SUPPLEMENTAL TRAFFIC STUDY WOLFF WATERS AFFORDABLE HOUSING PM 33588

Endo Engineering *Traffic Engineering* *Air Quality Studies* *Noise Assessments*

August 23, 2006

Mr. Marvin Roos
MSA Consulting, Inc.
34200 Bob Hope Drive
Rancho Mirage, CA 92270

SUBJECT: ***Coachella Valley Housing Coalition Project in La Quinta***
Evaluation of Deceleration Lane Requirements

Dear Mr. Roos;

Endo Engineering has been asked to evaluate and document the right-turn deceleration lane requirements associated with the Coachella Valley Housing Coalition (CVHC) project in the City of La Quinta. The proposed 218-unit apartment complex is to be constructed on the northwest corner of the intersection of Dune Palms Road and Avenue 48 with access via two unsignalized driveways on Dune Palms Road and one unsignalized driveway on Avenue 48, as shown in Figure 1 (the Vicinity Map). The southerly site driveway proposed on Dune Palms Road and the site driveway proposed on Avenue 48 will be restricted to right-in/right-out movements with positive control of left-turn egress provided by raised medians. The northerly site driveway on Dune Palms Road is proposed as a channelized directional median opening, designed to permit right-in/right-out and left-turn entry but physically prevent left-turn egress from the site.

Based upon the policies outlined in Engineering Bulletin #03-08 (revised November 10, 2005), the City of La Quinta is currently requiring a right-turn deceleration lane at the northern site driveway proposed on Dune Palms Road and a second right-turn deceleration lane at the site driveway proposed on Avenue 48, unless it can be established definitively that one or both of these auxiliary lanes is not required. Engineering Bulletin #03-08 requires a right-turn deceleration lane for any driveway with a projected right-turn entering volume of more than 50 vehicles per hour proposed on any street with a "primary arterial" or higher order street classification.

A 2004 traffic access study by Urban Crossroads assumed the development of 300 apartment units on-site served by two driveways on Dune Palms Road. It identified 42 vehicles turning right into each site driveway, a volume insufficient to warrant a right-turn deceleration lane based upon the City policy outlined in Engineering Bulletin #03-08. As documented below, the current development plan (with 218 apartment units served by the two previously proposed driveway as well as a third driveway on Avenue 48) will result in a maximum of 27 right-turn entering volumes in the peak hour at the site driveways. Consequently, none of the three site driveways will warrant an auxiliary right-turn deceleration lane.

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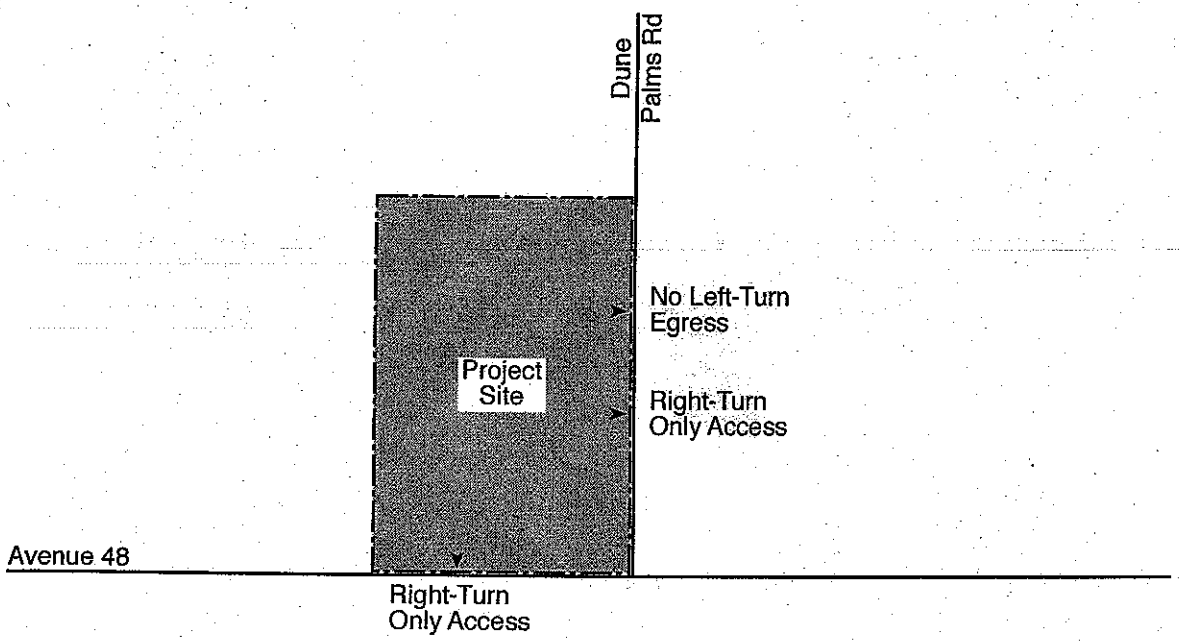
Figure 1
Vicinity Map



Legend

- Key Intersection
- Site Access
- Project Site

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No Scale

Methodology and Scope

To determine if a right-turn deceleration lane is required for one or more of the driveways proposed to serve the development, project-related traffic has been estimated and distributed through the site driveways to identify which, if any, will serve more than 50 entering vehicles in the peak hour. The trip generation potential was estimated from the trip generation regression equations published by the ITE in "Trip Generation" (7th Edition, 2003), assuming the 218 apartment units currently proposed per the Site Development Plan (Figure 2). The external traffic distribution documented in the traffic access analysis for the site prepared by Urban Crossroads in 2004, was assumed with only minor adjustments required to reflect a third site driveway being proposed on Avenue 48 and the current building layout and internal circulation plan.

Anticipated Access Restrictions

Dune Palms Road was changed from a Secondary Arterial with a four-lane undivided cross-section to a Primary Arterial (with a four-lane divided cross-section) from Highway 111 to Avenue 48 on February 4, 2003. Avenue 48 is also designated as a Primary Arterial in the *La Quinta Comprehensive General Plan.*

The minimum intersection spacing for Primary Arterials is 1,060 feet (per Program 2.4). Since there are existing intersections within 1,060 feet of the proposed site access driveways on both Dune Palms Road and Avenue 48, conventional median breaks that accommodate full-turn access will not be permitted at any of the site access driveways.

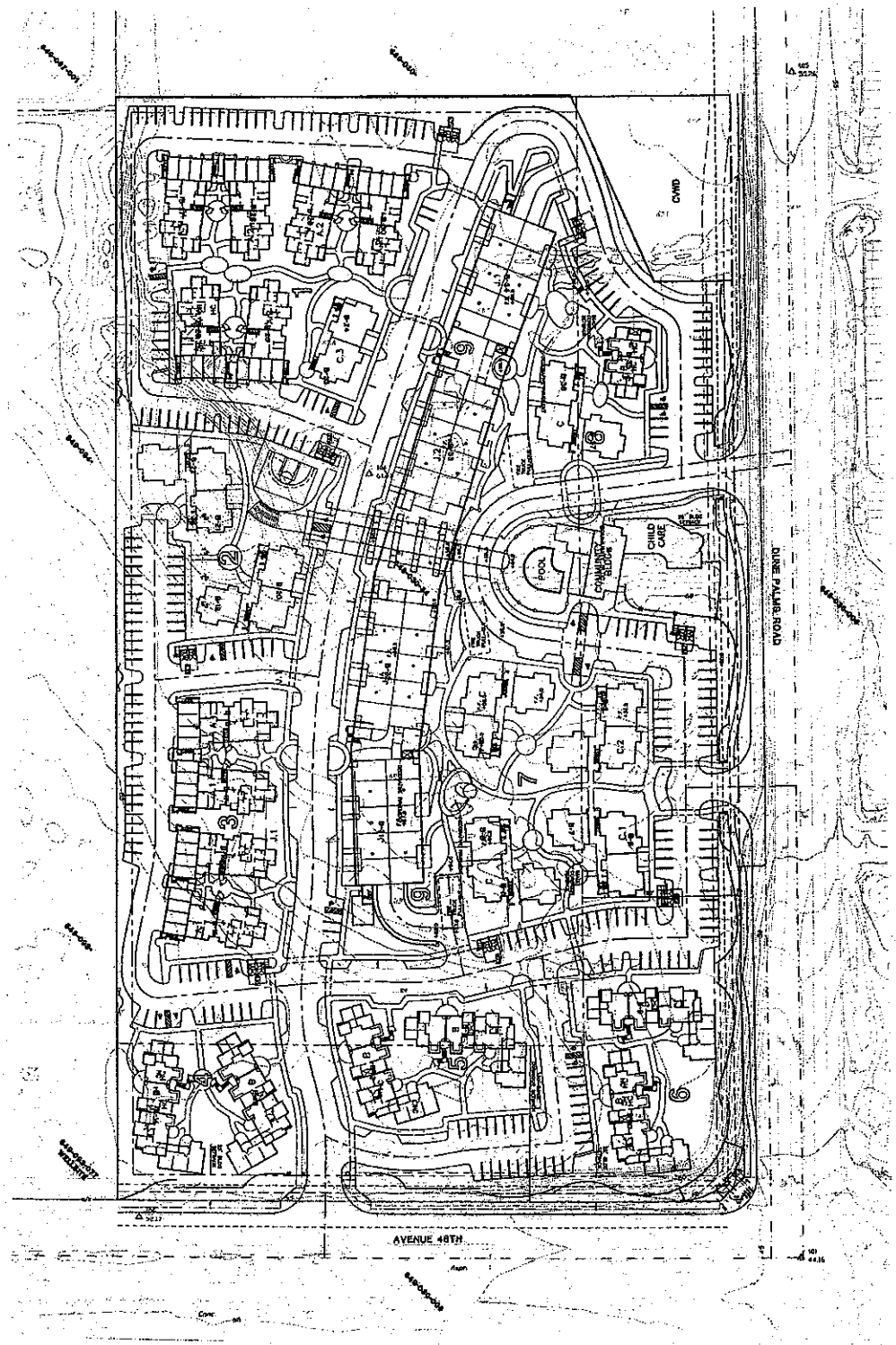
However, directional median breaks which prevent left-turn egress but permit left-turn ingress may be authorized if the left-turn pocket does not interfere with other existing or planned left-turn pockets. The northerly site driveway on Dune Palms Road is proposed at a location far enough from other existing and planned left-turn pockets to ensure that it will not interfere with them.

Previous Site Traffic Analysis

The proposed project is the residential component of The Centre of La Quinta development. A traffic analysis was previously prepared by Urban Crossroads entitled "The Centre of La Quinta Access Evaluation" (dated November 19, 2004) addressing the development of 300 apartment units on-site with access via two driveways on Dune Palms Road. Although the traffic study did not show the projected site traffic volumes at the two site driveways on Dune Palms Road, it did provide an inbound and outbound traffic distribution for each of the site driveways as well as an external traffic assignment showing site traffic approaching and departing from the apartment complex on Dune Palms Road and Avenue 48. The traffic study assumed that the raised median on Dune Palms Road would prevent left-turn egress from the apartment complex but permit left-turn ingress at the northerly site access. The southern driveway on Dune Palms Road was assumed to be restricted to right-in/right-out movements.

In view of the left-turn restriction onto Dune Palms Road, the traffic analysis by Urban Crossroads identified a project traffic distribution which involved 30 percent of the outbound site traffic making a southbound U-turn on Dune Palms Road at Avenue 48 to proceed northerly. Fifty five percent of the outbound site traffic was destined to the west via Avenue 48 and fifteen percent was destined to the east via Avenue 48. The inbound site traffic distribution included 70 percent approaching on southbound Dune Palms Road, with the remaining 30 percent split evenly between the east and the west on Avenue 48.

Figure 2
Site Development Plan



MSA Consulting, Inc., January 3, 2006

Scale 1" = 160'

The peak hour entering volume of 120 vehicles generated by the 300 apartments on-site was expected to be divided between northbound Dune Palms Road (36 VPH) and southbound Dune Palms Road (84 VPH). The northbound motorists were assumed to turn left into the northern site driveway via a directional median opening. Only the southbound motorists would be required to make right turns to enter the site. Without a building layout or internal street design, the southbound motorists were assumed to be evenly split between the two site driveways (42 VPH each). The Urban Crossroads traffic analysis concluded that based upon the City policy outlined in Engineering Bulletin #03-08, a northbound left-turn pocket should be provided 100 feet in length at the northerly site driveway. No southbound right-turn deceleration lane was recommended for Dune Palms Road at either site driveway, since neither driveway was projected to accommodate more than 50 entering vehicles in the peak hour making a right turn into the site from the southbound lane on Dune Palms Road.

The proposed development on-site has been refined in the two years since the traffic access evaluation of the Centre of La Quinta was completed by Urban Crossroads. The currently proposed development on-site currently includes 218 apartments rather than the 300 apartment units previously evaluated (a decrease of 82 apartments or 27 percent). The current site access plan proposes three driveways (two on Dune Palms Road and one on Avenue 48) rather than the two driveways previously evaluated. The access restrictions previously assumed for the two site driveways on Dune Palms Road have not changed. However, the addition of a site driveway on Avenue 48 will better serve the outbound traffic destined to the west (approximately 400 vehicles per day) and reduce the site traffic volume turning onto Dune Palms Road and traveling southbound then turning right at the intersection of Avenue 48.

Current Project Description

As shown in Figure 2, the proposed project is a 218-unit apartment complex with a centralized community recreation building and attached child care facility as well as a swimming pool. The community building will be available to residents for miscellaneous activities and family gatherings. The child care facility will accommodate up to forty children who reside in the apartment complex. Both the community building and child care facility are intended for residents and are not expected to generate external traffic.

The current Site Plan includes three project driveways, two driveways on Dune Palms Road and one driveway on Avenue 48. Since Dune Palms Road and Avenue 48 are both classified as Primary Arterials with raised medians, the turning movements permitted at all three driveways will be restricted.

The north driveway on Dune Palms Road is proposed approximately 760 feet north of Avenue 48 (centerline to centerline). Site traffic will not be allowed to turn left out of this driveway onto Dune Palms Road. However, right-in/right-out and left-turn ingress movements will be permitted at this driveway. The southern driveway on Dune Palms Road is proposed as a right-in/right-out driveway approximately 460 feet (centerline to centerline) north of Avenue 48. The driveway on Avenue 48 is proposed as a right-in/right-out driveway approximately 460 feet (centerline to centerline) west of Dune Palms Road.

Site Traffic Generation Forecast

The Institute of Transportation Engineers (ITE) report "Trip Generation - An Informational Report" is the principal source of trip-generation rates used in site traffic analyses to estimate the number of trips generated by a specific development. Detailed data are provided therein and updated periodically for vehicular trips generated by various land uses, determined through thousands of traffic counts made throughout the United States. The

trip generation potential of the proposed apartment complex was estimated from the data collected and published by the ITE in the most recent update of "Trip Generation - An Informational Report"(7th Edition; 2003). The number of weekday and peak hour trips that will be generated by the proposed development was estimated from the number of apartment units proposed on-site.

A companion document entitled "Trip Generation Handbook" (March 2001) is also published by the ITE that details the recommended practice for the proper application and appropriate interpretation of the data provided in the "Trip Generation" manual. The "Trip Generation Handbook" outlines the procedure recommended by the ITE for selecting between the weighted average trip generation rates and the regression equations in "Trip Generation". Important considerations include: (1) the sample size (rates associated with a larger number of samples are favored); (2) the standard deviation; and (3) the coefficient of determination.

The trip-generation rates associated with ITE Land Use Code 220 (Apartments) were utilized to estimate the number of trips that would be generated by the proposed development. This land use category includes attached rental dwellings located within the same building with at least three other dwelling units. The weekday rates were developed from studies of 86 apartment complexes with an average size of 212 apartment units. The morning peak hour rates for apartments were developed from 78 studies with and average size of 235 apartment units. The evening peak hour rates were developed from 90 studies of apartment complexes with an average of 233 dwelling units. The ITE found that for apartments, the peak hour of the generator typically coincides with the peak hour of the adjacent street traffic (between 7 and 9 a.m. and between 4 and 6 p.m.).

The site traffic volumes were estimated from the "best fit" regression equations provided by the ITE rather than the average rates. This approach was adopted since the ITE trip generation data included more than 20 samples. Table 1 provides the peak hour and daily trip generation forecast associated with the proposed project. The trip generation associated with the day care center is also included for informational purposes. However, since the day care center will serve the children of the residents on-site, it is not expected to increase the number of trips to/from the project site. Any additional trip generation associated with the employees of the child care facility would be offset by the reduction in the number of external trips required by parents who live on-site to transport children to and from an off-site child care facility.

As shown in Table 1, the 218 apartments proposed on-site would generate approximately 1,460 weekday trip-ends. During the morning peak hour, 110 trip-ends would be generated (22 inbound and 88 outbound). During the evening peak hour, 137 trip-ends could be generated (89 inbound and 48 outbound). The highest hourly inbound volume (89 vehicles per hour) is the critical number required to establish the traffic volume turning right into each site driveway.

Site Traffic Distribution and Assignment

Traffic distribution is the determination of the directional orientation of traffic. It is based upon the geographical location of the site and land uses which will serve as trip origins and destinations. Traffic assignment is the determination of which specific routes project-related traffic will use, once the generalized traffic distribution is determined. The basic factors affecting route selection are minimizing time and distance. Other considerations might be the aesthetic quality of alternate routes, the location of signals and driveways, the number of turning maneuvers, and avoidance of congestion. Site access locations,

signalized access points, and turn restrictions on driveways directly affect the project traffic assignment.

Table 1
Estimated Traffic Generation

Land Use Category (ITE Code)	Land Use Quantity[c]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily 2-Way
Apartments (220)[a]	218 DU	22	88	110	89	48	137	1,460
Child Care[b]	40 Students	18	16	34	16	18	34	180

a. Based upon the regression equations for ITE Land Use Code 220 (Apartments) published by the ITE in *Trip Generation* (7th Edition; December, 2003).
b. Based upon the average rate for weekdays (from eleven studies) and the regression equations for weekday peak hours of the adjacent street traffic (from 70 and 71 studies, respectively) associated with ITE Land Use Code 565 (Day Care Center) published by the ITE *Trip Generation* (7th Edition December, 2003). Since the child care facility is intended for the use of the residents on-site, the child care facility will not increase the external trip generation associated with the development of the site.
c. DU=dwelling units.

CONDITION/ APPROVAL.

The assignment of inbound and outbound site traffic to each of the site driveways is shown in Figure 3. It was developed through consideration of: (1) the overall traffic distribution previously identified by Urban Crossroads, (2) the anticipated driveway turn restrictions, and (3) the building layout and internal circulation system shown in the Site Development Plan.

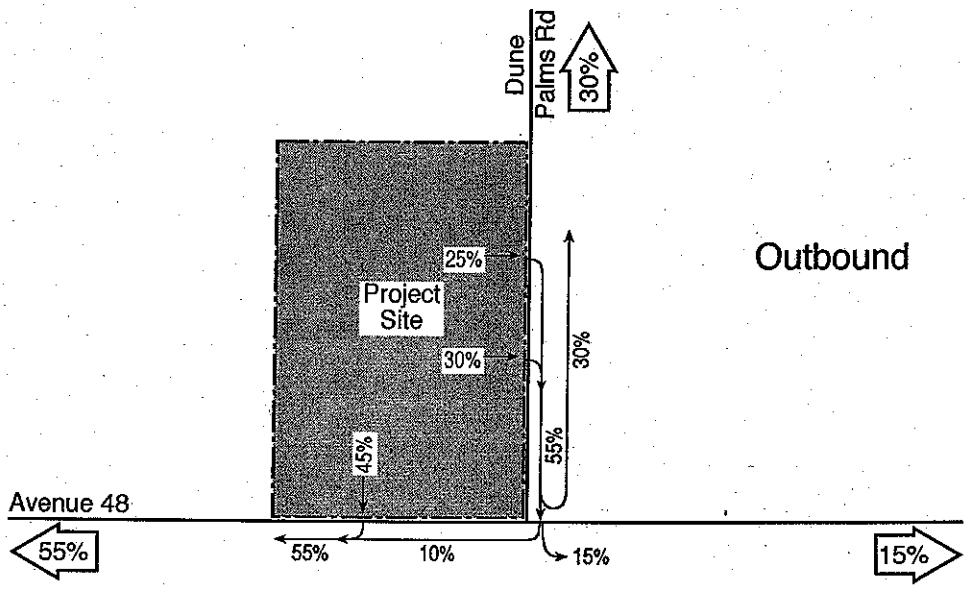
The restriction on left-turn egress across Dune Palms Road will cause an estimated 30 percent of the outbound site traffic (219 vehicles per day) to make a southbound U-turn on Dune Palms Road at Avenue 48 to proceed northerly. In addition, the restriction on left-turn egress across Avenue 48 will cause an estimated 5 percent of the inbound site traffic (73 vehicles per day) to make an eastbound U-turn on Avenue 48 at Dune Palms Road to reach the site driveway on Avenue 48.

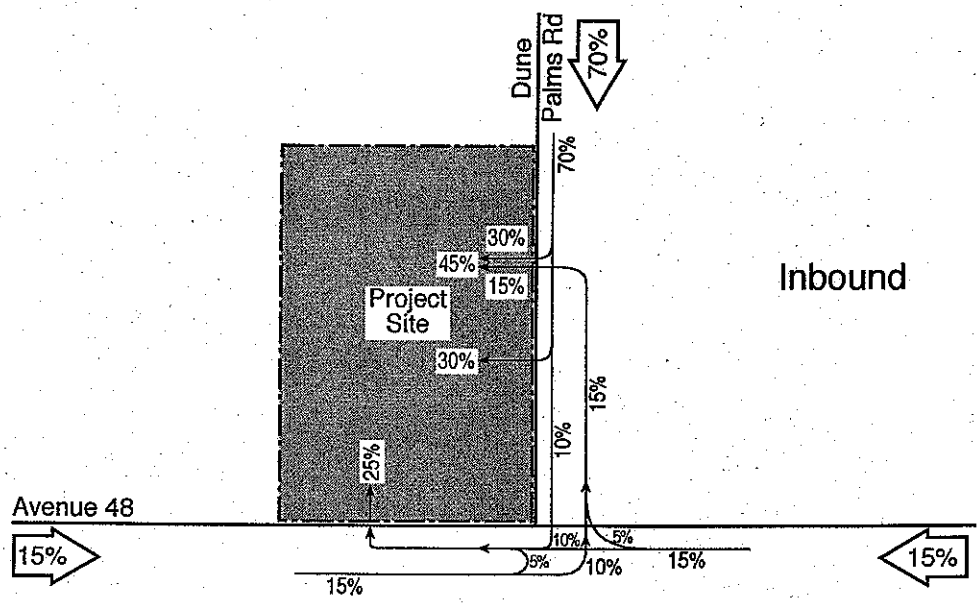
If the inbound and outbound traffic assignments are combined, it can be shown that the northerly driveway on Dune Palms Road will accommodate approximately 35 percent of the daily site traffic or 511 vehicles per day. The southerly driveway on Dune Palms Road will accommodate approximately 30 percent of the daily site traffic or 438 vehicles per day. The remaining 35 percent of the daily trips (511 vehicles per day) will utilize the driveway on Avenue 48 for access.

The project-related morning and evening peak hour traffic volumes at the site access intersections are shown in Figure 4. As shown therein, during the evening peak hour on weekdays, the traffic generated by the proposed project would include 27 vehicles turning right into the northern site driveway on Dune Palms Road. It is estimated that 27 vehicles will turn right into the southern site access on Dune Palms Road during the evening peak hour on weekdays. A total of 22 motorists will turn right into the site access on Avenue 48 in the peak hour on weekdays.

Figure 3

Project Traffic Distribution and Assignment





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100% Percent of Site Traffic

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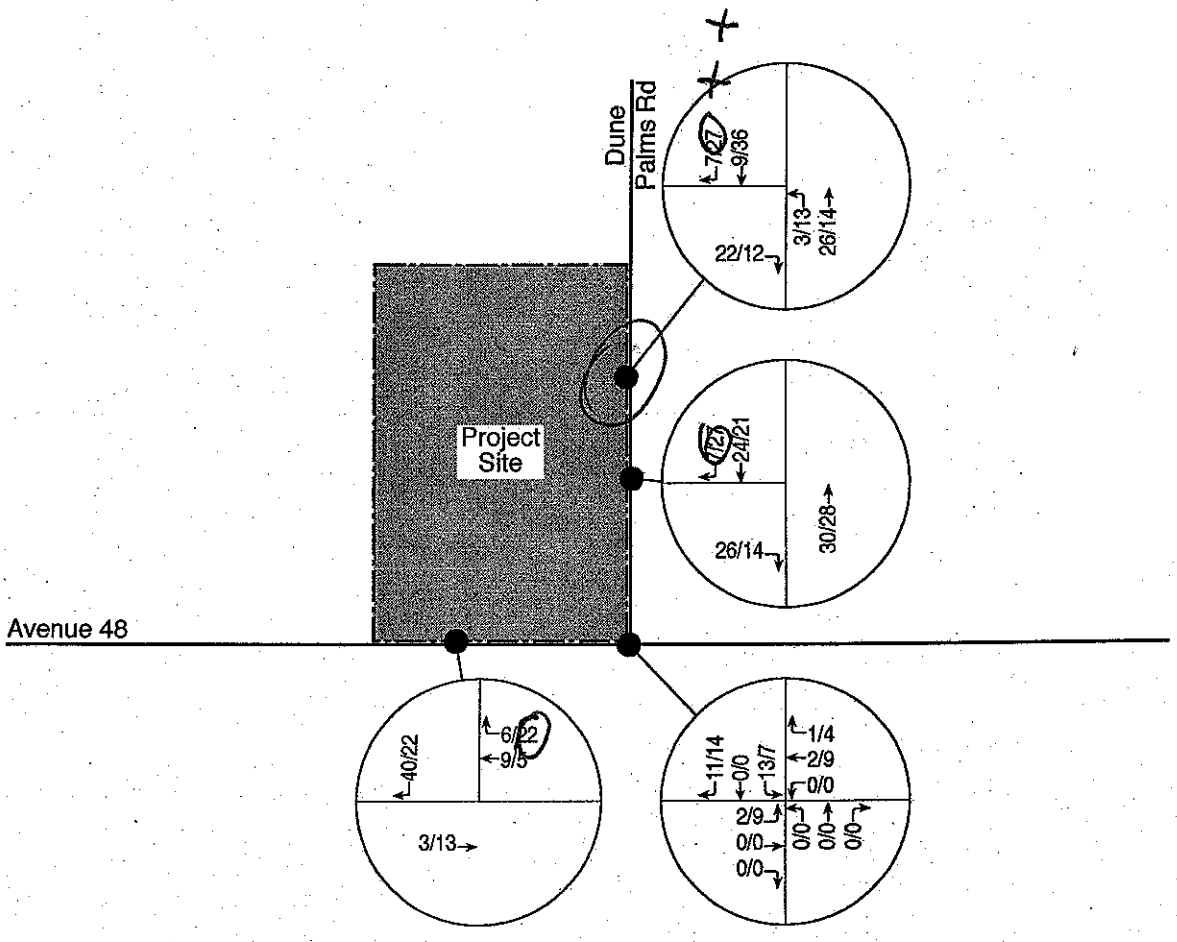
Figure 4
Project Related Traffic Volumes



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5/8 Morning/Evening Peak Hour Turning Volume

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Findings and Conclusions

Engineering Bulletin #03-08 specifies that an auxiliary right-turn deceleration lane shall be installed on all primary arterial and higher classification streets at any driveway with a projected right-turn entering volume of more than 50 vehicles per hour. With the reduction in the number of apartments proposed on-site and the increase in the number of site driveways proposed, none of the site access points will warrant the provision of a right-turn deceleration lane.

The traffic loading of the three site driveways currently proposed was identified by assuming residents will minimize travel time and distance traveled in selecting a site driveway for access, based upon the proximity of the apartment buildings on-site and the internal circulation system associated with each site driveway. The peak hour right-turn entering volume at the three site driveways is projected to range from 22 to 27 vehicles per hour. None of the site driveways will serve more than 50 vehicles turning right into the site in the peak hour. Therefore, a right-turn deceleration lane will not be required at any of the project driveways.

Even if the child care facility serves only off-site residents, the peak hour right-turn entering volume at the northern site driveway would increase to 32 vehicles per hour. This volume would not be sufficient to warrant a right-turn deceleration lane at the northern site driveway on Dune Palms Road.

We trust that this report provides sufficient information to clarify the situation regarding the need for an auxiliary right-turn deceleration lane at the site driveways on Dune Palms Road and Avenue 48. Should questions or comments arise regarding the findings and recommendations herein, please do not hesitate to contact our offices. We look forward to discussing our findings and recommendations with you.

Cordially,

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Vicki Lee Endo

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