the TRANSPORTATION GROUP INC.

February 17, 1988

Mr. Michael D. Antonovich
Chairman of the Board
Board of Supervisors
County of Los Angeles
500 West Temple Street
Los Angeles, CA 90012

Dear Mr. Chairman:

We are pleased to respond to your letter of December 1, 1987 regarding transportation needs along the Ventura 101 Freeway Corridor from Woodland Hills to Union Station in downtown Los Angeles.

TGI is pleased to submit the following concept paper addressing alternative ways in which a line haul transit project in the corridor can be financed and delivered. As requested, we addressed the fit of TGI's AGT Monorail technology in this major transportation corridor and found that both our intermediate and high capacity monorail systems represent a good match to the mass transit requirements and characteristics of the corridor.

We are confident that the Los Angeles/San Fernando Valley Monorail Project would provide a viable successful addition to the region's light rail and rail rapid transit network. Specifically, we do not view this project as a competitor to the Southern California Rapid Transit District's Metrorail project, nor to the Los Angeles County Transportation Commission's light rail transit projects. Rather, we envision the Los Angeles/San Fernando Valley Monorail line working together with the rail network, fully integrated with the bus network, to provide a comprehensive, coordinated approach to meeting the tremendous mobility needs of the County's residents.

We encourage the County to move forward with the recommendations included in this paper, and we pledge our support and assistance in implementing this important addition to the region's transit system.

Yours sincerely,

Thomas J. Stone

Thomas J. Stone, Ph.D., P.E.
President

TJS:llb

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Confidentiality Statement

The information contained in this document is proprietary information belonging to the Transportation Group, Inc. (TGI) or its affiliated companies and is submitted solely for use by the Los Angeles County Board of Supervisors for the purpose of evaluating the TGI Monorail technology for application in Los Angeles County, California.

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Executive Summary

We have reviewed the categories set forth in your letter and have concluded that the TGI Monorail technology can be successfully employed as a transportation solution in linking the San Fernando Valley to downtown Los Angeles. The physical characteristics of the TGI Monorail allow it to productively use freeway and arteried rights-of-way, thereby minimizing the impacts to the Valley's sensitive residential neighborhoods.

Both the high capacity, high speed Mark XXI and intermediate capacity Mark VI Monorail Systems are capable of meeting the requirements of the corridor. Operating in fully automated, quiet, air-conditioned, comfortably upholstered vehicles at 55 miles per hour (or 70 miles per hour for the Mark XXI) with very short stations (225 feet) made possible by frequent service provided by automation, the Monorail will represent a very attractive alternative to the automobile.

The conceptual-level construction cost estimate for the entire 26-mile line from downtown Los Angeles to Canoga Park is $920 million for the Mark XXI and only about $715 million for the Mark VI, excluding right-of-way acquisition, utility relocations, and other special items delineated in the paper. The estimated cost of the 16-mile segment from Universal City to Canoga Park compares favorably to that envisioned by the County for the light rail transit alternative.

The proposed route follows the Ventura Freeway alignment alternative developed for light rail transit by the LACTC. The section from Universal City to downtown follows the Hollywood Freeway and terminates in the vicinity of Union Station. The line is served by 19 stations and a vehicle maintenance facility located in the Valley between Vanowen and Sherman Way, as suggested for the light rail alternative. In order to meet the County's projected travel demand for the year 2010, two-car trains operating every four minutes would be required for the Mark XXI (or six-car trains on five minute intervals for the Mark VI). The system will have the capacity to be expanded to carry as many as 32,000 passengers per hour per direction for the Mark XXI, or 19,000 for the Mark VI, without any increase in the length of the remarkably short stations. These short stations permit a great deal of flexibility in the selection of final station sites.

The paper describes several alternative project financing solutions in order to supplement the nearly $500 million which was previously proposed for the San Fernando Valley line by the LACTC. Some of the most promising methods include:

- Creation or Transfer of Development Rights
- Joint Development
- Tax Increment Financing
- Special Benefit Assessments
- Private Sector Financing

All of these (and other) financing approaches could be applied within the context of the recommended private/public partnership approach, which is achieved by awarding a franchise through an open and competitive process. The process includes considerations such as estimated price, financial strength, the suitability of the proposed technology, and the track record of the proposed franchisee.

The entire project could be completed within less than five years from today with the actual construction requiring only about two years. While the selection of the freeway alignment requires intense coordination with and cooperation from CALTRANS, the prefabricated, small guideway of the monorail will be by far the least disruptive of all candidate technologies during construction, thereby ensuring that monorail will require the least time for construction of all alternatives.

The paper also recommends that the broad public appeal of the monorail, and particularly that of the monorail beamway, be used to generate early acceptance of and support for project implementation. Communities along the route will actively and strongly resist any action which might adversely impact their 'quality of life', and monorail technology can be of particular value in the campaign to attract the necessary support.

The Team

The transit industry in the United States over the past several years has been characterized by projects which have exceeded their budgets and have generally been delivered to the owner behind schedule. The Transportation Group, Inc. (TGI) believes that the process of system procurement has been more responsible for this phenomenon than fundamental deficiencies in technology. Responsibilities have been fragmented and interfaces not clearly defined.

TGI was formed to capitalize on the emerging trend of providing transportation systems on a fixed price turnkey basis. TGI's responsibility includes not only the provision of system hardware but also the guideway structure, stations, controls and communications, maintenance facility, testing and systems integration. Additionally, TGI is able to assist in arranging financing for the system and will contract to operate and maintain the system.

This approach, with a single entity responsible for the entire project, will give all parties a vested interest in the entire project's success and will streamline decision making and management of the project for the owner. For this project, the TGI team includes our parent company, Bombardier Inc., for vehicle production, Alcatel (SEL) for the vehicle control system and Smith Barney for system financing.

TGI/BOMBARDIER

TGI is a wholly owned subsidiary of Bombardier Inc., the only manufacturer in the world offering a full range of fixed guideway passenger transit technologies: automated people movers, streetcars, light rail, monorail, rubber-tired metro cars, steel-wheeled subway cars, rail passenger coaches, locomotives and high speed rail trains. With over 12,000 personnel and 6 million square feet of manufacturing space located in the United States, Great Britain, Canada, Austria and Belgium, Bombardier is North America's largest manufacturer of mass transit vehicles.

Important users of Bombardier transit equipment include:

- Metropolitan Transportation Authority of New York City,
- Southeastern Pennsylvania Transportation Authority,
- New Jersey Transit Corporation,
- Connecticut Department of Transportation,
- Chicago South Suburban Mass Transit District,

- Mexico City,
- Tri-County Metropolitan Transportation District of Oregon (Portland),
- Massachusetts Bay Transportation Authority,
- VIA Rail Canada and
- the Montreal Urban Community.

In addition to mass transit vehicles, Bombardier's product line includes industrial, military and recreational vehicles, jet aircraft and large diesel engines for rail and marine use.

Based in Orlando, Florida, with the western regional office in Denver, Colorado, TGI provides a unique combination of the Bombardier transit industry experience, public and private sector design/build experience and the Disney people moving systems technology.

The staff of TGI includes professionals with long service and has direct access to the expertise of both Bombardier and Disney. TGI personnel were instrumental in the program management, design, manufacture, installation, construction, operation and maintenance of the Walt Disney World Monorail and WEDway PeopleMover Systems, the Houston Intercontinental Airport PeopleMover System and many vehicle supply programs.

ALCATEL (SEL)

Alcatel develops, manufactures, installs and maintains high technology railway signaling products. The company has earned an outstanding reputation in the transit industry for excellence, having installed the world's most refined computer-based control and signaling system in Vancouver, British Columbia's, Sky Train automated guideway transit system.

Established in 1974 as SEL Canada, Alcatel Canada, Inc. is a joint venture of ITT (one of the world's largest corporations) and Compagnie Generale d'Electricite.

Alcatel has developed a fully computerized automatic control system which is marketed in the United States under the trade name SELTRAC. SELTRAC provides the classical function of Automatic Protection, Automatic Train Operation and Automatic Train Supervision through a network of processors distributed along the guideway and on transit vehicles. Through vital communication links, all processor modules are tied together.

Adapted for use on TGI's Mark XXI and Mark VI Monorail Systems, SELTRAC has been proven on three systems to date, of which the Vancouver System, 13.5 miles in length, is the word's most comprehensive AGT system.

Able to operate on headways as short as 60 seconds, the Vancouver System safely carried over 170,000 passengers per day at the peak of EXPO '86 and over 36 million passengers during its first year of operation. The computerized train control system impressed transit industry leaders from around the world when it

slotted non-stop trains, shuttling visitors between EXPO sites, on the same tracks in between regular, mainline trains with an outstanding on-time schedule performance record:

Alcatel will be responsible for providing the automated control system and the communications system.

SMITH BARNEY, HARRIS UPHAM & CO. INCORPORATED

There is no other investment firm in the United States with as much transportation experience as Smith Barney. Committed to helping local, regional and state transit entities to meet their projected capital requirements, Smith Barney has managed or advised over one third of all securities issued for mass transit purposes during the last six years.

These include:

- Over $1.2 billion for the San Francisco Bay Area Rapid Transit District.
- $707 million for the Los Angeles Transportation Commission.
- $450 million for Metropolitan Atlanta Rapid Transit Authority.
- $100 million for the Dade County Rapid Transit System, and
- $33.5 million for Tri-County Metropolitan Transportation District, (Portland, Oregon - the newest LRT System supplied by Bombardier).

In four of the last six years, Smith Barney was ranked first by Institutional Investor magazine in transportation finance with a cumulative dollar total substantially beyond every competitor. From 1972 to the present, the total of mass transit, highway and toll road financing for which Smith Barney served as managing underwriter or financial advisor aggregates over $414.9 billion.

Smith Barney will serve in the lead role for financing the Los Angeles/San Fernando Valley Monorail Project. A leader in the development of innovative, private/public sector partnerships for infrastructure financing, Smith Barney has for this project devised several financing concepts, which are discussed in this paper.

SYSTEM INFRASTRUCTURE CONTRACTOR

Assuming that the County will concur with the recommended system procurement approach described in this paper, TGI will select a major engineering and general construction firm as our principal subcontractor for the San Fernando Valley project. The selected firm will be responsible for final design and delivery on a fixed price basis of the "infrastructure" of the system, including such elements as foundations and guideway structures, traction power distribution, and if deemed appropriate, the vehicle maintenance facility and selected transit stations. This firm will be chosen on the basis of its price competitiveness, its history of on-time

performance, its experience delivering transit projects of high quality, its familiarity with the unique seismic and geotechnical characteristics of the Los Angeles Area, and its proven sensitivity to the social, political, and cultural nature of the neighborhoods and the communities along the route.

TGI has discussed this project and this approach with several of Southern California's and the nation's largest and most respected engineering consultants and has received a remarkably positive response.

The Technology

In addition to the conventional light and heavy rail vehicles of the Bombardier product line, TGI can provide automated guideway transit systems for application in the Ventura Freeway/Hollywood Freeway Corridor. TGI can provide two classes of automated monorail systems for the corridor: the intermediate capacity class Mark VI Monorail and the high capacity class Mark XXI Monorail. In subsequent sections of this paper, it is demonstrated that both the Mark VI and Mark XXI are capable of meeting the projected travel demand in the corridor through the year 2010. Should the initial installation from downtown Los Angeles to the Valley ever require substantial increases in capacity beyond that date due to future extensions, interconnections, and ridership increases, then the County may opt for the larger, faster, and more costly Mark XXI Monorail System. The Mark XXI is capable of achieving a 70 mph maximum speed and a peak capacity of about 50,000 passengers per hour per direction, both of which are comparable to a high performance, conventional rail rapid transit system.

Should the County deem that lower initial construction cost, maximum speeds of about 50 to 55 mph, and a peak capacity of about 20,000 passengers per hour per direction are acceptable, then the Mark VI will be appropriate.

This paper describes the characteristics and provides conceptual-level cost estimates for both the Mark VI and Mark XXI Monorail Systems. The table on the following page summarizes these characteristics. Following are more detailed descriptions of the physical and performance features of both alternatives.

GUIDEWAY

A brief description of the TGI Monorail guideway begins on page 16 followed by several photographs of the guideway in place in Orlando, Florida.

VEHICLES

As stated earlier in this document, the Mark XXI Monorail is the most appropriate technology for the expanding needs of the Los Angeles Area. With an initial capacity capability exceeding 30,000 passengers per hour, and an ultimate capacity of 50,000 passengers per hour, the Mark XXI Monorail System provides a transportation system that will meet the immediate needs of the San Fernando Valley as well as future needs.

An alternative transportation solution is the lower capacity and therefore lower cost Mark VI Monorail System. Carrying in the range of 15,000 to 20,000 passengers per hour, the Mark VI competes head on with Light Rail Transit solutions.

On the following pages are the Physical Characteristics of the Mark XXI and Mark VI Monorail Vehicles.

SUMMARY COMPARISON

TGI MARK VI AND MARK XXI MONORAIL SYSTEMS

Characteristics	Mark VI	Mark XXI
Typical Capacity Range (passengers per hour per direction, with standees)	2,000 - 20,000	5,000 - 50,000
Maximum Speed (mph)	55	70
Vehicle Dimensions		
Length of cab cars	40 ft. 6 in.	58 ft. 2 in.
Length of center cars	35 ft.	49 ft. 2 in.
Width	8 ft. 4 in.	9 ft. 10 in.
Height (from top of beam)	7 ft. 5 in.	11 ft. 6 in.
Guideway		
Width of beam	26 in.	33 1/2 in.
Depth of beam	4 ft. to 6 ft. 6 in.	4 ft. 10 in. to 8 ft.
Span length	100 ft. and 110 ft.	100 ft. and 110 ft.

MARK XXI MONORAIL

1. Physical Characteristics

1.1 Dimensions

	CAB CAR	NON-CAB CAR
Length	17.7m (58'-2")	15.0m (49'-2")
Width	3.0m (9'-10")	3.0m (9'-10")
Height (overall)	4.9m (16'-1-1/2")	4.9m (16'-1-1/2")
Height (from top of beam)	3.49m (11'-5-3/8")	3.49m (11'-5-3/8")
Floor height (from top of beam)	1.13m (44-1/2")	1.13m (44-1/2")

1.2 Weight

The projected weight of the Mark XXI Monorail is as follows:

	CAB CAR	NON-CAB CAR
Tare Weight	28,500 kg (63,000 lbs)	25,800 kg (57,000 lbs)
Passengers (crush load)	14,500 kg (32,000 lbs)	15,000 kg (33,000 lbs)
TOTAL	43,000 kg (95,000 lbs)	40,800 kg (90,000 lbs)

	2-CAR TRAIN	4-CAR TRAIN	8-CAR TRAIN
Tare Weight	54,000 kg (120,000 lbs)	103,400 kg (228,000 lbs)	201,400 kg (444,000 lbs)
Passengers (crush load)	28,000 kg (63,000 lbs)	58,500 kg (128,500 lbs)	117,500 kg (259,500 lbs)
TOTAL	82,000 kg (183,000 lbs)	161,900 kg (356,500 lbs)	318,900 kg (703,500 lbs)

2. Performance and Passenger Capacity

2.1 Train Performance Parameters

Performance characteristics will be as follows:

- Acceleration rate — 1.3 m/s^2 (3.0 mphps)
- Service deceleration rate below 80 km/h (50 mph) — 1.3 m/s^2 (3.0 mphps)

- Emergency deceleration rate below 80 km/h (50 mph) — 1.4 m/s^2 (3.2 mphps)
- Maximum service speed — 90 km/h (55 mph) (base); 112 km/h (70 mph) (optional)
- Maximum grade capability
  - Reduced performance — 7% (base)
  - Reduced performance — 12% (optional)

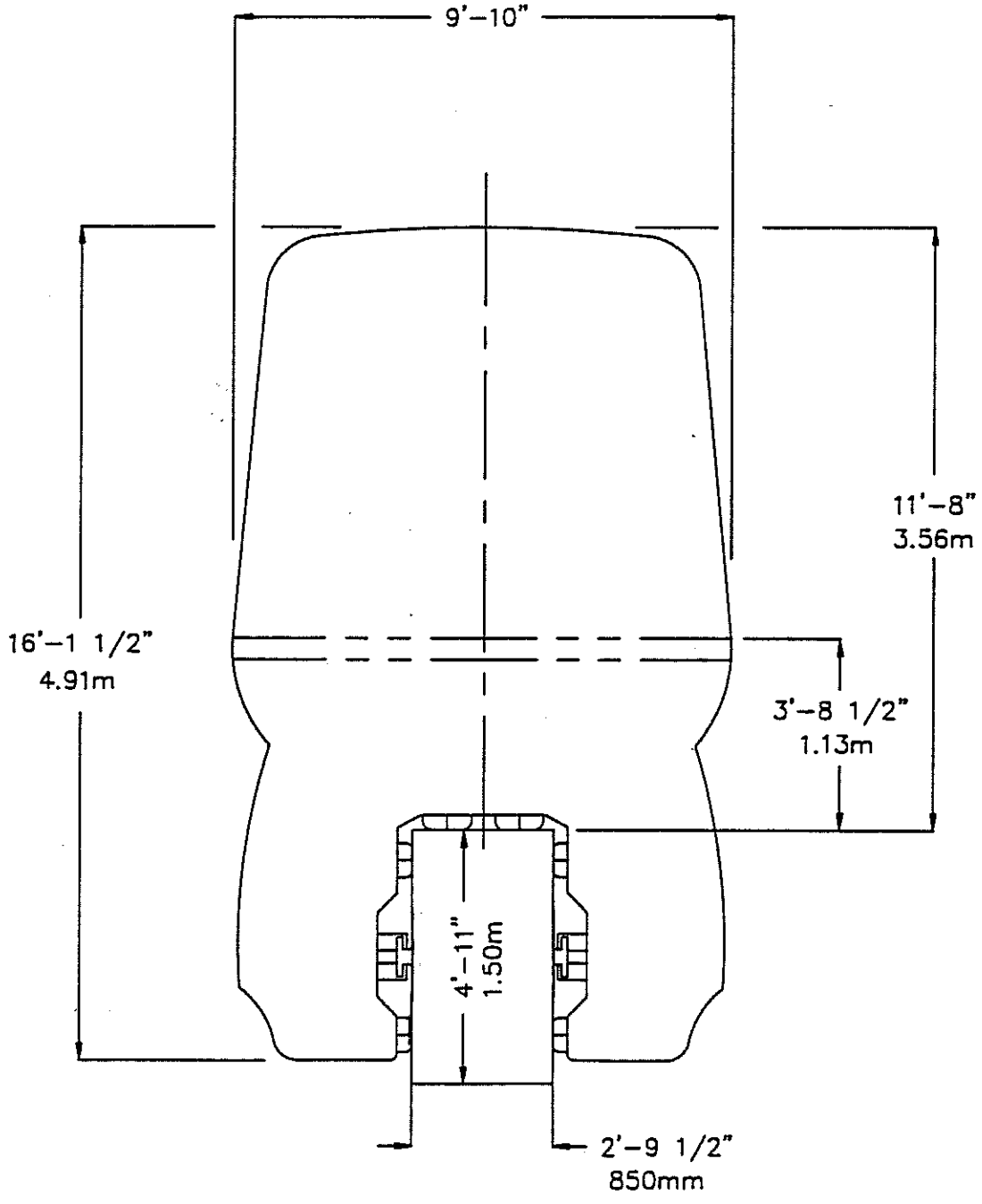
2.2 Passenger Capacity

The projected passenger capacity of the Mark XXI Monorail will be as follows:

	CAB CAR	NON-CAB CAR
SEATED:	42	42
STANDEES:		
• 2.7 ft^2/passenger (4 passengers/m^2)	90	94
• 1.8 ft^2/passenger (6 passengers/m^2)	136	141
• 1.5 ft^2/passenger (7.18 passengers/m^2)	162	169
TOTAL CAPACITY:		
• 2.7 ft^2/passenger (4 passengers/m^2)	132	136
• 1.8 ft^2/passenger (6 passengers/m^2)	178	183
• 1.5 ft^2/passenger (7.18 passengers/m^2)	204	211

This in turn results in the following maximum system capacity figures, based on different train lengths and 120 second headways:

	SYSTEM CAPACITY IN PPHPD
2-car trains	12,240
4-car trains	24,900
6-car trains	37,500
8-car trains	50,220



MARK XXI MONORAIL

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MARK VI-TC MONORAIL

1. Physical Characteristics

1.1 Dimensions

	CAB CAR	NON-CAB CAR
Length	12.3m (40'-6")	10.7m (35')
Width	2.5m (8'-4")	2.5m (8'-4")
Height (overall)	3.2m (10'-7")	3.2m (10'-7")
Height (from top of beam)	2.26m (7'-5")	2.26m (7'-5")
Floor height (from top of beam)	0.16m (6")	0.16m (6")

1.2 Weight

The projected weight of the Mark VI-TC Monorail is as follows:

	CAB CAR	NON-CAB CAR
Tare Weight	8,845 kg (19,500 lbs)	8,618 kg (19,000 lbs)
Passengers (crush load)	5,273 kg (11,625 lbs)	5,273 kg (11,625 lbs)
TOTAL	14,118 kg (31,125 lbs)	13,891 kg (30,625 lbs)

	3-CAR TRAIN	6-CAR TRAIN	9-CAR TRAIN
Tare Weight	26,309 kg (58,000 lbs)	52,164 kg (115,000 lbs)	78,019 kg (172,000 lbs)
Passengers (crush load)	15,819 kg (34,875 lbs)	31,638 kg (69,750 lbs)	47,457 kg (104,625 lbs)
TOTAL	42,128 kg (92,875 lbs)	83,802 kg (184,750 lbs)	125,476 kg (276,625 lbs)

2. Performance and Passenger Capacity

2.1 Train Performance Parameters

Performance characteristics will be as follows:

- Acceleration rate — 1.3 m/s^2 (3.0 mphps)
- Service deceleration rate below 80 km/h (50 mph) — 1.56 m/s^2 (3.5 mphps)

- Emergency deceleration rate below 80 km/h (50 mph) — 2.1 m/s^2 (4.7 mphps)
- Maximum service speed — 90 km/h (55 mph)
- Maximum grade capability
  - Reduced performance — 7% (base)
  - Reduced performance — 12% (optional)

2.2 Passenger Capacity

The projected passenger capacity of the Mark VI-TC Monorail will be as follows:

	CAB CAR	NON-CAB CAR
SEATED:	16	16
STANDEES:		
• 2.7 ft^2/passenger (4 passengers/m^2)	36	36
• 1.8 ft^2/passenger (6 passengers/m^2)	51	51
• 1.5 ft^2/passenger (7.18 passengers/m^2)	59	59
TOTAL CAPACITY:		
• 2.7 ft^2/passenger (4 passengers/m^2)	52	52
• 1.8 ft^2/passenger (6 passengers/m^2)	67	67
• 1.5 ft^2/passenger (7.18 passengers/m^2)	75	75

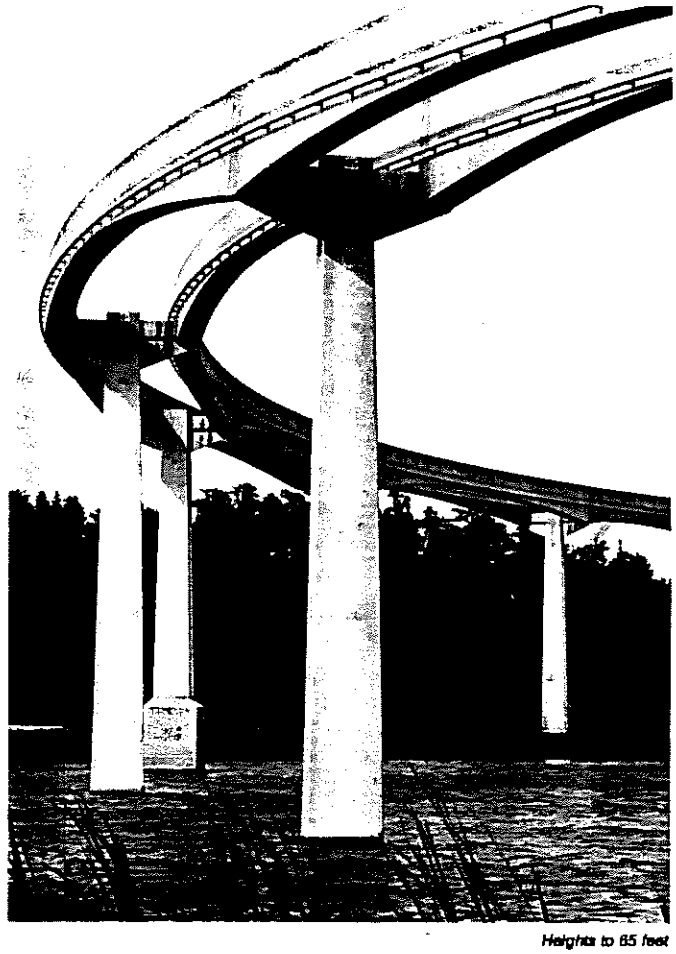
This in turn results in the following maximum system capacity figures, based on different train lengths and 120 second headways:

	SYSTEM CAPACITY IN PPHPD
3-car trains	6,750
6-car trains	13,500
9-car trains	20,250
12-car trains	27,000

The Guideway

The unique feature of the TGI Monorail - and the one that makes it less costly than any other elevated technology - is the guideway structure. Both the Mark XXI and the Mark VI Monorail Vehicles ride on narrow ribbons of concrete which cast narrow shadows and provide an open-looking appearance which is aesthetically pleasing.

GUIDEWAY DESIGN



Heights to 65 feet

The monorail guideway represents the state of the art in structural design and material technology. The design features long-span, prestressed, post-tensioned beams with curved haunches, precast columns and cast-in-place substructure - a combination that creates a technically exciting and highly functional structure. Close attention to tolerances for riding comfort, smooth geometry, and few disruptive discontinuities provide an aesthetically pleasing structure, totally compatible with its surroundings. Such tapered precast concrete columns support the monorail beamway to a maximum height of 65 feet at The Walt Disney World Resort, and higher where required for other applications. The 26-inch-wide prestressed girders (33.5 inches for the Mark XXI) are typically 100 to 110 feet in length, with midspan depths of 48 inches, and depths at the parabolic haunches of about 80 inches. Equivalent dimensions for the Mark XXI are 58 inches at midspan and 96 inches at the haunches. Each beam girder is cast with a hollow center core to keep its weight under 60 tons.

Highways too!

Spans to 110 feet

The beams can be produced with a wide variety of vertical and horizontal curvatures and variable super elevation. Accurate prestressing ensures zero camber for the guideway girders. Once in place, post-tensioning allows final alignment of segments of the beamway to reduce any remaining discontinuities. In a quarter of a century of service in California, Washington and Japan, monorail guideways have been unharmed by seismic activity.

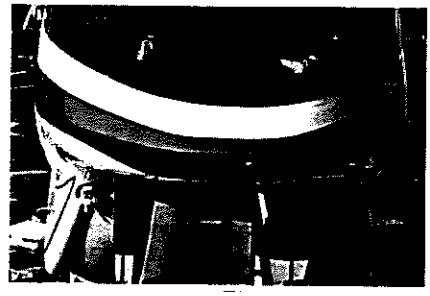
Monorail trains can operate on twelve per cent (12%) grades without any problem, even in the severe rain storms experienced in Southern California.

The beamway provides electrical power to the trains through a 600-volt DC bus bar (750 volts for the Mark XXI) affixed to the lower sides of each beam. The bus bar is fed from separate power rectifier stations along the beamway.

Monorail switching is accomplished by three types of switches: pivot, beam replacement and segmented, with TGI design improvements reducing the switch time to only about 15 seconds, lock-to-lock. Maintenance area and off-line switching use a 'pivot' segment of beam. On-line switching incorporates a 'beam replacement' switch which allows high-speed operations through the switch. In over sixteen years of operation at Walt Disney World, the pivot and beam replacement switches have never had a switch failure. The segmented monorail switches now in use in transit revenue service in Japan also operate efficiently, regularly and frequently.

The photographs on the following pages are typical applications of the TGI Monorail Guideway which has been in service since 1971.

Monorail Switch (Beam replacement type)



26-inch-wide beamway

The efficient "modular" approach to monorail guideway construction provides for a high level of quality control and the lowest possible cost.

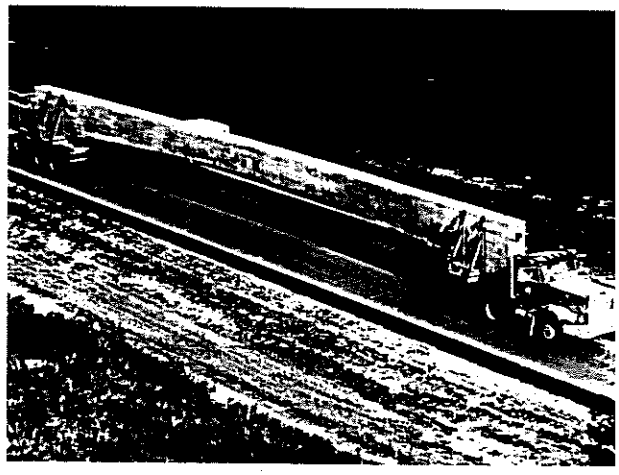
REMOTE CASTING YARD

Beams and columns are all precast in a remote casting yard designed for assembly line production of the major monorail guideway elements. Carefully controlled conditions ensure that tolerances are maintained and material wastes are minimal. The concrete beams and piers are cured at this remote facility before installation.

Quality control is easily and consistently achieved.

MONORAIL BEAM TRANSPORTER

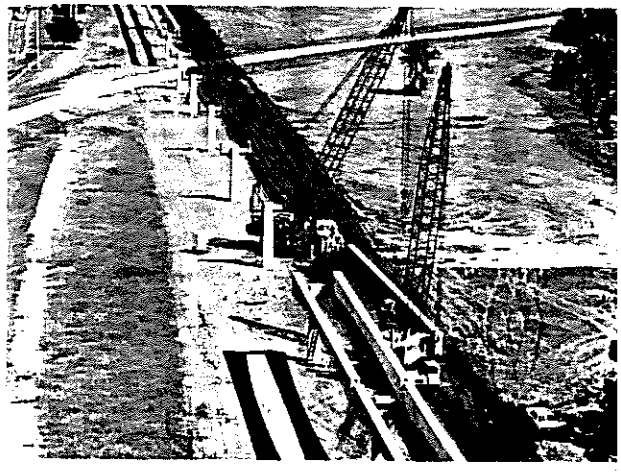
Completed monorail beams and columns are transported to the construction site by "hook-and-ladder" type transporters. These vehicles can operate over normal highway routes and minimize disruption caused by traditional formwork and concrete pouring in congested construction areas.

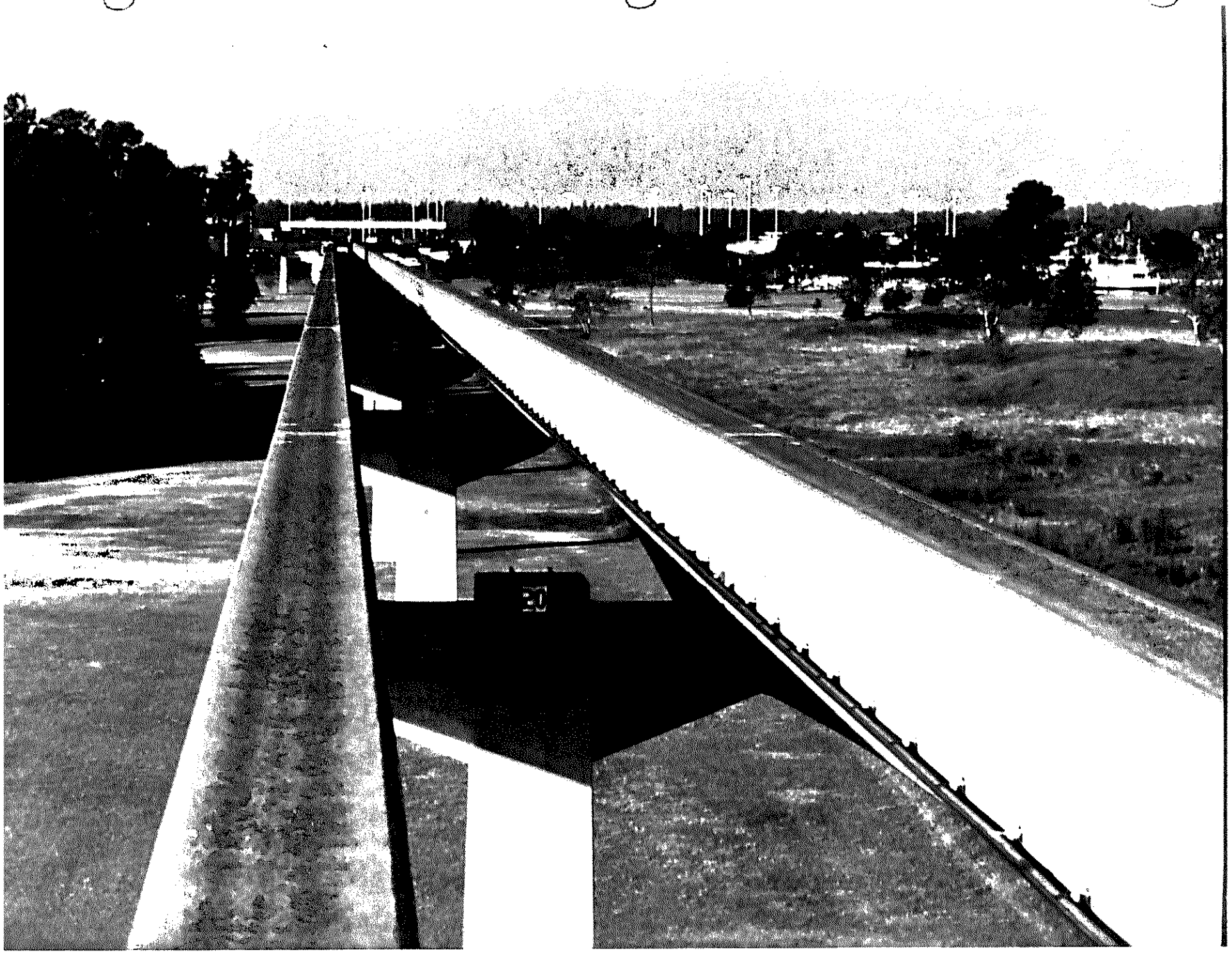


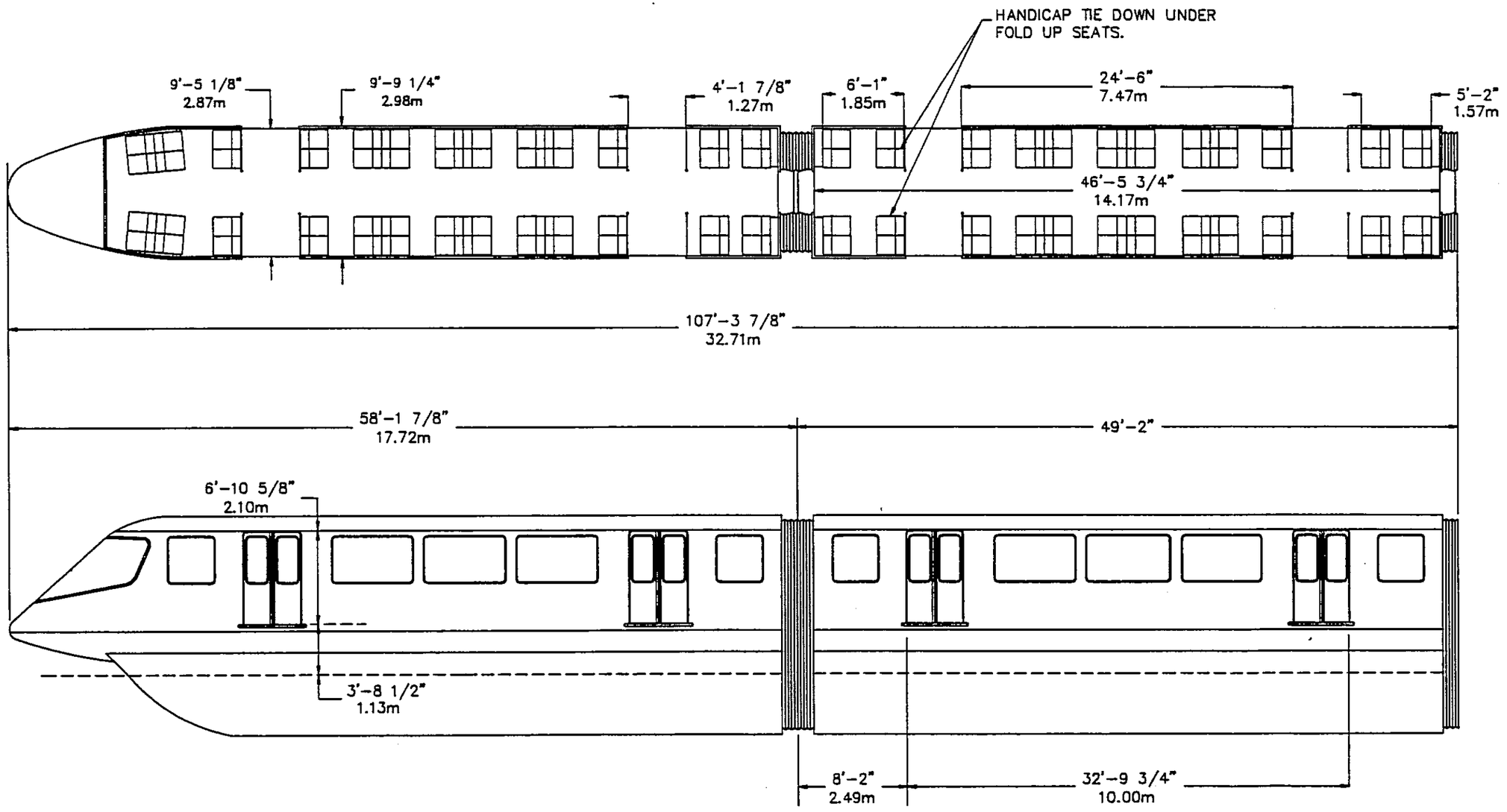
MONORAIL BEAM PLACEMENT

Guideway elements delivered by the transporters are quickly lifted into place by cranes. Final adjustments and alignment checks are made after post-tensioning of six-beam sections.

Actual installation can be achieved in periods likely to minimize interference in neighborhood traffic patterns.







MARK XXI MONORAIL

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Route Description

ROUTE REQUIREMENTS

The alignment described herein is based on the requirement to provide direct service from Woodland Hills/Canoga Park to Union Station in downtown Los Angeles. The western portion of the alignment from Woodland Hills to the Universal City area is to utilize the Ventura 101 Freeway corridor. This segment is similar to the Ventura Freeway light rail alignment alternative developed by the Los Angeles County Transportation Commission (LACTC).

From the intercept point of the proposed light rail alignment along the Hollywood Freeway at Universal City, we have conceptually developed an alignment utilizing the Hollywood Freeway corridor directly to the Union Station terminal located on the north side of the Freeway. At this terminal, transfers can be made to the Wilshire Boulevard Metro Rail line (Long Beach Light Rail line transfer from Metro Rail at 7th & Flower), local buses, AMTRAK Commuter Trains and to other future monorail or light rail lines serving the Pasadena and Golden State Freeway corridors.

General Route Description

After review of the light rail alignment proposed by the LACTC for the western section of the route from Canoga Park to Universal City, we endorse, in general, the proposed alignment for application of either of the TGI Mark VI or Mark XXI Monorail Systems. This application of the route, therefore, is applicable to both monorail alternatives. The entire route will be on a grade-separated and exclusive alignment. Further, we feel the space and cost efficient design, capacity, and operating speed of the Monorail System optimizes the use of the corridor as a major transportation artery in the San Fernando Valley in the near term and far into the twenty-first century.

Of great importance to the success of this proposed transportation service is a direct route, without mid-trip mode transfer, to downtown Los Angeles' employment and commercial centers. We have selected the Hollywood Freeway corridor as being the most direct route and the one having minimal adverse impact on the more densely developed neighborhoods in the proximity of central Los Angeles and Hollywood. This section of the route will be on a grade-separated and exclusive alignment with the one possible exception of an at-grade, exclusive alignment at a proposed station in the median of the Hollywood Freeway. We suggest a minimum number of stations in this section of the route which is currently served by an extensive bus network and will, in the future, be served by Metro Rail and feeder bus service. This feature of the route will minimize trip time between the San Fernando Valley and Union Station thus increasing the attractiveness of the service. The stations proposed along this segment of the route

are ideal intermodal transfer points along major north/south arterials which serve or provide access to other activity centers in the Los Angeles basin.

The proposed alignment for the Monorail System will be approximately 26.4 miles in length, including 1.8 miles along Canoga Avenue, 13.0 miles along the Ventura 101 Freeway, and 11.6 miles along the Hollywood Freeway (see map on following page). There will be nineteen (19) stations along the alignment, fourteen (14) of which were proposed for the LACTC light rail alternative and five (5) of which would be along the Hollywood Freeway segment at Universal City, Highland Avenue, Western Avenue, Vermont Avenue, and Union Station. The final number and location of stations is dependent on a detailed analysis of potential ridership.

ROUTE SEGMENT DESCRIPTIONS

Canoga Avenue Segment - Alternative 1

This segment alternative would run from the Train Storage & Maintenance Facility (TSMF) at Vanowen Street along Canoga Avenue to Victory Boulevard on a dual lane aerial guideway on the east side of Canoga Avenue. As the guideway crosses Victory Boulevard, it would cross to the median of Canoga Avenue and continue in this configuration to Burbank Boulevard where it would cross back to the east side of Canoga Avenue for its approach to the Ventura Freeway segment.

Stations along this segment are all aerial and are proposed at Vanowen, Victory and Oxnard. Since the Vanowen and Victory Stations can be placed on the east side of Canoga Avenue, we envision minimal visual impact and no adverse impact to the existing traffic lanes on the major thoroughfares. The Oxnard station would require a side platform station configuration as an integral part of the guideway support structure. With a total width requirement of approximately 23 feet for the Mark XXI (or 20 feet for the Mark VI) including the space required for the vehicles, plus approximately 24 feet required for the platforms, the entire station would extend over a substantial portion of the roadway below. There is a possibility of traffic lane impacts and most certainly a visual impact. We submit that through diligent attention to design solutions these adverse impacts can be mitigated.

Canoga Avenue Segment - Alternative 2

This segment alternative would run from the TSMF at Vanowen Street along Canoga Avenue to Victory Boulevard on a dual lane aerial guideway on the east side of Canoga Avenue. As the guideway crosses Victory Boulevard, the inbound guideway would cross to the west side of Canoga Avenue while the outbound guideway would remain on the east side of Canoga Avenue. The two single lane guideways would run on each side of Canoga Avenue to the south side of Burbank Boulevard where they would rejoin as a dual lane guideway on the east side of Canoga Avenue for the approach to the Ventura Freeway segment.

Stations along this segment are all aerial and are proposed at Vanowen, Victory and Oxnard. Since the Vanowen and Victory Stations can be placed on the east side of Canoga Avenue, we envision minimal visual impact and no adverse impact to the existing traffic lanes on the major thoroughfares. The Oxnard Station would be side platform stations on each single lane guideway. To maintain

Los Angeles, California

LEGEND

CANOGA AVENUE SEGMENT

VENTURA 101 FREEWAY SEGMENT

HOLLYWOOD FREEWAY SEGMENT

a tangent guideway, the platforms would encroach over existing private property. This particular configuration could possibly facilitate joint development opportunities with skywalks connecting the station platforms with commercial buildings or future multi-use developments (office, residential and retail complexes). We envision minimal adverse impact either visually or to the existing traffic lanes, so consequently, we strongly encourage the County to seriously consider this alignment.

Ventura Freeway Segment

The general alignment proposed for this segment by the LACTC for the light rail line is appropriate for application of the monorail technology. There may be some opportunities for variations in the alignment in specific locations where costs can be reduced through the use of alternative design solutions. One such location is the depressed cut section of the Ventura Freeway between DeSoto and Winnetka Avenues where an aerial structure can be placed in the embankment of the Freeway thus avoiding the costs of retaining walls and encroachment into future lane expansion right-of-way in the freeway.

Stations along this segment are all aerial and are proposed at DeSoto, Winnetka, Tampa, Reseda, White Oak, Hayvenhurst, Sepulveda, Van Nuys, Woodman, Coldwater Canyon, and Laurel Canyon.

Hollywood Freeway Segment

The northernmost section of the Hollywood Freeway segment would be similar to the LACTC proposed light rail alternative as it leaves the Ventura Freeway segment and crosses from the west side of the Hollywood Freeway to the east side in the proximity of Vineland Avenue. The Monorail route would continue on aerial guideway south of Vineland Avenue along the east embankment of the freeway to the Universal City Station. Proceeding south from Universal City, the aerial guideway would remain on the east side of the Hollywood Freeway through the Hollywood Hills cut until reaching the Highland Avenue Station.

As the aerial guideway proceeds south, it remains in the east embankment of the freeway, passing over the cross arterials which overpass the freeway. The Western Avenue Station, located on the east side of the freeway, can be brought down to freeway level by expanding the existing bus lane station right-of-way into the embankment. Another possible station configuration for the Western Avenue Station which could possibly decrease the need for property takes, would be an over/under guideway configuration where the outbound guideway would pass over Western Avenue while the inbound guideway would pass under Western Avenue at freeway level utilizing the existing bus lane station right-of-way.

The guideway continues within the east embankment of the freeway to the vicinity of Normandie Avenue where it crosses the outbound freeway lanes to the median of the freeway. The aerial guideway begins its decent into the widening freeway median until it enters the Vermont Avenue Station in an "at-grade" (freeway level) configuration. The Vermont Avenue Station, as described, offers the opportunity of widening Vermont Avenue over the freeway/Monorail Station complex for off-road bus bays within the fare zone of the Monorail station, thus creating a truly integrated intermodal transfer facility.

From the Vermont Avenue Station, the guideway proceeds south, gaining elevation until it crosses the outbound lanes of the freeway in the vicinity of Silver Lake Boulevard and reenters the east embankment alignment. The guideway generally remains in the freeway's east embankment but at times runs parallel to Bellevue Street along the freeway embankment's crest. As the freeway enters the depressed cut section, the guideway remains above the cross street elevations until it reaches Union Station, where it turns north to enter its terminal behind the station's concourse. Exact routing through this transportation complex will be determined after more detailed study.

Stations along this segment are Universal City, Highland, Western, Vermont, and Union Station. All stations are aerial with the exception of Vermont Avenue which is at freeway elevation (at-grade) and the possibility of a split aerial/at-grade station at Western Avenue.

Train Storage & Maintenance Facility

The Train Storage and Maintenance Facility (TSMF) is located on the same parcels of land as detailed in the LACTC light rail alternative. The site is approximately twelve (12) acres in size and is bordered by Canoga Avenue to the west, Deering Avenue to the east, Sherman Way to the north and the Los Angeles River to the south. The TSMF outbound terminal site is ideal for dispatch of trains for the morning peak to Los Angeles and for receipt of trains from Los Angeles at the end of the service day. After a more detailed analysis of potential ridership and directional flow, it may prove to be financially feasible to install a small mid-day train storage facility at the Union Station terminal for receipt of morning peak hour trains and dispatch of evening peak hour trains, thereby, eliminating unnecessary train movements along the route.

The TSMF would have all trains on the second level of the facility to accommodate the aerial configuration of the guideway at the Vanowen Station. Although partial use of the space on the ground level would be required for storage of parts and crew facilities, there is ample space available for joint development or rental of possible retail space typical of the current retail development in the vicinity.

System Operations

From preliminary ridership data prepared for the LACTC light rail alternative, it was estimated that the the maximum ridership demand during the peak period for the Year 2010 would be 3,921 passengers. This number reflects the disadvantage of a mid-trip intermodal transfer to Metro Rail at Universal City and would likely increase for the through service (without transfer) to Union Station provided by the monorail system. Potential ridership levels for the through service will be developed after more detailed analysis. TGI is confident that the actual ridership for this corridor has the potential to greatly exceed the LACTC estimate.

The service required to meet the LACTC estimate is 4-car Mark XXI trains on 8-minute headways (or 6-car trains on 5-minute headways for the Mark VI). With fully automated operation, 2-car trains on 4-minute headways can be operated without cost penalty for additional staff if more frequent service is desired. The

Take this out - no change in car base consists

system should be designed to accommodate 4-car trains operating on one-minute headways, however, yielding a maximum potential capacity of about 32,000 passengers (based on 4 passengers/m^2) in the peak direction during the peak hour for the Mark XXI. For the Mark VI, the equivalent figure is about 19,000 passengers per hour for the same station length. The operation of the entire route (Vanowen to Union Station) would require a total fleet of 13 Mark XXI Trains or 19 Mark VI Trains, including spares.

Trains can achieve a maximum speed of 70 mph where alignment geometrics and station spacing permit and can operate without performance degradation on gradients of up to 7%. All stations will have high-level, 225 foot long platforms for direct boarding of and alighting from the trains.

System Costs

BASIS OF ESTIMATE

The estimated conceptual costs are based on those elements of the system to be provided by the monorail system contractor (franchisee), i.e., vehicles; control and communications systems; rectifier substations and guideway power distribution system; a completely outfitted TSMF including a Central Control Facility; guideway beams, support columns, crossheads and foundations; and basic station structures including elevators for handicapped accessibility to the platforms.

Those elements not included in the estimate are any costs for right-of-way acquisition and utility relocation, any costs resulting from third party agreements, system signage/information systems, station parking facilities and other system amenities such as landscaping and special station architectural treatments, all of which are dependant upon site-specific policy and alignment decisions yet to be made by the County.

ESTIMATED COSTS - - MARK XXI MONORAIL SYSTEM

The estimated conceptual system cost was developed for the entire 26.4 mile route from Vanowen Station in Canoga Park to Union Station in downtown Los Angeles for both alternatives described heretofore for the Canoga Avenue segment.

For the Alternative 1 alignment option, the conceptual level estimated cost for the Mark XXI Monorail System is about $920 million. For the recommended Alternative 2 alignment option, the conceptual level estimated cost is only about $5 million to $10 million more.

If the monorail system is truncated at the Universal City Station, thereby approximating the LACTC's Ventura 101 Freeway alternative alignment, the conceptual level estimated cost is approximately $575 million. This compares favorably with LACTC's previously proposed $500 million commitment to the San Fernando Valley segment for a light rail transit alternative.

ESTIMATED COSTS - - MARK VI MONORAIL SYSTEM

The equivalent conceptual cost estimates for the Mark VI Monorail System are approximately $715 million for the entire 26.4 mile route, and about $465 million for the 16.3 mile Ventura Freeway/Canoga Park segment, for an average per mile cost of $28.5 million, including the vehicle maintenance facility. This figure is slightly lower than the average per mile cost of LACTC's Los Angeles/Long Beach light rail transit project. It is important to recognize, however, that these monorail cost estimates do not include the items such as right of way and utility relocation listed above under "Basis of Estimate".

Project Delivery Options

PROJECT DELIVERY REQUIREMENTS

The Project delivery (implementation) method for the downtown Los Angeles to San Fernando Valley project must secure through a competitive and public process the desired and most appropriate system technology, efficiently coordinate the design, specification, procurement and installation of equipment, preparation of the right-of-way, construction of facilities, and accomplish system operation.

In order to achieve these objectives, it is appropriate to examine the alternative project delivery approaches as well as the roles and responsibilities of the system supplier team and the County.

PROJECT DELIVERY APPROACHES

There are several alternative approaches available through which the project can be implemented. Each alternative has distinct advantages and disadvantages based on the desired project implementation timeframe, available financial resources and the assignment of responsibilities.

The Traditional Approach

The traditional approach, currently being utilized by the LACTC's LA/Long Beach Light Rail Project, is characterized through the use of architectural and engineering design contracts followed by a series of one-step low bid contracts and/or two-step competitive bid contracts for procurement and installation of equipment and construction of the facilities. It is used to develop specific contract documents to a level of detail to secure firm-price bids for each work element of the project.

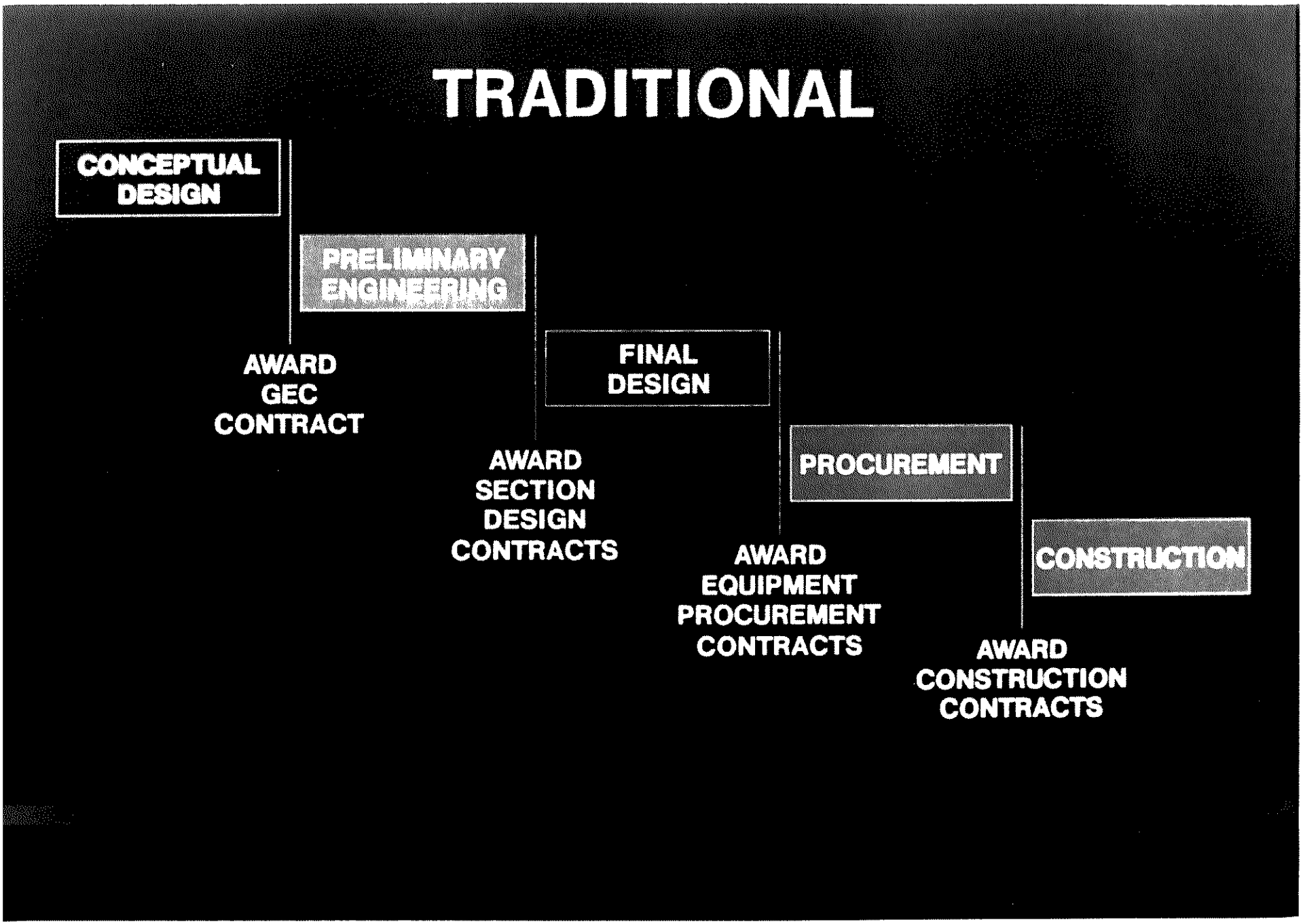
The primary advantage of this approach is that the County, through its engineer (agent), has close control over the project definition and specification and, apparently, control of the costs.

The disadvantages of this approach are significant when one considers that substantial cost savings can be realized when a system is designed and constructed in accordance with a supplier's standard and proven design and specifications. In addition, the traditional approach cannot maximize private financing due to the exclusive nature of the engineer's design contract and the manner in which work elements are packaged in small contract units. Generally, with this approach the only contract units for which private financing might become attractive (due to their high dollar value) are the vehicle and systems equipment procurement contracts.

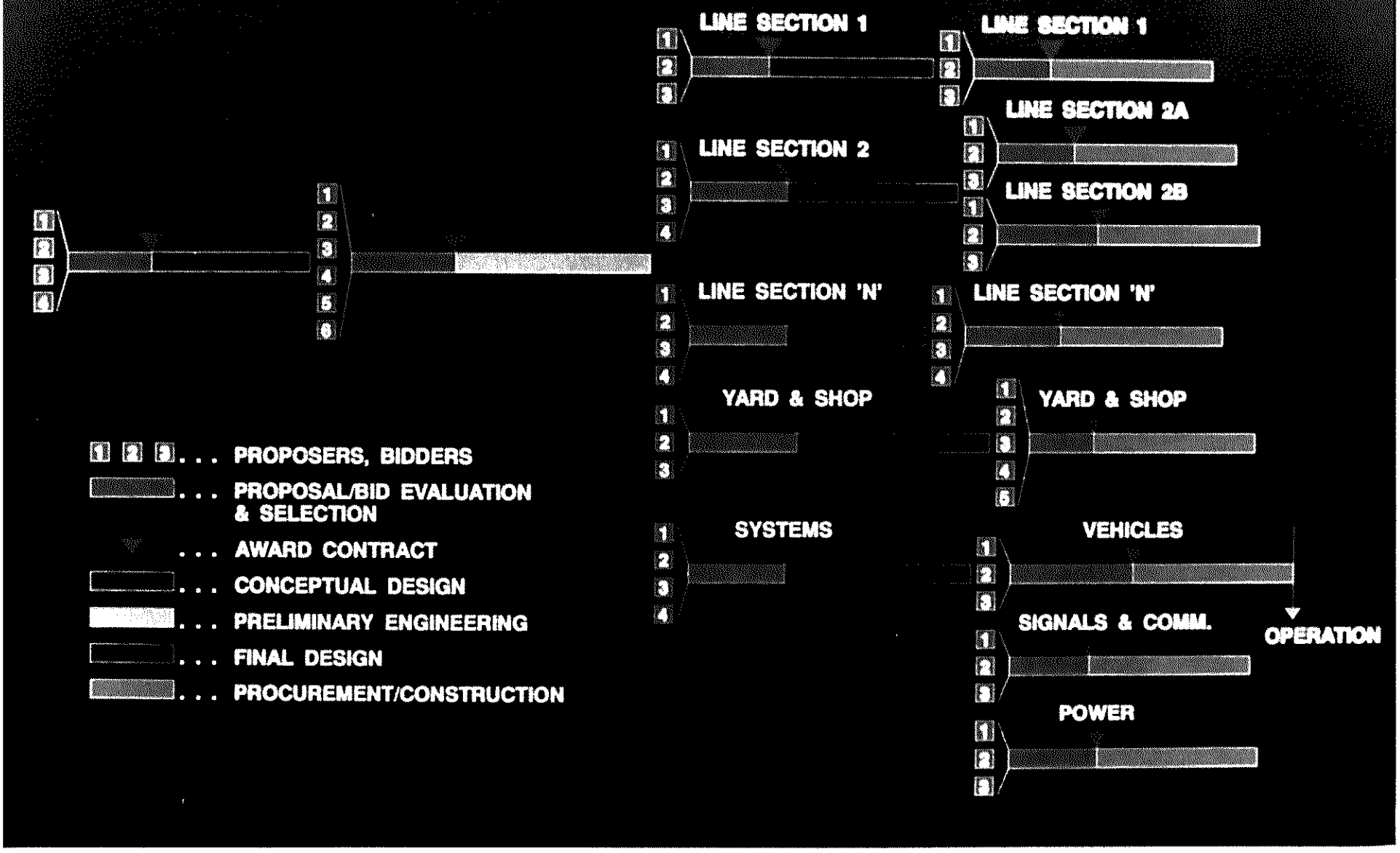
There are certain inherent schedule and cost disadvantages to the traditional approach. For example, work cannot be released for fabrication or

construction until design is completed to a level of detail required to obtain a firm-price bid. In addition, each contract unit must be placed into a time consuming bid and award process. The risks to project progress during this process can be substantial if no responsive and responsible bids are received due to engineer imposed requirements which cannot be met either technically or from a business perspective. Another risk resulting from these requirements is that of the bids received being significantly higher than estimated, thereby escalating the project's projected costs. Finally, the traditional approach is not well suited to the proprietary transit technologies such as maglev or monorail, where the unique vehicle/guideway/subsystems interfaces are proprietary and/or highly interrelated.

In the traditional approach, some of the most critical responsibilities lie mostly with the County. For example, the County assumes the responsibility for all design coordination and interface management, both of which are critical in assuring the successful construction and operation of the system. It is this one important function in a multi-contract project, which without application of adequate resources by the client, has historically led to contractor claims and the issuance of numerous and costly change orders (see figures on the following pages).


TRADITIONAL
CONCEPTUAL DESIGN
PRELIMINARY ENGINEERING
AWARD GEC CONTRACT
FINAL DESIGN
AWARD SECTION DESIGN CONTRACTS
PROCUREMENT
AWARD EQUIPMENT PROCUREMENT CONTRACTS
CONSTRUCTION
AWARD CONSTRUCTION CONTRACTS

TRADITIONAL



The Modified Turnkey Approach

There are two options available under the modified turnkey approach, namely, the one-step or low bid turnkey approach and the two-step or competitive negotiated bid turnkey approach.

Prior to the initiation of either of these modified turnkey approaches, the County must achieve the following milestones in the project's development to insure that a uniform basis for bidding is established:

Step 1. Selection of a technology class.

Step 2. Design definition of the corridor and alignment.

Step 3. System performance requirements.

Step 1: The County, through its own feasibility analysis, must determine the technology class, namely to determine which of the Automated Guideway Transit (AGT)/Monorail, Light Rail Transit (LRT), or Heavy Rail Transit (HRT) technologies, is best suited to meet the community's requirements (environmental goals, aesthetics, neighborhood impacts, etc.), available financial resources (affordability analysis), and the desired system performance requirements.

The first corridor, Union Station to Woodland Hills along the Ventura Freeway 101, has been conceptually identified, in part, by the County. It would appear that there are several important community players who are unwilling to accept an at-grade LRT System within the Valley. Further, it could very well turn out that the freeway alignment becomes the only acceptable choice. It follows, then, that a fully grade-separated, automated technology could become the County's selection as proposed herein.

Step 2: Following the technology decision, it is necessary for the County to further define the corridor and the preferred alignment to a level of detail commensurate with perhaps a 20% to 30% level of design completion. Typical products of this level of design development are a mathematized alignment, typical cross-sections, design solutions for atypical locations, composite utility plans, geotechnical survey data, right-of-way delineation, and prototypical facilities designs. In addition, station locations and their requirements based on projected level of usage and mode split analyses must be established.

Care must be exercised during this design development process to insure that competition is maximized through the use of criteria which do not cause any one of the viable system suppliers in the chosen technology class to be eliminated. At this level of design completion, all salient system features must have been adequately defined to permit proposals to be submitted for completion of the system and for the County to commence utility relocation and right-of-way acquistion.

Step 3: Concurrently, system performance requirements such as initial and long-term system capacity, trip times, and future networking capability must be developed from the conceptual level requirements utilized during the feasibility analysis to a level which adequately defines train consists, fleet requirements, vehicle performance parameters, control, communications and power system

requirements, and an operations plan detailing operating policies, procedures and project operating costs.

The One-Step Modified Turnkey Approach

Upon the completion of the aforementioned three steps, the low bid modified turnkey approach is initiated through the public issuance of a Request for Letters of Qualifications from system supplier teams (consortia, joint venturers, etc.). Evaluation criteria are specified which are the basis for selecting a short list of contending candidates. It is paramount that these criteria include, at a minimum, the team's proposed system technology, experience in delivering projects of a similar nature or scale, the team's financial strength, the proven capability of the proposer's technology to meet the performance requirements set forth by the County, a conceptual cost proposal, and a financial plan.

After the short listed teams are selected, an Invitation for Bids (IFB) is issued based on the County's specifications which include facilities design at a 20% to 30% level of completion and the system performance requirements as previously outlined. The turnkey contract to complete design and construction of the system is then awarded to the lowest responsive and responsible bidder.

As previously stated, a substantial cost savings can be realized when a system is designed and constructed in accordance with a supplier's standard and proven design and specifications. The low bid modified turnkey approach can better achieve this cost savings objective over that of the traditional approach since it is the Contractor's integrated design which will be implemented as modified by the County's requirements.

Basic system definition provided by the County allows for a definitive bid with a reasonable contingency margin. However, on the downside, this process can lead to the submittal of an unrealistic low bid with the Contractor anticipating a high degree of change orders to recoup his potential losses. As a safeguard against unrealistic low bids being submitted, a schedule of unit costs should be required with each bid establishing a basis upon which changes in the definition of the project will be negotiated.

Since the basic system design elements have been developed during previous project applications, the amount of time needed for the applications engineering is considerably less than the final design process associated with the traditional approach. The fabrication/construction of standard system elements such as vehicles, guideway beams, and control systems can commence as early as the 60% design completion level milestone. This approach is timeline efficient, yielding an operable system segment within two years of delivery of a secured, cleared, and environmentally approved alignment.

In the low bid modified turnkey approach, the system contractor is clearly responsible for the delivery, in full operating condition, of a completed system. Matters of design coordination and interface management previously mentioned are responsibilities of the system contractor, thus leaving the County valuable time to negotiate all third party agreements, secure the rights-of-way, relocate all existing utilities and provide for all required permitting.

Since the low bid turnkey approach could lessen the County's control over the selection and control of the system design, the County may choose to engage

the services of a project manager to oversee the development of the design and the construction, acting as the County's agent. In this capacity, the project manager ensures conformance to minimum quality levels and evaluates claims and change orders.

The Two-Step Modified Turnkey Approach

The competitive negotiated bid approach is initiated in a manner which is identical to the one-step modified turnkey approach. A Request for Letters of Qualifications is publicly issued with clearly stated evaluation criteria for the purpose of selecting a short-list of qualified teams, after the initial three milestones are completed.

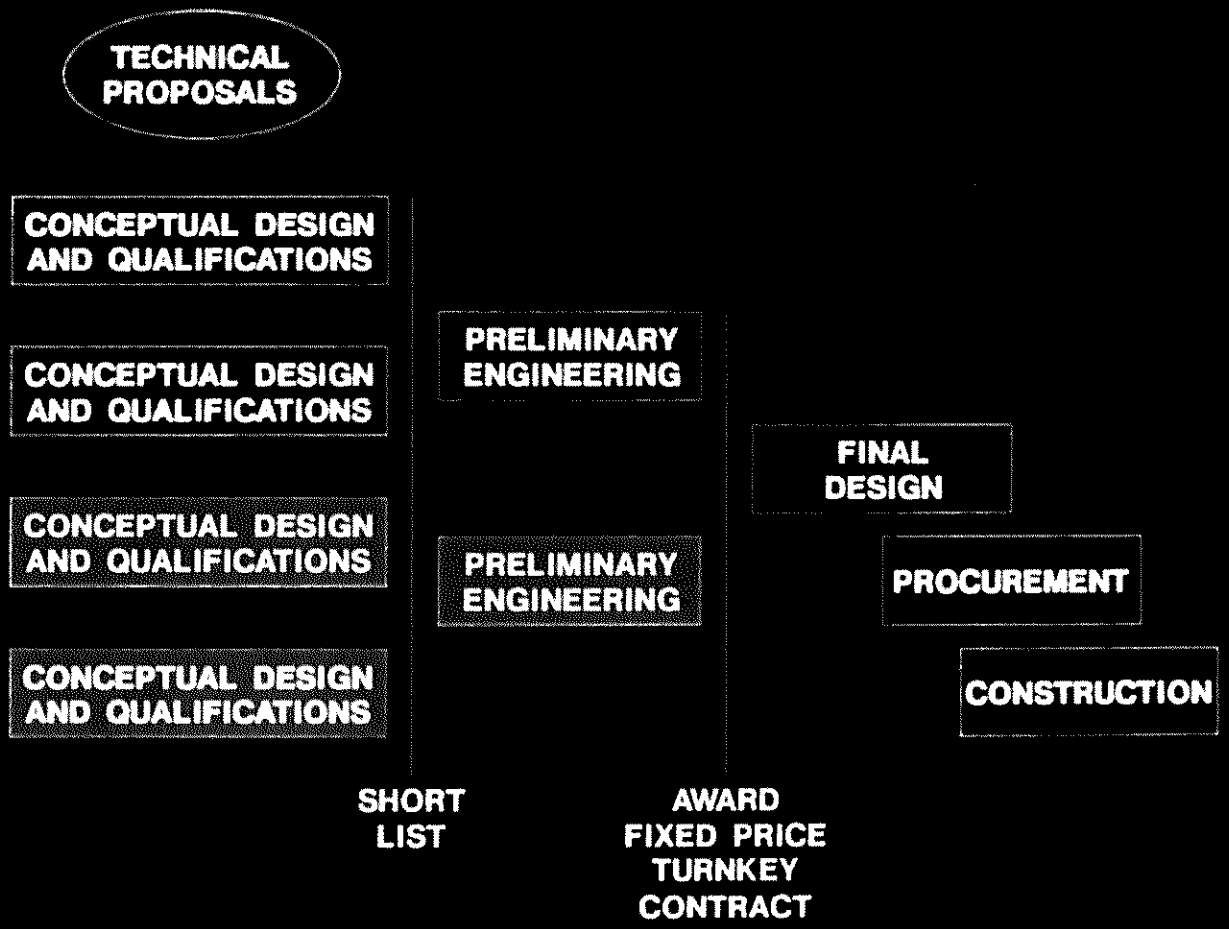
After the short-listed teams are selected, a Request for Proposals (RFP) is issued based upon the County's specifications, which include facilities design at a 20% to 30% level of completion and the system performance requirements as previously outlined. The proposals are to include both the technical description and approach of the proposed offer and the estimated price. Discussions and interviews are held separately with the proposers to allow the revision of the technical proposals based on the County's needs. When the technical proposals are deemed satisfactory by the County, the proposers are requested to provide their "best and final offers". Award is based on the highest ranked proposal in terms of technical quality, price, and other prescribed factors as may be required by the County.

It is apparent that a major advantage of the two-step modified turnkey approach is the ability of the County to further input technical requirements after submittal of the proposals and not to be restricted in accepting the lowest bid, thereby achieving a higher degree of quality and a better match to the County's requirements.

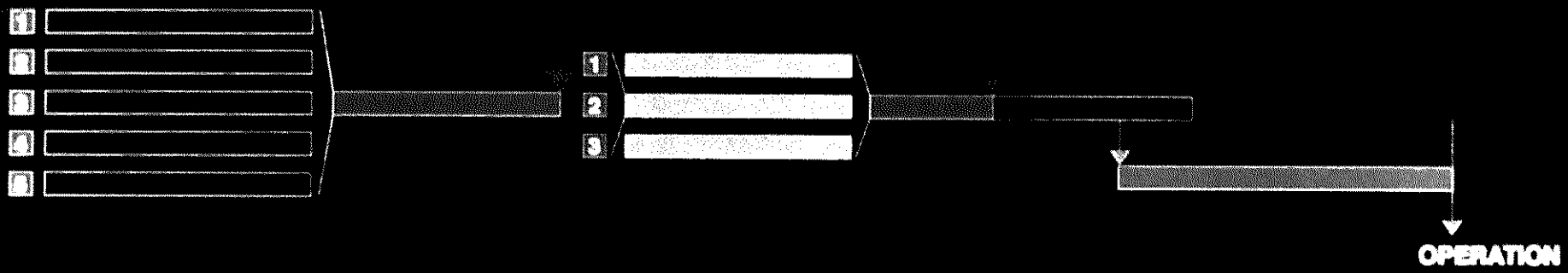
As with the one-step modified turnkey approach, substantial cost savings and scheduling efficiencies can be realized when a system is designed and constructed in accordance with a supplier's standard and proven design and specifications. The two-step modified turnkey approach further optimizes this cost savings objective and schedule advantages over the previously described approaches in that the design to be implemented will benefit from the Contractor's input into the technical requirements and thusly more closely approach his standard design.

Responsibilities in the competitive negotiated modified turnkey approach are identical to those outlined for the low bid modified turnkey approach. However, in the two-step modified turnkey approach, the County will have enhanced control over the selection of the system design and level of desired quality as compared to the one-step approach (see figures on following pages).

TURNKEY


TECHNICAL PROPOSALS
CONCEPTUAL DESIGN AND QUALIFICATIONS
CONCEPTUAL DESIGN AND QUALIFICATIONS
CONCEPTUAL DESIGN AND QUALIFICATIONS
CONCEPTUAL DESIGN AND QUALIFICATIONS
PRELIMINARY ENGINEERING
PRELIMINARY ENGINEERING
FINAL DESIGN
PROCUREMENT
CONSTRUCTION
SHORT LIST
AWARD FIXED PRICE TURNKEY CONTRACT

TURNKEY



1 2 3 . . . PROPOSERS, BIDDERS

. . . PROPOSAL/BID EVALUATION & SELECTION

. . . AWARD CONTRACT

. . . CONCEPTUAL DESIGN/QUALIFICATIONS (TECHNICAL PROPOSALS)

. . . PRELIMINARY ENGINEERING/BID

. . . FINAL DESIGN

. . . PROCUREMENT/CONSTRUCTION

The Phased Franchise Approach

The franchise approach is one in which the franchisee assumes the responsibility for system design and construction, and possibly for operations and maintenance, system financing, and even, joint land development. When applied as described below, this approach is characterized by a multi-phase process whereby each phase defines the activities and work scope for the next. No binding commitment beyond the scope of a particular phase need be made by either the County or the Contractor until the risks for each phase are understood, quantified and, therefore, limited.

The franchise approach is initiated after the County has completed a feasibility and technology study delineating, at a conceptual level, system performance requirements, a financial plan, a legal analysis, and a corridor impact analysis.

The first phase of the franchise process is the public issuance of a Request for Proposals/Qualifications with clearly stated evaluation criteria for the purpose of selecting a franchisee. It is paramount that these criteria include, at a minimum, the team's proposed system technology, experience in delivering projects of a similar nature or scale, the team's financial strength, the proven capability of the system technology to meet the feasibility study requirements set forth by the County, a conceptual cost proposal, and a financial plan.

The proposals are to include both the technical description and approach of the proposed offer, a preliminary cost proposal and financial plan, and a fixed price for the next phase of the process. Selection of the franchisee will be on a competitive negotiated bid basis. The County may exercise the option to contract with one or more of the proposers for the next phase of the process if it is deemed that sole selection of a franchisee at this time is not in the best interest of the County. It should be recognized that opting for more than one Contractor for the next phase carries a cost penalty and further delays the selection of a franchisee.

The next phase of the process consists of a detailed financial analysis, legal analysis, and technology application engineering. The financial analysis focuses primarily on the identification and evaluation of potential funding and revenue sources, evaluation of potential ownership structures, and identification and evaluation of funding mechanisms, including a cost/benefit and risk analysis of the available funding mechanisms.

The legal analysis focuses primarily on implementing the project within the laws of the Federal Government, the State of California, and the local jurisdictions. Germane to the development of a viable financial plan is a legal analysis of taxation laws and the effect that they may have on financing alternatives. Present statutory and regulatory laws will be reviewed, the potential need for legislative and/or regulatory change will be identified, and suggested changes presented to the appropriate governmental bodies for consideration.

The technology application engineering is performed to optimize the application of the selected technology within the selected corridor/alignment. The objective of this work is to develop the final system specification and costs for construction and operation. Also included in this work is the development of the project management plan for execution of the project, including schedules, a management information system, and project procedures.

Upon completion of this phase of the process, the County and the Contractor can negotiate a fixed-price contract for the final design/construction phase and establish ownership structure/operation agreements for implementation on a contractual basis at the conclusion of the final design/construction phase. Of course, if the negotiations are not successful, the County may choose to negotiate with the second-ranked team.

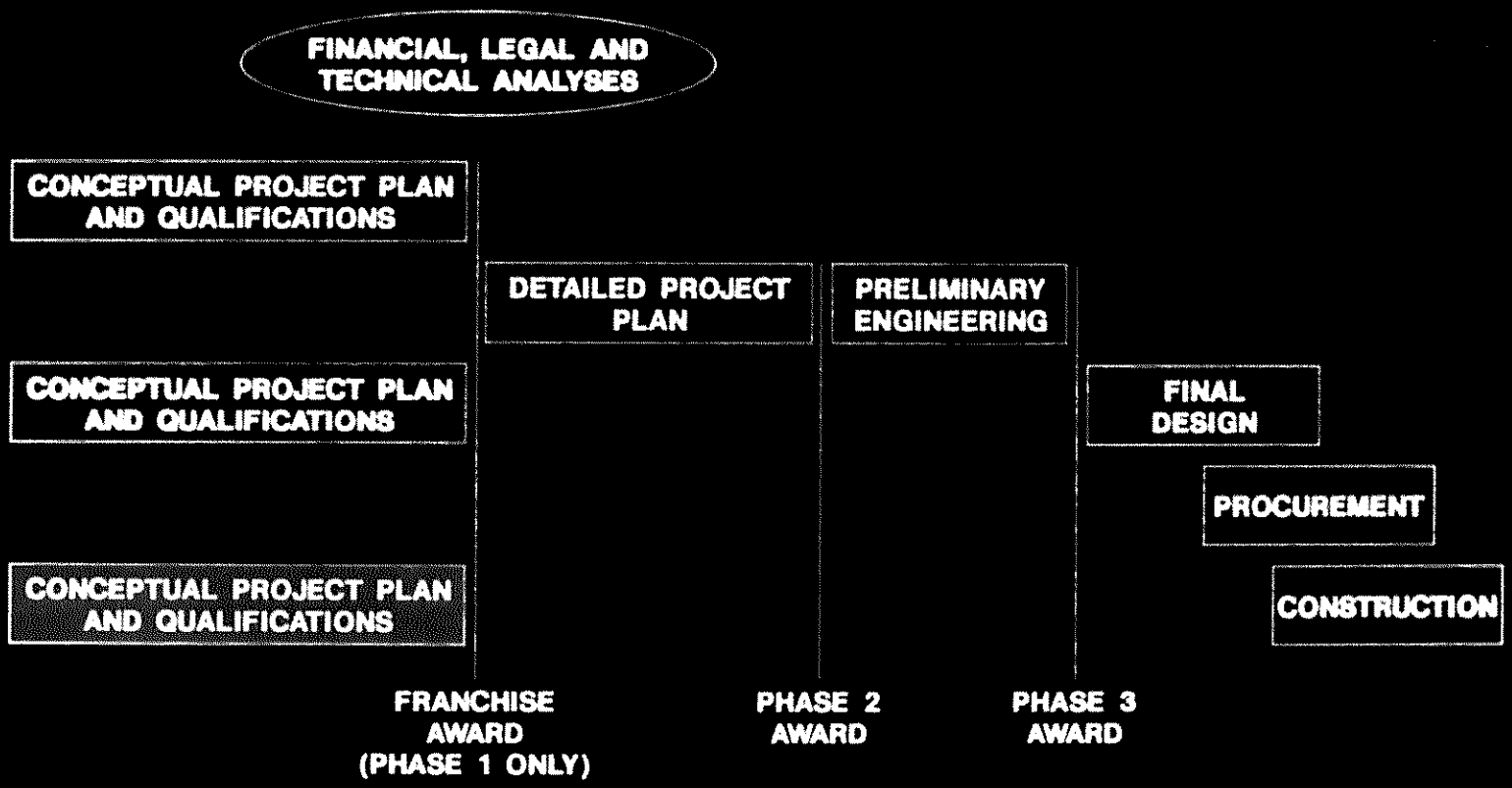
The advantages of the franchise approach are similar to the competitive negotiated bid or two-step modified turnkey approach as they relate to costs and schedule. An additional advantage in cost savings may be realized through lease/buy back pass throughs and other innovative financing strategies available to a franchisee in partnership with the County, including private/sector financing, value capture, advertising revenue, and so forth.

The franchise approach as outlined herein is one in which risks for all participants in the project are greatly reduced through the phasing approach, with associated analyses and risk identification completed prior to entering into a contractual agreement for the subsequent phase. With the phased approach, the County remains involved throughout the process as opposed to ceding all control to a franchisee at the end of the initial selection process.

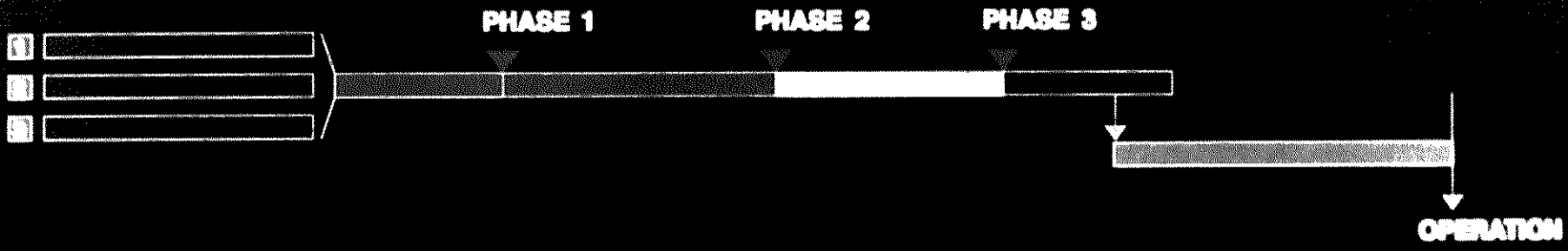
Although the assignment of responsibilities is similar to those cited for the two-step modified turnkey approach, responsibilities of all participants in the project will be determined prior to entering each phase of the franchise approach (the figures on pages 40 and 41 present the franchise approach).

The figures on pages 42 and 43 (subsequent to those regarding the phased franchise approach) present a comparison of project delivery options as they relate to the project implementation critical factors and percentage of private sector involvement.

PHASED FRANCHISE



PHASED FRANCHISE



... PROPOSERS, BIDDERS

... PROPOSAL/BID EVALUATION & SELECTION

... AWARD CONTRACT

... CONCEPTUAL PROJECT PLAN & QUALIFICATIONS

... DETAILED PROJECT PLAN: FINANCIAL, LEGAL, AND TECHNICAL ANALYSES

... PRELIMINARY ENGINEERING

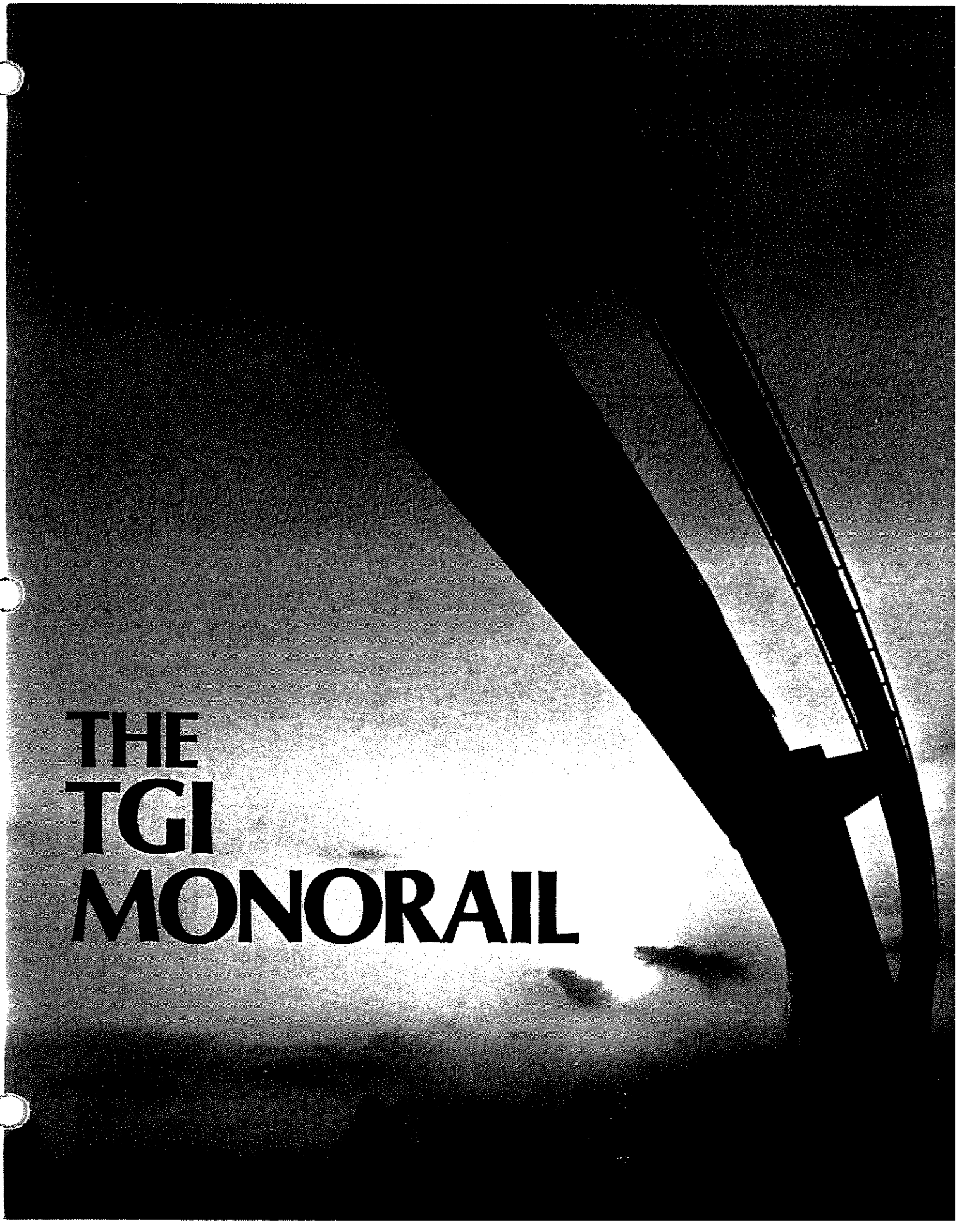
... FINAL DESIGN

... PROCUREMENT/CONSTRUCTION

LOS ANGELES/SAN FERNANDO VALLEY
MONORAIL SYSTEM

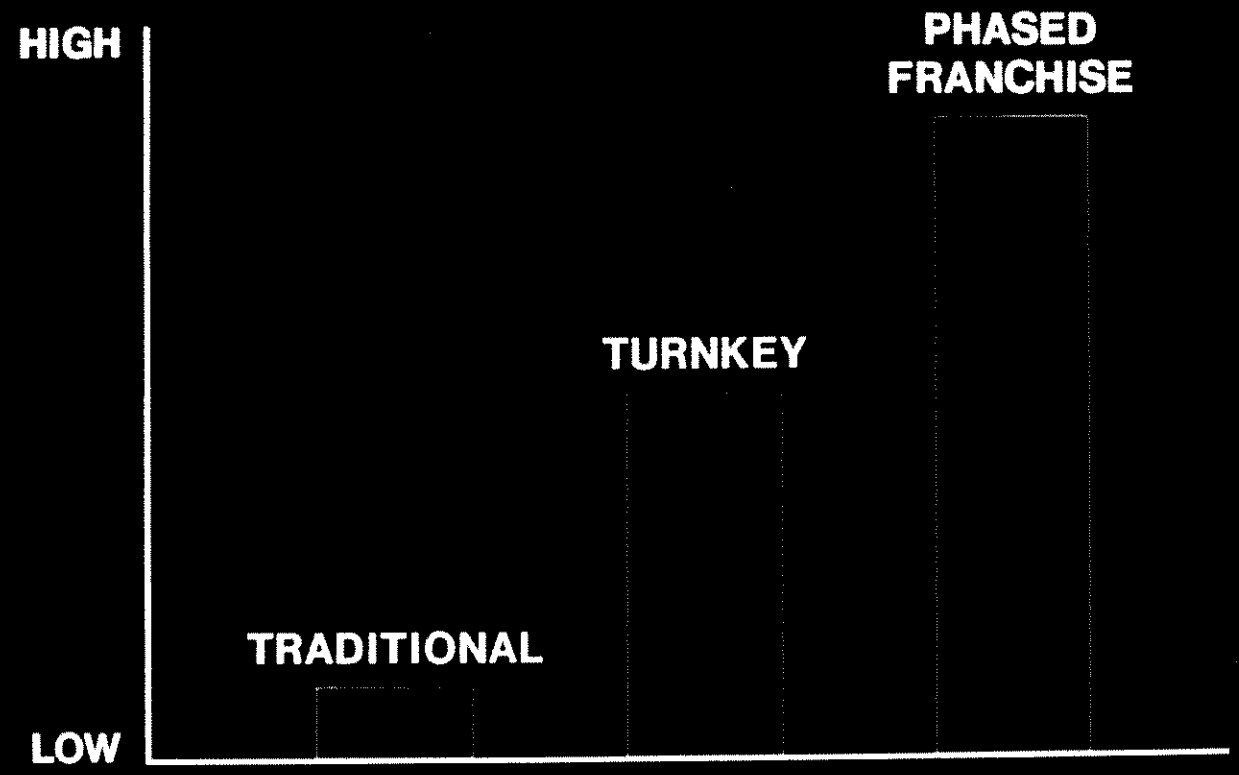
Presentation to:
Mr. Michael D. Antonovich
Supervisor, Fifth District
County of Los Angeles

February 17, 1988


THE
TGI
MONORAIL

COMPARISON OF PROJECT DELIVERY OPTIONS

PERCENT PRIVATE SECTOR INVOLVEMENT



COMPARISON OF PROJECT DELIVERY OPTIONS

CRITICAL FACTORS

	TRADITIONAL	TURNKEY	PHASED FRANCHISE
% PUBLIC FINANCING	H	M	L
TIME TO COMPLETE PROJECT	H	L	L
OWNER TECHNICAL RESPONSIBILITY	H	M	L
RISK OF EXCEEDING BUDGET	H	M	L
TOTAL COST	H	M	L

H = HIGH M = MEDIUM L = LOW

RECOMMENDED APPROACH

TGI recommends that the County consider the Phased Franchise approach for the Project Implementation method for the following reasons:

- Maximizes private sector financing. Responsibilities of all involved parties are dynamic and clearly defined.
- Phasing of the contract allows identification of all risks before entering into subsequent contractual agreements.
- County remains involved during the entire developmental stage of each phase leading to award of subsequent phase contracts.
- Time-efficient approach with the greatest potential for a minimum cost project.

TGI also recommends that to maximize public support for the project the County publicize, as early as possible in the implementation process, the potential for monorail usage.

Public support for or at the very least acceptance of the implementation of a transit system in the proposed corridor is essential, and it is already clear that communities along the route will actively and strongly resist any action which might adversely impact their 'quality of life'. Vehicle noise is an issue, but the visual intrusion of an ever-present guideway structure is of paramount importance.

No elevated structure can be invisible, but the monorail beamway is by far the least objectionable of all elevated guideways and can, in some areas, actually enhance existing structures. While some transit traditionalists have rejected the visually appealing monorail technology as 'fairground' in nature, poll after poll has shown an extraordinarily high level of public acceptance of and support for the construction of monorail systems in urban areas.

Research indicates that this support has little to do with the outstanding safety, reliability and operating cost record of the technology in the United States and Japan, but results from the beamway aesthetics, the 'futuristic' vehicle design, and a general perception that monorails could fit into existing road networks.

We recognize that the County knows much more than we do about the factors which will influence the potential for project implementation, but we respectfully suggest that the broad public appeal of the monorail could be used to generate a most helpful level of acceptance of and support for the transit project. If the County selects monorail technology, TGI will of course mount an intensive public awareness program in the earliest phase of project implementation.

Implementation Schedule

The implementation schedule of the County's fixed guideway project begins with the definition of the project's goals, identification of specific objectives, the preparation of an "order of magnitude" estimate of the project's cost, an assessment of available financial resources, identification of alternative financial sources, and selection of a project delivery option which best meets the County's requirements.

TGI has recommended that the County use the Phased Franchise Approach for project implementation for various reasons, one of which is its time-efficient schedule characteristic. The following project implementation schedule has been developed on the basis of the Phased Franchise Approach for a possible initial segment from Universal City to Canoga Park. If the contract were executed for the entire corridor, including the connection to downtown Los Angeles, a similar schedule should be achievable.

Activity	Time to Complete
• County completes conceptual feasibility and technology study resulting in the development of system performance requirements, a financial plan, a legal analysis, and a corridor impact analysis.	6 - 9 months
• County prepares and issues a Request for Proposals/Qualifications for selecting a franchisee.	1 - 2 months
• County receives and evaluates proposals, selects franchisee and awards Phase 1 contract.	3 - 4 months
• Contractor executes Phase I, resulting in a detailed financial analysis, legal analysis, and technology application engineering. County develops and completes all third party agreements. County commences right-of-way acquisition program. County awards Phase 2 contract, preliminary engineering, assuming acceptable results in Phase 1.	9 - 12 months

Activity	Time to Complete
• Contractor executes Phase 2, resulting in detailed right-of-way requirements and final costs for construction. County completes right-of-way acquisition.	10 - 12 months
• Contractor executes Phase 3 - final design/construction of first 16.3 mile segment between Vanowen and Universal City.	21 - 25 months
• Contractor completes pre-revenue System Testing and Training.	8 - 12 months
• Total time to complete 16.3 mile project between Vanowen and Universal City. Commence operations on this segment.	58 - 76 months

Development-Related Financing Sources

The LACTC has begun construction of the 18.6 mile Metro Rail Subway System. The Metro Rail is designed to link downtown Los Angeles with the San Fernando Valley by way of the Wilshire Boulevard corridor. A light rail line extending the Metro Rail transportation corridor to the San Fernando Valley cities between North Hollywood and Canoga Park is also planned. The LACTC has pledged nearly $500 million towards the construction costs of this San Fernando Valley light rail line with the funds coming from sales tax revenues, federal funds, State monies and other available funds.

The residents of the San Fernando Valley, while supporting the concept of a mass transit line connecting downtown Los Angeles, have objected to the impacts associated with the light rail technology. In response to this concern, TGI has been requested to review the application of the monorail technology in place of the light rail technology. The use of a monorail system to connect the Valley with Union Station in downtown Los Angeles both addresses the concerns of the residents and provides the Valley with a modern and technologically-advanced mass transit system.

One area which must be addressed in connection with the monorail technology is funding. The approximate total cost of constructing the Mark XXI Monorail System in the San Fernando Valley is $920 million (or about $715 million for the Mark VI), while the LACTC has only committed $500 million in funding to the project. There are several financing options which are potentially available to make up this shortfall. Due to the significant amount of business and residential growth which can be expected along this transportation corridor, however, the most viable means of meeting this shortfall may be to tap the "private sector" as a source of funds. In doing so, the following development-related financing sources may be considered:

Creation and/or Transfer of Development Rights

With the acquisition of land for the monorail line comes the acquisition of all the development rights associated with the land. The sale or lease of the air rights over or adjacent to the track or the stations is one of the least complicated ways of generating capital or income. Basically, the County could create additional wealth through zoning changes affecting those rights. These development rights could be transferrable and sold or leased. This approach is uniquely viable in high density areas such as Southern California where the cost of assemblage and gaining possession of development sites, as well as the lack of available land for development, creates a real market for development rights. If a developer wishes to construct a facility in the air space above a station, for example, or transfers the development rights and builds nearby, the rights for such

development may be purchased or leased with the lessor paying an appropriate annual rent. Leases could allow the County to enjoy the benefits of the long-term appreciation of the value of the land and still get the income stream from the lease payments to fund the Project.

The sale or lease of development rights associated with transportation facilities is a recognized financing source. For example, the Massachusetts Turnpike Authority collects $1.2 million per year under a 99-year lease for the air rights over the turnpike in Boston, and the State of California recently generated a gross annual return of $5.8 million for the lease of air rights over 389 parcels of land. With some creativity, the transferrable development rights ("TDRs") might be used as the security for a tax-exempt bond issue. Securities backed by pure air rights have been marketed on a limited basis. We would investigate going one step further and consider the TDR's as the primary security for debt.

Other rights or properties can similarly be sold or leased. The land and office space of the Santa Cruz Metropolitan Transit District in California are currently being leased to a private entity. In addition, several other transportation entities sell or lease fiber optics rights, that is, the right to develop a fiber optics communications system along the right-of-way of a project.

Joint Development

The County may consider the joint development of certain facilities in conjunction with the private sector. One joint development approach involves combining station design and construction with private development to raise capital for the monorail project. In this way, the location of a station can be combined with retail outlets, office space or other community facilities for the benefit of all entities involved.

In Southern California, a newly-created entity designed to promote the construction of transit stations (for example, a transit construction fund - "TCF"), could acquire land and then negotiate with a developer to build stations and terminals. The developer bears the cost of the transit facility in return for the ability to build a private facility on top of the station. In addition to the location benefits, the developer: (1) has access to tax-exempt financing for the construction costs; and (2) makes payments in lieu of taxes to the TCF rather than paying taxes to the municipality. These payments could be used to pay debt service.

The capital costs and service costs associated with the development also can be shared with the private sector. This type of financing has been used throughout the country. The Toledo Area Regional Transit Authority, for example, has obtained private funds in a joint-development project to support a downtown transit loop.

Tax Increment Financing

Tax increment financing is another alternative to capture the value added by the monorail system. To implement tax increment financing, a tax increment financing district is established in the general area benefiting from a transportation project and a base year for assessed property value determined. Property taxes collected in the base year are distributed to existing taxing

jurisdictions. Property taxes collected on any increase in property values above the base year would be dedicated to financing transportation projects. The use of tax increment financing has been utilized extensively in California including the financing of the San Francisco Embarcadero BART Station.

Special Benefit Assessments

Special benefit assessment financing is another option available to the County. This option is already being contemplated to raise a portion of the funds for the Metro Rail System. Special benefit assessment districts levy a charge against property within the district benefiting from the construction of new transportation projects. The creation of a special benefit assessment district generally requires a public hearing of the property owners in the district. These assessments must be levied in proportion to the benefit received by the property owner and may be used directly for operating expenses or leveraged as security for a bond issue. In Denver last year, the Colorado legislature created the Transit Construction Authority and empowered it with the authority to create a special benefit assessment district throughout the entire length of the 18-mile Southeast Corridor.

Zoning Bonuses

It may be possible to establish a special district in which, if a developer wants to construct or enlarge a building, he is required to make a payment to a specified transportation fund for the desired zoning variance or additional floor area ratio. The district would be established in the area of the transportation project and revenues generated would be dedicated to the monorail project.

Developer/Impact Fee

The taxing of new development in a specifically-defined area may be a potential source of funds dedicated to the monorail project. San Diego and San Francisco have each adopted similar programs which charge developers a fee to pay for the cost of expanding the area's infrastructure to accommodate the growth from development projects. These fees are generally based on the number of forecasted building units and are applied as one-time charges. It may be possible, however, to structure these fees as a payment stream or charge them as a percentage of gross revenues.

Conclusion

There are a number of development-related financing sources which could be utilized to fund the shortfall between the cost of the monorail project and the amount pledged by LACTC. In addition, TGI and Smith Barney have the ability to arrange various forms of private sector financing for all or part of the project, should long-term, traditional public debt financing be deemed undesirable. We would be pleased to provide additional information or analysis regarding the above alternatives, should it be helpful.