MARINA DEL REY TRAFFIC STUDY

Final Report

Prepared for

Los Angeles County
Department of Regional Planning

DKS Associates
In Association with Gruen Associates

January 17, 1991

MARINA DEL REY TRAFFIC MITIGATION FEES

Under the Marina del Rey Local Coastal Program amendment certified by the California Coastal Commission on February 8, 1996, all P.M. peak-hour vehicle trips must be mitigated according to the following schedule:

Category 1 (***internal*** trip mitigation fees)	$1,592 per peak-hour trip
Category 3 (***regional*** trip mitigation fees)	$4,098 per peak-hour trip
TOTAL TRIP MITIGATION FEES	**$5,690 per peak-hour trip**

PREFACE

The Los Angeles County Board of Supervisors approved the contract for this Marina del Rey traffic study on June 5, 1990. The six-month study was performed by DKS Associates, who subcontracted a portion of the study tasks to Gruen Associates. The study was paid for by the Los Angeles County Department of Regional Planning. The primary purpose of the study is to provide an up-to-date picture of traffic volumes and flows in the Marina del Rey area and to study potential mitigation measures for new development by Marina lessees. The Marina Bypass was not included as a potential mitigation measure. A public meeting was held at the beginning of the study, on June 20, 1990 in Marina del Rey. At that meeting, the consultant discussed the scope of work and answered questions from the public pertaining to various aspects of the study. A second public meeting was held on December 18, 1990 to inform citizens of the study results and provide an additional opportunity for public participation in the planning process for Marina del Rey.

The Marina del Rey Local Coastal Program (LCP) consists of a Land Use Plan (LUP) and a Local Implementation Program (LIP). The LUP establishes land use policy for the Marina, while the LIP provides the needed regulations and guidelines for new development. Both components of the LCP must receive approval by the Regional Planning Commission, Board of Supervisors and, ultimately, the California Coastal Commission. The Marina del Rey LUP received final certification from the Coastal Commission in 1984 and was recertified by the Commission in 1986 after the areas south of Ballona Creek and east of Lincoln Boulevard were annexed to the City of Los Angeles. The LIP for the County-owned segment of Marina del Rey was certified with suggested modifications by the Coastal Commission on September 12, 1990; the revised LIP ordinances were approved by the Board of Supervisors on November 6, 1990, and should receive final Coastal Commission approval either in December 1990 or January 1991.

The last comprehensive traffic study performed for Marina del Rey was completed in 1982 and was incorporated into the LUP by reference. Phase II development as identified in the LUP is based on the traffic patterns and volumes projected in the 1982 study. Since that time, traffic volumes have risen steadily as the Marina del Rey area has become increasingly urbanized. Also, land use policy contained in the LUP is in need of updating and revision. For these reasons, the entire LCP will be subject to an amendment process which will begin in 1991. This DKS Associates study and other relevant documents will be used to revise the LUP's circulation chapter and to establish phasing and funding requirements for new development.

Seven land use scenarios were analyzed in the traffic study. These scenarios varied greatly in development intensity and allocation. The most intense scenario contemplated an increase of more than a third over the amount of development proposed for Phase II in the Marina del Rey LUP, while the least intense scenario was for less than half of the Phase II development.

Like the traffic study itself, these scenarios are not policy-setting. They are simply tests, or trial runs, of the traffic model developed in the study to determine the magnitude of the traffic impacts associated with each scenario. No preferred land use alternative was chosen during the analysis. Selection of a preferred land use alternative and a preferred set of transportation mitigation measures will be made only after extensive public and lessee review and comment at future meetings and hearings during the LCP amendment process. Also, the preferred alternative need not be one of the scenarios already studied; it can be a completely new scenario, or a hybrid, which can then be analyzed on the traffic model.

Many individuals have been involved in the development and subsequent analysis and review of this traffic study. Viggen Davidian managed the project for DKS Associates with support from Nick Burningham and Michael Meyer; John Stutsman, Fred Pearson and Don Holloway were Gruen Associates' major contributors. The contract was managed by Ron Hoffman and Dennis Slavin from the Los Angeles County Department of Regional Planning. Barry Kurtz, Farhang Agahi and Chris Ramstead from the County Department of Public Works provided extensive review and numerous comments. Last but not least, Larry Charness and Terry Gordon from the County Department of Beaches and Harbors participated in the study and gave many valuable insights.

It should be noted that this study is the product of substantial public agency review and coordination. Copies of all traffic study tasks were sent, with requests for comments, to the City of Los Angeles Department of Transportation, Los Angeles Department of City Planning and the California Department of Transportation. A meeting was held in late October to coordinate with these agencies.

It is hoped that this document will provide citizens, planners and decision-makers with the additional traffic data needed to promote informed discussions related to the transportation implications of alternative land use policies. The study should be used primarily as a resource document. It does not in and of itself make or set land use policy; rather, it contains information which should be carefully evaluated and considered when land use policies are set and final decisions are made. Comments and questions on the study are welcomed and should be made to the Community Studies II Section at 320 West Temple St., Room 1168, Los Angeles, California, 90012. If you wish to call by telephone, the number is (213) 974-6417.

Table of Contents

List of Figures

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EXECUTIVE SUMMARY

The Marina del Rey Traffic Study was conducted during the period of June to December 1990, by DKS Associates in association with Gruen Associates under contract to the Los Angeles County Department of Regional Planning.

The primary purpose for this traffic and circulation study is to provide information and data to the Department of Regional Planning for reanalyzing the Local Coastal Program (LCP) and to determine the changes in conditions since the Gruen Associates traffic studies were conducted in 1982.

The following tasks were performed during the study:

- Review of existing and past traffic studies and other relevant documents,
- Analysis of existing traffic conditions within the study area,
- Development of traffic forecasts for future base conditions and various alternative land use scenarios,
- Intersection levels of service analyses for future forecasts,
- Development of measures to mitigate the impacts of additional development in the Marina, and
- Development of costs, phasing and funding strategies for these improvements.

The study analyzed 19 intersections, nine of which are located entirely within the unincorporated County territory. Four intersections are shared with the City of Los Angeles and the remaining six are located completely outside the unincorporated area.

The study revealed that existing available capacity on the Marina's circulation system is limited. Several key intersections are currently operating within unacceptable (Volume/Capacity ratios over 0.85) levels of service. A majority of the total traffic entering Marina del Rey via Fiji, Mindanao and Bali has a destination in the Marina. Only a relatively small portion (7 percent) passes through without stopping. The quantity or percent of through traffic has remained relatively constant since 1976. Overall, through traffic has a fairly insignificant impact on the operation of the Marina intersections.

Special trip generation surveys indicated that several types of land uses within the Marina are unique in terms of trip generation due to unique demographics of the area, and therefore specific locally developed trip generation rates can be used to analyze future development and its impacts. Some Marina trip generation rates are shown to be lower and some higher than Institute of Transportation Engineers (ITE) rates. Hotels and residential developments (apartments) are lower and commercial, restaurant and boating facilities are higher than ITE rates. Given the mix of land uses proposed in future Marina development, new trip generation

rates can result in a 33 percent (800 out of 2400 trips) reduction in number of trips compared to rates used in the current LUP.

The recently revised Playa Vista Development Plans by Maguire Thomas Partners were evaluated as they specifically related to Area A. Whereas changes in development proposals for Areas B and D in the revised Playa Vista plan are substantial, plans for Areas A and C are relatively unchanged. Changes to the plans for Area A are mostly related to layout, access and orientation of the land uses. The quantities of the proposed land uses are identical to that prescribed in the LUP. In summary, the plan revisions are proposed to achieve an overall reduction in traffic generation due to reductions in buildout intensity compared to what was originally proposed. The development should minimize traffic impacts on the Lincoln Boulevard and Jefferson Boulevard corridors.

Seven land use scenarios were analyzed in the study for additional development in the Marina. These scenarios varied greatly in development intensity and allocation. Analysis indicated that any additional amount of future Marina development would result in needed mitigation measures to the Marina's roadways and intersections. A total of eight out of 12 Marina intersections would need mitigation measures due to additional developments considered in the study.

A series of intersection-specific and system-wide mitigation measures were developed for each alternative scenario. The proposed improvements are recommended to be implemented in four stages as follows:

<u>Stage I:</u>

- Adding a third lane to Admiralty Way in the northbound/westbound direction.
- Improvement to the intersection of Admiralty Way and Palawan Way including provision of left-turn pockets at north and southbound approaches on Palawan Way at Admiralty Way.

<u>Stage II:</u>

- Improvements to the intersection of Via Marina/Admiralty.
- Additional NB right at Admiralty/Mindanao (needed for Alternative 3 only).
- Implementation of ATSAC at the intersections of Admiralty/Via Marina, Admiralty/Palawan, Admiralty/Bali, and Admiralty/Mindanao.

Stage III:

- All improvements to the intersections of Lincoln/Mindanao, Lincoln/Fiji and Lincoln/Bali.

- Implementation of ATSAC at the intersections of Lincoln/Mindanao, Lincoln/Fiji and Lincoln/Bali.

Stage IV:

- Addition of lanes to intersection of Admiralty and Fiji depending on the number of new lanes required by the development scenario, and

- Incorporation of the intersection of Admiralty Way and Fiji Way within the ATSAC system on Admiralty Way.

It is recommended that the new Marina development be phased in coordination with provision of additional traffic capacity on the circulation system. New development in each phase (measured as peak hour trips generated) should be directly related to the new traffic capacity provided by the mitigation measures that precede that phase of development. Stage I improvements should be implemented before any additional development, which adds new traffic above and beyond existing levels, can take place. After Stage I improvements are in place, new development can begin to occur up to a ceiling of 30 percent. Stage II improvements should be implemented before a second increment of 30 percent of the development is allowed to take place. Implementation of Stage III improvements would allow an additional 25 percent of the development to go forward. Finally, the remaining 15 percent of the development can occur when the mitigation measures in Stage IV are completed.

The total cost of mitigation measures for all intersections and roadways ranges between $2.3 and $3.97 million depending on the alternative land use scenario. If the entire cost of the intersection mitigation measures is allocated to new developments, potential traffic impact fees for future development can range between $800 to $2,100 per PM peak hour trip depending on the land use alternative. Since Stage I of the improvements would have to be completed before any additional development could occur and any traffic impact fees could be collected, alternative funding sources including revenue bonds and a benefit assessment district were proposed to help fund the Stage I improvements. The subsequent stages would be coordinated with the availability of funds from traffic impact fees from the preceding phases of development. Revenue bonds would be paid off as funds are generated by traffic impact fees.

In summary, implementation of the mitigation measures described and recommended in this study would provide the additional traffic capacity needed to accommodate the levels of development in each of the seven land use scenarios without any adverse effects on the transportation system. Further, the phasing of improvements with allowable development will

minimize the impact on the transportation network during all stages of construction such that the only amount of development permitted during each phase will be coordinated with the new capacity provided by the improvements in the preceding stage.

This study did not develop specific mitigation measures for the six intersections which are entirely outside County jurisdiction. However, the relative shares of additional future traffic at these intersections for Marina development scenarios versus other cumulative projects were calculated. It is recommended that based on a weighted average share of impacts future Marina developments be assessed a "fair share" contribution fee to the Los Angeles City's Coastal Transportation Fund to finance part of needed mitigation measures to these intersections. This fee would be calculated by applying the weighted fair share percentages to the current Coastal Transportation Corridor Traffic Impact Fee of $2,010 per PM peak hour trip. These fees range between $140 and $360 per PM peak hour trip.

Other mitigation measures such as shuttle services and light rail transit, as well as specific transportation demand and systems management measures have been discussed and can have an additional impact on reducing traffic demand from future developments.

1.0 INTRODUCTION

The Marina del Rey Traffic Study was conducted during the period of June to December 1990, by DKS Associates in association with Gruen Associates under contract to the Los Angeles County Department of Regional Planning. This report is a documentation of the results of surveys, technical studies and analyses conducted by the consultants as reviewed and revised by the County staff (Department of Regional Planning, Public Works, and Beaches and Harbors) during this study.

1.1 Purpose of the Study

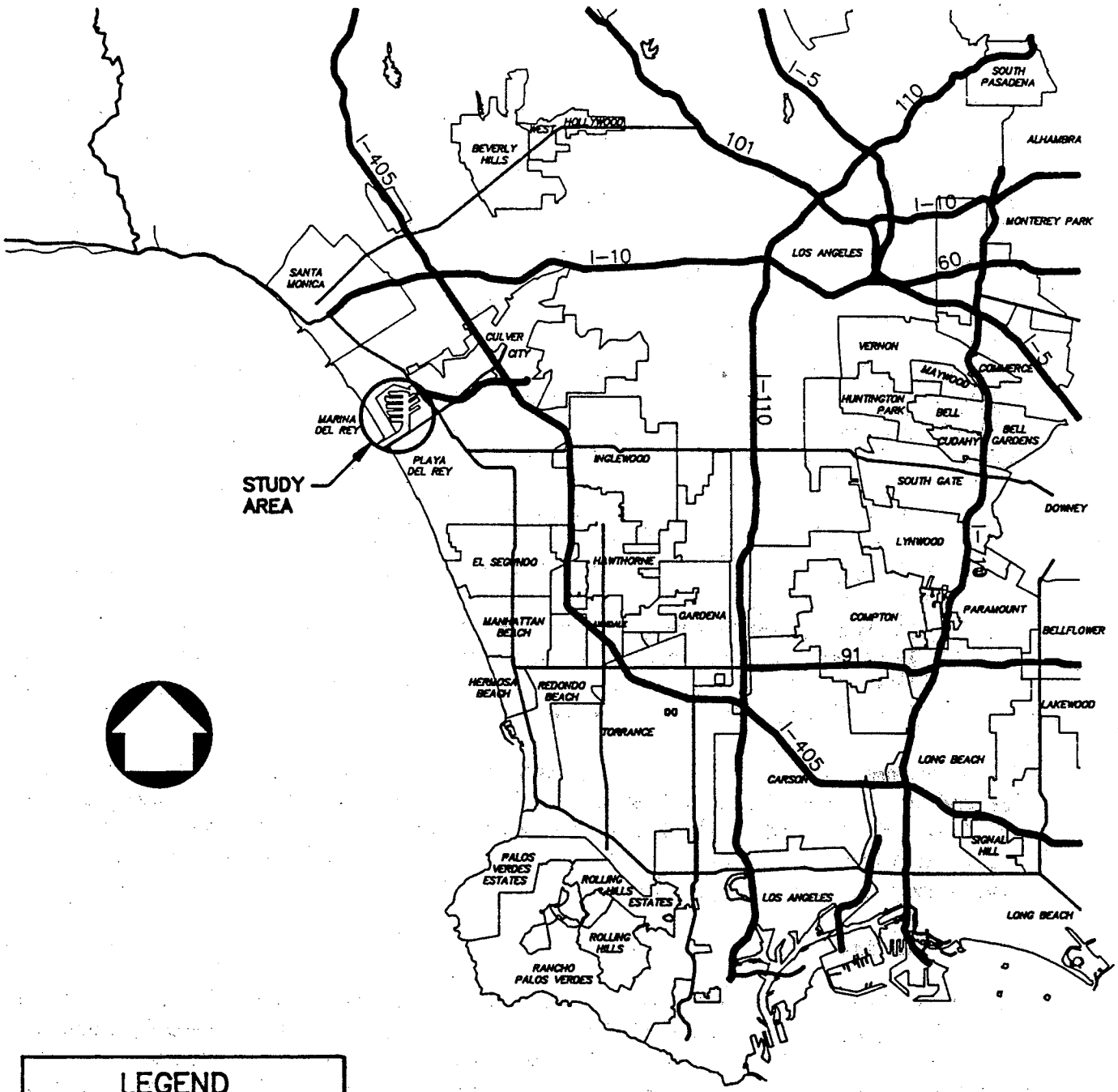
The primary purpose for this traffic and circulation study was to provide information and data to the Department of Regional Planning for reanalyzing the LCP and to determine the changes in conditions since the Gruen Associates traffic studies were conducted in 1982. To achieve this purpose the following objectives were developed for the study:

- Review of existing and past traffic studies and other relevant documents,
- Analysis of existing traffic conditions within the study area,
- Development of traffic forecasts for future base conditions and various alternative land use scenarios,
- Intersection levels of service analyses for future forecasts,
- Development of measures to mitigate the impacts of additional development in the Marina, and
- Development of costs, phasing and funding strategies for these improvements.

This document will provide the public, planners and decision-makers with the information needed to make responsible land use and transportation policy decisions. The study should be used primarily as a resource document. It does not in and of itself make or set land use policy; rather, it contains information which should be carefully evaluated and considered when land use policies are set and final decisions are made.

1.2 Study Area

The Marina del Rey (also referred to as "the Marina" throughout this report) area covers 943 land and water acres (1.5 square miles) in the western section of the Los Angeles Metropolitan Basin, as seen on Figure 1-1. Located between the coastal communities of Venice and Playa del Rey, this unincorporated area includes land owned by Los Angeles County and operated by the Department of Beaches and Harbors as well as privately owned land known as Area A.



MARINA DEL REY TRAFFIC STUDY

REGIONAL LOCATION

FIGURE 1–1

1.2.1 Circulation and Access System

The Marina's internal circulation system consists of two main components. First, a series of local streets serves the waterfront, including Fiji Way, Mindanao Way and Bali Way on the east and Tahiti Way, Marquesas Way, Panay Way and Palawan Way on west. Second, Admiralty Way on the east and north, and Via Marina on the west are secondary highways, which serve as the main collector elements within the Marina. Outside the Marina, Lincoln Boulevard (State Route 1) and Washington Street in the City of Los Angeles, are immediately to the east and northwest of Admiralty Way and provide the connection to the City of Los Angeles. The Marina Freeway (State Route 90), which ends at Lincoln Boulevard near the Marina, provides the primary regional connection via the San Diego Freeway (Interstate 405) approximately two miles to the east of the Marina.

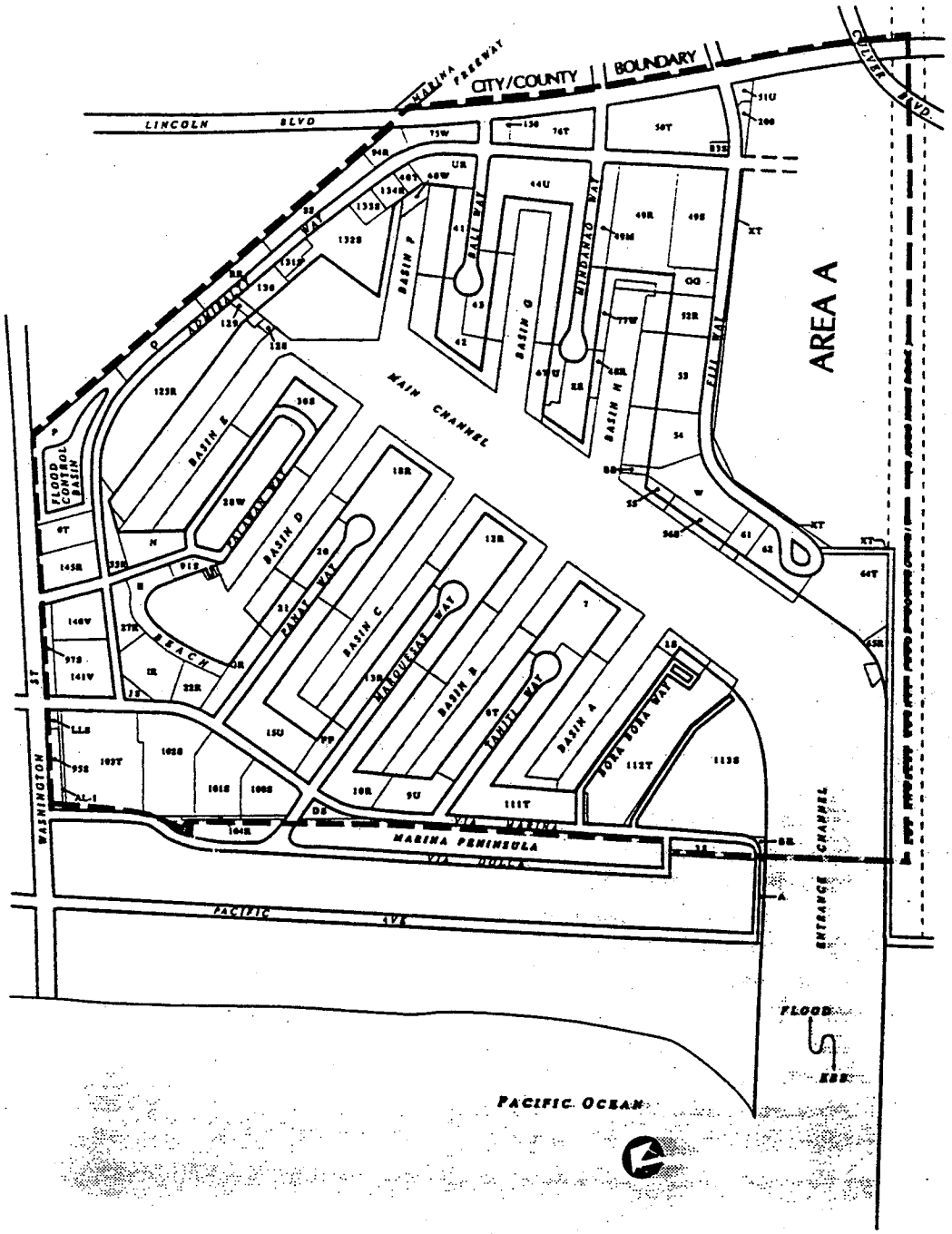
Marina del Rey's internal circulation system and parcels are shown in Figure 1-2.

1.2.2 Study Intersections

As indicated in Figure 1-3, 19 intersections were selected for this study. These are:

1. Via Marina/Washington St.
2. Via Marina/Admiralty Way
3. Via Marina/Panay Way
4. Via Marina/Marquesas Way
5. Via Marina/Tahiti Way
6. Via Marina/Bora Bora Way
7. Admiralty Way/Palawan Way
8. Washington Blvd./Lincoln Blvd.
9. Lincoln Blvd./Route 90
10. Admiralty Way/Bali Way
11. Lincoln Blvd./Bali Way
12. Admiralty Way/Mindanao Way
13. Lincoln Blvd./Mindanao Way
14. Admiralty Way/Fiji Way
15. Lincoln Blvd/Fiji Way
16. Mindanao Way/Route 90 EB
17. Mindanao Way/Route 90 WB
18. Jefferson Blvd./Culver Blvd.
19. Jefferson Blvd./Lincoln Blvd.

The above intersection numbering system will be used throughout this report for reference purposes.



LEGEND

XX PARCEL NUMBER

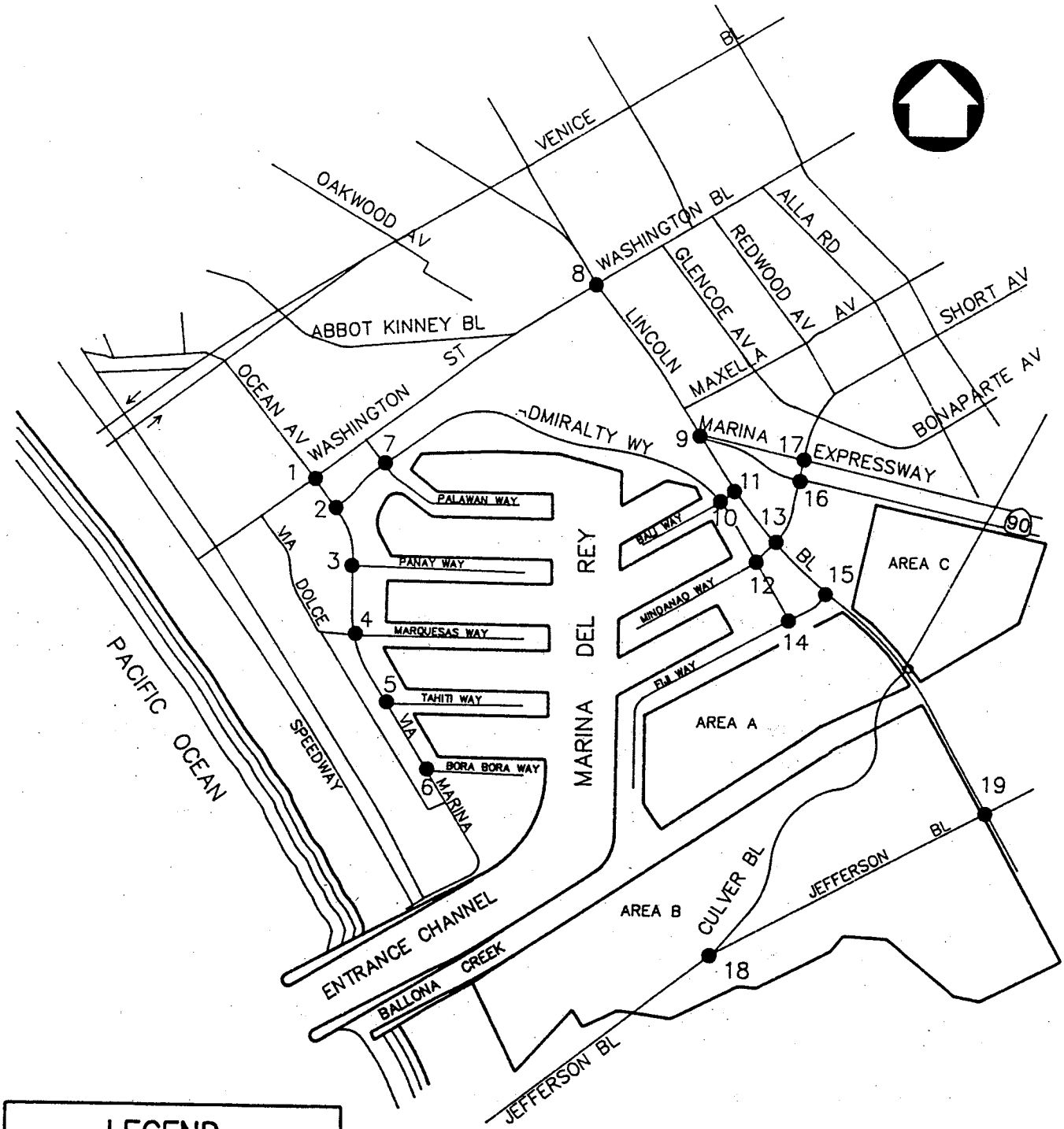
— — UNINCORPORATED COUNTY BOUNDARY

NO SCALE

MARINA DEL REY TRAFFIC STUDY

PARCELS AND INTERNAL CIRCULATION SYSTEM

FIGURE 1–2



LEGEND

- ● STUDY INTERSECTION
- XX INTERSECTION NUMBER

NO SCALE

MARINA DEL REY TRAFFIC STUDY

LOCATION OF STUDY INTERSECTIONS

FIGURE 1-3

Nine of the intersections are entirely within the Marina and are under County of Los Angeles jurisdiction. These are all Admiralty Way and Via Marina (except with Washington Street) intersections. Four intersections are shared by City of Los Angeles and the County. These are the Lincoln Boulevard intersections with Bali, Mindanao and Fiji way and the intersection of Washington Street with Via Marina. The remaining six intersections are entirely within the City of Los Angeles jurisdiction.

All of the intersections are signalized with the exception of the Bora Bora Way and Via Marina intersection, which is stop sign controlled.

1.3 Study Approach

The study was organized under various independent and related tasks. The main components of the study included:

- Traffic surveys and counts, including AM and PM peak period intersection turning movement counts.
- Special studies, such as trip generation analysis, through traffic analysis, evaluation of development phasing, light rail service and shuttle service analysis and analysis of the proposed land uses for Area A.
- Development of a micro computer-based traffic impact analysis model based on traffic zones within and outside the Marina and including the 19 study intersections.
- Evaluation of existing traffic conditions and intersection levels of service.
- Development of traffic forecasts for future base (ambient) conditions and with other known cumulative projects and levels of service analysis for study intersections.
- Performing levels of service analyses for seven different land use alternatives.
- Development of mitigation measures to lessen the impacts of additional development in the Marina.
- Determination of costs, feasibility and impacts of the mitigation measures.
- Evaluation of financing means for mitigation measures, identification of a phasing program, and development of traffic impact fees.

Figure 1-4 is a flow chart indicating the overall process of the project.

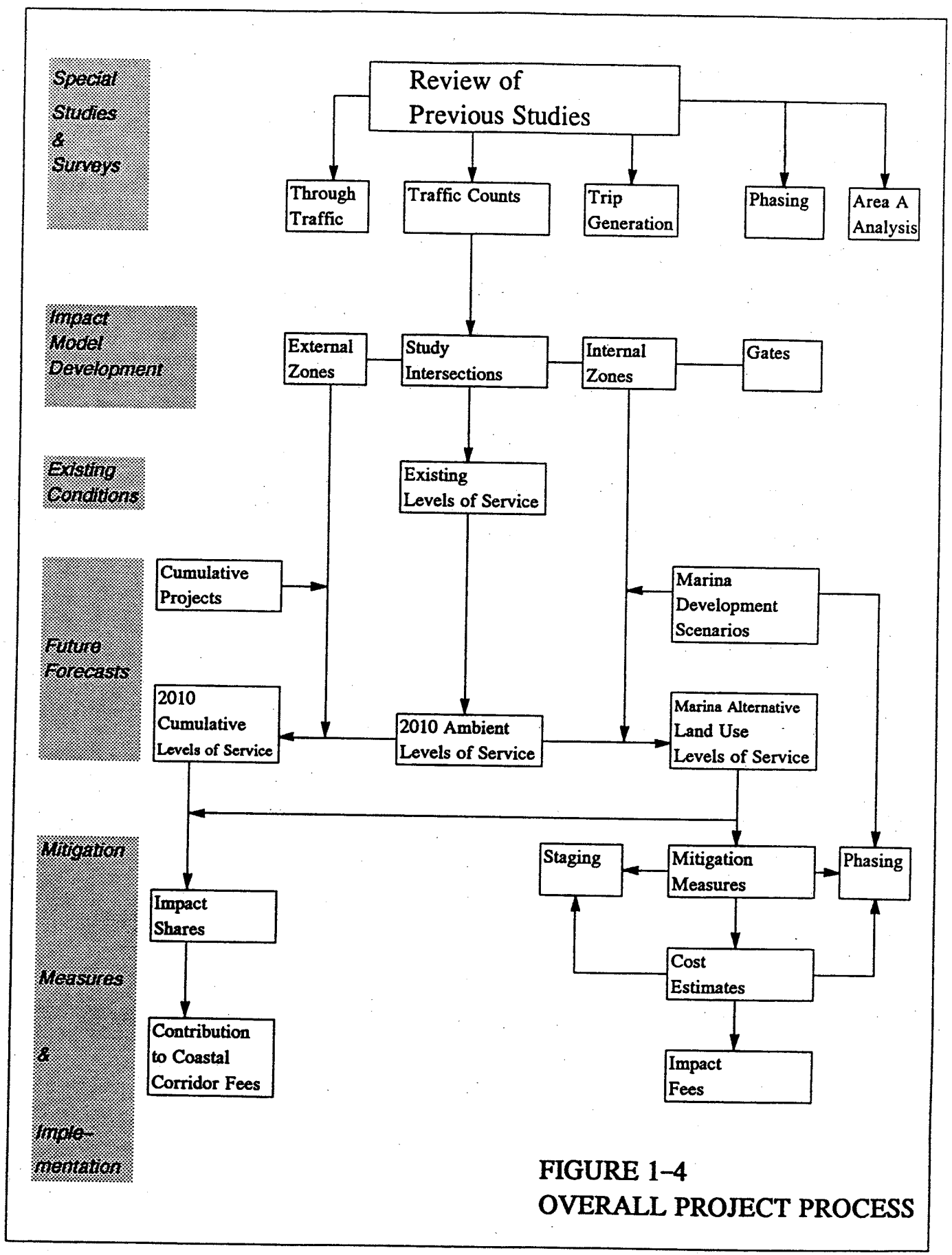


FIGURE 1-4
OVERALL PROJECT PROCESS

1.4 Organization of this Report

This report is organized in eight chapters, generally following the above tasks. The first chapter is this introduction. The second chapter presents a summary of reviews of all background material and results of surveys and special studies. The third chapter describes the developed traffic impact model and discusses the traffic forecasts and levels of service analysis for the base conditions. Chapter Four presents the results of the analysis for the seven land use alternatives, corresponding mitigation measures and their impacts. Chapter Five discusses other mitigation measures such as demand management and transit. Chapter Six is a discussion of implementation strategies for mitigation measures such as phasing of the improvements, funding and impact fees. Chapter Seven describes the public involvement process and presents the results of the public meetings and responses to raised comments and issues. Chapter 8 includes the final conclusions and recommendations.

In addition, this report includes a technical supplement, published under a separate cover, which includes technical details related to surveys and collected data and other technical background material used for the various analyses in this study.

2.0 BACKGROUND INFORMATION

This chapter includes a review of background materials which contain information regarding existing and historic transportation conditions within and around the Marina as well as the results of special surveys and studies. First, a review of all relevant background documents is provided. This is followed by the results of several special technical studies: collection of traffic counts and determination of the analysis time periods, analysis of through traffic, and trip generation surveys. At the end of this chapter, two areas related to the Land Use Plan are analyzed; these include an evaluation of the impacts of Area A and the Phasing Plan in the LUP.

2.1 Review of Background Material

The Marina del Rey Traffic Study required the review of background materials provided and/or available. The first section provides a summary of the reviewed information on the Marina del Rey Study area. The second section is a detailed look at the Circulation Chapter of the LUP.

2.1.1 Summary of Documents

The following is a list of the documents used as reference materials in the study.

1. Marina del Rey Land Use Plan, L.A. County, 1984
2. Marina del Rey Local Implementation Program, L.A. County, 1990
3. Coastal Corridor Rail Transit Project, North Segment, DKS Associates, 1989
4. Final EIR, Coastal Corridor Rail Transit Project - North Segment, Michael Brandman & Associates, 1988
5. Marina del Rey Transportation Study, Gruen Associates, 1976
6. Marina del Rey Traffic Study, Gruen Associates, 1982
7. Marina del Rey Traffic Study, Gruen Associates, 1989
8. Channel Gateway EIR, Planning Consultants Research, 1989
9. Marina Place Shopping Center EIR, McClelland Consultants, 1989

The following paragraphs summarize key points from the above documents.

1. *Marina del Rey Land Use Plan (LUP), L.A. County Local Coastal Program*, 1984

This plan, prepared by the Los Angeles County Department of Regional Planning and certified by the California Coastal Commission in 1984 and 1986, is one of the two components of the Local Coastal Plan for Marina del Rey. The document includes a review of the Coastal Plan process. It is the main policy document for guiding current land use decisions in the Marina. It

includes policy sections on coastal access and recreation, marine and land resources, and a land use plan which considered a new development policy. The Marina del Rey Circulation section (2.1.2) of this chapter will review the circulation element of the LUP. New development in the existing Marina as proposed in this plan was divided into two phases. Phase One consisted of three hotel development proposals. Phase Two was a mix of visitor-serving, residential and office uses. Traffic capacity was the key factor in determining intensities and phasing. Development proposals in Phase Two would be granted on a "first-come, first-served" basis and were limited to land uses which would generated a maximium total of 2,400 peak hour trips. Section 2.6 of this chapter will discuss this phasing plan in more detail.

2. *Marina del Rey Local Implementation Program (LIP)*, 1990

The LIP, which constitutes the primary implementation mechanism for the county-owned portion of the Marina del Rey LUP, was certified by the California Coastal Commission in September, 1990. The objectives of the specific plan are to document various developments, establish development standards and guidelines, guide redevelopment and development of vacant land, establish a governmental review process, and describe long term implementation efforts necessary to accommodate future development.

The Community-wide Plan and Design Standards consist of area-wide guidelines for urban design, land use, circulation, parking, access, and infrastructure. The Use Restrictions and Development Standards by Land Use section of the document contain the uses allowed and development standards for each land use in the Specific Plan. The Transportation Improvement Program includes a discussion of shuttle systems, LRT, the Marina Bypass and several intersection improvements, as well as funding for these measures.

3. *Coastal Corridor Rail Transit Project, North Segment*, DKS Associates, 1989

This study was prepared for Bechtel Civil Inc. and Los Angeles County Transportation Commission. It analyzes the traffic impact of the proposed light rail transit (LRT) route from Los Angeles International Airport to the Marina. The alignment runs approximately 5.75 miles northwesterly from the end of the Century Freeway Rail Transit Project at Aviation Boulevard and Imperial Highway to Culver Boulevard near the Marina Freeway.

The report examined existing traffic conditions, future traffic conditions without the LRT project, traffic generated by the LRT project, and mitigation measures. In the analysis, trip generation rates for LRT stations were developed and station impacts were examined using the Circular 212 Planning Method.

This analysis found that traffic impacts of LRT will only be localized at roadways and intersections near stations during the peak periods. Where significant impacts to intersections as a result of expected traffic growth with or without LRT were discovered, mitigation measures were proposed.

4. *Draft and Final Environmental Impact Reports, Coastal Corridor Rail Transit Project-North Segment EIR*, Michael Brandman Associates, 1989

This environmental impact report (EIR) analyzes the potential environmental impacts that would result from the construction and operation of the Coastal Corridor Rail Transit Project - North Segment.

The Coastal Corridor-North Segment Project is part of an on-going regional transit development program for the County of Los Angeles. The proposed Coastal Corridor-North Segment was identified as a possible candidate for transit development along with 13 other corridors in the County in keeping with the mandate of Proposition A passed in November 1980.

A route refinement study of this corridor was undertaken by the LACTC, in December 1984. An initial alternatives evaluation report was completed in August 1988. A Draft Environmental Impact Report (EIR) was published in January 1989. A Final EIR was published in August 1989 and was certified.

The proposed project would operate as an extension of the Norwalk-El Segundo rail transit Project. The proposed route travels north from LAX on Lincoln Boulevard to the eastern edge of Marina del Rey.

5. *Marina del Rey Transportation Study*, Gruen Associates, 1976

This report was prepared for the County of Los Angeles Department of Small Craft Harbors. It reviewed traffic and transportation conditions and examined improvement concepts in the area for 1976. The objectives of the report were to provide a comprehensive assessment of the transportation requirements in the Marina del Rey area.

The major study elements of the report include a review of traffic growth since 1971, an evaluation of circulation demand and capacity deficiencies and development of alternative transportation improvements.

Analysis of traffic conditions considered development within and around the Marina del Rey area and provided a summary of growth and development. The circulation study includes reports on traffic volumes and through traffic movements in addition to Marina traffic on external streets. Volume to Capacity analyses were also conducted.

The report identified the following short-term transportation improvements:

- Fine tuning of traffic signals and increasing the capacity of Lincoln Boulevard.
- Establishing a task force to acquire right-of-way for the Marina Bypass.
- Widening Admiralty Way at Via Marina.
- Development of a separate bikeway near Fiji Way.

The following longer-range improvements were suggested:

- Construction of the Marina Bypass from Route 90.
- Construction of a freeway extension to Lincoln Boulevard on Route 90.
- Reconstruction of Culver Boulevard and connection to Admiralty and Fiji Way.
- Institution of a transit service within Marina del Rey.

6. *Marina del Rey Traffic Study*, Gruen Associates, 1982

This report was prepared for the County of Los Angeles Department of Small Craft Harbors. It reviewed existing transportation conditions in the Marina del Rey and Playa Vista areas and examined improvement concepts thought to help transportation needs in 1982. The objectives were to assess transportation requirements in Marina del Rey and to provide information for other related planning activities in the area.

The major study elements included review of existing traffic volumes and capacities, parking utilization, circulation system capacity and demand, and development of a transportation improvement program to serve the Marina del Rey area.

Analysis of traffic conditions considered development within and around the Marina del Rey and Playa Vista areas. The existing circulation study included reports on traffic volumes and Marina traffic on external streets. Volume to Capacity analyses where conducted at the following intersections:

1. Admiralty at Fiji
2. Admiralty at Mindanao
3. Admiralty at Bali
4. Admiralty at Palawan
5. Admiralty at Via Marina
6. Lincoln at Fiji
7. Lincoln at Mindanao
8. Lincoln at Bali
9. Lincoln at Route 90
10. Lincoln at Washington

The following is a list of recommended Marina access improvements:

- Construction of Route 90 (Marina Bypass) across Lincoln Boulevard to Washington Street.
- Widening Lincoln Boulevard from 6 lanes to 8 lanes from Fiji Way to Route 90.
- Widening Washington Boulevard from 4 to 6 lanes and adding dual left turn lanes on the eastbound and westbound approaches to Lincoln Boulevard.

The report suggested the following Marina circulation improvements:

- Widening Mindanao Way at Admiralty Way, Admiralty Way at Bali Way, Admiralty Way at Palawan Way, and Admiralty Way at Via Marina.
- Implementation of an internal Marina del Rey shuttle transit system.
- Development of a separate bikeway east of Fiji Way.

Playa Vista improvements consist of the following:

- Construction of a direct ramp connection from Route 90 to Route 405 southbound.
- Modification of Route 405 local service ramps to/from Sepulveda Boulevard.
- Realignment and/or improvement of Culver Boulevard, Jefferson Boulevard, and Lincoln Boulevard.
- Development of grade separated interchanges on Culver Boulevard at Route 90 and Lincoln Boulevard.
- Extension of Admiralty Way from Fiji Way to Culver Boulevard.

7. *Marina del Rey Traffic Study*, Gruen Associates, 1989 (DRAFT)

This draft study was prepared for the Los Angeles County Department of Beaches and Harbors. It was undertaken to determine if traffic capacity was available in the existing circulation system to serve possible developments in the Marina del Rey area and whether additional traffic capacity could be created. A Marina Bypass was not considered as part of the study.

Volume to Capacity ratios were calculated to analyze the existing conditions. The following intersections were analyzed in this study:

1. Admiralty at Fiji
2. Admiralty at Mindanao
3. Admiralty at Bali
4. Admiralty at Palawan
5. Admiralty at Via Marina
6. Lincoln at Fiji
7. Lincoln at Mindanao
8. Lincoln at Bali

The study examined three development scenarios with varying assumptions for hotel rooms, restaurant seating, and retail square footage. The following is a breakdown of the three different scenarios:

	Scenario 1	Scenario 2	Scenario 3
Hotel Rooms	372	743	1,115
Restaurant Seats	231	462	693
Retail Area, Sq. Ft.	7,000	14,000	21,000

The effort was to maintain a level of service (LOS) E or better on impacted intersections.

It was found that under development scenario 1, additional turn lanes would be required at the first three intersections on the above mentioned list. Development scenarios II and III required more extensive improvements, including additional through lanes along Admiralty Way and Lincoln Boulevard or Mindanao Way to maintain a LOS E.

The draft report suggested the following possible additional transportation strategies:

- Addition of transit service within the Marina del Rey area.
- Implementation of Transportation Demand Management measures.
- Implementation of Transportation System Management measures.
- Construction of the Marina Bypass.

8. *Channel Gateway EIR*, Planning Consultants Research, 1989

This report, prepared for the City of Los Angeles, studied the impact of a mixed use residential and commercial center. The land use components will consist of 1312 dwelling units, 300,000 square feet of general office space and 15,000 square feet of support retail uses. The development is located on a 18.94 acre site in the Oxford Triangle Specific Plan area of the Venice Community. The project will generate approximately 1,200 additional vehicle trips during the PM peak hour.

The horizon year for this project was determined to be 1993. Twenty six study intersections were identified for analysis. Critical Movement Analysis showed that project traffic impacts over cumulative effects were significant at several study intersections.

However, significant project impacts could be mitigated through implementation of the following measures:

- Installation of Automated Traffic Surveillance and Control (ATSAC) systems at Lincoln Boulevard/Washington Boulevard, Lincoln Boulevard/Bali Way, Lincoln Boulevard/Mindanao Way, Lincoln Boulevard/Fiji Way, Lincoln Boulevard/Jefferson Boulevard, Culver Boulevard (north)/Marina Expressway and Culver Boulevard (south)/Marina Expressway.

- Widening and improvement of Lincoln Boulevard/Maxella Avenue, Lincoln Boulevard/Marina Expressway, Lincoln Boulevard/Venice Boulevard, and Mindanao Way/Marina Expressway.

9. *Marina Place Shopping Center EIR*, McClelland Consultants, 1989

Prepared for the City of Culver City, this study examined the impact of a mixed use commercial center. Land use for this proposed development will be approximately 753,000 square feet of leasable space. The 18.3 acre site is located one block east of Lincoln Boulevard and is bounded on the west and north by the City of Los Angeles. This project will generate 2,750 additional peak hour vehicle trips during the afternoon period.

The horizon year for the project was 1993. Thirty study intersections were identified in this report. The intersections were analyzed using the Critical Movement Analysis methodology. Several study locations were shown to be significantly impacted by project traffic.

Recommendations for mitigating the impacts were as follows:

- Installation of Automated Traffic Surveillance and Control (ATSAC) at various study intersections.
- Prohibiting parking at various times of the day at problem locations.
- Restricting and/or prohibiting left-turn movements at identified locations.
- Left-turn channelization at necessary intersections
- Widen appropriate study intersections.

With the implementation of the suggested mitigation measures, significant project impacts remained at:

1. Venice Boulevard at Walgrove Avenue
2. Washington Boulevard at Lincoln Boulevard
3. Washington Boulevard at Walgrove Avenue
4. San Diego Freeway Southbound Ramps at Sawtelle Boulevard
5. San Diego Freeway Northbound Ramps at Sepulveda Boulevard

In addition to the proposed project and its site, a range of alternatives to the project were analyzed. The six alternative scenarios considered for the proposed site were:

- No project - existing manufacturing facilities to remain vacant.
- No project - existing manufacturing facilities fully occupied at current use.
- Mixed use
- Specialty Retail Center
- Residential/Strip Retail
- Residential

Six alternative locations considered for the proposed project included:

- Veterans Administration Property (Westwood Community)
- Santa Monica Airport
- Channel Gateway (Marina del Rey)
- Villa Marina Shopping Center (Marina del Rey)
- Playa Vista
- LAX Northside

The alternatives which showed overall transportation and circulation impacts to be less than that of the proposed project included both of the no-project scenarios and the Playa Vista site. The options which showed overall transportation and circulation impacts to be similar to that of the proposed project included the mixed use alternative and the Santa Monica, Channel Gateway, and Villa Marina Shopping Center sites. The alternatives which caused overall impact to be greater than that of the proposed project were only the Veterans Administration and LAX Northside sites.

2.1.2 Marina del Rey Circulation

The following is a summary of the Circulation chapter of the Marina del Rey Land Use Plan. The topics which were identified as requiring closer review include:

1. Issues Identified

- What is the current level of service of the existing circulation system?
- Can a circulation system be designed to decrease congestion and increase traffic efficiency?
- What additional development could be supported?
- What alternative transportation modes are feasible in improving this traffic?
- How feasible would multiple use of parking spaces be for land uses not conflicting or sharing identical hours?
- Should parking continue to be determined on an individual basis?
- What alternative parking strategies exist for the Marina during special times?

2. Existing Circulation and Access System

The two state highways serving the area are the Marina Freeway (Route 90) and Lincoln Boulevard (Route 1). Both these routes serve as the main access facilities to the Marina.

As originally planned, Route 90 was to extend to Lincoln Boulevard with an extension to Washington Street. This would have provided a through highway corridor to Venice. Since the

extension was not built, an at-grade intersection exists at Culver Boulevard. With such an intersection, traffic on Route 90 is introduced to an unnecessary delay.

Lincoln Boulevard serves north and southbound traffic. Three connections provide access to the Marina - Fiji Way, Mindanao Way, and Bali Way. Culver Boulevard, Washington Boulevard and Jefferson Boulevard are the major east/west corridors.

Internal circulation within the Marina is provided by Admiralty Way and Via Marina. Further access from the north is provided by Via Dolce and Washington Street.

3. Existing Transit Service

The Southern California Rapid Transit District (SCRTD), Culver City, and Santa Monica Municipal Bus lines provide bus service to the Marina del Rey area. The lines include SCRTD Routes 115, 116, 220, 605, 606, and 828, Culver City Routes 2 and 5, and Santa Monica Route 3.

4. Existing Parking Conditions

Parking facilities in the Marina del Rey area generally provide sufficient capacity to serve the area, however special events and peak demands sometimes create parking overloads. Public parking facilities located near visitor areas fill up very quickly during summer weekends with overflow parking demand handled at more remote lots in the Marina.

2.1.3 Comparison of Traffic Conditions

Level of service is a common method used by traffic engineers to measure the efficiency of an intersection. Letter ratings ranging from "A" (free-flowing) to "F" (significant congestion) are based on the relationship between the intersection's traffic volumes and its capacity. Levels of Service A, B, and C are considered good operating conditions with only minor delays being experienced by motorists. Level of Service D represents below average or fair operating conditions where drivers occasionally have to wait through more than one signal cycle to proceed through the intersections. Level of Service E represents capacity and poor operating conditions. Level of Service F represents jammed conditions.

Of the 19 study intersections identified for analysis, 12 intersections have data from previous studies. The following table (Table 2-1) summarizes the base year LOS from the previous studies. It also provides good insight into the operating conditions of the study intersections during the past 13 years. It should be noted that improvements have been made at some intersections that have influenced levels of service. For example, improvements to the intersection of Lincoln Boulevard and Fiji Way after 1984 were a major factor in improving the LOS from a "D" to a "C".

2.2.1 Identification of Peak Hours

These peak period data were then entered into a specially developed spreadsheet to determine the peak one hour periods at each intersection. Data reduction spreadsheet printouts and the results are included in the Technical Supplement. The AM peak one hour periods are more uniform--11 of 19 occurring between 7:45 and 8:45; whereas, the PM peak one hours are more variable. Peak hours are scattered, beginning between 5:00 to 5:30 with the most predominant being the hour of 5:30 to 6:30--at seven locations. All peak hour volumes are tabulated in Table 2-2 and are graphically presented by intersection movements and total approach and departure volumes in the Technical Supplement.

Discussions were held with County staff to determine the hourly counts most appropriate for use in this study. The conclusion was to use the actual AM and PM peak hour volumes for each intersection as opposed to using the most predominant peak hour as a uniform period for all intersections. This will provide a more conservative approach for subsequent analyses, since each intersection will be analyzed during its peak hour. This approach would also be better suited for the development of specific mitigation measures to provide acceptable levels of service at intersections on an individual basis.

2.2.2 Seasonal Variations

Since traffic counts were conducted during one specific week in June, it was desirable to investigate the seasonal variation of traffic in the Marina to see in general how traffic in the month of June compares with other months. Los Angeles County Department of Public Works has a permanent traffic count station on Admiralty Way, north of Bali Way. Year round data for this station were made available by the County. Of the available 60 sets of AM and PM counts for various count days, 19 were for weekdays including one count for the month of June. These 19 AM and PM counts were averaged and compared to the counts for the month of June. The average numbers divided by June counts produced ratios of 0.7695 and 0.7727 for AM and PM peak hours respectively. These data indicate that the month of June is a relatively high traffic month, and that traffic for a year-round average peak hour is approximately 77 percent of the peak hour traffic during the month of June. In other words, according to this data, traffic volume on a typical peak hour in the month of June is approximately 23 percent higher than a year-round average peak hour volume. The peak hour count data used for the above analysis is presented in the Technical Supplement.

The need for application of an adjustment factor to intersection traffic counts to account for seasonal variations was discussed with County staff. It was concluded that the June counts would be used without adjustments for several reasons. Use of a yearly average count would be an extremely liberal and inappropriate approach, one that would not be a true representative of prevailing conditions suitable for planning purposes. On the other hand, planning for the highest season would tend to be excessive. Planning for the Marina is based on a typical peak summer month due to the importance of coastal access during this time. The June volumes

were among the higher counts of the year, but were not the highest. Therefore, the June counts conducted for this study were considered to be suitable and are recommended to be used without any seasonal adjustments.

2.3 Analysis of Through Traffic

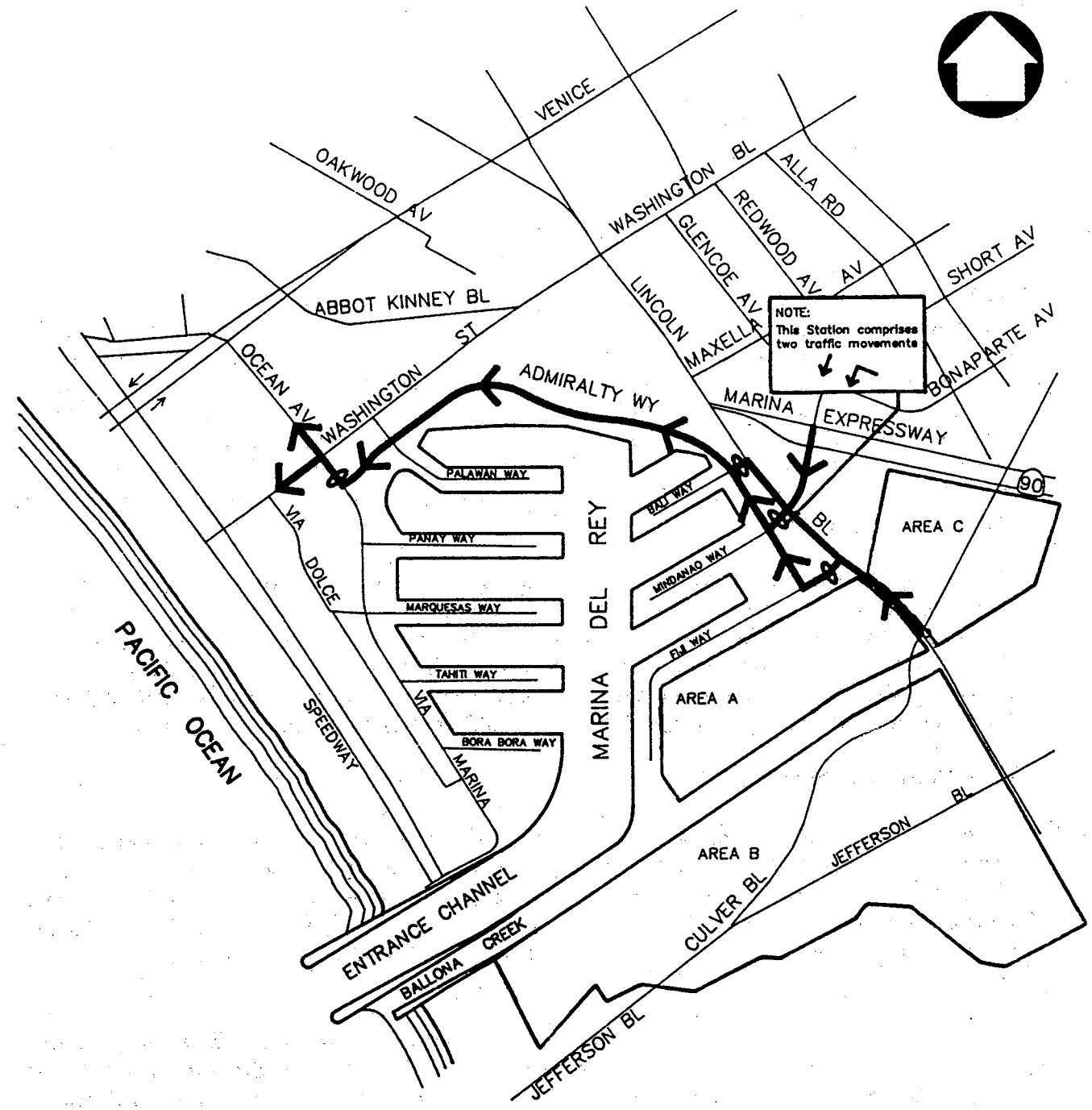
During the evening peak period, the main direction of traffic entering the Marina is generally northbound and westbound, mostly from Lincoln Boulevard and the Marina Freeway using the three main entry routes Fiji Way, Mindanao Way and Bali Way. It is believed that due to the orientation of the commute traffic in the vicinity of the Marina and the location of the Marina's circulation system, some portion of the traffic entering the Marina via these routes uses the Marina streets--mostly Admiralty Way--as an alternative to bypass the congestion on Lincoln and Washington Boulevards. If significant, this through traffic occupies and consumes a portion of the capacity available on the Marina's circulation system without having an origin or a destination in the Marina.

Therefore, it was important to identify the patterns of the through traffic relative to entry and exit points to the Marina and to determine the amount and percentage of these through trips from the total traffic. Data used in the analysis consist of a PM peak period license plate survey, traffic counts obtained and discussed previously in Section 2.2, and a through traffic analysis conducted by Gruen Associates in 1976, *Marina del Rey Transportation Study*, 1976. The latter was used to evaluate changes in through traffic trends from 1976 to the present.

2.3.1 Survey Methodology

A common method for identification of through traffic is the use of a vehicle license plate survey. This method involves setting of survey stations at entry and exit points and recording all or part of the license plate numbers of passing vehicles, by short periods of time. The number of matched plates from the comparison of the data between entry and exit stations, within a certain time period, identifies the amount of traffic that passes through the area without stopping.

A general idea of the through traffic pattern was identified prior to data collection. It was known that through traffic tends to enter the Marina from Bali Way, Mindanao Way and Fiji Way, continues on Admiralty Way and exits by a right-turn at Via Marina. Given this pattern, observation stations were established along the three entry streets and one station along the exit point. It was of additional interest to identify the origin of through trips entering on Mindanao Way. Therefore, at this station incoming traffic was separately surveyed for the Mindanao Way westbound through movement at Lincoln Boulevard and for the Lincoln Boulevard northbound left turn movement at Mindanao Way. Figure 2-1 shows the through traffic patterns and the data collection stations.



LEGEND

THROUGH TRAFFIC PATTERNS

SURVEY STATIONS

NO SCALE

MARINA DEL REY TRAFFIC STUDY

PATTERNS OF THROUGH TRAFFIC

FIGURE 2–1

License plates of passing vehicles were recorded by fifteen minute intervals between 4:30 and 6:30 PM on June 21, 1990. The PM peak period was selected for analysis because of its critical nature compared to the AM peak and the perceived high volumes of through traffic.

2.3.2 Analysis and Results

Results of the license plate matching survey are presented by 15 minute field data in the Technical Supplement and are summarized in Table 2-3 and Figure 2-2. The analysis includes both the peak period of 4:30 to 6:30 and the peak hour of the through traffic, which was identified as the hour of 5:15 to 6:15 PM. This one hour period contained the highest amount of through trips.

- Volume and Origins of Through Traffic:

A total volume of 325 vehicles was identified to be passing through the Marina during the two hour period of 4:30 and 6:30. The highest one hour total was 171 vehicles, which occurred during the hour of 5:15 and 6:15.

As shown in Table 2-3 and Figure 2-2, most of the through trips enter the Marina using Mindanao--143 vehicles or 44 percent, Fiji is second with 118 vehicles or 36 percent, and then Bali with 64 vehicles at 20 percent. These figures also suggest a general distribution for the origin of the through trips for the two hour peak period. As shown, 15 percent of the through trips originate east of Lincoln Boulevard from Mindanao Way, possibly coming from the Marina Freeway. Coming from Lincoln Boulevard, 20 percent enter using Bali Way, 29 percent using Mindanao Way and 36 percent using Fiji Way. Overall, this suggests that 85 percent of through trips originate from points south of the Marina along Lincoln Boulevard and 15 percent from points east of the Marina, entering along Mindanao Way east of Lincoln Boulevard.

- Through Traffic as a Percent of Total Traffic:

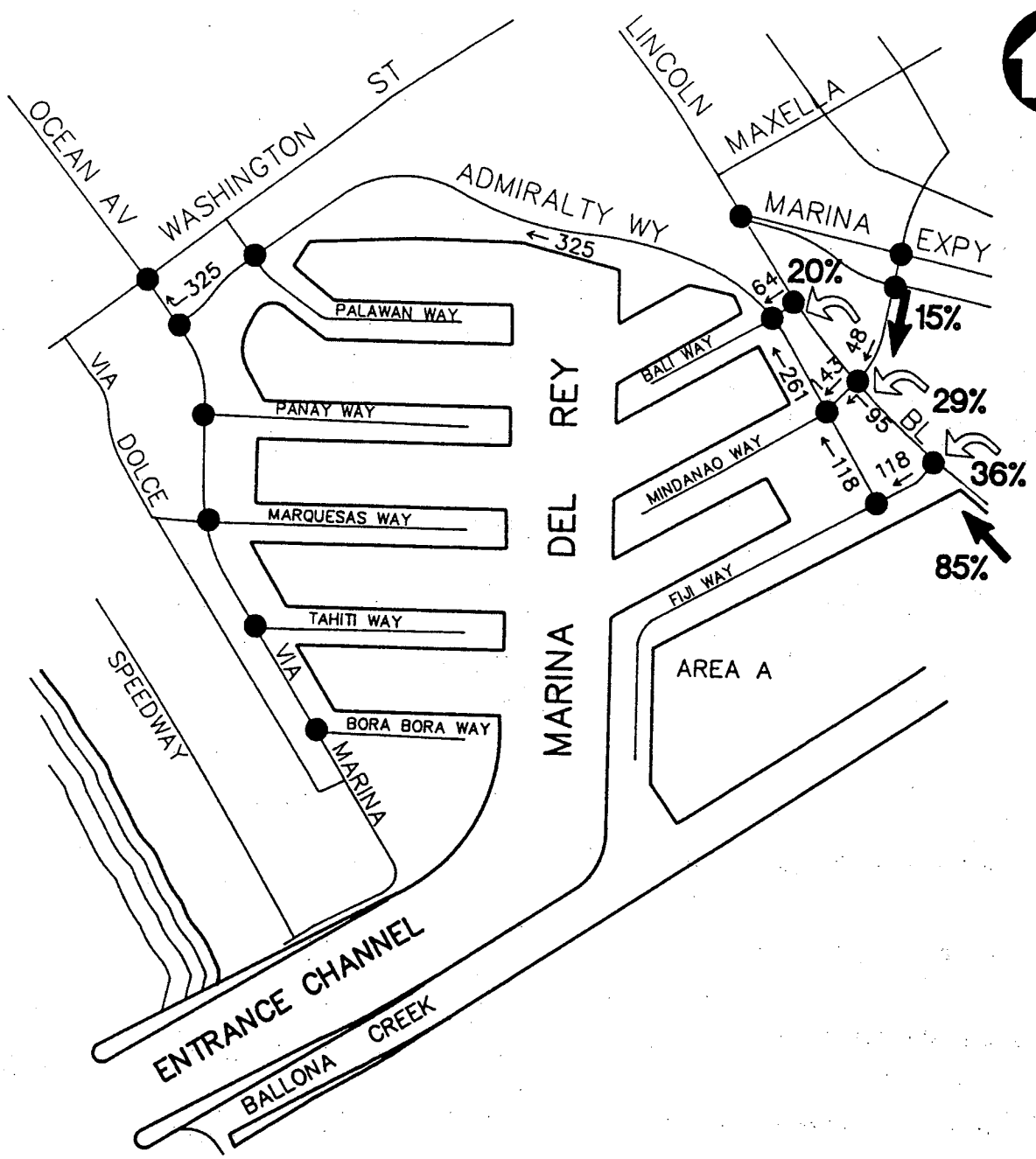
The proportion of through trips was calculated by comparing the volume of through trips with the total peak period and peak hour traffic volumes entering the Marina as well as traffic volumes on key links on Admiralty Way, the principal carrier of through trips within the Marina. Table 2-4 and Figure 2-3 summarize the through trip percentages.

Percentage of through trips does not vary significantly between the peak period and the peak hour of through traffic. Therefore, the following discussion focuses mostly on the peak period. As indicated in Table 2-4, through traffic constitutes 8, 7 and 8 percent of the peak period traffic volumes entering the Marina via Fiji, Mindanao and Bali, respectively. Collectively, from a total of 4359 peak period vehicles entering the Marina, between 4:30 and 6:30 PM using these three streets, a total of 325 vehicles--or 7 percent--passes through without stopping.

Table 2-3
Through Traffic Volumes
PM Peak Period (4:30-6:30) and
PM Peak Hour (5:15-6:15 PM)

Movement Surveyed	Station Type	two hours	peak hour	percent of total*
WB Fiji, Lincoln to Admiralty	Entry	118	70	36%
NB left turn, Lincoln to Mindanao	Entry	95	46	29%
WB through Mindanao at Lincoln	Entry	48	21	15%
WB Bali, Lincoln to Admiralty	Entry	64	34	20%
WB right turn, Admiralty to Via Marina	Exit	325	171	100%

* Origin percentage calculated based on the two hour volumes



LEGEND

- STUDY INTERSECTION
- ↑ XX — THROUGH TRIPS
- ↑ XX% — DISTRIBUTION OF ORIGINS

NO SCALE

MARINA DEL REY TRAFFIC STUDY
PM PEAK PERIOD THROUGH TRIPS

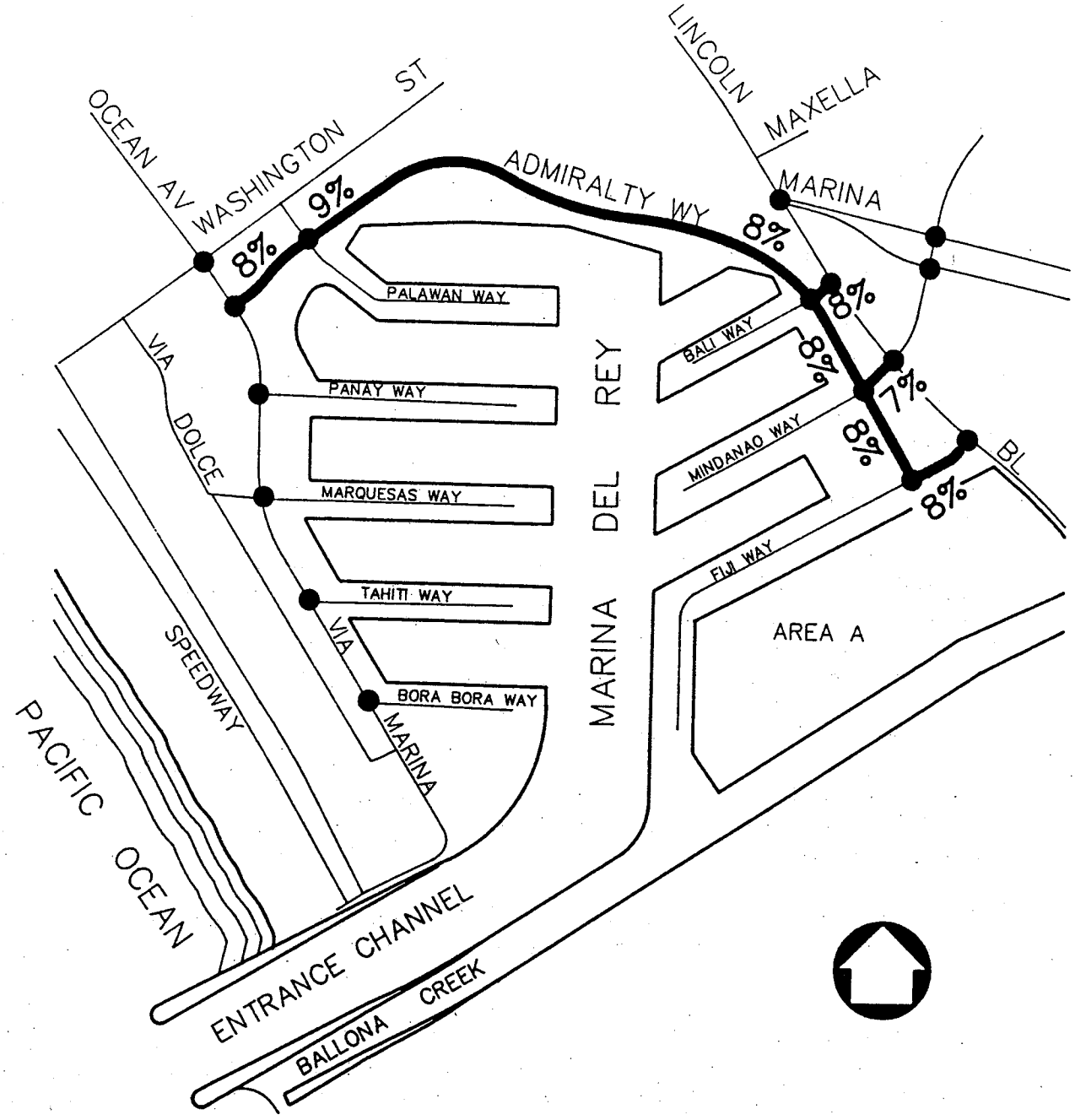
FIGURE 2–2

Table 2-4
Through Traffic Percentage on
Key Marina del Rey Streets

Location	Total Volume	Through Volume	Percentage
Fiji Way, Lincoln-Admiralty	1415 (758)	118 (70)	8% (9%)
Mindanao Way, Lincoln-Admiralty	2098 (1066)	143 (67)	7% (6%)
Bali Way, Lincoln-Admiralty	846 (470)	64 (34)	8% (7%)
Total Marina Entry Traffic	**4359** **(2294)**	**325** **(171)**	**7%** **(7%)**
Admiralty Way, Fiji-Mindanao	1414 (771)	118 (70)	8% (9%)
Admiralty Way, Mindanao-Bali	3096 (1669)	261 (137)	8% (8%)
Admiralty Way north of Bali	4071 (2210)	325 (171)	8% (8%)
Admiralty Way east of Palawan	3751 (2097)	325 (171)	9% (8%)
Admiralty Way, Palawan-Via Marina	3964 (2174)	325 (171)	8% (8%)

Key:

261 Peak Period--4:30 to 6:30 PM
(137) Peak Hour of Through Traffic--5:16 to 6:15 PM



LEGEND

- ● STUDY INTERSECTION
- ▌ THROUGH TRAFFIC LINK
- X% THROUGH TRAFFIC PERCENTAGE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

THROUGH TRAFFIC AS A PERCENTAGE OF TOTAL VOLUMES

FIGURE 2-3

From a different point of view, this through traffic constitutes 10 percent (325 out of 3418--see Table 2-5) of the total traffic volume entering the Marina at Admiralty via the three westbound right-turn movements which carry these through trips into the Marina, from Fiji, Mindanao and Bali.

The through traffic accounts for 8 percent of the total traffic on Admiralty Way between Fiji and Mindanao, Mindanao and Bali, as well as 8 percent of traffic on Admiralty northwest of Bali. As traffic becomes lighter moving north and west on Admiralty the through traffic (which stays constant) makes up a higher proportion of the total traffic. Just east of Palawan the 325 peak period through trips are 9 percent of the total peak period traffic at this point.

- Comparison with the 1976 Results:

For comparing the 1990 survey figures with the 1976 results, the 1990 data were arranged in a slightly different fashion to correspond to the presentation in the 1976 Gruen Associates study. Results of the comparison are shown in Table 2-5. The 1976 study focused mainly on the turn movements into the Marina which carried the through trips. The 1990 data presented in this table also corresponds to the same turn movements.

Remarkable similarities exist between the results of the two surveys which were conducted 14 years apart. In 1976, a total of 352 vehicles were counted as through trips compared to the 325 through trips counted in 1990. This indicates an 8 percent decrease in through traffic in 14 years. Considering minor daily variations in traffic, this is an insignificant change in the total amount of through traffic since 1976.

In 1976 through traffic accounted for 14 percent of the total volume entering the Marina on these turn movements; whereas, in 1990 through traffic is only 10 percent of the total entering traffic.

The pattern and distribution of through traffic between the three entry points was also analyzed. In 1976, 115 vehicles went through the Marina using Fiji, remarkably close to the 118 vehicles counted in 1990. However, the proportion of through traffic using Mindanao versus Bali appears to have reversed. In 1976 nearly twice as many vehicles used Bali, as opposed to Mindanao--150 versus 87. In 1990 the volume on Bali had decreased significantly to 64, but the through volume on Mindanao has grown to 143.

Midway through the Marina on Admiralty Way, through trips in 1976 were 10 percent of the total westbound peak period traffic. In 1990 this proportion is 8 percent. Although the volume of through traffic has decreased slightly, the reduction in the percentage of through trips is largely due to the increase in total traffic volumes on Admiralty, which showed a growth of 18 percent between 1976 and 1990.

Table 2-5
Comparison of Marina Through Traffic
Between 1976 and 1990
(Peak Period 2-Hour PM Count)

Location	1976[1] Total Volume	1976[1] Through Volume	1976[1] Percent	1990[2] Total Volume	1990[2] Through Volume	1990[2] Percent
Westbound Right-turns at Admiralty:						
From Fiji Way	579	115	20%	1196	118	10%
From Mindanao Way	833	87	10%	1508	143	9%
From Bali Way	1054	150	14%	714	64	9%
Total of Westbound Right-turns	**2466**	**352**	**14%**	**3418**	**325**	**10%**
Westbound Admiralty Way, Bali Way to Via Marina	**3463**	**352**	**10%**	**4071**	**325**	**8%**

[1] From Gruen Associates *Marina Del Rey Transportation Study*, 1976.
[2] From DKS Associates Study, 1990.

2.3.3 Summary and Conclusions

- The majority of the total traffic entering Marina del Rey via Fiji, Mindanao and Bali has a destination in the Marina. Only a relatively small portion (7 percent) passes through without stopping. This through traffic apparently finds Admiralty Way a more convenient route than the alternative Lincoln and Washington Boulevards. Compared to other areas in Southern California similar in size to the Marina, seven percent is a relatively small percentage for through traffic on the major streets. One reason for this is that the Marina is bounded by the ocean on the west side and an undeveloped area with no street connections on the south across the Ballona Channel. In addition, Marina del Rey's circulation system is not a continuous arterial grid system and, having been planned and developed separately, is not an extension or part of the circulation system of any of the adjacent areas. These are some of the reasons why 93 percent of the traffic entering the Marina's streets has a destination in the Marina. The Marina's circulation system is not suitable or conducive to through trips.

- Whether this seven percent through traffic has a significant impact on the Marina's street system depends on how much it affects traffic operations at the intersections which carry this through traffic. If the three major entry intersections on Admiralty operate at or near capacity, a small percent of additional traffic may have a significant impact on traffic operations. Level of service studies indicate that intersections of Admiralty Way with Bali and Mindanao are currently operating at top of level of service E, but the intersection of Admiralty at Fiji is at level of service A. Through traffic may have a significant impact on the first two intersections.

- Through traffic in the evening peak constitutes only 8 to 9 percent of the peak period and peak hour traffic volumes on major segments of Admiralty Way. Again, relatively speaking, this is generally considered a small percentage for through trips.

- Overall, the amount of through traffic has remained relatively constant since 1976. It is possible that increasing congestion levels within the Marina have kept pace with the outside making Admiralty Way no more of an attractive alternate to Lincoln and Washington Boulevards than it was 14 years ago. It is also possible that the improvements to the external intersections, such as the installation of dual northbound left turn lanes on Lincoln Boulevard at Washington Boulevard and other minor improvements since 1976, have kept operating levels on the outside intersections manageable enough that no additional drivers are encouraged to seek alternative routes. It could be concluded that the majority of the through traffic is destined to points immediately to the north of the Marina in Venice and has stayed relatively constant through the years. Longer distance through traffic, which travels beyond Venice, may save some time using Admiralty Way, but it still would encounter undesirable traffic conditions within the streets in Venice and therefore would not save any significant travel time overall using this route.

- The proportion of through traffic using Mindanao versus Bali appears to have reversed since 1976. Currently more through traffic enters the Marina via Mindanao Way. The current pattern correlates closer to the total traffic volumes entering the Marina via these two entry points. Possible reasons for this reversal may be that northbound left turn movement at Bali has become more difficult or the fact that more through traffic may be coming from Mindanao east of Lincoln compared to 1976. However, there are no data to support these arguments and there does not seem to be any obvious reasons for this observation. There are natural daily and seasonal variations in traffic patterns which may cause such observed shifts in traffic patterns depending on the particular time when the survey was made.

- The percentage of through traffic on westbound right-turn movements entering Admiralty Way has dropped from 14 percent to 10 percent since 1976. This is mainly due to a 39 percent increase in total turning movement volumes from 1976. Similarly, the percentage of through traffic on Admiralty Way through the Marina appears to have decreased from 10 to 8 percent since 1976. This is mainly due to an 18 percent growth in total traffic volumes on Admiralty Way since 1976.

- The future extension of Admiralty Way to Culver Boulevard may result in changes in the amount and patterns of through traffic in the Marina. The construction of a full intersection at Lincoln and Culver may result in redistribution of through traffic originating both from Lincoln and from the Marina Freeway. Some of the through traffic turning left at the three entry streets may be rerouted to Culver and then to Admiralty. This should have a positive impact on the external intersections (by reducing the through traffic) and possibly on the internal intersections as well (by relocating the through trips from a turn movement to a through movement). Since it seems that the through trips are mostly destined to Venice, it would not seem that the total amounts of through traffic should increase significantly due to the Admiralty connection. The connection may become a faster route for trips between Playa del Rey and Venice, especially if Falmouth Avenue is extended or if the intersection of Culver and Pershing Drive is improved. However, it does not seem that this will be significant.

- There is only one possible new pattern of through trips which may be created by the connection of Admiralty Way and Culver Boulevard. This is the eastbound Culver to northbound Lincoln traffic which may use Admiralty and then turn right on to Fiji, Mindanao or Bali to join northbound Lincoln. Currently the Culver-Lincoln move is accomplished via a direct loop ramp and in the future the intersection of Lincoln and Culver is planned to be a full interchange with easy connections. Therefore, this diversion should be insignificant.

- The circuitous orientation and "hook" shape of Admiralty Way, with no access points to westbound Washington Boulevard east of Via Marina, is the main factor discouraging use of the Marina streets as a bypass route for longer distance trips. Any future improvements to the Marina intersections are not anticipated to alter this significantly, unless these improvements change the orientation and access points to Admiralty Way creating a more attractive through corridor.

2.4 Trip Generation Analysis

The most common practice in forecasting traffic which may be generated by proposed developments is the use of nationally accepted trip generation rates from sources such as the Institute of Transportation Engineers (ITE) *Trip Generation Manual.* However, if a particular land use, due to its location or other unique characteristics, exhibits obvious differences in trip generation from similar land uses, it is always the recommended practice to use customized trip generation rates which have been specifically developed for that land use through trip generation surveys. To estimate future traffic from various proposed land uses for Marina del Rey, it is desirable to use trip generation rates which most accurately reflect the unique characteristics of the developments within the Marina.

2.4.1 The Advantages of Customized Trip Generation Rates

The ITE *Trip Generation Manual* (4th Edition 1987) is based on 1,950 individual trip generation studies. However, it is recognized that many of these studies are limited in sample number and the results often need to be used with caution. Trip generation characteristics for a land use often vary from place to place so it is recommended in the book that users "...may wish to modify or adjust the rates presented...to reflect a site's location, public transportation service, ride sharing, proximity to other developments...and special characteristics of the site or the surrounding area. Local data should be collected for comparison when considering use of the data in this report." (ibid. p.iii).

Other sources also recommend care when using regionally developed trip generation rates. The National Co-operative Highway Research Program *Report 187* is a user's guide for quick response urban travel estimation (Transportation Research Board 1978). The guide contains nationally derived trip generation data. However users are warned that "...the values given are averages and...they vary by location in an urbanized area, by size of urbanized area, and by location within the United States." (ibid. p.19). The report also recommends that "If manual techniques are to be applied for some level of study (i.e., corridor, site) in an urbanized area where regional planning efforts have resulted in pertinent data...the local results should be considered for the special study." (ibid. p.19).

The Marina del Rey Traffic Study was able to undertake local trip generation studies, as recommended in the *Trip Generation Manual* and the NCHRP *Report 187.* Where these rates

differed significantly from the ITE rates, the local Marina del Rey rates were used. The NCHRP 187 rates are considered too old for use in this study.

Another source of Trip Generation rates is the San Diego Association of Governments *Traffic Generators* book (SANDAG 1981). These rates are specific to San Diego which is a very different type of community to Marina del Rey and the surrounding area. In addition the rates are older than ITE rates and are generally only of use for studies in San Diego or if no rates are available for a particular land use in ITE or from local studies. For these reasons this source was not used in this traffic study, and is quoted here for information only.

2.4.2 Traffic Counts

To investigate the possible unique trip generation characteristics of land uses in the Marina area, driveway traffic counts were conducted on Thursday June 21, 1990 at 14 selected typical developments within the Marina, as identified by the County. These included a bank, a medical facility, two hotels, two restaurants, two apartment complexes, two commercial shopping centers, and four marine recreation and boating facilities. For each development, inbound and outbound traffic was counted between the hours of 7:00 to 9:00 AM and 4:00 to 6:30 PM, recorded by 15 minute increments. Site and driveway location sketches for these land uses and summarized traffic count data are presented in the Technical Supplement.

2.4.3 Trip Generation Rate Calculation

Existing land use build-out intensities for these 14 developments was obtained from the Department of Regional Planning and from other available resources. The AM and PM peak hour, inbound and outbound vehicle trip generation rates were calculated using the survey counts and land use quantities. Tables 2-6 and 2-7 summarize the results of the derived rates for the AM and PM peak hours respectively. These tables indicate the name and type of the specific development, the land use quantities, counted peak hour inbound, outbound and total trips and the calculated generation rates for each development.

2.4.4 Comparison with ITE Rates

To see how these derived trip generation rates for Marina del Rey land uses differed from nationally used averages, they were compared with trip generation rates for similar land uses published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 4th Edition. Results are shown in Tables 2-8 and 2-9 for AM and PM peak hours respectively. Some distinct patterns emerge when comparing Marina del Rey and ITE rates. The following is a general discussion of the differences in rates for each peak hour.

Table 2-6
Marina del Rey Traffic Study
Marina del Rey Trip Generation AM Peak

		Inbound		Outbound		Total	
	Units	Rate	Trips	Rate	Trips	Rate	Trips
California Overseas Bank	5.65 KSF	3.186	18	0.885	5	4.071	23
Benihana's Restaurant	3.96 KSF	0.253	1	0.253	1	0.506	2
	127 Seats	0.008	1	0.008	1	0.016	2
Cheesecake Factory Restaurant	4.10 KSF	8.537	35	5.854	24	14.391	59
	518 Seats	0.068	35	0.046	24	0.114	59
Doubletree Hotel	300 Rooms	0.177	53	0.153	46	0.330	99
Marina Int'l Hotel	134 Rooms	0.321	43	0.254	34	0.575	77
Marina Beach Shopping Center	20.9 KSF	8.900	186	8.182	171	17.082	357
Marina Shopping Center	124.9 KSF	2.578	322	2.346	293	4.924	615
Mariner's Village Apartments	981 DU	0.063	62	0.310	304	0.373	366
Villa Venetia Apartments	224 DU	0.089	20	0.214	48	0.303	68
Medical Building	52.98 KSF	0.698	37	0.245	13	0.943	50
Tradewinds Marina	157 Slips	0.076	12	0.529	83	0.605	95
Santa Monica Yacht Center	201 Slips	0.030	6	0.030	6	0.060	12
Windjammers Marina	422 Slips	0.014	6	0.019	8	0.033	14
Windward Yacht Center	58 Slips	0.241	14	0.155	9	0.396	23

KSF = 1,000 square feet
DU = Dwelling Unit

Table 2-7
Marina del Rey Traffic Study
Marina del Rey Trip Generation PM Peak

		Inbound		Outbound		Total	
	Units	Rate	Trips	Rate	Trips	Rate	Trips
California Overseas Bank	5.65 KSF	3.540	20	4.070	23	7.610	43
Benihana's Restaurant	3.96 KSF	3.283	13	0.758	3	4.041	16
	127 Seats	0.102	13	0.024	3	0.126	16
Cheesecake Factory Restaurant	4.10 KSF	44.634	183	16.341	67	60.975	250
	518 Seats	0.353	183	0.129	67	0.482	250
Doubletree Hotel	300 Rooms	0.110	33	0.187	56	0.297	89
Marina Int'l Hotel	134 Rooms	0.269	36	0.209	28	0.478	64
Marina Beach Shopping Center	20.9 KSF	11.579	242	11.053	231	22.632	473
Marina Shopping Center	124.9 KSF	4.540	567	4.371	546	8.911	1113
Mariner's Village Apartments	981 DU	0.236	232	0.127	125	0.363	357
Villa Venetia Apartments	224 DU	0.196	44	0.103	23	0.299	67
Medical Building	52.98 KSF	0.491	26	1.208	64	1.699	90
Tradewinds Marina	157 Slips	0.064	10	0.318	50	0.382	60
Santa Monica Yacht Center	201 Slips	0.104	21	0.070	14	0.174	35
Windjammers Marina	422 Slips	0.021	9	0.019	8	0.040	17
Windward Yacht Center	58 Slips	0.138	8	0.190	11	0.328	19

KSF = 1,000 square feet
DU = Dwelling Unit

Table 2-8
Marina del Rey Traffic Study
Comparison of Marina Versus ITE (4th Ed.) Trip Rates AM Peak

		Rate In		Rate Out		Rate Total	
	Units	Marina	ITE	Marina	ITE	Marina	ITE
California Overseas Bank	5.65 KSF	3.186	4.969	0.885	3.177	4.071	8.146
Benihana's Restaurant	3.96 KSF	0.253	0.818	0.253	0.091	0.506	0.909
	127 Seats	0.008	0.015	0.008	0.015	0.016	0.030
Cheesecake Factory Restaurant	4.10 KSF	8.537	10.702	5.854	8.408	14.391	19.110
	518 Seats	0.068	N/A(1)	0.046	N/A(1)	0.114	N/A(1)
Doubletree Hotel	300 Rooms	0.177	0.465	0.153	0.239	0.330	0.704
Marina Int'l Hotel	134 Rooms	0.321	0.465	0.254	0.239	0.575	0.704
Marina Beach Shopping Center	20.9 KSF	8.900	2.709	8.182	1.161	17.082	3.870
Marina Shopping Center	124.9 KSF	2.578	1.539	2.346	0.659	4.924	2.198
Mariner's Village Apartments	981 DU	0.063	0.096	0.310	0.436	0.373	0.532
Villa Venetia Apartments	224 DU	0.089	0.096	0.214	0.436	0.303	0.532
Medical Building	52.98 KSF	0.698	0.328	0.245	0.098	0.943	0.426
Tradewinds Marina	157 Slips	0.076	0.011	0.529	0.079	0.605	0.090
Santa Monica Yacht Center	201 Slips	0.030	0.045	0.030	0.045	0.060	0.090
Windjammers Marina	422 Slips	0.014	0.040	0.019	0.050	0.033	0.090
Windward Yacht Center	58 Slips	0.241	0.055	0.155	0.035	0.396	0.090

(1)Trip generation rate not available for this unit type.
Shading indicates Marina del Rey rates higher than ITE rates.
KSF = 1,000 square feet
DU = Dwelling Unit

Table 2-9
Marina del Rey Traffic Study
Comparison of Marina Versus ITE (4th Ed.) Trip Rates PM Peak

		Rate In		Rate Out		Rate Total	
	Units	Marina	ITE	Marina	ITE	Marina	ITE
California Overseas Bank	5.65 KSF	3.540	9.088	4.070	11.107	7.610	20.195
Benihana's Restaurant	3.96 KSF	3.283	5.003	0.758	2.248	4.041	7.251
	127 Seats	0.102	0.178	0.024	0.042	0.126	0.220
Cheesecake Factory Restaurant	4.10 KSF	44.634	10.562	16.341	9.367	60.975	19.929
	518 Seats	0.353	N/A(1)	0.129	N/A(1)	0.482	N/A(1)
Doubletree Hotel	300 Rooms	0.110	0.359	0.187	0.305	0.297	0.664
Marina Int'l Hotel	134 Rooms	0.269	0.359	0.209	0.305	0.478	0.664
Marina Beach Shopping Center	20.9 KSF	11.579	7.981	11.053	8.307	22.632	16.288
Marina Shopping Center	124.9 KSF	4.540	4.017	4.371	4.181	8.911	8.198
Mariner's Village Apartments	981 DU	0.236	0.458	0.127	0.215	0.363	0.673
Villa Venetia Apartments	224 DU	0.196	0.458	0.103	0.215	0.299	0.673
Medical Building	52.98 KSF	0.491	0.400	1.208	0.743	1.699	1.143
Tradewinds Marina	157 Slips	0.064	0.028	0.318	0.142	0.382	0.170
Santa Monica Yacht Center	201 Slips	0.104	0.102	0.070	0.068	0.174	0.170
Windjammers Marina	422 Slips	0.021	0.092	0.019	0.078	0.040	0.170
Windward Yacht Center	58 Slips	0.138	0.072	0.190	0.098	0.328	0.170

(1)Trip generation rate not available for this unit type.
Shading indicates Marina del Rey rates higher than ITE rates.
KSF = 1,000 square feet
DU = Dwelling Unit

- AM peak hour:

Overall, Marina rates are mostly lower than ITE rates--for 9 of the inbound, 7 of the outbound and 9 of the total rates out of the 14 sites. Marina del Rey rates are generally lower than ITE for restaurants, the bank, the hotels, and apartments but are higher than ITE rates for the medical center and commercial centers. The results are however, mixed for the marinas and yacht clubs--higher in two cases and lower for the other two.

The most significant difference appears to be in the shopping center trip generation. Shopping center rates are 2 to 4 times higher for the Marina sites compared to ITE.

- PM peak hour:

Overall, rates obtained for the Marina del Rey sites for the PM peak hour are closer to ITE rates than for the AM peak hour. Seven out of fourteen sites are higher and seven lower. Marina del Rey rates are lower than the ITE rates at one restaurant, the bank, the hotels, and apartments but are higher for the other restaurant, for the medical center and commercial centers. This is generally a very similar pattern to the AM case. Although mixed again, rates are generally higher for boating uses in Marina del Rey compared to ITE. The most significant difference is for the Cheesecake Factory Restaurant, where the inbound trip rates are over 4 times higher than the ITE rates. This particular restaurant is currently a very popular site and has one of the highest sales volumes, which could explain the high rates. This could be considered to be a non-typical case. It is worth noting that the Santa Monica Yacht Club rates are in both AM and PM cases almost identical to the ITE rates.

- Generalized Overall Summary:

In summary the above comparisons suggest the following generalized patterns.

Marina del Rey Rates Lower than ITE Rates	Marina del Rey Rates Higher than ITE Rates	Mixed Results
hotels	medical center	boating facilities
bank	shopping center	restaurants
apartment		

2.4.5 Investigation and Analysis

To explore possible reasons for higher trip generation rates than ITE, Los Angeles County Department of Beaches and Harbors provided information regarding specific activities at the survey sites. A copy of the memo is included in the Technical Supplement. For the most part, no apparent reasons could be found.

Further investigation into the reasons for the significant differences was conducted in cooperation with the County Regional Planning, Public Works and Beaches and Harbors staff in a working session. To help the discussions, Table 2-10 was developed, which combines all information in Tables 2-8 and 2-9 and also provides trip generation rates from the 3rd edition of the ITE Manual for further comparison.

An additional source of Marina del Rey trip generation surveys was made available by the County. This was a trip generation study undertaken by Barton Aschman Associates in December 1989. A copy of the summary table from the report dated March 19, 1990, is included in Technical Supplement to this report.

Some of the generators which the Barton Aschman study considered are the same as those surveyed in this report. Some of the rates are not consistent with those produced for this report, primarily because the December period is a very different trip generation period to June for seasonally affected land uses. The Barton Aschman study indicates lower rates for the hotel; however, the Marina Shopping Center showed higher trip rates in December but the Marina Beach Shopping Center was significantly lower in December than June. The Villa Venetia and Mariners Village apartment complexes had very close trip rates for both survey periods.

The working group discussion focused on determining the most appropriate approach for the development of customized Marina Trip Rates. The issues included whether or not to use the ITE Trip Generation Manual (4th Edition, 1987) rates, whether to only use the rates developed from the June survey, and finally, whether to combine survey results and develop average rates based on all or some of the June rates with the Barton Aschman rates developed in December 1989.

2.4.6 Conclusions and Recommendations

It was concluded that each type of development should be considered on its own rather than a blanket decision being applied to all generator types. Six types of land uses were considered for development of trip rates which are unique to Marina del Rey:

1. Restaurant
2. Hotel
3. Shopping Center
4. Office
5. Apartments
6. Marina/Yacht Clubs

Table 2-10
Marina del Rey Traffic Study
Comparison of Marina Versus ITE (4th Ed.) Trip Rates AM and PM Peak

	Units	AM PEAK Rate In Marina	AM PEAK Rate In ITE	AM PEAK Rate Out Marina	AM PEAK Rate Out ITE	AM PEAK Rate Total Marina	AM PEAK Rate Total ITE	PM PEAK Rate In Marina	PM PEAK Rate In ITE	PM PEAK Rate Out Marina	PM PEAK Rate Out ITE	PM PEAK Rate Total Marina	PM PEAK Rate Total ITE	PM PEAK Rate Total ITE(2)
Calif. Overseas Bank	5.65 KSF	3.186	4.969	0.885	3.177	4.071	8.146	3.540	9.088	4.070	11.107	7.610	20.195	6.300
Benihana's Rest.	3.96 KSF	0.253	0.818	0.253	0.091	0.506	0.909	3.283	5.003	0.758	2.248	4.041	7.251	6.140
	127 Seats	0.008	0.015	0.008	0.015	0.016	0.030	0.102	0.178	0.024	0.042	0.126	0.220	0.140
Cheesecake Factory	4.10 KSF	8.537	10.702	5.854	8.408	14.391	19.110	44.634	10.562	16.341	9.367	60.975	19.929	10.500
	518 Seats	0.068	N/A(1)	0.046	N/A(1)	0.114	N/A(1)	0.353	N/A(1)	0.129	N/A(1)	0.482	N/A(1)	N/A(1)
Doubletree Hotel	300 Rooms	0.177	0.465	0.153	0.239	0.330	0.704	0.110	0.359	0.187	0.305	0.297	0.664	0.730
Marina Int'l Hotel	134 Rooms	0.321	0.465	0.254	0.239	0.575	0.704	0.269	0.359	0.209	0.305	0.478	0.664	0.730
Marina Bch Center	20.9 KSF	8.900	2.709	8.182	1.161	17.082	3.870	11.579	7.981	11.053	8.307	22.632	16.288	14.420
Marina Shopping Ctr	124.9 KSF	2.578	1.539	2.346	0.659	4.924	2.198	4.540	4.017	4.371	4.181	8.911	8.198	5.900
Mariner's Vill. Apts.	981 DU	0.063	0.096	0.310	0.436	0.373	0.532	0.236	0.458	0.127	0.215	0.363	0.673	0.700
Villa Venetia Apts.	224 DU	0.089	0.096	0.214	0.436	0.303	0.532	0.196	0.458	0.103	0.215	0.299	0.673	0.700
Medical Building	52.98 KSF	0.698	0.328	0.245	0.098	0.943	0.426	0.491	0.400	1.208	0.743	1.699	1.143	N/A(1)
Tradewinds Marina	157 Slips	0.076	0.011	0.529	0.079	0.605	0.090	0.064	0.028	0.318	0.142	0.382	0.170	0.170
Santa Monica Yacht	201 Slips	0.030	0.045	0.030	0.045	0.060	0.090	0.104	0.102	0.070	0.068	0.174	0.170	0.170
Windjammers Marina	422 Slips	0.014	0.040	0.019	0.050	0.033	0.090	0.021	0.092	0.019	0.078	0.040	0.170	0.170
Windward Yacht Ctr.	58 Slips	0.241	0.055	0.155	0.035	0.396	0.090	0.138	0.072	0.190	0.098	0.328	0.170	0.170

(1)Trip generation rate not available for this unit type.
(2)Trip generation rate from 3rd Ed. ITE Trip Generation Manual.
Shading indicates rates higher than ITE (4th Ed.) rates.
KSF = 1,000 square feet
DU = Dwelling Unit

Banks were excluded because this land use is not specifically mentioned in future land use planning for the Marina. In addition, only one bank was surveyed which does not give sufficient justification to deviate from the ITE trip generation rates.

A summary of the recommended Marina del Rey trip generation rates is displayed in Table 2-11. The following paragraphs describe the process and reasons behind the development of the recommended rates for each of these six land uses:

Restaurants:

It was decided to augment the June data with the December data to achieve a sample of five restaurants from which to derive a weighted average trip rate based on number of seats. This was done because generally the number of restaurant seats, rather than square footage, has a closer correlation with trip generation. In addition, it was felt that the restaurants in the Marina area are popular the entire year and the combined surveys would provide a better average rate for future planning use. The resulting recommended Marina rate is higher than the ITE rate.

Hotels:

It was decided to use only the June data for hotel trip generation. Hotels are very seasonal in terms of their guest numbers and the critical period is summer not winter. In support of this, it was discovered that the hotels had a much higher (over 80 percent occupancy) occupancy rate at the time of the survey in June than in December. A weighted average trip rate was developed using the two hotels surveyed in June. Even with the high occupancy rates, both showed lower rates than ITE which suggested that this was a typical trend for hotels in this area. For this reason it was not felt appropriate to use the higher ITE rates.

Shopping Centers:

It was decided to use only the June survey trip rates for shopping centers due to the abnormal shopping patterns that occur in December - before Christmas. Both shopping centers surveyed showed higher trip rates than ITE which suggested that this is a local trend. For this reason, the lower ITE rates were not used. It should be noted that trip rates for shopping centers vary according to the size of the center.

Table 2-12 shows four examples of the trip rates for shopping centers of varying sizes. The linear regression equation from which these rates were developed is shown in Table 2-13 for the AM and PM peak hours. The table also shows the proportion of trips entering and exiting the shopping center.

Table 2-11
Marina del Rey Traffic Study
Recommended Marina del Rey Trip Generation Rates AM and PM Peak

		AM PEAK			PM PEAK		
	Units	In	Out	Total	In	Out	Total
Restaurant	Seats	0.042	0.034	0.076	0.159	0.091	0.250
Hotel	Rooms	0.221	0.184	0.406	0.159	0.194	0.353
Shopping Center	KSF	This rate will vary according to size (1)					
Office	KSF	This rate will vary according to size (2)					
Apartments	DU	0.062	0.287	0.349	0.223	0.103	0.326
Marina	Slips	0.044	0.083	0.126	0.050	0.087	0.137

(1)Refer to Tables 2-12 and 2-13.
(2)Refer to Tables 2-14 and 2-15.

KSF = 1,000 square feet
DU = Dwelling Unit

Table 2-12
Marina del Rey Traffic Study
Shopping Center Trip Rates AM and PM Peak

Size	Units	AM PEAK In	AM PEAK Out	AM PEAK Total	PM PEAK In	PM PEAK Out	PM PEAK Total
50	KSF	4.464	4.120	8.584	6.651	6.390	13.042
100	KSF	2.877	2.655	5.532	4.895	4.703	9.598
150	KSF	2.348	2.167	4.515	4.309	4.140	8.450
200	KSF	2.083	1.923	4.007	4.017	3.859	7.876

Table 2-13
Marina del Rey Traffic Study
Shopping Center Vehicle Trip Generation Equations

Average Weekday	Equation	Proportion of Trips Entering	Proportion of Trips Exiting
AM Peak Hour	Trips = 2.48(X) + 305.15	0.52	0.48
PM Peak Hour	Trips = 6.15(X) + 344.38	0.51	0.49

X = Area in 1,000 gross square feet of leasable area.
KSF = 1,000 square feet

Offices:

No general office was surveyed in June. The Barton Aschman survey in December considered offices which were not adequately occupied. For this reason the ITE trip rates for offices were considered to be appropriate for the Marina area. It should be noted that trip rates for offices also vary according to the size of the development.

Table 2-14 shows a summary of the ITE trip rates for offices for various sizes. A more detailed list of rates is available in the Trip Generation Manual itself (ITE, 4th Edition, 1987). For reference purposes, Table 2-15 shows the ITE linear regression equation from which the rates are calculated.

Apartments:

It was decided to average the trip rates from June and December for apartments because no seasonality was observed and rates were closely clustered in both surveys for this land use. The trip rates were consistently lower than ITE rates. It is known that in general Marina residents tend to be older in average age, have a smaller average household size, fewer school-age children, and a higher rate of working at home, all of which could explain the consistent lower trip generation rates. This, along with a good sample size of five from both surveys, was considered a valid reason to use the lower Marina rates rather than the higher ITE rates.

Marinas/Yacht Clubs:

It was agreed that an overall trip rate for this land use should be developed by averaging all the June and December rates; there was not felt to be significant seasonality in trip generation. This is a very specialized land use and unique to the Marina. Therefore, the rates produced by the surveys were concluded to be more appropriate to the Marina del Rey area than the general ITE rates.

2.5 Area A Analysis

This section addresses land use and transportation planning issues related to Area A within the Marina del Rey area. It reviews the proposed buildout of Area A as allowed by the existing Land Use Plan (LUP)--Plan Summary, Page 4 and Design Principles for New Development Chapter, page II-97, the estimated traffic impacts of the proposed Playa Vista development as reflected in the LUP (Circulation Chapter, Page II-143) and the related proposed transportation improvements (Circulation Chapter, Page II-148). The revised Playa Vista plans and their impact on the existing Marina will also be discussed.

Table 2-14
Marina del Rey Traffic Study
General Office Building Trip Rates AM and PM Peak*

Size	Units	AM PEAK In	AM PEAK Out	AM PEAK Total	PM PEAK In	PM PEAK Out	PM PEAK Total
50	KSF	1.921	0.287	2.209	0.354	1.860	2.214
100	KSF	1.744	0.261	2.004	0.315	1.653	1.968
150	KSF	1.647	0.246	1.894	0.294	1.543	1.837
200	KSF	1.582	0.236	1.819	0.280	1.470	1.749

**ITE Trip Generation Manual (4th Ed.)*

Table 2-15
Marina del Rey Traffic Study
General Office Building Trip Generation Equations*

Average Weekday	Equation	Proportion of Trips Entering	Proportion of Trips Exiting
AM Peak Hour	Ln(T) = 0.86Ln(A) + 1.34	0.87	0.13
PM Peak Hour	Ln(T) = 0.83Ln(A) + 1.46	0.16	0.84

T = Two way volume of traffic or total trip ends
A = Area in 1,000 gross square feet of building area.
Ln = Natural Logarithm
KSF = 1,000 square feet
**ITE Trip Generation Manual (4th Ed.)*

2.5.1 Description of Buildout For Area A as Allowed by the LUP

The general policy for development of Area A was clearly set in the Design Principles for New Development chapter of the LUP (pages II-96, 97), which states that "...the most coastally-oriented use of [Area A] would be to develop it as an extension of the existing Marina, reflecting its mix of uses and its stress upon water oriented recreational and visitor serving uses". The plan further asserts that "...plans to develop this vacant parcel into an extension of the existing Marina should include water-oriented residential uses".

The proposed construction of hotels, restaurants and the extension of Fisherman's Village, in combination with a shoreline promenade linking these uses, was seen as clearly fulfilling these aims. A major new boat basin was proposed by Playa Vista development in Area A surrounded by a mix of visitor serving and residential land uses similar to the existing Marina (see Figure 2-4). New housing development in Area A is required to have 15 percent low and moderate income housing units. Table 2-16 is a summary of the distribution of the designated land uses for the 139 acre (plus 2 acres in parcel 61) Area A as reflected in the Land Use Plan (page II-97):

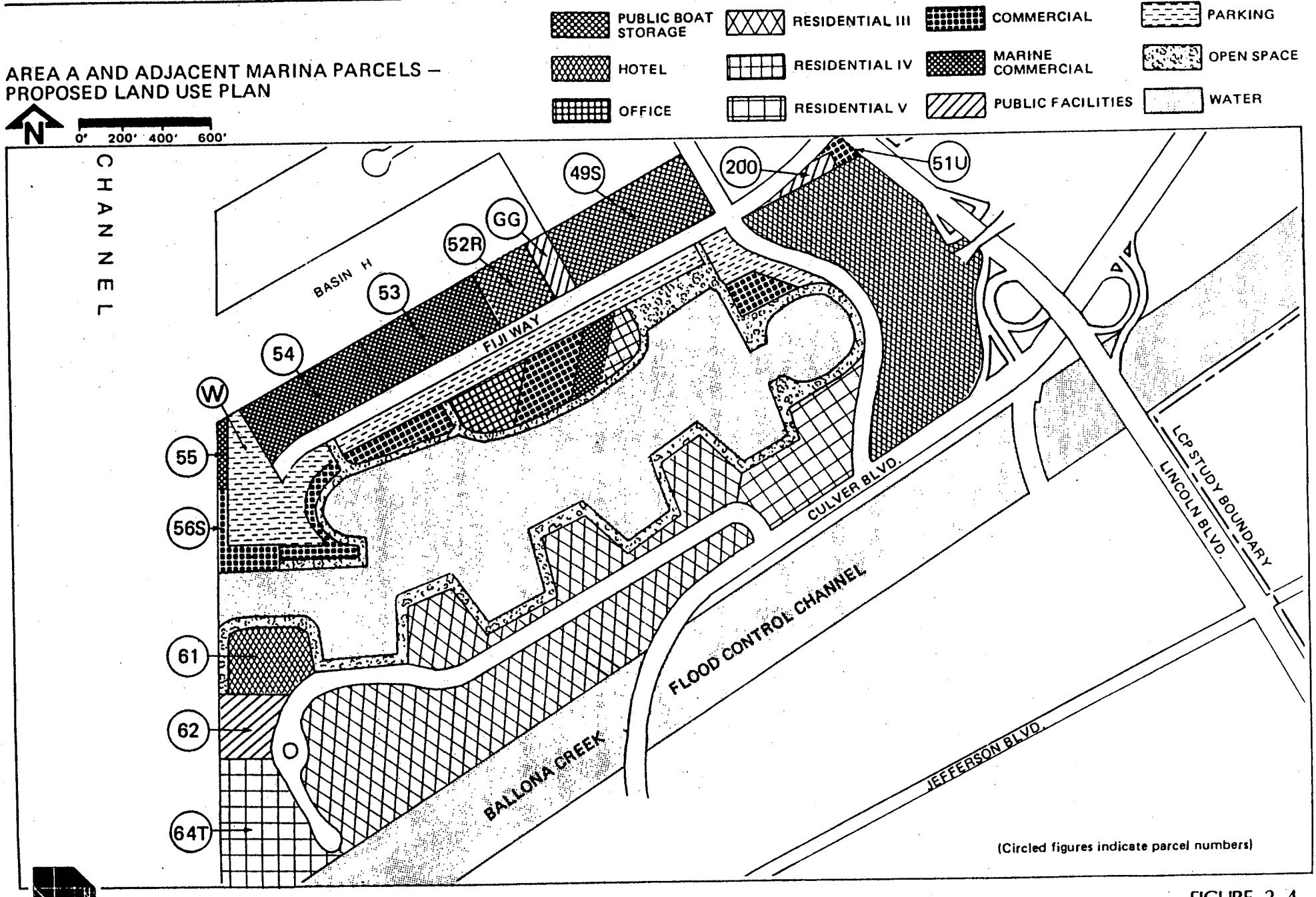
Table 2-16. Area A Land Use Designations and Acreage

Land Use Type	Acres
Water (Marina basin)	40
Hotel	22
Residential III	33
Residential V	4
Commercial (Visitor serving)	5
Mixed Commercial/Marina Commercial/Office/ Residential IV (100 units)	3
Open Space (Shoreline park and south shore mini parks)	15
Parking	7
Roads	12
TOTAL	**141**

The following amounts of new development were proposed by the Playa Vista plan for Area A, in conformity with the buildout allowed in the LUP (page II-143).

Residential	1,226 Dwelling Units
Retail (visitor serving commercial)	200,000 SF
Hotel	1,800 Rooms
Marina	40 Acres (including 26 acres of boat slips)

AREA A AND ADJACENT MARINA PARCELS –
PROPOSED LAND USE PLAN



Source: Local Implementation Program 1990

FIGURE 2-4

2.5.2 Traffic Impacts of the Playa Vista Development on the Marina

The Land Use Plan had ascertained that full development of Areas A, B and C would double the existing level of Marina traffic by adding about 133,600 new trips per day (Circulation Chapter, page II-143).

Access to the proposed developments in Playa Vista would be primarily from Lincoln Boulevard and Culver Boulevard. It had been determined that the full development of Areas A, B and C and future developments in the vicinity of the Marina would seriously overload the existing major street and highway system.

In particular, Admiralty Way was projected to experience an increase in its daily traffic of about 35 to 42 percent. Traffic on Lincoln Boulevard south of Mindanao Way was forecast to increase by 26 to 32 percent, since this link was projected to carry 18 percent of the access traffic from the Playa Vista project. Culver Boulevard would be the most impacted with its traffic volumes projected to increase by 180 to 216 percent, carrying 21 percent of the traffic to and from the east.

This kind of traffic increase was expected to produce severe congestion and overcapacity on Lincoln Boulevard, Culver Boulevard, Jefferson Boulevard and Centinela Avenue, without proper mitigation measures.

2.5.3 Proposed Playa Vista Transportation Improvements

The Land Use Plan identifies eleven transportation improvements associated with the Playa Vista development, which would be necessary to mitigate the traffic impacts (Circulation Chapter, page II-148). These are summarized below:

1. Realign and extend Culver Boulevard as a 6 lane divided road to eliminate the sharp "S" bend just west of Lincoln Boulevard. This would necessitate the construction of a new bridge over Ballona Creek.

2. Design and construct new roads in an environmentally sensitive manner which would attempt to preserve the Ballona Wetlands.

3. Extend Admiralty Way on a curved alignment to the realigned Culver Boulevard when Area A is developed.

4. Extend Falmouth Avenue as a four lane secondary road to join Culver Boulevard and intersect Jefferson Boulevard.

5. Modify the Culver Boulevard/Lincoln Boulevard interchange.

6. Widen Lincoln Boulevard to eight lanes between Hughes Way and Route 90.

7. Develop Jefferson Boulevard as a six lane facility with an additional eastbound lane between Lincoln Boulevard and Centinela Avenue.

8. Reserve right-of-way for a transit linkage along the Lincoln Boulevard corridor.

9. Extend the Marina Freeway just west of Culver Boulevard with a grade separated interchange at their intersection.

10. Extend Bay street north of Ballona Channel as a basic four lane facility. Construct a new bridge across the channel.

11. Prohibit on-street parking during at least the evening peak hours on the south side of Jefferson Boulevard, east of Centinela Avenue to Mesmer Avenue to provide a third eastbound lane for traffic.

2.5.4 Revised Playa Vista Development Plans and Impacts

In February 1989 Maguire Thomas Partners (MTP) became the Managing General Partner of Maguire Thomas Partners-Playa Vista, owners of Areas A, B and D of the Playa Vista property. Continued discussions with the council person representing the 6th City Council District, community groups, citizens and government agencies led to a recognition of significant objections to the existing General and Specific plans for the property. Subsequently, MTP substantially revised the original plans and has submitted a new development plan as reflected in the *Playa Vista-Land Development Counseling Report*, Maguire Thomas Partners, February, 1990. The revised plan is reflected graphically in Figure 2-5, as excerpted from that document.

One of the key objectives of the revised plan was to reduce the overall traffic impacts by reducing office and retail development and redistributing the reduced space throughout the property. In summary, the plan revisions for the entire Playa Vista project include: 1) a reduction of commercial density by eliminating one million square feet of office space in Area D (a 25 percent reduction), 2) a reduction of 350,000 square feet of retail space, including the elimination of a proposed regional shopping center (a 33 percent reduction), and 3) an increase in market rate housing units by 25 percent, and an increase in affordable housing units by 110 percent.

In addition, if the conditions of a pending lawsuit are satisfied, all residential development proposed for the area west of Lincoln Boulevard and south of Jefferson Boulevard in Area B, and residential development on a site adjacent to Playa del Rey will be eliminated and the area will be dedicated for restoration of the Ballona Wetlands Preserve.

Area A - 139.1 acres

Residential	1,226 dwelling units
Retail	200,000 square feet
Hotel	1,800 rooms
Marina	40 acres
Open Space	48 acres

Area B - 336.1 acres

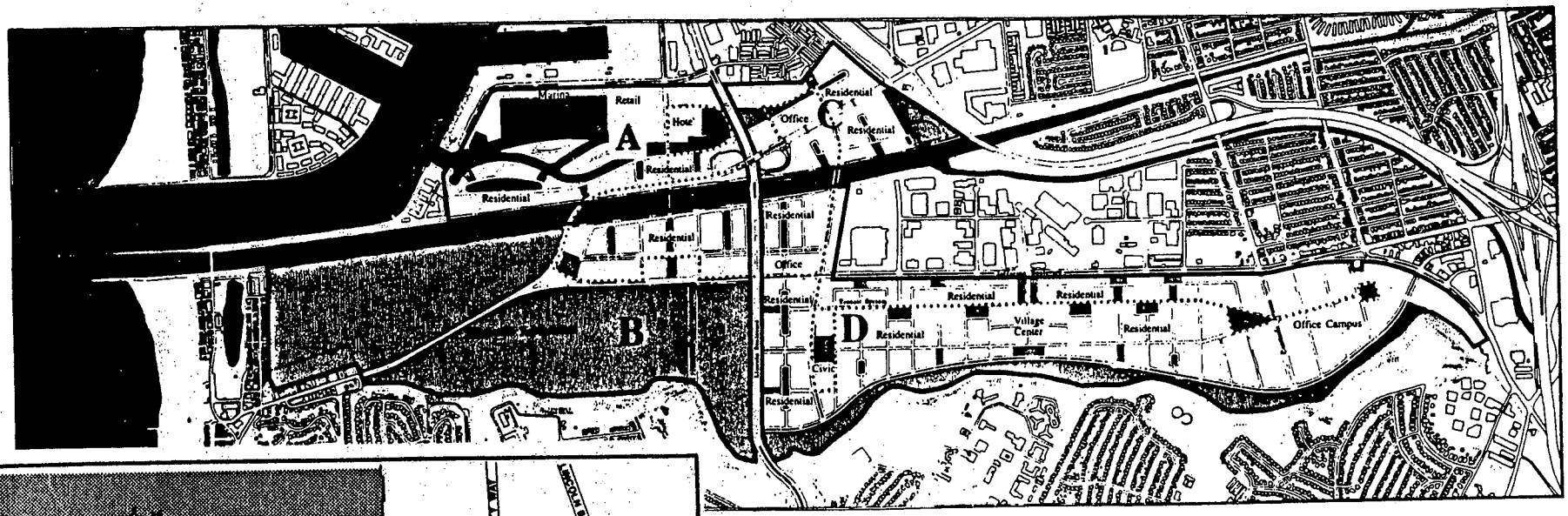
Residential	1,800 dwelling units
Retail	20,000 square feet
Open Space	260 acres

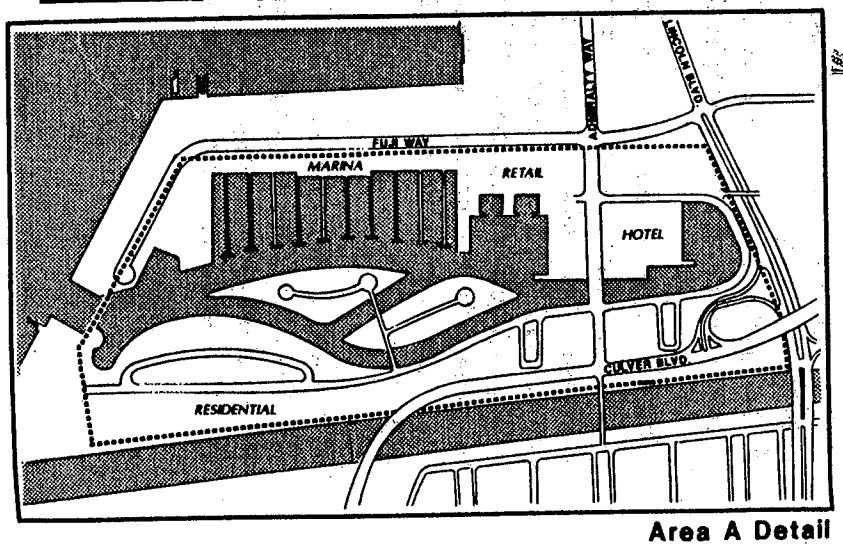
Area C - 69.7 acres

Residential	2,032 dwelling units
Office	900,000 square feet
Retail	150,000 square feet
Open Space	10 acres

Area D - 412.2 acres

Residential	6,677 dwelling units
Office	4,000,000 square feet
Retail	350,000 square feet
Hotel	600 rooms
Open Space	72 acres





Area A Detail

FIGURE 2-5

PLAYA VISTA-Proposed Plan & Area A Detail

SOURCE: Playa Vista Land Development Counseling Center Report 1990

The previously proposed regional shopping center has been deleted and replaced by a smaller scale Village Center centrally located in Area D to be accessible by pedestrians from surrounding residential neighborhoods or by the proposed internal transit. Office development in Area D is focused in the eastern portion of the property, north of Jefferson Boulevard to facilitate freeway access and reduce traffic impacts on Lincoln and Jefferson Boulevards. In addition, the office development in Area C is located north of Culver, with access restricted to Bay Street and Culver Boulevard. Other features include the provision of an internal public transit system and proposed transit services to other activity centers such as Santa Monica, Westwood, Century City and Downtown Los Angeles. In summary, the plan revisions are proposed to achieve an overall reduction in traffic generation and to minimize traffic impact on the Lincoln and Jefferson corridors.

Whereas changes in development proposals for Areas B and D in the revised Playa Vista plan are substantial, plans for Areas A and C are relatively unchanged. Changes to the plans for Area A are mostly related to layout, access and orientation of the land uses. The quantities of the proposed land uses are identical to that prescribed in the LUP. These include a total of 1,226 dwelling units, of which 184 units or 15 percent are designated as affordable housing; 200,000 square feet of retail; 1800 hotel rooms and a 40 acre marina with 600 to 900 boat slips.

Layout and design changes include reconfiguration of the boat basin and inclusion of a pair of residential islands. A continuous network of promenades and walkways would provide public access to the water's edge. The extension of Admiralty Way south of Fiji Way to Culver Boulevard is modified from its former curved orientation to a straight alignment, with an inland tidal lagoon planned between the extension of Admiralty Way and Lincoln Boulevard. Possible impacts of the extension of Admiralty Way are discussed in section 2.3--through traffic analysis.

The new circulation plan for Area A concentrates much of the access for the residential developments on a roadway connecting to the extension of Admiralty Way north of Culver Boulevard, as seen on Figure 2-5 detail. The layout of the previous plan, as indicated in Figure 2-4, however, connected the residential access directly to the realigned Culver Boulevard by a tight curved alignment. The revised plan, although more superior from a design and layout stand-point, may result in increased traffic on Admiralty Way near the entry points to the Marina.

One major modification to the external (to Area A) circulation improvements from the previous plans is the deletion of the northerly extension of Falmouth Avenue and its connection with Culver/Jefferson in Area B. Falmouth would serve as an additional north-south road paralleling Lincoln Boulevard and Vista del Mar. Current traffic studies by others seem to show an insignificant benefit to be gained by this extension from a circulation and traffic relief stand point, relative to cost and public sensitivity of this proposed extension. It is also argued that the changes in proposed uses in the western portions of Area D, and the reduction in density

in Area B, support the elimination of the extension of Falmouth Avenue through the Ballona Wetlands. However, this deletion has not been fully justified to the County's satisfaction.

The extension of Falmouth Avenue and alignment of this extension with the realigned Culver Boulevard (the original plan) has the potential to create a more direct connection between the Marina and the area near Westchester Avenue and Pershing Drive, which may increase through traffic. Whereas, the new proposal, generally maintains the current configuration of the street system in Area B, with Culver being the continuous street and Jefferson intersecting it at a T intersection. In any case, it is not anticipated that this connection will have a significant impact on increasing traffic through the Marina, although it would increase traffic along Lincoln Boulevard to the Marina.

As indicated in the previous discussions, although reduced through the revised plans, it is inevitable that traffic generated from the Playa Vista project will have a significant impact on the circulation system in the vicinity of the Marina. Impacts will be focused on Lincoln Boulevard, Culver Boulevard and Jefferson Boulevard, the main traffic arteries of the project.

Impacts on the Marina will be mainly related to reduced access capacity at the three major access points to the Marina at Lincoln Boulevard. Previous Playa Vista studies indicated that up to 10 percent of Playa Vista traffic may be distributed on Lincoln Boulevard and 5 percent on Admiralty Way, both north of Fiji. Revised traffic distribution figures were not available from the MTP traffic consultants to allow for an assessment of changes in impacts, due to revised plans. However, as discussed in the previous section, reductions in commercial and office development intensity, a more self-contained project, and changes in location and access orientation for major traffic generators, would suggest reduced traffic impacts and diversion of trips away from the immediate Marina area towards the freeways and regional facilities. These strategies were originally suggested, in Gruen Associates' reviews of the original Playa Vista plans in 1982 as possible mitigation measures for reducing traffic impacts.

The EIR and traffic impact documents currently being prepared by MTP should address the implications of the developments proposed for Areas A, B, C and D in the most comprehensive manner. These documents were not available at the time of this study for review. Any assessment of specific impacts of the Playa Vista development on the Marina's circulation system will be at best speculative at this juncture.

2.6 Phasing Analysis

This section reviews the phasing schedules proposed in the "Research Analysis" section of the LUP's Design Principles for New Development chapter (pages II-75-77). It discusses the number of peak hour vehicle trips which could be generated in Phase II development and the implications of the revised trip generation rates developed in this study (see section 2.4).

Traffic capacity has been considered as the key factor in determining intensities and phasing of additional development in the Marina. Development intensities in each phase are linked to additional traffic capacity through access and circulation improvements.

As indicated in the LUP (page II-75), Phase I consisted of three hotel development proposals: the Marina Beach Hotel, the Marina Plaza Hotel and the Marina (Ritz-Carlton) City Hotel. The Marina del Rey Traffic Study by Gruen Associates in 1982 had indicated that sufficient reserve capacity existed within the Marina to accommodate increased traffic from Phase I proposals. Subsequently, these proposals were approved and the first two were constructed since the publication of the LUP.

As indicated in the LUP (page II-76), Phase II development consisted of a mix of visitor serving uses, residential and office developments as summarized in Table 2-17. Recognizing that following the completion of Phase I developments, the Marina's circulation system would be at the threshold of acceptable operating conditions with no further reserve capacity, approval of these developments were made contingent upon a number of traffic system improvements which would accommodate an additional 2,400 peak hour trips, including construction of the Marina Bypass. Based on peak hour trip generation rates referenced in the LUP (page II-76) Table 2-17 also indicates the number of allowable trips by each of the planned Phase II developments.

Additional boat slip development in the LUP was indicated in terms of acres of marina. However, trip generation rates were based on boat slips (0.3 trips per boat slip). Working back from the total allowable 2,400 additional peak hour trips, a total number of 515 additional boat slips was derived, which would produce 155 peak hour trips bringing the total Phase II development traffic to 2,400 peak hour trips.

The "first-come, first served" approach to granting development proposals in Phase II would be an acceptable approach if it pertained to each category of development type separately. The disadvantage of this approach is that it will encourage a "capacity grab" attitude which may not produce projects which are compatible to the area or consistent with County goals and objectives.

One alternative approach might be to stage the amount of development permitted in each development category, where a certain percentage of the total planned Phase II development would be permitted in each stage in concert with needed capacity improvements. This method will provide a more controlled and monitored development process. As an example of this method, on September 12, 1990, the California Coastal Commission certified the County's Implementation Program whereby 10 percent of the proposed Phase II development (generating up to 240 peak hour trips) could proceed without building the Bypass, as long as certain findings could be made.

Table 2-17

Allowable Development in Phase II
Constrained by 2400 PM Peak Hour Trips

Development	Units	PM Peak Hour Trip Rates	PM Peak Hour Trips	Trip Share (%)
Hotel Rooms	740	0.70	518	21.6
Restaurant Seats	450	0.07	32	1.3
Boat Slips	515	0.30	155	6.4
1000 sq ft Commercial	14	14.70	206	8.6
Residential Units	1500	0.70	1050	43.8
1000 sq ft Office	200	2.20	440	18.3
Total			2400	100.0

Note: Marine Commercial can develop in Phase II buildout

Another approach would be to allocate the additional development by giving priority to one or more development category. This prioritization may be based either on intensity of trip generation or consistency with development or economic policies. For example, the different amounts of each type of development which produce the same number of peak hour trips could be determined. Then through economic and/or policy considerations a decision could be made as to which one is more desirable and should receive development priority. As an example of policy based prioritization, in keeping with Coastal Commission and County of Los Angeles development objectives, preference could be given to visitor-serving uses.

As documented in Section 2.4, Trip Generation Analysis, this study has analyzed and made recommendations on revised peak hour trip generation rates to be used for additional Marina del Rey development.

Using these revised rates and the quantities of additional Phase II development from the LUP, Table 2-18 indicates the total PM peak hour traffic generated from planned Phase II developments. The revised trip rates are in some cases higher and in other cases lower than the rates cited in the LUP. In aggregate, however, as shown in Table 2-18, Phase II developments as proposed in the LUP produce only 1,600 additional PM peak hour trips with the new rates.

Table 2-18

PM Peak Hour Trip Generation for Phase II Development Using New Rates

Development	Units	PM Peak Hour Trip Rates	PM Peak Hour Trips	Trip Share (%)
Hotel Rooms	740	0.353	261	16.3
Restaurant Seats	450	0.250	113	7.0
Boat Slips	515	0.137	71	4.4
1000 sq ft Commercial	14	22.632	317	19.8
Residential Units	1500	0.326	489	30.6
1000 sq ft Office	200	1.749	350	21.9
Total			1600	100.0

Note: Marine Commercial can develop in Phase II buildout

3.0 EXISTING CONDITIONS AND TRAFFIC FORECASTS

This chapter describes the methodology used in development of traffic forecasts and evaluation of operating conditions at study area intersections which is the primary method of evaluating the impacts of land use scenarios.

3.1 Methodology

The technical analysis for this study was primarily undertaken using a local area traffic impact analysis model specifically developed for this study. This model is based on the TRACS (TRaffic Analysis Computer Software), developed by DKS Associates in 1986.

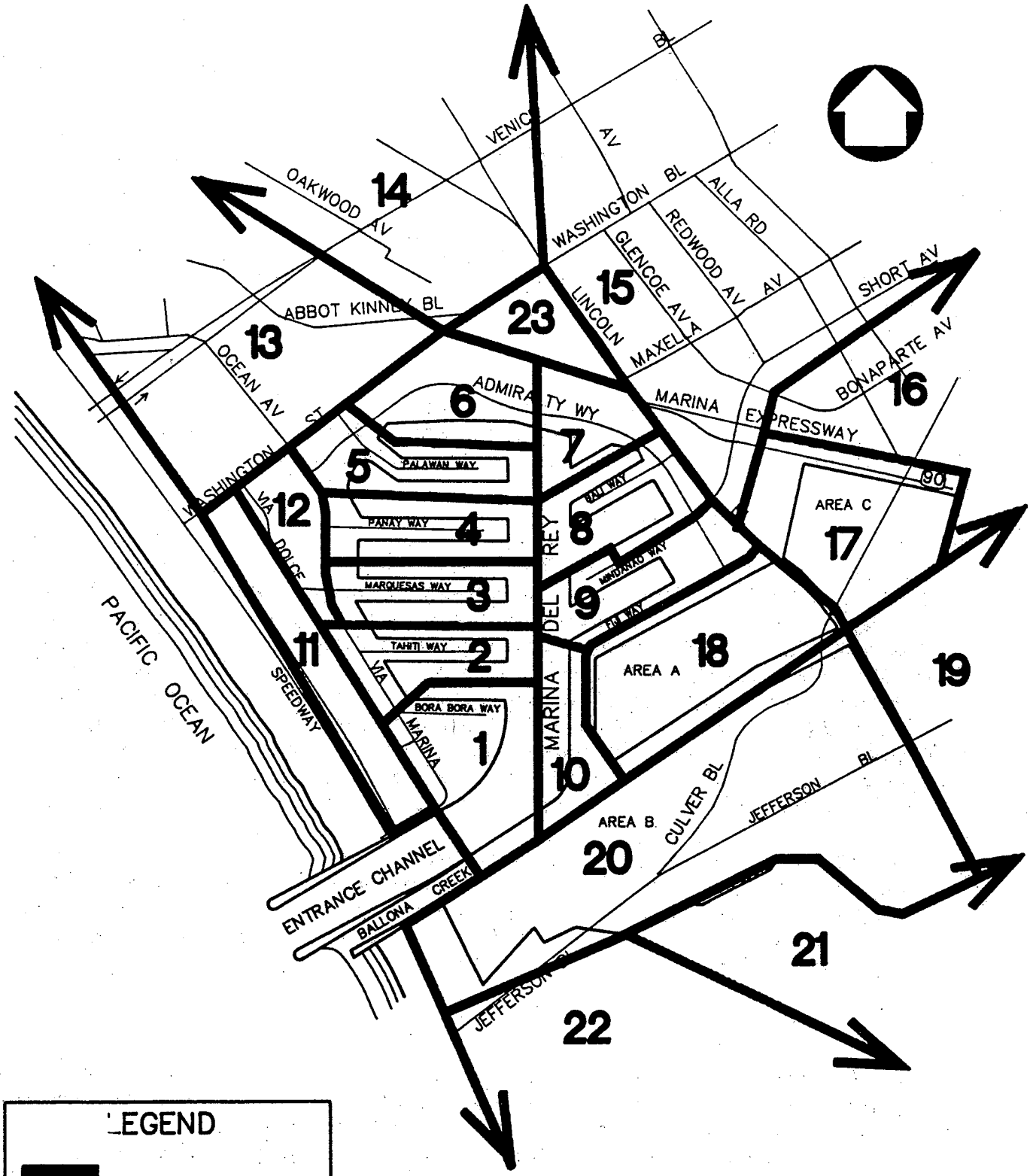
3.1.1 Zones and Intersections

The two main components of the TRACS model are the study area zones (units of trip generation) and study intersections. For analytical efficiency purposes it was necessary to aggregate the Marina parcels (indicated in Figure 1-2) into logical and practical groupings. A range of alternative zoning arrangements was proposed, discussed with project review members, evaluated and subsequently modified. Alternatives considered internal parcelization, land use arrangements as well as location of cumulative projects for development of external zones. The final configuration was arrived which divided the study area into 23 traffic analysis zones (TAZ) as shown in Figure 3-1. This arrangement provided for a Marina-focused system which has a greater zonal density inside the Marina area and provides distinct zoning for the areas A, B, C and D in and around the Marina which are of special importance.

The previously discussed nineteen study intersections (see Figure 1-3) were coded into the model. Field collected data on the geometric layout of each intersection and operational features such as signal phasing and control were entered into the model. Collected AM and PM peak hour traffic counts, as described in Chapter 2, were also entered as basic inputs for each intersection.

3.1.2 Trip Generation

The basic units of trip generation in the traffic impact model are the traffic zones. Trip generation can be accomplished either internally through application of trip generation rates to zonal land use quantities or by directly inputting the total number of inbound and outbound trips to and from each zone. A combination of both techniques was used in this study.



LEGEND

X TRAFFIC ANALYSIS ZONE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

TRAFFIC ANALYSIS ZONES

FIGURE 3-1

3.1.3 Trip Distribution and Assignment

Trip distribution is based on development of directional distribution percentages for trips to and from the study zones to the assumed gateways to the study area. Traffic assignment is accomplished through specification of travel paths between each zone and each gateway.

Trips generated from internal as well as external zones were distributed around the network in a way which was felt to be the most logical paths taken by actual traffic. This was an iterative process which used several sources for verification of assumptions. The methods included:

a) directional traffic distribution from previous studies,

b) professional judgement, and local knowledge on possible distribution of trips to and from the Marina,

c) traffic distribution by relative proportions of traffic count volumes on major arterials near the model gateways, and

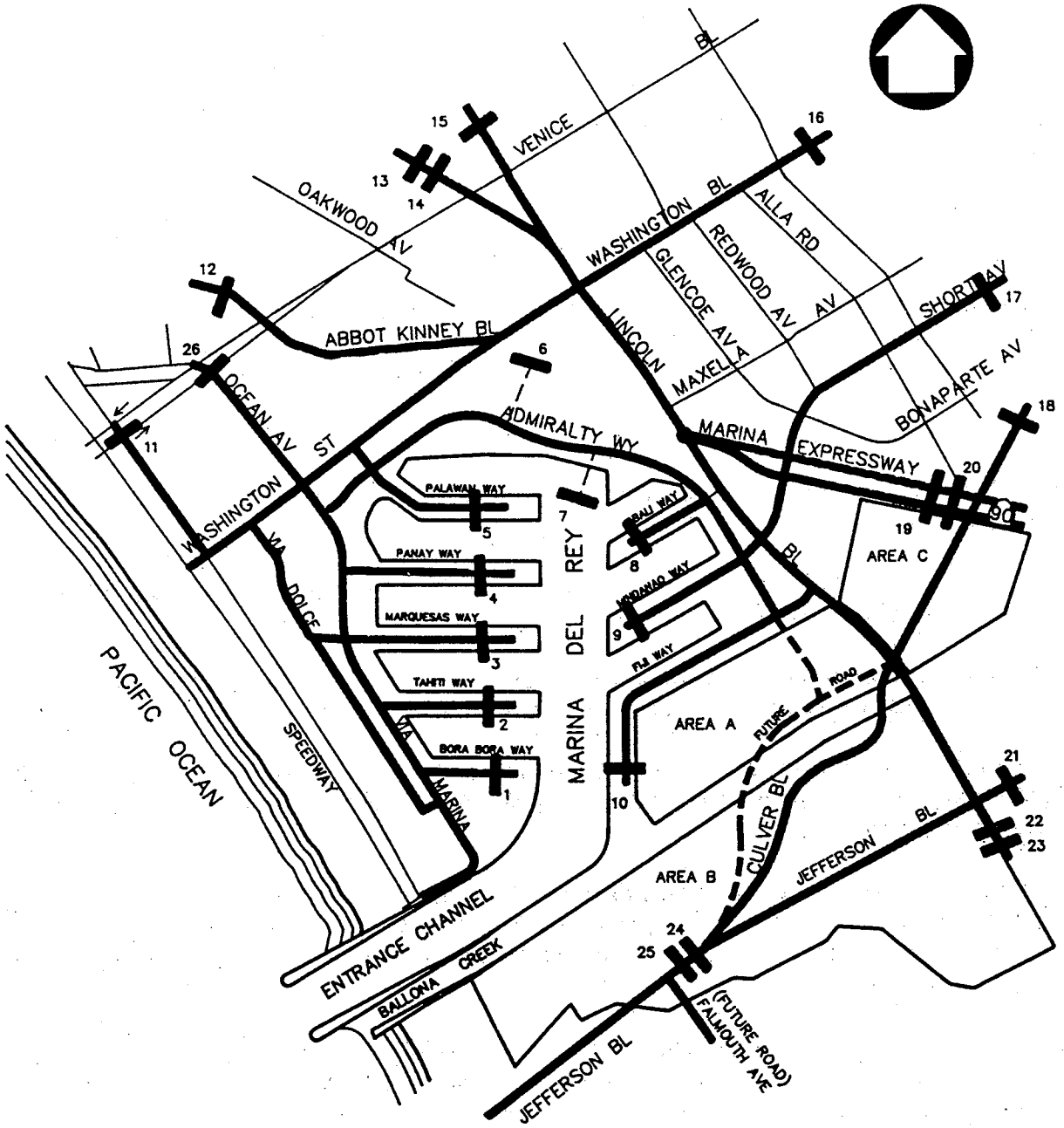
d) regional origin/destination information for trips using trip distributions from southern California regional travel demand model.

All methods generally produced highly consistent results. Following review and discussions with the project team, a combination of the information was used to arrive at the final directional distribution percentages.

In addition, as the model work continued to progress it became necessary to revise the distribution assumptions to achieve better travel patterns. This was not only based upon engineering judgement, but also local knowledge and experience of the Marina area from the project team.

There was a need in this project to model internal Marina trips. Therefore a denser zone system was employed within the Marina area. It was assumed that peak hour zone to zone travel between the residential zones would be very small and can be ignored. However travel between residential zones and the commercial zones on the north-eastern quadrant of Admiralty Way were assumed to be more significant. As a proportion of the total trip generation from these Marina based zones, the internal element was assumed to be 5 percent during the AM and PM peak hours, as derived from the regional model data related to the Marina area.

Figure 3-2 shows the existing and the future network which was considered in the analysis as well as the location of gates into the study area. These gates are basically entry points onto the local road network. Additional gates were provided in the Marina itself to allow for internal trip evaluation. A total of 22 gates was provided.



LEGEND

- MODEL NETWORK
- FUTURE ROAD
- DUMMY ROAD
- MODEL GATE
- xx GATE NUMBER

NO SCALE

MARINA DEL REY TRAFFIC STUDY

STUDY NETWORK AND GATES

FIGURE 3-2

It should be noted that certain roads have multiple gates such as Lincoln Boulevard and the Marina Expressway. This is done to allow for multiple path assignments. Assumed traffic distribution percentages for all zones to and from each gateway are provided in tables in the Technical Supplement.

3.1.4 Intersection Capacity Analysis

The intersection capacity evaluation methodology within the TRACS model incorporates the Critical Movement Analysis (CMA) procedure based on the planning method in Transportation Research Board, *Special Report 212, Interim Materials on Highway Capacity*. The intersection capacity analysis module within the model calculates the critical volumes, volume/capacity ratios and levels of service for each intersection and allows for interactive modifications to basic inputs for identification of mitigation measures and other sensitivity tests.

3.2 Existing Intersection Levels Of Service

Using the collected existing traffic volumes and the intersection geometrics and operating characteristics, the existing intersection levels of service (LOS) and volume to capacity ratios (V/C) were calculated for the AM and PM peak hours for the 19 study intersections.

The existing LOS and V/C ratios for both AM and PM peak periods are presented in Table 3-1. The results are also shown in Figures 3-3 and 3-4.

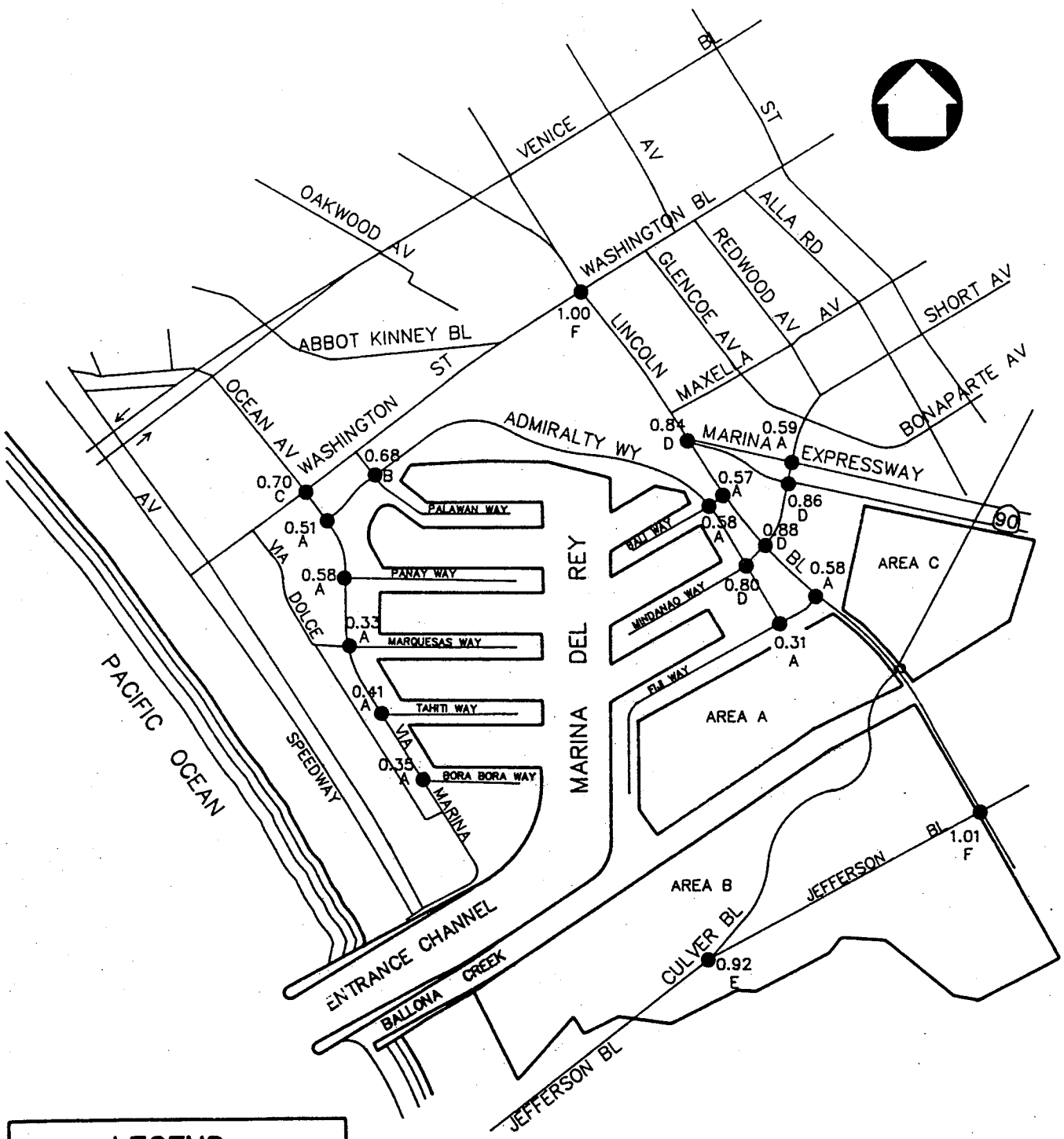
The analysis indicated that PM peak conditions are significantly worse than the AM. Fourteen of the nineteen study intersections are shown to operate at levels of service D (0.85) or better in the AM peak hour, with only three intersections at LOS E and F. On the other hand, in the PM peak hour only nine intersections operate at LOS D (0.85) or better and nine at LOS E and F.

In the AM peak hour, the five intersections which operate worse than LOS D (0.85) are:

Lincoln Boulevard and Washington Boulevard,
Lincoln Boulevard and Mindanao Way,
Mindanao Way and Marina Expressway EB Ramp,
Culver Boulevard and Jefferson Boulevard, and
Lincoln Boulevard and Jefferson Boulevard

TABLE 3–1
Marina del Rey Traffic Study
Existing Conditions

Intersection	AM PEAK V/C	AM PEAK LOS	PM PEAK V/C	PM PEAK LOS
Via Marina & Washington St	0.70	C	0.96	E
Via Marina & Admiralty Way	0.51	A	0.83	D
Via Marina & Panay Way	0.58	A	0.53	A
Via Marina & Marquesas Way	0.33	A	0.39	A
Via Marina & Tahiti Way	0.41	A	0.40	A
Via Marina & Bora Bora Way	0.35	A	0.33	A
Palawan Way & Admiralty Way	0.68	B	1.06	F
Lincoln Blvd & Washington Blvd	1.00	F	1.19	F
Lincoln Blvd & Marina Expwy	0.84	D	0.95	E
Admiralty Way & Bali Way	0.58	A	0.99	E
Lincoln Blvd & Bali way	0.57	A	0.82	D
Admiralty Way & Mindanao Way	0.80	D	0.99	E
Lincoln Boulevard & Mindanao Way	0.88	D	0.90	E
Admiralty Way & Fiji Way	0.31	A	0.51	A
Lincoln Blvd & Fiji Way	0.58	A	0.83	D
Mindanao Way & Marina Expwy EB	0.86	D	0.93	E
Mindanao Way & Marina Expwy WB	0.59	A	0.81	D
Culver Blvd & Jefferson Blvd	0.92	E	1.00	F
Lincoln Blvd & Jefferson Blvd	1.01	F	0.99	E



LEGEND

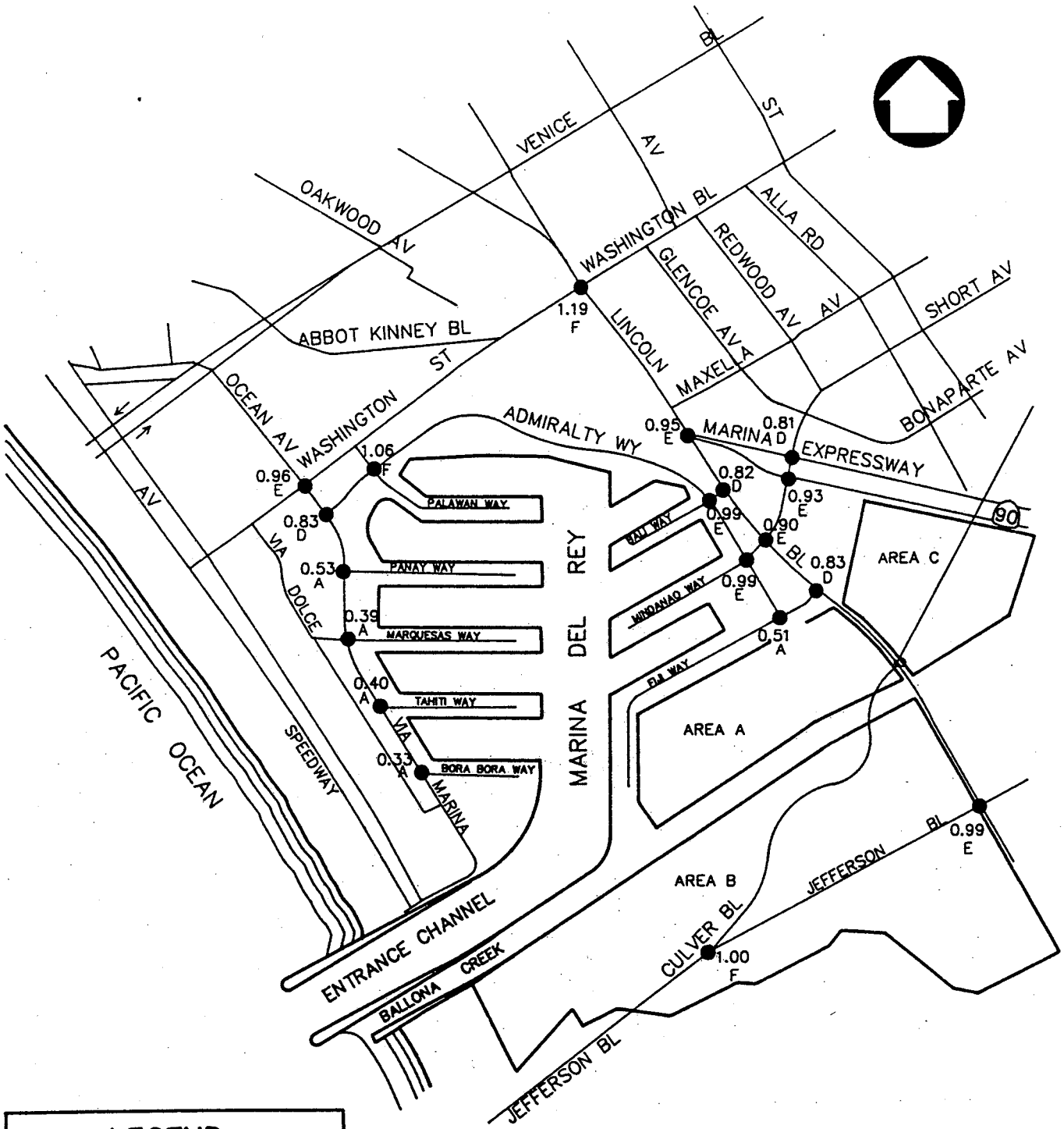
- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

EXISTING INTERSECTIONS LEVELS OF SERVICE AM PEAK

FIGURE 3-3



LEGEND

●	STUDY INTERSECTION
X.XX	V/C RATIO
A – F	LEVEL OF SERVICE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

EXISTING INTERSECTIONS LEVELS OF SERVICE PM PEAK

FIGURE 3-4

In the PM peak hour, ten intersections operate worse than LOS D (0.85):

Via Marina and Washington Street,
Palawan Way and Admiralty Way,
Lincoln Boulevard and Washington Boulevard,
Lincoln Boulevard and Marina Expressway,
Admiralty Way and Bali Way,
Admiralty Way and Mindanao Way,
Lincoln Boulevard and Mindanao Way,
Mindanao Way and Marina Expressway EB Ramp,
Culver Boulevard and Jefferson Boulevard, and
Lincoln Boulevard and Jefferson Boulevard.

3.3 Ambient Growth Levels of Service (Year 2010)

3.3.1 Methodology

Ambient growth of traffic represents the natural "background" growth in traffic volumes which is mainly attributable to regional traffic growth and the collective effects of many small developments. The collected traffic volumes for the 19 study intersections which were based on the existing AM and PM peak hour traffic counts had to be growth-factored to represent the natural growth of background traffic volumes to the horizon year of 2010.

Based on review of historical traffic data within the Marina an annual growth rate of 0.5 percent was used to account for the growth of ambient traffic for the intersections which were entirely within the Marina. Similarly, a rate of 2 percent was used to develop the ambient traffic volumes for other study intersections outside the Marina. This figure was also derived from historical data and is the figure recommended and used by the City of Los Angeles for all Coastal Corridor projects and other studies. Therefore, over 20 years, by the year 2010, these growth factors represent a total of 10 and 40 percent growth for internal and external intersections respectively.

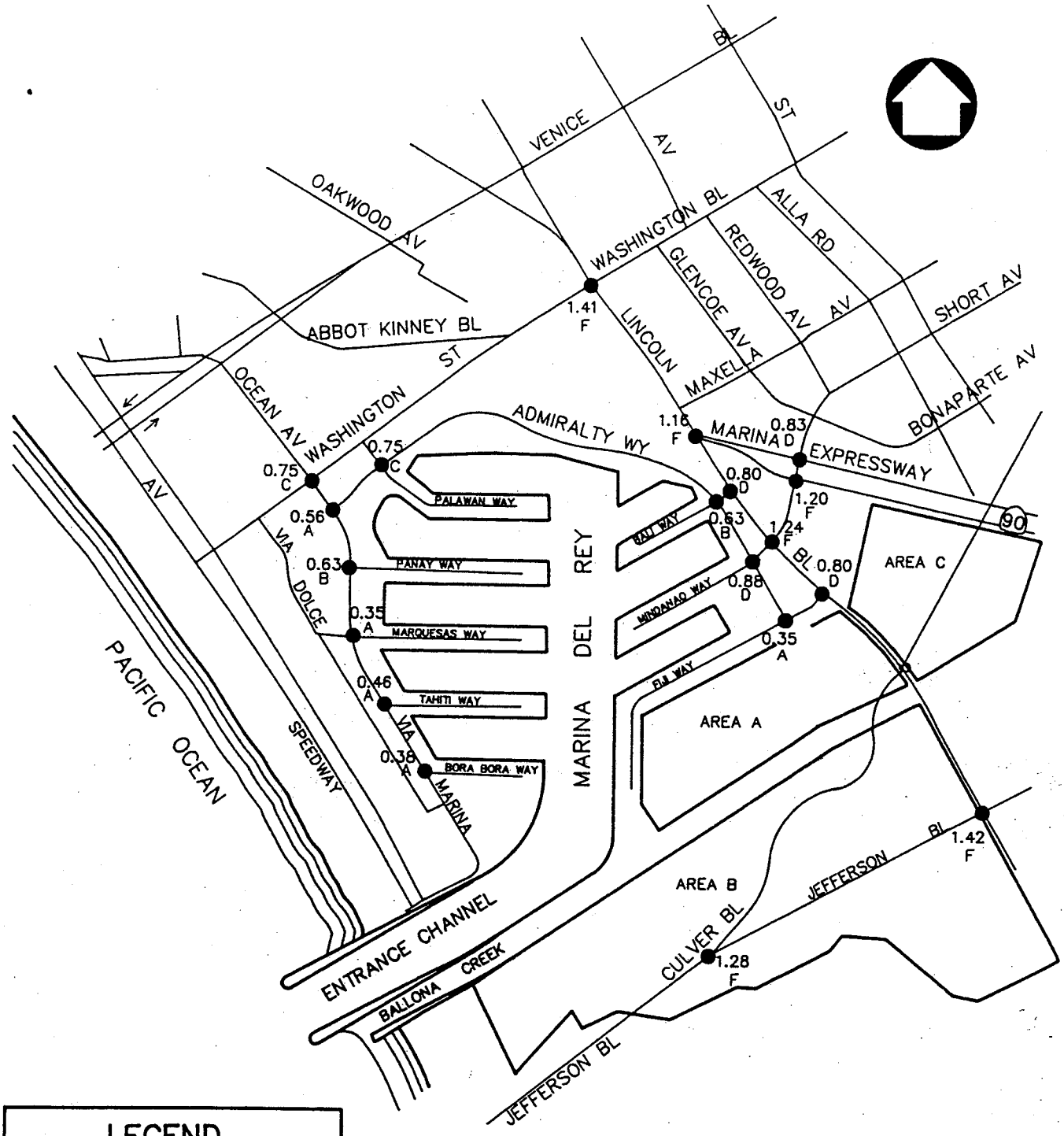
3.3.2 Analysis

These projected 2010 ambient traffic volumes were analyzed with the model to compute future ambient intersection levels of service. Intersection configurations in the road network were assumed unchanged from the existing case.

The calculated ambient LOS and V/C ratios for the AM and PM peak hours for the year 2010 are presented in Table 3-2. The results are also shown in Figures 3-5 and 3-6.

TABLE 3–2
Marina del Rey Traffic Study
Ambient Conditions

Intersection	AM PEAK V/C	AM PEAK LOS	PM PEAK V/C	PM PEAK LOS
Via Marina & Washington St	0.75	C	1.05	F
Via Marina & Admiralty Way	0.56	A	0.91	E
Via Marina & Panay Way	0.63	B	0.59	A
Via Marina & Marquesas Way	0.35	A	0.44	A
Via Marina & Tahiti Way	0.46	A	0.43	A
Via Marina & Bora Bora Way	0.38	A	0.37	A
Palawan Way & Admiralty Way	0.75	C	1.16	F
Lincoln Blvd & Washington Blvd	1.41	F	1.67	F
Lincoln Blvd & Marina Expwy	1.16	F	1.34	F
Admiralty Way & Bali Way	0.63	B	1.08	F
Lincoln Blvd & Bali way	0.80	D	1.14	F
Admiralty Way & Mindanao Way	0.88	D	1.10	F
Lincoln Boulevard & Mindanao Way	1.24	F	1.26	F
Admiralty Way & Fiji Way	0.35	A	0.55	A
Lincoln Blvd & Fiji Way	0.80	D	1.18	F
Mindanao Way & Marina Expwy EB	1.20	F	1.32	F
Mindanao Way & Marina Expwy WB	0.83	D	1.14	F
Culver Blvd & Jefferson Blvd	1.28	F	1.40	F
Lincoln Blvd & Jefferson Blvd	1.42	F	1.38	F



LEGEND

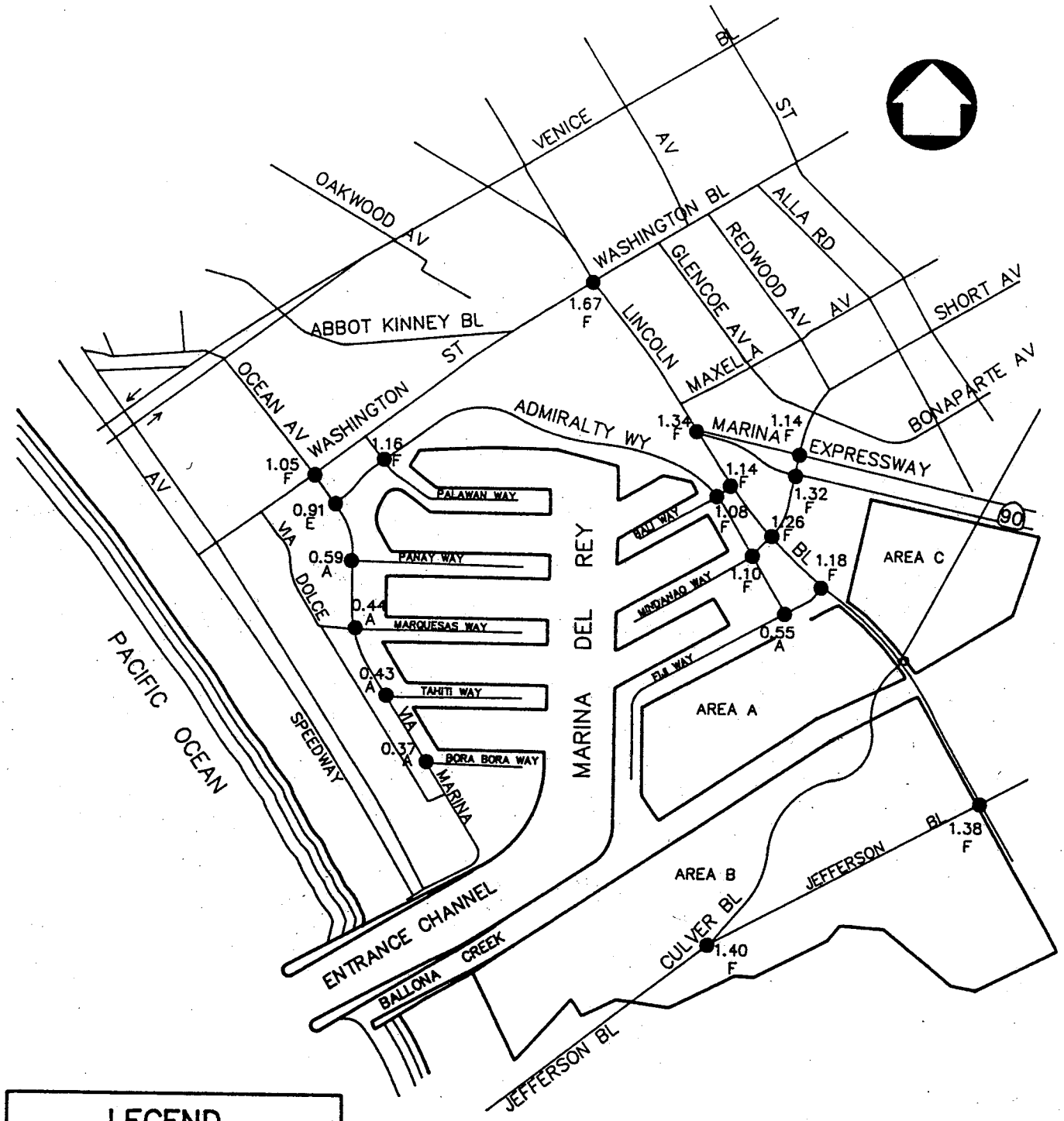
●	STUDY INTERSECTION
X.XX	V/C RATIO
A – F	LEVEL OF SERVICE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

AMBIENT GROWTH LEVELS OF SERVICE AM PEAK

FIGURE 3-5



LEGEND

●	STUDY INTERSECTION
X.XX	V/C RATIO
A – F	LEVEL OF SERVICE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

AMBIENT GROWTH LEVELS OF SERVICE PM PEAK

FIGURE 3-6

Given the current congested conditions at a number of study intersections and the considerable increase represented by the assumed ambient growth factors (especially the 40 percent for the external intersections) it was not surprising to see a significant worsening of conditions from the existing situation. In the AM peak hour, 11 intersections would operate at LOS D or better, with six intersections operating at LOS E or F. The PM peak hour was again considerably worse than AM with only five intersections operating at LOS D (0.85) or better and 14 intersections at LOS E or F.

The following intersections would operate worse than LOS D (0.85) in the AM peak hour:

Lincoln Boulevard and Washington Boulevard,
Lincoln Boulevard and Marina Expressway,
Admiralty Way and Mindanao Way,
Lincoln Boulevard and Mindanao Way,
Mindanao Way and Marina Expressway EB Ramp,
Culver Boulevard and Jefferson Boulevard, and
Lincoln Boulevard and Jefferson Boulevard.

In the PM peak hour the following intersections would operate worse than LOS D (0.85):

Via Marina and Washington Street,
Via Marina and Admiralty Way,
Palawan Way and Admiralty Way,
Lincoln Boulevard and Washington Boulevard,
Lincoln Boulevard and Marina Expressway,
Admiralty Way and Bali Way,
Lincoln Boulevard and Bali Way,
Admiralty Way and Mindanao Way,
Lincoln Boulevard and Mindanao Way,
Lincoln Boulevard and Fiji Way,
Mindanao Way and Marina Expressway EB Ramp,
Mindanao Way and Marina Expressway WB Ramp,
Culver Boulevard and Jefferson Boulevard, and
Lincoln Boulevard and Jefferson Boulevard.

3.4 Cumulative Projects Levels Of Service (2010)

3.4.1 Methodology

To assess the overall year 2010 conditions, other known approved and/or planned projects within the general area of the Marina were considered. The primary source for these cumulative

projects was a report[1] and an accompanying map developed by the County. Overall, this future development project list represented five general groups of land uses, with the following total quantities:

1. Residential Units - 13,924 Units
2. Hotel Units - 6,516 Units
3. Retail Square Footage - 2,238,952 Square Feet (SF)
4. Office Square Footage - 11,465,460 SF
5. Other Use Square Footage - 2,677,460 SF

The list of cumulative projects was reviewed by staff and was finalized through coordination with the County staff and is presented in the Technical Supplement.

All cumulative projects were located within their appropriate traffic impact model zones. The model was then used to simulate the effects of the cumulative traffic based on the Institute of Traffic Engineers (ITE) Trip Rates (1987). Each project was analyzed to determine the number of new trips it would generate. Trips generated by retail establishments were reduced by 10 percent to account for pass-by trips. These trips were allocated to the network using trip distribution and assignment procedures similar to the ones described in Section 3.1.3. These included a combination of methods, including review of other documents, local knowledge, and, most importantly, trip distribution patterns derived from the processing of zonal origin-destination trip tables from the regional model.

A modified road network was used for this analysis to reflect the proposed roadway changes associated with future local projects. This assumed an extension of Admiralty Way south of Fiji Way to connect with the realigned Culver Boulevard as proposed by Maguire Thomas development for the Playa Vista property. In addition, Falmouth Avenue was assumed to link with Jefferson Boulevard. This future network is indicated in Figure 3-2.

Based on a detailed analysis of the provided traffic movements and travel patterns served by these future roadway modifications, possible traffic movements and volumes which would be diverted to and use these new links were determined. In addition, through the use of the regional origin-destination travel data for zones surrounding the Marina, zone to zone travel patterns were analyzed to estimate the possible usage of the new roadway links in the future.

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1 *City Encroachment on Marina del Rey, New and Proposed Development*, January 1988 - November 1989. Robert L. Wicke and Michael P. Thayer. December 1989.

3.4.2 Analysis

Traffic generated by cumulative projects was superimposed on the ambient traffic and intersection operating conditions were evaluated. The LOS and V/C ratios for the year 2010 cumulative conditions are presented in Table 3-3. A comparison of the V/C ratios and LOS for the 2010 Ambient vs. the 2010 Cumulative Scenarios for the AM peak is shown in Table 3-4. Table 3-5 presents the corresponding values for the PM peak. The results are also shown in Figures 3-7 and 3-8.

As can be seen on Table 3-3, six intersections would operate at LOS D (0.85) or better in the AM peak and only four in the PM peak. A large number of intersections are shown to operate at LOS F, 10 in the AM peak and 15 in the PM peak.

It should be pointed out that no mitigation measures are assumed at the study intersections for this analysis. There will be a broad range of mitigations required by many of the large developments on the list of cumulative projects. Therefore, indicated levels of service, mainly for intersections outside the Marina, are shown to be worse than anticipated. In addition, projects under the City of Los Angeles Coastal Transportation Corridor Specific Plan, possible light rail, transit service, and transportation demand management programs would provide mitigations, which would result in better operating conditions and improved levels of service at these intersections.

TABLE 3-3
Marina del Rey Traffic Study
Cumulative Traffic Conditions

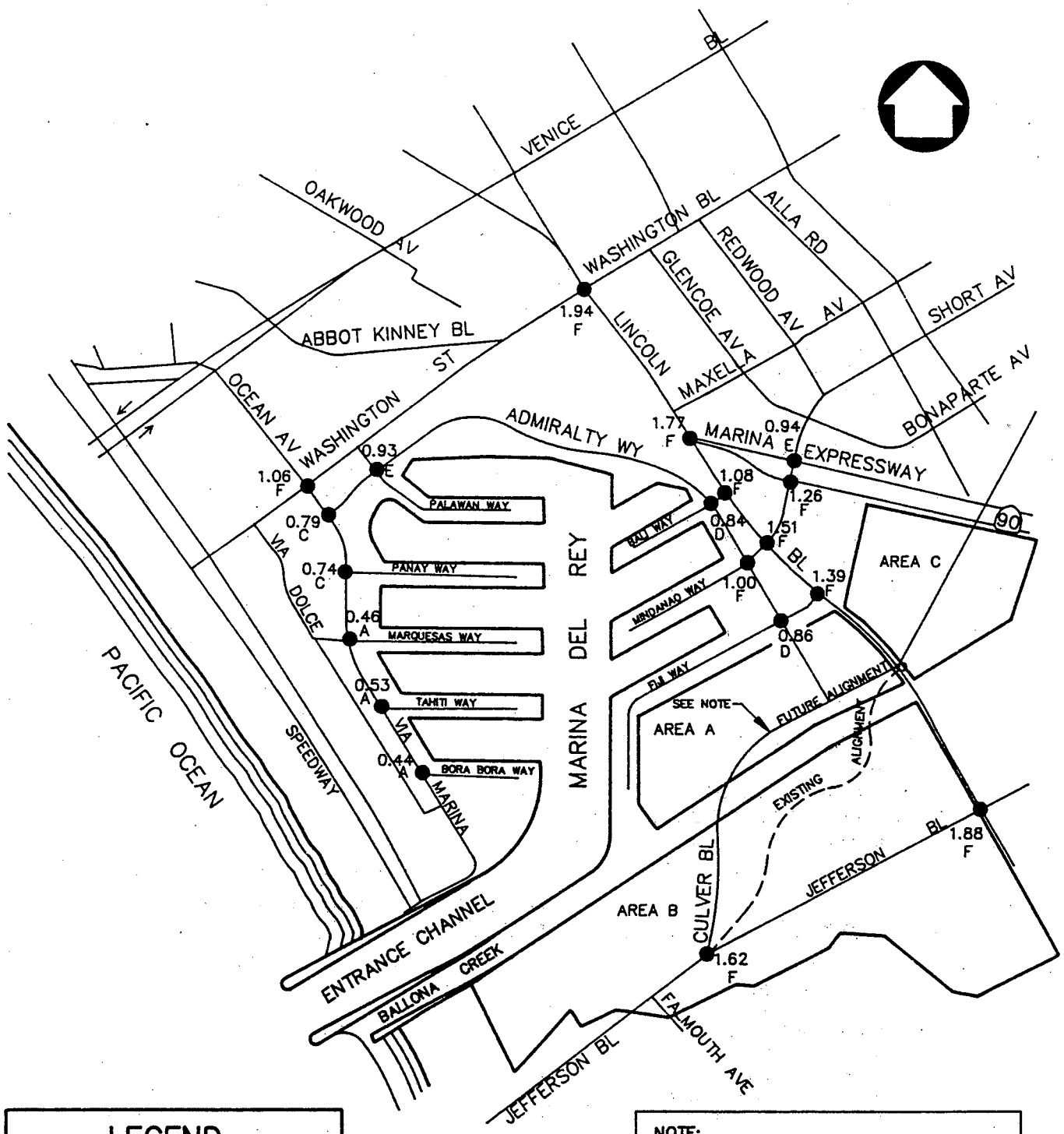
Intersection	AM PEAK V/C	AM PEAK LOS	PM PEAK V/C	PM PEAK LOS
Via Marina & Washington St	1.06	F	1.68	F
Via Marina & Admiralty Way	0.79	C	1.27	F
Via Marina & Panay Way	0.74	C	0.72	C
Via Marina & Marquesas Way	0.46	A	0.58	A
Via Marina & Tahiti Way	0.53	A	0.55	A
Via Marina & Bora Bora Way	0.44	A	0.45	A
Palawan Way & Admiralty Way	0.93	E	1.38	F
Lincoln Blvd & Washington Blvd	1.94	F	2.40	F
Lincoln Blvd & Marina Expwy	1.77	F	2.04	F
Admiralty Way & Bali Way	0.84	D	1.32	F
Lincoln Blvd & Bali way	1.08	F	1.49	F
Admiralty Way & Mindanao Way	1.00	F	1.26	F
Lincoln Boulevard & Mindanao Way	1.51	F	1.73	F
Admiralty Way & Fiji Way	0.86	D	1.20	F
Lincoln Blvd & Fiji Way	1.39	F	1.62	F
Mindanao Way & Marina Expwy EB	1.26	F	1.56	F
Mindanao Way & Marina Expwy WB	0.94	E	1.33	F
Culver Blvd & Jefferson Blvd	1.62	F	1.88	F
Lincoln Blvd & Jefferson Blvd	1.88	F	2.30	F

TABLE 3–4
Marina del Rey Traffic Study
Ambient vs Cumulative Scenario (Future Network)
AM Peak

Intersection	Ambient V/C	Ambient LOS	Cumulative V/C	Cumulative LOS	Difference In V/C Ratio
Via Marina & Washington St	0.75	C	1.06	F	0.31
Via Marina & Admiralty Way	0.56	A	0.79	C	0.23
Via Marina & Panay Way	0.63	B	0.74	C	0.11
Via Marina & Marquesas Way	0.35	A	0.46	A	0.11
Via Marina & Tahiti Way	0.46	A	0.53	A	0.07
Via Marina & Bora Bora Way	0.38	A	0.44	A	0.06
Palawan Way & Admiralty Way	0.75	C	0.93	E	0.18
Lincoln Blvd & Washington Blvd	1.41	F	1.94	F	0.53
Lincoln Blvd & Marina Expwy	1.16	F	1.77	F	0.61
Admiralty Way & Bali Way	0.63	B	0.84	D	0.21
Lincoln Blvd & Bali way	0.80	D	1.08	F	0.28
Admiralty Way & Mindanao Way	0.88	D	1.00	F	0.12
Lincoln Boulevard & Mindanao Way	1.24	F	1.51	F	0.27
Admiralty Way & Fiji Way	0.35	A	0.86	D	0.51
Lincoln Blvd & Fiji Way	0.80	D	1.39	F	0.59
Mindanao Way & Marina Expwy EB	1.20	F	1.26	F	0.06
Mindanao Way & Marina Expwy WB	0.83	D	0.94	E	0.11
Culver Blvd & Jefferson Blvd	1.28	F	1.62	F	0.34
Lincoln Blvd & Jefferson Blvd	1.42	F	1.88	F	0.46
			Impact Index		5.16

TABLE 3–5
Marina del Rey Traffic Study
Ambient vs Cumulative Scenario (Future Network)
PM Peak

Intersection	Ambient V/C	Ambient LOS	Cumulative V/C	Cumulative LOS	Difference In V/C Ratio
Via Marina & Washington St	1.05	F	1.68	F	0.63
Via Marina & Admiralty Way	0.91	E	1.27	F	0.36
Via Marina & Panay Way	0.59	A	0.72	C	0.13
Via Marina & Marquesas Way	0.44	A	0.58	A	0.14
Via Marina & Tahiti Way	0.43	A	0.55	A	0.12
Via Marina & Bora Bora Way	0.37	A	0.45	A	0.08
Palawan Way & Admiralty Way	1.16	F	1.38	F	0.22
Lincoln Blvd & Washington Blvd	1.67	F	2.40	F	0.73
Lincoln Blvd & Marina Expwy	1.34	F	2.04	F	0.70
Admiralty Way & Bali Way	1.08	F	1.32	F	0.24
Lincoln Blvd & Bali way	1.14	F	1.49	F	0.35
Admiralty Way & Mindanao Way	1.10	F	1.26	F	0.16
Lincoln Boulevard & Mindanao Way	1.26	F	1.73	F	0.47
Admiralty Way & Fiji Way	0.55	A	1.20	F	0.65
Lincoln Blvd & Fiji Way	1.18	F	1.62	F	0.44
Mindanao Way & Marina Expwy EB	1.32	F	1.56	F	0.24
Mindanao Way & Marina Expwy WB	1.14	F	1.33	F	0.19
Culver Blvd & Jefferson Blvd	1.40	F	1.88	F	0.48
Lincoln Blvd & Jefferson Blvd	1.38	F	2.30	F	0.92
			Impact Index		7.25



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

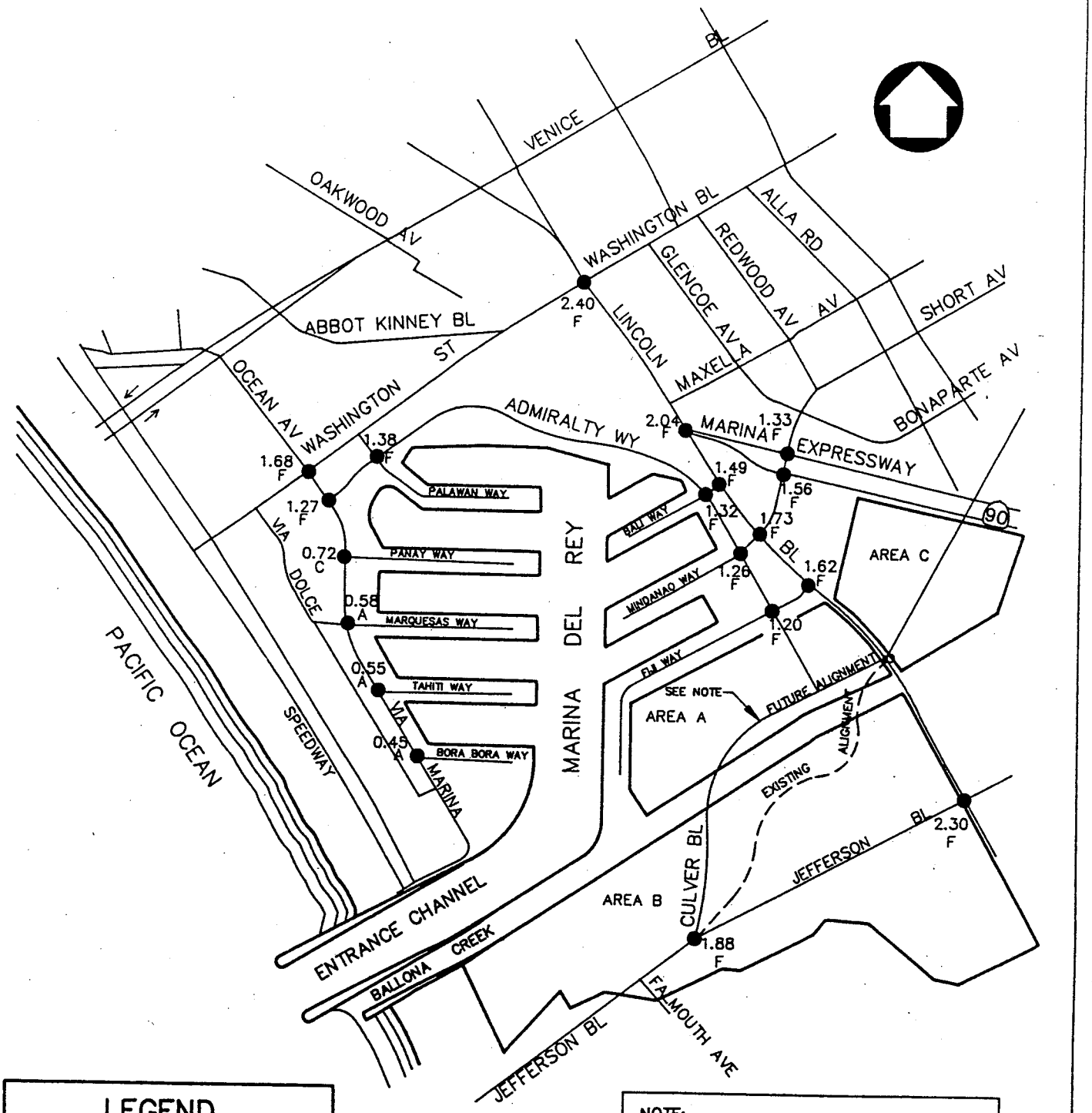
NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

CUMULATIVE PROJECTS SCENARIO
AM PEAK

FIGURE 3–7



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

CUMULATIVE PROJECTS SCENARIO
PM PEAK

FIGURE 3–8

4.0 TRAFFIC ANALYSIS OF LAND USE ALTERNATIVES

4.1 Development of Land Use Alternatives

Seven land use alternatives were developed by the County Department of Regional Planning for this study and are described in the next section. These scenarios were based on the intensities and types of development contained in the existing LUP. Alternative 1 was the LUP's Phase II development. Each of the other land use scenarios were developed as variations on Alternative 1. Alternatives 2 and 4 contain greater development intensity, whereas Alternatives 3, 5, 6 and 7 all had less intensity than Alternative 1. Alternative 3 was identical to Alternative 1 but did not include any development for Area "A". The distribution, intensity and type of land use varied among the alternatives. These seven land use alternatives were developed to test how development affects traffic needs in the study area as a function of the location and intensity of the development. These land use alternatives do not reflect any specific land use policies.

4.2 Analysis of Future Development Alternatives

4.2.1 Introduction

The DKS TRACS software was used to model the effects of future Marina development traffic based on a combination of Marina del Rey trip rates and ITE Fourth Edition trip rates. Each alternative scenario was analyzed to determine the number of new trips it would generate. Trips generated by retail establishments were reduced by 10 percent to account for pass-by trips. Trips were then assigned to the network along the most logical travel paths.

The analysis assumes that the future road network would be in place to serve future development in Area "A". This network includes the realignment of Culver Boulevard, a new interchange at Culver Boulevard and the Marina Expressway, and the extension of Admiralty Way to the realigned Culver Boulevard. Manual redistribution of traffic from the existing network to the new configuration was undertaken to reflect the new route options using Admiralty Way extended and the realigned Culver Boulevard. This redistribution was used for all but Alternative 3 which does not assume the new network since it excluded the Area A development.

Mitigation measures were developed to mitigate the adverse impacts of traffic generated by new development under the seven land use alternatives.

The goal of the mitigation measures is to provided additional capacity to improve V/C ratios at the study intersections to 0.85 or to the pre-development ambient V/C ratio if the ambient ratio exceeds 0.85. For the study intersections which meet these criteria, feasible mitigation measures have been identified to reduce the traffic impact of future Marina development. For each Marina development alternative, a set of feasible traffic improvement measures was proposed. In some cases, application of these feasible mitigation measures would not fully mitigate the traffic effects of the alternative tested. In these cases, the City of Los Angeles' Automated Traffic Surveillance and Control program (ATSAC) was considered for the

intersection and for other intersections along the corridor. The ATSAC program is a sophisticated traffic monitoring and control system that records the volume and speed of vehicular traffic and responds to changing traffic flow patterns by adjusting signal timing to reduce traffic congestion and vehicular delays. ATSAC systems have been shown to reduce the number of stops along travel corridors and improve average travel speeds. Intersections with ATSAC would have V/C ratios reduced by 0.07. For the ATSAC mitigation to be effective, it must be installed at each of the signalized intersections along the given corridor to achieve traffic progression from signal to signal along the corridor.

Several of the intersections within the Marina were not adversely impacted by any of the land use alternatives studied. The intersections were Via Marina and Panay, Via Marina and Marquesas, Via Marina and Tahiti and Via Marina and Bora Bora. For some of the alternatives, several intersections have a lower V/C ratio for the unmitigated condition than for the ambient condition. The reason for this is that the proposed future extension of Admiralty from Fiji Way to Culver Boulevard would divert some traffic from these intersections. This extension of Admiralty Way is assumed in all of the alternatives with the exception of Alternative 3.

The following is a description of the seven development alternatives with the mitigation measures needed for each of the intersections within the Marina. A complete list and description of all mitigation measures, the detailed amount of their physical impacts, along with diagrams of before and after intersection configurations, are presented in subsequent sections of this chapter.

4.2.2 Analysis of Land Use Alternatives

Alternative 1

A. Description

This alternative consists of the development (type, intensity and location of uses) allowed by the certified Land Use Plan (LUP). The future road network (extension of Admiralty to Culver) is also assumed. The alternative includes marine commercial uses (392 trips) plus:

729	Additional Hotel Rooms
456	Additional Restaurant Seats
1,050	Boat Slips
731	New Residential Units
13,779 SF	Retail
196,000 SF	Office

B. Analysis

A comparison of the V/C ratios and the LOS for the 2010 Ambient vs. Alternative 1 for the AM and PM peaks are shown on Tables 4-1 and 4-2. These results are also depicted in Figures 4-1 and 4-2.

TABLE 4-1
Marina del Rey Traffic Study
Ambient vs Alternative 1 (Phase II with Area A)
AM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 1 V/C	Alternative 1 LOS	Difference In V/C Ratio
Via Marina & Washington St	0.75	C	1.10	F	0.35
Via Marina & Admiralty Way	0.56	A	0.95	E	0.39
Via Marina & Panay Way	0.63	B	0.81	D	0.18
Via Marina & Marquesas Way	0.35	A	0.42	A	0.07
Via Marina & Tahiti Way	0.46	A	0.52	A	0.06
Via Marina & Bora Bora Way	0.38	A	0.45	A	0.07
Palawan Way & Admiralty Way	0.75	C	1.08	F	0.33
Lincoln Blvd & Washington Blvd	1.41	F	1.51	F	0.10
Lincoln Blvd & Marina Expwy	1.16	F	1.25	F	0.09
Admiralty Way & Bali Way	0.63	B	0.85	D	0.22
Lincoln Blvd & Bali way	0.80	D	0.87	D	0.07
Admiralty Way & Mindanao Way	0.88	D	1.06	F	0.18
Lincoln Boulevard & Mindanao Way	1.24	F	1.25	F	0.01
Admiralty Way & Fiji Way	0.35	A	0.85	D	0.50
Lincoln Blvd & Fiji Way	0.80	D	0.86	D	0.06
Mindanao Way & Marina Expwy EB	1.20	F	1.20	F	0.00
Mindanao Way & Marina Expwy WB	0.83	D	0.82	D	-0.01
Culver Blvd & Jefferson Blvd	1.28	F	1.34	F	0.06
Lincoln Blvd & Jefferson Blvd	1.42	F	1.41	F	-0.01

Note: Dark shading = intersection needing mitigation

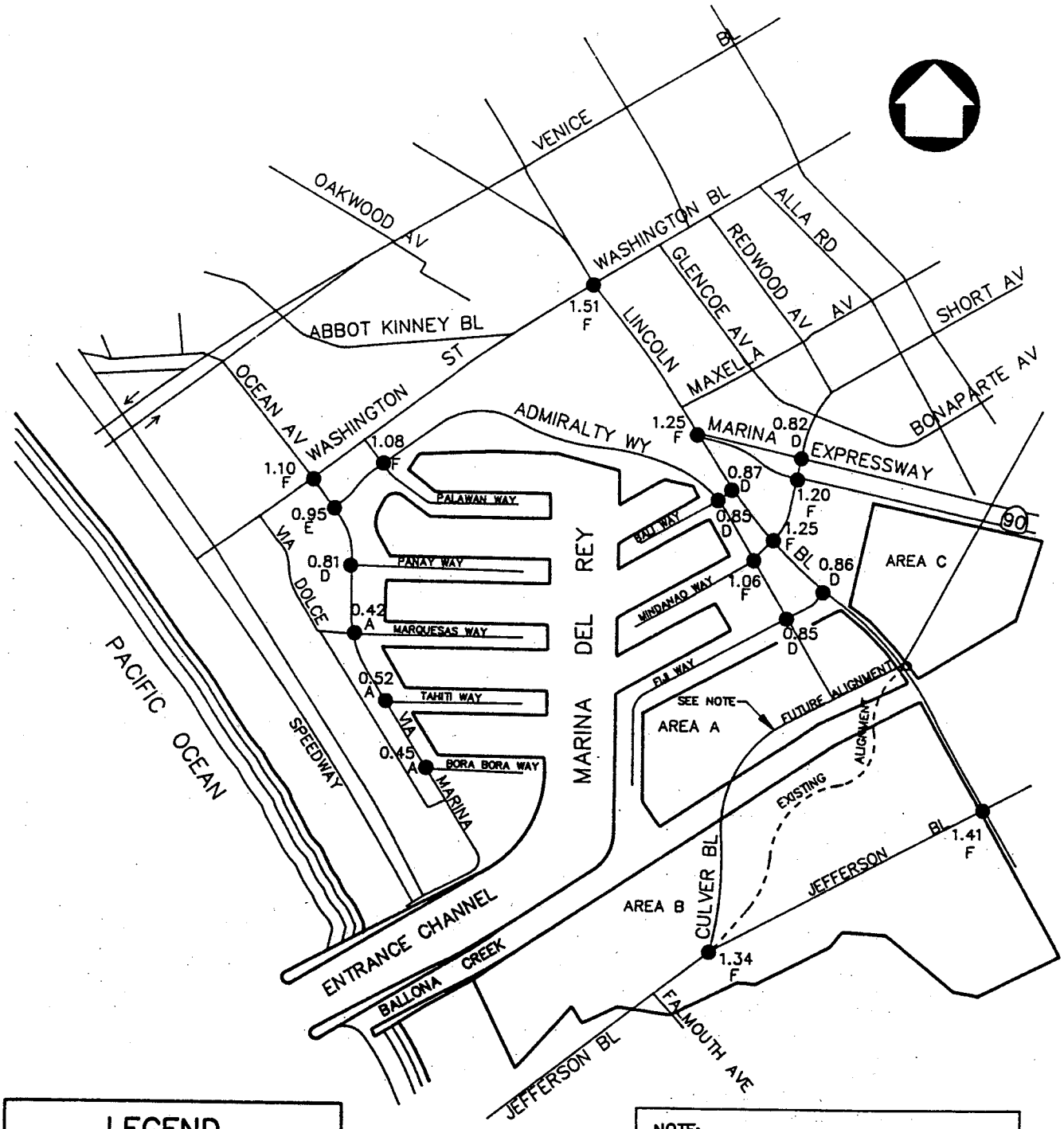
Impact Index	2.72

TABLE 4-2
Marina del Rey Traffic Study
Ambient vs Alternative 1 (Phase II with Area A)
PM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 1 V/C	Alternative 1 LOS	Difference In V/C Ratio
Via Marina & Washington St	1.05	F	1.42	F	0.37
Via Marina & Admiralty Way	0.91	E	1.30	F	0.39
Via Marina & Panay Way	0.59	A	0.75	C	0.16
Via Marina & Marquesas Way	0.44	A	0.51	A	0.07
Via Marina & Tahiti Way	0.43	A	0.50	A	0.07
Via Marina & Bora Bora Way	0.37	A	0.43	A	0.06
Palawan Way & Admiralty Way	1.16	F	1.49	F	0.33
Lincoln Blvd & Washington Blvd	1.67	F	1.77	F	0.10
Lincoln Blvd & Marina Expwy	1.34	F	1.44	F	0.10
Admiralty Way & Bali Way	1.08	F	1.34	F	0.26
Lincoln Blvd & Bali way	1.14	F	1.20	F	0.06
Admiralty Way & Mindanao Way	1.10	F	1.27	F	0.17
Lincoln Boulevard & Mindanao Way	1.26	F	1.32	F	0.06
Admiralty Way & Fiji Way	0.55	A	1.17	F	0.62
Lincoln Blvd & Fiji Way	1.18	F	1.12	F	-0.06
Mindanao Way & Marina Expwy EB	1.32	F	1.35	F	0.03
Mindanao Way & Marina Expwy WB	1.14	F	1.08	F	-0.06
Culver Blvd & Jefferson Blvd	1.40	F	1.48	F	0.08
Lincoln Blvd & Jefferson Blvd	1.38	F	1.49	F	0.11

Note: Dark shading = intersection needing mitigation

Impact Index	2.92



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

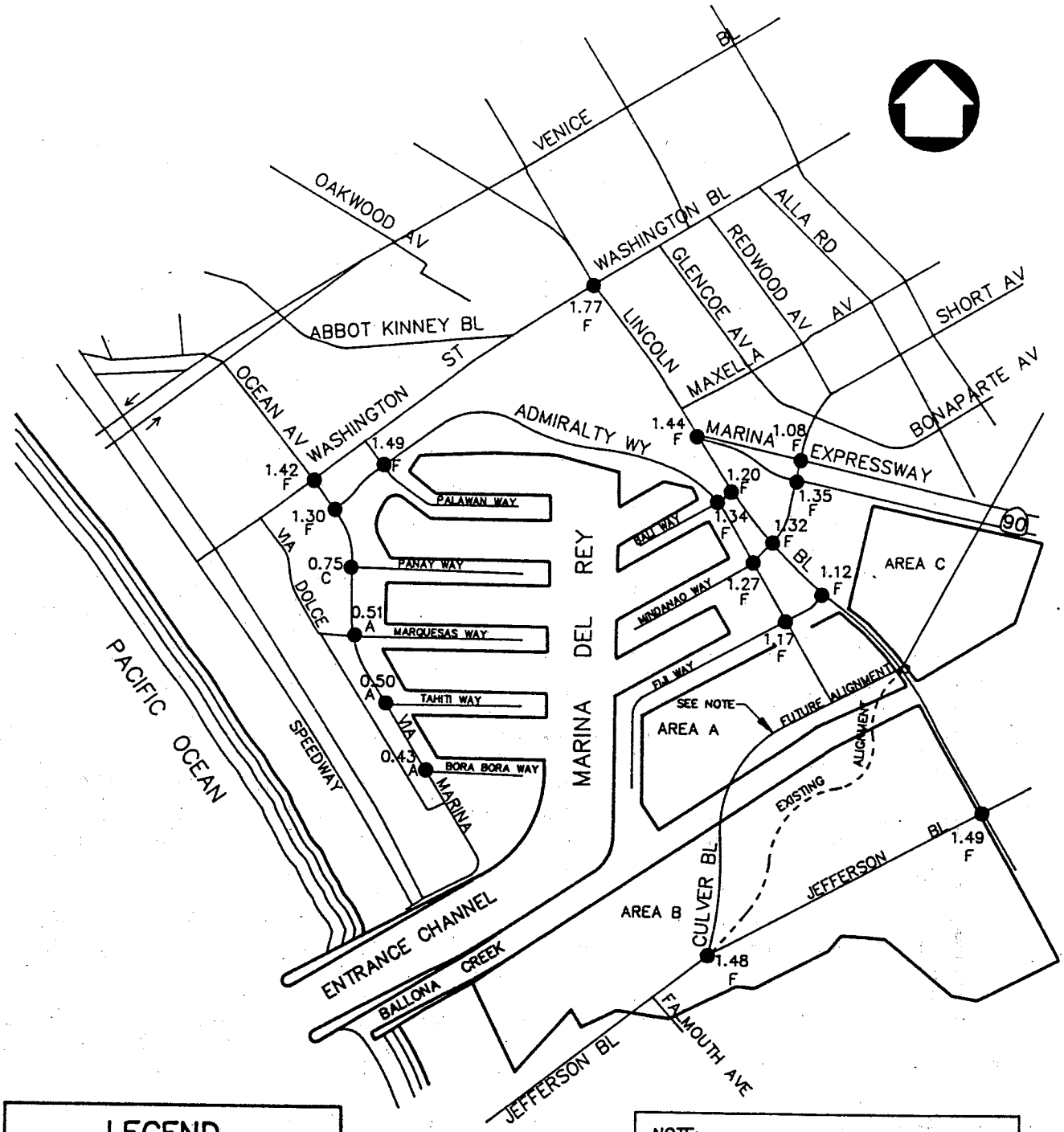
NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 1 LEVELS OF SERVICE AM PEAK

FIGURE 4–1



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 1 LEVELS OF SERVICE PM PEAK

FIGURE 4–2

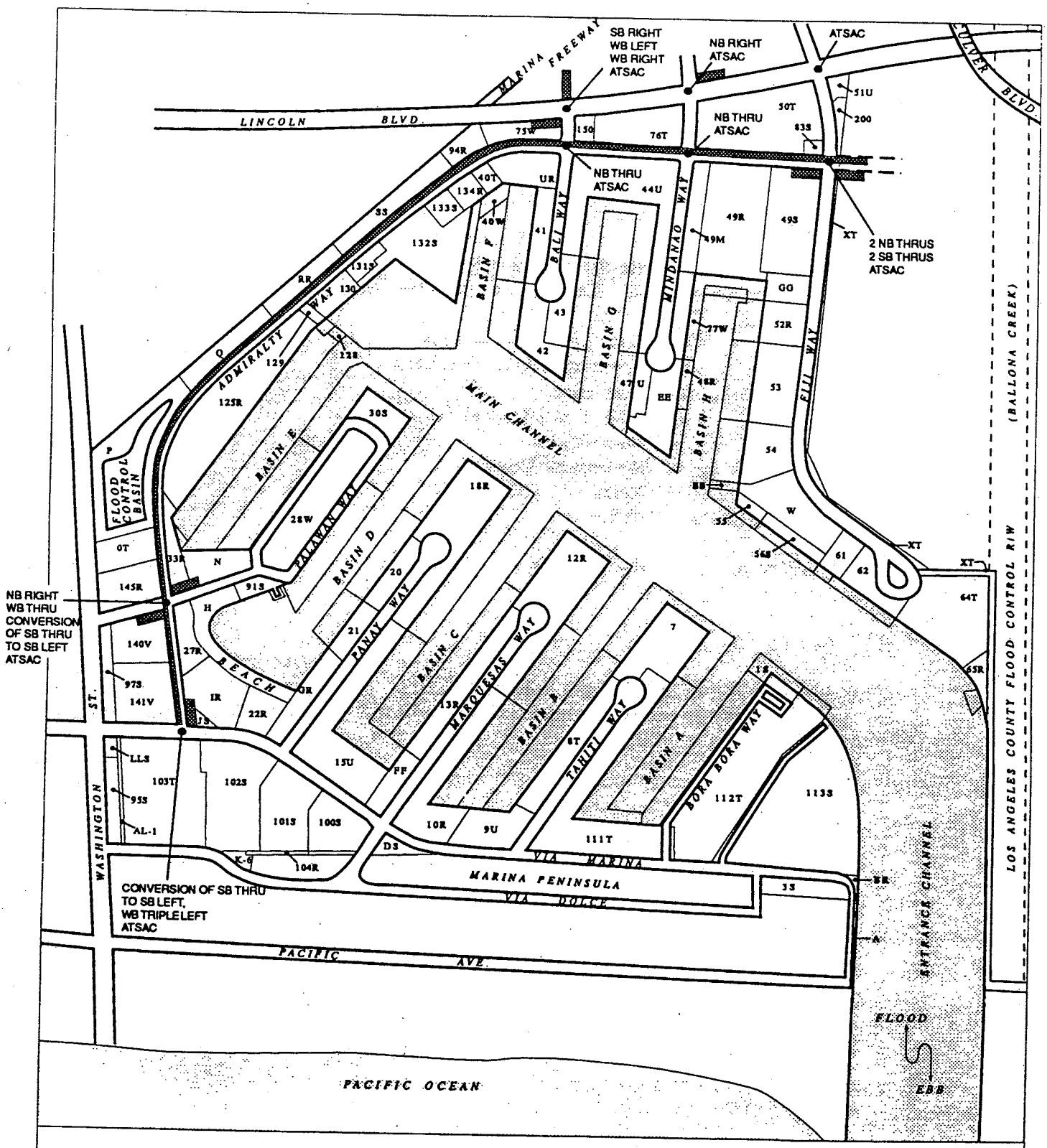
C. Results

The V/C ratios for the 2010 Ambient, Unmitigated and Mitigated condition are presented in Table 4-3 for Alternative 1. In each case, the intersections were fully mitigated with the exception of the Palawan and Admiralty intersection. At this intersection, including ATSAC along the Admiralty corridor would reduce the AM V/C ratio from 0.93 to 0.86, or 0.01 short of a mitigated V/C of 0.85.

Table 4-3
Intersection Mitigation
Alternative 1

INTERSECTION		Ambient V/C		Unmitigated V/C		Mitigated V/C		Mitigation Measures
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
2	Via Marina and Admiralty	.56	.91	1.16	1.30	.68	.87	Conversion of a SB Through to a SB Left Turn, WB Left Turn, ATSAC
7	Palawan and Admiralty	.75	1.16	1.07	1.27	.93	1.09	WB Through, NB Right Turn, Conversion of a SB Through into a SB Left Turn, ATSAC
10	Admiralty and Bali	.63	1.08	.85	1.34	.85	1.03	NB Through, ATSAC
11	Lincoln and Bali	.80	1.14	.96	1.31	.85	1.08	SB Right Turn, WB Left Turn, WB Right Turn, ATSAC
12	Admiralty and Mindanao	.88	1.10	1.01	1.18	.83	.97	NB Through, ATSAC
13	Lincoln and Mindanao	1.24	1.26	1.35	1.42	1.27	1.33	NB Right Turn, ATSAC
14	Admiralty and Fiji	.35	.55	.85	1.17	.55	.84	2 SB Thrus, 2 NB Thrus, ATSAC
15	Lincoln and Fiji	.80	1.18	.86	1.12	.86	1.12	ATSAC

Note: Intersections with ATSAC used as a mitigation measure would have a Mitigated V/C ratio 0.07 lower than indicated in the table above.



Marina del Rey Traffic Study

Figure 4-3
Mitigation Measures
Alternative 1

DKS ASSOCIATES
GRUEN ASSOCIATES

Alternative 2 - Increased Development Alternative

A. Description

This alternative assumes the same development as Alternative 1 for berths, retail, office and marine commercial. This alternative includes marine commercial uses (392 trips) plus:

432	Additional Hotel Rooms
892	Additional Restaurant Seats
1,050	Boat Slips
718	New Rental Residential
1,018	New Condos
718	Retirement Units
13,779 SF	Retail
196,000 SF	Office

These buildouts are <u>not in addition</u> to Alternative 1. These quantities also represent an increase in trips from Alternative 1.

B. Analysis

A comparison of the V/C ratios and the LOS for the 2010 Ambient vs. Alternative 2 for the AM and PM peaks are shown on Tables 4-4 and 4-5. These results are also depicted in Figures 4-4 and 4-5.

TABLE 4–4
Marina del Rey Traffic Study
Ambient vs Alternative 2
AM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 2 V/C	Alternative 2 LOS	Difference In V/C Ratio
Via Marina & Washington St	0.75	C	1.19	F	0.44
Via Marina & Admiralty Way	0.56	A	1.02	F	0.46
Via Marina & Panay Way	0.63	B	0.84	D	0.21
Via Marina & Marquesas Way	0.35	A	0.44	A	0.09
Via Marina & Tahiti Way	0.46	A	0.57	A	0.11
Via Marina & Bora Bora Way	0.38	A	0.53	A	0.15
Palawan Way & Admiralty Way	0.75	C	1.12	F	0.37
Lincoln Blvd & Washington Blvd	1.41	F	1.54	F	0.13
Lincoln Blvd & Marina Expwy	1.16	F	1.27	F	0.11
Admiralty Way & Bali Way	0.63	B	0.91	E	0.28
Lincoln Blvd & Bali way	0.80	D	0.88	D	0.08
Admiralty Way & Mindanao Way	0.88	D	1.09	F	0.21
Lincoln Boulevard & Mindanao Way	1.24	F	1.29	F	0.05
Admiralty Way & Fiji Way	0.35	A	0.87	D	0.52
Lincoln Blvd & Fiji Way	0.80	D	0.87	D	0.07
Mindanao Way & Marina Expwy EB	1.20	F	1.23	F	0.03
Mindanao Way & Marina Expwy WB	0.83	D	0.82	D	-0.01
Culver Blvd & Jefferson Blvd	1.28	F	1.34	F	0.06
Lincoln Blvd & Jefferson Blvd	1.42	F	1.42	F	0.00

Note: Dark shading = intersection needing mitigation

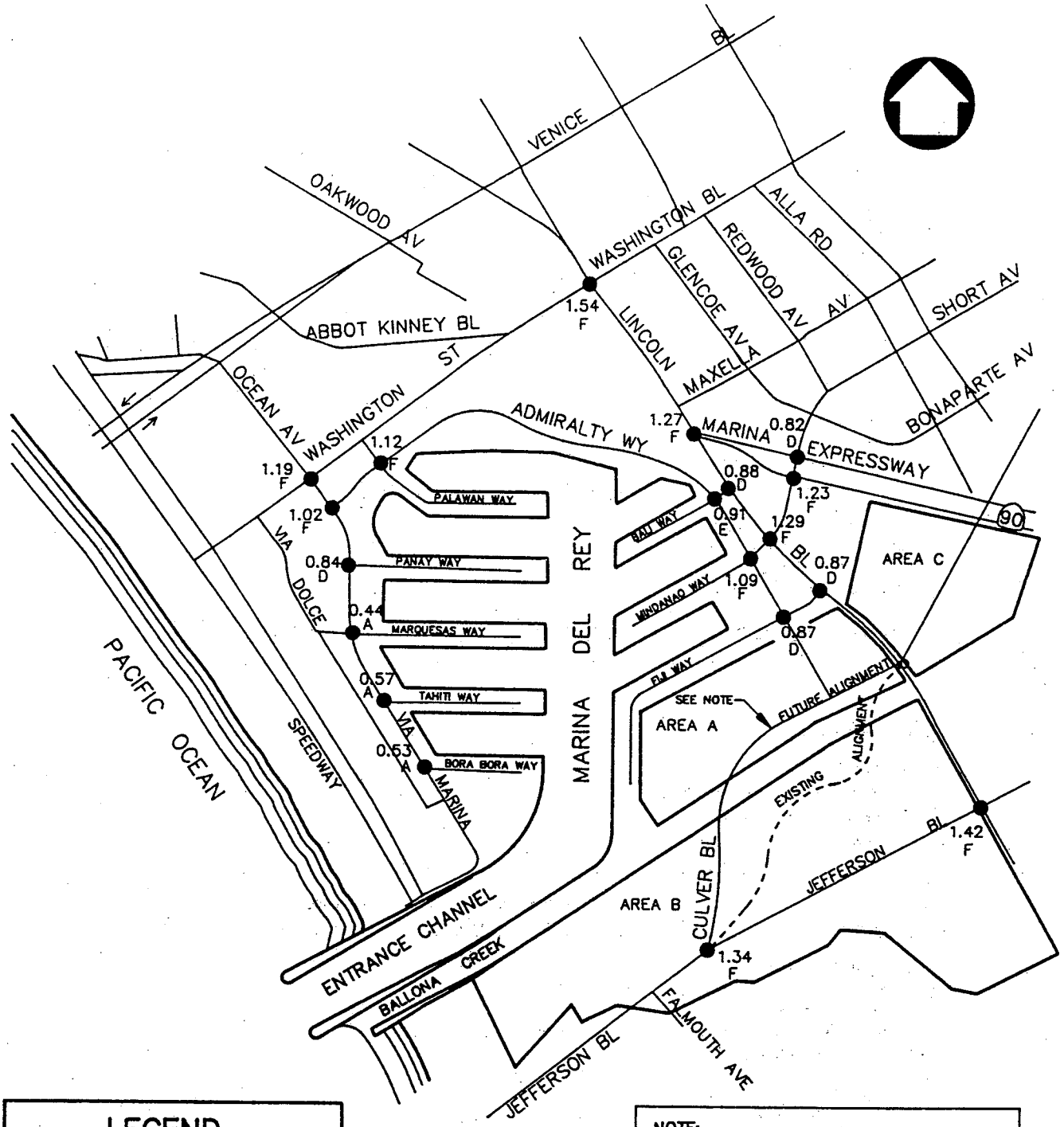
Impact Index 3.36

TABLE 4–5
Marina del Rey Traffic Study
Ambient vs Alternative 2
PM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 2 V/C	Alternative 2 LOS	Difference In V/C Ratio
Via Marina & Washington St	1.05	F	1.55	F	0.50
Via Marina & Admiralty Way	0.91	E	1.38	F	0.47
Via Marina & Panay Way	0.59	A	0.78	C	0.19
Via Marina & Marquesas Way	0.44	A	0.54	A	0.10
Via Marina & Tahiti Way	0.43	A	0.53	A	0.10
Via Marina & Bora Bora Way	0.37	A	0.50	A	0.13
Palawan Way & Admiralty Way	1.16	F	1.52	F	0.36
Lincoln Blvd & Washington Blvd	1.67	F	1.81	F	0.14
Lincoln Blvd & Marina Expwy	1.34	F	1.46	F	0.12
Admiralty Way & Bali Way	1.08	F	1.41	F	0.33
Lincoln Blvd & Bali way	1.14	F	1.26	F	0.12
Admiralty Way & Mindanao Way	1.10	F	1.32	F	0.22
Lincoln Boulevard & Mindanao Way	1.26	F	1.34	F	0.08
Admiralty Way & Fiji Way	0.55	A	1.20	F	0.65
Lincoln Blvd & Fiji Way	1.18	F	1.14	F	-0.04
Mindanao Way & Marina Expwy EB	1.32	F	1.37	F	0.05
Mindanao Way & Marina Expwy WB	1.14	F	1.10	F	-0.04
Culver Blvd & Jefferson Blvd	1.40	F	1.48	F	0.08
Lincoln Blvd & Jefferson Blvd	1.38	F	1.51	F	0.13

Note: Dark shading = intersection needing mitigation

Impact Index 3.69



LEGEND

●	STUDY INTERSECTION
X.XX	V/C RATIO
A – F	LEVEL OF SERVICE

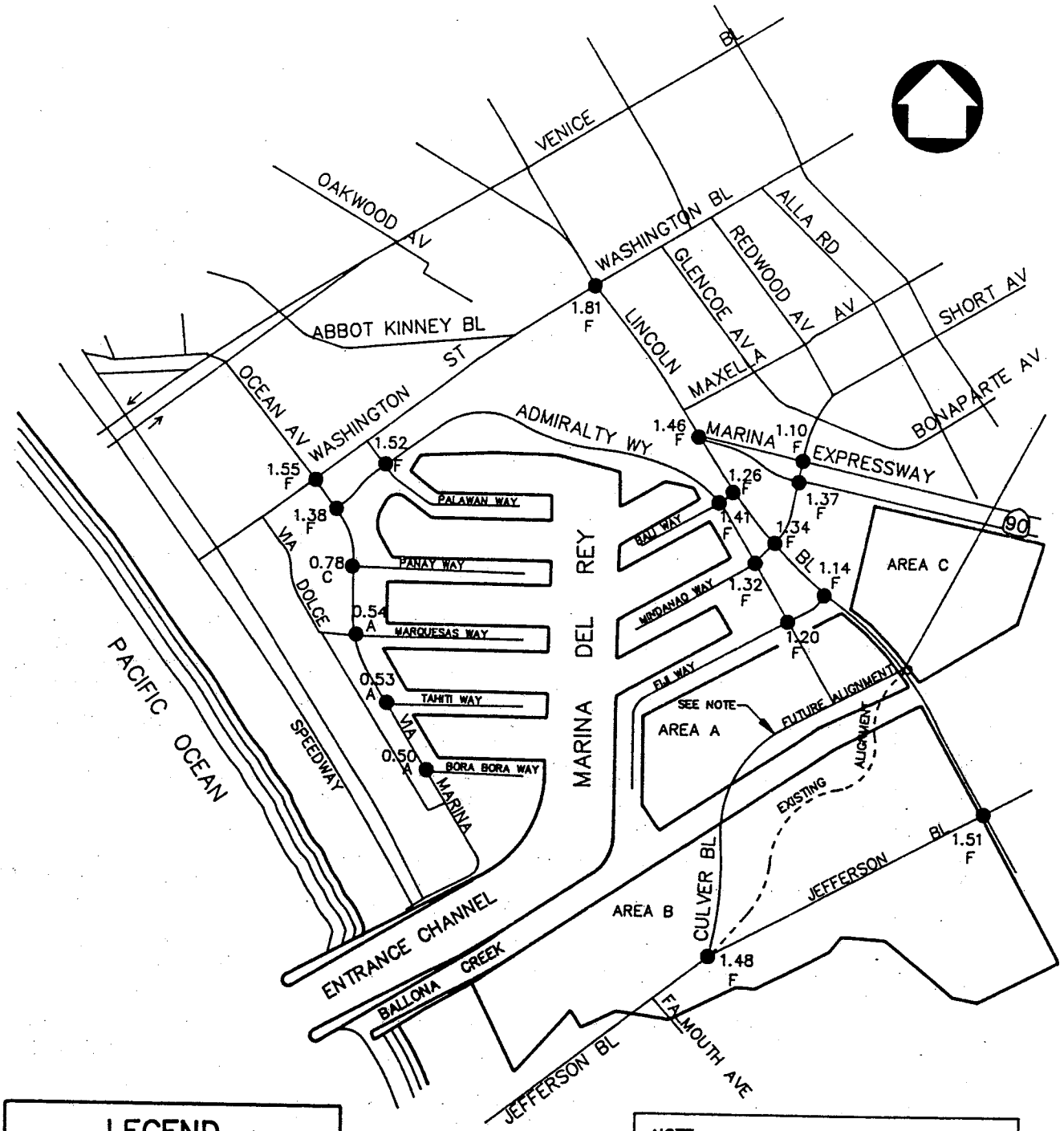
NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 2 LEVELS OF SERVICE AM PEAK

FIGURE 4–4



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 2 LEVELS OF SERVICE PM PEAK

FIGURE 4–5

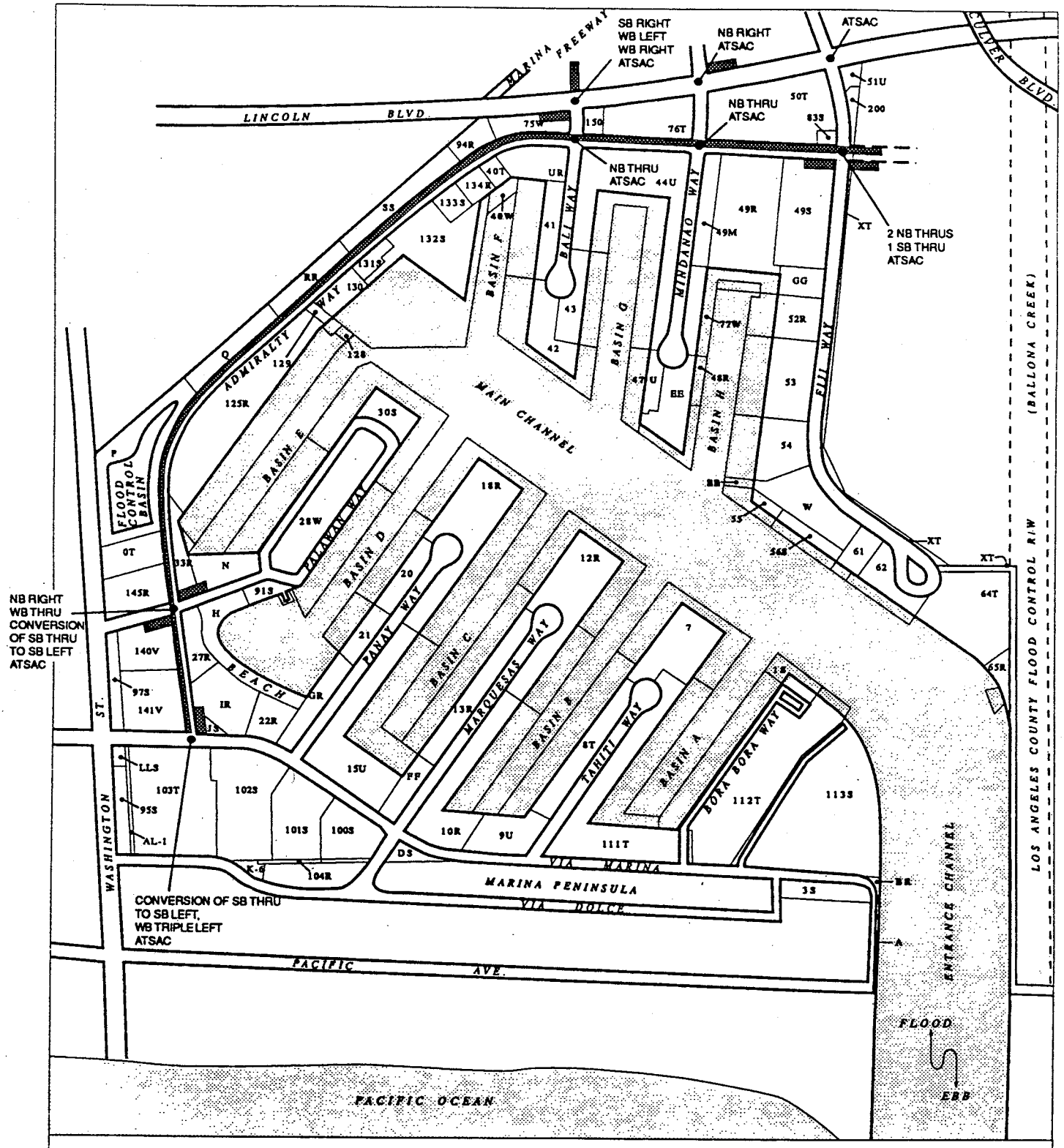
C. Results

The V/C ratios for the 2010 Ambient, Unmitigated and Mitigated condition are presented in Table 4-6 for Alternative 2. In each case, the intersections were fully mitigated with the exception of the Palawan and Admiralty intersection. At this intersection, including ATSAC along the Admiralty corridor would reduce the AM V/C ratio from 0.96 to 0.89, or 0.04 short of a mitigated V/C of 0.85. ATSAC was also needed for the Lincoln corridor to bring all of the intersections along the corridor to mitigated levels. The mitigation measures for this alternative are depicted on Figure 4-6.

Table 4-6
Intersection Mitigation
Alternative 2

INTERSECTION		Ambient V/C		Unmitigated V/C		Mitigated V/C		Mitigation Measures
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
2	Via Marina and Admiralty	.56	.91	1.22	1.38	.74	.93	Conversion of a SB Through to a SB Left Turn, WB Left Turn, ATSAC
7	Palawan and Admiralty	.75	1.16	1.12	1.31	.96	1.15	WB Through, NB Right Turn, Conversion of a SB Through into a SB Left Turn, ATSAC
10	Admiralty and Bali	.63	1.08	.91	1.41	.91	1.09	NB Through, ATSAC
11	Lincoln and Bali	.80	1.14	.99	1.37	.87	1.13	SB Right Turn, WB Left Turn, WB Right Turn, ATSAC
12	Admiralty and Mindanao	.88	1.10	1.04	1.23	.85	.98	NB Through, ATSAC
13	Lincoln and Mindanao	1.24	1.26	1.28	1.33	1.20	1.26	NB Right Turn, ATSAC
14	Admiralty and Fiji	.35	.55	.87	1.20	.62	.81	1 SB Through, 2 NB Thrus, ATSAC
15	Lincoln and Fiji	.80	1.18	.87	1.14	.87	1.14	ATSAC

Note: Intersections with ATSAC used as a mitigation measure would have a Mitigated V/C ratio 0.07 lower than depicted in the table above.



Marina del Rey Traffic Study

Figure 4-6
Mitigation Measures
Alternative 2

DKS ASSOCIATES
GRUEN ASSOCIATES

Alternative 3 - Phase II without Area A

A. Description

This alternative assumes the same development as Alternative 1 except for no development in Area A. This alternative represents a decrease in trips from Alternative 1.

B. Analysis

A comparison of the V/C ratios and the LOS for the 2010 Ambient vs. Alternative 3 for the AM and the PM peaks are shown on Tables 4-7 and 4-8. These results are also depicted in Figures 4-7 and 4-8.

TABLE 4-7
Marina del Rey Traffic Study
Ambient vs Alternative 3 (Phase II without Area A on Existing Network)
AM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 3 V/C	Alternative 3 LOS	Difference In V/C Ratio
Via Marina & Washington St	0.75	C	1.07	F	0.32
Via Marina & Admiralty Way	0.56	A	0.80	D	0.24
Via Marina & Panay Way	0.63	B	0.78	C	0.15
Via Marina & Marquesas Way	0.35	A	0.39	A	0.04
Via Marina & Tahiti Way	0.46	A	0.51	A	0.05
Via Marina & Bora Bora Way	0.38	A	0.43	A	0.05
Palawan Way & Admiralty Way	0.75	C	0.95	E	0.20
Lincoln Blvd & Washington Blvd	1.41	F	1.51	F	0.10
Lincoln Blvd & Marina Expwy	1.16	F	1.22	F	0.06
Admiralty Way & Bali Way	0.63	B	0.73	C	0.10
Lincoln Blvd & Bali way	0.80	D	0.85	D	0.05
Admiralty Way & Mindanao Way	0.88	D	1.07	F	0.19
Lincoln Boulevard & Mindanao Way	1.24	F	1.31	F	0.07
Admiralty Way & Fiji Way	0.35	A	0.38	A	0.03
Lincoln Blvd & Fiji Way	0.80	D	0.85	D	0.05
Mindanao Way & Marina Expwy EB	1.20	F	1.25	F	0.05
Mindanao Way & Marina Expwy WB	0.83	D	0.86	D	0.03
Culver Blvd & Jefferson Blvd	1.28	F	1.29	F	0.01
Lincoln Blvd & Jefferson Blvd	1.42	F	1.49	F	0.07

Note: Dark shading = intersection needing mitigation

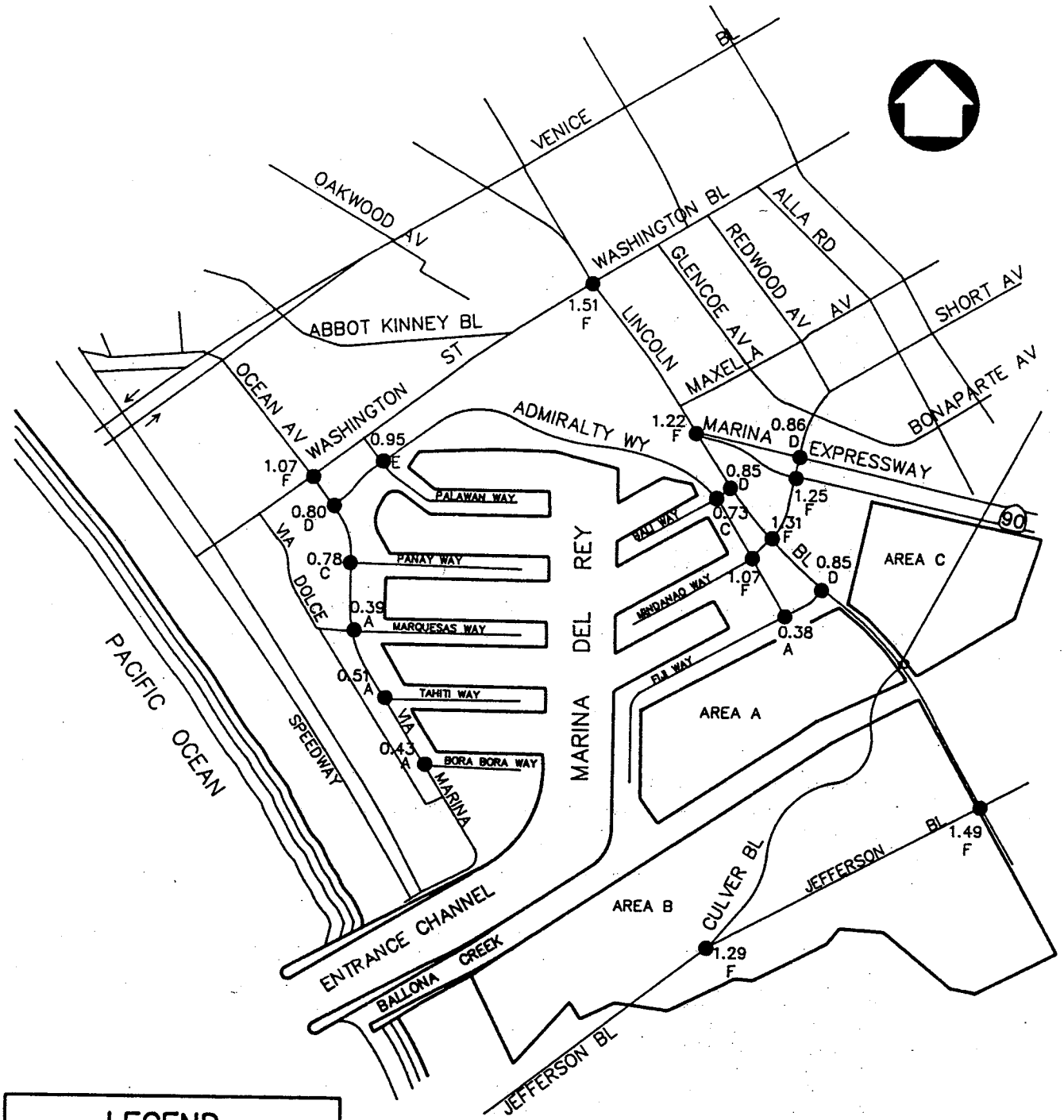
Impact Index 1.86

TABLE 4-8
Marina del Rey Traffic Study
Ambient vs Alternative 3 (Phase II without Area A on Existing Network)
PM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 3 V/C	Alternative 3 LOS	Difference In V/C Ratio
Via Marina & Washington St	1.05	F	1.25	F	0.20
Via Marina & Admiralty Way	0.91	E	1.09	F	0.18
Via Marina & Panay Way	0.59	A	0.72	C	0.13
Via Marina & Marquesas Way	0.44	A	0.48	A	0.04
Via Marina & Tahiti Way	0.43	A	0.47	A	0.04
Via Marina & Bora Bora Way	0.37	A	0.41	A	0.04
Palawan Way & Admiralty Way	1.16	F	1.36	F	0.20
Lincoln Blvd & Washington Blvd	1.67	F	1.77	F	0.10
Lincoln Blvd & Marina Expwy	1.34	F	1.40	F	0.06
Admiralty Way & Bali Way	1.08	F	1.22	F	0.14
Lincoln Blvd & Bali way	1.14	F	1.23	F	0.09
Admiralty Way & Mindanao Way	1.10	F	1.22	F	0.12
Lincoln Boulevard & Mindanao Way	1.26	F	1.36	F	0.10
Admiralty Way & Fiji Way	0.55	A	0.60	B	0.05
Lincoln Blvd & Fiji Way	1.18	F	1.24	F	0.06
Mindanao Way & Marina Expwy EB	1.32	F	1.36	F	0.04
Mindanao Way & Marina Expwy WB	1.14	F	1.16	F	0.02
Culver Blvd & Jefferson Blvd	1.40	F	1.40	F	0.00
Lincoln Blvd & Jefferson Blvd	1.38	F	1.44	F	0.06

Note: Dark shading = intersection needing mitigation

Impact Index 1.67



LEGEND

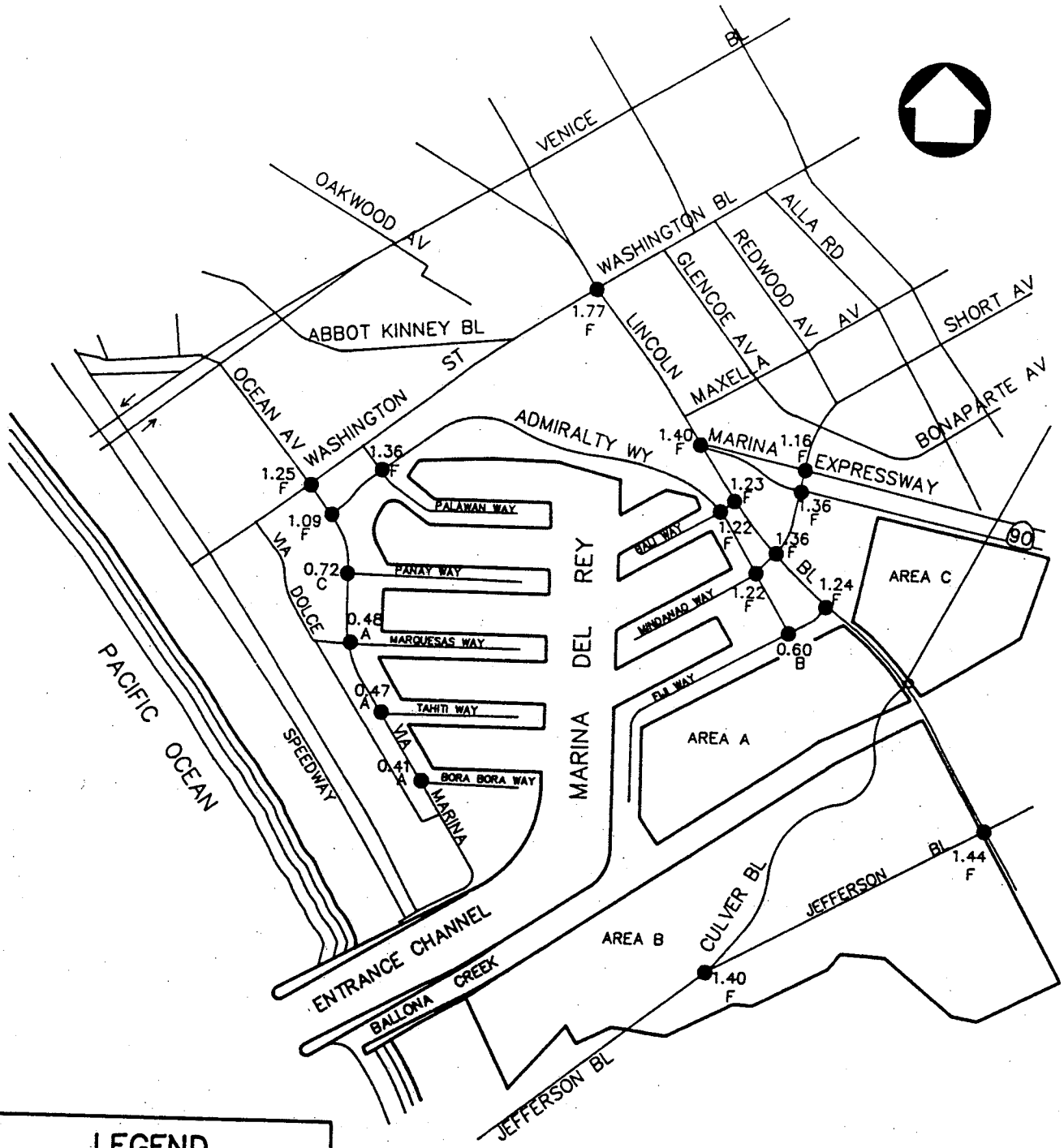
●	STUDY INTERSECTION
X.XX	V/C RATIO
A – F	LEVEL OF SERVICE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 3 LEVELS OF SERVICE
AM PEAK

FIGURE 4-7



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 3 LEVELS OF SERVICE
PM PEAK

FIGURE 4-8

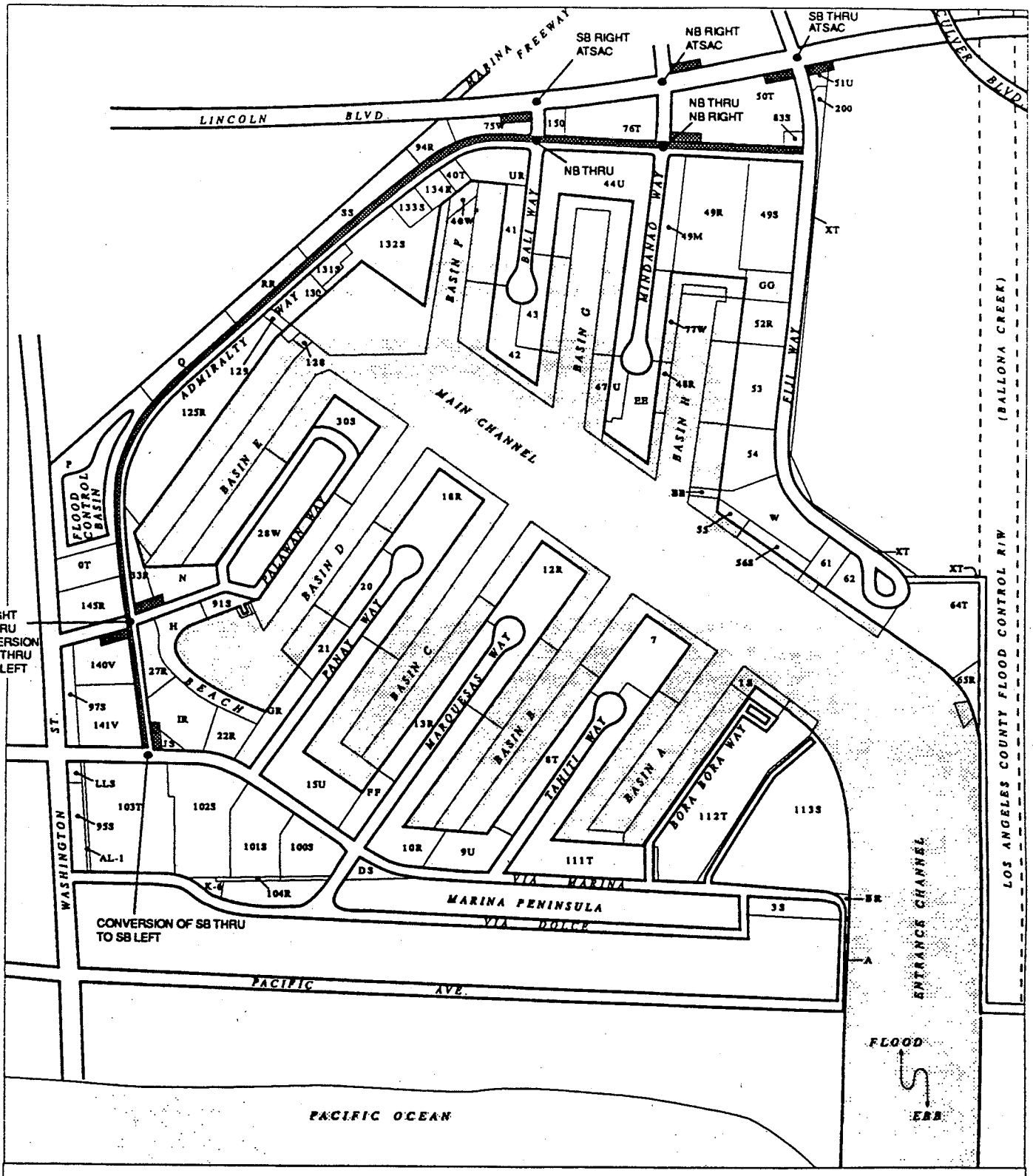
C. Results

The V/C ratios for the 2010 Ambient, Unmitigated and Mitigated condition are presented in Table 4-9 for Alternative 3. In each case, the intersections were fully mitigated with the inclusion of ATSAC along the Lincoln corridor. The mitigation measures for this alternative are depicted on Figure 4-9.

Table 4-9
Intersection Mitigation
Alternative 3

INTERSECTION		Ambient V/C		Unmitigated V/C		Mitigated V/C		Mitigation Measures
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
2	Via Marina and Admiralty	.56	.91	1.05	1.13	.64	.90	Conversion of a SB Through to a SB Left Turn
7	Palawan and Admiralty	.75	1.16	.95	1.11	.81	.95	WB Through, NB Right Turn, Conversion of a SB Through into a SB Left Turn
10	Admiralty and Bali	.63	1.08	.73	1.22	.73	.96	NB Through
11	Lincoln and Bali	.80	1.14	.95	1.34	.84	1.13	SB Right Turn, ATSAC
12	Admiralty and Mindanao	.88	1.10	.94	1.14	.80	.80	NB Through, NB Right Turn
13	Lincoln and Mindanao	1.24	1.26	1.31	1.35	1.22	1.27	NB Right Turn, ATSAC
14	Admiralty and Fiji	.35	.55	.38	.60	.38	.60	None Needed
15	Lincoln and Fiji	.80	1.18	1.12	1.56	.85	1.07	SB Through, ATSAC

Note: Intersections with ATSAC used as a mitigation measure would have a Mitigated V/C ratio 0.07 lower than depicted in the table above.



Marina del Rey Traffic Study

Figure 4-9
Mitigation Measures
Alternative 3

DKS ASSOCIATES
GRUEN ASSOCIATES

Alternative 4 - Increased Development Alternative

A. Description

This alternative assumes the same development as Alternative 1 for berths and marine commercial. This alternative includes marine commercial (392 trips) plus:

350	Additional Hotel Rooms
686	Additional Restaurant Seats
1,050	Boat Slips
1,121	Residential
75	Retirement Units
300,000 SF	Office

This represents an increase in trips from Alternative 1.

B. Analysis

A comparison of the V/C ratios and the LOS for the 2010 Ambient vs. Alternative 4 for the AM and PM peaks are shown on Tables 4-10 and 4-11. These results are also depicted in Figures 4-10 and 4-11.

TABLE 4-10
Marina del Rey Traffic Study
Ambient vs Alternative 4
AM Peak

Intersection	Ambient V/C	LOS	Alternative 4 V/C	LOS	Difference In V/C Ratio
Via Marina & Washington St	0.75	C	1.09	F	0.34
Via Marina & Admiralty Way	0.56	A	0.96	E	0.40
Via Marina & Panay Way	0.63	B	0.79	C	0.16
Via Marina & Marquesas Way	0.35	A	0.41	A	0.06
Via Marina & Tahiti Way	0.46	A	0.53	A	0.07
Via Marina & Bora Bora Way	0.38	A	0.45	A	0.07
Palawan Way & Admiralty Way	0.75	C	1.07	F	0.32
Lincoln Blvd & Washington Blvd	1.41	F	1.51	F	0.10
Lincoln Blvd & Marina Expwy	1.16	F	1.26	F	0.10
Admiralty Way & Bali Way	0.63	B	0.94	E	0.31
Lincoln Blvd & Bali way	0.80	D	0.88	D	0.08
Admiralty Way & Mindanao Way	0.88	D	1.03	F	0.15
Lincoln Boulevard & Mindanao Way	1.24	F	1.27	F	0.03
Admiralty Way & Fiji Way	0.35	A	0.86	D	0.51
Lincoln Blvd & Fiji Way	0.80	D	0.87	D	0.07
Mindanao Way & Marina Expwy EB	1.20	F	1.22	F	0.02
Mindanao Way & Marina Expwy WB	0.83	D	0.82	D	-0.01
Culver Blvd & Jefferson Blvd	1.28	F	1.34	F	0.06
Lincoln Blvd & Jefferson Blvd	1.42	F	1.42	F	0.00

Note: Dark shading = intersection needing mitigation

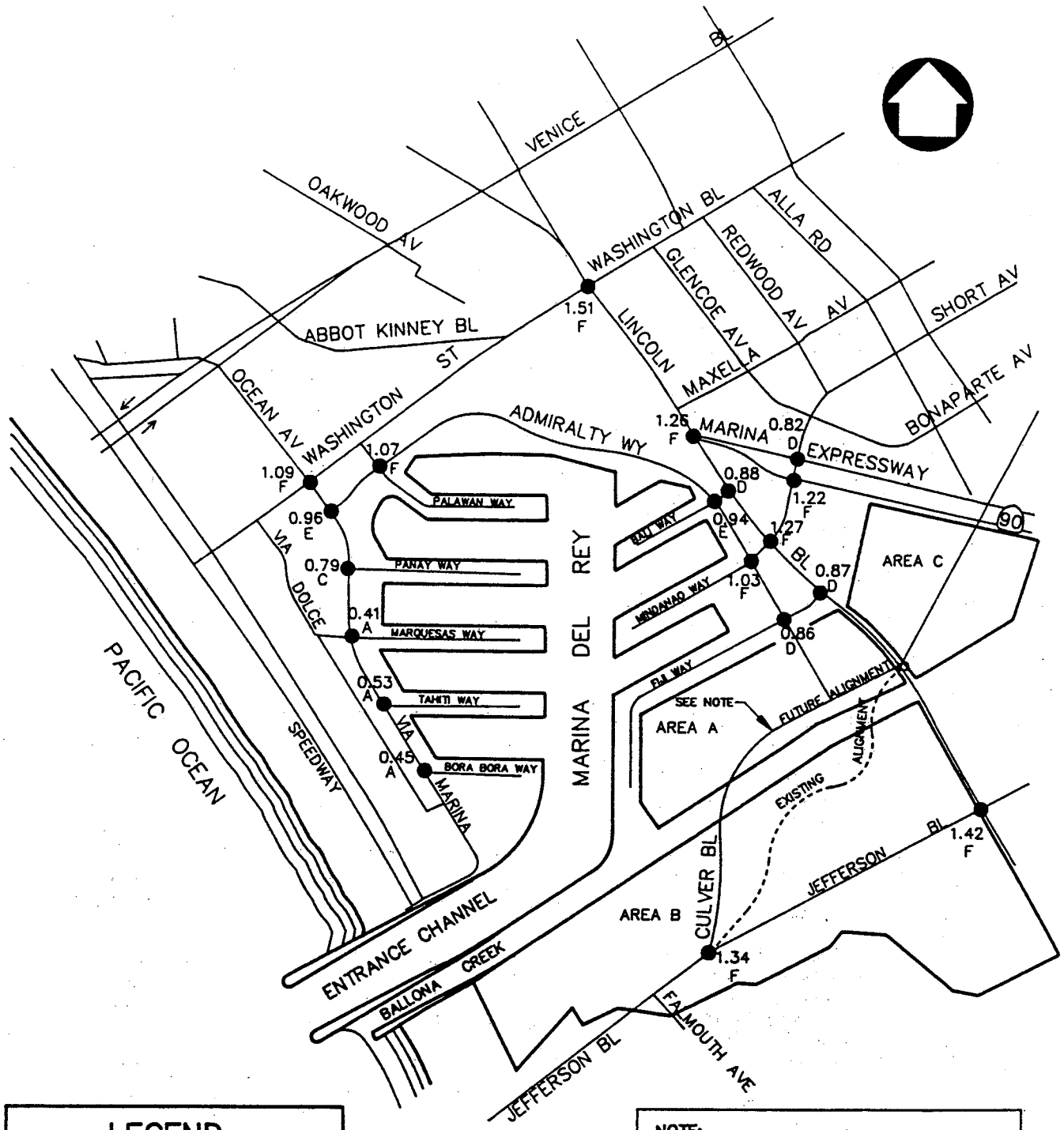
Impact Index	2.84

TABLE 4-11
Marina del Rey Traffic Study
Ambient vs Alternative 4
PM Peak

Intersection	Ambient V/C	LOS	Alternative 4 V/C	LOS	Difference In V/C Ratio
Via Marina & Washington St	1.05	F	1.43	F	0.38
Via Marina & Admiralty Way	0.91	E	1.32	F	0.41
Via Marina & Panay Way	0.59	A	0.74	C	0.15
Via Marina & Marquesas Way	0.44	A	0.50	A	0.06
Via Marina & Tahiti Way	0.43	A	0.50	A	0.07
Via Marina & Bora Bora Way	0.37	A	0.44	A	0.07
Palawan Way & Admiralty Way	1.16	F	1.49	F	0.33
Lincoln Blvd & Washington Blvd	1.67	F	1.78	F	0.11
Lincoln Blvd & Marina Expwy	1.34	F	1.45	F	0.11
Admiralty Way & Bali Way	1.08	F	1.41	F	0.33
Lincoln Blvd & Bali way	1.14	F	1.27	F	0.13
Admiralty Way & Mindanao Way	1.10	F	1.26	F	0.16
Lincoln Boulevard & Mindanao Way	1.26	F	1.31	F	0.05
Admiralty Way & Fiji Way	0.55	A	1.18	F	0.63
Lincoln Blvd & Fiji Way	1.18	F	1.12	F	-0.06
Mindanao Way & Marina Expwy EB	1.32	F	1.37	F	0.05
Mindanao Way & Marina Expwy WB	1.14	F	1.08	F	-0.06
Culver Blvd & Jefferson Blvd	1.40	F	1.48	F	0.08
Lincoln Blvd & Jefferson Blvd	1.38	F	1.49	F	0.11

Note: Dark shading = intersection needing mitigation

Impact Index	3.11



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

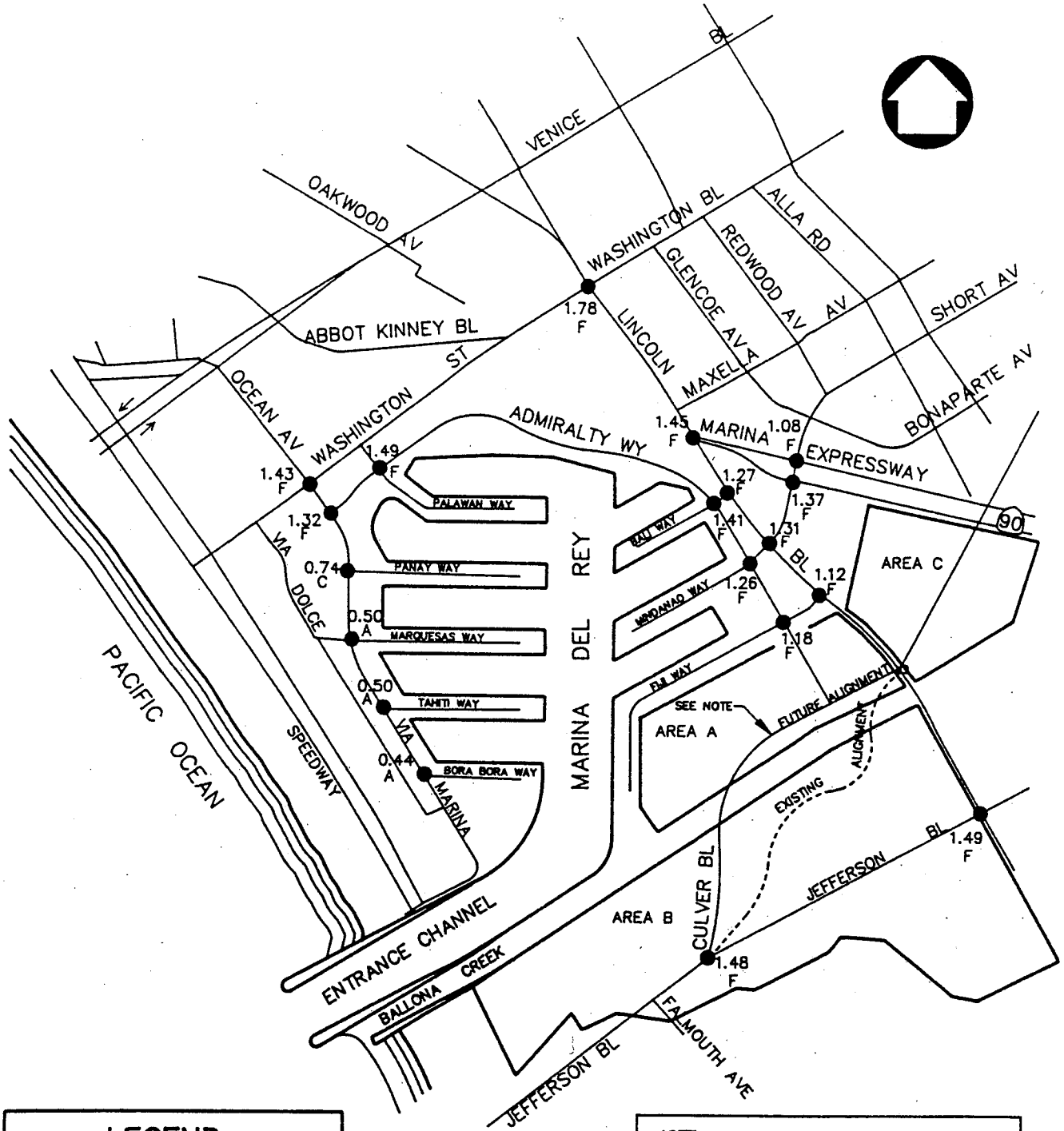
NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 4 LEVELS OF SERVICE AM PEAK

FIGURE 4-10



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 4 LEVELS OF SERVICE
PM PEAK

FIGURE 4-11

Alternative 6 - Reduced Development Alternative (Equal Zone)

A. Description

The development for this alternative was reduced by 15 percent from Alternative 1 levels and equally distributed by traffic analysis zone. This represents a decrease in trips from Alternative 1.

B. Analysis

A comparison of the V/C ratios and the LOS for the 2010 Ambient vs. Alternative 6 for the AM and PM peaks are shown on Tables 4-16 and 4-17. These results are also depicted in Figures 4-16 and 4-17.

TABLE 4-16
Marina del Rey Traffic Study
Ambient vs Alternative 6
AM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 6 V/C	Alternative 6 LOS	Difference In V/C Ratio
Via Marina & Washington St	0.75	C	1.05	F	0.30
Via Marina & Admiralty Way	0.56	A	0.88	D	0.32
Via Marina & Panay Way	0.63	B	0.79	C	0.16
Via Marina & Marquesas Way	0.35	A	0.48	A	0.13
Via Marina & Tahiti Way	0.46	A	0.60	B	0.14
Via Marina & Bora Bora Way	0.38	A	0.48	A	0.10
Palawan Way & Admiralty Way	0.75	C	0.96	E	0.21
Lincoln Blvd & Washington Blvd	1.41	F	1.48	F	0.07
Lincoln Blvd & Marina Expwy	1.16	F	1.22	F	0.06
Admiralty Way & Bali Way	0.63	B	0.83	D	0.20
Lincoln Blvd & Bali way	0.80	D	0.85	D	0.05
Admiralty Way & Mindanao Way	0.88	D	0.96	E	0.08
Lincoln Boulevard & Mindanao Way	1.24	F	1.21	F	-0.03
Admiralty Way & Fiji Way	0.35	A	0.82	D	0.47
Lincoln Blvd & Fiji Way	0.80	D	0.86	D	0.06
Mindanao Way & Marina Expwy EB	1.20	F	1.19	F	-0.01
Mindanao Way & Marina Expwy WB	0.83	D	0.81	D	-0.02
Culver Blvd & Jefferson Blvd	1.28	F	1.34	F	0.06
Lincoln Blvd & Jefferson Blvd	1.42	F	1.38	F	-0.04

Note: Dark shading = intersection needing mitigation

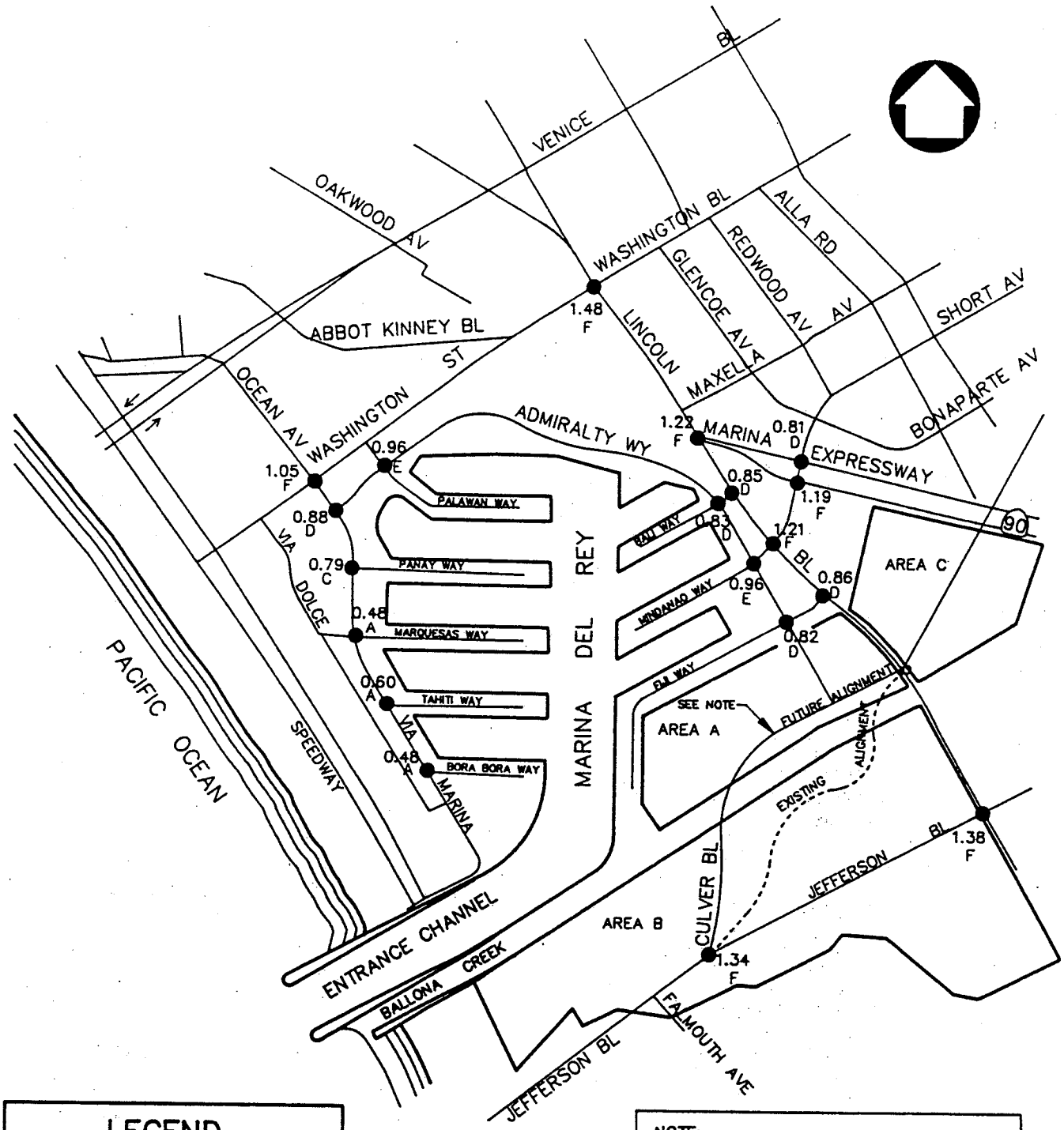
Impact Index 2.31

TABLE 4-17
Marina del Rey Traffic Study
Ambient vs Alternative 6
PM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 6 V/C	Alternative 6 LOS	Difference In V/C Ratio
Via Marina & Washington St	1.05	F	1.41	F	0.36
Via Marina & Admiralty Way	0.91	E	1.27	F	0.36
Via Marina & Panay Way	0.59	A	0.73	C	0.14
Via Marina & Marquesas Way	0.44	A	0.56	A	0.12
Via Marina & Tahiti Way	0.43	A	0.55	A	0.12
Via Marina & Bora Bora Way	0.37	A	0.45	A	0.08
Palawan Way & Admiralty Way	1.16	F	1.38	F	0.22
Lincoln Blvd & Washington Blvd	1.67	F	1.75	F	0.08
Lincoln Blvd & Marina Expwy	1.34	F	1.41	F	0.07
Admiralty Way & Bali Way	1.08	F	1.31	F	0.23
Lincoln Blvd & Bali way	1.14	F	1.19	F	0.05
Admiralty Way & Mindanao Way	1.10	F	1.20	F	0.10
Lincoln Boulevard & Mindanao Way	1.26	F	1.26	F	0.00
Admiralty Way & Fiji Way	0.55	A	1.14	F	0.59
Lincoln Blvd & Fiji Way	1.18	F	1.11	F	-0.07
Mindanao Way & Marina Expwy EB	1.32	F	1.34	F	0.02
Mindanao Way & Marina Expwy WB	1.14	F	1.07	F	-0.07
Culver Blvd & Jefferson Blvd	1.40	F	1.48	F	0.08
Lincoln Blvd & Jefferson Blvd	1.38	F	1.47	F	0.09

Note: Dark shading = intersection needing mitigation

Impact Index 2.57



LEGEND

●	STUDY INTERSECTION
X.XX	V/C RATIO
A – F	LEVEL OF SERVICE

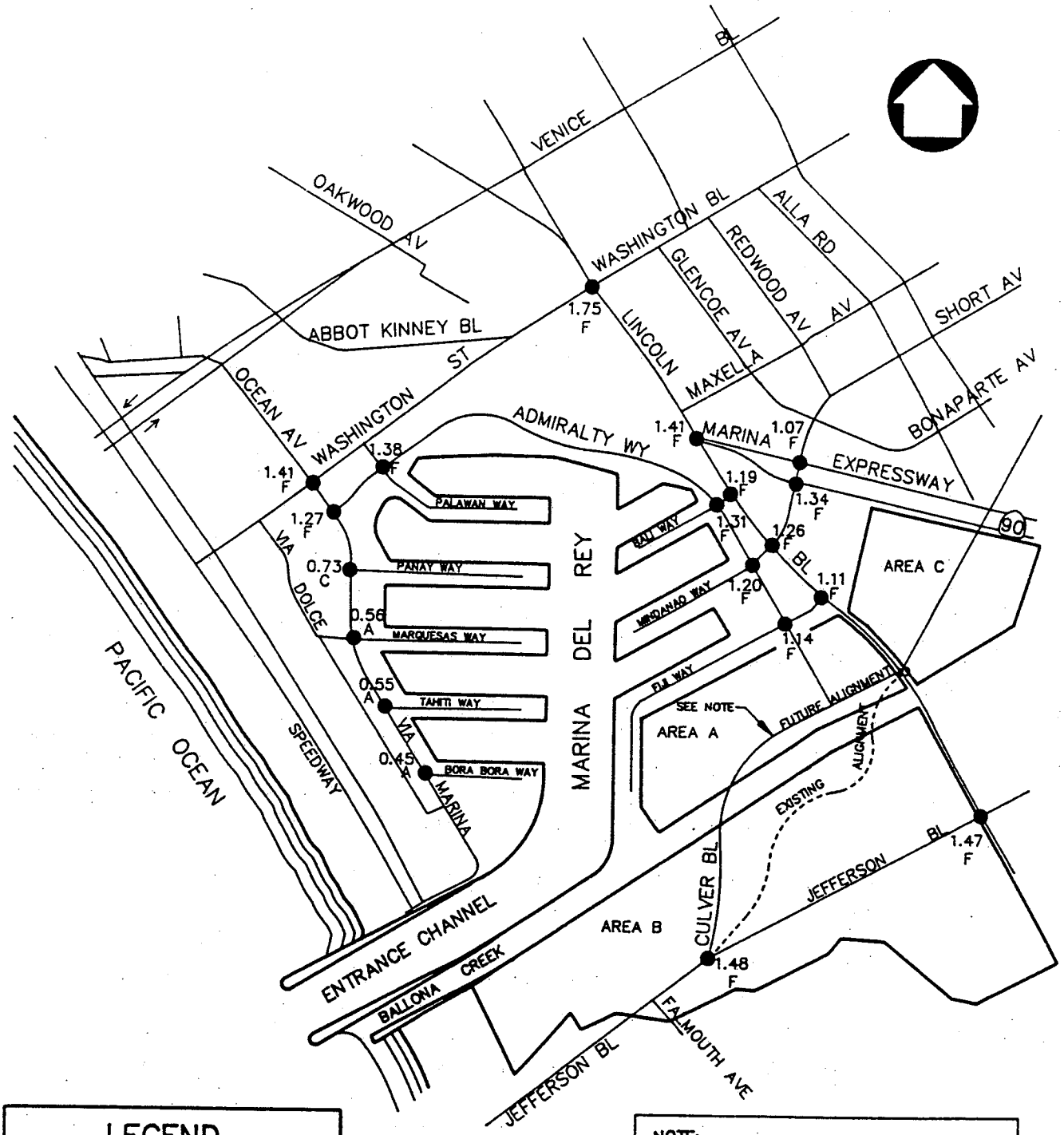
NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 6 LEVELS OF SERVICE AM PEAK

FIGURE 4-16



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 6 LEVELS OF SERVICE
PM PEAK

FIGURE 4-17

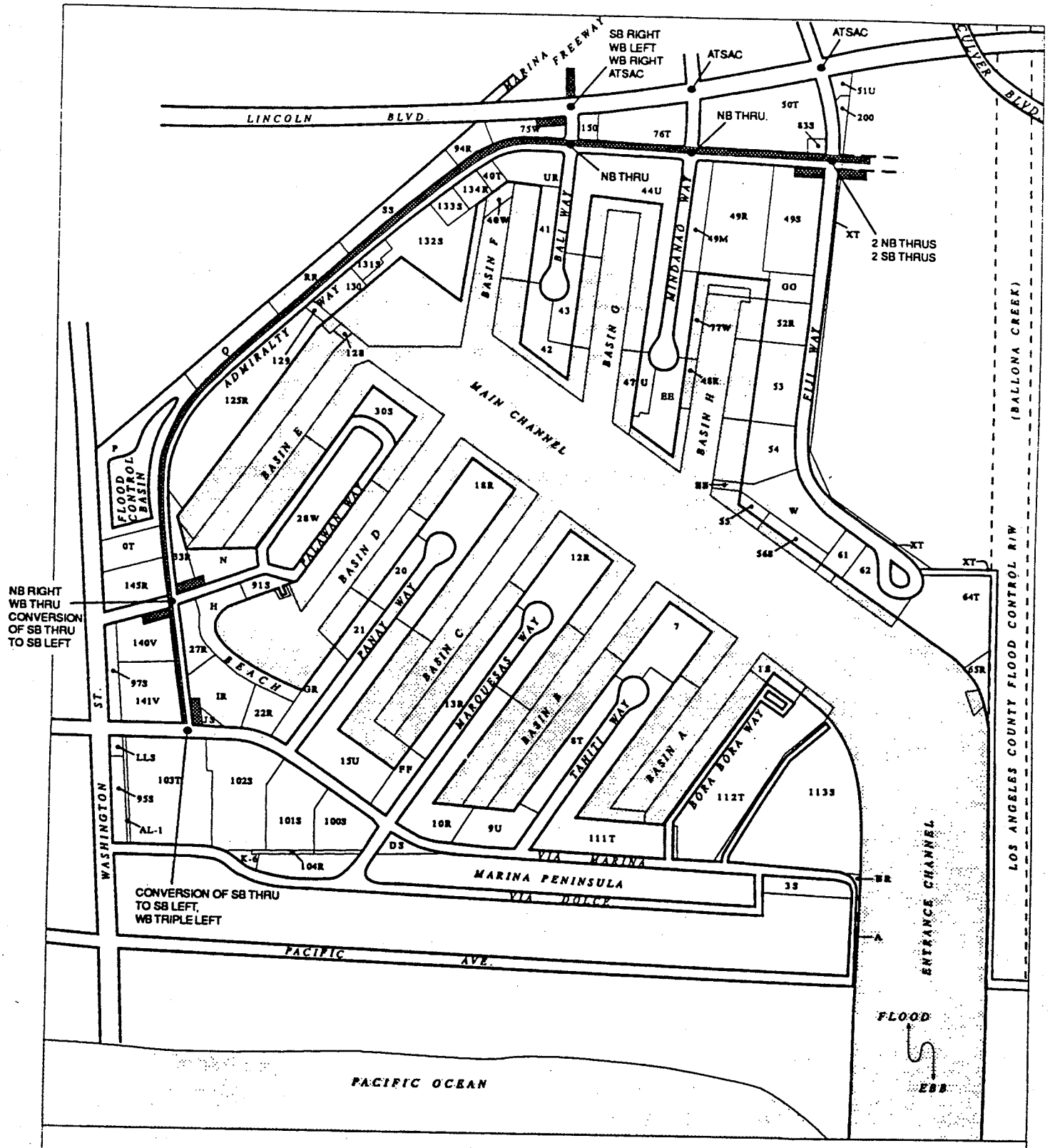
C. Results

The V/C ratios for the 2010 Ambient, Unmitigated and Mitigated condition are presented in Table 4-18 for Alternative 6. In each case, the intersections were fully mitigated. ATSAC was needed along the Lincoln Boulevard corridor in order to bring all of the intersections along the corridor to mitigated levels. The mitigation measures for this alternative are depicted on Figure 4-18.

Table 4-18
Intersection Mitigation
Alternative 6

INTERSECTION		Ambient V/C		Unmitigated V/C		Mitigated V/C		Mitigation Measures
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
2	Via Marina and Admiralty	.56	.91	.88	1.27	.65	.85	Conversion of a SB Through to a SB Left Turn, WB Left Turn
7	Palawan and Admiralty	.75	1.16	.96	1.11	.82	.97	WB Through, NB Right Turn, Conversion of a SB Through into a SB Left Turn
10	Admiralty and Bali	.63	1.08	.83	1.31	.83	1.00	NB Through
11	Lincoln and Bali	.80	1.14	.85	1.19	.84	1.07	SB Right Turn, WB Left Turn, WB Right Turn, ATSAC
12	Admiralty and Mindanao	.88	1.10	.96	1.20	.81	1.02	NB Through
13	Lincoln and Mindanao	1.24	1.26	1.21	1.26	1.21	1.26	ATSAC
14	Admiralty and Fiji	.35	.55	.82	1.14	.53	.84	2 SB Thrus, 2 NB Thrus
15	Lincoln and Fiji	.80	1.18	.86	1.11	.86	1.11	ATSAC

Note: Intersections with ATSAC used as a mitigation measure would have a Mitigated V/C ratio 0.07 lower than depicted in the table above.



Marina del Rey Traffic Study

Figure 4-18
Mitigation Measures
Alternative 6

DKS ASSOCIATES
GRUEN ASSOCIATES

Alternative 7 - Reduced Development Alternative (Equal Area)

A. Description

Development for this alternative was reduced by 30 percent from Alternative 1 levels and proportionately distributed according to the traffic analysis zone's size. The area for each zone is calculated using only those parcels which are given development potential in Alternatives 1, 2, or 3; the area includes land and water area and represents a decrease in trips from Alternative 1.

B. Analysis

A comparison of the V/C ratios and the LOS for the 2010 Ambient vs. Alternative 7 for the AM and PM peaks are shown on Tables 4-19 and 4-20. These results are also depicted in Figures 4-19 and 4-20.

TABLE 4-19
Marina del Rey Traffic Study
Ambient vs Alternative 7
AM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 7 V/C	Alternative 7 LOS	Difference In V/C Ratio
Via Marina & Washington St	0.75	C	1.04	F	0.29
Via Marina & Admiralty Way	0.56	A	0.85	D	0.29
Via Marina & Panay Way	0.63	B	0.81	D	0.18
Via Marina & Marquesas Way	0.35	A	0.45	A	0.10
Via Marina & Tahiti Way	0.46	A	0.58	A	0.12
Via Marina & Bora Bora Way	0.38	A	0.49	A	0.11
Palawan Way & Admiralty Way	0.75	C	0.92	E	0.17
Lincoln Blvd & Washington Blvd	1.41	F	1.47	F	0.06
Lincoln Blvd & Marina Expwy	1.16	F	1.21	F	0.05
Admiralty Way & Bali Way	0.63	B	0.81	D	0.18
Lincoln Blvd & Bali way	0.80	D	0.83	D	0.03
Admiralty Way & Mindanao Way	0.88	D	0.92	E	0.04
Lincoln Boulevard & Mindanao Way	1.24	F	1.21	F	-0.03
Admiralty Way & Fiji Way	0.35	A	0.78	C	0.43
Lincoln Blvd & Fiji Way	0.80	D	0.83	D	0.03
Mindanao Way & Marina Expwy EB	1.20	F	1.18	F	-0.02
Mindanao Way & Marina Expwy WB	0.83	D	0.81	D	-0.02
Culver Blvd & Jefferson Blvd	1.28	F	1.34	F	0.06
Lincoln Blvd & Jefferson Blvd	1.42	F	1.37	F	-0.05

Note: Dark shading = intersection needing mitigation

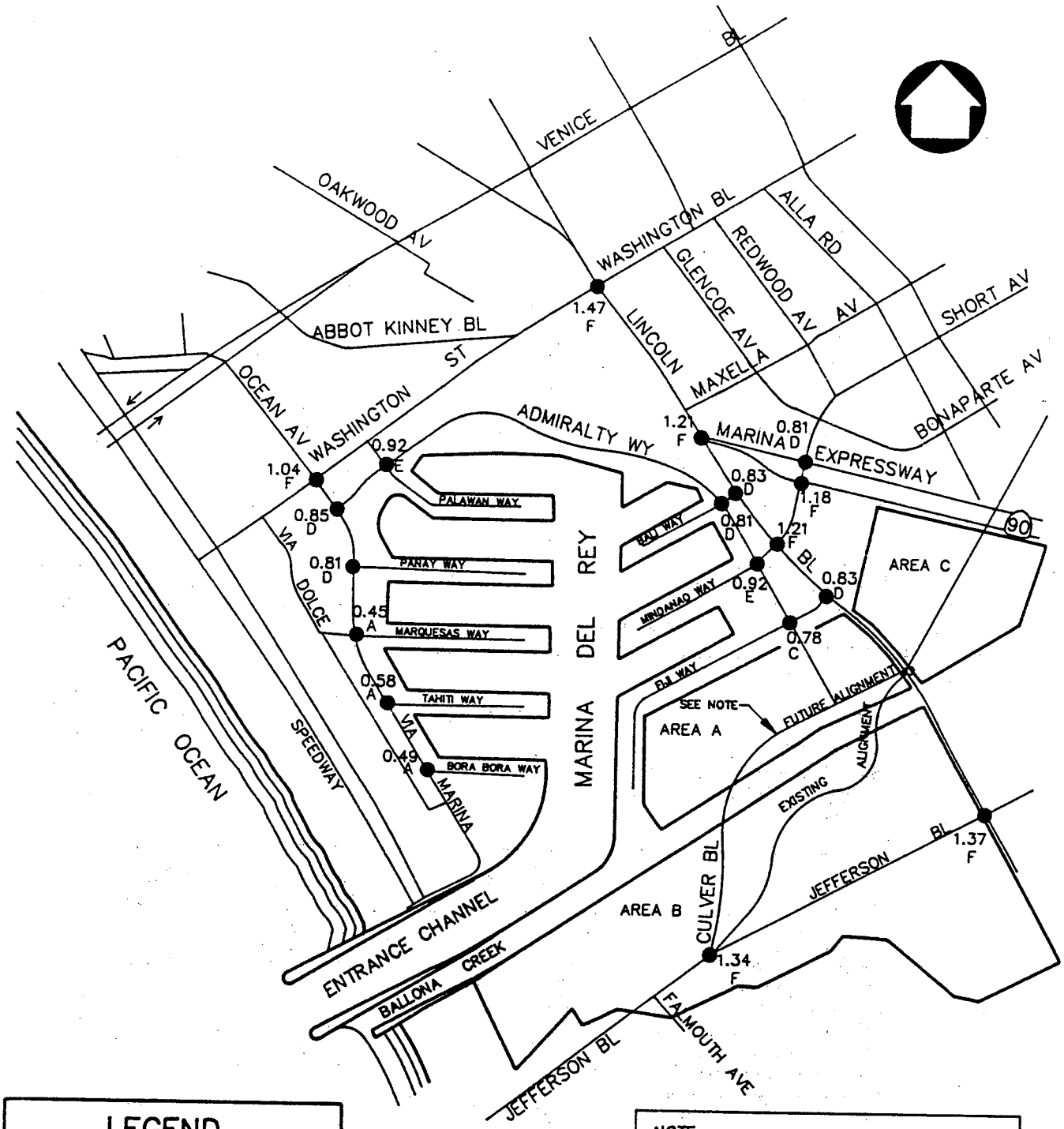
Impact Index 2.02

TABLE 4-20
Marina del Rey Traffic Study
Ambient vs Alternative 7
PM Peak

Intersection	Ambient V/C	Ambient LOS	Alternative 7 V/C	Alternative 7 LOS	Difference In V/C Ratio
Via Marina & Washington St	1.05	F	1.38	F	0.33
Via Marina & Admiralty Way	0.91	E	1.23	F	0.32
Via Marina & Panay Way	0.59	A	0.74	C	0.15
Via Marina & Marquesas Way	0.44	A	0.53	A	0.09
Via Marina & Tahiti Way	0.43	A	0.53	A	0.10
Via Marina & Bora Bora Way	0.37	A	0.46	A	0.09
Palawan Way & Admiralty Way	1.16	F	1.34	F	0.18
Lincoln Blvd & Washington Blvd	1.67	F	1.62	F	-0.05
Lincoln Blvd & Marina Expwy	1.34	F	1.37	F	0.03
Admiralty Way & Bali Way	1.08	F	1.28	F	0.20
Lincoln Blvd & Bali way	1.14	F	1.17	F	0.03
Admiralty Way & Mindanao Way	1.10	F	1.18	F	0.08
Lincoln Boulevard & Mindanao Way	1.26	F	1.25	F	-0.01
Admiralty Way & Fiji Way	0.55	A	1.08	F	0.53
Lincoln Blvd & Fiji Way	1.18	F	1.07	F	-0.11
Mindanao Way & Marina Expwy EB	1.32	F	1.33	F	0.01
Mindanao Way & Marina Expwy WB	1.14	F	1.07	F	-0.07
Culver Blvd & Jefferson Blvd	1.40	F	1.48	F	0.08
Lincoln Blvd & Jefferson Blvd	1.38	F	1.46	F	0.08

Note: Dark shading = intersection needing mitigation

Impact Index 2.06



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

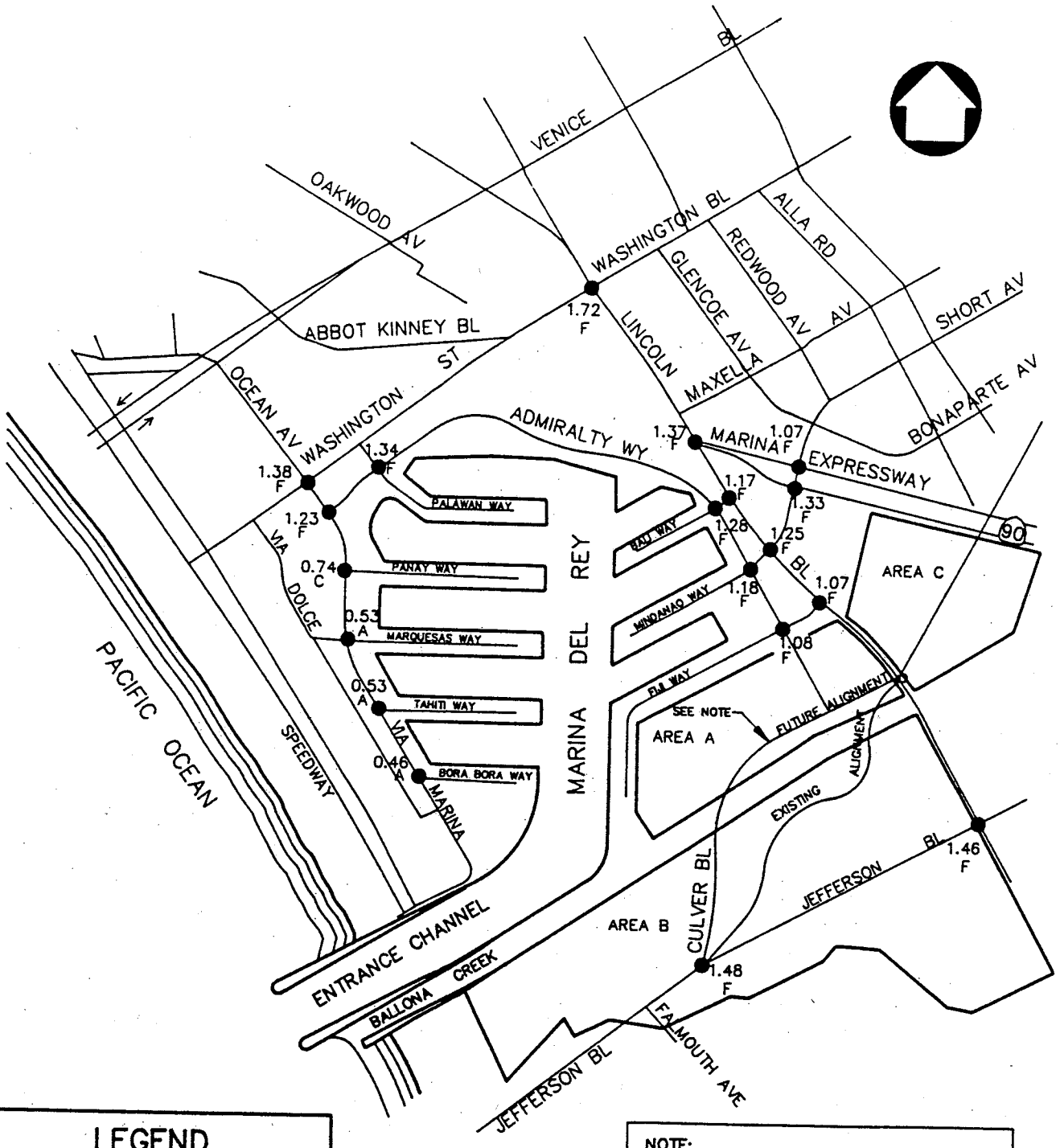
NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 7 LEVELS OF SERVICE AM PEAK

FIGURE 4-19



LEGEND

- ● STUDY INTERSECTION
- X.XX V/C RATIO
- A – F LEVEL OF SERVICE

NO SCALE

NOTE:
THIS IS AN APPROXIMATE ALIGNMENT AND DOES NOT NECESSARILY REPRESENT THE FINAL DESIGN

MARINA DEL REY TRAFFIC STUDY

ALTERNATIVE 7 LEVELS OF SERVICE PM PEAK

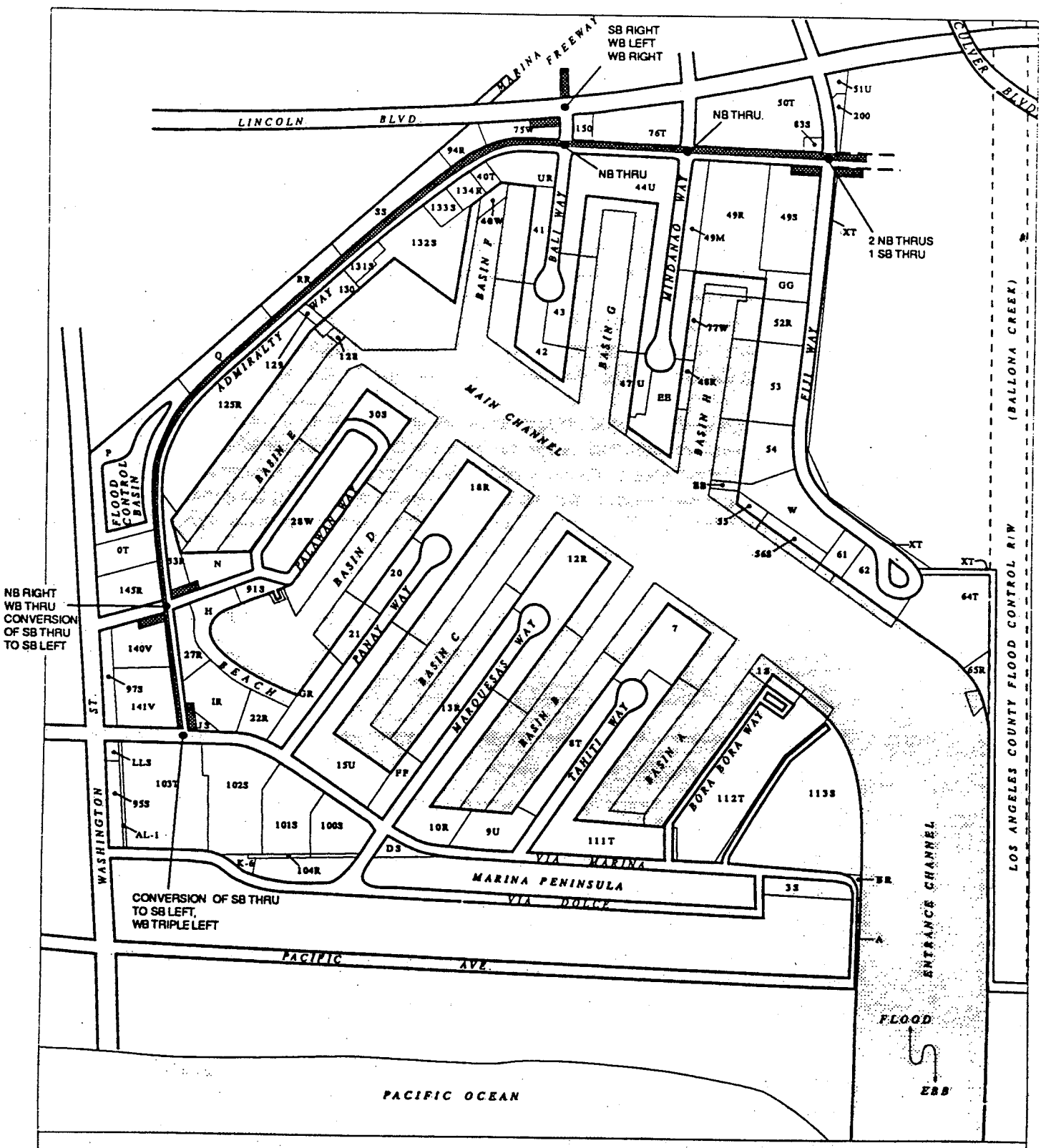
FIGURE 4-20

C. Results

The V/C ratios for the 2010 Ambient, Unmitigated and Mitigated condition are presented in Table 4-21 for Alternative 7. In each case, the intersections were fully mitigated without the use of ATSAC. The mitigation measures for this alternative are depicted on Figure 4-21.

Table 4-21
Intersection Mitigation
Alternative 7

INTERSECTION		Ambient V/C		Unmitigated V/C		Mitigated V/C		Mitigation Measures
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
2	Via Marina and Admiralty	.56	.91	.85	1.23	.63	.82	Conversion of a SB Through to a SB Left Turn, WB Left Turn
7	Palawan and Admiralty	.75	1.16	.92	1.07	.79	.94	WB Through, NB Right Turn, Conversion of a SB Through into a SB Left Turn
10	Admiralty and Bali	.63	1.08	.81	1.28	.81	.98	NB Through
11	Lincoln and Bali	.80	1.14	.83	1.17	.82	1.04	SB Right Turn, WB Left Turn, WB Right Turn
12	Admiralty and Mindanao	.88	1.10	.92	1.18	.78	1.00	NB Through
13	Lincoln and Mindanao	1.24	1.26	1.21	1.25	1.21	1.25	None Needed
14	Admiralty and Fiji	.35	.55	.78	1.08	.60	.83	1 SB Through, 2 NB Thrus
15	Lincoln and Fiji	.80	1.18	.83	1.07	.83	1.07	None Needed



Marina del Rey Traffic Study

Figure 4-21
Mitigation Measures
Alternative 7

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GRUEN ASSOCIATES

4.3 Development of Potential Traffic Mitigation Measures

Mitigation measures were developed to mitigate the adverse traffic impacts generated by new development under the seven land use alternatives. Mitigation measures were developed based on the Level of Service analysis and include physical improvement measures such as intersection widening and additional lanes as well as ATSAC. Again, the goal was to identify mitigation measures which provide additional capacity to improve V/C ratios at study intersections to 0.85 or to the pre-development ambient V/C ratio if the ambient ratio exceeds 0.85. Study intersections outside the County's jurisdiction are discussed in subsection 4.5.

A "first pass" analysis of potential mitigation measures and roadway improvements was initially developed and reviewed with staff members from the County's Regional Planning Department, Public Works Department and Beaches and Harbors Department. As a result of these reviews, mitigation measures which would have significantly impacted existing buildings were eliminated from further consideration. The remaining mitigation measures were assembled into a proposed program of feasible mitigation measures, as described below:

SYSTEM IMPROVEMENT - ADDITIONAL NORTHBOUND THROUGH LANE ON ADMIRALTY

Narrowing the widths of the existing lanes on Admiralty and moving the median island to the west to allow an additional Northbound through lane.

INTERSECTION 2 - VIA MARINA AND ADMIRALTY

Conversion of a Southbound through lane to a Southbound left-turn lane and addition of a Westbound left-turn lane.

INTERSECTION 7 - PALAWAN AND ADMIRALTY

Addition of a Westbound through, Northbound right-turn lane and the conversion of one of the Southbound through lanes into a second left-turn lane.

INTERSECTION 10 - ADMIRALTY AND BALI

Addition of a Northbound through lane.

INTERSECTION 11 - LINCOLN AND BALI

Addition of a Southbound right-turn lane and a Westbound left-turn and right-turn lane at the Toyota Dealership driveway (car dealership may need to reconfigure driveway at own expense).

INTERSECTION 12 - ADMIRALTY AND MINDANAO

Addition of a Northbound through lane and a Northbound right-turn lane.

INTERSECTION 13 - LINCOLN AND MINDANAO

Addition of a Northbound right-turn lane.

INTERSECTION 14 - ADMIRALTY AND FIJI

Addition of two Northbound through lanes and two Southbound through lanes.

INTERSECTION 15 - LINCOLN AND FIJI

Addition of a Southbound through lane.

4.4 Assessment of Mitigation Measure Impacts

Impacts were assessed for the various roadway improvements in the Marina which were evaluated as mitigation measures. The following is a discussion of these impacts.

SYSTEM IMPROVEMENT - ADDITIONAL NORTHBOUND LANE ON ADMIRALTY

A. An additional Northbound through lane for Admiralty Way from Fiji to Via Marina. This improvement is needed for each of the seven alternatives investigated. The extra lane can be provided between the existing 70-foot curb to curb width by reconstructing the median island towards the water side of Admiralty and reducing the existing lane widths. This would also involve the removal and reconstruction of the existing median. Luminaire poles would need to be relocated into the new median island. Because reconstruction would reduce the width of the existing curb lane on the water side of Admiralty, two driveways serving the Pier 44 boat yard may need to be widened for adequate boat trailer turn movements.

INTERSECTION 2 - VIA MARINA AND ADMIRALTY

A. Conversion of a southbound through lane to a southbound left-turn lane. This improvement would require widening the east leg of the intersection which currently is striped to receive traffic from the one existing southbound left-turn lane. The right-hand lane on this leg is currently striped to receive the northbound free right-turn traffic. This lane would be re-striped to receive the new left-turn lane. This would require widening the leg for the free right turn. To minimize impacts on existing development, the widening should end at the east end of the County's parking lot property. This would result in widening the road to the south by approximately 13 feet for a total length of 300 feet including transitions. The existing sidewalk would also be removed and reconstructed along the edge of the construction area and the channelization island would also be removed and relocated. The luminaire poles would also need to be moved. One quadrant of the traffic signal would need to be relocated also. Widening through the County's parking lot would result in the loss of approximately five parking spaces. The median island for the northbound approach would also need to be shortened by approximately 13 feet.

B. Construction of an additional westbound left-turn lane. This improvement would be undertaken concurrently with the additional southbound left-turn lane mentioned above. These improvements would require widening the east leg of the intersection to the south by 24 feet. The right-hand lane would be striped to receive the northbound free right turn traffic. This would result in a widening of Admiralty by 24 feet for a total of 390

feet including transitions. The existing sidewalk would also have to be removed and reconstructed along the edge of the construction area and the channelization island would also need to be removed and relocated along with the 250-foot long median island on Admiralty. The luminaire poles would also need to be moved. One quadrant of the traffic signal would need to be relocated also. Widening through the County's parking lot would result in the loss of approximately five parking spaces. The median island for the northbound approach will also need to be shortened by approximately 24 feet. See Figure 4-22 for the location of these improvements.

INTERSECTION 7 - PALAWAN AND ADMIRALTY

A. Westbound through lane. This improvement was discussed above in the System Improvement section.

B. Northbound right-turn lane. This can be accomplished by re-striping the northbound Palawan approach into two lanes. No additional widening is needed.

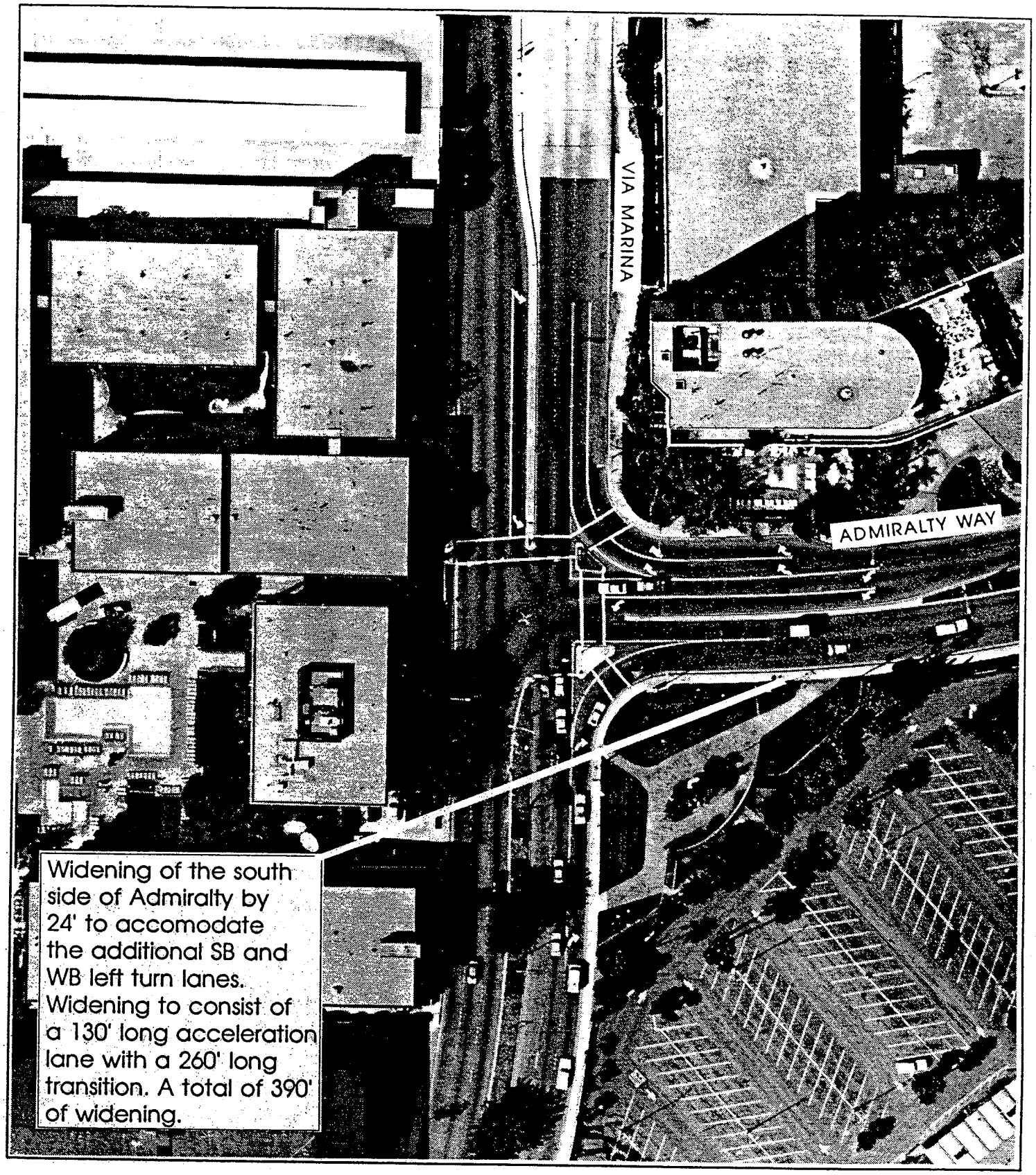
C. Southbound left-turn lane. The conversion of one of the Southbound Palawan through lanes into a second left-turn lane can be accomplished by restriping.

See Figure 4-23 for the location of these improvements.

INTERSECTION 10 - ADMIRALTY AND BALI

A. The northbound through lane. This improvement was discussed above in the System Improvement section.

See Figure 4-24 for the location of this improvement.



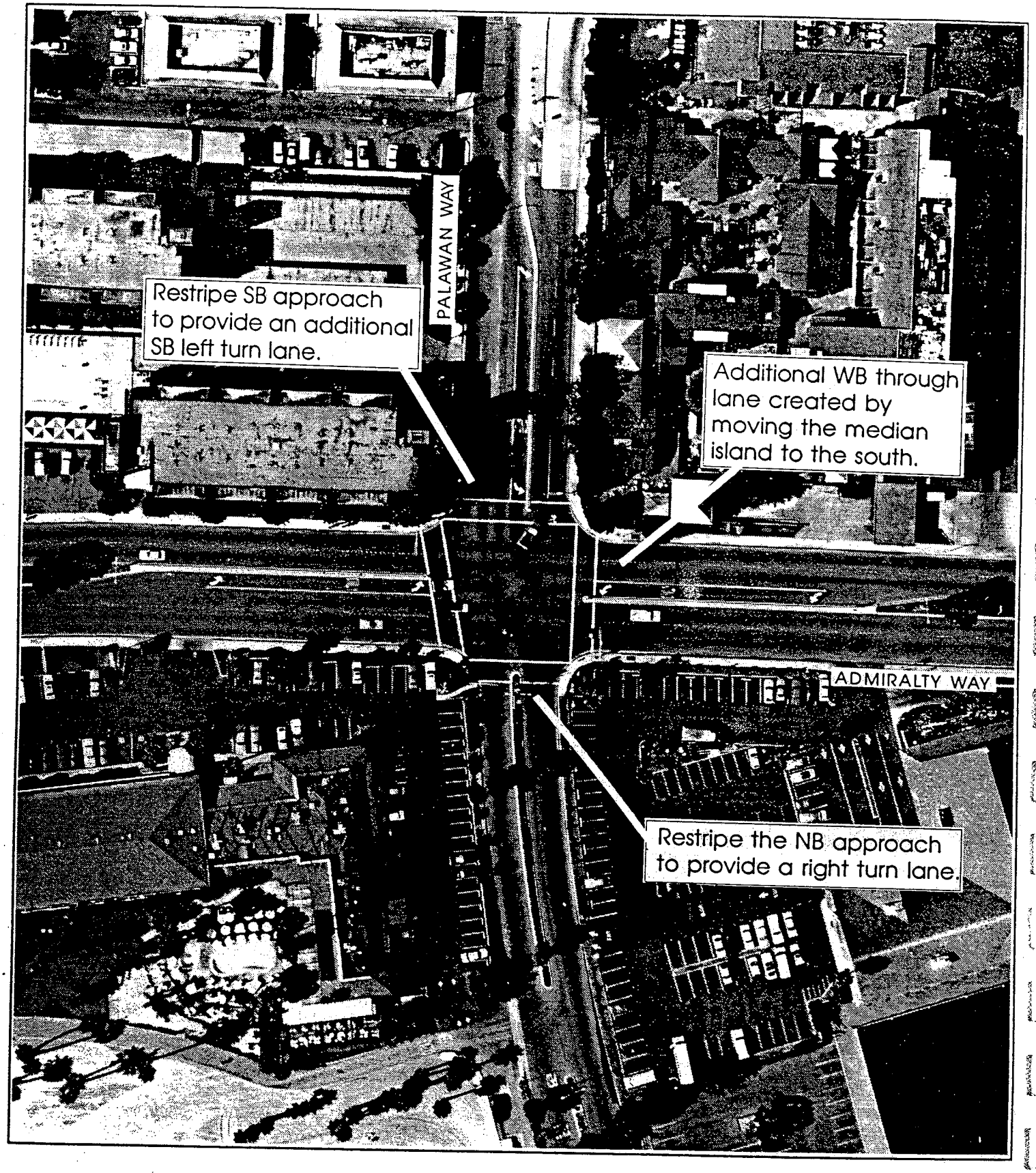
Marina del Rey Traffic Study

Figure 4-22

Proposed Mitigation Concept
Via Marina and Admiralty Way

DKS ASSOCIATES
GRUEN ASSOCIATES

0 20 80
SCALE IN FEET



Marina del Rey Traffic Study

Figure 4-23
Proposed Mitigation Concept
Palawan Way and Admiralty Way

DKS ASSOCIATES
GRUEN ASSOCIATES

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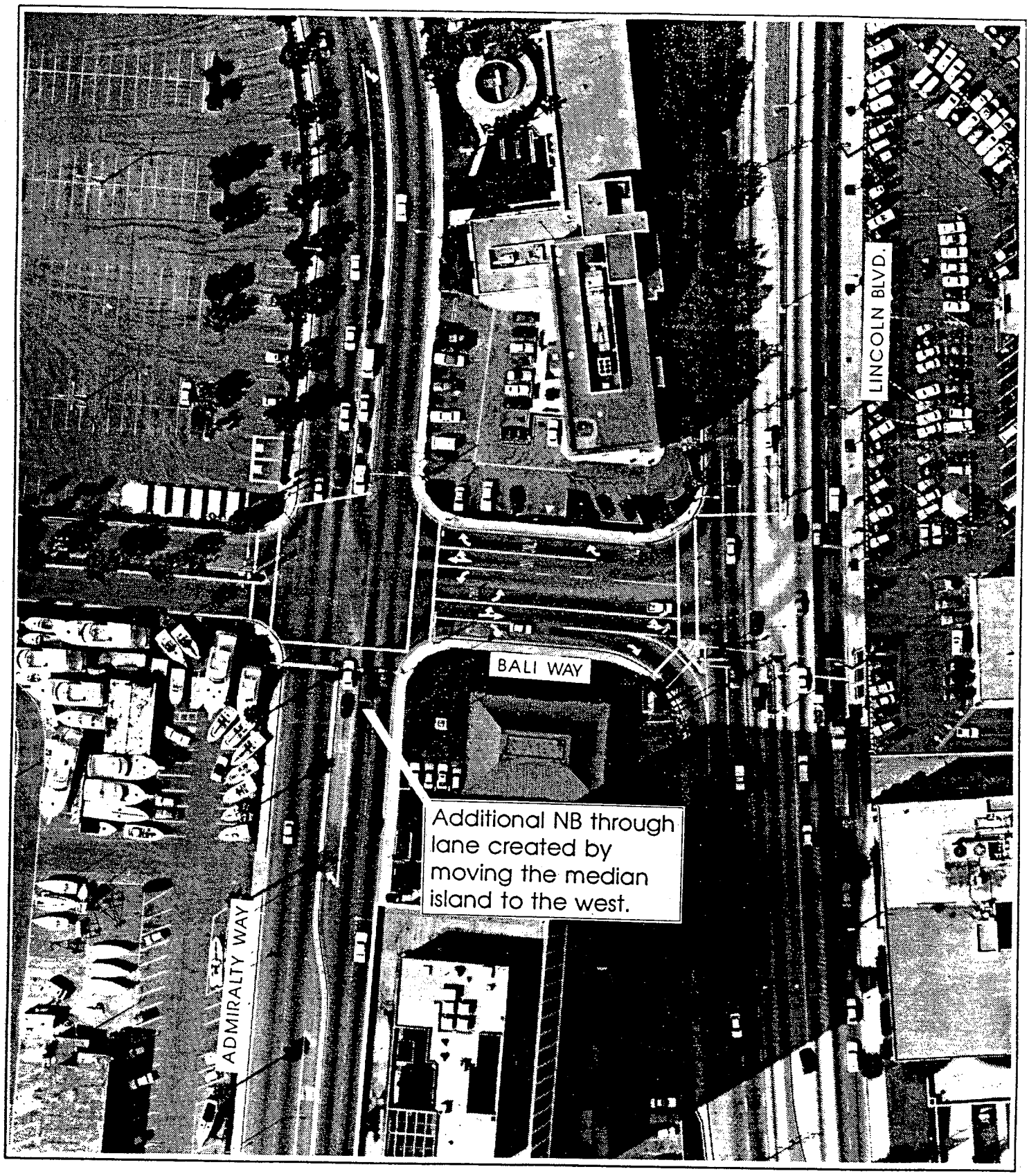
SCALE IN FEET



Marina del Rey Traffic Study

Figure 4-24
Proposed Mitigation Concept
Admiralty Way and Bali Way

DKS ASSOCIATES
GRUEN ASSOCIATES

0 20 80
SCALE IN FEET

INTERSECTION 11 - LINCOLN AND BALI

A. Southbound right-turn lane. This widening would require a 260-foot long right-turn lane with a 90-foot transition by widening along the west side of Lincoln. The existing sidewalk would also have to be removed and reconstructed along the edge of the construction area. One luminaire pole would also need to be moved along with 3 large wooden high voltage power poles on the west side of Lincoln. One quadrant of the traffic signal would need to be relocated also. Widening would close the access drive behind the Marina Professional Building on Parcel 75 and would result in the loss of approximately five parking spaces.

B. Westbound left turn, westbound right turn. These improvements can be accommodated by restriping the driveway and would be the responsibility of the private property owner (auto dealer).

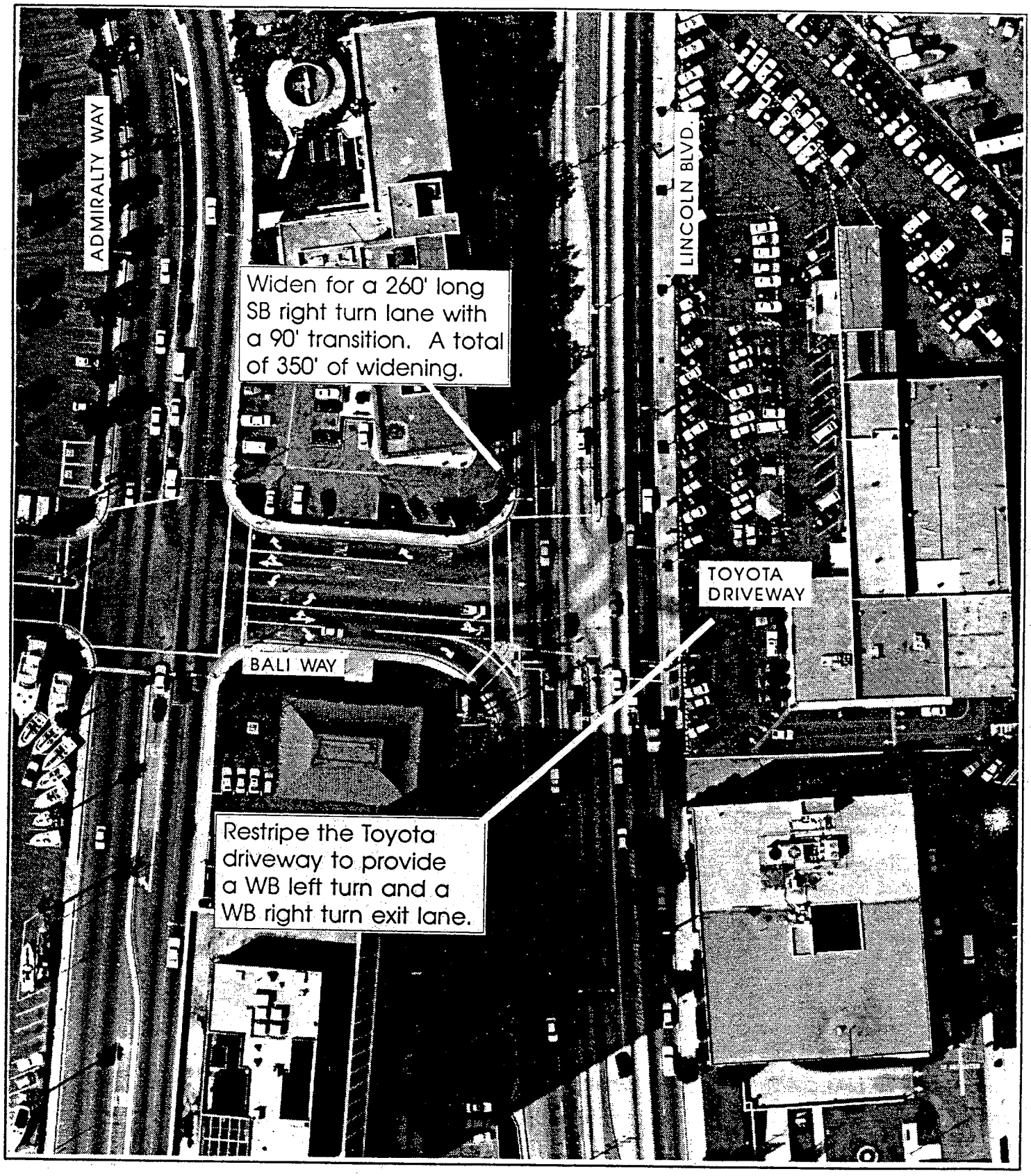
See Figure 4-25 for the location of these improvements.

INTERSECTION 12 - ADMIRALTY AND MINDANAO

A. The northbound through lane. This improvement was discussed above in the System Improvement section.

B. Northbound right-turn lane. This widening would require a 260-foot long right-turn lane with a 90 foot transition on the east side of Admiralty. The existing sidewalk would also have to be removed and reconstructed along the edge of the construction area. One quadrant of the traffic signal would need to be relocated. This widening would result in the loss of approximately 10 parking spaces from the Marina Shopping Center. The spaces could be replaced by adding parking on to other areas of the parcel.

See Figure 4-26 for the location of these improvements.

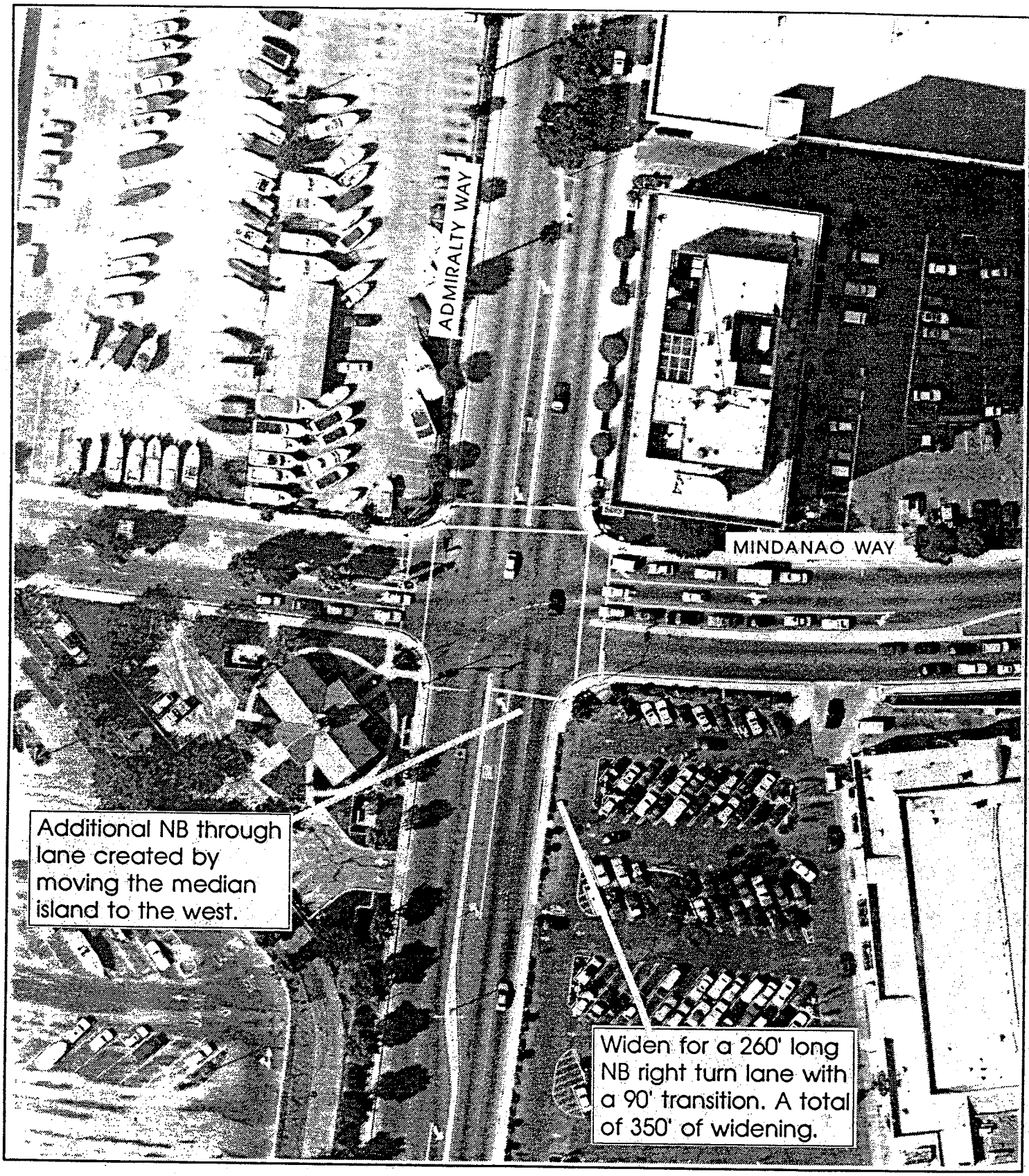


Marina del Rey Traffic Study

Figure 4-25
Proposed Mitigation Concept
Bali Way at Lincoln Boulevard

DKS ASSOCIATES
GRUEN ASSOCIATES

0 20 80
SCALE IN FEET



Marina del Rey Traffic Study

Figure 4-26
Proposed Mitigation Concept
Admiralty Way and Mindanao Way

DKS ASSOCIATES
GRUEN ASSOCIATES

0 20 80
SCALE IN FEET

INTERSECTION 13 - LINCOLN AND MINDANAO

A. Northbound right-turn lane. This widening accommodates a 280-foot long right-turn lane by widening the west side of Lincoln by 6 feet along the length of the lane and by narrowing the median island. This widening will take place along 580 feet of the south leg of the intersection and along 300 feet of the north leg of the intersection. This would also involve removing the median island on Lincoln through the construction area and replacing it with a narrower relocated island. The existing sidewalk would also have to be removed and reconstructed along the edge of the construction area. Two quadrants of the traffic signal would need to be relocated and the median signal poles for the northbound and southbound traffic would have to be replaced by signal mast arms. Approximately five luminaire poles would also need to be moved as well as eight large high voltage power poles on the west side of Lincoln.

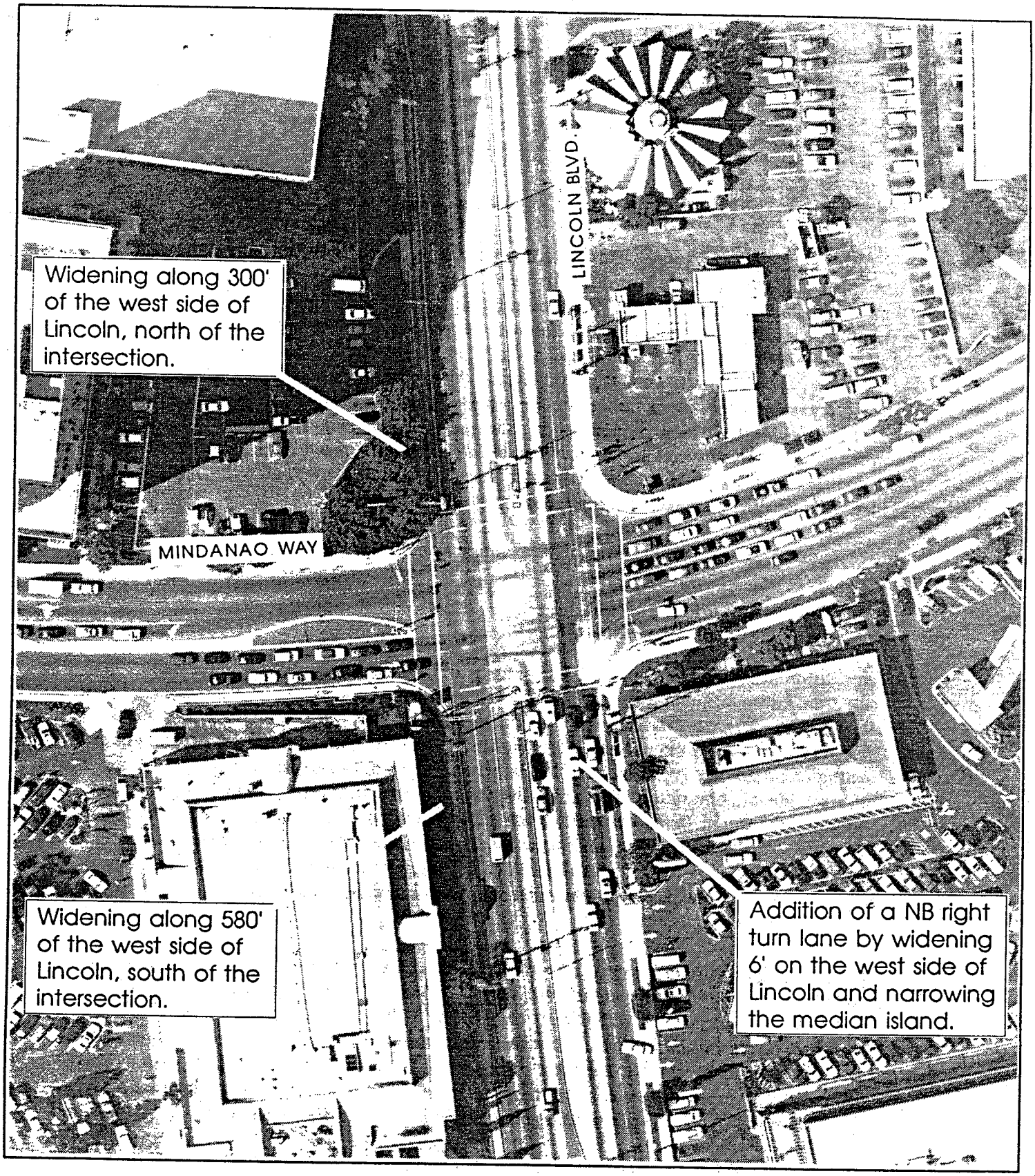
See Figure 4-27 for the location of these improvements.

INTERSECTION 14 - ADMIRALTY AND FIJI

A. One Southbound through lane. This intersection is currently a "tee" intersection and would be extended to the south with the development of Area "A", in all but one of the alternatives. The new extension to the south takes place on vacant land, but must be integrated with development plans for this area. The north leg of the intersection adjoins existing commercial development. This improvement would encroach on the parkway on the west side of Admiralty. This parkway consists of landscaping and a bike path. If one southbound through lane were added to the intersection, the lane could take the place of the existing right-turn lane and a new right-turn lane could be developed out of the parkway. This lane would need to be 200 feet long with a 60-foot transition. This would require removing and relocating the existing sidewalk and bike path throughout the length of these improvements.

B. Two Southbound through lanes. If two southbound through lanes were constructed, the roadway would need to be widened a total of 24 feet. These through lanes would be at least 200 feet long with a 550-foot transition. The right-turn lane would also be developed as mentioned above. This will require removing and relocating the existing sidewalk and the bike path throughout the total length of these improvements. The existing parkway at the intersection should be wide enough to accommodate the approximately 24 feet of widening needed, the bike path and the sidewalk.

See Figure 4-28 for the location of these improvements.



Marina del Rey Traffic Study

Figure 4-27
Proposed Mitigation Concept
Lincoln Boulevard and Mindanao Way

DKS ASSOCIATES
GRUEN ASSOCIATES

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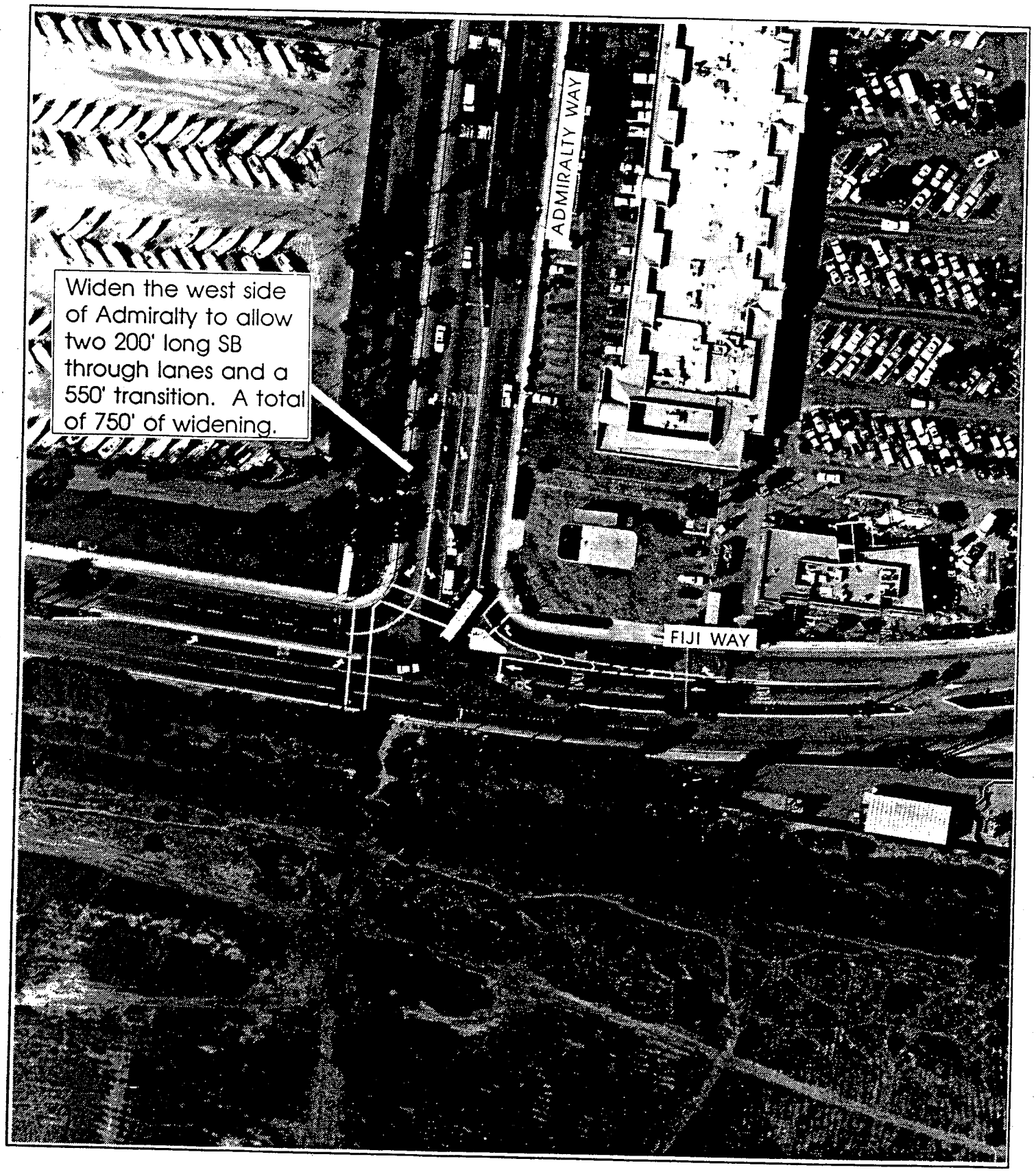
SCALE IN FEET



Marina del Rey Traffic Study

Figure 4-28
Proposed Mitigation Concept
Admiralty Way and Fiji Way

DKS ASSOCIATES
GRUEN ASSOCIATES

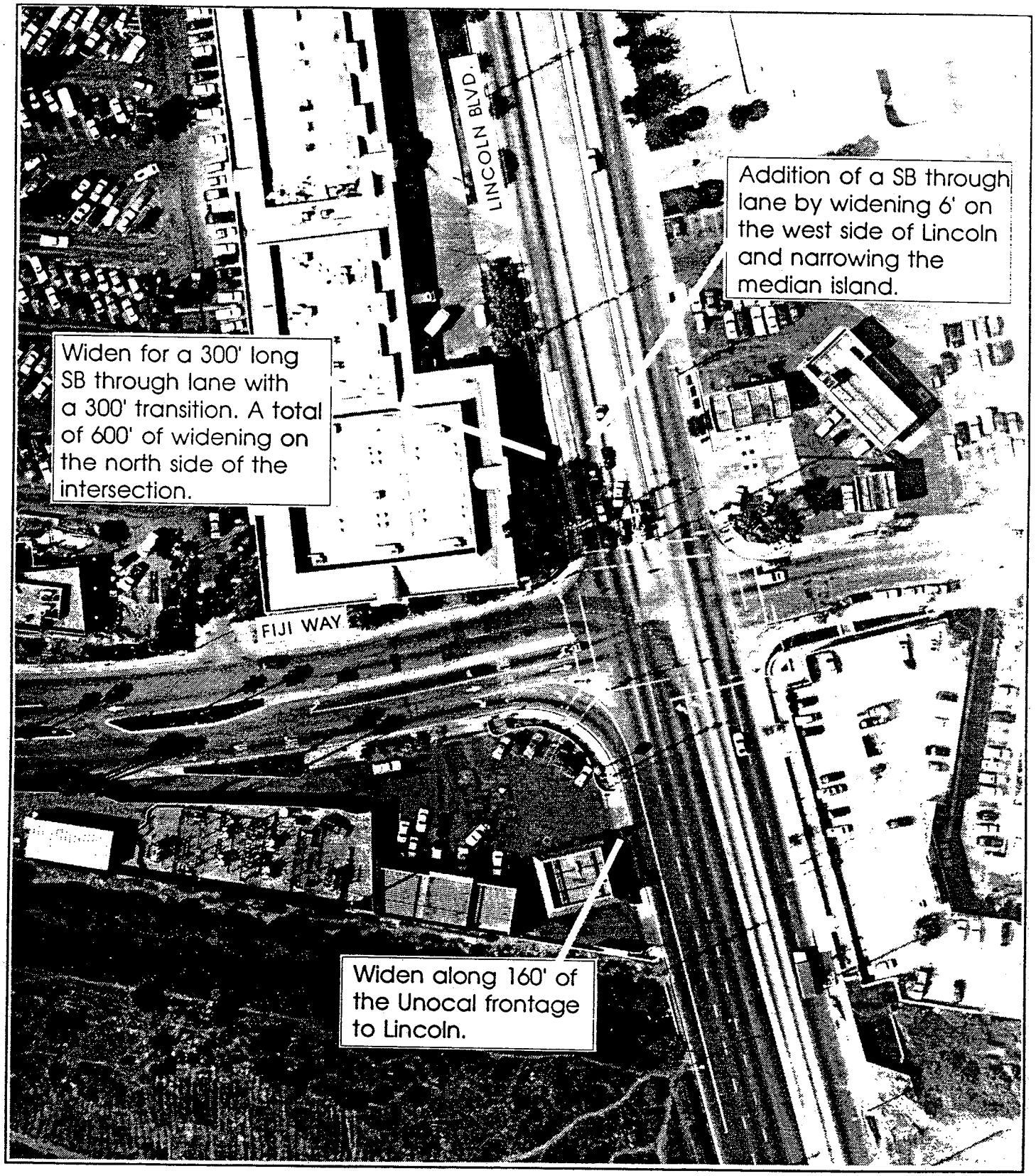
0 20 80
SCALE IN FEET

INTERSECTION 15 - LINCOLN AND FIJI

A. Southbound through lane. This widening accommodates a 300-foot through lane in advance of the intersection by widening the west side of the road by 6 feet along the length of the lane and by narrowing the median island with a 300-foot transition. On the south side of the intersection, the widening would encroach on the service station necessitating moving one of the gas pump islands. The service station has approximately 160 feet of Lincoln frontage. Improvements south of this area would be the responsibility of the Playa Vista development. The existing sidewalk would have to be removed and reconstructed along the edge of the construction area. Two quadrants of the traffic signal would need to be relocated and the median signal poles for the northbound traffic would have to be replaced by signal mast arms. Approximately four luminaire poles would also need to be moved along with 5 large high voltage power poles on the west side of Lincoln.

See Figure 4-29 for the location of these improvements.

Schematic diagrams showing the study intersections in their existing configuration and after these improvements are depicted on Figures 4-30 to 4-33.

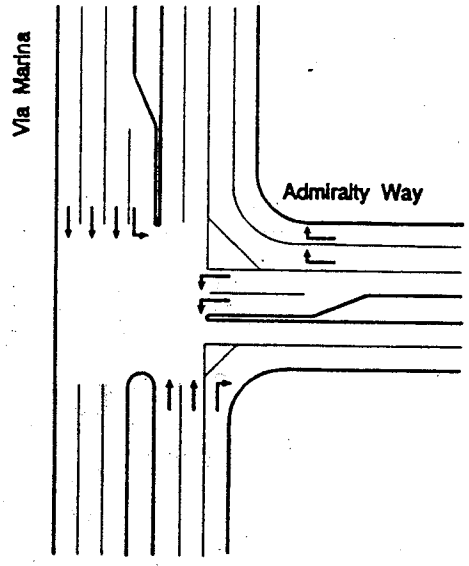


Marina del Rey Traffic Study

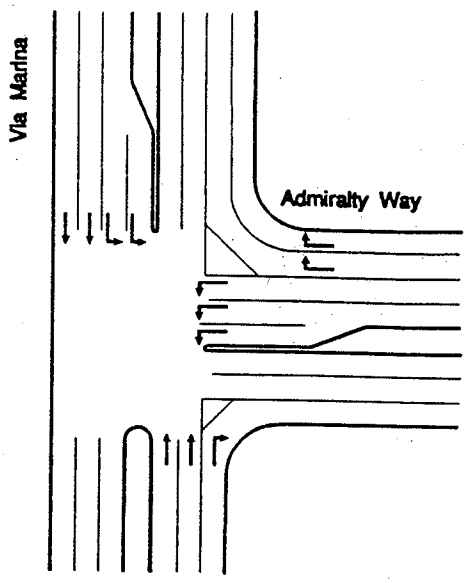
Figure 4-29
Proposed Mitigation Concept
Lincoln Boulevard and Fiji Way

DKS ASSOCIATES
GRUEN ASSOCIATES

0 20 80
SCALE IN FEET



Before Improvements



After Improvements

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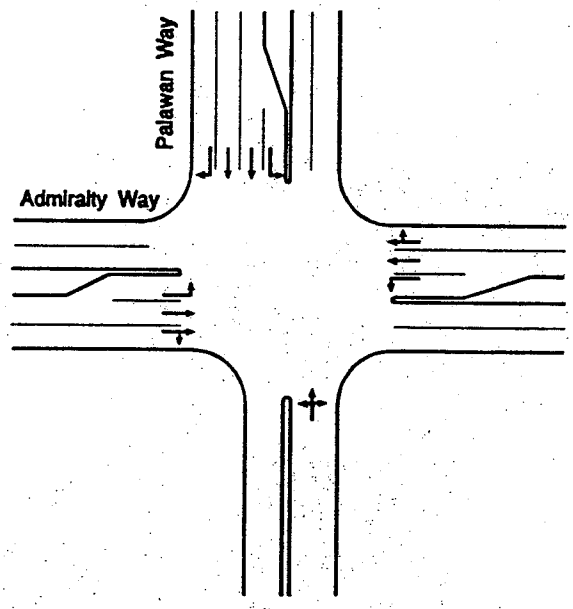
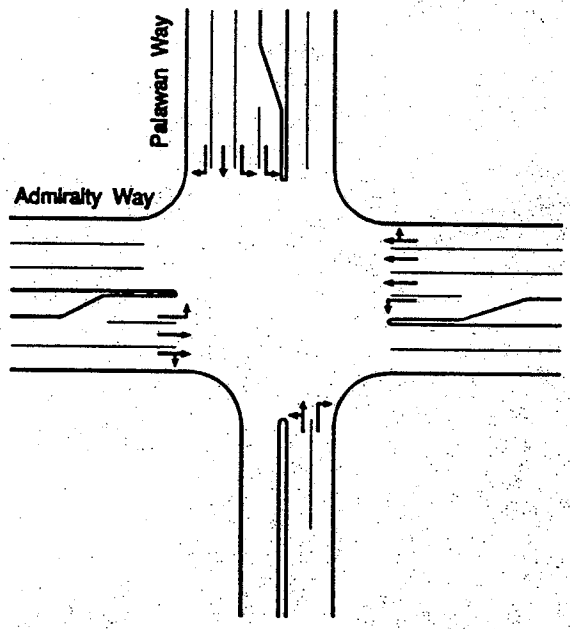


Before Improvements



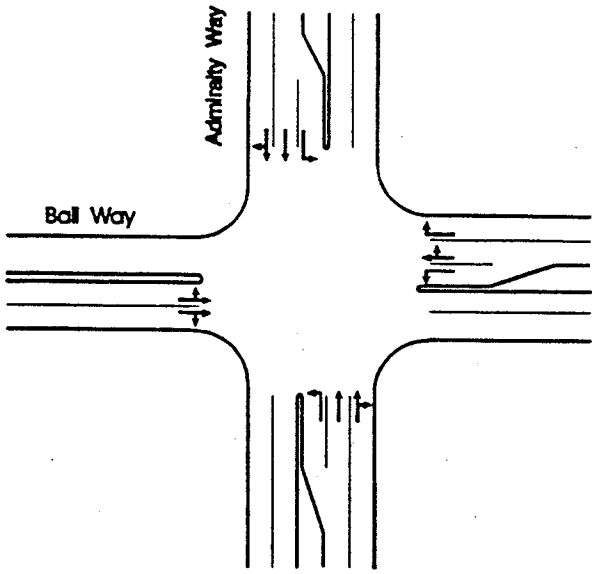
After Improvements

NOT TO SCALE

Marina del Rey
Traffic Study

DKS ASSOCIATES
GRUEN ASSOCIATES

Figure 4-30
Existing and Mitigated Intersection Lanes
Via Marina and Admiralty Way
Palawan Way and Admiralty Way



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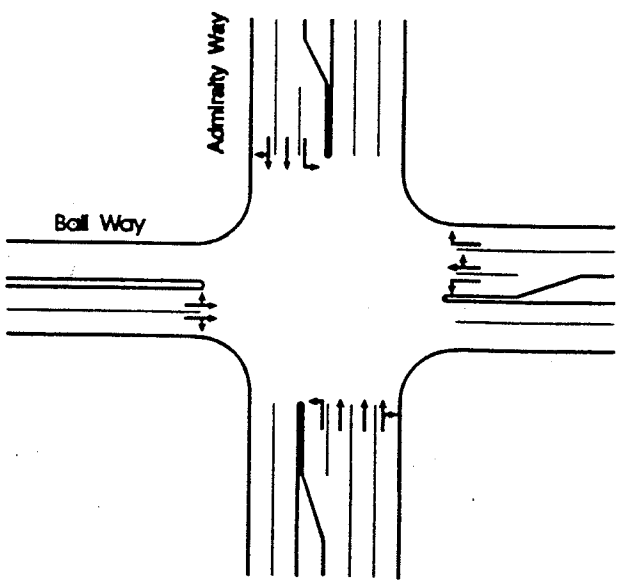

After Improvements

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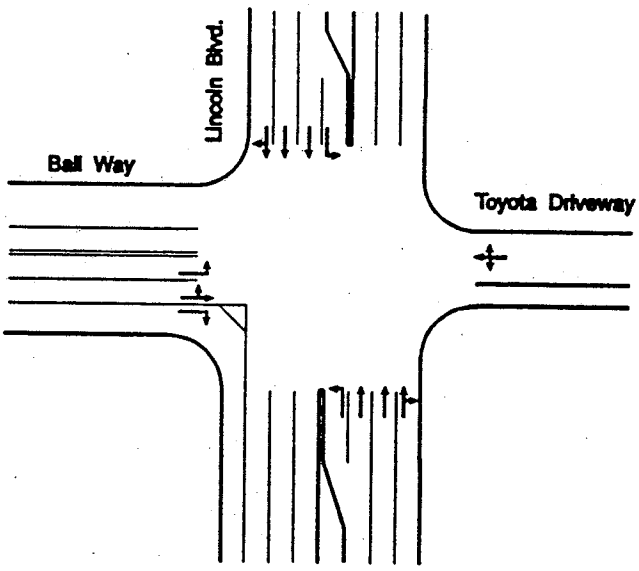
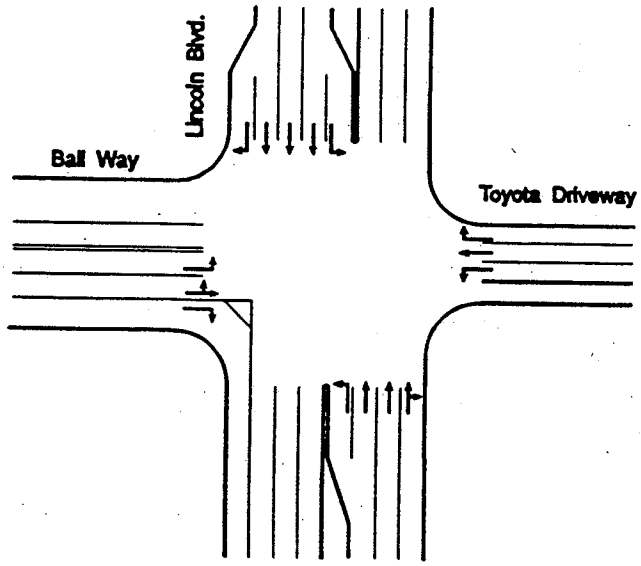


Before Improvements



After Improvements

NOT TO SCALE

Marina del Rey

Traffic Study

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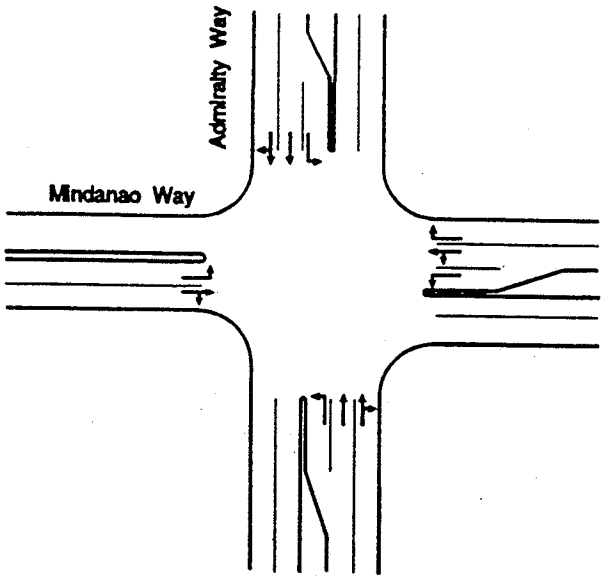
GRUEN ASSOCIATES

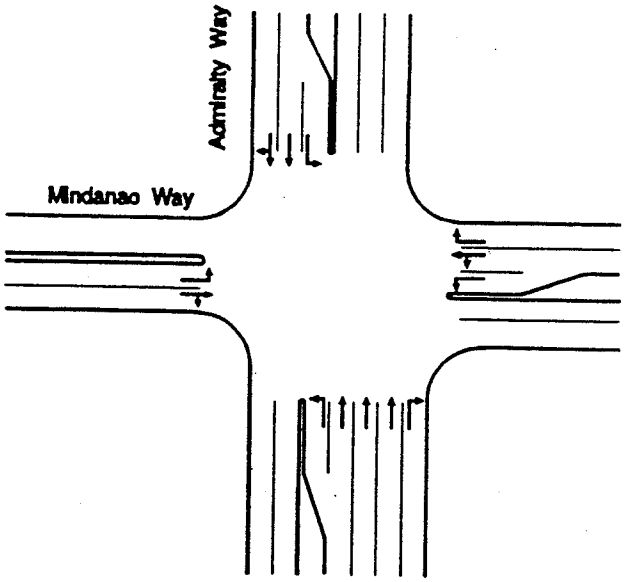
Figure 4-31

Existing and Mitigated Intersection Lanes

Admiralty Way and Bali Way
Lincoln Boulevard and Bali Way



Before Improvements



After Improvements

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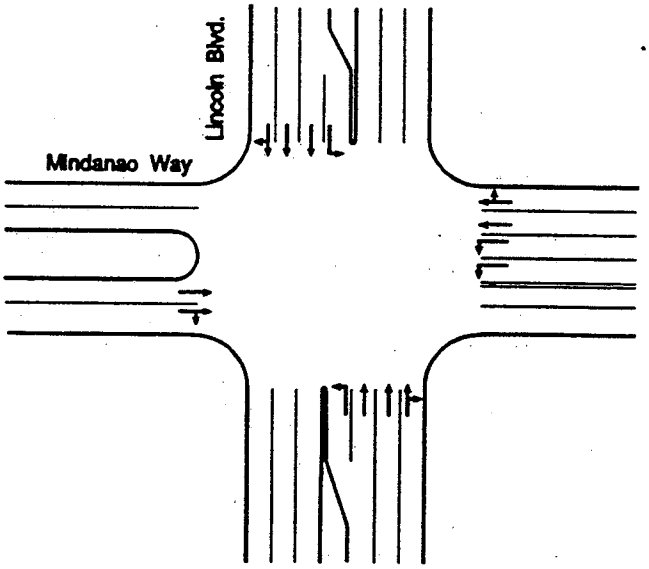
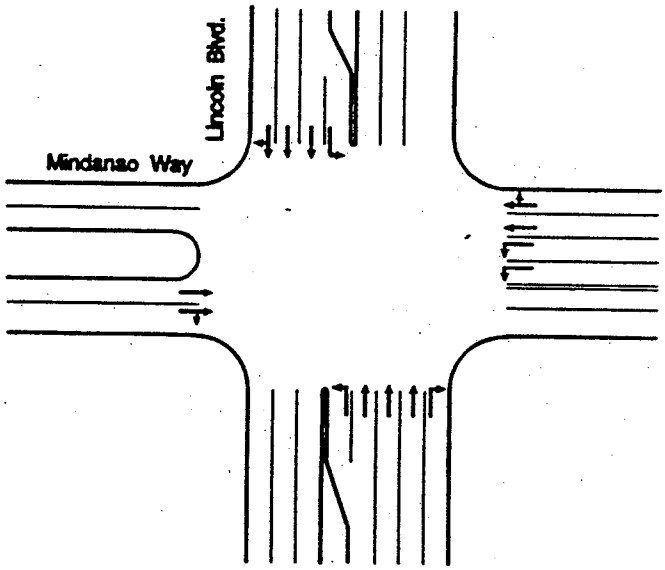


Before Improvements



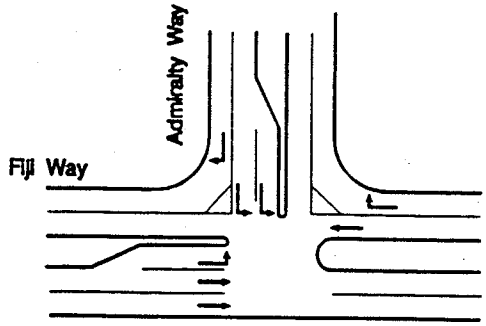
After Improvements

NOT TO SCALE

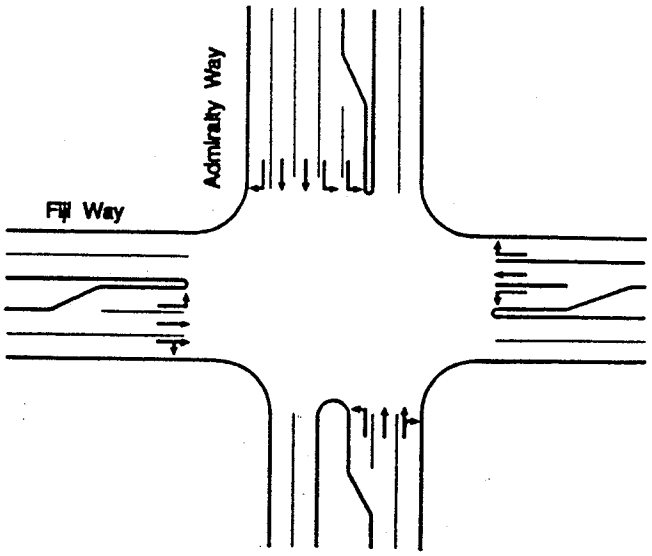
Marina del Rey
Traffic Study

DKS ASSOCIATES
GRUEN ASSOCIATES

Figure 4-32
Existing and Mitigated Intersection Lanes
Admiralty Way and Mindanao Way
Lincoln Boulevard and Mindanao Way



Before Improvements



After Improvements

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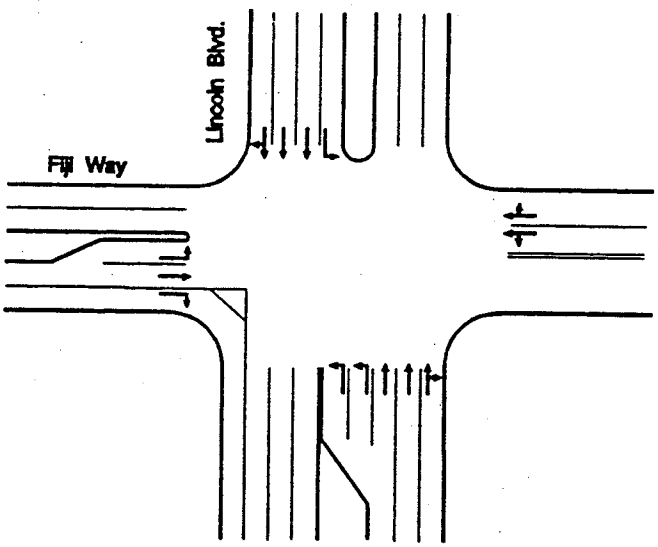
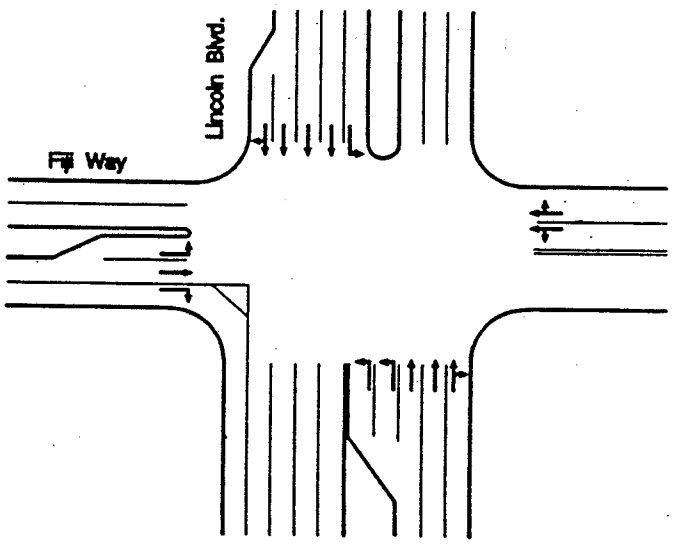


Before Improvements



After Improvements

NOT TO SCALE

Marina del Rey
Traffic Study

DKS ASSOCIATES
GRUEN ASSOCIATES

Figure 4-33
Existing and Mitigated Intersection Lanes
Admiralty Way and Fiji Way
Lincoln Boulevard and Fiji Way

4.5 Intersections Outside County Jurisdiction

No specific mitigation measures were proposed for study intersections which lie outside the County's jurisdiction. For these intersections, the relative share of the trips generated by the Marina for each scenario was calculated as a percent of total additional future traffic volumes for the intersection to assess the relative impacts of Marina land use alternatives on these intersections. The results showing PM peak hour percentages are depicted in Table 4-22. For each intersection, the percentages were developed by dividing the PM peak hour total intersection approach volume generated by additional Marina development by the sum of this Marina development traffic plus the total approach volume generated by all cumulative projects described in Section 3.4. In addition to these percentage share figures for each individual intersection, an average percentage was also developed representing a weighted contribution of Marina development traffic over all seven intersections for each scenario. These weighted averages were calculated by dividing the sum of all Marina traffic across all seven intersections by the grand total of Marina plus cumulative project totals across all seven intersections. In other words, the sum of numerators was divided by the sum of denominators from the seven individual intersection percentage calculations. These percentages may be used to determine the allocation of share of contributions toward implementation of future mitigation measures to additional Marina development under each scenario at individual intersections and the weighted average can be used as an overall contribution share to Marina developments for all impacted external intersections, as will be discussed in Section 6.4.

Table 4-22
Intersection Approach Traffic Volumes as a Percent of Total Traffic Volumes at Selected Intersections, by Study Alternative

Intersection		Study Alternative						
		1	2	3	4	5	6	7
1	Via Marina and Washington	42.0%	47.9%	30.0%	41.8%	23.7%	52.1%	45.9%
8	Lincoln and Washington	16.8%	19.2%	9.2%	17.1%	7.4%	14.4%	12.3%
9	Lincoln and Marina Expressway	16.6%	18.1%	6.3%	17.3%	7.6%	14.2%	11.7%
16	Mindanao and Marina Expressway EB	18.1%	22.5%	14.6%	19.9%	7.5%	13.4%	12.0%
17	Mindanao and Marina Expressway WB	10.6%	14.4%	7.3%	11.8%	4.8%	8.9%	8.1%
18	Culver and Jefferson	3.0%	3.4%	1.1%	3.1%	1.3%	2.4%	2.1%
19	Lincoln and Jefferson	11.1%	12.5%	5.6%	11.6%	5.0%	9.4%	7.9%
Weighted Averages		15.7%	18.2%	8.8%	16.2%	7.0%	13.7%	11.8%

4.6 Comparison Of Alternatives

4.6.1 Traffic Impact Indices

One way of comparing the various alternatives is to consider the traffic impact they have on the study intersections. By the sum of the difference in the V/C ratios between the Ambient scenario and the various alternatives provides an overall index which considers both beneficial and adverse impacts. Table 4-23 summarizes these Impact Indices for each of the seven alternatives.

As can be seen from the Table 4-23, Alternative 2 has the largest adverse impact because the indices are larger for this alternative. This is not surprising because this is an increased development scenario. The least impacting alternative is Alternative 5, which is a reduced development scenario.

4.6.2 Trip Generation Levels

The trip generation levels for alternatives are depicted in Table 4-24. These trip generation figures represent additional trips over and above Marina's existing traffic volumes. Alternative 2 has the highest level of trip generation while Alternative 5 has the lowest level of trip generation.

Alternative 2 generates the largest number of trips in both the AM and PM peaks with 4,026 and 4,714 trips respectively. Alternative 4 has the next highest trip generation with 3,765 and 4,311 trips in the AM and PM peak hours respectively. The lowest generator of trips is Alternative 5 in the AM peak with 1,481 trips, and Alternative 3 in the PM peak with 1,644 trips.

4.6.3 Number of Impacted Intersections

A comparison of the number of significantly impacted intersections is available in Table 4-25. These intersections are significantly impacted according to the thresholds of significance discussed earlier in this report.

As can be see from the Table 4-25, Alternatives 2 and 4 have the most impacted intersections with 13 in both the AM and PM peaks. Alternative 5 has the least number of impacted intersections with 4 in the AM peak and 8 in the PM peak.

4.6.4 Overall Comparison

Alternative 2 has the highest impact indices, the largest trip generation, and shares the highest number of impacted intersections. Alternative 5 has the lowest impact indices, the lowest trip generation in the AM peak and the second lowest in the PM peak, and the lowest number of impacted intersections.

TABLE 4-23
Marina del Rey Traffic Study
Impact Indices

	AM Peak	PM Peak
Alternative 1	2.72	2.92
Alternative 2	3.36	3.69
Alternative 3	1.86	1.67
Alternative 4	2.84	3.11
Alternative 5	1.01	1.12
Alternative 6	2.31	2.57
Alternative 7	2.02	2.06

TABLE 4-24
Marina del Rey Traffic Study
Trip Generation Summaries

	AM PEAK			PM PEAK		
	Trips In	Trips Out	Total	Trips In	Trips Out	Total
Alternative 1	1,713	1,773	3,486	2,017	2,118	4,135
Alternative 2	1,870	2,156	4,026	2,404	2,310	4,714
Alternative 3	851	720	1,571	721	923	1,644
Alternative 4	1,773	1,992	3,765	2,125	2,186	4,311
Alternative 5	702	779	1,481	899	896	1,795
Alternative 6	1,294	1,649	2,943	1,770	1,689	3,459
Alternative 7	1,076	1,374	2,450	1,466	1,387	2,853

TABLE 4-25
Marina del Rey Traffic Study
Numbers of Significantly Impacted Intersections

	AM PEAK Impacted Intersections	PM PEAK Impacted Intersections
Alternative 1	10	13
Alternative 2	13	13
Alternative 3	11	13
Alternative 4	13	13
Alternative 5	4	8
Alternative 6	8	12
Alternative 7	6	11

5.0 OTHER POTENTIAL MITIGATION MEASURES

5.1 Shuttle Service

5.1.1 Introduction

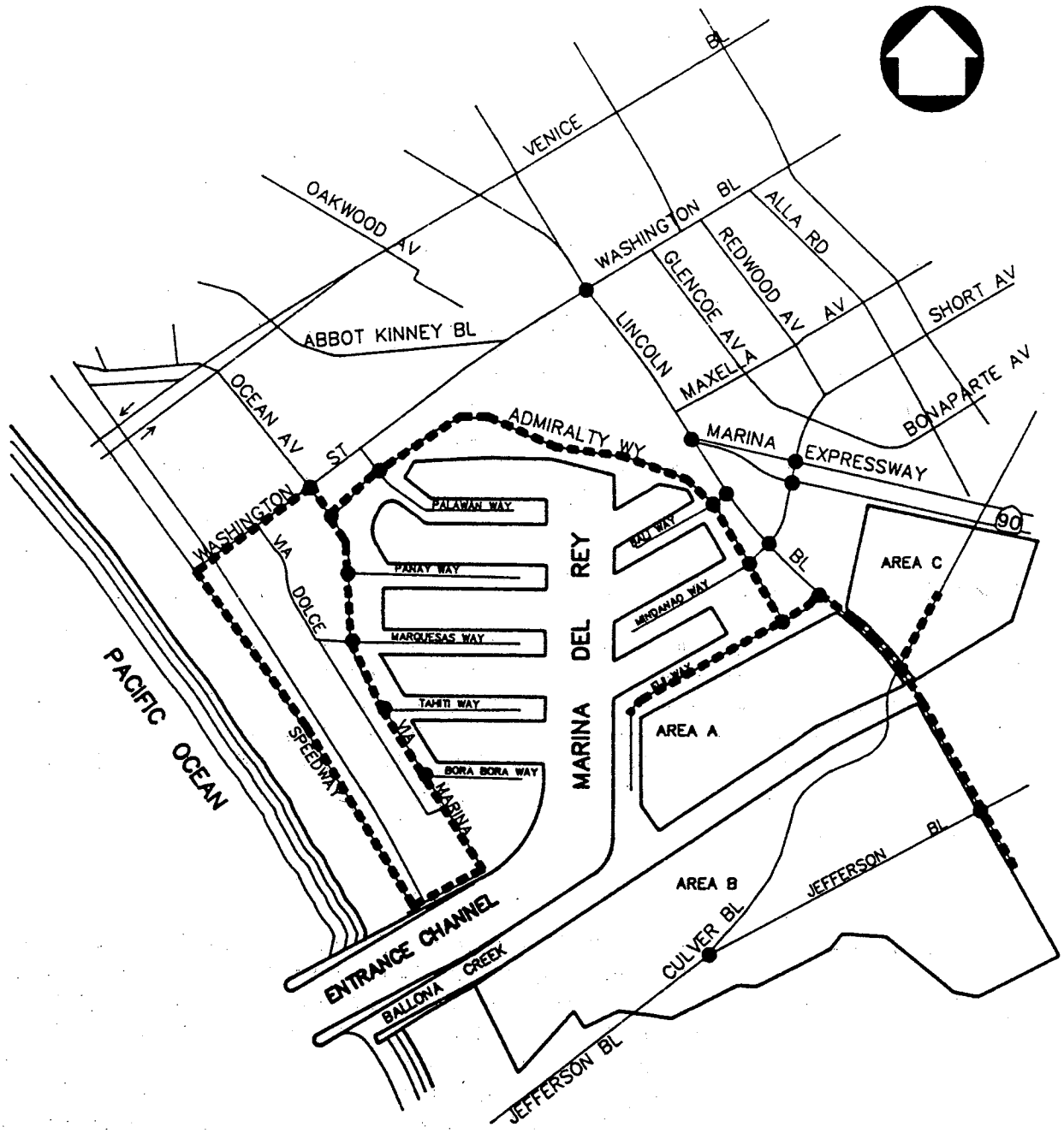
The concept of a shuttle bus system serving the Marina del Rey area has been introduced and much discussed in the past. The 1984 Marina del Rey Land Use Plan (LUP) recommended the introduction of a shuttle service to operate in the Marina area. The service was envisioned as a South Venice Beach Loop and a link to the New Area A development. The Loop would include Pacific Avenue, a short section of Washington Street, Via Marina, and a section of Channel Walk. The remaining route would be along Admiralty Way and a section of Fiji way which would access the Area A development. The location of the proposed shuttle service is shown in Figure 5-1.

Specifically, the Land Use Plan states that:

> "... a shuttle bus system serving Venice and Playa del Rey beaches, connecting to park and ride facilities to be located at the existing Venice Boulevard median parking lot, Marina Freeway extension, Jefferson and Lincoln intersection, Dockweiler State Beach parking lot north end, or alternative sites substituted in the general area, shall also be implemented by the Coastal Transportation Funds." (Marina del Rey LUP 1984, p.II-8, Policy 4.)

5.1.2 Previous Studies

Two traffic studies by Gruen Associates, in 1976 and 1982 identified the need for a Marina Shuttle Service. The 1976 Gruen Associates study discussed transit service improvements and proposed a transit shuttle service within Marina del Rey, as recommended in the 1971 traffic and parking report. It was suggested that such a shuttle system could result in a significant reduction in auto trips between residential and commercial areas within the Marina. In addition it was felt that the service would be used by increasing numbers of visitors because it would connect public-use areas. It was also suggested that this would relieve the pressure on the limited public parking supply at high-use locations.



LEGEND

- STUDY INTERSECTION
- SHUTTLE SERVICE ROUTE

NO SCALE

MARINA DEL REY TRAFFIC STUDY

POTENTIAL SHUTTLE SERVICE ROUTE

FIGURE 5–1

The 1982 Gruen Associates study listed a number of Marina circulation improvements which included transit service. It was recommended that an internal Marina del Rey shuttle transit system operating on short headway be introduced to minimize auto trips. It was stated that the service should be designed to serve residents, employees and visitors to the Marina. The document advised that the initial emphasis be on a visitor serving transit service, due to more limited facilities for visitor parking and the greater potential for visitor use of transit during weekend and seasonal peak periods.

5.1.3 Local Implementation Program

The Marina del Rey Local Implementation Program (LIP) discusses the need for institution of a visitor and resident serving shuttle system to mitigate traffic impacts and improve public access to the Marina Area. In particular the system would have three main objectives:

1. To reduce the need for automobiles in the Marina area.
2. Serve the increasing number of Marina visitors by connecting various public recreation areas.
3. Relieve the increasing pressure on limited public parking facilities at major activity centers.

The LIP states that initially the shuttle program would provide a service to Marina visitors to compensate for limited visitor parking spaces and peak visitor ridership on weekends and seasonal holidays. The system should potentially appeal to Marina residents, hotel patrons and commuters within the Marina. The shuttles should include bicycle racks to encourage bike-shuttle interface.

The LIP identifies a route which is the same as that described earlier in this chapter. Shuttle stops in the pilot program envisioned in the LIP would be as close as possible to existing bus routes in Venice and Playa del Rey. This would facilitate transfers from municipal and RTD buses to the shuttle service, to allow commuting to and from the Marina.

If the pilot program were successful the system could be connected to other local and regional transit systems. This would maximize the potential for Marina residents to commute outside the Marina using the shuttle service. There would be a separate service for Marina visitors and weekday commuters. The LIP details the following five possible trip patterns:

1. Weekday peak hour trips to and from places of employment.
2. Weekday business trips within the Marina.
3. Daytime shopping trips.
4. Evening entertainment trips.
5. Weekend and seasonal beach/recreation trips.

The LIP proposes that funding for the shuttle should come from a Coastal Transportation Fund. The Fund is expected to be generated by charging a fee for the net increase in peak hour trips generated by new developments around the existing Marina. The per-trip fee should be based on the total cost of the shuttle program.

5.1.4 Future Transit Service

A shuttle transit system should be designed to evolve as the Marina del Rey environment changes. This will require consideration of the following issues:

1. A continuous source of funding.
2. Interconnections with bus routes, bus stops and transit stations in Venice, Playa del Rey and Culver City.
3. An interface between the shuttle route and the bike/pedestrian system in Marina del Rey.
4. A shuttle monitoring system.
5. Connections with future rail services.

5.1.5 Potential Vehicle-Trip Reduction Capability

The potential automobile trip reduction capability of a Marina Shuttle service will greatly depend on a number of factors:

- Routing and service to major activity centers
- Service to possible remote park and ride lots in the periphery of the Marina
- Quality, capacity and frequency of service

A possible range of vehicle trip reduction can be established based on service frequency and capacity assumptions.

At the lower range of service, the service may employ about two shuttle mini-buses with a maximum carrying capacity (seated and standees) of about 20 passengers. Such a service would have an operational frequency of about one bus per 20 to 30 minutes. For any peak demand hourly period this translates to 40 to 60 passengers per hour depending on the frequency of service.

The typical auto occupancy for visitor trips to a marina is about 2.05 persons per vehicle (NCHRP *Report 187*, 1978, Table 1). On the other hand, work commute and other trips have much lower vehicle occupancy rates--in the order of 1.2 persons per vehicle. Thus the peak

hour vehicle trip equivalents for such a limited capacity shuttle service would be about 20 to 30 cars for visitor trips and 33 to 50 cars for other trips.

Such a reduction in peak hour traffic, although relatively small, can be significant at intersections which are operating close to capacity. Recent capacity evaluation data show that the intersections at Lincoln Boulevard/Mindanao Way, Admiralty Way/Mindanao Way and Admiralty Way/Bali Way operate at level of service E. It is possible that even a relatively small reduction in traffic at these intersections would have beneficial effect on the level of service, especially where turning traffic is concerned.

On the other end of the service supply scale, a more frequent 5-6 minute headway service could be assumed with a mid-size passenger fleet and service to peripheral parking lots. This type of a service may employ customized 30 foot "cutaway" van vehicles with a maximum carrying capacity of up to 55 (seated and standees) passengers. To provide the more frequent 5-6 minute headway service, assuming a 5 mile loop route, there would be a need for a larger fleet of 6 to 10 vehicles. This type of a service would have the capacity to carry up to 600 passengers per hour. It may have the potential to reduce up to 300 vehicle-trips per hour for visitor trips and as high as 500 other vehicle trips.

Peak hour intersection approach volumes along Admiralty Way north of Bali Way have been shown to be around 2,800 to 3,000 vehicles per hour in both directions. Reductions of 300 to 500 vehicles per hour due to the shuttle service could have a significant positive impact on traffic conditions in the Marina.

To verify the reasonableness of carrying such patronage volumes with a shuttle service, operation and patronage data were obtained from the Downtown Los Angeles DASH service, which is operated by the City of Los Angeles Department of Transportation. This service operates daily for 12 hours (6:30 AM to 6:30 PM) with a fleet of 30 vans--due to a much longer route. The service has been consistently averaging between 5,200 to 6,500 passengers a day with 6 minute headway during the peak hour, and monthly patronage as high as 150,000 passengers.

Assuming a conservative 10 to 15 percent peak hour ridership, the daily patronage figures translate into 500 to 1,000 passengers per hour during the peak hours, which could mean a reduction of 400 to 800 peak hour vehicle trips.

It should be pointed out that the DASH service operates in Downtown Los Angeles with land use densities far greater than the Marina. The above comparison is only presented to indicate the passenger carrying capabilities of a shuttle service, which is designed to serve major concentrations of activities and origin/destination points, with an adequate service frequency. These include major employment sites, commercial centers and park-and-ride locations.

5.1.6 Conclusions and Recommendations

Shuttle service additions to the Marina were not found to be an essential mitigation measure for future Marina development. It may give an additional cushion in system capacity for unexpected change in regional transportation patterns. In order for a Marina del Rey shuttle service to be of maximum effectiveness in reducing auto trips, it should have the following characteristics:

- It should interface properly future municipal and regional transit services such as the possible light rail extensions into the area. Consideration for efficient transfers should also be given. Indeed, a shuttle bus may be most effective after the extension of the light rail into the Marina area.

- It should connect major activity centers including visitor serving facilities, commercial centers and employment concentrations.

- It should be augmented with peripheral parking facilities.

- It should be a frequent service, with less than 10 minute headway and larger vans or buses with adequate capacity of greater than 50 seated and standing passengers. A limited mini-van type of shuttle service will not have a significant effect on increasing overall transportation system capacity.

- Separate customized services should be designed for weekend versus weekday operations, considering the different characteristics of trips served.

- A dynamic and flexible system should be designed, which could be modified easily with demand fluctuations and as development patterns change. As emphasized in the technical memorandum for potential light rail service for the Marina, the success of the rail service in attracting Marina related trips, will greatly depend on institution of an effective connecting shuttle service. The Marina del Rey shuttle service should be designed and implemented with the flexibility to provide future connections to the planned Culver/Route 90 and Lincoln/Jefferson stations. In addition, provisions should be made to extend the shuttle service to the northern terminus of the Coastal light rail line, if the initial stage of the rail service does not extend to the two stations near the Marina.

- The shuttle system is seen as part of a range of traffic management measures aimed at improving conditions in the Marina area. It will have an important role to play, but it has to be supported by other measures including, major developer subsidies, employee and merchant promotions and incentives for transit use.

- A shuttle system should have stops at public parking lots in order to best serve the needs of the commuters.

5.2 Analysis of Light Rail Transit Potentials

5.2.1 Introduction

The Coastal Transit Corridor is one of three rail transit corridors under consideration by the Los Angeles County Transportation Commission (LACTC). The Coastal Corridor would provide a regional rail transit connection between Marina del Rey, the Westchester-LAX area, and to other parts of the Los Angeles region via a connection with the Century Freeway Transitway. The closest envisioned station to the Marina is a terminus station at Culver Boulevard east of Lincoln. If implemented, the Coastal Corridor transit line could provide a significant increase in regional mobility for the Marina del Rey area.

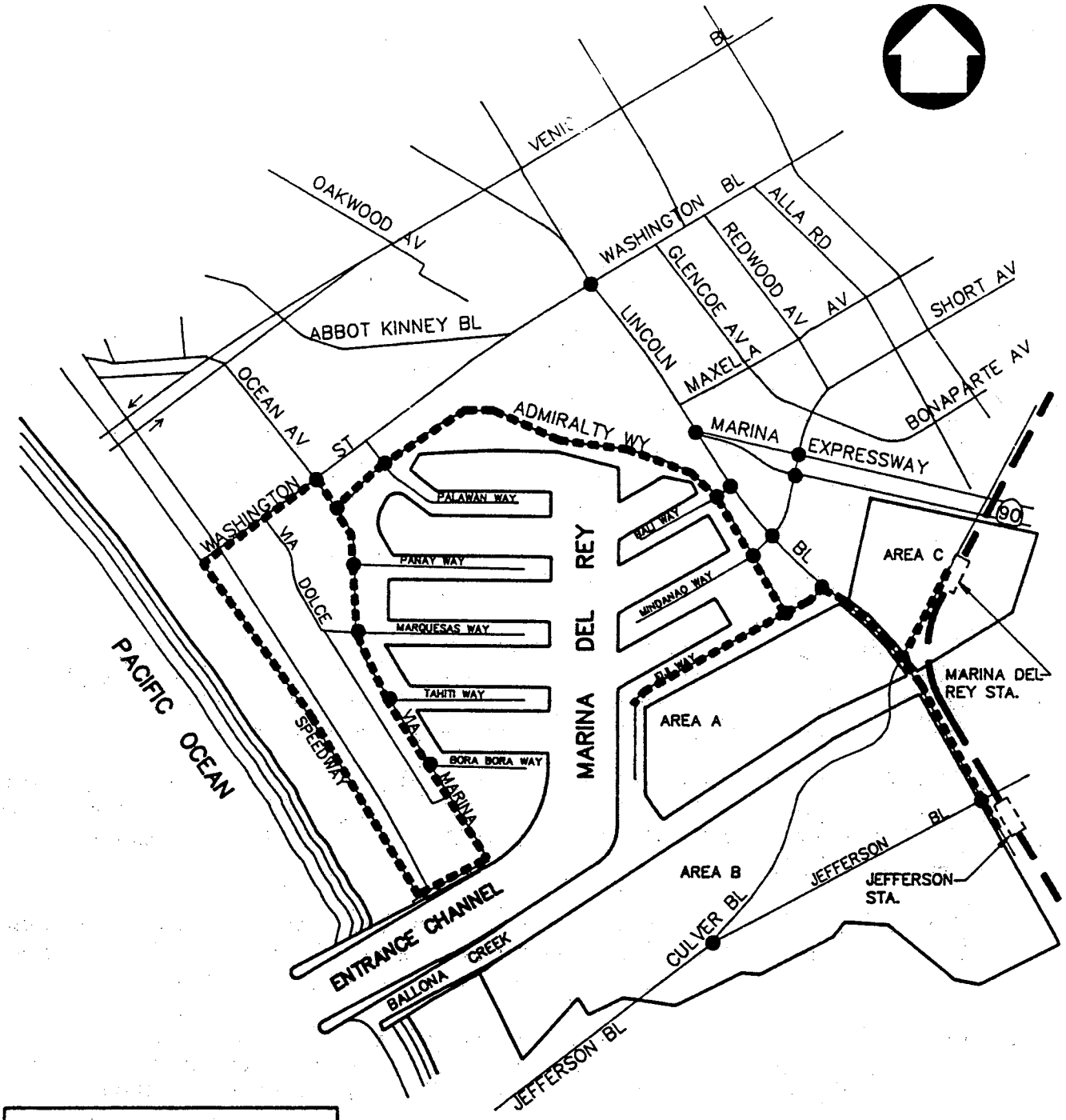
5.2.2 Planning History

The Coastal Corridor-North Segment Project is part of an on-going regional transit development program for the County of Los Angeles. The proposed Coastal Corridor-North Segment was identified as a possible candidate for transit development along with 13 other corridors in the County in keeping with the mandate of Proposition A passed in November 1980.

A route refinement study of this corridor was undertaken by the LACTC, in December 1984. An initial alternatives evaluation report was completed in August 1988. A Draft Environmental Impact Report (EIR) was published in January 1989. A Final EIR was published in August 1989 and was certified.

The proposed project would operate as an extension of the Norwalk-El Segundo rail transit Project. The proposed route travels north from LAX on Lincoln Boulevard to the eastern edge of Marina del Rey. Figure 5-2 illustrates the proposed light rail alignment.

Originally, two alternatives routes were considered for serving the Marina area. One alternative would proceed north on Lincoln Boulevard to the City of Santa Monica. The other route would turn east at Culver Boulevard and continue to the San Diego freeway. The Marina del Rey Local Implementation Program provides a discussion on the proposed route, land acquisition, transit interface, and funding for LRT



LEGEND

- STUDY INTERSECTION
- SHUTTLE SERVICE ROUTE
- LIGHT RAIL ALIGNMENT
- POSSIBLE LRT STATION

NO SCALE

MARINA DEL REY TRAFFIC STUDY

PROPOSED LIGHT RAIL ALIGNMENT

FIGURE 5–2

The potential Lincoln Boulevard-Santa Monica route, which would serve the Marina area more directly, was envisioned to be located on the west side of Lincoln Boulevard between Ballona Creek and Fiji Way in Area A. It was suggested that the right-of-way will be acquired through setback requirements or dedication at the time of development and/or subdivision. It was indicated, however, if the route along Culver Boulevard were chosen, the reserved area will become extra parking or some other use beneficial to the light rail transit system.

The certified Final EIR document was prepared with the Marina del Rey station at Culver and Route 90 as the terminal station for the rail line. The alternative alignment and the extension of the line along Lincoln Boulevard to Santa Monica was not selected for analysis due to early identification of right of way and construction constraints. In addition, the extension of the line to the I-405 Freeway beyond the Culver station was not addressed in the document.

As described in the Final EIR, the Marina del Rey station would be located on the north side of Culver Boulevard, about a quarter mile east of Lincoln Boulevard, and just south of the Marina Freeway.

5.2.3 Traffic Impacts at Stations

The 1988 Coastal Corridor-North Segment LRT EIR Traffic Impact Study (by DKS Associates) analyzed the traffic impacts of the proposed LRT route from Los Angeles International Airport to the Marina. It analyzed the impacts of the alignment that runs approximately 5.75 miles northwesterly from the end of the Century Freeway Rail Transit Project to Culver Boulevard near the Marina Freeway.

The report examined existing traffic conditions, future traffic conditions with and without the rail project, and recommended mitigation measures. In the analysis, total trip generation at stations was estimated and impacts were examined on nearby intersections through levels of service analysis. The document suggested that the impacts of traffic generated by the rail system would only be localized at roadways and intersections near stations during the peak periods. Mitigation measures were proposed where significant impacts were discovered along the route.

Within the general Marina area, two stations are proposed, one on Lincoln Boulevard south of Jefferson Boulevard and one on Culver Boulevard just south of the Route 90. Due to traffic attracted to these two stations the intersections of Culver Boulevard with Route 90 and Jefferson Boulevard with Lincoln Boulevard were examined. Only the intersection of Culver Boulevard at Route 90 Westbound was found to require mitigation as a result of trips generated by a local station. The proposed mitigation is the addition of a third through lane on Culver Boulevard on the southbound approach and between the east and westbound freeway ramps in the southbound direction.

The report further suggested that additional benefits can also be gained if a second westbound left-turn lane is added in addition to an interconnect with the adjacent intersection. It was indicated that these mitigation measures would be advantageous; however, they will not be required as a result of the LRT project.

5.2.4 Funding and Status

The proposed light rail line is a part of County of Los Angeles' Proposition A Rail Transit System, therefore, the primary source of funding will come from the funds generated by the County-wide 1/2 cent sales tax. The remainder will be generated by local jurisdictions through specific funds such as the Coastal Transportation Trust Fund. The County has recognized in the LIP document that it should have a role in funding the proposed rail service. However, the document states that funding requirements and exact shares can not be adequately analyzed until the route refinements are made by LACTC and final cost estimates are prepared. After the final route has been determined, the cost of the light rail transit system and the respective shares will be factored between Los Angeles County, the City of Los Angeles, and other local jurisdictions.

Originally due to funding limitations, the construction of the Coastal Corridor North segment was to be prioritized along with two other planned transit lines--the San Fernando Valley and the Los Angeles-Pasadena light rail line. However, the passage of the recent transportation funding measures (Proposition 111 and 108) in June, 1990, may enable all three lines to be funded and construction to begin concurrently. The LACTC staff has recommended that all three projects be approved for completion.

According to LACTC, in order to take advantage of the construction that is currently taking place on the Norwalk to El Segundo line (Green Line), the LAX extension of this line (Coastal Corridor-North Segment) should be scheduled for construction between 1991 and 1994. This will allow rail service to the Airport to be in revenue service when the Green Line begins service. Staff of the LACTC believes that the Coastal line north segment can be built by the early 1990's, at least to the Westchester station. Extension beyond this station to the Marina area, in the same time frame, is in some doubt due to identified right of way and construction constraints in the Westchester area.

5.2.5 Potential Trip Reduction Due to a Light Rail System

A primary assumption in this analysis is that the total auto trips reduced by a light rail line would be related to and derived from the forecasts of light rail patronage by the year 2010. Patronage forecasts were developed by utilizing the Southern California Association of Governments' (SCAG) rail patronage forecast model for the LACTC. These patronage

forecasts were reflected in general in the Final EIR document and further detailed station boarding and access data were obtained from LACTC staff.

A light rail system serving the Marina del Rey area would have the potential to reduce auto traffic on the study area streets related to several types of trips: a) trips destined to the Marina for work or recreation, b) trips by Marina residents to outside work or other destinations, and c) through trips along Lincoln Boulevard depending on the selected rail alignment.

Passengers destined to the Marina will alight at the closest station to their destination (the Jefferson/Lincoln station and the Culver/Route 90 or possibly another station on Lincoln Boulevard if there will be a Santa Monica extension) and will either walk or take another transit mode (regular bus or shuttle) to their final destinations.

On the other hand, passengers leaving the Marina will either walk, drive (park-and-ride), be dropped off (kiss-and-ride) or will take another transit mode (regular bus or shuttle) to the rail station.

Park-and-ride or kiss-and-ride trips are not expected to reduce traffic locally on the Marina streets since the vehicles would have to make the trip to the stations, which are generally outside the immediate Marina area. There may even be a potential increase in local traffic if kiss-and-ride is a significant component, and the vehicle dropping the passenger off returns to the Marina area during the peak period. The positive impacts of these two modes of arrival in reducing auto trips would mostly be regional and not locally on the Marina circulation system. Therefore, only the walk and bus connection trips have a potential to reduce auto traffic.

It is anticipated that walking will not be a predominant mode of arrival at the rail stations. The proposed stations are located outside the immediate Marina area and outside the generally acceptable 1/4 mile walking distance around stations. The Jefferson/Lincoln station will be over half a mile away from the Marina. The Culver/Route 90 station may be served by walk access to the Area A only. If a Santa Monica extension is constructed with a station on Lincoln Boulevard in the vicinity of the Marina, this station would have the highest potential for walk access, but only to a portion of the eastern areas. This suggests that the success of a light rail line in reducing Marina traffic would greatly depend on the support of a local collection/distribution system such as regular bus and/or a shuttle service.

As described in the Final EIR, the Marina del Rey station which would be located on the north side of Culver Boulevard, about a quarter mile east of Lincoln Boulevard, and just south of the Marina Freeway (Route 90) would have a bus and kiss-and-ride entrance on Culver Boulevard. The EIR states that since this would be an end-of-line station for an indeterminate time, feeder bus access will be important. Four bus stalls are proposed to accommodate the bus demand. The following bus routes currently operate in the vicinity and could feed the station:

anticipated as a result of proposed TDM programs. TDM could also provide an additional increment of improvement in Level of Service for those intersections which were not fully mitigated with intersection improvements and with implementation of the ATSAC program.

TDM seeks to ease traffic congestion and improve air quality by manipulating the demand side of the transportation equation. An effective demand management effort requires offering a wide choice of travel alternatives, providing incentives to use those alternatives and to secure broad private sector support and participation in these demand management programs. Surveys have indicated that the key reason people drive alone to work is that they need their cars either before, during or after work. For this reason, it is not just enough to simply offer people commute alternatives. It is also important to provide the commuter with amenities that will compensate for the inconvenience of not having a car. Some of these may be to provide day care at the job site, provide transportation for employees who need to get home in the case of an emergency or stay late after normal working hours. This will help alleviate the feeling that the worker is "stranded" without a car. Other TDM measures can include preferential parking for high occupancy vehicles, charging schemes for employee parking, financial subsidies for transit riders to work place-based promotion of commute alternatives. A well conceived and aggressively promoted demand management program can result in a 10 to 15 percent reduction in drive alone travel.[1] Reductions in the drive alone rate do not necessarily translate into equivalent auto-use reductions. This may not seem to be significant, but often a small decrease in the number of vehicles on a facility can make a significant difference in rush hour congestion.

5.3.2 Transportation Demand Management Measures and Experience

Table 5-1 shows how trip characteristics might be modified using two types of travel demand strategies. It presents land use-oriented and transportation oriented demand management strategies related to various aspects of travel behavior.

Each of these TDM measure will have varying effects dependent on the type of measure used, the degree of implementation, enforcement techniques used, and the travel characteristics of the development where the program is implemented. Table 5-2 gives typical reduction in drive-alone commuters for several TDM measures.

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[1] *A Toolbox for Alleviating Traffic Congestion*, Institute of Transportation Engineers, 1989.

Table 5-1
Transportation Demand Management and Travel Behavior[2]

Aspect of Travel	TDM Objective	TDM Implementation Strategies
Trip generation	Eliminate trip entirely.	**Land Use:** growth control (eliminate specific activities associated with trip making). **Transportation:** telecommunications substitution for travel (telecommuting, teleshopping, teleconferencing) (eliminate trip making associated with specific activities.)
Trip distribution	Shift trip from a more congested destination to a less congested one.	**Land Use:** zoning restrictions that limit the density of development, type of land use, etc., thus shifting the location of activities within urban or regional areas. **Transportation:** trip chaining, satellite activity locations (satellite work locations, on-site day care facilities, personal services, cafeterias, restaurants, etc.)
Mode choice	Shift trip from a lower-occupancy mode of travel (e.g., drive alone) to a higher-occupancy one.	**Land Use:** increasing allowable density of development (to improve the market for high occupancy vehicle facilities). **Transportation:** mode-specific incentives and disincentives, such as parking pricing, carpool, vanpool, and transit subsidies; bicycle and pedestrian amenities; guaranteed ride home programs; etc.
Route selection (spatial)	Shift trip from a more congested route to a less congested one.	**Land Use:** street quieting (removal of through traffic from residential streets through creation of permanent or temporary barriers). **Transportation:** smart highways and vehicles (technologies capable of the instantaneous delivery of current route information, including identification of the route with the shortest travel time, based on ambient traffic conditions before or during the trip).
Route selection (temporal)	Shift trip from a more congested time period to a less congested one.	**Land Use:** mixed use development, jobs/housing balance (where different land uses exhibit different peaking characteristics of trip generation). **Transportation:** alternative work schedules (flexible work hours, staggered work shifts, and compressed work weeks).

[2] "Transportation Demand Management, Planning, Development and Implementation", *APA Journal*, Autumn 1990.

Table 5-2
Effect of Demand Management Incentives on Modal Split

Demand Management Incentive	Reduction in Drive-Alone Commuters [a]
Aggressive work place-based promotion & marketing of commute alternatives	6%
Financial subsidy for transit riders and carpoolers	
low option (e.g. fare subsidies)	2%
high option (e.g. transportation allowance)	5-8%
Employee-paid parking charge (nominal)	2%
Employee-paid parking charge (market cost)	12%
Provision of midday transportation	2%
Emergency Ride Home Program	4%
Walk-accessible services	3%
Preferential parking for HOVs	> 1%

[a] *Percentage point reduction in number of drive-alone workers during commute hours. Trip reductions are additive, but some combinations of incentives may produce exaggerated results.*

Source: "Can Management of Transportation Demand Help Solve Our Growing Traffic Congestion and Air Pollution Problems?", from the *Transportation Quarterly*, published by the Eno Foundation for Transportation, Inc., October 1990.

Because of the primarily residential and recreational nature of the Marina, some mitigation measures which work for an office complex may not be effective in the Marina without special treatment. Flexible work hours, for example, would have limited effects on the residential and recreational activities of the Marina. Because the Marina for the most part does not have large individual employers, car pooling and van pooling would probably be most effective if the programs were either operated through the County or through homeowners or lessees groups. These programs may prove effective if residents are able to contact a single agency in the Marina to coordinate these efforts. Van pooling may also be effective connecting the Marina to LAX or other areas of high travel demand.

Telecommuting may be enhanced by providing communication centers within the Marina which may include computers, fax machines, and teleconferencing centers.

During initial public meetings, two additional TDM measures were suggested. The first was the construction of parking garages in the median area of SR-90 (Marina Expressway) for employees who work in the Marina. These employees would then be shuttled from the garages to their work places. This could reduce peak hour traffic on Marina streets, although the reductions would be primarily in the reverse commute direction. If constructed, employee parking structures would be best utilized if they could also provide parking for weekend visitors to the Marina.

Another mitigation measure suggested during the public meetings was providing more residential-oriented commercial services on the west wide of the Marina to reduce trips to the shopping center on the east side of the Marina. This may have some net benefit to traffic circulation within the Marina as it would shorten shopping trips for Marina residents. To be effective, these uses should be neighborhood commercial services which would not attract additional traffic from outside of the Marina. Any land use changes of this type should be considered in the context of the overall land use plan for the Marina.

5.3.3 Enforcement

If implemented, a program of proposed TDM measures could be required for each proposed development, together with assurances of compliance satisfactory to the County of Los Angeles. These TDM compliance assurances might include an annual monitoring/certification requirement to insure that each TDM measure is currently in operation, how effective it is, and any modifications proposed. Developers might be required to put up a TDM performance bond as a condition of approval. This would be an individual developer-initiated approach to TDM. An alternative approach would be to set up and administer an overall TDM program supported by individual developers, with County monitoring. Whatever technique is used, it must give the County the ability to monitor TDM measures and provide enforcement mechanisms to be effective.

6.0 IMPLEMENTATION OF MITIGATION MEASURES

This chapter discusses issues related to implementation of the mitigation measures identified in the previous chapters. Order-of-magnitude cost estimates are given for the necessary improvements related to each alternative land use scenario. Possible mechanisms for staging and prioritization of these improvements and the corresponding phasing of the additional development are discussed and recommended. Potential suitable funding sources are identified. Finally, based on the cost estimates and the projected total trips associated with each alternative scenario, funding strategies including traffic impact fees are suggested.

6.1 Costs of Mitigation Measures

Based on the specified mitigation measures recommended for each intersection and their identified impacts, as detailed in Section 4.4, generalized order-of-magnitude cost estimates were developed for each improvement. Known unit cost figures compiled from previous documents and studies, as verified by figures supplied by the Department of Public Works, were applied to estimated quantities of construction indicated in Section 4.4 to develop the cost estimates. Results are summarized in Table 6-1. Detailed backup information on derivation of these costs is provided in the Technical Supplement. Figures do not include right-of-way acquisition costs and/or severance payments.

This table indicates the individual cost estimates for improving each intersection given the mitigation measures required under various scenarios. The two system-wide improvements, namely the additional northbound/westbound lane on Admiralty Way and the installation of the ATSAC systems along Admiralty Way and Lincoln Boulevard are indicated separately. The remaining cost figures shown for each individual intersection are the costs of the measures needed for that intersection in addition to the system-wide improvements at these intersections, as detailed in tables describing mitigations in Section 4.2.

A total cost estimate for all mitigation measures is also included for each land use alternative. These total costs range from a low of $2.23 million for Alternative 5 to a high of $3.88 million for Alternatives 1 and 4.

TABLE 6-1
MARINA DEL REY TRAFFIC STUDY
COSTS OF INTERSECTION AND SYSTEM MITIGATION MEASURES (WITHOUT LAND COSTS)

	Alternative Land Use Scenarios						
	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
System Improvements:							
Additional NB/WB Lane on Admiralty	1,443,400	1,443,400	1,443,400	1,443,400	1,443,400	1,443,400	1,443,400
ATSAC	680,000	680,000	255,000	680,000	-	255,000	-
Other Intersection Improvements:							
Via Marina & Admiralty Way	120,740	120,740	63,340	120,740	63,340	120,740	120,740
Palawan Way & Admiralty Way	1,500	1,500	1,500	1,500	1,000	1,500	1,500
Admiralty Way & Bali Way	*	*	*	*	*	*	*
Lincoln Blvd & Bali Way	99,950	99,950	94,950	99,950	-	99,950	99,950
Admiralty Way & Mindanao Way	*	*	75,350	*	*	*	*
Lincoln Blvd & Mindanao Way	248,900	248,900	248,900	248,900	-	-	-
Admiralty Way & Fiji Way	49,670	28,080	-	49,670	28,080	49,670	28,080
Lincoln Blvd & Fiji Way	-	-	197,700	-	-	-	-
TOTAL	2,644,160	2,622,570	2,380,140	2,644,160	1,535,820	1,970,260	1,693,670
Miscellaneous (20%)	528,832	524,514	476,028	528,832	307,164	394,052	338,734
Contingency (30%)	793,248	786,771	714,042	793,248	460,746	591,078	508,101
GRAND TOTAL	$3,966,240	$3,933,855	$3,570,210	$3,966,240	$2,303,730	$2,955,390	$2,540,505
TRIP GENERATION TOTAL (PM)	4,135	4,714	1,644	4,311	1,795	3,459	2,853
TRIP FEE** ($/PM Peak Hour Trip)	$959	$835	$2,172	$920	$1,283	$854	$890

* Mitigated with System Improvements
** Assumes 100 Percent of Improvement Costs Paid by New Development

6.2 Phasing

Since any significant amount of new development can potentially have adverse impacts on the transportation system, it has long been recognized that proposed developments should be phased such that necessary infrastructure improvements are in place in a coordinated fashion and additional system capacity is provided to offset these adverse impacts on mobility. Chapter Four identified and discussed in detail a series of intersection-specific and system-wide improvements which would be necessary in the Marina to mitigate the impacts of additional development under various land use scenarios. How these improvements are phased will have a direct relationship with the allowable levels of additional development in the Marina. Conversely, the additional development should be limited and phased in a logical fashion contingent upon the implementation of these mitigation measures. This section will discuss these two issues.

6.2.1 Staging of Improvements

Several factors were considered and a combination of theses factors was selected for development of a staging plan for recommended mitigation measures. These factors included location of the mitigation measure (whether it is on an internal Marina street or on the periphery of the Marina), the new traffic capacity provided by the measure, the improvement cost and the need for the improvement relative to future contemplated development. Maintaining acceptable mobility is also a key criteria; therefore, the proposed staging strategy for mitigation measures was designed to also address mobility requirements in the Marina in the relative order of need. Since intersections are the main components of regulating traffic operation, relative intersection operating conditions (as reflected by V/C ratios) was used as one of the criteria for a phasing mechanism for improvements.

Table 6-2 lists the eight Marina intersections which need mitigation measures in the order of their existing PM peak hour V/C ratios. This table also includes future ambient V/C ratios for comparison purposes. As seen in this table, several of the Marina intersections are already operating at unacceptable levels of service as defined by County standards. This threshold is considered to be the mid-point of level of service D, or a volume/capacity ratio of 0.85. According to County standards, when an intersection is operating over 0.85 any development which results in an increase of the intersection V/C ratio by any amount is obligated to improve the ratio back to at least the pre-development conditions.

It is logical that intersections with the greatest significance on internal Marina circulation are those within the Marina. It follows that these intersections should be given a high priority in the staging of improvements. As can be seen in Table 6-2, four of the five intersections with the worst current operating conditions are internal Marina intersections on Admiralty Way. Thus, these intersections and their associated improvements were given the highest priority both from a mobility and location stand point and were placed in the first two stages.

TABLE 6-2
MARINA DEL REY TRAFFIC STUDY
EXISTING AND AMBIENT INTERSECTION LEVELS OF SERVICE

Intersection	Existing PM V/C	2010 Ambient V/C
Palawan Way & Admiralty Way	1.06	1.16
Admiralty Way & Bali Way	0.99	1.08
Admiralty Way & Mindanao Way	0.99	1.10
Lincoln Blvd & Mindanao Way	0.90	1.26
Via Marina & Admiralty Way	0.83	0.91
Lincoln Blvd & Fiji Way	0.83	1.18
Lincoln Blvd & Bali Way	0.82	1.14
Admiralty Way & Fiji Way	0.51	0.55

Stage I: As discussed above, the intersections of Admiralty Way and Palawan Way, Admiralty Way and Bali Way and Admiralty Way and Mindanao Way are in immediate need for improvements and their mitigation measures should be given first priority. At the top of the list of these improvements is the additional northbound/westbound lane along Admiralty Way, which is the system improvement common among all three critical intersections. Other improvements to Admiralty Way and Palawan Way which are relatively minor and inexpensive mitigation measures should be done in the first stage. As it relates to new development, the above discussion indicates that no additional Marina del Rey development which adds new peak hour trips should take place until these three intersections which are currently operating below the County standards are improved and additional capacity is provided for enhanced mobility. In summary:

Stage I Improvements:

- System-wide improvement adding a third lane to Admiralty Way in the northbound/westbound direction;
- Improvement to the intersection of Admiralty Way and Palawan Way including provision of left turn pockets at north and southbound approaches on Palawan Way at Admiralty Way.

Stage II: The intersection of Via Marina and Admiralty is currently operating at level of service D, but just within the threshold of acceptability. When Stage I improvements are complete, the operation of this intersection should improve slightly. However, the full mitigation of this intersection should receive priority next. An additional important improvement will also be needed at Admiralty Way and Mindanao Way for Alternative 3 in this stage. The implementation of the ATSAC system on the internal Marina intersections should also take place following completion of all physical improvements to these Admiralty Way intersections in stages I and II. In summary:

Stage II Improvements:

- Improvements to the intersection of Via Marina/Admiralty;
- Additional NB right at Admiralty/Mindanao (needed for Alternative 3 only).
- Implementation of ATSAC at the intersections of Admiralty/Via Marina, Admiralty/Palawan, Admiralty/Bali, and Admiralty/Mindanao.

Stage III: The next set of intersections are those on the periphery of the Marina including Lincoln Boulevard and Mindanao Way, Lincoln Boulevard and Fiji Way and Lincoln Boulevard and Bali Way. These intersections are in the jurisdiction of the County but their improvement

will require some coordination with the California Department of Transportation (Caltrans) and with the City of Los Angeles. These intersections were placed in the third stage of improvements. In summary:

Stage III Improvements:

- All physical improvements to the intersections of Lincoln/Mindanao, Lincoln/Fiji and Lincoln/Bali.

- Implementation of ATSAC at the intersections of Lincoln/Mindanao, Lincoln/Fiji and Lincoln/Bali.

Stage IV: The remaining final intersection which needs mitigation measures is the intersection of Admiralty Way and Fiji Way. This "T" intersection will be converted to a four-legged intersection when Admiralty Way is extended to realigned Culver Boulevard under the Playa Vista Plan as part of the Area A development. All of the improvements to this intersection would be needed as a result of the conversion to a four-legged intersection. These mitigation measures will not be needed until Area A development takes place and Admiralty Way is extended; therefore, the last stage consists of improvements to the intersection of Admiralty Way and Fiji Way. These improvements will be tied into the development of Area A and the extension of Admiralty Way to realigned Culver Boulevard. The improvements are:

Stage IV Improvements:

- Addition of lanes to intersection of Admiralty and Fiji depending on the number of new lanes required by the development scenario, and

- Incorporation of the intersection of Admiralty Way and Fiji Way within the ATSAC system on Admiralty Way.

6.2.2 Phasing of Development

This discussion relates to all alternatives except for Alternative 3, which is discussed on the next page. The new development which can occur in the Marina should be phased in coordination with provision of additional traffic capacity on the circulation system. New development in each phase (measured as peak hour trips generated) should be directly related to the new traffic capacity provided by the mitigation measures that precede that phase of development. For example, Stage I improvements would improve the levels of service at the worst intersections and would provide additional capacity which would be a portion of the total capacity provided by all identified mitigation measures. Therefore, only an appropriate level of the total development planned in the selected land use alternative should be permitted to occur in the first phase of development, which will follow the completion of Stage I improvements. In the stages that follow, greater percentages of the overall capacity will be provided, and equivalent

percentages of development should be allowed. Ultimately, after Stage IV improvements are complete, 100 percent of the mitigation capacity will have been provided, and the remaining development resulting in 100 percent buildout, can be approved.

It was made clear in the discussion in the previous section that no additional Marina del Rey development, the impacts of which cannot be mitigated, should take place until the Stage I improvements are in place. These would improve corresponding intersections to acceptable operating levels with additional capacity for improved mobility. These intersections are Admiralty Way and Palawan Way, Admiralty Way and Bali Way and Admiralty Way and Mindanao Way.

The level of additional capacity provided by Stage I improvements is approximately 30 percent of the ultimate new capacity provided by all mitigation measures. Therefore, new Marina development can begin to occur up to a ceiling of 30 percent after the Stage I improvements, namely the system improvements on Admiralty Way, are complete and in place. These system improvements will bring the Admiralty Way intersections within acceptable operating limits and will be more than enough to accommodate the 30 percent additional development in the Marina.

It is evident that this new development would result in an increase of V/C ratios at the remaining unimproved intersections. The intersection of Via Marina and Admiralty Way was the next critical Marina intersection. If unimproved, a 30 percent development would begin to push the V/C ratio at this intersection into unacceptable levels. The Stage I system improvements, however, would provide some additional capacity at this intersection to offset the impacts. This intersection should be fully improved, with the mitigation measures indicated in Chapter 4.0, before any additional development beyond the first 30 percent is allowed.

The level of additional capacity provided by Stage II improvements is approximately another 30 percent of the ultimate additional capacity provided by all mitigation measures. It is therefore recommended that the Stage II improvements, which include the full improvement of the Via Marina and Admiralty Way intersection and installation of an ATSAC system on Admiralty Way, be implemented before a second increment of 30 percent of the development is allowed to take place.

Implementation of Stage III improvements, which include the intersection improvements on Lincoln Boulevard and the ATSAC system, would allow an additional 25 percent of the development to go forward. Finally, the remaining 15 percent of the development can go forward when the mitigation measures in Stage IV, including the extension of Admiralty Way and the related improvements to the Admiralty Way and Fiji Way intersection and its inclusion in the ATSAC system, are completed.

In case of Alternative 3, which does not include the Area A, and consequently does not assume the extension of Admiralty Way and the corresponding improvements in Stage IV, there would

only be three development phases. Following the implementation of Stage I improvements, the first phase could go forward with 30 percent of the development; after Stage II improvements are complete, the second phase would allow 20 percent of development; and finally the implementation of the third stage of improvements would enable the remaining 50 percent of the development in this alternative scenario to occur.

The above phased development thresholds were translated to PM peak hour trips for a more specific presentation for each alternative. Table 6-3 indicates the maximum number of PM peak hour trips which would be allowed to be generated by developments in each phase under each alternative scenario.

It should be pointed out that individual development projects may be allowed to proceed if such projects include acceptable mitigation measures other than those outlined in Stages I through IV, provided the developers contribute the required trip fees. The alternative measures proposed in this fashion must be consistent with the rest of the mitigation phasing program. Details of this project approval process will be developed by appropriate County agencies as part of the Local Coastal Program amendment.

6.3 Funding Mechanisms

The intent of this section is to review available and potential revenue sources for the implementation of the identified transportation system improvements. A variety of existing revenue sources was considered and the potential of each was analyzed for applicability to funding the proposed mitigation measures. These sources included:

Motor Vehicle In-Lieu Tax: This revenue is collected by the State and distributed to cities and counties under the provisions of Section 11005 of the Revenue and Taxation Code.

State Gasoline Tax: These funds are collected by the State as part of its 9 cents a gallon motor fuel tax (additional taxes are collected and disbursed by the Federal government). As part of the recent legislation which increased State gas taxes, money is available for "flexible congestion relief" funding. The mitigation measures contemplated for the Marina would qualify for such funds. The funds are distributed on a competitive basis by the State after applications are submitted by cities and counties throughout the State. The County could apply for such funds to pay for all or a portion of the Marina's mitigation measures.

Federal Highway Funds: The Federal government has a number of programs for support of highways, based upon its 9 cent/gallon gasoline tax (recently increased to 14 cents/gallon) and other vehicle-related excise taxes. A large portion of this money is devoted to the Interstate Highway System.

Other programs of significance include Federal aid primary (FAP), secondary (FAS), and urban (FAU) routes, railroad grade separation, and bridge replacement funds.

TABLE 6-3
MARINA DEL REY TRAFFIC STUDY
DEVELOPMENT PHASING

	Percent Development		*Maximum Allowable PM Peak Hour Trips* in Each Phase*						
	Alt 3	Others	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Phase 1	30	30	1,241	1,414	493	1,293	539	1,038	856
Phase 2	20	30	1,241	1,414	329	1,293	539	1,038	856
Phase 3	50	25	1,033	1,179	822	1,078	448	864	713
Phase 4		15	620	707	----	647	269	519	428
TOTAL	100	100	4,135	4,714	1,644	4,311	1,795	3,459	2,853

* Trips refer to new PM peak hour trips generated by new development

Local Sales Tax Increase for Transportation: Retail sales tax revenues provide the largest single source of funding to most state governments, and a significant revenue source for many local governments.

Tax Increment Financing: Tax increment financing is used when public improvements are expected to lead to large increases in the private value of property.

Fines and Forfeitures: These represent the net proceeds (after administrative cost) for traffic and parking fines. The funds are provided to the local government in whose jurisdiction the violation occurs.

Special Assessment Districts: Fees are assessed to existing development to help fund needed improvements. Assessment districts are used when a well-defined and limited area of land is benefitted by the improvement.

Mello-Roos Community Facilities Act: The Mello-Roos Act allows counties and cities to designate service districts where two-thirds of the citizens within the district can levy a special assessment to provide for public services, or the purchase, construction, expansion, or rehabilitation of any property with an estimated useful life of five years or more. Although enacted in 1982, there are only two or three community facilities districts in the unincorporated area of Los Angeles County. Provisions of this method of funding are found beginning with Section 53311 of the Government Code. The funding from this source is raised by a special tax that becomes a lien on the property. This is a funding source that should receive additional consideration.

Revenue Bonds: Revenue bonds can be used to generate up-front moneys to pay for mitigation measures and be reimbursed when development-generated funds are made available.

Traffic Impact Fees: These are fixed fees usually charged to new developments, collected by local governments and are generally based on the total cost of mitigation measures which will be required as a result of the new developments.

Public/Private Joint Venture: Where a local government owns land for or adjacent to transportation facilities, but does not need such property for near-term use, the value of such property can sometimes be captured by leasing the air, surface or subsurface rights.

Development Agreement: Development agreements were enabled by the State Legislature in 1979 and may be used for public facilities such as streets, sewerage, transportation, drinking water, schools, and utility facilities.

Bridge and Thoroughfare Fees: This is a procedure which is contained in Title 21 (Section 21.32.200 of the Subdivision Ordinance) of the Los Angeles County Code and Section 66484 of the Government Code. It was enacted to provide a means to defray the cost of constructing

roads in a designated area of benefit through fees collected from developers. Although primarily used for subdivision developments, this procedure could be applied to the Marina as the area of benefit. One drawback to this procedure is that there is no guarantee of "up front" money to pay for improvements needed before additional development takes place. It is interesting to note that the procedures allow the Board of Supervisors to approve the advancement of money from the General Fund or Road Fund to pay the costs of constructing the improvements covered by the district; however, it is unlikely that this funding method would be approved. In the event that such funding was approved, the General Fund or Road Fund could be reimbursed for such advances by the fees collected as development within the district occurs. Another method of providing "up front" money could come from those developers who are anxious to begin their projects, either contributing or constructing the necessary initial improvements. If these improvements exceed the share of the total costs that developers would be required to pay, they could be reimbursed from fees collected from future projects located in the area of benefit. This is another potential area of funding that should receive additional consideration.

Marina General Funds:

Marina del Rey generates approximately $20 million in County revenue each year. A majority of this income goes into the County's general fund and is used for a variety of purposes. These revenues could be made available for improvements to the Marina's circulation system; however, their use is unlikely because of the great demand for revenue to fund other critical County programs.

6.3.1 Potential Alternative Funding Sources

Through extensive discussions with County staff and a review of the above existing sources as well as several other specific Marina and County related possible funding sources, the following sources of funding were determined to be the most feasible and applicable given the Marina development circumstances. A combination of these sources, which will be discussed in more detail in this section, is recommended to be used to fund the identified transportation system improvements.

Revenue Bonds:

Revenue bonds can be used to generate up-front moneys to pay for mitigation measures and be reimbursed when development generated funds are made available.

Revenue bonds are frequently utilized for public works improvements where a revenue stream can be assumed to be generated by implementation of the improvement. For example, a toll road or bridge can be financed by a revenue bond with the tolls being allocated to pay off the bonds (principal and intersect). Similarly, parking facilities are often constructed with revenue bonds and the parking fees paid by customers allocated to bond payments. In the case of

Marina mitigation measures, it may be more difficult to finance revenue bonds based on anticipated development fees as the payback mechanism. The payment of development fees is tied to the pace of development and is therefore more speculative than a user fee such as a toll or parking fee. If the County can allocate a guaranteed revenue stream from Marina fees, then a revenue bond may be more feasible to finance Marina improvements.

Special Assessment Districts:

Assessment districts have been used to fund a variety of public works improvements in California since 1911. Assessment districts are used when a well-defined and limited area of land, such as the Marina area, is benefitted by the improvement. The assessment may be paid in cash by the landholder or through installments (usually on the land owner's property tax bill). Assessments do not require a vote of the owners or voters in the assessed area, but rather are created through the administrative procedures. Typically, assessed land owners must be given appropriate notice and a hearing must be held. There is a mechanism for majority protest of the assessment, although a charter city or county can over-rule such a protest with a 4/5th vote of its council/supervisors.

Bonds issued to pay for improvements are exempt from state and federal taxes and carry a lower interest rate than privately raised capital would. Assessments can be levied by a county, city, or special district, and can overlap jurisdictional boundaries with the consent of the local governments involved. Special districts must have specific enabling authority to levy assessments from the State Legislature.

The distribution of assessments (called the "spread") is done by formula, and must be reasonably related to the benefits received. The assessment can be a flat fee (e.g., $'s per acre) or it can be related to the benefit conferred on a parcel (e.g., a graduated fee based on distance, where land further from the improvement pay less).

A major disadvantage of assessment districts for a project is that they do not handle phased development well. It would probably be necessary to create a new, different assessment district for each phase of development (though geographical boundaries could overlap). The IRS has frowned upon large sales of tax-exempt bonds, the proceeds of which are unspent for many years.

Traffic Impact Fees:

These are fixed fees usually charged to new developments which are collected by local governments and are generally based on the total cost of mitigation measures which will be required as a result of the new developments. Fees are typically assessed at a fixed, codified rate and are not an open item for negotiation. However, some changes may be implemented for cause (e.g., an unusual project with unusual trip generation characteristics). The actual collection of the fee is typically done at the time the final map is filed, although some agencies

wait until the building or occupancy permit is issued. Recent State legislation requires that fees be spent within five years or be returned to developers.

6.3.2 Staged Funding Approach

It has been indicated that the need for the transportation improvements will be brought on by the anticipated traffic generated from the additional developments in the Marina under various land use alternatives. One common way of financing the necessary mitigation measures, as discussed in section 6.3.1, is to assess the cost of improvements to the sponsors of the additional developments relative to the impacts caused by their proposals through traffic impact fees. Since relative impacts are generally proportional to the total number of produced peak hour trips, the total cost of the improvement package can be allocated to developments relative to the number of generated peak hour trips. Each alternative land use scenario produced a certain level of peak hour trips as discussed and compared in Section 4.6.2. The total number of PM peak hour trips corresponding to each scenario were shown again in Table 6-1.

Dividing the total cost of improvements for each alternative by the total peak hour trips corresponding to that scenario produced the values indicated at the bottom row of Table 6-1. These per-trip fees, if applied by the total number of trips produced by each additional future development would generate the necessary funds to finance the entire package of mitigation measures. A look at the numbers reveals that the fees are generally in the range of $800 to $1,200 per trip, with Alternative 3 (Phase II, without Area A) having the unusually higher rate of over $2,100 per trip. The reason for this high per-trip fee for Alternative 3 is mainly the low number of trips which would have to share the high cost of improvements.

An inherent assumption in these figures is that 100 percent of the cost of mitigation measures will be paid by the new developments. Of course, if other sources of funding are found to be available and feasible, these trip fees could be reduced accordingly. On the other hand, it was indicated that the implementation of Stage I of the improvements was desirable before any additional development which adds new peak hour trips could be allowed and consequently before any traffic impact fees would be available. This fact by itself necessitates the need for other complementary funding mechanisms to help fund the Stage I improvements. In addition, the subsequent stages would also have to be coordinated with the availability of funds from traffic impact fees from the preceding phases of development. The following discussion addresses the staged funding approach giving two alternative strategies: a) County Funding Mechanisms, such as Revenue Bonds, and b) a Benefit Assessment District approach. Throughout this discussion alternative land use scenarios 1 and 3 are used to present examples of required funds in each stage and implications on traffic impact fees. Table 6-4 presents a breakdown of costs of all improvements by each stage for these two scenarios for reference purposes.

a) County Funding Mechanisms

Revenue Bonds

Revenue bonds are a County-oriented source of funding for the traffic mitigation measures. The County would issue bonds to provide funds which would be used to finance all four stages of the circulation system improvements and would be gradually paid back through trip fees charged for all new development. The trip fees would be calculated using the identical process described for the Marina income financing method. The bond would be paid off as income is received from the trip fees. A potential problem with this method would arise if complete buildout did not occur. Also, the cost per trip using bonds would be higher than with other funding methods because of the cost of administering the bond. The following is a comparison of the trip fees which would be needed to repay the bonds (without administration costs figured in):

Alternative 1

The total cost for improvements in all four stages of this alternative is approximately $4.0 million. Dividing this cost by the 4135 possible PM peak hour trips, one arrives at a cost of approximately $960/trip. After full buildout and the 4135 trips have all been charged for new development in the existing Marina and Area A, the entire $3.9 million sum will have been used to repay the bonds.

Alternative 3

All improvements for this alternative would cost approximately $3.7 million. The per-trip fee can be calculated by dividing the $3.6 million by the 1644 possible PM peak hour trips in this alternative for a cost of approximately $2170/trip. This fee of $2170/trip will be charged for all new peak hour vehicle trips generated by new development in the existing Marina until full buildout has occurred and the entire $3.6 million has repaid the bonds.

b) Benefit Assessment District

Another way to look at the Stage I funding is to have the costs of the improvements to the existing substandard Marina intersections shared by all leaseholders. The justification for this is that the existing development in the Marina adds traffic to the road network and it is this traffic that has led to decreasing levels of services. Thus, the existing leaseholders would have paid to help correct a situation caused, for the most part, by their own developments. In addition, when the Stage I improvements are made and the Marina intersections are operating at County standards, all leaseholders will benefit from the improved traffic flow and reduced congestion.

The improvements proposed in Stages II, III and IV will create additional capacity in the circulation system. This increased capacity is not needed by existing development, but rather, would be required for additional future development. Thus, the funding for these Stages would come from the new development that would be taking advantage of the increased traffic capacity. These funds would be collected as traffic impact fees when permits for these developments are approved.

Alternative 1

Stage I would be financed by a benefit assessment district which would generate the approximately $2.2 million necessary to complete the mitigation measures. This stage of improvements would bring the existing transportation system up to County standards, therefore benefitting existing Marina developments. The remaining stages would be financed by traffic impact fees collected as future development occurs. The fees collected from each stage need to be an amount sufficient to cover the costs of each successive stage.

Stages II, III and IV have an estimated mitigation cost of approximately $1.8 million (see Table 6-1 for precise figures). If that total cost is shared by the 4,135 trips which are allowed by Alternative 1, the traffic impact fee for each trip would be approximately $450.

After Stage I mitigation is completed, according to the phasing plan outlined in section 6.2, Alternative 1 would allow 30 percent of the future development to be built. This 30 percent constitutes 1240 trips which would generate only about $550,000, which is not sufficient to pay for the Stage II mitigation measures. However, if a traffic impact fee of $650 per trip is used, about $800,000 is raised which covers the cost of Stage II mitigation. This $650 fee is also sufficient to pay for the remaining stages. When final buildout occurs, there would be a surplus of about $880,000 which would be divided equally among the 4,135 trips for a refund of approximately $200 per trip.

When the refund of $200 is subtracted from the traffic impact fee of $650, the net cost per trip is $450 which is the same as the original amount calculated above.

Alternative 3

Stage I would be financed by a benefit assessment district which would generate the approximately $2.2 million necessary to complete the mitigation measures. The remaining stages would be financed by traffic impact fees collected as future development occurs. The fees collected from each stage need to be an amount sufficient to cover the costs of each successive stage. This is similar to the method for Alternative 1, except that there are no Stage IV improvements.

Stages II and III have an estimated mitigation cost of approximately $1.4 million (see Table 6-1 for precise figures). If that total cost is shared by the 1,644 trips which are allowed by Alternative 3, the traffic impact fee for each trip would be about $850.

After Stage I mitigation is completed, according to the phasing plan outlined in Section 6.2, Alternative 3 would allow 30 percent of the future development to be built. This Phase I development constitutes 493 trips which would generate about $420,000 which is sufficient to pay for the Stage II mitigation measures and would leave a surplus of about $210,000. However, this surplus, when added to the $280,000 generated by the 329 trips (20 percent) comprising Phase II, is insufficient to pay for the Stage III improvements which total over $1 million. If instead a traffic impact fee of approximately $1,750 per trip is used, a sufficient amount is raised which covers the cost of Stage III mitigation. When final buildout occurs, there would be a surplus of about $1,500,000 which would be divided equally among the 1,644 trips for a refund of about $900 per trip.

When the refund of $900 is subtracted from the traffic impact fee of $1750, the net cost per trip is about $850, which is the same as the original amount calculated above.

It should be pointed out that at this stage, the above cost estimates are order-of-magnitude and mostly for comparison purposes only. It is recommended that a more detailed estimate of costs be developed for impact fee determination prior to institution of such fees. Ordinances establishing such fees should be based on more detailed and thoroughly researched construction and demolition costs. Furthermore, since the unit costs were based on current roadway improvement cost data, it is recommended that these figures be updated periodically based on the Consumer Price Index or other indices to account for inflation.

TABLE 6-4
PROPOSED PHASING AND COSTS OF
MARINA DEL REY IMPROVEMENTS

STAGE I (Brings all Marina intersections to acceptable levels of service)

	Alternative 1	Alternative 3
1. System improvements	$1,443,400	$1,443,400
2. Admiralty/Palawan	1,500	1,500
Misc./Contin.	722,450	722,450
Total: Stage I	$2,167,350	$2,167,350

STAGE II (Marina mitigation for future development)

3. Via Marina/Admiralty	$120,740	$63,340
4. ATSAC Admiralty	340,000	0
5. Admiralty/Mindanao	0	75,350
Misc./Contin.	230,370	69,345
Total: Stage II	$691,110	$208,035

STAGE III (Lincoln mitigation for future development)

6. Lincoln/Mindanao	$248,900	$248,900
ATSAC	85,000	85,000
7. Lincoln/Fiji	0	197,700
ATSAC	85,000	85,000
8. Lincoln/Bali	99,950	94,950
ATSAC	85,000	85,000
Misc./Cont.	301,925	398,275
Total: Stage III	$905,775	$1,194,825

STAGE IV (Mitigation for connection to Area A)

9. Admiralty/Fiji	$49,670	0
ATSAC	85,000	0
Misc./Cont.	67,335	
Total: Stage IV	$202,005	0
GRAND TOTAL	$3,966,240	$3,570,210

6.4 Contribution to Coastal Transportation Fund

Although future intersection levels of service were calculated for the external study area intersections for ambient and cumulative projects conditions, this study did not develop specific mitigation measures for these intersections which are entirely outside the Marina and outside County jurisdiction. Section 4.6 addressed these intersections, as presented in Table 4-22, by discussing the relative shares of additional future traffic at these intersections for Marina development scenarios versus other cumulative projects. Table 4-22 also indicated a weighted average share of contribution by Marina development traffic on all external intersections for each land use scenario. It is recommended that based on this weighted average, future Marina developments be assessed a "fair share" contribution fee to the Los Angeles City's Coastal Transportation Corridor Fund to finance part of needed mitigation measures to these intersections. This fee would be calculated by applying the weighted fair share percentages to the current Coastal Transportation Corridor Traffic Impact Fee of $2,010 per PM peak hour trip and would be as follows:

Alternative 1	$2,010 x 15.7% = $316	per PM Peak hour trip
Alternative 2	$2,010 x 18.2% = $366	per PM Peak hour trip
Alternative 3	$2,010 x 8.8% = $177	per PM Peak hour trip
Alternative 4	$2,010 x 16.2% = $326	per PM Peak hour trip
Alternative 5	$2,010 x 7.0% = $141	per PM Peak hour trip
Alternative 6	$2,010 x 13.7% = $275	per PM Peak hour trip
Alternative 7	$2,010 x 11.8% = $237	per PM Peak hour trip

It should be pointed out that these fees will be in addition to traffic impact fees per trip indicated in the previous sections to be used for the mitigation measures within the Marina. These additional fees will be collected as new development proposals are approved for the Marina and will be included in the Coastal Transportation Corridor Fund for transportation improvements.

7.0 PUBLIC INPUT

This chapter describes the coordination efforts undertaken by County staff and consultants with public agencies and the general public.

7.1 Pre-Study Public Meeting

A public meeting was held on June 20, 1990, in the Department of Beaches and Harbors Conference room in Marina del Rey. The intent of this meeting was to inform the public about the recently initiated traffic study for the Marina del Rey Local Coastal Plan and obtain comments on the methodology and issues.

The meeting began promptly at 6:00 PM. It was attended by over 20 members of the public (a sign-up sheet is located at the end of the Chapter). The attendees also included staff from other involved agencies, such as the City of Los Angeles Department of Transportation as well as members of the press. Consultant staff present included: Viggen Davidian and Michael Meyer from DKS Associates, and Fred Pearson and John Stutsman from Gruen Associates.

Following a general introduction by the County Department of Regional Planning staff, the consultant project manager presented the various aspects of the project, outlining its purpose, scope of work, technical methodology and schedule. After the presentation, the meeting was opened to the public for questions and comments.

The following is a summary of the major issues, comments and questions including a brief response for each issue:

- **How will through trips be counted?**

  Analysis of through trips is one of the specific tasks included in this study. Through trips will be counted using a license plate survey to be conducted along major entry and exit points to the Marina. Licence plates at entry and exit points will be recorded and matched to determine quantity and patterns of through traffic.

- **How will projections for through traffic be made?**

  Projections of through traffic will be made based on a number of factors, some of which include: a) comparison of results from the current through traffic analysis with data from previous analysis conducted on through trips, b) analysis of historical traffic data on the Marina's circulation system to identify rates of growth in ambient traffic,

c) review of other documents and EIR's prepared for projects in the study area, d) review of regional traffic growth trends, rates and patterns.

- **What would be the feasibility of having a parking structure in the Route 90 median?**

  If land and funding is available and the study indicated that such a structure can help traffic conditions, it could be considered as an alternative mitigation measure by this study.

- **The intersection at Culver Boulevard and Route 90 very heavily impacts the traffic in the Marina area. Why is this intersection not one of the 18 being studied?**

  Since this traffic study is to support land use planning within the Marina only, for practicality purposes, the analysis is limited to the evaluation of all intersections within the Marina and a few major intersections immediately outside the Marina. Over half of the study intersections are outside the Marina. Of the major intersections adjacent to but outside the Marina, the feeling is that Marina related traffic has very small impact on the intersections of Culver Boulevard and Route 90 and Lincoln and Venice.

- **The weekend traffic at the Marina is congested due to people trying to access the beach. Why are weekend traffic counts not being done?**

  Review of historical data from traffic studies conducted within the past 15 years has indicated that although previously, weekend peak hour traffic was as high or, in some cases, higher than weekday traffic, that is no longer the case. Weekday peak hours currently have the heaviest traffic volumes and worst operating conditions, consistently.

- **Marina del Rey/Venice residents feel that the streets in the area are being occupied by non-residents who use the surface streets as an alternative to the congested 405 Freeway. How can this congestion be mitigated?**

  This is a problem of regional significance and concern, and to some extent beyond the scope of this study. However, the study will be cognizant of this issue and will try to identify the magnitude of the external impacts to the extent possible. Some potential future planned projects such as the Coastal Corridor Light Rail system, as well as other recommended mitigation measures in regional planning efforts with a broader focus, like the Coastal Transportation Corridor, are designed to address such problems.

- **Residents in the western end of the Marina feel that they always have to use their cars to get basic services. Will the study be looking into providing service oriented facilities for Marina residents in the western portion of the area?**

Minimizing vehicular trips through travel demand management would be one of the ways that the study will be looking at improving traffic operating conditions within the Marina. Providing service oriented facilities close to residences to minimize auto trips will be one of the land use related mitigation measures, which will be considered in the alternatives analysis portion of this study.

- **Will the study be looking at alternate land uses Marina-wide?**

  Yes, but only to the extent that these alternative land uses have the potential to provide improved mobility and traffic conditions.

- **How will Playa Vista be incorporated into the study since their EIR is not complete?**

  Given the timing of the Marina Traffic Study, it will have to rely on the best and most recent information available from the Playa Vista planning and traffic documents. Certain assumptions will be made and clearly documented when information is incomplete or not finalized. In other instances, multiple assumptions may be made as part of the alternatives analysis and sensitivity tests will be conducted to identify the impacts of these assumptions on various outcomes of this study.

- **Why is the Marina Bypass not being considered as a mitigation measure in this study?**

  Due to the uncertain status of the implementation of the Marina Bypass and its unpopular nature with some groups, it was decided that other mitigation measures with more realistic implementation possibilities, would be considered, which could provide additional traffic capacity and consequently allow for additional developments to occur. (There was expressed positive reaction from the public regarding the decision to exclude the Bypass as a mitigation measure.)

The City of Los Angeles Department of Transportation, through its representative, welcomed the opportunity to participate in the study and indicated support for the effort and would appreciate an opportunity to review some specific aspects of the work, such as specially developed trip generation rates.

The public was encouraged to provide further comments and input to the traffic study process through communication with the County staff, with consideration for the various stages of the study as indicated in the presented schedule.

The meeting was adjourned at 7:30 PM.

7.2 Coordination with Other Public Agencies

Meetings were held with Caltrans and City of Los Angeles Department of Transportation staff for coordination purposes.

Additional meetings were held with the Maguire Thomas representatives to discuss the Playa Vista Plans and with the Marina del Rey Lessees' representatives and their traffic consultants.

7.3 Post-Study Public Meeting

A public meeting was held on December 18, 1990 in the Department of Beaches and Harbors Conference room in Marina del Rey. Notices of the meeting were sent to approximately 100 individuals, community groups and public agencies. This meeting was held after the publication of the Draft Final Report, dated December 7, 1990, which contained the entire report with the exception of this Section (7.3). Fifty copies of the report were made available to the County Department of Regional Planning who in turn distributed them to involved agencies and all members of the public present at the first public meeting. Additional copies were made available to the Marina del Rey County Library and other interested persons who had requested copies. The intent of this meeting was to inform the public about the results of the completed traffic study for the Marina del Rey Local Coastal Plan and obtain comments on the results and findings.

The meeting began promptly at 5:30 PM. It was attended by over 20 members of the public (a sign-up sheet is attached to end of this chapter). The attendees also included staff from other involved agencies, such as the City of Los Angeles Department of Transportation, Caltrans as well as members of the press. Representing the County of Los Angeles were Ron Hoffman and Dennis Slavin, Department of Regional Planning; Barry Kurtz, Department of Public Works; and Larry Charness, Department of Beaches and Harbors. Consultant staff present included: Viggen Davidian, the Project Manager from DKS Associates, and John Stutsman and Don Holloway from Gruen Associates.

Following a general introduction by the County staff, the consultant Project Manager made a comprehensive presentation of the study scope of work, technical methodology and key findings and results. Specific questions were answered during the presentation and afterwards the meeting was opened to the public for further questions and comments.

The following is a summary of the major issues, comments and questions including a brief response for each issue. (Note: References to "Sections" refer to sections in the Draft Final Report.)

- **What days were the traffic counts done? Is it valid to use counts taken from only three days out of the entire year?**

  As indicated in Section 2.2, peak period traffic counts were conducted at all 19 study area intersections during the three days of Tuesday, Wednesday and Thursday, June 26, 27 and 28. Traffic volumes including all turning movements and pedestrian flows were counted manually by 15-minute intervals during the peak two-hour periods of 7:00 to 9:00 AM and 4:30 to 6:30 PM. These peak periods were selected based on previous data and experience, and were approved for use by County staff.

  Basing traffic studies on traffic counts from a limited number of days is a common and acceptable practice. However, additional analysis and research were conducted to assure that these specific days were typical ones and suitable for planning purposes. Since traffic counts were conducted during one specific week in June, it was desirable to investigate the seasonal variation of traffic in the Marina to see in general how traffic in the month of June compares with other months. The Los Angeles County Department of Public Works has a permanent traffic count station on Admiralty Way, north of Bali Way. Year-round data for this station were made available by the County. These data indicate that the month of June is a relatively high traffic month, and traffic volumes on a typical peak hour in the month of June is approximately 30 percent higher than a year-round average peak hour volume.

  It was concluded that the June counts would be used without adjustments for several reasons. Use of a yearly average count would be an extremely liberal and inappropriate approach, one that would not be a true representative of prevailing conditions suitable for planning purposes. On the other hand, planning for the highest season would tend to be excessive. Planning for the Marina is based on a typical peak summer month due to the importance of coastal access during this time. The June volumes were among the higher counts of the year, but were not the highest. Therefore, the June counts conducted for this study were considered to be suitable and are recommended to be used without any seasonal adjustments.

- **Why has the percentage of through traffic remained relatively low over the years?**

  As discussed in Section 2.3, overall, the amount of through traffic has remained relatively constant since 1976. There could be several reason for this observation. It is possible that congestion levels within the Marina have kept pace with the outside making Admiralty Way no more of an attractive alternate to Lincoln and Washington Boulevards than it was 14 years ago. It is also possible that the improvements to the external intersections, such as the installation of dual northbound left-turn lanes on Lincoln Boulevard at Washington Boulevard and other minor improvements since 1976, have kept operating levels on the outside intersections manageable enough that no additional drivers are encouraged to seek alternative routes through the Marina. It could be concluded that

majority of the through traffic is destined to points immediately to the north of the Marina in Venice and has stayed relatively constant through the years. Longer distance through traffic, which travels beyond Venice, may save some time using Admiralty Way, but it still would encounter undesirable traffic conditions within the streets in Venice and therefore would not save any significant travel time overall using this route.

- **Why were locally-derived trip generation rates used rather than SANDAG or other Southern California rates? Aren't most other local projects using these rates rather than ITE rates or developing their own?**

The most common practice in forecasting traffic which may be generated by proposed developments is the use of nationally accepted trip generation rates from sources such as the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. However, if a particular land use, due to its location or other unique characteristics, exhibits obvious differences in trip generation from similar land uses in other locations, it is always the recommended practice to use customized trip generation rates which have been specifically developed for that land use through trip generation surveys.

As discussed in section 2.4, to estimate future traffic from various proposed land uses for Marina del Rey, the study intended to use trip generation rates which most accurately reflect the unique characteristics of the developments within the Marina.

The ITE *Trip Generation Manual* (4th Edition 1987) is based on 1,950 individual trip generation studies. However, it is recognized that many of these studies are limited in sample number and the results often need to be used with caution. Trip generation characteristics for a land use often vary from place to place so it is recommended in the ITE Manual that users "...may wish to modify or adjust the rates presented...to reflect a site's location, public transportation service, ride sharing, proximity to other developments...and special characteristics of the site or the surrounding area. Local data should be collected for comparison when considering use of the data in this report." (ibid., iii).

Other sources also recommend care when using regionally developed trip generation rates. The *National Co-operative Highway Research Program Report 187* is a user's guide for quick response urban travel estimation (Transportation Research Board 1978). The guide contains nationally derived trip generation data. However users are warned that "...the values given are averages and...they vary by location in an urbanized area, by size of urbanized area, and by location within the United States." (ibid., 19). The report also recommends that "If manual techniques are to be applied for some level of study (i.e., corridor, site) in an urbanized area where regional planning efforts have resulted in pertinent data...the local results should be considered for the special study." (ibid., 19).

The Marina del Rey Traffic Study was able to undertake local trip generation studies, as recommended in the *Trip Generation Manual* and the *NCHRP Report 187*. Where these rates differed significantly from the ITE rates, the local Marina del Rey rates were used. The NCHRP 187 rates are considered too old for use in this study. In addition, a local trip generation study conducted for Marina del Rey, completed by a separate traffic consultant, was used for comparison purposes.

Another source of trip generation rates is the San Diego Association of Governments *Traffic Generators* document (SANDAG, 1981). These rates are specific to San Diego, which is a very different type of community than Marina del Rey. In addition, the rates are older than ITE rates and are generally only of use for studies in San Diego or if no rates are available for a particular land use in ITE or from local studies. For these reasons this source was not used in this traffic study.

- **What is the tradeoff for using individualized trip generation rates? If they are not being used to allow more development, then why use them?**

The purpose for using Marina trip generation rates is not to justify more development. Research conducted during this study was designed to provide accurate information on traffic patterns within the Marina and to develop a true picture of trip generating characteristics of the Marina land uses and their generated traffic impacts. As indicated in the report, for some land uses the Marina trip rates are higher than the ITE rates.

- **Why didn't the study consider the weekend period? Aren't the weekend volumes higher than the weekday volumes?**

As reflected in the Pre-Study Meeting responses, review of historical data from traffic studies conducted within the past 15 years has indicated that although previously weekend peak hour traffic was as high, or in some cases higher, than weekday traffic, that is no longer the case. Weekday peak hours currently have the heaviest traffic volumes and worst operating conditions, consistently.

- **Why aren't we designing for the peak day in the entire year, such as for Christmas Boat Parade or the Fourth of July fireworks show? There are major traffic problems on these days which are far worse than the average peak hour conditions. Coastal access must be the primary consideration for the study.**

It is true that coastal access was an important consideration for this study, but the planning needs to be reflective of typical rather than extreme conditions. It is the accepted traffic engineering practice to base future planning on a set of typical or prevailing conditions. To plan and design for extreme traffic conditions, which only occur on a few special occasions during the year would result in overdesigned facilities and inefficient use of resources.

- **Won't there be problems with Admiralty Way being unbalanced after mitigation? It would be substandard to have two lanes in the eastbound/southbound direction and three lanes in the westbound/northbound direction. This condition will present future problems for buses, vehicle breakdowns and bicycles.**

  It is true that the recommended mitigation measure will create an unbalanced lane configuration on Admiralty Way. Currently, there are only two striped lanes in each direction on Admiralty Way which results in an impacted lane at bus stops or in places where vehicles break down. The recommended mitigation measure is an effective solution given the need for the additional capacity in the critical northbound/westbound direction. The additional lane will facilitate traffic movement around bus stops and stalled vehicles. Bicycles are not a factor on Admiralty Way because of the existing bike path which generally parallels this route. The unbalanced lane configuration also achieves the very important objective of minimizing impacts on existing land uses. Relatively more sensitive developments are located adjacent to Admiralty Way on the north side of the street, whereas the south side generally has less sensitive land uses, such as parking lots. A six-lane configuration, which would also provide additional capacity, was considered and discussed during the preliminary study recommendations. The recommended improvement in this study provides the needed third lane in the northbound/westbound direction within the existing curb-to-curb distance without widening Admiralty and impacting the adjacent land uses on the north side. Therefore, if in the future it is needed to create a third lane in the opposite direction to balance the number of lanes on Admiralty Way, the widening can be on the south side with less impacts.

- **The study mentioned that a 0.07 reduction in the volume/capacity ratio can be assumed when ATSAC is implemented at intersections. Isn't this reduction unrealistic? The traffic model already assumed that each intersection is operating at optimum efficiency, so applying ATSAC can not improve upon perfection. How can we credit for ATSAC in these situations?**

  ATSAC provides traffic signal interconnection and complete computerized synchronization of the signal system and the real-time coordination of the timing of the signals according to the actual traffic demand. Thus, ATSAC increases traffic throughput, improves system-wide traffic flow and reduces traffic stops and delay. The "optimum conditions" assumptions in intersection levels of service analysis refer to an optimally timed signal rather than an intersection having an ideal capacity or an efficiently operating system. An individual signal may be timed ideally, but it may not be operating efficiently in relation to adjacent signals. ATSAC actually improves the traffic flow, coordinates traffic arrivals, reduces the needed clearance times and provides more system-wide capacity. The referenced operational benefits of an ATSAC system have been empirically tested and proven in Los Angeles. The application of ATSAC at County maintained intersections is subject to County, City and State agreements.

- **What will be the loss in open space due to implementation of the mitigation measures?**

  The loss in open space will be insignificant due to recommended mitigation measures.

- **What are the new lane widths going to be on Admiralty? Will they be substandard?**

  Potential new lane dimensions on Admiralty Way could be (from north to south) 12, 10, 11, (14-foot median), 11, and 12 feet, for a total of 70 feet curb-to-curb distance. The lanes will not be substandard. A 10-foot lane is allowed by County of Los Angeles standards for any lane other than the curb lane.

- **Is Admiralty Way wide enough to accommodate another lane within the existing curb-to-curb distance?**

  Yes, Admiralty Way is wide enough to accommodate another lane as discussed in the report and the previous paragraph.

- **What is being done to mitigate the impact of Marina development on intersections and roadways outside the Marina?**

  Future cumulative levels of service were calculated for external intersections, but no mitigation measures were recommended since the intersections are outside County jurisdiction area and the County would not have any control over implementation of improvements. The amount of impacts from future Marina developments at these intersections relative to all other developments was calculated and presented in Section 4.5. It recommended that additional traffic impact fees be collected from future Marina developments to be paid into the City of Los Angeles' Coastal Transportation Corridor Fund to pay for improvements at these intersections, as discussed in Section 6.4.

- **Why was the Marina Bypass not considered in the study?**

  As reflected in responses to the Pre-Study Meeting issues, due to the uncertain status of the implementation of the Marina Bypass and its unpopular nature with some groups, it was decided that other mitigation measures with more realistic implementation possibilities would be considered which could provide additional traffic capacity and consequently create additional development potential.

  The Marina Bypass is still an important potential mitigation measure that could significantly improve circulation in the region by reducing through traffic on Lincoln Boulevard, Washington Street and Admiralty Way.

- **Why was there no proposal for widening Mindanao Way between Glencoe and Admiralty to three lanes in each direction?**

  The study attempted to recommend only practical and feasible mitigation measures which had minimal right-of-way takes and impacts on adjacent properties. Furthermore, the corresponding intersections did not require such a widening for mitigation of traffic impacts.

- **Shuttle and light rail do not provide much traffic mitigation. They shouldn't be considered viable mitigation options.**

  This study also generally concurs with this opinion specifically as it relates to Marina del Rey. Although the study recognized the possible benefits of and ultimate need for such TDM measures, it did not assume any trip reduction benefits from future implementation of shuttle, light rail or other TDM measures for justifying the possibility of additional development.

- **Physical improvements alone will not solve traffic problems. A more profound approach to new growth and development needs to be considered.**

  This study provides a responsible approach to potential growth by proposing a phased development plan which is contingent upon implementation of additional circulation capacity. Any future development will be staged and limited by the additional capacity provided by the suggested improvements.

- **Caltrans is interested in receiving some of the money slated for the City. Is there any way an appropriate amount could be determined?**

  Caltrans should enter into discussions and negotiations with the City of Los Angeles for a share of the funds which will be generated by the recommended traffic impact fees from additional Marina developments to be paid into the City's Coastal Transportation Fund for improvements to state highways in the area.

- **How do the County's improvements fit into the regional transportation system?**

  The proposed local street improvements will provide additional capacity to the internal Marina circulation system and Lincoln Boulevard, which are compatible with transportation improvements contemplated in the region. The recommended funding contributions to external intersections will assist in implementation of regional improvements for a comprehensive approach.

- **The report should consider the impact on emergency vehicle response times with the expected future levels of service.**

  The development contemplated in this traffic study will not impact emergency vehicle response time if the recommended mitigation measures are implemented.

- **The report is a justification of future development in an area with significant traffic problems.**

  The report analyzes the existing traffic conditions in the area and makes projections for future traffic levels. Although the report recognizes that traffic volumes are high in this area, the increased traffic problems are generally not attributable to Marina development, which has remained relatively stable in the past ten years. The recommended mitigation measures proposed in the study should alleviate the traffic impacts of future Marina development and improve the operating conditions at most study intersections.

- **A disclaimer should be added to the study which states that it really only looked at the internal Marina traffic problems and did not study the sub-region. Thus, it did not try to solve the transportation problems for the sub-region, but only for the Marina.**

  The study has analyzed future conditions at seven sub-regional intersections and has recommended funding contributions towards future improvements for these intersections. It has not recommended specific improvements to these intersections due to the fact that they are outside County control. This has also been noted in various places throughout this report.

- **A sub-regional organization should be formed to control growth and construct sub-regional transportation systems. There is a great need for inter-jurisdictional cooperation to solve growth and transportation problems.**

  The establishment of a new sub-regional organization to regulate urban growth and build transportation improvements is a complex undertaking and beyond the scope of this study. This study recognizes the need for a cooperative approach to address growth and transportation issues. Considerable inter-jurisdictional coordination and dialogue was accomplished during this study in order to achieve solutions that were sensitive to the concerns of adjoining jurisdictions.

County staff concluded the meeting by thanking the public for their participation and pointed out the remaining steps of the process in updating the LCP. The meeting was adjourned at 7:30 PM.

PUBLIC INFORMATION MEETING

June 20, 1990

Beaches & Harbors Conference Room

Attendance Sheet

Name	Address	Telephone
BOB LESLIE	14120 TAHITI WAY MDR 90292	822-0322
ERIC LIEBERMAN	10100 SANTA MONICA BL. CENTURY CITY, CA. #380	203-8973
Bob Bush	990 W. 190th #201 Torrance, 90502	515-1300
Maynie Atatore	13470 WASHINGTON BL. VENICE 90291	827-2346
Charles Christensen	2060 Pacific ave Venice. 90291	823-3714
Dell Chumley	2480 Penmar AV #5 Venice 90291	305-1459
Felix Rozas	913 Dickson St.	821-4233
Rick Toney	5831 Burnet ave Van Nuys CA 91411	818-787-13
PATRICIA YOUNG	RPM 444 WASH. ST. MDR	822-1444
Ruthann Carlisle	731 Howard St / MDR	821-7668
BOB PATERNOSTER	5736 MADRID LN. LONG BEACH 90814	590-6623

PUBLIC INFORMATION MEETING

June 20, 1990

Beaches & Harbors Conference Room

Attendance Sheet

Name	Address	Telephone
Randall Tanijiri	LADOT 200 N. Spring St Room 1200, LA 90012	485-2286
TED HALLER	4560 ADMIRALTY WAY #109 MDR 90292	306-0725
DAVID LEVINE	DEL REY SHORES 4201 VIA MARINA MARINA DEL REY, CA 90292	823-5384
Judy Wyluda	817 DICKSON ST MDR. 90292	8218540
Richard KLEIN	742 Howard St 90292	827-2109
John McALISTER	MTP. 13250 Jefferson L.A. 90094-66	822-0074
STEVE FREEDMAN	732 HOWARD ST MDR 90292	827 1189
John McClellan	Selden Ring Corp 1880 Wilshire #600 LA, 90024	470-9777

PUBLIC INFORMATION MEETING

June 20, 1990

Beaches & Harbors Conference Room

Attendance Sheet

Name	Address	Telephone
Jeffrey Rabin	LA Times 1717 4th Street, Suite 200 Santa Monica 90401	394-1250
Michael Meyer	DKS Assoc. 411 W. Fifth St #500 LA CA 90013	627.0419

MARINA DEL REY TRAFFIC STUDY

PUBLIC INFORMATION MEETING

December 18, 1990

Attendance Sheet

Name	Address	Telephone
Stan Higgins	Caltrans 120 So. Spring St LA 90012	620-4813
Charles Christensen	2000 Pacific ave Venice cal 90291	823-3714
Bob Bush	990 W. 190th St. #201 Torrance 90502	515-1300
Karl F. Berger	Caltrans 120 S. Spring St. Loc. 2-1A Los Angeles 90012	(213) 620-3829
WILFORD MELTON	CALTRANS - 120 S. SPRING ST TRANS. PLNG. & ANALYSIS BR. 90012	(213) 620-3163
Bets Leslie	Mdr Lessoc Assoc	822-0322
SALVATORE GRAMMATICO	4737 MARSHALL DR. CC 90230	390-1673
Lori Schweitzer	The Outlook 1920 Colorado Ave Apt 404	829-6811
HARRY PARKER	690 HARBOR ST. VENICE 90291	827-7089
Neal Liddicoat	Barton-Aschman Assoc., Inc. 75 N. Fair Oaks Ave. Pasadena 91103	(818) 449-3917
Greg Lorrance	2049 Century Park East #3760 Los Angeles	213-556-3350
Rick Tonely	" "	" "
Barry Kurtz	LA County Public Works	(818) 458-5902
Debra Bowen	6320 Commodore Sloat Drive LA 90048	213/930-2103
S. DeLaRiva	CAO - County of Los Angeles Hall of Admin.	(213) 974-2356

MARINA DEL REY TRAFFIC STUDY

PUBLIC INFORMATION MEETING

December 18, 1990

Attendance Sheet

Name	Address	Telephone
Felix Rozas	913 Dickson St.	213-821-4233
Rex Frankel	6038 W 75th St LA 90045	213 645 224

8.0 KEY CONCLUSIONS AND RECOMMENDATIONS

The preceding chapters have described existing and projected future conditions in the Marina as well as analyzed impacts of alternative land use scenarios. Observations have been made and conclusion have been drawn on each specific subject area in detail. Some key conclusions and recommendations from the Marina del Rey Traffic Study are summarized below:

Existing Traffic and Levels of Service:

- Traffic counts indicated that the peak hours are generally between 7:45 to 8:45 in the AM and 5:30 to 6:30 in the PM.

- Existing available capacity on the Marina's circulation system is limited. Several key intersections are currently operating within unacceptable (Volume/Capacity ratios over 0.85) levels of service.

Through Traffic:

- A majority of the total traffic entering Marina del Rey via Fiji, Mindanao and Bali has a destination in the Marina. Only a relatively small portion (7 percent) passes through without stopping.

- Through traffic in the evening peak constitutes only 8 to 9 percent of the peak period and peak hour traffic volumes on major segments of Admiralty Way. Relatively speaking, this is generally considered a small percentage for through trips.

- Overall, the amount of through traffic has remained relatively constant since 1976.

Trip Generation:

- Special trip generation surveys indicated that several types of land uses within the Marina are unique in terms of trip generation and therefore specific locally developed trip generation rates can be used to analyze future development and its impacts.

- Some Marina trip generation rates are shown to be lower and some higher than ITE rates. Hotels and residential developments (apartments and condominiums) are lower and commercial, restaurant and boating facilities are higher than ITE rates.

- Given the mix of land uses proposed in Phase II development in the Marina LUP, new trip generation rates can result in a 33 percent (800 out of 2400 trips) reduction in number of trips compared to rates used in the current LUP.

Playa Vista Plans and Area A:

- Whereas changes in development proposals for Areas B and D in the revised Playa Vista plan are substantial, plans for Areas A and C are relatively unchanged. Changes to the plans for Area A are mostly related to layout, access and orientation of the land uses. The quantities of the proposed land uses are identical to that prescribed in the LUP.

- In summary, the plan revisions are proposed to achieve an overall reduction in traffic generation and to minimize traffic impact on the Lincoln and Jefferson corridors.

Future Land Use Scenarios and Mitigation Measures:

- Any additional amount of future Marina development would result in needed mitigation measures to the Marina's roadways and intersections.

- A total of eight out of 12 Marina intersections will need mitigation measures due to additional developments considered in the study.

- A series of intersection-specific and system-wide mitigation measures were developed for each alternative scenario. The proposed improvements are recommended to be implemented in four stages as follows:

  Stage I:

  - Adding a third lane to Admiralty Way in the northbound/westbound direction;

  - Improvement to the intersection of Admiralty Way and Palawan Way including provision of left-turn pockets at north and southbound approaches on Palawan Way at Admiralty Way.

  Stage II:

  - Improvements to the intersection of Via Marina/Admiralty;

  - Additional NB right at Admiralty/Mindanao (needed for Alternative 3 only).

- Implementation of ATSAC at the intersections of Admiralty/Via Marina, Admiralty/Palawan, Admiralty/Bali, and Admiralty/Mindanao.

Stage III:

- All improvements to the intersections of Lincoln/Mindanao, Lincoln/Fiji and Lincoln/Bali.

- Implementation of ATSAC at the intersections of Lincoln/Mindanao, Lincoln/Fiji and Lincoln/Bali.

Stage IV:

- Addition of lanes to intersection of Admiralty and Fiji depending on the number of new lanes required by the development scenario, and

- Incorporation of the intersection of Admiralty Way and Fiji Way within the ATSAC system on Admiralty Way.

- Other mitigation measures such as shuttle service and light rail transit, as well as specific transportation demand and systems management measures, have been discussed, should be considered and can have an additional impact on reducing traffic demand from future developments.

Phasing of New Development:

- It is recommended that the new Marina development be phased in coordination with provision of additional traffic capacity on the circulation system. New development in each phase (measured as peak hour trips generated) should be directly related to the new traffic capacity provided by the mitigation measures that precede that phase of development. Stage I improvements should be implemented before any additional development, which adds new traffic above and beyond existing levels, can take place. After Stage I improvements are in place, new development can begin to occur up to a ceiling of 30 percent. Stage II improvements should be implemented before a second increment of 30 percent of the development is allowed to take place. Implementation of Stage III improvements would allow an additional 25 percent of the development to go forward. Finally, the remaining 15 percent of the development can occur when the mitigation measures in Stage IV are completed.

- Implementation of the mitigation measures described and recommended in this study would provide the additional traffic capacity needed to accommodate the levels of development in each of the seven land use scenarios without any adverse effects on the

transportation system. Further, the phasing of improvements with allowable development will minimize the impact on the transportation network during all stages of construction such that the only amount of development permitted during each phase will be coordinated with the new capacity provided by the improvements in the preceding stage.

Funding of Mitigation Measures:

- The total cost of mitigation measures for all intersections and roadways ranges between $2.3 and $3.97 million depending on the alternative land use scenario. If the entire cost of the intersection mitigation measures is allocated to new developments, potential traffic impact fees for future development can range between $800 to $2,100 per PM peak hour trip depending on the land use alternative. Since Stage I of the improvements would have to be completed before any additional development could occur and any traffic impact fees could be collected, alternative funding sources including revenue bonds and a benefit assessment district were proposed to help fund the Stage I improvements. The subsequent stages would be coordinated with the availability of funds from traffic impact fees from the preceding phases of development. Marina income funds would be reimbursed and revenue bonds would be paid off as funds are generated by traffic impact fees.

Contribution to the City of Los Angeles Coastal Transportation Fund:

- It is recommended that based on a weighted average share of impacts for Marina development scenarios versus other cumulative projects, future Marina developments be assessed a "fair share" contribution fee to the Los Angeles City's Coastal Transportation Fund to finance part of needed mitigation measures to study area intersections which are outside the unincorporated area. This fee would be calculated by applying the weighted fair share percentages to the current Coastal Transportation Corridor Traffic Impact Fee of $2,010 per PM peak hour trip. The fees would range between $140 and $360 per PM peak hour trip.