FINAL
ENVIRONMENTAL IMPACT REPORT

METRO GREEN LINE EASTERLY EXTENSION

Prepared for the

Los Angeles County Transportation Commission

and the

City of Norwalk

Prepared by

Myra L. Frank & Associates, Inc.

In association with

Gannett-Fleming West, Inc.
Meyer, Mohaddes Associates, Inc.
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Preface

This Final EIR incorporates changes to the text that have arisen from the public comment period. These changes are shown as ~~strikeout~~ or **bold** to indicate where information has been deleted or added.

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SUMMARY

S.1 INTRODUCTION AND BACKGROUND

In May 1991, the LACTC authorized the preparation of a Route Refinement Study and Environmental Impact Report for the easterly extension of the Metro Green Line. This extension would begin at the present Green Line eastern terminus at I-605 and Studebaker Road in the City of Norwalk and proceed eastward approximately 2.8 miles to the proposed Norwalk Transportation Center, located south of Imperial Highway and east of Bloomfield Avenue, also in the City of Norwalk. The Metro Green Line Easterly Extension is one of eight fundable candidate corridors included in the 30-Year Integrated Transportation Plan that was adopted by the LACTC in April 1992.

The Norwalk-to-El Segundo Metro Green Line project, currently under construction, will provide direct rail access from Norwalk to Los Angeles International Airport and the El Segundo employment area, and through its connection with the Metro Blue Line, the Green Line will provide regional light rail accessibility to downtown Los Angeles. The City of Norwalk is desirous of developing a Transportation Center that would integrate its local bus service with regional rail service, including the proposed commuter rail service from Orange and Riverside counties. The Metro Green Line Easterly Extension is a regional rail gap closure that would complete the linkages required for fully integrated regional rail service. The Orange County Transportation Authority is currently exploring the connection between ~~of~~ its urban rail system and the Los Angeles County urban rail network at the Norwalk Transportation Center.

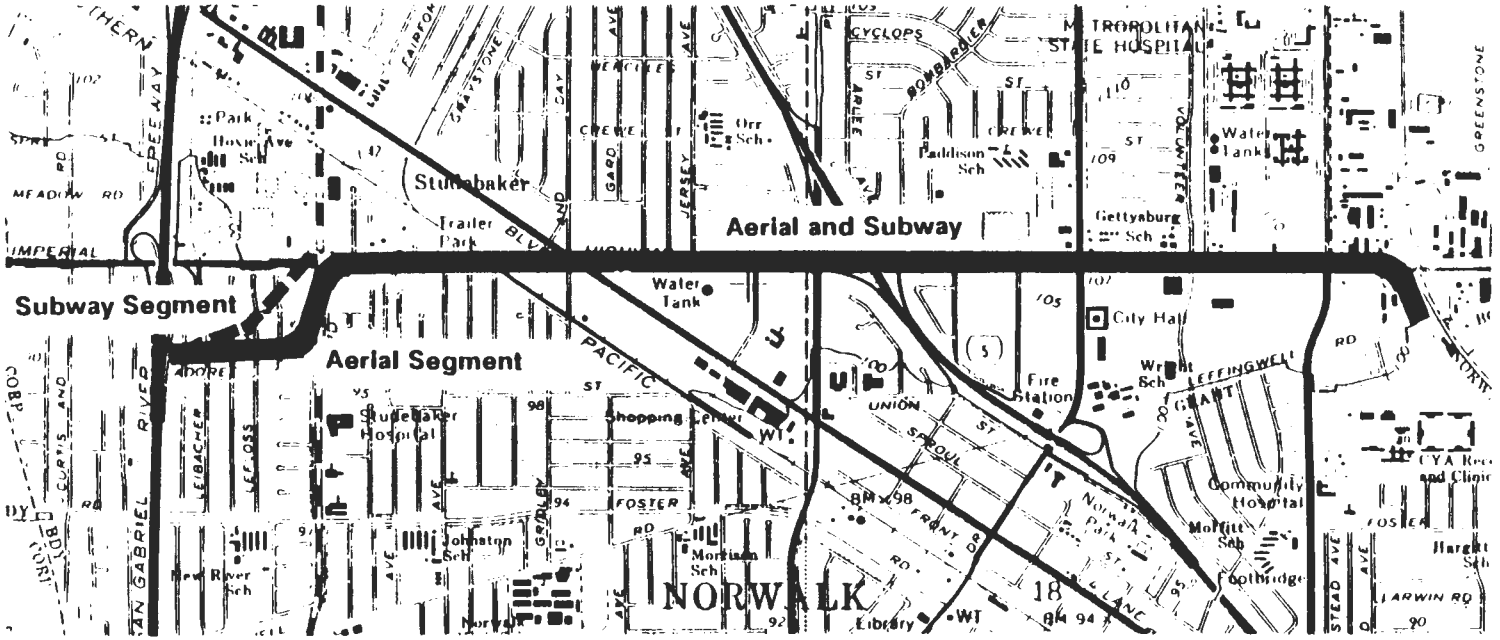
Three alternative routes were evaluated for the easterly extension, each of which would connect the easterly terminus of the Green Line at I-605 with the proposed Norwalk Transportation Center. After preliminary engineering evaluation of the three routes, which included extensive discussions on community, environmental and land use impacts, and inputs received at a public meeting, the preferred route was identified. This route would begin at the Green Line station east of I-605, proceed northward to Imperial Highway and east along Imperial Highway to the Norwalk Transportation Center.

Based on the results of the preliminary evaluation, the LACTC directed staff to analyze the impacts of both an aerial alignment and a subway alignment along the Imperial Highway route and document the analysis in the ~~DRAFT~~ Environmental Impact Report. These two alignments have been defined and are documented in the ~~D~~EIR.

S.2 PROJECT DESCRIPTION

S.2.1 Aerial Alignment

The aerial alignment (shown in Figure S-1) would begin in a cut approximately 20 feet below grade at the Metro Green Line station located west of Studebaker Road and south of Imperial Highway. It would proceed eastward a short distance and before reaching Studebaker Road, it would turn to the north. Before reaching Studebaker Road, the guideway would pass over



Source: Myra L. Frank & Associates, Inc., 1992.

Myra L. Frank & Associates, Inc.

Aerial and Subway Alignments

Figure S-1
Environmental Impact Report
Metro Green Line Easterly Extension

properties currently occupied by a church, an associated residence, and a community garden, all of which would be subject to potential acquisition by the project. At Studebaker Road, the guideway would be approximately 17 feet above grade at the bottom of the guideway structure and 23 feet above grade at the height of the bottom of the vehicles (top~~-or-~~of-rail). From its point of beginning to Studebaker Road, the concrete guideway would be supported on single vertical columns 7 to 10 feet in diameter. Column bents spanning Studebaker Road at an average spacing of approximately 130 feet would support the guideway as it crosses Studebaker Road.

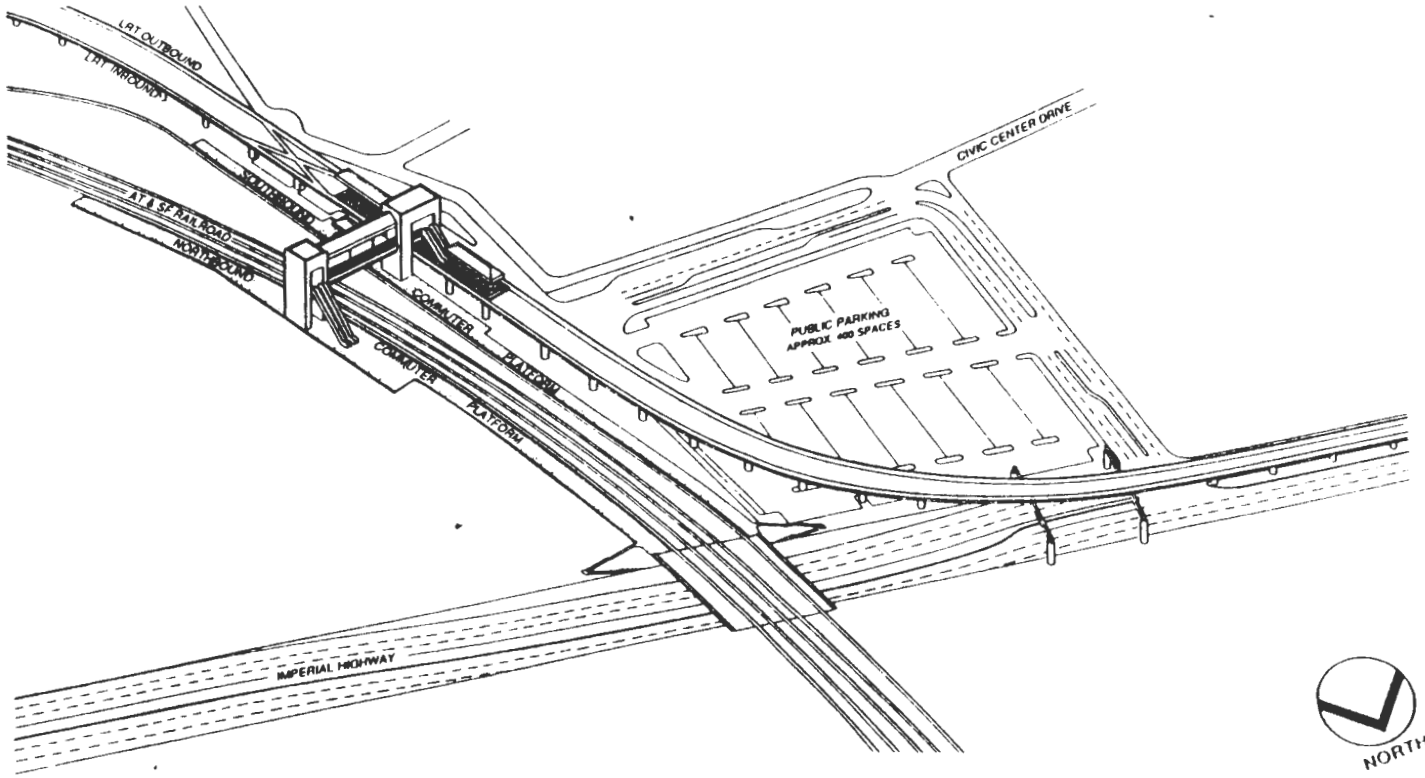
The guideway would continue across Studebaker Road, passing over a vacant commercial lot on the southeast corner of Studebaker Road and Imperial Highway, which would also be subject to potential acquisition. It would then turn east and proceed in the center of Imperial Highway, supported in the median on single columns at an average spacing of 130 feet.

Beginning on the west side of the Southern Pacific (SP) railroad tracks (at Longworth Avenue), the guideway would be supported on bents straddling Imperial Highway at an average spacing of 100 feet, continuing to the east of Firestone Boulevard. The guideway would rise ~~before the SP tracks~~ in order to clear **the SP tracks** ~~them~~ at a required height of 26 feet ~~over the SP tracks~~. After crossing the tracks, the guideway would descend to its typical height of 23 feet above grade (at top-of-rail).

Beginning just to the west of Woods Avenue, the guideway would again begin a rise, crossing Pioneer Boulevard at a height of approximately 50 feet, and continuing to rise to a final elevation of 67 feet above grade at I-5 . It is necessary to reach this height in order to clear the elevated HOV lanes that are likely to be located above I-5. Between west of Pioneer Boulevard and east of I-5 at Zeus Avenue, the guideway would be supported on bents at an average spacing of 130 feet. The guideway would again descend to its typical height of 23 feet in the vicinity of Kalnor Avenue.

From I-5 to Norwalk Boulevard, widening of Imperial Highway to the north beyond its right-of-way would be required to maintain the existing number of lanes and construct a median to locate the columns supporting the guideway. From Norwalk Boulevard eastward to Bloomfield Avenue, similar widening would be required on the south side of Imperial Highway. Between Zeus Avenue and east of Bloomfield Avenue, the guideway would be supported on single columns spaced 130 feet apart, on average.

East of Bloomfield Avenue, the guideway would begin a turn to the southeast, leaving Imperial Highway and entering a parcel owned by the City of Norwalk currently being used for maintenance purposes. Within this parcel, which is also the site of the proposed commuter rail station and the Norwalk Transportation Center, the guideway would terminate in an aerial station with associated surface automobile parking. Also to be provided at this location would be transfer facilities (stairs, pedestrian walkways, elevators and escalators) to permit transfer between proposed commuter rail service, the light rail facilities, **parking** and bus transit service. The station area is shown in Figure S-2.



Source: The Tanzmann Associates.

Myra L. Frank & Associates, Inc.

Proposed Station
at Norwalk Transportation Center
(Aerial Alignment)

Figure S-2
Environmental Impact Report
Metro Green Line Easterly Extension

S.2.2 Subway Alignment

The subway alignment (also shown in Figure S-1) would follow a path similar to the aerial alignment. It would begin at the Metro Green Line station at I-605 and proceed eastward, curving to the northeast under Studebaker Road and then curveing to the east to a position beneath the center of Imperial Highway.

A short distance after leaving the Metro Green Line station, the guideway would enter a tunnel portal. At this point the top of the tunnel would be 23 feet below grade. By the time Studebaker Road is reached, the top of the tunnel would be 28 feet below grade, and it would continue at this approximate elevation (top of tunnel at 28-35 feet below grade) until immediately east of Norwalk Boulevard. A vent shaft would be located immediately ~~west~~ **east** of I-5, in the open area between the ramps and the freeway. Between Norwalk Boulevard and Bloomfield Avenue, Imperial Highway changes grade while the subway alignment would continue at the same level. At Volunteer Avenue the top of the tunnel would be 11 feet below grade. At Bloomfield Avenue the top of tunnel would be 19 feet below grade.

Shortly after passing beneath Bloomfield Avenue, the subway alignment would begin a rise and, at the same time, a turn to the southeast. The light rail line would reach grade and exit the tunnel on the south side of Imperial Highway, within the Norwalk Transportation Center site, just before entering the station area. An at-grade station would be provided at the location of the Norwalk Transportation Center, together with surface parking and transfer provisions to bus transit and commuter rail services. The proposed station is shown in Figure S-3.

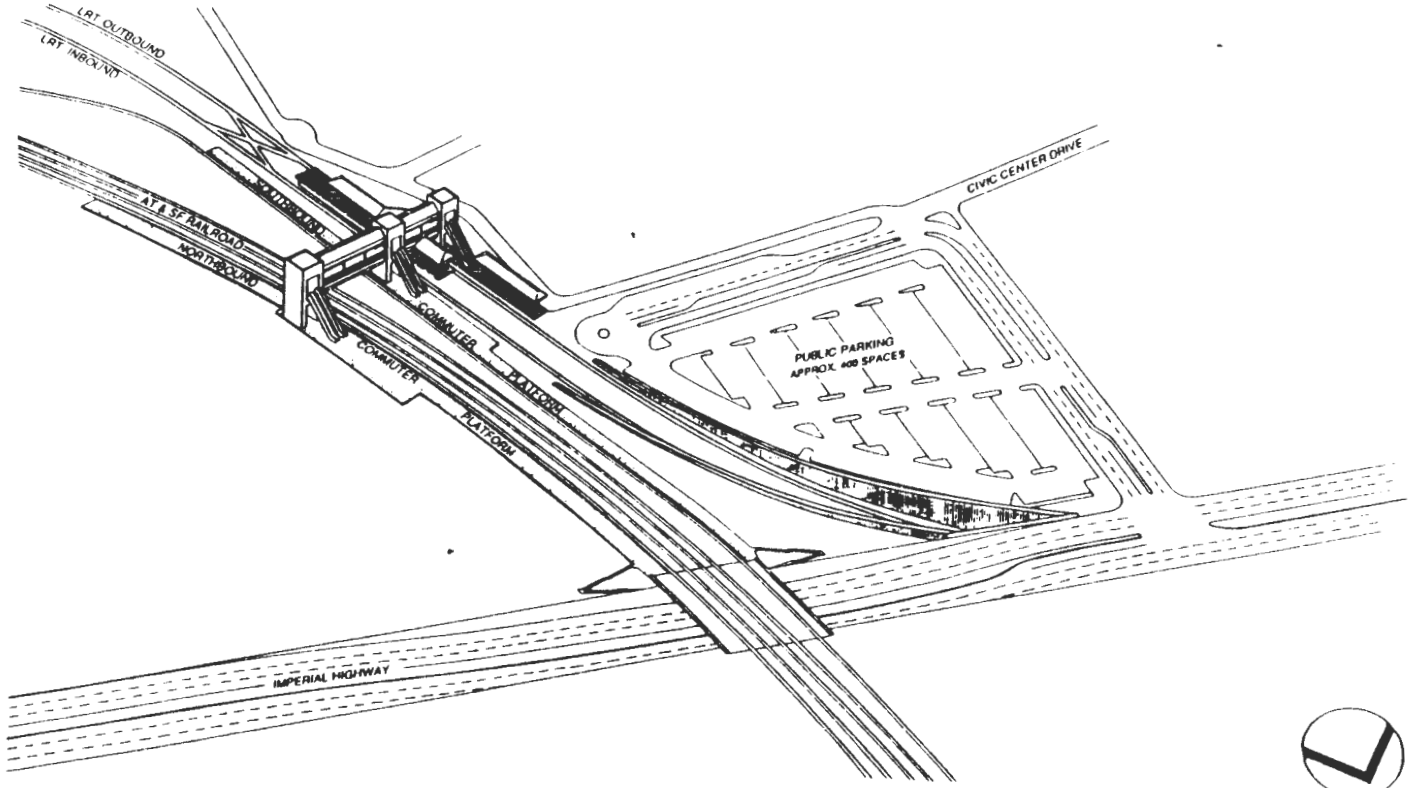
S.2.3 Operating Characteristics

The Metro Green Line Easterly Extension would utilize the same vehicles that would be used on the Green Line. These would be trained in consists of one, two or three vehicles, and they would be powered electrically through an overhead catenary. Service would be provided over a 20-hour operating day (4:30 a.m. to 12:30 a.m.). The peak service periods would be from 5:30 a.m. to 8:30 a.m. and from 3:30 p.m. to 6:30 p.m. Operating headways would be 5 minutes during peak periods and 8 minutes at other times. When the Metro Green Line branch line is completed to the North Coast Line, the Norwalk portion of the system would operate on 2.5 minute peak period headways and 4 minutes over the remainder of the day.

Under the aerial alignment the travel time from the I-605/Studebaker station to the Norwalk Transportation Center (2.79 miles) would be 4.18 minutes. Trains would operate at an average speed of 40 miles per hour and would attain a maximum speed of 65 mph. Under the subway alignment, west-to-east (2.62 miles) travel time would be 3.07 minutes. Average speed would be 51 miles per hour and the maximum speed would be 65 mph. The difference in average speed between the aerial and subway alignments is primarily due to changes in grades that must be negotiated by the aerial alignment.

S.2.4 Cost Estimates

Cost estimates have been prepared for both the aerial and subway alignments. Standard cost estimating techniques were used and past cost history of projects under development by the



Source: The Tanzmann Associates.

NO SCALE

Myra L. Frank & Associates, Inc.

Proposed At-Grade Station at Norwalk Transportation Center
(Subway Alignment)

Figure S-3
Environmental Impact Report
Metro Green Line Easterly Extension

LACTC and the Rail Construction Corporation (RCC) have been reflected. Estimates have been developed in consultation with LACTC and RCC staff and are intended to reflect recent knowledge of actual costs.

Taking into account all capital costs and associated costs of right-of-way acquisition, administrative costs, and ~~so on~~ **other costs**, the aerial alignment is estimated to cost a total of $215 million in current dollars. By comparison, the subway alignment cost would range from ~~$237~~ **240** million (assuming use of the east end staging area) to ~~$238~~ **241** million (assuming use of the west end staging area).

S.3 ALTERNATIVES TO THE PROPOSED PROJECT

Two alternatives to the Imperial Highway route were also evaluated. One of these routes would have begun at the I-605 Metro Green Line station and would have proceeded north along Studebaker Road, southeast along the Southern Pacific railroad right-of-way, north along Pioneer Boulevard, and east along Imperial Highway. The other route alternative would have begun at the I-605 Green Line station and would have proceeded south along Studebaker Road, east along Rosecrans Avenue, northeast along San Antonio Road and east along Imperial Highway. Both of these alternative routes were dropped from further consideration because they did not satisfy engineering design guidelines and evaluation criteria established for the project.

Two other alternatives to the proposed project are possible: the No Build alternative and an alternative which would utilize a bus shuttle. These options are discussed in more detail in Chapter 5.

The No Build alternative would not close the gap in the regional transportation network ~~that would occur with~~ **as would** completion of the Metro Green Line and implementation of commuter rail service to the Norwalk Transportation Center. It would have other adverse consequences ~~related to this~~, including the lack of potential reductions in automobile use and associated emissions.

A bus shuttle connection between the I-605 Metro Green Line station and the Norwalk Transportation Center could be operated as an alternative to the proposed project. Such an alternative could be implemented at less cost than the proposed project. It would, however, have inferior operating characteristics (i.e., reduced operating speed) and it would require transit patrons to negotiate an additional transfer. A bus shuttle connection would not have the benefits regarding air quality and energy consumption that would be possible with the proposed project.

S.4 AREAS OF CONTROVERSY

One area of controversy was identified at an early stage of project development. Representatives of the City of Norwalk indicated that the I-5 freeway is perceived as a prominent visual element which also acts to divide the city into eastern and western portions. Concern over the fact that this occurred in the past led groups within the city to successfully oppose extending the I-105 freeway further east than its present terminus at Studebaker Road.

City of Norwalk representatives related these past occurrences in the context of developing the Metro Green Line Easterly Extension, indicating that if the project were to result in further

perceived division of the city, this would become an issue of substantial controversy to Norwalk citizens. The aerial alignment alternative could be perceived as a controversial proposal in this context.

S.5 ISSUES TO BE RESOLVED

Two major issues remain to be resolved before the project can be implemented: the project must be selected for implementation from among candidate corridors in the 30-Year Plan of the LACTC, and an alignment alternative must be selected.

Several potential projects in the 30-Year plan are currently under consideration for implementation. The Metro Green Line Easterly Extension is one of the projects being considered. Project cost, potential benefits, environmental impacts and necessary mitigation measures, ~~the~~ potential speed of project development, project acceptability to the City of Norwalk, and merits of this project relative to other candidate corridors are all factors that will be considered before a decision is made on selection of the project.

At a conceptual level, the EIR proposed project could be approved without selecting one of the two alignments documented in this EIR. However, this decision must be made before implementation can be achieved. Selection of one alignment for implementation will be made on the basis of many of the same factors discussed in the paragraph above. Cost considerations will play an important role in this process.

S.6 INTENDED USES OF THE EIR

This environmental document will be used by the LACTC in consideration of the following actions: (1) selection of the project among ~~the~~ candidate corridor**s,** (2) selection of an alignment for implementation, (3) a decision to begin preliminary engineering, and (4) further development of mitigation measures and incorporation of such measures into the final design of the project. This environmental document will also be used by other responsible parties and agencies in actions that those parties and agencies must also make, including: (1) required municipal approvals and issuance of required permits by the City of Norwalk, (2) issuance of permits to construct within the right-of-way of I-5 by Caltrans, (3) issuance of permits to cross railroad right-of-way by the Southern Pacific Transportation Company, and (4) for purposes of coordination with affected utility providers.

S.7 IMPACTS AND PROPOSED MITIGATION

A summary of the impacts and proposed mitigation associated with each alignment is provided in Table S-1. The following sections discuss the more prominent impacts that have been identified. It should be understood that the potential impacts described in the following sections are based on conceptual-level engineering. As the project progresses through preliminary engineering, it is likely that the impacts could change.

S.7.1 Aerial Alignment

The aerial alignment could require the acquisition of several parcels of private property in an area to the west and east of Studebaker Road and south of Imperial Highway. Affected properties

include a church, a residence, a community garden and a vacant commercial parcel. Partial property acquisitions may also be required along Imperial Highway, for roadway widening due to placement of the guideway columns and creation of a median in the center of Imperial Highway. These acquisitions would be typically confined to small areas for column placement west of Norwalk Boulevard, but between Norwalk Boulevard and Bloomfield Avenue, a continuous strip of land (about 10 feet in width) would be necessary. Assistance would be provided to displaced property owners.

The presence of an aerial guideway in proximity to some residential and other uses would have visual impacts and effective mitigation would be difficult. Visual encroachment of the guideway onto the Paddison Ranch National Register property is an example of this effect. The guideway and supporting columns would be prominent visual elements and they would be of a different scale from their surroundings in some portions of the alignment.

There are substantial underground utilities located beneath Imperial Highway. Prominent among these is a 79-inch Metropolitan Water District main line that would need to be relocated to permit construction of the columns supporting the aerial guideway.

Construction activities and equipment would be prominent throughout the length of the project corridor. The overhead guideway would be of substantial size, and it would dominate its surroundings along the corridor. Guideway columns and bents would contribute to the visual prominence of the guideway, and motorist sight distances could be adversely affected. A change in the visual character of the area would occur, which could be perceived as adverse by viewers.

The Paddison Ranch property is listed on the National Register of Historic Places. This property would be visually encroached upon by the guideway, and it would be adversely affected by the proximity of the large scale guideway. An 8-foot wide strip of land would have to be acquired from the frontage of this property for widening Imperial Highway.

One lane of traffic in each direction would be closed while the aerial guideway is being constructed. This would directly affect traffic conditions on Imperial Highway and indirectly affect traffic circulation in the study area. Rosecrans Avenue and Florence Avenue/Telegraph Road would likely become alternative parallel routes accommodating some of the traffic diverted off Imperial. Some north-south streets would also experience traffic volume increases. The roadway geometry of Imperial Highway would need to be changed to provide for a continuous center median in which guideway columns would be placed. Sight distances could be adversely affected by the columns.

The aerial alignment would result in noise impacts affecting 141 single-family units, 20 multi-family buildings, three motels and one library. With mitigation, five single-family units would be potentially affected and all other effects would be eliminated. Mitigation would consist of a small parapet wall placed at the edge of the aerial guideway. The aerial alignment would not result in adverse vibration impacts.

Construction emissions would exceed the SCAQMD significance threshold for nitrogen oxides. Localized construction emissions would occur along the entire corridor.

An earthquake could produce ground shaking and possible liquefaction of the soil that could result in damage to structures and/or operating systems. This would not be significant, however, since standard design practices are available to reduce the potential for damage.

S.7.2 Subway Alignment

A construction staging area has been identified at the west end of the alignment, in the vicinity of the Green Line station, where a tunnel portal would be located and general construction activities would be focused; however, it also may be possible to use the city-owned parcel (the site of the Norwalk Transportation Center) for this purpose. A decision would be made in preliminary engineering in this regard. If the east end staging area is selected, there would be traffic on Imperial Highway resulting from added trucks and other construction-related vehicles.

Construction of the subway alignment would require acquisition of 17 homes for a construction staging area at the west end of the corridor. If the staging area could be located at the east end of the alignment, these could be avoided. Assistance to displaced homeowners would be provided.

The below-grade profile of the subway alignment would avoid the land use impacts that would occur with the aerial alignment.

The subway alignment would avoid the utility disruption that would occur with the aerial alignment.

Construction activities and equipment would be confined to the staging area. With the exception of at-grade portions of the project at the ends and the location of the vent shafts, the corridor itself would not be visible from the surface.

The subway alignment would avoid the adverse effects on the Paddison Ranch historic resource.

Disruption of traffic during the construction period would be confined to the area surrounding the staging area and would revolve largely around the movement of trucks hauling away excavated material. Operational effects on traffic associated with this alignment would not be significant.

The subway alignment would not result in adverse noise impacts. It could produce ground-borne vibration impacts, affecting 33 single-family units, nine multi-family buildings and three motels. With mitigation, these effects can be eliminated. Mitigation would consist of a short section of floating slab, and could include special track fasteners, resiliently supported toes, ballast mats, and possibly, speed restrictions in the curves.

Construction emissions would exceed the SCAQMD significance thresholds for nitrogen oxides and reactive organic gases. Localized emissions would be confined to the staging area.

Ground shaking associated with an earthquake ~~would have a likelihood of producing~~ **may possibly produce** damage in the subway alignment; however, ~~the potential for damage could be minimized with~~ standard design and construction practices **would significantly reduce the potential damage**.

CHAPTER 1
INTRODUCTION AND BACKGROUND

Locating the construction staging area at the east end of the alignment would disrupt a portion of the parking area associated with the commuter rail facilities which ~~is~~ assumably **would** ~~to~~ be in place at the time of construction of the Metro Green Line Easterly Extension.

S.7.3 Impacts Common to Both Alignments

Joint use of the Norwalk Transportation Center site by the Green Line Easterly Extension would be compatible with, and supportive, of that development.

Public services (hospitals, fire and police, parks, schools, libraries) could experience inconveniences during the construction period. Beneficial effects would be anticipated once the project is operational.

There is a small chance of encountering archaeological resources during the construction process.

The operational effects of both alignments on intersection performance would be quite similar. Only one intersection (I-5 southbound ramp at Imperial) would require mitigation, which would consist of an additional left turn lane. Parking (750 spaces) would be required to service patrons of both the Metro Green Line Easterly Extension and the proposed commuter rail facilities. Since only 400 surface parking spaces can be on the site, overflow parking onto local streets could result.

Both project alignments would result in small reductions in criteria pollutant emissions when the project is in operation, as compared with the No Project condition. Both alignments would result in reduction of carbon monoxide levels at all seven study area intersections.

Both alignments would result in decreases in auto-related fuel consumption when the project is in operation.

S.8 CONCLUSION

The Environmental Impact Report documents the construction and operational impacts likely to be generated by the proposed Metro Green Line Extension project between the I-605 Freeway and the Norwalk Transportation Center, along the Imperial Highway route. The impacts analysis process followed conceptual engineering (route refinement) studies for both an aerial alignment and a subway alignment. The cost of the aerial alignment is estimated to be $215 million, and the cost of the subway alignment is estimated to range from ~~$230~~ **240** million to ~~$240~~ **241** million.

Of the two, the subway alignment is found to be the environmentally superior one based on the analysis of impacts and recommended mitigations; however, with the exception of visual impacts, other adverse impacts due to the aerial alignment can be mitigated to a level where they no longer would be significant.

Although the Metro Green Line Easterly Extension project would qualify for an exemption under CEQA Section 15275 (b), the LACTC prefers to circulate an EIR to fully inform the public of the project and to elicit public involvement.

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
TOPOGRAPHY, GEOLOGY, AND SOILS					
Seismicity	Aerial	Some areas along the corridor may be subject to liquefaction in the event of an earthquake that could result in damage to structures.	Potentially significant	Identify areas of high groundwater during design and apply appropriate engineering techniques	Not significant
	Aerial and subway	An earthquake event could produce ground shaking that could result in damage to structures or operating systems.	Potentially significant	Standard design specifications and construction practice	Not significant
Hazardous materials	Aerial and subway	Several sites (gas stations) are located along the corridor that could have hazardous materials deposition.	Potentially significant	Site assessments would be conducted and appropriate clean up procedures would be followed.	Not significant
HYDROLOGY AND WATER QUALITY					
Surface water resources	Aerial and subway	The potential exists for excessive surface runoff and erosion of soil surfaces during construction.	Not significant	Use of proper grading, sloping and bracing techniques during construction.	Not significant
Groundwater resources	Aerial and subway	The potential exists for dewatering to be required during construction, with the possible consequence of encountering contamination.	Not significant	Groundwater levels would be identified during final design. Dewatering and disposal of excavated material would be conducted using approved techniques.	Not significant
VEGETATION AND WILDLIFE					
Plant and animal species	Aerial and subway	No endangered or threatened plant or animal species exist within the corridor and therefore no effects would occur.	Not applicable	None required.	Not applicable
Landscaping	Aerial and subway	Minor amounts of landscaping and urban vegetation would be removed at various locations along the corridor.	Not significant	Revegetation would be undertaken where practicable.	Not significant

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
LAND USE					
Property acquisition	Aerial	Full property acquisitions would be required in the vicinity of Imperial Highway and Studebaker Road, affecting a community garden, a residence, a church, and a vacant commercial property.	Significant	Relocation assistance would be provided.	Not significant
		Partial property acquisitions would occur along the corridor, affecting various residential and commercial land uses.	Not significant	Excess land beyond that needed for column placement could be returned to the underlying land use.	Not significant
	Subway	Full property acquisitions wcould be required in a residential area at the west end of the corridor (south of Lyndora Street, between LeFloss Avenue and East of Pecos Avenue), for use as a construction staging area. Approximately 17 homes would be affected. Removal of homes would not be consistent with City of Norwalk General Plan objectives to preserve residential uses.	Significant	Use of the east end of the alignment as an alternative location for the staging area.	Not significant
	Aerial and subway	Partial property taking is required at the east end of the corridor, in a parcel designated for use by the Norwalk Transportation Center.	Not significant	Coordination with the City of Norwalk regarding current and future uses.	Not significant
Land use compatibility	Aerial	The presence of an aerial guideway in proximity to some residential and other properties, or the encroachment of the guideway onto those properties would be considered less than compatible, and perhaps incompatible in some locations. Encroachment of the guideway onto the Paddison Ranch property is an example.	Potentially significant	Full property taking where incompatibility cannot be overcome, use of buffer where possible.	Potentially significant.
	Subway	Below-grade configuration avoids instances of incompatibility and therefore has no effect.	Not applicable	None required.	Not applicable
	Aerial and Subway	Joint use of the area designated for the Norwalk Transportation Center would be compatible. Green Line station facilities located there would not be incompatible with development of the site.	Beneficial	None required.	Beneficial

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
POPULATION AND HOUSING					
Property acquisition	Aerial	The aerial alignment would require acquisition of one residential parcel, displacing an estimated 3 persons.	Significant	Payment of fair market value and provision of relocation assistance.	Not significant
		The aerial alignment would result in partial acquisitions, affecting 9 parcels, for placement of guideway columns or street widening.	Not significant	Placement of columns to reduce intrusion as much as possible.	Not significant
	Subway	The subway alignment would require acquisition of 17 residential parcels, displacing an estimated 54 persons, for a construction staging area at the west end of the corridor.	Significant	Payment of fair market value and provision of relocation assistance. **Use of the east and of the corridor for construction staging would eliminate the takings.**	Not significant
Growth	Aerial and subway	The proposed project is not anticipated to produce a demand for additional housing or induce population growth.	Not applicable	None required.	Not applicable
PUBLIC SERVICES					
Construction	Aerial and subway	Construction of the proposed project would produce traffic, noise and accessibility impacts that would affect parks, schools, churches, libraries and health care facilities. Fire and police services could also experience some impairments. These effects would be temporary.	Not significant	Construction signage, adequate advanced notice, auto and pedestrian detours	Not significant
Operation	Aerial and subway	The proposed project should result in a slight reduction of traffic along Imperial Highway and would thus have a slight beneficial effect on accessibility to most public services. Emergency response should not be adversely affected. No adverse effects on schools are expected. Adverse effects are not expected for libraries, parks, and medical facilities.	No effect or slightly beneficial	None required.	No effect or slightly beneficial.
		One church would be displaced by the project.	Potentially significant	Relocation assistance	Not significant

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
		UTILITIES			
Facilities disruption	Aerial	Underground utilities would be subject to temporary disruption during the construction period, including gas, oil, and water lines ranging in diameter from 2 inches to 10 inches. A 79 inch diameter Metropolitan Water District main line runs beneath Imperial Highway for a distance of 3,000 feet and would require a substantial effort to relocate. Overhead electrical power poles in the vicinity of the Southern Pacific tracks would be potentially subject to relocation.	Potentially significant	All lines would be relocated using appropriate procedures and service interruptions would be kept to a minimum.	Not significant
	Subway	No problems associated with minor utilities are anticipated. The MWD water main can be avoided.	Not significant	Definition of final profile to take into account the location of the MWD water main.	Not significant
		AESTHETICS			
Construction	Aerial	Construction activities and equipment would be generally prominent and would affect the entire corridor over the course of the construction period.	Significant	Construction would be conducted as expeditiously as possible. Screening would be used where visual aspects would have safety implications.	Not significant
	Subway	Construction activities would be confined to the portal/staging area ~~at the west end of the corridor~~.	Significant	Screening of construction area from nearby residences could be considered. Use of east end for staging area.	Not significant
Operation	Aerial and subway	The presence of the light rail station and associated parking at the Norwalk Transportation Center would constitute a different but not incompatible change from the existing visual environment.	Not significant	Appropriate design principles and architectural treatments would be used.	Not significant

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
Aesthetics - Operation (Cont.)	Aerial	The overhead guideway would be of substantial size and it would become a significant visual element in the post-project environment. The guideway support columns would constitute a significant change from the existing visual setting. The number, size and proximity of bent structures would obstruct views along some portions of the corridor. The project would be out of scale with its environment in some locations.	Significant	Design elements and architectural treatments would be carefully selected to reduce adverse visual effects.	Significant
	Subway	With the exception of ~~at-grade~~ **descending** portions of the project at the west end of the corridor, this alternative would not be visible until it reaches the east end station.	Not significant	None required.	Not significant
CULTURAL RESOURCES					
Archaeological resources	Aerial and subway	There is a small potential for encountering resources during construction of the project.	Not significant	A phase I archaeological survey should be conducted and consultation with an archaeologist should be done if artifacts are encountered.	Not significant
Historical and architectural resources	Aerial	The Paddison Ranch (11951 Imperial Highway) is a National Register property that would be adversely affected by: (a) the taking of an 8-foot wide strip of land along its frontage, and (b) the presence of columns, bents and guideway structures that are out of scale with this resource.	Significant	Substantial landscaping should be provided to reduce the visual prominence of the project structures.	Significant
	Subway	No adverse effects regarding the Paddison Ranch property would occur.	Not applicable	None required.	Not applicable

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
TRANSPORTATION AND CIRCULATION					
Construction	Aerial	One lane of Imperial Highway (in each direction) would be closed during the construction period. This would result in diversion of some traffic to parallel local streets. Some north-south streets may also be affected. Closure of traffic lanes near I-5 and possible temporary closure of I-5 may be necessary.	Significant	A traffic management plan would be developed prior to construction.	Potentially significant
	Subway	Traffic disruption would be confined to the staging area and surrounding streets where trucks hauling away excavated material would be added to existing traffic. The intersection of Studebaker Road and Imperial Highway could be adversely affected, if the west end staging area is used.	Not significant	A traffic management plan would be developed prior to construction.	Not significant
Operation	Aerial	Roadway geometry must be altered along Imperial Highway to accommodate columns placed in the median. Sight distances would be reduced from present conditions.	Significant	Right-of-way should be purchased for required roadway widening.	Potentially significant
	Subway	This alternative should have a minimal effect on traffic	Not significant	None required.	Not significant
	Aerial and subway	Effects on study area intersection levels of service would be the same for both alternatives. In the morning peak, 7 intersections would experience improved level of service, 4 intersections would remain unchanged, and 5 intersections would have an inferior level of service. In the afternoon peak, 9 intersections would experience improved level of service, 3 intersections would remain unchanged, and 4 intersections would have an inferior level of service.	Not significant at any intersection in A.M. peak. Significant at intersection of Norwalk Blvd and I-5 southbound ramp in P.M. peak.	A left-turn pocket should be added to the I-5 southbound ramp at Norwalk Boulevard.	Not significant
Parking	Aerial and subway	An estimated 750 total parking spaces would be recommended for commuter rail and green line patrons. A total of 400 spaces are to be provided. The shortfall could result in overflow parking onto local streets.	Potentially significant	None proposed.	Potentially significant

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
NOISE AND VIBRATION					
Noise	Aerial	Adverse impacts affecting 141 single-family units, 20 multi-family buildings, 3 motels and 1 library.	Significant	Sound barrier placed atop guideway.	Not significant
	Subway	No effects.	Not applicable	None required.	Not applicable
Vibration	Aerial	No effects.	Not applicable	None required.	Not applicable
	subway	Adverse impacts affecting 33 single-family units, 9 multi-family buildings and 3 motels.	Significant.	Floating slabs, ballast mats, special track work, **track fasteners**.	No effect. (All impacts eliminated.)
AIR QUALITY					
Construction	Aerial	Construction emissions are expected to exceed the SCAQMD threshold of significance for nitrogen oxides. Localized emissions would occur along the length of the corridor.	Significant	Standard construction practices. Adherence to SCAQMD rules.	Not significant
	Subway	Construction emissions are expected to exceed the SCAQMD threshold of significance for nitrogen oxides and reactive organic gases. Localized emissions would be confined to the area surrounding the west end staging area.	Significant	Same as above	Not significant
Operation	Aerial and subway	Both project alternatives would result in reductions in criteria emissions, as compared with the No Project condition. Both project alternatives would result in reductions of carbon monoxide levels at all 7 study area receptors, as compared with existing conditions.	Beneficial	Project is mitigation	Beneficial

TABLE S-1
SUMMARY OF PROJECT IMPACTS FOR THE METRO GREEN LINE EASTERLY EXTENSION

IMPACTS	ALIGNMENT	POTENTIAL ENVIRONMENTAL EFFECTS	SIGNIFICANCE	MITIGATION	RESIDUAL IMPACT
ENERGY					
Construction	Aerial and subway	Both project alternatives would consume minor amounts of electricity and fossil fuels.	Not significant	Standard conservation practices	Not significant
Operation	Aerial and subway	Both project alternatives would consume minor amounts of electricity for daily operation.	Not significant	Standard conservation practices	Not significant
		Both project alternatives would result in decreases in auto-related fuel consumption	Beneficial	Project is mitigation	Beneficial

1.0 INTRODUCTION AND BACKGROUND

1.1 PROJECT HISTORY

The voters of Los Angeles County approved Proposition "A" in November 1980, authorizing the Los Angeles County Transportation Commission (LACTC) to assess a county-wide one-half percent sales tax . The proceeds of this tax were to be used to improve and expand public transit in ~~the~~ Los Angeles County and plan, build and operate a regional rail rapid transit system. The map accompanying the proposition included an east-west rail transit line connecting Los Angeles International Airport (LAX) with Norwalk through Downey. In June of 1984 the LACTC approved the construction of a rail system in the median of the Century Freeway, ~~a.k.a.,~~ **also known as the** Glenn Anderson Freeway (I-105). The rail line, known as the Metro Green Line, is scheduled to begin operation in 1994. This rail transit project is now called the "Metro Green Line."

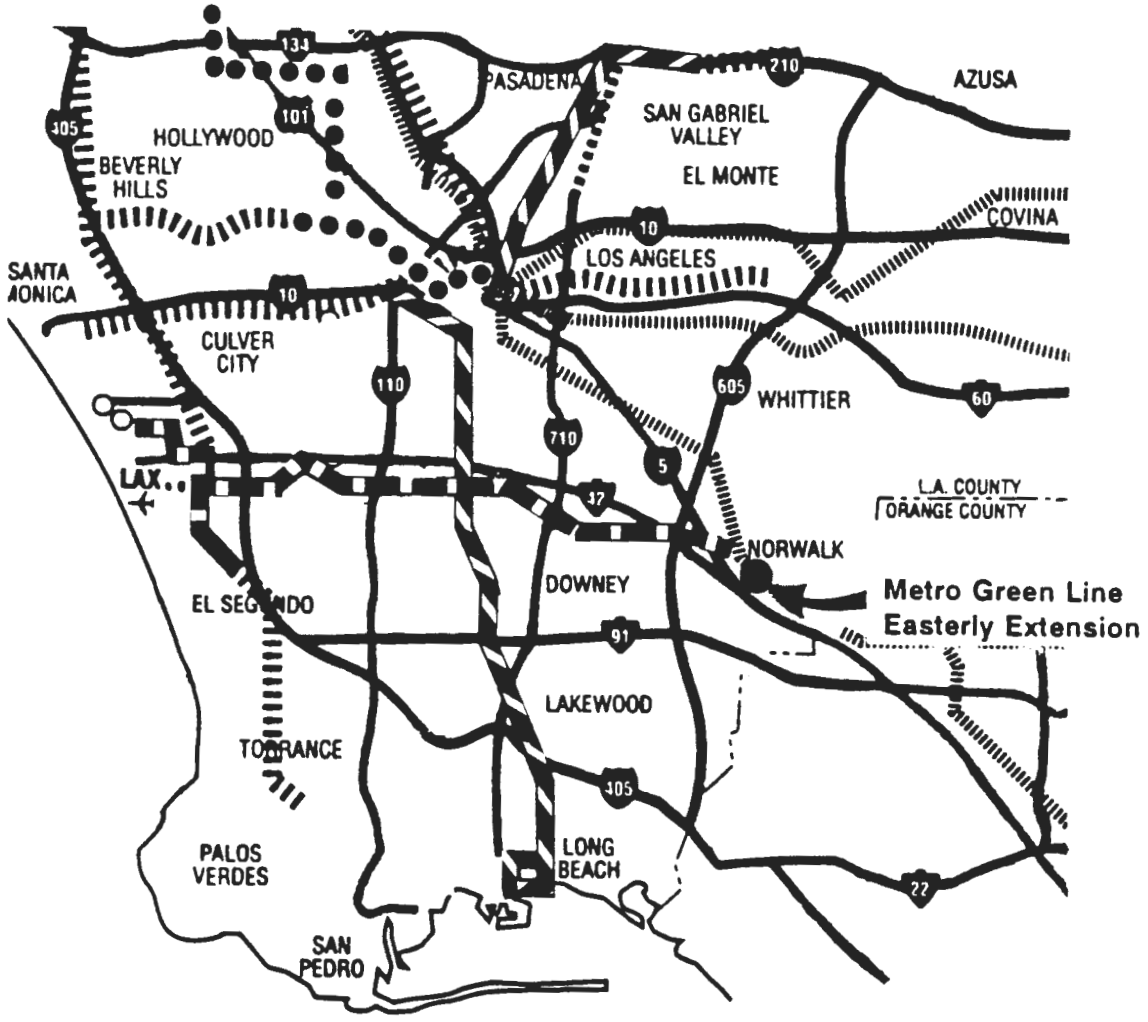
In May 1991, the LACTC authorized the preparation of a Route Refinement Study and an Environmental Impact Report (RRS/EIR) for the easterly extension of the Metro Green Line from its present eastern terminus at I-605 and Studebaker Road to a new terminus approximately 2.8 miles further east at the proposed Norwalk Transportation Center. The Metro Green Line Easterly Extension is one of the eight fundable corridors included in the 30-Year Integrated Transportation Plan adopted by the LACTC in April of 1992.

1.2 PURPOSE OF THE PROJECT

The Norwalk to El Segundo Metro Green Line Rail Project, currently under construction, will provide direct rail access from Norwalk to Los Angeles International Airport and the El Segundo employment area, and through its connection with the Metro Blue Line, the Green Line will provide region-wide rail transit accessibility. Efforts by the City of Norwalk are underway to develop a commuter rail station where the Orange/Riverside/San Bernardino County to Union Station commuter trains will stop. Furthermore, the Orange County Transportation Authority (OCTA) is formulating plans to develop urban rail in Orange County, and a connection to the Norwalk Transportation Center is being given high priority.

However, the eastern terminus of the Metro Green Line currently under construction is at I-605. The Metro Green Line Easterly Extension is therefore primarily envisioned as a regional rail gap closure between the inter-county Rail Corridor, the Urban Rail network in Los Angeles County, and the Urban Rail Network in Orange County. This 2.8 mile proposed segment would be a regionally significant project, due to the region-wide system linkage it would provide.

Figure 1-1 shows the location of the Metro Green Line Easterly Extension project.



Source: Myra L. Frank & Associates, Inc., 1992.

Myra L. Frank & Associates, Inc.

Metro Green Line Easterly Extension Environmental Impact Report

Figure 1-1: Project Location

1.3 ROUTE SELECTION PROCESS

1.3.1 Alternative Routes Initially Considered

In the summer of 1991, the Route Refinement Study was initiated under the joint sponsorship of the LACTC and the City of Norwalk. LACTC identified three alternative routes for the proposed easterly extension of the Metro Green Line. The location of the alternative routes were based on discussions between LACTC staff and representatives of the City of Norwalk. All alternatives had a common beginning at I-605/Studebaker Station and a common end point at the proposed Norwalk Transportation Center. The three route alternatives are described below and are also shown in Figure 1-2.

Route Alternative 1

This route alternative would begin at the proposed I-605 Metro Green Line Station and take an alignment running north on Studebaker Road then east on Imperial Highway to the proposed eastern terminus at the Norwalk Transportation Center.

Alternative 2

Route alternative 2 would begin at the proposed I-605 Metro Green Line Station, proceed north on Studebaker Road to Firestone Boulevard, continue in a southeast direction on the Southern Pacific right-of-way, cross Imperial Highway, proceed north on Pioneer Boulevard and eastward on Imperial Highway to the proposed eastern terminus at the Norwalk Transportation Center.

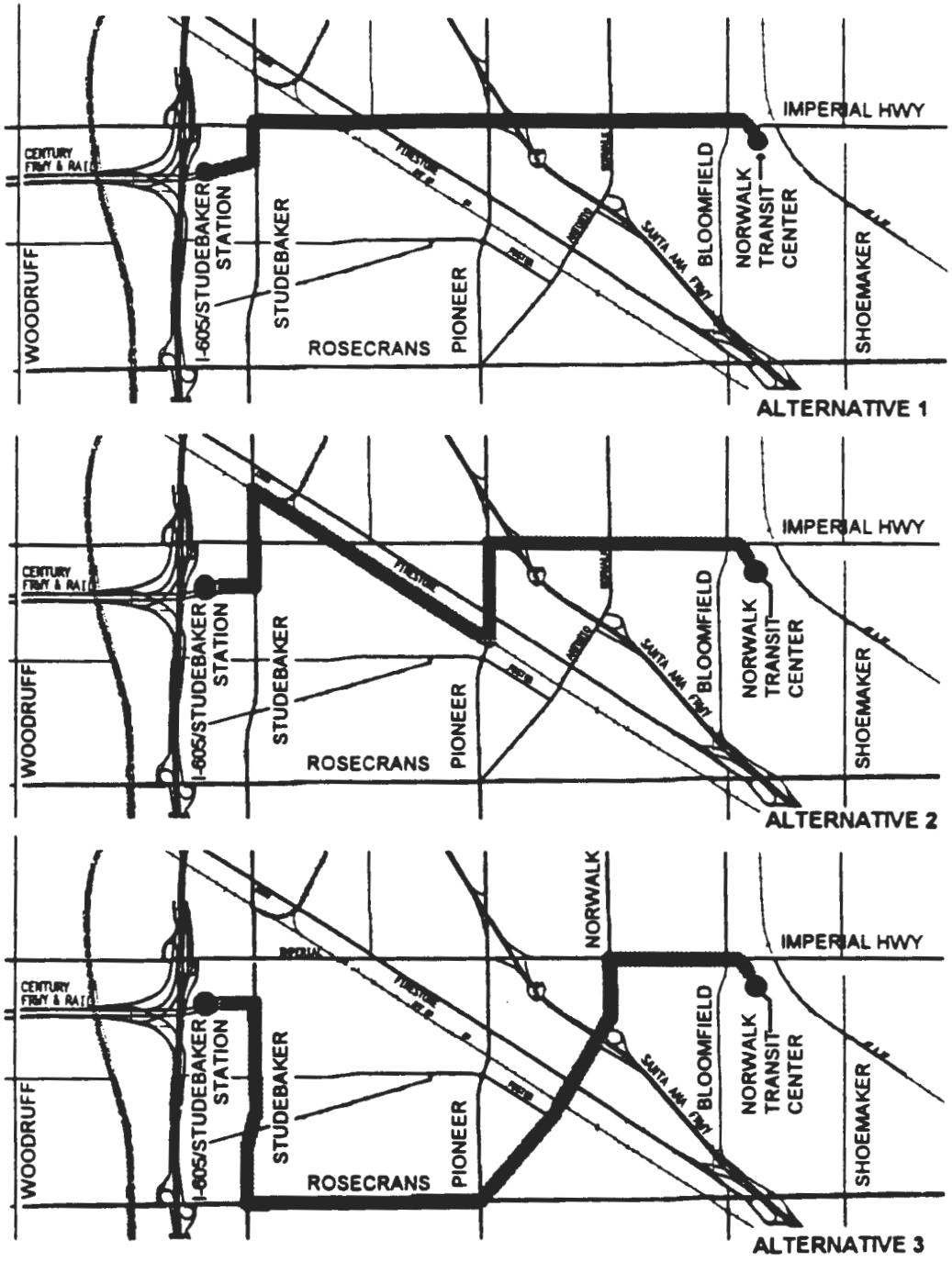
Alternative 3

Route alternative 3 would proceed south on Studebaker Road from the proposed I-605 Metro Green Line Station, continue an eastward alignment on Rosecrans Avenue, then northeast on San Antonio Boulevard and east on Imperial Highway to the proposed eastern terminus at the Norwalk Transportation Center.

During the initial phase of the study it became apparent that evaluating aerial guideways along all three routes would be logical. In the case of a subway configuration, however, only one route closely following Alternative 1 would be appropriate to evaluate because subway construction technology would require following a direct route connecting the two end points. Also, no at-grade alternatives for any of the routes were studied because the Metro Green Line will be fully grade separated. The grade separation would allow higher operating speeds without having to negotiate grade crossings or other traffic, as the Metro Blue Line does, and it would leave open the option of utilizing either fully automated or driver operated vehicles.

1.3.2 Design Guidelines and Evaluation Criteria

The following design guidelines and evaluation criteria were observed in the development and evaluation of alternatives.



Source: Myra L. Frank & Associates, Inc., 1992.

Myra L. Frank & Associates, Inc.

Metro Green Line Easterly Extension
Environmental Impact Report

Figure 1-2: Alternative Routes Considered

Design Guidelines

1. Consistency with the Metro Green Line technology and standards;

2. Maintain a minimum average operating speed of 40 miles per hour;

3. Maintain 2.5 minutes headway;

4. Maintain the ability to provide a connection with Orange County;

5. Provide for convenient transfers between Metro Green Line, Commuter Rail, Orange County Fixed Guideway Transit and Buses at the Norwalk Transportation Center.

Evaluation Criteria

1. Minimize negative impacts on the surrounding community;

2. Avoid major utility disruptions;

3. Avoid serious engineering problems;

4. Minimize travel time; and,

5. Emphasize cost effectiveness.

1.3.3 Recommended Route Alternatives

Key findings of the evaluation as of May 1992 were as follows:

Route Alternative 1-A (Aerial Guideway)

- The alternative would have 42 single-family units and 28 multi-family buildings in the study area.
- Eight properties would be required for right-of-way purposes.
- Crossing over I-5 would be at a very high elevation (67 feet).
- Crossing Firestone Boulevard would necessitate very long-spanned striders (300 to 400 feet).
- Traffic impacts would be low.

Route Alternative 1-S (Subway)

- Would have the shortest travel time of all alternatives.
- Impacts on utilities would be very low.
- The construction process would require crossing **beneath** a portion of Imperial Highway while a vent shaft is constructed, and a construction staging area would be needed for tunnel construction.
- The alternative would have 42 single-family units and 28 multi-family buildings in its study area, but its below grade profile would reduce the likelihood of adverse effects.
- Traffic impacts would be low.

Route Alternative 2 (Aerial Guideway)

- Would have the lowest overall operating speed of all alternatives.
- Moderate impacts on utilities would be expected.
- A high elevation crossing of I-5 would be required, and its many curves would reduce speed.
- The study area would include 44 single-family units and 21 multi-family buildings.
- Expected traffic impacts would be moderate.

Route Alternative 3 (Aerial Guideway)

- Would be the longest of all alternatives (3.61 miles), resulting in the longest travel time (5.27 minutes).
- Impacts on utilities would be moderate.
- A high elevation crossing of I-5 would be required.
- Right-of-way takings for roadway widening purposes may be required at I-5 and Imperial Highway, Foster Road and Firestone Boulevard.
- The study area would include 142 single-family units and 29 multi-family buildings.
- Right-of-way requirements would require the taking of 12 properties.
- Traffic impacts would be high.

Results of the evaluation were presented to the Metro Green Line Easterly Extension Task Force, **which** ~~The Task Force~~ had representatives ~~of~~ **from** the LACTC, RCC, Norwalk and Caltrans. The consultant team recommended to the Task Force that Route Alternatives 2 and 3 be dropped from further consideration, due to their higher costs, longer travel times, slower operating speeds and more extensive environmental impacts.

Of the remaining two route alternatives along Imperial Highway, the consultant team recommended that Alternative 1-S (Subway) should be ~~carried forward and~~ studied in more detail and be carried **forward** through the environmental documentation process. The consultant team felt that the subway alternative along Imperial Highway was more advantageous due to its shorter length, higher operating speed, comparable cost with the aerial alternative along Imperial Highway and ~~the least~~ **fewer** environmental and traffic impacts.

This recommendation was presented to the Planning and Mobility Improvement Committee (PMIC) at its May 13, 1992, meeting. PMIC concurred with the consultant and staff recommendation that the EIR document focus on the subway alignment along Imperial Highway. This recommendation was presented to the full LACTC Board on May 27, 1992. The Board decided that both the aerial and subway alignments along Imperial Highway should be carried forward through the EIR process, and LACTC staff was directed to carry out that recommendation.

The remainder of this environmental document presents ~~the~~ impacts and mitigation measures associated with an aerial alignment and a subway alignment, both of which follow a direct route from the Metro Green Line station at I-~~1~~605 and terminate at the Norwalk Transportation Center.

1.4 FORMAT OF THE EIR

This EIR has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) of 1970, as amended and as described in the most recent State Guidelines for its implementation. The Los Angeles County Transportation Commission and the City of Norwalk were cooperative parties in the studies and analyses leading to this document. Pursuant to Section 15051 of the State Guidelines, the Los Angeles County Transportation Commission is designated as the lead agency, and pursuant to Section 15096 of the State Guidelines, the City of Norwalk is designated as a responsible agency. The content and format of the EIR is established by Article 9 (sections 15120 through 15132) of the State Guidelines. The information contained in this EIR was developed in response to an Initial Study Checklist prepared by the lead agency pursuant to Section 15063 of the State Guidelines, and in satisfaction of Subsection (c)(3)(A) of that citation, is intended to focus on the effects considered to be significant.

It should be noted that the Metro Green Line Easterly Extension project would qualify for an exemption under CEQA, as described in Section 15275 (b) of the State CEQA Guidelines:

Specified Mass Transit Project	15275. CEQA does not apply to the following mass transit projects: (b) Facility extensions not to exceed four miles in length which are required for transfer of passengers from or to exclusive public mass transit guideway or busway public transit services.

The LACTC has elected to prepare and circulate an EIR in order to fully disclose potential effects of the project and to ensure public participation in the process.

In addition to the Summary, the EIR is organized into chapters, as follows:

Chapter 1 provides an introduction and background for the project. Chapter 2 describes the proposed project. In this chapter, two alternative (aerial and subway alignments) are discussed. Chapter 3 identifies the setting, impacts and proposed mitigation measures associated with the project. Chapter 4 discusses a range of other effects required by State Guidelines. Chapter 5 identifies other alternatives to the project that could be considered. **Chapter 6 provides comments and responses occurring as a result of the public comment period.** A series of appendices are provided that contain supporting documentation and references.

CHAPTER 2
PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1 INTRODUCTION

This chapter describes two alternative alignments that are under consideration for the Metro Green Line Easterly Extension project. These alternative alignments have been prescribed as a result of an evaluation of route alternatives and decisions by the Los Angeles County Transportation Commission (LACTC), Planning and Mobility Improvement Committee and the Governing Board.

The first alignment under consideration assumes an aerial configuration throughout its length. The second alignment is a subway configuration that would remain below grade throughout its entire length. Both alignments would begin at the eastern terminus of the Metro Green Line at I-605 and end at the location of the proposed Norwalk Transportation Center east of Bloomfield Avenue.

The following sections describe the physical characteristics, operating characteristics and construction sequence of each alignment as well as methods of construction. Following this is a section that discusses other projects related to the proposed Metro Green Line Easterly Extension.

2.2 AERIAL ALIGNMENT

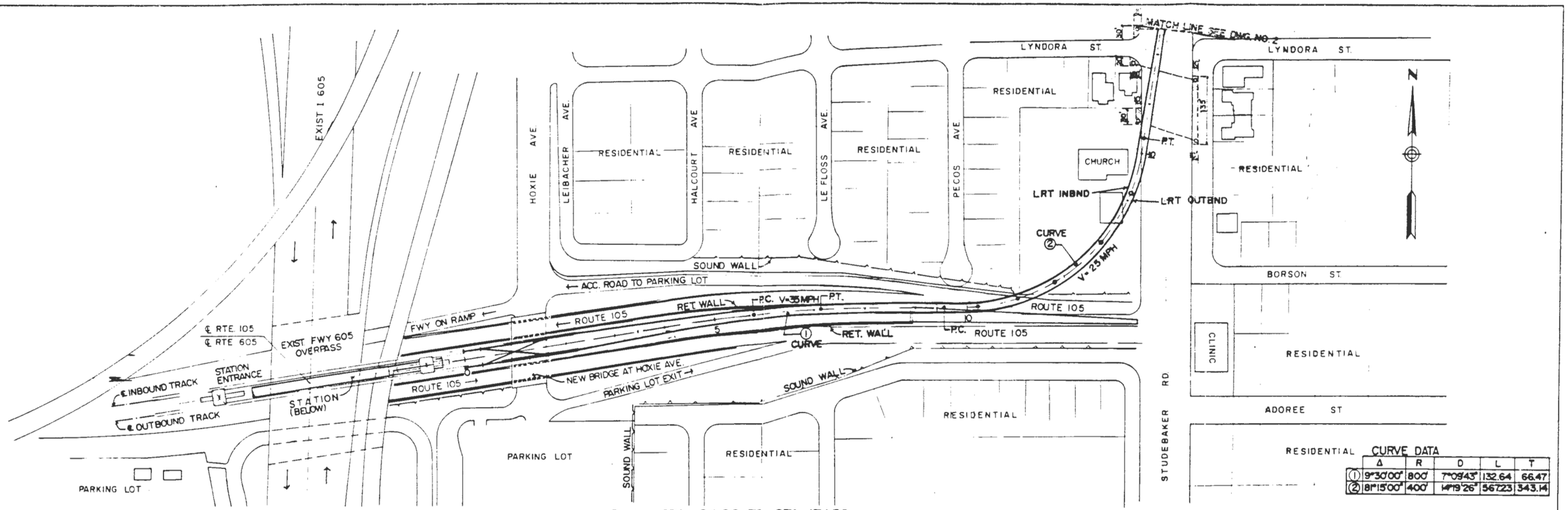
2.2.1 Physical Description

The Aerial Alignment of the Metro Green Line Easterly Extension begins at the I-605/Studebaker Station, currently the eastern terminus station of the Green Line. The aerial alignment is shown in Figure 2-1. I-605/Studebaker Station is in an open cut approximately 20 feet below the existing ground level. The area surrounding the station would be subject to vehicular movements associated with the terminus of the I-105 freeway and the I-605/Studebaker Metro Green Line station.

Traffic from **the** I-105 **HOV lanes** would exit at Studebaker Road and proceed to other destinations using arterial streets. In addition to movements from the freeway, access to and from Green Line parking lots (south of I-105) would use separate access ramps along the north side of the parking lots to and from Studebaker Road.

Metro Green Line trains would proceed eastward past I-105 on an independent guideway proceeding northeast, rising from the station to assume an aerial configuration proposed by the Easterly Extension project. Access ramps for both the freeway and parking lot would not be affected by transit operations except during the construction period.

Pedestrians using the Metro Green Line parking lots would use a bridge at Hoxie Avenue and descend the platform via stairs, elevators or escalators. Walk-on patrons from the surrounding area would reach the Green Line station in the same manner.



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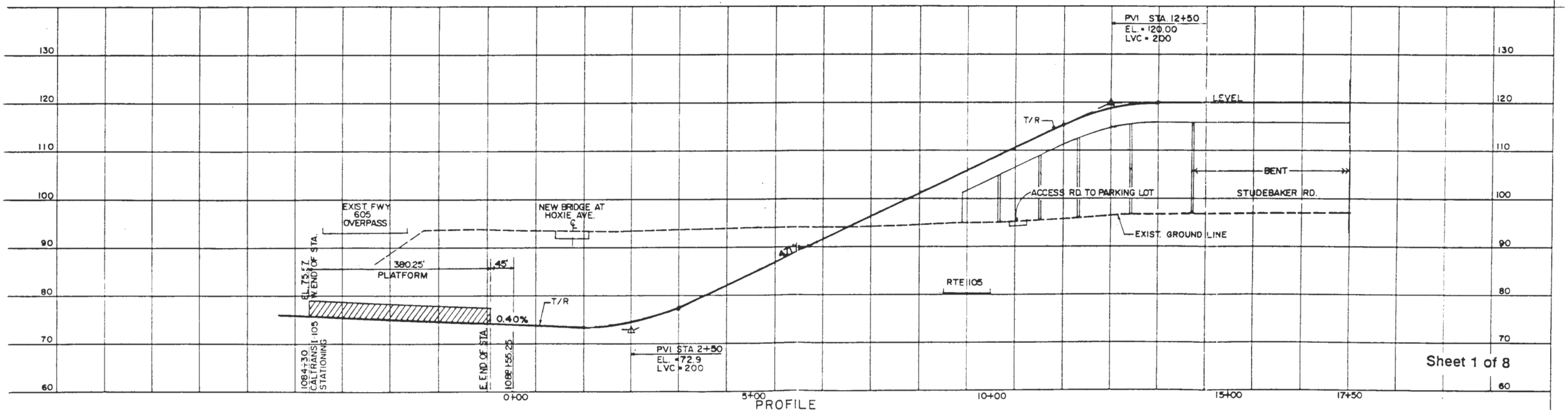

PROFILE

Sheet 1 of 8

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ENGINEERS AND PLANNERS

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SCALE: HOR. 1" = 100' (100 0 100 200); VERT. 1" = 10' (10 0 10 20)

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1
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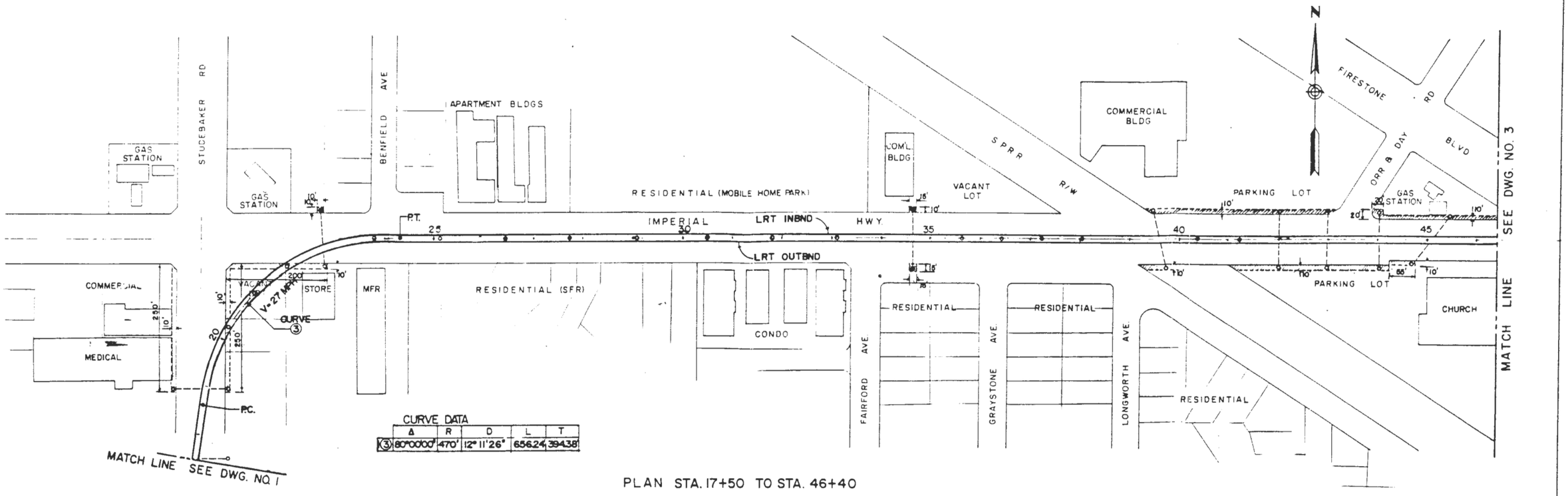
L. D.	D. S.		8-31-92	1

FIGURE 2-1



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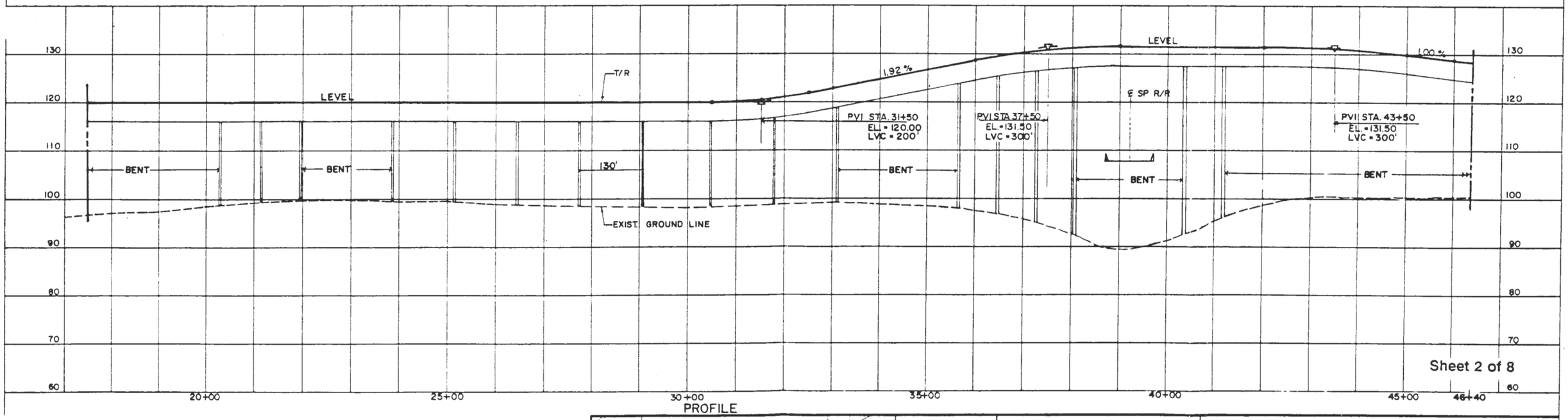

PROFILE

Sheet 2 of 8

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L. D.	D. S.		8-31-92

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE I
PLAN & PROFILE STA. 17+50 TO STA. 46+40

FIGURE 2-1

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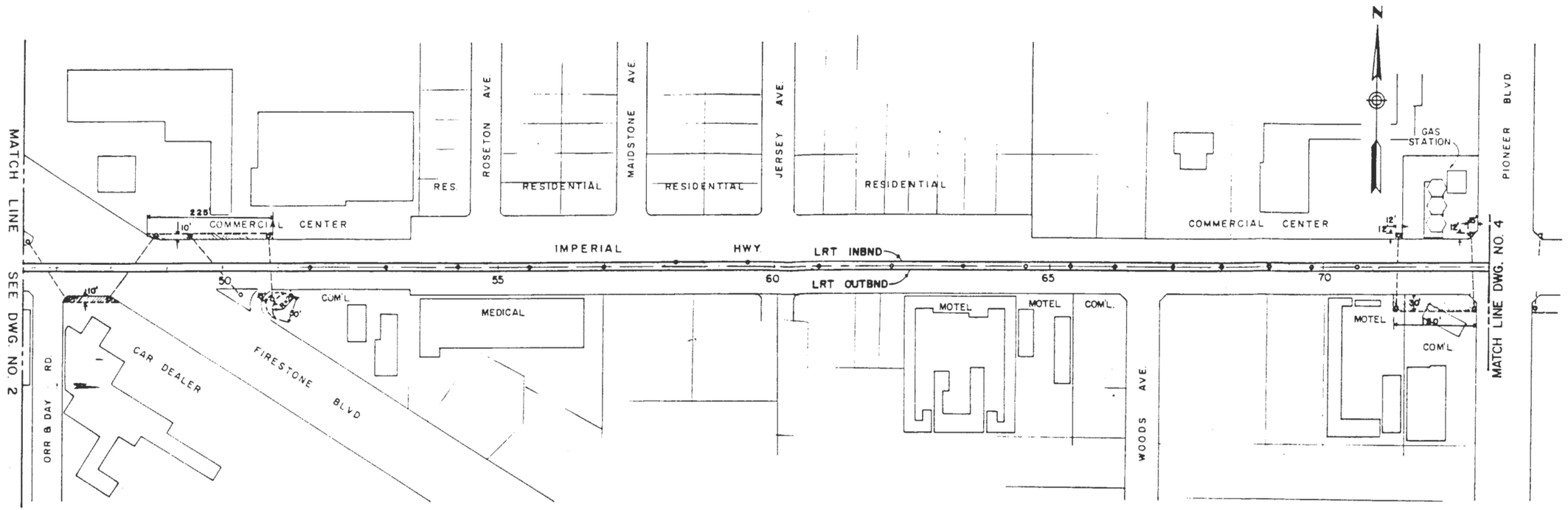

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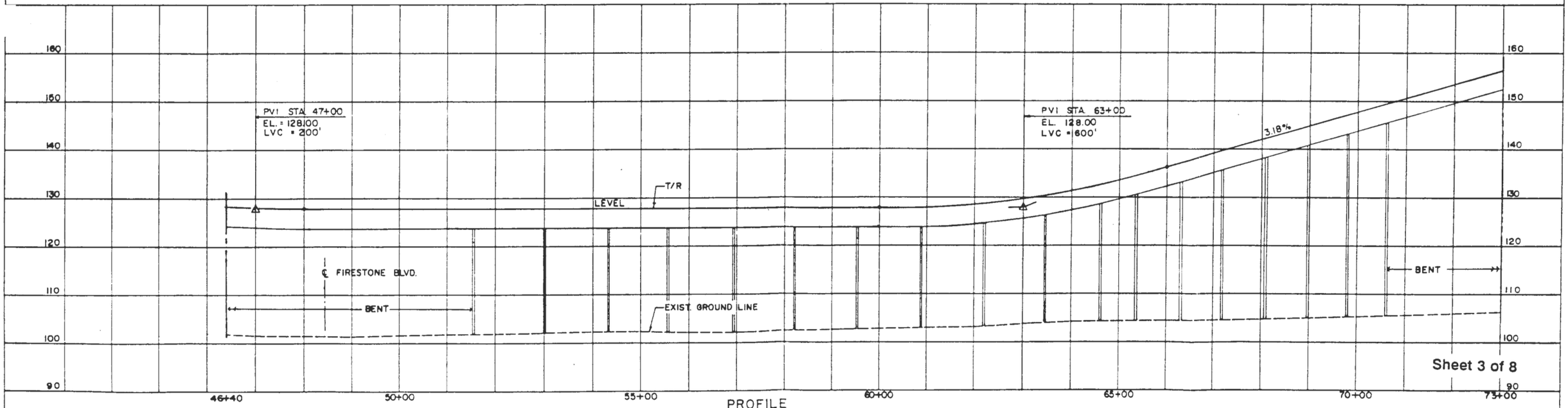

PROFILE

Sheet 3 of 8

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NO.	DATE	REVISION	BY	APP	APP

SCALE: HOR. 100 0 100 200, 1" = 100'; VERT. 10 0 10 20, 1" = 10'

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L.D.	D.S.	

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1
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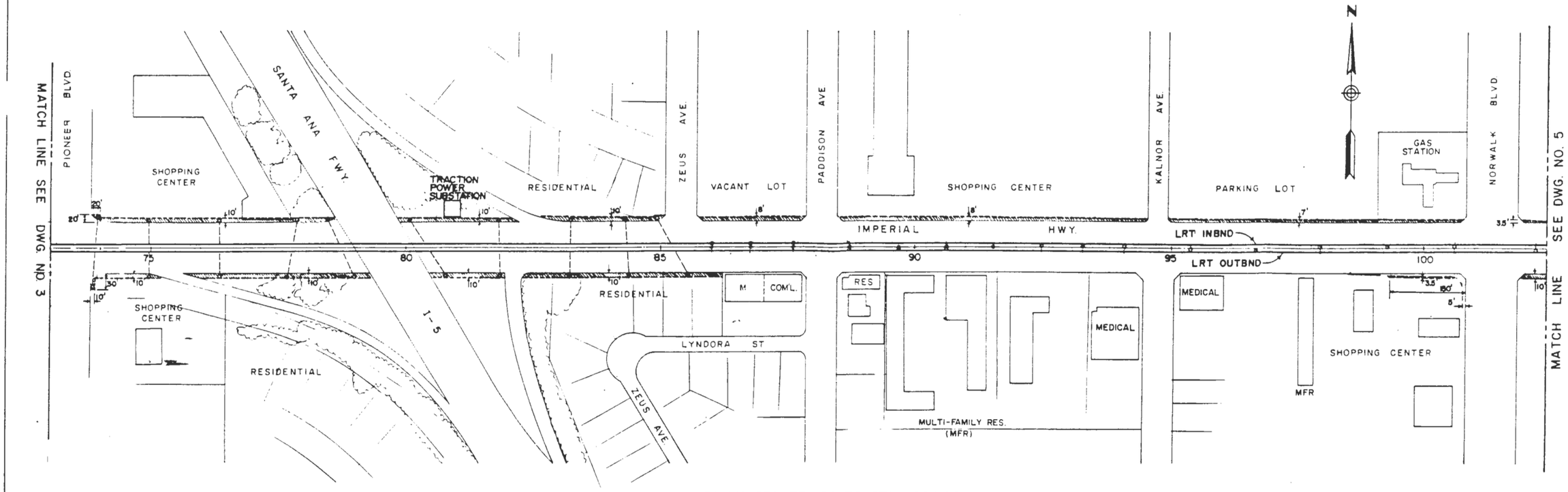
Date		Dwg. No.
8-31-92	FIGURE 2-1	3



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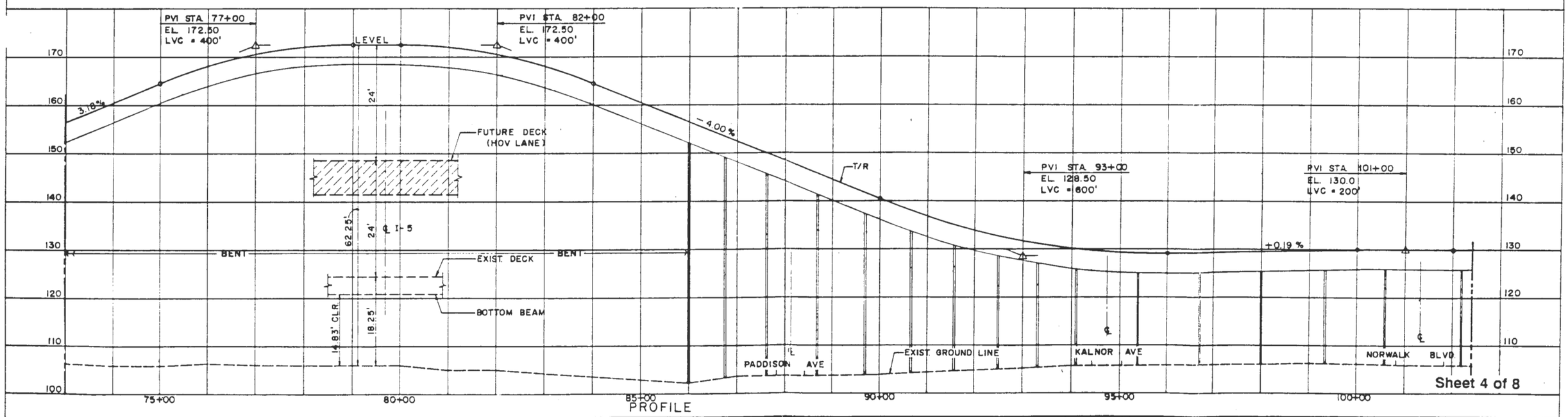

PROFILE

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SCALE:
HOR. 100 0 100 200 — 1" = 100'
VERT. 10 0 10 20 — 1" = 10'

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L. D.	D.S.	

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

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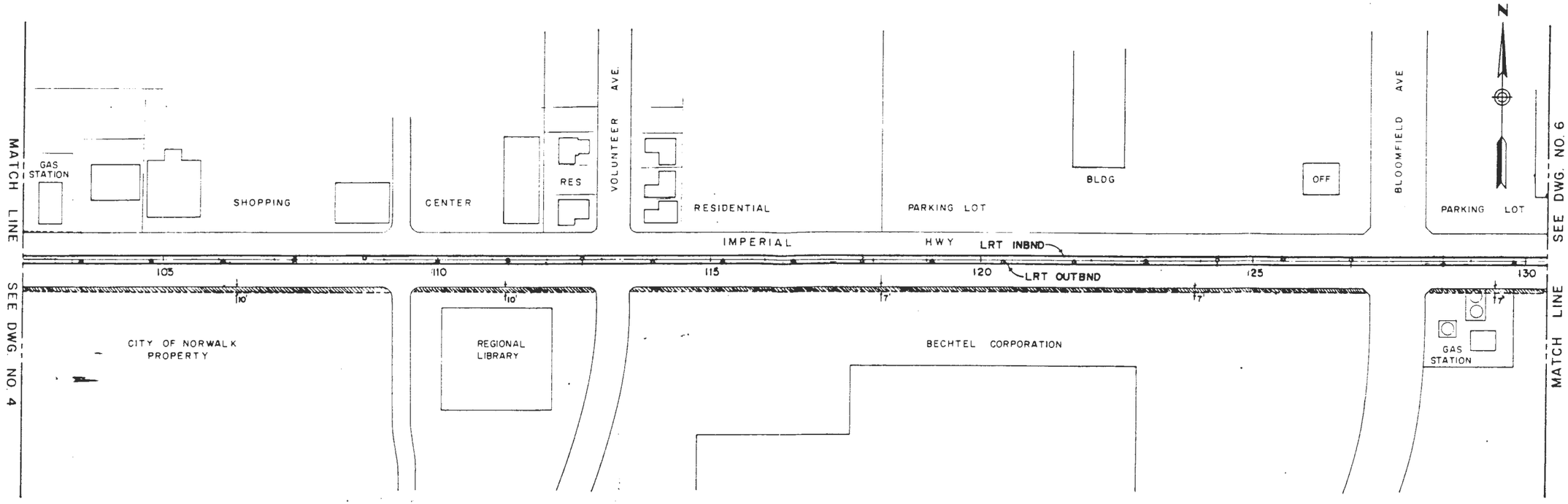
Date: 8-31-92

FIGURE 2-1

Dwg. No. 4

Sheet 4 of 8



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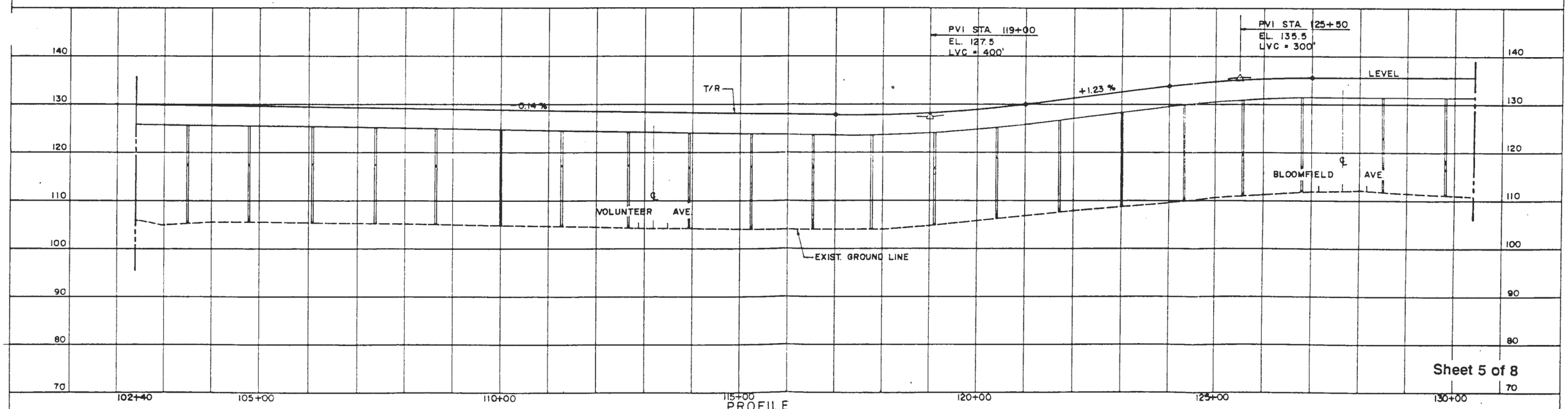

PROFILE

Sheet 5 of 8

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SCALE: HOR. 1" = 100' (100 0 100 200); VERT. 1" = 10' (10 0 10 20)

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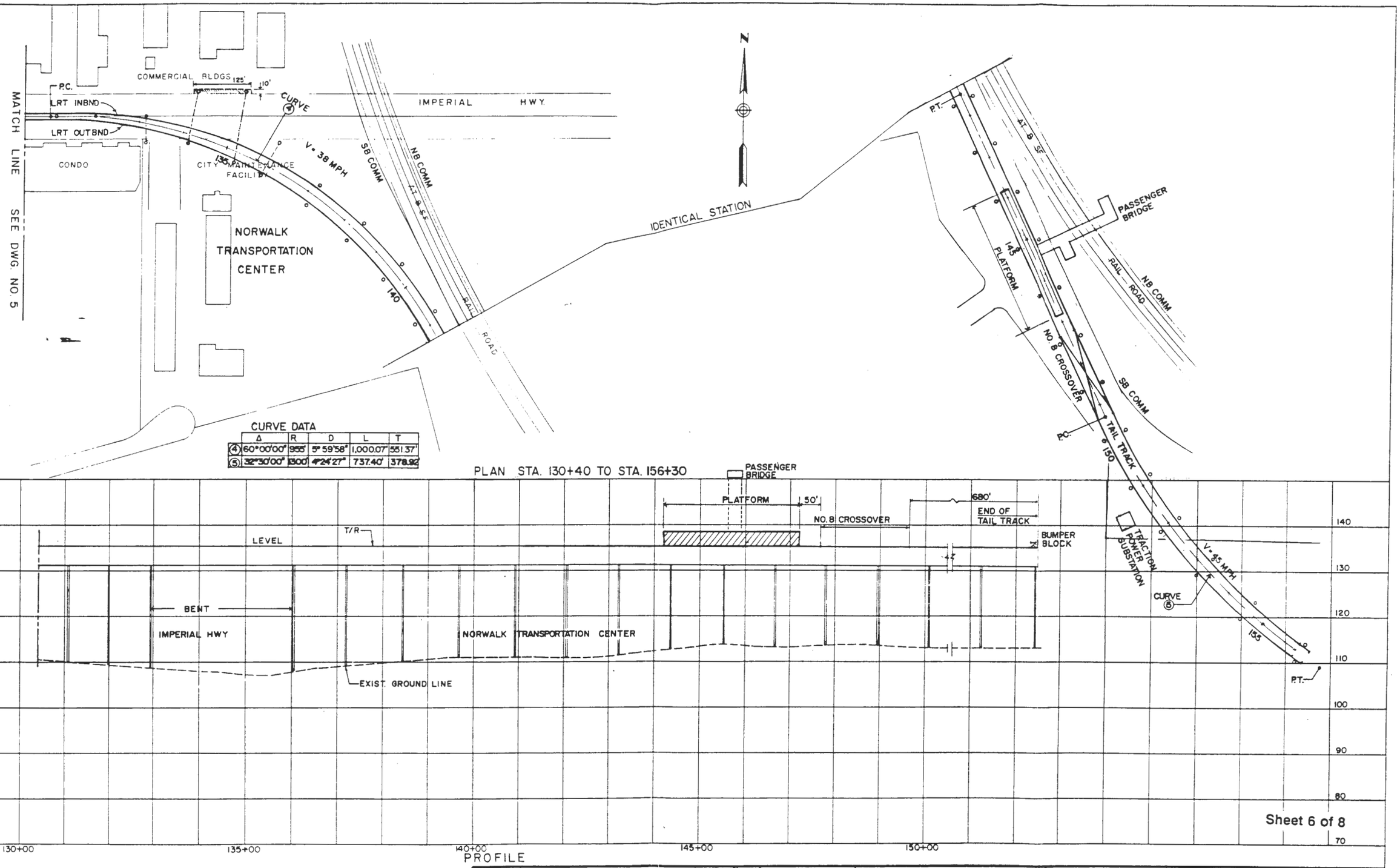
LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1
PLAN & PROFILE STA. 102+40 TO STA. 130+40

Date: 8-31-92

FIGURE 2-1

Dwg. No. 5



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Gannett Fleming
ENGINEERS AND PLANNERS

NO.	DATE	REVISION	BY	APP	APP

SCALE:
HOR. 1" = 100' (100 0 100 200)
VERT 1" = 10' (10 0 10 20)

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CHECKED BY: D. S.
APPROVED BY:

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1
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Date: 8-31-92

FIGURE 2-1

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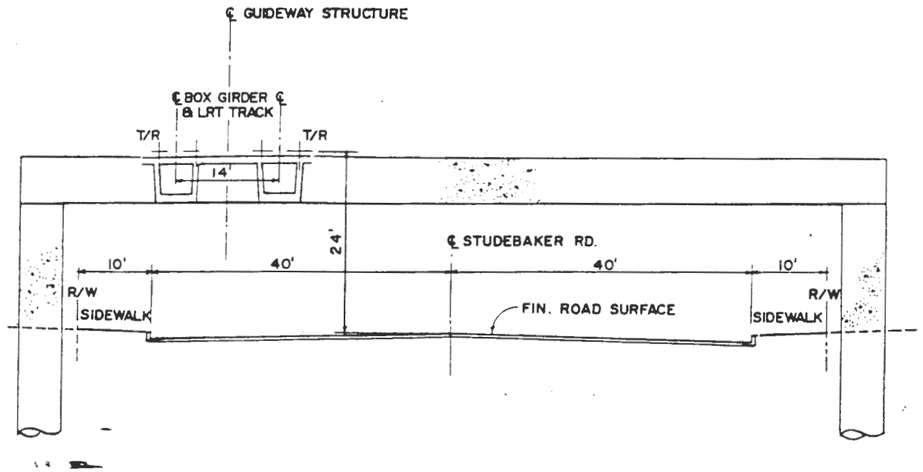
Sheet 6 of 8



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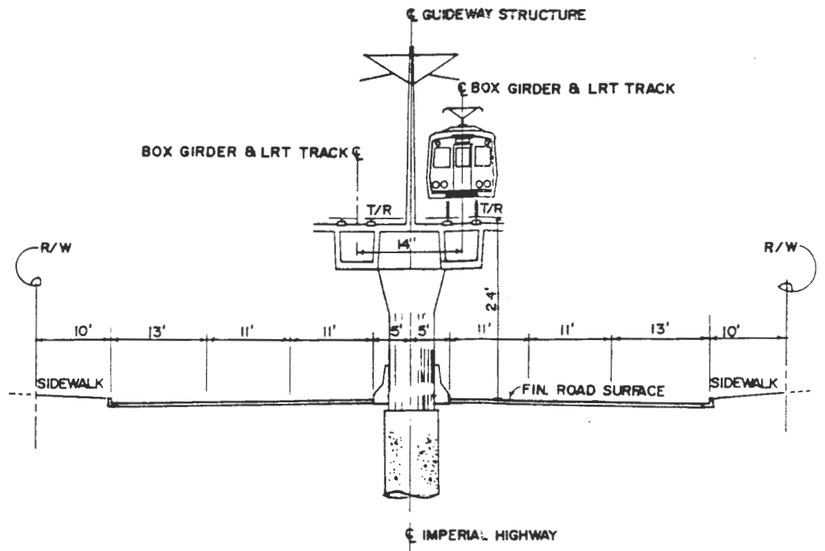

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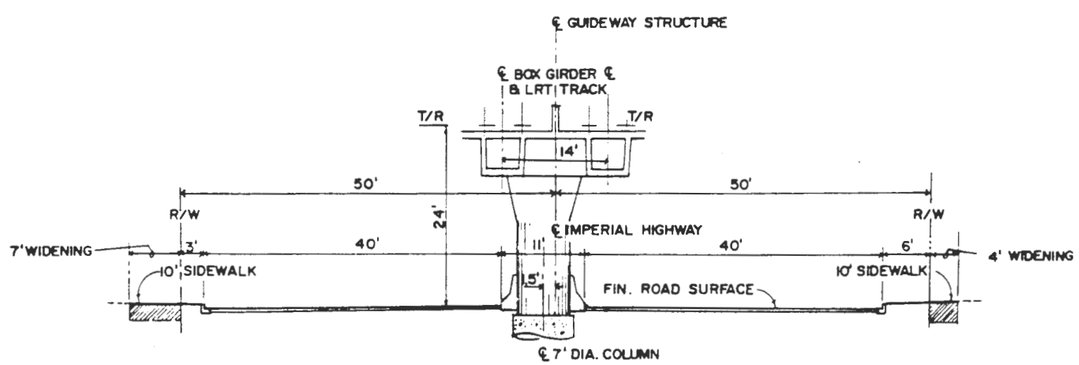
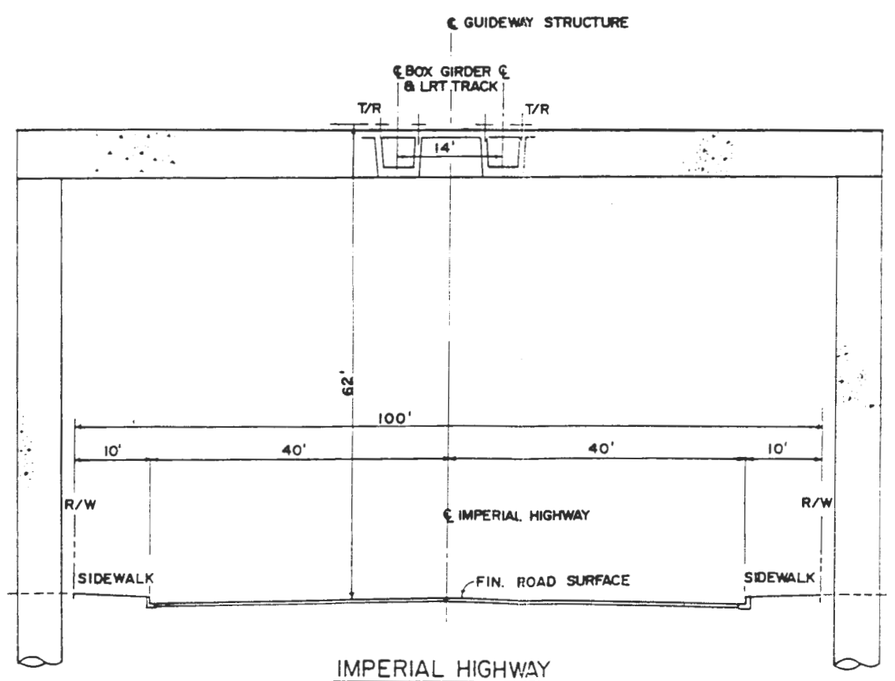


IMPERIAL HIGHWAY
SECTION STA. 100+50



IMPERIAL HIGHWAY
SECTION STA. 81+00

SECTIONS LOOKING EAST

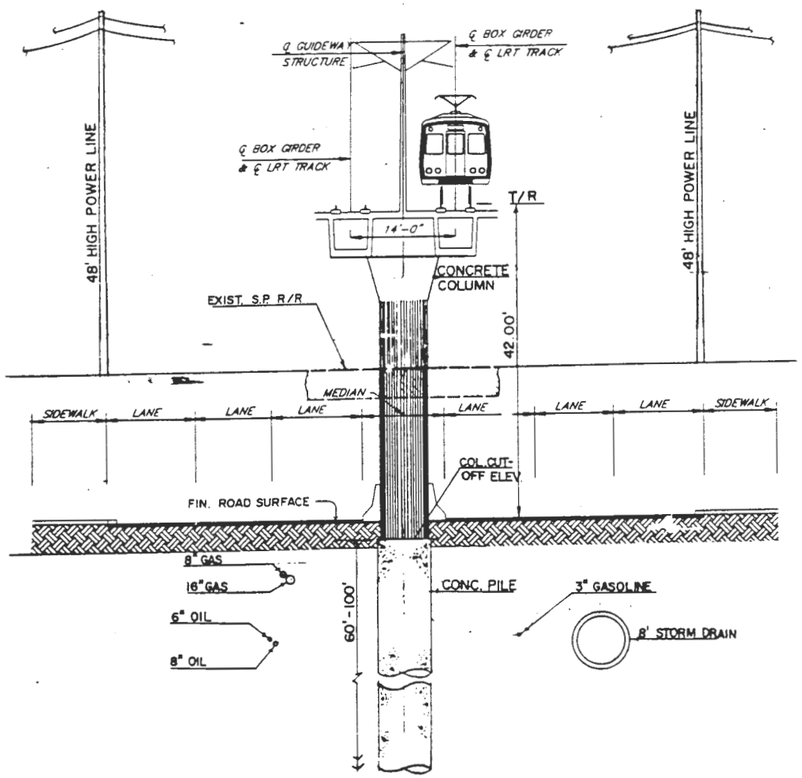
FIGURE 2-1
Sheet 7 of 8

Gannett Fleming
ENGINEERS AND PLANNERS

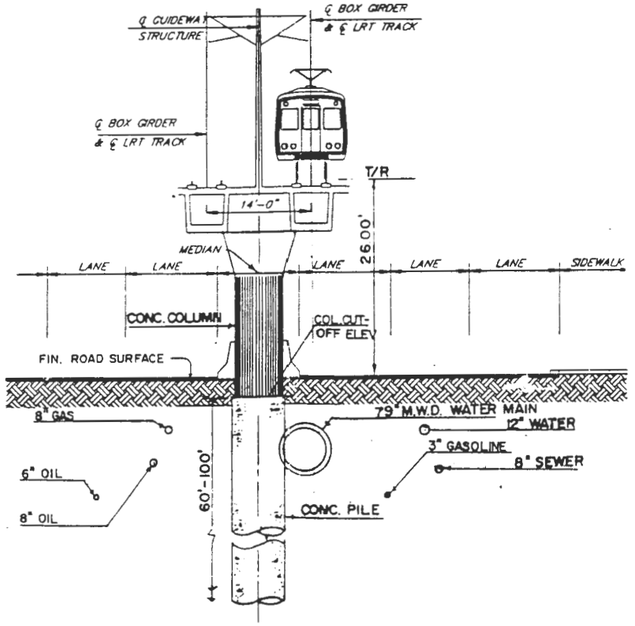
LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION
LACTC

ALTERNATIVE I
SECTIONS

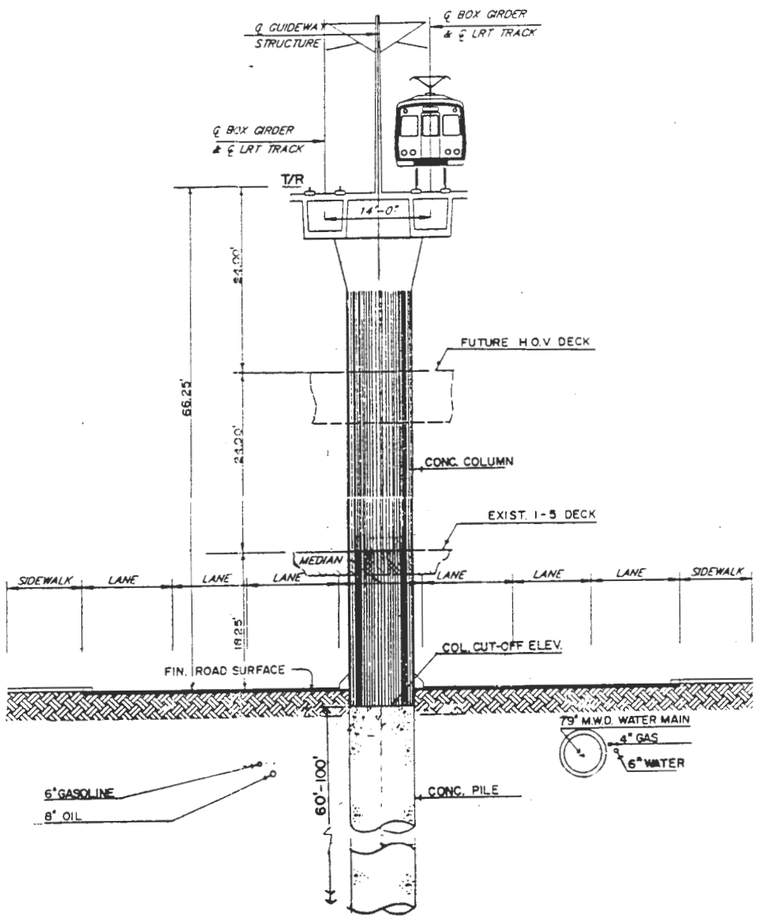
Date	DRAWN BY L D	CHECKED BY D.S	Dwg. No.
8-31-92	SECTIONS SCALE: 1" = 10'		7



IMPERIAL HIGHWAY
SECTION STA. 39+20



IMPERIAL HIGHWAY
SECTION STA. 65+50



IMPERIAL HIGHWAY
SECTION STA. 79+70

SECTIONS LOOKING EAST

FIGURE 2-1
Sheet 8 of 8

Gannett Fleming
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LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION
LACTC

ALTERNATIVE I
UTILITY SECTIONS

Date	DRAWN BY: L. D.	CHECKED BY: D. S.	Dwg. No.
8-31-92	SECTIONS SCALE: 1" = 10'		8

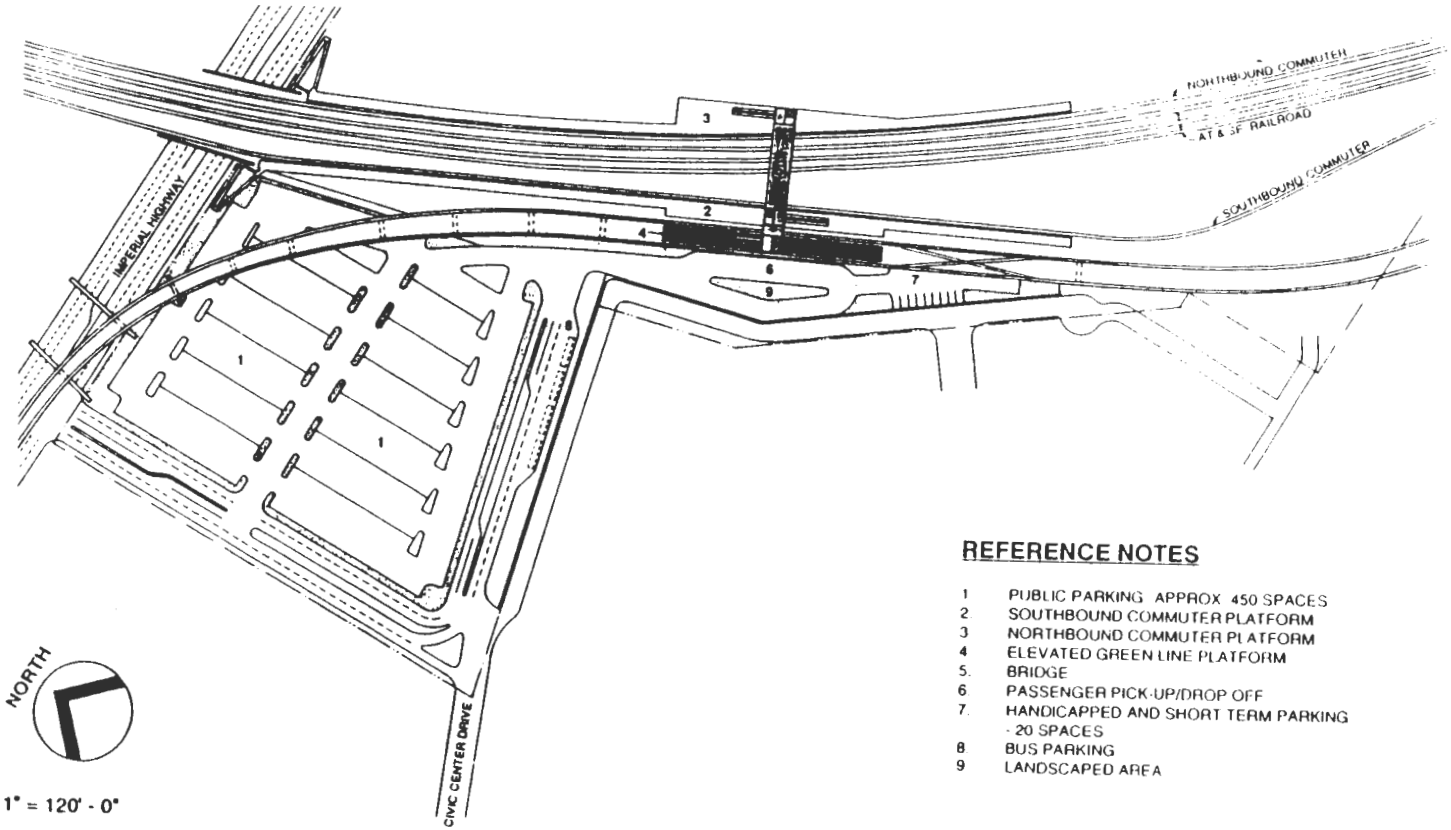
The aerial alignment would follow a route to the northeast toward Studebaker Road, passing over a church property west of Studebaker Road, opposite Borson Street. At Studebaker Road the guideway top-of-rail would be about 23 feet above the existing grade, with a 17-foot clearance between the bottom of the guideway structure and the street below. At this point, the guideway would be a concrete structure about 27 feet wide and generally 6 to 7 feet deep, with catenary poles in the center. The columns would be generally 7 to 10 feet in diameter, and usually a single column would support the center of the guideway, except where roadway geometry would prohibit such an installation, in which case, two columns would be placed outside the road right-of-way and a large concrete beam, or a "bent," would be placed to span the two columns. The guideway then would rest on the bent. The usual span between columns would be 130 feet.

The alignment would turn east on Imperial Highway, passing over a vacant lot on the southeast corner of Imperial Highway and Studebaker Road. At approximately Benfield Avenue, the alignment would be located over the center line of Imperial Highway. Proceeding east of Benfield Avenue, the alignment would cross over the Southern Pacific Railroad tracks, which are located on an overcrossing structure. At this juncture Imperial Highway is depressed below the Southern Pacific overcrossing bridge, and the top-of-rail would be approximately 43 feet above.

The alignment would then ~~turn~~ proceed east in an aerial configuration over the center of Imperial Highway and cross over the Firestone Boulevard intersection. Further east, after passing Jersey Avenue, the alignment would start an ascent that would be necessary to clear I-5. At Pioneer Boulevard the top-of-rail would be almost 50 feet above street level. The alignment would cross over I-5 at approximately 67 feet above street level, in order to clear a proposed High Occupancy Vehicle (HOV) structure located above I-5. The alignment would then descend to a height of 24 feet at top-of-rail east of Kalnor Avenue and proceed at this approximate height past Norwalk Boulevard and Bloomfield Avenue. Turning south, the alignment would enter the site of the proposed Norwalk Transportation Center (NTC), which is currently occupied by the City of Norwalk Maintenance Yard. The NTC site is south of Imperial Highway and west of the AT&SF railroad tracks.

Within the NTC site the alignment would be west of, and parallel to, the AT&SF tracks. The LRT aerial station would be approximately 24 feet above ground and would provide connection to the commuter rail platform below. Crossovers and tail tracks would be located beyond the center platform station, which would be accessed from the ground level via stairs, escalators and elevators. The commuter rail platforms would be accessed from the elevated station platform by another set of stairs, escalators and elevators via an overpass spanning the AT&SF tracks. The NTC site would also contain parking for approximately 400 cars as well as bus bays for transferring patrons. The southbound commuter track would be on the west side, whereas the northbound commuter track would be on the far east side. Patrons transferring between the Green Line and commuter service would use vertical circulation elements. The station would have a center platform. Transfers to ground transportation from the southbound commuter platform would be made directly at ground level; however, a transfer from a northbound train would require passengers to ascend, cross over, then descend.

Figure 2-2 and Figure 2-3 illustrate the proposed aerial alignment station at the Norwalk Transportation Center.



REFERENCE NOTES

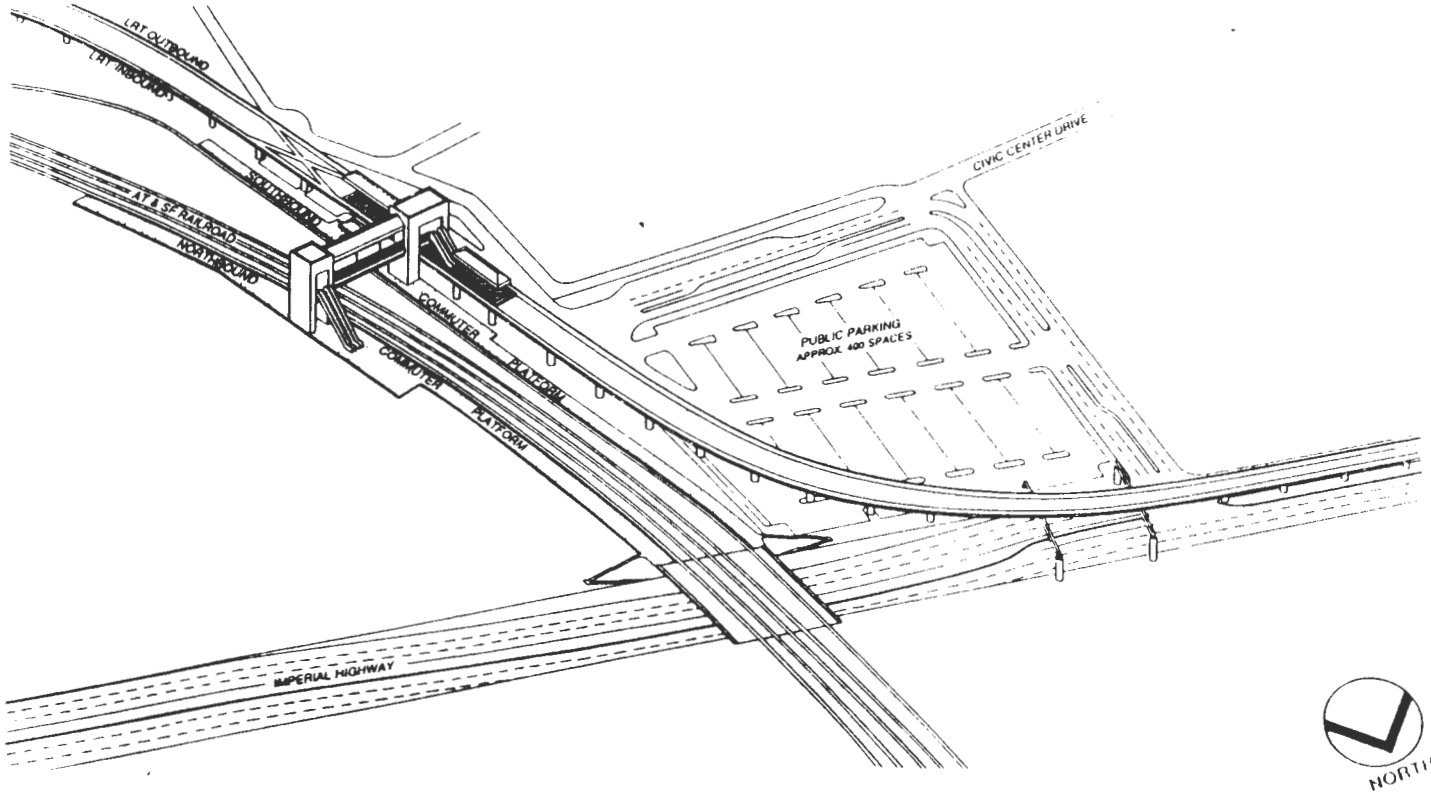
1. PUBLIC PARKING APPROX 450 SPACES
2. SOUTHBOUND COMMUTER PLATFORM
3. NORTHBOUND COMMUTER PLATFORM
4. ELEVATED GREEN LINE PLATFORM
5. BRIDGE
6. PASSENGER PICK-UP/DROP OFF
7. HANDICAPPED AND SHORT TERM PARKING - 20 SPACES
8. BUS PARKING
9. LANDSCAPED AREA

Source: The Tanzmann Associates.

Myra L. Frank & Associates, Inc.

Metro Green Line Easterly Extension
Environmental Impact Report

Figure 2-2: Aerial Alignment - Conceptual Site Plan - NTC



Source: The Tanzmann Associates.

Myra L. Frank & Associates, Inc.

Metro Green Line Easterly Extension
Environmental Impact Report

Figure 2-3: Aerial Alignment - Perspective View - NTC

2.2.2 Operating Characteristics

It is assumed that the LRT vehicle to be used on the Green Line Easterly Extension would be similar to that on the Blue Line, powered by an overhead catenary system which would provide 750 volts D.C. Electricity would be routed to the vehicle's traction motors which would be used to turn the wheels.

Initially a 87-foot articulated car would be used on the system. Each car would accommodate 76 seated passengers and 76 standing passengers, and up to three of these cars can be joined together to form a train. Ample room has been allowed at station platforms should patronage dictate more LRT vehicles.

The overall operating speed of the system would be 40 mph, with a maximum allowable speed of 65 mph. The maximum designed desirable grade is 4 percent and 300' is the minimum turning radius.

There would most likely be two traction power substations along this alignment. These take into account the geometry of the line (both horizontal and vertical profiles), vehicle size and capacity, operating speeds, the number of proposed vehicles on one circuit, headways, frequencies, etc. Typically, these substations are placed approximately 1 to 1.5 miles apart. For the aerial alternative, one substation would be placed within the public right-of-way at I-5 inside the ramps, and the second substation would be at the NTC site. The substation could be incorporated as part of a structure, or it could be a separate small structure, usually a brick/cement block building.

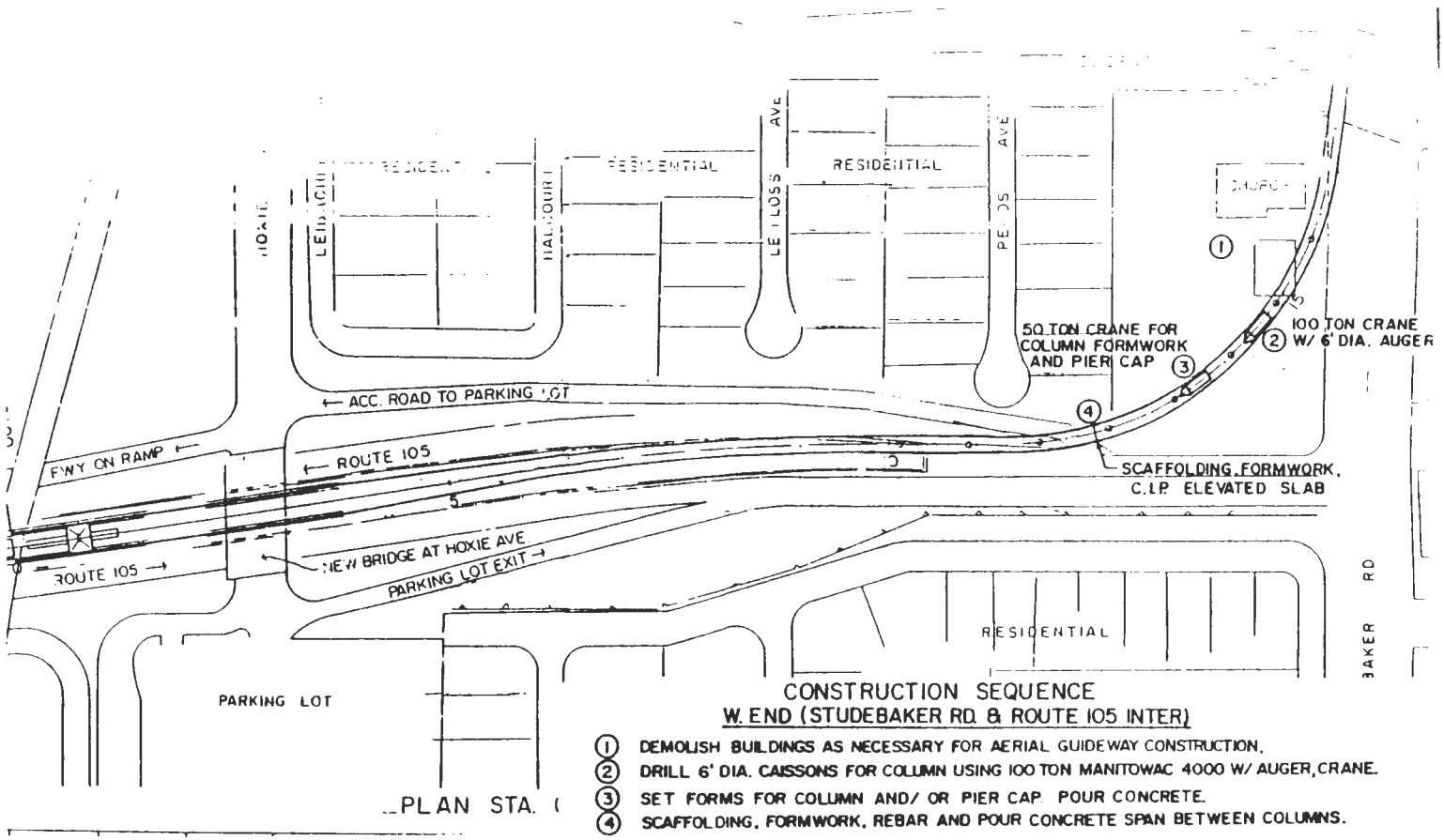
The aerial alternative would have train service 20 hours per day, between 4:30 A.M. and 12:30 A.M. The peak service periods would be weekdays from 5:30 to 8:30 A.M. and from 3:30 to 6:30 P.M. The operating headways would be 5 minutes during peak periods and 8 minutes during off-peak periods for the Metro Green Line's Norwalk to El Segundo section. When the branch to the North Coast Line is built, the headways on the Green Line Easterly Extension would be 2.5 minutes during peak periods and 4 minutes during off-peak periods. To travel the 2.79 mile distance between the I-605/Studebaker Station and the Norwalk Transportation Center Station would take 4.18 minutes, with an overall operating speed of 40 mph.

2.2.3 Construction Sequence

The following narrative describes the overall construction process from the west end at Studebaker/I-105 to the Norwalk Transportation Center on the east end. It should be noted that various segments or specific contract limits may be constructed simultaneously thereby reducing the overall construction period of the project. Figure 2-4 illustrates the construction sequence for this alignment.

<u>West End Construction</u>

Construction activities at the west end of the alignment would include clearing of sites, relocating utilities, managing traffic destined to either the Metro Green Line or the I-605/I-105 freeways, constructing guideway columns and sections, installing operating equipment and fixtures and providing connections to Green Line service.



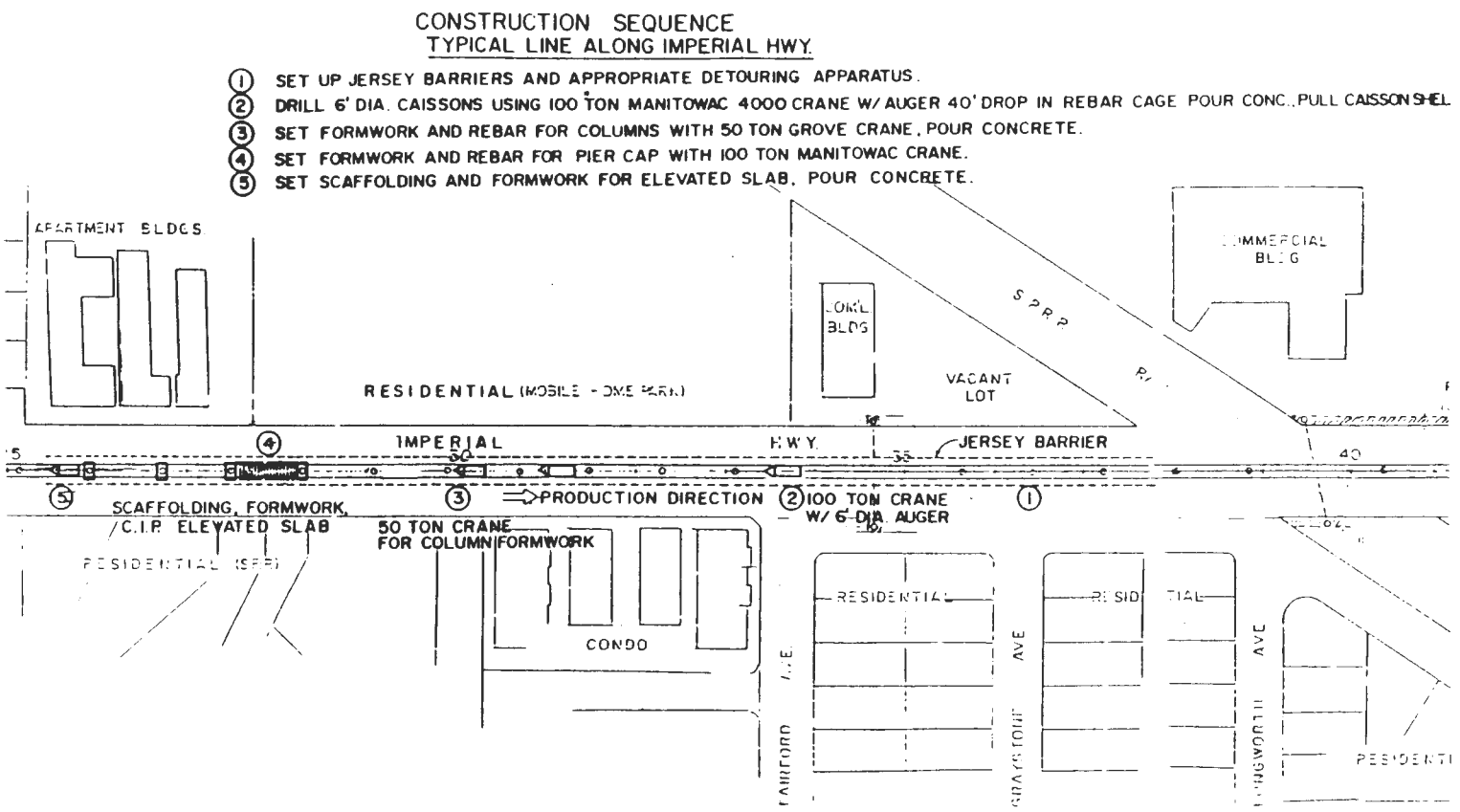
Sheet 1 of 3

Source: Gannett Fleming, Inc.

Myra L. Frank & Associates, Inc.

Metro Green Line Easterly Extension
Environmental Impact Report

Figure 2-4: Aerial Alignment - Construction Sequence



Sheet 2 of 3

Source: Gannett Fleming, Inc.

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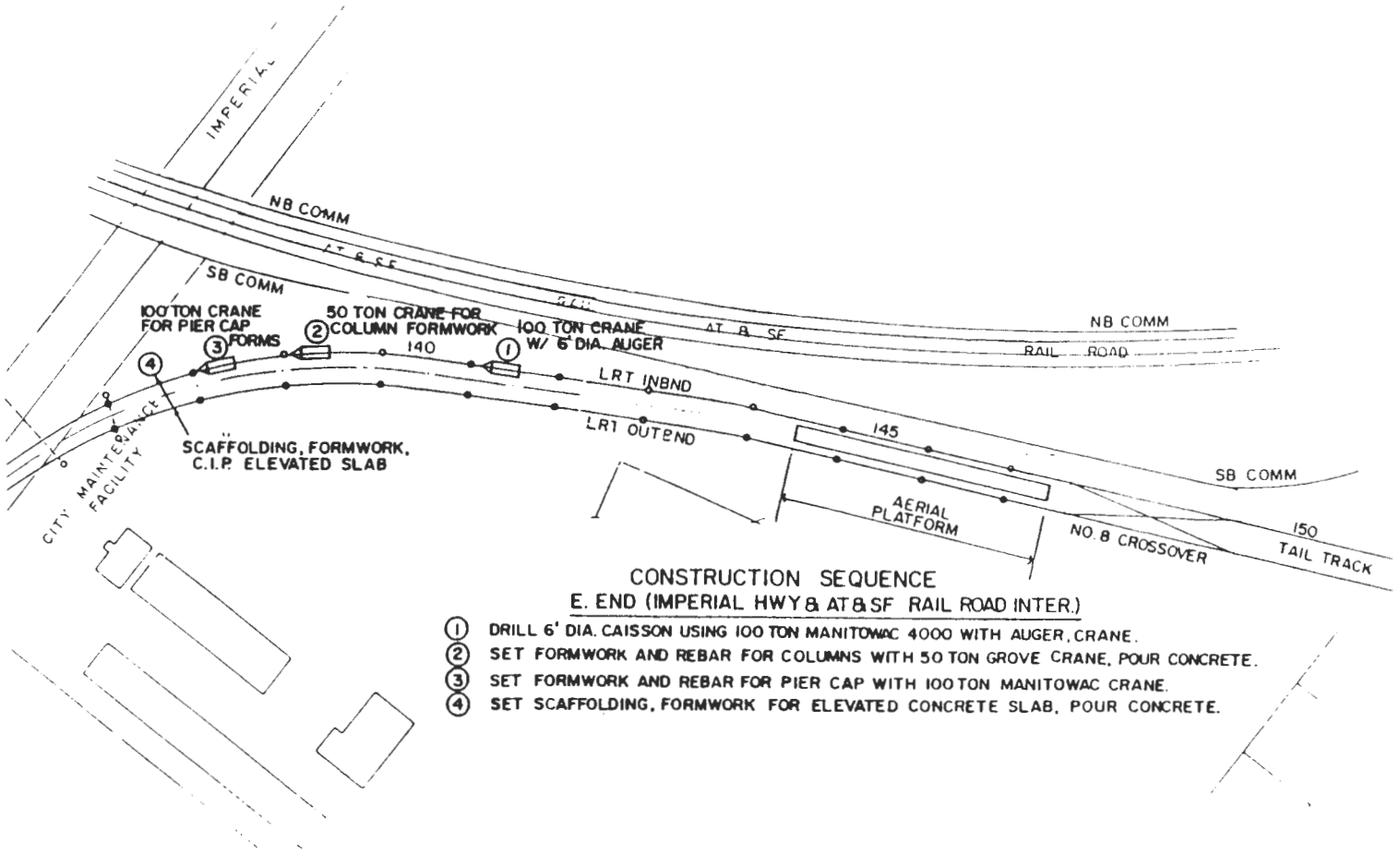
Metro Green Line Easterly Extension
Environmental Impact Report

Figure 2-4: Aerial Alignment - Construction Sequence



Source: Gannett Fleming, Inc.

Sheet 3 of 3

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Metro Green Line Easterly Extension
Environmental Impact Report

Figure 2-4: Aerial Alignment - Construction Sequence

West End construction would be complicated because the alignment begins to climb near the end of the existing Green Line Station platform, a condition that ~~w~~could necessitate the ~~removal~~ **relocation** of tail tracks and crossovers. Crossovers could be relocated to the west end of the platform, which would permit loading and unloading of passengers onto the platform from either inbound or outbound tracks. The lack of a tail track would be disadvantageous because there would be no place to store malfunctioning cars or start-up cars for the morning. Also, access into the retained cut area would be difficult for heavy equipment.

A further disadvantage of west end construction would be the configuration of the guideway over I-105 and access ramp roads. Long spans would be necessary in order to cross this area, and traffic mitigation measures such as nighttime construction and detours would probably be required.

Center Section Construction

The center section of the project would extend from approximately Studebaker Road and Imperial Highway to east of Bloomfield Avenue and Imperial Highway. Construction activities in this portion of the project would include managing traffic and detours, relocating utilities, placing columns, bents and guideway sections, installing operating equipment and fixtures and constructing required street and signalization improvements.

The alignment would be located over the middle of Imperial Highway. Trucks hauling spoil, rebar, forms, and other items would be traveling to and from construction sites, contributing to traffic congestion. A portion of the guideway would be constructed using cross-bents, and in order to drill a ~~pile~~ **caisson** on either side of Imperial Highway at a specific location, the drill rig must be set up either in the street or on private property. This would also affect traffic adversely. Also, it would be necessary to span Imperial Highway to set forms and pour transverse sections of the beams.

In areas where the guideway would be required to be extremely high, namely over the SPRR and I-5, additional width at the bottom may be necessary to support scaffolding. If this is the case, adjacent traffic lanes would be further reduced. Construction measures similar to those being used for construction over the HOV facility of the Harbor Freeway may be required. Overall, the construction process to be experienced along Imperial Highway would likely be cumbersome and disruptive.

East End Construction

Construction activities at the east end of the project consist of site clearance, utility relocation, construction activities necessary to bring the guideway into the site from Imperial Highway and construction of the light rail station and related facilities.

This open site would ~~be~~ make guideway and station construction less difficult. Typical aerial guideway construction techniques would occur here. Upon approaching the platform the single, two-track guideway would be split into two separate guideways.

It is anticipated that commuter rail service would be in operation at the time the Green Line Easterly Extension is under construction. As a result, the commuter parking lot/bus transfer areas that would be in place for the commuter operation would be displaced during construction of the Green Line Easterly Extension.

A. SUBWAY ALIGNMENT

1. Physical Description

The subway alignment would begin at the I-605/Studebaker Station, currently the eastern terminus station of the Green Line. Figure 2-5 illustrates the subway alignment. The I-605/Studebaker Station is in an open cut approximately 20 feet below the existing ground level.

Conditions to be expected in the vicinity of the freeway and station are discussed in section 2.2.1.

Beginning from a position already partially below grade, the alignment would proceed east and north toward Studebaker Road and descend further underground, with a portal located between LeFloss and Pecos avenues and under the access ramp of I-105. Green Line Easterly Extension tunnels would be approximately 20 to 22 feet in diameter and 30 to 35 feet apart at center. They would not be positioned to disturb the freeway and parking lot ramps as they pass under them.

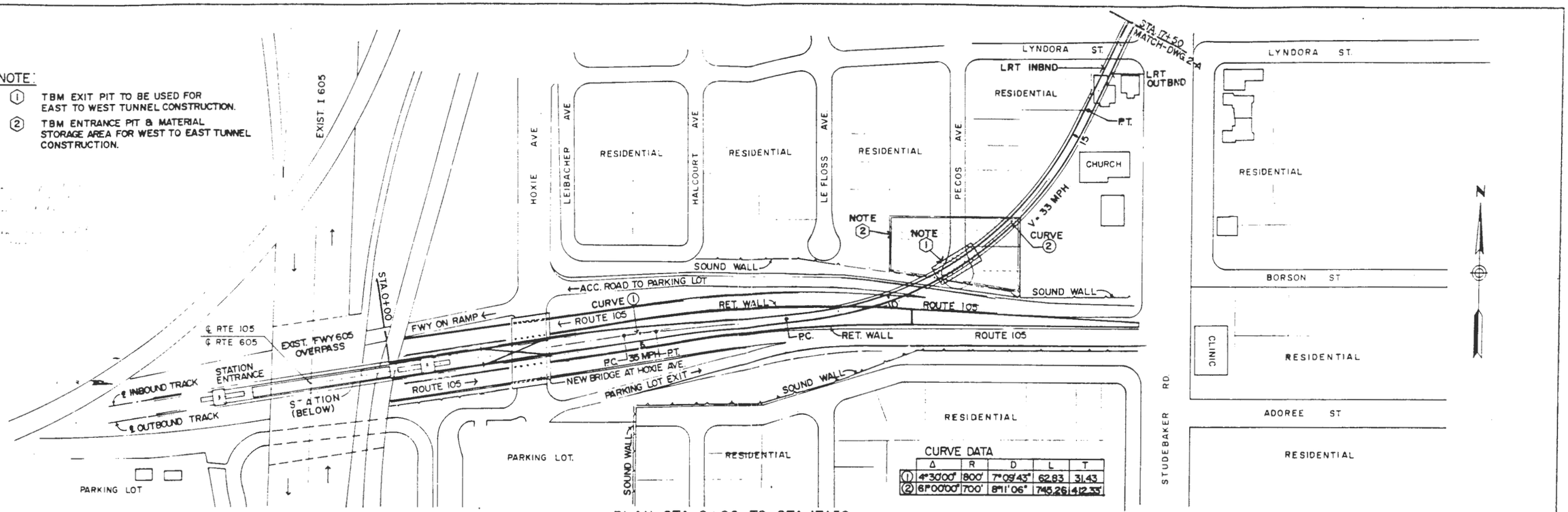
The alignment would pass under residential and church property. At Studebaker Road the alignment would be almost 50 feet below the existing ground level. The alignment would then turn in a northeasterly direction toward Imperial Highway, while crossing under private property at the southeast corner of Imperial Highway and Studebaker Road. By the time it reaches Benfield Avenue, the alignment would be completely within the public right-of-way of Imperial Highway. From this point on, the alignment would proceed eastward under Imperial Highway and cross under the SPRR overpass. It would then proceed under the Firestone Boulevard and Pioneer Boulevard intersections, cross under I-5, Norwalk Boulevard and Bloomfield Avenue to finally turn south into the site of the proposed Norwalk Transportation Center (NTC). The NTC site is south of Imperial Highway and west of the AT&SF Railroad tracks. Figure 2-6 and Figure 2-7 illustrate the subway alignment station at the Norwalk Transportation Center.

A vent shaft is a necessary component of the subway alignment. The shaft would be located in an open area straddling Imperial Highway immediately ~~west~~ **east** of I-5. Vent shafts are hollow concrete structures that connect the subway tunnels to the ground surface above for the purpose of relieving the air pressure resulting from train movement inside the tunnels. The exact size of the vent shaft would be determined when final calculations are made, but it would be approximately four to six feet square at the surface. The vent shaft may be flush with the surface, such as a sidewalk, or it may be raised above the surface to prevent surface drainage from entering subway tunnels through the vent shafts. The top of the shaft would have a grating flush with its edge. This is to prevent large objects or people from falling into the shaft.

The alignment would climb out of the underground profile to a station within the NTC site at approximately four feet below the existing grade. Crossovers and tail tracks would be located beyond the center platform station, which would be accessed by stairs, escalators and elevators via an overpass. The same overpass would continue to the commuter rail platforms, which are

NOTE:

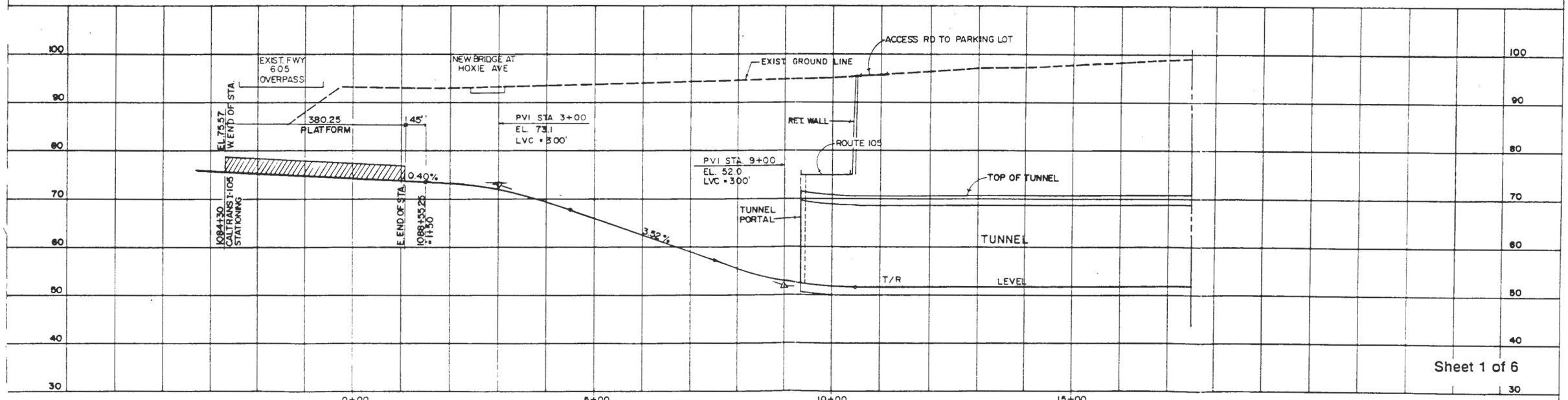
1. TBM EXIT PIT TO BE USED FOR EAST TO WEST TUNNEL CONSTRUCTION.
2. TBM ENTRANCE PIT & MATERIAL STORAGE AREA FOR WEST TO EAST TUNNEL CONSTRUCTION.



CURVE DATA

	Δ	R	D	L	T
(1)	4°30'00"	800'	7°09'43"	62.83	31.43
(2)	61°00'00"	700'	8°11'06"	745.26	412.33

PLAN STA. 0+00 TO STA. 17+50



PROFILE

Sheet 1 of 6

Gannett Fleming
ENGINEERS AND PLANNERS

NO.	DATE	REVISION	BY	APP	APP

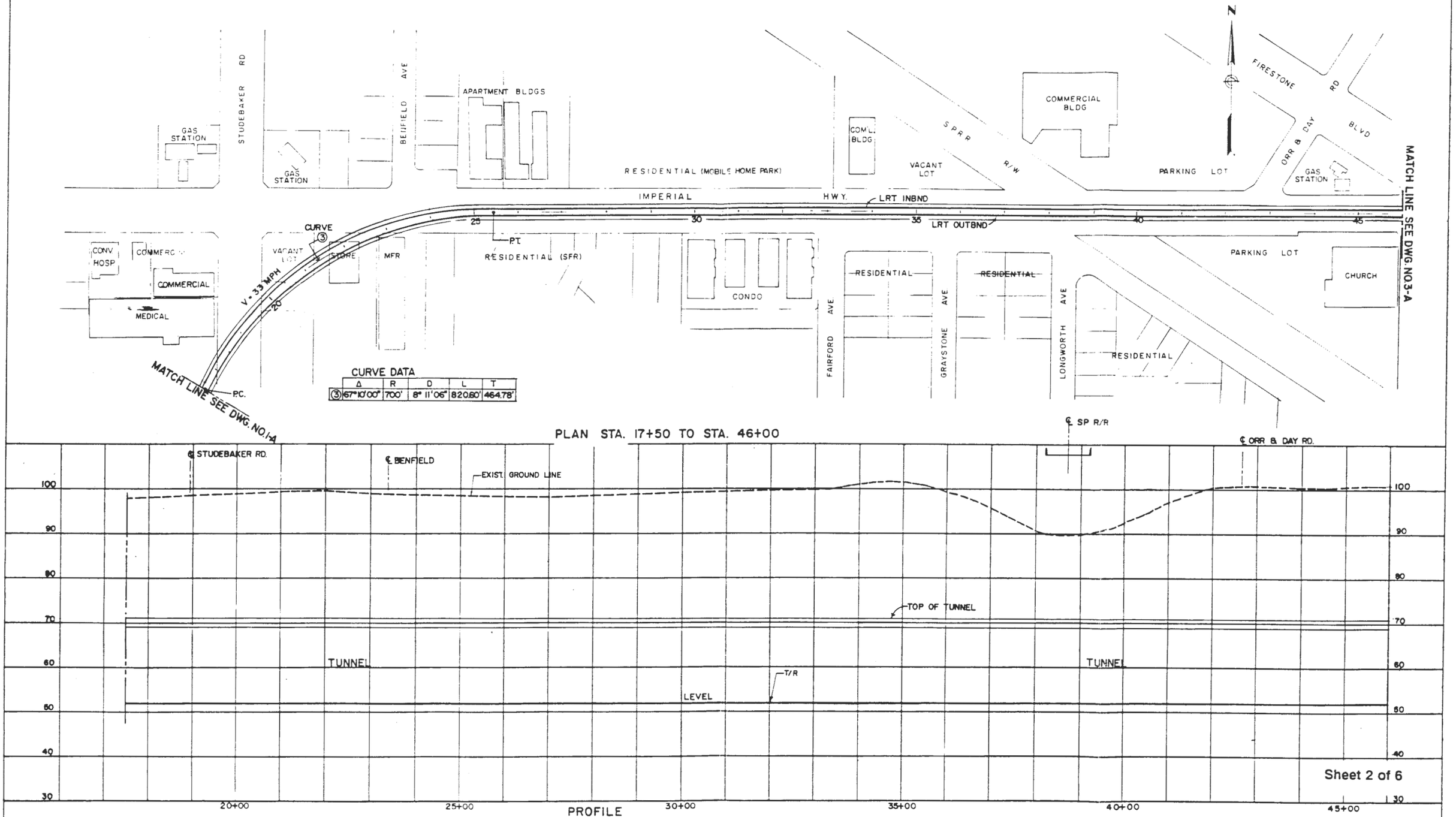
SCALE: HOR. 1" = 100 (100 0 100 200); VERT. 1" = 10' (10 0 10 20)

DRAWN BY:	CHECKED BY:	APPROVED BY:
L. D.	D. S.	

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1-A
PLAN & PROFILE STA. 0+00 TO STA. 17+50

Date		Dwg. No.
8-31-92	FIGURE 2-5	1-A



Sheet 2 of 6

Gannett Fleming
ENGINEERS AND PLANNERS

NO.	DATE	REVISION	BY	APP	APP

SCALE:
HOR. 100 0 100 200 (1" = 100')
VERT. 10 0 10 20 (1" = 10')

DRAWN BY:	CHECKED BY:	APPROVED BY:
L. D.	D. S.	

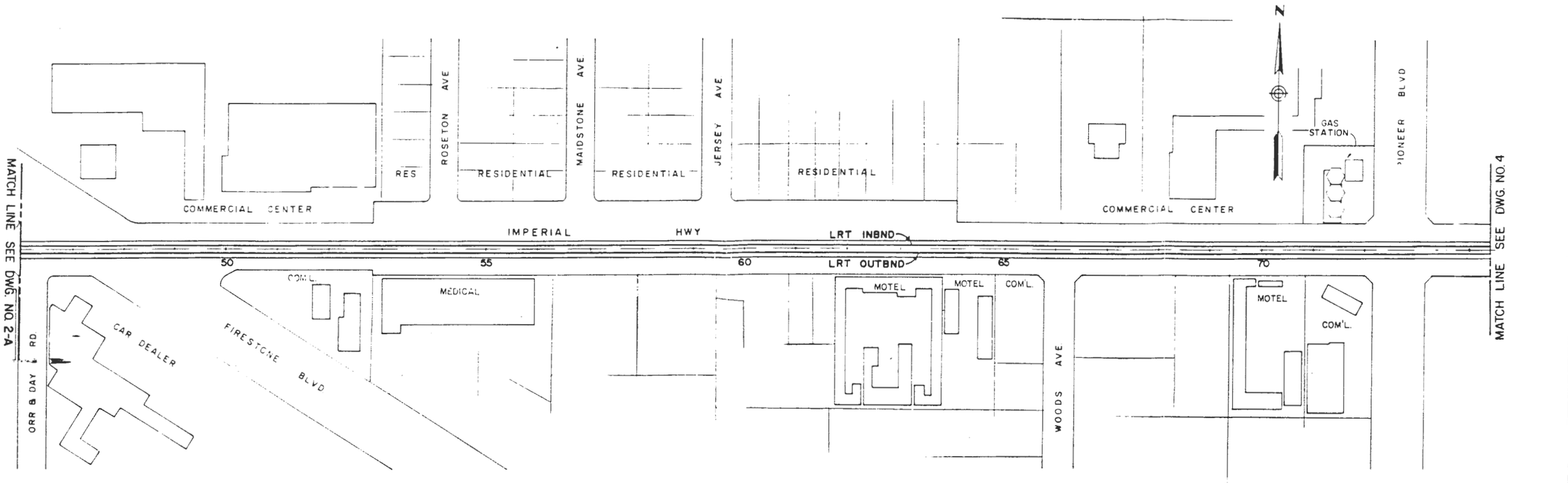
LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1-A
PLAN & PROFILE STA. 17+50 TO STA. 46+00

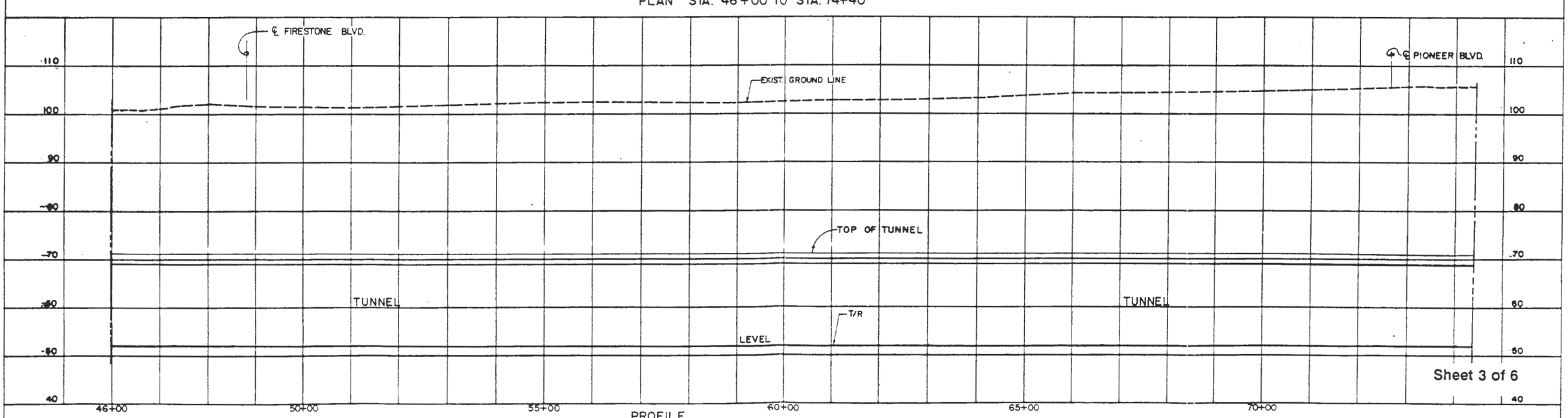
Date: 8-31-92

FIGURE 2-5

Dwg. No. 2-A



PLAN STA. 46+00 TO STA. 74+40



PROFILE

Gannett Fleming
ENGINEERS AND PLANNERS

NO.	DATE	REVISION	BY	APP	APP

SCALE: HOR. 1" = 100' (100 0 100 200); VERT. 1" = 10' (10 0 10 20)

DRAWN BY:	CHECKED BY:	APPROVED BY:
L. D.	D. S.	

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1-A
PLAN & PROFILE STA. 46+00 TO STA. 74+40

Date		Dwg. No.
8-31-92	FIGURE 2-5	3-A

MATCH LINE SEE DWG. NO. 3-A

SHOPPING CENTER

SANTA ANA FWY.

TRACTION POWER SUBSTATION

RESIDENTIAL

ZEUS AVE

VACANT LOT

PADDISON AVE.

SHOPPING CENTER

KALNOR AVE

PARKING LOT

GAS STATION

NORWALK BLVD

MATCH LINE SEE DWG. NO 5-A

N

IMPERIAL HWY.

LRT INBND

LRT OUTBND

75 80 85 90 95 100

SHOPPING CENTER

VENT SHAFT

I-5

RESIDENTIAL

RESIDENTIAL

M COM'L.

LYNDORA ST

ZEUS AVE

RES

MEDICAL

MEDICAL

MULTI-FAMILY RES. (MFR)

MFR

SHOPPING CENTER

PLAN STA. 74+40 TO STA. 102+40

℄ I-5

℄ PADDISON AVE.

℄ KALNOR AVE.

℄ NORWALK BLVD.

110 100 90 80 70 60 50 40

EXIST. GROUND LINE

VENT SHAFTS

TOP OF TUNNEL

TUNNEL

LEVEL

T/R

TUNNEL

75+00 80+00 85+00 90+00 95+00 100+00

PROFILE

Sheet 4 of 6

Gannett Fleming
ENGINEERS AND PLANNERS

NO.	DATE	REVISION	BY	APP	APP

SCALE: HOR. 1" = 100' (100 0 100 200); VERT. 1" = 10' (10 0 10 20)

DRAWN BY:	CHECKED BY:	APPROVED BY
L.P.	D.S.	

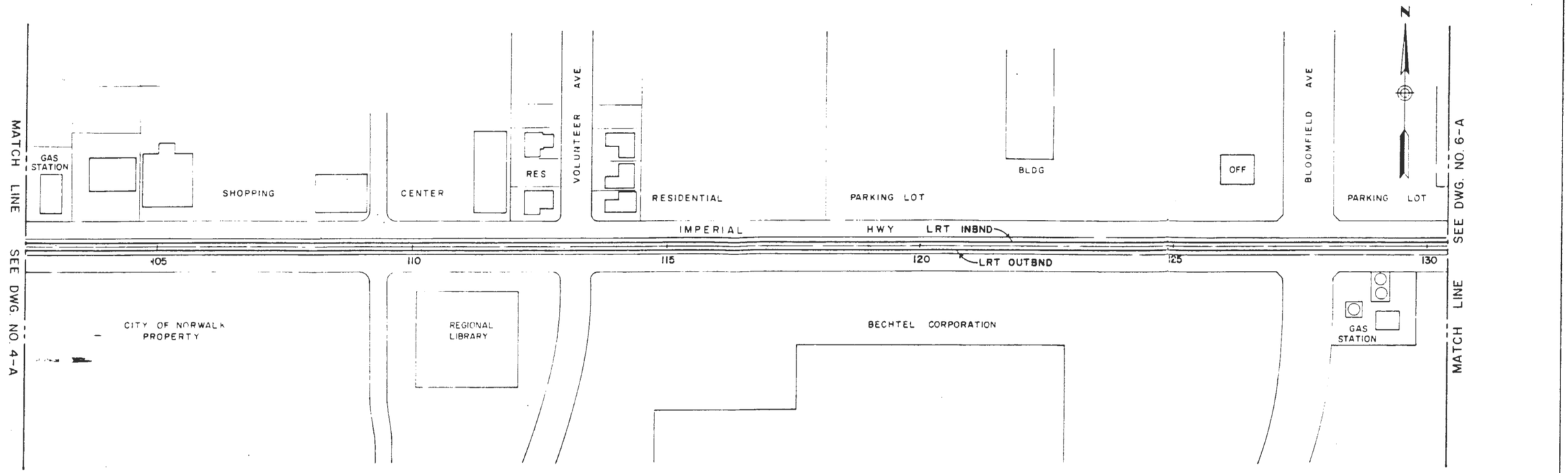
LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1-A
PLAN & PROFILE STA. 74+40 TO STA. 102+40

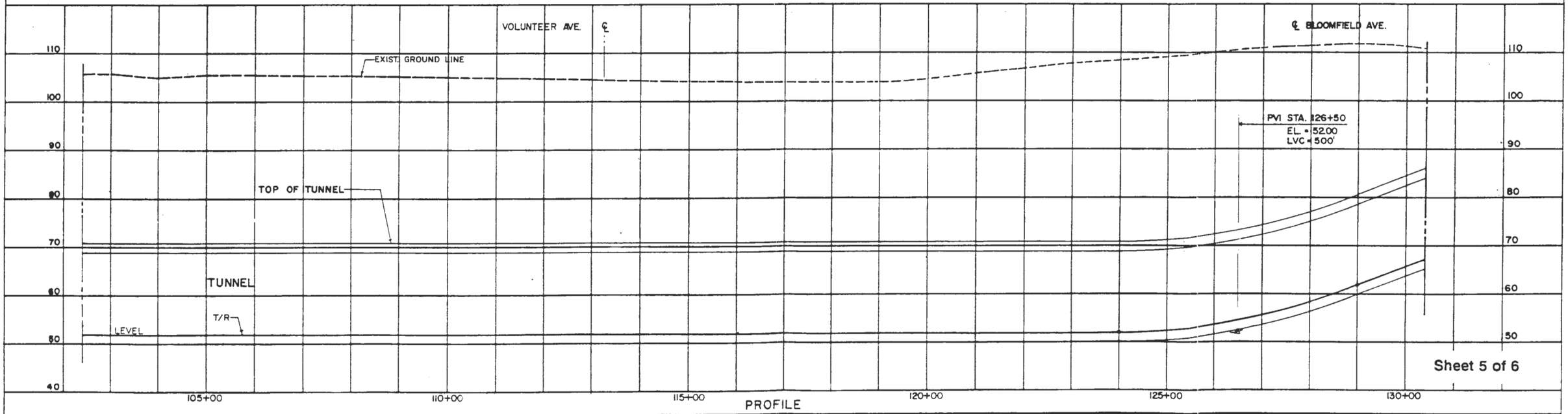
Date 8-31-92

FIGURE 2-5

Dwg. No. 4-A



PLAN STA. 102+40 TO STA. 130+40



PROFILE

Gannett Fleming
ENGINEERS AND PLANNERS

NO.	DATE	REVISION	BY	APP	APP

SCALE:
HOR. 100 0 100 200 — 1" = 100'
VERT. 10 0 10 20 — 1" = 10'

DRAWN BY:	CHECKED BY:	APPROVED BY:
L. D.	D. S.	

LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1-A
PLAN & PROFILE STA. 102+40 TO STA. 130+40

Date		Dwg. No.
8-31-92	FIGURE 2-5	5-A

Sheet 5 of 6

MATCH LINE SEE DWG. NO. 5-A

COMMERCIAL BLDGS.

P.C.

LRT INBND

LRT OUTBND

V = 38 MPH

CURVE ④

IMPERIAL HWY

135

PORTAL

CONDO

CITY MAINTENANCE FACILITY

RET WALL

RET WALL

SB COMM AT B ST

NB COMM AT B ST

NORWALK TRANSPORTATION CENTER

140

RAIL

END OF RETAINED SECTION

IDENTICAL STATION

N

P.T.

AT B ST

144+00

145

PASSENGER BRIDGE

PLATFORM

RAIL ROAD

NB COMM

NO. 8 CROSSOVER

SB COMM

P.C.

150

TAIL TRACK

TRACTION POWER SUBSTATION

V = 45 MPH

CURVE ⑤

155

END TAIL TRACK

BUMPER BLOCK

P.T.

CURVE DATA

	Δ	R	D	L	T
④	60°00'00"	955'	5° 59'58"	1,000.07'	551.37'
⑤	32°30'00"	300'	19° 24'27"	737.40'	378.92

PLAN STA. 130+40 TO STA. 156+30

PVI STA 132+00
EL. = 74.00
LVC = 400'

600'

R/W

PVI STA 141+00
EL. = 109.50
LVC = 400'

PLATFORM

50'

NO. 8 CROSSOVER

END TAIL TRACK

IMPERIAL HWY

79" MWD
5'-5" BELOW FS

12"

TOP OF TUNNEL

PORTAL

EXIST. GROUND LINE

4.00 %

25' MIN.

TUNNEL

BUMPER BLOCK

P.T.

140 130 120 110 100 90 80 70 60 50

135+00 140+00 145+00 150+00 155+00

PROFILE

Sheet 6 of 6

Gannett Fleming
ENGINEERS AND PLANNERS

NO.	DATE	REVISION	BY	APP	APP

SCALE:
HOR. 1"=100' (100 0 100 200)
VERT. 1"=10' (10 0 10 20)

DRAWN BY:	CHECKED BY:	APPROVED BY:
L. D.	D. S.	

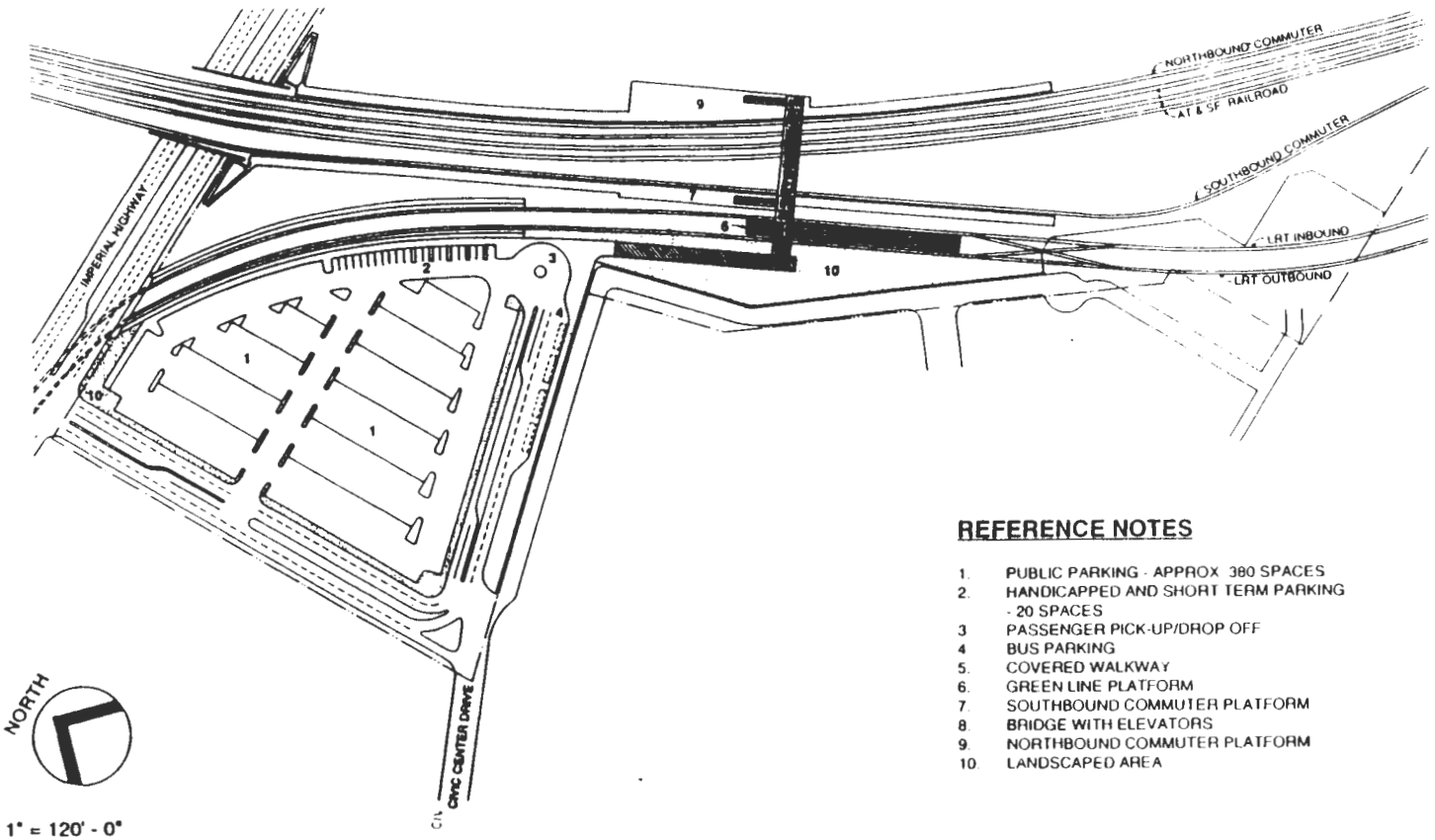
LOS ANGELES COUNTY TRANSPORTATION COMMISSION
METRO GREEN LINE EASTERLY EXTENSION

ALTERNATIVE 1-A
PLAN & PROFILE STA. 130+40 TO STA. 156+30

Date: 8-31-92

FIGURE 2-5

Dwg. No. 6-A



REFERENCE NOTES

1. PUBLIC PARKING - APPROX 380 SPACES
2. HANDICAPPED AND SHORT TERM PARKING - 20 SPACES
3. PASSENGER PICK-UP/DROP OFF
4. BUS PARKING
5. COVERED WALKWAY
6. GREEN LINE PLATFORM
7. SOUTHBOUND COMMUTER PLATFORM
8. BRIDGE WITH ELEVATORS
9. NORTHBOUND COMMUTER PLATFORM
10. LANDSCAPED AREA

Source: The Tanzmann Associates.

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Figure 2-6: Subway Alignment - Conceptual Section - NTC

also accessed by stairs, escalators and elevators. The NTC site also contains parking for approximately ~~380~~ 400 cars and bus bays for transferring patrons. The southbound commuter track would be on the west side, whereas the northbound commuter track would be on the far east side. Patrons transferring from the Green Line to commuter service, or vice versa, would use vertical circulation elements. The Green Line platform would be a high, center type. However, transfers to ground transportation from the southbound commuter platform would be made directly on the ground, whereas a transfer from a northbound train would require passengers to ascend, cross over, and descend. (Figure 2-8.)

2.3.2 Operating Characteristics

It is assumed that the LRT vehicle to be used on the Green Line would be similar to trains currently being used on the Blue Line. These cars, which accommodate 76 seated passengers and 76 standing passengers, use an overhead catenary system which provides 750 volts D.C. Electricity is routed to traction motors which convert the energy into mechanical form to propels the cars. Typically trains would consist of a 87-foot articulated single car; however, up to three such cars could be joined together to form a longer train, where necessary. Ample expansion room has been allowed at station platforms in the event patronage dictates more vehicles.

There will most likely be two traction power substations along this alignment, taking into account the geometry of the line (both horizontal and vertical profiles), vehicle size and capacity, operating speeds, the number of proposed vehicles on one circuit, headways, frequencies, etc. Typically, these substations are placed approximately 1 to 1.5 miles apart. For the subway alignment, one substation would be placed at I-5 within the public land inside the ramps, and the second substation would be at the NTC site. The substation itself is often hidden along the alignment by making it part of a structure. In other cases where this is not feasible, a separate small structure, usually a brick/cement block building, would be adequate.

The subway alternative would offer train service 20 hours per day, between 4:30 A.M. and 12:30 A.M. The peak service periods would be 5:30 to 8:30 A.M. and 3:30 to 6:30 P.M. on weekdays. Operating headways would be 5 minutes during peak periods and 8 minutes during off-peak periods for the Metro Green Line's Norwalk to El Segundo section. When the branch to the North Coast Line is built, then the train headways on the Green Line Easterly Extension would be 2.5 minutes during peak periods and 4 minutes during off-peak periods, with a travel time of 3.62 minutes for the 2.78 miles between the I-605/Studebaker Station and the NTC station. Trains would attain a maximum average operating speed of 46 mph. The system's overall operating speed would be 40 mph, and the maximum speed would be 65 mph. The maximum desirable grade is 4 percent, and the minimum radius is 300'.

2.3.3 Construction Sequence

Construction activities associated with the subway alignment would differ quite markedly from construction activities associated with the aerial alignment. Nearly all construction activities (excepting the vent shaft) would be focused at the area used to establish the tunnel portal. This area, referred to as the "staging area," would be the location where materials would be removed from the tunnel excavation, installed in the subway and stockpiled for use as needed. The following section discusses the subway construction staging are, and the following describes construction of the vent shaft.

Staging

There are two logical tunnel pit locations, one at the east end of the alignment, the other on the west end. The east end site would be within the proposed Norwalk Transportation Center. Existing structures on the site have been cleared away, providing an area for the contractor's laydown and staging arena. The pit itself should begin on a tangent alignment to facilitate operations and to ensure a higher degree of survey accuracy. Trucks hauling tunnel spoil would have direct access to Imperial Highway and the site. **The estimated tunnel spoil hauling and the rate of tunnel production would be as per the west end pit discussion below. The tunnel boring machine would exit at the west end once a single tube has been bored from the east. The equipment for drilling under the I-105/access ramp shown in Figure 2-9 would be used for removing the tunnel boring machine. This construction access pit may impact access to one existing home.**

The pit location, if situated at the west end, would be somewhat more complicated. For purposes of illustration, the west end staging area has been assumed in the construction sequence shown in Figure 2-9. The area between Lyndora, Pecos, and LeFloss Avenue would be required as an open area for construction staging purposes. As a result, 17 existing homes located there ~~would need to~~ **may** be acquired and removed or demolished. The tunnel pit would be excavated for the tunnel boring machine. All spoil for the entire operation would exit from this location, and all subway construction materials would enter from this location. Also, construction materials would be stockpiled at the staging area.

It is estimated that a total of 395,000 cubic yards of material would be hauled from the site, entailing the use of 30 trucks per 8-hour work day for a period of two years. There are many variables affecting this, however, and therefore these figures should be regarded as estimates. The length of haul, tunneling, rate of production and traffic routing are some of the factors involved.

The rate of tunnel production is estimated to be 70 lineal feet per day. Again, this would be affected by soil conditions, ~~mucking~~ **soil disposal** operations, tunneling methods, etc. However, the number of hauling trucks (30) would balance the lineal footage rate of production.

Tunneling operations could be conducted in such a way that operation of the Green Line would not be compromised. The area under the I-105/ramp can either be done with a thrust bore, underpinned with a pile and bridge method of construction or by means of conventional tunnel lagging.

Noise and dust would be created and therefore mitigation measures would have to be implemented. Portable sound walls to surround the excavation site may be necessary. Also, nighttime construction ~~would~~ **may** not be allowed; hence, the flow of trucks to and from the site during the day would increase congestion on the streets and the freeway.

Construction activities at the alternative east end staging area should begin with the cut/retained section from Imperial Highway into the NTC site. In this way, the Commuter/LRT transfer facility can be constructed without interfering with parking, bus transfers, and patron circulation. Also, this pit could be an excellent site for the tunnel boring machine to exit once a single tube has been bored **from the west**.

The actual pit/underground exit is simply a retained cut section with variable height walls. Construction, depending on soil conditions, may need to be supported with sheet piling or H-pile and lagging (at the deep end). Since the slope of the tunnel would emerge at only a four percent grade, movement of haul trucks into this area for loading should not be a problem.

The volume of material to be excavated for the retained cut section is approximately 6,000 cubic yards, a relatively small amount. Ten trucks certainly could haul this quantity in less than one month.

After the excavation site is compacted to the proper grade, construction on the bottom slab/invert can begin. Once this slab is formed, reinforced and poured, construction of the retaining walls can begin. Forming, placing rebar and pouring the concrete would be the next step. Once completed, this "U" type section would be ready for rail-laying at any later date. Also, construction of the NTC and related appurtenances can begin. The major underground portion of the site will have been completed. An example construction sequence using the east end staging area is shown in Figure 2-10.

Vent Shaft Construction

Vent shafts would be built from the subway tunnels in the center of Imperial Highway to the edge of the street. There are two potential methods for accomplishing this: cut and cover or tunneling.

The cut and cover method would affect the street and traffic. In this method a narrow strip of ground would be dug from the tunnels to the edge of the street and covered with decking in order to allow traffic to pass during construction. Utilities would be supported within the cut. After the construction of the vent shafts, the cut in the ground would be filled and the street surface would be paved again.

Tunnels for the vent shaft would be bored or mined if the tunneling method were employed, thereby avoiding the problem of disrupting traffic. The surface above the vent shaft tunnels would only be disturbed where the vertical shafts would be located outside the street and traffic lanes. The application of this method would depend on ascertaining the exact soil conditions during the final engineering phase.

2.4 COST ESTIMATES

Cost estimates have been prepared for both the aerial and subway alignments. Standard cost estimating techniques were used and past cost history of projects under development by the LACTC and the Rail Construction Corporation (RCC) have been reflected. Line item estimates and unit costs were developed from several sources. Included among these were quantity estimates from concept engineering drawings, averages of past bid prices associated with projects previously bid or under construction, and standard reference source values and supplier unit costs. Also included in the estimates are assumptions regarding such items as contingencies, administrative costs, right-of-way costs, project reserve, and so on. Estimates for these items have been developed in consultation with LACTC and RCC staff and are intended to reflect recent knowledge of actual costs.

Taking into account all physical and operating costs, and associated costs of right-of-way acquisition, administrative costs, and so on, the aerial alignment is estimated to cost a total of $215 million, in current dollars. By comparison, the subway alignment cost would range from ~~$237~~ **240** million (assuming use of the east end staging area) to ~~$238~~ **241** million (assuming use of the west end staging area). Table 2-1 provides a breakdown of these costs.

B. RELATED PROJECTS

The Metro Green Line Easterly Extension is being considered in the context of a number of other transportation projects. The following sections discuss those projects, which include other light rail projects, commuter rail projects, High Occupancy Vehicle projects, and local projects. Most of these projects are part of the recently adopted 30-Year Integrated Transportation Plan for Los Angeles County. Figure 2-11 illustrates the overall transit network envisioned in this plan.

1. Metro Green Line

The Metro Green Line is a 20-mile light rail project that is located primarily **(16.5 miles)** within the center of the I-105 freeway. This project, which is scheduled to open in November 1994, extends from the vicinity of Aviation Boulevard and Imperial Highway (south of LAX) to Norwalk, where it would terminate at a station west of Studebaker Road and south of Imperial Highway.

Green Line stations will be located in the freeway and will be accessible by stairs, escalators **of** elevators. Buses will also serve the 16 stations along the line. Transfers from the Green Line will be possible to the Metro Blue Line, which in turn will permit a transfer to the Metro Red Line, which is also under construction.

Two extensions to the **basic** Green Line are under consideration. A Southern Branch ~~would also be~~ **is being** built as part of the project, extending southward to ~~Mariposa Avenue and Nash Street~~ **Marine Avenue**. An extension of this could continue further south into the South Bay area. The North Coast Branch is currently under study. It would extend from the Green Line northward to the vicinity of Westchester Parkway and Sepulveda Boulevard, and future plans could continue this line further to the Marina Del Rey area.

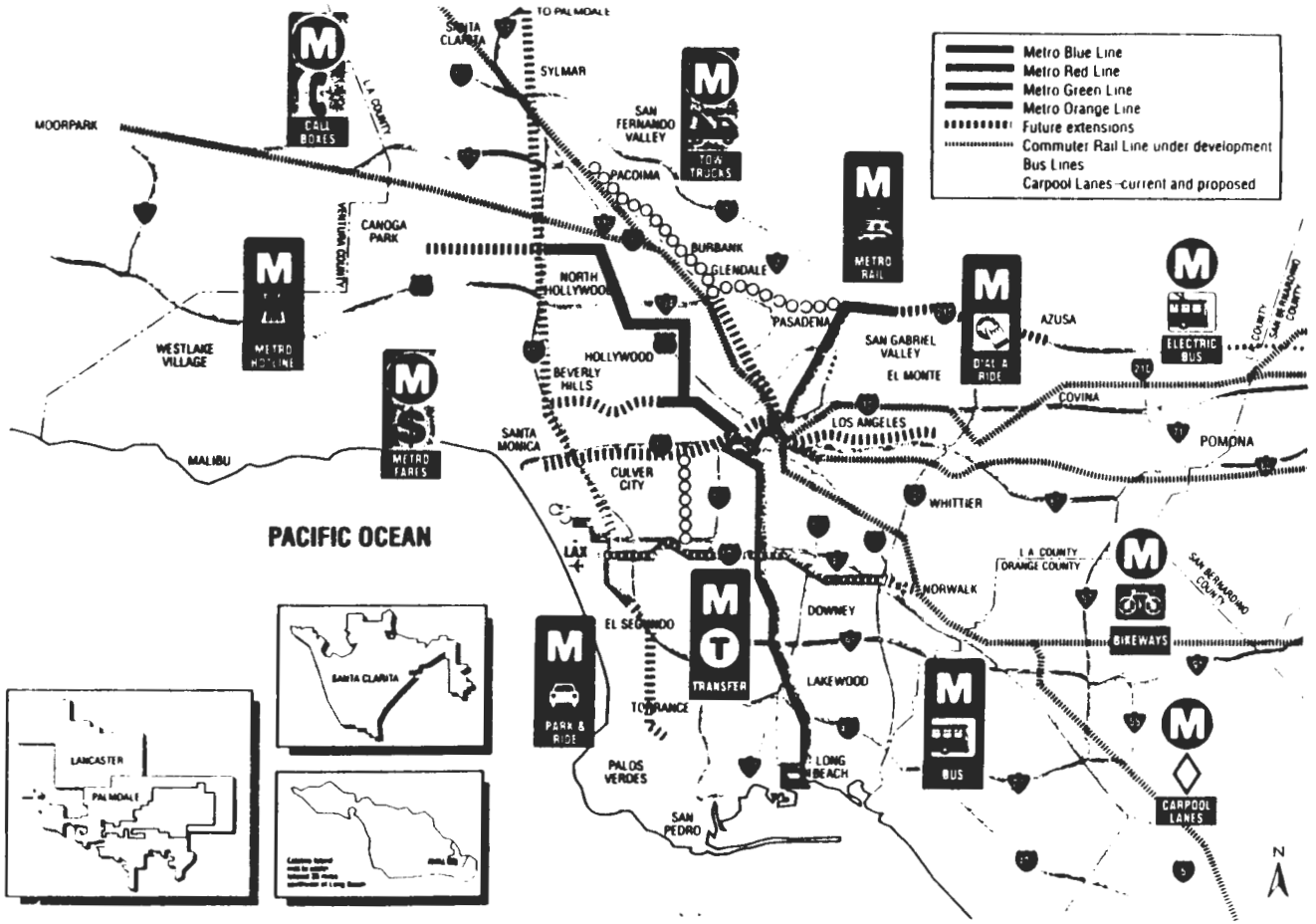
2. Other Rail Transit Projects

A number of other rail transit projects are either being built at the present time or are in various stages of planning leading to construction. They are as follows:

Metro Blue Line - Currently in operation, effective 1990. Twenty-two miles in length, connecting downtown Los **Angeles** with downtown Long Beach.

Metro Red Line (Segment 1) - Under construction, with opening expected in ~~September~~ **January** 1993. 4.4 miles in length, extending from Union Station to Wilshire & Alvarado.

Metro Red Line (Segment 2) - Under construction, with opening expected in 1996. 6.7 miles in length, connecting Wilshire section from Alvarado to Western. ~~and Hollywood~~ **A** section to Hollywood and Vine **would open in 1998**.



Source: L.A. County Transportation Commission

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Figure 2-11: LACTC 30-Year Plan Transportation Network

2.5.4 Orange County Urban Rail Project

In October of 1991, the Orange County Transportation Authority (OCTA) completed a two-year countywide rail study. the Urban Rail Master Plan developed by the study calls for an 87-mile network serving 17 cities. In January of 1992, the OCTA commissioned a Project Definition

Study for the 47-mile core rail component/Initial Urban Rail Network. This study is still under progress.

For connecting the Orange County Urban Rail to the Metro Green Line, the proposed Green Line terminus at the Norwalk Transportation Center is the preferred location. There are two routes currently under study. One is the AT&SF right-of-way and the other is I-5/Stanstead Avenue to bring the Orange County Urban Rail to the Norwalk Transportation Center.

2.5.5 High Occupancy Vehicle Projects

Caltrans is developing a program of High Occupancy Vehicle (HOV) facilities throughout Southern California, but with primary focus on the highly urbanized areas of Los Angeles and Orange counties. The I-105 will contain HOV lanes that will terminate at I-605. HOV lanes are also planned for SR-91 and I-5. the HOV facility on I-5 would connect SR-91 with I-605. It would be a guideway structure located above the center of I-5, which in the vicinity of the Metro Green Line Easterly Extension is above grade in a structure, to clear Imperial Highway.

2.5.6 Norwalk Transportation Center

The City of Norwalk has proposed the development of a Transportation Center, to be located on a parcel of land currently used by the city for maintenance purposes. The parcel is located east of Bloomfield Avenue and immediately south of Imperial Highway. The site would be used as the focal point of local transit services operating in the City of Norwalk, and it would afford connections with regional commuter rail service arriving from Orange County, and the Metro Green Line Easterly Extension, which would also have a station at this location. The site of the Norwalk Transportation Center could also be a focal point for future commercial development. No development projects have as yet been identified, however.

CHAPTER 3
ENVIRONMENTAL SETTING, IMPACTS & MITIGATION

3.0 ENVIRONMENTAL SETTING, IMPACTS & MITIGATION

3.1 TOPOGRAPHY, GEOLOGY AND SOILS

3.1.1 Environmental Setting

The proposed project is located within the northerly end of the Peninsular Ranges geomorphic province. This geomorphic province is characterized by elongated northwest-trending mountain ranges separated by straight-sided sediment-floored valleys (Yerkes et al., 1965). The northwest trend is further reflected in the direction of the dominant geologic structural features of the province, which are northwest-trending faults and folds. These include the Newport-Inglewood fault zone, the Paramount syncline, the Dominguez anticline, the Gardena syncline, the Wilmington anticline, and the Wilmington syncline, all of which cross the corridor. Geologic units of the northern Peninsula Ranges province consist of Jurassic and Cretaceous age basement rocks overlain by as much as 32,000 feet of marine and non-marine sedimentary strata ranging in age from late Cretaceous to Holocene. The corridor will extend across materials deposited during the early Pleistocene through Holocene epochs.

Physiographic Features

The project site is situated in the northern part of the physiographic basin known as the Los Angeles Basin (Yerkes et al., 1965), or the Coastal Plain of Los Angeles (Mendenhall, 1905). There are no prominent landforms near the project site. The project site lies on relatively flat terrain within the Downey Plain.

- Downey Plain

The Downey Plain is a Holocene age plain formed by coalescing alluvial fans of the Los Angeles and San Gabriel-Rio Hondo River systems (California Department of Water Resources, 1961). The Downey Plain ranges in elevation from as high as 275 feet above sea level to sea level; the surface of the plain slopes from 7 to 23 feet per mile but is generally less than 18 feet per mile.

Existing Geology

The City of Norwalk is directly underlain by alluvial and marine terrace deposits ranging in age from the Pleistocene to Holocene epochs (see The Geologic Time Scale shown on Table 3-1). The majority of the project site is underlain by fine to medium-coarse grained alluvial or flood plain deposits of Holocene age. The eastern end of the alignment is underlain by fine to medium grained Pleistocene alluvium or marine terrace deposits (County of Los Angeles Department of Regional Planning, 1990).

~~directly underlie, or are in very close proximity to the corridor.~~ Some of these faults are considered active and capable of generating large, damaging earthquakes. These faults are shown in Figure 3-1.

Seismic activity of a fault is measured by the frequency and magnitude of past earthquakes associated with that fault. An active fault is a fault that exhibits movement or shows evidence of movement within the last 11,000 years. A potentially active fault is a fault that has exhibited evidence of movement within the last two-million years. Historical records indicate that the faults described below are considered active and capable of generating earthquakes that could affect the project area. Historical records indicate extensive seismic activity in ~~the~~ Southern California area, particularly in the Los Angeles area. Table 3-2 presents a listing of active faults in Southern California with the distance in miles between the corridor and the nearest point on the fault, and the maximum credible earthquake for the fault.

An earthquake is classified by the amount of energy released, which is quantified using the Richter scale. This is a logarithmic scale where each whole number increase in Richter magnitude (M) represents a tenfold increase in the wave amplitude generated by an earthquake, which is a representation of an earthquake's size. Also, for each full point increase in Richter magnitude, the corresponding amount of energy released increases 31.6 times. Thus, a M 6.3 earthquake is 10 times larger than a M 5.3 earthquake and releases 31.6 times more energy. In contrast, a M 7.3 event is 100 times larger than a M 5.3, and releases almost 1,000 times more energy. Earthquakes of Richter magnitude 6.0 to 6.9 are classified as "moderate". Earthquakes between M 7.0 and 7.9 are classified as "major", and M 8.0 and larger are classified as "great".

- -Inglewood Fault Zone

The closest active fault to the corridor is ~~the Newport-Inglewood fault zone. This zone traverses the corridor in the vicinity of the Dominguez Gap.~~ The -Inglewood fault extends from the southern edge of the Santa Monica Mountains southeastward to an area offshore of Newport Beach **and is eight miles west of the project corridor**. This zone, commonly referred to as the Newport-Inglewood uplift, or zone of deformation, can be traced at the surface by following a line of geomorphically young anticlinal hills and mesas formed by the folding and faulting of a thick sequence of Pleistocene and tertiary age sedimentary rocks (Barrows, 1974). These hills and mesas include the Baldwin Hills, Dominguez Hills, Signal Hill, Huntington Beach Mesa and Newport Mesa. Recent earthquake focal mechanisms for 39 small earthquakes (1977 to 1985) show faulting along the north segment (north of Dominguez Hills) and along the south segment (south of Dominguez Hills to Newport Beach) (Hauksson, 1987).

The 1933 Long Beach earthquake has been attributed to movement on the Newport-Inglewood fault zone. Based on historic earthquakes along the corridor, the fault zone is considered active. The Newport-Inglewood fault zone is considered capable of generating a maximum credible earthquake of a magnitude 7.0.

- Raymond Fault

The active Raymond fault is located 14 miles to the north of the corridor. The Raymond fault is a high-angle reverse fault thrusting basement rocks north of the fault, over alluvial sediments

Table 3-2: Major Named Active Faults

FAULT (in alphabetical order)	DATE OF LATEST MAJOR ACTIVITY	MAXIMUM CREDIBLE EARTHQUAKE	DISTANCE FROM ROUTE (miles)	DIRECTION FROM ROUTE
Big Pine	1852	7.5 (b)	82	NW
Cucamonga	(e)	6.5 (b)	28	NE
Elsinore	1910	7.5 (b)	35	ESE
Elysian Park Structure	1989	6.75 (c)	13	NE
Garlock	(d)	7.75 (b)	74	NNW
Helendale	(e)	7.5 (b)	70	NE
Malibu Coast	1973	7.0 (c)	32	W
More Ranch	(d)	7.5 (b)	103	WNW
Newport-Inglewood	1933	7.0 (b)	8	W
Palos Verdes	1982	6.6	20	SW
Pinto Mountain	(e)	7.5 (b)	77	E
Raymond	(e)	6.6 (c)	14	N
San Andreas Zone	1857	8.25	37	NE
San Cayetano	(e)	6.75 (c)	51	NW
San Fernando Zone	1971	6.5 (b)	30	NNW
San Gabriel	(e)	7.5 (c)	22	NNW
San Jacinto Zone	1968	7.5 (b)	19	NNE
White Wolf	1952	7.75	89	NNW
Whittier	1987(?)	7.1 (c)	4	NE

Notes:

(a) Historic movement (1769 to present).
(b) Greensfelder, C.D.M.G. Map Sheet 23, 1974.
(c) Mark (1977) Length-Magnitude relationship.
(d) Intermittent creep.
(e) Movement within the last 11,000 years; zoned by the State Geologist for the Alquist-Priolo Program.

Source: Law/Crandall and Associates, 1991.

Oil Wells

The Los Angeles Basin is a major oil-producing district in Southern California. Oil, first discovered in the basin in 1889, occurs chiefly in Pliocene and Miocene strata, with lesser amounts in Pleistocene strata and in fractured schist (Cretaceous or older) of the basement complex. The Santa Fe Springs oil field lies **approximately one to two miles** to the north of the project.

Liquefaction and Other Soil Instability Issues

Liquefaction potential, which is associated with earthquakes, has been found to be greatest where the ground water level is shallow and loose fine sands occur within a depth of about 50 feet or less. Liquefaction potential decreases with increasing grain size and clay and gravel content but increases as the ground acceleration and duration of shaking increase.

According to Plate 4 (Liquefaction Susceptibility) of the County of Los Angeles Safety Element (1974, revised 1990) the eastern section of the proposed project lies within an area of very low liquefaction susceptibility. However, the central portion of the alignment lies in an area considered to be liquefiable and the western portion of the alignment is considered potentially liquefiable. The area with the greatest liquefaction potential has groundwater levels of 30 feet below the surface or less. The remainder of the area has groundwater depths of 30 to 50 feet (Los Angeles County Department of Regional Planning, 1990).

- Seismic Settlement

Seismic settlement often occurs when loose to medium dense granular soils densify during ground shaking. If such settlement were uniform beneath the proposed project, risk of damage would be minimal. However, such settlement is generally not uniform because of variations in distribution, density and confining conditions of the soil. Such seismically induced settlement can occur in both dry and partially saturated soils as well as in saturated granular soils. Differential settlement may also be induced by ground failures such as liquefaction, flow slides and surface ruptures. Generally, differential settlements due to such conditions would be more severe than those due to densification alone. Soils in the potential construction area of the proposed project range from fine to medium coarse.

Hazardous Materials Deposition

Sources of potential hazardous materials were inventoried for the City of Norwalk and a portion of the City of Santa Fe Springs that is adjacent to the route at the eastern end (see Figure 3-2.) As indicated in the Hazardous Waste and Substances Sites List compiled by the State Office of Planning and Research, 12 sites of hazardous materials deposition exist in the City of Norwalk (see Table 3-3) and one in the City of Santa Fe Springs (adjacent to the route). Four of the sites lie along Imperial Highway, and **tanks** leaking **gasoline** ~~tanks~~ at each of the four sites may have resulted in contamination of surrounding soil and groundwater.

Table 3-3: Hazardous Waste Sites in the Project Vicinity

NO.	SITE	ADDRESS	APPROXIMATE MILES FROM IMPERIAL
1	Norwalk Fuel Supply Depot	15306 Norwalk Boulevard	1.9
2	Peacock Engineering & MFG.	10620 East Firestone Boulevard	0.6
3	General Petroleum Corp. #3	11101 S. Pioneer Blvd.	0.9
4	Metropolitan State Hospital	11400 Norwalk Boulevard	0.7
5	Mobil Station #11-F20	12616 Imperial HWY.	0
6	Power Rated	11750 Imperial HWY.	0
7	Shell Station	11821 Rosecrans Avenue	1.1
8	Cerritos Community College	1110 Alondra Boulevard	2.1
9	Russell Transportation	11600 Firestone Boulevard	0.2
10	Shell Station	11755 Imperial HWY	0
11	Montgomery Ward	12051 Imperial HWY	0
12	Mobile Station #11-FTA	12800 Rosecrans Avenue	1.1
13	Neville Chemical Company	12800 Imperial Highway	0

Source: State Office of Planning and Research, Hazardous Waste and Substances Sites List.

3.1.2 Construction Impacts

Physiographic Features

No impacts during construction of the proposed project are expected either on or from the existing physiographic features in the area.

Geology and Seismicity

No surface evidence of faults or fault-associated features have been identified in the immediate vicinity of the proposed project. However the proposed project does lie near the potentially active Norwalk fault. The site does not lie within an Alquist-Priolo Special Studies Zone for surface fault rupture hazard.

The seismic hazard along the corridor during the construction period is generally limited to those hazards caused by earthquakes. The major cause of damage from earthquakes along the corridor would be violent shaking from earthquake waves, the potential effects of which would be more damaging to the aerial alignment because of its extensive above-ground falsework and

in the failure of structures along the proposed project or interruption of operating systems. This potential is regarded as potentially significant **before mitigation. Mitigation consisting of appropriate design provisions would reduce the risk to below a level of significance.**

Oil Fields

No operational impacts with regard to oil fields are anticipated.

Liquefaction and Other Soil Instability Issues

Some areas along the corridor may be subject to liquefaction in the event of an earthquake during the operational lifetime of the proposed project. Soil liquefaction could cause overlying structures to fail through the loss of load bearing capacity, lateral spreading, and settlement; **however,** this is **not** considered a potentially significant impact. For the subway alignment, the proposed depth (50 to 60 feet below grade) should be adequate to minimize liquefaction settlement. However, the effects of liquefaction on the aerial alignment would be substantial, and therefore piling depths would probably range from 40 to 100 feet deep. Deeper pilings, passing through the silty clay layer, would be more stable than shallower pilings, which, being shorter, would feel the impact of liquefaction to a greater extent.

Hazardous Materials Deposition

Operation of the proposed project is not anticipated to result in the deposition of hazardous materials in the surrounding environment, and the potentially adverse effect on the project from sources in the area would be remedied during the construction period.

3.1.4 Mitigation Measures

Construction

- Geology and Seismicity

The likelihood of a severe earthquake occurring during the construction period is low; however, the possibility does exist and should not be discounted. If the area is subject to a substantial seismic event and associated severe ground shaking during the construction period, the effects of the shaking can be minimized through appropriate construction techniques. All ~~available~~ **appropriate** construction techniques for the safety of workers, pedestrians, motorists and nearby residents should **be** implemented. These measures include shoring and falsework. Despite these measures, in the event of an earthquake during the construction period, damage to structures under construction could be extensive.

- Oil Fields

Any undocumented or improperly abandoned wells encountered during construction along the corridor would be abandoned according to requirements set forth in Title 14, Chapter 4, Subsection 1, Article 3, Section 1723, of the California Administrative Code.

in the higher elevations of the San Gabriel and San Bernardino Mountains. As is typical of many semi-arid regions, the Los Angeles area experiences wide variations in monthly and seasonal precipitation totals.

Precipitation may flow into surface reservoirs or groundwater basins, or run off to the ocean. Short-term water storage is in surface reservoirs and long-term storage is in groundwater basins. the amount of infiltration possible to groundwater basins is dependent upon the slope, soil type, and intensity and duration of rainfall. Because most of Los Angeles is either paved and developed or steeply sloped, a great deal of runoff occurs. Flood control structures have been constructed to channel the water safely through the inhabited areas to minimize flooding and to aid in recharging the water storage units.

The Norwalk area is part of the Los Angeles River Basin. The Los Angeles River Basin, as defined in the Basin Plan of the State Water Resources Control Board (SWRCB), involves the coastal areas of Los Angeles county south of the divide of the San Gabriel Mountains and Santa Susana Mountains, plus a small part of the coastal portion of Ventura County south of the divide of the Santa Monica Mountains. This basin is drained by four major streams: the Los Angeles River, the Rio Hondo River, Ballona Creek, and the San Gabriel River. Numerous tributaries discharge into these major drainages, most of which have intermittent flow. Except for a few rivers in the mountainous areas, most have been converted to flood control channels lined with concrete and stone rip-rap. The drainage pertinent to this project is the San Gabriel River.

Surface Water Resources

- San Gabriel River

The San Gabriel River originates in the San Gabriel Mountains north of Los Angeles. The river is controlled by a series of dams including the Cogswell, San Gabriel, Morris, and Whittier Narrows. Tributaries to the San Gabriel River include Walnut, San Jose and Coyote Creeks. The river is located approximately 0.70 miles west of the project site. At this location the river is contained within a trapezoidal concrete-lined channel and remains so until it reaches the ocean.

Flooding

A Federal Insurance Rate Map has not been produced by the Federal Emergency Management Agency for the City of Norwalk because it is classified as Zone C, an area of minimal flooding.

Groundwater Resources

Groundwater resources are shown in Figure 3-3 and are discussed below.

Freshwater permeates soils to varying degrees depending on the composition of the soil. Coarsely grained, sandy, or gravelly strata comprise individual aquifers. These water-bearing deposits are readily capable of absorbing, storing, transmitting, and yielding water to wells. Fine-grained sediments, such as silts and clays, are interbedded with the aquifers and form aquicludes which limit the transmission of water out of the aquifer. The aquicludes form discrete boundaries, and the aquifers may merge and coalesce with adjacent aquifers.

Groundwater basins are underlain by one or more permeable layers. Basin boundaries do not necessarily coincide with drainage basins and are derived from political boundaries, surface features, and/or geologic features such as faults, non-waterbearing rocks, and natural or artificial divides in the water table surface. The elevation of groundwater varies with the amount of pumping and the amount of recharge occurring. Groundwater basins may be recharged naturally through percolation of precipitation or artificially with imported water or reclaimed water. Artificial recharge with imported water is practiced as a means of offsetting declining groundwater levels and providing storage for use in times of drought.

The groundwater basins of the Los Angeles Coastal Plain are incorporated into the Coastal Plain Hydrographic Subunit. The Coastal Plain Hydrographic Subunit contains the Central, West Coast, Santa Monica, and Hollywood Basins. The most important of these basins with respect to the proposed project is the Central Basin.

- Central Basin

The Central Basin extends over much of the Coastal Plain and holds most of its groundwater. Groundwater occurs within alluvium, Lakewood Formation and San Pedro Formation sediments. These sediments contain several very permeable layers of aquifers.

Groundwater enters the basin through percolation of precipitation, stream flow, and artificial recharge in spreading grounds such as those located along the Rio Hondo and San Gabriel Rivers. Groundwater movement within the basin is toward pumping depressions located in the Vernon area and at the point where the Los Angeles River crosses the Newport-Inglewood Fault. Some groundwater moves across the fault replenishing the West Coast Basin. 194,900 acre feet of water were extracted from the basin between July 1, 1986 to June 30, 1987 for use as municipal potable supply. The basin capacity is considered stabilized, and all extractions of water are monitored by the Department of Water Resources.

3.2.2 Construction Impacts

Surface Water Resources

Construction impacts to surface water resources within the study area would be confined to the immediate area and would be related to water run-off from construction sites and the erosion of barren rock and soil surfaces exposed during excavation. Construction-related runoff would occur along the entire route of the aerial alignment, and the station area at the east end of the route. For the subway alignment, runoff would be confined to the construction staging areas (east or west). This would not be considered a significant impact. No further construction-related impacts to surface waters are anticipated.

Groundwater Resources

The excavation required for the subway alignment could have an impact on groundwater quality and solid waste disposal. Excavation may intercept shallow groundwater and would require dewatering and muck disposal. The removed water and ~~muck~~ **soil** could be contaminated with oil, tar and other hazardous wastes, which would necessitate wastewater treatment and possible transport of muck to a Class I or Class II landfill. Potential effects on groundwater associated

With regard to groundwater contamination resulting from a material spill, **which would be highly unlikely** after the project is operational, the same emergency response plan would be employed as discussed above.

3.3 VEGETATION AND WILDLIFE

This section analyzes potential impacts to plant and animal life associated with the proposed Metro Green Line Easterly Extension. The analysis is based on information obtained from the California Natural Diversity Data Base (CNDDB) species account records and a field survey of the site.

3.3.1 Environmental Setting

The Los Angeles region is primarily urbanized and dominated by paved surfaces and landscaping. Typical of a Mediterranean climate, the region is arid with highly seasonal rainfall occurring primarily in winter. Native vegetation has been largely replaced by urban landscaping. Intrusive exotic species have also displaced native vegetation, although remnants of the native vegetation of the Los Angeles Coastal Plain occur on some hillsides. In undeveloped but disturbed urban areas, flora consist of native and non-native species that are tolerant of disturbances. Typical species found include eucalyptus, palms, and iceplant. Landscaping along the proposed project include pines, jacaranda, palms, eucalyptus, oleander, bottlebrush and magnolia trees.

Wildlife in the area also include species adapted to a disturbed environment. Examples include pigeons, gulls, mockingbirds, scrub jays and house mice.

Applicable Rules and Regulations

The federal Endangered Species Act of 1973 (as amended), the State of California's endangered species legislation of 1970 (California Administrative Code, Title 14) and the California Fish and Game Code require the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) to list all species threatened with extinction. The USFWS lists species in the Federal Register and the CDFG lists species in California Administrative Code Title 14. In addition, the California Department of Fish and Game Natural Diversity Data Base (NDDB) lists species considered sensitive by the scientific community, though this listing offers no legal protection. The NDDB identifies the location and status of a species by recording observations.

Sensitive habitats are also identified by the USFWS and CDFG. The California Coastal Act of 1976 defines a sensitive habitat as an area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which would be disturbed or degraded by human activities and development.

Threatened and Endangered Species

There were no species identified by the NDDB within the project area.

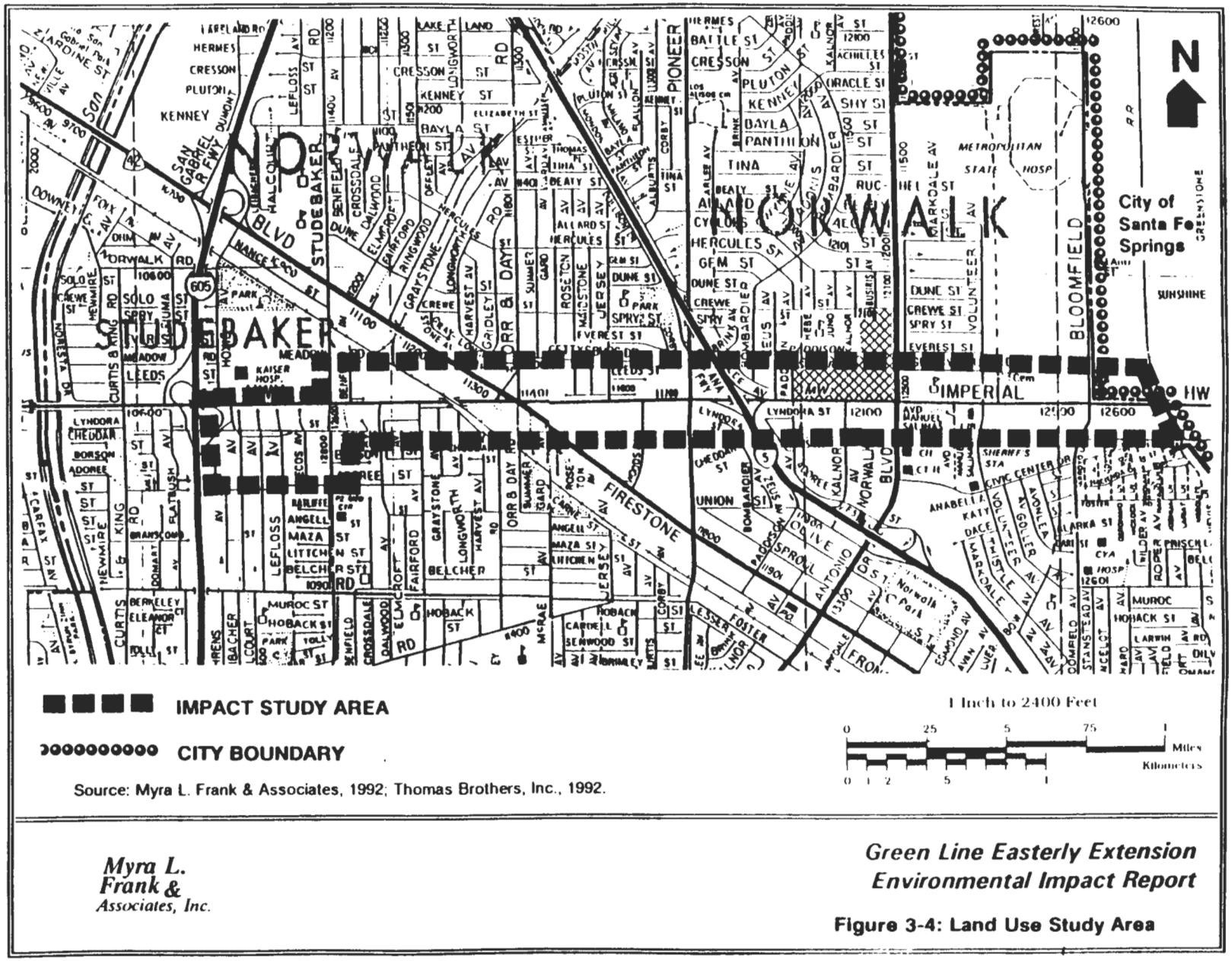

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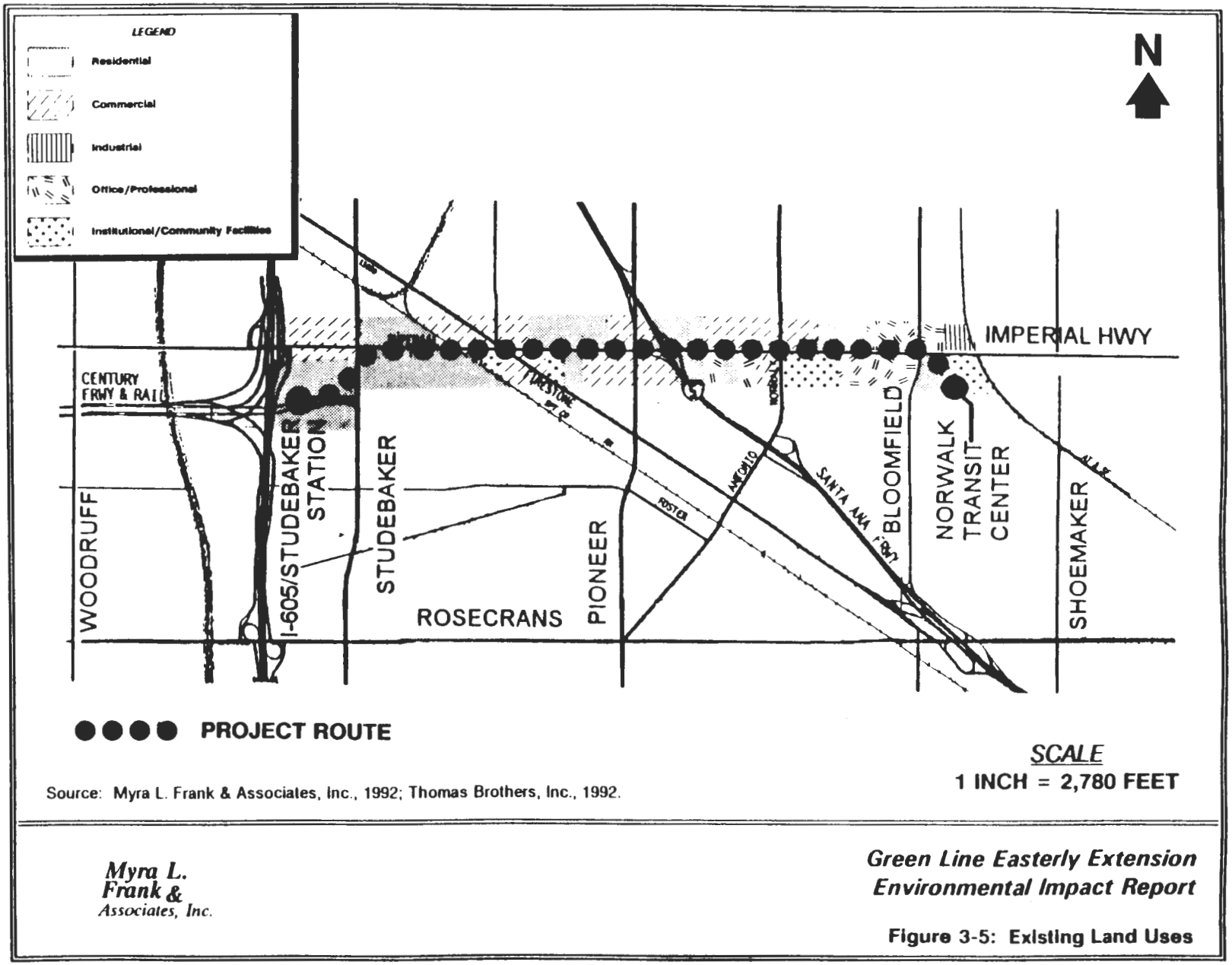
Figure 3-4: Land Use Study Area



Source: Myra L. Frank & Associates, Inc., 1992; Thomas Brothers, Inc., 1992.

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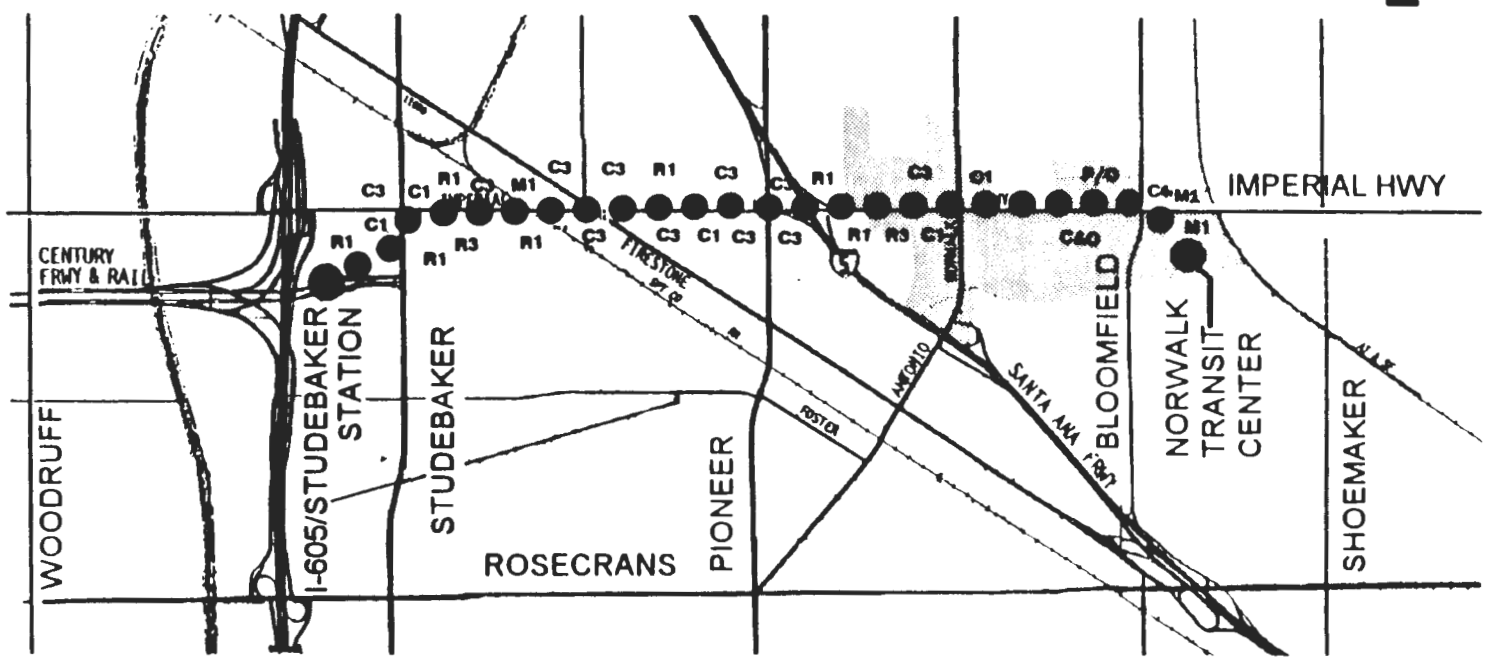
Figure 3-5: Existing Land Uses



Source: Norwalk City Planning Dept.; Thomas Bros., Inc., 1992.

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Figure 3-7: General Plan Land Use Designations

2) improve the city as an attractive place in which to live and work; 3) develop high aesthetic standards in all existing and future development within the city; 4) promote Norwalk's position in commerce, industry, recreation, and culture; and 5) create a circulation and transportation system which is integrated with the community pattern of residence and employment and which will ensure the safe movement of people throughout the city.

Specific goals of the Norwalk General Plan include the:

- Diversification of certain single-family residential areas to higher density residential and commercial land uses;

- Allocation of high density residential uses in areas near essential community facilities, adequate streets, and required utilities;

- Establishment of ten restricted commercial centers, located approximately one mile apart, with an overall average approximately nine acres each;

- Designation of several areas within the community for commercial-professional office type uses;

- Creation of a high density office complex adjacent to the Civic Center through the development of large scale facilities and high-rise buildings.

The City of Norwalk regulates the development of six specific plan developments in the project study area. Figure 3-8 shows the location of the specific plan boundaries and Table 3-5 indicates the type of development in each of the specific plan areas.

The City of Norwalk is currently revising its General Plan in order to reflect existing conditions and incorporate updated land use policies and goals. Table 3-5 confirms that a primary land use goal of the city is to establish an expanded high density office node encompassing the Civic Center area, including adjacent office space south and east of the Civic Center and commercial/office land uses north of Imperial Highway. The city seeks to promote this 1.2 million square feet (MSF) area as an attractive alternative to the downtown Los Angeles office market and office space is rapidly being occupied within the Civic Center area. The County of Los Angeles plans to transfer its Recorder's Office as well as the office of the County Clerk and the ~~Register~~ **Registrar** of Voters to the site of the former Bechtel Company, directly east of the Norwalk Regional Library. The city intends the Civic Center office node to be developed under the guidance of a Civic Center Master Plan, which will ensure the provision of mixed-use office and retail development, pedestrian linkages, recreational open space, and cultural amenities for the area.

The City of Norwalk Redevelopment Agency manages two redevelopment areas which are partially contained within the boundaries of the Green Line Easterly Extension project (see Figure 3-8). Redevelopment Project Area 1 is located along Imperial Highway from approximately Firestone Boulevard to Roseton Avenue; from Pioneer Boulevard to Bombardier Avenue; and from Paddison Avenue to the eastern project terminus. A portion of Redevelopment Project Area 2 is centered about the intersection of Imperial Highway and Studebaker Road.

Table 3-5: Specific Planning Area (SPA) - Project Study Area

SPA #	LOCATION	USE	ACRES	PERMITTED DENSITY NUMBER OF UNITS
6	Orr & Day Road between Firestone Blvd. and Gettysburg Drive	Multi-family Residential	2.62	19 du/acre 50 condominium units
8	North side of Imperial Blvd. between Norwalk Blvd. and Volunteer Ave.	Commercial	4.48	88,950 sq ft
9	North side of Imperial Blvd. between Volunteer Ave. and Bloomfield Ave.	Multi-family Residential	5.02	15.01 du/acre 73 condo units
14	Northwest corner of Firestone Blvd. and Woods Ave.	Multi-family Residential	5.0	50 du/acre 249 apartment units
1	Southeast corner of Norwalk Blvd. and Civic Center Drive	Multi-Family Residential	8.45	20.49 du/acre Existing: 119 condo units Proposed: 49 condo units
		Commercial	14.82	Existing: Hotel (175 rooms) 5,100 sq ft restaurant 1,800 sq ft lounge 6,050 sq ft ballroom 650 sq ft meeting room Proposed: 104,000 sq ft office 52,800 sq ft retail 9,000 sq ft restaurant 14,000 sq ft theater
11	Southeast corner of Imperial Blvd. and Bloomfield Ave.	Multi-family Residential	8.71	24 du/acre 192 apartment units

Source: Myra L. Frank & Associates, Inc., 1992.

Subway Alignment

Construction-related land use impacts associated with the subway alignment would be primarily confined to the areas used for construction staging purposes. Such an area has been identified at the western end of the alignment, but it also may be possible to use the Norwalk Transportation Center site at the east end of the alignment.

The effects of using either end (west or east) as a staging area are fully discussed in sections 3.10 and 3.11.

3.4.3 Operational Impacts–Land Use Consistency

Operational land use impacts are defined in terms of the project's compatibility with surrounding land uses and proposed development, including the project's conformity with established neighborhoods. Operational impacts are also defined by the project's consistency with the policy goals of local land use and redevelopment plans as well as applicable zoning.

The criteria used to assess project consistency with existing and future land uses are summarized in Table 3-6. These criteria are based on previous evaluations using criteria developed by the Federal Transit Administration. A station site without parking would have a high or moderate compatibility with nearby residential land uses, providing pedestrian accessibility to a regional transportation network linking residents to jobs, schools, and shopping opportunities throughout Los Angeles County; such a facility would produce a beneficial impact on an adjacent residential area. A transit station with parking facilities would have a low level of compatibility with adjacent residential uses, producing potentially significant adverse impacts because of additional noise and gas emissions from externally-generated traffic, as well as the appropriation of relatively large amounts of land dedicated to uses that do not serve nearby residents.

3.4.4 Operational Impacts–Property Acquisitions

Other operational land use impacts associated with the project consist of full and partial property acquisitions at the east and west ends and along portions of the alignment. Full property acquisitions resulting from the project are considered to be adversely significant. Partial acquisitions may be considered either moderately significant or adversely significant, depending on the location of the affected parcel in relation to the project and the extent of the acquisition.

Aerial Alignment See Table 3-7 and Table 3-8.

- Commercial Acquisitions

The aerial alignment would require the full acquisition of the Norwalk Community Garden and its associated building as well as Immanuel Church and its parking area. Both properties are located on Studebaker Road between Lyndora and Adoree. Full acquisitions involving the displacement of these properties would not be consistent with goals of the Norwalk General Plan to protect existing residential development from incompatible uses and provide neighborhoods with necessary facilities and services.

Table 3-8: Aerial Alignment Partial Property Acquisitions

RESIDENTIAL PROPERTY		
LOCATION/ADDRESS	**SINGLE OR MULTIPLE-FAMILY**	**AREA ACQUIRED (sq. ft.)**
12483 Artee Avenue	S	400
11951 Imperial Highway	M	2000
11917 Lyndora Street	S	464
11911 Lyndora Street	S	480
11907 Lyndora Street	S	880
11903 Lyndora Street	S	600
11923 Lyndora Street	S	424
10959 Lyndora Street	S	200
10958 Lyndora Street	S	200

NON-RESIDENTIAL PROPERTY			
LOCATION/ADDRESS	**NAME/TYPE**	**AREA ACQUIRED (Sq. Ft.)**	**REMARKS**
11306 Firestone Boulevard	Albertson's Commercial Center	400	Parking spaces removed
11353 Imperial Highway	Gas Station	250	Frontage pavement removed
11364 Imperial Highway	New Harvest Christian Fellowship Church	100	Parking spaces removed
11459 Imperial Highway	Keystone Bowling Alley	20	Parking spaces removed
11750 Imperial Highway	Vacant lot	6,000	Significance of impact depends on future use
11733 Imperial Highway	Ford Auto Dealership	20	Parking spaces removed
11755 Imperial Highway	Shell Gas Station	20	Frontage removed
12051 Imperial Highway	Paddison Square Mall	1,000	Frontage removed
12155 Imperial Highway	Chevron Gas Station	750	Frontage removed
12138 Imperial Highway	Wendy's, Jack N' Box Restaurant	500	Frontage removed
12213 Imperial Highway	Unocal 76 Gas Station	500	Frontage removed
Norwalk Boulevard	Open Recreational Space	700	Frontage removed
12720 Norwalk Boulevard	Norwalk Public Library	320	Frontage removed
12400, 12440 Imperial Highway	Office	1,350	Frontage and landscaping removed
12655 Imperial Highway	Crescent Transmission	40	Parking spaces removed; partial access block
Imperial Highway	City Maintenance Facility*	1,500	Parking and vacant land removed at site of proposed Norwalk Transportation Center

Note:
* Entire site subject to acquisition/reconfiguration in conjunction with development of the Norwalk Transportation Center

From Norwalk Boulevard to the eastern end of the project alignment, the project would cause partial acquisitions on the north side of Imperial Highway by removing approximately five feet of property frontage from a Unocal 76 gas station located at the northeast corner of Norwalk Boulevard and Imperial Highway; this impact is not judged to be significant since access to the business would be preserved. Property acquisitions between Norwalk Boulevard and the site of the Norwalk Transportation Center would be required for street widening associated with the proposed project. The project would also cause partial acquisitions by removing one parking space and a portion of the formal entrance of the Crescent Transmission service center. This impact would not be significant because access to the site would be preserved. The project would result in a full acquisition of the City of Norwalk Maintenance Facility; this impact is judged not to be significant because the entire city maintenance facility is eventually slated to become the site of the Norwalk Transportation Center. Moreover, the NTC site is scheduled to be first developed for parking associated with commuter rail service, with construction of the Metro Green Line Easterly Extension occurring after.

South of Imperial Highway, between Norwalk Boulevard and the east end of the alignment, the partial acquisition associated with a gas station at the southeast corner of Bloomfield Avenue and Imperial Highway would not be consistent with the goal of Redevelopment Project Area 1 to stimulate sales tax revenues to the city and establish modern, convenient commercial centers serving the needs of the city. At the project's eastern terminus, the partial acquisition of parking spaces and the establishment of a transit station at the site of a city maintenance facility would be permitted under the M1 zone category and would be consistent with the objectives of Norwalk Redevelopment Area 1.

- Residential Acquisitions

The establishment of the Metro Green Line transit station with associated park-and-ride facilities, and the presence of an above-grade aerial alignment proposed by the Easterly Extension at the western end of the project alignment would have a low compatibility with surrounding single-family residential uses and would not be consistent with uses permitted in an R1 Single-Family Residential zone. One full acquisition would result from the aerial alignment. Although the acquisition of one housing unit is considered adverse, it is not considered significant.

Immediately east of the Santa Ana Freeway (I-5) the partial acquisition of frontage from single-family homes on the north and south sides of Imperial Highway would not be consistent with the goals of the Norwalk General Plan to protect existing residential development and develop a transportation system that is integrated with the community pattern of residence.

Subway Alignment

Property acquisition associated with the subway alignment would be limited to the western end of the alignment, where a construction staging area is proposed, and the east end of the alignment, where the NTC is located. (See Table 3-9 and Table 3-10.) The NTC site could also be considered as a construction staging area.

The project would result in the full acquisition of up to 17 single-family residences in the block bounded by Lyndora Street to the north, Pecos Avenue to the east and Lefloss Avenue to the west, as well as a row of residential units flanking the east side of ~~Studebaker Road~~ **Pecos**

Table 3-10: Subway Alignment Partial Property Acquisitions

RESIDENTIAL PROPERTY			
LOCATION/ADDRESS	SINGLE OR MULTIPLE-FAMILY	AREA ACQUIRED	
None	None	None	
NON-RESIDENTIAL PROPERTY			
LOCATION/ADDRESS	NAME/TYPE	AREA ACQUIRED (SQ. FT.)	REMARKS
Impenal Highway	City Maintenance Facility*	300	Vacant land removed

Note:
* Entire site subject to acquisition/reconfiguration in conjunction with development of the Norwalk Transportation Center

Source: Myra L. Frank & Associates, 1992.

If the tunneling operations are staged at the eastern end of the alignment, construction of the project would result in the partial taking of vacant land currently being used by the City of Norwalk as a maintenance yard, located immediately west of the AT&SF railroad tracks. Because this site is proposed for development of the Norwalk Transportation Center, this is an impact which is judged to be not significant since it would be consistent with a M1 zone category and the city's goal of establishing a multi-purpose transportation center at this site.

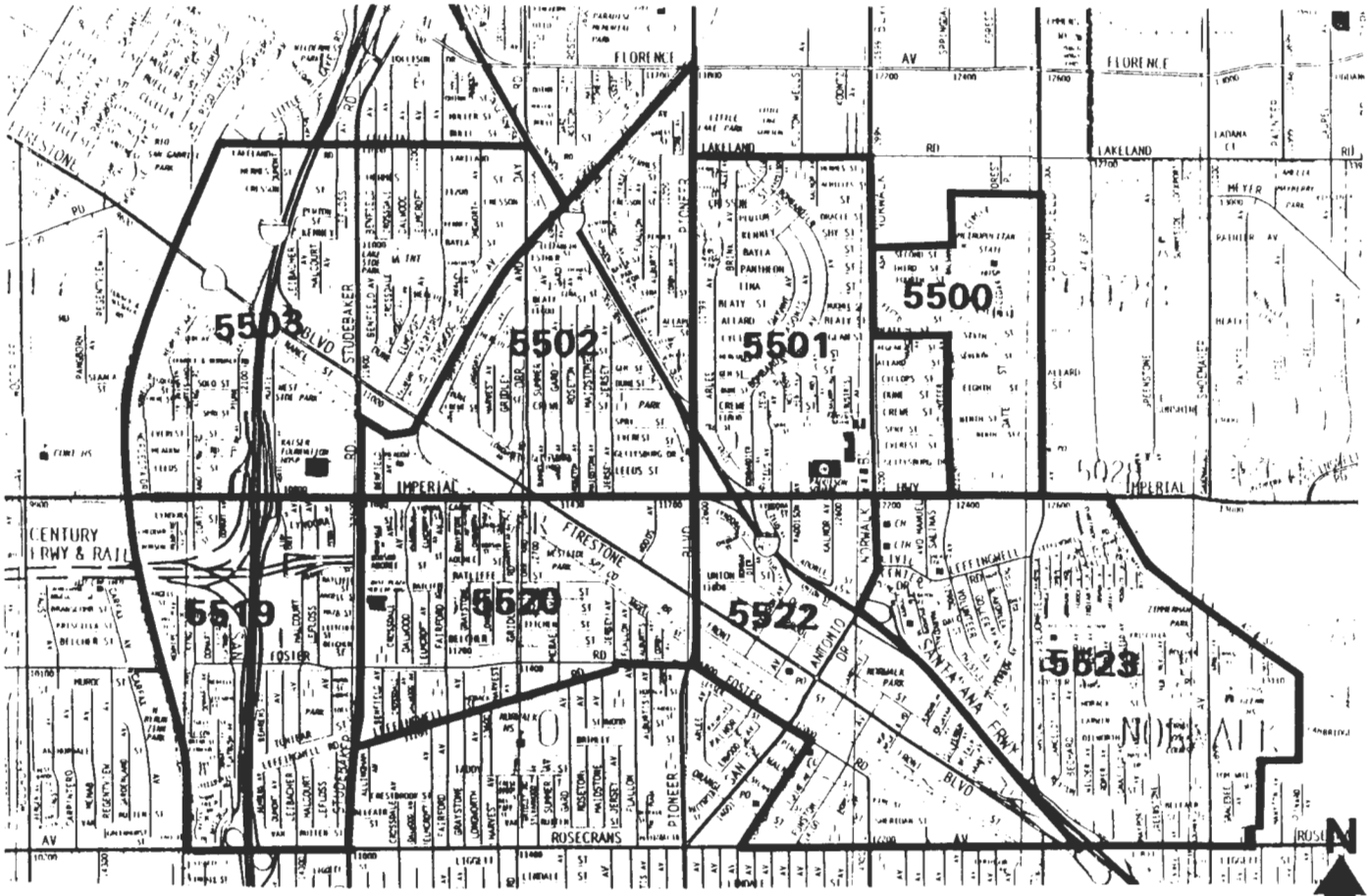
3.4.5 Mitigation Measures

Construction

Temporary sound walls may be considered to buffer sensitive land uses (i.e., single-family and multi-family residential areas, churches, hospitals) from the effects of the project. Should the location of fixed aerial guideway columns require acquisition of portions of the city's street or sidewalk system, the LACTC and the City of Norwalk should ensure that residential areas maintain access to the city's main arterial streets.

In the event that property frontage is acquired for guideway columns that obstruct access to business and retail establishments, the project should maintain access to such uses by minimizing the amount of construction work at those sites or by scheduling construction work for non-business hours.

Significantly adverse amounts of parking that are removed from business and retail commercial establishments as a result of the project can be partially mitigated by allowing property owners of such uses to restripe their lots in order to recoup lost parking opportunities. The city could also permit affected businesses to expand parking areas on adjacent vacant properties or allow for limited street parking during peak business hours to compensate for displaced parking areas.



Source: Thomas Bros. Maps, 1986.

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Figure 3-9: Project Area Census Tracts

Table 3-11: Population and Housing Characteristics

Area	Total Population	Population					Housing								
		Hispanic %	Race				Housing Units	Household Size	Owner-occupied %	Renter-occupied %	Vacant %	Median Value	Median Rent	Median Income	Families Below Poverty Level %
			White %	Black %	Asian %	Other %									
City of Norwalk	94279	48%	56%	3%	12%	29%	27247	3.48	65%	36%	3%	$166,000	$642	$40,369	7%
Census Tracts:															
5500	1404	24%	52%	17%	10%	20%	187	2.97	76%	24%	1%	$171,900	$764	$41,250	0%
5501	6652	48%	58%	1%	10%	30%	1817	3.61	78%	22%	2%	$163,900	$743	$37,574	10%
5502	7564	46%	61%	2%	10%	27%	2301	3.42	70%	30%	3%	$169,500	$590	$43,873	5%
5503	6822	37%	66%	3%	11%	20%	2071	3.27	67%	32%	3%	$167,800	$617	$40,446	1%
5519	4656	38%	70%	3%	11%	15%	1445	3.20	70%	30%	3%	$167,100	$667	$42,986	4%
5520	6621	51%	56%	3%	12%	29%	1972	3.53	66%	34%	9%	$159,800	$680	$39,057	6%
5522	5922	61%	47%	6%	7%	41%	1908	3.27	24%	76%	6%	$158,000	$571	$29,455	16%
5523	8472	41%	55%	7%	15%	22%	2479	3.25	59%	41%	4%	$166,200	$679	$40,321	4%
Census Tracts Total	48113	45%	59%	4%	11%	26%	14180	3.53	62%	38%	4%	$165,525	$664	$39,370	7%

Source: 1990 U.S. Census of Population and Housing

(apartment complexes and condominium developments) and 10 mobile homes, are currently located within 100 feet of the proposed guideway (along Studebaker Road, Imperial Highway and north of the I-105 freeway ramp). Given that Imperial Highway presently serves as a commercial corridor and boundary for school districts, it is not anticipated that an elevated rail system along Imperial Highway would further divide or present a physical or psychological barrier to neighborhoods in the area.

- Subway Alignment

Assuming the tunneling operation is staged in the west end, approximately 55 persons would be displaced as a result of the acquisition of 17 housing units. With appropriate design mitigation, the subway alignment would produce insignificant noise and vibration impacts upon the local population residing directly along the alignment. The demographic profile of residents adjacent to the alignment are not significantly different from those of the City of Norwalk as a whole. Because the system is below grade, the subway alignment would neither separate or present barriers to existing neighborhoods.

Effects upon the Local Housing Stock

- Aerial Alignment

Full acquisition of one unit located at 12739 Studebaker Road and partial acquisition of nine residential properties would be required under the aerial alignment. In all cases of partial acquisition, the residential structure would not be removed, and in most cases the property acquisition would be less than 1,000 square feet. A reduction of one housing unit, though adverse, is not considered significant. Reduction of any units, however, would affect SCAG's five-year housing needs goals.

- Subway Alignment

If the west end staging area is selected, the subway alignment would require acquisition of 17 single-family residences located in the area bounded by Pecos Avenue, Lefloss Avenue and Lyndora Street, and the block of houses east of Pecos Avenue, south of Lyndora. Selection of the east end staging area would reduce this effect. While adverse, removal of 17 units is not considered significant in terms of the net effect upon local housing stock: the City of Norwalk's housing stock would be depleted by less than 0.1 percent. Any housing acquisition~~, however,~~ would affect the SCAG's five-year housing needs goals for the city (Figure 3-10 illustrates the location of the acquisitions); however, if the tunneling operation is staged at the eastern end of the route, these acquisitions would not be necessary.

Property Tax Losses

When privately-owned property is acquired for rights-of-way or construction, the property tax base is reduced. In general, Los Angeles County collects property taxes for properties within the county and disburses the revenue to individual jurisdictions, based upon a percentage of the total property taxes collected in those jurisdictions. The City of Norwalk, however, receives a

percentage of Los Angeles County's general fund revenues as its property tax reimbursement. Regardless of the reimbursement method, reduction of the property tax base would result in a revenue loss to the county, city and special assessment districts.

Property taxes collected in 1991 on residential properties which would be fully acquired by the project were calculated using 1991 Los Angeles County Assessor rolls. Property tax losses under the aerial alignment, in which only one residential property would be acquired, equalled $583. Property tax losses under the subway alignment, with tunneling operations staged in the western end of the route, which would require the acquisition of 17 residential properties would be $16,029. Tax losses per property would range from $343 to $1,868. These losses in property tax revenue would not occur if the tunneling operation were staged on the eastern end. Property tax losses to the City of Norwalk and Los Angeles County would be a small portion of their annual property tax revenue and therefore not significant. **This loss may be at least partially offset by potentially increased property values.**

3.5.4 Mitigation Measures

Construction

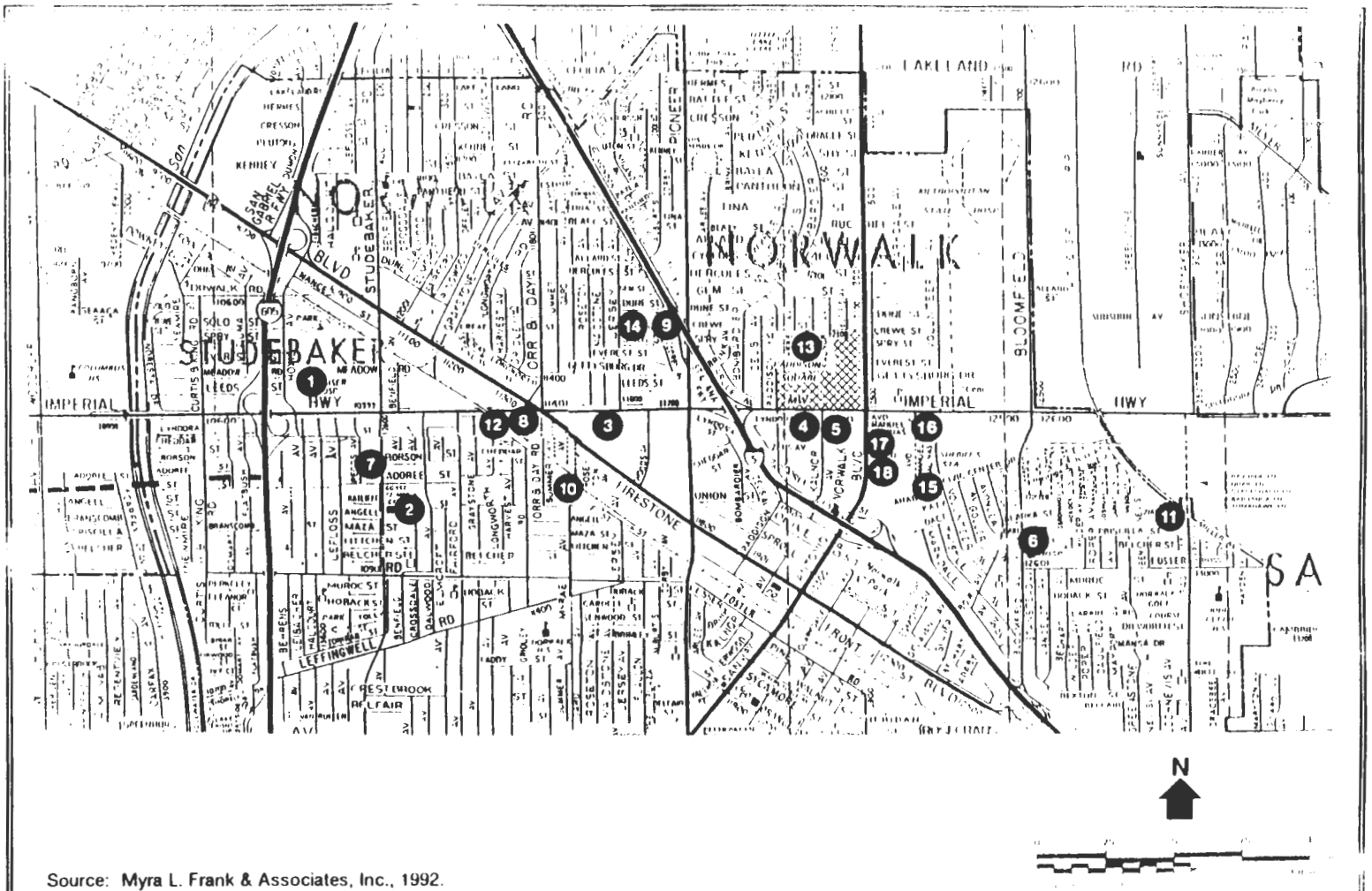
The Metro Green Line Easterly Extension would result in construction impacts affecting population and housing in the areas of noise, vibration, traffic, safety and light and glare. These topics are discussed in other sections of this document and the reader is referred to those sections for specific mitigation measures.

Regarding acquisition of residences north of the I-105 freeway ramp, relocation could be avoided by placing the staging area **at the east end** and **locating** the tunnel portal ~~could be located~~ on the adjacent lot ~~located~~ west of Studebaker Road **and** south of Lyndora Street. Relocating the tunnel portal to this ~~location~~ **site** would require acquisition of only one residence ~~and a church~~. Selection of the east end staging area would also **eliminate** ~~reduce~~ the ~~number~~ of acquisitions necessary at the west end~~, although it would not entirely eliminate them~~.

Operation

The operation of the project in an aerial alignment would require that the property owners of nine residences be compensated for the partial acquisition of their property. Procedures outlined in the Uniform Relocation Procedures and Real Property Acquisition Act would generally be followed with respect to the full acquisition.

Provisions of State law regarding relocation and assistance (California Government Code, Chapter 16, Section 7260 et sea., "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970") would require the Los Angeles County Transportation Commission to provide assistance to eligible residents, business concerns and non-profit organizations displaced by the project. State requirements would need to be followed in principle. Adopted policy of the LACTC at the time of actual property acquisition would apply.



Source: Myra L. Frank & Associates, Inc., 1992.

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Figure 3-11: Location of Public Services In Study Area

Table 3-12: Public Services Facilities in the Study Area

CATEGORY	DISTANCE FROM ALIGNMENT (ft.)	NAME & LOCATION		AERIAL ALIGNMENT IMPACTS		SUBWAY ALIGNMENT IMPACTS	
		MAP NO.	ADDRESS	CONSTRUCTION	OPERATION	CONSTRUCTION	OPERATION
CHURCHES	Adjacent	7	Immanuel Korean Church 12719 Studebaker Road	• Full property acquisition	N/A	N/A	N/A
	Adjacent	8	New Harvest Christian Church 11634 East Imperial Highway	• Partial acquisition • Noise/vibration • Reduced access • Increased traffic	• Noise • Visual	• Noise/vibration • Increased traffic	• Noise/vibration
PARKS	1200	9	Orr Park 12130 Jersey Street	• Circuitous routing	• Visual	• None	• None
	960	10	Vista Verde Park 11459 Ratliff Ave.	• Circuitous routing	• Visual	• None	• None
	1200	11	Zimmerman Park 13031 Shoemaker Ave.	• Circuitous routing	• Visual	• None	• None
SCHOOLS	Adjacent	12	New Harvest Christian Church 11364 East Imperial Highway	• Reduced access • Increased traffic • Noise/vibration	• Noise • Visual	• Noise/vibration • Increased traffic	• Noise/vibration
	1200	13	Paddison School 12100 Crewe St.	• None	• Visual	• None	• None
	1560	14	William Orr School 12130 Jersey Ave.	• None	• Visual	• None	• None

convalescent hospital is located within the study area. The Glen Terrace Convalescent Hospital, located at 11510 Imperial Highway has a capacity of 99 beds. The Family Medical Clinic, located at 12100 Kalnor Avenue is within the study area. The offices of a dentist, and a chiropractor are located at 12052 Kalnor Avenue.

Parks

Parks and recreational facilities within the study area are provided by the City of Norwalk. There are three parks located within the study area. Orr Park, located at 12130 Jersey Street, is comprised of 1.2 acres and is leased to the City of Norwalk by the Little Lake City School District. Park facilities include play equipment, **and** a recreation center and bathrooms. Vista Verde Park, located at 11459 Ratliff Avenue, occupies 6.5 acres. The park has one set of handball courts, a spray pool, play equipment, a basketball court, bathrooms and recreational offices. The largest of the four parks, Zimmerman Park, is located at 13031 Shoemaker Avenue. The park occupies 9.5 acres and includes three baseball diamonds, a half court basketball court, play area, snack bar, bathrooms, and recreational offices.

Churches

There are two churches located within the study area. They are the New Harvest Christian Church, located at 11364 East Imperial Highway, and the Immanuel Korean Church located at 12719 Studebaker Road.

Community Buildings

Norwalk City Hall, located at 12700 Norwalk Boulevard and the Los Angeles County Superior Court, located at 12720 Norwalk Boulevard are both within the study area.

3.6.2 Construction Impacts

Impacts to public services during the construction period would include reduced access to, and potential disruption of, service/operation of community facilities. Construction impacts are not generally significant because they are temporary in nature; however, when the construction period becomes protracted, the impacts can be substantial.

Construction activities could result in increased police, fire and paramedic response time; however, proper planning should minimize these effects. Fire protection service could be further impeded in instances where direct access to buildings is obstructed by construction activities or where the buildings are located on streets temporarily closed by the project.

Access to some facilities could be affected during the construction period. Temporary street closure, temporary elimination of on-street parking and generally increased traffic congestion could impair auto access to some community facilities. Temporary closure of crosswalks or sidewalks could impair pedestrian access to some service facilities. Relocation of utility lines may affect the operation of these facilities.

Facilities most affected would include those locations accessed via Imperial Highway or Studebaker Road only. Potentially, the Norwalk branch of the Los Angeles County Public

on Imperial Highway to Studebaker Road and then south to their respective schools. Student accessibility to schools south of the alignment is not expected to be significantly affected.

Students attending the New Harvest Christian Church school may be affected by construction activities involving both the subway and aerial alignments. Increased traffic and operation of heavy machinery could limit access to the school at times.

General increases in traffic due to construction activities may affect school bus routing and arrival time to schools.

- Safety of School Children

The safety of school children is not expected to be significantly affected. Construction of both the subway and aerial alignment would involve the implementation of appropriate safety provisions and procedures to ensure the safety of pedestrians.

Based on school district boundaries, no students in the Little Lake City School District would be required to cross Imperial Highway and only a very small portion of students from the Norwalk-La Mirada School District. Students attending the New Harvest Christian school may be more directly affected.

- Other Effects

Noise and vibration generated by construction of either the subway or aerial alignments is not expected to impact Paddison or William Orr elementary schools. The New Harvest Christian Church school may be adversely affected by noise and vibration as a result of construction activities. Impacts would involve increases in ambient noise and vibration levels. For a more detailed discussion of these potential impacts, please refer to section 3.11.

Fugitive dust caused by construction of the aerial alignment is not expected to affect operations of schools. For a more detailed discussion of these impacts, please refer to section 3.12.

Effects on Libraries, Churches and Community Buildings

- Acquisition

Construction of either the aerial or subway alignments would result in partial and full acquisition of some community facilities. Construction of either the aerial or subway alignments would result in the acquisition/relocation of the Immanuel Korean Church. Construction of the aerial alignment would necessitate acquisition of approximately 10 feet of the New Harvest Christian Church parking lot and approximately 10 feet of landscaping fronting the Norwalk branch of the Los Angeles County Public Library.

- Accessibility

Construction of the subway alignment would not significantly affect access to community facilities. Implementation of the aerial alignment would result in increased traffic, potentially circuitous routing, and temporary street closures. Access to the Norwalk branch of the Los

Effects on Parks

- Accessibility

Only Orr Park is located north of Imperial Highway. The subway alignment would not limit park accessibility for residents located either north or south of the alignment. Under the aerial alignment, patrons south of Imperial Highway would still have convenient and direct access to Vista Verde and Zimmerman parks, but access north of Imperial Highway would result in more circuitous routing. Similar conditions would apply for patrons living north of Imperial Highway accessing parks located to the south.

- Other Effects

Noise and vibration impacts generated by construction of either the aerial or subway alignments would not affect park operations.

3.6.3 Operational Impacts

At present, Imperial Highway experiences high traffic volumes, especially during peak hour periods. Traffic projections for 2010 indicate a net increase in vehicle volumes, which will consequently further reduce vehicle speeds and increase congestion. The proposed project would result in a slight reduction of year 2010 traffic volumes and therefore should have a small, but nonetheless beneficial, effect. The following sections identify effects that would be expected on public services under the two alignments.

Effects on Law Enforcement and Fire Services

Implementation of the project would have an overall net benefit in reducing traffic volumes and, perhaps, emergency response times.

Effects on Schools

Implementation of either the subway or aerial alignments would not affect accessibility to schools.

The safety of school children is not expected to be affected. Both the subway and aerial alignment would have appropriate safety provisions and procedures in place to ensure the safety of pedestrians as well as passengers.

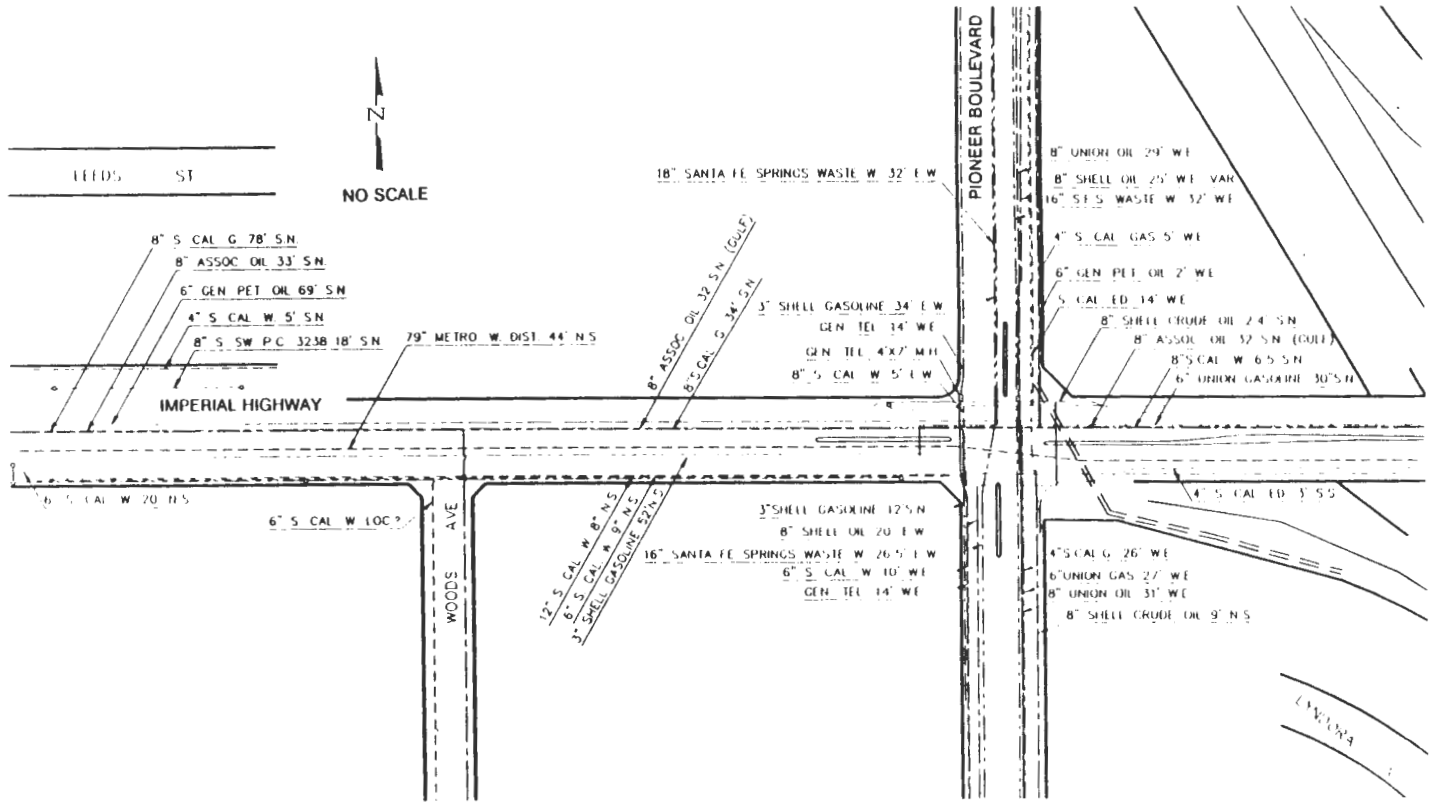
Effects on Libraries, Churches and Community Buildings

The Norwalk branch of the Los Angeles County Public Library and the New Harvest Christian Church would not be significantly affected by train operations from either the aerial or subway alignment. Implementation of either alignment would not affect access or operations of the Norwalk City hall or the Los Angeles County Superior Court.

Table 3-13: Existing Utilities Located Along Imperial Highway

TYPE OF FACILITY	SIZE (diameter in inches)	LENGTH (in feet)
Water Lines	2 4 6 8 12 79	100 605 7,680 6,824 3,105 8,945
Southern California Gas Company	2 3 4 6 8 16	910 1,435 735 300 14,125 3,690
Southern California Edison	Lines & ducts	3,860
Sanitary Sewer	8 30	8,340 365
Storm Drain	24 33 96	650 2,615 590
Gasoline	3 4 6 8	6,555 3,070 11,955 17,930
Telephone	Lines & ducts	8,400
Catch basins and laterals	18 inch lateral 24 inch lateral catch basins	740 825 11 locations
Traffic Signal Conduit		2,860
Box Culverts	Varying sizes	1,510

Source: Gannett-Fleming, 1992.



Source: Gannett-Fleming, 1992.

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Figure 3-12: Utility Sections

would have to be made. The second potential solution suggested by MWD proposed straddling the pipeline, thereby eliminating the need for a new line.

Further analysis has indicated that the guideway structure could be supported with a single large diameter drilled caisson. This design has been used in the construction of the Harbor Freeway HOV lanes and LACTC's Green Lines and appears to be the most feasible for minimizing the relocation of utilities.

As can be seen from the three accompanying utility plan views (which are typical of most intersections along Imperial Highway) another major utility requiring attention is the 8-inch storm drain paralleling the centerline of Imperial Highway from Studebaker to Pioneer. This large gravity flow pipe would have to be rerouted. There are also many smaller pipes that would be affected by an aerial alignment.

Along Studebaker, parallel overhead electric wires would have to be removed and reestablished to accommodate the aerial alignment. This is similar in nature to those along Imperial Highway, but for a much shorter distance.

Subway Alignment

The subway alignment would pose the least amount of disruption with regard to utilities, because the twin-tube tunnel would be approximately 50 to 60 feet underground at all times. The top of the concrete tunnel would be 20 to 30 feet below the street surface, considerably deeper than electric, phone, gas, and communication lines, which are close to the surface. Water and sewer lines, however, are placed deeper. At the east end of the underground alignment the tunnel will be ascending at a 4 percent grade as it enters the Norwalk Transportation Center. The top of the tunnel would be very close to the street grade, and could conflict with the 79-inch high pressure MWD line. Because the actual depth of the pipeline has not been field verified, the extent of the conflict, if there is a conflict, has not been determined.

3.7.3 Mitigation Measures

No matter which alternative is selected, utilities would be relocated at an early stage in the construction process, if necessary, and the relocation process would be carefully coordinated with the utility owner in order to minimize disruption to service. This is especially important with regard to the 79-inch water main owned by MWD because of its size and its importance to municipal water delivery.

3.8 AESTHETICS

3.8.1 Environmental Setting

For purposes of aesthetics the study area includes the route taken by each of the project alignments and the immediate view shed in which the project would reside.

The existing visual setting consists of a mixture of land uses that are predominantly residential and commercial with some industrial **uses** adjacent to the railroad tracks. The suburban setting of the area contains commercial uses bordering Imperial Highway. Most buildings are not higher

next to the railroad tracks. The south side of the street has a gas station, an apartment complex, and the present city maintenance yard, which, ~~like the warehouse,~~ is a ~~messy and unattractive~~ site with stored material. ~~and miscellaneous junk piled on the ground.~~

In general the visual setting of the proposed route alignment along Imperial Boulevard is typical of suburban Southern California, with a mixture of residential and commercial uses. The exception is the large open space around the Norwalk Civic Center, which creates a park setting.

The visual impact of the aerial alignment would be extensive and intrusive the full length of the alignment. The subway alignment, on the other hand, would be minimally exposed to the surrounding area because, except for the at-grade portions of the alignment at the west and east ends of the corridor, the alignment follows an underground route.

3.8.2 Construction Impacts

Aerial Alignment

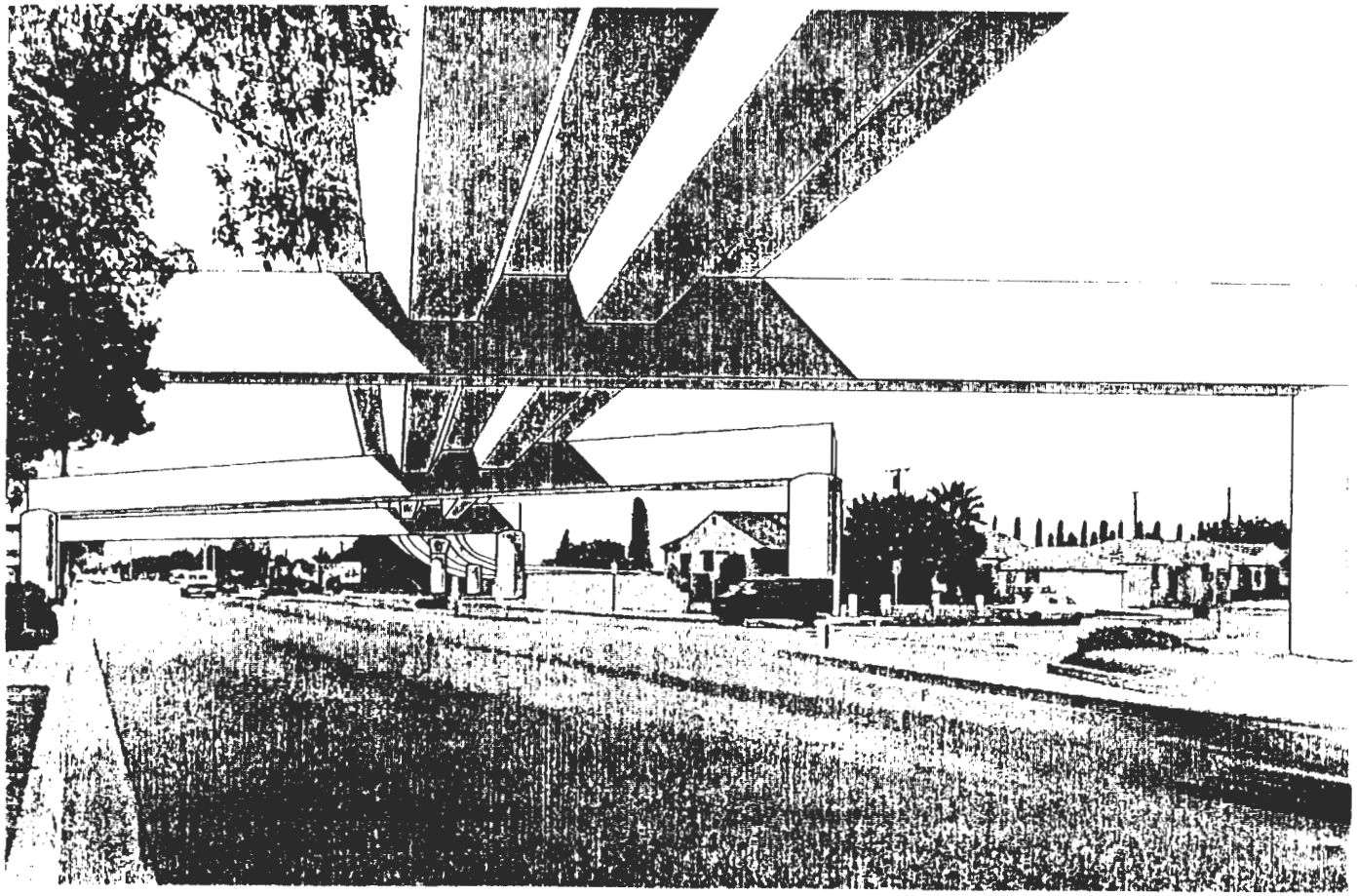
Visual impacts resulting from the construction of an aerial alignment would be significant throughout the construction period and for the length of the line. The construction of road-centered columns and cross road bents would create a large number of barriers and directional and detour signs. Areas along the alignment would be enclosed by a chain link fence to protect the public from construction activity. The activities of work crews would be prominently visible. Lanes on Imperial Highway and Studebaker Road would be closed at planned intervals to accommodate construction. Roadway areas, existing landscaping and some buildings would be demolished. Fugitive dust would be created. Large vehicles, cranes, and trucks would be moving along Imperial Highway.

Subway Alignment

The visual impacts resulting from construction of a subway alignment would be minimal and short term, affecting only the two ends of the alignment. The distance between these construction activities and nearby residential uses are sufficient to support a finding of not significant for this impact.

Barriers and directional signs would be built at I-105. The area surrounding the construction staging area is primarily residential and thus would be sensitive to adverse visual effects such as the stockpiling of supplies, the presence and operation of construction equipment and the hauling of excavated material away from the construction staging area and portal. Exposed raw earth would be contained within areas already affected by the construction of I-105. Construction activities during nighttime hours would introduce the effects of light and glare.

At the Norwalk Transportation Center, barriers surrounding the construction of the subway portal would constitute visual construction impacts. All other visual impacts would be limited to the maintenance yard site.



Source: The Tanzmann Associates, 1992.

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Figure 3-13: Studebaker Road and Lyndora Street

occurring before the railroad tracks would be in a landscaped area in front of a commercial building and its south column would be in a landscaped area between the highway and a parallel street separating a residential area from heavily traveled Imperial Highway. This arrangement would cast fewer shadows from the structure on neighboring buildings; however, these columns would obscure the intersection of Imperial Highway and Fairford Avenue, and the curb cuts into the commercial building. The four bents occurring after the railroad tracks would follow the edge of parking lots flanking the highway, and they would not obscure any buildings. These four bents, in combination with the bents which would occur between Orr and Day Road and Firestone Boulevard, would create a powerful arcade of portals down Imperial Highway. At the railroad tracks the rising guideway and the descending roadway would make the sky more open.

- Firestone Boulevard and Imperial Highway

Starting just east of Orr and Day Road, five angled bents would carry the guideway over the intersection of Firestone Boulevard and Imperial Highway. The longest of these bents would stretch 140 feet across Firestone Boulevard and Imperial Highway between a car dealership and a commercial center, obscuring a large electronic sign for the car dealership. The column for the first bent in this group would be on the south side in front of a church. The columns for the other bents would occur in a landscaped area on the north side of the street and in a triangular island and parcel on the south side of the street. These large structures would visually dominate this intersection, creating significant shadows on both streets throughout the day, obscuring commercial signage along Imperial Highway to the east, and blocking the view of traffic traveling westward along Imperial Highway at Firestone Boulevard (Figure 3-15).

- Imperial Highway from Firestone Boulevard to Pioneer Boulevard

Beyond the last bent at the Firestone intersection, the aerial Green Line extension would be supported by road-centered columns to a point 150 feet west of the intersection of Imperial Highway and Pioneer Boulevard, where the bents would resume. In this section of the alignment the columns would gently arc along the roadway to accommodate left turn lanes. The guideway would create a strong visual separation between opposing lanes on Imperial Highway as it rose 16 feet above the road. The typical catenary supports above the guideway would increase visual clutter along the horizon, and a strong shadow would be cast on the westbound lane throughout the day with intermittent blocks of bright light created between the column shadows.

- Imperial Highway and I-5 Freeway

Starting before Pioneer Boulevard the guideway would start to rise for its ascent over I-5. At 150 feet before the intersection of Imperial and Pioneer boulevards the guideway would be carried on increasingly taller bents that would rise to a height of 66 feet and then descend again on the far side of I-5. This height is intended to provide adequate clearance for an HOV lane to be built in the future atop the existing freeway. These 12 tall portal frames would create a large, scaled arcade along Imperial Highway. On the westerly portion of this arcade, the columns would stand in landscaped areas in front of commercial uses to the north and freeway access areas to the south. Beyond the freeway on-ramps, the columns of the easterly portion of the arcade would stand in the rear yards of residential units. As the tallest structures in the vicinity they would be visible for a considerable distance in all directions. The columns and beams of these portals would create a considerable network of shadow and light across the roadway, on the freeway,

and on commercial structures and residential units on the north side of the street. (Figure 3-16.)

- Imperial Highway from I-5 to Bloomfield

Beyond the I-5 Freeway the Green Line Extension would return to being supported on road-centered columns at the standard height of 16 feet above the roadway. From Zeus Street to Bloomfield the visual impact of the aerial guideway would be increased by road widening to accommodate the loss of area for the column supports in the center of Imperial Highway. From Zeus Street to Norwalk Boulevard, widening would take place on the north side of the street. This would affect the historic site (Paddison Ranch) between Zeus Avenue and Paddison Avenue, where eight to ten feet of frontage would be lost. Further along Imperial Highway, frontage to a commercial center, parking lot, and gas station would be lost. At Norwalk Boulevard the widening would take place on the south side of the street. Immediately adjacent to Norwalk Boulevard, eight to ten feet would be lost to an open area north of the Norwalk Civic Center. Further east, landscaped areas in front of the city's library and the Hutton International Centre would be lost, including many mature trees. The center column supports would gently undulate along Imperial Highway to accommodate left turn lanes (Figure 3-17.) The off center placement of columns would be too small to have a significant visual impact along this stretch of roadway. However, this long colonnade would create a strong visual separation between opposing lanes of traffic as well as partially obscure traffic emerging from perpendicular streets. Throughout the day, columns and the guideway would cast a shadow over westbound lanes. In winter months, when the sun is low in the sky, a pattern of light and shadow would be created along the highway from the columns at 130 feet on center and the guideway above.

- The Norwalk Transportation Center

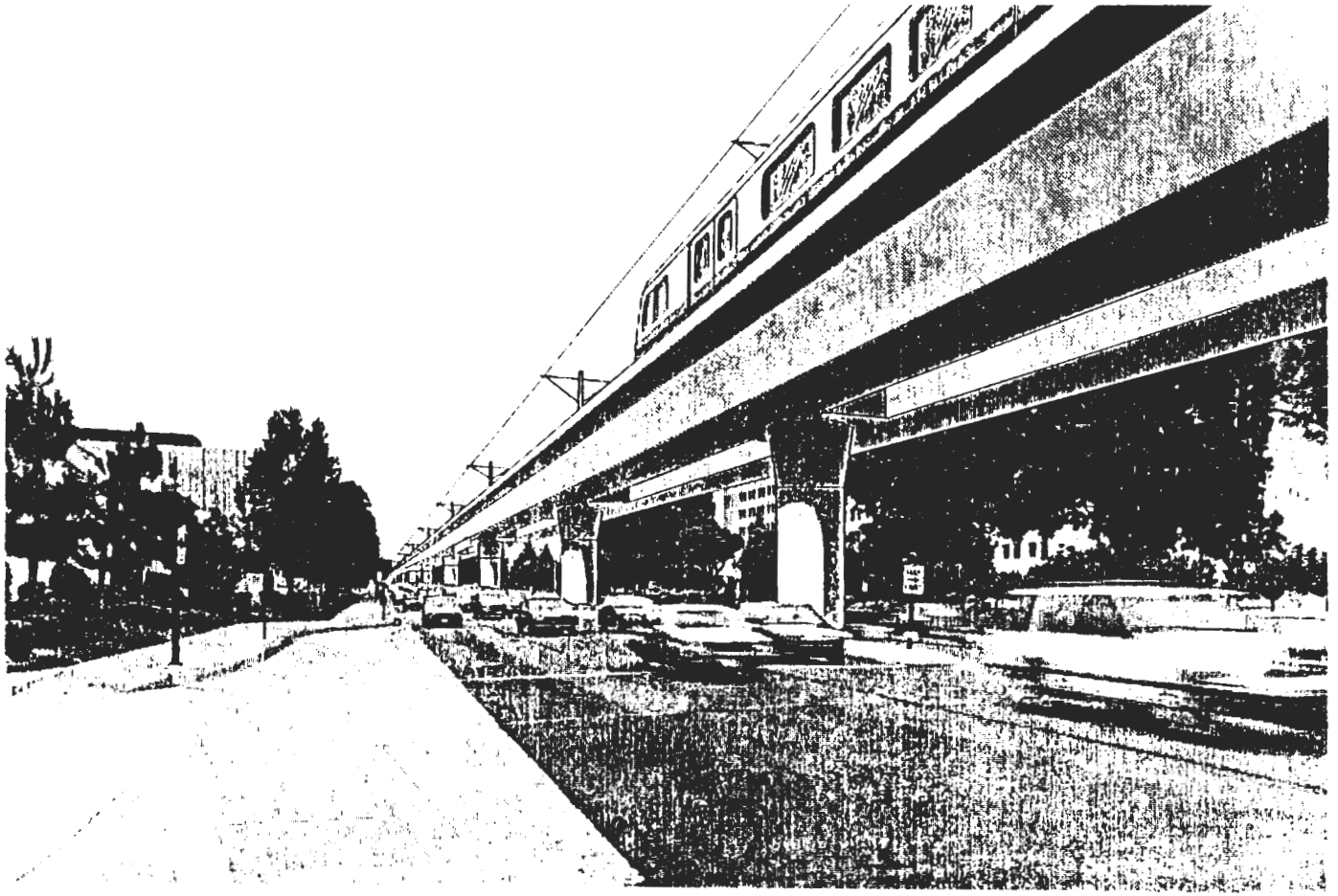
Beyond Bloomfield Boulevard the guideway would continue in the center of the road on columns for 500 feet past commercial and office complexes on the north and a gas station and condominiums on the south until it reached the property line of what is currently the Norwalk Maintenance Yard. Then the guideway would begin to curve, supported on two bents, and continue to a raised station. (Figure 3-18.)

Along Imperial Highway the visual impact of the aerial route would be large, but not unattractive. The guideway would be very visible from the second floor of the condominiums. The broad curve of the guideway arcing into the transportation center would be a very strong visual presence which creates a new scale in the area as it cuts across the broad landscaped embankment which separates Imperial Highway from the station.

The station would be a substantial improvement over the disorder of the present maintenance yard. The parking area and the station itself would be flanked by landscaped areas, and the station's canopies, escalators, elevators, and exterior paved and patterned areas would be a vast improvement over the metal sheds and utility buildings which cover the site today.

Subway Alignment

The subway alignment would create visible elements only at its two ends. At I-105 the alignment would start out ~~at~~ **below** grade and descend **further** into the ground. Only the length of track before the rail line descends into the ground, the low retaining walls flanking the track's descent,



Source: The Tanzmann Associates, 1992.

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Figure 3-17: Imperial Highway and Hutton Imperial Centre

and the portal into which it disappears ~~and the sound walls surrounding the area~~ would be visible. ~~The most significant element would be the sound walls, which, if sensitively designed and surrounded by landscaping, could enhance an area already aesthetically marginal.~~ At the Norwalk Transportation Center site, the subway alignment would be seen along Imperial Highway, and a portal next to the road would mark where the train emerges from the tunnel. Located in a landscaped embankment, this portal should not negatively affect the visual surroundings, which include retaining walls and abutments for the railroad overpass. The new train station on the site of the city maintenance yard should be a significant visual improvement over the present litter, stored material, trucks, and metal sheds currently present. The new train station would provide landscaped parking and buffer areas, walks, and a new small scale structure.

3.8.4 Mitigation Measures

The subway alignment would require few mitigation measures to improve its visual effect. Retaining walls defining the portals where the line enters or emerges from the ground can be screened with landscaping or treated with relief and color to make them aesthetically pleasing. The proposed Norwalk Transportation Center would provide the opportunity to design a handsome structure.

The aerial alignment presents a greater challenge. To mitigate the presence of this large and long structure would require careful and sensitive design. Landscaping the center strip down Imperial Highway between the columns supporting the guideway would be a great help. Colorful scrubs and decorative trees would scale down the route and obscure opposing traffic, making the road seem smaller. Sensitively placed trees would reduce the ~~overwhelming presence~~ **prominence** of the overhead guideway and partially obscure its appearance from a distance. The columns of the guideway could be designed to obscure their presence or highlight their form. Columns could be covered with vine arbors and turned into green and flowered posts. Columns could be treated as sculptural forms with the base, shafts and capitols articulated. They could be striated and lined into smaller segments and surfaces. The columns of the aerial route create an opportunity for public art. They could be designed to scale down the guideway above making it seem less ~~overbearing~~ **prominent** or they could be designed to make the guideway more monumental and impressive. ~~The overhead guideway itself could be designed to create an interesting shadow pattern which would break the heavy slab into a filigree of lines and shades.~~ Street lighting along the guideway would also present another opportunity to either diminish the structure or highlight its presence. Night lighting can be used to obscure the guideway in dark shadow or to dramatize its interesting elements. A number of approaches, including landscaping, form manipulation, decoration, color, and lighting would probably be needed to mitigate the appearance of the aerial alignment.

3.9 CULTURAL RESOURCES

3.9.1 Applicable Legislation

The following section identifies cultural resources, including both archaeological and historic/cultural resources, and describes the potential effects of the proposed project alternatives on these resources. The purpose of this discussion is to comply with the California Environmental Quality Act (CEQA) regulations in regard to cultural resources.

elements to its historic or cultural significance, and the sensitivity of the current or historic use of the resource. Once the nature of the potential effect is established, mitigation measures should be incorporated as part of the project to minimize disruption or adverse effect on these resources.

Historic/Architectural/Cultural Resources Impact Criteria

Impacts on historic, architectural, or cultural resources could occur during the construction and/or operational phases of the project. During the construction phase, effects such as demolition, complete or partial right-of-way acquisition, temporary loss of access, vibration, and settlement may be considered. Construction impacts not resulting in demolition, settlement or which produce a temporary loss of access are considered temporary and therefore negligible. For the operational phase, permanent loss of access, vibration, noise, visual, alteration, and disruption of the integrity of setting may be considered. In order to establish criteria for these potential effects, technical reports and criteria were examined for right-of-way acquisition, land use sensitivity, noise, vibration, and visual obstruction.

The significance of right-of-way acquisition was based on the "partial" or "full" acquisition determinations used in the land acquisition section of this document (Section 3.4). In addition, the right-of-way plans and profiles for the project alternatives were examined to better interpret the effects of acquisition on a site specific basis. Should the right-of-way acquisition result in the demolition of all or part of the architecturally significant portion of a structure, or result in isolation of the structure from significant viewpoints, it would be considered an adverse effect. If the acquisition is limited to a portion of the resource property, and not the structure, the determination of effect is subjective and is dependent upon the historical association of the property to the significance of the resource, and the nature of the resulting loss of integrity of setting.

Impact due to loss of access was also based on the land acquisition analysis completed for this project. Site specific determinations were based on project plans in the immediate vicinity of a resource. Loss of access which results in isolation of the property, loss of significant viewpoints to the building, or **which** diminishes its operational capacity to such a degree that it may force a change of use or cause the property to be vacated would be considered an adverse effect.

The potential for visual impact was established as that area encompassed by the next adjacent parcel or the area within 5 feet per every 1 foot of elevated structure introduced by the project. If the significant resource is located beyond this distance from the project alignment, a finding of "no effect" for this impact category would be determined. The degree of potential impact is directly related to the proximity of the project improvements to significant portions of the cultural resource. Below grade project improvements are not considered to create significant visual effects.

Table 3-15: Impact Criteria for Ground-Borne Vibration and Noise

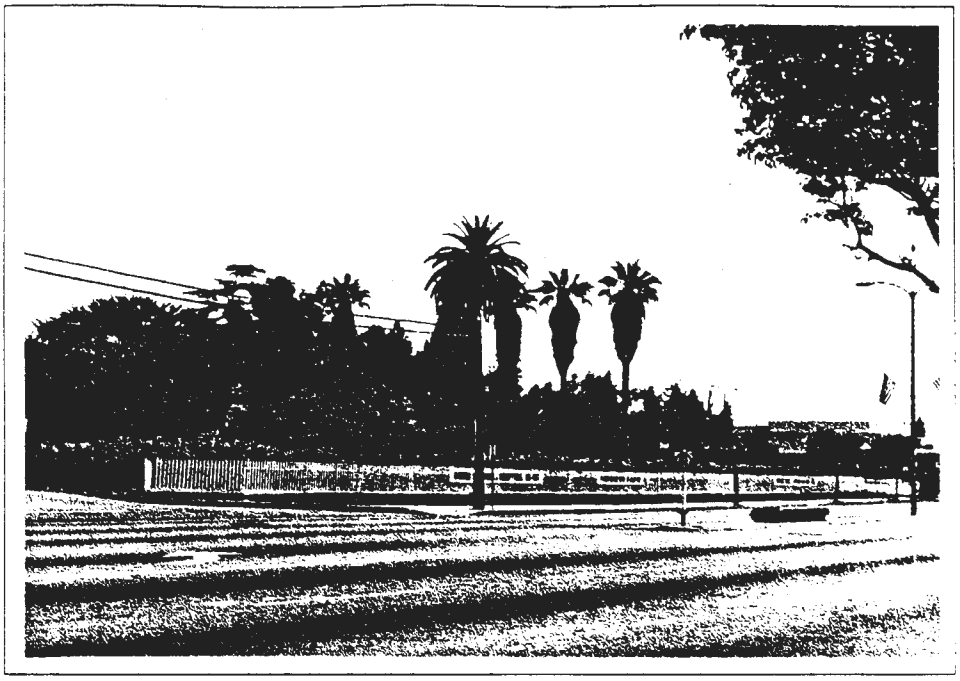
LAND USE CATEGORY	RMS GROUND-BORNE VIBRATION		
	DECIBELS RELATIVE TO 1 μin./sec	in./sec	GROUND-BORNE NOISE
Category 1: Buildings where low ambient vibration is essential for interior operations. The limits are based on acceptable vibration for moderately vibration sensitive equipment such as optical microscopes or electron microscopes with vibration isolation bases.	65 dB	0.0018	-
Category 2: Residences and buildings where people normally sleep.	72 dB	0.004	35 dBA
Category 3: Institutional such as schools and offices with primarily daytime use.	75 dB	0.0056	40 dBA

Source: Harris Miller Miller & Hanson Inc., July 1992.

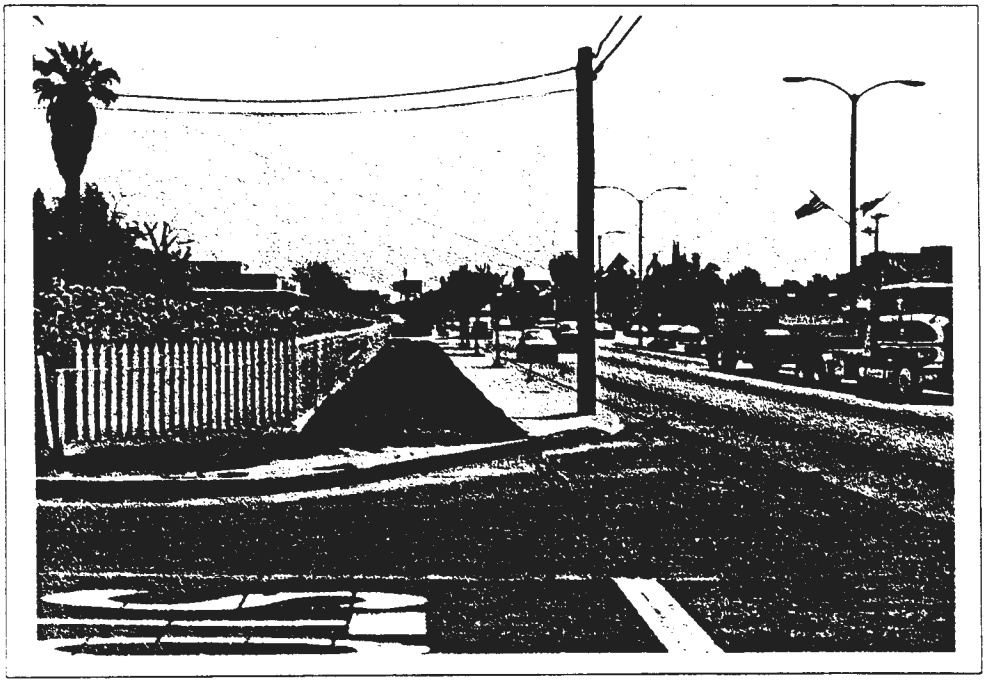
effect would be made for the structure if it were in extremely close proximity to an excavation site.

Disruption of integrity of setting is a more subjective area of evaluation and was analyzed in terms of the historic or existing use of the resource, proximity to elevated structures, and the absence or presence of intervening structures. For example, introduction of an elevated structure alongside a resource where there had previously been none would be a disruption of the integrity of setting. Replacement of a front yard with a relocated roadway would also be a significant disruption of integrity of setting.

Effects on historical, architectural or cultural resources may be categorized as beneficial, no adverse effect, and adverse effect. A beneficial effect is defined as an improvement of the condition of the resource as a direct or indirect result of implementation of the project. No adverse effect is defined as a perceptible change to the environment of the resource or its setting, but no diminution of its significant qualities. An adverse effect is defined as an effect which would result in a significant loss of integrity of the property's location, design, setting, materials, workmanship, feeling, or association.



Looking northeast from the south side of Imperial Highway at the southern boundary of the Paddison Ranch property.



Looking east from the northwest corner of Zeus Avenue at the southern boundary of the Paddison Ranch property.

Figure 3-19: Southern boundary of Paddison Ranch

approximately 180 feet from Imperial Highway. The Victorian Stick/Eastlake design features of the residence include decorative stickwork in the gable roof, decorative window sills and porch support braces, overhanging eaves, clapboard siding, and a one-story wrap around porch with spindlework porch detailing. A two-story octagonal section dominates the porch area. A series of one-story agricultural/utilitarian buildings located behind the residence feature low-pitched gable roofs and board and batten siding. These buildings are surrounded by a white-picket fence extending along the south side and a portion of the east and west sides of the property. A modern era block wall extends along the perimeter of the remainder of the east and west sides of the property. A corn field extends along the west and south sides of the property. The residence and buildings are partially secluded from the surrounding streets by the corn fields and by mature trees planted throughout the grounds. Vehicular access to the property is provided from the eastern corner of the southern boundary and from the east side of the property. The structures were built in 1880 and have survived in very good condition and with few significant modifications. The historic use of the property is agriculture/subsistence. The site was listed on the National Register on June 23, 1978.

3.9.3 Impacts on Archaeological Resources

Since there is a slight to moderate degree of sensitivity to potential cultural resource remains of a prehistoric nature, the possibility does exist that remains may be encountered during construction. The potential effects are regarded as not significant, but appropriate mitigation measures should nonetheless be followed.

3.9.4 Impacts on Historical/Architectural/Cultural Resources

One historical resource, Paddison Ranch, located at 11951 Imperial Highway, would potentially be affected by the project.

Aerial alignment

The aerial alignment would be fully within the center of Imperial Highway right-of-way by the time it reaches the Paddison Ranch with the centerline of the structure located 50 feet from the southern boundary of the property and 180 feet from the main residence. The structure would be at its highest elevation of 67 feet as it crosses over the I-5 Freeway, 580 feet west of the southwest corner of the ranch. The aerial guideway would be descending after crossing over the I-5 Freeway so that by the time it reaches the southwest corner of the property at Zeus Avenue/Imperial Highway the top-of-rail would be 55.5 feet above the existing grade, with a 49.5 foot clearance between the bottom of the guideway and the street. The top-of-rail would be 45.5 feet above the existing grade, with a 39.5 foot clearance between the bottom of the guideway and the street by the time it reaches the southeast corner of the property at Paddison Avenue/Imperial Highway.

Three columns measuring seven feet in diameter and spaced 75 feet apart would be located in the centerline of the guideway between Zeus and Paddison avenues. A fourth column would be located 110 feet east of the property, also in the centerline of the guideway.

Cross bent structures would be placed west of the property beginning 75 feet west of southwest

The earlier agricultural setting surrounding the Paddison Ranch property has been erased over time. Still, although today the ranch sits in an urban setting, the aerial alignment would introduce a structure of a magnitude significantly unlike the existing environment, defined by a major but at-grade highway and low-rise commercial and residential development. The introduction of the aerial guideway would, therefore, significantly disrupt the integrity of the agricultural setting.

Right-of-way Acquisition

Construction of the aerial alignment would result in the partial taking of the entire length of the southern boundary of the Paddison Ranch property. Right-of-way acquisition between Zeus and Paddison avenues would involve taking an 8-foot wide strip of property north of the public right-of-way to accommodate the placement of the columns in Imperial Highway. The taking would affect the grassy area of the ranch property located between the picket fence and the sidewalk. The grassy area extends from the southwest corner of the property at Zeus Avenue/Imperial Highway to the driveway at the south entrance gate. The grassy area measures 10 feet 11 inches in width, except at the western edge where ~~the~~ it measures 12 feet 2 inches. The grassy area ends west of the south entrance gate. East of the driveway entrance the unlandscaped property measures 10 feet 5 inches between the public right-of-way and the fence.

The partial right-of-way taking would move the sidewalk to within 2 feet 11 inches of the picket fence, except at the western and eastern edges where the clearance would be 4 feet 2 inches and 2 feet 5 inches, respectively. The partial property acquisition at the Paddison Ranch is significant because it diminishes the overall size of the property and removes a buffer between the fence line and sidewalk. Although construction of the aerial alignment would move the sidewalk to within a short distance of the picket fence, the change would not result in disruption of the fence which is considered to be an integral part of the ranch complex.

Subway alignment

The subway alignment would be approximately 50 feet below the existing ground level and completely within the public right-of-way of Imperial Highway upon reaching the Paddison Ranch. Since the subway alignment would be constructed by tunnel and not cut and cover, there would be no effects caused by the construction or operation of the proposed project in this configuration.

3.9.5 Mitigation for Archaeological Resources

It is recommended that a Phase 1 Archaeological Study be conducted prior to subsurface excavation under the aerial alignment, since the potential for prehistoric remains exists and the majority of the project area has never undergone a systematic archaeological reconnaissance.

In the event the subway alignment is selected, a professional archaeologist would be promptly brought in for consultation and a Phase I Archaeological Study would be conducted prior to excavation since the potential for prehistoric remains exists and the majority of the project area has never undergone a systematic archaeological reconnaissance.

In addition to I-5, the study area is surrounded by and has close access to the following freeways: San Gabriel River Freeway (I-605) to the west with a north-south orientation, Century Freeway (I-105) to the west with an east-west orientation (currently under construction), and Artesia Freeway (SR-91) to the south with an east-west orientation. There are several additional on-/off-ramps from these freeways which provide alternate freeway access points via city streets to the study area. Figure 3-20 shows the regional vicinity of the study area.

The section of the Santa Ana Freeway near the study area has interchanges with other major freeways in Los Angeles and Orange counties and serves as a major inter-county commute corridor and interstate commerce route, leading to significant freeway congestion. It stems from the inadequate capacity of the freeway system to serve the peak period travel demands at the present time. This lack of capacity has resulted in poor levels of service, characterized by severe congestion and low travel speeds during peak periods.

Arterial highways are intended to handle the bulk of intra-regional traffic and complement the freeway system and the local street network. As congestion continues to increase on the freeway system, those arterials parallel to freeways or those arterials serving the same trip destination as the freeways suffer from increased traffic volumes. Consequently, arterials in the vicinity of the study area, such as Imperial Highway and Firestone Boulevard, are becoming increasingly congested.

Local Transportation Facilities and Circulation

Although not served by a standard grid system of streets, study area sites can currently be accessed via major and secondary highways. Imperial Highway provides immediate access to the Santa Ana Freeway and is also the principal east-west access corridor along with Rosecrans Avenue. Pioneer Boulevard and San Antonio Drive/Norwalk Boulevard provide primary access in the north-south corridor.

The roadways which serve the study area are Imperial Highway, Firestone Boulevard (SR-42), San Antonio Drive/Norwalk Boulevard, Pioneer Boulevard, Studebaker Road, Rosecrans Avenue, Foster Road, Bloomfield Avenue, Civic Center Drive, and Orr & Day Road. Existing daily traffic volumes on city streets within the study area were obtained through traffic counts conducted at selected locations in February, 1992; from traffic counts conducted by Los Angeles County Department of Public Works; and estimates based on PM peak hour traffic volumes (assuming that PM peak hour traffic is approximately 10 percent of daily traffic). Freeway traffic volumes were obtained from Traffic Volumes on State Highways, published by Caltrans, 1989. The following paragraphs describe the general geometric conditions of key roadways.

Imperial Highway is classified as a Major Arterial traveling east-west. The roadway generally has three travel lanes in each direction west of Shoemaker Avenue and two lanes in each direction east of it. It generally carries a one-lane wide median that is raised (median island) in some stretches. Parking is prohibited all day on Imperial Highway near the study area. The posted speed limit varies from 40 to 45 miles per hour (mph). The daily traffic volume ranges from 35,000 to 40,000 vehicles per day.[1]

[1] Source: Traffic counts conducted in February 1992.

Firestone Boulevard is classified as a Major Arterial. It travels northwest-southeast in the study area. North of Imperial Highway, it generally has two travel lanes in each direction with a raised median, however, it has three travel lanes in the southbound direction in some stretches. South of Imperial Highway, it has two travel lanes in each direction separated by a median. Parking is prohibited on Firestone Boulevard all day north of Imperial Highway, and permitted with a two-hour limit in some stretches south of Imperial Highway. The posted speed limit on Firestone Boulevard is 40 mph. Presently Firestone Boulevard carries approximately 20,000 vehicles per day south of Imperial Highway.[2]

Norwalk Boulevard is a discontinuous street which travels north-south north of the I-5 Freeway and south of Rosecrans Avenue. San Antonio Drive provides the necessary connection between the two segments of Norwalk Boulevard, but is located west of the south segment of Norwalk Boulevard. San Antonio Drive exists between its intersection with Rosecrans Avenue/Pioneer Boulevard and the I-5 Freeway and continues as Norwalk Boulevard north of the freeway. San Antonio Drive/Norwalk Boulevard is classified as a Major Arterial. San Antonio Drive/Norwalk Boulevard has two travel lanes in each direction with a raised median in certain stretches. Parking is generally permitted on both sides of San Antonio Drive/Norwalk Boulevard. The posted speed limit is 35 mph. Presently, San Antonio Drive/Norwalk Boulevard carries approximately 25,000 vehicles per day near Imperial Highway and approximately 12,000 vehicles per day near Rosecrans Avenue.[2]

Pioneer Boulevard is classified as a Major Arterial in the study area. It travels north-south and generally carries two travel lanes in each direction with a raised median. Parking is generally permitted all day on Pioneer Boulevard. The posted speed limit is 35 mph. The street carries approximately 17,000 to 20,000 vehicles per day.[1]

Studebaker Road is classified as a Major Arterial. It travels north-south. It has two lanes in each direction with a raised median. Parking is generally permitted on both sides of Studebaker Road all day. The posted speed limit is 40 mph. The street carries approximately 26,700 vehicles per day.[1]

Rosecrans Avenue is classified as a Major Arterial traveling east-west. It has two travel lanes in each direction with a raised median. Parking is generally permitted on both sides of Rosecrans Avenue. The posted speed limit varies from 35 mph to 40 mph. This street carries approximately 22,000 vehicles per day east of Pioneer Boulevard and 29,000 vehicles per day west of it.[3]

Bloomfield Avenue is classified as a Major Arterial traveling north-south with two travel lanes in each direction and a median north of Imperial Highway. Bloomfield Avenue is discontinuous at I-5 Freeway/Rosecrans Avenue with off-set intersections on Rosecrans Avenue, which causes inconvenience for through traffic. Parking is allowed on both sides of the street north of Imperial Highway and at some stretches south of Imperial Highway. The posted speed limit varies from 40 mph to 45 mph. The street carries approximately 15,100 vehicles per day.[1]

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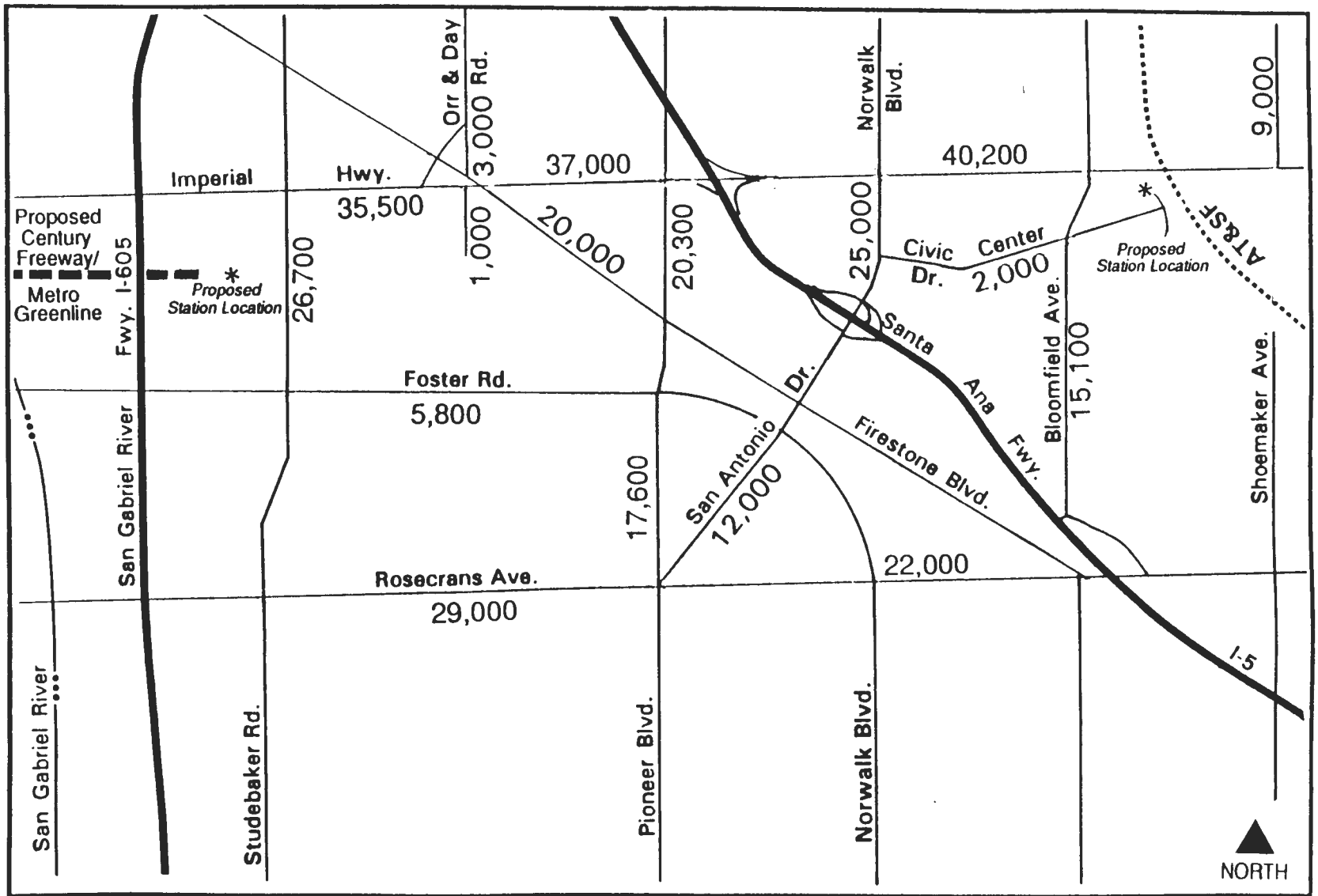
[2]Source: ADT was estimated based on PM peak hour traffic volumes.

[3]Source: Traffic counts conducted by Los Angeles County in January 1992.



Meyer, Mohaddes Associates, Inc.

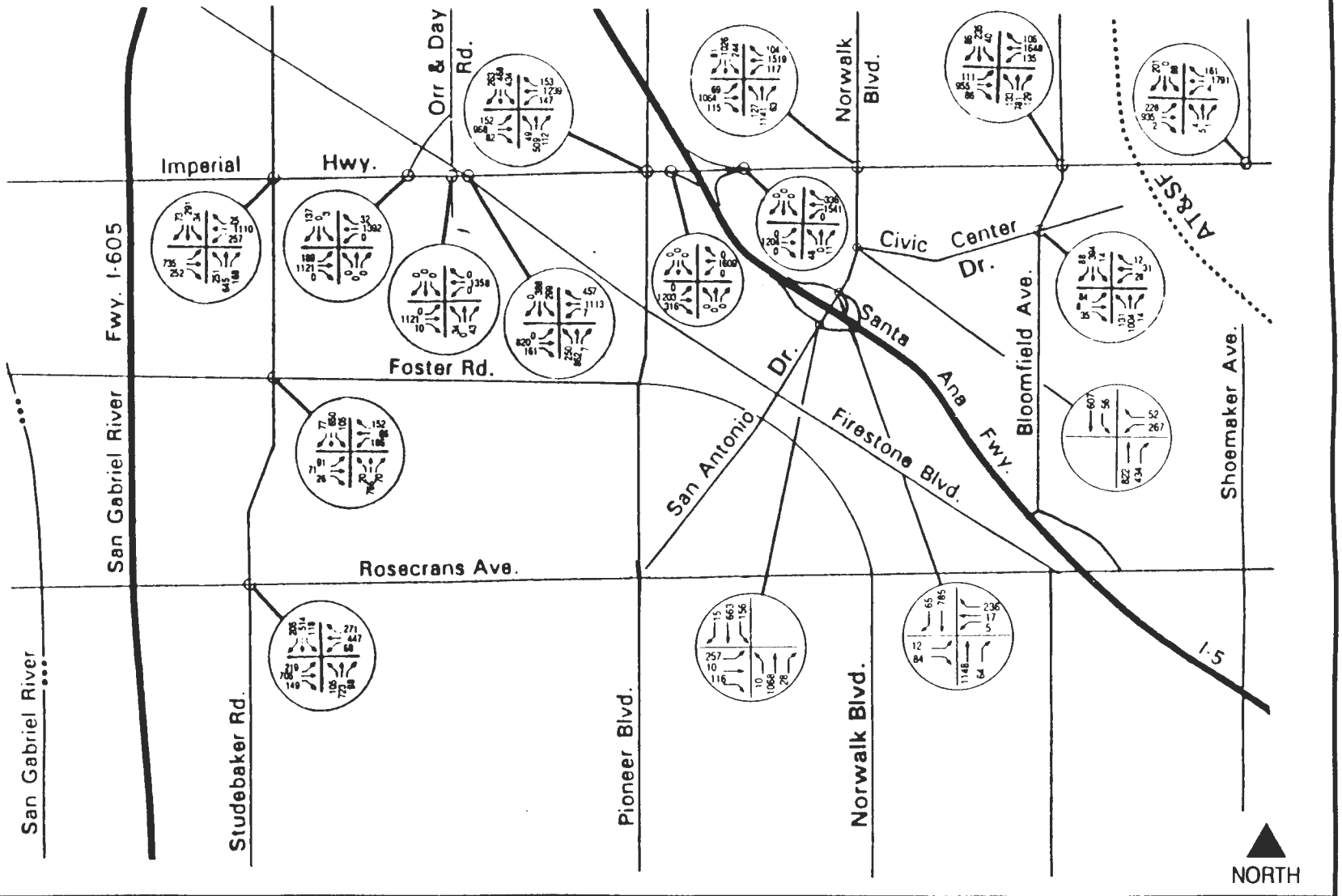
Existing ADT Volumes in Study Area
Metro Greenline Easterly Expansion RRS/EIR

FIGURE 3-21

Meyer, Mohaddes Associates, Inc.

Study Intersections
Metro Greenline Easterly Expansion RRS/EIR

FIGURE 3-22



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AM Peak Hour Turning Movements
at Study Intersections
Metro Greenline Easterly Expansion RRS/EIR

FIGURE
3-24

Table 3-16: Level of Service Interpretation

Level of Service	Description	Volume to Capacity Ratio
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	≤0.60
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	0.61-0.70
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	0.71-0.80
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues. This level is typically associated with design practice for peak periods.	0.81-0.90
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	0.91-1.00
F	Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	>1.00

Source: *Highway Capacity Manual*, Special Report 209, Transportation Research Board, Washington, D.C., 1985 and *Interim Materials on Highway Capacity*, NCHRP Circular 212, 1982.

analysis, during the PM peak hour, three study intersections (Studebaker Road at Imperial Highway, Pioneer Boulevard at Imperial Highway, and Norwalk Boulevard at Imperial Highway) are operating at LOS E or worse, and all other intersections are operating at LOS D or better. At the intersection of Studebaker Road/Imperial Highway, it is observed that the heavy left-turn traffic volumes on the westbound and northbound approaches contribute to the significant delay at the intersection. At the Pioneer Boulevard/Imperial Highway intersection, the very heavy southbound left-turn traffic volume is contributing to the significant delay at the intersection. At the Norwalk Boulevard/Imperial Highway intersection, the lack of an exclusive right-turn lane on the southbound approach to accommodate the heavy right-turn traffic volume is contributing to a significant delay at this intersection.

Using the unsignalized methodology, it was determined that both unsignalized intersections (Imperial Highway at the I-5 Freeway NB ramps and Imperial Highway at Orr & Day Road-west) are operating at LOS E or worse during AM and PM peak hours. At the Imperial Highway/I-5 Freeway NB ramps intersection, the minor street traffic delay is primarily contributing to a poor level of service, whereas at the intersection of Imperial Highway/Orr & Day Road-west, both minor street and major street left-turn traffic is contributing to the poor level of service.

Transit Services

The study area is served by the Southern California Rapid Transit District (SCRTD), local buses, commuter rail service between Los Angeles and San Juan Capistrano and taxi service throughout the study area.

SCRTD operates a number of bus routes throughout the study area, including routes 115, 120, 125, 270, 460, 462, and 466. SCRTD route No. 120 currently operates along Imperial Highway, and there are no plans to have buses stop at the Transportation Center. The nearest existing stop is at the corner of Imperial Highway and Bloomfield Avenue. Possible route changes to directly service the station would be dependent upon patronage realization. Route 270 is the route with closest access to the Studebaker station.

The City of Norwalk currently operates three bus routes, all of which travel along some stretch of Imperial Highway between Studebaker Road and Shoemaker Avenue. These buses could be used in conjunction with SCRTD buses to access the proposed stations.

The City of Norwalk's bus system would incorporate a new route to directly serve the Metro Green Line Station. This would be a loop route with potential stops at IBM, Bechtel, the Sheraton Hotel and City Hall, among others. As ridership increases on this route, extra buses would be added to serve these stops at more frequent intervals.

Amtrak presently operates commuter rail service between Los Angeles and San Juan Capistrano for the Orange County Transportation Authority. Currently there is one northbound train in the AM and one southbound train in the PM and this service is proposed to be expanded to a total of eight trains in each direction per day. Currently, Amtrak's trains between San Diego and Los Angeles/other destinations north use this corridor, however, they do not presently stop at Norwalk.

26,000 ADT to 32,000 or 33,000, about a 25 percent increase. This would result in a significant traffic impact on Rosecrans Avenue requiring mitigation. The increase in ADT on the Telegraph-Florence route would be about 4,000 to 4,800 vehicles per day. This would increase the average ADT from approximately 40,000 to 44,000 or 44,800, about an 11 percent increase. This would cause a significant impact on Florence Avenue, requiring mitigation. It is not anticipated that the diversion of traffic to the north-south streets would cause a significant impact to any of the roadways because of the numerous alternate north-south routes.

The traffic on minor side streets with access to Imperial Highway would be diverted to the closest alternative access routes. This would cause inconvenience to local residents and employees or patrons of commercial land uses along Imperial Highway and result in an increase in U-turns at signalized intersections, but this is not anticipated to cause a significant impact requiring mitigation other than a traffic control plan. Traffic at major intersections is anticipated to be excluded from significant disruption due to construction, except for certain turn movement restrictions, since bent structures rather than center columns would be utilized at major intersections and no lane closures are proposed.

Regional access to trucks/equipment used for construction of the aerial rail line is provided by I-5, I-605, and I-105. Depending on the location of activity, the nearest freeway access should be utilized; trucks and equipment should be limited to major arterials such as Imperial Highway, Studebaker Road, and Pioneer Boulevard to minimize their impact on traffic. In addition to closure of traffic lanes on Imperial Highway during construction, I-5 at Imperial Highway could potentially be briefly closed during the construction of an aerial guideway over I-5. The construction of a guideway at this location and simultaneous closure of I-5 would preferably be limited to nighttime and weekends because of the significance of the I-5 Freeway as a travel corridor. An actual plan for traffic circulation during construction of the Green Line needs to be developed during the final design stages.

Subway Alignment

For the subway alignment, the primary impact would be from trucks used for the construction process; more specifically, dirt haul trucks removing dirt excavated from the subway tunnel. There would be no other disruption to traffic along the alignment due to the subway alignment. The access/portal to the tunnel is anticipated to be located near the Pecos Avenue cul-de-sac, which is located west of Studebaker Road, south of Imperial Highway and north of Adoree Street. Trucks would potentially use Lyndora Street to access the tunnel portal. The estimated number of trucks to be used during the construction process is approximately 30, and each truck is assumed to make about four round trips during a typical eight-hour shift. This is equivalent to 120 truck round trips during a typical day shift, which is the time period under evaluation for this traffic study.

If the east end staging area is selected, construction-related traffic would shift to that locale.

Regional access to trucks used for subway construction is provided by I-105 and I-605. Figure 3-26 illustrates the general circulation pattern for trucks in the construction area. Access to I-105 is available from Studebaker Road just south of Lyndora Street; outbound trucks from the tunnel portal would travel south on Studebaker Road to the on-ramp and inbound trucks would travel northbound on Studebaker Road to reach the tunnel portal. The closest access to

the San Gabriel Freeway (both northbound and southbound) is available at Imperial Highway; outbound trucks from the tunnel portal would travel north on Studebaker Road and west on Imperial Highway, and inbound trucks would travel eastbound on Imperial Highway and south on Studebaker Road to reach the tunnel portal. These trucks would travel through one study intersection--Studebaker Road at Imperial Highway. It is anticipated that these trucks would potentially worsen level of service at this intersection only during the AM and PM peak hours and are therefore recommended to be restricted during peak hours.

As described above, truck traffic would potentially add traffic to Studebaker Road and Imperial Highway. Assuming an even split between I-105 and I-605, the daily truck traffic to be added to each freeway is 120 trips, assuming one shift per day. This would change the volumes on city streets by approximately 0.90 percent on Studebaker Road and 0.34 percent on Imperial Highway daily traffic. This would not cause a significant traffic impact requiring mitigation. A traffic control plan at the access points to the construction area, where trucks would turn onto/off of city streets, should be prepared as a mitigation measure to reduce localized impacts at the project access points.

3.10.3 Operational Impacts

Overview of Approach

The first step in the traffic impact analysis is to forecast traffic conditions based on existing conditions. The next step is an analysis of project-related impacts (extension of rail line) for the two alignments (aerial and subway) of the preferred Studebaker Road/Imperial Highway Alignment.

Future Traffic Conditions without the Project

Intersection levels of service have been forecast without the project for both AM and PM peak hour periods. Future forecasts were developed in accordance with the methodology described below.

- Cumulative Traffic Increases

The first element of the future no-project analysis was the application of an ambient traffic growth rate to expand existing traffic volumes. The purpose of the ambient traffic growth rate is to reflect background (ambient) increases in the traffic volumes which would occur as a result of projects that would be constructed before the rail line extension is completed. The ambient growth rate used in this study is 1.0 percent per year compounded for 18 years to 2010 (a total growth rate of 20 percent). No other related development projects were included in the analysis.

- Trips between Century Freeway and Santa Ana Freeway

I-105 is currently being constructed by Caltrans. It extends from the Los Angeles International Airport (LAX) in the west to its eastern terminus near I-605 and provides significant regional connections through its interchanges with many freeways, including the San Diego Freeway (I-405), the Harbor Freeway (I-110), the Long Beach Freeway (I-710), and I-605. I-105 does not connect with the Santa Ana Freeway (I-5), an important transportation corridor in the vicinity of

Table 3-18: Forecasted Commuter Rail Vehicular Trips

Mode	Mode Split %	AM		PM		Daily
		In	Out	In	Out	
Drive Alone	60	126	0	0	126	546
Car Pool	15	16	0	0	16	68
Van Pool	5	2	0	0	2	9
Kiss N Ride	5	11	11	11	11	46
Transit	8	3	3	3	3	14
Shuttles	5	6	6	6	6	26
Walk/Bike	2	0	0	0	0	0
Total	**100**	**163**	**19**	**19**	**163**	**709**

Source: Meyer, Mohaddes Associates, 1992.

Table 3-19: Forecasted Green Line Vehicular Trips

Mode	Mode Split %	AM		PM		Daily
		In	Out	In	Out	
Drive Alone	55	124	14	14	124	825
Car Pool	10	11	1	1	11	75
Van Pool	5	2	0	0	2	15
Kiss N Ride	10	25	25	25	25	150
Transit	13	3	3	3	3	20
Shuttles	5	2	2	2	2	11
Walk/Bike	2	0	0	0	0	0
Total	**100**	**167**	**45**	**45**	**167**	**1095**

Source: Meyer, Mohaddes Associates, 1992.

to stations with similar park-and-ride lots, such as Del Amo station and Artesia station, and was obtained from the Southern California Rapid Transit District (SCRTD).

Trip distribution for Green Line trips is different for primary trips and other trips. For primary trips the following distribution was used: 35 percent from the south via Studebaker Road and I-605, 25 percent from the west via Imperial Highway/Rosecrans Avenue/I-105 and 40 percent from the north via Studebaker Road and I-605. The following distribution was used for other trips: 35 percent from the east via Imperial Highway, 50 percent from the south via I-5 and 15 percent from the northeast of the Studebaker station via Norwalk Boulevard/Bloomfield Avenue.

- Future No Project Traffic Conditions

The base 1992 traffic volumes were adjusted for the ambient growth and traffic volumes from I-105. The commuter rail and the Green Line were added to obtain the future cumulative traffic volumes. The Circular 212 Planning methodology for signalized intersections was used in analyzing the level of service at the study intersections for all future condition alternatives. Based on the 2010 peak hour, traffic volumes were developed and the "No Project" intersection levels of service were derived. Six study intersections were projected to operate with an estimated LOS E or worse during the AM peak hour. During the PM peak hour, seven of the study intersections (including the six in the AM peak hour) were projected to operate at LOS E or worse. These intersections are listed below:

AM Peak Hour

- Studebaker Road/Imperial Highway
- Firestone Boulevard/Imperial Highway
- Pioneer Boulevard/Imperial Highway
- Norwalk Boulevard/Imperial Highway
- Bloomfield Avenue/Imperial Highway
- Shoemaker Avenue/Imperial Highway

PM Peak Hour

- All intersections listed under AM peak hour
- Studebaker Road/Rosecrans Avenue

Impact Analysis (Future with Project Conditions)

The traffic impact analysis under "With Project" conditions considers impacts due to the proposed project at study intersections as well as along the entire stretch of roadway along the alignment. Impacts at study intersections could be in terms of level of service due to traffic generated by the Norwalk Transportation Center Station and any other impacts due to actual construction of the rail line. Impacts on level of service at study intersections is anticipated to be the same for either of the alignments (aerial or subway) because the vehicular trip characteristics to/from the station are the same for either alignment.

The estimation of level of service at study intersections involved two steps. The first step was the removal of "Green Line other trips" at the Studebaker station and the second step was the

Table 3-20: Future AM Peak Hour Intersection Levels of Service

INTERSECTION	WITHOUT PROJECT		WITH PROJECT		IMPACT
	V/C	LOS	V/C	LOS	
Studebaker Road/Imperial Hwy	1.18	F	1.06	F	NI
Studebaker Road/Foster Road	0.68	B	0.68	B	NC
Studebaker Road/Rosecrans Ave	0.87	D	0.87	D	NC
Firestone Blvd/Imperial Hwy	0.99	E	0.94	E	NI
Orr & Day Road(E)/Imperial Hwy	0.47	A	0.44	A	NI
Orr & Day Road(W)/Imperial Hwy	0.64	B	0.61	B	NI
Pioneer Blvd/Imperial Hwy	1.01	F	0.98	E	NI
I-5 NB on/off-ramps/Imperial Hwy	0.78	C	0.72	C	NI
I-5 SB on-ramp/Imperial Hwy	0.50	A	0.48	A	NI
Norwalk Blvd/Imperial Hwy	1.26	F	1.26	F	NC
Bloomfield Ave/Imperial Hwy	1.00	E	1.00	E	NC
Shoemaker Ave/Imperial Hwy	1.23	F	1.24	F	+ & NSI
Bloomfield Ave/Civic Center Dr	0.63	B	0.70	B	+ & NSI
Norwalk Blvd/Civic Center Dr	0.58	A	0.63	B	+ & NSI
Norwalk Blvd/I-5 NB ramps	0.70	B	0.74	C	+ & NSI
Norwalk Blvd/I-5 SB on-ramp	0.81	D	0.82	D	+ & NSI

Key to Symbols:
NI = No Impact, V/C ratio improves
NC = No Change
+ & NSI = No Significant Impact

Source: Meyer, Mohaddes Associates, 1992.

3.10.4 Parking Impacts

An analysis of parking requirements was conducted for the Norwalk Transportation Center Station with the proposed Green Line Easterly Extension. The parking requirements at this Station with the proposed extension are from two primary sources--the Commuter Rail and the Green Line. The parking demand would be the same with either of the alignments (aerial or subway). The estimation of parking demand at the Norwalk Transportation Center Station involves data related to patronage and mode split for both the Commuter Rail and the Green Line which were discussed in earlier sections. Based on those assumptions, peak hour and daily vehicular trips were estimated.

Parking demand was estimated by hour of the day between 6:00 AM and 7:00 PM and the results for the time period between 7:00 PM and 6:00 AM were combined. Parking demand is derived from vehicles related to the drive alone and car pool/van pool modes only. Other modes of travel do not generate parking demand. Based on proposed service descriptions, assumptions were made regarding direction of travel (inbound versus outbound) which affects the number of spaces occupied. The analysis resulted in information on the number of vehicles entering/leaving the proposed parking lot and the number of spaces occupied during each hour. This information was estimated for the Commuter Rail and the Green Line separately. Based on the analysis, a combined (Commuter Rail & Green Line) maximum parking demand of approximately 680 spaces was forecast, as shown in Figure 3-27. Of these, approximately 315 spaces would be required for Commuter Rail and approximately 365 spaces would be required for Green Line. As per LACTC staff, provision of an additional 10 percent parking spaces is recommended to attract additional riders to rail service. Therefore, a total of approximately 750 parking spaces would be required to meet parking demands on site at the Norwalk Transportation Center with the proposed extension of the Green Line.

If the estimated number of parking spaces required to meet the demand are not provided on-site, two primary impacts are likely. One is a potential spill over of parking, affecting on-street parking in the vicinity of Norwalk Transportation Center Station site, including parking on Bloomfield Avenue and on residential streets to the south of the station. The other impact of a parking shortfall would be reduced ridership on the Green Line or a potential increase in the demand for carpool/shuttle service.

3.10.5 Mitigation Measures

No Project Conditions

Two of the study intersections, Firestone Boulevard/Imperial Highway and Norwalk Boulevard/Imperial Highway, are designated as arterial monitoring locations in the Congestion Management Program (CMP) and are thus required to be maintained at no worse than level of service E or the existing level of service by the City of Norwalk. Currently, Firestone Boulevard/Imperial Highway operates at better than LOS E and Norwalk Boulevard/Imperial Highway operates at LOS F. The City of Norwalk would have to develop a deficiency plan to keep the Norwalk Boulevard/Imperial Highway intersection from degrading any further into LOS F. LACTC staff has recommended that the proposed project not preclude any potential mitigations that may be pursued by the city to mitigate the CMP intersections and other major study intersections along the alignment.

Potential mitigation measures to mitigate significant impacts under cumulative ("No Project") conditions were identified (e.g., double left-turn lanes). These are potential mitigation measures that the City would probably include in its deficiency plan. These potential CMP-related mitigations were considered during the selection of column/bent locations by providing proper setbacks to account for these mitigations.

With Project Conditions

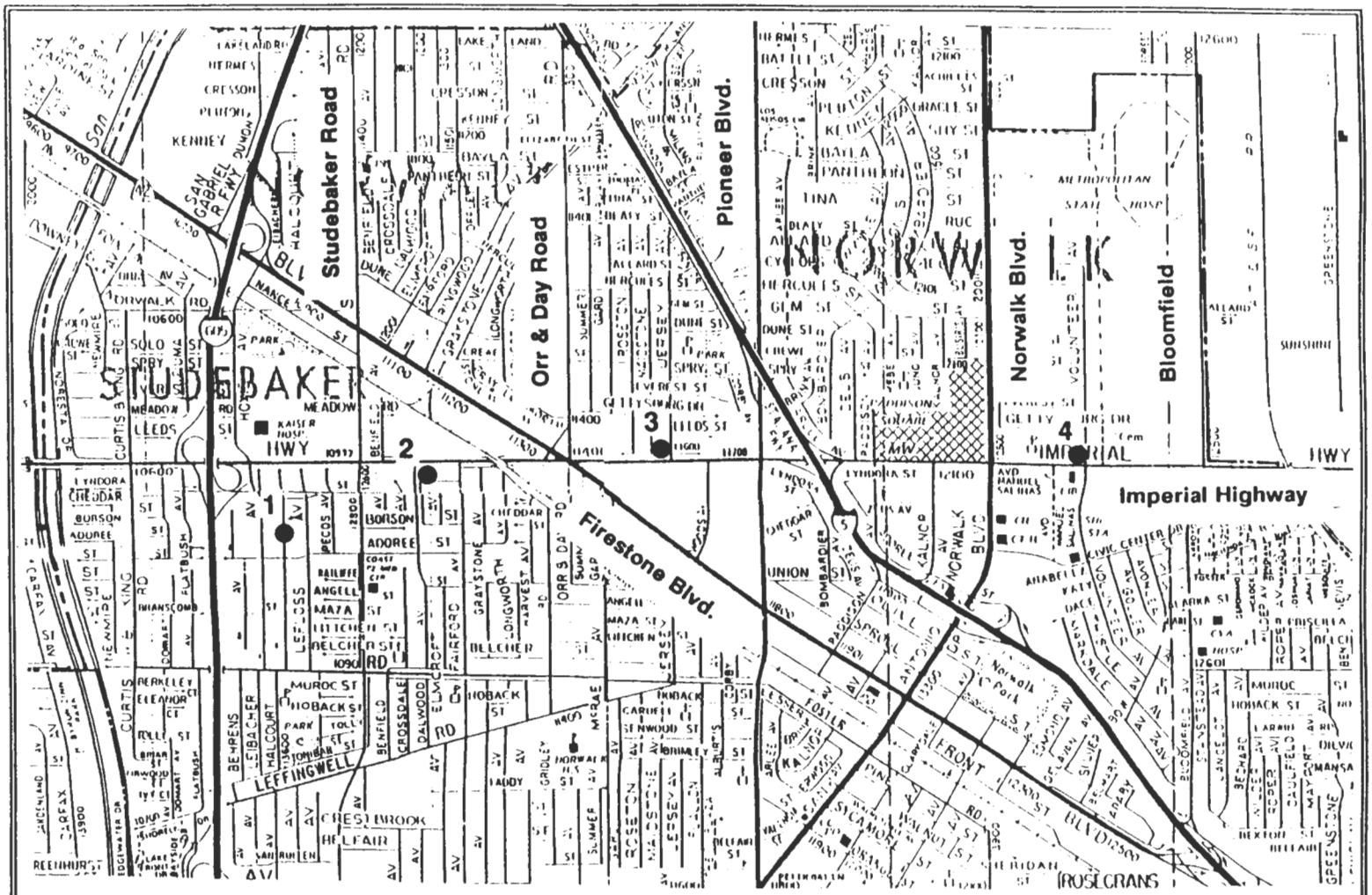
- Construction

Prior to the construction of the chosen alternative, the contractor should develop a traffic management plan to control traffic during the construction period. The traffic management plan should be reviewed with relevant public agency staff. The traffic management plan should identify both auto and pedestrian detours, ensure a smooth traffic flow, and consider safety of motorists and workers related to construction activity. Adequate advance notice should be given to potential motorists through a public relations campaign. Adequate construction signage should be provided. For the aerial alignment, construction of the aerial guideway over I-5 and the potential closure of I-5 would preferably be limited to nighttime and weekends because of the significance of I-5 as a travel corridor. Also, at least two travel lanes in each direction should be maintained on Imperial Highway, and construction related truck/equipment movement should be limited to off-peak hours to reduce traffic impacts on the two remaining lanes.

With the aerial alignment, some traffic from Imperial Highway is anticipated to be diverted to Rosecrans Avenue and Florence Avenue-Telegraph Road for the duration of the construction period, as described earlier in the report, and mitigation measures need to be implemented on these alternate routes to accommodate additional traffic. On Rosecrans Avenue, the Los Angeles County Department of Public Works staff has recommended the restriction of parking during peak hours to provide an additional travel lane as part of the signal coordination project. However, the City of Norwalk is not accepting the county staff recommendation at this time. The peak period parking restrictions should be implemented as a temporary measure during the Green Line construction period to provide an additional travel lane on Rosecrans Avenue. The third travel lane on Rosecrans Avenue would mitigate the impacts of traffic diverted from Imperial Highway. The Los Angeles County staff has also recommended peak hours parking restriction on Florence Avenue to provide for an additional travel lane as part of a corridor study. According to the staff of City of Santa Fe Springs (the relevant stretch of Florence Avenue is located in the City of Santa Fe Springs), the City may be willing to implement this recommendation, at least temporarily, for the construction period of the Green Line extension. The additional travel lane on Florence Avenue would mitigate the impacts of traffic diverted from Imperial Highway. Without any mitigation measures to accommodate diverted traffic, there would be significant traffic congestion on these alternate routes.

- Traffic

Mitigation measures to mitigate potential significant impacts due to the proposed extension are again dealt with separately for study intersections and mid-block sections. The only study intersection significantly affected by the proposed project is the intersection of Norwalk Boulevard at the I-5 SB on-ramp. The proposed mitigation would be the addition of a southbound left-turn pocket resulting in a dual left turn for that approach. For the mid-block sections, mitigations



Myra L. Frank & Associates, Inc.

Green Line Easterly Extension
Environmental Impact Report

Figure 3-28: Noise and Vibration Survey Sites

Table 3-23: Generalized Community Noise Levels

LOCATIONS	NOISE LEVEL USED IN ASSESSMENT	COMMENTS
Areas at west and east end where alignment is not in median of Imperial Highway	CNEL = 62 dBAC	This is 2 dBA lower than the measured level at the end of Le Floss.
Residential areas along Imperial Highway	CNEL = 65 dBA	Existing noise levels are higher than this for most residences facing Imperial Highway. This level is representative of residences partially shielded from Imperial Highway noise.
Commercial and institutional buildings along Imperial Highway	L_{eq}(day) = 67 dBA	Change in daytime L_{eq} is used to evaluate noise impact for institutions where occupants are not more sensitive to nighttime noise

Source: Harris Miller Miller & Hanson

High sensitivity accelerometers mounted in the vertical direction on steel stakes driven either into the ground or sidewalks were used to measure the vibration. Acceleration signals were recorded on a portable FM tape recorder. Recordings of at least 20 minutes in duration were made at each site. The field tape recordings were subsequently analyzed in the HMMH laboratory to obtain a strip chart record of root-mean-square (rms) vibration velocity level in decibels. A one second rms time constant was used.

It is uncommon for ground-borne vibration to be perceptible to humans except near sources such as heavy construction equipment or steel-wheel rail systems. Vibration from normal street traffic, even buses and heavy trucks, does not usually reach levels perceptible to humans unless one is within about 25 feet of the road or there is a bump or other road irregularity causing higher than normal vibration. As a reference point, using the decibel scale with a reference of 1 μin./sec, 65 dB is the approximate threshold of human perception of vibration, 70 dB is the point vibration starts to becomes noticeable, 75 dB inside residences is about the point where people get annoyed if the vibration is a common occurrence, and vibration amplitudes of 80 dB inside residences would annoy many people even if it occurs only 20 to 30 times per day. Levels up to the 95 to 100 dB range are necessary before even minor cosmetic damage to buildings, such as hairline cracks in plaster, are possible.

3.11.2 Impact Criteria

Airborne Noise

Noise impact for this project has been evaluated using the existing Federal Transit Administration (FTA), formerly the Urban Mass Transportation Administration (UMTA), criteria, although it is expected that FTA would soon adopt new noise standards. A preliminary review of the impact assessment with the existing impact criteria and the proposed new impact criteria indicates that the two sets of criteria result in approximately equivalent degrees of impact. Table 3-25 summarizes the present FTA impact criteria as defined in "Guidelines for Preparing Environmental Impact Assessments," UMTA Circular UMTA C 5620.1 (Ref. 1).

Table 3-25: Federal Transit Administration Noise Impact Criteria

IMPACT CATEGORY	CONDITIONS*	
Generally Not Significant	1.	No noise-sensitive sites in project area.
	2.	Increase of 3 dBA or less at noise sensitive sites and project does not result in violations of noise ordinances or standards.
Possibly Significant *(Marginal Impact)*	Increases in noise levels no greater than 5 dBA.	
Generally Significant *(Significant Impact)*	1.	Project would cause noise standards or ordinances to be exceeded.
	2.	Project would cause 6 to 10 dBA increase in noise levels in built-up areas.
	3.	Project would cause increase in noise levels of 10 dBA or more.

Note:

* The circular states that an L_{eq} measure should be used to characterize the noise conditions. In this study, CNEL has been used to characterize noise in residential communities and daytime L_{eq} has been used for areas that are not particularly sensitive to nighttime noise. CNEL is a representation of total acoustic energy over a 24-hour period with adjustments during the nighttime hours (10 pm to 7 am) and evening hours (7 pm to 10 pm) to account for many people being particularly sensitive to noise during these periods.

Source: Harris Miller Miller & Hanson, Inc., 1992.

The impact identified using the present FTA criteria is consistent with the guidelines included in the noise and vibration sections of the American Public Transit Association (APTA) noise and vibration guidelines (Ref. 3) and the design goals used for the Los Angeles-Long Beach Blue Line (Ref. 4). For clarity, in the remainder of the report the two levels of significant impact are referred to as marginal impact and significant impact, as indicated in the table.

Table 3-27: Vibration and Noise Criteria for Special Buildings

TYPE OF BUILDING OR ROOM	RMS GROUND-BORNE VIBRATION		GROUND-BORNE NOISE
	DECIBELS RELATIVE TO 1 MIN./SEC	IN./SEC	
Concert Halls	65 dB	0.0018	25 dBA
TV Studios	65 dB	0.0018	25 dBA
Recording Studios	65 dB	0.0018	25 dBA
Auditoriums	72 dB	0.004	30 dBA
Churches	72 dB	0.004	35 dBA
Theaters	72 dB	0.004	35 dBA

Source: Harris Miller Miller & Hanson, Inc., 1992.

construction noise. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, and the dominant source of noise from most construction equipment is the engine, which is usually a diesel, often without sufficient muffling. For special construction processes such as impact pile driving and pavement breaking, noise generated by the actual process dominates.

Projection of construction noise requires developing a construction scenario of the equipment to be used and the average utilization factors or duty cycles (i.e., the percentage of time during operating hours that the equipment operates under full power during each phase). Using typical sound emission characteristics, it is then possible to estimate L_{eq} or CNEL at various distances from the construction site. Table 3-28 below provides a typical equipment scenario for the excavation phase, including full-power equipment noise emission levels at 50 feet, assumed duty cycles, and the resulting workday L_{eq} for this phase of construction. The estimate assumes a 12-hour daytime workday.

Noise from Train Operations

The basis for projections of airborne noise from trains operating on the aerial structure is the noise emission limits included in the specification for the Green Line vehicle and standard formulas to project the maximum level (L_{max}) at other distances and to estimate L_{eq}, given information about L_{max} and train speed. The noise limits included in the specification are a maximum level of 77 dBA at a distance of 50 feet from the train with the train operating on tangent tie and ballast track at a speed of 40 mph. A 2 dBA adjustment has been made to allow for modest noise level increases due to normal wear on the wheels and rails and a 3 dBA adjustment has been made to account for noise levels being higher when trains are on aerial structures. The final reference level used was 82 dBA at 50 mph 50 feet from the centerline of the near track.

Ground-borne vibration and noise are not expected to be a factor for the aerial alignment. The vibration path from the rail, through the aerial structure and support columns to the ground, usually results in sufficient attenuation that the vibration should be within acceptable limits even a few feet from the columns.

The noise and vibration assessment has included a survey of existing noise and vibration in the corridor, projections of airborne noise and ground-borne vibration and noise at sensitive receptors along the corridor, and for any receptors where the noise or vibration impact criteria are exceeded, recommendation of suitable mitigation measures. The evaluation of noise impact is based on the present Federal Transit Administration (FTA) guidelines. Impact of ground-borne vibration and noise is based on the design goals included in the American Public Transit Administration (APTA) rapid transit design guidelines and impact limits commonly used on transit projects.

Following is a summary of the assumptions that have been used in developing the impact assessment:

1. The vehicle is assumed to have similar noise and vibration emission characteristics as the vehicles in use on the Blue Line operating between Los Angeles and Long Beach.

2. Because there are no at-grade street crossings, it is assumed that there would be no need for warning horns, bells, or whistles.

3. The maximum train speed would be ~~35~~ **45** mph on curves and ~~60~~ **65** mph on straight sections.

4. Existing noise levels expressed in terms of Community Noise Equivalent Level (CNEL) are 62 dBA in neighborhoods not directly fronting on Imperial Highway and 65 dBA for neighborhoods on Imperial Highway. These levels are based on generalization of the ~~of~~ the noise survey results. The level for neighborhoods along Imperial Highway assumes the equivalent of a 6-foot wall between street traffic and noise sensitive receivers. This assumption underestimates existing noise levels for areas where residences are directly exposed to noise from Imperial Highway traffic.

5. A sound barrier along the aerial structure would reduce levels of train noise by 7 dBA. This can be achieved by a wall extending 3.5 to 4 feet above the top-of-rail.

The projections of airborne noise and ground-borne vibration and noise have been based on measurements that have been performed at existing transit properties, including the Blue Line running from Long Beach to Los Angeles and standard mathematical models. The models have been previously verified through measurements.

Airborne noise projections basically assume that Green Line vehicles would meet noise specifications used for Blue Line vehicles. The basic limit in the **Blue Line** specifications is a maximum of 77 dBA at a distance of 50 feet from the track with the vehicle operating on tie and ballast tangent track at 40 mph. ~~The~~ **This** base level has been increased by 2 dBA to allow for moderate noise increases because of normal wear of the wheels and rails and an additional 3 dBA to account for operation on an aerial structure.

Table 3-29: Airborne Noise and Ground-Borne Vibration Impact

ALIGNMENT	LAND USE	AIRBORNE NOISE		GROUND-BORNE VIBRATION
		MARGINAL IMPACT	SIGNIFICANT IMPACT	
1. Aerial No mitigation	Single Family	39	102	–
	Multi-Family	9	11	–
	Motel/Hotel	0	3	–
	Library	0	1	–
2. Subway No mitigation	Single Family	–	–	33
	Multi-Family	–	–	9
	Motel/Hotel	–	–	3
	Library	–	–	0
1. Aerial With mitigation	Single Family	5	0	–
	Multi-Family	0	0	–
	Motel/Hotel	0	0	–
	Library	0	0	–
2. Subway With mitigation	Single Family	–	–	0
	Multi-Family	–	–	0
	Motel/Hotel	–	–	0
	Library	–	–	0

Source: Harris Miller Miller & Hanson, Inc., 1992.

- Ballast mats. If ballasted track is used in the subway **(which is not likely)**, ballast mats can provide 5 to 10 dB attenuation. A ballast mat consists of special mats, typically made of rubber, that is placed on the invert under the ballast.

The actual attenuation achieved with special track fasteners, resiliently supported ties, or ballast mats strongly depends on the spectrum of the ground-borne vibration. Vibration mitigation measures should be carefully evaluated during the design phase to select the most cost effective measure.

3.12 AIR QUALITY

The purpose of this section is to discuss the potential impacts of the proposed project on regional and local air quality, during both construction and operation. These potential impacts are measured against the current state of air quality in the study area. Where necessary, mitigation measures are proposed to reduce the impacts created by the project.

3.12.1 Regulatory Authority

The California Air Resources Board (ARB) is the state agency responsible for coordinating both the state and federal air pollution control programs. Enforcement of standards and permitting of new stationary pollution sources within the SCAB are performed by the South Coast Air Quality Management District (SCAQMD). In March 1989, SCAQMD adopted an Air Quality Management Plan (AQMP) in order to attain air quality standards established by the U.S. Environmental Protection Agency (EPA) under the provisions of the Clean Air Act (CAA). The plan is subject to approval by EPA, and it was adopted by the California Air Resources Board (ARB) later in 1989. A Draft 1991 AQMP revision was adopted by the SCAQMD in July 1991. The plan is designed to bring the SCAB into compliance with federal and state air quality standards. Southern California Association of Governments (SCAG) is responsible for developing regional plans for the transportation management, growth, and land use portions of the AQMP. Approval of the 1991 AQMP is still pending from the ARB and EPA.

The California Clean Air Act, effective January 1, 1989, divides the non-attainment areas into three categories with progressively stringent requirements: moderate, serious, and severe. The South Coast Air Basin is a severe non-attainment area for ozone, carbon monoxide, and nitrogen dioxide. The basin is nearing attainment for sulfates and has met attainment goals for lead and sulfur dioxide. The California Clean Air Act does not address PM_{10}. According to the California Clean Air Act, air quality management districts containing severe non-attainment pollutants are required to include specified emission reduction strategies to meet milestones in implementing emission controls into regional air quality management plans.

The 1989 AQMP established air pollution control strategies to bring the South Coast Air Basin into compliance with all federal and California air quality standards. The attainment strategy identified in the AQMP consists of three tiers:

- Tier I identifies control measures that can be adopted within the next five years through technological applications and management practices that are currently available.

Table 3-31: Federal and State Air Quality Standards

POLLUTANT	AVERAGING PERIOD	CALIFORNIA STANDARD[1]	FEDERAL STANDARD[2]	
			PRIMARY[3]	SECONDARY[4]
Ozone	1 Hour	0.09 parts per million (ppm)	0.12 ppm	Same as primary
Carbon Monoxide	1 Hour	20 ppm	35 ppm	Same as primary
	8 Hours	9.0 ppm	9.0 ppm	
Nitrogen Dioxide	1 Hour	0.25 ppm	No Standard (NS)	NS
	Annual	NS	0.053 ppm	Same as primary
Sulfur Dioxide	1 Hour	0.25 ppm	NS	NS
	3 Hours	NS	NS	1300 micrograms per cubic meter ($\mu g/m^3$)
	24 Hours	0.05 ppm	365 $\mu g/m^3$	NS
	Annual	NS	80 $\mu g/m^3$	NS
Suspended Particulate (PM_{10})	24 Hours	50 $\mu g/m^3$	150 $\mu g/m^3$	Same as primary
	Annual Arithmetic Mean	NS	50 $\mu g/m^3$	
	Annual Geometric Mean	30 $\mu g/m^3$	NS	NS
Lead	30 days	1.5 $\mu g/m^3$	NS	NS
	Calendar Quarter	NS	1.5 $\mu g/m^3$	Same as primary
Sulfates	24 Hours	25 $\mu g/m^3$	NS	NS
Hydrogen Sulfide	1 Hour	0.03 ppm	NS	NS
Vinyl Chloride	24 Hours	0.010 ppm	NS	NS
Visibility[5]	8 Hours	Reduce visibility below 10 miles	NS	NS

Notes:

1 California standards for ozone, carbon monoxide, sulfur dioxide (1-hour), nitrogen dioxide, suspended particulate matter - PM_{10}, and visibility are values that are not to be exceeded. The sulfur dioxide (24-hour), sulfates, lead, hydrogen sulfide, and vinyl chloride standards are not to be equaled or exceeded.

2 Federal standards, other than ozone and those based on annual averages, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3 National Primary Standards: the levels of air quality necessary to protect the public health with an adequate margin of safety.

4 National Secondary Standards: the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

5 This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range when relative humidity is less than 70%.

Source: California Air Resources Board air Quality Data - General Summary, 1989.

In 1987, 1,075 tons per day of particulate matter (PM_{10}) were produced in the SCAB. Stationary sources accounted for about 94 percent of the total.

3.12.3 Environmental Setting

South Coast Air Basin

The proposed project is located within the South Coast Air Basin (SCAB). The SCAB consists of the non desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange County, covering a total of 6,600 square miles of area. Los Angeles County comprises approximately 40 percent of the basin (2,400 square miles). The SCAB is bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto mountains, and on the south by the San Diego County line.

Climate

The location of Southern California, at the edge of the Pacific High Pressure Area, makes the weather pattern very stable. It is a coastal plain with connecting broad valleys and low hills. Southern California has a Mediterranean climate characterized by warm dry summers and mild winters. On most days the net wind flow is from west to east. This produces the effect of having pollutant source areas near the coast affecting receptor areas inland to the east, and this source-receptor relationship is further compounded by the population density and the majority of industries, commerce, streets and freeways that are located in the principal source areas in the western portion of the basin.

Temperatures in the basin are generally mild, increasing inland from the coast. Average annual high and low temperatures measured near the project sites were 74 and 53° F, respectively, over the last 30 years of record (SCAQMD, 1980).

Most of the rainfall occurs between November and April, averaging approximately 15 inches per year over the last 40 years. Total recorded rainfall varied from 5 to 33 inches per year in this period (*Los Angeles Times*, July 1992).

Among the four counties of the SCAB region, Los Angeles County ambient pollution concentrations are the highest. In winter months, air quality degradation is mainly due to carbon monoxide and nitrogen dioxide emissions from mobile sources, because these pollutants remain in the air for a longer period of time. In summer, air quality problems result from the formation of photochemical smog as hydrocarbons and nitrogen dioxide react under strong sunlight. Los Angeles County has been designated as a non-attainment area by the U.S. EPA under provisions of the CAA for ozone, carbon monoxide, nitrogen dioxide and total suspended particulates. Los Angeles County is designated an attainment area for sulfur dioxide.

Project Area Air Quality and Meteorological Conditions

The SCAQMD has subdivided the region into 22 air monitoring areas. Each of these areas has an air monitoring station. The project is located in the South East Los Angeles County, Region no. 5 monitoring area. The monitoring station for this area is located at 14427 Leffingwell Road, Whittier, approximately 5 miles northeast of project site. Another near by receptor station is

Table 3-32: Whittier Monitoring Station Exceedances

(STANDARD OR MEASUREMENT)	1989	1990	1991
CARBON MONOXIDE			
Federal: (1 Hour)	0	0	0
(8 Hour)	0	0	0
State: (1 Hour)	0	0	0
(8 Hour)	0	0	0
OZONE			
Federal: (1 Hour)	37	21	23
State: (1 Hour)	70	47	59
NITROGEN DIOXIDE			
Federal: (% above std.)[2]	0	0	0
State: (1 Hour)	1	0	0
SULFUR DIOXIDE			
Federal: (24 Hour)	0	0	0
State: (24 Hour)	0	0	0
VISIBILITY			
State: (Los Angeles International Airport)	150	154	159
SUSPENDED PARTICULATE (PM_{10})			
Federal: (24 Hour)	NM	NM	NM
State: (24 Hour)	NM	NM	NM
LEAD			
Federal: (Quarters exceeding std.)	NM	NM	NM
State: (Months exceeding std.)	NM	NM	NM
SULFATE			
State: (No. of samples exceeding std.)	NM	NM	NM

Notes:

[1] The Whittier monitoring station is located at 14427 Leffingwell Rd.
[2] The federal standard is an annual arithmetic mean value greater than 0.053 parts per million.
NM Pollutant not monitored at this station.

Source: South Coast Air Quality Management District - Air Quality Data Sheets, 1989-1991.

Table 3-34: Construction Equipment

EQUIPMENT BY PHASE**	SUBWAY ALTERNATIVE		AERIAL ALTERNATIVE	
	# Used	Time (hr/day)	# Used	Time (hr/day)
STREET WIDENING				
Concrete Saws	NA	NA	4	8
Rollers	NA	NA	2	8
Asphalt Pavers	NA	NA	2	8
Tract/Loader/Backhoe	NA	NA	2	8
Concrete Pavers	NA	NA	1	8
Trucks[a]	NA	NA	2	8
RELOCATION OF UTILITY LINES				
Bore/Drill Rig	NA	NA	3	8
Trencher	NA	NA	2	8
Trucks[a]	NA	NA	3	8
DEMOLITION				
Crawler Cranes	1	8	2	8
Crawler Dozer (Gals)	NA	NA	1	8
Generator Sets	NA	NA	6	8
Rubber Tired Loaders	NA	NA	2	8
Tractors/Loaders	2	8	NA	NA
Trucks[a]	4	8	8	8
EXCAVATION				
Crawler Dozer (Gals)	1	8	NA	NA
Drill Rig	2	8	NA	NA
Pumps	4	8	NA	NA
Rubber Tired Loaders	2	8	NA	NA
Generators	4	8	NA	NA
Excavators	1	8	1	8
Tunnel Boring Machine	1	16	NA	NA
Trucks[a]	30	8	2	8
CONSTRUCTION				
Drill Rig	NA	NA	3	8
Pile Drilling Auger	NA	NA	1	8
Cement/Mortar Mixer	18	8	12	8
Crawler Cranes	1	8	2	8
Generators	4	8	6	8
Plate Compactor	2	8	2	8
Welders	6	8	4	8
Trucks[a]	30	8	8	8

Notes:
* Type of equipment, number used and operating times provided by Gannett Fleming, Los Angeles.
** Emission factors obtained from SCAQMD's Draft CEQA Air Quality Handbook, May 1992.
[a] Off-highway truck emission factors for diesel-powered construction equipment assumed.
NA Not Applicable.

Source: Myra L. Frank & Associates, Inc., 1992.

Table 3-36: Construction Emissions - Subway Alternative

POLLUTANTS (Pounds per Day)	ROG	CO	NOx	PM10	SOx
SCAQMD THRESHOLD CRITERIA	75	550	100	150	150
CONSTRUCTION PHASES					
Demolition	**16**	**73**	**152**	**14**	**13**
Exceeds Criteria	No	No	Yes	No	No
Excavation	**94**	**489**	**947**	**93**	**85**
Exceeds Criteria	Yes	No	Yes	No	No
Construction	**71**	**355**	**739**	**68**	**68**
Exceeds Criteria	No	No	Yes	No	No

Note: Emission factors obtained from SCAQMD's Draft CEQA Air Quality Handbook, May 1992.

Source: Myra L. Frank & Associates, Inc., 1992.

3.12.5 Operational Criteria Emissions

The proposed project is expected to increase commuter mobility by public transport thereby reducing the production of pollution. No significant land use changes or new developments are anticipated as a result of this project.

The Green Line Easterly Extension is not expected to generate significant mobile emissions from project-related traffic except at the two intersections closest to the end stations. The intersections of Studebaker Road and Imperial Highway and Bloomfield and Imperial Highway are likely to be the intersections most affected by project-related traffic. Data on existing and future conditions with project traffic volumes at major intersections, Level of Service (LOS) and Average Daily Trips (ADT) along Imperial Highway were provided by Meyer, Mohaddes Associates. Table 3-37 shows AM Peak LOS and PM Peak LOS at each major intersection. Regional ambient growth of 20% **percent** was assumed in order to project future traffic volumes.

Mobile Source Criteria Emissions

Mobile source criteria emissions were calculated using a methodology prescribed in the SCAQMD's *Draft CEQA Air Quality Handbook* (1992). Project Average Daily Trips (ADT) were converted into VMT and multiplied by the emission factor for each criteria pollutant. Daily mobile source criteria pollutants were predicted for three conditions: existing, future without the project and future with the project. They are recorded in Table 3-38. The proposed project is expected to reduce future traffic volume by approximately 1000 vehicles per day on Imperial Highway. SCAQMD threshold criteria for Reactive Organic Gases (ROG), Carbon Monoxide (CO) and Nitrogen Oxides (NOx) are predicted to exceed the criteria in the year 2010. Particulate Matter (PM_{10}) and Sulfur Oxide (SOx) emissions are not expected to exceed SCAQMD criteria. It is

Table 3-38: Daily Mobile Source Emissions

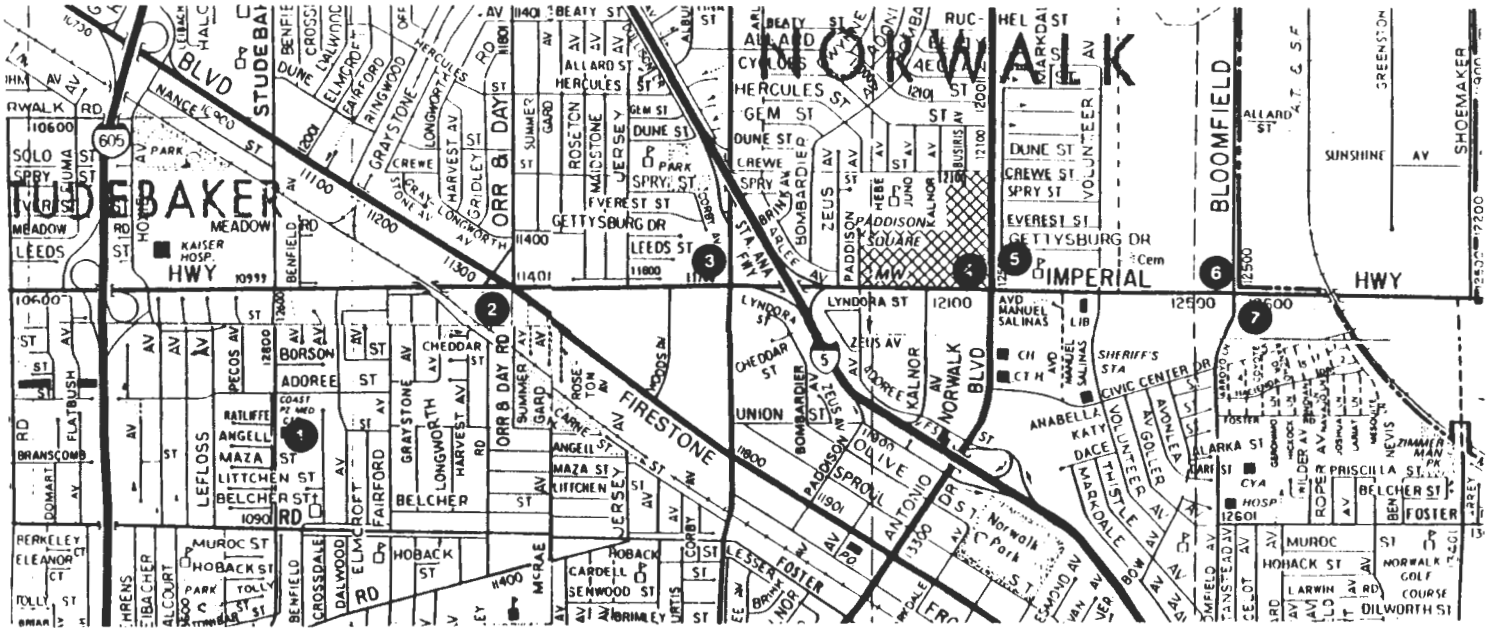
	ROG	CO	NOx	PM_{10}	SOx
1. Existing (1992)					
East of I-5	207	4,418	813	100	0.19
West of I-5	190	4,066	748	92	0.17
Total	**397**	**8,484**	**1,561**	**192**	**0.36**
2. Future Without Project (Year 2010)					
East of I-5	41	824	257	48	0.02
West of I-5	44	900	280	53	0.03
Total	**85**	**1,724**	**537**	**101**	**0.05**
3. Future With Project (Year 2010)					
East of I-5	41	820	255	48	0.02
West of I-5	44	887	276	52	0.03
Total	**85**	**1,707**	**531**	**100**	**0.05**
Net Reduction (1-3)	**312**	**6,777**	**1,030**	**92**	**0.31**
Net Reduction (2-3)	**0**	**17**	**6**	**1**	**0.00**
SCAQMD Threshold Criteria	**75**	**550**	**100**	**150**	**150**

Notes: Daily mobile emissions are based on methodology adopted by SCAQMD Draft CEQA Air Quality Handbook (Daily Emissions = VMT * Emission factor for each criteria pollutant).

This table reflects emissions at locations along Imperial Highway (pounds per day).

Source: Myra L. Frank & Associates, Inc., 1992.

The electricity produced to meet the added demand by the project would have associated emissions. Table 3-39 shows anticipated amount of criteria pollutants generated from the power plants. Emission factors were obtained from SCAQMD's *Draft CEQA Air Quality Handbook* (1992). No significant air quality impact is anticipated. None of the criteria pollutant emissions would exceed AQMD significance thresholds. The project site would not be affected by any of these pollutants generated from power plants.



Source: Myra L. Frank & Associates, Inc., 1992.

N

Not to Scale

Myra L. Frank & Associates, Inc.

Metro Green Line Easterly Extension
Environmental Impact Report

Figure 3-29: Location of Sensitive Receptors

Carbon Monoxide Conformity

SCAG's Draft CO Conformity Guideline states that transportation projects conform if: (1) It is included in a Regional Transportation Plan and a Traffic Improvement Program found to conform and (2) it can reasonably be demonstrated that the project, when taken as a whole, would reduce or eliminate the number and severity of violations of the federal carbon monoxide standards in the area substantially affected by the project. A more specific statement of the CO conformity guideline requirements as they relate to the proposed project is presented below:

- For areas in which there would be no carbon monoxide violations in the "no-build" scenario, the project conforms only if there would be no violations in the "build" scenario.

- For areas in which there would be carbon monoxide violations in the "no-build" scenario, the project conforms if the "build" scenario shows a reduction in the number and severity of CO violations in the area substantially affected by the project.

The "area substantially affected by the project" includes both (a) the vicinity of the project in which receptors are located which could be affected by vehicles using the project, and (b) other affected streets and arterials on which traffic could be expected to change significantly as a result of the proposed project.

As described in earlier sections, the Metro Green Line Easterly Extension is predicted to reduce CO, NO_x, PM_{10}, and ROG emissions from current levels. The project's implementation would improve overall traffic flow, contribute to increased average speeds, and therefore lower emission rates on a per miles traveled basis. It would decrease traffic on Imperial Highway and other streets thereby reducing local emissions. The "no-build" scenario shows reduction in the number of "hot-spots" (CO concentration at identified locations). Therefore, the proposed project is considered to be in conformance with the guideline.

3.12.7 Mitigation Measures

Construction

Short term impacts of construction could be reduced by the following measures. These measures should be considered as conditions of project approval and could be contained in applicable contracts between the project sponsor and contractors.

Fugitive dust control programs consistent with the provisions of SCAQMD Rule 403 for grading or earthwork activities should be employed. Measures include:

- Water all active projects sites with multiple daily applications to assure proper dust control.
- Wash down the under carriage of all haul trucks leaving site.
- Utilize street sweeping equipment on all adjacent streets used by haul trucks or vehicles that have been on-site.
- Stockpiles of soil, sand and similar materials shall be covered.
- Suspend grading operations and tunnel digging during first and second stage smog alerts, and during high winds, i.e., greater than 25 miles **per hour**.

Table 3-41: Estimated Fossil Fuel Consumption

	1980	2010	2020
SCAG REGION			
Gasoline	5.5 billion	7.2 billion	7.7 billion
Diesel	530 million	690 million	740 million
SOUTH COAST AIR BASIN			
Gasoline	4.9 billion	6.4 billion	6.9 billion
Diesel	470 million	610 million	660 million

Source: Alameda Corridor Draft EIR, Myra L. Frank & Associates, Inc., 1992.

3.13.2 Construction Impacts

Construction of the proposed project would result in the consumption of fossil fuels associated with the operation of construction equipment and vehicles. Table 3-42 provides estimated fuel consumption associated with construction equipment and vehicles. As compared with regional daily fuel consumption, these amounts are considered insignificant.

3.13.3 Operational Impacts

Energy consumed by the proposed project would be in the form of electricity. Each transit vehicle is expected to consume approximately 6 Kwh/car mile. This indicates that the total electric consumption during operational phase would be approximately 42,740 kilo watts per day. Typical peak hour load is anticipated to be 2,219 Kw per hour. The total yearly consumption would be approximately 15.6 mega-watts. Table 3-43 shows combined energy consumption expressed in British Thermal Units (BTUs). In 2010, with the operation of the Green Line Easterly Extension, total energy consumption is estimated to be 3.87 billion BTUs, as compared to vehicular energy consumption of 2.13 billion and 2.44 billion BTUs in 1992 and 2010 (without the project), respectively. Yearly consumption is well within the production capacity of power plants.

3.13.4 Mitigation Measures

To maximize fuel economy and conserve energy, mitigation measures indicated in the previous air quality section should be adopted. In the interest of promoting energy efficiency, the following mitigation measures are also suggested:

Construction

- Select dump sites as close as practicable to the corridor to minimize haul distance and excavation related fuel consumption.

Table 3-43: Estimated Overall Operating Energy Consumption

VEHICULAR ENERGY	EXISTING (Year 1992)	FUTURE W/O PROJECT (Year 2010)	FUTURE WITH PROJECT (Year 2010)
Auto - Miles[1]	**248,866**	**366,140**	**363,530**
Fuel consumption rate[2]	22.2	29.6	29.6
Gasoline Consumed[3]	11,210	12,370	12,281
Truck - Miles[4]	**27,652**	**40,682**	**40,392**
Fuel consumption rate[2]	5.6	6.6	6.6
Diesel consumed[3]	4,938	6,164	6,120
TOTAL FUEL CONSUMED[3]	**16,148**	**18,534**	**18,401**
British Thermal Units (BTU)			
Gasoline	1.46 billion	1.60 billion	1.59 billion
Diesel	0.67 billion	0.84 billion	0.83 billion
VEHICULAR BTUs	**2.13 billion**	**2.44 billion**	**2.42 billion**
Green Line Easterly Extension BTUs			**1.45 billion**
TOTAL BTUs	**2.13 billion**	**2.44 billion**	**3.87 billion**

Notes:
1. 90 percent of total VMT. Vehicle Miles Travels (VMT) per day were converted from Average Daily Trip information provided by Meyer, Mohaddes Associates, Inc. using conversion factors from SCAQMD Draft CEQA Handbook, 1992.
2. Miles/Gallon. Alameda Corridor, Draft EIR, Myra L. Frank Associates, 1992.
3. Gallons per day.
4. 10 percent of total VMT.

Source: Meyer, Mohaddes Associates, Inc.; Myra L. Frank Associates, Inc., 1992.

- Recycle asphalt taken up from roadways, if practicable and cost-effective.
- Maintain construction equipment in good working condition.
- Promote car-pooling among construction workers, perhaps involving the use of project vans.
- Schedule construction operations to result in the most efficient use of construction equipment practicable.

CHAPTER 4
OTHER ENVIRONMENTAL EFFECTS

4.0 OTHER ENVIRONMENTAL EFFECTS

This chapter presents discussions of cumulative effects, growth inducement and the "environmentally superior alternative." These topics are required by sections 15126 and 15130 of the State Guidelines for implementing the California Environmental Quality Act.

4.1 CUMULATIVE EFFECTS

As is noted in Chapter 2, a number of projects have been identified as being related to the Metro Green Line Easterly Extension. Briefly, these include the Metro Green Line itself, other rail transit projects under the jurisdiction of the LACTC, Metrolink commuter rail projects, the Orange County Urban Rail project, high occupancy vehicle projects, and the Norwalk Transportation Center. The following sections describe the anticipated effects which would occur if the proposed project were to be implemented along with these related projects.

4.1.1 Topography, Geology and Soils

Exposure to potentially adverse effects associated with liquefaction and ground shaking from earthquakes would be expanded in proportion to the amount of new public transit facilities being constructed. The Metro Green Line Easterly Extension would add incrementally to this exposure. The same would be true for encountering sites suspected of containing hazardous materials, **although these would be mitigated as a result of the project.** These effects would be potentially significant on an individual basis. On a cumulative basis the effects would not be significant unless a clearly major earthquake were to occur, and even then the affects may not be significant.

4.1.2 Hydrology and Water Quality

Excessive surface runoff and erosion of soil surfaces could occur during construction of individual projects, including the proposed project. This would not be significant and it would not be increased in magnitude on a cumulative basis. Groundwater could be encountered during construction of individual projects and contamination of groundwater could also occur. This effect would not be significant either on an individual project or cumulative basis.

4.1.3 Vegetation and Wildlife

With the exception of landscaping and urban vegetation, it is not anticipated that vegetation or wildlife species of concern would be affected on an individual or cumulative basis. The effects, where they would occur, would not be significant.

4.1.4 Land Use

Each of the related projects has the potential for requiring property acquisitions for right-of-way purposes. The proposed project would add incrementally to this. The significance of potential acquisitions could be significant on an individual project basis, and also potentially significant on a cumulative basis.

4.1.8 Aesthetics

The proposed and related projects would collectively produce a visual presence of public transit and rail facilities that has not previously existed in the greater Los Angeles area. Some of the facilities in the network would use overhead catenary for power collection, primarily the light rail component of the system. Also, some lines would be constructed above grade on aerial guideway structures. One of the alternatives being considered for the proposed project would have such a guideway. While some people would not regard the presence of the above grade structures and overhead wires as unattractive visual elements, others would. An overall judgement as to this effect cannot be made because it involves subjective opinion.

The proposed project in the context of the Norwalk Transportation Center would help define the site as a focal point of public transportation services and facilities.

4.1.9 Cultural Resources

Both archaeological and historic resources are subject to adverse effects from the proposed project and related projects. The cumulative effects could include acquisition, increased noise exposure, visual encroachment, and other effects. The proposed project would add incrementally to this, insofar as it would affect (aerial alignment only) the Paddison Ranch National Register property. Community concern regarding adverse effects to cultural resources typically would ensure that all planning had been done to minimize the harm that would otherwise occur. It is therefore likely that appropriate mitigation would be incorporated in most instances. However, it is probable that some resources would be adversely affected for which adequate mitigation is not available.

4.1.10 Transportation and Circulation

Implementation of the proposed project and related projects would result in a comprehensive network of public transportation facilities, offering access to destinations throughout Southern California. The facilities located at the Norwalk Transportation Center would be an important part of this network. Completion of the proposed project in the context of other related public transit projects would produce a beneficial effect with regard to regional mobility and transit patronage.

As a result of the integrated transportation network, other beneficial effects would also be expected. Among these would be reduced automobile travel, reduced energy consumption, and reduced air pollution.

4.1.11 Noise and Vibration

Implementation of regional transit facilities could expose some areas to increased noise and, potentially, vibration. With regard to vibration, sufficient mitigation measures are generally available to reduce these effects in all but a few instances to a level of insignificance.

Insofar as noise is concerned, there may be some locations which would experience increased noise as a result of an at-grade or above-grade transit line being in proximity to a sensitive use. It may not be possible to completely mitigate the increase at some locations, although the

4.2.3 Cultural Resources

The Paddison Ranch property, located at 11951 Imperial Highway, is listed on the National Register of Historic Places. The aerial alignment alternative would result in two effects on this property. First, it would require the acquisition of an 8-foot wide strip across the property's frontage for purposes of roadway widening associated with the project. Second, it would place an aerial guideway in proximity to the property. These effects would be considered unavoidable adverse if the aerial alignment were to be selected for implementation.

4.2.4 Property Acquisition

Both the aerial and subway alignments would require the acquisition of private property. In the case of the aerial alignment, acquisition would include property at the west end of the alignment and portions of property frontage along Imperial Highway, the latter being necessary for roadway widening. Also, small areas would be needed along the alignment for placement of guideway support columns and bents.

The subway alignment would require property for use as a construction staging area. The west end of the alignment has been initially identified as a likely location for this, however, the east end of the alignment may also be a potential site for this activity, in which case, the amount of private property to be acquired would be far less. Once construction has been completed, the area used for construction staging purposes could be reused.

Both alternatives would involve joint use of a parcel of land, located at the east end of the alignment, that is currently occupied by the City of Norwalk Maintenance Yard and designated for future development as the Norwalk Transportation Center. This is a publicly-held parcel of land.

Property owners would be compensated and assisted in finding a suitable place for relocation, and therefore for purposes of residual impact determination, the effects are considered not significant. However, since property acquisition does result in displacement of persons and families, and since in the case of the aerial alignment it would also result in the displacement of a church, for purposes of this section it is characterized as an unavoidable adverse effect that would not occur if the project were not implemented.

4.3 GROWTH INDUCEMENT

The proposed project would not of itself foster economic or population growth; however, it would be part of a larger public transportation system that could have such effects. It is also related to the development of the Norwalk Transportation Center, which could have implications for economic growth within Norwalk. A discussion of these cumulative effects can be found in section 4.1.

4.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Implementation of either project alignment alternative would produce beneficial effects regarding regional accessibility, reduced use of the automobile and related improvements in air quality and

CHAPTER 5
ALTERNATIVES TO THE PROPOSED PROJECT

5.0 ALTERNATIVES TO THE PROPOSED PROJECT

This chapter discusses options that could be considered as alternatives to the proposed project described in Chapter 2. Not discussed in this chapter are the two route alternatives that were dropped from further consideration as a result of a comparative evaluation process. These route alternatives are described in Chapter 1 of this EIR and they are fully documented in a separate document, Metro Green Line Easterly Extension Rail Transit Project Route Refinement Study (Gannett-Fleming, September 1992).

Two alternatives to the proposed project, the No Build alternative and a Bus Shuttle Connection alternative, are discussed in the sections following.

5.1 NO BUILD ALTERNATIVE

The No Build alternative would not construct a connection between the eastern terminus of the Metro Green Line at I-605 and the proposed Norwalk Transportation Center (NTC). Metro Green Line service would terminate at the I-605 station and a commuter rail station would be located at the NTC. Persons wishing to travel between these two locations would have to do so by private automobile or by regularly scheduled local transit service.

The No Build alternative would avoid the construction effects associated with the proposed project. These effects would include potentially encountering hazardous materials or contaminated soils, creating excessive surface runoff, the potential need for dewatering, impairing access to residences, businesses and public services, relocating utilities, creating prominently visible construction sites and stockpile areas, potentially encountering archaeological resources, causing traffic delays and congestion, causing construction noise and vibration, producing construction related pollutant emissions, and consuming energy for construction purposes.

The No Build alternative would not subject additional physical structures or the public to potentially adverse effects from earthquakes. It would not result in the removal of landscaping. The No Build alternative would not produce land use incompatibilities with surrounding land uses, nor would it require the acquisition of private property, either commercial or residential. The No Build alternative could have a slightly adverse effect on access to public services, resulting from increased vehicular traffic in the vicinity. The No Build alternative would not change the visual environment in the project area, nor would it affect the Paddison Ranch National Register property.

The No Build alternative would have an adverse effect on several aspects associated with transportation and circulation. Most importantly, it would not complete a regional rail gap closure that would permit convenient transfer between commuter rail and light rail service. The absence of this gap closure would hinder regional connectivity from the Norwalk area to points north and west, effectively severing the Metro system from the Norwalk area and Orange County. The No Build alternative would result in an increase in traffic associated with regional travelers who would

CHAPTER 6
COMMENTS AND RESPONSES

6.0 COMMENTS AND RESPONSES

This chapter contains information concerning the public review period for the draft environmental document. In the first section an overview is provided regarding the conduct of the public review process. Following this is a section which contains written comments received and responses to those comments. Following this is a section which contains comments received at the public hearing and responses to those comments.

6.1 OVERVIEW OF THE PUBLIC COMMENT PROCESS

The public review period began on November 2, 1992. The DEIR was distributed to a mailing list of 50 government agencies and interested parties. Notices announcing the availability of the DEIR were published in the *Herald American, Los Angeles Times, Long Beach Press-Telegram and City News Service.* Copies of the DEIR were placed in the Norwalk and Santa Fe Springs public libraries. A public hearing was held on November 18, 1992, at the Norwalk City Hall. This hearing was announced through the same newspapers identified above, by general news releases, and by flyers that were handed out to businesses along the proposed route. Approximately 25 people attended the public hearing. The public comment period was officially closed on December 22, 1992.

A total of 13 pieces of written communication requiring responses were received. These included Caltrans, the South Coast Air Quality Management District, the Los Angeles County Departments of Fire, Sanitation and Public Works, the City of Norwalk, and six individuals. Five individuals provided testimony at the public hearing.

6.2 WRITTEN COMMENTS AND RESPONSES

The following pages contain the text of the written comments and responses to those comments.

4 vicinity of this project (the effect to On/Off Ramps due to changing traffic patterns and volumes, etc.), and any proposed mitigation.

5 In our letter of June 1, 1992, to Mr. Ram Kumar, of LACTC, Caltrans expressed its desire to have an analysis and evaluation of the possible inclusion of a Busway/HOV facility with the Metro Green Line Easterly extension discussed in the EIR. We are still of the opinion that this alternative should be included in the document.

If you have any questions regarding this response, please call Mr. Wilford Melton, IGR/CEQA Coordinator, at (213) 897-1338.

Robert Goodell

ROBERT GOODELL, Chief
Advance Planning Branch

/cc: Ram Kumar
Los Angeles County Transportation Commission
818 West Seventh Street
Los Angeles, CA 90017

Responses to: **Caltrans, District 7**

1. The June 1, 1992 letter referred to in the comment was submitted in response to the Notice of Preparation, and it is acknowledged in Appendix E of the EIR. The comments raised in that letter have been addressed in the EIR.

2. The proposed project will not negatively affect the I-105 (Glenn Anderson Freeway, also known as the Century Freeway) terminus. The easterly extension of the Green Line to the Norwalk Transportation Center will reduce the number of vehicle trips to the Studebaker Station and park and ride lot by providing a new station further to the east. This will reduce traffic in the vicinity of the I-105 terminus and therefore have a beneficial impact on freeway ramps. The construction impacts section of the transportation analysis (Section 3.10.2) notes that construction of the subway alignment, the alternative which generates more truck trips due to the tunneling operation, will generate approximately 120 daily truck round trips. These will be divided equally between the I-605 and I-105 freeways. The project will therefore add about 60 trips to the I-105 terminus ramps during an eight-hour construction period, or less than eight trucks per hour. This would not significantly affect the ramps. The Studebaker Road and Imperial Highway intersection will not be negatively affected by the aerial alignment. As illustrated on Figure 2-1, the alignment has been designed to avoid impacting the intersection by placing columns in existing median island areas, utilizing bents across both Studebaker and Imperial Highway to preserve existing left turn lanes and by curving across private property outside the intersection right-of-way. Lane configurations at the intersection will be unchanged as a result of this project. There are no impacts to the I-105 off/on ramps which would require an alignment change for mitigation purposes. As noted above, the proposed project has no effect on the park-and-ride lot other than to potentially reduce the demand for parking by providing Green Line patrons with an alternate station at which to park.

3. Required procedures will be followed as necessary on any mitigation proposed within Caltran's right-of-way.

4. Tables 3-20 and 3-21 on pages 3-104 and 3-105, respectively, list the effects of proposed projects on intersections at the ramp terminals of the two interchanges on the Santa Ana Freeway, Imperial Highway and Norwalk Boulevard, in the project vicinity. The tables illustrate that the project will affect the Norwalk Boulevard southbound on-ramp to the I-5 in the PM peak hour. On page 3-109, the mitigation measure to eliminate this impact, the provision of a dual southbound left turn lane, is described. The level of service improvement with this mitigation measure is also noted in Table 3-21 (page 3-105) in the column labeled "W/Mitigation." The PM peak hour level of service would improve from LOS E (V/C ration of 0.97) to LOS C (V/C ratio of 0.79) with the implementation of the recommended mitigation measure. As noted above in the response to Comment No. 2, the proposed project will not impact ramps to the San Gabriel River Freeway because it will reduce traffic in the vicinity of Studebaker Station and shift some of the trips from that station to the Norwalk Transportation Center station.

5. The feasibility of a connection between HOV lanes on the I-5 Freeway and on the I-1-5 Freeway will be analyzed as a part of the I-5 Corridor Capacity Enhancement Value Engineering Study proposed by Caltrans.

South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (909) 396-2000

December 14, 1992

Mr. Ram Kumar
Los Angeles County
Transportation Commission
818 West 7th Street
Los Angeles, CA 90017

Dear Mr. Kumar:

Subject: Draft Environmental Impact Report for the Metro Green Line Rail Transit Easterly Extention Project
SCAQMD NO. LAC921110-04

The South Coast Air Quality Management District (SCAQMD) has reviewed the Draft Environmental Impact Report (Draft EIR) for the Metro Green Line Rail Transit Easterly Extension Project. The extension will be 2.8 miles long, and will proceed eastwards from the proposed Interstate 605 rail terminus to the proposed Norwalk commuter rail station. Two alternatives are proposed, a subway, and an aerial alignment along the Imperial Highway.

The SCAQMD finds that the Draft EIR has analyzed the project's overall (cumulative) air quality benefits and has proposed a mitigation strategy to reduce project emissions based on SCAQMD recommendations made during the EIR preparation stage. The SCAQMD, while concurring with the net air quality benefits documented in the Draft EIR, is of the opinion, that there are potential site specific project impacts, which should be further addressed in the Final EIR.

1 The Draft EIR mentions the need for deficiency plans required by the Congestion Management Plan (CMP) to reduce construction related congestion along several streets. Specific congestion relief measures have not been included in the discussion of deficiency plans. Traffic impacts within the cities of Santa Fe Springs and Norwalk, in particular, may require a coordinated effort during the two-year construction period. The increased level of truck traffic that may impact congestion during this period should be fully assessed in the Final EIR.

2 Delays at access points along the extension corridor have not been fully assessed in the Draft EIR. The Draft EIR states that "a traffic control plan at the access points to the construction area, where trucks would turn onto/off of city streets, should be prepared as a mitigation measure." Staff concurs with the proposal to include such a plan for reducing the traffic impacts and recommends the inclusion of a localized traffic impact assessment in the Final EIR.

ATTACHMENT 1

MITIGATION MEASURES FOR THE METRO GREEN LINE RAIL TRANSIT EASTERLY EXTENSION

1. Minimize Construction Activity Emissions

- o Employ activity management techniques, reduce the number of pieces of equipment used simultaneously; increase the distance between the emission sources; reduce or change the hours of construction; schedule activity during off-peak traffic hours; and require a phased-schedule for construction activities to even out emission peaks.
- o Remove silt by paving construction roads, sweeping streets, and washing trucks leaving the construction site.
- o Maintain construction equipment engines by keeping them tuned.
- o Use low-sulfur fuel for equipment.
- o Permanent sources of power should be used from the beginning of the project; temporary power use should be avoided.

2. Reduce Construction-Related Traffic Congestion:

- o Provide rideshare incentives, and transit incentives for construction personnel.
- o Configure construction parking to minimize traffic interferences.
- o Minimize obstruction of through-traffic lanes.
- o Provide a flagperson to guide the traffic properly.
- o Schedule operations affecting traffic during off-peak hours.

3. Minimize Energy Requirements:

- o Implement energy conservation measures beyond state and local requirements.
- o Introduce glazed windows, wall insulation, and efficient ventilation methods; install window systems to reduce thermal gain and loss.
- o Incorporate appropriate passive solar design and solar heaters.
- o Replace incandescent indoor lighting with fluorescent lamps, and outdoor lighting with halogen lights.

4. Limit Emissions From Architectural Coatings and Asphalt Usage:

- o Use low-coating systems where possible.
- o Substitute reactive solvents with nonreactive solvents.
- o Use high-solid or water-based coatings.

Draft CEQA Air Quality Handbook, May 1992. Table 6-2 shows daily worst case construction equipment emissions for each phase. The SCAQMD's thresholds of significance would not be violated during any of the construction activity.

The proposed rail station parking lot would provide parking for approximately 400 automobiles. Primary access to the parking lot would be from Imperial Highway, and the secondary access would be from Civic Center Drive. Carbon monoxide concentration analysis at the intersection of the parking lot access road and Imperial Highway considered the rail station to be the receptor. Information on traffic volume and lane configuration were provided by Meyer, Mohaddes Associates, Inc. Emission factors were obtained from the Draft CEQA Air Quality Handbook. The same assumptions considered in other intersection analyses were used in this analysis. In addition, the parking lot was considered as a source of carbon monoxide emissions. The 1-hour and 8-hour carbon monoxide emissions were estimated to be 12.1 and 8.0, respectively, for the future with the project alternative. No violations of the SCAQMD's thresholds of significance at this location is anticipated.

The conceptual architectural design shows that the walls of stairwells and overpasses would be the major surface areas to be painted. Using SCAQMD Rule 1113 and Table 9-13 of the Draft CEQA Air Quality Handbook, unmitigated evaporative reactive organic gas (ROG) emissions from architectural coating have been estimated to be 2.1 pounds per day.

4. Section 3.12.4 (Table 3-34) of the EIR indicates that generators would be used during construction activities; however, SCAQMD permits should be obtained prior to their use, and as a mitigation measure, permanent sources of power should be used where feasible.

TABLE 6-2 EMISSIONS DURING STATION CONSTRUCTION					
Pollutant (Pounds per Day)	**CO**	**ROG**	**NOx**	**SOx**	**PM10**
SCAQMD THRESHOLD CRITERIA	**75**	**550**	**100**	**150**	**150**
STATION PARKING LOT					
Grading	**47**	**13**	**30**	**3**	**4**
Exceeds Criteria	NO	NO	NO	NO	NO
Paving	**35**	**13**	**32**	**4**	**4**
Exceeds Criteria	NO	NO	NO	NO	NO
STATION CONSTRUCTION					
Excavation	**39**	**13**	**47**	**5**	**6**
Exceeds Criteria	NO	NO	NO	NO	NO
Station Construction	**58**	**20**	**49**	**6**	**6**
Exceeds Criteria	NO	NO	NO	NO	NO
Notes: Emission factors obtained from SCAQMD's Draft CEQA Air Quality Handbook, May 1992.					

Source: Myra L. Frank Associates, Inc., 1992.

Should you have any questions regarding this matter, contact Battalion Chief Richard Schiehl at (213) 244-6345.

Sincerly,

Richard B. Schiehl, Battalion Chief
Los Angeles County Fire Department
Metro Rail Coordinator

cc: Mr. J. Gee, L.A. County Fire Department
Mr. R. Kumar, Los Angeles County Transportation Commission
Mr. D. Sievers, Rail Construction Corporation

WASTEWATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-4998
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (310) 699-7411, FAX: (310) 695-6139

CHARLES W. CARRY
Chief Engineer and General Manager

December 3, 1992

File No: 18-00.04-00

Mr. Ram Kumar
Los Angeles County Transportation Commission
818 West Seventh Street, Suite 1100
Los Angeles, CA 90017

Dear Mr. Kumar:

Metro Green Line Easterly Extension

The County Sanitation Districts received a *Draft Environmental Impact Report* for the subject project on November 4, 1992. The proposed development is located within the jurisdictional boundaries of District No. 18. We offer the following comments regarding sewerage service:

1. According to the proposed project alignment, the project could impact several (up to 5) Districts' trunk sewers over which it passes. This would be particularly true in the case of the subway option. The Districts cannot issue a detailed response to, or permit construction of, the proposed project until project plans which have been revised to incorporate our sewer lines are submitted. In order to prepare these plans, you will need to contact the Districts Sewer Design Section to request drawings of our sewers. Please direct these requests to the County Sanitation Districts of Los Angeles County, 1955 Workman Mill Road, Whittier, CA. 90607, Attention Calvin Jin, Sewer Design Section. When revised plans which incorporate our sewers have been prepared, please send copies of the same to the address shown above for our review and comments.

2. Wastewater generated at the proposed Norwalk Transportation Center will discharge directly to the Districts' Bloomfield Avenue Trunk Sewer, located in a right of way adjacent and parallel to the AT and SF Railroad between Imperial Highway and Foster Road. A direct connection to a Districts' trunk sewer requires a Trunk Sewer Connection Permit, issued by the Sanitation Districts. For information regarding the permit, please contact Mr. Charles Ryee at (310) 699-7411, extension 1205. Wastewater generated at the proposed Metro Green Line Station will discharge to a local sewer for conveyance to the Districts' Orr and Day Road Trunk Sewer Section 1, located in Orr and Day Road between Florence Avenue and Imperial Highway.

3. The wastewater will be treated at the Long Beach Water Reclamation Plant (WRP), located in Long Beach, and/or the Joint Water Pollution Control Plant (JWPCP), located in Carson. These facilities have been interconnected to form a regional treatment system.

4. The Sanitation Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting to the Sanitation Districts' Sewerage System or increasing the existing strength and/or quantity of wastewater attributable to a particular parcel or operation already connected. A connection fee is required in order that necessary expansions to the Sewerage System

Responses to: **County Sanitation Districts of Los Angeles County**

1. Preliminary drawings of the proposed project alignments and profiles are provided as Figures 2-1 and 2-5 in the EIR. More detailed plans will not be available until a project is selected and preliminary engineering has been conducted. At that time, a set of plans will be submitted for review by the Sanitation Districts. Contact will be made with the Districts Sewer Design Section in order to obtain sewer drawings early in that process. The contact person noted in the comment will be added to the project file for future reference.

2. The information identified in the comment regarding the District's wastewater facilities is noted for the record. Restrooms will not be provided at the Metro Green Line station and therefore only minor amounts of wastewater would be expected. However, all permits, reviews and approvals required to connect the proposed project to District facilities will be obtained. The contact person noted in the comment has been added to the file for future reference.

3. The information identified in the comment is noted for the record.

4. Appropriate procedures will be followed for any connections required to the Sanitation District's sewerage system from the project.

5. The capacity limitations and underlying planning documents referred to in the comment are noted. As is noted in the EIR, it is not anticipated that the proposed project would result in an increased demand for housing or would result in increased population. It is therefore not expected that a measurable demand on District facilities would arise from the proposed project.

5 The EIR should more fully assess the impact on the quality of stormwater as the result of the project. Mitigation measures should be incorporated into the design and layout of the project. The document should reference National Pollutant Discharge Elimination System Permit No. CA0061654 issued by the Regional Water Quality Control Board to the County and local cities. The document should indicate that the project will comply with all applicable stormwater quality management programs of the City and County.

6 Any mitigation measure monitoring program performed by the Los Angeles County Department of Public Works (DPW), Waste Management Division, will require a funding account to be established by the project proponent to pay for the required services. The amount of necessary funds will be determined at the time monitoring will be performed. The DPW, Waste Management Division, must be contacted to establish the funding account.

If you have any questions regarding these comments, please contact Mr. Russell W. Bukoff of our Waste Management Division at (818) 458-2186. Questions regarding the environmental reviewing process of this Department can be directed to Ms. Clarice Nash at the previous page address or at (818) 458-4334.

Very truly yours,

T. A. TIDEMANSON
Director of Public Works

Michael H Nagao

for CARL L. BLUM
Assistant Deputy Director
Planning Division

MA:my
#2/183

appropriate procedures will be instituted with respect to the funding of the mitigation monitoring program.

450 - there needs to be consistency (e.g., Figure 2-2 on Page 2-11; Page 2-27 first paragraph; Figure S-2 on Page S-4 and Figure 2-6 on Page 2-25).

7. North arrows should be placed on all map figures.

8. Page S-1 second paragraph, last sentence - delete the word "of".

9. Page 2-17 last paragraph, fourth line - delete the word "be".

10. Page 2-32 where will parking be during this construction sequence?

11. Page 3-16 Section 3.2.4. There may be need to comply with Construction Storm Water regulations or interfacing with Regional Water Quality Control on dewatering discharge.

12. Page 3-17 Section 3.3.1 What about the use of reclaimed water? Also, will this be in compliance with the State's Landscape Ordinance?

13. Page 3-25 third paragraph "Register" should be "Registrar" of Voters.

14. Page 3-35 Section 3.4.5 third paragraph - Is this a reasonable mitigation measure? It does not sound viable.

15. Page 3-55 Table 3-13. What about petroleum pipelines which could cause potential concerns? Are these included under gasoline category?

16. Page 3-58 second paragraph second line - delete the word "would".

17. Page 3-58 Section 3.7.2 fourth paragraph - I recommend there be no loss of water service to other communities. There would be a major impact to other area residents if MWD water service was interrupted.

18. Page 3-60 second paragraph, last sentence "...is messy and unattractive site....junk piled on the ground". This should be reworded.

19. Page 3-62 to 3-68. Various references to shadows and obscuring traffic (vision). Reaffirms the idea that aerial alignment is not a good option. [Also consider the unsightly graffiti which would occur on an aerial alignment.]

20. Page 3-71 Section 3.8.4 "quideway" should be "guideway" in all six uses. Also, the use of xeriscape should be considered.

City of NORWALK

12700 NORWALK BLVD., P.O. BOX 1030, NORWALK, CA 90651-1030 • PHONE: 213/929-2677 • FACSIMILE: 213/929-3880

January 7, 1993

Los Angeles County
Transportation Commission
818 West Seventh Street
Suite 1100
Los Angeles, CA 90017
Attn: Mr. Ram Kumar, Project Manager

Subject: Comments on the Metro Green Line Easterly Extension Draft EIR

Dear Mr. Kumar:

This letter supplements the City's response letter of December 17, 1992 regarding the "Draft Environmental Impact Report" for the Metro Green Line Easterly Extension. As indicated in the previous letter, (Comment #22), the following remarks address issues relating to traffic impacts:

1. Section 3.10.1 (Page 3-85) - Last sentence in paragraph 6 states that Civic Center Drive carries 2,000 vehicles per day. Recent machine counts by City staff show traffic volumes ranging from 11,980 to 8,240 vehicles per day.

2. Section 3.10.1 (Page 3-86) - Statement is made that the signalized intersections were analyzed using Circular 212 Planning methodology per Los Angeles County guidelines. However, the calculation sheets for the various intersections are not contained in the appendix to verify assumptions in the analyses.

   Also, the City of Norwalk uses the LACTC recommended Intersection Capacity Utilization (ICU) method to calculate its Level of Service (LOS) for the

Responses to: **City of Norwalk**

1. The City's preference for the subway alignment is noted for the record.

2. The alignment shown in the draft EIR adheres to LACTC/RCC standards and was ratified by the Metro Green Line Easterly Extension Task Force.

3. The following has been added to Figures S-2, S-3, 2-2, 2-3, 2-6, 2-7 and 2-8: "Conceptual Drawing - Subject to Modification."

4. The EIR notes that the demand for parking at the Norwalk Transportation Center is expected to exceed the proposed supply of parking, and this could result in potential overflow of parking onto nearby streets. The construction of a parking structure is one potential mitigation measure to alleviate this impact, although it is a costly mitigation measure. Since the parking demand at the station is split between the Green Line and the Commuter Rail service, which will also serve this station, it may be possible to obtain funding for a parking structure through the commuter rail program. Alternative mitigation measures to a parking structure are the implementation of preferential parking on streets near the station, if the parking spillover is perceived as a significant impact, or the provision of additional shuttle service to/from the station to reduce the need for Green Line patrons to drive and park at the station.

5. It is reasonable to assume that the proposed project would not generate demand for additional housing or induce population growth. The project would draw its employees from within the region and therefore would not contribute to the expansion of population in the basin.

6. The precise number of parking spaces to be provided is not known at the present time. Based on current system characteristics, approximately 400 spaces are assumed. Depending upon the topic under discussion in the EIR, the estimated number of spaces could vary somewhat. Figure 2-2 shows approximately 450 parking spaces, because the aerial alignment would permit spaces beneath the guideway that would not be possible with the subway alignment. The reference to 380 spaces in Section 2.3.1 is incorrect. It should read "400" spaces. The number of parking spaces shown on Figures S-2 and 2-6 are correct.

7. North arrows will be placed on all map figures.

8. The correction has been made.

9. The correction has been made.

10. If this construction sequence is selected as the preferred construction scenario, the 300 spaces commuter rail parking lot would be displaced during the construction period. The contractor would be required to provide replacement parking off-site, with a shuttle service to/from the station during the time period when the parking is displaced. It would be up to the contractor to find an appropriate location for replacement parking, but it is likely that any contractor would seek to rent spaces in an available lot as close as

Traffic engineer and was felt to be reasonable. As noted in Section 3.10.3, the Caltrans LARTS model was also utilized to add traffic to city streets to reflect the impact of completion of the I-105 Freeway on traffic volumes in the year 2010.

25. Parking demand would be monitored on an ongoing basis and local measures to mitigate impacts due to any overflow parking would be initiated by the City of Norwalk.

The second letter presented by the City of Norwalk was presented as a point of information and does not require a response in this section.

Response to: **Clara Sherman**

The commenter's preference for the subway alignment and east end construction staging area are noted for the record. The implementation schedule for the project is unfortunately not known because the project is one of a number of candidate corridors under consideration. Insofar as cost differences are concerned, the aerial alignment is currently estimated to require $215 million (in current dollars), whereas the subway alignment is estimated to require approximately $240-241 million to construct. The actual cost difference will not be known until more engineering has been completed.

Carrie Torres

I think that the connection project is probably a necessary evil. I could wish that one of the other corridors had been chosen so that the northern part of the city would not be so badly impacted by construction but as we seem to be doomed to suffer this project a subway would seem to be the best solution. Imperial Highway has a lot of pipes underneath it which are always needing repairs. In the last few years Imperial highway has been torn up so often that I rarely try to shop in the main part of Norwalk, I can't count on being able to drive across Imperial. If the aerial line is chosen I will have to hope that I can get out of the tract and go north on Norwalk Blvd to shop in Santa Fe Springs or Whittier because it sounds like Imperial will be impassable for quite a few years.

Of course the noise, dust and vibration may be so bad that my husband and I may be forced to sell our house at a loss. The subway will probably bring more noise and vibration during construction but when it is finished it should be unnoticeable and may even improve property values because of the easy access to public transportation. The above ground pillars of the other solution would also be a magnet for graffiti. We don't need to encourage any more of that. On the whole I see the elevated tramway as a disaster for the city and the subway as a livable solution to a difficult problem.

5

COMMENT SHEET

Los Angeles County Transportation Commission
City of Norwalk

Draft Environmental Impact Report Public Hearing
Metro Green Line Easterly Extension

(X) I would like to speak.
( ) I would like to submit written comments.

Name Daniel R Smith

Address 10526 Downey Norwalk Rd

City Norwalk Zip 90650 Phone 863-6219

Representing

Date 11/18/92

Use the space below for comments. Please print. If you need additional space, you may write on the back or attach another form.

I am in Favor of the subway.
I would like to see the construction
at the Eastern end of Imperial highway.
I Favor the subway due to the
minimal impact on property value, and
traffic. It will not Be an eye sore.
In a Referance To earthquake concerns
look at the Bart system in San Francisco
Burning The Bay area Quake in 1989.

339 10th Street
Santa Monica, CA 90402
November 30, 1992

232025 DEC-2

Ram K. Kumar
Project Manager, Southeast Area Team
Los Angeles County Transportation Commission
818 West Seventh Street, Suite 1100
Los Angeles, CA 90017

Dear Mr. Kumar:

I would like to make the following public comments on the Metro Green Line Easterly Extension Draft Environmental Impact Report:

1 • This is clearly an important connector, providing linkage between the Norwalk commuter rail station and Green Line to El Segundo.

2 • One would expect a station at the intersection of Imperial Highway and Norwalk Blvd., to serve the Norwalk Civic Center and adjacent office and retail buildings. A subway station could easily be built here under the large Civic Center lawn at the intersection's south-east corner.

3 • The cost of additional height for an elevated structure over Interstate 5 to clear hypothetical elevated carpool lanes should be paid by CalTrans, not LACTC rail funds. I seriously question whether such a freeway structure will ever be built, given its enormous cost and the neighborhood impact of the similar Harbor Freeway elevated sections.

4 • Local contribution to the incremental cost of a subway is a good criterion. Why has it not been applied to other LACTC subway plans, especially the over $1 *billion* increment for the Red Line subway (vs. a grade separated surface alignment along the Burbank Branch right-of-way) in the San Fernando Valley?

Sincerely,

Darrell Clarke

T.A. NELSON, P.E.

CONSULTING ENGINEER
TRANSPORTATION CONSULTANT

2563 Dearborn Dr., Los Angeles, CA 90068 (213) 462-5500

December 3, 1992

Ram K. Kumar, Project Mgr.
Southeast Area Team
L. A. County Transp. Commission
818 W. Seventh St. Suite 1100
Los Angeles, CA 90017

Dear Mr. Kumar:

The following comments on the Draft EIR for the Metro Green Line Easterly Extension are based on the information supplied in the Summary provided with LACTC's October 28 Agenda.

1 In the second paragraph on page S-1, reference is made to a connection between the L. A. County and Orange County (O. C.) rail transit systems. Assuming this does not refer to commuter rail, neither the aerial nor subway alignment maps on pages S-4 and S-6 show a future connection. As you are aware, O. C. has not yet decided on the mode to be used nor the point at which the two systems will interface. Nevertheless, Norwalk is a logical site, and space should be reserved in the Green Line station design to accommodate whichever mode O. C. settles on. For center platform transfers, space may be needed to install double crossovers and pocket tracks at each end of the station. If O. C. decides on monorail or a rubber-tired people mover, space for two additional guideways will be needed to allow across-the-platform transfers.

2 On page S-10 it is stated that 17 homes would be taken if the west staging area is chosen. Yet, on page S-11 the difference in the range of subway costs is only $1 million. Assuming an average cost of $100,000 per home, this totals $1.7 million. Plus there are relocation costs to be added.

3 The table on page S-13 indicates some property may be taken when incompatibility cannot be overcome for the aerial alternative. However, I cannot find any costs assigned to this.

4 The problem of parking overflow onto local streets is mentioned on page S-11. This can be mitigated in the future by construction of a parking garage.

5 The table on page S-19 refers to consuming minor amounts of electricity. The word "consume" should be changed to "use". A fundamental law of physics states that energy can neither be created nor destroyed.

Sincerely,

T. A. Nelson

COMMENT SHEET

Los Angeles County Transportation Commission
City of Norwalk

Draft Environmental Impact Report Public Hearing
Metro Green Line Easterly Extension

( ) I would like to speak.

(X) I would like to submit written comments.

Name Phil & Annette Bliss
Address 12344 Everest St.
City Norwalk Zip 90650 Phone 864-0007
Representing Neighborhood near Imperial Hwy.
Date 12-3-92

Use the space below for comments. Please print. If you need additional space, you may write on the back or attach another form.

We are concerned about disruption of the businesses and the comings and the going of traffic on Imperial. It appears that digging the subway beneath Imperial Hwy. and starting the digging from the east end would be the better way - an aerial Green Line would give "the Gangs" more room to mess-up with their writings - we have far too much

Written comments on the DEIR will be accepted by the Los Angeles County Transportation Commission until December 22, 1992. Please submit written comments to: City of Norwalk, Att: Jill Anderson, Management Assistant, 12700 Norwalk Blvd., Norwalk, CA 90651-1030.

Response to: **Phil & Annette Bliss**

Every effort will be made to reduce the disruptive effects of project construction. The commenter's preference for the subway alignment and east end construction staging area are noted for the record. Traffic light sequencing should not be affected by the proposed light rail line. This should be brought to the attention of the City of Norwalk traffic staff.

Nancy Luque, Citizens Under Freeway Fallout

Comment:

The subway would be the logical way to go for the City of Norwalk in order to minimize construction, economic, traffic, air and dust impacts and to minimize effects on residences and commercial establishments.

Response:

The commenter's preference for the subway alignment is noted for the record.

Bob Lingo

Comments:

1. The aerial tramway would be the answer to our needs because above ground is preferable to underground when the big one hits and because, being the first of its kind in the country, it would bring us recognition.

2. I'm wondering about what's going to happen to all that earth they will move.

3. Are the cars for the easterly extension, whether the alignment is aerial or subway, to be the same as for the Green Line?

4. What will this project cost the City of Norwalk?

Responses:

1. The commenter's preference for the aerial alignment is noted for the record.

2. The soil that is removed form the tunnel excavation would be disposed of in one or both of two ways. It could either be taken to a sanitary landfill and used for daily cover or it could be used as fill material for some other public or private project. The latter possibility is probably more likely, since the contractor would be able to recover costs in this manner. In either event, the disposal option would be left up to the contractor, subject to stockpiling and transport constraints which would be established by the project.

3. The type of vehicle used for the easterly extension would be the same as those used for the Metro Green Line service west of I-605 and would be the same no matter which alignment is finally selected.

4. The contribution of the City of Norwalk to the cost of constructing the Metro Green Line Easterly Extension has yet to be determined. The purpose of the EIR is to address environmental impacts due to the project and the measures required to mitigate the impacts.

APPENDICES

APPENDIX A
BIBLIOGRAPHY

Appendix A
Bibliography

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APPENDIX B
LIST OF PREPARERS

Appendix B
List of Preparers

Gannett Fleming

Walter Marriott III, Project Manager
Donald Steeley, Project Engineer
Sharad Mulchand, Project Planner
Laureano Del Castillo, Design Engineer

Meyer Mohaddes Associates, Inc.

Michael P. Meyer, Principal
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Michael Lott, Planner
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Gilberto Ruiz, Planner
Quyen Vuong, Planner
Beverly Lafontaine, Technical Editor

APPENDIX C
LIST OF PERSONS AND ORGANIZATIONS CONSULTED

Appendix C
List of Persons and Organizations Consulted

Persons Consulted

Linda Alvarez, Historic Heritage Commission
Paul Barbe, Traffic Committee Staff, Los Angeles County Department of Public Works
Connie Fuentes, Griffith Company
Carmine Gendusa, City of Norwalk, Traffic Engineering Department
Randy Hillman, City of Norwalk
Kathy Hsiao, Caltrans, District 7 Transportation Planning
Ron Kasinski, Caltrans, District 7
Ram Kumar, Los Angeles County Transportation Commission
Monica Penninger, Library Director, City of Santa Fe Springs
Jerry Stock, City of Norwalk
Bill Stracker, City Traffic Engineer, City of Norwalk
Lynn Struthers, Rail Construction Corporation
Kay Vansickle, Orange County Transportation Authority

Organizations Consulted

City of Norwalk Department of Parks and Recreation
Little Lakes City School District
Los Angeles County Sheriffs Department
Los Angeles County Fire Department
Norwalk-La Mirada School District

APPENDIX D
NOTICE OF PREPARATION

NOTICE OF PREPARATION
May 1, 1992

TO: All Interested Agencies, Organizations and Individuals

FROM: Los Angeles County Transportation Commission
818 West Seventh Street
Suite 1100
Los Angeles, CA 90017

SUBJECT: Notice of Preparation Draft Environmental Impact Report

The Los Angeles County Transportation Commission, in cooperation with the California Department of Transportation, Rail Construction Corporation and the City of Norwalk, hereby presents notice that it will be the Lead Agency for an Environmental Impact Report (EIR) for the:

PROJECT TITLE: Metro Green Line Easterly Extension Project

We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. If your agency is a Responsible Agency as defined by State CEQA Guidelines (Section 15381), your agency will need to use the EIR prepared for this project when considering your permit or other approval for the project. If your agency is not a responsible agency as defined by CEQA Guidelines, or if you are an interested individual or organization, we would still appreciate your views on the scope of the environmental document for this project.

The project description, location map and the probable environmental effects are contained in the enclosed materials. A copy of the Initial Study is enclosed.

Due to the time limits mandated by state law, your response must be sent at the earliest possible date but no later than 30 days after the receipt of this notice. Please send your responses before June 1, 1992 to the Los Angeles County Transportation Commission, 818 West Seventh Street, Suite 1100, Los Angeles, CA 90017 ATTN: Ram Kumar. Please include the name of an appropriate contact person in your agency for continued EIR coordination.

BACKGROUND

In November of 1980, Los Angeles County voters approved Proposition A, which authorized a one-half percent sales tax to improve and expand public transit countywide and to construct and operate a rail rapid transit system. Several transportation corridors were identified as part of the regional network. They are: Los Angeles to Long Beach (Blue Line), Norwalk to El Segundo (Green Line), Los Angeles to San Fernando Valley, Los Angeles to Pasadena, Los Angeles to Glendale, and Los Angeles to Sylmar. The Blue Line has been constructed and has been in operation since July 1990. The Green Line is currently under construction, with its opening date slated for 1995. The Red Line is currently under construction and scheduled for operation in 1993. The other routes are either in various stages of design or EIR preparation. The Metro Green Line Easterly Extension is intended as a rail gap closure between the Metro Green Line and the Los Angeles to Orange County Commuter Rail Line.

PROJECT DESCRIPTION

The Metro Green Line Easterly Extension will be consistent with Metro Green Line technology, and will extend beyond the eastern terminus of the Metro Green Line in the vicinity of the Route 105/Route 605 Junction. The proposed rail project would extend approximately 2.5 miles to the proposed Norwalk Transportation Center, located at the city yard at the junction of Imperial Highway and the A.T. & S.F. Railroad. The project location is shown in Figure 1.

PROJECT ALTERNATIVES

Although the specific details of the project alternatives have not been defined, two alternatives are under consideration: subway and elevated. The project alignment will run from the proposed I-605 Metro Green Line Station, north on Studebaker Road and east on Imperial Highway to the proposed Norwalk Transportation Center. Three alternative routes were originally considered, but after preliminary environmental and engineering evaluations, the Studebaker Road - Imperial Highway alignment was identified as offering the least impediments from environmental and engineering perspectives. This alignment would affect a smaller number of residential units and require fewer, if any, property takings and relocations. The other alignments under consideration were: 1) from the proposed I-605 Metro Green Line Station, north on Studebaker Road to Firestone Boulevard, southeast on the Southern Pacific right-of-way, across Imperial Highway, north on Pioneer Boulevard, east on Imperial Highway to the proposed Norwalk Transportation Center, 2) from the proposed I-605 Metro Green Line Station, south on Studebaker Road, east on Rosecrans Avenue, northeast on San Antonio Boulevard, east on Imperial Highway to the proposed Norwalk Transportation Center.

In addition to engineering and environmental evaluations that will be conducted as part of the development of the project, the station at the Norwalk Transportation Center will be considered for possible future lines or paired with future lines of the Orange County Urban Rail Line. No intermediate passenger station is proposed between the I-605 freeway and the Commuter Rail Station.

ENVIRONMENTAL IMPACT CHECKLIST
METRO GREEN LINE EASTERLY EXTENSION

Identification of Environmental Effects

	YES	MAYBE	NO
1. **Earth.** Will the proposal result in:			
a. Unstable earth conditions or in changes in geologic structures?	( )	( )	(x)

It is not anticipated that the project will result in unstable earth conditions or changes in geologic structures. Existing soil and geology information will be obtained and reviewed for potential problems. It is anticipated that adequate engineering solutions and approaches are available to mitigate problems that might arise.

b. Disruptions, displacements, compaction or overcovering of the soil?	(x)	( )	( )

Development of the proposed project will require grading, including excavation and fillwork. However, it is not anticipated that the grading will result in significant impacts to the soil.

c. Change in topography or ground surface relief features?	( )	( )	(x)

The project would either be elevated or subway. Because the project is in an urban area that has already been significantly altered, the minor potential for creating berms or other localized changes in topography is not significant.

d. The destruction, covering or modification of any unique geologic or physical features?	( )	( )	(x)

The project area is largely developed, and it is unlikely that there are any remaining unmodified unique features which could be destroyed or covered.

e. Any increase in wind or water erosion of soils, either on or off the site?	( )	(x)	( )

Construction activities would temporarily increase potential soil erosion by exposing bare soil to wind. This is expected to be of minimum significance. Increased erosion, however, would be mitigated through standard construction practices such as prompt reseeding, site watering, check dams, and hay bales.

f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel or a river or stream or the bed of the ocean or any bay, inlet, or lake?	( )	( )	(x)

YES MAYBE NO

3. **WATER.** Will the proposal result in:

a. Changes in currents, or the course or direction of water movements, in either marine or fresh waters? ( ) ( ) (x)

The project corridor is not located near marine or fresh waters and therefore would not produce changes in the course or direction of water movements.

b. Changes in absorption rates, drainage patterns or the rate and amount of surface water runoff? ( ) ( ) (x)

The absorption and drainage in this urban area would not be changed by an elevated or subterranean system. Runoff would be directed to existing storm drains but no increase is anticipated.

c. Alterations to the course or flow of flood waters? ( ) ( ) (x)

Available flood insurance maps indicate that there are no 100-year floodplains in the study area.

d. Change in the amount of surface water in any water body? (e.g., perennial or intermittent streams; seasonal or year-round springs; ponds and marshes? ( ) ( ) (x)

There are no lakes, ponds, or streams in the study area. Drainage would be directed to existing storm drains.

e. Alteration of water quality including, but not limited to, temperature, dissolved oxygen, or turbidity? ( ) ( ) (x)

The project is not expected to change the constituents of surface water runoff.

f. Alteration of the direction or rate of flow of groundwaters, including changes in infiltration or percolation rates? ( ) (x) ( )

If constructed as a subway, some interception of groundwater during construction may occur. This will be investigated during the environmental study. No change in percolation rate is anticipated.

	YES	MAYBE	NO
e. Any effect upon a Significant Ecological Area which is identified in the Los Angeles County General Plan?	( )	( )	(x)

No Significant Ecological Areas are identified in the Los Angeles County General Plan for the project study area.

5. **ANIMAL LIFE.** Will the proposal result in:

	YES	MAYBE	NO
a. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	( )	(x)	( )

The project corridor is highly urbanized, and it is unlikely that construction or operation of the proposed project would result in any adverse impacts to any species of animal. Should any species be identified as adversely affected, appropriate mitigation measures will be identified.

	YES	MAYBE	NO
b. Reduction of the numbers of any unique, rare or endangered species of animals?	( )	(x)	( )

The highly urbanized character of the study area makes it unlikely that any unique, rare or endangered species of animals remain near the project corridor. Should any species be identified, appropriate mitigation measures will be specified.

	YES	MAYBE	NO
c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	( )	( )	(x)

No new species would be introduced and an elevated or subterranean system would not introduce a barrier to the area.

	YES	MAYBE	NO
d. Deterioration to existing fish or wildlife habitat?	( )	( )	(x)

The project corridor is highly urbanized, and no fish or wildlife habitat has been identified.

6. **NOISE.** Will the proposal result in:

	YES	MAYBE	NO
a. Increases in existing noise or vibration levels?	(x)	( )	( )

Construction and operation of the proposed project may increase noise and vibration for areas adjacent to the rail line. All sensitive receptors will be identified and measurements of ambient noise to characterize the existing noise environment will be

YES MAYBE NO

Development of the proposed project would result in only an incremental increase in the use of natural resources. These increases are not expected to be substantial in relation to increases normally associated with similar developments. No significant impacts are anticipated.

b. Substantial depletion of any nonrenewable natural resource? ( ) ( ) (x)

Although the project would be electrically powered, there would be no substantial depletion of fossil fuels, concrete or other nonrenewable resources as a result of the construction or operation of the proposed project.

10. **RISK OF UPSET.** Will the proposal involve:

a. A risk of an explosion or the release of hazardous substances (including, but not limited to oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions? ( ) (x) ( )

A hazardous materials investigation will be conducted for the route. Based on a preliminary field survey, it would appear that sites of potential hazardous materials would be confined to a number of existing gas stations. In addition, the historical land use of each site will be estimated, insofar as its potential for hazardous materials is concerned.

b. Possible interference with an emergency response plan or an emergency evacuation plan? ( ) ( ) (x)

It is not anticipated that the proposed project would interfere with any proposed plans.

c. Exposure of people or property to a flooding hazard, such as a change in location of flooding in the event of an accident or upset condition? ( ) ( ) (x)

There are no lakes, ponds, or streams in the study area. Furthermore, available flood insurance maps indicate that there are no 100-year floodplains in the study area. No significant impacts are anticipated.

11. **POPULATION.** Will the proposal alter the location, distribution, density or growth rate of the human population of an area? ( ) ( ) (x)

The proposed project is expected to have a minimal effect upon population in the area. Neither distribution nor density should be affected.

	YES	MAYBE	NO
e. Alterations to waterborne, rail or air traffic?	( )	(x)	( )

The proposed project will link the easterly terminus of the Metro Green Line with the proposed Norwalk Transportation Center. Construction activities may temporarily affect Metro Green Line operations. No impacts to freight rail, waterborne or air traffic are anticipated.

f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	( )	(x)	( )

Implementation of the proposed project would result in additional vehicular traffic in the vicinity of station areas, create new parking areas and possible pedestrian crossings, all of which are potential traffic conflict points. However, with proper signage and signals, the increased risk of traffic hazard is not expected to be significant.

14. **PUBLIC SERVICES.** Will the proposal have an effect upon or result in a need for new or altered governmental services?	( )	(x)	( )

Public and community services may be potentially affected by the proposed project. Specific facilities which will be identified and examined are hospitals, schools and other community facilities. Should adverse effects be found, appropriate mitigation measures will be recommended. Possible adverse effects on accessibility during construction will also be considered.

15. **ENERGY.** Will the proposal result in:

a. Use of substantial amounts of fuel or energy?	( )	( )	(x)

Development of the proposed project would result in only a small increase in the use of natural resources in relation to increases normally associated with similar developments. No significant impacts are anticipated.

b. A substantial increase in demand upon existing sources of energy or require the development of new sources of energy?	( )	( )	(x)

See response to 15.a. above.

16. **UTILITIES.** Will the proposal result in a need for new systems or substantial alterations to utilities such as, but not limited to, gas, water, sewer, storm water drainage or solid waste disposal?	( )	(x)	( )

YES MAYBE NO

Recreational facilities and parks in proximity to the project will be identified for analysis. Potential effects would largely be related to accessibility, during both the construction and operational phases of the project. Proximity effects such as noise and visual effects could also be encountered, however, and these would also be examined.

20. **CULTURAL, ARCHAEOLOGICAL, HISTORICAL AND PALEONTOLOGICAL RESOURCES.** Will the proposal result in:

a. Alteration or destruction of a prehistoric or historic archaeological site? ( ) (x) ( )

A preliminary investigation has revealed one National Register historic resource adjacent to the alignment. The location of other historically significant resources which may be affected will be determined by a documentation search of all national, state and local lists, and any appropriate site specific surveys will be consulted. An archaeological inquiry will be made to determine the presence of any sensitive resources.

b. Alteration or destruction of a paleontological resource? ( ) (x) ( )

The project area is urban and developed. It is unlikely that any previously undiscovered paleontological resource would be found in the project area. However, project grading and excavation may reveal new finds, for which mitigation procedures would need to be followed.

c. Physical changes which would affect unique ethnic cultural values? ( ) ( ) (x)

No known ethnic, cultural or religious values are associated with the project area. No significant impacts are anticipated.

d. Restriction of existing religious or sacred uses within the potential impact area? ( ) (x) ( )

An initial field survey has revealed two churches adjacent to the proposed project which may be subject to noise and vibration impacts. For those locations where an adverse effect is found, specific mitigation measures will be recommended.

21. **MANDATORY FINDINGS OF SIGNIFICANCE.**

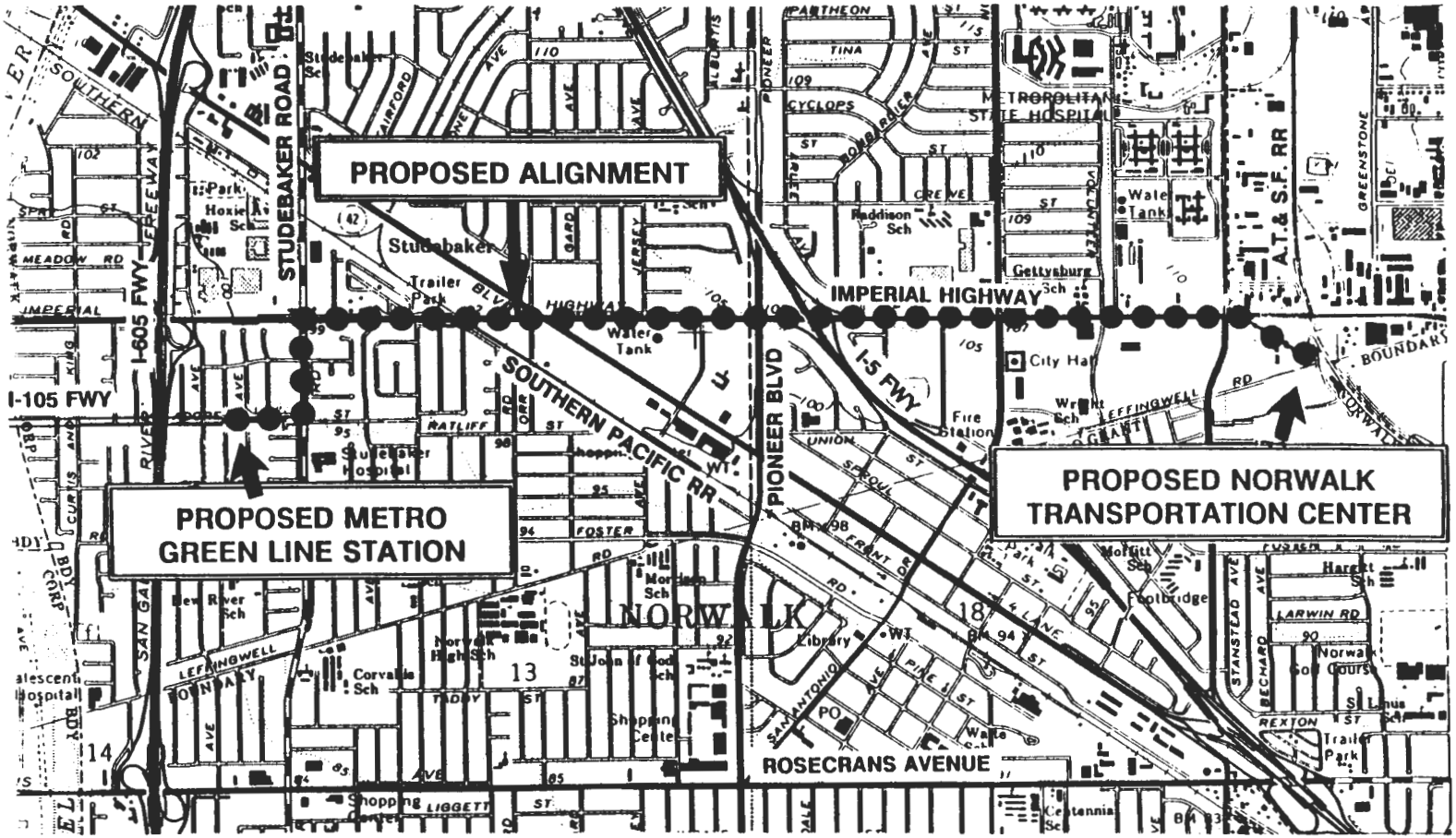
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or

SUMMARY

Factor	No Possible Significant Effect	Possible Significant Effect*	Explanation
Earth	X		
Air	X		
Water	X		
Plant Life	X		
Animal Life	X		
Noise		X	Construction and operation of the proposed project may increase noise and vibration for areas adjacent to the rail line.
Light and Glare	X		
Land Use	X		
Natural Resources	X		
Risk of Upset		X	Several sites of potential hazardous materials, i.e. gas stations, are located in the project area.
Population	X		
Housing	X		
Transportation/Circulation		X	Construction of the project may result in temporary land or road closures adversely affecting local circulation patterns.
Public Services		X	Public and community services, such as hospitals, schools and other community facilities, located near the alignment may be potentially affected by the proposed project.
Energy	X		
Utilities	X		
Human Health	X		
Aesthetics	X		
Recreation	X		
Cultural Res., et al		X	A national historic site and two churches are adjacent to the alignment and may be potentially affected by the proposed project, although significant effects are unlikely.
Mandatory Findings of Significance		X	The project may have environmental effects which could result in substantial adverse effects on human beings.

FIGURE 1

METRO GREEN LINE EASTERLY EXTENSION PROJECT
LOCATION MAP



Source: USGS, Whittier, California Quadrangle, 7.5 Minute Series

APPENDIX E
SUMMARY OF RESPONSES TO THE NOTICE OF PREPARATION

APPENDIX E

RESPONSES TO NOTICE OF PREPARATION FOR METRO GREEN LINE EASTERLY EXTENSION		
AGENCY OR INDIVIDUAL	ENVIRONMENTAL COMMENT	RESPONSE/LOCATION IN EIR
California Dept. of Fish & Game	Required assessment of flora & fauna in project area; project effect on biological resources	Section 3.3
	Requested discussion of runoff, sedimentation and other effects on watercourses	Section 3.2
	Requested discussion of alternatives to minimize adverse effects	Section 3.2., 3.3, Chapter 5
South Coast Air Quality Management District	Provide outline of Air Quality Analysis to be documented in the EIR	Section 3.12
Governor's office of Planning and Research	SCA # 92051033 assigned	Title/Cover Sheet
City of Santa Fe Springs	Expressed concerns regarding effects on surrounding circulation system	Section 3.10
	Identified areas of traffic concerns to include Imperial Highway, intersection of Imperial Highway and Bloomefield Avenue, with reference to Norwalk Transportation Center	Section 3.10
	Identified 79" Metropolitan Water District Feeder Line Located in Imperial Highway	Section 3.7
State Fire Marshall	Identified oil pipe in vicinity of project, and the potential effects of stray electrical current on those pipelines.	Section 3.7
California Public Utilities Commission	No comments	Not required