Los Angeles Downtown People Mover

ROUTE REFINEMENT ANALYSIS

Overview

April, 1978

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The Downtown People Mover is a City of Los Angeles Project administered by the Community Redevelopment Agency, funded by the Department of Transportation, Urban Mass Transportation Administration under Contract No. CA-06-0012 and CA-03-0131, by the California Department of Transportation, and by the City of Los Angeles.

PURPOSE OF THE ROUTE REFINEMENT ANALYSIS

During 1976 and 1977 the Community Redevelopment Agency conducted a study of future transportation needs for downtown Los Angeles.[1] That study, referred to as the Phase II Alternative Analysis, recommended that the City of Los Angeles evaluate the feasibility of implementing an Improved Bus/Downtown People Mover Alternative and undertake preliminary engineering studies of the People Mover portion of that alternative. These Phase III Preliminary Engineering Studies have been underway since January 1978. Detailed design and environmental analyses cannot be conducted, however, until a specific route alignment is identified.

The purpose of the route refinement analysis as part of the Phase III Preliminary Engineering is to evaluate route options and to define a specific route alignment and station locations in downtown. This task occurs early in the People Mover work program so that architectural, engineering, operating, environmental and financial aspects of the proposed system can be estimated with more accuracy and in greater detail.

ROUTE OPTIONS EVALUATED

A proposed DPM route alignment was developed during the Phase II Alternatives Analysis. This was defined for the purposes of submitting a proposal to the U.S. Department of Transportation. Initial analytical tasks of Phase III Preliminary Engineering Studies focused on evaluating refinements to this proposed alignment to define an optimal route configuration and station locations.

The following map illustrates the Baseline Alignment developed during the previous Phase of the DPM Program. It also illustrates route refinement

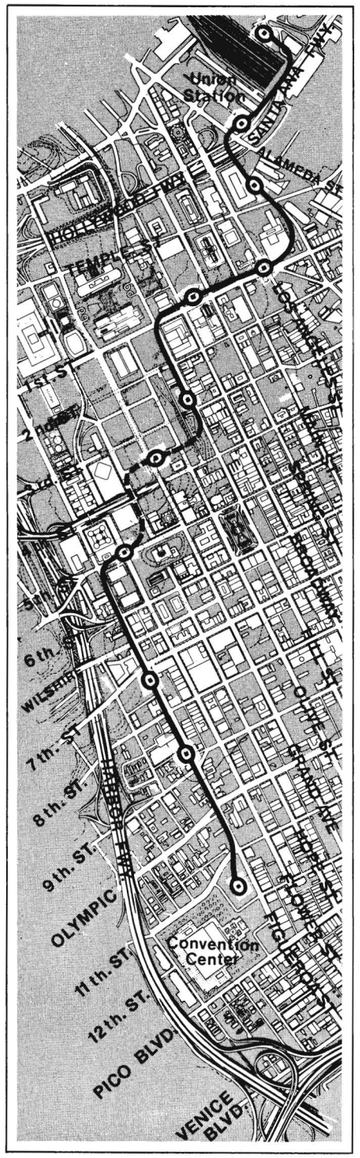
1 Moving People in Los Angeles, A Summary Report of the Los Angeles Circulation/Distribution Program, June 1977.

options that were used for comparative evaluation purposes. Although each of these route options service essentially the same corridor, there are differences in provision of direct access, in costs and impacts and in joint development opportunities.

ROUTE REFINEMENT OPTIONS

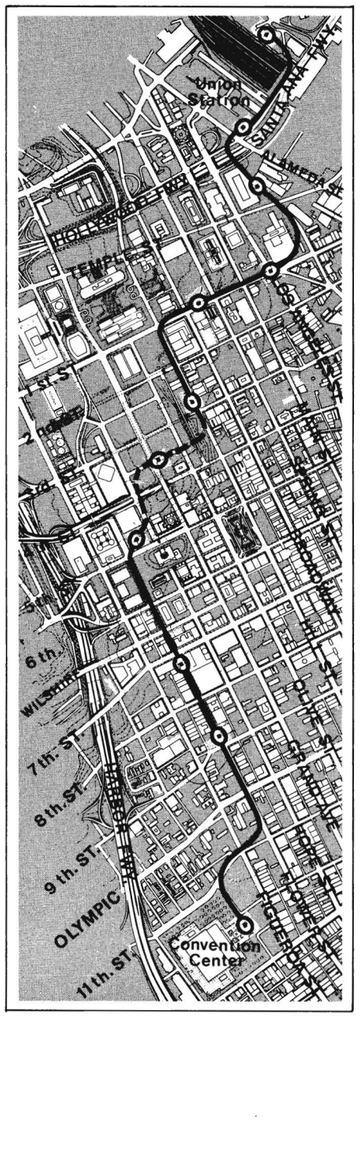
Baseline A

ALIGNMENT PROPOSED AT COMPLETION OF PHASE II ALTERNATIVE ANALYSIS



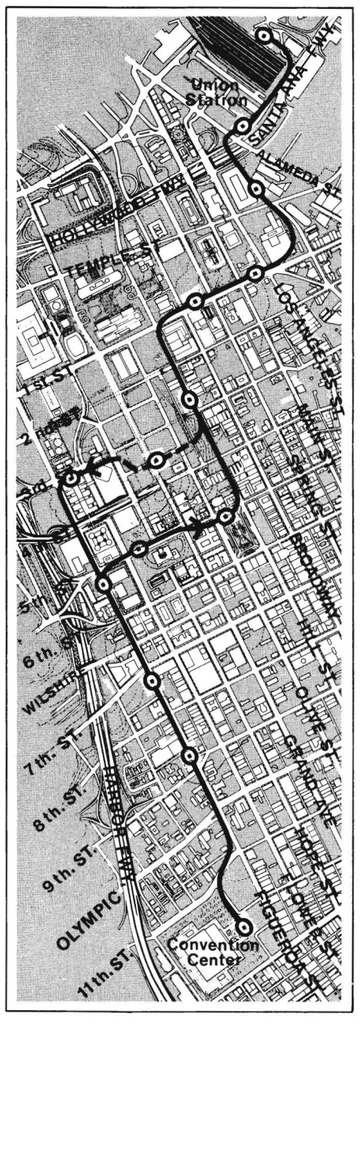
Option B

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



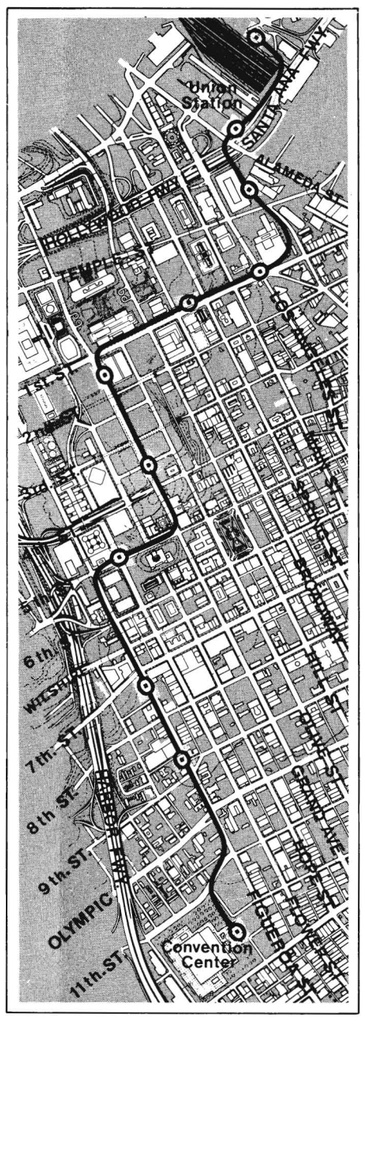
Option C

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



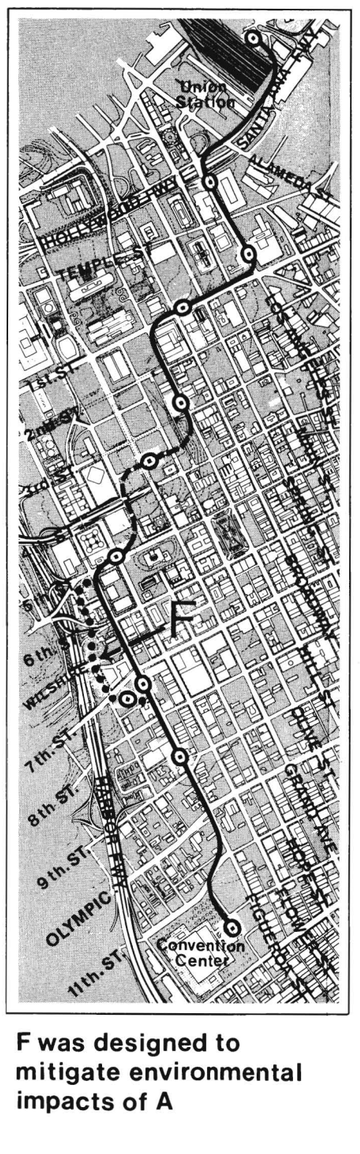
Option D

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

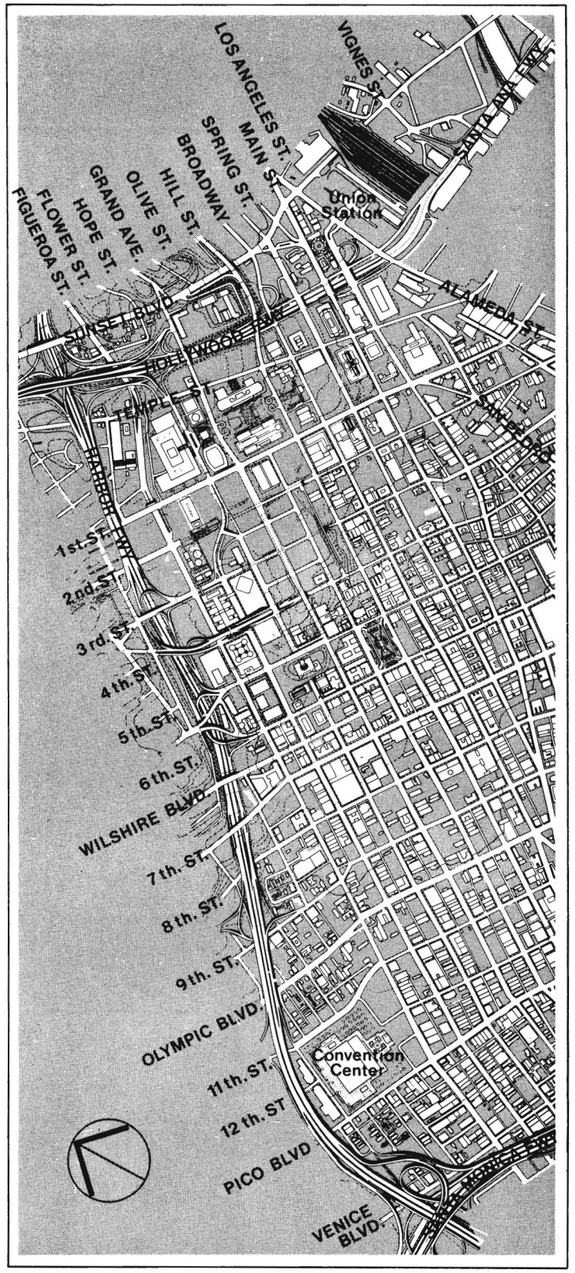


Option E(F)

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



F was designed to mitigate environmental impacts of A



THE EVALUATION PROCESS: SUMMARY OF FINDINGS

The Route Refinement Evaluation was conducted in a manner similar to that of the Phase II Alternatives Analysis. During Phase II, Program Goals and Objectives were synthesized into a set of performance, impact and cost criteria. During the current set of analytical tasks each route refinement option was reviewed according to this comprehensive list of criteria to determine if there were significant differences among the options. A detailed analysis was conducted in each case to identify significant differences.

Figures I and II summarize the major differences among the route options. As shown in Figure I, the options do not vary significantly in terms of patronage, travel time, comfort and convenience of the ride, and operating costs.

Major differences appear, however, in terms of capital cost, direct access to activity centers, visual, noise and historical site impact, and joint development opportunities. Furthermore, as shown in Illustration I, Option C covers a greater service area because of the split alignment.

FIGURE I: SUMMARY OF FINDINGS

MEASURE	Recommended Alignment	Baseline A	Route Options B	C	D	E	F	Significance
Service Measures								
Patronage estimates - daily total	84,200	78,300	79,500	84,700	81,000	79,300	78,300	◒
Typical Trip times - minutes								○
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	
Street traffic loads								
Number of locations with V/C greater than .8	3	4	2	6	3	4	4	◒
Activity centers served								●
Maximum service	26	18	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	
Guideway curves and grades								
Normalized factor	125	100	106	99	89	96	125	○

Refinement Findings as a Determinance: ● Significant ◒ Moderatly Significant

FIGURE I: SUMMARY OF FINDINGS (continued)

MEASURE	Recommended Alignment	Baseline	Route Options A	B	C	D	E	F	Significance
Impact Measures									
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	○
Environmental Areas									
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

FIGURE I: SUMMARY OF FINDINGS (continued)

MEASURE	Recommended Alignment	Baseline A	Route Options B	C	D	E	F	Significance
Financial Measures								
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	2851	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			

○ LEAST FAVORABLE
◒ MID-RANGE
● MOST FAVORABLE

SERVICE TO ACTIVITY CENTERS

Activity Centers/Buildings	Alternate Alignments A	B	C	D	E	F
A. Existing						
1. Convention Center	●	●	●	●	●	●
2. Broadway Plaza	◒	●	◒	◒	◒	◒
3. Hilton Hotel	●	◒	●	●	●	●
4. St. Paul's Cathedral	◒	◒	◒	◒	◒	◒
5. Jonathan Club	◒	◒	◒	◒	◒	◒
6. California Club	●	●	●	●	●	●
7. Central Library	●	●	●	●	●	●
B. Proposed						
1. Convention Center Hotel	●	●	●	●	●	●
2. South Park Housing (Phase I)	◒	●	◒	◒	◒	◒
3. 7th & Figueroa Mixed-use Project	●	◒	●	●	●	●
A. Existing						
1. Bonaventure Hotel	●	●	●	●	●	●
2. World Trade Center	◒	◒	●	◒	◒	◒
3. Security Pacific Bank	●	●	●	●	●	●
4. Bunker Hill Housing	○	○	●	○	○	○
5. Music Center	○	○	○	●	○	○
6. County Courts	○	○	○	●	○	○
7. Grand Central Market	●	●	●	○	●	●
8. Broadway District	◒	◒	◒	○	◒	◒
9. Biltmore Hotel	○	○	●	○	○	○
10. Pershing Square	○	○	●	○	○	○
B. Proposed						
1. Jewelry Mart	○	○	●	○	○	○
2. Offices (Parcels N & O)	●	●	●	●	●	●
3. MAT Hotel	○	○	●	○	○	○
4. Exchange Square	○	○	●	○	○	○
5. Bunker Hill Condominiums	○	○	◒	●	○	○
6. Senior Citizen Housing (X & Y)	●	●	●	○	●	●
7. Angel's Flight Office	◒	◒	◒	○	◒	◒

○ LEAST FAVORABLE
◒ MID-RANGE
● MOST FAVORABLE

SERVICE TO ACTIVITY CENTERS
(continued)

Activity Centers/Buildings	Alternate Alignments A	B	C	D	E	F
A. Existing						
1. Los Angeles Times	●	●	●	●	●	●
2. City Hall	●	●	●	●	●	●
3. Los Angeles Mall	◒	◒	◒	◒	●	◒
4. Federal Building	●	●	●	●	●	●
5. New Otani Hotel	●	●	●	●	●	●
6. El Pueblo de Los Angeles	○	○	○	○	◒	○
7. Union Station	◒	◒	◒	◒	○	◒
B. Proposed						
1. New State Office (1st & Spring)	●	●	●	●	●	●
2. Little Tokyo Mall	●	●	●	●	●	●
3. GSA Parking Structure	●	●	●	●	◒	●

Previous DPM analyses indicated that significant opportunities for joint development exist in downtown Los Angeles and there is a potential for a commitment of private sector monies to operate and maintain the system.

Illustration II identifies near-term developments along each corridor. Current urban design and financial analyses indicate that opportunities for joint development exist primarily along Figueroa Street and in the Bunker Hill and Hill Street areas. (see Figure III).

Design solutions to visual, noise and historical site impacts were developed during this stage of analysis. Routing the system behind St. Paul's Cathedral is a solution to the visual, noise and historic site impacts at that site. (see Option F in Illustration I). Locating a single station in front of the Federal Building and providing pedestrian linkages to the Los Angeles Mall and Olvera Street offers design improvements particularly for the El Pueblo State Historic Park. (see Option E in Illustration I). Given these two proposed modifications, there appear to be minimal visual and noise impact differences among the alternatives. There are more local historic sites and parks along Option C.

ROUTE REFINEMENT OPTIONS (Facility Integration Opportunities)

Baseline A

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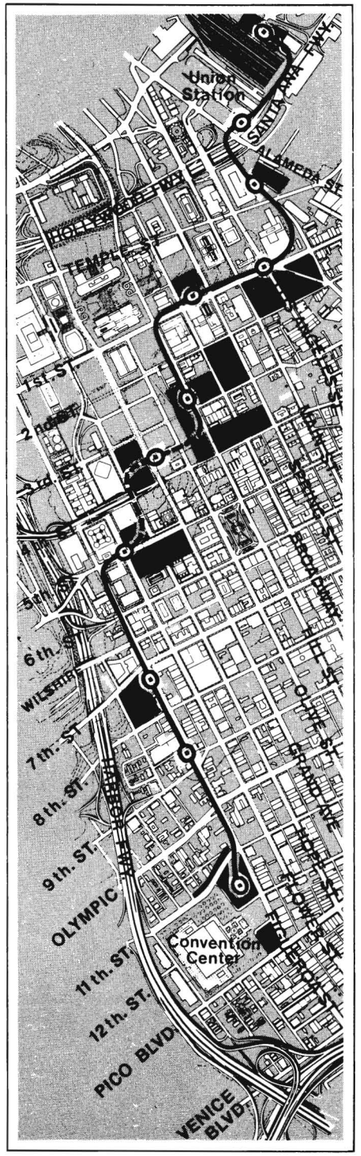

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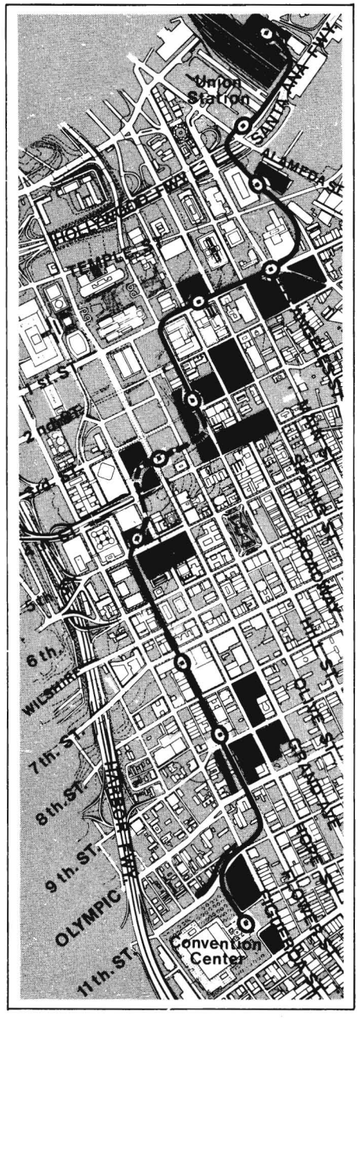

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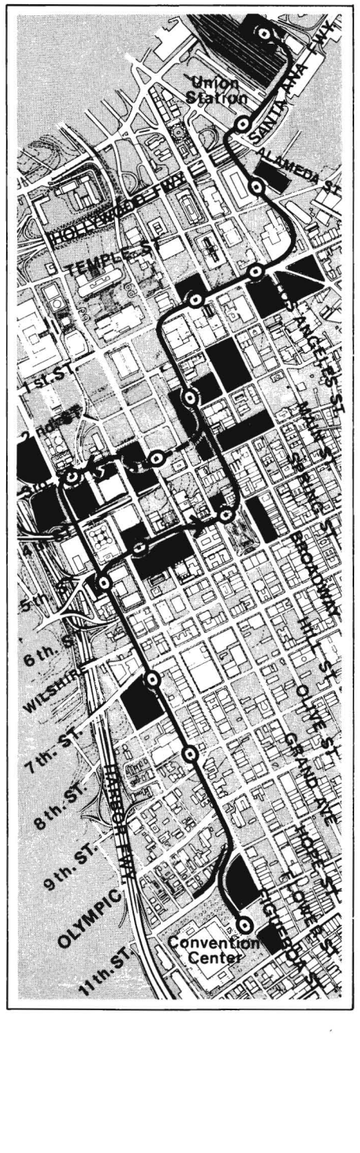

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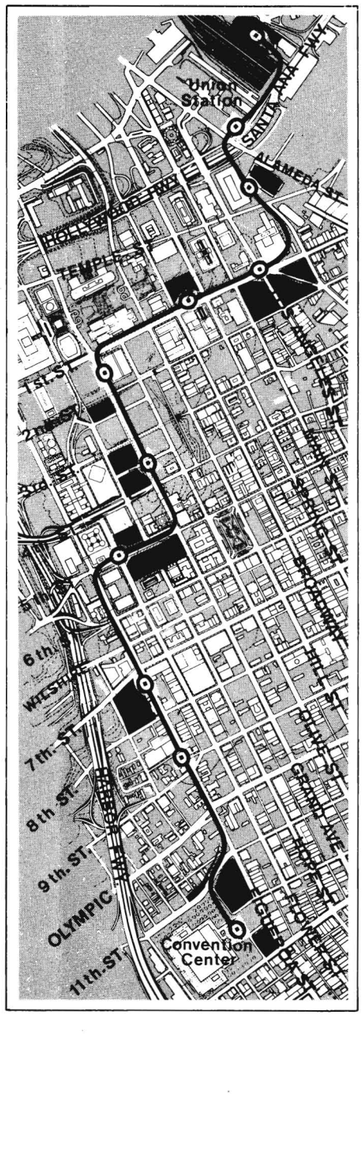

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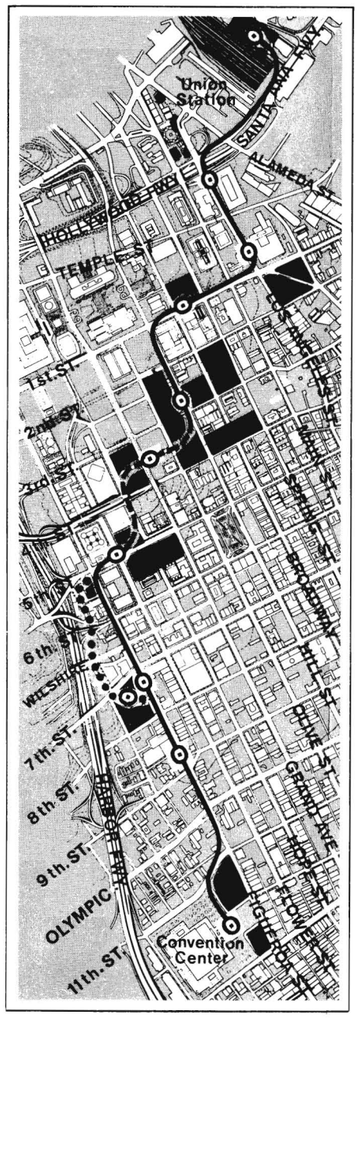
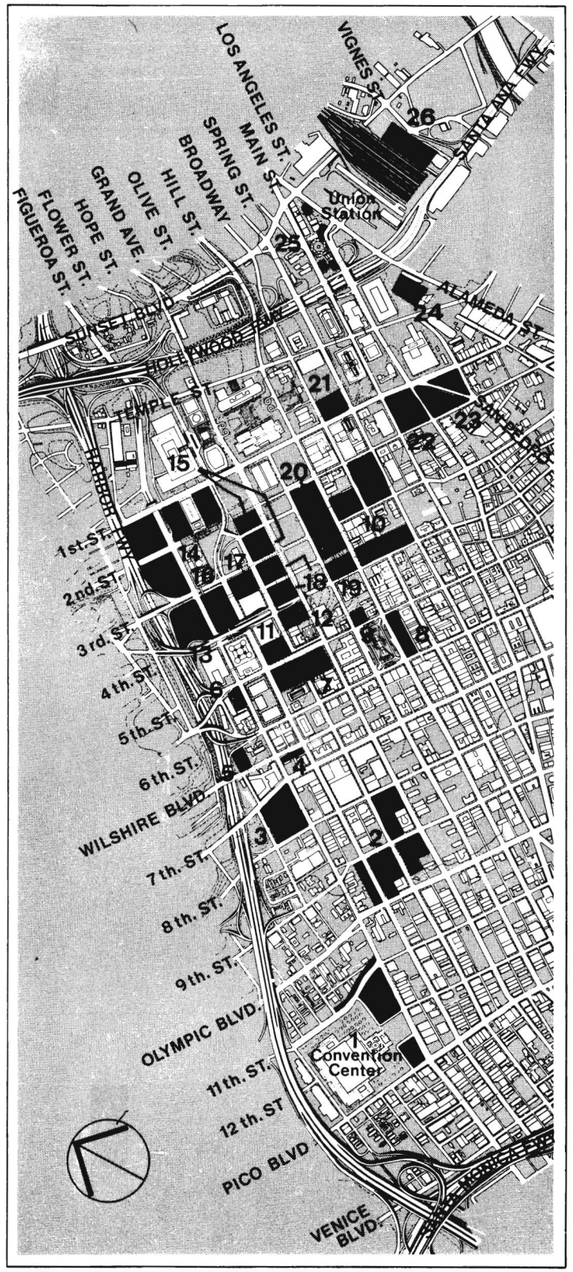


Near-Term Development Proposed Within The DPM Corridor



NEAR-TERM DEVELOPMENT PROPOSED
WITHIN THE DPM CORRIDOR

MAP KEY

No.	Development
1	Convention Center Regional Bus/Auto Intercept (1981)
1	Hotel at Convention Center (N.D.)*
2	South Park Housing (1st phase) and Park (1982/3?)
3	Mixed Use Development (N.D.)
4	Office Building (1978)
5	Office Building (1980)
6	Office Building (1983?)
7	Library Restoration (1983/4?)
8	Jewelry Mart Facility (1981?)
9	Old Auditorium/Office Building (1980)
10	Hill/Spring/4th/2nd Revitalization (N.D.)
11	Office Building (N.D.)
12	Office Building (N.D.)
13	MAT Associates Hotel (1981/82)
14	Exchange Square (1979)
15	Market-Rate Condominiums (1978-83)
16	Los Angeles World Trade Center (1974)
17	Security Pacific Plaza (1974)
18	Office Buildings (1980/82)
19	Angel's Flight Commercial (N.D.)
20	Senior Citizen Housing & Multi-Purpose Center (1980/82)
21	State Office Building (1981)
22	State Office Building (1982?)
23	Auto Free Zone - Block 3 (1980)
24	GSA Parking Structure (1979)
25	Olvera Street/El Pueblo de Los Angeles (1978)
26	Union Station Regional Bus/Auto Intercept (1981)

*N.D. = no date.

Figure III

SUMMARY MATRIX

○ LEAST FAVORABLE

◒ MID-RANGE

● MOST FAVORABLE

Urban Design Integration

	A	B	C	D	E	F
A. Station Integration Potentials						
1. Private						
a. 7th & Figueroa mixed-use	◒	○	◒	◒	◒	●
b. Parcels N & O	●	●	●	◒	●	●
c. Parcels X & Y	●	●	●	○	●	●
d. World Trade Center	○	○	●	○	○	○
e. South Park Housing (Phase I)	○	●	○	○	○	○
f. 5th & Figueroa	○	○	●	○	○	●
2. Public						
a. GSA Parking Structure	●	●	●	●	○	●
b. Union Station Intercept	●	●	●	●	●	●
c. New State Office (1st & Spring)	●	●	●	●	●	●
d. Convention Center	●	●	●	●	●	●
B. Direct Pedway Connection Potential						
1. Private						
a. Convention Center Hotel	●	●	●	●	●	●
b. Broadway Plaza	◒	●	◒	◒	◒	◒
c. MAT Hotel	○	○	●	○	○	○
d. New Otani Hotel	●	●	●	●	●	●
e. Bonaventure Hotel	●	●	●	●	●	●
f. Bunker Hill Condominiums	○	○	○	◒	○	○
g. Security Pacific Bank	◒	◒	●	◒	◒	◒
h. Proposed Jewelry Mart	○	○	●	○	○	○
i. Biltmore Hotel	○	○	●	○	○	○
j. Grand Central Market	●	●	●	○	●	●
2. Public						
a. Convention Center Parking	●	●	●	●	●	●
b. New Los Angeles Mall	◒	◒	◒	◒	●	◒
c. Federal Building	●	●	●	●	●	●
d. City Hall South	●	●	●	●	●	●
e. Police Building	●	●	●	●	●	●
f. Central Library	●	●	●	●	●	●
g. Pueblo de Los Angeles	○	○	○	○	●	○

RECOMMENDED ROUTE ALIGNMENT

Illustration III shows the optimal alignment recommended for more detailed design, engineering and environmental analysis. This alignment is considered optimal for the following reasons:

From A Service Perspective:

- o The recommended route alignment connects more employment, retail, and tourism activity centers. 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.
- o The recommended route alignment offers greater operational flexibility in terms of scheduling due to the split guideway configuration.
- o 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.
- o 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.
- o Routing the system in front of the Federal Building provides better access to those working and shopping in the Los Angeles City Mall area.

From A Cost Perspective:

- o The recommended route alignment offers cost savings over the Baseline Alignment developed during the previous stage of analysis. Compared to the Baseline, there is no significant difference in the level of funds required to operate the system.
- o Joint development analysis indicates that the recommended route alignment has the greatest opportunities for sharing of system operation and maintenance costs. Sites reviewed in this joint development analysis are shown in Illustration II and Figure 3 .

From An Impact Perspective:

- o Direct linkage of more commercial, hotel and retail establishments afforded by the recommended route alignment is expected to yield relatively greater economic benefits.

PEOPLE MOVER ROUTE ALIGNMENT RECOMMENDED FOR DETAILED PRELIMINARY ENGINEERING AND ENVIRONMENTAL STUDIES

- The recommended route alignment provides direct service (1 minute walk time) to 3770 hotel rooms as compared to 2850 rooms in the Baseline Alignment. It also serves 4.80 million sq.ft. of retail/commercial space compared to 3.75 million sq.ft. served in the Baseline Alignment.

Figure IV

COMPARISON OF BASELINE AND RECOMMENDED ALIGNMENT: MAJOR FINDINGS

	Baseline	Recommended Alignment
Activity centers directly served	19	27
Hotel rooms within 1 minute walk time	2850	3770
Retail/commercial uses served (millions of sq.ft.)	3.75	4.80
Visually sensitive areas	2	1
Noise sensitive areas	2	0
Historic Sites and Parks	5	6
Private Sector Revenue Potential *	100	104
Parking Substitution Potential *	100	122

* Normalized Factor

- Significant visual and noise impacts are mitigated in this recommended route alignment by routing the system behind St. Paul's Cathedral. (see Option F in Illustration I.)

- Impacts on major historic sites are mitigated by routing the system behind St. Paul's Cathedral and by providing a more aesthetically sensitive design solution to the station serving the El Pueblo State Historic Park.

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. (see Figure II).

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 PM 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, Hill Street, and First Street. Further design and analysis to coordinate bus and DPM service at these sites will be conducted throughout the People Mover Work Program.

- Illustration IV shows the DPM route against a background of the several proposed Rapid Transit Starter routes within the CBD. The DPM has the ability to be compatible with and complement a wide range of rapid rail routes for several reasons:

    1. An effective circulation/distribution system is required through the high trip density area to supplement the limited stop MRT approach from the west side as well as those trips entering the CBD from the south and east.

    2. Circulation internal to the CBD is required, and circulation trips represent approximately 30% of the DPM total trips.

  Key DPM/MRT interfacing points are possible at the two or three CBD station locations such as the Civic Center, Union Station, the Convention Center or Seventh Street. The MRT stations will be in the order of 600 feet long and at a sufficient depth to clear building foundations. These conditions offer excellent opportunities to bring the escalators to the surface of the DPM station. Analysis of station design indicates that all DPM stations will have the capacity to accommodate maximum volumes since the minimum station size is determined primarily by architecture standards, code requirements, and train length.

  The recommended DPM route can be compatible with the various Starter Line proposals and does not preclude any of these proposals.

PEOPLE MOVER INTEGRATION WITH PROPOSED STARTER LINES

People Mover

Starter Line Alternatives

NEXT STEPS

Definition of a recommended People Mover route for downtown is critical to a timely completion of Phase III Preliminary Engineering Studies. Subsequent analytical tasks will focus on further detailed engineering, financial and environmental aspects at the site-specific level. Key reports and decisions which remain in Phase III Preliminary Engineering are shown on the accompanying chart. (See Figure V).

LOS ANGELES PEOPLE MOVER

PRELIMINARY ENGINEERING AND ENVIRONMENTAL IMPACT ANALYSIS

SCHEDULE OF PROGRAM MILESTONES

C City Council
A Interagency
◯ Interim Report
□ Final Report
PH Public Hearing

PRODUCT	Week	1/30 0	2/27 4	3/27 8	4/24 12	5/22 16	6/19 20	7/17 24	8/14 28	8/28 30	PRODUCT DESCRIPTION
1. WORK PROGRAM PLAN		C A									Describes work program, which starts following selection of consultants, hiring of staff and approval from UMTA and City Council.
2. MONTHLY PROGRESS REPORTS (Schedule + Budget Status)			C	C	C	C	C	C	C		Informational report showing how well we are holding to program plan, including cost and schedule.
3. CITIZEN & USER PARTICIPATION WORK PROGRAM			C A								Defines the process to assure adequate citizen participation.
4. PRELIMINARY CONSTRUCTION SCHEDULE			A						C		Shows what is to be built when. Has impact on cost and other programs.
5. OPERATIONS PLAN (Bus, Parking, People Mover)					C A				C		Defines service frequencies, transfer policies, fares, hours of operation. Includes feeder bus service arrangements.
6. SYSTEM LOCATION REPORT (Guideway, Stations, Intercepts, Support Facility)			C A	C A	C A						Defines location of the guideway, stations, intercepts, support facilities (including storage yard and maintenance). Impacts cost.
7. GUIDEWAY STRUCTURES REPORT				C	C A						Defines the range of acceptable guideway alternatives; shows what guideway will look like; impacts cost, community acceptance and schedule.
8. SYSTEM PATRONAGE						C A	C				An estimate of how many people will ride the system on opening date and in 1990. Impacts unit cost (cost per rider) and operating revenues.
9. DRAFT ENVIRONMENTAL IMPACT REPORT							C A		PH		Is used in public hearing for adoption of final EIR and preparation of Federal Environmental Impact Statement. Includes discussion of alternatives.
10. SUBSYSTEM REQUIREMENTS + SPECIFICATIONS (Vehicle, Control, etc.)					C A	C A	C A	C A			Details of candidate vehicles, controls, safety and security and provision for accommodating elderly and handicapped.
11. CIVIL FACILITIES PRELIMINARY DESIGN					C A	C A	C A	C A			Describes technical details of stations, intercepts, yards and shops, guideway columns and footings.
12. PRIVATE SECTOR PARTICIPATION REPORT				C	C	C	C	C	C		Describes joint public/private development (design and funding) of stations and other facilities. Impacts how you pay for system.
13. FINANCIAL PLAN AND DEVELOPMENT SCHEDULE					C A	C A	C A	C A	C A		Total capital and operating cost estimates, and identification of revenue sources; in final report includes conditional funding commitments.
14. CITIZEN PARTICIPATION REPORTS				C	C	C	C	C	C		Documents citizen comment, extent of citizen input and its impact on final recommendations.
15. SYSTEM SPECIFICATIONS (Includes Project Requirements & Design Baseline)										C A	Overall detail system description, criteria and specifications; the basis for final design. Impact all of the key issues.
16. FINAL ENVIRONMENTAL IMPACT REPORT/STATEMENT										C A	Same as draft EIR but includes response to public and agency reviews and comments. Impacts decision to proceed with further project development.
17. PROCUREMENT BID PACKAGES FOR IMPLEMENTATION										C	Becomes the RFP to system supplier (contractor who will build the system); contains system specifications, EIR and financial plan.
18. MANAGEMENT CONTROL SYSTEMS								C	C		Describes procedure for insuring implementation wil be carried out within the budget and on schedule.
19. RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION PROCEDURES AND REQUIREMENTS								C	C		Right-of-way needs and procedures for obtaining right-of-way and relocating displaced residents, businesses, etc.
20. GRANT APPLICATIONS FOR IMPLEMENTATION										C	Upon Council approval submitted to U.S. DOT and Caltrans for final design and construction; includes system specifications, EIR and financial plan.
21. FINAL PRELIMINARY ENGINEERING REPORT										C A	Summary report of key findings to assist decision makers in deciding to proceed with implementation of the People Mover.