KUNZMAN ASSOCIATES, INC.

SHADOWROCK CHURCH

TRIP GENERATION COMPARISON ANALYSIS

March 11, 2014

Traffic Engineering | Transportation Planning | Parking | Noise/Vibration | Expert Witness
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5655

KUNZMAN ASSOCIATES, INC.
OVER 35 YEARS OF EXCELLENT SERVICE

March 11, 2014

Pastor Craig Cunningham
SHADOWROCK CHURCH
75-580 East Ramon Road
Thousand Palms, CA 92264

Dear Pastor Cunningham:

INTRODUCTION

The firm of Kunzman Associates, Inc. is pleased to provide this trip generation comparison analysis for the ShadowRock Church project in the City of La Quinta. The church is proposed to be located at 79-390 Highway 111 within the La Quinta Valley Plaza. The location map for the project site is shown on Figure 1.

Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided within Appendix A.

DEVELOPMENT DESCRIPTION

La Quinta Valley Plaza currently includes approximately 63,267 square feet of commercial space. Based upon information provided by the applicant, this includes:

- 8,714 square feet of salon
- 9,056 square feet of retail
- 8,542 square feet of restaurant
- 8,400 square feet of beauty college
- 1,795 square feet of dry cleaner
- 8,273 square feet of medical office
- 18,487 square feet of vacant space (includes the square footage that will be used by ShadowRock Church

Previously, 79-390 Highway 111 was occupied by Patios Plus, Inc. The proposed use consists of a 6,720 square feet of church use. The proposed site plan is illustrated on Figure 2.

PREVIOUS PROJECT TRIP GENERATION

The trips generated by the project are determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the

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availability of roadway capacity, the availability of vehicles to drive, and life styles remain similar to what are known today. A major change in these variables may affect trip generation rates.

Trip generation rates were determined for daily traffic, morning peak hour inbound and outbound traffic, and evening peak hour inbound and outbound traffic for the previous project land use. By multiplying the trip generation rates by the land use quantity, the traffic volumes are determined. Table 1 shows the project trip generation rates, project peak hour volumes, and project daily traffic volumes for the previous project land use. The trip generation rates are from the La Quinta Corporate Centre Traffic Impact Study prepared by Endo Engineering, May 10, 1999.

The previous project (commercial) is projected to generate approximately 497 daily vehicle trips, 12 of which will occur during the morning peak hour and 46 of which will occur during the evening peak hour (see Table 1).

PROPOSED PROJECT TRIP GENERATION

The proposed church trip generation rates are from the Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012. In addition, the applicant provided the ShadowRock Church schedule of weekly events (see Table 2). In order to provide a conservative analysis, the weekday (Wednesday) bible study/classes were added to the church trip generation (see Table 3)

The proposed project (church) is projected to generate approximately 141 daily vehicle trips, 23 of which will occur during the morning peak hour and 24 of which will occur during the evening peak hour (see Table 3).

CONCLUSIONS

Trip generation comparison calculations are depicted in Table 4. The difference in vehicle trips and percent difference in vehicle trips are calculated between the previous and proposed land uses.

The proposed project compared to the previous project is projected to generate approximately 356 less daily vehicle trips, 11 more of which will occur during the morning peak hour and 22 less of which will occur during the evening peak hour.

The proposed project is not projected to add 50 or more new trips to any peak travel direction to or from the site during the peak hours.

Pastor Craig Cunningham
SHADOWROCK CHURCH
March 11, 2014

It has been a pleasure to service your needs on this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 973-8383.

Sincerely,

KUNZMAN ASSOCIATES , INC.

Perrie Ilercil, P.E.
Senior Associate

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM A. KUNZMAN
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KUNZMAN ASSOCIATES, INC.

William Kunzman

William Kunzman, P.E.
Principal

Table 1

Previous Project Trip Generation[1]

Land Use	Quantity	Units[2]	Peak Hour						Daily
			Morning			Evening			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Commercial		TSF	1.07	0.68	1.75	3.27	3.53	6.80	74.02
Trips Generated									
Commercial	6.72	TSF	7	5	12	22	24	46	497

[1] Source: La Quinta Corporate Centre Traffic Impact Study, Endo Engineering, May 10, 1999.

[2] TSF = Thousand Square feet

Table 2

ShadowRock Church Schedule of Weekly Events[1]

Day of Week	Time Period	Event	Estimated Number of People
Sunday	9:30 AM - 10:30 AM	Sunday Main Church Services	240
Sunday	9:30 AM - 10:30 AM	Sunday Nursery	10
Sunday	9:30 AM - 10:30 AM	Sunday Preschool Church Services	20
Sunday	9:30 AM - 10:30 AM	Sunday Children's Church Services	20
Sunday	11:00 AM - 12:00 NOON	Sunday Main Church Services	240
Sunday	11:00 AM - 12:00 NOON	Sunday Nursery	10
Sunday	11:00 AM - 12:00 NOON	Sunday Preschool Church Services	20
Sunday	11:00 AM - 12:00 NOON	Sunday Children's Church Services	20
Sunday	6:00 PM - 7:30 PM	Youth Group	50
Monday	9:00 AM - 5:00 PM	Pastoral Office Hours	5
Tuesday	9:00 AM - 5:00 PM	Pastoral Office Hours	5
Tuesday	6:00 PM - 8:00 PM	Bible Study	20
Wednesday	7:00 AM - 8:00 AM	Bible Study	20
Wednesday	9:00 AM - 5:00 PM	Pastoral Office Hours	5
Wednesday	6:00 PM - 8:00 PM	Bible Study	20
Thursday	9:00 AM - 5:00 PM	Pastoral Office Hours	5
Thursday	6:00 PM - 8:00 PM	Bible Study	20
Friday	9:00 AM - 5:00 PM	Pastoral Office Hours	5
Friday	6:00 PM - 8:00 PM	Bible Study	20
Saturday	7:00 AM - 8:00 AM	Bible Study	20
Saturday	6:00 PM - 8:00 PM	Bible Study	20

[1] Source: ShadowRock Church

Table 3

Proposed Project Trip Generation

Land Use	Quantity	Units[1]	Peak Hour						Daily
			Morning			Evening			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Church[2]		TSF	0.35	0.21	0.56	0.26	0.29	0.55	9.11
Trips Generated									
Church	6.72	TSF	2	1	3	2	2	4	61
Bible Study/Class[3]	20	PRS	0	20	20	20	0	20	80
Total			2	21	23	22	2	24	141

[1] Source: Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012, Land Use Category 560.

[2] TSF = Thousand Square feet; PRS = Persons

[3] Source: ShadowRock Church schedule of weekly events (Wednesday).

Table 3

Project Trip Generation Comparison

Land Use	Peak Hour						Daily
	Morning			Evening			
	Inbound	Outbound	Total	Inbound	Outbound	Total	
Previous Project[1]	7	5	12	22	24	46	497
Proposed Project[2]	2	21	23	22	2	24	141
Difference	-5	+16	+11	0	-22	-22	-356

[2] See Table 1.

[2] See Table 3.

Figure 1
Project Location Map

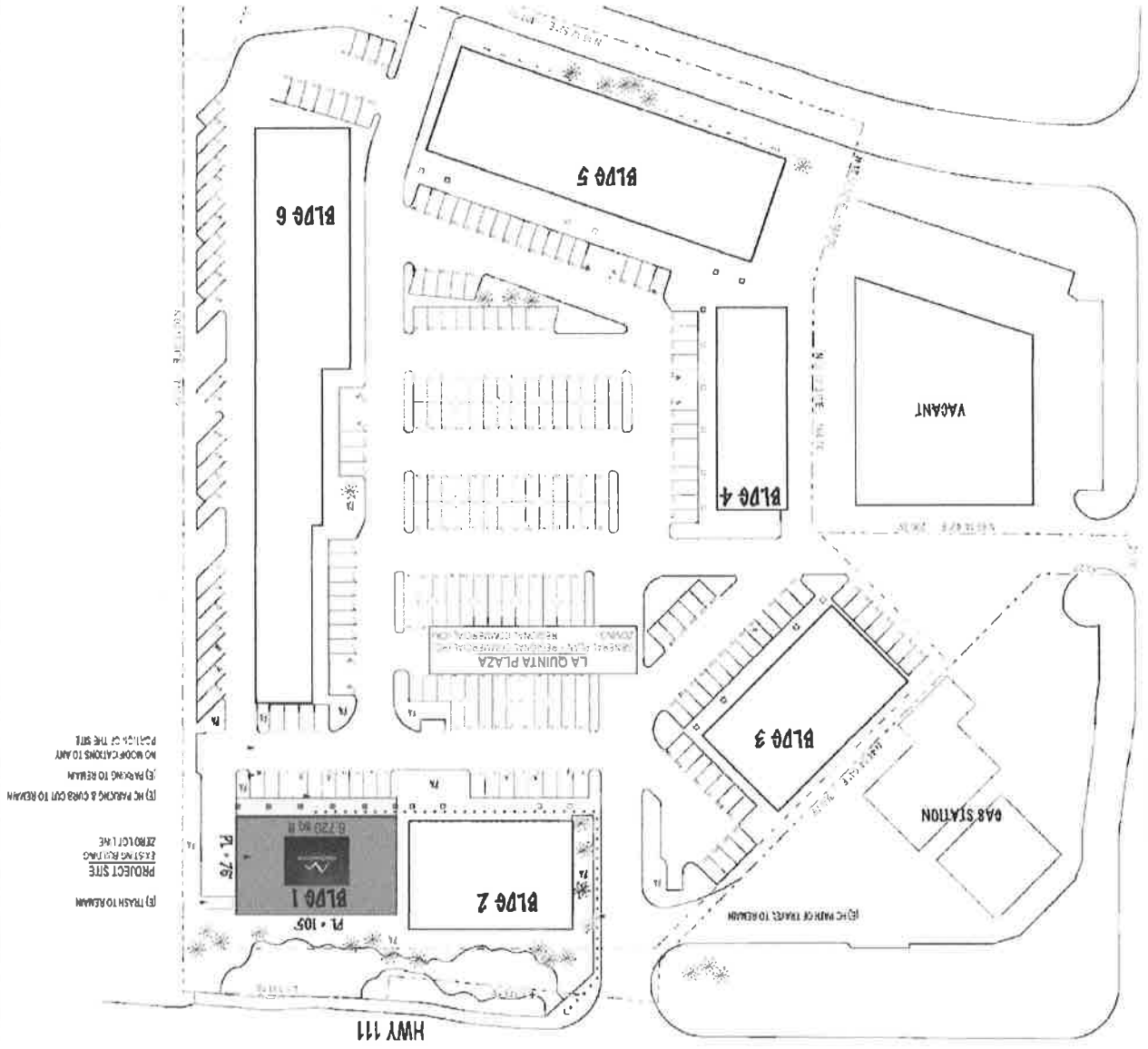

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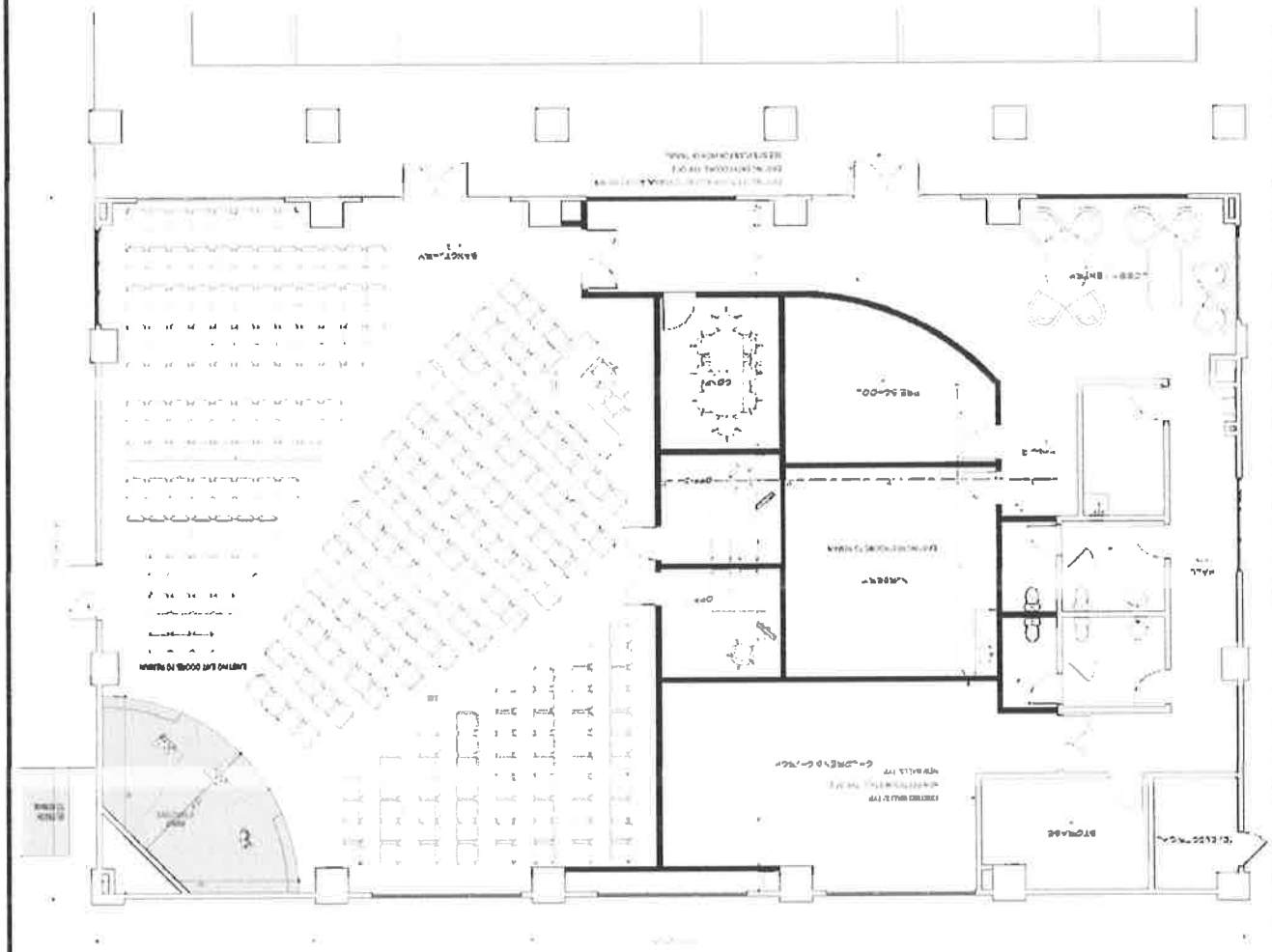
Figure 2
Site Plan



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APPENDIX A

Glossary of Transportation Terms

GLOSSARY OF TRANSPORTATION TERMS

COMMON ABBREVIATIONS

AC:	Acres
ADT:	Average Daily Traffic
Caltrans:	California Department of Transportation
DU:	Dwelling Unit
ICU:	Intersection Capacity Utilization
LOS:	Level of Service
TSF:	Thousand Square Feet
V/C:	Volume/Capacity
VMT:	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A constriction along a travelway that limits the amount of traffic that can proceed downstream from its location.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CYCLE LENGTH: The time period in seconds required for one complete signal cycle.

CUL-DE-SAC STREET: A local street open at one end only, and with special provisions for turning around.

DAILY CAPACITY: The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

ORIGIN-DESTINATION SURVEY: A survey to determine the point of origin and the point of destination for a given vehicle trip.

PASSENGER CAR EQUIVALENTS (PCE): One car is one Passenger Car Equivalent. A truck is equal to 2 or 3 Passenger Car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination; i.e. each trip has two trip-ends. A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quantity of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.