

sequencing illustration

sunset coast line
march 24, 1976



MEMBERS OF THE BOARD
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**BOARD OF SUPERVISORS
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BAXTER WARD
SUPERVISOR, FIFTH DISTRICT
974-5555

March 24, 1976

TO THE RTD BOARD OF DIRECTORS:

Several methods are available for the construction sequences of the Sunset Coast Line. It is necessary to select a method that most closely matches the obligations of serving a number of sub-regions as quickly as possible, while at the same time developing a network that is orderly, capable of continuous expansion, served by yards and shops, and technically and financially feasible.

This Illustration should be considered as one approach toward meeting those requirements. We believe the concept (as expressed in these maps and comments) represents the most extensive and properly balanced development of fully operational miles to logical service points, in the shortest possible time -- and to the broadest range of corridors.

The philosophy has been to drive a main line route into each primary regional corridor as deeply and swiftly as possible. The augmenting, interconnecting, and closely parallel rail lines then would be developed, evenly balanced, as quickly as funding would allow.

RTD Board of Directors

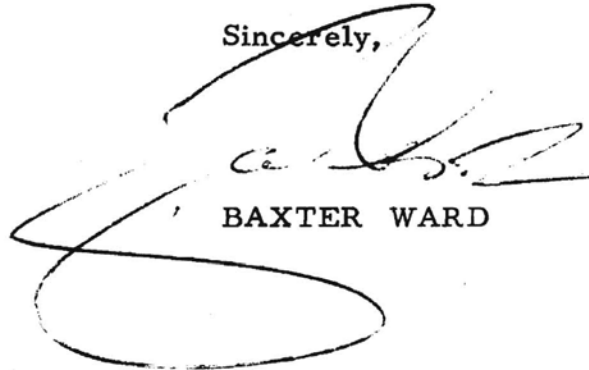
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A major contingency factor has been incorporated into the construction concept -- an additional full year is allowed beyond each contract term to provide for unexpected delays (construction slowdowns, strikes, jurisdictional disagreements, environmental considerations, etc.) and full testing. This constitutes a 50 percent contingency quality.

Enclosed are maps that show the yearly progression of the routes, and there are discussion pages that indicate construction and other details.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read 'Baxter Ward', is written over the typed name. The signature is fluid and somewhat abstract, with a large loop at the bottom.

BAXTER WARD

BW:eva

It has been assumed by the RTD Board of Directors that the Sunset Coast Line, or any other regional transit project here, will seek to utilize all available UMTA matching funds. The enclosed Sequencing Illustration assumes the capture of Federal funds for the Starter Line -- no matter what its configuration.

Fortunately, the entire corridor from Canoga Park to Long Beach is considered by Washington as suitable for intensive study as a possible Starter Line. As a result, segments within that long corridor can be extracted for the initial actual first, or Starter, phase.

For example, UMTA might determine that the appropriate Starter Line would be from Union Station to Long Beach -- as had been agreed on by the RTD and the funding partners last November 21.

Or, the Federal Government might prefer a segment from the Hollywood Bowl or North Hollywood, south under La Brea, and then east under Wilshire to downtown and Union Station -- and that segment, too, is within the established corridor. This subway segment would cost considerably more than Washington probably would agreeably provide in any first phase, however.

It is likely we should not expect more than \$800 million in extra funding for the first phase.

Whichever route finally is selected, the financial impact of the \$800 million would be identical. Because the local share already is in existence and earmarked for construction somewhere within the approved corridor, it is mainly a matter of bookkeeping procedures on the part of the District to include the Federal program into the local construction budget.

The Canoga Park/Long Beach corridor contains sufficient segments of enough mileage and cost to warrant Federal matching funding for at least two additional cycles beyond this Starter situation. Actually, if it were Washington's choice, other segments within the system could be considered instead, or as well.

For purposes of illustration, we have designated the Union Station to Long Beach route as the recipient of this Federal funding -- although ultimately some other line element might actually be involved (such a change would require only a substitution of Washington money to the other segment, with the subsequent transfer of the originally intended funds to some other portion of the line).

In the maps that appear later in this Illustration, the Starter Line will be included as a part of the general construction, and will add approximately 22 miles to the length of the system, which then will total 254.

Although pay as you go financing in this form will require a longer construction period than if the project had been supported by a fully-bonded program, the bulk of the system nonetheless can be completed reasonably early in the program.

In fact, during the first ten years the rates of construction are identical between fully bonded and pay as you go. After the eleventh year (1987) the program would be accelerated under bond financing.

But even under pay as you go, the mileage figures are impressive. For example, the elements of construction throughout the system can be analyzed in percent form as follows:

Project Year	Miles Completed	Percent Completed
8	89	36.6
13	128	55.7
18	185	76.1
23	212	89.5
28	243	100.0

As construction begins in this Illustration, the data accompanying each map will indicate the lines under construction, miles completed, and miles that are operational.

The Wilshire, La Brea, and Downtown Subways (North Portal to Union Station and Union Station to 23rd) are included for design and construction as swiftly as possible, after the beginning of the project.

The short Downtown Subways are expected to require 8 years for construction. Running north and south, they should be considered as separate projects from the longer Wilshire/La Brea work -- which is expected to take up to 10 or 12 years for completion.

Tunnel contractors would not begin at one portal and work gradually toward the opposite end. Rather, they would prepare openings approximately every 4 miles and work on several faces of the tunnel at one time. It is not known now whether the station construction will call for cut and cover construction, or if they can simply be mined from below.

In the data accompanying the following maps, the subway construction is treated in equivalent terms, as funded for equivalent mileage -- for example, _____ miles allocated. Such terms are not to suggest that that much trackage actually has been completed in progressive segments. Rather, it is intended simply to show a stage of work.

The major tunnels will be under construction almost throughout their lengths, and all of the tunnel links probably will become operational almost simultaneously. For that reason, our maps show the tunnels through their 10 or 12 years of construction in symbols that at first are faint, and then gradually increase in strength of appearance.

It is appropriate now to identify the separation of design and construction opportunities between public and private sectors.

Although the Caltrans role has not been fully defined, it is expected that organization would assume responsibility for the design, preparation of administrative data, supervision, and inspection of all guideway installations on freeways. However, the Caltrans assignment probably should not include communications or controls, because such fields are beyond Caltrans experience at present. Also, there is some question as to the actual laying of track (as opposed to construction of the supporting or separating structures).

The maintenance of the track, communications, and control systems should remain within the province of the RTD. The support structures and balance of the guideway could be maintained by Caltrans under contract to the RTD, and all subway segments as well.

The private sector would be expected to accept responsibility for the design and construction features of Union Station, all yards and shops, and all on-line stations.

The El Monte Busway presents a difficulty for the transit project, inasmuch as an intention of the proposal is to convert the bus line to rail. However, there have been indications that the Federal Government might object to dismantling a concept and service that is this new. Caltrans, also, is said to be concerned about any swift conversion of the busway to rail.

Respect for these considerations suggests it would be appropriate to have an alternate approach. Therefore, we are showing in these maps a means by which the Pomona line can be developed independently of any ultimate conversion of the El Monte Busway. The Sequencing Illustration here calls for simultaneous development of two separately supported segments -- the El Monte Busway being converted to rail beginning at the Union Station site, and working east. This will allow the Busway terminal at El Monte to maintain its integrity as both an originator of bus activity, as well as serving as a transfer point for passengers coming in, or departing on, trains on the Pomona link.

While we show this as a simultaneous development, we recognize that such possibly will not be the case -- so what we have done is to develop a timetable for the Pomona link in a manner that will allow the Busway conversion to float free, in effect.

The Busway conversion is fully funded, and can be accomplished in any later year that the RTD Board might desire -- delaying this decision until the Federal Government and Caltrans agree that a reasonable time has elapsed to allow for amortization of the original Busway.

If the El Monte Busway conversion is delayed, passengers from the rail service on the Pomona Line will be required to transfer (under a common roof) to high-speed bus service at El Monte.

Such service should be both express and local for the convenience of through passengers, and those wishing to leave the line at some intermediate station.

If the ballot issue is successful, several projects should move forward immediately. These include arrangements for Union Station and other yards and shops -- funds for all of which have been provided within the first years of the construction budgets. Union Station, particularly, requires decisions virtually the day after the election, should the ballot issue be placed and become successful.

Acquisition of land and transfer of land parcels might become a part of the Union Station considerations. Yards and shops involve the purchase of land which will become only more costly as delays develop.

Yards are expected to be located adjacent to Union Station, near Macy Street, for the central section, and in the Dominguez area for the southern region.

Those two yards probably would take care of the operations of the entire system -- except for the operational problem created by the El Monte Busway. Thus, a third yard will be sought in the industrially-zoned sector north of the San Bernardino Freeway along the San Gabriel River route. Until such time as the River line is developed in Heavy Rail, the yard connection will be through a simple spur to the Intervalley Line near Baldwin Park.

This third yard will not be wasted when the Pomona leg is linked to the balance of the system, however, inasmuch as ultimate growth of vehicle operations will call for additional service areas -- for which this San Gabriel River site is excellent.

Included in this Illustration is a communication from the Los Angeles Department of Airports, dated March 12, 1976, that discusses their proposal for a new transportation system around the central terminal area. Their plan is for an elevated guideway to circle the terminal and then branch out to parking areas.

Although initial service would be by bus, the guideway would be of sufficient strength and width for conversion to a rail transit line. Figure three shows a cutaway of the construction elements.

The project will require considerable matching funds -- the seed money (\$1,700,000) for which is contained in a County allocation made at my request, in 1974, for development of a pilot Personal, or Group, Rapid Transit program. The Airport could constitute an excellent showcase for both the mechanism and product of elevated construction.

I am enclosing their proposal in this packet, inasmuch as it is apparent their guideway system could be finished well in advance of the entry of a rail line into LAX. If this is the case, the tremendous construction problems at the airport will have been solved in advance, and the entry of the rail system would consist of not much more than the laying of track and the development of communications and controls -- plus, of course, developing an approach guideway from the San Diego Freeway.

PRELIMINARY REPORT
ON
INTRA-AIRPORT TRANSPORTATION SYSTEM - LAX

prepared by
Facilities Planning
Los Angeles Department of Airports
March 12, 1976

INTRA-AIRPORT TRANSPORTATION SYSTEM - LAX

Los Angeles International Airport currently has an internal roadway capacity equivalent to approximately 24.5 MAP*. Proposed roadway improvements, primarily the addition of one traffic lane to World Way (the primary internal road), will increase this capacity to approximately 30 MAP. After all currently scheduled roadway and parking lot improvements are completed, there will be little else that can be done to increase the capacity of the existing system. External roadway capacity, by comparison, will be increased to about 40 MAP with the completion of the Route 105 Freeway on the south and the addition of a major arterial highway on the north, including a new interchange at the San Diego Freeway. For a balanced, efficiently operating system, the internal capacity, therefore, should be increased by 10 MAP.

Since the internal roadway system cannot support the traffic generated by an additional 10 MAP, a new system of transportation must be constructed, grade-separated from the existing, so that these passengers can be transported from peripheral lots into the central terminal area.

The nature of the improvements to be made in the peripheral parking lots to support such a transportation system will depend to some degree upon the nature and routing of mass transit that will be constructed to serve the entire urban area. One such regional transit system, called "The Sunset Coast Line", has recently been proposed by County Supervisor Baxter Ward. This system would consist of 230 miles of heavy rail, plus 51 miles of light rail and monorail. Essentially, there would be three types of transit service: Local, Red Car Interurban, and Airporter.

Airporter trains to LAX would leave from various locations in the L. A. basin every half hour creating an airport arrival schedule of a train every two and one-half minutes. As proposed by Supervisor Ward, these airporter trains would come directly into the airport and around the central terminal area with stops at each terminal. Passengers on these trains would have to pay a premium fare for direct airport service.

The intra-airport transportation system as currently envisioned by the Department of Airports includes a 10,000 car parking facility in East Westchester and a 7,000 car facility at the VSP lot with direct access from both lots into the central terminal area. The ultimate plan consists of a mechanical operation on a grade-separated guideway that would provide fast, reliable and economical service to the traveling public, a system that would attract substantial ridership by providing an excellent level of service.

*Million Annual Passengers

Current passenger statistics and roadway congestion require that an intra-airport transportation system be constructed now. There is no time to wait either for a more reliable, mechanical system to be developed, or for local, state, and federal officials to agree on what type of a system is best to serve the entire area. For this reason, it is recommended that a phased transportation program be developed for implementation in the near future with a system that is adaptable enough to interface ultimately with a regional mass transit system.

This program would have two phases; one to initiate direct elevated busway service between peripheral parking lots and the central terminal area, and a second to expand the system to provide higher levels of service for increasing passenger volumes.

As shown on figures 1-3, the first phase of this program would consist of the construction of a two-lane elevated guideway with stations at each of the terminal buildings in the central terminal area. The guideway would be designed both structurally and dimensionally to serve a wide range of mechanical systems and would provide service to both the East Westchester and VSP parking areas. In East Westchester, the Phase I system would consist of buses circulating at grade within the existing parking lot, crossing Sepulveda Boulevard over a new bridge, descending back down to grade at 96th Street and Sky Way and then elevating to the third level guideway.

The expanded VSP lot would be serviced also by buses circulating within the parking area, crossing Aviation Boulevard and then following airport service roads to an ascending ramp which connects with the elevated guideway.

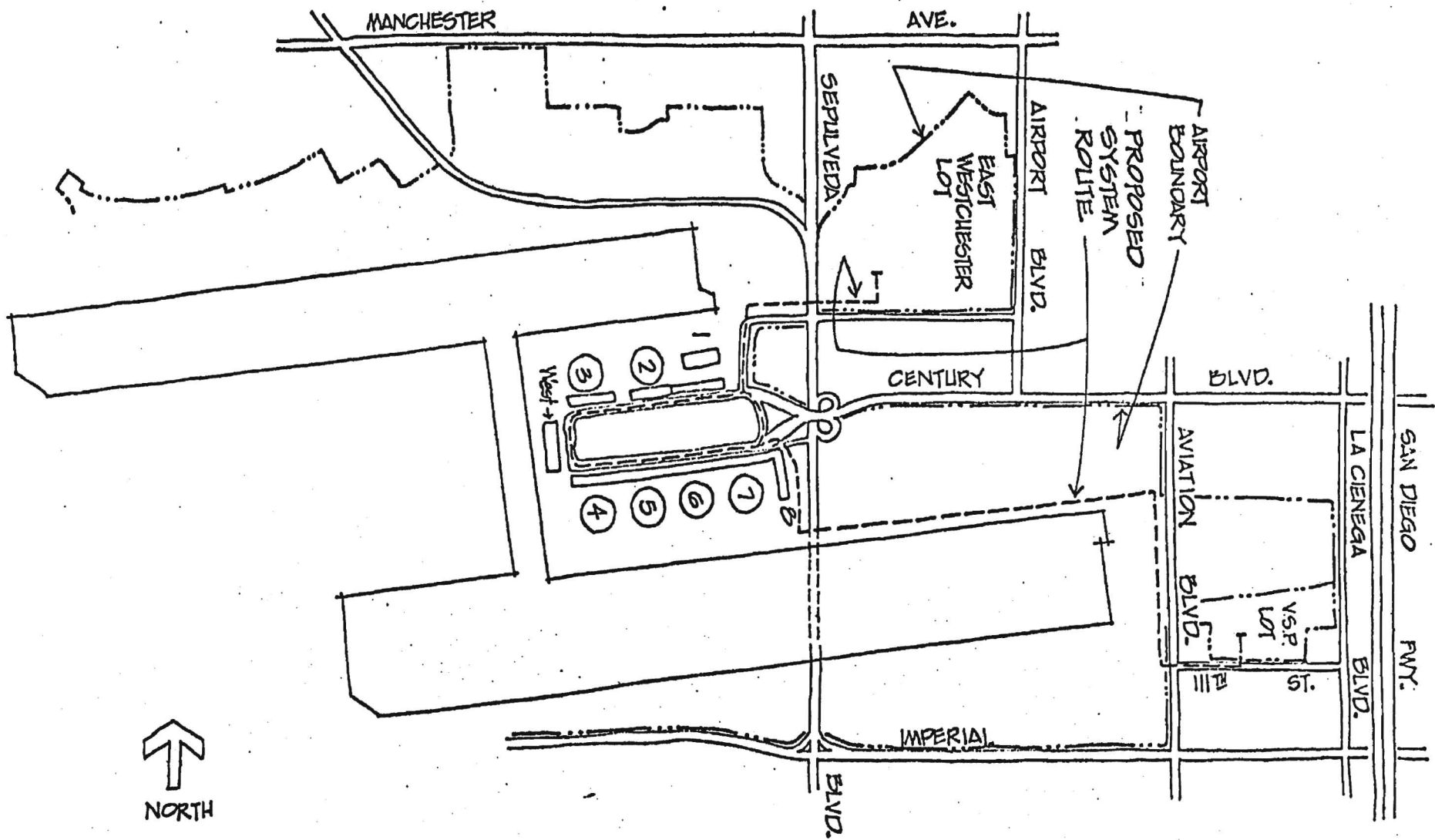
Passenger stations on the two-lane guideway would include escalator and elevator service to the two levels below.

The Phase II program would convert the bus system to the previously-mentioned mechanized system connected with both the East Westchester and VSP parking lots. This phase would require constructing sections of both elevated and depressed guideways along Century and Aviation Boulevards to the VSP lot and additional guideway along 96th Street to East Westchester. The system would also require constructing additional facilities in the parking lots. The Phase I guideway would be readily convertible to this type of system.

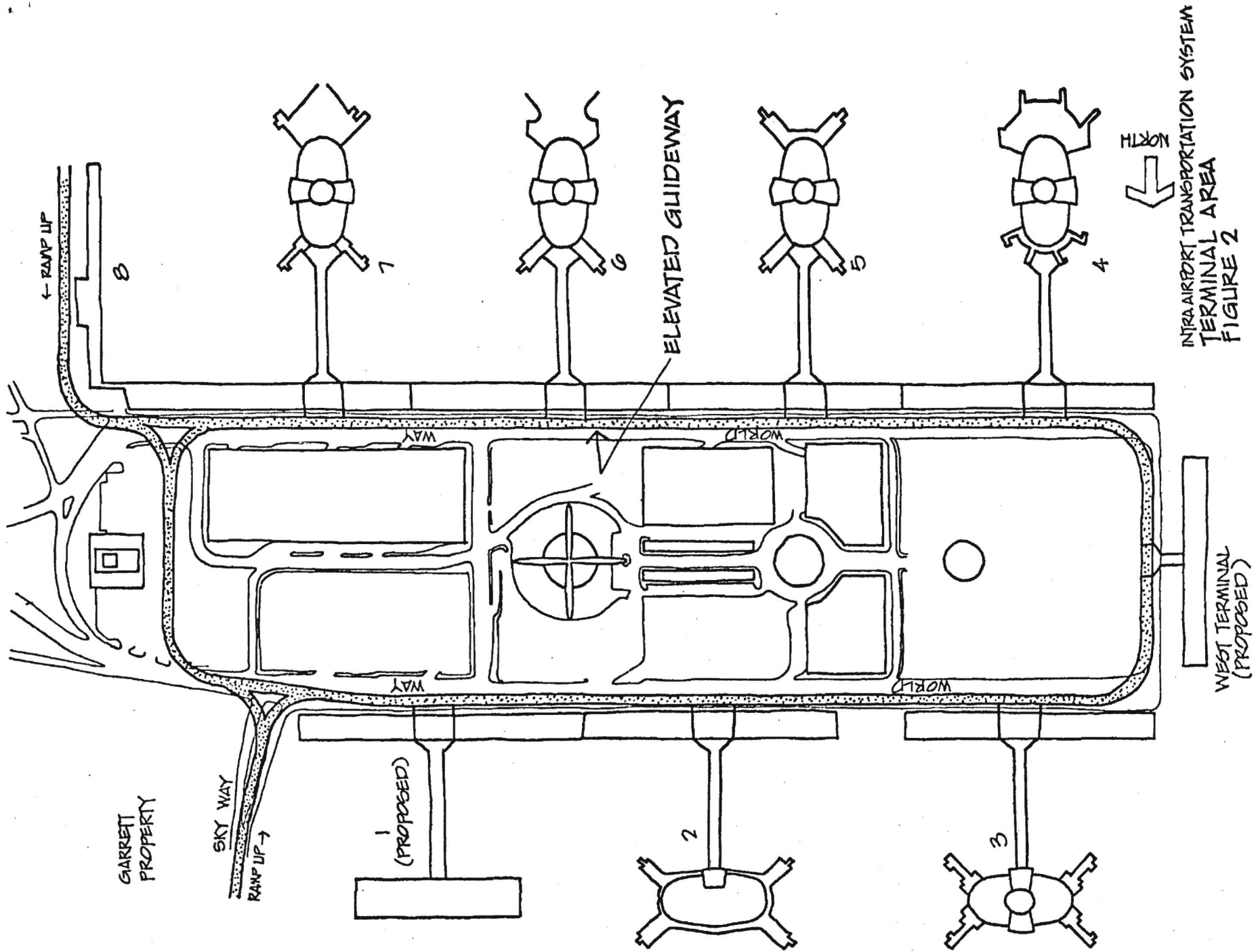
Rough cost estimates indicate that Phase I should cost from \$20 to \$22 million and Phase II from \$40 to \$45 million. To accommodate current passenger projections which indicate a figure of 29 MAP by 1980, the Phase I project should be completed and in service by 1980. This will require assigning high priority to this project.

There are currently approximately 9,000 peripheral parking spaces to service Phase I of the program. The extent to which peripheral parking lots become expanded will be partially determined by development of the proposed regional transit system. The decision as to whether to bring the mechanical vehicles directly into the

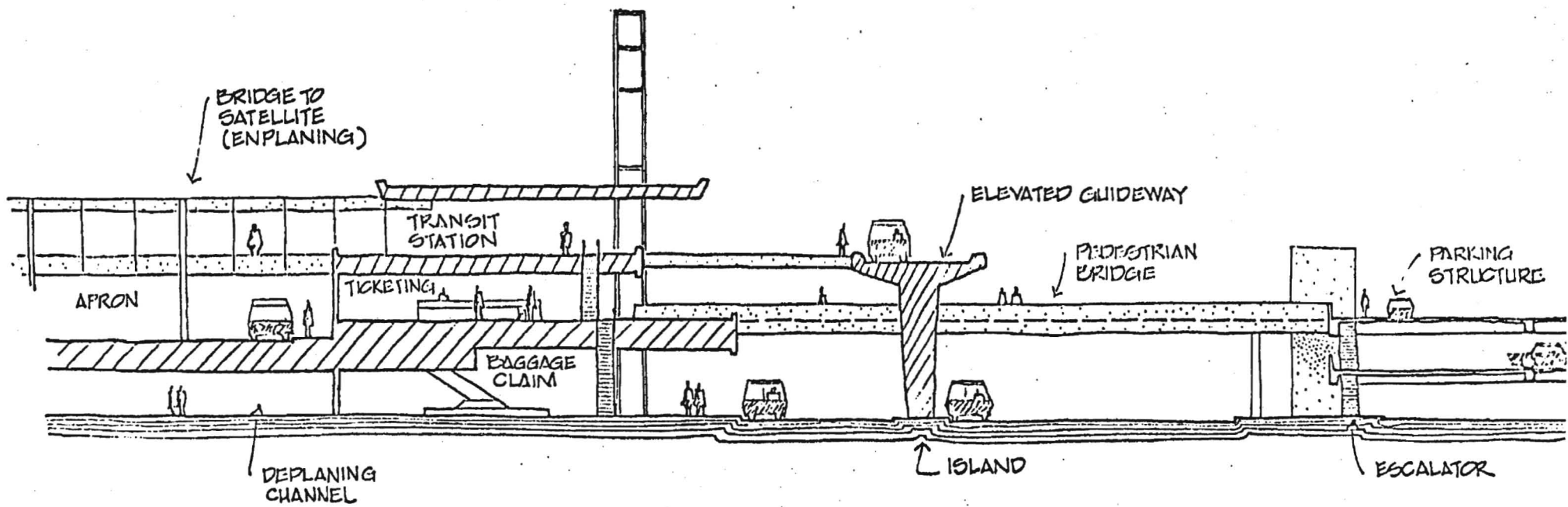
terminal areas from remote locations or to interface with an on-airport system in East Westchester need not be made at this time. The Phase I busway program will readily have the flexibility to be developed on either contingency.



INTRA AIRPORT TRANSPORTATION SYSTEM
 PLOT PLAN
 FIGURE 1



INTRA AIRPORT TRANSPORTATION SYSTEM
 TERMINAL AREA
 FIGURE 2



INTRA AIRPORT TRANSPORTATION SYSTEM
 CROSS SECTION - TERMINAL AREA
 FIGURE 3

The following map of the system is illustrated by the Caltrans view of length of construction projects for various segments within the network.

The marker points do not specify mileage but rather denote certain geographical or topographical or other features that would be typical beginning to end points of a construction project. The accompanying figures in each set of marks demonstrates the number of years that Caltrans deems necessary for the length of the project.

This information was developed by a Caltrans Special Projects Team on behalf of the Sunset Coast Line Project.

CANOGA PARK

SAN FERNANDO

VAN NUYS

BURBANK

NORTH HOLLYWOOD

PASADENA

GLENDORA

GLENDALE

HOLLYWOOD

ALHAMBRA

SANTA MONICA

DOWNTOWN

POMONA

WHITTIER

INGLEWOOD

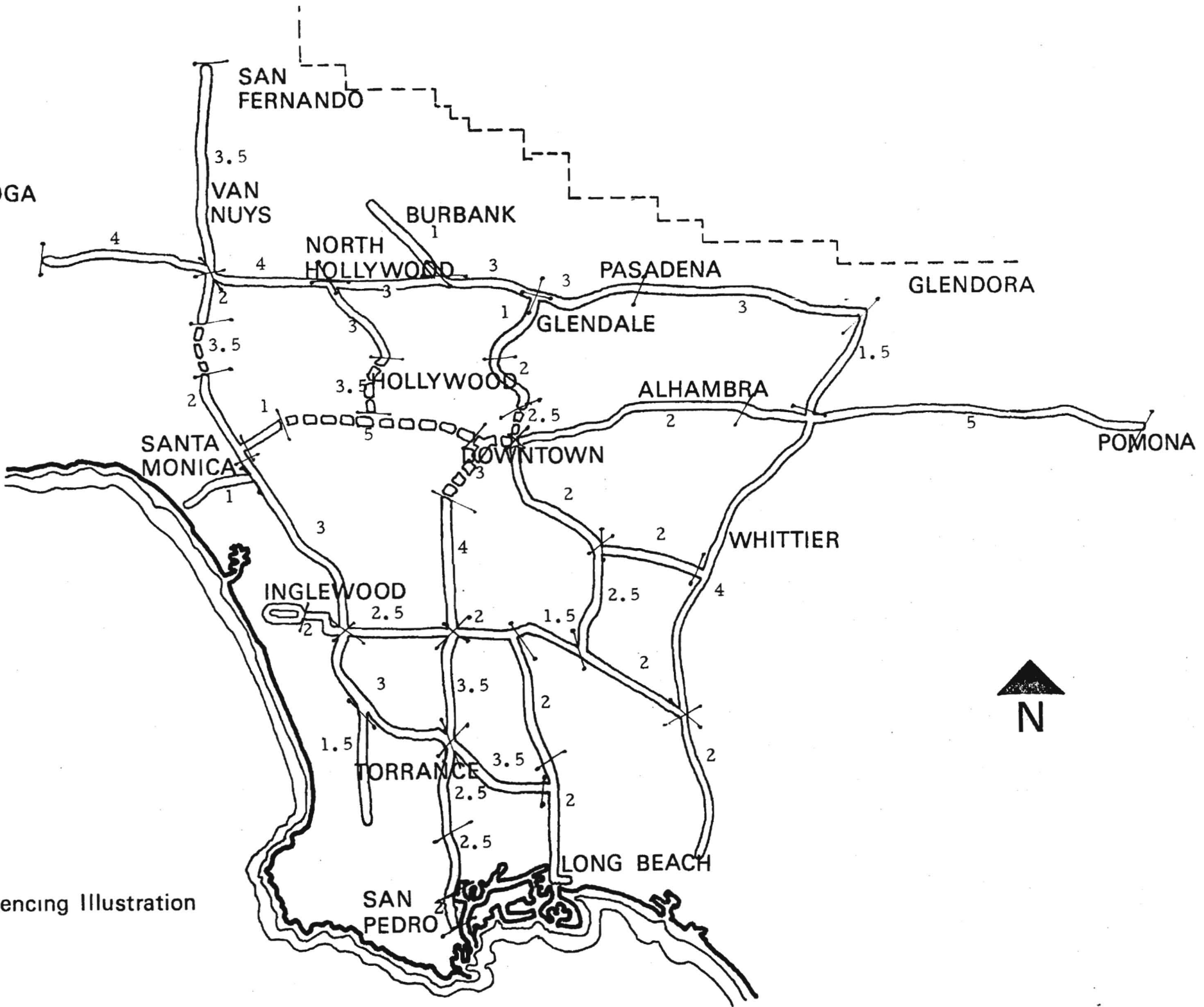
TORRANCE

LONG BEACH

SAN PEDRO



Sequencing Illustration



Operational miles are developed on a formula that provides for a full year of testing of any completed segment prior to placing those miles in revenue service.

Therefore, following the first major linkup of construction segments in 1983, operations will be delayed until 1984 and then will consist of only 48 miles -- which includes 41 miles funded by the Sunset Coast Line sales tax project, plus 7 miles (3.5 per year) funded by the Starter Line Project, which is included into the construction phases of the entire system.

There is a method or formula for determining the number of miles to be built in any given year. That amount includes the cost of stations, vehicles, and other special facilities, averaged throughout the length of the construction period.

The total cost of the system (\$5.8 billion) then is divided by the number of miles in the basic Sunset Coast Line project (232). That equation in 1976 dollars yields this cost per mile: \$25 million. That figure then is escalated by the inflation factor of .085 percent for each successive year.

The project would begin in January of 1977. On that date, one mile of average construction (including structures, etc.) would cost \$27.1 million. In the first three years of the project, a total of \$325 million is provided from the one cent sales tax for the costs of environmental impact studies, administration, preliminary engineering, the acquisition of sites, the development of yards, shops, Union Station, and certain specific line stations, etc.

Actual construction of the first line work would be delayed until sometime in the year 1980. For that year, \$250 million has been budgeted for construction. The average cost per mile by then has inflated to \$34.6 million. It is at this point that the financial formula controls the number of miles that could be built in each successive year through the combination of four-year, three-year, twelve-year, and other project length contracts.

That formula produces the construction schedule that follows, and which is shown here in only summary form.

CONSTRUCTION FORMULA

Year	Sunset Coast Line Mileage Available	Starter Line Mileage	Total Mileage Available	Miles Contracted	Mileage Carried Forward to Next Year
1980-81	22	7.0	29	29	0
1982-83	35	7.0	42	41	1
1984-85	19	7.0	27	26	1
1986-87	19	3.5	23.5	23	.5
1988-89	18		18.5	18.5	0
1990-91	17		17	17	0
1992-93	16		16	16	0
1994-95	15		15	15	0
1996-97	14		14	14	0
1998-99	13		13	13	0
2000-01	11		11	11	0
2002-03	10		10	10	0
2004-05	9		9	9	0

Construction begins this year with typical contracts awarded in average four mile segments. For the purpose of this illustration, construction progress for estimated construction at two miles per year for aboveground work and one mile per year for subway work.

1. Pomona Line
-- Union Station, 4 miles east on San Bernardino Freeway to the Long Beach Freeway.
2. Pomona Line
-- El Monte terminal 4 miles east to Baldwin Park Blvd.
3. Central Line
-- Northern Portal Subway, 2 miles.
4. Starter Line
-- Downtown Subway, 3 miles
5. Central Line
-- Glendale Freeway north 4 miles from North Portal to York Boulevard.
6. Starter Line
-- Century Freeway 4 miles between Harbor Freeway and Willowbrook.
7. Airport Line
-- LAX, 4 miles east across Century to Prairie.
8. Wilshire Line
-- Wilshire Tunnel, 3 miles.
9. Starter Line
-- Long Beach Freeway, 4 miles north from Pacific Coast Highway to 31st Street.

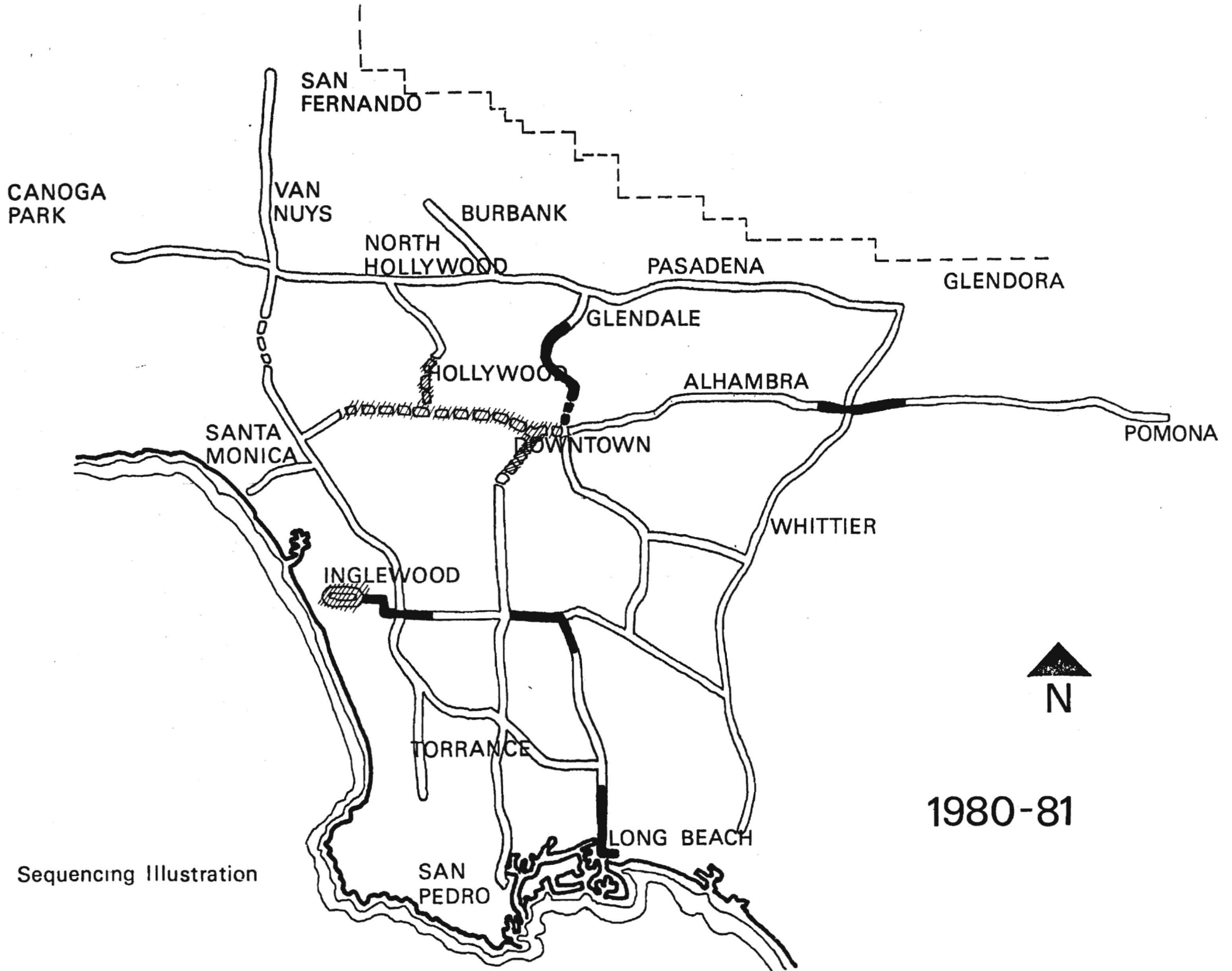
1980 - 1981

Miles Under Construction: 29

Contracts in Progress: 9

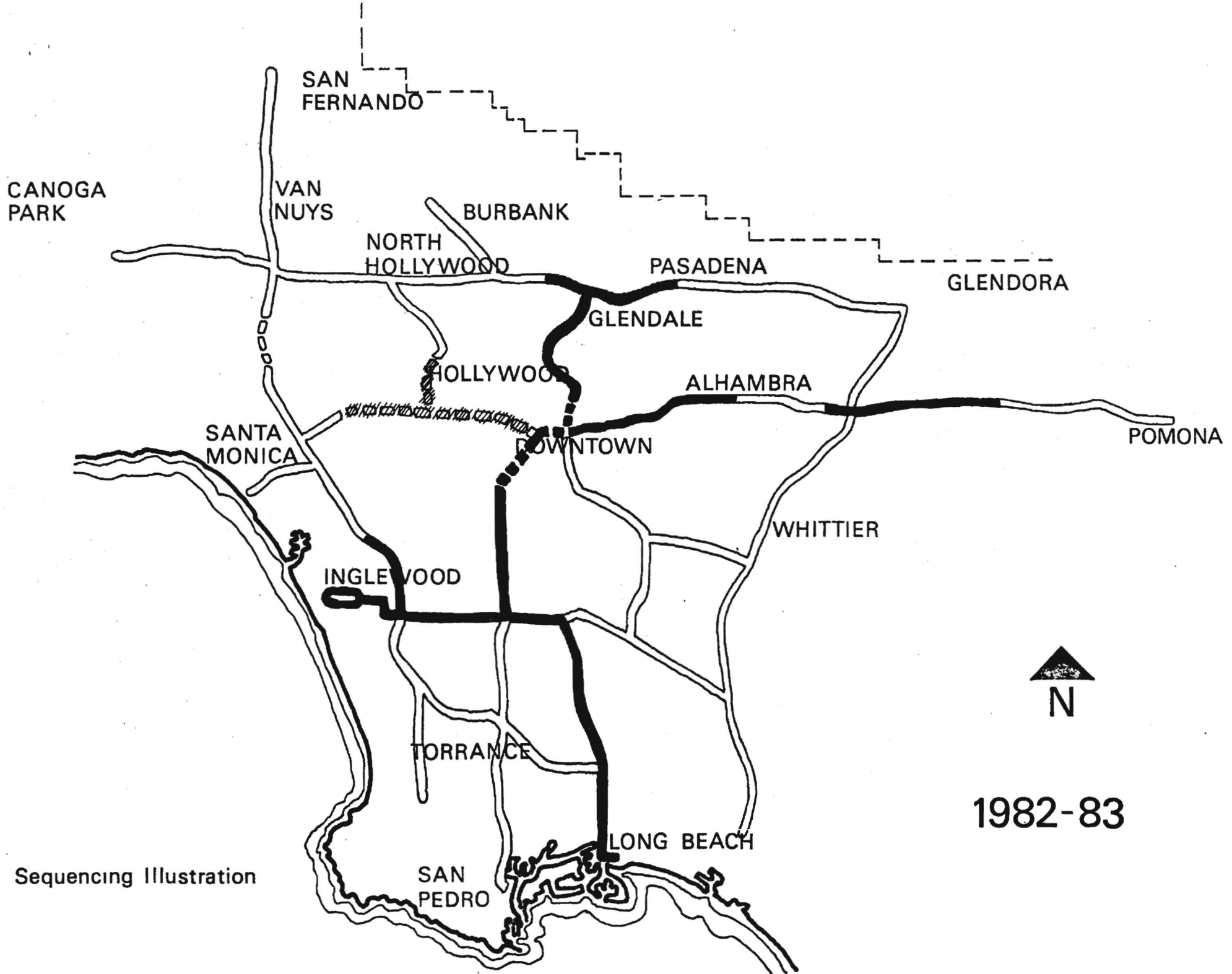
Miles Completed: 26

Miles Operational: 0



It is not known exactly when the Los Angeles Department of Airports will have completed its elevated peplemover project around the central terminal area. We are assuming, however, that it will have been finished and available for the laying of track by this time. Therefore, we now are including that trackage within the project. Because no guideway costs are involved, this contract assignment is of modest size and will have virtually no impact on the costs of the overall project -- funds for this will be extracted from the budget allocations within the first three year period.

		<u>1982 - 1983</u>	
1.	Inter/Valley Line -- Glendale Freeway at York 1½ miles to Ventura Freeway, west on Ventura Freeway 2½ miles to Kenilworth.	Miles Under Construction:	41
2.	Inter/Valley Line -- Ventura Freeway at Glendale Freeway 4 miles east to Foothill Freeway/Ventura Freeway junction.	Contracts in Progress:	13
3.	Starter Line -- Harbor Freeway at 23rd 4 miles south to 73rd.	Miles Completed:	67
4.	Airport Line -- Century Freeway at Prairie 3.7 miles to Harbor Fwy.		
5.	Pomona Line -- San Bernardino Fwy. at Long Beach Fwy. east 4 miles to Del Mar.	Miles Operational:	0
6.	Pomona Line -- San Bernardino Fwy. at Baldwin Park 4 miles east to Azusa.	Testing can begin from Union Station on the northern approach tunnel to Union Station.	
7.	Starter Line -- Harbor Freeway 4 miles south from Rosecrans to Del Amo Boulevard.	Testing can be conducted on the sections from Union Station east to Los Angeles State College, and from the Station north to York Boulevard in Glendale. The Downtown Subway to 23rd will not be completed for testing until 1984.	
8.	Valley/Long Beach -- San Diego Fwy. at Century Fwy. 4 miles north to Centinella.	Testing also can begin on the independent link to Pomona, for four miles east of El Monte.	
9.	Starter Line -- Harbor Fwy. at 73rd 4 miles south to Century Fwy.		
10.	Starter Line -- Willowbrook at Del Amo 2.2 miles south to 31st Street.		



Sequencing Illustration

1982-83

1984 - 1985

Miles Under Construction: 26

Contracts in Progress: 9

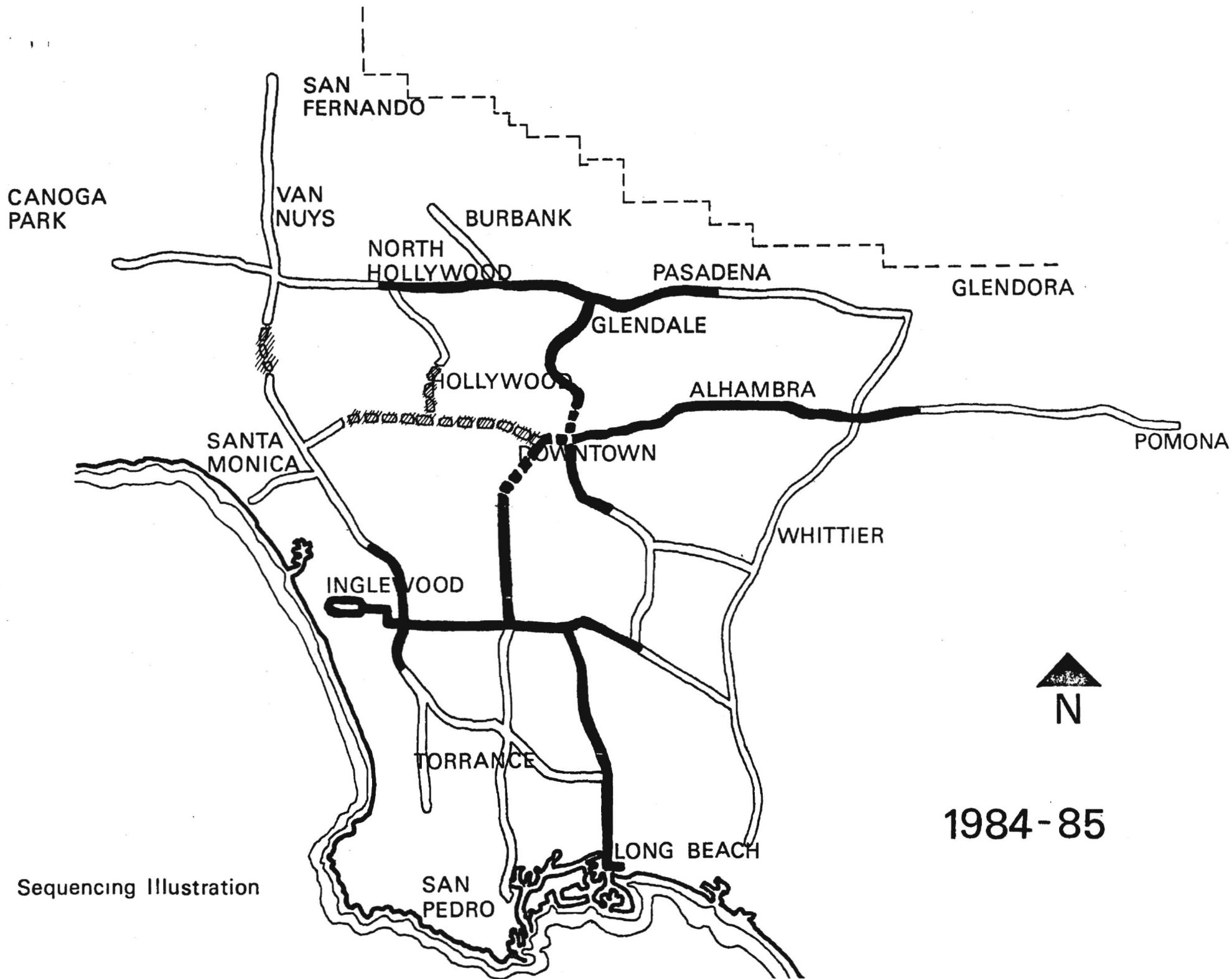
Miles Completed: 89

Miles Operational: 48

Testing extends westward on the independent Pomona link.

Testing extends southward from Union Station to the Airport Line and west to LAX, and southeast to Dominguez yards.

1. Inter/Valley Line
-- Ventura Freeway at Olive 4 miles west to Whittsett
2. Inter/Valley Line
-- Ventura Freeway at Kenilworth 4 miles west to Olive.
3. Inter/Valley Line
-- Foothill Freeway at Ventura Junction 2 miles east to Hill Avenue
4. Long Beach Line
-- Los Angeles River at Union Station 4 miles south to Downey Avenue.
5. Pomona Line
-- San Bernardino Freeway at Del Mar, 2.3 miles to the busway.
6. Airport Line
-- Willowbrook Line 1 mile to PE(Santa Ana), south 3 miles to Los Angeles River.
7. Valley/Long Beach Line
-- Tunnel from Valley Vista through Santa Monica Mountains, 3.2 miles.
8. Valley/Long Beach Line
-- San Diego Freeway at Century 2 miles to 147th Street.
9. Wilshire Tunnel, 2 miles allocated.



Sequencing Illustration

1984-85

1986 - 1987

Miles Under Construction: 23

Contracts in Progress: 8

Miles Completed: 112

Miles Operational: 86

Testing can be extended from Los Angeles State College east to Larkellen on Pomona Line, assuming El Monte Busway is converted.

Testing also extends from Glendale eastward to Marengo at Pasadena and Olive in Burbank.

1. Whittier Line (from Long Beach Line)
-- Los Angeles River at Downey 4 miles east on PE line to Garfield.
2. Pomona Line
-- San Bernardino Freeway at Azusa 4 miles east to Via Verde.
3. Inter/Valley Line
-- Ventura Freeway at Whittsett 4 miles west to Haskell.
4. Valley/Long Beach Line
-- San Diego Freeway at 147th 2 miles south to Redondo Beach Boulevard
5. Valley/Long Beach Line
-- San Diego Freeway at Centinella 4 miles north to National Boulevard.
6. Airport Line
-- PE (Santa Ana) at Los Angeles River junction 2 miles southeast to Downey Avenue.
7. Wilshire Tunnel, 2 miles allocated.

CANOGA
PARK

SAN
FERNANDO

VAN
NUYS

BURBANK

NORTH
HOLLYWOOD

PASADENA

GLENDORA

GLENDALE

HOLLYWOOD

ALHAMBRA

SANTA
MONICA

DOWNTOWN

POMONA

WHITTIER

INGLEWOOD

TORRANCE

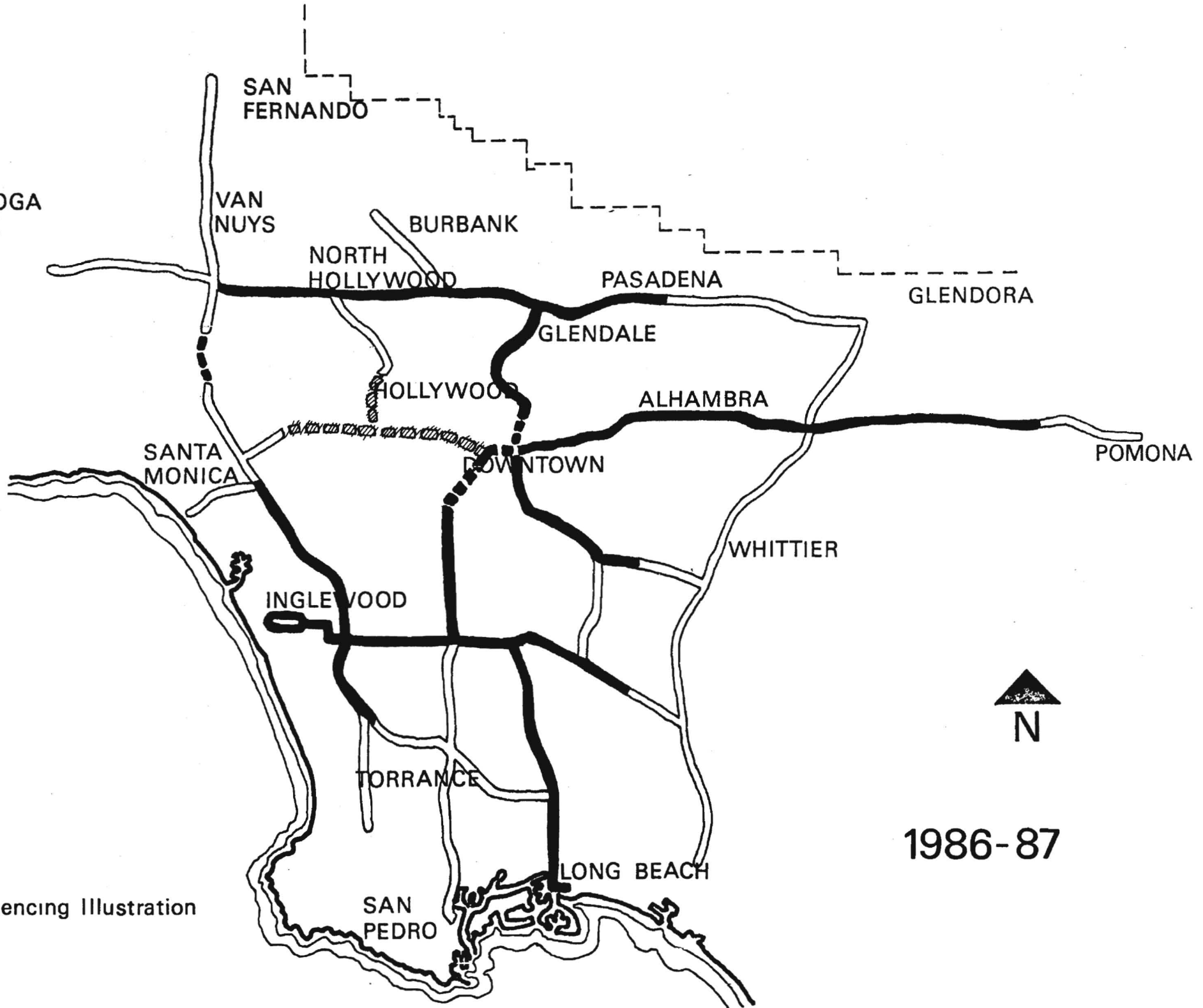
LONG BEACH

SAN
PEDRO



1986-87

Sequencing Illustration



1988 - 1989

Miles Under Construction: 18.5

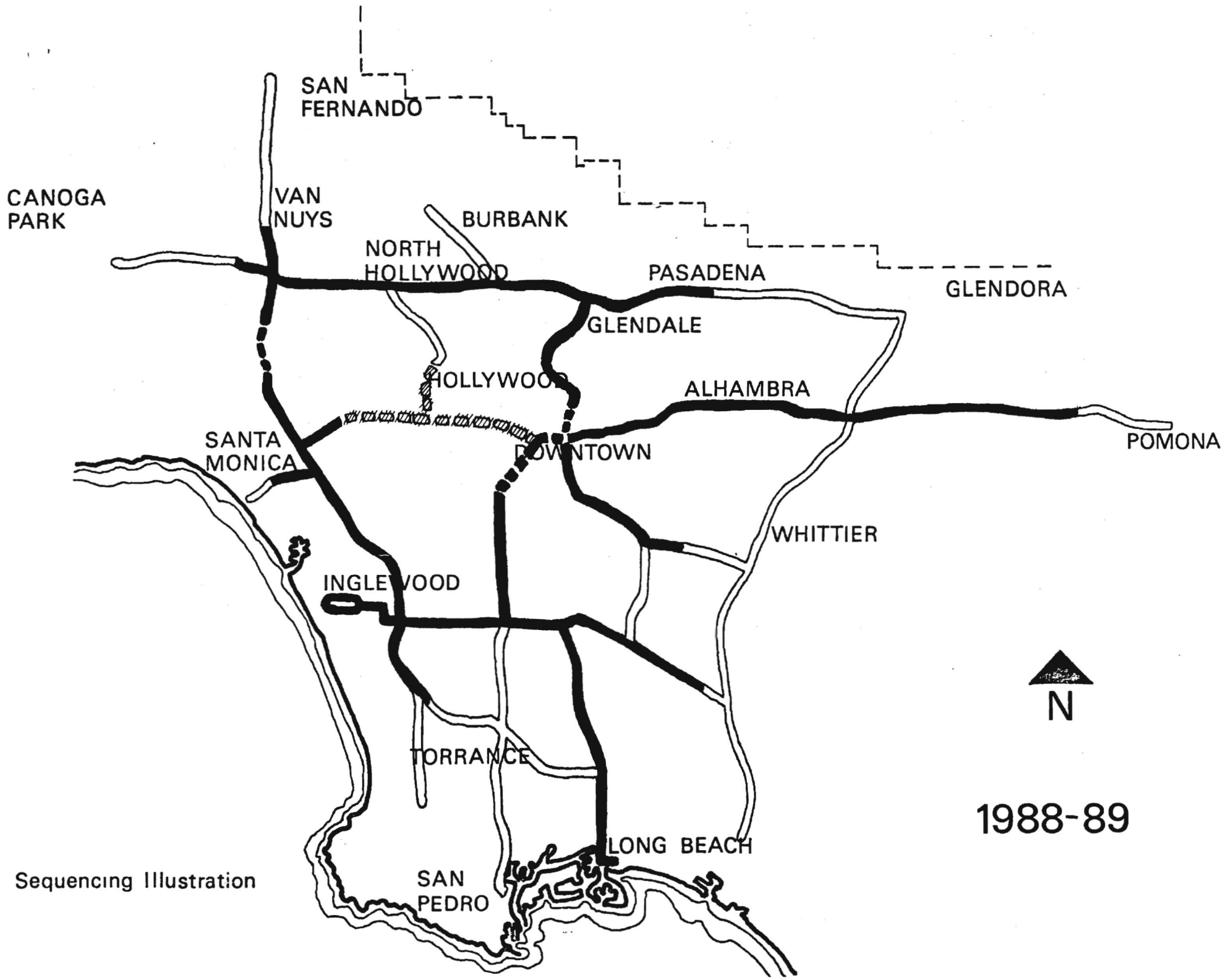
1. Valley/Long Beach Line
-- San Diego Freeway at Ventura Freeway 2 miles north to Vanowen.
2. Inter/Valley Line
-- Ventura Freeway at Haskell 2 miles west to Louise.
3. Valley/Long Beach Line
-- San Diego Freeway 4 miles north from National to Santa Monica Southern Portal.
4. Santa Monica Line
-- Santa Monica Freeway at San Diego Freeway junction two miles west to Cloverfield.
5. Century City Line
-- Santa Monica Boulevard at San Diego Freeway 2 miles northeast to Ventura Freeway.
6. Valley/Long Beach Line
-- San Diego Freeway at Northern Portal, 2 miles north to Ventura Freeway junction.
7. Airport Line
-- PE (Santa Ana) 2 miles southeast to Woodruff Avenue.
8. Wilshire Tunnel, 2 miles allocated.

Contracts in Progress: 8

Miles Completed: 128

Miles Operational: 105

From this point, the testing program can immediately extend to each newly completed segment of track.



Sequencing Illustration

1988-89

1990 - 1991

Miles Under Construction: 17

1. Airport Line
-- PE (Santa Ana) at Woodruff 1 mile southeast to San Gabriel River Junction. End of Line.

Contracts in Progress: 7

2. Torrance Feeder Line
-- San Diego Freeway at Hawthorn Boulevard 2 miles south to Talisman.

Miles Completed: 143

3. Pomona Line
-- San Bernardino Freeway at Via Verde, 2.5 miles east to the San Dimas, Orange, and Corona Freeway junction, then south 1.5 miles on the Corona Freeway from the San Bernardino Freeway junction, to the SP Line and Pomona Boulevard junction.

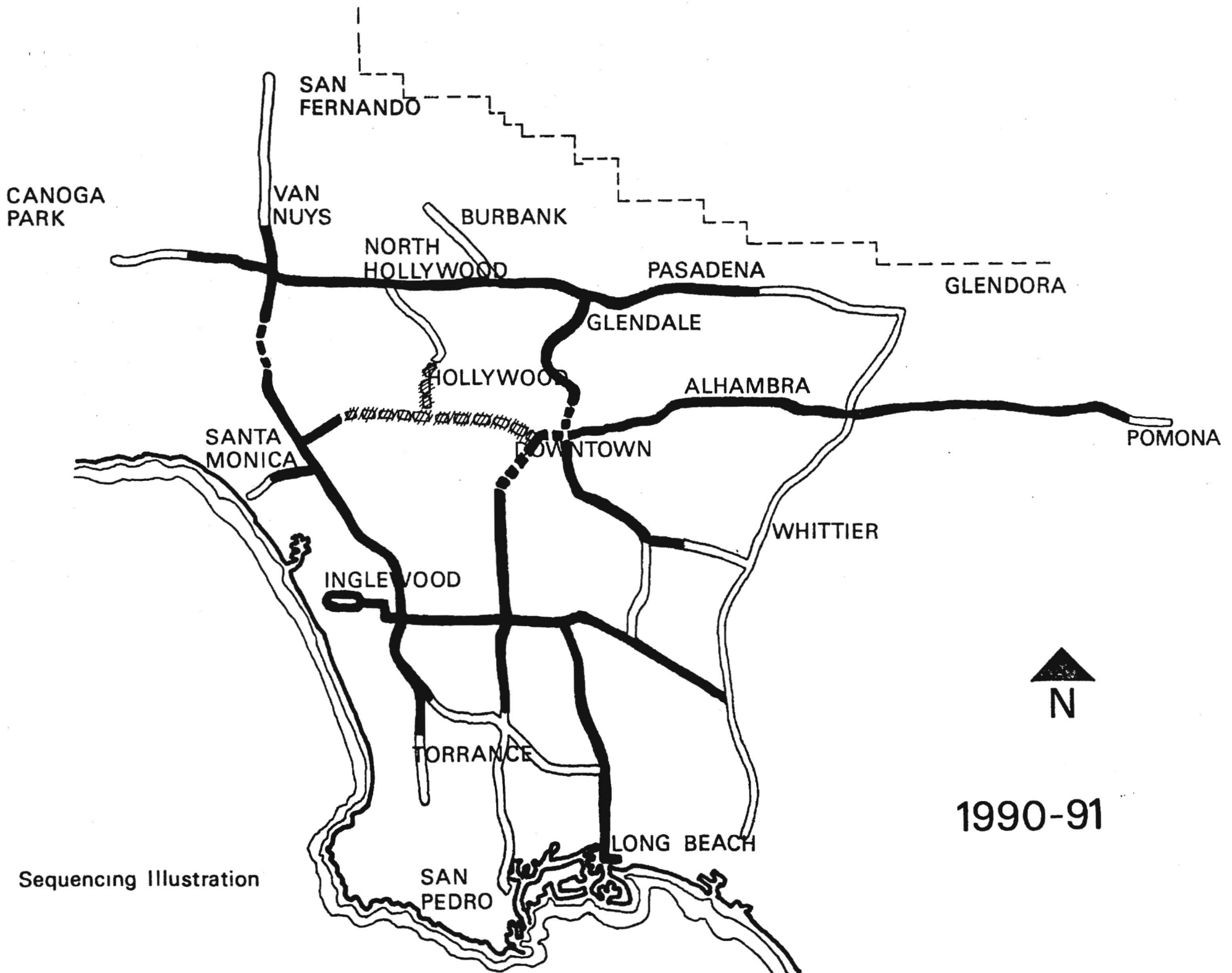
Miles Operational: 124.5

4. Central Line
-- Harbor Freeway at Century Freeway 4 miles south to 182nd Street.

5. Inter/Valley Line
-- Foothill Freeway at Hill Avenue, 2 miles east to Foothill Boulevard.

6. Inter/Valley Line
-- Ventura Freeway at Louise, 2 miles west to Wilbur.

7. Wilshire Tunnel, 2 miles allocated.



1992 - 1993

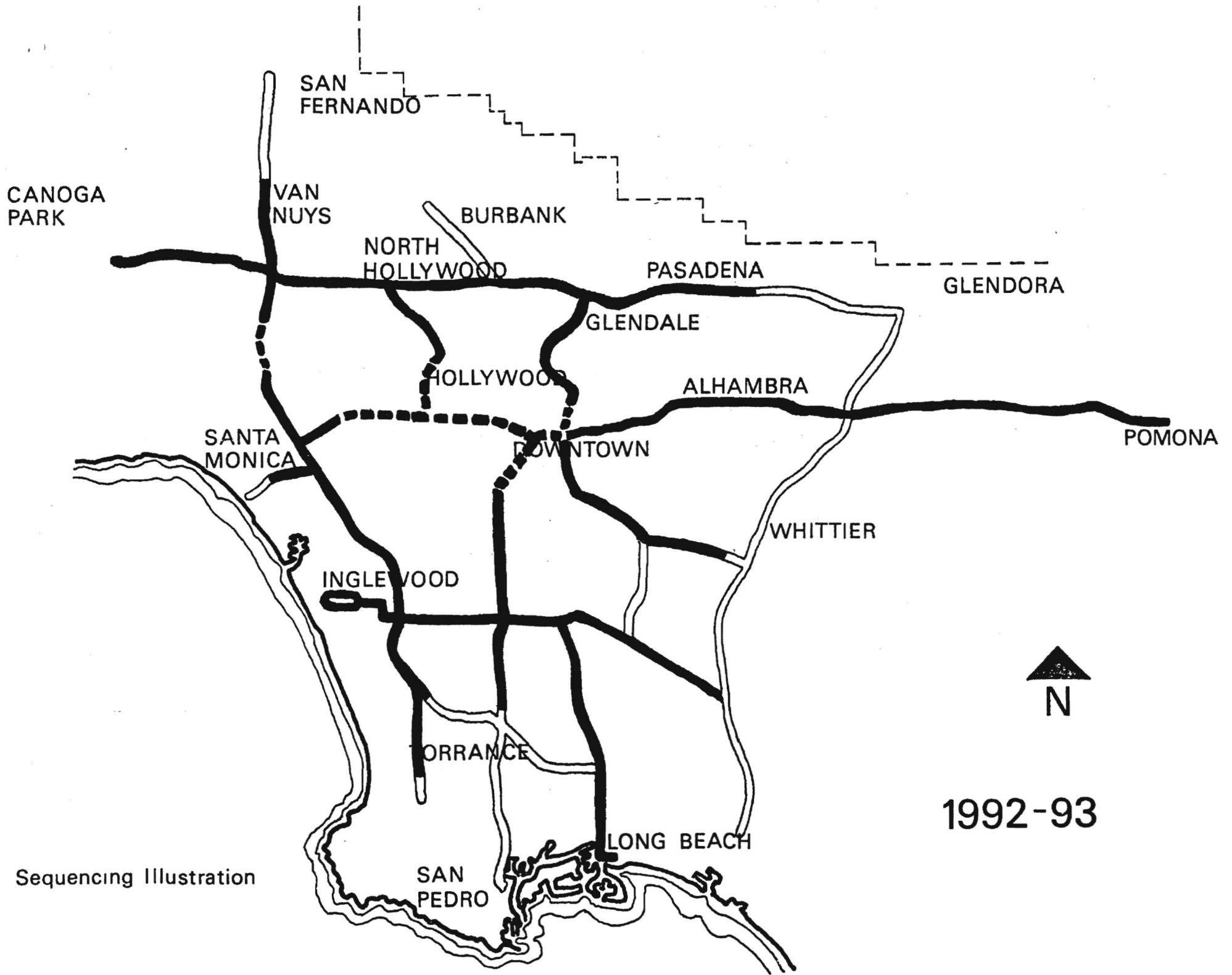
Miles Under Construction: 16

1. Hollywood Bowl Line
-- Ventura Freeway at Hollywood Freeway Interchange
4 miles southeast to Hollywood Bowl.
2. Whittier Line
-- PE(Whittier Line) at Garfield 2 miles east to Rosemead.
3. Torrance Feeder Line
-- Torrance Feeder at Talisman 2 miles south to Sepulveda.
4. Valley/Long Beach Line
-- San Diego Freeway at Vanowen 2 miles north to Roscoe
Boulevard.
5. Inter/Valley Line
-- Ventura Freeway at Wilbur 3 miles west to Canoga
Avenue. End of Line.
6. Pomona Line
-- PE(Corona Freeway) 2 miles east to Garey. End of
Line.
7. Wilshire Tunnel, 1 mile. End of Line.

Contracts in Progress: 7

Miles Completed: 170

Miles Operational: 153



Sequencing Illustration

1992-93

1994 - 1995

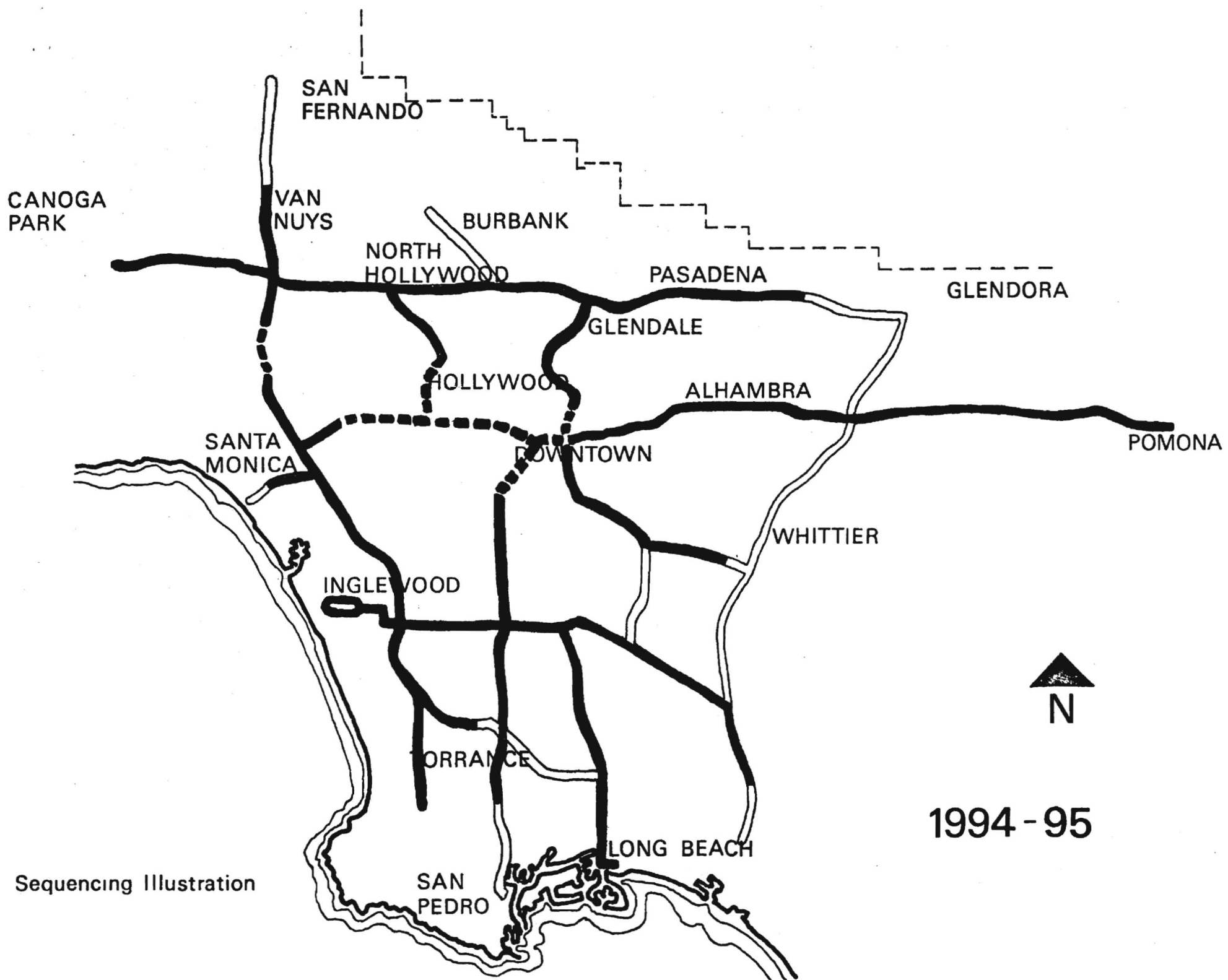
Miles Under Construction: 15

1. Central Line
-- Harbor Freeway at 182nd 4 miles south to 235th.
2. Torrance Feeder Line
-- Torrance Line at Sepulveda 1.5 miles south to Pacific Coast Highway. End of Line.
3. San Gabriel River Line
-- San Gabriel River at PE(Santa Ana) 4 miles south to Wardlowe.
4. Inter/Valley Line
-- Foothill Freeway at Foothill Boulevard 2 miles east to Baldwin Avenue.
5. Valley/Long Beach Line
-- San Diego Freeway at Redondo Beach Boulevard 3 miles southeast to Normandie.

Contracts in Progress: 5

Miles Completed: 185

Milcs Operational: 169



CANOGA PARK

SAN FERNANDO

VAN NUYS

BURBANK

NORTH HOLLYWOOD

PASADENA

GLENDALE

GLENDALE

HOLLYWOOD

ALHAMBRA

SANTA MONICA

DOWNTOWN

POMONA

WHITTIER

INGLEWOOD

TORRANCE

LONG BEACH

SAN PEDRO



1994-95

Sequencing Illustration

1996 - 1997

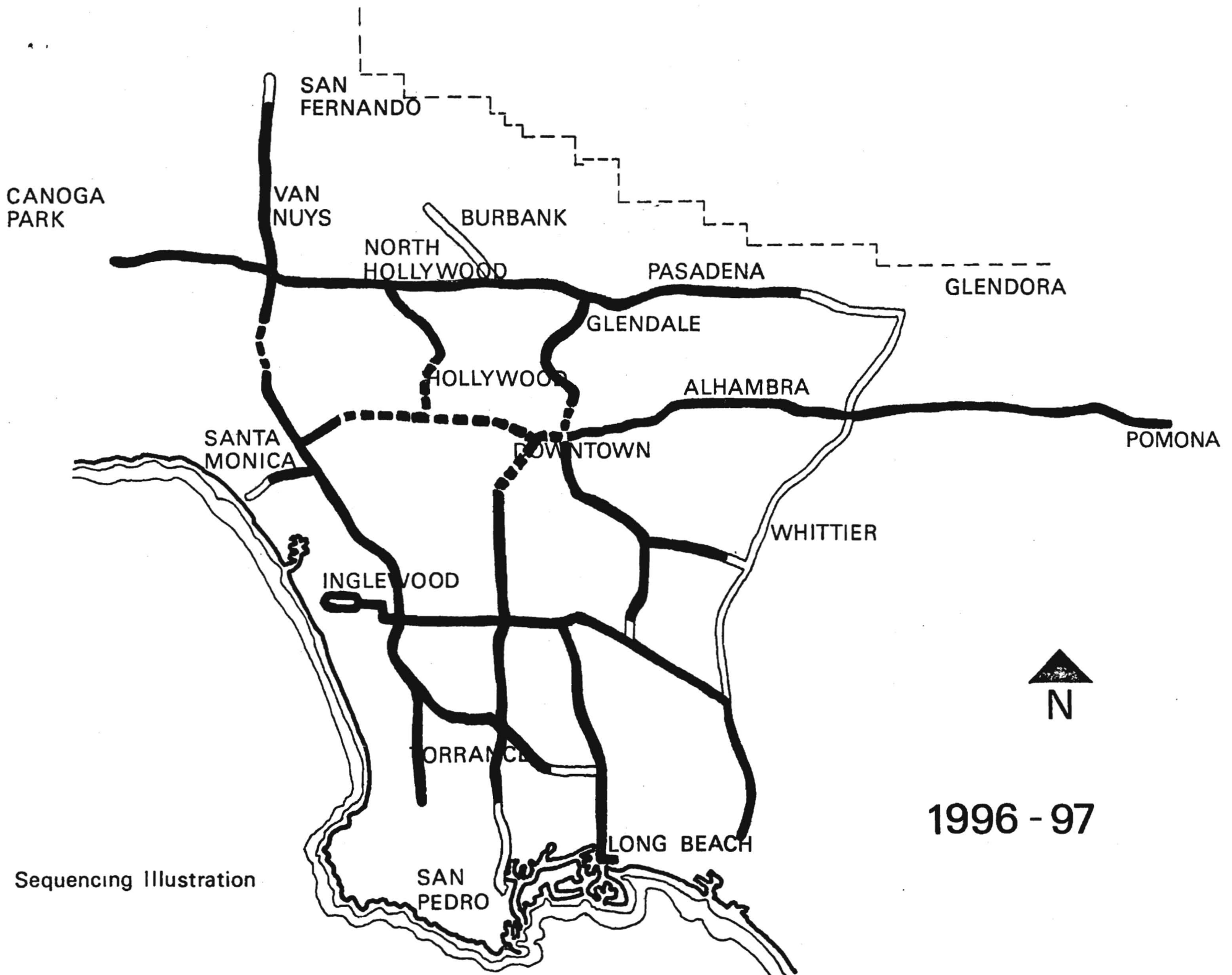
1. Valley/Long Beach
-- San Diego Freeway at Roscoe 4 miles north to Rinaldi.
2. San Gabriel River Line
-- San Gabriel River at Wardlowe 2 miles south to
San Diego Freeway. End of Line.
3. Valley/Long Beach Line
-- San Diego Freeway at Normandie 4 miles southeast
to Wilmington.
4. Long Beach Line
-- Los Angeles River from Randolph 4 miles south to
Beechwood.

Miles Under Construction: 14

Contracts in Progress: 4

Miles Completed: 199

Miles Operational: 184



CANOGA PARK

SAN FERNANDO

VAN NUYS

BURBANK

NORTH HOLLYWOOD

PASADENA

GLENDORA

GLENDALE

HOLLYWOOD

ALHAMBRA

SANTA MONICA

ROWNTOWN

POMONA

WHITTIER

INGLEWOOD

TORRANCE

LONG BEACH

SAN PEDRO



1996 - 97

Sequencing Illustration

1998 - 1999

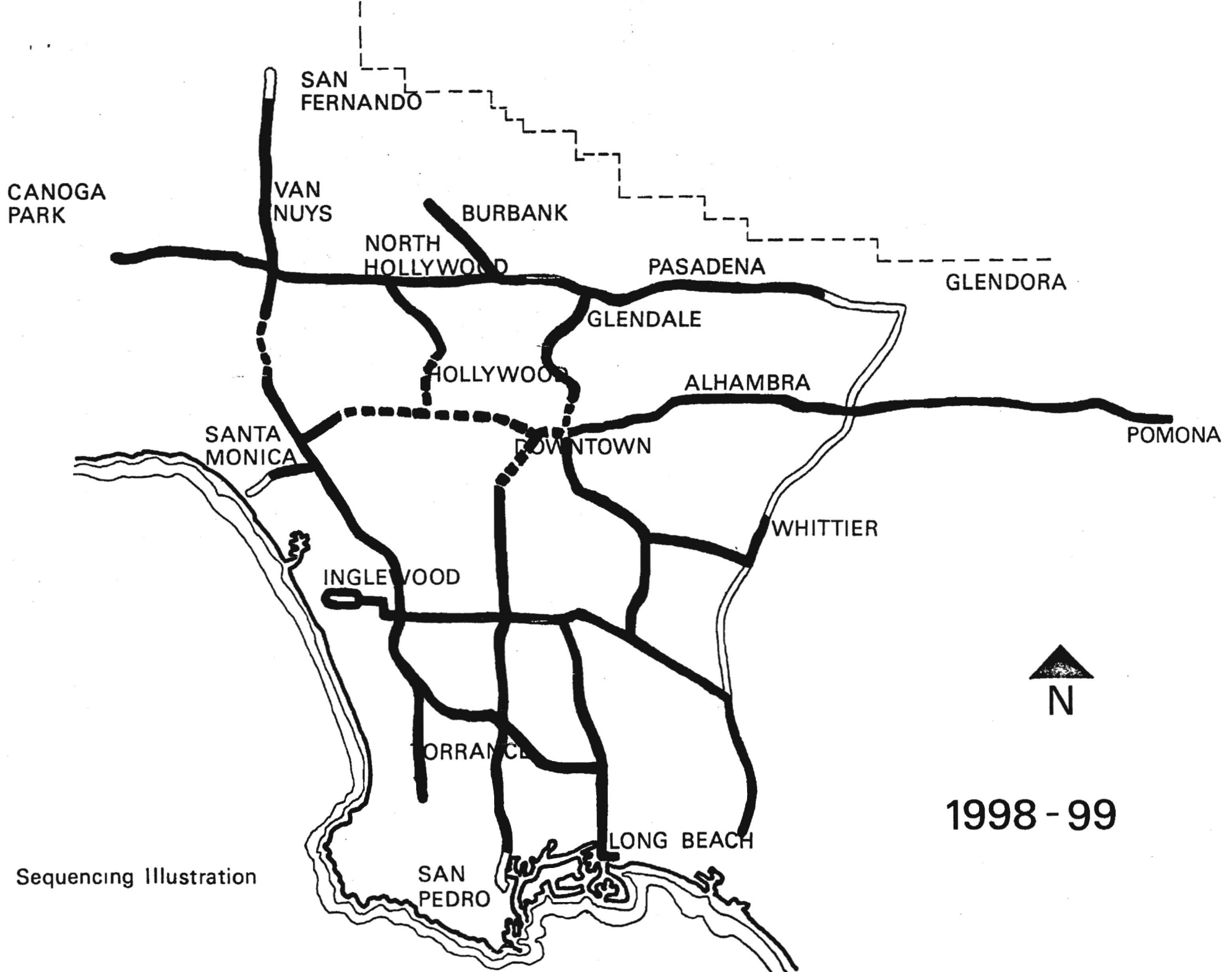
1. Whittier Line
-- PE (Whittier) at Rosemead 1 mile east to San Gabriel River.
2. Long Beach Line
-- Los Angeles River at Beechwood 1 mile south to PE (Santa Ana).
3. Valley/Long Beach Line
-- San Diego Freeway at Wilmington 2 miles east to Long Beach Freeway.
4. Burbank Feeder Line
-- Ventura Freeway 4 miles northwest to Empire.
5. Central Line
-- Harbor Freeway at 235th 3 miles south to B Street.
6. San Gabriel River Line
-- San Gabriel River at PE(Whittier) 2 miles north to Whittier Boulevard.

Miles Under Construction: 13

Contracts in Progress: 6

Miles Completed: 212

Miles Operational: 198



Sequencing Illustration

1998 - 99

2000 - 2001

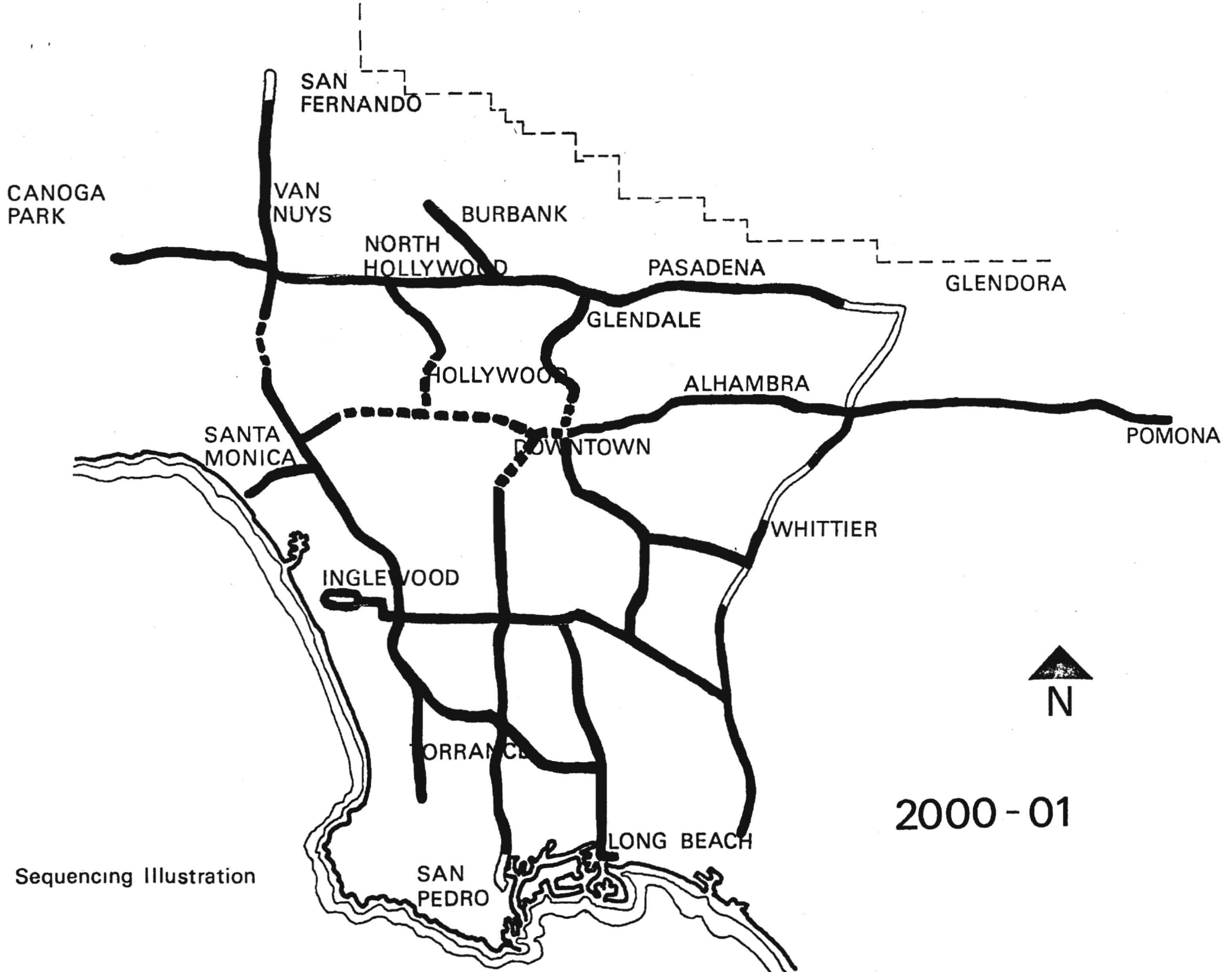
1. Santa Monica Line
-- Santa Monica Freeway at Cloverfield 1.8 miles southwest to Ocean Avenue.
2. San Gabriel River Line
-- San Gabriel River Freeway at PE(Santa Ana) 4 miles north to Cecelia.
3. Inter/Valley Line
-- Foothill Freeway at Baldwin 2 miles east to Huntington Drive.
4. San Gabriel River Line
-- San Gabriel River at San Bernardino Freeway 3 miles south to Peck Road.

Miles Under Construction: 11

Contracts in Progress: 4

Miles Completed: 223

Miles Operational: 210



Sequencing Illustration

2002 - 2003

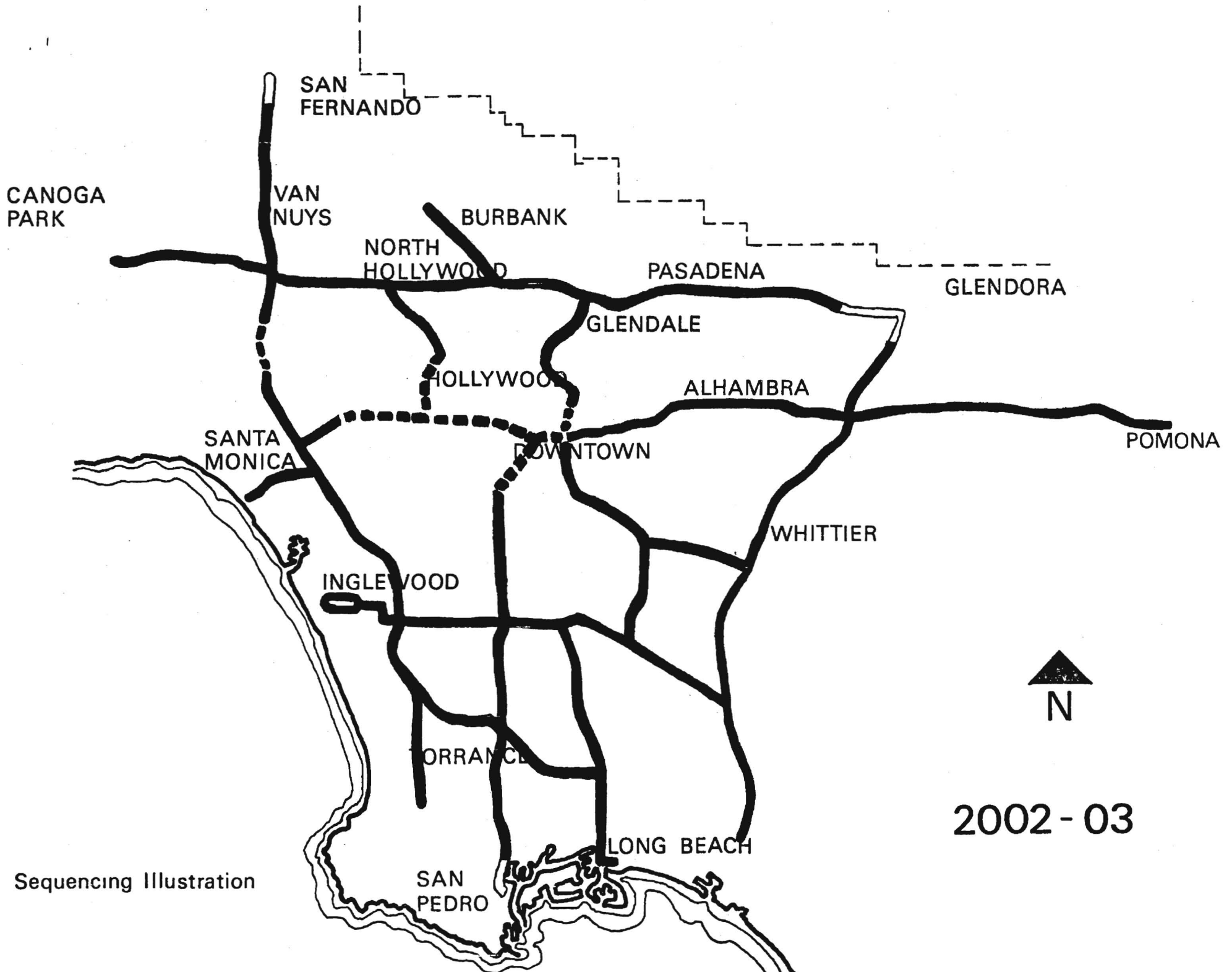
1. San Gabriel River Line
-- San Gabriel River at Cecelia 3 miles north to
PE (Whittier).
2. San Gabriel River Line
-- San Gabriel River at PE (Whittier) 3 miles north to
Peck Road.
3. San Gabriel River Line
-- San Gabriel River at San Bernardino Freeway 4 miles
north to Arrow Highway.

Miles Under Construction: 10

Contracts in Progress: 3

Miles Completed: 233

Miles Operational: 221



CANOGA
PARK

SAN
FERNANDO

VAN
NUYS

BURBANK

NORTH
HOLLYWOOD

PASADENA

GLENDORA

GLENDALE

HOLLYWOOD

ALHAMBRA

SANTA
MONICA

DOWNTOWN

POMONA

WHITTIER

INGLEWOOD

TORRANCE

LONG BEACH

SAN
PEDRO



2002-03

Sequencing Illustration

2004 - 2005

1. San Gabriel River Line
-- San Gabriel River at Arrow Highway 2 miles north to Foothill Freeway.
2. Inter/Valley Line
-- Foothill Freeway at Huntington Drive 3.5 miles east to San Gabriel River Freeway. End of Line.
3. Central Line
-- Harbor Freeway at B Street 3 miles south to Ports 'O Call. End of Line.
4. Valley/Long Beach Line
-- San Diego Freeway at Rinaldi 2 miles north to Roxford. End of Line.

Miles Under Construction: 9

Contracts in Progress: 4

Miles Completed: 243

Miles Operational: 233

CANOGA
PARK

SAN
FERNANDO

VAN
NUYS

BURBANK

NORTH
HOLLYWOOD

PASADENA

GLENDORA

GLENDALE

HOLLYWOOD

ALHAMBRA

SANTA
MONICA

DOWNTOWN

POMONA

WHITTIER

INGLEWOOD

TORRANCE

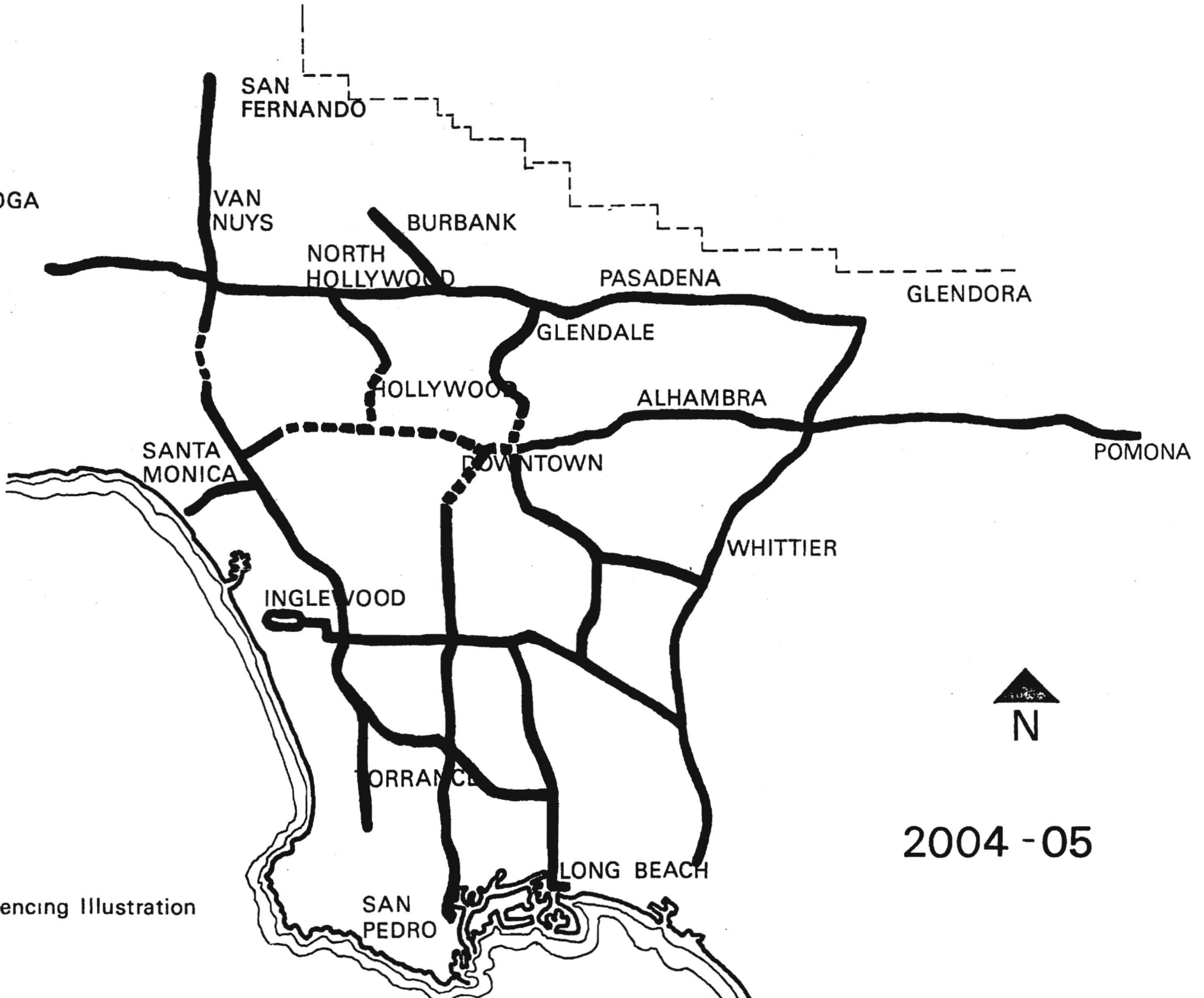
LONG BEACH

SAN
PEDRO



2004 - 05

Sequencing Illustration



We are including charts that indicate in unit form the progress of contract progression. Actual construction on each of the jobs would have been preceded by a minimum of three years for engineering and environmental considerations (subways in the downtown area will need much longer engineering).

Obviously, the distances in construction contracts here are only approximate, and are expressed in miles, rather than feet. The precision of preliminary and final engineering will shorten or lengthen those distances to exact geographical considerations.

All the same, the averages are well rounded and can present a clear picture as to how development can proceed.

There will be extreme difficulty in several freeway stretches that are crossed by frequent overpasses within short spans of distance. Although we are aware generally of their locations, we have not attempted to specify short slower construction periods, because we are aware that in the long term the delays of time will be balanced out by the convenience of vast, relatively clear stretches of freeway.

CONSTRUCTION CONTRACT SEQUENCING
(continued)

Prepared by	Initials	Date
Approved by		

Priority	Contract	(Line)	1980/81	82/83	84/85	86/87	88/89	90/91	92/93	94/95	96/97	98/99	2000/01	02/03	04/05
16	Rosecrans-Del Amo	13		█											
17	Century Fwy-Centinel	1		█											
18	73rd St.-Century Fwy	13		█											
19	Del Amo-31st St. (Long Beach)	13				█									
20	Wilshire/La Brea Sub- way (2 addl miles west)	11		█											
21	Olive-Whittsett	2				█									
22	Kenilworth-Olive	2				█									
23	Fthill Fwy Jct-Hill Avenue	2				█									
24	Union Station-Downey Avenue	9				█									
25	Del Mar-El Monte Terminal	10				█									
26	Willowbrook-LA River	7				█									
27	Santa Monica Mounts. Tunnel	1				█									
28	Century Fwy-147th St.	1				█									
29	Wilshire/La Brea Sub- way (2 addl mi. west)	11				█									
30	Downey-Garfield	12							█						

	Initials	Date
Prepared by		
Approved by		

CONSTRUCTION CONTRACT SEQUENCING

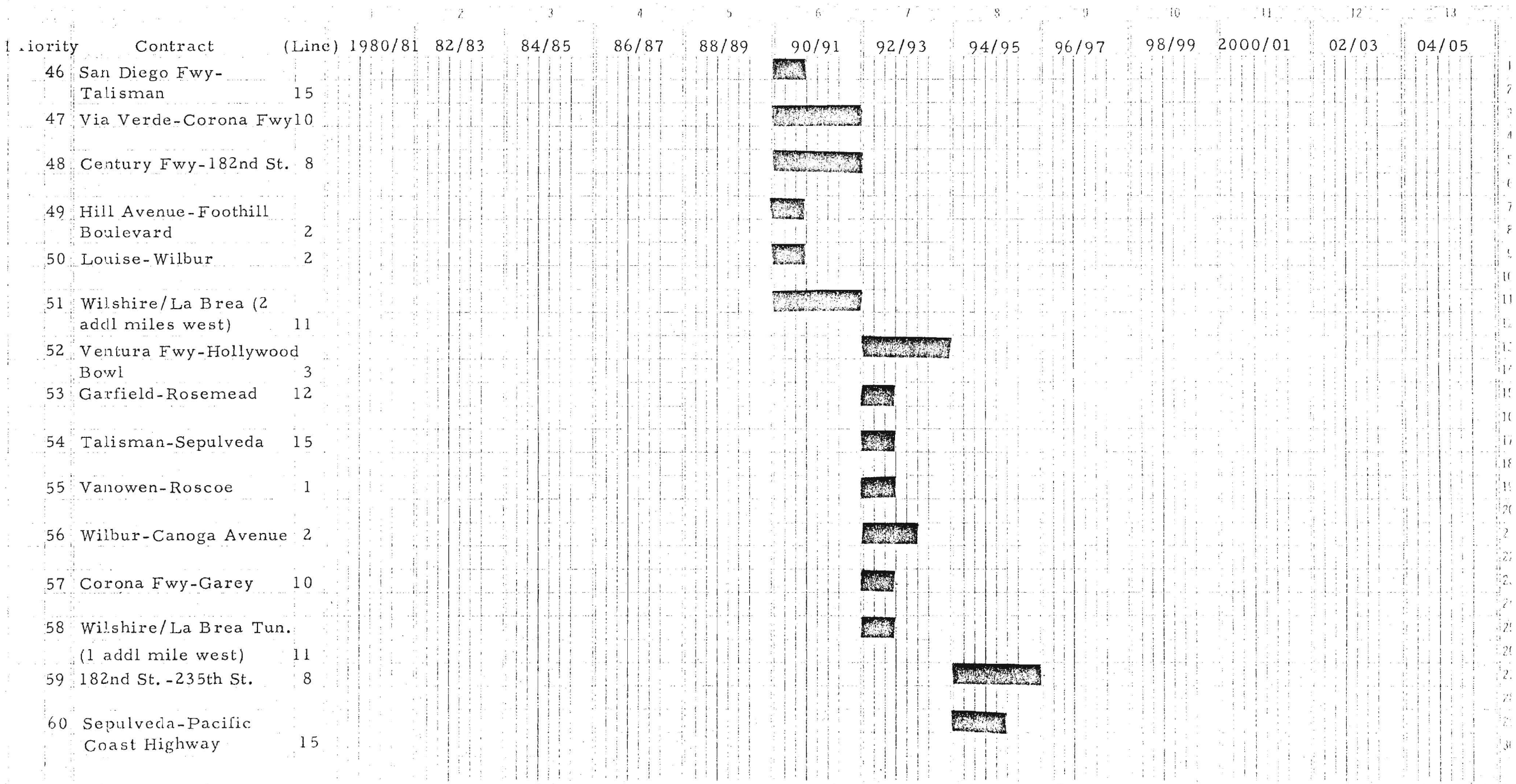
(Continued)

Priority	Contract	(Line)	1 1980/81	2 82/83	3 84/85	4 86/87	5 88/89	6 90/91	7 92/93	8 94/95	9 96/97	10 98/99	11 2000/01	12 02/03	13 04/05
31	Azusa - Via Verde	10				█									
32	Whitsett - Haskell	2				█									
33	147th St. - Redondo Beach Blvd.	1				█									
34	Centinela to National	1				█									
35	L. A. River to Downey Avenue	7				█									
36	Wilshire/LaBrea Subway (2 add mi. W.)	11				█									
37	Ventura Fwy. - Vanowen	1					█								
38	Haskell - Louise	2				█									
39	National - So. Portal	1					█								
40	San Diego Fwy. - Cloverfield	6					█								
41	San Diego Fwy. - Century City	5					█								
42	No. Portal - Ventura Fwy. Jct.	1					█								
43	Downey Avenue - Woodruff	7					█								
44	Wilshire/LaBrea Subway (2 add mi. W.)	11					█								
45	Woodruff - I-605	7						█							

CONSTRUCTION CONTRACT SEQUENCING

(continued)

Prepared by	Initials	Date
Approved by		



CONSTRUCTION CONTRACT SEQUENCING

(Continued)

Prepared by	Initials	Date
Approved by		

Priority	Contract	(Line)	1980/81	82/83	84/85	86/87	88/89	90/91	92/93	94/95	96/97	98/99	2000/01	02/03	04/05
61	Santa Ana Line - Wardlow	4													
62	Foothill Blvd - Baldwin Ave	2													
63	Redondo Beach Blvd - Normandie	1													
64	Roscoe - Rinaldi	1													
65	Wardlow - San Diego Fwy	4													
66	Normandie - Wilmington	1													
67	Randolph - Beechwood	9													
68	Rosemead - San Gabriel River	12													
69	Beechwood - Santa Ana Line	9													
70	Wilmington - Long Beach Fwy	1													
71	Ventura Fwy - Empire	14													
72	235th Street - "B" St	8													
73	Whittier PE Line - Whittier Blvd	4													
74	Cloverfield - Ocean Avenue	6													
75	Santa Ana PE Line - Cecelia	4													

CONSTRUCTION CONTRACT SEQUENCING

(Continued)

Priority	Contract	(Line)	1980/81	82/83	84/85	86/87	88/89	90/91	92/93	94/95	96/97	98/99	2000/01	02/03	04/05
76	Baldwin Avenue - Huntington Drive	2													
77	San Bernardino Fwy. - Peck Road	4													
78	Cecelia - Whittier P.E. Line	4													
79	Whittier P.E. Line - Peck Road	4													
80	San Bernardino Fwy. - Arrow Hwy.	4													
81	Arrow Hwy. - Foothill Fwy.	4													
82	Huntington Drive - I-605	2													
83	"B" St. - Ports O'Call	8													
84	Rinaldi - Roxford	1													

*Contracts based on:
 2 miles per year aboveground.
 1 mile per year for tunnel construction.

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