operation of the DPM would result in daily VMT savings of 17,400 auto VMT, 1,055 bus VMT, and 2,189 minibus VMT or  $213.3 \times 10^6$  BTU. Correcting for the daily induced VMT because of DPM development yields a daily savings of  $171.2 \times 10^6$  BTU of petroleum fuels with the DPM in operation.

#### B. Long-Term Adverse Effects

1. Depending upon the observer's location, the elevated portions of the DPM will create some view obstructions and visual incompatibilities. View obstructions will be most pronounced where the massing is largest, for example at stations with mezzanines. Visual incompatibilities are likely to occur where the surrounding cityscape is older and less densely developed, for example along Figueroa Street south of Seventh Street.
2. The proposed project would provide 3750 auto parking spaces at two intercept garages. This addition would result in a slight increase of carbon monoxide concentrations at the two intercept locations.
3. Sections of the alignment pass in close proximity to some buildings. Noise analysis conducted for the proposed project shows that, in certain cases, increases in local noise levels would result. The noise levels will depend, in part, on the guideway and vehicle technology selected. However, these increases are not considered significant.
4. The proposed project would require the acquisition of right-of-way at some historic and park sites.

In addition, there will be partial obstruction of the views of some historic buildings. Some open spaces will also experience partial view obstruction.

5. The placement of the guideway could limit, to some degree, emergency access to certain buildings.
6. Vehicles, stations, and parking areas in the proposed system will provide some opportunities for crime. These opportunities will be minimized to the greatest extent possible through surveillance, communications, and specific design measures.
7. Placement of the columns at intersections or in street medians could create visual obstructions to motorists making turns.
8. The portions of the guideway that will be in a median will create capacity restrictions at certain intersections on Figueroa Street until the street is widened to major highway standards.
9. If the three businesses to be displaced do not relocate in the immediate vicinity, employees and patrons of these businesses could have access problems.
10. Operation of the DPM would result in a daily energy consumption of 64,485 KWH of electrical energy ( $220 \times 10^6$  BTU). Subtracting the energy saved because of reduced auto, bus, and minibus VMT of  $171.2 \times 10^6$  BTU, yields a daily energy loss of  $48.8 \times 10^6$  BTU with the DPM in operation. This represents only 1.9% of the daily energy used for auto and public transit in the CBD in 1990. The energy savings due to reduced VMT would occur entirely in petroleum fuels. The energy used by the DPM could be obtained from a variety of fuel sources depending on the mix of fuels used for generating the power stations. Thus, the DPM would provide greater energy source flexibility.

#### C. Short-Term Beneficial Effects During Construction

1. Construction of the proposed project will result in increased employment of construction workers in the region. The resulting increased construction workers' payroll, some portion of which will be spent in the region, will increase regional economic activity.

#### D. Short-Term Adverse Effects During Construction

1. The relocation of three existing businesses will cause short-term inconveniences until new business facilities can be found.
2. Temporary traffic congestion and pedestrian inconveniences will occur along the route. The exposure of pedestrians and motorists to potential accidents will be increased. In addition, the presence of construction equipment and traffic diversions could impede access by emergency vehicles to certain locations.
3. Increased noise, vibration, and air pollutant emissions can be anticipated. Both businesses and residences are likely to be affected for short periods of time.
4. Construction of the DPM will consume approximately 106 million KWH ( $361 \times 10^9$  BTU) of energy for both the manufacture and installation of system components.
5. The visual environment would be adversely affected by construction equipment, haul vehicles and excavation at selected sites. The visual impacts will be present for relatively short periods of time at varying locations.

6. Vegetation removal will result in unsightly conditions until such time as construction is completed and new landscaping is in place. Some mature trees will be permanently removed and other trees will be relocated or pruned.
7. Construction of the proposed project will necessarily result in some disruption, with attendant sales losses, to businesses adjacent to the route.
8. Construction of the proposed project presents the potential for disturbing some archaeological remains, if such are present.

#### 4. Alternatives Considered

##### A. System Alternatives

1. Null (no project) - The Null alternative consists of the currently operating transit system, maintained at a constant level of service through 1990.
2. Bus - The Bus alternative is an expanded bus system, designed to meet the demands of a 1990 estimated workforce of 230,000.
3. People Mover - The People Mover alternative consists of an automated guideway transit system supplemented by bus and minibus service.
4. People Mover/Rail - The People Mover/Rail alternative consists of the People Mover interfacing a rail system, supplemented by the regular downtown bus system.
5. Rail - The Rail alternative consists of rail service, supplemented by bus and minibus service,

without the DPM.

##### B. Other Alternatives

In addition to the system alternatives, alternative corridors, route alignments, and terminal locations were evaluated during planning and preliminary engineering studies, and are summarized in this document.

5. Comments on the Draft EIS were received from the following parties:

##### Federal Agencies

- General Services Administration (GSA)
- U.S. Department of Agriculture, Soil Conservation Service (Agriculture)
- U.S. Department of Housing and Urban Development (HUD)
- U.S. Department of the Interior, (Interior)
- U.S. Department of Transportation, Federal Highway Administration (FHWA)
- U.S. Department of Transportation, Office of the Secretary (DOT)
- U.S. Environmental Protection Agency (EPA)

##### California State Agencies

- Air Resources Board (ARB)
- California Department of Transportation (CALTRANS)
- California Transportation Commission (CTC)
- Governor's Office, Office of Planning and Research (OPR)
- State Lands Commission (State Lands)

##### Regional Agencies

- Southern California Association of Governments (SCAG)
- South Coast Air Quality Management District (SCAQMD)

County Agencies

- Los Angeles County Flood Control District (LACFCD)
- Los Angeles County Transportation Commission (LACTC)

City Agencies/Departments

- Los Angeles Department of City Planning (City Planning)
- Los Angeles Department of Public Works, Bureau of Engineering (City Engineering)
- Los Angeles Fire Department (LAFD)
- Los Angeles Police Department (LAPD)

Organizations

- California Mart (California Mart)
- California Paralyzed Veterans Association (Paralyzed Veterans)
- Coalition for Rapid Transit (CRT)
- Jonathan Club (John R. Shiner, Counsel)
- League of Women Voters, Los Angeles Chapter (LWV)
- Los Angeles Central City Association (CCA)
- Los Angeles Chamber of Commerce (Chamber)
- Los Angeles City Council for the Handicapped (Handicapped Council)
- Los Angeles Conservancy (Conservancy)
- Los Angeles County Federation of Labor (Labor Federation)
- Los Angeles Visitors and Convention Bureau (Visitors Bureau)
- National Association for the Advancement of Colored People (NAACP)
- Scenic Shoreline Preservation Conference (Shoreline)
- Sierra Club Los Angeles Chapter (Sierra)
- Society for California Archaeology (SCA)

Individuals

- Gregory Goldin
- Johnathan Hartman
- Natalyn Levin
- Richard Marvin
- Rodney E. Nelson
- T. A. Nelson
- Vince Petito
- Ronn S. Pickard
- Joy Picus, Los Angeles City Councilwoman, Third District
- Ray Remy, Deputy Mayor, City of Los Angeles
- Pat Russell, Los Angeles City Councilwoman, Sixth District; member, Los Angeles County Transportation Commission
- Robert Sarnoff
- Samuel Schiffer
- David Seidman
- Richard A. Stromme
- Everett Welmers, Board Member, Community Redevelopment Agency
- Michael Winn
- Julian Wolinsky

6. This Final Environmental Impact Statement is being made available in June, 1980.

7. Review and Findings

This Final Environmental Impact Statement represents a detailed statement, as required by Section 14 of the Urban Mass Transportation Act of 1964 and Section 102(2)(c) of the National Environmental Policy Act of 1969, as amended, on:

(1) the environmental impact of the proposed project;

- (2) any adverse environmental effects which cannot be avoided should the proposal be implemented;
- (3) alternatives to the proposed project;
- (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and
- (5) any irreversible and irretrievable impact on the environment which may be involved in the proposed project should it be implemented.

Based on the information contained in this Final Environmental Impact Statement and on consideration of the written and oral comments offered on the document, the Urban Mass Transportation Administration has determined, in accordance with Section 14 of the Urban Mass Transportation Act, that:

- (1) adequate opportunity was afforded for the presentation of views by all parties with a significant economic, social, or environmental interest, and fair consideration has been given to the preservation and enhancement of the environment and to the interest of the community in which the project is located; and
  - (2) all reasonable steps have been taken to minimize adverse environmental effects of the proposed project and where adverse environmental effects remain, there exists no feasible and prudent alternative to avoid or mitigate such effects...
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## 1-000 REGIONAL OVERVIEW AND INTRODUCTION TO THE STUDY AREA

The 10-county Southern California region had a 1976 population of 12.6 million, and a civilian employment of 5 million (excluding Inyo County). The 10-county region is the second largest center of business and trade in the nation (next to the New York-New Jersey area). The Los Angeles urbanized area, shown in Figure 1-00A, had a 1970 population of 8,356,000.

The County of Los Angeles is bordered on the east by Orange and San Bernardino counties, on the north by Kern County, on the west by Ventura County, and on the south by the Pacific ocean. About one-half of the county is mountainous. The remainder is made up of the Los Angeles basin and the Mojave Desert. The basin is the largest coastal low-land in the state, and it contains about one-third of the state's population, including the City of Los Angeles, the nation's third largest city, with a 1970 population of 2.8 million.

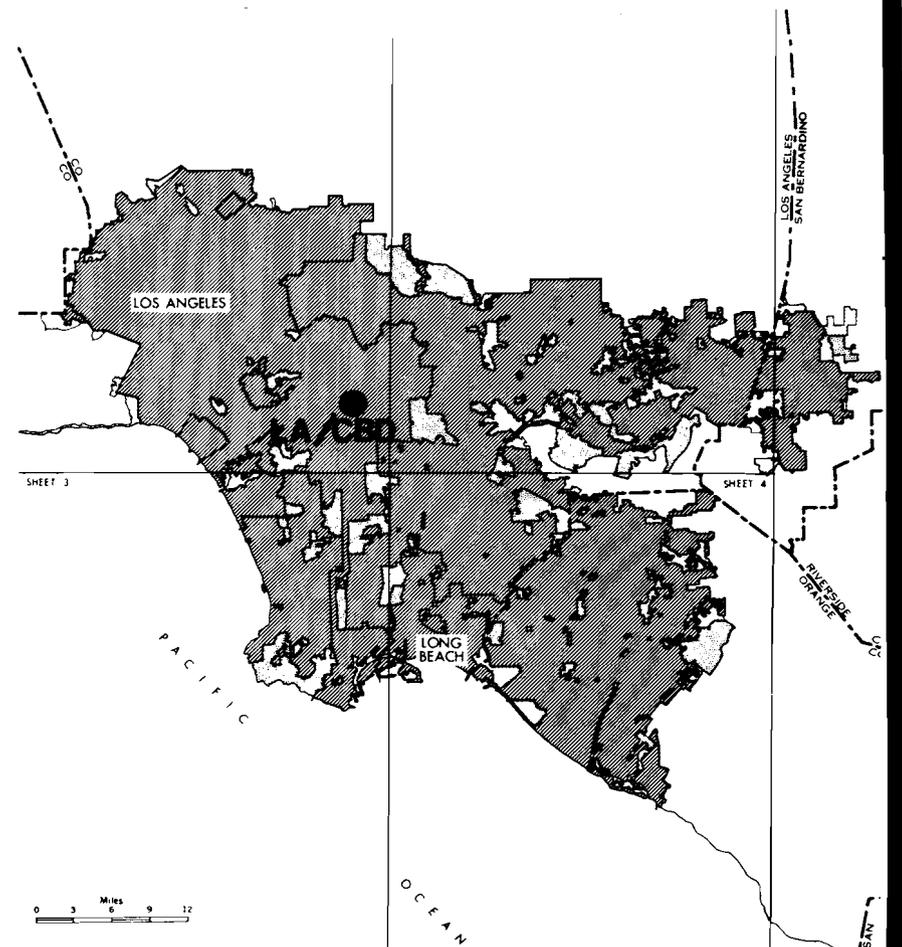
The Los Angeles Central Business District (CBD) is the regional business, financial, and government center for the Los Angeles/Long Beach metropolitan area. The current 200,000 employment level is projected to increase to 230,000 by 1990. Over half of the employees reside outside of the City of Los Angeles, and median travel distance for work trips is 7.5 miles. The CBD is served by eight freeways, all of which experience severe congestion during commute hours. Many surface streets near and within the CBD also operate above capacity.

## 1-100 REGIONAL PERSPECTIVE

The Los Angeles region is an area of immense cultural and ethnic diversity where more than ten million people work and live. Of a total population of 7,032,075 persons in Los

FIGURE 1-00A

## LOS ANGELES URBANIZED AREA



Source: U.S. Dept. of Commerce  
Bureau of the Census

Angeles county in 1970, 85.4% were white, including 17.5% Spanish-American, 10.8% were Black, and the remaining 3.7% were American-Indians, Japanese, Chinese, Koreans, Filipinos, Hawaiians and others. By 1990 the population of the county is anticipated to reach 7.5 million people in a land area of 4083 square miles.

#### 1-110 Major Land Use Patterns and Trends

Physical conditions, particularly terrain, have influenced the development of the urban form of the region. This urban form consists of residential, commercial, industrial, and institutional land uses, generally characterized by low profile communities and low intensity uses. Intense residential and commercial uses are concentrated in more established communities; high rise structures are generally located in the Los Angeles Central Business District, Wilshire Corridor, Hollywood, Century City, and the south central portion of the San Fernando Valley.

Although residential development is spread throughout the region, it is primarily concentrated in the basin and inland valleys. Large scale development of single family detached units with varying lot sizes has contributed to urban sprawl. High rise apartments or condominiums are found along a corridor between the Central City and Santa Monica, Marina del Rey, Long Beach, Pasadena, and portions of the San Fernando Valley.

Industrial growth has occurred along major transportation routes. Concentrations exist around Los Angeles International Airport, the Los Angeles-Long Beach Harbor area, south central Los Angeles, and along railroad routes through portions of the San Gabriel and San Fernando Valleys.

#### 1-120 Centers of Economic Activity and Trends

The region's economic output represents 10 percent of the Gross National Product. (Security Pacific, 1972.) There

has been broad diversification of the area's industry in the last ten years.

As an indicator of where this diversified industry is located, most of the region's employment is concentrated in the Central Los Angeles area. Also, the single greatest employment concentration is the Los Angeles Central Business District-Wilshire Corridor, which is estimated to contain 20 percent of the region's jobs. Besides the Central Business District and the Wilshire Corridor, other major economic activity centers in the region are Hollywood, Century City, Beverly Hills, Westwood, Pasadena, and the south central portion of the San Fernando Valley.

#### 1-130 Regional Transportation Network

The region's transportation system consists of five major modes: roadways (automobiles, buses, trucks), rail, water, air, and pipelines. All of these modes are important movers of freight, while only two - roadways and air - are major movers of people.

The Los Angeles region is characterized by a vast highway/freeway system for the movement of people by automobiles and buses. Los Angeles County's 19,284 miles of roadway - of which 493 miles are freeways and expressways - serve more than 95 percent of the daily people movement.

Los Angeles County also contains the largest airport in the region - Los Angeles International Airport (LAX). In 1976, this facility served 24.5 million passengers and handled 1485 million pounds of cargo. The area is also served by major rail lines of the Southern Pacific, Union Pacific, and Santa Fe railways. Union Station, located in the downtown area, is the major regional rail passenger terminal. Primary interregional bus service is provided by Greyhound and Continental Trailways.

## 1-200 DEVELOPMENT OF THE CENTRAL BUSINESS DISTRICT

Downtown Los Angeles was the regional business center up to the beginning of the Depression in 1929. By the turn of the century, Bunker Hill was the most prestigious residential area in the City. The business district shifted gradually from its origins to Main Street, and then to Spring Street and Broadway. The post-World II period became one of continuous decline, exacerbated by the development of suburban regional shopping centers and construction of a regional freeway system (servicing suburban sprawl). Skid Row surrounded the Core on three sides and many business firms moved out, first along Wilshire Boulevard and, subsequently, to other regional sub-centers.

Critical decisions that were instrumental in accelerating a revitalization trend included the decision to build a government center which was to become the largest of its kind outside of Washington, D.C.; implementation of the 133-acre Bunker Hill Redevelopment Project; construction of the regional Music Center, the Los Angeles Convention Center, and many public buildings; development of the regional freeway system from the downtown out in a radial pattern to suburban growth areas; and removal of the historical 13-story height limitation in the 1950's.

Private action(s) came with a series of bank decisions to remain in the Downtown. The 1969 decision of Bank of America to relocate to the twin 52-story Atlantic Richfield Plaza on the west side of the CBD firmly re-established downtown as the regional financial center, supported by a captive tenant base of law, accounting, and international business firms.

Although the west side has been the area of major office, hotel and retail construction, the east side has also

experienced a social and economic resurgence and continues to serve as an important center. The east side today contains a viable retail center including shopping facilities for residents and tourists. On the south side, apparel, textile, and produce industries continue to flourish.

The economic activities of downtown are reflected by its major employment categories. The 126,000 professional office and governmental employees represent 63% of downtown total employment. However, the 74,000 retail, service, and manufacturing employees also represent a significant proportion of the employment (37% of the total) and therefore, a significant portion of the economic activity of downtown.

Downtown presently has about 15,000 residents, concentrated primarily in the Skid Row area on the east side. However, recent redevelopment efforts have resulted in construction of the high rise Bunker Hill Towers (714 units) which constitutes the major single residential development in the downtown area.

1-210 Role of the Central Business District in the Region

In addition to its regional significance as a major employment center, downtown Los Angeles provides a wide range of cultural, commercial, and social service functions. These services and opportunities exist not only for downtown residents and workers but also for communities near downtown. Nearby residential communities had a total population in 1970 of over 200,000. These communities, primarily northeast Los Angeles, have looked to downtown for shopping and recreational needs. Many of these residents have low incomes and are transit dependent. Approximately 40% of daily bus trips are taken by residents from surrounding communities and are largely nonwork trips. As such, the residents of these surrounding communities depend upon downtown to provide a necessary localized, nonregional function.



## 2-000 STUDY AREA SETTING

The study area is the Los Angeles Central Business District, defined as the 4 square mile area bounded by the Santa Ana/Hollywood Freeway on the north, Alameda Street on the east, the Santa Monica Freeway on the south, and the Harbor Freeway on the west (see Figure 2-00A). The following sections present a brief profile of the setting for this study area. Data have been drawn from many sources and from program analysis, particularly task reports prepared in previous phases (see Phase 2 and 3 task reports listings in the Technical Appendix).

## 2-100 NATURAL ENVIRONMENT

The aspects of the natural environment of the CBD that are affected by the proposed project include: vegetation and wildlife; air quality; noise and vibration; and energy. Other aspects of the natural environment which are not directly affected by the proposed project but were analyzed during the environmental study include: topography, geology, and soils characteristics; seismicity; flood plains; water quality; and meteorology and climate. Analysis of these aspects are documented in Task Termination Reports.

### 2-110 Topography, Geology, And Soil Characteristics

The Los Angeles central business district comprises some 2240 acres, with the lowest elevation (about 220 feet above sea level) along the southern edge. Proceeding north, elevation climbs first gradually and then abruptly to the Elysian Park Hills, at 400 feet above sea level. (See Figure 2-11A)

Pleistocene to Recent age alluvium covers most of the CBD over continental terrace deposits in the northeast and southwest segments of the proposed DPM system. However, over most

of the area, alluvium overlies marine strata of Pleiocene and Miocene ages, consisting of layers of sand, gravel, silt and clay. The Pliocene and Miocene formations consist of sandstone, siltstone, shale, diatomaceous shale (locally) and, in some areas, oil-bearing sediments. However, no producing oil field is within the boundaries of the proposed project. (Bureau of Engineering, 1976).

Bedrock strata in the eastern half of the CBD strike east-west and dip south at angles from 10° to 83°. The western half of the CBD contains structures whose axes trend from east-west to northwest-southeast. (Bureau of Engineering, 1976).

Surface soils along the proposed DPM route have been classified as several types of loam by the Department of Agriculture. These classifications have similar engineering properties and are considered silty sand or sandy silt for the purpose of foundation design. Soil studies done for other projects in the area have generally shown the presence of silty sand and sandy silt, with some poorly graded sands and gravels. These soils would be rated "moderate" as to "Degree of Soil Limitation" (1967 Soil Conservation Service). Other limitations such as soil swelling, shrinkage, or excessive settlement would not be encountered in the project area. (Bureau of Engineering, 1976).

Extensive grading has been done throughout the area in the past; therefore, man-made fill of unknown extent and quality could be encountered almost anywhere along the proposed route. The general geologic conditions in downtown Los Angeles are shown in Figure 2-11A and soils are shown in Figure 2-11B.

### 2-120 Seismic Conditions In Downtown Los Angeles

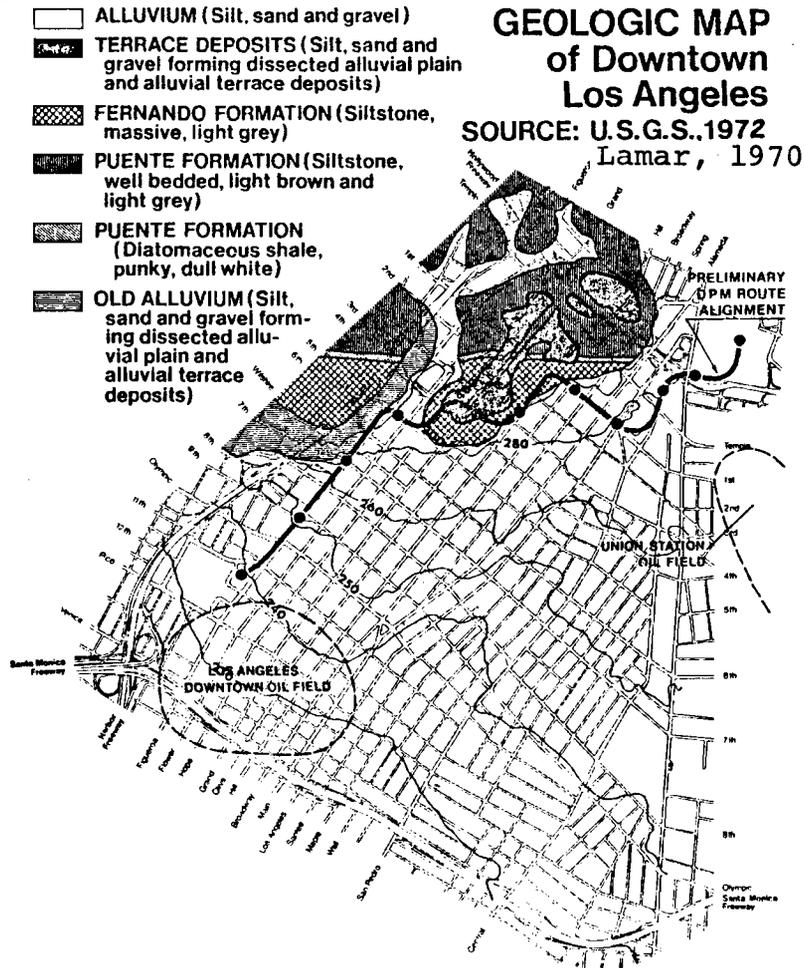
California is located in the volcanic belt that coincides with the circum-Pacific seismic belt along which 80% of the world's earthquakes occur. This belt occurs in the basin occupied by

Figure 2-00A

# LOS ANGELES CENTRAL BUSINESS DISTRICT



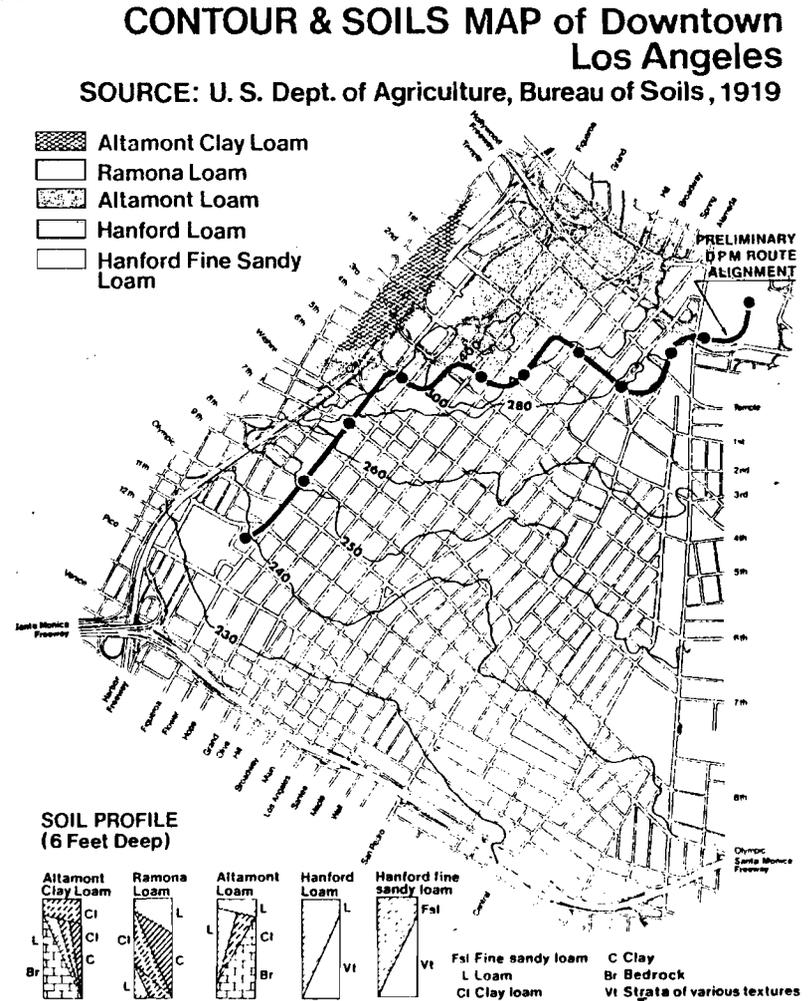
Figure 2-11A



the Pacific Ocean from the coast of Chile to the West Coast of the United States, and from Alaska to Japan and south to the islands of New Zealand.

There are no major earthquake faults in the Central Business District. However, the San Andreas Fault is located about 30 miles northeast and the Newport-Inglewood fault is located

Figure 2-11B



about six miles south. Other nearby potentially active faults include the Raymond Hill Fault (from the San Gabriel Mountains to within five miles of the CBD) and the Sierra Madre Fault along the base of the San Gabriel Mountains.

Although it contains no major faults, the CBD is subject to many of the damaging effects of earthquakes. Subsoil cond-

itions easily transmit ground shaking, potentially damaging existing structures. The Department of Building and Safety has estimated that about 70 percent of existing structures in the CBD were built prior to the 1933 earthquake building code revisions. Therefore, if a major earthquake were to occur on a nearby fault system, significant damage could result. Although there is no generally agreed upon method of earthquake prediction, it is reasonable to expect a moderate earthquake (Richter Magnitude 6.0 - 6.9) every ten years, a major earthquake (Magnitude 7.0 - 7.7) every 25 years, and a great earthquake (greater than 7.7) about every 100 years. (Southern California Association of Governments, 1974.)

If a magnitude 7.5 earthquake were to occur on the Raymond Hill Fault, bedrock acceleration of 0.53 g could be expected in the central business district. A magnitude 7.0 earthquake on the Newport-Inglewood Fault could result in an acceleration of 0.48 g. If a quake were to occur on the San Andreas Fault, a magnitude of 8.25 might result, which could produce bedrock acceleration of 0.34 g in the CBD. At magnitudes of 7.0 or greater, ground shaking could last up to 35 seconds. (Bureau of Engineering, 1976).

#### 2-130 Flood Plains

The U.S. Army Corps of Engineers, the Los Angeles County Flood Control District, and the City's Department of Public Works share responsibility for drainage and flood control in Los Angeles.

The Corps of Engineers is responsible for the improvement of the larger streams in the metropolitan area. Its projects are designed to protect against severe storms that occur on an average of once every 100 years. The Los Angeles County Flood Control District's channels are built to accommodate 50-year storms. The CBD is interlaced with storm drains under

the jurisdiction of either the City's Department of Public Works or the Los Angeles County Flood Control District (LACFCD). The area has an extensive storm drain system separate from the sanitary sewer system, capable of carrying runoff from five to ten-year storms, which conforms to standard design capacity. The capacity of the street surface increases this capacity to above 10-year frequency.

The Drainage (1968) and Conservation (1973) elements of the City General Plan indicate no major inundation areas or potential heavy flooding areas within the CBD.

#### 2-140 Water Quality

The Federal Water Pollution Control Act Amendments of 1972 and the California Water Quality Control Act of 1970 established a comprehensive water quality planning and control program for local, state, and federal governments, implemented through state and regional agencies. Quality objectives for inland surface water include standards for color, taste, odor, floating and suspended materials, bacteria, toxicity, and oil and grease. Groundwater quality objectives relate to taste, odor, bacteria, chemical constituents, pesticides, radioactivity and toxicity, and others.

The San Gabriel River and the Los Angeles River cross and drain the Los Angeles Basin. The Los Angeles River is the major water course within the city of Los Angeles providing flood control channels to transport stormwater and other runoff to the Pacific Ocean. Water quality in the upper reaches of the Los Angeles River is in basic conformance with water quality objectives.

The most important groundwater basin for the CBD is the Central Hydrographic Subarea (Central Basin), which contains most of the Coastal Plain, including the Los Angeles CBD.

Groundwater enters the Central Basin through subsurface flow at the Los Angeles and Whittier narrows. Replenishment of this groundwater is by percolation or precipitation, streamflow, and artificial spreading. Extraction of water from the Central Basin has been limited by law, to 217,367 acre-feet per year. Since the limits have been set, groundwater levels have been gradually rising (SWRCB, 1975).

Upper limits of groundwater in the CBD are from 21 feet to 33 feet below the surface. This water is probably "perched" (i.e. a small quantity held above the general groundwater table by an impervious stratum). Potable drinking water has been tapped by wells averaging 120 feet in depth, and as such, represents the general water table level (City of Los Angeles Bureau of Engineering, 1976).

Generally, the quality of groundwater in the Central Basin is good.

#### 2-150 Vegetation And Wildlife

The central business district is a well-established urban area, and therefore, little or no native vegetation remains. Existing vegetation consists of shade trees, shrubs, and some ground cover associated with the established developments in the area. There are no known rare or endangered species of plant material located within the CBD.

Intensive urban development and a dearth of native vegetation have resulted in an essential absence of wildlife. The CBD, however, is inhabited by small rodents and birds which are normally found in urban areas and include :

Crow	House Sparrow
Domestic Dog	Mockingbird
Feral Cat	Pigeon
Gopher	Ring Neck Dove
House Finch	Scrub Jay
House Mice	Starling

There are no known rare or endangered species of animal life associated with the CBD, although the Ring Neck Dove is a relatively rare inhabitant of the Los Angeles area.

#### 2-160 Meteorology and Climate

The Los Angeles climate is normally pleasant and mild, moderated by the Pacific Ocean, buffered from interim extremes by breezes, and balanced by hot and cold interim winds resulting in some weather variations.

#### 2-170 Air Quality

The South Coast Air Basin (see figure 2-17A) is an ideal environment for producing maximum concentrations of air pollutants. The basin is a natural air trap that is made even more effective by the presence of thermal inversions on an average of 300 days per year (Hines, 1973).

Through the efforts of control agencies and since the adoption of federal and state standards, significant progress has been made towards controlling sources of air pollution. However, air quality standards are frequently violated, although the level of emissions is steadily decreasing. For example, in Los Angeles County, by 1965-66, total emissions from both stationary and mobile sources had reached a level of 14,000 tons per day. In 1976, this figure had been reduced to 7,600 tons per day. Yet in 1975, the state standard for ozone had been violated on more than 200 days (Cobeil and Chass, 1977).

#### 2-171 Characteristics Of Air Pollution

The South Coast Air Basin has two types of air pollution:  
(1) primary air pollutants, which include sulfur oxides, nitrogen oxides, carbon monoxide, organic gases, and particulates;

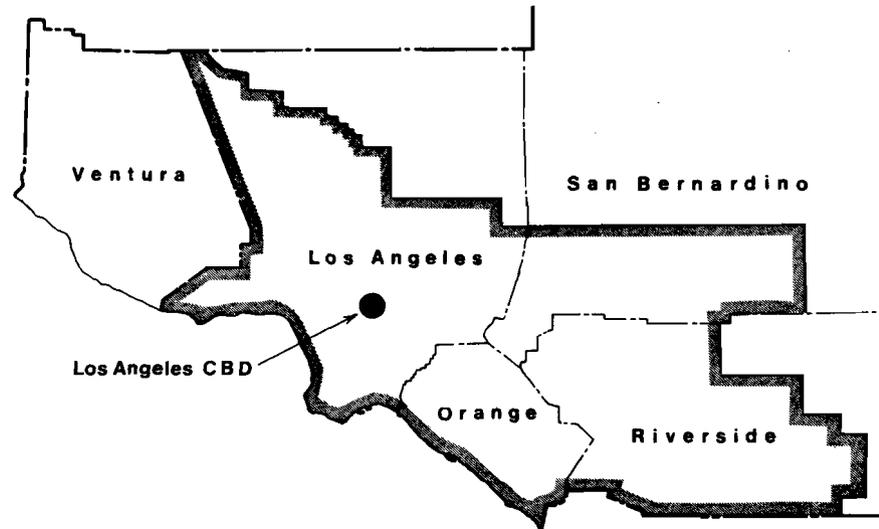
and (2) photochemical smog which results when hydrocarbons and nitrogen oxides mix in the presence of sunlight. Because of the complexity of the photochemical process that produces smog, primary pollutants are typically used to measure air pollution. The primary pollutants which are most directly associated with transportation are: hydrocarbons (HC), nitrogen oxides ( $\text{NO}_x$ ), sulfur oxides ( $\text{SO}_x$ ), carbon monoxide (CO), and particulates. These pollutants are used as a basis for air pollution analysis in this document. Ground transportation modes (primarily autos and buses) account for 82% of the hydrocarbons, 72% of the nitrogen oxides, and 98% of the carbon monoxide produced in the South Coast Air Basin. These same modes account for 39% of particulate matter and 13% of sulfur oxide production.

#### 2-172 Air Quality Standards

Federal and state air quality standards have been established based on the effects of the pollutants on public health. U.S. Environmental Protection Agency (EPA) standards are statutory requirements to be achieved and maintained as required by the Clean Air Act of 1970; State of California standards are management objectives that represent goals of existing and planned air pollution control programs.

State air quality standards have been set for visibility, as well as in terms of contaminants having various bases of concentration and duration. National air quality standards were established in two categories: Primary standards to protect the public health and secondary standards to protect both the public welfare and the environment from known or anticipated adverse effects. Table 2-17A summarizes both the state and federal air quality standards currently in effect.

FIGURE 2-17A  
**SOUTH COAST AIR BASIN**



#### 2-173 Regional And Local Emissions

Although ambient air quality in the South Coast Air Basin has been steadily improving since 1967, both federal and state standards were violated on a number of days in 1976 (see Table 2-17B). The most frequently violated standards are those relating to oxidants and carbon monoxide. Recent violations in the downtown area have also been frequent. (see Table 2-17C) Violations in downtown Los Angeles, however, appear to be somewhat less frequent than for the air basin as a whole. This is partly accounted for by meteorology which produces greater concentrations in the inland valleys.

Figure 2-17B shows the air quality monitoring stations which have been established within the South Coast Air Quality Management District.

Table 2-17A  
**AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Time	California Stds. (a)	National Stds. (b)	
			Primary (c)	Secondary (d)
Oxidant (Ozone)	1 hour	.10 ppm <sup>(e)</sup> (200 ug/m <sup>3</sup> ) <sup>(f)</sup>	160 ug/m <sup>3</sup> (.08 ppm)	same as primary
Carbon Monoxide	12 hours	10 ppm <sup>(g)</sup> (11 mg/m <sup>3</sup> )	---	---
	8 hours	---	10 mg/m <sup>3</sup> (9 ppm)	same as primary
	1 hour	40 ppm <sub>3</sub> (46 mg/m <sup>3</sup> )	40 mg/m <sup>3</sup> (35 ppm)	
Nitrogen Dioxide	Annual average	---	100 ug/m <sup>3</sup> (.05 ppm)	same as primary
	1 hour	.25 ppm (470 ug/m <sup>3</sup> )	---	
Sulfur Dioxide	Annual average	---	80 ug/m <sup>3</sup> (.03 ppm)	---
	24 hours	.05 ppm (131 ug/m <sup>3</sup> ) <sup>(h)</sup>	365 ug/m <sup>3</sup> (.14 ppm)	---
	3 hours	---	---	1300 mg/m <sup>3</sup> (.5 ppm)
	1 hour	.5 ppm (1310 ug/m <sup>3</sup> )	---	---
Suspended Particulate Matter	Annual geometric mean	60 ug/m <sup>3</sup>	75 ug/m <sup>3</sup>	60 ug/m <sup>3</sup>
	24 hours	100 ug/m <sup>3</sup>	260 ug/m <sup>3</sup>	150 ug/m <sup>3</sup>
Sulfates	24 hours	25 ug/m <sup>3</sup>	---	---
Lead	30 day average	1.5 ug/m <sup>3</sup>	---	---
Hydrogen Sulfide	1 hour	.03 ppm <sub>3</sub> (42 ug/m <sup>3</sup> )	---	---

Pollutant	Averaging Time	California Stds. (a)	National Stds. (b)	
			Primary (c)	Secondary (d)
Hydrocarbons	3 hours (6-9 am)	--	160 $\mu\text{g}/\text{m}^3$ (.24 ppm)	same as primary
Ethylene	8 hours	0.1 ppm	---	---
	1 hour	0.5 ppm		
Visibility Reducing Particles	1 Observation	Insufficient amount to reduce prevailing visibility to less than 10 miles when relative humidity is less than 75% (i)	---	---

## NOTES:

- (a) California standards are not to be equaled or exceeded.
- (b) National standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once per year.
- (c) National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must meet the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency (EPA). Preparation of California's implementation plan is underway; EPA approval is expected in July 1979.
- (d) National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must meet the secondary standards within a "reasonable time" after its implementation plan is approved by the EPA.
- (e) ppm= parts per million.
- (f)  $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter
- (g)  $\text{mg}/\text{m}^3$  = milligrams per cubic meter
- (h) At locations where the state standards for oxidant and/or suspended particulate matter are violated. Federal standards apply elsewhere.
- (i) Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

Figure 2-17B  
**AIR QUALITY MONITORING STATIONS  
 IN THE SOUTH COAST AIR QUALITY  
 MANAGEMENT DISTRICT**

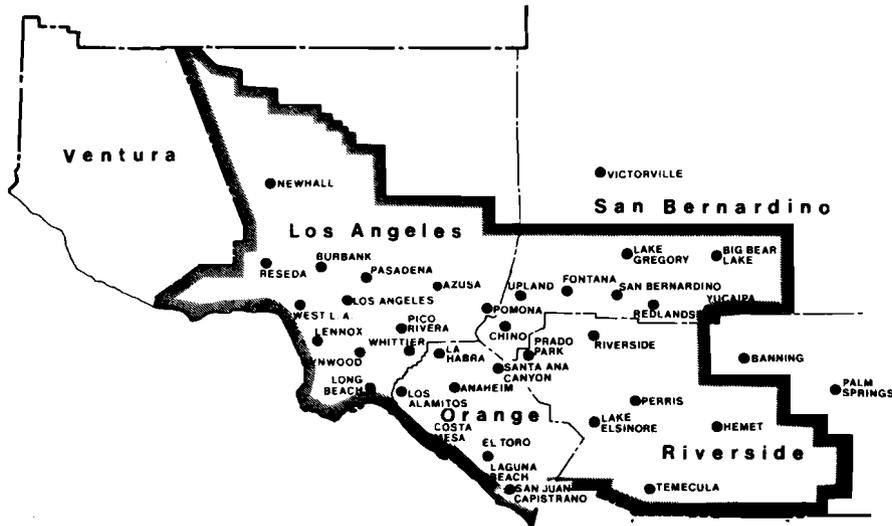


Table 2-17B

VIOLATIONS OF FEDERAL AND STATE AIR QUALITY STANDARDS IN  
 THE SOUTH COAST AIR BASIN--1976

Pollutant (Standard)	Averaging Time	Days Exceeding Standards	Maximum Concentration
<u>Oxidant</u>			
Federal (.08 ppm)	1 hour	252	0.38 ppm
State (.10 ppm)	1 hour	238	0.38 ppm
<u>Carbon Monoxide</u>			
Federal (9 ppm)	8 hours	118	26.0 ppm
State (10 ppm)	12 hours	119	25.0 ppm
<u>Nitrogen Dioxide</u>			
State (.25 ppm)	1 hour	50	0.53 ppm
<u>Sulfur Dioxide</u>			
Federal (0.5 ppm) <sup>a</sup>	1 hour	0	.25 ppm
State (.05 ppm) <sup>b</sup>	24 hours	45	.138 ppm
<u>Sulfates</u>			
State (25 ug/m <sup>3</sup> )	24 hours	52	48 ug/m <sup>3</sup>
<u>Particulates</u>			
State (60 ug/m <sup>3</sup> )	Annual avg.	N/A	166 ug/m <sup>3</sup>
<u>Lead</u>			
State (1.5 ug/m <sup>3</sup> )	Monthly mean	12 mo.	10.04 ug/m <sup>3</sup>

(a) The California Air Resources Board has determined that only the Los Angeles County portion of the SCAB is projected to violate the SO<sub>2</sub> standard more than once per year.

(b) This standard is considered violated when either the state's 24-hour particulate matter and/or the one-hour oxidant standard is violated.

Source: Southern California Association of Governments, 1978.

Table 2-17C

 VIOLATIONS OF FEDERAL AND STATE AIR QUALITY STANDARDS  
 IN DOWNTOWN LOS ANGELES--1975

Pollutant (Standard)	Averaging Time	Days Exceeding Standards	Maximum Concen- trations	Annual Average Concentrations
<u>Oxidant</u>				
Federal (.08 ppm)	1 hour	157	.25 ppm	.030 ppm
State (.10 ppm)	1 hour	129	.25 ppm	.030 ppm
<u>Carbon Monoxide</u>				
Federal (9 ppm)	8 hour	42*	21.9 ppm	4.64 ppm
State (10 ppm)	12 hour	15*	20 ppm*	4.64 ppm
<u>Nitrogen Dioxide</u>				
State (.25 ppm)	1 hour	26*	.42 ppm*	.067 ppm
<u>Sulfur Dioxide</u>				
Federal (.14 ppm)	24 hour	0	.061 ppm	.020 ppm
State (.05 ppm)	24 hour	0	.038 ppm*	.020 ppm
<u>Sulfates</u>				
State (25 ug/m <sup>3</sup> )	24 hour	4*	45.0 ug/m <sup>3</sup> *	12.3 ug/m <sup>3</sup>
<u>Particulates</u>				
State (100 ug/m <sup>3</sup> )	24 hour	26*	197 ug/m <sup>3</sup> *	100 ug/m <sup>3</sup>
<u>Lead</u>				
State (1.5 ug/m <sup>3</sup> )	30 day	5 months*	2.71 ug/m <sup>3</sup> *	2.44 ug/m <sup>3</sup>
<u>Hydrocarbons</u>				
Federal (.24 ppm)	3 hour	271	2.6 ppm	.41 ppm
<u>Hydrogen Sulfide</u>				
State (.03 ppm)	1 hour	0	.001 ppm	.002 ppm
<u>Visibility</u>				
State	---	185	N/A	N/A

Source: L.A. County Preliminary General Plan, Draft EIR, January 1978.

\*1978 data. Source: South Coast Air Quality Management District

2-180 Noise And Vibration

In most urban areas, the major source of noise and vibration is the transportation system. There are two basic kinds of noise which increase outdoor noise levels. Steady or quasi steady-state noise (ambient or background noise) and intermittent single-event noise (specific source noise). A good example of constant level ambient noise is the noise produced in a busy city like Los Angeles. High daytime ambient noise levels often make it difficult to have a face-to-face conversation at normal voice levels on many streets. This noise typically results from nearby freeways, street traffic, industrial activity, and air-conditioning units. Intermittent single-event noises such as a bus pulling away from the curb, an aircraft flying overhead, or a car passing raise the peak noise level of an area, causing interference with speech and other activities for brief periods of time (U.S. Environmental Protection Agency, 1971a).

Because the major source of noise is typically the transportation system, the Council of Environmental Quality has developed a standard in which the noise levels emitted by transportation systems can be compared to subjective human responses (see Table 2-18A). As this comparison indicates, freeway traffic noise (70 dbA at 50 feet) can make telephone use difficult. At levels higher than this over continuous periods, loss of hearing can result. Generally, actual noise levels produced in a CBD are somewhat higher because of a "tunnel" effect created by high-rise buildings. In June 1978, the City of Los Angeles Bureau of Engineering conducted an ambient noise survey with readings at various locations in the central business district. The results of the survey are discussed in section 5-218.

Table 2-18A  
A-WEIGHTED SOUND LEVELS AND HUMAN RESPONSES

Noise Level dB(A)	Response	Hearing Effects
150		
Carrier Deck Job Operation		CONTRIBUTIONS TO HEARING IMPAIRMENT BEGINS ↓
-140 -	Painfully Loud	
-130 -	Limit Amplified Speech	
Jet Takeoff (200 feet)		
-120 -	Maximum Vocal Effort	
Discotheque		
Auto Horn (3 feet)		
Riveting Machine		
-110 -		
Jet Takeoff (2,000 feet):		
Garbage Truck		
-100 -	Very Annoying	
New York Subway Station		
Heavy Truck (50 feet)		
-90 -	Hearing Damage (8 hours)	
Pneumatic Drill (50 feet)		
-80 -	Annoying	
Alarm Clock		
Freight Train (50 feet)		
-70 -	Telephone Use Difficult	
Air Conditioning Unit (20 feet)		
-60 -	Intrusive Normal Conversation Level	
Light Auto Traffic (100 feet)		
-50 -	Quiet	
Living Room		
Bedroom		
-40 -		
Library		
Soft Whisper (15 feet)		
-30 -	Very Quiet	
Broadcasting Studio		
-20 -		
-10 -	Just Audible	
-0 -	Threshold of Hearing	

2-190 Energy

More than 95% of California's energy comes from oil and natural gas. Most natural gas goes directly into final uses, but oil is processed into a number of fuels and other materials (SCAG, 1978). The transportation sector is dependent exclusively upon petroleum products with 65% of its energy in the form of gasoline and 35% in the form of jet and diesel fuel.

In 1973, crude oil production in Southern California amounted to 51% of the state total. Crude oil for refining included 34% imports from overseas sources and 8% from Alaska. Regional gas production was 25% of the state total, but only 12% of the regional total. Production of oil and gas are both decreasing in the region, as well as in the rest of the state (SCAG, 1978).

#### 2-191 Transportation Energy

Transportation is the region's largest energy consuming sector, accounting for 47% of total energy use in 1975. In 1976, total transportation fuel used in Los Angeles County was approximately 4,900 million gallons. Of this, 71% was consumed in the highway sector, primarily by automobiles. Table 2-19A shows 1976 consumption of transportation fuel in the county.

TABLE 2 - 19A

#### 1976 TRANSPORTATION FUEL USAGE -- LOS ANGELES COUNTY

<u>Type of Use</u>	<u>Millions of Gallons Consumed</u>	<u>Percentage of Transportation Energy Usage</u>
Automobiles	3,218	65%
Transit buses	26	.5%
Commercial trucks	259	5%
Aircraft (Jet & Aviation Fuel)	761	15%
Harbors (Bunker Fuel)	545	11%
Railroads (Diesel Fuel)	160	3%

Source: L.A. County Preliminary General Plan, Draft EIR, January 1978.

#### 2-192 Electrical Energy

The City of Los Angeles Department of Water and Power (LADWP) supplies the electricity used within the City of Los Angeles. The LADWP served a total population of 2.8 million, had a peak system load of 3594 megawatts and total sales of 16.0 billion kilowatt hours in 1975. The net generating capacity of the LADWP (in megawatts) is summarized in Table 2-19B.

TABLE 2-19B

#### LOS ANGELES DEPARTMENT OF WATER AND POWER EXISTING NET GENERATING CAPACITY - 1978<sup>(a)</sup>

<u>TYPE</u>	<u>NO. OF GENERATING UNITS</u>	<u>NET CAPABILITY (MW)</u>	<u>LOCATIONS</u>
COAL	5	866 <sup>(b)</sup>	NEVADA AND ARIZONA
DISTILLATE	4	76	L.A. HARBOR
HYDRO ELECTRIC	28	1229	VARIOUS LOCATIONS, INCLUDING NEVADA AND PACIFIC NORTHWEST
OIL/GAS	18	3155 <sup>(c)</sup>	LOS ANGELES AND SEAL BEACH
PUMPED STORAGE	7	1247	NORTHEAST L.A. COUNTY

(a) Represents total capacity which would be available with all generating units operating.

(b) Includes DWP share of Mojave generating unit (20% of 1580 mw) and Navajo generating unit (21.2% of 2250 mw), plus 73 mw of Bureau of Reclamation layoff.)

(c) Includes Scattergood generating unit 3, for which 284 mw are available only if gas fuel is available.

## 2-200 LAND USE AND URBAN DEVELOPMENT

### 2-210 Development Trends

Downtown Los Angeles was the regional business center until the Depression in 1929. The business district shifted from its origins to Main Street, and then to Spring and Broadway. The post-World War II period was one of continuous decline, exacerbated by the development of suburban regional shopping centers and construction of a regional freeway system. A skid row surrounded the office core on three sides and many business firms moved out, first along Wilshire Boulevard, then to other regional sub-centers.

Several critical decisions accelerated a revitalization trend, including: the decision to build a government center (the largest of its kind outside of Washington); implementation of the Bunker Hill Redevelopment Project; construction of the Music Center and the Convention Center; development of the regional freeway system; and removal of the historical 13-story height limitation in the 1950s. As shown in Figure 2-21A, more recent development has concentrated in the west side CBD. Although the west side has seen the major office, hotel, and retail construction, the east side has also experienced a social and economic resurgence and continues to serve as an important center, which today contains a viable retail center for residents and tourists. Broadway, Olvera Street, and Little Tokyo are major shopping and cultural centers for residential communities adjacent to downtown. On the south side, apparel, textile, and produce industries continue to flourish, although the area has many obsolete and inefficient structures on uneconomically subdivided land.

### 2-211 Current Land Use Patterns

Land use in the CBD is dominated by governmental, private office, retail, commercial, and industrial sectors. This is

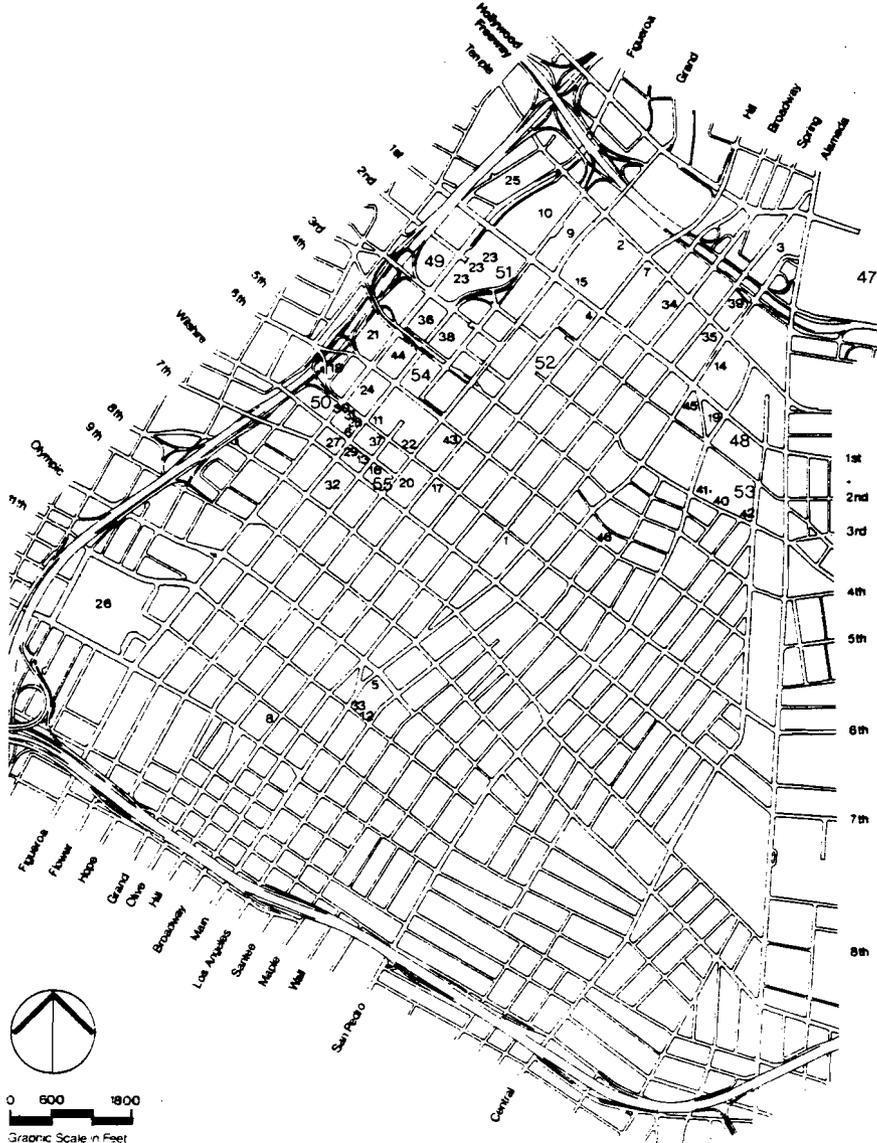
in sharp contrast to the rest of the city, where commercial and industrial uses occupy a minor position and residential uses predominate. In order to describe current land uses in the CBD, the following classifications have been made: office; government; retail; service/hotel/institutional; manufacturing/wholesale; residential. Figure 2-21B shows the distribution of land use for 1978 based on these classifications; Table 2-21A provides a breakdown of 1975 land use by gross floor area and residential units. A major land use not identified in the table is the street system which covers over 100 miles in the CBD.

Manufacturing and wholesale activities are concentrated in the southeastern portion of the CBD. (See Figure 2-21B.) The produce center, garment manufacturing, and printing businesses are located in this area. Government uses are concentrated in the Civic Center area north of First Street, with local, state, and federal agencies employing approximately 35,000 employees (Wilbur Smith and Associates, 1978). Office activity is concentrated in the "new downtown" area west of Hill Street to the Harbor Freeway. Between Hill and Figueroa Streets the highest densities occur between 5th and 7th Streets; along Figueroa Street they are concentrated between 3rd and 6th Streets. 1975 estimates indicate that approximately 10.5 million square feet of office space were concentrated in the west CBD (Wilbur Smith and Associates, 1978).

The highest concentrations of businesses are along 7th Street between Figueroa Street and Broadway, in Little Tokyo, and along Broadway from 3rd to 7th Streets. Historically, Broadway has been a retail center of the CBD and continues as such, serving as an important shopping and entertainment resource for the Latino Community. Another strong retail area has been developed on the west side of downtown, north of 8th Street. Located here are the Broadway Plaza, ARCO plaza, Barker Bros., J.W. Robinsons, and many specialty shops and restaurants. To the east of Los Angeles Street, between 7th and 9th Streets, is a concentrated retail garment sales area.

Figure 2-21A

# MAJOR PUBLIC AND PRIVATE DEVELOPMENTS EXISTING AND UNDER CONSTRUCTION IN THE CBD: 1960-1981



MAP NO.	YEAR	BUILDING	STORIES/ UNITS
1	1960	United California Bank	22
2	1960	County Hall of Administration	8
3	1960-	El Pueblo de Los Angeles (Olvera St.)	NA
4	1961	State Office Building	9
5	1962	California Mart I	13
6	1962	Tishman Building	22
7	1962	County Hall of Records	15
8	1963-65	Occidental Center	32
9	1963-65	Music Center Complex	
10	1964	City Department of Water & Power	17
11	1965	Bank of California	12
12	1965	California Mart II	13
13	1965	Peck-Norman Building	8
14	1965	Federal Office Building	9
15	1965	County West Mall and Underground	NA
16	1966	State Mutual Building	12
17	1967	City National Bank	26
18	1967	Coldwell Banker	10
19	1967	Kajima International	15
20	1967	One Wilshire Building	30
21	1967	Union Bank Square	42
22	1968	Crocker Bank Plaza	42
23	1969	Bunker Hill Towers	714 Units
24	1971	ARCO/Bank of America Towers & Plaza	52
25	1971	County Health Services	13
26	1971	Los Angeles Convention Center	2
27	1972	800 Wilshire Building	16
28	1972	Pacific Financial Center	17
29	1973	Wells Fargo Bank	9
30	1973	Security Financial Center	17
31	1973	Linder Plaza	15
32	1973	Broadway Plaza & Hyatt Regency Hotel Complex	32
33	1973	California Mart III	13
34	1973	County Criminal Courts Building	15
35	1973-74	City Hall East	12
36	1974	Los Angeles World Trade Center	13
37	1974	United California Bank Headquarters	63
38	1974-75	Security Pacific Nat'l Bank Headquarters	55
39	1975	Los Angeles Mall	NA
40	1975	Little Tokyo Towers	301 Units
41	1976	Union Church	
42	1976	Higashi Hongwanji Buddhist Temple	
43	1976-77	Biltmore Hotel (refurbishing)	11
44	1977	Bonaventure Hotel	35
45	1977	New Otani Hotel	22
46	1977	Central Area Police Station & Parking Structure	3-5
47	1978	Plaza Technical Center	4
48	1978	Japanese Village Plaza	2
49	1979	The Park	2-5
50	1980	911 Wilshire (under construction)	22
51	1980	Market-rate Condominiums (under construction)	140 Units
52	1980	Angelus Plaza (under construction)	761 Units
53	1980	Little Tokyo Gardens (under construction)	100 Units
54	1981	Wells Fargo Building (under construction)	48
55	1981	Wilshire/Grand Building (under construction)	16

Figure 2-21B  
**1978 COMPOSITE LAND USE**  
 (Zones Greater Than 50% by Type)

-  OFFICE
-  GOVERNMENT
-  RETAIL
-  SERVICE, HOTEL, INST'L.
-  MANUFACTURING/  
WHOLESALE
-  RESIDENTIAL
-  NO PRE-  
DOMINATE  
USE

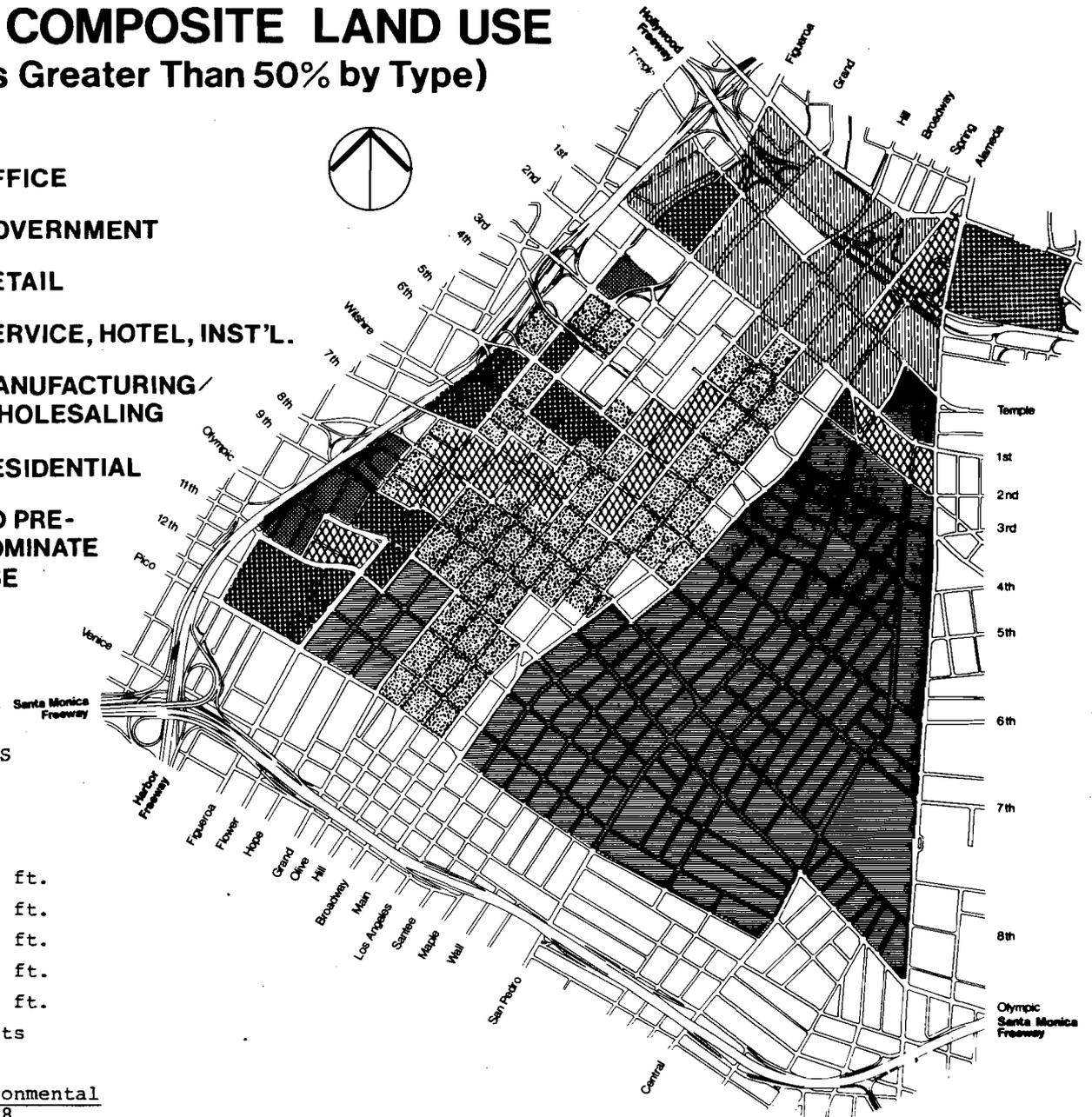


Table 2-21A

ESTIMATED 1975 LAND USE IN THE CBD BY GROSS FLOOR AREA/UNITS

Land Use Categories	Amount
Private Office	27,189,000 sq. ft.
Government Office	9,550,000 sq. ft.
Retail/Commercial	5,305,000 sq. ft.
Service, Hotel, Inst'l.	5,365,000 sq. ft.
Manufacturing/Wholesale	18,485,000 sq. ft.
Residential	9,400 units

Source: Wilbur Smith and Associates, Environmental Baseline Data Update, May 15, 1978

Parcels devoted to service, hotel, and institutional uses are scattered throughout the CBD. However, some areas of concentration are the larger hotels such as the Biltmore, Bonaventure, Hilton on Figueroa, the Clark Hotel on Hill Street, and the New Otani Hotel in Little Tokyo. Lesser service concentrations are the Main Library and several private clubs.

Residential units are also scattered throughout the CBD, with upper middle income concentrations in the Bunker Hill area, and lower income concentrations in the area north of the Convention Center, between Figueroa and the Harbor Freeway. The eastern central city (skid row), between Main, Central, 3rd and 7th, also has large concentrations of low-income residents.

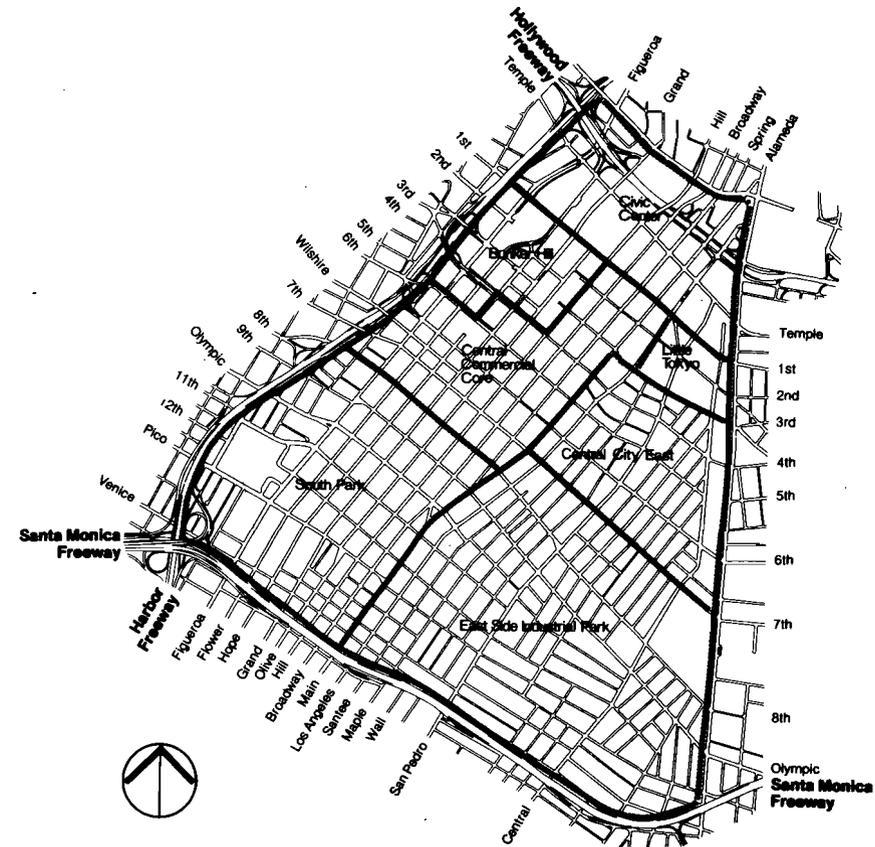
CBD land use patterns have resulted in concentrated activities in specific areas. Where functional interdependencies exist among these activity areas, transportation systems become a critical factor for providing appropriate linkages.

#### 2-212 Goals, Plans, Policies, and Responsible Agencies

Major development decisions and land use changes in the CBD are guided by the long range goals and objectives of the Citywide Plan, the intermediate policies and objectives of the Central City Community Plan, and the short-term plans of the City Council-approved redevelopment plans. All are elements of the City of Los Angeles General Plan. The Citywide Plan was adopted by the City Council on April 3, 1974; the Central City Community Plan, on May 2, 1974; the Bunker Hill Urban Renewal Project Redevelopment Plan, in 1959 and revised in 1973; the Little Tokyo Redevelopment Project: The Redevelopment Plan, in 1970; and the Central Business District Redevelopment Project, in 1975. All proposed changes in land use that require City Council approval are reviewed for conformance with the above plans and the various elements of the General Plan. A complete description of each plan is contained in

Figure 2-21C

## PLANNING AREAS OF THE CENTRAL CITY COMMUNITY PLAN



SOURCE: City of Los Angeles, 1974 Central City Community Plan.

Task Termination Report # 4.15. Planning areas for the Central City Community Plan are shown in Figure 2-21C.

### Redevelopment Areas in the CBD

Most of the central business district lies within three redevelopment projects: Bunker Hill, Little Tokyo and the Central Business District (see Figure 2-21D). The Community Redevelopment Agency of the City of Los Angeles has broad powers to implement City Council-approved redevelopment plans for these areas, including: (1) specifying study boundaries and general uses; (2) property acquisition; (3) relocating displaced property and/or persons; (4) demolition, clearance, public improvements, and site preparation; (5) property disposition and development; (6) establishment of general controls and limitations such as floor area ratios and specific parcel uses; (7) providing public improvements such as streets, bridges, parks, transportation systems, etc.; and (8) financing projects with city, state, and federal assistance; property tax increments; interest income; agency boards; and other sources.

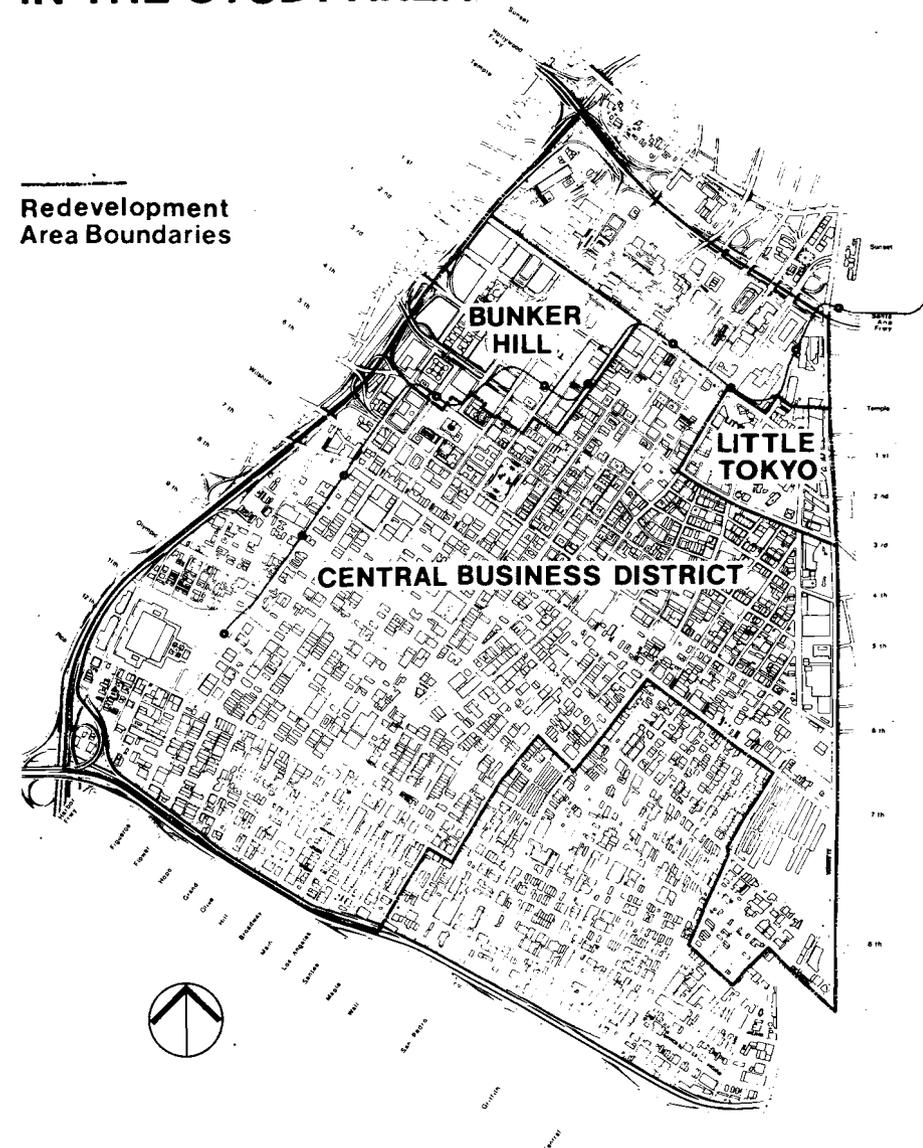
In Bunker Hill and Little Tokyo, where the Agency owns land, these controls are fully exercised. In the Central Business District Redevelopment Project, where the Agency owns none of the land, these powers are limited at present to establishing goals, policies, and general land use criteria; establishing general controls and limitations; and financing specific projects. A complete description of these three redevelopment projects is contained in Task Termination Report # 4.15.

### 2-213 Projected Land Use In The CBD

Based on planned developments, economic trends and adopted plans, projections of 1990 CBD floor area by land use type were made. These projections indicate major changes in office, retail/commercial, institutional/hotel/service and residential uses (see Table 2-21B).

Figure 5-21E shows the location of projected land use changes in the CBD.

Figure 2-21D  
**REDEVELOPMENT PROJECTS  
IN THE STUDY AREA**



Source: Community Redevelopment Agency, 1977

Figure 2-21E

# PROJECTED 1990 COMPOSITE LAND USE

(Zones Greater Than 50% by Type)

-  OFFICE
-  GOVERNMENT
-  RETAIL
-  SERVICE, HOTEL, INST'L.
-  MANUFACTURING/WHOLESALE
-  RESIDENTIAL
-  NO PRE-DOMINATE USE

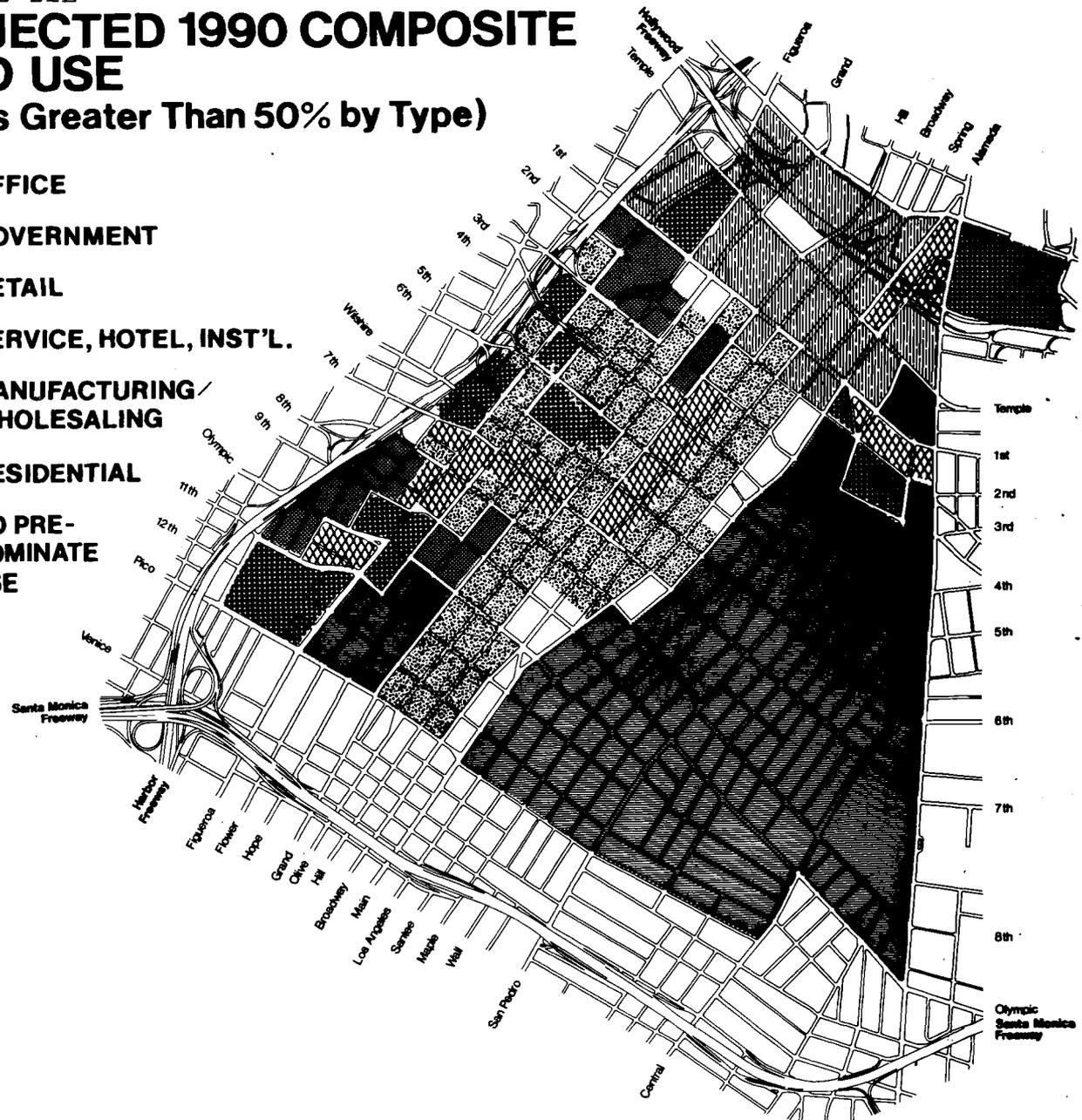


Table 2-21B

## COMPARATIVE 1975 AND PROJECTED 1990 LAND USE IN THE CBD BY GROSS FLOOR AREA/UNITS

<u>Land Use Categories</u>	<u>1975 Amount</u> (Sq.Ft.)	<u>1990 Amount</u> (Sq.Ft.)	<u>Difference</u> (Sq.Ft.)	<u>% Change</u>
Private Office	27,189,000	32,824,000	+5,626,000	21.0
Government Office	9,550,000	10,260,000	+710,000	7.4
Retail/Commercial	5,305,000	6,410,000	+1,105,000	21.0
Service, Hotel, Inst'l	5,365,000	7,893,000	+2,528,000	47.0
Manufacturing/Wholesale	18,485,000	19,300,000	+815,000	4.4
Residential	9,400 units	13,700 units	4,300 units	46.0

Source: Wilbur Smith and Associates, Environmental Baseline Data Update, May 15, 1978.

Office use is expected to intensify west of Olive Street between 3rd and 8th streets. Major renovation is anticipated in the Olive/Hill Street area between 5th and 8th Streets; new office space will be concentrated primarily in Bunker Hill. Hotel/Service/Institutional uses will increase in the west CBD, particularly along Figueroa and Flower Streets. This concentration of office and hotel/tourist oriented development will be reflected in modernized and concentrated major retail activities. Major residential land use changes are also expected, particularly in Little Tokyo, Bunker Hill and South Park. Few changes in government and manufacturing uses are anticipated.

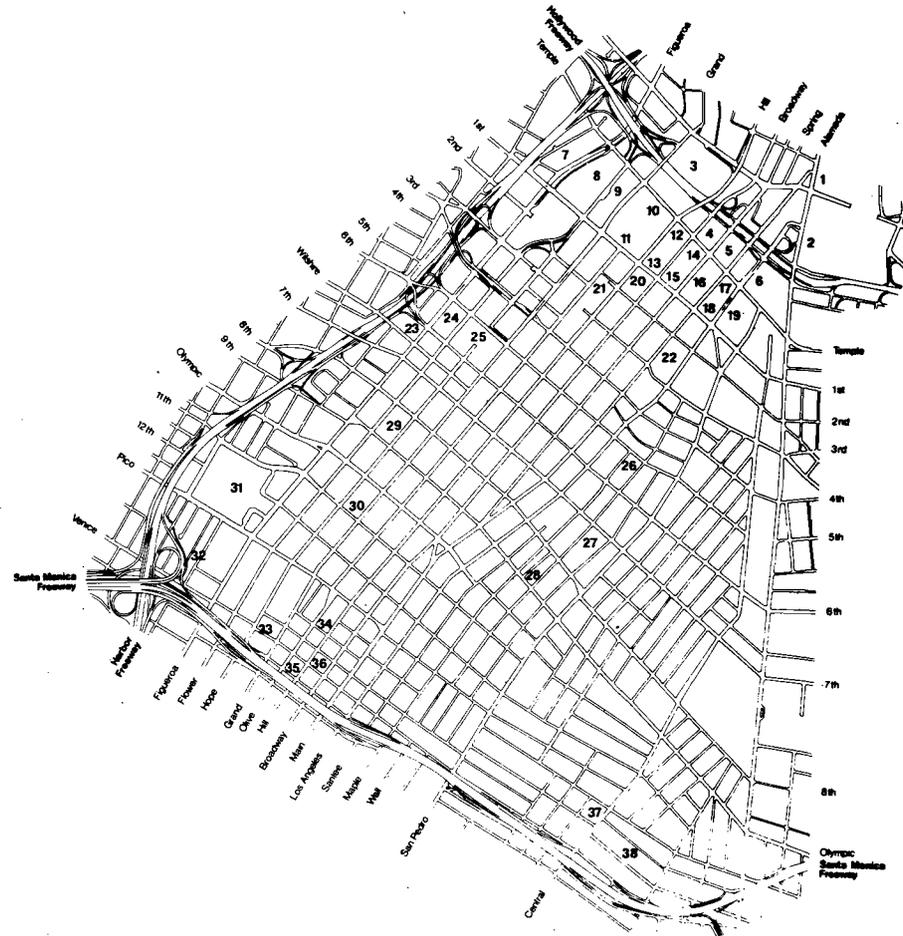
2-220 Community Services

There are many community services in the study area, in two major categories: municipal services and social services. Municipal services include law enforcement and fire protection. Water supply, waste water, and solid waste information was collected and documented in Task Termination Report 4.24. The social services focus on public assistance programs available to residents of the central city east and skid row areas. Figure 2-22A lists the community services and their location within the CBD.

## Key to Figure 2-22A

1 Terminal Annex (P.O.)	20 State Office Building
2 Union Station	21 Fire Station #3
3 Board of Education	22 St. Vibiana's Cathedral
4 County Hall of Justice	23 St. Paul's Cathedral
5 Federal Court	24 Post Office (Arco)
6 Federal Building and P.O.	25 Central Library
7 County Health Center	26 Central Police Facil.
8 Dept. of Water and Power	27 Fire Station #9
9 Music Center	28 Municipal Court
10 County Hall of Admin.	29 1st Methodist Church
11 County Court House	30 Univ. of Calif. Exten.
12 County Hall of Records	31 Convention Center
13 Law Library	32 Police Station (Georgia)
14 County Criminal Courts	33 California Hospital
15 Future State Building	34 Fire Station #10
16 City Hall	35 California High School
17 City Hall East	36 State Employment Office
18 City Hall South	37 Fire Station #30
19 Parker Center (Police)	38 Police Station (Newton)
	39 Metro Post Office

Figure 2-22A  
**MUNICIPAL AND SOCIAL  
SERVICES IN THE CBD**



Source: Community Redevelopment Agency, 1978.

### 2-221 Law Enforcement

Police protection in the study area is provided by both the Central and Newton Divisions, with the Central Division responsible for most of the CBD. In 1977, Central Division had 939 reports of and 463 arrests for homicide, rape and aggravated assault. In 1978, these figures increased to 1,112 and 471, respectively. Crimes against property in 1977 numbered 10,638, with thefts (6,215) and auto thefts (1,708) dominating.

### 2-222 Fire Protection

Six fire engine companies consider the CBD as part of their service area, although engine companies number 4 and 17 are located at 800 North Main Street and 719 South Santa Fe Street, respectively. (See Figure 2-22A) All of them are task force companies except one, which is a single engine company.

All of the fire companies supporting the CBD have accessibility problems due to rush hour traffic, parked cars, and traffic functions such as trucks blocking alleys.

Downtown has a higher structure fire rate than the city norm. Many fires occur in residence hotels, caused by careless use of matches and cigarettes. There are few effective preventive measures for reducing the incidences of this kind of fire. Non-structure fires are largely rubbish and auto fires. The numbers of malicious false alarms is high; increases have been experienced in low income, high unemployment, and blighted CBD areas.

### 2-223 Social Services

Los Angeles provides many traditional social services within the CBD. This section, however, focuses on three nontraditional programs available to residents of the central city east and skid row areas, many of whom are low-income or unemployed.

There are at least 20 rescue missions in the central city east area with most of their support coming from private individuals. The rescue missions provide housing and meals for men and serve as employment centers.

Several of the missions also provide alcoholic rehabilitation programs, providing work opportunities, and religious instruction. Others are anxious to broaden their programs to include less traditional assistance and vocational rehabilitation. Although the number of missions is large, only 10% of the area's residents use their services.

The Los Angeles County Department of Public Social Services operates an Unattached Men's Center located just east of Alameda on East Fourth Place. Services are generally short-term in nature, offered while a man is actively seeking employment. Approximately 10,000 to 15,000 requests for aid are received annually. Eighty percent of these are for meals and lodging. Payment is provided by the center directly to the vendor, and applicants receive meal and lodging tickets. Other services include job referral, transportation, clothing, and subsidized medical care under the Medi-Cal program.

Treatment and rehabilitation services for skid row alcoholics are provided by the L.A. County Health Department, the L.A. County Department of Hospitals, and some rescue missions. Proposals for improving the delivery of social services in the east side area are part of the CBD redevelopment plan.

### 2-230 Parks And Open Spaces

The CBD has been a highly urbanized area for quite some time. Consequently, open space is very limited.

There are four main open space sites in the CBD with several

additional areas of lesser size. These four are: Olvera Street--Pueblo de Los Angeles Cultural site; Pershing Square; Los Angeles Civic Center Mall; and the City Hall Mall.

Olvera Street--Pueblo de Los Angeles is located just west of Alameda and north of the Hollywood Freeway. This is the site of the original settlement and has been preserved as a historical and cultural monument by the State of California. The historical park contains some early buildings which are being restored, the site of the original Plaza, and Olvera Street, which contains small shops and restaurants commemorating the Mexican heritage of the early Pueblo.

Pershing Square, bounded by 5th, 6th, Hill, and Olive Streets, is one of the oldest and presently the largest park site within the CBD. Pedestrian walkways criss-cross the park among beds of low evergreen shrubs and flowers, and benches provide seating for tourists, employees, and residents of the area. Underground parking is provided beneath the park itself.

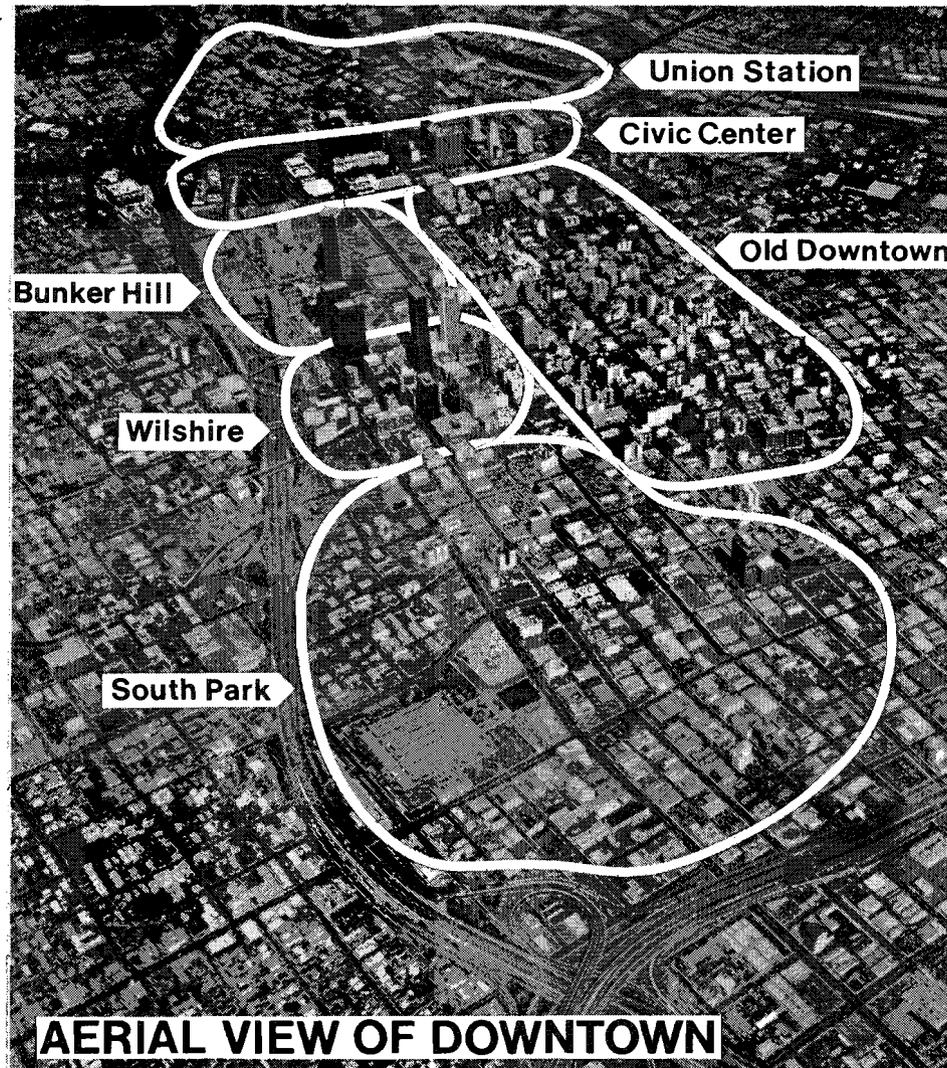
The Los Angeles Civic Center Mall is the largest open space within the CBD. Large areas of well manicured lawns are interrupted by several large fountain displays and pedestrian walkways lined with park benches. Its boundaries extend north/south between 1st and Temple Streets and east/west between Spring Street and Grand Avenue. Underground parking is provided beneath this site also.

The fourth major open space site is the City Hall Mall, bounded by 1st, Main, Temple, and Los Angeles Streets. The mall has a triforium, park-like setting with pedestrian walkways and benches at street level. Below street level are several shops, restaurants, and parking facilities.

#### 2-240 Aesthetic And Visual Setting

The visual and aesthetic setting of downtown Los Angeles can be broken down into six general areas; South Park, Wilshire, Bunker Hill, Old Downtown, Civic Center, and Union Station.

Figure 2-24A



South Park

The visual aspect of this area is broad, low, flat, and frequently sunbaked, with mixed uses and older buildings. Retail and automotive shops, motels, small manufacturing companies and older residences are mixed throughout the area without apparent plan or purpose. The Convention Center, with its identifiable form and wide surrounding open space buffer provides a point of orientation; and linear definition is provided by the Harbor Freeway, and, to some extent, by Figueroa Street.

**Convention Center**

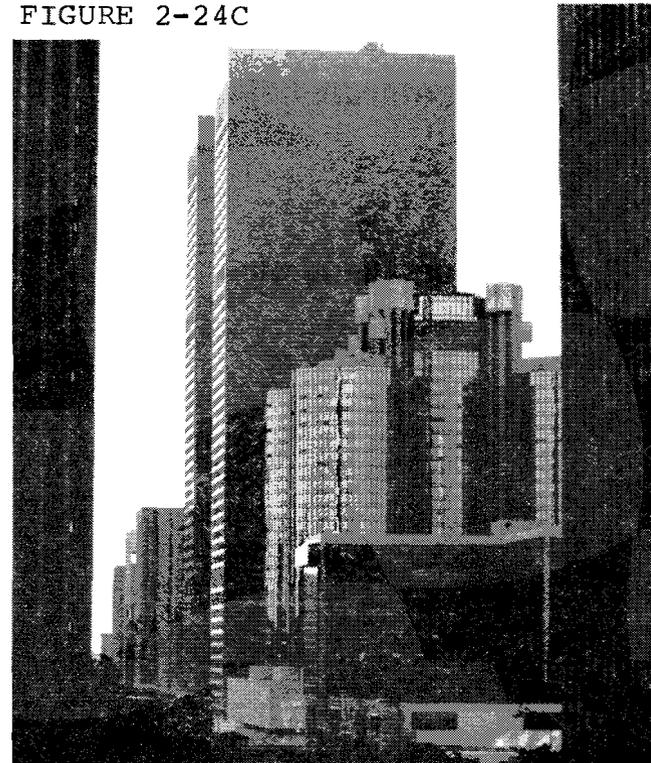
FIGURE 2-24B

Wilshire

This is the new high-rise area of downtown. The United California Bank (the tallest building) and the Arco/Bank of America (the most massive complex) stand out among the many other new and interesting medium and high-rise buildings that have come to predominate in this section of Los Angeles during the last decade. Several older and stately structures including the Central Library, the California Club, the Jonathan Club, and St. Paul's Cathedral provide architectural interest and a contrast in scale to the towers rising around them. Pedestrian traffic is brisk and a cosmopolitan ambience characterizes the area.

**West Side Financial District**

FIGURE 2-24C



Bunker Hill

Like the Wilshire area, Bunker Hill is developed with very new structures, with more to come on the still vacant parcels, but at a somewhat lower density and a lesser level of urban activity than the Wilshire core. The present pattern of medium and high-rise buildings with considerable open space will continue to guide future developments.

**Bunker Hill Towers**

FIGURE 2-24D

Old Downtown

This section, from 1st Street to 8th Street and along Spring, Broadway, and Hill Streets comprises the old downtown and is characterized by low, multi-story structures of varying ages and predominantly commercial uses. The upper floors of older, formerly prestigious office structures are often vacant. At street level, small inexpensive shops attract large crowds of pedestrians on weekdays and weekends. Many of the signs are in Spanish and snatches of overheard conversation are most likely to be in that language. The ambiance is reminiscent of a paseo, despite the heavy use of the street by cars, trucks and buses. There is a significant population of elderly in this area. At the Grand Central Market and Pershing Square the poor, elderly, and occasional citizens from the east side skid row area are seen mingling with office workers and professionals. Pershing Square is the demarcation between this older mixed area and the newer crisp urbanity of the west side, with the elegant Biltmore Hotel standing vigil on the edge. Despite its decline, old downtown remains one of the most interesting and diverse sections of the city.

**Grand Central Market**

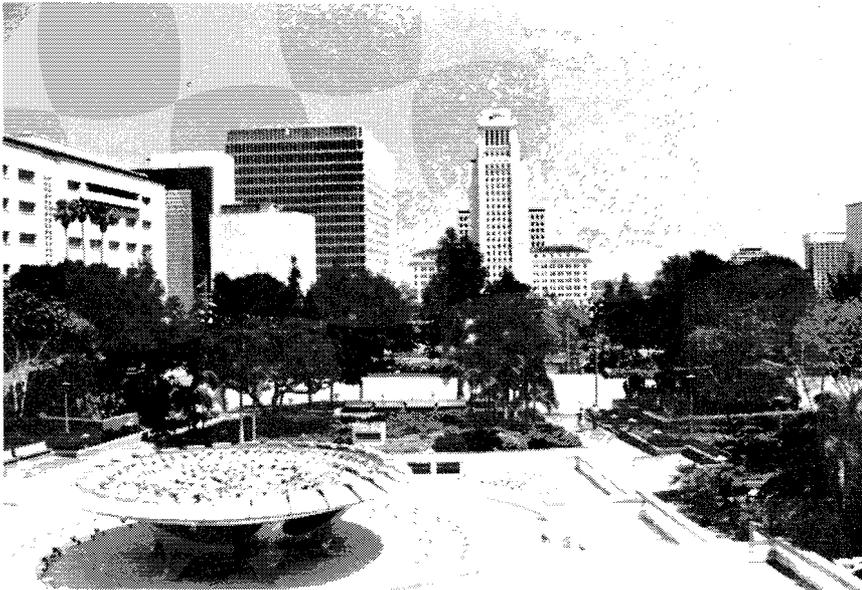
FIGURE 2-24E



Civic Center

This is the largest governmental center outside of Washington, D.C. Grids of windows punctuate the white granite walls of soaring monoliths, rising above manicured lawns and broad sidewalks. There are no signs; the trees and shrubs are all carefully pruned. First Street marks the southern edge of the Civic Center, dividing it from the commercial district to the south. The Hollywood/Santa Ana Freeway separates it from Chinatown and Union Station to the north.

FIGURE 2-24F

**Civic Center Mall**Union Station

The area of the freeway is generally wide and low. The interesting old structures of Union Station and Terminal Annex rise above the surrounding palms and undifferentiated lower buildings against a backdrop of the San Gabriel Mountains to the north. The historic Plaza and Olvera Street provide the primary social and visual focus in the area. Except for the Plaza, where automobiles were recently excluded, the area tends to be auto dominated, whether due to freeway and ramp traffic, surface street movements, or the numerous parking lots which dot the area.

FIGURE 2-24G

**Union Station**

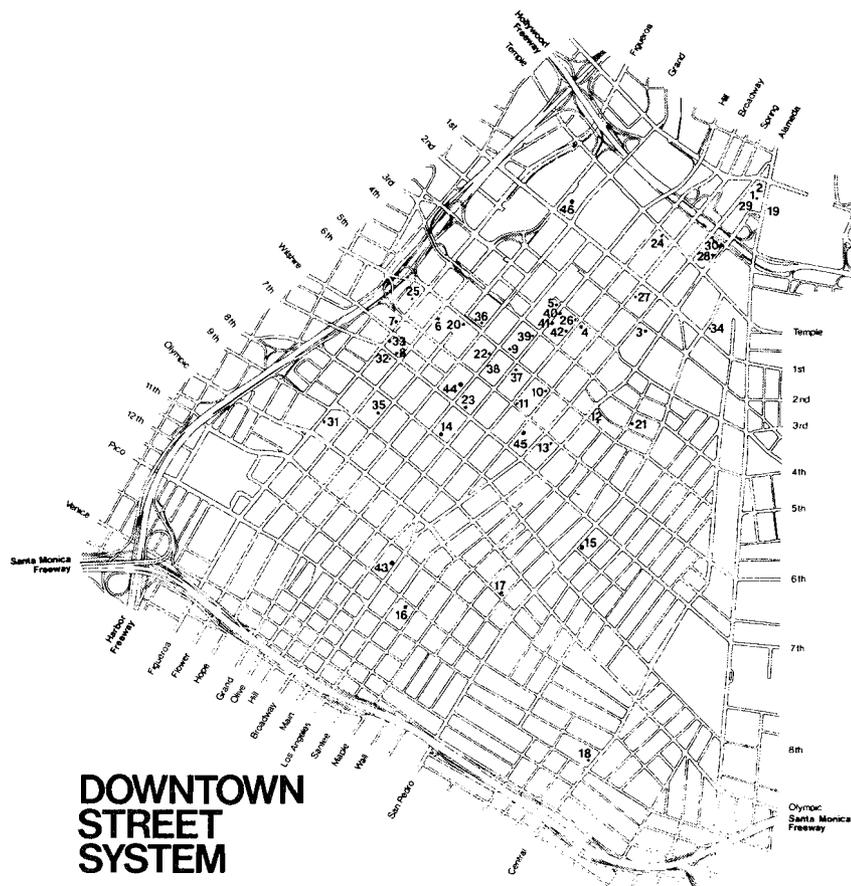
2-250 Historic Sites and Cultural Facilities

A number of historic sites exist within the CBD; Figure 2-25A illustrates many of them and identifies those designated on National, State, and local registers. In addition to these recognized monuments and historical sites, the Music Center Complex, located within the Civic Center Mall, is a cultural resource which is unique to southern California.

There are no known archeological sites within the CBD. However, a Chinese dump was excavated by Dr. Clement Meighan of UCLA during construction of the Hollywood Freeway in the early 1950's. The site was recorded as being near the intersection of Alameda Street and the Santa Ana/Hollywood Freeway across from Alameda Street from Union Station (Archeological Survey, 1978, p. 136).

Historic sites within the transit corridor are further reviewed in Chapter 6.

Figure 2-25A  
**HISTORIC AND CULTURAL SITES WITHIN THE CBD**



See following page for listing of site in this figure.

Key to FIGURE 2-25A  
HISTORIC AND CULTURAL  
RESOURCES WITHIN THE CBD

- |   |   |   |   |
|---|---|---|---|
| +o 1. Plaza Church<br>Sunset Blvd. & North Main             | o 13. Cole's P.E. Buffet<br>118 E. Sixth Street         | 25. Jonathan Club Bldg.<br>545 S. Figueroa Street   | 36. Edison Building<br>601 W. Fifth Street                            |
| + 2. El Pueblo de Los Angeles<br>State Park                 | o 14. Garfield Building Lby.<br>403 W. Eighth Street    | 26. Million Dollar Theater<br>307 S. Broadway   | 37. Albert L. Bath Bldg.<br>500 S. Hill Street                        |
| o 3. St. Vibiana's Cathedral<br>114 E. Second Street        | o 15. Cast Iron Comm. Bldg.<br>San Pedro and Agatha     | + 27. Butterfield Station Site<br>(Mirror Building)<br>145 S. Spring Street                   | 38. Pershing Square Bldg.<br>448 S. Hill Street                       |
| *o 4. Bradbury Building<br>304 S. Broadway                  | o 16. St. Joseph's Church<br>218 E. Twelfth Street      | + 28. Bella Union Hotel Site<br>314 N. Main Street  | o 39. Subway Terminal Bldg.<br>417-425 S. Hill St.                    |
| o 5. "Angel's Flight" Site<br>Third and Hill Streets        | o 17. Cohn-Goldwater Bldg.<br>Eleventh & San Julian     | * 29. Los Angeles Plaza<br>Historic District<br>Spring/Sunset/Alameda/<br>Arcadia/Los Angeles | 40. The Myrick Hotel<br>(The Aldine)<br>324½ S. Hill Street           |
| o 6. California Club<br>538 S. Flower                       | o 18. Coca-Cola Building<br>1334 S. Central Avenue      | + 30. The Los Angeles Star Site<br>N. Main & Commercial Sts.                                  | 41. The Markham Hotel<br>(The Whipple)<br>326½ S. Hill Street         |
| o 7. St. Paul's Cathedral<br>615 S. Figueroa                | o 19. Union Station & Grounds<br>800 S. Alameda         | o 31. Variety Arts Center Bldg./<br>Friday Morning Club<br>940 S. Figueroa                    | 42. Homer Laughlin Bldg.<br>(Grand Central Market)<br>315 S. Broadway |
| o 8. Global Marine Building<br>811 W. Seventh Street        | *o 20. Central Library & Grnds.<br>630 W. Fifth Street  | 32. Barker Bros. Building<br>818 W. Seventh Street  | o 43. Herald Examiner Bldg.<br>1111 S. Broadway                       |
| o 9. Philharmonic Auditorium<br>427 W. Fifth Street         | o 21. Wolfer Printing Co.<br>416 Wall Street            | 33. Engine Company No. 28<br>644 S. Figueroa Street   | o 44. Oviatt Building<br>617 S. Olive Street                          |
| o 10. Alexandria Hotel(Palm Ct.)<br>501 South Spring Street | o 22. Biltmore Hotel<br>515 S. Olive Street             | 34. Japanese Union Church<br>120 N. San Pedro St.   | o 45. Los Angeles Stock<br>Exchange Building<br>618 S. Spring Street  |
| o 11. Finney's Cafeteria<br>217 W. Sixth Street             | o 23. Los Angeles Athletic Cl.<br>431 W. Seventh Street | 35. First Methodist Church<br>813 S. Hope Street  | 46. Music Center<br>First and Grand Sts.                              |
| o 12. Fire Station No. 23<br>225 E. Fifth Street            | o 24. Los Angeles City Hall<br>200 N. Spring Street     |   |   |

Source: \* National Register Sites  
+ State of California Historic Sites  
o Locally Designated Historic Sites  
(as designated by the City of Los  
Angeles Cultural Heritage Board)

## 2-300 SOCIAL-ECONOMIC ENVIRONMENT

Z-310 Social Characteristics of Resident Population

The total resident population in the CBD in 1970 was approximately 18,400. By 1975, it was estimated that this had decreased to 17,800 (City Planning Dept. 1975 Population Estimate and Housing Inventory).

In 1970, the CBD's population was ethnically diverse with 48% white, 29% Spanish, 12% black, 6% Chinese, 2.4% Japanese, and 1% American Indian. City Planning Department estimates for 1975 indicate that the CBD is becoming even more diverse. Over two thirds of downtown residents in 1970 were men; 45% of those between the ages of 25 and 54. Downtown also had a substantial elderly population in 1970 with slightly over 20% of the residents aged 60 years or older; almost twice the city average.

Estimates of the number of handicapped persons are difficult to make because of varying definitions. The Urban Mass Transportation Administration Regulations on Transportation for Elderly and Handicapped Persons define elderly and handicapped persons as:

...those individuals who, by reason of illness, injury, age, congenital malfunction, including those who are nonambulatory wheelchair-bound and those with semi-ambulatory capabilities, are unable without special facilities or special planning or design to utilize mass transportation facilities and services as effectively as persons who are not so affected.

From a SCRTD survey, it has been estimated that 300-400 handicapped were probably downtown residents. (SCRTD, 1978, Paratransit in Los Angeles County, p. 39).

Generally, CBD residents incomes were quite low in 1970, with 28% being at the federally defined poverty level; in some areas the percentage ranged as high as 67%. Approximately 13% of all families and unrelated individuals received

public assistance in 1970. Median annual income for families and unrelated individuals who resided in the CBD was \$4,127. For families the highest income was found in the high rise Bunker Hill residential development, where the median family income in 1970 was over \$24,000. The lowest median income levels for individuals occurred on the east side of downtown, east of Los Angeles Street, with the skid row area around 3rd and San Pedro Streets recording the lowest income of \$1,984.

Accurate information on CBD income levels for more recent years is not available, although at least one survey has confirmed the continued high income levels in the Bunker Hill area.

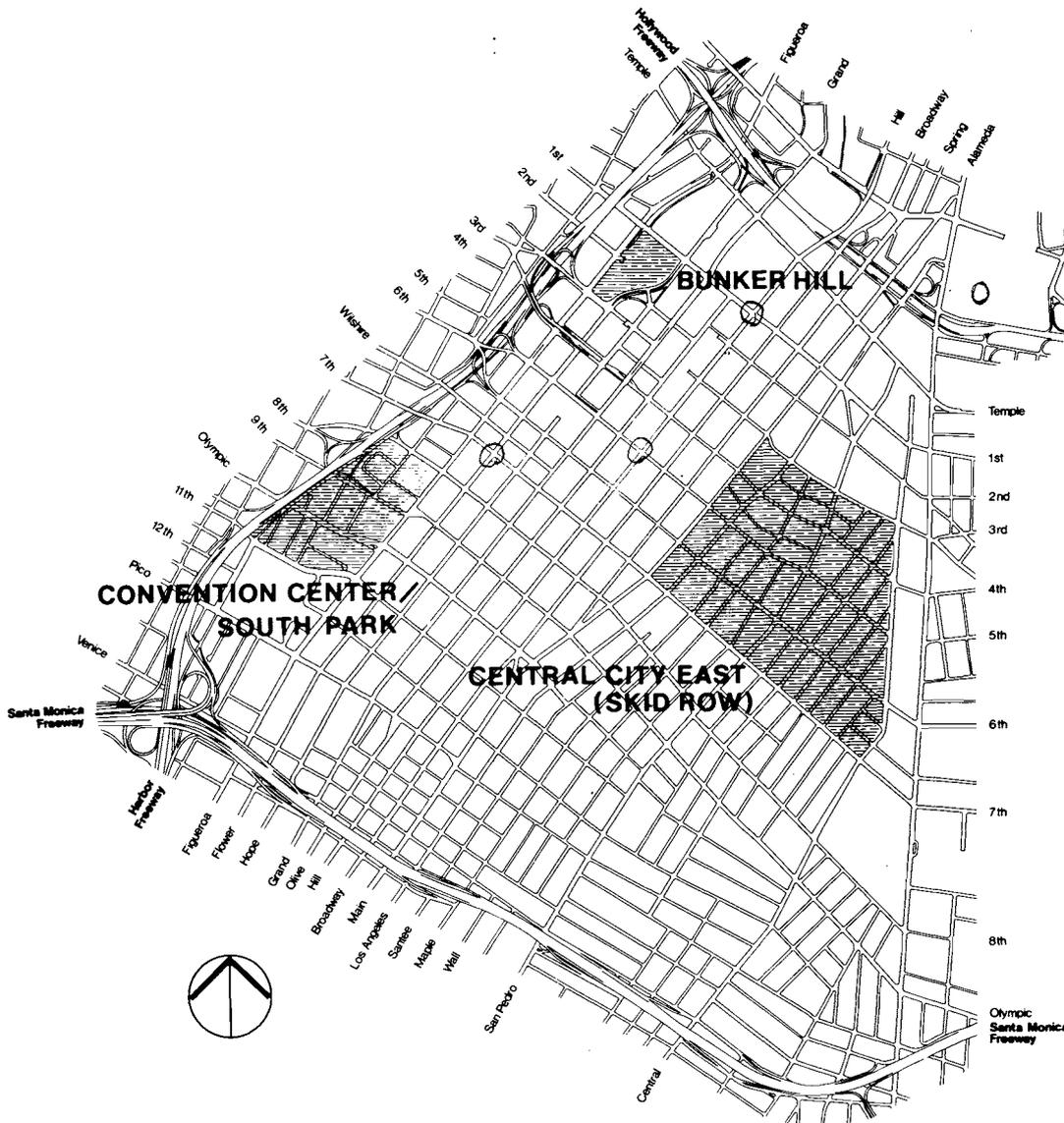
In 1970 there were 7600 CBD residents in the labor force, although how many worked in downtown is unclear. Of the 7600 residents, almost 5900 were men. The unemployment rate among CBD residents was 12.9% compared to a city-wide unemployment rate of 7% in 1970. Unemployment among male CBD residents was 14.4%, over twice as high as the city-wide average. The occupation of CBD residents was predominantly blue - rather than white-collar by two-thirds to one-third ratio. Employed women residents (almost 60% in 1970) were more likely in white collar occupations.

The 1970 census reported journey to work information for employed CBD residents. Mode of transportation appears to have been fairly evenly divided among automobiles, bus, and walking. (U.S. Census, 1970, Census of Population and Housing).

Since 1960, the 714-unit Bunker Hill Towers has been the only major residential complex constructed in downtown Los Angeles. A smaller 301-unit high-rise complex for the elderly was completed in Little Tokyo in 1975. The remaining CBD housing stock consists of older residence hotels, some single family and duplex housing units, and a few deteriorating apartment buildings. In 1970, there were 10,200 housing units in the CBD; this number declined slightly to 9,900 in

FIGURE 2-31A

## MAJOR RESIDENTIAL CLUSTERS IN THE CBD



Source: Community Redevelopment Agency, 1978.

1975. Although most units were scattered throughout the CBD, major clusters occur in Central City East, Convention Center/South Park, and Bunker Hill.

The Central City East (skid row) comprises an area from Third Street to Seventh Street between Main and Central Streets. There are an estimated 9,000 residents here (5,00-7,000 single men), many living in modified commercial buildings, hotels, apartment buildings, and rescue missions. The second major housing cluster-Convention Center/South Park--is north of the Convention Center and west of Figueroa Street. In 1975, an estimated 1400 low income residents lived in this area, primarily in deteriorating single family and duplex units and hotel/apartment buildings.

In contrast with other housing areas within the central city, Bunker Hill Towers offers the only high quality housing in the CBD for middle and upper income groups.

A 1974 survey of the socioeconomic characteristics of the 1040 Bunker Hill residents indicated that 70% of the households had incomes ranging from \$20,000 to \$35,000 per year, with a small percent ranging from \$60,000 to \$100,000. The majority of the residents were in professional occupations, primarily law and business management. 90% of the Towers' residents worked in downtown Los Angeles. The average household size was approximately 1.7 persons. Nearly 75% of the residents were over 35 years of age and 50% were single (Property Evaluation Services, 1977).

### 2-320 Social Characteristics of the Employed Population

Most of the information that follows is drawn from four downtown employee studies. The first two studies were prepared by Wilbur Smith Associates (WSA) for the Southern California Rapid Transit District (SCRTD) in 1975 and 1976. The third, which refined employment estimates, was also prepared by WSA in 1978 for the DPM program. The fourth study was prepared by Property Evaluation Services in 1977 for the Community Redevelopment Agency. Although the studies were prepared at different times and covered slightly different study areas, they give the best summary of downtown employee social characteristics.

In 1975 there were approximately 203,000 employees in the downtown study area (Task Termination Report 4.01). This represented a slight increase over a 1971 estimate of 185,000 for a slightly different study area (PES, 1977, pp. 11-12, 11-13). Changes in the number of employees in the last 10 years have been less significant than changes in their location.

In 1975, over half (53.7%) of CBD employees were women. The majority of downtown employees (52.2%) were between the ages of 25 and 44, and less than one percent were over age 65. The average working woman was 35 years while the average male was almost 40 (WSA, 1975, p. 119). The ethnic distribution of downtown employees is not available, nor are any specific estimates of the number of handicapped.

The income levels of downtown employees are generally higher than downtown residents. Table 2-32A is a summary of average income of CBD employees in 1977. Average income for residents was based on the 1970 census and the average income for employees is based on 1977 surveys.

The occupational distribution of CBD is predominantly "white collar" (Table 2-32B). In 1977, white collar jobs accounted for 67.9% of all downtown employees surveyed in the PES report. This may be overstated slightly because of the

Table 2-32A

### SUMMARY OF MEAN PERSONAL INCOMES PRIMARY MARKET AREA SECTORS

	Families	Unrelated Individuals
<u>Non-Governmental Employees:</u>		
Government Center	\$18,419	\$ 9,606
West CBD	20,325	10,414
East CBD--Little Tokyo	19,665	10,000
South Park	18,754	9,673
East Side Industrial	18,964	9,838
<u>Government Employees</u>	\$19,300	\$15,285 <sup>a</sup>

(a) The mean income of single persons working in government is higher than for private industry in the LACBD due to greater concentration of incomes in lower ranges and the almost total absence of incomes below \$6,000.

Source: Property Evaluation Services, 1977, pp. 11-32.

Table 2-32B

### OCCUPATIONAL DISTRIBUTION OF CBD EMPLOYEES, 1977

	Number	Percent
Managers, Administrators	33,858	15.9
Professional, Technical, Sales	44,995	21.1
Stenographic, Clerical, Sales Clerks	65,824	30.9
Craft and Kindred Workers	15,325	7.2
Manufacturing Equipment Operators	17,569	8.2
Transportation Equipment Operators	1,772	0.8
Service Workers	26,290	12.3
Non-Farm Laborers	7,417	3.5
Other		
TOTAL	213,050	99.9a

Source: Property Evaluation Services, 1977, Tables 9 and 12, Market Analysis Reuse Appraisal of Parcels A, E-3, E-4, L and M; CRA staff

all Percentages do not equal 100 because of rounding

inclusion of an area west of the Harbor Freeway to Lucas Street, between 3rd and 7th Streets in the PES study area. Even if this area is subtracted from the total, over 65% of downtown employees would be in white collar occupational categories.

The most current information about the residences of CBD employees is contained in the 1976 WSA study. Based on 1975 employee surveys, the San Gabriel Valley accounted for the highest percentage of employee residences. The Wilshire-Hollywood area was second, while Glendale/Burbank and East/Northeast Los Angeles ranked third and fourth respectively.

Together, the areas east and northeast of the CBD accounted for over 37% of downtown employee residences. The central city area accounted for fewer employees than did other counties in the Los Angeles region. The most important limitation of the WSA study is that the study area excluded large manufacturing areas in the southeastern CBD, east of San Pedro Street.

Table 2-32C

## RESIDENCES OF CBD EMPLOYEES, 1975

<u>Area of Residence</u>	<u>Percent</u>	<u>Number</u>
San Gabriel Valley	17.6	31,699
Wilshire/Hollywood	14.0	25,131
Glendale/Burbank	10.2	18,435
East/Northeast	9.5	17,107
South Bay	9.1	16,445
West Central L.A.	8.7	15,585
San Fernando Valley	8.6	15,523
South Central L.A.	5.5	9,899
Mid-Cities	4.9	16,445
West L.A.	4.8	8,724
Other Counties	3.8	6,907
Central City	3.2	5,802
	99.9	180,052

Source: Wilbur Smith Associates, Feb., 1976, Los Angeles Central Business District Transit Plan, Table 14, p. 40.

In 1975, the average downtown employee commuted about 7.5 miles to work, with over 70% commuting less than 10 miles. The automobile was used for about 62% of the home to work trips. Almost 32% of downtown employees used buses and the remainder (about 6%) used some other form of transportation (WSA, 1975, Table 24, P. 93).

2-330 Economic Base

The downtown economic base discussed in this section focuses on CBD employment, retail activity and tax base.

2-331 Employment Distribution, Growth Rates and Unemployment Levels

Latest estimates by Wilbur Smith and Associates (May 1978) show the 1975 work force at 203,180. Figure 2-33A shows

the distribution of those employees per acre. In terms of primary economic sectors, office employment dominates the center of the CBD, flanked by manufacturing and wholesale activities to the southeast, and service, hotel and institutional activities to the southwest. Major retail areas dot the center of the CBD surrounded by office employees. Government is the major employer to the north.

Table 2-33A shows the actual distribution of jobs by major economic sector for the years 1966, 1971 and 1975. In 1975

Table 2-33A

## COMPARISON OF CBD EMPLOYMENT BY MAJOR ECONOMIC SECTOR

<u>Economic Sector</u>	<u>1966<sup>1</sup></u>	<u>%</u>	<u>1971<sup>2</sup></u>	<u>%</u>	<u>1975<sup>3</sup></u>	<u>%</u>
Private Office	67,159	38.3	80,882	40.6	84,410	41.4
Government Office/ Institutional	24,683	14.1	38,486	19.3	42,340	20.8
Retail/Commercial	10,241	5.8	12,201	6.1	10,770	5.2
Hotels/Service	21,310	12.2	15,050	7.5	8,375	4.1
Industrial/ Wholesale	51,883	29.6	52,586	26.4	43,140	21.2
Area south of Pico Boulevard	n/a <sup>4</sup>		n/a <sup>4</sup>		14,700	7.2
TOTAL	175,276		199,205		203,735	

<sup>1</sup>Source: Development Research Associates, Market Analysis Upper Bunker Hill, Table 5. Estimated Employment Los Angeles CBD 1966 (1971).

<sup>2</sup>Estimated: Wallace, McHarg, Roberts and Todd, LA/CBD General Development Plan Study, Table Square Footage and Employee Summary by Land Use (1971).

<sup>3</sup>Wilbur Smith and Associates Task 4.01 CRA, 1978

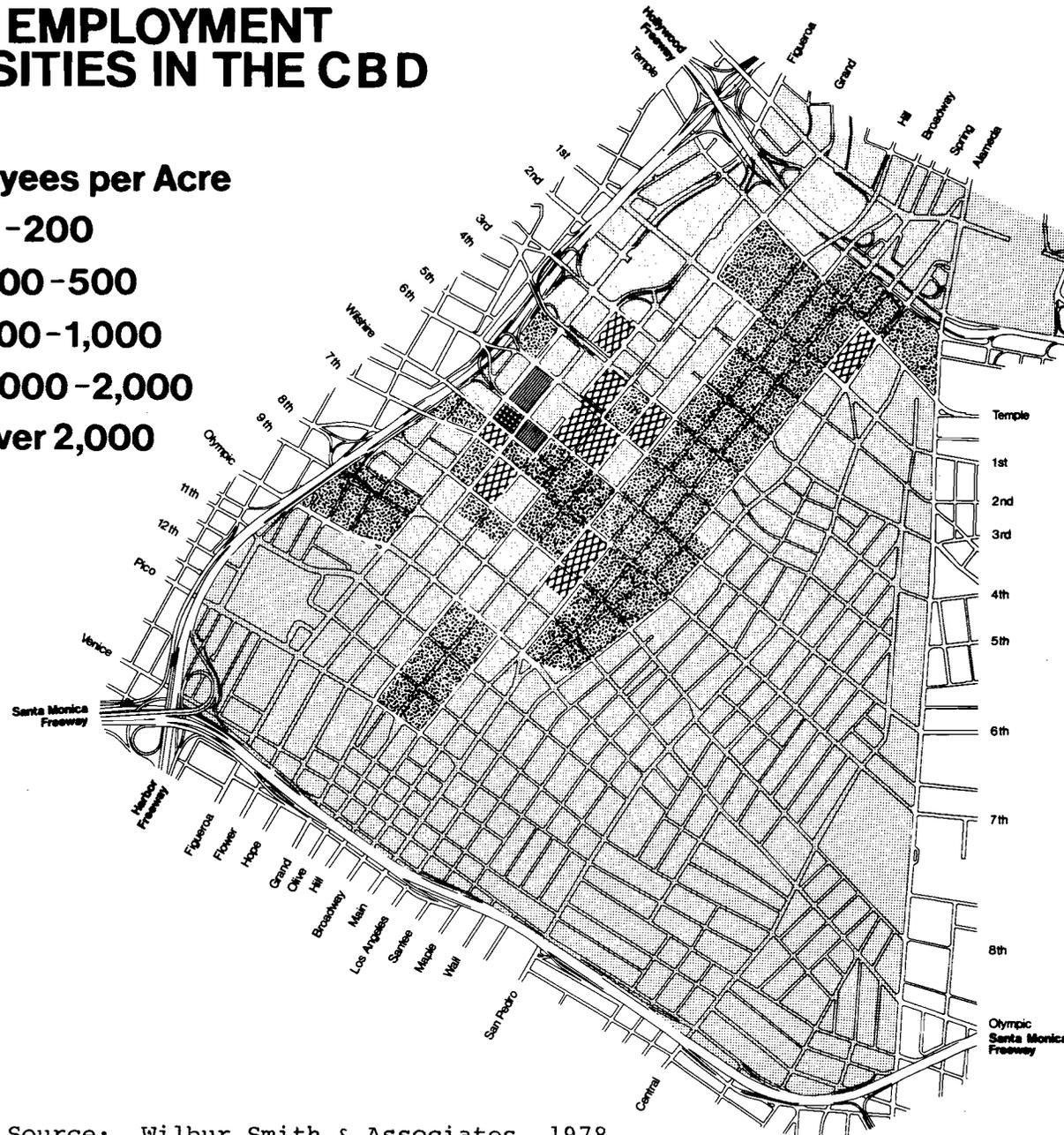
<sup>4</sup>Data for the area south of Pico Boulevard is included in the economic sector distribution for 1966 and 1971.

Figure 2-33A

# 1975 EMPLOYMENT DENSITIES IN THE CBD

## Employees per Acre

-  0 - 200
-  200 - 500
-  500 - 1,000
-  1,000 - 2,000
-  over 2,000



Source: Wilbur Smith & Associates, 1978.

private office employment dominated the downtown area with 84,410 employees, while government and industrial-wholesale were second with 42,340 and 43,140 respectively. Comparing the three years in the table, private office employment has increased slightly in its share of the market. More noteworthy, however, has been the increase in government office/institutional employment and the decline in industrial/wholesale employment.

There has been a geographic shift in the location of employees in the CBD along with the change in the nature of that employment. As private office employment has increased and manufacturing and wholesaling have decreased, there has been a shift in CBD employment westward from Spring Street to Flower Street. This shift is documented by the increase in office structures over eight stories in height built in downtown since 1965 (Western Economic Research Co).

Table 2-33B shows current and 1990 projected employment for the CBD. The trend of increasing office employment on the west side is expected to continue, manufacturing and wholesaling are expected to remain stable, and government employment should increase slightly.

Study Area	1975	1990	% Change 1975-1990
Private Office	84,410	106,895	26.6
Retail	10,770	11,707	8.7
Institutional/Service/ Hotel	8,375	11,520	37.6
Government	42,340	46,670	10.2
Industrial/Wholesale	43,140	46,060	6.8
South of Pico	14,700	14,060	(4.4)
TOTALS	203,735	236,912	16.3

Source: Wilbur Smith & Associates, 1978 (Task 4.01).

Figure 2-33B shows 1990 employment densities based on the anticipated land use changes discussed in Section 2-213.

The California Department of Employment Development reported that the Los Angeles--Long Beach area had a seasonally adjusted unemployment rate of 7.5% for May 1978.

It was estimated by the Community Redevelopment Agency that the 1977 CBD annual payroll approached \$3 billion, with the West CBD leading all other parts of downtown by almost a two to one margin for both family and single person income. Table 2-33C illustrates the average family and single person income earned in the various areas of downtown for 1977 as well as total earnings in those areas.

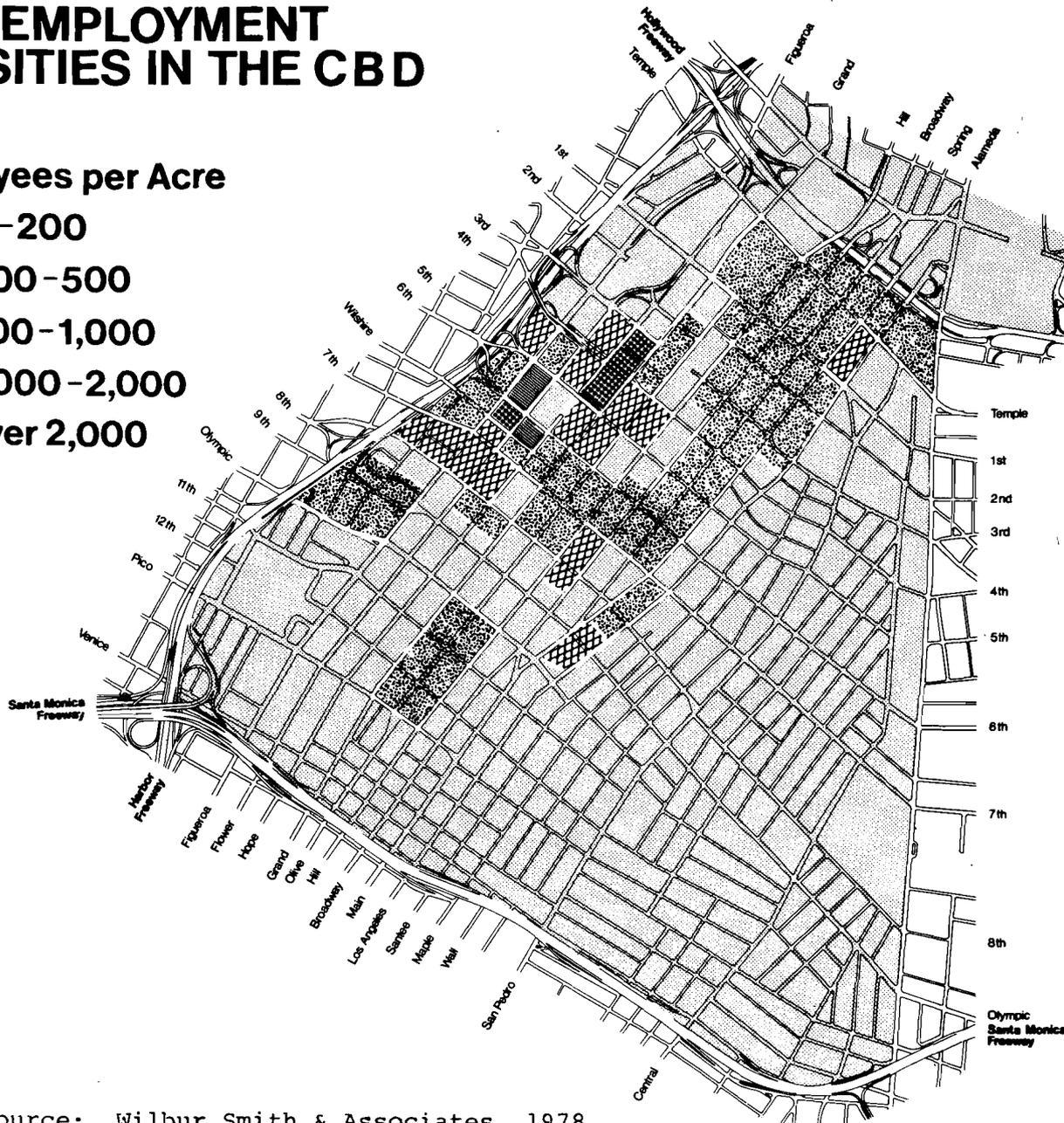
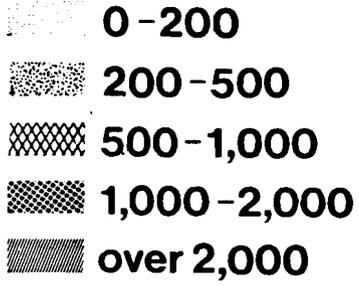
CBD Sub-Area	No. Family Payrolls	Average Payroll	Total Payroll in 000's
Government Center	30,151	\$14,168	\$ 427,179
West CBD	54,610	\$15,634	\$ 853,773
East CBD	28,487	\$15,125	\$ 430,894
South Park	17,060	\$14,425	\$ 246,091
East Side Industrial	25,755	\$14,587	\$ 375,688
			\$2,333,625
CBD Sub-Area	No. Single Payrolls	Average Payroll	Total Payroll in 000's
Government Center	11,649	\$ 9,149	\$106,577
West CBD	19,690	\$ 9,917	\$195,266
East CBD	10,263	\$ 9,523	\$ 97,735
South Park	6,140	\$ 9,212	\$ 56,562
East Side Industrial	9,245	\$ 9,369	\$ 86,617
			\$542,757
Total CBD 1977 Payroll in 000's			\$2,876,382

Notes: Average incomes calculated from Table 13 and methodology outlined in Appendix A-2 as found in the PES report of 1977. Government Center salaries calculated on basis of non-governmental salaries.

Figure 2-33B

# 1990 EMPLOYMENT DENSITIES IN THE CBD

## Employees per Acre



Source: Wilbur Smith & Associates, 1978.

TABLE 2-33D DOWNTOWN RETAIL EXPENDITURES  
1972-1977 (THOUSANDS)

Type of Retail Outlet	Total 1972 <sup>1</sup>	1972-77 Estimated Percentage Growth	Total	Employees	Visitors	Local Residents <sup>2</sup>	Other Residents <sup>3</sup>
General Merchandise	\$127,605	35%	\$172,267	\$ 20,376	\$ -	\$ 563	\$ 151,328
Apparel	75,543	35	101,983	9,938	1,104	238	90,703
Specialty	43,938	65	72,498	10,563	4,416	404	57,115
Furniture/Appliance	28,864	40	40,410	4,053	-	181	36,176
Drug	10,919	45	14,777	3,522	1,104	100	10,051
Grocery/Packaged Liquor	25,396	45	36,824	3,736	1,104	985	30,999
Eating/Drinking	46,456	120	102,203	72,154	16,560	489	13,000
TOTAL Primary Outlets	\$375,993	51%	\$540,962	\$124,342	\$ 24,288	\$2,960	\$ 389,372
Percentage Distribution			100%	22.9%	4.5%	0.6%	72.0%

1 Data from 1972 U.S. Census of Retail Trade

2 Bunker Hill Towers residents

3 Living outside the downtown area

Source: U.S. Bureau of Census  
Taylor Dark and Company

#### 2-332 Retail Sales

Although downtown employees, business visitors, and tourists are the primary patrons for retail activity, considerable support also comes from surrounding residents. Table 2-33D shows that estimated downtown retail expenditures for 1977 total almost \$540 million, a 51% increase over the 1972 sales volume. These of the seven expenditure categories shown have increased more than 40% and one (restaurants) increased 120%.

A 1975 CBD survey showed that employees are expected to spend about \$825 per capita in the CBD, 55% of which for food and drink. Hotel guest spending is estimated at \$22 per day in the downtown area, mostly for food. Resident spending based on California state average per capita levels, adjusted for differences in income yielded spending of almost \$2,600 for residents of Bunker Hill Towers and other upper-middle income housing residents; and about \$1,344 for residents of the proposed retirement housing units.

#### 2-333 Tax Base

The CBD base includes property, sales and hotel taxes. While other taxes are collected directly and indirectly because of activities in the downtown, this discussion will focus on property, sales and hotel taxes, because of their importance to city and county revenues.

##### 2-333.1 Property Taxes

Property taxes are based on the market value of land and improvements on a given parcel. The assessor is required by law to assess property at 25% of the market value. Changes in market value have a direct effect on the changes in assessed value. This effect will be emphasized with the passage of Proposition 13 because changes in market value through transfer or development of property will be reflected immediately on the assessor's roll. In the absence of the development or land transfers, the market value of a parcel can only be increased 2% a year.

Excluding Bunker Hill and Little Tokyo, the assessed valuation of secured CBD land and improvements for FY, 1977/78 is 376 million. With the addition of unsecured improvements and personal property (valued at \$115 million) the total 1977/78 assessed value for the CBD is \$490 million (including public utility properties of \$40 million).

The 1977/78 tax rate applicable to the CBD was \$13.7861 per \$1000 of assessed valuation. This is composed of the following:

Table 2-33E  
Property Tax Rates, 1977

<u>Taxing Agency</u>	<u>Rate</u>	<u>% of the Rate</u>
Los Angeles City	\$2.8807	20.90
Los Angeles County	4.2544	30.86
L.A. Unified School Dist.	5.4325	39.41
Other (including community colleges, flood control & Water Dist., etc.)	1.2185	8.84
	<u>\$13.7861</u>	

Source: Los Angeles County Assessor's Office, Robert J. Harmon Associates.

Applying this rate to assessed valuation yields CBD property tax revenues of \$67.55 million. In addition, the Bunker Hill and Little Tokyo Redevelopment Districts provide \$6 million annually in tax revenue which is apportioned in the manner shown above, and \$15.2 million (in 1977/78) in tax increment revenues. This latter revenue reverts to the Community Redevelopment Agency of the City of Los Angeles and is used to finance its redevelopment and revitalization activities.

For 1977/78, the City's share of net general revenue from CBD property taxes (including the \$6 million from redevelopment projects) thus amounted to \$15.4 million.

The 1978-79 property tax levy translates to 1.0612 of this market value; i.e. the basic levy of one percent of market value plus the two percent annual rate of increase in that

levy as stipulated in Proposition 13, compounded over the three year period. The 1978-79 property tax levy for the CBD thus becomes \$20.4 million. This is equivalent to only 30% of the previous year's property tax revenues. Applying this factor to the city share of such revenues and allowing for a 7% increase in sales and hotel tax revenues (primarily as a result of inflation), the anticipated 1978/79 City tax revenues derived from the CBD would total \$13.34 million (56% of the previous year's total). In addition, the Community Redevelopment Agency anticipates the loss of \$10-11 million in tax increment revenue between 1977/78 and 1978/79 as a result of the changes in property tax levies.

#### 2-333.2 Sales and Hotel Taxes

The City's tax revenues from the CBD also include: a share of sales tax revenues (one percent of taxable sales); proceeds of the six percent tax on hotel room charges; and miscellaneous business taxes and fees. Based on estimated 1977 taxable retail sales in the CBD (\$500 million), the City's share of CBD retail sales tax in 1977 was \$5 million. The County's portion of CBD retail sales tax was \$1.25 million and the state's \$23.75 million (Robert J. Harmon & Associates estimate, 1978).

The total of 1977/78 general tax revenues directly accruing to the city from the CBD thus is estimated to be \$23.9 million. This consists of the following:

Table 2-33F  
Distribution of Tax Revenues from the CBD  
1977

City Revenues from CBD property taxes:	\$15.4 million
City share of CBD retail sales taxes:	5.0 million
City Revenues from CBD hotel room sales tax:	3.3 million
City Revenues from CBD-generated misc. business taxes and fees	.3 million
<b>Total 1977/78</b>	<b>\$23.9 million</b>

Source: Robert J. Harmon & Associates, 1978

## 2-400 TRANSPORTATION

This section describes regional and study area transportation facilities and the basic travel demand characteristics affecting downtown.

### 2-410 Transportation Facilities in the Region

Southern California has one of the most extensive highway networks in the nation, with over 1,400 miles of freeway and nearly 2,300 miles of state highway. The freeway mileage in Los Angeles County amounts to nearly 34% of the regional total. Within the six-county SCAG region, there are over 39,000 miles of county roads and city streets. Los Angeles County accounts for 47% of this total. Figure 2-41A illustrates the extent of the freeway system in Los Angeles County. This freeway system surrounds the downtown area providing good regional access to the central city.

Transit service in the region is also quite extensive. There are more than thirty transit operators in the SCAG region providing 132 million revenue bus-miles per year. Los Angeles County's share of this total is 110 million revenue bus-miles. Most of this service is provided by the Southern California Rapid Transit District.

Southern California also offers a variety of supplemental "paratransit" services, including taxis, Dial-a-Ride, Van-pools, and subscription buses. In most cases, paratransit services are privately operated.

### 2-420 Regional Travel Demands

On an average weekday, over one million riders use the region's transit systems, with the Southern California Rapid Transit District accounting for approximately 850,000 of this total. Transit trips are still a small percentage of person trips (approximately 3.36%). The goal of the Southern California Association of Governments, however, is to increase the transit share to 6% by 1990 (SCAG, 1978a, pp.4-6).

On a regional basis, there are currently more than 370 million transit passengers per year. The transit systems in Los Angeles County alone account for slightly more than 90% of the regional total. Paratransit services in the region attract approximately 4,000 passengers per day and about 1.1 million per year.

### 2-430 Transportation in the Study Area

#### 2-431 Volume of Travel to Downtown

Of particular concern to the study area is the number of regional travelers who enter or leave the central business district. A total of 630,000 persons enter the cordon area during the 16-hour period from 6:00 a.m. to 10:00 p.m. on an average weekday (1976 Department of Traffic Cordon Counts).

This results in over 1.2 million daily cordon crossings. (Department of Traffic's cordon area is bordered by Figueroa, Pico, Los Angeles, and Temple Streets). Of the total persons entering the downtown area, 64% arrive in automobiles, 26% in buses, 4% in commercial vehicles, and 6% on foot (see Figure 2-43A). It has been estimated that 20% of the transit crossings and 58% of the automobile cordon crossings are through trips, i.e., trips which neither end nor begin within the downtown area (CRA, Internal CBD Travel Demand Modeling, February, 1976. Excluding through trips, transit person crossings represent approximately 52% of the total during the p.m. peak hour.

The number of bus passengers entering and leaving the downtown is shown in Table 2-43A. Approximately 256,000 passengers use local buses and about 33,000 ride interurban express buses.

Between 1976 and 1977 there was a 4.6% reduction in transit ridership to and from the central business district.

Travelers approach the CBD from nine major corridors, as shown in Table 2-43B. Some shifts in the travel patterns are expected between now and 1990. It is estimated that the

TABLE 2-43A  
NUMBER OF BUS PASSENGERS PER DAY  
ENTERING AND LEAVING DOWNTOWN  
1976 AND 1977

	1977	1976	Percent Change
Park-n-Ride Passengers	6,089	7,182	- 15.2%
Subscription Passengers	784	1,000	- 21.6%
Interurban Passengers	33,079	33,100	- 0.2%
Airport Service Passengers	918	--	+100.0%
Local Passengers	256,151	270,172	- 5.2%
<b>TOTALS</b>	<b>297,021</b>	<b>311,454</b>	<b>- 4.6%</b>

Source: SCRTD, 1977 Summary Report of Los Angeles Central Business District Cordon Check.

TABLE 2-43B

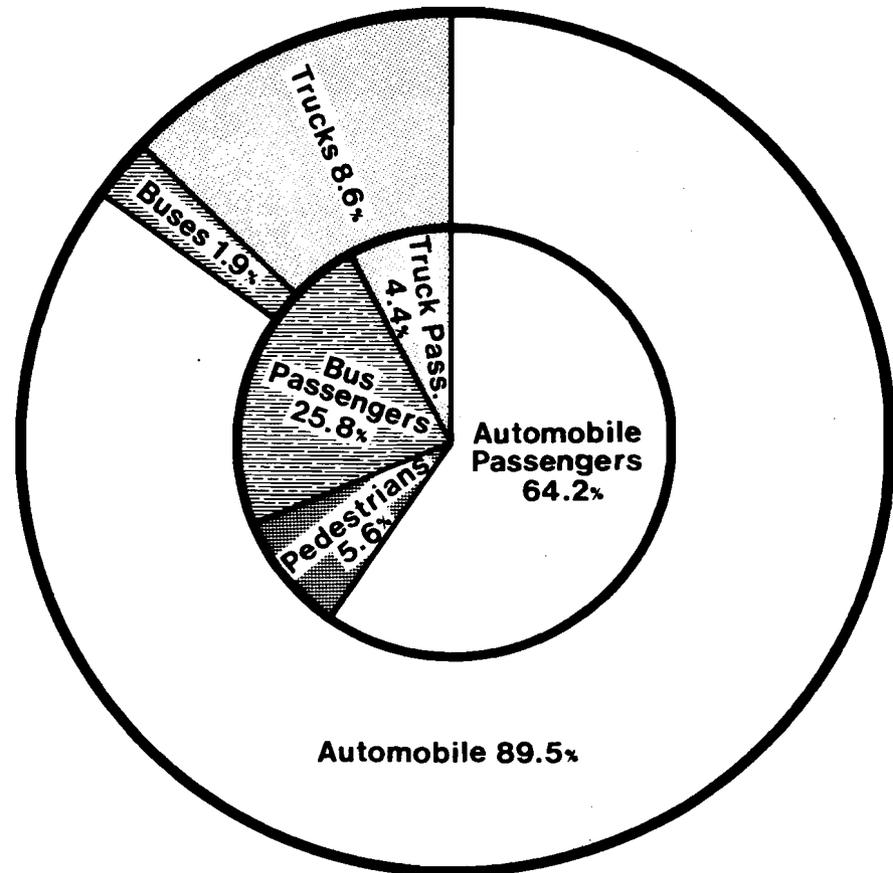
## EXTERNAL DIRECTIONS OF APPROACH TO CBD

Corridor	1967 O-D Survey	1990 LARTS Forecasts
Hollywood Freeway	16.0	13.0
Wilshire/Olympic	12.5	17.3
Santa Monica Freeway	13.5	10.5
Harbor Freeway	12.5	14.5
San Pedro/Alameda	5.5	2.8
San Ana Freeway	12.5	14.1
San Bernardino Freeway	8.0	13.1
Pasadena Freeway	8.0	7.1
Golden State Freeway	11.5	7.6
<b>TOTALS</b>	<b>100.0%</b>	<b>100.0%</b>

number of trips to the central city along the Wilshire, Harbor, Santa Ana, and San Bernardino Freeway corridors will increase, and those along the other corridors will decrease.

Figure 2-43A

## CLASSIFICATION OF VEHICLES AND MODE OF TRANSPORTATION ENTERING CORDON AREA



MAY 1976

Source: Los Angeles City Department of Traffic.  
Cordon Counts, 1976.

## 2-432 Bus Service

The Southern California Rapid Transit District provides most of the bus transit service in the downtown area. With 91 different routes serving downtown Los Angeles, RTD provides a total of 628 outbound buses to all corridors during the p.m. peak hour (4:30-5:30). As shown in Table 2-43C, 207 of these are express buses operating on the regional freeway system. Three municipal bus operators (Torrance, Gardena, and Santa Monica) also serve the downtown area with a total of 12 express buses outbound in the p.m. peak hour.

Figures 2-43B show estimated bus volumes on the downtown streets during the afternoon peak hour (based on 1975 counts). The highest volumes are on Hill Street, northbound between 8th and 5th Street. This segment of Hill has 147 buses per hour. Other high volume locations within downtown include Broadway southbound between First and 8th Streets--90 buses per hour; Spring Street northbound, north of First Street--117 buses per hour; Temple Street, westbound between Hill and Grand--110 buses per hour.

## 2-433 Minibus Service

Downtown minibus service was established in October 1971. The minibus route is shown in Figure 2-43C. This service was made possible with subsidies provided by the City of Los Angeles, the County of Los Angeles, and the Los Angeles Community Redevelopment Agency. During the past few years, there have been numerous fare changes; the current fare is 15 cents. The service operates from 7:00 a.m. to 7:00 p.m., Monday through Friday, and from 9:00 a.m. to 4:00 p.m. on Saturday. Weekday headways are 8 minutes in the p.m. peak hour and 5 minutes during the midday. As shown in Table 2-43D, the minibus attracts approximately 6,000 riders per day, with a peak of about 1,100 riders during the noon hour. Patronage in May 1978 reached 6,142 persons, a doubling of ridership since January 1977.

TABLE 2-43C

TRANSIT SERVICE FROM CBD  
TO REGIONAL CORRIDORS  
Buses Per Hour, Outbound,  
P.M. Peak Hour

Corridor	RTD Service (Dec. 1977)	
	Local	Express
1. Hollywood Freeway	57	40
2. Wilshire/Olympic	83	--
3. Santa Monica Freeway	51	19 <sup>a</sup>
4. Harbor Freeway	42	25 <sup>b</sup>
5. San Pedro/Alameda	43	--
6. Santa Ana Freeway	22	39
7. San Bernardino Freeway	58	52
8. Pasadena Freeway	36	15
9. Golden State Freeway	<u>29</u>	<u>17</u>
TOTAL	421	207

<sup>a</sup> Does not include 6 buses per hour provided by Santa Monica Municipal Bus Lines.

<sup>b</sup> Does not include 4 buses per hour provided by the City of Gardena and 2 by the City of Torrance.

Source: Community Redevelopment Agency and Southern California Rapid Transit District, June, 1978.

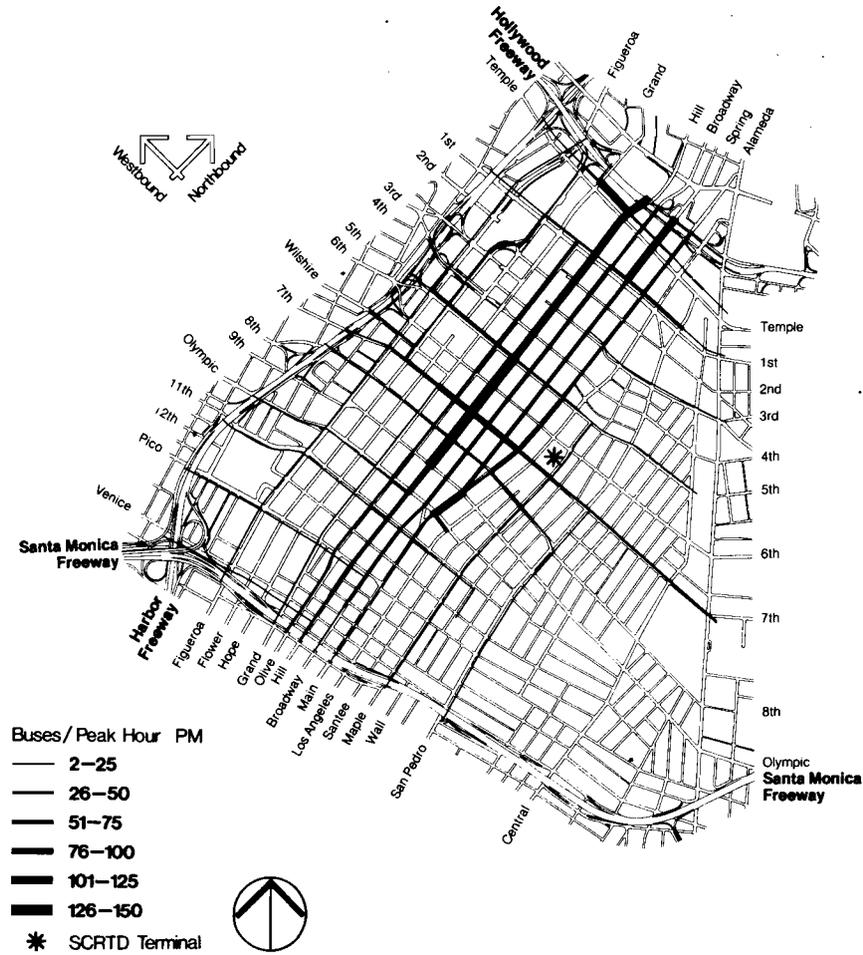
## 2-434 Other Transit Into and Within Downtown

Other forms of transit operate both to and within downtown. In addition to the bus and minibus operations, downtown transportation service is also provided by taxis.

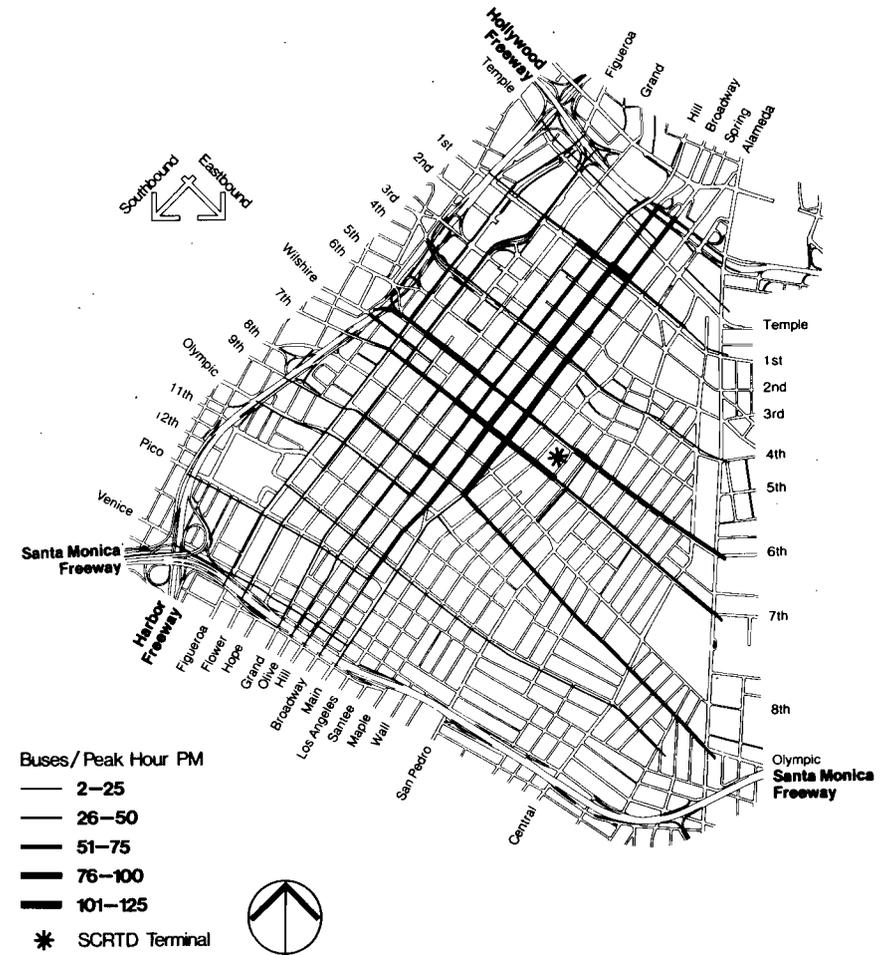
Figure 2-41A  
**FREWAY SYSTEM PROVIDING  
REGIONAL ACCESS TO THE CBD**



Figure 2-43B  
**BUS VOLUMES, 1975**  
**Local Bus / Freeway Bus**

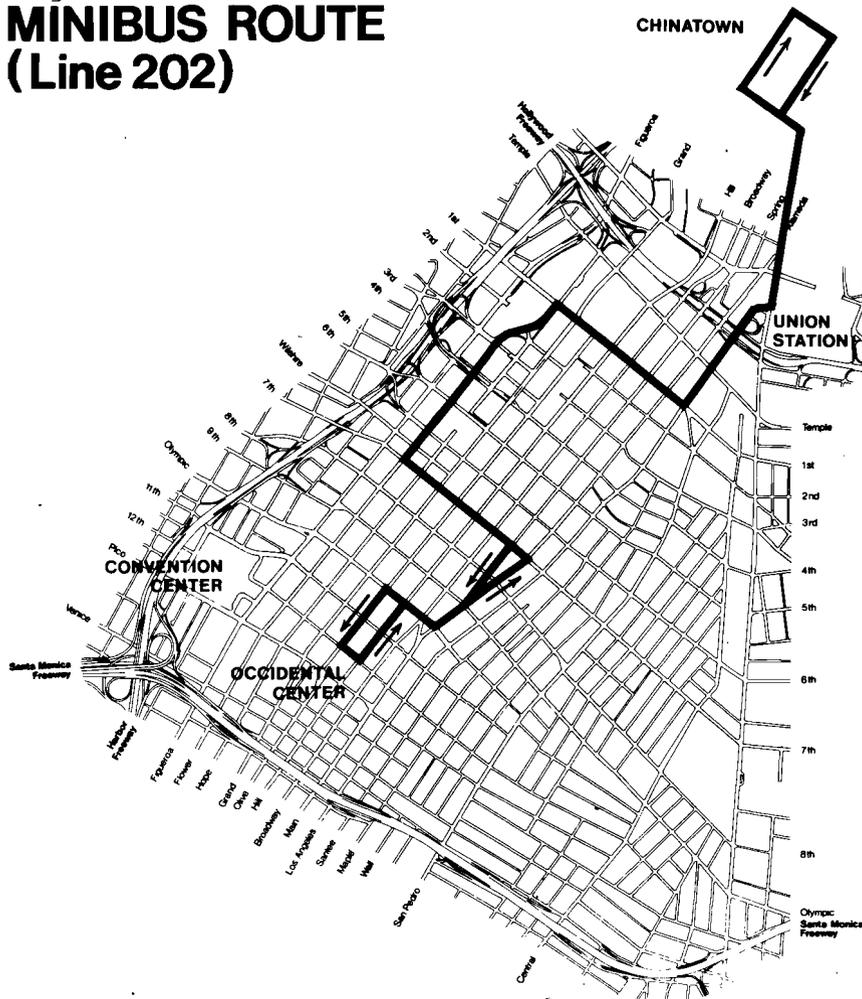


**BUS VOLUMES, 1975**  
**Local Bus / Freeway Bus**



Source: Community Redevelopment Agency, 1976.  
Moving People in Los Angeles.

Figure 2-43C  
**MINIBUS ROUTE**  
**(Line 202)**



Source: Southern California Rapid Transit District, 1978.

TABLE 2-43D  
 TRENDS IN MINIBUS  
 RIDERSHIP (LINE 202)

Average Daily Ridership During:		<u>Weekday</u>	<u>Saturday</u>
1977	January-June	3,024	584
	July-December	4,806	1,052
1978	January	4,782	1,044
	February	4,821	827
	March	5,418	1,012
	April	5,764	819
	May	6,142	1,321

Source: SCRTD Planning Department, 1978 Downtown Minibus Passenger Summary.

Greyhound and Continental Trailways provide intercity bus service to downtown Los Angeles. Greyhound operates from a terminal located on Los Angeles Street between 6th and 7th Streets. The Continental terminal is located at Main and 6th Streets.

Intercity rail service is provided by Amtrak, which operates 6 round-trip trains per day between San Diego and Union Station. Approximately 700,000 trips per year, or about 2,700 trips per weekday, are made on the San Diego line alone.

Amtrak also offers daily service to San Francisco, Seattle, and Chicago. Service to New Orleans operates three times a week. About 450,000 trips are made each year on the Seattle-Los Angeles line. The San Francisco-Los Angeles line carries about 90,000 passengers annually.

The locations of terminals for these services are shown in Figure 2-43D.

Figure 2-43D

## INTERCITY TRANSIT TERMINALS

- 1● Airport Bus
- 2● Amtrack
- 3● RTD/Greyhound Bus Terminal
- 4● Continental Trailways Bus Terminal



Figure 2-43E

## AUTO RELATED LAND IN THE CENTRAL CITY



SOURCE: CENTRAL CITY LOS ANGELES  
1972/1990, APRIL, 1972.

### 2-435 The Automobile in the CBD

The automobile has a major impact on the downtown area, as shown in part by the amount of land devoted to the automobile (see Figure 2-43E). The shaded portions of the chart include parking lots and structures, city streets, freeways, and service stations. During an average workday, 570,000 automobiles cross the CBD cordon, representing 90% of the total vehicular traffic. The peak accumulation of automobiles reaches nearly 60,000 cars during the day, approximately 6,000 more than in 1972 (Department of Traffic, City of Los Angeles, 1976).

Peak hour traffic congestion is partly due to the downtown street network. Downtown streets form a grid pattern, however, this grid is obstructed on the west side by several dead ends and steep hills, making through bus service difficult. The elevation of Bunker Hill requires two major east-west through streets to be in tunnels, while north-south access is severely restricted.

Many downtown streets already experience congestion during peak hour operations. The Department of Traffic has forecasted an increase of 15 to 20% in vehicular volumes from 1975 to 1990 within the Los Angeles CBD (Department of Traffic, City of Los Angeles, 1977). Obviously, any increase in an already congested street system will result in more congestion if other improvements are not made.

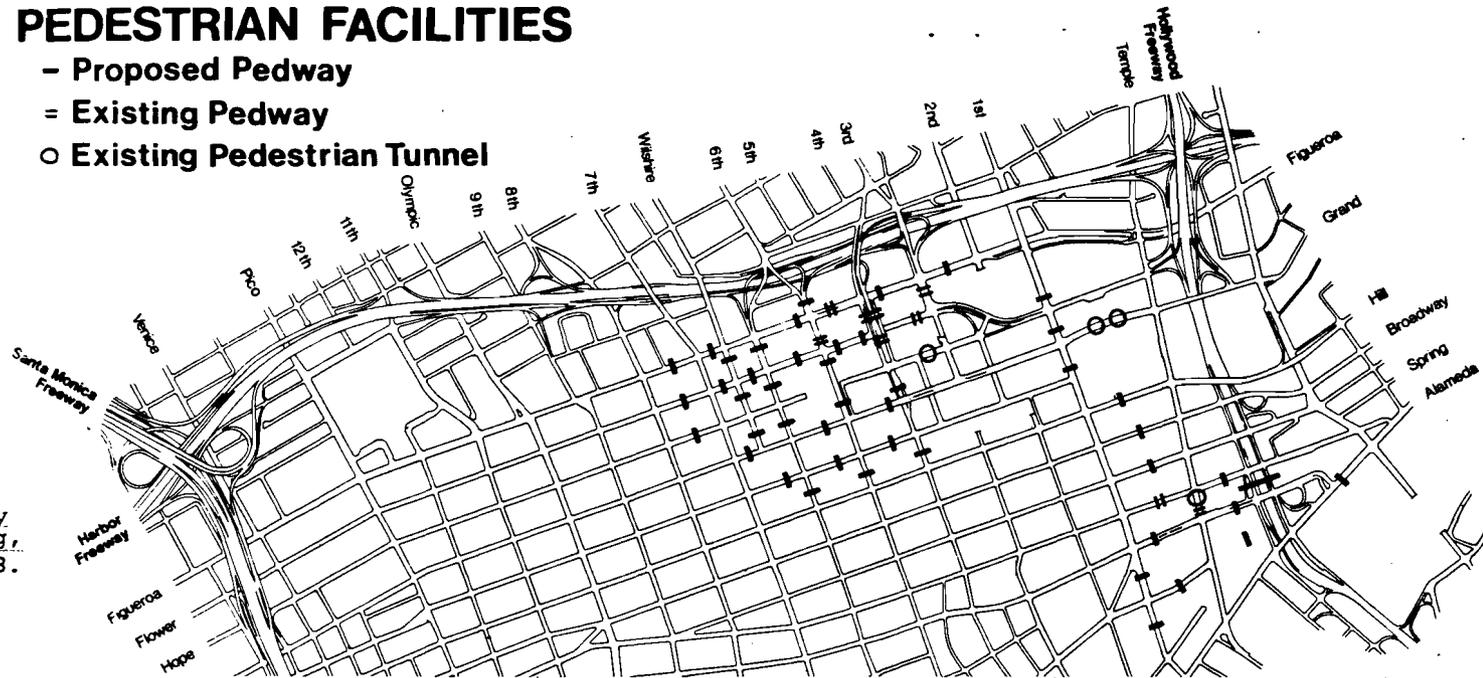
### 2-436 Pedestrian Systems

Downtown has an extensive network of sidewalks and grade-separated pedways. There are currently eight aerial pedways and four pedestrian tunnels. Forty-six additional locations for pedways have been proposed (see Figure 2-43F). As measured in 1973, the heaviest downtown pedestrian traffic occurs along Broadway between 6th and 7th Streets (2,610 pedestrians during the noon hour). Traffic on the west side is relatively low. For example, the number of walkers on Figueroa Street reaches a maximum of 430 per hour at lunch time (Department of Traffic, City of Los Angeles, 1973).

Figure 2-43F

**PEDESTRIAN FACILITIES**

- Proposed Pedway
- = Existing Pedway
- Existing Pedestrian Tunnel



Source: Los Angeles City  
Department of Engineering,  
1978.

2-440 Transportation Goals, Policies, And Plans

## 2-441 Regional Policies

Regional transportation plans and policies are developed by the Southern California Association of Governments. The policies are updated periodically and published in the Regional Transportation Plan (RTP). Five broad goals for transportation have been adopted:

- To develop a transportation system which will support the comprehensive goals of the region, taking into account the effect of mode selection, location, and time upon the physical, social, economic, and organizational environment
- To create a balanced transportation system integrated with planned land use to provide effective mobility for all people and efficient and economic movement of goods

- To minimize the need for long distance intra-regional travel, particularly work trips, by guiding the development of the region to create self-sufficient metros having balanced service facilities, employment, and housing
- To develop for the region a transportation system compatible with the environment, using the available resources wisely, promoting the aesthetic beauty of the region, and avoiding undesirable environmental changes
- To develop a transportation system that is financially, legally, and politically feasible, has broad public support, and has a commitment to its implementation by elected officials and those providing transportation services

(SCAG, 1978. Draft Regional Transportation Plan, p. 4-3).

In addition to these overall goals, the 1978 RTP establishes four major objectives for the regional transportation system:

- Reduce emissions attributable to the transportation system equivalent to a reduction of vehicle miles traveled of 5% in each five-year period from 1980 to 1995.
- Reduce fuel consumption by the transportation system equivalent to a reduction of vehicle miles traveled of 5% in each five-year period from 1980 to 1990.
- Increase transit ridership, currently 3.36%, to 6% of persons trips in the region by 1990.
- Increase the number of multi-occupant light-duty vehicles (i.e., carpools, vanpools, etc.) currently 2 million, to 3.0 million by 1990, for both work and non-work trips.

(SCAG, 1978. Draft Regional Transportation Plan, p. 4-3).

One of the major components of the RTP is the Regional Transit Development Program--a four-part program of transit service improvements:

- Regional Transportation System Management, or TSM, is an ongoing program which calls for further refinement of the existing bus system including improved parking, scheduling and maintenance. More local buses, freeway flyers and fringe parking lots would also be added over the next four years to provide region-wide service improvements. Carpooling will be encouraged.
- Regional Freeway Transit includes ramp metering, the adding of exclusive bus/carpool lanes when necessary to achieve free flow on freeways, and construction of bus stations adjacent to the freeway.
- The Los Angeles Downtown People Mover which is documented in this report.
- Fixed Guideway Rapid Transit is proposed for the Wilshire corridor connecting downtown with the San Fernando Valley.

#### 2-442 Local Policies

The City of Los Angeles General Plan includes major policies and objectives for transportation improvements in the City. The City of Los Angeles General Plan, the Central City Community Plan and redevelopment plans for the downtown area are discussed in detail in section 2-212. The following section discusses only the transportation goals and policies of those plans.

The "Circulation Element" of the Citywide Plan (a portion of the General Plan, adopted April 3, 1974) emphasizes the interrelationship of land use and transportation. The first major objective in the Circulation Element is "to provide an integrated transportation system coordinated with land use which adequately accommodates the total travel needs of the community." The Citywide Plan calls for a primary rapid transit system which supports the centers concept of land use as discussed in section 2-111.

The rapid transit system shall be in the form of a network connecting Centers with other Centers. It is to operate on its own grade separated right of way, either above or below ground depending upon local conditions.

"Park-and-ride" stations are to be located outside Centers and include facilities for the parking of automobiles and bicycles and facilities for transfer between local and rapid transit.

(Department of City Planning, 1974. Citywide Plan, p. 17).

The Citywide Plan's support of auxiliary transit and peripheral parking facilities is of particular relevance to transportation planning for downtown Los Angeles:

- Auxiliary transit systems, compatible with the primary system should be developed on unobstructed rights-of-way within the principal Centers. Where there is sufficient demand, the auxiliary systems should be built before the primary system, otherwise the two systems should be built simultaneously.
- Additional parking in centers for automobiles and bicycles should be located at the periphery of the most intensively developed areas convenient to freeway access and interconnected with such areas by auxiliary transit or other public transportation facilities.

(Department of City Planning, 1974. Citywide Plan, pp.17,18)

These policies are generally reflected in the Central City Community Plan, the portion of the General Plan which focuses on downtown Los Angeles. The Central City Community Plan is concerned with all facets of transportation in the downtown area, including parking, carpooling, public transit,

pedways, and highways. Challenging the problems of air pollution and energy consumption, the plan calls for a reduction in vehicle-miles of travel. The following four policies illustrate the Plan's concern for environmental quality:

- While the proportion of trips to the central city carried by public transportation is expected to increase, demand for parking in the central city will also continue to increase as employment and other activities grow. Street system capacity, air quality, and land utilization considerations indicate that a continually greater proportion of the longer term parking, chiefly for employees, should be located on the periphery of the more intensively developed areas. Parking within the intensively developed areas is intended for use by residents and short time use by business patrons.
- Parking facilities should be encouraged to provide reduced rated and preferential locations to higher occupancy private automobiles.
- A vastly improved public transportation system, including rapid transit between central city and other centers as well as better bus service between central city and other areas, must be provided to reduce the environmental impact of the present transportation system which is based chiefly on the private automobile.
- People movers (auxiliary grade separated transit systems) shall be constructed to connect major central nodes with each other, with rapid transit stations, and with peripheral parking facilities. People movers must be aesthetically and functionally integrated with development and are generally proposed where this can occur. They also must be phased to accommodate new concentrations of development as they take place.

(Department of City Planning, 1974. Los Angeles Central City Community Plan, p. 6).

Transportation decisions in downtown Los Angeles are also guided by City Council-approved redevelopment plans, including the Central Business District Redevelopment Project (CRA, 1971) (see section 2-212). Both of these plans support the peripheral parking facilities, pedways, and coordinated rapid transit/people mover systems. For example, the Bunker Hill Plan includes the following statement on transit:

The existing bus route system will be significantly modified to provide maximum service to the Project. The plans for the Project and the Southern California Rapid Transit District mass transit system proposes a station within the hilltop to directly serve the high population concentration of Bunker Hill. A secondary transit network or "People Mover" will be developed to connect the Project with the peripheral parking facilities and designed for ultimate integration into a downtown system.

(CRA, 1971. Design for Development, Bunker Hill. p.3)

Section 424 of the Redevelopment Plan for the Central Business District Redevelopment Project offers additional support to people mover systems, rapid transit, and associated facilities:

It is proposed that the Project area be developed with-in central city rapid transit facilities as part of a metropolitan-wide transit system. It is also proposed that the People Mover system planned to serve the Bunker Hill Urban Renewal Project be expanded throughout the Central City area as feasible. It is further proposed that as feasible pedways, including pedestrian bridges, be developed in the Central City.

(CRA, 1975, p. 33)

The Plan also reiterates the importance of reducing vehicle miles of travel:

The Agency shall seek to accomplish a reduction in vehicle miles traveled by encouraging an immediate and a long-term increase in the proportion of Project area employees, shoppers, and visitors who utilize public transportation. The Agency shall prepare a transportation plan as part of the development plan for the Project area. This plan shall explore more effective utilization of the existing transportation system, using techniques like carpooling, subscription buses and park-and-ride buses, as well as new and/or additional transportation systems.

(CRA, 1975, p. 33).

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### 3-000 IDENTIFICATION AND EVALUATION OF ALTERNATIVES

#### 3-100 OVERVIEW

A number of alternatives to the proposed action have been studied by local transportation agencies. The Community Redevelopment Agency (CRA) has studied various means of meeting the goals of improving the circulation/distribution system in downtown. Additionally the Southern California Rapid Transit District (SCRTD) has assessed alternative regional services to and from downtown.

This Chapter presents a range of system level alternatives that address downtown's transportation needs. Five alternatives are presented. They include: (1) the Null Alternative; (2) the Bus Alternative; (3) the Downtown People Mover Alternative; (4) the Rail Alternative, and (5) the People Mover/Rail Alternative. The Null and Bus Alternatives were designed and analyzed by the CRA as part of a downtown circulation/distribution study. The People Mover Alternative was also designed as part of that study but was refined during subsequent preliminary engineering studies conducted by CRA. A more detailed treatment of the Null, Bus, and DPM alternatives is provided in Moving People in Los Angeles (CRA, June 1977). The Rail Alternative was designed and analyzed by the SCRTD as part of a study of regional transit alternatives. This alternative, along with other regional rail and bus alternatives, is treated in detail in the Alternatives Analysis/Environmental Impact Statement on Transit System Improvements in the Los Angeles Regional Core (UMTA and SCRTD; May 1979). Additionally, the bus plan that complements guideway transit in downtown was designed by the SCRTD for the Downtown People Mover Program.

The Chapter has three main sections: Section 3-200 summarizes system level alternatives, Section 3-300 summarizes their operating characteristics and impacts, and Section 3-400 presents the reasons for proposing the project.

#### 3-200 SYSTEM LEVEL ALTERNATIVES

##### 3-210 THE NULL ALTERNATIVE

The Null Alternative is the option of not making any transit improvements in downtown Los Angeles. This section describes the No Project Alternative and in addition describes the implications of postponing the project.

##### 3-211 No Project

The No Project Alternative is defined as the option of not making any transit improvements in downtown Los Angeles. This implies a continuation of current levels of bus and mini-bus service through at least 1990. Approximately 1400 freeway and local buses would continue to provide services to downtown from surrounding areas. The buses would distribute passengers throughout the downtown area, just as in today's system. Approximately 1400 regional and local buses are routed so that a portion of their service area is within downtown. Ninety-one routes enter the downtown area and about 630 outbound buses provide service to outlying areas during the PM peak hour. About 200 of these buses are freeway express services. Most of this transit service is provided by the Southern California Rapid Transit District although three municipal bus operators (Torrance, Gardena, and Santa Monica) also serve the downtown area with a total of 12 express buses outbound in the PM peak hour.

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TABLE 3-21A  
1990 OPERATING INFORMATION  
FOR THE NO-PROJECT ALTERNATIVE.

<u>Number of Vehicles</u>		<u>Daily Vehicle Miles</u>	
Buses	1415	Buses	9,525
Minibuses	37	Minibuses	2,703
<u>Average P.M. Headway</u>		<u>Annual Vehicle Miles (10<sup>6</sup>)</u>	
Buses	1.6	Buses	2.95
Minibuses	4.0	Minibuses	.79
<u>P.M. Peak Hour Outbound</u>			
Local	421		
Express	207		
Total	628		

TABLE 3-21B  
1990 COST INFORMATION  
FOR THE NO-PROJECT ALTERNATIVE.

<u>Annual Operating Costs</u> (thousands of 1978\$)		<u>Capital Costs</u> (thousands of 1978\$)	
Buses	7,028	Buses	--
Minibuses	2,614	Minibuses	--

The routing of these buses in downtown is concentrated on selected streets. The highest volumes are on Hill Street, northbound between 8th and 5th Street. This segment of Hill Street has 147 buses per hour. Other high volume locations within downtown include Broadway southbound; Spring Street northbound; and Temple Street westbound.

Under this alternative almost all of the buses would operate in mixed traffic without added traffic improvements. The only downtown preferential treatment for bus service is the Spring Street contraflow lane which has been operating since 1975. The SCRTD downtown terminal at 7th and Grand Streets would remain the main point of transfer for those travelling through the downtown area.

Today's minibus fleet would continue to supplement normal bus operations by providing additional distribution/circulation service. The existing minibus route is shown in Figure 3-21A.

Tables 3-21A, 3-21B, 3-21C and 3-21D contain summary operating and cost information for the No-Project Alternative.

Figure 3-21A.

# MINIBUS ROUTE FOR THE NULL ALTERNATIVE

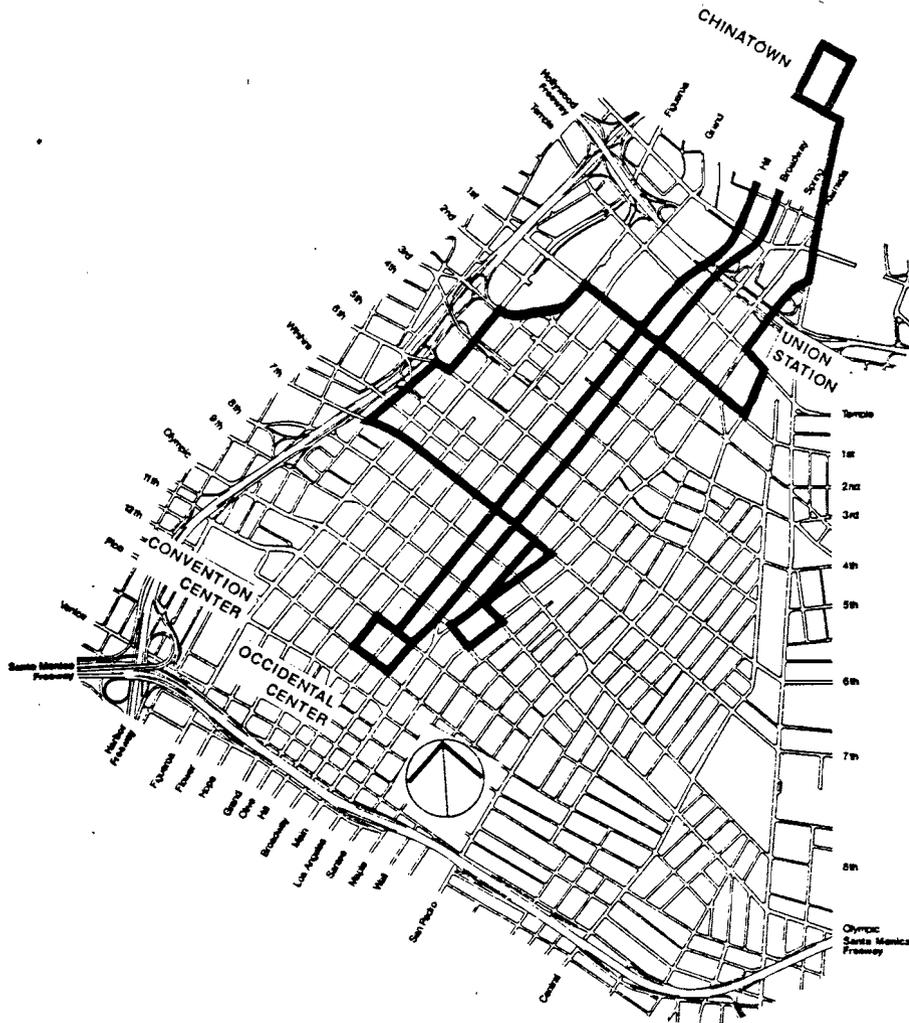


TABLE 3-21C  
1990 PATRONAGE ESTIMATES FOR  
THE NO-PROJECT ALTERNATIVE

DISTRIBUTION TRIPS		CIRCULATION TRIPS	
Regional Bus/Walk	244,000	Minibus	13,000
Regional Auto/Walk	503,000	Bus	18,000
Transfers to minibus	9,000	Walk	321,000
Transfers to bus	7,000	Auto	198,000
<b>TOTAL</b>	<b>763,000</b>	<b>TOTAL</b>	<b>763,000</b>

TABLE 3-21D  
PERCENTAGE OF PEOPLE USING VARIOUS MODES FOR  
1990 DISTRIBUTION AND CIRCULATION TRIPS

DISTRIBUTION TRIPS		CIRCULATION TRIPS	
Regional bus/walk	32.0	Minibus	2.4
Regional Auto/walk	65.9	Bus	3.3
Transfers to minibus	1.2	Walk	58.3
Transfers to bus	0.9	Auto	36.0
<b>TOTAL</b>	<b>100.0</b>	<b>TOTAL</b>	<b>100.0</b>

### 3-212 Postponing the Project

Postponing the project has implications for capital costs, project funding for both capital and operating cost, construction feasibility and other parts of the Regional Transit Development Program.

#### Capital Costs/Funding

One of the most important impacts of postponing the project is increasing costs of construction. At current rates of inflation, it is estimated that the cost of the DPM would increase 0.6 percent per month or about \$1,000,000 a month.

Another major impact in capital costs resulting from postponing the project would be the possible loss of federal funds to build the project. If the project were to be postponed indefinitely, it is possible that federal discretionary Downtown People Mover funds now earmarked for Los Angeles could be shifted to another candidate city.

#### Operating Revenues

It is not clear what effect postponing the project would have on developer intentions. The momentum of developer commitments could slow, or even stop in some cases, if the DPM were postponed. The discussion of induced development in Chapter 5 (Operational Impacts) assumes that the system would be operational in early 1983. Postponing the project indefinitely could seriously reduce developer interest at some sites and could slow down rehabilitation efforts at others.

The effects of postponing the project on developer participation directly affects operating revenues. If service contracts were used to establish developer contributions to operating costs, opportunities for negotiating such contracts with developers of proposed near-term office and retail space would be jeopardized. Parking substitution arrangements are also tied to the timing of development construction and the refurbishing of older structures. Postponing the DPM could affect these negotiations and consequently the operating revenues available to the system from this source.

#### Construction Feasibility

Vacant parcels that are currently planned for a DPM station at 9th Street and the parking garage at the Convention Center could be developed in the interim for other uses if the project were postponed indefinitely. This could foreclose the opportunity of using those sites for the DPM, and therefore force consideration of other sites and/or routes.

Easements through the World Trade Center in Bunker Hill will expire in 1983. If they are not used by then they will either have to be renegotiated or allowed to lapse.

Postponing the project will increase the probability of construction problems with new buildings adjacent to the route. This is most likely in the underground guideway section where developer plans for Parcel N are well advanced. The proposed mixed use parcel at 7th and Figueroa, the planned Wells Fargo building on 5th and Flower, and the proposed State Office Building on 1st Street could also present some difficulties in coordinating design and construction if the DPM project were postponed. These problems could result in further capital cost increases.

### Impacts on Related Projects

Other elements of the Regional Transit Development Program would probably be adversely affected by postponing the project. The Regional Core Starter Line, the Freeway Bus Program and TSM program could continue without the DPM, but supporting circulation/distribution service for major activity centers in downtown would be lost.

The Downtown Parking Management Program (which is part of a regional program to encourage ride sharing) will be adversely affected insofar as carpool spaces at the intercepts would not be available and the DPM's circulation/distribution services would not be in place enabling carpools to meet quickly and conveniently.

### 3-220 The Improved Bus Alternative

An Improved Bus Alternative could be implemented to meet the transportation capacity needs of downtown. Strong public commitment to this improved regional access would reinforce downtown's growth trends, enabling a projected 230,000 employment level for 1990 to be realized. Additionally, the downtown bus improvements could be coordinated with regionwide improvements, thereby providing more service for travel to, and from, and within the study area. Service would be throughout the downtown area, providing to the extent possible a distribution of service proportional to volumes of activity. However the Bunker Hill area may not be fully served by bus service due to topographical constraints and street design limitations.

Design of the Improved Bus Alternative drew from experiences in other U.S. cities. This Alternative incorporates transit marketing policies and bus-related design improvements along Broadway, Flower, First, and Seventh Streets. Recent opposition of the Broadway merchants to a proposal designating portions of Broadway for only buses and pedestrians reconfirm strong public opposition to restricting auto travel on major downtown streets. Consequently, bus improvements designed for downtown concentrate primarily on sidewalk amenities related to bus operations.

The Improved Bus Alternative was designed according to numerous criteria including: minimize bus turning movements; minimize passenger access time; minimize transfer and waiting times; optimize use of existing facilities; avoid excessive bus volumes on streets; support regional and local bus movements; improve circulation to and within the Bunker Hill area. The Improved Bus Alternative requires an additional 385 buses resulting in approximately 1,800 regular freeway and local buses providing service to downtown from surrounding areas.

In the near-term, bus service increases would be allocated to Broadway, Seventh, First, and Flower Streets, reinforcing these streets as major downtown bus streets. Subsequently, service would be increased along Spring, Hill, Figueroa, and Sixth Streets. The regional and local bus system would be supplemented by mini bus service in the downtown area. The size of the existing minibus fleet would be increased by about 35 percent. Figure 3-22A illustrates the minibus route assumed for the Improved Bus Alternative.

Analysis of this alternative provided an estimate of the fleet characteristics, performance characteristics, daily ridership and costs of this system alternative. The following tables summarize these estimates.

TABLE 3-22A

1990 OPERATING INFORMATION  
FOR THE IMPROVED BUS ALTERNATIVE

<u>Number of Vehicles</u>		<u>Number Buses Outbound</u>	
Buses	1,800	Local	473
Minibuses	50	Express	273
		Total	746
<u>Average PM Headway (minutes)</u>		<u>Daily Vehicle Miles</u>	
Buses	1.3	Buses	10,925
Minibus	3.0	Minibuses	3,425
		<u>Annual Vehicle Miles (10<sup>6</sup>)</u>	
		Buses	3.387
		Minibus	1.004

TABLE 3-22B

## 1990 COST INFORMATION\*

<u>Annual Operating Cost</u> (thousands of 1978\$)		<u>Capital Cost</u> (thousands of 1978\$)	
Buses	8,060	Buses	50,050
Minibus	3,312	Minibus	624

\*These costs are for service beyond that which currently exists.

TABLE 3-22C

## 1990 DAILY PATRONAGE ESTIMATES

<u>Distribution Trips</u>		<u>Circulation Trips</u>	
Regional bus/walk	281,000	Minibus	14,000
Regional auto/walk	457,000	Bus	18,000
Transfers to minibus	17,000	Walk	321,000
Transfers to bus	9,000	Auto	198,000
TOTAL	764,000	TOTAL	551,000

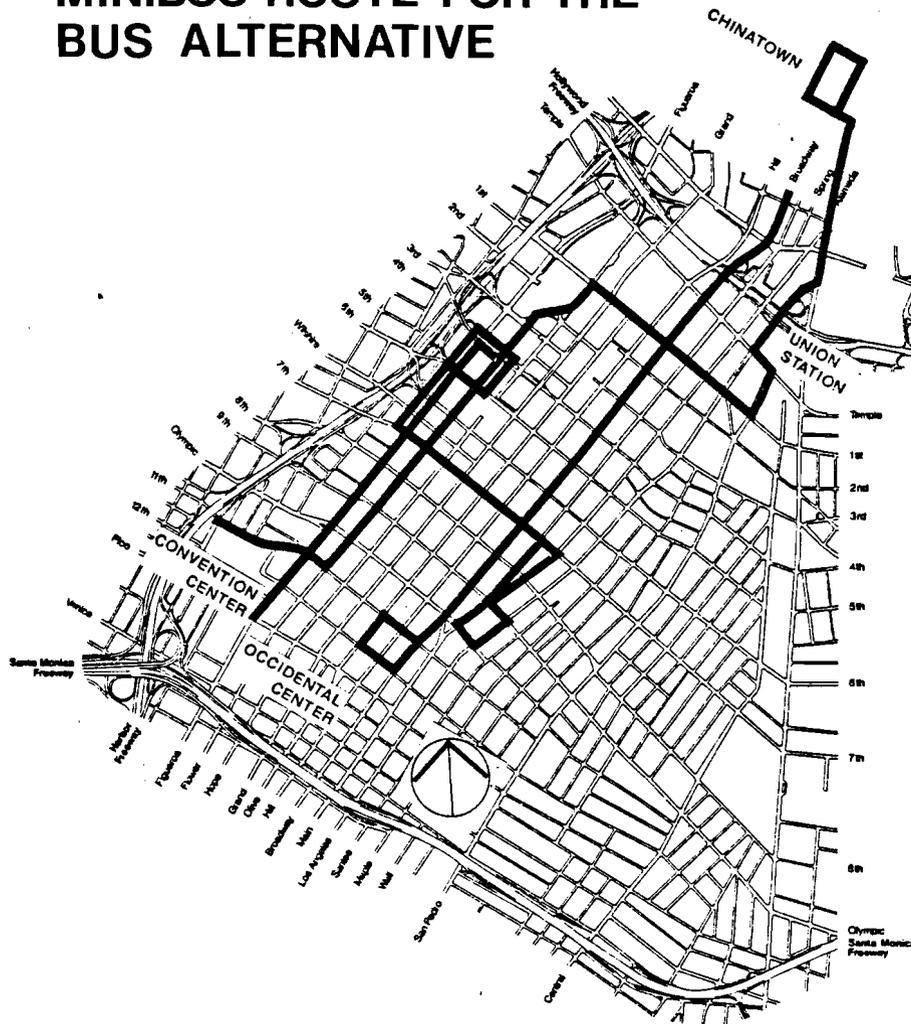
TABLE 3-22D

PERCENTAGE OF PEOPLE USING VARIOUS MODES FOR 1990  
DISTRIBUTION AND CIRCULATION TRIPS

<u>Distribution Trips</u>		<u>Circulation Trips</u>	
Regional bus/walk	36.8	Minibus	2.5
Regional auto/walk	59.8	Bus	3.3
Transfers to minibus	2.2	Walk	58.3
Transfers to bus	1.2	Auto	35.9
TOTAL	100.0	TOTAL	100.0

FIGURE 3-22A

## MINIBUS ROUTE FOR THE BUS ALTERNATIVE



### 3-230 The People Mover Alternative

The People Mover Alternative consists of an automated guideway transit system supplemented by bus and minibus service. The guideway portion will run approximately three miles through the north and west sides of downtown, between Union Station in the north and the Convention Center in the south. The people mover will be a grade separated facility with automated vehicles providing service to thirteen stations along the proposed route. The vehicles, operating singly or in trains, will operate over an elevated guideway except for a short underground segment through Bunker Hill. Twelve of the thirteen stations will be aerial with two of these connected to bus intercept and parking structures, and one station located underground.

Additional improvements related to the people mover will provide 2000 parking spaces at Union Station and 1750 at Convention Center. These parking structures will also be used as major points of bus transfer. Direct bus access and preferential access for carpools will be provided at both locations.

The SCRTD has designed a downtown bus system to operate with the people mover. This bus system is a modification of today's downtown service. For example bus routes that operate adjacent to DPM service will be modified to enable direct transfer between the people mover and buses. Additionally some bus trips to downtown will be terminated at the Convention Center and Union Station facilities. Passengers will use the people mover to complete their trip. Table 3-23A illustrates the number of buses, transfer opportunities, and intercepted service that will occur if the people mover service and a Transportation System Management (TSM) regional bus plan is implemented.

Tables 3-31A, 3-31B, 3-31C, and 3-31D contain summary operating, cost and patronage information for the People Mover Alternative.

FIGURE 3-23A

## MINIBUS ROUTE FOR THE PEOPLE MOVER ALTERNATIVE

TABLE 3-23A

### 1990 TRANSIT SERVICE FROM CBD TO REGIONAL CORRIDORS: DPM/TSM BUS PLAN; PM PEAK HOUR

Corridor	Total Buses <sup>1</sup>	Inter- <sup>2</sup> face	Per cent	Inter- <sup>3</sup> cept	Per cent
Harbor Freeway	78	68	87.2	6	18.0
Santa Monica Freeway	83	70	84.3	5	20.0
Wilshire/Olympic	97	66	68.0	0	0
Hollywood Freeway	115	99	86.1	0	0
Golden State Freeway	57	46	80.7	0	0
Pasadena Freeway	60	60	100.0	0	0
San Bernadino Freeway	133	95	71.4	32	46.3
Santa Ana Freeway	75	14	18.7	0	0
South Central	48	24	50.0	0	0
<b>TOTAL</b>	<b>746</b>	<b>542</b>	<b>72.7</b>	<b>43</b>	<b>15.8</b>

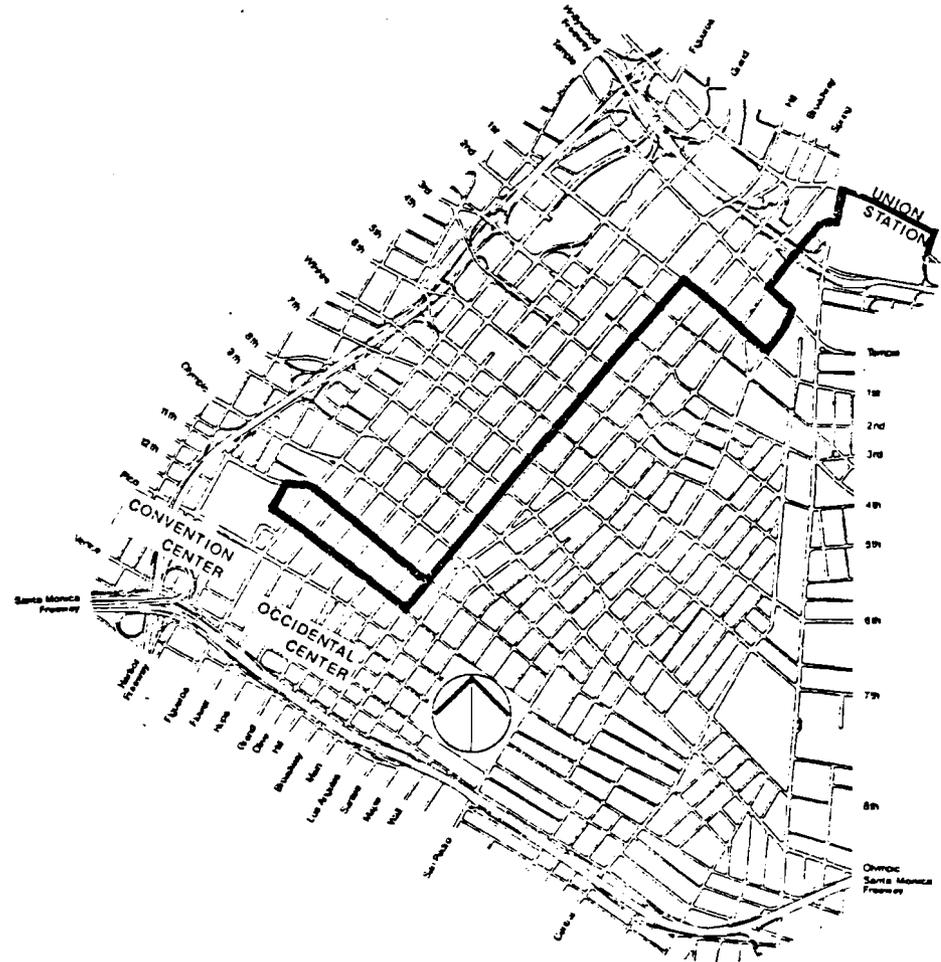
<sup>1</sup>Total number of express and local buses serving the corridor.

<sup>2</sup>Number of buses which "interface" at least one of the following DPM stations: Union Station, Civic Center, 7th and Figueroa, Convention Center.

<sup>3</sup>Intercept buses as % of express buses.

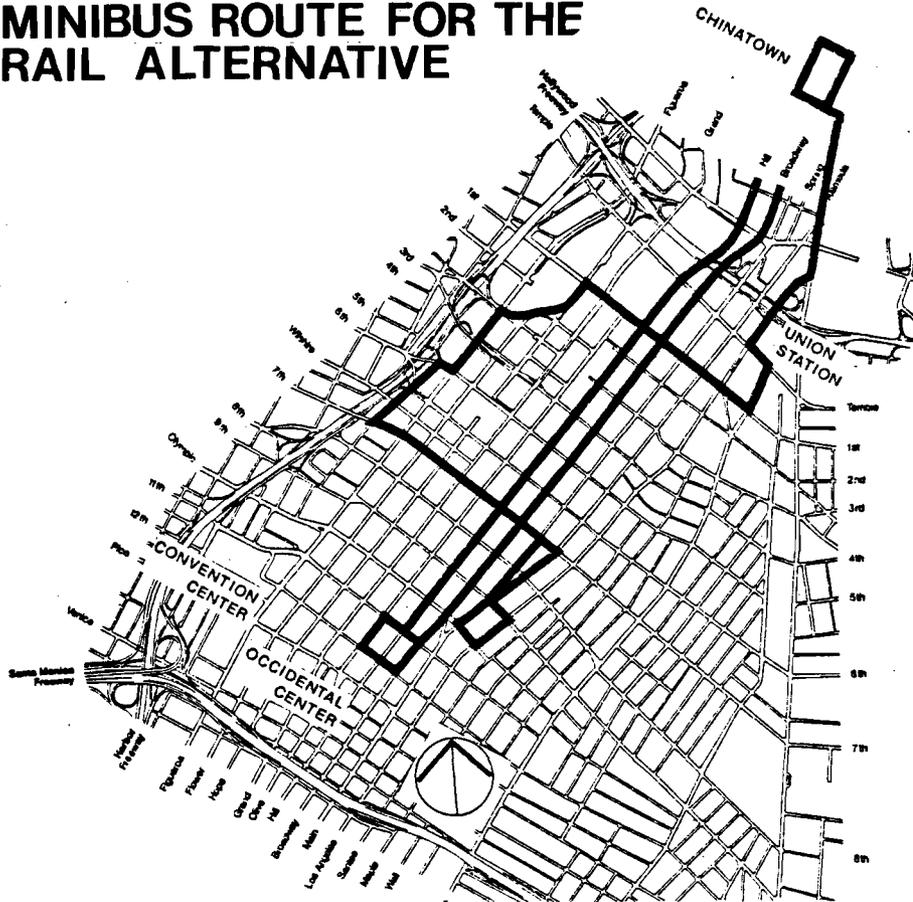
Note: PM Peak Hour is 4:30 - 5:30

Source: Community Redevelopment Agency and Southern California Rapid Transit District, June 1978.





**FIGURE 3-24B**  
**MINIBUS ROUTE FOR THE**  
**RAIL ALTERNATIVE**



**TABLE 3-24A**

1990 OPERATING INFORMATION  
 FOR THE RAIL ALTERNATIVE

<u>Number of Vehicles</u>		<u>Daily Vehicle Miles</u>	
Buses	1,512	Buses	9,000
Minibuses	37	Minibus	2,703
Rail Cars (total systems)	120	Rail (total systems)	36,900
		CBD portion of rail	4,100
<u>Average P.M. Headway (minutes)</u>		<u>Annual Vehicle Miles (10<sup>6</sup>)</u>	
Buses	1.5	Buses	2.79
Minibuses	3.0	Minibuses	.79
Rail	4.0	Rail (total systems)	11.43
<u>PM Peak Hour Outbound Buses</u>		CBD portion of rail	1.27
Local	380		
Express	281		
Total	661		
<u>Buses Intercepted</u>	24		

**TABLE 3-24B**

1990 COST INFORMATION FOR THE RAIL ALTERNATIVE\*

<u>Annual Operating Costs</u> (thousands of 1978\$)		<u>Capital Costs</u> (thousands of 1978\$)	
Bus	6,640	Buses	12,610
Minibus	2,614	Bus Maintenance Facility	7,900
Rail (total system)	25,300	Urban Design Street Improvements	6,413
Total	34,554	Traffic Improvements	363
		Rail (total system)	1,232,000
		Total	1,259,286

\*These costs are for service in addition to that which currently exists.

TABLE 3-24C

1990 DAILY PATRONAGE ESTIMATES

<u>Distribution Trips</u>		<u>Circulation Trips</u>	
Regional bus/walk	208,000	Minibus	12,000
Regional auto/walk	431,000	Bus	17,000
Regional rail/walk	98,000	Walk	320,000
Transfers to minibus	8,000	Auto	194,000
Transfers to bus	8,000	Rail	7,000
Transfers to rail	12,000		
<b>TOTAL</b>	<b>765,000</b>	<b>TOTAL</b>	<b>550,000</b>

TABLE 3-24D

PERCENTAGE OF PEOPLE USING VARIOUS MODES FOR 1990  
DISTRIBUTION AND CIRCULATION TRIPS: RAIL ALTERNATIVE

<u>Distribution Trips</u>		<u>Circulation Trips</u>	
Regional bus/walk	27.2	Minibus	2.2
Regional auto/walk	56.3	Bus	3.1
Regional rail/walk	12.8	Walk	58.1
Transfers to minibus	1.0	Auto	35.3
Transfers to bus	1.0	DPM	--
Transfers to DPM	--	Rail	1.3
Transfers to rail	1.7		
<b>TOTAL</b>	<b>100.0</b>	<b>TOTAL</b>	<b>100.0</b>

3-250 The People Mover/Rail Alternative

The People Mover/Rail Alternative consists of people mover and rail service supplemented by the regular downtown bus and minibus system. The Alternative includes the same People Mover system detailed in Chapter 4, i.e. grade-separated providing service to thirteen stations. As in the case of the proposed project, 3700 parking spaces would be provided at Union Station and Convention Center, making these facilities major transfer points for auto as well as bus trips. Operating with the People Mover is a regional rail system, designed by the SCRTRD. The rail alternatives being studied by SCRTRD range from eight to eighteen miles in length. However the downtown portion is assumed to be the same regardless of which regional system is finally approved. The rail system would enter downtown from the Wilshire corridor and proceed to Union Station where the rail yard would be located. The downtown rail stations would be located at 7th Street, 5th and Broadway, Civic Center, and Union Station. Figure 3-25A illustrates the locations of both the people mover and rail stations throughout downtown.

The bus system designed by the SCRTRD to operate with the People Mover service approximates the type of bus service that is assumed for the People Mover/Rail Alternative. Table 3-25A summarizes characteristics of the bus service that would occur if the People Mover/Rail Alternative is implemented. Within the downtown, Hill Street, Broadway, and Spring Street would be major bus streets. Minibus service would supplement mid-day circulation services. Figure 3-25B illustrates minibus route that would complement people mover/rail operations in downtown.

Tables 3-25B, 3-25C, 3-25D and 3-25E contain operating, cost and patronage estimates for the People Mover/Rail Alternative.

FIGURE 3-25A  
**PEOPLE MOVER - RAIL  
ALTERNATIVE**

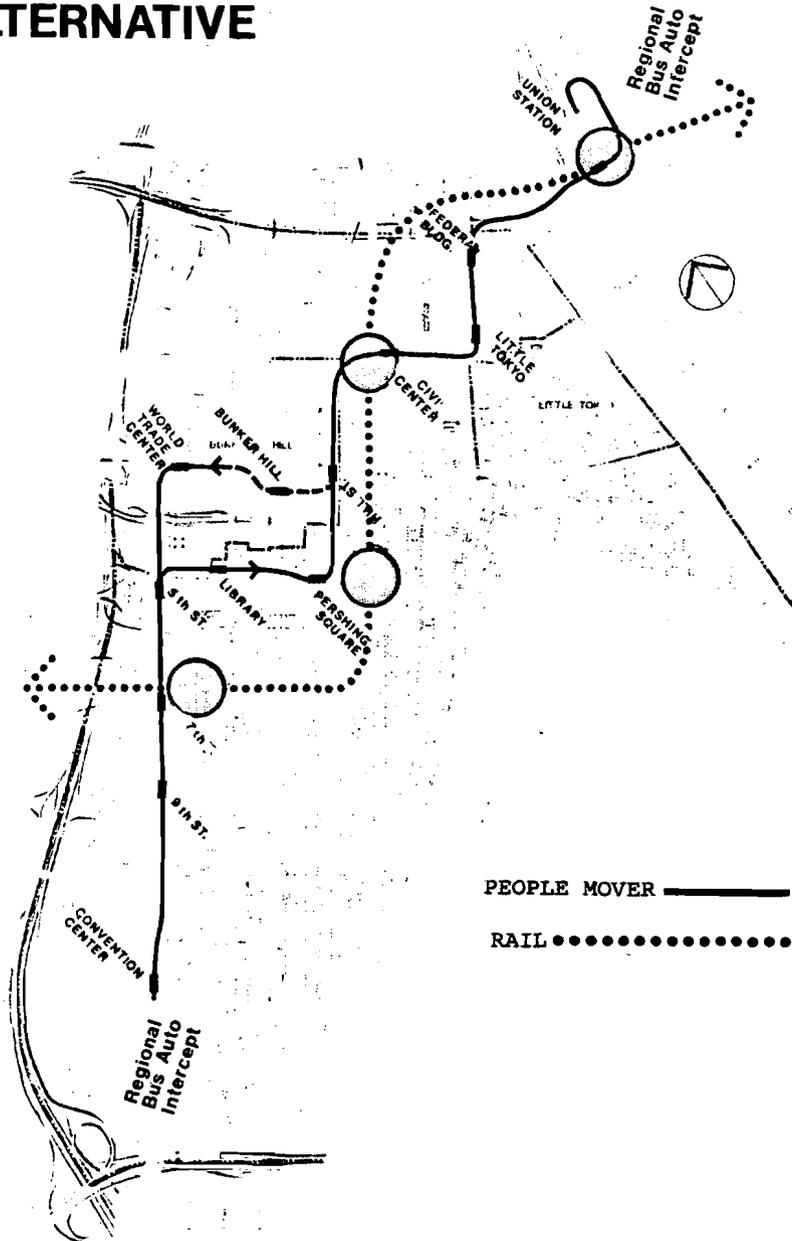


FIGURE 3-25B  
**MINIBUS ROUTE FOR THE  
PEOPLE MOVER - RAIL ALTERNATIVE**

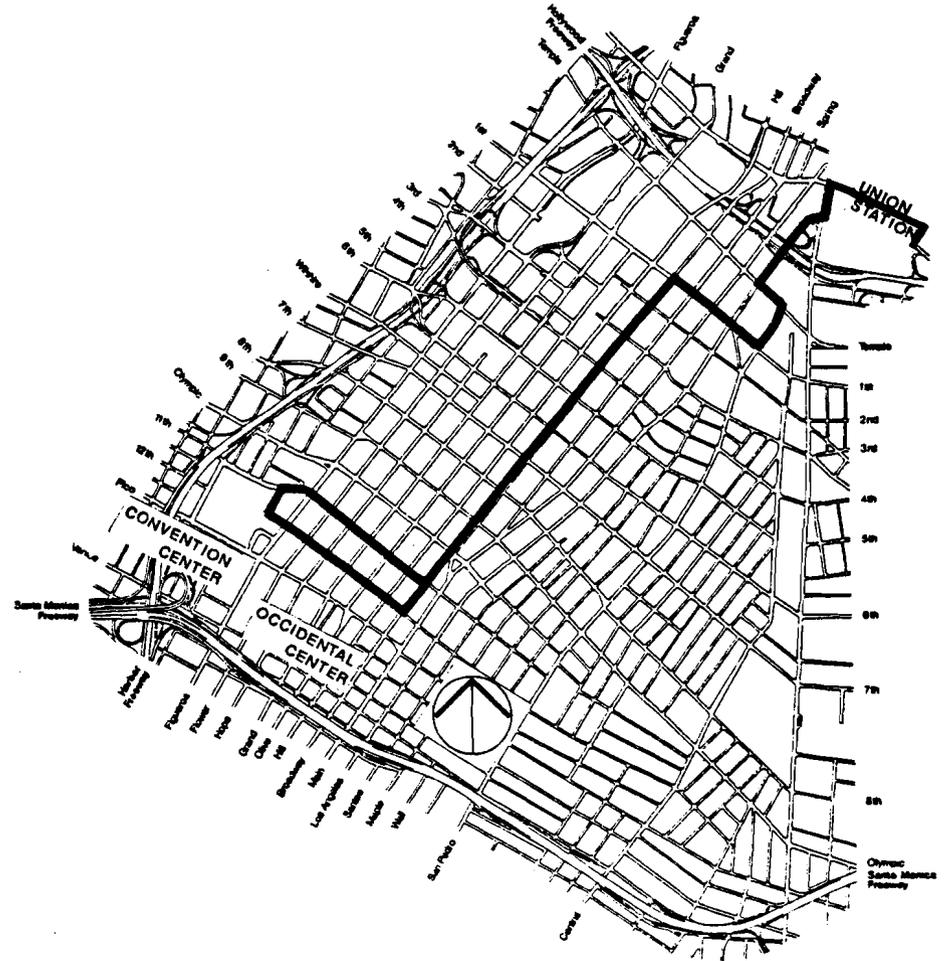


TABLE 3-25A

TRANSIT SERVICE FROM CBD TO REGIONAL CORRIDORS: PEOPLE MOVER/  
RAIL ALTERNATIVE

Corridor	Total Buses <sup>1</sup>	Interface <sup>2</sup>	Per Cent	Intercept <sup>3</sup>	Per Cent
Harbor Freeway	91	77	84.6	10	20.4
Santa Monica Freeway	89	74	83.0	8	18.6
Wilshire/Olympic	70	60	85.7	0	0
Hollywood Freeway	60	50	83.3	0	0
Golden State Freeway	53	34	64.2	0	0
Pasadena Freeway	54	54	100.0	0	0
San Bernadino Freeway	129	75	58.1	24	31.6
Santa Ana Freeway	70	12	17.1	0	0
South Central	45	23	51.1	0	0
TOTAL	661	459	69.4	42	13.5

<sup>1</sup>Total number of express and local buses serving the corridor

<sup>2</sup>Number of buses which "interface" at least one of the following DPM stations: Union Station, Civic Center, 7th and Figueroa, Convention Center.

<sup>3</sup>Intercept buses as % of express buses.

Note: PM Peak Hour is 4:30 - 5:30

Source: Community Redevelopment and Southern California Rapid Transit District, June 1978.

TABLE 3-25B

SUMMARY 1990 OPERATING INFORMATION FOR  
THE PEOPLE MOVER/RAIL ALTERNATIVE

Number of Vehicles		Daily Vehicle Miles	
Buses	1,500	Bus	8,745
Minibuses	26	Minibus	1,236
DPM	60	DPM	8,321
Rail	120	Total Rail System	36,900
		CBD Portion of Rail	4,100
Average PM Headway (minutes)			
Buses	1.5		
Minibuses	3.0		
DPM	1.8		
Rail	4.0		
PM Peak Hour Outbound Buses		Annual Vehicle Miles (10 <sup>6</sup> )	
Local	380	Bus	2.711
Express	281	Minibus	.362
Total	661	DPM	2.438
		Total Rail System	11.439
		CBD Portion of Rail	1.271
<u>Buses Intercepted</u>	42		

TABLE 3-25C

1990 COST INFORMATION FOR THE  
PEOPLE MOVER/RAIL ALTERNATIVE\*

<u>Annual Operating Costs</u> (thousands of 1978\$)		<u>Capital Costs</u> (thousands of 1978\$)	
Bus	6,452	Buses	11,505
Minibus	1,195	Minibuses	(528)
DPM	4,450	Bus Maintenance	
Rail (total system)	25,300	Facility	7,900
Total	37,397	Urban Design Street	
		Improvements	6,413
		Traffic Improvements	363
		DPM System	148,000
		Rail (total	
		system)	1,232,000
		Total	1,405,198

\*These costs are for service beyond that which currently exists.

TABLE 3-25D

1990 PATRONAGE ESTIMATES  
FOR THE PEOPLE MOVER/RAIL ALTERNATIVE

<u>Distribution Trips</u>		<u>Circulation Trips</u>	
Regional bus/walk	187,000	Minibus	6,000
Regional auto/walk	421,000	Bus	12,000
Regional rail/walk	95,000	Walk	318,000
Transfers to minibus	5,000	Auto	184,000
Transfers to bus	5,000	DPM	26,000
Transfers to DPM	46,000	Rail	4,000
Transfers to rail	6,000		
TOTAL	765,000	TOTAL	550,000

TABLE 3-25E

PERCENTAGE OF PEOPLE USING VARIOUS MODES FOR DISTRIBUTION  
AND CIRCULATION TRIPS: PEOPLE MOVER/RAIL ALTERNATIVE

<u>Distribution Trips</u>		<u>Circulation Trips</u>	
Regional bus/walk	24.4	Minibus	1.1
Regional auto/walk	55.0	Bus	2.2
Regional rail/walk	12.4	Walk	57.8
Transfers to minibus	0.7	Auto	33.5
Transfers to bus	0.7	DPM	4.7
Transfers to DPM	6.0	Rail	0.7
Transfers to rail	0.8		
TOTAL	100.0	TOTAL	100.0

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### 3-300 SUMMARY OF OPERATING STATISTICS AND IMPACTS

#### 3-310 Summary of Operating Statistics

Table 3-31A estimates the fleet composition and operating information for system level alternatives to the proposed project. This Table contains a range of information about service to and within downtown. The fleet size of the bus system is an estimate of the number of buses required to provide regional transit service to downtown. Only a portion of that bus service operates within downtown. The minibuses operate only within downtown, as does the DPM. The rail alternative is a regional service similar to buses and the number of vehicles shown in Table 3-31A is an estimate of the vehicles needed for a regional starter line. SCRTD provided the data for the rail system. Table 3-31A also shows average PM headway in downtown for all transit modes. The bus headway is for service along major bus streets. Additionally an estimate of the number of buses to be intercepted is shown in Table 3-31A. This estimate reflects a preliminary bus plan designed to operate with the people mover and/or rail systems. It is likely that this estimate will be revised once more detailed bus plans are prepared.

Table 3-31B contains preliminary cost information for system level alternatives to the proposed project. Costs are estimated in 1978 dollars so that they are consistent with estimates of preliminary engineering studies. With respect to the rail system, total capital and operating costs are shown. These cost estimates were prepared by SCRTD for their environmental studies and are preliminary. A three mile rail system operating just in downtown is not feasible from an operating or cost perspective, therefore total costs were included in Table 3-31B recognizing that only a portion of these costs are directly attributable to the downtown area.

Tables 3-31C and 3-31D provide patronage estimates for each of the alternatives to the proposed project. These patronage forecasts were obtained by using a model designed to estimate circulation and distribution trips in activity centers. The model is designed to address mode shift within downtown and cannot address the effect of improvements internal to downtown on the regional system. Thus induced regional trips cannot be estimated. Consistency between regional and local forecasting studies was achieved by designating a control total of trips entering and leaving downtown. Once this total was established, subsequent analyses focused on changes in circulation/distribution mode share.

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## SUMMARY 1990 OPERATING INFORMATION FOR SYSTEM ALTERNATIVES

TABLE 3-31A

	NULL	BUS	DPM	DPM/RAIL	RAIL
<u>Number of Vehicles</u>					
Buses (1)	1415	1800	1776	1500	1512
Minibuses	37	50	26	26	37
DPM Cars	--	--	60	60	--
Rail Cars (total system)	--	--	--	120	120
<u>Average P.M. Headway</u>					
Bus (major bus streets)	1.6	1.3	1.3	1.5	1.5
Minibus	4.0	3.0	3.0	3.0	3.0
DPM			1.8	1.8	
Rail				4.0	4.0
<u>P.M. Peak Hour Outbound Buses</u>					
Local	421	473	473	380	380
Express	207	273	273	281	281
Total	628	746	746	661	661
Buses Intercepted (preliminary plan)	-0-	-0-	43	42	24
<u>Daily Vehicle Miles</u>					
Bus	9525	10925	9870	8745	9000
Minibus	2703	3425	1236	1236	2703
DPM	--	--	8321	8321	--
Rail (System)	--	--	--	36900	36900
Total CBD portion	--	--	--	4100	4100
<u>Annual Vehicle Miles (10<sup>6</sup>)</u>					
Bus	2.953	3.387	3.060	2.711	2.790
Minibus	.792	1.004	.362	.362	.792
DPM	--	--	2.438	2.438	--
Rail (total system)	--	--	--	11.439	11.439
CBD portion	--	--	--	1.271	1.271

TABLE 3-31B

## 1990 COST INFORMATION FOR SYSTEM ALTERNATIVES\*

	NULL	BUS	DPM	DPM/RAIL	RAIL
<u>Annual Operating Costs (thousands of 1978 \$)</u>					
Bus	7028	8060	7282	6452	6640
Minibus	2614	3312	1195	1195	2614
DPM			4450	4450	
Rail (total system) (2)				25300	25300
Total	9642	11372	12927	37397	34554
<u>Capital Costs (thousands of 1978 \$)</u>					
Buses	--	50050	46930	11505	12610
Minibuses	--	624	(528)	(528)	--
Urban Design Street Improvements	--	9075	6413	6413	6413
Traffic Improvements	--	363	363	363	363
DPM System	--	--	148000	148000	--
Rail (total system) (3)	--	--	--	1232000	1232000
Total	-	75912	216978	1405198	1259286

\*These costs are for service above that outlined in the Null Case.

Footnotes to Tables 3-31A, B, C.:

- (1) Buses required for regional service to downtown.
- (2) Total system costs are included because the CBD portion of the rail system would not be implemented by itself.
- (3) Preliminary estimates.

TABLE 3-31C

## SUMMARY 1990 PATRONAGE ESTIMATES FOR SYSTEM ALTERNATIVES

1990

<u>DAILY PATRONAGE</u>	NULL	BUS	DPM	DPM/RAIL	RAIL
<u>DISTRIBUTION TRIPS</u>					
Regional bus/walk	244,000	281,000	255,000	187,000	208,000
Regional auto/walk	503,000	457,000	447,000	421,000	431,000
Regional rail/walk	---	---	---	95,000	98,000
Transfers to minibus	9,000	17,000	8,000	5,000	8,000
Transfers to bus	7,000	9,000	8,000	5,000	8,000
Transfers to DPM	---	---	46,000	46,000	---
Transfers to rail	---	---	---	6,000	12,000
TOTAL (4)	763,000	764,000	764,000	765,000	765,000
<u>CIRCULATION TRIPS</u>					
Minibus	13,000	14,000	7,000	6,000	12,000
Bus	18,000	18,000	13,000	12,000	17,000
Walk	321,000	321,000	318,000	318,000	320,000
Auto	198,000	198,000	186,000	184,000	194,000
DPM	---	---	26,000	26,000	---
Rail	---	---	---	4,000	7,000
TOTAL (4)	550,000	551,000	550,000	550,000	550,000

(4) For the purpose of CBD patronage analysis, control totals were used. Consequently, induced regional and internal trips are not included in these figures.

TABLE 3-31D

PERCENTAGE OF PEOPLE USING VARIOUS MODES FOR 1990 DISTRIBUTION  
AND CIRCULATION TRIPS

		1990				
		NULL	BUS	DPM	DPM/RAIL	RAIL
<u>DAILY PATRONAGE</u>						
<u>DISTRIBUTION TRIPS</u>						
	Regional bus/walk	32.0	36.8	33.4	24.4	27.2
	Regional auto/walk	65.9	59.8	58.5	55.0	56.3
	Regional rail/walk	--	--	--	12.4	12.8
	Transfers to minibus	1.2	2.2	1.0	0.7	1.0
	Transfers to bus	0.9	1.2	1.0	0.7	1.0
	Transfers to DPM	--	--	6.0	6.0	--
	Transfers to rail	--	--	--	0.8	1.7
	TOTAL	100.0	100.0	100.0	100.0	100.0
<u>CIRCULATION TRIPS</u>						
	Minibus	2.4	2.5	1.3	1.1	2.2
	Bus	3.3	3.3	2.4	2.2	3.1
	Walk	58.3	58.3	57.8	57.8	58.1
	Auto	36.0	35.9	33.8	33.5	35.3
	DPM	--	--	4.7	4.7	--
	Rail	--	--	--	0.7	1.3
	TOTAL	100.0	100.0	100.0	100.0	100.0

### 3-320 Summary of Impacts

The following pages summarize analyses of the system alternatives. Information on displacement, economic, energy, noise, visual and air quality impacts of various elements are described.

#### 3-321 Displacement Due to Construction

Neither the Null Alternative nor the Bus Alternative would have displacement impacts due to construction. The People Mover Alternative would require displacement of three businesses at the 1200 block of South Figueroa Street. Displacements due to the Rail Alternative would be associated with parking at various stations.

#### 3-322 Economic Impacts: Development

Implementation of each alternative would result in a range of economic impacts. The Null Alternative would negatively effect downtown's competitiveness in attracting new development to the extent that new developments are slowed, so too the beneficial filtering effects on revitalization of older office buildings would be negatively affected. Collectively a slowing of new development and refurbishing older office buildings will negatively affect local taxes including property taxes, sales taxes and hotel room taxes.

The Improved Bus Alternative would enable downtown to reach a 230,000 employment without major negative traffic impacts. However this alternative would not contribute significantly toward reinforcing downtown growth trends.

The People Mover Alternative would be a key variable in reinforcing downtown growth trends in two respects: (1) In the past few years, the private sector has shown a strong

interest in downtown sites, pending indications that there would be a strong and substantial commitment of public funds in downtown Los Angeles. (2) The people mover system would be located in the center of near-term prime development opportunities in downtown. Specific development opportunities exist at Convention Center, South Park, 7th Street, Bunker Hill, Hill Street, and Union Station. About 1.5 million sq. ft. of new office development would result from implementation of the people mover. Additionally about 100,000 sq. ft. of new retail space would be provided in downtown.

The People Mover/Rail Alternative would reinforce development trends along the Wilshire Corridor as well as within downtown. With respect to the rail portion of that alternative, the SCRTD analysis focused on joint development opportunities. That analysis indicates that \$164 million of possible joint development could occur in downtown and an additional \$415 million of possible joint development could occur along the remaining portions of an eighteen mile route. That analysis qualifies these estimates insofar as new development will not occur automatically as a result of system implementation. Other forces must also be present, including supportive land use policy and zoning, a healthy economy, and advance planning.

This SCRTD economic analysis of joint development opportunities applies to both the People Mover/Rail Alternative and the Rail Alternative.

#### 3-323 Economic Impact: Retail Sales

The negative effects on development outlined in the Null Alternative will have resulting negative impacts on retail sales. Declining regional and downtown accessibility coupled with continuing increases in downtown parking costs will restrict the ability of downtown retailers to compete with other shopping areas.

With respect to the Bus Alternative, analysis indicates that the most significant economic benefit of this alternative would result from a long-term commitment of the City to improving transit services. Economic benefits in terms of added sales throughout the day due to convenient transit access are not likely to occur within the downtown area, given this alternative. Instead added sales in downtown would most likely be due to purchases by new employees, rather than increased sales to the existing labor force. The impact of transit and pedestrian related improvements on streets and sidewalks would have a generally favorable environmental impact but only a limited economic impact. A small net increase in retail employment might be expected.

The People Mover Alternative would result in significant increased in retail sales primarily due to trips to retail places and restaurants. It is estimated that \$90 million annually in retail sales will occur by 1990 if this Alternative is implemented. This is attributable to two factors: (1) The density and composition of activities that are connected by thirteen people mover stations and (2) the very high midday and PM peak frequency of people mover service.

The People Mover/Rail Alternative would result in even greater downtown retail sales since the rail system would improve regional accessibility to downtown.

The SCRTD did not estimate retail sales increases due to implementation of the Rail Alternative. However about 70 percent of all sales in downtown are generated by residents of the surrounding metropolitan area, day trip visitors to downtown, guests at non-CBD hotels and others in the CBD market area (as opposed to the downtown labor force). It seems reasonable to expect that significant increases in regional accessibility will have a favorable impact on these retail sales.

### 3-324 Energy

Only the people mover and rail elements of the systems will consume energy for construction. The people mover will require  $0.106747 \times 10^9$  KWH for construction. The rail system (the entire eighteen mile system) would require  $3.6072 \times 10^9$  KWH for construction.

Estimates were made for daily propulsion energy requirements. These requirements for each alternative are shown in Table 3-44A.

TABLE 3-32A

## STUDY AREA DAILY PROPULSION ENERGY ESTIMATES, 1990

ALTERNATIVE	MODE VMT (X10 <sup>3</sup> )	BTU (X10 <sup>6</sup> )	KWH
NULL:	AUTO: 345,984	2314.633	678,187
	BUS: 9,525	312.859	91,667
	MINI: 2,703	76.885	22,527
	TOTAL		792,381
BUS:	AUTO: 318,437	2130.344	624,191
	BUS: 10,925	349.828	102,499
	MINI: 3,425	97.736	28,637
	TOTAL		755,327
DPM:	AUTO: 301,037	2013.937	590,083
	BUS: 9,870	315.505	92,442
	MINI: 1,236	35.128	10,292
	DPM: 8,321	---	64,485
	TOTAL		757,302
DPM/RAIL:	AUTO: 291,780	1952.008	571,938
	BUS: 8,745	280.966	82,323
	MINI: 1,236	35.128	10,292
	DPM: 8,321	---	64,485
	RAIL: 4,100	---	108,116
	TOTAL:		837,154
RAIL:	AUTO: 300,196	2008.311	588,435
	BUS: 9,000	295.615	86,615
	MINI: 2,703	76.821	22,508
	RAIL: 4,100	---	108,116
	TOTAL:		805,674

## 3-325 Noise Impacts

Most of the noise generated by all the alternatives is associated with the supplemental bus service. Because the Bus Alternative provides the greatest increase in downtown bus operations, it would produce the most noise affecting downtown users. The People Mover would have a less negative noise impact to the extent that it replaces bus service along the corridor. The people mover technology generates less noise than a regular bus. Since the rail system operates underground, it would not result in increases in noise levels.

## 3-326 Visual Impact

The five alternatives have a range of visual impacts. For the Null Alternative, the visual appearance of the bus system would be essentially the same as that of today's system. The Bus Alternative would require an increased number of buses on the street, and this would intensify the presence of bulky vehicles. The People Mover Alternative would result in some adverse visual impacts. This factor was taken into account in selection of the corridor. The modern architecture dominating the west corridor and the open spaces at the Civic Center provide the most amenable man-made setting in downtown for the technology. The rail portion of the People Mover/Rail and Rail Alternative would not have visual impacts in downtown since that portion of the system is tunnelled.

## 3-327 Air Quality

Air quality impacts were proposed based on the modal distribution and vehicle miles travelled for each alternative in the downtown. As shown in Table 3-32B, there is a slight improvement as transit travel increases.

TABLE 3-32B

TOTAL DAILY EMISSIONS FOR SYSTEM ALTERNATIVES (TONS PER DAY)

ALTERNATIVE	TOTAL HYDROCARBONS	CARBON MONOXIDE	NITROGEN OXIDES	SULFUR OXIDES	PARTICULATES
NULL	2.713	27.192	1.905	0.186	0.325
BUS	2.479	24.875	1.800	0.179	0.303
PEOPLE MOVER	2.352	23.448	1.757	0.318	0.297
PEOPLE MOVER/RAIL	2.273	22.622	1.817	0.598	0.309
RAIL	2.334	23.315	1.798	0.451	0.304

### 3-400 SUMMARY OF REASONS FOR PROPOSING THE PEOPLE MOVER PROJECT

This section summarizes reasons for proposing the project. Included in this section is the rationale for selecting the People Mover, the bus intercept/auto park locations, the recommended people mover corridor and the alignment within that corridor.

#### 3-410 Selection of the People Mover Alternative

The Improved Bus Alternative meets downtown's basic transportation needs. However, that system does little to reinforce downtown growth. People mover service would reinforce downtown's growth trends. It would attract new development to downtown without adding significantly to congestion on downtown streets. Because the People Mover is a fixed facility which provides stations located in activity centers, it provides the sense of permanence necessary to attract major new developments. Also the bus system cannot function effectively with fringe parking facilities (such as the 3700 parking spaces provided in the people mover alternative). Recent experiments connecting Convention Center parking with downtown employment centers via buses were not successful. Discussions with private sector representatives indicate that developers' willingness to locate parking at the fringe of downtown and/or contribute to funding operating costs of transit in downtown is dependent upon a provision of a permanent facility, such as the People Mover. Whereas, developers were once reluctant to consider locating parking at the fringe of downtown, they expressed interest and support for the People Mover's peripheral park-facilities and agreed to assist in financing the People Mover service connecting their project with this fringe parking.

The bus service does not provide an opportunity to automate at least some of the downtown service. The people mover pro-

vides these opportunities and offers fast, highly reliable midday service directly connecting the major centers of employment with shopping, restaurant, and other facilities. The type of service offered by a grade separated people mover cannot be matched by a bus system, because it must compete with other vehicles and pedestrians on the city streets, and therefore is subject to traffic delays.

The People Mover and the Improved Bus Alternatives impact downtown's site specific economic activity in different ways. The Convention Center is a good example of a facility whose activity is sensitive to transportation service. The People Mover would enable the Convention Center to be connected directly with over 5000 hotel rooms in 1980 and 6,500 hotel rooms in 1990. Convention Center officials feel this will increase the Center's bookings. Such increased bookings would not result from improved bus service. A second example is the number of people that can reach a department store during the noonday hours. Within a ten-minute time period, 33,000 people could walk to the Broadway Plaza. Using the minibus, 61,000 people could reach the site within ten minutes. If the People Mover were operating, over 100,000 people could reach the site in the same time. By increasing the market "draw" area, the People Mover contributes to increases in retail sale, the value of commercial leases, and hotel usage.

A transportation system such as the People Mover is clearly identified in the Central City Community Plan (adopted in 1974) as a system which would reinforce planned land use in the downtown area. Unlike the bus system, the People Mover reinforces approved plans by providing a fixed facility, with stations located in activity centers.

Selection of the People Mover in lieu of rail service involves a wider set of issues than in the case of the Improved Bus Alternative. The regional rail starter line, as other regional transit service (such as the El Monte Busway and the bus on freeway programs) will improve access to downtown and facilitate future growth plans. In this respect, the rail service provides significant transportation and economic benefits since it would upgrade line-haul service in an area not well-served by the freeway system.

However, implementation of the rail system, unlike the DPM, will be decided on the basis of larger regional issues, including service to many different communities throughout the region, and not solely the downtown. Furthermore, from a design perspective, the rail system cannot be adapted to fulfill the smaller scale circulation/distribution needs of the downtown without negatively affecting its overall performance and cost. The station spacing required for effective line haul operation is such that four stations have been proposed for the downtown. In order to approach the scale of service needed for the downtown, the rail station spacing would have to be reduced quite dramatically, which would prevent it from achieving the travel speeds which make it efficient from a line haul perspective.

Length of construction time is another factor which relates to the choice of the DPM. As currently planned, the length of time required for completion of the entire DPM system is 39 months, including testing. Because the rail system involves a much greater area, and because of the increased complexity of the rail system, including additional testing requirements, a much greater period of time would be required to achieve an operational status. Thus, service of the scale best fitting the needs of downtown could be more quickly provided by implementation of the DPM system.

Combined DPM and line haul regional rail is an effective means of providing public transportation service. Furthermore, their effectiveness is enhanced by placing the function of each system in its appropriate geographic context. This means that to obtain the best possible service for both line haul and circulation distribution, the two systems should be designed in a complementary, rather than competitive, manner. Consequently, rather than rejecting rail service, local and federal efforts have focused on designing People Mover service that could function effectively with a future rail system. This approach would provide local circulation service within a near time frame, and at the same time would not preclude the implementation of rail service. By recognizing the merits of both types of systems, and making accommodation for their integration, overall transportation service can be greatly improved both in the region, and in its largest activity center.

Another reason for proposing implementation of the People Mover is that it would allow the demonstration of a new transportation technology in a highly developed urban area. A national Downtown People Mover Demonstration Program was initiated in April 1976, to achieve the following purposes: (1) to test the reliability, level of service, and costs of operating people mover service in urban environments; (2) to compare the costs and performance of systems operating in urban settings with those operating in more controlled environments such as airports; and (3) to assess the impacts of people mover systems on an urban setting. Los Angeles, along with thirty-eight other cities, competed in this national demonstration program. On December 22, 1976, the City was selected as a demonstration city pending successful completion of preliminary engineering and environmental studies. Los Angeles was selected as a demonstration city because of the size and density of the urban area, the potential to reinforce an existing CBD growth trend, its coordinated regional transportation planning efforts, and the opportunities for private sector participation.

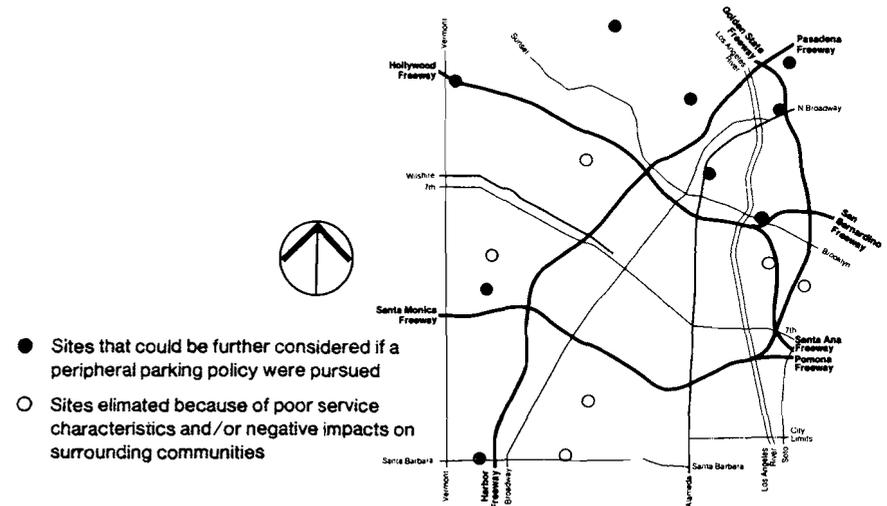
3-420 Selection of the Intercept Locations

From a set of 25 candidate sites, (see Figures 3-42A and 3-42B) the Convention Center and Union Station were selected as the best locations for auto/bus intercept facilities. The major reasons for their selection are as follows:

- These sites offer convenient access to the freeway.
- These locations maximize connections with regional transit.
- Intercepts at these sites would cause no significant impacts on residential areas.
- Parking facilities can be located here without serious impacts on traffic congestion.

FIGURE 3-42A

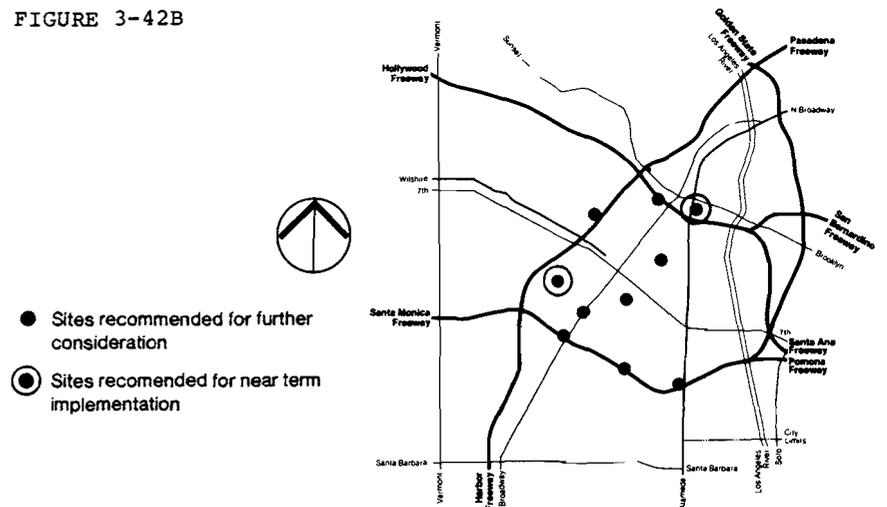
**POTENTIAL PERIPHERAL AUTO INTERCEPT LOCATIONS**



Source: CRA, 1977. Moving People in Los Angeles.

**POTENTIAL FRINGE AUTO INTERCEPT LOCATIONS**

FIGURE 3-42B



Source: CRA, 1977. Moving People in Los Angeles.

Figures 3-42C and 3-42D illustrate site specific intercept options that were evaluated at a site specific level. Judging only on the basis of the types of impact considered, sites A and B were considered to be the best locations for the intercept DPM station at Union Station. (see Figure 3-42C) Site C is the least desirable. Site D has the same rating as site A. However, it is preferable to utilize vacant industrial land as in sites A and B than to convert or demolish existing industrial buildings which would be required at site D, even though the existing building may be underutilized or presently vacant. Taking the additional factor into account results in a lower rating for site D.

At the Convention Center, site B was considered to be the best location. Again, site C has the same rating as site B, but the land use benefits of B are stronger than for C, and whether design relationship is more important than commuter visibility is a matter of judgment. Sites A, D, and E appear less desirable than either B or C for the station.

FIGURE 3-42C

## SITE ALTERNATIVES EVALUATED AT EACH INTERCEPT LOCATION Union Station - Possible Sites

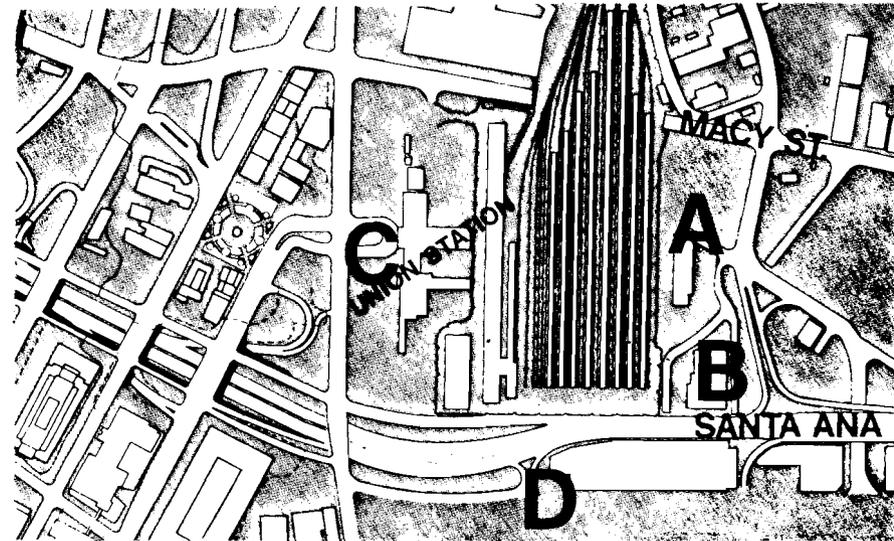
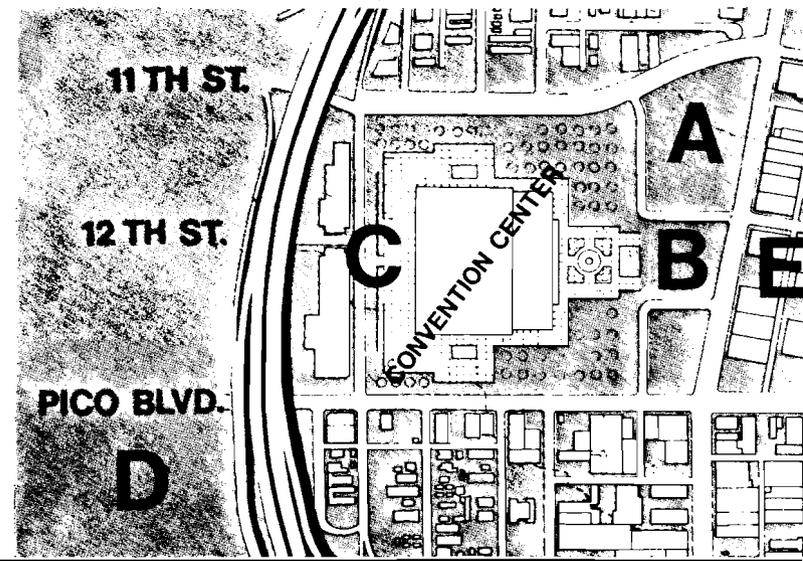


FIGURE 3-42D Convention Center - Possible Sites



Source: CRA, 1978.

3-430 Selection of the West Side Corridor for People Mover Service

Three alternative corridors were considered for the DPM: A west-side corridor, an east-side corridor, and the central corridor. (see Figure 3-43A) Corridor A is preferable because it would:

- provide service to more transit users, particularly during the peak hour;
- offer the greatest potential for maintaining the economic vitality of the downtown;
- require no residential relocation;
- have the least negative economic impacts during construction;
- generate more substantial economic benefits, thus creating greater potential for private sector participation.

From an environmental impact standpoint, there is little difference among the three corridors. The potential for joint development offered in Corridor A was a more critical factor in its selection than the predicted environmental impacts.

3-440 Selection of Recommended Alignment During Route Refinement Phase

Five route refinement options shown in Figure 3-44A were evaluated during the route refinement phase of Preliminary Engineering to determine the alignment to be used for detailed engineering and environmental studies.

The following is a summary of the reasons for recommending a hybrid of alignments A,F,C and E in the early Spring of 1978. A full discussion of the analysis to that date can be found in Route Refinement Analysis (CRA, April, 1978).

From a service perspective:

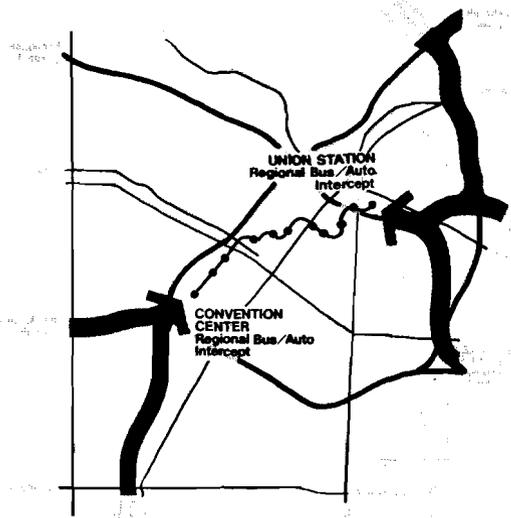
- The recommended route alignment connects more employment, retail, and tourism activity centers than any of the other alignments. Service is further maximized with the addition of a station between Flower and Hope on 5th and the deletion of the station at the side of Union Station.
- The recommended route alignment offers greater operational flexibility in terms of scheduling due to the split guideway configuration.
- Since many of the activity centers such as Olvera Street, the Olive/Hill Street and Broadway areas are used on weekends, service along this recommended route alignment is likely to be used on weekends as well as weekdays.
- The 3700 parking spaces at the Convention Center and Union Station intercepts would be a direct benefit to merchants operating in the Olive/Hill Street area and would help contribute to stabilization of economic activity in this area.
- Routing the system in front of the Federal Building provides better access to those working and shopping in the Los Angeles City Mall area and offers the best access to historic Olvera Street without actually locating a station in the historic district.

From a Cost Perspective:

- The recommended route alignment offers cost savings over the baseline alignment developed during the previous stage of analysis. Compared to the baseline,

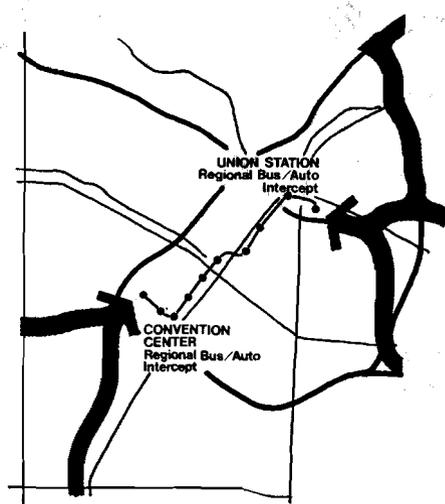
FIGURE 3-43A

## ALTERNATIVE PEOPLE MOVER ALIGNMENTS EVALUATED IN PHASE II



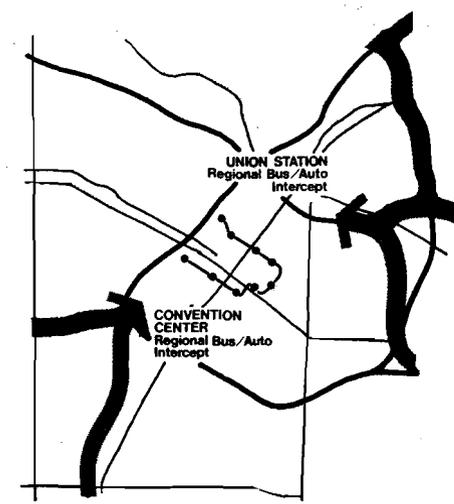
### Alternative A

THIS ALTERNATIVE USES STRATEGICALLY LOCATED REGIONAL BUS INTERCEPTS TO EMPHASIZE COORDINATION WITH REGIONAL TRANSIT PLANS. WITHIN DOWNTOWN THE GUIDEWAY ROUTE REINFORCES EXISTING DEVELOPMENT TRENDS.



### Alternative B

THIS ALTERNATIVE USES THE SAME STRATEGICALLY LOCATED BUS INTERCEPTS AS ALTERNATIVE A. WITHIN DOWNTOWN, IT PLACES EMPHASIS ON USING THE TRANSIT GUIDEWAY TO PROMOTE DEVELOPMENT IN DETERIORATING SECTIONS OF DOWNTOWN.



### Alternative C

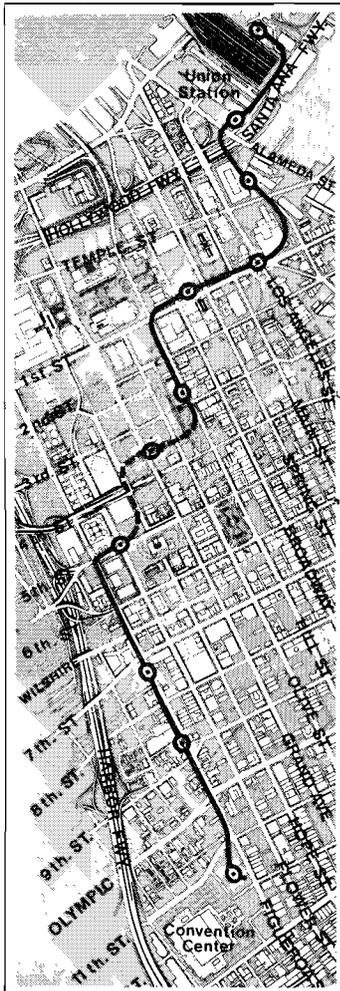
THIS ALTERNATIVE EMPHASIZES STRENGTHENING OF NOON HOUR ACTIVITY WITHIN THE CENTRAL CORE OF DOWNTOWN. MAJOR COORDINATION WITH REGIONAL SERVICES VIA BUS INTERCEPTS IS NOT A CONSIDERATION IN THIS ALTERNATIVE. IN THIS RESPECT, IT IS MORE LOCALIZED IN TERMS OF DESIGN AND EFFECT THAN THE OTHER TWO ALTERNATIVES.

FIGURE 3-44A

# ROUTE ALTERNATIVES TO THE PROPOSED PROJECT

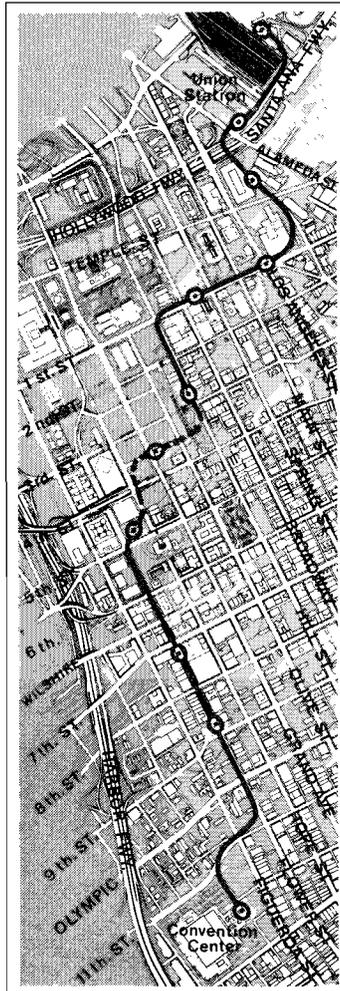
## Baseline A

ALIGNMENT PROPOSED AT COMPLETION OF PHASE II ALTERNATIVE ANALYSIS



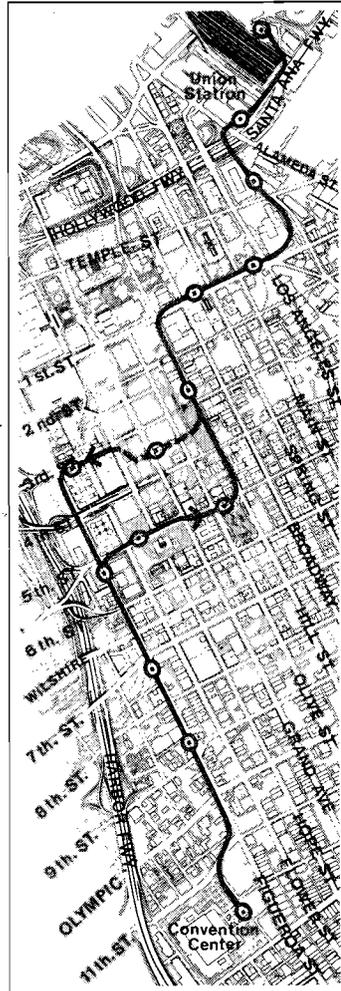
## Option B

FLOWER STREET (5th Street to the Convention Center via Flower Street)



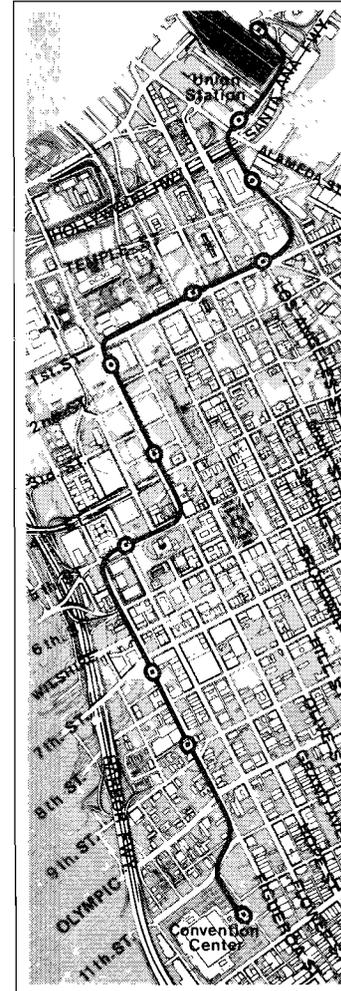
## Option C

5 TH. AND 3RD. ONE WAY SPLIT ALIGNMENT (Integrates Olive/Hill Streets and Bunker Hill)



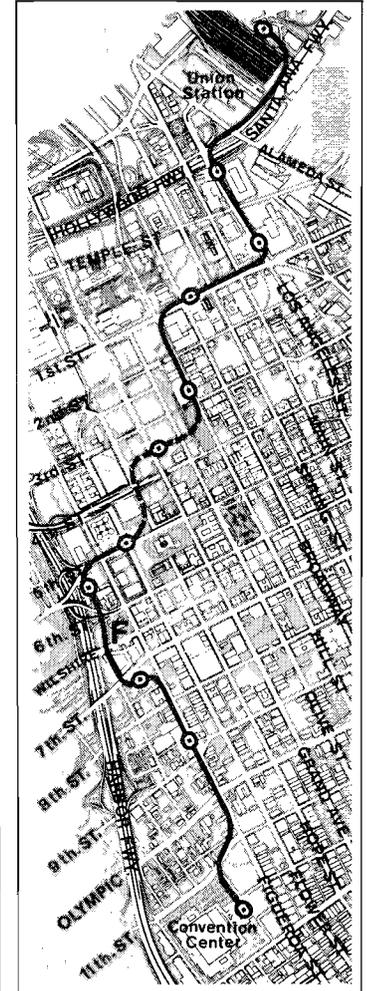
## Option D

GRAND AVENUE (Connects Bunker Hill with the Civic Center Mall)



## Option E(F)

LOS ANGELES STREET (One station on Los Angeles Street serving the Federal Building and Olvera Street)



Source: CRA, Route Refinement Analysis, April, 1978.

r was designed to mitigate environmental impacts of A

there is no significant difference in the level of funds required to operate the system.

- Joint development analysis indicates that the recommended route alignment has the greatest opportunities for sharing of system operation and maintenance costs.

From an Impact Perspective:

- Direct linkage of more commercial, hotel and retail establishments afforded by the recommended route alignment is expected to yield relatively greater economic benefits.
- The recommended route alignment provides direct services (1 minute walk time) to 3770 hotel rooms as compared to 2850 rooms in the baseline alignment. It also serves 4.8 million sq. ft. of projected retail/commercial space compared to 3.75 million sq. ft. served in the baseline alignment.
- Significant visual and noise impacts would be mitigated in this recommended route alignment by routing the system either behind St. Paul's Cathedral or in the center of Figueroa. (see Option F in figure 3-44A) Of the two, behind St. Paul's would be less intrusive.
- Impacts on major historical sites are mitigated by routing the system either behind St. Paul's Cathedral or in the center of Figueroa. Of the two, behind St. Paul's would be less intrusive, Impacts in El Pueblo de Los Angeles could be mitigated by providing a more aesthetically sensitive design solution to the station serving the El Pueblo State Historic Park. (Olvera Street)

With Respect to Other Regional Transportation Services:

- The recommended route alignment serves the regional bus system more effectively by providing distribution service to more activity centers within downtown.

The Southern California Rapid Transit District is designing a bus plan to complement downtown people mover service. Current estimates of the number of buses using each intercept point are: 84 buses in the DPM peak hour would be routed to Convention Center; 135 buses in the PM peak hour would be routed to Union Station. Other major points of interface between the

DPM and bus service (both freeway and local) are:  
Seventh and Figueroa Streets and Hill and First Streets.

In addition to the factors summarized already, design solutions to visual, noise, and historical site impacts were developed during the route refinement analysis. Routing the system either behind St. Paul's Cathedral or in the middle of Figueroa were solutions to the visual, noise, and historic impacts at that site. Providing a station at the Federal Building in a manner whereby El Pueblo de Los Angeles could be accessed would minimize impacts on that site while maintaining relatively good access. There are more local historic sites and parks along Option C. Table 3-44A is a summary of the comparative assessment of route alternatives.

3-441 Additional Route Analysis

Subsequent analysis during preliminary engineering indicated substantially increased costs and engineering difficulties with route segment F. As a consequence, additional analysis of placing the guideway in the center of Figueroa Street between Fifth and Seventh Streets was performed. Because of the increased costs, increased travel times, unacceptable station locations, and engineering difficulties of several small radius turns with segment F, it was eliminated from consideration and replaced with the center of Figueroa alternative.

TABLE 3-44A  
**EVALUATION OF ALTERNATIVE ROUTE ALIGNMENTS**

MEASURE	Recommended Baseline	Route Options					Significance	
	Alignment	A	B	C	D	E	F	
<b>Service Measures</b>								
Patronage estimates - daily total	84,200	78,300	79,500	84,700	81,000	79,300	78,300	●
<b>Typical Trip times - minutes</b>								
a) City Hall to Broadway Plaza	13.6	12.5	10.6	13.6	12.4	12.5	12.7	○
b) Convention Center to Biltmore Hotel	8.2	11.1	11.5	8.2	11.1	11.1	11.3	
c) Convention Center to Security Plaza	12.6	9.9	10.3	12.6	9.3	9.9	10.1	
<b>Street traffic loads</b>								
Number of locations with V/C greater than .8	3	4	2	6	3	4	4	●
<b>Activity centers served</b>								
Maximum service	26	19	18	25	19	18	18	●
Less than 3 minute walk		9	9	9	7	9	9	
3 minute walk		10	10	3	11	10	10	
<b>Guideway curves and grades</b>								
Normalized factor	125	100	106	99	89	96	125	○

Refinement Findings as a Determinance: ● Significant

● Moderately Significant

○ Not Significant

Source: CRA, Route Refinement Analysis, April, 1978.

TABLE 3-44A (continued)

MEASURE	Recommended Baseline		Route Options					Significance
	Alignment	A	B	C	D	E	F	
<u>Impact Measures</u>								
Minimize construction impacts								
Utility relocations - normalized factor	NA	100	65	143	109	113	90	○
Construction difficulties- normalized factor	NA	100	102	123	112	93	109	○
Business disruption during construction number of business parcels	NA	315	267	317	284	315	310	○
<u>Environmental Areas</u>								
Number of visually sensitive areas	1	2	1	3	2	1	0	◐
Number of/noise sensitive use areas	0	2	0	0	0	0	0	◐
Historic Sites and parks								
Federal register	1	1	1	1	1	1	1	◐
Local	5	4	3	7	4	4	3	◐
Conformance to adopted plans	Yes	Yes	Yes	Yes	Yes- better	Yes	Yes	
Expansion Flexibility	Yes	Yes	Yes-	Yes- better	Yes	Yes	Yes	○

N. A. Not available but approximately equal to C

TABLE 3-44A (continued)

MEASURE	Recommended Alignment	Baseline Route Options						Significance
		A	B	C	D	E	F	
<u>Financial Measures</u>								
Operating & Maint. Costs - normalized factor	N/A	100	101	105	101	99	101	○
Private Sector Revenue potential normalized factor	104	100	57.5	104	99	100	94.4	●
Parking substitution potential	122	100	82	101	100	100	100	●
Potential Developments Served								●
Retail/Commercial Million sq.ft.	4.8	3.75	2.25	3.55	3.75	3.75	4.0	
Hotel units	3770	2351	1305	3770	2851	2740	2851	
New Residential Units	1100	1100	1800	1100	256	1100	1100	
Operating Revenue to Cost ratios	108	100	101	108	103	100	100	◐
Capital Costs Normalized	97	100	99	95	87	99	101	●
Maximum Local Share Funding Saved		--	--	--	--	--	--	
City				.4M	1M			
County				.4M	1M			
State				.8M	2M			

Source: CRA, 1978. Route Refinement Analysis.



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#### 4-000 DESCRIPTION OF THE PROPOSED ACTION

##### 4-100 INTRODUCTION

Preliminary studies, conducted between January and August 1978, resulted in a system description in sufficient detail to determine reasonably certain costs and identify reasonably complete impacts. However, because a system manufacturer will not be selected until the environmental process is complete, the system finally selected may differ in some respects from the description in this chapter. Changes may occur during the final design phase of the program. To understand this potential for change, it is useful to outline the studies of Phase II of the program through the completion of preliminary engineering.

Phase II transportation analysis estimated system ridership. This figure, refined in preliminary engineering, provided the basis for the development of certain operational criteria (such as station on and off volumes, maximum link volumes, desired service frequency, operating speeds, and headways). Any candidate system, to be considered, would have to meet these criteria.

A technology assessment, also conducted during Phase II, imposed the criterion that a candidate system must be presently operating with demonstrated reliability. A design envelope was defined using the characteristics of all the systems that met the criteria. The design envelope defined station size (including width and length of platforms), guideway width, allowable grades and curves, required guideway support systems, allowable turning radii, and other parameters.

Data from additional transportation studies resulted in refined patronage analysis and parking requirements. The preliminary engineering phase used these data to establish a reference system design.

The result of these activities is a system design of sufficient detail to allow reasonably close estimates of the system's alignment, physical and operating characteristics, and capital and operating costs. Although the reference system is representative of final design and configuration, certain minor changes could occur which may affect guideway and station sizing, numbers of vehicles required, and other aspects. The system description that follows is a reasonable one based on currently available technologies and Phase II study results.

##### 4-110 General Description Of The System

The Los Angeles Downtown People Mover has been planned as a completely automated circulation/distribution system for the central business district. It will run approximately three miles through the north and west sides of the CBD, between Union Station on the north and the Convention Center on the south (see Figure 4-21A). Total trip time between Union Station and the Convention Center will be less than 15 minutes. The DPM will be grade-separated with automated vehicles providing service to 13 stations along the proposed route. Vehicles will operate singly or in trains over an elevated guideway except for a short underground segment under Bunker Hill.

Of the 13 stations twelve will be aerial, with two (Union Station and Convention Center) directly connected to intercept and parking structures, and one (Bunker Hill) will be underground. Additional improvements will provide 2000 parking spaces at the Union Station and 1750 at the Convention Center intercepts. Preferential access and parking will be afforded to carpools in both locations. It will be possible to transfer to and from regional and local buses at the two intercepts and at some intermediate stations.

The DPM system will cross the route of the proposed Regional Core Rapid Transit (Starter) Line at several locations, thus providing additional transfer points for circulation/distribution.

Operation of the DPM vehicles will be fully automatic. Equipment with fail-safe mechanisms will assure operation of trains within safe limits, maintain proper speeds and train separation, as well as safe switch and interlocked door operation. The system will be continuously supervised by control personnel.

Assistance to passengers will come primarily from the control center, using closed circuit television, public address, and passenger intercom systems.

#### 4-120 Local And Regional Buses

Local and regional buses from the Southern California Rapid Transit District (SCRTD) and other municipal and regional systems will continue to provide service to and within downtown. Some bus routes may be modified to complement the DPM system, particularly the minibus route that currently provides service to the west side of downtown. Curbside bus transfers will be possible at other stations along the system, to minimize duplication of bus routes.

Buses from east and southeast areas of the region will be able to use Union Station as either a terminus or transfer point. The Union Station intercept will be linked with the planned El Monte busway extension, allowing both inbound and outbound buses to be routed through the intercept for passenger transfer to the DPM. Regional buses not terminating at the intercept could distribute passengers within the CBD and continue beyond. Local buses could also use the intercept as either a transfer or terminal point. The Union Station intercept will also provide connections to intercity buses and Amtrak service.

Buses from the west and southwest will be able to use the Convention Center as either a terminus or transfer point. The Convention Center intercept will include facilities for curbside unloading of local and regional buses.

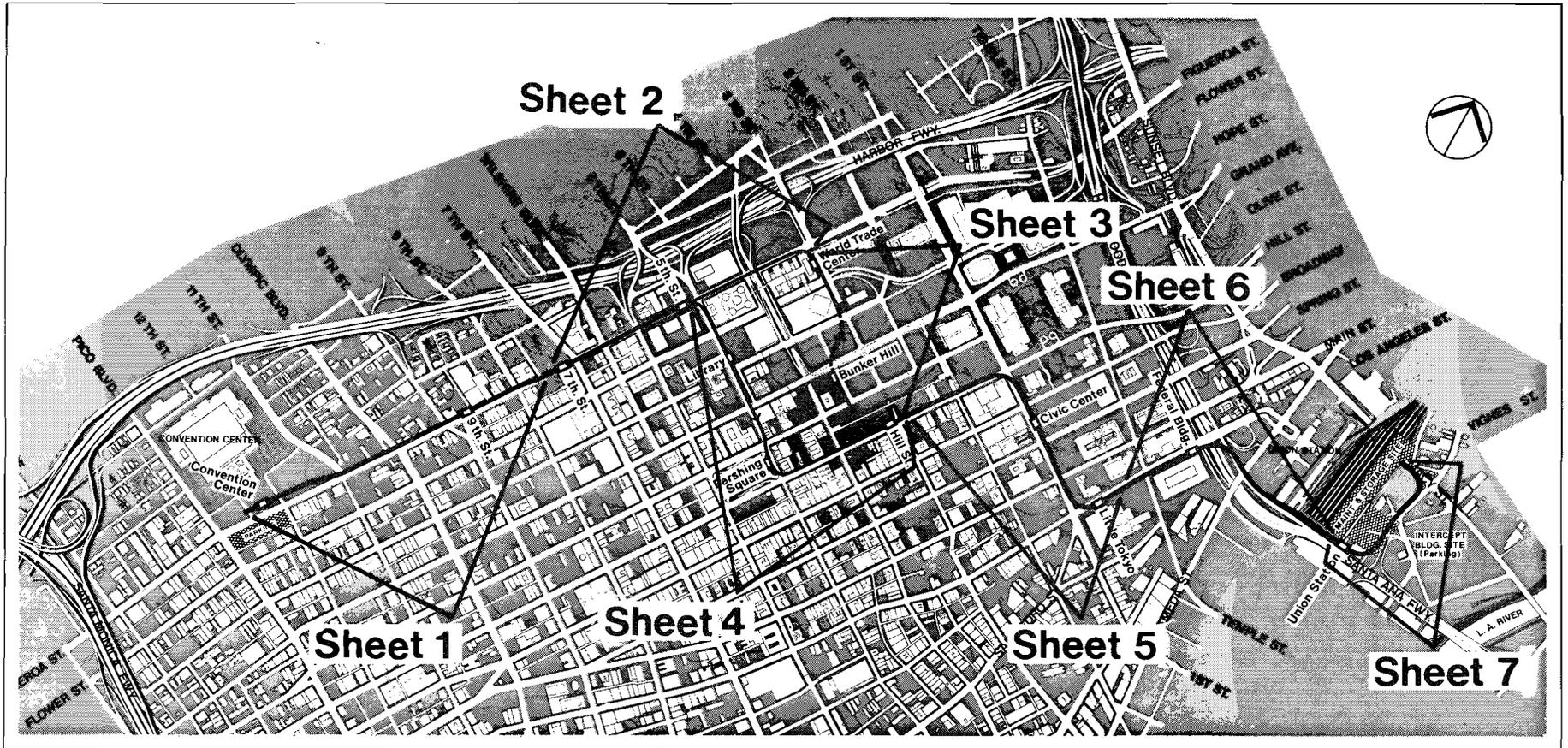
#### 4-200 DESCRIPTION OF THE DPM

The Los Angeles Downtown People Mover is an automated, grade separated circulation/distribution system. The system will consist of approximately 1.9 miles of dual-lane aerial guideway, 1.8 miles of single-lane aerial guideway, and 0.4 mile of single guideway in a tunnel along the alignment shown in Figure 4-21A. All but three of the 13 stations will have side platforms. The center platform station will be located at the intercepts (Union Station and the Convention Center) and at the transfer station for the Bunker Hill loop (the Hill Street station).

The system will operate on a schedule with service frequency ranging from 1.5 to 5 minutes, depending on time of day. Operating hours are planned to be from 6 am to 12 am on weekdays and 8 am to 12 am on weekends. Vehicles would operate in train consists during peak periods to provide a capacity of about 3500 passengers per hour.

#### 4-210 Alignment

The guideway alignment that has been recommended for final design is shown in detail on plan and profile drawings Figures 4-21A through 4-21H. A one-way loop system operates through the Bunker Hill area. The drawings show the recommended alignment, elevation above the ground, and approximate column locations. Both directions of the loop terminate at transfer stations to be located at 5th/Figueroa and Hill Streets. The west-to-southbound portion of the loop uses a cut-and-cover tunnel west of Hill Street, an



# KEY MAP

- People Mover ———
- Station ———
- Underground - - - -
- Direction (Split Alignment) ———>
- Percentage of Slope  $s = +0.00\%$

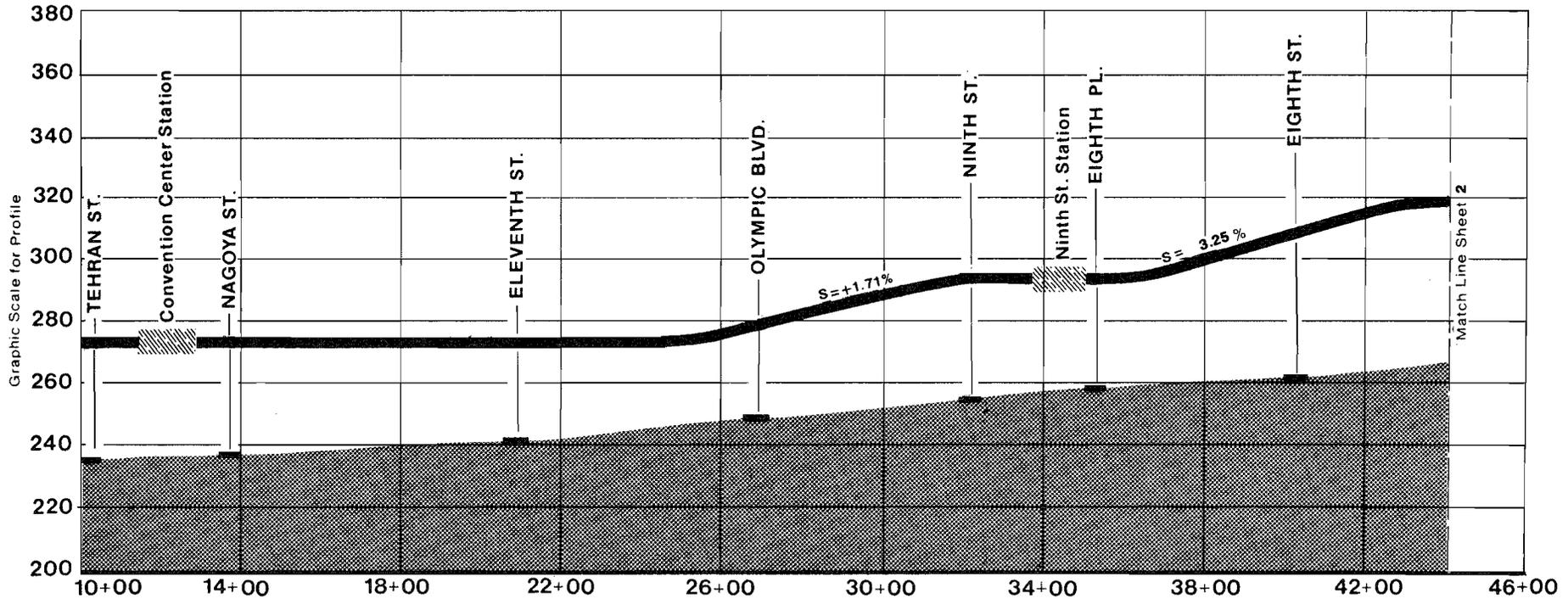
## PLAN AND PROFILE

# Los Angeles Downtown People Mover Project

4-4 FIGURE 4-21B



0' 100' 200' 400'  
Graphic Scale for Plan

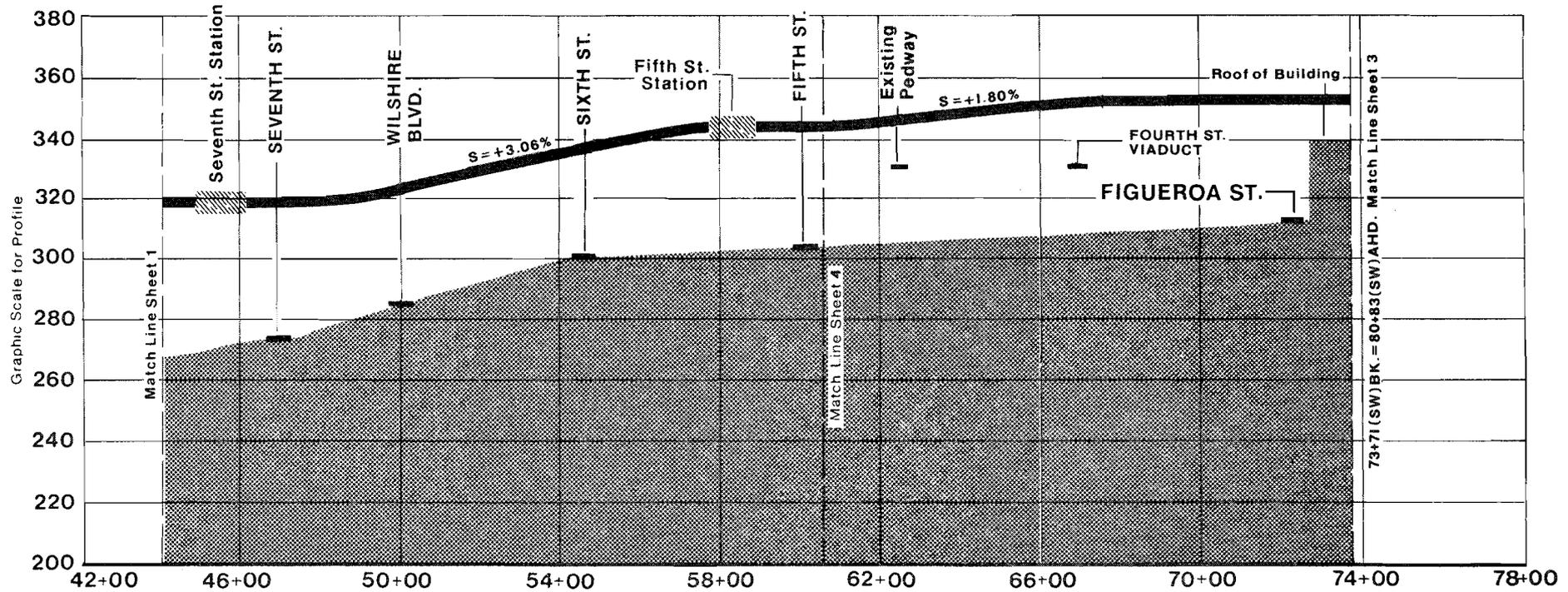
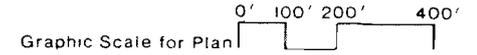
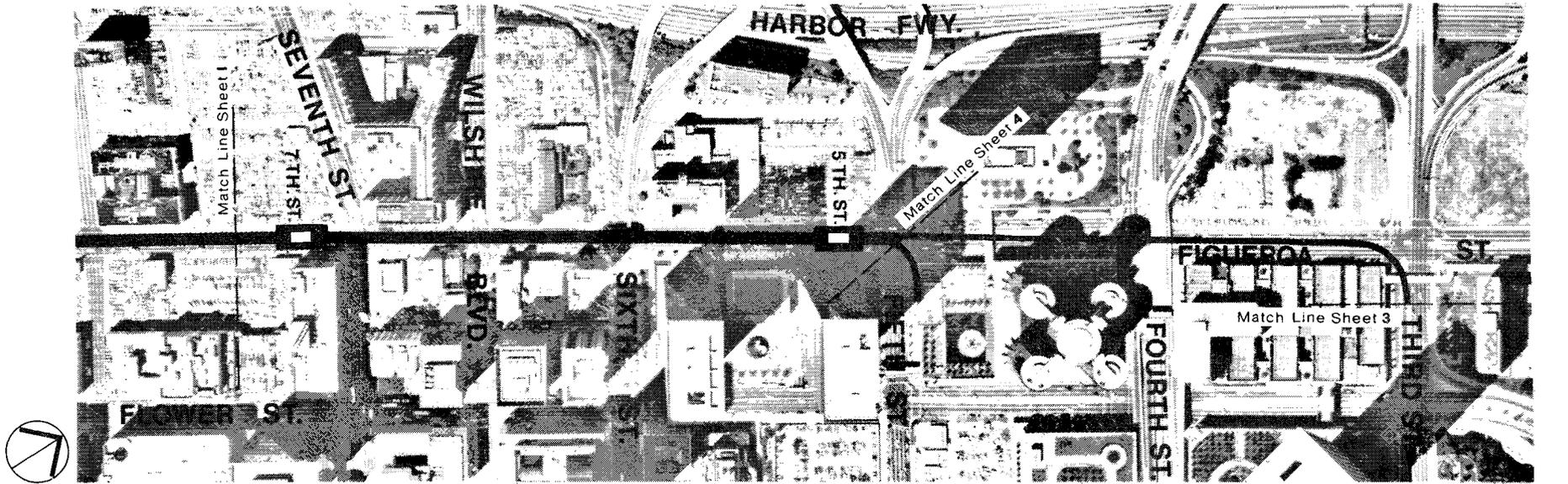


# PLAN AND PROFILE

## Los Angeles Downtown People Mover Project

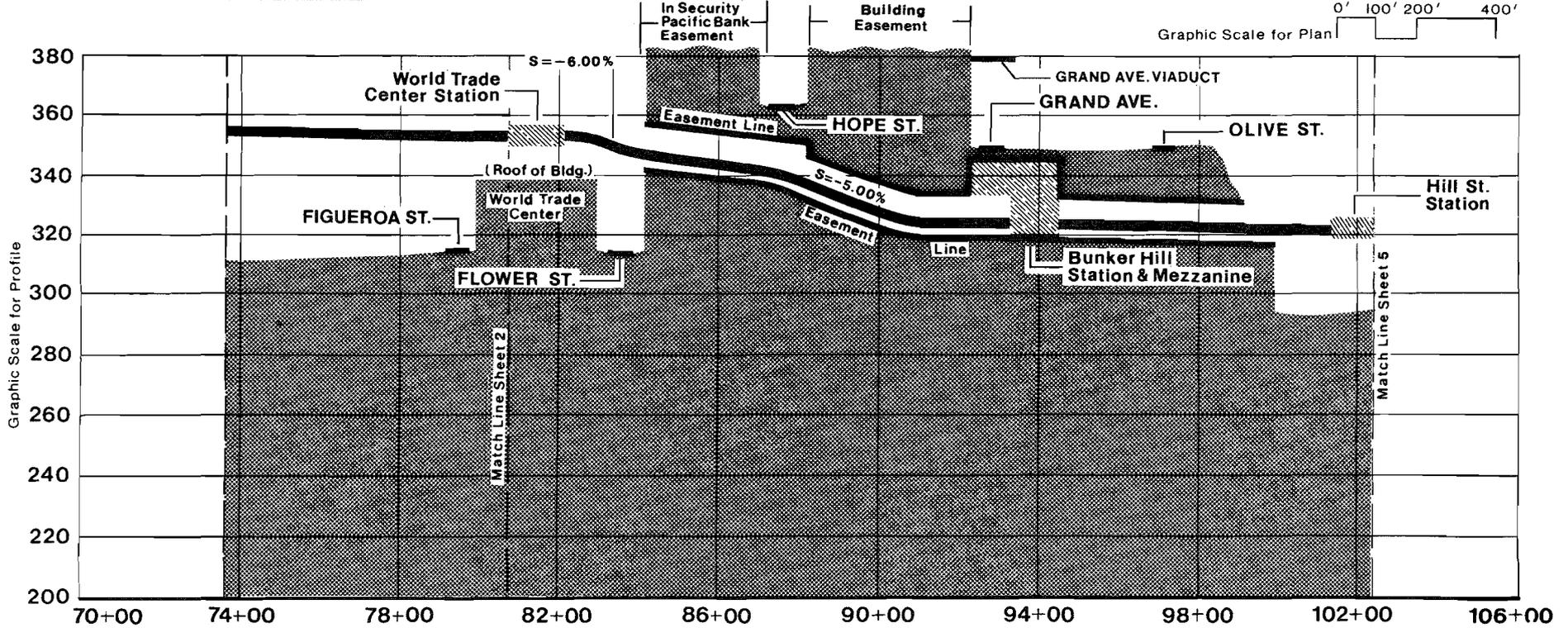
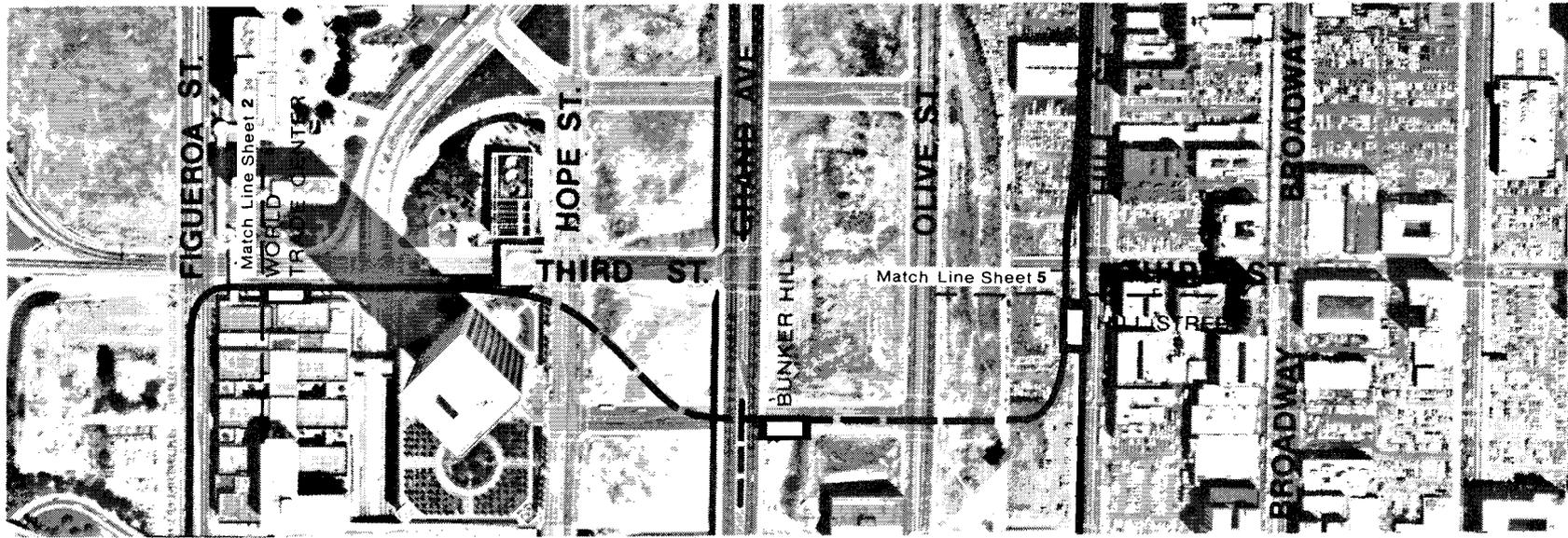
SHEET **1**

FIGURE 4-21C



PLAN AND PROFILE  
**Los Angeles Downtown People Mover Project**  
 COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF LOS ANGELES

SHEET **2**

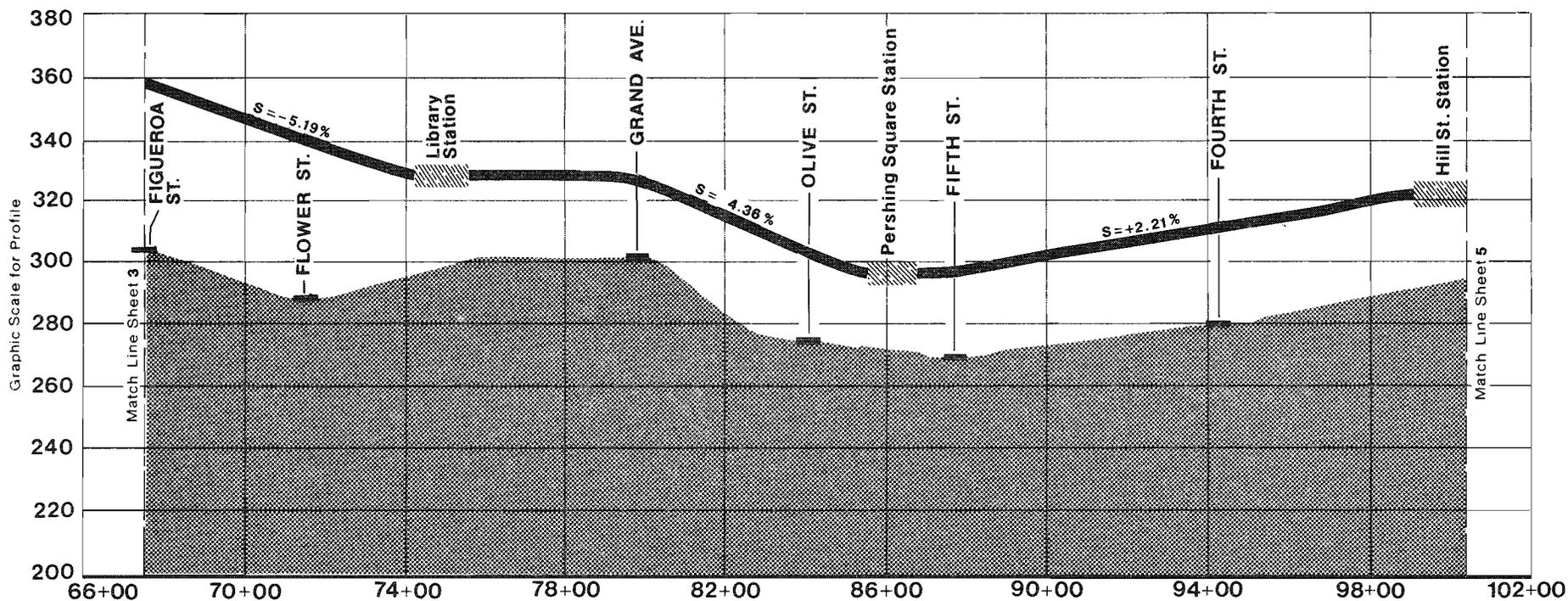
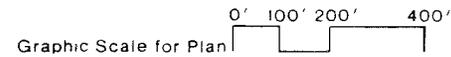
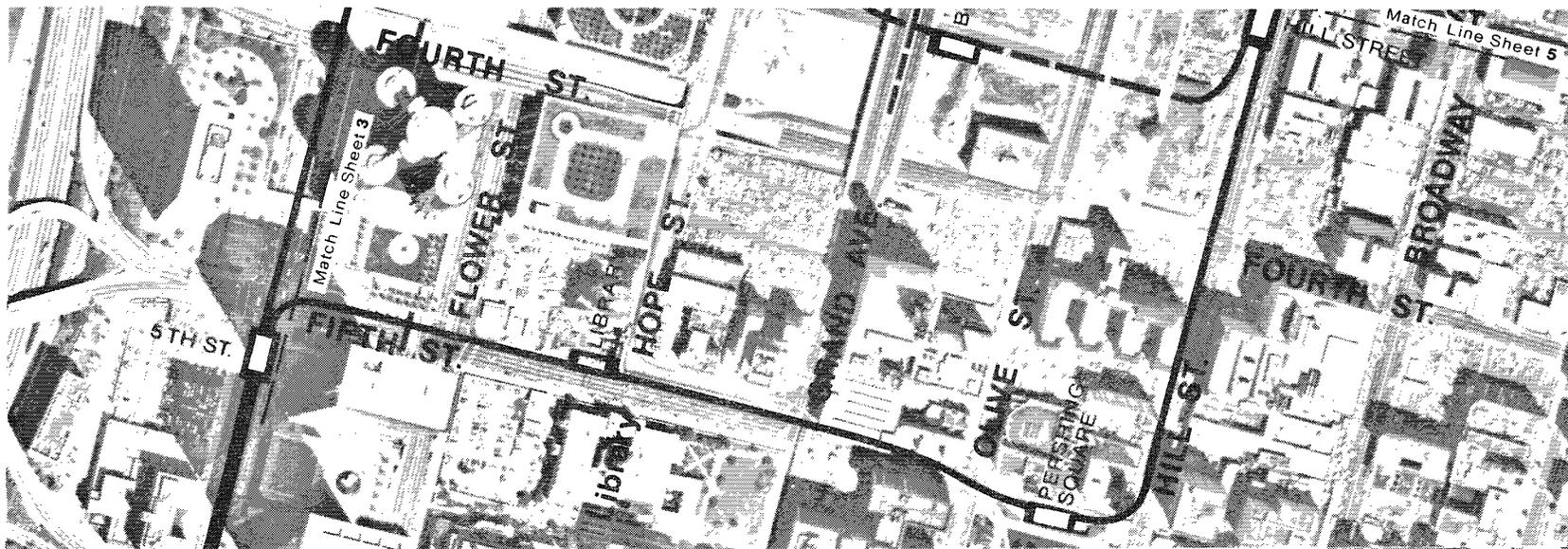


# PLAN AND PROFILE

## Los Angeles Downtown People Mover Project

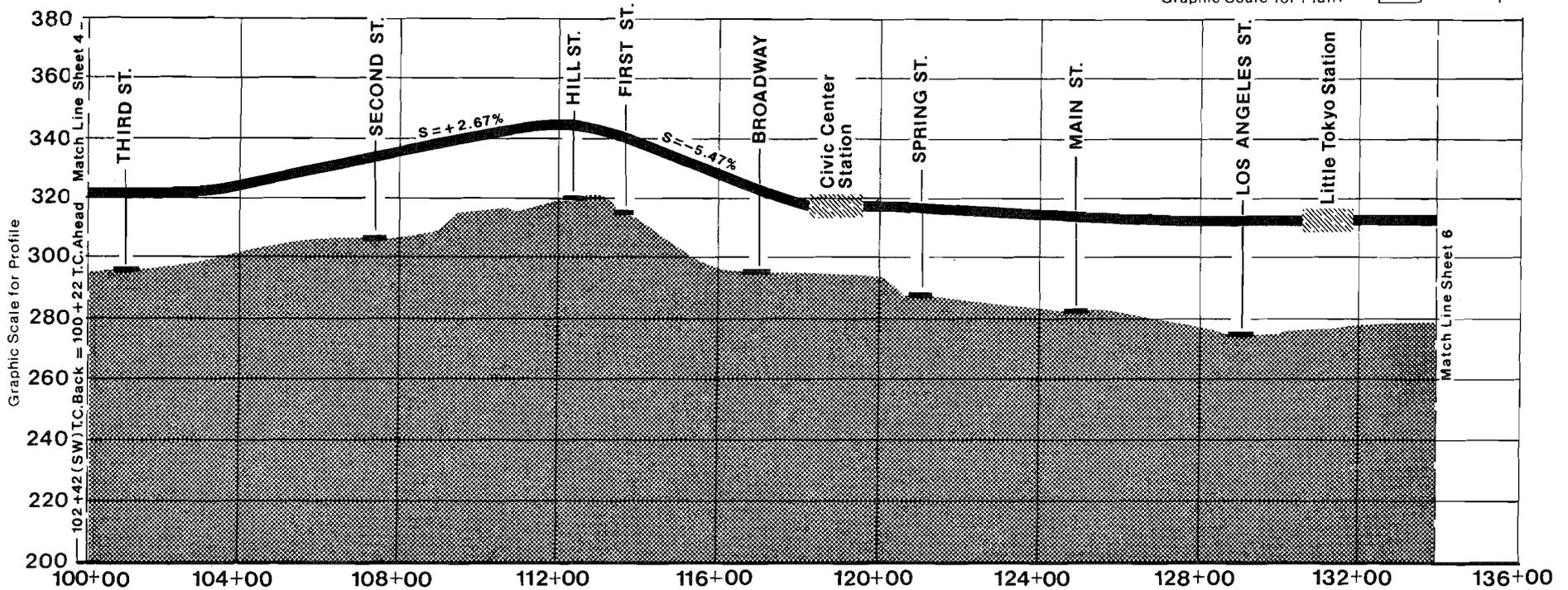
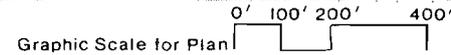
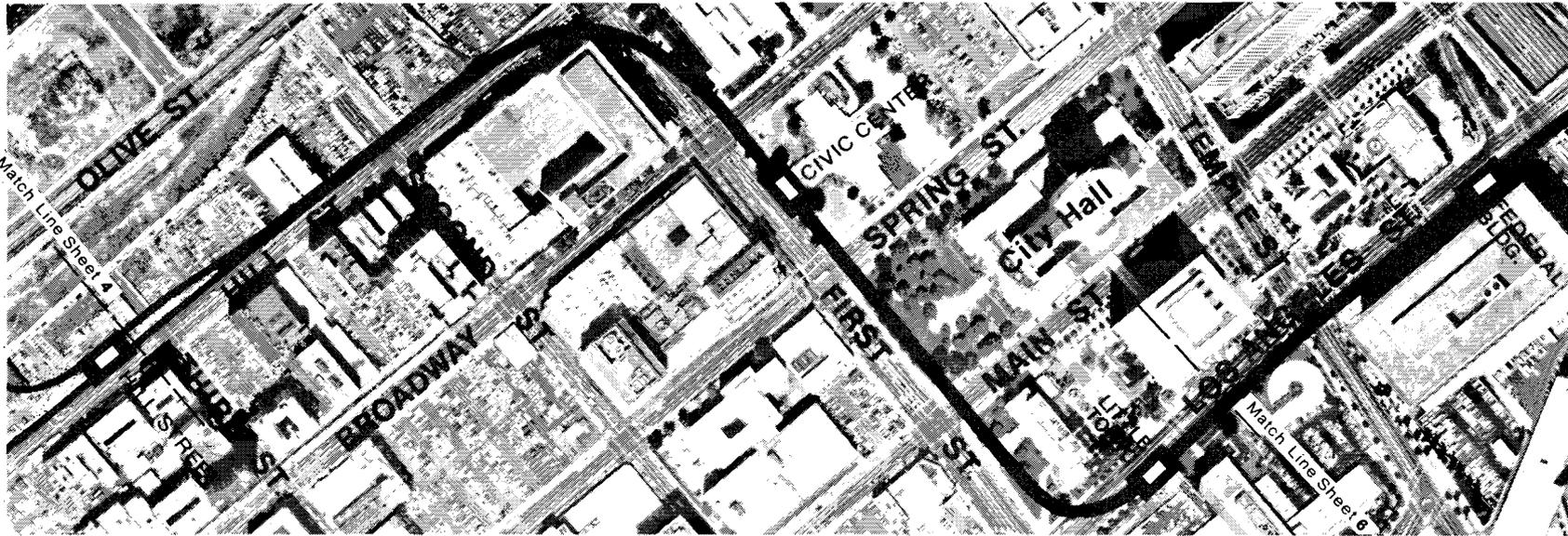
COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF LOS ANGELES

SHEET **3**



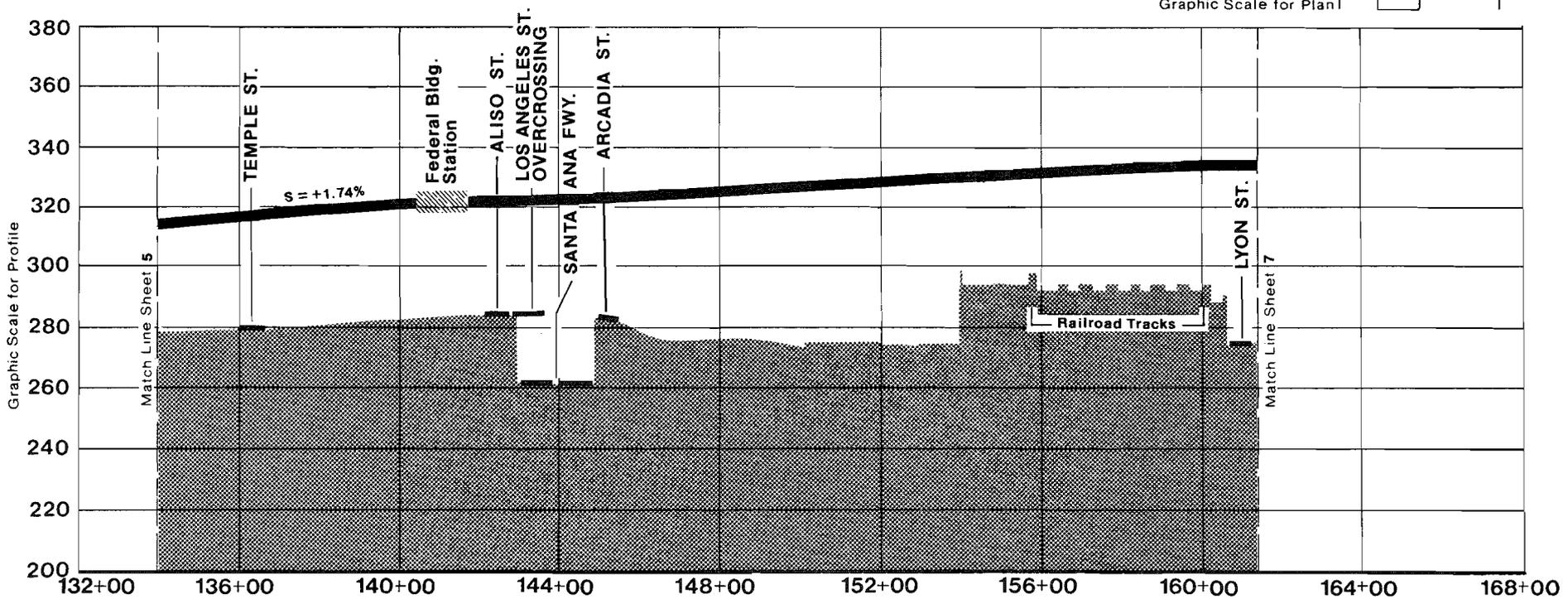
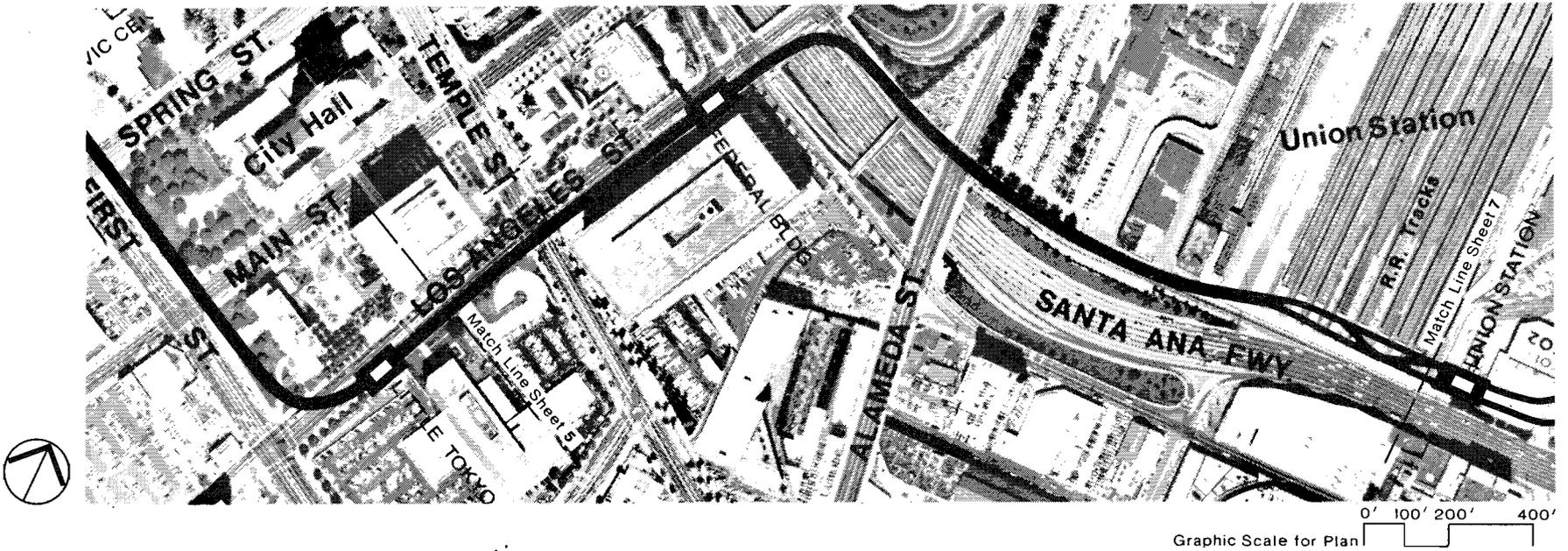
PLAN AND PROFILE  
**Los Angeles Downtown People Mover Project**  
 COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF LOS ANGELES

SHEET **4**



PLAN AND PROFILE  
**Los Angeles Downtown People Mover Project**  
 COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF LOS ANGELES

SHEET **5**

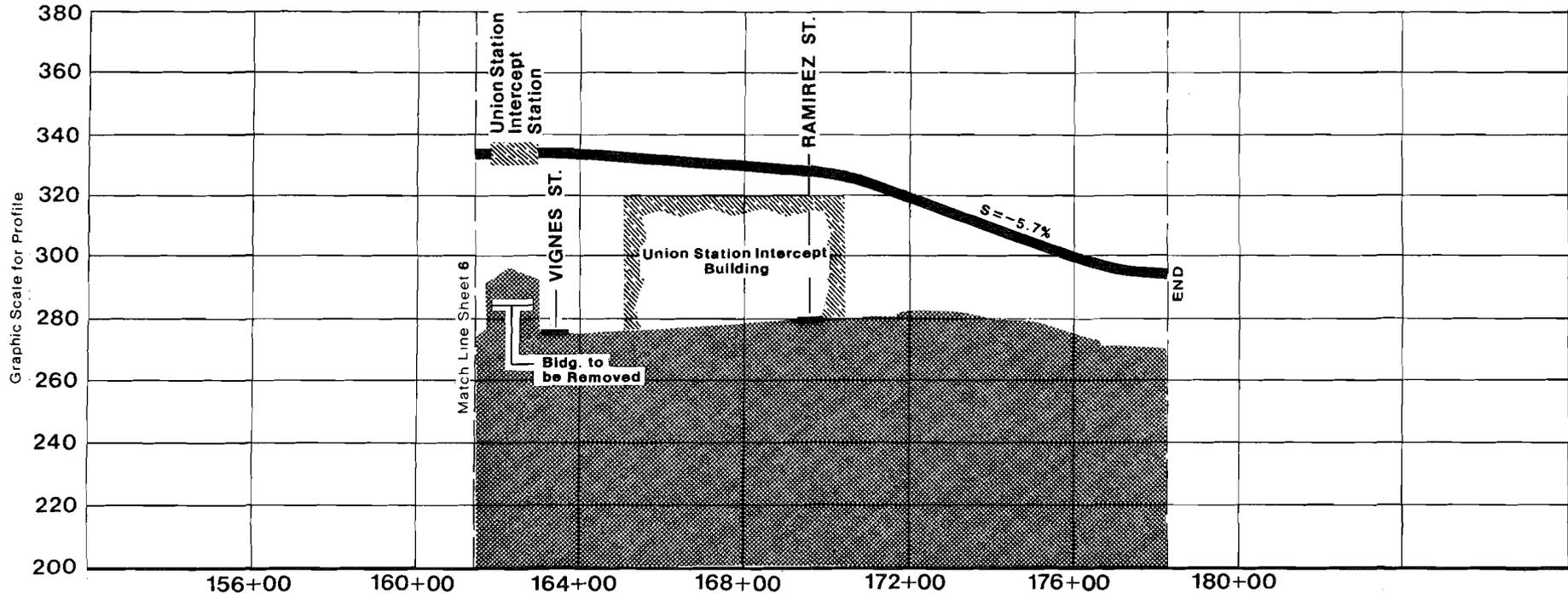
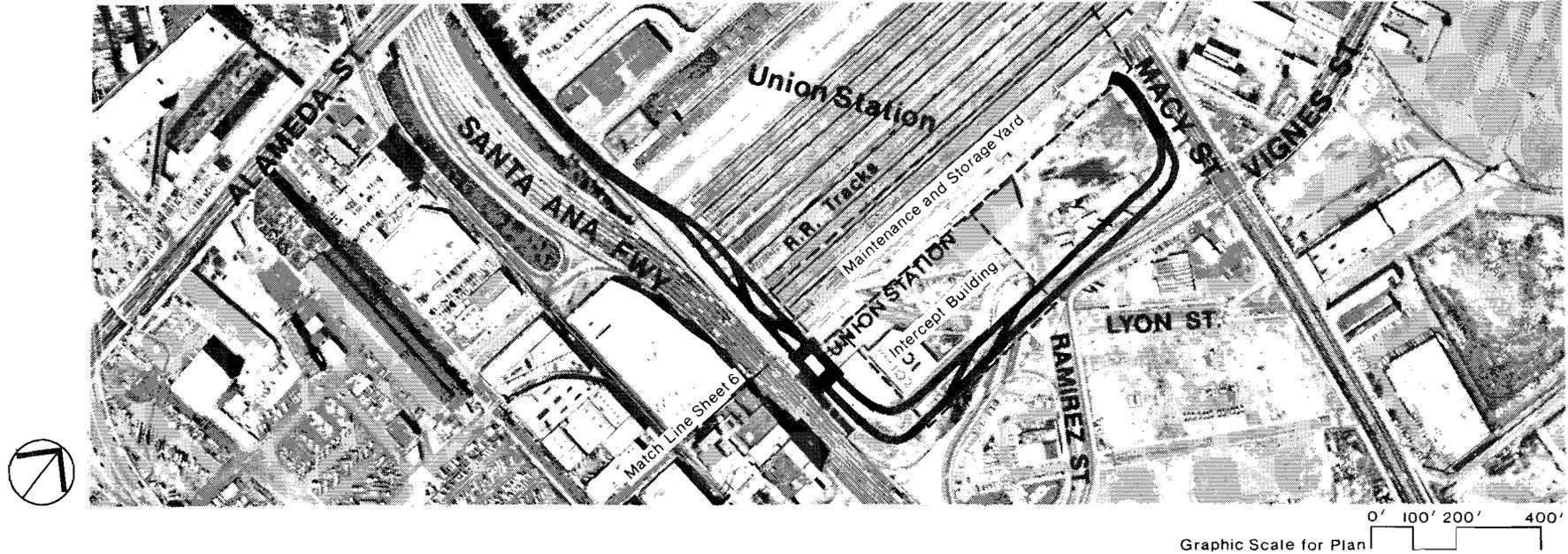


PLAN AND PROFILE

# Los Angeles Downtown People Mover Project

COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF LOS ANGELES

SHEET **6**



# PLAN AND PROFILE

## Los Angeles Downtown People Mover Project

COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF LOS ANGELES

SHEET **7**

existing tunnel beneath Hope Street, and an existing easement through the Security Pacific Plaza Building. Stations are provided across from the Central Library and at Pershing Square. All other portions of the guideway are aerial, ranging in height above street level from 17 to 57 feet, but generally at 28 feet to clear the city's existing and planned pedway system.

Between 7th and 3rd Streets, columns will be placed in a median in the middle of the street. This will require that sidewalk widths will be reduced, on both sides of the street. Final sidewalk widths will vary, between 7th Place and 6th Street, but in no case will they be reduced to less than 8 feet. These reductions are necessary to ensure adequate vehicle traffic capacity on Figueroa.

Along Figueroa Street, south of 7th Street, columns will be placed on the western edge of existing sidewalks and the guideway will use airspace over existing property lines at several locations. Existing ordinances require dedication of a ten-foot frontage for street widening when any new building takes place. When and if the street is widened, the guideway columns will be 1½ feet from new curb lines.

Because of the shift of the Convention Center station from the west sidewalk to the center of the street, it is possible that the entire alignment south of 7th Street could be shifted to a center median. If such a shift were to be made, the guideway would be supported by a combination of columns or bents in order to maintain traffic capacity on the street and to maintain sidewalk widths of at least 8 feet.

#### 4-211 Right-Of-Way Requirements

The proposed route alignment takes advantage of public rights of way along city streets and sidewalks wherever possible. Existing easements through Bunker Hill are also utilized and additional redevelopment easements will have to be negotiated.

#### 4-220 Stations

DPM stations will provide safe and convenient access from city streets, pedways, and adjacent buildings. Although station configurations vary, sizes are similar because they are based on peak hour passenger volumes and maximum train length. Station platforms will be approximately 100 feet long. Single guideway stations will be approximately 20 feet wide and double guideway stations will be about 54 feet wide.

Every station will be equipped with elevators, escalators, and stairs. Each station will also be equipped with information about the DPM route, bus routes, and other operating information. Special phones will be provided at each level of each station to report emergencies and to obtain information. Aerial stations will probably be of open design with protective canopies above and balustrades on the sides. The platform edge will be separated from the guideway by protective screens, with doors that automatically open when the vehicle is ready for boarding.

The platforms, mezzanines, fare gates, and elevator areas will be under closed circuit television surveillance for patron security. Special consideration will be given to station layout and lighting to avoid dark areas. The stations will be closed by security gates at the fare barriers when the system is closed for the night. Only the intercept buildings will have public restrooms and water fountains. Each

station will have a small nonpublic area for operation and maintenance supplies and equipment. All stations will have full accessibility to the handicapped and informational aids for both the visually and hearing impaired.

There are three general types of aerial stations; side platform stations with a platform on each side of the double guideway, a center platform station where the guideway is separated and passes on each side of the platform, and a single platform station used on the one way sections of the system. Each of the three station categories may have a mezzanine level below the platform or may have direct access to the ground level.

Side platform stations with a mezzanine below the platforms are used at 9th, 7th, 5th, Little Tokyo, and Federal Center. The mezzanine provides a means of escalator and elevator access to each platform. Where one or both of the platforms are over the street, the mezzanine also provides an area for fare collection as well as direct pedway connections to adjacent buildings.

A side platform, single level station with direct access to the platforms from ground level will be located at the Civic Center. The station is located over state land and out of the sidewalk, allowing direct access to groundlevel without a mezzanine.

At Pershing Square, the Library, and the World Trade Center, there are single platform stations on the one way portion of the guideway. At Pershing Square, fare collection is accomplished at the ground level. The Library station is tied into the planned Wells Fargo building and fare collection will be at the adjacent building terrace level. Similarly the roof area of the World Trade Center is used as the fare collection area for that station. The Bunker Hill station

is a single side platform type located underground. Center platform stations are used at each end of the system to allow vehicle turn back switches to be used rather than a large loop. The Union Station terminus is located in conjunction with the intercept building providing easy interconnection between the DPM and SCRTD Buses, Amtrak trains, intercity buses as well as the parking structure. At the Convention Center, a pedway provides direct access from the parking structure to the DPM station. Bus benches are provided at curbside for transfers between buses and the DPM.

A center platform station is used at Hill Street to provide a direct transfer across the platform from one direction to the other. Transfers at the 5th and Figueroa Station will be via the mezzanine since the over-street location for this station precludes a center platform station.

Representative site plans for each station are shown in Figures 4-22A through 4-22K. Typical station plans for aerial stations are shown in Figure 4-22L. The site plans are preliminary. Final dimensions and locations of items such as vertical circulation elements and transformer substations will be determined during final design in coordination with the adjacent development. An artists conception of the station at 5th and Figueroa is shown in Figure 4-22M.

FIGURE 4-22A

# PROPOSED SITE PLAN: FEDERAL BUILDING DPM STATION

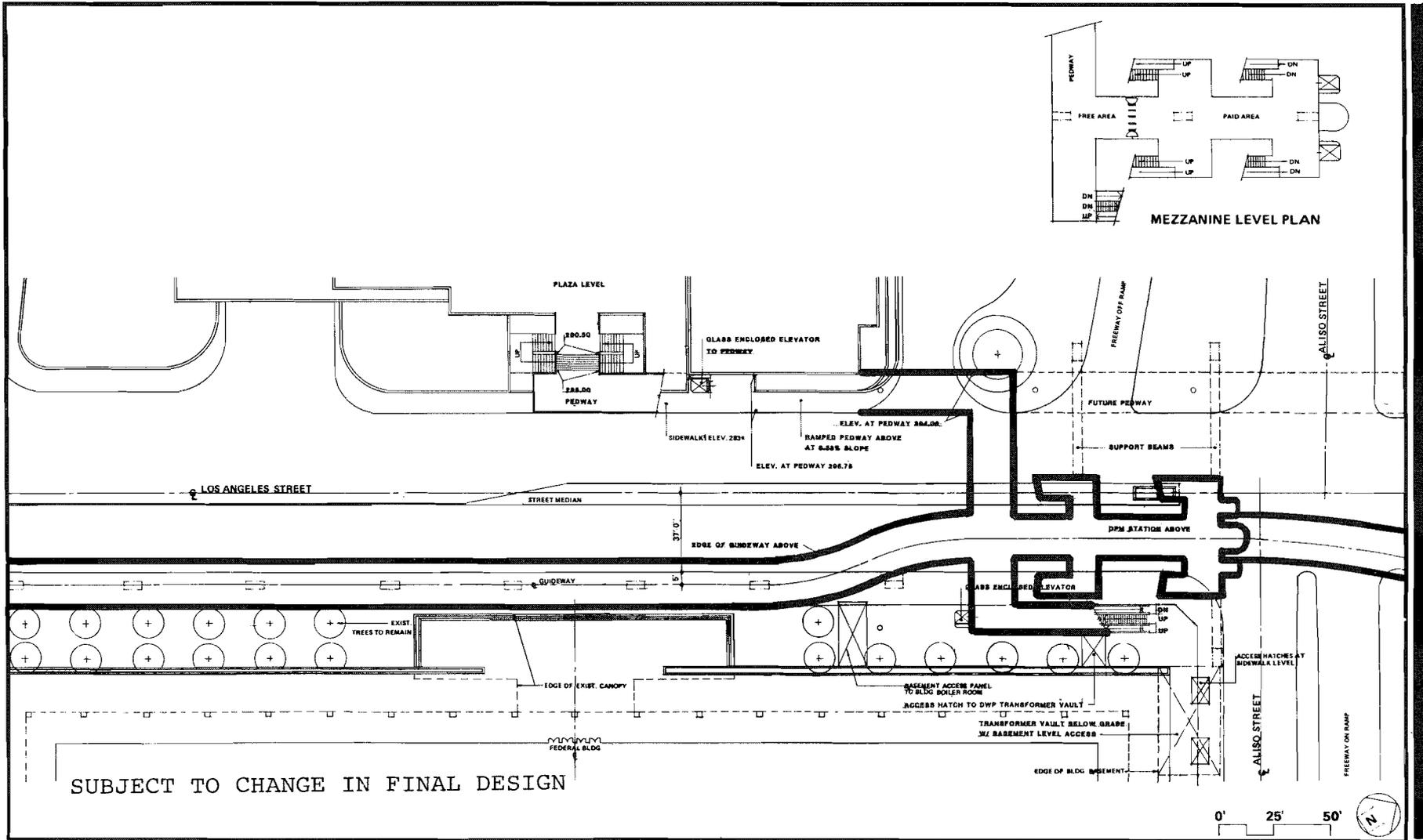


FIGURE 4-22B

# PROPOSED SITE PLAN: LITTLE TOKYO DPM STATION

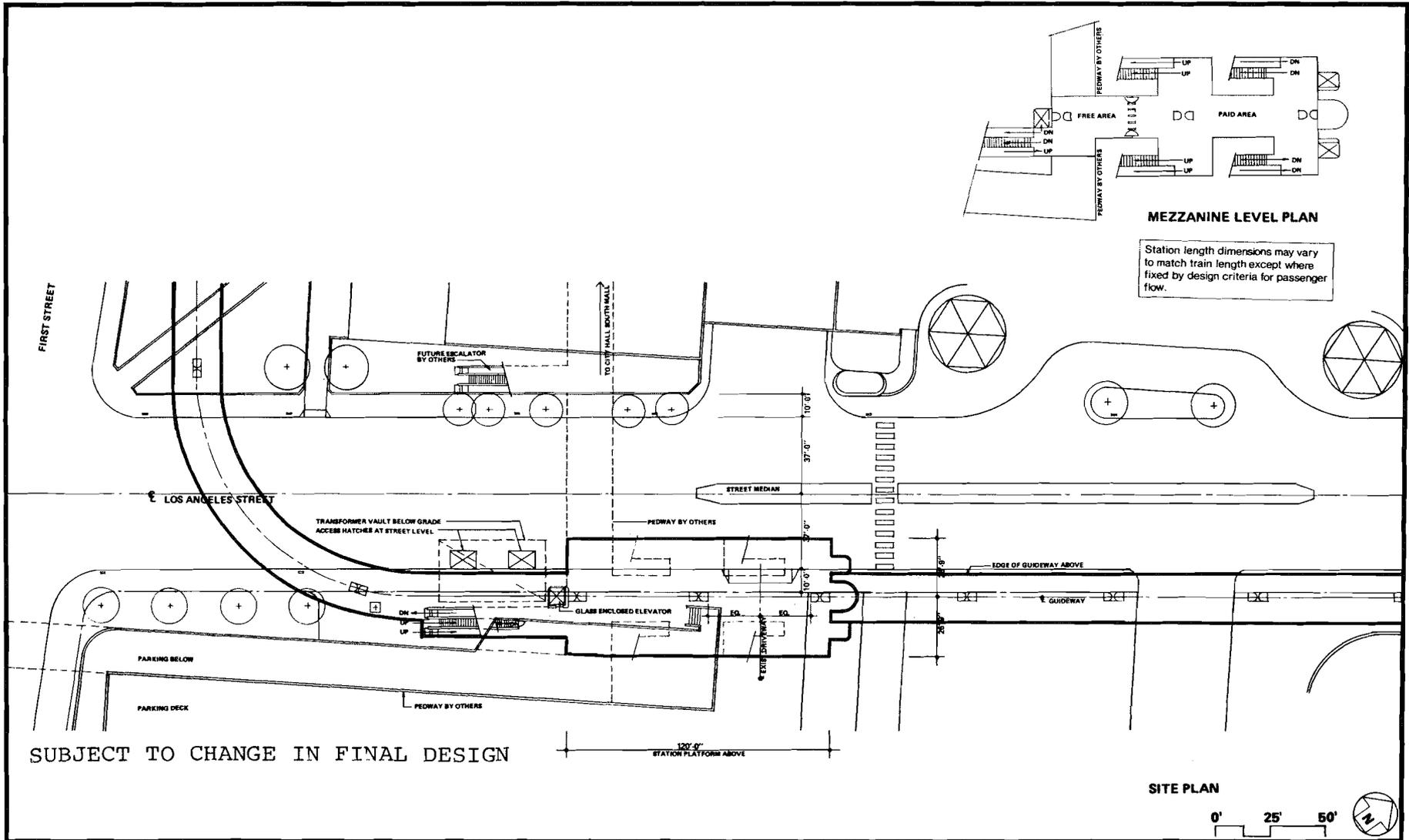


FIGURE 4-22C  
**PROPOSED SITE PLAN:  
CIVIC CENTER DPM STATION**

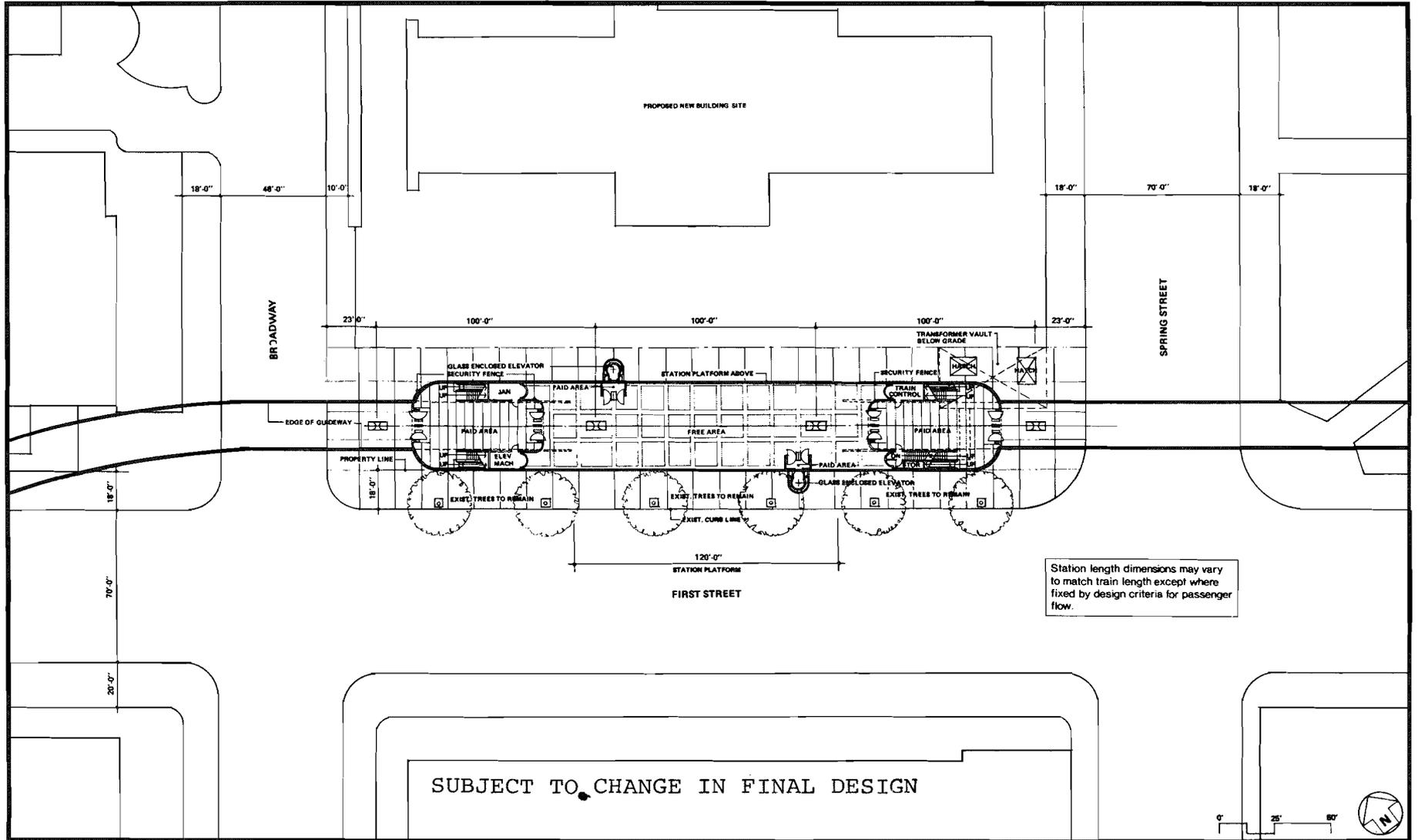


FIGURE 4-22D  
**PROPOSED HILL STREET DPM STATION**

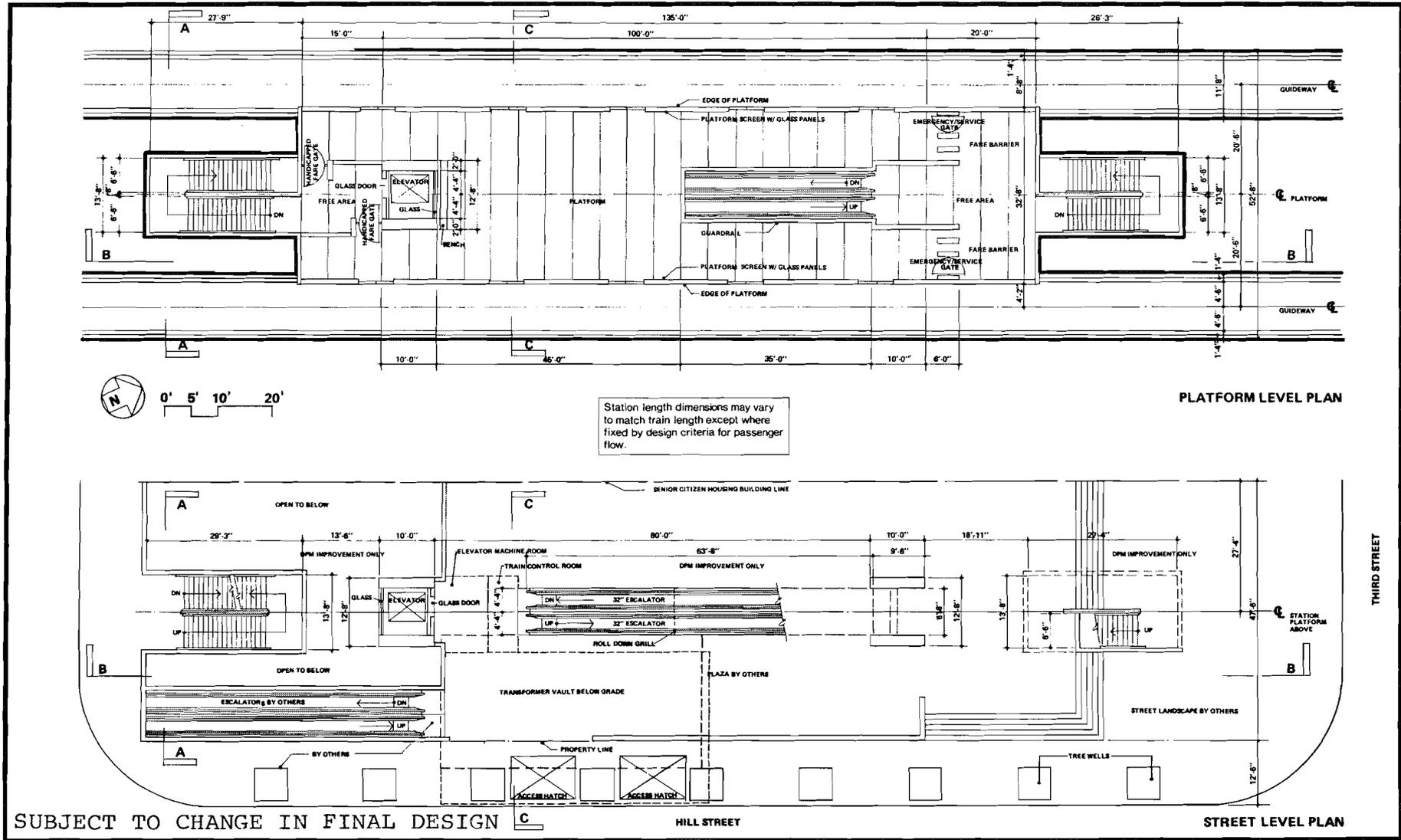


FIGURE 4-22E  
**PROPOSED BUNKER HILL DPM STATION**

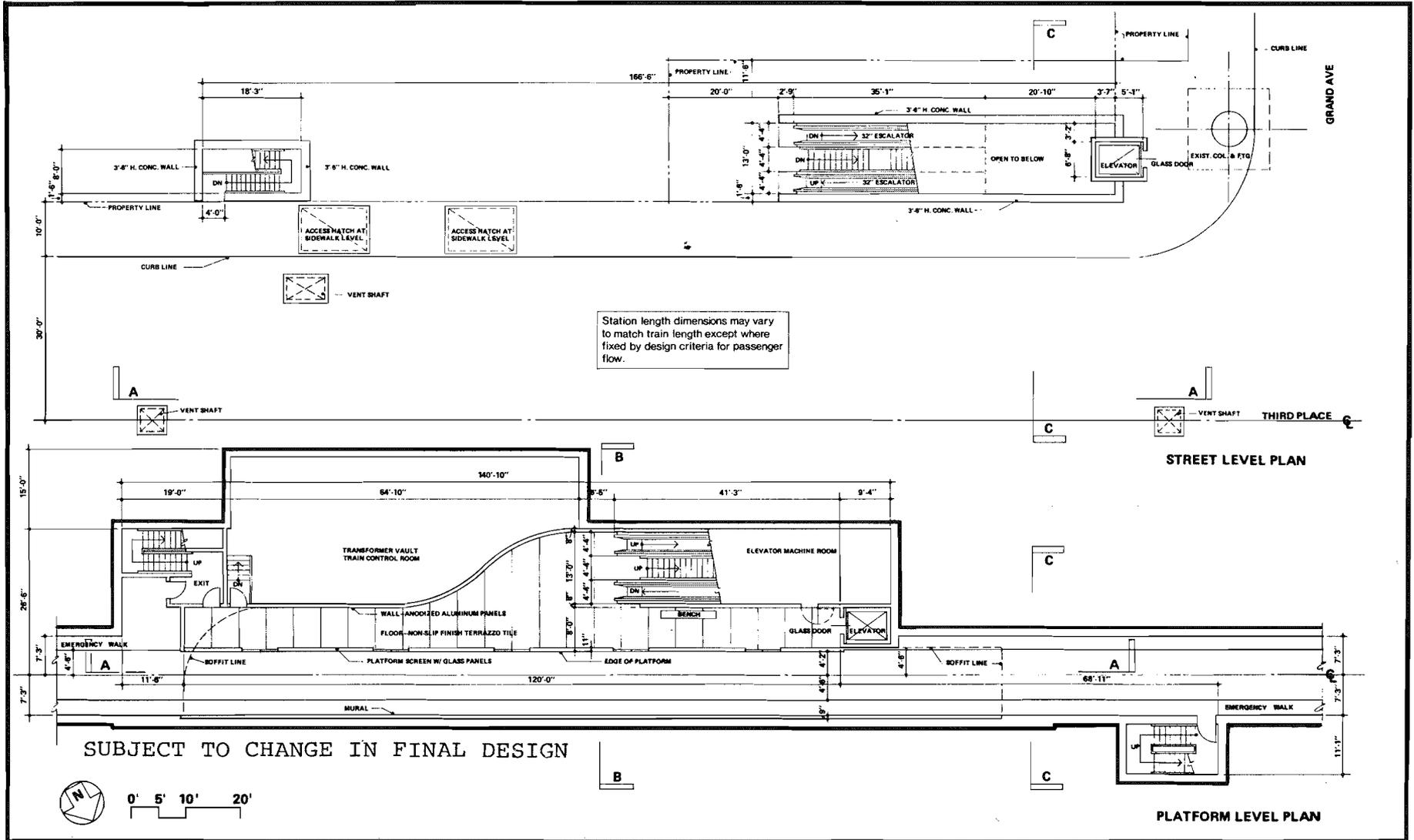


FIGURE 4-22F  
**PROPOSED WORLD TRADE CENTER DPM STATION**

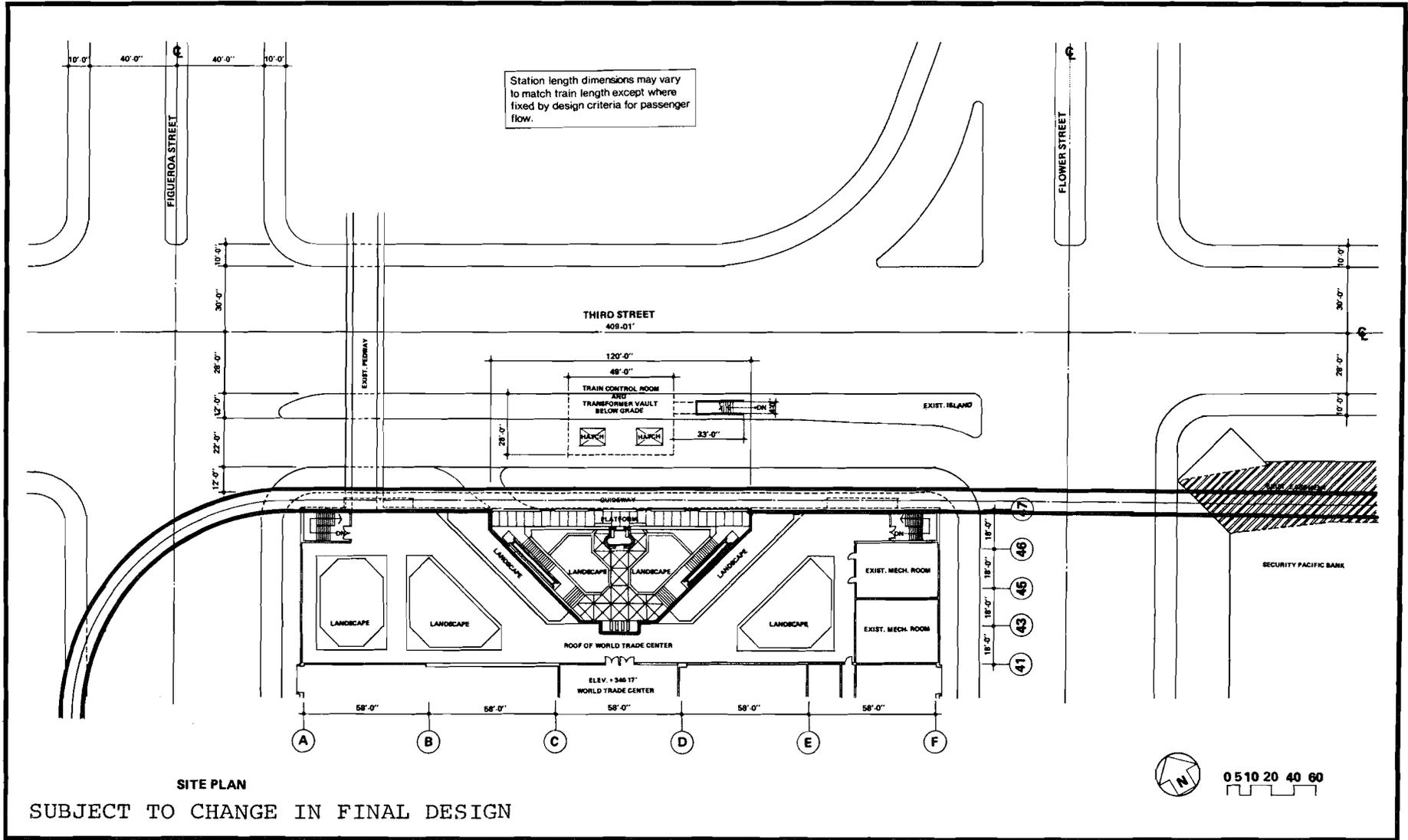


FIGURE 4-22G

# PROPOSED SITE PLAN: PERSHING SQUARE DPM STATION

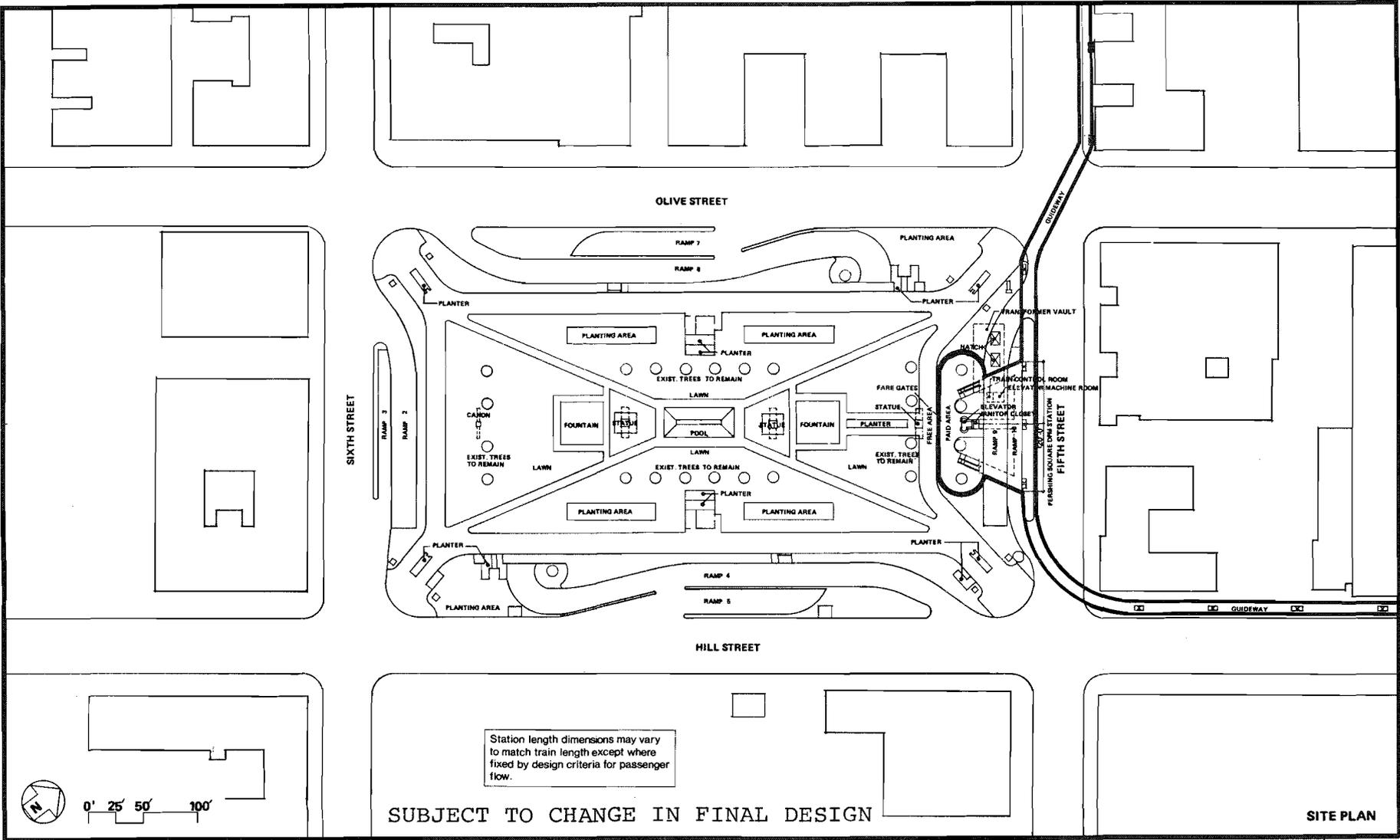


FIGURE 4-22H

# PROPOSED SITE PLAN: LIBRARY DPM STATION

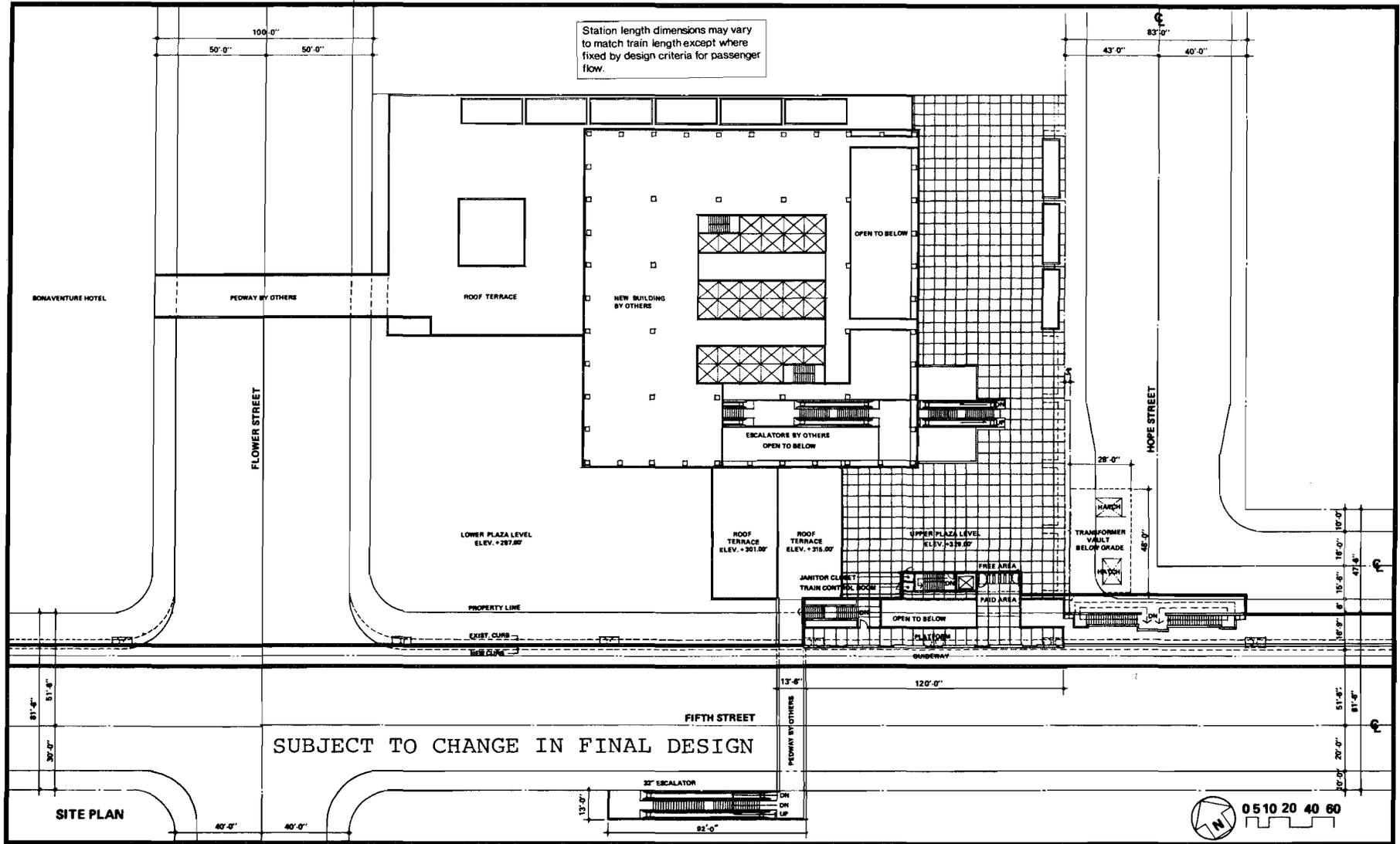


FIGURE 4-22I

# PROPOSED SITE PLAN: FIFTH AND FIGUEROA DPM STATION

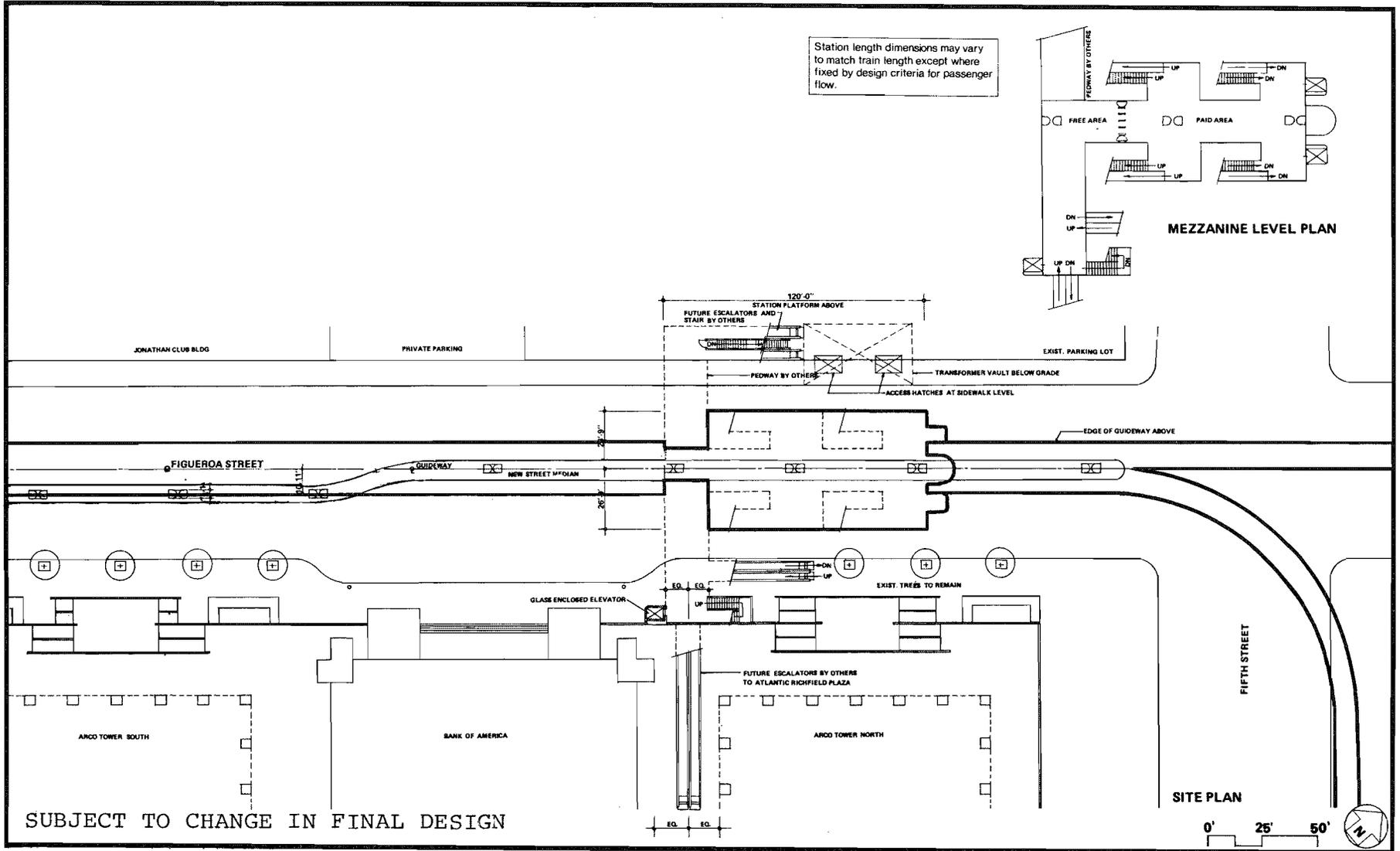
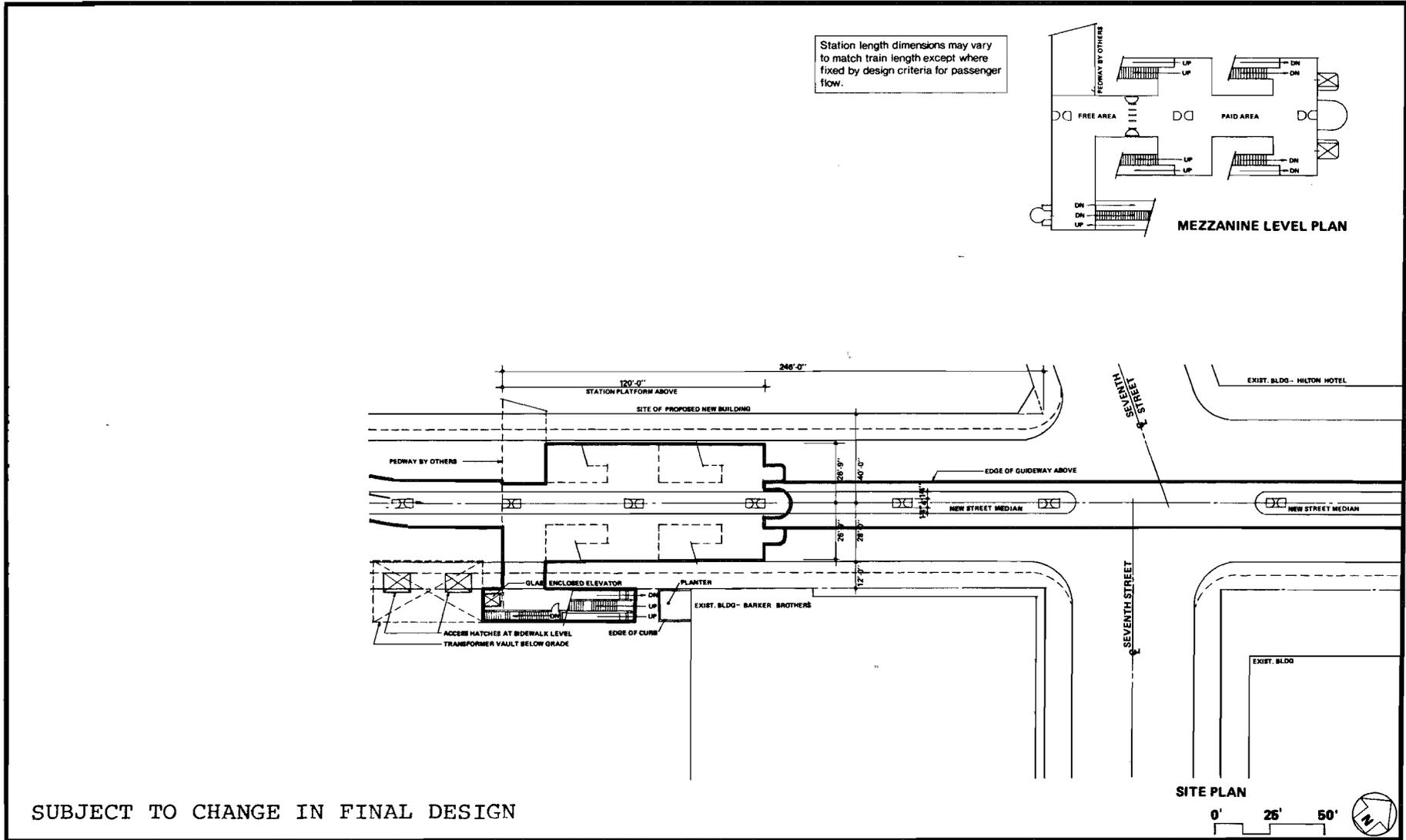


FIGURE 4-22J  
**PROPOSED SITE PLAN:  
SEVENTH AND FIGUEROA DPM STATION**



# PROPOSED SITE PLAN: NINTH AND FIGUEROA DPM STATION

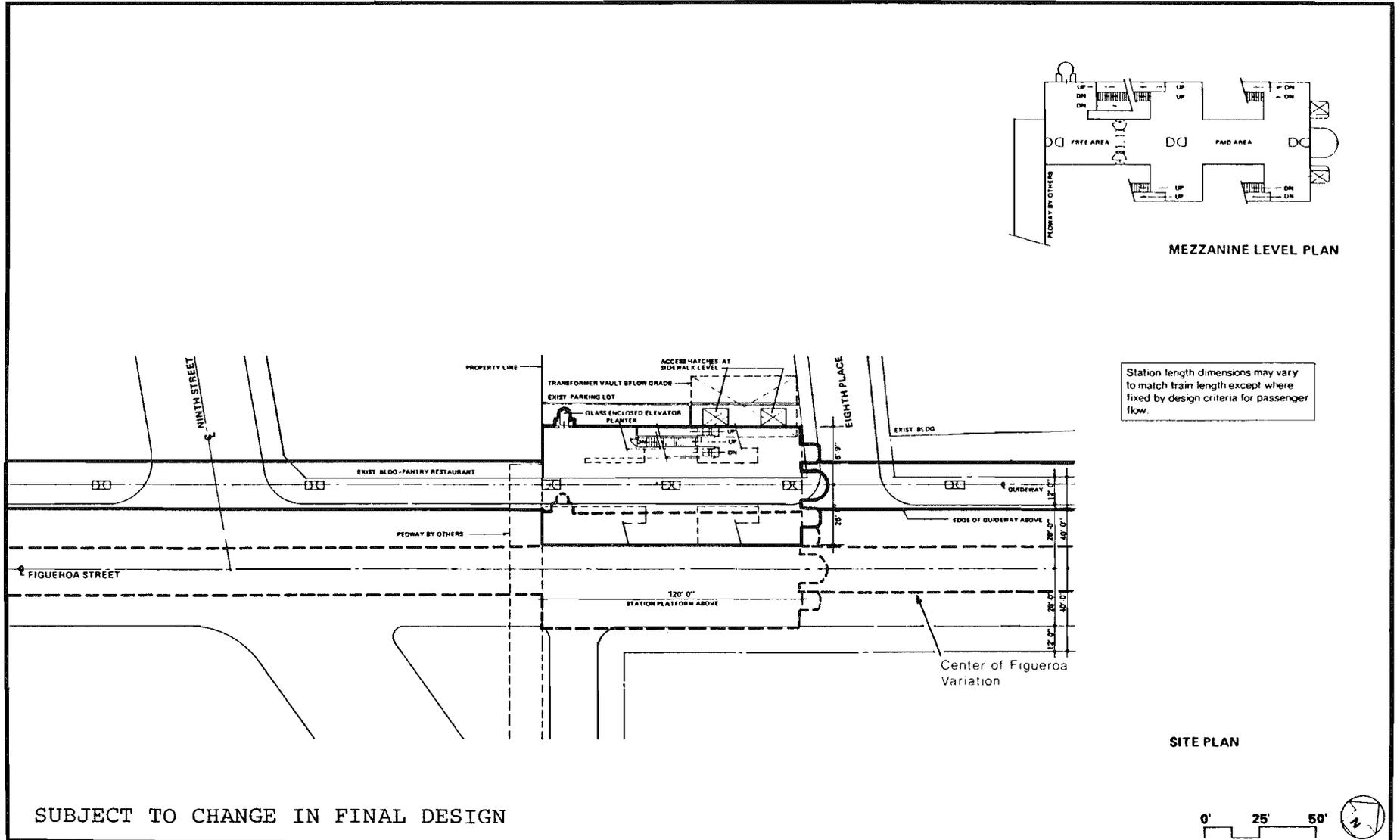


FIGURE 4-22L

# PROPOSED TYPICAL AERIAL STATION FIFTH AND FIGUEROA

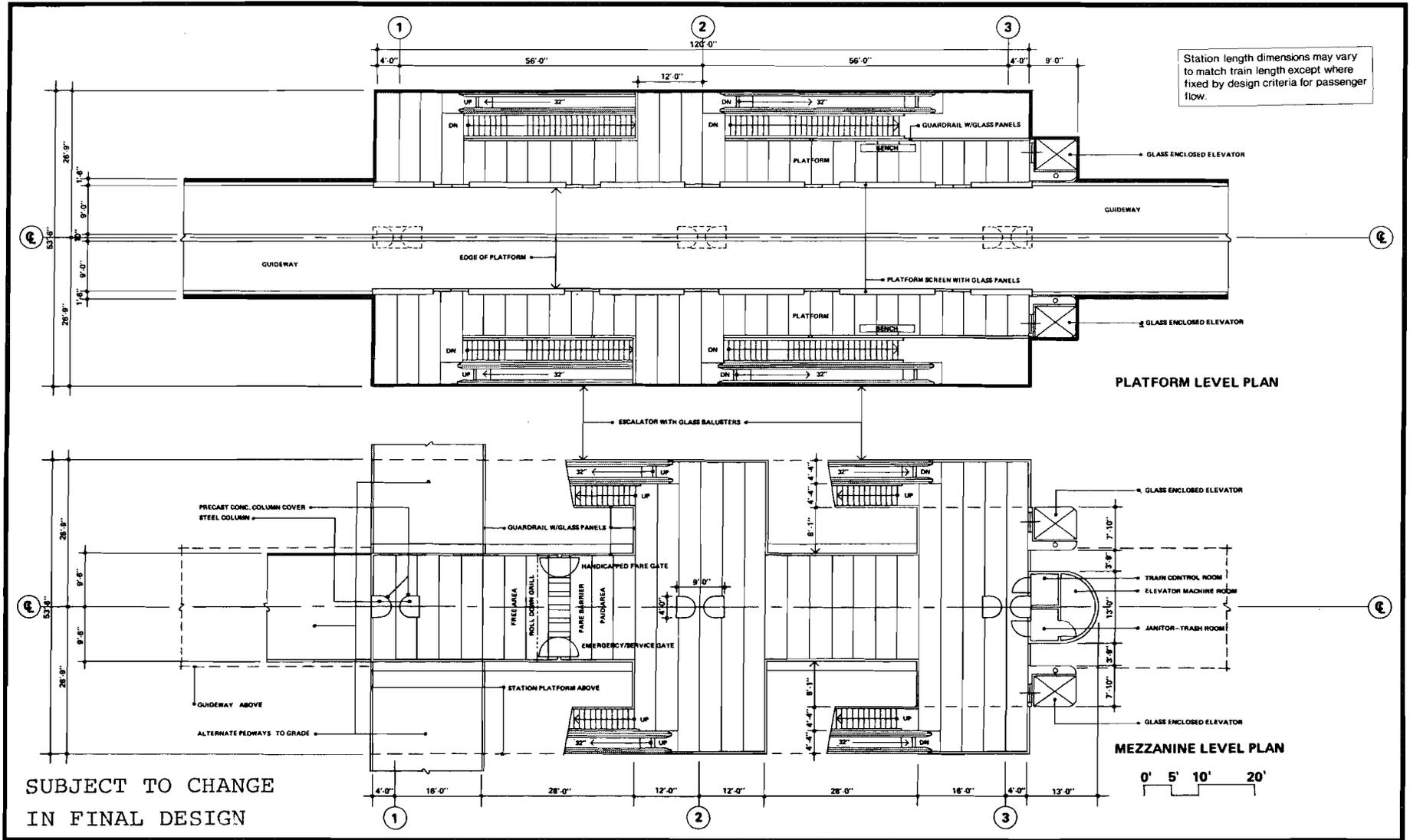
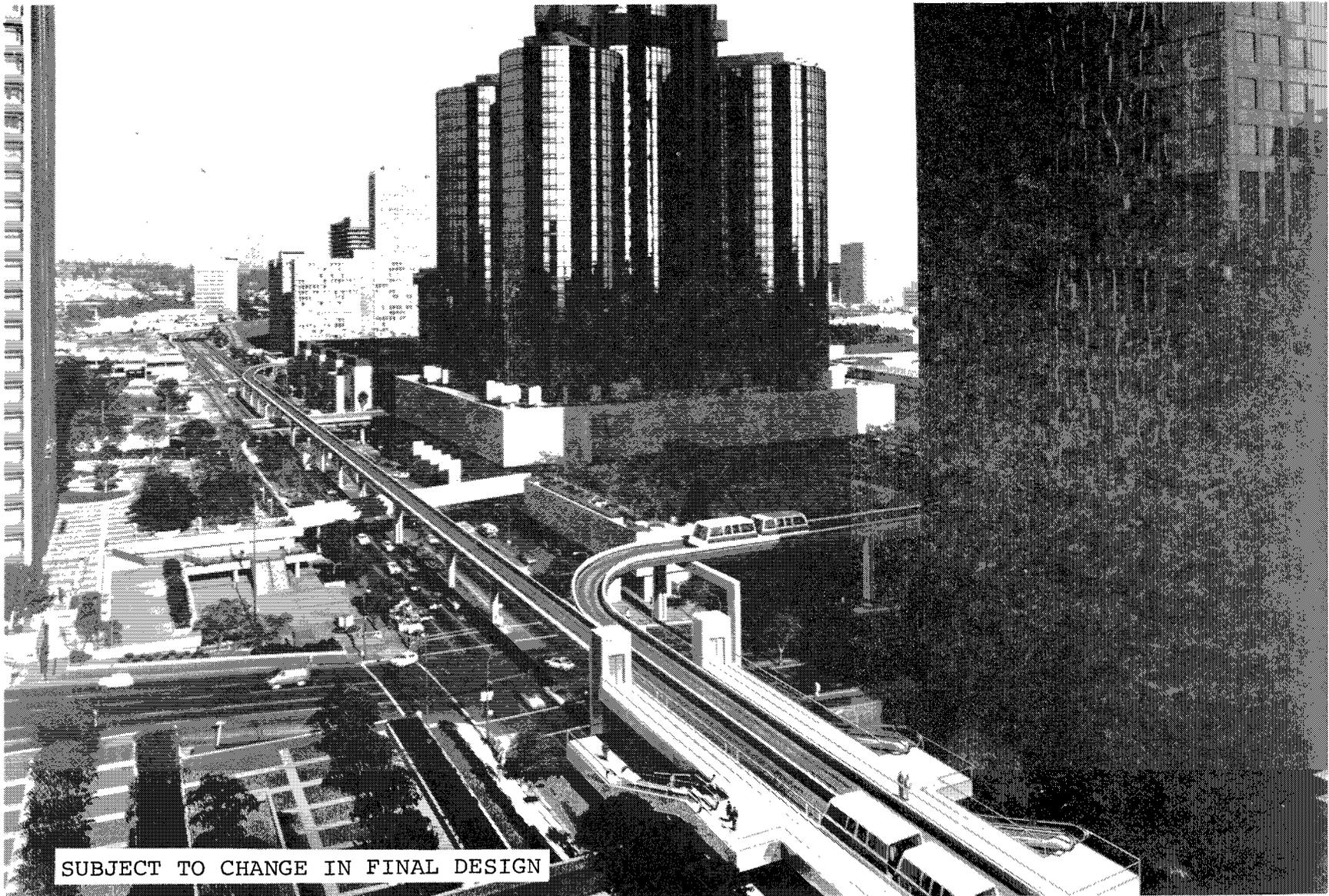


FIGURE 4-22M

# FIGUEROA STREET, LOOKING NORTH AT FIFTH STREET



SUBJECT TO CHANGE IN FINAL DESIGN

4-230 Guideway

Guideway designs for the DPM system may be categorized by the manner in which they support the vehicle. These guideway options are: bottom-supported roadway, bottom-supported monorail beam, and top-supported monorail beam. Of the candidate systems which are presently available, only one uses a top-supported monorail beam. This system does not meet the study criterion of being currently in revenue service and the design presents further difficulties for emergency evacuation. For these reasons, the bottom-supported roadway and bottom-supported monorail beam are the most likely candidates for use in the Los Angeles DPM system. Figures 4-23A-C show typical guideway cross sections for single- and double-lane bottom supported roadway configurations. The dimensions shown are approximate and may vary, depending upon vehicle systems and length of the span between columns. Figure 4-23D shows a typical guideway cross section for a monorail beam.

If a roadway surface guideway is used, both sidewall and center guidance are possible. Figure 4-23B shows a typical arrangement for a center guidance system and Figures 4-23 A and C show a typical sidewall guidance arrangement. On a monorail beam system, guidance is achieved by guide wheels bearing against the sides of the beam.

The shape and finish of the guideway can vary to some extent, within the limits of vehicle operating requirements, to provide improvements in appearance. Large guideway shapes can be visually enhanced by emphasizing the linear quality of the guideway. This can be done in several ways:

FIGURE 4-23A

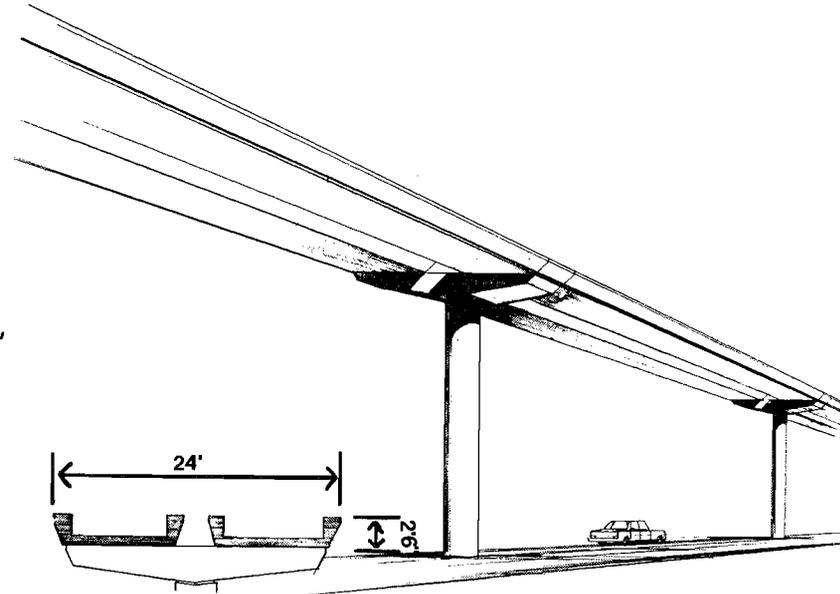


FIGURE 4-23B

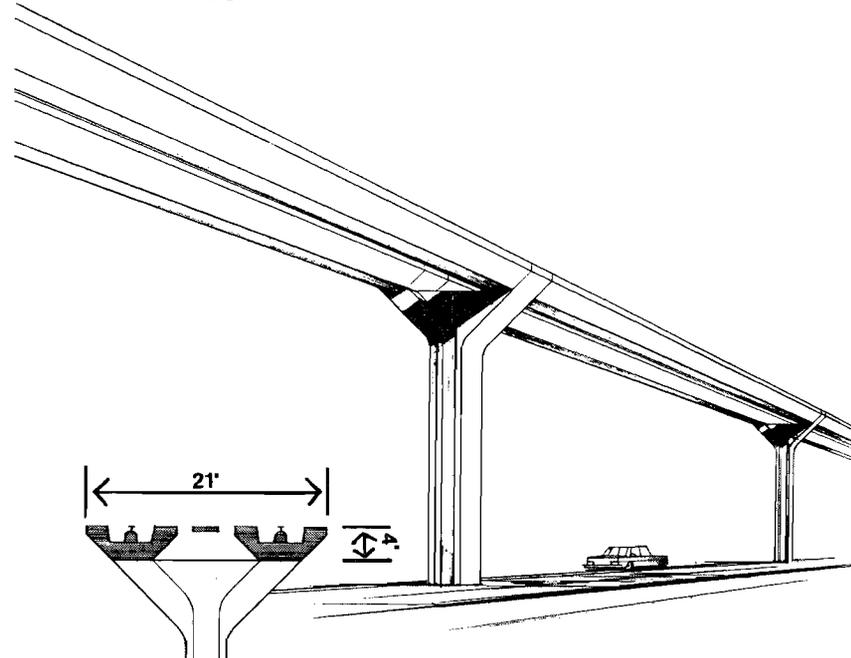


FIGURE 4-23C

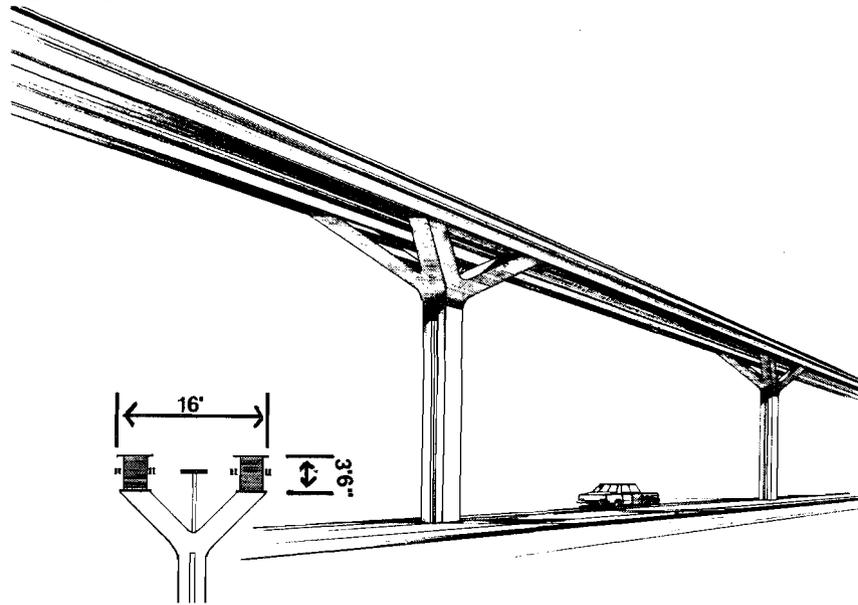


FIGURE 4-23D

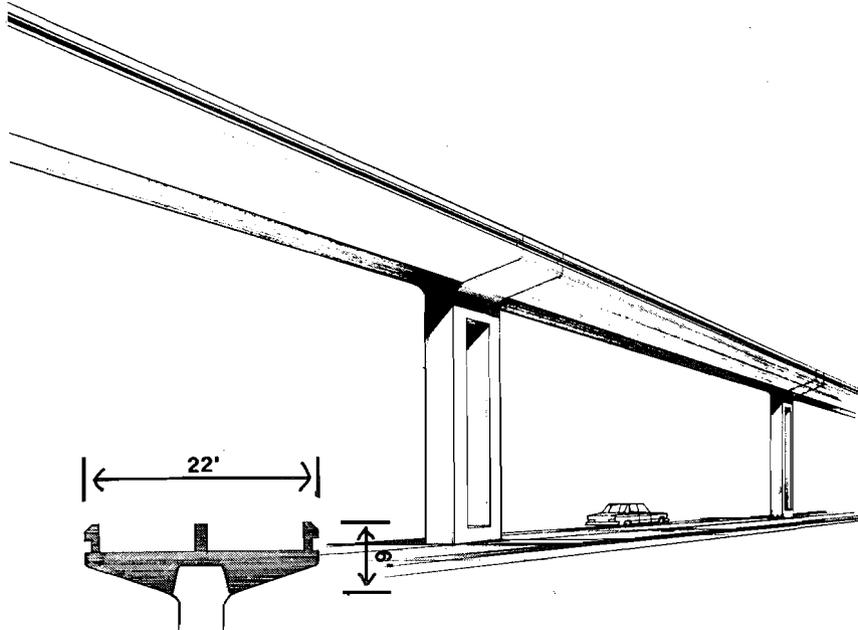
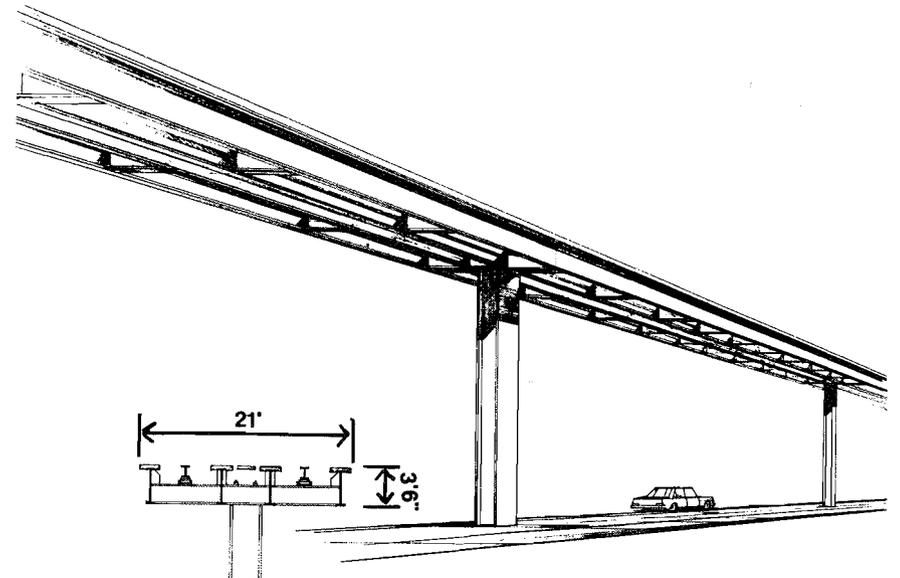


FIGURE 4-23E



- Careful structural design to produce a guideway which is not larger than necessary.
- Breaking large surfaces into a number of smaller ones.
- Providing accent to structural lines which parallel the length of the guideway by means of optical devices such as color.

Concrete is the preferred material for the DPM guideway and columns because of its cost advantage over steel. (A typical steel guideway section is shown in Figure 4-23E) Either pre-stressed or post-tensioned concrete sections will be used. A steel structure with a concrete running surface has some economic advantages over all concrete, especially for long, straight, and curved spans. However, the use of steel generally requires additional visual treatment that increases cost. For a mono-rail beam guideway, a box cross section is normally used and can be made from either concrete or steel.

The span length between columns will be determined in final design but will generally vary between 70 and 100 feet. Some street crossings will have spans on the order of 120 feet to minimize traffic disruption. Local building code seismic design requirements could result in a column cross section that could appear heavy. Consequently, some form of optical refinement may be used to improve the column appearance. As illustrated in the figures, various column shapes can be used varying from simple cylinder and rectangular cross sections to more complex geometric shapes, such as coupled columns.

The use of longer spans reduces the number of columns required, but would also increase column size. While fewer columns lessen visual impact, the increased size of the column requires more sidewalk space. Conversely, increasing the number of columns to achieve a lighter cross section and more graceful slenderness ratio increases both the foundation and column costs and also tends to produce a "picket fence" appearance. The structural cross section of the column can be arranged so that the column would be narrower in one dimension to take less sidewalk width. With this approach, a reduction in width can be achieved by dividing the width into two coupled columns.

Column sizes can vary. For square columns they may vary from 3 feet 3 inches to 4 feet 6 inches on a side. For coupled rectangular columns size may vary from 3 feet by 7 feet 6 inches to 3 feet 9 inches by 9 feet. Larger-sized columns would be used where either the guideway is offset to one side or where very long spans would be required.

An item of major importance in the design of the guideway structure is the juncture of the top of the column with the vehicle guideway. A careful marriage of form is required in order to enhance the linear quality of the guideway. In the final design of the guideway structure, sensitive design of the column capital will be used to achieve the most beneficial optical effect possible.

#### Section 4-231 Aesthetic Considerations During Final Engineering

Because the DPM is a demonstration project that must use one of several existing system technologies, the system supplier will not be chosen until after environmental clearances and a federal capital grant have been obtained. Consequently it is not possible to describe precisely what the system will look like at this time. The system described in this chapter is a composite of the systems currently available and likely to be candidates for implementation in Los Angeles. During Final Engineering, once the system supplier has been selected, architectural design of the guideway, stations and intercepts will proceed. A number of institutional and functional procedures have been identified to assure high quality of design for the system.

During Final Engineering, the aesthetic design and urban integration responsibility will rest with the System Architect retained by the City of Los Angeles DPM Project. The System Architect will define the form, finish, and urban integration criteria for the LADPM and conduct necessary coordination with developers, building owners, and the various City agencies to achieve a satisfactory aesthetic design. The Architect will work in conjunction with the System Contractor's architects and engineers, who will prepare the final designs and construction bid packages for guideway, stations, and related fixed facilities. The System Architect will also have responsibility for concept design through final design and construction documents for the bus/auto intercepts, and for system-wide graphics, fine art work, color schemes, finishes, landscaping, and furnishings for the LADPM stations and guideway.

Design reviews will be held at designated milestones during the final design process. Participants at these design reviews will include the Municipal Arts Commission, the State Historic Preservation Office, UMTA, and other agencies from

the city and state directly involved in the project. These design reviews will be part of the overall project schedule and will be arranged to allow timely input by the participants into the design process without causing project delays. Participants will be notified well ahead of time; they will be furnished with preparatory material to assist their participation; their comments will be noted during the review sessions; and the issues discussed and their resolutions will be the subject of action memoranda circulated to all participants after the design review meetings. Although final design decisions will rest with the City of Los Angeles, comments and suggestions of the design review participants will be carefully noted and taken into consideration during the decision-making process.

Some of the design review participants have statutory responsibilities over certain design elements of the system. For example, the Los Angeles Municipal Arts Commission must approve both preliminary and final designs of any project built on public property in Los Angeles. The Arts Commission will exercise this control over the DPM Program, and all designs must meet their approval before they are constructed.

Some of the issues that will be addressed during final design of the system have already been the subject of preliminary analysis. The System Architect will be responsible for developing a set of aesthetic guidelines that will inform and guide the final design process from preliminary design to final construction drawings. These guidelines will set the general theme of the system and establish criteria regarding shapes, finishes, textures and color of the system. These guidelines will expand and elaborate on aesthetic considerations such as the ones listed below.

- The DPM guideway should be designed to achieve a linear, unifying quality, and yet not be dominant in its surroundings. The guideway should be designed to convey a feeling of openness and transparency, and shadows should be minimized.

- Guideway and station surfaces should be rounded or tapered, and large planes should be broken up into several smaller ones.
- The bulky appearance of support columns can be improved by using coupled columns or some other similar treatment.
- DPM stations should be designed for viewing from below as well as from above.
- DPM station lighting used for safety reasons should also be used to give the station nighttime identity.
- Design of escalators, elevators, and stairs should communicate safety, ease of use, and the absence of barriers to the handicapped. Access to ramps, escalators, and elevators should be well-defined and uncluttered. Those sometimes bulky structures can be lightened by the use of glass.
- The environment created by DPM stations should convey a sense of security, direction, order, and cleanliness. Elevators and escalators should be arranged so as to not create conflict in traffic.
- Design of station mezzanine levels should be managed so as to diminish the tunneling effect created at street level, without reducing the mezzanine area to the extent where pedestrian traffic is restricted.
- The overall design of the DPM system should use materials, textures and colors to achieve coherence and to direct the proper entry and use of the system, as well as a sense of lightness.
- Signing should not be relied upon to explain the architectural environment, but should rather be used as a supplementary visual aid.
- Graphic design for signage should be consistent, use modern type faces, and should incorporate easily identifiable logos and symbols. A rule of thumb for directional sign letter size is for letters to be two (2) inches high with an increase of one inch for every 25 feet of viewing distance.
- Materials used throughout the system should be durable, resistant to the elements and physical abuses, maintenance free, easy to clean, fireproof, and capable of being formed into various aesthetic shapes.
- The selection of walking surface materials must be given careful attention, as they must be non-slippery, wear-resistant, and easy to clean. Potential materials include terrazzo, quarry tile, and cement. The use of colors in the walking surfaces is appropriate to carry out the general color scheme.

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#### 4-240 Maintenance And Storage Facilities

Maintenance activities for the DPM include both periodic and unscheduled servicing of vehicles and equipment. A maintenance and storage facility is proposed to be located in the vicinity of the Union Station intercept station. A general site plan of the maintenance and intercept facilities at Union Station is shown in Figure 4-24A. This area, comprising approximately 0.35 acre, is adequate for maintenance of the vehicle fleet currently projected for 1990, with room for expansion, if necessary.

The maintenance and storage facility would consist of a maintenance shop building, vehicle storage tracks (approximately 1300 feet in length), yard tracks, car washer, dispatch area, access roads, and miscellaneous yard facilities.

Daily inspection and interior cleaning of vehicles would be performed in the storage area and paved aisles would be provided along both sides of the storage tracks to facilitate these activities. Exterior car washing would be performed in a car wash facility adjacent to the storage area.

#### 4-250 Vehicle Description

Los Angeles Downtown People Mover vehicles will operate during peak periods as trains, capable of carrying approximately 50 seated passengers and up to 120 standees. Trains will be approximately 100 feet in length and, depending upon the manufacturer selected, may consist of as few as two or as many as six vehicles during peak periods of operation.

There is a wide range of currently available vehicle sizes. People Mover vehicles are as long as 39 feet and as short as 18 feet. The smaller vehicles require longer consists to provide the same line capacity. Those most suitable for use in Los Angeles range from 24 to 39 feet long, in height from 8 feet 3 inches to 11 feet 3 inches and in width from 6-1/2 feet to just over 9 feet.

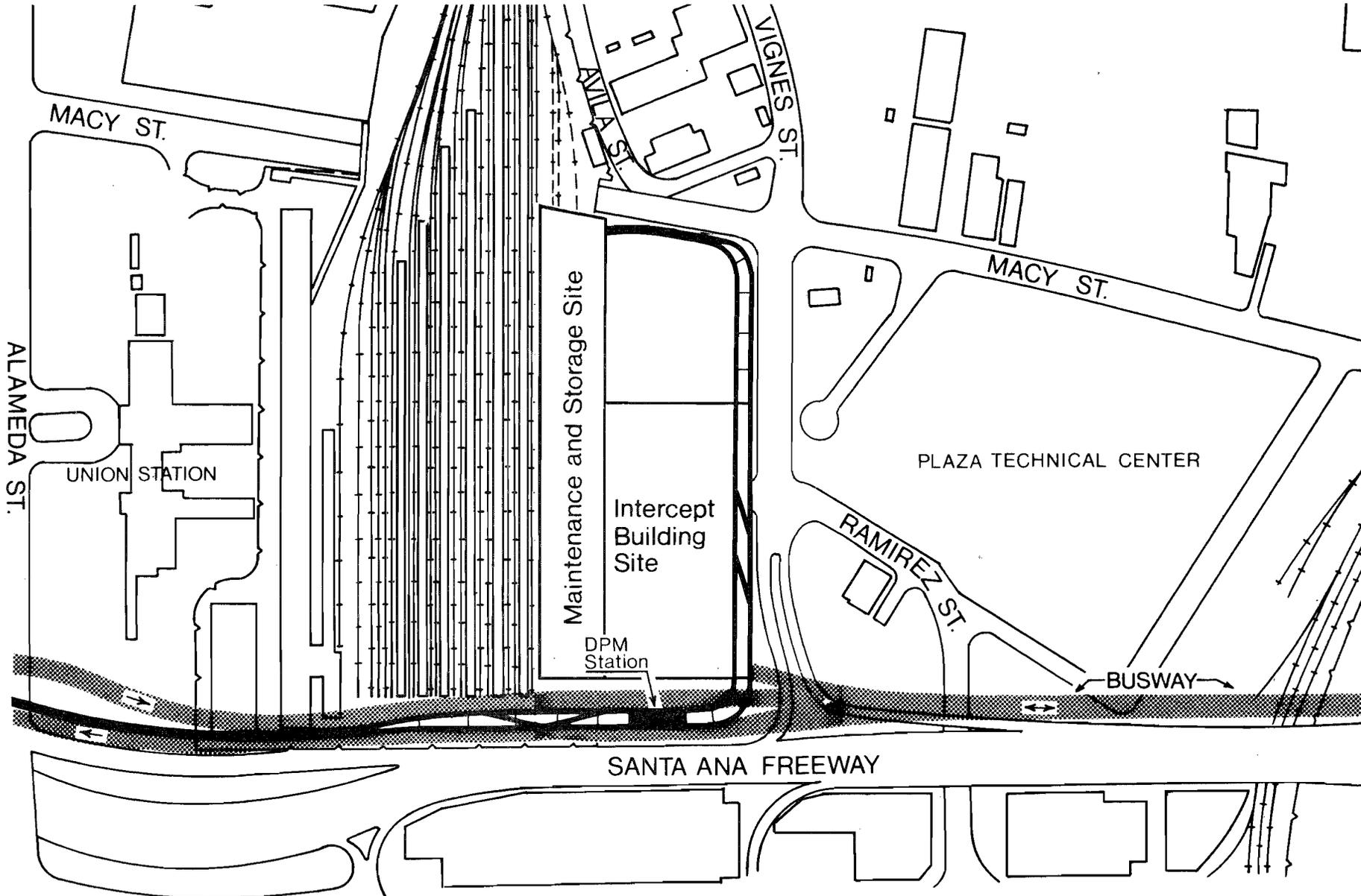
Most of the candidate DPM Vehicles are supported by rubber tires on concrete guideways, such as those pictured in Figures 4-25A & B. Another system uses a vehicle suspended on an air cushion and uses a linear-induction motor (Figure 4-25C); still another vehicle operates on a monorail guideway beam (Figure 4-25D). Figures on following page are placed counter-clockwise starting with A in upper left hand corner.

All of the vehicle systems being considered are electrically powered. Regenerative braking can be used as an energy conservation measure, which means that some portion of the energy generated by the vehicle braking system will be retained. Doors will be located on either side of the vehicle. The doors adjacent to the platform will be automatically opened and synchronized with platform door opening.

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Figure 4-24A

# UNION STATION DPM FACILITIES LAYOUT



# SOME TYPES OF PEOPLE MOVER VEHICLES UNDER CONSIDERATION

FIGURE 4-25A



FIGURE 4-25D

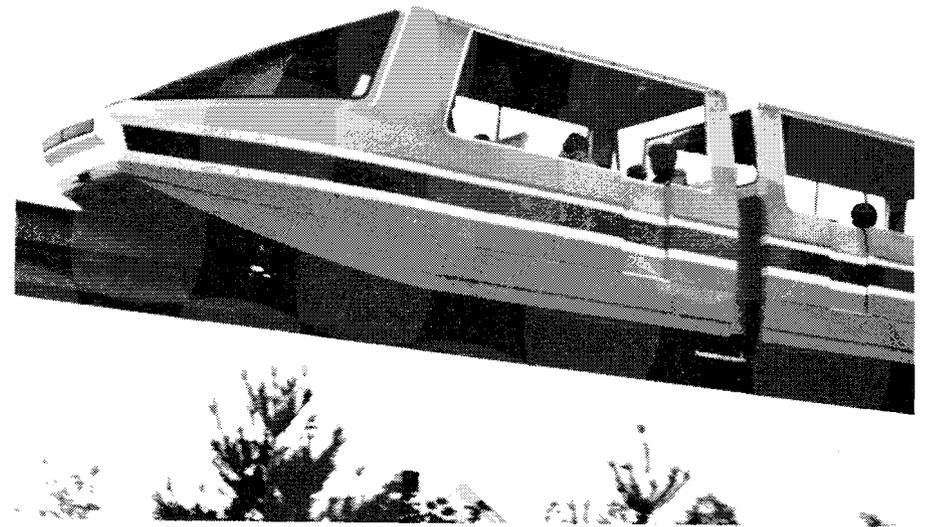
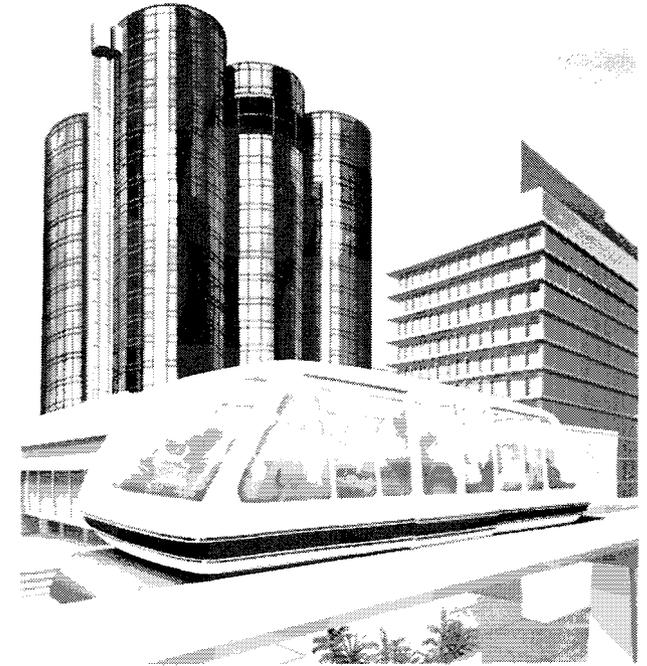


FIGURE 4-25B



FIGURE 4-25C



The vehicle will have a bright, highly visible interior to assure the security of both passengers and equipment. The interior of the vehicle will be designed to provide a comfortable ride, while minimizing the effects of both normal wear and tear and vandalism.

Each vehicle will be equipped with a public-address system and a two-way intercom system. The public-address system will allow announcements to the passengers, including identification of stations and instructions during an emergency. The intercom system will allow a passenger to communicate with the control center, if necessary.

Special consideration has been and will be given to the needs of the elderly and the handicapped in vehicle and station design. The vehicle floor will be at the same height as the station platform. Each car will accommodate wheelchairs.

#### 4-260 Related Facilities

##### 4-261 Power Supply System

The Los Angeles Downtown People Mover will receive power from the Los Angeles Department of Water and Power, distributed to secondary substations, located in the passenger stations. Here the power will be transformed to required service levels and fed to station service panels and guideway power rails.

Power transformers and distribution equipment will be housed in special vaults, located in the passenger stations. This equipment will control the traction power and the 120 volt single-phase power used for equipment and lighting.

The power distribution system will be designed so that substations can be fed from either of two sources, providing required safety of redundancy in the event of failure of one of the sources.

The power distribution system will be monitored and controlled from the control center. Special safety switches will be located along the system to remove guideway power in an emergency.

##### 4-262 Other Utilities

The two intercept stations, at the Convention Center and at Union Station, will have rest rooms and drinking fountains. Water service will, therefore, be required at these stations, as well as a minimal amount of gas service for water heaters. The remaining stations will require water only at the janitor closets for station maintenance.

The maintenance facilities will require both gas and water service for rest rooms, locker rooms, water fountains, vehicle wash facilities, and water and environmental heating.

#### 4-263 Operations Control Center

Management and supervision of the Los Angeles DPM will be accomplished from an operations control center located at the Union Station intercept. Display and control equipment will enable operating personnel to monitor and control the operation of the system. In addition, closed circuit television monitors will allow visual observation of stations.

The control center will be the focal point for response to emergency conditions. Fire, police, ambulance, or maintenance personnel will be contacted by operating personnel in response to alarms and communications located in the control center. Radio, public address, closed circuit television, and intercoms will be used as required, to coordinate evacuation and to reassure patrons.

#### 4-264 Fare Collection System

Riders will be able to enter the DPM system by using exact change or tokens for single rides, by using a free transfer from an SCRTD or other public bus (subject to agreement with the bus operating agencies), or by using a pass. Passes will be valid for an unlimited number of rides during a stated period (typically one month). Both tokens and passes will be available at numerous outlets and the intercept parking areas. Reduced fare passes or tokens will be available at these outlets for the elderly and handicapped.

Access to the station paid area will be through standard fare gates capable of accepting exact change, tokens, passes, or transfers. Swing gates will be provided for the handicapped.

#### 4-300 OPERATION OF THE SYSTEM

##### 4-310 Service

A DPM operating plan has been prepared based on 1990 patronage estimates and a baseline system which has a capacity of 42 passengers per vehicle. This operating plan is shown on Table 4-31A. Table 4-31B shows typical travel times between DPM stations. A trip from Union Station to Convention Center would require about 15 minutes. Average station dwell times would be about 25 seconds.

##### 4-320 Patronage

An estimated 72,400 trips would be made on the DPM during an average workday in 1990.

DPM trips can be divided into two major categories:

- Distribution trips are trips which have one end in the downtown, either an origin or destination; for example, a peak-hour trip from office to home.
- Circulation trips are trips which begin and end in the downtown; for example, a noon-hour trip from office to restaurant.

Table 4-32A shows the split of daily trips among regional bus transfers, auto transfers, and circulation trips throughout the operating day.

Figure 4-32A shows the estimated DPM ridership by hour of the day and by major category. Two prominent peaks are expected in the morning and early evening, reflecting rush hour demand. Another modest peak occurs during the midday period, when circulation trips reach their maximum.

Demand for the DPM is expected to be greatest during the afternoon peak hour (4:30 - 5:30 p.m.) with a total of 9,221 trips.

Figure 4-32B shows estimated station volumes and link volumes for the afternoon peak hour. Station volumes refer to total ONS and OFFS in both the northbound and southbound directions. The four stations with the heaviest peak-hour usage would be Union Station, Convention Center, Civic Center, and 7th and Figueroa Streets.

Link volumes represent the total number of passengers riding the DPM between adjacent stations. The maximum one-way link volume would occur between Pershing Square and Hill Street (3509 passengers/hour).

TABLE 4-31A

## 1990 DPM OPERATING PLAN

<u>Weekday</u>	<u>Nominal Headway</u>	<u>Consist</u>
6:00 AM - 9:00 AM	1.5 min.	4-car train
9:00 AM - 3:30 PM	3.0 min.	4-car train
3:30 PM - 6:30 PM	1.5 min.	4-car train
6:30 PM - 12:00 AM	4.5 min.	2-car train
<u>Saturday</u>		
6:00 AM - 8:30 AM	4.5 min.	2-car train
8:30 AM - 6:00 PM	3.0 min.	2-car train
6:00 PM - 12:00 AM	4.5 min.	2-car train
<u>Sundays &amp; Holidays</u>		
8:00 AM - 12:00 AM	4.5 min.	2-car train

TABLE 4-31B

APPROXIMATE STATION-TO-STATION RUN TIMES  
(in minutes)

<u>Station</u>	<u>Southbound</u>	<u>Northbound</u>
Union Station		
Federal Building	1.0	1.4
Little Tokyo	0.6	0.6
Civic Center	0.8	0.8
Hill Street	0.9	0.9
Bunker Hill	0.6	0.8
World Trade Center	0.8	0.7
5th & Figueroa	1.0	0.7
7th & Figueroa	0.9	0.8
9th & Figueroa	1.0	1.0
Convention Center	1.1	1.0

TOTAL ROUND-TRIP TIME about 27 minutes

AVERAGE STATION DWELL TIME = 25 seconds

DAILY DPM RIDERSHIP, 1990		AFTERNOON PEAK-HOUR RIDERSHIP, 1990	
Distribution Trips		Distribution Trips	
Trips to/from transit stops	34,159	Trips to/from transit stops	5,062
Trips to/from parking lots	12,529	Trips to/from parking lots	2,382
Circulation Trips	25,720	Circulation Trips	1,777
<b>TOTAL DPM RIDERSHIP</b>	<b>72,408</b>	<b>TOTAL PEAK-HOUR RIDERSHIP</b>	<b>9,221</b>

FIGURE 4-32A

### ESTIMATED DPM RIDERSHIP BY HOUR OF THE DAY, 1990

#### Distribution and Circulation Trips

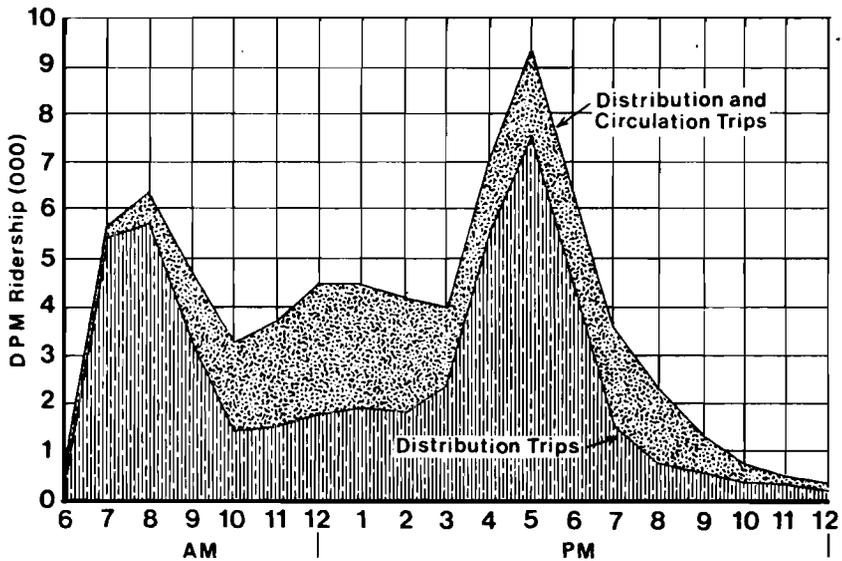
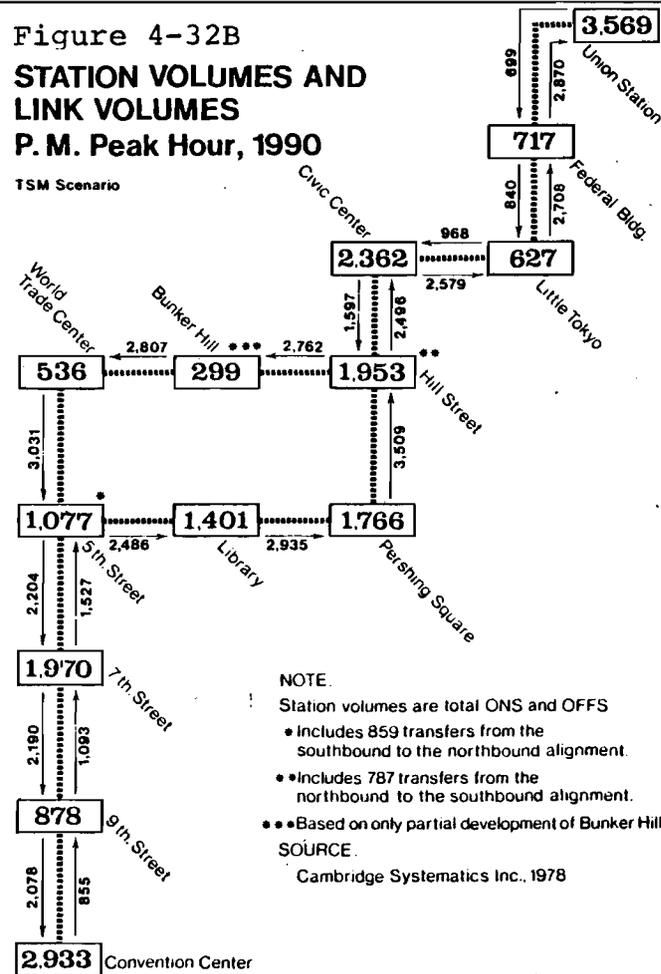


Figure 4-32B

### STATION VOLUMES AND LINK VOLUMES

#### P. M. Peak Hour, 1990

TSM Scenario



**NOTE.**

- Station volumes are total ONS and OFFS
- Includes 859 transfers from the southbound to the northbound alignment.
- Includes 787 transfers from the northbound to the southbound alignment.
- Based on only partial development of Bunker Hill

**SOURCE:**

Cambridge Systematics Inc., 1978

#### 4-330 Associated Transportation Improvements

Proposed improvements that would be constructed in conjunction with the DPM include:

- A 2,000-car parking garage and bus loading/unloading facility as part of an auto/bus intercept near Union Station.
- A 1,750-car parking garage and bus loading/unloading areas as part of an auto/bus intercept near the Convention Center.
- Ramp modifications and a new off-ramp from eastbound Santa Monica Freeway to the auto/bus intercept.

#### 4-331 Proposed Extension of the El Monte Busway

Caltrans is preparing final design plans for the El Monte Busway extension. A Caltrans milestone schedule dated October 17, 1979 projects a design public hearing in February, 1980 and beginning of construction in June, 1982. Construction is scheduled to be completed in June, 1984. The Busway design has been coordinated with the design of the People Mover and multi-modal center at Union Station. These projects have also been coordinated with longer range plans for Union Station which call for the addition of rapid transit and increased inter-city rail service. All interested agencies have participated in the planning of these facilities through a formalized interagency coordinating committee.

The preferred alternative for the Busway extension provides for a grade-separated roadway beginning just east of Mission Road and ending at Alameda Street. The roadway will bridge over Mission Road, the Los Angeles River, Center Street, and Vignes on and off ramps to the Santa Ana Freeway. The roadway is aligned generally adjacent to the north side of the Santa Ana Freeway. The design allows for extension of railroad tracks across the Santa Ana Freeway to permit run-through train service at Union Station. A loading-unloading platform is provided at the People Mover intercept to enable direct

vertical transfer to the DPM. Direct access ramps between the busway and intercept parking are also provided for carpools and vanpools.

Caltrans has published a report which indicates an intent to purchase Union Station, including property required for the Busway extension and the People Mover project. Appraisal of the property for the purpose of acquisition has been initiated and is being coordinated with the appraisals being performed under the People Mover program. Steps to acquire the property will also be coordinated.

#### 4-332 DPM Improvements at Union Station

Assuming that the San Bernardino Busway will be extended to Alameda Street, the Caltrans design will accommodate connections with the Union Station bus/auto intercept proposed as part of the People Mover project. This intercept would be located adjacent to and north of the Busway/Santa Ana Freeway and adjacent to and east of the Union Station platform area. It would be bounded on the north by Macy Street and on the east by Vignes Street. The intercept facility would consist of a six-level structure. It would include 2,000 parking spaces; people mover station; bus loading/unloading platforms; Amtrak ticketing/baggage facilities; intercity, tour, and airport bus facilities; and limited retail facilities.

The connection of the intercept to the Busway is designed to provide direct access to the carpool parking and bus/loading/unloading areas. Inbound traffic from the Busway would be able to continue to Alameda Street or turn into the intercept. Buses and carpools have separate access to the building. Outbound traffic from the intercept would merge with other outbound traffic entering the Busway at Aliso Street and Alameda Street.

#### 4-333 DPM Improvements at the Convention Center

The Convention Center Station would be located in front of the Convention Center, either on the west side of Figueroa or in the center of the street. Car-pool and auto parking would be provided for 1,750 vehicles on a parcel which is now private property on the east side of Figueroa Street, between Pico Blvd. and 12th Street.

#### 4-334 Proposed Freeway Ramp Improvements at the Convention Center

Additional improvements call for reconstructing the ramp connections from the Santa Monica Freeway to the northbound Harbor Freeway and to Pico Boulevard. A new ramp would be constructed from the existing eastbound Santa Monica Freeway to the northbound Harbor Freeway to Pico Boulevard off-ramp. This ramp would enable direct access to the Convention Center area for eastbound Santa Monica Traffic. A new ramp would be constructed from the westbound Santa Monica Freeway; it would bridge over the exit ramps to Pico Boulevard and join the northbound Harbor Freeway. These ramp modifications will not significantly change existing traffic patterns. For the most part, the construction will require acquisition of very little right-of-way. The surrounding area is residential. No relocation would be involved.

Caltrans has determined that it is feasible to provide improved access from the Santa Monica Freeway to the Convention Center. Caltrans has also indicated that implementation of projects to improve access to the Convention Center from both the Santa Monica and Harbor Freeways can be best handled as part of the Freeway Transit project on the Harbor Freeway. Preliminary engineering on that project has been initiated.

#### 4-335 DPM Parking Management

The peripheral parking facilities to be constructed at the Convention Center and Union Station are in conformance with the City of Los Angeles' Parking Management Plan, which has as its primary aim the voluntary reduction in the supply of off-street parking spaces in major activity centers, including downtown. Among the strategies included in the plan is the substitution of parking spaces at remote locations for required on-site spaces associated with new development. The DPM intercept facilities, with their 3750 remote parking spaces, provide a means to implement this parking substitution concept.

Coupled with the provision of peripheral parking for DPM users, each of the intercept facilities will also contain reserved spaces for carpools and vanpools, in an effort to encourage increased vehicle occupancy for downtown commuters.

#### 4-340 Interface With Other Modes

To achieve a well-integrated circulation/distribution system for downtown Los Angeles, a number of decisions and cooperative agreements will be required of participating agencies, including CRA, SCRTD, and Caltrans. Progress has already been made to this end, in terms of integrating plans for the El Monte Busway extension with plans for the Union Station bus/DPM terminal, as well as providing for direct passenger transfer to or from a future rapid rail starter line. Similar progress has been made in terms of anticipating the types of service changes that would be required. Continued efforts will be required in planning the location and frequency of downtown bus service.

CRA, Caltrans, and the SCRTD have developed plans for coordinating DPM, bus, and rail service under three alternative 1990 scenarios:

FIGURE 4-34A

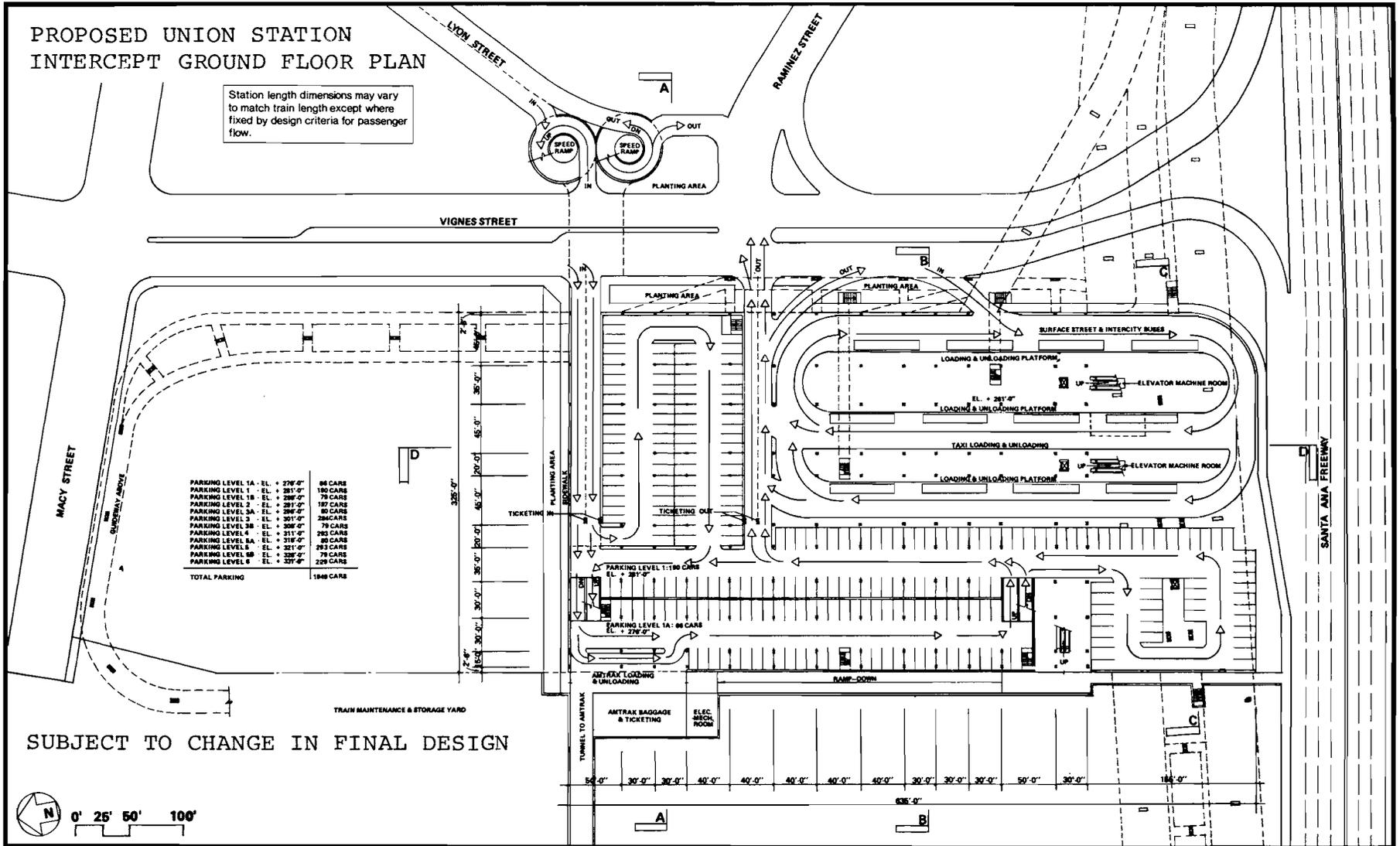




FIGURE 4-34C

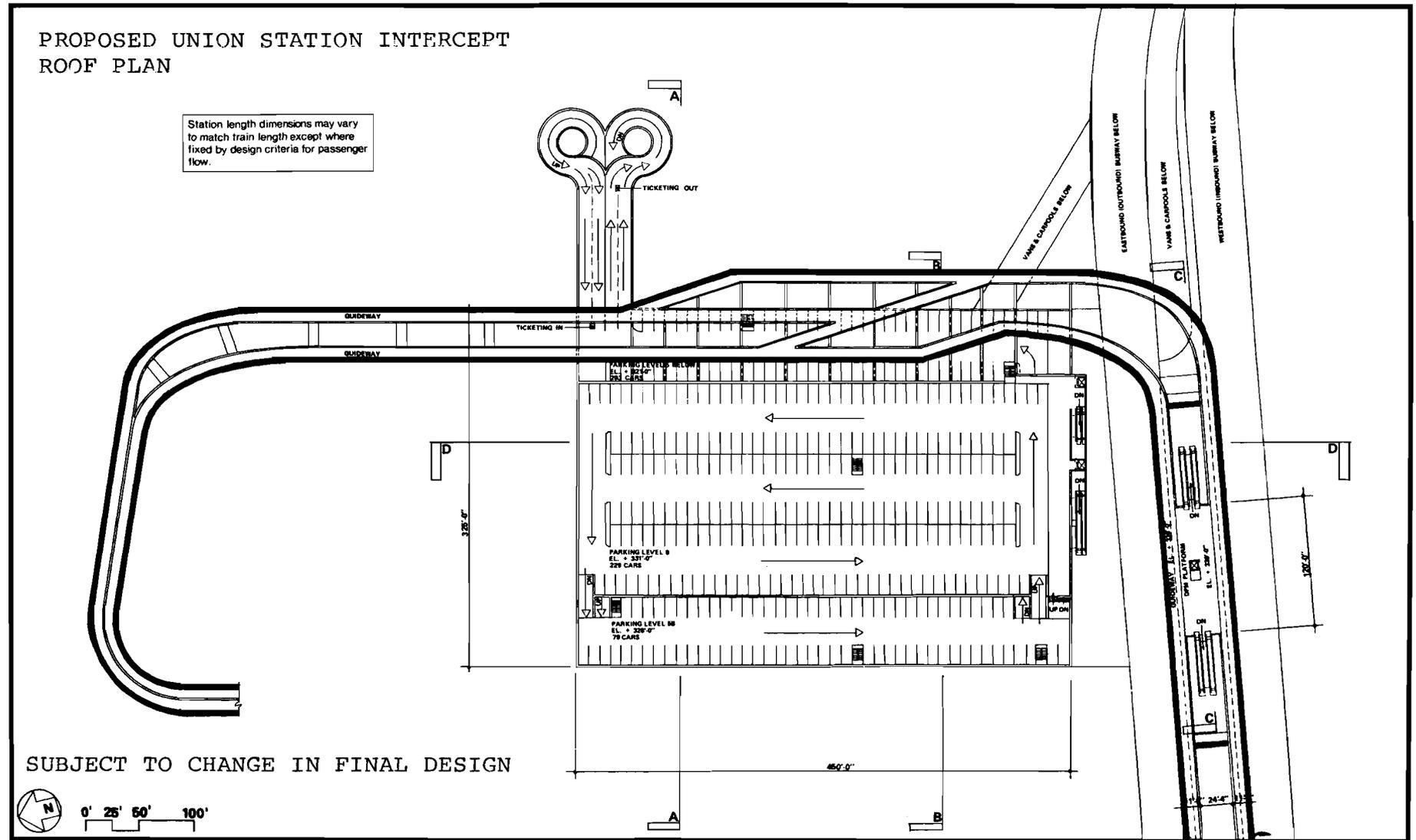


FIGURE 4-34D

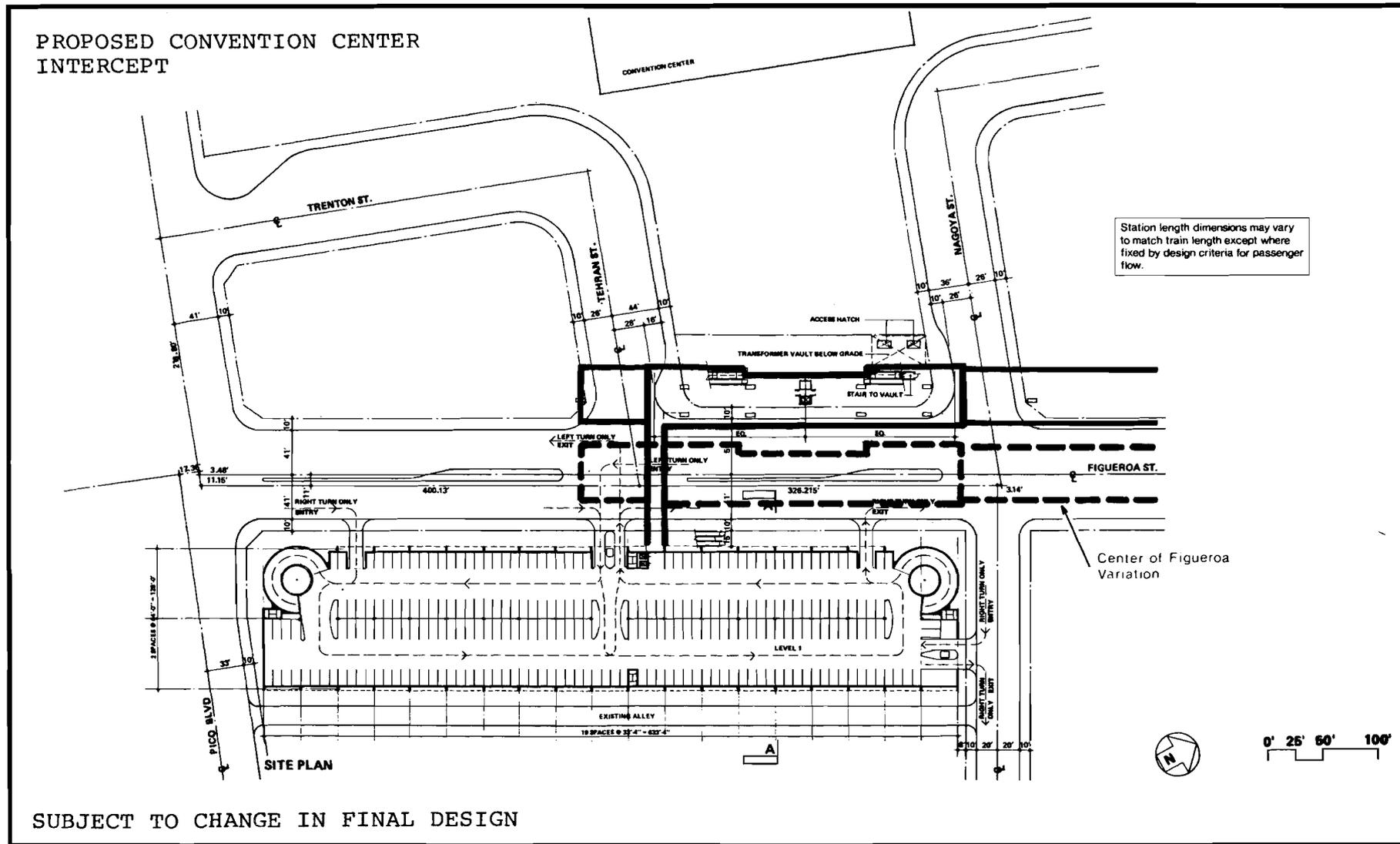


FIGURE 4-34E

# CONVENTION CENTER INTERCEPT SITE AS SEEN FROM CONVENTION CENTER MAIN ENTRANCE



- Transportation Systems Management (TSM) consists of an 11% increase in local bus frequency, together with a 30% increase in express bus frequency.
- Freeway Transit assumes implementation of the Caltrans freeway transit program. Five-minute, peak-hour headways would be provided on each of ten different freeway routes. Local bus frequencies would be the same as in the TSM case.
- Starter Line includes the Wilshire/La Brea alignment of the rapid transit starter line, and the freeway transit program, with the exception of the Hollywood busway. Local and express bus frequencies would be reduced.

The DPM system will connect other modes of transit for each of the three scenarios in one of two ways. First, some bus routes would be "intercepted" at the Convention Center and Union Station. (Illustrations of proposed intercept facilities are shown in Figures 4-34A thru 4-34E.) The alternative is a bus that continues on downtown after stopping at the DPM station. These buses that stop near DPM stations are designated as interface buses.

An example of an intercepted bus would be an inbound El Monte freeway flyer that would terminate its route at the Union Station Bus/DPM terminal. This is in contrast to an interface bus that would continue on downtown after stopping at Union Station. Similarly, an outbound freeway bus which begins its route at Union Station can also be called "intercepted."

In both the freeway transit and starter line cases, a total of 42 outbound buses would be intercepted in the peak hour. In the TSM case, 43 buses per hour would be intercepted. The primary source of intercepted buses would be the Harbor, Santa Monica, and San Bernardino Freeway corridors. In terms of interface, between 69 percent and 73 percent of all regional buses would have a DPM transfer capability to at least one of four major DPM stations: Union Station, Civic Center, 7th and Figueroa, and the Convention Center. All approach corridors

except that served by the Santa Ana Freeway will interface heavily with the DPM. A total of from 459 to 586 buses per peak hour would thus have a transfer capability to the DPM.

In the freeway transit case, although there would be considerably more express bus service, new freeway transit routes operate on a "through routing" basis, and therefore the level of intercept is not increased. Both the starter line and Freeway Transit programs, however, would increase the level of transit "interface" with the DPM.

Downtown rapid transit stations located at 7th and Flower, 5th and Broadway, 1st and Broadway, and Union Station would allow transfer to the DPM. Headways are expected to be four minutes in the peak hour and six minutes during the noon hour.

Interface with the minibus system is also made possible under an alternative 1990 routing which would provide DPM transfer capability at Union Station, Little Tokyo, and the Convention Center.

Interface of the DPM system with the automobile is possible at both Union Station and the Convention Center. At Union Station a total of 2,000 auto parking spaces will be provided, of which 750 will be allocated to carpools. At the Convention Center, 1,750 parking spaces will be provided, of which 750 will be reserved for carpools.

The DPM station at Union Station also provides for a connection to Amtrak service. Currently, Amtrak operates six round-trip trains to San Diego per day, one outbound and one inbound to Chicago, the same to Seattle, and a three-times weekly train to New Orleans.

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#### 4-350 Provisions For Elderly And Handicapped

DPM policies and concepts have been developed to ensure that DPM vehicles and facilities will be fully accessible to elderly and handicapped persons. These policies and concepts are in compliance with American National Standards Institute standards and Section 504 of the Rehabilitation Act of 1973. During final system design, these policies and concepts will be fully implemented.

Stations and intercept facilities, as well as DPM vehicles, will be clean, attractive, and well-lighted, and will be planned so that, as much as possible, elderly and physically handicapped patrons can move unassisted through them with a minimum of crowding and a maximum of safety. Stations, intercept facilities, operations control center, and yard and shop areas will also be planned to enable physically handicapped persons full access to working areas so they may be given nondiscriminatory consideration for employment. DPM facilities will incorporate suitable signing and use of color, sound, and light to enable elderly and physically handicapped patrons to know where they are and where they are going. A public address system will function in the stations and on the trains. Graphics will be bilingual (English and Spanish). International symbols will be used wherever appropriate.

Preferential parking spaces will be provided to handicapped patrons at the intercepts. Where provided, public rest rooms, drinking fountains, and telephones will be accessible to physically disabled people.

At the stations, elevators will be provided for the physically handicapped. Special fare gates will be provided. Platform screens will be used to prevent guideway access unless a vehicle is present. Emergency and assistance phones will be available to patrons, as well as a public address system for announcements, and closed circuit television monitoring.

In the vehicles, a specific area will be set aside for individuals in wheelchairs. The height of the vehicle floor and the station platform will be the same, with a horizontal gap not to exceed 1.5 inches.

In both the operations control center and the yards and shops, complete access will be provided to the physically handicapped employees, including office areas, rest rooms, drinking fountains and telephones.

#### 4-360 Safety And Security

Both the general public and federal and local transportation regulatory bodies require levels of safety and security in new transportation systems which are sufficiently high as to permit virtually no incidents. The following is a summary of these requirements and considerations.

The DPM system will be designed and operated in such a way as to equal or exceed the safety of currently operating systems in the United States, using existing and currently acceptable practices and procedures. Safety system design will be achieved by eliminating all single points of potential hazard and controlling combinations of events which could result in injuries, fatalities, major system damage, or system loss.

A primary criterion in designing the DPM safety system is to anticipate every possibility of failure of a system element or combination of elements or events that could result in injuries, fatalities, or system damage. System dynamic elements will be designed to fail in a safe manner.

The supplier selected to implement the system will be required to develop a safety program which addresses safety, fire protection, security, and human factors. This program will:

- (1) establish appropriate goals and criteria and implement them early in the design phase;
- (2) continually review the design

against the goals and criteria; (3) identify and assess hazards early in the design phase; (4) take appropriate action to eliminate or minimize these hazards; and (5) verify the systems to be safe before opening for service. All of these aspects will be addressed and documented in a Systems Safety Program Plan.

In terms of fire protection, the DPM system will be designed and implemented so as to achieve a level of protection at least equivalent to that which is currently being provided through the local building code. Requirements will include: noncombustible station designs, fire and smoke retardant vehicle interiors, emergency exits, and emergency alarm systems.

A Patron Personal Security plan has been developed in conjunction with the Los Angeles Police department. Personal Security will involve the use of closed circuit television, security communication systems, public address systems, remote assistance devices (such as warning lights), intrusion detection alarms, and special assistance techniques for handicapped patrons. Some or all of these techniques and methods will be employed throughout the system to maintain security for both patrons and DPM personnel. Although the operating vehicles and stations are unattended, the system will have highly visible and well lighted areas and vehicles, together with remote visual and audio monitoring, and roving patrols to maintain security.

#### 4-370 Operating Employees

The DPM system would employ a staff of about 80 people distributed among three shifts. Operation of the system would require 11 managers/administrators, 25 operations personnel and 44 maintenance personnel.

#### 4-380 Projected Energy Requirements

The DPM system will consume operating energy in terms of both

traction power and power to operate various subsystems. Traction power required by the DPM system is based on an assumed unit consumption of 4.6 kwh/vehicle mile, which represents current operational experience. Table 4-38A shows total 1990 annual DPM system power consumption.

TABLE 4-38A  
1990 ANNUAL DPM POWER CONSUMPTION  
(in kwh)

Traction Power <sup>(1)</sup>	12,249,600
Escalators <sup>(2)</sup>	2,811,800
Station Lighting <sup>(3)</sup>	1,483,500
Maintenance Building <sup>(4)</sup>	525,600
Control Center <sup>(5)</sup>	91,800
Miscellaneous <sup>(6)</sup>	<u>14,300</u>
SUBTOTAL	17,176,600
10% Contingency	<u>1,717,600</u>
TOTAL	<u><u>18,894,200</u></u>

(1) Based on vehicle consumption rate of 4.6 kwh/vehicle mile. Includes 8% line losses.

(2) Based on 58 escalators, operating at a rate of 7.5 kwh per hour.

(3) Based on power consumption ranging from 5-11 kwh/hour for a total of 13 stations.

(4) Based on a consumption rate of 60 kwh/hour.

(5) Based on a consumption rate of 12 kwh/hour.

(6) Includes subway ventilation requirements.

4-390 Projected Operating Costs

Table 4-39A presents operating costs for initial system operation in 1983 and 1990. These projected costs are based on the reference system design and the operating plan of Section 4-300.

Table 4-39B lists proposed sources of operating funds.

TABLE 4-39A

ESTIMATED OPERATING COSTS  
(All costs in 1978 dollars)

<u>Costs Elements:</u>	1983	1990
Labor (including overhead)	\$2,626,000	\$2,626,000
Power	536,000	568,000
Materials and spare parts	255,000	269,000
Contract services	323,000	323,000
Liability fund	240,000	269,000
Intercepts	<u>385,000</u>	<u>385,000</u>
TOTAL	\$4,365,000	\$4,440,000 ■

TABLE 4-39B

	RECOMMENDED							
	SOURCES OF OPERATING FUNDS							
	FISCAL YEAR (Millions of 1978 Dollars)				FISCAL YEAR (Millions of Inflated Dollars <sup>1</sup> )			
	1983-84	1984-85	1989-90	1994-95	1983-84	1984-85	1989-90	1994-95
DPM Passenger Revenues (10 Cents equivalent fare in 1976 dollars) <sup>2</sup>	\$0.93	\$2.10	\$2.10	\$2.10	\$1.40	\$3.37	\$ 4.73	\$ 6.63
Parking Gross Revenues <sup>3</sup>	0.71	0.71	0.75	0.75	1.07	1.14	1.70	2.37
Bus Terminal Lease	0.0	0.10	0.10	0.10	0.0	0.16	0.23	0.32
Private Sector Revenues								
Ads and Concession Rentals	0.14	0.20	0.27	0.27	0.21	0.32	0.61	0.85
Station Retail Leases	0.0	0.13	0.13	0.13	0.00	0.21	0.29	0.41
Air Rights Leases	0.0	0.13	0.13	0.13	0.00	0.21	0.29	0.41
Value Capture Revenues	0.0	1.20	1.29	1.29	0.00	1.93	2.91	4.07
Subtotal Private sector	\$0.14	\$1.66	\$1.82	\$1.82	\$0.21	\$2.67	\$ 4.10	\$ 5.74
UMTA Section 6 Demonstration Funds	2.59	0	0	0	3.87	0	0	0
Total Operating Funds DPM and Intercepts	\$4.37	\$4.57	\$4.77	\$4.77	\$6.55	\$7.34	\$10.71	\$15.06
Less Operating Costs for DPM and Intercepts	4.37	4.37	4.44	4.44	6.55	7.00	10.00	14.03
Net Operating Contingency	\$0.0	\$0.20	\$0.33	\$0.33	\$0.00	\$0.34	\$0.71	\$1.03
Net Contingency Percentage	0%	5%	7%	7%	0%	5%	7%	7%

- 1) Based on an inflation rate of 7% compounded annually.
- 2) A ten cent equivalent fare in 1976 dollars, when inflated to 1983, represents an average fare of 18 cents, or a 25 cent base fare with Elderly and Handicapped and monthly pass discounts.
- 3) Covers the operating cost of intercept parking and the operating cost of transporting parkers on the DPM.

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#### 4-400 CONSTRUCTION

##### 4-410 Design And Construction Schedule

It is estimated that a 39-month time period would be required to complete design, construction, and testing of the DPM system and all of its major components. An estimated schedule has been prepared of events which would take place during this time period. Figure 4-41A represents a reasonable estimate of task duration and sequencing, based on current information. The duration indicated for each task represents the total time required to complete that phase of construction activity. The time at any one location will be considerably shorter than the time indicated.

Construction of the DPM system is concerned with four major areas: aerial guideway, cut and cover subterranean guideway/station, aerial stations, and intercept/maintenance facilities. Construction of the aerial guideway and aerial station portions of the system will constitute the major construction effort. In order to complete construction of the aerial guideway within a 39-month schedule, it will be necessary for work to begin in a number of locations at the same time. This means that a number of locations along the route will be in various stages of completion at the same time. This approach is designed to minimize disruption. Table 4-41A shows a typical construction cycle for a section.

Construction of the aerial stations will require the same type of construction activities as for the aerial guideway. In station locations, construction of both the station and guideway sections will occur at the same time, to minimize disruption and increase construction efficiency. Stations will require additional interior equipment finishing work

that the guideway will not. Most of this work will take place after the station structure has been completed and, therefore will produce minimal disruption to businesses or surface traffic.

For the cut-and-cover guideway and station in Bunker Hill, the work differs from other areas in that excavation and heavy equipment employed will be much greater. These areas are currently undeveloped and therefore disruption will be minimal. The site of the maintenance facility will be cleared early in the overall construction process to provide for storage and security of construction equipment. The maintenance facility itself will be partially completed before the arrival of the vehicles, in order to conduct tests and check-out and to provide storage space.



TABLE 4-41A

## Typical Construction Sequence And Duration

## PHASE 1 - FOUNDATIONS

Construction Steps

	Time
1. Restripe street	
2. Close curb lane	
3. Excavate footings	2 weeks
4. Drill piles and pour footing	
5. Temporary cover excavation	2 weeks

Construction Steps (Figueroa, center median segments)

1. Close curb lane	
2. Cut sidewalk and install new curbing*	2-4 weeks
3. Breakout old curb and install new base*	
4. Restripe street	
5. Close centerlanes	2 weeks
6. Excavate footings	
7. Drill piles, pour footings, and install temporary covers	2 weeks
8. Complete center median curbing	2 weeks
	(2-4 week gap)

## PHASE 2 - GUIDEWAY SUPPORTS

Construction Steps

1. Set Steel	1 week
2. Construct forms and pour	2 weeks
3. Strip forms	-
4. Restore sidewalk	2 weeks
	(2-4 week gap)

## PHASE 3 - GUIDEWAY

Street and Sidewalk Disruption

- Phase 1 Approximately 10-15 feet from curb and access restricted during entire phase, at each column site. Temporary sidewalk disruption and detour.
- Phase 2 Lane 1 and curb access restricted during entire phase. (Significantly reduced, if precast).
- Phase 3 Complete sidewalk closure during guideway erection and complete or partial street closure, depending upon particular street involved.

TOTAL PERIOD: 14-18 weeks  
 TOTAL PERIOD (Figueroa, between 7th & 3rd Sts): 18-24 weeks

\* These steps apply only to the segment between 6th & 7th Streets.

4-420 General Construction Methods

The following section describes typical DPM construction practices. The source of this information is Task 3.29, Construction Process Memorandum, Kaiser Engineers/DMJM, February 13, 1978.

4-421 Aerial Guideway

Working intermittently throughout the construction process, crews of surveyors locate and mark foundation, column support, and guideway section locations. At all foundation sites, existing utilities must be located and some possibly relocated. At this same time, areas will be excavated for column foundations. Street alignment modifications may also begin at this time.

Depending upon the geology or subsurface conditions at each foundation site, individual decisions will be made to use either caissons or piles to support the column foundations. Caissons are large cross section concrete columns that extend to the depth of bedrock or clay. Holes would be drilled with an auger, lined with steel, concrete poured, and the liner removed. Piles are clusters of smaller cross section columns which extend to a depth less than bedrock. The pile drilling procedure is the same as for caissons, except that a smaller diameter auger is used.

Once the foundations are in place, concrete footings or pile caps are placed on top, to which the guideway column supports are attached. The guideway column supports may be steel, precast concrete, or poured in place. Some locations will require bents (two single columns joined by a horizontal beam). Where precast or steel columns are used, they are

brought to the site by truck, lifted onto the foundation with cranes, and bolted in place. "T" heads (top section upon which the guideway will rest) are then bolted to the columns. Where poured concrete columns are used, vertical steel reinforcing will be attached to the foundation, wooden form work will be constructed, and the concrete will be poured.

As soon as guideway supports are in place, streets and sidewalks will be restored with temporary paving. Final restoration will occur after all street-level activity is completed.

The next step in the process is installation of guideway sections, which may be made of steel, precast concrete, or poured concrete, and the selection of which will be dependent upon difficulty of fabrication, ease of installation, and degree of disruption anticipated. For both precast and steel sections, it is assumed that installation will take place during late night hours to minimize disruption. These sections would be brought in by truck, hoisted into place with cranes, and secured to the T-heads. Where poured-in-place sections are used, forms would be constructed, reinforcing steel installed, and concrete poured. Longer construction time and more disruption are anticipated where poured sections are used.

A series of steps then take place after the guideway sections are installed. Depending upon the technology chosen, a running surface may be poured on top of the guideway. Vehicle guidance is then added. This is done by using guide beams, guide rails, or metal plates, which would be hoisted up to the guideway, aligned, and bolted down. The power rail, which supplies power to the vehicles, would be installed on the guideway and connected to electrical substations. Then the connections for train control and communications are installed, either as brackets or embedded in the concrete guideway.

After the guideway is in place, street access is no longer needed and streets and sidewalks can be permanently improved. New curbs, gutters, sidewalks and paving will be installed, and traffic and street lights can be moved or installed. Other activities will complete the guideway construction process, including landscaping, guideway lighting, and other finish work.

#### 4-422 Aerial Stations

Construction of aerial stations involves many of the same activities as guideway construction. However, once the columns have been installed, station construction then requires the following activities.

After the station supports have been installed, either steel or precast concrete plates are placed on top to form the station platform, and the joints between sections filled. If a platform must be poured, temporary shoring and forms will be put up, reinforcing added, and the concrete poured.

Other work which will then take place consists of installing stairs (precast concrete units or poured in place) and escalators and elevators, which would be assembled, installed, and tested on each site.

Once the station structure is completed, station systems would be installed, including the electrical system, lighting and communications, fare collection equipment, train control, heating and air conditioning, and plumbing. After the system connections are made, interior finishing takes place, such as panelling and painting. Finally to be installed are station graphics and equipment such as change machines, turnstiles, water fountains, and light fixtures.

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#### 4-423 Cut-and-Cover Guideway and Station

After survey and utility work are completed, and before extensive excavation begins, the site would be enclosed by a temporary earth support structure and braced to withstand lateral pressure. Shoring is installed, consisting of horizontal or inclined steel beams, running from wall to wall or from floor to wall.

Because the site for the Bunker Hill station is expected to be vacant at the time of construction, traffic may be detoured to one side of the site. If, however, street decking is required, steel beams would be slung across the top of the retaining wall and a temporary street surface would be formed from timber.

After the earth retaining system is in place, earth would be excavated and removed from the site. Then the floor, walls and roof would be poured, using standard concrete construction techniques.

A ventilation system would then be installed, consisting of a vertical lined shaft at each end of the station, and fans would be installed. The outside of the tunnel or station would then be waterproofed.

At this point in the process, the same activities would take place as for aerial guideway and stations. These activities consist of installation of guidance, power rails, control and communication, stairs, elevators, and interior finish work.

After the tunnel is waterproofed and while guideway and station finish work is going on, the space between the walls and the inside of the tunnel is filled with compacted soil and gravel. Utilities would also be relocated to their new positions. When backfilling reaches street level, temporary decking (if used) would be removed, at which time the street surface would be restored.

#### 4-424 Maintenance/Storage Facility, Intercepts

Construction activities required for the maintenance facility, as well as the intercepts, include the general tasks of site clearance, grading, general structure work, and interior finishing. No unusual construction practices would be required. What does distinguish the maintenance facility from other aspects of system construction would be the installation of storage guideway and system repair facilities. Also to be constructed at the intercepts would be access ramps, parking facilities, and control devices for both automobiles and buses.

#### 4-430 Energy Requirements For Construction

Table 4-43A shows the estimated consumption of energy required for the construction of the DPM system. The estimate is expressed in thermal units and is derived from information presented in a report prepared by the United States Congressional Budget Office. The unit energy consumption figures used, both for guideway and vehicles, reflect fabrication, assembly, transportation, and installation of these system components.

TABLE 4 - 43A  
ESTIMATED ENERGY REQUIRED FOR CONSTRUCTION  
OF THE DPM SYSTEM

GUIDEWAY

TOTAL ONE-WAY GUIDEWAY LENGTH = 33,900 feet  
PORTION ELEVATED = 32,600 feet  
PORTION IN SUBWAY = 1,300 feet

## ENERGY UNITS: (1)

ELEVATED = 2160 KWH/ft.  
SUBWAY = 4870 KWH/ft.

## ENERGY REQUIRED TO CONSTRUCT GUIDEWAY:

ELEVATED =  $2160 \times 32,600 = 70.416 \times 10^6 \text{ KWH}$   
SUBWAY =  $4870 \times 1,300 = 6.331 \times 10^6 \text{ KWH}$   
TOTAL =  $76.747 \times 10^6 \text{ KWH}$

VEHICLE MANUFACTURE

TOTAL VEHICLES REQUIRED - 15 TRAINS at 4 CARS = 60 VEHICLES

ENERGY UNIT: 500,000 KWH/VEHICLE. (2)

VEHICLE MANUFACTURE ENERGY =  $500,000 \times 60 = 30 \times 10^6 \text{ KWH}$

TOTAL CONSTRUCTION ENERGY REQUIRED =  $106.747 \times 10^6 \text{ KWH}$

(1) Source: "URBAN TRANSPORTATION AND ENERGY: THE POTENTIAL SAVINGS OF DIFFERENT MODES," prepared by the Congressional Budget Office, September 1977.

(2) Source: "INDIRECT ENERGY CONSUMPTION FOR TRANSPORTATION PROJECTS," prepared for California Department of Transportation, Division of Transportation Planning, by DeLeuw, Cather and Company, October 1975.

Vehicle manufacture energy reported in this document is for a group rapid transit vehicle of 12,000 pounds in weight, and has a value of 180,000 KWH/VEHICLE. The baseline vehicle for the analysis has weight of 20,000 pounds. Using a simple factoring yields a per vehicle manufacture energy of approximately 500,000 KWH.

## 4-500 CAPITAL COSTS AND PROPOSED SOURCE OF FUNDS

Table 4-50A summarizes capital cost estimates for the people mover and expected funding sources.

UMTA Section 3	\$118.1
Federal Aid Interstate (FAI)	25.0
State Proposition 5	15.9
State Senate Bill 1879 (Funding for Multimodal centers)	2.3
Local Land Contributions	12.0
Local Cash Contributions	1.7
TOTAL	\$175.0*

\*Millions of inflated dollars

TABLE 4-50A

## DPM SYSTEM ELEMENTS - CAPITAL COST ESTIMATES

(All Costs in Millions of Inflated Dollars at 7% per Annum)

<u>People Mover System</u>	<u>(Millions of Dollars)</u>	
Vehicles	\$ 23.6	
System Equipment	24.1	
Guideway	31.6	
Stations	20.2	■
Right-of-Way	13.2	
System Testing	1.8	
Project Management	5.2	
Contingency Reserves	<u>10.1</u>	■
TOTAL - PEOPLE MOVER CAPITAL COSTS (1982)	\$129.8	■
<u>Regional Bus/Auto Intercepts</u>		
Convention Center Intercept Facility		
Design and Construction	12.0	
Right-of-Way	3.6	
Project Management	0.7	
Contingency Reserves	<u>1.6</u>	
TOTAL - CONVENTION CENTER INTERCEPT (1982)	17.9	
Union Station Intercept Facility		
Design and Construction	21.3	■
Right-of-Way	2.6	
Project Management	1.0	
Contingency Reserves	<u>2.4</u>	■
TOTAL - UNION STATION INTERCEPT (1982)	<u>27.3</u>	■
TOTAL DPM SYSTEM*	\$175.0	

\*(Includes \$29.2 Million Escalation)



## 5-100 CONSTRUCTION IMPACTS AND MITIGATION

It is estimated that 39 months would be required to complete construction of the DPM system, including utility relocation, street improvements, guideway and supports, stations, intercept facilities, installation of operating components and vehicles, and system testing. For a complete description of the construction schedule, see Section 4-400.

Utility relocations would take place early, after project start and well ahead of actual guideway construction. The only two areas of significant utility relocation are along 5th Street and portions of Figueroa where the guideway is located over the sidewalk.

For a typical city block, construction tasks are expected to take approximately 14 to 18 weeks, with construction taking place in three phases: preparing for and installing foundations; installing guideway supports; and installing guideway sections. The first two of these phases would require about five weeks and the third would take about one week. There would be gaps in time between the phases of about two-four weeks each. Thus, the disruptive effects are expected to be of moderate duration and temporary, as construction moves from one location to the next. For those sections of the route in the center of Figueroa, blocks along Figueroa would experience an increase in Phase I work, due to street widening activities. The total time frame for one block would be increased to about 18-24 weeks.

Impacts and discussions are organized in the following categories:

- Impacts on the Natural Environment
- Impacts on Land Use and Urban Development
- Impacts on Socio-Economic Environment
- Impacts on Transportation

5-110 Impacts Of Construction On The Natural Environment

## 5-111 Topography, Geology, and Soil Characteristics

Constructing the proposed DPM system will require excavating for foundation, for both the intercept facilities and for guideway column footings throughout the length of the route. Consultation with the City Bureau of Engineering indicated that the soil characteristics and geology in the project area are such that these construction activities should present no difficulty. (Bureau of Engineering, 1976)

## 5-112 Seismicity

As discussed in section 2-120, Southern California is a seismically hazardous area, and therefore the potential for seismically produced damage to structures must be explicitly considered in their design. The potential risk is present both during the construction of the DPM and after it is operational. However, during the construction period, the response to this risk can be only to provide adequate construction safety barriers and other such precautions, so as to minimize the potential for personal injury, should an earthquake take place as the system is being constructed. The long term response to seismic risk is to explicitly incorporate it into the design of the system's structural components. This response is discussed in section 5-212.

## 5-113 Flood Plains

Construction of the DPM would have an insignificant impact on the runoff and storm drain systems in the area, and therefore construction activity is expected to have no detrimental impact from a flood hazard perspective. (Bureau of Engineering, May 1978)

## 5-114 Water Quality

Perched ground water may be found in some areas of the CBD at a depth of from 21 to 33 feet below the surface. This perched water is of limited quantity and pressure, not truly representing the water table, which is found probably 120 feet below the surface. Footings for the DPM on the tunnel section will be well above the water table. Should perched water be encountered, drainage might occur into the tunnel if the bottom of the water zone is above the invert of the tunnel. The drainage would occur until the water zone is sufficiently drained so that a hydraulic head no longer exists between the tunnel opening and the water zone. The resulting minimal quantities of perched water can be easily pumped out of the tunnel. Soil settlement resulting from this pumping of perched water, is not expected to be excessive, and therefore will not be a difficulty. (Bureau of Engineering, 1976)

Because the amounts of excavated material will not be great, and further because this material will be expeditiously removed, there will be no significant erosion or runoff problems during storm periods.

## 5-115 Vegetation and Wildlife

The vegetation within the Central Business District that will be impacted during the construction phase of the DPM will be mainly trees and bushes along the alignment. Existing street trees that will be affected during the construction are as follows:

1. At the Convention Center, four Ficus Retusa along Figueroa will be transplanted if in way of station.
2. Along Figueroa Street, trees will clear guideway with some pruning, or can be transplanted for street widening.
3. At Pershing Square station, two hollies require boxing for replanting in the park.
4. On Hill Street, between 4th and 5th Streets, several Ficus Retusa can remain with pruning, depending upon final column placement.
5. At corner of Hill Street and 1st Street, a large Ficus Nitida may be saved by pruning to clear guideway.

6. At Civic Center Station (1st Street and Broadway), two large Magnolias will have to be destroyed or relocated on State Property.
7. On City Hall lawn, a large Jacaranda must be relocated and a Littleleaf Fig tree may have to be removed.
8. At Parker Center, three small Laurel Fig trees must be boxed or transplanted and a Littleleaf Fig must be trimmed to clear.
9. At the Federal Building, several shrubs and young trees may be damaged during construction of the station and pedway to the mall.
10. On Aliso Street at Union Station seven Littleleaf Fig trees will need pruning, and several could be lost, depending on final column placement.

The animal life present along the route consists primarily of common birds and rodents. These animals are expected to migrate to other areas during construction when existing vegetation would be removed. Similar species are expected to populate the site upon completion of construction and installation of new vegetation.

## 5-116 Meteorology and Climate

Construction of the DPM system will have no detrimental effect on meteorology and climate.

## 5-117 Construction Dust and Air Quality Impacts

Dust Impacts. Dust will be produced during most all phases of Construction. Street excavation and restoration earth hauling, cut-and-cover operations in the Bunker Hill area, erection of the aerial guideway, and construction of aerial stations and the intercepts will all subject adjacent areas to increased dust levels. Of these construction activities, the cut-and-cover operations in the Bunker Hill area will result in the most severe dust impacts. Dust will also be produced where guideway columns will be installed, although the amounts of dust produced are expected to be small, because of the smaller excavations required for this purpose.

Dust will also be generated at each of the station locations. Of these, the most dust production will occur at Union Station

and the Convention Center, primarily because the area of construction at each of these sites is greater than at any of the aerial station sites. Because both of these locations currently have far less pedestrian and automotive traffic than is the case in the areas of the aerial stations, the impacts are expected to be minimal.

Expected adverse dust impacts during construction are addressed in the following municipal code and city ordinance references: Los Angeles Municipal Code Chapter IV, Section 41.40 and Chapter XL, and City Ordinance Nos. 144, 331 and 148,595. The requirements of these references will be made part of all construction contracts.

Although dust abatement measures will be required of all contractors, construction activities will still produce some quantity of dust. Therefore, some tolerance will be required from affected residents, business owners, pedestrians, and motorists during the construction phase.

Air Quality Impacts. Air quality impacts during the construction phase would result from both the operation of construction equipment and from construction workers' automobiles, going to and from the construction site. These impacts are generally expected to be minor and of short duration.

Emissions due to construction workers' automobiles can be described as follows. An estimated 1700 person-years of labor will be expended during the 39 months of construction. This translates into an average monthly labor force (during peak construction activity) of approximately 530 persons. The actual daily labor force may vary, but 530 is a reasonable daily figure.

Assuming that construction workers have a typical auto occupancy of 1.38 persons per auto, applying this figure to construction employment yields an additional 475 autos both entering and leaving the CBD each day during the peak construction period, or a daily increase of 950 vehicle trips. Comparing this with a daily total for the CBD of about 633,000

vehicle trips, the daily contribution to emissions from construction workers' vehicles would be on the order of 0.1 percent and, thus, can be considered insignificant.

Daily emissions resulting from the operation of construction equipment have been estimated using recent emission factors for heavy duty diesel-powered vehicles. The factors shown on Table 5-11A were derived using emissions factors for 1976 and 1990 (EPA, 1978), interpolated for 1980, and an assumed speed of 10 miles per hour.

Applying these emissions factors to estimated fuel consumption by construction equipment yields the estimates of emissions shown on Table 5-11B. Reference to this table demonstrates that emissions produced by construction equipment is a very small proportion of regional estimates and, therefore, may be considered negligible.

The effects of emissions on a project scale (immediately surrounding the construction site) would be somewhat greater than those effects experienced at either the CBD or regional level. However, existing traffic volumes in this area are such that these effects would also be minimal.

Table 5-11A

1980 EMISSIONS FACTORS FOR DIESEL-POWERED VEHICLES (1)

<u>Pollutant Type</u>	<u>Emissions Factor (grams/mile)</u>	<u>Emissions Factor (2) (pounds/gallon)</u>
Carbon monoxide	42.17	0.46
Total hydrocarbons	6.11	0.07
Nitrogen oxides	25.26	0.28
Sulfur oxides	2.80	0.09
Particulates	1.96	0.02

(1) Source: Mobile Source Emissions Factors, Environmental Protection Agency, Office of Transportation and Land Use Policy, January 1978.

2) Calculated by assuming a fuel consumption rate of 5 miles per gallon.

TABLE 5-11B  
1980 DAILY EMISSIONS FOR CONSTRUCTION EQUIPMENT (1)

	CO	THC	NO <sub>x</sub>	SO <sub>x</sub>	Particulates
Construction Emissions in pounds per day	2944.00	488.00	1792.00	576.00	128.00
Regional emissions <sup>(2)</sup> in tons per day	6273.40	692.90	625.30	39.10	86.30
Construction emissions as a percentage of regional emissions	0.02	0.03	0.14	0.74	00.07

(1) Estimates of fuel consumption for construction equipment are about 6400 gallons per day

(2) Interpolated from 1976 and 1990 estimates for the South Coast Air Basin (SCAG, 1978), for mobile sources.

Source: CRA, 1978

5-118 Noise and Vibration

Methodology. Noise impacts resulting from DPM construction were evaluated using the following methodology:

- The Task 3.29 Construction Process Memorandum, KE/DMJM, Feb. 13, 1978, identified several activity categories expected to produce significant adverse construction noise.
- Each category was analyzed with respect to the numbers and types of equipment involved and the length of time required to complete the activity for an average block-long segment of the DPM system. Typically, the construction sequence will involve a block-by-block approach.
- Equipment noise sources were viewed as essentially stationary points, since the equipment will be used in the immediate vicinity of a given activity, such as utility relocation, column foundation preparation, and street/sidewalk modification.
- Noise level ranges for the various equipment types were used to estimate composite  $L_{10}$  and  $L_{eq}$  noise levels anticipated during construction. The composite noise levels were calculated by super-imposing noise source contributions, a method discussed in detail in Chapter 1 of the FHWA report "Fundamentals and Abatement of Highway Traffic Noise," June 1973.

Construction Noise Analysis. The seven construction activity categories which may produce significant adverse noise impacts are listed in Table 5-11C together with equipment used, the  $L_{10}$  and  $L_{eq}$  noise levels measured 50 feet from the source, and the estimated time needed to complete an activity along a standard 660-foot city block.

On the basis of the composite noise levels given in Table 5-11C utility work, foundation preparation, and street restoration activities will all have about the same noise impacts, and all could be significant. These three activities will be conducted along the entire DPM route during various phases of aerial guideway construction. Activities 4 and 5 will occur only at the Union Station and Convention Center Intercept sites.

Considering activity duration and noise levels, it can generally be stated that unless mitigation measures are enforced, construction  $L_{10}$  noise levels of 100dB(A) will be emitted for an average of 6 weeks at each point along the DPM route.

Particular attention must be given to the noise sensitive land uses along the DPM route listed in Table 5-13A and Task 4.20. Site-specific attenuation measures may be required to reduce interior noise to allowable maximums. The most severe impacts will be experienced at those sensitive land uses directly fronting the DPM route, including: The Hotel Figueroa, the Inn-Towne Motel, The Hilton Hotel, St. Paul's Cathedral, the Jonathan Club, the Bonaventure Hotel, the Biltmore Hotel, the Grace Baptist Church, and the County Law Library. Possible mitigation measures for these land uses are discussed later in this section.

For the Center of Figueroa variation, land uses on the west side of Figueroa would experience a decrease in construction noise. Of the sensitive areas identified above, the Hotel Figueroa and the Inn-Towne Motel would be so affected. Increases in construction noise would be experienced by uses on the east side of the street, including the Holiday Inn, Belmont Apts., Kent Inn, and Finkle Arms.

Table 5-11C

CONSTRUCTION ACTIVITY NOISE LEVELS AND DURATION  
(Noise Level, dBA @ 50 Feet)

<u>Activity</u>	<u>Equipment</u>	<u>L<sub>10</sub></u>	<u>L<sub>eq</sub></u>	<u>Cumulative days of Activity Per Typical Block</u>
1. Locating/Relocating Utilities	Jackhammer/			13
	Pavement breaker	98	84	
	Backhoe	93	89	
	Truck	93	84	
	<u>Composite</u>	<u>100</u>	<u>91</u>	
2. Preparing Column Foundations	Jackhammer	98	84	5
	Backhoe	93	89	
	Truck	93	84	
	Compressor	87	79	
	<u>Composite</u>	<u>100</u>	<u>91</u>	
3. Modifying Restoring Streets and Sidewalks	Jackhammer	98	84	13
	Front Loader	84	82	
	Truck	93	84	
	Light Crane	88	78	
	<u>Composite</u>	<u>100</u>	<u>91</u>	
4. Demolishing Structures	Front Loader	84	82	10/SITE
	Truck	93	84	
	<u>Composite</u>	<u>94</u>	<u>86</u>	
5. Clearing and Grading	Tractor	96	92	10/SITE
	Grader	93	84	
	Front Loader	84	82	
	Backhoe	93	89	
	<u>Composite</u>	<u>100</u>	<u>95</u>	
6. Mobilizing Equipment at Excavations	Crane	88	78	10/SITE
	Truck	93	84	
	Generator	81	75	
	Compressor	87	79	
	<u>Composite</u>	<u>95</u>	<u>86</u>	

Source: Kaiser Engineers/DMJM, 1978; City of Los Angeles  
Department of Engineering

Noise Mitigation Measures. Mitigation measures recommended for the DPM construction period are divided into three categories: measures to reduce noise impact upon the general public both indoors and outdoors, and measures to ensure the health and safety of the construction workers. Noise impacts on the general public will be reduced, where appropriate, by:

- providing acoustical enclosures around stationary construction equipment;
- scheduling equipment operations to maintain the lowest possible overall noise levels, i.e. perform high-noise-level operations during peak ambient noise periods, and maintain uniform operating noise levels;
- Modifying pedestrian access routes to provide a maximum possible distance between pedestrians and construction operations with high-noise-levels.

Noise impacts on interior noise levels at sensitive locations may be reduced by:

- replacing certain high-noise-generating equipment, such as jackhammers, with lower noise equipment such as concrete saws and pavement breakers.
- Placing exterior and/or interior noise barriers near doors and windows of particularly sensitive buildings;
- scheduling construction activities to avoid high noise levels during high use periods for individual buildings.

The mitigation measures available for reducing occupational noise levels are generally easier to enforce than for the private sector, and include:

- substituting low-noise generating construction equipment whenever possible;
- using prefabricated structures instead of assembling on-site;
- using machinery with flexible mountings and shaft couplings;
- including noise-level specifications when ordering new equipment;

- providing personal protective equipment, i.e. ear protectors and sound isolation booths, and
- arranging work schedule to correspond to OSHA allowable occupational noise-level duration limits.

The contractor will also be required to adhere to the provisions and regulations of Los Angeles Municipal Code Chapter IV, Section 41.40 and Chapter XL, and City Ordinance Nos. 144, 331 and 148, 595.

Unmitigated Construction Noise Impacts. The degree of disturbance or annoyance resulting from construction of the DPM system will be extremely difficult to mitigate to the satisfaction of every affected CBD resident or employee. Adverse impacts on speech communication, telephone usage, and even mental concentration cannot be completely avoided. Every effort will be made, however, to keep adverse impacts to a minimum. Cooperation between the City government, contractors, and the private sector will help greatly in keeping unmitigatable construction noise impacts to a minimum.

Vibration Methodology. Vibration impacts resulting from DPM construction depend on many variable, including soil types, soil-bearing values, building-foundation designs, proximity to vibration sources, presence or absence of overburden, natural frequency of vibration for affected structures, and the measures used to reduce vibration sources and intensities. Since these variables are numerous, difficult to document, and will require individual monitoring during construction, this discussion will focus on potential vibration sources, impacts, and mitigation measures.

Construction Vibration Sources. The main source of vibration associated with DPM construction will be the operation of heavy equipment, such as dump trucks, caterpillar tractors, and pavement breakers. No high-vibration-level generating operations such as pile driving or blasting are planned. Buildings planned for demolition are not adjacent to occupied structures.

#### 5-120 Construction Impacts on Land Use and Urban Development

#### 5-121 Construction Impacts on Land Use and Business Development

As discussed in Chapter 4, the proposed DPM system would require the construction of a 7 level, 1750 space parking structure on Figueroa Street, east of the Convention Center. The construction of this parking structure would require the acquisition of one vacant parcel, and the acquisition and removal of three businesses located on the proposed site. (The Charter Auto Park shown in Figure 5-12A is not a currently operating business.) This business displacement is expected to have a substantial impact on the businesses involved (see Figure 5-12A). A summary of the acreage and businesses to be displaced is shown on Table 5-12A. The vacant parcel on the corner of Pico Boulevard and Figueroa Street on the map is owned by the City of Los Angeles, and, therefore, does not require acquisition and displacement of a current tenant. The use of these parcels for the proposed parking facility would pre-empt other long-term uses of this area.

Mitigation The displacement of the businesses located on the proposed DPM parking facility site will be partially mitigated by the payment of fair market value for land and improvements to individual property owners as well as the payment of business relocation costs to the tenants occupying the land and buildings. Relocation assistance will also involve the identification of potential relocation sites in the vicinity of the displaced business. Fair market values and relocation costs would be determined during Phase IV, Final Design of the DPM Program.

The provisions of the Uniform Relocation Assistance Act of 1970, provide for either a payment of actual, reasonable moving expenses, including damage due to moving and expenses in searching for a replacement location or, under certain conditions, a fixed payment in lieu of the moving payment. Under the fixed payment, the allowance is tied to the average

annual net earnings of the business with minimum and maximum amounts prescribed. Payments may also be allowed for actual, direct losses of tangible personal property when a displaced owner who is entitled to relocate chooses not to. Payments may only be made after a bona fide effort has been made to sell the items involved. Relocation counseling, including technical and managerial assistance, assistance in obtaining bank loans or Small Business Administration loans, will be provided by the designated relocation agency.

Individual merchants may incur some non-reimbursible losses as a result of displacement, including discontinuities, loss of prior customers and/or costs of adopting to new quarters. These may be partially or even totally offset by increased efficiency in new quarters and new customers. During Final Design a survey will be conducted to identify the availability of suitable nearby replacement facilities for those displaced businesses.

#### 5-122 Construction Impacts on Community Services

##### 5-122.1 Utilities

Construction of the DPM will require relocation, support across excavation, or blanketing of telephone cable, sewer lines, electrical cables, gas company lines and storm drains. Analysis of the degree of relocation required was completed in the Preliminary Engineering Phase and is documented in Task Termination report 4.04.

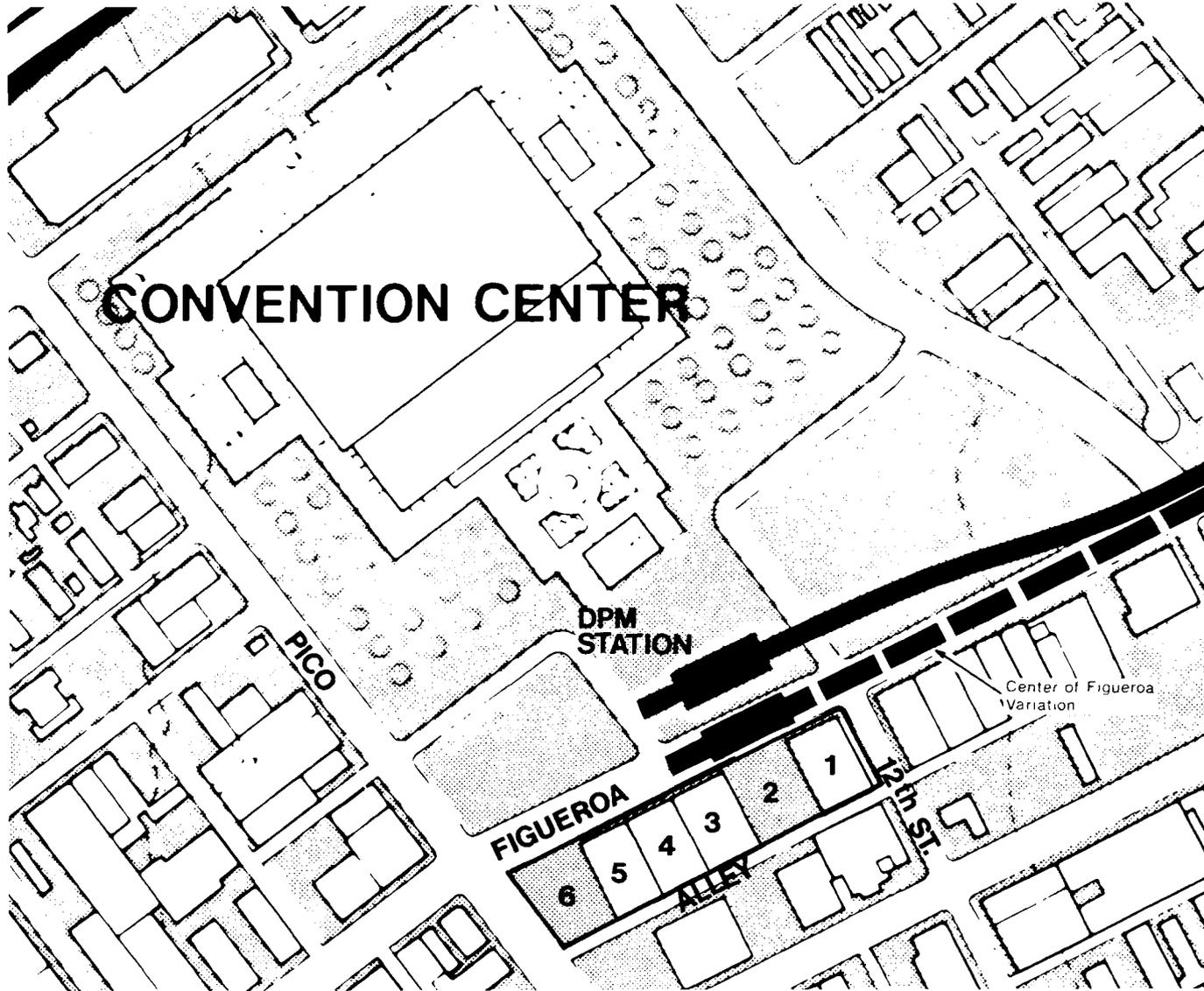
Relocation will be the responsibility of each of the utilities involved and will not result in an interruption of customer service.

##### 5-122.2 Solid Waste From Construction

Construction of the DPM system will result in an estimated 74,500 cubic yards of soil and debris from the project site. When compared to annual solid waste production in Los Angeles County, this is an insignificant amount. Further, there is sufficient capacity at any of the 54 approved land fill sites in the County of Los Angeles to accept this amount of solid waste.

Figure 5-12A

# BUSINESSES AND VACANT LAND TO BE DISPLACED BY SYSTEM CONSTRUCTION



Parcel No	Business
1	Sid Ostrow's Office Equipment
1	Keiser Poster
2	Charter Auto Parks
2	Pacific Outdoor Poster
3	Sid Ostrow's Furniture Storage
4	Kraus Original Shoes
5	Kerman's Wholesale Furniture
6	Vacant (City of Los Angeles)

Source: CRA, 1978



Graphic Scale in Feet



TABLE 5-12ABUSINESSES AND VACANT LAND TO BE DISPLACED

<u>Map Key Parcel No.</u>	<u>Business</u>	<u>Address</u>	<u>Building Sq. Feet</u>	<u>Acreage</u>	<u>Estimated Annual Property Tax Losses</u>	
					<u>L.A. County</u>	<u>L.A. City*</u>
1	Sid Ostrow's Office Equipment	1200 Figueroa St.	59,246	.37	\$ 4,260	\$ 1,192
1	Keiser Poster.	(Top of building 12th and Figueroa)	N.A.	N.A.		
2	Charter Auto Parks		Vacant	.34	1,269	355
2	Pacific Outdoor Poster		N.A.	N.A.		
3	Sid Ostrow's Furniture Storage	1228 Figueroa St.	15,000	.447	1,841	516
4	Kraus Original Shoes	1240 Figueroa St.	35,486	.34	2,824	790
5	Kerman's Wholesale Furniture Company	1248 Figueroa St.	31,278	.36	2,636	738
<b>TOTALS</b>			<b>141,000 sq.ft.</b>	<b>1.9 acres</b>	<b>\$12,830</b>	<b>\$ 3,591</b>

Source: CRA, 1978

\*Includes bonded indebtedness tax to City.

The soil and solid waste material is generally desirable for fill at other construction sites. Therefore, only a portion of the solid waste produced by construction will be disposed of at designated land fill sites.

#### 5-122.3 Law Enforcement and Fire Protection

During the approximately 39-month construction schedule, construction activities may temporarily impair vehicular access on certain streets, which could effect the delivery of both police and fire services. Some temporary street closures and lane reductions could delay emergency services unless appropriate scheduling and planning is arranged. Therefore, close coordination with both police and fire authorities will be required. Some of the construction impacts can be mitigated by scheduling some portion of the construction activity for nights and weekends, thus lessening the impact on traffic congestion.

#### 5-123 Impacts on Parks and Open Space

Each of the parks along the route - Pershing Square, City Hall lawn, and Father Serra Park - will be the site of construction activity for the placement of column foundations. Although the construction period will be temporary, the result will be limitation on the use of park areas by the general public during the construction period. For Father Serra park this is not a serious impact since the park is not used for anything but car parking at the present time. Portions of City Hall lawn will not be available for pedestrian circulation during this period and access to the south entrance of City Hall may be impeded. The most significant effect on parks will occur at Pershing Square where the northern portion of the park will not be available either for pedestrian circulation or for other passive forms of recreation such as sitting.

The only other open space areas along the route that could be affected by construction are the lawn areas on the site of the State building and City Hall south. Both of these are used for pedestrian circulation and passive recreation, which uses will be limited during the construction period.

#### 5-124 Construction Visual Impacts

Compared to the visual impacts of the system in operation, visual impacts during construction are of short duration but high intensity.

Negative impacts include the unsightliness of torn up streets, exposed utility conduits, uprooted or damaged trees and shrubs, temporary plywood barriers, and the general visual disorder that accompanies heavy construction. Trucks rumbling through downtown streets have a jarring aesthetic impact. Temporary street closures may cause visual disorientation, particularly when circulation detours are involved.

Mitigating measures. These negative impacts are offset to some degree by the fact that, for most people, heavy construction is inherently fascinating. People like to watch earth-moving machines, stations coming together, columns going up, cranes lifting giant guideway spans. This inherent mitigating factor can be augmented by providing windows and peepholes in construction screens and planning pedestrian circulation to take advantage of interesting views.

The number of people visually impacted by construction activities can be reduced by performing the more disruptive activities during off hours and by scheduling the work in a manner that will shorten the construction period at any given location.

Constructing the DPM in the center of Figueroa will have different visual impacts. Views of major structures that would be partially obstructed include St. Paul's Cathedral, the Hilton Hotel, and the Jonathan Club. Additionally, construction of the project in the middle of the street will be more visible.

## 5-125 Impacts on Historic Sites and Cultural Facilities

## 5-125.1 Historic Sites

Historic sites along the route will suffer temporary construction impacts concerning noise, dust and impeded access similar to those experienced by other buildings. The only historic site that will be changed by construction is Union Station where trackage at the back of the station will be removed for the Transportation Center and columns will be placed along the southern boundary of the station site from Alameda Street to the tracks behind the station.

Construction and other impacts on historic and archaeological sites are more fully discussed Chapter 6 of this report.

## 5-125.2 Street Lighting/Street Furniture

An analysis has been conducted of the potential DPM impacts on street lights along the route (Analysis of Street Lighting Along DPM Route, CRA, January, 1980). The analysis consisted of identifying the number and type of electroliers adjacent to the route, assessing their historical significance (in terms of age and integrity of design), and identifying the potential impacts which the DPM would have upon them. This inventory and analysis was reviewed by the SHPO, with regard to significance and appropriate mitigation measures.

The analysis identified four electroliers as being significant. Of these, two types would be affected, consisting of the possible removal of 12 to 14 electroliers in three locations: (1) one or two electroliers on the north side of First Street, between Broadway and Hill, (2) 3 to 4 electroliers in the vicinity of Union Station, and (3) 7 to 8 electroliers on the north side of 5th Street, between Olive and Flower.

For the electroliers located on 5th Street, they will be removed if necessary, and placed in storage with the Bureau of Street Lighting. For the electroliers located both on First Street and in the vicinity of Union Station, they will be removed, if necessary, and the SHPO and Bureau of Street Lighting will be consulted concerning possible relocation in the area of Union Station.

In addition to street lighting, street furniture (utility covers, fire hydrants, bus benches, etc.) of historical significance will be removed and replaced in such a way that they will be restored as nearly as possible, to their original condition.

## 5-130 Construction Impacts on the Socio-Economic Environment:

## 5-131 Residential Population

Residential buildings in the study area are shown in Figure 5-13A and their characteristics are identified in Table 5-13A. The apartments and some hotels in the table are used as permanent residences, whereas the motels and larger hotels are used by businessmen, tour groups, vacationers, and other visitors on a short-term basis. In general, the least expensive residential units are rented on a long-term basis, and some of them are occupied by elderly and handicapped individuals. Some residential buildings have cooking facilities in all their units. These are used primarily by families with children. There are few of these types of units, and all are located in older structures.

Construction of the DPM system will result in varying degrees of impact on nearby residents, as shown in Table 5-13B. Increased noise and dust levels, visual unsightliness and impaired accessibility during certain times of the day are the types of impacts that can be expected. No residential structures will be physically affected and no relocation of residents will be required.

The most severe construction impact is the increased noise level which will be felt by downtown residents. Construction noise is expected to range from 86 to 95 dB(A)s, in terms of  $L_{eq}$  values measured at 50 feet from the construction site. Interior noise levels will be 10 to 35 dB(A)s lower, depending upon distance from the construction site, structural characteristics of the building, the presence of landscaping or walls, and whether windows are open or closed. For a detailed discussion of construction noise impacts, see Section 5-118.

Figure 5-13A

# SURVEY OF RESIDENTIAL UNITS ADJACENT TO THE PREFERRED DPM ALIGNMENT

-  Existing
-  Committed 1980/82
-  People Mover
-  Station
-  Underground
-  Direction  
(Split Alignment)

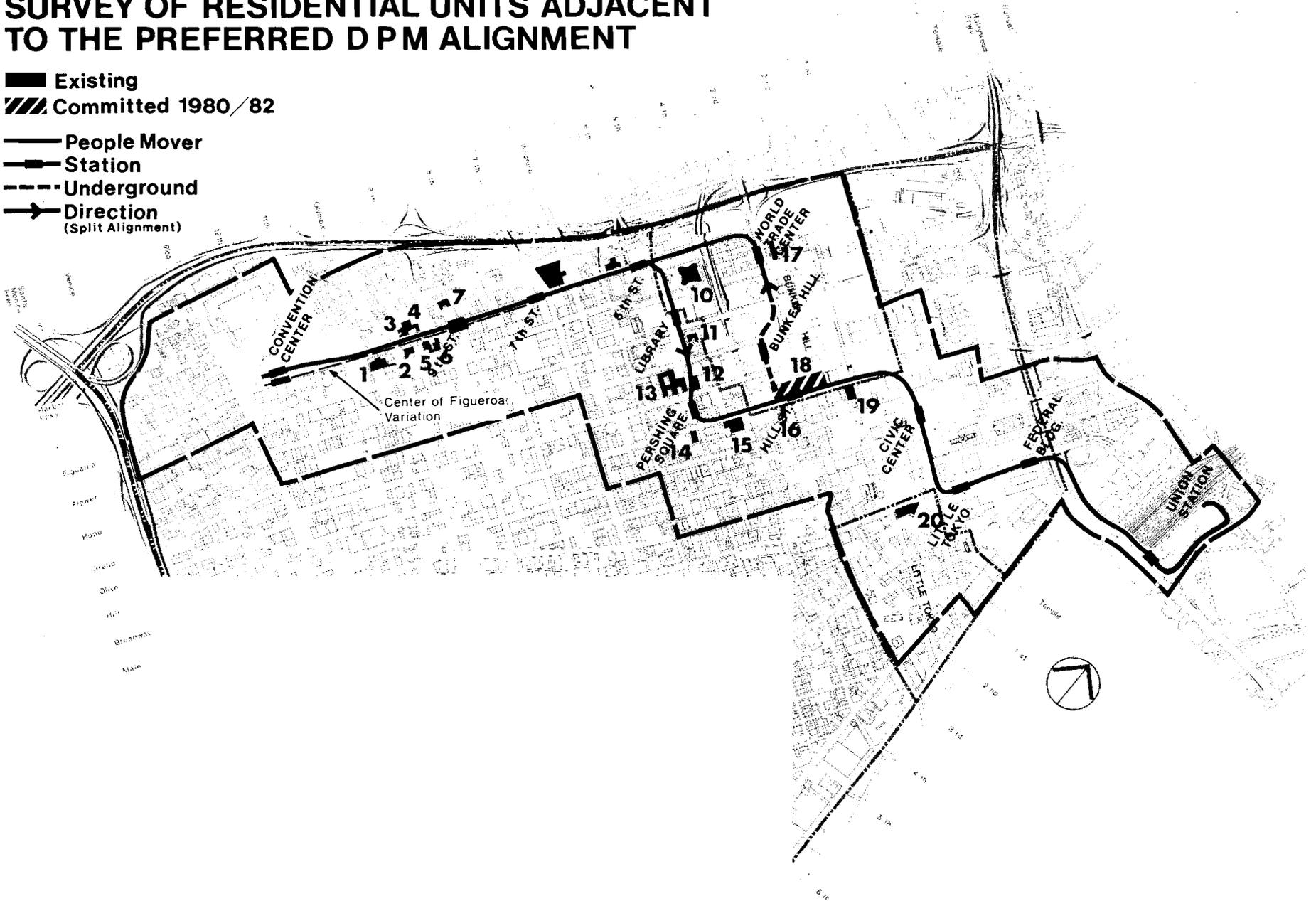


Table 5-13A

SURVEY OF RESIDENTIAL UNITS ADJACENT TO THE DPM SYSTEM									
<u>MAP NO.</u>	<u>NAME OF BLDG.</u>	<u>NR. OF UNITS</u>	<u>EST. RESIDENTS</u>	<u>Families</u>	<u>Handicapped</u>	<u>Elderly</u>	<u>Permanent</u>	<u>WITH COOKING</u>	<u>PRIVATE BATHS</u>
1.	Holiday Inn	192	202					No	All
2.	Belmont Apartments	85	186	X	X	X	X	All	All
3.	Figueroa Hotel	350	476		1	X	X	No	Some
4.	Gala Inn-Towne	170	179					No	All
5.	Kent Inn Motel	92	110					3	All
6.	Finkle Arms Apts	50	88	X			X	All	All
7.	Clifton Hotel	162	191			X	X	No	Most
8.	Hilton Hotel	1206	1435					No	All
9.	Jonathan Club	78	56					No	All
10.	Bonaventure Hotel	1500	1785					No	All
11.	Engstrum Apts	96	109		1	X	X	Most	All
12.	San Carlos Hotel	135	101			X	X	No	Some
13.	Biltmore Hotel	1072	1276					2	All
14.	Hill Street Hotel	18	22					No	Some
15.	Clark Hotel	507	690		5	X	X	No	Most
16.	Myrick Hotel	48	43			X	X	No	Few
17.	Bunker Hill Towers (So)	244	358				X	All	All
18.	Sr. Citizen Housing	1100	1525		180 200	X	X	Most	All
19.	Astor Apartments	116	125		3	X	X	No	Some
20.	New Otani Hotel	448	533					No	All

Permanent = Over 25% of units rented to permanent resident (6 mos.).  
 Elderly = More than 20% of residents are over 65 years of age.  
 Handicapped = Number of handicapped persons in building.  
 Families = More than 50% of families with children.

Source: CRA, June 1978

TABLE 5-13B

## EFFECTS OF DPM CONSTRUCTION ON PERCEIVED INTERIOR NOISE LEVELS AT RESIDENTIAL LOCATIONS

LOCATION	WEST SIDE FIGUEROA ALIGNMENT		CENTER OF FIGUEROA VARIATION	
	Distance to Nearest Construction Site (feet)	Increase in Perceived Interior Noise	Distance to Nearest Construction Site (feet)	Increase in Perceived Interior Noise
Holiday Inn	150	Minor	90	Moderate
Belmont Apartments	90	Moderate	40	Significant
Hotel Figueroa	10	Most Significant	50	Significant
Inn-Towne Motor Hotel	10	Most Significant	50	Significant
Kent Inn	90	Moderate	70	Significant
Finkle Arms	120	Moderate		
Clifton Hotel	270	No Increase		
Hilton Hotel	50	Significant (1)		
Jonathan Club	50	Significant		
Bonaventure Hotel (swimming pool deck)	40	Significant		
Engstrom Apartments	70	Significant		
Biltmore Hotel	70	Significant		
San Carlos Hotel	10	Most Significant		
Hill Street Hotel	150	Minor		
Clark Hotel	80	Significant		
Bunker Hill Towers	240	No Increase		
Myrick Hotel	90	Moderate		
Hill St. Elderly Housing	40	Significant		
Astor Apartments	90	Moderate		
New Otani Hotel	250	No Increase		

NOTE: The following perceived noise level increases correspond to the above criteria:

Minor: increase of 5 dB(A), or less

Moderate: increase of 6-10 dB(A)

Significant: increase of 11-15 dB(A)

Most Significant: increases of greater than 16 dB(A)

(1) The wing facing Figueroa contains office uses

The following discussion summarizes the expected construction noise impacts on residential locations along the route. The analysis considered an average building attenuation value of 25 dB(A)s.

Fourteen permanent and temporary residential locations would experience a significant increase in interior noise levels during construction of the DPM. These locations would have interior noise levels increased to beyond a recommended maximum. Of these, the most significant increases would occur at the Hotel Figueroa, Inn-Towne Motor Hotel, Hilton Hotel, Bonaventure Hotel (exterior swimming pool deck), Clark Hotel, and the Hill Street Elderly Housing Project. The remaining locations would experience a moderate increase in perceived interior noise. An additional four residential locations would experience increased noise levels, but not to a degree that they would be readily perceived. Three locations would not experience a perceptible increase.

With the Center of Figueroa variation, six residential locations (see Table 5-13B) would experience construction noise impacts that differ from those under the west side alignment. Of these, four locations experience an increase in construction noise, and two locations experience a decrease.

Increased noise levels will not be continuous throughout the day, and construction activities will be scheduled to minimize the increases to the greatest degree practicable. Further, the greatest noise producing activities will not be conducted during evening hours in locations near residences.

Residents will also be disrupted during construction by additional dust, visual unsightliness, and impaired accessibility during certain times of the day. In addition to noise differences which affect residential locations, the center of Figueroa segment would result in additional access problems during street widening activities. Particular attention will be paid to these impacts, and contractors will be required to

reduce them to the minimum degree practicable. Also, the following mitigating measures have already been employed: the use of multiple crews to reduce the length of time that a disruptive impact is occurring, off-site prefabrication of guideway sections, joint coordination of construction activities for the DPM Hill Street guideway station and the Elderly Housing Project, and the enforcement of other general criteria to assure the use of mitigation techniques by contractors.

#### 5-131.1 Impacts of Construction on Safety and Security

Public safety is a major concern during construction due to the possibility of personal injury from the malfunction of heavy equipment; either by mechanical or human cause. The movement of construction vehicles such as dump trucks, concrete mixers, large transporter trucks, and cranes into and out of the construction site(s) poses potential problems for motorists and other vehicular traffic. Public safety is also of concern for pedestrians and workers at all sites where the ground is being opened.

To lessen the safety and security impacts, the contractor(s) will be required to meet all of the requirements of, and to establish construction procedures in accordance with, the regulations of the Occupational Safety and Health Act (OSHA), the State of California, Los Angeles County, and the City of Los Angeles. These regulations include but are not limited to: safe storage of equipment so as not to cause an obstruction, provision of appropriate signs, lights, flares, construction, barricades and other facilities for the safe guidance of public traffic through or around the work area(s), and assignment of flagmen and guards for traffic control as necessary.

Construction in the center of Figueroa would produce some additional traffic safety hazards, because of street widening and construction activities in the median, affecting the flow of traffic in both directions. A more detailed site specific analysis of safety and security impacts and appropriate regulations will be conducted during the final engineering phase.

## 5-132 Regional Economic Impacts of DPM System Construction

Introduction

Construction of any large transportation or public works project with federal funds provides an economic stimulus to the local economy. The dollar expenditures for local purchases of materials and labor/engineering represent "outside money" invested in the local economy. The direct income and employment gains from the initial construction expenditures, in turn, cause additional employment and business activity.

The cumulative regional impact of the new investment or expenditure in a local economy is measured by a set of economic indices called multipliers. The term "multiplier" refers to the fact that the cumulative increase in output, employment, and household income is greater than the direct gain attributable to the initial purchases of labor and material required to construct the project.

For example, the retail purchase of groceries and household items by the construction workers produces wages and income to retail clerks. These retail employees, in turn, make purchases with their wages derived from sales from the construction workers.

In a large sophisticated regional economy such as Los Angeles, new investments for "net sales" gains to the region stimulate 10 to 12 rounds of purchases or transactions before the effect of the new "outside" money is completely diminished. (Source: The Economic Base of U.S. Cities, University of Washington Press, 1969). Under these circumstances \$1,000 of new investment generates approximately \$2,500 in total direct and indirect business activity. In this analysis of the regional economic impacts of the Los Angeles DPM, estimates have been made of three types of economic multipliers. These include: (1) the business activity or output multiplier, (2) the household income multiplier and (3) the employment multiplier.

## Step 1. Determination of the Geographic Distribution of DPM Related Construction Expenditures.

The initial step in this regional economic impact evaluation was to determine the distribution of the expenditures associated with the construction of the Los Angeles DPM by labor and material category as well as geographic areas.

As discussed in Section 4-500, the total capital costs of the DPM project are estimated to be \$175 million. It is assumed that sources of "new money" to the region include UMTA Section 3 funds, Federal Aid Interstate Funds, and State SB 1879 funds. For option 1 of the Financial Plan, these sum to about \$145 million. This implies that the remaining \$30 million would not contribute to the regional multiplier effect.

Results

Based on an examination of (1) the expenditure profile of other large scale fixed guideway projects throughout the United States and (2) after provision for a higher proportion of outside purchases of system hardware, it is estimated that \$91 million (i.e. 63%) of the total of \$145 million in DPM system construction costs would take place in the Los Angeles Metropolitan area economy. The breakdown of this local expenditure by category is as follows:

\$39 million for construction labor  
 \$21 million for materials and supplies  
 \$22 million for engineering and management  
 \$ 9 million reserved as contingencies

A complete breakdown of the total \$145 million in DPM construction expenditures that represent potential "new money" to the local economy are presented in table 5-13C.

TABLE 5-13C

GEOGRAPHIC DISTRIBUTION OF THE LOS ANGELES DPM CONSTRUCTION EXPENDITURES<sup>a)</sup>  
(Millions of dollars)

<u>Geographic Data</u>	<u>Construction Labor</u>	<u>Materials &amp; Supplies</u>	<u>Engineering &amp; Management</u>	<u>Contingency<sup>c)</sup></u>	<u>Total</u>
Los Angeles Metropolitan Area	39	21	22	9	91 (63%)
Outside of L.A. within California	4	4	1	1	10 ( 7%)
Outside California	18	19	2	5	44 (30%)
TOTAL	61	44	25	15	145 <sup>b)</sup>

a) Estimates based on expenditure profiles of large scale fixed guideway systems constructed throughout the United States, modified to reflect a higher proportion of imported system hardware costs. All estimates are rounded to the nearest \$1 million and stated in 1981 dollars.

b) Includes UMTA Section 3, Federal Aid Interstate, and SB 1879 funds.

c) Represents approximately 10 to 11% of total estimated construction costs.

Source: Robert J. Harmon & Associates, Inc., 1978

Step 2. Estimate the Total Business Activity Multiplier Effects of the Los Angeles DPM System.

In the case of the Los Angeles Metropolitan Area, the output multiplier for "net" sales or investment in the local economy was estimated to be approximately 3.0 in 1970. More recent estimates by the University of California and the Los Angeles Planning Council indicate that, in 1975, the Los Angeles region's multiplier is between 2.4 and 2.5.

Results

To maintain a conservative posture in the overall economic evaluation, an output multiplier of approximately 2.5 (not 3.0) was applied for both the Los Angeles Metropolitan Area and the State of California to the estimates of the Los Angeles DPM system. The results of this analysis which are presented in Table 5-13D indicated that:

- The economy of the State of California will receive nearly 8 times (i.e. \$253 million), the original investment amounting to 20% of the total costs of \$175 million in cumulative economic activity, measured in GNP terms.
- Approximately 90%, or \$228 million, of the economic activity gains generated directly or indirectly by the system construction expenditures will occur in the Los Angeles Metropolitan Area.
- In dollar ratios this means that nearly \$17 in new economic activity will be generated in Southern California for every \$1 invested by a 7.8% local support of the total capital costs of the system.

TABLE 5-13D

TOTAL ECONOMIC IMPACT OF THE LOS ANGELES DPM SYSTEM  
CONSTRUCTION EXPENDITURES (\$ millions)

<u>Geographic Area</u> <sup>a)</sup>	<u>Direct Impact</u>	<u>Indirect &amp; Induced Impact</u> <sup>b)</sup>	<u>Total Impact</u>
Los Angeles Metropolitan Area	91	137	228
Outside of Los Angeles within California	10	15	25
<b>TOTAL</b>	<b>101</b>	<b>152</b>	<b>253</b>

a) See distribution of construction expenditures, Table 5-13C. Total impact would occur between 1980-1984.

b) Estimate based on an output multiplier of 2.5 for the Los Angeles Metropolitan Area and the State of California. (It should be noted that a 2.8 multiplier was estimated from the self-sufficiency analysis of the Metropolitan Area, but the lower multiplier was utilized to be conservative.)

Source: Robert J. Harmon & Associates, Inc., 1978

Step 3. Calculate the Household Income Multiplier  
Effect of the Los Angeles DPM System

Of the \$91 million in direct local purchases for the construction of the Los Angeles DPM, approximately \$67 million would be in the form of wages, salaries and fringe benefits paid to individuals. This total includes: (1) \$39 million for labor, (2) \$21 million for engineering and management, and (3) \$7 million allocated from the contingency budget. In order to estimate the direct household income gain, this total of \$67 million was reduced to \$54 million to represent to 20% of non-income fringe benefit included in the total salary and wage payments.

In the previous output multiplier analysis, it was estimated that \$137 million of indirect and induced business activity would occur in the Los Angeles metropolitan region as a result of the "new" money expenditures related to the Los Angeles DPM. Approximately 70% of these purchases, or \$96 million, would be in the form of wages or salary payments to individuals. (The figure of 70% is based on the most recent results of the econometric models of the University of Michigan and the Wharton School of Business/Finance). Due to the lower proportion of fringe benefits included in the average wage earner's salary, this total was only reduced by 15% to reflect "true" household income. On this basis, \$82 million of indirect and induced household income would be created by the construction of the Los Angeles DPM system.

Results

Based on the foregoing analysis, the investment of \$91 million in local expenditure for DPM construction would generate \$136 million in new household income in the economy of the Los Angeles metropolitan area. The household income multiplier for this project is therefore estimated to be 1.49 (i.e., \$136 million divided by \$91 million). This result compares favorably with the household income multiplier estimated for other large

scale construction projects in the Los Angeles Metropolitan Area. (See for example, Measuring Development in Southern California, Pasadena Research Institute, 1975).

Step 4. Calculate the Employment Multiplier Effect  
of the Los Angeles DPM System

The local DPM system expenditures for labor, engineering and management including contingency will generate \$67 million in wages and salaries. These estimates of payroll and management expenditure take into account the cost inflation during the construction period. On this basis, by 1981 (the midyear of construction) the average hourly construction wage and salary rate (i.e., including fringe benefits) would be \$21.50 (Source: Kaiser Engineers). Utilizing this average hourly wage and salary rate, the DPM system would directly generate nearly 1,600 man years of employment during its four year construction period.

In the previous analysis of "household income" multiplier effects of the DPM system, it was estimated that the induced/indirect business activity generated by local expenditures would create \$82 million of additional "household income". Assuming a median Southern Californian wage/salary rate of \$22,000 in 1981, it is estimated that this \$82 million in new wages/salaries would produce at least 3,700 additional man years of employment in the Los Angeles metropolitan area.

Results

Based on the foregoing analysis the construction of the Los Angeles DPM would produce a total of 5,300 man years of employment (1,600 direct and 3,700 indirect and induced). These employment gains would be generated by \$91 million of new local construction expenditure supported by non-local funding sources.

Summary

The results of the regional economic impact analysis of DPM construction are summarized in Table 5-13E. With an initial investment in the local area of \$91 million, the total effects on the region's output of goods and services would be \$228 million. An increase of \$54 million in household income leads to a \$136 million total increase in regional household income. 1,600 person years of work would be created as a direct consequence of DPM construction expenditures. The multiplier effect would create an additional 3,700 person-years in the regional economy, for a total effect of 5,300 person-years.

TABLE 5-13E

Direct, Indirect, and Induced Effects  
of DPM Construction on the Economy of the  
Los Angeles Metropolitan Area, 1980-1984

	<u>Direct Effect</u>	<u>Indirect &amp; Induced Effect</u>	<u>Total Effect</u>	<u>Total Effect ÷ Direct Effect</u>
Regional Output (sales in millions of dollars)	91	137	228	2.5
Household Income (salaries and wages in millions of dollars)	54	82	136	2.5
Employment (person years)	1,600	3,700	5,300	3.3

Source: Robert J. Harmon and Associates, Inc., 1978

5-133 Construction Impacts on the Socio-Economic  
Environment: EmploymentLabor Force

Construction activities for the DPM are expected to generate over \$67 million in local wages during the 39-month construction period. A labor force of about 1600 person-years would be required for the project. Construction of the guideway, stations, and other elements would require a labor force of about 1150 person-years, and construction of the intercepts and maintenance facility would require about 450 person-years, over an estimated 15-month period.

Estimates of wage costs are based on recent experience in transportation construction projects.

Increased construction employment because of the DPM would partially offset the current 7.5% unemployment rate in the Los Angeles-Long Beach area. In the construction trades, this figure may be even higher. Currently, it is estimated that 80% - 85% of all union members in the twelve major construction crafts are currently employed, with about 100,000 of these in contract construction activities. (Calif. Dept. of Employment Development, July, 1978).

5-134 Minor Construction Impacts on the Socio-Economic Environment: Business Disruption, Retail Sales and Tax Base

#### Overview

Construction of the DPM system carries with it the potential for adverse impacts on existing businesses in the vicinity of the guideway, stations and/or construction staging areas. The nature and severity of such impacts is a function of the alignment, the timing and duration of construction and the construction techniques employed. The potential for disruption during construction is based on the possible occurrence of a number of conditions which inhibit or degrade normal business activities, deliveries of goods, and access (vehicular, pedestrian and visual) by customers, employees, clients or vendors.

The major factors of concern include:

- Loss of parking - due to elimination of off-street parking or temporary blockage of entrances to parking lots/structures
- Loss of pedestrian access (physical and visual) - due to sidewalk closures, construction barriers, etc.
- Degradation of vehicle access - due to land or street closures, detours, temporary pavement covers, etc.
- Degradation of goods movement (shipments and deliveries) - due to re-routing of traffic, blockage of loading ramps, etc.
- Potential for damage to storefronts or inventories due to dust, vibration
- General inconvenience to customers, clients, and hotel guests as a result of noise, traffic re-routing and perceptions of confusion, clutter, congestion, uncertainty, etc.
- Disruption of businesses relocated as a result of right-of-way property acquisitions

Individual commercial enterprises will vary in their susceptibility to temporary disruption. The highest degree of sensitivity would probably be: small convenience stores which offer non-unique products and rely heavily on walk-in trade; small specialty stores which rely on window displays and impulse shoppers; moderate-priced luncheon facilities; and hotels. The first three of these types of establishments tend to have low customer loyalty and customers can easily shift their patronage to similar establishments not affected by construction. Therefore such establishments would be most likely to experience temporary loss of business if the construction impacts on them are significant. Hotels would probably suffer less financial loss from temporary impacts, but would be subjected to higher levels of guest complaints or dissatisfaction if mitigating measures as to hours or construction activity are not implemented.

Office buildings, professional service establishments and quality stores selling "unique" merchandise typically are least sensitive to disruptive influence, although those that rely heavily upon customers not residing or employed in the western CBD may experience lower activity levels if parking and traffic disruptions are severe and prolonged.

In general, the time period of disruption on any single block along the route (4-5 months) is sufficiently short to preclude the likelihood of any permanent adverse impacts on any established business operations. During the construction period, continued customer access to businesses will be maintained and there will be no interruption of utilities and other public services.

Quantification of Impacts

While individual retail stores and businesses may experience a temporary loss in customer and sales volume, the net effect on the CBD will be reduced by internal transfers of sales. The losses incurred by one establishment will yield gains to other establishments not subject to disruption. The shift will be virtually complete for eating establishments and others catering primarily to downtown employees; employees will not stop eating lunch because of DPM construction. Retail specialty and department stores with clientele composed primarily of non-CBD residents or employees could suffer temporary losses. These losses plus some short-term decline in hotel guests may yield net losses to the CBD sales volume. Given the small magnitude of expected revenue losses and the short time period involved, it is not anticipated that any employment loss in continuing businesses would arise from the disruptions caused by construction or that any business (other than the three to be relocated) would move or cease to operate because of disruption impacts.

The probable dollar volume of net CBD business losses has been estimated by Robert J. Harmon & Associates based on case studies of Metro construction in Washington, D.C., transit construction in Baltimore, Md., and Market Street reconstruction in San Francisco, Ca.

Total 1982 CBD sales were estimated at \$573 million based on expenditures in the following categories:

TABLE 5-13F  
1982 CBD Expenditures

<u>Category</u>	<u>Total</u>	<u>CBD Employees Total</u>	<u>Visi- tors Total</u>	<u>CBD Resi- dents</u>	<u>Other</u>
Eating/Drinking	\$110	\$ 78	\$20	\$1	\$ 11
General Merchandise	370	45	5	1	319
Convenience Goods	56	10	2	1	43
Other	<u>37</u>	<u>4</u>	<u>-</u>	<u>1</u>	<u>32</u>
Total	\$573	\$137	\$27	\$4	\$405

Source: Robert J. Harmon & Associates, 1978; CRA Task 4.09

Approximately 60% of the CBD employment was in the DPM Corridor in 1975, and this figure will be used as an approximation for the expenditure pattern. Assuming a five month construction period (14-18 weeks) at each location for 60% of the CBD yields a factor of .25 to be applied to annual expenditures that could be affected by DPM construction (or \$143.8 million).

Of the people who normally buy goods and services, some would be more likely than others to shift their purchases outside the CBD and the city during the construction period. People who live and work outside the CBD would be most likely to avoid shopping there during a period of perceived disruption. CBD employees, visitors and residents are less likely to shift their purchases. Even if they were shifted temporarily, the bulk of the expenditures would probably still occur in the city, although outside the CBD.

The proportion of sales that would shift outside the CBD during construction ranges from one to five percent for the various shoppers and goods. The highest shifts are assumed for non-CBD employees, visitors or residents eating and drinking expenditures (see Task 4.09 for specific percentages).

Applying the .25 factor described above for expenditures that would be shifted during the five month construction period yields the following:

● Convenience retail expenditures	\$0.3525
1% of CBD employees and visitors	
3% of other (millions of \$)	
● General Merchandise expenditures	\$1.8375
2% of CBD employees, residents and others	
1% of visitors (millions of \$)	
● Eating/Drinking expenditures	\$0.3875
1% of CBD employees and visitors	
2% of CBD residents	
5% of other (millions of \$)	
	\$2.5775

Source: Robert J. Harmon & Associates, 1978

Of the potential \$2.58 million sales shift, approximately 40% (\$1.03 million) could shift to merchants outside the city.

(Robert J. Harmon estimate based on residences of CBD employees reported in Wilbur Smith Associates 1976 CBD employee survey).

A \$1.03 million sales shift would result in a \$10,300 loss in sales tax receipts to the city.

#### Mitigation Measures to Reduce the Length of the Construction Period

- Multiple crews working simultaneously at several critical locations throughout the system.
- Careful scheduling to minimize time on location and attention to reducing noise and dust impacts near fast-food restaurants, small businesses and service stores.
- Particular scheduling to minimize or limit the restriction of pedestrian access to the guideway side of the street.
- Merchant and media programs to indicate alternate parking and approaches, special sales and events to attract customers.
- Scheduling to reduce uncertainties so that retailers' plans for special sales, advertising or alternate parking arrangements are coordinated effectively with the construction schedule.

#### 5-140 Construction Impacts On Transportation

#### 5-141 Regional Transportation

Construction of the DPM will have minimal effect on regional transportation services. Some regional bus routes through downtown may have to be temporarily rerouted if affected by temporary street closures. Traffic congestion on the local street network is not expected to have any effect on freeway traffic flows.

Traffic on the Santa Ana Freeway will be limited during construction of the columns on either side of the freeway and in the freeway median. Placing the guideway atop the columns will require closing northbound freeway lanes one night and the southbound freeway lanes another night. (See Section 5-142 for a more detailed discussion of traffic impacts on the Santa Ana Freeway).

Regional rail service at Union Station will not be affected by construction of the Transportation Center behind Union Station. The tracks and platforms used by Amtrak will not be affected by DPM construction activities.

Union Station has 16 tracks and 8 passenger platforms. Tracks 13-16 (on the east side of the complex) have been taken up but the platforms for these tracks remain standing. The DPM maintenance and storage area would extend as far west as Track 13; thus, none of the existing tracks (1-12) would be affected.

Eight of the 12 existing tracks are currently operational. According to the Los Angeles Union Passenger Terminal Agency (LAUPT), capacity of the system is approximately 1 train in and 1 train out per track per hour, giving a current total operational capacity of 192 arrivals and 192 departures for a 24-hour day.

Even with only 8 tracks, a considerable amount of excess capacity exists. AMTRAK currently operates six round trips to San Diego daily. There is also one round trip to Seattle daily, one to Chicago, and one to Las Vegas/Salt Lake City. Service to New Orleans operates 3 times weekly. This means that on any given day, there are 10 arrivals and 10 departures.

Some historical data may help to place these figures in perspective. Peak utilization occurred during World War II when Union Station handled about 100 trains per day. The first terminal time table, effective May 7, 1939, listed 33 arrivals and 33 departures. The capacity estimates are therefore well above any conceivable estimate of future demand.

#### 5-142 Construction Impacts On Transportation: Traffic

Maintenance of normal traffic movement is of concern to the DPM construction program. Even with careful planning, it is anticipated that traffic congestion will be created at various points along the DPM route. In this section, the street segments most affected by DPM construction are identified. The construction activities that will have the greatest impact on traffic are discussed as are possible mitigation measures.

To analyze traffic impacts caused by construction, the project has been divided into four segments, as follows:

1. The elevated guideway from Union Station to the tunnel section.
2. The tunnel section through Bunker Hill.
3. The remainder of the elevated guideway to the Convention Center.
4. The stations.

The first portion of the route is constructed, for the most part, within private rights-of-way along the east side of Los

Angeles Street, the north side of 1st Street, and the west side of Hill Street. Therefore, utility relocations are minimized and column placement or other construction activities are removed from the traveled way. Disruption of traffic along this portion of the route will, therefore, be minimal.

An exception occurs at the guideway passes over the Santa Ana Freeway at Los Angeles Street. Three columns will be placed close to the freeway, two near the northbound and southbound on ramps and one in the median. Although most of the column placement work can be performed from the surface street level, it may be necessary to close one freeway lane southbound and one freeway lane northbound for the column foundation placement.

The median column foundation placement may require closure of one lane in each direction. Each column placement will require approximately three to four weeks. Precast columns will be used at these locations to minimize traffic disruption. The column setting will take less than one day. The median column setting will require freeway closure in both directions for a few hours one night to ensure traffic safety. Hoisting the guideway sections into place over the freeway will also require temporary closure of the freeway. The closure will be staged so that the northbound lanes will be closed for a few hours one night and the southbound lanes will be closed the next night. Guideway finishing activity will not affect freeway traffic.

The tunnel section through Bunker Hill extends from Hill Street along 3rd Place, turns northward crossing Olive Street, Grand Avenue, and Hope Street to the portal in the Security Pacific Bank at Flower Street. Since the Hope Street portion of the tunnel is already built, construction of this segment will affect only Olive Street, 3rd Place, and lower Grand Avenue. These streets currently have low volumes of auto traffic.

From a construction standpoint, it is most desirable to close 3rd Place between Olive Street and Grand Avenue for the 9-12

month period during construction. If developments on the adjacent lots eliminate this possibility, the street can be decked over after excavation. Two lanes at a time on lower Grand Avenue will be closed for approximately one week, for excavation and covering. Temporary marking would be provided for two-way traffic flow on the remaining half of the street.

The construction activity associated with both the Union Station and Convention Center intercept stations will be conducted on vacant land away from the street and will cause negligible traffic impacts. The traffic impacts during construction of the other stations will depend on location. As with construction of the guideway, those stations located furthest from the roadway will have a minimum impact while those that extend over the roadway will result in maximum traffic disruption.

#### Critical Construction Procedures

Those steps involving erecting and pouring guideway supports, placing of guideway and similar activities associated with aerial-station construction will have the greatest impact on traffic. These activities require large cranes, flatbed trucks, and other heavy equipment that have large turning radii and slow speeds. The equipment sometimes requires full street width. These steps are also some of the most time consuming (see construction schedule in Section 4-400).

The minimum impact for these construction steps would be the closure of the curb lane during construction, while the worst case would be complete street closure during guideway placement at night. Intermediate steps might include the installation of detour striping or extensive use of traffic cones.

#### Critical Street Segments

The critical street segments affected by the DPM construction are 5th Street from Hill Street to Figueroa Street, and Figueroa Street from 3rd street, to Olympic Blvd.

Utilities along 5th Street will be relocated from the curb area to the center of the street over a period of one-to-two months per block. During this period, one-to-two lanes will be closed in each block with the resulting traffic rerouting and increasing congestion. A similar traffic disruption for utility relocation will occur along Figueroa Street portion.

Placement of column foundations where the guideway is over the sidewalk will require excavations of up to six feet beyond the curb line along 5th Street between Olive Street and Grand Avenue, ten to fifteen feet beyond the curb between Olive Street and Figueroa Street, and up to six feet along Figueroa Street when the guideway is over the sidewalk.

These foundation excavations will cause a temporary loss of one or two traffic lanes for a period of about four weeks per block. Along 5th Street between Hill Street and Olive Street, the station and guideway are located to the south of 5th. To minimize congestion, simultaneous work on both sides of 5th Street will not be scheduled in the same time period.

5th Street is one-way westbound varying in width from 46 to 66 feet and is striped to accommodate four and five lanes of traffic. The roadway provides direct access to the northbound and southbound Harbor Freeway on-ramps and carries almost 2,000 vehicles during the p.m. peak hour. Volumes exceeding 23,000 vehicles a day have been recorded, indicating constant demand throughout most of the day.

The worst condition on 5th Street would occur between Grand Avenue and Hill Street where the roadway is narrow and the guideway shifts from the north to the south side of the street towards the Pershing Square station. On 5th the erection of guideway column supports will require the closure of at least one lane of traffic during construction, thereby reducing the through movement of traffic to a maximum of three lanes.

Impacts on traffic may be increased by the construction of the Pershing Square station, which will require closing one lane on the south side of the street.

Figueroa Street is 56 feet wide from 7th Street to Olympic Blvd. and is striped for three lanes of traffic in each direction during the peak hours. Traffic volumes on this segment approach 25,000 vehicles a day and operating speeds are less than 10 mph for peak traffic periods.

The guideway construction of this section along Figueroa Street would create severe impacts because of the high traffic volumes on Figueroa and its narrow lane widths. The placement of supports, the placement of elevated guideway and construction of the 9th Street station will necessitate closure of one and possibly two southbound lanes.

The closure of traffic lanes on both 5th and Figueroa Streets will cause traffic to seek out alternative routes, particularly during the p.m. peak hour when the impacts are most severe. To quantify those diversions, it was necessary to project traffic volumes to the 1981 construction year. These projections were determined by comparing 1975 volumes and 1990 projections contained in the Department of Traffic's Central Area Transportation Study 1975-1990 to establish growth rates for each street. Peak-hour volumes for 1981 were obtained from 1977 traffic count data expanded by the appropriate growth rate and modified slightly to reflect a continuing tendency towards "spreading" of the peak hour. Table 5-14A gives these 1981 projections for Average Daily Traffic (ADT) and for the afternoon peak direction.

The overall traffic congestion is also influenced by the estimated 1981 travel speeds. Department of Traffic Travel Speed Studies for 1978, 1977, and 1976 were used to predict 1981 speeds in the peak hour considering traffic volume growth

rates, improvements in level of traffic controls, potential increased vehicle occupancy rate and spreading of peak-hour demands. Based on these data, an estimation was made of 1981 p.m. peak-hour speeds on 5th and Figueroa Streets and on the streets on which diversion would likely occur. Speeds on most of Figueroa Street, on 5th Street between Hill Street and Grand Avenue, and on some of the heavily traveled diversion routes would be less than 10 mph. Traffic speeds on other roadways along and adjacent to the route would vary from 10 mph to 20 mph. It is reasonable to assume that diversion will occur on all nearby roadways since block lengths are short and density of development is high.

It was assumed that the worst case situation would be the closure of a critical street segment during the p.m. peak hour and the assignment of the projected 1981 p.m. peak-hour volumes to parallel streets. This assignment does not consider those trips that would not be made at all because of construction congestion. The results of the diversion analysis are given in Table 5-14B.

The addition of diverted volumes from 5th Street would seriously affect traffic flow on 3rd, 7th and 8th Streets since these roadways will carry approximately 1,500 vehicles during the 1981 p.m. peak. A ripple effect may occur as traffic is diverted from one parallel street to the next. The most critical avenues would be those leading to the Harbor Freeway ramps at 3rd, 5th, and 8th Streets, and possibly at 11th Street.

Vehicles diverted from the southerly section of Figueroa Street to the Harbor Freeway would increase the peak hour congestion on the freeway. The streets to the east of Figueroa Street (e.g. Flower, Hope, Olive), on the other hand, could accommodate the projected diversions without exceeding capacity limitations if diversion occurs south of 7th Street.

Northbound vehicles diverted from Figueroa Street between 3rd Street and 7th Street would cause excessive congestion on the northbound Harbor Freeway and on northbound Flower Street and could result in diversion to Beaudry Avenue, Boylston Street,

Table 5-14A  
PROJECTED TRAFFIC VOLUMES, 1981

Street	Street Segment	AUT	PM Peak Hour
5th	Harbor Freeway to Figueroa	31,800	2,740
	Figueroa to Flower	24,100	2,160
	Flower to Grand	20,800	1,900
	Grand to Olive	18,200	1,670
	Olive to Hill	16,500	1,320
Figueroa	11th to Olympic	21,300	1,200
	Olympic to 9th	23,500	1,430
	9th to 8th	21,800	1,240
	8th to 7th	20,300	1,170
	7th to Wilshire	22,400	1,290
	Wilshire to 6th	25,500	1,610
	6th to 5th	26,200	1,670
	5th to 4th	28,100	1,820
	4th to 3rd	29,200	2,200

Sources: Department of Traffic, Central Area Transportation Study, 1975-1990, June, 1977  
 Department of Traffic, 1977 Traffic Flow Maps, July, 1978.  
 Department of Traffic, Traffic Counts 1977, 1978.

Table 5-14B

## ANALYSIS OF TRAFFIC DIVERSION DURING DPM CONSTRUCTION

<u>Street</u>	<u>Critical Segment</u>	<u>Direction of Travel</u>	<u>Principal Diversion Routes</u>	<u>Diverted Volumes</u>
5th	Olive to Grand	Westbound	1st	100
			2nd	100
			3rd	500
			7th	370
			8th	400
			Olympic	100
			11th	100
Figueroa	9th to Olympic	Southbound	Union	100
			Harbor Fwy	500
			Flower	430
			Hope	150
			Grand	150
			Olive	100
Figueroa	3rd to 5th	Northbound	Beaudry/ Boylston/ Lucas	300
			Harbor Fwy	800
			Flower	500
			Grand	400
			Olive	100

and Lucas Avenue to the west and Grand Avenue and Olive Street to the east. It would appear that the disruption of traffic on Figueroa Street would be greater than on 5th Street since Figueroa Street traffic is two-directional and is the prime diversion route when the Harbor Freeway is congested.

Curb parking is permitted on both sides of Figueroa Street from 8th Street to Olympic Blvd. during the hours of 9 a.m. to 4 p.m. Parking meters have also been installed along this segment.

Construction activities in the west sidewalk would require the elimination of parking on the west side of Figueroa Street. No interference with parking on the east side of the street is anticipated. There are sufficient off-street facilities to accommodate the increased demand, although increased walking distances can be expected.

Traffic Impacts: Center of Figueroa Street Segment

Constructing the DPM alignment in the center of Figueroa Street from 3rd Street to 7th Street would result in severe disruption to traffic. This section of Figueroa Street provides access to and from the Harbor Freeway at a number of locations, the most critical of which are 3rd, 5th, and 6th Streets, where ramp access is available directly west of Figueroa Street. Therefore, there is a constant demand on both Figueroa Street and these east-west streets. Any impedance to turning movements from Figueroa Street or through movements on the other roadways would not only disrupt traffic on those arteries, but would also impair circulation throughout the west side of the CBD.

Due to changes in roadway geometry, an analysis of various sections of Figueroa Street will be necessary. Included in this discussion are current data regarding traffic volumes and speeds based on Department of Traffic circulation distri-

bution studies (1978), traffic flow maps (1977), and 1977 traffic counts (1978). Proposed mitigation measures are listed at the end of this section.

Between 3rd and 4th Streets, Figueroa Street is 80 feet wide. Except for a 100-foot long island north of 4th Street, there is no existing, raised median. South of 3rd Street, the roadway is striped to provide three through lanes in each direction during the peak hours, plus two northbound left-turn lanes, which accommodate the heavy left-turn demand to the Harbor Freeway ramps. By using bents, the DPM construction would not affect traffic turning movements at 3rd Street or at 4th Street. The most disruptive construction activities would be the excavation for footings and the drilling of piles, since these activities require the greatest width for a period of about four weeks per block. One and possibly two through lanes would be closed in each direction during construction. This section of roadway carries 24,500 vehicles daily with a northbound p.m. peak-hour volume of 2,103 including 420 left turners. The northbound p.m. peak hour speed was measured at 12.9 mph in 1978. Southbound traffic is also heavy during the a.m. peak with 1,662 vehicles operating at a speed of 12.3 mph. Construction disruption would; cause considerable congestion at 3rd Street; impede access to the Harbor Freeway; divert vehicle trips to Flower Street, Grand Avenue, 5th Street, and Temple Street; and restrict access to the World Trade Center parking facility for southbound motorists.

A raised median varying from four feet to fourteen feet in width has been installed on Figueroa Street from 5th Street to 4th Street. Along this reach, the through-number and right-turning movements approach 2,000 vehicles per hour during the A.M. and P.M. peaks for southbound and northbound traffic and those motorists would be adversely affected by the closure of one through lane in each direction while foundations and

footings were constructed. Also affected would be northbound motorists desiring to turn left into the Union Bank parking garage, which would be no longer accessible from the south. Southbound vehicle speeds are currently less than 10 miles per hour for both peaks and these values would be expected to deteriorate during construction.

The next segment to discuss extends from 5th Street to 6th Street. The roadway is 80 feet wide and is striped for peak hour use of three through lanes of traffic and one left turn lane north of 6th Street and three through lanes southbound, two through lanes northbound, one left turn lane, and one optional left turn/through lane south of 5th Street. The striping would be modified to maintain the existing number of lanes plus an eight-foot median without any street width modifications. Disruption would be most critical for northbound motorists endeavoring to reach the Harbor Freeway ramps. The ADT is almost 26,000 vehicles with a p.m. peak hour volume of 1,920 vehicles. Northbound traffic during the a.m. peak and midday periods exceeds 1,000 vehicles per hour, an indication of the importance of this access route. Northbound vehicle speeds range from 7 mph during the p.m. peak to 14 mph during the a.m. peak. Again it is anticipated that these speeds would be reduced and congestion would increase in the area with diversion routes, including discontinuous local streets west of the Harbor Freeway being used by some motorists. Also impacted on this segment would be left turners to and from the Jonathan Club.

From south of 6th Street to 7th Street the roadway width of Figueroa Street is 56 feet with the exception of the block between Wilshire Boulevard and 7th Street where there is an additional 10 feet of roadway west of the center line of the street. Peak striping provides three lanes of traffic in each direction. To maintain a 56-foot minimum roadway, a four-foot width of sidewalk would be converted to roadway use by street modification and an eight-foot median would be installed.

The widening process will be accomplished first, using doweled curbing and breaking out the sidewalk, then the old curb, installing the new base. Since a portion of the work can be accomplished behind the old curb, traffic will be disrupted only for about one month per block. After completion of the street widening, construction will begin on the column foundations and center median. Six to eight weeks will be required to complete the foundation work and median construction for each block. An additional two weeks will be required for major structural work at the stations. During these periods traffic will be restricted to two lanes in each direction.

As along other sections, installation of precast guideway sections and pedways will be accomplished in the evening and night-time hours and will require closing of at least one side of the street to provide access to the site and maneuvering room.

Station finishing will be completed on site and the only other activities that could require temporary lane closure would be installation of major equipment items such as escalators. These would occur primarily in non-peak hours.

Prohibition of left turns for both directions at Wilshire Blvd. and 7th Street would probably be required during peak traffic periods. Other turning prohibitions would be installed for northbound traffic at 8th Street, southbound traffic at 9th Street, and southbound traffic at Olympic Boulevard. These street sections currently are used by approximately 20,000 vehicles each day with typical peak hour volumes of 1,100 vehicles. The average p.m. peak hour speed is less than 10 mph in each direction, an indication of the traffic sensitivity to narrow lanes, turning movements, and heavy vehicular volumes. After the street modification, four feet of additional roadway would be available on each side of the street. However, it would appear that the excavation and drilling stages would require retention of turning prohibitions and a maximum of two lanes of traffic in each direction. Disruption would be intense and motorists would use diversion routes east of Figueroa Street that currently provide relatively unimpeded flow south of 7th Street.

Once the existing curb is removed, parking will be prohibited. Local businesses will experience some disruption, although there are sufficient off-street facilities to accommodate the increased demand. Dependent on the final striping scheme, the parking prohibition could continue through the remainder of the construction phase and during operation of the DPM.

The final section for consideration extends from Olympic Boulevard to the Convention Center intercept site south of 12th Street. The roadway width is a constant 82 feet and peak hour striping accommodates three through lanes in each direction plus a continuous left-turn lane commencing approximately 100 feet south of Olympic Boulevard. By narrowing the existing lanes, the eight-foot median can be installed without widening the roadway. It is anticipated that a minimum of one through lane in each direction would be closed during excavation and pile drilling. The longer block lengths, wider lanes, and

lower volumes (less than 20,000 ADT) are generally responsible for the increased vehicle speeds although the northbound approach to Olympic Blvd. is still less than 10 mph during the p.m. peak. In general, the disruption in this section would be an order-of-magnitude less than the preceding sections provided that access to the Harbor Freeway via 11th Street is not impaired and congestion for northbound traffic north of Olympic Boulevard does not extend for a considerable distance.

#### Mitigation Measures

There are a number of measures that can mitigate the disruption to traffic flow. First, there should be no construction activity in the moving traffic lanes during the hours of 7-9 a.m. and 4-6 p.m. Second, night and weekend construction should be encouraged wherever feasible, particularly for those activities that require full street width. Third, construction can be expedited by the use of precast guideway sections. Fourth, organization of the activities and the staging of the construction equipment should be coordinated to minimize the time between opening an excavation and closing it on installing a temporary cover. Fifth, the use of bents where possible for the center of the Figueroa Street segment would reduce column placement within the traveled way. Any mitigating measure employed will conform to local standards and codes.

Traffic mitigation measures will be developed in consultation with the Los Angeles Department of Transportation and other City agencies as appropriate.

In the vicinity of the Santa Ana Freeway, Aliso and Arcadia Streets can be used as alternative bypass routes during periods of freeway closure. Southbound traffic could exit on Broadway, continue on Aliso Street, and re-enter the freeway via Los Angeles Street. Northbound traffic could enter the freeway on Broadway. Impacts would be reduced if the majority of the work were conducted during night and early morning hours.

Mitigation measures for 5th and Figueroa Streets are more difficult, especially on 5th. Traffic signs should be used to alert motorists to the location and duration of construction activities on 5th Street, Figueroa Street, and others, as necessary. Specific detour routes are not anticipated due to the number of nearby parallel streets to which traffic can be diverted.

#### 5.142.1 Construction Impacts On Transportation: Pedestrian Movement

##### Construction Impacts On Pedestrian Movement.

The construction impact on pedestrian flow along the DPM route would be most noticeable during the excavation and pouring of the guideway footings. This construction step would typically take four weeks per block and could require some sidewalk closure during that period.

The guideway-column foundations range from 9 feet by 9 feet to 14 feet by 14 feet, depending upon the guideway height and degree of eccentric loading. At those locations where sidewalk widths are narrow and buildings are located on the property line, the entire sidewalk area would be used during construction.

Each column and foundation will be specifically located during the final design phase so that access to doorways can be maintained during construction. Portions of the sidewalk in the area of the foundation will be closed during excavation (approximately one day at each foundation). After the excavation is completed, temporary walk ways will be erected to allow pedestrian movement around the excavations and to the doorways.

Those locations where pedestrian access would be most affected are: Hill Street between 4th and 5th Streets; 5th Street between Olive Street and Grand Avenue; and Figueroa Street

between 7th and 11th Streets, for the west side of Figueroa segment. The center of Figueroa segment would require sidewalk modification from 6th Street to Olympic Blvd. on both sides of the street. Also, the location of bents south of 3rd Street would disrupt pedestrian movement on both sides of Figueroa Street.

During periods of closure, appropriate warning regulatory signs will be installed and pedestrians will be diverted. The impact of these closures would be mitigated by scheduling excavation along each block in one period and bridging excavation sites to provide access.

Sidewalk closure would also be necessary while the guideway is erected along each block, or while pedway connections at the 5th, 7th, and 9th Street stations are installed. Since this construction will be accomplished at night, this closure should have minimal impact.

Pedestrian activities will be limited from 6th Street to Olympic Blvd. if the street is widened in the Center of Figueroa variation.

#### 5-200 OPERATIONAL IMPACTS AND MITIGATION

The operating plan of the DPM is discussed in Section 4-300, Project Description. The base operational year used in the following analysis is 1990. Although the system would be in operation by 1983, the full effects of the system on ridership and downtown development will not be felt for several years. 1990 was chosen as the plan year because it represented a good range for analysis and because it was the target year for employment and population projections used in the transportation needs analysis.

#### 5-210 Operational Impacts On The Natural Environment

##### 5-211 Topography, Geology, and Soil Characteristics

The DPM system will have no detrimental effect on the underlying geologic and soils conditions, when it becomes operational.

##### 5-212 Seismicity

As discussed in Section 2-120, Southern California is a seismically hazardous area. Although it is not possible to predict the degree of the hazard, because seismic activity is typically quite erratic, it is known that in the event of an earthquake, the downtown Los Angeles area would be particularly sensitive to ground shaking, which could result in severe damage to structures in the area.

The DPM system, as a new structural element in the downtown area, would be particularly sensitive, because it uses an aerial guideway system upon which will be transported large numbers of people. The appropriate response to this risk, therefore, is to ensure through system design that DPM structural facilities and operating components provide adequate safety in the event of potential earthquakes of known behavior and magnitude. As a result of the 1971 San Fernando earthquake experience, design specifications prepared by various levels of government have been modified to provide for further structural resistance, beyond those modifications resulting from the experience of the 1933 Long Beach earthquake. Both the Los Angeles City and County building codes have been so revised, and revisions to structural design specifications have been prepared by the American Association of State Highway and Transportation officials. The DPM Structural Design Criteria will reflect these latest standards.

### 5-213 Flood Plains

Construction of the DPM would have an insignificant impact on the runoff and storm drain systems in the area of the project. Minor modifications of this system may be necessary to accommodate the DPM. The minimum vertical clearance of the DPM guideway structure will be 17'0". At this elevation, any effects of flooding on the transit structure would be insignificant. The DPM structures such as buildings, footings, pedestals, and foundations will be constructed according to the current Building Codes to accommodate drainage.

### 5-214 Water Quality

The potential impacts which could result from DPM operation are two: (1) Permanent disruption of groundwater and thus diversion and disruption of groundwater flows, and (2) Increased urban storm water runoff from large, paved areas associated with the stations, creating the potential for increased flooding.

Increasing the areas of impervious surface could increase the volume of storm runoff. Increases in impervious surface area would be associated with new DPM stations and intercept facilities. Because the degree of additional impervious surface created by the DPM is minimal, additional runoff will also be minimal. Combining this with the presently good water quality of the Central Basin, the impact of the DPM system on water quality is expected to be undetectable.

### 5-215 Vegetation and Wildlife

Operation of the system is expected to have minimal effect on the vegetation and wildlife along the route. Some trees along Figueroa Street, First Street, Los Angeles Street and Arcadia Street may have to be pruned at regular intervals to maintain guideway clearance. (see Section 5-115 for the ini-

tial list of such trees). Animal life that is displaced during construction is expected to resume its former habitat after the construction period is over.

### 5-216 Meteorology and Climate

Operation of the DPM system will have no detrimental effect on meteorology and climate.

### 5-217 Air Quality

The air quality analysis conducted for purposes of this document consisted of two parts: (1) a burden analysis of air pollution increments produced within the study area and (2) a microscale analysis of carbon monoxide concentration in the vicinity of each of the two proposed intercept facilities. No attempt was made to quantify the potential effects on secondary pollutants due to the complexity of photochemical processes which produce such pollutants, and the uncertainty of available estimation methods. The results of the analysis demonstrate that incremental changes in emissions resulting from implementation of a DPM are nearly insignificant at the regional scale and only minor at a more local scale. Carbon monoxide concentrations at each of two proposed intercept locations were found to be minor-to-insignificant, depending upon receptor location. The following sections describe briefly the methodology used and results of the analysis. For a more detailed account of the analysis procedures, the reader is referred to the Air Quality analysis technical supplement.

The Los Angeles Downtown People Mover has been included in the regional Air Quality Maintenance Plan (AQMP) as a specific tactic (#H-87) for implementation after 1982. The AQMP, and its Environmental Impact Report, have been adopted by the Southern California Association of Governments and the South Coast Air Quality Management District. The AQMP is currently

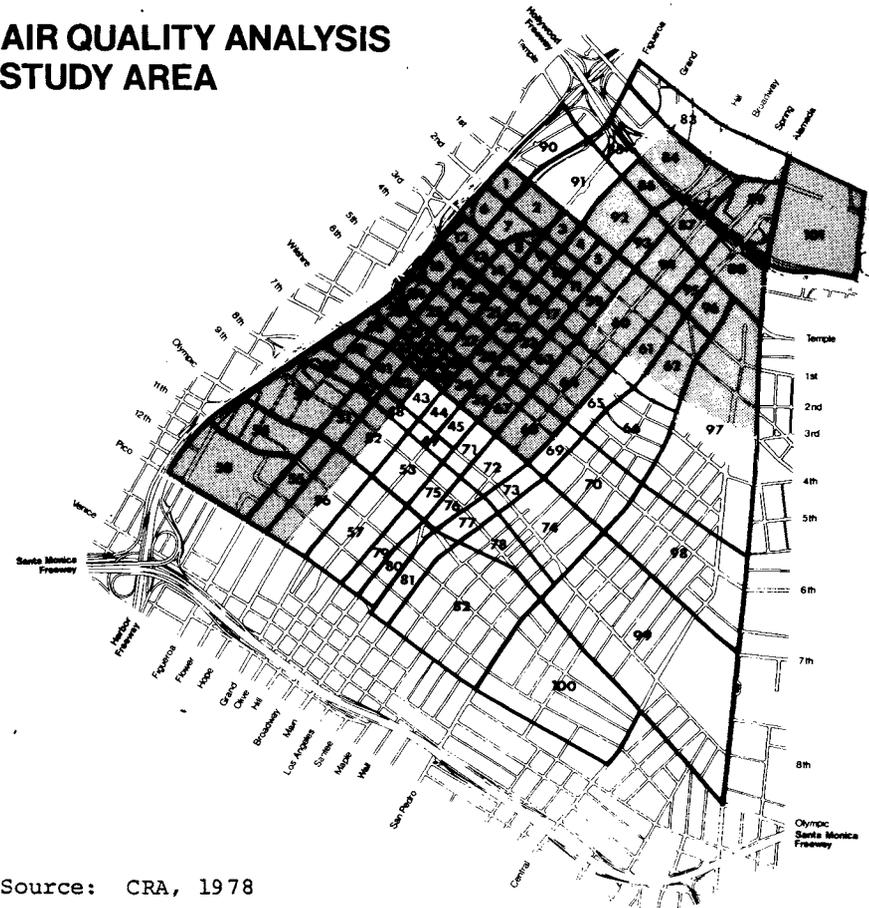
under review by the California Air Resources Board, at the completion of which (late April 1979) it will be submitted to the U.S. Environmental Protection Agency for final approval.

**Emissions analysis.** For the purposes of estimating the potential effects of a DPM system on emissions, a study area was chosen to fairly represent the extent of the potential measurable effect upon transportation performance. Since the automobile is the major source of emissions in a downtown area, a study area was defined beyond which the potential changes in automobile use would not be noticeable. Figure 5-21A shows the air quality analysis study area, based on estimated potential changes in traffic volumes by the Department of Traffic.

Individual 16 hour link volumes and 24 hour average speeds were supplied by the Department of Traffic, for light duty automobiles, for three conditions: 1977 (representing existing conditions), 1990 no project, and 1990 with DPM system in place. The link volumes and speeds were used to calculate total daily vehicle miles of travel (VMT) and emissions for light duty vehicles in the study area. Truck volumes were excluded as operation of the DPM would not affect them, and bus volumes were considered separately. Total daily VMT for each of the three cases were adjusted to correspond with cordon count information prepared by the Department of Traffic.

Bus volume information for 1978 was obtained from the SCRTD Planning Department for the CBD. Study area bus-miles were obtained by summing the SCRTD data according to census tract totals. 1990 bus-miles were obtained by factoring 1978 data by SCRTD expansion factors, which were based on anticipated employment growth. 1990 bus-miles for the DPM case were obtained using expected savings resulting from DPM usage and intercept information. (see Section 5-240.)

FIGURE 5-21A  
AIR QUALITY ANALYSIS  
STUDY AREA



Source: CRA, 1978

Emissions factors used were obtained from composite emissions factor calculations conducted by the Southern California Association of Governments, which in turn were derived from factor data presented in Mobile Source Emission Factors, U.S. Environmental Protection Agency, January 1978.

Emissions were calculated using the following procedure:

(1) Hot stabilized emissions were first calculated using daily VMT figures. (2) Cold start emissions were calculated by assuming that all outbound trips in the afternoon peak period were operating in the cold start mode, as were a proportion of all other types which corresponded to the regional average. (3) Hot start emissions were calculated assuming the regional proportion of all trips. (4) Hot soak emissions were calculated for all inbound distribution trips. (5) Diurnal emissions were calculated for all autos parked in the CBD throughout the course of the day.

For the DPM system itself, emissions would be produced by the electrical generation facility which produced its power. Emissions factors for this were obtained from the EIR Manual for Private Projects, City of Los Angeles, 1978.

The results of the emissions analysis are displayed in Table 5-21A, for each of the three cases. Several conclusions can be drawn from this table. A dramatic improvement in emissions results in 1990, irrespective of transportation system, due to improvements in the technology of automobile emissions control. Carbon monoxide emissions improve by 53% between 1977 and 1990 Null, for example. Secondly, 1990 DPM shows

a slight improvement over the Null case for every pollutant type, except sulfur oxides. Thirdly, the emissions produced by the DPM electrical power source does not have a significant effect on total emissions production, with the exception of sulfur oxides. As noted in the table, however, these emissions would not be experienced within the downtown area. At the regional scale, none of the three cases produce emissions that can be considered more than a minor proportion. Table 5-21B compares study area emissions estimates with estimates for the South Coast Air Basin. Data for the air basin estimates were obtained from the Southern California Association of Governments. The results of the macro scale emissions analysis indicate that the DPM case produces an insignificant effect on air quality in the study area.

Microscale analysis. Microscale air quality analysis generally refers to the estimation of emissions within close proximity of a specific site or facility. Implementation of the DPM system, as proposed, would result in two intercept/parking facilities - one at Union Station and the other at the Convention Center. At each of the facilities there would be parking spaces for a large number of automobiles; 2000 at Union Station and 1750 at the Convention Center. In addition, at the Union Station facility there would be provisions for substantial bus activity from the El Monte busway. The presence of these large numbers of vehicles could be of concern, because of potential exposure to high concentrations of pollutants, particularly carbon monoxide. Therefore, a microscale CO dispersion analysis was conducted at each facility.

The parking facility at the Convention Center would accommodate approximately 1750 vehicles. Of these, 1500 are estimated to be of long term use and 250 of short term use. The parking structure is approximately 600 feet by 130 feet in size and would have approximately seven parking levels. The structure would be located on the east side of Figueroa Street, between

TABLE 5-21A

STUDY AREA EMISSIONS ESTIMATES, BY STAGE OF PRODUCTION  
(Expressed in Tons per Day)

	Carbon Monoxide	Total Hvdro- carbons	Nitrogen Oxides	Sulfur Oxides	Particulates
<u>Automotive Emissions</u>					
<u>1977</u>					
Hot Stabilized	12.569	1.116	0.865	0.063	0.137
Cold Start	38.278	3.217	1.804	0.065	0.227
Hot Start	2.682	0.305	0.284	0.009	0.034
Hot Soak		0.921			
Diurnal		0.338			
TOTAL	53.529	5.897	2.953	0.137	0.398
<u>Automotive Emissions</u>					
<u>1990 NULL</u>					
Hot Stabilized	3.267	0.303	0.539	0.079	0.110
Cold Start	20.740	1.608	1.120	0.087	0.168
Hot Start	0.893	0.152	0.134	0.013	0.025
Hot Soak		0.372			
Diurnal		0.045			
TOTAL	24.900	2.480	1.793	0.179	0.303
<u>Automotive Emissions</u>					
<u>1990 DPM</u>					
Hot Stabilized	2.972	0.275	0.508	0.073	0.104
Cold Start	19.626	1.521	1.059	0.082	0.159
Hot Start	0.834	0.142	0.125	0.012	0.023
Hot Soak		0.360			
Diurnal		0.048			
DPM Emissions (1)	0.006	0.005	0.065	0.151	0.011
TOTAL	23.438	2.351	1.757	0.318	0.297

(1) These emissions are actually produced outside the region, but are included here to represent the total quantity of emissions produced by the system

TABLE 5-21B

COMPARISON OF SOUTH COAST AIR BASIN (SCAB) AND STUDY AREA  
MOBILE EMISSIONS  
(Tons per Day)

	<u>Carbon Monoxide</u>	<u>Total Hydro- carbons</u>	<u>Nitrogen Oxides</u>	<u>Sulfur Oxides</u>	<u>Particulates</u>
SCAB (1976)	7692.8	844.0	693.6	37.1	93.9
STUDY AREA (1977)	53.5	5.9	2.9	0.1	0.4
STUDY AREA AS PORTION OF SCAB	0.7%	0.7%	0.4%	0.3%	0.4%
-----					
SCAB (1990)	1594	215	267	23	45
STUDY AREA (1990 NULL)	24.9	2.5	1.8	0.2	0.3
STUDY AREA (1990 DPM)	23.4	2.3	1.8	0.3	0.3
STUDY AREA (1990 DPM) AS PORTION OF SCAB	1.5%	1.1%	0.7%	0.8%	0.7%

Source of South Coast Air Basin data - Southern California Association  
of Governments, 1978.

Pico Boulevard and Twelfth Street. In addition to the parking garage, a contribution would result from vehicular activity on Figueroa, immediately adjacent to the west.

Receptor locations for the Convention Center facility (see Figure 5-21B) corresponding to points of potential continued human exposure were selected as follows:

1. Middle of sidewalk on east side of Figueroa.
2. Mid point of parking garage interior.
3. Middle of alley to the east of parking garage.
4. Mid point of block between alley and Flower Street.
5. Middle of sidewalk on west side of Flower Street.

The Union Station parking facility lies in an area to the east of the existing track area and to the north of the Santa Ana freeway. Sources contributing to potentially increased carbon monoxide include the freeway, the proposed extension of the El Monte busway, and the automobile/bus intercept. Capacity for the intercept facility, which comprises six levels, is approximately 2000 spaces, 1500 of which are expected to be of long term use and 500 of short term use. Also, bus service extends to the intercept, with both local and express routes discharging or accepting passengers at the intercept. For the analysis, bus volumes were apportioned to both busway directions on the basis of data supplied by the SCRTD.

Receptor locations for the Union Station facility (see Figure 5-21C) were selected as follows:

1. A point located in the middle of the taxi waiting area, in the southern portion of the structure, at ground level.
2. A point located on the Macy Street sidewalk, at ground level, to the north of the intercept.

3. A midpoint of the maintenance yard employee/visitor parking lot, to the west of the intercept, at ground level.
4. A point located at the public information counter, at the southern end of the intercept, at the third level.
5. A midpoint of the DPM platform area, at the southern end of the intercept, at the roof level.

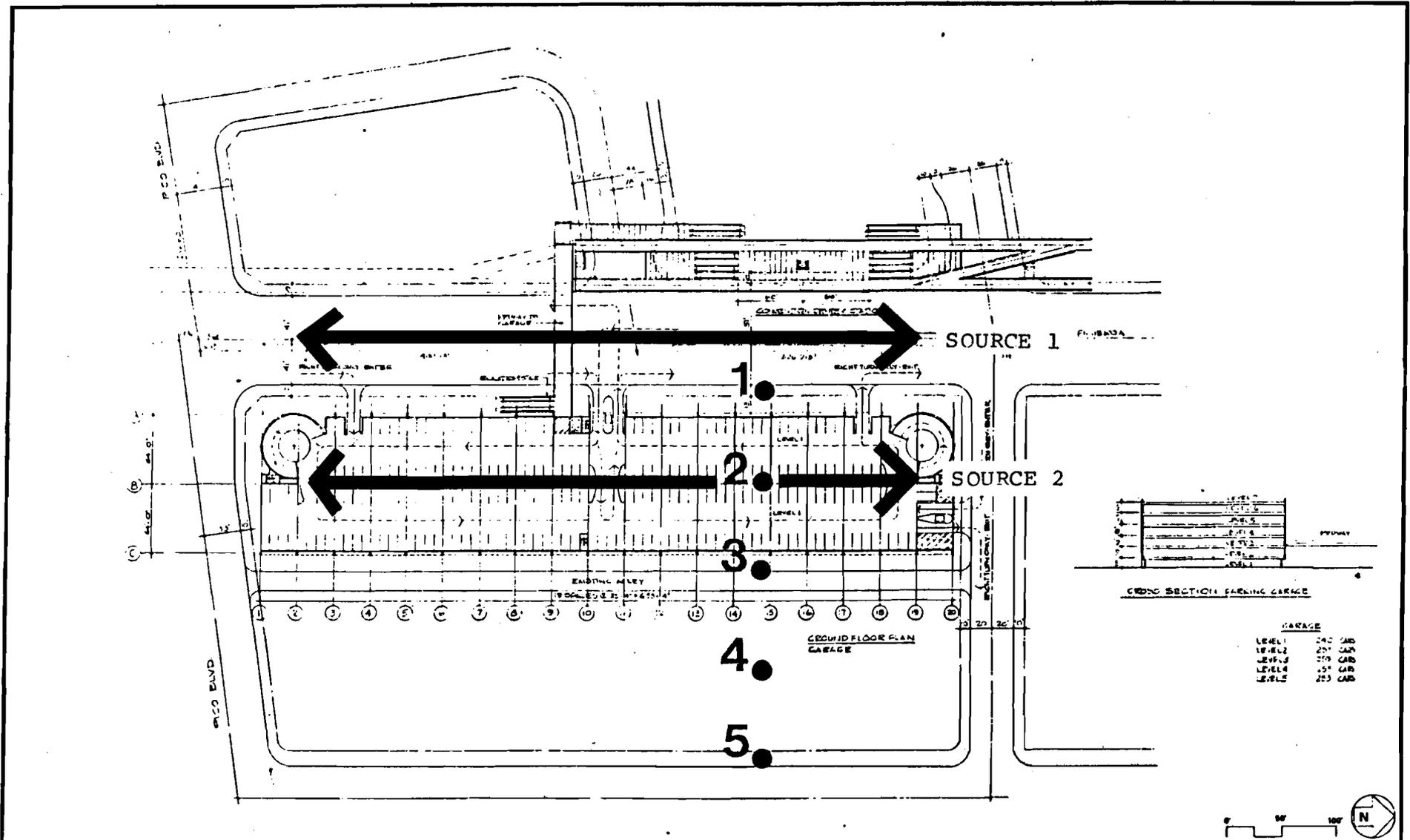
In order to estimate expected carbon monoxide concentrations at each of two parking intercepts, an analysis methodology was required which considered line sources, representing nearby arterial traffic, and an area source, representing vehicular activity within the intercepts themselves. Contributions from each of the arterial sources were estimated using the CALINE 2 line source model, developed by Caltrans. Using this model, concentrations were estimated at each of the receptors, for the contribution produced by each of the relevant line sources.

To apply the CALINE 2 model, several assumptions were needed regarding meteorology, emissions factors and volume of vehicular activity. In terms of meteorology, a prevailing wind direction from the west was assumed at both Union Station and the Convention Center. Wind speed was assumed to be 2 miles per hour and air stability was assumed to be Pasquill Class D. Both of these are worst case assumptions.

Vehicular traffic on roadways adjacent to each facility were obtained for 1977, 1990 Null, and 1990 DPM cases, for both peak hour and 8-hour average conditions. Both existing and projected volumes for Figueroa Street were obtained from the Department of Traffic. Traffic volumes for the Santa Ana freeway were obtained from Caltrans, with 8-hour averages calculated using cordon count information. Bus activity on the El Monte busway was obtained from the SCRTD Planning Department.

FIGURE 5-21B

CARBON MONOXIDE MICROSCALE ANALYSIS: CONVENTION CENTER SOURCE AND RECEPTOR LOCATIONS



<p>CONTRACTOR - AGENCY:</p> <p>Prepared by _____</p> <p>Checked by _____</p>	<p><b>DMJM</b></p>	<p><b>Los Angeles Downtown People Mover Project</b></p> <p>COMMUNITY REDEVELOPMENT AGENCY OF THE CITY OF LOS ANGELES</p>	<p>SUBJECT TO CHANGE IN FINAL DESIGN</p>
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FIGURE 5-21C  
 CARBON MONOXIDE MICROSCALE ANALYSIS: UNION STATION SOURCE AND RECEPTOR LOCATIONS

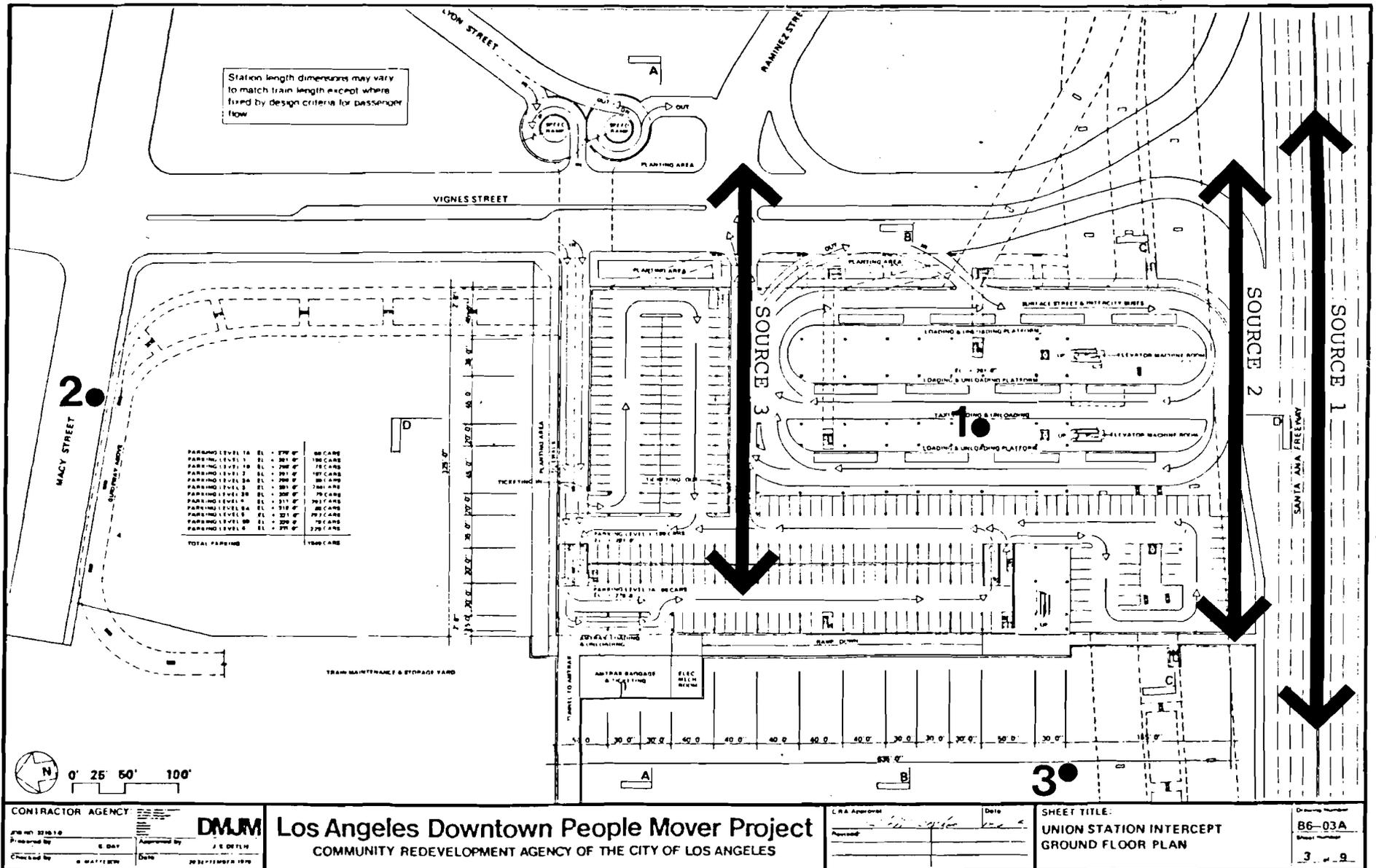
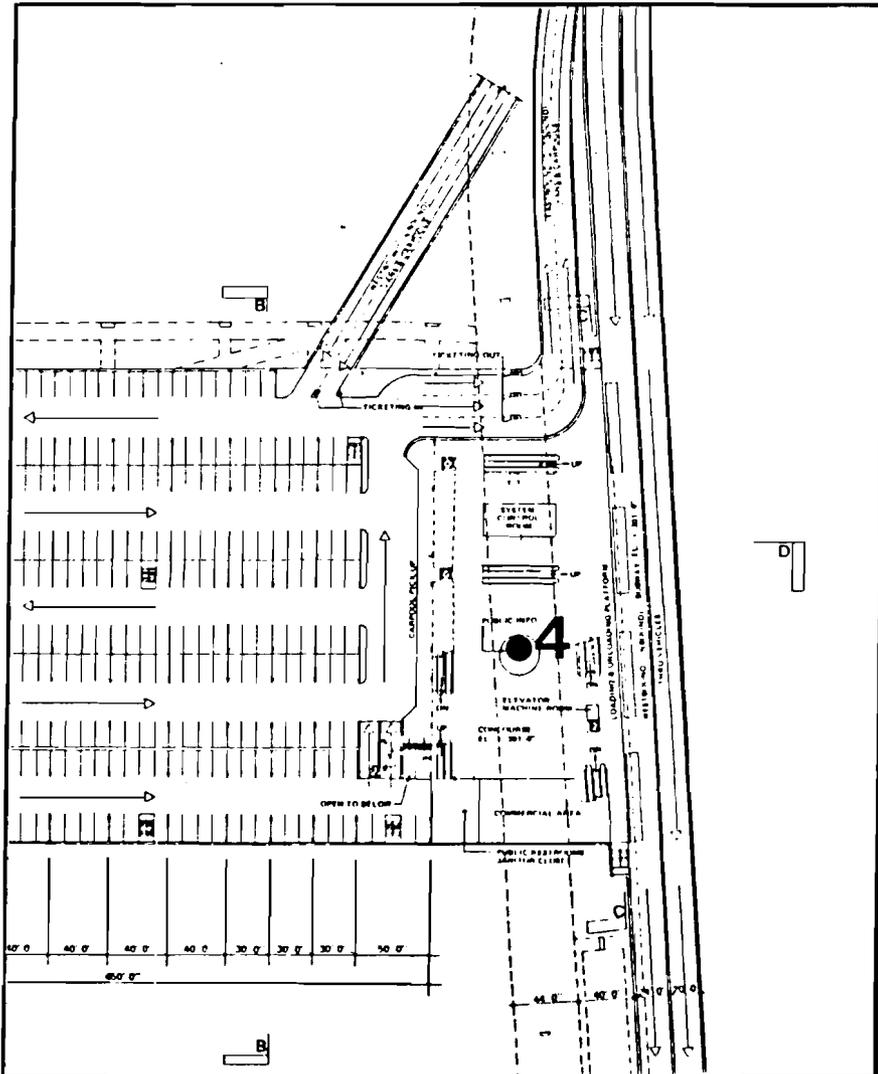
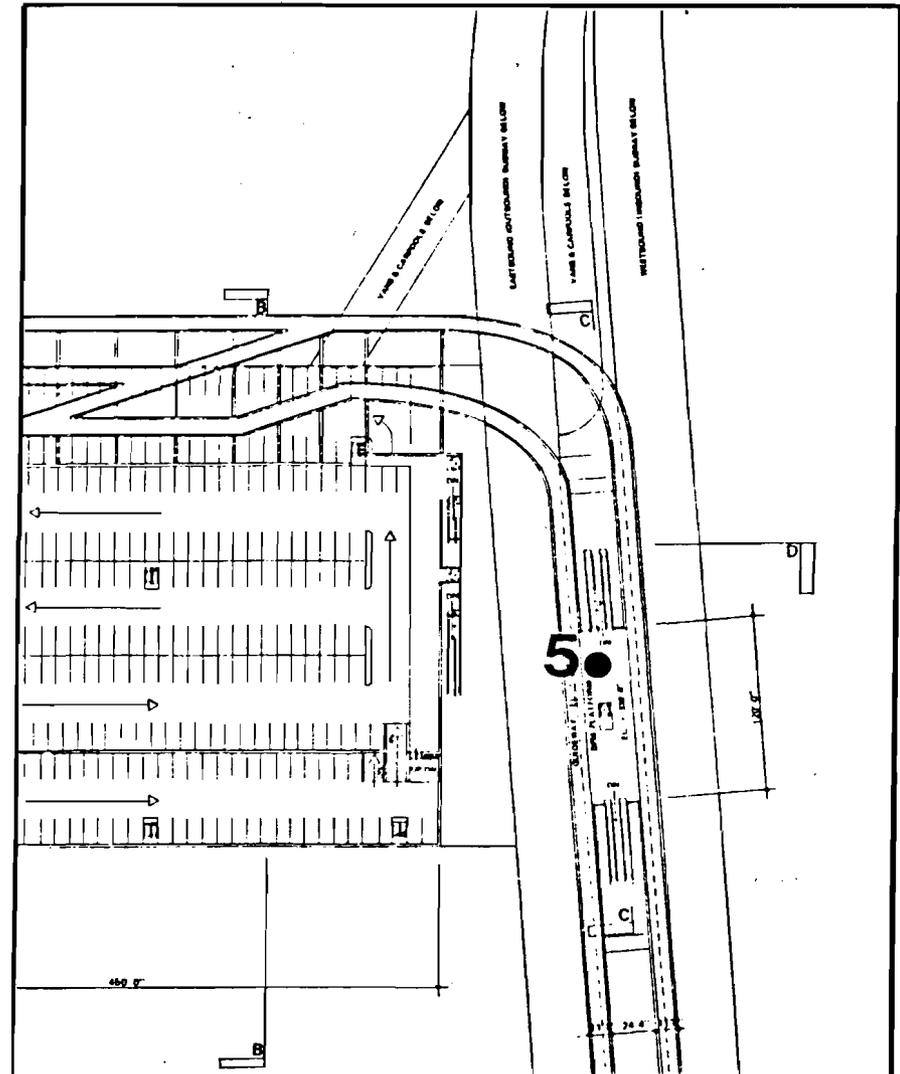


FIGURE 5-21C (continued)

CARBON MONOXIDE MICROSCALE ANALYSIS: UNION STATION SOURCE AND RECEPTOR LOCATIONS



<b>Project</b> SAGELES	CAA Approval <i>[Signature]</i>	Date 12-20-06	<b>SHEET TITLE:</b> UNION STATION INTERCEPT THIRD FLOOR PLAN	Drawing Number B6-05A
	Revised			Sheet Number 5 of 9



<b>Project</b> SAGELES	CAA Approval <i>[Signature]</i>	Date 12-20-06	<b>SHEET TITLE:</b> UNION STATION INTERCEPT ROOF PLAN	Drawing Number B6-07A
	Revised			Sheet Number 7 of 9

To estimate the concentration attributable to the parking intercept facilities, a line source model, such as CALINE 2, was not completely appropriate, because a parking structure would not behave strictly as a line source, and because of differences relating to mixing cell definition and diffusion characteristics. Similarly, an area source methodology available for parking lots (EPA, Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9 (Revised), Evaluating Indirect Sources, September 1978) was also not completely appropriate, due to its inability to represent the physical characteristics of an enclosed structure.

For these reasons, a methodology was developed for the specific characteristics of a parking structure design similar to that being proposed for each of the two intercept sites, which basically consists of ceiling and floor enclosures, with open sides at each parking level. Therefore, for the estimation of CO concentration attributable to the parking intercepts the following procedure was used.

First, each of the parking structures was assumed to be a closed box. This allowed the calculation of an initial concentration, based on an hourly build-up of pollutants in an initial volume of air. Emission factors were selected for light duty vehicles, operating in an idling mode in 1990. Vehicle usage for the intercepts was calculated in City of Los Angeles Community Redevelopment Agency, Air Quality Analysis, January 1979. Running time estimates were developed using the previously-cited EPA publication.

After having calculated the initial concentration assuming a closed box, the analysis then relaxed the closed box assumption and introduced the effects of meteorology through the action of wind. A prevailing westerly wind of one meter per second was assumed for this step of the analysis. This is a conservative assumption, as actual mean wind speeds over a recent twelve-month period have been measured between 1.4 and 2.2 meters per second.

By applying the assumed wind speed to a perpendicular cross section of the parking structure, at a thickness of one meter, the volume of air displaced in one second could be calculated. Dividing the total initial volume of the structure by the volume displacement per unit of time yielded the time required to totally displace one initial volume of air. This figure was then converted into the number of initial volumes displaced in one hours' time. In effect, this means that the actual concentrations are present in the effective volume of the structure, which is equivalent to the number of displaced volumes in one hours' time. This then was the basis for estimating CO concentrations in each of the parking structures.

A refinement to the analysis was obtained by performing the analysis at each of the parking levels, rather than for the structure as a whole. The procedure described above was applied to each of the parking levels, with its proportionate share of the total volume and degree of parking activity.

Ambient CO concentrations were estimated as follows: Monthly averages of one-hour maxima for a recent 12-month period were obtained from a nearby Southern California Air Quality Management District monitor point. The highest value (12.9 ppm), which occurred in November 1977, was used to represent 2 worst case ambient conditions, for both the one-hour and eight-hour cases. This worst case ambient value was attenuated to 1990 based on expected improvements in automobile emission characteristics. It should be noted that, even under worst case conditions, (1990 ambient = 2.7 ppm), neither the one-hour nor eight-hour federal standards will be violated.

A detailed description of the analysis methodology is provided in Community Redevelopment Agency, Los Angeles Downtown People Mover Program: Carbon Monoxide Concentration Analysis at Parking Intercepts, February 1979.

Tables 5-21C and 5-21D present the results of the carbon monoxide concentration analysis. Included in the tables are the contributions at each of the receptor locations for the parking intercepts, nearby line sources, and estimated 1990 ambient levels. Based on the information presented in these tables, the following conclusions may be drawn:

- Between 1977 and 1990, technological improvements in automobile emissions characteristics will be such that significant reductions in carbon monoxide concentrations result at both intercept facilities.
- Neither peak hour nor 8-hour federal standards are violated under any conditions, in 1990.
- At the Convention Center intercept, between the 1990 Null and DPM cases, peak-hour CO concentrations are increased at all receptors, although the increase is so small as to be insignificant.
- At the Convention Center intercept, between the 1990 Null and DPM cases, 8-hour CO concentrations remain essentially unchanged.
- At the Union Station intercept, between the 1990 Null and DPM cases, peak hour CO concentrations increase at four out of five receptors, although the increases are slight.
- At the Union Station intercept, between the 1990 Null and DPM cases, 8-hour CO concentrations increase at four out of five receptors, although the increases are so small as to be insignificant.

TABLE 5-21C

CARBON MONOXIDE CONCENTRATION ANALYSIS:  
CONVENTION CENTER INTERCEPT

SOURCE CONTRIBUTION	CO AT RECEPTORS (Parts per Million)				
	1	2	3	4	5
<u>1977</u>					
Figueroa Street - Peak Hour	2.0	1.5	1.4	1.3	1.2
Ambient	12.9	12.9	12.9	12.9	12.9
Total	14.9	14.4	14.3	14.2	14.1
Figueroa Street-8 Hr Average	1.2	0.9	0.8	0.8	0.7
Ambient	12.9	12.9	12.9	12.9	12.9
Total	14.1	13.8	13.7	13.7	13.6
<u>1990 NULL</u>					
Figueroa Street - Peak Hour	0.8	0.6	0.5	0.5	0.5
Ambient	2.7	2.7	2.7	2.7	2.7
Total	3.5	3.3	3.2	3.2	3.2
Figueroa Street-8 Hr Average	0.7	0.6	0.5	0.5	0.4
Ambient	2.7	2.7	2.7	2.7	2.7
Total	3.4	3.3	3.2	3.2	3.1
<u>1990 DPM/PEAK HOUR</u>					
Figueroa	0.4	0.4	0.3	0.3	0.3
Parking Garage	0.6	0.6	0.6	0.5(1)	0.3(1)
Ambient	2.7	2.7	2.7	2.7	2.7
Total	3.7	3.7	3.6	3.5	3.3
<u>1990 DPM/8 HOUR AVERAGE</u>					
Figueroa	0.4	0.3	0.3	0.3	0.3
Parking Garage	0.3	0.3	0.3	0.1(1)	0.1(1)
Ambient	2.7	2.7	2.7	2.7	2.7
Total	3.4	3.3	3.3	3.1	3.1

## NOTES:

- (1) Concentrations at these receptors taken from Caline 2 output. These values are conservative estimates, as diffusion of garage concentrations would be lower, by virtue of their lower initial values, compared with Caline 2 values.

TABLE 5-21D  
 CARBON MONOXIDE CONCENTRATION ANALYSIS:  
 UNION STATION INTERCEPT

SOURCE CONTRIBUTION	CO AT RECEPTORS (Parts Per Million)				
	1	2	3	4	5
<b>1977</b>					
Santa Ana Freeway - Peak Hour	3.3	0	6.4	6.5	6.4
Ambient	12.9	12.9	12.9	12.9	12.9
Total	16.2	12.9	19.3	19.4	19.3
Santa Ana Freeway - 8 Hr. Average	3.1	0	6.0	6.0	5.9
Ambient	12.9	12.9	12.9	12.9	12.9
Total	16.0	12.9	18.9	18.9	18.8
<b>1990 NULL/PEAK HOUR</b>					
Santa Ana Freeway	1.0	0	1.9	1.9	1.9
El Monte Busway - west bound	0	0	0	0	0.1
El Monte Busway - east bound	0	0	0	0	0
Ambient	2.7	2.7	2.7	2.7	2.7
Total	3.7	2.7	4.6	4.6	4.7
<b>1990 NULL/8 HR. AVERAGE</b>					
Santa Ana Freeway	0.9	0	1.8	1.8	1.8
El Monte Busway - west bound	0	0	0	0	0
El Monte Busway - east bound	0	0	0	0	0
Ambient	2.7	2.7	2.7	2.7	2.7
Total	3.6	2.7	4.5	4.5	4.5
<b>1990 DPM/PEAK HOUR</b>					
Santa Ana Freeway	1.0	0	1.9	1.9	1.9
El Monte Busway - west bound	0	0	0	0	0.1
El Monte Busway - east bound	0	0	0	0	0
Parking Garage	0.8	0	0.6 (1)	1.5	1.5 (2)
Ambient	2.7	2.7	2.7	2.7	2.7
Total	4.5	2.7	5.2	6.1	6.2
<b>1990 DPM/8 HR AVERAGE</b>					
Santa Ana Freeway	0.9	0	1.8	1.8	1.8
El Monte Busway - west bound	0	0	0	0	0
El Monte Busway - east bound	0	0	0	0	0
Parking Garage	0.3	0	0.1 (1)	0.4	0.4 (2)
Ambient	2.7	2.7	2.7	2.7	2.7
Total	3.9	2.7	4.6	4.9	4.9

## NOTES:

- (1) Concentration at this receptor taken from Caline 2 output. This value is a conservative estimate, as diffusion of garage concentration would be lower.
- (2) Box model analysis result for top interior floor. Actual concentration at roof level would be lower, by virtue of diffusion.

## 5-218 NOISE AND VIBRATION

DPM noise impacts have been analyzed in several ways. Maximum DPM noise production, controlled through the System Specification, was identified in a passby noise analysis. Second, a detailed computer analysis was used to identify the resulting noise levels, in terms of one-hour  $L_{eq}$ , at various locations in downtown. Third, an analysis was conducted to identify the potential impacts on noise sensitive land uses along the route. The following sections describe the analyses. A final section discusses vibration impacts.

## 5-218.1 Passby Noise Levels

The DPM System Specification states that exterior passby noise levels, measured at 50 feet from the guideway centerline, with auxiliaries and air conditioning operating, will not exceed the following:

- At 10 miles per hour - 63 dB(A)
- At 30 miles per hour - 75 dB(A)

DPM equipment manufacturers must conform to these specifications and therefore the specifications will become a part of the equipment finally selected.

Two operating speeds have been postulated for the DPM system, namely 17 and 30 mph, the choice of which is dependent upon guideway configuration and distance between stations. To estimate the noise produced at 17 mph, the relationship between speed and noise was assumed to be linear, resulting in an interpolated noise level at 17 mph of 68 dB(A).

Using the above basic noise levels, noise contours have been constructed for operating speeds of 17 and 30 mph, taking into account the attenuation produced by increasing distance. These are presented in Figures 5-21D and 5-21E, respectively.

FIGURE 5-21D

### EXTERIOR NOISE CONTOURS FOR DPM OPERATING AT 17 M.P.H.

Passby Duration 3.9-4.8 Seconds

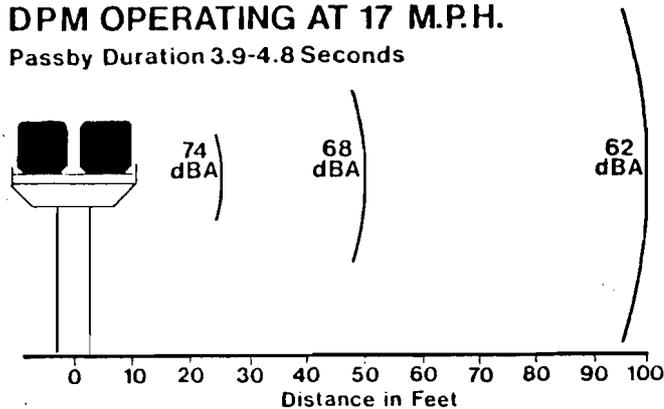
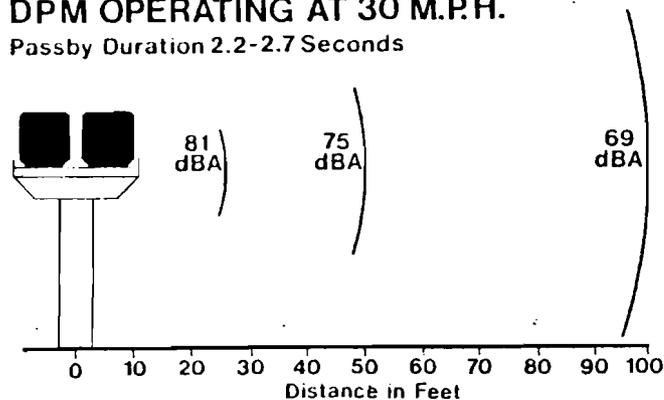


FIGURE 5-21E

### EXTERIOR NOISE CONTOURS FOR DPM OPERATING AT 30 M.P.H.

Passby Duration 2.2-2.7 Seconds



Each of the noise contour figures also includes an estimated passby duration. These estimates were developed assuming a train length of between 97 and 120 feet. Thus at a speed of 17 mph, the passby duration would range between 3.9 and 4.8 seconds, whereas at a speed of 30 mph this range would be reduced to between 2.2 and 2.7 seconds.

In addition to the above analysis, the effects of two trains passing one another were also examined. The DPM alignment has 7 two-way segments, on which two trains would pass one another on the average of once every 108 seconds, or 33 times per hour. The location of this occurrence would be randomly determined and the duration would be between 2.7 and 4.8 seconds.

The effect of the double passby would be two equally contributing sources, which results in an increase of 3 dB(A) in the overall noise level at a distance of 50 feet. This means double passby noise levels of 71 dB(A) for a speed of 17 mph and 78 dB(A) for a speed of 30 mph. Because the increase is so small as to not be readily perceptible, and further because of the randomness of this occurrence, double passby noise impacts are concluded to be insignificant.

#### 5-218.2 Interior Vehicle Noise

The levels of interior noise which would be experienced by DPM patrons are governed by the System Specification. The specified DPM maximum interior noise level is 74 dB(A), for the vehicle being either stationary or moving, with auxiliaries and air conditioning operating.

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### 5-218.3 Computer Analysis of Noise Impacts

Noise impacts resulting from operation of the DPM system were evaluated using the following methodology.

A study area was first defined to include that portion of downtown where DPM operation could have a direct and measurable impact. This area is a corridor centered along the DPM alignment and extending one-half block on either side of the route.

An ambient noise survey was then conducted to describe existing conditions and provide a reference for calibrating a noise prediction model. Noise levels were determined at each of the locations shown in Figure 5-21F, using two digital Acoustics Model DA-100 Precision Sound Level Meters and a Wang 600-14TP calculator. The measurements were taken with the meters set on the "A" weighting and fast response. The measurement time was ten minutes minimum for peak traffic condition and fifteen minutes minimum for ambient and light traffic conditions.

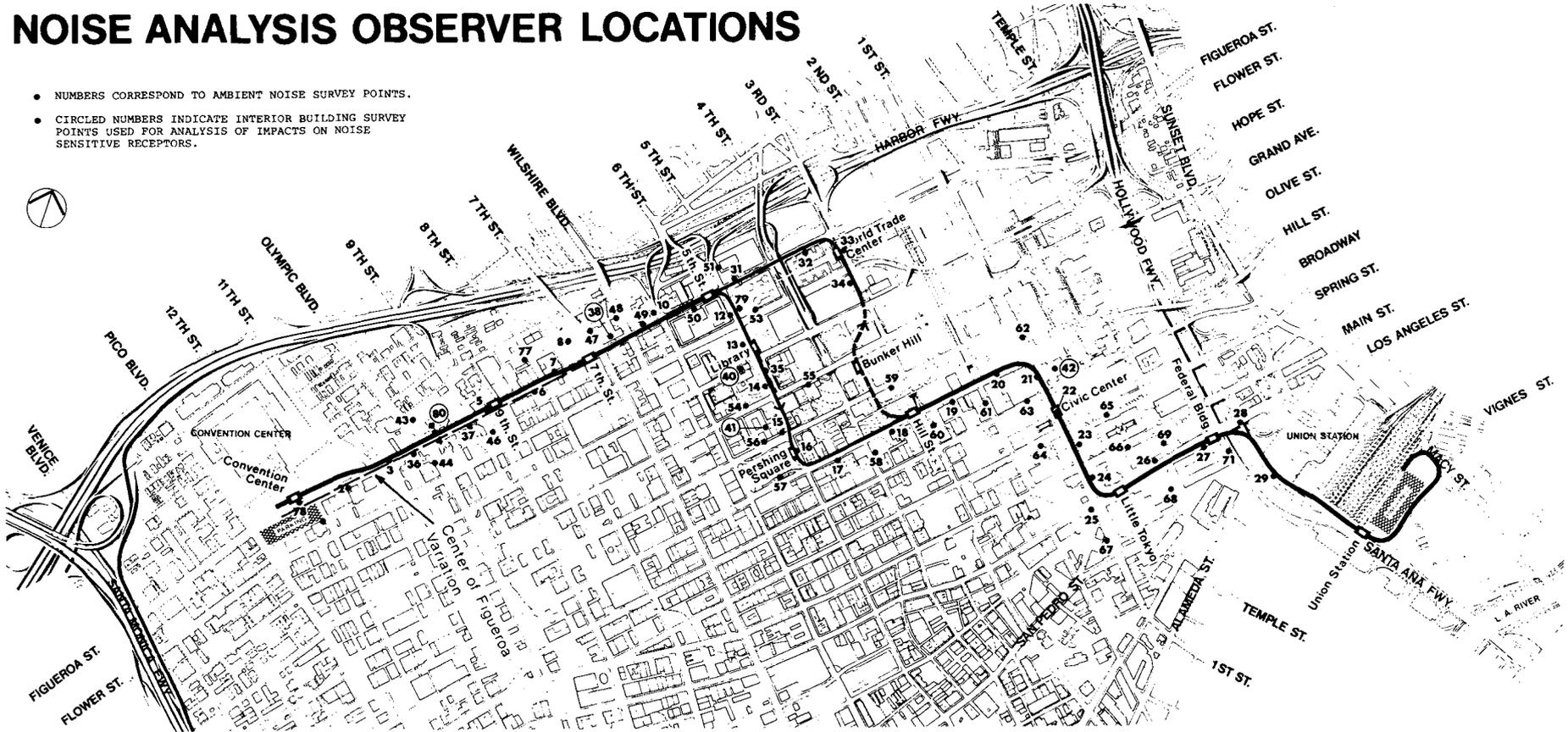
The 1978 P.M. peak hour noise levels were calculated using a noise prediction model and checked against the ambient noise survey readings. The model was then calibrated so that calculated values would compare with measured levels. The noise prediction model which was used for the analysis was adapted by the City of Los Angeles Bureau of Engineering from a model developed by the Federal Transportation Systems Center. (See Report No. DOT-TSC-FHWA-72-1, Manual for Highway Noise Prediction, March 1972.) The model (Program No. GFX091) was approved by the Federal Highway Administration for use in meeting requirement FHPM 7-7-3, "Noise Standards and Procedures," at the time that the noise analysis was undertaken.

The model was used to predict  $L_{eq}$  noise levels for P.M. peak,

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FIGURE 5-21F  
**NOISE ANALYSIS OBSERVER LOCATIONS**

- NUMBERS CORRESPOND TO AMBIENT NOISE SURVEY POINTS.
- CIRCLED NUMBERS INDICATE INTERIOR BUILDING SURVEY POINTS USED FOR ANALYSIS OF IMPACTS ON NOISE SENSITIVE RECEPTORS.



midday, and nighttime conditions for 1978, 1990 Null, and 1990 DPM cases. Observer locations modelled in the computer program corresponded to measurement locations in the ambient noise survey.

One of the important inputs to the noise analysis was traffic condition. The conditions assumed for the analysis were as follows:

#### 1978

Existing traffic count information, supplied by the Traffic Department of the City of Los Angeles, was used for automobile volumes on all streets in the study area. SCRTD bus counts were used to represent existing bus volumes on those same streets.

#### 1990 Null

City Traffic Department projections were used to represent anticipated 1990 auto volumes on study area streets. Bus volumes were derived from the SCRTD TSM plan, which would expand both local and express bus service to the CBD.

#### 1990 DPM

For automobile volumes in the DPM case, DPM patronage analysis results were used to calculate auto trip diversions to the DPM. These auto diversions were removed from the 1990 Null volumes, for the appropriate streets in the study area. Bus volumes were calculated to conform to planned interception of selected bus lines at Union Station and the Convention Center.

Table 5-21E presents the traffic data used for the peak hour analysis.

TABLE 5-21E  
TRAFFIC DATA USED FOR NOISE IMPACT PREDICTION

STREET	SEGMENT	VEHICLES PER PM PEAK HOUR					
		1978		1990 NULL		1990 DPM	
		AUTOS	TRUCKS & BUSES	AUTOS	TRUCKS & BUSES	AUTOS	TRUCKS & BUSES
FIGUEROA	PICO - 12TH	1940	61	2123	71	2117	125
	12TH - 11TH	1891	56	2332	69	2323	114
	11TH - OLYMPIC	1911	49	2352	61	2303	109
	OLYMPIC - 9TH	2117	62	2577	78	2528	125
	9TH - 8TH	1940	59	2421	72	2362	110
	8TH - 7TH	1833	47	2234	59	2175	57
	7TH - 6TH	2214	56	2810	68	2754	69
	6TH - 5TH	2332	77	2900	95	2842	90
	5TH - 4TH	2533	98	3175	108	3107	126
	4TH - 3RD	2401	61	2920	77	2881	76
5TH	FIGUEROA - FLOWER	2264	90	2617	105	2577	105
	FLOWER - GRAND	2009	85	2264	98	2234	98
	GRAND - OLIVE	1862	82	2038	94	2009	93
	OLIVE - HILL	1705	79	1774	88	1754	88
3RD	FIGUEROA - FLOWER	1921	39	2225	45	2195	37
	FLOWER - HOPE	1539	31	1843	37	1813	37
HILL	5TH - 4TH	1923	178	2293	188	2264	217
	4TH - 3RD	1852	179	2264	187	2244	217
	3RD - 2ND	1891	180	2214	187	2215	215
	2ND - 1ST	1901	190	2195	186	2156	215
1ST	HILL - BROADWAY	2166	201	2783	257	2754	157
	BROADWAY - SPRING	2332	267	2440	319	2411	319
	SPRING - MAIN	2097	142	2381	162	2362	161
	MAIN - LOS ANGELES	1933	136	2362	161	2342	161
LOS ANGELES	1ST - TEMPLE	1754	73	2195	89	2175	88
	TEMPLE - ALISO	2087	80	2499	95	2479	95
	ALISO - ARCADIA	1578	69	1421	65	1392	64
ARCADIA	LOS ANGELES - ALAMEDA	676	39	794	50	794	24

The results of the computer analysis are displayed in Tables 5-21F, 5-21G and 5-21H, for the P.M. peak, noon, and night-time conditions.

NOTES FOR TABLES 5-21F, G, & H:

- (1) Revised March 13, 1979
- (2) The increase results from the observer being located at nearly the same elevation as the DPM guideway, with the horizontal distance from the guideway being approximately 50 feet.
- (3) The increase results from the observer being located directly below the DPM guideway, in combination with a projected increase in bus and auto traffic along the adjacent street segment.

The data, as presented in the Tables, indicate that the DPM system would not have a significant impact on noise levels. The general range of impact is between -3 and +3 dB(A), as compared with the Null condition, with some specific exceptions. The exceptions, as explained in the notes to the Tables, result from the placement of observer locations in close proximity to the DPM guideway. The likelihood that actual observers would be located in such close proximity to the guideway for an appreciable length of time is very low.

5-218.4 Impacts on Noise Sensitive Land Uses:  
West Side of Figueroa Alignment

The Federal-Aid Highway Program Manual 7-7-3, July 28, 1976, defines allowable  $L_{eq}$  design noise levels on the basis of five activity categories. Based on these categories, a total of 24 sensitive uses were identified adjacent to the DPM alignment. As part of the noise impact analysis, an examination was made of the potential impacts on each of these sensitive uses. To accomplish this, guideway distance, building construction material, window configuration, and the presence or absence of air conditioning were taken into account to determine expected interior noise levels. The following noise reduction factors, taken from FHPM 7-7-3, were applied.

NOISE REDUCTION FACTORS

<u>Building Type</u>	<u>Window Condition</u>	<u>Noise reduction due to exterior of the structure</u>
All	Open	10 dB
Light Frame	Ordinary Sash (closed)	20 dB
	Storm Windows	25 dB
Masonry	Single Glazed	25 dB
Masonry	Double Glazed	35 dB

The analysis consisted of a comparison of the interior noise levels expected in 1990, both with and without the DPM.

The results of the analysis indicate that the presence of a DPM system would produce changes in interior attenuated  $L_{eq}$  noise levels of from -3 to +3 dB(A), at all but two locations, when compared to a Null condition. According to U.S.EPA, Community Noise, December 1971, differences of less than 5 dB(A) would not be readily perceptible to building occupants. Table 5-21I presents the estimated noise values at sensitive receptors during the afternoon peak hour and nighttime conditions, as appropriate.

TABLE 5-21F

## COMPARATIVE NOISE IMPACT ANALYSIS

### P.M. Peak Hour Leq Noise Levels (dBA)

NO.	OBSERVER LOCATION	1978	1990 NULL	1990 DPM	NO.	OBSERVER LOCATION	1978	1990 NULL	1990 DPM
78	W/S FIGUEROA, BET. TEHRAN & NAGOYA	71	72	76	55	E/S GRAND, BET. FIFTH & FOURTH	80	80	81
1	S/S TWELFTH, BET. FIGUEROA & FLOWER	70	71	74	15	S/W CORNER, OLIVE & FIFTH	77	79	76
2	E/S FIGUEROA, BET. ELEVENTH & TWELFTH	67	68	71	56	W/S OLIVE, BET. FIFTH & SIXTH	70	72	69
3	W/S FIGUEROA, BET. ELEVENTH & OLYMPIC	68	69	74	16	S/S FIFTH, BET. OLIVE & HILL	74	75	75
36	E/S FIGUEROA, BET. ELEVENTH & OLYMPIC	71	72	75	57	W/S HILL, BET. FIFTH & SIXTH	67	68	67
44	S/S OLYMPIC, BET. FIGUEROA & FLOWER	69	70	70	17	E/S HILL, BET. FIFTH & FOURTH	78	79	83(1)
43	W/S OLYMPIC, BET. FIGUEROA & FRANCISCO	73	74	77	58	N/S FOURTH, BET. HILL & BROADWAY	73	74	74
4	W/S FIGUEROA, BET. OLYMPIC & NINTH	73	74	76	18	E/S HILL, BET. FOURTH & THIRD	76	78	77
37	E/S FIGUEROA, BET. OLYMPIC & NINTH	69	71	73	60	N/S THIRD, BET. HILL & BROADWAY	69	70	70
46	S/S NINTH, BET. FIGUEROA & FLOWER	69	70	71	19	E/S HILL, BET. THIRD & SECOND	73	73	74
5	W/S FIGUEROA, BET. NINTH & NINTH PL.	72	73	76	61	S/S SECOND, BET. HILL & BROADWAY	76	78	77
6	E/S FIGUEROA, BET. NINTH & EIGHTH	71	73	75	20	W/S HILL, BET. SECOND & FIRST	71	72	72
77	S/S EIGHTH, BET. FIGUEROA & FRANCISCO	72	71	75	62	N/S FIRST, BET. HILL & OLIVE	74	75	74
7	W/S FIGUEROA, BET. EIGHTH & EIGHTH PL.	69	71	73	21	N/S FIRST, BET. HILL & BROADWAY	75	76	75
8	MIXED USE PARCEL, APPROX. MID-PARCEL	62	63	63	63	W/S BROADWAY, BET. FIRST & SECOND	72	73	72
47	N/S SEVENTH, BET. FIGUEROA & FRANCISCO	72	73	73(1)	22	N/S FIRST, BET. BROADWAY & SPRING	72	73	73
48	S/S WILSHIRE, BET. FIGUEROA & FRANCISCO	73	74	74	64	E/S SPRING, BET. FIRST & SECOND	71	72	70
49	W/S FIGUEROA, BET. WILSHIRE & SIXTH	70	71	73(1)	65	E/S SPRING, BET. FIRST & TEMPLE	75	76	76
10	S/S SIXTH, BET. FIGUEROA & HARBOR FWY	70	71	75(1)	23	N/S FIRST, BET. SPRING & MAIN	73	74	75
50	E/S FIGUEROA, BET. SIXTH & FIFTH	72	74	75(1)	24	N/S FIRST, BET. MAIN & LOS ANGELES	69	71	71
51	N/S FIFTH, BET. FIGUEROA & HARBOR FWY	73	75	75	25	S/E CORNER, FIRST & LOS ANGELES	72	73	73
31	W/S FIGUEROA, BET. FIFTH & FOURTH	72	74	74	67	S/S FIRST, BET. WELLER & SAN PEDRO	72	74	74
32	E/S FIGUEROA, BET. FOURTH & THIRD	73	74	76	26	W/S LOS ANGELES, BET. FIRST & TEMPLE	70	71	72
33	N/S THIRD, BET. FIGUEROA & FLOWER	68	69	69	66	E/S MAIN, BET. FIRST & TEMPLE	77	79	79
34	S/S THIRD, BET. FLOWER & HOPE	72	72	75	68	S/S TEMPLE, BET. LOS ANGELES & SAN PEDRO	74	75	75
59	E/S OLIVE, BET. THIRD & THIRD PL.	74	76	76	69	N/S TEMPLE, BET. LOS ANGELES & MAIN	71	72	73
12	S/S FIFTH, BET. FIGUEROA & FLOWER	75	76	76	27	E/S LOS ANGELES, BET. TEMPLE & ARCADIA	71	72	74
79	N/S FIFTH, BET. FIGUEROA & FLOWER	71	72	75(1)	70	S/S ARCADIA, BET. MAIN & LOS ANGELES	72	72	73
53	W/S FLOWER, BET. FIFTH & FOURTH	72	73	76	71	S/S ARCADIA, BET. LOS ANGELES & ALAMEDA	72	72	68
13	S/S FIFTH, BET. FLOWER & HOPE	71	72	74	28	N/E CORNER, ALISO & LOS ANGELES	74	76	74
35	N/S FIFTH, BET. HOPE & GRAND	67	68	75(2)	29	N/S ARCADIA, 200 F.T. E/O ALAMEDA	68	69	70
14	S/S FIFTH, BET. HOPE & GRAND	79	80	80					
54	W/S GRAND, BET. FIFTH & SIXTH	72	73	74					

SOURCE: City of Los Angeles, Bureau of Engineering

TABLE 5-21G

# COMPARATIVE NOISE IMPACT ANALYSIS

## Noon Hour Leq Noise Levels (dBA)

OBSERVER NO.	LOCATION	1978	1990 NULL	1990 DPM	OBSERVER NO.	LOCATION	1978	1990 NULL	1990 DPM
78	- W/S FIGUEROA, BET. TEHRAN & NAGOYA	68	68	72	55	- E/S GRAND, BET. FIFTH & FOURTH	70	71	71
1	- S/S TWELFTH, BET. FIGUEROA & FLOWER	66	65	69	15	- S/W CORNER, OLIVE & FIFTH	73	75	73
2	- E/S FIGUEROA, BET. ELEVENTH & TWELFTH	67	68	70	56	- W/S OLIVE, BET. FIFTH & SIXTH	72	75	73
3	- W/S FIGUEROA, BET. ELEVENTH & OLYMPIC	68	69	72	16	- S/S FIFTH, BET. OLIVE & HILL	68	69	69
36	- E/S FIGUEROA, BET. ELEVENTH & OLYMPIC	71	72	75	57	- W/S HILL, BET. FIFTH & SIXTH	69	70	69
44	- S/S OLYMPIC, BET. FIGUEROA & FLOWER	70	72	72	17	- E/S HILL, BET. FIFTH & FOURTH	72	73	76 (1)
43	- W/S OLYMPIC, BET. FIGUEROA & FRANCISCO	67	69	71	58	- N/S FOURTH, BET. HILL & BROADWAY	70	71	71
4	- W/S FIGUEROA, BET. OLYMPIC & NINTH	70	72	72	18	- E/S HILL, BET. FOURTH & THIRD	70	72	71
37	- E/S FIGUEROA, BET. OLYMPIC & NINTH	69	71	73	60	- N/S THIRD, BET. HILL & BROADWAY	71	72	72
46	- S/S NINTH, BET. FIGUEROA & FLOWER	71	72	73	19	- E/S HILL, BET. THIRD & SECOND	71	72	72
5	- W/S FIGUEROA, BET. NINTH & NINTH PL.	69	70	73	61	- S/S SECOND, BET. HILL & BROADWAY	70	72	71
6	- E/S FIGUEROA, BET. NINTH & EIGHTH	71	72	73	20	- W/S HILL, BET. SECOND & FIRST	67	68	68
77	- S/S EIGHTH, BET. FIGUEROA & FRANCISCO	67	69	72	62	- N/S FIRST, BET. HILL & OLIVE	68	69	68
7	- W/S FIGUEROA, BET. EIGHTH & EIGHTH PL.	69	70	72	21	- N/S FIRST, BET. HILL & BROADWAY	71	72	71
8	- MIXED USE PARCEL, APPROX. MID-PARCEL	64	66	66	63	- W/S BROADWAY, BET. FIRST & SECOND	73	74	73
47	- N/S SEVENTH, BET. FIGUEROA & FRANCISCO	71	73	73 (1)	22	- N/S FIRST, BET. BROADWAY & SPRING	71	72	72
48	- S/S WILSHIRE, BET. FIGUEROA & FRANCISCO	73	75	75	64	- E/S SPRING, BET. FIRST & SECOND	70	71	70
49	- W/S FIGUEROA, BET. WILSHIRE & SIXTH	71	72	74 (1)	65	- E/S SPRING, BET. FIRST & TEMPLE	70	71	70
10	- S/S SIXTH, BET. FIGUEROA & HARBOR FWY	68	69	69	23	- N/S FIRST, BET. SPRING & MAIN	58	58	59
50	- E/S FIGUEROA, BET. SIXTH & FIFTH	69	70	72 (1)	24	- N/S FIRST, BET. MAIN & LOS ANGELES	69	70	70
51	- N/S FIFTH, BET. FIGUEROA & HARBOR FWY	75	76	77	25	- S/E CORNER, FIRST & LOS ANGELES	71	71	71
31	- W/S FIGUEROA, BET. FIFTH & FOURTH	72	73	74	67	- S/S FIRST, BET. WELLER & SAN PEDRO	67	67	68
32	- E/S FIGUEROA, BET. FOURTH & THIRD	71	72	73	26	- W/S LOS ANGELES, BET. FIRST & TEMPLE	68	67	68
33	- N/S THIRD, BET. FIGUEROA & FLOWER	70	71	72	66	- E/S MAIN, BET. FIRST & TEMPLE	71	71	72
34	- S/S THIRD, BET. FLOWER & HOPE	71	71	74	68	- S/S TEMPLE, BET. LOS ANGELES & SAN PEDRO	65	65	66
59	- E/S OLIVE, BET. THIRD & THIRD PL.	68	70	69	69	- N/S TEMPLE, BET. LOS ANGELES & MAIN	75	74	76
12	- S/S FIFTH, BET. FIGUEROA & FLOWER	75	76	76	27	- E/S LOS ANGELES, BET. TEMPLE & ARCADIA	70	69	72
79	- N/S FIFTH, BET. FIGUEROA & FLOWER	68	69	73 (1)	70	- S/S ARCADIA, BET. MAIN & LOS ANGELES	71	70	71
53	- W/S FLOWER, BET. FIFTH & FOURTH	71	72	75	71	- S/S ARCADIA, BET. LOS ANGELES & ALAMEDA	68	68	66
13	- S/S FIFTH, BET. FLOWER & HOPE	67	68	70	28	- N/E CORNER, ALISO & LOS ANGELES	73	74	73
35	- N/S FIFTH, BET. HOPE & GRAND	66	67	74 (2)	29	- N/S ARCADIA, 200 FT. E/O ALAMEDA	68	69	63
14	- S/S FIFTH, BET. HOPE & GRAND	74	75	75					
54	- W/S GRAND, BET. FIFTH & SIXTH	68	69	69					

SOURCE: City of Los Angeles, Bureau of Engineering

TABLE 5-21H

# COMPARATIVE NOISE IMPACT ANALYSIS

## Nighttime Leq Noise Levels (dBA)

NO.	OBSERVER LOCATION	1978	1990 NULL	1990 DPM	NO.	OBSERVER LOCATION	1978	1990 NULL	1990 DPM
78	W/S FIGUEROA, BET. TEHRAN & NAGOYA	60	60	65	55	E/S GRAND, BET. FIFTH & FOURTH	64	64	65
1	S/S TWELFTH, BET. FIGUEROA & FLOWER	58	59	60	15	S/W CORNER, OLIVE & FIFTH	64	65	62
2	E/S FIGUEROA, BET. ELEVENTH & TWELFTH	60	61	63	56	W/S OLIVE, BET. FIFTH & SIXTH	54	55	49
3	W/S FIGUEROA, BET. ELEVENTH & OLYMPIC	61	62	66	16	S/S FIFTH, BET. OLIVE & HILL	63	63	64
36	E/S FIGUEROA, BET. ELEVENTH & OLYMPIC	65	66	68	57	W/S HILL, BET. FIFTH & SIXTH	58	58	57
44	S/S OLYMPIC, BET. FIGUEROA & FLOWER	60	61	57	17	E/S HILL, BET. FIFTH & FOURTH	62	63	66(1)
43	W/S OLYMPIC, BET. FIGUEROA & FRANCISCO	64	65	68	58	N/S FOURTH, BET. HILL & BROADWAY	65	65	66
4	W/S FIGUEROA, BET. OLYMPIC & NINTH	62	63	63	18	E/S HILL, BET. FOURTH & THIRD	61	62	62
37	E/S FIGUEROA, BET. OLYMPIC & NINTH	65	66	68	60	N/S THIRD, BET. HILL & BROADWAY	62	64	62
46	S/S NINTH, BET. FIGUEROA & FLOWER	60	60	58	19	E/S HILL, BET. THIRD & SECOND	59	60	60
5	W/S FIGUEROA, BET. NINTH & NINTH PL.	64	65	68	61	S/S SECOND, BET. HILL & BROADWAY	65	66	66
6	E/S FIGUEROA, BET. NINTH & EIGHTH	74	75	76	20	W/S HILL, BET. SECOND & FIRST	63	64	64
77	S/S EIGHTH, BET. FIGUEROA & FRANCISCO	65	64	68	62	N/S FIRST, BET. HILL & OLIVE	61	61	61
7	W/S FIGUEROA, BET. EIGHTH & EIGHTH PL.	64	66	68	21	N/S FIRST, BET. HILL & BROADWAY	66	66	68
8	MIXED USE PARCEL, APPROX. MID-PARCEL	55	56	56	63	W/S BROADWAY, BET. FIRST & SECOND	61	62	58
47	N/S SEVENTH, BET. FIGUEROA & FRANCISCO	59	61	62(1)	22	N/S FIRST, BET. BROADWAY & SPRING	66	67	69
48	S/S WILSHIRE, BET. FIGUEROA & FRANCISCO	60	61	61	64	E/S SPRING, BET. FIRST & SECOND	57	58	54
49	W/S FIGUEROA, BET. WILSHIRE & SIXTH	66	67	69(1)	65	E/S SPRING, BET. FIRST & TEMPLE	67	68	69
10	S/S SIXTH, BET. FIGUEROA & HARBOR FWY	57	58	58	23	N/S FIRST, BET. SPRING & MAIN	64	65	67
50	E/S FIGUEROA, BET. SIXTH & FIFTH	62	63	67(1)	24	N/S FIRST, BET. MAIN & LOS ANGELES	63	64	66
51	N/S FIFTH, BET. FIGUEROA & HARBOR FWY	62	71	72	25	S/E CORNER, FIRST & LOS ANGELES	62	63	62
31	W/S FIGUEROA, BET. FIFTH & FOURTH	64	65	66	67	S/S FIRST, BET. WELLER & SAN PEDRO	61	62	63
32	E/S FIGUEROA, BET. FOURTH & THIRD	64	65	66	26	W/S LOS ANGELES, BET. FIRST & TEMPLE	60	61	64
33	N/S THIRD, BET. FIGUEROA & FLOWER	62	63	63	66	E/S MAIN, BET. FIRST & TEMPLE	63	64	65
34	S/S THIRD, BET. FLOWER & HOPE	63	64	67	68	S/S TEMPLE, BET. LOS ANGELES & SAN PEDRO	61	62	62
59	E/S OLIVE, BET. THIRD & THIRD PL.	65	66	67	69	N/S TEMPLE, BET. LOS ANGELES & MAIN	58	59	62
12	S/S FIFTH, BET. FIGUEROA & FLOWER	66	67	66	27	E/S LOS ANGELES, BET. TEMPLE & ARCADIA	67	68	74(3)
79	N/S FIFTH, BET. FIGUEROA & FLOWER	67	68	72(1)	70	S/S ARCADIA, BET. MAIN & LOS ANGELES	60	61	64
53	W/S FLOWER, BET. FIFTH & FOURTH	62	62	66	71	S/S ARCADIA, BET. LOS ANGELES & ALAMEDA	54	56	55
13	S/S FIFTH, BET. FLOWER & HOPE	62	63	65	28	N/E CORNER, ALISO & LOS ANGELES	60	61	63
35	N/S FIFTH, BET. HOPE & GRAND	59	60	68(2)	29	N/S ARCADIA, 200 FT. E/O ALAMEDA	59	60	61
14	S/S FIFTH, BET. HOPE & GRAND	66	66	67					
54	W/S GRAND, BET. FIFTH & SIXTH	64	64	65					

SOURCE: City of Los Angeles, Bureau of Engineering

TABLE 5-211

## ESTIMATED NOISE IMPACTS ON SENSITIVE LAND USES

LAND USE TYPE	LOCATION	ATTENUATION FACTOR dB(A) (1)	ATTENUATED INTERIOR L. NOISE LEVELS (dBA)				RECOMMENDED LEVELS dB(A) (3)
			1990 NULL PEAK	1990 NULL NIGHT	1990 DPM PEAK	1990 DPM NIGHT	
HOTEL, MOTEL	HOLIDAY INN	25	42	36	45	38	35-45
	HOTEL FIGUEROA	21 (2)	53	42	55	42	
	INN-TOWNE-MOTOR HOTEL	25	43	32	45	32	
	HILTON HOTEL	25 (2)	46	42	49	44	
	KENT INN	25	42	37	44	39	
	BONAVENTURE HOTEL	25	38	34	41	38	
	BILTMORE HTOEL	20 (2)	62	48	59	45	
	NEW OTANI HOTEL	25	42	32	42	31	
RESIDENCE HOTEL	BELMONT APTS.	10-25	45-60	39-54	48-63	41-56	35-45
	FINKLE ARMS HOTEL	10-25	45-60	40-55	47-62	42-57	
	ENGSTROM APTS.	10-25	37-52	29-44	44-59	37-52	
	SAN CARLOS HOTEL	10-25	49-64	41-56	56-71	48-63	
	HILL STREET HOTEL	10-25	46-61	36-51	45-60	35-50	
	CLARK HOTEL	10-25	51-66	35-50	55-70	38-53	
	BUNKER HILL TOWERS	25	38	32	38	32	
	MYRICK/MARKHAM HOTELS	10-25	50-65	34-49	49-64	34-49	
	HILL ST. ELDERLY HOUSING	25	59	41	58	41	
	ASTOR APTS.	10-25	45-60	32-47	46-61	32-47	
LIBRARY	CENTRAL LIBRARY	17 (2)	50		52		40-45
	COUNTY LAW LIBRARY	16 (2)	45		44		
CHURCH	ST. PAUL'S CATHEDRAL	25	42		45		35-40
	TEMPLE BAPTIST CHURCH	25	47		44		
AUDITORIUM	VARIETY ARTS CENTER	10-25	44-59		46-61		35-45
PRIVATE CLUB	JONATHAN CLUB	10-25	46-61		49-64		

(1) Attenuation factors specified as a range, unless otherwise indicated, to reflect a variety of building conditions (i.e. operable windows, absence of air conditioning).

(2) Building attenuation factor determined by field measurement.

(3) Recommended acceptable noise levels, taken from a number of sources, as specified in Table D-13, U.S.EPA, Information on Levels of Environmental Noise Requisites to Protect Public Health and Welfare With An Adequate Margin of Safety, March, 1974

The analysis of impacts on noise sensitive land uses reveals the following conclusions.

- At 8 of the 24 locations, the DPM results in a maintenance or reduction of expected 1990 noise levels.
- At 14 locations, the DPM results in an insignificant increase over 1990 Null noise levels. (Seven of these locations will exceed recommended levels in the absence of the DPM.)
- At two locations (Engstrom Apts. and the San Carlos Hotel), the DPM results in noise levels which would be perceptible. However, the 1990 levels are expected to exceed recommended values in the absence of the DPM.

In the previous conclusion, two locations are identified as experiencing a perceptible increase in noise due to the DPM. The following are explanatory notes for these two locations:

Engstrom Apts. - The analysis shows an increase of 7 dB(A) for the peak hour and 8 dB(A) for the nighttime condition, comparing the Null and DPM cases. The building is currently being refurbished and will include air conditioning when the improvements are completed. This being the case, the 25 dB(A) attenuation factor will be more appropriate for the refurbished building, which then results in interior noise levels which are within recommended levels.

San Carlos Hotel - The analysis shows an increase of 7 dB(A) for both the peak and nighttime conditions, comparing 1990 DPM to 1990 Null. Existing noise, as well as the 1990 calculated values, already exceed recommended levels. The nearest observer location on the same side of the street is in the next block to the west, and therefore may not adequately reflect expected noise values in the vicinity of the hotel. However, as a perceptible impact has been identified, the noise levels occurring at the hotel will be monitored to establish the existence and extent of the potential impact during DPM operation.

### Noise Impacts: Center of Figueroa Variation

Noise impacts have also been estimated for the Center of Figueroa variation.  $L_{eq}$  noise levels for the relevant observer location are shown in Tables 5-21FF, GG, and HH. Estimated noise impacts on sensitive land uses, for the relevant uses along Figueroa, are shown in Table 5-21II.

Both in terms of  $L_{eq}$  noise levels and impacts on sensitive uses, the DPM is not expected to produce a noticeable impact, for the Center of Figueroa variation.

#### 5-218.5 Vibration

Minimal vibration levels are expected from DPM operation. These levels will be several orders of magnitude below the threshold of damage, similar to the vibration generated by typical building mechanical equipment. The vibrations will therefore not be perceptible.

Attempts have been made to measure the vehicle-induced vibration to the SEATAC Airport Terminal Building, but they were so small as to not be discernable. If subway rail data is interpolated to correspond with DPM vehicle size, the vibrations calculated are similarly so small as to not be perceptible.

A third correlation can be obtained by comparing DPM vehicles (36,000 lbs.) with trucks (up to 80,000 lbs.) and standard city buses (40,000 lbs.). In the case of trucks and buses, induced vibrations can be transmitted directly into the ground adjacent to buildings. DPM vehicle-induced vibrations, on the other hand, must first be transmitted through the guideway structure and secondly through the massive guideway foundations, before any residual vibrations would be transmitted to adjacent buildings. On this basis, DPM-induced ground-borne vibrations are expected to be less than that produced by trucks and bus traffic on adjacent streets.

TABLE 5-21FF

#### COMPARATIVE NOISE IMPACT ANALYSIS - CENTER OF FIGUEROA VARIATION P.M. PEAK HOUR $L_{eq}$ NOISE LEVELS (dBA)

NO.	LOCATION	1978	1990	1990
			NULL	DPM
3	W/S Figueroa, BET. 11th & Olympic	68	69	73
36	E/S Figueroa, BET. 11th & Olympic	71	72	76
43	W/S Olympic, BET. Figueroa & Francisco	73	74	77
44	S/S Olympic, BET. Figueroa & Flower	69	70	70
4	W/S Figueroa, BET. Olympic & 9th	73	74	76
37	E/S Figueroa, BET Olympic & 9th	69	71	74
5	W/S Figueroa, BET. 9th & 9th Pl.	72	73	76
46	S/S 9th, BET. Figueroa & Flower	69	70	71
6	E/S Figueroa, BET. 9th & 8th	71	73	75
77	S/S 8th, BET. Figueroa & Francisco	72	71	75
7	W/S Figueroa, BET. 8th & 8th Pl.	69	71	72
8	Mixed Use Parcel, Approx. Mid-Parcel	62	63	66

TABLE 5-21GG

#### COMPARATIVE NOISE IMPACT ANALYSIS - CENTER OF FIGUEROA VARIATION NOON HOUR $L_{eq}$ NOISE LEVELS (dBA)

NO.	LOCATION	1978	1990	1990
			NULL	DPM
3	W/S Figueroa, BET. 11th & Olympic	68	69	72
36	E/S Figueroa, BET. 11th & Olympic	71	72	72
43	W/S Olympic, BET. Figueroa & Francisco	67	69	71
44	S/S Olympic, BET. Figueroa & Flower	70	72	72
4	W/S Figueroa, BET. Olympic & 9th	70	72	72
37	E/S Figueroa, BET. Olympic & 9th	69	71	71
5	W/S Figueroa, BET. 9th & 9th Pl.	69	70	72
46	S/S 9th, BET. Figueroa & Flower	71	72	73
6	E/S Figueroa, BET. 9th & 8th	71	72	74
77	S/S 8th, BET. Figueroa & Francisco	67	69	71
7	W/S Figueroa, BET. 8th & 8th Pl.	69	70	73
8	Mixed Use Parcel, Approx. Mid-Parcel	64	66	68

TABLE 5-21HH

COMPARATIVE NOISE IMPACT ANALYSIS - CENTER OF FIGUEROA  
 NIGHTTIME  $L_{eq}$  NOISE LEVELS (dBA)

NO.	LOCATION	1990		
		1978	NULL	DPM
3	W/S Figueroa, BET. 11th & Olympic	61	62	65
36	E/S Figueroa, BET. 11th & Olympic	65	66	69
43	W/S Olympic, BET. Figueroa & Francisco	64	65	67
44	S/S Olympic, BET. Figueroa & Flower	60	61	57
4	W/S Figueroa, BET. Olympic & 9th	62	63	62
37	E/S Figueroa, BET. Olympic & 9th	65	66	69
5	W/S Figueroa, BET. 9th & 9th Pl.	64	65	67
46	S/S 9th, BET. Figueroa & Flower	60	60	58
6	E/S Figueroa, BET. 9th & 8th	74	75	77
77	S/S 8th, BET. Figueroa & Francisco	65	64	66
7	W/S Figueroa, BET. 8th & 8th Pl.	64	66	67
8	Mixed Use Parcel; Approx. Mid-Parcel	55	56	59

TABLE 5-21II

## ESTIMATED NOISE IMPACTS ON SENSITIVE LAND USES CENTER OF FIGUEROA VARIATION

LAND USE TYPE	LOCATION	ATTENUATION FACTOR (dB(A))	ATTENUATED INTERIOR $L_{eq}$ NOISE LEVELS (dBA)				RECOMMENDED LEVELS (dB(A) (3))
			1990 NULL		1990 DPM		
			PEAK	HEIGHT	PEAK	HEIGHT	
HOTEL, MOTEL	HOLIDAY INN	15	42	36	46	39	35-45
	HOTEL FIGUEROA	21 (2)	53	42	55	41	
	INN-FORNE MOTOR HOTEL	15	43	32	45	31	
	KENT INN	15	42	37	45	40	
RESIDENCE HOTEL	BELMONT APTS.	10-25	45-60	39-54	49-64	42-57	35-45
	FINKLE ARMS HOTEL	10-25	45-60	40-55	48-63	43-58	
AUDITORIUM	VARIETY ARTS CENTER	10-25	44-59		47-62		35-45

(1) Attenuation factors specified as a range, unless otherwise indicated, to reflect a variety of building conditions.

(2) Building attenuation factor determined by field measurement.

(3) Recommended acceptable noise levels, taken from a number of sources, as specified in Table D-10, U.S. EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With An Adequate Margin of Safety, March 1974.

## 5-219 Energy

The DPM system will consume operating energy in terms of both traction power and power to operate various subsystems.

Table 5-21J shows total 1990 annual DPM system power consumption, inclusive of traction, escalators, lighting, control and yard operations, and maintenance. This table reveals that in 1990, the DPM system as a whole will consume some 19 million kilowatt hours of electrical energy.

In 1976, the City of Los Angeles Department of Water and Power estimated its annual load at  $18,548 \times 10^6$  kwh. Before the Arab oil embargo of 1973, the Department reports that growth in power consumption had been doubling every 10-12 years. Since that time, through various mandatory and voluntary conservation measures, the growth rate has been reduced to approximately 3 percent per year. Applying this growth rate to the 1976 load yields a 1990 load of approximately  $26,300 \times 10^6$  kwh. The DPM system would require  $18.9 \times 10^6$  kwh in 1990, or 0.087% of the total demand, which is a very small proportion and therefore would not produce a significant impact. Communication with DWP staff has confirmed this conclusion, as well as the local availability of such power through one of several downtown distribution stations.

It should be further noted that the DPM system would result in a regional savings of 11,100 vehicle miles of travel per day. This figure is the net savings resulting from shorter work trips by CBD residents, intercepted auto trips, and diversion of auto circulation trips, as measured against induced travel resulting from new development. Assuming a 1990 average fuel economy of 20 miles per gallon, the VMT savings would result in about 162,600 gallons of gasoline a year.

TABLE 5-21J

1990 ANNUAL DPM POWER CONSUMPTION (in kwh)

Traction Power <sup>(1)</sup>	12,249,600
Escalators <sup>(2)</sup>	2,811,840
Station Lighting <sup>(3)</sup>	1,483,500
Maintenance Building <sup>(4)</sup>	525,600
Control Center <sup>(5)</sup>	91,800
Miscellaneous <sup>(6)</sup>	14,300
SUBTOTAL	17,176,600
10% Contingency	1,717,600
TOTAL	18,894,200

- (1) Based on vehicle consumption rate of 4.6 kwh vehicle mile. Includes 8% line losses.
- (2) Based on 58 escalators, operating at a rate of 7.5 kwh/hour.
- (3) Based on power consumption ranging from 5-11 kwh/hour for a total of 13 stations.
- (4) Based on consumption rate of 60 kwh/hour.
- (5) Based on consumption rate of 12 kwh/hour.
- (6) Includes subway ventilation requirements.

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Source: CRA, 1978

5-220 Impacts on Land Use and Development

## 5-221 Land Use Changes

Implementation of the proposed DPM system is expected to produce changes in the nature and rate of land development within the CBD. The primary and major impact area of these changes will be within the 5 minute walkshed of the DPM system or the "DPM Corridor" as defined in Section 5-000.

Projected DPM-induced land use changes are expected to be in (1) the continuing viability and activity levels of existing uses and facilities and (2) the rate, mix, density, timing, and geographic distribution of new development. (The significance of both of these with regard to tax base, employment, and land value terms are discussed in Section 5-234.) These changes will occur primarily because the DPM will:

- Improve the absolute and/or relative access to activity areas in the DPM corridor. (see Figure 5-22A).
- Increase the volumes and concentrations of people moving past or through specific CBD locations.
- Improve the physical integration of a circulation/distribution transportation system with existing and proposed developments.

Changes in these parameters will in turn affect demand, market conditions, comparative advantages of sites; and perceived risk to alter development plans and activity patterns. Specifically, induced land use and development changes can take the form of:

- Creation of new projects not otherwise contemplated.
- Alteration in the timing and/or pace of development.
- Changes in the size and/or density of individual projects.
- Changes in the type/mix/configuration of projects.

Figure 5-22A

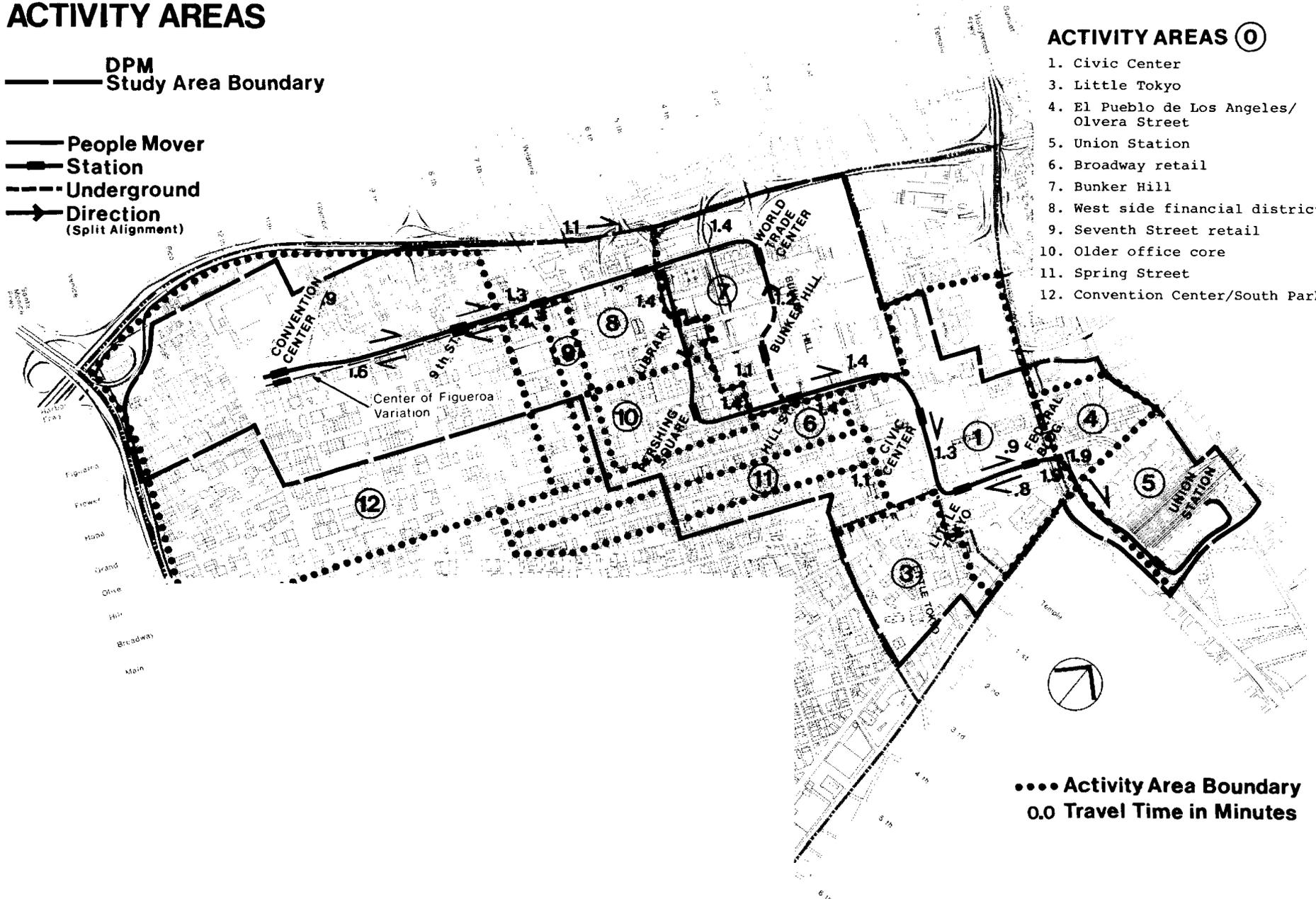
# TRAVEL TIMES BETWEEN DPM CORRIDOR ACTIVITY AREAS

**—** DPM  
**—** Study Area Boundary

**—** People Mover  
**■** Station  
**- - -** Underground  
**→** Direction  
(Split Alignment)

## ACTIVITY AREAS ①

1. Civic Center
3. Little Tokyo
4. El Pueblo de Los Angeles/  
Olvera Street
5. Union Station
6. Broadway retail
7. Bunker Hill
8. West side financial district
9. Seventh Street retail
10. Older office core
11. Spring Street
12. Convention Center/South Park



- Changes in the geographic location of specific development/redevelopment/rehabilitation for specific sites.
- Changes in the relative growth, distribution, and market share of land use. Changes that occur within the CBD in relationship to other areas in the region.

These factors in turn will affect land supplies, activity levels, (retail sales, hotel occupancy and employment), and tenant expansion/relocation decisions. They also will affect developer-perceived risk which is a combination of anticipated rental and occupancy rates, and reductions in non-rentable space (e.g. parking); the ability to obtain competitive financing; and the time period over which a development project can retain its prestigious market position. All of these factors combine to create alterations in development feasibility.

The nature of these potential impacts and the factors which induce such effects are a function of the specific land use under consideration. The impact analyses which follow are categorized in terms of office, hotel, residential, and retail activity, and represent a summary of the detailed analysis presented in Task Termination Report 4.15.

#### 5-221.1 Office Space Impacts

As discussed in Section 2-200, commercial office space has been the dominant factor in new CBD development. Representing nearly 85% of all CBD construction since 1965, it constitutes the largest category of building use in the CBD.

In spite of the significant increases in the CBD's office growth, its share of the Los Angeles/Orange Counties Office market has been declining. Whereas the CBD accounted for 45% of this region, new high-rise office construction in the 1947-1965 period, this share dropped to 29% for the 1966-76 period. Over all, the CBD's share of the region's office

demand in 1975 was estimated to be 32% (Urban Development Group, 1976). The region's average annual absorption for major new office space over the past decade has been at a rate of 3.8 million net square feet. CBD absorption has accounted for about 30% of this, yielding a CBD average annual absorption rate of 1.1 million net square feet.

The existing commercial office inventory in the CBD is estimated at 23 million net rentable square feet. Of this total, some 16.2 million square feet (70%) are located in prime high-rise structures. The remainder is scattered throughout the CBD, especially in smaller, older, and deteriorating buildings in the eastern sections of the CBD (i.e., along Spring Street). Approximately 10 million of the 16.2 million prime square footage (62%) is located in the western section of the CBD, the focal point of new CBD development. An additional 9.5 million square feet of CBD government office space is located primarily in the Civic Center complex at the northern end of the CBD.

The vacancy rate for non-prime space is high, reaching 60% for some sections of Spring Street. This contrasts with the tight prime-space vacancy rates which, in recent months, have ranged from 4.5% to 6.0% in areas west of Grand Avenue. Rental rates in the CBD have increased significantly in the past two years as a reflection of the tightening market. In 1975, prime space was available in the \$8.00 to \$8.50 per square foot range (with inducements added). By 1977, these rates had risen to a \$12 to \$14 range (without inducements) and currently prime space (where it is available) is going for \$14 to \$16 per square foot. (Turpin, 1978).

#### Baseline Forecasts

Between 1975 and 1985, the market demand for commercial office space in the Los Angeles CBD is estimated to range

from a low of 200,000 square feet a year to a high of 950,000 square feet a year (Property Evaluation Services, 1976). During this time period, about 450,000 square feet of new commercial office space is expected to be constructed per year in the Los Angeles CBD for a total of four to five million square feet. This average annual rate of market absorption of commercial office space is expected to be less than half (i.e. 42%) of that experienced during the 1970-75 period.

Major office development, committed for development and refurbishment by 1980, will result in approximately 1.6 million feet of net leasable area being added to the 1975 supply of approximately 23.0 million net leasable square feet. Planned development could add another 1.8 million net leasable square feet to this total by the early 1980's.

Similar to the 1970-1975 experience, the estimated annual construction cycle indicates that the pace of construction will slow down after the peak estimated for 1985, and will increase to another peak in 1990.

#### DPM Impact Measurement Parameters

The implementation of the Los Angeles DPM would reinforce the existing concentration of high-use commercial office space, most of which is concentrated in the western portion of the Los Angeles CBD. By 1990, approximately 26 million square feet of prime office space will be within the DPM corridor under Baseline conditions. Within this Corridor, over 85,000 office employees will be within a ten-minute travel time to the major retailing, dining, entertainment, and government centers in downtown Los Angeles.

The greatest impacts on office space because of DPM implementation are expected in the areas of:

- Internally generated demand
- Regional headquarters demand

#### Internally Generated Demand

Firms located in the CBD currently generate a need for between 640,000 and 800,000 square feet of additional office space annually simply to meet their own internal expansion needs. The CBD is currently meeting about 50% of this need. Because of the higher level of satisfaction with a downtown location with the DPM, it is estimated that the CBD would increase its capture rate from 50% of this demand to 60%, or a cumulative increase between 1978 and 1990 of 1.0 - 1.1 million incremental square feet.

#### Regional Headquarters Demand

Baseline forecasts indicate that by 1990, the CBD will capture about 28% of the regional office space. With the DPM providing direct physical access to the city's financial, entertainment and retail centers and with the unique image value of such a permanent guideway system, it is estimated that by 1990 the Los Angeles CBD will increase its share of the regional office market from 28% to 30%. In terms of leasable office space, this increased demand would equal 700,000 - 800,000 square feet by 1990.

A summary comparison of baseline and "with DPM" office space projections is shown on Table 5-22A. As this table indicates, the peak demand years will be in 1985 and 1990; the average annual net increase, approximately 120,000 net square feet. Demand for approximately 43% or 750,000 square feet of DPM-induced office space will occur between 1980-1985; in the 1986-1990 period, demand is expected to occur for about 58% or 1,000,000 square feet.

TABLE 5-22A  
 COMPARISON OF BASELINE AND "WITH DPM" OFFICE SPACE PROJECTIONS FOR THE LOS ANGELES CBD  
 (1976-1990).

Year	Office Space Demand (Square Feet)		Net Change
	Base Line	With DPM	
1976	350,000	350,000	--
1977	850,000	850,000	--
1978	550,000	550,000	--
1979	350,000	350,000	--
1980 *	225,000	300,000 - 325,000	+ 75,000- 100,000
1981	325,000	400,000 - 425,000	+ 75,000- 100,000
1982	350,000	450,000 - 475,000	+ 100,000- 125,000
1983	225,000	325,000 - 350,000	+ 100,000- 125,000
1984	275,000	375,000 - 425,000	+ 100,000- 150,000
1985	1,000,000	1,200,000 - 1,250,000	+ 200,000- 250,000
1986	550,000	650,000 - 675,000	+ 100,000- 125,000
1987	350,000	475,000 - 500,000	+ 125,000- 150,000
1988	250,000	375,000 - 400,000	+ 125,000- 150,000
1989	350,000	475,000 - 500,000	+ 125,000- 150,000
1990	750,000	1,200,000 - 1,250,000	+ 450,000- 500,000
TOTAL	6,750,000	8,325,000 - 8,650,000	+1,575,000-1,900,000
Average Annual Increase	450,000	555,000 - 576,000	+ 116,000

\* Note: Construction begins in 1980, following formal approval

Source: Robert J. Harmon and Associates, Inc., 1978

### Effects of the DPM on Office Space

Based on the DPM impact measurement parameters described in the previous section, the following impacts on office space in the CBD are expected to occur.

### Internally Generated Office Market

In the Olive/Hill Street area between 5th and 7th Streets, approximately 10% or 100,000 to 110,000 net square feet of office space will be absorbed between 1980 and 1985. This space will be located in refurbished buildings in the area.

The remaining demand (900,000 to 990,000 net square feet) will result in an increase in the number of gross square feet of office space in the Bunker Hill and Figueroa/Flower Street area south of 8th Street. Based on the assumption that office space occupancies will range from between 90-95% and that 85% of the gross area of a commercial office building is leasable, this internally generated office space demand will result in an addition of approximately .95 to 1.05 million gross square feet of office space in these areas. The following allocation of this predicted gross square footage increase is expected:

- In the Bunker Hill area, about 60% or 600,000 gross square feet will be added to projected baseline office space between 1980 and 1985.
- In the Figueroa/Flower Street area south of 8th Street, approximately 40% or 400,000 gross square feet will be added between 1985 and 1990 (Robert J. Harmon and Associates, 1978).

### Regional Office Space Demand

Conservatively, it is estimated that there will be a demand in the west side of the Los Angeles CBD for about 700,000 to 800,000 square feet regional office headquarters space. This would be the equivalent level for incremental DPM-induced office space demand from national firms seeking a prestige

location in Southern California. The major tenant of this building would be a single firm involved in financial insurance, international trade, etc. Based upon similar assumptions made for internally generated office space demand (i.e. a 90% to 95% office space occupancy rate and 85% gross leasable square feet for commercial office space), it is estimated that:

- A 740,000 to 874,000 gross square foot regional headquarters building will be built in the 1989-1990 period in either the Bunker Hill area of the Figueroa/Flower area south of 8th Street.

### Net Effects of the DPM on Office Space

The implementation of the DPM system is expected to increase the cumulative Los Angeles CBD demand for office space by 6%. The net effect of the DPM system's potential positive influence on both the internally generated and regional office market segments will be that the 1990 office demand in the Los Angeles CBD will increase by approximately 1.8 million square feet.

Compared with baseline forecasts for 32.8 million gross square feet of office space in the CBD by 1990, this increase would represent a DPM-induced increment of 5.5%. Figure 5-22B shows the probable location of this induced office growth.

### Mitigation/Enhancement Measures

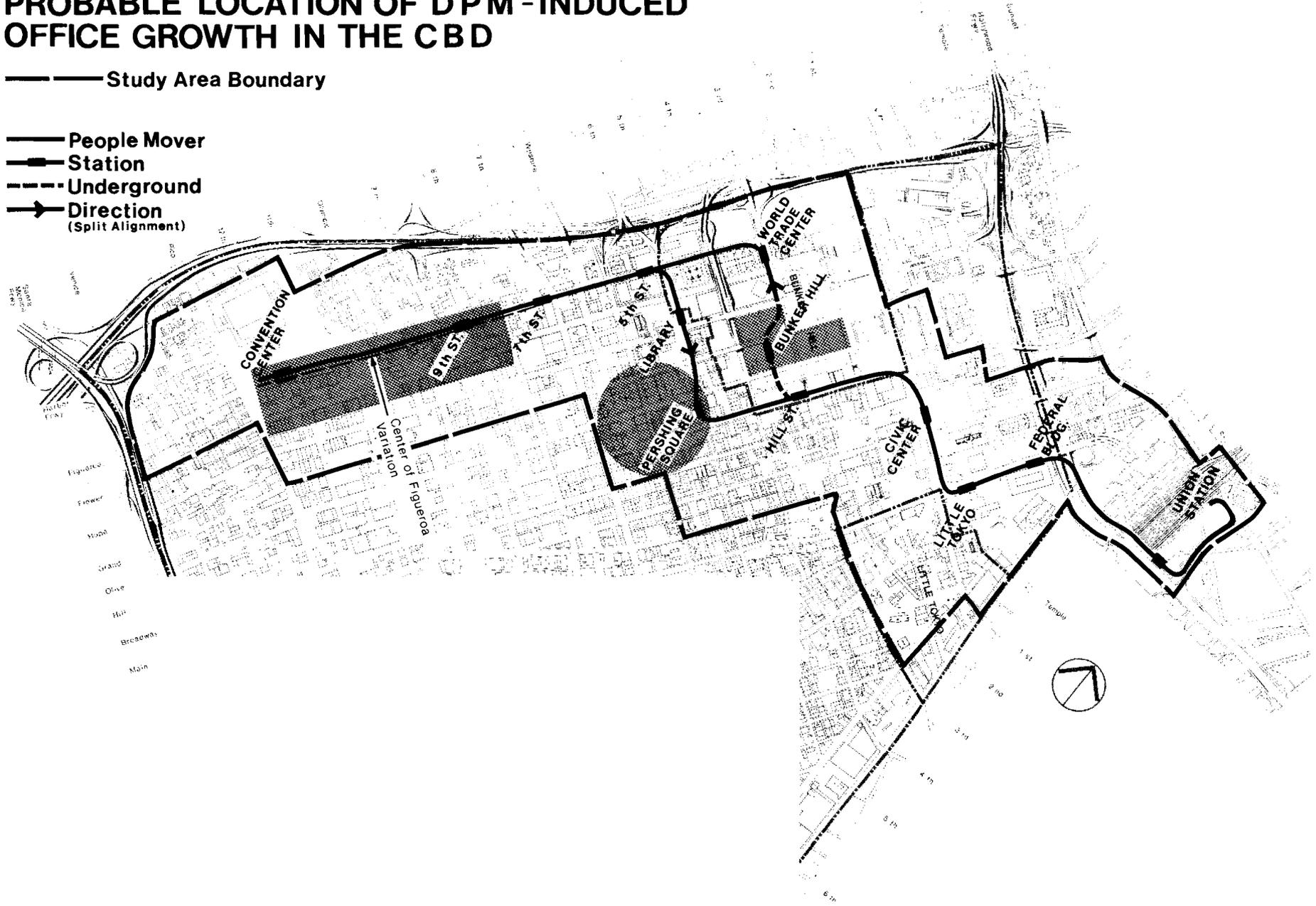
The potential office market attributable to the DPM system can be enhanced by careful coordination of the urban integration aspects of both the stations and pedway facilities. Specifically, the direct pedestrian interface to the Bunker Hill, 7th and Figueroa, and the Library stations from adjacent office facilities should be implemented. Incremental investment in permanent station improvements should receive careful consideration.

Figure 5-22B

# PROBABLE LOCATION OF DPM - INDUCED OFFICE GROWTH IN THE CBD

———— Study Area Boundary

- People Mover
- Station
- - - - Underground
- ➔ Direction (Split Alignment)



From the standpoint of public development policy, additional Floor Area Ratio (FAR) zoning at each DPM station area should be considered, particularly if the private developers of these sites fully participate in the parking, financial, and urban integration aspects of the DPM system.

From the standpoint of potential negative impact, tenants of second-story offices could view the guideway and moving vehicles as an intrusion. A major portion of this negative impact can be mitigated through urban design accommodations and tenant space planning efforts. Examples of urban design accommodations include promoting retail uses in to the guideway, where appropriate. Examples of tenant space planning efforts include the provision of computer, mail distribution, and other support service for that portion of a building, which would be adjacent to the guideway.

#### 5-221.2 Hotel Facility Impacts

Currently there are approximately 6100 guest rooms located in the Los Angeles Central Business District that are classified as Class A accommodations (competitive for business, convention and tourists). Since 1970, nearly 2500 new hotel rooms have been constructed in three new facilities: Hyatt Regency (1973: 487 rooms), the New Otani (1976: 448 rooms), and the Bonaventure (1977: 1544 rooms). All three hotels are located in the DPM corridor.

Between 1970 and 1976, annual room night demand increased at an average annual rate of 2-3%; from 1976 to 1977 this demand increased 12%. However the opening of the Bonaventure Hotel sent the CBD occupancy rates, which had risen from 53.3% in 1974 to 62% in 1976, back down to 57% in 1977-1978.

In 1978, the Los Angeles CBD captured approximately 19% of the total metropolitan room night demand, or 1,190,700 room

nights. Tourists made up the smallest segment of this market or 10.3%, with business and government visitors accounting for 65% and conventions/groups, approximately 25%. (Dark and Higginbotham, 1978).

#### Baseline Forecasts 1990

Los Angeles CBD capture of county room nights is expected to increase to 21.5% of the projected 1985 regional demand, with convention/groups accounting for 43% of the demand in that year. (Dark and Higginbotham, 1978). This increased capture is attributed to an increased supply of quality rooms and banquet facilities at the Bonaventure, the New Otani and the planned MAT Associates Hotel at 3rd and Figueroa (to be completed in 1980), and to improvements in marketing and physical amenities at the Convention Center. At the same time the CBD is expected to maintain its regional share of business/government visitors (25%) and tourists (5%).

In order to establish baseline 1990 forecasts, the 1985 forecasts for each segment of the regional hotel market were extrapolated for the 1985-1990 period. Therefore, in 1990 a 2,000,000 room night demand is projected for the Los Angeles CBD, a net increase of 265,000 room nights between 1985 and 1990. Assuming an average occupancy rate of 75% for new hotels and 65% for older hotels and taking into consideration the overbuilt existing CBD hotel market (i.e. 57% occupancy rate) with projected room additions at the MAT Hotel and a proposed facility at 7th and Figueroa, yields an estimated market demand for 100 additional luxury rooms in 1990.

#### DPM Impact Measurement Parameters

Implementation of the Los Angeles DPM would generate positive effects on three major sources of hotel patronage:

- The convention and convention delegate market
- The tourist market
- The business and government visitors market

### Convention/Convention Delegate Market

The DPM would connect 80% of the existing and proposed Class A hotel rooms, with the revitalized Convention Center, thus improving the "packageability" of the Los Angeles CBD for larger conventions (i.e. those over 2500 delegates). The combination of connected facilities at the Convention Center and the hotels would make the Los Angeles CBD more attractive to major conventions.

### Tourist Market

The attraction of the Los Angeles CBD would be enhanced for tourists with the advent of DPM. Quick, inexpensive, easy-to-use transportation would improve visitor satisfaction, particularly for strangers unfamiliar with getting around Los Angeles.

### Business/Government Market

For the 50% of the visitors who come to Los Angeles on business, direct linkages to potential business markets and entertainment facilities would be improved. The DPM system would reduce the need for taxi cab or rental car expenses. The increase in prestige office construction predicted with the DPM would expand the overall market for business and government visitors.

### Effects of the DPM on Hotel Facilities

The greatest effect on hotel facilities will occur in the convention/delegate demand for hotel rooms. With the DPM, the Los Angeles CBD is predicted to increase its capture of the regional convention market from 1-2%, or from 44-45% to 46%, and to attract an additional 5-6 large conventions a year. The annual 1990 business/government visitor trade is expected to increase by 1-2% over the basecase conditions (or from 25% to 26-27%), and the tourist market is expected to increase from the projected 5% to 6% of the regional market. The results of the market segment analysis are shown in Table 5-22B.

Compared with the 1990 baseline conditions (i.e. without the DPM), the following "net" cumulative changes are expected to occur:

- The annual 1990 room nights of hotel demand generated by business/government visitors is expected to increase from 1,087,000 to 1,152,220 representing a 6% DPM induced growth.
- The annual convention/group market demand for hotel room nights is expected to increase by 9.5%, from 730,150 to 806,742.
- The tourism segment of the 1990 demand is expected to increase from 140,850 to 159,120 room nights, representing a 13% DPM induced demand.

In total, the implementation of the DPM system is expected to increase the annual 1990 Los Angeles CBD hotel room night demand by approximately 8%, or 160,000 room nights a year. Such a demand would support the construction of one additional major 500-600 room hotel, possibly in the Convention Center area where hotel development has been proposed. This analysis assumes that new hotel rooms would not be constructed until the annual demand supports the break-even levels in existing and committed developments.

### Mitigation/Enhancement Measures

In order to ensure that the potential hotel market benefits related to the DPM system are realized by Los Angeles CBD, careful attention must first be given to the urban integration aspects of the system design. Specifically, direct pedestrian interfaces from the stations to the planned MAT Associates hotel (World Trade Center Station); the Hilton Hotel and proposed hotel at Mixed Use (7th Street Station); the Bonaventure Hotel (Library Station), and the proposed hotel at the Convention Center (Convention Center Station) should be incorporated into the final station designs. Also efforts should be made to encourage completion of a pedway facility from the

TABLE 5-22B

## NET EFFECTS OF THE LOS ANGELES DPM ON HOTEL DEMAND AND CONSTRUCTION: 1990

ALTERNATIVE SCENARIOS	ROOM NIGHT MARKET DEMAND IN THE CBD		NET ROOM DEMAND	
	Segment	Annual Demand		
1. Basecase	Business/ Government	1,087,000	Total demand for break-even occupancy	1,930,904
	Convention/ Groups	730,150	Excess Room Night Demand	27,096
	Tourists/ Visitors	<u>140,050</u>		
	TOTAL	1,958,000	Net Supportable Rooms <sup>d</sup>	100
2. With DPM	Business/ Government	1,152,220 <sup>a</sup>	Total demand for <sup>c</sup> break-even occupancy	1,930,904
	Convention/ Groups	806,742 <sup>b</sup>	Excess Room Night Demand	187,178
	Tourists/ Visitors	<u>156,120<sup>c</sup></u>		
	TOTAL	2,118,082	Net Supportable Rooms	680 - 700
NET DIFFERENCE	Business/ Government	+ 65,220	Total demand for <sup>d</sup> break-even occupancy	1,930,904
	Convention/ Groups	+ 76,592	Excess Room Night Demand	+ 166,082
	Tourists/ Visitors	+ <u>18,270</u>		
	TOTAL	+ 160,082	TOTAL	Net Supportable Rooms +580 - 600

<sup>a</sup>Forecasted increase from 25% to 26-27% of the estimated 1990 regional (i.e., Los Angeles County) market.

<sup>b</sup>Forecasted increase from 42.5% to 44-45% of the 1990 regional (i.e., Los Angeles County) market.  
In addition 5-6 additional 2500 + delegate conventions averaging 4.3 visitor nights and 2.4 room occupancy will be attracted to the Los Angeles CBD.

<sup>c</sup>Forecasted increase from 5-6% of the estimated 1990 regional (i.e., Los Angeles County) market.

<sup>d</sup>Net Supportable rooms is defined as 7% of excess room night demand.

<sup>e</sup>Assumes 65% occupancy requirement for older Class A hotels representing 4,571 rooms in 1978 and 3,092 new Class A hotel rooms which include the Bonaventure, planned MAT Associates, Hyatt Regency and 75% proposed Mixed Use Hotels.

SOURCE: Robert J. Harmon and Associates, Inc.

7th Street Station to the Hyatt Regency Hotel at 7th and Flower Streets, one from the Biltmore Hotel to the Pershing Square Station, and one from the Little Tokyo Station to the New Otani Hotel at 1st and Los Angeles Streets.

In addition to these urban integration aspects, other related public information and promotional efforts need to be undertaken cooperatively with the Los Angeles Convention Center and Visitors Bureau. In this regard, both consumer information booklets and convention/tourism promotional packages need to be formulated in advance of the system "opening". Cooperative promotional efforts should be initiated with the hotel facility owners and tourist center/entertainment facility operators.

#### 5-221.3 Residential Land Use Impacts

Since 1960, the 714-unit Bunker Hill Towers and the 301 unit Little Tokyo Towers have been the only major residential complexes constructed in downtown Los Angeles. The remaining CBD housing stock consists of older residential hotels, some single-family and duplex housing units and a few aging apartments. After some initial difficulty in renting the Bunker Hill Towers, current occupancy rates are exceeding 95%, with over 90% of the 1200 residents working downtown in professional fields. (Property Evaluation Services, 1977).

Two additional CBD housing projects are planned for the Bunker Hill Redevelopment Project Area. The first is an 1100 unit elderly and handicapped housing project to be located on Hill Street between 2nd and 4th Streets (Parcels X/Y), scheduled for occupancy in 1980. The second project of at least 800 condominium units will be located on 1st Street between the Harbor Freeway and Hope Street and on Grand Avenue between 2nd and 3rd Streets (Bunker Hill Parcels A,E-3, E-4, L and M).

There is a positive overall outlook for downtown residential development because of the following factors:

- Energy conservation and gasoline price increases will make the downtown more attractive as a place to live and work.
- Changing life styles including smaller families, more households without children, and increased numbers of single people seeking investments requiring low maintenance will also contribute to the attraction of downtown residential living.
- Single family housing costs have risen rapidly in the Los Angeles area and created a high demand for condominiums.
- General housing shortages in Los Angeles have become particularly acute in the rental market. Demand for apartments is high and downtown could be a viable option for some segments of this market.

#### Baseline 1990 Residential Development Forecasts

To evaluate the demand for future "market rate" CBD residential development, it is important to distinguish among: (1) effective sub-area market demand, (2) the supply of suitable and available parcels, and (3) feasible construction schedules and absorption rates. The demand for "in-city" housing is most likely to come from a small segment of CBD employees with adequate income levels and compatible life-style needs. Effective housing market demand is the small percentage of the total CBD employee-housing demand which could be attracted to the type of residential environment that could be provided in certain sub-areas of the CBD. Because of the competition for other uses in the CBD, only a portion of the effective market demand for housing could be met in the CBD. Finally, the absorption rate (i.e., the purchase or leasing rate), for new "in-city" development has traditionally been slow.

For the purpose of this analysis, effective market demand is defined as unsubsidized housing renting for \$250 or more per month or condominium units selling for more than \$30,000. The two sub-areas of the Los Angeles CBD where residential development is expected to occur are Bunker Hill and the Convention Center/South Park area.

Bunker Hill

Bunker Hill is the only Los Angeles CBD sub-area that has an established market image and the existing infrastructure or amenities to support near term development. The 1985 demand for housing in this area has been estimated at 2600 additional units; by 1990 an effective market demand for 4500 units has been estimated. (Property Evaluation Services, 1977; Dark and Higginbotham, 1978; and Robert J. Harmon Associates, 1978).

The maximum holding capacity of Bunker Hill is defined in the Redevelopment Plan as 3750 units. There are 714 units in Bunker Hill Towers, 1100 units under construction for the elderly and handicapped on Hill Street and an additional 800+ condominium units planned by 1985 on Parcels A, E-3, E-4, L and M. Another 250 condominium units are planned between 1985 and 1990. Counting just the 1814 units constructed or under construction, Bunker Hill could accommodate 1936 additional market rate units. With an effective 1990 market demand for 4500 additional units, only 200 of which could be accommodated on Bunker Hill, there is a potential excess 1990 demand for 2500 units.

The 800 units now planned for Bunker Hill by 1985 will require three to five years to be completely sold. (Dark and Higginbotham, 1978) The 250 units planned for after 1985 under baseline condition, are also expected to be fully occupied by 1990.

In summary, even with allowances for slow absorption rates and staggered construction, about 1050 new market-rate residential units will be constructed and occupied between 1978 and 1990 in the Bunker Hill area under baseline conditions. This would leave an excess demand for about 3350-3450 market rate housing units in this sub-area.

South Park

South Park is the other sub-area of the Los Angeles CBD where new market-rate residential development is planned. This area, near the Convention Center, does not have an established market image for residential development. An effective demand for 360 residential units has been estimated for this area in 1980, and a cumulative 1990 demand of 1600 units is projected. By 1990 total demand for subsidized and market rate housing has been estimated to exceed 5000 units. (Property Evaluation Services, 1977; Robert J. Harmon and Associates, 1978).

The supply of available parcels for residential construction is not a critical factor in the development of South Park because of the number of underdeveloped parcels and fully depreciated buildings. However public and private investments in physical amenities and facilities will be required to make this area more attractive to investors. Currently 400 units of a "new town in-town" are planned, leaving a total 1990 demand in this area of 4600 units.

The 400 units planned for construction in the early 1980's will require three to five years to be fully absorbed. Assuming adequate public funds and private capital for infrastructure and facility improvements, an additional 500-600 units of subsidized housing and 300-400 units of market rate housing would be constructed by 1985. The market absorption rate of the second stage of housing should be higher than the first stage leading to the construction of 300-400 additional market rate units between 1985 and 1990.

In summary, under baseline (i.e. without DPM conditions), it is expected that 1000-1200 units of market rate housing would be built and occupied in South Park by 1990, leaving a potential excess demand for 400-600 market rate residential units and 2600-2700 subsidized units.

### DPM Impact Measurement Parameters

Implementation of the DPM will increase the overall attractiveness of in-city living. It will improve the proximity to expanded work, entertainment and retail opportunities for downtown residents. The need for a second car would be reduced because weekday activities could be accomplished by DPM or on foot. Reducing the need for a second car could save an estimated \$1000-\$1200 a year (National Highway Users Federation, 1977) and increase the amount a prospective renter could pay by \$50-\$100 a month, with no increase in income. These factors would combine to expand the market potential and the effective market capture rate of one and two person households from 5-7% to 7-10% (estimate includes both primary and secondary CBD residential areas). This would translate into an effective market demand for 5,300-5,500 market rate residential units in Bunker Hill. Assuming 1,050-1,150 market-rate housing units under baseline conditions, excess demand with the DPM would be 4,250-4,350 compared with a baseline excess demand for 2500-3000 units.

### Net Effect of DPM System on Residential Development

If the proposed DPM is implemented, increased market rate development will first manifest itself in increased densities on Bunker Hill parcels within two blocks of the DPM station, already scheduled for residential development. Parcel A density is projected to increase by 80 units and an additional 300 units would probably be built on Parcels L and M. Thus, with the DPM, an additional 380 units are projected by 1985 and an additional 250 are estimated by 1990. (Parcels U and T) In summary, an additional 630 units over the baseline of 1050-1150 units would be built on Bunker Hill with the DPM. However, even with this induced development there would still be an additional demand for 3600-3800 market rate units in the CBD. (Robert J. Harmon and Associates, 1978)

With the development in Bunker Hill and assuming adequate infrastructure development in South Park, the most likely place for additional development would be South Park. Prior to 1985, the effect of the DPM would be increased absorption of the market rate units already planned and the probable development of an additional 200-300 units. Between 1985 and 1990, because of the excess demand for in-city residential units, an additional 100-1200 market rate units above the 300-450 already planned would be built near the 9th Street DPM station (probably between 9th Street and the Convention Center, west of Figueroa). Robert J. Harmon, Associates, 1978)

In summary, by 1990 the DPM will induce an additional 630 units in Bunker Hill and an additional 1300-1450 units in South Park for a total of 1930-2100 residential market rate units over the baseline case. (see Table 5-22C)

### Enhancement or Mitigating Measures

An increase in the allowable dwelling units on Parcels U and T, and a reduction in the parking requirements are necessary in Bunker Hill if the increased levels of potential DPM-induced residential developments are to be achieved. In the case of South Park a majority of the local and federal public sector residential infrastructure/facility funds must be expended to ensure that the proper transition of this segment of the South Park/Convention Center area to a residential neighborhood occurs. This expenditure of public funds would not represent an increase generated by the DPM system; rather, such funds would be necessary to achieve the baseline 1990 forecasts of new market-rate residential development estimated to occur in the South Park/Convention Center area.

TABLE 5-22C

ESTIMATED PACE OF MARKET RATE RESIDENTIAL DEVELOPMENT IN THE  
WITH DPM: 1978-1990

Time Period	Baseline	Construction Units		Absorption Rate	
		DPM Increment	Total	Low	High
1978-1985	1500-1650	580-680	2080-2330	1250	1480
Bunker Hill	800-850	380	1180-1230	850	930
South Park	700-800	200-300	900-1100	400	550
1986-1990	550-700	1350-1450	1990-2150	2730	3000
Bunker Hill	250-300	250	500-550	830	850
South Park	300-400	1100-1200	1400-1600	1900	2150
TOTALS	2050-2350	1930-2130	3980-4480	3980	4480

Source: Robert J. Harmon and Associates, Inc., 1978.

From an urban design integration perspective, a secured second-story pedestrian walkway system from the 9th Street Station to the new residential development is very important. From a systems operation stand point, in-city residents should be able to use the DPM system between 6 or 7 AM and 12 midnight if pedestrian access advantages, especially to South Park, are not to be limited. Generally every aspect of urban design integration recommended for office, hotel retail development along the DPM route would enhance the residential development potential of Bunker Hill and the South Park/Convention Center area.

#### 5-221.4 Retail Activity Impacts

Total retail sales in the CBD for 1977 have been estimated at \$540 million, a 51% increase in current dollars over the 1972 level of \$358 million (Dark and Higginbotham, 1978). Estimates made for 1977 retail expenditures indicate that of the total \$540 million expended, general merchandise accounted for 31%, eating/drinking for 19%, and apparel for 19%. These estimates also indicated that 23% of retail sales were made by CBD employees, 4.5% by visitors, and less than 1% by local residents (Bunker Hill). The largest percentage of retail purchases were made by residents living outside of downtown, an estimated 72%.

The current retail space inventory is estimated at slightly more than 5 million square feet. Occupancy rates vary from 80-90% in newer retail complexes to less than 50% in some of the older buildings in the Broadway area. Retail sales per square foot averages range from \$70-80 in the Broadway area to \$90-100 or higher in the newer successful CBD retail areas and tourist areas such as Olvera Street. Department store sales in the older stores range from \$50-70 per square foot.

Retail activity since 1970 has been increasing in the western CBD, with new complexes such as the Broadway and ARCO Plazas and retail outlets in new hotels and office buildings capturing the bulk of this increase. The DPM Corridor accounts for about 60 percent of the 1975 retail space inventory and 55 percent of its retail employment (Wilbur Smith, 1978). About one-third of the total CBD retail space inventory and 45% of sales are now concentrated in the newer (post-1970) developments in the west CBD.

#### Baseline Forecast: 1990

A recent estimate of future retail sales in the western CBD projects an increase from the current (1977) level of \$247.5 million to a 1985 level of \$281.3 million (Dark and Higginbotham, 1978). The 1990 baseline (without DPM) projections anticipate that the retail sales volume in the DPM Corridor will approximate \$330-350 million. This projection assumes that there would be an increase of about 1.0 million square feet of additional retail space in the DPM Corridor by 1990 for a total of 4.1 million square feet.

Under baseline 1990 conditions, retail employment in the DPM Corridor is estimated to be about 6,700, or a 14% increase over 1975 levels. These employees in addition to employees from other sectors - a projected DPM Corridor total of 147,000 - would account for 35-40% (about \$125 million) of retail sales being expended at eating and drinking establishments. Overall eating and drinking would account for 15-20% of western CBD retail sales, while shoppers goods would comprise 70-75% of such sales (Robert J. Harmon & Associates, 1978).

#### DPM Impact Measurement Parameters

Implementation of the DPM would generate increases in CBD retail sales activity from three major sources of patronage:

(1) the downtown employee market; (2) the local resident market; and (3) the CBD visitor market. In each of these markets, the DPM-induced sales growth would result from increases in the patronage base (i.e., the additional numbers of people present in the CBD) and in the per capita expenditures of the baseline markets.

The increase in retail sales volume attributable to the DPM will translate into: additional retail space demand; changes in the baseline patterns of retail sales per square foot; additional employment in the retail sector; increases in the City's tax revenues derived from its share of the sales tax.

The rationale and basis for estimation of retail sales impacts and the nature and magnitude of such impacts are briefly set forth below and more fully discussed in Task Termination Report 4.15. Employment and tax revenue impacts are discussed in Sections 51-233 and 5-234.

#### Downtown Employee Market

In 1975, the annual per capita expenditure of all Los Angeles CBD employees was estimated to be \$825 (based on Dark and Higginbotham, 1978). Office employees spent an estimated \$880 per capita vs. \$600 for non-office employees (Robert J. Harmon & Associates, 1978). Under baseline (without DPM) conditions, it is anticipated that the "market draw" of planned retail facilities as well as the "net" increase in normal income will generate increased retail expenditures by employees in the western CBD ranging from \$100-\$125 per capita (15%) for office employees and \$50-\$75 per capita (10%) for non-office employees. (Dark and Higginbotham, 1978)

The DPM system would provide a rapid, dependable, and economic internal circulation system that would link employees in the DPM Corridor with retail facilities throughout the corridor.

The resulting improvement in mobility would increase noontime and afterwork shopping and dining expenditures by CBD employees.

By 1990, the per capita increases in retail sales attributable to the DPM are expected to be 25%-30% for office workers (\$1100 versus \$1400) and 15%-20% for non-office workers (\$750 versus \$900) (Robert J. Harmon & Associates, 1978). Most of this increase is expected to be in the purchase of shoppers and convenience goods.

#### Local Resident Market

Currently, CBD retail expenditures by upper and middle-income residents (i.e. Bunker Hill) are \$2597 per capita. Most of this (83%) is spent on shoppers and convenience goods (Dark and Higginbotham, 1978). The effect of baseline retail development is expected to be an increase in 1990 resident per capita expenditures by 5-10% (from \$2597 to \$2800) (Robert J. Harmon & Associates, 1978).

Rapid and convenient access to the entire DPM Corridor would also increase resident expenditures in downtown by an estimated 5-10% over the 1990 baseline level (\$2800 versus \$3000) (Robert J. Harmon & Associates, 1978).

Residents of subsidized units and in older existing housing within the corridor have lower incomes and thus less discretionary income. Any DPM related impacts would be limited to possible redistribution of spending within the CBD, not an increase. Therefore, the DPM has not been credited with any increased spending by this market segment.

Although about 70% of current CBD sales are generated by residents of, or visitors to the surrounding area, no credit is taken for increased expenditures by retail customers not residing, employed, or staying in the CBD.

#### CBD Visitor Market

With the improved mobility provided by the DPM and the expanded retail facilities associated with its implementation, it is expected that the expenditures of CBD hotel guests would increase from 25-30% above the baseline per capita level of \$24-\$25 to \$32 per day. (Robert J. Harmon & Associates, 1978; Dark and Higginbotham, 1978).

#### Estimated Size of Market Segments

The estimated size of each market is based on projections of future development, with and without the DPM outlined in the preceding sections and in section 5-231.1 for employment. These projections indicate a net DPM induced increase in 1990 of 6,600 office employees, 1615 non-office employees, a 160,182 room night demand, and approximately 2800 residents in that year. Table 5-22D provides a summary of per capita expenditures, size of market segments, and projected levels of retail activity with and without the DPM.

#### Net Effects of DPM on Retail Activity

The incremental retail sales volume for each market sector and the total impacts of the DPM are shown in Table 5-22E. The dollar volume for each segment is obtained by multiplying the per capita expenditures by the number of individuals in each segment. The totals, as shown in Table 5-22E, indicate that the DPM would yield a net increase in annual retail sales of \$93.024 million in 1990 when compared with the baseline. This would constitute a net increase of 30% over the baseline conditions in that year. The cumulative sales impact between 1983 and 1990 would be about \$515 million. (see Table 5-22F)

This expected increase in retail sales volume will translate into additional retail space and changes in the baseline patterns of sales per square foot for (1) eating and drinking establishments, (2) convenience goods stores, and (3) shoppers goods stores.

Table 5-22D

## DPM-INDUCED RETAIL ACTIVITY--MEASUREMENT PARAMETERS

CRITICAL PARAMETERS	BASE CONDITIONS <sup>a</sup>			WITH DPM <sup>b</sup>	
	1975	1985	1990	1985	1990
	1977 Dollars			1977 Dollars	
<u>1. CBD Office Employees in DPM Corridor (Private &amp; Public)</u>					
A. Annual per capita CBD retail expenditures	\$880	\$1,000	\$1,100	\$1,250	\$1,400
B. Number of employees	94,100	113,075	125,700	115,925	132,300
C. Eating/drinking as percent of retail expenditures	55%	50%	45%	46%	43%
D. Shoppers Goods " " " "	40%	45%	50%	49%	52%
E. Convenience Goods " " " "	5%	5%	5%	5%	5%
<u>2. CBD Non-Office Employees in DPM Corridor</u>					
A. Annual per capita CBD retail expenditures	\$600	\$675	\$750	\$800	\$900
B. Number of employees	16,900	20,000	21,500	20,270	23,115
C. Eating/drinking as percent of retail expenditures	50%	48%	44%	44%	42%
D. Shoppers Goods " " " "	45%	47%	51%	51%	53%
E. Convenience Goods " " " "	5%	5%	5%	5%	5%
<u>3. CBD Residents--Upper/Middle Income in DPM Corridor</u>					
A. Annual per capita CBD retail expenditures	\$2,597	\$2,800	\$2,800	\$3,000	\$3,000
B. Number of residents	1,050	2,415	4,060	2,961	6,900
C. Eating/drinking as percent of retail expenditures	17%	17%	17%	18%	18%
D. Shoppers Goods " " " "	47%	47%	47%	46%	46%
E. Convenience Goods " " " "	36%	36%	36%	36%	36%
<u>4. Hotel Guests</u>					
A. Annual room nights (1.4 occupants/room)	961,400	1,692,550	1,958,000	1,800,000	2,118,082
B. Daily per capita retail expenditures of business, convention and tourist visitors	\$22	\$24	\$25	\$30	\$32
C. Eating/drinking as percent of retail expenditures	68%	68%	64%	60%	60%
D. Shoppers Goods " " " "	23%	23%	27%	31%	31%
E. Convenience Goods " " " "	9%	9%	9%	9%	9%

<sup>a</sup> Wilbur Smith & Associates, 1978; Robert J. Harmon & Associates, 1978; Dark and Higginbotham, 1978.

<sup>b</sup> Robert J. Harmon & Associates, 1978.

Table 5-22E

DPM-INDUCED IMPACTS ON  
RETAIL SALES VOLUME  
(In Thousands of 1977 Dollars)

I. Annual Retail Sales Volume: <sup>a</sup>

<u>Retail Sales Components</u>	<u>Baseline</u>		<u>With DPM</u>		<u>Net Effect of DPM</u>	
	<u>1985</u>	<u>1990</u>	<u>1985</u>	<u>1990</u>	<u>1985</u>	<u>1990</u>
Retail Sales from CBD Office Employees	\$113,075	\$138,270	\$144,906	\$185,220	\$31,831	\$46,950
Retail Sales from CBD Non-Office Employees	13,500	16,125	16,216	20,804	2,716	4,679
Retail Sales from CBD Residents	6,762	11,368	8,883	20,000	2,121	8,632
Retail Sales from CBD Hotel Guests	56,870	68,530	75,600	94,890	18,730	26,360
Hotel Room Rental Charges <sup>b</sup>	<u>67,702</u>	<u>78,320</u>	<u>72,000</u>	<u>84,723</u>	<u>4,298</u>	<u>6,403</u>
Total Annual Retail Sales	\$257,909	\$312,613	\$317,605	\$405,637	\$59,696	\$93,024

<sup>a</sup> Computations based on data from Table IV-221.2 (per capita expenditures multiplied by size of market sector) and as noted below.

<sup>b</sup> Based on constant average room rate of \$40 per night. This is lower than average current published rates (\$45), but the lower value is used to reflect discounts offered to tour groups, conventions, government employees, businessmen, etc.

Source: Robert J. Harmon & Associates, 1978.

TABLE 5-22F

DPM-INDUCED IMPACTS ON RETAIL SALES VOLUME  
(1977 Dollars)

1983-1990 Cumulative Net Effect on Sales Increase<sup>a</sup>

<u>Year End</u>	<u>Annual Net of DPM</u>
1983	\$ 19,185,000
1984	37,877,000
1985	59,696,000
1986	66,362,000
1987	73,028,000
1988	79,694,000
1989	86,360,000
1990	93,024,000
1983-1990 Cumulative Total Impact	\$515,226,000

<sup>a</sup>Assumes linear growth from 1983-1985 (at 20% of 1990 level) and from 1985-1990 (at 6.6% of 1990 level).

Source: Robert J. Harmon & Associates, 1978.

Eating and Drinking Establishments

Because of the increases in per capita expenditures, amounts spent on eating/drinking, and the number of people in each market segment, total expenditures in this category would increase about \$34,000,000 in 1990, or 37% of the DPM retail impact.

Assuming that the restaurants and cocktail lounges would have sufficient excess capacity to absorb about 33-40% of the increased 1990 demand, the DPM impacts on restaurant facilities would be (1) an increase in gross sales of \$9-9.5 million for restaurants existing under baseline conditions, and (2) creation of a demand for about 3,400 additional luncheon seats, about 1,100 additional dinner seats, and about 250 additional cocktail lounge seats in new facilities. This added demand would be equivalent to 6-10 new restaurants, depending on their size and price range.

Convenience and Shoppers Goods Establishments

The DPM-induced impact on convenience and shoppers goods retail in 1990 is projected at \$60,000,000 a year, of which shoppers goods would account for \$51 million. Of the \$9 million in increased convenience goods sales, it is assumed that about 60% (or \$5.4 million) would be absorbed by 1990 baseline stores in the DPM Corridor and the remainder would occur at new facilities in the DPM stations. The DPM induced impact on sales volumes per square foot would amount to an increase of \$10-\$11.

Shoppers Goods: \$51 million

Of the nearly \$51 million in 1990 annual net DPM-induced shoppers goods sales, it is estimated that 75% or \$38 million would accrue to 1990 baseline stores in the DPM Corridor; 25% or \$13 million would create enough demand to support additional or DPM-induced square footage. At \$125 per square foot, the demand for new shoppers goods would translate into an additional 104,000 square feet of supportable specialty/shoppers establishments within the DPM Corridor.

### Mitigation/Enhancement Measures

The proposed station locations have been chosen in order to maximize the opportunity for integration with future office or mixed use complexes which have significant retail space or proximity to existing retail complexes. In virtually all cases, access between stores/hotels and stations is relatively direct and should pose a minimum of problems. The discussion of retail impacts has assumed the integration of DPM stations into these major existing and planned retail and hotel complexes, either directly or via accessible, secure and attractive pedestrian linkages. One major example is the potential connection of the 7th Street Station to the Broadway Plaza. This Plaza, which contains about 366,000 square feet of retail space (including the Broadway department store and several dozen specialty shops), the Hyatt Regency Hotel and an office tower, is separated from the 7th and Figueroa DPM Station by the block-square Barker Bros. building. A direct second-level covered passageway with interior storefronts and other interesting spaces would be a possible solution to this direct access problem. Failure to provide such connections and to maintain their cleanliness and security could degrade significantly the magnitude of retail impacts.

#### 5-221.5 Conformance With Adopted Land Use Plans

Based on the DPM-induced land use impacts predicted for office, hotel, residential and retail use in the CBD, the DPM is expected to increase the probability that the goals and objectives outlined in the adopted land use plan for the CBD will be realized. As discussed in Section 2-212, land use plans for the CBD consist of the long-range policies and objectives of the Central City Community Plan, and the short-range objectives and development plans as specified in the Bunker Hill Urban Renewal Project Redevelopment Plan, the Little Tokyo Redevelopment Project: The Redevelopment Plan, and the

Central Business District Redevelopment Project. The DPM is in conformance with and furthers the goals of all of the above plans.

A detailed analysis of the expected DPM-induced land use impacts and their conformance with adopted plans is shown in Task Termination Report 4.15.

#### 5-222 Community Services and Cultural Facilities

Major facilities providing social, public, community, or municipal services are shown in Figure 5-22C. With some exceptions, the DPM system will generally have a positive impact on community and social services by providing improved access.

For those services which have a relatively elastic demand, that is, where users have a great deal of choice as to whether to use the services, the DPM is likely to produce an increase in the amount of use. These include: the Terminal Annex, the Music Center, the Law Library and the Central Library, the three major churches (St. Vibiana's Cathedral, St. Paul's Cathedral and the First United Methodist Church), the Post Office in Arco Plaza, the University of California extension, and the Convention Center. Other facilities which would benefit from improved ease of access, but not necessarily significant increases in levels of use, are: Union Station, most of the government buildings in the Civic Center, and California Hospital. Remaining services would not benefit directly from the DPM because they are outside the convenient DPM walkshed or they have little or no public visitor use.

#### Impacts on Police Protection Services

Because the DPM intercept facilities will have high volumes of automobiles, which may be unattended for some length of time during the day, representatives of the Los Angeles Police Department have suggested that additional foot patrols may be desirable at both Union Station and the Convention Center.

Figure 5-22C

# PUBLIC AND SOCIAL SERVICES IN THE CBD



NUMBER ON MAP	FACILITY PROVIDING SOCIAL, PUBLIC, COMMUNITY OR MUNICIPAL SERVICE	AMOUNT OF USE BY PUBLIC (Line indicates little or no public use)	ACCESSIBILITY TO DPM STATION *** 3 min. walk ** 5 min. walk * 10 min. walk	POSITIVE SOCIAL SERVICE IMPACTS DUE TO DPM		NEGATIVE SOCIAL SERVICE IMPACTS DUE TO DPM
				INCREASED AMOUNT OF USE	INCREASED EASE OF USE	
1	Terminal Annex (P.O.)	X	**	X	X	N O N E
2	Union Station	XXX	**		XX	
3	Board of Education	X	**		X	
4	County Hall of Justice	XX	**		XX	
5	Federal Court	XX	***		XXX	
6	Federal Bldg. & P.O.	XXX	***		XXX	
7	County Health Center	XX	*			
8	Dept. Water & Power	XX	*			
9	Music Center	XXX	*	X	X	
10	County Hall of Admin.	XXX	**		XX	
11	County Court House	XXX	**		XX	
12	County Hall of Records	XXX	***		XX	
13	Law Library	XXX	***	XX	XXX	
14	County Criminal Courts	XX	***		XX	
15	Future State Building	XXX	***		XXX	
16	City Hall	XXXX	***		XXX	
17	City Hall East	XX	***		XXX	
18	City Hall South	XXX	***		XXX	
19	Parker Center (Police)	XX	***		XXX	
20	State Office Building	XX	***		XXX	
21	Fire Station #3					
22	St. Vibiana's Cathedral	X	**	X	X	
23	St. Paul's Cathedral	X	***	X	X	
24	Post Office (Arco)	XXX	***	X	XX	
25	Central Library	XXX	***	XXX	XXX	
26	Central Police Facil.					
27	Fire Station #9					
28	Municipal Court	XXX				
29	1st Methodist Church	X	***	X	X	
30	Univ. of Calif. Exten.	XX	**	X	X	
31	Convention Center	XXXX	***	XXX	XXX	
32	Police Station (Georgia)					
33	California Hospital	XX	*		X	
34	Fire Station #10					
35	California High School	XX				
36	State Employment Office	XX				
37	Fire Station #30					
38	Police Station (Newton)					

Source: Community Redevelopment Agency, 1978.

### Impacts on Fire Protection Services

The desire to serve certain sites and mitigate other types of impacts has resulted in a recommended route alignment that provides a minimum horizontal clearance of three feet to the fronts of certain buildings. This situation interferes with the use of external fire escapes in older buildings, and presents the potential for limiting fire department capabilities to gain external access by means of ladder to rooms and/or roofs, or to rescue occupants.

The six sites of particular concern are those older unsealed buildings which lack the modern internal pressurized smoke proof stairs, and where the fire department is forced to rely on external means for access and rescue operations, e.g. those with only openable windows and/or external fire escapes. These sites have been reviewed and discussed with fire department personnel. There appear to be alternatives for each of the sites that can ameliorate the potential accessibility restrictions and afford satisfactory life, safety, and fire protection capabilities. These alternatives include the consideration of smoke towers in certain sites, enclosing external fire escapes, storing aerial ladders on guideway, hydraulic aerial ladder turntable on guideway, enclosing certain internal stairs, etc., and will require coordination with the Los Angeles Fire Prevention Bureau in the final design phase, as for obtaining approvals and/or the proper variances.

Alternatives have been selected for each of the sites of concern to the department, consistent with the conceptual level design of this phase, and included in the cost estimates. The modifications suggested must meet the standards of the Los Angeles Municipal Code before they can be considered feasible.

### Impacts on Public Utilities

Implementation of the DPM would provide a stimulus to secondary office and commercial development in the CBD. The capacities of both the existing wastewater and utility systems for the downtown area are sufficient to accommodate the increased demands resulting from this secondary development.

### Overview of Impacts on Cultural Facilities

The major cultural facility immediately adjacent to the DPM route is the Convention Center, discussed below. The Music Center is the other major cultural facility in downtown, but the DPM is expected to have little or no impact on this facility beyond a marginal improvement in access.

#### Convention Center

This major Los Angeles cultural facility serves the entire metropolitan area. Its accessibility by freeways and surface streets is improved by the addition of a DPM station which will establish a much-needed link between the Convention Center and the remainder of downtown. In addition, planned parking garages will provide a park-and-ride opportunity for people employed in the downtown area, thus significantly reducing the congestion on the already overburdened streets.

The DPM station will either be located on the west side of Figueroa Street in a large open space facing the main entry of the Convention Center or in the center of Figueroa, also opposite the Convention Center main entry. In either case, the DPM will establish a strong pedestrian and visual link between the Convention Center and the parking intercept, thereby diminishing the impact of the DPM station in the Convention Center.

The DPM station will substantially increase the use of the Convention Center by creating a strong physical connection between the facility and other downtown activity centers.

## 5-223 Parks and Open Spaces

Present and planned parks and open spaces in downtown Los Angeles are shown and described in Figure 5-22D. The area and uses of each one are given. The most important of these open spaces are those which are available now and readily accessible to pedestrians. Nineteen of the 44 areas totaling 33.2 acres, meet these criteria. Total open space comprises 70.3 acres. This total includes land that is purely decorative in function as well as rough estimates for planned and proposed open spaces. Approximately 40 acres of open space are within relatively easy pedestrian access from the DPM.

In General, open spaces in downtown Los Angeles will experience the beneficial impact of improved accessibility. This will be more true for those areas within a short distance from DPM stations, and this should result in increased or extended use of open space areas. Open space areas which would be most directly affected include: Olvera Street and the Pueblo de Los Angeles Park, City Hall Mall, Civic Center Mall, the Music Center area, Pershing Square, the Central Library grounds, and selected plaza areas in the financial district.

The DPM system may present some degree of visual intrusion on open space areas. However, with careful design, the DPM guideway and stations could be made compatible with and even enhance the appearance of adjacent open space.

A more detailed analysis of the impacts the DPM would have on the three designated parks along the route -- Pershing Square, City Hall lawn, and Father Serra -- are discussed in Chapter 6.

## 5-224 Visual and Aesthetics

The overall impact of the DPM, visually and aesthetically, will depend upon the manner in which the system is designed and integrated into the environment. Also, to some extent it will depend upon the taste and attitudes of the observer.

The following pages discuss the DPM from both perspectives. First there is a generalized discussion of the visual and aesthetic considerations that were applied in analyzing the downtown visual environment, the design responses to that environment, and a more detailed description of tradeoffs found in guideway, column and station design. This general impact assessment is followed by a segment by segment analysis of the visual impacts the guideway and stations are likely to have at specific points along the route.

## 5-224.1 General Visual Impact

## 5-224.11 Urban Environment

There are several identifiable aspects of the urban environment which have a bearing on the design of the people mover system.

- Architectural environment: The service area of the DPM system is mostly composed of buildings, streets, viaducts, and other facilities characterized by hard geometry that have been constructed of hard, durable materials. Although Los Angeles began with a Spanish motif in architecture and during the early decades of this century changed to an Art Nouveau, in recent years the downtown architectural "explosion" has been distinguished by buildings in the contemporary manner, many of which are tall high rise structures.

The modern lines of the DPM will be most compatible with the newer buildings on the west side of the CBD, e.g. Security Pacific Plaza and ARCO Towers, and least compatible with older, smaller structures, e.g. buildings on the west side of Figueroa Street, south of 8th Street.

- Landscape: A second aspect of the urban environment is its soft landscaped quality. The DPM service area

Figure 5-22D

# OPEN SPACE, EXISTING AND PROPOSED

■ EXISTING (Accessible to Pedestrians)

▨ EXISTING (Predominantly Visual)

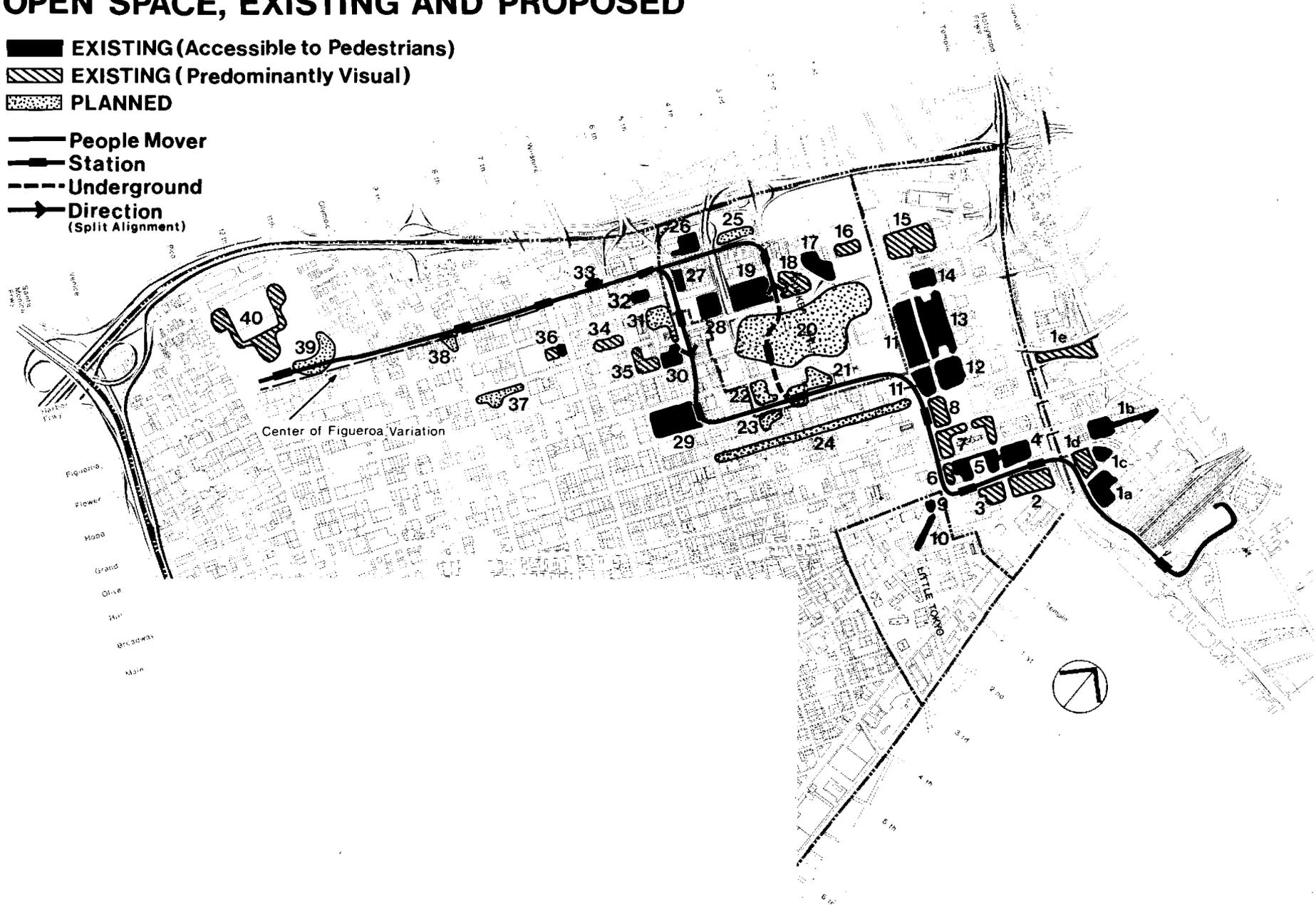
▤ PLANNED

— People Mover

— Station

- - - Underground

→ Direction  
(Split Alignment)



## STATUS, USE CHARACTERISTICS AND ACREAGE OF OPEN SPACES

key to Figure 5-22D

	EXISTING PLANNED PROPOSED	Predominantly VISUAL	ACCESSIBLE to pedestrians	LUNCH TIME	WEEK DAYS	WEEKENDS	COMM'L OR CULTURAL	SPECIAL EVENTS	ESTIMATED ACREAGE
1a Union Station	X		X				X		.5
1b Plaza/Olvera St.	X		X		X	X	X	X	1.5
1c Plaza lawn	X		X	X					.7
1d City Parking		X							1.0
1e Fort Moore	X	X							2.8
2 Federal Bldg.	X	X							.3
3 Parker Center	X	X							.5
4 Mall/Triforium	X		X	X				X	2.3
5 City Hall mall	X		X	X	X		X		2.0
6 Lawn, City Hall South	X	X							2.0
7 Lawn, Main City Hall	X	X						X	3.0
8 State Bldg. Site		X	X	X					1.0
9 New Otani	X		X	X					.5
10 Weller Street		X	X	X	X	X	X		n/a
11 County Bldgs.	X	X							.5
12 County Mall, lower	X		X	X					2.5
13 County Mall, upper	X		X	X					5.5
14 Music Center	X		X		X	X	X	X	1.4
15 Dept. Water & Power	X	X							2.0
16 B.H. Tower Access	X	X							.5
17 B.H.Tennis Courts	X		X		X	X			2.0
18 Central Power Plant	X	X							1.0
19 Security Pacific	X		X	X			X		2.8
20 Bunker Hill		X	X						3.0
21 Retirement Housing		X	X		X	X		X	1.0
22 Angel's Flight		X	X		X	X		X	.5
23 Public Plaza Site		X	X		X	X	X	X	.5
24 Broadway		X	X		X	X	X	X	n/a
25 MAT Hotel Site		X	X		X	X	X	X	1.0
26 Union Bank	X		X		X				1.0
27 Bonaventure Hotel	X		X		X	X	X	X	.5
28 Arco Garage (Roof)	X		X					X	2.2
29 Pershing Square	X		X		X	X			3.0
30 Library Lawn	X		X		X				2.0
31 Library parking		X	X						2.0
32 Arco Plaza	X		X		X				1.8
33 St. Paul's Courtyard	X		X		X				.5
34 Union Bank	X	X							.5
35 Crocker Bank	X	X	X						.5
36 Broadway Plaza	X	X	X		X	X	X	X	.5
37 South Park "park"		X	X		X	X			1.0
38 9th Street Triangle		X	X	X					.5
39 Hotel site		X	X						2.0
40 Convention Center	X	X	X						10.0

contains several parks and tree planted streets.

The following considerations have been incorporated in the designs to preserve as much of the existing environment as possible: replacement of disturbed plant material; the provision for addition landscaped areas to complement existing "soft" areas; and the creation of new landscaped station plazas.

- New development: The people mover corridor is in a constant state of development and change. On balance, the character of new developments is accelerating a change to a more contemporary look. Whenever possible efforts have been made to integrate station and building design, e.g. the Elderly Housing Project on Hill Street and the Wells Fargo building on Fifth Street.
- Pedway system: Provision of second-story pedway facilities is a distinguishing mark of this accelerating change. The first stages of the pedway system are in place, and many additional pedways are being planned. Existing and future pedways were taken into consideration during design of the station access plans, e.g. a pedway from the Federal Building to the Civic Center Mall is incorporated into the Federal Station plan and the Library Station has been designed to allow a future pedway to be built between the station and the Library.
- Historical Associations: Downtown Los Angeles had a people mover system above ground for many years; today steps are being taken to reinstall the famous "Angels' Flight" on Bunker Hill.

Connections between the two systems will be possible; and the visual juxtaposition of the Angel's Flight funicular and the contemporary lines of the DPM will provide an interesting visual contrast between traditional and modern ways of moving people in Los Angeles.

#### 5-224.12 Design Development of Vehicles, Guideway Structure and Stations

The Downtown People Mover system consists of three major physical elements: (1) The vehicle system; (2) The guideway structure; (3) The stations.

#### The Vehicle System

Several vehicle systems can comply with the requirements of the Los Angeles DPM. Candidate vehicles are illustrated in Figure 4-25. Prior to final design, manufacturers of these

vehicles will bid on provision of service. Consequently, it is not possible at this time to identify the exact vehicle (which may be modified slightly) to be used. The exterior and interior colors of the vehicle will be selected to coordinate with comprehensive color scheme for the entire system.

#### Guideway and Station Structure

The guideway and station structures consist of three common elements: (1) foundations; (2) supporting columns; (3) vehicle guideway. Other aspects of station design are discussed in the next section.

It should be observed that Los Angeles is potentially subject to severe seismic activity. Because of this, all structures in downtown must reflect the same design requirements. There will be no difficulty in relating the structural proportions of the DPM system with adjacent buildings. (These heavier proportions can be observed in the lower columns of the ARCO Towers and other larger downtown structures.)

- Guideway foundations: In order to reduce the impact on street traffic during construction, the location of column foundations was carefully considered, along with other factors such as interference with underground utilities. The basic concept of structural design was to keep all foundation elements below grade, so that the foundations would have no visual impact.
- Supporting columns: Trade-off studies. Column location planning and design involved a study of the trade-offs among the number of columns, length of guideway span, proximity of column locations to adjacent structures, the division of city blocks into reasonably uniform spans, and finally cost trade-offs between uniformity in guideway beam lengths and variations to accommodate minor elements of urban design. Basically, fewer columns and longer spans yield larger columns that require space at the sidewalk level. Conversely, increasing the number of columns to achieve a lighter cross section and a more graceful slenderness ratio, both increases the foundation and column costs and tends to produce a "picket fence" appearance. One solution was to design the structural cross section so that the column

would be thinner in one dimension to take less of the sidewalk width and wider in the dimension paralleling the sidewalk length. To reduce the width of two columns as seen from the street, it was divided into two coupled columns.

Seismic design requirements result in making the columns heavier in cross section. Consequently, many optical refinements were considered and can be applied in final design to increase the slenderness effect. Various column shapes were considered. See Figures 4-23A-E.

- Column Capitals: An item of major importance in the design of the guideway structure is the juncture of the top of the column with the vehicle guideway. A careful transition of form is required in order to enhance the linear quality of the guideway.
- Vehicle guideway - Guideway types: Of the many candidate vehicle systems which could be selected for the DPM system most are supported from the bottom. The dimensional and technical requirements of the systems vary widely. Some guidance systems require low sidewalls to give guidance to the vehicles. Others require no sidewalls but a steel beam on top of the guideway to secure and guide the vehicles. Still others provide both support and guidance for the vehicles by a single beam. Typical guideways for these varied vehicle systems are illustrated in Figures 4-23A-E.

#### Station Types

Three transportation station types were designed: (1) On line; (2) Transfer; (3) Terminal.

On-line stations were designed as side platforms. This enabled the guideway to be kept straight, so that the impact of the guideway on the corridor would be kept to a minimum.

Transfer stations were designed as center platforms, for ease of transfer, but options were kept open for the side platform type to reduce impact in a major traffic corridor.

Terminal stations were designed to be center platform types.

#### 5-224.13 Other Design Refinements

In addition to the considerations discussed above, other design refinements to minimize the visual impact of the DPM have been or can be incorporated into the final design of guideways and stations.

All guideways other than the single-beam type can be reduced in visual impact by accenting the linear quality of the member. This can be achieved by: careful attention to structural requirements; breaking large surfaces into smaller faces; accenting structural lines paralleling the guideway length and other optical devices.

In addition, the form integration of the top of the supporting columns with the guideway will maintain, without visual interruption, a continuous smooth flow of form along the entire guideway. These mitigating measures, illustrated in the preliminary baseline guideway structure design, can be applied in the final design of the selected guideway structure.

The use of colors and materials can also minimize the impression of size for both the stations and the guideways. Light colors such as white, off-white, light beige, or light grey, are proposed for the guideways and stations. A transparent effect can be achieved in the stations by opening mezzanines, glazing elevator cars and keeping elevator shafts open.

## 5-224.2 Visual Impacts Segment Analysis:

The environmental setting of the DPM is defined, for purposes of this section, as a corridor one-half block deep on either side of the alignment. Also considered are short and significant long-distance views which the DPM would affect. The viewpoints considered are those of the pedestrian on the street and the observer from adjacent structures at the first, second, and third level. Also considered is the quality and nature of the city view to DPM passengers.

For purposes of analysis, the alignment has been divided into segments, as shown in Figure 5-22E. The following factors were determined to be relevant in analyzing the visual setting for DPM facilities:

- general and unique visual characteristics; factual and impressionistic aspects
- short, medium and long-range views: panoramic, corridor, transitory
- the visual definition of the segment, in terms of edges, nodes, paths, landmarks, and legibility
- predominant building types and uses
- anticipated future development
- structures of historic or other interest of importance
- predominant building heights
- proximity of buildings, landscaping, and setbacks from projected guideway
- landscape characteristics, including major available and potential open spaces
- visibility from adjacent building first, second and third stories
- activity centers and areas of high pedestrian usage
- street design; width, number of lanes, sidewalk width

Figure 5-22E

## DPM SEGMENTS DEFINED FOR VISUAL IMPACT ANALYSIS



Source: City of Los Angeles, Planning Dept.

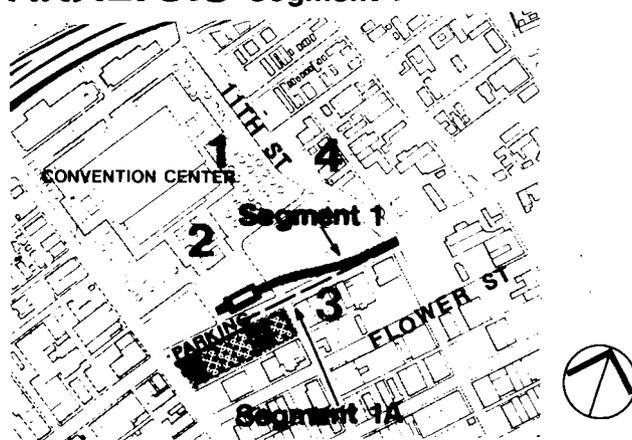
- shadow characteristics; e.g., sunny vs. dark sides of the street, existing shadow coverage
- present and potential view obstructions: pedways and guideways

#### Segment 1: 11th and Figueroa to Convention Center Station

This segment is characterized by broad, flat spaces and low structures. The Convention Center dominates the visual aspect of the area, with its rectilinear modern architectural forms, wide low profile, and deep setback. (1) In front of the Convention Center is a pedestrian plaza and fountain; (2) On the east side of Figueroa are small commercial uses in low structures; (3) To the northwest is an area composed of narrow streets, considerable open parking, and marginal structures; (4) The DPM Station planned for this location could be integrated easily into the existing formal, modern design of the Convention Center.

Figure 5-22F

### DPM VISUAL IMPACT ANALYSIS Segment 1



The impact of the DPM station, guideway and vehicles on the Convention Center environment would be positive due to the nature of the activity there, the compatible building materials and architectural forms, and the deep setbacks and generous open spaces which would provide medium-range and panoramic views both of and from the DPM.

The station would strengthen the general perception of the area as an important node of activity, thus enhancing urban legibility, or the image of the downtown. Provided the station design is symmetrical and on the same axis as the Convention Center and is constructed of modern compatible materials, no mitigating measures will be necessary; the overall aesthetic and visual impact will be positive.

#### Segment 1A

In the Center of Figueroa variation, the guideway and station would remain located over the centerline of the street. Because of its increased separation from the Convention Center, there should remain a positive impact on this facility. For pedestrians and motorists however, the station would become very prominent, and some may find this a negative experience. On the other hand, placement of the guideway and station in the center of the street would act to provide a unifying visual element to an area of downtown which presently does not possess a strong identity.

#### Segment 2: Figueroa Street from 11th Street to 7th Place

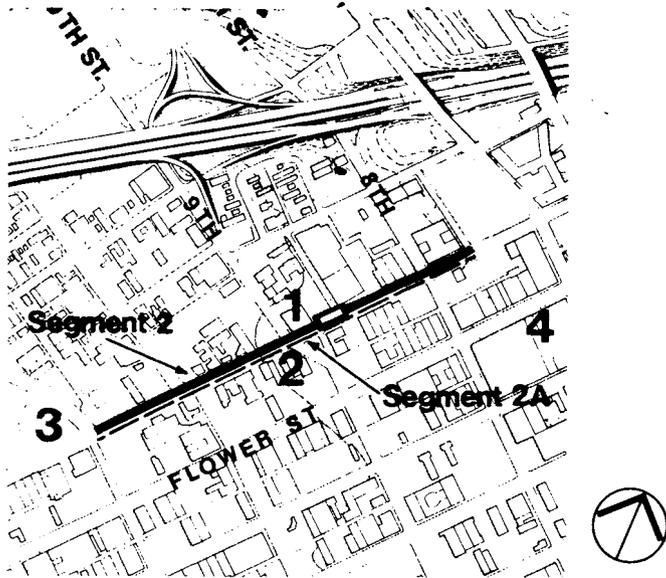
Figueroa Street is both an important traffic artery and part of the western visual edge of downtown. It is bounded by a mixture of low and medium-rise buildings with considerable open parking.

The west side of Figueroa (1) is at times baked with strong sunlight, while the east side (2) is in shadow until late afternoon. The major open spaces at the Convention Center (3) and to a much lesser degree at Ninth Street, only tend to dilute the visual definition and legibility of the street.

The Convention Center is a monumental structure, but set so far back from Figueroa as to appear low and wide, contributing little to the spatial definition of the corridor. (3) The other notable structure on the segment is of social but not visual importance: the Pantry Cafe at Ninth Street is a family-style restaurant which has been a landmark in Los Angeles for decades.

Figure 5-22G

## DPM VISUAL IMPACT ANALYSIS Segment 2



To the north can be seen the Broadway Plaza high-rise complex (4) and major new high-rise structures.

Traversing Segment 2, the dominant impression is of a wide, long and noisy street with a jagged spatial definition, strong contrasts of light and dark, and an approximately four-story building height along much of the street, with many gaps due to empty lots, lower buildings, and intersecting arterials. (see Figure 5-22H)

This segment will benefit from the visual reinforcement and definition provided by the DPM guideway which will create a unifying visual element serving to strengthen the function of the street.

While the DPM stations along this segment would serve to provide visual focal points and upgrade the architectural mix, guideways and columns would, at least initially, be out of keeping and visually incompatible in scale, form and materials with the existing small, older buildings. This is an instance where the DPM would at first be somewhat incompatible with its surroundings but would later integrate well with the new development which it can be expected to stimulate. Along most of this segment the narrow sidewalks and shallow setbacks present a tight setting which would be further crowded by the DPM guideway. In a high-rise setting this can be tolerated more easily, as close-up and corridor views become more dramatic, but in this segment of lower buildings and tight streetscape, the column impingement, presence of the guideway and case shadows would seem constricting and awkward.

FIGURE 5-22H

**FIGUEROA STREET, LOOKING NORTH AT NINTH STREET** / West side of Figueroa Alignment



SUBJECT TO CHANGE IN FINAL DESIGN

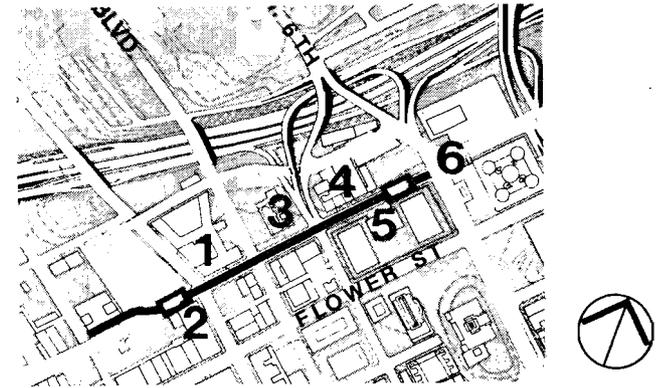
Segment 2A

In the Center of Figueroa variation, the stations at Fifth, Seventh, and Ninth Streets would become very prominent visual elements. These stations would be 120 feet long and 54 feet wide. Suspended 20 to 25 feet above and nearly as wide as the roadway, these stations will create significant shadows and a quasi-tunnel effect for motorists and pedestrians beneath. While some may find this intriguing, it is possible that others will consider these stations as out-of-place, too large, and oppressive. In any event, they will present downtown areas with an entirely new experience. Mitigating measures include the planned connecting pedways, escalators, and the use of design materials that will soften the stations and blend them into the surrounding buildings.

Segment 3: Figueroa Street from 7th Place to 5th Street

This segment passes through the most dense and highly developed area in the Central Business District, the new financial district. Adjacent buildings include: the 14-story, 1200 room Hilton Hotel with office tower (1); Barker Brothers, a major multi-story quality furniture store (2); Saint Paul's Cathedral, a designated historic and cultural site which includes several courtyards which are always open to the public and are used as meeting and relaxation areas (3); The Jonathan Club, one of the major private clubs of Los Angeles, an older, ornate, brick building (4); and the Bank of America Towers, a 2-1/2 million square foot twin tower office complex with a major subterranean multi-level shopping center, generating considerable pedestrian traffic, (5).

Figure 5-22I

**DPM VISUAL IMPACT ANALYSIS Segment 3**

Trees are planted along the length of Figueroa on both sides of the street. The south sun at certain times of the year casts long shadows that reach over Figueroa Street to the west side. However, the buildings on the west side (4) are generally much lower than those on the east (5) and present lower and less uniform visual definition. Projected development on the west side of the street at 7th, Wilshire, and 5th Streets may create more of a canyon-like visual character. However, it is likely that Figueroa from 5th to 7th Streets will continue to have a spatial and light-filled openness, in contrast to the typical core-city "canyons" created by high-rise buildings lining both sides of Flower Street.

The view north on Figueroa leads to the mountains, but is interrupted by a recently constructed pedestrian bridge between the Bonaventure Hotel and Union Bank (6) and by the 4th Street viaduct, further to the north.

At the northern end of this segment, the DPM would have a positive impact. With three of the four corners at Fifth

and Figueroa Streets developed with impressive high-rise buildings, and with the fourth likely for similar development in the near future, merging guideways at a mid-street aerial station over Figueroa Street would present a striking complex of aerial lines and forms, complementing the rising towers and existing and future pedways. With the views of the freeway ramp system to the west, this could well be regarded as the most visually exciting intersection in the city. Farther to the south the impacts are more adverse. The guideway is apt to be in marked contrast with both the semi-ornate brick Jonathan Club or the modest neo-gothic St. Paul's Cathedral. Users of the Cathedral courtyard would find the passing vehicles distracting, as may the occupants. Placement of the guideway in the street centerline will mitigate the impact on building occupants almost completely, and it will do much to lessen the visual impact upon the facades of the buildings themselves. For motorists, however, it may be somewhat distracting to have a row of columns down the centerline; which may obscure visibility when sighting along the length of the guideway. (see Figure 5-22K)

The presence of the guideway and columns, however, will strengthen the image of Figueroa as a major path of circulation, and will perhaps help to orient drivers. In general, it must be conceded that the southern portion of this segment is the most sensitive area that would be visually impacted by the DPM.

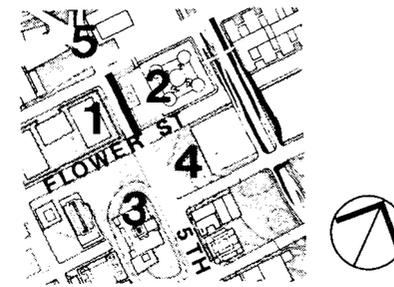
#### Segment 4: Fifth Street between Figueroa and Flower

This is the shortest segment in the analysis but the most intense in terms of density of development and traffic and pedestrian activity.

To the south is the massive, black granite and glass 52-story north tower of the ARCO complex (1). A pedestrian bridge, over which the DPM would pass, connects this area with the sparkling silver glass towers of the Bonaventure Hotel (2).

FIGURE 5-22J

## DPM VISUAL IMPACT ANALYSIS Segment 4



To the east, the vista is presently open, with the parking and yard areas of the Central Library (3) and a vacant parcel (4) providing sharp contrast to the high-rise office and hotel uses at (1) and (2).

The view to the west (5) is broad, expansive, and dynamic, owing to the freeway ramp activity, as traffic pours westerly along 5th Street, onto and over the Harbor Freeway. The DPM would serve to complement and intensify the modern, even futuristic, urban character of this area.

While the impacts of the DPM on this segment are positive, two possible negative effects should be mentioned. One is the possible confusion to motorists approaching and turning onto Fifth Street, who, seeing a DPM vehicle moving eastward, might attempt an eastward turn, and encounter the rush of oncoming traffic that continuously pours westerly along this major one-way artery. Even if it does not represent a danger, it could tend to confuse the perceived function of this circulation path. The other negative impact is the possible visual intrusion upon the users of the open space on the elevated terrace of the Bonaventure Hotel. Until final design determines the height and lateral placement of the guideway

FIGURE 5-22K

**FIGUEROA STREET, LOOKING NORTH AT FIFTH STREET**



SUBJECT TO CHANGE IN FINAL DESIGN

relative to this terrace, it cannot be said whether mitigation measures will be necessary, such as heavy landscaping or screening. It may even be discovered that the periodically passing DPM vehicles introduce a charming atmosphere of urbanity and modernity quite in keeping with outdoor lounging at the foot of the gleaming glass towers.

#### Segment 5: Fifth Street from Flower to Grand

Looking westerly from this segment toward the Bonaventure and ARCO Towers, the view is interrupted by a connecting pedestrian bridge spanning Fifth Street (1) The DPM guideway would pass over this bridge at a higher elevation, and would modify this view condition. The view of the freeway signs from 5th Street to the west could be obstructed, depending upon the size and location of the guideway. If this is the case, the freeway signs could be moved to a more visible location.

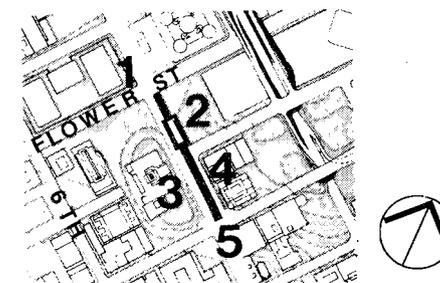
The lateral view along this segment is largely open, the vacant parcel at (2) and the Library at (3) with its parking and landscaped yard areas providing a low elevation frontage.

Portions of the library site may be used for expanded library facilities; and designs for a high-rise office structure on the vacant parcel integrate the DPM station into the design of the building. The site reuses would yield more shadow and landscaping than presently exist. The DPM guideway and station would intensify this visual impression. (see Figure 5-22M)

The area at (4) is defined by an imposing buttressed earth-colored concrete retaining wall approximately 30 feet in height with a concealed staircase leading up to Hope Street. Between the wall and the street is a narrow landscaped area (approximately 3 feet wide). The area above this retaining wall is not visible from the street, but consists of a narrow

Figure 5-22L

## DPM VISUAL IMPACT ANALYSIS Segment 5



ramping street from Grand up to the continuation of Hope Street and the paved, partially landscaped front reception area of an older residential hotel. These unique features will be visible from the guideway, enhancing the visual experience for the rider of the People Mover.

The proposed station is located across 5th Street from the historic Los Angeles Library (3) limiting the negative visual impact. A proposed pedestrian bridge from the station to the Library across 5th Street would facilitate access and patronage from the Library to the DPM, with the least visual impact.

Pedestrian connections from the station to 5th Street incorporate the historic staircase retaining wall on the north side of 5th Street.

#### Segment 6: Fifth Street and Grand Avenue to Hill and Third Streets

There is a slight jog in the alignment of Fifth Street at Grand Avenue (1) which creates visual discontinuity as one approaches this intersection from either direction.

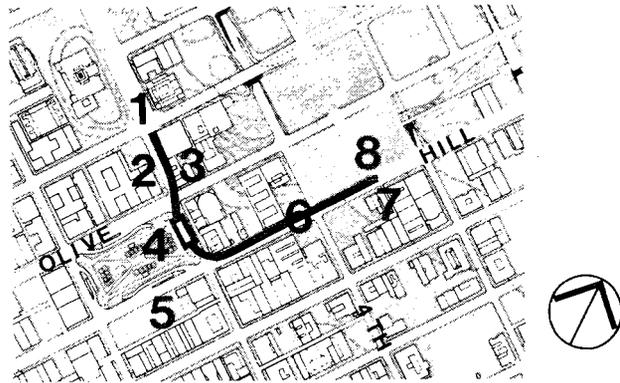
FIGURE 5-22M  
**PROPOSED DPM ALONG 5TH. STREET**



SUBJECT TO CHANGE IN FINAL DESIGN

Figure 5-22N

## DPM VISUAL IMPACT ANALYSIS Segment 6



The historic, brick Biltmore Hotel at (2) and the lower six to ten story stores and offices on the north side of Fifth Street (3) create a somewhat narrow passage both visually and physically. This narrow slice of space connects the more spacious areas around the Central Library and at Pershing Square. There are narrow sidewalks in this passage, approximately 8 to 10 feet, and there are some young street trees in portable planters. (see Figure 5-220)

Pershing Square (4) is a large open area developed with walks, statuary and landscaping and is a popular spot for gathering, relaxing, and listening to the orations of informal, self-ordained urban philosophers. The Square is flanked on three sides by substantial medium and high-rise structures. When the marginal 3 and 4 story commercial uses on the east side of the Square are redeveloped (5) to more appropriate densities, the spatial enclosure and definition of Pershing Square will be complete. There is relatively complete sign control around Pershing Square except along the eastern frontage (5).

Moving north along Hill Street, one traverses a minor "canyon" of older 8 to 10-story office and hotel buildings (6) with the vista widening at Fourth Street where low structures and open space predominate.

Continuing northward, the structures are smaller and of marginal quality (7) on the east side of the street. The west side is primarily vacant, along an embankment of Bunker Hill (8). This area, too, will change dramatically in the foreseeable future with the completion of the retirement housing project and the proposed development at the Angel's Flight site.

The introduction of a DPM station in Pershing Square unquestionably alters the visual environment. The location of the station along the northern edge of the Square over a vehicular ramp reduces the amount of land devoted to the station. The station has been designed without a mezzanine to present a minimum profile. This limits the visual impact of the station on the row of buildings along the north side of 5th Street. However, because the station does not have a mezzanine, about 4800 square feet of the park would be used for the paid area. The overall visual design of Pershing Square, as well as the statuary and existing trees will remain undisturbed. The important and historically significant east facade of the Biltmore Hotel will remain unobstructed to public view from Pershing Square. The view of the north facade will not be affected from the perspective of a pedestrian on 5th Street, but the visual experience for riders (patrons) of the DPM will be an extraordinary one. The opportunity to view the Central Library from above the street, then pass through a narrow slot of space which opens dramatically to views of the Biltmore Hotel and Pershing Square, will provide DPM riders with a unique visual experience.

FIGURE 5-22 O

**PERSHING SQUARE: DPM GUIDEWAY AND STATION**



SUBJECT TO CHANGE IN FINAL DESIGN

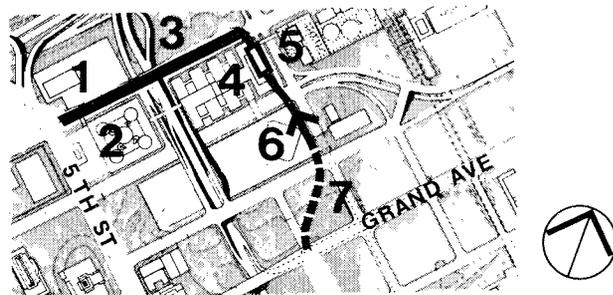
In general, this segment along 5th Street, through Pershing Square, and up Hill Street will be the most difficult area of the entire DPM route in which to achieve aesthetic compatibility. The age of structures, their low heights, their small scale detailing, their varied materials and closeness to the streets are all inharmonious with the sleek, modern forms of the DPM system. Short of tailoring the structural designs to the scale and variety of the environment, little other than landscaping can be done to mitigate the aesthetic incompatibilities.

#### Segment 7: Fifth and Figueroa to Grand and 3rd Place

Between the Union Bank tower (1) and the Bonaventure Hotel (2) a second story pedway spans Figueroa Street. The Union Bank has a 2-story landscaped parking structure at its base and the Bonaventure Hotel has a 3-story entrance structure flanking the street, creating a defined rectangular slot of space.

Figure 5-22P

### **DPM VISUAL IMPACT ANALYSIS Segment 7**



The DPM guideway would integrate easily into this contemporary architectural environment and would be high enough to afford good views to the riders. The streamlined, modern character

at (1) and (2) is reinforced by the 4th Street viaduct at (3) and then is immediately dissipated by the expanse of open space to the north of (3). A planned hotel of contemporary design for this site would significantly alter the environmental setting, blocking the view of the freeway and completing the structural definition of Figueroa Street.

Rounding the corner at 3rd Street one views the new, low (approximately 3 and 4 story) World Trade Center on the right (4) and the Bunker Hill Towers development on the left (5). The ample landscaping and modern architecture with generous setbacks, enhanced by gently rounded pedestrian bridges gives a quiet but cosmopolitan feeling to 3rd Street. Sign control is evident in the area. Passing Flower Street and looking south (between 4 and 6) one briefly glimpses multiple pedway and viaducts and the high-rise urban canyon of Flower Street.

The segment then enters the right-of-way through the base of the 55-story Security Pacific Tower (6) and goes into tunnel at Hope Street to the underground DPM station at Grand Avenue (7). (see Figure 5-22Q)

The streamlined architectural forms, soaring pedways and viaducts, and generally cosmopolitan character of this segment render it perhaps the most suitable of all the segments in the corridor for the construction of a DPM guideway. Such a guideway could be easily integrated into the existing urban-scape, and far from being detrimental, would serve to reinforce the emerging futuristic lines and forms of the district.

#### Segment 8: Tunnel from Grand and 3rd Place to Hill Street

This segment would be in a tunnel, continuing from the underground DPM station at (2) and portaling through the embankment on the west side of Hill Street just south of the existing 3rd Street tunnel at point (3).

FIGURE 5-22Q

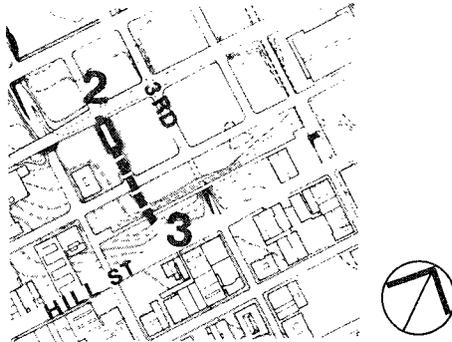
PROPOSED DPM AT WORLD TRADE CENTER



SUBJECT TO CHANGE IN FINAL DESIGN

Figure 5-22R

## DPM VISUAL IMPACT ANALYSIS Segment 8



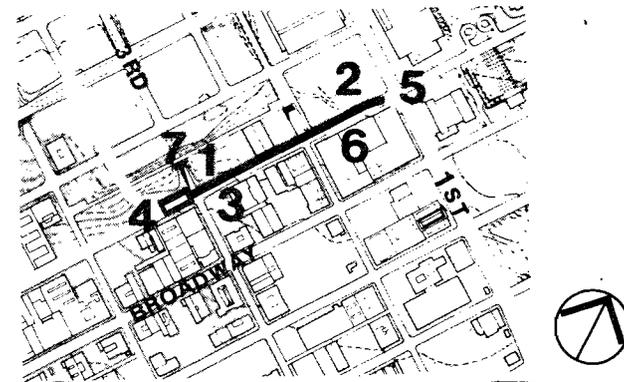
While the DPM could have no impact on the existing underground, the tunnel environment thus created would be a significant aesthetic and visual factor in the perception of the riders who would use the DPM. For some people, tunnels are dramatic and exciting; for others, they are threatening or oppressive. Probably one of the most exciting visual experiences for DPM riders will be the ride from the relatively low-density historical environment of Hill Street through the dark tunnel portaling out over the top of the World Trade Center with dramatic views of the new Bunker Hill contemporary architecture.

### Segment 9: Hill Street Subway Portal to First Street

The western side of Hill Street skirts a steep slope which forms the eastern edge of Bunker Hill (1). A substantial portion of this side of Hill Street is currently used for parking, but is slated for a major 1200 unit complex for the elderly. An existing fire station, of some historical importance, located on the site will be removed for the housing development. County property, at the intersection of First and Hill Streets on the west side of Hill Street, is currently empty and slated for eventual office uses (2). With the exception of the very active Grand Central Market (3), the

Figure 5-22S

## DPM VISUAL IMPACT ANALYSIS Segment 9



entire length of the east side of Hill Street, from Fourth to Second Streets, is deteriorating. Sites are either empty or contain one - to four-story buildings occupied by such marginal uses as small food stores, bars and old apartments. There is little landscaping on the empty lots; the back side of the buildings facing Broadway can be seen. The overall impression is of litter and decay.

Looking west, the Security Pacific Tower and the Pacific Telephone Microwave facility loom above the crest of Bunker Hill. The view south towards Fifth Street (4) is of more intense and substantial development, with correspondingly greater shadows and landscaping. To the north, the fully grown landscaping of First Street, and the mountains beyond, are visible (5).

Between the older downtown uses of the east side of the street and the newer (to-be-built) developments on Bunker Hill, the DPM can and will serve as an important visual "edge". It will provide a visual and psychological demarcation between the old and the new, between the low and the elevated, between the minor buildings crowding the street on the east and the soaring towers among green space to the west. The general impact will be enhancing.

The block between Second and First Streets on the east side of Hill Street (6) constitutes a major change in the character of Hill Street, and signals the southern border of the Civic Center. Here is the State office building, a governmental structure of high-quality materials with appropriate landscaping. As one moves north toward First Street, the landscaping becomes more intense, and the quality and maintenance of the buildings and sidewalks improves noticeably.

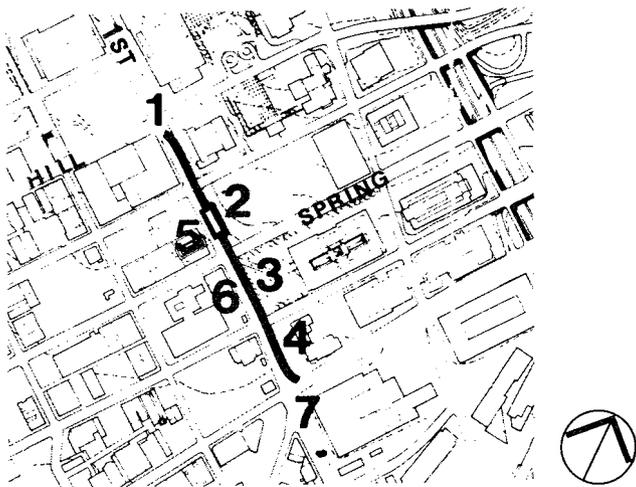
The turn of the guideway at this corner will signal this shift in the character of the urban environment.

Segment 10: First Street from Hill Street to Los Angeles Street

This segment is qualitatively different from all other sections of the alignment. It is located along the southern boundary of the governmental center of the Los Angeles region, with its many major buildings and highly developed landscaping and open space.

Figure 5-22T

## DPM VISUAL IMPACT ANALYSIS Segment 10



Turning east on First Street from Hill Street (1) the environment suddenly becomes lush with wide-spreading and fully grown trees, modulating sunlight against a variety of elegant surface materials of governmental buildings. The many pedestrian and waiting transit users contribute to the overall impression of an attractive and busy urban scene. To the west (1) up the hill, can be seen the Court House, Music Center, and the Water and Power building. Moving east on First Street, the view suddenly widens at Broadway into two full blocks of open space bordering the north side of the street. Here are located the temporary park replacing the old State building (2), the lawn area which serves as a setting for City Hall (3) and the landscaping area in front of City Hall South (4). The northern edge of First Street is defined by two rows of mature trees. The visual impact of the Civic Center station will be minimized by locating the guideway and the station itself north of the rows of trees along First Street. The government buildings north of the station are set back so as not to be adversely affected by the station itself. This open space tends to attract the eye diagonally north from the narrow corridor defined between Broadway and Hill Streets. The south side of First Street is essentially a flat facade, which serves as a visual foil to the open space opposite. The facade is defined by the Times/Mirror Buildings (5), a series of low buildings which contain various businesses and coffee shops, and an open parking lot (6). These buildings, other than the Times/Mirror complex, are not of the same visual quality as the governmental buildings, nor do they have significant landscaping.

The area is never entirely in shadow, due to the extensive open space. It sustains a moderately intense level of pedestrian activity, due to the many governmental center employees and users, as well as the proximity to Little Tokyo (7). The view east on First Street ends in a rather visually undefined mound of reddish structures in the far distance -- industrial buildings of the eastern portion of the Central Business District.

Also in this area (7) are Parker Center, the New Otani Hotel, and Weller Street, the gateway to Little Tokyo, with its many two and three-story buildings.

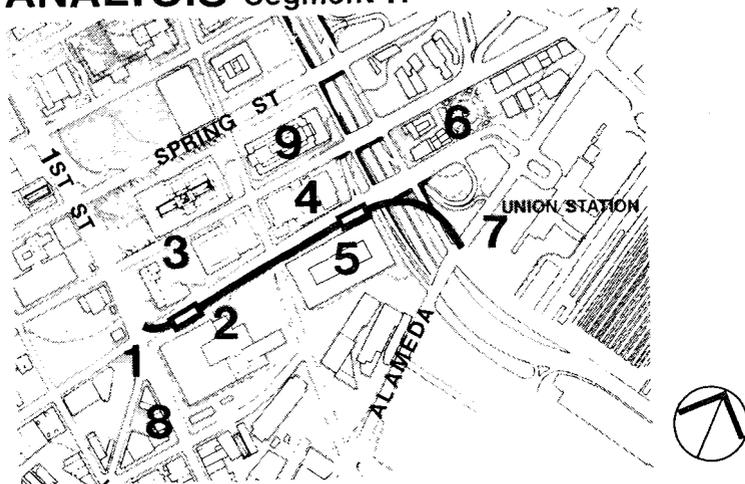
The guideway and the Civic Center station will be set between rows of trees on the north side of the street, thereby minimizing visual intrusion on the streetscape. However, the presence of the guideway will also create a visual band interrupting the view of the civic buildings, including City Hall. Views of these buildings are now intermittently available through the trees; some close up and medium views of these buildings would be affected. (see Figure 5-22U)

The opportunity to integrate the station at the site of the new State Building into the designs for that structure should take into consideration the need to tie the DPM and its ridership into the presently under-utilized County Mall.

In general this is one of the better segments along the route from the standpoint of potential for aesthetic enhancement via the DPM system.

Segment 11: First and Los Angeles Streets to Alameda Street at the Hollywood Freeway (In front of the Federal Building)

FIGURE 5-22T-1  
**DPM VISUAL IMPACT ANALYSIS Segment 11**



From the New Otani Hotel (1) the route proceeds northerly between Parker Center (2) with its two-story parking structure, main building, and attractive open space with landscaping and memorial fountain on the east side, and the City Hall complex on the west side, with its white granite theme.

Crossing Temple Street, it passes between the City Hall Mall (4) and the Federal Building (5) which present a modern, streamlined appearance. With the exception of a sign announcing the entrance to the public parking beneath the Mall, the area is free of signs.

From this segment, looking northward across the Freeway, the vista is generally broad and flat, but not unattractive, the towers of Union Station (7) and Terminal Annex rise charmingly above the surrounding lush landscaping and palms, and, on clear days, the San Gabriel Mountains provide a backdrop in the distance. To the left are the restored three-story brick buildings of the historic old plaza (6).

In general, it would appear that the DPM guideway will integrate well into the environmental setting of this segment, with its freeway and open space character at the northern end and the modern, monumental structures flanking the portion south of the Freeway to First Street. (see Figure 5-22W)

This is one of the few segments in the corridor which appears relatively set; that is, no environmental changes are likely in the foreseeable future. The perception of the setting will be appreciably altered for an assumed DPM rider: at a height of thirty feet or more above the street level, the Mall (4) and Triforium in particular become much more evident. People using the Mall area would see the guideway as a slender spine floating high above the street.

The DPM rider travelling southbound from Arcadia Street would view the seven-story New Federal Building (5) and the sixteen-story Federal Court Building (9). These buildings appear equal in height, owing to the differential distances, and as one approaches the curve at Los Angeles Street, they part to reveal a dramatic view of the 27-story City Hall. The ARCO

FIGURE 5-22U

**INTERSECTION OF FIRST AND BROADWAY STREET, LOOKING NORTHEAST**



SUBJECT TO CHANGE IN FINAL DESIGN

Towers are visible in the distance, hinting at the downtown core yet to come. Travelling in this direction would provide an interesting portal to the central city for commuters beginning their ride at Union Station.

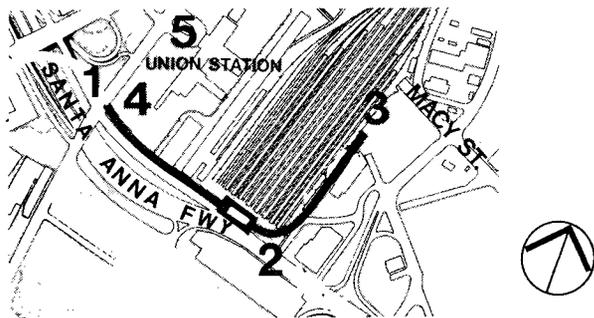
The station at Parker Center will be integrated with the second level pedestrian environment via a future pedway bridge linking the station on the east side of Los Angeles Street with the City Hall South pedestrian plaza and the City Mall. The station at the Federal Building should be rectilinear in form, reflecting the lines of the massive building it will flank, and perhaps, adorn. At the proposed location, opportunity exists to tie in with the Plaza via a landscaped deck which could be constructed over the freeway.

Segment 12: Alameda Street to the Union Station Intercept

This segment proceeds from Alameda Street (1) to a station at the eastern boundary of Union Station (2) terminating at the Union Station bus-auto intercept and parking facility, behind the rail yards (3).

Figure 5-22V

**DPM VISUAL IMPACT ANALYSIS Segment 12**



This is a segment lacking in visual definition and clarity and dominated by the automobile, whether in the depressed freeway and its approaches, or in the large parking areas in front of Union Station (4). Beyond the intense green of the street landscaping bordering the freeway and the entry parking lots of Union Station, the colors seem washed out. Union Station (5) is a tan color which seems to merge with the sky and the parking at its base. Pedestrian and auto access to the station is not visually clear, as the station is set back behind a moat of green trees and cars. Farther in the distance appear the Terminal Annex and the low building of Chinatown, which also are visually indistinct.

The view south, back over the freeway, has much more definition and strength. The intense development of the downtown creates a skyline of great interest and drama, silhouetted against the sky in comparison with the weaker visual contrast of Union Station with its sky and ground planes.

Once beyond Union Station, a visual path is defined by the high blank boundary wall of the Union Station yards, and the freeway. Behind Union Station (3) are tracks, train sheds, unused loading docks, and various other low utility and industrial structures of functional but not architectural or visual importance. (see Figure 4-22W)

Due to the freeway environment, it would not seem that the DPM system would have an especially noticeable impact on the surroundings, although rider views would be interesting, especially rounding the corner from Aliso Street onto Los Angeles Street. At this location, the government buildings seem to part to reveal distant views of the downtown core high-rise buildings, presaging the highlights of the journey yet to come.

The wall adjacent to Union Station is discussed in Chapter 6.

FIGURE 5-22W

**FEDERAL CENTER STATION, LOOKING NORTH ALONG LOS ANGELES STREET**



SUBJECT TO CHANGE IN FINAL DESIGN

As the system would run parallel to the freeway, any negative impacts on Union Station would be mitigated to the point of being negligible, particularly when one considers the effects of intervening landscaping, most of which already exists.

Medium range views of Union Station and other historic buildings in the area could be created by selective view cutting through this landscaping.

In general, the impact on this area would be positive, most particularly at the site of the station.

#### 5-224.3 Other Considerations: Shadow Analysis

In addition to the visual analysis previously presented, an analysis was also conducted of the potential shadow impacts of the DPM system (ARCHI PLAN, "Downtown People Mover Shadow Analysis - Technical Memorandum," November 30, 1979), which is described in the following section. For the analysis shade and shadow are defined as follows: Shadow is the dark area resulting from placing a physical element between the sun and the surface on which the shadow is cast. Shade means the darker tones which result from the surface of a structure being on the opposite side of a sunlit area. The analysis dealt only with shadows, and not shade.

The mere fact that an impact analysis is being conducted connotes a negative result. Shadows, however, are not inherently negative, but in many cases can provide visual interest, serve to accentuate areas, or, in warm climates such as Southern California, provide welcome shade to pedestrian areas. Shadows are constantly changing, both during the course of the day and according to the season of the year. The analysis points out areas of concern during an assumed period. For this analysis adverse impact is defined as the introduction of new shadows in sensitive areas of downtown, such as open spaces, sidewalk areas or historically noteworthy structures.

The degree of severity is subject to a variety of special conditions at special locations. Therefore, the emphasis is placed on discussion of DPM shadows in the context of the urban environment in which they will be cast. The overall conclusion of the study was that from the perspective of the existing downtown urban environment the DPM will have a relatively minor shadow impact.

#### Methodology

The procedure used to identify DPM shadow impacts was first to map shadows in the morning and afternoon, both for the DPM and surrounding structures. The second step was to analyze: (1) areas of shadow overlap (DPM and buildings), (2) areas of shadow sensitivity, (3) sidewalk shadow impacts, and (4) DPM station shadow impacts. A mid-November date was chosen for the analysis, at which time the sun has a 25° altitude and an azimuth of 47° east of south in the morning, and an azimuth of 45° west of south in the afternoon.

#### Impact Description

The DPM guideway structure is a large physical element and will create shadow impacts throughout the length of the alignment. However, many of the shadows created by the guideway will overlap with shadows created by surrounding buildings and tend to nullify one another in terms of their impact. The areas which have significant shadow overlap during the morning are as follows:

- Figueroa Street, between 3rd and 7th
- 5th Street, between Figueroa and Hill
- Hill Street, between 4th and 5th
- Hill Street, between 1st and 2nd
- Los Angeles Street, between Temple and Arcadia

The areas which have significant shadow overlap during the afternoon are:

- 5th Street, between Figueroa and Flower
- 5th Street between Grand and Hill
- 1st Street, between Hill and Spring

The areas of significant shadow overlap tend to coincide with canyon-like areas in downtown, such as along Figueroa (particularly between 4th and 7th Streets), 5th Street, and portions of Hill Street. In these areas, the DPM guideway and stations will further reduce the amount of sunlight reaching the street level.

DPM stations, because of their size and mass, will cast shadows of a greater magnitude than the guideway. These shadows will be at least as large as the station plan view, and in some cases when the angle of the sun is lower in altitude, will cast even larger or longer shadows. DPM stations which are of particular concern are: 9th, 7th, 5th, Civic Center, and Federal Center.

Because of its elevated position, the guideway shadow will move across the ground plane during the course of the day. Consequently, morning shadows cast on pedestrian areas will have moved to the area of the street by mid- to late afternoon. Sidewalk shadows are most prominent in those areas where the guideway has a north-south orientation. The sidewalk areas of concern in the morning hours are: Figueroa, between 7th and 12th, and Hill, between 1st and 5th, and Los Angeles Street, between 1st and Temple. The sidewalk areas of concern in the afternoon are 5th, between Hope and Olive and 1st, between Hill and Los Angeles.

Two areas of particular sensitivity to shadow impacts have been defined, namely (1) parks and open spaces and (2) historic buildings.

There are significant areas of open urban landscape which will be impacted by the DPM shadow. The elevated position of the guideway and its relatively narrow width will reduce the impact considerably, however. Shadow impacts of some significance have been defined for the following open space areas: Pershing Square (a limited impact occurring primarily in the morning) and Civic Center open spaces (an impact on the grassy lawn areas in the afternoon hours).

Shadow impacts of some significance have been defined for the following historic buildings: Barker Brothers (late afternoon shadows across the arched facade of the lower floors), Edison Building (late afternoon shadows on the sidewalk and part of the building facade), the Biltmore Hotel (minor shadows on the northeast corner of the building in the early morning), Title Guarantee (considerable morning shadows on the facade), Federal Title (considerable morning shadows on the sidewalk and lower facade), the Myrick and Markham Hotels (minor shadows on the sidewalk, occurring during late summer afternoons), Grand Central Market (minor sidewalk shadows in late summer afternoons), and the Los Angeles Times Building (some sidewalk shadows, occurring only when sun angles are very low).

#### Potential Mitigation Measures

The overall assessment of the impacts described above is that given the shadow context of the surrounding urban environment, shadows cast by the DPM should not be a serious problem. However, since some of the impacts have been characterized as significant, consideration should be given to ways of minimizing shadows, particularly at stations and in canyon-like areas, during final design of the DPM system. The following are possible mitigation measures that should be considered:

- (1) Lighting the underside of selected stations, including those at 9th Street, 7th Street, and 5th Street. This would be particularly successful in the canyon-like areas where the station would tend to act as a roof.
- (2) The use of particular shapes for final guideway design could help to reduce the size of cast shadows.
- (3) Separation of the two guideways in double-guideway sections could break up a larger, more solid shadow into two smaller ones.

#### 5-230 Operational Impacts on the Socio Economic Environment

##### 5-231 Residential Population

The land use analysis in Section 5-221.2 identified an increase of 630 housing units in Bunker Hill and 1300-1500 units in South Park because of DPM-induced market activity. The resulting population increases would range from 2500-3300 additional CBD residents assuming 1.4 persons per unit in Bunker Hill and 1.6 per unit in South Park. (The household sizes differ slightly because more families are assumed for South Park).

The original 1990 midrange population forecast projected a CBD residential population of 25,000 (CRA, Task 19, 1975). That forecast has been revised to approximately 20,000; later analysis of the 1990 Bunker Hill population indicated that the 1975 figure was about 4500 people too high (CRA, Task 4.01, 1978). The incremental population growth projected with the DPM would constitute a 12 percent increase over the revised 1990 baseline without the DPM. However, residential development would still be concentrated in the areas previously predicted -- Bunker Hill, South Park and Little Tokyo.

More important, perhaps, than the actual numbers is the likely change in the social and economic characteristics of the population. Section 2-310 outlined the characteristics of the 1970 population -- a dominance of the elderly, the poor and single men. In 1990 there will be a shift toward more middle and upper-middle income people because of projected developments in Bunker Hill, and South Park. DPM-induced development will reinforce that shift. Housing development in Bunker Hill will be oriented to upper income professionals and house-holds without children. The South Park development, although market rate, is anticipated to be lower priced housing than Bunker Hill. Increased development in this area will give middle-income people an opportunity to live

downtown, thereby increasing the diversity of downtown population.

It is also likely that a higher percentage of CBD residents will work in the CBD in 1990. In 1970 about 40 percent of CBD residents were employed, almost two-thirds of them in the CBD. The 1990 figure is likely to be higher because CBD employment opportunities will be greater and because of proximity to work.

The proportion of children in the CBD could increase slightly. In 1970, people under 18 accounted for seven percent of the CBD population. By 1990 this percentage could increase to 10 or 12 percent, again depending on the number of family units in South Park.

Increased population growth normally requires an increase in public services -- fire, police, schools, etc. The population growth projected for Bunker Hill and South Park is within the growth levels projected by the adopted plans. It is likely that the new buildings will be more fireproof than the buildings currently there and that the new population will pose fewer police control problems than the old. The numbers of children could increase slightly, depending on the number of family units planned for South Park but that will not be known until the South Park development is more clearly defined.

#### 5-231.1 Social Services for Elderly and Handicapped

The numbers of elderly residents in the CBD in 1990 will increase by almost 2000 whether or not the DPM is built. The 1100-unit retirement housing development on Hill Street and the 300-unit elderly housing development in Little Tokyo will increase an already substantial elderly population in the CBD (Section 2-310 reported almost 4000 persons residing in the CBD in 1970 to be over the age of 62). The

Hill Street project also contains 180 units specifically designed for handicapped persons. With direct DPM connections to this development, significant improvement in access will accrue to the elderly and handicapped people residing in the DPM corridor. A significant improvement in access will also benefit those residing elsewhere who wish to use the Hill Street facilities or other social, governmental, medical, or commercial services along the corridor. The Hill Street DPM station could also be linked with an underground tunnel to Grand Central Market on the east side of Hill Street.

#### 5-231.2 Safety and Security

When the DPM system becomes operational, personal safety and security will be of major concern to patrons of the system. Design specifications are being formulated which attempt to minimize the potential for mishap, through security staff, audio-visual communication devices, visual surveillance by closed-circuit television, and system lighting and vehicle design to make all parts of the system highly visible.

#### 5-232 Regional Economy

Implementation of the DPM is expected to have more effect on the local (or downtown) economy than on the regional economy. As the following analysis will show, the regional economy will benefit from the attraction of a new headquarters building and a new 500-600 room hotel in the DPM corridor. Some of the other benefits occurring in the corridor - increased CBD capture of internally generated office demand, increase retail sales per square foot, and an increased market for residential units in the downtown area will come at the expense of development elsewhere in the region. However, over time, the continued strength of the central business district is important to the economic vitality of the region as a whole.

## 5-233 Employed Population

The western section of the CBD (west of Hill Street) and the northeastern section around the government/Civic Center complex are the focal points of recent office development, and are generally in the DPM corridor. The 1975 employment in this corridor was 110,995, a level which represents some 54 percent of the total CBD employment and 59 percent of the employment in the 101 Zone area (CRA, Task 4.01, 1978). The distribution by employment sector within the DPM corridor is shown in Table 5-23A.

TABLE 5-23A

DISTRIBUTION OF EMPLOYMENT, BY SECTOR, IN DPM CORRIDOR, 1975

<u>Sector</u>	<u>Number of Employees</u>	<u>% of DPM Corridor Employment</u>	<u>DPM Corridor As % of CBD Employment</u>
Private Office	59,160	53	70
Government Office	34,940	31	83
Retail	5,915	5	55
Serv., Hotel, Inst'l	5,430	5	65
Manuf./Wholesale	5,550	5	13
<b>TOTAL</b>	<b>110,995</b>	<b>99</b>	<b>54</b>

Baseline Forecast 1990

The 1990 forecast of baseline employment (without DPM in the corridor) reflects the continuing concentration of high rise commercial office space in the western CBD. The anticipated growth is shown in Table 5-23B below by sector and reflects the new development activity described in Section 5-221.

The private office employment increase reflects projected expansion of operations of existing tenants and an influx of additional professional banking and commercial enterprises. It represents an increase in the occupancy rate and density

TABLE 5-23B

DISTRIBUTION OF EMPLOYMENT, BY SECTOR, IN DPM CORRIDOR, 1990

<u>Sector</u>	<u>1990 Total in DPM Corridor</u>	<u>Increase Over 1975</u>	<u>% Increase</u>	<u>DPM Corridor Employment</u>
Private Office	86,385	27,225	46	59
Government Office	39,270	4,330	12	27
Retail	6,717	802	14	5
Service, Hotel, Inst'l	8,480	3,050	56	6
Manuf./Wholesale	6,340	790	14	4
<b>TOTAL</b>	<b>147,192</b>	<b>36,197</b>	<b>33</b>	<b>101</b>

Source: Wilbur Smith and Associates, 1978

of use of existing office structures and construction of new office space. The increase in government office employment is predicated upon construction of a major new state office building in the northern CBD during the 1985-1990 period. This project has been placed in an uncertain position by the recent passage of Proposition 13. If the new state office building is not constructed prior to 1990, the baseline government office employment would remain unchanged from the 1978 levels.

The projected increase in retail employment primarily reflects new retail development (including a major department store) at 7th and Figueroa (mixed-use project), retail components of the MAT Hotel and office towers at Bunker Hill and intensification of retail activity at ARCO Plaza. The increase in the service and hotel sector consists primarily of employment at the Bonaventure and New Otani Hotels (which have opened since 1975) and at the MAT Associates Hotel scheduled to be open before 1985. The net employment increase in the manufacturing and whole sale sector is almost all associated

with the planned revitalization of the Jewelry Mart in the Pershing Square area.

The importance of the DPM Corridor as the focus of CBD growth can be demonstrated by comparing the corridor growth projections with those of the remainder of CBD. By 1990, the DPM corridor is expected to account for 62 percent of total CBD employment (versus 54 percent in 1975). Across all sectors except private office, the DPM Corridor accounts for 79 percent of the new CBD employment (8,972 out of 11,332 new jobs). In the private sector, the corridor area is projected to grow by 27,225 jobs, while office employment in the remainder of the CBD is expected to decline by about 4,700 jobs. In terms of overall totals, the DPM Corridor will grow by 36,200 jobs (33 percent).

#### DPM Impact Measurement Parameters

Implementation of the DPM will increase commercial, office, residential, hotel and retail development in the western CBD, as well as the pace of retail activity. The nature and magnitude of these impacts, as described in Section 5-221, will determine the growth of permanent employment in the impact areas. In addition, the employment impacts include permanent jobs directly associated with the DPM system operation and maintenance and the temporary employment associated with the system construction and component fabrication. The basis for calculation of each employment element is fully described in Task Termination Report 4.13.

#### DPM System Employment-Permanent

The operation and maintenance of the DPM system, including vehicles, guideways, stations, intercept garages and other facilities will create the equivalent of 80 permanent full-time jobs.

#### DPM Construction Employment

Temporary DPM construction employment is discussed in Section 5-132.

#### DPM Impacts

The permanent impacts attributable to the DPM system are summarized in Table 5-23C.

TABLE 5-23C

SUMMARY OF DPM-INDUCED PERMANENT EMPLOYMENT, 1990

<u>Office Employment:</u>		6,603
<u>Service Employment:</u>		
Residential	140	
Office	40	
Hotel	450	
Existing Fast-Food Establishments	11	
New Fast-Food Establishments	39	
Existing Restaurants	45	
New Restaurants	160	
Existing Cocktail Lounges	6	
New Cocktail Lounges	<u>18</u>	
Total Service		909
<u>Retail Employment:</u>		
Existing Convenience Stores	88	
New Convenience Stores	138	
Existing Shoppers Goods Stores	191	
New Shoppers Goods Stores	<u>194</u>	
Total Retail		<u>611</u>
Total Private Employment		8,123
<u>DPM System Employment:</u>		<u>80</u>
Total New Permanent Employment		8,203

Source: Robert J. Harmon & Associates, 1978  
Task Termination Report 4.13

Introduction of the DPM system would create over 8,200 new permanent jobs by 1990. About 80 percent of these would be in the private office employment sector. The added employment, all within the DPM Corridor, represents an overall increase of 5.6 percent above the 1990 baseline employment in the corridor (7.6 percent for the office, 10.7 percent for the services sectors, 9 percent for the retail sector, and no change in the government office and manufacturing/wholesaling sectors).

The increase in DPM Corridor employment from 1975 to 1990 under the baseline case was 33 percent (36,197 jobs). With implementation of the DPM system, the increase from 1975 to 1990 would rise to 40 percent (44,400 jobs).

#### 5-234 Tax Base and Revenues

##### Overview

Introduction of the DPM system into the CBD is expected to produce a number of changes in the economic base of the downtown area. The projected effects are the result of the increases in development activity and use density discussed in Section 5-221.1. These result in: (1) changes in property values, economic activity levels, and the tax base; (2) changes in the size, mix and growth rate of the CBD labor forces; and (3) the short-term impacts of DPM construction activity with respect to construction employment and disruption of the economic activity levels at existing retail facilities.

The tax base impacts will result from DPM-induced development.

Such development typically yields:

- an acceleration and increase in new construction activity;
- an increase in the comparative advantages of develop-

able land at "prime" locations resulting in increased land values at these sites;

- an extension of the geographic boundaries that define prime locations resulting in increased land values for parcels now considered to be on the periphery of the high-value sector of the CBD;
- an increased rate of rehabilitation for older, marginal buildings on the periphery of development zones;
- changes in the relative near-term value of property outside the immediate impact shed; either positive, if they can be reoriented toward specific functions (e.g. as lower-rent "incubator" space), or negative, if such demand cannot be generated;
- extension of the period of maximum economic value of new and existing facilities; that is, a slower rate of relative decline in assessed valuation for buildings in the 10 to 20 year period after construction;
- increases in retail sales activity levels (dollar volume per square foot) which produces: (1) a direct increase in the City's share of retail sales taxes and (2) increased property tax revenues (assessed valuation for retail facilities is tied to lease rates and gross dollar volume of sales);
- increases in hotel occupancy that produce direct increases in City revenues from the tax on hotel room tariffs and increases in hotel valuation based on higher occupancy factors.

The normal flow and interaction of the above factors to determine tax base changes is altered, in the present instance, by the recent passage of Proposition 13 in the State of California. This initiative, which became effective July 1, 1978, is still being interpreted by State officials and will almost certainly be the subject of court challenges. As it stands, the following constraints and conditions are imposed upon property valuations and tax increases:

- The 1975/76 tax year becomes the base valuation year. All property valuations are based on 1% of the full fair market value in that year. The maximum permissible increase in this valuation without property im-

provements or transfer of ownership is 2% per year.

- 1978/1979 tax valuations for properties which have not been improved or transferred since the 1975/76 tax year will be a maximum of 106% of the base-year market value.
- Property improvements since 1975/76 and in future years will be appraised at the current market value.
- Property transfers since 1975/76 and in future years will be assessed on the basis of the actual sale price (or the market value, if the sale price is demonstrably below this level).
- There is presently no provision for reductions in assessed valuation for depreciating property retained by the same owner.

The overall near-term and long-term effects of Proposition 13 on CBD property tax revenues will be minimal, except for Bunker Hill and Little Tokyo Redevelopment Areas. Except for a few individual parcels (the areas outside these two redevelopment areas) the growth in valuation of developed parcels in the CBD over the past three years has been less than the 2% per year, which is less than the maximum allowed under the new regulations.

#### Property Valuation and Tax Base Trends

The total 1977/78 market value of all taxable secured properties (land and improvements) in the CBD was \$1.863 billion, including \$357 million for developed property on parcels in the Bunker Hill and Little Tokyo Redevelopment Projects. The CBD currently accounts for 5% of the Los Angeles City property valuation and almost 2% of that for Los Angeles County.

CBD property taxes accounted for over 60% of all of the revenues collected in the CBD in 1977. Of the total \$23.9 million, the City received \$15.4 million in property taxes, \$5 million in retail sales taxes, \$3.2 million in hotel

taxes, and \$.3 million in miscellaneous taxes (see Section 2-333.2). With the passage of Proposition 13, other sources of revenue become more important to taxing jurisdictions formerly reliant on the property tax.

Anticipated 1990 baseline property tax revenues are shown in Table 5-23D. For the year 1990 without DPM, the total annual CBD property tax levies would be \$32.31 million, an increase of 58% over the 1978 level. The cumulative property tax revenues derived from the CBD between 1978 and 1990 would amount to \$345.67 million. Assuming that the City's share of such revenues remains the same as at present (20.9%), the baseline case would yield \$6.75 million in annual CBD property tax revenue to the City of Los Angeles in 1990 and cumulative revenues of \$72.25 million from this source between 1978 and 1990. (Robert J. Harmon Assoc., 1978).

Adding other City sources of tax revenue to the property tax receipts, and eliminating intra-City transfers, yields a projected City tax revenue from the CBD of \$18.47 million in 1990 (an increase of 38% over 1978 levels) and a cumulative 1978-1990 total of \$208 million under the baseline condition. These other tax revenues include the City's share of CBD retail sales taxes, hotel room taxes, and miscellaneous business taxes and fees.

#### DPM Impact Measurement Parameters

As noted in previous sections, implementation of the DPM system would generate numerous economic effects on the City of Los Angeles and its CBD. Those that would affect City tax revenues include:

- additional private sector development (office, residential, hotel and retail)
- acceleration in the pace of planned development

- increases in annual retail sales volume
- increases in annual hotel room demand
- construction employment of City residents and local purchases of supplies and materials during construction
- changes in the pattern of property value growth and decline

TABLE 5-23D

Projected CBD Baseline Property Tax Revenues, 1978-1990  
(in millions of 1978 Constant Dollars)

<u>Fiscal Yr. Beginning</u>	<u>Total CBD Property Tax Revenues</u>	<u>City Share (20.9%)</u>
1978	\$ 21.19	4.43
1979	21.98	4.59
1980	22.85	4.78
1981	23.63	4.94
1982	24.55	5.14
1983	25.35	5.30
1984	26.25	5.49
1985	27.76	5.80
1986	28.70	6.00
1987	29.55	6.17
1988	30.34	6.34
1989	31.21	6.52
1990	32.31	6.75
Cumulative Total	\$ 345.67	72.25
Average Annual Value	26.59	5.56

Source: Robert J. Harmon & Associates, 1978

The long-term development and activity impacts resulting from the DPM have all been described in detail in Section 5-221.1. They are summarized below.

Office: An additional demand for some 1.725-1.750 million square feet of office space in the 1978-1990 period.

Residential: Additional demand for 2,000-2,100 market-rate dwelling units in the 1978-1990 period.

Hotel: Additional demand sufficient to justify an additional 500-600 room Class A hotel in the CBD and an increase of over 160,000 occupied room-nights in 1990.

Retail: Additional demand for 230-250,000 square feet of space by 1990. An increase in annual retail sales which in 1990 would amount to \$88.4 million (excluding intra-City transfers and hotel room charges.)

Construction Employment And Purchases: Localized direct expenditures for labor, materials, and engineering in the amount of \$ 91 million and an additional 137 million as the multiplier effect of these expenditures upon the economy over the three-year construction period. (see Section 5-132).

#### DPM Impacts

The property tax revenues to be derived from the CBD with implementation of the DPM system are shown in Table 5-23E. The rationale and procedures used in this calculation are the same as those used for the baseline case, but the size and rate of DPM-induced demand/activity are added to the baseline levels.

These calculations indicate that, with a DPM system, the total annual property tax levy for the CBD in the year 1990 would be \$34.74 million. This represents an increase of 70% over the 1978 level and of 7.5% over the 1990 baseline level. On a cumulative basis, the property tax revenues derived from

TABLE 5-23E

Projected CBD Property Tax Revenues, with DPM, 1978-1990  
(in millions of 1978 Constant Dollars)

Fiscal Yr. Beginning	Total CBD Projects Tax Revenues	City Share (20.9%)
1978	\$ 21.19	\$ 4.43
1979	21.99	4.60
1980	22.97	4.80
1981	23.79	4.97
1982	24.87	5.20
1983	25.82	5.40
1984	26.89	5.62
1985	28.63	5.98
1986	29.78	6.22
1987	30.84	6.45
1988	31.85	6.66
1989	33.20	6.94
1990	34.74	7.26
Cumulative Total	\$ 356.56	\$ 74.52
Average Annual Value	27.43	5.73

Source: Robert J. Harmon Assoc., 1978  
CRA Task 4.15, 1978

the CBD with a DPM system between 1978 and 1990 would amount to \$356.56 million. This represents a 3.1% increase over the cumulative baseline total for the same period. If the City's share of property tax revenues remains constant at its present level (20.9%) the with-DPM case would yield \$7.26 million in CBD property tax revenues to the City in 1990 and cumulative revenues of \$74.52 million over the 1978-1990 period.

The addition of retail sales, hotel room and other sources of tax revenues and deletion of transfer revenues indicates that, with the DPM, the City's total tax receipts from the CBD in 1990 would total \$20.29 million. This reflects an increase in retail sales of approximately \$90 million in sales volume (or about \$800,000 in sales tax receipts to the City), an increase of over two million room nights (or about \$300,000 in hotel tax revenues to the City), and an increase in business taxes and fees collected by the City. (see Task 4.30 for calculations by Robert J. Harmon & Associates.)

Table 5-23F summarizes the impacts on City tax revenues for 1990 and cumulatively from 1978.

TABLE 5-23F  
SUMMARY OF NET DPM IMPACTS IN CITY TAX REVENUES  
(millions of constant 1978 dollars)

	1978	1990 Baseline	1990 with DPM	Net DPM Impact vs 1990 Baseline	% Change
Annual Net Property Tax Revenues to City from CBD <sup>1)</sup>	\$ 4.26	\$ 6.75	\$ 7.18	0.43	6.4
Cumulative (1978-1990) Net Property Tax Revenues to City from CBD	N/A	72.25	74.13	1.88	2.6%
Annual Net Retail Sales <sup>1)</sup> Tax Revenues to City from CBD	5.35	5.84	6.34	0.50	8.6%
Cumulative (1983-1990) Net Retail Sales Tax Revenues to City from CBD	N/A	72.74	75.99	3.25	4.5%
Annual Hotel Tax Revenues to City from CBD	3.42	5.75	6.17	0.42	7.3%
Cumulative (1983-1990) Hotel Tax Revenues to City from CBD	N/A	59.61	62.34	2.73	4.6%
Annual Misc. Tax Revenues (Business Taxes and Fees) to City from CBD	.31	0.50	0.60	0.10	20%
Cumulative (1983-1990) Misc. tax Revenues to City from CBD	N/A	6.2	7.1	0.9	14.5%
Total Annual Net City <sup>1)</sup> Revenues from CBD	\$13.34	\$ 18.84	\$ 20.29	\$1.45	7.7%
Cumulative (1978-1990) Net City Revenues from CBD	N/A	\$210.80	\$219.56	\$8.76	4.2%

1) "Net" City taxes are exclusive of intra-city transfers.

Source: Robert J. Harmon and Associates, 1978.

Tax Revenue Impacts on Other Major Taxing JurisdictionsLos Angeles County

The County revenues from CBD activity currently include a 30.86 % share of property taxes and 0.25% of the sales tax. Assuming that these values remain constant, and considering no new revenue sources, the DPM-induced tax benefits to the County are projected at \$251,000 for the year 1990 and a cumulative total of some \$1.5 million for the 1978-1990 period, excluding estimated intra-county transfer of new development.

Los Angeles Unified School District

The School District revenues derived from the CBD currently constitute a 39.41% share of property taxes. Application of this rate to the DPM-induced increase in this source of revenue yields an anticipated increase in 1990 annual revenue of \$288,600 and a cumulative 1978-1990 increment of \$1.6 million.

State of California

Virtually all of the incremental sales tax revenues attributable to the introduction of the DPM System represent intra-State transfers insofar as the State of California is concerned; i.e., the bulk of additional retail activity in the CBD represents a transfer of purchases which would have been made elsewhere in the State. The two exceptions are: (1) the one-time State revenues derived from sales tax on supplies and materials purchased in California as part of the DPM construction program and (2) the State's continuing share of CBD retail expenditures made by the increased number of convention visitors attributed to the DPM who would otherwise have attended conventions outside California.

The former consists of the State's share of the tax levies on an estimated \$24 million of in-State construction material purchases. At the current State tax rate of 4.75%, this totals some \$1,140,000. The latter is estimated to be \$100,168 million in 1990 and at a cumulative total of \$500,000 for the 1978-1990 period. This is derived as follows:

DPM-Induced 1990 Retail Sales to Hotel Guests (as per Section 5-221.24)	\$26,360,000
Estimated Proportion of Hotel Guests Derived From Convention/Groups	x.40
DPM-Induced 1990 Retail Sales From Convention/ Group Visitors	\$10,544,000
Proportion of Convention/Group Sales Which Represent State Increment	x.20
	<hr/>
	\$ 2,108,000
State Sales Tax Rate	x.0475
	<hr/>
Net Incremental Tax Revenues to California	\$ 100,168

5-240 Operational Impacts On Transportation

## 5-241 Regional Service

The DPM will have a significant impact on the level of transportation service in the downtown area. DPM travel times and other service characteristics are discussed in Section 4-300.

The DPM will have a negligible impact on transportation facilities outside the downtown area. But the DPM will continue to be an important consideration in planning for the downtown portions of RTD and municipal bus lines, the Rapid Transit Starter Line, and the Freeway Transit Program.

To a large degree, the impacts of the DPM on transportation service will take the form of decisions and cooperative agreements by participating agencies, including CRA, SCRTD, Caltrans--the primary goal being to develop a well-integrated circulation/distribution system for downtown Los Angeles. Much progress has already been made, for example, in integrating the plans for the El Monte Busway Extension and the designs for the Union Station Bus/DPM terminal.

See Section 4-330 for a description of the multi-modal terminal at Union Station and Section 5-141 for a description of the long-term effects at Union Station.

In response to the DPM, decisions will be made regarding the location and frequencies of downtown bus routes, including the minibus line. SCRTD has worked closely with CRA in an attempt to anticipate the types of changes in bus service that would be beneficial to all concerned.

The purpose of the following sections is to describe potential changes to the transportation system, and to discuss the effects of those changes on travel patterns in the downtown area.

## 5-242 Sensitivity Analysis--Impacts On Transportation In The Study Area

A transportation impact analysis has been conducted for three alternative 1990 scenarios. The scenarios--labeled "TSM", "Freeway Transit", and "Starter Line"--are based on the various elements of the Regional Transit Development Program. (An overview of the RTDP can be found in the SCAG Draft 1978 Regional Transportation Plan). Assumptions regarding levels of transit service were first carefully defined for each scenario, and then put into a series of demand models for predicting mode choices within the CBD. (A complete description of the demand models is contained in Models and Estimates of Los Angeles DPM Demand, Cambridge Systematics, Inc. 1978).

In all cases, it was assumed that DPM headways would be 1.5 minutes in the p.m. peak hour, and the DPM fare would be 15¢ per ride (in 1978 dollars). Travel times on the DPM are shown in Table 4-31B.

Assumptions have been made about the location of RTD bus stops, frequencies of service, bus fares, transfers, etc. Nearly all of the assumptions about 1990 bus service were developed by SCRTD staff, in support of the CRA modeling effort. These assumptions, however, do not necessarily reflect the official policies of the SCRTD. Major assumptions for the three scenarios are listed below:

TSM

This scenario assumes an 11% increase in local bus frequencies by 1990 relative to present service levels, plus a 30% increase in express bus frequencies.

### Freeway Transit

This scenario includes the Caltrans Freeway Transit Program. Ten different freeway routes, shown in Figure 5-24A, would serve the CBD with 5-minute headways during the peak hours. Existing freeway flyers are assumed to operate also, but at 1978 service levels. Local bus frequencies are assumed to be the same as in the TSM case.

### Starter Line

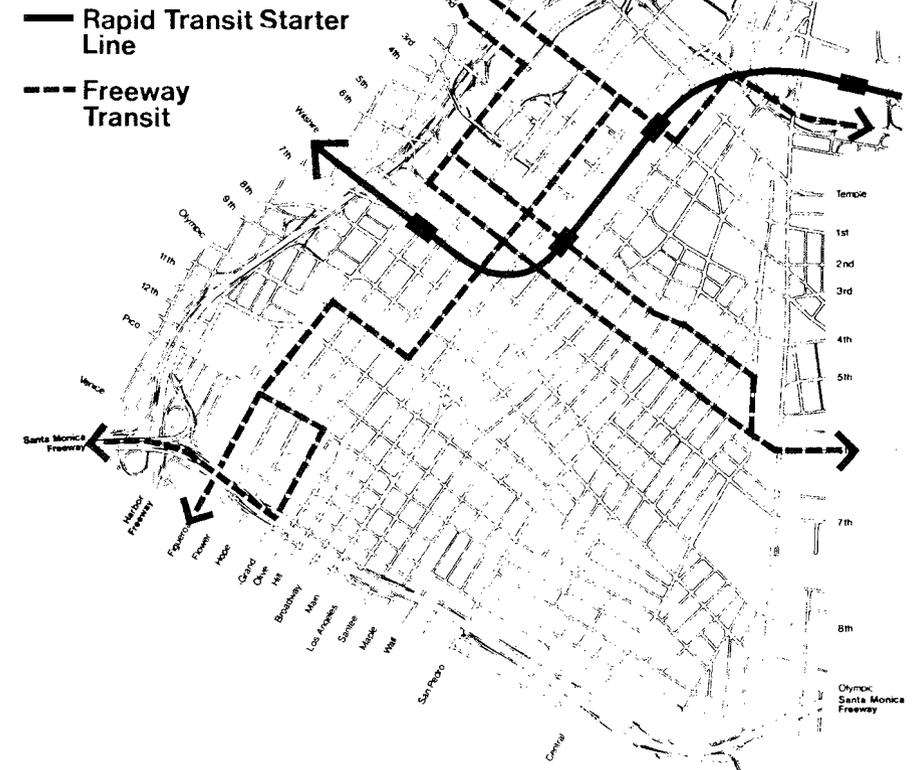
This scenario includes the Wilshire/La Brea alignment of the Rapid Transit Starter Line and the Freeway Transit Program--with the exception of the Hollywood Busway. Local and express bus frequencies have been reduced, especially on the west side. Rapid transit stations were assumed to be located at 7th and Flower, 5th and Broadway, 1st and Broadway and Union Station (see Figure 5-24A). Headways for the rail line were assumed to be four minutes in the peak hour.

#### 5-242.1 Impacts On Bus Service

Under each scenario it was assumed that a certain number of buses would be "intercepted" at the Convention Center and at Union Station. An example of an intercepted bus would be an inbound El Monte freeway flyer that would terminate its route at the Union Station Bus/DPM terminal. This is in contrast to a bus that would continue on downtown after stopping at Union Station. Similarly, an outbound freeway bus which begins its route at Union Station can also be called intercepted. For each scenario, Tables 5-24A and 5-24B indicate the number of buses serving each regional corridor in 1990, and the number of outbound buses that are assumed to be intercepted. Table 5-24A also shows the number of buses that would stop near DPM stations (excluding intercept buses). These buses are designated as "interface".

Figure 5-24A

### STARTER LINE AND FREEWAY TRANSIT ROUTES



Source: Southern California Rapid Transit District, 1978

Table 5-24A  
 TRANSIT SERVICE FROM CBD TO REGIONAL CORRIDORS  
 Buses Per Hour, Outbound, P.M. Peak Hour

Corridor	TSM (1990)			FREEWAY TRANSIT (1990)			STARTER LINE (1990)		
	Total Buses <sup>1</sup>	Interface <sup>2</sup>	Per Cent	Total Buses <sup>1</sup>	Interface <sup>2</sup>	Per Cent	Total Buses <sup>1</sup>	Interface <sup>2</sup>	Per Cent
1. Harbor Freeway	78	68	87.2	95	81	85.3	91	77	84.6
2. Santa Monica Freeway	83	70	84.3	101	85	84.2	89	74	83.0
3. Wilshire/Olympic	97	66	68.0	97	66	68.0	70	60	85.7
4. Hollywood Freeway	115	99	86.1	126	98	77.8	60	50	83.3
5. Golden State Freeway	57	46	80.7	63	53	84.1	53	34	64.2
6. Pasadena Freeway	60	60	100.0	55	55	100.0	54	54	100.0
7. San Bernadino Freeway	133	95	71.4	140	110	78.6	129	75	58.1
8. Santa Ana Freeway	75	14	18.7	75	14	18.7	70	12	17.1
9. South Central	48	24	50.0	48	24	50.0	45	23	51.1
TOTAL	746	542	72.7	800	586	73.3	661	459	69.4

Source: Community Redevelopment Agency and Southern California Rapid Transit District, June 1978.

<sup>1</sup> Total number of express and local buses serving the corridor.

<sup>2</sup> Number of buses which "interface" at least one of the following DPM stations: Union Station, Civic Center, 7th and Figueroa, Convention Center.

Note: PM Peak Hour is 4:30 - 5:30

Table 5-24B  
 TRANSIT SERVICE FROM CBD TO REGIONAL CORRIDORS  
 Buses Per Hour, Outbound, P.M. Peak Hour

Corridor	Null (Dec. 1977)		TSM (1990)			%*
	Local	Express	Local	Express	Intercept	
1. Harbor Freeway	42	25	46	32	6	18.8
2. Santa Monica Freeway	51	19	58	25	5	20.0
3. Wilshire/Olympic	83	0	97	0	0	0
4. Hollywood Freeway	57	40	62	53	0	0
5. Golden State Freeway	29	17	34	23	0	0
6. Pasadena Freeway	36	15	40	20	0	0
7. San Bernadino Freeway	58	52	64	69	32	46.3
8. Santa Ana Freeway	22	39	24	51	0	0
9. South Central	43	0	48	0	0	0
TOTAL	421	207	473	273	43	15.8

Source: Community Redevelopment Agency and Southern California Rapid Transit District, June 1978

Notes: Figures for express buses include intercept buses.  
 P.M. Peak Hour is 4:30 - 5:30.

\* Intercept buses as % of express buses.

Table 5-24B (Continued)

TRANSIT SERVICE FROM CBD TO REGIONAL CORRIDORS  
Buses per Hour, Outbound, P.M. Peak Hour

Corridor	Freeway Transit (1990)				Starter Line (1990)			
	Local	Express	Intercept	%*	Local	Express	Intercept	%*
1. Harbor Freeway	46	49	10	20.4	42	49	10	20.4
2. Santa Monica Freeway	58	43	8	18.6	46	43	8	18.6
3. Wilshire/Olympic	97	0	0	0	70	0	0	0
4. Hollywood Freeway	62	64	0	0	38	22	0	8
5. Golden State Freeway	34	29	0	0	28	25	0	0
6. Pasadena Freeway	40	15	0	0	39	15	0	0
7. San Bernadino Freeway	64	76	24	31.6	53	76	24	31.6
8. Santa Ana Freeway	24	51	0	0	19	51	0	0
9. South Central	48	0	0	0	45	0	0	0
TOTAL	473	327	42	12.8	380	281	42	13.5

Source: Community Redevelopment Agency and Southern California Rapid Transit District, June 1978

Notes: Figures for express buses include intercept buses.  
P.M. Peak Hour is 4:30 - 5:30.

\* Intercept buses as % of express buses.

As shown in Table 5-24B, it was assumed that about 43 outbound buses/hour would be intercepted. In the TSM case, this represents about 16% of all outbound express buses in the p.m. peak hour.

Table 5-24A shows that about 73% of all buses would stop close to at least one of four major DPM stations: Union Station, Civic Center, 7th and Figueroa, and the Convention Center. All corridors except the Santa Ana Freeway corridor show a high degree of interface between buses and the DPM. Only 17% to 19% of the Santa Ana buses would be routed close enough to DPM stations to allow transfers.

In the Freeway Transit case, it was assumed that there would be considerably more express bus service (327 outbound buses per hour, in contrast to 273 buses in the TSM case). It was also assumed, however, that all of the new Freeway Transit routes would be "through" routed; i.e., they would not be intercepted at the Convention Center or Union Station. The only buses that are assumed to be intercepted in the Freeway Transit case are 42 of the existing freeway flyer buses.

In all cases, some minor adjustments were made to certain bus routes in order to increase transfer opportunities at DPM stations. These adjustments usually involved adding stops, or shifting the route one block in order to connect with the DPM. Detailed maps of possible route and stop modifications have been developed by RTD staff.

In the p.m. peak hour, intercepting 43 outbound buses would result in a reduction of approximately 113 bus miles in the downtown. Inbound intercepts would save an additional 40 bus miles in the same time period. The total savings of 153 bus miles in the p.m. peak hour in 1990 represents a 9.7% reduction in bus miles in the study area.

Bus fares did not vary from one scenario to the next. It was assumed that the base RTD bus fare would be 40¢ (1978 dollars) and that bus transfers would be 10¢.

#### 5-242.2 Impacts On Minibus Service

The current minibus line (202) provides west side service between Occidental Center and Chinatown (see Section 2-400). SCRTD and CRA planners believe that it might be appropriate to shift the minibus line to the east side of the CBD after the DPM is built. Two alternate routing schemes are shown in Figure 5-24B. Alternative 2 was assumed for all three scenarios in the modeling analysis. The route operates between the Convention Center and Union Station via Broadway. Minibus headways were assumed to be three minutes in the p.m. peak hour and the fare was assumed to be 15¢ (in 1978 dollars).

#### 5-242.3 Impacts On Transit Patronage And Modal Shares

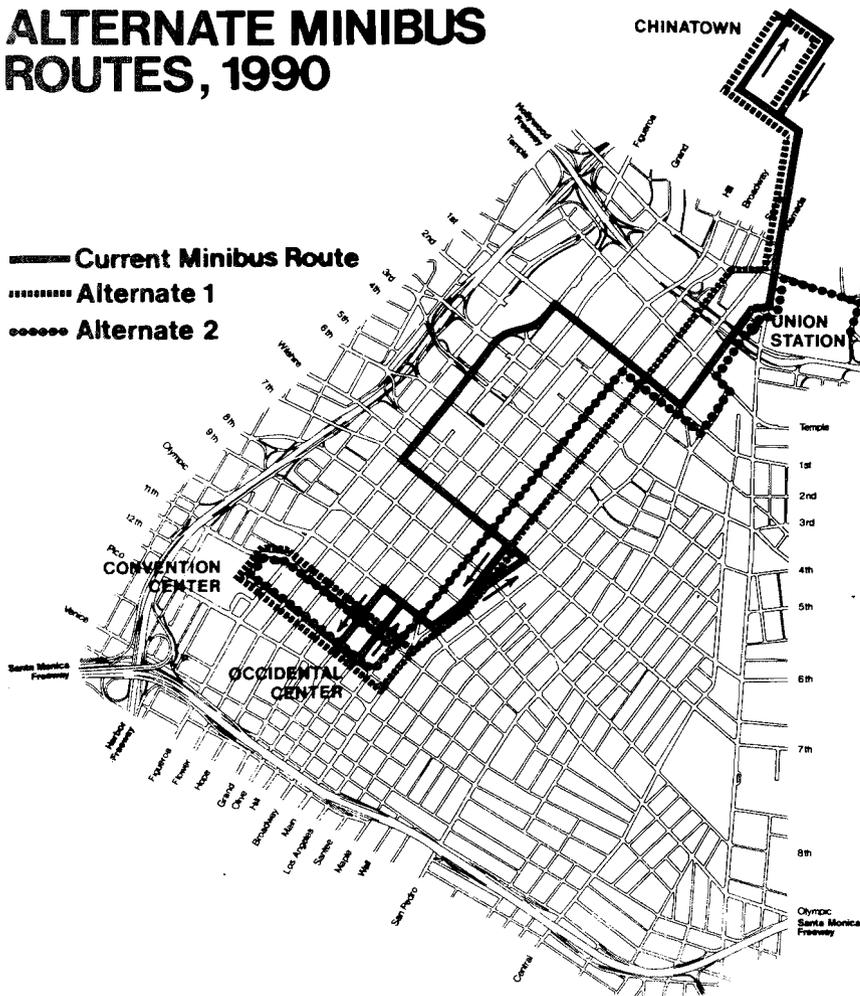
Once the assumptions about transit route location and levels of service were defined, all of the necessary data were coded into a series of computer models. The models predict mode choice for trips made within the CBD. Internal CBD trips can be divided into two major categories:

##### Distribution Trips

These are trips which have one end in the downtown, either an origin or destination; for example, a peak hour trip from office to home. The CRA demand models predict mode choice for the CBD portion of these trips.

Figure 5-24B

## ALTERNATE MINIBUS ROUTES, 1990



Source: Community Redevelopment Agency and Southern California Rapid Transit District

### Circulation Trips

These are trips which both begin and end in the downtown; for example, a noon hour trip from office to restaurant.

For distribution trips, available modes from CBD origin to parking lot or transit stop are assumed to be: walk, mini-bus, DPM, and RTD (bus and/or rail). For circulation trips, available modes are all of the above plus the automobile.

The results of the mode choice analysis for the TSM scenario are shown in Tables 5-24C and 5-24D. An estimated 4,151 people will board the DPM in the p.m. peak hour and then transfer to regional buses which will take them out of the downtown area. An additional 911 people will transfer to the DPM from inbound buses. Total bus/DPM transfers would amount to 5,062 in the p.m. peak hour. Approximately 2,382 people will ride the DPM to or from their parking lots in the p.m. peak hour. It is estimated that about 1,840 of these trips would be outbound.

Predictably, most of the trips to transit stops and parking lots are made on foot (82.1% and 95.5% respectively). The DPM attracts about 8.8% of all distribution trips by regional transit users and about 3.7% of all distribution trips by auto users. The average mode share for DPM in the p.m. peak hour is 6.1%.

During the noon hour, 2,312 employees are predicted to board the DPM. These are primarily workers on their lunch hour. An additional 260 DPM trips are predicted for non-workers; i.e., shoppers, visitors, etc. The DPM share for noon hour trips by workers and non-workers is expected to be 5.4% and 1.3%, respectively. The average DPM share for noon hour circulation trips is 4.1%.

The CBD demand models predict that both Starter Line and the Freeway Transit Program will have relatively insignificant impact on DPM patronage. As shown in Table 5-24E, daily DPM ridership for the Freeway Transit and Starter Line Scenarios would be 73,200 and 72,500 respectively. Internal mode shares for the two cases vary by only a few tenths of a percent from the TSM scenario shown in Table 5-24C.

In the p.m. peak hour a total of 300 to 350 transfers are expected between the Starter Line Station at 7th and Flower and the DPM station at 7th and Figueroa. The models predict that the vast majority of those passengers boarding the Starter Line at 7th and Flower will walk to the station. This station is strategically located, in that it is within walking distance of a great many employment opportunities in the financial district of Los Angeles. Thus, as shown in Table 5-24F, the Starter Line has a relatively insignificant effect on passenger volumes at DPM stations.

TABLE 5-24C  
MODE SHARES FOR TSM SCENARIO  
P.M. PEAK HOUR, 1990--DISTRIBUTION TRIPS

	Walk	Mini Bus	DPM	RTD Bus	TOTAL
Regional Transit Users	47,023 82.1%	1,985 3.5%	5,062* 8.8%	3,194 5.6%	57,264 100.0%
Regional Auto Users	62,145 95.5%	164 0.3%	2,382** 3.7%	341 0.5%	65,032 100.0%
Total Distribution Trips	109,168 89.3%	2,149 1.8%	7,444 6.1%	3,535 2.8%	122,296 100.0%

\*Includes 4,151 DPM to bus transfers and 911 bus to DPM transfers.

\*\*Includes 1,840 DPM to auto transfers and 542 auto to DPM transfers.

Source: Cambridge Systematics, Inc., 1978

TABLE 5-24D  
MODE SHARES FOR TSM SCENARIO  
NOON HOUR, 1990 - CIRCULATION TRIPS

	Walk	Auto	Mini-bus	DPM	RTD Bus	TOTAL
Workers	21,084 49.1%	17,456 40.7%	1,360 3.2%	2,312 5.4%	686 1.6%	42,898 100.0%
Non-Workers	13,059 64.4%	6,582 32.5%	114 0.6%	260 1.3%	251 1.2%	20,266 100.0%
TOTAL	34,143 54.1%	24,038 38.1%	1,474 2.3%	2,572 4.1%	937 1.4%	63,164 100.0%

Source: Cambridge Systematics, Inc., 1978

TABLE 5-24E  
ESTIMATED DPM RIDERSHIP  
1990

	TSM	Freeway Transit	Starter Line
<u>Distribution Trips</u>			
PM Peak Hour	7,444	7,546	7,440
Noon Hour	1,820	1,851	1,829
Daily*	46,688	47,486	46,923
<u>Circulation Trips</u>			
PM Peak Hour	1,777	1,777	1,762
Noon Hour	2,572	2,572	2,562
Daily*	25,720	25,720	25,620
<u>Total Trips</u>			
PM Peak Hour	9,221	9,323	9,202
Noon Hour	4,392	4,423	4,391
Daily*	72,408	73,206	72,543

\* Defined as 6:00 a.m. to 12:00 midnight

Source: Cambridge Systematics, Inc., 1978

TABLE 5-24F

## IMPACT OF STARTER LINE ON DPM STATION VOLUMES\*

P.M. PEAK HOUR, 1990

<u>DPM STATION</u>	<u>TSM Scenario</u>	<u>Starter Line Scenario</u>	<u>% Change</u>
7th and Figueroa	1,970	2,068	+5.0
Civic Center	3,362	2,372	+0.4
Union Station	3,569	3,386	-5.1

Volumes are total ONS and OFFS

Source: Cambridge Systematics, Inc., 1978

## 5-242.4 Impacts of a DPM Fare Increase

The DPM fare was assumed to be 15¢ (in 1978 dollars) for the three scenarios previously discussed. To test the effects of a fare increase, the TSM scenario was run again with a 25¢ DPM fare. The results are shown in Table 5-24G.

The models predict that daily DPM ridership would drop by 3.5% in response to the fare increase. The change in fare has a slightly greater impact on circulation trips than on distribution trips.

In general, the models indicate that demand for the DPM is relatively insensitive to an increase in fare. P.M. peak hour ridership drops by 3.0%. The 7,224 distribution trips in the p.m. peak hour are composed of 4,949 trips to or from transit stops, and 2,275 trips to/from parking lots, representing a 2.2% reduction in trips by regional transit users, and a 4.5% reduction in trips by auto users.

TABLE 5-24G  
EFFECTS OF A DPM FARE INCREASE  
ON DPM RIDERSHIP

	<u>15¢ Fare</u>	<u>25¢ Fare</u>	<u>Percent Change</u>
<u>Distribution Trips</u>			
P.M. Peak Hour	7,444	7,224	-3.0
Noon Hour	1,820	1,768	-2.9
Daily	46,688	45,363	-2.8
<u>Circulation Trips</u>			
P.M. Peak Hour	1,777	1,695	-4.6
Noon Hour	2,572	2,453	-4.6
Daily	25,720	24,530	-4.6
<u>Total Trips</u>			
P.M. Peak Hour	9,221	8,919	-3.3
Noon Hour	4,392	4,221	-3.9
Daily	72,408	69,893	-3.5

Source: Cambridge Systematics, Inc., 1978

## 5-243 Operational Impacts On Transportation: Traffic

There are three types of impacts to traffic flow that would result from DPM operations. First, street capacity will be affected at specific locations due to the placement of DPM support columns. Second, during the peak periods, traffic volumes will be heavier in the general vicinity of the intercept parking facilities. Third, traffic volumes will be reduced somewhat because trips will be diverted from the automobile to the DPM.

Reductions in Street Capacity

With the DPM in place, the width of 5th Street between Grand Avenue and Figueroa Street would be reduced by approximately six feet. The intersections most affected are 5th Street at Flower Street and 5th Street at Figueroa Street. With the DPM in place, the right turn lanes at these intersections would be eliminated. Currently, these lanes have the important function of separating turning traffic from the through traffic destined to the southbound and northbound Harbor Freeway on-ramps. The loss of capacity is somewhat mitigated by the diversion of auto trips to the DPM. However, under any possible scenario, congestion of Fifth Street between Grand and Figueroa would be increased as a result of the DPM.

The west side of Figueroa alignment includes a center of Figueroa segment from Third Street to Seventh Street. South of Seventh Street the impacts of the DPM would be negligible if the guideway columns were placed on the west sidewalk. North of Seventh Street, the following impacts would occur. (Impacts of the center of Figueroa variation south of Seventh Street are discussed at the end of this section).

From Third Street to Fifth Street, Figueroa has been widened to major highway standards. The DPM guideway could be located in the median without significantly affecting traffic

or pedestrian movement if bents are used at selected locations north of Fourth Street.

From Fifth Street to south of Seventh Street, the DPM would be supported by columns in the median of Figueroa Street. The Los Angeles Department of Transportation prepared an analysis (LA DOT, January, 1980) of various striping alternatives and concluded that the support columns should be placed in a raised median, which would also include left-turn lanes at intersections. This configuration would not require prohibition of left turns at intersections (except southbound at Seventh Street) and would best fit the ultimate roadway cross section. Figueroa Street would be widened to a minimum of 60 feet by narrowing sidewalks from 12 feet to 10 feet and a minimum of two through lanes would be provided in each direction, in addition to the left-turn lanes.

Although this median configuration is deemed to be the most desirable, it would result in reductions of intersection approach capacities ranging from 8 to 28 percent. The higher capacity losses would generally occur at intersections where left-turn channelization cannot be utilized due to the direction of flow of the intersecting one-way street, such as northbound at Sixth Street. The less significant capacity losses would occur at intersections where existing left-turn demand is high and addition of the proposed left-turn lanes will nearly offset the loss of a through lane. These conditions are not permanent and will exist only during an interim period following construction of the People Mover, until properties along Figueroa Street are redeveloped and the street is widened to ultimate width.

North of Seventh Street the highest capacity losses would occur at Sixth Street, both northbound and southbound, ranging from 24-26 percent. With the pending redevelopment of the

St. Paul's site, the southbound approach capacity reductions could be mitigated with street widening associated with the new development. The LA DOT report has recommended that existing easements on the east side of the street be exercised and an additional easement acquired to widen Figueroa between Wilshire and Sixth Street to its ultimate width, thereby increasing the northbound approach capacity at Sixth Street. At Seventh and Figueroa, southbound left turns could be provided in a left-turn lane if bents were used between Wilshire and Seventh.

Insertion of the DPM support columns into the median area of Figueroa Street would necessitate some compromises in the areas of lane widths and left-turn visibility. The proposed lane widths will typically be 10 feet, with an 11-foot curb lane, rather than the preferred design, which would provide 12-foot lanes adjacent to the median island and outside curb. Clearance to DPM columns would be the minimum acceptable.

Opposing left-turn lanes would be offset 8 feet, resulting in reduced left turn visibility compared to the desirable 0-4 foot offset. While slightly higher left-turn and fixed-object accident rates may be expected in future years, compared to other streets with less left-turn lane offset and without median columns, it should be noted that installation of the proposed left-turn lanes would be an improvement compared to existing conditions, and judicious placement of DPM columns would maximize visibility for turning vehicles.

The continuous raised median island will prevent left turns to and from driveways (except entry to the Union Bank garage) in all blocks where the guideway is supported on center columns. This will actually improve traffic flow and reduce midblock accident potential, but will require some circuitous

rerouting of driveway traffic and increase U-turns at signalized intersections. A continuous raised median would also require the prohibition of stopping in the two-lane sections between Sixth and Olympic Boulevard. The impacts of such a prohibition would have more effects in the area south of Seventh Street and these are discussed in more detail in the following section. If the demand for curbside loading cannot be met through the use of off-street parking facilities or side street curb space, problems of enforcement and spot congestion may result from illegal parking or stopping.

Impacts of columns on pedestrian congestion were analyzed in Task Termination Report 2.04. The results of the analysis indicated that resulting sidewalk widths will be adequate, although narrower than ideal in certain locations. Also, loading and unloading of pedestrians at station locations could create some flow problems, but these can be mitigated through further construction of the downtown pedway system.

#### Center of Figueroa Variation

The same impacts concerning lane widths, clearances and left turn availability and accessibility would apply to the entire reach of Figueroa with this alternative as apply to the area north of Seventh Street with the preceding alternative. The Los Angeles Department of Transportation conducted a detailed study of the impacts of placing the guideway in the center of Figueroa south of Seventh Street. (LA DOT, January, 1980) The Department concluded that the center alignment would be acceptable, if bents and local widening were used at critical locations to prevent significant increases in congestion.

Between Seventh and Eighth Streets, redevelopment of the west side of Figueroa should result in street widening before DPM implementation. The additional southbound lane provided by the widening will be used as a right-turn-only lane, thereby minimizing the reduction in southbound approach capacity to

11 percent. Northbound approach capacity at Seventh Street will be reduced 16 percent when the DPM is constructed. However, developer plans for the east side of the street could result in widening the street to ultimate width; and providing increases in capacity to mitigate this reduction.

Between Eighth and Ninth Streets there are no known plans for redevelopment and most of the right-of-way needed to widen to ultimate standards has not been dedicated. If the DPM were constructed in the median with center support columns, usable roadway would be reduced to two through lanes, plus left turn pockets. This would result in an 8 percent reduction in northbound approach capacity at Eighth Street and a 9 percent drop in southbound capacity at Ninth Street. Stopping would be prohibited on both sides of the entire block, eliminating 24 metered parking spaces and two commercial loading zones. These restrictions would impact several businesses. However, off-street parking is available to most of these businesses and a loading bay could be constructed within existing right-of-way in front of the Social Security Office.

Between Ninth Street and Olympic Boulevard serious congestion would occur if the DPM is placed in the median. Northbound approach capacity at Ninth Street would be reduced by an estimated 28 percent. This could be mitigated somewhat by adjusting the traffic signal timing. Southbound traffic at Olympic would also be seriously congested. This could be mitigated by street widening on the west side. If the required right-of-way were acquired, southbound approach capacity at Olympic Boulevard would be increased by 16 percent. Stopping along the curb would be curtailed in this block. The impact of parking restrictions could be mitigated by construction of a loading bay within existing right-of-way in front of the Kent Inn and passenger loading could be allowed in front of the theater on nights and weekends.

South of Olympic Boulevard the roadway has been improved to ultimate standards. In this reach the DPM could be constructed in the median area without reducing the number of traffic lanes. However, the width of the lanes would be reduced. Northbound approach capacity at Olympic Boulevard would be reduced 7 percent and restriction of midblock left turns could result in less convenient access for Holiday Inn patrons.

Between 11th and 12th Streets the additional weight and space required by the guideway switching tracks may require the use of bents. South of 12th Street, LA DOT recommends using bents spanning the entire roadway to support a Convention Center Station in the middle of the street and to allow the addition of a southbound left turn lane into the Convention Center intercept.

#### Effects of Parking Demand for DPM Intercepts on the Adjacent Street System

As discussed in Section 4-340, 3,750 parking spaces would be provided for the DPM intercepts, 2,000 spaces at Union Station, and 1,750 spaces at the Convention Center. Each site would provide 750 spaces for carpools and 750 spaces for long-term parking. Union Station would also provide 500 short-term spaces and the Convention Center, 250 short-term spaces. Trips generated from these sites would have a significant impact on adjacent surface streets.

#### Union Station

Local street access would be located at driveways on Vignes Street at Ramirez Street and at speed ramps on Vignes Street north of Ramirez Street. Ramps to and from the El Monte Busway extension would be constructed for carpools and buses.

Today, the critical intersections exhibiting capacity restraints and congestion delays in the area are located along Alameda Street between Aliso Street/Arcadia Street

and North Main Street and to the west. Specifically, the intersection of Alameda Street and Macy Street is most sensitive during the p.m. peak hour. The construction of the Plaza Technical Center and the DPM intercept would also impact the intersections of Macy Street and Vignes Street and Macy Street and Mission Road.

However, since most of the carpools would use the busway and motorists would access the speed ramps via right turning movements, it is anticipated that the street system would accommodate the increased demand without exceeding capacity under the following assumed conditions:

- The westbound on-and-off ramps at Vignes Street will remain open.
- The parking facility will be fully utilized.
- 60 to 65% of trips from the facility will occur during the p.m. peak hour.
- Direct connection to the El Monte Busway will be provided and used by 90% of all carpools.
- Trips generated by the Plaza Technical Center are included, but no other development in the area has been considered.
- Trip distribution from the intersection of Vignes Street and Ramirez during the p.m. peak hour will have the following directional split: northbound--50%; southbound--35%; eastbound--15%.

#### Convention Center

Parking for this intercept would be located on the east side of Figueroa Street north of Pico Boulevard. Approximately 1,750 spaces would be provided.

In the morning peak, direct access to the Convention Center from the westbound Santa Monica Freeway and the northbound Harbor Freeway would be provided by off ramps to Pico Boulevard opposite Sentous Street. Southbound Harbor Freeway traffic would exit at a ramp labeled "Olympic Blvd." and

proceed to 11th Street, which forms the northerly border of the Convention Center. These maneuvers would result in little interference with existing traffic and by themselves would have few impacts on the street system.

The eastbound Santa Monica Freeway currently has the most difficult access route to the intercept. Eastbound traffic has a choice of either taking the northbound Harbor Freeway and exiting at 9th Street or continuing east on the Santa Monica Freeway, exiting at Grand Avenue or Hoover Street and using surface streets to return to the intercept.

The Harbor Freeway option appears to be the worst because traffic exiting on 9th Street would have to traverse three lanes of traffic (carrying over 19,000 vehicles per day) to turn right at Figueroa Street, a difficult and dangerous series of lane changes. Traffic exiting at Grand Avenue or Hoover Street would encounter little opposition from traffic, but the maneuvering to the intercept would be time consuming.

This access difficulty would be mitigated by the construction of an off-ramp from the eastbound Santa Monica Freeway to join the other off-ramps opposite Sentous Street. The critical a.m. peak hour approach to the parking facility then would be eastbound Pico Boulevard at Figueroa Street. It is anticipated that a majority of the vehicles would be exiting the ramp from the northbound Harbor Freeway and the eastbound and westbound Santa Monica Freeway at Pico Boulevard, desiring to travel east to the intercept. Although the volume/capacity ratio only indicates a small capacity deficit, in reality, the high volume of left turns on Figueroa Street could result in a severe capacity problem.

The potential traffic difficulties for the p.m. peak hour would depend on the ability to minimize left turn exiting and to facilitate access to the freeway ramps at 11th Street

and southbound Figueroa Street, which have been identified as the major demand routes.

The 44-foot width of 11th Street under the Harbor Freeway currently acts as a capacity constraint resulting in periods of severe congestion on this roadway. The addition of the intercept traffic would exacerbate this problem.

#### Diversion of Auto Trips to DPM

It is predicted that there will be sufficient demand to fill the intercept parking lots during the peak period (6:00-9:00 a.m.). This implies that 3,750 automobiles would be "intercepted" during the peak period, thus reducing traffic volumes on city streets. It is assumed that without the DPM and without the new parking structures, the 3,750 automobiles would drive further into downtown and park at other lots.

The CBD demand models predict that the average length of a trip made from the intercept parking lots to CBD destinations would be about 0.8 miles. It is assumed that without the DPM and without the intercept parking facilities, each of the 3,750 cars would have to travel an average of 0.8 miles further to reach a parking lot. This would imply that the DPM and the intercept parking facilities could result in a reduction of about 3,000 vehicle-miles-of-travel (VMT) in the downtown area during the 3-hour peak period.

It is also assumed that there would be a total of 1,500 spaces allocated to 3-person carpools and 1,500 to other all-day parkers. Each of these spaces are assumed to be used by one car during the day. The remaining 750 spaces are to be allocated to short-term parkers. It is assumed that the short-term spaces would be turned over 3 times a day.

As a result a daily total of 10,500 auto trips would not be made on city streets because of the intercept parking facilities (2 trips/day x # carpool spaces + 2 trips/day x # other all-day spaces + 6 trips/day x # short-term spaces).

Assuming a CBD trip length of 0.8 miles, the daily VMT reduction would be about 8,400. This represents a 2.6% reduction in daily VMT (a base case forecast for 1990 VMT within the study area is 318,437 per day).

The reduction of 8,400 VMT per day represents distribution trips only. It has been estimated that 45% of the DPM circulation trips during the noon hour represent diversions from the automobile. Assuming an average occupancy of 1.56 (non-work trips) and an average circulation trip length of 1.2 miles, the DPM would result in a VMT savings of 900 miles during the noon hour. Over an entire day, VMT reduction could reach ten times this amount or about 9,000 miles, which represents a reduction of 2.8% of total downtown VMT.

The combined savings from distribution trips and circulation trips in 1990 would, therefore, be 17,400 auto VMT/day, a reduction of 5.4% from the base 1990 case. Correcting for net induced VMT (estimated at 6,300 VMT per day), total VMT savings would be 11,100 per day--a reduction of 3.5%.

#### 5-244 Conformance to Regional and Local Transportation Plans

Section 2-440 described the major transportation goals and policies that have been adopted by key regional and local agencies. The following plans were summarized in that section: the SCAG Regional Transportation Plan (1978), the Los Angeles Citywide Plan (1974), the Central City Community Plan (1974), the Redevelopment Plan for the Central Business District Redevelopment Project (1975), and the Bunker Hill Design for Development (1971).

All of these plans recognize the need for improved public transportation in the CBD, including rapid transit and "auxiliary" transit, or People Movers. They also call for additional parking capacity located at the periphery of downtown and other major developed areas. Reflecting a concern for environmental quality, the plans also support preferential treatment for high-occupancy vehicles, and other techniques for reducing vehicle-miles-of-travel. The construction of pedway systems is also encouraged.

The People Mover is a major component of SCAG's four-part Regional Transit Development Program. As such, the DPM becomes an integral part of a "balanced transportation system", involving coordinated service with buses, minibuses, automobiles, and rail transit. Plan conformance is therefore evident.

The project's conformance to adopted plans is clear with respect to policies on carpooling and peripheral parking. 3,750 peripheral parking spaces would be provided - 2,000 at Union Station and 1,750 at the Convention Center. In each of these facilities, 750 spaces would be reserved for carpools.

As described in Section 5-242 it is expected that the DPM will result in fewer vehicular miles of travel by both automobiles and buses, thus leading to reduced noise and emission levels in the downtown area. The project is therefore consistent with adopted transportation and environmental goals.

Conformance to adopted land use policies is discussed in Section 5-221.5.

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## CHAPTER 6

HISTORIC PROPERTIES (SECTION 106) DETERMINATIONS AND PARKLAND  
(SECTION 4(f) STATEMENTS6-100 Introduction

This chapter assesses the impact of the project on certain parklands, recreational areas, and historic properties. This discussion is treated separately from the main chapter on environmental impacts because it is responding to the specific requirements of certain Federal laws. These laws recognize the significant public values residing in certain open space areas and historic and cultural resources.

Section 106 of the National Historic Preservation Act of 1966, as amended, directs Federal agencies to take into account the effect of their undertakings on any district, site, building, structure, or object which is included in the National Register of Historic Places. The 1970 amendments to the Act extend this consideration to properties which are eligible for the National Register of Historic Places. Federal agencies must obtain the review and comment of the Advisory Council on Historic Preservation prior to the approval of undertakings which affect such properties. The Advisory Council, an independent agency created to advise the President and Congress on matters involving historic preservation, has established procedures for the protection of historic and cultural properties included in or eligible for inclusion in the National Register of Historic Places (36 CFR Part 800).

Sections 6-300 to 6-500 of this chapter have been structured to meet the requirements of the Advisory Council on Historic Preservation with regard to historic and cultural properties.

Section 4(f) of the Department of Transportation Act of 1966

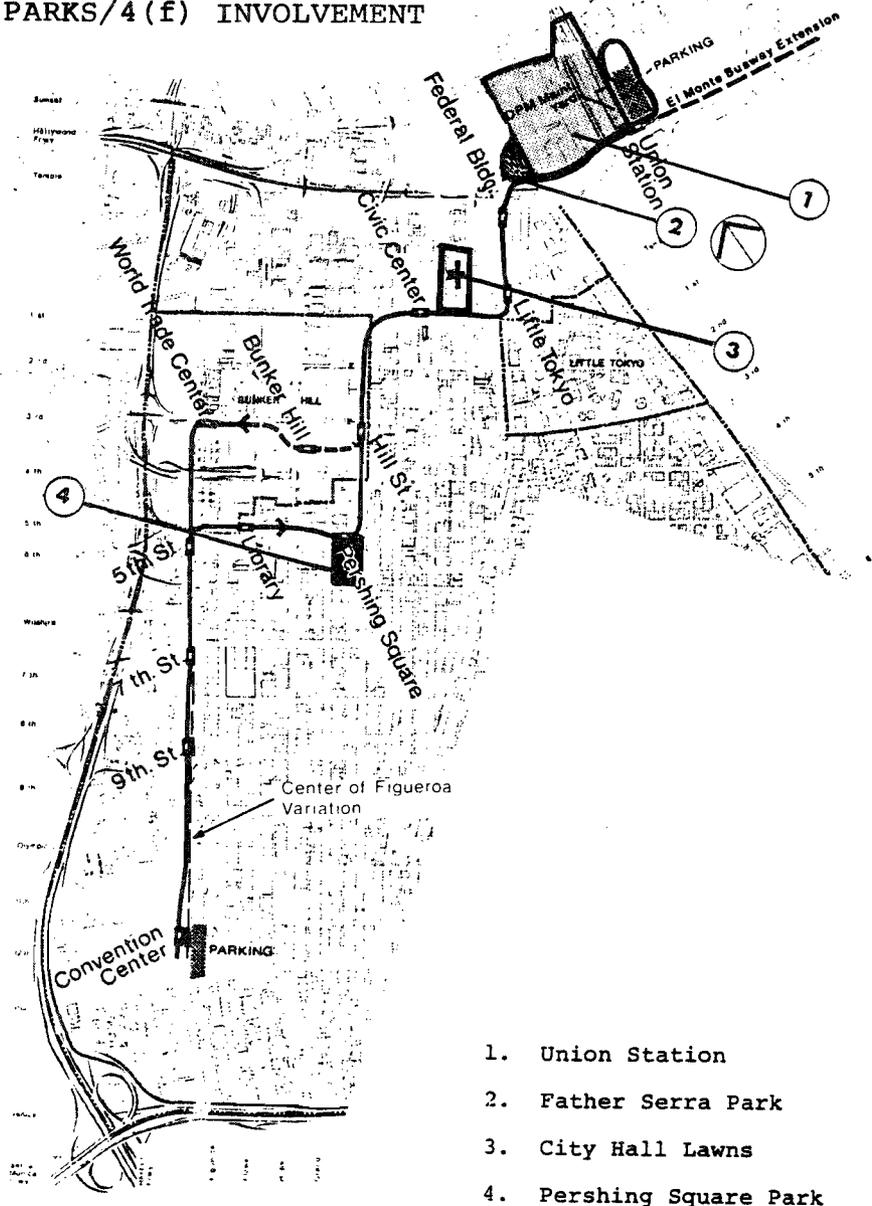
(49 USC 1653 (f)) declares a national policy that special effort be made to preserve the natural beauty of the countryside, public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) permits the Secretary of Transportation to approve a project which requires the use of publicly owned land from a park, recreation area, or wildlife refuge of national, state, or local significance, or any land from a historic site of national, state, or local significance only if the following determinations have been made: (1) there is no feasible and prudent alternative to the use of such land; and (2) all possible planning has been undertaken to minimize harm to the 4 (f) land(s) resulting from such use. This 4 (f) analysis is presented in this chapter in Section 6-200.

6-200 4(f) Analysis

Implementation of the DPM will require using land from the following historic properties or parks, as identified in Figure 6-20A: Union Station, Los Angeles City Hall, Pershing Square Park, and Father Serra Park. Impacts on other historic properties along the DPM route where the use of land is not required are discussed in Sections 6-300 to 6-500.

FIGURE 6-20A

## PARKS/4 (f) INVOLVEMENT



## 6-210 Union Passenger Terminal

● Description

Union Station and most of its associated structures were built in 1938 and designed by a team of architects headed by John and Donald Parkinson. First opened in 1939, it was one of the last major passenger terminals to be built and one of the latest examples of the Spanish Colonial architecture style. Primary architectural interest is placed on the entrance facade with the volume of the building's parts becoming greater towards the center and culminating in the central clock tower. Decorative features include colored tile, red tile roof, and inverted pyramid parking lot lights. Landscape features include garden courtyards and a ring of Moreton bay figs surrounding the parking lot opposite the main entrance to the station.

● Current Status

Union Station is currently used for AMTRAK passenger service. Several of the tracks to the rear of the station, particularly the three most easterly tracks, have been removed; passenger service is now concentrated on the two central tracks. The baggage terminal/parking structure to the east and south of the station is currently vacant and in disrepair. Because Union Station is a "stub" end station, there have been suggestions that tracks to the rear of the station might be extended southerly across the freeway and the river to allow the station to become an on-line station. The railroads that own the station have not considered the investment worthwhile enough to implement.

The passenger terminal and the parking lots in front of the station were placed on the local register in 1972 (CHB 101). In August, 1978, the Cultural Heritage Board forwarded a National Register nomination by the Los Angeles City Planning Department to the California State Historic Preservation Office.

FIGURE 6-21A



UNION STATION



The State Commission approved forwarding the nomination to the National Register at the Commission meeting on July 12, 1979. Receipt of the nomination to the National Register was reported in the Federal Register on September 11, 1979.

In May, 1979, the Director of the California Department of Transportation (Caltrans) announced that it was Caltrans' intention to buy the entire Union Station property to facilitate the orderly development of the area for multimodal transportation purposes. Caltrans has started appraisal activities and is expected to complete acquisition by July, 1981.

• Probable Effects of the Proposed Project

Implementation of the project as proposed will require alteration of a portion of the Union Station grounds. Guideway supports will be constructed along the southern edge of the parking lot along the sidewalk in front of the row of trees adjacent to the sidewalk. Columns will be placed so that none of the trees will have to be moved. The trees are approximately 30-40 feet high now and will have to be pruned to maintain this height in order to clear the guideway. Six single columns and six double columns would also be dropped through the upper level at the southern end of the track platform just north of the existing wall. (see Figure 6-21B) Construction of the Transportation Center, the Maintenance Building and test track will require taking 3.48 acres of unused track area in the most easterly portion of the station grounds, or approximately 7% of the total Union Station property. Figure 6-21B shows the extent of right-of-way takings required at Union Station.

There will be some visual impacts on Union Station if the project is built, but the view of the main facade of Union Station from Alameda Street will not be altered. Because the guideway is situated on the edge of the grounds and the Transportation Center and other supporting facilities will

FIGURE 6-21B

# PROPOSED ROW AND COLUMN LOCATIONS AT UNION STATION

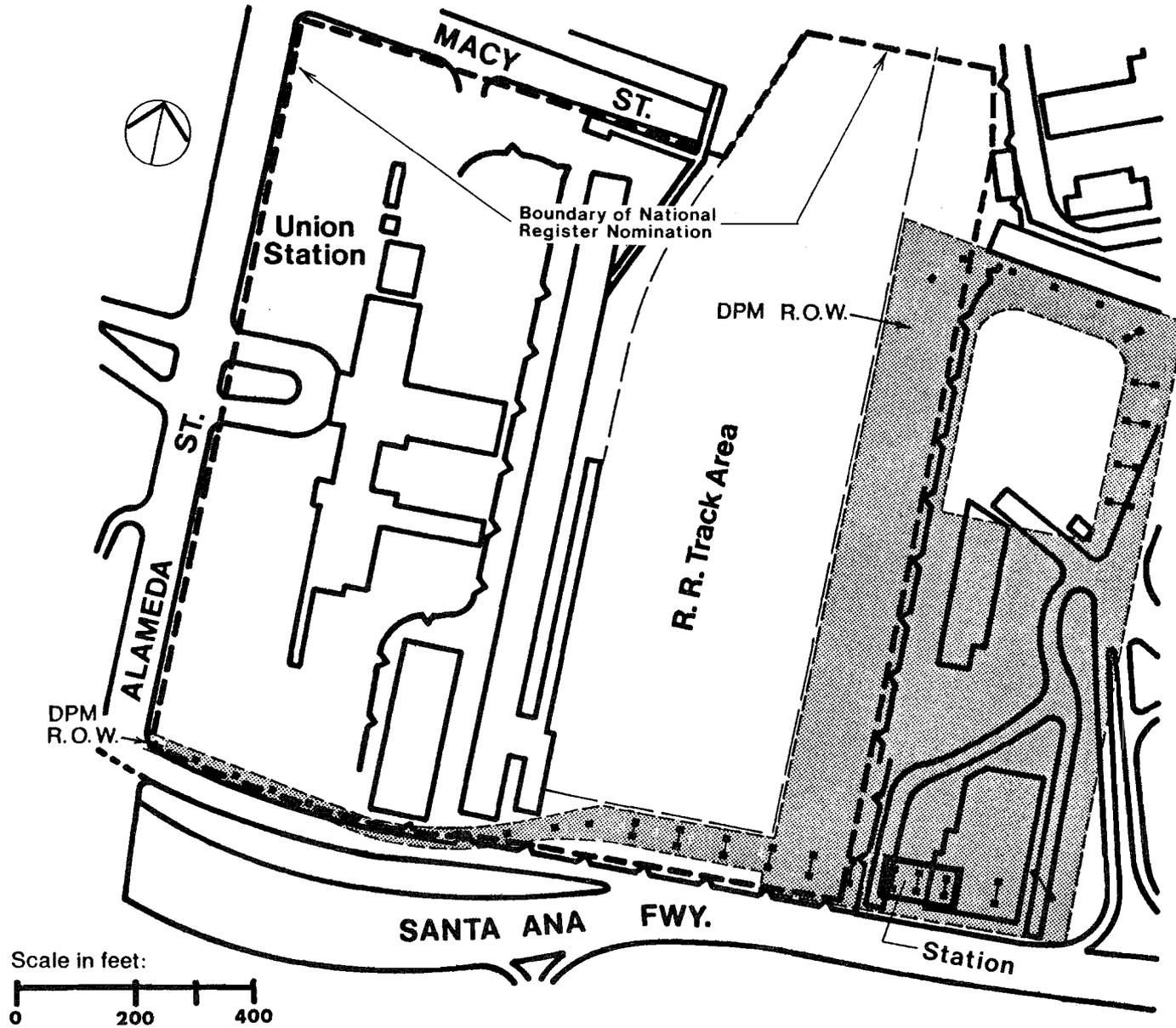


FIGURE 6-21C

**UNION STATION MAIN ENTRANCE DPM GUIDEWAY IN BACKGROUND**



SUBJECT TO CHANGE IN FINAL DESIGN

be located behind the station, the negative visual impacts are expected to be minor. Figure 4-43F shows Union Station from the east and Figure 6-21C looks south from the main entrance on the west towards the DPM guideway at the edge of the parking lot.

Noise analysis (Section 5-218.3, Point 29, Tables 5-21 F,G,H) shows an imperceptible (1 dBA) increase in P.M. peak hour and nighttime  $L_{eq}$  noise levels and a 6 dBA decrease in noontime noise levels with the DPM in operation. Noise from the DPM yard and shop will be in keeping with the existing activities at the railroad station.

With the DPM in place there would be increased vehicular and pedestrian traffic in the vicinity of Union Station. Traffic analysis has indicated increased vehicle traffic at several intersections including Alameda/Main Streets, Macy/Vigness Streets, and Macy Street/Mission Road. The analysis concluded that the street system would be able to accommodate the increased traffic, much of which would be generated by autos and buses entering or leaving the Transportation Center behind Union Station, assuming that the Vigness Street freeway ramps remained open and that a direct connection to the El Monte busway would be available and used by 90% of all carpools. (See Section 5-243 for a complete discussion of traffic impacts on Union Station). Increases in pedestrian traffic would occur primarily within the Transportation Center as people transfer from one mode to another. There could also be a small increase in the number of pedestrians using the historic Union Passenger Terminal.

Removal of four track beds for the DPM Maintenance Center and storage area will have a negligible effect on the future ability of Union Station to provide rail service. Of the remaining twelve tracks, only eight are operational; these eight tracks are estimated by Los Angeles Union Passenger

Terminal Agency to have a theoretical capacity of almost 200 arrivals and 200 departures a day, well in excess of the current 10 arrivals and 10 departures per day. During World War II, peak utilization was 100 trains per day. (See Section 5-241.) Rather than limiting the ability of Union Station to provide rail service, the presence of a convenient intermodal transfer facility may actually enhance the service that Union Station will be able to provide the transportation user.

The Transportation Center that will be built behind Union Station will be integrated with the proposed extension of the El Monte busway; it will also provide facilities for AMTRAK ticketing and baggaging, inter-city buses, and local bus service in addition to parking for cars, carpools, and van pools. The Transportation Center is also planned to link with the northern terminus of the proposed Regional Core Rapid Transit Line. The Transportation Center will thus link the three major capital improvement projects of the Four-Part Regional Transportation Program, providing a unique and valuable intermodal transfer point.

- Alternatives that would Avoid Adverse Impacts

The no-project alternative is discussed in Chapter 3. During the planning phase of this project, a complete DPM network was defined and separated into three corridors, for analysis as discrete potential initial segments. (See Chapter 3 for a description of these studies.) Corridor alternative C avoided the Union Station site altogether, whereas both Corridor alternatives A and B utilized Union Station as a DPM terminus. Corridor alternative C was rejected, as a result of the analysis, for the following reasons: it had the lowest rating from the point of view of linking activity centers; it had lower patronage than either alternative A or B; it would have resulted in the greatest amount of housing relocation; and it had the least potential for enhancing economic development. The other alternative that would avoid

adverse impacts would require moving the guideway and station away from the Union Station area and finding an alternative site for the northern terminus of the DPM. Alternative sites were carefully analyzed and the results of that analysis are reported in Section 3-420. Other sites were rejected because of incompatible land uses, inadequate size, or negative community reaction (Moving People in Los Angeles, CRA, 1977).

Siting the DPM in close proximity to the extension of the El Monte busway, to the proposed terminus for the rail starter line, and to the termini of intercity rail and bus service will create a convenient intermodal transfer point that does not now exist anywhere close to downtown Los Angeles. Union Station represents not only the opportunity to create such a transfer point, but also the opportunity to take advantage of the significant existing transportation investment in the station and track facilities. Without convenient intermodal transfer, the attractiveness and effectiveness of the DPM and all the other modes will be decreased. Relocating existing facilities, such as the AMTRAK platforms, to an alternate site would represent a considerable additional expense. In addition to the expense, there is the practical difficulty of revising plans that are in different stages of development and finding an alternate site that each of the transportation planning agencies could agree upon as suitable.

The Union Station site is currently in transportation use. The proposed DPM facilities will significantly increase the utilization of the site and thus make better use of existing facilities. Development of the multimodal Transportation Center could also encourage restoration and rehabilitation of Union Station's physical plant which has fallen into some disrepair over years of deferred maintenance. With the Transportation Center, Union Station will again become an important transfer point among transportation modes.

● Alternatives that would Mitigate Adverse Impacts/Planning to Minimize Harm

During the route refinement analysis, moving the guideway to the south of the freeway to minimize the use of land at Union Station was considered. Under this option, the maintenance facility and the Transportation Center would still be located on the Union Station grounds. The guideway would cross from the south side to the north side of the freeway at a point behind the REA building, but west of the Transportation Center. This alternative was rejected because of engineering difficulties in making the turn around the Federal Building on Los Angeles Street and the complications of crossing the freeway at a point where the DPM guideway could conflict with the proposed extension of the El Monte busway.

Moving the guideway to the median of the Santa Ana Freeway from Los Angeles Street to a point behind Union Station would eliminate the impacts on the parking lot area in front of the station and would also eliminate the columns in Father Serra Park. (This alternative also assumed that the Maintenance Facility and Transportation Center would remain behind Union Station). This alternative would have the following impacts: it would create severe adverse traffic impacts on the Santa Ana Freeway during construction; it would cost over \$1,000,000 more to construct; it would require very tall columns on the order of 50-60 feet in height; it would require bents at the Los Angeles Street end and adjacent to the Alameda offramp nosing. The most serious impact would be the traffic impact during construction. In order to construct the DPM in the middle of the freeway, it would be necessary to close at least the two center lanes during column preparation and placement. Even if all of the work were done at night, at least one freeway traffic lane would be required during the day for storage of equipment. When the precast guideway segments are lowered into place, all of the traffic lanes on one side of the free-

way would have to be closed. Assuming this work was also done at night, one half of the freeway would be closed for at least 16 nights. This portion of the Santa Ana Freeway carried 165,000 ADT in 1977 and is projected to have 197,000 ADT in 1990. A large number of trucks use this section of the Santa Ana Freeway as a major north-south truck route both during the day and at night. Closing even one lane during the day and two lanes at night, for approximately 6 months would be a severe adverse impact by itself. Closing either the northbound or southbound side for several weeks at night would be an extremely severe adverse impact. The use of columns 50-60 feet in height creates some engineering difficulties but these impacts are not as severe as the traffic impacts. Fifty to sixty foot columns would have to be larger to carry the additional weight and to manage the extra-long span length required in some places with this alternative. Firefighting and emergency evacuation procedures would be more difficult if such a high guideway were in the middle of the freeway. In contrast to the rest of the route, the guideway would not be as accessible from the street or from the surrounding buildings. The fire department would have to use extra-long ladders and probably halt traffic on one side of the freeway in order to provide assistance to vehicles and patrons on the guideway. The additional cost and the need for additional bents are less significant reasons for rejecting this alternative.

Since the proposed Transportation Center would be located east of the existing track area, attention was focused on alternative sites for the maintenance facility and test track only. The possibility of moving these facilities off of the Union Station property to a site south of the freeway was studied. Location of the maintenance building and test track at the Meier Brewery site would require building additional DPM trackage across the freeway, and acquisition and demolition of the brewery property. The minimum additional cost of this

alternative is estimated at \$3.8 million. Constructing the maintenance facility south of the freeway would cost approximately \$200,000 less than at the proposed site, but the acquisition costs of the brewery alternative are \$4,000,000 greater than the Union Station site. A maintenance facility south of the freeway would create operational difficulties in hostling trains from the storage tracks to the intercept because hostlers could not move easily between the two facilities. A moving sidewalk above or below the freeway for the use of hostlers would add to the estimated additional cost of this alternative. Other considerations affecting this alternative include acquisition difficulties; if this property had to be condemned, acquisition could take longer and generate substantial project delay costs. There is also the possibility that the brewery may contain within it the remains of the first winery ever constructed in Los Angeles. Documentary evidence suggests that this was the site of the original Aliso winery and that portions of the original winery may have been surrounded by the present building. Since it has not been possible to do an onsite survey of this property, the existence of historic values has not been verified.

To minimize the impact on Union Station property, the guideway has been planned to run along the edge of the Union Station grounds, and the Transportation Center and maintenance facility have been located in the eastern most area of unused trackage behind the station. Location of the guideway and the other facilities in this manner minimizes both the amount of Union Station property required and the visual impacts on the station itself. The DPM facilities behind the station will be set low enough so that they will not change the profile of the visually important western facade of the station, as viewed from Alameda Street.

- Coordination with Other Agencies

Numerous meetings among the various agencies concerned with the future of Union Station have been held throughout the planning period for this project. The Interagency Technical Committee composed of representatives from Caltrans, the DPM Program, SCRTD, SCAG, and the Los Angeles City Planning Department have met frequently to coordinate plans for the multimodal facilities at Union Station. This cooperative planning effort is expected to continue through construction of each of the proposed transportation improvements. Caltrans has stated in its report on the acquisition of Union Station, that one of the purposes of that action is to facilitate the necessary right-of-way activities by each of the transportation agencies planning improvements at Union Station and to "ensure a coordinated interfacing of the transportation modes expected to utilize the Union Station facility." (Los Angeles Union Station Report: Caltrans, 1979, p. III).

The Department of the Interior was sent a copy of the Draft EIS and asked to fulfill their consultative requirements under the provisions of 4(f). In a letter dated August 30, 1979, the Department responded as follows:

"Our comments on Section 4(f) information in a draft environmental statement are usually preliminary in nature. However, in this case we are willing to provide comments satisfying the consultative requirements of Section 4(f) of the Department of Transportation Act at this point. We concur that there is no feasible and prudent alternative to the use of lands from Union Station, Fire Station #3, Los Angeles City Hall, Pershing Square and Father Serra Park for the DPM route discussed in the environmental statement. In addition, contingent on a commitment to implement all measures to minimize harm set forth in the statement and developed with the Advisory Council on Historic Preservation, we concur that the second proviso of Section 4(f) would be satisfied. Accordingly, we would pose no objection to Section 4(f) approval of this project."

- Determination

Because of the lack of other appropriate sites and the positive advantages to be gained from using the existing and proposed transportation facilities at Union Station, there is no feasible and prudent alternative to the use of the Union Station site. Alternatives that would mitigate adverse impacts to the Union Station property have been analyzed and the project as proposed includes measures to minimize harm to this National Register eligible property.

6-220 Los Angeles City Hall● Description

The Los Angeles City Hall was designed as a joint project by three of the most prominent architects of the period: John Parkinson, John Austin and Albert Martin. Built in 1926, it is representative of the "modern" architectural ideal common to government buildings of the 1920's and a forerunner of what has come to be known as WPA moderne. City Hall was for many years the tallest structure in the city, serving as a symbol of modernism and progressivism. The building is eclectic; the detail is neo-classic, combining low pitched tile roofs, large scale and simply detailed cornices below attic stories. The top of the building is seen as a free interpretation of the Temple of Halicarnassus, with the battered walls suggesting Egyptian influence. The stepped roof is representative of the 1920's interest in antiquity and in geometrically based primary forms.

● Current Status

City Hall is still the seat of municipal government and has been expanded by the construction of City Hall South along First Street and City Hall East along Los Angeles Street. Only the latter is physically connected with the original City Hall by means of a pedestrian bridge over Main Street.

● Probable Effects of the Project

Implementing the project as proposed will require alteration of a portion of City Hall grounds along the First Street side of the building. Five columns will be constructed approximately 30 feet north of the sidewalk on the City Hall lawn. (The City Hall lawn is officially designated a park). The guideway columns will be placed between two rows of trees and the taking for the column foundations will require approximately 490 square feet, depending upon the guideway configura-

FIGURE 6-22A Los Angeles City Hall



tion chosen during final engineering. (Figure 6-22B) The top of the guideway will be approximately 30 feet above the lawn level as it crosses in front of the First Street facade of City Hall.

Running the guideway in front of City Hall will introduce a visual element that will alter the visual environment of the structure and will interrupt some short and medium range views of the First Street facade. Figure 6-22C shows the DPM guideway in front of City Hall from the sidewalk on the south side of First Street.

Noise analysis (Section 5-218.3, Point 23, Tables 5-21 F,G,H) indicates an imperceptible (1 DBA) increase in P.M. peak hour and noontime  $L_{eq}$  noise levels and an imperceptible (2 DBA) increase in nighttime noise levels with the DPM in operation.

City Hall lawn is currently used for pedestrian circulation and visual open space. There are no benches or other facilities to encourage anything but walking through to or from City Hall. The lawn is sometimes used for sitting or napping under the trees. Although the south facade of the building is not the primary architectural entrance (that entrance is on Spring Street), the southern entrance is functionally important because it is closer to parking and bus stops along First Street. Access to City Hall will not be affected by the presence of DPM columns. The proposed DPM station, less than half a block away, will improve access to City Hall.

- Alternatives that would Avoid Adverse Impacts

The no project alternative is discussed in Section 3-210. Corridor Alternative C which would avoid First Street, is described and the reasons for its rejection are discussed in Sections 3-430 and 6-210.

The other alternatives that would avoid adverse impacts on City Hall would be to shift the alignment either to the center of First Street or to the south side of First Street. The latter could be done in one of two ways: the guideway could be shifted to the south side of the street altogether and the station placed on that side of the street or the guideway could be swung to the south side of the street after it exits the station on the north side of the street. Each of these alternatives has been considered and each has engineering, visual or traffic problems.

Placing the station on the south side of First Street would raise the height of the guideway approximately ten feet to provide for a mezzanine at the Civic Center Station. (The Civic Center Station as proposed would not have a mezzanine level; similar to the Pershing Square Station, this station would use the ground level area adjacent to the sidewalk for elevator and escalator access). A station on the south side of First Street would be located in front of the Times Mirror building, in order to maintain as much vertical integration as possible with the proposed Starter Line Station at Broadway and First Streets, and would be of a design similar to that of the Ninth and Figueroa Street Station. A station in this location would encroach over the Times Mirror property, a historic landmark, and might require some remodelling of the facade of the Times Mirror building to accommodate pedestrian access to the station. Between Los Angeles Street and Main Street and Spring Street and Broadway, this alignment would reduce the usable sidewalk area to less than the eight feet minimum maintained elsewhere along the route. It would require two bents at the First Street/Los Angeles Street intersection for an alignment on the east side of Los Angeles Street, and at least one, possibly two bents, for either a middle or west side of Los Angeles Street alignment. It would also require extensive relocation or support of significant utility lines and would cost a minimum additional

FIGURE 6-22B

**R.O.W. AT CITY HALL**

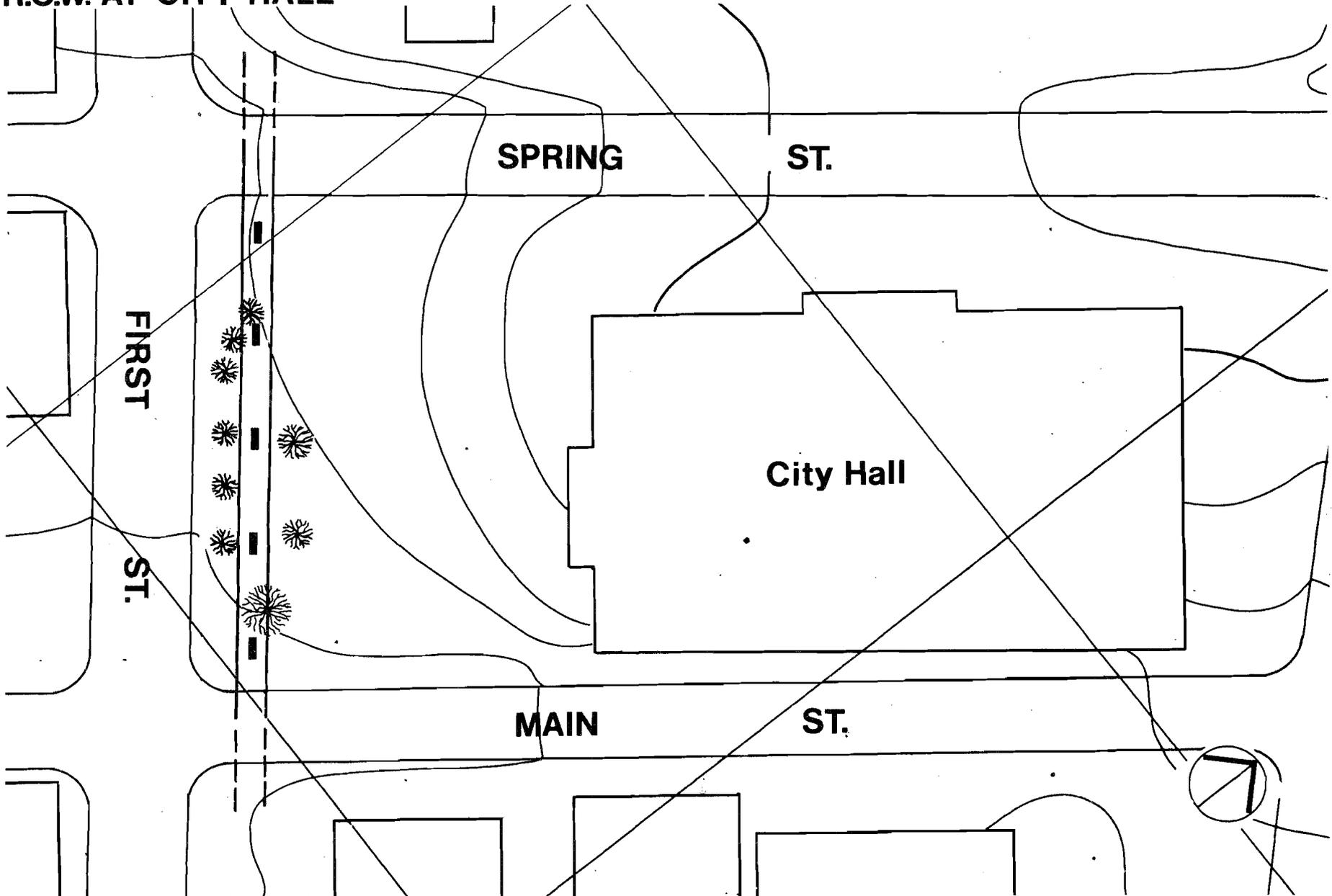


FIGURE 6-22C

LOS ANGELES CITY HALL WITH PROPOSED DPM IN FOREGROUND



SUBJECT TO CHANGE IN FINAL DESIGN

\$386,000, not including land or building acquisition. Increased costs over the baseline are largely due to the increased height of the columns, the additional (mezzanine) station level, and the extensive utility work associated with this alternative. The visual impacts on the Times Mirror building would be significant. There would be no impact on close up views of City Hall from the north side of First Street, but there would be some interruption of medium range and long range views from the south side of First Street.

Shifting the alignment to the center of First Street would require construction of a median in the center the street, similar to the median proposed for Figueroa. However, on First Street the 100 foot street right-of-way is already fully committed so that widening the street to replace the traffic lane lost with the median would require acquisition of new street right-of-way from adjacent properties to maintain sidewalk widths, or reduction of sidewalks. If new right-of-way were acquired for street purposes, the additional width would most likely come from the north side of the street where the setback is more uniform. If the sidewalk width were to be maintained, and the eight foot right-of-way acquired on the north side of First Street, City Hall lawn would be reduced by approximately 2400 square feet. First Street is a major east-west thoroughfare. In 1977 average daily traffic volumes ranged from 18,700 at Los Angeles Street to 22,800 at Broadway. Traffic volumes in 1990 with the DPM are estimated to range from 23,900 at Los Angeles Street to 28,100 at Hill Street. Removing a traffic lane would create a significant traffic impact. Construction of the station in the middle of the street would require additional sidewalk width in the block between Broadway and Spring Streets to provide pedestrian access to station elevators and escalators. With or without street widening to replace the median, widening the sidewalk in front of the Times Mirror building for pedestrian access to the station would further reduce the capacity of First

Street. A station in this location would also require a mezzanine, so that visual impacts on the Times Mirror building would be significant and adverse. Since utilities are located in the center and south sides of First Street, utility and storm drain relocation would be required. Short range views of City Hall from the north side of First Street would not be adversely affected; medium and long range views from the south side of First Street would be adversely affected. The additional cost of this alternative would be \$360,000, not including additional right-of-way for street widening. The factors that increase the cost of this alternative over the baseline are the same as for the south side of First Street alternative.

The final alternative studied to reduce the visual impact on City Hall and the required taking of park area in front would maintain the proposed station on the north side of First Street, but swing the guideway to the south side of First Street after it exits the station on the east. The guideway could then either go in the center of First Street or on the south side of First Street. The visual impacts on City Hall would be similar to those outlined above for either of these alternatives; short range views would not be affected, medium or long range views would be affected depending upon the alternative. Crossing the street at this point would require bents at Spring Street and at Los Angeles Street. The use of bents anywhere along the route has been minimized in order to avoid the negative visual impacts and the possible obstruction to drivers. Crossing to the south side of First Street at Spring Street would juxtapose that curve in close proximity to the curve required at Los Angeles Street to round that corner, creating a series of S curves that are imprudent from an engineering perspective and that could create operational problems for the DPM.

In summary, moving the guideway and the station to the south

side of First Street would create significant adverse negative impacts on another National Register eligible property, the Times Mirror building; moving the guideway and station to the middle of First Street would create severe negative traffic impacts and adverse visual impacts on both the Times Mirror building and City Hall; shifting the guideway to the center of the street east of Spring Street would also create negative visual impacts on City Hall, severe traffic impacts on First Street, and operational problems for the DPM; and moving to the south side of First Street east of Spring would create a series of S curves that would not only be visually unappealing but would create operational difficulties for the DPM.

- Alternatives that Would Mitigate Adverse Impacts/Planning to Minimize Harm

The guideway was originally planned for the north side of First Street in order to integrate the DPM station with the proposed Starter Line Station at the proposed new state office building. This station would provide integrated access to rail, DPM and bus service for the 42,000 employees in the Civic Center area north of First Street and would allow the design opportunity of linking with the new state building not available with other locations on First Street. Keeping the guideway behind the sidewalk on the north side of the street was judged to have fewer visual impacts on the government buildings facing the street, particularly City Hall, than an alignment close to the street. During the route refinement analysis, consideration was given to moving the guideway off of City Hall lawn to the northern edge of the sidewalk or to the sidewalk itself. Analysis of these alternatives suggested that these would be more visually obtrusive than placing the guideway between the two rows of trees so that the trees would serve as a visual buffer on each side of the guideway. City Hall is situated at an elevation approximately 14 feet above that of the lawn area along First Street. With the guideway between the trees, views of City Hall from either the north

or south sides of First Street would be less affected than with either of the other alternatives. From the standpoint of the people who use City Hall lawn for sitting or napping, placing the guideway columns on the lawn, as opposed to either edge of the sidewalk, would have little effect on usable lawn area.

- Coordination With Other Agencies

Meetings have been held with the general manager of the Parks Department. The DPM Program Director made a presentation to the Parks Commission on November 11, 1978. The Draft EIR and Draft EIS have been furnished to the Parks Department for comment. The Parks Department commented on the DEIR and voiced no objection to the use of the lawn area; no comment was received from them on the DEIS. The Department also received notices of the public hearings on each of the environmental documents and did not comment at either of them.

The Department of the Interior in a letter dated August 30, 1979, has concurred that there is no feasible and prudent alternative to taking land at City Hall and that, contingent on a commitment to implement all measures to minimize harm set forth in the statement and developed with the Advisory Council on Historic Preservation, they concur that the second proviso of Section 4(f) would be satisfied (see Section 6-210, Coordination). In particular, the letter noted the decision to use existing trees on City Hall lawn to screen the DPM guideway as a measure to minimize harm to the park.

- Determination

Based on consideration of alternatives to avoid the use of 4(f) lands and the adverse impacts associated with these alternatives, it has been determined that there is no feasible and prudent alternative to the use of City Hall lawn and that all possible planning to minimize harm to this property has been undertaken as part of this project.

6-230 Pershing Square Park

Once known as Central Park, Pershing Square was deeded to the City of Los Angeles for park use in the 19th century. It includes the entire city block bounded by Fifth Street on the north, Hill Street on the east, Sixth Street on the south, and Olive Street on the west. In the late 1950's a parking garage was constructed under Pershing Square necessitating the removal of trees and the imposition of a new landscaping plan. Access to the parking garage is obtained from ramps on all four sides of the park.

The park contains approximately three acres of landscaping criss-crossed by pedestrian paths, with related statuary, fountains, and lamp standards. It contains some benches but no other recreational equipment. It is used for passive recreation and pedestrian circulation. It is the major green space in the center of the city.

- Current Status

The park is well maintained by the City and the parking underneath is extensively used, particularly for patrons of older buildings in the area that lack parking facilities of their own.

- Probable Effects of the Project

A DPM station is planned at the northern edge of Pershing Square. Three columns would be dropped into the Fifth Street ramp entrance to the garage between the ramp and Fifth Street. Another column would be placed at the edge of the sidewalk in the northwest corner of the park at the intersection of Fifth and Olive Streets. Column placement would not interfere with access to the park or to the parking garage underneath.

The DPM station platform at the northern edge of Pershing Square would be elevated over the ramp entrance to the parking garage at approximately 26 feet from street level. Most of the affected area at Pershing Square is the air space above the parking garage access ramps. However, elevators and escalators would descend from the platform into the northern portion of the park in an area between the northern sidewalk and the parking garage entrance. Figure 4-22G shows the site plan for the Pershing Square Station in relationship to the rest of the park. Figure 6-23A shows the specific site plan for the portion of the park affected by the DPM. Approximately 4800 square feet of parkland (approximately .11A) in the northern portion of the park would be fenced off to create a paid area for the DPM. No structures would be built; fare collection and escalators would be out in the open. Landscaping would be installed in and around the DPM "paid" area with appropriate lighting.

The proposed DPM station will create a new visual element in the Pershing Square area. The station will be 120 feet in length and will extend from a height of 18 feet at the bottom of the guideway/station to a height of 34 feet at the top of the station. The guideway will create a visual band across the northern edge of Pershing Square, but views of the Square from most directions will be unaffected (see Figures 6-23 B and C).

$L_{eq}$  noise levels in the vicinity of Pershing Square (Point 16, Tables 5-21 F, G, and H) are now and are expected to be approximately 74-75 dBA (P.M. peak hour), 68-69 dBA (noon), and 63 dBA (nighttime), without the DPM. With the DPM in operation, these noise levels are expected to increase by about one dBA, which would be imperceptible.

Fencing off a paid area in the northern portion of the park will remove that area from potential park use. However, the

FIGURE 6-23A

# PROPOSED SITE PLAN: PERSHING SQUARE DPM STATION

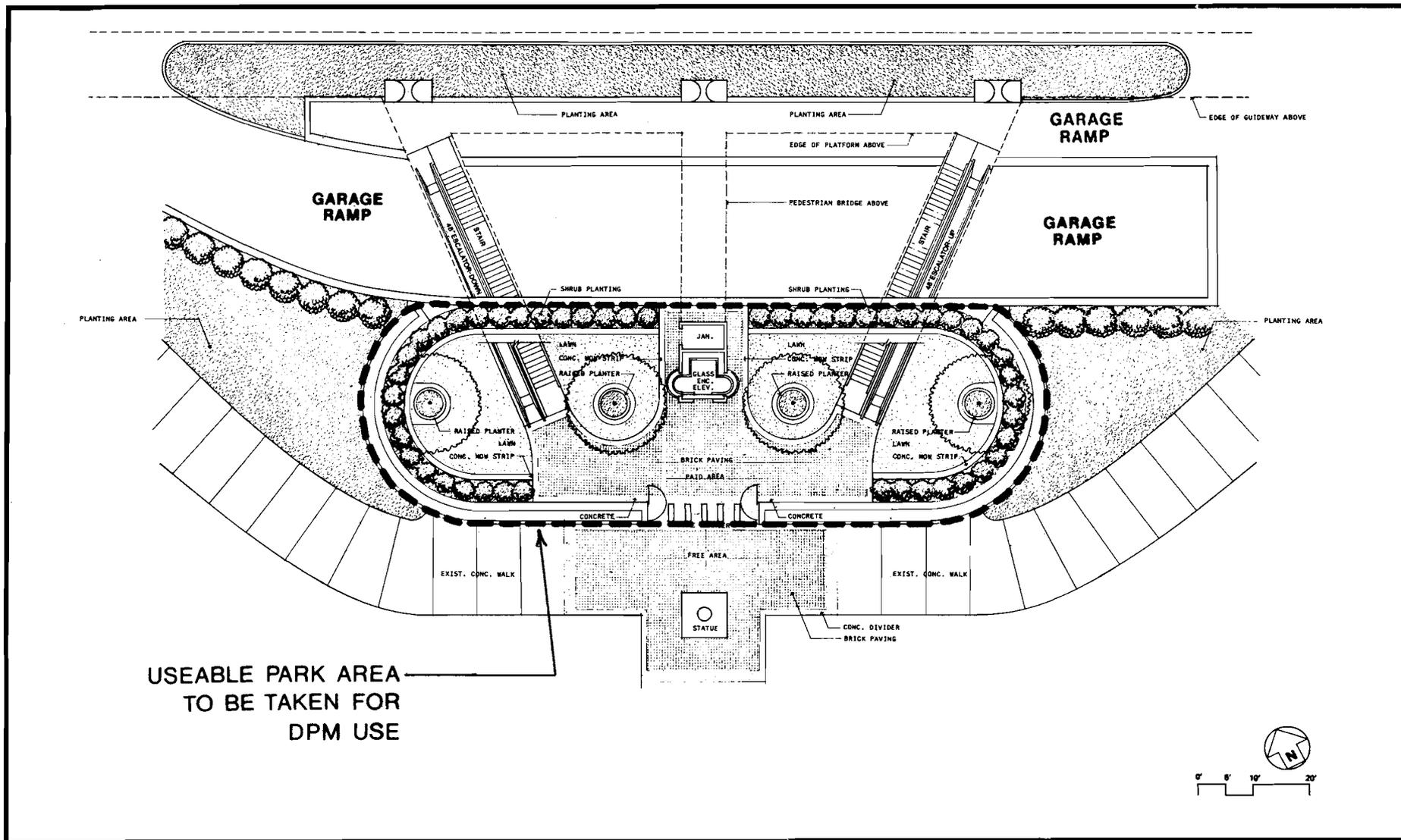


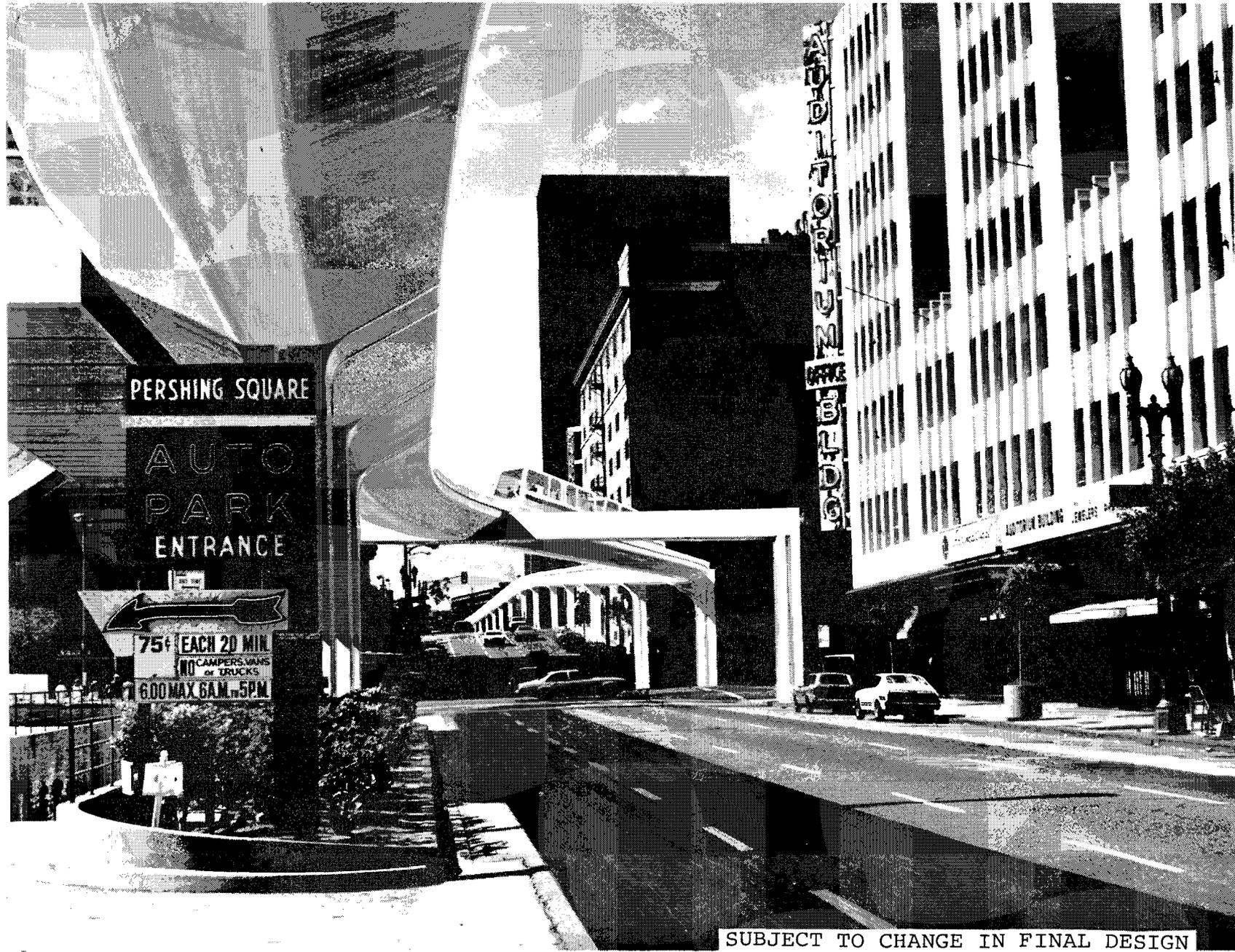
FIGURE 6-23B

**PERSHING SQUARE: DPM GUIDEWAY AND STATION**



SUBJECT TO CHANGE IN FINAL DESIGN

FIGURE 6-23C  
DPM GUIDEWAY AT NORTHERN EDGE OF PERSHING SQUARE



SUBJECT TO CHANGE IN FINAL DESIGN

only use that area gets now is pedestrian circulation on the sidewalk. The area north of the current sidewalk is planted in ivy; it contains no benches or other recreational equipment, no trees, bushes or flowers, and is not suitable for sitting or walking. Its only function is visual open space. Implementation of the DPM will add a fence, fare collection equipment, escalators, elevators, lighting and landscaping to this area. The station area will become a destination and this will probably increase the use of the park. The remainder of the park will not be physically changed by the DPM station. The park will become more visible to office workers and shoppers, most of whom simply walk through unless there is a summer concert in progress.

- Alternatives that would Avoid Adverse Impacts

The No Project alternative is discussed in Chapter 3. Corridor Alternatives B and C, evaluated during previous studies, would avoid Hill Street. Corridor Alternative C was rejected for the reasons described in Section 6-210.

Corridor Alternative B was rejected for the following reasons: It had no effective linkage to redevelopment areas; it had lesser patronage than Alternative A; it had the least favorable costs; and it had less potential for promoting growth in downtown.

As part of preliminary engineering studies, route refinement alternatives were also evaluated. Of these alternatives (described in Section 3-440), Alternatives A, B, D and E avoided Fifth Street between Grand and Hill Streets; only Alternative C incorporated the one-way loop through Bunker Hill, including service to Pershing Square. As reported in the Route Refinement Report (CRA, 1978), alternatives not incorporating the loop and service to Pershing Square and the east side of downtown, had lower performance ratings in terms of patronage and link volumes and lesser economic benefits

to the central and east side portions of the CBD. Route Alternative D ranked less favorably than C on four of the five significant measures including service to activity centers, private sector revenue potential to operate the system, parking substitution potential, and service to residential and hotel units. Of the factors judged moderately significant, Route D did not have as high rankings as C on patronage estimates and operating to cost ratios. Route Alternatives A, B, and E also ranked lower than C on the same four significant factors as Route D (service to activity centers, private sector revenue potential, parking substitution potential and service to hotel units); in addition A, B, and E had higher capital costs than Route C. Of the factors judged moderately significant, A, B, and E all ranked lower than C on patronage estimates and operating revenue to cost ratios.

The location of a station at Pershing Square, if a one-way loop was selected, was necessary as an intermediate location between the Library and Hill Street/Elderly Housing Stations, and to provide a connection with a proposed rail starter line station at Broadway. A station in the Pershing Square area is projected to have a beneficial economic effect on the older office and hotel buildings in the Olive/Hill Street area (see Section 5-221.1, DEIS). Many of the structures that would benefit from the increased accessibility provided by the DPM and the opportunity to park at the intercepts are themselves historic structures including the Biltmore Hotel, the Title Guarantee Building, Pershing Square Building, and Federal Title Building. Some of these structures have been or will be refurbished.

Several alternatives to avoid taking land in Pershing Square have been studied. These include: (1) a station on the north side of Fifth Street with minimum street vacation; (2) a station on the north side of Fifth Street with minimum private acquisition; and (3) a station over the center of

Fifth Street, constructed on a median. Fifth Street between Hill and Olive Streets currently carries 17,400 vehicles a day and is projected to carry 17,900 vehicles a day in 1990 with the DPM in operation. Fifth Street is now and will continue to be an important feeder street to the freeways to the west. Each of the alternatives that would avoid Pershing Square assumes that the guideway would continue to be located on the west side of Hill Street after it turns the corner from Fifth Street. An east side of Hill Street option was considered but rejected because it would create many other problems. If the guideway were on the east side of Hill Street it would adversely affect other National Register eligible buildings including the Pershing Square building, the Myrick and Markham hotels and Grand Center Market. In order to provide service to the elderly/handicapped housing facility being built on the west side of Hill Street between 2nd and 4th Streets, the guideway would have to swing across Hill Street from east to west close to 4th Street. This would require bents across the street, create another curve in the alignment requiring reduced operating speeds, and would create potential adverse visual impacts on National Register eligible buildings on the west side of the street, including Subway Terminal Building. Creating another curve about a block north of the curve onto Hill Street would result in an S curve that is judged to be visually more intrusive than a straight line and imprudent from an engineering and operating perspective.

A station on the north side of Fifth Street would require a mezzanine level, making the station substantially higher than the station as proposed in Pershing Square. This would create additional visual impacts. Each of the alternatives that would avoid the use of Pershing Square is presented in more detail below.

(1) Station on north side of Fifth Street, with minimum street vacation

This alternative would locate the station and guideway columns in the sidewalk, reducing its usable width to nine (9) feet. The station would be similar to the Ninth Street Station. The sidewalk area on the north side of the street would have to be completely reconstructed, between Hill and Olive Streets including curb and gutter, sidewalk and street lights.

In order to maintain the present number of traffic lanes on Fifth Street, the station would have to be constructed on private property on the north side of the street. Acquisition and demolition of either the Auditorium Building, Title Guarantee or Wells Fargo buildings would be necessary. The first is on the local historic register; the second has been found eligible for the National Register. The most likely site for the station on this alternative would be the Wells Fargo building.

In order to retain the west side of Hill Street alignment, the guideway would have to be realigned so as to make a double reverse curve, immediately after leaving the station. One or two bents would be required for this. This guideway realignment could reduce ride comfort and effect overall operations.

The additional cost of this alternative, including land and building acquisition, would be approximately \$2,900,000. This additional cost is primarily due to estimated building acquisition and demolition costs of \$2,100,000. Other additional construction costs occur because the station on the north side of the street would have a mezzanine level.

(2) Station on north side of Fifth Street, with minimum private land acquisition

This alternative would eliminate two lanes of traffic on the north side of Fifth Street, to provide column and vertical access areas for the station, which would be constructed over the vacated street area, similar to the 7th Street Station. In addition to a severe loss of traffic capacity on Fifth Street, a wider sidewalk would have to be constructed to accommodate vertical pedestrian access. Reconstruction of curb and gutter, sidewalk, and street lights would be required.

In order to maintain the west side of Hill Street alignment, the guideway would have to make a sharp double reverse curve immediately after leaving the station. One or two bents would be required.

The additional cost of this alternative, exclusive of land and building acquisition, would be approximately \$900,000.

(3) Station over center of Fifth Street

This alternative would require the construction of a median island in the center of Fifth Street, wherein columns would be located. One lane of traffic would thus be eliminated. The station constructed above the median would be similar to Fifth and Figueroa Street Station. Pedestrian access would be accomplished from the north side of Fifth Street, but placement of the elevators and escalator on that side of the street would require widening the sidewalk and consequently removing a second traffic lane from this block on Fifth Street, a significant negative traffic impact. Additional negative traffic impacts would also result from increased pedestrian crossings at Fifth Street intersections for DPM patrons arriving from the south. This could be mitigated by building a pedestrian bridge from the station to the south

side of Fifth Street, but such a bridge would require building a sidewalk on the north side of Pershing Square (removing yet another traffic lane) and would create pedestrian conflicts with auto access to the ramps leading to Pershing Square garage.

As in the previous two alternatives, a sharp double reverse curve would be required just as the guideway leaves the station. This would reduce ride comfort and affect operations. One or two bents would be required.

The additional cost of this alternative, excluding the possible pedestrian bridge to the south side of Fifth Street, would be approximately \$740,000. Construction of the median, reconstruction of sidewalks, and the addition of the mezzanine level at the station are the primary components of this increased cost.

● Planning to Minimize Harm

The station has been located on the northern edge of Pershing Square to minimize the amount of parkland that will be required. Columns will be dropped in the parking ramp area, an area that is not now available for park use in any case. The station was designed without a mezzanine and the "paid" area was placed in the northern portion of the park in order to reduce the visual impacts of the station on the park. Use of the park will probably increase because of the DPM station. Lighting and security will improve in the entire park because of the activity associated with the station. The station at Pershing Square will be designed to be as compatible as possible with its surroundings. In particular, landscaping will be incorporated into the design so as to soften the perceived contrast and to blend with the park-like setting.

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- Coordination With Other Agencies

The City of Los Angeles Parks Department and the Parks Commission have been furnished information concerning the use of Pershing Square for the site of a proposed DPM station (see Section 6-220). In a letter of November, 1978, the Department of Recreation and Parks expressed concern that the surface of the park was fragile, due to the underground parking, but did not object to the planned use of the park for a DPM station. They had no comment on the DEIS.

A copy of the DEIS was sent to the Department of the Interior for its review of 4(f) involvement. In a letter dated August 30, 1979, (quoted more fully in Section 6-210), the Department concurred that there was no prudent and feasible alternative to taking land from Pershing Square Park and also found, subject to fulfilling certain commitments, that the second proviso to minimize harm had also been fulfilled.

The letter noted that "At Pershing Square, the plan to simply fence off the tip of the park as a paid-passenger area is an excellent way to blend the DPM station into the adjacent park, altering the space's function but retaining its landscaping and visual relationship to the park".

- Determination

It has been determined that there is no feasible and prudent alternative to the use of Pershing Square property. This determination has been made after consideration of the alternatives to avoid the use of Pershing Square and the negative impacts associated with these alternatives, including adverse impacts on historic buildings, adverse traffic impacts, operational difficulties, and increased costs. It has been further determined that all possible planning to minimize harm has been undertaken as part of this project. Planning to minimize harm to Pershing Square has included minimizing the size of the station, and thus the visual intrusion of the station on the park, by eliminating the mezzanine level and using the

tip of the park for that purpose; fencing off and landscaping a small portion of parkland that is not now available for recreational use; and using airspace that is not currently in park use.

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6-240 Father Serra Park● Description

Father Serra Park is bounded by Alameda Street on the east, Arcadia Street on the south and Los Angeles Street on the west and north. This triangle of land comprises approximately one acre and is part of the larger el Pueblo de Los Angeles State Historic Park. The Pueblo is a 42 acre state historic park bounded by Alameda Street on the east, Arcadia Street on the south, Hill Street on the west and Sunset/Macy Streets on the north. The focus of the Pueblo area is the plaza and surrounding buildings, northwest of Father Serra Park and separated from it by Los Angeles Street. No impacts of DPM implementation on any other portion of the Pueblo except Father Serra Park are anticipated.

Father Serra Park is made up of two sections. The northern section (beyond the freeway on-ramps) is a grassy area which is occasionally used for passive recreation. There are no benches or recreational facilities. A statue of Father Juniper Serra is located on the northern tip of the park. Separating this portion of the park (see Figure 6-24A) from the remainder to the south is a row of large trees, which acts as a buffer, located just to the north of the freeway on-ramps. The southern portion of the park is made up of freeway on-ramps (from Alameda and Los Angeles Streets to the Hollywood Freeway), and parking lots. Neither of these areas have recreational use. It is in the area of the park which now serves as a parking lot that the proposed DPM would be located.

● Current Status

Those areas of the park not covered by asphalt are fairly well maintained with trees and grass.

FIGURE 6-24A  
FATHER SERRA PARK NORTHERN PORTION



- Probable Effects of the Project

Construction of the DPM will require dropping three columns along the northern edge of the sidewalk adjacent to Arcadia Street. Since the sidewalk is part of the designated park area, dropping the columns will require taking from 50 to 180 square feet of the park depending upon the column size selected during final engineering. Figure 6-24B shows the right-of-way required in the park. The top of the guideway will be approximately 31 feet above street level at this point. Visual impacts are expected to be minimal because the guideway will be on the street side of the park, buffered by the trees from the park itself. Noise levels in 1990 are predicted to be 1-2 dBA less with the DPM than without it.

There is potential for archaeological remains in this area. During the construction of the Hollywood Freeway on-ramps the remains of a Chinese dump were collected. The archaeological site was designated LAN-7. It is now under the freeway on-ramps. Inspection of historic Los Angeles maps also suggests that the Zanja Madre ("mother ditch") may run through the site in a north-south direction in two locations. (Lecouvreur, 1870; Kelleher, 1875)

- Alternatives That Would Avoid Adverse Impacts

The no project and other route alternatives are discussed in Chapter 3. This route alternative was chosen in order to serve the el Pueblo Plaza and Olvera Street commercial area with the least amount of disturbance to the state historic park. The station at the Federal Building is just across the freeway and within walking distance of the plaza area.

Keeping the alignment on the south side of the freeway was studied during preliminary engineering. This was not possible from an engineering standpoint because of the radius required to make the turn at the corner of the Federal Building. It

would also have created engineering problems farther east when the line crossed the freeway to Union Station because of the proposed ramps for the El Monte busway extension.

Placing the guideway in the median of the Santa Ana Freeway was also studied. (See Section 6-210 for a detailed discussion of this alternative.) This alternative was rejected because of the severe traffic impacts during construction, significantly increased time and costs for construction, and the lesser margin of safety associated with such a high guideway in the middle of a freeway.

- Planning to Minimize Harm

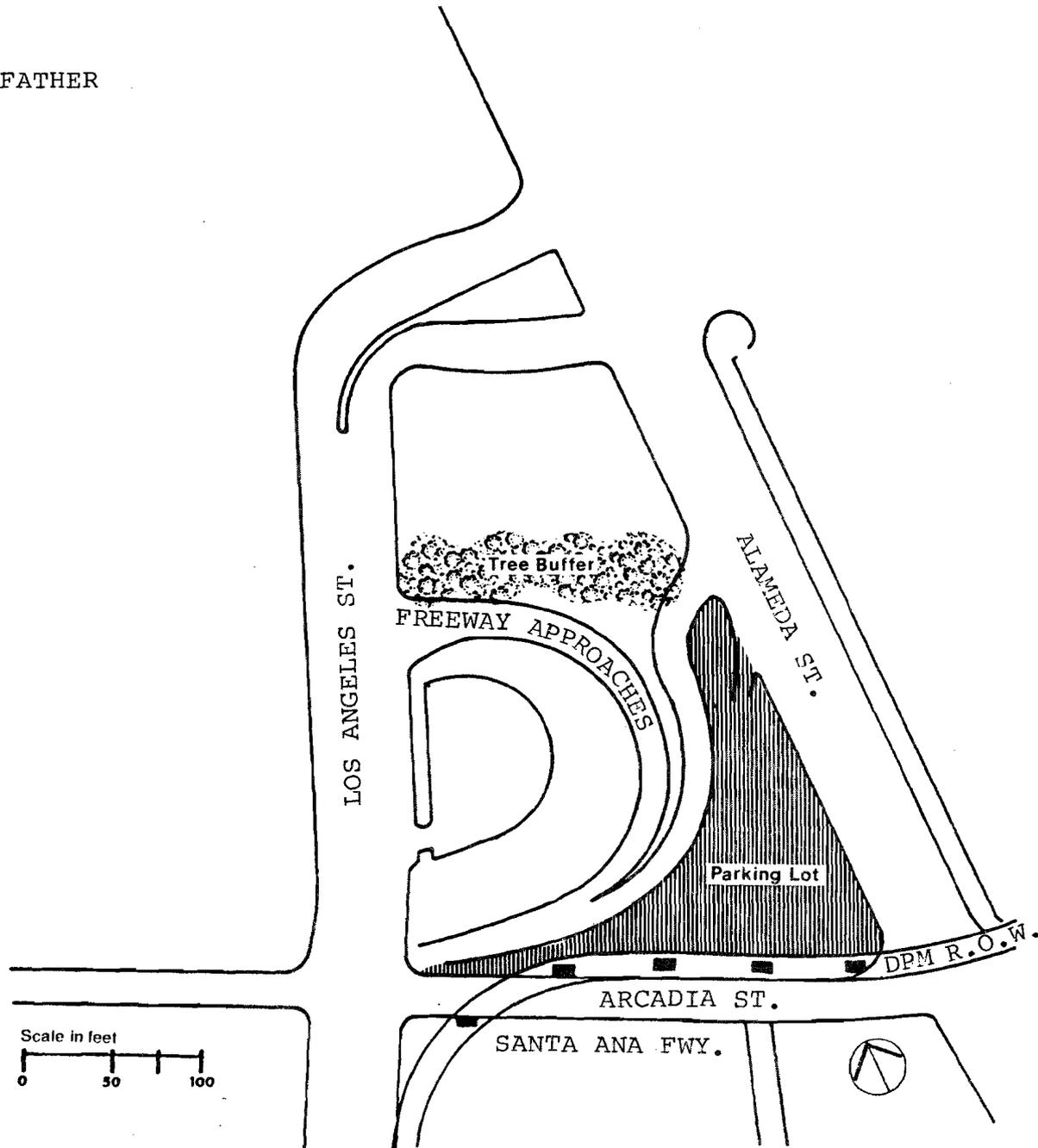
During preliminary engineering, column locations were moved to the west of the park to the very edge of the sidewalk to minimize the amount of land taken from the park. Shifting the columns to the sidewalk edge should also increase the likelihood that the final column locations will occur in an area that has already been disturbed.

Because neither final column configuration or column location has been determined at this stage, it is difficult to predict precisely what measures will be necessary to minimize harm to potential archaeological resources, if they are present. Procedures to protect archaeological resources during final engineering and construction have been developed in consultation with the State Historic Preservation Office, and the Advisory Council on Historic Preservation. The Memorandum of Agreement outlining these procedures is presented in Section 6-340 of this report.

- Coordination With Other Agencies

The California State Historic Preservation Office (SHPO) and the State Department of Parks and Recreation have been consulted during the preliminary engineering phase of this project, as have the staff of the el Pueblo de Los Angeles/State

FIGURE 6-24B  
RIGHT OF WAY AT FATHER  
SERRA PARK



Historic Park. Both the SHPO and the Parks Department are aware of the potential for historic remains on this site and will be consulted during continuing engineering on the project. The staff of the Pueblo commented on the DEIS in two letters to Dr. Knox Mellon, State Historic Preservation Officer, the first dated July 31, 1979, and the second on August 17, 1979. The Pueblo staff expressed concern about the archaeological resources in Father Serra Park and took issue with the assertion that the noise levels (presumably in Father Serra Park) would be less in 1990 than they are today. Pueblo staff also expressed strong concerns about the visual impact of the DPM on the National Register District adjacent to Father Serra Park and questioned whether the DPM would improve transportation service to the Plaza area. An invitation has been extended to Pueblo staff to continue discussions about Father Serra Park and the impacts of the DPM.

The Department of the Interior received a copy of the DEIS and was asked to comment on the 4(f) implications of the project. Their letter, dated August 30, 1979, stated their concurrence that there was no feasible and prudent alternative to the use of Father Serra Park and noted that the requirement to minimize harm would be satisfied if certain commitments contained in the DEIS were fulfilled. (For a more complete discussion on this letter, see Section 6-210, Coordination.) With reference to Father Serra Park their letter stated: "We also concur that UMTA has done all possible planning to minimize harm to the parks, as shown by the decision .... to take a small, unused strip of land from Father Serra Park."

A copy of the Memorandum of Agreement, including a plan to preserve potential archaeological resources, is presented in Section 6-540.

- Determination

Based on consideration of alternatives to avoid the use of 4(f) land, it has been determined that there is no feasible and prudent alternative to the use of a small portion of Father Serra Park. The alternatives studied would have created severe traffic impacts during construction, significantly increased time and costs of construction, and a lesser margin of safety associated with a high guideway in the middle of a freeway. It has also been determined that all planning to minimize harm has been undertaken as part of the planning for this project. These measures have included placing the guideway columns in an area that is not used for recreational purposes and which is screened by trees from the portion of the park used as visual open space; placing the guideway columns along the very edge of the park to minimize the amount of parkland used; and locating the columns in an area that has already been disturbed. Additionally, potential archaeological resources will be protected by the terms of the Memorandum of Agreement, Section 6-540.

6-300 Inventory of Historic and Cultural Resources

In order to meet the requirements of the National Historic Preservation Act of 1966, as amended, and other relevant legislation and executive orders, it was necessary to determine which historic and archaeological resources were already known to exist within the area of environmental impact and to identify those other resources that had not been previously identified.

State, local and national registers of historic sites were consulted. Figure 2-25A identifies all of the historic and cultural resources in the Los Angeles CBD that had been identified prior to the route refinement analysis portion of the DPM planning program. This information was part of the analysis of route alternatives. Once a route was selected for preliminary engineering and detailed environmental studies in April, 1978, attention focused on identifying other historic and cultural resources within the area of potential environmental impact. In consultation with the State Historic Preservation Office, (SHPO) it was decided to perform two surveys: the first to identify historic resources and the other to identify potential archaeological resources.

6-310 Historic and Archaeological Surveys

The first step in performing the surveys was to select the researchers, determine a survey area, and agree on a methodology. The State Historic Preservation Office (SHPO) was apprised of each step and consulted continuously. Student professionals performed the actual surveys and their work was reviewed by professionals in their respective fields. Working from a list supplied by SHPO, two UCLA graduate students were selected to perform the architectural survey, and Roberta Greenwood and Associates was selected to perform the archaeological survey.

A panel was selected to review the results of both surveys. The following people agreed to serve on the panel: Professor Thomas Hines of UCLA's History and Architecture departments; Ms. Margaret Bach, editor of L.A. Architect and Chairperson of the Los Angeles Conservancy; and Roberta Greenwood, archaeologist and principal of Roberta Greenwood and Associates.

6-311 Definition of Survey Area

The survey area was defined as a one-building band on either side of the proposed DPM route, confirmed with the SHPO, and approved by the review panel members. Within this band, the architectural survey was confined to those buildings built prior to 1940. Two properties within this band were already on the National Register: the Los Angeles Central Library and El Pueblo de Los Angeles.

6-312 Performance of Surveys

An inventory form for the architectural survey was adopted and agreed to by the members of the review panel and the SHPO. The form is a duplicate of a form used by the SHPO, "Historic Resources Inventory" form (7/75). The archaeological survey team members were consulted in the definition of the study area but decided that the Historic Resources Inventory form was not really suitable for their needs.

Each of the survey teams was furnished with plans and profiles for the proposed route that included possible column placements and locations of stations and maintenance facilities. In addition, the historic/architectural survey team was furnished with photographs of every building along the route and an initial set of information about every building assembled from the Land Use Planning and Management System (LUPAMS) file maintained by the City Planning Department. This included

the name, address, owner, owner's address, building date, current use, and parcel size for each property. These data were entered on a Historic Resources Inventory form for each property and then turned over to the survey team. At the request of the historic/architectural survey team, Community Redevelopment Agency and City Planning staff also procured Sanborn maps, building permit file cards, copies of building permits, assessor's maps, and district maps.

The archaeological survey team was furnished with the following materials: a list of every building along the route built prior to 1940, an index to historic maps of Los Angeles, a copy of the grading plan for Bunker Hill, and access to the Sanborn maps available in CRA offices and City Hall. The archaeological survey team also was given access to utility maps, Wye maps (sewer maps), grading plans for the Route 101 freeway, and aerial photographs of downtown Los Angeles.

The surveys commenced on May 12, 1978. The survey reports were delivered on June 12, 1978 and were forwarded to the review panel on the same day.

#### 6-313 Review Panel Activities

The review panel read the reports and then met to walk the route on June 14, 1978. On June 15, 1978, they surveyed the secondary areas of concern by car and then met in the CRA office to frame their recommendations. The review panel's recommendations, including buildings the review panel judged worthy of the National Register consideration, are contained in their Review Panel Report (June, 1978).

#### 6-320 State Historic Preservation Office Actions

The Initial Architectural Survey, the Review Panel Report, the Initial Archaeological Survey and the Historic Building Survey Report (a summary of the historic process to that date

prepared by CRA) were forwarded to the SHPO on July 6, 1978, with a request for a determination of eligibility.

In a letter of October 24, 1978, the SHPO expressed the view that 19 buildings were eligible for the National Register. In subsequent conversations, the SHPO suggested that additional research be performed on the Fifth Street retaining wall to determine its eligibility. Supplementary material was transmitted to the SHPO and in a letter of February 8, 1979, the SHPO expressed the view that the Fifth Street retaining wall was eligible for the National Register.

#### 6-330 Department of Interior Actions

A letter requesting a determination of eligibility for properties 2-19 in Table 6-32A was forwarded to the Department of the Interior on January 22, 1979. A request for a determination for Union Passenger Terminal was forwarded to the Department of the Interior on February 1, 1979. All 19 properties were found eligible for the National Register on March 28, 1979.

A letter requesting a determination of eligibility for the Fifth Street retaining wall was submitted to the Department of the Interior on March 19, 1979, and the Department declared the wall eligible for the National Register on April 5, 1979.

Table 6-33A lists the National Register and eligible properties and figure 6-33A shows the location of these properties along the route of the proposed Downtown People Mover Project.

FIGURE 6-33A

# NATIONAL REGISTER AND ELIGIBLE HISTORIC PROPERTIES

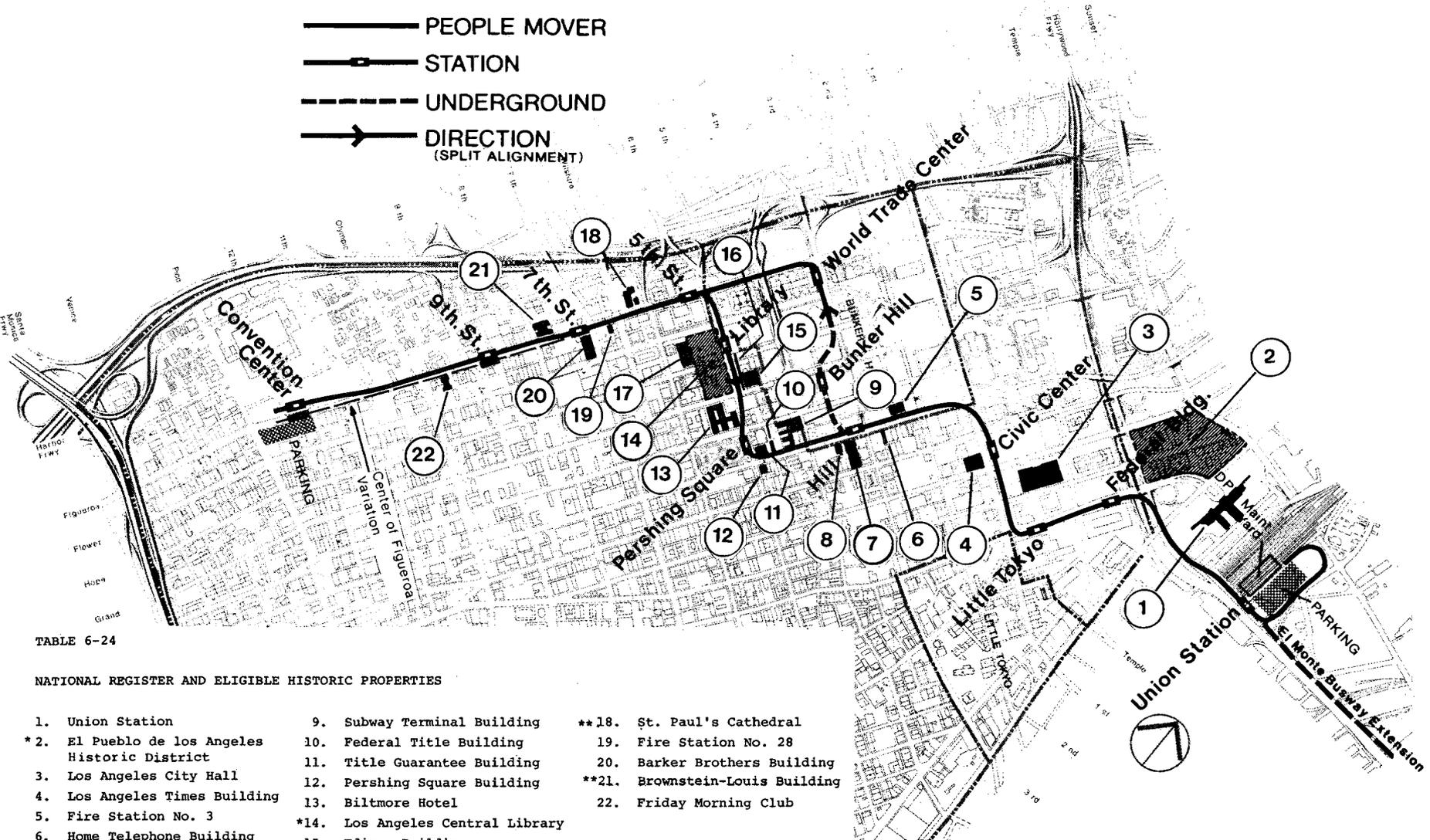


TABLE 6-24

NATIONAL REGISTER AND ELIGIBLE HISTORIC PROPERTIES

- |   |                                  |                                 |
|---|----------------------------------|---------------------------------|
| 1. Union Station                                | 9. Subway Terminal Building      | **18. St. Paul's Cathedral      |
| * 2. El Pueblo de los Angeles Historic District | 10. Federal Title Building       | 19. Fire Station No. 28         |
| 3. Los Angeles City Hall                        | 11. Title Guarantee Building     | 20. Barker Brothers Building    |
| 4. Los Angeles Times Building                   | 12. Pershing Square Building     | **21. Brownstein-Louis Building |
| 5. Fire Station No. 3                           | 13. Biltmore Hotel               | 22. Friday Morning Club         |
| 6. Home Telephone Building                      | *14. Los Angeles Central Library |                                 |
| 7. Grand Central Market                         | 15. Edison Building              |                                 |
| 8. Myrick and Markham Hotels                    | 16. Fifth Street Retaining Wall  |                                 |
|   | 17. California Club              |                                 |

\* National Register Property  
 \*\* Currently under demolition, in an action unrelated to the DPM.

TABLE 6-33A

## LIST OF PROPERTIES DETERMINED ELIGIBLE FOR THE NATIONAL REGISTER BY THE DEPARTMENT OF THE INTERIOR

1. Union Station, 800 North Alameda
2. Los Angeles City Hall, 200 North Spring Street
3. Los Angeles Times Building, 201 West First Street
4. Home Telephone Building, 246 South Hill Street
5. Grand Central Market, 315 South Broadway
6. Myrick and Markham Hotels, 324½ - 326½ So. Hill Street
7. Fire Station No. 3, 219 South Hill Street
8. Subway Terminal Building, 417 South Hill Street
9. Biltmore Hotel, 515 South Olive
10. Edison Building, 601 West Fifth Street
11. California Club, 538 South Flower
12. St. Paul's Cathedral, 615 South Figueroa
13. Friday Morning Club, 940 South Figueroa
14. Federal Title, 448 South Hill Street
15. Pershing Square Building, 427 South Hill Street
16. Title Guarantee Building, 401 West Fifth Street
17. Louis Brownstein and Company, 751 South Figueroa
18. Barker Brothers, 800 West Seventh Street
19. Fire Station No. 28, 644 South Figueroa
20. Fifth Street Retaining Wall

6-400 Application of Criteria of Effect

The Advisory Council on Historic Preservation have developed criteria to determine whether a proposed project will have an effect on a National Register or eligible historic property. These criteria of effect are described in 36 CFR 800.3 (a).

The Criteria of Effect (36 CFR 800.3(a)) were applied in consultation with the SHPO to the properties identified as on or eligible for inclusion in the National Register of Historic Places and it was determined that the project will have no effect on the following properties:

TABLE 6-40A

PROPERTIES FOR WHICH A FINDING OF  
NO EFFECT HAS BEEN MADE

- California Club (Figure 6-33A, Number 17)
- El Pueblo de Los Angeles National Register District (Figure 6-33A, Number 2)

The distance of the guideway to the California Club is approximately 500 feet. The distance of the guideway to el Pueblo National Register District is about 130 feet. The National Register District is functionally separated from the DPM by the presence of Los Angeles Street, a wide and very busy street. No effect determinations were made because of the absolute distances and the functional separations involved.

6-500 Application of Criteria of Adverse Effect

The Advisory Council on Historic Preservation has developed criteria to determine whether a proposed project will have an adverse effect on a National Register or eligible historic property. These Criteria of Adverse Effect are described in 36 CFR 800.3(b) and include, but are not limited to:

- (1) Destruction or alteration of all or part of a property;
- (2) Isolation from or alteration of the property's surrounding environment;
- (3) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- (4) Neglect of a property resulting in its deterioration or destruction;
- (5) Transfer or sale of a property without adequate conditions or restrictions regarding preservation, maintenance, or use.

6-510 Documentation for Determinations of No Adverse Effect

The Criteria of Adverse Effect (36 CFR 800.3(b)) have been applied in consultation with the SHPO to the remaining properties identified as on or eligible for inclusion on the National Register of Historic Places. It has been determined that there will be no adverse effect on the properties listed in Table 6-51A for the following reasons:

- (1) No part of any of the properties will be altered or destroyed.
- (2) The DPM guideway will be across the street from each of the properties and will consequently not alter or isolate the property from the surrounding environment. The street creates a functional barrier and visual edge that will not be altered by having the DPM on the other side. The distance of the guideway, the level of activity on the highly urban streets, and the

intensity of the surrounding built environment make the introduction of the DPM such a minimal intrusion on these historic buildings that a finding of no adverse effect is justified.

- (3) The project will produce no atmospheric elements that will be out of character with the property or will alter its setting. The visual and noise elements associated with implementation of the DPM will be at sufficient distance from each of the properties and will be of such a minimal nature that they will also effect no change in the character of the property or alter its setting. A building by building discussion of this point is presented below.
- (4) The proposed project will not contribute to the neglect of any of the properties resulting in the property's deterioration or destruction.
- (5) Implementation of the project does not require transfer or sale of any of these properties.

The letter containing the views of the State Historic Preservation Officer is contained in Section 6-540.

TABLE 6-51A

PROPERTIES FOR WHICH A FINDING OF NO ADVERSE EFFECT IS MADE

<u>Property</u>	<u>Map Identification</u>
Los Angeles Times Bldg.	4
Home Telephone Bldg.	6
Grand Central Market	7
Myrick & Markham Hotels	8
Pershing Square Bldg.	12
Biltmore Hotel	13
Los Angeles Central Library	14
Friday Morning Club*	22

\*Only for a West Side of Figueroa alignment.

A complete physical description and discussion of the significance of each building is included in the Historic Building

Survey (CRA, January, 1979) submitted to the Department of the Interior with the request for a determination of eligibility. A brief summary of that information is presented below, as well as a more detailed documentation for the finding of no adverse effect.

- Los Angeles Times Building: Built in 1934 and designed by the prominent architect, Gordon B. Kaufman, the original building is one of the finest examples of WPA Moderne in the downtown. It is significant also as the home of the largest newspaper in Southern California.

The DPM guideway will be across the street and at least 150 feet from the Times Building and will not change or isolate the visual setting of the building. Noise analysis (Section 5-218.3, Point 22, Tables 5-21 F,G,H,) shows no change in noon or P.M. peak hour  $L_{eq}$  levels and an imperceptible (2 dBA) increase in nighttime noise levels with the DPM in operation.

- Home Telephone Building: This heavily ornamented eclectic building was built in 1906 and designed by Traine and Williams. Now vacant and deteriorating, the unusual facade is still intact.

The DPM guideway will be across the street and at least 80 feet from Home Telephone Building and will not change or isolate the visual setting of the building. Noise analysis (Section 5-218.3, Point 19, Tables 5-21 F,G,H) shows no change in noon or nighttime  $L_{eq}$  levels and an imperceptible (1 dBA) increase in P.M. peak hour noise levels with the DPM in operation.

- Grand Central Market: The market is composed of two structures that extend from Hill Street on the west to Broadway on the east. Although the original Hill Street facade is obscured, the original building designed by John Parkinson

in 1897 has been in continuous commercial use since it was built.

The DPM guideway will be across the street and at least 90 feet from Grand Central Market and will not change or isolate the visual setting of the building. Noise analysis (Section 5-218.3, Point 18, Tables 5-21 F,G,H) shows no change in nighttime  $L_{eq}$  levels and an imperceptible (1 dBA) decrease in noon and P.M. peak hour noise levels with the DPM in operation.

- Myrick and Markham Hotels: Although slightly altered, these adjacent bay window structures are two of the last of their kind in downtown Los Angeles. The Myrick was built in 1893 and the Markham in 1897.

The Myrick and Markham hotels are directly adjacent to Grand Central Market. The same visual and noise analysis would apply to these structures as to Grand Central Market.

- Pershing Square Building: The prominent firm of Curlett & Beelman designed this utilitarian 13 story office structure in Italian Renaissance style in 1923.

The DPM guideway will be across the street and at least 60 feet from the Pershing Square Building and will not change or isolate the visual setting of the building. Noise analysis (Section 5-218.3, Point 17, Tables 5-21 F,G,H) shows an imperceptible (3 dBA) increase in noon and nighttime  $L_{eq}$  noise levels and a barely perceptible (4 dBA) increase in P.M. peak hour noise levels with the DPM in operation.

- Biltmore Hotel: Recently restored, this Italian Renaissance building designed by Schultze and Weaver has again taken its place as one of the largest and most elegant hotels in the city. Built in 1923 its interior spaces are as elegant as

the exterior and include paintings by Giovanni B. Smeraldo.

The DPM guideway will be across the street and at least 50 feet from the Biltmore Hotel and will not change or isolate the visual setting of the building. The DPM was designed to maintain maximum distance from the facade of the Biltmore. Noise analysis (Section 5-218.3, Point 15, Tables 5-21 F,G,H) shows an imperceptible (2 dBA) decrease in noon and nighttime  $L_{eq}$  noise levels and an imperceptible (3 dBA) decrease in P.M. peak hour noise levels with the DPM in operation.

- Los Angeles Central Library: Designed in 1924 by Bertram Goodhue and Carleton Winslow, this eclectic building was nominated to the National Register of Historic Places in 1969. Plans are underway to refurbish the structure.

The DPM guideway will be across the street and at least 85 feet from the Los Angeles Central Library and will not change or isolate the visual setting of the building. Noise analysis (Section 5-218.3, Point 13, Tables 5-21 F,G,H) shows an imperceptible (2 dBA) increase in noon, nighttime, and P.M. peak hour  $L_{eq}$  noise levels with the DPM in operation.

- Friday Morning Club: Allison & Allison designed this clubhouse for the ladies of the Friday Morning Club in 1923. Recently it has been acquired and refurbished for the use of the Society for the Preservation of Variety Arts, with rooms set aside for the continued use of the Friday Morning Club.

With the DPM guideway on the west sidewalk and at least 80 feet from the facade of the Friday Morning Club, the visual setting of the building will not be changed or isolated. Noise analysis (Section 5-218.3, Point 37, Tables 5-21 F,G,H) shows an imperceptible (2 dBA) increase in noon, nighttime, and P.M. peak hour  $L_{eq}$  noise levels with the DPM in operation.

#### 6-520 Preliminary Case Reports

The Criteria of Adverse Effect (36 CFR 800.3(b)) have been applied in consultation with SHPO to the remaining properties identified as on or eligible for inclusion in the National Register of Historic Places and within the area of environmental impacts from this project. It has been determined that the project will not create adverse impacts on any of the properties according to criteria (4) and (5) of adverse effect identified in Section 6-400 for the following reasons:

- The proposed project will not contribute to the neglect of any of the properties resulting in the property's deterioration or destruction. The project could act as a stimulus in the rehabilitation or reuse of underutilized or vacant properties.
- Implementation of the project will not require transfer or sale of any of these properties.

Criterion (1) of Adverse Effect (alteration or destruction of all or part of a property) applies only to Union Station and Los Angeles City Hall where a portion of the grounds will be required for DPM facilities. (see Sections 6-210 and 6-220)

Criterion (2), isolation from or alteration of the property's surrounding environment, has also been applied, and the potential impacts of the project in this regard are discussed on a building by building basis later in this chapter.

The project will not produce atmospheric elements that would be out of character with any of the properties or alter their settings (Criterion (3) 36 CFR 800.3(b)). Potential visual and noise impacts from the proposed project are discussed on a building by building basis, later in this chapter.

Comments of the State Historic Preservation Officer are contained in Section 6-540. Other information required by the

Advisory Council on Historic Preservation for inclusion in a preliminary case report can be found in the Summary at the beginning of this document and in Chapter 4, Project Description.

A summary of the historic properties for which preliminary case reports have been prepared is contained in Table 6-52A.

TABLE 6-52A

## PROPERTIES FOR WHICH A FINDING OF ADVERSE EFFECT IS MADE

<u>Property</u>	<u>Map Identification</u>
Union Station	1
Los Angeles City Hall	3
Fire Station #3**	5
Subway Terminal Building	9
Federal Title Building	10
Title Guarantee Building	11
Edison Building	15
Fifth Street Retaining Wall	16
St. Paul's Cathedral	18
Fire Station #28	19
Barker Bros. Building	20
Brownstein-Louis Building	21
Friday Morning Club*	22

\*Only for the Center of Figueroa variation.

\*\* Proposal for inclusion in a Memorandum of Agreement is currently being circulated.

6-521 Union Passenger Terminal

A complete discussion of the impacts of the DPM on Union Station is contained in Section 6-210.

6-522 Los Angeles City Hall

A complete discussion of the impacts of the DPM is contained in the 4(f) portion of this chapter in Section 6-220.

6-523 Fire Station #3● Description

When originally built in 1924, this was the headquarters of the Los Angeles Fire Department. Designed by Rudolph Meier in Italian Renaissance style modeled after a Florentine Palazzo, the fire station was extended to the south by a building addition in 1950. The addition was designed by Albert C. Martin. Details of the original building include carriage lamps, a decorative shield and the original wood doors. The brass fire pole inside is said to be the longest in the city.

● Current Status

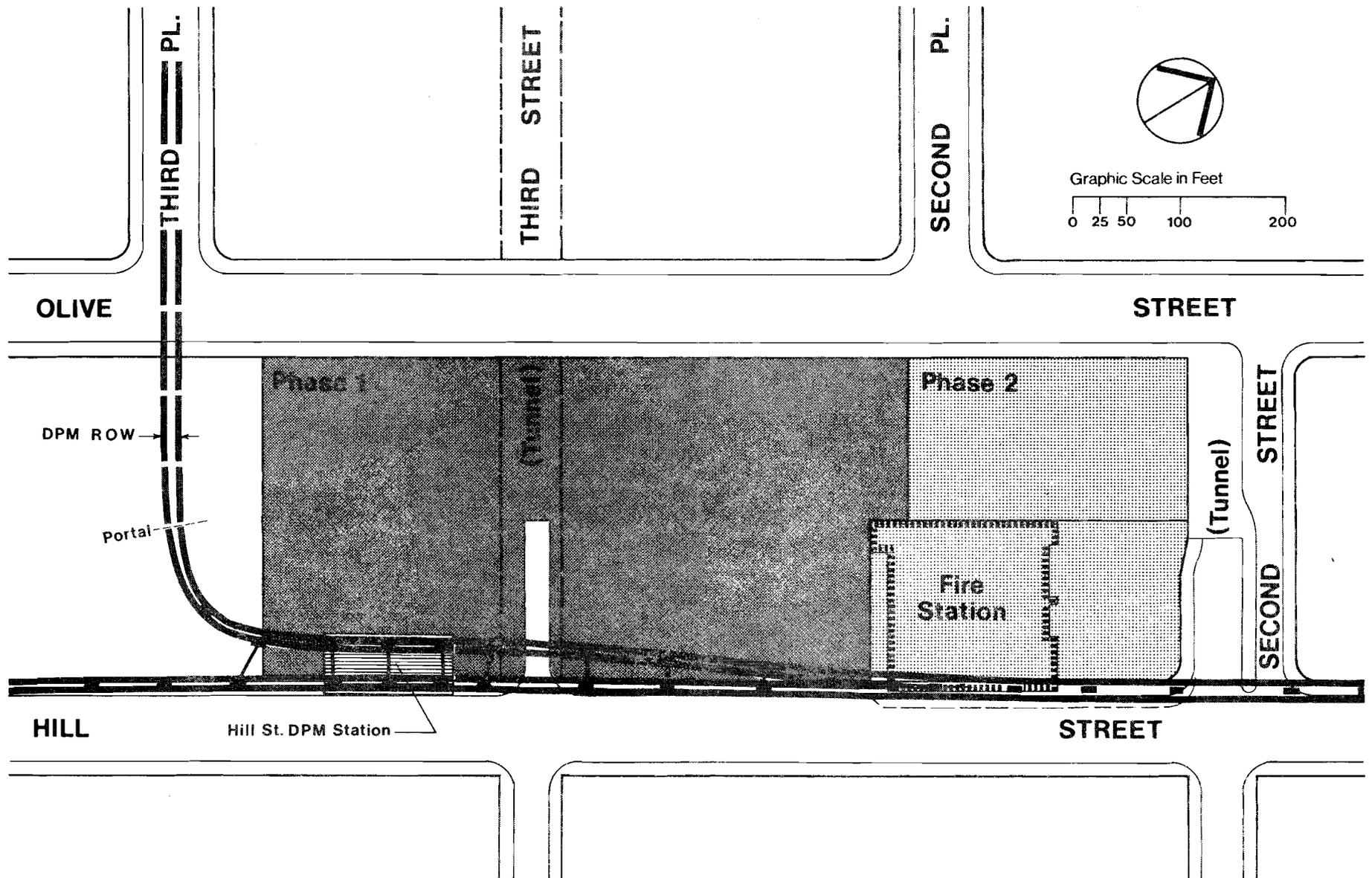
The fire station was acquired by the Community Redevelopment Agency in 1977 as part of the site for the second stage of the senior citizen housing development currently being built directly to the south on Hill Street. (Figure 6-52B) The Fire Department plans to vacate the building as soon as new facilities, currently being constructed on First and Hope Streets, are completed.

A preliminary case report on the demolition of Fire Station #3 was prepared by the Community Redevelopment Agency of the City of Los Angeles and the Department of Housing and Urban Development and was submitted to the Advisory Council on Historic Preservation in August, 1979. A letter of concurrence

FIGURE 6-52A Fire Station #3



FIGURE 6-52B ROW at Fire Station



in the proposed demolition was sent by the State Historic Preservation Officer to the Advisory Council on Historic Preservation on November 6, 1979. A Proposal for Inclusion in a Memorandum of Agreement is currently being circulated. The fire station is scheduled for demolition in September, 1980.

- Probable Effects of the Proposed Project

The DPM alignment along the west side of Hill Street was designed under the assumption that the Fire Station would already have been demolished to clear a site for the elderly housing project.

- Alternatives that would Avoid Adverse Impacts

The no project alternative and other route alternatives are discussed in Chapter 3. Alternatives that would avoid Hill Street are discussed in Section 6-524. This route alternative would serve the elderly/handicapped housing facility being developed at Third and Hill Streets. A DPM station will be integrated into the structure. This facility will provide housing, medical care, eating and recreational facilities to over 1100 elderly and handicapped persons. All of the facilities, except the housing, will be open to all elderly or handicapped individuals who wish to use them. The DPM will provide a significant improvement in access for residents and non-residents alike to these facilities and other medical, governmental, and social facilities along the DPM route. Construction on the first phase of the housing development began in late 1978.

- Alternatives that would Mitigate Adverse Impacts

Moving the DPM line to the east side of Hill Street would make the turn onto First Street almost impossible from an engineering perspective, have negative visual and traffic impacts associated with the use of bents, and would negatively affect historic structures identified on the east side of Hill Street including Home Telephone Building, Grand

Central Market, the Myrick and Markham Hotels and the Pershing Square Building. An alignment on the east side of the street would eliminate the advantages of a station integrated into the elderly housing project and all the benefits that would accrue to the elderly and handicapped people using the station on that site.

6-524 Subway Terminal Building● Description

Designed by Schultze and Weaver in the Italian Renaissance style, the Subway Terminal building was hailed at its opening in 1925 as the start of a new transportation system in Los Angeles. The 12-story office structure surmounted a network of underground rail lines linking the Pacific Electric's downtown terminal with Santa Monica and Hollywood through a tunnel under Bunker Hill. At the height of its use during World War II, the Subway Terminal Building served 65,000 persons a day. The last train used its underground tunnel in 1955 and portions of the tunnel were filled in in the 1960's.

● Current Status

The building is in relatively good physical condition but is essentially vacant. The ground floor is partially occupied by the Veterans Administration. It has recently been sold to a group of business men who are planning on restoring the lobby area and refurbishing the office suites.

● Probable Effects of the Proposed Project

Column supports for the single lane guideway will be constructed at the edge of the sidewalk in front of the Subway Terminal Building. The center of the guideway will be approximately 10 feet from the face of the building. The height of the guideway will range from 23 feet at the bottom of the structure to 30 feet at the top, thus introducing a visual element that will alter the visual setting of the building. (Figure 6-52D shows the DPM in front of Subway Terminal, Federal Title and Title Guarantee.)

P.M. peak hour  $L_{eq}$  noise levels along Hill Street are now and are projected to be approximately 78-79 dBA (see Section 5-218.3,

Point 17, Tables 5-21 F,G,H,)), without the DPM. With the DPM peak noise levels are expected to increase approximately 4 dBA, an increment that is considered barely perceptible to the human ear.

Noon and nighttime  $L_{eq}$ 's are projected to increase an imperceptible 3 dBA with operation of the DPM. Because all but three floors of the building are air conditioned, the effect of DPM operations on interior noise levels should be negligible.

Because the centerline of the DPM guideway passes in front of the building at a horizontal distance of approximately 10 feet, an additional noise analysis was conducted. The analysis consisted of calculating the expected DPM passby noise reaching the building facade, and further calculating the resulting attenuated interior noise level. The analysis showed that, with a DPM passby noise level of 68 dBA at 50 feet (vehicles operating at 17 mph) and a building attenuation of 25 dBA, (assuming closed windows and air conditioning) expected interior noise levels resulting from the DPM passing by would be approximately 56 dBA, which is comparable to the typical noise level encountered in a small office (EPA, 1974) It is therefore concluded that the DPM noise impact on the Subway Terminal Building would be negligible.

Implementation of the DPM will increase the accessibility of the older office structures around Pershing Square, including those along Hill Street within a block of the Pershing Square Station. Increased accessibility by public transportation and the availability of competitively priced parking at the intercepts is expected to increase the attractiveness of these older office structures for rental and/or rehabilitation. (see Section 5-221.1) The Subway Terminal Building may benefit from these market forces. It would not be inappropriate for a building that was built to serve the needs of an earlier transit system to be rescued from neglect because of the effects of a new transit system.

FIGURE 6-52C Subway Terminal from Mid-Block , East side of Hill, North of Fourth Street



FIGURE 6-52D

**WEST SIDE OF HILL STREET AT FIFTH, LOOKING NORTH**

SUBJECT TO CHANGE IN FINAL DESIGN

Hill Street buildings, from left to right: Title Guarantee, Federal Title, Subway terminal

- Alternatives that would Avoid Adverse Impacts

The No Project alternative is discussed in Chapter 3. Corridor Alternatives B and C, evaluated during previous studies, would avoid Hill Street. Corridor Alternative C was rejected for the reasons described in Section 6-210.

Corridor Alternative B was rejected for the following reasons: It had no effective linkage to redevelopment areas; it had lesser patronage than Alternative A; it had the least favorable costs; and it had less potential for promoting growth in downtown.

As part of preliminary engineering studies, route refinement alternatives were also evaluated. Of these alternatives (described in Section 3-440), Alternatives A, B, and E avoided Hill Street, between 4th and 5th Streets, and Alternative D avoided Hill Street altogether. As reported in the Route Refinement Report (CRA, 1978), alternatives not incorporating the loop and service to Pershing Square and the east side of downtown, had lower performance ratings in terms of patronage and link volumes and lesser economic benefits to the central and east side portions of the CBD. Route Alternative D ranked less favorably than C on four of the five significant measures including service to activity centers, private sector revenue potential to operate the system, parking substitution potential, and service to residential and hotel units. Of the factors judged moderately significant, Route D did not have as high rankings as C on patronage estimates and operating to cost ratios. Route Alternatives A, B, and E also ranked lower than C on the same four significant factors as Route D (service to activity centers, private sector revenue potential, parking substitution potential and service to hotel units); in addition A, B, and E had higher capital costs than Route C. Of the factors judged moderately significant, A, B, and E all ranked lower than C on patronage estimates and operating revenue to cost ratios.

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- Alternatives that would Mitigate Adverse Impacts

Moving the DPM line to the east side of Hill Street would make the turn onto First Street almost impossible from an engineering perspective, have negative visual and traffic impacts associated with the use of bents, and would negatively affect historic structures identified on the east side of Hill Street including Home Telephone Building, Grand Central Market, the Myrick and Markham Hotels and the Pershing Square Building. An alignment on the east side of the street would eliminate the advantages of a station integrated into the elderly housing project and all the benefits that would accrue to the elderly and handicapped people using the station on that site.

6-525 Federal Title Building● Description

A good example of zig zag moderne, this ten story building was constructed in 1927 and designed by the prominent Southern California architectural firm of Walker & Eisen. Major architectural details include bas-relief panels at the second/third story and arched window bays with keystones above at the tenth floor. Originally designed as a bank building, it incorporated some ingenious features to accommodate the extra-narrow lot size including a combination bank lobby that could function separately for the building when the bank was closed.

Current Status

The building is currently vacant; the facade is unaltered.

● Probable Effects of the Proposed Project

Placing the DPM guideway along Hill Street in front of the Federal Title Building will have essentially the same effects on that building as on the Subway Terminal Building. The nearest edge of the guideway will be a horizontal distance of 12 feet from the building, at a height of from 21 feet (bottom of guideway) to 28 feet (top of guideway), thus introducing an element that will alter the visual setting of the building. (See Figure 6-52D)

P.M. peak hour  $L_{eq}$  noise levels along Hill Street are now and are projected to be approximately 78-79 dBA (see Section 5-218.3, Point 17, Tables 5-21 F,G,H,), without the DPM. With the DPM, peak noise levels are expected to increase approximately 4 dBA, an increment that is considered barely perceptible to the human ear. Noon and nighttime  $L_{eq}$ 's are projected to increase an imperceptible 3 dBA with operation of the DPM.

FIGURE 6-52E

Federal Title from the N.E. Corner of Fifth and Hill Streets



Because the centerline of the DPM guideway passes in front of the building at a horizontal distance of approximately 18 feet, an additional noise analysis was conducted. The analysis consisted of calculating the expected DPM passby noise reaching the building facade, and further calculating the resulting attenuated interior noise level. The analysis showed that, with a DPM passby noise level of 68 dBA at 50 feet (vehicles operating at 17 mph) and a building attenuation of 25 dBA, (assuming closed windows and air conditioning) expected interior noise levels resulting from the DPM passing by would be approximately 52 dBA, which is less than the typical noise level encountered in a small office (EPA, 1974). It is therefore concluded that the DPM noise impact on the Federal Title Building would be negligible.

The building should benefit from the same economic incentives for rental and rehabilitation as were discussed for the Subway Terminal Building (see Section 6-524).

● Alternatives that Would Avoid Adverse Impacts

Alternatives that would avoid adverse impacts on the Federal Title Building are the same as for the Subway Terminal Building discussed in Section 6-524.

● Alternatives that Would Mitigate Adverse Impacts

Alternatives that would mitigate adverse impacts on the Federal Title Building are the same as those discussed in Section 6-524 for the Subway Terminal Building.

6-526 Title Guarantee Building

● Description

Built in 1930, this multi-story building was designed by John and Donald Parkinson in a combination of Gothic and zig zag moderne styles. Architectural details include zig zag

FIGURE 6-52F

Title Guarantee from S.E. Corner of Fifth and Hill Streets



ornament above the eleventh floor and flying buttresses with moderne grills flanking the stepped back tower. It is faced in terra cotta and has relatively little ornamentation. Interior details include a set of six paintings by Hugo Ballin depicting the history of Southern California from prehistoric times.

With the exception of alterations to the street level frontage, the building facade is intact.

#### Current Status

The ground floor has been occupied by Thrifty Drug Store and the upper stories are vacant. However, Thrifty has recently sold the building to a group of investors involved in jewelry merchandising. Although details are not clear, it appears that the new owners are planning on refurbishing Title Guarantee for use as a jewelry mart that would complement the new Jewelry Mart soon to be constructed on the southeast corner of Fifth and Hill Streets.

#### ● Probable Effects of the Proposed Project

Because Title Guarantee is a corner building, implementation of the DPM will affect views of two facades of the building rather than one. Along the Hill Street frontage, the DPM will have essentially the same visual effects on Title Guarantee as on the Subway Terminal and Federal Title Buildings. The nearest edge of the guideway will be at a horizontal distance of 13 feet from the building, at a height of from 21 feet (bottom of guideway) to 28 feet (top of guideway), thus introducing an element that will alter the visual setting of the building.

On the Fifth Street side, the DPM will be on the other side of the street from Title Guarantee, but views of the lower stories of the building will be partially obscured from south of Fifth

Street. Figure 6-23B shows the Pershing Square area and the corner of Fifth and Hill Street. Figure 6-52D shows the DPM along Hill Street in front of Title Guarantee, Federal Title and Subway Terminal Buildings.

P.M. peak hour  $L_{eq}$  noise levels along Hill Street are now and are projected to be approximately 78-79 dBA (see Section 5-218.3, Point 17, Tables 5-21 F,G,H), without the DPM. With the DPM, peak noise levels are expected to increase approximately 4 dBA, an increment that is considered barely perceptible to the human ear. Noon and nighttime  $L_{eq}$ 's are projected to increase an imperceptible 3 dBA with operation of the DPM.

P.M. peak hour  $L_{eq}$  noise levels along 5th Street are now and are projected to be approximately 74-75 dBA, both with and without the DPM. Noon  $L_{eq}$  noise levels (68-69 dBA) and nighttime  $L_{eq}$  noise levels (63-64 dBA) will also not be affected by the DPM.

Because the DPM guideway passes in close proximity to the front of the building, a passby noise analysis was done. The nature of this analysis was the same as that conducted for both the Subway Terminal Building and the Federal Title Building. The analysis indicated that the expected interior passby noise from the DPM would be 52 dBA, which is less than the typical noise level encountered in a small office. It is therefore concluded that the noise impact in the Title Guarantee Building would be negligible.

The anticipated revitalization of the buildings in the Pershing Square area already seems to be underway for Title Guarantee Building. The commitment of the Community Redevelopment Agency to development of the new Jewelry Mart across the street from Title Guarantee has undoubtedly had some effect on the interest shown in refurbishing the older building. In turn, the probable implementation of the DPM has influenced private investor decisions concerning the new Jewelry Mart,

and thus indirectly, in the rehabilitation of Title Guarantee as a complementary jewelry mart.

- Alternatives that would Avoid Adverse Impacts

Alternatives that would avoid adverse impacts on the Title Guarantee Building are the same as those discussed for the Subway Terminal Building in Section 6-524 and Pershing Square in Section 6-230.

- Alternative that would Mitigate Adverse Impact

Alternatives that would mitigate adverse impacts on Title Guarantee are the same as those discussed for the Subway Terminal Building in Section 6-524 and Pershing Square in Section 6-230.

#### 6-527 Edison Building

- Description

One of the first electrically heated and cooled buildings in the western United States, the Edison Building was considered both an engineering and architectural landmark when it was opened in 1931. Allison & Allison designed this fourteen story structure in a mixture of WPA and zig zag moderne. The orientation of the building is to the corner of Grand Avenue and Upper Fifth Street with a polygonal corner entrance on the ground floor. The interior of the building contains representative works by several prominent artists, including Hugo Ballin, Barse Miller, Conrad Buff and E. Batchelder.

- Current Status

Southern California Edison sold the building in 1971 when the company moved its offices to Rosemead. The building is currently occupied by the One Bunker Hill Company who have made some minor alterations of the exterior of the building, including the corner entrance.

- Probable Effects of the Proposed Project

The DPM guideway will be situated approximately 80 feet south of the southern facade of the Edison Building, along the sidewalk of lower Fifth Street. The single guideway which passes in front of the Edison Building is at a height of from 21 feet (bottom of guideway) to 28 feet (top of guideway), thus introducing an element which alters the visual setting of the building. This will affect the view of the building from the south side of lower Fifth Street. Views of the corner entrance of the building will be obscured from the south side of the lower Fifth Street/Grand Avenue intersection. Noise levels on the north side of Fifth Street between Hope and Grand are projected to increase approximately 7 dBA with implementation of the People Mover (see Section 5-218.3 Tables 5-21 F,G,H). However,

FIGURE 6-52G Edison Building Facade



impacts on the Edison Building are not considered significant because of the distance of the building from the guideway and the attenuation factors for an air-conditioned building. Interior noise levels in the building will only be minimally affected.

- Alternatives that would Avoid Adverse Impacts

The no project and other alternatives are discussed in Chapter 3. Specific alternatives that would avoid Fifth Street, in the vicinity of the Edison Building include corridor alternatives B and C. The reasons for rejecting these alternatives are described in Section 3-430. Route refinement alternatives that would similarly avoid the Edison Building include A, B, and E (see Sections 3-440 and 6-230). The recommended route alignment was selected over these alternatives because of the superior joint development opportunities, particularly the opportunity to integrate the Library Station with the new Wells Fargo Building on the corner of Fifth and Flower Streets. It also provides transit service to the Los Angeles Central Library across the street, which is a National Register Property.

- Alternatives that would Mitigate Adverse Impacts

Placing the guideway either in the center or the south side of Fifth Street would lessen the impacts on the Edison Building. However, both of these options carry with them potentially severe impacts as well. A center of Fifth Street alignment would require a median. This would reduce traffic capacity on a major artery that is currently carrying 20,000 vehicles per day. This section of Fifth Street is also an important feeder to the freeway network. Placing the guideway on the south side of Fifth Street would avoid the traffic impacts, but it would at the same time produce a visual obstruction in front of the Central Library, which is a National Register Property. It would further possibly produce adverse noise impacts, as the library is not air-conditioned, necessitating open windows.

## 6-528 Fifth Street Retaining Wall

### ● Description

The Fifth Street retaining wall is a concrete wall running from the corner of Fifth and Grand to the west side of the end of Hope Street. The wall is parallel to Fifth Street on the north side of the street. It varies in height from approximately four feet at the east end to approximately twenty-five feet at the west end. At the foot of Hope Street there is an arcaded double stairway. The detailing of the majority of the wall consists of flat pilasters attached to the wall surface; the scroll on top of the pilaster is very similar to those on the Los Angeles Central Library across the street.

The wall was designed by the City of Los Angeles Bureau of Public Works, with one bay serving the Edison Building designed by the architects for that building, Allison & Allison. There is evidence that Carleton Winslow, one of the architects for the Library, prepared some sketches for the wall although he is not credited on the as-built drawings dated 1929.

### ● Current Status

The wall is deteriorating and it is becoming increasingly difficult to keep pace in removing graffiti on the exterior and in the staircases. It is ill-lighted and has become a night-time refuge for derelicts.

### ● Probable Effects of the Proposed Project

With construction of the DPM, a single guideway would be built approximately 20 feet in front of the wall at a height of 28 feet to the top of the guideway. Because the wall changes height from west to east and the guideway stays at relatively the same height, the guideway would partially obstruct the view of the wall at the west end. (Figure 6-52I) The Library Station of the DPM will be on

the mezzanine level of the new Wells Fargo Building, directly adjacent to the west end of the wall. The staircases in the wall will be integrated with the station and passengers will be able to use the stairs if they so desire. Integrating the wall with the station will not require changing or destroying the wall in any way; an opening will be made in the barrier on the west side of Hope Street to allow access to the sidewalk adjacent to the top of the wall.

If the DPM is built and the staircase is thus used for access to the station, the wall and the staircase will have to be maintained in better condition than they are today, repairs will have to be made, and lighting and security improved.

### ● Alternatives that would Avoid Adverse Impacts

Alternatives that would avoid adverse impacts are the same as those for the Edison Building, Section 6-527.

### ● Alternatives that would Mitigate Adverse Impacts

Alternatives that would mitigate adverse impacts are the same as those for the Edison Building, Section 6-527.

FIGURE 6-52H Fifth Street Retaining Wall from S.E. Corner of Fifth and Flower Streets, Los Angeles



FIGURE 6-52I

DPM GUIDEWAY ALONG 5TH STREET



SUBJECT TO CHANGE IN FINAL DESIGN

6-529 St. Paul's Cathedral● Description

St. Paul's Cathedral is the product of four prominent architects of the 1920's: R. Coate, R. Johnson, G.B. Kaufman, and C. Winslow. Built in 1923, it is an interesting combination of Gothic and Spanish Colonial architecture. Major architectural features include shallow buttresses along longitudinal sides, an arcade connecting the chapel and the cathedral, a central compound arched entrance with a distinct motif imparted to each archivolt, small medieval and pointed windows and a stained glass window over the main entrance. It received an award from the American Institute of Architects in 1925 for "Merit of Design and execution of Work in Architecture and Fine Arts". Interior details include rather extensive use of Batchelder tile. Exterior landscaping includes garden patios and a forecourt area that is used for lunches by office workers in surrounding high-rises.

● Current Status

St. Paul's has recently been sold to a group of businessmen who plan to demolish the cathedral and erect a highrise office on the site. A demolition permit was applied for in September, 1979, and blocked by the Cultural Heritage Board. However, on November 13, 1979, the Cultural Heritage Board vacated the block because no alternative buyer for the property was available. The Los Angeles Conservancy had been consulted and concurred in the vacation of the block. Demolition has been scheduled for March, 1980.

● Probable Effects of the Proposed Project

The DPM should have no effect on St. Paul's because of the scheduled demolition of the Cathedral. If the Cathedral is not demolished, the DPM would have the effects described below.

The DPM guideway will be constructed in a median in the middle of Figueroa Street, approximately 50 feet from the facade of St. Paul's. At a height of about 28 feet above street level, the guideway will create a new visual element in the immediate surroundings. In assessing the potential impacts on St. Paul's, height relationships and pedestrian viewing angles were carefully analyzed. Because the guideway is so high, there would be a clear view of the facade from either side of Figueroa with the guideway in place. From some vantage points on the east side of Figueroa Street, pedestrian views of St. Paul's would be interrupted by the guideway column supports.

Noise analysis (Section 5-218.3, Point 49, Tables 5-21 F,G, and H) shows that existing  $L_{eq}$  noise levels for the P.M. peak, noon, and nighttime, will increase by one or two dBA by 1990, without the DPM. With the DPM in operation, an additional two dBA is expected, for P.M. peak, noon, and nighttime. This increase is considered imperceptible. The attenuation characteristics of the building are such that interior noise levels would be on the order of 45 dBA, or less, and thus the expected impact is insignificant.

The DPM would improve the accessibility of St. Paul's, particularly on Sundays for downtown residents who are beyond walking distance of the Cathedral. Elderly residents of downtown, for example those in the elderly housing development on Hill Street, could find this an advantage in attending religious services.

● Alternatives that would Avoid Adverse Impacts

The no project and corridor alternatives are discussed in Chapter 3. Two options were examined during the route refinement analysis (also discussed in Chapter 3) which would avoid passing in front of St. Paul's. The first, Option F, would have gone behind both St. Paul's and the Hilton Hotel, along Fremont Street. The second, Option B would have gone up

Seventh Street Station would have to be relocated more than 100 feet to the south of its present location. This new station location, which would be similar to the Ninth Street Station, would necessitate the acquisition of an air space easement or real property.

Because Fire Station No. 28 does not have a sufficient setback, the sidewalk is not wide enough to allow column placement between the curb and the building. Therefore, either the Fire Station would have to be demolished, or one lane of traffic would have to be used.

There would be the loss of a right turn pocket on the east side of Figueroa, due to the placement of corner columns, and either the sidewalk width would be reduced below 8 feet, or the street width would have to be reduced.

The estimated additional cost of the east side of Figueroa alternative, compared with its present alignment, and exclusive of right-of-way acquisition, would be approximately \$3,340,000.

#### 6-530 Fire Station No. 28

##### ● Description

This fire-proof structure is a three-story reinforced concrete building with a surface layer of brick on the street facade. Major architectural features include twin parapet towers with inset arches, capped by flagpoles. The windows are contained within two-story arched bays. The building has a cornice above the first and third floors. The two central doorways are recessed and framed by brackets. This structure, designed by the architectural firm of Krempel and Erkes, is an interesting and unusual design in the central city. Surrounded by much newer buildings, it is one of the first reinforced concrete fire stations in the area.

##### ● Current Status

The fire station is currently vacant, and has been so for several years, ever since the Fire Department vacated the premises. It has been offered for sale by the City of Los Angeles on several occasions, and is currently being offered for sale again. It was nominated to the National Register of Historic Places in October, 1979 and entered on the Register on November 16, 1979.

##### ● Probable Effects of the Proposed Project

The DPM guideway will be constructed in a median in the middle of Figueroa Street, approximately 40 feet from the fire station facade. At a height of between 21 feet (bottom of guideway) and 28 feet (top of guideway), the guideway will create a new element, thus altering the visual setting of the building. In assessing the potential visual impact on the fire station, both guideway height and pedestrian viewing angles were analyzed. For an observer standing across the street, the guideway would obstruct approximately the top 8 feet of the building facade. Thus, the first floor bays would be unobstructed. From the same vantage points on the west side of Figueroa Street, pedestrian views of the fire station would be

FIGURE 6-53A  
FIRE STATION #28 FROM WEST SIDE OF FIGUEROA



interrupted by the guideway column supports.

Noise analysis (Section 5-218.3, Point 49, Tables 5-21 F,G, and H) shows that existing  $L_{eq}$  noise levels for the PM peak, noon, and nighttime, will increase by one or two dBA by 1990, without the DPM. With the DPM in operation, an additional two dBA is expected, for PM peak, noon, and nighttime. This increase is considered imperceptible.

An additional passby noise analysis was conducted for the fire station, which consisted of calculating the expected DPM passby noise reaching the building facade. The analysis showed that the DPM passby noise level reaching the facade of the fire station would be approximately 70 dBA. This is equivalent to the existing  $L_{eq}$  noise level currently being experienced during the P.M. peak hour, at that site.

- Alternatives that would Avoid Adverse Impacts

Alternatives that would avoid adverse impacts on Fire Station No. 28 are the same as those for St. Paul's Cathedral. See Section 6-529 for a discussion of these alternatives.

- Alternatives that would Mitigate Adverse Impacts

The alternative that would mitigate adverse impacts on Fire Station No. 28 is to place the guideway on the west side of Figueroa Street. As discussed in Section 6-529, this alternative was rejected because of the effect on St. Paul's. The cathedral is across the street, approximately one-half block to the north. An alternative which would have placed the guideway on the east side of Figueroa was considered, but rejected due to engineering difficulties and the effect on the fire station. Thus, the location of the guideway in the center of the street constitutes a mitigation measure for both St. Paul's and Fire Station No. 28.

6-531 Barker Brothers● Description

The family firm of Barker Brothers has been a commercial enterprise in Los Angeles since the 1880's. The present structure was built in 1925 and was one of the largest furniture stores in the country at that time. Designed by Curlett and Beelman in a style reminiscent of Italian Renaissance, this eleven to thirteen story structure is virtually unaltered on the exterior. Interior alterations have been significant. Major architectural features on the exterior include a rusticated top floor and lower stories, a band of arched windows at the second story, and four cornices at various elevations on the building. Structural details include a large central archway over the main entrance on Seventh Street, a repeating ram's head motif and decorative metal grillwork around the showcase windows on the ground floor.

● Current Status

The first four stories are occupied by Barker Brothers furniture store and the remaining stories have been modified for office tenants.

● Probable Effects of the Project

The proposed project includes a station at Seventh and Figueroa Streets, in the center of Figueroa Street. The station and guideway would be placed just south of Seventh Street, opposite the western facade of Barker Brothers. There is an entrance to the store on Figueroa Street. Views of the western facade of Barker Brothers would be obscured by the station from points on the west side of Figueroa. This is not the significant facade of the building. The most important facade is the Seventh Street side where the building stretches from Figueroa to Flower Streets and where the main arched entrance is located. Views of the Seventh Street facade would be affected by the

FIGURE 6-53B

Barker Brothers from Mid-Block North Side of 7TH STREET

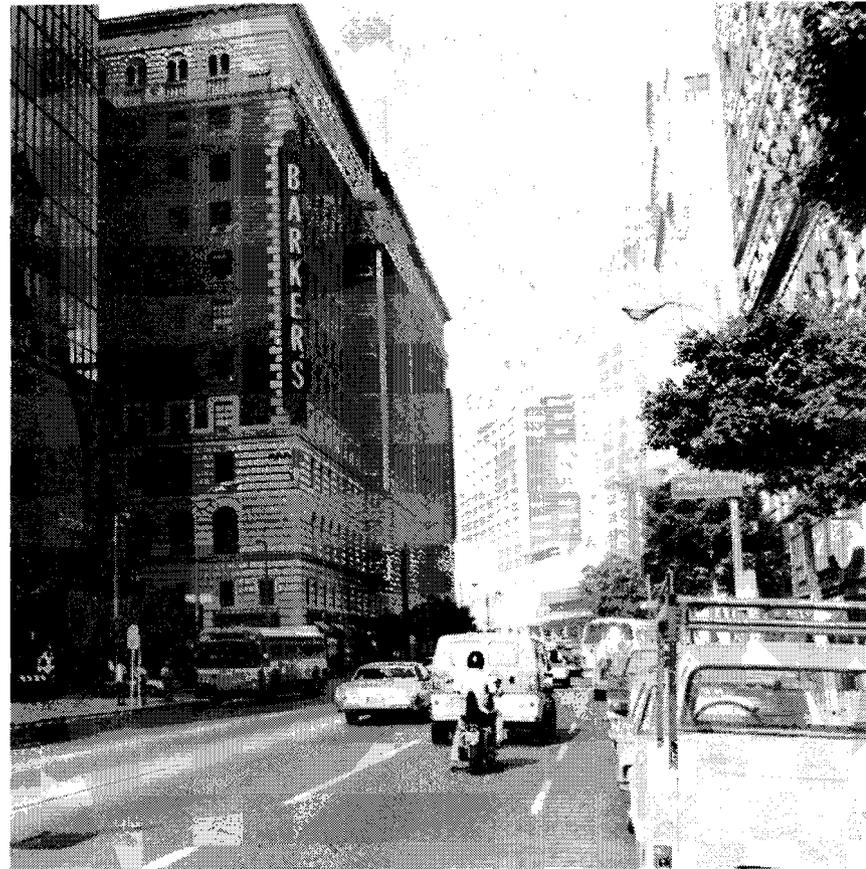


FIGURE 6-53C  
Barker Brothers from West Side of Figueroa



DPM, to an observer standing on the northwest corner of 7th and Figueroa.

$L_{eq}$  noise levels with and without the DPM would be the same in 1990 at various times of the day (see Tables 5-21 F,G,H). Consequently, no significant noise impacts are expected on Barker Brothers when the DPM is in operation.

Barker Brothers is one of the retail outlets that is expected to benefit from increased sales because of the improved accessibility for downtown workers and residents made possible by the DPM (see Section 5-221.4).

- Alternatives that would Avoid Adverse Impacts

The no-project and other route alternatives are discussed in Chapter 3. All of the route alternatives studied in this phase of the analysis would affect either the east or west facades of Barker Brothers. (A Flower Street alternative would have had the same effects on the east facade as a Figueroa alternative on the west facade).

All of the alternatives have included a station at Seventh Street because it is now and is expected to be an important employment and sales activity area. A Seventh Street station would also allow connections between the DPM station and the proposed rapid transit station, also planned for the Seventh Street/Flower Street area.

- Alternatives that would Mitigate Adverse Impacts

Shifting the line and the station to the west side of the street would mitigate the visual impacts, but would create others. There is not sufficient room in the projected development across the street to build the station within the development. The station would project over the street in any case so that shifting the line would not change the visual impacts substantially. If the line stayed on the west side of the street at that point, the transition to

the center of the street would occur at the intersection of Seventh and Figueroa. Such a transition would require the use of bents that would be visually unappealing and that could require columns on the sidewalk adjacent to the northwest corner of Barker Brothers. The transition from the west side of Figueroa to the center of the street is now planned to occur south of the proposed Seventh Street Station.

#### 6-532 Brownstein-Louis Building

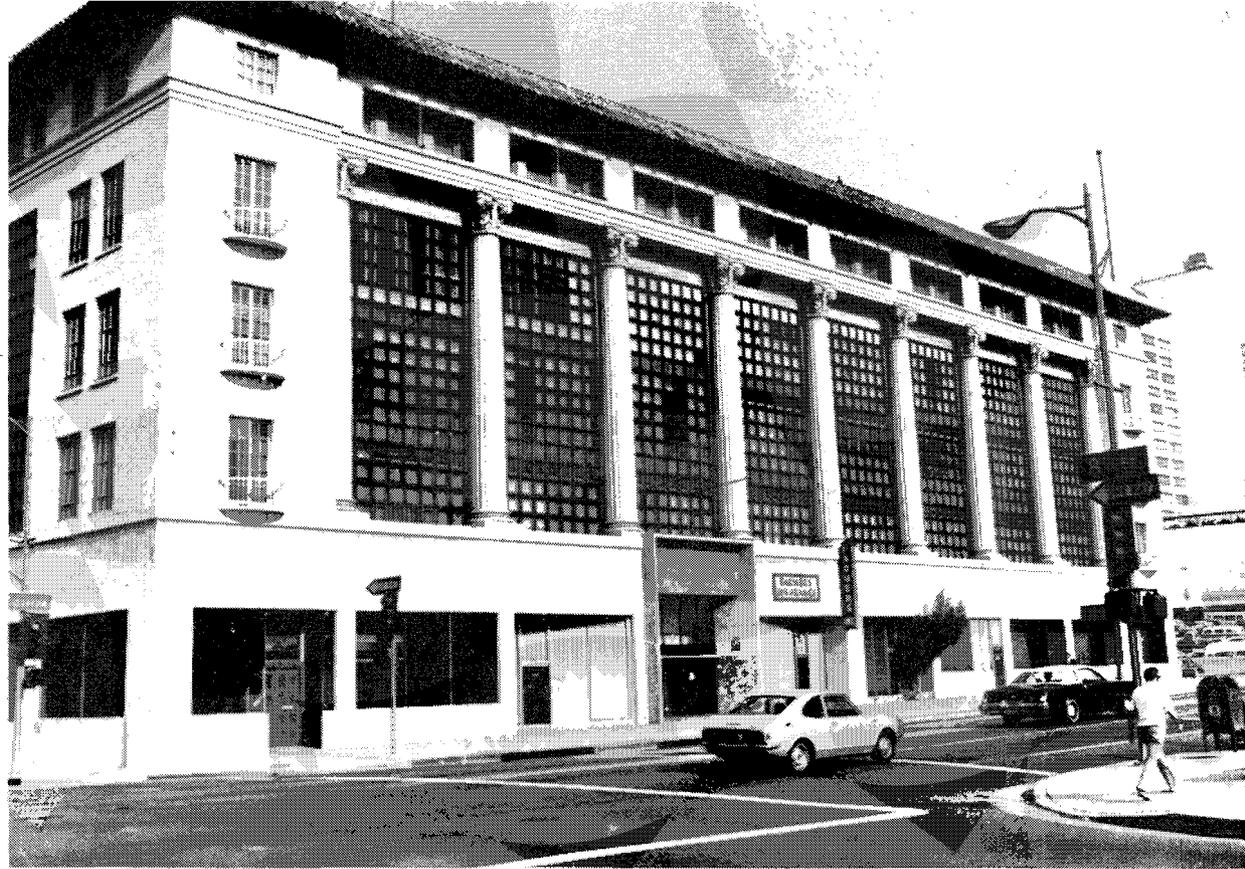
- Description

Originally proposed in 1919, this manufacturing building was designed as an ideal industrial community with employee kitchens, hospital, recreation area and library. Designed by John Parkinson, the building was opened in 1921 and staffed by a labor force composed largely of women. Major architectural features of the five story H-shaped structure include a giant portico of composite order, engaged columns raised above the first story attic, and a large glass and metal screen between the second and fourth stories on all but the western side of the building. This "screen" provides a maximum amount of interior light, a design feature related to the original industrial use and an early example of a form of curtain wall design. The building is basically neoclassical in style, with some Spanish influences incorporated into it. One detail of particular interest is the capitals above the Figueroa facade which incorporate female figures, a possible comment by the architect on the labor force working inside.

- Current Status

The Figueroa facade has been altered at ground level with the addition of plate glass windows and red marble exterior surface to the main entrance doorway. The building is currently vacant and is scheduled for removal as part of a two-phase office-retail development by Metropolitan Structures, Inc. and Amoco Realty. Completion of the first phase (a new Bullock's, retail mall, and office tower) is scheduled for Spring 1982. The Brownstein site is to be the second phase of the development, and will consist of approximately 500,000 square feet of office space. A demolition permit for the entire block, including the Brownstein Building, was issued on November 15, 1979. Scaffolding has been erected at the Brownstein Building and demolition work is underway.

FIGURE 6-53D Facade of Brownstein Company



- Probable Effects of the Proposed Project

The Brownstein Building, in an action unrelated to the DPM, should be demolished by June, 1980. If the building were still standing at the time this project is implemented, the following effects would occur.

The DPM guideway would be constructed on the west side of Figueroa and two to three columns would be placed in the sidewalk approximately eight to ten feet in front of the building facade. The guideway would be about 50 feet above sidewalk level and would create a new element that would alter the visual setting of the building. The guideway is at this height to maintain an even grade between the Seventh and Ninth Street Stations. Views of the building from both the east and west sides of the street would be obscured by this visual band.

Noise analysis indicates that noise levels with the DPM in operation would increase approximately 2-3 dBA in 1990 at this side, an insignificant increase (see Section 5-218.3).

Because the guideway centerline passes by the building at a distance of approximately 20 feet, an additional noise analysis was conducted. The analysis consisted of calculating the expected DPM passby noise reaching the building facade, and further calculating the resulting attenuated interior noise level. The analysis showed that, with a DPM passby noise level of 68 dBA, and assuming closed windows and air conditioning, expected interior noise levels resulting from the DPM passing by would be approximately 51 dBA, which is less than the typical noise level encountered in a small office, thus producing a negligible impact.

- Alternatives that would Avoid Adverse Impacts

The no-project and other route alternatives are discussed in Chapter 3. The primary alternative that would avoid

the impact in the Brownstein Building is the Flower Street option which was examined during the route refinement analysis. The reasons for selecting the Figueroa alignment over the Flower alignment are discussed in Section 6-529.

- Alternatives that would Mitigate Adverse Impacts

Alternatives that would mitigate the adverse impacts consist of placing the guideway either in the center of the street or on the east side of the street. The alternative of placing the guideway in the center of the street, for the entire length of Figueroa, was examined during preliminary engineering. Because of traffic impacts, the alignment was moved to the west side of the street wherever possible. North of Seventh Street, the alignment is located in the median, partially in response to the impacts on St. Paul's Cathedral. Placing the guideway on the east side of Figueroa would also mitigate the effects on the Brownstein Building, but it would produce impacts on the Friday Morning Club. Furthermore, placement of the guideway on the east side of the street would necessitate a guideway crossing in the vicinity of Eighth Street. To accomplish this, it would be necessary to place a column in the center of the street, which could result in negative traffic impacts.

6-533 Friday Morning Club● Description

Allison and Allison designed this five and seven story structure for the ladies of the Friday Morning Club. Constructed in 1923, the building contains an auditorium, dining room, library, lounge, lecture hall and meeting rooms. The exterior is of cast stone and cement plaster with a tile roof. The style is influenced by Italian Renaissance architecture with fairly austere wall and window surface treatment. Major architectural features include a triple arch entrance supported on columns. The balcony at third story level has an arched cornice. A second story balcony is supported on an unusual arrangement of beam ends supported by columns. The fourth floor has a loggia which repeats the arches of the ground floor and a snowflake pattern balustrade supported on two tiered brackets. Other features include sash windows and a corner tower with a continuous balcony at tower level.

● Current Status

With minor alterations to the exterior, the facade is intact. In 1977 the Society for the Preservation of the Variety Arts (SPVA) bought the structure with the intent of preserving and using the building. The Friday Morning Club retained a lease for their meeting rooms. The SPVA is a non-profit tax-exempt organization whose activities include original and revival theater presentations, lectures, and maintenance of a growing archive of the theater arts.

● Probable Effects of the Project

If the guideway were constructed on the west sidewalk of Figueroa Street, it would have no adverse effect on the Friday Morning Club. If the guideway were constructed in a center median, the following effects would occur.

FIGURE 6-53E  
Friday Morning Club



A guideway in the center of the street would be approximately fifty feet away from the facade of the Friday Morning Club at a height of approximately 30-32 feet above the street. The guideway would create new visual element altering the visual setting of the building. Views of the building from across the street would be partially obscured by the presence of the guideway in the middle of the street.

Noise analysis (Section 5-218.4 Point 37, Tables 5-21FF, GG, and HH) shows that peak, noon, and nighttime  $L_{eq}$  noise levels will increase 2 dBA by 1990 without the DPM. With the DPM in the center of the street an additional 3 dBA is expected for PM peak and nighttime. Noontime  $L_{eq}$  would remain the same with the DPM as without. This increase is considered imperceptible. Because of the auditorium and the library, the Friday Morning Club is considered a noise sensitive land use. (See Section 5-218.4) Interior noise levels could range from 44 dBA - 64 dBA, depending upon the time of day and the number and location of open windows. However, since interior noise levels are directly related to exterior noise levels, the 0-3 dBA increase over present conditions at the exterior is the same increase that would occur on the interior with the DPM in the center of the street. The increase is considered imperceptible and should have minimal adverse impact.

An additional passby noise analysis was conducted for the Friday Morning Club, which consisted of calculating the expected DPM passby noise reaching the building facade. The analysis showed that the DPM passby noise level at the facade of the building would be approximately 68 dBA.

Access to the Friday Morning Club would improve with the DPM in place. The proposed Ninth Street Station would be half a block away and would help reduce some of the parking problems currently being experienced.

#### • Alternatives that Would Avoid Adverse Impacts

The No Project alternative is discussed in Chapter 3; the alternative of going up Flower Street (Option B) was also studied in the route refinement phase of preliminary engineering. The reasons for selecting the Figueroa rather than the Flower Street alternative are discussed in Section 6-529.

Placing the guideway on the west side of the street would be another way of avoiding impacts on the Friday Morning Club. The possibility of placing the guideway in the middle of the street arose when the Convention Center Authority pointed out that placing the DPM station on their property would limit the development options for the parcels in front of the Convention Center. If the Convention Center Station were shifted to the center of the street an anomalous engineering situation would be created. The guideway could be in the center of the street at Convention Center Station and in the center of the street at Seventh Street, but the guideway would have to make a series of S curves to and from the west side of the street between the two stations. It was because of this anomaly that consideration was given to placing the guideway in the center of the street for the entire length of Figueroa. Placing the guideway in the center of the street would have the advantage of eliminating the S curves, reducing station-to-station travel time, and reducing the visual impacts of an alignment that could curve back and forth into the street. A center of the street alignment would have the advantage of moving the guideway away from the front of the Figueroa Hotel and the Pantry restaurant. Although neither of these buildings are National Register eligible historic sites, they are both downtown landmarks of some renown. Although this alignment would have an adverse effect on the Friday Morning Club, the adverse effects are minimal. The advantages to the Club of having the area around the Convention Center revitalized with hotels, office, commercial development or restaurants may offset the anticipated 0-3 dBA increase in the noise level and

the change in the visual environment created by the DPM structure in the middle of the street.

● Alternatives that Would Minimize Adverse Impacts

The only alternative that would minimize adverse impacts, placing the guideway across the street, would also have the effect of avoiding adverse impacts altogether. The disadvantages of an alignment across the street are discussed in the previous section.

6-540 Consultation With the State Historic Preservation Office

An initial consultation with the State Historic Preservation Office, which included a site inspection, was conducted in June, 1978. In a letter of November, 1978, an official request was made for the State Historic Preservation Officer's opinion of effect on the properties identified in this chapter. That opinion has been received and is shown in Figure 6-54A.

Representatives of the State Historic Preservation Office, the Advisory Council on Historic Preservation, the Urban Mass Transportation Administration, and the Community Re-development Agency met in Los Angeles on August 30, 1979, for a site visit and further consultation. Information responding to the points raised in the June, 1979, letter from the SHPO was presented at that meeting. Further clarification was sent to the SHPO in a letter dated October 30, 1979. A proposal for inclusion in a Memorandum of Agreement was circulated among all the signatory parties and the approved version of that document is presented in Figure 6-54B.

FIGURE 6-54A

SHPO LETTER ON THE EFFECTS OF THE DPM ON HISTORIC AND CULTURAL PROPERTIES

STATE OF CALIFORNIA—THE RESOURCES AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF PARKS AND RECREATION

P.O. BOX 2390  
SACRAMENTO 95811  
(916) 445-8006



June 19, 1979

Mr. Edward Fleischman, Chief  
Planning and Analysis Division  
Department of Transportation, 9305  
Urban Mass Transportation Administration  
400 7th Street, S.W.  
Washington, D.C. 20590

Dear Mr. Fleischman:

RE: Los Angeles, California Downtown People Mover

Pursuant to 36 CFR 800.4(b) of the Advisory Council Procedures, I am providing you with my determination of this undertaking's effects on properties included in or eligible for inclusion in the National Register of Historic Places. Definitive effect comments were not always possible due to the limitations of data provided. I have asked for additional documentation in such cases and will reserve final judgment pending further review.

A. Structures

1. Union Station
  - a) Adverse visual effects on Union Station will occur through alteration of its setting.
  - b) Adverse atmospheric impacts may be possible due to the construction of a major parking facility and necessary appurtenances. Documentation discounting this possibility or establishing its magnitude should be developed.
  - c) If construction in the area were to limit or inhibit access to the Station, an adverse effect might occur. This possibility should also be studied.
2. Los Angeles City Hall
  - a) Adverse visual effects will occur due to an alteration of the property's setting and the guideway's bisection of a viewshed.
3. El Pueblo State Historic Park
  - a) I will reserve comment until all possible effects on this National Register district perceived by its owners and operators have been obtained and forwarded to me. Their views may well be important in helping me to reach an accurate decision.

b7c [unclear] 6/19/79

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4. Los Angeles Times Building
  - a) There appears to be no adverse visual impact.
  - b) There appears to be no significant, adverse audible impact.
5. Fire Station No. 3
  - a) The undertaking will have an adverse visual effect on this property.
  - b) Although a proposal to demolish this structure has been made, demolition is not yet certain. For purposes of discussion, I would ask you to consider the building as a candidate for adaptive reuse. The close proximity of the People Mover might act as a disincentive to prospective purchasers, developers or public agencies concerned about the visual and, depending on the reuse proposed, the audible effects of the system on this building. I believe the matter should be studied to determine if the undertaking could foreclose any viable option capable of preventing neglect or deterioration of Fire Station No. 3.
  - c) Has documentation been compiled which discounts adverse effects due to construction or DPM induced vibrations?
6. Home Telephone Building
  - a) It appears that this building will not experience adverse visual or significant audible effects.
7. Grand Central Market
  - a) It appears that this building will not be subject to adverse visual effects.
  - b) Construction activity could disrupt normal customer access to the Market. If this were left to occur unmitigated, an adverse effect might result. The matter should be studied.
8. Myrick and Markham Hotels
  - a) It appears that these buildings will not experience adverse visual effects.
  - b) FM Peak and Noon Leq measurements yielded 76 and 70 db respectively. The 1990 DPM figures were 77 and 71 db. Estimated attenuation ranged from 10-25 db depending on whether windows were open or closed. Abated figures ranged from 49-64 and 50-65. UMTA considers this to be insignificant. I am reluctant to discuss the possibility of no adverse audible effects until current interior ambient noise levels are measured and added to attenuated measurements to yield a total level. Although the result may not be significantly higher (+3db) than currently recorded attenuated levels, the matter should not be left to conjecture. The model further appears to assume that VMT will be reduced by 2.6%. What level of db attenuation does this represent? The model also appears to assume a bus traffic reduction. What assurances are there that this will in fact happen? Do the DPM figures reflect the db contribution of the particular train technology which will be used? Would

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June 19, 1979

- other technologies being considered yield greater or lesser sound pressure levels? These comments and questions also apply to the passby peak noise levels provided.
- c) Item 9-f applies.
  9. Subway Terminal Building
    - a) This building will be subjected to an adverse visual impact.
    - b) If this building is currently in use, the concerns I expressed in 1-c apply.
    - c) If the building is not currently in use, the concerns expressed in 5-b apply.
    - d) The concerns set forth in 5-c apply here.
    - e) The comments and question which appear in 8-b also apply here. Db figures differ, of course.
    - f) If the building is currently in use, have the owners and occupants stated on record after a briefing, that their interests would not be adversely affected by the DPM to the extent that they might relocate and possibly contribute to the decline of this building?
  10. Federal Title Building
    - a) All comments given in Item 9 apply.
  11. Title Guarantee Building
    - a) All comments given in Item 9 apply.
  12. Pershing Square Building
    - a) There will apparently be no adverse visual effects on this building.
    - b) Am I correct in assuming that with respect to construction of a station there will be a 4f in Pershing Square?
  13. Biltmore Hotel
    - a) There do not appear to be adverse visual effects on this building.
    - b) The subject matter of 8-b and 9-f applies here.
  14. Edison Building
    - a) This building will experience adverse visual effects.
    - b) Comments and questions appearing in 1-c, 5-b, 5-c, 8-b and 9-f apply.
  15. Fifth Street Retaining Wall
    - a) This structure will be adversely affected.
  16. Los Angeles Public Library
    - a) There will apparently be no adverse visual effects on the library.
    - b) Since the interior spl of libraries is generally around 35 db, I am reluctant to concur with your determination of no significant audible effect until additional interior measurements show that the +3db exterior spl contributed by the DPM does not result in a 3db or greater rise inside the Library.

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Page Four  
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17. California Club
  - a) I concur with your determination of no adverse visual effect.
18. Saint Paul's Church
  - a) Visually, Saint Paul's will be adversely affected.
  - b) Items 1-c, 5-c, 8-b, and 9-f, with congregation substituted, apply.
19. Fire Station No. 28
  - a) This building will be subject to an adverse visual effect.
  - b) If still in use, Items 1-c and 9-f, with appropriate changes reflecting a public service function, would apply. If not in use, Item 5-b would apply. Item 5-c would apply in either case.
20. Barker Brothers
  - a) Barker Brothers will be adversely affected visually.
  - b) If currently in use, Item 1-c, 9-f and 8-b apply. If not in use, 5-b applies. Item 5-c applies in either case.
21. Louis Brownstein Building
  - a) Equivalent to Item 20.
22. Friday Morning Club
  - a) There will apparently be no adverse visual effect.
  - b) If in use, Items 1-c, 8-b and 9-f apply. Item 5-c also applies. Item 5-b applies if not in use.

The Agency has not yet addressed the possible impacts to any significant street furniture located along the preferred corridor. I would hope proper documentation listing such furniture could soon be assembled and evaluated as part of the 106 process.

The DPM may carry with it a potential for affecting the value of National Register and National Register eligible properties, particularly those in private ownership or any in public ownership awaiting sale or transfer. I can only speculate on whether such effects would be beneficial or adverse and how significant they might be. As a prospective seller or purchaser of such property, the presence of the DPM in close proximity would be a factor in my fiscal and economic deliberations. It might or might not be the determinative element in any decision. Has the Agency dealt with such considerations in its exploration of the DPM's effects on historic properties?

#### 5. Archeology

I firmly believe that any discussion of National Register eligibility or potential effects on archeological values is unwarranted at this time. The data compiled so far simply do not permit it. Project design, including the location of guideway supports, has not yet reached the level of detail needed in defining specific impact areas or the nature of impacts. An inadequate level of detail also precludes a really useful discussion of the archeological values themselves.

Edward Fleischman  
Page Five  
June 19, 1979

The work done to date does, however, permit some preliminary conclusions and provides some basis for direction. It appears that several areas of potential archeological sensitivity have been defined. They are:

1. The area east of the Union Station tracks.
2. The frontage area defined by Lyon to the east; the freeway to the south; the Union Station tracks to the north; and Los Angeles Street to the west.
3. The area bounded by Temple and First Street on the east side of Los Angeles Street.
4. The entire corridor from Los Angeles to Hill Street on the north side of First Street.
5. The area fronting the west side of Hill Street from Second to Fifth.

Further documentary research is warranted for these areas to expand and refine the information already developed. This should provide the basis for a meaningful and cost-effective testing program in those potentially significant areas where ground disturbance is likely to occur. Secondly, further work is needed as part of an attempt to fill gaps in our data base. Without it, confident predictions and evaluations would be difficult. Thirdly, an archeological consultant and monitor should be retained for all areas provisionally deemed non-sensitive. Our knowledge of prehistoric cultural remains in the central Los Angeles area is quite unreliable and so chance discoveries can definitely not be discounted. Finally, it would be appropriate for a professional archeologist to be in attendance at all contemplated test borings.

I suggest that you seriously consider seeking the assistance of Interagency Archeological Services, Department of the Interior, San Francisco, in planning your approaches to further archeological studies. The extent of their involvement, should you wish to engage them would be a matter of mutual agreement. I have no doubt they can provide you with an excellent array of services. Contact either Marley Brown or Garland Gordon.

If you have any questions regarding the topics discussed in this letter, please contact Hans Kreutzberg of my staff. I look forward to your continuing cooperation in this matter.

Sincerely yours,  
Original Signed by  
Dr. Knox Mellon

Dr. Knox Mellon  
State Historic Preservation Officer  
Office of Historic Preservation

HK:pbp

Edward Fleischman  
Page Six  
June 19, 1979

FIGURE 6-54B

cc: Advisory Council on Historic Preservation  
P.O. Box 25085  
Denver, CO 80225

Daniel Townsend, Director  
Circulation and Distribution Program  
Community Redevelopment Agency  
City of Los Angeles  
727 West 7th Street, Suite 400  
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Alan Steiner  
Project Management Division  
Urban Mass Transportation Administration  
Region IX  
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Interagency Archeological Services  
Heritage Conservation and Recreation Service  
Box 36062  
San Francisco, CA 94102

**Advisory  
Council On  
Historic  
Preservation**

1522 K Street NW.  
Washington D.C.  
20005

MEMORANDUM OF AGREEMENT

WHEREAS, the Urban Mass Transportation Administration (UMTA) proposes to assist the City of Los Angeles, California, with the construction of the Los Angeles Downtown People Mover Project; and,

WHEREAS, UMTA, in consultation with the California State Historic Preservation Officer (SHPO), has determined that this undertaking as proposed would have an adverse effect upon Union Station and other properties included in or eligible for the National Register of Historic Places; and,

WHEREAS, pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. Sec. 470f, as amended, 90 Stat. 1320) Section 800.4(d) of the regulations of the Advisory Council on Historic Preservation (Council), "Protection of Historic and Cultural Properties" (36 CFR Part 800), UMTA has requested the comments of the Council; and,

WHEREAS, pursuant to Section 800.6 of the Council's regulations, representatives of the Council, UMTA, the California SHPO, and the Mayor, City of Los Angeles have consulted and reviewed the undertaking to consider feasible and prudent alternatives to avoid or satisfactorily mitigate the adverse effect;

NOW, THEREFORE, it is mutually agreed that the undertaking will be implemented in accordance with the attached proposal from Edward R. Fleischman, Acting Director, Office of Program Analysis, UMTA to satisfactorily mitigate or minimize adverse effects on the above-mentioned properties.

*John M. Fowler*

(date) *5/5/80*

Executive Director  
Advisory Council on Historic Preservation

*Richard W. Jantzen*

(date) *5-20-80*

Chairman  
Advisory Council on Historic Preservation

PROPOSAL FOR INCLUSION IN A  
MEMORANDUM OF AGREEMENT

The City of Los Angeles (the City) proposes to construct, with assistance from the Urban Mass Transportation Administration (UMTA), a Downtown People Mover transit system in Los Angeles. UMTA will ensure that in the implementation of this project the following stipulations will be met:

1. The City will prepare a recordation of the historic properties adversely affected by the project according to the standards of the National Architectural and Engineering Record (NAER) of the Heritage Conservation and Recreation Service. This recordation will be consistent with the goal of documenting the current appearance of buildings or properties or those elements of buildings or properties that will be adversely affected by the proposed project. In those instances where the project does not involve the physical alteration of an historic property and the adverse effect on buildings, properties or their settings will be primarily visual, the recordation will be confined to a photographic survey with appropriate documentation as determined by NAER. The City will make such a photographic record with appropriate documentation as determined by NAER of the following eleven (11) properties:

City Hall, 200 North Spring Street  
(affected viewshed only)

Subway Terminal Building, 415-417 South Hill Street

Federal Title Building, 437 South Hill Street

Title Guarantee Building, 401 West Fifth Street

Edison Building, 601 West Fifth Street

Fifth Street Retaining Wall, Fifth Street across  
from Los Angeles Central Library

St. Paul's Cathedral, 615 South Figueroa Street

Fire Station No. 28, 644 South Figueroa Street

Barker Brothers Building, 800 West Seventh Street

Brownstein-Louis Building, 751 South Figueroa Street

Union Station, 300 North Alameda Street

In the instance where the project will require the physical alteration of the property, i.e., Union Station (800 North Alameda Street), the recordation and documentation will meet the appropriate standards of the NAER and may extend beyond the photographic survey specified above.

The location of the DPM guideway on Figueroa Street south of Seventh Street may be changed from the west side of the street to the center of the street. A guideway alignment in the center of the street would have an adverse visual impact on the Friday Morning Club, 940 South Figueroa Street. If the center of Figueroa variation is adopted, recordation of the Friday Morning Club will be done in the same manner as with the aforementioned properties.

Documentation on each adversely affected property will be prepared in accordance with NAER standards and submitted to NAER by November 1, 1980. The City will prepare an RFP for the photographic survey in consultation with the SHPO and release the RFP by July 1, 1980. If the NAER has not commented by sixty (60) days after receipt of the submission, UMTA and the City may assume that the submission is acceptable.

2. With respect to design, configuration, color and material of the guideway and support columns, the City will use techniques such as light-colored materials, open stations, transparent elevator shafts, and other optical devices to reduce any adverse visual impact of the DPM. With respect to placement of support columns, the objective will be to locate columns so that they do not interfere with the frontal view of the historic buildings listed in Item 1. An effort will be made to place support columns so that these historic buildings are located in mid-span between columns. This will be done consistent with engineering requirements and the overall visual appearance of the DPM system.

The City will obtain the comments of the State Historic Preservation Officer (SHPO) regarding the architectural elements of the system. The SHPO will be consulted at the earliest possible time in the design process when the general architectural criteria for the system are being developed. The SHPO will provide input to the development of the general architectural criteria as they relate to historic properties. This consultation will occur prior to the first scheduled meeting in the City's design review process. The SHPO will also be requested to comment during regularly scheduled architectural design reviews of DPM fixed facilities. The SHPO's comments will focus on questions of design, shape and finishes of system elements as they relate to historic properties. The SHPO will receive timely notice of the design review meetings, will receive preparatory materials, and will be given a level of documentation sufficient to permit adequate review and comment. The SHPO will provide such comment within fifteen (15) days of each design review meeting, and will have its comments recorded in the action memoranda prepared to document the decision-making process for design considerations. The SHPO reserves the right to request additional meetings with project staff if it becomes necessary in the opinion of the SHPO to do so.

Such review and comment pursuant to Stipulation 2 will allow the SHPO and UMTA to determine whether there are design alternatives that would avoid or satisfactorily mitigate adverse effects of this project on historic properties, or if not, whether adverse effects can be accepted. If the City's preferred design alternative is not mutually acceptable, the City and UMTA will request the review of the Advisory Council on Historic Preservation (ACHP). For this purpose, the ACHP will be afforded thirty (30) days from the date of receipt of adequate documentation.

3. Specifications for DPM vehicles have been developed to limit the operating noise of the system to prescribed levels. The City and UMTA will insure that the DPM system is constructed in conformance with these vehicle specifications.
4. The City will undertake to prepare and locate prominently in the intercept facilities an interpretive historic display consisting of an architectural/historical and archaeological (if appropriate) narrative with professionally prepared visual aids describing the historic values along the DPM route. The display will be prepared by the City with the assistance of appropriate authorities. Interested local historic preservation organizations authorities, and SHPO will be consulted during the preparation of the display. Consideration will be given to preparing a brochure to accompany the display. The City will inform SHPO of the decision regarding the brochure by November 1, 1983.
5. The protection of archaeological resources will be accomplished under the following procedures:
  - a. A second phase study, building upon conclusions and recommendations of the first phase Archaeological Resources Survey (June, 1978), will be undertaken with the objective of identifying, as precisely as possible, the location, type, extent, and significance of potential archaeological resources along the route in the areas determined to be archaeologically sensitive. The City consulted with the SHPO in developing the scope of work and the intended research questions to be addressed.
  - b. The City will retain a qualified archaeologist for a third phase study to analyze the core samples taken during final design to determine the presence or absence of archaeological values at proposed column locations. Any such values which are encountered will be described and evaluated.
  - c. Based on the results of the second and third phase studies, and in consultation with the SHPO, the City and UMTA will prepare documentation on potentially eligible sites for a determination of eligibility for the National Register of Historic Places. This documentation will be submitted to the Department of the Interior within thirty (30) days of the completion of the third phase study.
  - d. At those sites determined eligible for the National Register of Historic Places, the City and UMTA will consult with the SHPO in determining the potential effects of the undertaking on the historic properties and in determining whether column locations or construction methods can be reasonably modified so that archaeological resources are avoided.
  - e. If it is mutually agreed that there is no practicable alternative to avoid the archaeological resources the City and UMTA will consult with the SHPO to decide on an acceptable program for data recovery.
  - f. If it is determined necessary by the City, UMTA, and the SHPO, a qualified archaeologist will be retained to monitor excavation and grading work during construction and to evaluate archaeological remains uncovered during construction. If the resources discovered are eligible for the National Register of Historic Places, the City will follow the provisions of the Council's regulations dealing with resources discovered during construction (36 CFR 800.7(a)).

6. Modifications to the DPM Project which could require additional findings of effect under the provisions of 36 CFR 800 shall be submitted to the SHPO by the City and UMTA for consultation.

Edward R. Hirschman      3/21/80  
Urban Mass Transportation      Date  
Administration

Kenneth M. Allen      4/13/80  
California State Historic      Date  
Preservation Officer

Tom Brantley      10/1/80  
City of Los Angeles      Date

6-600 Other Cultural Resources - Archaeological Remains

The proposed DPM alignment runs through some of the oldest portions of Los Angeles. The area from Pershing Square to Union Station has been an area of continuous development and redevelopment of the urban core. The area from Pershing Square to Convention Center was developed much later, primarily in the twentieth century, and thus has significantly less potential for archaeological remains.

Generally, wherever the DPM is close to the street right-of-way, the lower the potential for archaeological remains. However, early grading plans for many of the streets can not be located and it is difficult to determine the extent of previous disturbance because of street grading. Utility lines generally run close to the edge of the streets and the disturbance for their placement has been fairly substantial.

The UCLA Archaeological Survey was queried in April, 1978, and responded in May, 1978, regarding the potential for archaeological remains in the Bunker Hill area. They were furnished with the grading plans for Bunker Hill, prepared in 1969, which show approximately forty feet of excavation at the top of the hill. The potential for archaeological remains in the tunnel section of the DPM through Bunker Hill is considered unlikely.

Old maps and directories were consulted regarding the development of Los Angeles in the 19th and early 20th centuries. This map and literature search identified the possible positions of the Zanja Madre ("mother ditch") at various locations along the route, primarily at Father Serra Park (see Section 6-240), possibly crossing Los Angeles Street in an east-west direction roughly between the current Parker Center and the Federal Building, and crossing First Street in a

north-south direction approximately in front of the Los Angeles City Hall. Recent excavations for the Placita del Dolores at el Pueblo de Los Angeles (just northeast of the Plaza area) have confirmed the presence of the Zanja in that location, and tend to substantiate the likelihood that the Zanja may run through Father Serra Park. There is less documentation for the other locations along First Street and Los Angeles Street, but the possibility must be considered in planning for column locations and excavations. (It should be noted that the Zanja was not just one water distribution line but was a network of lines serving both agricultural and domestic uses in the 19th Century. The Zanja originated at an old mill, whose location has not been firmly pinpointed but which has been suggested as being northeast of the present el Pueblo area. From the origin the water lines spread south and west to serve the developing metropolis. It was abandoned in the late 19th Century for health reasons and replaced with an enclosed water system.)

• Probable Effects of the Project and Planning to Minimize Harm

Placing the DPM above ground limits the area of potential effects on archeological resources to those sites where columns will be placed. The cut and cover tunnel through Bunker Hill is in an area that has been thoroughly disturbed already and where there is little likelihood of archaeological remains. If archaeological remains are found, it might be possible to shift column locations to avoid them or to follow agreed-upon procedures for excavation, salvage or recordation. The map and literature search conducted during preliminary engineering has suggested the possibility of potential resources but the actual presence of those resources has not been confirmed.

Because final column locations and column configurations will not be known until final engineering, effects of the DPM on potential archaeological resources cannot be specified. Areas of greater potential for archaeological remains have been identified in Archaeological Resources Survey, Los Angeles Downtown People Mover Project (Greenwood and Associates, June 1978). Procedures to further identify areas of potential resources and protect those that might be found have been developed in consultation with the SHPO and the Advisory Council on Historic Preservation. An additional map and literature search to pinpoint the location of resources and archaeological monitoring of soil borings for column location studies have been scheduled for early 1980. Additional mitigation procedures for potential archaeological resources are outlined in the Memorandum of Agreement reproduced in Section 6-540.

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7-000 PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

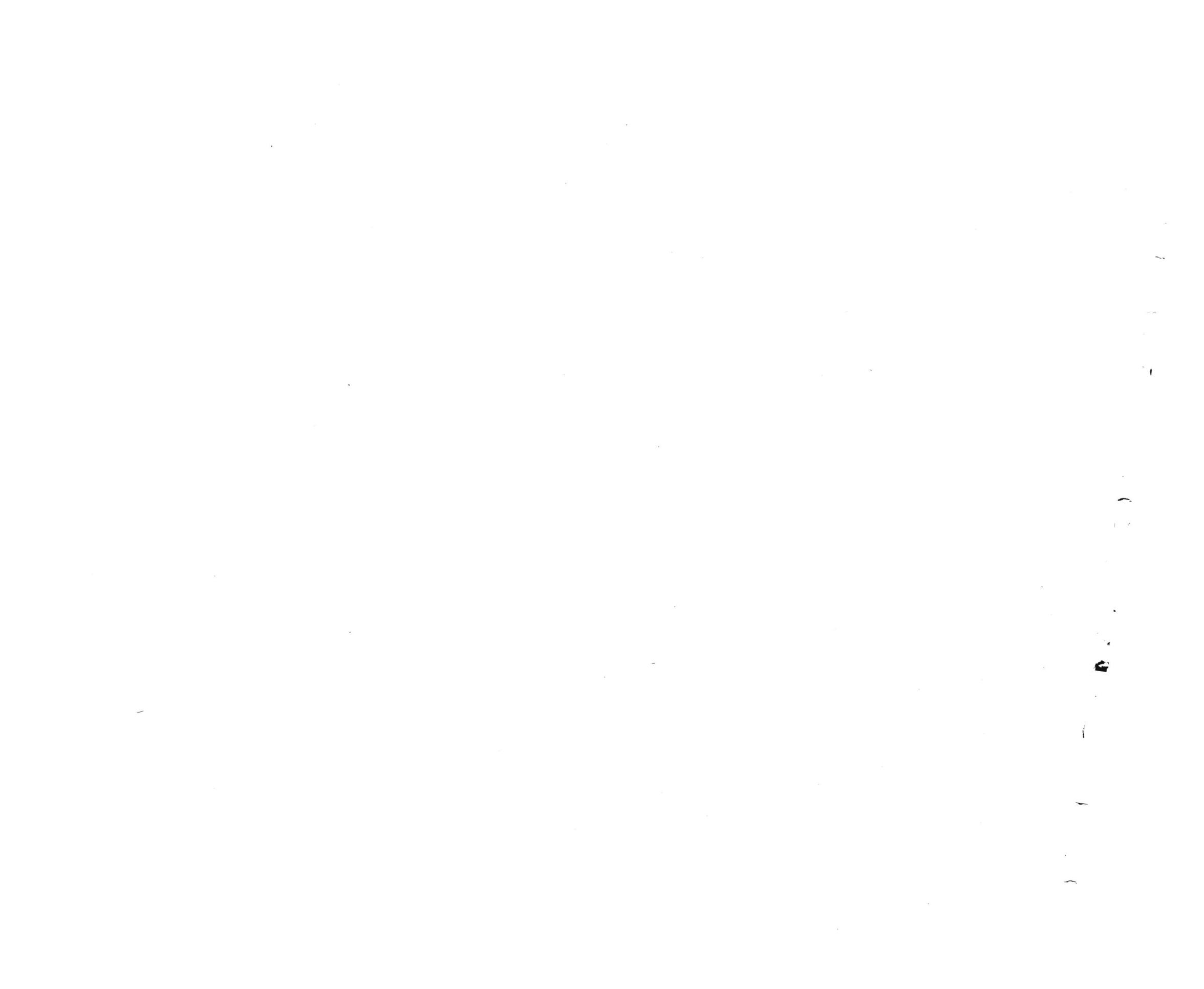
The proposed project would result in some adverse environmental effects which cannot be completely avoided or mitigated. This applies to both the construction and operation phases of the project. It is the purpose of this section to summarize the nature and extent of these effects. A detailed description of individual impacts can be found in the corresponding impact sections of this report. (see Chapter 5)

Most construction impacts will be temporary and limited to specific sites in the downtown area. Construction of the proposed project would result in:

- the displacement of three businesses employing about 20-30 persons.
- estimated annual losses in property tax revenues resulting from business displacement of about \$16,000 (City and County combined).
- temporary increase in noise levels near construction sites.
- reduced sidewalk and street capacity, increased traffic congestion, reduced travel speeds at certain locations.
- presence of unsightly construction equipment, contributing to a general sense of disorder.
- increased risk of traffic accidents.
- reduced accessibility to some residences and businesses along the proposed route, resulting in minor losses in retail sales.
- a minor increase in solid waste from the construction program.
- a minor increase in air pollution from construction vehicles.
- removal of several mature trees, and the pruning or replacement of other trees and shrubs.
- constraints on emergency vehicle access.

DPM operations would also result in some unavoidable adverse environmental impacts, including:

- some view obstructions and other visual incompatibilities due to the placement of the DPM guideway and stations.
- increased traffic congestion in the general vicinity of the intercept parking sites.
- reduced traffic capacity along certain segments of Figueroa Street.
- minor increase in carbon monoxide emissions near the intercept parking facilities.
- a slight increase in the demand for electrical energy.
- potential for limiting emergency access and egress from certain buildings due to placement of the guideway.
- acquisition of small amounts of open space and park land for right-of-way.



8-000 THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The distinction between short and long-term effects of the DPM is largely the distinction between its construction and operation. Short-term effects are primarily confined to the 39-month estimated construction schedule, whereas the effects of a more lasting nature occur as the system becomes operational. Throughout the environmental analysis, operational effects and conditions have been evaluated for the year 1990. This is sufficiently far into the future to assure that the long-term trends have been established.

The long-term effects of system operation will be to encourage implementation of the adopted plans for downtown Los Angeles, including the Central City Community Plan, the Central Business District Redevelopment Plan (particularly the South Park Plan), the Bunker Hill Redevelopment Plan, and the Little Tokyo Redevelopment Plan. The most significant long-term effects of DPM operation will be in the areas of economics, transportation, and aesthetics.

The long-range economic effects will be to encourage growth in previously undeveloped or underdeveloped areas. Growth will take the form of new building or increased use of older structures. The DPM system will thus encourage rehabilitation efforts currently underway.

The overall economic effect will be to reinforce the position of the central business district vis-a-vis the city and the region; to make downtown a place where more people live and work; and to increase the attraction of the downtown area to businesses, residents, and visitors. The long-term productivity of the area will thus be improved.

The major long-term transportation effect of DPM operation

will be improved circulation/distribution service within downtown. Transit service will be faster, more predictable, and more reliable. Travel times will therefore be lower. The DPM system will encourage the use of peripheral parking facilities and will reduce the number of bus miles and auto miles of travel in the downtown area. Transit ridership as a whole will increase, and operating costs per rider will decrease. Thus, the downtown transportation system will be more productive.

Another important long-term effect of DPM operation is visual. The DPM guideway and stations will become an important architectural element in the downtown cityscape--an element that will influence the location and design of new buildings along the route. This is most likely in areas such as Figueroa Street, south of 7th, where the likelihood of new buildings replacing older structures is fairly high. Design opportunities for linking new structures visually and physically with the DPM will be a long-term influence on the shape and style of the cityscape. The visual effects will therefore contribute to the long-term productivity of the downtown area.

The treatment of short/long-term relationships presented in this Section differs from the type normally found in Environmental Impact statements. Rather than using narrative, a summary chart has been prepared. This chart (Table 8-00A) identifies impact categories--the short-term effects which would be experienced during the DPM construction phase and the long-term effects which could be expected as the system becomes operational. This format clearly and concisely identifies short-term/long-term relationships of the DPM system.

TABLE 8-00A

## THE RELATIONSHIP BETWEEN SHORT TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

	<u>SHORT TERM EFFECTS OF CONSTRUCTION</u>	<u>LONG TERM EFFECTS OF OPERATION</u>
Transportation: Regional transportation	<ul style="list-style-type: none"> <li>● Slight decline in accessibility to certain CBD bus destinations</li> <li>● Some rerouting of CBD buses may be required</li> <li>● Some increase in internal CBD travel time</li> </ul>	<ul style="list-style-type: none"> <li>● Increased connection with other modes of travel</li> <li>● Improved CBD travel times for DPM and bus patrons</li> <li>● Enhanced capability of fostering car-pools</li> <li>● Increased efficiency of busway service</li> <li>● Intercept concept fosters improved regional bus efficiency</li> </ul>
Local traffic and transportation service	<ul style="list-style-type: none"> <li>● Reduced capacity, slower speeds, and increased travel time for downtown streets affected by construction</li> <li>● Some rerouting of downtown trips may occur</li> </ul>	<ul style="list-style-type: none"> <li>● Reduced bus miles in downtown area</li> <li>● Potential for improving CBD bus and minibus service</li> <li>● Increased local transit ridership</li> <li>● Reduced need for additional CBD parking capacity</li> <li>● Reduced travel time for trips made in the CBD</li> <li>● Increased accessibility to CBD activity centers</li> <li>● Reduced auto trip miles in downtown area</li> </ul>

TABLE 8-00A continued

	<u>SHORT TERM EFFECTS OF CONSTRUCTION</u>	<u>LONG TERM EFFECTS OF OPERATION</u>
<b>Economic Effects</b>		
Regional economy	<ul style="list-style-type: none"> <li>● Increased employment (1332 person-years) in construction trades</li> <li>● Increased sales to regional materials suppliers</li> <li>● Increased business activity resulting from multiplier effect</li> </ul>	<ul style="list-style-type: none"> <li>● Increase in permanent employment accruing to some regional residents</li> <li>● Increase in tax revenues for city, county state, and federal jurisdictions</li> <li>● Increased employee spending induced by DPM results in regional multiplier effects</li> </ul>
Local Economy	<ul style="list-style-type: none"> <li>● Slight decline in local business activity resulting from disruption</li> <li>● Local employment increased in construction trades</li> <li>● CBD capture of some portion of construction worker spending</li> <li>● Three businesses displaced</li> </ul>	<ul style="list-style-type: none"> <li>● Increase of \$90 million in annual retail sales</li> <li>● Increase of 100,000 sq. ft. in retail floor space</li> <li>● Increase in value of local land and improvements</li> <li>● Increases in payrolls and local per capita spending</li> <li>● Increases in sales, property, and hotel tax receipts</li> <li>● 8000 Additional employees in DPM corridor</li> </ul>

TABLE 8-00A continued

	<u>SHORT TERM EFFECTS OF CONSTRUCTION</u>	<u>LONG TERM EFFECTS OF OPERATION</u>
Land Use Changes:	<ul style="list-style-type: none"> <li>● Construction activities produce disruption which has minor negative effect on effective use of existing improvements along route</li> </ul>	<ul style="list-style-type: none"> <li>● Office space increased by 1.0-1.1 million sq. ft.</li> <li>● 700,000-800,000 sq. ft. of regional office headquarters induced</li> <li>● Accelerated development of several proposed projects</li> <li>● 160,000 hotel rooms per night demand increase annually</li> <li>● One additional 500-600 room hotel</li> <li>● Increased occupancy of existing hotels</li> <li>● Opportunities for physical link among buildings and activities</li> <li>● Additional 630 units of market rate housing in Bunker Hill by 1990</li> <li>● Addition 1300-1500 units of market rate housing in South Park by 1990</li> <li>● Increased absorption rate of housing in Bunker Hill and South Park</li> <li>● Two vacant parcels not available for alternative use</li> </ul>

TABLE 8-00A continued

	<u>SHORT TERM EFFECTS OF CONSTRUCTION</u>	<u>LONG TERM EFFECTS OF OPERATION</u>
Effects on Local Residents:	<ul style="list-style-type: none"> <li>• Some residential locations experience disruption, in terms of increased noise, visual intrusion, and reduced access (applies to both permanent residents and hotel guests)</li> </ul>	<ul style="list-style-type: none"> <li>• Additional residential units made available in Bunker and South Park</li> <li>• Increased accessibility to activity centers</li> <li>• Additional 3300 permanent residents induced by 1990</li> <li>• Change in demographic and social mix of downtown residents</li> <li>• Increased access for elderly and handicapped to special services at Bunker Hill elderly housing project</li> <li>• Barrier free system provides improved mobility to all elderly and handicapped residents</li> </ul>
Visual and Aesthetics:	<ul style="list-style-type: none"> <li>• Substantial visual intrusion from construction activities and equipment</li> <li>• Perceived sense of disorder</li> </ul>	<ul style="list-style-type: none"> <li>• Improved visual access to DPM corridor</li> <li>• Change in city scape - opportunity to use DPM as unifying architectural element as land uses are recycled</li> <li>• New vistas for DPM passengers</li> <li>• Some visual obstructions, produced by guideway and stations located in close proximity to some buildings and passing over pedways</li> <li>• Some visual incompatibilities, produced by guideway in close proximity to certain historic buildings</li> </ul>

TABLE 8-00A continued

	SHORT TERM EFFECTS OF CONSTRUCTION	LONG TERM EFFECTS OF OPERATION
Air Quality and Energy:	<ul style="list-style-type: none"> <li>• Slight increase in emissions from construction equipment and worker's autos</li> <li>• Slight increase in fugitive dust</li> <li>• Minor energy consumption for manufacture and installation of DPM components</li> </ul>	<ul style="list-style-type: none"> <li>• Slight decrease in total daily emissions in study area</li> <li>• Carbon monoxide concentration slightly higher at parking intercepts</li> <li>• Slight increase in overall energy demand</li> <li>• DPM provides for flexible energy source, should shortages require shift to alternative fuel</li> </ul>
Noise and Vibration:	<ul style="list-style-type: none"> <li>• Significant increases in perceived noise levels during certain times of the day</li> <li>• Noise levels at sensitive receptors exceeding recommended maximum levels</li> <li>• Vibration not expected to be a problem</li> </ul>	<ul style="list-style-type: none"> <li>• Minor changes in ambient noise levels</li> <li>• No vibration impacts</li> </ul>
Archaeological and Historic Sites:	<ul style="list-style-type: none"> <li>• Potential for disturbing archaeological remains if they exist</li> <li>• Visual obstruction of certain historic sites</li> </ul>	<ul style="list-style-type: none"> <li>• Right of way required in vicinity of some potential landmarks</li> <li>• Partial view obstruction of some buildings</li> <li>• Increased visibility and new views of some sites</li> <li>• Increased accessibility to some sites</li> </ul>

TABLE 8-00A conclusion

	<u>SHORT TERM EFFECTS OF CONSTRUCTION</u>	<u>LONG TERM EFFECTS OF OPERATION</u>
<p>Other Local Conditions: Community services</p>	<ul style="list-style-type: none"> <li>● Possible impedance to emergency vehicles</li> </ul>	<ul style="list-style-type: none"> <li>● Additional police service required. Some fire access problems</li> </ul>
<p>Parks and open space</p>	<ul style="list-style-type: none"> <li>● Some visual, noise and access problems</li> </ul>	<ul style="list-style-type: none"> <li>● Increased accessibility. Some visual intrusion</li> </ul>
<p>Safety and security</p>	<ul style="list-style-type: none"> <li>● Increased vehicular accident potential</li> </ul>	<ul style="list-style-type: none"> <li>● Minor increase in opportunity for crimes. Improved accident safety for DPM patrons</li> </ul>
<p>Vegetation and wildlife</p>	<ul style="list-style-type: none"> <li>● Some disturbance of plant life and animal habitats</li> </ul>	<ul style="list-style-type: none"> <li>● Additional tree and shrub plantings</li> </ul>



## 9-000 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The development and construction of a people mover system in downtown Los Angeles represents the commitment of various types of resources by several levels of government and portions of the private sector. To the extent that these resources cannot be readily renewed, their commitment may be considered irretrievable. To the extent that the use of these resources results in a perceived permanent addition to the downtown, the commitment of these resources are irreversible. Neither term is entirely appropriate, however, because permanency is a relative term, and hence resources once committed may at least be partially recycled to other uses at some point in the future. Nevertheless, a commitment of some resources is required by the project, and it is the purpose of this section to briefly identify such commitments.

### 9-100 LAND

A substantial portion of the proposed DPM system will be constructed in public rights of way, primarily some portions of the downtown street system. However, the taking of privately owned land would be required for intercept facilities in the vicinity of the Convention Center and Union Station. Also, the use of a portion of certain other privately owned property would be required for guideway or station uses along the route. The proposed project therefore requires the commitment of a resource which is becoming more scarce, in a general sense. However, the use of land in a highly urbanized downtown area also represents the latest in a series of reuses. It may therefore be considered as part of the recycling process which affects all urbanized land.

### 9-200 MONEY

The capital which would be committed to the construction of the proposed project cannot be retrieved. Although this

commitment is substantial, the resulting public service produces benefits in terms of expanded employment, increased mobility for users of downtown, improved travel times for trips with downtown destinations, and monetary benefits in terms of increased local spending and tax revenues.

### 9.300 CONSTRUCTION MATERIALS

Materials such as concrete aggregate, cement, lumber, steel, and fabricated metals are all resources that would be irretrievably committed with the construction of the proposed project. Some materials would be produced locally and others would be produced elsewhere. Although these materials are not necessarily in abundance, their use is in quantities which will have little effect on their overall availability.

### 9-400 MANPOWER

Labor which is expended in the design and construction of the DPM cannot be recovered. However, the requirement for this labor is, in itself, a benefit to members of the local construction trades. Secondary local and regional economic benefits also result from this expenditure of labor.

### 9-500 ENERGY

Energy consumed both during construction and operation of the DPM system constitutes an irretrievable commitment of resources. Energy required for construction will be a combination of electrical energy and energy derived from petroleum products. Energy used for system operation will be primarily electrical, supplied by the City of Los Angeles Department of Water and Power.

Energy used during construction would be partially expended locally and partially expended outside the region, for the manufacture and transportation of certain systems components. Recent experience with other forms of transportation systems has demonstrated that the energy used for construction, when compared with the energy used during a system's useful lifetime, can be as much as 20 percent of the total energy consumed by the system. According to energy estimates for DPM construction and operation, this would appear not to be the case, with DPM construction energy accounting for only 10 percent of total system energy consumed over a fifty-year lifetime.

The greatest portion of energy consumed by DPM operation is used for traction, or that power which directly operates the vehicles. Far lesser portions of total energy consumption are required for other elements of the system. This being the case, the consumption of operation energy bears a direct relationship to actual use of the system. It should also be recognized that the DPM is powered by electricity, which may be generated by various fuels. The system therefore has the flexibility to adapt to changing fuel supply conditions, such that future changes in the technology of electrical power generation can be easily accommodated by the system.

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## CHAPTER 10

COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT10-100 Introduction

The initial circulation period for the Draft EIS began on July 20, 1979 and was scheduled to end on September 4, 1979. Several requests were received to extend the circulation period by 15 days and these were granted, resulting in the official end of circulation on September 19, 1979. Thirty-five commenting letters were received from federal, state and local agencies, private organizations, and concerned citizens. The official public hearing was held on August 28, 1979. Afternoon and evening sessions were held in the auditorium of the Los Angeles Department of Water and Power at 111 North Hope Street, Los Angeles, California. Testimony was taken on this date before an appointed hearing officer. During the hearing, a total of 22 persons presented oral testimony. The transcript of the public hearing may be inspected at the offices of the Urban Mass Transportation Administration in Washington, D.C. and locally at the offices of the Los Angeles Community Redevelopment Agency.

All substantive comments are included in this chapter with a response provided to each comment. In some cases the individual comments have not been reproduced verbatim. Public hearing comments were treated the same as commenting letters. To reproduce them in their entirety would have been too lengthy and therefore excerpts and summaries were used, paying careful attention to accurately and completely represent the original comments. Notations identifying the commentor(s) appear after each comment. The material provided in the Draft EIS has been revised as necessary to adequately address the comments. Changes in the text are identified by a vertical bar in the margin.

The following are the agencies, organizations and private citizens who commented on the Los Angeles Downtwon People Mover Project's Draft Environmental Impact Statement during the circulation period.

Federal Agencies

- General Services Administration (GSA)
- U.S. Department of Agriculture, Soil Conservation Service (Agriculture)
- U.S. Department of Housing and Urban Development (HUD)
- U.S. Department of the Interior, (Interior)
- U.S. Department of Transportation, Federal Highway Administration (FHWA)
- U.S. Department of Transportation, Office of the Secretary (DOT)
- U.S. Environmental Protection Agency (EPA)

California State Agencies

- Air Resources Board (ARB)
- California Department of Transportation (CALTRANS)
- California Transportation Commission (CTC)
- Governor's Office, Office of Planning and Research (OPR)
- State Lands Commission (State Lands)

Regional Agencies

- Southern California Association of Governments (SCAG)
- South Coast Air Quality Management District (SCAQMD)

County Agencies

- Los Angeles County Flood Control District (LACFCD)
- Los Angeles County Transportation Commission (LACTC)

City Agencies/Departments

- Los Angeles Department of City Planning (City Planning)
- Los Angeles Department of Public Works, Bureau of Engineering (City Engineering)

- Los Angeles Fire Department (LAFD)
- Los Angeles Police Department (LAPD)

Organizations

- California Mart (California Mart)
- California Paralyzed Veterans Association (Paralyzed Veterans)
- Coalition for Rapid Transit (CRT)
- Jonathan Club (John R. Shiner, Counsel)
- League of Women Voters, Los Angeles Chapter (LWV)
- Los Angeles Central City Association (CCA)
- Los Angeles Chamber of Commerce (Chamber)
- Los Angeles City Council for the Handicapped (Handicapped Council)
- Los Angeles Conservancy (Conservancy)
- Los Angeles County Federation of Labor (Labor Federation)
- Los Angeles Visitors and Convention Bureau (Visitors Bureau)
- National Association for the Advancement of Colored People (NAACP)
- Scenic Shoreline Preservation Conference (Shoreline)
- Sierra Club Los Angeles Chapter (Sierra)
- Society for California Archaeology (SCA)

Individuals

- Gregory Goldin
- Johnathan Hartman
- Natalyn Levin
- Richard Marvin
- Rodney E. Nelson
- T.A. Nelson
- Vince Petito
- Ronn S. Pickard
- Joy Picus, Los Angeles City Councilwoman, Third District
- Ray Remy, Deputy Mayor, City of Los Angeles
- Pat Russell, Los Angeles City Councilwoman, Sixth District member, Los Angeles County Transportation Commission

- Robert Sarnoff
  - Samuel Schiffer
  - David Seidman
  - Richard A. Stromme
  - Everett Welmers, Board Member, Community Redevelopment Agency
  - Michael Winn
  - Julian Wolinsky
-

10-200 Comments and Responses by Topic10-210 Alternatives

## COMMENT 1:

The minibus system meets the transportation needs in downtown now and could do so in the future. (R. Nelson, Wolinsky)

## RESPONSE 1:

The minibus system fulfills a viable transportation function in downtown and will continue to do so with the DPM in operation. However, in terms of carrying capacity, comfort and service frequency, the DPM provides improved service to a level which would not be practical with the minibus system.

## COMMENT 2:

Minibuses would cost less to operate than the DPM. (CRT, Schiffer)

## RESPONSE 2:

The current minibus service operates at approximately \$3.30 per vehicle-mile, in contrast to DPM operating costs of \$1.66 per vehicle-mile in 1978 dollars. If the minibus service were expanded such that it would have the same passenger-carrying capacity as the DPM, it would cost about \$13,827,000 annually to operate. This is in contrast to DPM operating costs of \$4,441,000 annually. The cost estimate for minibus operations is based on the assumption that the minibus service could accommodate the same maximum one-way link volume as the DPM (3500 passengers/hour during the peak hour). It is further assumed that the minibus could carry half this volume, or 1750 passengers, during the peak 20 minutes. For a minibus route which roughly parallels the DPM route, this would require 153 vehicles operating at average peak hour headways of 21 seconds. Both the DPM and minibus operating cost estimates

include intercept operating costs of \$325,000.

## COMMENT 3:

The rerouting of the minibus shown in the DEIS would bypass the California Mart. (California Mart)

## RESPONSE 3:

The alternative minibus routes in the DEIS should be regarded as assumptions used only for estimating capital and operating costs, patronage, and other factors. The actual routing that will be in place in 1990 is largely a matter of speculation at this stage. The SCRTRD will be responsible for proposing actual route changes.

## COMMENT 4:

The DEIS does not present a convincing case for the superiority of the DPM over the improved bus system. (Conservancy)

## RESPONSE 4:

The reasons for selecting the People Mover project are discussed in Sections 3-320 and 3-410 of the DEIS (pages 3-19 through 3-24). The Improved Bus system was found to be not competitive with the DPM for the following reasons.

- (1) The Improved Bus alternative would not markedly act to reinforce downtown growth trends, particularly in terms of the sense of permanency that the DPM provides.
- (2) The Improved Bus alternative does not function effectively with fringe parking facilities.
- (3) The Improved Bus alternative cannot be automated for increased efficiency.
- (4) The Improved Bus alternative is not grade separated, and therefore it must compete with other street traffic.

- (5) The Improved Bus alternative does not efficiently link downtown hotels with the Convention Center.
- (6) The Improved Bus alternative would not have as marked an effect on downtown retail sales.
- (7) The Improved Bus alternative would likely produce greater noise impacts.
- (8) The Improved Bus alternative would produce greater daily air pollutants, with the exception of sulfur oxides.

## COMMENT 5:

Buses would be more flexible than the DPM to meet future needs for expansion. (LWV, Picus)

## RESPONSE 5:

One advantage of buses is route flexibility. As demand patterns shift, bus lines can be rerouted. But unless employment and land use densities along the DPM corridor change radically, route flexibility is not an issue. Travel demand within the corridor is well established because of high density, particularly in the financial district. And, as Bunker Hill is developed, travel demand within the DPM corridor will be reinforced. A fixed guideway makes sense in areas with high density and stable development patterns, such as the Wishire Core and downtown Los Angeles.

The DPM will be designed with the potential for growth and expansion in mind. Depending on the level of demand, the number of cars per train can be changed, and the number of trains in service can be modified. Changes in consist and headways provide a surprising degree of operational flexibility.

Furthermore, there are a number of options for extending the DPM alignment; e.g., to the east side of downtown, or south

to the USC campus, etc.

## COMMENT 6:

There is insufficient basis for the statement in the DEIS that the improved bus alternative would not contribute significantly toward reinforcing downtown growth trends. The DEIS contains many subjective, questionable statements about the ability of the bus system to function effectively with fringe parking facilities and its inferiority in reinforcing growth trends because of its lack of permanence. The flexibility of a bus system (as demonstrated in other cities) could be argued to make for greater growth potential. (Conservancy)

## RESPONSE 6:

Economic impact analyses conducted during Phase II Alternatives Analysis evaluated three system-level alternatives - the "Null" or no project alternative, the "Improved Bus" alternative, and the "Improved Bus/DPM" alternative (see Section 3-200 for description). The evaluation of the economic growth impacts were based on an assessment of the way in which each alternative served to strengthen linkages between centers of economic activity in the downtown and to improve personal mobility for trips related to economic purposes. The basic findings were that both the Improved Bus and Improved Bus/DPM alternatives would reinforce downtown development and generate additional retail sales above what was predicted under the "Null" condition. However, the analysis concluded that the Improved Bus/DPM alternative would have "...a greater impact on economic activity levels than the 'Bus' alternative does because of the greater improvement in transit service..." and that the DPM, as a modern technology, would provide a "visible" symbol of progress in downtown Los Angeles to help "...in efforts to merchandise downtown Los Angeles locations to both office users and tourists from outside the Los Angeles region..." (Kahn, Kappe, Lotery, Boccato, Task Termination Report on Economic and Social Evaluation, Circulation/Dis-

tribution System Program: Tasks 60 and 61; August 25, 1976). This evaluation estimated that the Improved Bus alternative would generate an additional \$9.9 million in 1990 annual retail sales and a cumulative (1976-1990) additional \$80,000,000 in real estate development; by comparison, the Improved Bus/DPM alternative would generate an additional \$28.5 million in 1990 annual retail sales and a cumulative (1976-1990) additional \$140,000,000 in real estate development.

In order to confirm these Phase II findings, an analysis was conducted by Wilbur Smith and Associates during Phase III analysis to evaluate the economic impact bus malls and semi-malls have had on the downtown areas of other cities, specifically Minneapolis (Nicollett Mall), Portland (5th and 6th Streets), Sacramento (K Street), Philadelphia (Chestnut Street), and San Francisco (Market Street). It should be noted that these bus-related improvements are more extensive than those which were outlined as part of the Improved Bus alternative.

#### General Economic Effects of Transit Malls

The Wilbur Smith and Associates study concluded that, generally, the economic impacts of transit malls have been favorable to CBD office and retail activity. However, the study noted the following features:

- "1. The City's commitment to build a transit mall may be more important than its actual operation;
2. This commitment is always seen by merchants and real estate people as a demonstration of City Council support for downtown retailing;
3. This symbolic commitment by the City Council has influenced decisions by downtown retailers in Portland and Chicago to retain their CBD stores and in Portland brought an additional department store (Nordstrom's) into the mall area;

4. Actual operation of the mall may be disappointing in practice relative to the symbolic impact of construction commitment;
5. It is practically impossible to identify transit mall impacts clearly because of parallel changes (e.g. new parking garages in Portland); and
6. No auto-free zone type of improvement can by itself reverse a long-term decline in CBD retail activity brought on by declining buying power in residential areas accessible from the CBD and by increasing competition from outlying centers."

(Wilbur Smith and Associates, August 1, 1978. Memorandum: "Economic Effects of Surface Bus Improvements.")

With respect to downtown Los Angeles, the Wilbur Smith and Associates report concluded:

- "1. The history of transit-preference improvements in southern California suggests that exclusive bus streets and reductions in motor vehicle capacity will be approved only after thorough citizen participation and design compromises.
2. The best potentials for such improvements appear to be mainly on the east side of LACBD, while the main land development potentials are in Bunker Hill and along Flower and Figueroa Streets.
3. The impact of such transit and pedestrian preferences on surface streets will have a generally favorable environmental impact but only a limited economic impact. A small net increase in retail employment might be expected, but major developer commitments to office buildings or stores cannot be expected in the Los Angeles context."

Minibus service was established in December 1971 to provide satellite parking at the Convention Center for recently completed developments in the Bunker Hill/Financial District area (from approximately 3rd Street south along Figueroa and

Flower Streets to 6th Street). At that time, supporting high-rise parking structures associated with these new developments had not as yet been constructed (e.g. ARCO garage). Initially, the service was cost competitive, attaining a maximum patronage of 740 monthly parkers in July 1973. Patronage dropped to 120 in July 1976 and then to 59 in November 1976, after the public transit strike. There was a further decline later that year to an average of only 53 daily parkers during January, 1977 (Southern California Rapid Transit District, Board Memorandum: "Proposed Discontinuance of Line 201 Convention Center Park/Ride Service," January 24, 1977).

Among the major reasons cited by the Southern California Rapid Transit District (SCRTD) for the decline in patronage of the Convention Center Park/Ride Service were the following:

- (1) Subsidies provided for the service by many tenants of the Bunker Hill/Financial District area eroded as convenient on-site parking became available;
- (2) The District's overall service was improved and Park/Ride services from outlying areas were expanded;
- (3) The Commuter Computer Van Pool Program was expanded during and partially as the result of the public transit strike.

(Southern California Rapid Transit District, Board Memorandum: "Proposed Discontinuance of Line 201 Convention Center Park/Ride Service," January 4, 1977).

This decline in patronage resulted in increased deficit funding. As of November, 1976, the Convention Center Park/Ride Service required an estimated annual subsidy by the SCRTD of approximately \$86,600. In consideration of the low-benefit and low-cost effectiveness of this service, the SCRTD Board discontinued the service on February 25, 1977.

The general conclusion which can be drawn is that a bus system can effectively function with fringe or peripheral parking facilities only if there is a shortage of available on-site parking, a private sector subsidy of the service, and no other competing private and/or public transit service which offers a more attractive alternative.

COMMENT 7:

The circulation/distribution functions of the people mover could be performed just as well by a rapid transit system at less cost. (CRT, LWV, Marvin, Stromme)

RESPONSE 7:

The proposed regional rail Starter Line has been designed to provide regional line haul distribution service within a specific corridor, in which is included the downtown portion of the City of Los Angeles. As currently planned, the Starter Line would have four stations operating in the downtown area, as opposed to the thirteen stations planned for the DPM system. Thus, while the Starter Line, by virtue of its speed and regional line haul capabilities, can provide efficient distributor service, it cannot effectively provide circulation service without altering its functional design. As noted in Section 3-410 of the DEIS, "from a design perspective, the rail system cannot be adapted to fulfill the smaller scale circulation/distribution needs of the downtown without negatively affecting its overall performance and cost. In order to approach the scale of service needed for the downtown, the rail station spacing would have to be reduced quite dramatically, which would prevent it from achieving the travel speeds which make it efficient from a line haul perspective."

COMMENT 8:

Certain configurations of rapid transit lines (e.g., a subway "loop") can accomplish the same task as the DPM with a greater

degree of speed, convenience, and efficiency. This has been independently confirmed in a memorandum (FMT-79-8, July 16, 1979) by Caltrans. (NAACP)

RESPONSE 8:

The comment refers to a Caltrans memo which recommends that the California Transportation Commission allocate \$2.9 million of state funds in FY 1979-80 toward the implementation of the DPM. On page 2 of the memo, Caltrans states:

"An alternative to the DPM would be an extension of the proposed Wilshire Rapid Transit line to include a 2-3 mile segment of subway through downtown to provide the necessary circulation and distribution.... The principal disadvantage of the subway extension alternative is the lack of committed federal funding, which makes the entire project uncertain."

The Caltrans memo hypothesizes that the subway loop alternative "could provide improved service over a DPM/Wilshire alternative, by reducing total transfers and by avoiding different transportation technologies." This statement by no means "confirms" that the subway loop alternative could accomplish the same task as the DPM with "a greater degree of speed, convenience, and efficiency," as claimed in the comment.

The issue of level of service must be viewed in the context of the contrasting functions of the Wilshire subway and the DPM. The Wilshire subway is a regional line haul mode, whose function is to carry passengers at high speed over relatively long distances. Maximum speed depends on the distance between stations -- with shorter distances between stops, maximum design speed cannot be attained. Subway trains are designed to reach a top speed of 70 miles per hour. The total trip time for a commuter traveling from the Civic Center to North Hollywood would be significantly increased, however, if the trains had to loop around downtown, stopping every two or three blocks to pick up other passengers. The slower speeds also mean re-

duced operating efficiency for the subway, in terms of operating cost per car-mile.

Similarly, express buses serve a line-haul function, and they are more efficient than local buses when measured in terms of operating cost per vehicle-mile. But their efficiency is reduced when they have to pick up and discharge passengers in a "local" mode at the beginning and end of the route. An advantage of intercepting express buses at the Convention Center and Union Station is that they can avoid a substantial amount of the "stop-and-go" traffic in the CBD, thereby increasing operating efficiency. The same principle applies to the subway. Thus, converting the line-haul function of the subway into a local circulation/distribution function only reduces the operating efficiency of the subway and increases travel times for most subway patrons.

The issue of "convenience" usually relates to the need to transfer from one mode to another; i.e. a trip that involves a transfer is often considered less "convenient" than one that does not. Considering that the DPM headway will be about 1.5 minutes in the peak period, the transfer time will be minimal.

COMMENT 9:

Supporting documentation for the automated people mover suggests that it would reduce bus operation costs from what otherwise would be necessary to accomplish the same distribution functions.

However, this analysis did not consider an operating cost comparison assuming that distribution is performed by the Starter Line rather than the people mover. (LWV)

## RESPONSE 9:

The DEIS includes a cost analysis of five system alternatives, including a "rail" alternative without the DPM. Costs of all the alternatives include bus operations and are shown in Table 3-31B of the DEIS.

## COMMENT 10:

Construction of a DPM/subway route with subway trains running on the DPM route would be economically more beneficial. (CRT, Sierra)

## RESPONSE 10:

The reasons for not selecting a downtown subway system with many stops along the DPM corridor are described on page 3-24 of the DEIS.

## COMMENT 11:

The DEIS does not seriously address alternatives to the DPM for downtown circulation and distribution. (NAACP, LWV, Pickard)

## RESPONSE 11:

Various alternatives to the DPM have been analyzed throughout the planning and engineering phases of the programs, including alternative system, corridors, alignments and intercept sites. A summary of these various analyses is provided in Chapter 3 of the DEIS.

## COMMENT 12:

Electric buses were rejected in the alternatives analysis because of the visual impacts of overhead wires. (Wolinsky)

## RESPONSE 12:

Electric buses, or trolley coaches, are vehicles which draw

power from wires above street level. Because trolley coaches have no capability to operate away from the power lines, their movements can be blocked by minor accidents, fires, or other temporary obstructions.

Size, speed, capacity, and many other components of trolley coaches are similar to urban buses. Trolley coaches could be substituted for buses to achieve quieter operation and eliminate vehicle exhaust. However, a considerable capital outlay would be necessary for vehicles and for the power supply system, and electrical supply lines would likely be criticized on aesthetic grounds.

It is for these reasons that trolley coaches were rejected as part of a technology assessment conducted during early planning studies.

## COMMENT 13:

The DPM is not the only alternative that would increase accessibility in the Pershing Square area. (Conservancy)

## RESPONSE 13:

In addition to the DPM system, other modes can provide service to the Pershing Square area including increased bus service on several routes which currently serve the area, the introduction of new bus routes to serve the area, and rerouting mini-bus service to better connect with the Pershing Square area. Each of these potential improvements would increase accessibility to Pershing Square.

However, the DPM, with a station located at Pershing Square, would also increase accessibility there, particularly when coupled with fringe parking facilities. (The absence of adequate parking in the Pershing Square area has been a major factor preventing further commercial development in the area.)

10-220 Service

## COMMENT 14:

The DPM/subway interface would be most awkward with the DPM at 20 feet above ground and the subway 50 feet below. (CRT)

## RESPONSE 14:

Vertical level changes of 50 to 150 feet are not unusual in rapid transit subways and are accomplished by high speed escalators. Washington and other cities have transfers from buses and other modes occurring over this vertical distance; the Moscow subway has a 200 foot long escalator. The vertical distance between the DPM and subway would be traversed by escalators and would require a minimum of movement along sidewalks.

## COMMENT 15:

The people mover does not address the real transportation needs of Los Angeles, which are regional. (NAACP, Winn, Goldin)

## RESPONSE 15:

The DPM is part of the four-element Regional Transit Development Program, which includes in addition to the DPM, the regional rail Starter Line, the Transportation Systems Management Program, and freeway bus improvements. The DPM is therefore part of an overall package designed to address regional transportation needs.

## COMMENT 16:

The People Mover would better serve the City if it were a loop. (Picus)

## RESPONSE 16:

As part of the Phase II studies of the program, a complete

DPM network was defined, which would operate as a loop, consisting of three distinct segments. The presently proposed DPM alignment was developed from the complete network as the segment selected for initial implementation.

## COMMENT 17:

The People Mover does not serve people from the Wilshire District, the Echo Park area, the central area, or the area west of the Harbor Freeway. (Winn)

## RESPONSE 17:

The People Mover system, as it is presently proposed, provides links to public transportation services external to the CBD in two ways. First, the location of intercept facilities at Union Station and the Convention Center allows transfers from bus routes approaching the CBD from several major corridors. Second, with 13 DPM stations located throughout the CBD, transfers are possible from a great number of bus routes operating both to and within the CBD. The DPM therefore provides improved overall public transportation service, through its connectivity with the regional bus network, and the proposed Starter Line, to the areas noted in the comment.

## COMMENT 18:

The People Mover does not serve people in the area of the California Mart. (California Mart)

## RESPONSE 18:

The initial segment of the DPM will not directly serve the area of the California Mart. However, the DPM will indirectly improve transportation service to this area. By improving general public transportation service in downtown, and by reducing the need for buses along the DPM corridor, the DPM can facilitate improved minibuss and regular bus service to

the garment district. An SCRTD supporting bus plan has been developed, at a conceptual level, to complement DPM service. Specific bus routes, assuming the DPM in operation, have not yet been designed.

## COMMENT 19:

The DPM does not serve the transit dependent or low income workers in the garment district; it will serve the predominantly middle-high income people who work or have businesses on the west side. (CRT, LWV)

## RESPONSE 19:

The initial segment of the DPM will not directly serve the low income worker in the garment district. It will serve transit dependent persons either directly or indirectly. The best example of potentially transit dependent persons that will be served directly by the DPM are the estimated 1600 elderly or handicapped persons who will be living in the Angeles Plaza development on Hill Street. Angeles Plaza will be directly integrated into the Hill Street DPM Station. Other transit dependent persons using the medical/social services at Angeles Plaza or other community/government services along the route will also be served directly by the DPM. Indirectly, by improving the general public transportation service in downtown and by reducing the need for buses along the DPM corridor, the DPM allows bus and minibus service in other areas of downtown to be improved. An SCRTD bus support plan has been developed at a conceptual level to complement DPM service. Specific bus routes, assuming DPM in operation, have not yet been designed.

## COMMENT 20:

Termination of bus lines at the two intercepts could make the use of public transit less attractive because of the need to transfer. (Marvin)

## RESPONSE 20:

It is possible that having to transfer at the intercept stations may discourage some travellers from using transit. On the other hand, if the DPM brings a commuter closer to his destination than the bus would, then he may prefer to make the transfer to avoid a long walk at the end of the trip. If the DPM results in a net reduction in total door-to-door travel time, then bus ridership should actually increase. Furthermore, by intercepting buses SCRTD will not have to operate as many bus-miles and bus-hours within the congested areas of the CBD. These buses can then be used to increase bus frequencies to and from downtown, thereby stimulating transit demand.

The transfer time will also be much less than what is normally experienced on bus to bus transfers. The DPM headway will be about 1.8 minutes in the peak periods. This implies a wait time of less than a minute, on the average. Escalator time will be about one minute, making the total transfer time from 2 to 3 minutes.

It is also interesting to note that the success of the Starter Line from Hollywood to downtown is dependent on passengers' willingness to transfer. Depending on the station, from 43 to 76 percent of the Starter Line users will reach the MRT stations via feeder bus. (Source: SCRTD, "Station Access Mode Split Analysis", December 19, 1977)

10-230 Costs/Financial

## COMMENT 21:

Building the DPM would use federal transit dollars and up to \$30 million in local matching funds that could be used for other projects such as the Wilshire Starter Line or rapid transit in transit dependent areas. (LWV, NAACP, Sierra, CRT, Picus, Goldin)

## RESPONSE 21:

The federal transit dollars being used for the DPM are not available for transit projects in Los Angeles other than the downtown people mover. If the demonstration money that has been committed to Los Angeles for development of a Downtown People Mover is not used in Los Angeles, it will be used in some other city for a downtown people mover. It cannot be transferred to other transit projects in the area.

The local match for the LADPM is composed of \$12.0 million in local land contributions and \$1.7 million in cash. The land being contributed as part of the local match consists of land along the DPM route; none of it could be used for local match for the rapid transit line.

Local share monies for the Starter Line have already been set aside by the Los Angeles County Transportation Commission and the California State Transportation Commission. The minimal amount of cash contributions required for the DPM has not affected and will not affect the local share set-asides for the Starter Line. There are no other transit projects requiring a local share commitment at this time.

## COMMENT 22:

Construction cost inflation has been running at 13 percent in Los Angeles, UMTA has agreed to pay for 80 percent of construction costs, under a formula using 7 percent inflation

rates. However, the financial plan in the Draft EIS has no alternative to pay for the almost certain cost overruns resulting from a 7 percent escalation of construction costs. (OPR)

## RESPONSE 22:

As with all major fixed guideway projects, the federal funding limit may be raised to account for unusual cost of living index escalation.

## COMMENT 23:

Reference is made to a Caltrans intergovernment memo which states that the proposed sources of capital funds appear to be extremely optimistic. (LWV)

## RESPONSE 23:

The referenced Caltrans memo, dated October 13, 1978, was written over a year ago. Caltrans now supports the project and agrees to the funding mechanisms identified.

## COMMENT 24:

We have carefully reviewed the eligibility of this project for FAI funds and have found that only those features associated with the I-10 busway extension are eligible. We detailed this issue in our August 1, 1979 letter to Caltrans, copy enclosed for your ready reference. (FHWA)

## RESPONSE 24:

The enclosed referenced letter includes the statement that "features which we do not find eligible for FAI funds are eligible for FAU funds under the provisions of 23 USC 142(c)." The City of Los Angeles DPM Program will pursue funding from

the Federal Highway Administration in accordance with the commitment expressed in Secretary Coleman's letter of December 22, 1976.

## COMMENT 25:

On pages ii and 4-55, there is reference to \$25 million in FAI funds. The Secretary's letter of December 22, 1976, did not refer specifically to FAI funds. (FHWA)

## RESPONSE 25

The Secretary's letter referred to "federal-aid highway sources;" it was not specific about which highway source. The financial plan in Section 4-500 shows a range of funding sources between full FAI funding at \$25 million and no FAI funding. The final financial plan will fall somewhere between these two extremes, when the issue of federal funding is finally resolved. The FAI funds are being proposed for several reasons:

1. The intercept facilities for which these funds are proposed are a direct extension of the El Monte busway which has been previously approved for FAI funding.
2. The primary users of the facilities will be car, vanpool, and bus passengers using the I-10 corridor busway and freeway.

## COMMENT 26:

The cost of the People Mover is in excess of the per mile cost of the BART system. (Sarnoff)

## RESPONSE 26:

A comparison at the permile costs of the DPM with those of the BART system is not entirely valid, because the two systems differ quite dramatically in several respects. The DPM system has a greater service frequency, has more stations, and fulfills a much different function than the heavy rail distribution service of the BART system. In addition, the amount of DPM guideway is too small to yield economies of scale.

If the costs of the two systems are nevertheless compared, in terms of costs escalated to the mid-point of DPM construction, the comment is not correct. For a system of length of 2.9 miles (double lane guideway), the construction cost of the DPM system (excluding intercepts) would be \$48.3 million/mile. A comparable cost for the 73.8 mile BART system would be \$55.4 million/mile.

## COMMENT 27:

It seems possible that actual operating deficits will be larger than predicted, especially during the early years of operation. (OPR)

## RESPONSE 27:

A number of analyses of alternative operating scenarios, including higher and lower patronage estimates, have been prepared. The operating deficit presented in the DEIS represents a reasonable analysis of patronage, operating costs, and operating revenues. Within various patronage parameters, there are a number of steps that could be taken to maintain the operating deficit at a level close to that predicted. These include fare changes, increases in lease charges, in-

creases or decreases in parking charges at the intercepts, and operational changes to reduce costs (for example, increasing headways). The operating costs and revenues presented in the DEIS are considered to be realistic projections. In the first year of operation, Urban Mass Transportation Administration funding will cover first year start-up and unusual operating costs.

COMMENT 28:

Concern is expressed regarding the legality of the benefit assessment district, in light of Proposition 13. (LWV)

RESPONSE 28:

The legality of benefit assessment districts under Article XIII A of the California Constitution (Proposition 13) is undergoing review by the State Courts. On July 12, 1979, the Court of Appeals of the State of California Fifth Appellate District ruled in "County of Fresno v James B. Malmstrom" that Article XIII A does not apply to special assessments and bonds levied pursuant to Streets and Highway Code Sections 5000 et seq, and 10,000 et seq., the Improvement Act of 1911 and the Municipal Improvement Act of 1913 respectively. The basis of the Appellate Court's ruling was that special assessments are not general taxes (and therefore covered under Article XIII A) because they are "...used to confer special benefits upon the parcels charged for the improvements."

COMMENT 29:

The issue of FAI funding availability was apparently clarified at a recent California Transportation Commission meeting (8/23/79) when UMTA committed to fund 80% of the total project cost. The total funding package should also be updated and clarified in the EIS. (Caltrans)

RESPONSE 29:

The City of Los Angeles DPM Program is continuing discussions with the Federal Highway Administration to procure the full \$25 million in federal-aid highway funding identified in Secretary Coleman's letter of December 22, 1976. It is not expected that that matter will be fully clarified until after the FEIS has been published.

COMMENT 30:

A formal request to FHWA for their determination of the extent of FAI participation is presently being pursued. Initial indications are that FHWA will participate in \$4.7 million for portions of the interface (loading platforms) between the DPM and Busways. FAI funds will not be available for parking structures. This should be clarified in the Final EIS. (Caltrans)

RESPONSE 30:

The initial indications from the Federal Highway Administration regarding the availability of FAI funds are included in the comments from the Federal Highway Administration reported in the FEIS. See comment number 22.

COMMENT 31:

Costs and benefits of the disputed segment have not been balanced. No effort has been made to minimize cost. (Jonathan)

RESPONSE 31:

During the route refinement analysis, a number of alternative alignments were evaluated. For this evaluation, the costs of each of the alternatives were reduced as much as possible

and particular design elements, such as column spaces, were kept comparable between alternatives. Each of the alternatives was designed to include a minimum number of curves, right-of-way requirements were kept to a minimum, and column height was also kept to a minimum, consistent with grade considerations and other constraints.

A discussion of the benefits of the center of Figueroa variation, as compared with the west side alignment, is presented in Section 6-529 of the FEIS. The costs of the center of Figueroa variation, relative to the west side alignment, are as follows:

	<u>Increase</u>	<u>Savings</u>
Guideway		\$ 907,000
Switches		54,000
Street and Facilities Modification	\$665,000	
Stations:		
9th Street		18,000
7th Street		25,000
5th Street		100,000
Electrification		170,000
Program Administration	40,000	
Escalation to 1982		160,000
Right-Of-Way		3,529,000
Total System Savings . . . . .		<u>\$4,626,000</u>

COMMENT 32:  
The Final EIS should adequately address questions of financing, construction and operations and of security. (CTC)

RESPONSE 32:  
Questions of financing, construction and operations and of

security have been adequately addressed in the Final EIS. These questions are identified in the appropriate EIS sections, and responses to specific comments on these subjects are also provided.

COMMENT 33:  
The Environmental Impact Statement should examine the adequacy of the assumed 7% inflation rate. (CTC)

RESPONSE 33:  
It is the policy of the Department of Transportation to participate in 80% of the costs due to unusual cost of living index escalations.

COMMENT 34:  
System security costs were not calculated as part of the operating expenses. (Pickard)

RESPONSE 34:  
The costs of various DPM system security components have been included in the operating cost estimates. (e.g. closed circuit television, communications and public address systems, remote assistance devices, and intrusion detection alarms). In addition, the Los Angeles Police Department has estimated additional manpower requirements which could be necessary during DPM and parking intercept operation. The cost of such additional manpower, however, is a cost which would be borne by the City of Los Angeles, because it constitutes a normal expansion of police services resulting from an increase in CBD population. See Section 4-360 for a description of DPM security provisions.

COMMENT 35:  
Criticisms of the limited service of the proposed routes have been repeatedly answered by promises of the addition of

twice again as much track later, but no evaluations have been made for the costs or funding sources for those additions. (Pickard)

RESPONSE 35:

Analysis performed during various DPM planning studies have not demonstrated that it provides limited service. In fact, these studies have demonstrated quite the opposite.

During early planning studies, the DPM was conceived as a network consisting of three distinct segments. (See Moving People in Los Angeles, the Community Redevelopment Agency of the City of Los Angeles, June 1977.) Extensive evaluations of these three segments were made, with the purpose of selecting a segment for initial implementation. The recommended project documented in the EIS is a direct result of these evaluations. Costs were estimated for the three segments, but federal funding limitations have precluded implementation of all but the initial segment, at this time. Should additional funding become available, it would then be possible to complete the total network.

10-240 Associated Improvements

COMMENT 36:

On page 4-37 there is a description of proposed ramp rearrangements for I-10, the Santa Monica Freeway, and for I-11, the Harbor Freeway. At this time there are no approved plans for modifications of these interstate Freeways. It is our understanding that costs for freeway modification are not included in DPM costs. These extra costs should be shown in the EIS. (FHWA)

RESPONSE 36:

The freeway ramp additions are needed to improve access to the Convention Center area whether or not the DPM is built. Since the access ramps have a broader benefit than just the DPM, they are not included as part of the DPM project. A cost has not been estimated for these ramp modifications.

COMMENT 37:

The ramp modifications proposed (Section 4-332) for the Convention Center access will create a traffic impact on Pico Boulevard. The addition of eastbound Santa Monica Freeway traffic to the existing Pico Boulevard offramp opposite Sentous Street is a very significant change. Concerns have been raised as to the capacity of the Pico/Sentous intersection in handling additional traffic.

In our review of the Downtown People Mover DEIR, it was suggested that an exit of Santa Monica Freeway traffic onto 12th Street (and not directly into the Pico/Sentous intersection) would be preferred. The 12th Street offramp will help to decrease the severe capacity problem at the intersection of Pico and Figueroa (Section 5-243). Caltrans continues to support the 12th Street access to the proposed DPM/Convention

Center parking as the preferred access. (Caltrans)

RESPONSE 37:

Caltrans noted in their comment on the DEIR that the "feasibility of the 12th Street off-ramp has not been, at this time, supported by preliminary engineering." When such preliminary engineering has been completed, further analysis of the traffic circulation to the intercept will be necessary. The DPM Program looks forward to continued coordination with Caltrans and with the Los Angeles Department of Transportation to develop the best solution for improving access to the People Mover from the eastbound Santa Monica Freeway.

COMMENT 38:

Caltrans is aware of and is participating in the ongoing interagency coordination efforts as the Union Station Transportation Center is being developed. Updated proposals for the DPM/Transportation Center intercept should be included and clarified in the Final EIS. (Caltrans)

RESPONSE 38:

Interagency coordination is an ongoing activity to assure effective coordination within agencies for the Union Station Transportation Center. The Final EIS includes the latest available revisions to the plans. (See Section 4-332.)

10-250 Patronage

COMMENT 39:

The DEIS is highly speculative about patronage. The backup materials and study on which the patronage and alternatives analysis have been based should be made available to a select committee for careful review. (NAACP, Sierra)

RESPONSE 39:

Backup materials are available upon request. The assumption and analytical techniques used in the patronage analysis are full documented in a report entitled Models and Estimates of Los Angeles DPM Demand, Cambridge Systematics, Inc., October 1978. A comparison document, DPM Travel Prediction System: User's Manual, also by Cambridge Systematics, fully describes the computerized procedures used in forecasting DPM demand.

The demand estimating procedures used in Los Angeles have been recommended by UMTA for use in other cities. The work done in Los Angeles is the basis for UMTA's three-volume report on state-of-the-art methods (Planning for Downtown People Movers, April 1979, Report No. DOT-TSC-UM-917-PP-79-8).

A few of the major assumptions used in the Los Angeles DPM demand forecasting are as follows:

- A "mid-level" forecast of 230,000 employees in the downtown area in 1990.
- An 11% increase in local bus service and a 30% increase in express bus service to downtown, between now and 1990.
- 16% of all express buses to downtown "intercepted" at either the Convention Center or Union Station.
- Average auto occupancy in 1990 of 1.35 for regional trips.
- A parking cost of \$1.00 at the DPM intercepts.
- 15 cent fare for both the DPM and minibus, 40 cents for RTD bus (in 1978 dollars).

These are some of the most critical assumptions in the analysis. For further information, see the above-referenced reports.

COMMENT 40:

Lack of sufficient parking makes the patronage figures highly suspect. (Wolinsky)

RESPONSE 40:

A total of 3,750 parking spaces will be constructed at the two intercept facilities. It has been estimated that in the peak hour in 1990, 2382 people would ride the DPM after parking at one of the two intercepts. Considering the capacity of the lots, this does not appear to be an excessively high number. On a daily basis, 12,500 DPM distribution trips are expected to be made by regional auto users. This estimate takes into account round trips, the average occupancy of the cars, the number of spaces reserved for car-poolers, and the turn-over rate for short-term parking spaces. On a daily basis, 34,200 DPM distribution trips are expected to be made by regional transit users, and 5,062 in the P.M. peak hour. In the peak hour, the DPM is expected to "capture" about 8.8% of all distribution trips by regional transit users, and 3.7% of all distribution trips by regional auto users.

COMMENT 41:

Patronage is likely to differ if certain assumptions about implementation of improved bus service or alternative configurations of proposed rail service prove incorrect. (LWV)

RESPONSE 41:

It is agreed that alternative assumptions regarding bus and rail service to downtown will have an effect on DPM ridership. A critical assumption is the number of buses to be "intercepted" at Union Station or the Convention Center. Clearly, the more lines that terminate at the intercept stations, the higher

DPM patronage will be. The current patronage estimates are based on the conservative assumption that 16% of all SCRTD express buses to downtown terminate at the intercepts. These estimates are also based on the assumption that the Transportation Systems Management (TSM) proposals will be implemented. The effect of TSM would be roughly an 11 percent increase in the frequency of local bus service to downtown and a 30 percent increase in the frequency of express bus service to downtown. Granted, if these improvements are not implemented, then DPM ridership will probably be lower. This is because there is a greater likelihood that a bus passenger will transfer to the DPM than an auto user, and with fewer buses serving downtown, there are fewer opportunities to transfer.

In a sensitivity analysis conducted during Preliminary Engineering, the effects of the Freeway Transit and the Starter Line projects on DPM patronage were studied. The results are described in Section 5-242 of the DEIS. It was assumed that all of the Freeway Transit buses would be "through-routed;" i.e., they would not be intercepted at Union Station or the Convention Center. If these were intercepted, the effects on DPM ridership would have been more significant.

Similarly, a different route for the Starter Line than the one assumed in the sensitivity analysis would mean changes in DPM ridership forecasts. If, for example, the Starter Line intersected with the DPM at the Convention Center and then proceeded east to, say, Broadway before swinging north, the number of transfers to the DPM would be significantly greater than with the currently planned alignment which has a connection at 7th Street.

COMMENT 42:

The estimates of patronage are possibly too conservative. Although there are many side benefits, a fundamental objective

of the project is to aid in the relief of traffic congestion in the central business district. To this end, the patronage figures reflect the anticipated distribution and circulation trips to be made by commuters, shoppers, noon-time diners, etc. I suspect another category of rider should be added to this: Sightseer. Both residents and visitors would be attracted to this new, futuristic transportation mode which affords elevated close-up and panoramic views of a dynamic city. This pleasure-ride capability is evident from the scenic descriptions included within the visual impact analysis section of the EIS. Also, judging by the heavy lunch-hour patronage on the present minibus service, shorter headways than projected may be necessary at mid-day. (T.A. Nelson)

## RESPONSE 42:

No response required.

## COMMENT 43:

Criticisms of the patronage studies have forced the CRA into re-evaluating its projections. (Pickard)

## RESPONSE 43:

Travel surveys will be conducted in 1980 as part of the DPM Evaluation Program, otherwise known as the "Before and After" Study. A similar survey will be conducted after DPM operations begin so that shifts in travel behavior can be analyzed.

It was felt that these surveys could also be used for recalibrating the travel demand models, thereby greatly increasing the value of the surveys. Detailed patronage forecasts are needed for the Final Design and Engineering Phase. Fleet size, platform lengths and widths, the number of escalators, fare gates, etc. all depend on the expected level of passenger demand. Refinements to the patronage estimates made during Preliminary Engineering are required partly because downtown

development is proceeding at a more rapid pace than previously anticipated. For example, it is now expected that parcels in the Bunker Hill area will be fully developed by 1985.

Furthermore, the demand models developed during Preliminary Engineering are based on travel surveys conducted in 1975. Increases in gasoline and parking prices since that time have been significant. A re-examination of CBD travel patterns is therefore warranted. In addition, major shifts in transit services are expected. The SCRTD recently announced the 1980 Sector Improvements, the most extensive revision of bus service in RTD history. These new developments demand a revision to the forecasts of economic growth, parking supply and costs, transit service levels, and regional travel to downtown - all of which are input variables to the DPM patronage models. Patronage projections will continue to be refined and updated during final design and engineering.

10-260 Technology/TechnicalAGT SYSTEM APPLICATIONS IN THE U.S.

(Existing or under construction)

## COMMENT 44:

A discussion/evaluation should be included in the DEIS of existing similar systems in use in the U.S. or world. This discussion should deal with utilization rates, mechanical or other problems, and impact on their service area. (State Lands)

## RESPONSE 44:

Virtually all of the Automated Guideway Transit (AGT) systems in operation today are in airports, shopping centers, university campuses, and recreational areas where riding is a necessity, rather than a matter of discretion. Utilization rates from these applications would have little bearing on the LADPM, which will be ridden by choice.

With a few exceptions, existing AGT systems have been designed as a part of the larger complex to which they belong. Thus, there has been little problem in blending the systems with their environments and minimizing interference with the normal activities of the area. By contrast, the LADPM must blend with a wide range of architectural styles and perform its function without interfering with a large variety of urban activities. Recognizing the added challenge of meeting these requirements, the LADPM program has been structured to contain a series of reviews and to require approvals at critical milestones of the program, assuring compatibility with and integration into the existing urban environment.

In all probability, the single most important factor in public acceptance of an AGT system is the perceived reliability of service. Although a system will not be selected until the completion of the environmental process, the LADPM will be based upon a system which has a record of operation. It would appear reasonable to expect system availability of the same

<u>SYSTEM APPLICATION</u>	<u>LOCATION</u>	<u>SYSTEM SUPPLIER</u>
Morgantown Personal Rapid Transit	Morgantown, WV	Boeing Aerospace Company
Duke University Hospital Peoplemover	Durham, NC	Otis Elevator Company (Transportation Technology Division)
California State Exposition	Sacramento, CA	Universal Mobility, Inc. (UMI)
Hershey Park	Hershy, PA	UMI
Magic Mountain	Valencia, CA	UMI
Carowind	Charlotte, NC	UMI
Kings Island	Kings Mills, OH	UMI
Kings Dominion	Ashland, VA	UMI
Minnesota Zoological Gardens	Apple Valley, MN	UMI
AIRTRANS	Dallas/Ft. Worth Airport, TX	Vought Corporation
Walt Disney World WEDWAY People Mover	Disney World, FL	Walt Disney Community Transportation Services
Tampa Airport	Tampa, FL	Westinghouse Electric Corporation (WEC)
Seatac Airport	Seattle, WA	WEC
Busch Gardens	Williamsburg, Va.	WEC
Miami Airport	Miami, FL	WEC
Atlanta Airport	Atlanta, GA	WEC

order as the system upon which it is based. Most mature AGT systems are reporting system availability of the order of 0.99, or higher. That is, these systems are inoperative less than 1% of the time. The system supplier will be required to demonstrate that the system he has furnished meets the system availability and schedule adherence requirements of the system specification.

There are a number of AGT systems either in operation or under construction in the U.S. today. The accompanying table contains a list of such systems, one of which may serve as the base-line for the LADPM system.

COMMENT 45:

No prototype test has been specified before committing to the project. (Schiffer)

RESPONSE 45:

The System Specification for the LADPM requires that proven technology be used for its implementation. Given this requirement, there are no major technical issues to be resolved through prototype testing prior to committing to the project. The program is structured, however, to require prototype testing of system elements which must be developed to adapt the selected technology to the LADPM application. The amount of prototype testing will depend upon the technology selected.

The table accompanying the response to Comment #44 contains a list of AGT systems either in operation or under construction in the U.S. today. Some of these systems have been in operation since as long as 1969. There appears to be little justification for requiring system level prototype tests prior to selection of the technology.

COMMENT 46:

The spacing and design of the DPM has not been analyzed for its convertibility to a PRT (Personal Rapid Transit) system. (Pickard)

RESPONSE 46:

Because there are no current federal development efforts for PRT systems, the characteristics of PRT systems are rather nebulous, making the task of designing a DPM which could be converted to a PRT somewhat problematical, at best. On the other hand, the ongoing development of Automated Guideway Rapid Transit (AGRT) has begun to define some general characteristics of these types of systems, allowing some judgments to be made as to the convertibility of DPM to AGRT.

Assuming that an AGRT vehicle could be made to fit the LADPM guideway, there is nothing in the LADPM system design to preclude conversion. Modifications would need to be made to provide for offline stations and shorter headway operations, but these could be made without having to raze the basic physical structures. Judgments as to the desirability and practicality of such a conversion must be withheld until further data are available.

COMMENT 47:

The DPM columns should be made of steel to withstand earthquakes and to allow recycling of the material when the People Mover is dismantled. (Stromme)

RESPONSE 47:

All structures will be designed and will include sufficient steel to meet earthquake conditions. No final decision can be made regarding the guideway material until final design. Other factors such as cost, maintenance, and aesthetics need to be considered in addition to recycling.

## COMMENT 48:

Technical questions remain about the DPM, such as "how is the system cleared when it is shut down, and what happens if it is too sensitive and shuts down too often". (Pickard)

## RESPONSE 48:

Detailed responses to system failures are, to a degree, dependent upon the selected technology. Thus, these are considered to be a part of the final design of the system. There are several features, however, which are being required by the System Specification to aid in system recovery. These include:

1. Remote restart capability from Central Control
2. The ability to push or tow stalled vehicles with another vehicle
3. Manual operation by service personnel
4. Extensive diagnostic data to aid in implementing quick restoration of system service

Existing systems, through combinations of these and other features, are reporting system availability of 0.99 or more. That is, the systems are inoperative less than 1% of the time they are scheduled to be operating. Since the LADPM is to be based upon an existing system, it would appear reasonable to expect that it will achieve an availability of the same order of magnitude.

## COMMENT 49:

Emergency passenger exit from the DPM vehicles has not been addressed in the DEIS. (Pickard)

## RESPONSE 49:

The DPM System will include design features and special procedures for the safe and efficient handling of emergencies.

The system design is to include provisions to enable the safe, timely, and unassisted evacuation of patrons and personnel from facilities and vehicles located in stations or at any location on the guideway. The system design is to also include provisions to safeguard patrons, system personnel, and emergency forces anywhere on an evacuation or access route, from hazards. These will include such provisions as emergency exits on vehicles, walkways on or adjacent to the guideway, station stairs, telephones, and public address systems for providing information and guidance.

## COMMENT 50:

What are the special safety concerns of an elevated, automated DPM system. (HUD)

## RESPONSE 50:

For the most part, safety and security in conventional transit systems have been dealt with by providing vehicle operators and station attendants. Both the transit industry and the Urban Mass Transportation Administration recognize that automated guideway transit (AGT) systems must provide the same level of safety and security, in order for them to be acceptable.

The AGT technology involves the use of automated vehicles, operating on an elevated guideway, in an urban setting. A number of existing transit systems have automated vehicles on an elevated guideway, and therefore the AGT safety considerations are not unique. Some of the specific concerns, however, include emergency egress from the system, including vehicles and fixed facilities, and communications between passengers and the system operators, should some problem arise. These are examples of problems which have been faced in the past, and for which solutions are available.

In the case of the LADPM, some potential solutions to these

problems have already been specified. Closed circuit television, for example, will be used to monitor the station and platform areas for crowding, unusual activity, and identifying an unsafe condition. Platform edges will be made easily recognized, through the use of color, texture, and material. In the case of emergency egress from the system, specific measures cannot be stated at this time, due to the wide range of systems being considered. However, it will be a requirement of each system supplier to specify how emergency exit from the system will be handled, for both a supervised and unsupervised condition. In addition, fixed facilities will be designed to satisfy all applicable fire and building and safety codes.

There is an extensive body of knowledge on the subject of safety and security which is being used for safety planning. Two publications in particular, prepared by the Vought Corporation for UMTA, have provided useful information concerning passenger safety, convenience services, and evacuation and rescue services in AGT systems. (Vought Corporation, Guidebook for the Provision of Passenger Safety and Convenience Services in Automated Guideway Transit and Guidebook for the Provision of Evaluation and Rescue Services in Automated Guideway Transit, 1978.) The current literature on the subject will continue to be used in LADPM safety planning. Early in the DPM safety and security planning, a meeting was held with the Los Angeles Police Department (LAPD). The discussion centered on specific security provisions, such as the use of closed circuit television, communication and public address systems, remote assistance devices, intrusion detection alarms, and special assistance techniques for handicapped patrons. The LAPD was of the opinion that although the vehicles and stations will be unattended, the security planning and use of highly visible and well lighted areas and vehicles will enable coverage by normal patrol car service. However, the intercepts would necessitate foot patrols and added manpower.

In a letter of November 15, 1978, the LAPD noted that LADPM security planning adequately addressed most of its concerns. It was suggested that uniformed guards be used, in addition to electronic monitoring devices, at the parking facilities. If the LAPD provided this service, 12 additional officers would be needed.

COMMENT 51:

The Police Department would like to be asked to supply an estimate of the additional police officers required to meet the policing needs of the DPM system. (LAPD)

RESPONSE 49:

Early in the DPM Preliminary Engineering studies, a general security coordination and planning meeting was held with Captain W. C. Swihart, Commanding Officer - Central Area LAPD. The discussions centered on DPM personal security planning for use of closed circuit television, communication and public address systems, remote assistance devices, intrusion detection alarms, and special assistance techniques for handicapped patrons. Captain Swihart was of the opinion that although the vehicles and stations will be unattended, the security planning and use of highly visible and well lighted areas and vehicles will enable LAPD coverage of the stations and guideway by normal patrol car service. However, the intercepts would necessitate LAPD foot patrols and added manpower.

By letter of November 15, 1978, W. T. Burke, Captain - Commanding Officer Planning and Research Division, LAPD, noted that the DPM security planning adequately addressed most Police Department concerns. Captain Burke went on to suggest the use of uniformed guards in addition to the electronic monitoring devices at the parking facilities. If the LAPD provided this service, 12 additional officers would be needed.

Coordination will be continued with the LAPD, as well as other applicable regulatory and advisory agencies.

COMMENT 52:

Concern has been expressed regarding the proximity of the DPM to buildings, the construction and operation of the subway portion of the route, and other aspects of fire prevention and fire safety. The Los Angeles Fire Department recommends inserting pages 3-36-3-39 of the FEIR into the FEIS. (LAFD)

RESPONSE 52:

An organizational unit has been established to act as a single point of contact for establishing and implementing a system safety and fire protection program. This program is vitally concerned with DPM system impacts on the LAFD fire protection and fire-related services for the CBD and the associated mitigating measures during the construction, implementation and subsequent operational phases of the program.

The safety and fire protection organization coordinated with the LAFD and incorporated their recommendations in The Preliminary System Specifications and Draft Technical Statement of Work for the System Contractor. These documents establish the DPM technical and program requirements relative to providing code and standard equivalencies for fire protection, loss prevention, and life safety considerations for the unique aspects of a downtown people mover system. By letter of December 11, 1978, Battalion Chief D. F. Anthony - LAFD Planning Section, concurred with the sections dealing with system safety and fire protection and stated that no further modification to these sections was necessary.

The safety and fire protection organization will continuously coordinate the program efforts and mitigating measures with the fire department, city building department, fire prevention

bureau and other appropriate agencies to provide equitable and timely agreements and approvals for building and occupancy permits as well as safety approvals for opening of passenger service. This unit will also coordinate the training of fire department and emergency medical personnel relative to the DPM system.

Summary of LAFD FEIR Comment

In a letter to the City Planning Department dated February 22, 1978, the Los Angeles Fire Department expressed the following comments regarding subway, bus and aerial transit systems.

Subway

In order for the Fire Department to safely execute its responsibilities during construction, several measures should be taken.

1. Operational procedures, methods and equipment should meet all applicable requirements for tunnels, as covered by the following publications: Department of Industrial Safety, Electrical and General Safety Orders; California Labor Code; U.S. Department of Interior, Bureau of Mines, Bulletin 644; OSHA Rules and Regulations; Los Angeles Municipal Code; National Fire Protection Handbook; and other applicable safety orders.
2. Safety conditions during construction would be dependent upon the degree of gassiness. Consideration should be given to the following: (a) Gas Monitoring systems, (b) ventilation systems, (c) fire suppression systems, (d) explosion proof electrical systems, (e) permit before flame producing operations are conducted, (f) an approved tunnel-to-surface communications system should be present, (g) vertical tubes for emergency access should be provided at 1000-foot intervals, (h) an evacuation plan and procedures should be developed, (i) rescue crews should be trained in the use of breathing apparatus, and (j) other applicable safety equipment and methods should be used.

Supplemental fire protection and rescue requirements to be used when the system is operational should include the following:

1. Access for fire and rescue operations should be provided to stations, parking structures and subway sections of the system.
2. Fire protection systems should be well-planned. (Examples given)
3. Consideration should be given to adequate drainage facilities from subsurface areas.
4. The installation of under-train sprinkler systems should be considered.
5. All vertical exitways, shafts, and subsurface walkways should have automatic sprinkler systems, as well as all waiting stations and other places of assemblage.
6. Smoke removal systems, similar to those in high-rise buildings, will be necessary.
7. A Fire Department communications system shall be incorporated into all vertical exitways, subsurface walkways and similar areas.
8. A local fire warning system and automatic detection system should be installed.
9. A fail-safe de-energization of the electrical system must be designed.
10. An emergency electrical system throughout the subway is recommended.
11. All subsurface exitways and vertical exit shafts shall have approved exit illumination with a secondary source of power.

#### Special Bus Lanes

Special bus lanes, currently in use, do not appear to be a problem for providing adequate fire protection and safety for bus occupants.

#### Aerial Rail Systems

The following are fire protection considerations for an aerial transit system:

1. Access to aerial vehicles, at locations other than loading platforms, is a primary consideration. Special planning will be necessary to ensure the Fire Department of adequate access for aerial ladders and engine companies.
2. Dry standpipe inlets and outlets at elevated passenger stations will be required to provide a water system above ground.
3. A thorough evaluation of the aerial rail system will be required to determine what effect the aboveground rail will have on providing accessibility to multi-story buildings for fire protection and rescue purposes.

#### Conclusion

Detailed descriptions and more specific conditions of the above requirements could be established when actual plans become available. This Department will make an in-depth study and specific recommendations on the type of mitigation measures that will be required to ensure that adequate safety measures are incorporated into the proposed program.

#### COMMENT 53:

If possible, the Final EIS should reflect a decision on the technology to be used for the system. In particular, it should reflect efforts to use a system which would permit thin guideway designs in order to minimize the visual impacts of the project. (DOT)

#### RESPONSE 53:

Choosing the final system will require competition among potential suppliers. That competition cannot be held until UMTA funding for the system has been finally approved. UMTA cannot

approve final funding for the system until the Final EIS has been approved. That is why the Final EIS cannot reflect a decision on the technology to be used in the system.

The visual impact of the system is an important concern. This concern is addressed in the System Specification by a requirement that the visual impact of both the guideway and the stations be minimized. In addition to the architect employed by the system supplier, an architect will be engaged by the DPM program to exercise overall responsibility for design coordination. The Los Angeles Municipal Arts Commission must approve final design of all system facilities. Finally, the visual impact and aesthetics of the proposed design will be an important criterion used in the evaluation of the proposals and the selection of the system supplier.

COMMENT 54:

The Environmental Impact Statement should examine the potential for on-site security personnel to enhance ridership, particularly for the elderly and handicapped. (CTC)

RESPONSE 54:

The latter portion of response 50 responds to this comment.

COMMENT 55:

To reduce disruptions to ground-level traffic patterns and possible adverse visual impacts, DPM guideway structures should incorporate single-column bent construction. However, it must be realized that this type of construction is particularly vulnerable to seismic action. Obviously, a more slender column would be adequate to carry the load of the DPM guideway compared to columns supporting the wider free-way decks. Because of the smaller column cross section, consideration should be given to increasing structural resistance to seismic forces even beyond that required by revised

building codes and recent design specifications of the American Association of State Highway and Transportation Officials. (T.A. Nelson)

RESPONSE 55:

Consideration will be given to this and a seismic dynamic analysis will be conducted.

COMMENT 56:

The 5th and Figueroa station is to be a transfer point between one-way sections of the DPM. Due to space limitations, a center platform is not practical, so transfers will be made via the mezzanine level. In planning the pedestrian flow on the mezzanine of this station, consideration should be given to assigning priority to the transferring passenger over the entry passenger. Accordingly, the direction of movement of the northeast escalator should be up instead of down. (T.A. Nelson)

RESPONSE 56:

We agree with the basic principle. The actual elevator location will be determined as part of final design.

COMMENT 57:

The Urban Mass Transportation Administration has established a policy of allowing no federal money to be spent on the development of the PRT technology. Why is this so? (Pickard)

RESPONSE 57:

UMTA had decided to concentrate its resources on Shuttle Loop Transit (SLT) and Group Rapid Transit (GRT), rather than Personal Rapid Transit (PRT), for the following reasons:

- (1) To fulfill its potential, a PRT system requires many stations with an extensive network of elevated guideways. This represents a large

capital investment in an unproven technology.

- (2) A true PRT system has off-line stations, very close headways, and therefore, a complex switching and automatic train control system. This would need more development before it could be employed in a dense urban environment. There is no need for off-line stations to perform a circulation/distribution function in downtown Los Angeles.
- (3) It is the feeling of UMTA that any time saving that a PRT system could provide would not be offset by its large capital cost. More importantly, the objectives of a PRT system are more ambitious than what is needed in Los Angeles. Therefore, the rational approach is to try a simpler technology first. Such an approach is being employed with Shuttle Loop Transit in Los Angeles, characterized by: relatively small vehicles; close, but not impossibly so, headways; on-line stations; proven technology; simpler switching.

UMTA does, however, continue to investigate the possibilities of advanced Group Rapid Transit. Two private firms are moving into prototype development with UMTA assistance. In addition, UMTA is supporting the further development of certain components of a PRT system, e.g. vehicle control, although it is not supporting total system development.

10-270 Handicapped Provisions

COMMENT 58:

The DEIS was not circulated for comment to any organization which directly represents the physically handicapped. (Paralyzed Veterans)

RESPONSE 58:

The DEIS was circulated or distributed on request to the following agencies and organizations having an interest in the physically handicapped:

U.S. Department of Transportation  
 U.S. Department of Housing and Urban Development  
 U.S. Department of Health Education & Welfare  
 California Department of Transportation  
 California Department of Public Health and Welfare  
 County of Los Angeles Commission for the Handicapped  
 City of Los Angeles, Mayor's Office for the Handicapped

COMMENT 59:

Site plans presented in the DEIS for the following stations do not indicate the presence of elevators, and the stations are therefore not fully accessible: Federal Bldg., Library, Fifth and Figueroa. (Paralyzed Veterans)

RESPONSE 59:

Section 4-350 of the DEIS deals with the general provisions for the elderly and handicapped. The DEIS and the LADPM Elderly and Handicapped Plan were discussed at several planning and coordination meetings held with the Mayor's Office for the Handicapped. The DPM is fully committed to provide designs of system facilities and vehicles which will safely allow for full accessibility to the elderly and handicapped.

There is direct elevator access to each station platform level

from each public area in near proximity of the stations; i.e. from street level areas, public mall levels, roof levels, park levels, etc. Similar elevator access to the station platforms is provided within the intercepts. "Future pedway, escalators, and stairs by others" are shown for the purpose of illustrating potential planning concepts only. The DPM project will assure proper planning and coordination for handicapped access when system facilities are actually being implemented.

COMMENT 60:

Emphasis must be made that access to the DPM from all buildings and structures must be barrier free. (Paralyzed Veterans)

RESPONSE 60:

See response 59.

10-280 Impacts: Traffic and Transportation

COMMENT 61:

The People Mover will not discourage automobile use and not relieve downtown congestion as claimed. (Hartman, Sarnoff)

RESPONSE 61:

Analysis performed for the DEIS has indicated that the DPM will have a positive impact on automobile use, as it relates to downtown. Moreover, the analysis has shown that a net decrease of 11,000 daily regional VMT would be expected. Within the CBD, it is expected that a 2.6% daily reduction in VMT would result, which would have a positive impact on traffic congestion.

COMMENT 62:

If the DPM is to relieve congestion, why are large support structures being placed in already inadequate streets and sidewalks? (LWV)

RESPONSE 62:

For purposes of the EIS, "Minimum acceptable sidewalk width" is a term which relates to the quality of pedestrian flow associated with a given segment of sidewalk, rather than a specific sidewalk width.

Studies conducted for the DPM project have analyzed pedestrian flow using a methodology that is comparable to vehicular analysis. Various levels of service are developed using the parameter of "pedestrians per foot of width per minute" (PFM). Pedestrian volumes recorded during a 1973 Department of Traffic Downtown Midblock Pedestrian Study were employed to examine the impacts on pedestrian flow along the DPM route. Although this study does not reflect the impact of newer structures on pedestrian movement on the west side of the CBD, it

does include a majority of the area where DPM columns were anticipated to be placed within the sidewalk area.

For example, analyses of pedestrian flow on 5th Street and on Hill Street indicate that there will be no constraints to movement despite the presence of DPM columns within the sidewalk. These analyses were based on sidewalk width, pedestrian volumes and flow characteristics, for an assumed unconstrained flow level of service C.

As more information concerning construction becomes available, a more thorough analysis will be possible. However, using currently available information, there appears to be no indication that pedestrian flow will be adversely affected by the DPM.

Furthermore, the ability to integrate some of the existing street furniture (traffic signals, electroliers, signs, etc.) into the DPM column structure will limit the effects on pedestrian mobility. Also, the development of a pedway system on the west side of the CBD will improve pedestrian flow to and from newer structures and future developments.

COMMENT 63:

The DEIS contains a discrepancy regarding traffic impacts in the vicinity of the Convention Center intercept. Section 3-420 indicates that no serious impacts on traffic congestion will result, whereas Section 5-243 indicates a significant impact on adjacent streets and that severe capacity problems could result for left turn movements from Figueroa and at the 11th Street/Harbor Freeway undercrossing. (City Engineering)

RESPONSE 63:

The statement in Section 3-420 referred to a systems analysis

of the contiguous street networks at the Convention Center and Union Station intercepts. Using this qualitative form of analysis, it is projected that trips to and from the intercepts will have a limited effect on total vehicle flow throughout the individual networks. System-wide congestion, therefore, will not be significantly increased. Section 5-243 contains a quantitative evaluation of individual intersectional approaches along routes to and from the intercept parking facilities. The evaluation consists of a prediction of future demands and the assessment of these demands on intersectional capacity. For the Convention Center analysis, deficiencies in capacity were calculated for the intersections of Figueroa Street and Pico Boulevard and Eleventh Street and Blaine Street. This worst case analysis did not consider possible mitigation measures or changes in vehicle routings, which could offset the capacity deficiencies. In any event, the adjacent intersections will have sufficient excess capacities to absorb the intercept demand without affecting the entire street system.

COMMENT 64:

The center of Figueroa alignment was not recommended during previous route refinement analysis and would result in safety problems and substantial disruption to vehicular traffic during both construction and operation of the DPM. Street widening necessary for this alignment would result in narrowed sidewalks of barely acceptable width for the increased pedestrian traffic associated with the DPM. (LWV)

RESPONSE 64:

The center of Figueroa Street alignment was recommended because of its lower capital cost for both construction and right-of-way and for its improved operating and service characteristics. Sections 5-142 and 5-243 enumerate the construction and operation traffic impacts of this alignment.

With respect to pedestrian impacts, maintaining acceptable minimum sidewalk width should be sufficient to accommodate pedestrian activity in the area. See Comment 62 for a more detailed discussion of this issue.

COMMENT 65:

If the DPM is to decrease vehicle-miles traveled for those going to the CBD, why are parking spaces provided for 3750 vehicles? (LWV)

RESPONSE 65:

Analysis conducted for the DEIS has indicated that a net daily reduction of 11,000 VMT in the region would result from DPM implementation. Part of this reduction is due to the diversion of auto trips to the DPM at each of the two intercept facilities. As a result of the intercept concept, which provides 3750 auto parking spaces at the two intercepts, approximately 8,400 auto VMT will be saved each day.

COMMENT 66:

A regional goal is to reduce VMT, yet the DPM will increase it. (Pickard)

RESPONSE 66:

The DPM will decrease the regional VMT, even with the increased office and residential uses in downtown that will be induced by the DPM. The DPM will effect a gross savings in vehicle miles travelled of 27,400 as follows:

- 10,000 - due to shorter work trips and lower auto use by the new residents of downtown
- 8,400 - due to intercepting regional auto trips at Union Station and Convention Center
- 9,000 - due to diversion of auto circulation trips to the DPM

The DPM would result in 16,300 induced vehicle miles of travel, as follows:

- 15,300 - due to increased distribution trips associated with new office development downtown
- 1,000 - due to increased circulation trips by new residents of downtown

Thus the DPM would result in a net savings of 11,100 vehicle miles of travel in the region.

COMMENT 67:

The system will rob some of the downtown streets of their pedestrian traffic. (Sarnoff)

RESPONSE 67:

It is true that the DPM will attract some riders who would have otherwise walked to their destination. This can be viewed as a positive impact, in that auto/pedestrian conflicts are reduced. This implies a reduction in traffic congestion on City streets, and a reduction in the potential for traffic accidents involving pedestrians.

10-290 Impacts: Historic and Cultural Resources

COMMENT 68:

Elimination of at least six railroad tracks at Union Station, about a third of the trackage, is a major impact deserving further consideration. The tracks and platforms to be removed would be permanently unavailable for future or expanded passenger service. (Shoreline, Conservancy, Stromme)

RESPONSE 68:

Both Caltrans and AMTRAK representatives have indicated at interagency meetings that future expansion needs would not be precluded by the taking of four track beds. For a detailed discussion of the impacts on AMTRAK service, see Section 5-141.

COMMENT 69:

I am taking issue with the comments in section 5-125.1 which states that the only historic site that will be impacted by this project is Union Station. (SCA)

RESPONSE 69:

The discussion in section 5-125.1 relates to construction impacts and states that the only historic site to be changed by construction is Union Station. Other historic sites are impacted in various ways during DPM operation, and these impacts are discussed in Chapter 6. However, the Union Station site is the only one that will be physically altered by DPM construction.

COMMENT 70:

The DPM project should be designed to allow for extension of the tracks to the south and east, so that Union Station could become a through rather than stub end station. (Shoreline, Stromme)

RESPONSE 70:

The project is being designed to allow for extension of the tracks.

COMMENT 71:

DPM intercept facilities and guideway will detract from the architectural and historic unity of the Union Station site. (Stromme)

RESPONSE 71:

The DPM intercept and guideway have been carefully planned to minimize their effect on the architectural and historic unity of the Union Station site. As noted in Section 6-421: Alternatives to Minimize Harm, the guideway has been placed at the southern edge of the Union Station property; the intercept facilities have been placed in the easternmost track area; and the intercept building will be low enough so that the profile of Union Station as viewed from Alameda Street will not be changed.

COMMENT 72:

The busway, people mover guideway, and intercept facilities will block views of the cityscape to the south and views of the Union Station buildings from the south and east. (Stromme)

RESPONSE 72:

The busway, people mover guideway, and intercept facilities will block current views of the cityscape to the south and views of the Union Station buildings from the south and the east. The view to the south will be blocked for the rail passenger but not for the people using the DPM intercept. Views of Union Station from the south, presumably from across the depressed freeway, would be blocked but there is a question of how many people currently have a view of Union Station from

the south now. Views of the eastern facade, or the back of the station, would be blocked from the east. However, these views are seen only by drivers on the Santa Ana Freeway, who would be passing by at high speeds on an intensely used segment of that freeway. Views of the back of Union Station would be increased for those people using the Transportation Center.

COMMENT 73:

The DEIS should clearly indicate sufficient interface between the different modes of transport to justify the centralization of facilities at Union Station. (Stromme)

RESPONSE 73:

All modes of transportation are present in the Union Station today with the exception of the DPM, the Starter Line, and the El Monte busway extension.

The Union Station intercept plan is designed to improve the integration of the modes and to provide an improved means of distribution of transit passengers from Union Station through the Central downtown area.

COMMENT 74:

Final design for the Union Station intercept should carefully consider the space needs and operational characteristics of each transportation mode. Specifically, the multi-modal transportation center should accomplish the following:

1. Provide for the handling of AMTRAK rail passengers as one of its main components.
2. Provide a direct interface between AMTRAK passenger trains and interstate buses, perhaps sharing the same passenger waiting area, and permitting the coordination of schedules.

3. Provide a convenient and efficient interface between the train-bus passenger area and the DPM, the Starter Line subway stop, metropolitan buses, taxis, etc. (City Planning)

RESPONSE 74:

Final planning for the intercept will be carefully coordinated with the other agencies and organizations that will use Union Station. A number of interagency coordination meetings have taken place and will continue to do so during the final engineering of the DPM system.

COMMENT 75:

The maintenance and storage facility would constitute a fire hazard and a source of dirt and noise for train passengers using Union Station. (Stromme)

RESPONSE 75:

Section 4-360 of the DEIS deals with the general subject of safety and security which includes fire protection. The system safety and fire protection program has been carefully defined, consistent with the conceptual project level being presently pursued, and has been concurred in by the LAFD.

The DPM project will conform to the South Coast Air Quality Management District regulations and obtain the proper approvals and permits for maintenance operations. The maintenance and storage facility will be subject to the CAL-OSHA noise limits with regard to employees. These noise limits and distance attenuation should result in little or no noise disturbance to LAUPT patrons. All heavy vehicular maintenance and exterior cleaning operations will be performed within fixed facility buildings, which will preclude general public exposure to dirt, solvent, and noise pollutants.

Unlike diesel trains, which produce a large amount of parti-

culates, the DPM will not produce a measurable amount of particulates once it is in operation. Further, analysis has shown that the DPM will not have a significant noise impact anywhere along the route, least of all in the Union Station area, where train and freeway noise will most certainly dominate. In the context of a densely populated urban environment, Union Station is a good choice for the location of a maintenance facility of this type.

COMMENT 76:

Nomination of the Union Station property to the National Register of Historic Places has been forwarded to the Department of the Interior. (Conservancy)

RESPONSE 76:

Nominations to the National Register of the following two properties along the DPM route have been forwarded to the Department of the Interior since the DEIS was published: Union Station, Fire Station No. 28.

COMMENT 77:

The DEIS fails to discuss the improved bus system in the "Alternatives that would Avoid Adverse Impacts" section of the Parklands and Historic Properties Chapter. (Conservancy)

RESPONSE 77:

The impacts on historic properties of either the null alternative or the improved bus alternative were analyzed during Phase 2 of the Circulation/Distribution Program studies and reported in the Environmental Impact Assessment, 1977, (Section 5.2.4) and in the Summary of Environmental Impact and Response to Issues (August, 1977: pp. 26,30,37). Both of these documents have been available to the public since 1977. The choice of system alternatives included consideration of the impacts on historic structures, but those impacts were only one of

several factors influencing the choice of the preferred system.

The bus alternative was not selected because it could not provide a level of transportation service, a degree of economic development potential, or the amount of operating cost savings comparable to the DPM. It therefore is not a practical alternative for avoiding historic properties.

COMMENT 78:

The analysis of the impact of the DPM on the historic Plaza area is not adequate. The DPM will have a significant adverse visual impact on the El Pueblo State Historic Park and will be potentially distracting to Park visitors. The adjacent Father Serra Park is also an area of extreme visual and archaeological sensitivity. (Conservancy)

RESPONSE 78:

The DPM will not require the use of any land from El Pueblo de Los Angeles National Register District; it will be over 100 feet away and across a fairly busy street from the southeast corner of the National Register District. The locus of activities in the National Register District and in the State Historic Park is from the Plaza area northward. The DPM can scarcely be seen from the Plaza and not at all from the Olvera Street shopping area. The potential visual impacts on the State Historic Park including Father Serra Park are fully discussed in Section 6-240 and Figures 6-24A and 6-24B. The DPM, because it will improve accessibility, will benefit park visitors and not detract from their enjoyment. It will also provide unique views of the park which are not now available. It should be noted that the DPM is an elevated system which will have minimal disruption to the ground surface. If, however, archaeological resources are found, they will be fully protected under the terms of the Memorandum of Agreement signed by the State Historic Preservation Officer, the Advisory Coun-

cil on Historic Preservation and the Urban Mass Transportation Administration.

COMMENT 79:

The Federal Highway Administration is currently conducting a Section 106 study for the El Monte busway extension. This extension will also be using Union Station property. Therefore, coordination of the two proposals will be necessary for a proper "effects" determination. (FHWA)

RESPONSE 79:

Contacts have been made with the California Department of Transportation, FHWA division office and with the State Historic Preservation Officer to coordinate the 106 activities for the two projects. However, until plans for the busway are finalized, a definitive finding of effect can only be made for the DPM project.

COMMENT 80:

In the discussion of Section 4(f) properties, in many cases it has not been shown that there are no feasible and prudent alternatives to the use of Section 4(f) lands. (City Engineering)

RESPONSE 80:

Further analysis has been done with respect to properties protected by Section 4(f) of the Department of Transportation Act. Section 6-200 of the FEIS contains documentation to support the determinations required by Section 4(f).

COMMENT 81:

The following Cultural Heritage Board monuments should be included in the Section 4(f) discussion:

Subway Terminal Building (CHB No. 177)  
St. Paul's Cathedral (CHB No. 66)

Also, indicate the Los Angeles City Hall as CHB monument No. 150. (City Engineering)

RESPONSE 81:

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 1653) requires that programs and projects assisted by the Department of Transportation "avoid the use of land" from publicly owned parks, recreation areas and wildlife refuges and any historic properties, unless there is no feasible and prudent alternative to the use of these lands. The proposed Downtown People Mover would require the use of land only from those properties identified in the DEIS, namely: Pershing Square, City Hall lawns, Father Serra Park, and Union Station.

Los Angeles City Hall is identified as a local Cultural Heritage Board monument in Section 2-250, Figure 2-25A.

COMMENT 82:

The DEIS does not identify significant street furniture along the proposed route, and therefore does not address impacts and mitigation measures. (Conservancy)

RESPONSE 82:

Subsequent to publishing the DEIS, an inventory has been taken of street furniture along the DPM route, to identify in particular street lighting standards of potential significance. This information, together with information regarding potential impacts and mitigation measures has been forwarded to the State Historic Preservation Officer and has been incorporated as necessary into Section 5-125.2 of the FEIS.

COMMENT 83:

The Draft EIS does not support a determination that alternatives which would avoid use of land from Pershing Square are not feasible and prudent. It appears that a relocation of

the People Mover station at Pershing Square, to the north side of the street would be feasible. This would entail relocation of the Hill Street portion of the People Mover to the west side (sic) of Hill Street and then a crossing of Hill Street, but this approach does not appear to be infeasible nor materially different from that suggested in the EIS for Fifth Street. (DOT)

RESPONSE 83:

A discussion of alternatives in the Pershing Square area can be found in Section 6-230 of the FEIS.

COMMENT 84:

The location of the People Mover in the middle of Figueroa Street will have an adverse visual impact on St. Paul's Cathedral. Relocation of the People Mover to the east side of Figueroa Street would significantly reduce that impact. It appears that the final EIS should reflect detailed engineering study of possible column placement integrated with the existing structures on the east side of Figueroa Street to permit the People Mover to be located there. (DOT)

RESPONSE 84:

A discussion of Figueroa Street alternatives can be found in Section 6-529 of the FEIS.

COMMENT 85:

Section 6-300 implies that there will be no effect on the El Pueblo Historic District. The use of heavy equipment for construction could produce disturbance of the current surface. This could impact the historic district in many areas. The historic resources within the district have a degree of protection that resources next to the district do not now have, but may qualify for later. There is a very good probability that the district boundaries should be or could be

enlarged if significant resources are found next to it. Care should also be taken with the use of mechanical equipment in areas around known cultural resources, as damage can be done faster than realized. (SCA)

RESPONSE 85:

El Pueblo National Register Historic District is outside the proposed route of the Los Angeles Downtown People Mover and also outside of the construction area for the project. Father Serra Park is part of the State Historic Park, but not part of the National Register District. Construction of the columns and column supports in Father Serra Park will be preceded by additional archaeological research including a Phase 2 Map and Literature Survey and Phase 3 Core Borings Analysis. A qualified archaeologist will be retained to monitor construction activities. As stated in the DEIS, Father Serra Park has been identified as having the potential for containing archaeological remains. All of the above steps are part of the Memorandum of Agreement signed by the Urban Mass Transportation Administration, the State Historic Preservation Office, and the Advisory Council on Historic Preservation to protect historic and archaeological resources both known and not yet identified. The Memorandum of Agreement is found in Chapter 6 of this document.

COMMENT 86:

In Section 6-410 pertaining to 36 CFR 800.3(b), I do not feel that the answers are given to substantiate the issue discussed in number (1). (SCA)

RESPONSE 86:

This comment does not specify a particular property, however, in the context of the letter, it appears to relate to a concern for unidentified archaeological remains in the vicinity of El Pueblo State Historic Park. The process for protecting -

archaeological resources is addressed in the Memorandum of Agreement and is discussed in Response 82. If archaeological remains are found during final engineering or construction, a determination of eligibility will be sought and the regulations of the Advisory Council on Historic Preservation will be followed.

COMMENT 87:

The Draft EIS would aid in the understanding of Section 6-210 if the review panels' recommendations were reported. The SCA has never received a copy of the Review Panel Report. (SCA)

RESPONSE 87:

The Review Panel's Report has been available from the DPM Program. It was forwarded to the State Historic Preservation Office as noted in Section 6-210, along with other reports prepared on historic and archaeological matters. The SCA has never requested a copy of this report. They requested, and were sent in October, 1978, a copy of the Archaeological Resources Survey.

10-300 Impacts: Visual

COMMENT 88:

The DPM is a visual affront to the environment and would create other negative impacts including noise, dirt; and crime, similar to existing elevated rail lines elsewhere. (CRT, Rodney Nelson, Wolinsky)

RESPONSE 88:

Perception of the DPM will depend upon the subjective judgment of the viewer. However, as discussed in Section 5-224, a significant effort has been and will be placed on the design of the system and the system elements, including columns, guideway, and stations, to enhance the aesthetic qualities of the system. Because the system will not be a steel-wheel/steel-rail system, as so many of the previous elevated systems have been, the noise and dirt generated by the DPM will be insignificant in comparison to the older "els". The questions of crime and security are discussed in sections 5-222 and 4-360. The DPM will be traversing an area with fairly low crime rates and the system security plan is being developed and updated in cooperation with the Los Angeles Police Department to minimize safety and security risks to patrons.

COMMENT 89:

The DEIS does not contain an analysis of the extent to which shadows and obstruction of sunshine will be created along the route. (Conservancy, Sarnoff, Wolinsky)

RESPONSE 89:

An analysis of shadows created by the DPM has been incorporated into the visual impacts Section 5-224.14.

COMMENT 90:

The placement of the DPM guideway and station in front of the

Federal Building would detract from easy recognition of the Federal Building. (GSA, LWV)

RESPONSE 90:

Placing the station in front of the Federal Building will obscure the front of the building and may make it harder for people driving down the street to recognize it as the Federal Building. However, for people using the DPM, the name of the station, Federal Building Station, will increase recognition of the building and improve access for people wishing to use federal services. The presence of the station name on every route map throughout the system and on every street map showing the transit system will substantially increase the recognition value of the building, particularly for people who have not previously had occasion to go there. Access for both transit dependents and auto users will be significantly improved.

COMMENT 91:

Visual presentations of the DPM are sometimes deceptive because they are made from an aerial rather than ground level view. Also, shadow impacts are also often ignored. (Conservancy)

RESPONSE 91:

Visual presentations of the DPM were presented in retouched photographs to give as accurate an impression of the system as possible. (It should be noted that the actual system to be deployed has not yet been selected.) The photographs were taken from a variety of positions both at street level and from adjacent buildings to reflect the different perspectives from which the system could be viewed. Of the 15 retouched photographs, 9 are from street level and the remaining 6 are

elevated from the street. The photographs were taken at various times of the day and thus reflect different positions of the sun. The retouched photographs were carefully analyzed and corrected so that shadows would be accurately represented.

COMMENT 92:

If the DPM is the first segment of a total network, further adverse visual impacts can be expected. (Conservancy)

RESPONSE 92:

If additional segments of a DPM network were to be constructed, visual impacts would be similar; perception of the visual character of an expanded system would be as dependent on the subjective judgment of the viewer as is true for the initial segment currently being proposed.

COMMENT 93:

It is questioned whether the visual impact of the DPM system, in terms of scale and obstruction, can be reduced to a level of acceptability, as it relates to the architecturally and historically sensitive segments of the route. In particular, the visual impacts are questioned on the following segments analyzed in the DEIS: 3,5,6,9,10,11, and 12. (See Section 5-224.2) (Conservancy)

RESPONSE 93:

Perception of the DPM as being "acceptable" or "unacceptable" in visual terms is a subjective judgment, as is pointed out in Section 5-224 of the document. The purpose of the discussion in the visual impacts section was to present enough information so that the reader could form his or her own opinions about the visual impacts of the DPM. The DPM will present a contrast between it and many of the older buildings and structures. This is discussed in some detail in the segment analysis along the route. Whether this contrast is per-

ceived as visually exciting or visually detrimental will depend upon the viewer. A number of design refinements have been identified that will be included in final design to minimize the visual impacts. These are discussed in Section 4-231 of the FEIS.

In addition to these points, the Memorandum of Agreement with the State Historic Preservation Office and the Advisory Council on Historic Preservation includes the commitment to locate columns so as to "frame" building facades rather than interrupting them wherever this is possible, consistent with engineering considerations.

COMMENT 94:

Construction of the system, along with fringe parking facilities, will create secondary impacts, particularly in the older, low income residential Pico/Olympic area. (Conservancy)

RESPONSE 94:

Secondary impacts of the DPM system have been discussed insofar as they can be predicted at this time. Section 5-221.3 presents an analysis of probable effects in the South Park area, with particular regard to the housing supply.

COMMENT 95:

Placement of the DPM guideway and station in front of the Federal Building and on federal property is not acceptable to the General Services Administration, for the following reasons:

1. Removal of trees in front of the building
2. Noise impacts of the proposed route
3. Visual impacts of the proposed route

Preliminary investigation by the General Services Administration indicates the an alignment in the median or on the west side of Los Angeles Street is feasible and would be prefer-

able in its impact on the Federal Building.

The GSA will not approve an easement for such use unless it can be proved that there are no other viable alternative locations. (GSA)

RESPONSE 95:

Alternatives to the present DPM alignment in Los Angeles Street have been defined and evaluated, in terms of cost, feasibility, and potential impacts. The following is a discussion of these alternatives.

Alternative No. 1 (Centerline - Los Angeles Street)

This alternative would locate the DPM guideway and stations on the street centerline, between First and Aliso Streets. The alternative is about the same length and has the same amount of curvature as the adopted alignment.

The existing islands in Los Angeles Street would have to be extended to Temple Street to allow column placement. This would require widening the street by 6 feet to retain the same number of traffic lanes. A major portion of this widening (or possibly all) would be on the east side of the street. Additional cost to the DPM project would be approximately \$184,000 (1983 dollars). The additional street widening would add to overall construction disruption.

This alternative would require relocation of existing telephone and water lines, which would result in an additional cost of between \$132,000 and \$300,000 (1983 dollars), depending upon available locations for the telephone line.

Placing columns in the median would result in permanent fixed objects that may increase the frequency and severity of traffic accidents. Left turn pockets at Temple Street would be off-

set 8 feet, thereby increasing accident potential. Also, permanent median islands would severely restrict the available options for managing future traffic flow on Los Angeles Street.

The right-of-way adjacent to Parker Center would no longer be available as part of the local share in the financial plan. This could increase the required cash contributions from the City of Los Angeles.

#### Alternative No. 2 (West Side - Los Angeles Street)

This alternative would locate the DPM guideway on the east side of Los Angeles Street south of the Little Tokyo Station. North of the station, the guideway would cross to the west side of the street, adjacent to City Hall East. The guideway would continue on the west side to the Federal Building Station at Aliso Street. The guideway would be about 110 feet longer and more circuitous than the adopted alignment. DPM columns and foundations would be located within the basement of the Los Angeles Mall, which extends beyond the west curb line of Los Angeles Street, at a depth of 50 feet. Because the Mall and City Hall East were not designed to accommodate the DPM, the guideway must be supported from the ground below the buildings, making the effective height of the guideway about 80 feet. The additional cost, including extra guideway length, would be about \$2,250,000 (1983 dollars). Column placement would result in the loss of at least 80 Mall parking spaces and a reduced rental value to some of the Mall commercial spaces.

Disruption to City Hall East and the Mall would be severe during construction, lasting as long as 6 months. One of the entrances to Mall parking would be required for contractor use, resulting in the loss of at least 240 parking spaces during the construction period. Construction noise and vibration would have a significant adverse impact on City Hall East operation and the Mall commercial activity.

and the Mall commercial activity.

Right-of-way within City Hall East and the Mall would probably be eligible as part of the local share in the financial plan. City of Los Angeles cash contributions would be higher, however, as the right-of-way value represents revenue losses to the City from lost parking spaces and devalued commercial spaces.

#### Alternative No. 3 (East Side of Los Angeles Street with Federal Building Station on Street Centerline)

This alternative would locate the DPM guideway on the east side of Los Angeles Street between First and Temple. North of Temple, the guideway would cross to the street centerline, where the Federal Building Station is located. This would allow the station to be placed so as not to require an easement from the General Services Administration.

The guideway would be about 45 feet longer and more circuitous than the adopted alignment. The additional cost would be approximately \$102,000 (1983 dollars). Construction disruption would be slightly higher to the Los Angeles Mall and slightly lower to the Federal Building.

#### Alternative No. 4 (East Side Los Angeles Street - Modified Station Location)

This alternative would locate the DPM guideway on the east side of Los Angeles Street between First and Aliso Streets. The major difference between this alternative and number 3 would come in the relocation of the station northward, closer to Aliso Street. The station would be located 20 feet west and 95 feet north of the originally recommended location. Shifting the station in this way would still require a slight swing out into the street, but it would allow the station to be placed so as not to require an easement from GSA. The station would be supported on bents spanning Los Angeles Street on either side of the freeway off-ramp on the west side

of the street. On the east side of the street, the columns supporting the bents would be located near the east property line to allow for the future addition of a right turn lane at Aliso Street. The guideway would be about 16 feet longer and slightly more circuitous than the adopted alignment. Shifting the station northward reduces the radius available for the curve across the Santa Ana Freeway and results in reduced operating speeds, and increased travel time. The additional cost of this alternative, compared to the recommended alternative, would be approximately \$36,000. Construction disruption would be slightly higher to the Los Angeles Mall and slightly lower for the Federal Building because of the increased distance from the building.

Pedestrian access to this relocated station would be by means of pedway from the Los Angeles Mall. This pedway connection is awkward, but feasible. A station located closer to the northwest corner of Aliso and Los Angeles Streets would be more accessible, but also more visible to the El Pueblo National Register District. Pueblo staff have expressed concern about the adverse impacts of DPM visibility on visitors at the Pueblo.

After reviewing the four alternatives outlined above, the original location of the Federal Building Station is still considered superior by the City of Los Angeles. However, after additional consultation with the GSA, the City has agreed to shift the station northward to the location identified in Alternative #4. The plans and profiles presented in Section 4-210 have been revised to reflect this change in station location. (See Figure 4-22A) Comments from GSA architects pertaining to design of this station will be solicited and considered during final engineering.

10-310 Impacts: Economic/Social

COMMENT 96:

If the DPM will revitalize downtown, why is it routed in an area where property values have already begun to soar? (LWV, Picus)

RESPONSE 96:

The Downtown People Mover will reinforce current and projected growth trends on the west side of downtown Los Angeles. (See Section 2-210 "Development Trends".) It will connect the high density activity centers in this area, thereby serving the vast majority of the existing and projected downtown employee population. (See Section 2-320.) It will also serve the growing population of downtown residents projected for the west side.

During Phase II of the DPM Program, three alternative corridors were considered for the DPM route. Two of those alternatives, namely B and C, served the eastside of downtown; corridor alternative A served the westside. (See Figure 3-43A, p.3-28.) The West Side corridor was superior to the other two in terms of patronage, maintaining the economic vitality of downtown, least need for residential relocation, least negative economic impacts during construction and generation of more substantial economic benefit. (See Section 3-430.) A more complete discussion of the corridor-level alternatives analysis is contained in Moving People in Los Angeles; Community Redevelopment Agency of the City of Los Angeles, California, June 1977 (see pages 75-77). As development trends move eastward, the opportunity will exist to extend the DPM system to more effectively serve these areas in the Central Business District.

COMMENT 97:

What will be the development impacts of the DPM on the east

side of downtown for example, Spring Street, as compared to the extensive analysis of impacts on the west side? How is this reflected in the proposed benefit assessment district? (LWV)

RESPONSE 97:

Although the DPM is expected to reinforce development trends on the west side of downtown, the presence of stations at Pershing Square and at Hill Street will provide some incentive for east side development also. Both of these stations are within a 1.5 minute walk of the Broadway retail area and within a five minute walk of the Spring Street office area. Effects on the east side of downtown will not be as direct as those on the westside; but this improved access to the older, still active portions of the East Side of downtown, particularly Broadway, will reinforce some of the filtering effects of the West Side's economic growth.

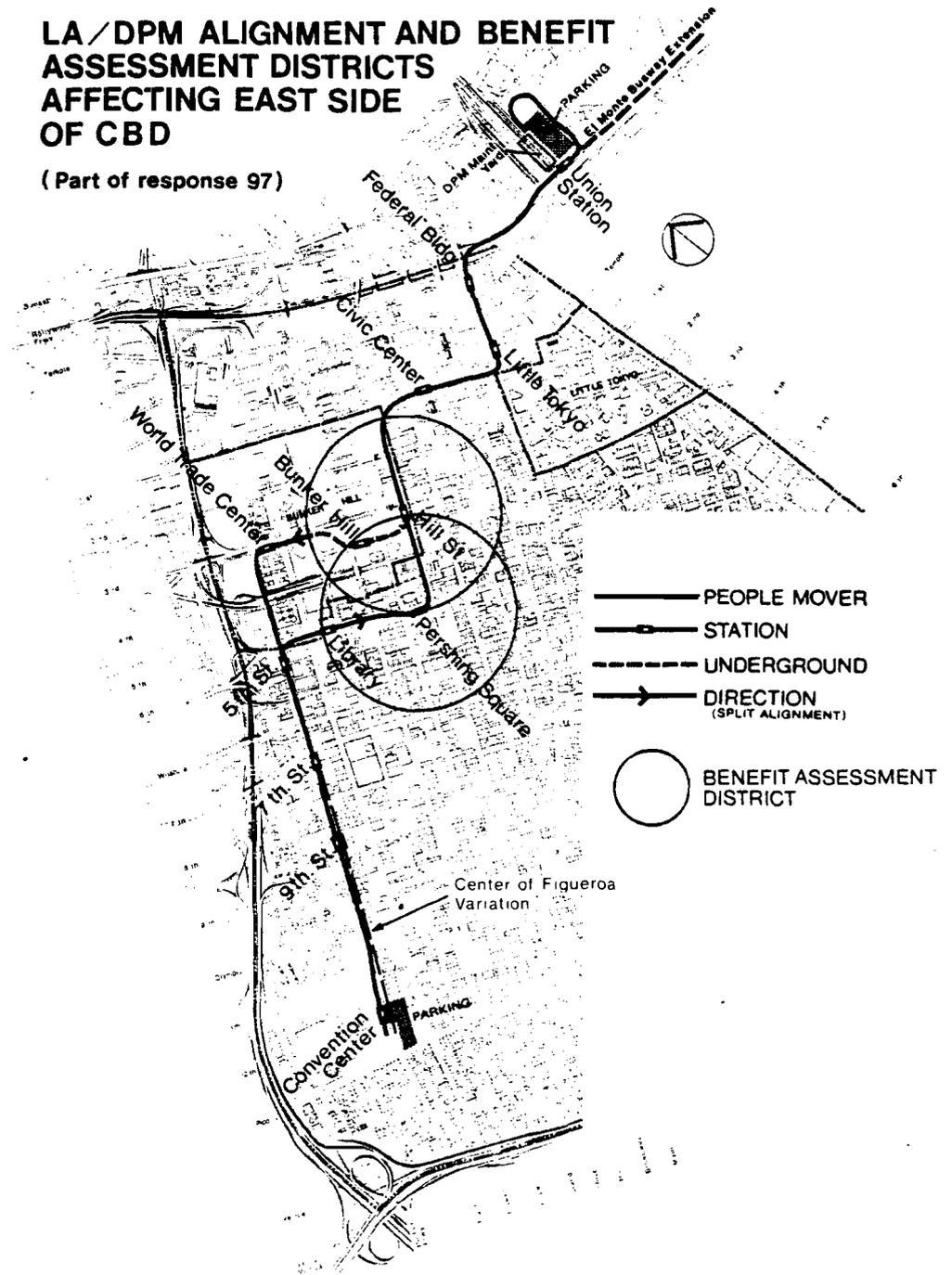
Since the Final Environmental Impact Report (FEIR) was published in November, 1978, the area to be covered by the proposed benefit assessment district has been expanded to better reflect benefits which will accrue to property as the result of DPM system implementation. As stated in the Financial Plan, the Los Angeles Downtown People Mover Program, March, 1979:

To determine the benefits accruing to the private sector as a basis for the assessment rate, major consideration will be given to the properties' distance from DPM stations with zones being established up to but not exceeding 1200 feet from each station. (p-12)

In this case, potentially reusable financial buildings along Spring Street (from approximately 2nd Street to 6th Street) would be included in the assessment district. (See accompanying map.)

## LA/DPM ALIGNMENT AND BENEFIT ASSESSMENT DISTRICTS AFFECTING EAST SIDE OF CBD

(Part of response 97)



## COMMENT 98:

The DPM is part of an overall redevelopment process that has shifted our City from the east side of downtown to the west side, leaving us with a blighted east side. (Goldin)

## RESPONSE 98:

In selecting the preferred DPM alignment, many different evaluation factors were considered. One of these factors was an ability to reinforce existing downtown growth trends, which are currently being exhibited in the western portion of the CBD. This strong growth on the west side is the result of the interplay of market forces, and the DPM alignment in this area is a response to those forces. For a more detailed discussion of DPM development impacts on the east side of downtown, see response 97.

## COMMENT 99:

Instead of creating incentives for rehabilitation and rental of older office structures, the DPM could have the reverse effect. The proximity of the DPM to the buildings on the west side of Hill Street could create potentials for disruption. (Conservancy)

## RESPONSE 99:

Past experience with elevated transit systems has been negative in a number of cases, because of the characteristics of the systems which were installed. These systems are generally order and are characterized by steel-wheeled vehicles operating on steel rails in open track beds. These systems are further supported on steel columns and, because they are high capacity systems, operate at high speeds. Because of these characteristics, these older systems produce a significant amount of dirt, noise and vibration.

The proposed DPM system does not include any of the negative

aspects of these older systems. It is much quieter, and because of its electric power, does not produce dirt. Because of its concrete guideway and column design, the DPM will not produce a measurable amount of vibration. In short, the proposed DPM will not produce any of the negative effects generally associated with older elevated systems.

## COMMENT 100:

No consideration has been given to the desirability of forcing hundreds of thousands of people to commute to downtown Los Angeles. (Stromme)

## RESPONSE 100:

Implementation of the DPM, together with the intercept facilities, will not force people to commute to downtown Los Angeles or to change modes to reach a destination within downtown. Rather than reducing transportation choice, the DPM system will increase the options available for trips both to and within the CBD.

## COMMENT 101:

The DEIS is highly speculative about increases in downtown retail sales. (NAACP)

## RESPONSE 101:

Although any forecast of future events involves some speculation, the validity of such forecasts rests upon the methodology utilized. The forecast of the DPM's impact on retail sales in the Central Business District (CBD) was based on a parametric analysis of each sub-market: office employees, non-office employees, tourists, convention delegates, business/government visitors and residents. Estimates were made for each of these sub-markets in terms of increased numbers and increased expenditures per capita as a result of DPM

implementation (see Section 5-221, p. 5-57 through 5-76).

The increased per capita spending, as the DEIS analysis indicates, was the major factor producing the forecasted sales increases. The DPM system's influence on expanding both the "perceived" and actual pedestrian domain of employees, residents and hotel guests will minimally produce the per capita sales increases described in the document. Such expansion in the range and magnitude of noontime activity has been a major impact of the new Washington, D.C. rapid transit system (Washington Metropolitan Area Transportation Authority, 1977-1978) and of the skyway system in Minnesota (James B. McComb and Associates, 1976-1977). In fact, the percentage increase in per capita sales rates in these two cases exceeds the increases forecasted for the Los Angeles DEIS report. It also should be noted that no credit was taken in the DEIS for any potential increases in the regional shopping portion of the CBD retail sales market (see Section 5-221.4, p. 5-72).

COMMENT 102:

Various assumptions and projections regarding economics, ridership, technology, etc. have been questioned. It is further questioned whether these assumptions and projections are sufficient to warrant the expected environmental disruption. (Conservancy)

RESPONSE 102:

The various assumptions and projections which have been used in the course of the DPM analysis are conservative and are not overly prejudiced in favor of the DPM. The environmental effects of the project, although in some cases identified as significant, are for the most part, minor.

COMMENT 103:

A discussion should be included in the DEIS of the impacts of the project on existing downtown parking facilities, e.g. economic, employment, availability of land presently used for such purposes for other subsequent uses should the need for parking be affected (reduced or eliminated) by the proposed project. (State Lands)

RESPONSE 103:

The DPM would have a relatively small impact on existing downtown parking facilities. The 3,750 spaces to be provided at the DPM intercepts, however, will satisfy a portion of the expected 1990 demand for 93,900 parking spaces in the Central Business District. (Phase II, Task Termination Report 22, Parking Supply Location, and Demand.) This will have the effect of reducing the number of on-site parking spaces built in conjunction with new buildings and of satisfying some additional parking demand which cannot be met within the intensely developed downtown core.

10-320 Impacts: Air Quality/Energy/Noise

## COMMENT 104:

A comparative analysis of the air quality impacts of the DPM versus the minibus should be presented. (DOT)

## RESPONSE 104:

The macro scale air quality analysis which is presented in the Draft EIS considers the contributions to study area emissions produced by all transportation modes operating in the downtown area. The results of these collective contributions are presented in Tables 5-21A and 5-21B.

However, a specific comparison of potential air quality impacts between the minibus system and the DPM system can be made although this is not completely relevant in the context of overall impacts in downtown. The expected emissions resulting from the DPM system are shown in Table 1, below.

TABLE 1  
EXPECTED DPM EMISSIONS CHARACTERISTICS

ANNUAL VEHICLE-MILES:	2,438,200	(1990)			
ANNUAL PASSENGERS:	21,213,200				
EXPECTED EMISSIONS:	<u>THC</u>	<u>CO</u>	<u>NO<sub>X</sub></u>	<u>SO<sub>X</sub></u>	<u>PARTICULATES</u>
ANNUAL (TONS)	2.19	1.82	23.72	55.11	4.01
DAILY (TON)	.006	.005	.065	.151	.011
PER PASSENGER (GRAMS)	.09	.08	1.02	2.36	0.17
PER VEHICLE-MILE (GRAMS)	.82	.68	8.84	20.55	1.49

For comparison purposes, emissions have also been calculated for the present mini-bus system, using applicable emission factors for heavy duty gasoline-powered vehicles. The results are displayed in Table 2.

TABLE 2  
EXISTING MINIBUS EMISSIONS CHARACTERISTICS

ANNUAL VEHICLE-MILES:	260,433	(FY 1977-78)			
ANNUAL PASSENGERS:	1,612,200				
CALCULATED EMISSIONS:	<u>THC</u>	<u>CO</u>	<u>NO<sub>X</sub></u>	<u>SO<sub>X</sub></u>	<u>PARTICULATES</u>
ANNUAL (TONS)	9.93	94.00	2.75	0.10	0.35
DAILY (TONS)	.027	.257	.007	.0002	.0009
PER PASSENGER (GRAMS)	11.20	106.00	3.10	0.11	0.39
PER VEHICLE-MILE (GRAMS)	34.68	328.13	9.62	0.36	1.24

A comparison of the two tables reveals the following conclusions:

1. When compared in terms of both annual and daily emissions generated, the DPM system is superior to the minibus system for all pollutants except sulfur oxides and particulates.
2. When compared in terms of emissions per passenger carried, the DPM is superior to the minibus for all pollutants except sulfur oxides.
3. When compared in terms of emissions generated per vehicle-mile of service, the DPM is superior for total hydrocarbons, carbon monoxide and nitrogen oxides; the minibus is superior for sulfur oxides; and the two systems are nearly equivalent for particulates.

The above analysis demonstrates that, in terms of a simple comparison, the DPM system would produce generally lower emissions than the existing minibus system. It should be noted, however, that it is the overall emissions produced by all modes operating in downtown that should be used for assessing air quality impacts. It should further be noted that the emissions produced by the DPM system, although included in the analysis, would not be directly experienced in the downtown area, due to the fact that it is electrically powered, and therefore the emissions would be experienced at the electrical power generating facility.

COMMENT 105:

Worst case data should be used to calculate ambient CO concentrations. (SCAQMD)

RESPONSE 105:

The following changes have been made in response to the comment: (1) On page 5-45, reference to the monthly average of

one-hour worst case CO ambient concentrations has been changed to reflect the use of the annual worst case (12.9 ppm) to represent the ambient condition. (2) Tables 5-21C and 5-21D, on pages 5-46 and 5-47, respectively have been changed to reflect the use of the worst case ambient CO concentration.

COMMENT 106:

The DEIS contains a discrepancy regarding air and noise impacts. Section 5-244 indicates reduced noise and emission levels in the downtown area, whereas Sections 5-218.2 and 5-217 indicate an insignificant impact upon noise sensitive receptors and air quality. (City Engineering)

RESPONSE 106:

The reference to air quality and noise consequences in Section 5-244 reads as follows:

"...it is expected that the DPM will result in fewer vehicular miles of travel by both automobile and buses, thus leading to reduced noise and emission levels in the downtown area."

Reference to Table 5-21A (DEIS, page 5-38) reveals that the expected emissions produced under the 1990 DPM Case are less than those produced in the 1990 Null Case, with the exception of sulfur oxides. The net reduction in emissions is small, but a reduction, nevertheless, is expected. The statement in Section 5-244 is therefore consistent with the analytical results.

With respect to the suggested discrepancy regarding noise impacts, examination of the noise impact (Tables 5-21F, 5-21G, 5-21H) reveals that the expected noise levels produced in the 1990 DPM Case are equal to or less than those produced in the 1990 Null Case at approximately one-half of the ambient survey points. For the remaining survey points, increases are so

small as to not be readily perceptible. The analysis conducted relative to noise sensitive receptors produced similar conclusions for specific sites along the DPM route.

In the noise impact analysis, worst case assumptions regarding DPM noise prediction were used wherever possible. It is therefore quite likely that the actual field noise experienced after DPM installation will be less than the predicted values, thus resulting in an improvement in noise levels at a majority of survey points. For these reasons, the statement regarding noise impacts in Section 5-244 is considered valid.

COMMENT 107:

What improvement in air quality does the DPM produce? Doesn't it worsen air quality because it enables more automobiles to reach downtown Los Angeles? (CRT, Marvin)

RESPONSE 107:

The analysis of air quality impacts is presented in Section 5-217 (DEIS, pages 5-36 through 5-47). This analysis indicates that, with respect to the five major primary pollutants, the DPM produces a slight improvement in daily emissions, with the exception of sulfur oxides. In addition, the DPM system has been shown to result in a decrease in vehicle-miles of travel within the CBD, and in the region. It cannot therefore be concluded that the DPM would worsen air quality.

COMMENT 108:

An AQMD permit may be required for selected activities at the maintenance facility. (SCAQMD)

RESPONSE 108:

All federal, state and local regulatory requirements applicable to the DPM will be met. The permit referred to in this comment concerns the use of certain fluids at the maintenance facility.

COMMENT 109:

What savings in energy does the DPM produce? (CRT)

RESPONSE 109:

The DPM system, once it is in operation, will result in a net saving to the region of 11,100 vehicle miles of travel, daily. In addition, a total of 3,244 daily bus miles would be saved, in the CBD. The calculated accompanying energy saving would be equivalent to approximately 390,000 gallons of gasoline annually. Because the DPM is one important link in the four-part Regional Transportation Development Program, it functions together with the other elements to encourage additional regional trips by public transportation. This will undoubtedly have additional energy benefit, but this cannot be readily calculated.

Construction of the DPM would require some  $107 \times 10^6$  KWH of electrical energy. Annual DPM operation would require  $18 \times 10^6$  KWH of electrical energy, which translates to approximately 501,000 gallons of gasoline per year. If the minibus system was to provide a comparable level of service, which would be impractical without grade separation, over 4 million vehicle miles would be expended every year, resulting in an annual use of 815,000 gallons of gasoline. This is a 63% greater energy expenditure than that required by the DPM system.

COMMENT 110:

The final EIS should reflect commitment to all feasible measures to minimize noise and visual impacts. (DOT)

RESPONSE 110:

The noise analysis performed for the DEIS indicated that no significant noise impacts would result. It is therefore not expected that any mitigation measures, beyond those already incorporated into the system specifications, will be necessary.

A perceptible increase in noise may be experienced at two noise sensitive land uses. However, the 1990 noise levels expected at these locations will exceed recommended levels, in the absence of the DPM. (See Section 5-218 of the FEIS.)

COMMENT 111:

The final EIS should reflect a firm commitment that the system will meet the established noise specifications (page 5-54). If the project will not meet these specifications at any significant location, detailed discussion of noise abatement measures at such locations should be included. (DOT)

RESPONSE 111:

The noise criteria noted on page 5-54 of the DEIS are taken from the system specifications for the project. DPM equipment manufacturers must conform to these specifications, and therefore the noise criteria will be enforced through the specifications and will become a part of the DPM equipment finally selected for implementation.

COMMENT 112:

The ARB is supportive of the local planning and prioritization process for transit projects and encourages thorough objectives analysis of all transportation measures. The May 10, 1979 ARB Resolution adopting the Air Quality Management Plan for this region included the Los Angeles Downtown People Mover (DPM) as a specific tactic. It would be a part of the regional planning process with implementation after 1982. The DPM has been subject to significant public review as a component of the four-part Regional Transit Development Program and is a major objective of the Regional Transportation Plan. (ARB)

RESPONSE 112:

No response required.

COMMENT 113:

The Community Redevelopment Agency has admitted at their public hearings that there will be more energy expended and more pollution emitted if the DPM is built than if it is not. (Pickard)

RESPONSE 113:

The DPM system, once it is in operation, will result in a net saving of 11,100 daily regional auto VMT and 3,244 daily bus VMT. This translates into an annual saving of 9285 equivalent barrels of oil. Furthermore, because the DPM is an important element of the four-part Regional Transportation Development Program, it acts together with the other elements to encourage the increased use of regional public transportation facilities. This will undoubtedly have an additional energy benefit, but this cannot be readily calculated.

Construction of the DPM system, including the manufacture, transport, and installation of all system components, would consume some  $107 \times 10^6$  KWH of electrical energy, which translates into approximately 63,900 equivalent barrels of oil. The DPM system is expected to consume approximately  $18 \times 10^6$  KWH of electrical energy per year, or 35 equivalent barrels of oil per day. If the minibus system could be improved to provide comparable service, which would be impractical without grade separation, over 4 million annual vehicle miles would be expended by minibuses operating at 21 second headways. This would translate into approximately 63 equivalent barrels of oil per day -- nearly 63% greater than the energy expenditure of the DPM system.

With respect to air quality, Section 5-217 of the EIS points out that the DPM system would result in a net reduction in emissions produced by the downtown area. Although the reduction produced by the DPM system alone is small, it is

reasonable to expect that, as time goes on, regional emissions could be significantly reduced through patronage of the regional system improvements programmed as part of the four-part program.

COMMENT 114:

The ambient air quality data presented in the DEIS should be updated to reflect the most current information. (SCAQMD)

RESPONSE 114:

The appropriate air quality data have been updated in Table 2-17C, as per the data transmitted by the Southern California Air Quality Management District.

10-330 Impacts: Open Space and Vegetation

COMMENT 115:

No analysis of street tree removal associated with widening Figueroa Street is presented. (Conservancy)

RESPONSE 115:

An inventory of trees along the DPM route was prepared during the Preliminary Engineering phase of the project. Trees along Figueroa Street that might have to be relocated because of the proposed widening are neither rare or endangered. These trees are small and do not provide valuable shade. No special difficulty in relocating or replacing such affected trees is anticipated and all such work will be coordinated with the Street Tree Division of the Department of Public Works.

COMMENT 116:

The People Mover runs over some of the few green space areas in downtown Los Angeles. (Pickard)

RESPONSE 116:

The anticipated impacts of the DPM on open space areas are discussed in Section 5-223 (DEIS, page 5-79). As noted in this discussion, the DPM has direct impact on two currently used open spaces - Pershing Square and City Hall lawn. In both of these cases there is a minimal loss of physical space and the presence of a new visual element. The DPM also provides increased accessibility to both of these open spaces and a number of others, as well. Of the 70.3 existing and planned acres of CBD open space, the DPM provides easy pedestrian access to 40 acres of this total. On balance, the DPM would therefore have a beneficial impact on the usefulness of CBD open spaces.

10-340 Impacts: Geology/Water Quality

## COMMENT 117:

A statement should be added to the water quality section which discusses the significance of the erosion of excavated soil and debris during storm periods. (Interior)

## RESPONSE 117:

Because excavated soil and debris will be expeditiously removed during construction, the erosion of this material will not present a runoff problem during storm periods. A statement has been added to Section 5-114 (page 5-4) to clarify this concern.

## COMMENT 118:

The Department has reviewed the Draft EIS and concludes that there are no adverse impacts upon any of the concerns of the Soil Conservation Service. (Agriculture)

## RESPONSE 118:

No response required.

## COMMENT 119:

The Downtown People Mover, when constructed, will have very little effect on the operation and effectiveness of the drainage facilities in the CBD. During construction, some existing facilities may be affected since present drains are within the path of the proposed project. However, depending on the time of the year construction is occurring, the impact will vary from moderate to none at all. (LACFCD)

## RESPONSE 119:

No response required.

10-350 Coordination/Plan Conformance

## COMMENT 120:

Goals and objectives of the DPM should be explicitly stated in the EIS. (City Engineering)

## RESPONSE 120:

Both regional and local goals and objectives for transportation are discussed in Section 2-440 of the DEIS. DPM conformance to these goals and to the plans which incorporated them is described in Section 5-244 of the DEIS. In addition to these, specific goals and objectives for the circulation/distribution program were developed in Phase I of the program and addressed in terms of planning studies in Phase II of the program. Specific documents produced during these program phases contain this material and have been available throughout the program.

## COMMENT 121:

The DEIS does not indicate coordination with the Southern California Association of Governments, with respect to the Area-Wide Water Quality Management Plan (AWQMP). Consistency with AWQMP should be discussed, in terms of:

1. erosion and sedimentation due to construction related activities, and implementation of appropriate control/mitigation measures.
2. operational project related surface runoff and implementation of appropriate control/mitigation measures.

(EPA)

## RESPONSE 121:

As the DEIS points out in Section 5-214, the effect of DPM operation on water quality would be undetectable. This review was coordinated with both the State Water Resources

Agency and the appropriate State Water Resources Control Boards. Further, because amounts of excavated materials will not be great, there will be no significant erosion or runoff problems during storm periods.

COMMENT 122:

An inter-agency task force should be established for early review of planned construction activities within the Caltrans right-of-way. The task force will provide additional traffic construction mitigation measures for short-term interruption of transportation system (i.e. freeway lane closures and traffic re-routing) during construction stages. A discussion of the task force and mitigation measures should be included in the Final EIS. (Caltrans)

RESPONSE 122:

Since close coordination and cooperation between Caltrans and the DPM Program is an absolute necessity, we can only agree that inter-agency communication and cooperation continue and that jointly agreed-to plans concerning mitigation measures relating to traffic interruptions be included in the plans for final project implementation.

The only Caltrans right-of-way which may be impacted by DPM construction activities is in the area of Union Station. An interagency task force which includes Caltrans has been functioning during the current planning process and will continue to function throughout the implementation phase. In addition to this task force activity there is daily communication with Caltrans staff working on the project to extend the El Monte Busway to the intercept at Union Station. In January, 1980, a Task Force composed of all of the parties involved in planning for Union Station was formed. This Task Force will develop an integrated approach for the total development of the Transportation Center. This approach will include all construction activities, operation and future development. With

regard to the DPM, specifically, the approach will meet DPM construction requirements in a timely fashion as well as the requirements of the integrated transportation program projected for Union Station.

COMMENT 123:

The Downtown People Mover project is either irrelevant or contradictory to principal goals for future transportation - energy conservation, air quality, and general mobility. It is also contradictory to the stated goals for Downtown Los Angeles. (Pickard)

RESPONSE 123:

Planning of the DPM system has been cognizant of the various goals and policies operative in the downtown area since its inception. In fact, the applicable goals and policies at all levels have been part of the evaluation criteria of the whole range of planning studies for the project, to the end that the DPM would be planned so as to be responsive to them. For a description of these goals, policies and plans, see Section 2-440 of the EIS.

In the course of the review of the Draft EIS, the document has been circulated to all agencies and jurisdictions which have responsibility for the various transportation goals, policies and plans which are addressed in Section 2-440. Taken together, these various plans are fairly complete in their attention to energy, air quality and mobility. In all cases, and in particular for the topics raised in the comment, the DPM system has been found to be in conformance with the following plans:

- Air Quality Maintenance Plan (SCAQMD, 1978)
- Regional Transportation Plan (SCAG, 1978)
- Central City Community Plan (L.A. Planning Dept., 1974)
- Los Angeles Citywide Plan (L.A. Planning Dept., 1974)

- Redevelopment Plan for the Central Business District (CRA, 1975)
- Bunker Hill Design for Development (CRA, 1971)
- Little Tokyo Redevelopment Project Plan (CRA, 1970)

## COMMENT 124:

Both the SCRTD and the City Planning Department have been left out of the planning for the DPM project. (Schiffer)

## RESPONSE 124:

The Southern California Rapid Transit District has been continuously consulted throughout the DPM planning process, with respect to issues of coordinated service, both for the bus-DPM interface and the interface with the proposed Starter Line. This consultation has included such topics as: bus route planning, schedules, Starter Line station location and interface, and patronage assumptions. The SCRTD will continue to be consulted as the DPM proceeds toward implementation.

The Los Angeles City Planning Department has been similarly consulted during DPM planning, both in terms of a review capacity and direct staff input. Several members of the Planning Department acted as staff to the DPM during the Route Refinement and Preliminary Engineering studies.

10-360 Procedure

In their commenting letter on the DEIS, the Jonathan Club incorporated, by reference, comments which had been made concerning the EIR. The Jonathan Club comments addressed in this section therefore refer to the EIR. These comments are numbers 125-127 and 129-132.

## COMMENT 125:

The Environmental Impact Report (EIR) fails to fully identify or treat significant environmental effects of the disputed segment (i.e. Figueroa Street from Fifth to Seventh Streets. :

1. Visual impacts are presented in narrative form, rather than pictorial. Visual impacts editorialize rather than present facts.
2. Demand studies were not reported.
3. Noise impact studies were not reported.
4. Analysis of long term effects is abbreviated and narrow.

(Jonathan Club)

## RESPONSE 125:

1. Visual impacts are largely based on subjective response, as identified in the document. The visual impact analysis emphasizes that point. However, there is no legal requirement for a pictorial representation, although several such representations were made available to the City Council at the time that it made its decision.

2. The DEIR states in Section IV-241,

"If the Center of Figueroa variation were selected, there would be a slight increase in DPM patronage, on the order of 1 to 2 percent. This increase would occur because of a slight decrease in travel time between stations on Figueroa and because the station at 5th Street would be more accessible."

3. Section IV-212.2 of the DEIR states that the findings of the noise analysis (namely no significant impact) apply to both the west side of Figueroa Street alignment and the center of Figueroa variation. The computer analysis which supports this statement was never requested. Also, other

references to noise impacts summarize the analysis and characterize the impacts as not significant.

4. Chapter VI of the DEIR (16 pages in length) discusses short-term versus long-term effects according to City of Los Angeles guidelines, prepared in response to the California Environmental Quality Act.

COMMENT 126:

The EIR fails to meaningfully discuss possible alternatives or mitigation measures that would reduce or eliminate adverse noise, visual, traffic and safety impacts on the disputed segment. (Jonathan Club)

RESPONSE 126:

From the comment, it cannot be ascertained which alternatives were not meaningfully discussed. Both Chapter IV and VII of the DEIR discuss alternatives at some length.

With respect to noise, the EIR states that no mitigation is needed. With respect to visual and traffic impacts, the EIR identifies mitigation measures. With respect to safety, the EIR identifies mitigation measures which have already been incorporated into the project.

COMMENT 127:

The EIR fails to give meaningful responses to major issues raised in the comments. (Jonathan Club)

RESPONSE 127:

The comment does not identify which major issues were not responded to.

COMMENT 128:

Many critical comments which have been made on the EIR have

not been included in the EIS. (Schiffer)

RESPONSE 128:

All of the comments received during the circulation of the Environmental Impact Report were responded to in the Final EIR. Some of these comments resulted in changes to the document. These changes were carried forward into the Draft Environmental Impact Statement. Because the two documents are distinct and separate as to their circulation and other procedures, only those comments received specifically on the Draft EIS are responded to in the Final EIS.

COMMENT 129:

The City Council has abandoned its duty to make findings by adopting CRA findings. (Jonathan Club)

RESPONSE 129:

The City Council had at its disposal, in addition to DPM staff documentation, reports prepared by the Ad Hoc Technical Committee, the Traffic and Transportation Committee, and the Grants, Housing, and Community Development Committee. The Chief Legislative Analyst's Office and the Chief Administrative Officer also reported to the Council on this project. These reports were made available to the City Council, along with the FEIR, from December 12, 1978 until its decision on March 27, 1979.

COMMENT 130:

The City Council did not allow itself adequate time for review. (Jonathan Club)

RESPONSE 130:

See response 129:

## COMMENT 131:

The EIR fails to cite specific economic, social, or other reasons to support the determination that significant impacts are mitigated to the extent feasible. (Jonathan Club)

## RESPONSE 131:

The comment appears to confuse the Findings with the Statement of Overriding Considerations. The Findings identify mitigation measures; the determination portion of the Statement of Overriding Considerations identifies the social, economic and other reasons for making the Statement of Overriding Considerations.

## COMMENT 132:

A decision has been made which is not supported by substantial evidence.

1. Environmental studies demonstrate the superiority of the original over the Figueroa alignment.
2. The findings fail to mention the effects of the disputed segment on traffic congestion, safety and noise levels.
3. The findings treatment of visual impact is based upon a deficient analysis.

(Jonathan Club)

## RESPONSE 132:

1. This is overstating the case. Detailed environmental studies demonstrated advantages and disadvantages of both routes - they did not recommend one route over the other.

Preliminary environmental studies in the route refinement analysis led to the recommendation of a west of Figueroa alignment in April, 1978. Detailed engineering and environmental studies after that date raised additional questions

about the jog behind the Hilton, including cost, ride performance, engineering feasibility and station access, which in turn led to another look at the center of Figueroa variation. In July, 1978, the center of Figueroa variation was included in the on-going environmental studies. In September, 1978, both alternatives were presented in the DEIR.

2. The Findings do mention the effects of construction on traffic congestion, safety and noise levels. The impacts of operation on traffic congestion, safety and noise levels were characterized as minor impacts in the EIR and consequently not cited in the Findings.

3. In the absence of further evidence to support the comment, it is disputed that the visual analysis was deficient.

## COMMENT 133:

Is the Citizens Advisory Panel (CAP) report included in the FEIS? (Pickard)

## RESPONSE 133:

The CAP report has been available to the public, upon request, since its publication in July, 1976. It has not been included in the FEIS.

10-370 Miscellaneous

## COMMENT 134:

The Los Angeles Downtown People Mover Draft Environmental Impact Statement (EIS) contains the following crime data errors. In Section 2-221, the number of arrests for homicide, rape, and aggravated assault in the Central Area in 1977 should be 463 rather than 11,577. Central Area had 939 reported homicides, rapes, and aggravated assaults in 1977. The EIS correctly reflects the statistics for crimes against property.

Pertinent Central Area statistics for 1978 are 1,112 reported crimes and 471 arrests for homicides, rapes, and aggravated assaults and 12,336 crimes and 2,943 arrests for property-related offenses. Central Area experienced a 16.2% increase in serious crimes in 1978 over 1977. (LAPD)

## RESPONSE 134:

The noted errors in data regarding CBD crimes have been corrected.

## COMMENT 135:

A number of typographical and grammatical errors are contained in the DEIS. (City Engineering)

## RESPONSE 135:

The errors noted in the comment have been corrected.

## COMMENT 136:

Following our A-95 review of the Downtown People Mover DEIR, Caltrans received responses from the CRA regarding our specific concerns. We feel the comments and response generated by the A-95 review should have been included in the DEIS, and therefore further request the inclusion and clarification of those

concerns in the Final EIS. (Caltrans)

## RESPONSE 136:

The Caltrans comments received during the A-95 review of the DEIR, and the responses to those comments, are reprinted in the FEIS, as the comment requested.

Summary of Caltrans FEIR Comments

In a memorandum to the Caltrans Department A-95 Coordinator, District 07 transmitted several comments. These comments and their responses, are summarized as follows:

Funding

Comment 1: A Table in the EIR Executive Summary shows five sources of capital funds. These sources should be discussed.

Response 1: UMTA funds are proposed to be derived from the Section 3, discretionary program. FHWA funds are proposed to be derived from the Federal Aid Interstate program. FHWA has informally advised that the City should pursue both FAI and FAU funding options. Los Angeles City and County funds could come from several sources including Proposition 5, general funds, tax increment funds, land contributions, parking revenue funds, and others.

Comment 1a: Interstate funds could not be used for the guideway and vehicles. Possibly the interface between the DPM and Interstate freeway or busway at the terminals could be eligible. The proposed sources of Capital funds appear to be extremely optimistic. The source of \$25 million in FHWA funds is unknown.

Response 1a: The proposal to use FHWA funds came from the Secretary of the U.S. Department of Transportation.

Comment 1b: The possibility appears remote that the Federal and State agencies involved will contribute over 93% of the cost of the project and not expect the local share to consist of more than donated County and City rights-of-way.

Response 1b: The financial plan calls for Federal and State agencies to contribute 92% toward the cost of the project. The City, County and private sector will contribute 8%. The value of land donated to the project represents a real cost to local entities. The use of land already owned represents a potential savings in total project cost and reduction in State and Federal funding requirements.

#### Union Station Intercept

Comment 2: The DEIR does not discuss the most current plan being considered which is a reduced transportation center with an on-line bus station situated on the busway extension.

Response 2: A change has been made to reflect the revised configuration of the intercept facility at Union Station.

#### Proposed Improvement at the Convention Center

Comment 3: The DEIR discussed one possible modification to the LA-10/11 connections to northbound Route 11. Potentially significant additional traffic due to the modification and added off-ramp to Pico Boulevard was not considered. We have studied an alternative eastbound Santa Monica Freeway off-ramp to the Convention Center and suggest widening the existing N/B connectors to provide an off-ramp to 12th Street.

Response 3: The traffic impacts section contains a discussion of the impacts near the Convention Center. This assumes that

access is provided from the eastbound Santa Monica Freeway to Pico Boulevard. If the proposed ramp were to be located at 12th Street, further analysis of the traffic circulation would be necessary.

#### Coordination and Consultation

Comment 4: Because of some short-term service facility interruptions during construction, Caltrans recommends that an inter-agency task force be established to provide additional traffic mitigation plans or measures for inclusion in the FEIS.

Response 4: Since close coordination and cooperation between Caltrans and the DPM Program is an absolute necessity we can only agree that inter-agency communication and cooperation continue and that jointly agreed-to plans be included in the plans for final project implementation.

#### Patronage

Comment 5: A sub-committee of the LARTS/SCAG modeling Task Force reviewed preliminary CDS modeling assumptions. Two concerns have not been resolved: (1) an assumption that noon-hour and peak-hour trips are similar and (2) that patronage is relatively insensitive to fare.

Response 5: There is no question that trip purposes change between noon-hour and P.M. peak-hour. That is why separate models were developed for each time period. During the Preliminary Engineering Phase of the DPM project, a major effort was made to refine the DPM demand models. Special attention was given to refining time and cost coefficients to present the appropriate sensitivity to fares.

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