return to La Quinta Planning

FILE COPY

# TRAFFIC IMPACT REPORT ✓

~~OAK TREE WEST~~

PGA WEST

PREPARED FOR:
LANDMARK LAND COMPANY
100 CLOCK TOWER PLACE
CARMEL, CA 93923

PREPARED BY:
Linscott, Law & Greenspan, Inc.
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September 9, 1983
O-507

LINSCOTT, LAW & GREENSPAN, INC., ENGINEERS
TRANSPORTATION, TRAFFIC, PARKING, CIVIL ENGINEERING
150 C PAULARINO, SUITE 120, COSTA MESA, CALIFORNIA 92626 (714) 641-1587

September 9, 1983

Mr. D. Kaye Chandler
Landmark Land Company
100 Clock Tower Place, Suite 200
Carmel, CA 93923

Subject: Oak Tree West Specific Plan

Dear Mr. Chandler,

Pursuant to your recent authorization, we are pleased to submit this Traffic Study Report for the proposed Oak Tree West development which is based on a maximum 5000 dwelling unit total. This report addresses existing traffic conditions, project traffic generation characteristics, ultimate operating conditions on key site-area roadways, recommended roadway improvements to support forecast traffic, and internal circulation issues. We have analyzed several conditions regarding the extension of Madison Street as well as the impact that would be produced from closing Jefferson Street to public traffic. A technical appendix follows the body of the report and presents supporting data for the analysis.

We have welcomed the opportunity to provide this analysis and stand ready to provide additional support as may be required. We gratefully acknowledge the assistance provided to us from the City of La Quinta, Landmark Land Company, and J.F. Davidson, Associates. Please do not hesitate to contact me directly should you have any questions.

Very Truly Yours,

LINSCOTT, LAW, AND GREENSPAN, INC.

Jerry L. Crabill

Jerry L. Crabill, PE
Transportation Engineer

Encl.
JLC/jal

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# EXECUTIVE SUMMARY

## GENERAL

- The Oak Tree West development is located in a currently undeveloped area of Riverside County.

- The area is planned to be served by an excellent network of arterial streets and highways.

- Good access to the site-area is currently available. With selected roadway improvements to the highway system, good access would continue to be available as the project is constructed.

- The overall project-area would enjoy several benefits from the extension of Madison Street.

- Although the project would remove one of the links in the Master Planned roadway network (Jefferson Street between 54th and 58th Avenues), the general area-wide circulation system would not be seriously affected.

## Project Traffic Impact

- Oak Tree West is a mixed-use private recreational and gated residential community. The project is expected to produce a total of 53,220 vehicle trip ends daily of which 28,550 trips would be external and 12,335 trips would be internal to Oak Tree West.

- The primary impact of the project would be along Jefferson Street between 54th Avenue and Highway 111.

- A four lane roadway section along Jefferson Street would be needed to support the development traffic volumes.

- Seven of the nine intersections studied would operate at satisfactory Levels of Service. Adequate mitigation would be available for the two locations showing poor Service Levels.

- The La Quinta Channel Bridge should be widened to 62 feet as the surrounding area and the project develop.

- Eventual traffic signalization would be required at the Jefferson Street intersections with 52nd, 50th, and 54th Avenues.

- The initial circulation system and access points would be adequate to support project traffic.

- Contiguous project-related construction along 54th Avenue, Madison Avenue, Airport Boulevard, and 58th Avenue would provide sufficient capacity to serve future development volumes.

Madison Street Extension

- The northerly extension of Madison Street would reduce the overall project traffic impact and would improve project circulation.

- The City of Indio should be encouraged to install necessary Madison Street improvements north of 49th Street.

- A two-lane roadway configuration along Madison Street would be adequate to service future development volumes.

Jefferson Street Closure

- The closure of Jefferson Street would have a minimal impact on the area-wide circulation system.

- The construction of Oak Tree West would create an adequate system of substitute roadways. These facilities would provide satisfactory access to and from the area currently achieved via Jefferson Street south of 54th Avenue.

- If Madison Street remains in its current configuration, or it is only partially extended, some of the current Jefferson Street traffic would experience a slightly longer travel time and distance.

- Assuming the full extension of Madison Street, the closure of Jefferson Street would have little or no impact on recreational trips to Lake Cahuilla or trips from the existing road department rock quarry.

Linscott, Law & Greenspan, Inc., Engineers

# TRAFFIC IMPACT REPORT
# OAK TREE WEST SPECIFIC PLAN

## INTRODUCTION

This report has been prepared to determine the traffic and circulation impacts associated with the Oak Tree West Development, located in the City of La Quinta, California (Riverside County). A visual inspection has been made of the project area, as well as the streets and highways which would serve the proposed development. Existing traffic data was obtained from the County of Riverside and from special counts performed by Linscott, Law & Greenspan, Inc. (LL&G).

A traffic generation forecast has been prepared based on information compiled by the Institute of Transportation Engineers and from special traffic generation studies conducted by LL&G. Forecast traffic has been distributed and assigned to project streets based on information supplied by the City of La Quinta planning staff as well as a review of existing travel patterns and street networks. Existing and future volume-capacity relationships have been evaluated at nine key intersections by means of the Intersection Capacity Utilization (ICU) method.

This analysis also recognizes the impact on area roadways and intersections of extending Madison Street to the north into the City of Indio, north of 49th Street. Since project construction would result in the closure of Jefferson Street to through traffic movements, the impact of redistributing existing traffic volumes has been included in the study.

Specific recommendations have been made concerning the adequacy of on and off-site traffic controls. Site access and internal circulation, together with the daily traffic carrying capacities associated with various roadway links, have also been evaluated.

## PROJECT DESCRIPTION AND LOCATION

The proposed 1665 acre Oak Tree West project will consist of several land uses including Residential, Hotel, Commercial, and Recreational development. Currently, the project is scheduled for completion in the year 2003 with the construction sequence consisting of 10-two year phases.

The proposed development site is generally situated in the southeast portion of the City of La Quinta. At project completion, the north project boundary would be formed by 54th Avenue with 58th Avenue forming the south project boundary. The easterly project boundary predominately occurs along Madison

Street with a small rectangular portion of the site (160 acres) south of Airport Boulevard extending about 2600 feet east of Madison Avenue. The projects' general westerly boundary consists of Lake Cahuilla and the Coachella Canal.

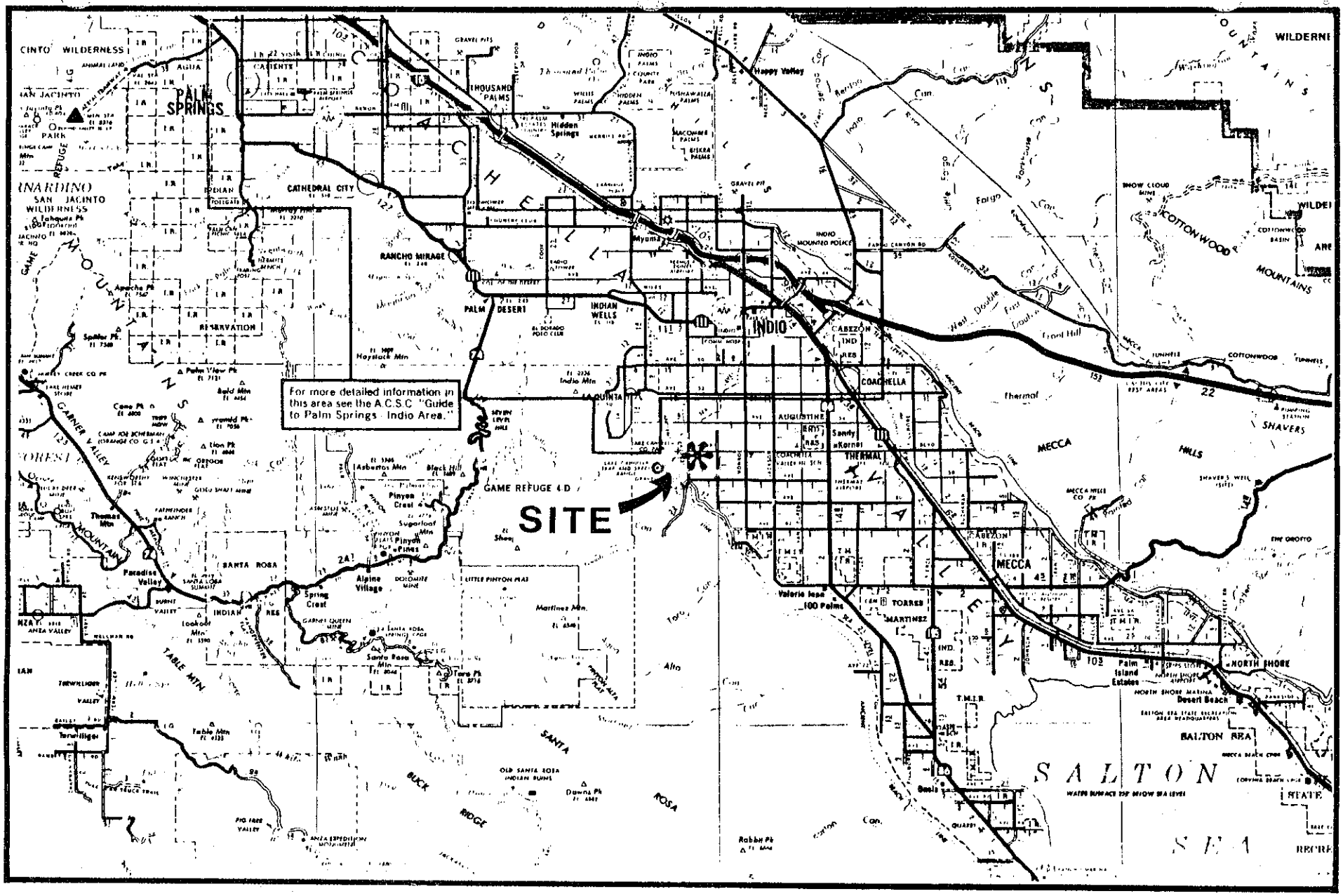
As currrently envisioned, project construction would include Master Planned improvements to roadways adjacent to the site. Additionally, Jefferson Street (between 54th and 58th Avenues) would essentially be closed to through traffic while Airport Boulevard, west of Madison Street, would be abandoned.

The backbone of the site's internal circulation system would be a currently unnamed arterial highway south of 54th Avenue. Current plans call for this facility to be realigned from its intersection with 54th Avenue to extend southeast toward the Resort Village located at the Center of the development. From the Resort Village, the new roadway facility would continue southwest, winding its way to its eventual connection with 58th Avenue.

An additional element to the sites' internal circulation system is a network of loop roadways which would link the interior residential developments to Jefferson Street, Madison Street, and 58th Avenue.

Oak Tree West is to be a controlled access community, with traffic access to the various project areas accomplished through a series of mechanical gates. In order to provide public access to the Resort Village, gated access will not occur along the primary project roadway between the Village and 54th Avenue. However, in areas just south of the Village, mechanical gates would restrict access to southern portions of the development. Additional gate controls are envisioned at the major internal street entrances north of the Resort Village (located about one-half mile south of 54th Avenue), at the major project boulevard and 58th Avene, and at the Madison Avenue entrances located about 800 feet south of Airport Boulevard.

At project completion, the site would consist of 5000 residental dwelling units, 35 acres of commercial land use, four 18 hole golf courses, and 650 transient units within the Resort Village. As currently planned, the residential units would be evenly distributed around the Resort Village and constructed at a rate of about 500 units per phase. At the core of the site, the Resort Village would provide mixed land uses including a 400 unit Hotel, 250 apartment/condominium units, restaurants, specialty retail shops, boutiques, sports/fitness facilities, and other support facilities. The projected completion date for the Hotel and support facilities is estimated to be 1988. The apartment/condominiums are scheduled for construction at about 50 units per phase with final completion of this component to occur about 1995. Exhibits 1 and 2 illustrate the regional location of the project and the proposed site plan, respectively.



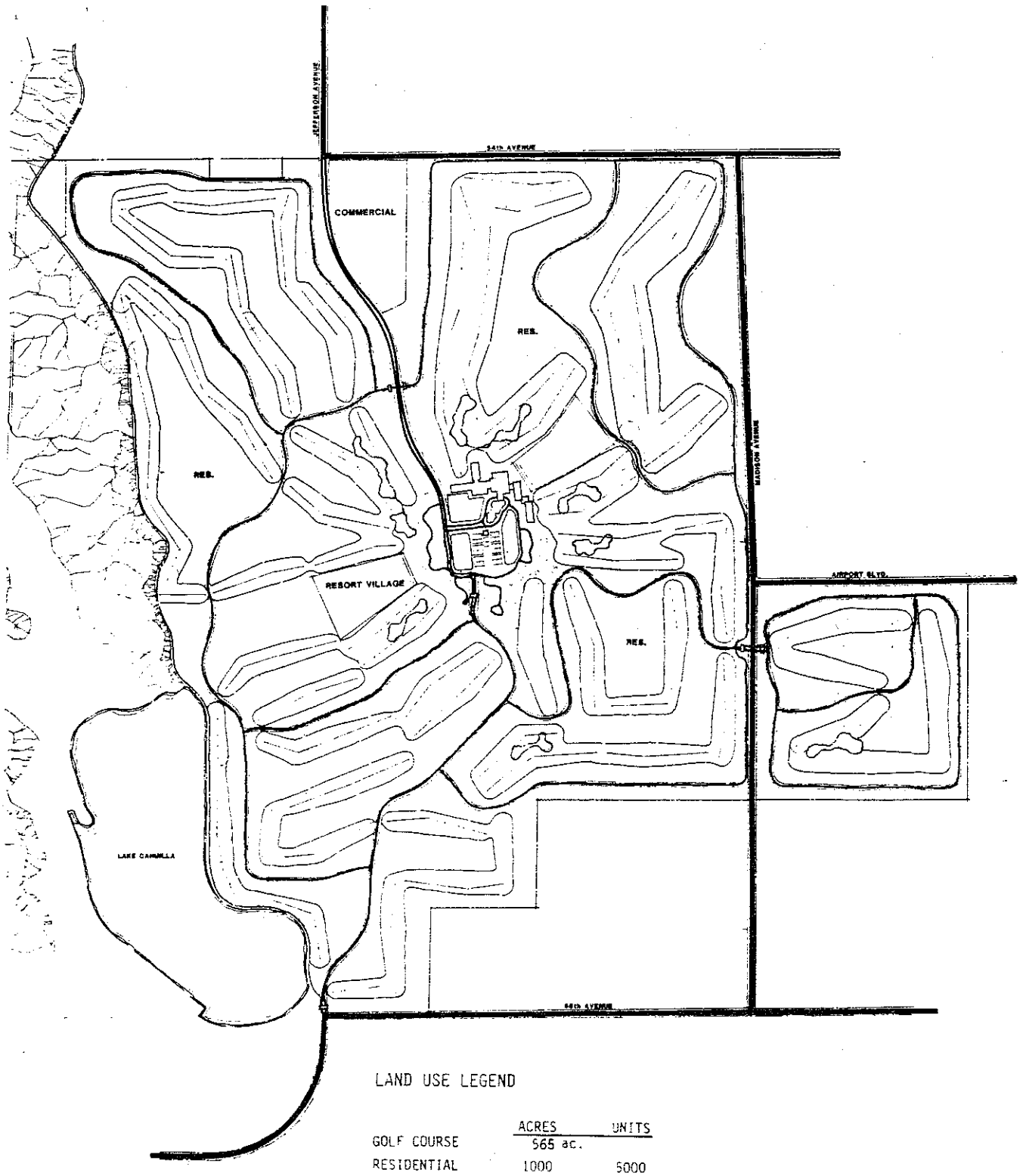

MAP SOURCE: AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA

1

VICINITY MAP

OAK TREE WEST

Linscott, Law & Greenspan, Inc., Engineers




LAND USE LEGEND

| | ACRES | UNITS |
|---|---|---|
| GOLF COURSE | 565 ac. | |
| RESIDENTIAL | 1000 | 5000 |
| COMMERCIAL | 35 | |
| RESORT VILLAGE (mixed use-hotel, commercial, res.) | 65 | 650 |
| TOTAL ACRES | 1665 | 5650 |

SOURCE: LANDMARK LAND COMPANY

2

NORTH

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PRELIMINARY SCHEMATIC SITE PLAN

OAK TREE WEST

## AREA DEVELOPMENT

The project site is currently a mixture of agricultural uses and vacant land. The Santa Rosa mountain range is located to the west of the project, while Lake Cahuilla Recreational Park is located southwest of the project.

## EXISTING STREET NETWORK

Regional access to the Oak Tree West site is provided by Interstate 10 (I-10) and to a lesser extent, by Highway 111. Primary north-south access would be via Jefferson Street with east-west access occuring along 54th Avenue, Airport Boulevard, and 58th Avenue.

### Regional Access Roadways

Interstate 10 (I-10) bears in a northwesterly to southwesterly direction and is located 8 miles north of the site. Currently, this facilitiy carries approximately 75,000 vehicles per day (VPD) and provides local interchanges at Washington Street, Jefferson Street (Indio Boulevard) and Monroe Street.

State Highway 111 is located about 3 1/2 miles north of the site. This facility provides two lanes in each direction of travel and currently averages 13,400 VPD in the vicinity of Jefferson Street.

### Project Access Roadways

Jefferson Street is shown on the Riverside County Master Plan as an Arterial Highway providing 86 feet of pavement width on 110 feet of right-of-way (ROW). This roadway is currently a two lane facility and provides traffic service between Lake Cahuilla and Interstate 10. Current site area traffic volumes along this roadway range from of 728 to 1152 vehicles per day, depending on location.

In areas south of 50th Avenue, Jefferson Street traffic is unrestricted (no stop signs). However, from 50th Avenue north, traffic on this north-south street is controlled by stop signs at major intersections, except at the signalized intersection of Jefferson Street and Highway 111.

For the most part, Jefferson Street is on a relatively flat grade and provides a high level of traffic service for existing conditions. However, it dips down into and crosses the White Water River storm channel located about 1000 feet north of Highway 111, making it subject to flooding, and complete closure.

Madison Street is located one mile east of Jefferson Street. This facility is currently operating as a 2-lane roadway but is shown on the County Master Plan as a Secondary Highway (64 feet of pavement on 88 feet of right-of-way). In the immediate site

area, Madison Street is a continuous roadway from an area south of 58th Street to its "Tee" intersection with 54th Avenue. North of 54th Avenue the roadway becomes fragmented and serves sectional areas between 50th and 52nd Avenues, Miles and 48th Avenues, and areas between Indio Boulevard and 44th Avenue. Under these existing conditions, continuous travel from the site to areas north of 54th Avenue is not possible via Madison Street. The estimated daily traffic volume along this roadway is 500 vehicles per day (between 58th and 54th Avenues).

54th Avenue is shown on the Master Plan of Highways as a Major Highway providing 76 feet of pavement on 100 feet of ROW. This facility currently provides 24 feet of pavement width and services an estimated 500 vehicles per day. The roadway currently extends from the Coachella Canal (about 3300 feet west of Jefferson Street) easterly to Highways 86 and 111 in the City of Coachella.

Airport Boulevard is shown on the Master Plan of Highways as a major Arterial Highway providing 110 feet of ROW. This facility currently provides 25 feet of pavement width and services an estimated 735 vehicles per day. The roadway would provide an east-west link from the project to Thermal Airport and to the City of Coachilla.

58th Avenue would provide an east-west access to and from the southerly portion of the development to Highway 86. This facility is Master Planned as a Major Highway on 100 feet of ROW. Currently, 58th Avenue east of Madison Street serves 206 vehicles per day.

Table 1 summarizes the existing site-area daily traffic volumes. Exhibit 3 illustrates existing PM peak hour volumes at the various project area intersections studied, while Exhibit 4 presents a portion of the current Master Plan of Streets and Highways as adopted by the County of Riverside.

## PUBLIC TRANSIT

No public transit (bus) facilities are currently available near the site area. In looking at future bus service, SunBus (Sunline Transit Agency) has advised that it would be difficult at this time to predict future transit service ridership for the Oak Tree West development. The agency further indicated however, that with a demonstrated need for expanded service, transit service to the site could be negotiated (Telcom with Mr. George Moulton, SunBus Transit Agency, June 27, 1983).

## TRAFFIC FORECASTING METHODOLOGY

Traffic forecasting utilizes a multi-step process which involves traffic generation, traffic distribution, and traffic assignment. The first step (traffic generation) estimates the number of vehicle trip ends which would be produced by the full development

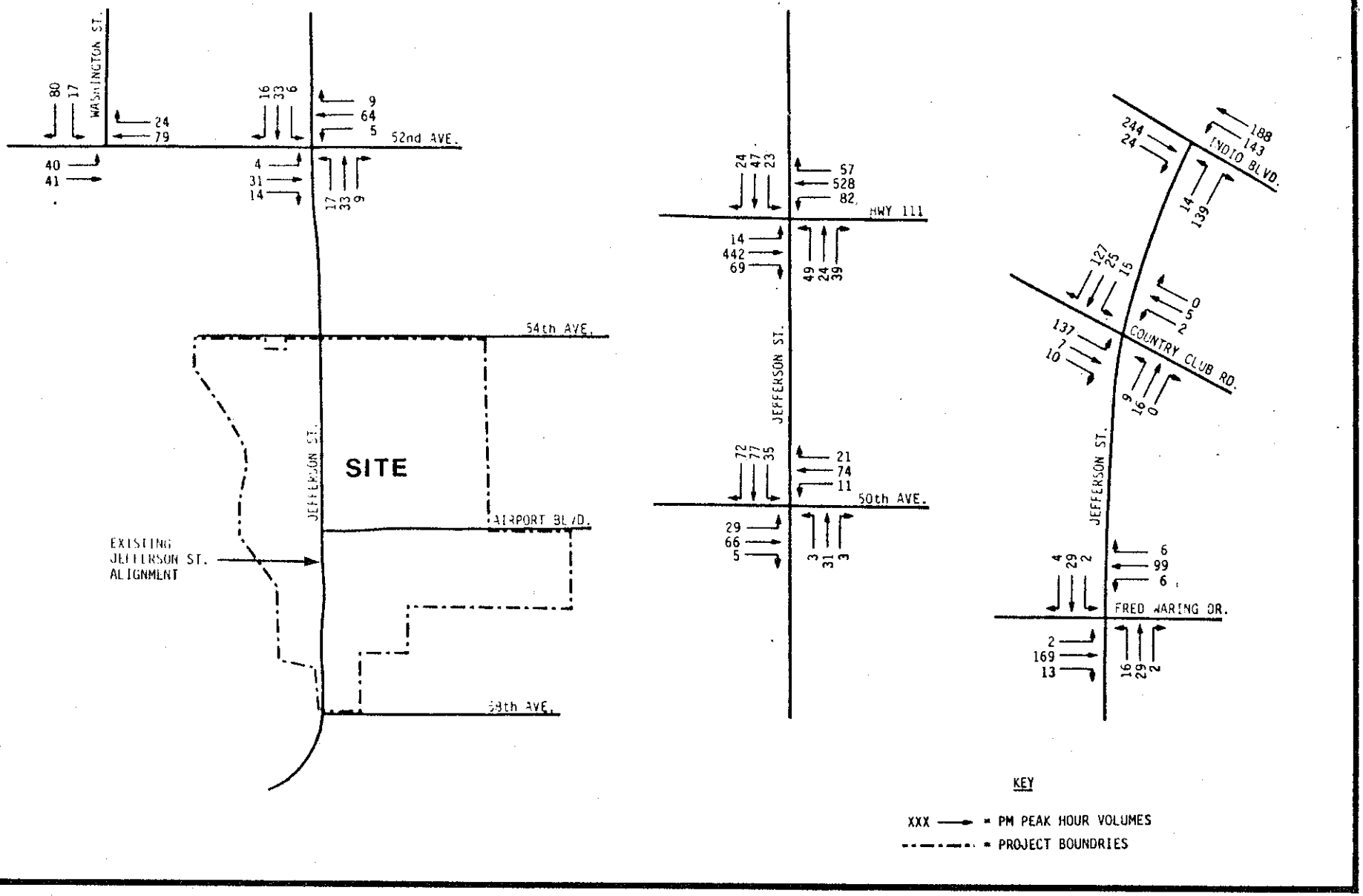
TABLE 1
EXISTING SITE AREA DAILY TRAFFIC VOLUMES[1]
Oak Tree West

| STREET | COUNT LOCATION | COUNT DATE | 24-HOUR VOLUME |
|---|---|---|---|
| Jefferson Street | s/o Airport Blvd. | 4/82 | 728 |
| | n/o Airport Blvd. | 4/82 | 1152 |
| | n/o 52nd Ave. | 4/82 | 1441 |
| | n/o 50th Ave. | 5/82 | 1790 |
| | s/o Hwy 111 | 1/81 | 1756 |
| | n/o Hwy 111 | 1/81 | 3419 |
| | n/o 44th St. | 5/82 | 1000 |
| 58th Avenue | e/o Madison | 4/82 | 206 |
| 52nd Avenue | e/o Jefferson [2] | 5/80 | 514 |
| | w/o Jefferson [3] | 5/80 | 901 |
| 50th Avenue | e/o Jefferson [2] | 1/81 | 1076 |
| | w/o Jefferson [3] | 1/81 | 1270 |
| Airport Boulevard | w/o Monroe St. | 5/82 | 735 |

[1]Source: County of Riverside Road Department.

[2]Special Count: Westbound traffic entering intersection.

[3]Special Count: Eastbound traffic entering intersection.

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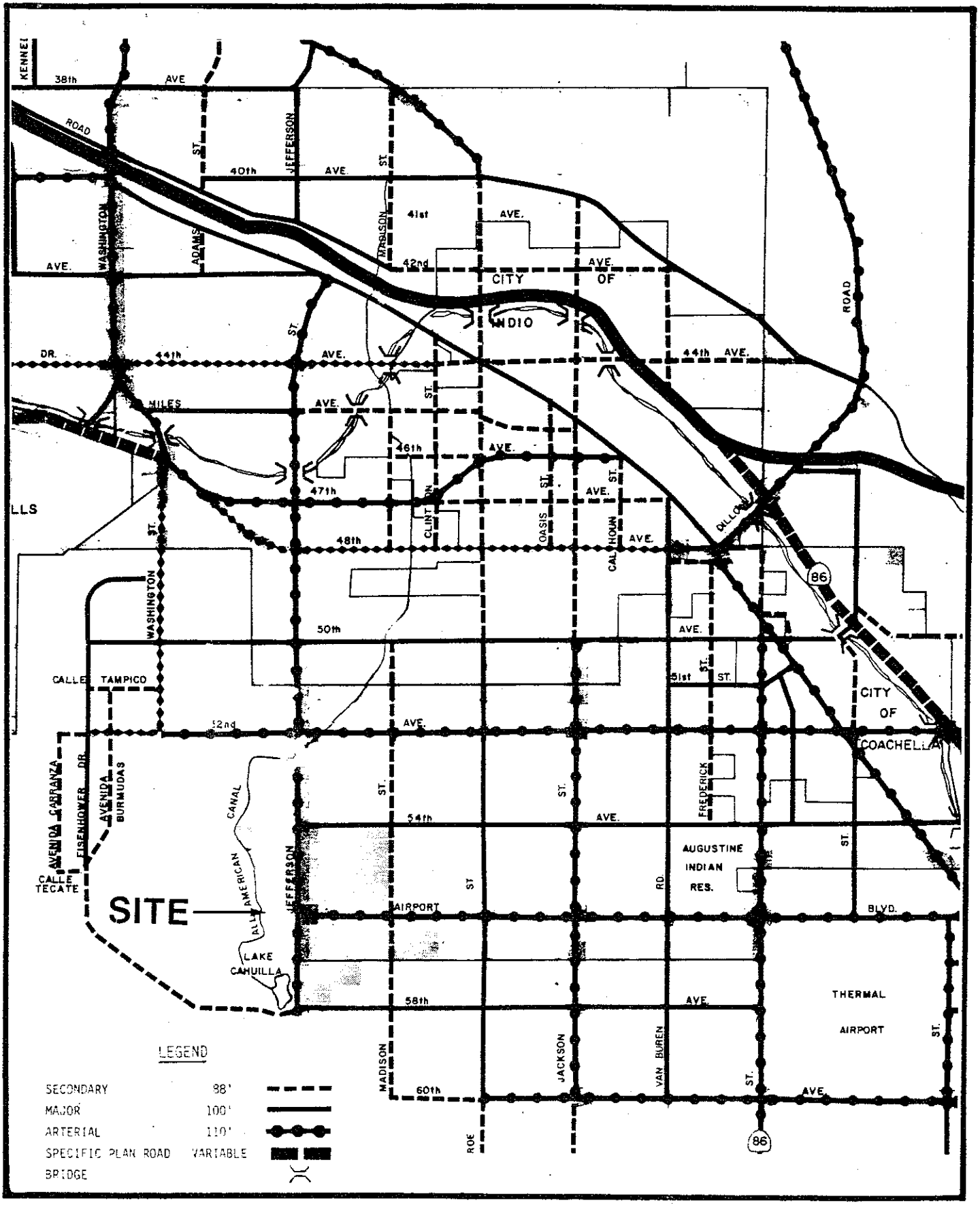
3

EXISTING PM PEAK HOUR TURNING MOVEMENTS
OAK TREE WEST

LLG Linscott, Law & Greenspan, Inc., Engineers




**4**

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NORTH

PORTION OF RIVERSIDE COUNTY
MASTER PLAN OF STREETS AND HIGHWAYS
OAK TREE WEST

and occupancy of the planned land uses. In the distribution step of the analysis, the overall travel orientation of project traffic to locations internal or external to the site is identified. Finally, project traffic is assigned to area roadways. This step typically reflects the most direct route and the least travel time between two points. It also considers the street system that would be available to project traffic at full site-development and occupancy.

## TRAFFIC GENERATION

The traffic generation forecast for the Oak Tree West development is based on the anticipated number of dwelling units, building square footages, or acres. The trip generation rates used in the study are based on data compiled and published in (1) Trip Generation - An Informational Report by the Institute of Transportation Engineers, (2) Trip Generation Intensity Factors, by the Arizona Department of Transportation in conjunction with the Federal Highway Administration, and (3) on independent studies as performed by Linscott, Law & Greenspan, Inc.

Traffic generation is expressed in vehicle trip ends, where a trip end is a one-way vehicular movement either entering or departing a generating land use. Each vehicle trip has two trip ends; one at its origin and one at its destination. Where all traffic generated by a specific site has travel orientations external to the site itself, the number of trips added to the adjacent roadway system exactly equals the number of vehicle trip ends generated by the site. However, in a larger mixed-use development such as Oak Tree West, a portion of the project generated travel will remain completely internal to the site, such as travel between residential units and the commercial land uses. Not only do these trip end "pairs" represent a single vehicle trip rather than two trips, they represent a trip which remains completely internal to the site and is not added to the external roadway system. Therefore, appropriate adjustments were applied to the forecast traffic generation to arrive at the maximum number of vehicle trips which might be generated by the development and distributed to off-site locations.

Table 2 presents the residential and non-residential generation factors that were used in the analysis. The factors developed for the residential land uses are based on special studies conducted at Sunrise Country Club and Country Club Estates in Rancho Mirage, California. Briefly, these studies indicated that the resort atmosphere of the desert community typically produces a lower per-unit generation rate than the residential rates found in large metropolitan areas. The Commercial rates are applicable to community centers of about 200,000 square feet. These centers usually include a major anchor tenant such as a supermarket, large drug store, or a junior department store. The office rates reflect general office usage, while the Golf Course and Hotel data reflect the availability of traditional amenities such as club houses, banquet/meeting rooms, and sports/fitness centers.

TABLE 2
TRAFFIC GENERATION FACTORS
RESIDENTIAL/NON-RESIDENTIAL LAND USES
Oak Tree West

| LAND USE DESCRIPTION | GENERATION UNITS [1] | GENERATION FACTORS PM PEAK HOUR INBOUND | PM PEAK HOUR OUTBOUND | PM PEAK HOUR TOTAL | 24-HOUR 2-WAY |
|---|---|---|---|---|---|
| RESIDENTIAL | | | | | |
| Single Family Detached [3] | TE/DU | 0.68 | 0.16 | 0.84 | 7.48 |
| Multi-Family [2] & [3] | TE/DU | 0.33 | 0.26 | 0.59 | 6.21 |
| NON-RESIDENTIAL | | | | | |
| Commercial [4] | TE/KSF | 2.30 | 2.50 | 4.80 | 49.90 |
| Office [4] | TE/KSF | 0.36 | 1.84 | 2.20 | 12.30 |
| Golf Courses [5] | TE/ACRE | 0.13 | 0.19 | 0.32 | 4.50 |
| Resort Village Hotel [4] | TE/ROOM | 0.35 | 0.35 | 0.70 | 10.20 |
| Apartment/Condominiums [4] | TE/ROOM | 0.35 | 0.35 | 0.70 | 10.20 |

[1]Trip ends (TE) per dwelling unit (DU),guest room, acre, or 1000 square feet (KSF) of floor area. A trip end is a one-way vehicular movement either entering or departing a generating land use.

[2]Includes Condominiums, Townhouses, Duplex, etc.

[3]Source: Traffic generation counts by Car Counter Company; Palm Springs, CA, January 25-29, 1979.

[4]Source: Trip Generation - An Informational Report, Institute of Transportation Engineers, Arlington, VA, 1975.

[5]Source: Trip Generation Intensity Factors (TGIF), Arizona Department of Transportation in cooperation with the Federal Highway Administration, Phoenix, AZ, Revised 1979.

In general, the traffic generation rates included in the analysis are believed to result in a conservatively high generation estimate for the total development. All of the generation factors are considered somewhat conservative and may in fact, overstate the traffic generation potential and thus, the impact of the project.

Table 3 illustrates the incremental traffic generation forecast on a per phase basis. The table also sums to identify the cumulative total at the end of each phase. With the exception of Phases 1, 3, and 8, the percentage increase of development traffic generally follows a consistent incremental increase of about 6 percent to 8 percent per phase. Because of the abreviated phase 1 time-frame (1-1/2 years), only 4 percent of the development traffic would appear at this time. A total of 12 percent of project traffic would appear with the full occupancy of phase 2 while phase 3 project traffic would increase the total traffic demand to 28 percent of the sites' potential traffic generation. Phases 4 thru 7 would each add about 7 percent to the tabulation, where the total traffic load at the completion of phase 8 would show about 83 percent. Since phase 8 would include the project's commercial development, 28% of additional project traffic would be added to the street system at its completion and occupancy. The remaining percentage increase of project traffic would occur in phase 9 and phase 10 as shown by incremental increase of 6 percent and 9 percent, respectively.

At full site development and occupancy, the Oak Tree West community would generate an estimated 53,220 daily trip ends evenly divided between inbound and outbound movements. A total of 5090 trip ends would be generated during the afternoon peak hour of which, 2840 would be inbound and 2250 would be outbound. However, not all of the trip ends generated by the site would represent an added vehicle trip to the area street and highway system, and not all trips generated by the proposed development plan would leave the confines of the Oak Tree West community. Exhibit 5 identifies these trips and summarizes the anticipated daily trip-making relationships of the site; identifying vehicle trip ends and vehicle trips, as well as internal and external trips. This exhibit is structured around the two basic categories of the project development; residential and non-residential land uses.

Table 4 summarizes the vehicle trip forecast for the Oak Tree West project at full development and occupancy. The forecast was arrived at by applying the trip adjustment procedures outline in Exhibit 5 to the trip ends forecasts of Table 3. The 53,220 daily trip ends produced by the project would actually result in an estimated 40,885 daily trips, 28,550 of which would be directed externally to off-site roadways, while 12,335 trips per

# TABLE 3
# TRAFFIC GENERATION FORECAST
## Oak Tree West

| LAND USE DESCRIPTION | GENERATED VEHICLE TRIP ENDS [1] PM PEAK HOUR INBOUND | OUTBOUND | TOTAL | DAILY 2-WAY |
|---|---|---|---|---|
| PHASE 1 (1983 - 1985) - 4% [5] | | | | |
| Residential [3] (250 DU) | 100 | 60 | 160 | 1615 |
| Golf Course | 20 | 30 | 50 | 675 |
| Sub-Total Phase 1 | 120 | 90 | 210 | 2290 |
| PHASE 2 (1985 - 1987) - 8% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Resort Village Condos (50 DU) [4] | 20 | 20 | 40 | 510 |
| Golf Course | 20 | 30 | 50 | 675 |
| Sub-Total Phase 2 | 240 | 170 | 410 | 4415 |
| (CUMULATIVE TOTAL PHASE 1 - 2) | (360) | (260) | (620) | (6705) |
| PHASE 3 (1987 - 1989) - 16% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Resort Village Condos (50 DU) | 20 | 20 | 40 | 510 |
| Resort Village Hotel (400 Rooms) | 140 | 140 | 280 | 4080 |
| Golf Course | 20 | 30 | 50 | 675 |
| Sub-Total Phase 3 | 380 | 310 | 690 | 8495 |
| (CUMULATIVE TOTAL PHASE 1 - 3) | (740) | (570) | (1310) | (15,200) |
| PHASE 4 (1989 - 1991) - 8% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Resort Village Condos (50 DU) | 20 | 20 | 40 | 510 |
| Golf Course | 20 | 30 | 50 | 675 |
| Sub-Total Phase 4 | 240 | 170 | 410 | 4415 |
| (CUMULATIVE TOTAL PHASE 1 - 4) | (980) | (740) | (1720) | (19,615) |
| PHASE 5 (1991 - 1993) - 7% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Resort Village Condos (50 DU) | 20 | 20 | 40 | 510 |
| Sub-Total Phase 5 | 220 | 140 | 360 | 3740 |
| (CUMULATIVE TOTAL PHASE 1 - 5) | (1200) | (880) | (2080) | (23,355) |
| PHASE 6 (1993 - 1995) - 7% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Resort Village Condos (50 DU) | 20 | 20 | 40 | 510 |
| Sub-Total Phase 6 | 220 | 140 | 360 | 3740 |
| (CUMULATIVE TOTAL PHASE 1 - 6) | (1420) | (1020) | (2440) | (27,095) |
| PHASE 7 (1995 - 1997) - 6% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Sub-Total Phase 7 | 200 | 120 | 320 | 3230 |
| (CUMULATIVE TOTAL PHASE 1 - 7) | (1620) | (1140) | (2760) | (30,325) |
| PHASE 8 (1997 - 1999) - 28% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Commercial (210,000 SF) | 485 | 525 | 1010 | 10,480 |
| Office (90,000 SF) | 35 | 165 | 200 | 1110 |
| Sub-Total Phase 8 | 720 | 810 | 1530 | 14,820 |
| (CUMULATIVE TOTAL PHASE 1 - 8) | (2340) | (1950) | (4290) | (45,145) |
| PHASE 9 (1999 - 2001) - 6% | | | | |
| Residential (500 DU) | 200 | 120 | 320 | 3230 |
| Sub-Total Phase 9 | 200 | 120 | 320 | 3230 |
| (CUMULATIVE TOTAL PHASE 1 - 9) | (2540) | (2070) | (4610) | (48,435) |
| PHASE 10 (2001 - 2003) - 10% | | | | |
| Residential (750 DU) | 300 | 180 | 480 | 4845 |
| Sub-Total Phase 10 | 300 | 180 | 480 | 4845 |
| (CUMULATIVE TOTAL PHASE 1 - 10) | (2840) | (2250) | (5090) | (53,220) |

[1] Trip ends forecast rounded to nearest 5 vehicles.

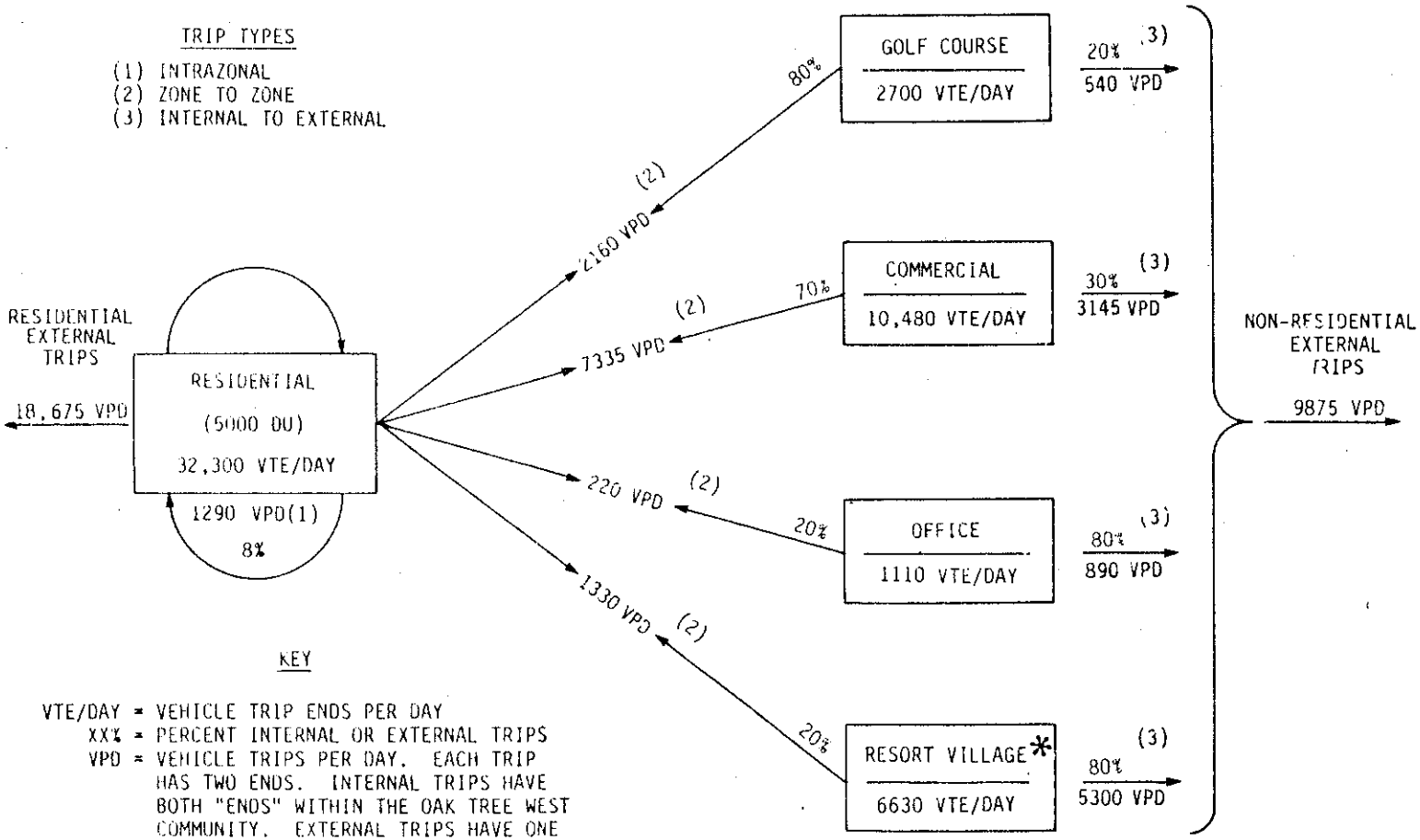
[2] Assumes 4 golf courses at about 150 acres each (playable date).

[3] Residential component assumes 80% multi-family units and 20 % single family detached.

[4] Apartment/Condominiums located within resort village.

[5] Incremental percent increase per phase of total project traffic.

## DAILY TRIP PROFILE




KEY

VTE/DAY = VEHICLE TRIP ENDS PER DAY
XX% = PERCENT INTERNAL OR EXTERNAL TRIPS
VPD = VEHICLE TRIPS PER DAY. EACH TRIP HAS TWO ENDS. INTERNAL TRIPS HAVE BOTH "ENDS" WITHIN THE OAK TREE WEST COMMUNITY. EXTERNAL TRIPS HAVE ONE END IN THE COMMUNITY AND THE SECOND AT SOME OTHER LOCATION.

* INCLUDES 650 TRANSIENT DWELLING UNITS





INTERNAL AND EXTERNAL TRIP PROFILES
OAK TREE WEST

TABLE 4
VEHICLE TRIP SUMMARY
Oak Tree West

| DESCRIPTION | PM PEAK HOUR INBOUND | PM PEAK HOUR OUTBOUND | PM PEAK HOUR TOTAL | 24-HOUR 2-WAY |
|---|---|---|---|---|
| EXTERNAL TRIPS: | | | | |
| Residential Based | 1320 | 610 | 1930 | 18,675 |
| Golf Course Based | 15 | 25 | 40 | 540 |
| Commercial Based | 145 | 155 | 300 | 3145 |
| Office Based | 30 | 130 | 160 | 890 |
| Resort Village Based | 190 | 190 | 380 | 5300 |
| Sub-Total | 1700 | 1110 | 2810 | 28,550 |
| INTERNAL TRIPS: | | | | |
| Intra-Residential | 130 | 130 | 260 | 1290 |
| Golf Course to Home | 95 | 65 | 160 | 2160 |
| Commercial to Home | 370 | 340 | 710 | 7335 |
| Office to Home | 35 | 5 | 40 | 220 |
| Resort Village to Home | 50 | 50 | 100 | 1330 |
| Sub-Total | 680 | 590 | 1270 | 12,335 |
| TOTAL TRIPS ADJUSTED FOR OVERLAP BETWEEN USES: | 2380 | 1700 | 4080 | 40,885 |

day would occur completely internal to the site boundaries. The 5090 trip ends produced during the PM peak hour would result in 1270 internal and 2810 external trips.

The analysis of area-wide cumulative developments was based on information supplied by the City of La Quinta, Landmark Land Company, and JF Davidson Associates. Table 5 presents a brief description of each development, while Exhibit 6 identifies the approximate location of each project. Table 6 presents a traffic generation forecast for the combined developments. As shown, 46,460 vehicle trip ends would be produced on a daily basis. The afternoon peak hour would total 4,580 trip ends, of which, 2,635 would be inbound and 1,945 would be outbound.

With the exception of Duna La Quinta, the development intensities used in this analysis have been estimated after discussion with City of La Quinta staff. It is noted that as the planning process evolves for these projects, alternative development tabulations may result. Hence,the overall cumulative forecast contained herein could be considerably altered. Additionally, it is noted that the access locations for these developments have also been estimated. Since their final location would have a decided affect on the impact on area intersections, the ultimate configuration and location of cumulative project access points could possibly change the results described in this study.

## TRAFFIC DISTRIBUTION AND ASSIGNMENT

The distribution and assignment of project traffic was based on a review of available peak hour travel patterns, a review of the existing and proposed street and highway system, and an analysis of the site's proposed access points relative to the adjacent street system. Additional refinements to the area-wide distribution pattern were based on discussions with the City of La Quinta staff relative to the most probable travel orientation of project traffic.

On that basis, an estimated 93 percent of the externally generated project traffic would be oriented to the north along Jefferson Street. The remaining seven percent would be oriented to the east along 54th Avenue (2 percent) and Airport Boulevard (5 percent). In areas further removed from the site, it is estimated that 50 percent of project traffic would have travel destinations to the west or northwest (La Quinta, Indian Wells, Rancho Mirage, etc.). An estimated 40 percent would be oriented to and from the east with the remaining 10 percent travelling to and from the I-10 Freeway to the north.

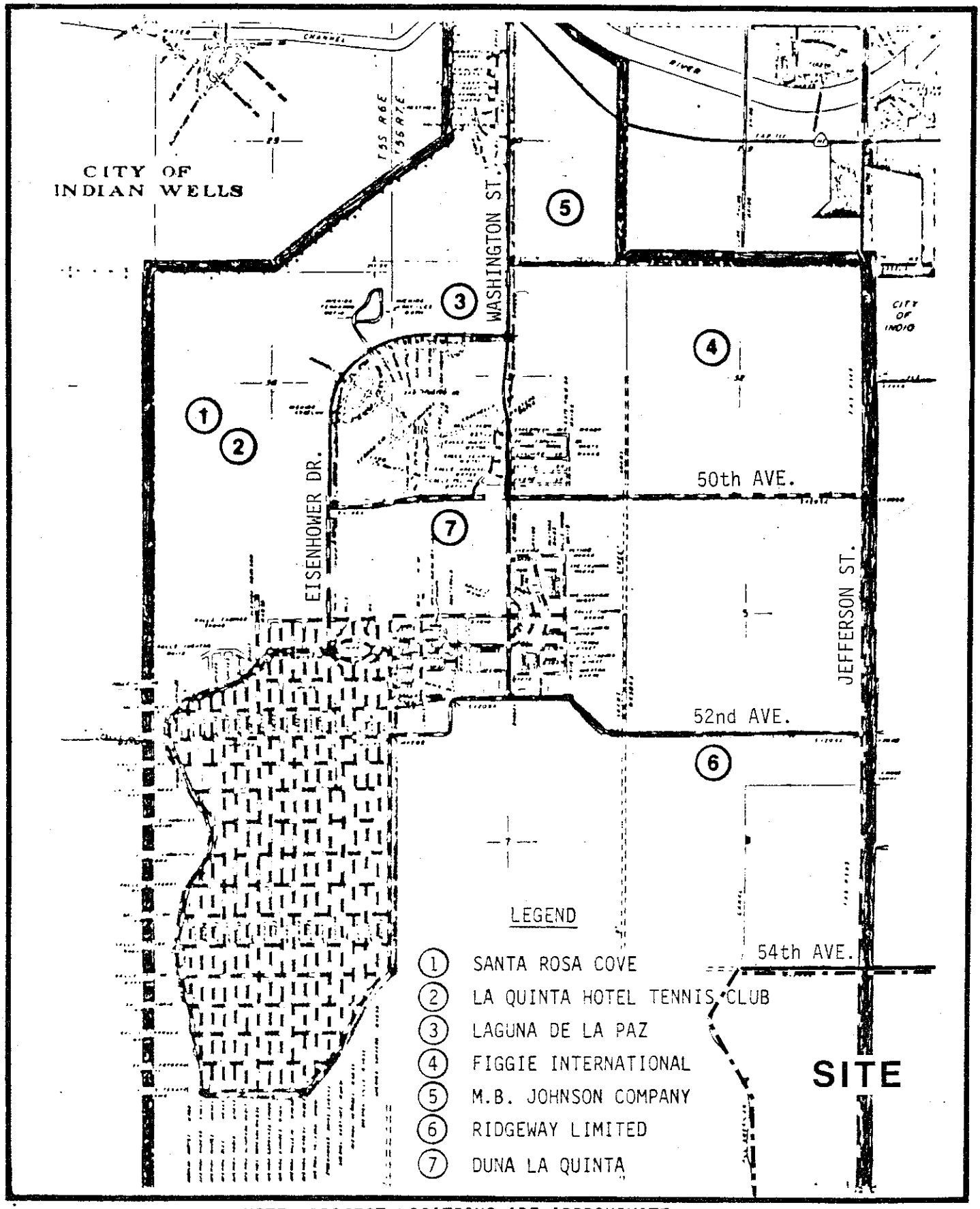
Exhibits 7 and 8 illustrate the anticipated traffic distribution of the Oak Tree West project and the resulting project traffic assignments, respectively. The distribution and assignment of cumulative traffic volumes was based primarily on the location of

TABLE 5
CUMULATIVE PROJECT-AREA DEVELOPMENTS[1]
Oak Tree West

| DEVELOPMENT | APPROXIMATE LOCATION | PROPOSED LAND USE | GENERAL DEVELOPMENT DENSITY |
|---|---|---|---|
| 1. Santa Rosa Cove (Anden Corp) | Eisenhower Dr @ 50th Ave | Residential/ Recreational | 559 Condominiums |
| 2. La Quinta Hotel Tennis Club | Eisenhower Dr @ La Quinta Hotel | Residential/ Recreational | 108 Townhomes |
| 3. Laguna de la Paz | Eisenhower Dr @ Washington St | Residential/ Recreational | 396 Single Family Units [2] |
| 4. Figgie International | Bounded by Washington, 50th, Jefferson, & 48th | Residential/ Recreational | 2049 Condominiums |
| 5. M.B. Johnson | Washington North of 48th | Residential/ Recreational | 750 Condominiums |
| 6. Ridgeway/Ltd (Desert Gardens) | Jefferson St @ 52nd Ave | Hotel/ Recreational/ Recreational | 100 Room Hotel + SPA + 600 Condominiums |
| 7. Duna La Quinta | Washington St @ 50th Ave | Residential/ Recreational | 900 Condominiums + 320 Single Family + Motor Lodge |

[1]Per City of La Quinta and Landmark Land Company.

[2]Assumption per City of La Quinta.




NOTE: PROJECT LOCATIONS ARE APPROXIMATE

SCHEMATIC
NOT TO SCALE

NORTH

6

CUMULATIVE PROJECT LOCATIONS

TABLE 6
CUMULATIVE DEVELOPMENT TRAFFIC GENERATION FORECAST
Oak Tree West

| DESCRIPTION | UNITS [1] | TRIP GENERATION FACTORS PM PEAK HOUR INBOUND | PM PEAK HOUR OUTBOUND | PM PEAK HOUR TOTAL | 24-HOUR 2-WAY |
|---|---|---|---|---|---|
| Condominium [2] | TE/DU | 0.33 | 0.26 | 0.59 | 6.21 |
| Single Family [2] | TE/DU | 0.68 | 0.16 | 0.84 | 7.48 |
| Hotel [3] | TE/ROOM | 0.36 | 0.37 | 0.73 | 10.50 |
| Motor Lodge | TE/ROOM | 0.35 | 0.30 | 0.65 | 10.14 |
| Commercial [3] & [4] | TE/1000 SF | 7.20 | 7.20 | 14.40 | 115.80 |
| Commercial [3] & [5] | TE/1000 SF | 3.86 | 4.34 | 8.20 | 79.10 |

| DESCRIPTION | UNITS | GENERATED VEHICLE TRIP ENDS PM PEAK HOUR INBOUND | PM PEAK HOUR OUTBOUND | PM PEAK HOUR TOTAL | 24 HOUR 2-WAY |
|---|---|---|---|---|---|
| Condominium | 4966 DU | 1640 | 1290 | 2930 | 30840 |
| Single Family | 716 DU | 485 | 115 | 600 | 5360 |
| Hotel | 100 ROOMS | 35 | 35 | 70 | 1050 |
| Motor Lodge | 100 ROOMS | 35 | 30 | 65 | 1050 |
| Commercial | 26,136 SF | 190 | 190 | 380 | 3030 |
| Commercial | 65,340 SF | 250 | 285 | 535 | 5165 |
| TOTAL GENERATED VEHICLE TRIP ENDS | | 2635 | 1945 | 4580 | 46,460 |

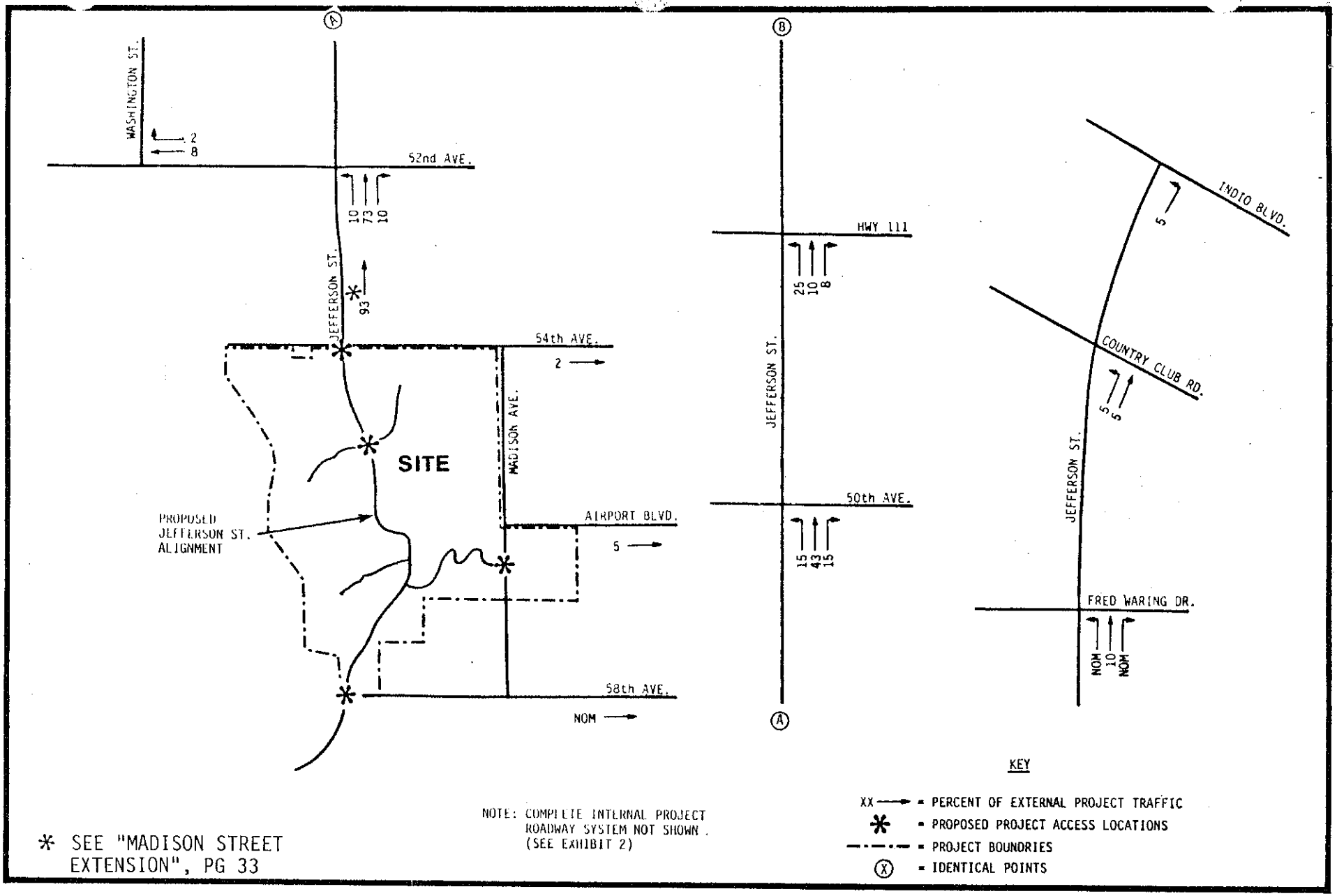
[1]Trip ends per dwelling unit or room where a trip end is a one-way vehicular vehicular movement either entering or departing a generating land use.

[2]Source: Traffic Generation counts by Car Counter Company - Palm Springs, CA, January 25-29, 1979.

[3]Source: ITE - Trip Generation - An Informational Report, Institute of Transportation Engineers, Arlington, VA, 1975.

[4]2-Acre Commercial Site.

[5]5-Acre Commercial Site.




NORTH

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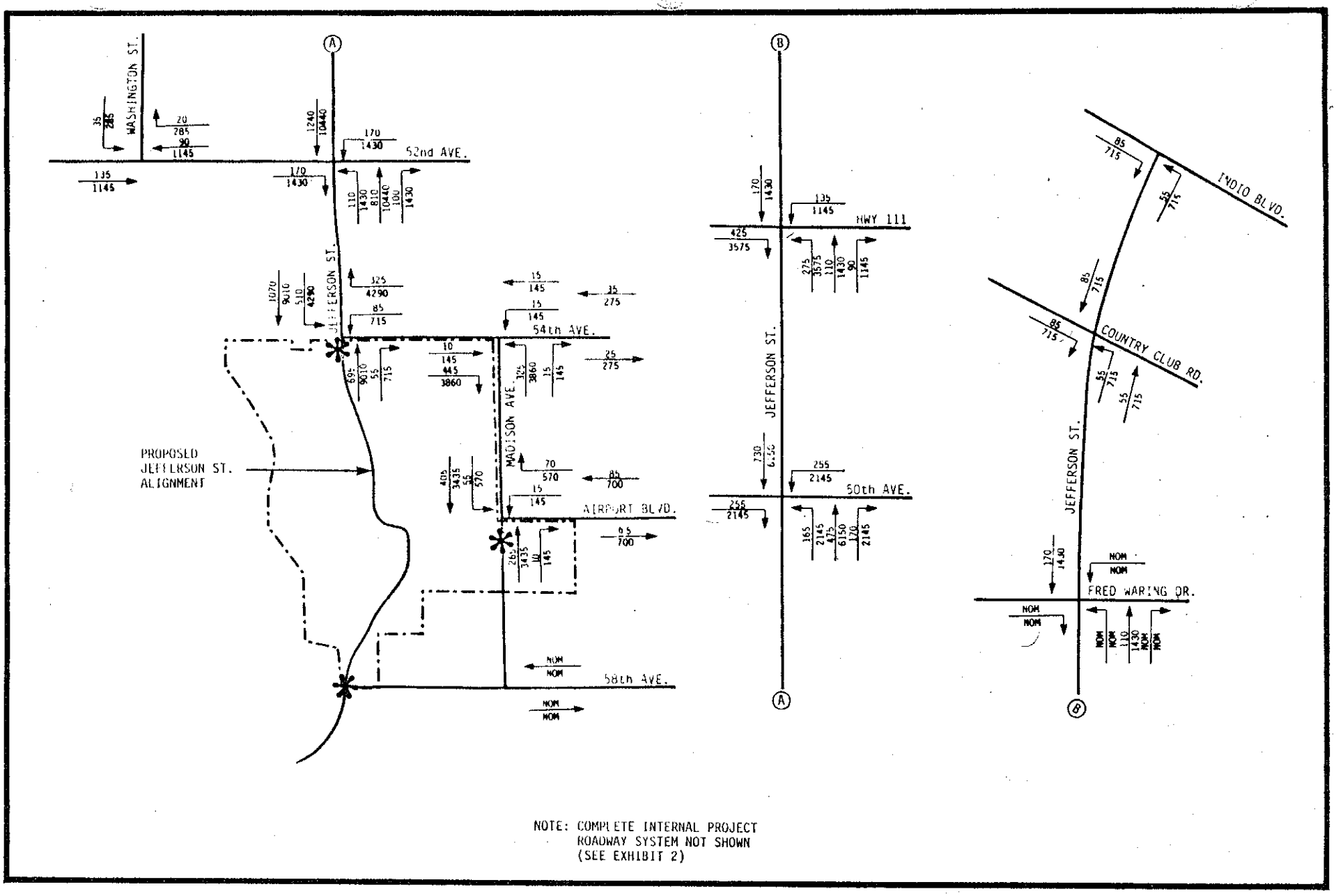
NOT TO SCALE

7

PERCENT PROJECT TRAFFIC DISTRIBUTION

OAK TREE WEST

LLG Linscott, Law & Greenspan, Inc., Engineers




NOTE: COMPLETE INTERNAL PROJECT ROADWAY SYSTEM NOT SHOWN (SEE EXHIBIT 2)

NORTH

SCHEMATIC
NOT TO SCALE

KEY

* = PROPOSED PROJECT ACCESS LOCATIONS

XX / XXXX = PM PEAK HOUR VOLUME / 24 HOUR VOLUMES

= PROJECT BOUNDRIES

(X) = IDENTICAL POINTS

LLG Linscott, Law & Greenspan, Inc., Engineers

8

# PROJECT TRAFFIC ASSIGNMENTS

## OAK TREE WEST

each site relative to the regional highway system. Additional consideration was given to the anticipated usage of each development as well as estimated location of site access points.

## PROJECT-AREA TRAFFIC ANALYSIS

### Roadway Link Analysis

The analysis of individual project-area roadway links was evaluated through comparative "volume/capacity" (VC) relationships along several roadway segments (roadway "links" between intersections). Briefly, this procedure relates the expected daily traffic volumes (existing, project, cumulative, etc.) to the capacity typically associated with a specific roadway. Although this analysis provides an estimate to the required right-of-way (and number of lanes) for project streets and highways, it should not be used as a substitute for the more precise intersection analysis described later in this report.

As shown in Table 7, roadway capacities used by the County of Riverside (based on peak hour Level of Service C conditions), range from 12,000 vehicles per day (VPD) for a two lane collector roadway to 168,000 VPD for a 10 lane freeway. By relating these values to the estimated daily link volumes, V/C relationships can be developed as a roadway planning guide (estimated volume/design capacity = V/C ratio).

The limiting value for these relationships is a V/C ratio of 1.0 (100 percent). When this value is reached, the demand volume (useage) on a particular roadway has theoretically reached its design capacity (based on an assumed peak hour service level) and additional widening improvements (such as extra lanes) should be considered. However, the decision to widen a roadway should not be based solely on a V/C ratio greater than 1.0. As discussed in a subsequent section, several other decision-making factors must be considered as well.

Table 8 presents a volume/capacity comparison for the below listed analysis conditions. As shown, the table has been organized to show the basic capacity and volume data ("Capacity and Traffic Volume Data") used as input to the analysis followed by the resulting V/C ratios ("Volume/Capacity (V/C) Ratios") which provide the basis for recommended street improvements. The analysis format includes the following conditions:

1. Existing Conditions (1983 Traffic Volumes).
2. 2003 Base Year Volumes (20 year projection).
3. 2003 Base Year and Project Volumes.
4. 2003 Base Year and Project Cumulative Volumes.

## EXISTING CONDITIONS

Existing traffic on the project area roadways is generally light,

TABLE 7
RIVERSIDE COUNTY HIGHWAY CAPACITY CRITERIA[1]
GENERAL PLAN ROADS
Oak Tree West

| FACILITY TYPE | NUMBER OF LANES | DESIGN CAPACITY |
|---|---|---|
| Freeway | 10 | 168,000 |
| Freeway | 8 | 132,000 |
| Freeway | 6 | 96,000 |
| Freeway | 4 | 60,000 |
| Expressway | 6 | 78,000 |
| Expressway | 4 | 50,000 |
| Arterial [2] | 4 | 24,000 |
| Major [3] | 4 | 24,000 |
| Secondary [4] | 4 | 20,000 |
| Collector | 2 | 12,000 |

[1]Source: Riverside County Road Department - values indicate average daily traffic, total of both directions (Level of Service C).

[2]Applicable for Jefferson Street and Airport Boulevard.

[3]Applicable for 54th Avenue and 58th Avenue.

[4]Applicable for Madison Avenue.

# TABLE 8
# DAILY VOLUME/CAPACITY LINK ANALYSIS
## Oak Tree West and Cumulative Developments

| ROADWAY | CAPACITY AND TRAFFIC VOLUME DATA: ROADWAY CAPACITIES — EXISTING DESIGN CAPACITY [1] | ROADWAY CAPACITIES — ULTIMATE DESIGN CAPACITY | EXISTING/FUTURE VOLUME DATA [2] — EXISTING VOLUMES [3] | 2003 BASE YEAR [4] | 2003 BASE YEAR + PROJECT | 2003 BASE YEAR + PROJECT + CUMULATIVE | VOLUME/CAPACITY (V/C) RATIOS — EXISTING TWO-LANE ROADWAYS (EST. VOLUMES VS EXISTING DESIGN CAPACITY [5]) — EXISTING VOLUME | 2003 BASE YEAR | 2003 BASE YEAR + PROJECT | 2003 BASE YEAR + PROJECT + CUMULATIVE | ULTIMATE FOUR-LANE ROADWAYS (EST. VOLUMES VS ULT. DESIGN CAPACITY [6]) — 2003 BASE YEAR | 2003 BASE YEAR + PROJECT | 2003 BASE YEAR + PROJECT + CUMULATIVE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JEFFERSON ST [7] | | | | | | | | | | | | | | |
| s/o 54th | N/A [8] | 24,000 | N/A [8] | N/A | 19,500 | 19,500 | N/A | N/A | N/A | N/A | N/A | 0.81 | 0.81 |
| n/o 54th Ave | 12,000 | 24,000 | 1,100 | 1,400 | 28,000 | 29,200 | 0.09 | 0.12 | 2.33 | 2.43 | 0.06 | 1.17 | 1.22 |
| n/o 52nd Ave | 12,000 | 24,000 | 1,400 | 1,800 | 22,700 | 27,200 | 0.12 | 0.15 | 1.89 | 2.27 | 0.08 | 0.95 | 1.13 |
| n/o 50th Ave | 12,000 | 24,000 | 1,800 | 2,300 | 14,600 | 21,000 | 0.15 | 0.19 | 1.22 | 1.75 | 0.10 | 0.61 | 0.88 |
| s/o Hwy 111 | 12,000 | 24,000 | 1,800 | 2,300 | 14,600 | 22,500 | 0.15 | 0.19 | 1.22 | 1.88 | 0.10 | 0.61 | 0.94 |
| n/o Hwy 111 | 12,000 | 24,000 | 3,400 | 4,400 | 7,300 | 9,600 | 0.28 | 0.37 | 0.61 | 0.80 | 0.18 | 0.30 | 0.40 |
| n/o Fred Waring Dr | 12,000 | 24,000 | 1,000 | 1,300 | 4,200 | 6,500 | 0.08 | 0.11 | 0.35 | 0.54 | 0.05 | 0.18 | 0.27 |
| 58th AVENUE | | | | | | | | | | | | | |
| w/o Madison Ave | 12,000 | 24,000 | 300 | 400 | 1,800 | 1,800 | 0.03 | 0.03 | 0.15 | 0.15 | 0.02 | 0.08 | 0.08 |
| e/o Madison Ave | 12,000 | 24,000 | 200 | 300 | 300 | 300 | 0.02 | 0.03 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 |
| 52nd AVENUE | | | | | | | | | | | | | |
| e/o Jefferson St | 12,000 | 24,000 | 1,000 | 1,300 | 4,200 | 5,600 | 0.08 | 0.11 | 0.35 | 0.47 | 0.05 | 0.18 | 0.23 |
| w/o Jefferson St | 12,000 | 24,000 | 1,800 | 2,300 | 5,200 | 8,800 | 0.15 | 0.19 | 0.43 | 0.73 | 0.10 | 0.22 | 0.37 |
| 50th AVENUE | | | | | | | | | | | | | |
| e/o Jefferson St | 12,000 | 24,000 | 2,000 | 2,600 | 5,600 | 15,200 | 0.17 | 0.22 | 0.47 | 1.27 | 0.11 | 0.23 | 0.63 |
| w/o Jefferson St | 12,000 | 24,000 | 2,500 | 3,300 | 6,600 | 17,100 | 0.21 | 0.28 | 0.55 | 1.43 | 0.14 | 0.28 | 0.71 |
| 54th AVENUE | | | | | | | | | | | | | |
| e/o Jefferson St | 12,000 | 24,000 | 500 [10] | 650 | 10,700 | 10,700 | 0.04 | 0.05 | 0.89 | 0.89 | 0.03 | 0.45 | 0.45 |
| MADISON ST | | | | | | | | | | | | | |
| s/o 54th Ave | 12,000 | 24,000 | 500 [10] | 650 | 8,700 | 8,700 | 0.04 | 0.05 | 0.73 | 0.73 | 0.03 | 0.36 | 0.36 |

[1] Average daily traffic total of both directions.

[2] Volumes rounded to nearest 100 vehicles.

[3] Counts taken in 1981 and 1982. Source: Riverside County Road Department.

[4] Existing volumes expanded at 1-1/2 percent per year.

[5] 12,000 vehicles per day (existing two-lane roadways).

[6] 24,000 vehicles per day (master planned four-lane movements roadway - Level of Service C).

[7] Specific plan roadway.

[8] Existing roadway to be abandoned with the project construction.

[9] n/o = North of: s/o = South of: etc.

[10] Estimated value . No Count Available.

with resulting low volume-capacity ratios. Currently, the highest volume-capacity relationship occurs along Jefferson Street, north of Highway 111 (V/C = 0.28). Other segments along Jefferson Street are experiencing V/C ratios ranging from 0.09 (north of 54th Avenue) to 0.15 (between 50th Avenue and Highway 111). The remaining project-area roadways show ratios between 0.02 (58th Avenue, west of Madison) and 0.21 (50th Avenue east of Jefferson).

YEAR 2003 BASE YEAR VOLUMES

In the year 2003, the expected growth of existing traffic volumes would increase the utilization of Jefferson Street south Highway 111, to 0.37 while the remaining roadway segments along Jefferson Street, 58th, 52nd, and 50th Avenues would range from 0.03 (58th Avenue, east of Madison Avenue) to 0.28 (50th Avenue, west of Jefferson Street).

BASE YEAR + PROJECT VOLUMES

With the addition of Oak Tree West project traffic to year 2003 base traffic with existing physical roadway conditions, virtually all roadway segments studied would show a significant increase in their V/C ratios. The greatest impact would occur along Jefferson Street in the area between 54th Avenue and Highway 111. Along this portion of the roadway, the resulting V/C ratios would range from 1.22 (between 50th Avenue and Highway 111) to 2.33 (north of 54th Avenue). The remaining portions of Jefferson Street (north of Highway 111), as well as other project-area roadway links would remain well within prescribed limits (V/C = 1.0).

BASE YEAR + PROJECT + CUMULATIVE VOLUMES

Because of the relative location of known cumulative developments (Exhibit 6), the greatest cumulative-related impact (with existing roadways) would occur along Jefferson Street between 50th Avenue and Highway 111 and along 50th Avenue, east and west of Jefferson Street. Along Jefferson Street, cumulative traffic would produce substantial relative V/C increases at two locations. The area north of 50th Avenue would show an increase of 43 percent (V/C = 1.75) while the area south of Highway 111 would increase by 54 percent (V/C = 1.88). Along 50th Avenue, the V/C values of 1.27 (E/O Jefferson Street) and 1.43 (W/O Jefferson Street) represent relative increases (over the pre-existing project condition) of 170 percent and 160 percent, respectively. The remaining project roadway links along 58th Avenue and 52nd Avenue would continue to operate within acceptable V/C ratios ranging from 0.03 to 0.89.

## FUTURE RIGHT-OF-WAY NEEDS

### Project Traffic

In looking at the right-of-way requirements generated by project-related traffic, it was noted that the greatest impact on the existing roadway system would occur along Jefferson Street between 54th Avenue and Highway 111. This area includes roadway links between Highway 111 and 50th Avenue (V/C = 1.22), 50th Avenue and 52nd Avenue (V/C = 1.89), and 52nd Avenue and 54th Avenue (V/C = 2.33). If the Master Planned 4-lane roadway improvements (110' Arterial Highway with design capacity = 24,000 VPD) were constructed in these areas, Table 8 indicates that the link between 50th Avenue and Highway 111 (north of 50th Avenue to south of Highway 111) would improve to a V/C ratio of 0.61. Between 50th and 52nd Avenues, the ratio would improve to 0.95. However, in looking at the area between 54th and 52nd Avenues, the V/C ratio would be at 1.17. In this case, a theoretical 6-lane roadway along this section of Jefferson Street is suggested.

In evaluating the above, it should be recognized that the acceptable condition described for the northerly portion of Jefferson Street (between 50th Avenue and Highway 111, V/C = 0.61), is dependent on the widening of the La Quinta Channel bridge, located just south of Highway 111. Currently, this facility is 45 feet wide. To accommodate future development volumes, the structure will need to be widened by about 17 feet to a total width of 62 feet. It is noted the bridge widening improvements are not necessarily a function or project traffic alone. A subsequent section of this report describes a similar contribution from cumulative traffic volumes.

As noted above, a V/C ratio of 1.17 would be produced along Jefferson Street, between 54th and 52nd Avenue, where a 6-lane roadway would theoretically be required. Before committing to this section however, consideration should be given to the following.

First of all, it should be recognized that this roadway link would exceed the theoretical capacity value (which is based on service Level C criteria) by 17 percent (1.17 versus 1.0), or roughly 4,000 vehicles per day. Inasmuch as a relatively conservative traffic generation forecast was prepared for the Oak Tree West development, it is reasonable to assume that some of this traffic would not materialize. It is also possible that the final configuration of the site development plan could change within the proposed 20 year build-out period where the actual, externally generated traffic would be less.

Another factor that should be considered is the ultimate capacity value that was assigned to Jefferson Street (24,000 VPD). The roadway link analysis is a tool used to plan and design future roadway facilities. However, the roadway capacities described therein are "rule of thumb" figures only and are affected by many factors such as the number and configuration of intersections,

the degree of access control, roadway grades, design geometrics (horizontal and vertical alignment), sight distance, and the level of pedestrian and bicycle traffic. Since most of the area to the north of the project is currently undeveloped, the above factors could be optimized with careful planning and a higher capacity value realized.

Additionally, the 24,000 vehicles per day value refers to roadway capacity using Level of Service C (LOS) criteria. However, as the area becomes more urbanized, Service Level D criteria would be more appropriate when considering peak hour conditions. On this basis, the change in service level (LOS C to LOS D) would produce a 30,000 vehicle per day theoretical capacity for Jefferson Street. Under this criteria, a 4-lane roadway would provide satisfactory traffic service for project traffic (the resulting V/C ratios would range from 0.22 to 0.97 between 54th Avenue and Highway 111).

Based on the above, it is our opinion that the improvement of and the right-of-way needs on Jefferson Street between 54th Avenue and Highway 111, should be consistent with the 4-lane, 110' ROW, Arterial Highway standard as prescribed by the County of Riverside.

Project-related roadway improvements also would include the partial, site-specific widening of 54th Avenue, Madison Avenue, Airport Boulevard, and 58th Avenue (half width widening of roadways contiguous to the side). Adjacent to the Oak Tree West project, the south side of 54th and the north side of 58th Avenues would be widened to Major Highway standards (76' roadway - 100' ROW). Further, the east and west sides of Madison Street (adjacent to Landmark Land Company properties), and the south side of Airport Boulevard would be widened to Secondary (64' roadway - 88' ROW) and Arterial Highway standards (86' roadway - 110' ROW), respectively. Based on the anticipated traffic volumes along these facilities, the indicated roadway sections would provide adequate service for project traffic as well as future development traffic volumes.

Other than those improvements mentioned above, the existing ROW and lane configurations of other project-area roadways would be sufficient to service project traffic.

CUMULATIVE TRAFFIC

Along Jefferson Street, it is our opinion that the additional impact of known cululative traffic volumes can be accommodated within the 4-lane roadway configuration developed to service project traffic (110' ROW Arterial Highway). Although two areas along Jefferson Street would still exceed the theoretical limiting value of 1.0 (north of 52nd = 1.13; north of 54th = 1.22), the highly conceptual nature of these developments together with a more realistic roadway capacity (30,000 VPD based on Service Level D criteria), would suggest that a 6-lane roadway would be premature until the actual traffic volumes materialized.

Similar to the proceeding discussion of project traffic, it should be noted that cumulative traffic would also make a significant contribution toward the need to widen the La Quinta Channel bridge, located south of Highway 111. Without the bridge improvement, a "bottleneck" would develop at this point which would effectively negate any roadway improvements to the south along Jefferson Street.

Along 50th Avenue, the additive impact of cumulative traffic would necessitate the improvement of the roadway to its Master Planned, 4-lane configuration as a Major Highway (100' ROW).

It is noted that the above cumulative analysis is based on known developments as described by the City of La Quinta. Since the area north of Oak Tree West is undeveloped, it can be assumed that additional traffic impacts would occur if a significant number of other projects were constructed in the next 20 years. If these volume increments were to materialize, Jefferson Street could possibly exceed the capacity of a 4-lane highway and a 6-lane cross-section might indeed be needed. The necessary ROW section in this case should be 120 feet. Therefore, if in the future, other large developments are anticipated along Jefferson Street, an additional 10 feet of ROW (over the Master Planned 110' ROW Arterial), should be included in overall planning for the area.

## RIGHT-OF-WAY REQUIREMENTS AND ROADWAY IMPROVEMENT SUMMARY

The following summarizes the recommended right-of-way requirements and roadway improvements to service project and cumulative traffic volumes.

### To Serve Project-Related Traffic

1. Jefferson Street (54th Avenue to Highway 111)
   - o Share in the widening of Jefferson Street to a 4-lane Arterial Highway.
   - o Share in the widening of the La Quinta Channel bridge.

2. 54th Avenue
   - o Jefferson Street to Madison Street - widen south side to Master Planned Major Highway Standards (100' ROW).

3. Madison Street
   - o Airport Boulevard to 54th Avenue - widen west side to Master Planned Secondary Highway Standards (88' ROW).
   - o Airport Boulevard to 1/2 mile south of Airport Boulevard - Construct entire roadway to full Master Planned Secondary Highway Standards (88' ROW).

4. Airport Boulevard
   - o Madison Avenue to east project boundary - Construct south side to Master Planned Arterial Highway Standards (110' ROW).

5. 58th Avenue
   - Jefferson Street to Madison Avenue - Construct north side to Master Planned Major Highway Standards (100' ROW).

To Serve Cumulative Traffic from Other Known Developments

1. Jefferson Street (54th Avenue to Highway 111)
   - Share in the construction of Jefferson Street to 4-lane Arterial Highway Standards (110' ROW).
   - Share in the widening of the La Quinta Channel bridge.

2. 50th Avenue
   - Construct 50th Avenue to Master Planned Major Highway Standards (100' ROW).

INTERSECTION CAPACITY ANALYSIS

To provide a more precise definition of area-wide operating conditions, the Intersection Capacity Utilization (ICU) method of intersection analysis was also employed. This procedure computes a Level of Service (LOS) for an entire intersection based on a volume to capacity ratio summation for key conflicting movements. The summed values roughly represent the percentage of maximum intersection capacity which would be used by peak hour volumes under the analysis format presented in Table 8 (Exist, 2003 base year volumes, 2003 base year + project, etc.).

Level of Service (LOS) is a relative measure of driver satisfaction which ranges from A (free flow, ICU less than 0.60) to F (forced flow, ICU value in excess of 1.0). Level of Service D (ICU of 0.81 to 0.90) is traditionally considered the minimum acceptable level for peak hour conditions in urbanized or developing areas. At that level, most traffic clears on the first available green phase, but short accumulations of vehicles may occur. Average vehicle speeds are on the order of 20 to 25 MPH including stops. Level of Service E is characterized by long queues of waiting vehicles which exist over extended periods of time, often blocking nearby intersections, and requiring several cycles to clear. Appendix A of this report presents a complete discussion of the ICU technique and Level of Service concept.

The PM peak hour has been evaluated in this study since it typically reflects the maximum period of relative traffic demand. Existing PM peak hour traffic data were obtained on June 28, 1983 through manual counts at seven key site-area intersections. Existing traffic data was used as input at two other locations for a total of nine intersections. At project completion, the south leg of Jefferson Street will essentially carry project traffic only. On that basis, no existing Level of Service was calculated at this location. However, since the intersection would serve as the primary access point to the Oak Tree West site, the impact of project and cumulative traffic volumes was included with the analysis. Table 9 lists the key project intersections studied.

TABLE 9
KEY PROJECT INTERSECTIONS
Oak Tree West

1. Jefferson Street and Indio Boulevard.
2. Jefferson Street and Country Club Boulevard.
3. Jefferson Street and Fred Waring Drive.
4. Jefferson Street and Highway 111.
5. Jefferson Street and 50th Avenue.
6. Jefferson Street and 52nd Avenue.
7. Jefferson Street and 54th Avenue.
8. Washington Street and 52nd Avenue.
9. Washington Street and 50th Avenue.

## EXISTING INTERSECTION TRAFFIC CONDITIONS

Table 10 presents an ICU/LOS summary for the Oak Tree West development. Currently, all of the intersections studied along Jefferson Street are operating at a very high Level of Service (LOS A). As might be expected, the associated ICU values are the greatest at the Jefferson Street intersections with Highway 111 and Indio Boulevard (ICU = 0.36 at both locations). Along Washington Street, both of the intersections studied are operating at LOS A.

## YEAR 2003 BASE YEAR VOLUMES

In the year 2003, the incremental growth of existing traffic volumes (assumed at 1/2 percent per year) would produce ICU increases at all of the intersections studied. However, the relative increase in ICU values would not change intersection service levels.

## BASE YEAR + PROJECT VOLUMES

With the full development and occupancy of Oak Tree West, three project intersections would show a change in their pre-existing service levels. The intersection of Jefferson Street and Highway 111 would change from its pre-existing LOS A (ICU = 0.44) condition to LOS D (ICU = 0.89/D). As discussed in the Roadway Link Analysis, the maintenance of staisfactory operating conditions at this location is dependent on the improvement of the La Quinta Channel bridge. The intersection of Jefferson Street and 52nd Avenue would change from LOS A (ICU = 0.20) to LOS F (ICU = 1.02) while Jefferson Street at 50th Avenue would go from LOS A (ICU = 0.31) to LOS E (ICU = 0.91). Five intersection locations would remain at Service Level A while the new project intersection at Jefferson Street and 54th Avenue would operate at LOS C (ICU = 0.78).

TABLE 10
INTERSECTION CAPACITY UTILIZATION (ICU)/LEVEL OF SERVICE (LOS)
Oak Tree West

| INTERSECTION | 1983 EXIST | 2003 BASE YEAR | 2003 BASE YEAR + PROJECT | MITIGATED | 2003 BASE YEAR + PROJECT + CUMULATIVE | MITIGATED |
|---|---|---|---|---|---|---|
| 1. Jefferson St. & Indio Blvd. | 0.36/A | 0.43/A | 0.46/A | N/A | 0.52/A | N/A |
| 2. Jefferson St. & Country Club Dr. | 0.29/A | 0.35/A | 0.45/A | N/A | 0.51/A | N/A |
| 3. Jefferson St. & Fred Waring Dr. | 0.24/A | 0.28/A | 0.38/A | N/A | 0.45/A | N/A |
| 4. Jefferson St. & Highway 111 | 0.36/A | 0.44/A | 0.89/D | N/A | 1.24/F | 0.83/D [1] |
| 5. Jefferson St. & 52nd Ave. | 0.18A | 0.20/A | 1.02/F | 0.72/C [4] | 0.86/D | N/A |
| 6. Jefferson St. & 50th Ave. | 0.27/A | 0.31/A | 0.91/E | 0.71/C [2] | 1.13/F | 0.88/D [3] |
| 7. Jefferson St @ 54th Ave. | N/A | N/A | 0.78/C | N/A | 0.78/C | N/A |
| 8. Washington St. & 50th Ave. | 0.32/A | 0.34/A | 0.60/A | N/A | 1.15/F | 0.85/D [5] |
| 9. Washington St. & 52nd Ave. | 0.22/A | 0.25/A | 0.33/A | N/A | 0.44/A | N/A |

[1]Modify striping on west leg to provide for exclusive eastbound right turn lane plus optional right turn/thru lane. Improve north and south legs to Master Planned widths including exclusive left turn lanes. Provide dual northbound and westbound left turn lanes.

[2]Construct Jefferson Street to Master Planned widths. Install exclusive northbound and southbound left turn lane.

[3]Construct 50th Avenue to Master Planned width. Install exclusive eastbound left turn lane and dual westbound left turn lanes.

[4]Construct Jefferson Street to Master Planned widths. Provide exclusive northbound and southbound left turn lanes.

[5]Improve north, east, and west legs to Master Planned widths. On south leg, include exclusive northbound left turn lane.

BASE YEAR + PROJECT + CUMULATIVE VOLUMES

If all of the forecast cumulative traffic volumes were added to the year 2003 base year + project condition, Table 10 indicates that four of the nine project intersections would show a change in their pre-existing service levels. Along Jefferson Street, both of the intersections studied at Highway 111 and 50th Avenue would change to LOS F (ICU = 1.25 and 1.13, respectively). A Service Level F condition would also occur at the Washington Street/50th Avenue intersection (ICU = 0.60 to 1.15). At the Jefferson Street/52nd Avenue intersection, the "project-mitigated" ICU/LOS value of 0.72/C would change to 0.86/D. Four of the nine project intersections studied would remain at LOS A, while an LOS C condition would continue at the Jefferson Street/54th Avenue intersection.

MITIGATION MEASURES

Project-Related Traffic Volumes

For the two project-related conditions producing LOS E (Jefferson Street at 50th Avenue) and LOS F (Jefferson Street at 52nd Avenue), adequate mitigation would be available through the use of roadway widening improvements and exclusive turning lanes. At both of these intersections, Jefferson Street should be improved to its Master Planned 86' pavement width. This measure would provide two through lanes and an exclusive left turn lane for both directions of travel. The resulting ICU/LOS values would be 0.71/C and 0.72/C for Jefferson at 50th and Jefferson at 52nd, respectively.

As discussed, the Jefferson/Highway 111 intersection would operate at LOS D but would require a cooperative widening agreement of the La Quinta Channel bridge located south of Highway 111. Without this improvement, the bridge area would develop into a "bottle neck" condition and would effectively negate the predicted intersection service level.

Cumulative Traffic Volumes (Non-Project Related)

At the three locations showing poor service levels, Table 10 indicates that each location would lend itself to adequate mitigation.

At the Jefferson Street/Highway 111 intersection, the north and south legs should be improved to their Master Planned roadway widths. Because of the anticipated volume of northbound and westbound left turns, dual turning lanes are suggested for these movements. On the west leg, the striping should be modified to provide for an exclusive eastbound right turn lane plus an optional right turn/through lane. The resulting ICU/LOS at this location would be 0.83/D.

At Jefferson Street and 50th Avenue, Master Planned roadway improvements along 50th Avenue should be constructed. This

measure would provide ample capacity for through movements as well as exclusive eastbound and westbound left turn lanes. Dual left turn lanes are expected to be needed to handle westbound traffic. The resulting ICU/LOS value would be 0.88/D.

At the Washington Street/50th Avenue intersection, improve the north, east, and west legs to Master Planned width. The south leg would require a striping modification to incorporate an exclusive northbound left turn lane, with a resulting ICU/LOS value of 0.85/D.

## MADISON STREET ROADWAY EXTENSION

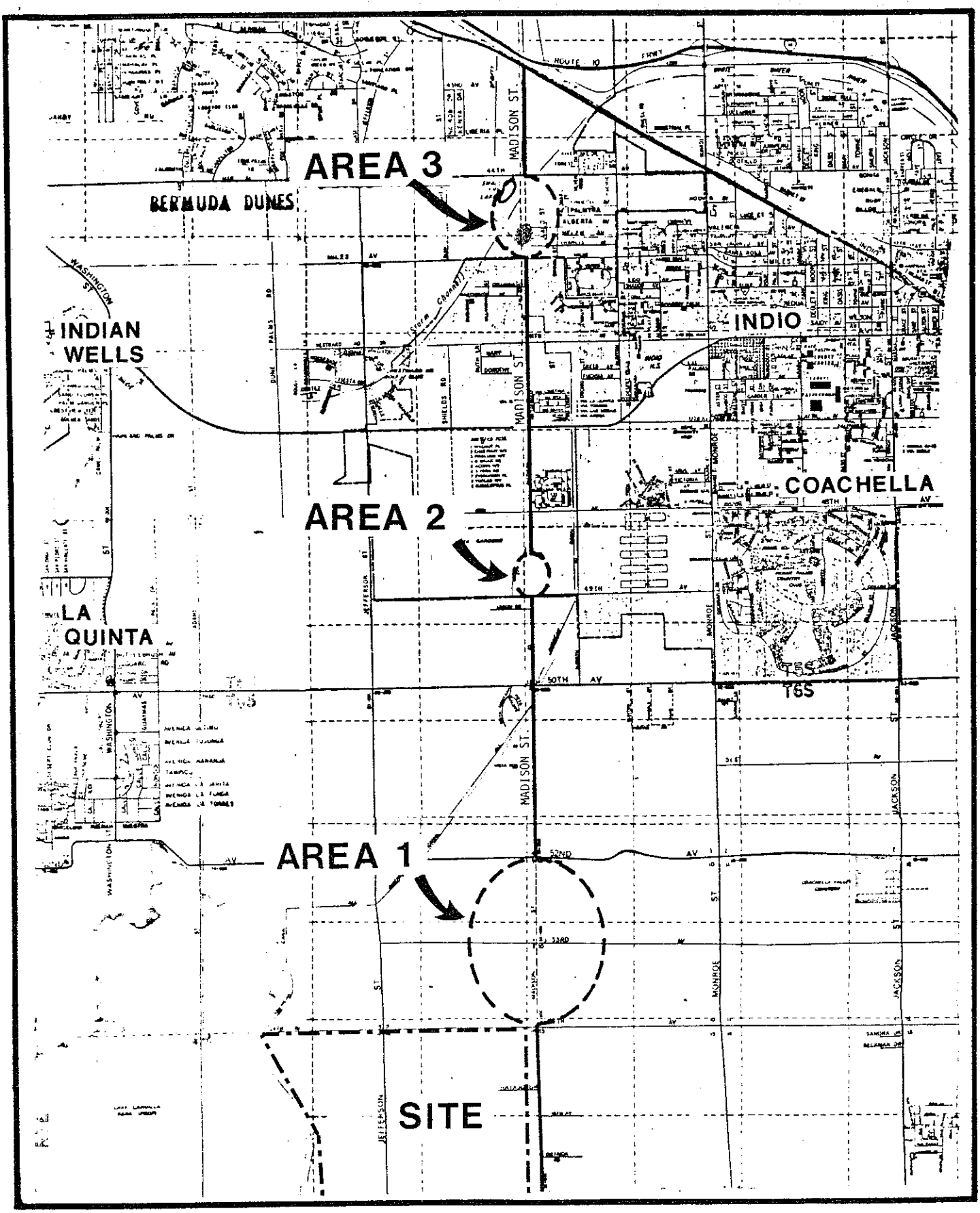
At the request of Landmark Land Company, this study also includes a review of future area-wide traffic conditions as they would occur if Madison Street were extended to the north. This analysis includes a detailed redistribution of project traffic to account for the added Madison Street roadway links, and in particular, a comparative description of daily traffic volumes along Jefferson Street, the primary project-area arterial highway. To further evaluate the impact of the Madison Street extension, revised ICU analyses are also presented for selected key project-area intersections.

Madison Street currently exists as a two-way, 22' north-south roadway located along the eastern boundary of the site. From 54th Avenue to Highway 111, through traffic movements are restricted by three unimproved roadway segments. As shown in Exhibit 9, the first barricaded "roadway gap" occurs between 54th and 52nd Avenue (Area 1) and is about one mile long. In areas further north, a 1/4-mile gap occurs roughly between 49th and 48th Avenues (Area 2) while an additional 1/2-mile gap occurs between Fred Waring Drive and Miles Avenue (Area 3). Based on information supplied by the City of Indio, the construction of Area 2 and Area 3 is anticipated as part of the overall Master Plan for the City of Indio. However, because of the low level of development in those areas, the exact construction time frames are unknown at this time.

## ROADWAY LINK ANALYSIS

To evaluate the impact of a Madison Street extension, a two part analysis was performed. The first part assumed the construction of Madison Street between 54th and 52nd Avenue (Area 1). Under this condition, traffic service would be available from areas south of 58th Avenue to 49th Avenue. The second part of the analysis looked at Madison Street as a completed thoroughfare from 58th Avenue to Highway 111 (construction of Areas 1, 2 and 3).

Table 11 illustrates the results of the analysis. The table has been organized to show the resulting incremental decrease in daily traffic along Jefferson Street as well as the incremental increase in daily traffic volumes along Madison Street. For comparison, the table reiterates a portion of the traffic volume




NORTH

SCHEMATIC
NOT TO SCALE

**9**

MADISON STREET
UNIMPROVED ROADWAY AREAS
OAK TREE WEST

# TABLE 11
# DAILY VOLUME/CAPACITY LINK ANALYSIS
## Madison Street Extension
## Oak Tree West and Cumulative Developments

| | MADISON STREET IMPROVEMENT SCENARIOS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NO MADISON STREET EXTENTION | | | | CLOSE 52nd AVE.- 54th AVE GAP [2] | | | | | CLOSE ALL GAPS SOUTH OF HIGHWAY 111 [3] | | | | |
| ROADWAY SEGMENT | JEFFERSON | V/C [4] | CUM | MADISON [5] | JEFFERSON | V/C [4] | CUM | MADISON | V/C [6] | JEFFERSON | V/C | CUM | MADISON | V/C [6] |
| n/o 54th Avenue | 26,600 | 1.17 | 1.22 | N/A [7] | 20,600 | 0.92 | 0.97 | 6,000 | 0.50 | 19,700 | 0.88 | 0.93 | 6,900 | 0.58 |
| n/o 52nd Avenue | 20,900 | 0.95 | 1.13 | - | 16,600 | 0.77 | 0.95 | 4,300 | 0.36 | 15,700 | 0.73 | 0.92 | 5,200 | 0.43 |
| n/o 50th Avenue | 12,300 | 0.61 | 0.88 | - | 12,300 | 0.61 | 0.88 | N/A [7] | - | 9,500 | 0.49 | 0.76 | 2,800 | 0.23 |
| s/o Hwy 111 | 12,300 | 0.61 | 0.94 | - | 12,300 | 0.61 | 0.94 | - | - | 9,500 | 0.49 | 0.82 | 2,800 | 0.23 |
| n/o Hwy 111 | 2,900 | 0.30 | 0.40 | - | 2,900 | 0.30 | 0.40 | - | - | 2,600 | 0.29 | 0.39 | 300 | 0.03 |
| n/o Fred Waring Dr. | 2,900 | 0.18 | 0.27 | - | 2,900 | 0.18 | 0.27 | - | - | 2,600 | 0.16 | 0.25 | 300 | 0.03 |

[1] Traffic volumes shown are 24 hour daily volumes.

[2] Provides access availability between 49th and 58th Avenue.

[3] Provides access availability between 58th Avenue and Indio Boulevard.

[4] Includes estimated 2003 traffic volumes (1983 traffic expanded to year 2003). Assumes 4-lane design capacity of 24,000 VPD.

[5] No access along Madison Street to the north.

[6] Assumes 2-lane collector roadway design capacity of 12,000 VPD.

[7] Further access to the north restricted by unimproved roadway at Area 1 (ignores short paved section to 49th Avenue).

data developed under the initial Roadway Link Analysis (Table 8) followed by each of the two construction scenarios for Madison Street; close 52nd Avenue to 54th Avenue gap (Area 1) and close all gaps south of Highway 111 (Area 1,2 and 3). To illustrate the comparative impact of each alternative construction format, volume-capacity relationships (V/C ratios) have been developed for each of the roadway segments studied.

With no extension of Madison Street, our analysis of the impact of project traffic suggested that a minimum four-lane roadway would be required along Jefferson Street between Highway 111 and 54th Avenue. Even with this improved condition, it was noted that the V/C ratio of Jefferson Street, north of 54th Avenue, would still exceed the theoretical limiting value of 1.0 (1.17 or 17 percent of total available capacity) where a six-lane section could be required to maintain Level of Service C conditions.

In looking at Table 11 however, it is apparent that closing the 52nd Avenue - 54th Avenue gap would have a positive impact on Jefferson Street. The primary impact would occur through the transfer of southbound left turns at Jefferson Street and 54th Avenue to southbound through movements at Madison Street and 54th Avenue. Instead of 93% of project traffic using Jefferson Street to the north (Exhibit 7), the availability of Madison Street would reduce this value to 72%. The resulting daily volumes along this area of Jefferson Street would be reduced by about 23 percent (26,000 VPD to 20,600 VPD). Similarly, the traffic volumes north of 52nd Avenue would be reduced by about 21 percent (20,900 VPD to 16,600 VPD). More important, the previous V/C ratio north of 54th Avenue of 1.17 would be reduced by 0.25 to a more acceptable value of 0.92. The previous V/C ratio north of 52nd Avenue (0.95) would fall to a new value of 0.77. Under these conditions, all roadway segments along Jefferson Street would be within the theoretical limiting value of the four-lane roadway criteria used by the County of Riverside (V/C ratio = 1.0 of less). With the addition of known cumulative traffic, the V/C ratio north of 54th Avenue would increase to about 0.97 while the ratio north of 52nd Avenue would increase to an estimated 0.95.

Closing all the gaps in Madison Street south of Highway 111 would further reduce the project-related V/C ratios as well as the north-south distribution or project traffic along Jefferson Street (72% to 69%). In looking at the key Jefferson Street roadway segments, the V/C ratio north of 54th Avenue would be improved to 0.88 while the ratio north of 52nd Avenue would improve to 0.73. The remaining portions of Jefferson Street (between the areas north of Fred Waring Drive and 52nd Avenue) would show ratios ranging between 0.16 and 0.49.

With the addition of cumulative traffic, the Jefferson Street V/C ratio north of 54th Avenue would increase to 0.93 with a ratio of 0.92 occurring north of 52nd Avenue. The remaining portions of Jefferson Street would show a range of V/C ratios from 0.25 to 0.76.

In terms of the impact on Madison Street itself, the improvement of Madison Street between 52nd and 54th Avenues would attract about 6000 vehicles per day to the area north of 54th Avenue. As discussed, this equates to a reduction of about 23 percent in the traffic that otherwise would use Jefferson Street. Assuming a two-lane roadway (design capacity = 12,000 VPD), the resulting V/C ratio for this area would be 0.50. In areas north of 52nd Avenue, 21 percent of "Jefferson Street" traffic (4300 VPD) would be diverted to this roadway link, resulting in a V/C ratio of 0.36.

Improving Madison Street to produce a continuous roadway south of Highway 111 would divert an additional 3 percent of Jefferson Street traffic to Madison Street. In this case, the daily volumes along Madison Street north of 54th Avenue would total 6900 vehicles per day. A total of 5200 VPD would be added to Madison Street north of 52nd Avenue. The area between 50th Avenue and Highway 111 would service an estimated 2800 VPD while 300 VPD would use Madison Street north of Highway 111. The above discussion therefore indicates that a considerable amount of capacity would still be available to serve future development volumes along Madison Street. As shown, the resulting V/C ratio would range from 0.03 (north of Fred Waring Drive) to 0.58 (north of 54th Avenue).

ICU/LOS ANALYSIS

With the full development and occupancy of Oak Tree West, the improvement of Madison Street to close the gap between 52nd Avenue and 54th Avenue would have the greatest impact at the Jefferson Street intersections with 50th, 52nd, and 54th Avenues. On a relative basis, Table 12 indicates that the Jefferson Street intersection at 50th Avenue would show an ICU reduction of 0.04 (0.91/E to 0.87/D). At 52nd Avenue, an ICU reduction of 0.17 would result where the previous ICU/LOS value of 1.02/F would be improved to 0.85/D. At Jefferson Street and 54th Avenue, the construction of Madison Street between 52nd Avenue and 54th Avenue would produce a significant reduction in southbound left turns. As shown, the resulting ICU/LOS value at this location would be 0.48/A. The remaining intersections along Jefferson Street north of 50th Avenue would experience no change in their ICU/LOS values.

If all of the gaps along Madison Street were closed between 54th Avenue and Highway 111, further ICU reductions would occur along Jefferson Street. As shown, the resulting ICU/LOS values would range from 0.35/A (Jefferson Street at Fred Waring Drive) to 0.82/D (Jefferson Street at 52nd Avenue).

Along Madison Street, project intersections would experience Service Level A conditions, regardless of improvement scenario.

TABLE 12
MADISON STREET EXTENSION
INTERSECTION CAPACITY UTILIZATION (ICU/LEVEL OF SERVICE (LOS)[1]
Oak Tree West

| INTERSECTION | MADISON STREET IMPROVEMENT SCENARIOS | | |
|---|---|---|---|
| | NO IMPROVEMENT | CLOSE 52nd AVE/ 54th AVE. GAP | CLOSE ALL GAPS SOUTH OF HWY 111 |
| Jefferson St.& Indio Blvd. | 0.46/A | NC | NC |
| Jefferson St. & Country Club Dr. | 0.45/A | NC | 0.44/A |
| Jefferson St. & Fred Waring Dr. | 0.38/A | NC | 0.35/A |
| Jefferson St. & Highway 111 | 0.89/D | NC | 0.80/C |
| Jefferson St. & 50th Ave. | 0.91/E | 0.87/D | 0.81/D |
| Jefferson St. & 52nd Ave. | 1.02/F | 0.85/D | 0.82/D |
| Jefferson St. & 54th Ave. | 0.78/C | 0.48/A | 0.46/A |

[1]ICU/LOS values reflect year 2003 Base Year Plus Project.

[2]Madison Street intersections not shown. All locations projected at LOS A, regardless of improvement scenario.

[3]NC = No Change.

## ROADWAY CONSTRUCTION TIME-FRAMES

The estimated time-frame for necessary project-area roadway construction is based on a review of total development volumes and assumes (1) existing roadway conditions, (2) closing the gap on Madison Street between 52nd and 54th Avenues, and (3) closing all the gaps south of Highway 111.

The most critical project-related roadway construction would be required along Jefferson Street, between 54th Avenue and Highway 111. Although a four-lane roadway would eventually be required along this roadway (regardless of the Madison Street impact scenarios), our analysis has shown that widening would occur sooner under the first alternative, which assumes existing roadway conditions. Table 13 describes the results of the analysis relative to Jefferson Street improvements.

TABLE 13
JEFFERSON STREET IMPROVEMENT TIME-FRAMES
Oak Tree West

| | JEFFERSON STREET IMPROVEMENT SCENARIOS | | | | | |
|---|---|---|---|---|---|---|
| | NO IMPROVEMENT ON MADISON ST. | | CLOSE 52nd AVE./ 54th AVE. GAP | | CLOSE ALL GAPS SOUTH OF HWY 111 | |
| ROADWAY SEGMENT | YEAR | PHASE [1] | YEAR | PHASE | YEAR | PHASE |
| n/o 54th Avenue | 1991 | Ø5 | 1993 | Ø6 | 1993 | Ø6 |
| n/o 52nd Avenue | 1993 | Ø6 | 1995 | Ø7 | 1995 | Ø7 |
| n/o 50th Avenue | 1995 | Ø7 | 1997 | Ø8 | 1997 | Ø8 |

[1]Refers to the beginning of that phase.

If Madison Street were not extended to the north, it is estimated that a four-lane roadway would be required along Jefferson Street, north of 54th Avenue by the beginning of Oak Tree West Phase 5, in 1991. Widening to four lanes would be necessary north of 52nd Avenue by 1993 (phase 6), while the area north of 50th Avenue would require widening by 1995 (phase 7).

If Madison Street were improved so that it could carry traffic all the way to Highway 111, the widening of Jefferson Street (north of 54th Avenue) could be delayed two years until 1993, (the beginning of phase 6). The remaining two roadway links along Jefferson would require improvement in 1995 (phase 7) and 1997 (phase 8).

Fifty-fourth Avenue, Madison Street, Airport Boulevard, and 58th Avenue are scheduled for simultaneous construction with their associated project phases. Since the site location of the Oak Tree West residential development phases has not been determined at this time, the time at which their associated roadway improvements will be built cannot be described.

ROADWAY CLOSURES - JEFFERSON STEET AND AIRPORT BOULEVARD

The construction of the Oak Tree West development would include the elimination of existing through traffic movements along Jefferson Street between 54th Avenue and 58th Avenue. Additionally, Airport Boulevard, west of Madison Street would be vacated with project construction. As shown in Exhibit 2, the current north-south alignment of the major internal project street would be shifted to the east, generally forming a northwest/ southeast alignment within the northern portion of the site. The new roadway in the southern portion of the development would show a northeast/southwest alignment. Although public traffic would still have access to the Resort Village along this roadway from the north, further travel to the south would be restricted by mechanical gate controls. In terms of Airport Boulevard, west of Madison Street, no replacement roadway is envisioned.

The impact of abandoning Jefferson Street and Airport Boulevard (west of Madison Street) has been evaluated through a review of available travel routes (existing and future substitute roadways) to service existing traffic volumes. Additional analysis is based on a volume/capacity analysis of those roadway links that would service the redistributed volumes.

As discussed, the existing portion of Jefferson Street provides traffic service to the Lake Cahuilla recreational facility and to an existing rock crushing area. Lake Cahuilla is a County Park located adjacent to the southwest corner of the proposed Oak Tree West development. This facility operates year-round and provides various seasonal recreational activities including sailing, fishing, camping, and daytime picnic activities.

Because of the seasonal temperature variation, heavy camping and fishing activities typically occur on a daily basis during the winter months (October to April) while the summer activities usually include heavier weekend usage. According to information supplied by the lake supervisor (Telcoms with Lilly Cory, June 27 and July 19, 1983), the winter lake usage attracts a large majority of people from outside the desert areas. The summer usage, however, is primarily generated from the nearby desert communities of Palm Desert, Indian Wells, Rancho Mirage, Indio, and Coachella. The estimated weekend usage of the facility is 3000-10,000 people per day (four people per car).

The County Road Department Borrow Pit, is located southwest of Lake Cahuilla. Another surface mining operation is planned for the adjacent property. Surface Mine Permit Number 127 sets forth

that associated trucking operations are limited to eight trucks per day until 1991 (Telcoms with City of La Quinta Planning Department, June 1983).

## ALTERNATIVE TRAVEL ROUTE ANALYSIS

### Existing Travel Routes

The winter and summer usage of Lake Cahuilla attracts visitors from areas well removed from the desert area as well as from nearby desert communities such as Palm Desert, Rancho Mirage, Indio, and Coachella.

The distribution of existing recreational trips from outside the desert areas are estimated to occur entirely along Jefferson Street from its interchange with Highway 111. From the northwestern communities (Palm Desert, Rancho Mirage, etc.), the estimated recreational distribution is oriented along Jefferson Street via Highway 111/Washington Street/52nd Avenue, or along Jefferson Street via Highway 111.

Traffic distribution from the Indio area would occur primarily along Monroe Street and Jefferson Street. Currently, Monroe Street acts as the initial vehicular route with further volume distribution (to Jefferson Street) occurring via 50th Avenue, Airport Boulevard, and 58th Avenue. It is noted that Monroe Street narrows in areas south of Airport Boulevard. However, because of the low traffic volumes along this facility and the undeveloped nature of the surrounding land area, this roadway segment still provides an attractive route to 58th Avenue.

From the southern portion of the valley, trip distribution to Lake Cahuilla is estimated to occur primarily along 52nd Avenue, Highway 86, Airport Boulevard, and 58th Avenue. Discussions with the City of Coachella indicate that a typical initial travel route from the City would be oriented to the west along 52nd Avenue. Subsequent southerly routing would occur along either Highway 86 or Monroe Street. Of those vehicles using Highway 86, the estimated route to the lake would include Airport Boulevard and Jefferson Street. From Monroe Street, recreational trips would use 58th Avenue.

The traffic distribution of the Road Department Borrow Pit, is assumed to occur entirely along Jefferson Street.

### Future Travel Routes

The evaluation of future travel routes was based on two factors. The first concerned the time and distance that would be involved if a detour, or alternative route around the site were necessary. The second factor included the effects of Madison Street being extended to close the three existing gaps between 54th Avenue and Highway 111 (Exhibit 9).

The closure of Jefferson Street will force a reorientation of some existing traffic currently using Lake Cahuilla and the rock

crushing facilities. In looking at the future distribution of freeway-oriented recreational trips (trips outside of the nearby desert communities), the closure of Jefferson Street would necessitate an alternate route around the site. From the intersection of Jefferson Street and 54th Avenue, such a trip route includes an easterly direction along 54th Avenue followed by a southerly route along Madison Street to 58th Avenue. The final link of the trip would occur to the west along 58th Avenue to Jefferson Street and the Lake Cahuilla area. To evaluate the time and distance involved in this alternative maneuver, site-specific time and distance measurements were performed. From the 54th Avenue and Jefferson Street intersection, trial runs to Lake Cahuilla via Jefferson Street resulted in an average time of 2.5 minutes and a distance of 2.1 miles. The alternative, route (Jefferson - 54th - Madison - 58th - Jefferson - Lake Cahuilla) took an average time of 5.5 minutes and a distance of 4.2 miles. The detour around the site added three minutes and 2.1 miles to the trip.

If Madison Street were improved between 52nd Avenue and 54th Avenue, it is doubtful that these "outside-area" trips would derive any significant benefit from the extension. If a diversion was made at 50th Avenue, (alternate route = Jefferson - 50th - Madison - 58th - Lake Cahuilla), the three minute time delay and 2.1 mile added trip distance would remain unchanged. However, should all of the unimproved areas along Madison Street south of Highway 111 be constructed, a positive impact would occur.

As an alternative roadway link to Jefferson Street, this construction would provide a fully completed roadway facility between areas south of 58th Avenue and Indio Boulevard. With proper signing along the Route 10 Freeway, outside recreational trips could easily be diverted to Madison Street and subsequently to 58th Avenue. These measures would provide relief to Jefferson Street and would reduce the time-delay in reaching the site. Since Airport Boulevard would not be used by these recreational trips, the vacation of this roadway west of Madison Street would not create an adverse impact.

The recreational trips originating from the upper Coachella Valley would also experience a negligible effect from the vacation of Airport Boulevard. The closure of Jefferson Street, however, would create a similar situation, where these trips would also experience a alternate route beginning at the Jefferson Street/54th Avenue intersection with an added distance of 2.1 miles plus a time-delay of about three minutes. In order for these trips to benefit from the extension of Madison Street, the first two gaps would require construction (Exhibit 9). It is noted that even with this extension of Madison Street, the additive time and distance factors developed for the above site-specific alternate route would still apply. However, because of the low level of development in the area, it is reasonable to assume that the roadways approaching the extended Madison Street (Highway 111, 50th Avenue, and 52nd Avenue), would

support a high level or service and relatively high travel speeds. Under these conditions, it is doubtful that recreational motorists would find the diversion unacceptable.

The trips from the Indio and Coachella areas will experience little or no road closure inconvenience in travelling to or from the site area. Although some travellers from Indio are currently using Jefferson Street, they could easily divert to Monroe Street and access Lake Cahuilla via 58th Avenue. Should Madison Street be extended to close all three gaps south of Highway 111, this roadway would then substitute for those Indio-based trips who previously preferred the Jefferson Street route over Monroe Street. The recreational trips from either Coachella or the southern valley currently using Airport Boulevard would experience a satisfactory diversion at Madison Street. Instead of continuing west to Jefferson Street, an adequate southerly route would be available along 58th Avenue via Madison Street. The remaining trips from these areas would experience no change in their current travel patterns.

In terms of the truck traffic to and from the Road Department Borrow Pit, the limited number of daily trips could easily be accommodated by the proposed new route. If the amount of trips were increased, ample alternative routes would be available where the impact of closing Jefferson Street would be nominal.

VOLUME/CAPACITY ANALYSIS

Currently, Jefferson Street is serving approximately 700 vehicles per day south of Airport Boulevard and about 1200 vehicles per day north of Airport Boulevard. Although precise studies of the lakes' traffic generation characteristics are unavailable, it is reasonable to assume that most, if not all of the above 700 VPD are oriented to and from Lake Cahuilla. Although this value increases to 1200 VPD north of Airport Boulevard, this increase can be attributed to a northerly orientation of Airport Boulevard traffic which occurs independent of recreational traffic. It is noted that 700 VPD roughly corresponds to the lower weekend usage of the lake (3000 people at four people per car). To account for periods of higher usage and to create a worst case analysis, an assumed daily volume of 2500 VPD south of Airport Boulevard (10,000 people at four people per car) has been added to the study.

Since the closure of Jefferson Street north of 58th Avenue would re-orient recreational traffic, the impact of these volumes has been evaluated through a volume-capacity analysis of nearby roadway segments. Table 14 describes the volume-capacity ratios of the various roadway links that would absorb these redistributed Jefferson Street volumes. Because the actual distribution patterns of recreational traffic from Lake Cahuilla is unknown, the full effect of the assumed generated traffic (2500 VPD - high usage period) has been added to each of the various roadway segments to produce the highest volume-capacity ratio and thus, the greatest possible impact.

# TABLE 14
# DAILY VOLUME/CAPACITY ANALYSIS
## Jefferson Street Closure
## Oak Tree West

| ROADWAY SEGMENT | EXISTING VOLUME [1] | 2003 AMBIENT [2] | 2003 AMBIENT + PROJECT | 2003 AMBIENT + PROJECT + CUMULATIVE | AMBIENT EXISTING VOLUME [3] | 2003 AMBIENT | 2003 AMBIENT + PROJECT | 2003 AMBIENT + PROJECT + CUMULATIVE |
|---|---|---|---|---|---|---|---|---|
| | EXISTING/FUTURE VOLUME DATA | | | | VOLUME/CAPACITY (V/C) RATIOS | | | |
| 54th Avenue | | | | | | | | |
| e/o Madison St. | 500 | 3,200 | 3,800 | 3,800 | 0.04 | 0.27 | 0.32 | 0.32 |
| w/o Madison St. | 500 | 3,200 | 13,200 | 13,200 | 0.04 | 0.27 | 0.73 [4] | 0.73 |
| Airport Boulevard | | | | | | | | |
| e/o Madison St. | 700 | 3,400 | 4,800 | 4,800 | 0.06 | 0.28 | 0.40 | 0.40 |
| 58th Avenue | | | | | | | | |
| e/o Madison St. | 200 | 2,800 | 2,800 | 2,800 | 0.02 | 0.23 | 0.23 | 0.23 |
| Madison Street | | | | | | | | |
| s/o Airport Blvd. | 500 | 3,200 | 17,500 | 17,500 | 0.04 | 0.27 | 0.73 [5] | 0.73 |
| n/o Airport Blvd. | 500 | 3,600 [6] | 11,600 | 11,600 | 0.04 | 0.27 | 0.064 [4] | 0.64 |

[1] Daily volumes rounded to nearest 100 vehicles.

[2] Ambient includes the expansion of existing traffic plus redistributed recreational trips.

[3] Capacity = 12,000 VPD.

[4] Capacity = 18,000 VPD (Partially improved roadway).

[5] Capacity = 24,000 VPD (Fully improved roadway).

[6] Includes existing traffic oriented to the north along Jefferson Street.

Because of the relatively low project-area traffic volumes, existing recreational-area volume-capacity ratios range from 0.02 (58th Avenue, east of Madison Street) to 0.06 (Airport Boulevard, east of Madison Street). In the year 2003, the growth of existing traffic volumes plus the inclusion of redirected Jefferson Street volumes, would produce volume-capacity ratios ranging from 0.23 to 0.28 at the above 58th Avenue and Airport Boulevard locations.

With the addition of project and cumulative traffic volumes, 58th Avenue east of Madison Street would show the smallest volume-capacity ratio of 0.23 while the highest value of 0.73 would appear along 54th Avenue (west of Madison) and also along Madison Street (south of Airport Boulevard).

Based on the above, it is apparent that the existing and future site-area street system would supply more than enough capacity to accommodate the added Jefferson Street volumes.

## PROJECT ACCESS AND INTERNAL CIRCULATION

### Jefferson Street and 54th Avenue

This access location would provide the primary entrance into the Oak Tree West development. Besides serving a large portion of the residential traffic, this entrance would also serve the Resort Village and the majority of the Commercial/Office traffic. Based on a review of the anticipated volumes at this location (Exhibit 8), it is apparent that considerable care will be required in the final design of the intersection. Assuming that Madison Street were not extended to the north past 54th Avenue, the traffic volumes illustrated in Exhibit 8 would suggest that two southbound left turns and dual southbound through lanes would required. Additional design measures would include the signalization of the intersection with exclusive signal phasing to service the southbound left turns.

To provide the greatest possible traffic service without the extension of Madison Street, an intersection channelization program would probably be required as well. Also, to provide positive identification of the restricted-access features of Jefferson Street, as well as directional information to Lake Cahuilla, an appropriate off-site signing program should be included in area planning.

If Madison Street were extended to 52nd Avenue, the design requirements for the Jefferson Street/54th Avenue entrance location would be substantially reduced. Although dual southbound through lanes would still be required into the site, the volume of the previously described southbound left turns would be reduced by a full 70 percent. Our preliminary analysis suggests that a signal would still be required at this location. However, the reduced southbound left turn demand could now be serviced via a single left turn rather than two lanes and probably would not require an exclusive signal phase.

Additionally, intersection channelization requirements would either be reduced or eliminated. In the event that Madison Street were extended to south of Highway 111, southbound left turns at the project entrance would be further reduced to a total of 81 percent from the base condition with no extension of Madison Street. More important, a similar volume reduction would occur along 54th Avenue. In this case, it is possible that the installation of a traffic signal at this location may not be necessary.

Other Project Access Locations

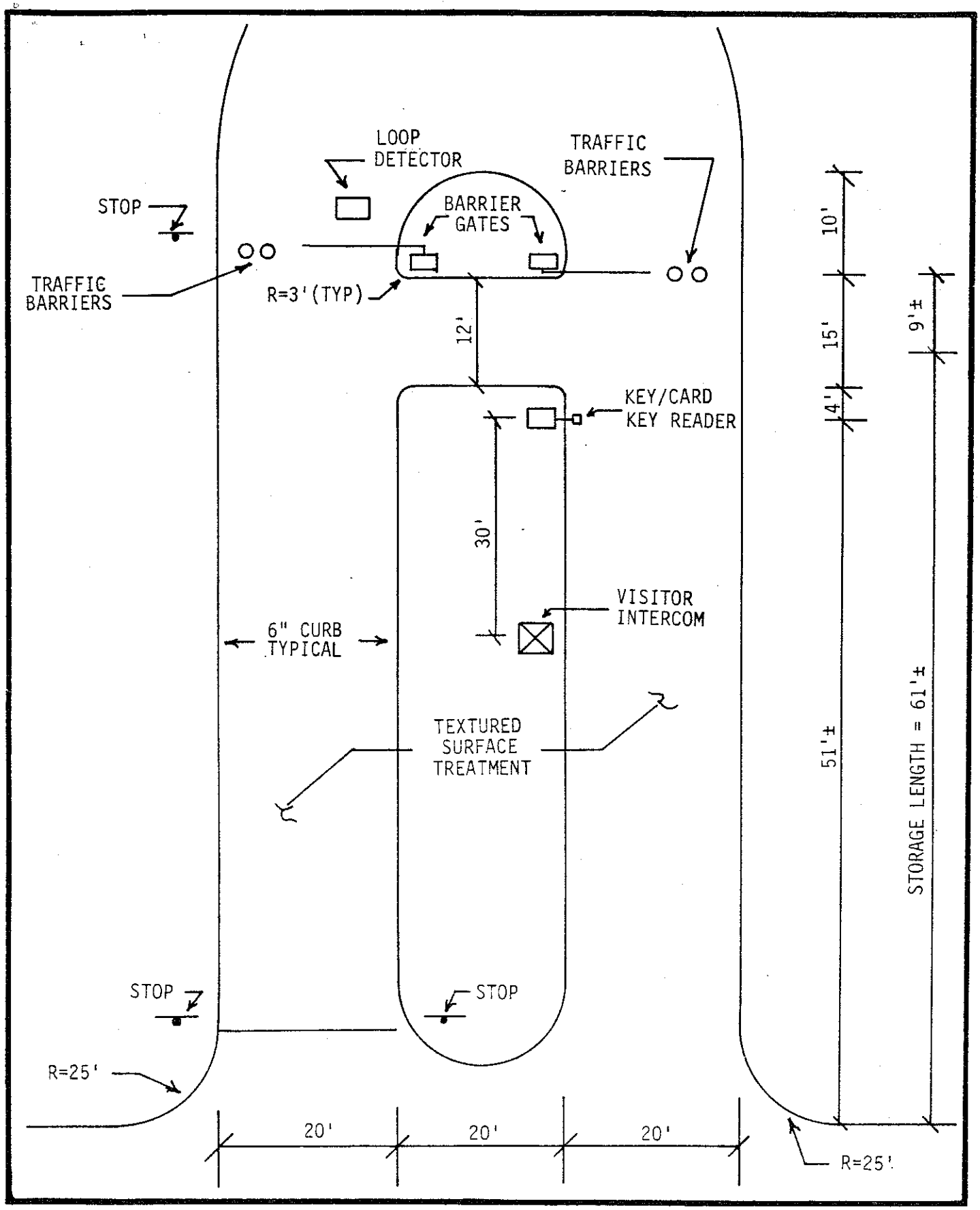
In addition to the primary project access at Jefferson Street and 54th Avenue, other access points would be available to service project traffic. Since Oak Tree West is intended as a private community, these locations would be gate controlled, providing exclusive access to residents of the development or their guests.

At the Madison street entrances, it is suggested that northbound and southbound left turn lanes be incorporated into the design of Madison Street. To facilitate stacking of entering project volumes, each gate arm should be set back from the adjacent roadway a minimum of 70 feet.

A single inbound and a single outbound lane would be adequate for each location. The recommended lane width is 20 feet. Under this configuration, the 20-foot entrance lane width would permit an inbound resident to bypass a standing visitor/service vehicle awaiting entry authorization. Such authorization could be by telephone intercoms, with activation from within the residence destination by dialing a single digit entry code. A bypass to the outbound lane (turn-around) should be provided for vehicles unable to obtain entry. Exhibit 10 illustrates our recommended access design.

INTERNAL CIRCULATION

An investigation has been conducted into the internal project roadway sizing requirements as well as internal vehicular circulation patterns. Based on an assumed location of the future residential dwelling units, the proposed curvilinear system of private streets would be adequate to service project traffic. To facilitate parking on both sides of the street, a 36-foot pavement width is recommended. From 54th Avenue to the Resort Center, the configuration of Jefferson Street should conform to Arterial Highway standards (86' roadway-110' ROW). In the area south of the Resort Center, a 66-foot Collector roadway is recommended. Inasmuch as several elements of the site plan are currently undefined (such as the location and relative density of dwelling units, interior project intersection treatment, Resort Center parking and circulation patterns, etc.), the final site planning process should include a detailed review of these elements.




SCHEMATIC
NOT TO SCALE

**10**

RECOMMENDED ACCESS DESIGN
OAK TREE WEST

TRAFFIC SIGNALS

Traffic signal warrants have been investigated at all of the key project area intersections. The results indicate that the addition of project-related traffic would justify the installation of a signal at Jefferson Street and 54th Avenue. In areas further north, eventual signalization will be required at the Jefferson Street intersections with 52nd Avenue, and 50th Avenue. At these locations however, the responsibility for signalization should be shared between other expected cumulative development and Oak Tree West. By the year 2003, the impact of cumulative projects would necessitite further project-area roadway improvements. Therefore, signalization of project area intersections should be viewed on an area-wide basis rather than specifically oriented toward any one particular project.

At the intersection of Jefferson Street and Indio Boulevard, our analysis indicates that existing traffic volumes already satisfy the Minimum Vehicular warrants as prescribed by CALTRANS.

By the year 2003, the combined effect of project and cumulative traffic volumes would also necessitate the installation of a signal at Washington Street and 50th Avenue.

The extension of Madison Street to south of Highway 111 would produce virtually no change in area signalization requirements. At Jefferson Street and 54th Avenue however, the resulting volumes (after complete extension of Madison Street) would barely exceed those criteria prescribed by CALTRANS. Therefore, depending on the extent of final site development, signal control may not be necessary at that location.

FIRE STATION LOCATION

At the request of Landmark Land Company, this analysis also includes a review of possible locations for the proposed Fire Station. From a traffic standpoint, it is our opinion that the proposed Fire Station should be located in the vicinity of Jefferson Street and 54th Avenue. In evaluating its actual location, it is noted that quick access to the arterial highway system is necessary for fast response time. Since 54th Avenue is projected to service about half the daily volume as Jefferson Street (10,000 VPD versus 20,000 VPD), consideration could be given to locating the facility along this roadway. In terms of possible conflicts with the 35-acre Commercial/Office land use, it is noted that the greatest commercial traffic activity would occur along Jefferson Street, which suggests further support to a 54th Avenue location. If a traffic signal is installed at Jefferson Street and 54th Avenue, traffic signal pre-emption equipment will be necessary at that location.

UNAVOIDABLE ADVERSE IMPACTS

Table 15 presents a forecast of Vehicle Miles Travelled (VMT) for the Oak Tree West Community at full development and occupancy. The average trip lengths for external trips were estimated form available LARTS (Los Angeles Regional Transportation Study) data, the proposed site area land uses, and the potential travel destinations in and around the City of La Quinta. Internal trip lengths were estimated from an analysis of the proposed development including the relative location of the various non-residential components to the site's residential developments.

As shown, the project's 28,550 external daily trips would produce an estimated 295,590 miles of travel daily. The 12,335 internal trips would produce an additional 13,700 vehicle miles for a total (internal plus external) of 309,290 vehicle miles of travel daily.

TABLE 15
VEHICLE MILES TRAVELLED (VMT)
Oak Tree West

| DESCRIPTION | 2-WAY DAILY TRIP FORECAST | AVERAGE TRIP LENGHTH | DAILY VMT MILES TRAVELLED [1] |
|---|---|---|---|
| EXTERNAL TRIPS: | | | |
| Residential Based | 18,675 | 10.8 | 202,300 |
| Golf Course Based | 540 | 9.5 | 5,100 |
| Commercial Based | 3,145 | 9.5 | 29,900 |
| Office Based | 890 | 9.5 | 8,500 |
| Resort Village | 5,300 | 9.5 | 50,400 |
| Sub-Total | 28,550 | | 295,590 |
| INTERNAL TRIPS: | | | |
| Intra-Residential | 1,290 | 0.5 | 600 |
| Golf Course to Home | 2,160 | 0.5 | 1,100 |
| Commercial to Home | 7,335 | 1.5 | 11,000 |
| Office to Home | 220 | 1.5 | 300 |
| Resort Village to Home | 1,330 | 0.5 | 700 |
| Sub-Total | 12,335 | | 13,700 |
| TOTAL | 40,885 | | 309,290 |

[1]Vehicle miles travelled rounded to nearest 100 vehicle miles.