
Construction Scheduling of the Sunset Coast Line



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Preliminary Evaluation Prepared by the
County of Los Angeles Transit Task Force

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JUNE 1976

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Introduction

Rapid execution of the electorate's mandate is essential for two reasons: First, so the public can begin using the system as soon as possible, and second, so that inflation does not escalate costs excessively. Effective design and construction management is necessary for timely construction of the Sunset Coast Line.

Within the next five years, the construction program must accelerate from a standing start to a level of more than 50 contracts under way at one time. The ability to maintain control over so many separate projects will be the key to successful implementation of the Sunset Coast Line.

This report is limited to the evaluation of the design and construction scheduling necessary to initiate operation of the Sunset Coast Line.

Program Management

Successful multiple project management requires strong program management capability. Key elements of the program management system that must be available are: scheduling, financial management, resource management, management information, and community relations.

Program Management must also focus immediately on two key areas: system planning and project planning. System planning involves system geometry, performance standards, architectural standards, structural standards, and the system environmental impact report. At the same time, project planning must begin on those projects which offer opportunities for early construction starts. Parallel activities ("fast track" scheduling) will assure that these projects get under way with a minimum of time lapse after completion of system planning.

IMPLEMENTATION REQUIREMENTS

PROGRAM MANAGEMENT	1976	1977	1978	1979	1980	1981	1982
Department Organization	■						
Operating Policies	■						
Staffing	■						
Budget	■						
Scheduling System	■						
Financial Management System	■						
Resource Management System	■						
Management Information System	■						
Community Relations	■	■					
SYSTEM PLANNING AND DEVELOPMENT							
System Geometry	■	■	■				
Performance Standards	■	■					
System EIR	■	■					
Architectural Standards	■	■					
Structural Standards	■	■					

The Design and Construction Team

There will be no delay in commencing design work on the Sunset Coast Line because it is planned to utilize the available engineering resources in the community. The design and construction team will be a community partnership. The partnership will involve a major role by private sector engineers, contractors, and manufacturers. The basic scheduling assumptions used in this Report include design of structures within freeway corridors by Cal-Trans and design of structures in other corridors by private consulting firms. System standards and equipment specifications will be developed by specialized consultants. Construction of system facilities and manufacture of equipment will be accomplished by private contractors and vendors after competitive bidding.

Design and construction management would be the responsibility of a proposed County Department of Transit Development. This

Department would also be responsible for system planning, preparation of environmental impact reports, acquisition of rights of way, and community relations.

Schedule Development

Detailed schedules have not been prepared in this study to show the research, development, and other activities necessary for procurement of the transit vehicles and the operation system. By relying on proven designs for these aspects of the system, it is expected that these elements can be available to begin testing in 1981. The following assumptions were used in developing the construction schedules:

General Assumptions

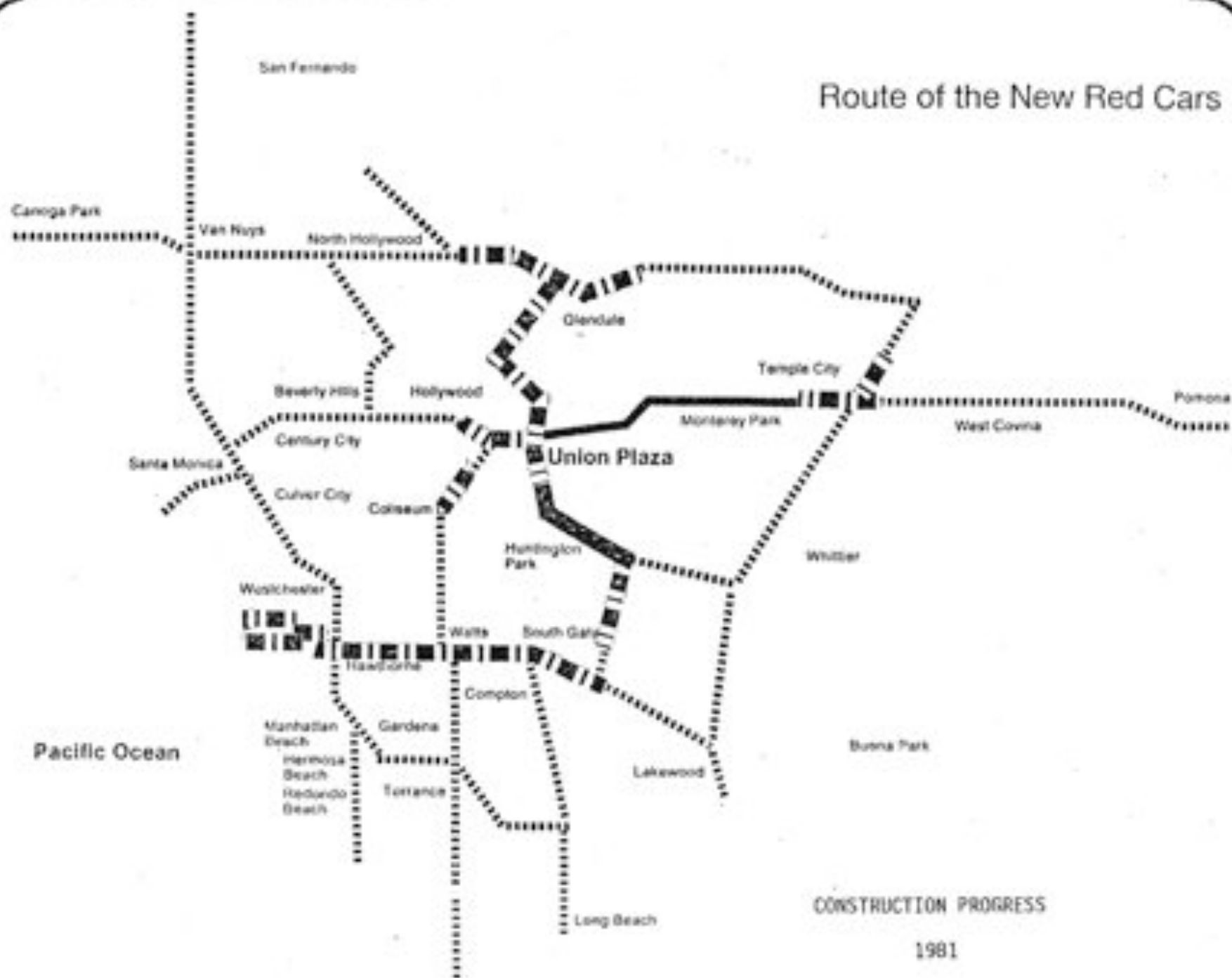
- A Department of Transit Development can be formed immediately after the election and initially draw upon existing County staff to start highest-priority studies.

- Cal-Trans designs all structures within freeway right of way.
- A-E's and specialized consultants retained for bulk of design work.
- Cal-Trans and A-E's can schedule project design starts by early 1977.
- Construction contracts awarded after competitive bidding.
- Development of criteria and standards be started immediately following election.
- System EIR and initial Project EIR's are prepared in parallel.
- Criteria development, design, and EIR preparation overlapped when possible to proceed on a "fast track" basis to get construction contracts out as soon as possible.
- General utilization of current "state of the art" design standards for initial contracts.
- Freeway system can be disrupted by multiple contracts along a given corridor.
- Construction industry can absorb work.
- Approvals by SC&TD, local agencies, and other jurisdictions are expedited.

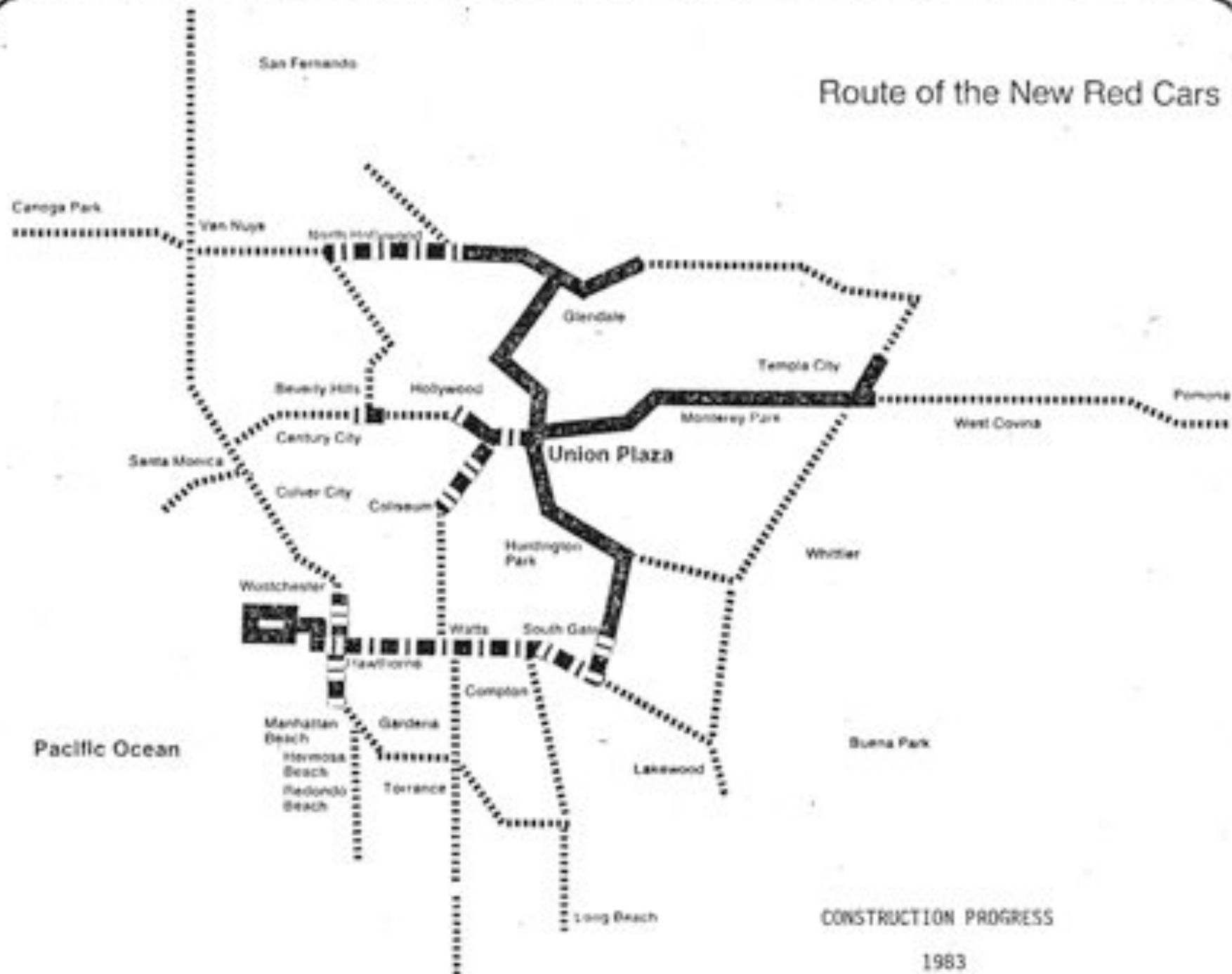
Timing Assumptions

- System EIR will take one year.
- Project EIR's will require one to three years for preparation and approvals depending upon nature of transit corridor.
- Project design and specifications will require one to three years depending upon project complexity.
- R/W acquisition, utilities, and approvals will require six months to three years but can be accomplished partially in parallel with design activities.
- Construction contracts will be about two years duration.
- Contracts for transit roadways, electrification/controls, and track construction can be awarded on a "fast track" basis with overlapping durations.

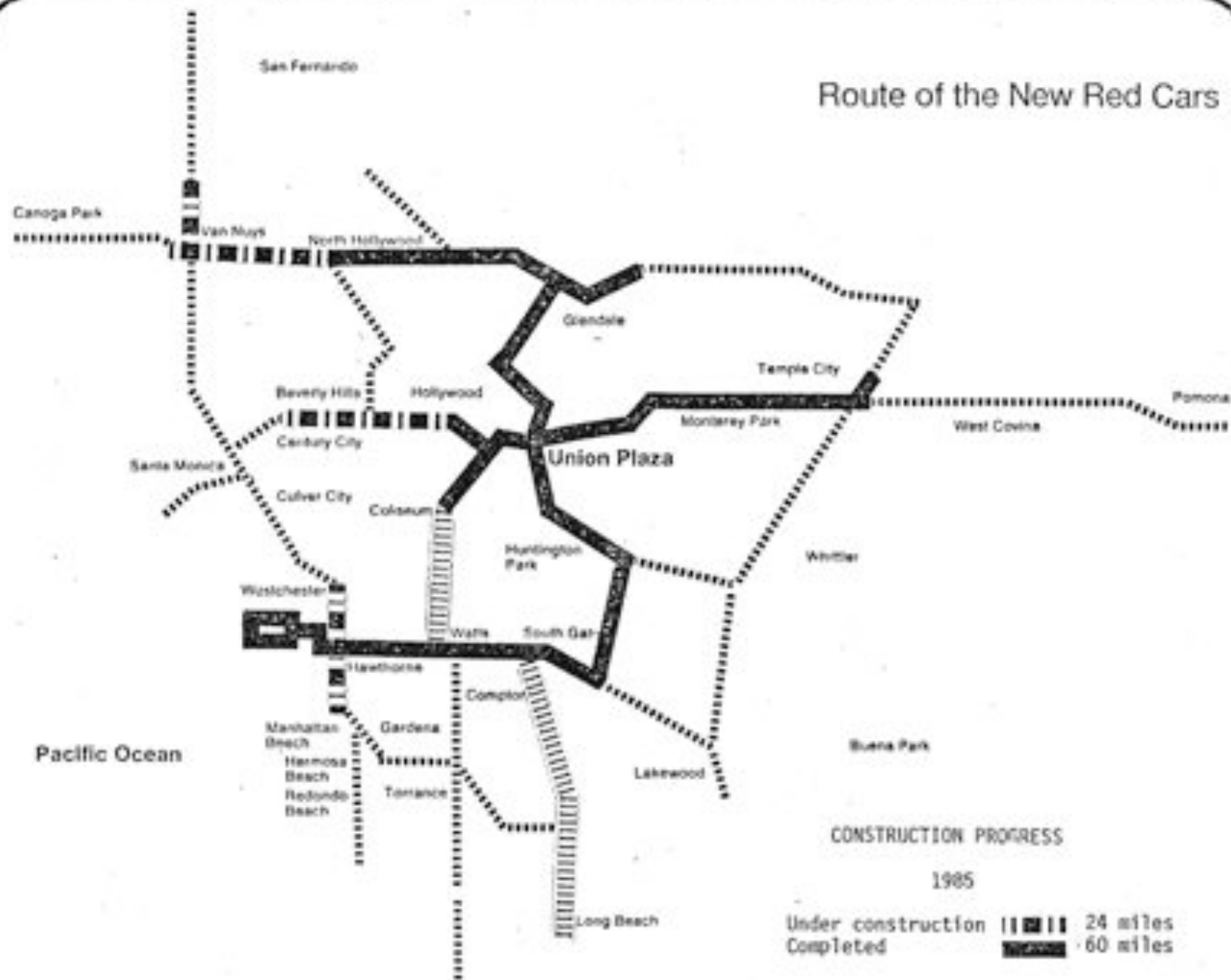
Route of the New Red Cars



Route of the New Red Cars



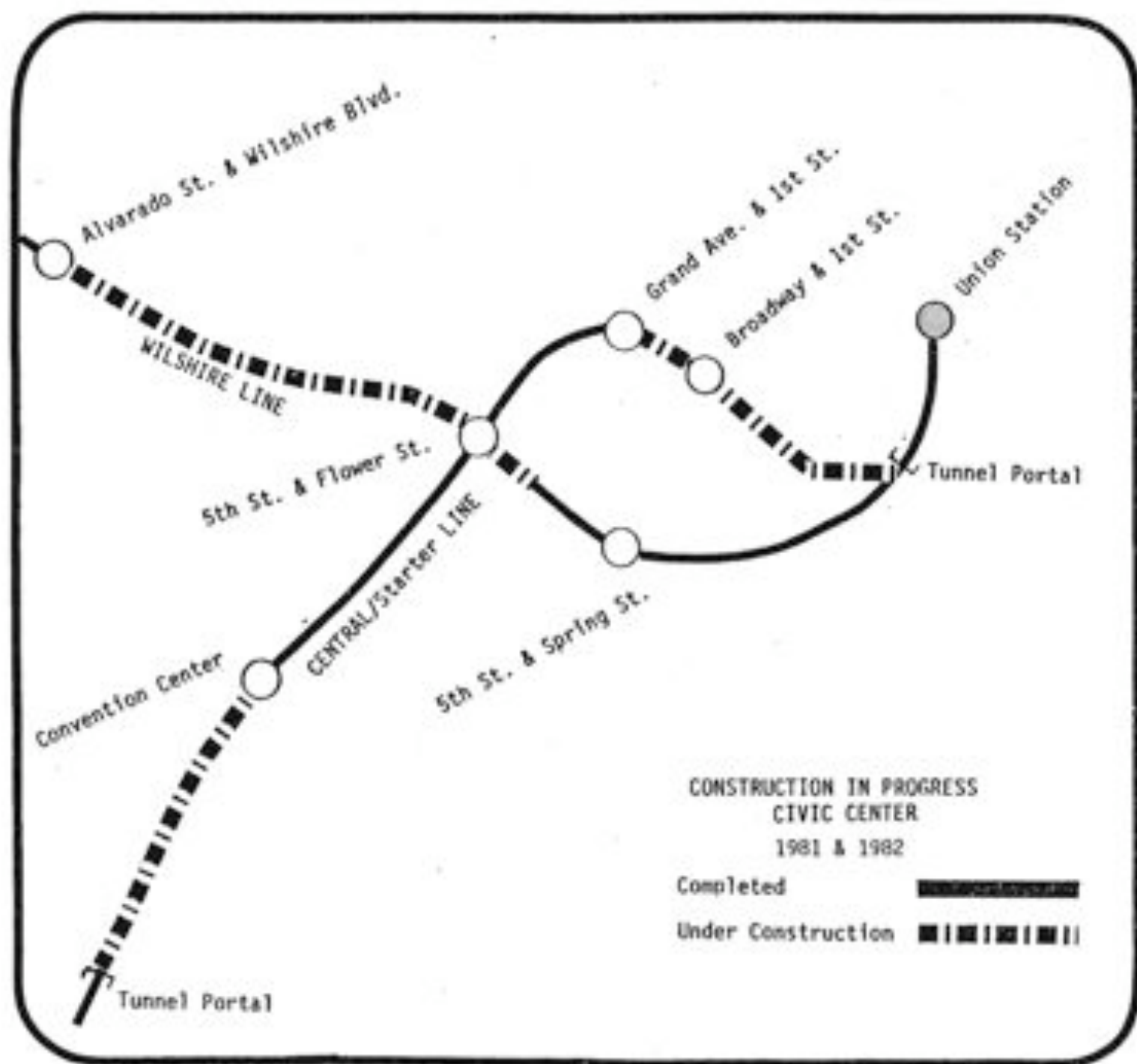
Route of the New Red Cars

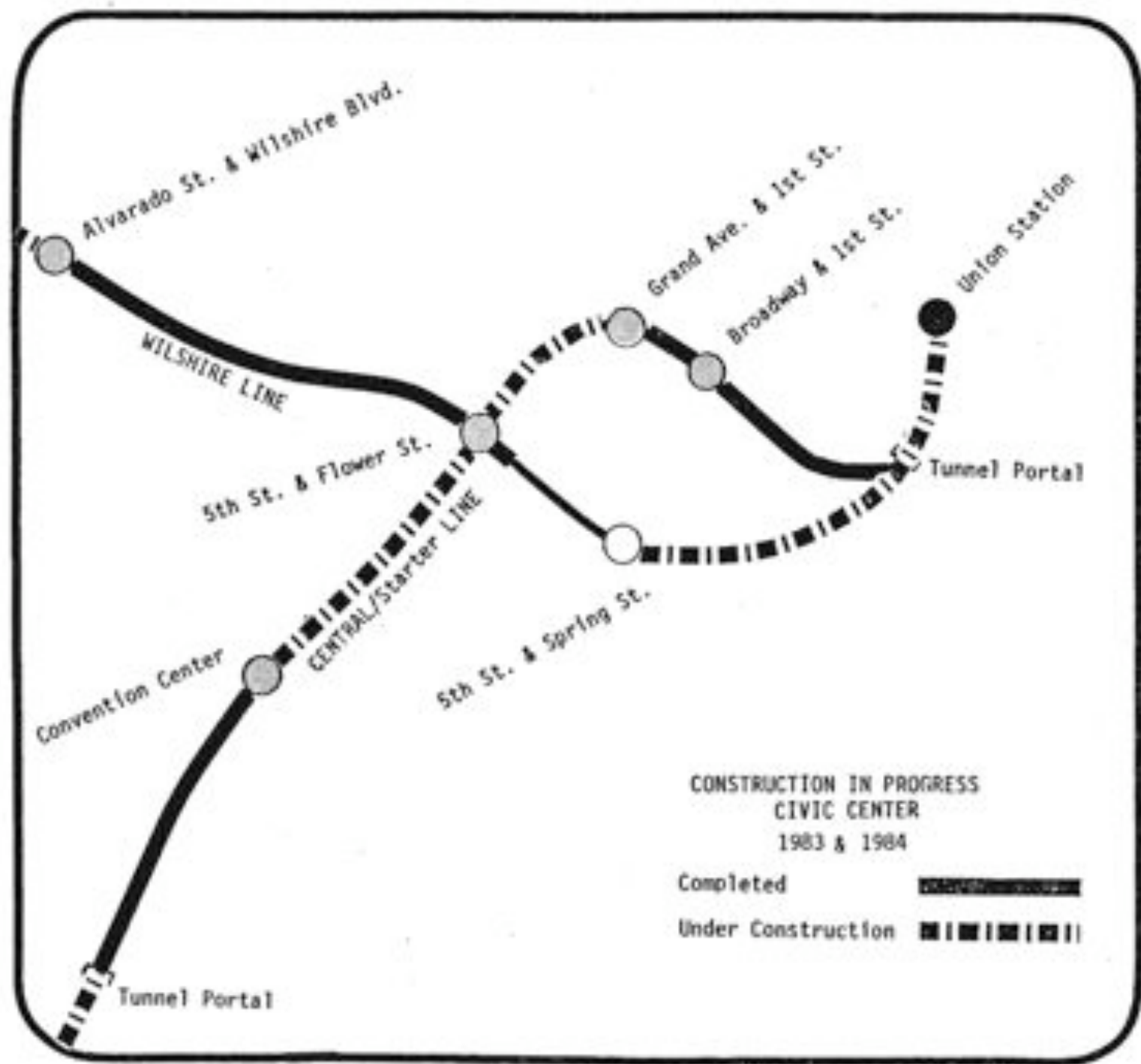


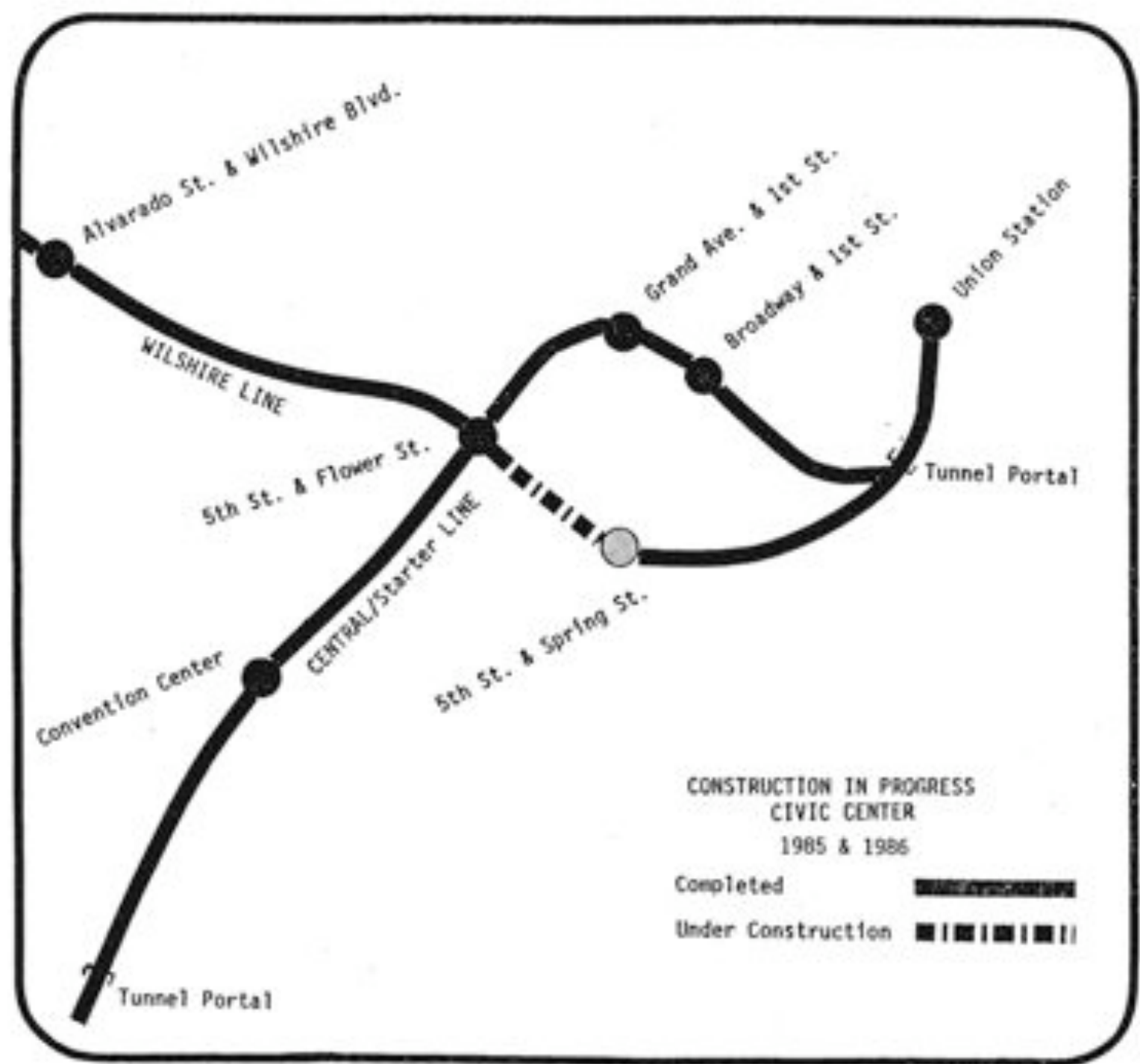
Union Plaza is the key to operation of the Sunset Coast Line. By January 1977, development of plans for Union Plaza should be under way. Preparation of the EIR and acquisition of a site will be of the highest priority. Accelerated development of the plans and specifications for Union Plaza, in parallel with the other prerequisite activities, will enable award in mid-1979 of construction contracts for the minimum facilities required at this site for system operation. By the end of 1981, Union Plaza will be sufficiently complete to allow initial use of the Pomona Line on a limited basis.

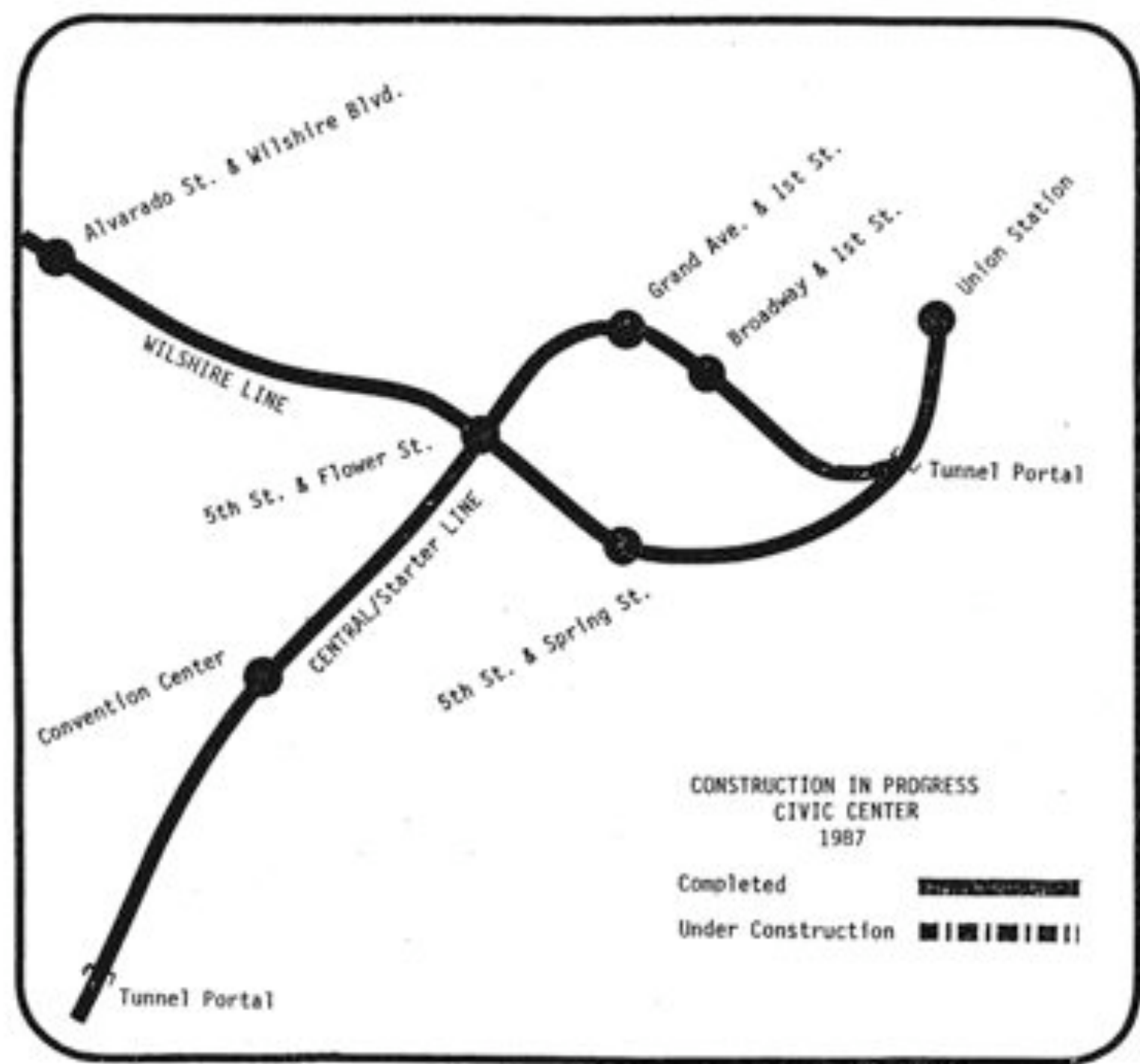
Scheduling of the Starter Line construction will be influenced by several factors: Union Plaza, UMTA financing, and coordination with the construction of the Wilshire Line. Detailed scheduling is not shown for the Starter Line because of the continuing

studies being conducted by the Southern California Rapid Transit District. A construction sequence is shown on the following pages to illustrate the possibilities for coordination with the construction of the Wilshire Line. This scheduling only shows construction as far south as the aerial structure extending to the USC/Coliseum area. It will be possible, however, to construct at the same time other links in the Starter Line further to the south to allow initial operations on the entire line in 1987 when construction and testing of the Civic Center subway can be completed.





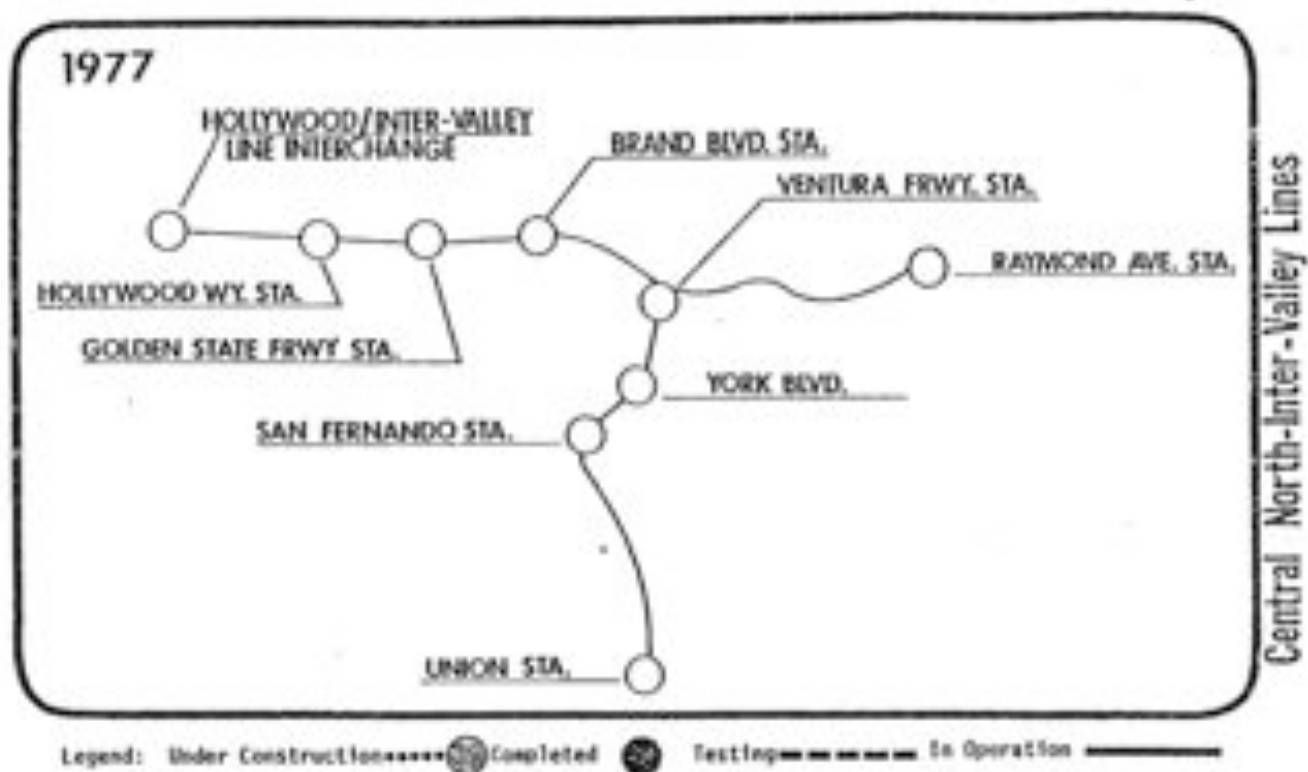




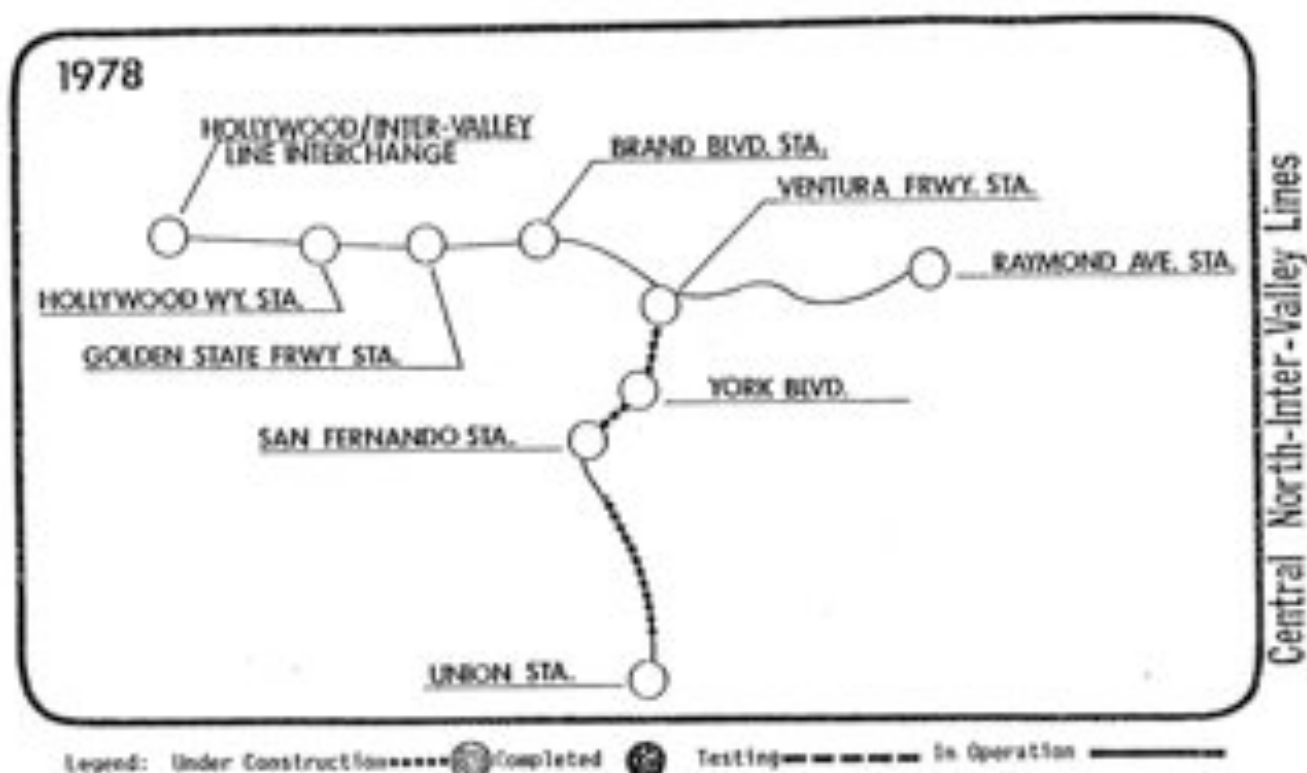
[illegible]

Early completion of the Central Line North and the portions of the Inter-Valley Line between North Hollywood and Pasadena can be accomplished by expediting the award of numerous construction contracts throughout the corridors. The south portion of this corridor is aligned within the Los Angeles River where it winds through an industrial area. Minimal construction interferences should be encountered in this stretch. Construction work within the River must be restricted to the dry portions of the year when flood flows are not a problem. The portions of the Central Line North and Inter-Valley Line located in freeway corridors involve recently constructed freeways where traffic densities are still low. This will reduce traffic conflicts, enabling rapid progress to be made on construction.

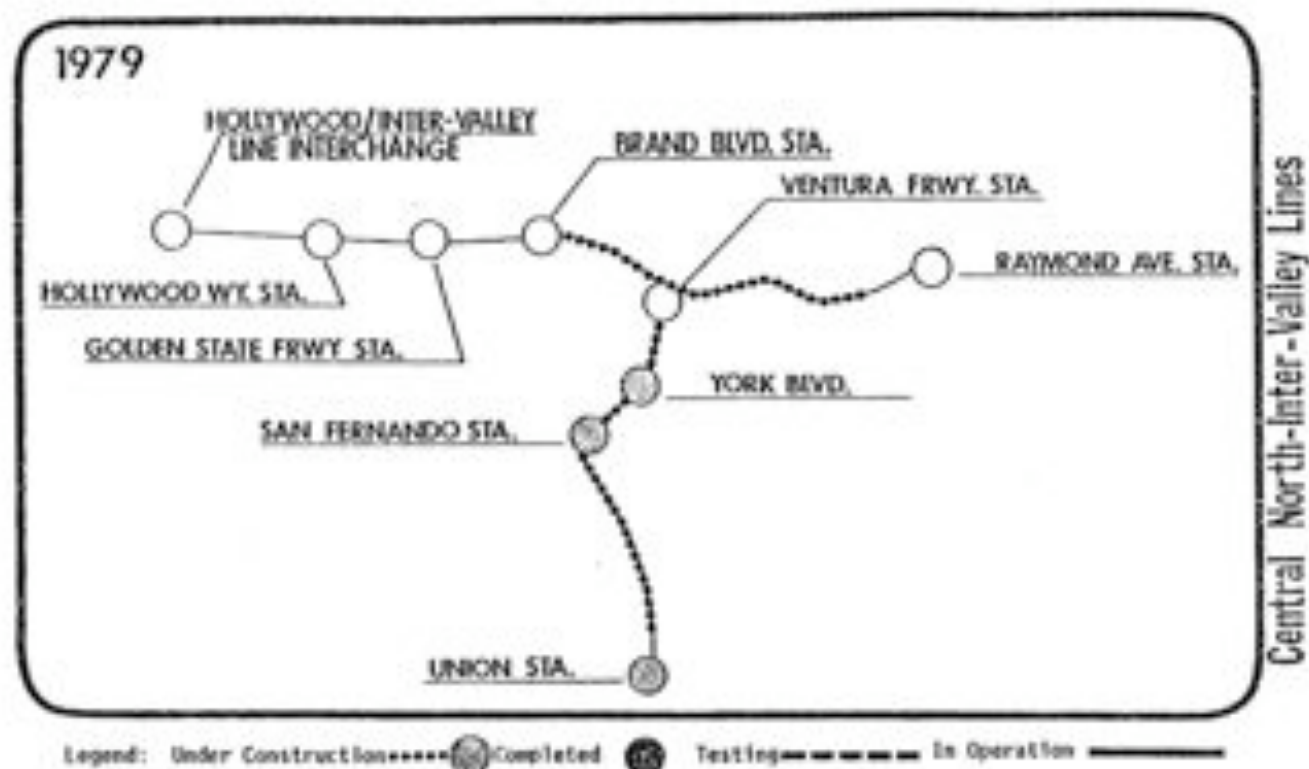
Major testing of the Central Line North to the Inter-Valley Line and the Inter-Valley Line from the Golden State Freeway at the Burbank-Glendale border to the Raymond Avenue Station in Pasadena will be under way in 1983. Full operation within these limits can be started in late 1983 or early 1984.



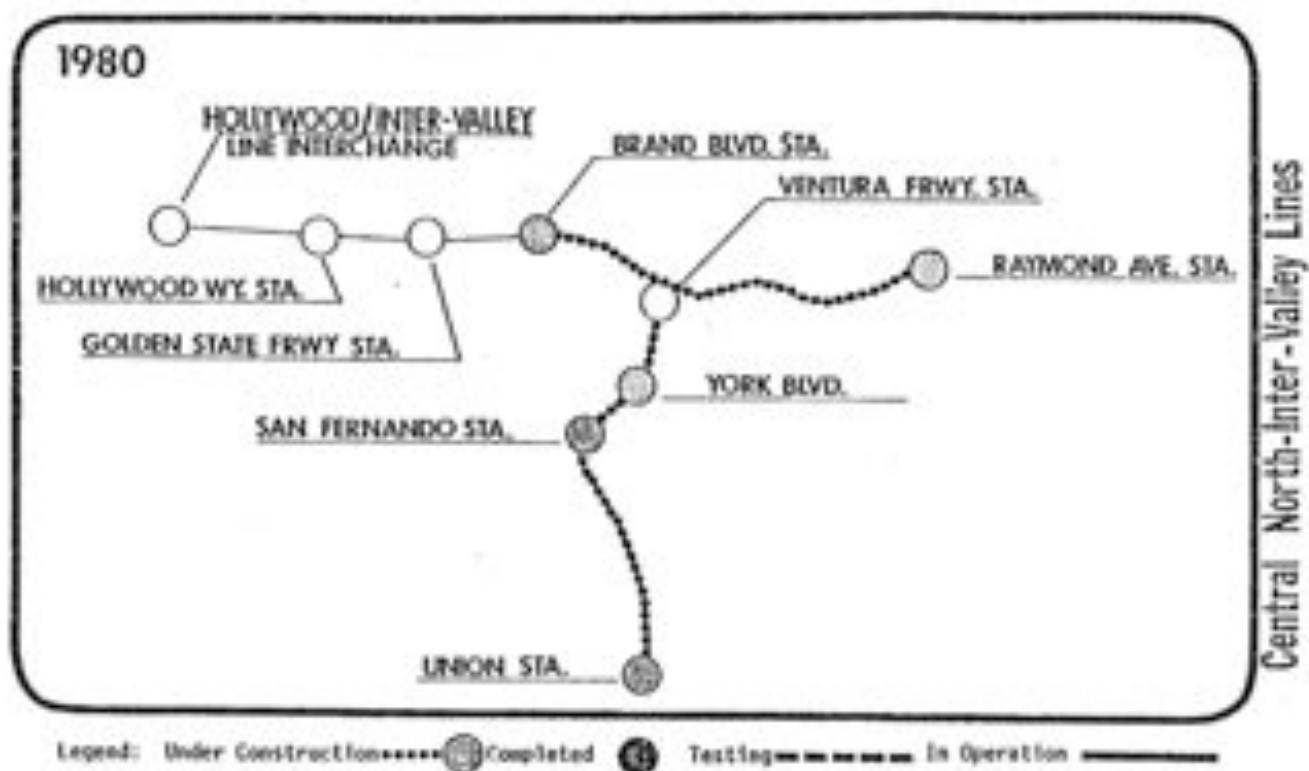
Design of the Central Line North and the Inter-Valley Line will be started early this year and proceed in parallel with preparation of the project and system EIR's.



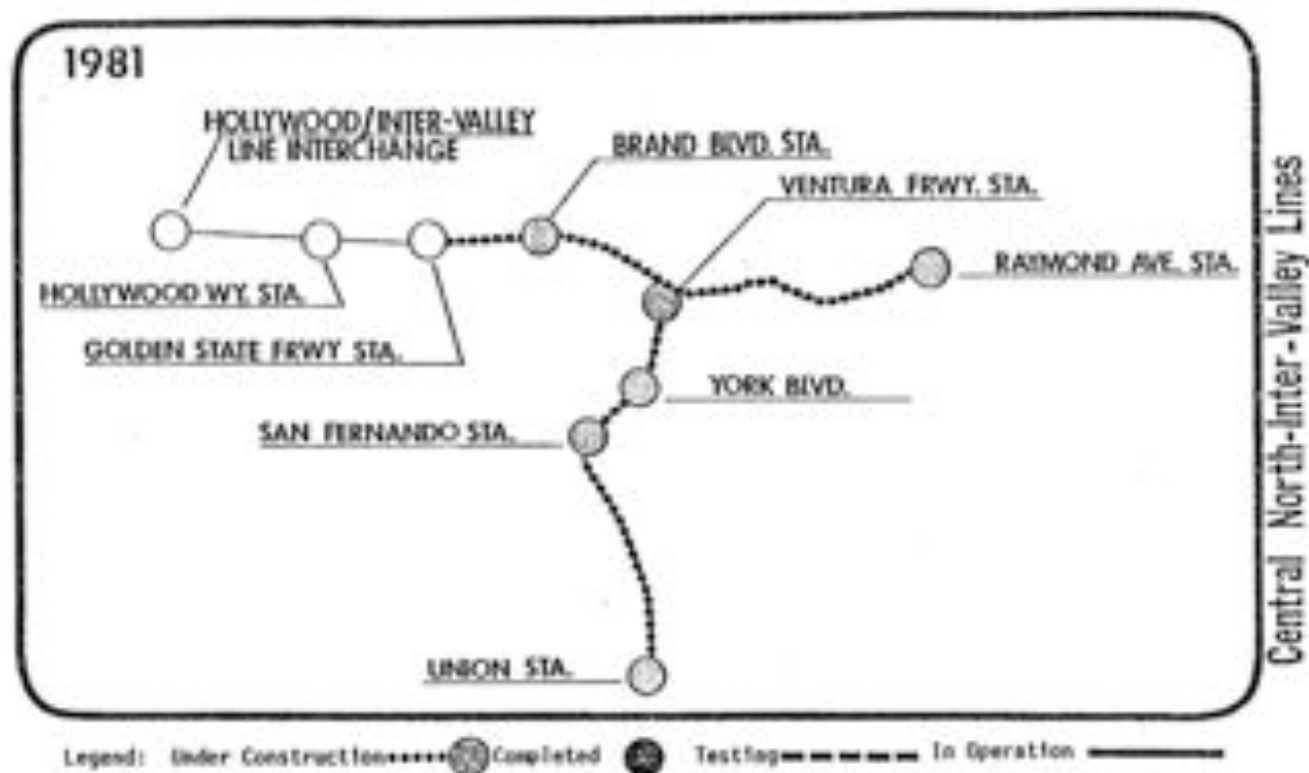
Contracts will be awarded for the construction of the subway sections located within the Los Angeles River and the aerial structures along the Glendale Freeway from the San Fernando Road Station north to the Ventura Freeway Station. Construction work in the Los Angeles River will be staged so that work is done only during the dry season. During construction, a low flow bypass will carry the year-round low flow past the construction sites in the Los Angeles River. A series of well points will be needed to allow excavation for precast subway sections. Strict water quality controls will be set to protect ground and surface waters.



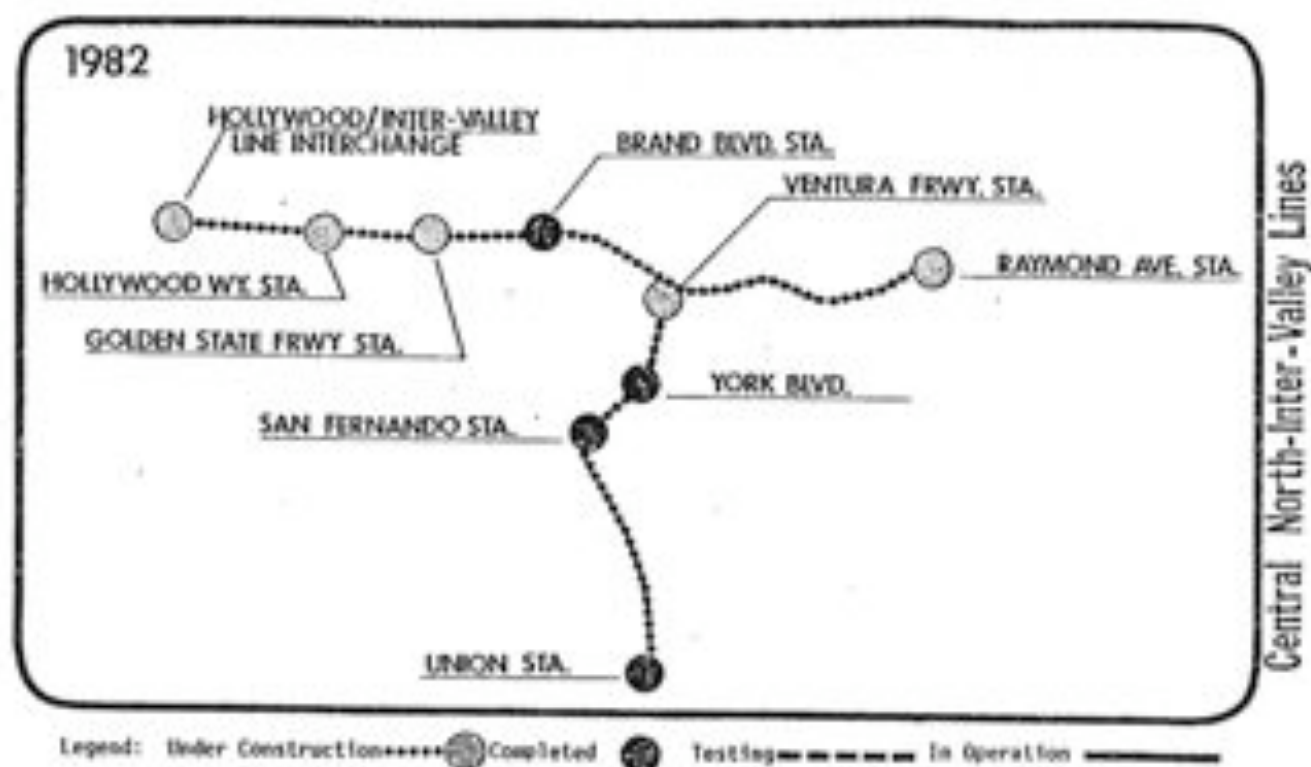
Construction will continue on the contracts awarded the previous year. Additional contracts will be awarded for work between the Los Angeles River and the San Fernando Road Station, the Central Line North-Inter-Valley Line interchange, and for the construction in the center lanes of the Ventura Freeway between Glendale and Pasadena. Construction of stations at York Boulevard and San Fernando Boulevard will begin.



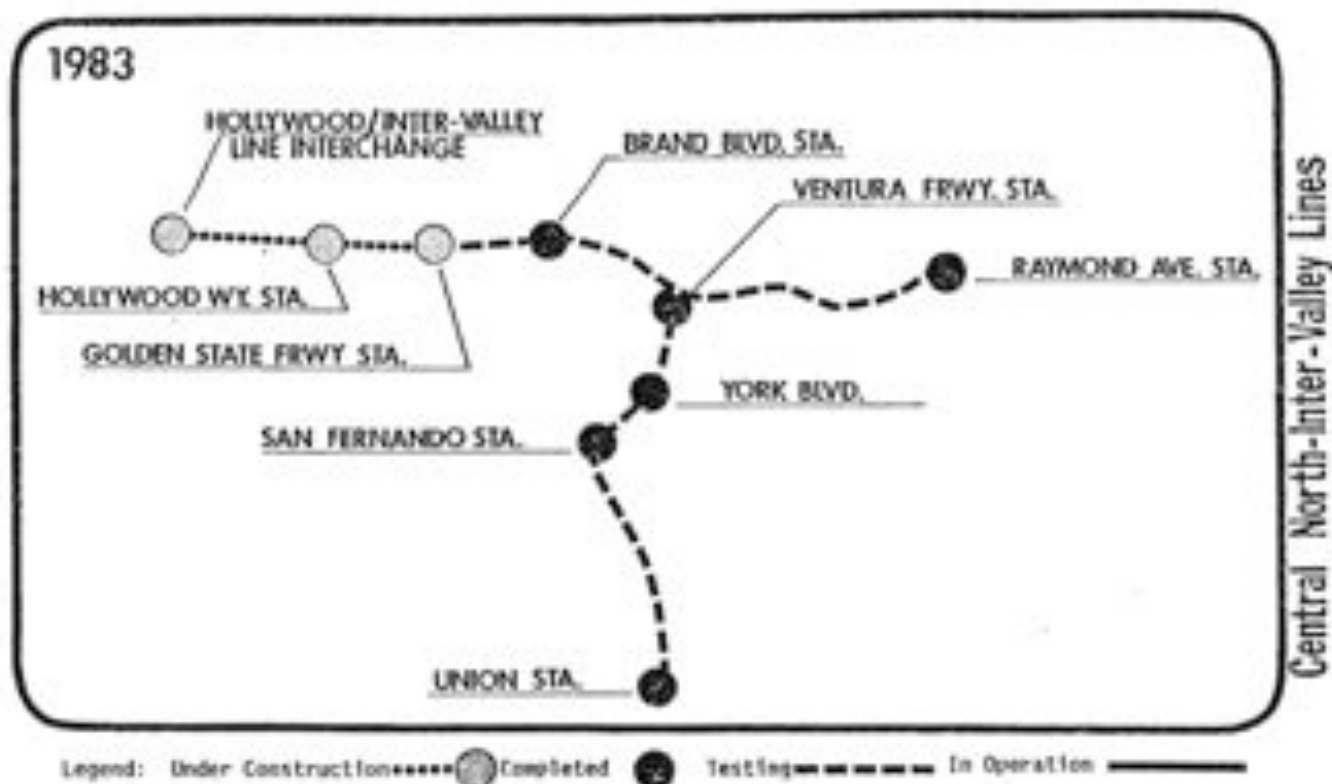
Construction continues on the previously awarded contracts. Contracts are awarded for construction of the Brand Boulevard Station, Raymond Avenue Station, and for track and control system construction.



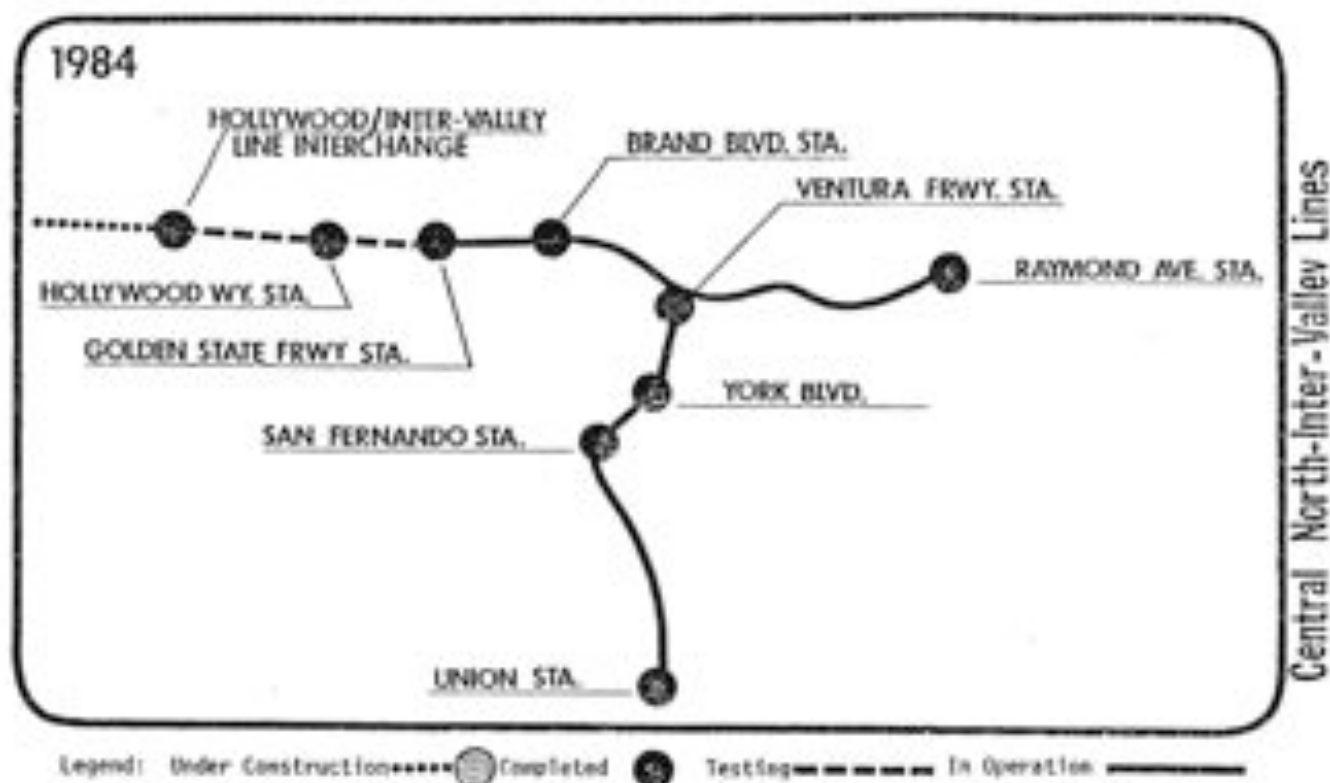
Construction continues on the entire line. New contracts are awarded for the construction of the Ventura Freeway Station and the line between the Brand Boulevard Station and the Golden State Freeway.



Construction is completed on the Brand Boulevard, York Boulevard, and San Fernando Road Stations. New contracts are awarded for the construction from the Golden State Freeway Station to the Hollywood Line-Inter-Valley Line interchange. Construction of the three stations in this stretch will also start.



Construction is completed on the Central Line North from Union Station to the Ventura Freeway and on the Inter-Valley Line from the Golden State Freeway to the Raymond Avenue Station. The system is tested, and late in the year, full-scale operation of the system within these limits may be initiated. Design will be completed on the extension of the Inter-Valley Line west to the Valley/ South Bay Line at the San Diego Freeway and portions of the Valley/South Bay Line north from the Inter-Valley Line.



Full-scale operation of the system is under way. Testing of the extension of the Inter-Valley Line from the Golden State Freeway Station west to the Hollywood Freeway starts, possibly opening the extension to full operation late in the year. Construction will start on the extension of the Inter-Valley Line west to the Valley/South Bay Line at the San Diego Freeway.

CENTRAL LINE - NORTH								
	1976	1977	1978	1979	1980	1981	1982	
Union Station to Sta. 24+50 Aerial								
Station 24+50 to 60+00 Cut and Cover								
Station 60+00 to 100+00 Cut and Cover								
Station 100+00 to 144+00 Cut and Cover								
Station 144+00 to 229+00 Levee Embankment								
Station 229+00 to 264+00 Aerial								
San Fernando Road Station								
Station 264+00 to 322+00 Aerial								
York Boulevard Station								
Station 322+00 to 365+00 Aerial								
Colorado Boulevard (Eagle Rock Plaza) Station								
Central/Inter-Valley Lines Interchange								
Union Station to Station 365+00 Track Construction								
Central/Inter-Valley Line Interchange Track Construction								
Union Station to Station 144+00 Electrification/Controls								
Station 144+00 to 365+00 Electrification/Controls								
Central/Inter-Valley Line Interchange Electrification/Controls								

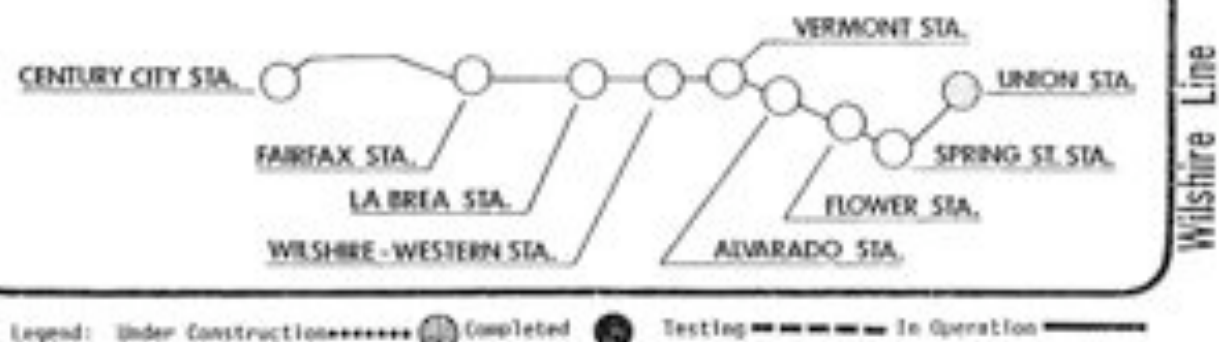
The Wilshire Line will serve a very dense transit corridor. This line also presents some of the severest challenges from a construction, engineering, and environmental standpoint.

The subway construction for the Wilshire Line must be coordinated with the Starter Line construction. A possible construction sequence for these two lines in the Civic Center area is shown in the Union Plaza/Starter Line/Civic Center section of this report.

The scheduling for the Wilshire Line assumes a rather involved environmental assessment to account for the special paleontologic considerations along this corridor.

Initial operations on the Wilshire Line will start between the Vermont Station and Union Plaza in 1987. The Wilshire Line will be in full operation in 1989.

1980



The project EIR for the Wilshire Line will be completed so that final plans and specifications for the initial contracts can be prepared.

1981-82



Wilshire Line

Legend: Under Construction ----- Completed ● Testing ● In Operation ———

Construction will start on the Wilshire Line subway tunnel between the Flower Street Station and the Alvarado Street Station.

1983-84



Legend: Under Construction..... Completed (solid circle) Testing (circle with 'X') In Operation (solid line)

The subway between the Flower Street Station and the Alvarado Street Station will be completed. Contracts will be awarded for the construction of the Flower Street Station and the Alvarado Street Station. Subway construction will be started between Alvarado Street and Vermont Avenue and in the vicinity of Highland Avenue.

1985-86



Wilshire Line

Legend: Under Construction..... Completed Testing In Operation

Construction and testing will continue on the Wilshire Line.

1987



Legend: Under Construction..... Completed Testing In Operation

The Wilshire Line from Union Plaza to Vermont Avenue will be operational. Contracts to complete the remaining portions of the Wilshire Line will be under way with completion targeted for 1988.

WILSHIRE LINE							
	1976	1977	1978	1979	1980	1981	1982
Station 14+50 (Portal) to 71+00 Subway							
Spring Street Station							
Station 71+00 to 90+00							
5th St. and Spring St. Station							
Station 90+00 to 163+50 Subway							
Alvarado Street Station							
Station 163+50 to 205+00 Subway							
Vermont Avenue Station							
Station 205+00 to 258+50 Subway							
Western Avenue Station							
Station 258+50 to 330+00 Subway							
Wilshire/Hollywood Bowl Line Interchange							
La Brea Avenue Station							
Station 368+00 to 419+00 Subway							
Fairfax Avenue Station							
Station 419+00 to 605+00 Subway							
Century City Station							

The scheduling for the Los Angeles International Airport Line and the Airport Loop is controlled by two related construction projects: the construction of the Intra-Airport Transportation System and the construction of the El Segundo-Norwalk (Century) Freeway.

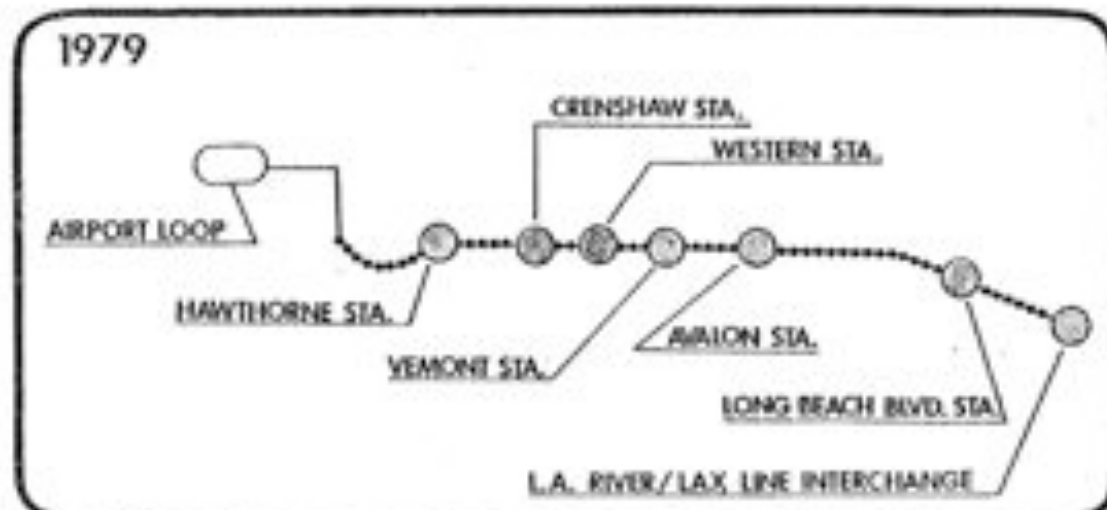
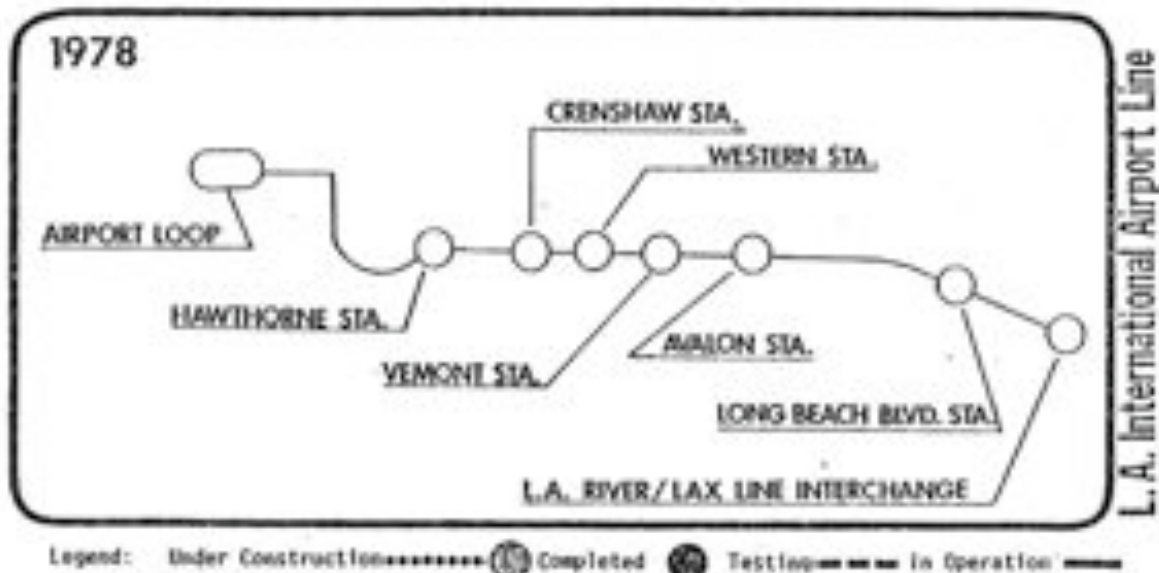
The Intra-Airport System will be built on a common elevated structure with the Sunset Coast Line circling the terminal area above World Way. Funding of this system was to come jointly from local sources and UMTA. However, the County's contribution has not been budgeted. The aerial structure common to both the Intra-Airport System and the Sunset Coast Line may be built with Sunset Coast Line financing, thereby meeting the local funding obligation needed for UMTA financing of the remaining portions of the Intra-Airport System including vehicles.

The El Segundo-Norwalk Freeway is presently halted by litigation over the adequacy of its Environmental Impact Statement. At present, Cal-Trans is enjoined from performing any work to further completion of the project. This injunction only allows preparation of an Environmental Impact Statement to continue except for minor activities approved by the Court to relieve hardships (i.e. removal of vandalized, vacant houses). Cal-Trans is not

allowed to perform any detailed design work. The schedule outlines the sequence of activities that may lead to conclusion of the litigation. The freeway will include a central corridor for a mass transit line. The Sunset Coast Line would be built in this corridor concurrently with freeway construction. Testing of the line would proceed as links are completed so that the entire line could be in operation by 1985.

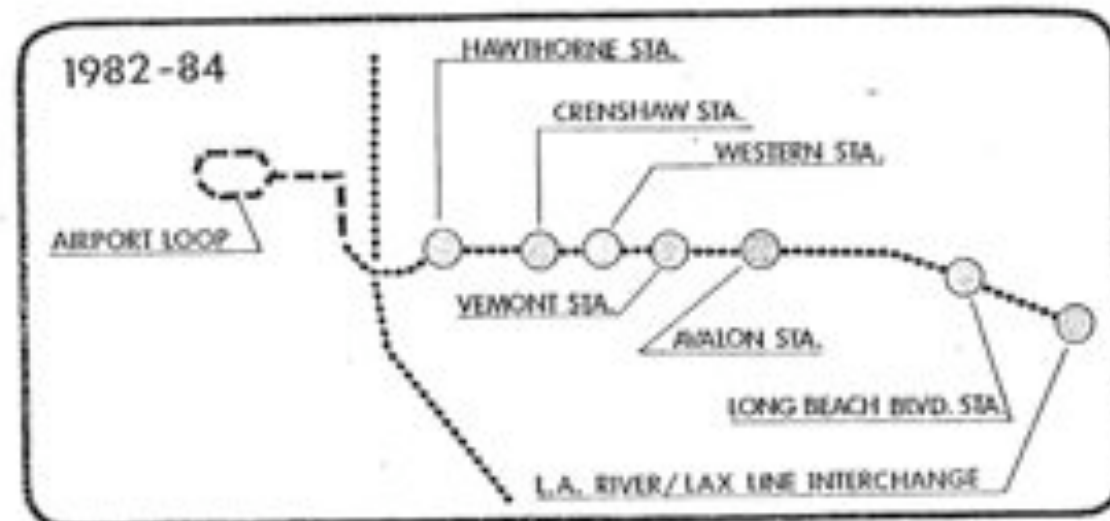
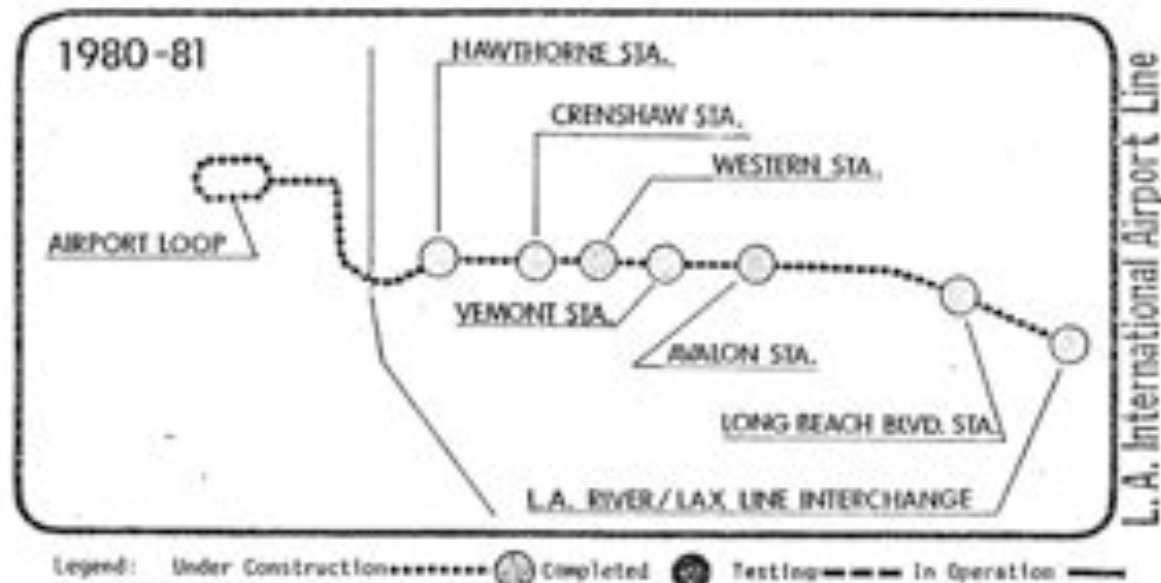
EL SEGUNDO-NORWALK FREEWAY	1976	1977	1978	1979	1980	1981	1982	1983	1984
Environmental Impact Statement Completed	SEQA Oct								
Highway Commission Readopt Revised Hawthorne Alignment	Nov								
Federal Review of EIS Sign EIS		SEQA July							
Court Review of EIS SEQA Sufficiency		SEQA July							
Complete Litigation (Trial or Settlement)			SEQA Jan						
Injunction Lifted			Jan						
Prepare Construction Plans			SEQA Jan						
Complete R/W Acquisition			SEQA Jan						
Minor Construction Clearing R/W, Utility Relocations			SEQA Jan						
Major Construction				SEQA Jan					

Planning and design of the Airport loop structure will continue through this year. Projected termination of the litigation over the El Segundo-Norwalk Freeway EIS in January will allow detailed design of the joint freeway/transit corridor to proceed at a rapid pace. Plans for the initial construction contracts will be completed.

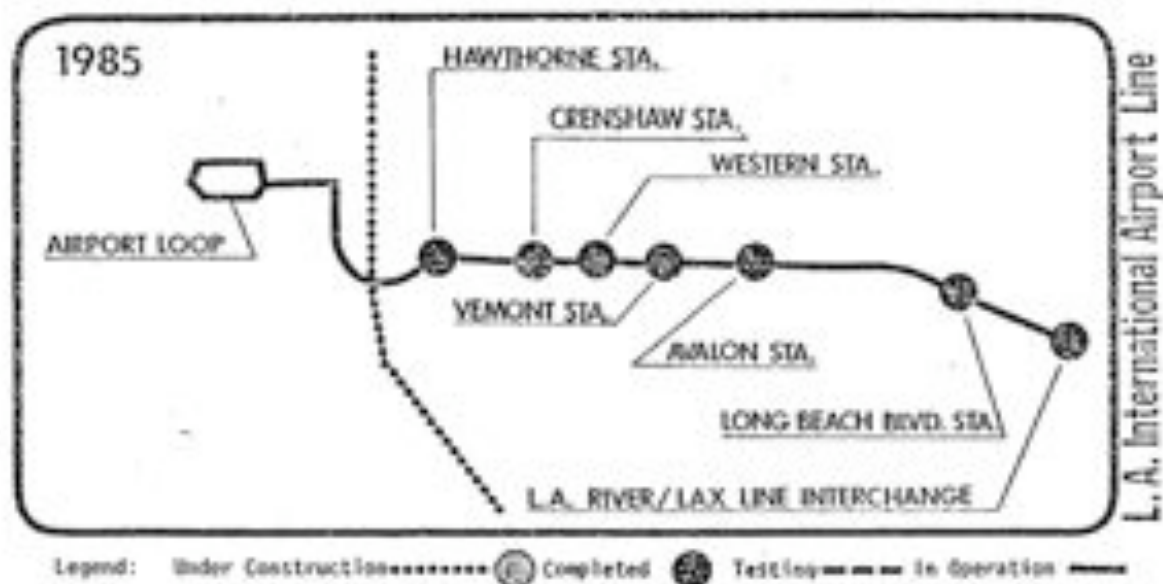


Design of the Airport loop structure and the aerial structure from the Airport Terminal area to the Freeway will be completed. Major construction on the El Segundo-Norwalk Freeway, including the Sunset Coast Line in the median strip, will start this year.

Construction of the Airport loop structures will be completed during this period. Major construction on the El Segundo-Norwalk Freeway and the Sunset Coast Line continues.



Completion of the Airport loop facilities will allow limited testing of the facility and opening of the structures for the Intra-Airport Transportation System. Construction on the El Segundo-Norwalk Freeway continues. Contracts are awarded extending the Valley/South Bay Line north and south along the San Diego Freeway.

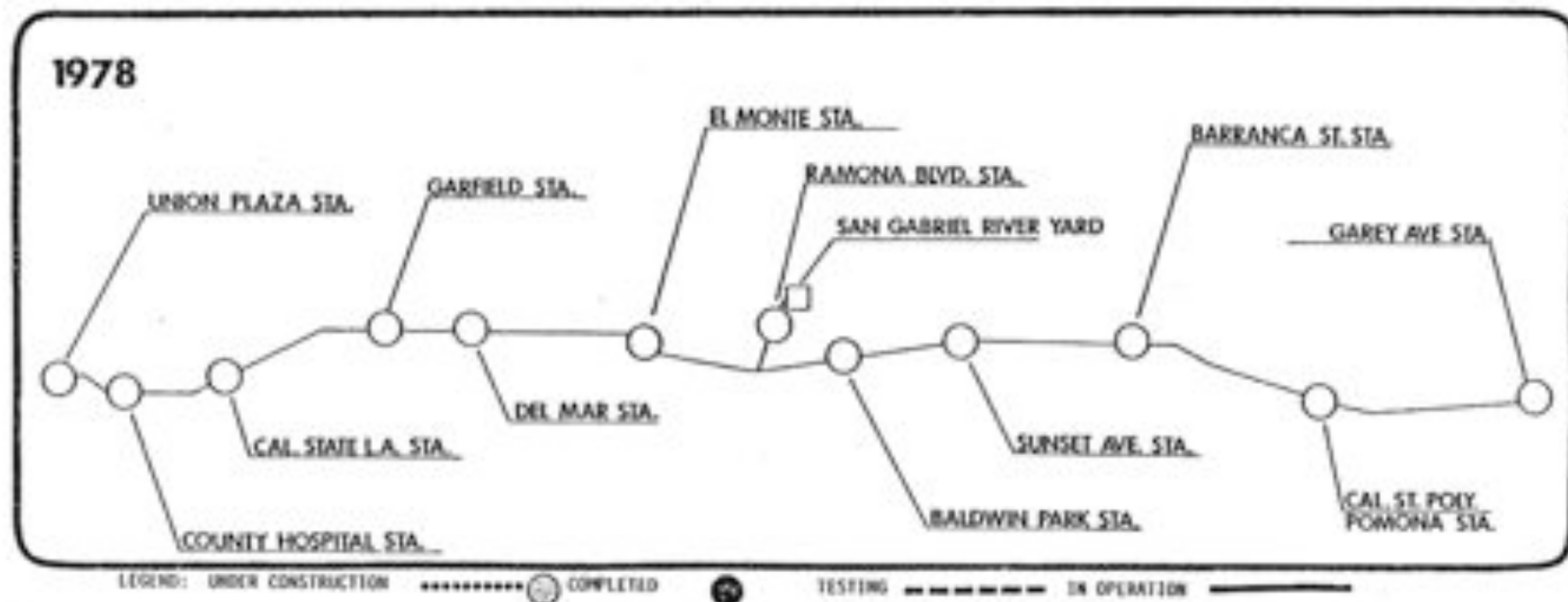


Testing of the Sunset Coast Line in the median of the El Segundo-Norwalk Freeway will proceed as units of work are completed. Upon completion of construction of the Freeway and the Sunset Coast Line, the transit line can be put into operation in 1985 from the Los Angeles International Airport to the Los Angeles River Line. Construction continues on the Valley/South Bay Line extending north and south along the San Diego Freeway.

Detailed planning for the Pomona Line and a portion of the San Gabriel River Line will be initiated soon after passage of the Sunset Coast Line. The scheduling for these lines proposes initial construction contracts underway by early 1979. By 1981, initial testing will start on a limited portion of the corridor between Union Plaza and the El Monte Station. In 1982, limited operations will start between San Gabriel River Yard and Union Plaza. The line will be fully operational between the Baldwin Park Station and Union Plaza in 1984.

The following pages describe the key design, construction, and testing activities during each year from 1978 through 1984. Bar charts describing the planning, design, and construction schedules are included at the close of this section.

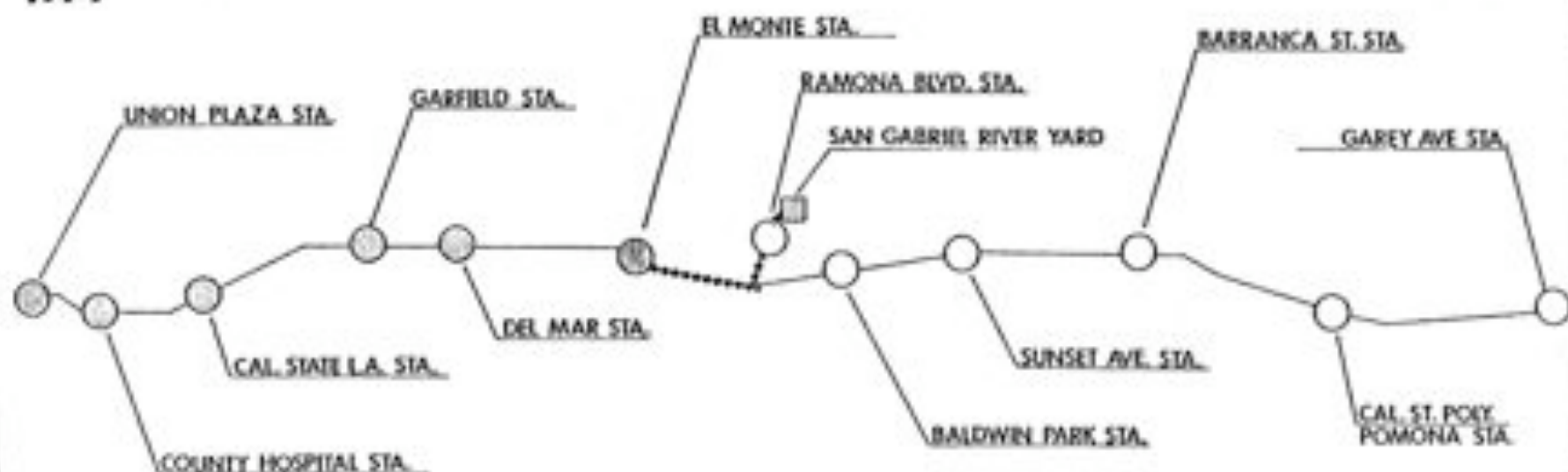
An alternative sequence of scheduling is shown which would open service between the El Monte Station and Pomona in 1984.



Detailed planning for the Pomona Line will be initiated by January 1977. The System EIR and the Pomona Line Project EIR should be completed by early 1978. Design and plan preparation for the initial construction contracts for the Pomona Line will be complete in 1978.

During this year, utility relocations will be initiated. Approvals required for construction will be obtained. Approval will be necessary from State and Federal transportation agencies for conversion of the busway to a rail system.

1979



LEGEND: UNDER CONSTRUCTION COMPLETED ● TESTING - - - - - IN OPERATION ———

Design for the Pomona Line from Union Plaza to the Baldwin Park Station and on the San Gabriel River Line from its interchange from the Pomona Line to the Ramona Line will be completed early this year. A site will be purchased during this year for the San Gabriel River Yard. Initial construction contracts will be awarded. These contracts will include construction of modifications to the County Hospital Station, modifications to the Station and Busway at Cal State L.A., construction of a rigid barrier separating

the busway lanes from adjacent freeway lanes eastward from the Long Beach Freeway, construction of a new station at the El Monte Busway Depot, construction of new stations at Garfield Avenue and Del Mar Avenue, site development for the San Gabriel River Yard, and late in the year, construction of the aerial structures between the El Monte Station and the San Gabriel River Yard including the San Gabriel River Line/Pomona Line Interchange. Use of the busway will be maintained.

1980

POMONA/SAN GABRIEL RIVER LINES



Construction of the stations and busway modifications at County Hospital, Garfield Avenue, Del Mar Avenue, and El Monte will be completed early this year. The Cal State L.A. work will be completed mid year. Construction will continue on the aerial structures along the freeway from the El Monte Station to the San Gabriel River Line/Pomona Line Interchange, and north to San Gabriel River Yard. Construction will be started on the Ramona Boulevard Station, Union Plaza, and San Gabriel River Yard.

First phase construction of the transit line in the Busway will be started this year. The first phase will be limited to one lane of the two-lane busway. The other lane will be kept open for one-way bus traffic during construction. Buses will use the open lane in the direction of peak flow. The freeway will be used for return trips by buses in the off-peak direction. Traffic flow in the Busway will be reversed mid-day.

1981



POMONA/SAN GABRIEL RIVER LINES

Construction will be completed this year on the line from the El Monte Station to the Baldwin Park Station and the San Gabriel River Line north to the San Gabriel River Yard. Union Plaza and the Ramona Boulevard Station will also be completed. A new contract

will be awarded for the construction of the Baldwin Park Station. First phase construction of the transit line in the Busway will be completed early in the year allowing testing of this portion of the track to begin on a limited scale.

1982



POMONA/SAN GABRIEL DIVIDED LINES

Testing will be completed early this year on the stretch between the San Gabriel River Yard and Union Plaza including the first phase construction in the Busway. Following the completion of testing, the from the San Gabriel River Yard to Union Plaza will be put into peak-hour service in 1982 as a unidirectional line reversed mid-day to accommodate the peak-hour flow direction. Cars will be stored at the San Gabriel River Yard in the morning and at Union Plaza during the day. Storage facilities will be adequate at these locations since the number of cars in use will be limited. This interim operating procedure will allow shutdown of the other bus lane to complete construction of the transit line.

Plaza during the day. Storage facilities will be adequate at these locations since the number of cars in use will be limited. This interim operating procedure will allow shutdown of the other bus lane to complete construction of the transit line.

1983



POMONA/SAN GABRIEL RIVER LINES

Limited operation in the peak-hour-flow direction will continue this year while testing of the second track construction is completed. During the year, service will be extended to the Baldwin Park Station.

1984



The Pomona Line is put into full operation between Union Plaza and the Baldwin Park Station.

1984 Scheduling Alternative

















































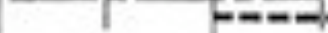

























The San Bernardino Freeway Busway was constructed under a three-way partnership between the Federal Department of Transportation, Cal-Trans, and S.C.R.T.D. It was built to test the viability of exclusive lanes for buses as an alternative to other individual and mass transit systems. Because of the trial nature of the Busway, State and Federal Authorities may request a delay in conversion of the Busway to a rail

transit system. In that event, construction on the Sunset Coast Line will initially proceed from the El Monte Station eastward. The line from the El Monte Station to Pomona would then be in operation in 1984 following a year of testing. Inbound commuters would transfer from the Sunset Coast Line to buses at El Monte Station for completion of their trips.

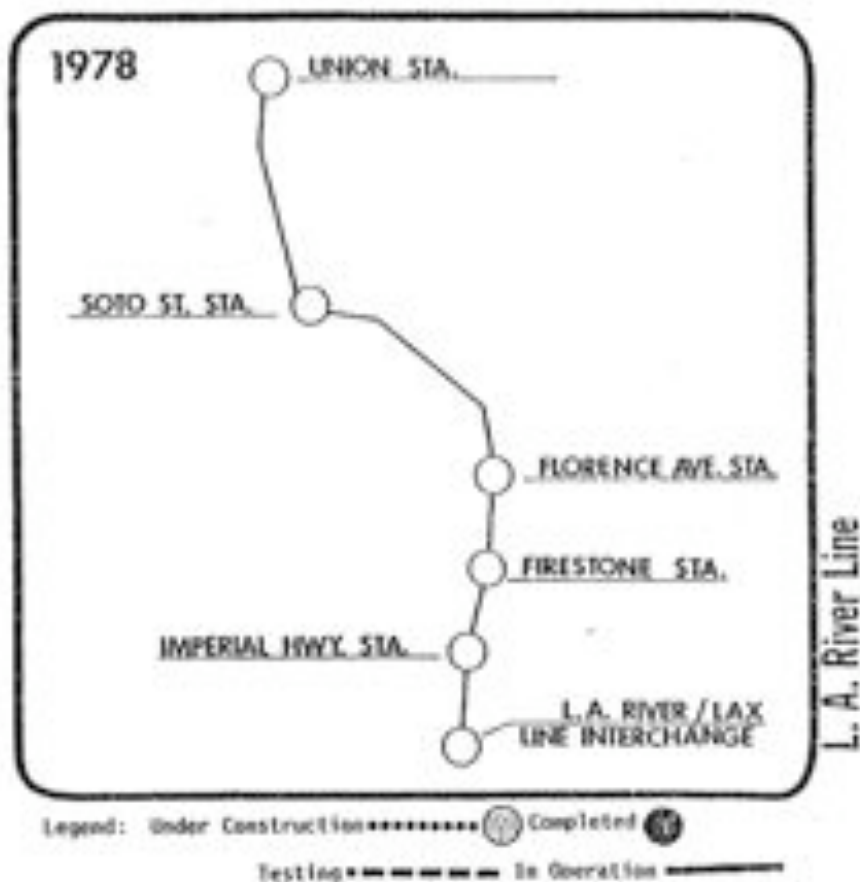
POMONA LINE							
	1976	1977	1978	1979	1980	1981	1982
County Hospital Station							
Cal State L.A. Station							
El Monte Station							
Garfield Avenue Station							
Del Mar Station							
Long Beach Freeway to El Monte Busway Barrier							
Station 0+00 to 53+00 Aerial Structure							
Station 50+00 to 615+00 Phase I - Track/Elec./Controls							
Station 50+00 to 615+00 Phase II - Track/Elec./Controls							
Station 615+00 to 670+00 Aerial							
Station 670+00 to 740+00 Aerial							
Pomona/San Gabriel River Line Interchange							
Station 750+00 to 806+00 Aerial							
Baldwin Park Boulevard Station							

POMONA LINE Scheduling Alternative

	1976	1977	1978	1979	1980	1981	1982
El Monte Station							
Station 655+00 to 670+00 Aerial							
Station 670+00 to 740+00 Aerial							
Pomona/San Gabriel River Line Interchange							
Station 750+00 to 806+00 Aerial							
Baldwin Park Boulevard Station							
Station 806+00 to 850+00 Aerial							
Station 850+00 to 900+00 Aerial							
Station 900+00 to 945+00 Aerial							
Sunset Avenue (West Covina Civic Center) Station							
Station 945+00 to 1000+00 Aerial							
Station 1000+00 to 1050+00 Aerial							
Station 1050+00 to 1112+00 Aerial							
Barranca Street Station							
Station 1112+00 to 1180+00 Aerial							
Station 1180+00 to 1365+00 Subway							
Cal Poly Station							
Station 1365+00 to 1446+00 Surface							

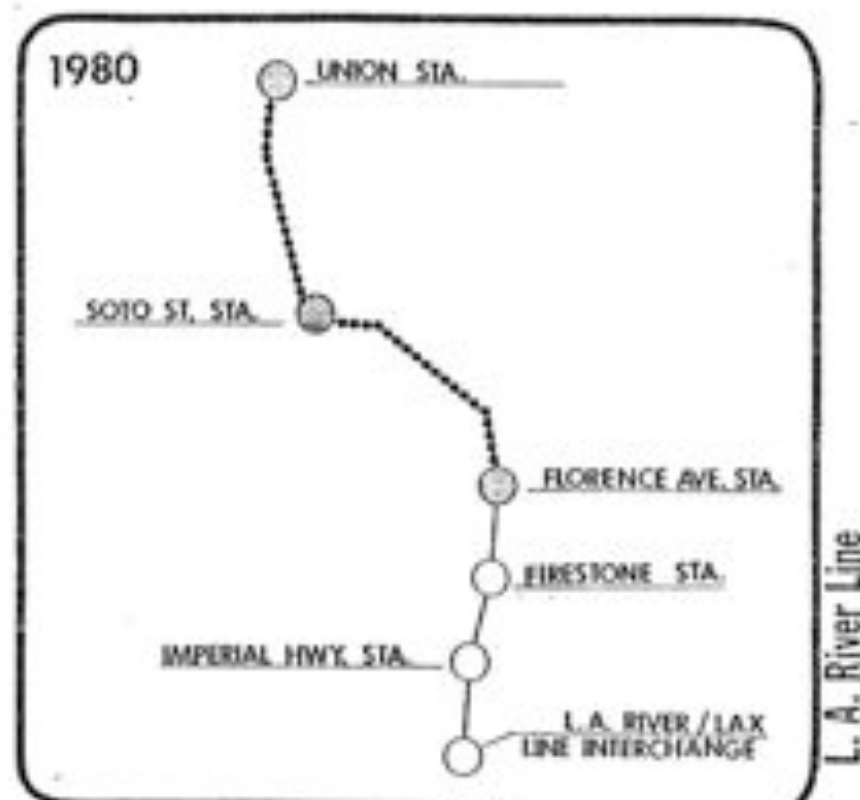
Design will be accelerated to facilitate early construction of this line. Use of parallel flood control and railroad rights of way will make this line one of the easiest to construct. It is proposed that this line be used for a test track between Third Street and the Florence Avenue Station. Construction of this stretch can be completed in 1981. Its immediate proximity to the major railroad systems will allow economical delivery of cars for testing. Scheduling of the construction of this line southerly from from the Florence Avenue Station to the Los Angeles International Airport Line will be timed to coincide with completion of the El Segundo-Norwalk Freeway and the transit line.

Accelerated design and plan preparation will proceed in parallel with preparation of the project EIR. Negotiations will be initiated with the railroads to allow utilization of a portion of the rights of way parallel to the Los Angeles River by relocating existing rail facilities.



Construction contracts will be awarded for the stretch from Third Street to Florence Avenue. Design and planning will be initiated for the remainder of the line. Plans for the aerial structure immediately south of Union Plaza will be completed this year.

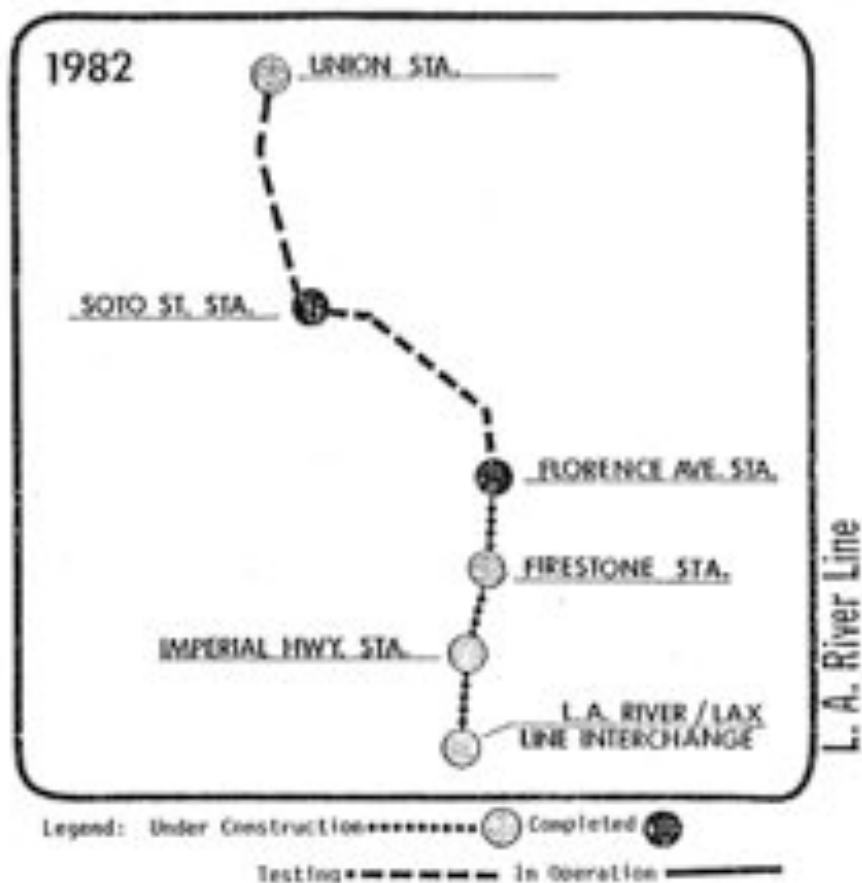
Construction will be under way on the entire stretch from Union Plaza to the Florence Avenue Station. Construction will be initiated on the Soto Street Station and the Florence Avenue Station this year. Planning and design work will continue on the remainder of the line.



Legend: Under Construction..... Completed
Testing----- In Operation

Construction of the stretch from Third Street to the Florence Avenue Station will be completed this year and its use as a testing track initiated. Construction will continue on the aerial structure from Union Plaza to Third Street and on the Soto Street Station and Florence Avenue Station. Contracts will be awarded for the construction of the line between Florence Avenue Station and Imperial Highway Station and for the construction of the

Completion of the aerial structure from Union Plaza to Third Street will allow use of the line from Union Plaza to the Florence Avenue Station for testing. The Soto Street Station and the Florence Avenue Station will be completed. Construction will continue on the stretch from the Florence Avenue Station to the Imperial Highway Station. Work will also continue on the Firestone Station. New contracts will be awarded to complete the line.



The line from Union Plaza to the Imperial Highway Station can be put in full operation in this period. Testing of the stretch between the Imperial Highway Station and the Los Angeles International Airport Line will be conducted at this time.

The line will be put in full operation from Union Plaza to the Los Angeles International Airport Line.

